

OWNER
MILLTOWNE ASSOCIATES LP
BY: HCH PARTNERS III LLC, GENERAL PARTNER
BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
BY: STACY SPANN, EXECUTIVE DIRECTOR
6751 COLUMBIA GATEWAY DR.
3RD FLOOR
COLUMBIA, MD 21046
(410) 313-6320

DEVELOPER
STAVROU ASSOCIATES, INC.
2661 RIVA ROAD
BUILDING 300
ANNAPOLIS, MD 21401
C/O STEPHEN J. MOORE
(410) 571-6610

RECEIVED
DUE 11/7/2011
HOWARD COUNTY HEALTH DEPT.
BUREAU OF ENVIRONMENTAL MGMT.

4	REVISE SHEET NUMBER	01/05/17
J	REDLINES PER AS-BUILT MODIFICATIONS	03/01/13
NO.	REVISION	DATE

REVISED SITE DEVELOPMENT PLAN
HILLTOP REDEVELOPMENT-PHASE 1
RESIDENTIAL TOWNHOUSES, APARTMENTS
AND RECREATION CENTER
THE RECREATION CENTER IS A GREEN BUILDING
L477/F-718, L456/F-448, L448/F-46, F-12-008

BUILDING DIMENSIONS AND ELEVATIONS
TAX MAP: 25 PARCELS: A, C, D, AND E BLOCK: 07 ZONINGS: R-VH, R-A-15, POR
2ND ELECTION DISTRICT

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410-461-7666
FAX: 410-461-8961

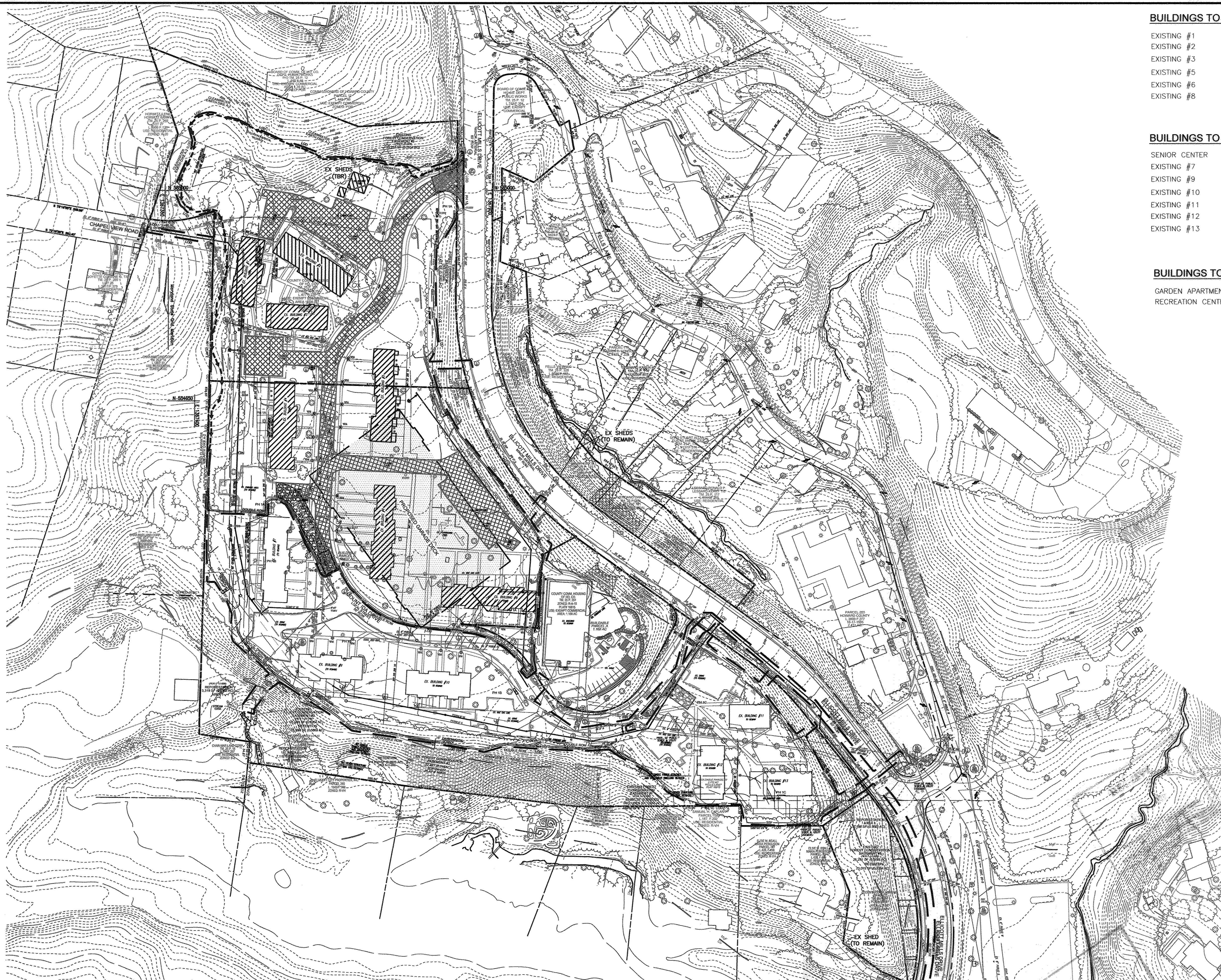
PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21438 EXPIRATION DATE 12-15-2012

DESIGN BY: JTD
DRAWN BY: KG
CHECKED BY: JTD
DATE: OCTOBER 2011
SCALE: AS SHOWN
W.O. NO.: 10-24

2 SHEET OF 50

MED HEIGHT	G1	G2	G3	G4	G5	G6
1	53.0	49.2	46.8	50.8	53.6	55.5
2	58.7	54.6	52.2	48.3	55.0	50.3
3	47.6	53.0	41.5	41.5	38.0	38.0
4	52.7	49.2	40.3	40.0	41.5	41.5
AVERAGE H	53.0	51.5	45.2	45.2	47.0	46.3

K:\Projects\10-24\eng\SDP\PHASE-1\02_BUILDING DIM & ELEV.dwg, 10/10/2011 3:32:47 PM



BUILDINGS TO BE DEMOLISHED

- EXISTING #1
- EXISTING #2
- EXISTING #3
- EXISTING #5
- EXISTING #6
- EXISTING #8

BUILDINGS TO BE REMAIN

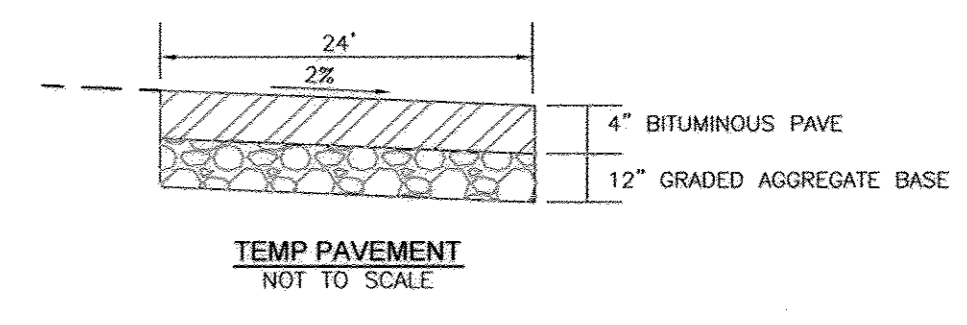
- SENIOR CENTER
- EXISTING #7
- EXISTING #9
- EXISTING #10
- EXISTING #11
- EXISTING #12
- EXISTING #13

BUILDINGS TO START CONSTRUCTION

- GARDEN APARTMENT PARKING DECK
- RECREATION CENTER

LEGEND:

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING TREELINE
- EXISTING VEGETATION (APPROXIMATE LOCATION)
- EXISTING STREET TREES
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- EXISTING SIDEWALK
- PAVEMENT TO BE REMOVED
- BUILDING TO BE REMOVED
- EX. WATER & SEWER EASEMENT TO BE REMOVED



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NO.	REVISION	DATE
4	REVISE SHEET NUMBER	01/05/17

SITE DEVELOPMENT PLAN
HILLTOP REDEVELOPMENT-PHASE 1
RESIDENTIAL TOWNHOUSES, APARTMENTS
AND RECREATION CENTER
THE RECREATION CENTER IS A GREEN BUILDING
L 477/F 718, L 496/F 448, L 448/F 46, F-12-008

DEMOLITION PLAN PHASE 1A

TAX MAP: 25 PARCELS: A, C, D, AND E BLOCK: 07 ZONINGS: R-VH, R-A-15, POR
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ROBERT H. VOGEL ENGINEERING, INC.
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3 SHEET OF 50

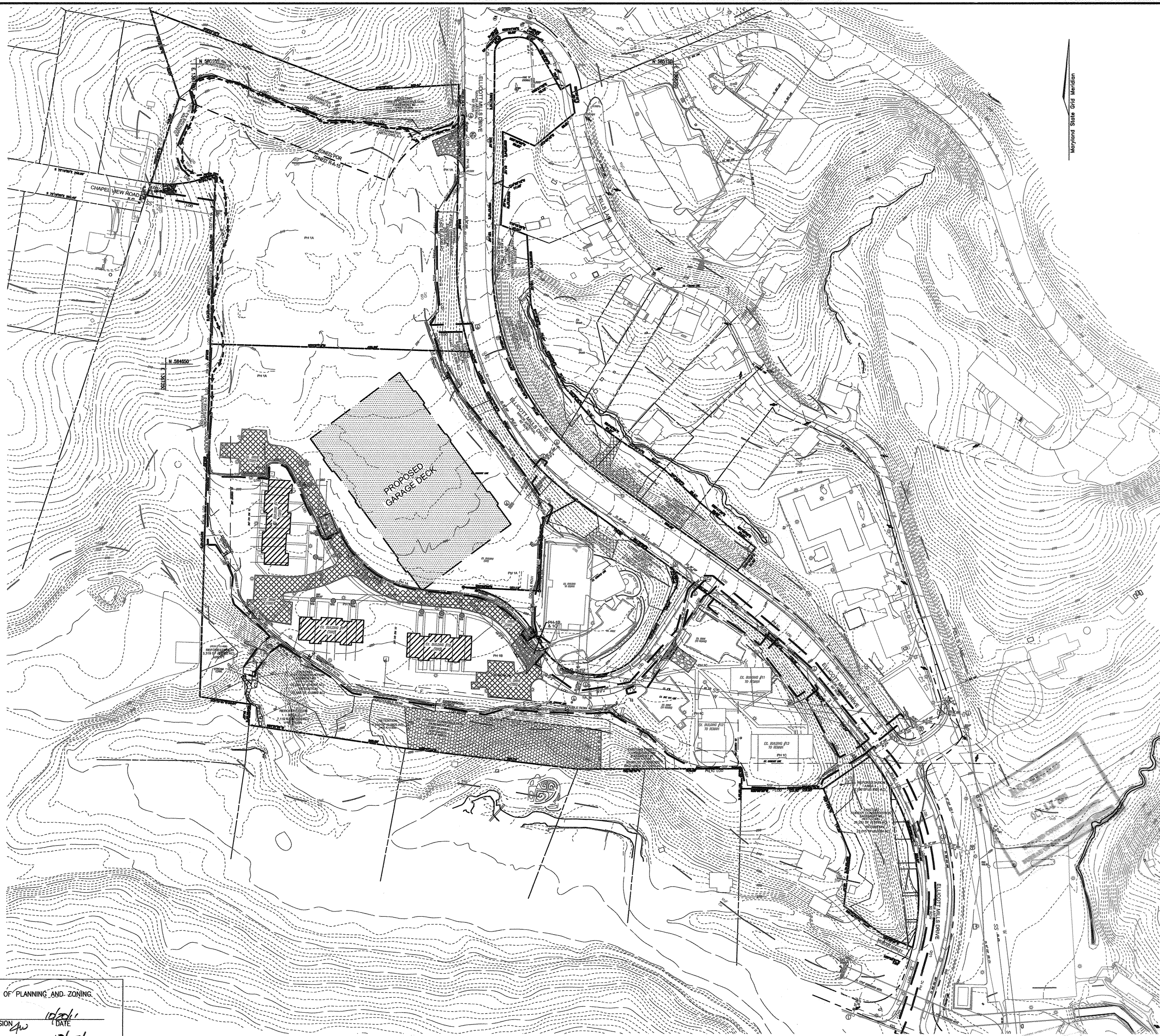
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 10/27/11
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 10/27/11
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 10/27/11
DIRECTOR DATE

PLAN VIEW
SCALE: 1"=80'



LEGEND:

	EXISTING CONTOUR
	PROPOSED CONTOUR
	PROPOSED SPOT ELEVATION
	EXISTING SPOT ELEVATION
	EXISTING CURB AND GUTTER
	PROPOSED CURB AND GUTTER
	EXISTING UTILITY POLE
	EXISTING LIGHT POLE
	EXISTING MAILBOX
	EXISTING SIGN
	EXISTING SANITARY MANHOLE
	EXISTING SANITARY LINE
	EXISTING CLEANOUT
	EXISTING FIRE HYDRANT
	EXISTING WATER LINE
	EXISTING TREELINE
	EXISTING VEGETATION (APPROXIMATE LOCATION)
	EXISTING STREET TREES
	EXISTING FENCE
	PROPERTY LINE
	RIGHT-OF-WAY LINE
	EXISTING SIDEWALK
	PAVEMENT REMOVED
	BUILDING REMOVED
	EX. WATER & SEWER EASEMENT TO BE REMOVED

- BUILDINGS TO BE REMOVED**
- EXISTING #7
 - EXISTING #9
 - EXISTING #10
- BUILDINGS TO BE REMAIN**
- SENIOR CENTER
 - EXISTING #11
 - EXISTING #12
 - EXISTING #13
- BUILDINGS TO START CONSTRUCTION**
- G1 TO G6
 - M1 TO M4
 - T1 TO T3

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NO.	REVISE SHEET NUMBER	REVISION	DATE
4			01/09/17

SITE DEVELOPMENT PLAN
HILLTOP REDEVELOPMENT-PHASE 1
RESIDENTIAL TOWNHOUSES, APARTMENTS
AND RECREATION CENTER
THE RECREATION CENTER IS A GREEN BUILDING
 L-477/F-718, L-466/F-448, L-448/F-46, F-12-008

DEMOLITION PLAN PHASE 1B

TAX MAP: 25 PARCELS: A, C, D, AND E BLOCK: 07 ZONINGS: R-VH, R-A-15, POR
 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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 SCALE: AS SHOWN
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4 SHEET OF 50

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 10/26/11
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 10/27/11
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 10/23/11
 DIRECTOR DATE

PLAN VIEW
 SCALE: 1"=80'



K:\Projects\10-24_ENGR\eng\SDP\PHASE-1\GA_DEMOPLAN_PHASE 1B.dwg, 10/10/2011 3:41:39 PM



PLAN VIEW
SCALE: 1"=80'

LEGEND:

	EXISTING CONTOUR
	PROPOSED CONTOUR
	PROPOSED SPOT ELEVATION
	EXISTING SPOT ELEVATION
	EXISTING CURB AND GUTTER
	PROPOSED CURB AND GUTTER
	EXISTING UTILITY POLE
	EXISTING LIGHT POLE
	EXISTING MAILBOX
	EXISTING SIGN
	EXISTING SANITARY MANHOLE
	EXISTING SANITARY LINE
	EXISTING CLEANOUT
	EXISTING FIRE HYDRANT
	EXISTING WATER LINE
	EXISTING TREE LINE
	EXISTING VEGETATION (APPROXIMATE LOCATION)
	EXISTING STREET TREES
	EXISTING FENCE
	PROPERTY LINE
	RIGHT-OF-WAY LINE
	EXISTING SIDEWALK
	PAVEMENT REMOVED
	BUILDING REMOVED
	EX. WATER & SEWER EASEMENT TO BE REMOVED

BUILDING TO BE DEMOLISH

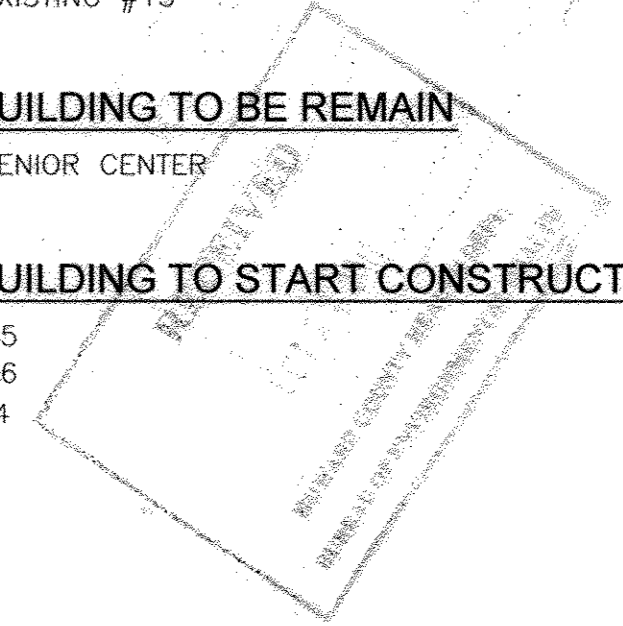
- EXISTING #11
- EXISTING #12
- EXISTING #13

BUILDING TO BE REMAIN

- SENIOR CENTER

BUILDING TO START CONSTRUCTION

- M5
- M6
- T4



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DEVELOPER

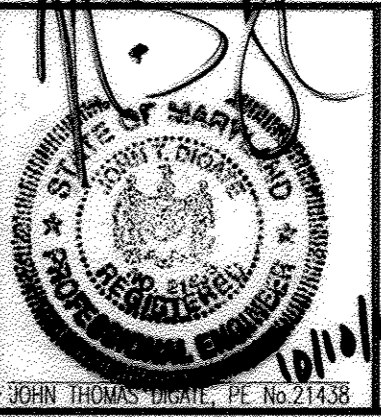
STAVROU ASSOCIATES, INC.
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NO.	REVISION	DATE
4	REVISE SHEET NUMBER	01/05/17

**SITE DEVELOPMENT PLAN
HILLTOP REDEVELOPMENT-PHASE 1
RESIDENTIAL TOWNHOUSES, APARTMENTS
AND RECREATION CENTER
THE RECREATION CENTER IS A GREEN BUILDING
L 477F.718, L 468F.448, L 448F.46, F-12-008
DEMOLITION PLAN PHASE 1C**

TAX MAP: 25 PARCELS: A, C, D, AND E BLOCK: 07 ZONINGS: R-VH, R-A-15, POR
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

