SITE DEVELOPMENT PLAN
GTW'S WAVERLY WOODS
SECTION 14
PARCEL 'G'
"WAVERLY MEWS"

GARDEN-STYLE CONDOMINIUMS
AGE RESTRICTED ADULT HOUSING
ZONED: PSC (PLANNED SENIOR COMMUNITY) DISTRICT

TAX MAP No. 16 GRID No. 4
PARCEL No. P/O 249

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ADDRESS CHART

BLDG. NO.	STREET ADDRESS
1	2211 JOHN GRAVEL ROAD
2	2221 JOHN GRAVEL ROAD
3	2231 JOHN GRAVEL ROAD
4	2241 JOHN GRAVEL ROAD
5	2251 JOHN GRAVEL ROAD
6	2121 JOHN STUART ROAD
7	2230 JOHN GRAVEL ROAD
CLUB HOUSE	2100 JOHN STUART ROAD

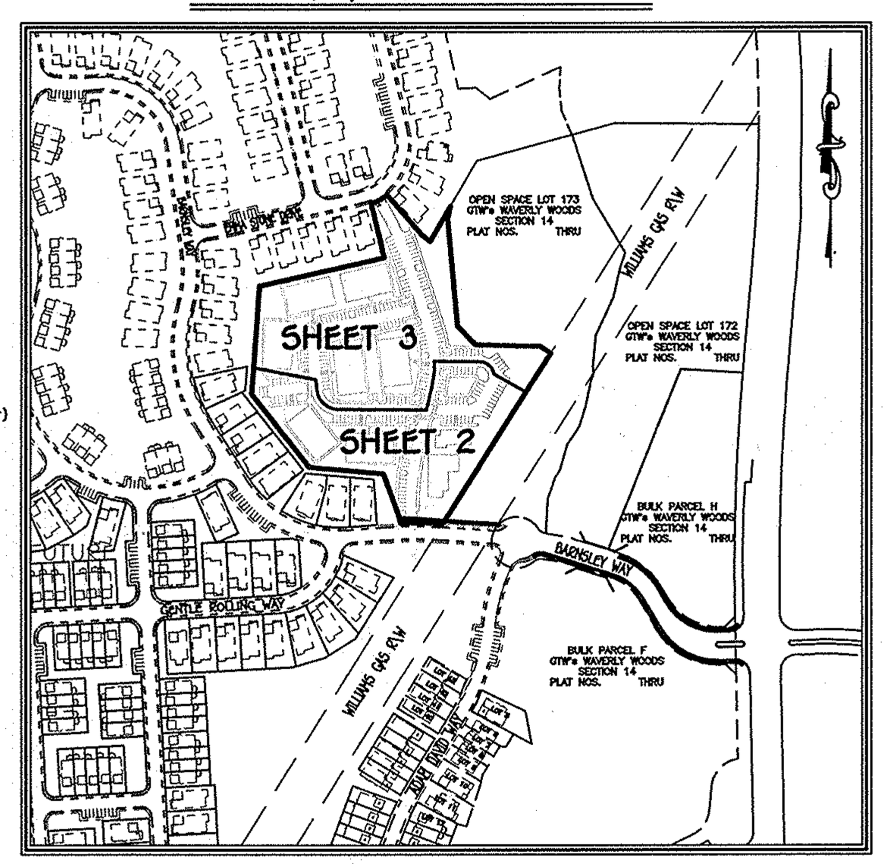
STREET LIGHT CHART (PRIVATE)

STREET NAME	STATION	OFFSET	FIXTURE/POLE TYPE
JOHN STUART ROAD (PRIVATE)	2+58.28	23.2	100-WATT "COLONIAL" SODIUM VAPOR POST TOP FIXTURE MOUNTED ON A 14-FOOT BLACK FIBERGLASS POLE.
	3+83.64	34.0	
	5+11.91	22.9	
	7+95.39	17.2	
JOHN GRAVEL ROAD (PRIVATE)	2+74.42	18.8	

STREET SIGN CHART

STREET NAME	STATION	OFFSET	POSTED SIGN	SIGN CODE
JOHN STUART ROAD (PRIVATE)	0+42.09	21.46	STOP	R1-1
JOHN STUART ROAD (PRIVATE)	1+52.92	25.39	SPEED LIMIT	R2-1
JOHN STUART ROAD (PRIVATE)	7+26.14	22.77	SPEED LIMIT	R2-1
JOHN STUART ROAD (PRIVATE)	7+96.16	18.82	STOP	R1-1
JOHN GRAVEL ROAD (PRIVATE)	0+34.28	21.66	STOP	R1-1
JOHN GRAVEL ROAD (PRIVATE)	6+34.18	21.04	STOP	R1-1
PARKING 'A'	0+33.31	21.28	STOP	R1-1
PARKING 'A'	3+36.60	20.92	STOP	R1-1
PARKING 'B'	0+27.39	14.58	STOP	R1-1

DEVELOPMENT SHEET INDEX



SITE ANALYSIS DATA CHART

A. TOTAL AREA OF BULK PARCEL 'G' = 6.689 AC.±.
B. TOTAL AREA OF THIS SUBMISSION =6.689 AC.±.
C. LIMIT OF DISTURBED AREA = 7.454 AC.±
D. PRESENT ZONING DESIGNATION = PSC (PLANNED SENIOR COMMUNITY)
E. PROPOSED USE: AGE RESTRICTED ADULT HOUSING AND CLUBHOUSE WITH POOL (7 BUILDINGS CONTAINING 16 UNIT CONDOMINIUMS IN EACH BUILDING)
F. FLOOR SPACE ON EACH LEVEL OF BUILDING: N/A
H. TOTAL NUMBER OF UNITS PROPOSED ON THIS SUBMISSION: 112 UNITS
J. TOTAL NUMBER OF PARKING SPACES REQUIRED = 210 SPACES
   a. CONDOMINIUM PARKING REQUIRED = 112 SPACES (112 X 1 SPACE/UNITS)
   b. CLUBHOUSE PARKING REQUIRED = 64 SPACES (6,373 SqFt. @ 10 SPACES PER 1,000 SqFt)
   c. OVERFLOW PARKING REQUIRED = 34 SPACES (0.3 SPACES X 112 UNITS)
K. TOTAL NUMBER OF PARKING SPACES PROVIDED = 217 SPACES (INCLUDING 14 HANDICAP SPACES)
L. OPEN SPACE ON SITE: N/A
M. BUILDING COVERAGE OF SITE: N/A
O. PREVIOUS HOWARD COUNTY FILES: S-94-07, S-06-013, ZB CASE NO. 1027 M, ZB CASE NO. 929-M, PB CASE NO. 381, F-01-091, F-01-093, F-01-148, F-01-147, F-08-159, P-08-010, WP-95-23, WP-08-069, F-09-057, F-07-032, F-09-057 (FC), F-10-113, WP-09-210, SDP-09-037, SDP-09-039, F-10-113, F-12-072, F-12-089, ZB CASE NO. 1097M, AND F-13-067.
P. TOTAL AREA OF FLOODPLAIN: 0.00 AC±
Q. TOTAL AREA OF SLOPES IN EXCESS OF 25% = 0.000 AC±
R. DENSITY TABULATION:
   1. TOTAL PRELIMINARY DEVELOPMENT PLAN TRACT AREA= 168.928 ACRES (ZB CASE NO. 1027M + ZB CASE NO. 1097M) (151.30 ACRES + 17.628 ACRES)
   2. TOTAL AMENDED PRELIMINARY DEVELOPMENT PLAN FLOODPLAIN AREA = 23.444 ACRES (ZB CASE NO. 1027M + ZB CASE NO. 1097M) (17.70 ACRES + 5.744 ACRES)
   3. TOTAL AMENDED PRELIMINARY DEVELOPMENT PLAN STEEP SLOPE AREA = 0.00 ACRES (ZB CASE NO. 1027M + ZB CASE NO. 1097M) (0.00 ACRES + 0.00 ACRES)
   4. TOTAL AMENDED PRELIMINARY DEVELOPMENT PLAN NET TRACT AREA = 145.484 ACRES (TOTAL AREA(-) FLOODPLAIN AREA(-) STEEP SLOPE AREA) (168.928 ACRES(-) + 23.444 ACRES(-) 0.00 ACRES)
   5. TOTAL ALLOWED UNITS = 1163 UNITS (NET TRACT AREA X 8 UNITS / NET TRACT ACREAGE) (145.484 AC. X 8 UNITS/AC.)
   6. TOTAL PROPOSED UNITS = 447 UNITS ZB CASE NO. 1027M(+) ZB CASE NO. 1097M (350 UNITS + 112 UNITS)

UNIVERSAL DESIGN GUIDELINES FOR AGE-RESTRICTED ADULT HOUSING IN HOWARD COUNTY

The Howard County Zoning Regulations allow for "active adult housing" as either a conditional use in residential zoning districts or as a permitted use in the Planned Senior Community, Planned Office Research, Community Center Transition, and Residential Institutional zoning districts. Active adult developments must be appropriately designed for adults at least 55 years of age. Site improvements must ensure accessible routes between parking, dwelling units and common areas. Individual dwellings must incorporate universal design features to be adaptable for residents with mobility and functional limitations that often result from aging.

Design standards for site accessibility and usable common areas have been established for multifamily housing by the Americans 'with' Disabilities Act and the Fair Housing Act of 1988. While recognized standards for individual units for older adults have not been established, "Universal Design" is a relatively new, evolving concept that provides some guidance.

Accordingly, the Department of Planning and Zoning met with several senior housing developers, representatives of the Homes for Life Coalition of Howard County, and the Department of Inspections, Licenses, and Permits to discuss minimum requirements. Divergent views were expressed regarding what features should be required vs optional. Features vary considerably in cost, relevance for different users, and adaptability to different sites and project types. Developers' chief concerns were that the current market doesn't perceive a need for most universal design features since the oldest boomers are still relatively young and aren't focused on how their needs may change over time. Concern was also expressed about increasing the cost of senior housing if many universal design features are required rather than optional.

These guidelines reflect a middle position focusing on requiring those features that are relatively inexpensive if part of initial construction, but would require major renovation to retrofit in the future. Items that are relatively less expensive to retrofit in the future are listed as desirable or optional.

REQUIRED
- for multi-family apartment or condo developments, an accessible path between parking, dwelling units, and common areas that meets ADA standards
- for single family detached and attached developments, a "no-step" access to the front entrance to the community building and all dwellings (a no-step entrance is desirable, but not required at other entrances)
- 36" wide front door with exterior lighting of the entrance
- all interior doorways at least 32" wide (36" is preferable)
- hallways at least 36" wide, (40-42" is preferable)
- complete living area including master bedroom & bath on first floor (or elevator access if multi-story rental/condo apartments)
- lever handles on interior and exterior doors
- blocking for grab bars in walls in bathroom near toilet and shower

DESIRABLE
- low maintenance exterior materials
- covered main entry
- entry door approach with 18"-24" of clearance at side adjacent to handle
- smooth transitions between rooms (vertical threshold of 2" or less)
- slip resistant flooring
- maximize accessible path between main living rooms (preferably 38-42")
- lever handles on kitchen and bathroom sinks, plus shower
- anti-scald devices on all plumbing fixtures
- 5' turning radius or T turn in kitchen and first floor bathroom
- parallel and forward approach maneuvering space in front of appliances and plumbing fixtures
- main electrical breaker box located on the first floor
- Switches, doorbells, thermostats, and breaker boxes should be located no more than 48" above the floor; electrical receptacles should be at least 15" above the floor

CUSTOM OPTIONS
- security system
- visual ID of visitors
- visual smoke detectors
- handrails on both sides of exterior and interior stairs
- task lighting in kitchen, bath and other work spaces
- rocker light switches
- lighting in closets and pantry
- closet rods adjustable from 3' to 5'-6"
- slip resistant flooring in kitchen and bath
- multi-level or adjustable kitchen countertops and work spaces
- pullout shelves for kitchen base cabinets
- front mounted controls on stove
- installation of grab bars in bathroom
- hand held showerhead in shower
- curbless shower

AMENDED PRELIMINARY DEVELOPMENT PLAN CRITERIA
GTW'S WAVERLY WOODS WEST
RE-ZONING 17.628 ACRES
PEC TO PSC
THIRD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

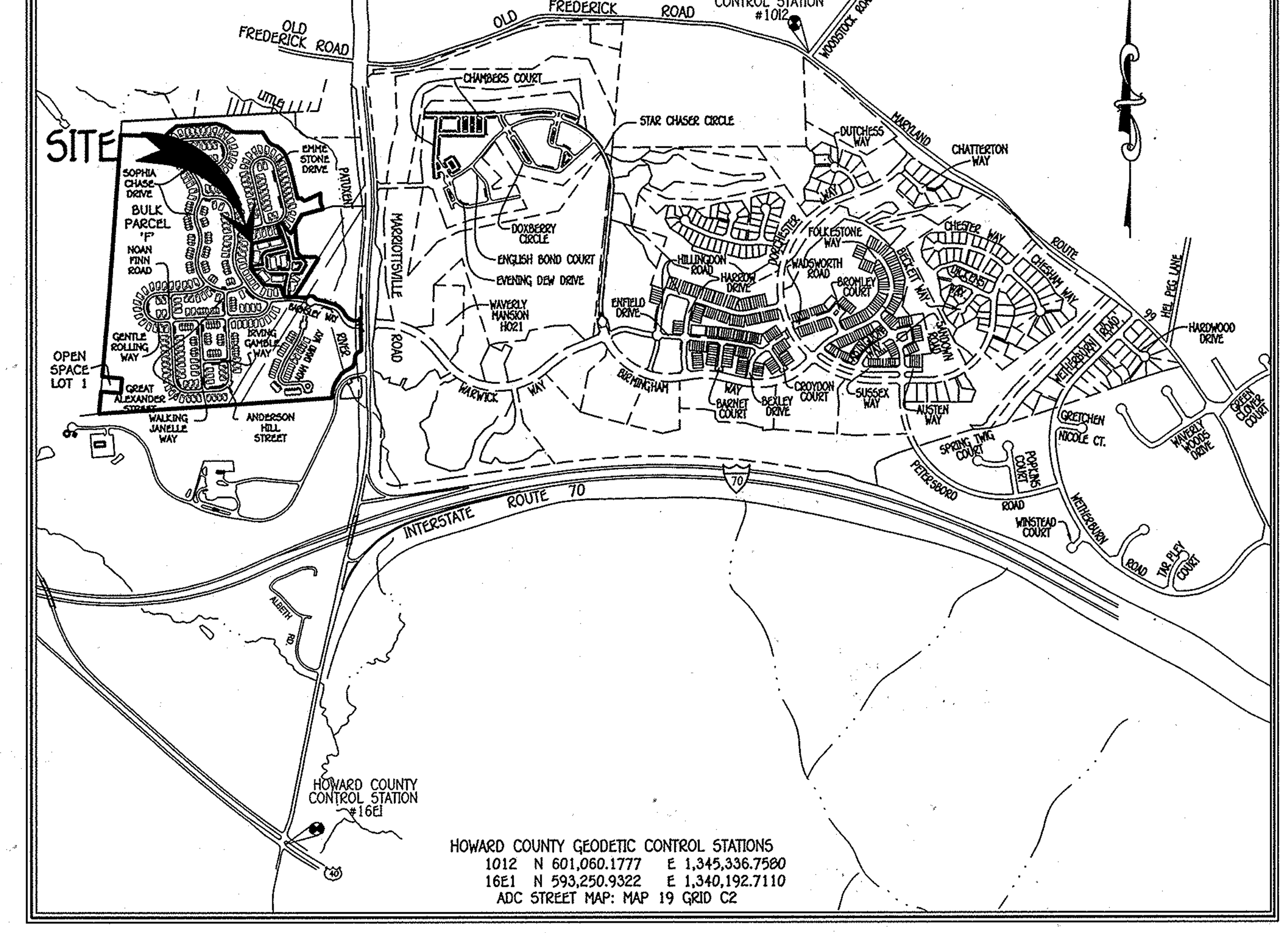
1. Maximum height shall not exceed:
a. Garden Condominiums = 60-feet
b. Community Building = 40-feet

2. Minimum distances between Single Family detached dwelling units and condominium buildings, provided improvements thereon are constructed in accordance with a site development plan approved by the Howard County.
a. Face to Face = 50-feet
b. Face to Side/Rear to Side = 30-feet
c. Side to Side = 15-feet
d. Rear to Rear = 40-feet
e. Rear to Face = 75-feet

3. Minimum distances between condominium buildings, provided improvements thereon are constructed in accordance with a site development plan approved by the Howard County.
a. Face to Face = 50-feet
b. Face to Side/Rear to Side = 30-feet
c. Side to Side = 15-feet
d. Rear to Rear = 40-feet
e. Rear to Face = 75-feet

4. Minimum distances between condominium residential buildings and edge of private roadway and/or parking areas:
a. Residential Front = 10-feet
b. Residential Side = 10-feet
c. Residential Rear = 10-feet

5. Minimum distances between community building, pool house structures and edge of private roadway and/or parking areas = 10-feet



VICINITY MAP

SCALE: 1" = 1200'

THIRD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

0' 1200' 2400' 4800'
SCALE: 1" = 1200'

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

GENERAL NOTES

1. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
2. THE CONTRACTOR SHALL NOTIFY MISS UTILITY AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
3. ANY DAMAGE TO THE COUNTY'S RIGHT-OF-WAY SHALL BE CORRECTED AT THE DEVELOPER'S EXPENSE.
4. [illegible], PARCEL 'G' AND OPEN SPACE LOTS 238 AND 239 ZONED PSC PER ZONING BOARD CASE NO. 1097M APPROVED JULY 31, 2012 AND ZONING BOARD CASE NO. 1027M APPROVED JUNE 18, 2003.
5. THIS PLAN IS IN COMPLIANCE WITH THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS PER COUNCIL BILL 45-2003 AND THE ZONING REGULATIONS AS AMENDED BY COUNCIL BILL 75-2003. DEVELOPMENT OR CONSTRUCTION ON THESE LOTS MUST COMPLY WITH SETBACK AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF THE SITE DEVELOPMENT PLAN, WAIVER PETITION APPLICATION, OR BUILDING/GRADING PERMIT AND THE COMP-LITE ZONING REGULATIONS DATED JULY 28, 2006.
6. IN ACCORDANCE WITH SECTION 128 OF THE HOWARD COUNTY ZONING REGULATIONS, BAY WINDOWS, CHIMNEYS OR EXTERIOR STAIRWAYS NOT MORE THAN 16 FEET IN WIDTH MAY PROJECT NOT MORE THAN 4 FEET INTO ANY SETBACK. PORCHES OR DECKS, OPEN OR ENCLOSED MAY PROJECT NOT MORE THAN 10 FEET INTO THE FRONT OR REAR YARD SETBACK (APPLIES TO RESIDENTIAL SDPS).
7. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE REQUIRED WETLANDS, STREAM(S), BUFFERS, FOREST CONSERVATION EASEMENT AREAS AND 100 YEAR FLOODPLAIN(S).
8. THE PREVIOUS WETLANDS REPORT PREPARED BY ENVIRONMENTAL SYSTEMS ANALYSIS, INC. AND APPROVED WITH S-94-07 ON NOVEMBER 30, 1993 HAS BEEN RE-CERTIFIED UNDER THIS PLAN BY ECO-SCIENCE PROFESSIONALS, INC. DATED APRIL, 2006 AND APPROVED WITH S-06-013 ON JANUARY 17, 2008.
9. THE NOISE STUDY FOR THIS PROJECT WAS PREPARED BY MARS GROUP DATED MARCH, 2006 AND WAS APPROVED UNDER THE S-06-013 PLAN DATED JANUARY 17, 2008. A REVISED NOISE STUDY WAS PREPARED BY MARS GROUP DATED MAY, 2008 AND APPROVED UNDER P-08-010 ON DECEMBER 1, 2008. THE 65 DBA NOISE CONTOUR LINE DRAWN ON THIS PLAT IS ADVISORY AS REQUIRED BY THE HOWARD COUNTY DESIGN MANUAL, CHAPTER 5, REVISED FEBRUARY, 1992 AND CANNOT BE CONSIDERED TO EXACTLY LOCATE THE 65 DBA NOISE EXPOSURE. THE 65 DBA NOISE LINE WAS ESTABLISHED BY HOWARD COUNTY TO ALERT DEVELOPERS, BUILDERS AND FUTURE RESIDENTS THAT AREAS BEYOND THIS THRESHOLD MAY EXCEED GENERALLY ACCEPTED NOISE LEVELS ESTABLISHED BY THE U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT.
10. A PUBLIC 100 YEAR FLOOD PLAIN STUDY WAS PREPARED BY MILDENBERG-BOENDER ASSOCIATES AND APPROVED UNDER S-94-07. A REVISION TO THAT FLOODPLAIN STUDY WAS PREPARED BY FISHER, COLLINS & CARTER, INC. AND APPROVED UNDER S-06-13 ON JANUARY 17, 2008 AND UNDER P-08-010 ON DECEMBER 1, 2008.
11. AN APFO EVALUATION LETTER DATED JANUARY 24, 2013 WAS PREPARED BY THE TRAFFIC GROUP ADDRESSING THE APFO TRAFFIC STUDY.
12. THE FOREST STAND DELINEATION PLAN WAS PREPARED BY ENVIRONMENTAL SYSTEM ANALYSIS, INC. AND APPROVED UNDER S-94-07 ON NOVEMBER 30, 1993.
13. SOILS INFORMATION TAKEN FROM SOILS MAP NO. 17, SOIL SURVEY, HOWARD COUNTY, MARYLAND, JULY, 1968 ISSUE. THE SOILS INVESTIGATION REPORT WAS PREPARED BY I.T.E., INC. ON JUNE 28, 1994.
14. TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED ON A FIELD RUN TOPOGRAPHIC PERFORMED BY FISHER, COLLINS AND CARTER, INC. ON OR ABOUT AUGUST 2012.
15. BOUNDARY OUTLINE IS BASED ON A FIELD MONUMENTED SURVEY PERFORMED BY FISHER, COLLINS & CARTER, INC. ON OR ABOUT AUGUST, 1990.
16. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY CONTROL STATIONS 1012 AND 16E1 WERE USED FOR THIS PROJECT:
    HOWARD COUNTY MONUMENT 1012 N 601060.177 E 1345336.7580
    HOWARD COUNTY MONUMENT 16E1 N 593250.9322 E 1340192.7110
17. THERE ARE NO CEMETERIES LOCATED ON THIS SITE.
18. THE PROPERTY SHOWN IS LOCATED IN THE METROPOLITAN DISTRICT.
19. FOREST CONSERVATION OBLIGATION FOR PARCEL 'G' HAS BEEN PROVIDED UNDER F-09-57.
20. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL". FINANCIAL SURETY FOR THE REQUIRED 89 SHADE TREES, 102 EVERGREEN TREES AND 84 SHRUBS HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF $44,520.00.
21. B.R.L. DENOTES BUILDING RESTRICTION LINE.
22. REFUSE COLLECTION, SNOW REMOVAL AND PRIVATE ROAD MAINTENANCE WILL BE PROVIDED BY THE WAVERLY MEWS CONDOMINIUM.
23. PRIVATE ROADS AND PARKING AREAS ARE PRIVATELY MAINTAINED BY THE WAVERLY MEWS CONDOMINIUM.
24. IN ACCORDANCE WITH SECTION 16.120.B.4(iii)C, FOR CONDOMINIUM UNITS, PROTECTED ENVIRONMENTAL FEATURES SHALL BE LOCATED IN OPEN AREA WITH NO UNIT CLOSER THAN 15 FEET FROM THE PROTECTED FEATURES. DECKS ARE ALLOWED 10 FEET INTO THE PROJECT BOUNDARY SETBACK PER ZONING SECTION 128.A.1(d).
25. STREET LIGHTS WILL BE REQUIRED IN THIS DEVELOPMENT IN ACCORDANCE WITH THE DESIGN MANUAL. THE STREET LIGHT PLACEMENT AND TYPE OF FIXTURE AND POLE SELECTED SHALL BE IN ACCORDANCE WITH THE LATEST HOWARD COUNTY DESIGN MANUAL VOLUME III (2006) AND AS MODIFIED BY GUIDELINES FOR STREET LIGHTS IN RESIDENTIAL DEVELOPMENTS (NOV. 2006). THE NOV. 2006 POLICY INCLUDES GUIDELINES FOR LATERAL AND LONGITUDINAL PLACEMENT. A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN STREET LIGHT AND ANY TREE. THE LIGHT FIXTURE PROPOSED ON THIS SITE WILL BE A 100 WATT "COLONIAL" SODIUM VAPOR WITH 14' BLACK FIBERGLASS POLE SIMILAR TO THAT ,WHICH WAS PROPOSED ON THE OVERALL WAVERLY WOODS WEST DEVELOPMENT.
26. ALL HANDICAP RAMPS SHALL MEET CURRENT ADA REQUIREMENTS.
27. TOTAL NUMBER OF MODERATE INCOME HOUSING UNITS (M.I.H.U.) REQUIRED FOR THIS SITE PER THE 'PSC' ZONING DISTRICT IS 10% OF THE TOTAL NUMBER OF UNITS CALCULATED AS FOLLOWS:
    A. TOTAL NUMBER OF "M.I.H.U." REQUIRED = 112 UNITS (7 BUILDINGS WITH 16 UNITS IN EACH) X 1 M.I.H.U./10 UNITS = 12 UNITS
    B. TOTAL NUMBER OF "M.I.H.U." PROVIDED = 12 UNITS
28. THE ZONING BOARD OF HOWARD COUNTY (ZB CASE NO. 1097M ON JULY 31, 2012 APPROVED THE RECLASSIFICATION OF 17.628 ACRES FROM PEC ZONING DISTRICT TO PSC ZONING DISTRICT AND THE AMENDED PRELIMINARY DEVELOPMENT PLAN SUBJECT TO AND SUPPLEMENTED BY THE CROSSWALK CONDITION IMPOSED IN CONCLUSION OF LAW 5 CITED IN THE SIGNED DECISION AND ORDER.
29. OPEN SPACE OBLIGATION PROVIDED ON F-13-067 GTW'S WAVERLY WOODS SECTION 14, BULK PARCEL 'F', PARCEL 'G' AND 'H', AND OPEN SPACE LOTS 172 & 173.
30. PUBLIC WATER AND SEWER WILL BE PROVIDED TO THE SITE BY CONTRACT NO. 44-4790-D AND CONTRACT NO. 24-4603-D RESPECTIVELY PRIVATE SEWER MAINS ARE PROVIDED AS PART OF THIS SITE DEVELOPMENT PLAN.
31. WATER AND SEWER SERVICE TO THESE LOTS WILL BE GRANTED UNDER THE PROVISIONS OF SECTION 18.122.B OF THE HOWARD COUNTY CODE.
32. PUBLIC WATER AND SEWER ALLOCATION WILL BE GRANTED AT THE TIME OF ISSUANCE OF THE BUILDING PERMIT IF CAPACITY IS AVAILABLE AT THE TIME.
33. STORMWATER MANAGEMENT FOR THIS PROJECT WILL BE PROVIDED IN ACCORDANCE WITH THE MARYLAND STORMWATER DESIGN MANUAL, VOLUMES I AND II (EFFECTIVE OCTOBER 2000, REVISED MAY 2009) BY THE USE OF TWELVE (12) MICRO BIO-RETENTION FACILITIES, NINE (9) AREAS OF PERMEABLE PAVING, AND TWO (2) CISTERNS.
34. IN ACCORDANCE WITH THE DECISION AND ORDER FOR ZONING BOARD CASE NO. 1097M THE PREVIOUS COMMUNITY CENTER IS ENLARGED TO 5,610 SQUARE FEET.
35. TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
36. 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 (14 GAUGE) INSERTED INTO A 2 1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE)- 3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
37. THE DEVELOPER WILL WORK WITH THE OFFICE OF THE FIRE MARSHAL TO ESTABLISH THE MARKINGS NECESSARY TO SHOW THE APPROPRIATE LOCATION OF THE REQUIRED FIRE LANE FOR THE ACCESS OF EMERGENCY VEHICLES.
38. A PRIVATE ROAD STREET NAME SIGN (SNS) ASSEMBLY NEEDS TO BE INSTALLED AT THE INTERSECTION OF THE PRIVATE ROAD WITH THE PUBLIC ROAD. IT SHALL BE FABRICATED AND INSTALLED BY THE HOWARD COUNTY BUREAU OF HIGHWAYS AT THE DEVELOPER'S/OWNER'S EXPENSE. CONTACT THE HOWARD COUNTY TRAFFIC DIVISION AT 410-313-5752 FOR DETAILS AND COST ESTIMATES.
39. THERE ARE NO EXISTING STRUCTURES ON PARCEL 'G'.
40. PROPERTY INFORMATION
    A) TAX MAP: 16
    B) TAX PARCEL: PART OF 249
    C) PLAT REFERENCE: PARCEL 'G' AS SHOWN ON A PLAT ENTITLED "GTW'S WAVERLY WOODS, SECTION 14 - PARCELS 'G' AND 'H', BULK PARCEL 'I' AND OPEN SPACED LOTS 238 AND 239".
41. THE ZONING BOARD OF HOWARD COUNTY (ZB CASE NO. 1097M) ON JULY 31, 2012 APPROVED THE RECLASSIFICATION OF 17.628 ACRES FROM PEC TO PSC SUBJECT TO CONDITIONS PROPOSED BY THE PETITIONER AND THE PETITIONER SHALL PURSUE A SIGNALIZED CROSSWALK AT MARRIOTTSVILLE ROAD, BARNSLEY WAY AND WARWICK WAY SUBJECT TO APPROVAL BY HOWARD COUNTY.
42. THE PLANNING BOARD APPROVED ON NOVEMBER 1, 2007 PB CASE NO 381, GTW'S WAVERLY WOODS, SECTION 14, BULK PARCEL 14, BULK PARCEL 'A', "THE COURTYARDS AT WAVERLY WOODS - WEST" A COMPREHENSIVE SKETCH PLAN (S-06-13) AND DEVELOPMENT CRITERIA FOR THE DEVELOPMENT OF 350 AGE-RESTRICTED ADULT HOUSING UNITS (139 SINGLE FAMILY ATTACHED UNITS AND 211 SINGLE FAMILY DETACHED UNITS) ON 149.40 ACRES OF LAND ZONED PLANNED SENIOR COMMUNITY.
43. PROPERTY SUBJECT TO PRIOR DEPARTMENT OF PLANNING AND ZONING FILES NO'S. S-94-07, S-06-013, ZB CASE NO. 1027 M, ZB CASE NO. 929-M, PB CASE NO. 381, F-01-091, F-01-093, F-01-148, F-01-147, F-08-159, P-08-010, WP-95-23, WP-08-069, F-09-057, F-07-032, F-09-057 (FC), F-10-113, WP-09-210, SDP-09-037, SDP-09-039, F-10-113, F-12-072, F-12-089, ZB CASE NO. 1097M, AND F-13-067.
44. ALL UNITS WILL BE SUPPLIED WITH INSIDE METER SETTINGS.
45. THE MIHU AGREEMENT AND COVENANTS FOR THIS PROJECT WERE RECORDED IN THE LAND RECORDS OF HOWARD COUNTY, MARYLAND SIMULTANEOUSLY WITH FINAL PLAT F-13-067.
46. SEE SHEET 22 FOR BUILDING LOCATION DIMENSIONS.
47. HEALTH DEPARTMENT APPROVAL OF THIS SITE DEVELOPMENT PLAN (SDP) DOES NOT ENSURE APPROVAL OF BUILDING PERMIT APPLICATIONS ASSOCIATED WITH THIS PLAN. PERMIT PLANS FOR CERTAIN FACILITIES TO BE CONSTRUCTED WITHIN THE LIMITS DESCRIBED BY THE SDP WILL REQUIRE REVIEW AND APPROVAL BY THE HEALTH DEPARTMENT. SUCH FACILITIES MAY INCLUDE, BUT ARE NOT LIMITED TO, THOSE WHICH HAVE SWIMMING POOLS, OR THAT SELL PREPARED OR PACKAGED FOODS, OR THAT MAY HAVE EQUIPMENT THAT EMITS RADIATION.
48. AN ALTERNATIVE TO INTERNAL LANDSCAPING FOR BUILDINGS 3, 6, AND 7 AS REQUIRED BY THE LANDSCAPE MANUAL WAS APPROVED AND ALLOWS FOR: 1) USE OF A TYPE 'E' LANDSCAPE BUFFER RATHER THAN REQUIRED PLANTING RATIOS FOR APARTMENTS AND 2) REDUCTION IN THE LANDSCAPE AREA WIDTH FROM 15' TO 12'.

PLEASE NOTE THAT ALL LOTS IN THIS SUBDIVISION ARE SUBJECT TO THE MIHU FEE-IN-LIEU REQUIREMENT THAT IS TO BE CALCULATED AND PAID TO THE DEPARTMENT OF INSPECTION, LICENSES AND PERMITS AT THE TIME OF BUILDING PERMIT ISSUANCE BY THE PERMIT APPLICANT

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

NO.	REVISION	DATE

PROFESSIONAL CERTIFICATION

"Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional land surveyor under the laws of the State of Maryland, License No. 21476, Expiration Date: 07/14/2015."

Frank John Manalansan II (signature) 8/9/14
Frank Manalansan II DATE

#21476
STATE OF MARYLAND FRANK JOHN MANALANSAN II No. 21476 PROFESSIONAL LAND SURVEYOR
Frank John Manalansan II (signature)
Frank Manalansan II

BUILDER
RYAN HOMES
9720 PATUXENT WOODS DRIVE
COLUMBIA MARYLAND, 21043
410-796-0908

OWNER
WAVERLY WOODS DEVELOPMENT CORPORATION
P.O. BOX 30
GLENELG, MARYLAND 21737-0030

DEVELOPER
WAVERLY WOODS DEVELOPMENT CORPORATION,
P.O. BOX 30
GLENELG, MARYLAND 21737-0030

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
(signature) Chief, Division of Land Development — Date 10/06/14
(signature) Chief, Development Engineering Division J.P. — Date 9.18.14
(signature) Director - Department of Planning and Zoning — Date 10/6/14

PROJECT	SECTION	PARCEL NOS.
GTW's WAVERLY WOODS, SECTION 14 PARCEL G	14	P/O 249

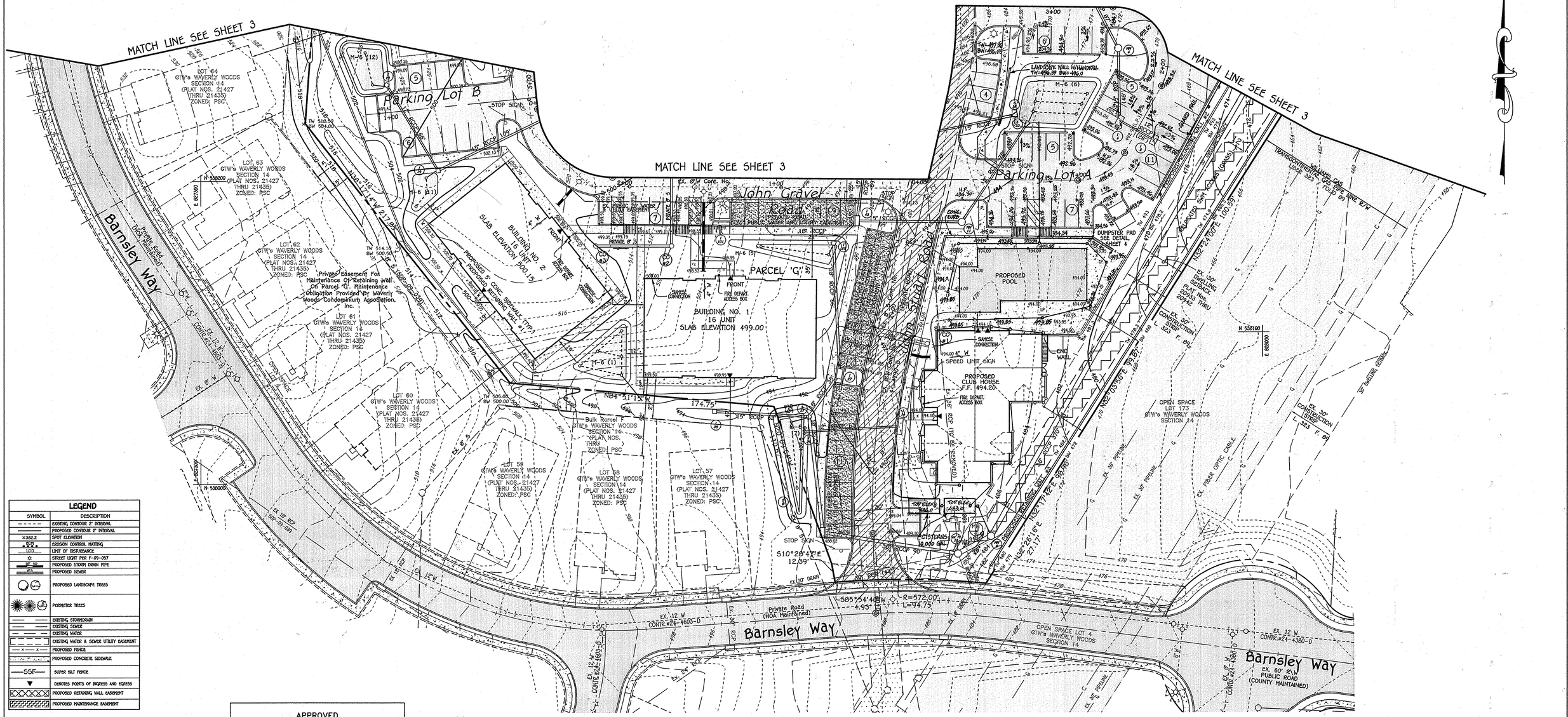
PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
22944-22953	3 & 4	PSC	16	THIRD	60300

WATER CODE	SEWER CODE
K-02	5992000

TITLE SHEET

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
PARCEL 'G' (Plat Nos. Thru
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014

SDP-13-031



LEGEND

SYMBOL	DESCRIPTION
	EXISTING CONTOUR 2' INTERVAL
	PROPOSED CONTOUR 2' INTERVAL
×362.2	SPOT ELEVATION
	EROSION CONTROL MATTING
LOD	LIMIT OF DISTURBANCE
☼	STREET LIGHT PER F-09-057
18" RCP	PROPOSED STORM DRAIN PIPE
	PROPOSED SEWER
	PROPOSED LANDSCAPE TREES
	PERIMETER TREES
	EXISTING STORMDRAIN
	EXISTING SEWER
	EXISTING WATER
	EXISTING WATER & SEWER UTILITY EASEMENT
	PROPOSED FENCE
	PROPOSED CONCRETE SIDEWALK
SSF	SUPER SILT FENCE
▼	DENOTES POINTS OF INGRESS AND EGRESS
	PROPOSED RETAINING WALL EASEMENT
	PROPOSED MAINTENANCE EASEMENT

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

NOTE: SEE SHEET 28 FOR ROADWAY GEOMETRY AND DIMENSIONS.

