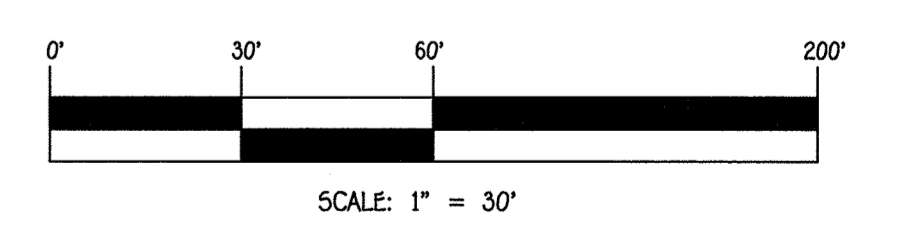


LEGEND	
SYMBOL	DESCRIPTION
---	EXISTING CONTOUR 2' INTERVAL
---	PROPOSED CONTOUR 2' INTERVAL
X 362.2	SPOT ELEVATION
---	EROSION CONTROL MATING
---	LINE OF DISTURBANCE
---	STREET LIGHT PER F-09-097
---	PROPOSED STORM DRAIN PIPE
---	PROPOSED SEWER
---	PROPOSED LANDSCAPE TREES
---	PERIMETER TREES
---	EXISTING STORMDRAIN
---	EXISTING SEWER
---	EXISTING WATER
---	EXISTING WATER & SEWER UTILITY EASEMENT
---	PROPOSED FENCE
---	PROPOSED CONCRETE SIDEWALK
---	SUPRE 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

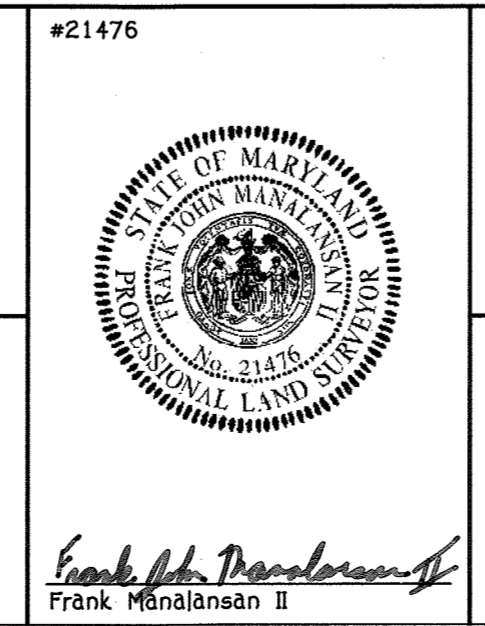


NOTE: SEE SHEET 2B FOR ROADWAY GEOMETRY AND DIMENSIONS.

**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CONTONIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE  
 ELICOTT CITY, MARYLAND 21142  
 (410) 461-2895

NO.	REVISION	DATE
2	REVISE LANDSCAPE WALL HAND RAIL & M-6 (S) STORM DRAIN PPS	7/16/19
1	REVISE FINAL GRADING & CISTERN WITH ROOF LEADERS	12/04/19

**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 8/7/14 DATE  
 APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.  
 COUNTY HEALTH OFFICER 9/2/2014 DATE



**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

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development	10/26/14
Chief, Development Engineering Division	9/18/14
Director - Department of Planning and Zoning	10/14/14

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

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

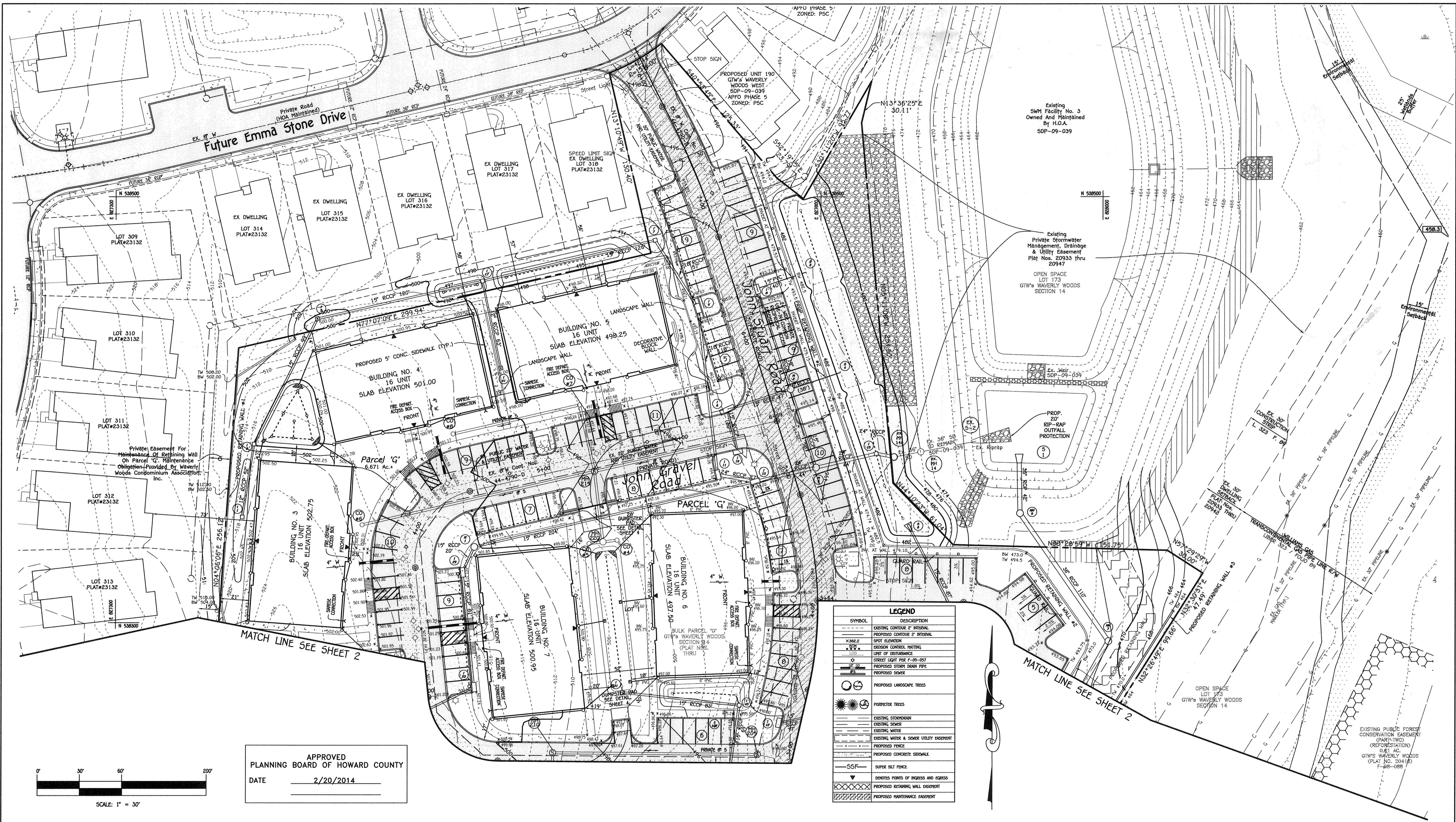
WATER CODE	SEWER CODE
K-02	5992000

**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 2 OF 31

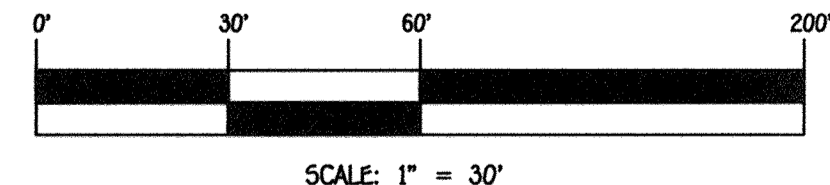
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SDP-13-031



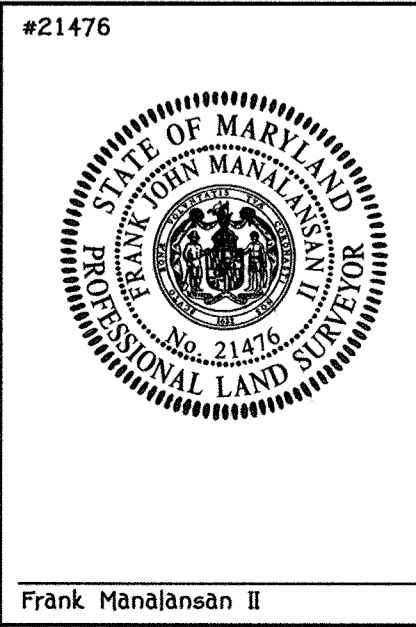


APPROVED  
PLANNING BOARD OF HOWARD COUNTY  
DATE 2/20/2014



NO.	REVISION	DATE
2	REVISE SWM FACILITIES AND ASSOCIATED GRADING	2/28/17
1	REVISE FINAL GRADING & CISTERN WITH ROOF LEADERS	2/4/15

**PROFESSIONAL CERTIFICATION**  
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 Frank Manalansan II 1-2-18 Date  
 APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.  
 Wilson M. Roman 1/29/2018  
 COUNTY HEALTH OFFICER



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

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

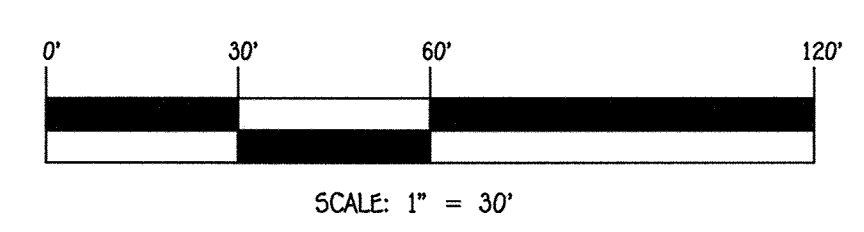
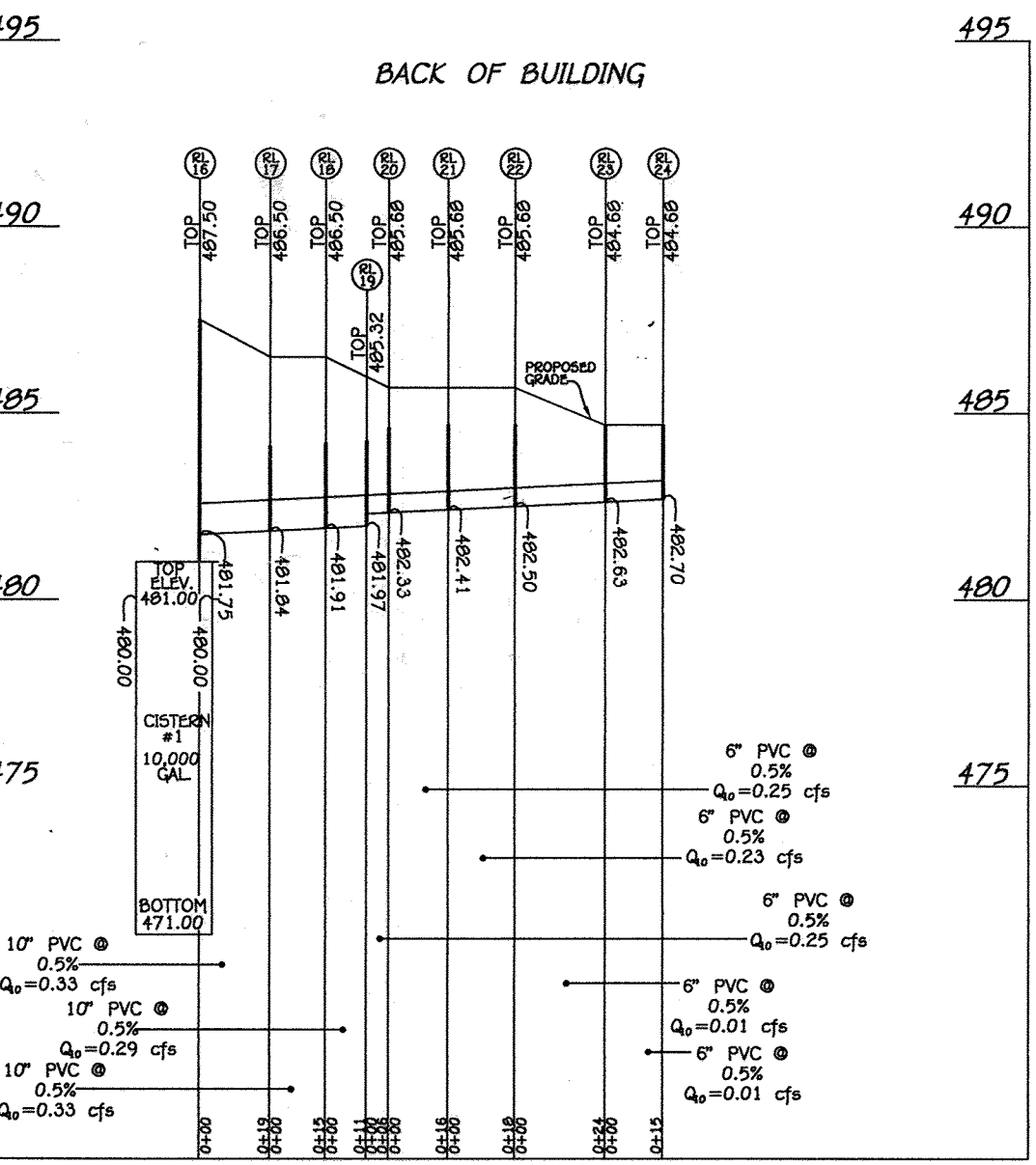
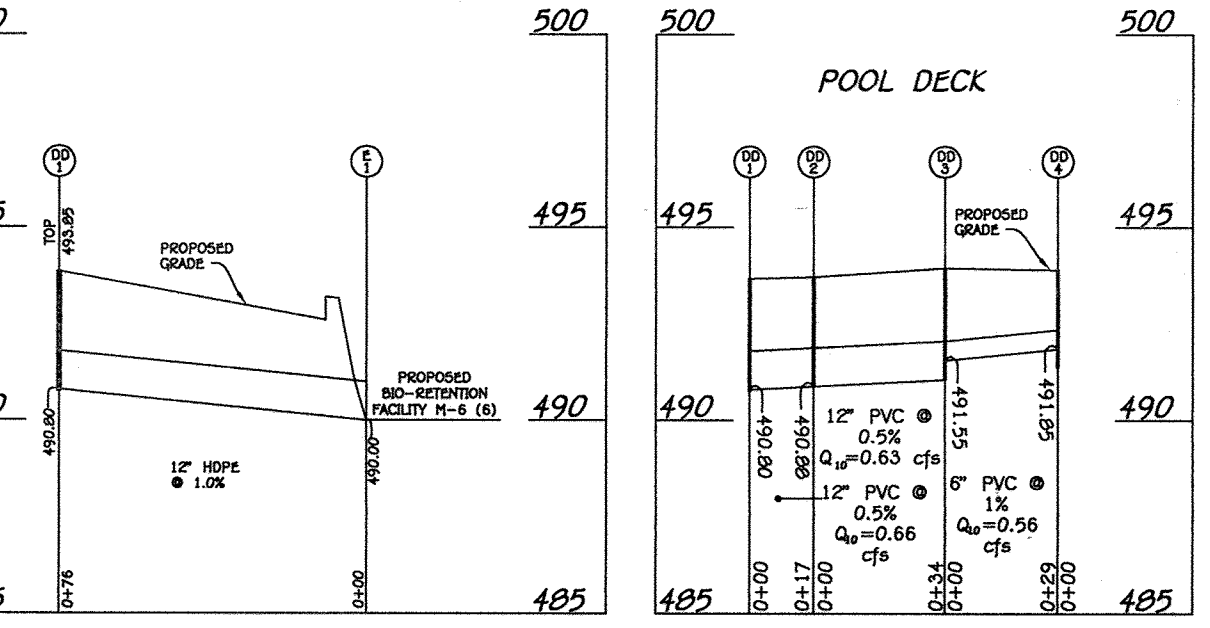
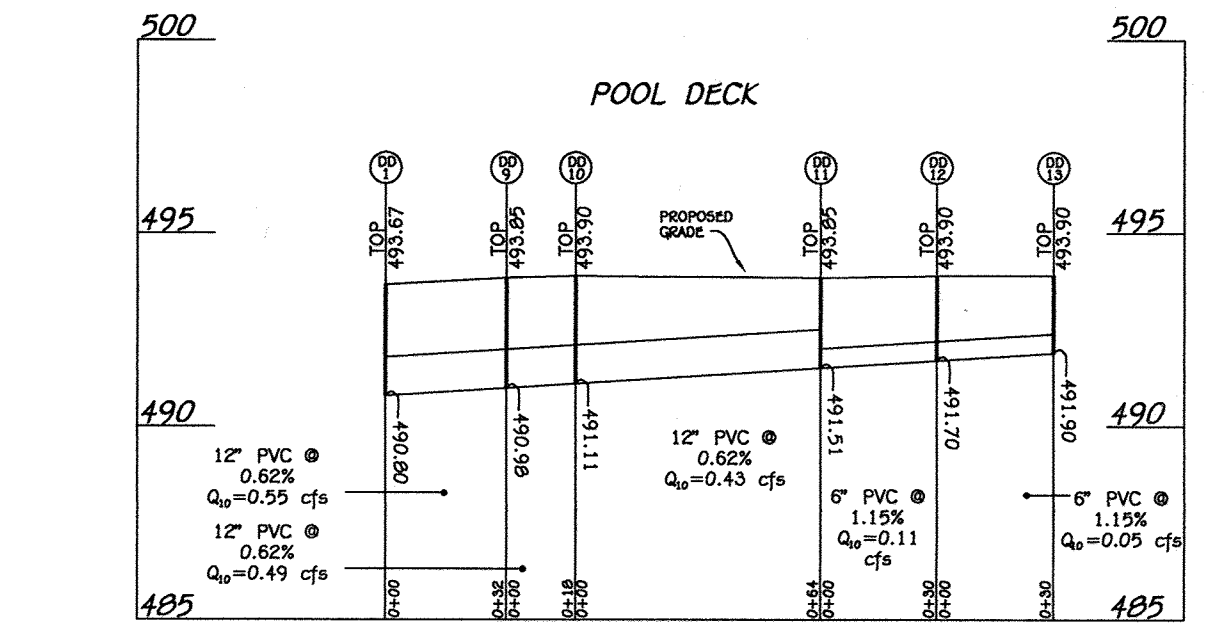
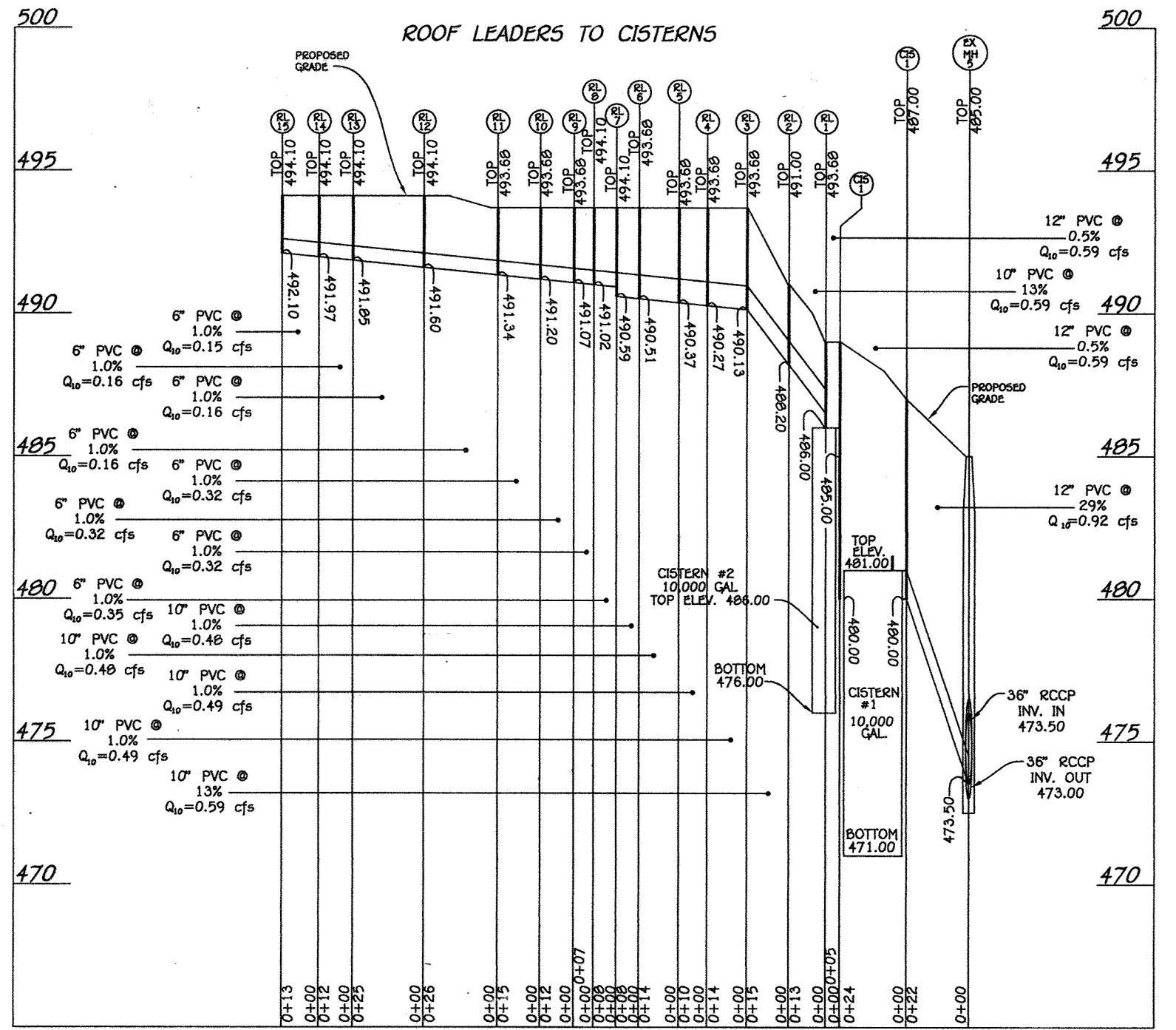
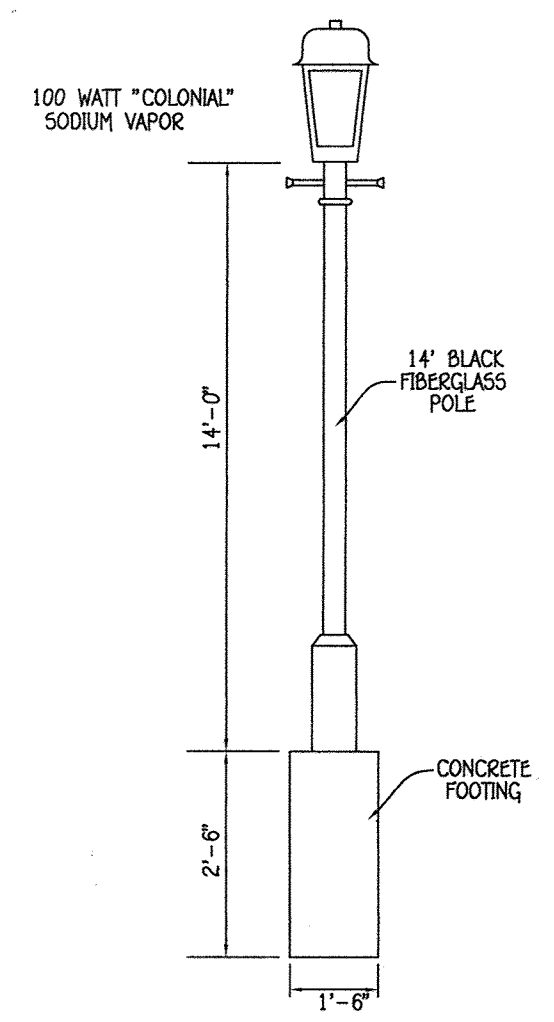
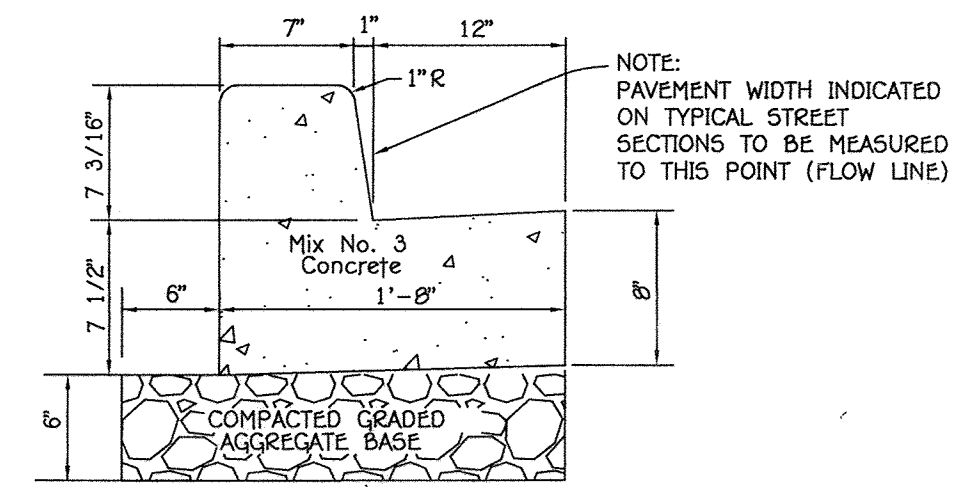
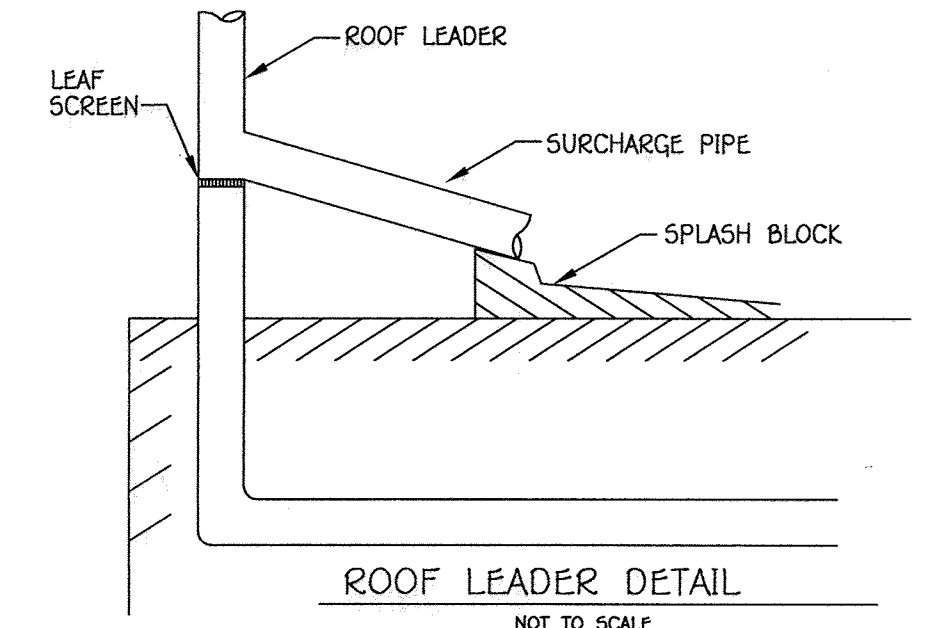
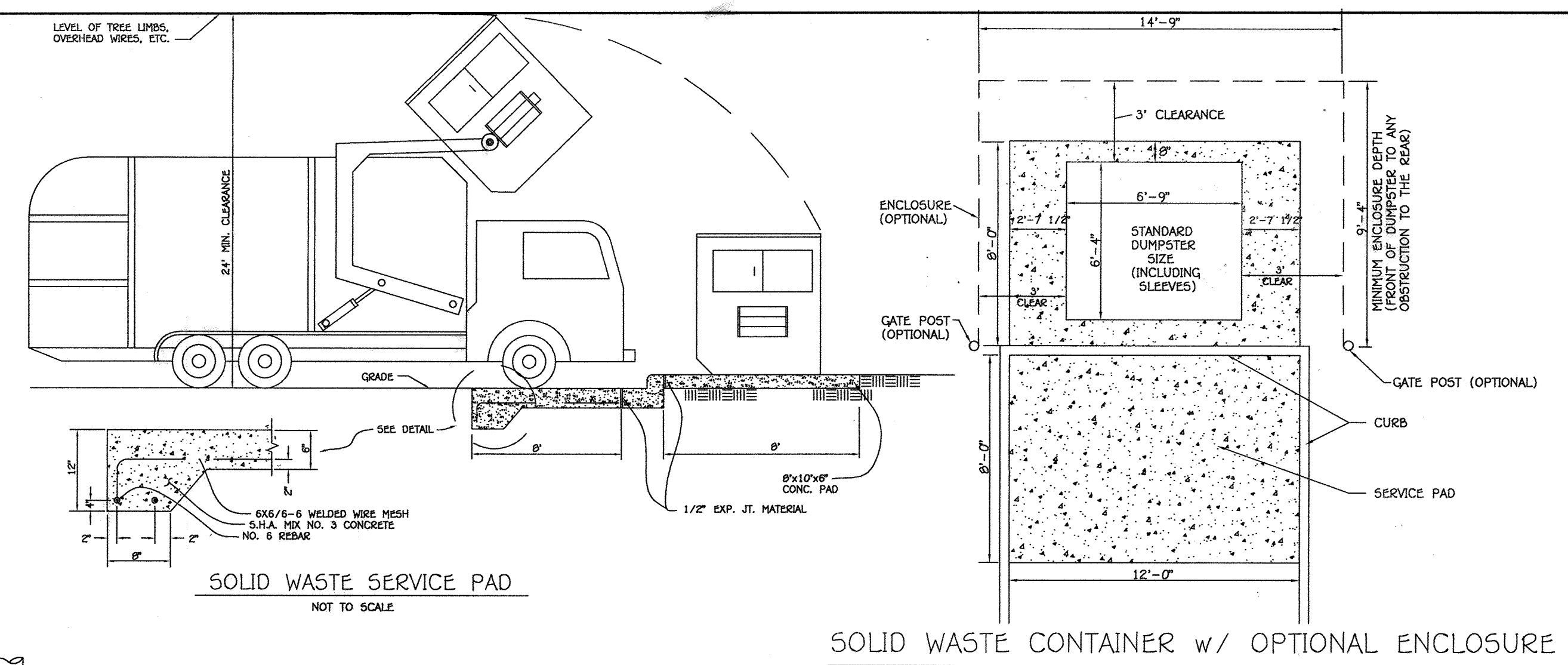
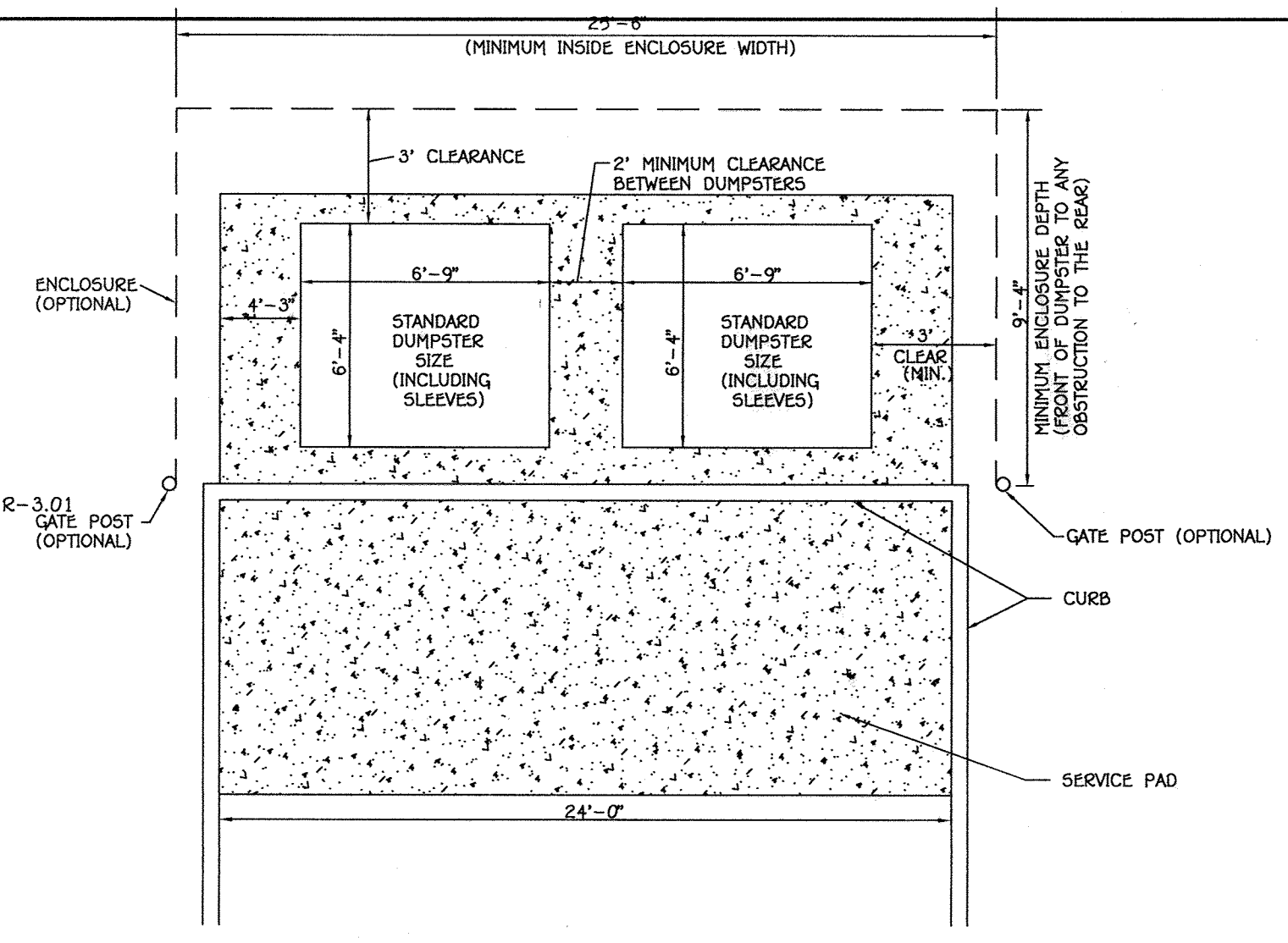
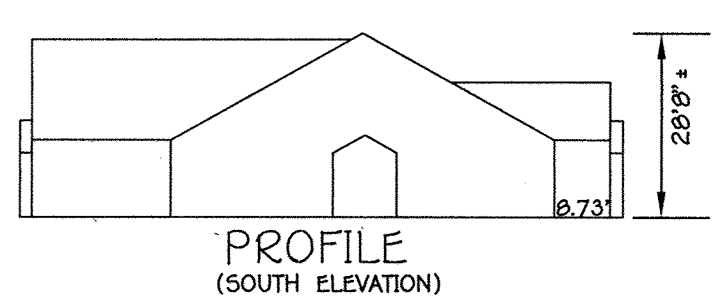
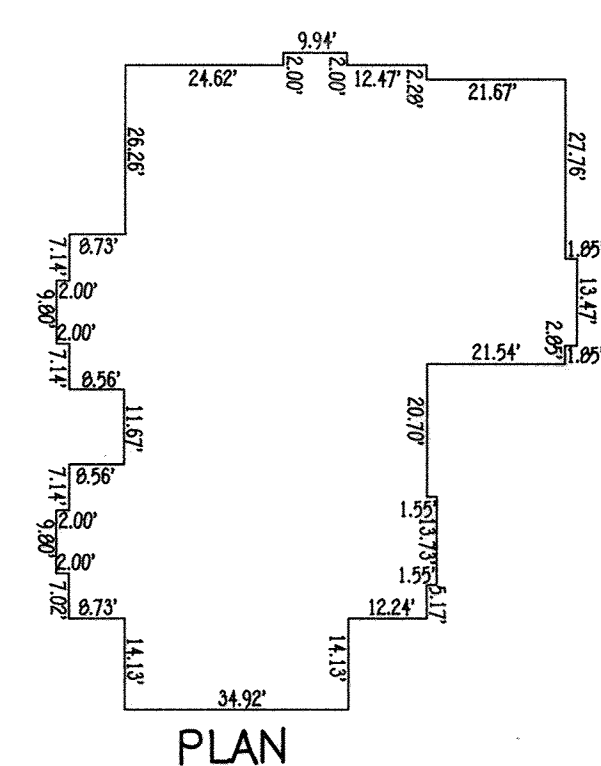
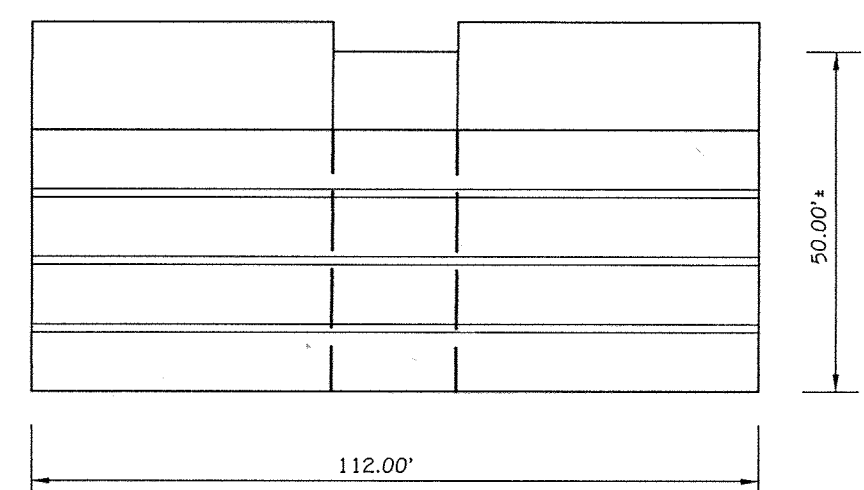
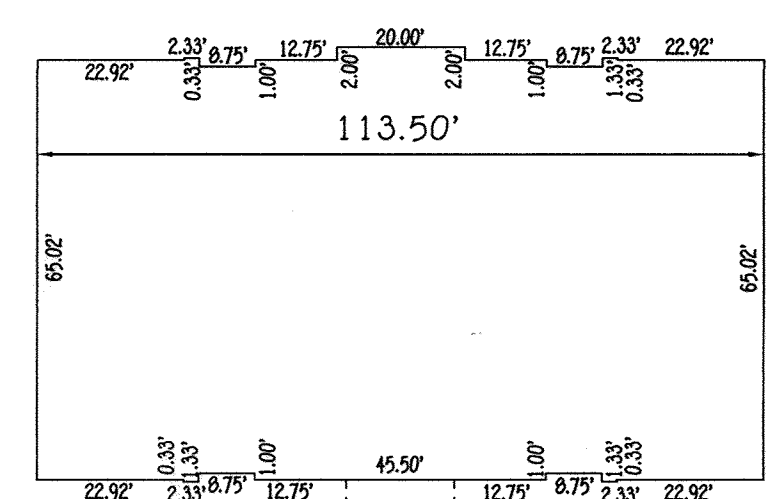
Chief, Division of Land Development 2/2/18 Date  
 Director, Department of Planning and Zoning 2-2-18 Date