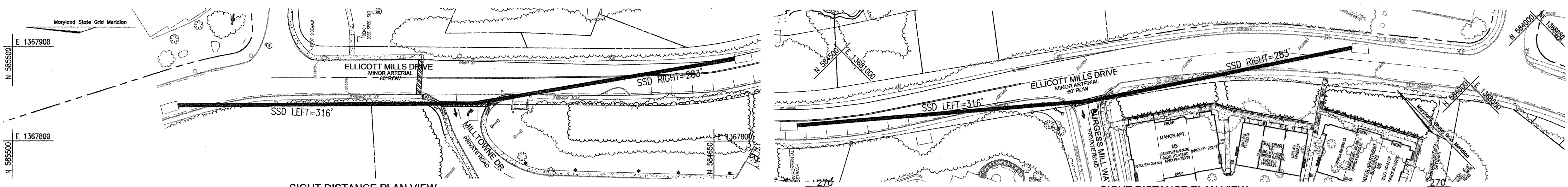
**ROBERT H. VOGEL
ENGINEERING, INC.**
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8407 MAIN STREET ELUGOTT CITY, MD 21043 TEL: 410.461.7666 FAX: 410.461.8961



DESIGN BY: JTD
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DATE: OCTOBER 2011
SCALE: 1"=30'
W.O. NO.: 10-24

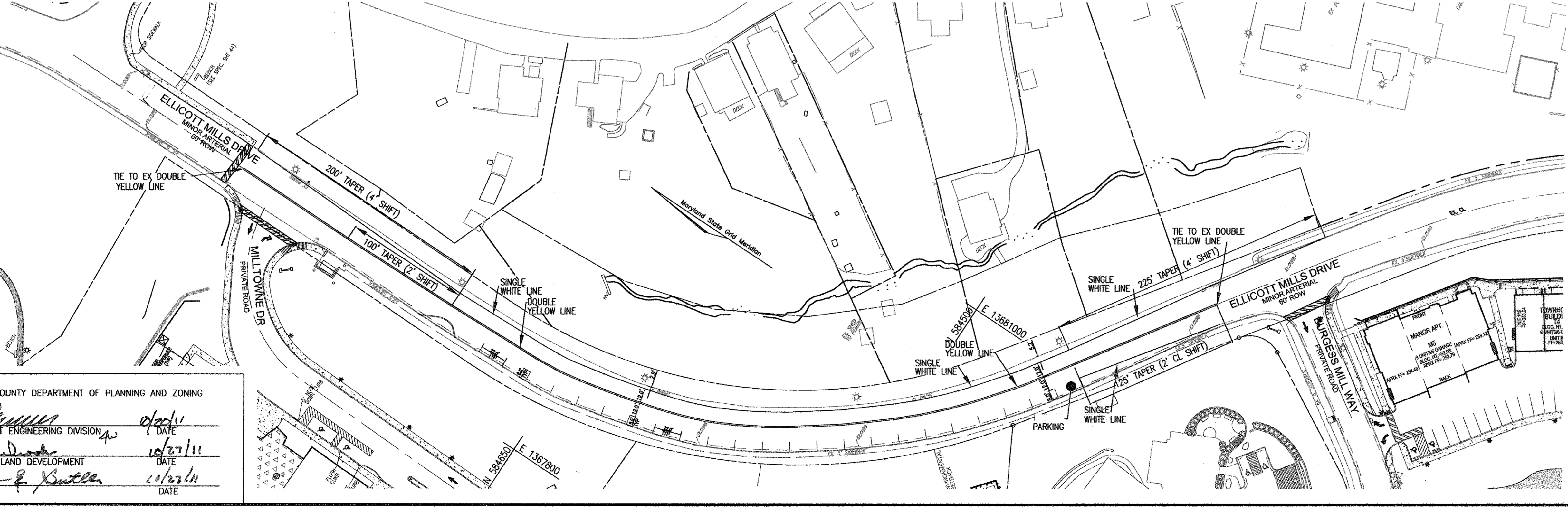
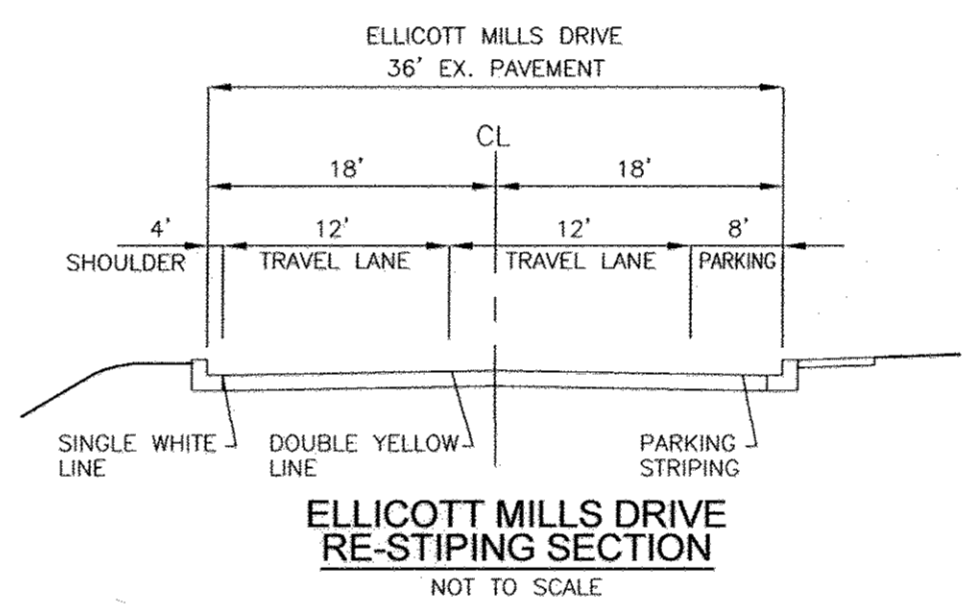
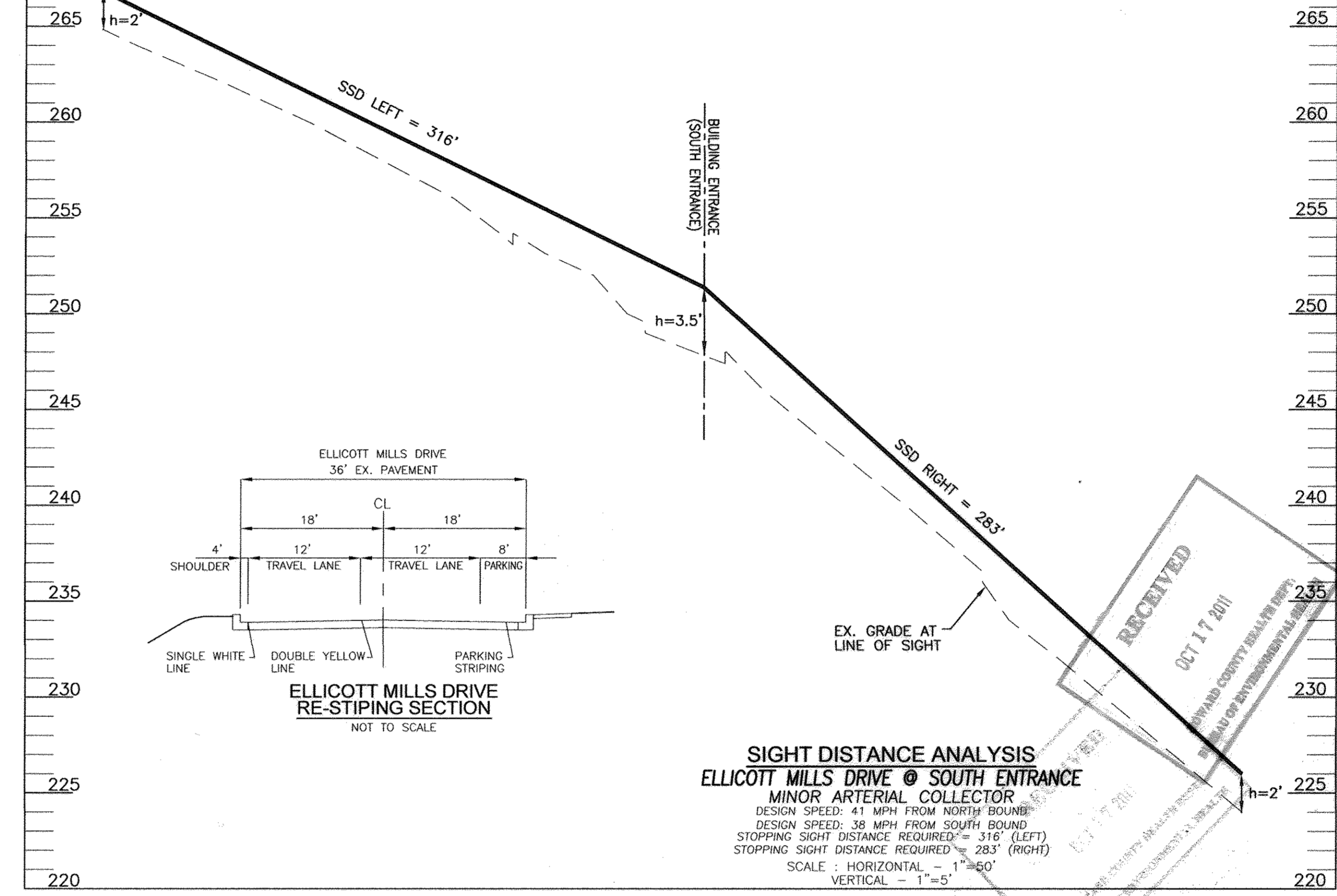
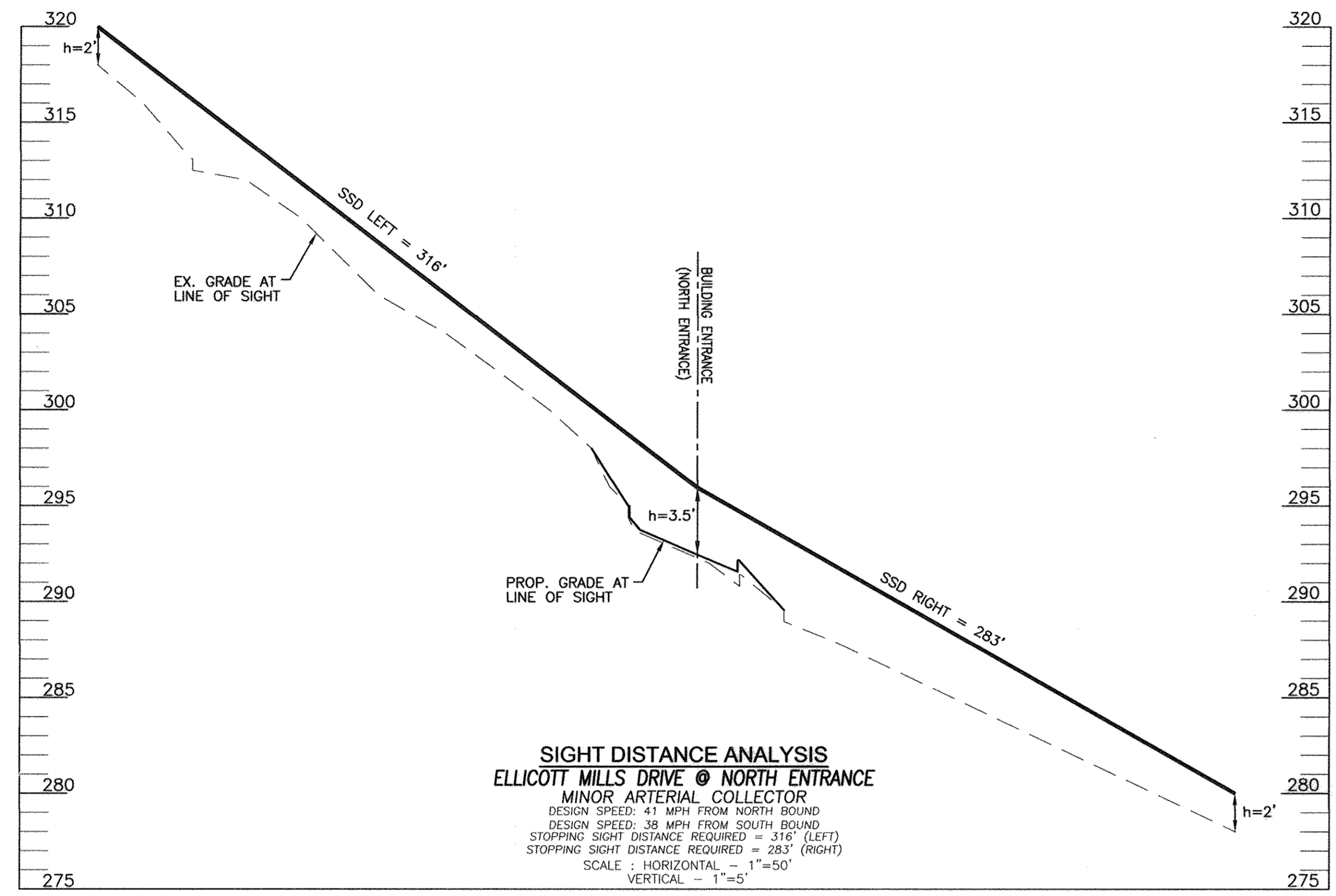
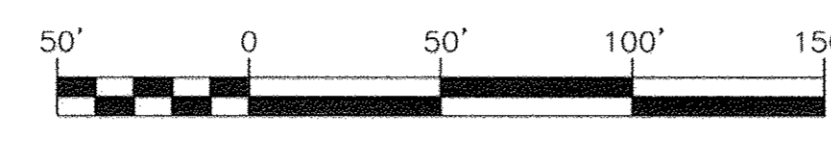
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5 SHEET **50**

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 10/27/11
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
[Signature] 10/27/11
CHIEF, DIVISION OF LAND DEVELOPMENT DATE
[Signature] 10/27/11
DIRECTOR DATE



SIGHT DISTANCE PLAN VIEW
NORTH ENTRANCE
SCALE: 1"=50'

SIGHT DISTANCE PLAN VIEW
SOUTH ENTRANCE
SCALE: 1"=50'



RECEIVED
OCT 11 2011
HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

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4	REVISE SHEET NUMBER	01/09/17
NO.	REVISION	DATE

SITE DEVELOPMENT PLAN
HILLTOP REDEVELOPMENT-PHASE 1
RESIDENTIAL TOWNHOUSES, APARTMENTS
AND RECREATION CENTER
THE RECREATION CENTER IS A GREEN BUILDING
L 4777E-718, L 4567F-449, L 4487F-46, F-12-008
STOPPING SIGHT DISTANCE ANALYSIS
& **ELLICOTT MILLS STRIPING PLAN**
TAX MAP: 25 PARCELS: A, C, D, AND E BLOCK: 07 ZONINGS: R-VH, R-A-15, POR
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL
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6 SHEET OF 50

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 10/27/11
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 10/27/11
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 10/23/11
DIRECTOR DATE

K:\Projects\10-24\ENG\10-24\PHASE-1\034-SIGHT DISTANCE ANALYSIS.dwg, 10/10/2011 3:49:05 PM

PARKING MANAGEMENT PLAN:

1. DURING SPECIAL EVENTS HELD AT THE RECREATION CENTER, OVERFLOW PARKING IS ALLOWED IN THE HOWARD COUNTY OFFICES FOUND ON 3430 COURT HOUSE DRIVE.
2. PARKING WILL BE ALLOWED IN THE SPACES ALONG ELLICOTT MILLS DRIVE.
3. THE RESIDENTIAL AREA OF THE SITE WILL BE BY PERMIT STICKER ONLY. ALL PATRONS OF THE RECREATION CENTER PARKING IN THE RESIDENTIAL PARKING WILL BE TOWED AT THEIR EXPENSE. PERMIT ONLY PARKING SIGNS WILL BE POSTED IN THE RESIDENTIAL PARKING AREAS.

PARKING RESTRICTED TO RESIDENTS ONLY. OVERFLOW PARKING FOR RECREATION CENTER LOCATED AT HOWARD COUNTY GOVERNMENT OFFICE COMPLEX

3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

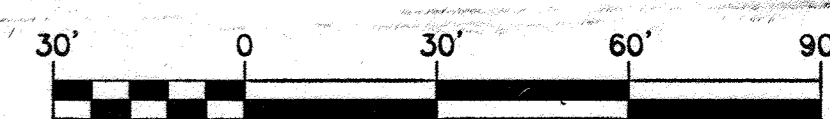
RECREATION CENTER OVER FLOW PARKING IN BLUESTripES SPACES ONLY

PARKING RESTRICTION SIGN

OVERFLOW PARKING LOCATION SIGN

LEGEND

- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING WATER LINE
- EXISTING STORMDRAIN LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- PROPOSED SIDEWALK
- EXISTING TREE LINE
- PROPOSED TREE LINE
- PROPERTY LIGHT
- PROPERTY SIGN
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN INLET
- EXISTING BSE LINE
- EXISTING COMCAST LINE
- PROPOSED FOREST CONSERVATION EASEMENT (RETENTION) PER F-13-057
- PERVIOUS PAVING (CONCRETE)
- MICRO BIO RETENTION
- PAINTED METAL FENCE
- 20' PUBLIC WATER & UTILITY EASEMENT
- VARIABLE WIDTH PUBLIC SEWER, WATER & UTILITY EASEMENT
- 20' PUBLIC SEWER & UTILITY EASEMENT
- DOWN SPOUT
- INTERNAL DOWN SPOUT
- GREEN ROOF
- P-2 PAVING
- TRANSFORMER
- PERVIOUS PAVING (INTERLOCKING PAVERS) SEE DETAIL SHT. 20



NO.	REVISION	DATE
6	REVISE PARKING FOR ELECTRIC VEHICLES	3-15-22

NO.	REVISION	DATE
1	REVISE FOOTPRINTS, DRAINAGE AND WATER/UTILITY	12/7/12
2	SELECTIVE REMOVAL OF PERMEABLE CONC. & REPLACE WITH PERVIOUS PAVERS	7/14/15
3	REVISE TO ADD TO THE RECREATION OPEN SPACE BY REMOVING NATURE TRAIL PROPERTY FROM PARK. SIGNAGE & DAMAGED SAND PIT	01/09/17
4		