0' 30' 60' 200'
SCALE: 1" = 30'

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

NO.	REVISION	DATE
1	REVISE FINAL GRADING & CISTERN WITH ROOF LEADERS	12/04/15

PROFESSIONAL CERTIFICATION

"Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional land surveyor under the laws of the State of Maryland, License No. 21476, Expiration Date: 07/14/2015."

Frank John Manalansan II 8/5/14
Frank Manalansan II DATE

APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.

William for Maura Rossman H.O. 9/2/2014
COUNTY HEALTH OFFICER DATE

#21476
STATE OF MARYLAND · FRANK JOHN MANALANSAN II · No. 21476 · PROFESSIONAL LAND SURVEYOR
Frank John Manalansan II

OWNER
WAVERLY WOODS DEVELOPMENT CORPORATION
P.O. BOX 30
GLENELG, MARYLAND 21737-0030

BUILDER
RYAN HOMES
9720 PATUXENT WOODS DRIVE
COLUMBIA MARYLAND, 21043
410-796-0900

DEVELOPER
WAVERLY WOODS DEVELOPMENT CORPORATION,
P.O. BOX 30
GLENELG, MARYLAND 21737-0030

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — Date 10/06/14
Chief, Development Engineering Division J.P. — Date 9.18.14
Director - Department of Planning and Zoning — Date 10/10/14

PROJECT		SECTION	PARCEL NOS.
GTW's WAVERLY WOODS, SECTION 14 PARCEL G		14	P/O 249
PLAT 22944-22953	BLOCK NO. 3 & 4	ZONE P5C	TAX/ZONE 16
ELEC. DIST. THIRD	CENSUS TR. 60300		
WATER CODE K-02	SEWER CODE 5992000		

SITE DEVELOPMENT PLAN

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
PARCEL 'G' (Plat Nos. 22944 Thru 22953
ZONED P5C TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 2 OF 31

SDP-13-031

LEGEND

SYMBOL	DESCRIPTION
	EXISTING CONTOUR 2' INTERVAL
	PROPOSED CONTOUR 2' INTERVAL
×362.2	SPOT ELEVATION
ECM	EROSION CONTROL MATTING
LOD	LIMIT OF DISTURBANCE
	STREET LIGHT PER F-09-057
18" SD	PROPOSED STORM DRAIN PIPE
8"S	PROPOSED SEWER
	PROPOSED LANDSCAPE TREES
	PERIMETER TREES
	EXISTING STORMDRAIN
	EXISTING SEWER
	EXISTING WATER
	EXISTING WATER & SEWER UTILITY EASEMENT
—x—x—	PROPOSED FENCE
	PROPOSED CONCRETE SIDEWALK
—SSF—	SUPER SILT FENCE
▼	DENOTES POINTS OF INGRESS AND EGRESS
	PROPOSED RETAINING WALL EASEMENT
	PROPOSED MAINTENANCE EASEMENT

0' 30' 60' 200'

SCALE: 1" = 30'

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

NO.	REVISION	DATE
1	REVISE FINAL GRADING & CISTERN WITH ROOF LEADERS	12/4/15

PROFESSIONAL CERTIFICATION

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Frank Manalansan II — 8/9/14 DATE

APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.

COUNTY HEALTH OFFICER H.O. — 9/2/2014 DATE

#21476

STATE OF MARYLAND FRANK JOHN MANALANSAN II No. 21476 PROFESSIONAL LAND SURVEYOR

Frank Manalansan II

OWNER
WAVERLY WOODS DEVELOPMENT CORPORATION
P.O. BOX 30
GLENELG, MARYLAND 21737-0030

BUILDER
RYAN HOMES
9720 PATUXENT WOODS DRIVE
COLUMBIA MARYLAND, 21043
410-796-0908

DEVELOPER
WAVERLY WOODS DEVELOPMENT CORPORATION,
P.O. BOX 30
GLENELG, MARYLAND 21737-0030

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — 10/06/14 Date
Chief, Development Engineering Division J.P. — 9.18.14 Date
Director - Department of Planning and Zoning — 10/8/14 Date

PROJECT	SECTION	PARCEL NOS.
GTW's WAVERLY WOODS, SECTION 14 PARCEL G	14	P/O 249

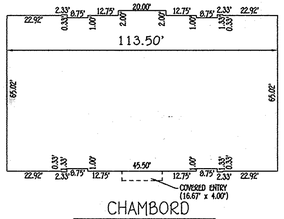
PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
22944-22953	3 & 4	PSC	16	THIRD	60300

WATER CODE	SEWER CODE
K-02	5992000

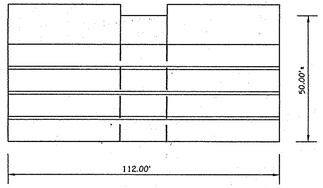
SITE DEVELOPMENT PLAN

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
PARCEL 'G' (Plat Nos. 22944 Thru 22953
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 3 OF 31

SDP-13-031

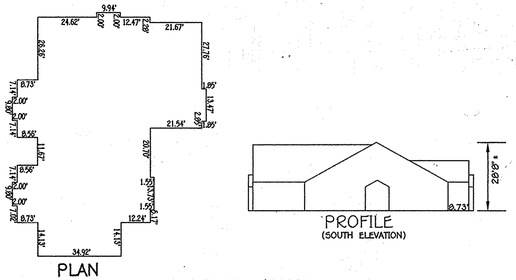


CHAMBORD



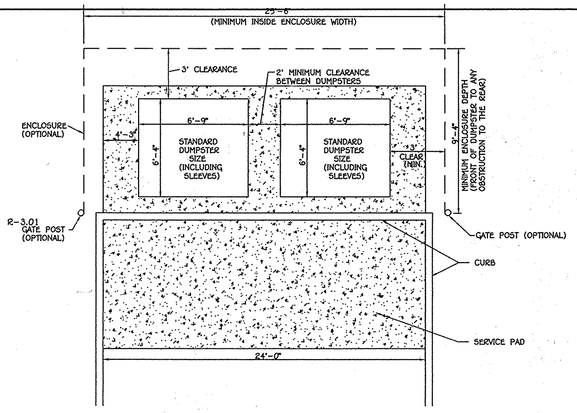
CONDO - ELEVATION

SCALE: 1" = 30'



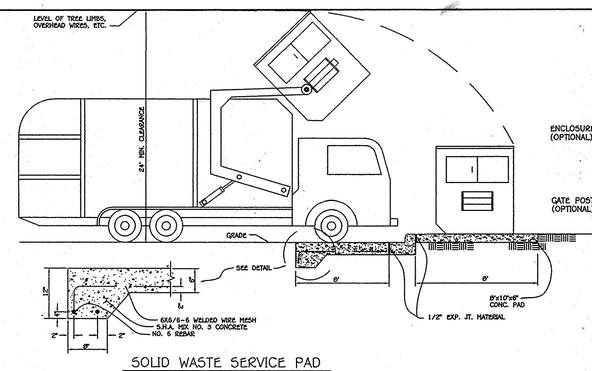
CLUB HOUSE

SCALE: 1" = 30'



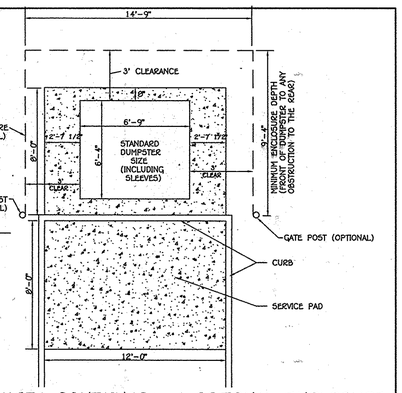
SOLID WASTE DOUBLE CONTAINER w/ OPTIONAL ENCLOSURE

NOT TO SCALE



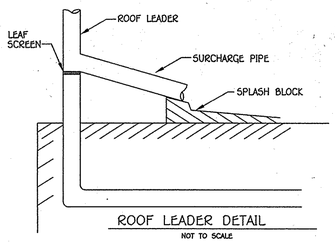
SOLID WASTE SERVICE PAD

NOT TO SCALE



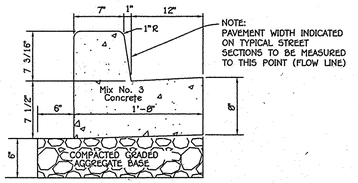
SOLID WASTE CONTAINER w/ OPTIONAL ENCLOSURE

NOT TO SCALE



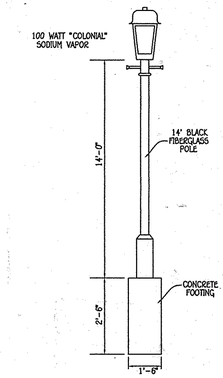
ROOF LEADER DETAIL

NOT TO SCALE



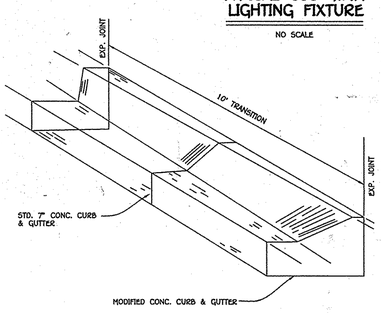
STD. 7" CONC. CURB AND GUTTER

NO SCALE



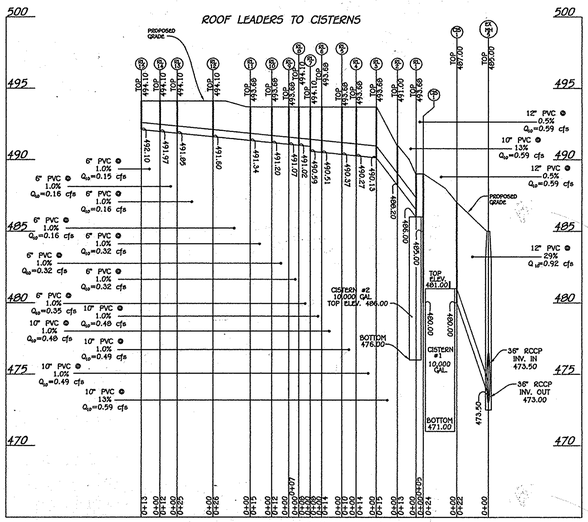
TYPICAL 100-WATT LIGHTING FIXTURE

NO SCALE



CONCRETE CURB & GUTTER TRANSITION

NO SCALE



0' 30' 60' 120'

SCALE: 1" = 30'

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR)	3 TO <5	5 TO <7	≥7	3 TO <5	5 TO <7	≥7
		PAVEMENT MATERIAL (INCHES)	MIN HMA WITH GAB			HMA WITH CONSTANT GAB		
P-2	PARKING DRIVE AISLES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY LOCAL ROADS: ACCESS PLACE, ACCESS STREET CUL-DE-SACS: RESIDENTIAL	HMA SUPERPAVE FINAL SURFACE 9.5 MM, PG 64-22, LEVEL 1 (ESAL)	1.5	1.5	1.5	1.5	1.5	1.5
		HMA SUPERPAVE INTERMEDIATE SURFACE 9.5 MM, PG 64-22, LEVEL 1 (ESAL)	1.0	1.0	1.0	1.0	1.0	1.0
		HMA SUPERPAVE BASE 19.0 MM, PG 64-22, LEVEL 1 (ESAL)	2.0	2.0	2.0	3.5	2.0	2.0
		GRADED AGGREGATE BASE (GAB)	8.0	4.0	3.0	4.0	4.0	4.0

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

NO.	REVISION	DATE
1	REVISE FINAL GRADING & CISTERN WITH ROOF LEADERS	12/4/15

PROFESSIONAL CERTIFICATION

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Frank Manalansan II 8/7/14
DATE

APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.

COUNTY HEALTH OFFICER 9/2/2014
DATE

#21476

STATE OF MARYLAND FRANK JOHN MANALANSAN II No. 21476 PROFESSIONAL LAND SURVEYOR

Frank Manalansan II

OWNER
WAVERLY WOODS DEVELOPMENT CORPORATION
P.O. BOX 30
GLENELG, MARYLAND 21737-0030

BUILDER
RYAN HOMES
9720 PATUXENT WOODS DRIVE
COLUMBIA MARYLAND, 21045
410-796-0900

DEVELOPER
WAVERLY WOODS DEVELOPMENT CORPORATION,
P.O. BOX 30
GLENELG, MARYLAND 21737-0030

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — 10/06/14 Date

Chief, Development Engineering Division — 9.18.14 Date

Director - Department of Planning and Zoning — 10/6/14 Date

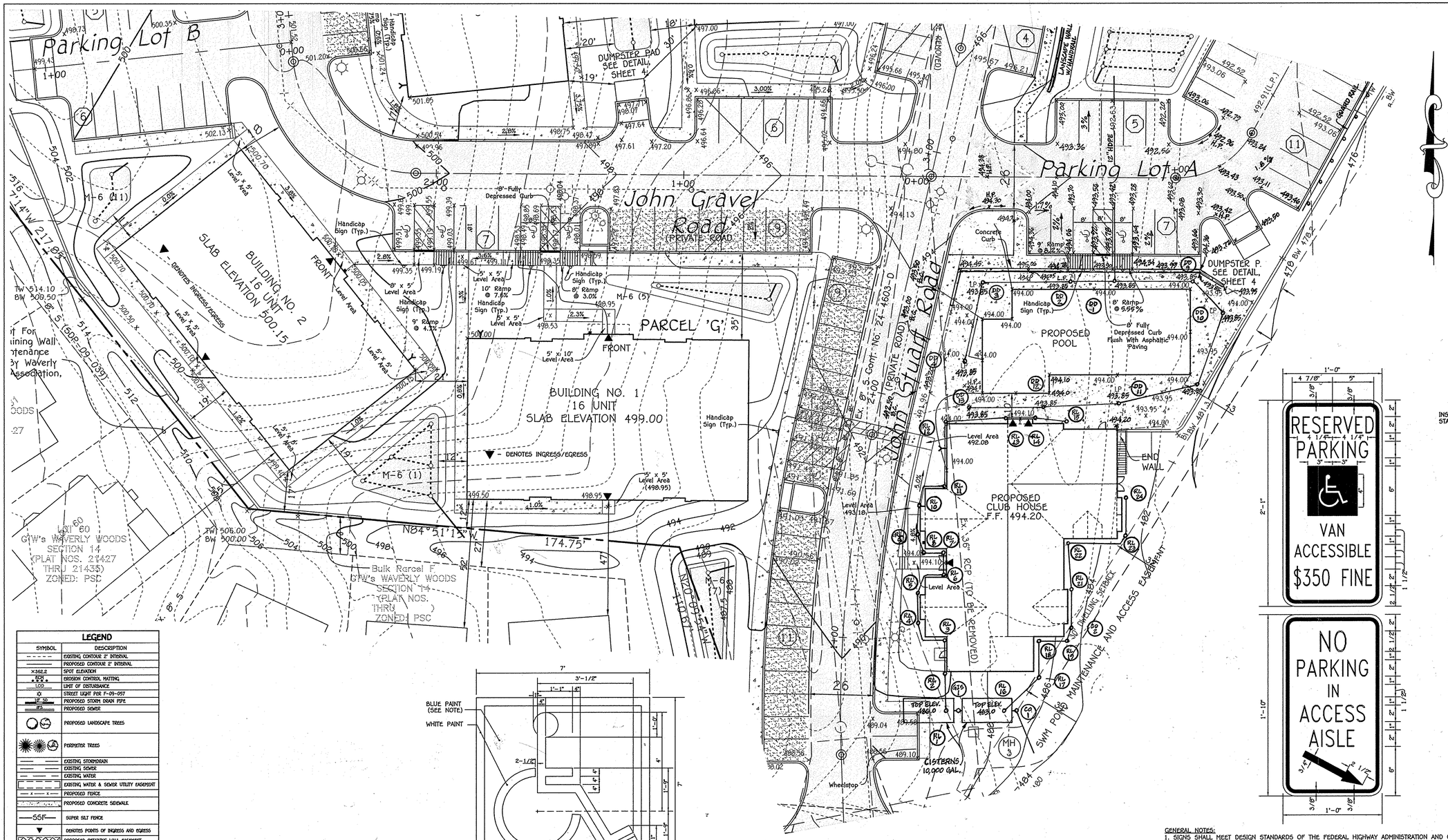
PROJECT			SECTION	PARCEL NOS.
GTW's WAVERLY WOODS, SECTION 14 PARCEL G			14	P/O 249
PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
22944-22953	3 & 4	PSC	16	THIRD	60300
WATER CODE		SEWER CODE		
K-02		5992000		

DETAIL SHEET

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
PARCEL 'G' (Plat Nos. 22944 Thru 22953
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 4 OF 31

SDP-13-031

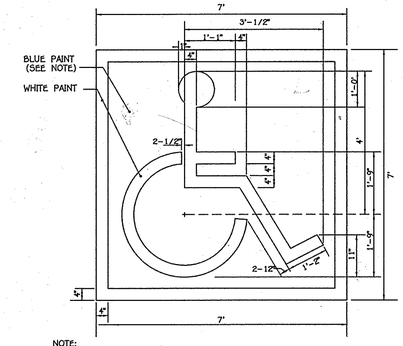
I:\30000\30770\dwg\SDP\30770 SHEET 4 Detail Sheet Redline-2.dwg, 1/5/2016 7:12:28 AM, 1:1



LEGEND	
SYMBOL	DESCRIPTION
	EXISTING CONTOUR 2' INTERVAL
	PROPOSED CONTOUR 2' INTERVAL
X368.2	SPOT ELEVATION
ESC	EROSION CONTROL MATTING
LOD	LIMIT OF DISTURBANCE
☼	STREET LIGHT PER F-09-057
12" SD	PROPOSED STORM DRAIN PIPE
PS	PROPOSED SEWER
	PROPOSED LANDSCAPE TREES
LA	PERIMETER TREES
	EXISTING STORMDRAIN
	EXISTING SEWER
	EXISTING WATER
	EXISTING WATER & SEWER UTILITY EASEMENT
	PROPOSED FENCE
	PROPOSED CONCRETE SIDEWALK
SSF	SUPER SILT FENCE
▼	DENOTES POINTS OF INGRESS AND EGRESS
	PROPOSED RETAINING WALL EASEMENT
	PROPOSED MAINTENANCE EASEMENT

0' 20' 40' 80'

SCALE: 1" = 20'

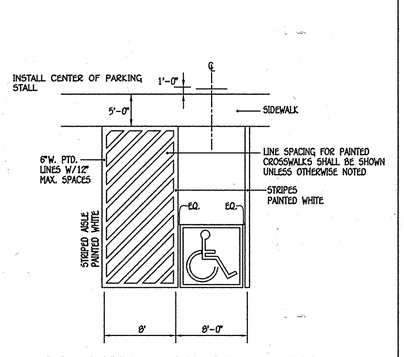


NOTE:
SYMBOL IS REQUIRED TO CONTRAST WITH BACKGROUND (WHITE ON BLUE: COLOR NO. 105090 IN FED. STANDARD 5952-DOUBLE COAT TYP.)

HANDICAP SPACE STENCIL LAYOUT

SCALE: 1" = 20'

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014



ACCESSIBLE SPACE LAYOUT

SCALE: 1" = 20'

GENERAL NOTES:
1. SIGNS SHALL MEET DESIGN STANDARDS OF THE FEDERAL HIGHWAY ADMINISTRATION AND CONFORM TO THE STATE OF MARYLAND STANDARD HIGHWAY SIGN BOOKLET DETAIL R7-8.
2. ONE SIGN IS REQUIRED PER SPACE PLACED AS SHOWN ON SITE IMPROVEMENT PLAN.
3. SIGNS SHALL BE POLE MOUNTED WITH HOT DIPPED GALVANIZED COUNTY APPROVED PERFORATED CHANNEL POSTS W/TOP OF SIGNS 9'-1" ABOVE FINISHED GRADE OR AS INDICATED ON SITE DRAWINGS.
4. SIGN SHALL BE ATTACHED TO FLANGED SIDE OF POST. POST SHALL EXTEND INTO GROUND 2'-6" MIN.
5. COLORS: LEGEND AND BORDER-GREEN
SYMBOL-WHITE ON BLUE BACKGROUND
BACKGROUND-WHITE
6. CONTRACTOR SHALL COORDINATE ARROW DIRECTION WITH LOCATION OF ADJACENT AISLE.
7. SPACES INDICATED ON SITE DEVELOPMENT PLANS AS "VAN ACCESSIBLE" SHALL BE SIGNED ACCORDINGLY.

HANDICAP PARKING SIGN DETAIL

NOT TO SCALE

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
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(410) 461 - 2855

NO.	REVISION	DATE
1	REVISE FINAL GRADING & CISTERN WITH ROOF LEADERS	12/4/15

PROFESSIONAL CERTIFICATION

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Frank Manalansan II 8/8/14
DATE

APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.

COUNTY HEALTH OFFICER 9/2/2014
DATE

#21476

STATE OF MARYLAND FRANK JOHN MANALANSAN II No. 21476 PROFESSIONAL LAND SURVEYOR

Frank Manalansan II

BUILDER
RYAN HOMES
9720 PATUXENT WOODS DRIVE
COLUMBIA MARYLAND, 21043
410-796-0900

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P.O. BOX 30
GLENELG, MARYLAND 21737-0030

DEVELOPER
WAVERLY WOODS DEVELOPMENT CORPORATION,
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GLENELG, MARYLAND 21737-0030

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

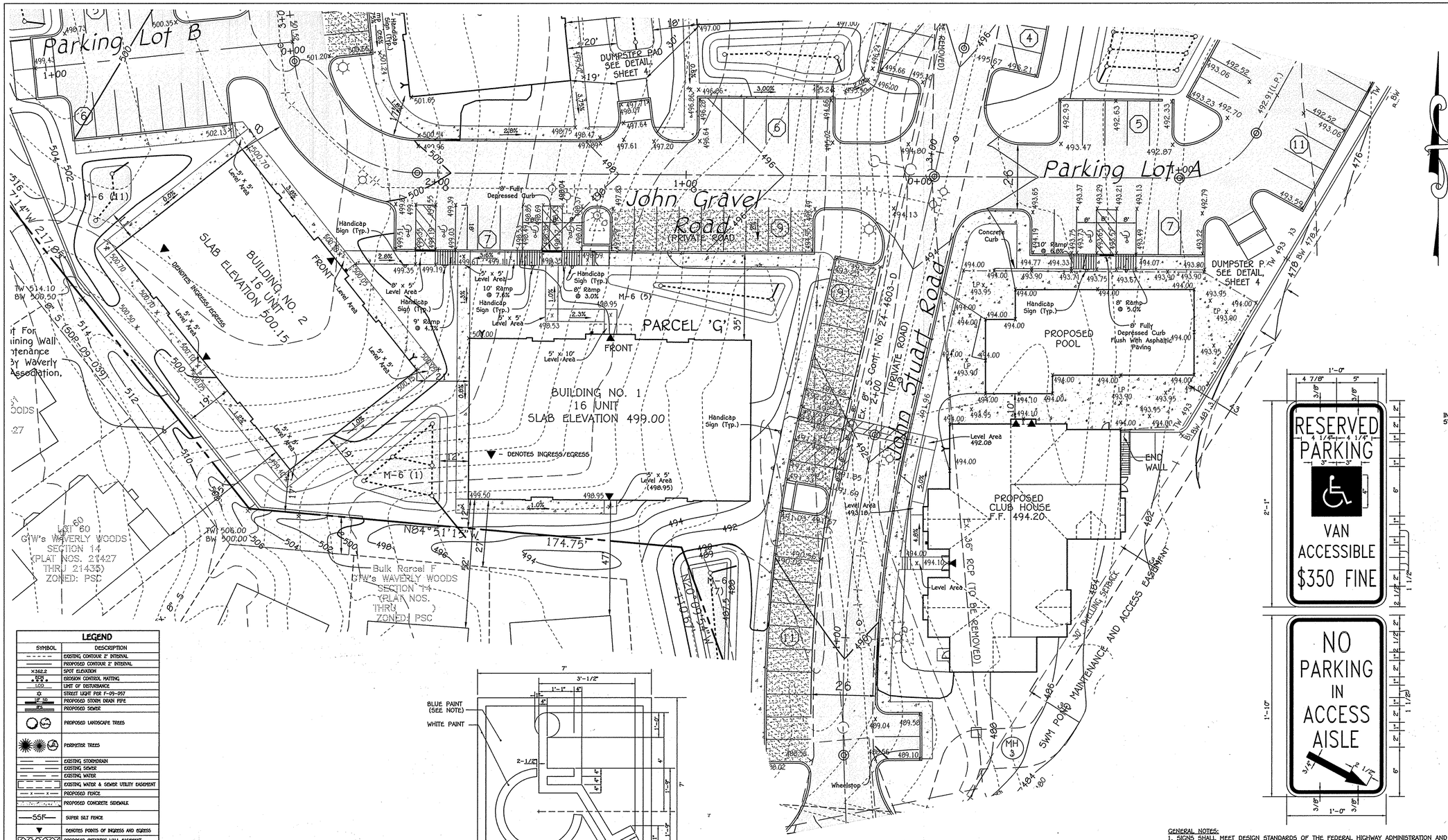
Chief, Division of Land Development — Date 10/06/14
Chief, Development Engineering Division — Date 9.18.14
Director - Department of Planning and Zoning — Date 10/6/14

PROJECT			SECTION		PARCEL NOS.
GTW's WAVERLY WOODS, SECTION 14 PARCEL G			14		P/O 249
PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
22944-22953	3 & 4	PSC	16	THIRD	60300
WATER CODE		SEWER CODE			
K-02		5992000			

HANDICAP DETAIL SHEET

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
PARCEL 'G' (Plat Nos. 22944 Thru 22953
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 6 OF 31

SDP-13-031

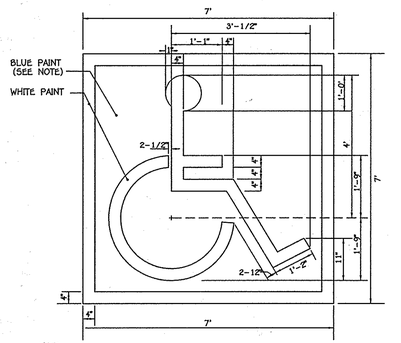


LEGEND

SYMBOL	DESCRIPTION
	EXISTING CONTOUR 2' INTERVAL
	PROPOSED CONTOUR 2' INTERVAL
×362.2	SPOT ELEVATION
ESC	EROSION CONTROL MATTING
LOD	LIMIT OF DISTURBANCE
	STREET LIGHT PER F-09-057
SD	PROPOSED STORM DRAIN PIPE
WS	PROPOSED SEWER
	PROPOSED LANDSCAPE TREES
	PERIMETER TREES
	EXISTING STORMDRAIN
	EXISTING SEWER
	EXISTING WATER
	EXISTING WATER & SEWER UTILITY EASEMENT
— x — x —	PROPOSED FENCE
	PROPOSED CONCRETE SIDEWALK
SSF	SUPER SILT FENCE
	DENOTES POINTS OF INGRESS AND EGRESS
	PROPOSED RETAINING WALL EASEMENT
	PROPOSED MAINTENANCE EASEMENT

0' 20' 40' 80'

SCALE: 1" = 20'



NOTE:
SYMBOL IS REQUIRED TO CONTRAST WITH BACKGROUND (WHITE ON BLUE: COLOR NO. 105090 IN FED. STANDARD 5952-DOUBLE COAT TYP.)

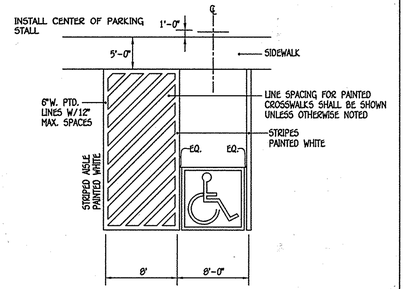
HANDICAP SPACE STENCIL LAYOUT

SCALE: 1" = 20'

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

HANDICAP PARKING SIGN DETAIL

NOT TO SCALE



ACCESSIBLE SPACE LAYOUT

SCALE: 1" = 20'

GENERAL NOTES:
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2. ONE SIGN IS REQUIRED PER SPACE PLACED AS SHOWN ON SITE IMPROVEMENT PLAN.
3. SIGNS SHALL BE POLE MOUNTED WITH HOT DIPPED GALVANIZED COUNTY APPROVED PERFORATED CHANNEL POSTS W/TOP OF SIGNS 9'-1" ABOVE FINISHED GRADE OR AS INDICATED ON SITE DRAWINGS.
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SYMBOL-WHITE ON BLUE BACKGROUND
BACKGROUND-WHITE
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ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

NO.	REVISION	DATE

PROFESSIONAL CERTIFICATION

"Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional land surveyor under the laws of the State of Maryland, License No. 21476, Expiration Date: 07/14/2015."

Frank Manalansan II 8/9/14
Frank Manalansan II DATE

APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.

for Maura Rossman 9/2/2014
COUNTY HEALTH OFFICER DATE

#21476
STATE OF MARYLAND — FRANK JOHN MANALANSAN II — No. 21476 — PROFESSIONAL LAND SURVEYOR
Frank Manalansan II

OWNER
WAVERLY WOODS DEVELOPMENT CORPORATION
P.O. BOX 30
GLENELG, MARYLAND 21737-0030

BUILDER
RYAN HOMES
9720 PATUXENT WOODS DRIVE
COLUMBIA MARYLAND, 21043
410-796-0908

DEVELOPER
WAVERLY WOODS DEVELOPMENT CORPORATION,
P.O. BOX 30
GLENELG, MARYLAND 21737-0030

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — Date 10/06/14
Chief, Development Engineering Division — Date 9.18.14
Director - Department of Planning and Zoning — Date 10/6/14

PROJECT		SECTION	PARCEL NOS.
GTW's WAVERLY WOODS, SECTION 14 PARCEL G		14	P/O 249
PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
22942-22953	3 & 4	PSC	16	THIRD	60300
WATER CODE		SEWER CODE	
K-02		5992000	

HANDICAP DETAIL SHEET

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
PARCEL 'G' (Plat Nos. Thru
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 6 OF 31

SDP-13-031

Future Emma Stone Drive

Private Road 24' (Not Maintained)

GmB
STOP SIGN

MaC

John Stuart Road

Parcel 'G'
6.871 Ac.±

PROPOSED UNIT 186
GTW's WAVERLY WOODS WEST
SDP-09-039
APFO PHASE 4
ZONED: PSC

PROPOSED UNIT 195
GTW's WAVERLY WOODS WEST
SDP-09-039
APFO PHASE 5
ZONED: PSC

PROPOSED UNIT 194
GTW's WAVERLY WOODS WEST
SDP-09-039
APFO PHASE 5
ZONED: PSC

BULK PARCEL 'F'
GTW's WAVERLY WOODS
SECTION 14
(PLAT NOS. THRU)

PROPOSED UNIT 193
GTW's WAVERLY WOODS WEST
SDP-09-039
APFO PHASE 5
ZONED: PSC

PROPOSED UNIT 192
GTW's WAVERLY WOODS WEST
SDP-09-039
APFO PHASE 5
ZONED: PSC

PROPOSED UNIT 191
GTW's WAVERLY WOODS WEST
SDP-09-039
APFO PHASE 5
ZONED: PSC

PROPOSED UNIT 190
GTW's WAVERLY WOODS WEST
SDP-09-039
APFO PHASE 5
ZONED: PSC

PROPOSED UNIT 197
GTW's WAVERLY WOODS WEST
SDP-09-039
APFO PHASE 4
ZONED: PSC

PROPOSED UNIT 198
GTW's WAVERLY WOODS WEST
SDP-09-039
APFO PHASE 4
ZONED: PSC

PROPOSED UNIT 199
GTW's WAVERLY WOODS WEST
SDP-09-039
APFO PHASE 4
ZONED: PSC

BULK PARCEL 'F'
GTW's WAVERLY WOODS
SECTION 14
(PLAT NOS. 21427
THRU 21435)

PROPOSED UNIT 200
GTW's WAVERLY WOODS WEST
SDP-09-039
APFO PHASE 4
ZONED: PSC

BULK PARCEL 'G'
GTW's WAVERLY WOODS
SECTION 14
(PLAT NOS.
THRU

BUILDING NO. 1
16 UNIT
SLAB ELEVATION 498.00

BUILDING NO. 2
16 UNIT
SLAB ELEVATION 500.50

BUILDING NO. 3
16 UNIT
SLAB ELEVATION 502.00

BUILDING NO. 4
16 UNIT
SLAB ELEVATION 500.50

BUILDING NO. 5
16 UNIT
SLAB ELEVATION 498.00

BUILDING NO. 6
16 UNIT
SLAB ELEVATION 498.00

BUILDING NO. 7
16 UNIT
SLAB ELEVATION 502.50

PROPOSED RETAINING WALL #1

PROPOSED RETAINING WALL #2

DUMPSTER PAD
SEE DETAILS
SHEET 17

Existing
SWM Facility No. 3
Owned And Maintained
By H.O.A.
SDP-09-039

Existing
Private Stormwater
Management, Drainage
& Utility Easement
Plat Nos. 10933 thru
20947

OPEN SPACE
LOT 173
GTW's WAVERLY WOODS
SECTION 14

OPEN SPACE
LOT 172
GTW's WAVERLY WOODS
SECTION 14

A-2 EARTH DIKE TO BE REMOVED AFTER FIRST PHASE OF CONSTRUCTION DETAILED AS ITEM 5 IN THE SEQUENCE OF CONSTRUCTION, SHEET 10 OF 26.

Existing Forebay

PROP. 20' RIP-RAP OUTFALL PROTECTION

Ex. Riprap

Ex. Weir
SDP-09-039

Ex. 36" CMP
SDP-09-039

Ex. Top of Dam

Existing Transcontinental Gas Pipeline R/W L 323 F. 89

Ex. 30' CONSTRUCTION STRIP L 323 F. 89

Ex. 36" WILLIAMS GAS PIPELINE

TRANSCONTINENTAL GAS PIPE LINE CO.

WILLIAMS GAS PIPE LINE CO.

Ex. 30" PIPELINE

15' Environmental Setback

25' Wetlands Buffer

GUARD RAIL

PROPOSED RETAINING WALL #2

MATCH LINE SEE SHEET 8

SOILS LEGEND

SOIL	NAME	CLASS
GgB	Glenelg loam, 3 to 8 percent slopes	B
MaC	Manor loam, 8 to 15 percent slopes	B
GmB	Glenville silt loam, 3 to 8 percent slopes	C
Ha	Hatboro-Codorus silt loams, 0 to 3 percent slopes	D
MaD	Manor loam, 15 to 25 percent slopes	B

NOTES:

- Hydric soils and/or contains hydric inclusions
** May contain hydric inclusions
† Generally only within 100-year floodplain areas

LEGEND

SYMBOL	DESCRIPTION
	EXISTING CONTOUR 2' INTERVAL
	PROPOSED CONTOUR 2' INTERVAL
×368.2	SPOT ELEVATION
SSM	EROSION CONTROL MATTING
LOD	LIMIT OF DISTURBANCE
	STREET LIGHT PER F-09-057
12" SD	PROPOSED STORM DRAIN PIPE
8" S	PROPOSED SEWER
	PROPOSED LANDSCAPE TREES
	PERIMETER TREES
	EXISTING STORMDRAIN
	EXISTING SEWER
	EXISTING WATER
	EXISTING WATER & SEWER UTILITY EASEMENT
	PROPOSED FENCE
	PROPOSED CONCRETE SIDEWALK
SSF	SUPER SILT FENCE
	DENOTES POINTS OF INGRESS AND EGRESS
	PROPOSED RETAINING WALL EASEMENT
	PROPOSED MAINTENANCE EASEMENT

0' 30' 60' 200'

SCALE: 1" = 30'

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

NO.	REVISION	DATE
1	REVISE FINAL GRADING & CISTERN WITH ROOF LEADERS	12/4/13

PROFESSIONAL'S CERTIFICATE

"I certify that this plan for sediment and erosion control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District."