PROJECT	SECTION	PARCEL NOS.			
GTW'S WAVERLY WOODS, SECTION 14	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				

REVISED  
 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: DECEMBER 28, 2017  
 SHEET 3 OF 31  
 SDP-13-031

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



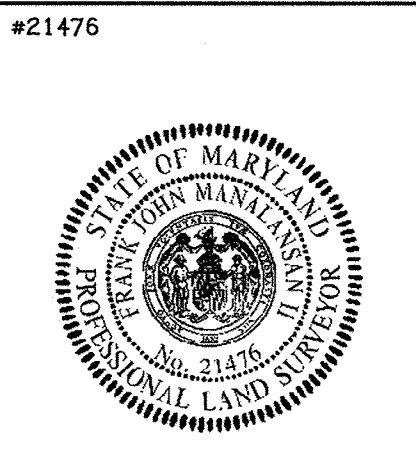


APPROVED  
PLANNING BOARD OF HOWARD COUNTY  
DATE 2/20/2014

SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR)							
		3 TO <5	5 TO <7	≥7	3 TO <5	5 TO <7	≥7		
P-2	PARKING DRIVE AISLES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY	PAVEMENT MATERIAL (INCHES)							
		HMA SUPERPAVE FINAL SURFACE		HMA WITH CONSTANT GAB					
		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		HMA WITH CONSTANT GAB					
LOCAL ROADS: ACCESS PLACE, ACCESS STREET	ACCESS PLACE, ACCESS STREET	9.5 MM. PG 64-22, LEVEL 1 (ESAL)		1.0	1.0	1.0	1.0	1.0	1.0
		HMA SUPERPAVE BASE		HMA WITH CONSTANT GAB					
		19.0 MM. PG 64-22, LEVEL 1 (ESAL)		2.0	2.0	2.0	3.5	2.0	2.0
CUL-DE-SACS: RESIDENTIAL	RESIDENTIAL	GRADED AGGREGATE BASE (GAB)		0.0	4.0	3.0	4.0	4.0	4.0
		GRADED AGGREGATE BASE (GAB)		0.0	4.0	3.0	4.0	4.0	4.0

FISHER, COLLINS & CARTER, INC.  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
CENTRAL SQUARE OFFICE PARK - 10272 BALDORRE NATIONAL PIKE  
ELICOTT CITY, MARYLAND 21042  
(410) 451-2999

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 8/7/14 DATE



OWNER  
WAVERLY WOODS DEVELOPMENT CORPORATION  
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

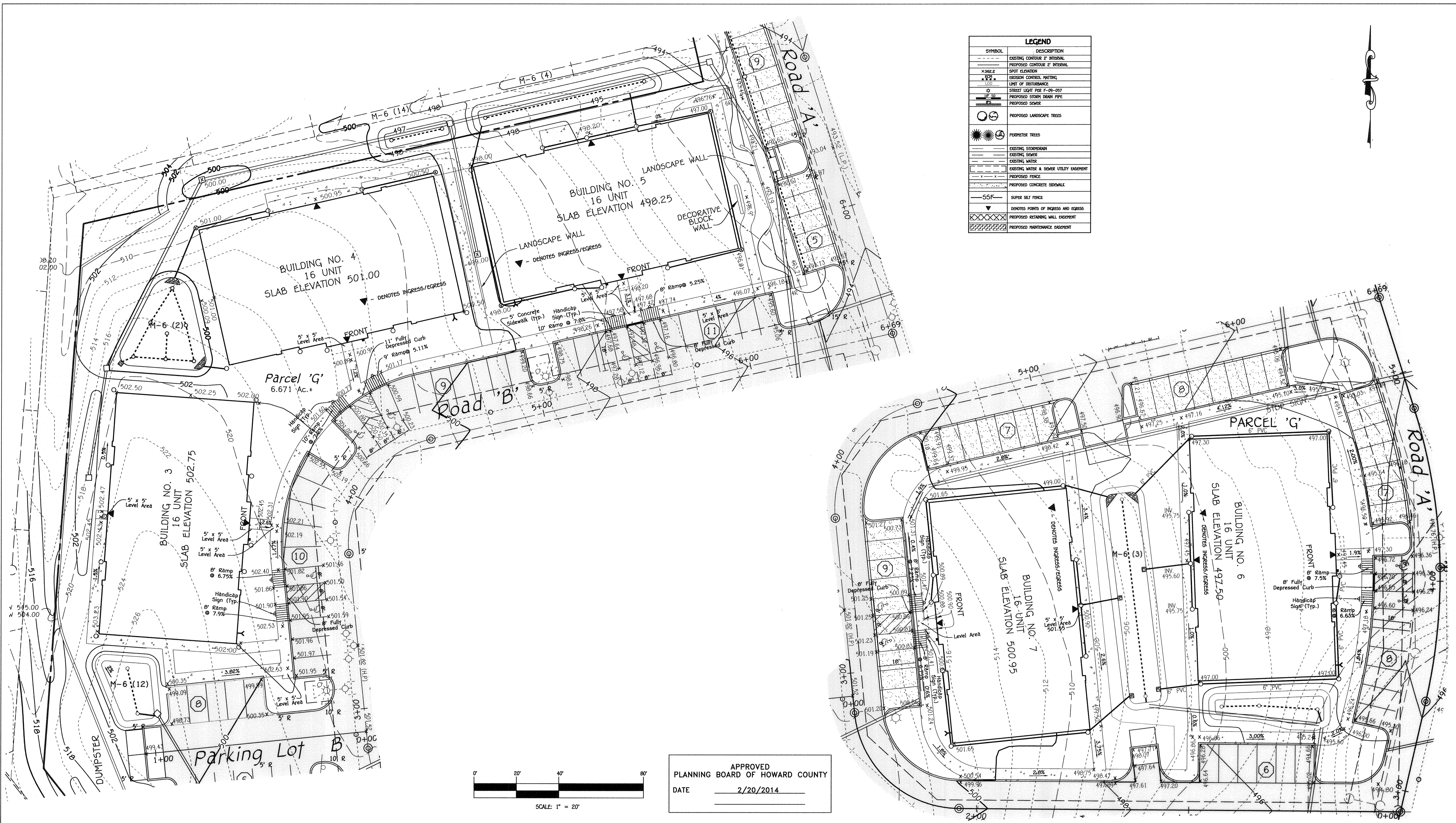
Chief, Division of Land Development  
Chief, Development Engineering Division  
Director - Department of Planning and Zoning

PROJECT GTW'S WAVERLY WOODS, SECTION 14 PARCEL G	SECTION 14	PARCEL NOS. 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	

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

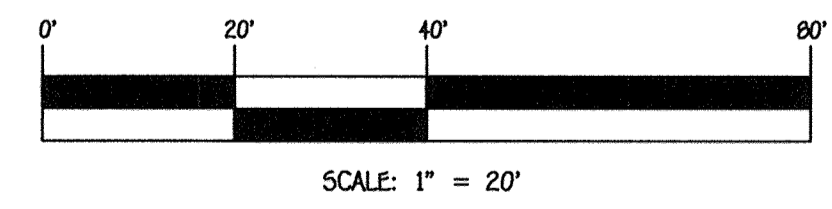
THERE IS NO "AS-BUILT" INFORMATION PROVIDED ON THIS SHEET





LEGEND	
SYMBOL	DESCRIPTION
---	EXISTING CONTOUR 2' INTERVAL
---	PROPOSED CONTOUR 2' INTERVAL
X-XXX-X	SPOT ELEVATION
---	PROPOSED CONTROL MATING
---	LIMIT OF DISTURBANCE
X	STREET LIGHT PER F-09-057
---	PROPOSED STORM DRAIN PIPE
---	PROPOSED SEWER
○	PROPOSED LANDSCAPE TREES
☼	PERMETER TREES
---	EXISTING STORMDRAIN
---	EXISTING SEWER
---	EXISTING WATER
---	EXISTING WATER & SEWER UTILITY EASEMENT
---	PROPOSED FENCE
---	PROPOSED CONCRETE SIDEWALK
---	PROPOSED CONCRETE SIDEWALK
---	SUPER SALT FENCE
▼	DENOTES POINTS OF INGRESS AND EGRESS
---	PROPOSED RETAINING WALL EASEMENT
---	PROPOSED MAINTENANCE EASEMENT

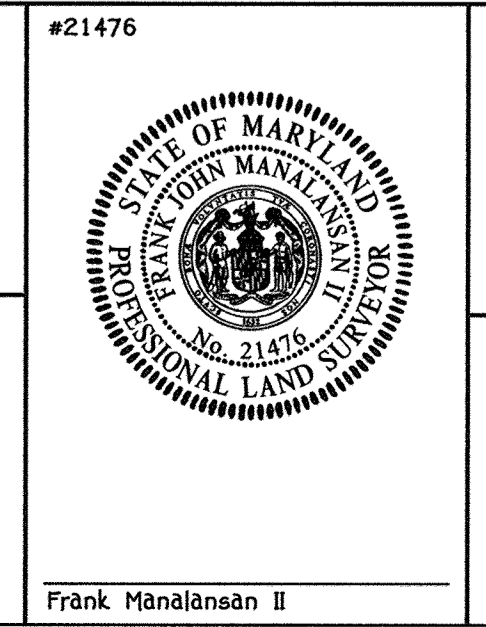
APPROVED  
PLANNING BOARD OF HOWARD COUNTY  
DATE 2/20/2014



**FISHER, COLLINS & CARTER, INC.**  
CIVIL ENGINEERING, CONSULTANTS & LAND SURVEYORS  
CENTRAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PARK  
ELICOTT CITY, MARYLAND 21042  
(410) 431-2099

NO.	REVISION	DATE
2	REVISE SWM FACILITIES AND ASSOCIATED GRADING	2/28/17
1	REVISE FINAL GRADING & CISTERN WITH ROOF LEADERS	2/4/15

**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: 07/14/2019."  
*Frank Manalansan II* 1-2-18 Date  
APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.  
*William Lawrence Roseman* 1/29/2018  
COUNTY HEALTH OFFICER  
W.D.



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

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*William Lawrence Roseman* 2/2/18 Date  
Chief, Division of Land Development  
*William Lawrence Roseman* 1-19-18 Date  
Chief, Development Engineering Division  
*William Lawrence Roseman* 2-2-18 Date  
Director - Department of Planning and Zoning

PROJECT	SECTION	PARCEL NOS.
GWV'S WAVERLY WOODS, SECTION 14	14	P/O 249

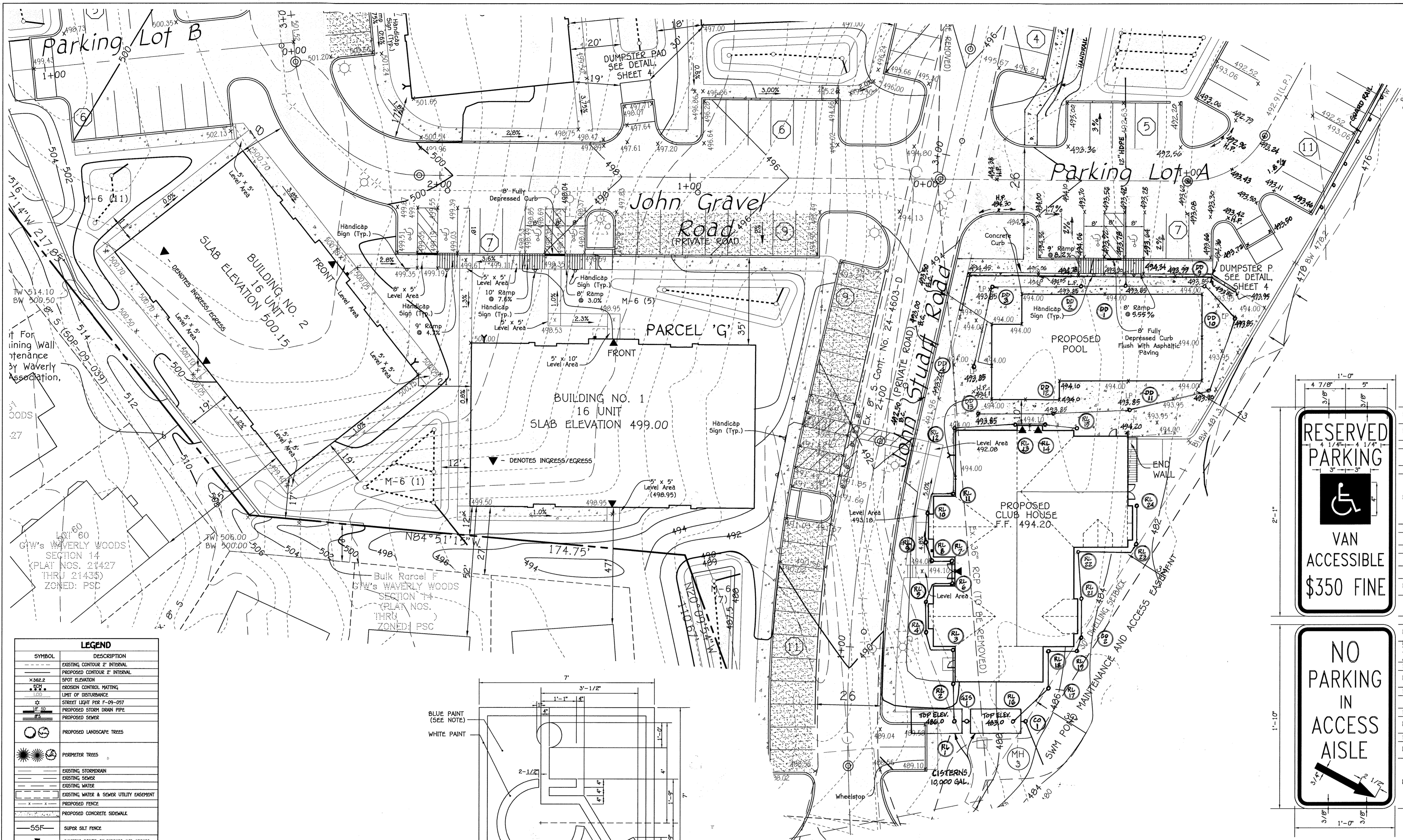
PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
22944-22953	3 & 4	PSC	16	THIRD	60300

WATER CODE	SEWER CODE
K-02	5992000

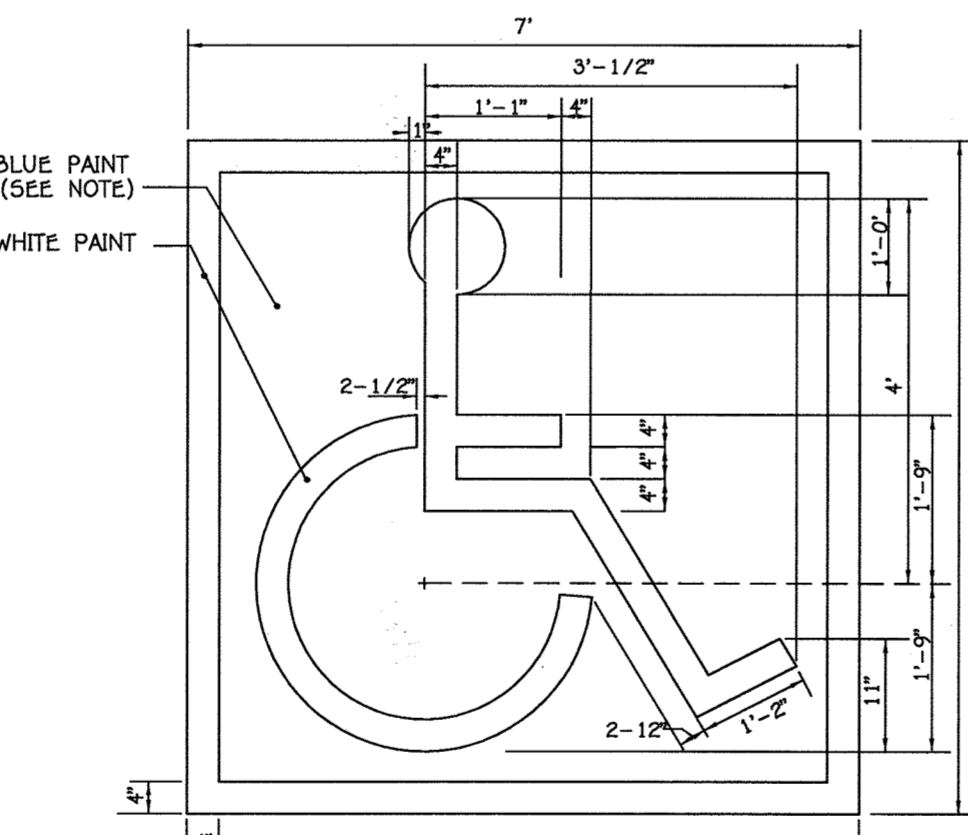
REVISED  
HANDICAP DETAIL SHEET  
AGE RESTRICTED ADULT HOUSING  
WAVERLY MEWS  
SECTION 14  
PARCEL 'G' (Plat Nos. 22944 Thru 22953  
ZONED: PSC TAX MAP NO.: 16 GRID NO.: 3 & 4  
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
SCALE: AS SHOWN DATE: DECEMBER 28, 2017  
SHEET 5 OF 31  
SDP-13-031

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





SYMBOL	DESCRIPTION
---	EXISTING CONTOUR 2' INTERVAL
- - -	PROPOSED CONTOUR 2' INTERVAL
x 562.2	SPOT ELEVATION
---	EROSION CONTROL MATING
---	LIMIT OF DISTURBANCE
SL	STREET LIGHT PER F-09-057
---	PROPOSED STORM DRAIN PIPE
---	PROPOSED SEWER
○	PROPOSED LANDSCAPE TREES
☀	PERMETER TREES
---	EXISTING STORMDRAIN
---	EXISTING SEWER
---	EXISTING WATER
---	EXISTING WATER & SEWER UTILITY EASEMENT
---	PROPOSED FENCE
---	PROPOSED CONCRETE SIDEWALK
---	SUPER SILT FENCE
▼	DENOTES POINTS OF INGRESS AND EGRESS
---	PROPOSED RETAINING WALL EASEMENT
---	PROPOSED MAINTENANCE EASEMENT



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

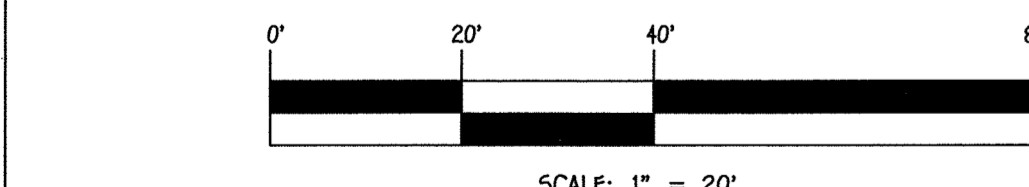
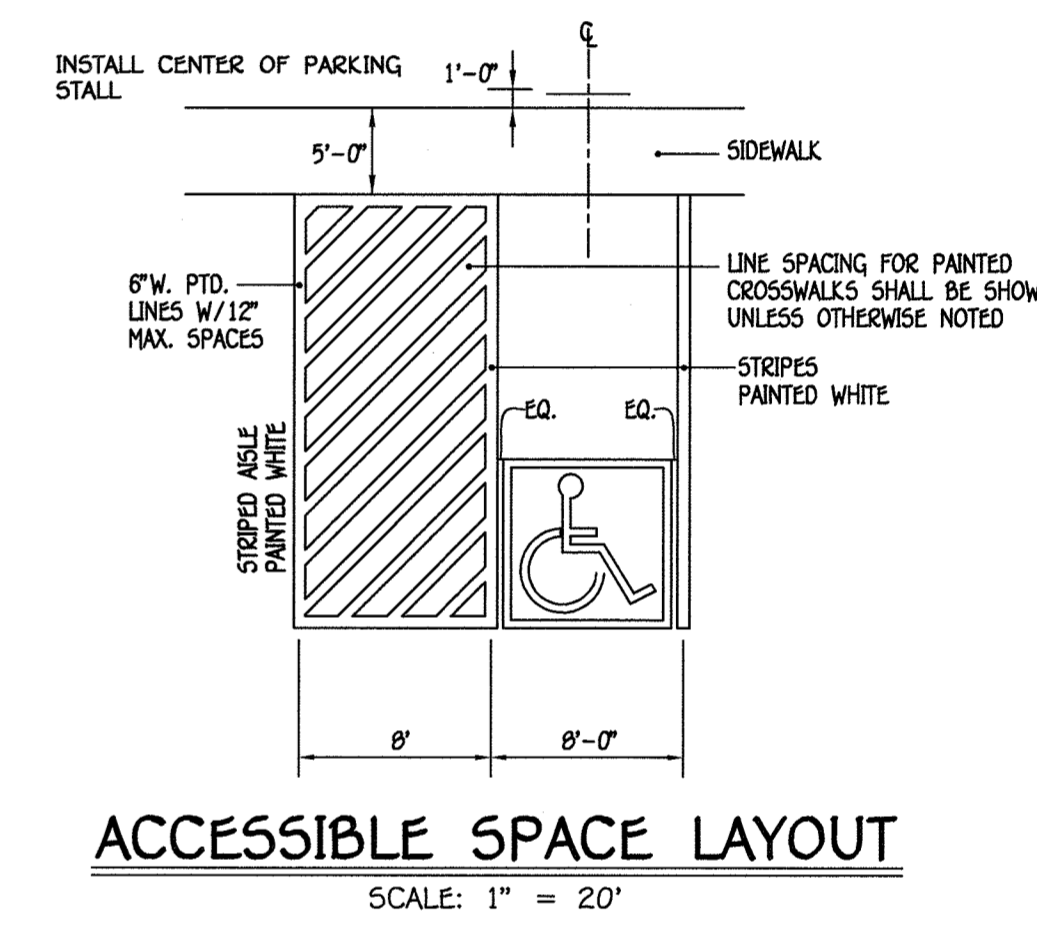
**HANDICAP SPACE STENCIL LAYOUT**  
SCALE: 1" = 20'

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



**HANDICAP PARKING SIGN DETAIL**  
NOT TO SCALE

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 87-8.  
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'-0" 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.

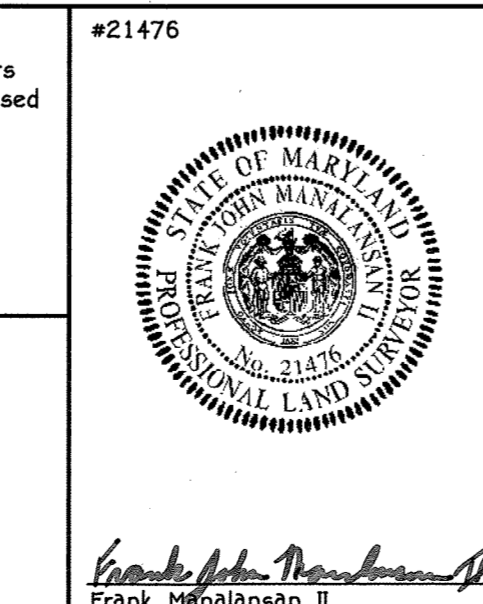


NO.	REVISION	DATE
2	REVISE LANDSCAPE WALL HAND RAIL & M-6 (G) STORM DRAIN PIPE	7/12/14
1	REVISE FINAL GRADING & CISTERN WITH ROOF LEADERS	12/4/13

**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: 2/10/14

APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.  
COUNTY HEALTH OFFICER: 4.0. 9-  
DATE: 9/2/2014



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

**BUILDER**  
RYAN HOMES  
9720 PATUXENT WOODS DRIVE  
COLUMBIA MARYLAND, 21043  
410-795-0908

**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: 10/26/14
Chief, Development Engineering Division	Date: 9/18/14
Director - Department of Planning and Zoning	Date: 10/16/14

PROJECT	SECTION	PARCEL NOS.
GW's WAVERLY WOODS, SECTION 14	14	P/O 249
PLAT	BLOCK NO.	ZONE
22944-2	3 & 4	PSC
TAX/ZONE	ELEC. DIST.	CENSUS TR.
16	THIRD	60300
WATER CODE	SEWER CODE	
K-02	5992000	

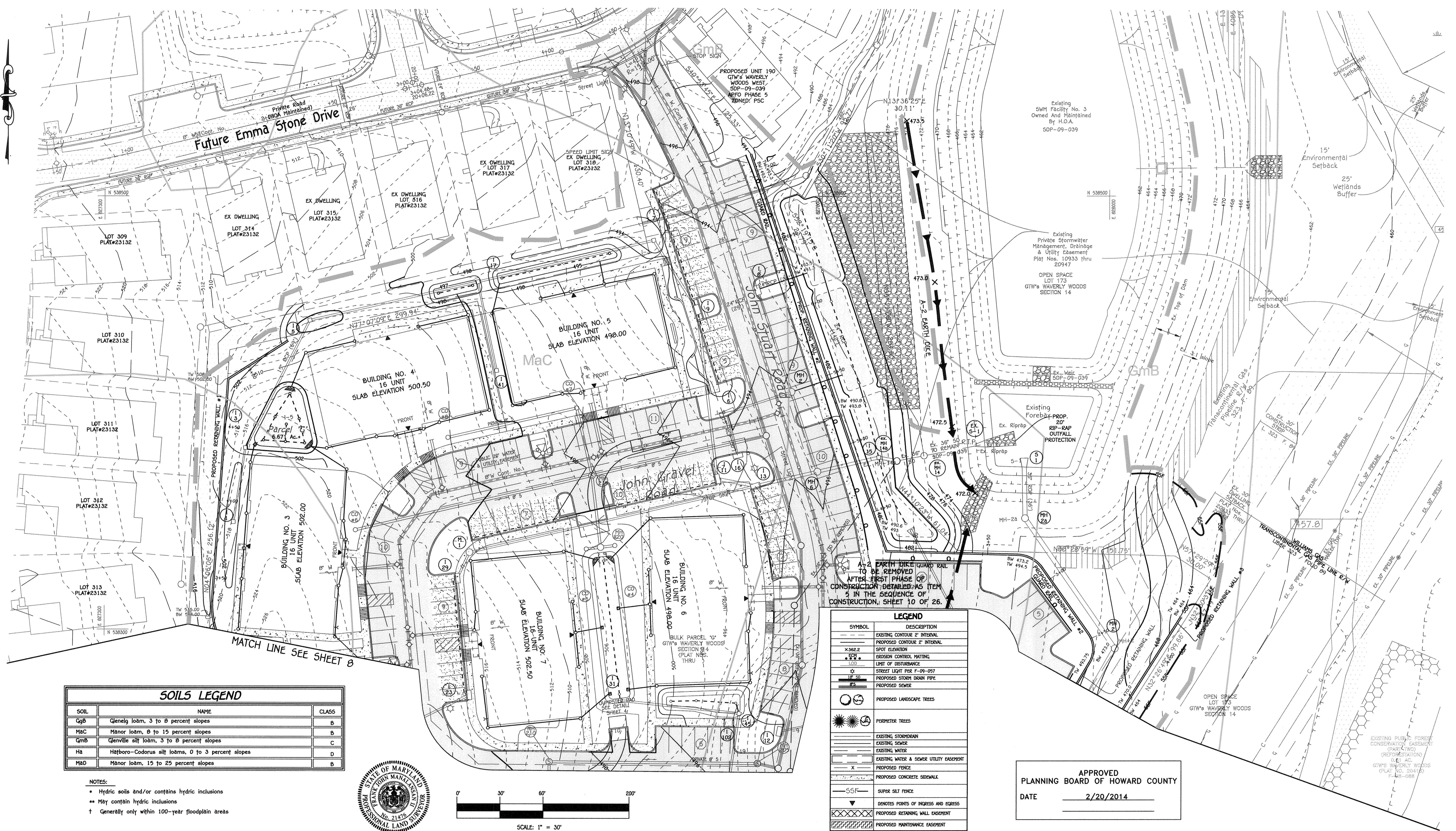
**HANDICAP DETAIL SHEET**

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

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



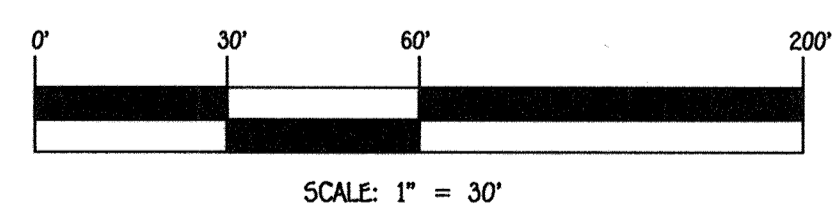


**SOILS LEGEND**

SOIL	NAME	CLASS
GgB	Glenelg loam, 3 to 8 percent slopes	B
MaC	Manor loam, 0 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
x362.2	SPOT ELEVATION
---	EROSION CONTROL MATING
---	LIMIT OF DISTURBANCE
---	STREET LIGHT FOR F-09-057
---	PROPOSED STORM DRAIN PIPE
---	PROPOSED SEWER
○	PROPOSED LANDSCAPE TREES
☼	PERIMETER TREES
---	EXISTING STORMDRAIN
---	EXISTING SEWER
---	EXISTING WATER & SEWER UTILITY EASEMENT
-X-	PROPOSED FENCE
---	PROPOSED CONCRETE SIDEWALK
---	SUPER SILT FENCE
▼	DENOTES POINTS OF INGRESS AND EGRESS
XXXXX	PROPOSED RETAINING WALL EASEMENT
---	PROPOSED MAINTENANCE EASEMENT

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

NO.	REVISION	DATE
2	REVISE SWM FACILITIES AND ASSOCIATED GRADING	2/28/17
1	REVISE FINAL GRADING & CISTERN WITH ROOF LEADERS	2/4/15

**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.  
 Signature of Surveyor: Frank John Malanowicz II, 1-2-18, 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: [Signature], 1-2-18, Date

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT.  
 Signature of Howard SCD: John P. [Signature], 4/10/18, Date

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

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 Signature: [Signature] for US, 2/2/18, Date  
 Chief, Division of Land-Development (9 for DP)  
 Signature: [Signature], 1-17-18, Date  
 Chief, Development Engineering Division  
 Signature: [Signature], 2-2-18, Date  
 Director - Department of Planning and Zoning

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

PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
22944-22953	3 & 4	P5C	16	THIRD	60300

WATER CODE	SEWER CODE
K-02	9992000

REVISED  
 SEDIMENT & EROSION CONTROL 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: DECEMBER 28, 2017  
 SHEET 7 OF 31  
 50P-13-031

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

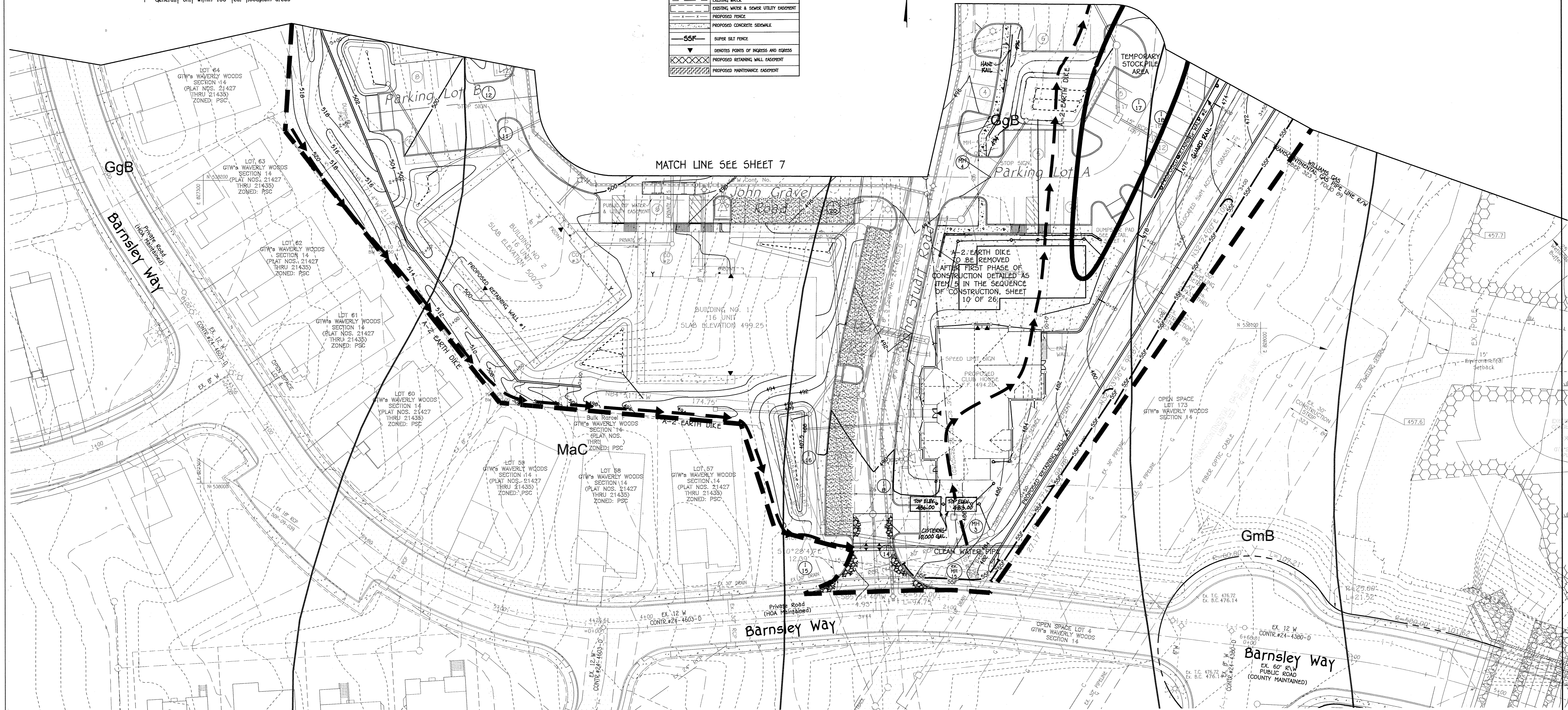
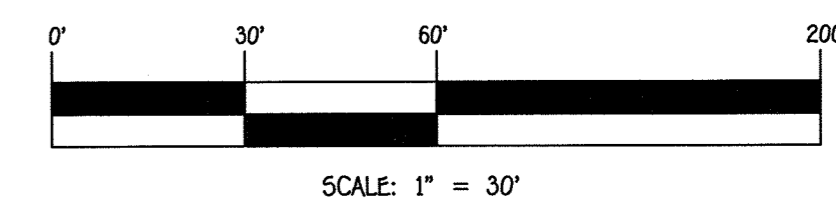


SOILS LEGEND		
SOIL	NAME	CLASS
GgB	Glennelg loam, 3 to 8 percent slopes	B
MaC	Manor loam, 8 to 15 percent slopes	B
GmB	Glennville silt loam, 3 to 8 percent slopes	C
Ha	Hatboro-Codorus silt loams, 0 to 3 percent slopes	D
MaD	Manor loam, 15 to 25 percent slopes	B

- 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
X.M.S. 2	SPOT ELEVATION
---	EROSION CONTROL MATING
---	LIMIT OF DISTURBANCE
---	STREET LIGHT PER F-09-057
---	PROPOSED STORM DRAIN PIPE
---	PROPOSED SEWER
○	PROPOSED LANDSCAPE TREES
☼	PERIMETER TREES
---	EXISTING STORMDRAIN
---	EXISTING SEWER
---	EXISTING WASTE
---	EXISTING WATER & SEWER UTILITY EASEMENT
---	PROPOSED FENCE
---	PROPOSED CONCRETE SIDEWALK
---	SUPER SILT FENCE
▼	DEMOTES 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  
ELLSWORTH CITY, MARYLAND 21042  
(410) 461-2295

NO.	REVISION	DATE
2	ADD LANDSCAPE WALL-HAND RAIL & A-6 1/2" SIDING DRAIN PIPE	7/16/13
1	REVISE FINAL GRADING & CISTERN WITH ROOF LEADERS	12/4/12

**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...* Date: 8/2/14

**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: *...* Date: 8-15-14

**OWNER'S CERTIFICATE**  
This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT.  
Signature: *John E. Patton* Date: 9/11/14

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

**BUILDER**  
RYAN HOMES  
9720 PATUMENT 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: 9/18/14  
Chief, Development Engineering Division: *...* Date: 10/10/14  
Director - Department of Planning and Zoning: *...* Date: 10/10/14

PROJECT: G1W's WAVERLY WOODS, SECTION 14  
SECTION: 14  
PARCEL NOS.: 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**  
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 8 OF 31

50P-13-031

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



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

STANDARD SYMBOL  
PSSMC - \* lb/ft<sup>2</sup>  
(\* INCLUDE SHEAR STRESS)

KEY IN UPPER ROLL END  
FILL MAT VOIDS IF SPECIFIED (SEE NOTE 9)  
6 IN DEEP (MIN.) KEY TRENCH FOR UPPER END OF DOWN SLOPE ROLL (TYP.)  
6 IN MIN. OVERLAP AT ROLL END (TYP.)  
OVERLAP OR ABUT EDGES (TYP.)  
PREPARED FLOW CHANNEL WITH SEED IN PLACE

**CONSTRUCTION SPECIFICATIONS:**

- USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
- 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.
- SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 1/2 INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" 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.
- 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.
- 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 SEEDBED SURFACE. AVOID STRETCHING THE MATTING.
- 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.
- 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.
- STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
- 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.
- 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 (e.g. A-1) ON FLOW CHANNEL SIDE OF DIKE.

2:1 SLOPE OR FLATTER  
2:1 SLOPE OR FLATTER  
EXISTING GROUND  
FLOW  
GRADE TO PROVIDE REQUIRED FLOW WIDTH AND FLOW DEPTH  
CONTINUOUS GRADE 0.5% MIN. TO 10% MAX. SLOPE

**DIKE TYPE**

	A	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**

- REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF EARTHDIKE.
- EXCAVATE OR SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.
- COMPACT FILL.
- CONSTRUCT FLOW CHANNEL ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.
- PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
- STABILIZE EARTH DIKE WITHIN THREE DAYS OF INSTALLATION. STABILIZE FLOW CHANNEL FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.
- 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.
- 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**

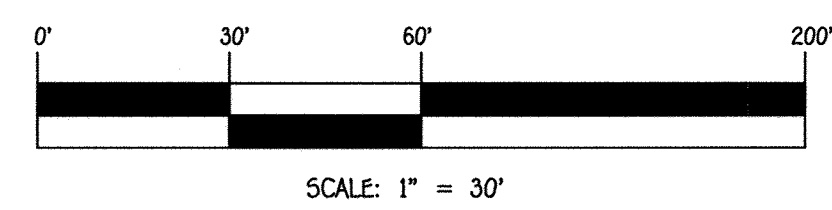
STANDARD SYMBOL  
SCE

50 FT MIN.  
MOUNTABLE BERM (6 IN MIN.)  
8 FT MIN. 3 FT  
EXISTING PAVEMENT  
EXISTING GROUND  
NONWOVEN GEOTEXTILE  
MIN. 6 IN. OF 2 TO 3 IN. AGGREGATE OVER LENGTH AND WIDTH OF ENTRANCE  
EARTH FILL  
PIPE (SEE NOTE 6)  
PROFILE  
50 FT MIN. LENGTH \*  
10 FT MIN. WIDTH  
EDGE OF EXISTING PAVEMENT  
10 FT MIN.