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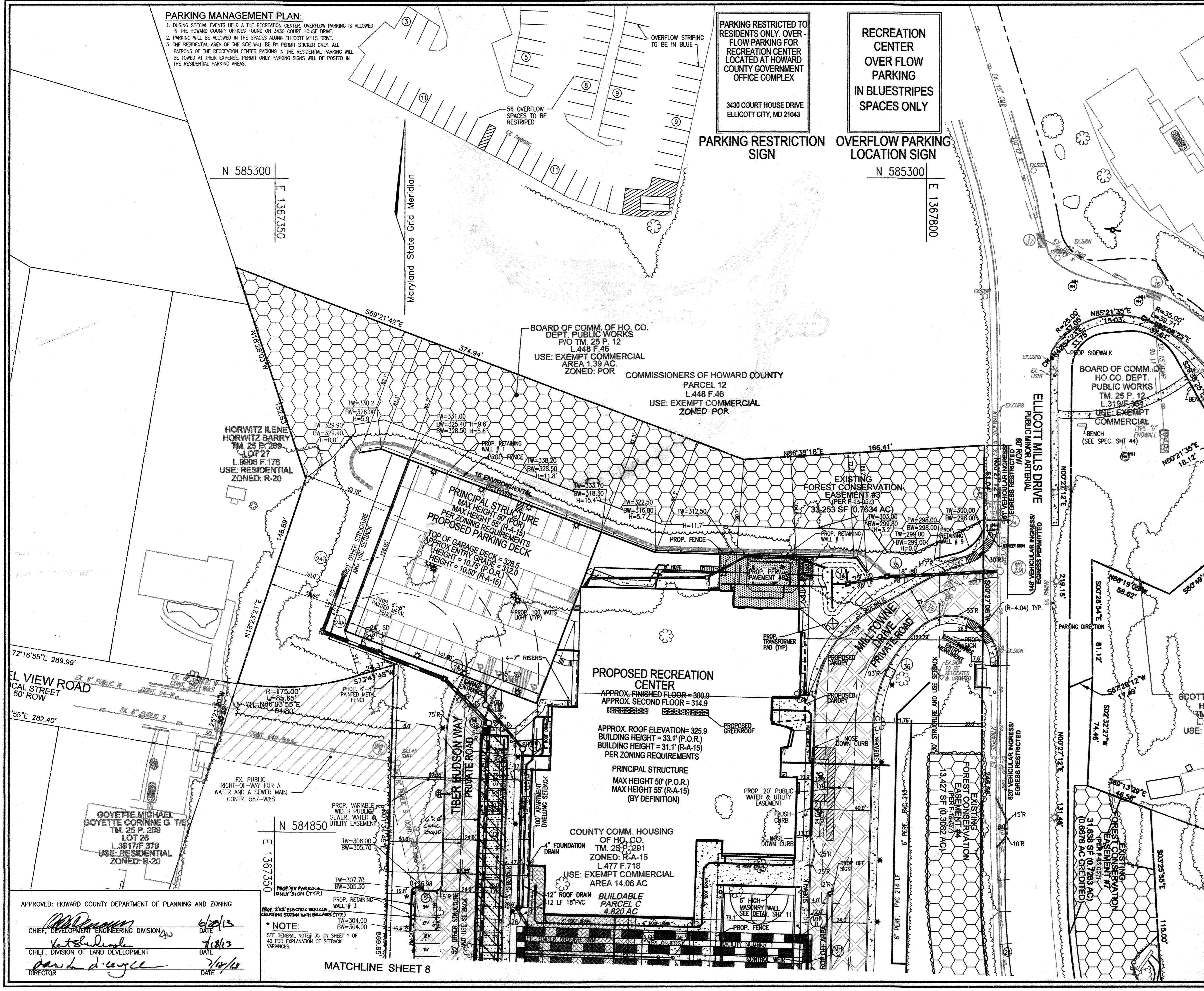
TAX MAP: 25 PARCELS: A, C, D, AND E BLOCK: 07 ZONINGS: R-1A, R-A-15, FOR 2ND ELECTION DISTRICT

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FAX: 410.481.8881

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7 SHEET OF 50



N 585300
E 1367350

N 585300
E 1367800

N 584850
E 1367350

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION
CHIEF, DIVISION OF LAND DEVELOPMENT
DIRECTOR

DATE: 6/20/13
DATE: 7/18/13
DATE: 7/14/12

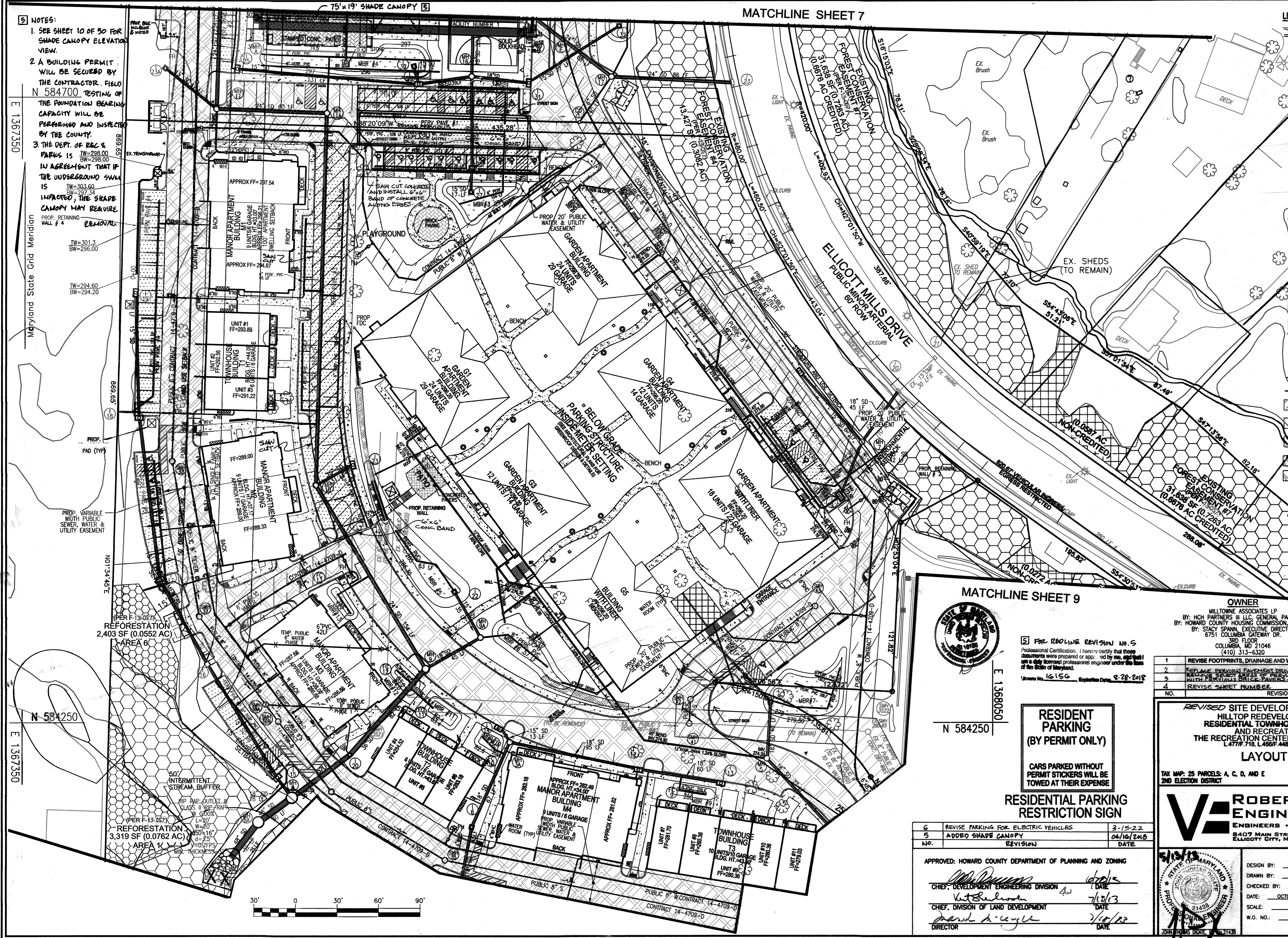
* NOTE:
SEE GENERAL NOTES 35 ON SHEET 1 OF 49 FOR EXPLANATION OF SETBACK VARIANCES.

MATCHLINE SHEET 8

NOTES:
 1. SEE SHEET 10 OF 50 FOR SHADE CANOPY ELEVATION VIEW.
 2. A BUILDING PERMIT WILL BE SECURED BY THE CONTRACTOR. FIELD N 584700 TESTING OF THE FOUNDATION BEARING CAPACITY WILL BE PERFORMED AND INSPECTED BY THE COUNTY.
 3. THE DEPT. OF REC & PARKS IS IN AGREEMENT THAT IF THE UNDERGROUND SWM IS IMPACTED, THE SHADE CANOPY MAY REQUIRE REMOVAL.

MATCHLINE SHEET 7

- LEGEND:**
- EXISTING CURB AND GUTTER
 - PROPOSED CURB AND GUTTER
 - EXISTING UTILITY POLE
 - EXISTING LIGHT POLE
 - EXISTING MAILBOX
 - EXISTING SIGN
 - EXISTING SWANNY MANHOLE
 - EXISTING SWANNY LINE
 - EXISTING CLEANOUT
 - EXISTING FIRE HYDRANT
 - EXISTING WATER LINE
 - PROPOSED STORM DRAIN
 - PROPOSED STORM INLET
 - EXISTING TREELINE
 - EXISTING VEGETATION (APPROXIMATE LOCATION)
 - EXISTING STREET TREES
 - EXISTING FENCE
 - PROPERTY LINE
 - RIGHT-OF-WAY LINE
 - MAIL BOX
 - PROPOSED SIDEWALK
 - PROPERTY LIGHT
 - PROPERTY SIGN
 - EXISTING BGE LINE
 - EXISTING COMCAST LINE
 - EXISTING STORMWATER LINE
 - EXISTING FOREST CONSERVATION EASEMENT PER SDP
 - PROPOSED FOREST CONSERVATION EASEMENT (RETAINING) PER F-13-057
 - PERVIOUS PAVING (CONCRETE)
 - MICRO BIO-RETENTION
 - PAINTED METAL FENCE
 - PROPOSED TREELINE
 - 20' PUBLIC WATER & UTILITY EASEMENT
 - VARIABLE WIDTH PUBLIC SEWER, WATER & UTILITY EASEMENT
 - 20' PUBLIC SEWER & UTILITY EASEMENT
 - GREEN ROOF
 - P-2 PAVING
 - TRANSFORMER
 - WATER ROOM
 - ELECTRIC ROOM
 - PERVIOUS PAVING (INTERLOCKING PAVERS) SEE DETAIL SH-20



MATCHLINE SHEET 9



5 For REVISION No. 5
 Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
 License No. 16156, Expiration Date: 8-28-2018

RESIDENT PARKING (BY PERMIT ONLY)
 CARS PARKED WITHOUT PERMIT STICKERS WILL BE TOWED AT THEIR EXPENSE

RESIDENTIAL PARKING RESTRICTION SIGN

NO.	REVISION	DATE
6	REVISE PARKING FOR ELECTRIC VEHICLES	3-15-22
5	ADDED SHADE CANOPY	04/16/2018

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DIRECTOR

OWNER: MILLTOWNE ASSOCIATES LP
 BY: HCH PARTNERS II LLC, GENERAL PARTNER
 BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
 BY: STACY SPANN, EXECUTIVE DIRECTOR
 6751 COLUMBIA GATEWAY DR.
 3RD FLOOR
 COLUMBIA, MD 21046
 (410) 313-6320

DEVELOPER: STARBU ASSOCIATES, INC.
 2861 RIVA ROAD
 BUILDING 300
 ANNAPOLIS, MD 21401
 C/O STEPHEN J. MOORE
 (410) 571-6610

NO.	REVISION	DATE
1	REVISE FOOTPRINTS, DRAINAGE AND WATERLINE	12/7/12
2	REPLACE PERVIOUS PAVING DECKS AND W/DR.P.P.	8/14/14
3	REMOVE SELECT AREAS OF PERVIOUS PAVING / REPLACE WITH PERVIOUS BRICE PAVERS	7/15/15
4	REVISE SHEET NUMBER	01/28/17

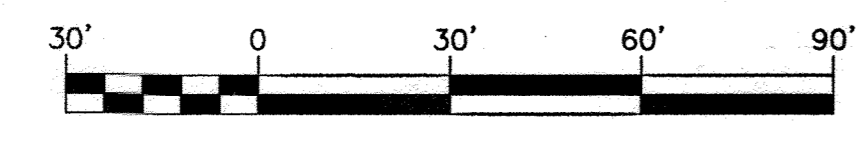
REVISED SITE DEVELOPMENT PLAN
 HILLTOP REDEVELOPMENT-PHASE 1
 RESIDENTIAL TOWNHOUSES, APARTMENTS
 AND RECREATION CENTER
 THE RECREATION CENTER IS A GREEN BUILDING
 L477F.718, L456F.448, L448F.40, F-12-008
LAYOUT SHEET

TAX MAP: 25 PARCELS: A, C, D, AND E BLOCK: 07 ZONING: R-W, R-4-15, FOR 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 8407 MAIN STREET
 ELLICOTT CITY, MD 21043 TEL: 410.461.7666
 FAX: 410.461.5981

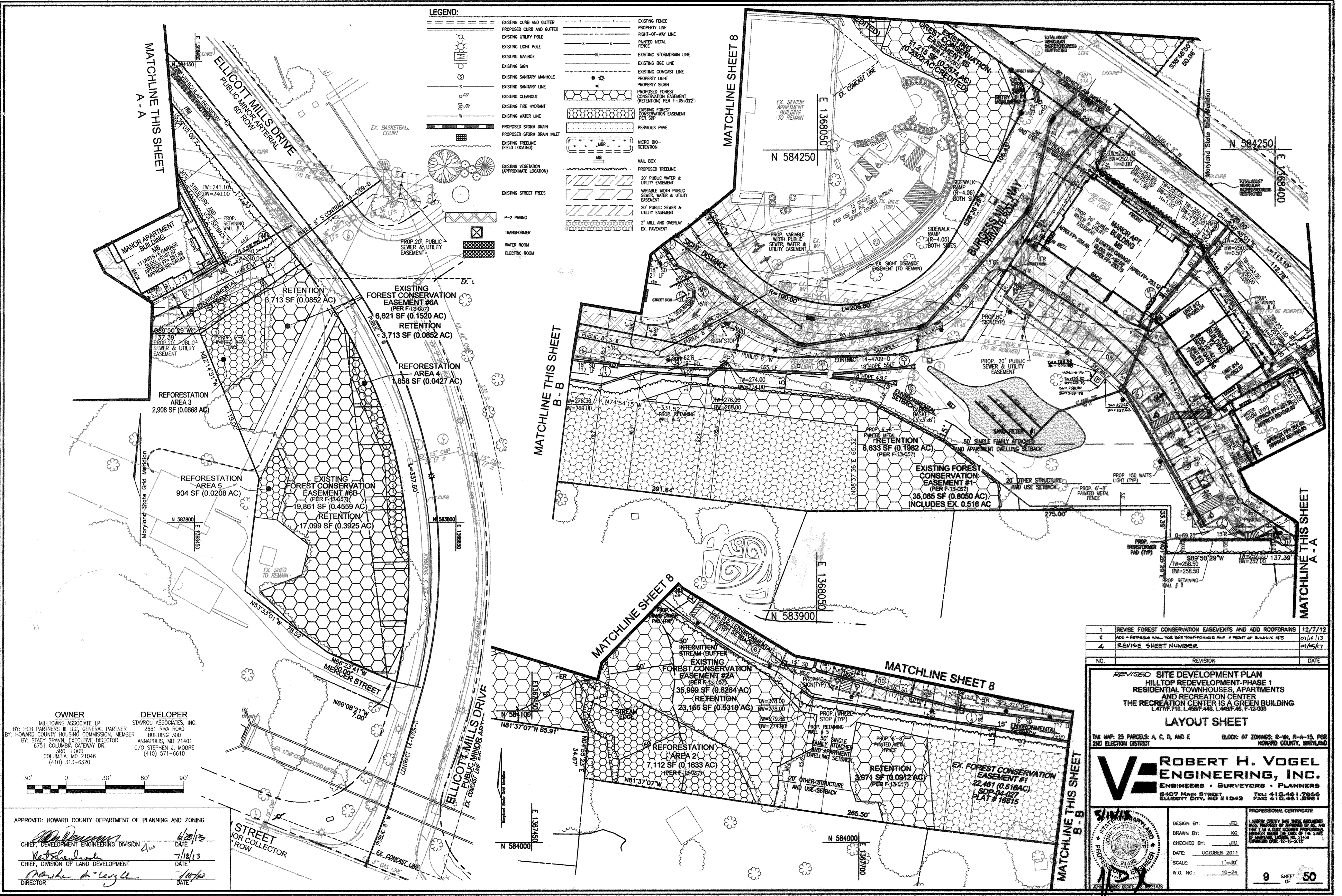
PROFESSIONAL CERTIFICATE
 DESIGN BY: JTD
 DRAWN BY: KG
 CHECKED BY: JTD
 DATE: OCTOBER 2011
 SCALE: 1"=30'
 W.O. NO.: 10-24

8 SHEET OF 50



LEGEND:

EXISTING CURB AND GUTTER	EXISTING FENCE	EXISTING LIGHT POLE	EXISTING SANITARY MANHOLE	EXISTING SANITARY LINE	EXISTING WATER LINE	PROPOSED STORM DRAIN	EXISTING VEGETATION (APPROXIMATE LOCATION)	EXISTING STREET TREES	P-2 PAVING	TRANSFORMER	WATER ROOM	ELECTRIC ROOM
PROPOSED CURB AND GUTTER	PROPERTY LINE	EXISTING MAILBOX	EXISTING SANITARY LINE	EXISTING FIRE HYDRANT	EXISTING WATER LINE	PROPOSED STORM DRAIN INLET						
EXISTING UTILITY POLE	RIGHT-OF-WAY LINE	EXISTING SIGN	EXISTING SANITARY LINE	EXISTING FIRE HYDRANT	EXISTING WATER LINE	PROPOSED STORM DRAIN INLET						
EXISTING UTILITY POLE	PAINTED METAL FENCE	EXISTING SIGN	EXISTING SANITARY LINE	EXISTING FIRE HYDRANT	EXISTING WATER LINE	PROPOSED STORM DRAIN INLET						
EXISTING UTILITY POLE	EXISTING STORMDRAIN LINE	EXISTING SIGN	EXISTING SANITARY LINE	EXISTING FIRE HYDRANT	EXISTING WATER LINE	PROPOSED STORM DRAIN INLET						
EXISTING UTILITY POLE	EXISTING BEE LINE	EXISTING SIGN	EXISTING SANITARY LINE	EXISTING FIRE HYDRANT	EXISTING WATER LINE	PROPOSED STORM DRAIN INLET						
EXISTING UTILITY POLE	EXISTING COMCAST LINE	EXISTING SIGN	EXISTING SANITARY LINE	EXISTING FIRE HYDRANT	EXISTING WATER LINE	PROPOSED STORM DRAIN INLET						
EXISTING UTILITY POLE	PROPOSED FOREST CONSERVATION EASEMENT (RETENTION) PER F-13-057	EXISTING SIGN	EXISTING SANITARY LINE	EXISTING FIRE HYDRANT	EXISTING WATER LINE	PROPOSED STORM DRAIN INLET						
EXISTING UTILITY POLE	EXISTING FOREST CONSERVATION EASEMENT PER SDP	EXISTING SIGN	EXISTING SANITARY LINE	EXISTING FIRE HYDRANT	EXISTING WATER LINE	PROPOSED STORM DRAIN INLET						
EXISTING UTILITY POLE	PERVIOUS PAVE	EXISTING SIGN	EXISTING SANITARY LINE	EXISTING FIRE HYDRANT	EXISTING WATER LINE	PROPOSED STORM DRAIN INLET						
EXISTING UTILITY POLE	MICRO BIO-RETENTION	EXISTING SIGN	EXISTING SANITARY LINE	EXISTING FIRE HYDRANT	EXISTING WATER LINE	PROPOSED STORM DRAIN INLET						
EXISTING UTILITY POLE	MAIL BOX	EXISTING SIGN	EXISTING SANITARY LINE	EXISTING FIRE HYDRANT	EXISTING WATER LINE	PROPOSED STORM DRAIN INLET						
EXISTING UTILITY POLE	PROPOSED TREELINE	EXISTING SIGN	EXISTING SANITARY LINE	EXISTING FIRE HYDRANT	EXISTING WATER LINE	PROPOSED STORM DRAIN INLET						
EXISTING UTILITY POLE	20' PUBLIC WATER & UTILITY EASEMENT	EXISTING SIGN	EXISTING SANITARY LINE	EXISTING FIRE HYDRANT	EXISTING WATER LINE	PROPOSED STORM DRAIN INLET						
EXISTING UTILITY POLE	VARIABLE WIDTH PUBLIC SEWER, WATER & UTILITY EASEMENT	EXISTING SIGN	EXISTING SANITARY LINE	EXISTING FIRE HYDRANT	EXISTING WATER LINE	PROPOSED STORM DRAIN INLET						
EXISTING UTILITY POLE	20' PUBLIC SEWER & UTILITY EASEMENT	EXISTING SIGN	EXISTING SANITARY LINE	EXISTING FIRE HYDRANT	EXISTING WATER LINE	PROPOSED STORM DRAIN INLET						
EXISTING UTILITY POLE	2" MILL AND OVERLAY	EXISTING SIGN	EXISTING SANITARY LINE	EXISTING FIRE HYDRANT	EXISTING WATER LINE	PROPOSED STORM DRAIN INLET						
EXISTING UTILITY POLE	EX. PAVEMENT	EXISTING SIGN	EXISTING SANITARY LINE	EXISTING FIRE HYDRANT	EXISTING WATER LINE	PROPOSED STORM DRAIN INLET						



1	REVISE FOREST CONSERVATION EASEMENTS AND ADD ROOFDRAINS	12/7/12
2	ADD A RETAINING WALL FOR BGR TRANSFORMER PAD IN FRONT OF BUILDING M'S	07/16/13
4	REVISE SHEET NUMBER	01/05/17

REVISED SITE DEVELOPMENT PLAN
HILLTOP REDEVELOPMENT-PHASE 1
RESIDENTIAL TOWNHOUSES, APARTMENTS
AND RECREATION CENTER
THE RECREATION CENTER IS A GREEN BUILDING
 L 471F-716, L 466F-448, L 448F-46, F-12-008

LAYOUT SHEET

TAX MAP: 25 PARCELS: A, C, D, AND E BLOCK: 07 ZONING: R-M, R-A-15, POR
 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

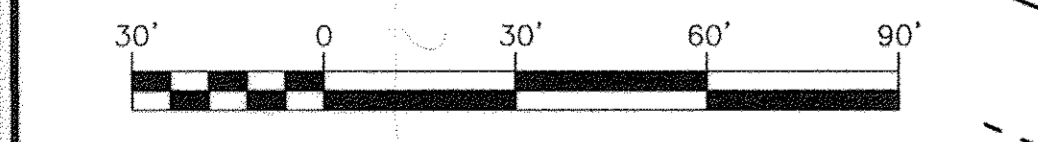
PROFESSIONAL CERTIFICATE

DESIGN BY: JTD
 DRAWN BY: KC
 CHECKED BY: JTD
 DATE: OCTOBER 2011
 SCALE: 1"=30'
 W.O. NO.: 10-24

9 SHEET OF 50

OWNER
 MILLTOWNE ASSOCIATE LP
 BY: HCI PARTNERS III LLC, GENERAL PARTNER
 BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
 BY: STACY SPANN, EXECUTIVE DIRECTOR
 6751 COLUMBIA GATEWAY DR.
 3RD FLOOR
 COLUMBIA, MD 21046
 (410) 313-6320

DEVELOPER
 STARVOR ASSOCIATES, INC.
 2661 RIVA ROAD
 BUILDING 300
 ANNAPOLIS, MD 21401
 C/O STEPHEN J. MOORE
 (410) 571-6610

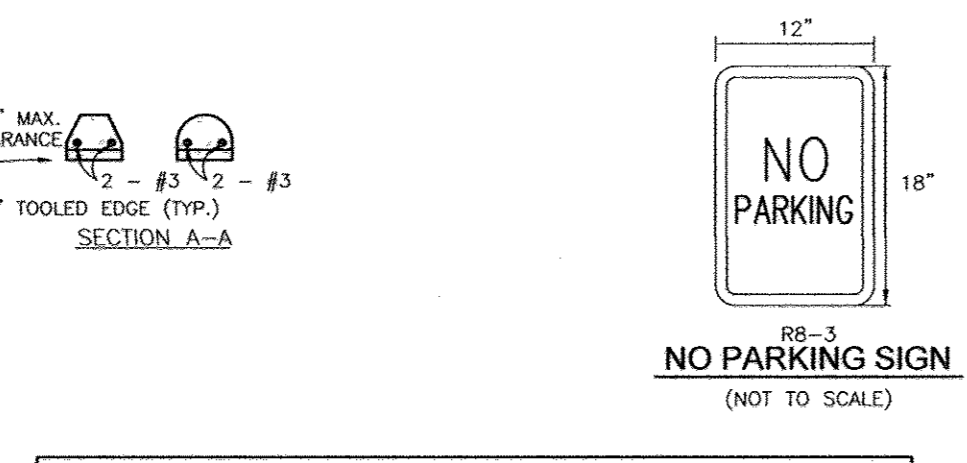
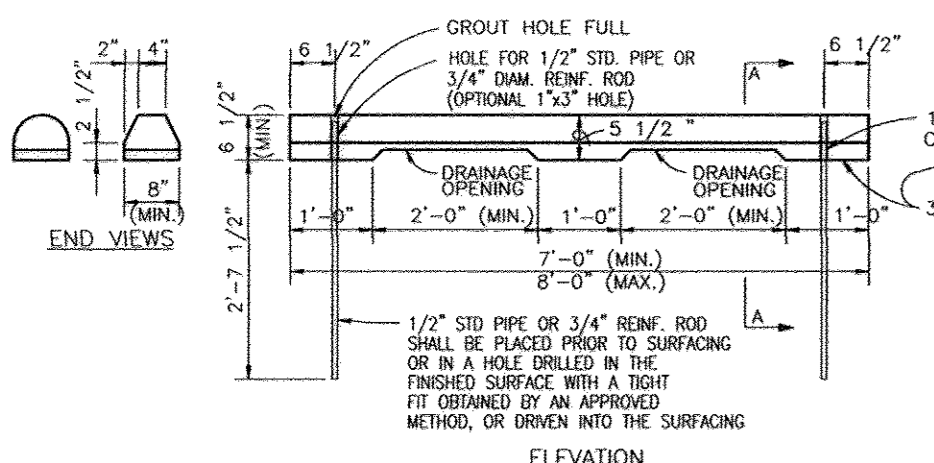


APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 6/28/13
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

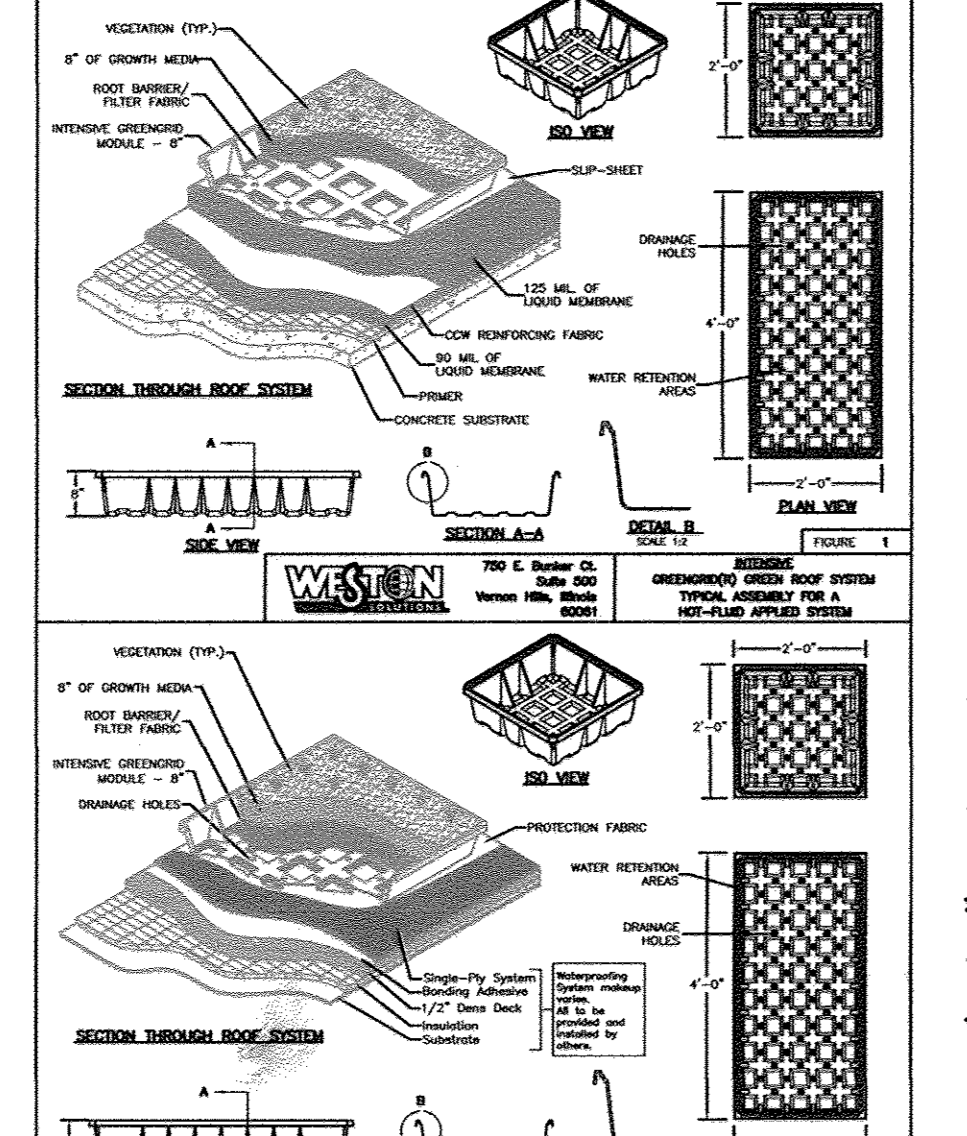
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 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 7/16/13
 DIRECTOR DATE