Signature of Surveyor — FRANK JOHN THOMPSON II — Date 8/8/14

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Signature of Developer — Date 8-15-14

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT.

Howard SCD — Date 9/11/14

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Chief, Division of Land Development — Date 10/06/14
Chief, Development Engineering Division — Date 9.18.14
Director - Department of Planning and Zoning — Date 11/6/14

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GTW's WAVERLY WOODS, SECTION 14 PARCEL G	14	P/O 249

PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
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WATER CODE	SEWER CODE
K-02	5992000

SEDIMENT & EROSION CONTROL PLAN

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
PARCEL 'G' (Plat Nos. 22944 Thru 22953
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 7 OF 31

5DP-13-031

SOILS LEGEND

SOIL	NAME	CLASS
GgB	Glenelg loam, 3 to 8 percent slopes	B
MaC	Manor loam, 8 to 15 percent slopes	B
GmB	Glenville silt loam, 3 to 8 percent slopes	C
Ha	Hatboro-Codorus silt loams, 0 to 3 percent slopes	D
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LEGEND

SYMBOL	DESCRIPTION
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———	PROPOSED CONTOUR 2' INTERVAL
×362.2	SPOT ELEVATION
ECM	EROSION CONTROL MATTING
LOD	LIMIT OF DISTURBANCE
☼	STREET LIGHT PER F-09-057
18" 50	PROPOSED STORM DRAIN PIPE
8"S	PROPOSED SEWER
	PROPOSED LANDSCAPE TREES
	PERIMETER TREES
	EXISTING STORMDRAIN
	EXISTING SEWER
	EXISTING WATER
	EXISTING WATER & SEWER UTILITY EASEMENT
— x — x —	PROPOSED FENCE
	PROPOSED CONCRETE SIDEWALK
—SSF—	SUPER SILT FENCE
▼	DENOTES POINTS OF INGRESS AND EGRESS
	PROPOSED RETAINING WALL EASEMENT
	PROPOSED MAINTENANCE EASEMENT

APPROVED
PLANNING BOARD OF HOWARD COUNTY

DATE 2/20/2014

0' 30' 60' 200'

SCALE: 1" = 30'

1	REVISE FINAL GRADING & CISTERN WITH ROOF LEADERS	12/4/15
NO.	REVISION	DATE

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
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APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — 10/06/14 Date

Chief, Development Engineering Division J.P. — 9.18.14 Date

Director - Department of Planning and Zoning — 10/8/14 Date

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WATER CODE K-02			SEWER CODE 5992000		

SEDIMENT & EROSION CONTROL PLAN

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
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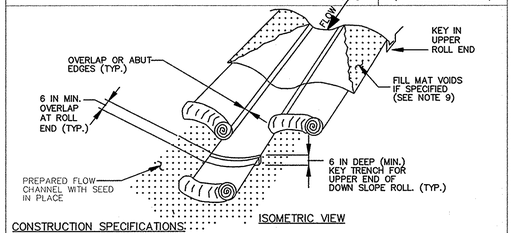
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014

SDP-13-031

DETAIL B-4-6-C — PERMANENT SOIL STABILIZATION MATTING CHANNEL APPLICATION

STANDARD SYMBOL: PSSMC – * lb/ft² (* INCLUDE SHEAR STRESS)



ISOMETRIC VIEW

CONSTRUCTION SPECIFICATIONS:

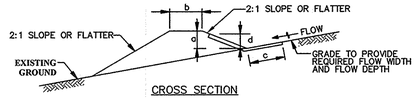
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "I" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 ½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "I" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTER LINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

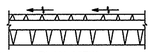
DETAIL C-1 — EARTH DIKE

STANDARD SYMBOL: A-1 (PLACE DESIGNATION (A-2, A-3) ON FLOW CHANNEL SIDE OF DIKE)



CROSS SECTION

CONTINUOUS GRADE 0.5% MIN. TO 10% MAX. SLOPE



PLAN VIEW

	DIKE TYPE A	DIKE TYPE B
a – DIKE HEIGHT	18 IN MIN.	30 IN MIN.
b – DIKE WIDTH	24 IN MIN.	36 IN MIN.
c – FLOW WIDTH	4 FT MIN.	6 FT MIN.
d – FLOW DEPTH	12 IN MIN.	24 IN MIN.

FLOW CHANNEL STABILIZATION

A-1	SEED WITH STRAW MULCH AND TACK. (NOT ALLOWED FOR CLEAR WATER DIVERSION.)
A-2/B-2	SEED WITH SOIL STABILIZATION MATTING OR LINE WITH SOD.
A-3/B-3	4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND.

CONSTRUCTION SPECIFICATIONS

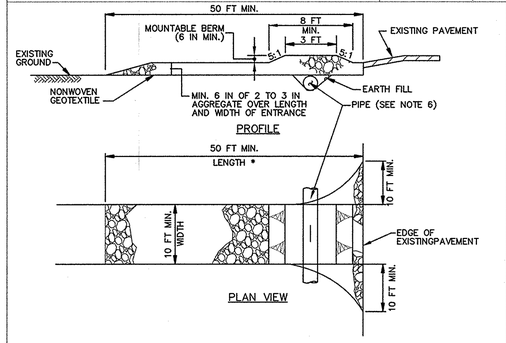
1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF EARTHDIKE.
2. EXCAVATE OR SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.
3. COMPACT FILL.
4. CONSTRUCT FLOW CHANNEL ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.
5. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
6. STABILIZE EARTH DIKE WITHIN THREE DAYS OF INSTALLATION. STABILIZE FLOW CHANNEL FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.
7. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS, AND MAINTAIN POSITIVE DRAINAGE. KEEP EARTH DIKE AND POINT OF DISCHARGE FREE OF EROSION, AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
8. UPON REMOVAL OF EARTH DIKE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-1 — STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE



CONSTRUCTION SPECIFICATIONS

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

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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0' 30' 60' 200'

SCALE: 1" = 30'

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DATE 2/20/2014

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K-02			5992000		

SEDIMENT & EROSION CONTROL PLAN

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
PARCEL 'G' (Plat Nos. Thru
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 9 OF 31

SDP-13-031

SOIL PREPARATION, TOPSOILING AND SOIL AMENDMENTS (B-4-2)

A. Soil Preparation

1. Temporary Stabilization

a. Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.

b. Apply fertilizer and lime as prescribed on the plans.

c. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.

2. Permanent Stabilization

a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
i. Soil pH between 6.0 and 7.0.
ii. Soluble salts less than 500 parts per million (ppm).
iii. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
iv. Soil contains 1.5 percent minimum organic matter by weight.
v. Soil contains sufficient pore space to permit adequate root penetration.

b. Application of amendments or topsoil is required if on-site soils do not meet the above conditions.

c. Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.

d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.

e. Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

B. Topsoiling

1. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.

2. Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.

3. Topsoiling is limited to areas having 2:1 or flatter slopes where:

a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.

b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.

c. The original soil to be vegetated contains material toxic to plant growth.

d. The soil is so acidic that treatment with limestone is not feasible.

4. Areas having slopes steeper than 2:1 require special consideration and design.

5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:

a. Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1 1/2 inches in diameter.

b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.

c. Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.

6. Topsoil Application

a. Erosion and sediment control practices must be maintained when applying topsoil.

b. Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.

c. Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

C. Soil Amendments (Fertilizer and Lime Specifications)

1. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.

2. Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.

3. Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #20 mesh sieve.

4. Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means.

5. Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

TEMPORARY SEEDING NOTES (B-4-4)

Definition

To stabilize disturbed soils with vegetation for up to 6 months.

Purpose

To use fast growing vegetation that provides cover on disturbed soils.

Conditions Where Practice Applies

Exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time, permanent stabilization practices are required.

Criteria

1. Select one or more of the species or seed mixtures listed in Table B.1 for the appropriate Plant Hardiness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. If this Summary is not put on the plan and completed, then Table B.1 plus fertilizer and lime rates must be put on the plan.
2. For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.

3. When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3.A.1.b and maintain until the next seeding season.

Temporary Seeding Summary

Hardiness Zone (from Figure B.3): 6b Seed Mixture (from Table B.1):				Fertilizer Rate (10-20-20)	Lime Rate
Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths		
BARLEY	96	3/1 - 5/15, 8/15 - 10/15	1"	436 lb/ac (10 lb/ 1000 sf)	2 tons/ac (90 lb/ 1000 sf)
OATS	72		1"		
RYE	112		1"		

PERMANENT SEEDING NOTES (B-4-5)

A. Seed Mixtures

1. General Use

a. Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.

b. Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planting.

c. For sites having disturbed area over 5 acres, use and show the rates recommended by the soil testing agency. d. For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 1/2 pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary .

2. Turfgrass Mixtures

a. Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.

b. Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan.

i. Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.

ii. Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.

iii. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes; Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.

iv. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes; Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1 1/2 to 3 pounds per 1000 square feet.

Notes:
Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo #77, "Turfgrass Cultivar Recommendations for Maryland"

Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line

c. Ideal Times of Seeding for Turf Grass Mixtures Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b, 6a) Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6b) Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 7a, 7b)

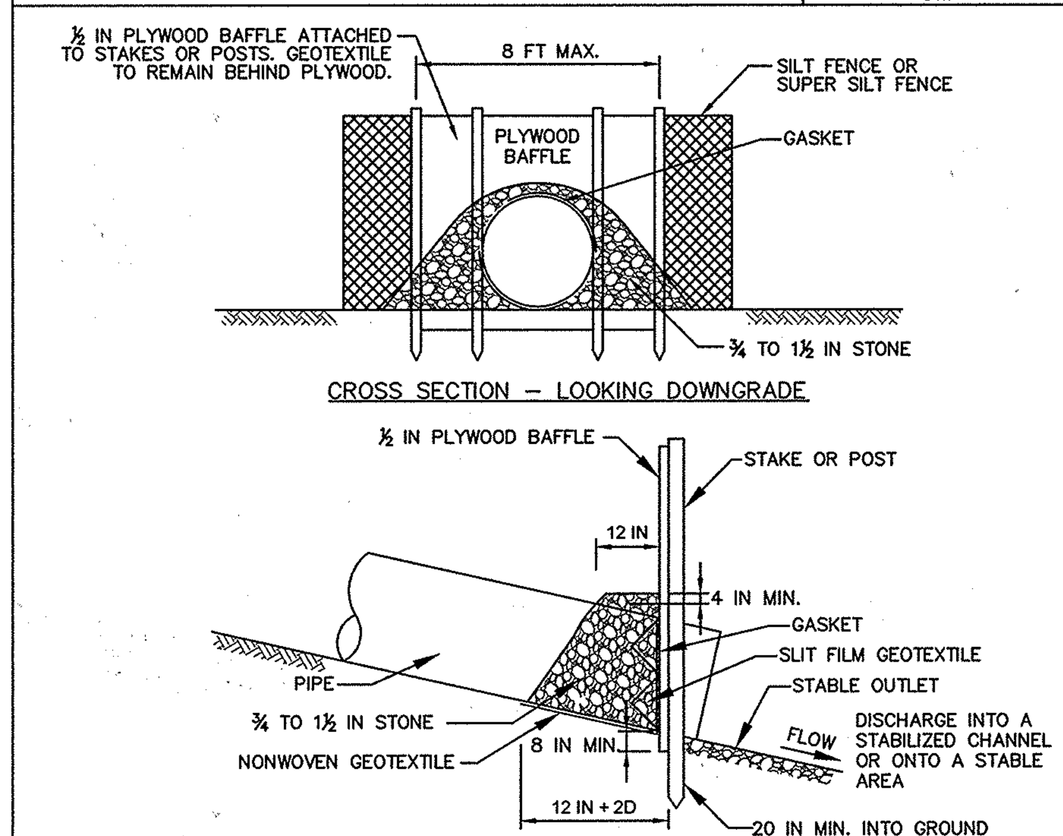
d. Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1 1/2 inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty.

e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (1/2 to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

Permanent Seeding Summary

Hardiness Zone (from Figure B.3): 6b Seed Mixture (from Table B.3): 8					Fertilizer Rate (10-20-20)			Lime Rate
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	N	P_2O_5	K_2O	
8	TALL FESCUE	100	Mar. 1-May 15 Aug. 15-Oct. 15	1/4-1/2 in.	45 lbs. per acre (1.0 lb/ 1000 sf)	90 lb/ac (2 lb/ 1000 sf)	90 lb/ac (2 lb/ 1000 sf)	2 tons/ac (90 lb/ 1000 sf)

DETAIL E-4 CLEAR WATER PIPE THROUGH SILT FENCE OR SUPER SILT FENCE	STANDARD SYMBOL CWP

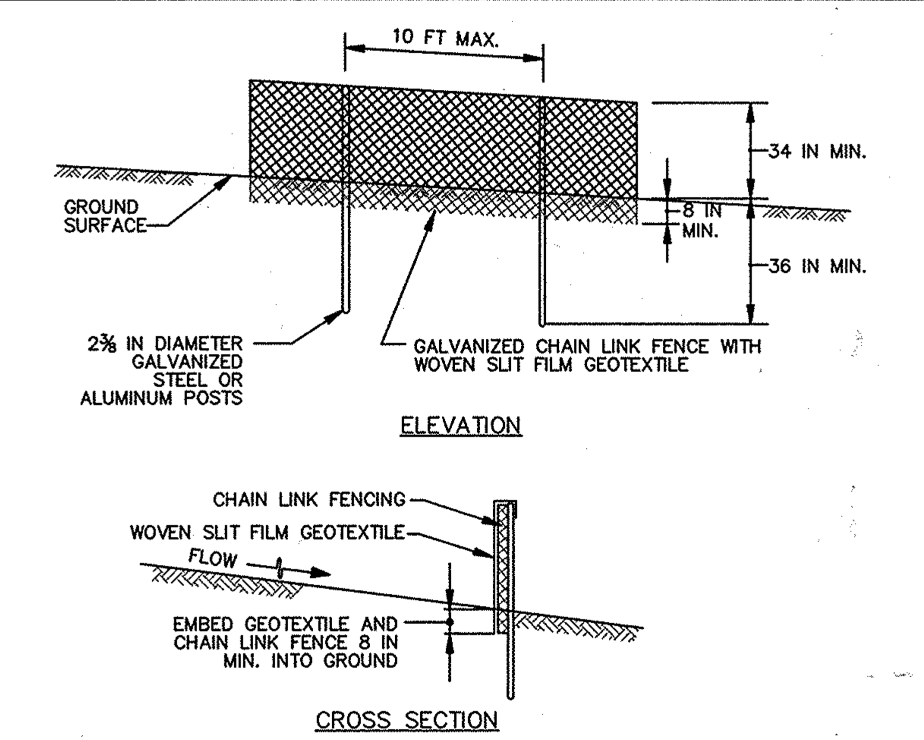


CONSTRUCTION SPECIFICATIONS

1. INSTALL SILT FENCE OR SUPER SILT FENCE IN ACCORDANCE WITH DETAIL E-1 OR DETAIL E-2.
2. AT THE PIPE LOCATION, CUT AND PULL BACK THE WOVEN SLIT FILM GEOTEXTILE AND CHAIN LINK FENCING. SECURE GEOTEXTILE TO PIPE WITH GASKET. INSTALL ADDITIONAL STAKES OR POSTS IF NECESSARY TO ACCOMMODATE THE INSTALLATION OF THE BAFFLE BOARD.
3. ENTRENCH ½ INCH PLYWOOD BAFFLE A MINIMUM OF 8 INCHES AND SECURE TO THE UPGRADE SIDE OF THE FENCE STAKES OR POSTS. BAFFLE SHOULD BE AT LEAST THE HEIGHT OF THE FENCE.
4. PLACE ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE BEHIND THE PLYWOOD BAFFLE ON NONWOVEN GEOTEXTILE AND EXTEND 12 INCH MIN. ALONG TOP OF PIPE AND TO A HEIGHT OF 4 INCHES ABOVE THE TOP OF PIPE.
5. USE NONWOVEN AND WOVEN SLIT FILM GEOTEXTILES AS SPECIFIED IN SECTION H-1 MATERIALS.
6. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN SEDIMENT REACHES 6 INCHES IN HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL BAFFLE, CHAIN LINK, AND GEOTEXTILE. REPLACE STONE IF DISPLACED. KEEP POINT OF DISCHARGE FREE OF EROSION.

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

DETAIL E-3 SUPER SILT FENCE	STANDARD SYMBOL SSF



CONSTRUCTION SPECIFICATIONS

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

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

0' 30' 60' 200'

SCALE: 1" = 30'

SEQUENCE OF CONSTRUCTION

1. OBTAIN A GRADING PERMIT. (2 WEEKS)
2. NOTIFY "MISS UTILITY" AT LEAST 48 HOURS BEFORE BEGINNING ANY WORK AT 1-800-257-7777. NOTIFY THE HOWARD COUNTY OFFICE OF CONSTRUCTION/INSPECTION AT 410-313-1330 AT LEAST 24 HOURS BEFORE STARTING WORK.
3. REQUEST A PRE-CONSTRUCTION MEETING WITH THE APPROPRIATE ENFORCEMENT AUTHORITY.
4. CLEAR AND GRUBBING AS NECESSARY FOR THE INSTALLATION OF PERIMETER CONTROLS. (2 DAYS)
5. INSTALL THE STABILIZED CONSTRUCTION ENTRANCE. INSTALL ALL SUPER SILT FENCE, EARTH DIKES, AND TEMPORARY CLEAN WATER PIPES INDICATED ON THE PLANS. (1 WEEK) THE CONTRACTOR SHALL VERIFY THAT BASIN No. 3 AND CONTROLS PER SDP-09-039 HAVE BEEN COMPLETELY INSTALLED BEFORE PROCEEDING.
6. REVISE THE EXISTING BASIN TO ITS ORIGINAL DIMENSIONS AND VOLUMES. (3 DAYS)
7. REMAINING CLEARING AND GRUBBING WITHIN INSTALLED PERIMETER CONTROLS.
8. BEGIN FIRST PHASE OF CONSTRUCTION CONSISTING OF THE CONSTRUCTION OF RETAINING WALL #2 FROM APPROXIMATELY STATION 4+00 TO STATION 7+10. GRADE SITE LOCATED TO THE WEST OF THE INTERNAL EARTH DIKE TO PROPOSED SUB-GRADE AND INSTALL RETAINING WALL #1, AS WELL AS STORM DRAIN SYSTEMS, WATER AND SEWER LINES WITHIN THE SAME SPECIFIED AREA. STABILIZE ALL SLOPES IMMEDIATELY UPON COMPLETION OF GRADING. DO NOT BLOCK INLETS AS STORM DRAIN SYSTEM WILL BE USED TO CONVEY SEDIMENT RUNOFF INTO THE BASIN. (9 WEEKS)
9. CONSTRUCT CURB & GUTTER AND INSTALL ROAD BASE COURSE FOR ROADS 'A' AND 'B'. (2 WEEKS)
10. GRADE AND STABILIZE WITH TEMPORARY SEEDING THE BUILDING PADS FOR THE 16 UNIT GARDEN-STYLE CONDOMINIUM BUILDINGS. (1 MONTHS)
11. WITH PERMISSION OF INSPECTOR, REMOVE INTERNAL EARTH DIKE SPECIFIED ON SHEETS 7 AND 8. (1 WEEK).
12. GRADE TO SUB-GRADE REMAINDER OF SITE AND CONSTRUCT RETAINING WALL #3, REMAINDER OF RETAINING WALL #2 AS WELL AS REMAINING STORM DRAIN SYSTEMS, WATER AND SEWER LINES. STABILIZE ALL SLOPES IMMEDIATELY UPON COMPLETION OF GRADING. DO NOT BLOCK INLETS AS STORM DRAIN SYSTEM WILL BE USED TO CONVEY SEDIMENT RUNOFF INTO THE BASIN. (9 WEEKS)
13. CONSTRUCT CURB & GUTTER AND INSTALL ROAD BASE COURSE FOR PARKING LOT 'A'. (2 WEEKS)
14. CONSTRUCT CLUB HOUSE AND POOL (3 MONTHS)
15. CONSTRUCT 16 UNIT GARDEN-STYLE CONDOMINIUM BUILDINGS. (3 MONTHS)
16. INSTALL FINISHED SURFACE COURSE, SIDEWALKS AND STREET TREES. (2 WEEKS)
17. CONTRACTOR SHALL REMOVE ALL OLD AND NEW JUNK, TRASH, AND DEBRIS FROM FORESTS, FLOODPLAIN, STREAMS, WETLANDS AND THEIR BUFFERS.
18. OBTAIN APPROVAL OF APPROPRIATE ENFORCEMENT AUTHORITY PRIOR TO REMOVAL OF SEDIMENT CONTROLS. (3 DAYS)
19. REMOVAL OF CONTROLS AND STABILIZATION OF AREAS THAT ARE DISTURBED BY REMOVAL OF SEDIMENT CONTROLS.
20. CONVERSION OF THE EXISTING BASIN TO A SWM POND WILL BE COMPLETED UNDER THE SDP-09-039 PROJECT.
21. NOTE: THE CONTRACTOR SHALL INSPECT AND PROVIDE NECESSARY MAINTENANCE AFTER EACH RAINFALL AND ON A DAILY BASIS. REMOVE SEDIMENT FROM THE POND/BASIN ON ALL SEDIMENT AND EROSION CONTROL STRUCTURES SHOWN HEREON.
22. EARTH DIKES INTERRUPTED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY

WHEN THE CLEANOUT ELEVATION HAS BEEN REACHED. ALL SEDIMENT MUST BE PLACED UPSTREAM OF THE APPROVED TRAPPING DEVICE.

SEDIMENT CONTROL NOTES

1) A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LISCENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1855).
2) ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
3) FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: a) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES STEEPER THAN 3:1, b) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
4) ALL SEDIMENT TRAPS/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 SEEDING (SEC. 51), SOD (SEC. 54), TEMPORARY SEEDING (SEC. 50), AND MULCHING (SEC. 52). 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 PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
7) SITE ANALYSIS:

TOTAL AREA OF SITE	6.671	ACRES
AREA DISTURBED	7.454	ACRES
AREA TO BE ROOFED OR PAVED	3.459	ACRES
AREA TO BE VEGETATIVELY STABILIZED	3.995	ACRES
TOTAL CUT	64,323	CU.YDS.
TOTAL FILL	62,803	CU.YDS.
OFFSITE WASTE/BORROW AREA LOCATION		CU.YDS.

8) ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
9) ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY 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 BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
11) TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGHTS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

NO.	REVISION	DATE

PROFESSIONAL'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."

Frank John Manalansan — Signature of Surveyor FRANK JOHN MANALANSAN II — 8/9/14 Date

BUILDER/DEVELOPER'S CERTIFICATE

"I/We certify that all development and construction will be done according to this plan, for sediment and erosion control and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of the Environment Approved Training Program for the Control of Sediment and Erosion before beginning the project. I also authorize periodic on-site inspection by the Howard Soil Conservation District."

Signature of Developer — 8-15-14 Date

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT.
John R Robertson — Howard SCD — 9/4/14 Date

BUILDER
RYAN HOMES
9720 PATUXENT WOODS DRIVE
COLUMBIA MARYLAND, 21043
410-796-0908

OWNER
WAVERLY WOODS DEVELOPMENT CORPORATION
P.O. BOX 30
GLENELG, MARYLAND 21737-0030

DEVELOPER
WAVERLY WOODS DEVELOPMENT CORPORATION,
P.O. BOX 30
GLENELG, MARYLAND
21737-0030

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Chief, Division of Land Development — 10/06/14 Date
Chief, Development Engineering Division J.P. — 9.18.14 Date
Director - Department of Planning and Zoning — 10/8/14 Date

PROJECT			SECTION		PARCEL NOS.
GTW's WAVERLY WOODS, SECTION 14 PARCEL G			14		P/O 249
PLAT 22944-22953	BLOCK NO. 3 & 4	ZONE PSC	TAX/ZONE 16	ELEC. DIST. THIRD	CENSUS TR. 60300
WATER CODE K-02			SEWER CODE 5992000		

SEDIMENT & EROSION CONTROL PLAN

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
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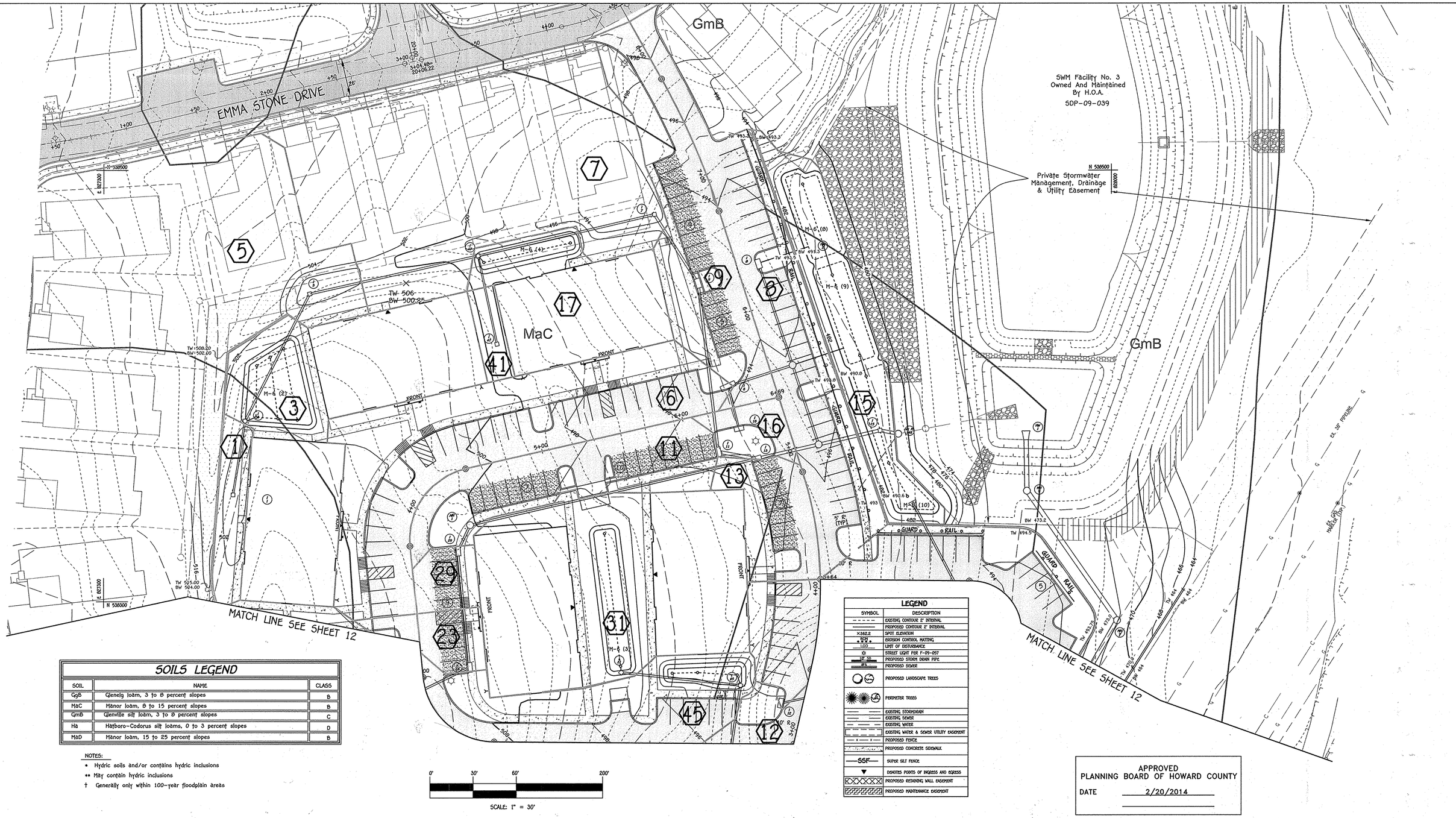
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 10 OF 31

SDP-13-031



SOILS LEGEND

SOIL	NAME	CLASS
GgB	Glenelg loam, 3 to 8 percent slopes	B
MaC	Manor loam, 8 to 15 percent slopes	B
GmB	Glenville silt loam, 3 to 8 percent slopes	C
Ha	Hatboro-Codorus silt loams, 0 to 3 percent slopes	D
MaD	Manor loam, 15 to 25 percent slopes	B

NOTES:

- * Hydric soils and/or contains hydric inclusions
- ** May contain hydric inclusions
- † Generally only within 100-year floodplain areas

LEGEND

SYMBOL	DESCRIPTION
	EXISTING CONTOUR 2' INTERVAL
	PROPOSED CONTOUR 2' INTERVAL
×562.2	SPOT ELEVATION
SF	EROSION CONTROL MATING
LOD	LIMIT OF DISTURBANCE
☼	STREET LIGHT PER F-09-057
18" SD	PROPOSED STORM DRAIN PIPE
S	PROPOSED SEWER
	PROPOSED LANDSCAPE TREES
	PERIMETER TREES
	EXISTING STORMDRAIN
	EXISTING SEWER
	EXISTING WATER
	EXISTING WATER & SEWER UTILITY EASEMENT
	PROPOSED FENCE
	PROPOSED CONCRETE SIDEWALK
SSF	SUPER SILT FENCE
▼	DENOTES POINTS OF INGRESS AND EGRESS
	PROPOSED RETAINING WALL EASEMENT
	PROPOSED MAINTENANCE EASEMENT

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

NO.	REVISION	DATE
1	REVISE FINAL GRADING & CISTERN WITH ROOF LEADERS	12/4/15

PROFESSIONAL CERTIFICATION

"Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional land surveyor under the laws of the State of Maryland, License No. 21476, Expiration Date: 07/14/2015."

Frank Manalansan II — 8/9/14 DATE

#21476
STATE OF MARYLAND — FRANK JOHN MANALANSAN II — No. 21476 — PROFESSIONAL LAND SURVEYOR
Frank Manalansan II

BUILDER
RYAN HOMES
9720 PATUXENT WOODS DRIVE
COLUMBIA MARYLAND, 21043
410-796-0908

OWNER
WAVERLY WOODS DEVELOPMENT CORPORATION
P.O. BOX 30
GLENELG, MARYLAND 21737-0030

DEVELOPER
WAVERLY WOODS DEVELOPMENT CORPORATION,
P. O. BOX 30
GLENELG, MARYLAND
21737-0030

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — 10/06/14 Date
Chief, Development Engineering Division — J.S. — 9-18-14 Date
Director - Department of Planning and Zoning — 10/6/14 Date

PROJECT	SECTION	PARCEL NOS.
GTW's WAVERLY WOODS, SECTION 14 PARCEL G	14	P/O 249

PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
22944 - 22953	3 & 4	PSC	16	THIRD	60300

WATER CODE	SEWER CODE
K-02	5992000

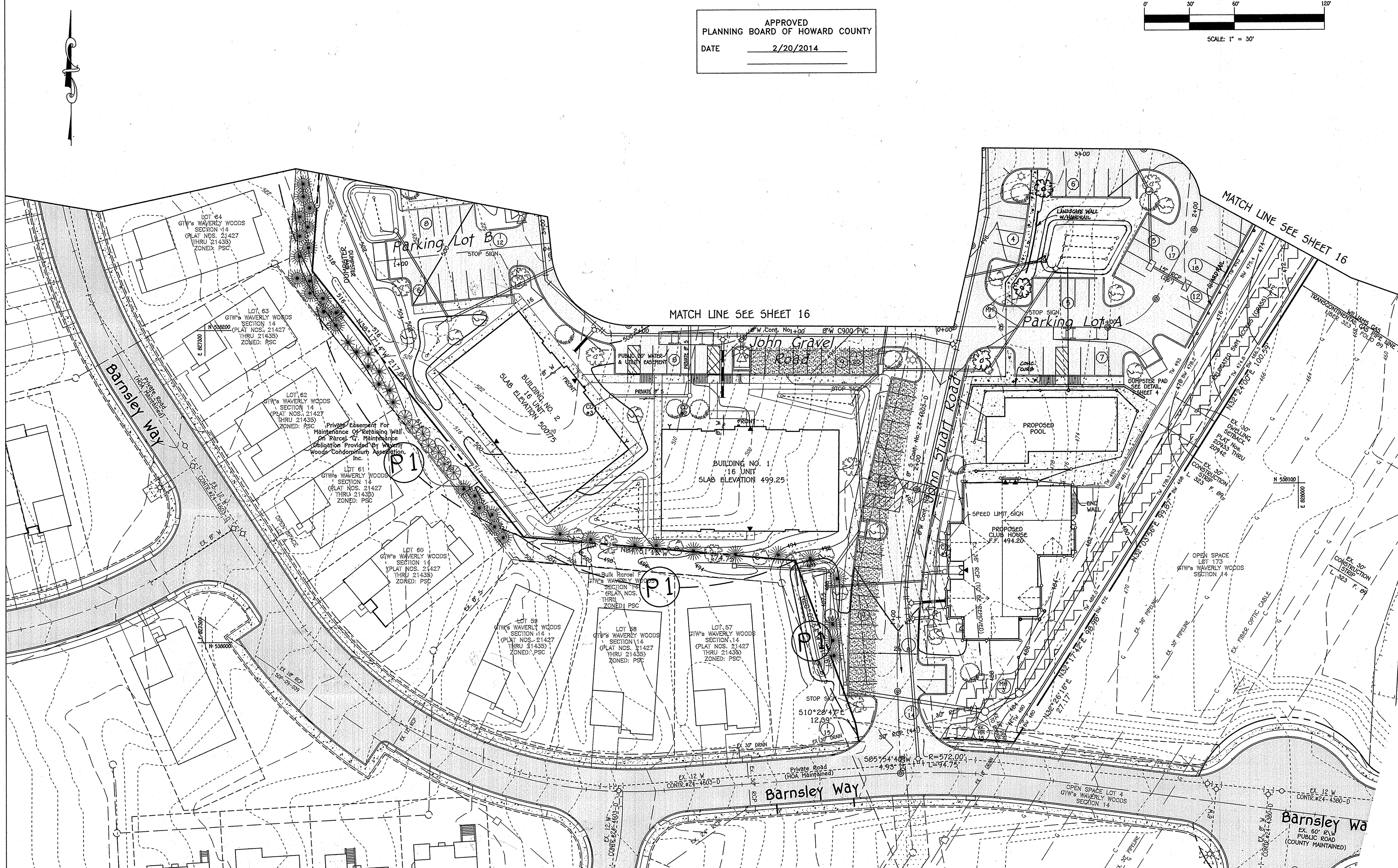
STORM DRAIN DRAINAGE AREA / SOILS MAP

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
PARCEL 'G' (Plat Nos. 22944 Thru 22953
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 11 OF 31

SDP-13-031

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

LEGEND	
SYMBOL	DESCRIPTION
- - - - -	EXISTING CONTOUR 2' INTERVAL
————	PROPOSED CONTOUR 2' INTERVAL
×362.2	SPOT ELEVATION
ECM	EROSION CONTROL MATTING
LOD	LIMIT OF DISTURBANCE
☼	STREET LIGHT PER F-09-057
18" SD	PROPOSED STORM DRAIN PIPE
8"S	PROPOSED SEWER
	PROPOSED LANDSCAPE TREES
	PERIMETER TREES
	EXISTING STORMDRAIN
	EXISTING SEWER
	EXISTING WATER
	EXISTING WATER & SEWER UTILITY EASEMENT
—x—x—	PROPOSED FENCE
	PROPOSED CONCRETE SIDEWALK
—SSF—	SUPER SILT FENCE
▼	DENOTES POINTS OF INGRESS AND EGRESS
XXXXXX	PROPOSED RETAINING WALL EASEMENT
	PROPOSED MAINTENANCE EASEMENT



1	REVISE FINAL GRADING & CISTERN WITH ROOF LEADERS	12/4/15
NO.	REVISION	DATE

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

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Frank Manalansan II — 8/9/14 DATE

APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.