**CONSTRUCTION SPECIFICATIONS**

- 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 EXISTING ROAD TO PROVIDE A TURNING RADIUS.
- 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.
- PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
- 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.
- 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  
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



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  
ELICOTT CITY, MARYLAND 21042  
(410) 461 - 2995

NO.	REVISION	DATE

**PROFESSIONAL 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 Maryland Department of Environment and Natural Conservation District."  
*Frank John Parnell*  
Signature of Surveyor  
FRANK JOHN PARNELL, SURVEYOR  
8/2/14  
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."  
*James A. Field*  
Signature of Developer  
8-15-14  
Date

**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

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
Chief, Division of Land Development  
Chief, Development Engineering Division  
Director - Department of Planning and Zoning

PROJECT  
GTW's WAVERLY WOODS, SECTION 14  
PARCEL G

SECTION  
14

PARCEL NOS.  
P/O 249

PLAT 22944-22953	BLOCK NO. 3 & 4	ZONE PSC	TAX/ZONE 16	ELEC. DIST. THIRD	CENSUS TR. 60300
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WATER CODE  
K-02

SEWER CODE  
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

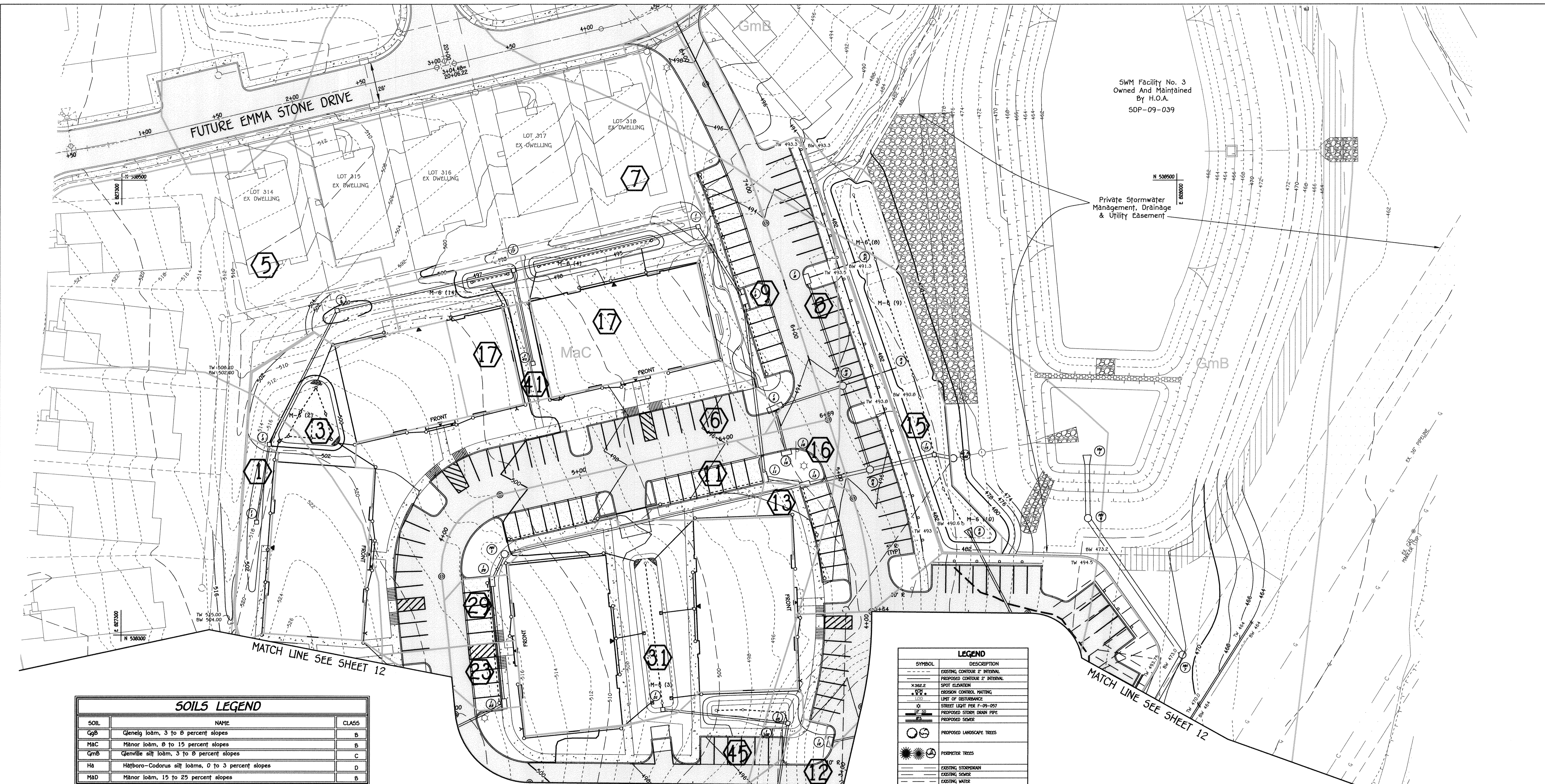
SDP-13-031

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









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

Private Stormwater  
Management, Drainage  
& Utility Easement

FUTURE EMMA STONE DRIVE

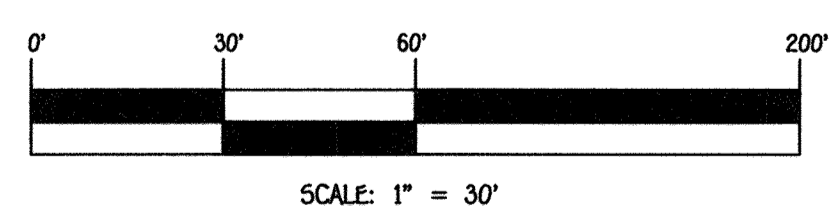
MATCH LINE SEE SHEET 12

MATCH LINE SEE SHEET 12

**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



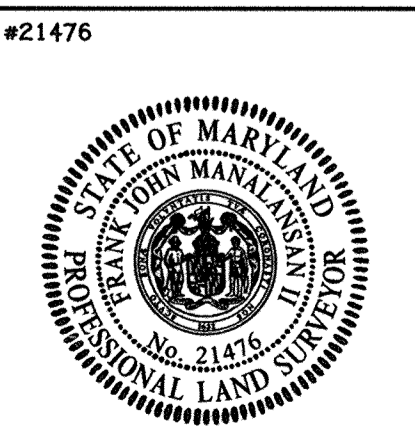
SYMBOL	DESCRIPTION
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---	PROPOSED MAINTENANCE EASEMENT

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  
ELLSWORTH CITY, MARYLAND 21042  
(410) 461-2899

NO.	REVISION	DATE
2	REVISE SWM FACILITIES AND ASSOCIATED GRADING	12/28/17
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: 07/14/2019."  
*Frank Manalansan II* 1-2-18  
Date



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

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING <i>Sue Handman for US</i> 2/2/18 Chief, Division of Land Development KB for P&Z Date					
<i>David Edick</i> 1-19-18 Chief, Development Engineering Division Date					
<i>Walter Miller</i> 2-2-18 Director - Department of Planning and Zoning Date					
PROJECT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
GTW's WAVERLY WOODS, SECTION 14	14	PSC	16	THIRD	60300
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				

REVISED  
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: DECEMBER 28, 2017  
SHEET 11 OF 31  
SDP-13-031

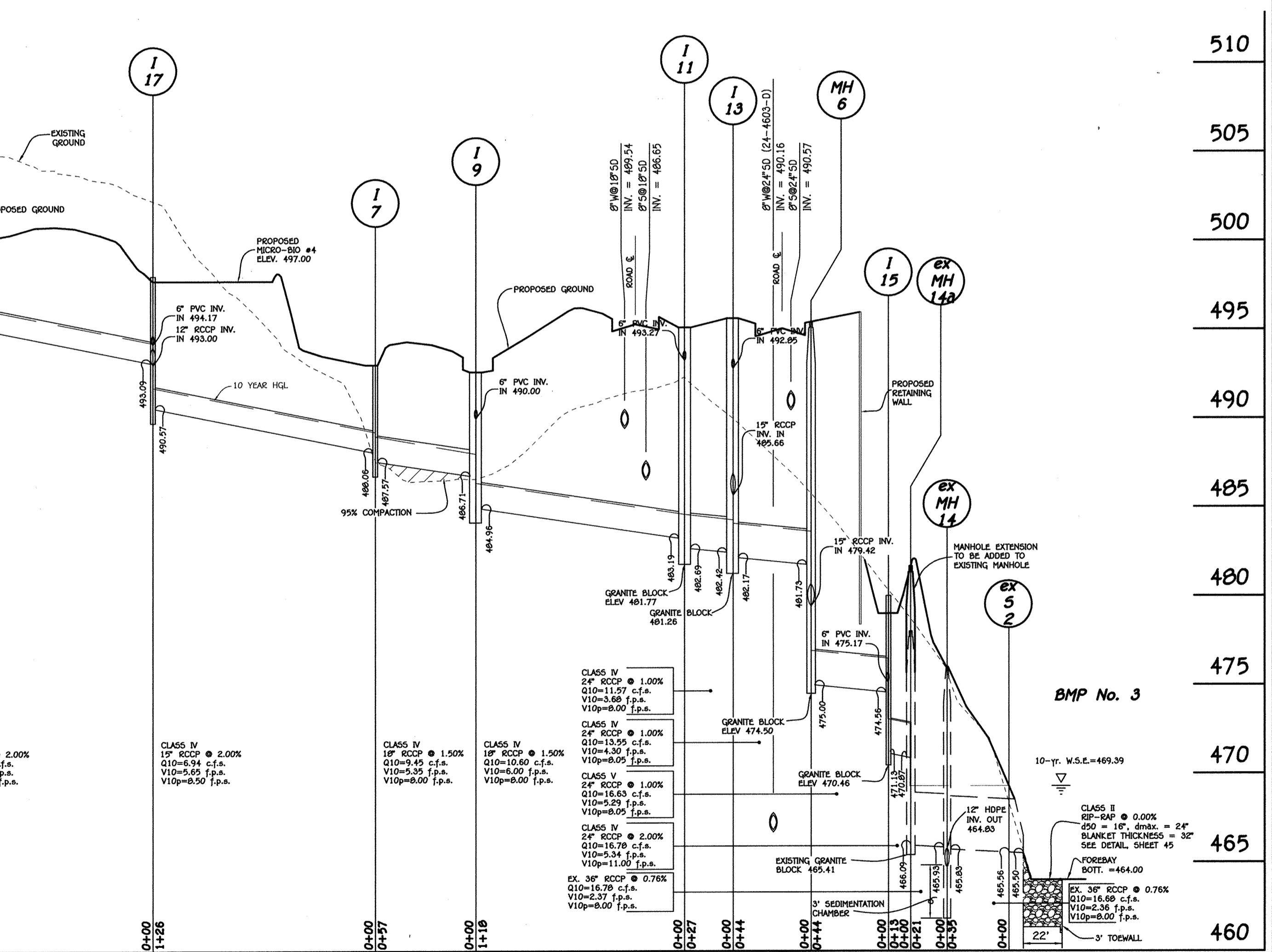
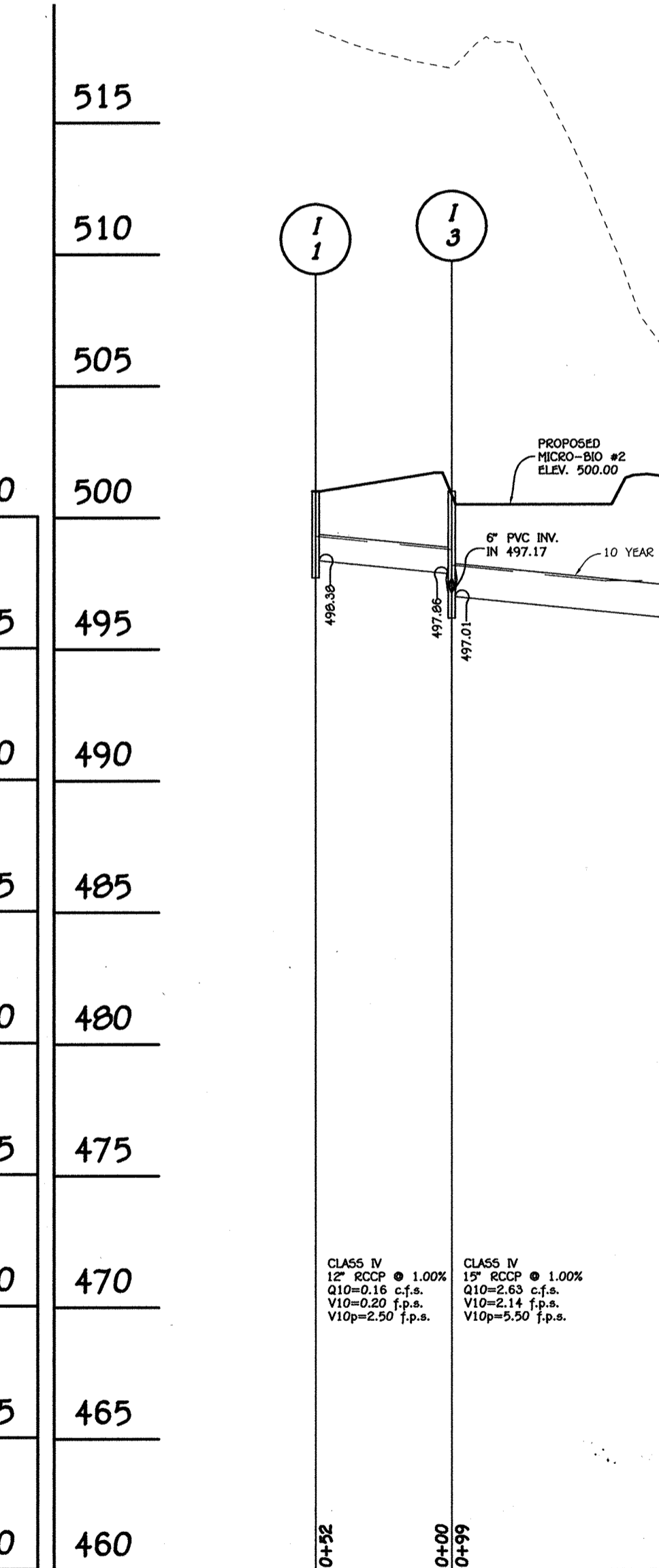
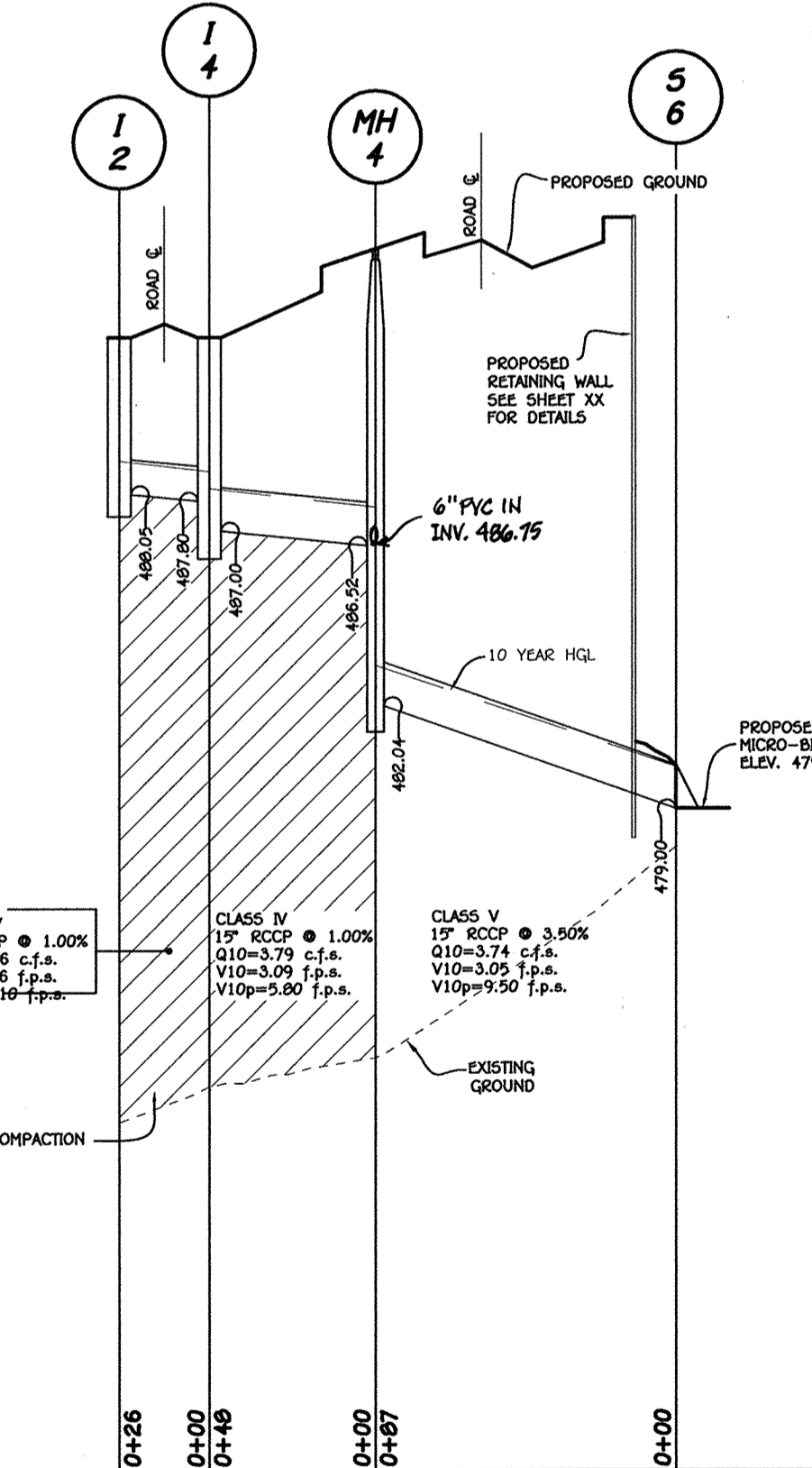
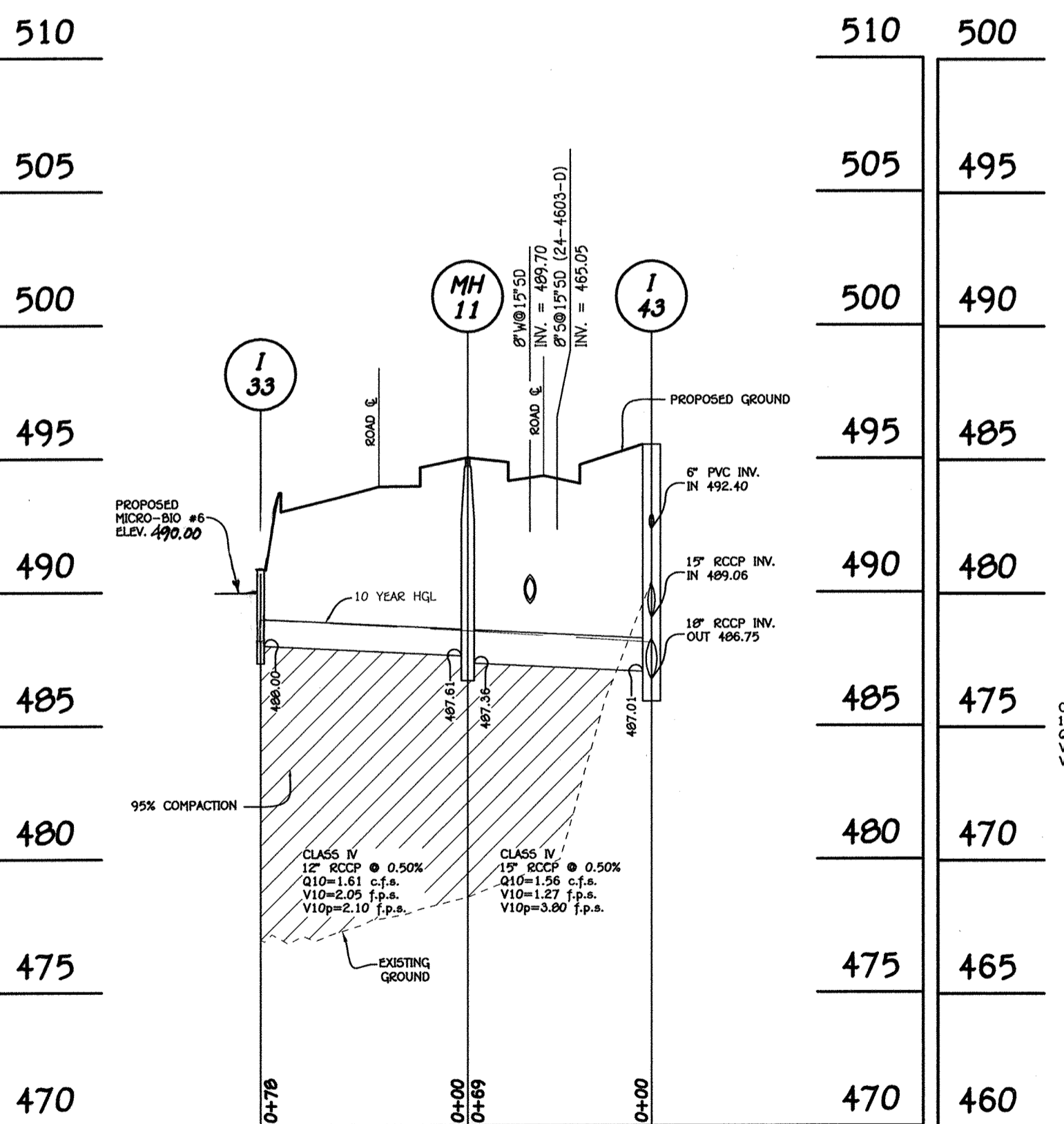
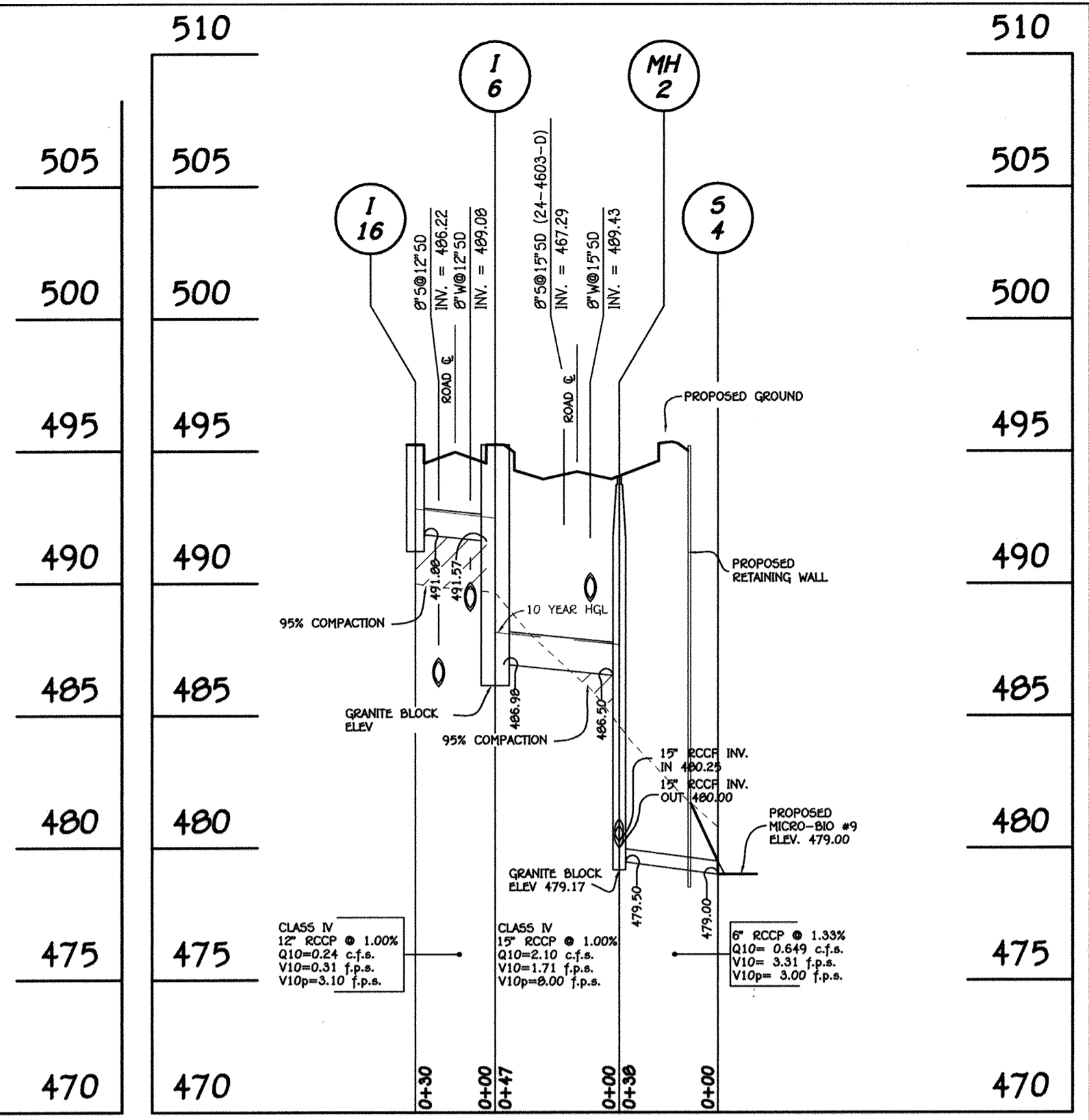
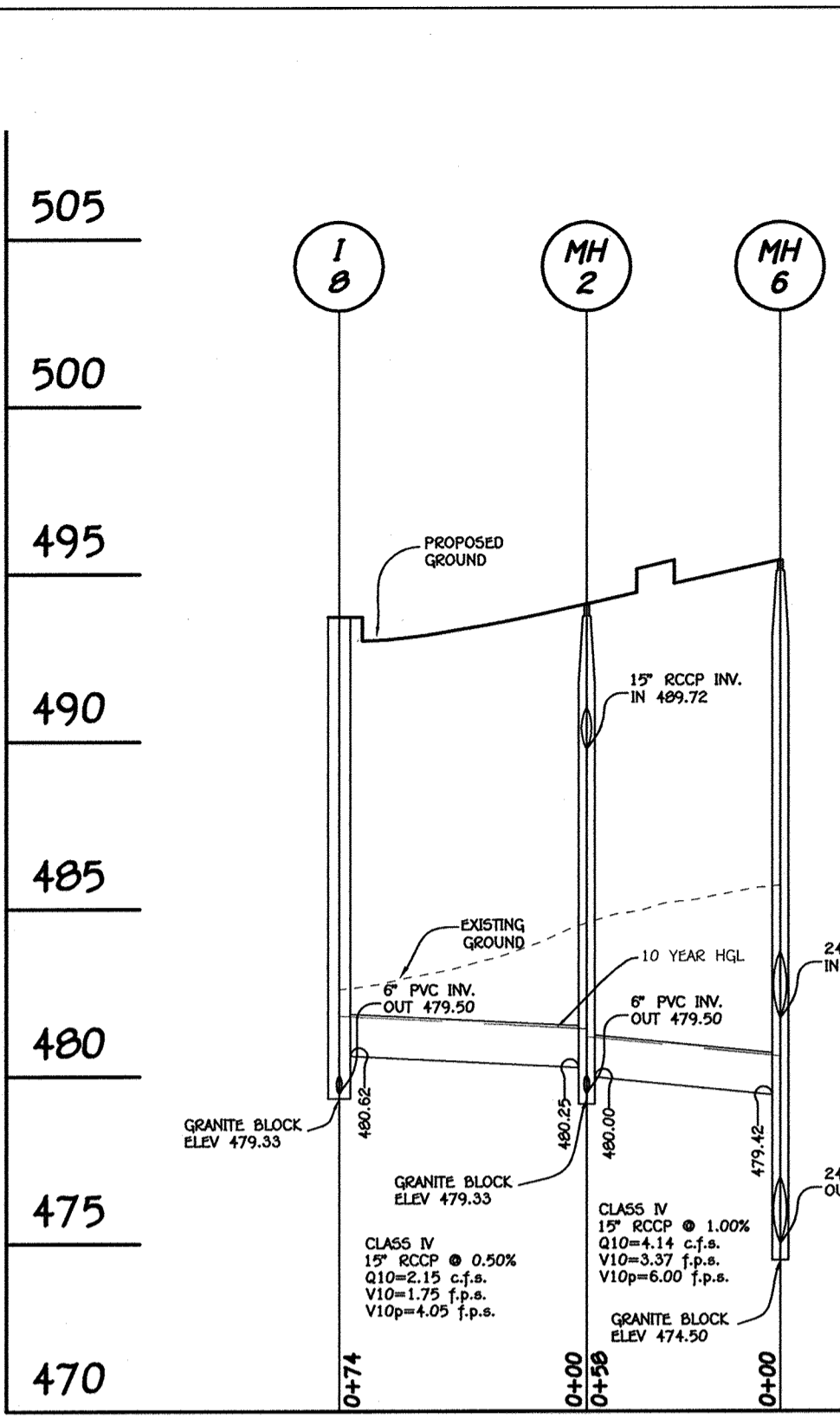
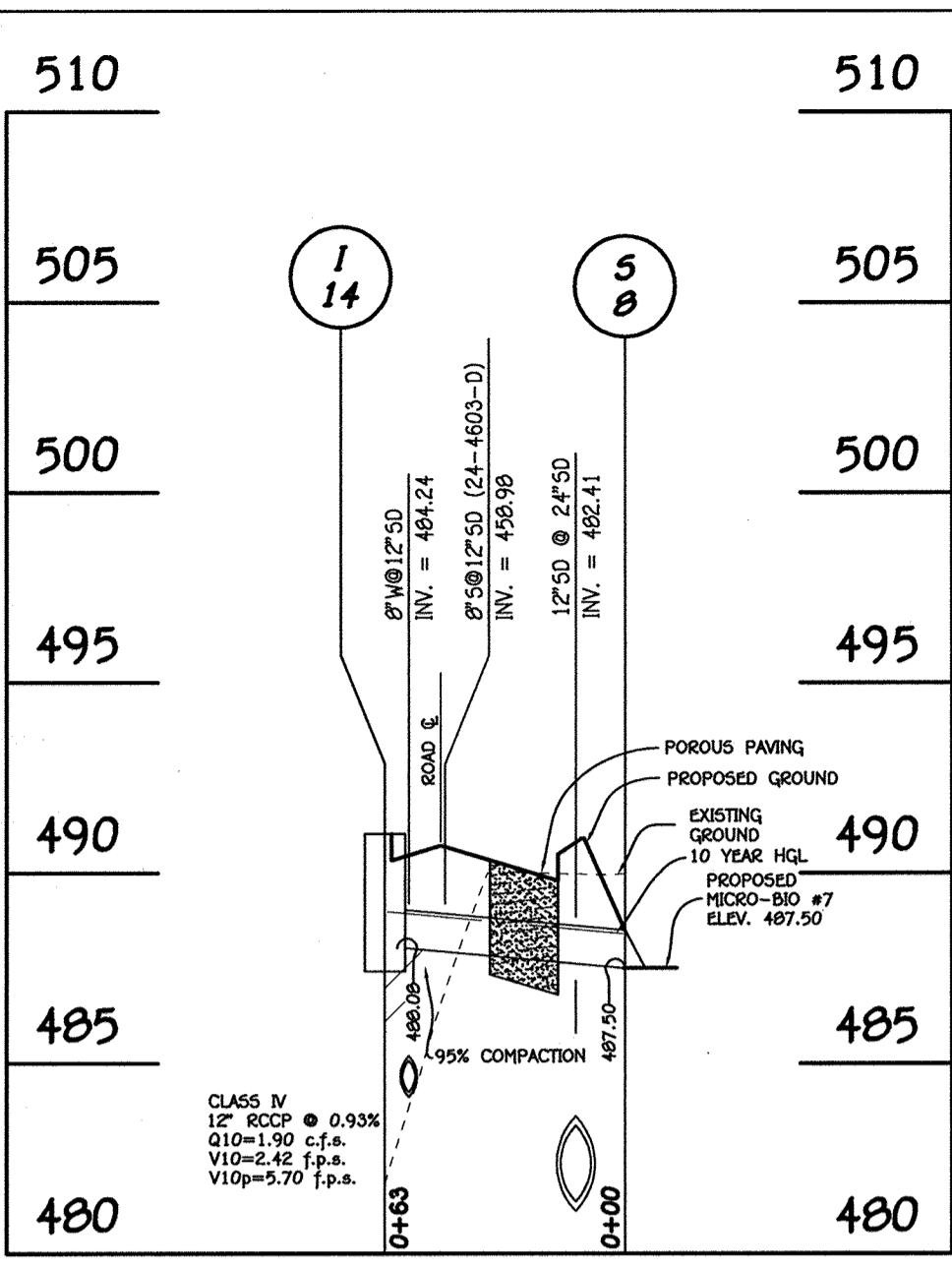
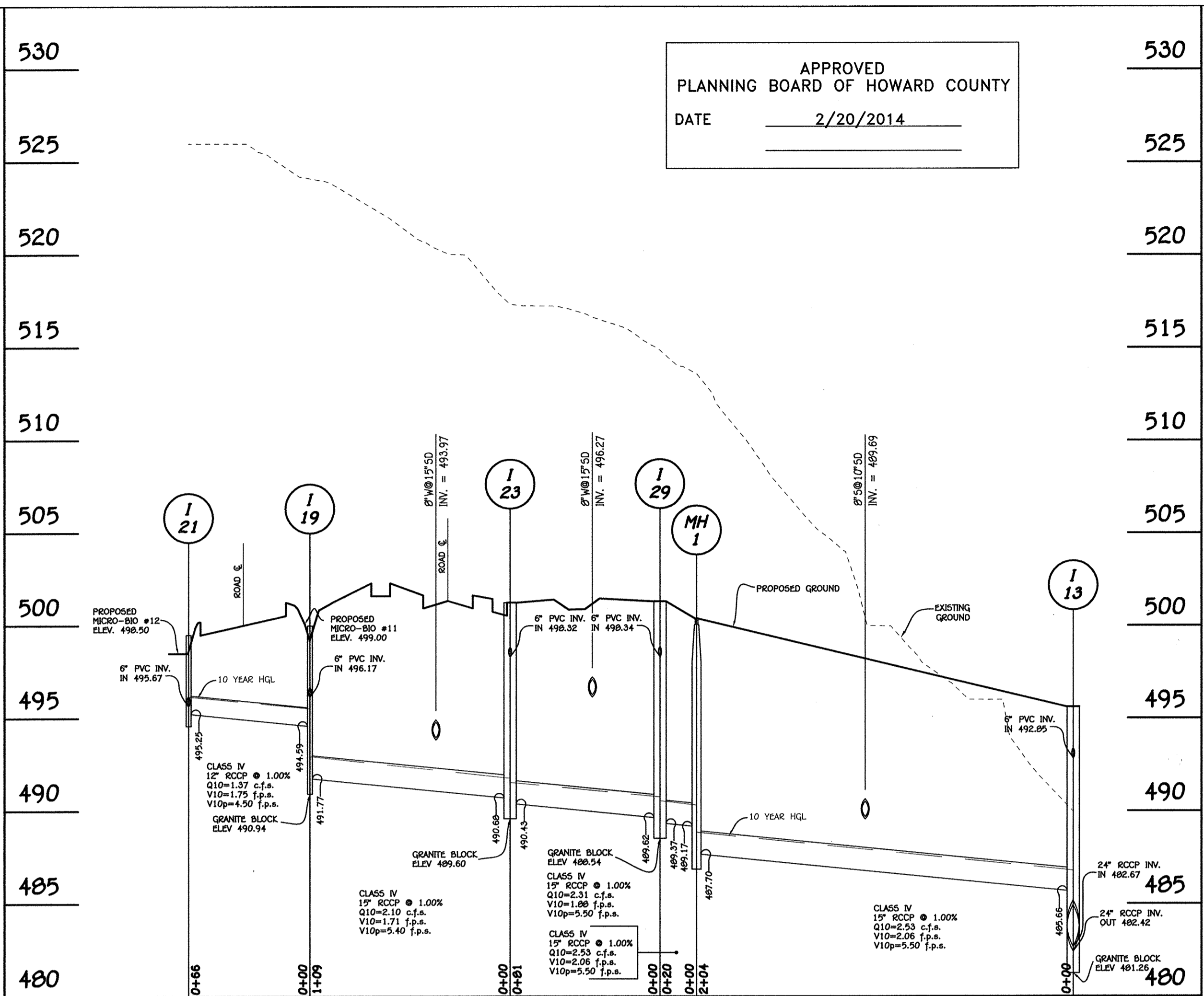
THERE IS NO "AS-BUILT" INFORMATION PROVIDED ON THIS SHEET





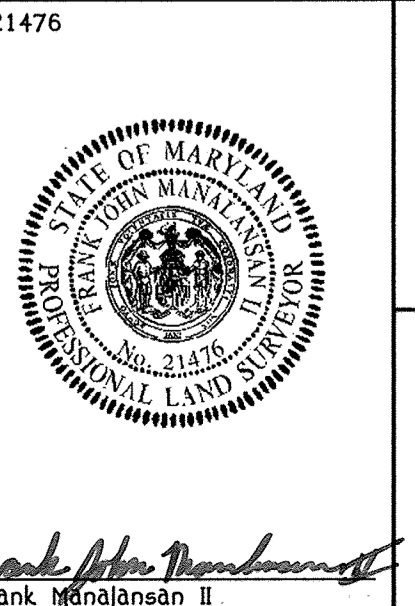


APPROVED  
PLANNING BOARD OF HOWARD COUNTY  
DATE 2/20/2014



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

**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 Mendonca II* 9/2/14 DATE  
APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.  
*William for Moore Roggman* 9/2/2014 DATE  
COUNTY HEALTH OFFICER H.O. 9