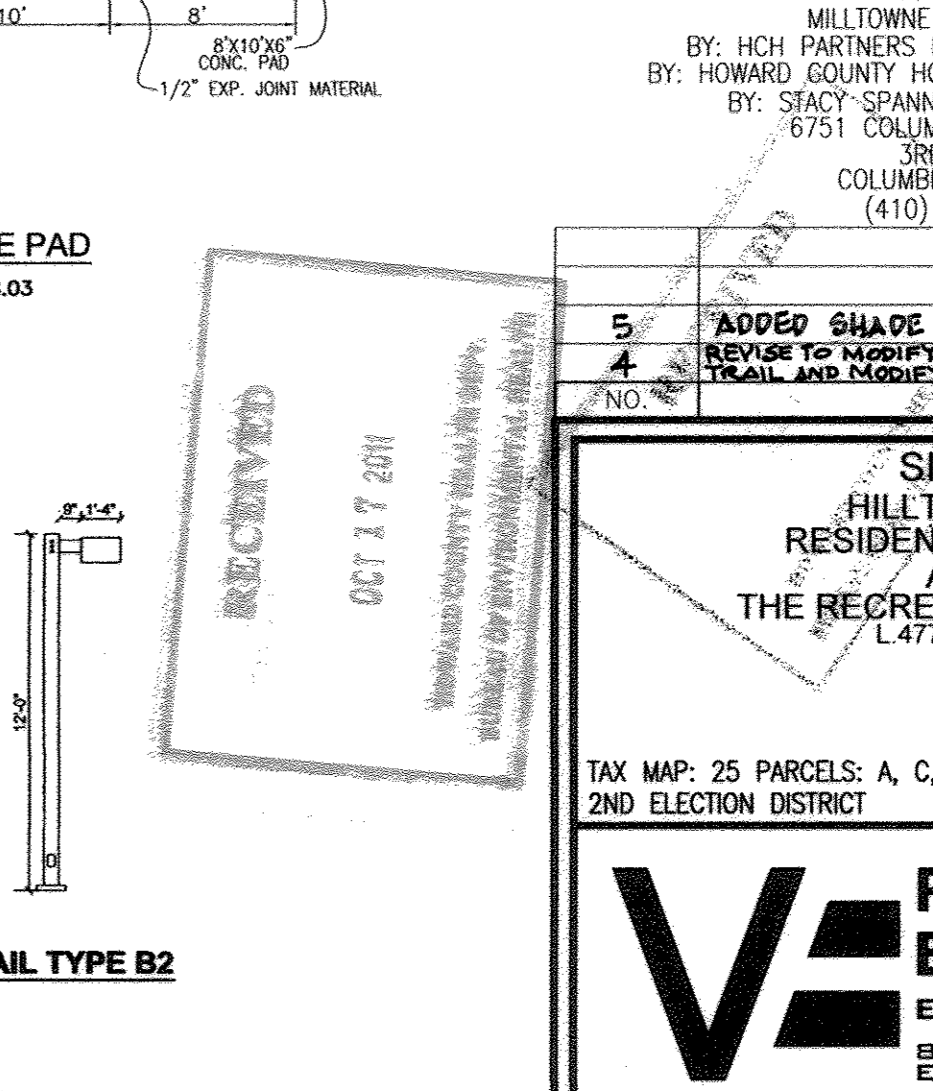
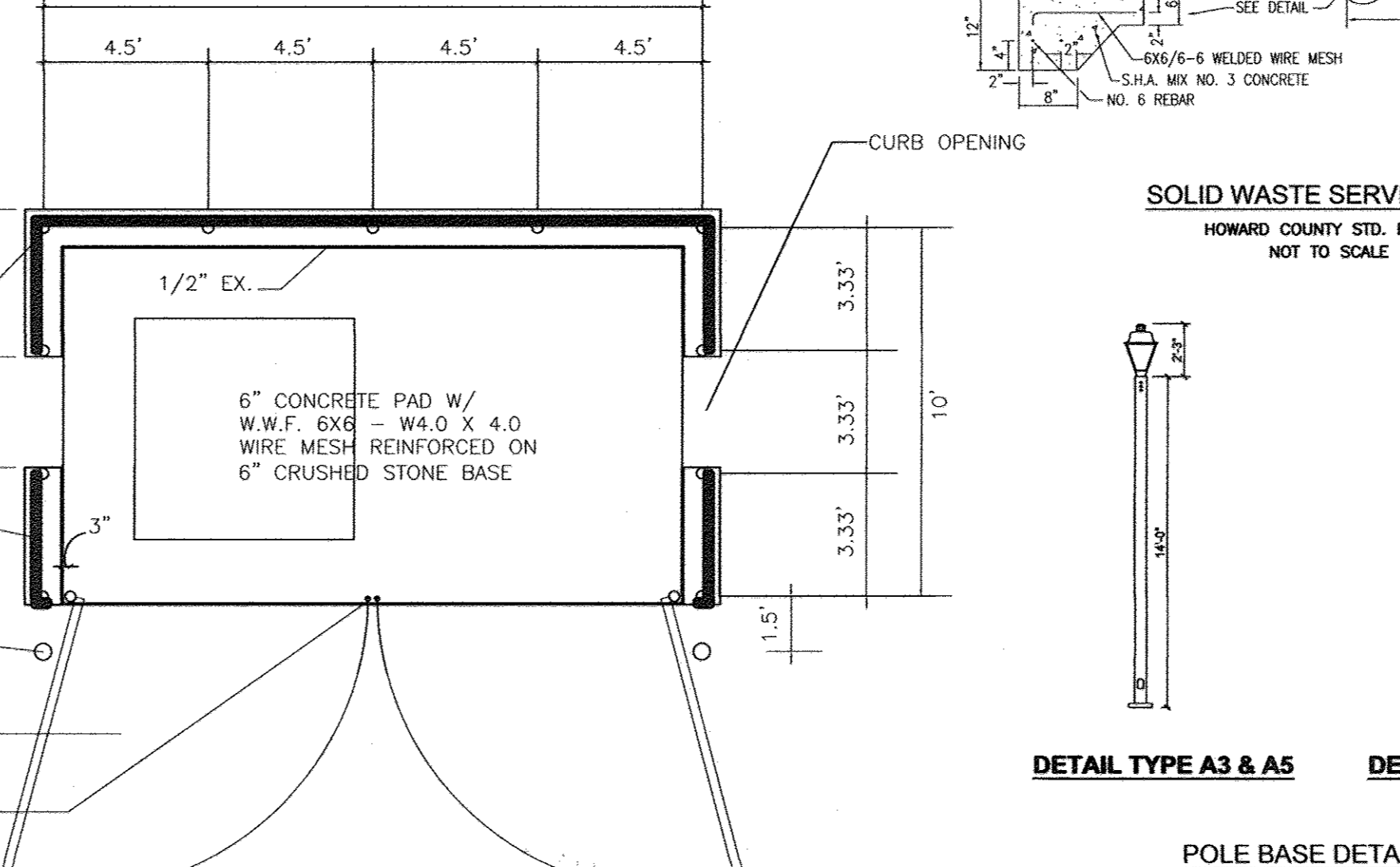
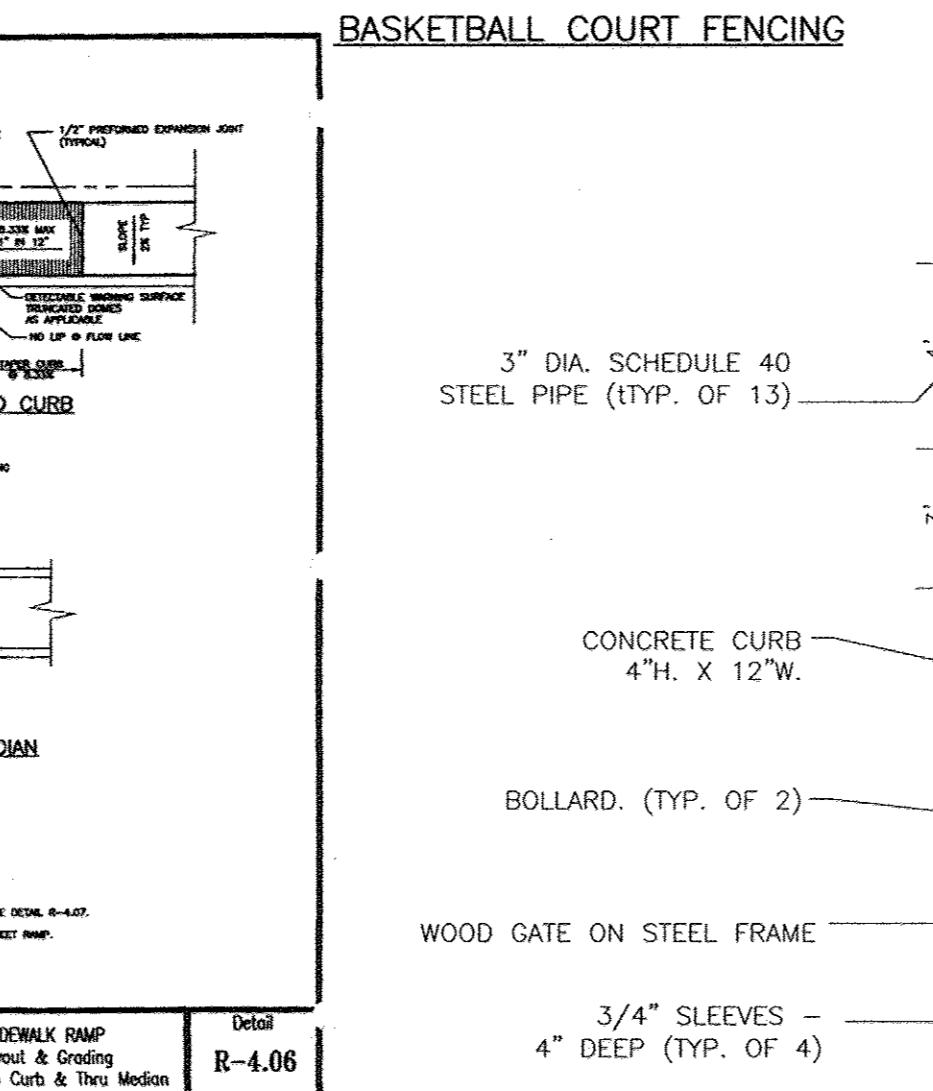
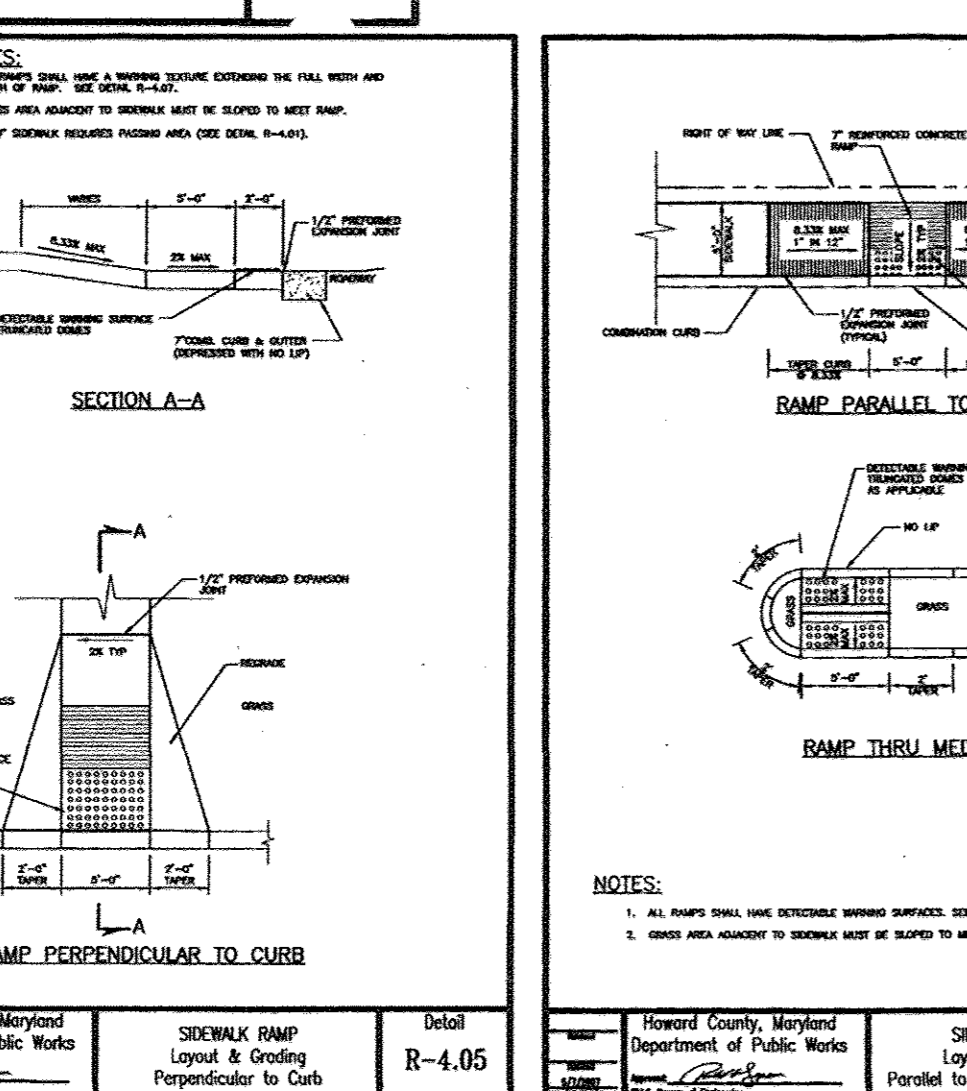
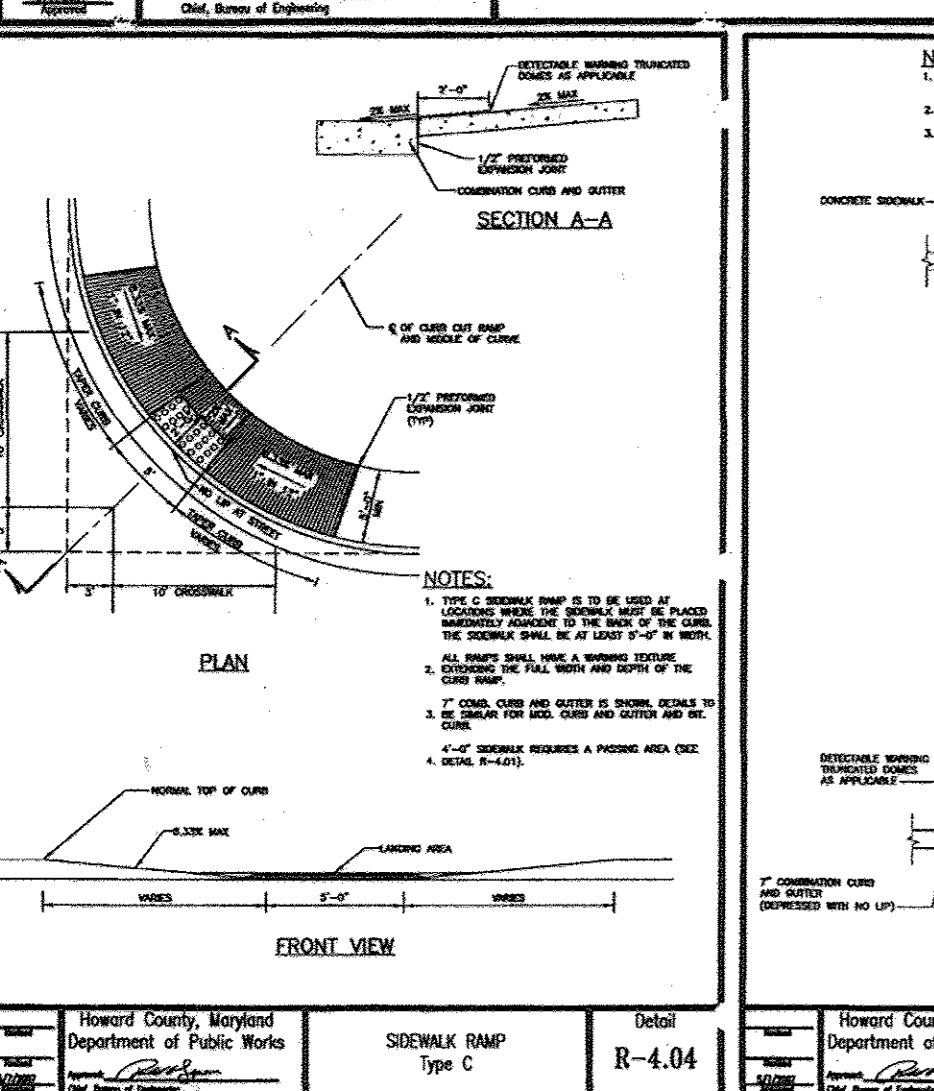
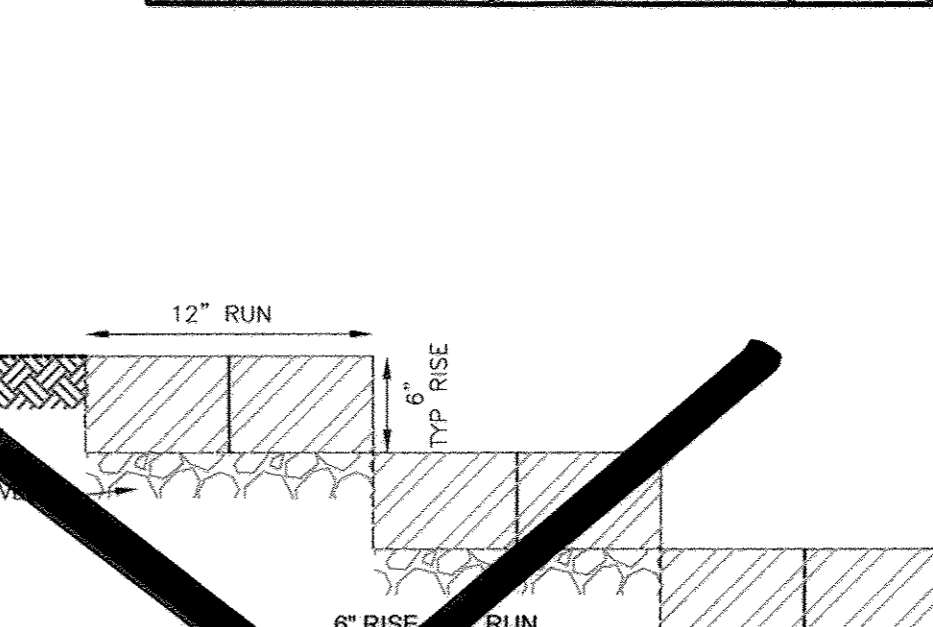
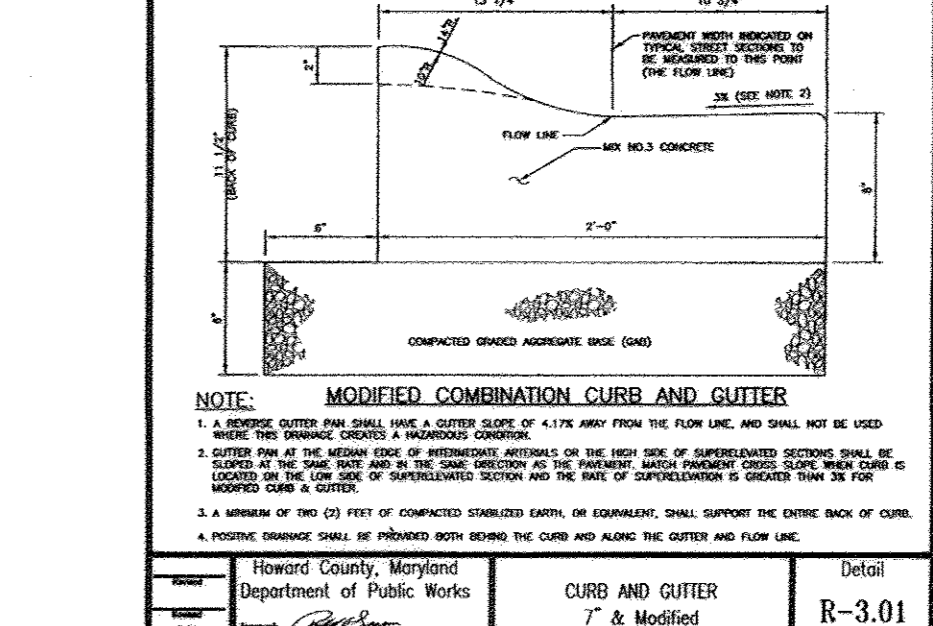
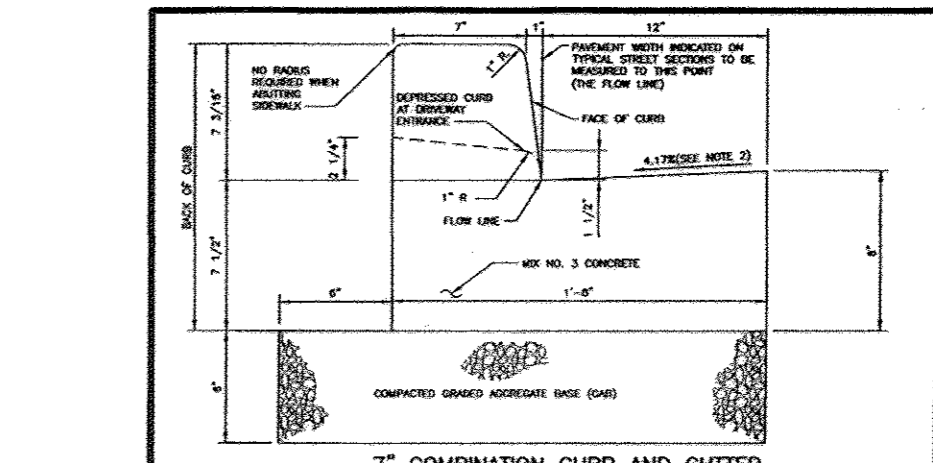
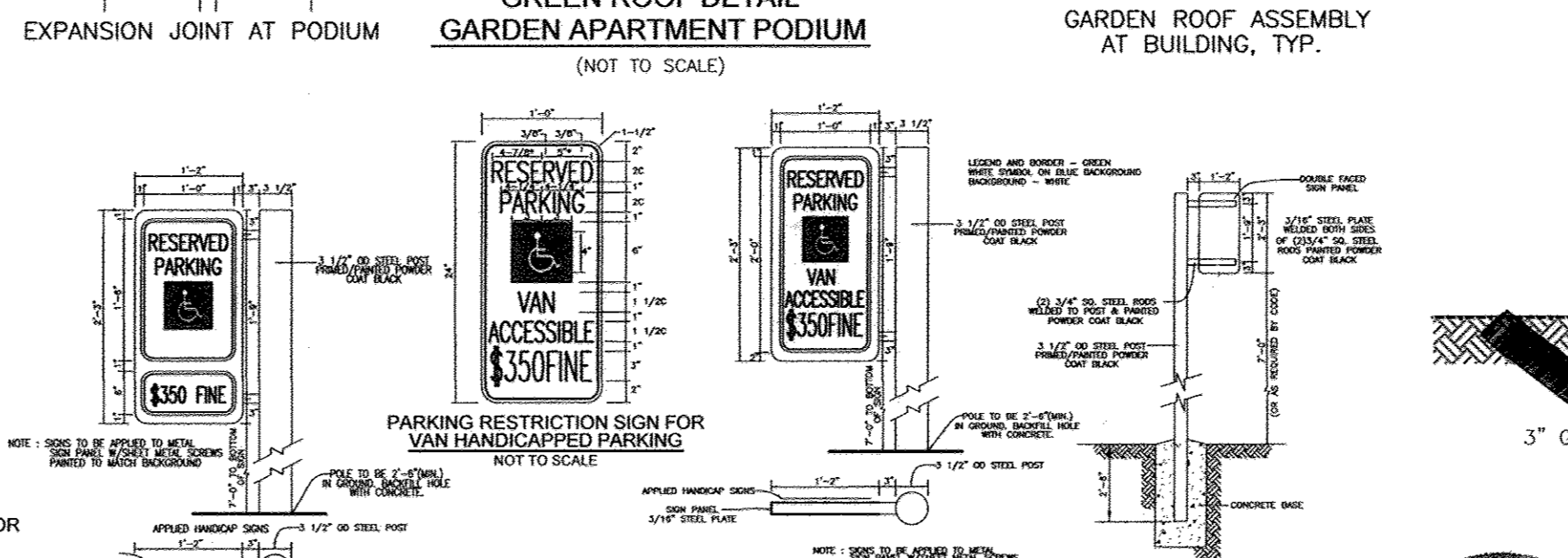
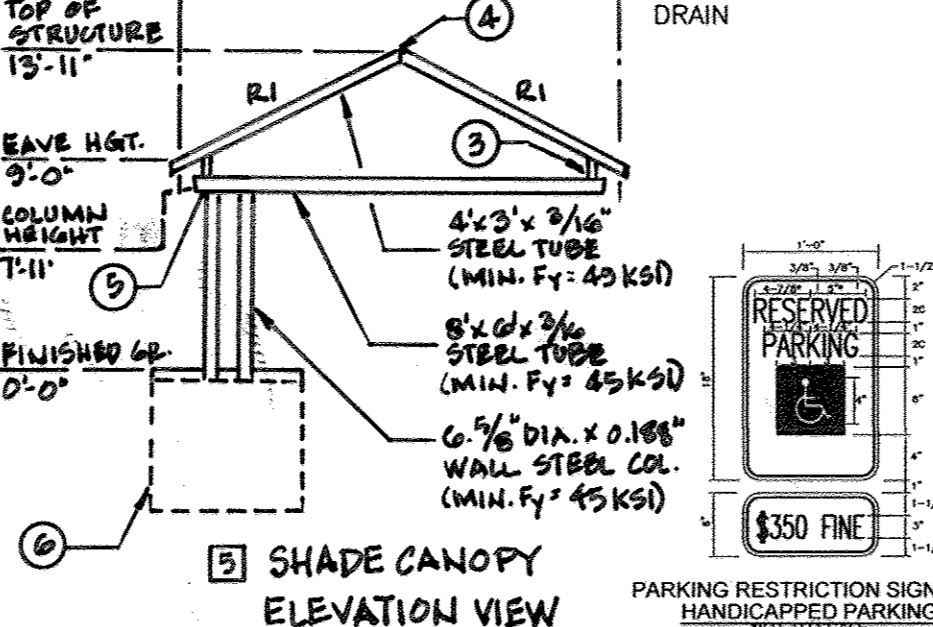
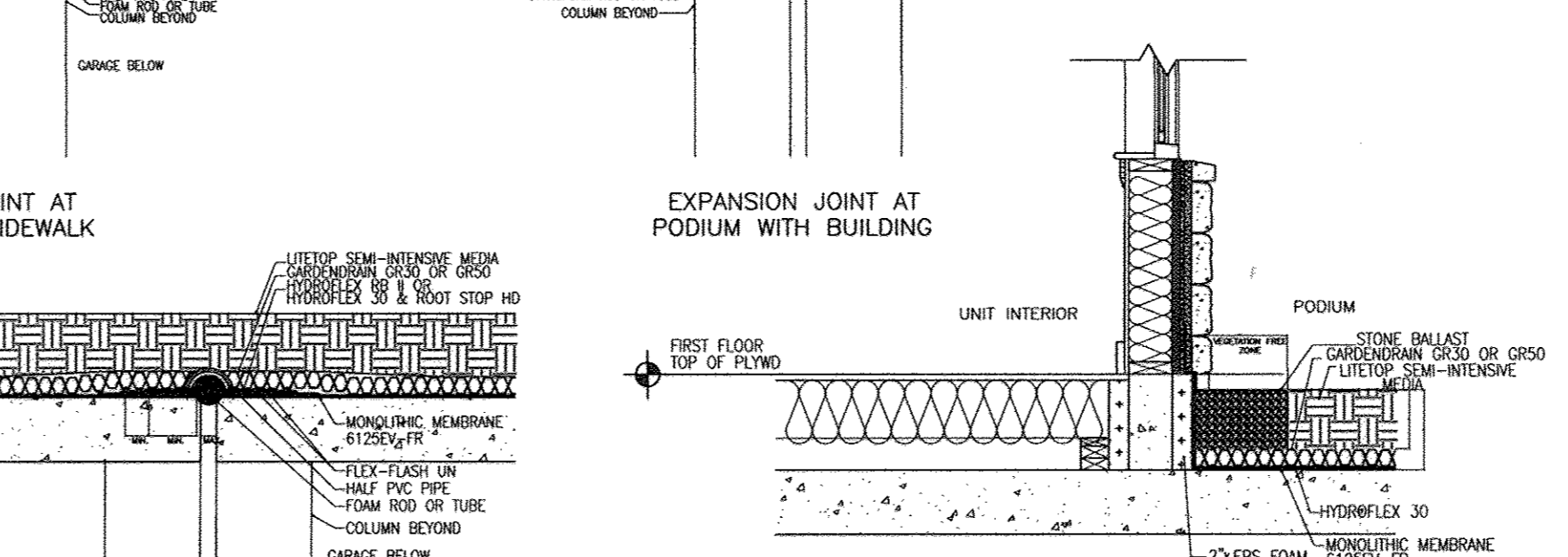
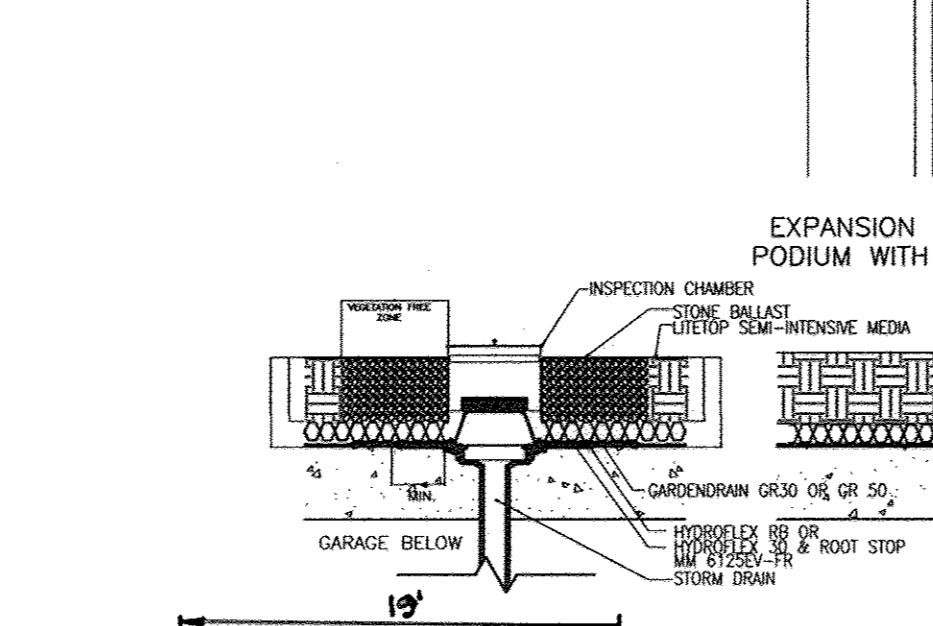
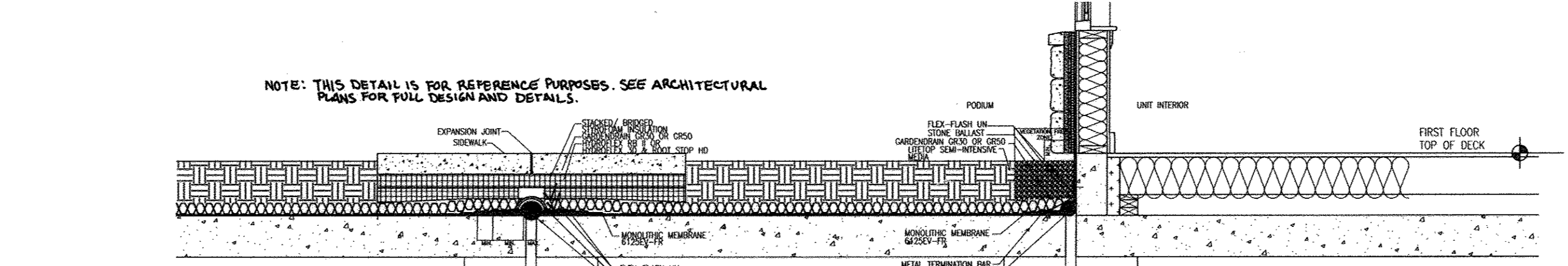
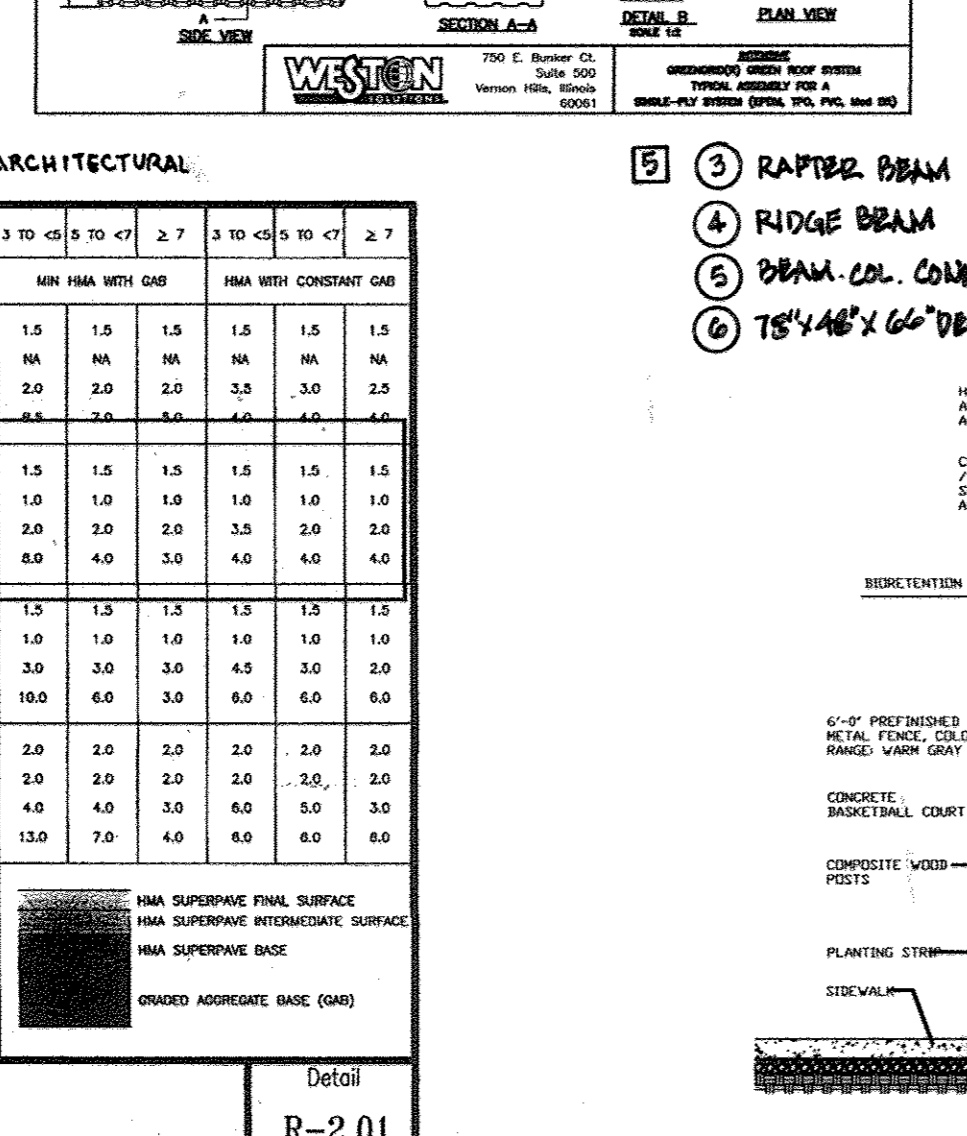
GREEN GRID Specifications Summary