COUNTY HEALTH OFFICER H.O. — 9/2/2014 DATE

#21476

STATE OF MARYLAND FRANK JOHN MANALANSAN II PROFESSIONAL LAND SURVEYOR No. 21476

Frank Manalansan II

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APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

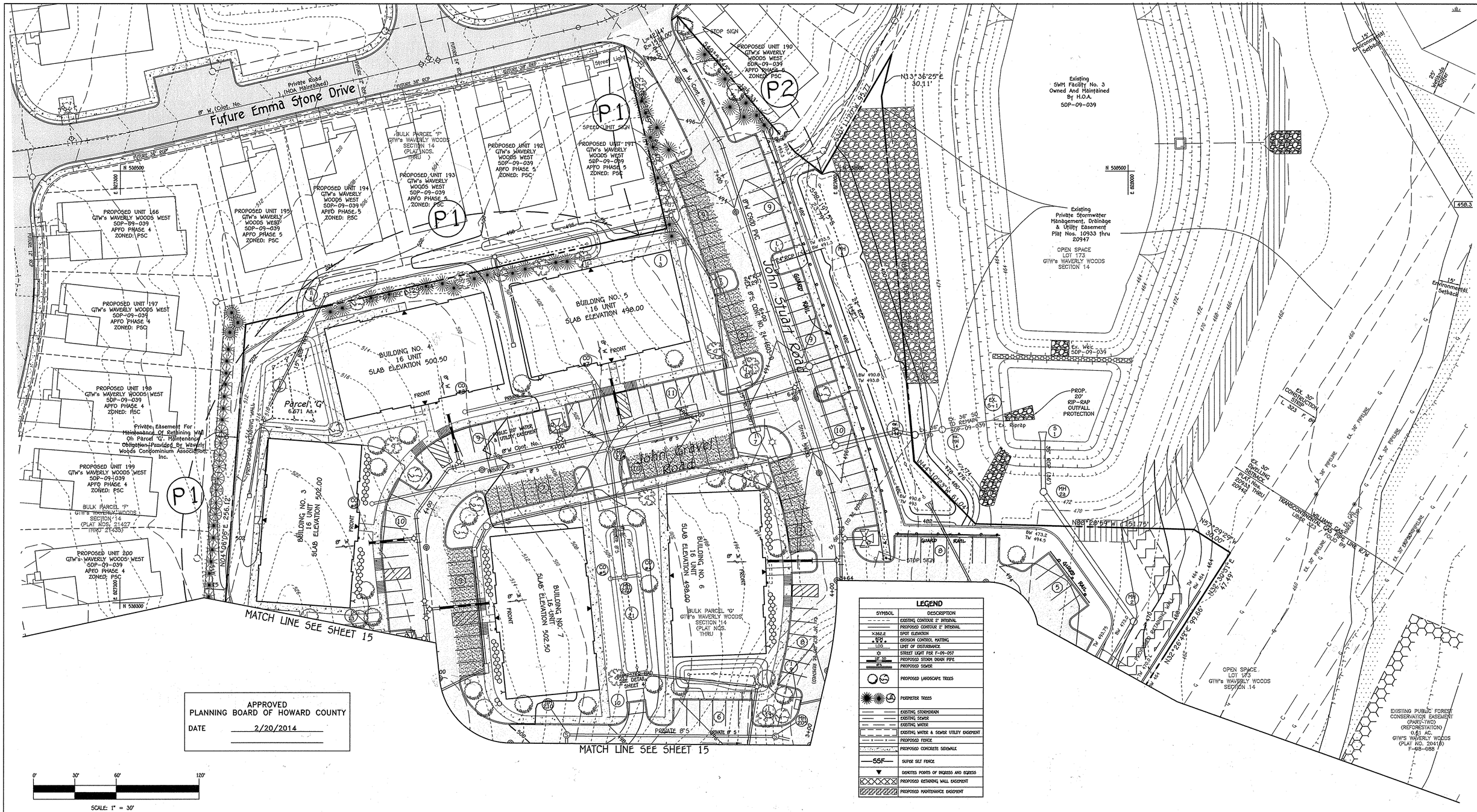
Chief, Division of Land Development — 10/06/14 Date
Chief, Development Engineering Division — 9.18.14 Date
Director - Department of Planning and Zoning — 10/8/14 Date

PROJECT			SECTION		PARCEL NOS.
GTW's WAVERLY WOODS, SECTION 14 PARCEL G			14		P/O 249
PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
22944-22953	3 & 4	PSC	16	THIRD	60300
WATER CODE			SEWER CODE		
K-02			5992000		

LANDSCAPE PLAN

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
PARCEL 'G' (Plat Nos. 22944 Thru 22953
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 15 OF 31

SDP-13-031



APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

LEGEND

SYMBOL	DESCRIPTION
	EXISTING CONTOUR 2' INTERVAL
	PROPOSED CONTOUR 2' INTERVAL
×362.2	SPOT ELEVATION
EC LOD	EROSION CONTROL MATTING / LIMIT OF DISTURBANCE
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18" SD	PROPOSED STORM DRAIN PIPE
8" S	PROPOSED SEWER
	PROPOSED LANDSCAPE TREES
	PERIMETER TREES
	EXISTING STORMDRAIN
	EXISTING SEWER
	EXISTING WATER
	EXISTING WATER & SEWER UTILITY EASEMENT
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FISHER, COLLINS & CARTER, INC.
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Frank Manalansan II 8/8/14
Frank Manalansan II DATE

APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.

Bill Hanlon Maura Rossman 9/2/2014
COUNTY HEALTH OFFICER DATE

#21476
STATE OF MARYLAND FRANK JOHN MANALANSAN PROFESSIONAL LAND SURVEYOR NO. 21476

Frank Manalansan II

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GLENELG, MARYLAND 21737

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

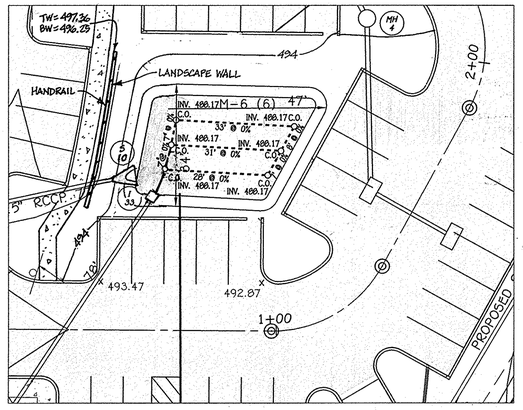
Chief, Division of Land Development — Date 10/06/14
Chief, Development Engineering Division — Date 9.18.14
Director - Department of Planning and Zoning — Date 10/6/14

PROJECT			SECTION		PARCEL NOS.
GTW's WAVERLY WOODS, SECTION 14 PARCEL G			14		P/O 249
PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
22944 - 22953	3 & 4	PSC	16	THIRD	60300
WATER CODE			SEWER CODE		
K-02			5992000		

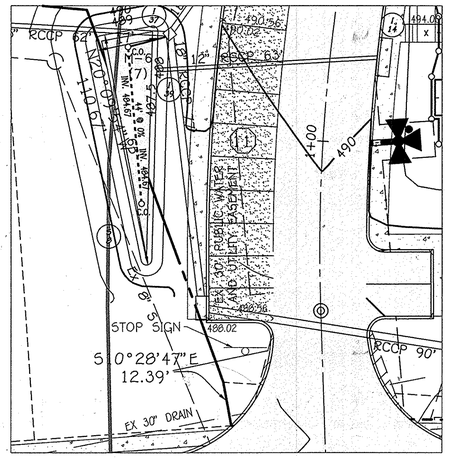
LANDSCAPE PLAN

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
PARCEL 'G' (Plat Nos. 22944 Thru 22953
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 16 OF 31

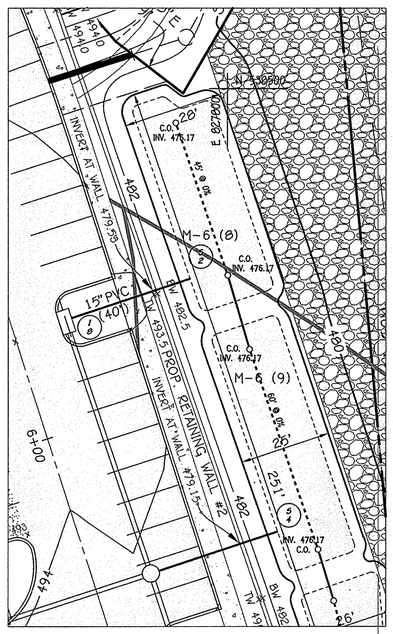
5DP-13-031



M-6 (6)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 16,021 SqFt.
FILTER AREA: 1046 SqFt.
ELEVATION ~~491.00~~
PERIMETER 184'
WEIR ELEVATION ~~492.00~~

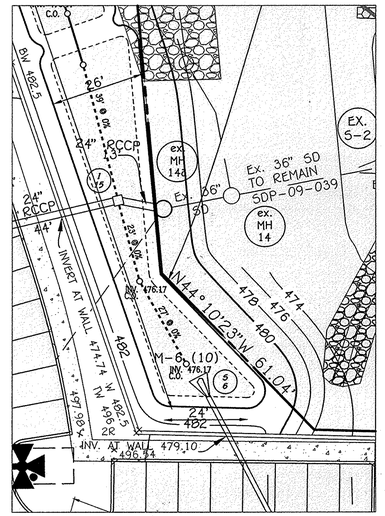


M-6 (7)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 8,789 SqFt.
FILTER AREA: 450 SqFt.
ELEVATION 489.00
PERIMETER 154'
WEIR ELEVATION 489.00

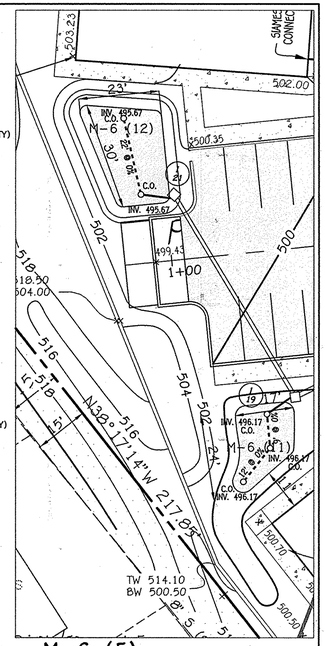


M-6 (8)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 16,343 SqFt.
FILTER AREA: 1260 SqFt.
ELEVATION 479.00
PERIMETER 158'
WEIR ELEVATION 480.00

M-6 (9)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 25,008 SqFt.
FILTER AREA: 1360 SqFt.
ELEVATION 479.00
PERIMETER 175'
WEIR ELEVATION 480.00



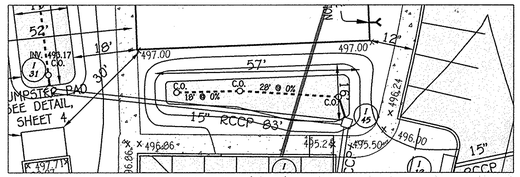
M-6 (10)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 22,530 SqFt.
FILTER AREA: 1,532 SqFt.
ELEVATION 479.00
PERIMETER 257'
WEIR ELEVATION 480.00



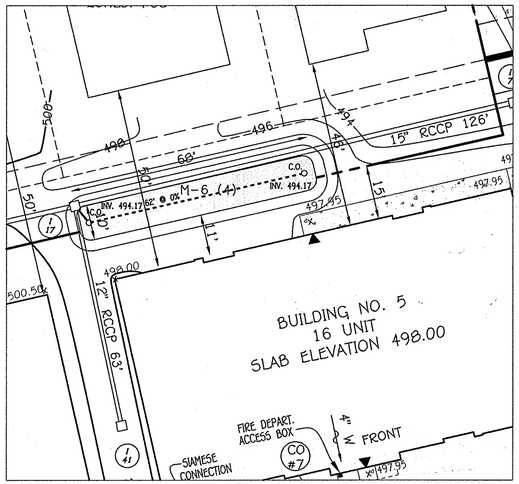
M-6 (12)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 8667 SqFt.
FILTER AREA: 513 SqFt.
ELEVATION 498.50
PERIMETER 91'
WEIR ELEVATION 499.50

M-6 (11)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 6,661 SqFt.
FILTER AREA: 320 SqFt.
ELEVATION 499.00
PERIMETER 74'
WEIR ELEVATION 500.00

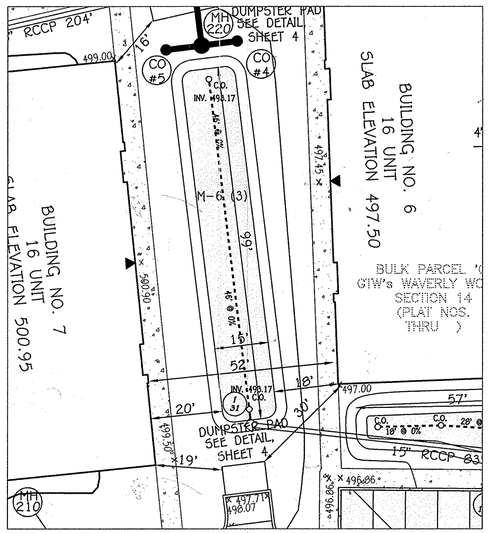
M-6 (5)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 11,491 SqFt.
FILTER AREA: 390 SqFt.
ELEVATION 495.00
PERIMETER 170'
WEIR ELEVATION 496.00



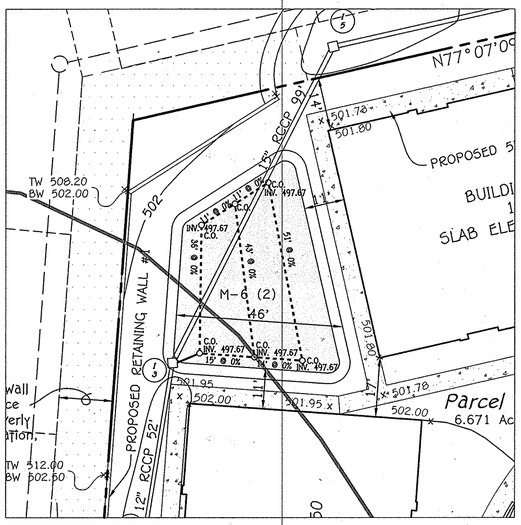
M-6 (13)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 9991 SqFt.
FILTER AREA: 490 SqFt.
ELEVATION 495.00
PERIMETER 119'
WEIR ELEVATION 496.00



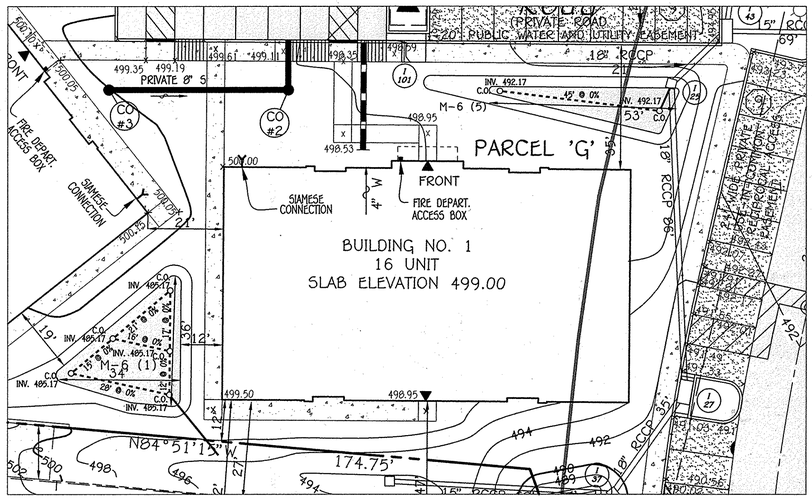
M-6 (4)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 9,299 SqFt.
FILTER AREA: 659 SqFt.
ELEVATION 497.00
PERIMETER 150'
WEIR ELEVATION 498.00



M-6 (3)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 22,738 SqFt.
FILTER AREA: 1476 SqFt.
ELEVATION 496.00
PERIMETER 222'
WEIR ELEVATION 497.00'



M-6 (2)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 19,876 SqFt.
FILTER AREA: 1979 SqFt.
ELEVATION 500.50
PERIMETER 178'
WEIR ELEVATION 501.50



M-6 (1)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 16,513 SqFt.
FILTER AREA: 744 SqFt.
ELEVATION 498.00
PERIMETER 116'
WEIR ELEVATION 499.00

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

0' 30' 60' 200'
SCALE: 1" = 30'

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

NO.	REVISION	DATE
3	REVISE FINAL GRADING & CISTERN WITH ROOF LEADERS	12/4/15

PROFESSIONAL CERTIFICATION

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Frank Manalansan II 9/9/14
DATE

APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.

for Maura Rossman 9/3/2014
COUNTY HEALTH OFFICER H.O.Q. DATE

#21476
STATE OF MARYLAND
FRANK JOHN MANALANSAN II
No. 21476
PROFESSIONAL LAND SURVEYOR

Frank John Manalansan II

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APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — Date 10/06/14
Chief, Development Engineering Division — Date 9.18.14
Director - Department of Planning and Zoning — Date 9/18/14

PROJECT			SECTION		PARCEL NOS.
GTW's WAVERLY WOODS, SECTION 14 PARCEL G			14		P/O 249
PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
22944 - 22953	3 & 4	PSC	16	THIRD	60300
WATER CODE		SEWER CODE			
K-02		5992000			

STORMWATER MANAGEMENT NOTES AND DETAILS

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
PARCEL 'G' (Plat Nos. 22944 Thru 22953
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 20 OF 31

SDP-13-031

Infiltration and Filter System Construction Specifications

Infiltration and filter systems either take advantage of existing permeable soils or create a permeable medium such as sand for WQ, and Re v. In some instances where permeability is great, these facilities may be used for Qp as well. The most common systems include infiltration trenches, infiltration basins, sand filters, and organic filters.

When properly planted, vegetation will thrive and enhance the functioning of these systems. For example, pre-treatment buffers will trap sediments that often are bound with phosphorous and metals. Vegetation planted in the facility will aid in nutrient uptake and water storage. Additionally, plant roots will provide arteries for stormwater to permeate soil for groundwater recharge. Finally, successful plantings provide aesthetic value and wildlife habitat making these facilities more desirable to the public.

Design Constraints:

> Planting buffer strips of at least 20 feet will cause sediments to settle out before reaching the facility, thereby reducing the possibility of clogging.
> Determine areas that will be saturated with water and water table depth so that appropriate plants may be selected (hydrology will be similar to bioretention facilities, see figure A.5 and Table A.4 for planting material guidance).
> Plants known to send down deep taproots should be avoided in systems where filter fabric is used as part of facility design.
> Test soil conditions to determine if soil amendments are necessary.
> Plants shall be located so that access is possible for structure maintenance.
> Stabilize heavy flow areas with erosion control mats or sod.
> Temporarily divert flows from seeded areas until vegetation is established.
> See Table A.5 for additional design considerations.

Bio-retention

Soil Bed Characteristics

The characteristics of the soil for the bioretention facility are perhaps as important as the facility location, size, and treatment volume. The soil must be permeable enough to allow runoff to filter through the media, while having characteristics suitable to promote and sustain a robust vegetative cover crop. In addition, much of the nutrient pollutant uptake (nitrogen and phosphorus) is accomplished through absorption and microbial activity within the soil profile. Therefore, soils must balance their chemical and physical properties to support biotic communities above and below ground.

The planting soil should be a sandy loam, loamy sand, loam (USDA), or a loam/sand mix (should contain a minimum 35 to 60% sand, by volume). The clay content for these soils should be less than 25% by volume (Environmental Quality Resources (EQR), 1996; Engineering Technology Inc. and Biohabitats, Inc. (ETAB), 1993). Soils should fall within the SM, ML, SC classifications or the Unified Soil Classification System (USCS). A permeability of at least 1.0 feet per day (0.5"/hr) is required (a conservative value of 0.5 feet per day is used for design). The soil should be free of stones, stumps, roots, or other woody material over 1" in diameter. Brush or seeds from noxious weeds (e.g., Johnson Grass, Mugwort, Nutsedge, and Canada Thistle or other noxious weeds as specified under COMAR 15.08.01.05.) should not be present in the soils. Placement of the planting soil should be in 12 to 18 lifts that are loosely compacted (tamped lightly with a backhoe bucket or traversed by dozer tracks). The specific characteristics are presented in Table A.3.

Table A.3 Planting Soil Characteristics

Parameter	Value
pH range	5.2 to 7.00
Organic matter	1.5 to 4.0% (by weight)
Magnesium	35 lbs. per acre, minimum
Phosphorus (phosphate – P205)	75 lbs. per acre, minimum
Potassium (potash –1(K20)	85 lbs. per acre, minimum
Soluble salts	500 ppm
Clay	10 to 25 %
Silt	30 to 55 %
Sand	35 to 60%

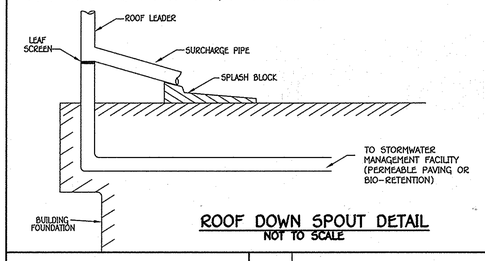
Mulch Layer

The mulch layer plays an important role in the performance of the bioretention system. The mulch layer helps maintain soil moisture and avoids surface sealing, which reduces permeability. Mulch helps prevent erosion, and provides a microenvironment suitable for soil biota at the mulch/soil interface. It also serves as a pretreatment layer, trapping the finer sediments, which remain suspended after the primary pretreatment.

The mulch layer should be standard landscape style, single or double shredded hardwood mulch or chips. The mulch layer should be well aged (stockpiled or stored for at least 12 months), uniform in color, and free of other materials, such as weed seeds, soil, roots, etc. The mulch should be applied to a maximum depth of three inches. Grass clippings should not be used as a mulch material.

Planting Guidance

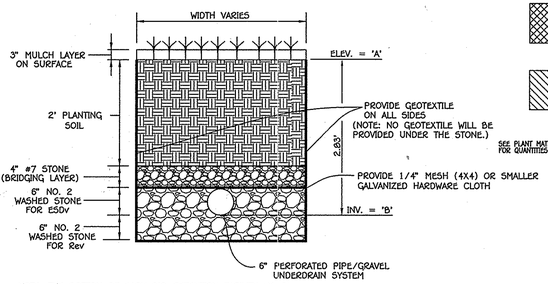
Plant material selection should be based on the goal of simulating a terrestrial forested community of native species. Bioretention simulates an upland-species ecosystem. The community should be dominated by trees, but have a distinct community of understory trees, shrubs and herbaceous materials. By creating a diverse, dense plant cover, a bioretention facility will be able to treat stormwater runoff and withstand urban stresses from insects, disease, drought, temperature, wind, and exposure.
The proper selection and installation of plant materials is key to a successful system. There are essentially three zones within a bioretention facility (Figure A.5). The lowest elevation supports plant species adapted to standing and fluctuating water levels. The middle elevation supports plants that like drier soil conditions, but can still tolerate occasional inundation by water. The outer edge
is the highest elevation and generally supports plants adapted to dryer conditions. A sample of appropriate plant materials for bioretention facilities are included in Table A.4. The layout of plant material should be flexible, but should follow the general principals described in Table A.5. The objective is to have a system, which resembles a random, and natural plant layout, while maintaining optimal conditions for plant establishment and growth. For a more extensive bioretention plan, consult ETAB, 1993 or Claytor and Schueler, 1997.



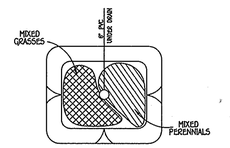
ROOF DOWN SPOUT DETAIL
NOT TO SCALE

OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS (M-6)

1. ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER IS REQUIRED. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING.
2. SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDER BEYOND TREATMENT. TREATMENT OF ALL DISEASED TREES AND SHRUBS AND REPLACEMENT OF ALL DEFICIENT STAKES AND WIRES.
3. MULCH SHALL BE INSPECTED EACH SPRING, REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.
4. SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS. WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.



NOTE: THE BOTTOM OF EACH BIO-RETENTION FACILITY (M-6) SHALL BE ROTOTILLED PRIOR TO STONE INSTALLATION.



MICRO-BIORETENTION PLANTING DETAIL
NOT TO SCALE

MIXED PERENNIALS * CUT-LEAF CONEFLOWER CHEROKEE FLOWER TRADESCANT ASTER

SHRUBS * INK BERRY ARROWWOOD BAYBERRY

MIXED GRASSES * VIRGINIA SWITCHGRASS PENNSYLVANIA SEDGE LITTLE BLUESTEM

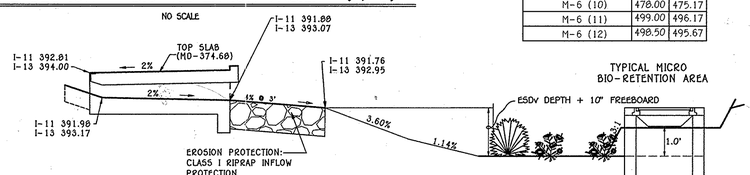
SEE PLANT MATERIAL CHARTS FOR QUANTITIES AND SPACING

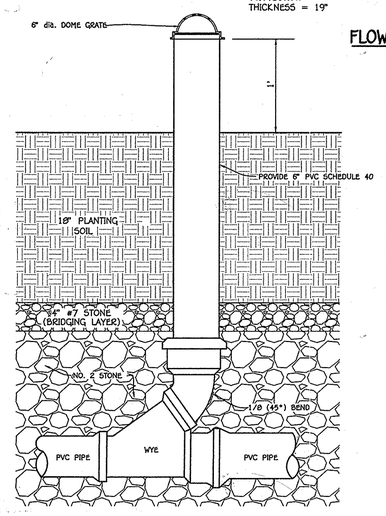
NOTE: PLANT MATERIAL MUST COVER AT LEAST 50% OF THE SURFACE AREA OF THE MICRO-BIORETENTION

FACILITY NO.	A	B
M-6 (1)	497.00	494.17
M-6 (2)	500.50	497.67
M-6 (3)	496.00	493.17
M-6 (4)	497.00	494.17
M-6 (5)	496.00	493.17
M-6 (6)	490.00	487.17
M-6 (7)	490.00	487.17
M-6 (8)	479.00	476.17
M-6 (9)	478.50	475.67
M-6 (10)	478.00	475.17
M-6 (11)	499.00	496.17
M-6 (12)	498.50	495.67

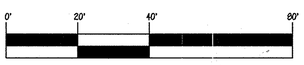
TYPICAL SECTION – BIO-RETENTION FACILITY (M-6)

NO SCALE





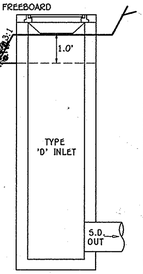
TYPICAL CLEAN-OUT DETAIL
NO SCALE



SCALE: 1" = 20'

SCHEMATIC SECTION FLOW INLET INTO MICRO BIO-RETENTION

NOT TO SCALE



NOTES:
UNDERDRAIN PIPE SHALL BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTMF 758, TYPE PS 28 OR AASHTO-M- 278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED 4" RIGID PIPE (e.g., PVC OR HDPE).

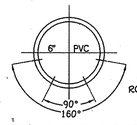
PERFORATIONS SHALL BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 1/4" (No. 4 OR 4 x 4) GALVANIZED HARDWARE CLOTH.

GRAVEL LAYER SHALL BE (No. 57 STONE PREFERRED) AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.

THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.

A RIGID, NON PERFORATED OBSERSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQ.FT.) TO PROVIDE A CLEANOUT PORT AND MONITOR PERFORMANCE OF THE FILTER.

A 4" LAYER OF PEA GRAVEL (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".



PIPE SIZE: 6"
HOLE SIZE: 3/8"
CENTER TO CENTER: 3"
ROWS OF HOLES: 2 @ 90°
2 @ 160° (+/-3°)

SCH40 PVC PERFORATED UNDERDRAIN PIPE DETAIL FOR HORIZONTAL DRAIN PIPE
NO SCALE

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

DRAINAGE AREA M-6 (1) MICRO-BIORETENTION PLANT MATERIAL		
QUANTITY	NAME	MAXIMUM SPACING (FT.)
186	MIXED PERENNIALS	1 FT.
93	SHRUBS / MIXED GRASSES	2 FT.

DRAINAGE AREA M-6 (2) MICRO-BIORETENTION PLANT MATERIAL		
QUANTITY	NAME	MAXIMUM SPACING (FT.)
495	MIXED PERENNIALS	1 FT.
247	SHRUBS / MIXED GRASSES	2 FT.

DRAINAGE AREA M-6 (3) MICRO-BIORETENTION PLANT MATERIAL		
QUANTITY	NAME	MAXIMUM SPACING (FT.)
369	MIXED PERENNIALS	1 FT.
185	SHRUBS / MIXED GRASSES	2 FT.

DRAINAGE AREA M-6 (4) MICRO-BIORETENTION PLANT MATERIAL		
QUANTITY	NAME	MAXIMUM SPACING (FT.)
165	MIXED PERENNIALS	1 FT.
82	SHRUBS / MIXED GRASSES	2 FT.

DRAINAGE AREA M-6 (5) MICRO-BIORETENTION PLANT MATERIAL		
QUANTITY	NAME	MAXIMUM SPACING (FT.)
98	MIXED PERENNIALS	1 FT.
49	SHRUBS / MIXED GRASSES	2 FT.

DRAINAGE AREA M-6 (6) MICRO-BIORETENTION PLANT MATERIAL		
QUANTITY	NAME	MAXIMUM SPACING (FT.)
262	MIXED PERENNIALS	1 FT.
130	SHRUBS / MIXED GRASSES	2 FT.

DRAINAGE AREA M-6 (7) MICRO-BIORETENTION PLANT MATERIAL		
QUANTITY	NAME	MAXIMUM SPACING (FT.)
113	MIXED PERENNIALS	1 FT.
56	SHRUBS / MIXED GRASSES	2 FT.

DRAINAGE AREA M-6 (8) MICRO-BIORETENTION PLANT MATERIAL		
QUANTITY	NAME	MAXIMUM SPACING (FT.)
335	MIXED PERENNIALS	1 FT.
167	SHRUBS / MIXED GRASSES	2 FT.

DRAINAGE AREA M-6 (9) MICRO-BIORETENTION PLANT MATERIAL		
QUANTITY	NAME	MAXIMUM SPACING (FT.)
332	MIXED PERENNIALS	1 FT.
166	SHRUBS / MIXED GRASSES	2 FT.

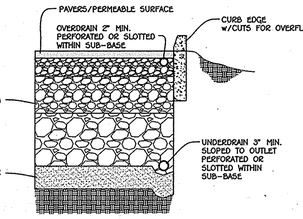
DRAINAGE AREA M-6 (10) MICRO-BIORETENTION PLANT MATERIAL		
QUANTITY	NAME	MAXIMUM SPACING (FT.)
296	MIXED PERENNIALS	1 FT.
148	SHRUBS / MIXED GRASSES	2 FT.

DRAINAGE AREA M-6 (11) MICRO-BIORETENTION PLANT MATERIAL		
QUANTITY	NAME	MAXIMUM SPACING (FT.)
80	MIXED PERENNIALS	1 FT.
40	SHRUBS / MIXED GRASSES	2 FT.

DRAINAGE AREA M-6 (12) MICRO-BIORETENTION PLANT MATERIAL		
QUANTITY	NAME	MAXIMUM SPACING (FT.)
93	MIXED PERENNIALS	1 FT.
47	SHRUBS / MIXED GRASSES	2 FT.

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

a. The Owner shall periodically sweep (or vacuum porous concrete pavement) the pavement surfaces to reduce sediment accumulation and ensure continued surface porosity. Sweeping should be performed at least twice annually with a commercial cleaning unit. Washing or compressed air units should not be used to perform surface cleaning.
b. The Owner shall periodically clean drainage pipes, inlets, stone edge drains and other structures within or draining to the subbase.
c. The Owner shall use deicers in moderation. Deicers should be non-toxic and be applied either as calcium magnesium acetate or as pretreated salt.
d. The Owner shall ensure snow plowing is performed carefully with blades set one inch above the surface. Plowed snow piles and snowmelt should not be directed to permeable pavement.



TYPICAL SECTION – PERMEABLE PAVEMENT w/ OVERDRAIN & UNDERDRAIN
NO SCALE

Construction Specifications for Environmental Site Design Practices

B.4.B Specifications for Permeable Pavements & Reinforced Turf

These specifications include information on acceptable materials for typical applications and are not exclusive or limiting. The designer is responsible for developing detailed specifications for individual projects and specific conditions.

1. Pervious Concrete Specifications

Design Thickness – Pervious concrete applications shall be designed so that the thickness of the concrete slab shall support the traffic and vehicle types that will be carried. Applications may be designed using either standard pavement procedures (e.g., AASHTO, ACI 325.9R, ACI 330R) or using structural values derived from flexible pavement design procedures.

Mix & Installation -- Traditional Portland cements (ASTM C 150, C 1157) may be used in pervious concrete applications. Phosphorus admixtures may also be used. Materials should be tested (e.g., trial batching) prior to construction so that critical properties (e.g., settling time, rate of strength development, porosity, permeability) can be determined.

Aggregate -- Pervious concrete contains a limited fine aggregate content. Commonly used gradations include ASTM C 33 No. 67 (3/4 in. to No. 4), No. 8 (1/2 in. to No. 16) and No. 89 (3/8 in. to No. 50) sieves. Single-sized aggregate (up to 1 inch) may also be used.

Water Content -- Water-to-cement ratios between 0.27 and 0.30 are used routinely with proper inclusion of chemical admixtures. Water quality should meet ACI 308. As a general rule, potable water should be used although recycled concrete production water meeting ASTM C 94 or AASHTO M 157 may also be used.

Admixtures -- Chemical admixtures (e.g., retarders or hydration-stabilizers) are used to obtain special properties in pervious concrete. Use of admixtures should meet ASTM C 494 (chemical admixtures) and ASTM C 260 (air entraining admixtures) and closely follow manufacturer's recommendations.

Base Course -- The base course shall be AASHTO No. 3 or 4 course aggregate with an assumed open pore space of 30% (n = 0.30).

2. Permeable Interlocking Concrete Pavements (PICP)

Paver Blocks – Blocks should be either 3 1/8 in. or 4 in. thick, and meet ASTM C 936 or CSA A23 1.2 requirements. Applications should have 20% or more (40% preferred) of the surface area open. Installation should follow manufacturer's instructions, except that infill and base course materials and dimensions specified in this Appendix shall be followed.

Infill Materials and Leveling Course -- Openings shall be filled with ASTM C-33 graded sand or sandy loam. PICP blocks shall be placed on a one-inch thick leveling course of ASTM C-33 sand.

Base Course – The base course shall be AASHTO No. 3 or 4 course aggregate with an assumed open pore space of 30% (n = 0.30).

Underdrains – Underdrains should meet the following criteria:
- Pipe- Should be 4" to 6" diameter, slotted or perforated rigid plastic pipe (ASTMF 758, Type PS 28, or AASHTO-M-278) in a gravel layer. The preferred material is slotted, 4" rigid pipe (e.g., PVC or HDPE).
- Perforations – If perforated pipe is used, perforations should be 3/8" diameter located 6" on center with a minimum of four holes per row. Pipe shall be wrapped with a 1/4" (No. 4 or 4x4) galvanized hardware cloth.
- Gravel – The gravel layer shall be at least 3" thick above and below the underdrain.
- The main collector pipe shall be at a minimum 0.5% slope.
- A rigid, non-perforated observation well must be provided (one per every 1,0000 square feet) to provide a clean-out port and monitor performance of the filter section.
- A 4" layer of sand shall be located between the filter media and underdrain to prevent migration of fines into the underdrain.

Note:
These practices may not be constructed until all contributing drainage area has been stabilized

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

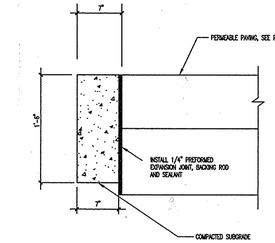
1. Remove grass clippings when mowing areas adjacent to the permeable pavement system.
2. Use deicers moderation. When used, deicers should be non-toxic and organic and can be applied either as calcium magnesium acetate or as pretreated salt.
3. Snow plowing should be done carefully with blades set one-inch higher than normal.
4. Plowed snow piles and snowmelt should not be directed to permeable pavement.
5. The repair or replacement of components must meet the original design specifications.

Quarterly and after every large storm event:

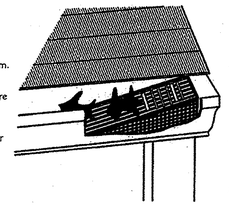
1. Ensure that the permeable pavement surface is free of any obstructions such that may clog or inhibit the system from performing as designed, such as sand, sediment, mulch, leaves, branches and other debris.
2. Inspect the permeable pavement system for standing water in order to verify that the system is dewatering between storm events as required.
3. Inspect cleanouts, sampling ports, underdrain outlets, and structures. Clear any obstructions encountered.
4. Maintain stable ground cover must be maintained in areas draining onto the permeable pavement. Inspect lawn and landscape areas contributing drainage to the system. Repair any erosion immediately.

Annually:

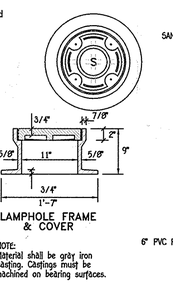
1. Vacuum sweep permeable pavement surface with a commercial cleaning unit.
2. Inspect the permeable pavement surface for deterioration.
3. Clean pipes, inlets, underdrains drains, overdrains and other structures within or draining to the permeable pavement system.



CONCRETE EDGING
N.T.S.

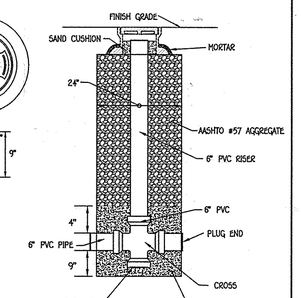


Gutter Drain Filter (Typical)

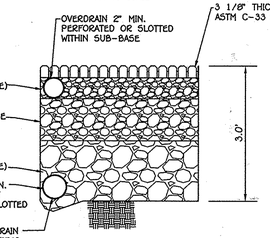


LAMPHOLE FRAME & COVER

NOTE: Material shall be grey iron casting. Castings must be machined on bearing surfaces.



CLEANOUT/ WATER QUALITY SAMPLING PORT DETAIL
NOT TO SCALE



NOTE: ALL STONE IS TO BE WASHED

TYPICAL SECTION – PERMEABLE PAVEMENT w/ OVERDRAIN & UNDERDRAIN
NO SCALE

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK – 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 – 2855

NO.	REVISION	DATE
1	REVISE FINAL GRADING & CISTERN WITH ROOF LEADERS	12/4/15

PROFESSIONAL CERTIFICATION

"Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional land surveyor under the laws of the State of Maryland, License No. 21476, Expiration Date: 07/14/2015."