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

**BUILDER**  
RYAN HOMES  
9720 PATUXENT WOODS DRIVE  
COLUMBIA, MARYLAND, 21043  
410-796-0909

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

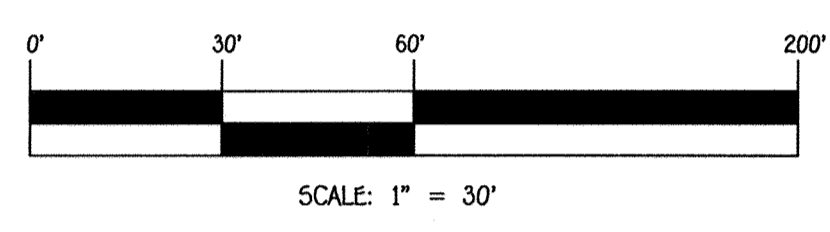
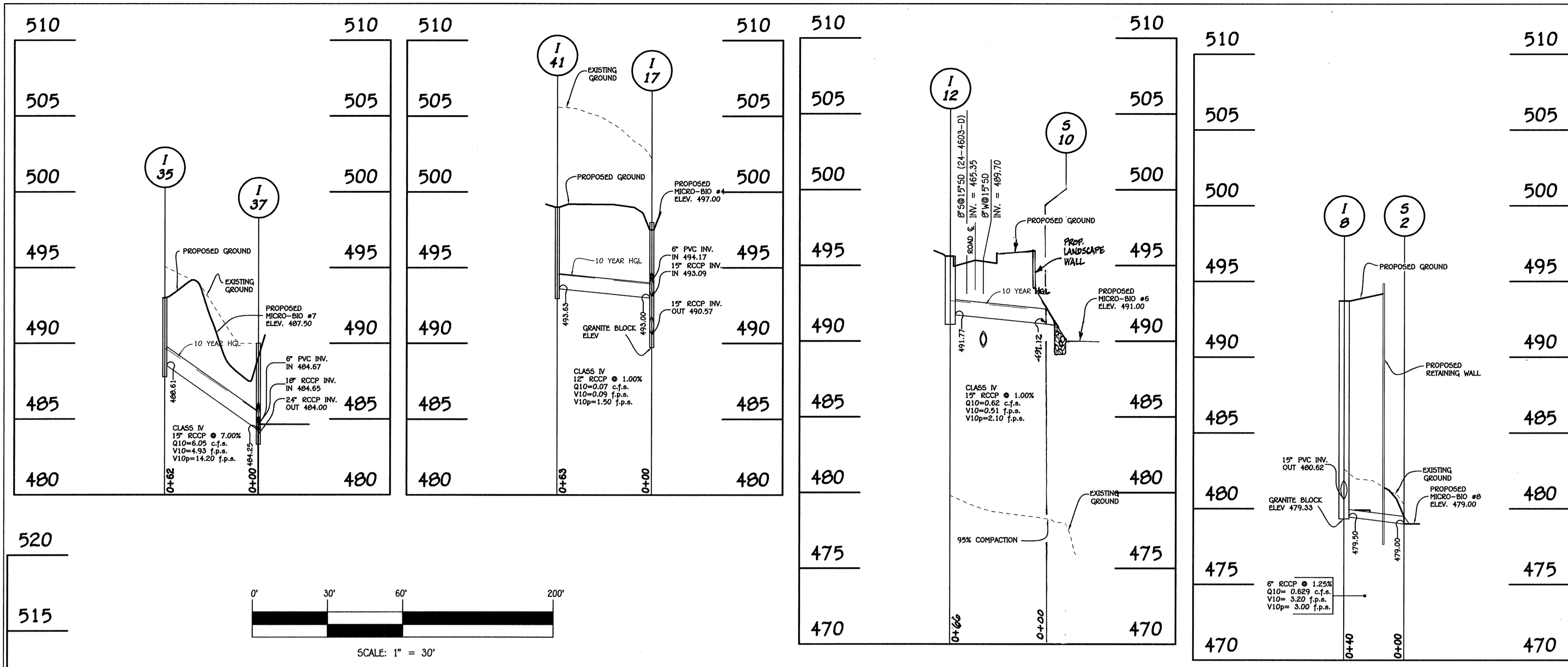
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Katrina J. Lusk* 10/26/14 DATE  
Chief, Division of Land Development  
*David Schick* 9/18/14 DATE  
Chief, Development Engineering Division  
*David L. Taylor* 2/14/14 DATE  
Director - Department of Planning and Zoning

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

STORM DRAIN PROFILES  
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 13 OF 31  
SDP-13-031

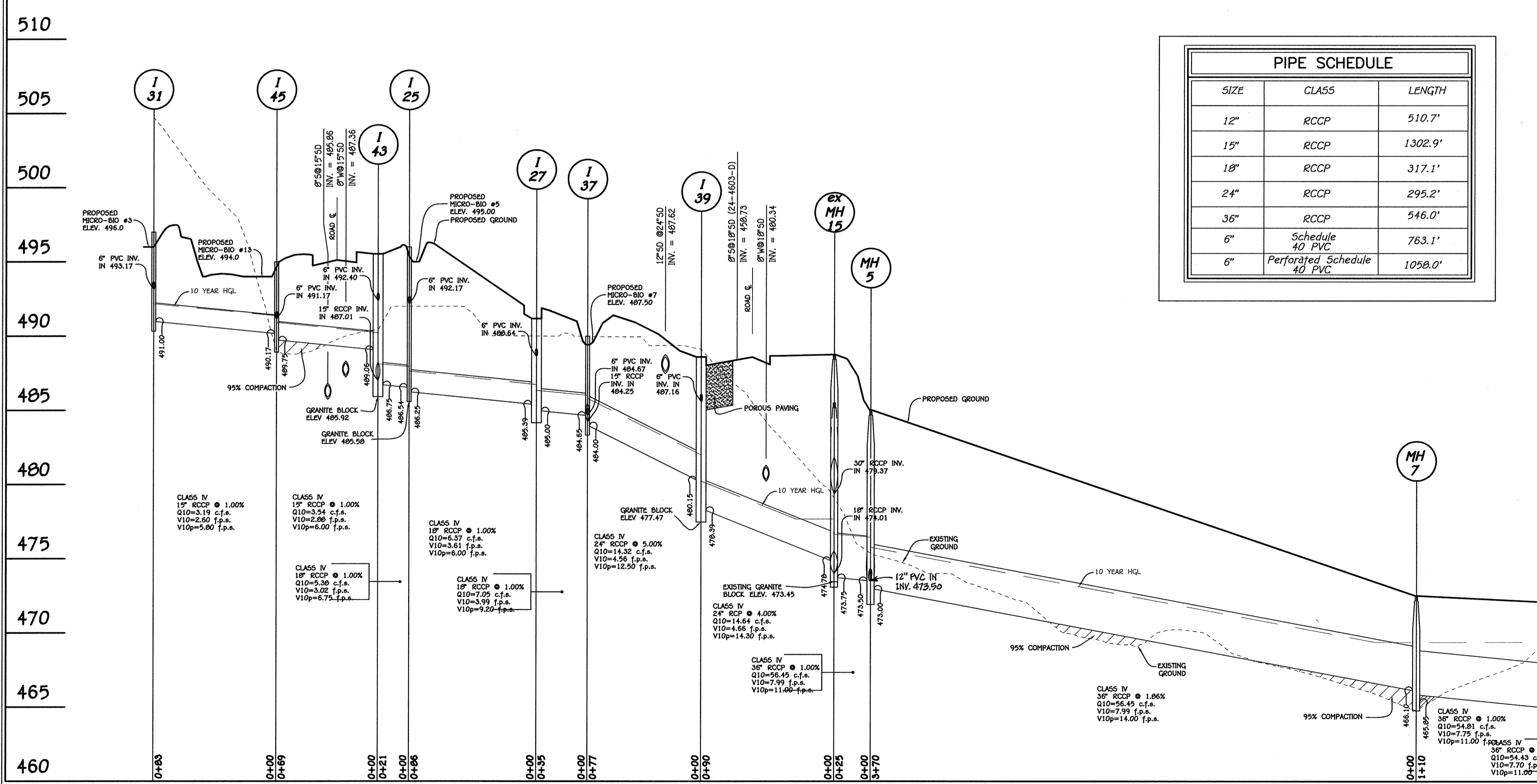
THERE IS NO "AS-BUILT" INFORMATION PROVIDED ON THIS SHEET





STRUCTURE SCHEDULE										
STRUCTURE NO.	OWNERSHIP AND MAINTENANCE	TOP ELEVATION	INV. IN	INV. OUT	COORDINATES	WIDTH	TYPE	REMARKS		
I-1	PUBLIC	501.00 *	-	498.38	N 538374.40 E 827389.92	-	D INLET	SD 4.10		
I-2	PUBLIC	492.52 **	-	488.05	N 538226.71 E 827928.69	-	S INLET	SD 4.22		
I-3	PUBLIC	501.00 *	497.86	497.01	N 538425.70 E 827398.26	-	D INLET	SD 4.10		
I-4	PUBLIC	492.52 **	487.80	487.00	N 538239.56 E 827906.09	-	S INLET	SD 4.22		
I-5	PUBLIC	500.00 *	496.02	495.49	N 538514.04 E 827443.09	-	D INLET	SD 4.10		
I-6	PUBLIC	495.24 *	491.57	486.98	N 538449.97 E 827733.86	-	A-10 INLET	SD 4.03		
I-7	PUBLIC	493.00 *	488.06	487.57	N 538569.39 E 827682.54	-	D INLET	SD 4.10		
I-8	PUBLIC	493.71 *	-	480.62	N 538534.92 E 827754.92	-	A-5 INLET	SD 4.02		
I-9	PUBLIC	492.60 **	484.96	486.71	N 538521.45 E 827713.00	-	S INLET	SD 4.22		
I-11	PUBLIC	495.10 *	482.94	483.19	N 538404.24 E 827727.14	-	A-5 INLET	SD 4.02		
I-12	PUBLIC	495.61 *	-	491.77	N 538229.45 E 827770.84	-	A-5 INLET	SD 4.22		
I-13	PUBLIC	495.61 *	485.66 (MH-1), 482.42 (I-11)	482.17	N 538399.40 E 827753.80	-	A-5 INLET	SD 4.02		
I-14	PUBLIC	491.04 *	-	488.08	N 537992.04 E 827757.90	-	A-10 INLET	SD 4.03		
I-15	PUBLIC	480.00 *	474.56	471.13	N 538419.12 E 827839.50	-	D INLET	SD 4.10		
I-16	PUBLIC	495.24 *	-	491.88	N 538420.61 E 827741.36	-	A-5 INLET	SD 4.01		
I-17	PUBLIC	498.00 *	493.09 (I-5), 493.00 (I-41)	490.57	N 538540.53 E 827756.06	-	D INLET	SD 4.10		
I-19	PUBLIC	500.00 *	494.59	491.77	N 538207.06 E 827456.47	-	D INLET	SD 4.10		
I-21	PUBLIC	499.50 *	-	495.25	N 538263.59 E 827422.49	-	D INLET	SD 4.10		
I-23	PUBLIC	501.24 *	490.68	490.43	N 538254.42 E 827554.37	-	A-5 INLET	SD 4.02		
I-25	PUBLIC	496.00 *	486.54	486.25	N 538159.03 E 827717.35	-	D INLET	SD 4.10		
I-27	PUBLIC	491.18 **	485.39	485.00	N 538072.86 E 827721.23	-	S INLET	SD 4.22		
I-29	PUBLIC	501.31 *	489.62	489.37	N 538335.34 E 827546.13	-	A-5 INLET	SD 4.02		
I-31	PUBLIC	497.00 *	-	491.00	N 538250.85 E 827659.75	-	D INLET	SD 4.10		
I-33	PUBLIC	491.00 *	-	488.00	N 538237.97 E 827845.18	-	D INLET	SD 4.10		
I-35	PUBLIC	493.00 *	-	488.61	N 538047.96 E 827638.81	-	D INLET	SD 4.10		
I-37	PUBLIC	490.00 *	484.25 (I-35), 484.65 (I-27)	484.00	N 538044.58 E 827701.07	-	D INLET	SD 4.10		
I-39	PUBLIC	488.02 *	480.15	478.39	N 537968.05 E 827710.19	-	A-5 INLET	SD 4.02		
I-41	PUBLIC	499.00 *	-	493.63	N 538479.13 E 827573.20	-	YARD INLET	SD 4.14		
I-43	PUBLIC	495.53 *	487.01 (MH-11), 489.06 (I-45)	486.75	N 538173.70 E 827732.61	-	A-5 INLET	SD 4.10		
I-45	PUBLIC	495.00 *	490.17	489.75	N 538241.83 E 827742.67	-	D INLET	SD 4.01		
I-101	PUBLIC	497.29 *	-	-	N 538167.67 E 827645.50	-	FLOW THRU INLET	-		
I-102	PUBLIC	494.66 *	-	-	N 538235.47 E 827735.62	-	FLOW THRU INLET	-		
MH-1	PUBLIC	500.38	489.17	487.70	N 538353.32 E 827554.59	-	MANHOLE	-		
MH-2	PUBLIC	494.06	480.25 (I-8), 486.50 (I-6)	480.00	N 538464.54 E 827779.69	-	MANHOLE	-		
MH-4	PUBLIC	495.06	486.52	482.04	N 538287.47 E 827905.04	-	MANHOLE	-		
MH-5	PUBLIC	485.00	473.50, 473.50 (12\"/>							

PIPE SCHEDULE		
SIZE	CLASS	LENGTH
12"	RCCP	510.7'
15"	RCCP	1302.9'
18"	RCCP	317.1'
24"	RCCP	295.2'
36"	RCCP	546.0'
6"	Schedule 40 PVC	763.1'
6"	Perforated Schedule 40 PVC	1058.0'



\* - DENOTES THROAT OPENING ELEVATION  
 \*\* - DENOTES TOP OF ROAD GRATE ELEVATION  
 'A' INLET COORDINATES ARE AT CENTERLINE OF INLET AT FACE OF CURB.  
 'K' INLET COORDINATES ARE AT CENTER OF INLET.

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

**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CENTRAL SOURCE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE  
 ELKORT CITY, MARYLAND 21042  
 (410) 461-2295

**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.  
*Walter M. Mauer* 9/2/2014  
 COUNTY HEALTH OFFICER H.O. 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

*Kevin Stuchman* 10/26/14  
 Chief, Division of Land Development Date

*John J. ...* 9/18/14  
 Chief, Development Engineering Division Date

*Walter M. Mauer* 8/19/14  
 Director - Department of Planning and Zoning Date

PROJECT: GTW'S WAVERLY WOODS, SECTION 14 SECTION 14 PARCEL NOS. P/O 249

PLAT: 2294A-22953 BLOCK NO. 3 & 4 ZONE PSC TAX/ZONE 16 ELCC. DIST. THIRD CENSUS TR. 60300

WATER CODE K-02 SEWER CODE 5992000

STORM DRAIN PROFILES

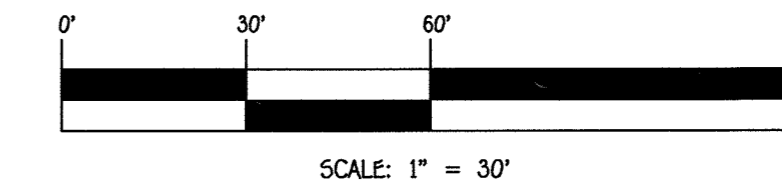
AGE RESTRICTED ADULT HOUSING  
 WAVERLY MEWS  
 SECTION 14  
 PARCEL 'G' (Plat Nos. 2294A Thru 22953  
 ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4  
 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 SCALE: AS SHOWN DATE: AUGUST 9, 2014  
 SHEET 14 OF 31

SDP-13-031

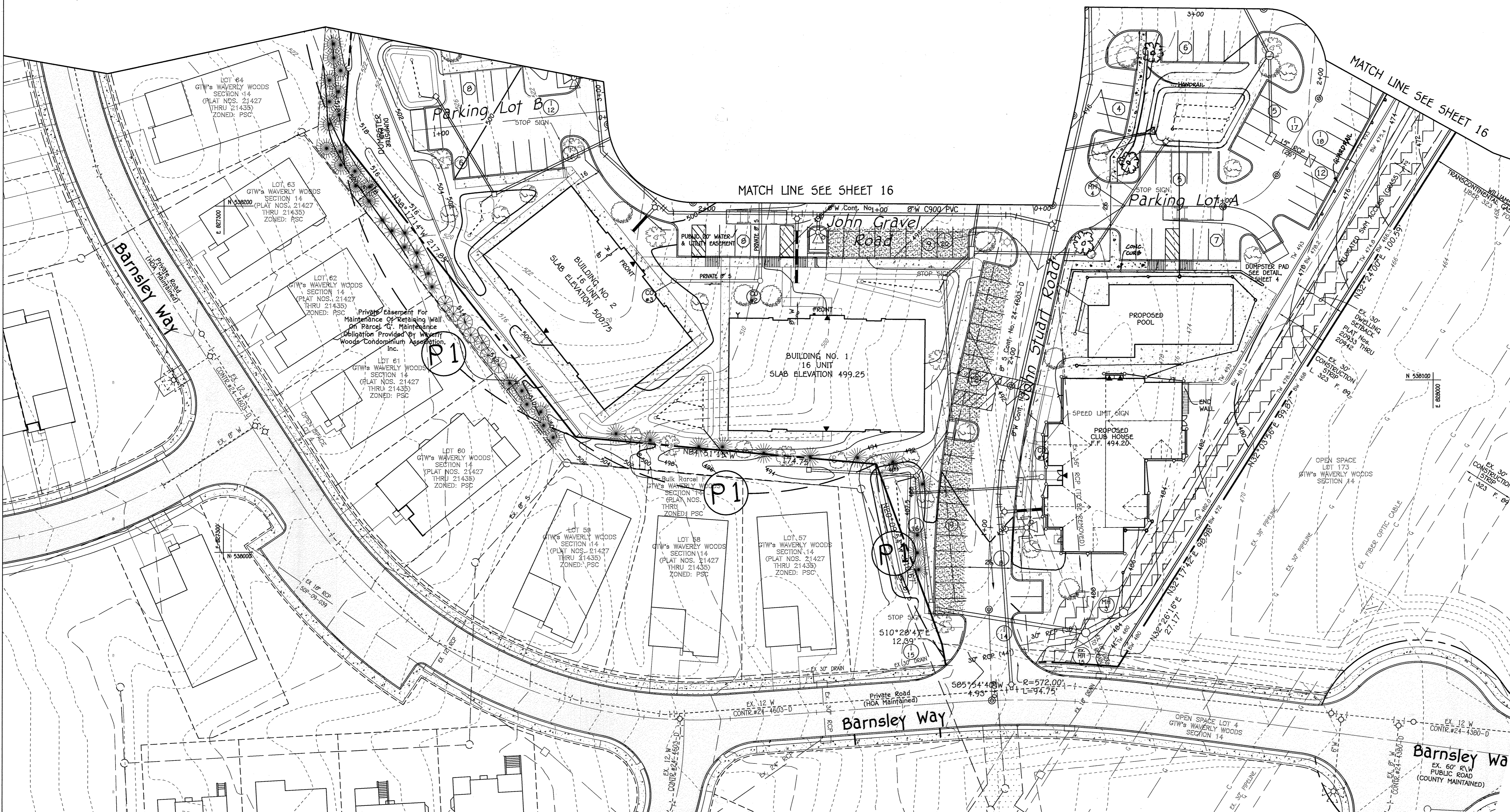
THERE IS NO "AS-BUILT" INFORMATION PROVIDED ON THIS SHEET



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



LEGEND	
SYMBOL	DESCRIPTION
---	EXISTING CONTOUR 2' INTERVAL
- - - -	PROPOSED CONTOUR 2' INTERVAL
•	SPOT ELEVATION
⊕	EROSION CONTROL MATING
---	LIMIT OF DISTURBANCE
⊙	STREET LIGHT PER F-09-097
---	PROPOSED STORM DRAIN
---	PROPOSED SEWER
⊙	PROPOSED LANDSCAPE TREES
⊙	PERIMETER TREES
---	EXISTING STORMDRAIN
---	EXISTING SEWER
---	EXISTING WATER
---	EXISTING WATER & SEWER UTILITY EASEMENT
---	PROPOSED FENCE
---	PROPOSED CONCRETE SIDEWALK
---	SUPER SALT FENCE
---	DEMOTES POINTS OF INGRESS AND EGRESS
---	PROPOSED RETAINING WALL EASEMENT
---	PROPOSED MAINTENANCE EASEMENT

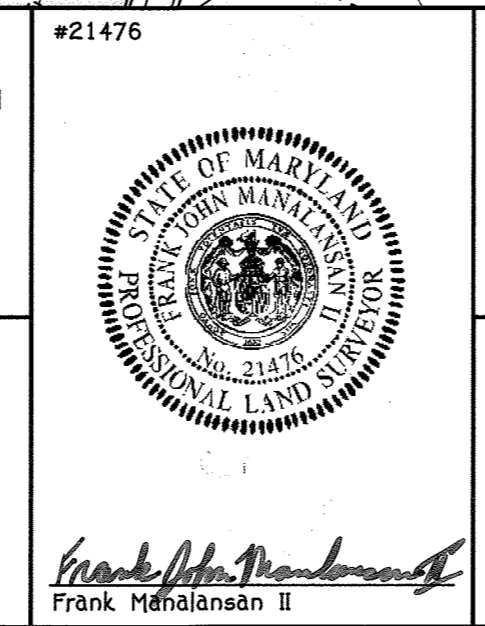


**FISHER, COLLINS & CARTER, INC.**  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
CONTINENTAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PARK  
ELICOTT CITY, MARYLAND 21042  
(410) 461-2895

NO.	REVISION	DATE
2	REVISE LANDSCAPE WALL RING DIA. R.N. 6 (LO) STORM DRAIN PIPE	7/16/13
1	REVISE FINAL GRADING & CISTERN WITH ROOF LEADERS	12/4/12

**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 Manalapan II* 8/2/14  
DATE

APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS,  
HOWARD COUNTY HEALTH DEPARTMENT.  
*Michael M. Roseman* 9/2/2014  
COUNTY HEALTH OFFICER 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  
*Kevin S. ...* 12/26/12  
Chief, Division of Land Development Date

*J.R.* 9-18-14  
Chief, Development Engineering Division Date

*...* 2/10/14  
Director - Department of Planning and Zoning Date

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

PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
20944-22943	3 & 4	PSC	16	THIRD	60300

WATER CODE	SEWER CODE
K-02	5992000

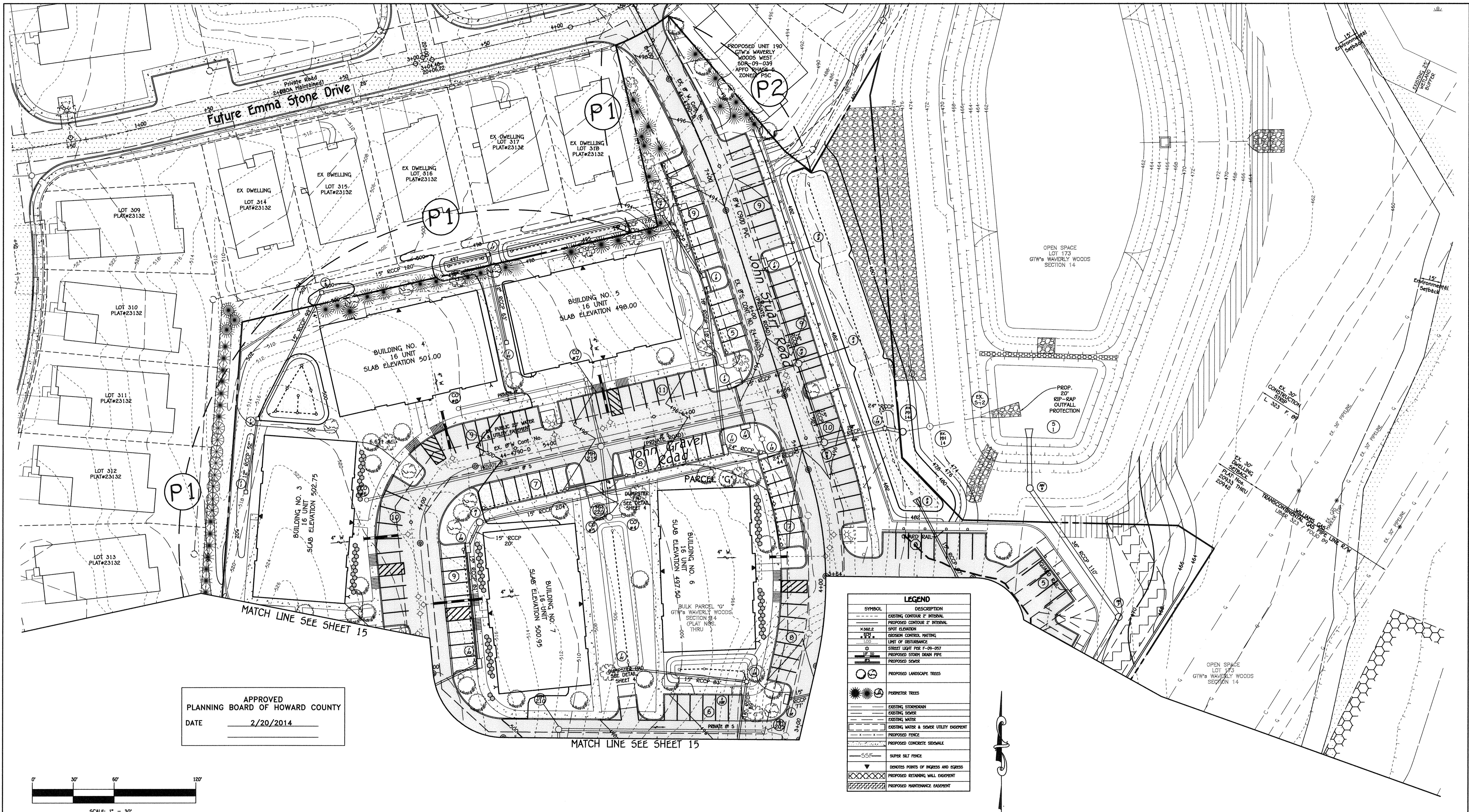
LANDSCAPE PLAN

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

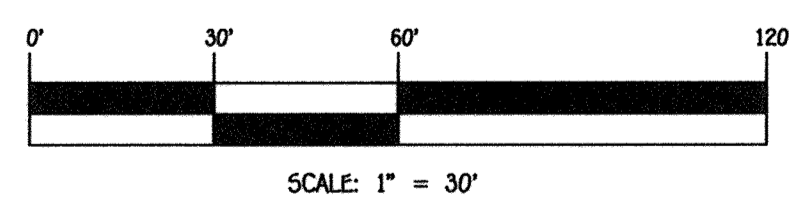
SDP-13-031

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





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

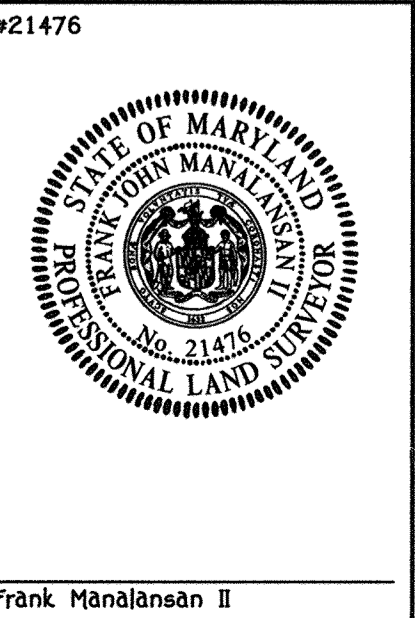


<b>FISHER, COLLINS &amp; CARTER, INC.</b> CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS <small>CENTONAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE          ELICOTT CITY, MARYLAND 21042          (410) 461-3992</small>		
NO.	REVISION	DATE
2	REVISE SWM FACILITIES AND ASSOCIATED GRADING	12/28/17
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: 07/14/2019."

*Frank Manalansan II* 1-2-18  
 Frank Manalansan II Date

APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS,  
 HOWARD COUNTY HEALTH DEPARTMENT.  
*William M. Moore* 11/29/2018  
 COUNTY HEALTH OFFICER DATE



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

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*John M. ...* 2/20/18  
 Chief, Division of Land Development & Zoning

*...* 1-18-18  
 Chief, Development Engineering Division

*...* 2-2-18  
 Director - Department of Planning and Zoning

PROJECT	SECTION	PARCEL NOS.			
GTW's WAVERLY WOODS, SECTION 14	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				

REVISED  
 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: DECEMBER 28, 2017  
 SHEET 16 OF 31

SDP-13-031

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



SCHEDULE B PARKING LOT INTERNAL LANDSCAPING	
	APARTMENTS
NUMBER OF PARKING SPACES	218
NUMBER OF TREES REQUIRED (1:10)	22
NUMBER OF TREES PROVIDED SHADE TREES OTHER TREES (2:1 SUBSTITUTE)	22

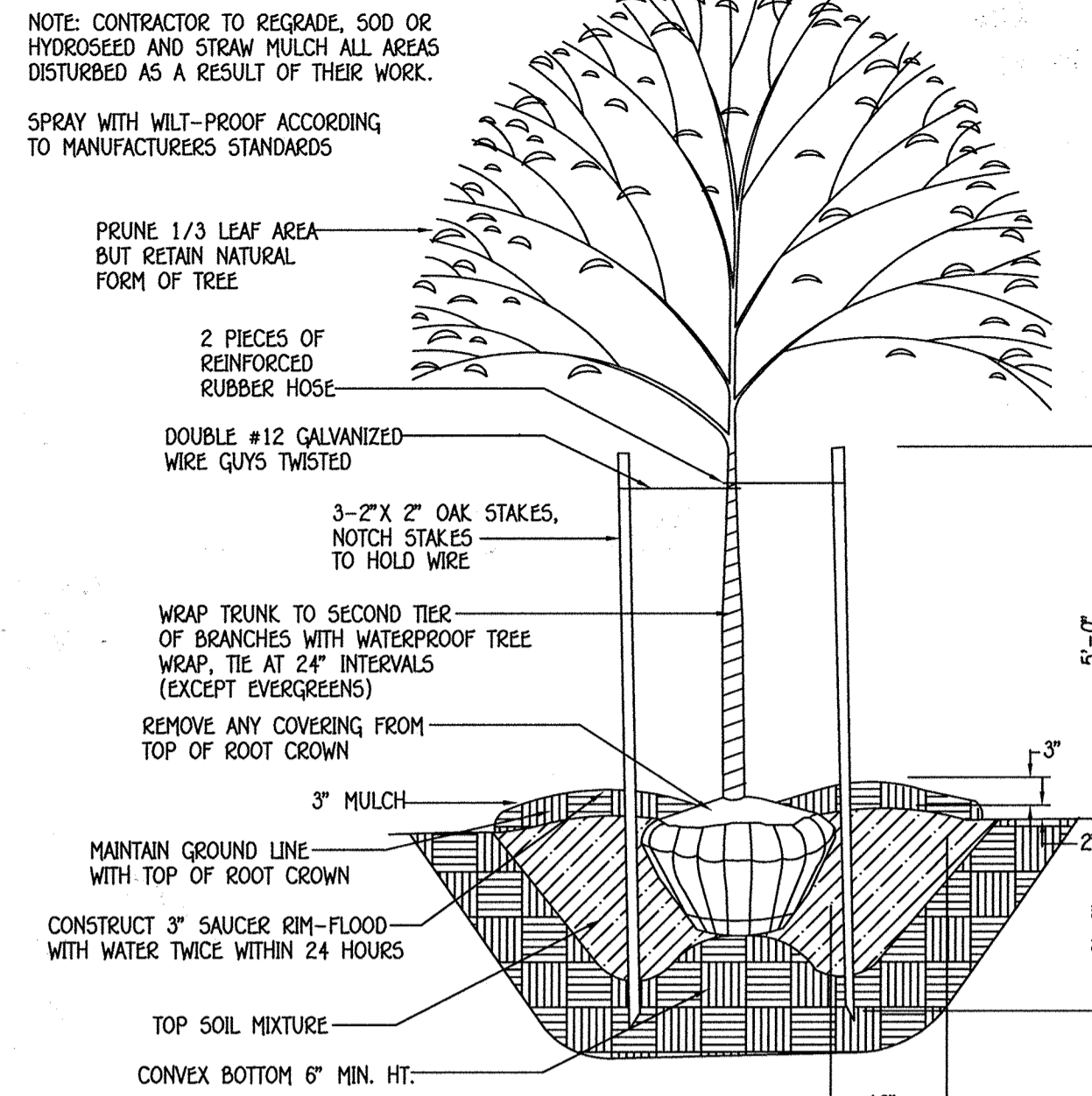
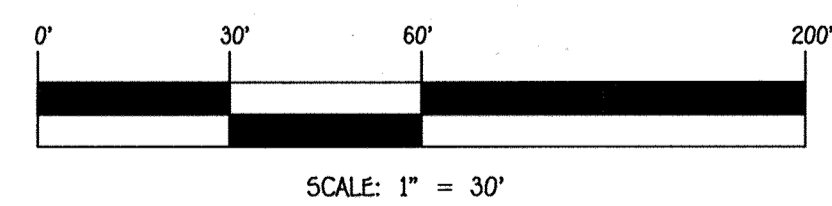
SCHEDULE C RESIDENTIAL DEVELOPMENT INTERNAL LANDSCAPING	
	APARTMENTS
NUMBER OF DWELLING UNITS	112
NUMBER OF TREES REQUIRED (1:3 DU APTS)	37
NUMBER OF TREES PROVIDED SHADE TREES OTHER TREES (2:1 SUBSTITUTE)	37

**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.

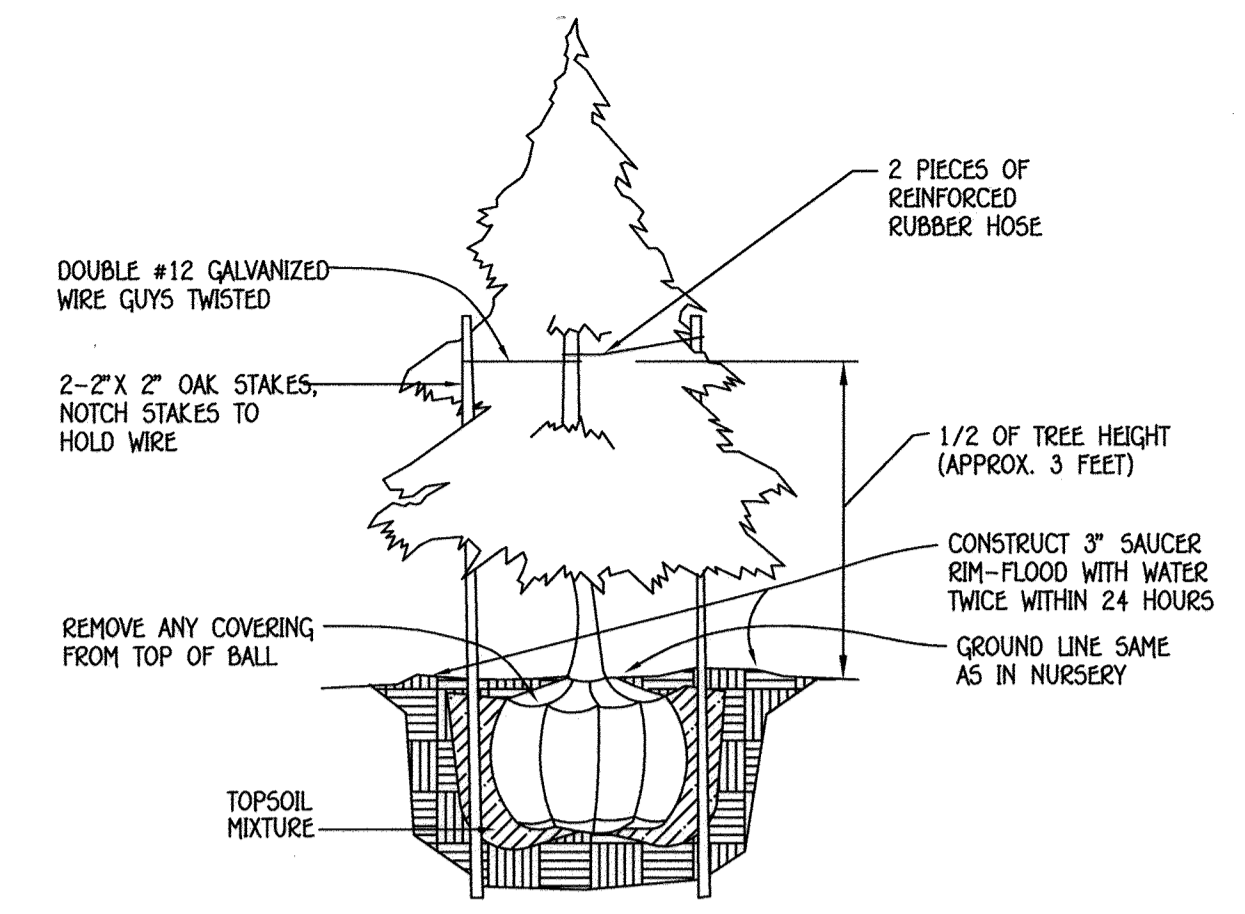
SCHEDULE A - PERIMETER LANDSCAPING											
PERIMETER	CATEGORY (PROPERTIES/ ROADWAYS)	LANDSCAPE TYPE	LINEAR FEET OF ROADWAY FRONTAGE PERIMETER	CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	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 SFD	C	148.72'	NO	NO	4	7	-	4	7	-
BUILDING 3	APT./SEA TO PARKING	E	112'	-	-	3	-	28	3	-	28
BUILDING 6	APT./SEA TO PARKING	E	112'	-	-	3	-	28	3	-	28
BUILDING 7	APT./SEA 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 GIANT ARBORVITAE	6'-8' HT.	LANDSCAPE BUFFER ALONG RETAINING WALL #1
○	84	ABELIA X GRANDIFLORA GLOSSY ABELIA	18" - 24" SP.	

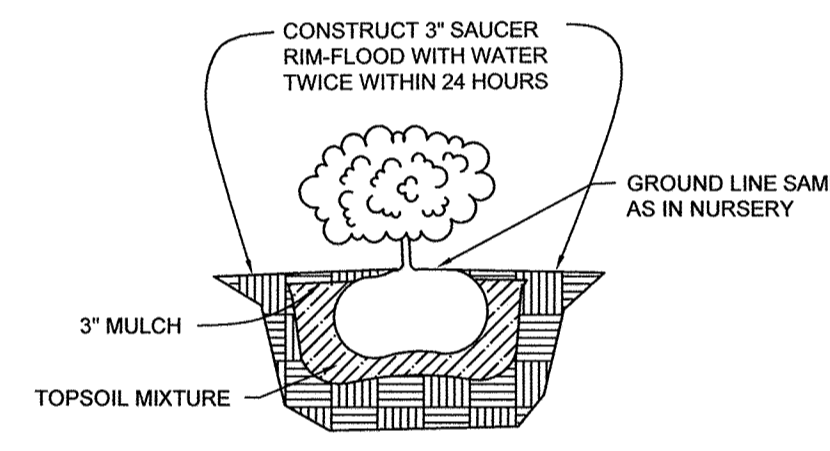
**NOTE:**  
THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE REQUIRED 89 SHADE TREES, 102 EVERGREEN TREES AND 84 SHRUBS HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$44,520.00.