Item	Specification
1. Green Grid Model	GG-1000
2. Green Grid Color	Green
3. Green Grid Material	High Density Polyethylene (HDPE)
4. Green Grid Thickness	1/2" (12.7mm)
5. Green Grid Grid Size	24" x 24" (610mm x 610mm)
6. Green Grid Weight	1.5 lbs/sq yd (1.37 kg/sq m)
7. Green Grid Installation	See Section 05100 - Green Roof System



NOTE: THIS DETAIL IS FOR REFERENCE PURPOSES. SEE ARCHITECTURAL PLANS FOR FULL DESIGN AND DETAILS.

SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CAVITY BEARING RATIO (CBR)	3 TO 4	5 TO 6	7 TO 8	9 TO 10	11 TO 12	13 TO 14	15 TO 16	17 TO 18	19 TO 20	21 TO 22	23 TO 24
P-1	PARKING DRIVEWAY, RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 2 HEAVY TRUCKS PER DAY	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
P-2	PARKING DRIVEWAY, RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 2 HEAVY TRUCKS PER DAY	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
P-3	PARKING DRIVEWAY, RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 2 HEAVY TRUCKS PER DAY	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
P-4	MINOR COLLECTORS, NON-RESIDENTIAL MAJOR COLLECTORS	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5



CONCRETE PAVING SECTIONS
(AS PER GEOTECHNICAL REPORT RECOMMENDATIONS PREPARED BY ECS, LLC, DATED JANUARY 5, 2011)

Section	Material	Thickness
DUMPSTER PAD	MIN 4.0" AS-STRIPPED PORTLAND CEMENT CONCRETE (MIN 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI)	4.0"
DRIVEWAYS/GARAGE APRON	MIN 4.0" AS-STRIPPED PORTLAND CEMENT CONCRETE (MIN 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI)	4.0"
POROUS PAVING	MIN 7.0" FIBER REINFORCED PORTLAND CEMENT CONCRETE (MIN 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI)	7.0"

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature]
CHIEF, DEVELOPMENT ENGINEERING DIVISION

[Signature]
CHIEF, DIVISION OF LAND DEVELOPMENT

[Signature]
DIRECTOR

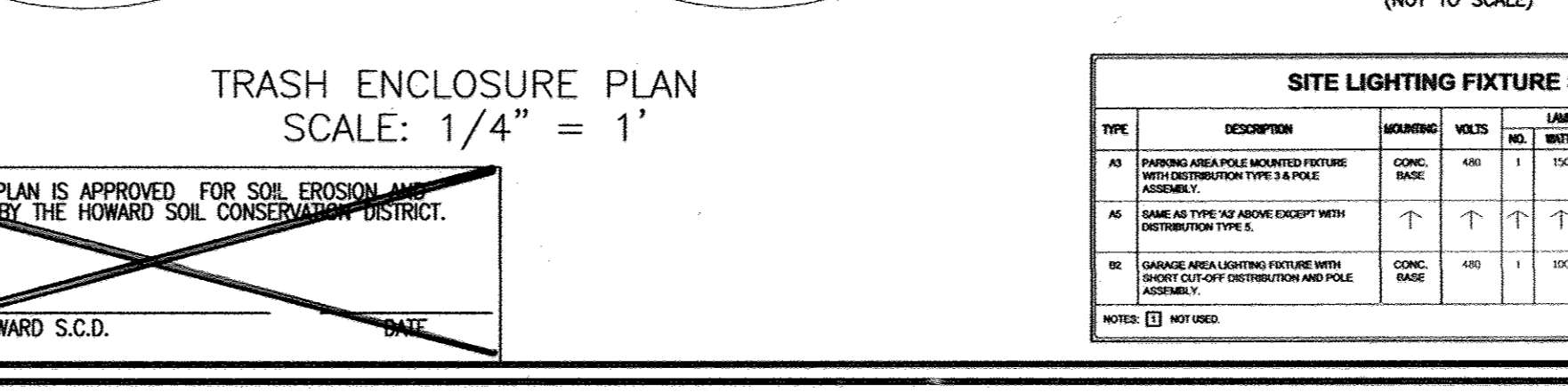
BY THE DEVELOPER:

[Signature]
DATE: 10/23/11

[Signature]
DATE: 10/23/11

BY THE ENGINEER:

[Signature]
DATE: 10/23/11



SITE LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	CONC. CODE	NO.	WTS.	HEIGHT	SPACING	MANUFACTURER & MODEL NO.	NOTES
A1	FIXTURE AREA POLE MOUNTED WITH DISTRIBUTION TYPE 2 & PACE FINISH	400	1	100	200	10'
A2	SAME AS TYPE A1 ABOVE EXCEPT WITH DISTRIBUTION TYPE 1	400	1	100	200	10'

CONCRETE PAVING SECTIONS
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OWNER
MILLTOWNE ASSOCIATES LP
BY: HCH PARTNERS III LLC, GENERAL PARTNER
BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
BY: SEAN SPANN, EXECUTIVE DIRECTOR
6751 COLUMBIA GATEWAY DR.
3RD FLOOR
COLUMBIA, MD 21046
(410) 313-6320

DEVELOPER
STAVROU ASSOCIATES, INC.
2661 RIVA ROAD
BUILDING 300
ANNAPOLIS, MD 21401
C/O STEPHEN J. MOORE
(410) 571-6610

SITE DEVELOPMENT PLAN
HILLTOP REDEVELOPMENT-PHASE 1
RESIDENTIAL TOWNHOUSES, APARTMENTS
AND RECREATION CENTER
THE RECREATION CENTER IS A GREEN BUILDING
L 477F-718, L 458F-448, L 448F-46, F-12-008

SITE DETAILS

TAX MAP: 25 PARCELS: A, C, D, AND E
BLOCK: 07 ZONINGS: R-VH, R-A-15, POR
2ND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
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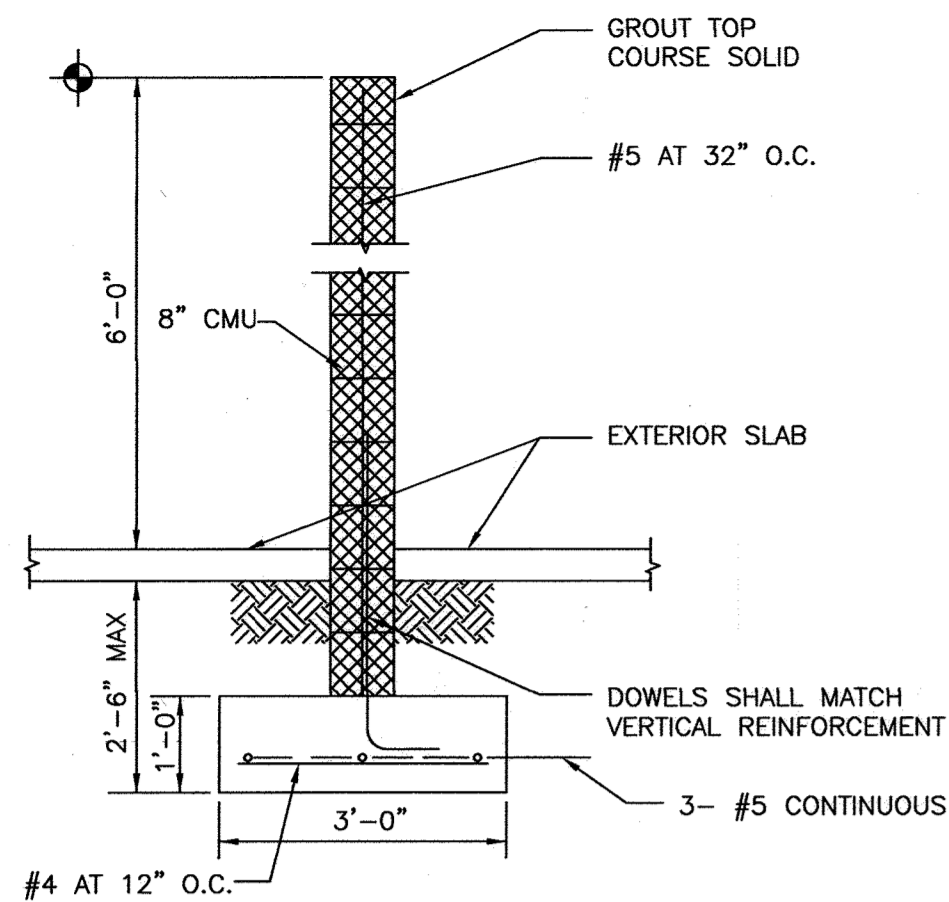
DESIGN BY: JTD
DRAWN BY: KC
CHECKED BY: JTD
DATE: OCTOBER 2011
SCALE: 1" = 30'
W.O. NO.: 10-24

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 17438 EXPIRATION DATE: 12-18-2012

10 SHEET OF 50

K:\Projects\10-24\ENGR\SDP Phase-1\SDP-SITE DETAILS.dwg, 10/10/2011 4:10:17 PM

NOTE:
ALL SEDIMENT CONTROLS ARE TO BE REPAIRED IMMEDIATELY
IF FUNCTION IS INTERRUPTED BY CONSTRUCTION ACTIVITY.