Frank Manalansan II 8/1/14
Frank Manalansan II DATE

APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.

for Maura Rossman 9/2/2014
COUNTY HEALTH OFFICER DATE

#21476

STATE OF MARYLAND — FRANK JOHN MANALANSAN II — No. 21476 — PROFESSIONAL LAND SURVEYOR

Frank Manalansan II

BUILDER
RYAN HOMES
9720 PATUXENT WOODS DRIVE
COLUMBIA, MARYLAND, 21043
410-796-0900

OWNER
WAVERLY WOODS DEVELOPMENT CORPORATION
P.O. BOX 30
GLENELG, MARYLAND 21737-0030

DEVELOPER
WAVERLY WOODS DEVELOPMENT CORPORATION,
P.O. BOX 30
GLENELG, MARYLAND
21737-0030

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — Date 10/06/14
Chief, Development Engineering Division — Date 9.18.14
Director – Department of Planning and Zoning — Date 10/6/14

PROJECT			SECTION	PARCEL NOS.
CITY's WAVERLY WOODS, SECTION 14 PARCEL G			14	P/O 249
PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
22944 - 22953	3 & 4	PSC	16	THIRD	60300
WATER CODE			SEWER CODE	
K-02			5992000	

STORMWATER MANAGEMENT NOTES AND DETAILS

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
PARCEL 'G' (Plat Nos. 22944 Thru 22953
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 21 OF 31

SDP-13-031

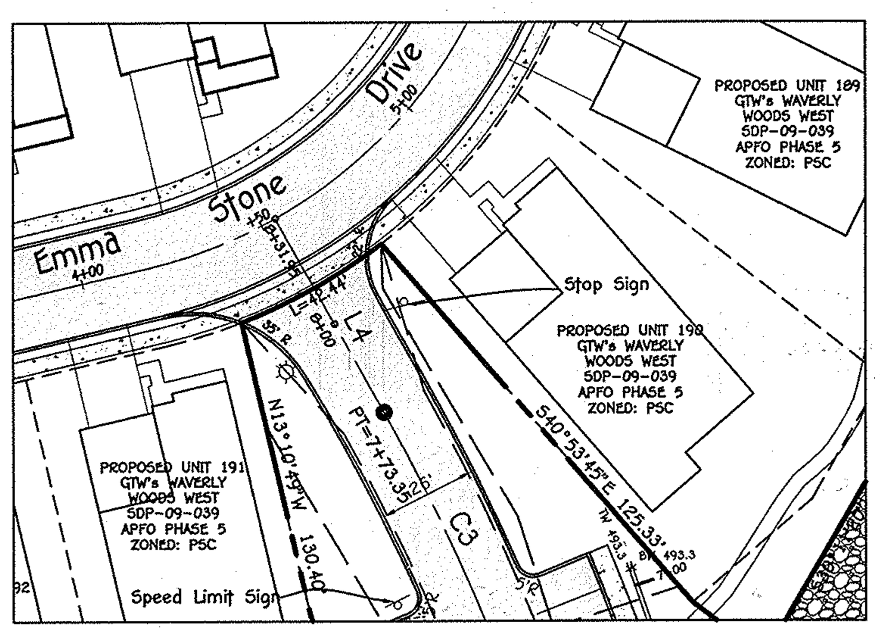
PROPOSED ALIGNMENT CURVE TABLE

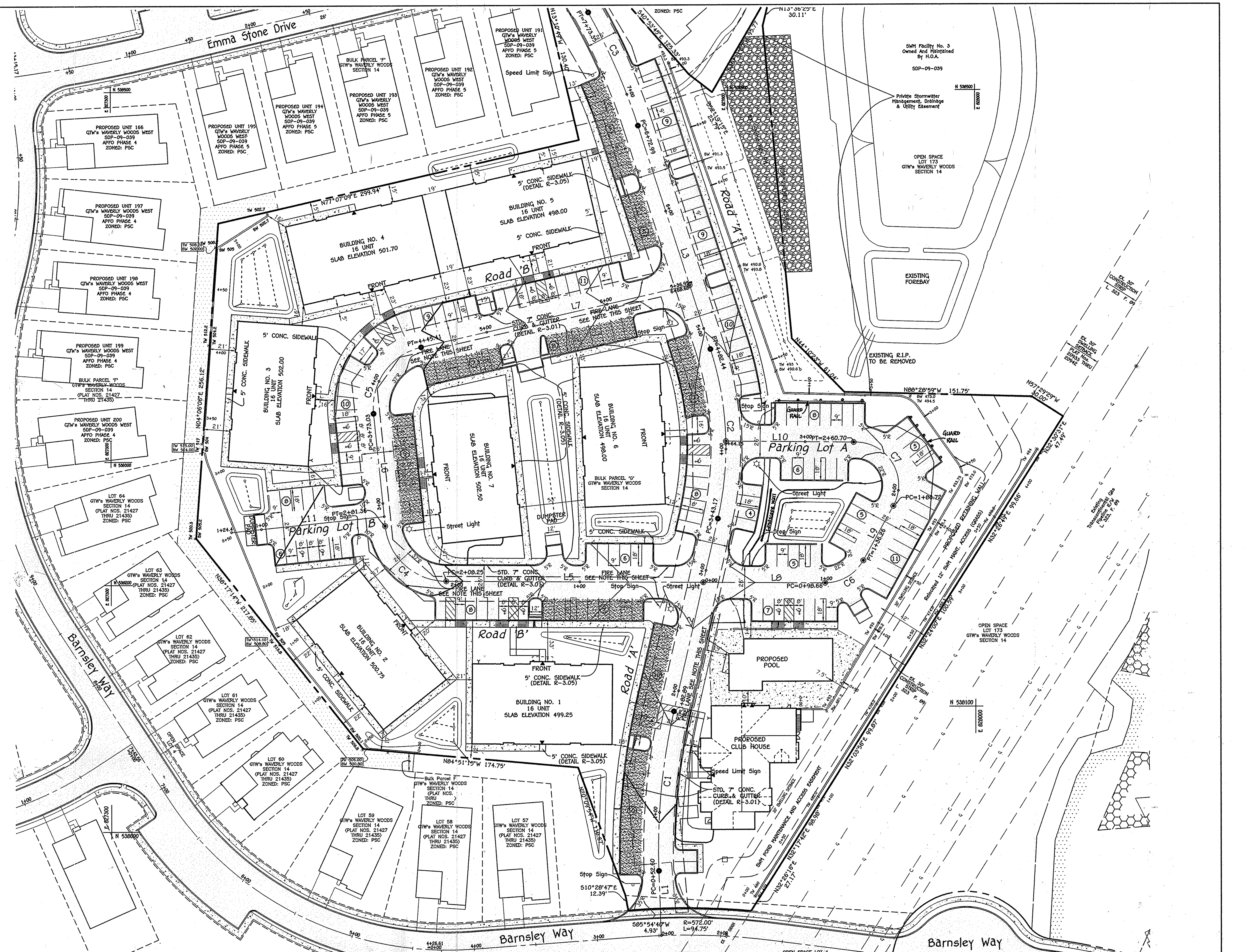
CURVE #	ROAD NAME	STATION	RADIUS	LENGTH	DELTA	TANGENT	CHORD	
C1	CL-Road 'A'	STA 0+52.60 TO STA 1+82.89	500.60'	130.30'	14°54'47"	65.52'	N5° 29' 36.41"E	129.93'
C2	CL-Road 'A'	STA 3+43.17 TO STA 4+82.44	259.41'	139.26'	30°45'34"	71.35'	N2° 25' 49.90"W	137.60'
C3	CL-Road 'A'	STA 6+72.99 TO STA 7+73.35	500.00'	100.35'	11°29'59"	50.35'	N23° 33' 36.12"W	100.19'
C4	CL-Road 'B'	STA 2+08.25 TO STA 2+81.36	50.00'	73.11'	83°46'40"	44.84'	N47° 41' 23.34"W	66.77'
C5	CL-Road 'B'	STA 3+73.03 TO STA 4+45.41	50.00'	72.38'	82°56'18"	44.19'	N35° 40' 16.10"E	66.22'
C6	CL-Parking Lot 'A'	STA 0+98.66 TO STA 1+36.26	35.00'	37.60'	61°33'27"	20.85'	N59° 39' 01.66"E	35.82'
C7	CL-Parking Lot 'A'	STA 1+86.72 TO STA 2+60.70	35.00'	73.97'	121°05'45"	61.98'	N31° 40' 34.55"W	60.95'

PROPOSED ALIGNMENT LINE TABLE

LINE #	ROAD NAME	STATION	DIRECTION	LENGTH
L1	CL-Road 'A'	STA 0+00 TO STA 0+52.60	N 01°58'19" W	52.60'
L2	CL-Road 'A'	STA 1+82.89 TO STA 3+43.17	N 12°56'57" E	160.28'
L3	CL-Road 'A'	STA 4+82.44 TO STA 6+72.99	N 17°48'37" W	190.56'
L4	CL-Road 'A'	STA 7+73.35 TO STA 8+31.95	N 29°18'36" W	58.60'
L5	CL-Road 'B'	STA 0+00 TO STA 2+08.25	N 89°34'34" W	208.25'
L6	CL-Road 'B'	STA 2+81.36 TO STA 3+73.03	N 05°48'03" W	91.67'
L7	CL-Road 'B'	STA 4+45.41 TO STA 6+68.68	N 77°08'34" E	223.27'
L8	CL-Parking Lot 'A'	STA 0+00 TO STA 0+98.66	S 89°34'15" E	98.66'
L9	CL-Parking Lot 'A'	STA 1+36.26 TO STA 1+86.72	N 28°52'18" E	50.46'
L10	CL-Parking Lot 'A'	STA 2+60.70 TO STA 3+64.15	N 89°21'11" W	103.46'
L11	CL-Parking Lot 'B'	STA 0+00.00 TO STA 1+24.40	S 84°11'57" W	124.40'

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014





NOTE:

THE DEVELOPER WILL WORK WITH THE OFFICE OF THE FIRE MARSHAL TO ESTABLISH MARKINGS NECESSARY TO SHOW THE APPROPRIATE LOCATION OF THE REQUIRED FIRE LANE FOR THE ACCESS OF EMERGENCY VEHICLES AS NOTED ON THIS PLAN.

0' 40' 80' 160'

SCALE: 1" = 40'

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

NO.	REVISION	DATE
1	REVISE FINAL GRADING & CISTERN WITH ROOF LEADERS	12/4/15

PROFESSIONAL CERTIFICATION
"Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional land surveyor under the laws of the State of Maryland, License No. 21476, Expiration Date: 07/14/2015."

Frank Manalansan II — 8/9/14 DATE

APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.
COUNTY HEALTH OFFICER — 9/2/2014 DATE

#21476
STATE OF MARYLAND FRANK JOHN MANALANSAN II No. 21476 PROFESSIONAL LAND SURVEYOR
Frank Manalansan II

OWNER
WAVERLY WOODS DEVELOPMENT CORPORATION
P.O. BOX 30
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BUILDER
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COLUMBIA MARYLAND, 21043
410-796-0908

DEVELOPER
WAVERLY WOODS DEVELOPMENT CORPORATION,
P.O BOX 30
GLENELG, MARYLAND 21737-0030

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Chief, Division of Land Development — 10/06/14 Date
Chief, Development Engineering Division — 9.18.14 Date
Director - Department of Planning and Zoning — 10/6/14 Date

PROJECT			SECTION		PARCEL NOS.
GTW's WAVERLY WOODS, SECTION 14 PARCEL G			14		P/O 249
PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
22944-22953	3 & 4	PSC	16	THIRD	60300
WATER CODE			SEWER CODE		
K-02			5992000		

GEOMETRY PLAN

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
PARCEL 'G' (Plat Nos. 22944 Thru 22953
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 22 OF 31

SDP-13-031

SCHEDULE B
PARKING LOT INTERNAL LANDSCAPING

	APARTMENTS
NUMBER OF PARKING SPACES	210
NUMBER OF TREES REQUIRED (1:10)	22
NUMBER OF TREES PROVIDED SHADE TREES OTHER TREES (2:1 SUBSTITUTE)	22 -

SCHEDULE C
RESIDENTIAL DEVELOPMENT INTERNAL LANDSCAPING

	APARTMENTS
NUMBER OF DWELLING UNITS	112
NUMBER OF TREES REQUIRED (1:3 DU APTS)	37
NUMBER OF TREES PROVIDED SHADE TREES OTHER TREES (2:1 SUBSTITUTE)	37

NOTE:
AN ALTERNATIVE TO INTERNAL LANDSCAPING FOR BUILDINGS 3, 6, AND 7 AS REQUIRED BY THE LANDSCAPE MANUAL WAS APPROVED AND ALLOWS FOR: 1) USE OF A TYPE 'E' LANDSCAPE BUFFER RATHER THAN REQUIRED PLANTING RATIOS FOR APARTMENTS AND 2) REDUCTION IN THE LANDSCAPE AREA WIDTH FROM 15' TO 12'. THE REQUIRED PLANTING FOR THE AREAS OF ALTERNATIVE COMPLIANCE FOR BUILDINGS 3 6 AND 7 HAVE BEEN ADDED TO SCHEDULE 'A' LOCATED ON THIS SHEET.

SCHEDULE A – PERIMETER LANDSCAPING

PERIMETER	CATEGORY (PROPERTIES / ROADWAYS)	LANDSCAPE TYPE	LINEAR FEET OF ROADWAY FRONTAGE PERIMETER	CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NUMBER OF PLANTS REQUIRED			NUMBER OF PLANTS PROVIDED		
						SHADE TREES	EVERGREEN TREES	SHRUBS	SHADE TREES	EVERGREEN TREES	SHRUBS
P-1	APTS. TO SFD	C	1201.97'	NO	YES 526' LONG WALL	17	34	-	17	34	-
P-2	NON-RES. TO RES.	C	148.72'	NO	NO	4	7	-	4	7	-
BUILDING 3	APT./SFA TO PARKING	E	112'	-	-	3	-	28	3	-	28
BUILDING 6	APT./SFA TO PARKING	E	112'	-	-	3	-	28	3	-	28
BUILDING 7	APT./SFA TO PARKING	E	112'	-	-	3	-	28	3	-	28

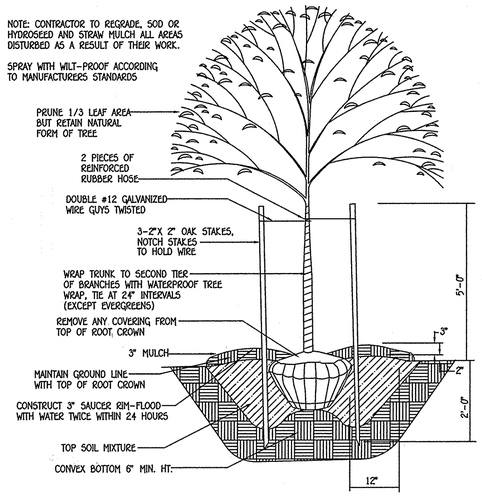
LANDSCAPING PLANT LIST (SCHEDULE A, B & C)

SYMBOL	QUANTITY	BOTANICAL AND COMMON NAME	SIZE	COMMENTS
	39	ACER RUBRUM 'ARMSTRONG' RED MAPLE	2 1/2-3" CAL.	
	25	PRUNUS SARGENTII SARGENT CHERRY	2 1/2-3" CAL.	
	25	QUERCUS COCCINEA SCARLET OAK	5'-6' HT.	
	41	CEDRUS ATLANTICA/ ATLAS CEDAR	6'-8' HT.	
	24	PICEA ABIES NORWAY SPRUCE	6'-8' HT.	LANDSCAPE BUFFER ALONG RETAINING WALL #1
	22	ILEX OPACA AMERICAN HOLLY	5'-6' HT.	LANDSCAPE BUFFER ALONG RETAINING WALL #1
	15	THUJA PLICATA GREEN GIANT ARBORVITAE	6'-8' HT.	LANDSCAPE BUFFER ALONG RETAINING WALL #1
	84	ABELIA X GRANDIFLORA GLOSSY ABELIA	18" - 24" SP.	

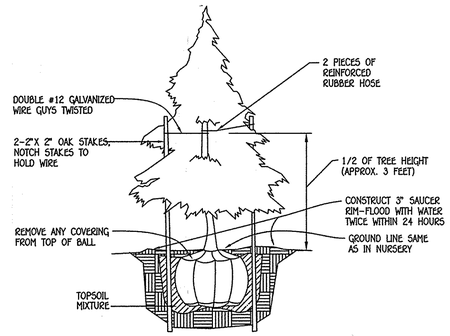
NOTE:
THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL". FINANCIAL SURETY FOR THE REQUIRED 89 SHADE TREES, 102 EVERGREEN TREES AND 84 SHRUBS HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF $44,520.00.

0' 30' 60' 200'

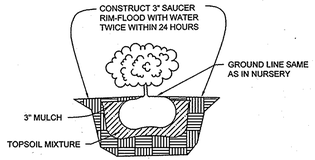
SCALE: 1" = 30'



TREE PLANTING DETAIL
NOT TO SCALE



EVERGREEN PLANTING DETAIL
NOT TO SCALE



SHRUB PLANTING DETAIL

PLANTING SPECIFICATIONS

PLANTS, RELATED MATERIAL, AND OPERATIONS SHALL MEET THE DETAILED DESCRIPTION AS GIVEN ON THE PLANS AND AS DESCRIBED HEREIN.

ALL PLANT MATERIAL, UNLESS OTHERWISE SPECIFIED, SHALL BE NURSERY GROWN, UNIFORMLY BRANCHED, HAVE A VIGOROUS ROOT SYSTEM, AND SHALL CONFORM TO THE SPECIES, SIZE, ROOT AND SHAPE SHOWN ON THE PLANT LIST AND THE AMERICAN ASSOCIATION OF NURSERYMEN (ANN) STANDARDS. PLANT MATERIAL SHALL BE HEALTHY, VIGOROUS, FREE FROM DEFECTS, DECAY, DISFIGURING, ROOTS, SUN SCALD INJURIES, ABRASIONS OF THE BARK, PLANT DISEASE, INSECT PEST EGGS, BORERS AND ALL FORMS OF INSECT INFESTATIONS OR UNSATISFACTORY DISFIGUREMENTS. PLANT MATERIAL THAT IS WEAK OR WHICH HAS BEEN CUT BACK FROM LARGER GRADES TO MEET SPECIFIED REQUIREMENTS WILL BE REJECTED. TREES WITH FORKED LEADERS WILL NOT BE ACCEPTED. ALL PLANTS SHALL BE FRESHLY DUG, NO HEALED-IN PLANTS FROM COLD STORAGE WILL BE ACCEPTED.

UNLESS OTHERWISE SPECIFIED, ALL GENERAL CONDITIONS, PLANTING OPERATIONS, DETAILS AND PLANTING SPECIFICATION SHALL CONFORM TO "LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREAS", (HEREINAFTER "LANDSCAPE GUIDELINES") APPROVED BY THE LANDSCAPE CONTRACTORS ASSOCIATION OF METROPOLITAN WASHINGTON AND THE POTOMAC CHAPTER OF THE MARYLAND SOCIETY OF LANDSCAPE ARCHITECT, LATEST EDITION, INCLUDING ALL ADDENDA.

CONTRACTOR SHALL BE OBLIGATED TO GUARANTEE ALL PLANT MATERIAL FOR A PERIOD OF ONE YEAR AFTER DATE OF ACCEPTANCE IN ACCORDANCE WITH THE APPROPRIATE SECTION OF THE LANDSCAPE GUIDELINES. CONTRACTOR'S ATTENTION IS DIRECTED TO THE MAINTENANCE REQUIREMENTS FOUND WITHIN THE ONE YEAR SPECIFICATIONS INCLUDING WATERING, AND REPLACEMENT OF SPECIFIED PLANT MATERIAL.

CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING UTILITY COMPANIES, UTILITY CONTRACTORS AND "MISS UTILITY" A MINIMUM OF 48 HOURS PRIOR TO BEGINNING ANY WORK. CONTRACTOR MAY FIELD FENCE ADJUSTMENTS IN SPACING AND LOCATION OF PLANT MATERIAL TO AVOID CONFLICTS WITH UTILITIES. DAMAGE TO EXISTING STRUCTURE AND UTILITIES SHALL BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR.

PROTECTION OF EXISTING VEGETATION TO REMAIN SHALL BE ACCOMPLISHED BY THE TEMPORARY INSTALLATION OF 4 FOOT HIGH SNOW FENCE OR BLAZE ORANGE SAFETY FENCE AT THE DRIP LINE.

CONTRACTOR IS RESPONSIBLE FOR INSTALLING ALL MATERIAL IN THE PROPER PLANTING SEASON FOR EACH PLANT TYPE. ALL PLANTING IS TO BE COMPLETED WITHIN THE GROWING SEASON OF COMPLETION OF SITE CONSTRUCTION.

BID SHALL BE BASE ON ACTUAL SITE CONDITIONS. NO EXTRA PAYMENT SHALL BE MADE FOR WORK ARISING FROM SITE CONDITIONS DIFFERING FROM THOSE INDICATED ON DRAWINGS AND SPECIFICATIONS.

PLANT QUANTITIES ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. IF DISCREPANCIES EXIST BETWEEN QUANTITIES SHOWN ON PLAN AND THOSE SHOWN ON THE PLANT LIST, THE QUANTITIES ON THE PLAN TAKE PRECEDENCE.

ALL SHRUBS SHALL BE PLANTED IN CONTINUOUS TRENCHES OR PREPARED PLANTING BEDS AND MULCHED WITH COMPOSTED HARDWOOD MULCH AS DETAILS AND SPECIFIED EXCEPT WHERE NOTED ON PLANS.

POSITIVE DRAINAGE SHALL BE MAINTAINED IN PLANTING BEDS (2 PERCENT SLOPES).

PLANTING MIX SHALL BE AS FOLLOWS: DECIDUOUS PLANTS - TWO PARTS TOPSOIL, ONE PART WELL-ROTTED COW OR HORSE MANURE. ADD 3 LBS. OF STANDARD FERTILIZER PER CUBIC YARD OF PLANTING MIX. EVERGREEN PLANTS - TWO PARTS TOPSOIL, ONE PART HUMUS OR OTHER APPROVED ORGANIC MATERIAL. ADD 3 LBS. OF EVERGREEN (ACIDIC) FERTILIZER PER CUBIC YARD OF PLANTING MIX. TOPSOIL SHALL CONFORM TO THE LANDSCAPE GUIDELINES.

WEED CONTROL: INCORPORATE A PRE-EMERGENT HERBICIDE INTO THE PLANTING BED FOLLOWING RECOMMENDED RATES ON THE LABEL. CAUTION: BE SURE TO CAREFULLY CHECK THE CHEMICAL USED TO ASSURE ITS ADAPTABILITY TO THE SPECIFIC GROUND COVER TO BE TREATED.

ALL AREAS WITHIN CONTRACT LIMITS DISTURBED DURING OR PRIOR TO CONSTRUCTION NOT DESIGNATED TO RECEIVE PLANTS AND MULCH SHALL BE FINE GRADED AND SEEDED.

THIS PLAN IS INTENDED FOR LANDSCAPE USE ONLY. SEE OTHER PLAN SHEETS FOR MORE INFORMATION ON GRADING, SEDIMENT CONTROL, LAYOUT, ETC.

LANDSCAPE DEVELOPER'S CERTIFICATE

I/We certify that the landscaping shown on this plan will be done according to the plan, Section 16.124 of the Howard County Code and the Howard County Landscape Manual. I/We further certify that upon completion a certification of landscape installation accompanied by an executed one year guarantee of plant materials will be submitted to the Department of Planning and Zoning.

Name _____ Date 10/2/14

This plan has been prepared in accordance with the provision of Section 16.124 of the Howard County Code and Landscape Manual. Financial surety for the required landscaping will be posted as part of the developer's agreement.

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

NO.	REVISION	DATE

PROFESSIONAL CERTIFICATION

"Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional land surveyor under the laws of the State of Maryland, License No. 21476, Expiration Date: 07.14/2015."

Frank John Manalansan II 8/6/14
Frank Manalansan II DATE

APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.

RDixon for Maura Rossman 9/3/2014
COUNTY HEALTH OFFICER DATE

#21476

STATE OF MARYLAND — FRANK JOHN MANALANSAN II — No. 21476 — PROFESSIONAL LAND SURVEYOR

Frank John Manalansan II

BUILDER
RYAN HOMES
9720 PATUXENT WOODS DRIVE
COLUMBIA MARYLAND, 21043
410-796-0908

OWNER
WAVERLY WOODS DEVELOPMENT CORPORATION
P.O. BOX 30
GLENELG, MARYLAND 21737-0030

DEVELOPER
WAVERLY WOODS DEVELOPMENT CORPORATION,
P.O. BOX 30
GLENELG, MARYLAND
21737-0030

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

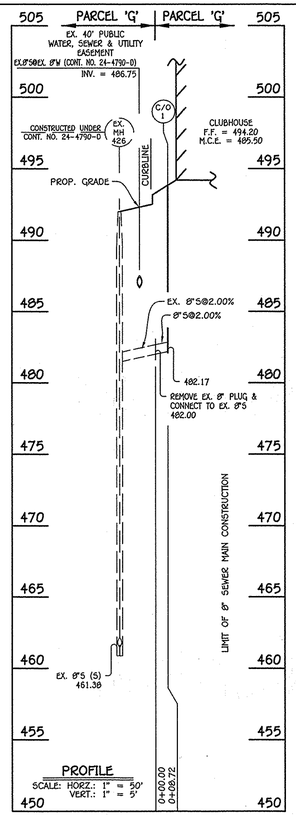
Chief, Division of Land Development — Date 10/06/14
Chief, Development Engineering Division — Date 9.18.14
Director - Department of Planning and Zoning — Date 10/6/14

PROJECT				SECTION		PARCEL NOS.	
GTW's WAVERLY WOODS, SECTION 14 PARCEL G				14		P/O 249	
PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.		
22944 - 22953	3 & 4	PSC	16	THIRD	60300		
WATER CODE		SEWER CODE					
K-02		5992000					

LANDSCAPE PLAN NOTES & DETAILS

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
PARCEL 'G' (Plat Nos. Thru
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 17 OF 31

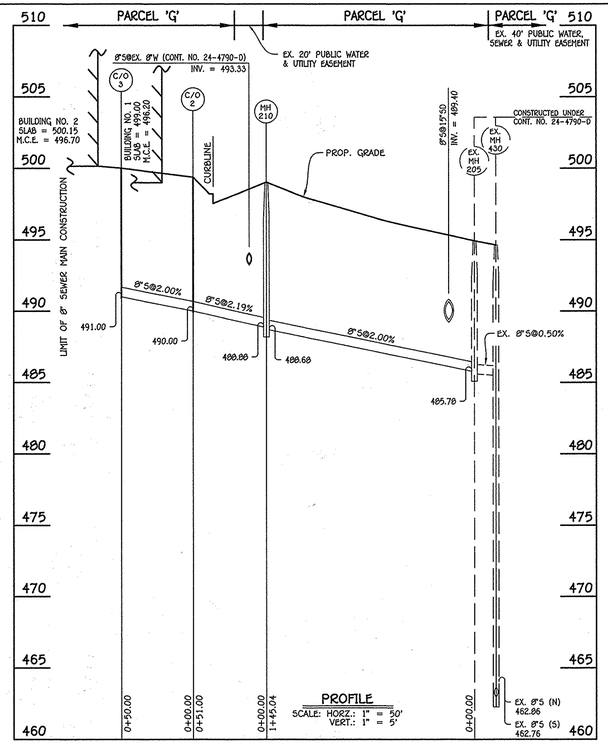
SDP-13-031



8" SEWER MAIN: CLUBHOUSE

MANHOLE TABULATION CHART			
NO.	NORTHING	EASTING	RIM ELEVATION
EX. 8" PLUG	538094.53	827770.57	---
C/O 1	538092.57	827779.07	493.85

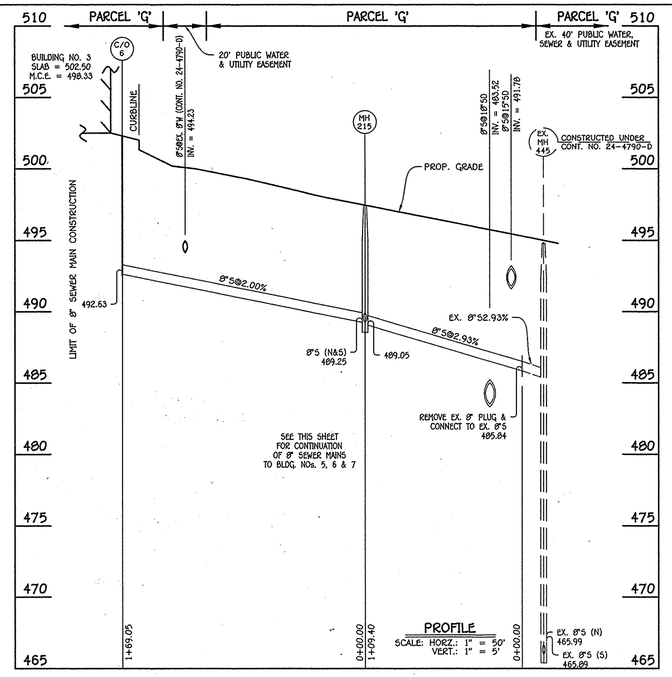
NOTE: SET C/O 1 RIM FLUSH W/PROPOSED GRADE.



8" SEWER MAIN: BUILDING NOs. 1 & 2

MANHOLE TABULATION CHART			
NO.	NORTHING	EASTING	RIM ELEVATION
MH 210	538208.28	827610.43	499.03
C/O 2	538157.28	827610.43	499.37
C/O 3	538157.28	827560.43	500.05

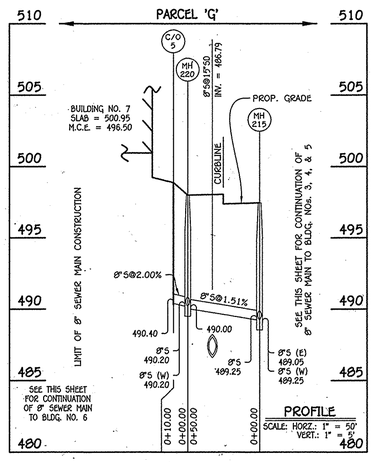
NOTE: SET MH & C/O RIMS FLUSH W/PROPOSED GRADE.



8" SEWER MAIN: BUILDING NO. 3

MANHOLE TABULATION CHART			
NO.	NORTHING	EASTING	RIM ELEVATION
EX. 8" PLUG	538430.88	827746.47	---
MH 215	538406.53	827639.81	497.45
C/O 6	538368.92	827475.00	502.30

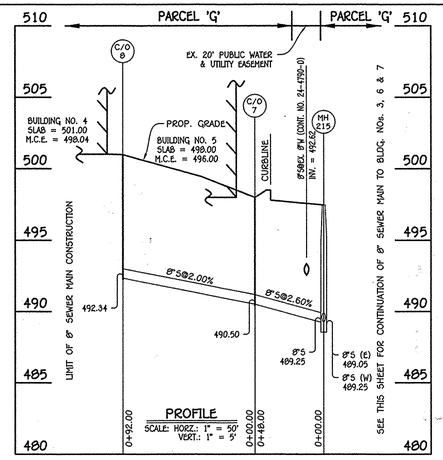
NOTE: SET MH & C/O RIMS FLUSH W/PROPOSED GRADE.



8" SEWER MAIN: BUILDING NO. 7

MANHOLE TABULATION CHART			
NO.	NORTHING	EASTING	RIM ELEVATION
MH 215	538406.53	827639.81	497.45
MH 220	538356.91	827645.92	498.00
C/O 5	538355.68	827635.99	498.88

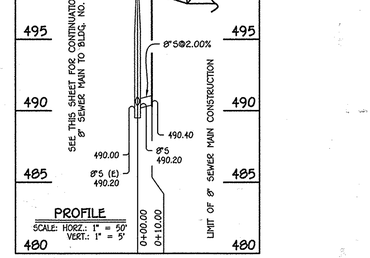
NOTE: SET MH & C/O RIMS FLUSH W/PROPOSED GRADE.



8" SEWER MAIN: BUILDING NOs. 4 & 5

MANHOLE TABULATION CHART			
NO.	NORTHING	EASTING	RIM ELEVATION
MH 215	538406.53	827639.81	497.45
C/O 7	538453.32	827629.11	498.00
C/O 8	538432.85	827539.42	500.96

NOTE: SET MH & C/O RIMS FLUSH W/PROPOSED GRADE.



8" SEWER MAIN: BUILDING NO. 6

MANHOLE TABULATION CHART			
NO.	NORTHING	EASTING	RIM ELEVATION
MH 220	538356.91	827645.92	498.00
C/O 4	538358.12	827655.84	498.35

NOTE: SET MH & C/O RIMS FLUSH W/PROPOSED GRADE.

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

0' 50' 100' 200'

SCALE: 1" = 50'

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

NO.	REVISION	DATE

PROFESSIONAL CERTIFICATION

"Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional land surveyor under the laws of the State of Maryland, License No. 12043, Expiration Date: 07/16/2016."

PAUL W. KRIEBEL 08/12/14
PAUL W. KRIEBEL DATE

#12043

STATE OF MARYLAND PAUL WILSON KRIEBEL 12043 REGISTERED PROFESSIONAL ENGINEER

PAUL W. KRIEBEL

BUILDER
RYAN HOMES
9720 PATUXENT WOODS DRIVE
COLUMBIA MARYLAND, 21043
410-796-0900

OWNER
WAVERLY WOODS DEVELOPMENT CORPORATION
P.O. BOX 30
GLENELG, MARYLAND 21737-0030

DEVELOPER
WAVERLY WOODS DEVELOPMENT CORPORATION,
P.O. BOX
GLENELG, MARYLAND
21737-0030

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — Date 10/06/14
Chief, Development Engineering Division — Date 9.18.14
Director - Department of Planning and Zoning — Date 10/8/14

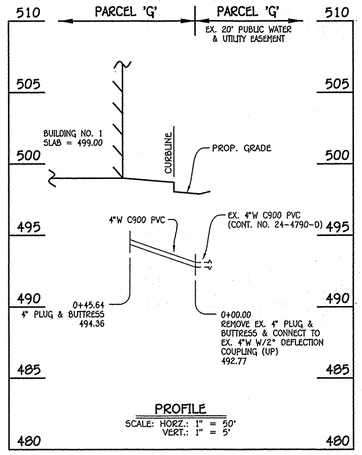
PROJECT				SECTION		PARCEL NOS.
GTW's WAVERLY WOODS, SECTION 14 PARCEL G				14		P/O 249
PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.	
22944-22953	3 & 4	PSC	16	THIRD	60300	
WATER CODE			SEWER CODE			
K-02			5992000			

PRIVATE SEWER MAINS:
PROFILES & CHARTS

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
PARCEL 'G' (Plat Nos. Thru
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 18 OF 31

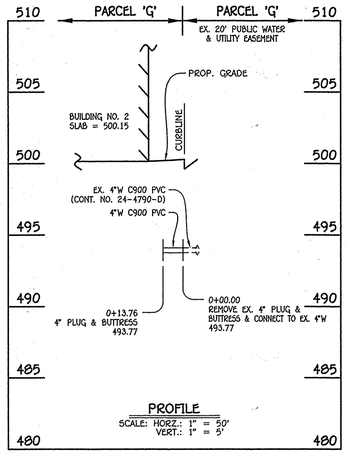
SDP-13-031

I:\30000\30770\dwg\Water & Sewer Contract\Final Plan\30770-S004 Water and Sewer Contract Plan.dwg, 8/11/2014 4:17:00 PM



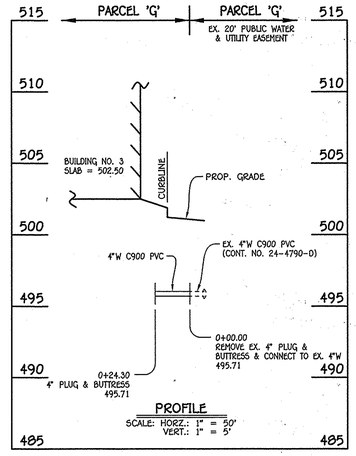
4" WATER MAIN: BUILDING NO. 1

WATER MAIN TABULATION CHART			
W.M. STA.	APPURTENANCE	NORTHING	EASTING
4" WATER MAIN: BUILDING NO. 1			
0+00.00	EX. 4" PLUG & BUTTRESS	538186.12	827631.64
0+45.64	4" PLUG & BUTTRESS	538140.48	827631.30



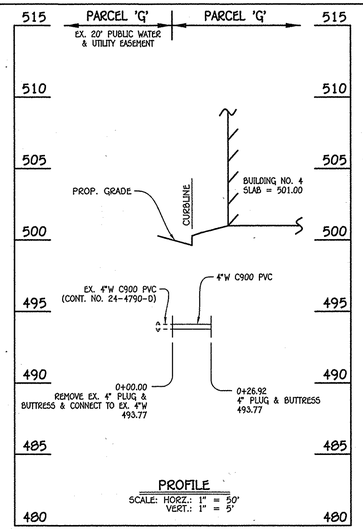
4" WATER MAIN: BUILDING NO. 2

WATER MAIN TABULATION CHART			
W.M. STA.	APPURTENANCE	NORTHING	EASTING
4" WATER MAIN: BUILDING NO. 2			
0+00.00	EX. 4" PLUG & BUTTRESS	538194.51	827544.70
0+13.76	4" PLUG & BUTTRESS	538184.33	827535.43



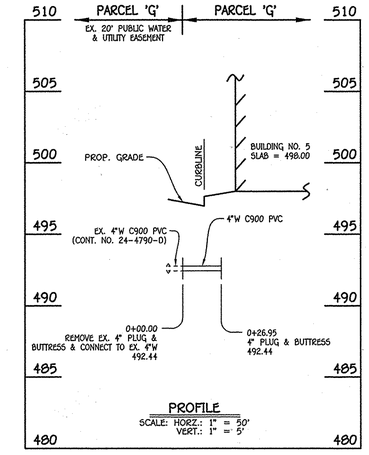
4" WATER MAIN: BUILDING NO. 3

WATER MAIN TABULATION CHART			
W.M. STA.	APPURTENANCE	NORTHING	EASTING
4" WATER MAIN: BUILDING NO. 3			
0+00.00	EX. 4" PLUG & BUTTRESS	538344.20	827497.17
0+24.30	4" PLUG & BUTTRESS	538341.74	827473.00



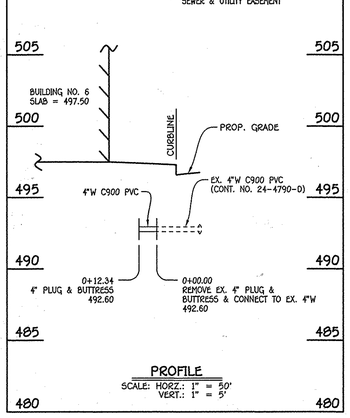
4" WATER MAIN: BUILDING NO. 4

WATER MAIN TABULATION CHART			
W.M. STA.	APPURTENANCE	NORTHING	EASTING
4" WATER MAIN: BUILDING NO. 4			
0+00.00	EX. 4" PLUG & BUTTRESS	538404.90	827533.80
0+26.92	4" PLUG & BUTTRESS	538431.15	827527.81



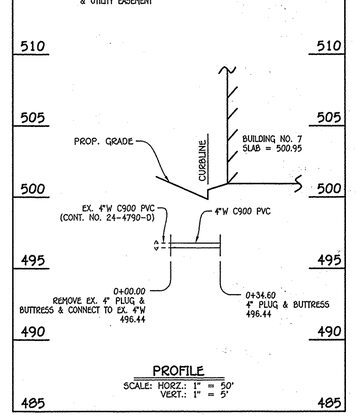
4" WATER MAIN: BUILDING NO. 5

WATER MAIN TABULATION CHART			
W.M. STA.	APPURTENANCE	NORTHING	EASTING
4" WATER MAIN: BUILDING NO. 5			
0+00.00	EX. 4" PLUG & BUTTRESS	538430.20	827644.65
0+26.95	4" PLUG & BUTTRESS	538456.48	827638.65



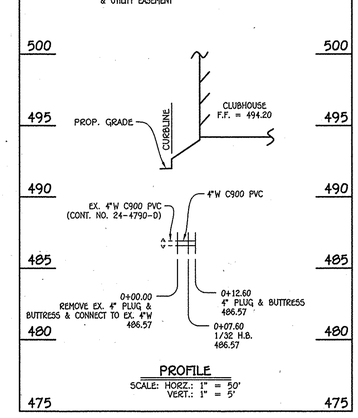
4" WATER MAIN: BUILDING NO. 6

WATER MAIN TABULATION CHART			
W.M. STA.	APPURTENANCE	NORTHING	EASTING
4" WATER MAIN: BUILDING NO. 6			
0+00.00	EX. 4" PLUG & BUTTRESS	538329.34	827770.92
0+12.34	4" PLUG & BUTTRESS	538329.20	827756.58



4" WATER MAIN: BUILDING NO. 7

WATER MAIN TABULATION CHART			
W.M. STA.	APPURTENANCE	NORTHING	EASTING
4" WATER MAIN: BUILDING NO. 7			
0+00.00	EX. 4" PLUG & BUTTRESS	538296.33	827522.13
0+34.60	4" PLUG & BUTTRESS	538299.83	827556.55



4" WATER MAIN: CLUBHOUSE

WATER MAIN TABULATION CHART			
W.M. STA.	APPURTENANCE	NORTHING	EASTING
4" WATER MAIN: CLUBHOUSE			
0+00.00	EX. 4" PLUG & BUTTRESS	538085.44	827768.48
0+07.60	1/32 H.B.	538083.74	827775.89
0+12.60	4" PLUG & BUTTRESS	538083.74	827780.89

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

0' 50' 100' 200'
SCALE: 1" = 50'

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

NO.	REVISION	DATE

PROFESSIONAL CERTIFICATION

"Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional land surveyor under the laws of the State of Maryland, License No. 12043, Expiration Date: 07/16/2016."