**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 WIDESPREAD ROOT SYSTEM, AND SHALL CONFORM TO THE SPECIES, SIZE, ROOT AND SHAPE SHOWN ON THE PLANS AND THE AMERICAN ASSOCIATION OF NURSERYMEN (AAN) STANDARDS. PLANT MATERIAL SHALL BE HEALTHY, VIGOROUS, FREE FROM DEFECTS, DISEASE, DEFOLIATING INSECTS, SUN SCOLD INJURIES, ABNORMALS OF THE BARK, PLANT DAMAGE, INSECT FEED DAMAGE, AND ALL FORMS OF INSECT INFESTATION OR DISEASE. PLANT MATERIAL THAT IS MARKED OR WHICH HAS BEEN CUT BACK FROM LARGER SPECIES TO MEET SPECIFIED REQUIREMENTS WILL BE REJECTED. TREES WITH FORKED LEADERS WILL NOT BE ACCEPTED. ALL PLANTS SHALL BE FRESHLY DUG, NO HEATED-IN PLANTS FROM COLD STORAGE WILL BE ACCEPTED.  
UNLESS OTHERWISE SPECIFIED, ALL GENERAL CONDITIONS, PLANTING OPERATIONS, DETAILS AND PLANTING SPECIFICATIONS SHALL CONFORM TO "LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREA" (HEREINAFTER "LANDSCAPE GUIDELINES") APPROVED BY THE LANDSCAPE CONTRACTORS ASSOCIATION OF METROPOLITAN WASHINGTON AND THE POTOMAC CHAPTER OF THE AMERICAN SOCIETY OF LANDSCAPE ARCHITECT, LATEST EDITION, INCLUDING ALL AMENDMENTS.  
CONTRACTOR SHALL BE RESPONSIBLE 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 "HIS UTILITY" A MINIMUM OF 48 HOURS PRIOR TO BEGINNING ANY WORK. CONTRACTOR MUST MAKE PROBE ADJUSTMENTS IN SPACING AND LOCATION OF PLANT MATERIAL TO AVOID CONFLICTS WITH UTILITIES. DAMAGE TO EXISTING STRUCTURES 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 DIRT 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 BASED 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 PLANT LIST PRECEDE.  
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.  
PLANTING ORANGE SHALL BE MAINTAINED IN PLANTING BEDS 2 PERCENT SLOPE.  
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.

*[Signature]* 10/2/14  
Name Date

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  
CONTINENTAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE  
ELICOTT CITY, MARYLAND 21042  
(410) 461-2222

**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."  
*[Signature]* 9/10/14  
Frank Manalansan II DATE



APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS,  
HOWARD COUNTY HEALTH DEPARTMENT.  
*[Signature]* 9/2/2014  
COUNTY HEALTH OFFICER DATE

**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					
<i>[Signature]</i> Chief, Division of Land Development		<i>[Signature]</i> Date 9.18.14			
<i>[Signature]</i> Chief, Development Engineering Division		<i>[Signature]</i> Date 9/2/14			
Director - Department of Planning and Zoning					
PROJECT GTM's WAVERLY WOODS, SECTION 14 PARCEL G	SECTION 14	PARCEL NOS. 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			

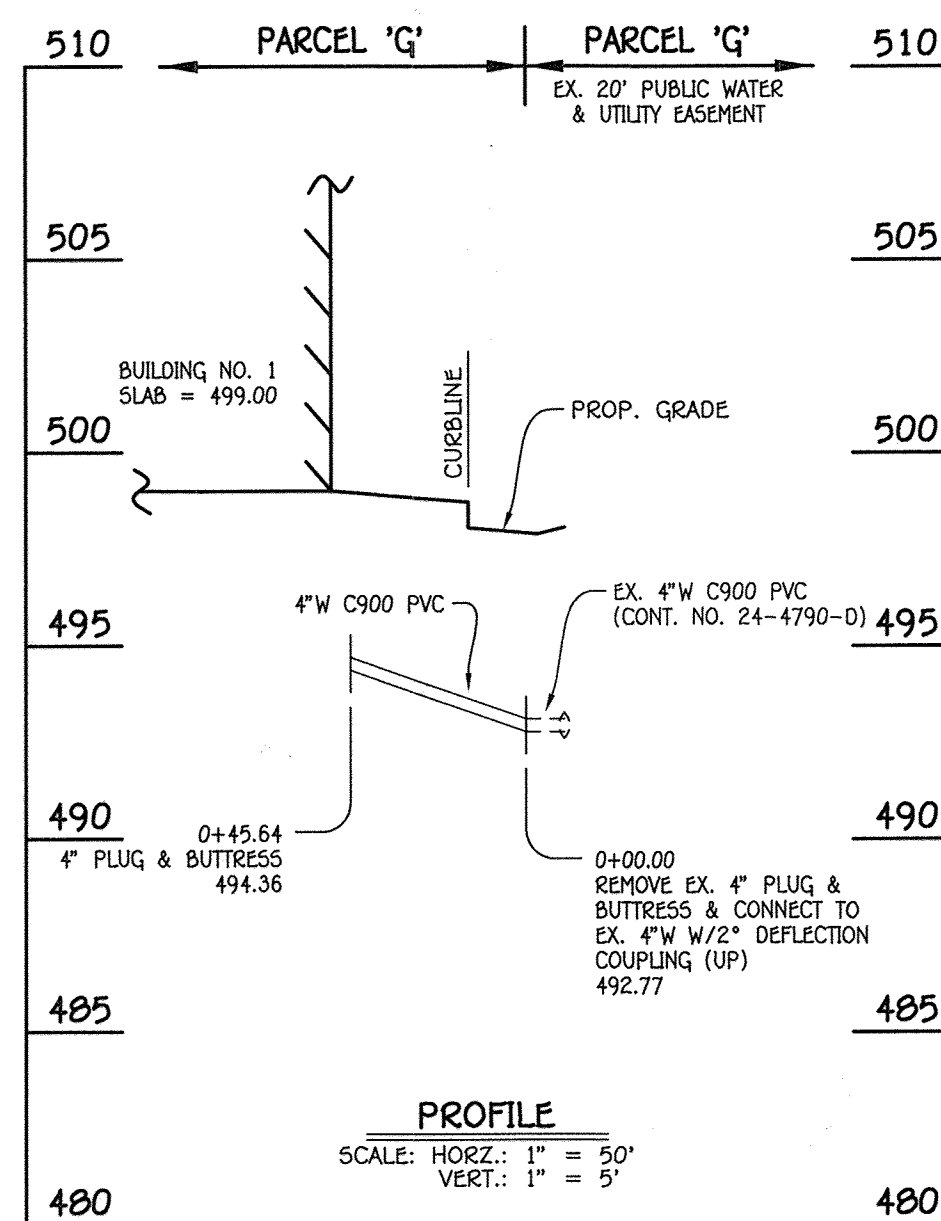
LANDSCAPE PLAN NOTES & DETAILS  
AGE RESTRICTED ADULT HOUSING  
WAVERLY MEWS  
SECTION 14  
PARCEL 'G' (Plat Nos. Thru  
ZONED PSC TAX MAP NO.: 16 GRID NO.: 3 & 4  
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
SCALE: AS SHOWN DATE: AUGUST 9, 2014  
SHEET 17 OF 31  
SDP-13-031

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

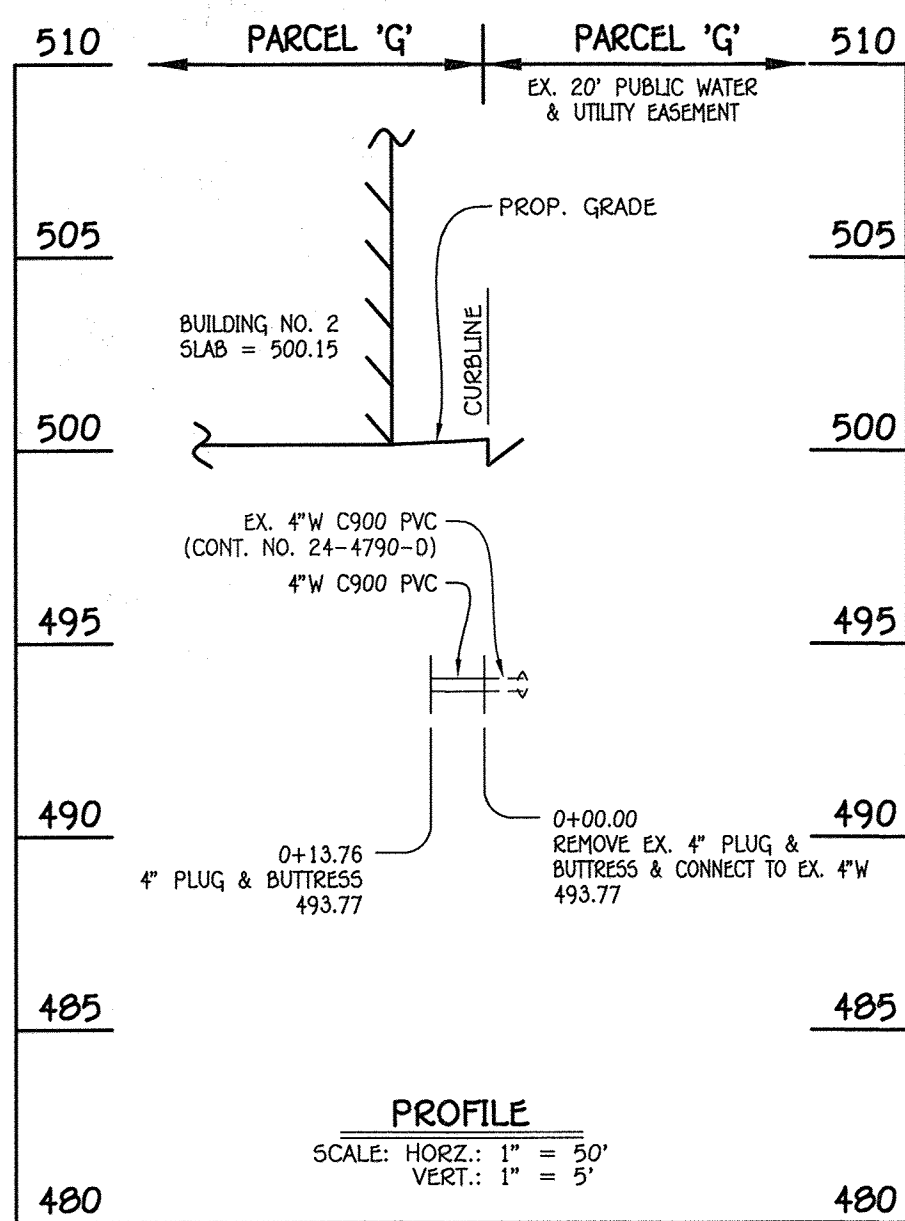




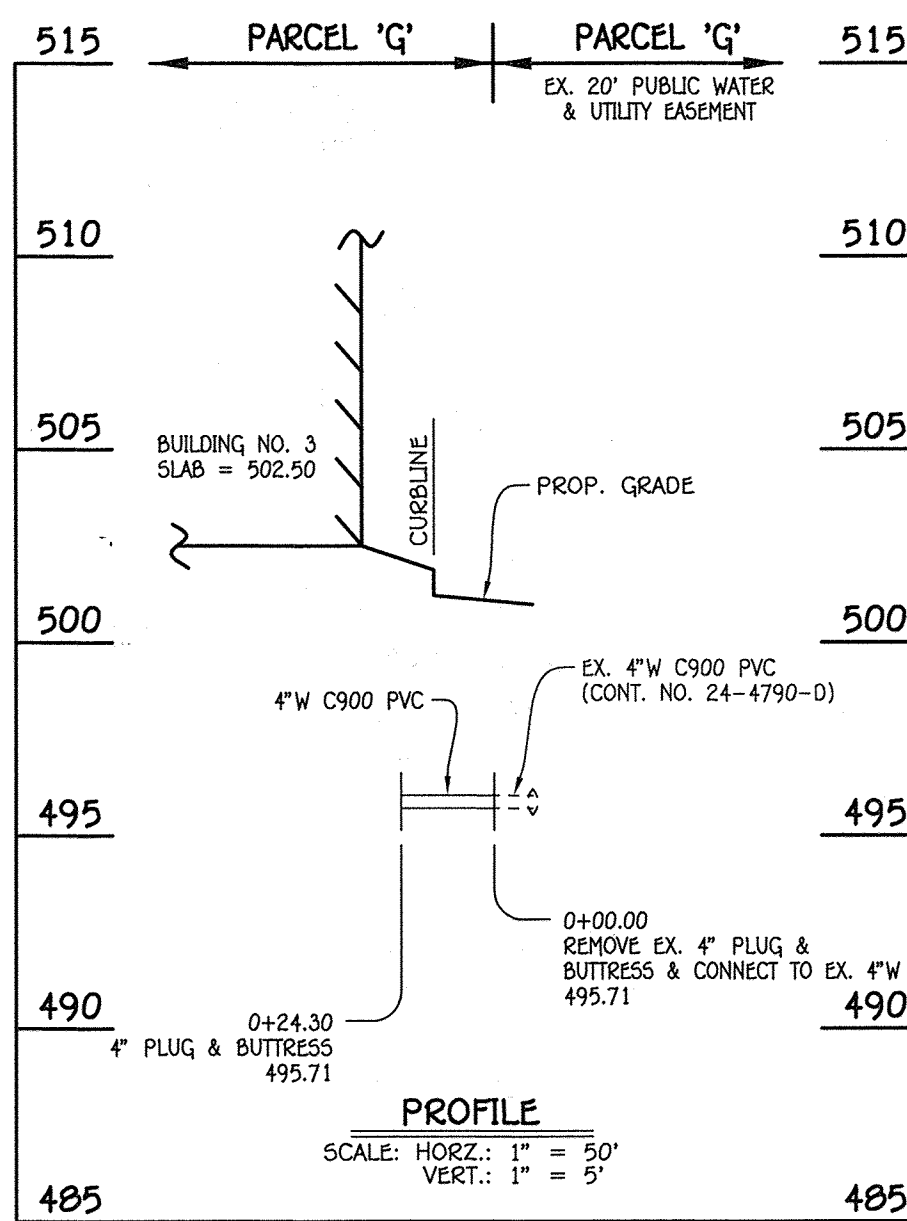




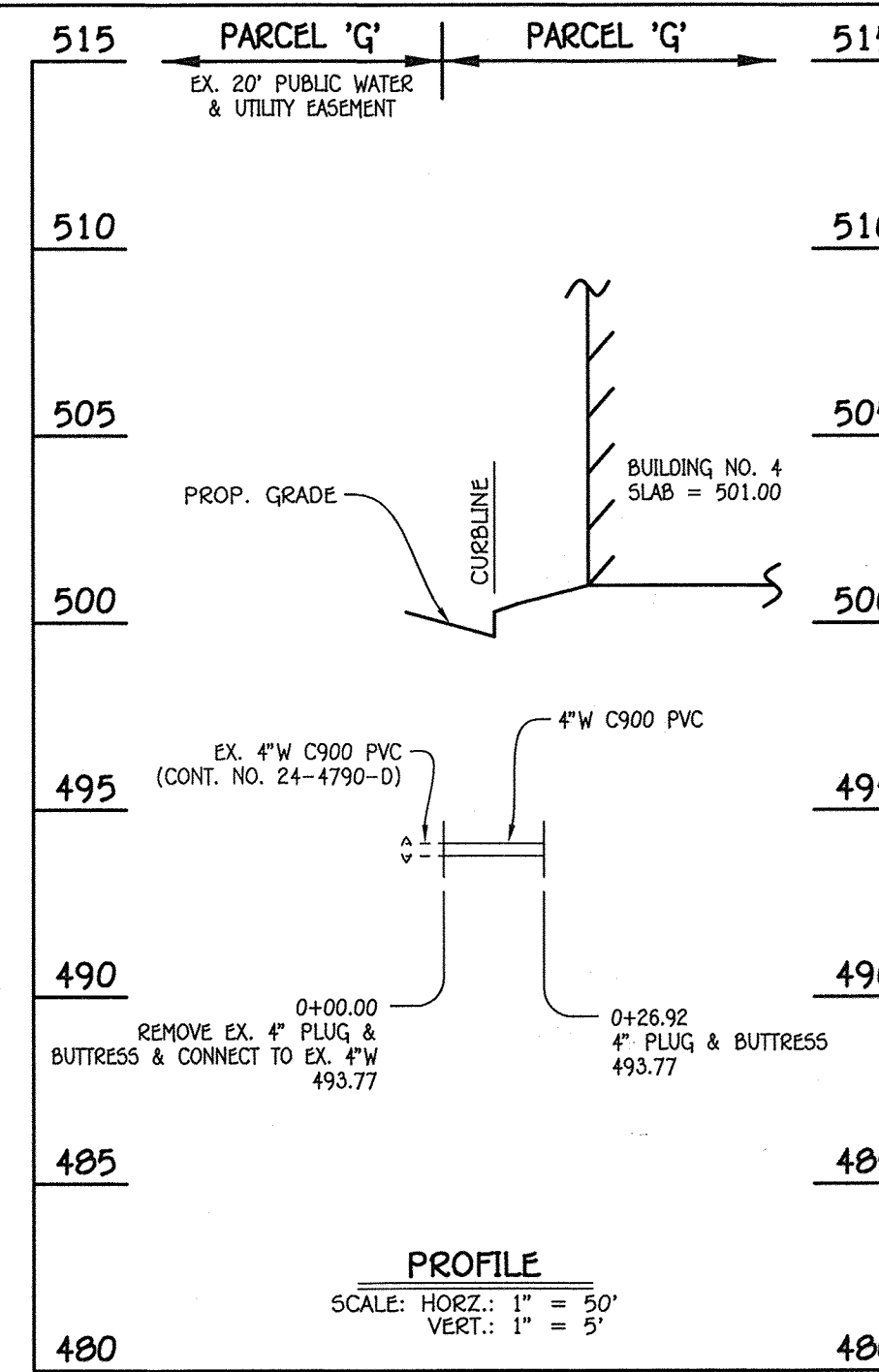
4" WATER MAIN: BUILDING NO. 1



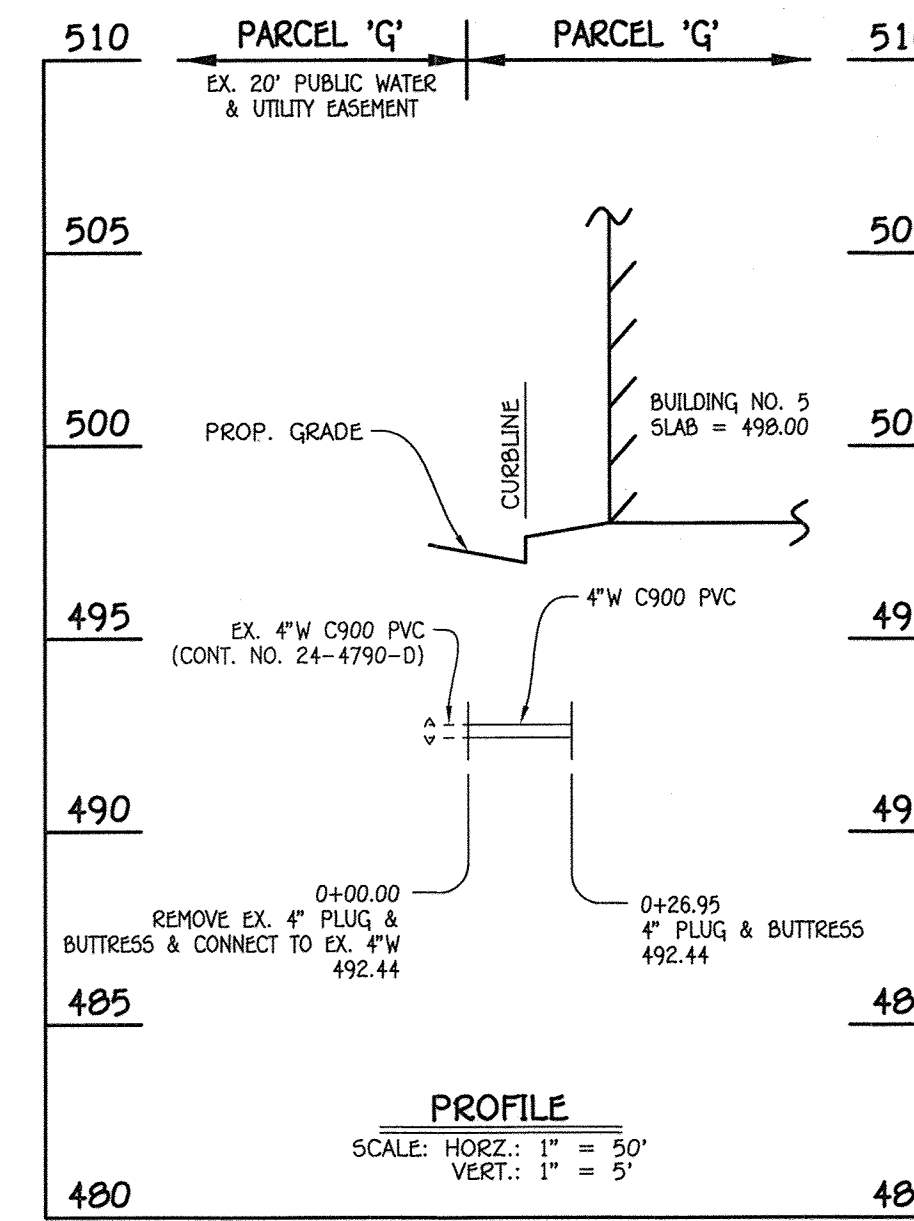
4" WATER MAIN: BUILDING NO. 2



4" WATER MAIN: BUILDING NO. 3



4" WATER MAIN: BUILDING NO. 4



4" WATER MAIN: BUILDING NO. 5

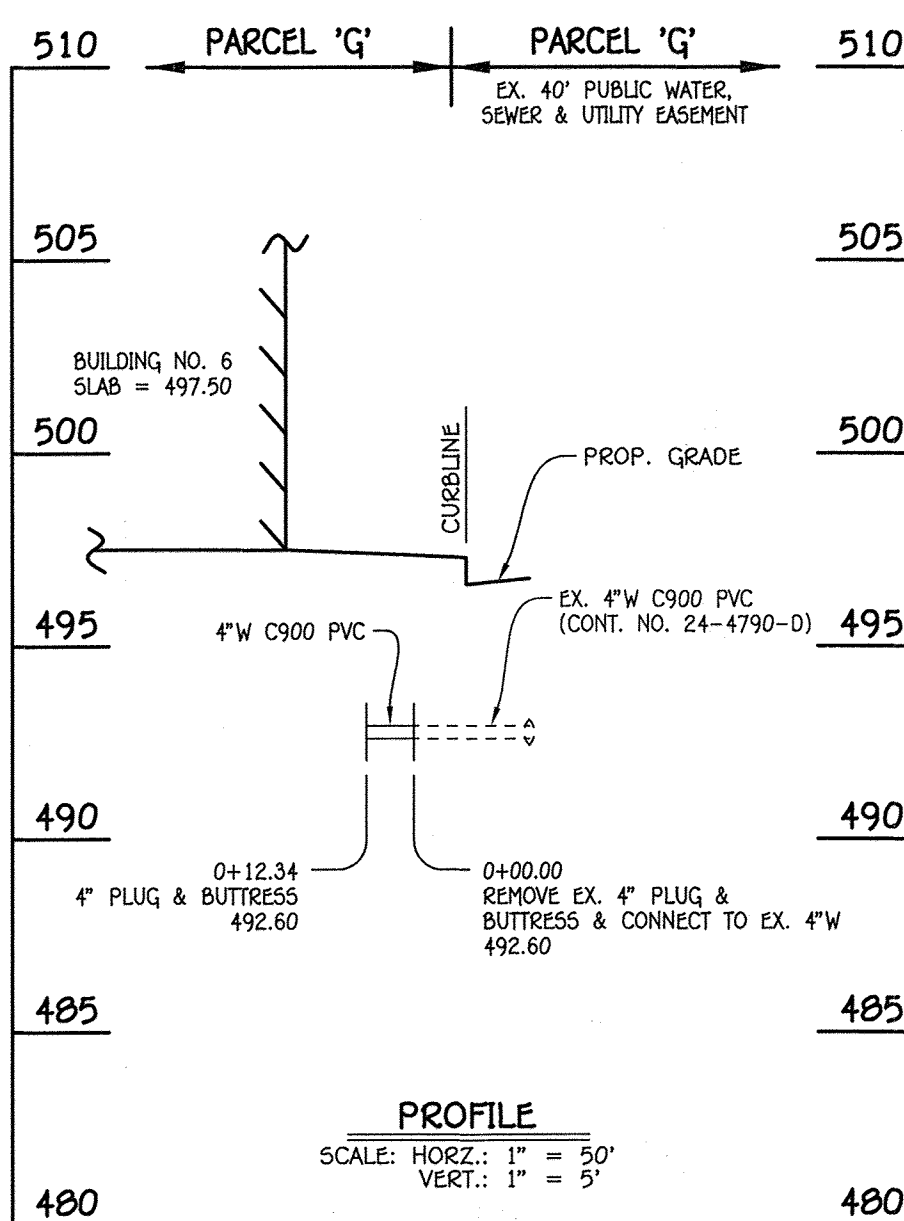
WATER MAIN TABULATION CHART			
W.M. STA.	APPURTENANCE	NORTHING	EASTING
4" WATER MAIN: BUILDING NO. 1			
0+00.00	EX. 4" PLUG & BUTTRESS	530106.12	027631.64
0+45.64	4" PLUG & BUTTRESS	530140.40	027631.30

WATER MAIN TABULATION CHART			
W.M. STA.	APPURTENANCE	NORTHING	EASTING
4" WATER MAIN: BUILDING NO. 2			
0+00.00	EX. 4" PLUG & BUTTRESS	530194.51	027544.70
0+13.76	4" PLUG & BUTTRESS	530184.33	027535.43

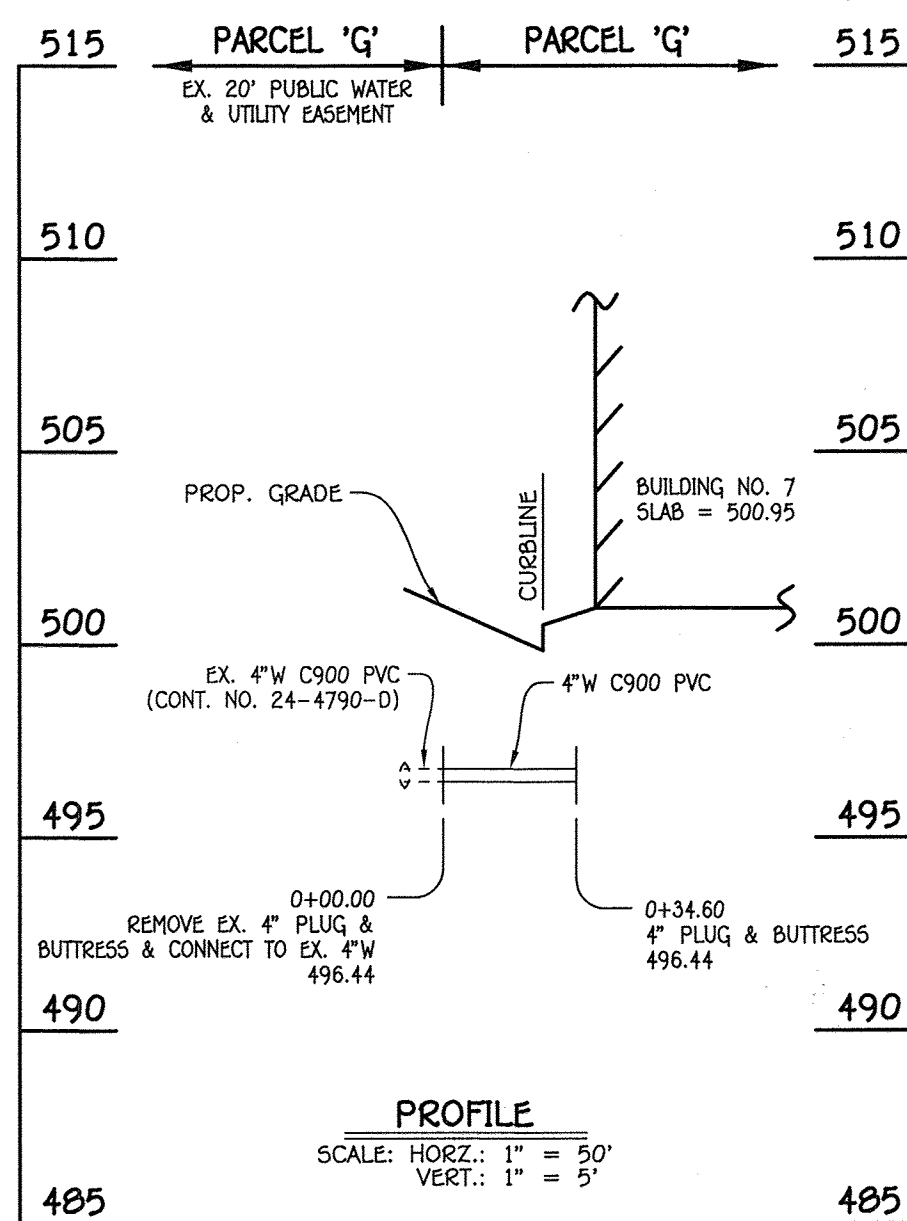
WATER MAIN TABULATION CHART			
W.M. STA.	APPURTENANCE	NORTHING	EASTING
4" WATER MAIN: BUILDING NO. 3			
0+00.00	EX. 4" PLUG & BUTTRESS	530344.20	027497.17
0+24.30	4" PLUG & BUTTRESS	530341.74	027473.00

WATER MAIN TABULATION CHART			
W.M. STA.	APPURTENANCE	NORTHING	EASTING
4" WATER MAIN: BUILDING NO. 4			
0+00.00	EX. 4" PLUG & BUTTRESS	530404.90	027533.80
0+26.92	4" PLUG & BUTTRESS	530431.15	027527.01

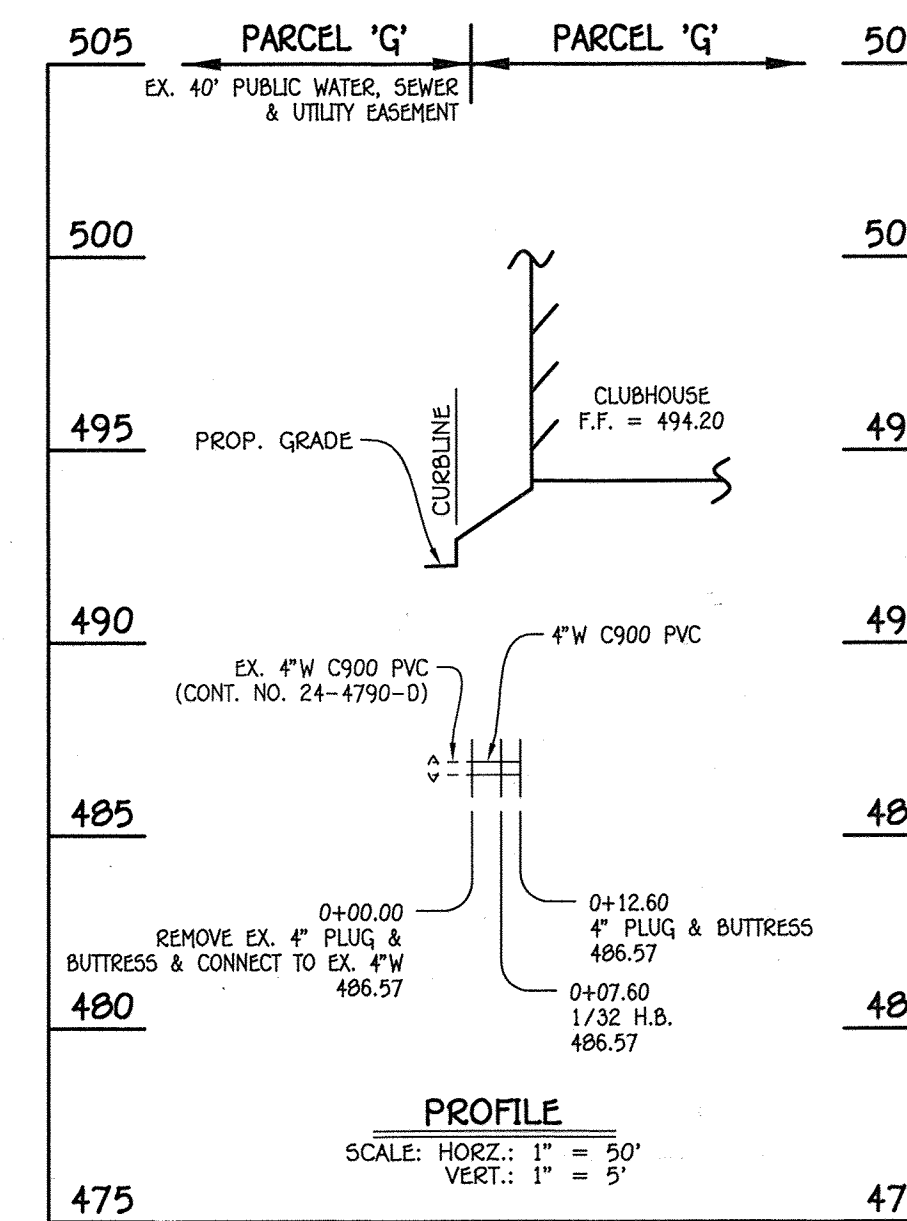
WATER MAIN TABULATION CHART			
W.M. STA.	APPURTENANCE	NORTHING	EASTING
4" WATER MAIN: BUILDING NO. 5			
0+00.00	EX. 4" PLUG & BUTTRESS	530430.20	027644.65
0+26.95	4" PLUG & BUTTRESS	530456.40	027630.65



4" WATER MAIN: BUILDING NO. 6



4" WATER MAIN: BUILDING NO. 7



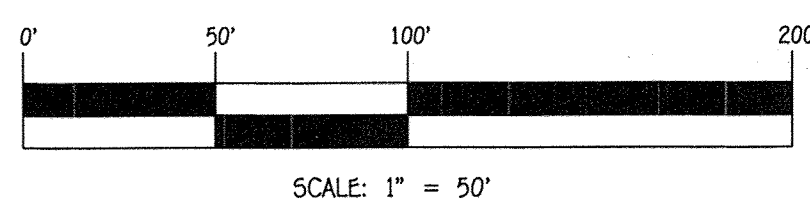
4" WATER MAIN: CLUBHOUSE

WATER MAIN TABULATION CHART			
W.M. STA.	APPURTENANCE	NORTHING	EASTING
4" WATER MAIN: BUILDING NO. 6			
0+00.00	EX. 4" PLUG & BUTTRESS	530329.34	027770.92
0+12.34	4" PLUG & BUTTRESS	530329.20	027750.50

WATER MAIN TABULATION CHART			
W.M. STA.	APPURTENANCE	NORTHING	EASTING
4" WATER MAIN: BUILDING NO. 7			
0+00.00	EX. 4" PLUG & BUTTRESS	530296.33	027522.13
0+34.60	4" PLUG & BUTTRESS	530299.83	027556.55

WATER MAIN TABULATION CHART			
W.M. STA.	APPURTENANCE	NORTHING	EASTING
4" WATER MAIN: CLUBHOUSE			
0+00.00	EX. 4" PLUG & BUTTRESS	530005.44	027760.40
0+07.60	1/32 H.B.	530003.74	027775.09
0+12.60	4" PLUG & BUTTRESS	530003.74	027780.89

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  
ELLSWORTH CITY, MARYLAND 21042  
(410) 461-2895

**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



**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

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

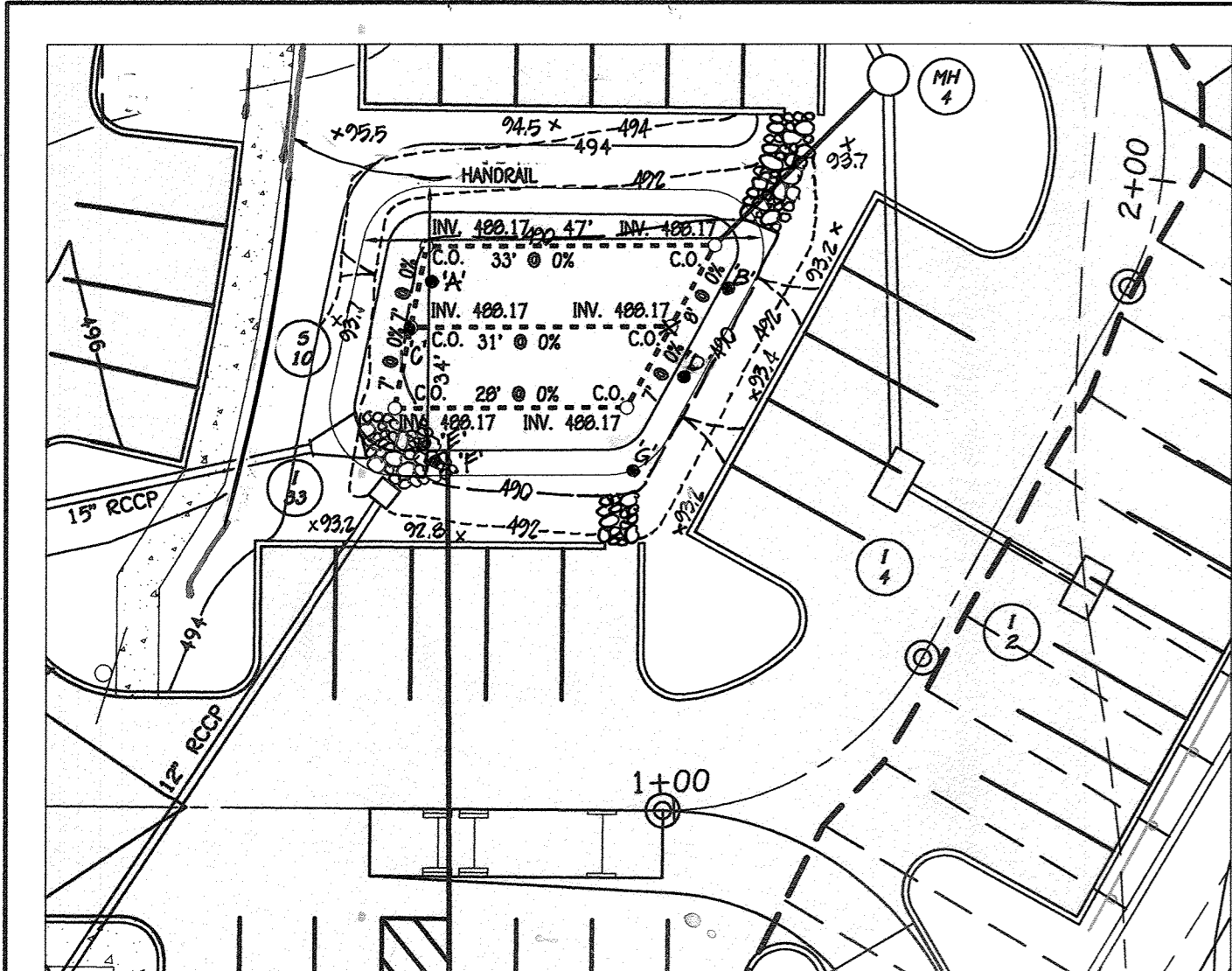
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Victoria D'Amico* 8/13/14  
Chief, Division of Land Development Date  
*John Smith* 8/13/14  
Chief, Development Engineering Division Date  
*Monika K. Grogan* 8/13/14  
Director - Department of Planning and Zoning Date  
PROJECT: GW'S WAVERLY WOODS, SECTION 14 SECTION: 14 PARCEL NOS.: P/O 249  
PLAT: 22944-32953 BLOCK NO.: 3 & 4 ZONE: PSC TAX/ZONE: 16 ELEC. DIST.: THIRD CENSUS TR.: 60300  
WATER CODE: K-02 SEWER CODE: 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