CMU WALL AT BASKETBALL COURT DETAIL
(NOT TO SCALE)

LEGEND	
	EXISTING CONTOUR
	PROPOSED CONTOUR
	PROPOSED SPOT ELEVATION
	EXISTING SPOT ELEVATION
	EXISTING CURB AND GUTTER
	PROPOSED CURB AND GUTTER
	EXISTING UTILITY POLE
	EXISTING LIGHT POLE
	EXISTING MAILBOX
	EXISTING SIGN
	EXISTING SANITARY MANHOLE
	EXISTING SANITARY LINE
	EXISTING WATER LINE
	EXISTING STORM DRAIN LINE
	EXISTING CLEANOUT
	EXISTING FIRE HYDRANT
	EXISTING FENCE
	PROPERTY LINE
	RIGHT-OF-WAY LINE
	SOILS BOUNDARY
	LIMIT OF DISTURBANCE
	PROPOSED SIDEWALK
	EXISTING TREELINE
	PROPOSED TREELINE
	PROPERTY LIGHT
	PROPERTY SIGN
	PROPOSED STORM DRAIN
	PROPOSED STORM DRAIN INLET
	MODERATE SLOPES (15% TO 25%)
	STEEP SLOPE (>25%)
	EXISTING BGC LINE
	EXISTING COMCAST LINE
	PROPOSED FOREST CONSERVATION EASEMENT (RETENTION) PER F-15-057
	PERVIOUS PAVING
	MICRO BIO RETENTION
	SUPER SILT FENCE
	STABILIZED CONSTRUCTION ENTRANCE
	CLEAN WATER DIKE
	PAINTED METAL FENCE
	20' PUBLIC WATER & UTILITY EASEMENT
	VARIABLE WIDTH PUBLIC SEWER, WATER & UTILITY EASEMENT
	20' PUBLIC SEWER & UTILITY EASEMENT
	DOWN SPOUT
	INTERNAL DOWN SPOUT
	GREEN ROOF
	INLET PROTECTION FENCE
	TRANSFORMER

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

John R. Burt
HOWARD S.C.D.
DATE: 6/30/13

BY THE ENGINEER:

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

Th P C
SIGNATURE OF ENGINEER
DATE: 7/10/13

BY THE DEVELOPER:

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

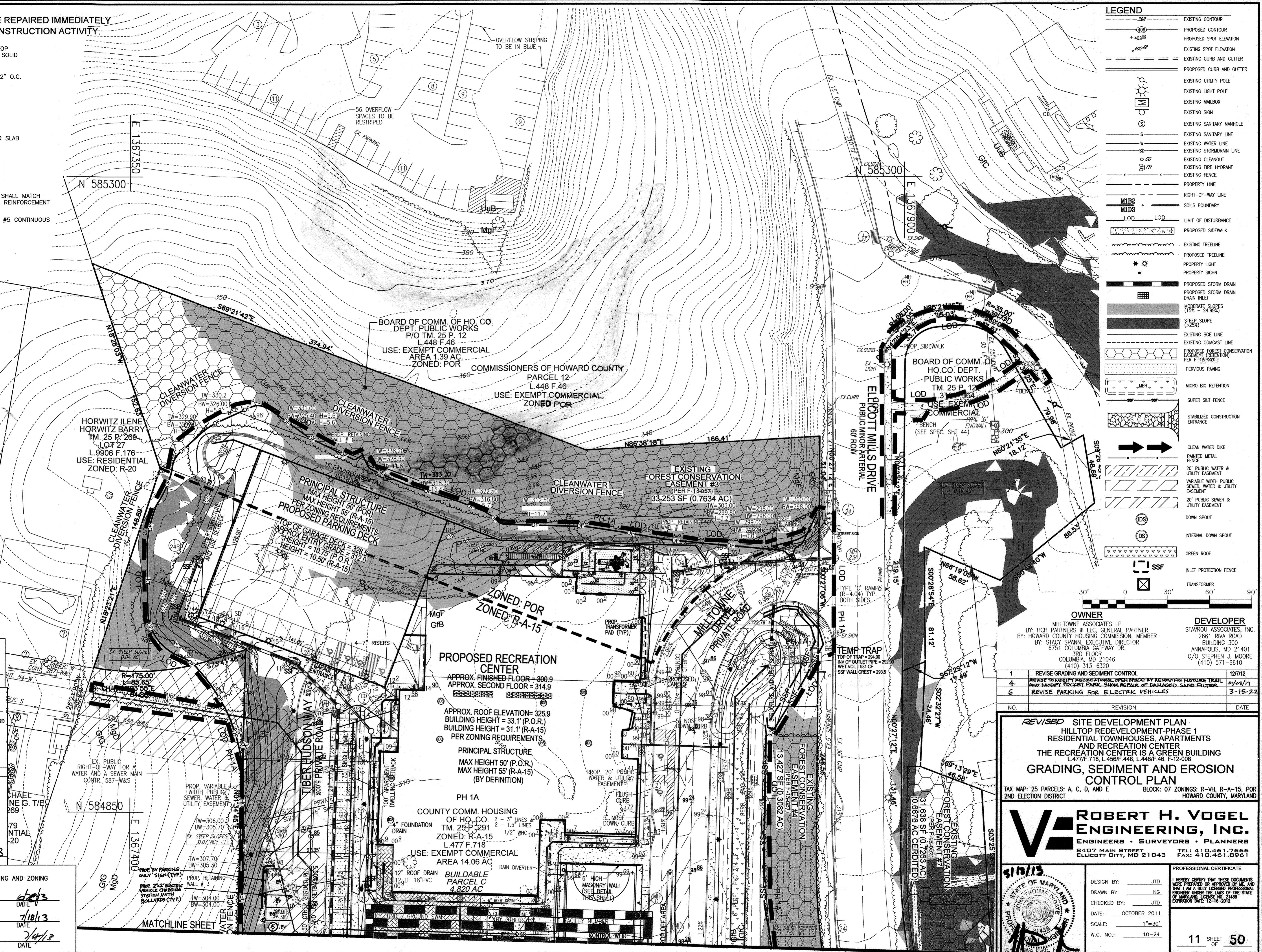
Th P C
SIGNATURE OF DEVELOPER
DATE: 5/31/13

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Michael Nege Tye
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 6/20/13

Michael Nege Tye
CHIEF, DIVISION OF LAND DEVELOPMENT
DATE: 7/10/13

Michael Nege Tye
DIRECTOR
DATE: 7/4/13



OWNER		DEVELOPER	
MILLTOWNE ASSOCIATES LP BY: HCH PARTNERS III LLC, GENERAL PARTNER BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER BY: STACY SPANN, EXECUTIVE DIRECTOR 6751 COLUMBIA GATEWAY DR. COLUMBIA, MD 21046 (410) 313-6320		STAVROU ASSOCIATES, INC. 2661 RIVA ROAD BUILDING 300 ANNAPOLIS, MD 21401 C/O STEPHEN J. MOORE (410) 571-6610	

NO.	REVISION	DATE
1	REVISE GRADING AND SEDIMENT CONTROL	12/11/12
4	REVISE TO CLARIFY AND ADDITIONAL OPEN SPACES BY RENOVATING EXISTING TRAIL AND LANDSCAPE FORECAST PLANTING, SHARVIL REPAIR, USE DALLAS-CO SAND FILTER	01/05/13
6	REVISE PARKING FOR ELECTRIC VEHICLES	3-15-22

REVISED SITE DEVELOPMENT PLAN
HILLTOP REDEVELOPMENT PHASE 1
RESIDENTIAL TOWNHOUSES, APARTMENTS
AND RECREATION CENTER
THE RECREATION CENTER IS A GREEN BUILDING
L 477 F 718, L 458 F 448, L 448 F 46, F-12-008
GRADING, SEDIMENT AND EROSION CONTROL PLAN
TAX MAP: 25 PARCELS: A, C, D, AND E BLOCK: 07 ZONINGS: R-VH, R-A-15, POR
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ROBERT H. VOGEL ENGINEERING, INC.
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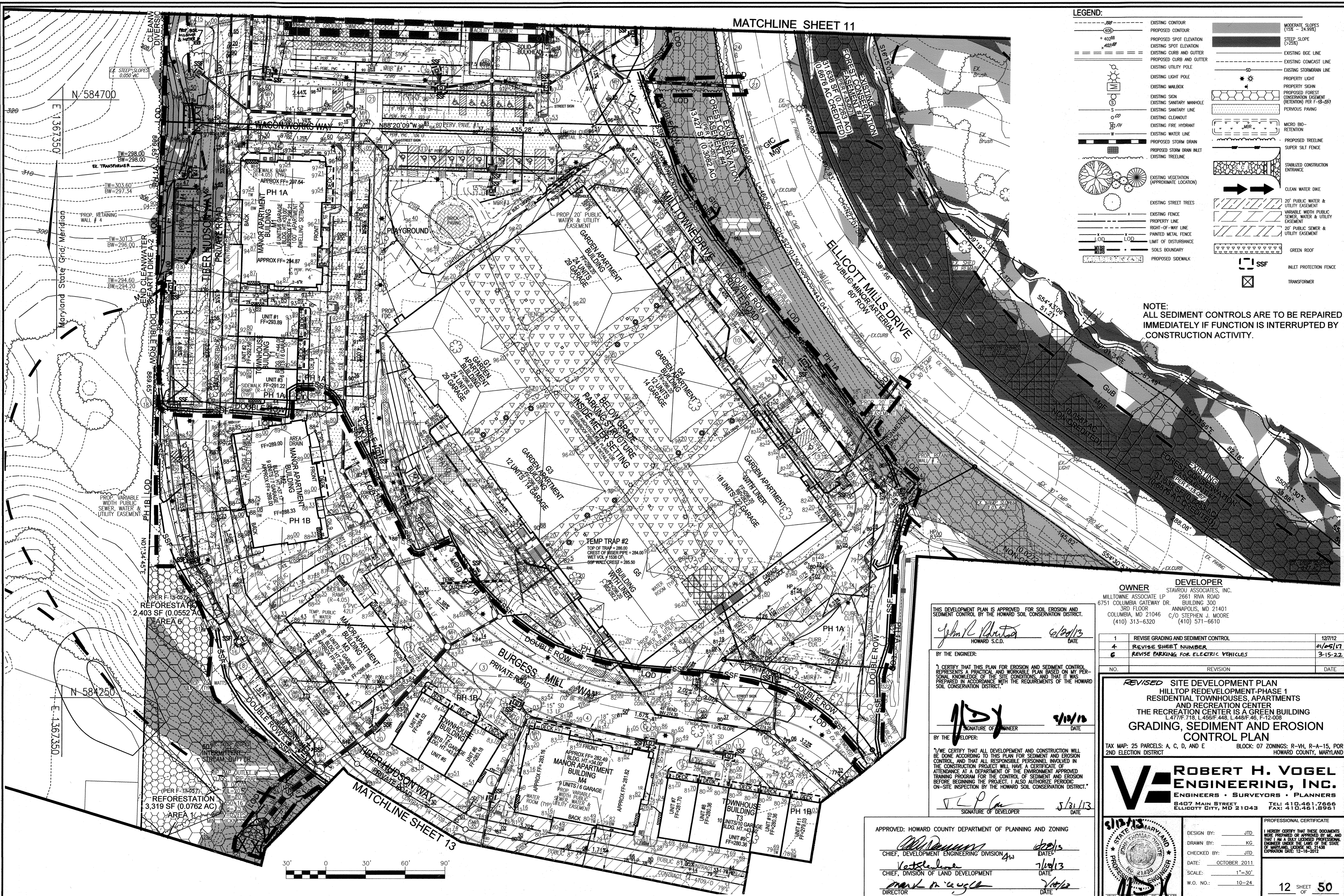
11 SHEET OF 50

SDP-11-051

LEGEND:

	PROPOSED CONTOUR		MODERATE SLOPES (15% - 24.99%)
	PROPOSED SPOT ELEVATION		STEEP SLOPE (25%+)
	EXISTING SPOT ELEVATION		EXISTING BGE LINE
	PROPOSED CURB AND GUTTER		EXISTING COMCAST LINE
	EXISTING CURB AND GUTTER		EXISTING STORM DRAIN LINE
	EXISTING UTILITY POLE		PROPERTY LIGHT
	EXISTING MAILBOX		PROPERTY SIGN
	EXISTING SIGN		PROPOSED FOREST CONSERVATION EASEMENT (PER F-18-05)
	EXISTING SANITARY MANHOLE		PERVIOUS PAVING
	EXISTING SANITARY LINE		MICRO BIO-RETENTION
	EXISTING CLEANOUT		PROPOSED TRESTLE
	EXISTING FIRE HYDRANT		SUPER SILT FENCE
	EXISTING WATER LINE		STABILIZED CONSTRUCTION ENTRANCE
	PROPOSED STORM DRAIN		CLEAN WATER DIKE
	PROPOSED STORM DRAIN INLET		20' PUBLIC WATER & UTILITY EASEMENT
	EXISTING TRESTLE		VARIABLE WIDTH PUBLIC WATER & UTILITY EASEMENT
	EXISTING VEGETATION (APPROXIMATE LOCATION)		20' PUBLIC SEWER & UTILITY EASEMENT
	EXISTING STREET TREES		GREEN ROOF
	EXISTING FENCE		INLET PROTECTION FENCE
	PROPERTY LINE		TRANSFORMER
	RIGHT-OF-WAY LINE		
	PAINTED METAL FENCE		
	LIMIT OF DISTURBANCE		
	SOILS BOUNDARY		
	PROPOSED SIDEWALK		

NOTE:
ALL SEDIMENT CONTROLS ARE TO BE REPAIRED IMMEDIATELY IF FUNCTION IS INTERRUPTED BY CONSTRUCTION ACTIVITY.



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

John C. Porter 6/20/13
HOWARD S.C.D. DATE

BY THE ENGINEER:

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

[Signature] 9/10/13
SIGNATURE OF ENGINEER DATE

BY THE DEVELOPER:

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

[Signature] 5/31/13
SIGNATURE OF DEVELOPER DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 6/20/13
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 7/10/13
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 7/10/13
DIRECTOR DATE

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

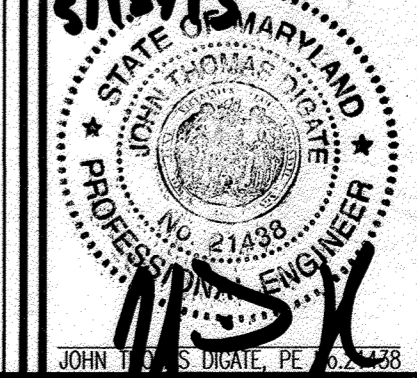
DEVELOPER STAVROU ASSOCIATES, INC.
2661 RIVA ROAD
BUILDING 300
ANNAPOLIS, MD 21401
C/O STEPHEN J. MOORE
(410) 571-6610

NO.	REVISION	DATE
1	REVISE GRADING AND SEDIMENT CONTROL	12/7/12
4	REVISE SHEET NUMBER	01/05/17
6	REVISE PARKING FOR ELECTRIC VEHICLES	3-15-22

REVISED SITE DEVELOPMENT PLAN
HILLTOP REDEVELOPMENT-PHASE 1
RESIDENTIAL TOWNHOUSES, APARTMENTS
AND RECREATION CENTER
THE RECREATION CENTER IS A GREEN BUILDING
L-456(F)-18, L-456(F)-44B, L-448(F)-46, F-12-001
GRADING, SEDIMENT AND EROSION CONTROL PLAN

TAX MAP: 25 PARCELS: A, C, D, AND E BLOCK: 07 ZONINGS: R-VH, R-A-15, POR
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410-461-7666
FAX: 410-461-8961

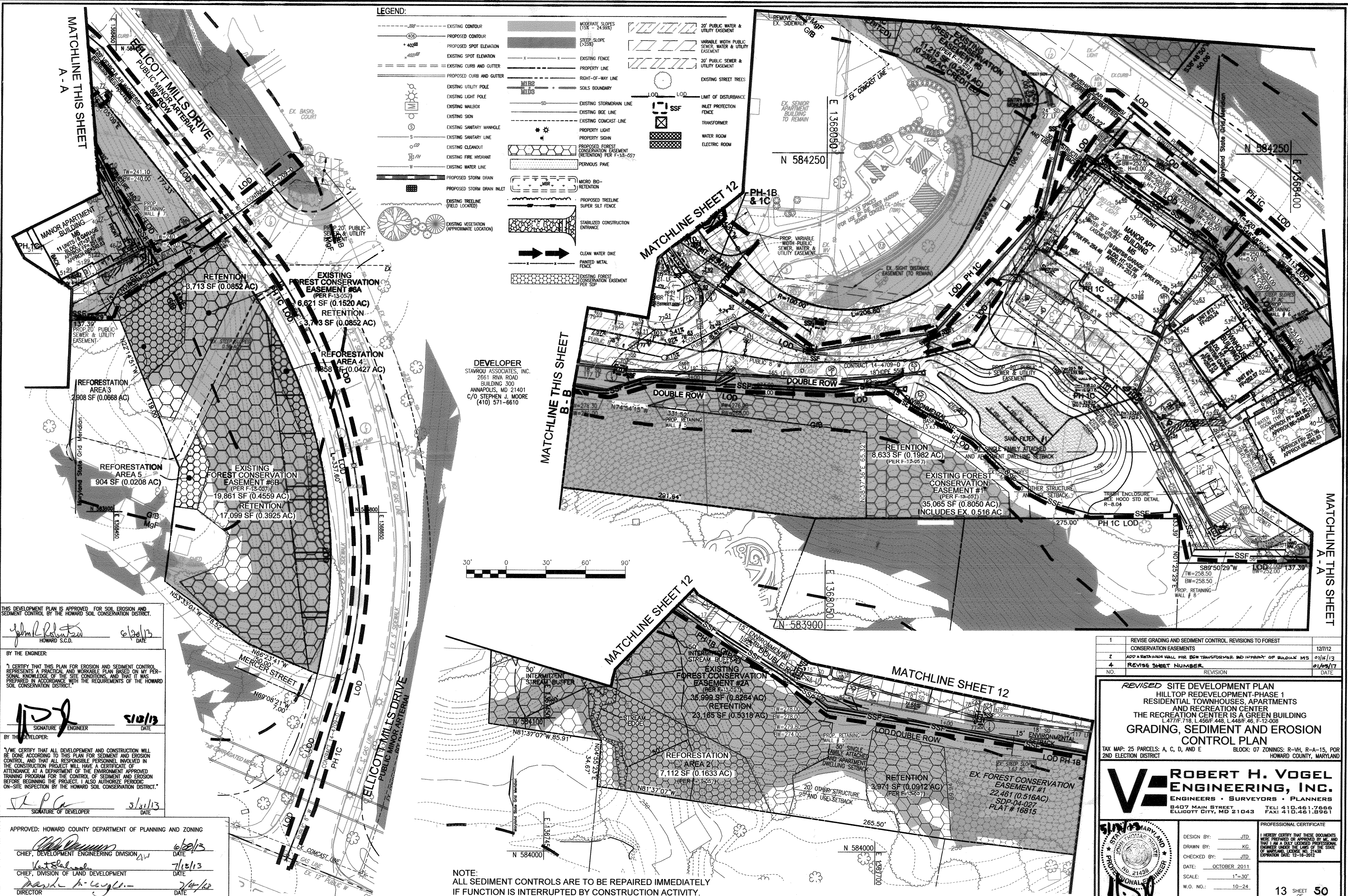


PROFESSIONAL CERTIFICATE

DESIGN BY: JTD
DRAWN BY: KC
CHECKED BY: JTD
DATE: OCTOBER 2011
SCALE: 1"=30'
W.O. NO.: 10-24

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21438 EXPIRATION DATE 12-11-2012.