PAUL W. KRIEBEL — DATE 08/12/14

#12043

STATE OF MARYLAND — PAUL WALTER KRIEBEL — NO. 12043 — REGISTERED PROFESSIONAL ENGINEER

PAUL W. KRIEBEL

OWNER
WAVERLY WOODS DEVELOPMENT CORPORATION
P.O. BOX 30
GLENELG, MARYLAND 21737-0030

BUILDER
RYAN HOMES
9720 PATUXENT WOODS DRIVE
COLUMBIA MARYLAND, 21043
410-796-0908

DEVELOPER
WAVERLY WOODS DEVELOPMENT CORPORATION,
P.O. BOX 30
GLENELG, MARYLAND
21737-0030

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — Date 10/06/14
Chief, Development Engineering Division — Date 9.18.14
Director - Department of Planning and Zoning — Date 10/6/14

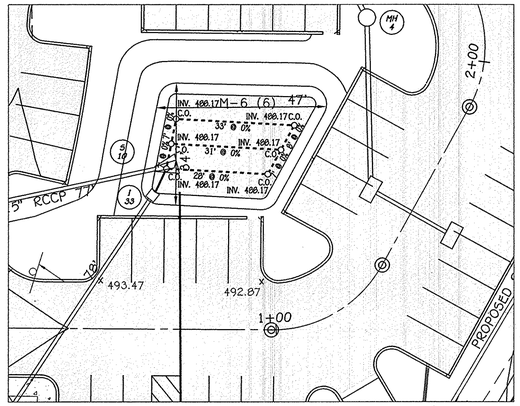
PROJECT				SECTION		PARCEL NOS.
GTW's WAVERLY WOODS, SECTION 14 PARCEL G				14		P/O 249
PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.	
22944 - 22953	3 & 4	PSC	16	THIRD	60300	
WATER CODE			SEWER CODE			
K-02			5992000			

PRIVATE WATER MAINS: PROFILES & CHARTS

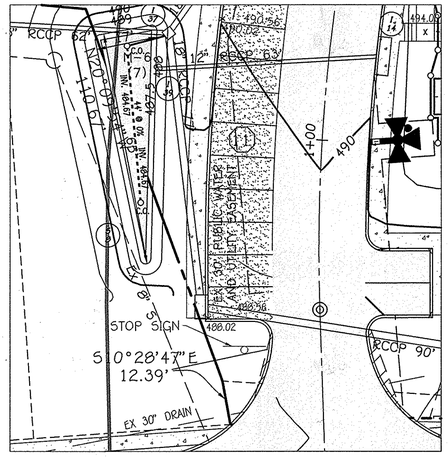
AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
PARCEL 'G' (Plat Nos. Thru
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 19 OF 31

SDP-13-031

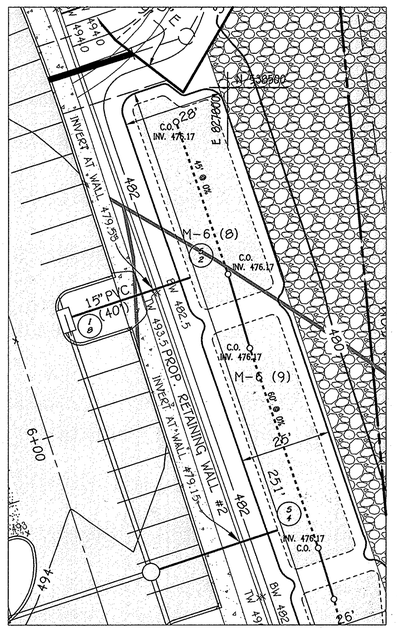
I:\30000\30770\dwg\Water & Sewer Contract\Final Plan\30770-3004 Water and Sewer Contract Plan.dwg, 8/11/2014 11:32:32 PM



M-6 (6)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 16,021 SqFt.
FILTER AREA: 1046 SqFt.
ELEVATION 491.00
PERIMETER 184'
WEIR ELEVATION 492.00

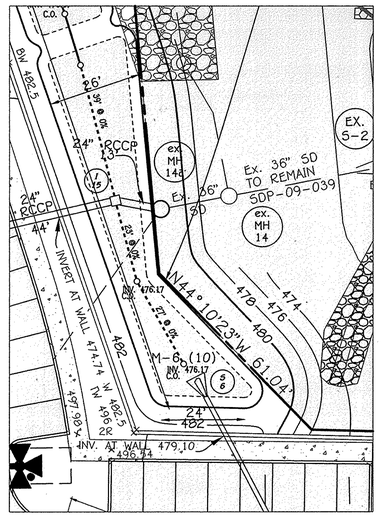


M-6 (7)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 8,789 SqFt.
FILTER AREA: 450 SqFt.
ELEVATION 488.00
PERIMETER 154'
WEIR ELEVATION 489.00

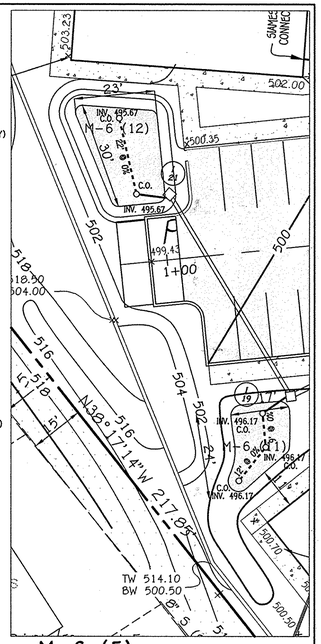


M-6 (8)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 16,343 SqFt.
FILTER AREA: 1250 SqFt.
ELEVATION 479.00
PERIMETER 158'
WEIR ELEVATION 480.00

M-6 (9)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 25,008 SqFt.
FILTER AREA: 1360 SqFt.
ELEVATION 479.00
PERIMETER 175'
WEIR ELEVATION 480.00



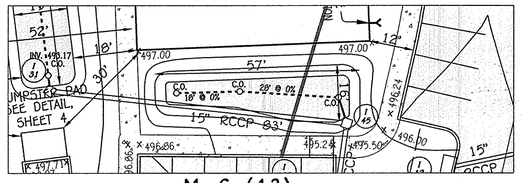
M-6 (10)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 22,530 SqFt.
FILTER AREA: 1,532 SqFt.
ELEVATION 479.00
PERIMETER 257'
WEIR ELEVATION 480.00



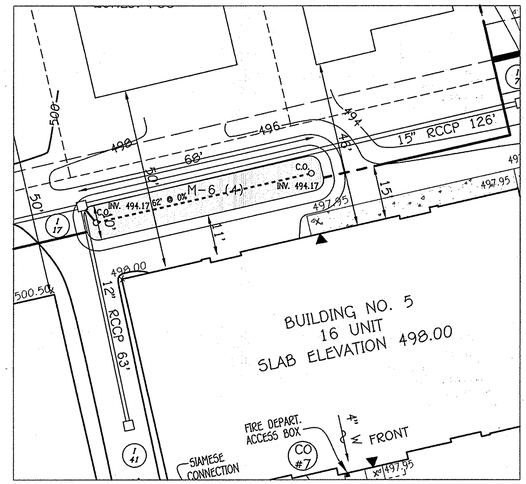
M-6 (12)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 8667 SqFt.
FILTER AREA: 513 SqFt.
ELEVATION 498.50
PERIMETER 91'
WEIR ELEVATION 499.50

M-6 (11)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 6,661 SqFt.
FILTER AREA: 320 SqFt.
ELEVATION 499.00
PERIMETER 74'
WEIR ELEVATION 500.00

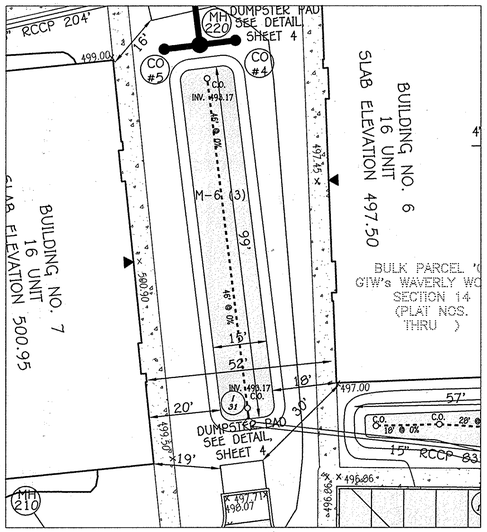
M-6 (5)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 11,491 SqFt.
FILTER AREA: 390 SqFt.
ELEVATION 495.00
PERIMETER 170'
WEIR ELEVATION 496.00



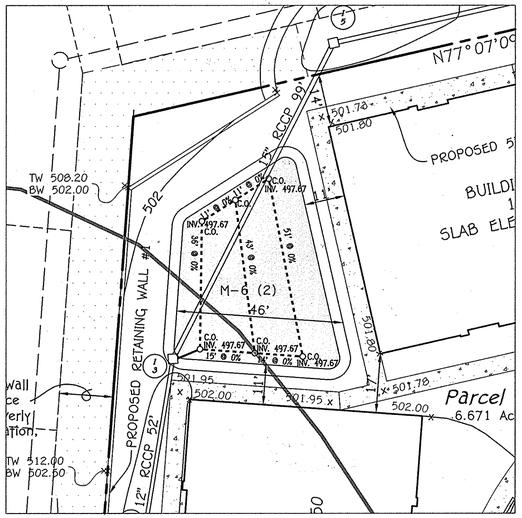
M-6 (13)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 9951 SqFt.
FILTER AREA: 490 SqFt.
ELEVATION 495.00
PERIMETER 119'
WEIR ELEVATION 496.00



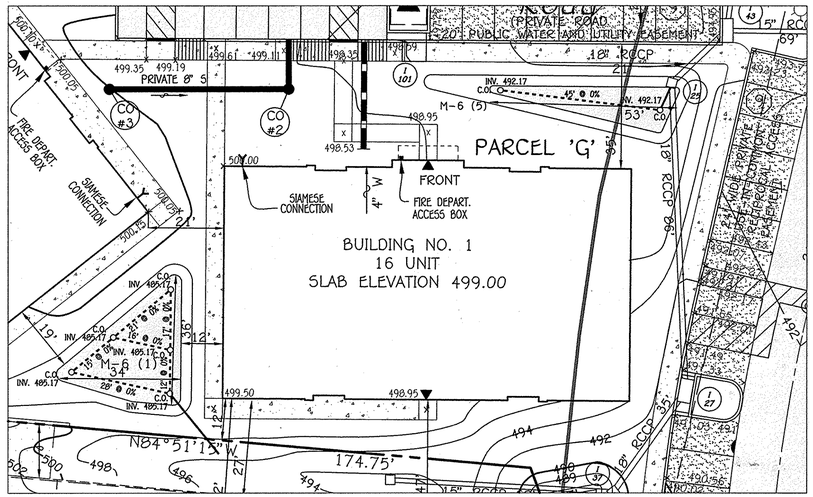
M-6 (4)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 9,299 SqFt.
FILTER AREA: 659 SqFt.
ELEVATION 497.00
PERIMETER 150'
WEIR ELEVATION 498.00



M-6 (3)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 22,738 SqFt.
FILTER AREA: 1476 SqFt.
ELEVATION 496.00
PERIMETER 222'
WEIR ELEVATION 497.00'



M-6 (2)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 19,876 SqFt.
FILTER AREA: 1579 SqFt.
ELEVATION 500.50
PERIMETER 178'
WEIR ELEVATION 501.50



M-6 (1)
(MICRO BIO-RETENTION FACILITY)
SCALE: 1" = 20'
DRAINAGE AREA: 16,513 SqFt.
FILTER AREA: 744 SqFt.
ELEVATION 499.00
PERIMETER 116'
WEIR ELEVATION 499.00

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

0' 30' 60' 200'
SCALE: 1" = 30'

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

NO.	REVISION	DATE

PROFESSIONAL CERTIFICATION
"Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional land surveyor under the laws of the State of Maryland, License No. 21476, Expiration Date: 07/14/2015."

Frank Manalansan II 9/9/14
DATE

APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.

COUNTY HEALTH OFFICER for Maura Rossman H.O.O. 9/2/2014 DATE

#21476
STATE OF MARYLAND FRANK JOHN MANALANSAN II No. 21476 PROFESSIONAL LAND SURVEYOR
Frank Manalansan II

BUILDER
RYAN HOMES
9720 PATUXENT WOODS DRIVE
COLUMBIA, MARYLAND, 21043
410-796-0900

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DEVELOPER
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GLENELG, MARYLAND 21737-0030

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — 10/06/14 Date
Chief, Development Engineering Division — 9.18.14 Date
Director - Department of Planning and Zoning — 9/18/14 Date

PROJECT		SECTION	PARCEL NOS.
GTW's WAVERLY WOODS, SECTION 14 PARCEL G		14	P/O 249
PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
22944 - 22953	3 & 4	PSC	16	THIRD	60300
WATER CODE		SEWER CODE	
K-02		5992000	

STORMWATER MANAGEMENT NOTES AND DETAILS

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
PARCEL 'G' (Plat Nos. Thru
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 20 OF 31

SDP-13-031

Infiltration and Filter System Construction Specifications

Infiltration and filter systems either take advantage of existing permeable soils or create a permeable medium such as sand for WC), and Re v. In some instances where permeability is great, these facilities may be used for Qp as well. The most common systems include infiltration trenches, infiltration basins, sand filters, and organic filters.

When properly planted, vegetation will thrive and enhance the functioning of these systems. For example, pre-treatment buffers will trap sediments that often are bound with phosphorous and metals. Vegetation planted in the facility will aid in nutrient uptake and water storage. Additionally, plant roots will provide arteries for stormwater to permeate soil for groundwater recharge. Finally, successful plantings provide aesthetic value and wildlife habitat making these facilities more desirable to the public.

Design Constraints:

> Planting buffer strips of at least 20 feet will cause sediments to settle out before reaching the facility, thereby reducing the possibility of clogging.
> Determine areas that will be saturated with water and water table depth so that appropriate plants may be selected (hydrology will be similar to bioretention facilities, see figure A.5 and Table A.4 for planting material guidance).
> Plants known to send down deep taproots should be avoided in systems where filter fabric is used as part of facility design.
> Test soil conditions to determine if soil amendments are necessary.
> Plants shall be located so that access is possible for structure maintenance.
> Stabilize heavy flow areas with erosion control mats or sod.
> Temporarily divert flows from seeded areas until vegetation is established.
> See Table A.5 for additional design considerations.

Bio-retention

Soil Bed Characteristics

The characteristics of the soil for the bioretention facility are perhaps as important as the facility location, size, and treatment volume. The soil must be permeable enough to allow runoff to filter through the media, while having characteristics suitable to promote and sustain a robust vegetative cover crop. In addition, much of the nutrient pollutant uptake (nitrogen and phosphorus) is accomplished through absorption and microbial activity within the soil profile. Therefore, soils must balance their chemical and physical properties to support biotic communities above and below ground.

The planting soil should be a sandy loam, loamy sand, loam (USDA), or a loam/sand mix (should contain a minimum 35 to 60% sand, by volume). The clay content for these soils should be less than 25% by volume [Environmental Quality Resources (EQR), 1996; Engineering Technology Inc. and Biohabitats, Inc. (ETAB), 1993]. Soils should fall within the SM, ML, SC classifications or the Unified Soil Classification System (USCS). A permeability of at least 1.0 feet per day (0.5"/hr) is required (a conservative value of 0.5 feet per day is used for design). The soil should be free of stones, stumps, roots, or other woody material over 1" in diameter. Brush or seeds from noxious weeds (e.g., Johnson Grass, Mugwort, Nutsedge, and Canada Thistle or other noxious weeds as specified under COMAR 15.08.01.05.) should not be present in the soils. Placement of the planting soil should be in 12 to 18 lifts that are loosely compacted (tamped lightly with a backhoe bucket or traversed by dozer tracks). The specific characteristics are presented in Table A.3.

Table A.3 Planting Soil Characteristics

Parameter	Value
pH range	5.2 to 7.00
Organic matter	1.5 to 4.0% (by weight)
Magnesium	35 lbs. per acre, minimum
Phosphorus (phosphate - P205)	75 lbs. per acre, minimum
Potassium (potash -1(K20)	85 lbs. per acre, minimum
Soluble salts	500 ppm
Clay	10 to 25 %
Silt	30 to 55 %
Sand	35 to 60%

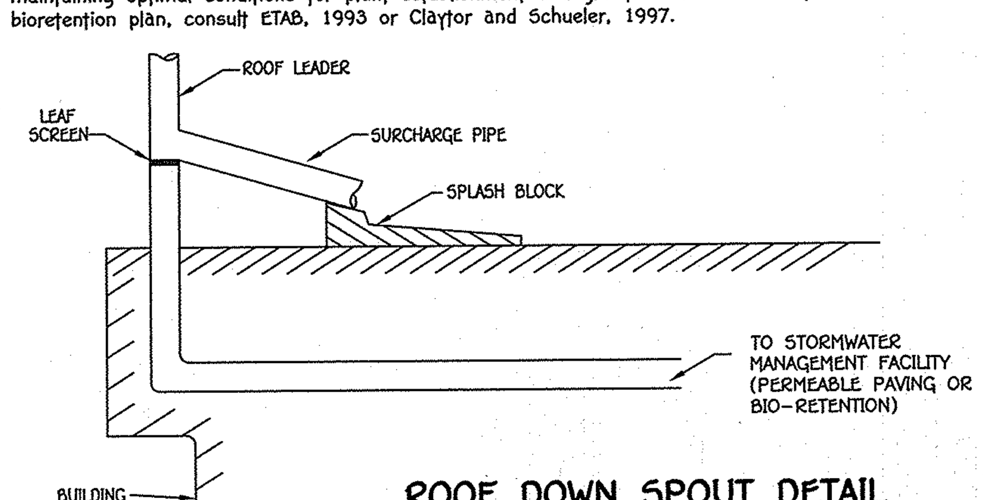
Mulch Layer

The mulch layer plays an important role in the performance of the bioretention system. The mulch layer helps maintain soil moisture and avoids surface sealing, which reduces permeability. Mulch helps prevent erosion, and provides a microenvironment suitable for soil biota at the mulch/soil interface. It also serves as a pretreatment layer, trapping the finer sediments, which remain suspended after the primary pretreatment.

The mulch layer should be standard landscape style, single or double shredded hardwood mulch or chips. The mulch layer should be well aged (stockpiled or stored for at least 12 months), uniform in color, and free of other materials, such as weed seeds, soil, roots, etc. The mulch should be applied to a maximum depth of three inches. Grass clippings should not be used as a mulch material.

Planting Guidance

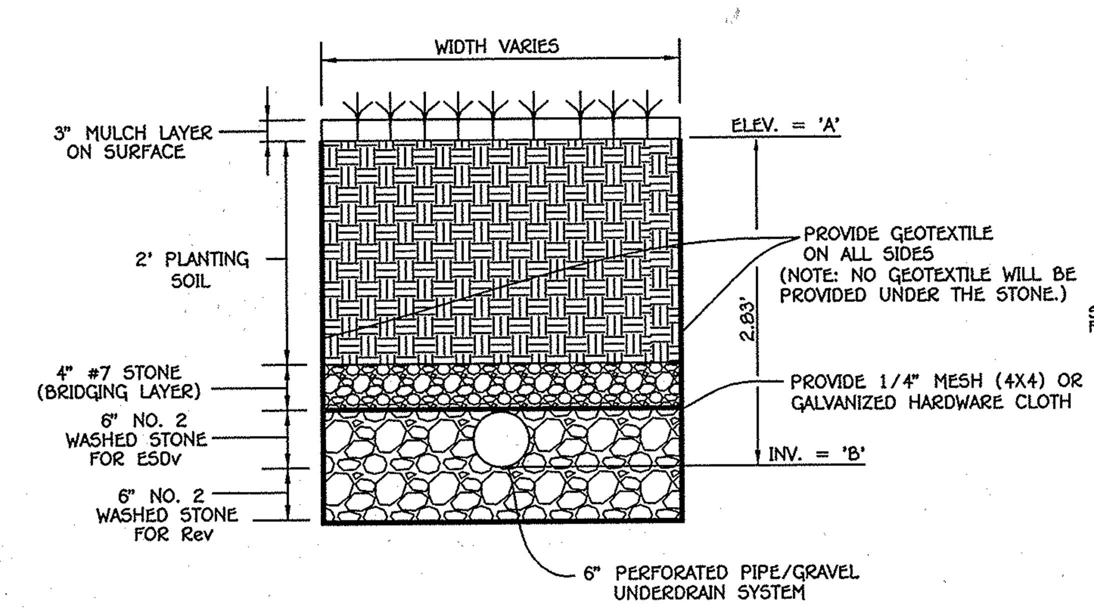
Plant material selection should be based on the goal of simulating a terrestrial forested community of native species. Bioretention simulates an upland-species ecosystem. The community should be dominated by trees, but have a distinct community of understory trees, shrubs and herbaceous materials. By creating a diverse, dense plant cover, a bioretention facility will be able to treat stormwater runoff and withstand urban stresses from insects, disease, drought, temperature, wind, and exposure.
The proper selection and installation of plant materials is key to a successful system. There are essentially three zones within a bioretention facility (Figure A.5). The lowest elevation supports plant species adapted to standing and fluctuating water levels. The middle elevation supports plants that like drier soil conditions, but can still tolerate occasional inundation by water. The outer edge
is the highest elevation and generally supports plants adapted to dryer conditions. A sample of appropriate plant materials for bioretention facilities are included in Table A.4. The layout of plant material should be flexible, but should follow the general principals described in Table A.5. The objective is to have a system, which resembles a random, and natural plant layout, while maintaining optimal conditions for plant establishment and growth. For a more extensive bioretention plan, consult ETAB, 1993 or Claytor and Schueler, 1997.



ROOF DOWN SPOUT DETAIL
NOT TO SCALE

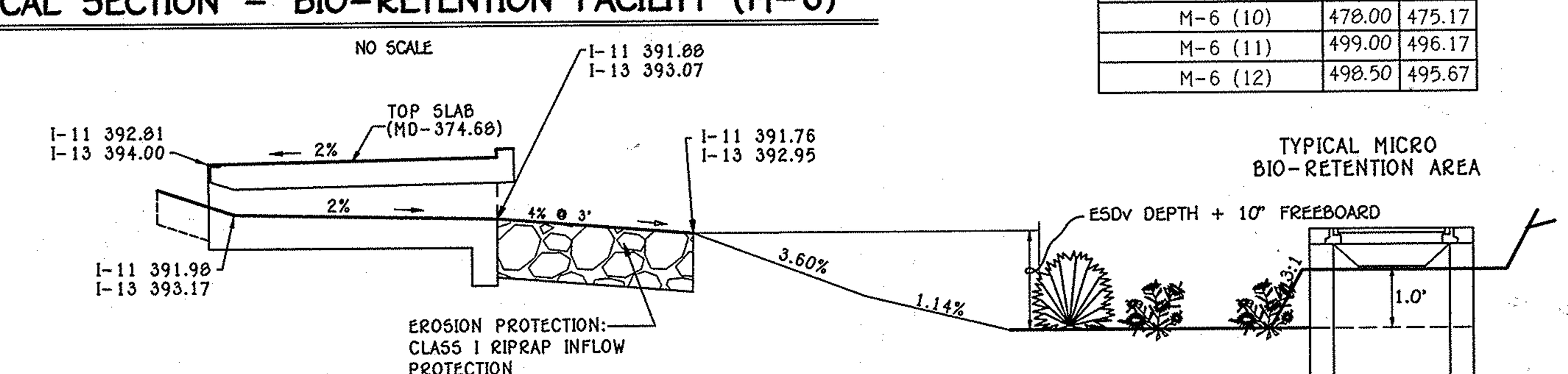
OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS (M-6)

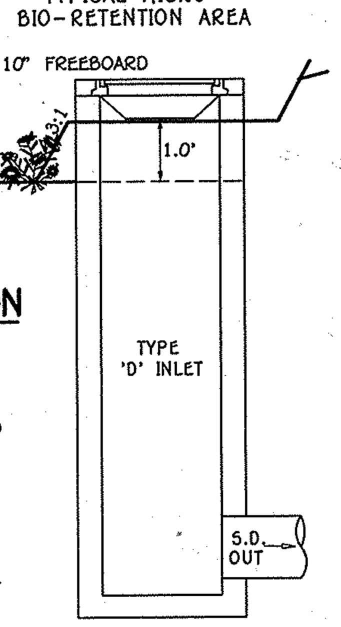
1. ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER IS REQUIRED. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING.
2. SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDER BEYOND TREATMENT. TREATMENT OF ALL DISEASED TREES AND SHRUBS AND REPLACEMENT OF ALL DEFICIENT STAKES AND WIRES.
3. MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.
4. SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS. WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.



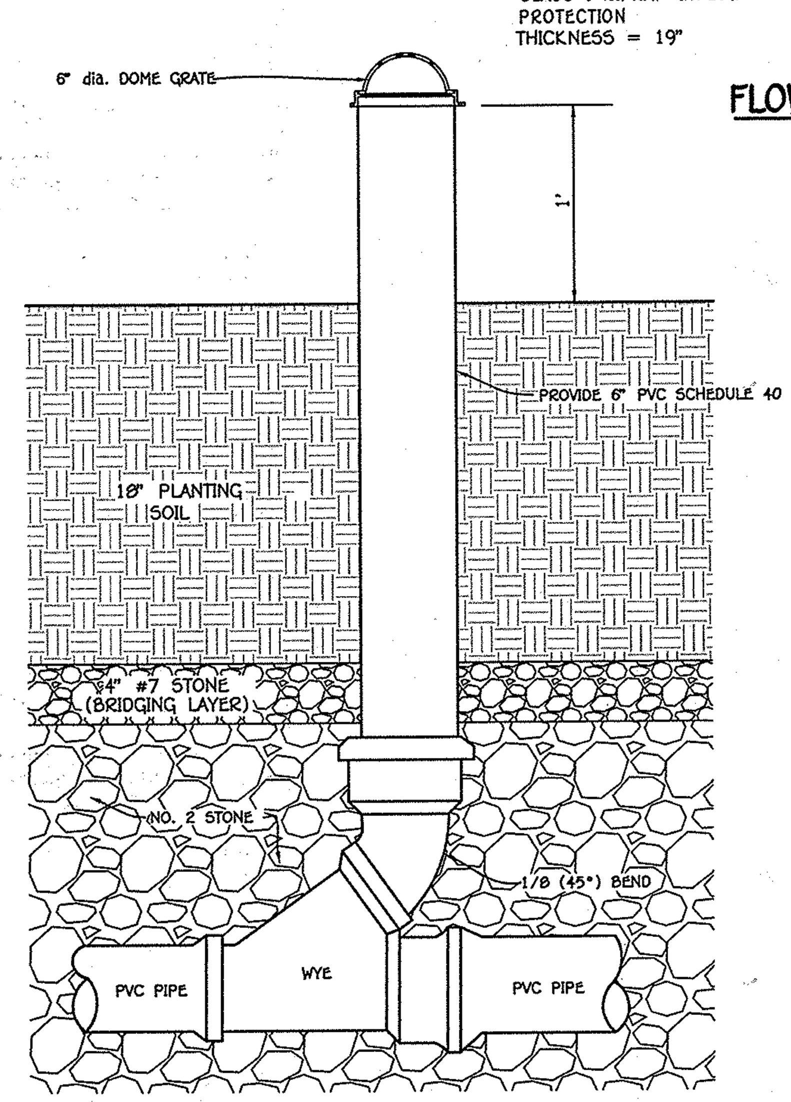
NOTE: THE BOTTOM OF EACH BIO-RETENTION FACILITY (M-6) SHALL BE ROTOTILLED PRIOR TO STONE INSTALLATION.

TYPICAL SECTION - BIO-RETENTION FACILITY (M-6)
NO SCALE

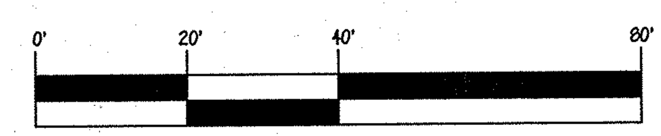




SCHEMATIC SECTION
FLOW INLET INTO MICRO BIO-RETENTION
NOT TO SCALE



TYPICAL CLEAN-OUT DETAIL
NO SCALE



SCALE: 1" = 20'

NOTES:
UNDERDRAIN PIPE SHALL BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTMF 758, TYPE PS 28 OR AASHTO-M- 278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED 4" RIGID PIPE (e.g., PVC OR HDPE).

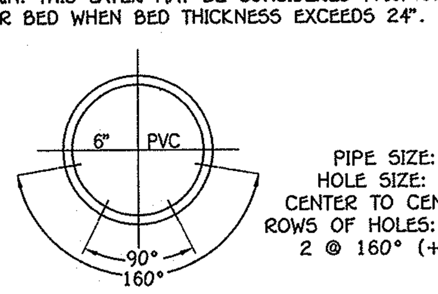
PERFORATIONS SHALL BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 1/4" (No. 4 OR 4 x 4) GALVANIZED HARDWARE CLOTH.

GRAVEL LAYER SHALL BE (No. 57 STONE PREFERRED) AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.

THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.

A RIGID, NON PERFORATED OBERSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQ.FT.) TO PROVIDE A CLEANOUT PORT AND MONITOR PERFORMANCE OF THE FILTER.

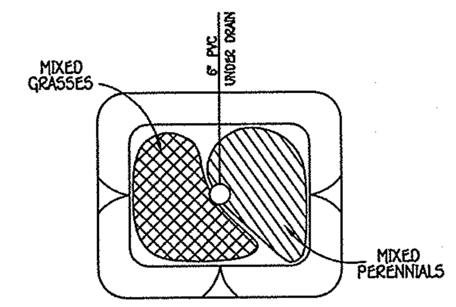
A 4" LAYER OF PEA GRAVEL (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".



PIPE SIZE: 6"
HOLE SIZE: 3/8"
CENTER TO CENTER: 3"
ROWS OF HOLES: 2 @ 90°
2 @ 160° (+/-3°)

SCH40 PVC PERFORATED UNDERDRAIN PIPE DETAIL FOR HORIZONTAL DRAIN PIPE
NO SCALE

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014



MICRO-BIORETENTION PLANTING DETAIL
NOT TO SCALE

MIXED PERENNIALS *
CUT-LEAF CONEFLOWER
CARDINAL FLOWER
TRADUSCANT ASTER

SHRUBS * / MIXED GRASSES *
INK BERRY / VIRGINIA SWITCHGRASS
ARROWWOOD / PENDULOUS SEDGE
BAYBERRY / LITTLE BLUESTEM

SEE PLANT MATERIAL CHARTS FOR QUANTITIES AND SPACING

NOTE:
PLANT MATERIAL MUST COVER AT LEAST 50% OF THE SURFACE AREA OF THE MICRO-BIORETENTION

FACILITY NO.	A	B
M-6 (1)	497.00	494.17
M-6 (2)	500.50	497.67
M-6 (3)	496.00	493.17
M-6 (4)	497.00	494.17
M-6 (5)	496.00	493.17
M-6 (6)	491.00	488.17
M-6 (7)	490.00	487.17
M-6 (8)	479.00	476.17
M-6 (9)	478.50	475.67
M-6 (10)	478.00	475.17
M-6 (11)	499.00	496.17
M-6 (12)	498.50	495.67

DRAINAGE AREA M-6 (1)
MICRO-BIORETENTION PLANT MATERIAL

QUANTITY	NAME	MAXIMUM SPACING (FT.)
186	MIXED PERENNIALS	1 FT.
93	SHRUBS / MIXED GRASSES	2 FT.

DRAINAGE AREA M-6 (2)
MICRO-BIORETENTION PLANT MATERIAL

QUANTITY	NAME	MAXIMUM SPACING (FT.)
495	MIXED PERENNIALS	1 FT.
247	SHRUBS / MIXED GRASSES	2 FT.

DRAINAGE AREA M-6 (3)
MICRO-BIORETENTION PLANT MATERIAL

QUANTITY	NAME	MAXIMUM SPACING (FT.)
369	MIXED PERENNIALS	1 FT.
185	SHRUBS / MIXED GRASSES	2 FT.

DRAINAGE AREA M-6 (4)
MICRO-BIORETENTION PLANT MATERIAL

QUANTITY	NAME	MAXIMUM SPACING (FT.)
165	MIXED PERENNIALS	1 FT.
82	SHRUBS / MIXED GRASSES	2 FT.

DRAINAGE AREA M-6 (5)
MICRO-BIORETENTION PLANT MATERIAL

QUANTITY	NAME	MAXIMUM SPACING (FT.)
145	MIXED PERENNIALS	1 FT.
73	SHRUBS / MIXED GRASSES	2 FT.

DRAINAGE AREA M-6 (6)
MICRO-BIORETENTION PLANT MATERIAL

QUANTITY	NAME	MAXIMUM SPACING (FT.)
560	MIXED PERENNIALS	1 FT.
280	SHRUBS / MIXED GRASSES	2 FT.