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



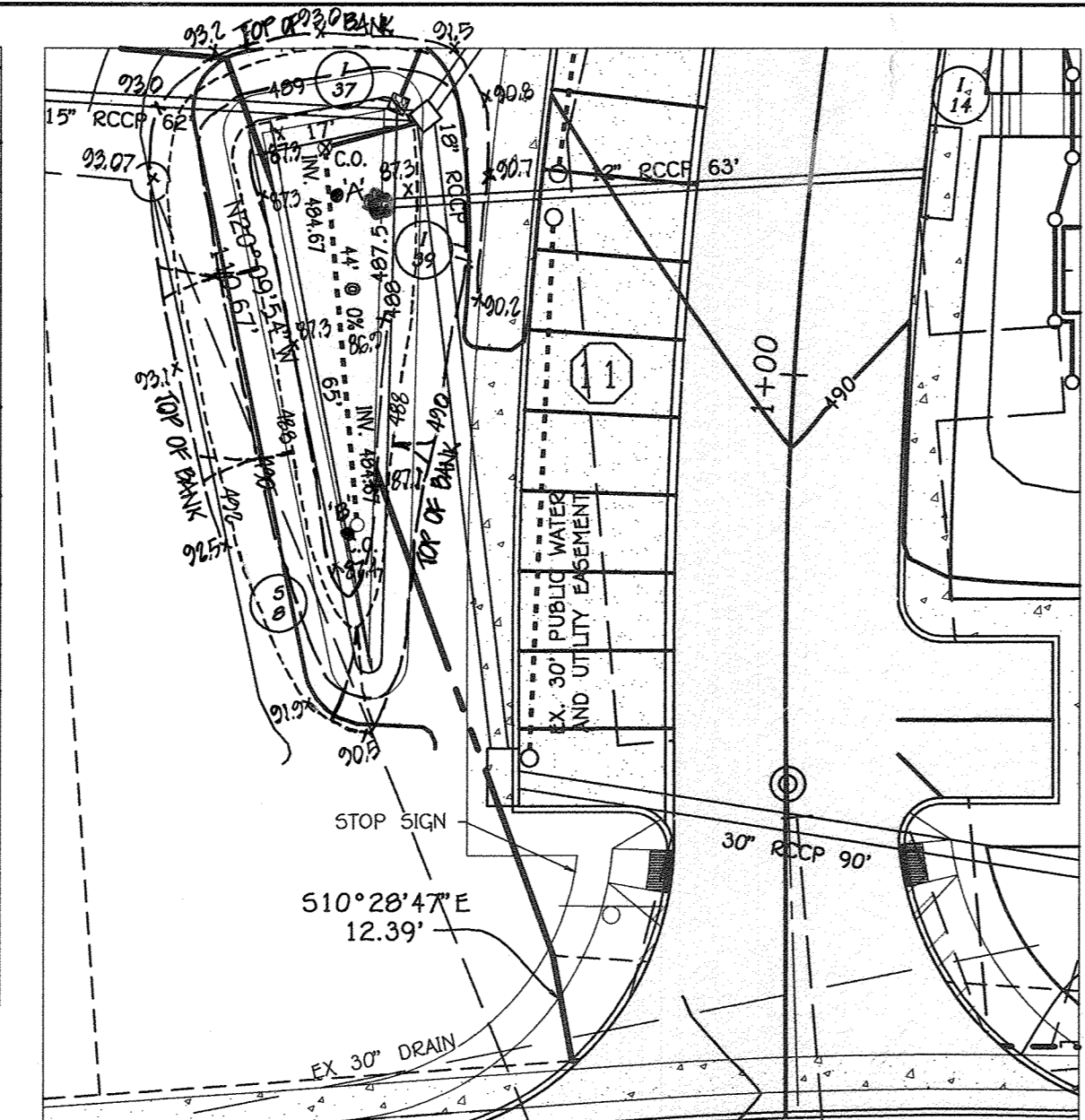


**M-6 (6)**  
 (MICRO BIO-RETENTION FACILITY)  
 SCALE: 1" = 20'  
 DRAINAGE AREA: 16,021 SqFt.  
 FILTER AREA: 1046 SqFt.  
 ELEVATION: 491.60-492.42  
 PERIMETER: 184'  
 WEIR ELEVATION: 492.00

**CLEANOUT TOP ELEV. INVERT**

'A'	491.11	497.11
'B'	491.10	497.03
'C'	491.11	497.03
'D'	491.15	497.15
'E'	491.21	497.15
'G'	491.10	497.11

**INLET 1-33**  
 TOP ELEV. 492.33  
 THROAT ELEV. 491.40  
 INV. IN 12" 491.55

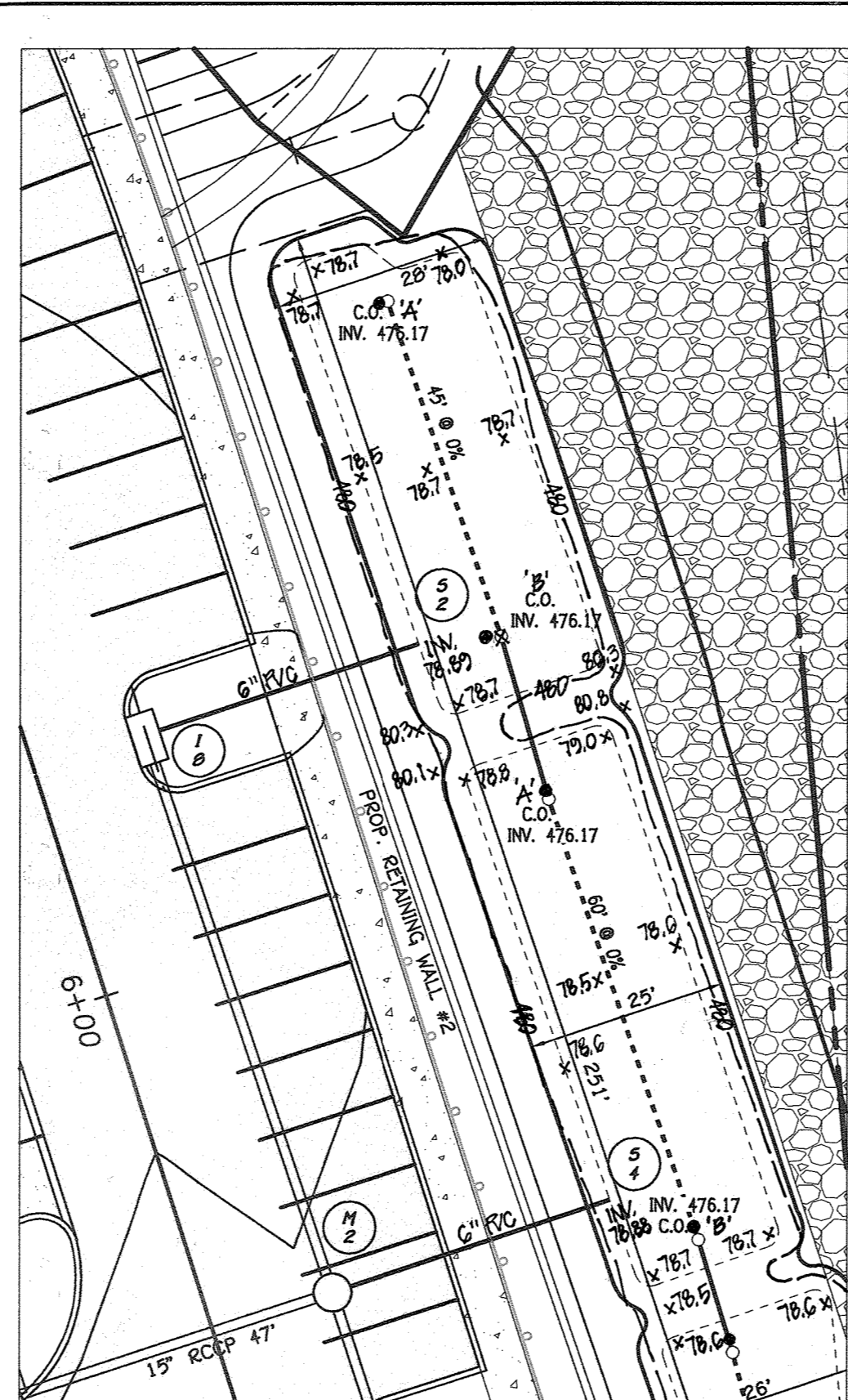


**M-6 (7)**  
 (MICRO BIO-RETENTION FACILITY)  
 SCALE: 1" = 20'  
 DRAINAGE AREA: 8,789 SqFt.  
 FILTER AREA: 450 SqFt.  
 ELEVATION: 488.98-492.21  
 PERIMETER: 154'  
 WEIR ELEVATION: 489.00

**CLEANOUT TOP ELEV. INVERT**

'A'	488.50	484.56
'B'	488.39	484.50

**INLET 1-37**  
 TOP ELEV. 489.09  
 THROAT ELEV. 488.21  
 INV. IN 12" 484.03  
 INV. IN 18" 484.03  
 INV. OUT 24" 483.76

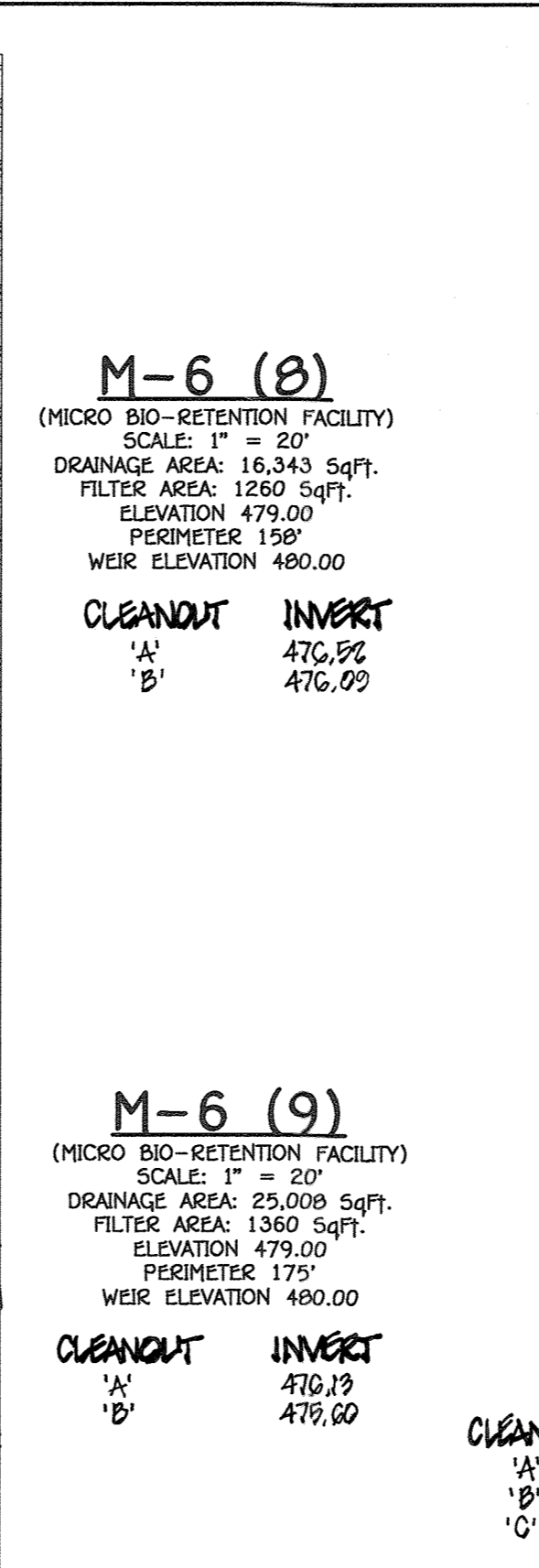


**M-6 (9)**  
 (MICRO BIO-RETENTION FACILITY)  
 SCALE: 1" = 20'  
 DRAINAGE AREA: 25,008 SqFt.  
 FILTER AREA: 1360 SqFt.  
 ELEVATION: 479.00  
 PERIMETER: 175'  
 WEIR ELEVATION: 480.00

**CLEANOUT TOP ELEV. INVERT**

'A'	478.52	478.02
'B'	478.52	478.02

**INLET 1-37**  
 TOP ELEV. 478.17  
 THROAT ELEV. 478.17  
 INV. IN 12" 476.17  
 INV. IN 18" 476.17  
 INV. OUT 24" 476.17

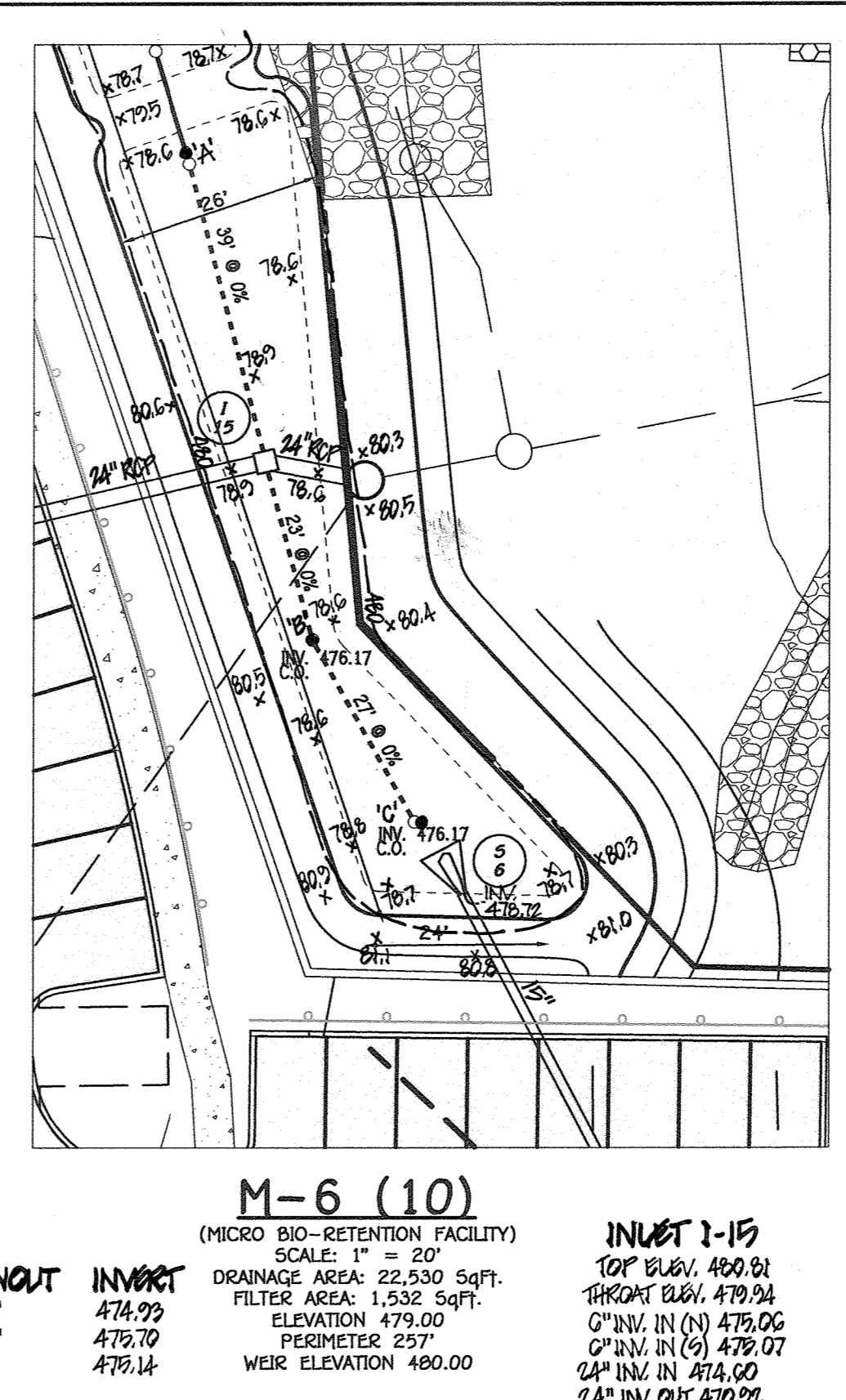


**M-6 (8)**  
 (MICRO BIO-RETENTION FACILITY)  
 SCALE: 1" = 20'  
 DRAINAGE AREA: 16,343 SqFt.  
 FILTER AREA: 1260 SqFt.  
 ELEVATION: 479.00  
 PERIMETER: 158'  
 WEIR ELEVATION: 480.00

**CLEANOUT TOP ELEV. INVERT**

'A'	478.52	478.02
'B'	478.52	478.02

**INLET 1-37**  
 TOP ELEV. 478.17  
 THROAT ELEV. 478.17  
 INV. IN 12" 476.17  
 INV. IN 18" 476.17  
 INV. OUT 24" 476.17

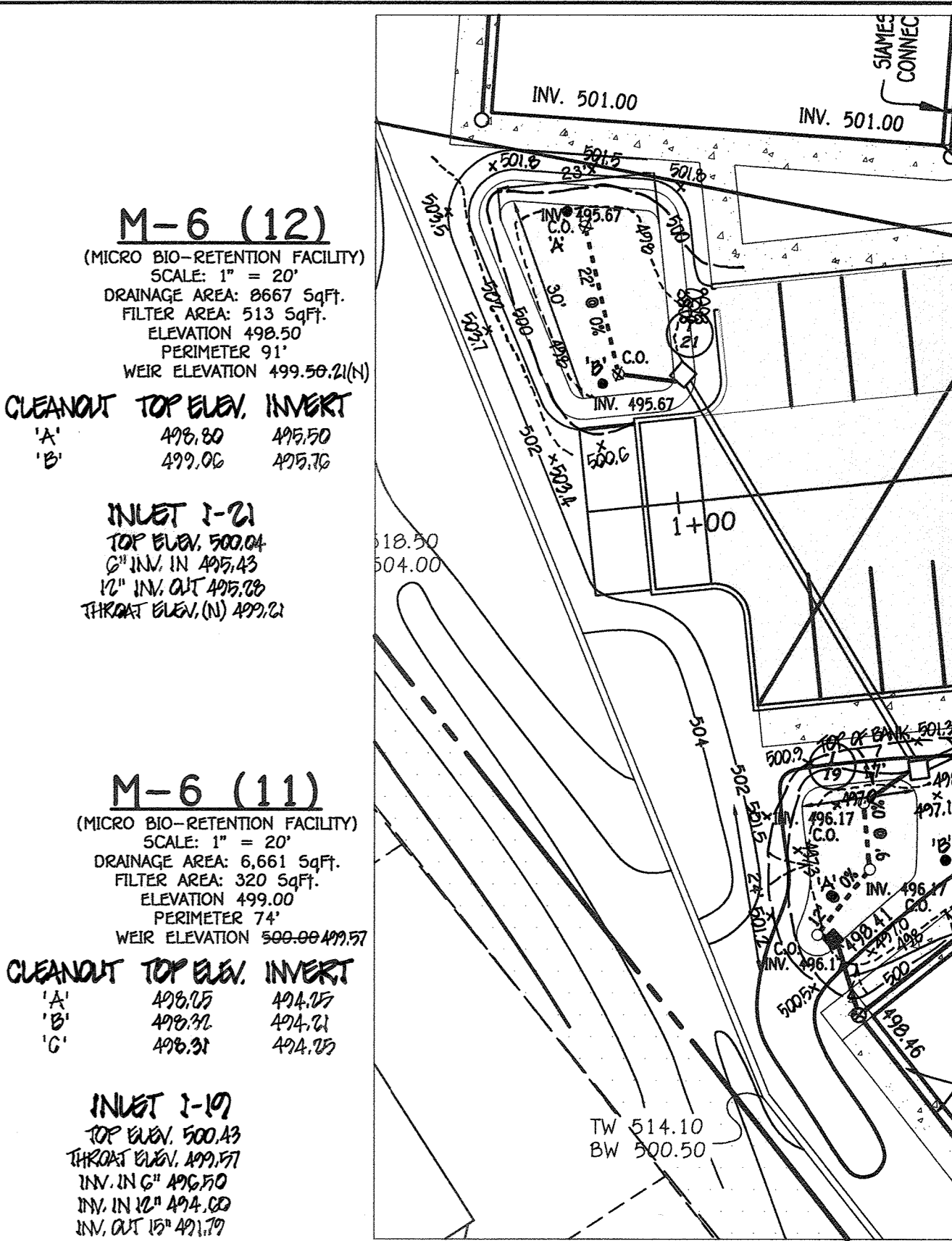


**M-6 (10)**  
 (MICRO BIO-RETENTION FACILITY)  
 SCALE: 1" = 20'  
 DRAINAGE AREA: 22,530 SqFt.  
 FILTER AREA: 1,532 SqFt.  
 ELEVATION: 479.00  
 PERIMETER: 257'  
 WEIR ELEVATION: 480.00

**CLEANOUT TOP ELEV. INVERT**

'A'	474.92	475.70
'B'	474.92	475.70
'C'	475.14	475.14

**INLET 1-15**  
 TOP ELEV. 480.81  
 THROAT ELEV. 479.94  
 INV. IN (A) 475.06  
 INV. IN (G) 478.07  
 INV. IN (E) 474.50  
 INV. OUT 24" 470.92

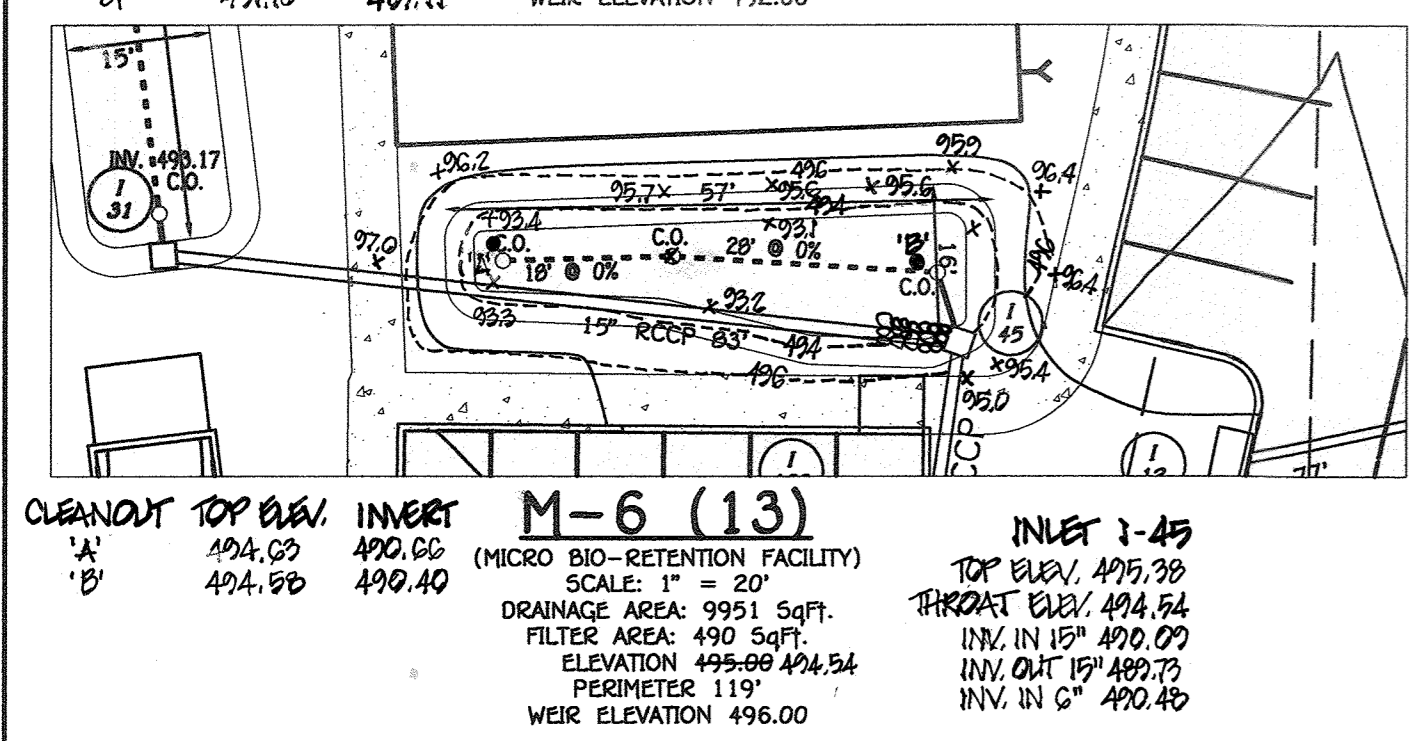


**M-6 (11)**  
 (MICRO BIO-RETENTION FACILITY)  
 SCALE: 1" = 20'  
 DRAINAGE AREA: 6,651 SqFt.  
 FILTER AREA: 320 SqFt.  
 ELEVATION: 499.00  
 PERIMETER: 74'  
 WEIR ELEVATION: 500.00-499.57

**CLEANOUT TOP ELEV. INVERT**

'A'	498.05	494.25
'B'	498.92	494.21
'C'	498.92	494.25

**INLET 1-19**  
 TOP ELEV. 500.43  
 THROAT ELEV. 499.57  
 INV. IN (A) 496.10  
 INV. IN (E) 494.00  
 INV. OUT 18" 491.79

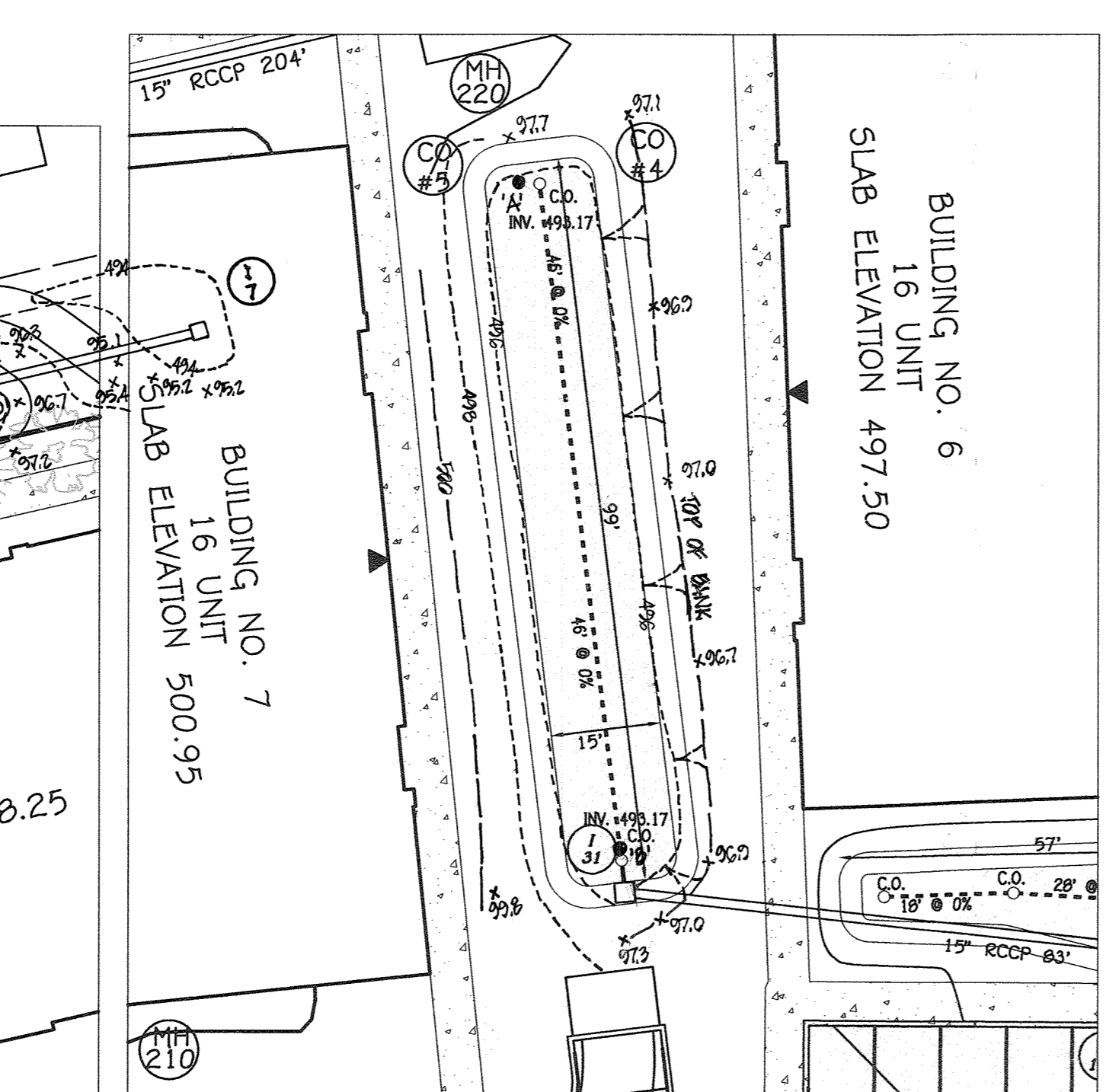


**M-6 (13)**  
 (MICRO BIO-RETENTION FACILITY)  
 SCALE: 1" = 20'  
 DRAINAGE AREA: 9,951 SqFt.  
 FILTER AREA: 490 SqFt.  
 ELEVATION: 495.60-494.54  
 PERIMETER: 119'  
 WEIR ELEVATION: 496.00

**CLEANOUT TOP ELEV. INVERT**

'A'	494.02	490.06
'B'	494.50	490.40

**INLET 1-45**  
 TOP ELEV. 495.38  
 THROAT ELEV. 494.54  
 INV. IN 12" 490.07  
 INV. OUT 18" 489.75  
 INV. IN (C) 490.48

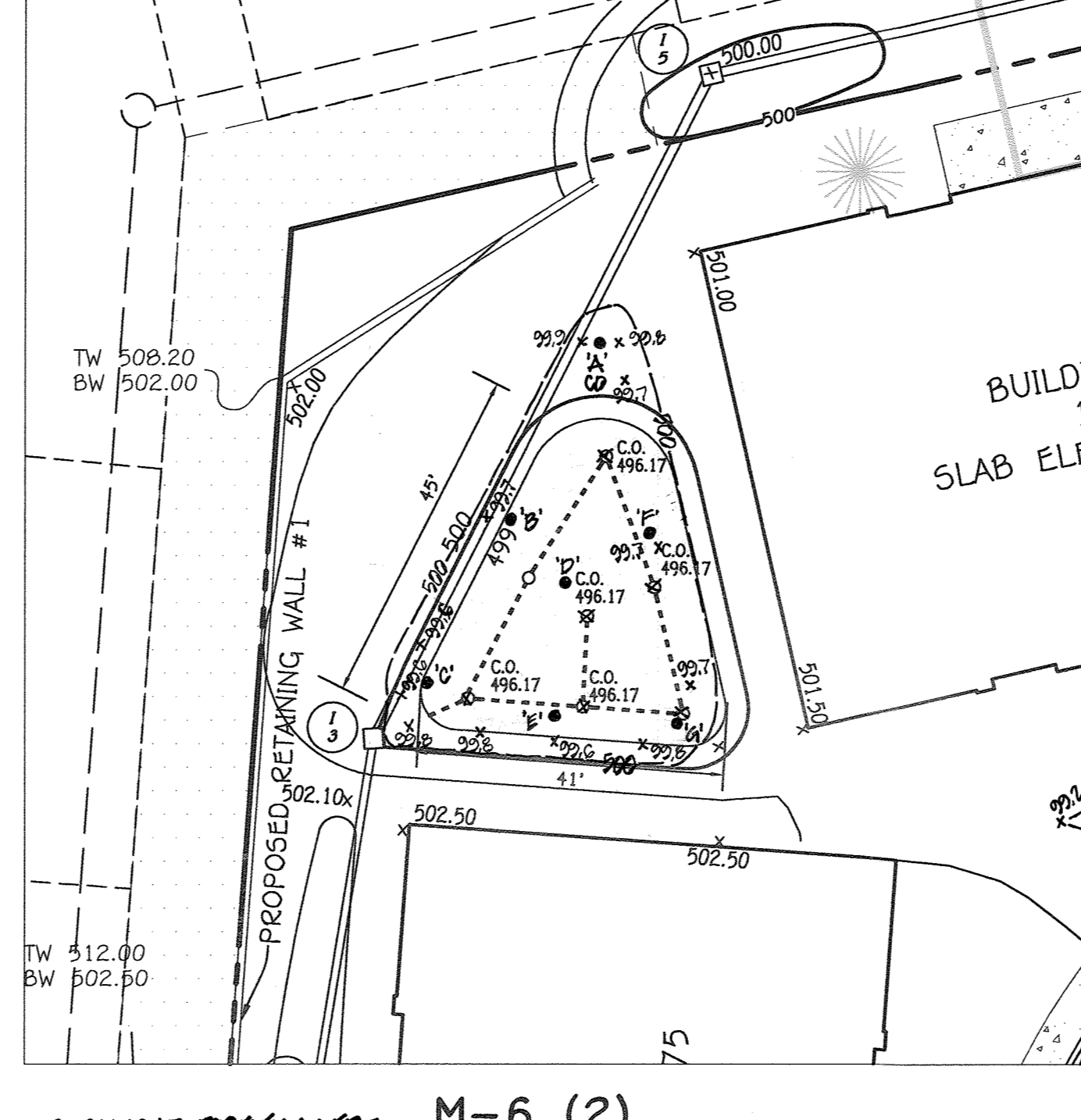


**M-6 (4)**  
 (MICRO BIO-RETENTION FACILITY)  
 SCALE: 1" = 20'  
 DRAINAGE AREA: 9,293 SqFt.  
 FILTER AREA: 624 SqFt.  
 ELEVATION: 495.00  
 PERIMETER: 180'  
 WEIR ELEVATION: 496.00

**CLEANOUT TOP ELEV. INVERT**

'A'	496.19	495.01
'B'	496.05	495.24

**INLET 1-31**  
 TOP ELEV. 497.10  
 THROAT ELEV. 497.10  
 INV. IN 12" 491.00

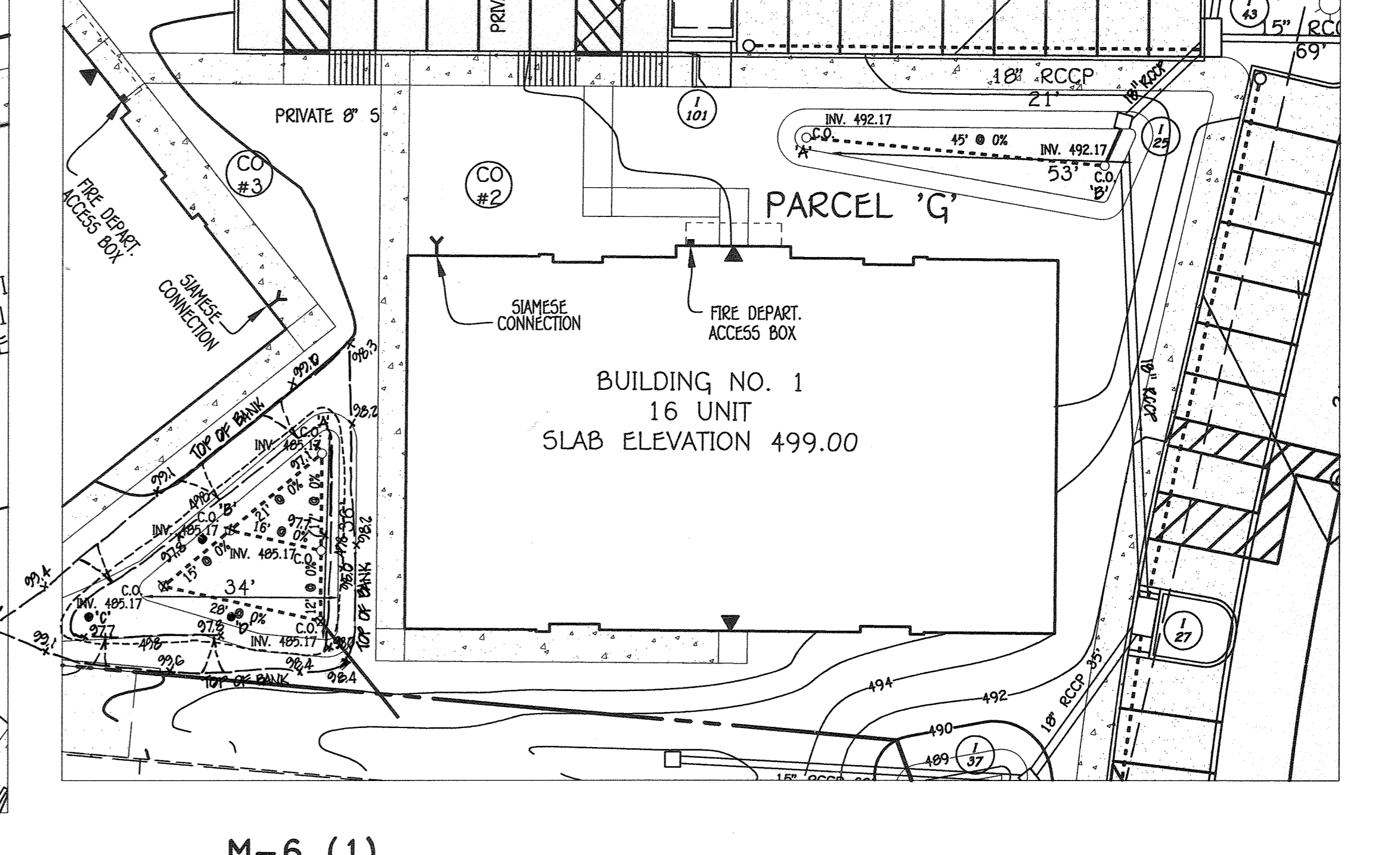


**M-6 (2)**  
 (MICRO BIO-RETENTION FACILITY)  
 SCALE: 1" = 20'  
 DRAINAGE AREA: 19,876 SqFt.  
 FILTER AREA: 1,218 SqFt.  
 ELEVATION: 499.00  
 PERIMETER: 137'  
 WEIR ELEVATION: 500.00-97

**CLEANOUT TOP ELEV. INVERT**

'A'	500.64	497.00
'B'	500.99	497.09
'C'	500.78	497.15
'D'	500.50	497.15
'E'	500.61	497.04
'F'	500.56	497.10
'G'	500.46	497.16

**INLET 1-3**  
 TOP ELEV. 501.09  
 THROAT ELEV. 500.97  
 INV. IN 12" 497.06  
 INV. IN 18" 497.06

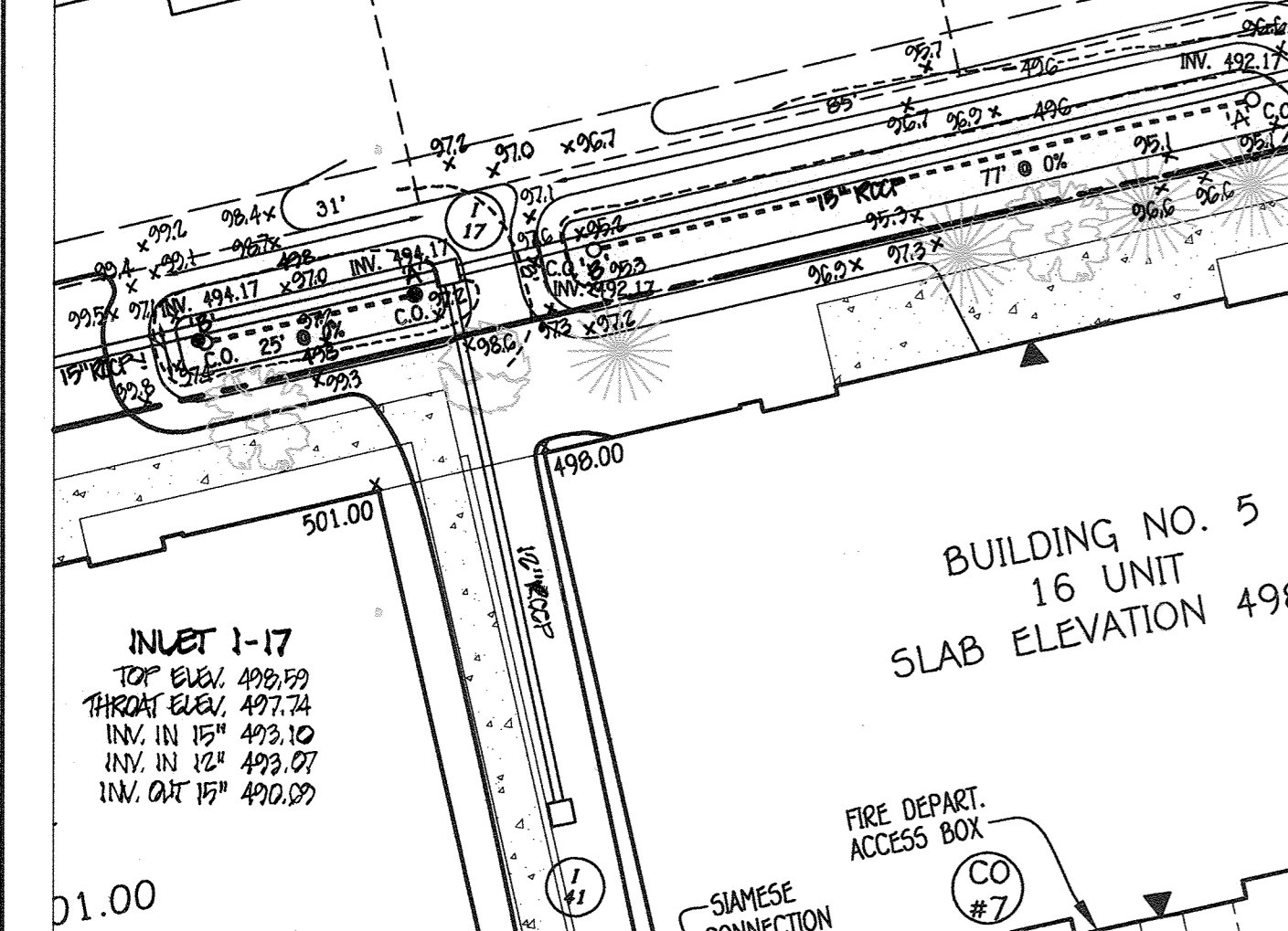


**M-6 (1)**  
 (MICRO BIO-RETENTION FACILITY)  
 SCALE: 1" = 20'  
 DRAINAGE AREA: 16,513 SqFt.  
 FILTER AREA: 744 SqFt.  
 ELEVATION: 488.00  
 PERIMETER: 116'  
 WEIR ELEVATION: 489.00

**CLEANOUT TOP ELEV. INVERT**

'A'	495.73	494.79
'B'	495.09	494.07
'C'	495.17	495.22
'D'	495.57	495.06

**INLET 1-3**  
 TOP ELEV. 501.09  
 THROAT ELEV. 500.97  
 INV. IN 12" 497.06  
 INV. IN 18" 497.06



**M-6 (14)**  
 (MICRO BIO-RETENTION FACILITY)  
 SCALE: 1" = 20'  
 DRAINAGE AREA: 3,671 SqFt.  
 FILTER AREA: 205 SqFt.  
 ELEVATION: 497.00  
 PERIMETER: 72'  
 WEIR ELEVATION: 498.00

**CLEANOUT TOP ELEV. INVERT**

'A'	496.19	495.01
'B'	496.05	495.24

**INLET 1-17**  
 TOP ELEV. 498.99  
 THROAT ELEV. 497.74  
 INV. IN 12" 493.10  
 INV. IN 18" 493.07  
 INV. OUT 18" 490.00

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

SCALE: 1" = 20'

NO.	REVISION	DATE
3	REVISE LANDSCAPE WALL - HAND RAIL	7/16/19
2	REVISE SIGN FACILITIES AND ASSOCIATED GRADING	12/28/17
1	REVISE FINAL GRADING & CISTERNS WITH ROOF LEADERS	12/17/15

**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: 07/14/2019."

*Frank Manalansan II* 1-2-18  
 Frank Manalansan II Date

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

*Charles J. Cisterne* 1/29/2018  
 COUNTY HEALTH OFFICER DATE

NO. DATE

**AS-BUILT CERTIFICATION FOR PSWM**  
 I hereby certify that the facility shown on the plan was constructed as shown on the "AS BUILT" plans and complies with the approved plans and specifications. I have verified that the contributing drainage area is sufficiently stabilized to prevent clogging of the underdrains in the Facility.