DRAINAGE AREA M-6 (7)
MICRO-BIORETENTION PLANT MATERIAL

QUANTITY	NAME	MAXIMUM SPACING (FT.)
241	MIXED PERENNIALS	1 FT.
121	SHRUBS / MIXED GRASSES	2 FT.

DRAINAGE AREA M-6 (8)
MICRO-BIORETENTION PLANT MATERIAL

QUANTITY	NAME	MAXIMUM SPACING (FT.)
335	MIXED PERENNIALS	1 FT.
167	SHRUBS / MIXED GRASSES	2 FT.

DRAINAGE AREA M-6 (9)
MICRO-BIORETENTION PLANT MATERIAL

QUANTITY	NAME	MAXIMUM SPACING (FT.)
332	MIXED PERENNIALS	1 FT.
166	SHRUBS / MIXED GRASSES	2 FT.

DRAINAGE AREA M-6 (10)
MICRO-BIORETENTION PLANT MATERIAL

QUANTITY	NAME	MAXIMUM SPACING (FT.)
296	MIXED PERENNIALS	1 FT.
148	SHRUBS / MIXED GRASSES	2 FT.

DRAINAGE AREA M-6 (11)
MICRO-BIORETENTION PLANT MATERIAL

QUANTITY	NAME	MAXIMUM SPACING (FT.)
93	MIXED PERENNIALS	1 FT.
47	SHRUBS / MIXED GRASSES	2 FT.

DRAINAGE AREA M-6 (12)
MICRO-BIORETENTION PLANT MATERIAL

QUANTITY	NAME	MAXIMUM SPACING (FT.)
93	MIXED PERENNIALS	1 FT.
47	SHRUBS / MIXED GRASSES	2 FT.

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

a. The Owner shall periodically sweep (or vacuum porous concrete pavement) the pavement surfaces to reduce sediment accumulation and ensure continued surface porosity. Sweeping should be performed at least twice annually with a commercial cleaning unit. Washing or compressed air units should not be used to perform surface cleaning.
b. The Owner shall periodically clean drainage pipes, inlets, stone edge drains and other structures within or draining to the subbase.
c. The Owner shall use deicers in moderation. Deicers should be non-toxic and be applied either as calcium magnesium acetate or as pretreated salt.
d. The Owner shall ensure snow plowing is performed carefully with blades set one inch above the surface. Plowed snow piles and snowmelt should not be directed to permeable pavement.

Construction Specifications for Environmental Site Design Practices

B.4.B Specifications for Permeable Pavements & Reinforced Turf

These specifications include information on acceptable materials for typical applications and are not exclusive or limiting. The designer is responsible for developing detailed specifications for individual projects and specific conditions.

1. Pervious Concrete Specifications

Design Thickness - Pervious concrete applications shall be designed so that the thickness of the concrete slab shall support the traffic and vehicle types that will be carried. Applications may be designed using either standard pavement procedures (e.g., AASHTO, ACI 325.9R, ACI 330R) or using structural values derived from flexible pavement design procedures.

Mix & Installation -- Traditional Portland cements (ASTM C 150, C 1157) may be used in pervious concrete applications. Phosphorus admixtures may also be used. Materials should be tested (e.g., trial batching) prior to construction so that critical properties (e.g., settling time, rate of strength development, porosity, permeability) can be determined.

Aggregate -- Pervious concrete contains a limited fine aggregate content. Commonly used gradations include ASTM C 33 No. 67 (3% in. to No. 4), No. 8 (/8 in. to No. 16) and No. 89 (3/s in. to No. 50) sieves. Single-sized aggregate (up to 1 inch) may also be used.

Water Content -- Water-to-cement ratios between 0.27 and 0.30 are used routinely with proper inclusion of chemical admixtures. Water quality should meet ACI 30a. As a general rule, potable water should be used although recycled concrete production water meeting ASTM C 94 or AASHTO M 157 may also be used.

Admixtures -- Chemical admixtures (e.g., retarders or hydration-stabilizers) are used to obtain special properties in pervious concrete. Use of admixtures should meet ASTM C 494 (chemical admixtures) and ASTM C 260 (air entraining admixtures) and closely follow manufacturer's recommendations.

Base Course -- The base course shall be AASHTO No. 3 or 4 course aggregate with an assumed open pore space of 30% (n = 0.30).

2. Permeable Interlocking Concrete Pavements (PICP)

Paver Blocks - Blocks should be either 3 1/8 in. or 4 in. thick, and meet ASTM C 936 or CSA A23 1.2 requirements. Applications should have 20% or more (40% preferred) of the surface area open. Installation should follow manufacturer's instructions, except that infill and base course materials and dimensions specified in this Appendix shall be followed.

Infill Materials and Leveling Course -- Openings shall be filled with ASTM C-33 graded sand or sandy loam. PICP blocks shall be placed on a one-inch thick leveling course of ASTM C-33 sand.

Base Course - The base course shall be AASHTO No. 3 or 4 course aggregate with an assumed open pore space of 30% (n = 0.30).

Underdrains - Underdrains should meet the following criteria:
- Pipe- Should be 4" to 6" diameter, slotted or perforated rigid plastic pipe (ASTMF 758, Type PS 28, or AASHTO-M-278) in a gravel layer. The preferred material is slotted, 4" rigid pipe (e.g., PVC or HDPE).
- Perforations - If perforated pipe is used, perforations should be 3/8" diameter located 6" on center with a minimum of four holes per row. Pipe shall be wrapped with a 1/4" (No. 4 or 4x4) galvanized hardware cloth.
- Gravel - The gravel layer shall be at least 3" thick above and below the underdrain.
- The main collector pipe shall be at a minimum 0.5% slope.
- A rigid, non-perforated observation well must be provided (one per every 1,0000 square feet) to provide a clean-out port and monitor performance of the filter section.
- A 4" layer of sand shall be located between the filter media and underdrain to prevent migration of fines into the underdrain.

Note:
These practices may not be constructed until all contributing drainage area has been stabilized

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

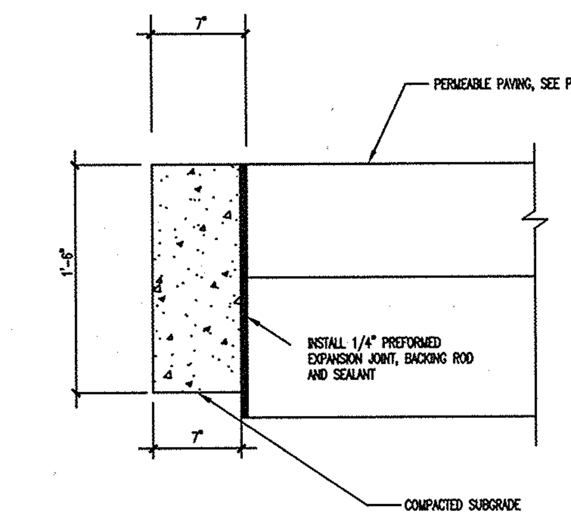
1. Remove grass clippings when mowing areas adjacent to the permeable pavement system.
2. Use deicers moderation. When used, deicers should be non-toxic and organic and can be applied either as calcium magnesium acetate or as pretreated salt.
3. Snow plowing should be done carefully with blades set one-inch higher than normal.
4. Plowed snow piles and snowmelt should not be directed to permeable pavement.
5. The repair or replacement of components must meet the original design specifications.

Quarterly and after every large storm event:

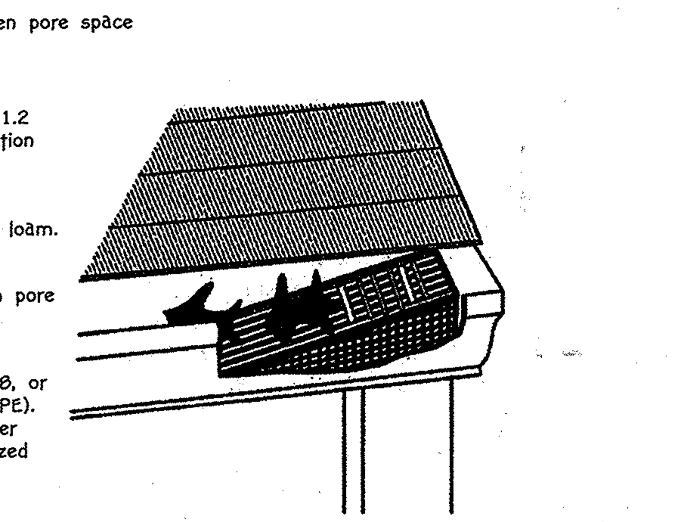
1. Ensure that the permeable pavement surface is free of any obstructions such that may clog or inhibit the system from performing as designed, such as sand, sediment, mulch, leaves, branches and other debris.
2. Inspect the permeable pavement system for standing water in order to verify that the system is dewatering between storm events as required.
3. Inspect cleanouts, sampling ports, underdrain outlets, and structures. Clear any obstructions encountered.
4. Maintain stable ground cover must be maintained in areas draining onto the permeable pavement. Inspect lawn and landscape areas contributing drainage to the system. Repair any erosion immediately.

Annually:

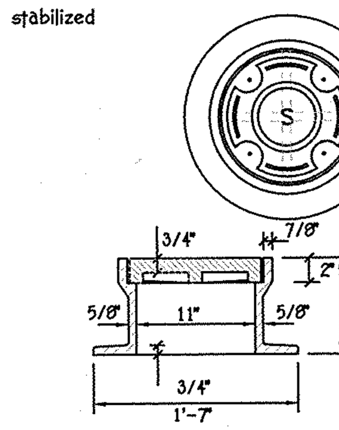
1. Vacuum sweep permeable pavement surface with a commercial cleaning unit.
2. Inspect the permeable pavement surface for deterioration.
3. Clean pipes, inlets, underdrains drains, overdrains and other structures within or draining to the permeable pavement system.



CONCRETE EDGING
N.T.S.

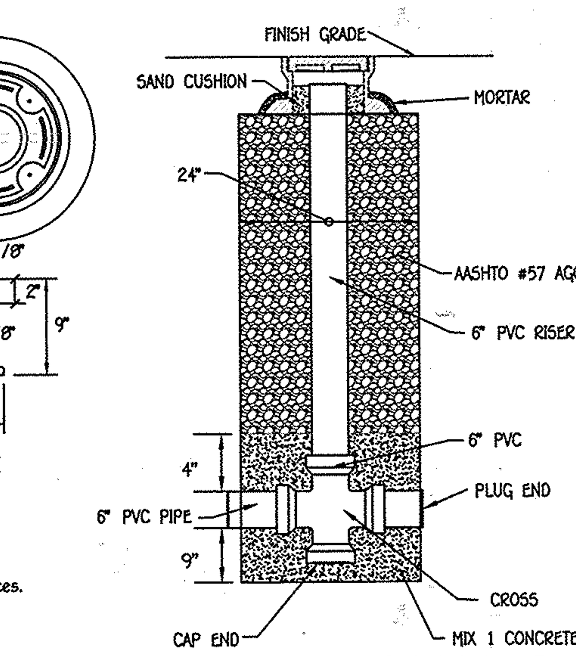


Gutter Drain Filter (Typical)

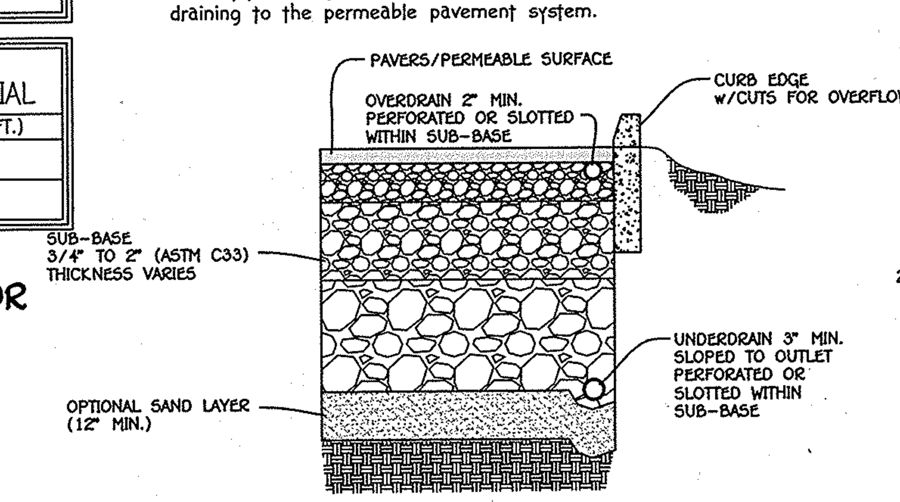


LAMPHOLE FRAME & COVER

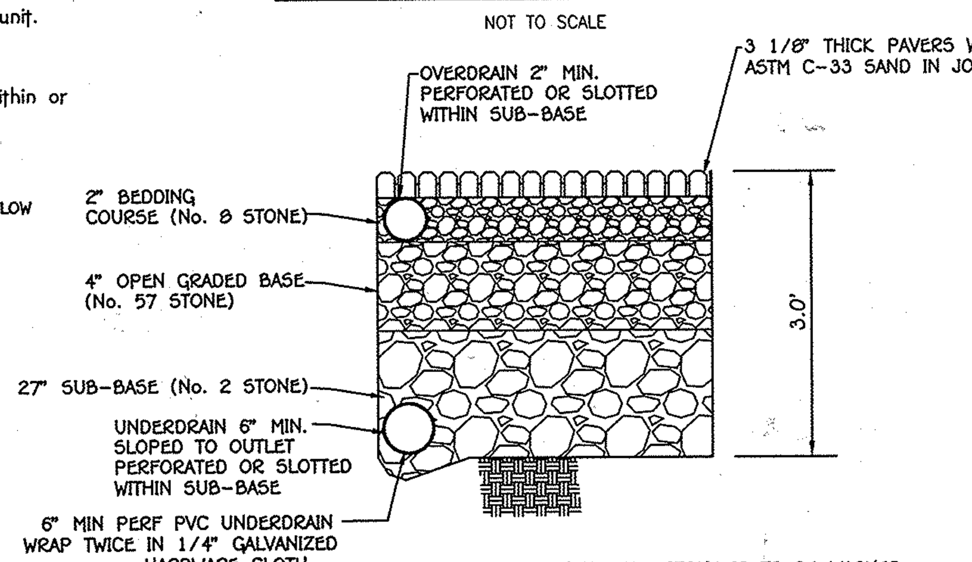
NOTE:
Material shall be gray iron casting. Castings must be machined on bearing surfaces.



CLEANOUT/ WATER QUALITY SAMPLING PORT DETAIL
NOT TO SCALE



TYPICAL SECTION - PERMEABLE PAVEMENT w/ OVERDRAIN & UNDERDRAIN
NO SCALE



NOTE: ALL STONE IS TO BE WASHED

TYPICAL SECTION - PERMEABLE PAVEMENT w/ OVERDRAIN & UNDERDRAIN
NO SCALE

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

NO.	REVISION	DATE

PROFESSIONAL CERTIFICATION
"Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional land surveyor under the laws of the State of Maryland, License No. 21476, Expiration Date: 07/14/2015."
Frank Manalansan II — DATE 8/9/14

APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.
COUNTY HEALTH OFFICER — DATE 9/2/2014

#21476

Frank Manalansan II

BUILDER
RYAN HOMES
9720 PATUXENT WOODS DRIVE
COLUMBIA MARYLAND, 21043
410-796-0908

OWNER
WAVERLY WOODS DEVELOPMENT CORPORATION
P.O. BOX 30
GLENELG, MARYLAND 21737-0030

DEVELOPER
WAVERLY WOODS DEVELOPMENT CORPORATION,
P.O. BOX 30
GLENELG, MARYLAND 21737-0030

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Chief, Division of Land Development — Date 10/06/14
Chief, Development Engineering Division — J.P. — Date 9.18.14
Director - Department of Planning and Zoning — Date 10/8/14

PROJECT	SECTION	PARCEL NOS.
GTW's WAVERLY WOODS, SECTION 14 PARCEL G	14	P/O 249

PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
22944 - 22953	3 & 4	PSC	16	THIRD	60300

WATER CODE	SEWER CODE
K-02	5992000

STORMWATER MANAGEMENT NOTES AND DETAILS

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
PARCEL 'G' (Plat Nos. Thru
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 21 OF 31

SDP-13-031

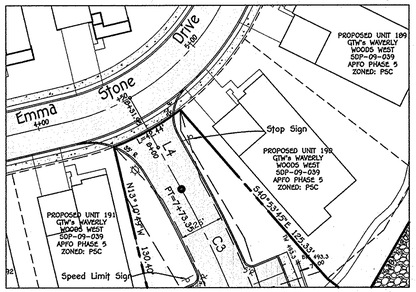
PROPOSED ALIGNMENT CURVE TABLE

CURVE #	ROAD NAME	STATION	RADIUS	LENGTH	DELTA	TANGENT	CHORD	
C1	CL-Road 'A'	STA 0+52.60 TO STA 1+82.89	500.60'	130.30'	14°54'47"	65.52'	N5° 29' 36.41"E	129.93'
C2	CL-Road 'A'	STA 3+43.17 TO STA 4+82.44	259.41'	139.26'	30°45'34"	71.35'	N2° 25' 49.90"W	137.60'
C3	CL-Road 'A'	STA 6+72.99 TO STA 7+73.35	500.00'	100.35'	11°29'59"	50.35'	N23° 33' 36.12"W	100.19'
C4	CL-Road 'B'	STA 2+08.25 TO STA 2+81.36	50.00'	73.11'	83°46'40"	44.84'	N47° 41' 23.34"W	66.77'
C5	CL-Road 'B'	STA 3+73.03 TO STA 4+45.41	50.00'	72.38'	82°56'18"	44.19'	N35° 40' 16.10"E	66.22'
C6	CL-Parking Lot 'A'	STA 0+98.66 TO STA 1+36.26	35.00'	37.60'	61°33'27"	20.85'	N59° 39' 01.66"E	35.82'
C7	CL-Parking Lot 'A'	STA 1+86.72 TO STA 2+60.70	35.00'	73.97'	121°05'45"	61.98'	N31° 40' 34.55"W	60.95'

PROPOSED ALIGNMENT LINE TABLE

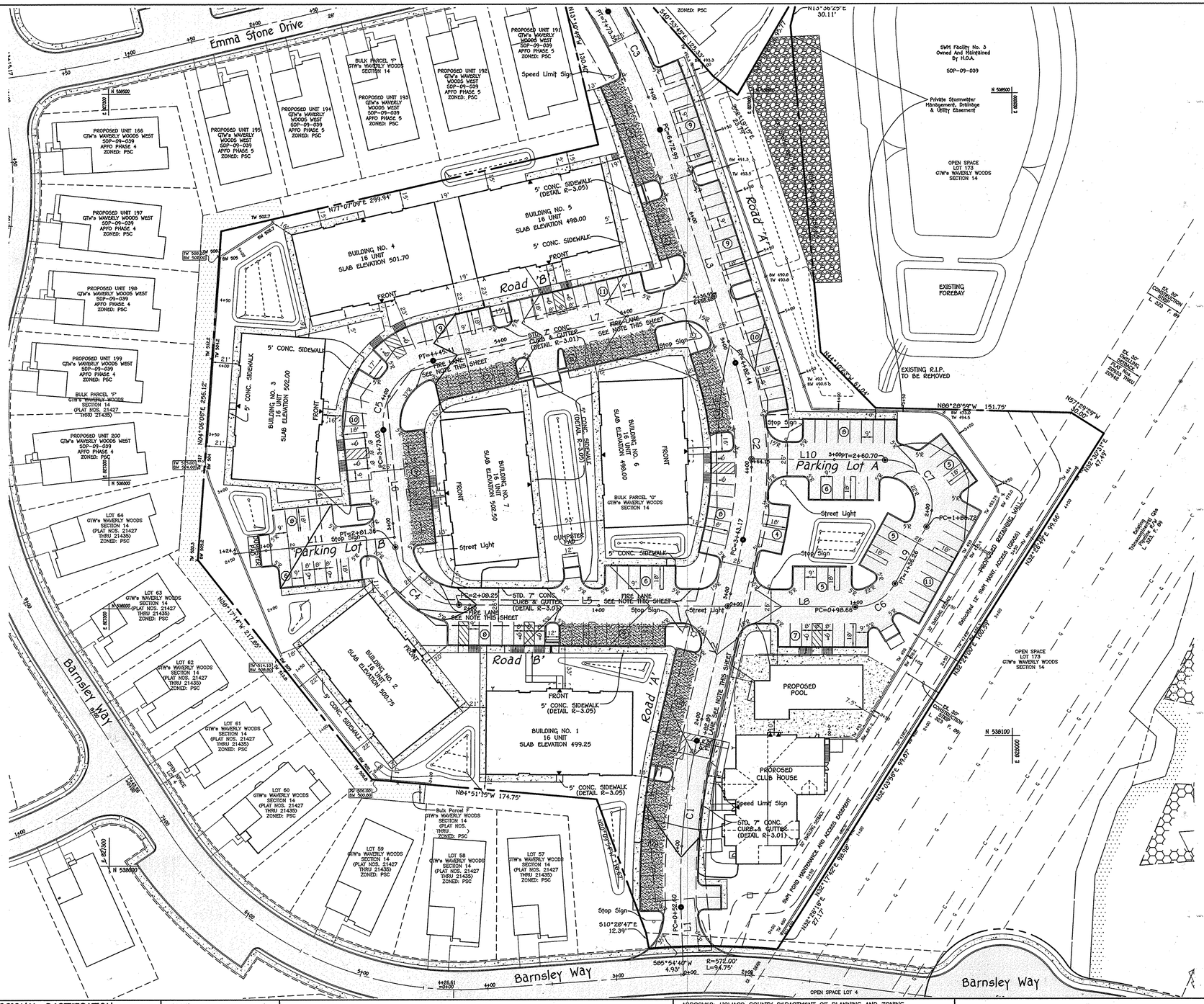
LINE #	ROAD NAME	STATION	DIRECTION	LENGTH
L1	CL-Road 'A'	STA 0+00 TO STA 0+52.60	N 01°58'19" W	52.60'
L2	CL-Road 'A'	STA 1+82.89 TO STA 3+43.17	N 12°56'57" E	160.28'
L3	CL-Road 'A'	STA 4+82.44 TO STA 6+72.99	N 17°48'37" W	190.56'
L4	CL-Road 'A'	STA 7+73.35 TO STA 8+31.95	N 29°18'36" W	58.60'
L5	CL-Road 'B'	STA 0+00 TO STA 2+08.25	N 89°34'34" W	208.25'
L6	CL-Road 'B'	STA 2+81.36 TO STA 3+73.03	N 05°48'03" W	91.67'
L7	CL-Road 'B'	STA 4+45.41 TO STA 6+68.68	N 77°08'34" E	223.27'
L8	CL-Parking Lot 'A'	STA 0+00 TO STA 0+98.66	S 89°34'15" E	98.66'
L9	CL-Parking Lot 'A'	STA 1+36.26 TO STA 1+86.72	N 28°52'18" E	50.46'
L10	CL-Parking Lot 'A'	STA 2+60.70 TO STA 3+64.15	N 89°21'11" W	103.46'
L11	CL-Parking Lot 'B'	STA 0+00.00 TO STA 1+24.40	S 84°11'57" W	124.40'

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014



NOTE:
THE DEVELOPER WILL WORK WITH THE OFFICE OF THE FIRE MARSHAL TO ESTABLISH MARKINGS NECESSARY TO SHOW THE APPROPRIATE LOCATION OF THE REQUIRED FIRE LANE FOR THE ACCESS OF EMERGENCY VEHICLES AS NOTED ON THIS PLAN.

0' 40' 80' 160'
SCALE: 1" = 40'


Emma Stone Drive
Barnsley Way
Road 'A'
Road 'B'
Parking Lot A
Parking Lot B
BUILDING NO. 1 16 UNIT SLAB ELEVATION 499.25
BUILDING NO. 2 16 UNIT SLAB ELEVATION 500.75
BUILDING NO. 3 16 UNIT SLAB ELEVATION 502.00
BUILDING NO. 4 16 UNIT SLAB ELEVATION 501.70
BUILDING NO. 5 16 UNIT SLAB ELEVATION 499.00
BUILDING NO. 6 16 UNIT SLAB ELEVATION 499.00
BUILDING NO. 7 16 UNIT SLAB ELEVATION 502.50
PROPOSED POOL
PROPOSED CLUB HOUSE
EXISTING FOREBAY
EXISTING R.I.P. TO BE REMOVED
SWM Facility No. 3 Owned And Maintained By H.O.A.
SDP-09-039
Private Stormwater Management, Drainage & Utility Easement
OPEN SPACE LOT 173 GTW's WAVERLY WOODS SECTION 14
OPEN SPACE LOT 4
BULK PARCEL 'F' GTW's WAVERLY WOODS SECTION 14 (PLAT NOS. 21427 THRU 21435)
BULK PARCEL 'G' GTW's WAVERLY WOODS SECTION 14
BULK PARCEL 'O' GTW's WAVERLY WOODS SECTION 14
PROPOSED UNIT 166 GTW's WAVERLY WOODS WEST SDP-09-039 APFO PHASE 4 ZONED: PSC
PROPOSED UNIT 191 GTW's WAVERLY WOODS WEST SDP-09-039 APFO PHASE 5 ZONED: PSC
PROPOSED UNIT 192 GTW's WAVERLY WOODS WEST SDP-09-039 APFO PHASE 5 ZONED: PSC
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LOT 58 GTW's WAVERLY WOODS SECTION 14 (PLAT NOS. 21427 THRU 21435) ZONED: PSC
LOT 57 GTW's WAVERLY WOODS SECTION 14 (PLAT NOS. 21427 THRU 21435) ZONED: PSC
OPEN SPACE LOT 173 GTW's WAVERLY WOODS SECTION 14
Speed Limit Sign
Stop Sign
Street Light
DUMPSTER PAD
FIRE LANE SEE NOTE THIS SHEET
5' CONC. SIDEWALK (DETAIL R-3.05)
STD. 7' CONC. CURB & GUTTER (DETAIL R-3.01)
PROPOSED 10' WIDE SHARED USE PATH (PUBLIC ACCESS EASEMENT)
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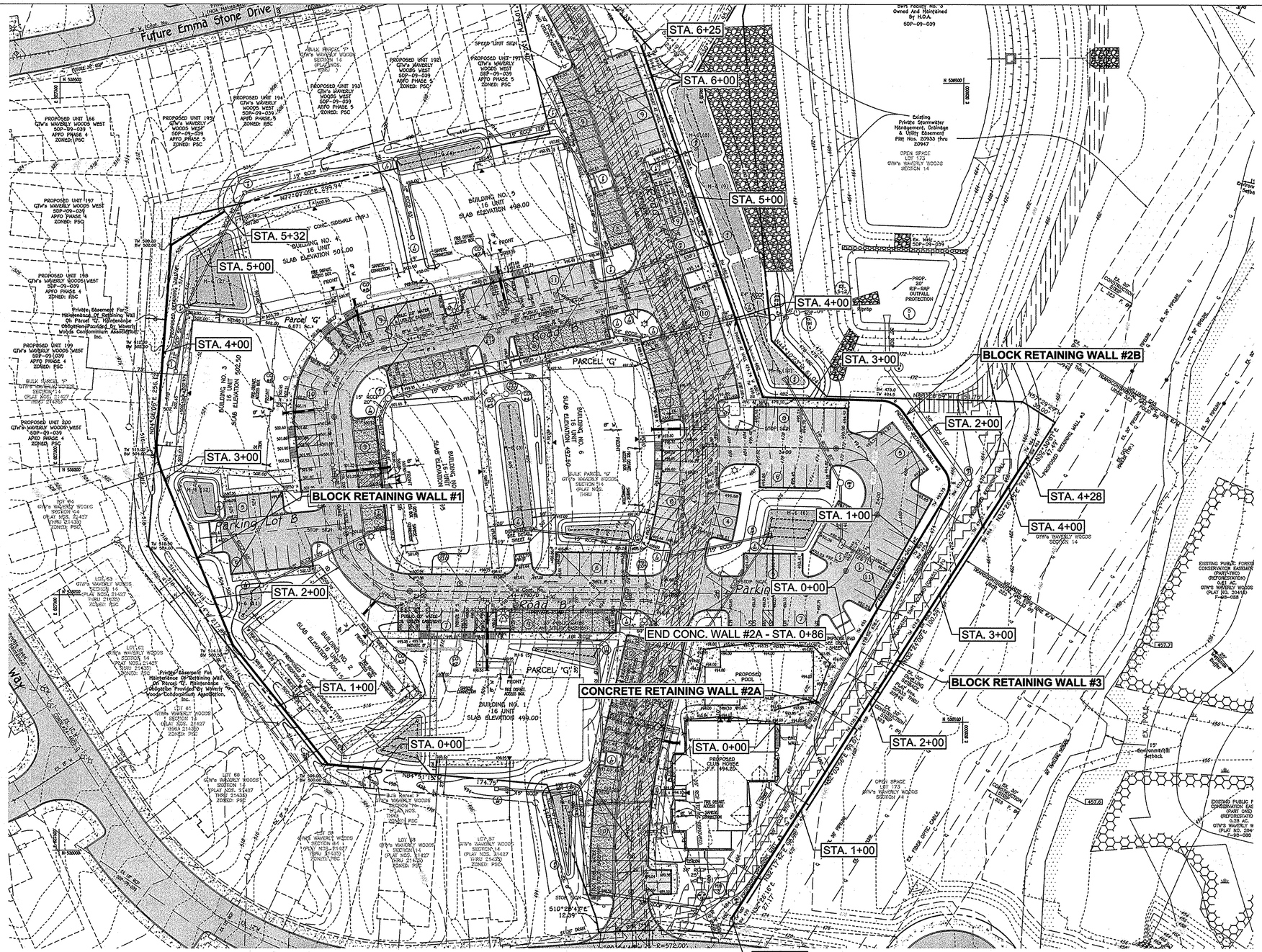

WALL LOCATION PLAN
1" = 40'

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
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10975 Guilford Road, Suite A Annapolis Junction, Maryland
(410) 880-4788 WWW.HCEA.COM Fax: (410) 880-4098

NO.	REVISION	DATE

PROFESSIONAL CERTIFICATION

"Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional land surveyor under the laws of the State of Maryland, License No. 14434, Expiration Date: 05/13/15."

RICHARD W. STURTEVANT 8/14/14 DATE

STATE OF MARYLAND · RICHARD WARREN STURTEVANT · No. 14434 · REGISTERED PROFESSIONAL ENGINEER

RICHARD W. STURTEVANT

BUILDERS
RYAN HOMES
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410-796-0908

OWNER
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DEVELOPER
WAVERLY WOODS DEVELOPMENT CORPORATION,
P.O. BOX 30
GLENELG, MARYLAND 21737-0030

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — Date 10/06/14
Chief, Development Engineering Division — Date 9-18-14
Director - Department of Planning and Zoning — Date 9/16/14

PROJECT		SECTION	PARCEL NOS.
GTW's Waverly Woods, Section 14 PARCELS G		14	P/O 249
PLAT 22944- 22953	BLOCK NO. 3 & 4	ZONE PSC	TAX/ZONE 16
ELEC. DIST. THIRD	CENSUS TR. 60300		
WATER CODE K-02	SEWER CODE 5992009		

RETAINING WALL LOCATION PLAN

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
BULK PARCEL G (PLAT Nos. Thru
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 23 OF 31

HCEA PROJECT # 12486-A SDP-13-031

SPECIFICATIONS

MODULAR CONCRETE BLOCK RETAINING WALL

PART 1: GENERAL

1.01 Description

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

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

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

1.02 Delivery, Storage and Handling

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

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

PART 2: PRODUCTS

2.01 Modular Concrete Retaining Wall Units

A. Modular concrete units shall conform to the following architectural requirements: face color - color may be specified by the Owner.

face finish - sculptured rock face in angular tri-planer configuration. Other face finishes will not be allowed without written approval of Owner.

bond configuration - running with bonds nominally located at midpoint vertically adjacent units, in both straight and curved alignments.

exposed surfaces of units shall be free of chips, cracks or other imperfections when viewed from a distance of 10 feet under diffused lighting.

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

C. Modular concrete units shall conform to the following structural and geometric requirements measured in accordance with appropriate references:

compressive strength = 3000 psi minimum; absorption = 8% maximum (6% in northern states) for standard weight aggregates;

dimensional tolerances = ±1/8" from nominal unit dimensions not including rough split face, ±1/16"

unit height - top and bottom planes; unit size - 8" (H) x 18" (W) x 12 (D) minimum;

unit weight - 75 lbs/unit minimum for standard weight aggregates;

inter-unit shear strength - 1000 plf minimum at 2 psi normal pressure; at 2 psi normal force.

geogrid/unit peak connection strength - 1000 plf minimum

D. Modular concrete units shall conform to the following constructability requirements: (if applicable)

vertical setback = 1/8"± per course (near vertical) or 1"+ per course per the design;

alignment and grid positioning mechanism - fiberglass pins, two per unit minimum;

maximum horizontal gap between erected units shall be - 1/2 inch.

2.02 Shear Connectors (if applicable)

A. Shear connectors shall be 1/2 inch diameter thermoset isopthalic polyester resin-protruded fiberglass reinforcement rods or equivalent to provide connection between vertically and horizontally adjacent units. Strength of shear connectors between vertical adjacent units shall be applicable over a design temperature of 10 degrees F to + 100 degrees F. B. Shear connectors shall be capable of holding the geogrid in the proper design position during grid pre-tensioning and backfilling.

2.03 Base Leveling Pad Material

A. Material shall consist of a compacted #57 crushed stone base as shown on the construction drawings.

2.04 Unit Drainage Fill

A. Unit drainage fill shall consist of #57crushed stone

2.05 Reinforced Backfill

A. Reinforced backfill shall type SM, be free of debris and meet the following gradation tested in accordance with ASTM D-422 and meet other properties shown on the plan:

Sieve Size	Percent Passing
2 inch	100-75
3/4 inch	100-75
No. 40	0-60
No. 200	0-35

Plasticity Index (PI) <10 and Liquid Limit <35 per ASTM D-4318.

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

2.06 Geogrid Soil Reinforcement

A. Geosynthetic reinforcement shall consist of geogrids manufactured specifically for soil reinforcement applications and shall be manufactured from high tenacity polyester yarn.

2.07 Drainage Pipe

A. The drainage pipe shall be perforated corrugated HDPE pipe manufactured in accordance with ASTM D-1248.

PART 3 EXECUTION

3.01 Excavation

A. Contractor shall excavate to the lines and grades shown on the construction drawings. Owner's representative shall be responsible for inspecting and approving the excavation prior to placement of leveling material or fill soils.

3.02 Base Leveling Pad

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

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

3.03 Modular Unit Installation

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

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

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

D. Place and compact drainage fill within and behind wall units. Place and compact backfill soil behind drainage fill. Follow wall erection and drainage fill closely with structure backfill.

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

3.04 Structural Geogrid Installation

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

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

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

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

3.05 Reinforced Backfill Placement

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

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

C. Reinforced backfill shall be compacted to 95% of the maximum density as determined by ASTM D698. The moisture content of the backfill material prior to and during compaction shall be uniformly distributed throughout each layer and shall be + 3% to - 3% of optimum.

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

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

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

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

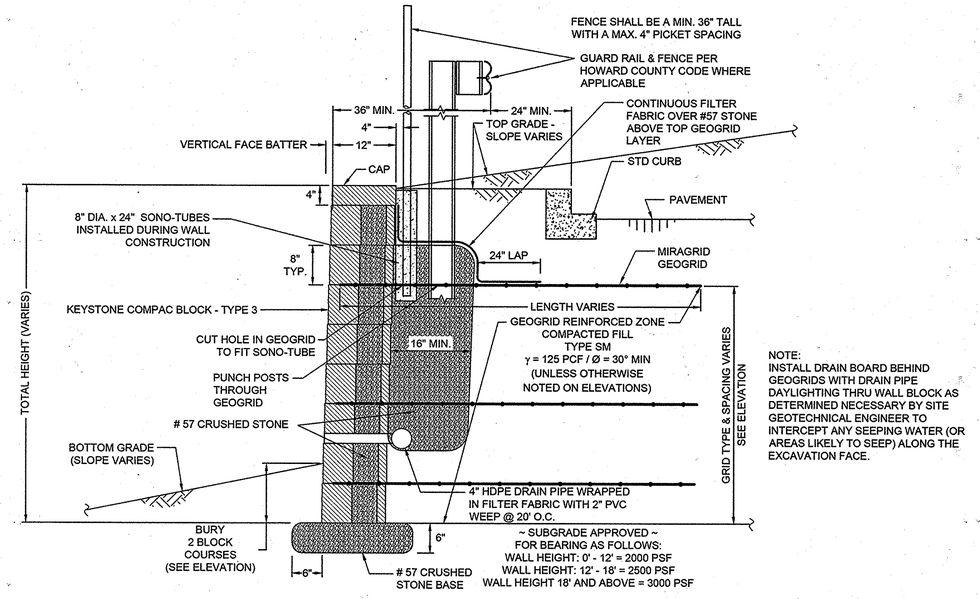
3.06 Cap Installation

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

3.07 Field Quality Control

A. The Owner shall engage inspection and testing services, including independent laboratories, to provide quality assurance and testing services during construction.

B. As a minimum, quality assurance testing should include foundation soil inspection, soil and backfill testing, verification of design parameters, and observation of construction for general compliance with design drawings and specifications.



NOTE:
INSTALL DRAIN BOARD BEHIND GEOGRIDS WITH DRAIN PIPE DAYLIGHTING THRU WALL BLOCK AS DETERMINED NECESSARY BY SITE GEOTECHNICAL ENGINEER TO INTERCEPT ANY SEEPING WATER (OR AREAS LIKELY TO SEEP) ALONG THE EXCAVATION FACE.