CHARLES J. CISTERNE, P.E. NO. 19224 DATE 3/11/18

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

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*John M. ...* 2/20/18  
 Chief, Division of Land Development & Planning Date

*Walter ...* 1-19-18  
 Chief, Development Engineering Division Date

*Walter ...* 2-2-18  
 Director - Department of Planning and Zoning Date

PROJECT	SECTION	PARCEL NOS.			
GW'S WAVERLY WOODS, SECTION 14	14	P/O 249			
PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
22944-22953	3 & 4	PSC	16	THIRD	60300

WATER CODE: K-02  
 SEWER CODE: 5992000

REVISED  
 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: DECEMBER 28, 2017

SHEET 20 OF 31

SDP-13-031  
 "AS-BUILT"

**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CENTRAL SQUARE OFFICE PARK - 10772 MALTBORE NATIONAL PARK  
 ELICOTT CITY, MARYLAND 21042  
 (410) 461-2895



**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 Rev. In some instances where permeability is great, these facilities may be used for (WC) 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 phosphorus 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 Biohabit, Inc. (ETAB), 1993). Soils should fall within the SM, ML, SC classifications of 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, Nutedge, and Canada Thistle or other noxious weeds as specified under CORAS 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 - P2O5)	75 lbs. per acre, minimum
Potassium (potash - K2O)	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.

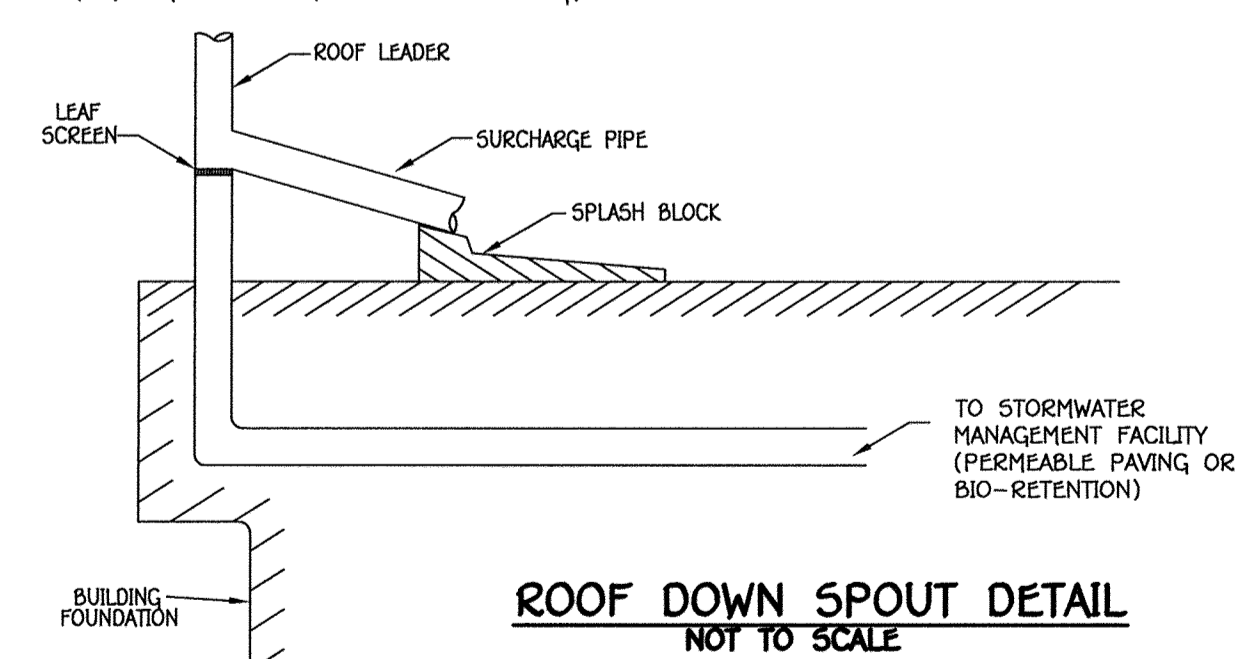
The mulch layer should be standard landscape style, single or double shredded hardwood mulch or chips. The mulch layer should be well aged (stockpiled or stored for at least 12 months), uniform in color, and free of other materials, such as weed seeds, soil, roots, etc. The mulch should be applied to 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

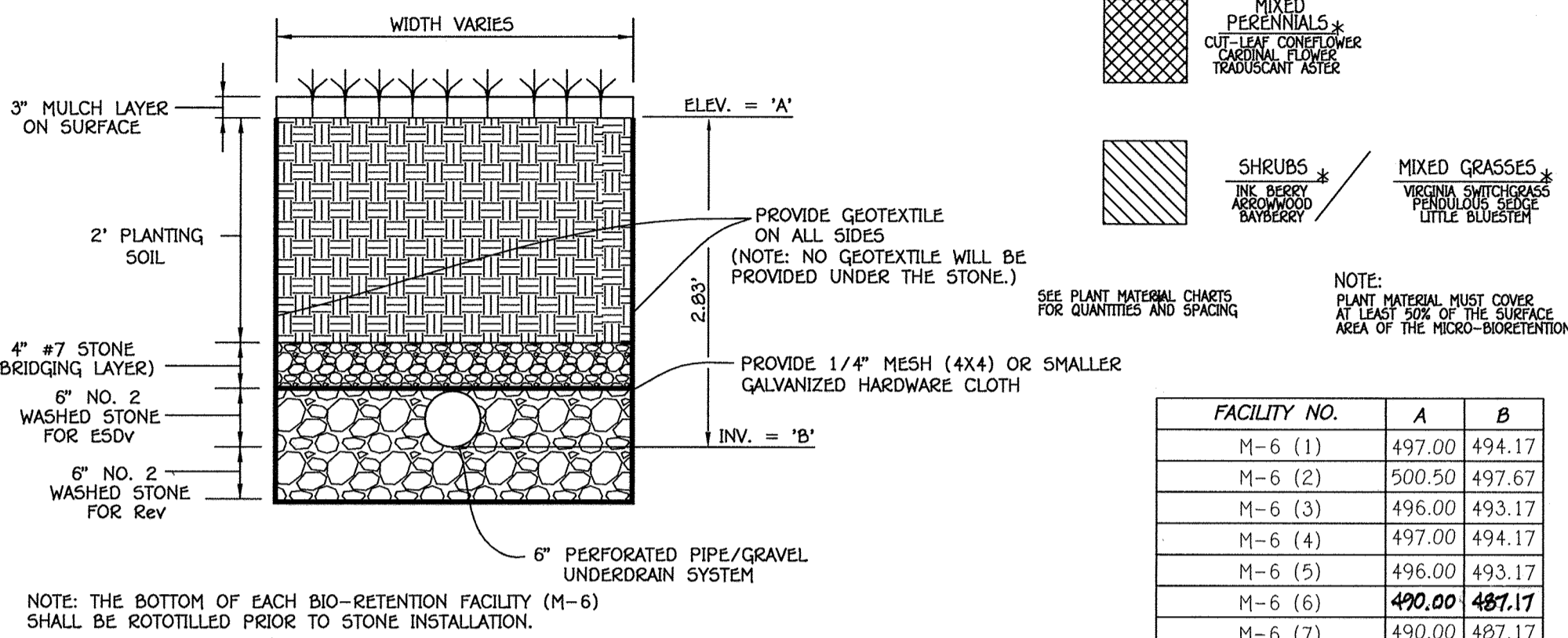
is the highest elevation and generally supports plants adapted to dryer conditions. A sample of appropriate plant materials for bioretention facilities are included in Table A.4. The layout of plant material should be flexible, but should follow the general principals described in Table A.5. The objective 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.



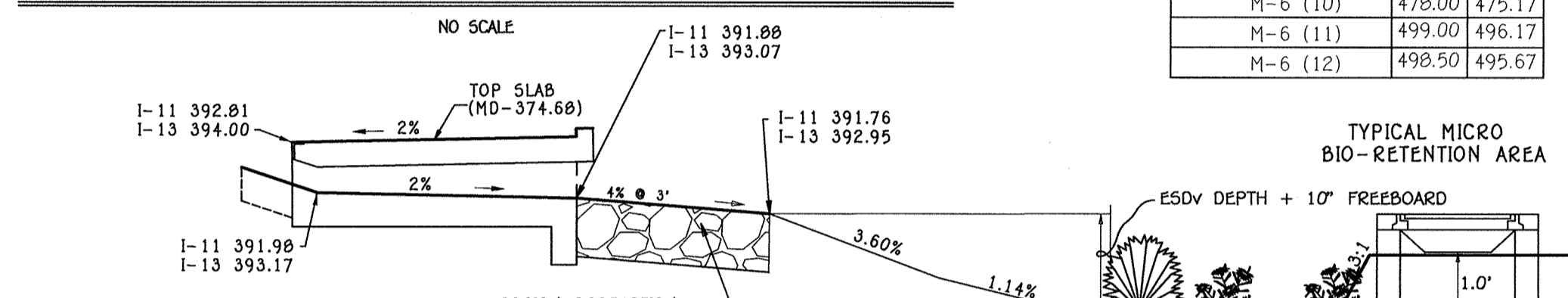
**OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS (M-6)**

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 DISGASSED VEGETATION CONSIDERED BEYOND TREATMENT. TREATMENT OF ALL DISGASSED 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.

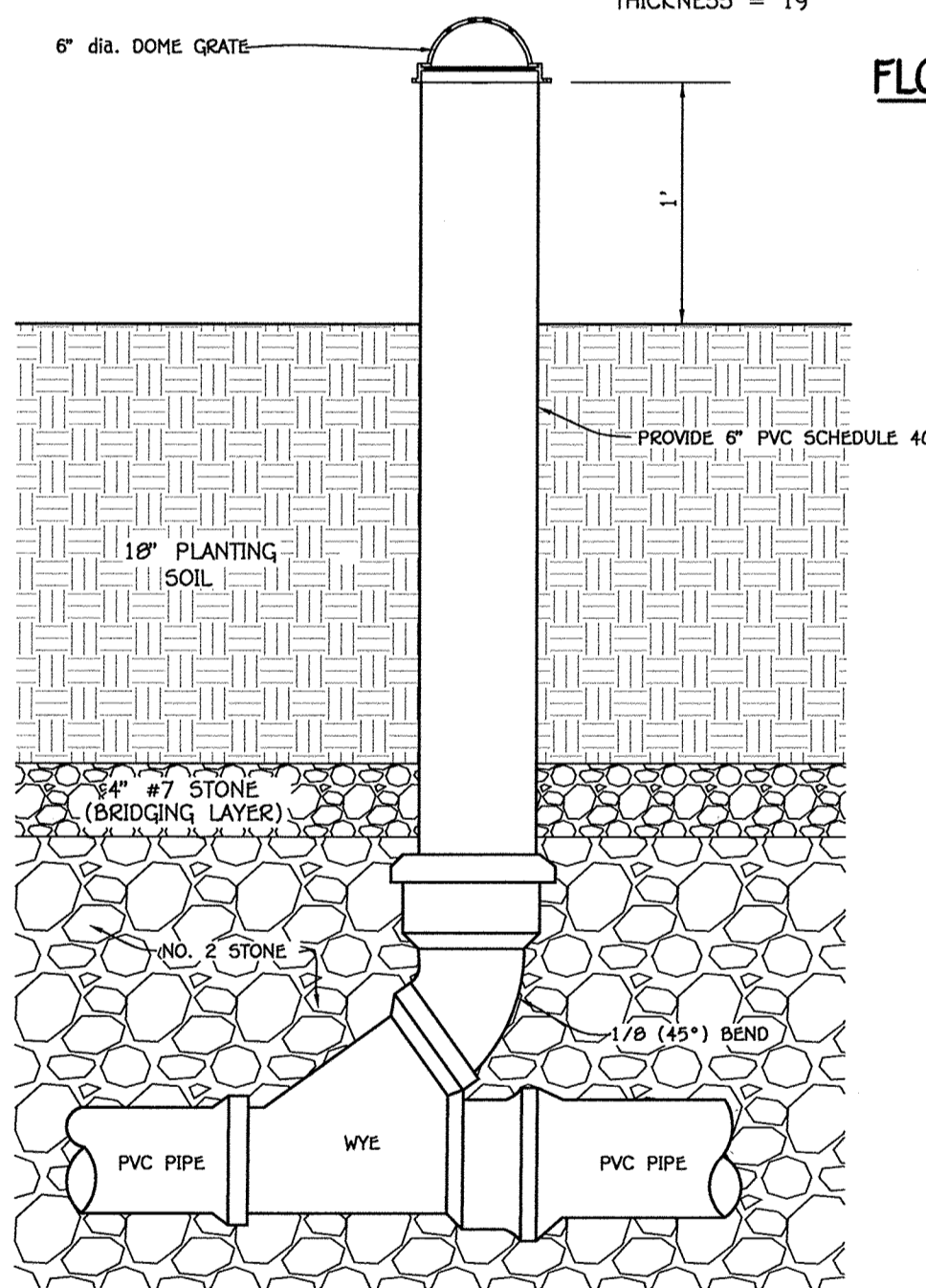
**MICRO-BIORETENTION PLANTING DETAIL**



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



**SCH40 PVC PERFORATED UNDERDRAIN PIPE DETAIL FOR HORIZONTAL DRAIN PIPE**



**SCH40 PVC PERFORATED UNDERDRAIN PIPE DETAIL FOR HORIZONTAL DRAIN PIPE**

**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 its 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., setting time, rate of strength development, porosity, permeability) can be determined.

Aggregate -- Pervious concrete contains a limited fine aggregate content. Commonly used gradations include ASTM C 33 No. 67 (3% in. to No. 4), No. 8 (1/8 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:**

- Pipes -- should be 4" to 6" diameter, slotted or perforated rigid plastic pipe (ASTM F 756, Type PS 2B, 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 1,000 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

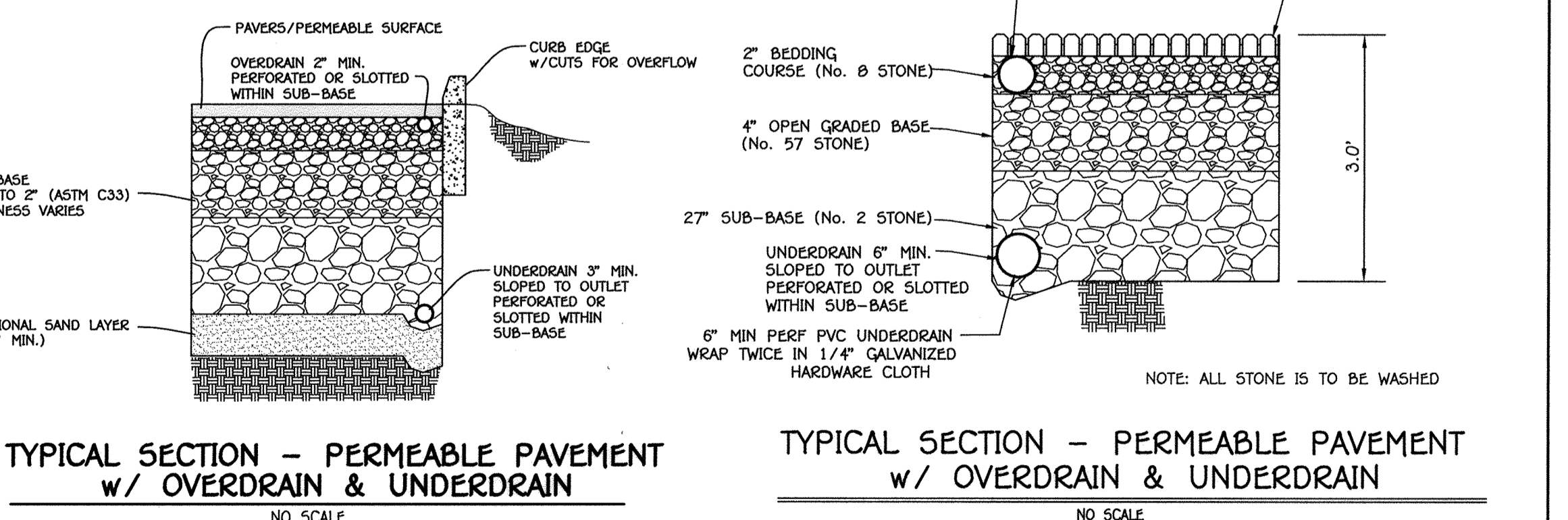
**OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED PERMEABLE PAVEMENT SYSTEMS (A-2)**

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 its 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.

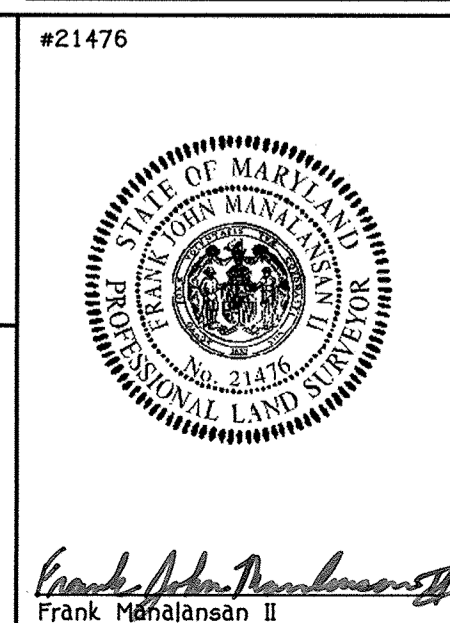


**TYPICAL SECTION - PERMEABLE PAVEMENT w/ OVERDRAIN & UNDERDRAIN**

**TYPICAL SECTION - PERMEABLE PAVEMENT w/ OVERDRAIN & UNDERDRAIN**

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

**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: 9/2/14  
 APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.  
 COUNTY HEALTH OFFICER: [Signature] DATE: 9/2/2014



**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: [Signature] DATE: 10/01/14  
 Chief, Development Engineering Division: [Signature] DATE: 9/18/14  
 Director - Department of Planning and Zoning: [Signature] DATE: 10/01/14

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

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

WATER CODE: K-02  
 SEWER CODE: 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



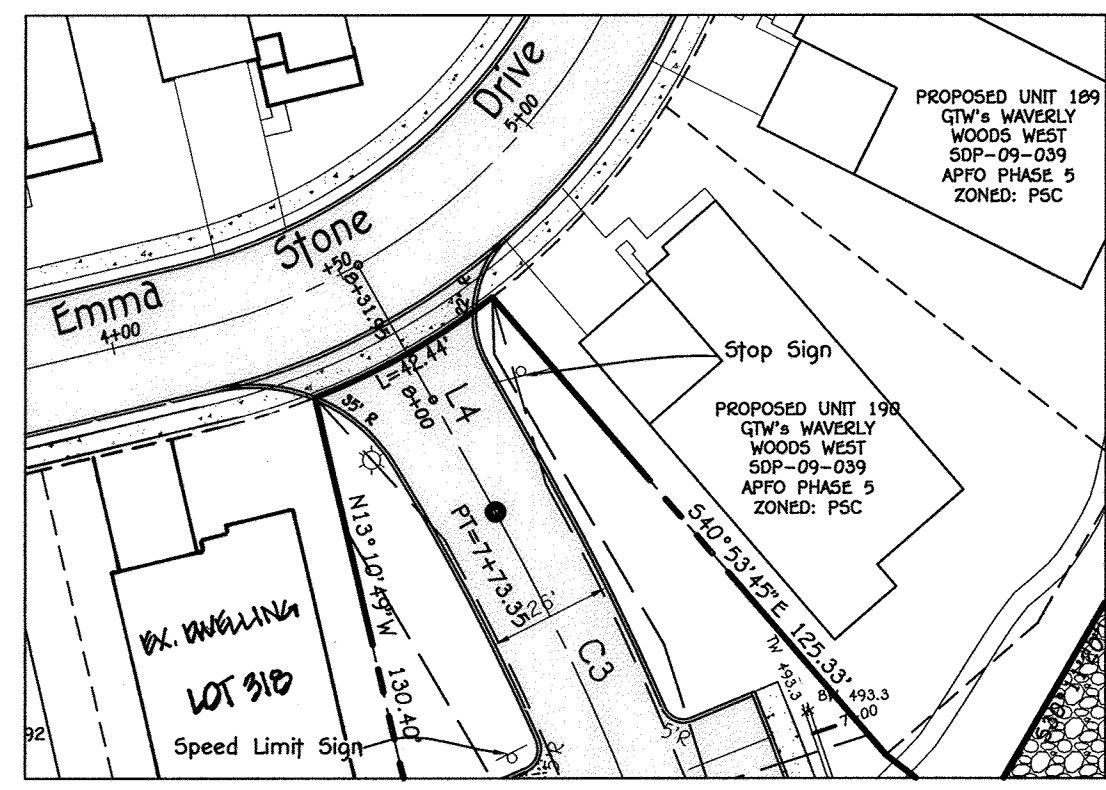
THERE IS NO "AS-BUILT" INFORMATION PROVIDED ON THIS SHEET



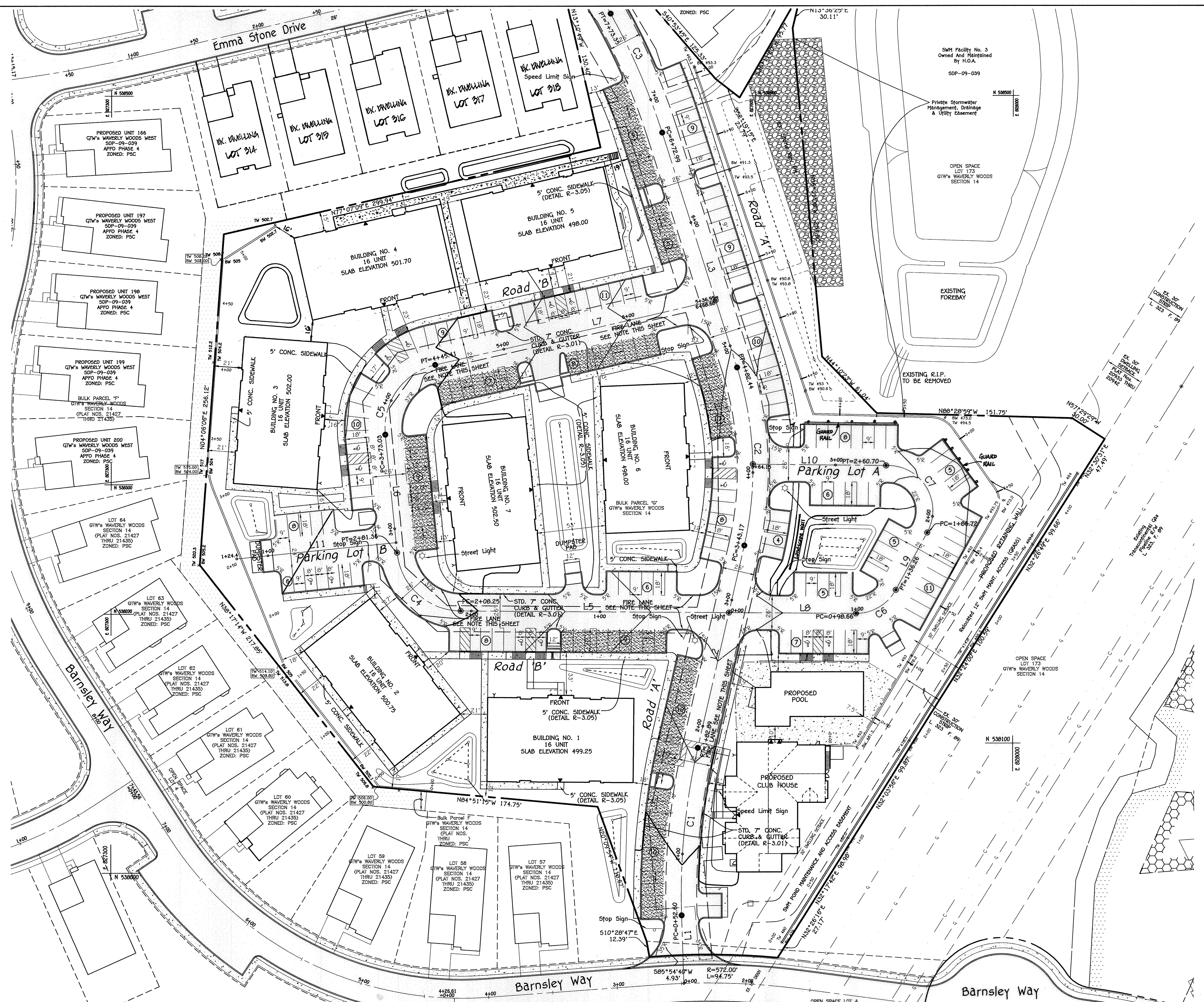
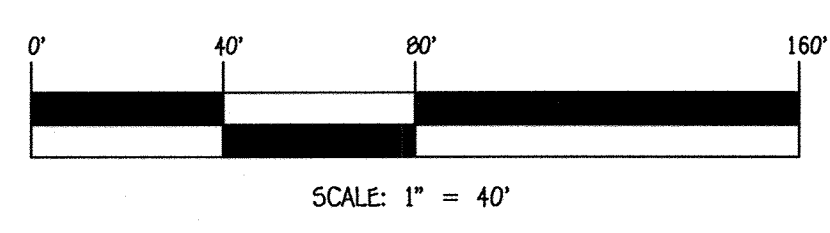
PROPOSED ALIGNMENT CURVE TABLE							
CURVE #	ROAD NAME	STATION	RADIUS	LENGTH	DELTA	TANGENT	CHORD
C1	CL-Road 'A'	STA 0+52.60 TO STA 1+82.89	500.60'	130.30'	14°54'47"	65.52'	N5°29'36.41"E 129.93'
C2	CL-Road 'A'	STA 3+43.17 TO STA 4+82.44	259.41'	139.26'	30°45'34"	71.35'	N2°25'49.90"W 137.60'
C3	CL-Road '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+93.95	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.



NO.	REVISION	DATE
2	REVISE SWM FACILITIES AND ASSOCIATED GRADING	12/26/17
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 Hanalansan II* 8/5/14 DATE  
APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.  
*Walter Manna Rossman* 9/2/2014 DATE  
COUNTY HEALTH OFFICER



**BUILDER**  
RYAN HOMES  
9720 PATUXENT WOODS DRIVE  
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410-796-0908

**OWNER**  
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**DEVELOPER**  
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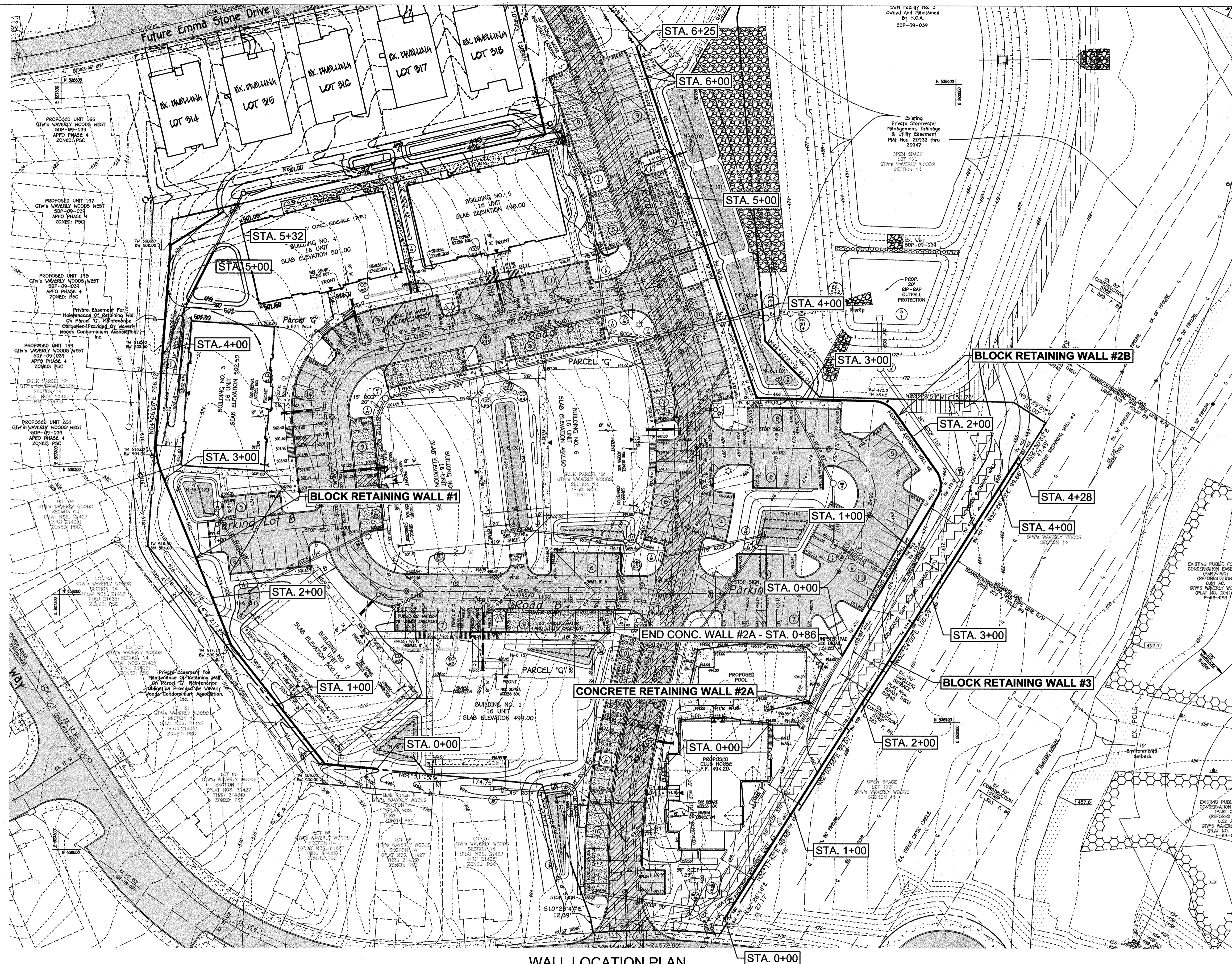
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*W. J. ...* 10/26/14 DATE  
Chief, Division of Land Development  
*W. J. ...* 9/18/14 DATE  
Chief, Development Engineering Division  
*W. J. ...* 10/26/14 DATE  
Director - Department of Planning and Zoning

PROJECT	SECTION	PARCEL NOS.
GTW'S WAVERLY WOODS, SECTION 14	14	P/O 249
PLAT	BLOCK NO.	ZONE
22944-22953	3 & 4	PSC
TAX/ZONE	ELEC. DIST.	CENSUS TR.
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

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





WALL LOCATION PLAN  
1" = 40'

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

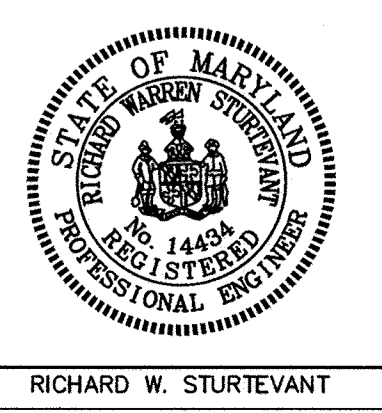
**FISHER, COLLINS & CARTER, INC.**  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE  
ELICOTT CITY, MARYLAND 21042  
(410) 461-2855

**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
1	REVISE SWM FACILITIES AND ASSOCIATED GRADING	12/28/17

**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: 05/31/15."

*R.W. Sturtevant*  
RICHARD W. STURTEVANT  
DATE 8/14/14



**BUILDERS**  
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410-796-0908

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Kurt Schulz*  
Chief, Division of Land Development  
Date 10/06/14

*David J. Givell*  
Chief, Development Engineering Division  
Date 9/18/14

*David J. Givell*  
Director - Department of Planning and Zoning  
Date 8/6/14

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

PLAT	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
27944-27953	3 & 4	PSC	16	THIRD	60300

WATER CODE: K-02  
SEWER CODE: 599200Q

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

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



# 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 =  $\pm 1/8"$  from nominal unit dimensions not including rough split face,  $\pm 1/16"$   
  
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 =  $1/8" \pm$  per course (near vertical) or  $1" \pm$  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 thermostat isophthalic polyester resin-protuded fiberglass reinforcement rods or equivalent to provide connection between vertically and horizontally adjacent units. Strength of shear connectors between vertical adjacent units shall be applicable over a design temperature of 10 degrees F to + 100 degrees F. B. Shear connectors shall be capable of holding the geogrid in the proper design position during grid pre-tensioning and backfilling.

#### 2.03 Base Leveling Pad Material

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

#### 2.04 Unit Drainage Fill

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

#### 2.05 Reinforced Backfill

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

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

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

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

#### 2.06 Geogrid Soil Reinforcement

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

#### 2.07 Drainage Pipe

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

### PART 3 EXECUTION

#### 3.01 Excavation

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

#### 3.02 Base Leveling Pad

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

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

#### 3.03 Modular Unit Installation

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

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

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

recommendations.

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

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

#### 3.04 Structural Geogrid Installation

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

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

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

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

#### 3.05 Reinforced Backfill Placement

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

- B. Reinforced backfill shall be placed and compacted in lifts not to exceed 6 inches where hand compaction is used, or 8 - 10 inches where heavy compaction equipment is used. Lift thickness shall be decreased to achieve the required density as required.

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

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

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

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

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

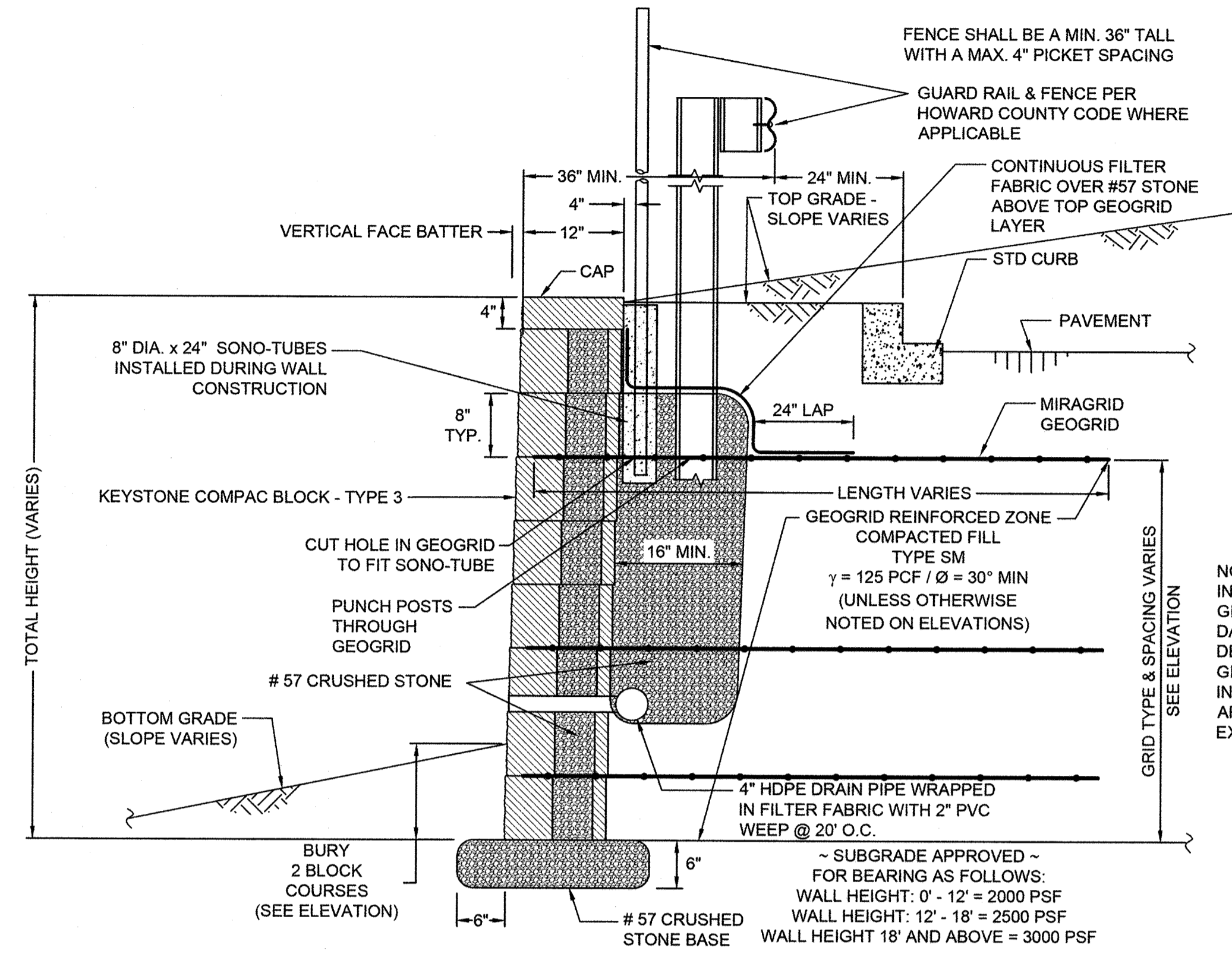
#### 3.06 Cap Installation

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

#### 3.07 Field Quality Control

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

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



TYPICAL 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  
ELKLOTT 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

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."  
  
*R.W. Sturtevant*  
RICHARD W. STURTEVANT  
8/14/14  
DATE



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  
GLENELG, MARYLAND  
81737-0030

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
Chief, Division of Land Development *[Signature]* Date 10/26/14  
Chief, Development Engineering Division *[Signature]* Date 9-18-14  
Director - Department of Planning and Zoning *[Signature]* Date 10/26/14

PROJECT GTW's Waverly Woods, Section 14 PARCELS G	SECTION 14	PARCEL NOS. P/O 249
PLAT 27944- 27953	BLOCK NO. 3 & 4	ZONE PSC
TAX/ZONE 16	ELEC. DIST. THIRD	CENSUS TR. 60300
WATER CODE K-02	SEWER CODE 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

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

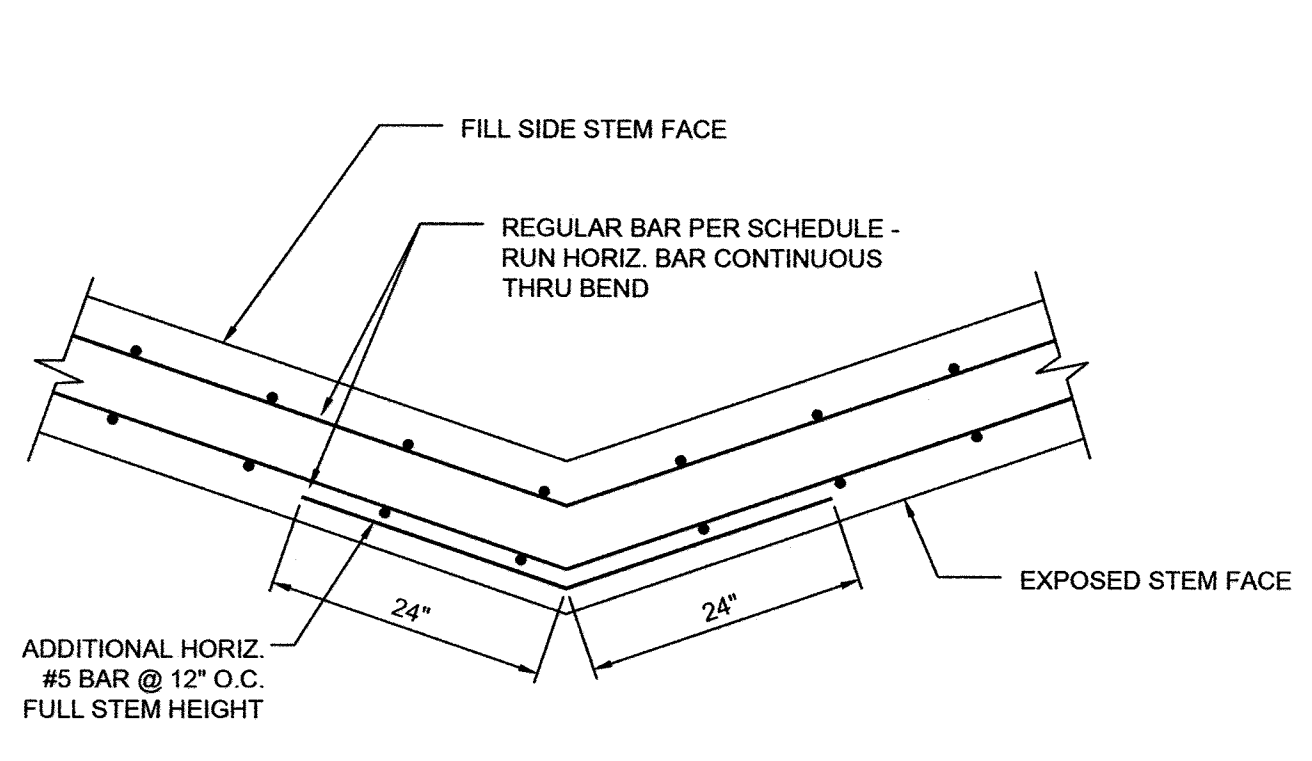




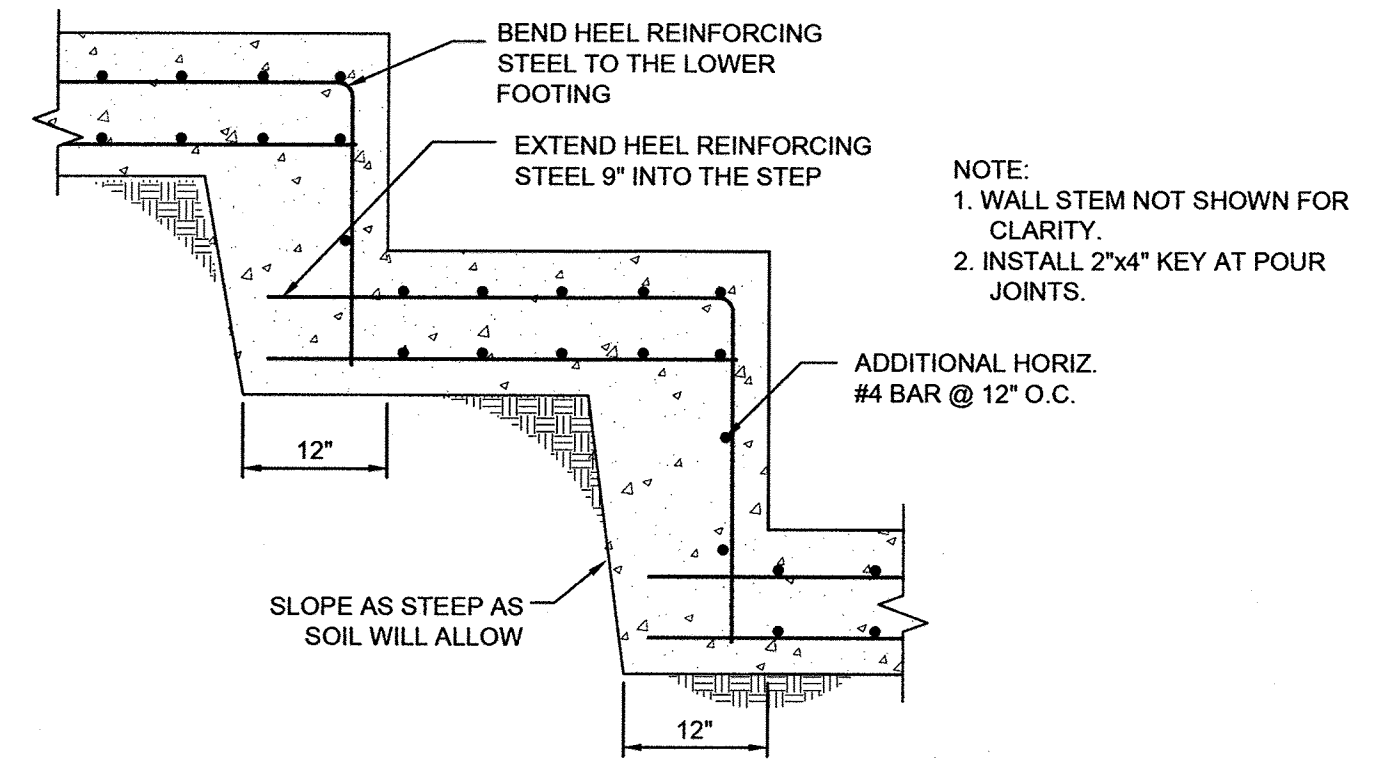




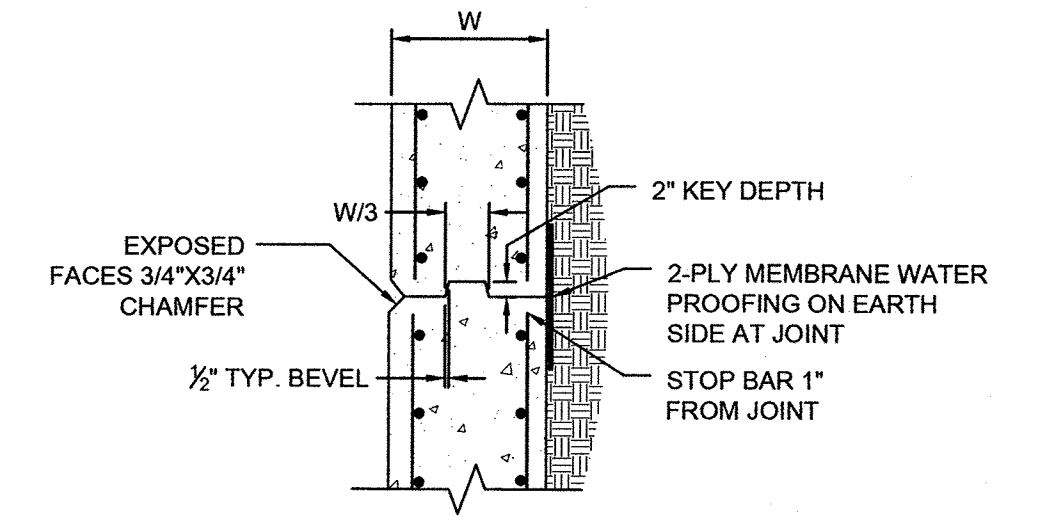




**WALL BEND REINFORCEMENT DETAIL**  
NOT TO SCALE



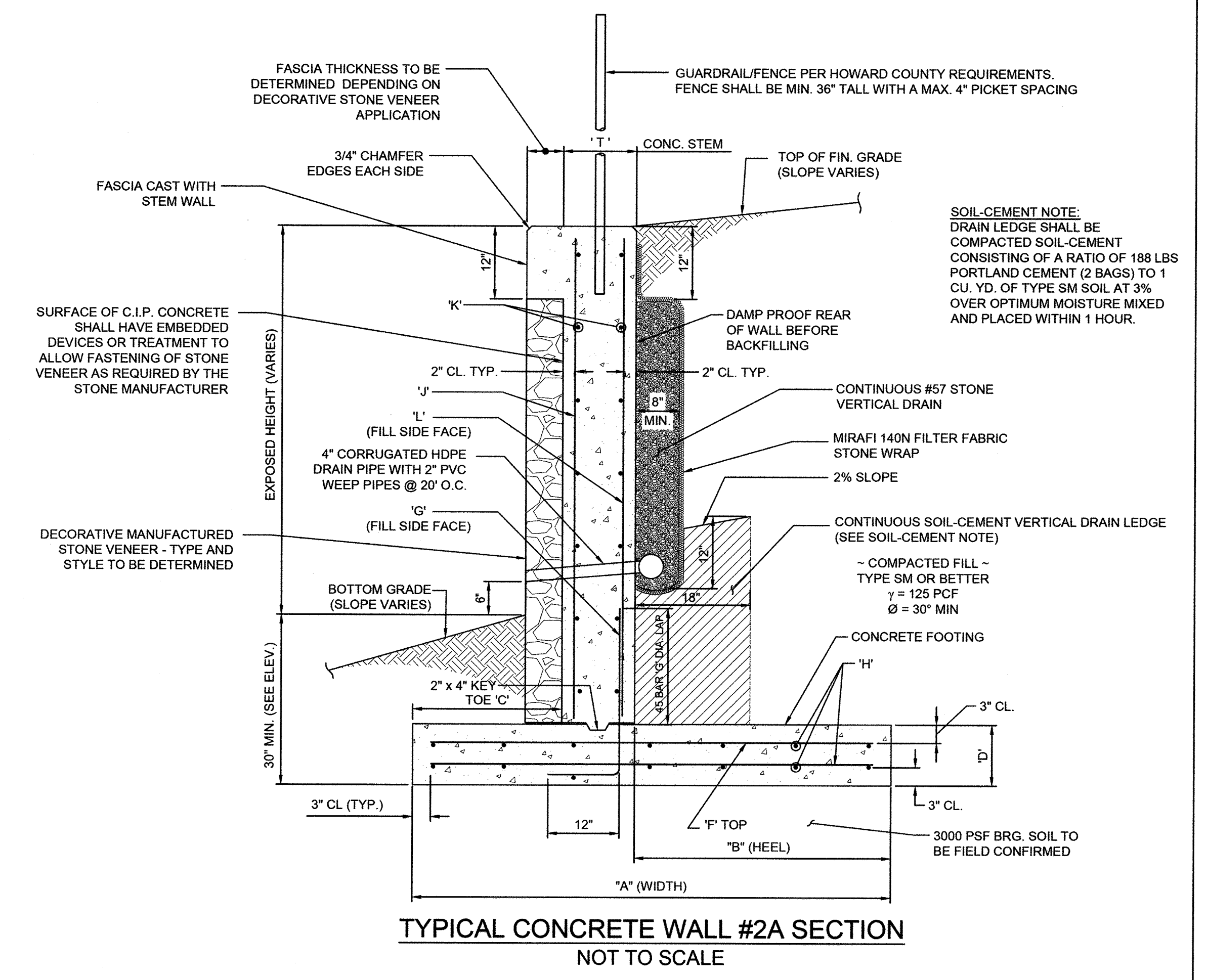
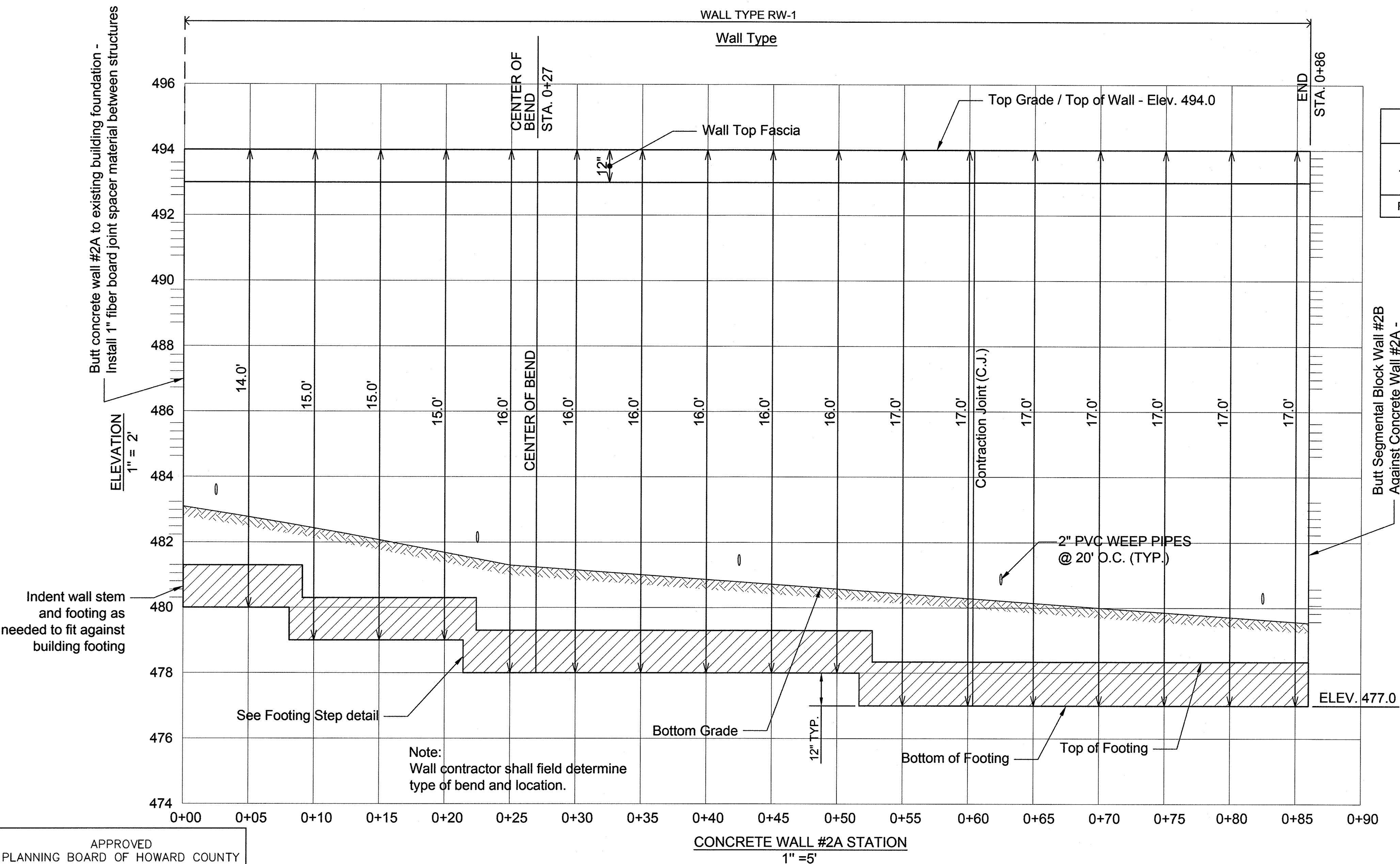
**CONCRETE WALL FOOTING STEP DETAIL**  
NOT TO SCALE



**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 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

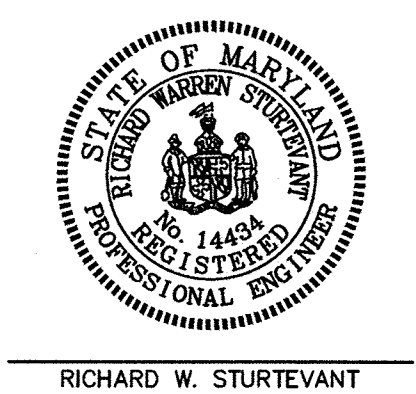
APPROVED  
PLANNING BOARD OF HOWARD COUNTY  
DATE 2/20/2014

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CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
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NO.	REVISION	DATE

**PROFESSIONAL CERTIFICATION**  
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*Richard W. Sturtevant*  
RICHARD W. STURTEVANT  
DATE 8/14/14



**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  
*[Signature]*  
Chief, Division of Land Development  
*[Signature]*  
Chief, Development Engineering Division  
Director - Department of Planning and Zoning

DATE 10/26/14  
DATE 9-18-14  
DATE 8/2/14

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

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

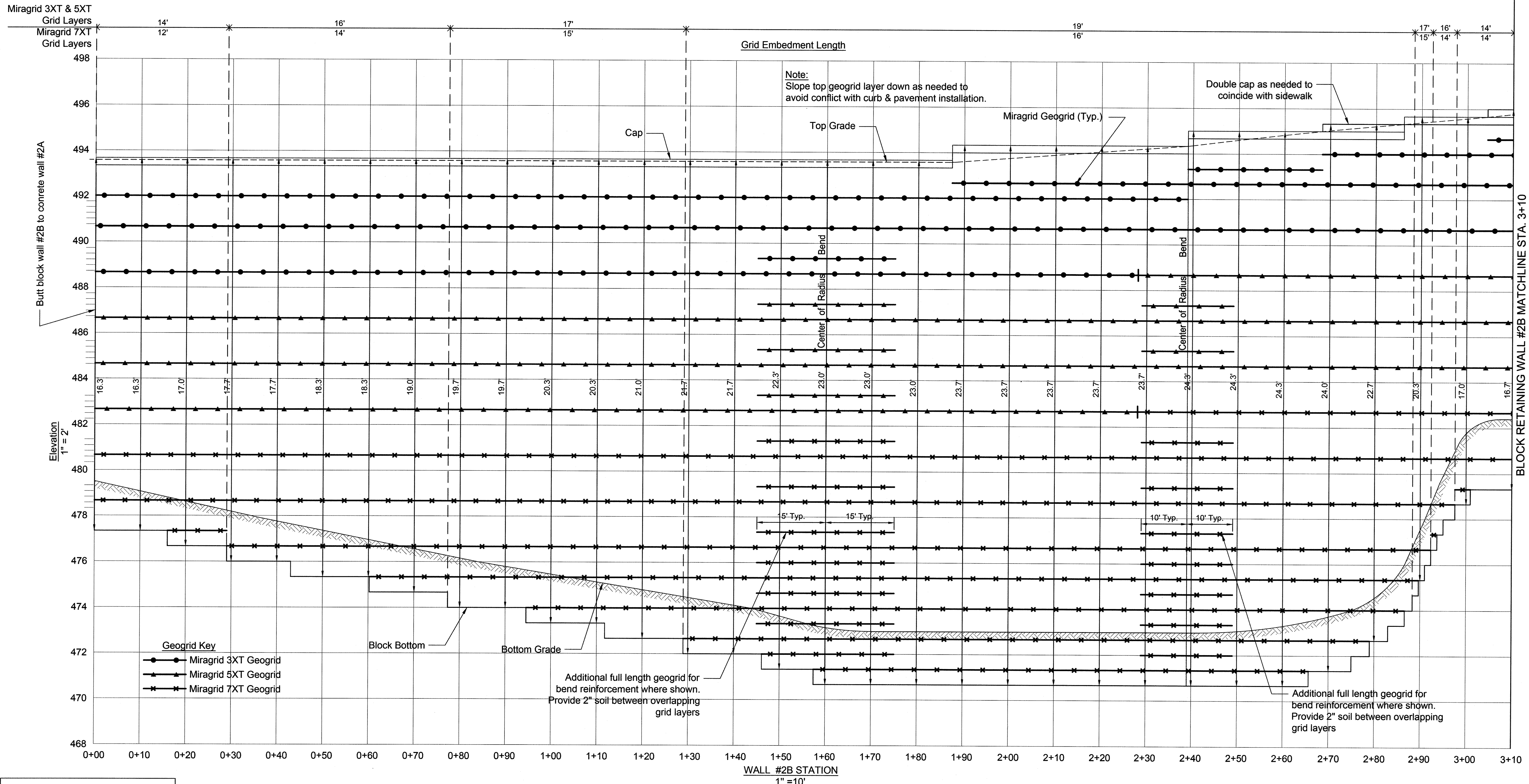
WATER CODE: K-02  
SEWER CODE: 5992000

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

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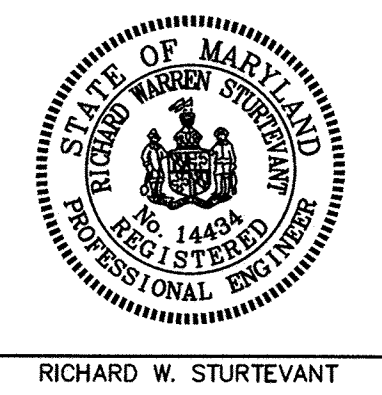
APPROVED  
 PLANNING BOARD OF HOWARD COUNTY  
 DATE 2/20/2014

**BLOCK RETAINING WALL #2B ELEVATION**

**FISHER, COLLINS & CARTER, INC.**  
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**PROFESSIONAL CERTIFICATION**  
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*Richard W. Sturtevant*  
 RICHARD W. STURTEVANT  
 8/14/14  
 DATE



**OWNER**  
 WAVERLY WOODS DEVELOPMENT CORPORATION  
 P.O. BOX 30  
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**BUILDERS**  
 RYAN HOMES  
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 410-796-0908

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Kurt S. D... 10/26/14*  
 Chief, Division of Land Development  
*John S... 9/18/14*  
 Chief, Development Engineering Division  
*David L... 10/14/14*  
 Director - Department of Planning and Zoning

PROJECT GTW's Waverly Woods, Section 14	SECTION 14	PARCEL NOS. P/O 249
PLAT 28944-22953	BLOCK NO. 3 & 4	ZONE PSC
TAX/ZONE 16	ELEC. DIST. THIRD	CENSUS TR. 60300
WATER CODE K-02	SEWER CODE 5992000	

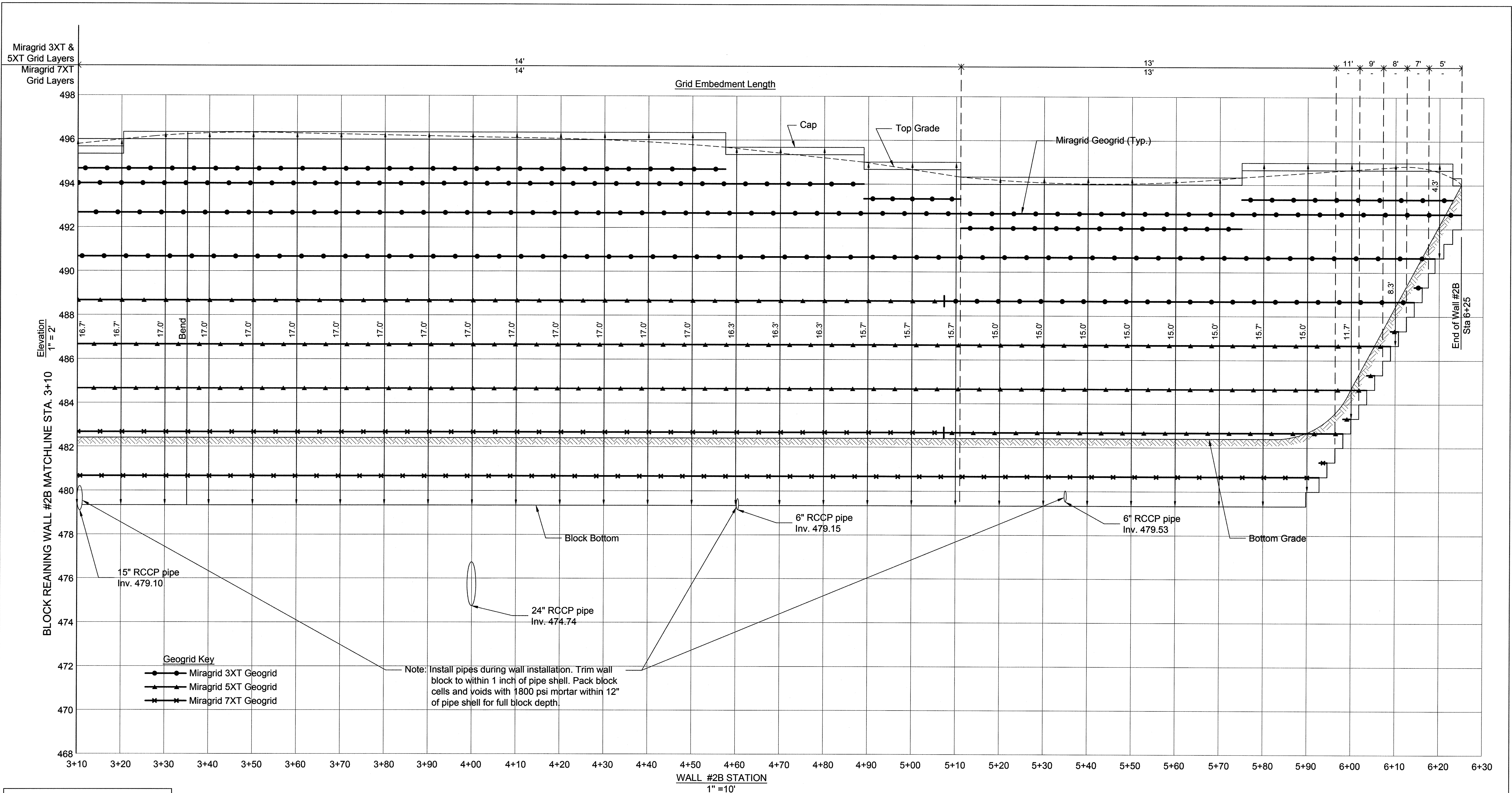
BLOCK RETAINING WALL #2B ELEVATION  
 (STA. 0+00 TO STA. 3+10)

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

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





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

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



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

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Kevin D. Dwyer* 10/26/14  
Chief, Division of Land Development Date  
*Denise M. George* J.R. 9-28-14  
Chief, Development Engineering Division Date  
Director - Department of Planning and Zoning Date

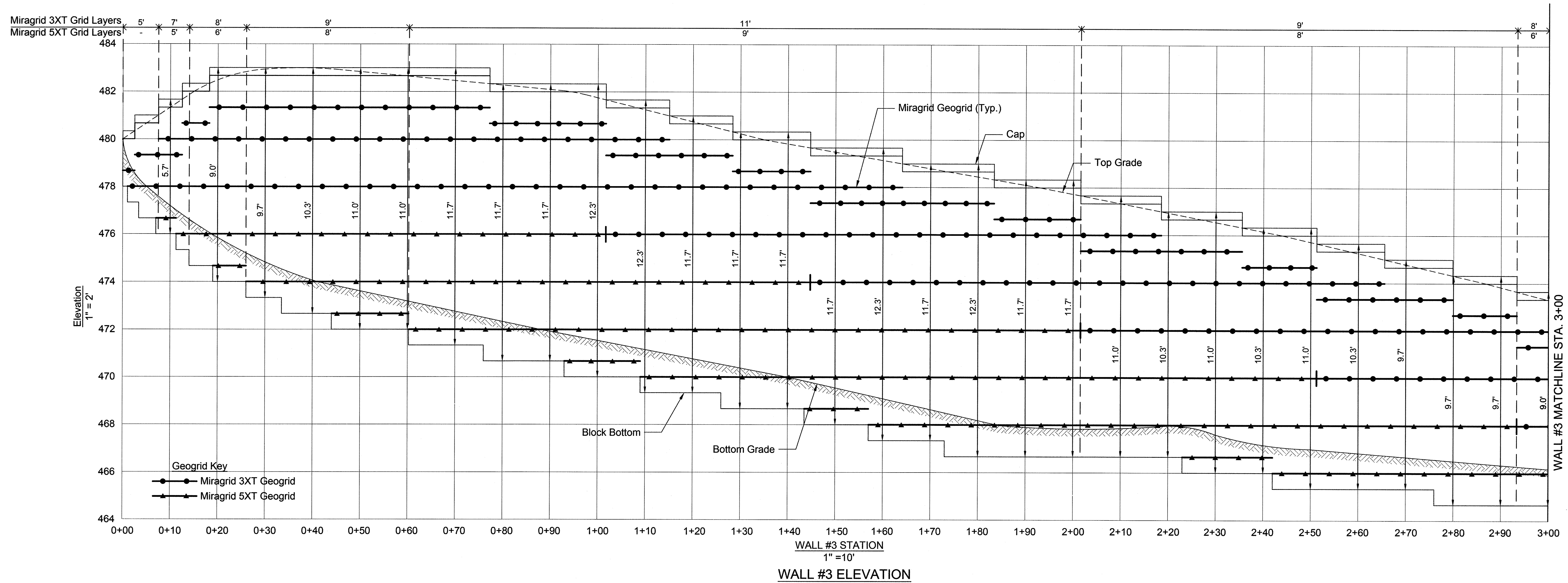
PROJECT: GTW's Waverly Woods, Section 14 SECTION: 14 PARCEL NOS.: P/O 249  
PLAT: 22744-22953 BLOCK NO.: 3 & 4 ZONE: PSC TAX/ZONE: 16 ELEC. DIST.: THIRD CENSUS TR.: 60300  
WATER CODE: K-02 SEWER CODE: 5992000

**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

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





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

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



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**BUILDERS**  
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 410-796-0908

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Karl LaOndra*  
 Chief, Division of Land Development  
 Date: 9/18/14

*David S. Lough*  
 Chief, Development Engineering Division  
 Date: 9/18/14

*David S. Lough*  
 Director - Department of Planning and Zoning  
 Date: 10/2/14

PROJECT GTW's Waverly Woods, Section 14 PARCELS G	SECTION 14	PARCEL NOS. 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	

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

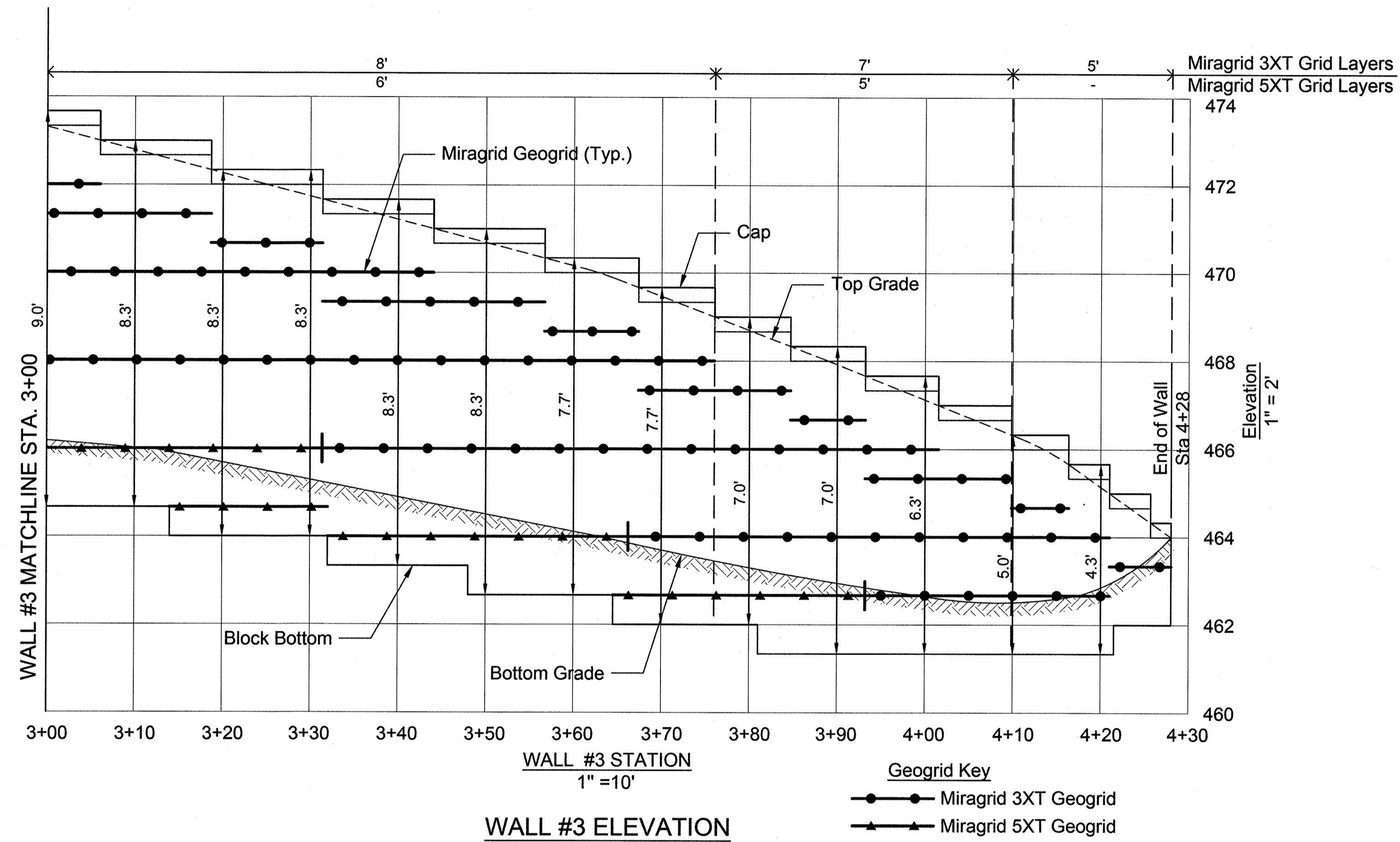
AGE RESTRICTED ADULT HOUSING  
 WAVERLY MEWS

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

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



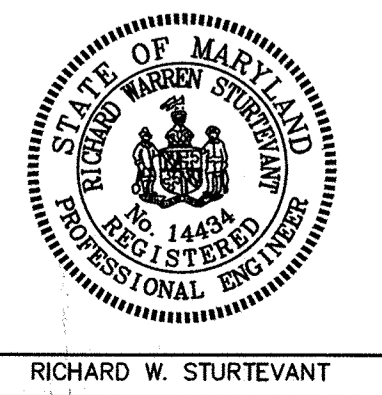


APPROVED  
 PLANNING BOARD OF HOWARD COUNTY  
 DATE 2/20/2014

**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE  
 ELICOTT 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

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



**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

*Mark S. Weyl* 8/14/14  
 Chief, Division of Land Development Date  
*Mark S. Weyl* 8/14/14  
 Chief, Development Engineering Division Date  
 Director - Department of Planning and Zoning Date

PROJECT GTW's Waverly Woods, Section 14 PARCELS G	SECTION 14	PARCEL NOS. P/O 249
PLAT 2274A- 22953	BLOCK NO. 3 & 4	ZONE PSC
TAX/ZONE 16	ELEC. DIST. THIRD	CENSUS TR. 60300
WATER CODE K-02	SEWER CODE 5992000	

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

AGE RESTRICTED ADULT HOUSING  
 WAVERLY MEWS

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