TYPICAL BLOCK RETAINING WALL SECTION
N.T.S.

NOTES:

1. No trees shall be planted within 10 feet of the top of the retaining wall.
2. Retaining walls shall only be constructed under the observation of a registered professional engineer and a (NICET, WACEL, or equiv.) certified soils technician.
3. 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.
4. 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.
5. 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.
6. Walls shall not be constructed on uncertified fill materials.
7. Walls shall not be constructed within a Howard Co. right-of-way or easement.

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
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HILLIS-CARNES
ENGINEERING ASSOCIATES
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(410) 880-4788 WWW.HCEA.COM Fax: (410) 880-4098

NO.	REVISION	DATE

PROFESSIONAL CERTIFICATION
"Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional land surveyor under the laws of the State of Maryland, License No. 14434, Expiration Date: 05/13/15."

RICHARD W. STURTEVANT 8/14/14
RICHARD W. STURTEVANT DATE

STATE OF MARYLAND · RICHARD WARREN STURTEVANT · NO. 14434 · REGISTERED PROFESSIONAL ENGINEER
RICHARD W. STURTEVANT

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BUILDERS
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410-796-0908

DEVELOPER
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P.O. BOX
GLENELG, MARYLAND
21737-0030

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — Date 10/06/14
Chief, Development Engineering Division — Date 9.18.14
Director - Department of Planning and Zoning — Date 10/6/14

PROJECT	SECTION	PARCEL NOS.
GTW's Waverly Woods, Section 14 PARCELS G	14	P/O 249

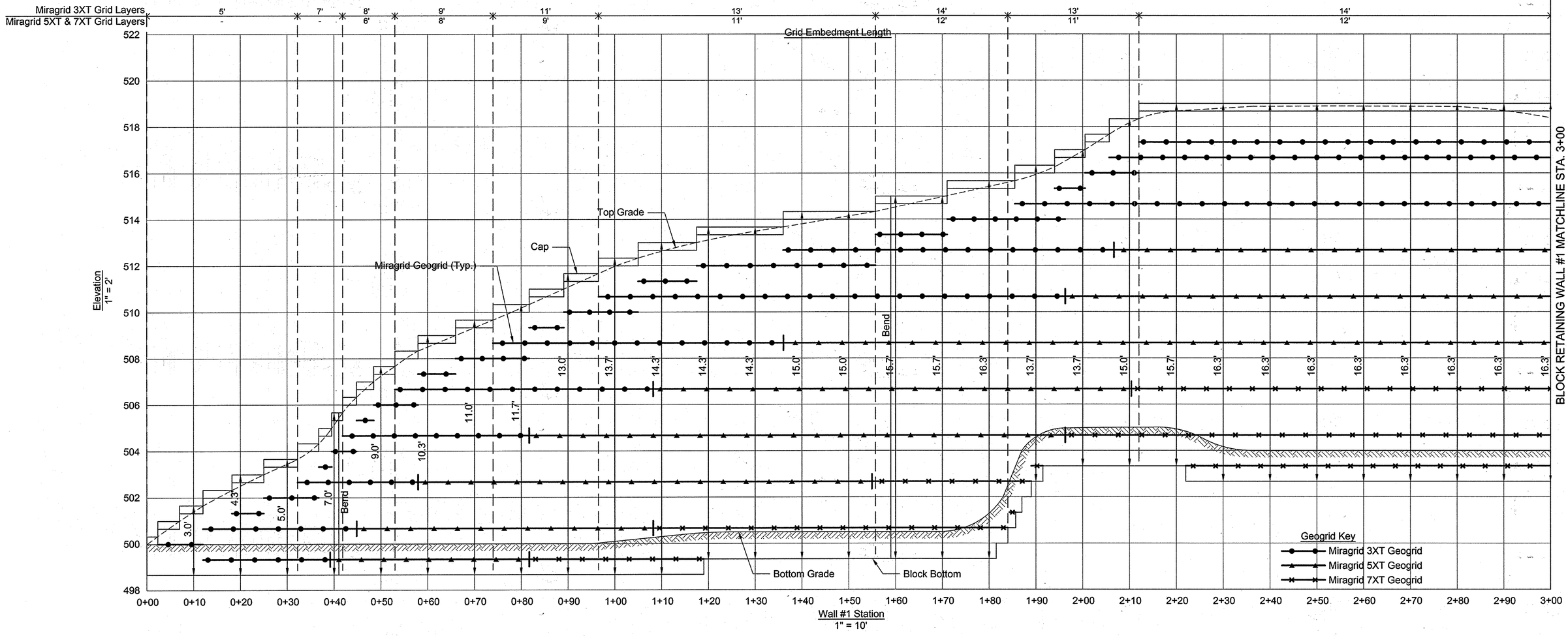
PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
22942-22953	3 & 4	PSC	16	THIRD	60300

WATER CODE	SEWER CODE
K-02	5992000

BLOCK RETAINING WALL CONSTRUCTION DETAILS

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
BULK PARCEL G (PLAT Nos. Thru
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 24 OF 31

HCEA PROJECT # 12486-A SDP-13-031



BLOCK RETAINING WALL #1 ELEVATION

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK – 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 – 2855

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

NO.	REVISION	DATE

PROFESSIONAL CERTIFICATION
"Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional land surveyor under the laws of the State of Maryland, License No. 14434, Expiration Date: 05/13/15."
RICHARD W. STURTEVANT 8/14/14
DATE

STATE OF MARYLAND · RICHARD WARREN STURTEVANT · No. 14434 · REGISTERED PROFESSIONAL ENGINEER
RICHARD W. STURTEVANT

OWNER
WAVERLY WOODS DEVELOPMENT CORPORATION
P.O. BOX 30
GLENELG, MARYLAND 21737-0030

BUILDERS
RYAN HOMES
9720 PATUXENT WOODS DRIVE
COLUMBIA, MARYLAND, 21043
410-796-0908

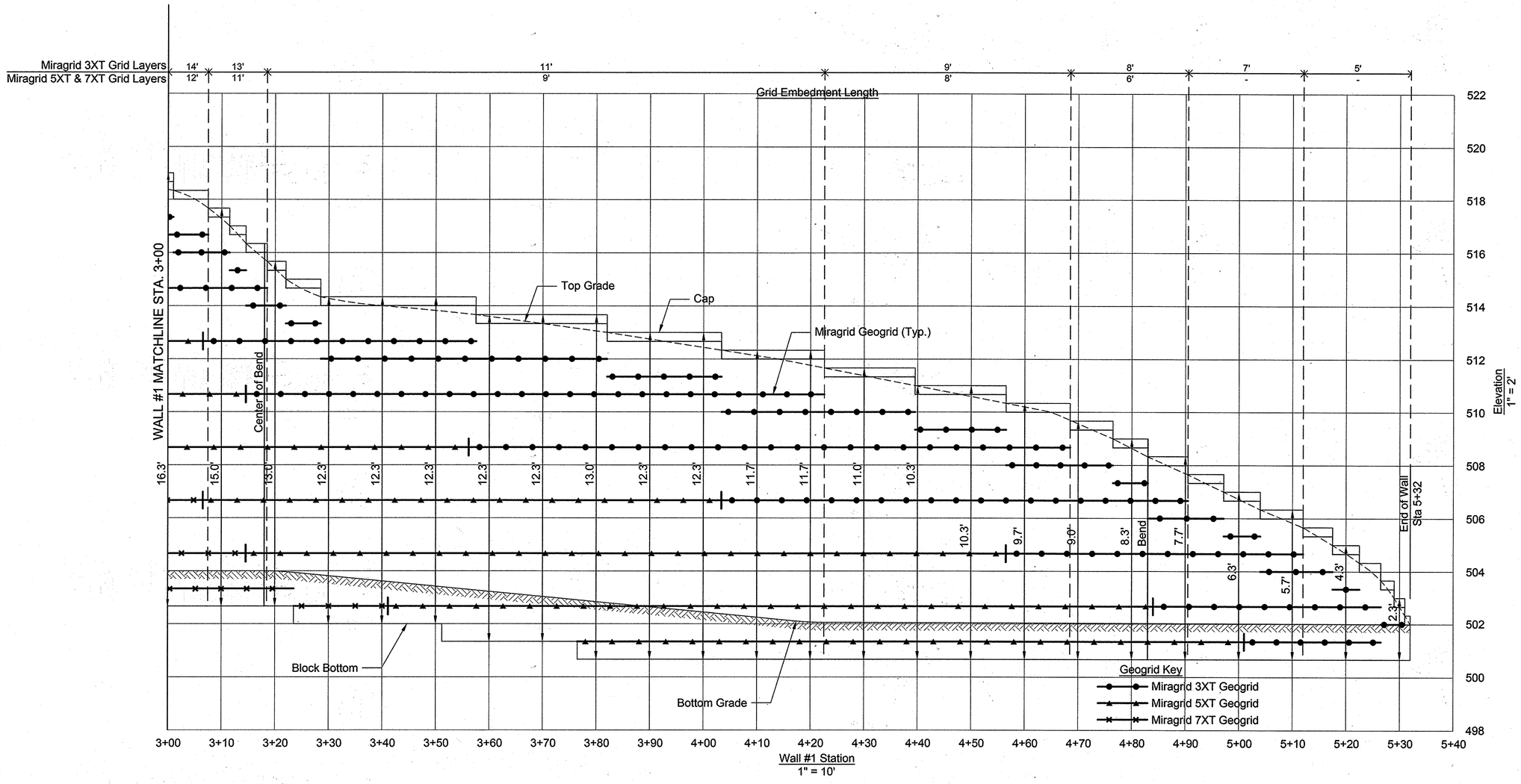
DEVELOPER
WAVERLY WOODS DEVELOPMENT CORPORATION,
P.O. BOX 30
GLENELG, MARYLAND
21737-0030

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Chief, Division of Land Development — Date 10/06/14
Chief, Development Engineering Division — Date 9.18.14
Director – Department of Planning and Zoning — Date 10/6/14

PROJECT			SECTION		PARCEL NOS.
GTW's Waverly Woods, Section 14 PARCELS G			14		P/O 249
PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
22944-22953	3 & 4	PSC	16	THIRD	60300
WATER CODE			SEWER CODE		
K-02			5992000		

BLOCK RETAINING WALL #1 ELEVATION
(STA. 0+00 TO STA. 3+00)

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
BULK PARCEL G (PLAT Nos. Thru
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 25 OF 31
HCEA PROJECT # 12486-A SDP-13-031



BLOCK RETAINING WALL #1 ELEVATION

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

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RICHARD W. STURTEVANT DATE

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Chief, Development Engineering Division — Date 9.18.14
Director – Department of Planning and Zoning — Date 10/6/14

PROJECT	SECTION	PARCEL NOS.
GTW's Waverly Woods, Section 14 PARCELS G	14	P/O 249

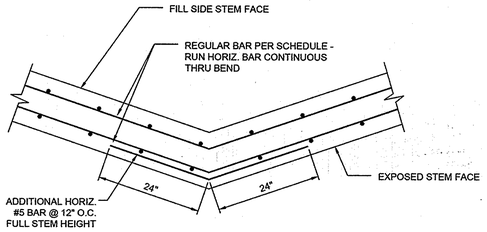
PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
22944 - 22953	3 & 4	PSC	16	THIRD	60300

WATER CODE	SEWER CODE
K-02	5992000

BLOCK RETAINING WALL #1 ELEVATION
(STA. 3+00 TO STA. 5+32)

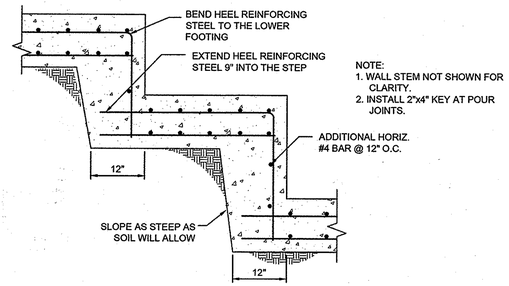
AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
BULK PARCEL G (PLAT Nos. Thru
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 26 OF 31

HCEA PROJECT # 12486-A SDP-13-031



WALL BEND REINFORCEMENT DETAIL

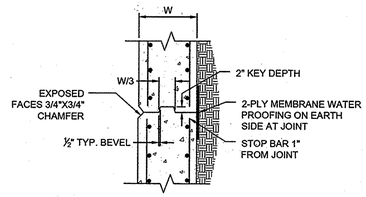
NOT TO SCALE



NOTE:
1. WALL STEM NOT SHOWN FOR CLARITY.
2. INSTALL 2"x4" KEY AT POUR JOINTS.

CONCRETE WALL FOOTING STEP DETAIL

NOT TO SCALE

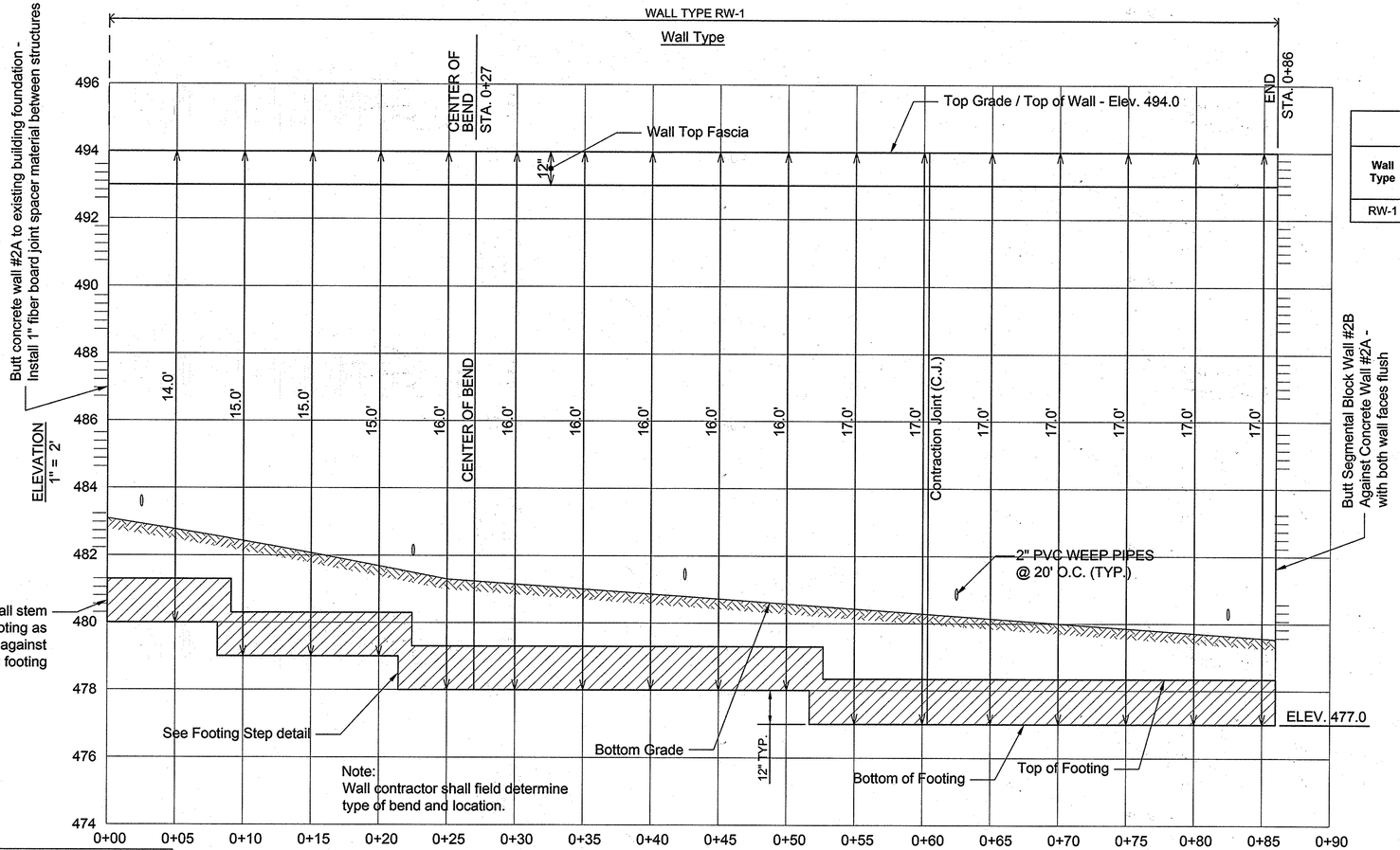


CONCRETE WALL STEM VERTICAL CONTRACTION JOINT C.J. DETAIL (PLAN VIEW)

NOT TO SCALE

NOTES:

1. ALL RETAINING WALL CONCRETE SHALL BE 4000 PSI WITH AIR ENTRAINMENT.
2. REINFORCING STEEL SHALL CONFORM TO ASTM A-615 GRADE 60.
3. WALL BACKFILL SHALL BE COMPACTED TO 95% OF T-99.
4. CONCRETE WORK SHALL COMPLY WITH THE LATEST ACI 318 BUILDING CODE FOR CONCRETE STRUCTURES.
5. ALL REBAR SPLICES NOT SHOWN SHALL BE A MINIMUM OF 40 BAR DIAM.
6. ALL WALL PERMANENTLY EXPOSED SURFACES SHALL BE MORTAR PATCHED AND SACK-RUBBED FINISHED WITH GROUT AND BURLAP, (RUB FINISH PER OWNER'S SPECIFICATIONS).
7. DESIGN SOIL BEARING VALUE OF 3000 PSF TO BE FIELD VERIFIED.
8. ALL WALL DIMENSIONS, ANGLES, BEND LOCATIONS, TW/BW GRADES AND LAYOUT SHALL BE FIELD VERIFIED.
9. 2-PLY MEMBRANE WATERPROOFING PER SHA. STANDARD DETAIL NO. BR-SB(6.47)-05-362.
10. SEE SHEET 2 OF 9 FOR STANDARD HOWARD COUNTY NOTES FOR WALL CONSTRUCTION.

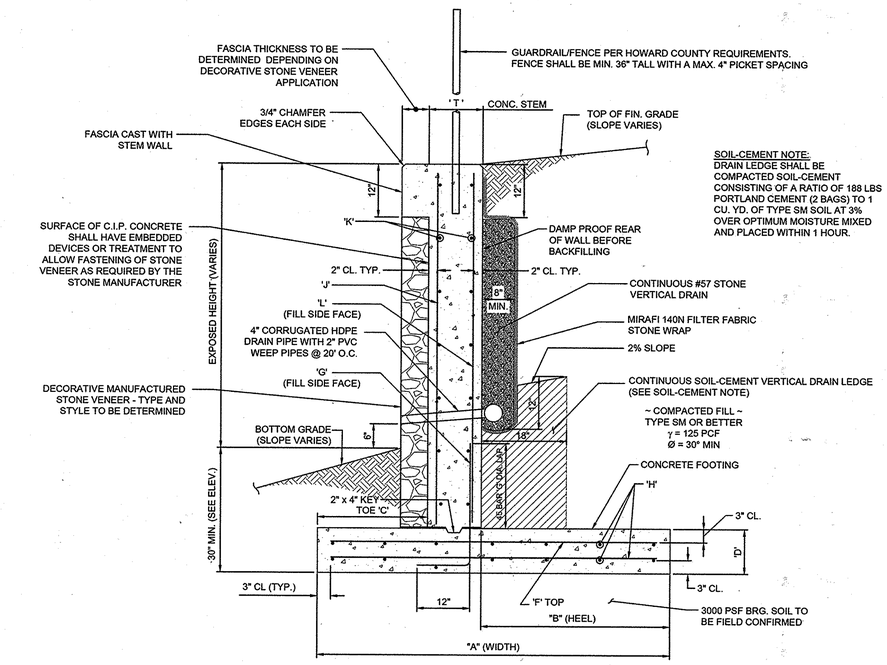


CONCRETE WALL #2A STATION

1" =5'

CONCRETE WALL SCHEDULE

Wall Type	Wall Footing Width 'A'	Wall Footing Heel 'B'	Wall Footing Toe 'C'	Footing Depth 'D'	Stem Thickness 'T'	Footing Reinf. 'F'	Stem Reinf. 'G'	Footing Reinf. 'H'	Stem Reinf. 'J'	Stem Reinf. 'K'	Stem Reinf. 'L'
RW-1	9'-10"	5'-8"	2'-10"	1'-4"	1'-4"	#7 @ 12"	#8 @ 12"	#6 @ 12"	#6 @ 12"	#5 @ 12"	#6 @ 12"



TYPICAL CONCRETE WALL #2A SECTION

NOT TO SCALE

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
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RICHARD W. STURTEVANT 8/14/14
DATE

STATE OF MARYLAND · RICHARD WARREN STURTEVANT · No. 14434 · REGISTERED PROFESSIONAL ENGINEER

RICHARD W. STURTEVANT

BUILDERS
RYAN HOMES
9720 PATUXENT WOODS DRIVE
COLUMBIA, MARYLAND, 21043
410-796-0908

OWNER
WAVERLY WOODS DEVELOPMENT CORPORATION
P.O. BOX 30
GLENELG, MARYLAND 21737-0030

DEVELOPER
WAVERLY WOODS DEVELOPMENT CORPORATION,
P.O. BOX 30
GLENELG, MARYLAND
21737-0030

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — Date 10/06/14
Chief, Development Engineering Division — Date 9.18.14
Director - Department of Planning and Zoning — Date 9/6/14

PROJECT	SECTION	PARCEL NOS.
GTW's Waverly Woods, Section 14 PARCELS G	14	P/O 249

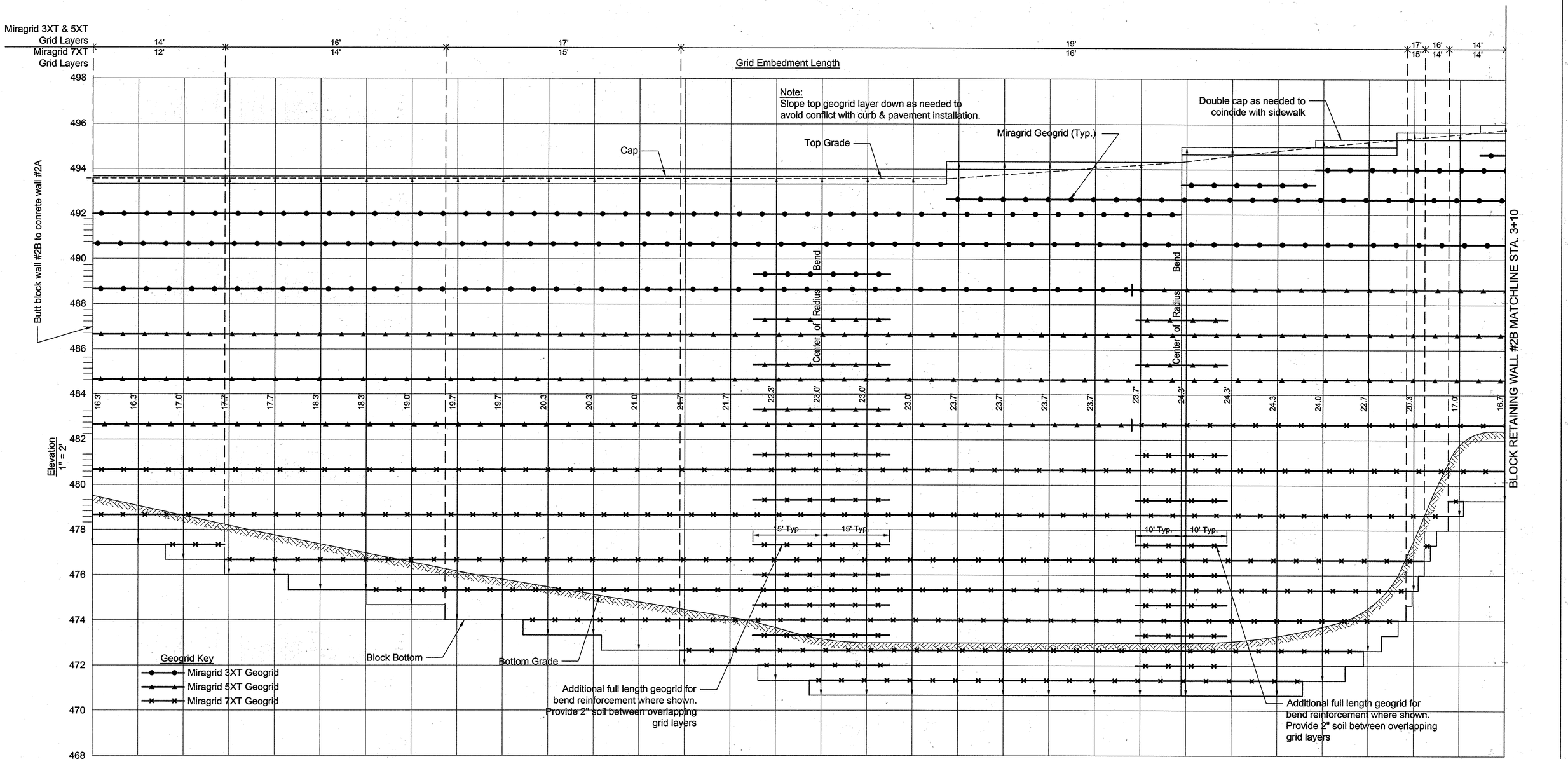
PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
22944-22953	3 & 4	PSC	16	THIRD	60300

WATER CODE	SEWER CODE
K-02	5992000

CONCRETE RETAINING WALL #2A CONSTRUCTION DETAILS

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
BULK PARCEL G (PLAT Nos. Thru
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 27 OF 31

HCEA PROJECT # 12486-A SDP-13-031



BLOCK RETAINING WALL #2B ELEVATION

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
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APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Chief, Division of Land Development — Date 10/06/14
Chief, Development Engineering Division — Date 9.18.14
Director - Department of Planning and Zoning — Date 10/14/14

PROJECT	SECTION	PARCEL NOS.
GTW's Waverly Woods, Section 14 PARCELS G	14	P/O 249

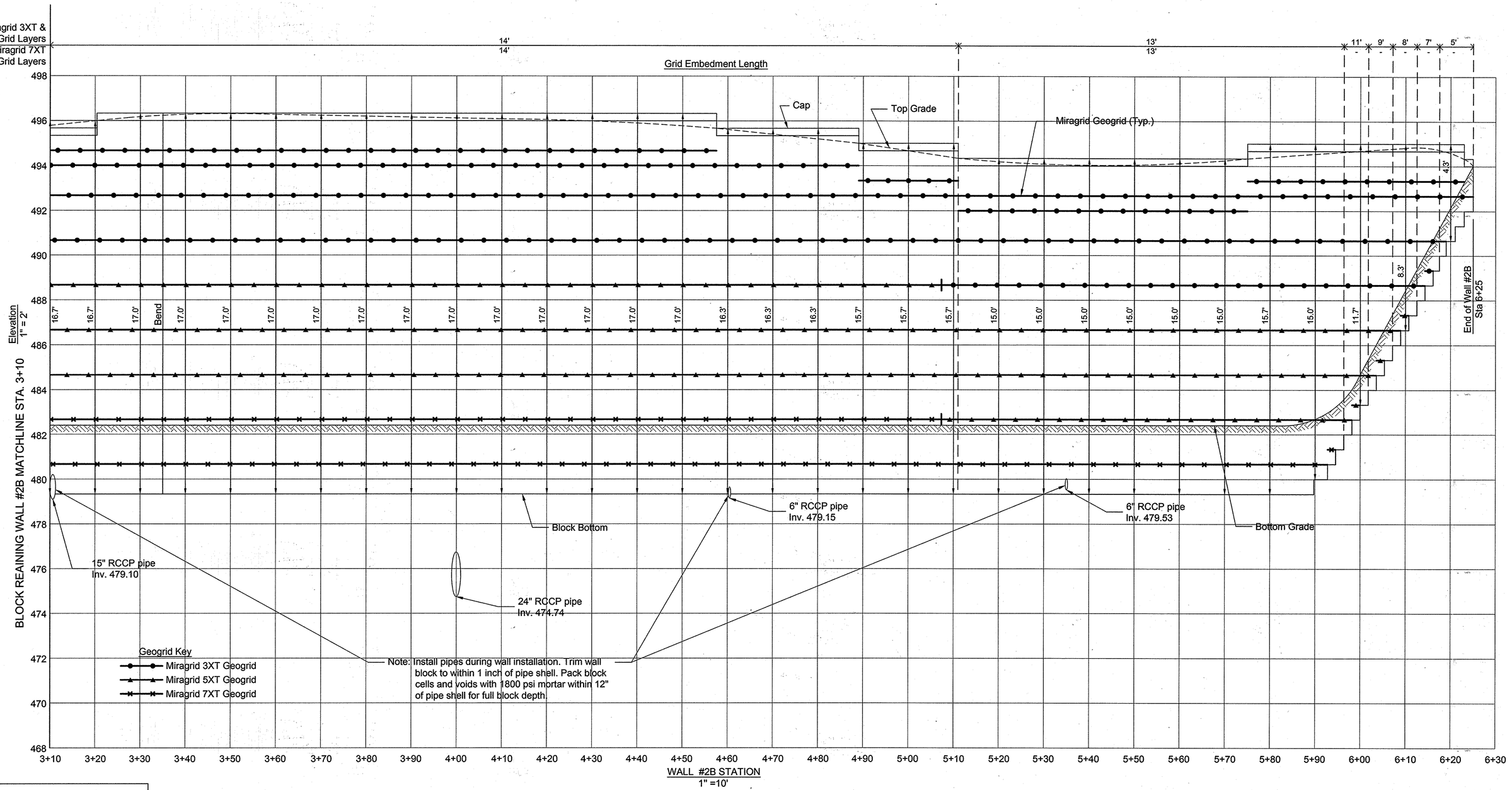
PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
22944-22953	3 & 4	PSC	16	THIRD	60300

WATER CODE	SEWER CODE
K-02	5992000

BLOCK RETAINING WALL #2B ELEVATION
(STA. 0+00 TO STA. 3+10)

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
BULK PARCEL G (PLAT Nos. Thru
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 28 OF 31

HCEA PROJECT # 12486-A SDP-13-031



BLOCK RETAINING WALL #2B ELEVATION

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

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GLENELG, MARYLAND 21737-0030

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

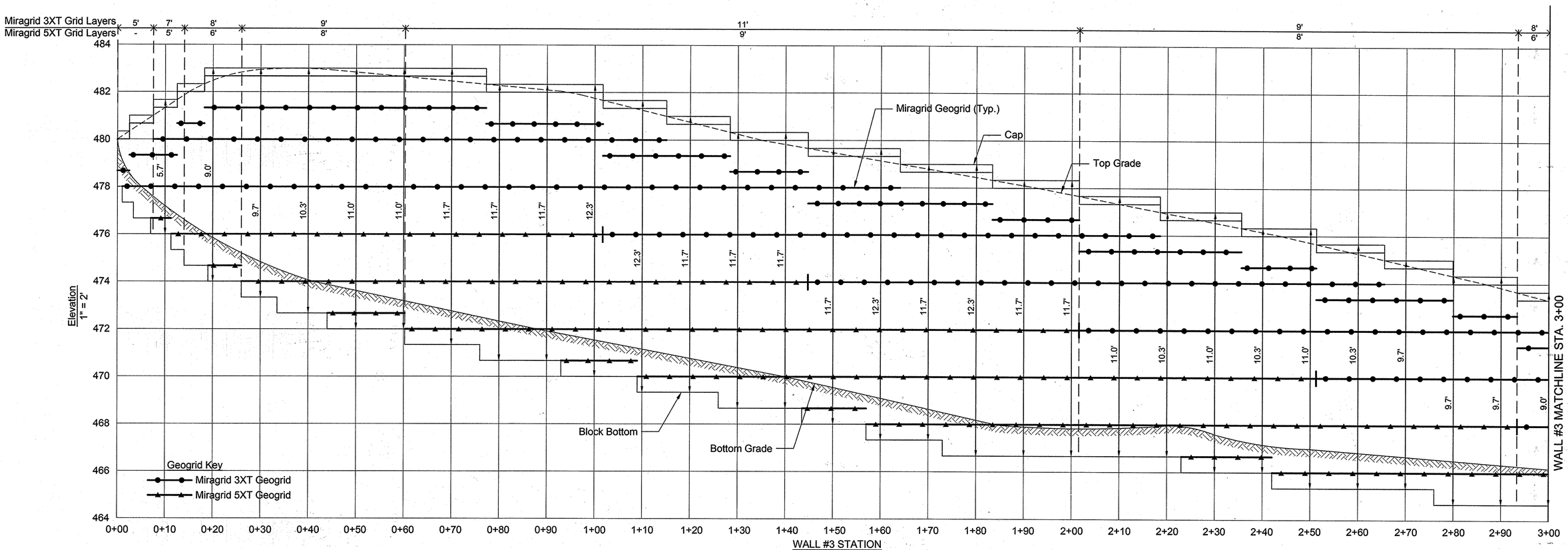
Chief, Division of Land Development — Date 10/06/14
Chief, Development Engineering Division — Date 9.18.14
Director – Department of Planning and Zoning — Date 9/18/14

PROJECT		SECTION	PARCEL NOS.
GTW's Waverly Woods, Section 14 PARCELS G		14	P/O 249
PLAT	BLOCK NO. / ZONE / TAX/ZONE / ELEC. DIST. / CENSUS TR.		
22944-22953	3 & 4 / PSC / 16 / THIRD / 60300		
WATER CODE		SEWER CODE	
K-02		5992000	

BLOCK RETAINING WALL #2B ELEVATION
(STA. 3+10 TO STA. 6+25)

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
BULK PARCEL G (PLAT Nos. Thru
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 29 OF 31

HCEA PROJECT # 12486-A SDP-13-031



WALL #3 STATION
1" =10'

WALL #3 ELEVATION

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

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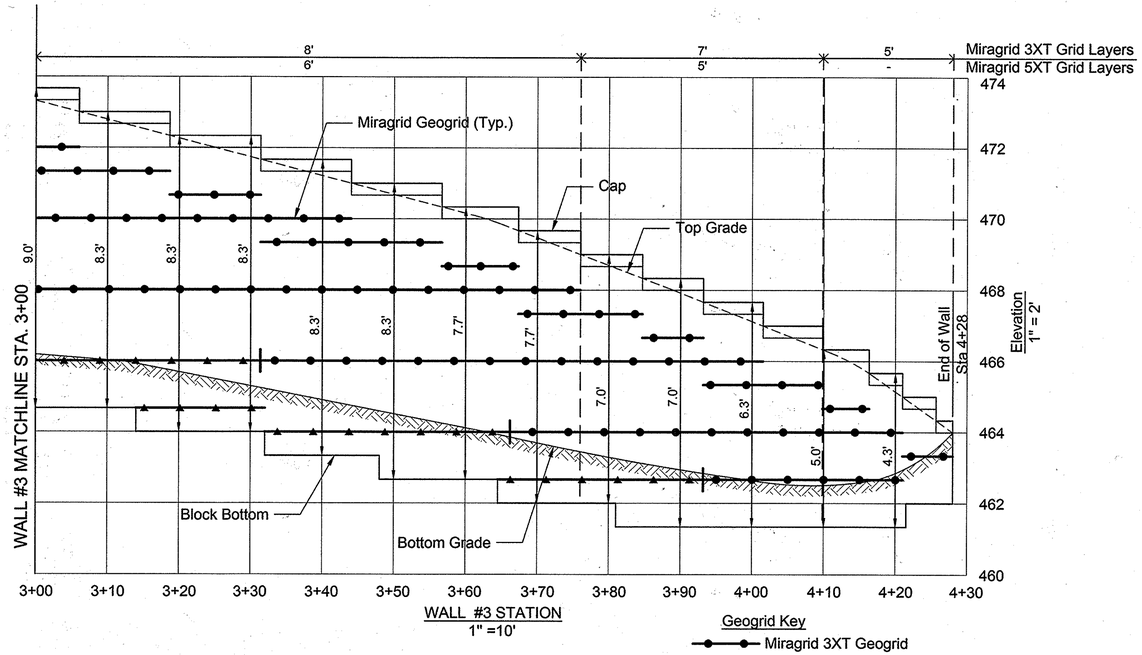
PROJECT			SECTION		PARCEL NOS.
GTW's Waverly Woods, Section 14 PARCELS G			14		P/O 249
PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
22944 - 22953	3 & 4	PSC	16	THIRD	60300
WATER CODE			SEWER CODE		
K-02			5992000		

WALL #3 ELEVATION
(STA. 0+00 TO STA. 3+00)

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
BULK PARCEL G (PLAT Nos. Thru
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: AUGUST 9, 2014
SHEET 30 OF 31

HCEA PROJECT # 12486-A SDP-13-031



WALL #3 ELEVATION

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE 2/20/2014

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PROFESSIONAL ENGINEER

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Chief, Division of Land Development — Date 10/24/14
Chief, Development Engineering Division — Date 9.18.14
Director - Department of Planning and Zoning — Date 10/21/14

PROJECT		SECTION	PARCEL NOS.
GTW's Waverly Woods, Section 14 PARCELS G		14	P/O 249
PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
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WATER CODE		SEWER CODE	
K-02		5992000	

WALL #3 ELEVATION
(STA. 3+00 TO STA. 4+28)

AGE RESTRICTED ADULT HOUSING
WAVERLY MEWS
SECTION 14
BULK PARCEL G (PLAT Nos. Thru
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
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SHEET 31 OF 31

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