12 SHEET OF 50



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

John R. Robertson 6/20/13
 HOWARD S.C.D. DATE

BY THE ENGINEER:

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

[Signature] 5/10/13
 SIGNATURE ENGINEER DATE

BY THE DEVELOPER:

I HAVE CERTIFIED THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

[Signature] 5/31/13
 SIGNATURE OF DEVELOPER DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 6/20/13
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

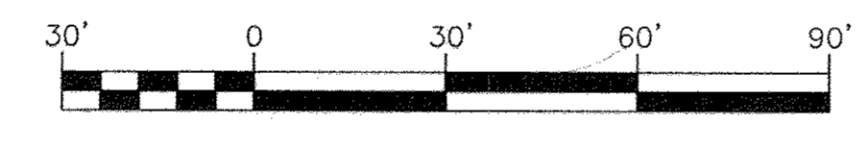
[Signature] 7/10/13
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 7/14/13
 DIRECTOR DATE

LEGEND:

---	EXISTING CONTOUR	▨	MODERATE SLOPES (15% - 24.99%)	▨	20' PUBLIC WATER & UTILITY EASEMENT
- - -	PROPOSED CONTOUR	▨	STEEP SLOPE (>25%)	▨	VARIABLE WIDTH PUBLIC SEWER, WATER & UTILITY EASEMENT
•	PROPOSED SPOT ELEVATION	---	EXISTING FENCE	---	20' PUBLIC SEWER & UTILITY EASEMENT
•	EXISTING SPOT ELEVATION	---	PROPERTY LINE	---	EXISTING STREET TREES
---	EXISTING CURB AND GUTTER	---	RIGHT-OF-WAY LINE	---	LIMIT OF DISTURBANCE
---	PROPOSED CURB AND GUTTER	---	SOILS BOUNDARY	---	INLET PROTECTION FENCE
---	EXISTING UTILITY POLE	---	EXISTING STORMDRAIN LINE	---	TRANSFORMER
---	EXISTING LIGHT POLE	---	EXISTING ROE LINE	---	WATER ROOM
---	EXISTING MAILBOX	---	EXISTING COMCAST LINE	---	ELECTRIC ROOM
---	EXISTING SIGN	---	PROPERTY LIGHT	---	
---	EXISTING SANITARY MANHOLE	---	PROPERTY SIGN	---	
---	EXISTING SANITARY LINE	---	PROPOSED FOREST CONSERVATION EASEMENT (RETENTION) PER F-13-057	---	
---	EXISTING CLEANOUT	---	PERVIOUS PAVE	---	
---	EXISTING FIRE HYDRANT	---	MICRO BIO-RETENTION	---	
---	EXISTING WATER LINE	---	PROPOSED TREE LINE SUPER SILT FENCE	---	
---	PROPOSED STORM DRAIN	---	STABILIZED CONSTRUCTION ENTRANCE	---	
---	PROPOSED STORM DRAIN INLET	---	CLEAN WATER DIKE	---	
---	EXISTING TREE LINE (FIELD LOCATED)	---	PAINTED METAL FENCE	---	
---	EXISTING VEGETATION (APPROXIMATE LOCATION)	---	EXISTING FOREST CONSERVATION EASEMENT PER SDP	---	

DEVELOPER
 STAVROU ASSOCIATES, INC.
 2661 RIVA ROAD
 BUILDING 300
 ANNAPOLIS, MD 21401
 C/O STEPHEN J. MOORE
 (410) 571-6610



NOTE:
 ALL SEDIMENT CONTROLS ARE TO BE REPAIRED IMMEDIATELY IF FUNCTION IS INTERRUPTED BY CONSTRUCTION ACTIVITY.

1	REVISE GRADING AND SEDIMENT CONTROL, REVISIONS TO FOREST CONSERVATION EASEMENTS	12/7/12
2	ADD A RETAINING WALL FOR BGM TRANSFORMER AND IMPROVE OF BUILDING M55	07/16/13
4	REVISE SHEET NUMBER	01/05/17
NO.	REVISION	DATE

REVISED SITE DEVELOPMENT PLAN
 HILLTOP REDEVELOPMENT-PHASE 1
 RESIDENTIAL TOWNHOUSES, APARTMENTS
 AND RECREATION CENTER
 THE RECREATION CENTER IS A GREEN BUILDING
 L 477/F 716, L 455/F 448, L 448/F 46, F-12-008
GRADING, SEDIMENT AND EROSION CONTROL PLAN

TAX MAP: 25 PARCELS: A, C, D, AND E BLOCK: 07 ZONINGS: R-VH, R-A-15, POR
 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

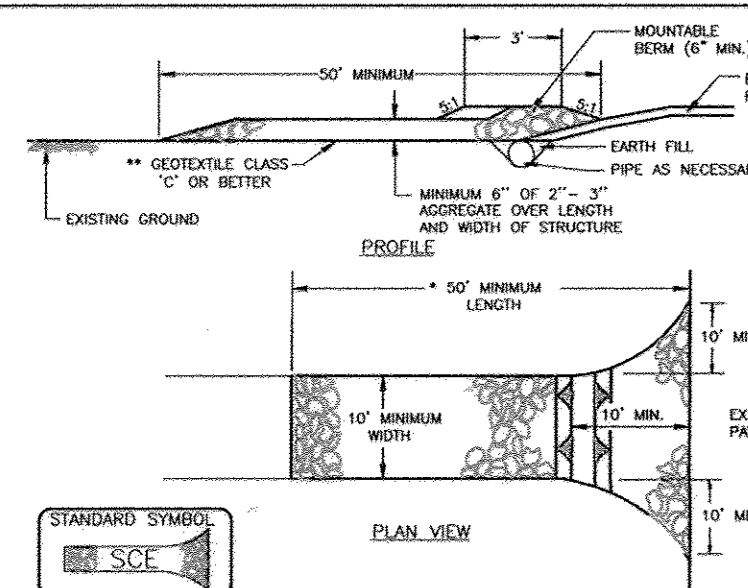
PROFESSIONAL CERTIFICATE

DESIGN BY: JTD
 DRAWN BY: KC
 CHECKED BY: JTD
 DATE: OCTOBER 2011
 SCALE: 1"=30'
 W.O. NO.: 10-24

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21438, EXPIRATION DATE: 12-18-2012.

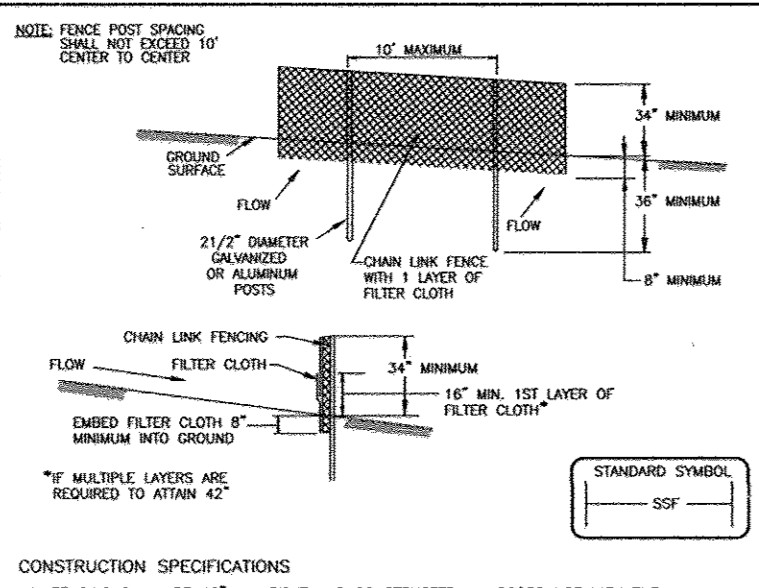
13 SHEET OF 50

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



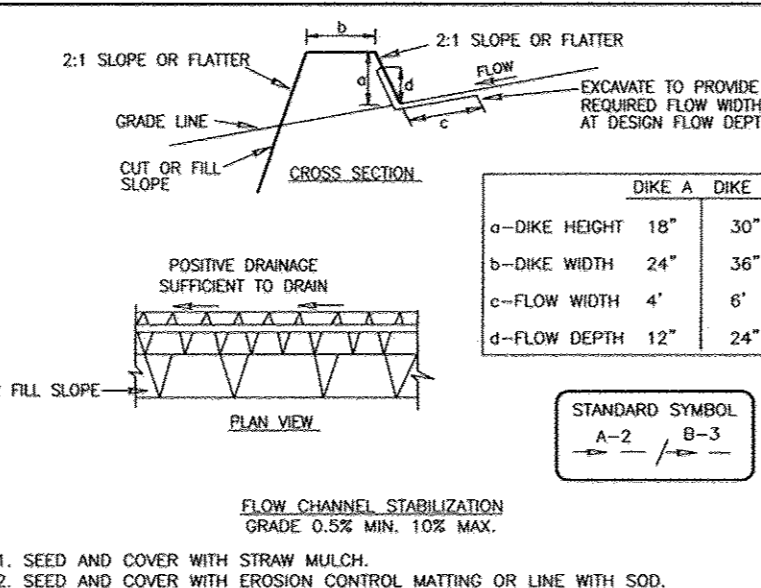
CONSTRUCTION SPECIFICATION
1. LENGTH - MINIMUM OF 50' (30' FOR SINGLE RESIDENT LOT)
2. WIDTH - 10' MINIMUM, SHOULD BE FLARED AT THE EXISTING ROAD TO PROVIDE A TURNING INSIDE

DETAIL 33 - SUPER SILT FENCE



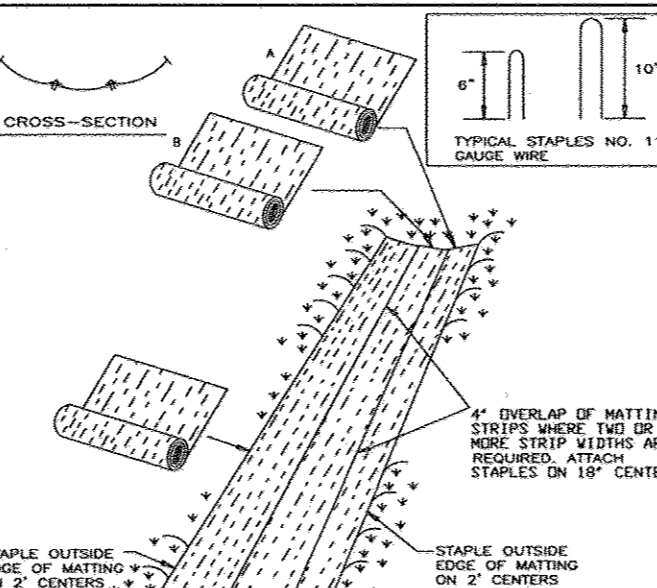
CONSTRUCTION SPECIFICATIONS
1. FENCING SHALL BE 42" IN HEIGHT AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST MARYLAND STATE HIGHWAY DETAILS FOR CHAIN LINK FENCING. THE SPECIFICATION FOR A C FENCE SHALL BE USED, SUBSTITUTING 42" FABRIC AND 6" LENGTH POSTS.

DETAIL 1 - EARTH DIKE



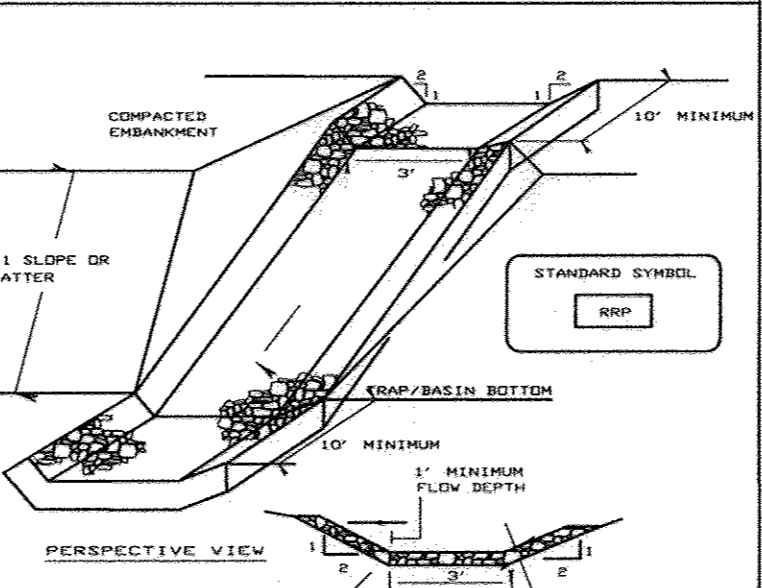
CONSTRUCTION SPECIFICATIONS
1. ALL TEMPORARY EARTH DIKES SHALL HAVE UNINTERRUPTED POSITIVE GRADE TO AN OUTLET. SPOT ELEVATIONS MAY BE NECESSARY FOR SLOPES LESS THAN 1:1.

DETAIL 30 - EROSION CONTROL MATTING



CONSTRUCTION SPECIFICATIONS
1. KEY-IN THE MATTING BY PUSHING THE TOP EDGE OF THE MATTING IN A HOLLOW TRENCH OF 3" DEPTH. BRUSH THE TRENCH AND TRAMP IT DOWN TO CONFORM TO THE CHANNEL SECTION. SECURE WITH A ROW OF STAPLES ABOUT 4" FROM THE TOP SURFACE OF THE TRENCH.

DETAIL 5 - RIP-RAP INFLOW PROTECTION



CONSTRUCTION SPECIFICATIONS
1. Rip-rap lined inflow channels shall be 12" in depth. Have a trapezoidal cross section with 3:1 or flatter side slopes and a 12" bottom width.

SEQUENCE OF CONSTRUCTION

- PHASE I
1. OBTAIN HOWARD COUNTY GRADING PERMIT (1 WEEK)
2. NOTIFY HOWARD COUNTY AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION. (2 DAYS)
3. CONDUCT A PRE-CONSTRUCTION MEETING WITH THE SEDIMENT CONTROL INSPECTOR PRIOR TO ANY LAND DISTURBANCE. (1 WEEK)
4. INSTALL STABILIZED CONSTRUCTION ENTRANCE AND INSTALL PERIMETER CONTROLS. INSTALL 1.5 TO EX MEDIA AND CLEANWATER DIVERSION DIKE FOR BYPASS OF CLEANWATER FROM SITE. (3 WEEKS)

21.0 STANDARDS AND SPECIFICATIONS FOR TOPSOIL

DEFINITION
PLACEMENT OF TOPSOIL OVER A PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION.
PURPOSE
TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH.

PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LEIVED VEGETATIVE COVER IS NEEDED.
SEEDING PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

30.0 DUST CONTROL

DEFINITION
CONTROLLING DUST BLOWING AND MOVEMENT ON CONSTRUCTION SITES AND ROADS.
PURPOSE
TO PREVENT BLOWING AND MOVEMENT OF DUST FROM EXPOSED SOIL SURFACES, REDUCE ON AND OFF-SITE DAMAGE HEALTH HAZARDS, AND IMPROVE TRAFFIC SAFETY.

PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS LIKELY TO BE RE-DISTURBED ON A SHORT-TERM VEGETATIVE COVER IS NEEDED.
SEEDING PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS LIKELY TO BE RE-DISTURBED ON A SHORT-TERM VEGETATIVE COVER IS NEEDED.
SEEDING PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

PHASE I A WILL CONTINUE

- VACUATE EXISTING BUILDINGS 7, 9 & 10, TURN OFF ALL UTILITIES SERVING THESE UNITS AND PREPARE FOR DEMOLITION. (2 WEEKS)
INSTALL PERIMETER CONTROLS FOR PHASE I B. SEE SHEET 4 OF 46 FOR LIMITS OF DISTURBANCE AND PLACEMENT OF PERIMETER CONTROLS. (2 DAYS)

SEDIMENT CONTROL NOTES

- A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSE AND PERMITS SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (410-313-1855).

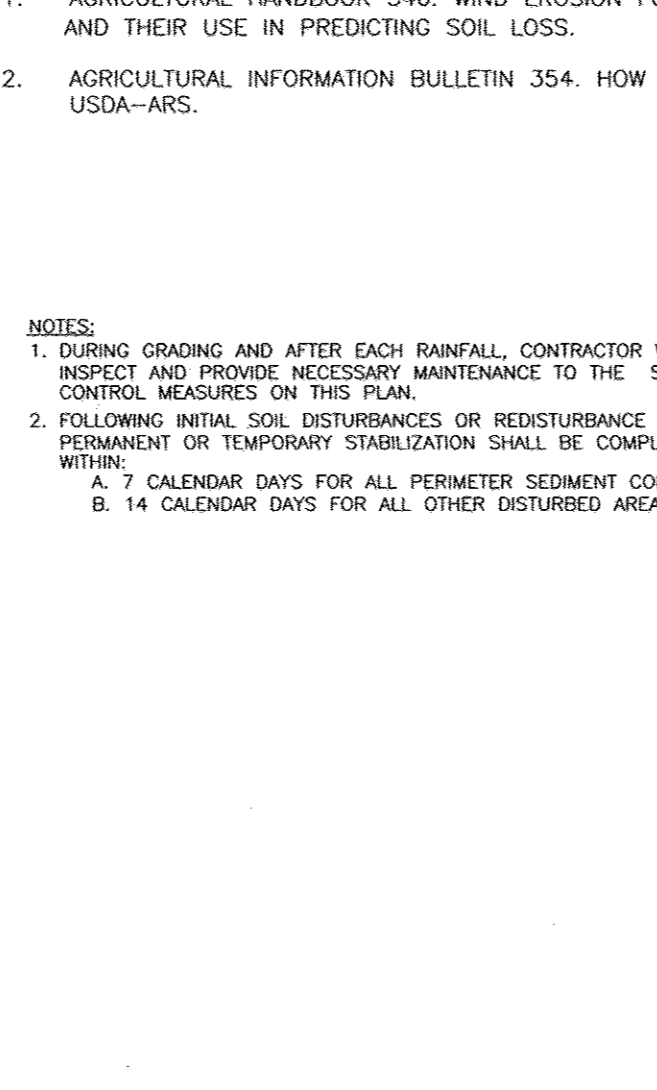
SEDIMENT CONTROL NOTES

- A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSE AND PERMITS SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (410-313-1855).

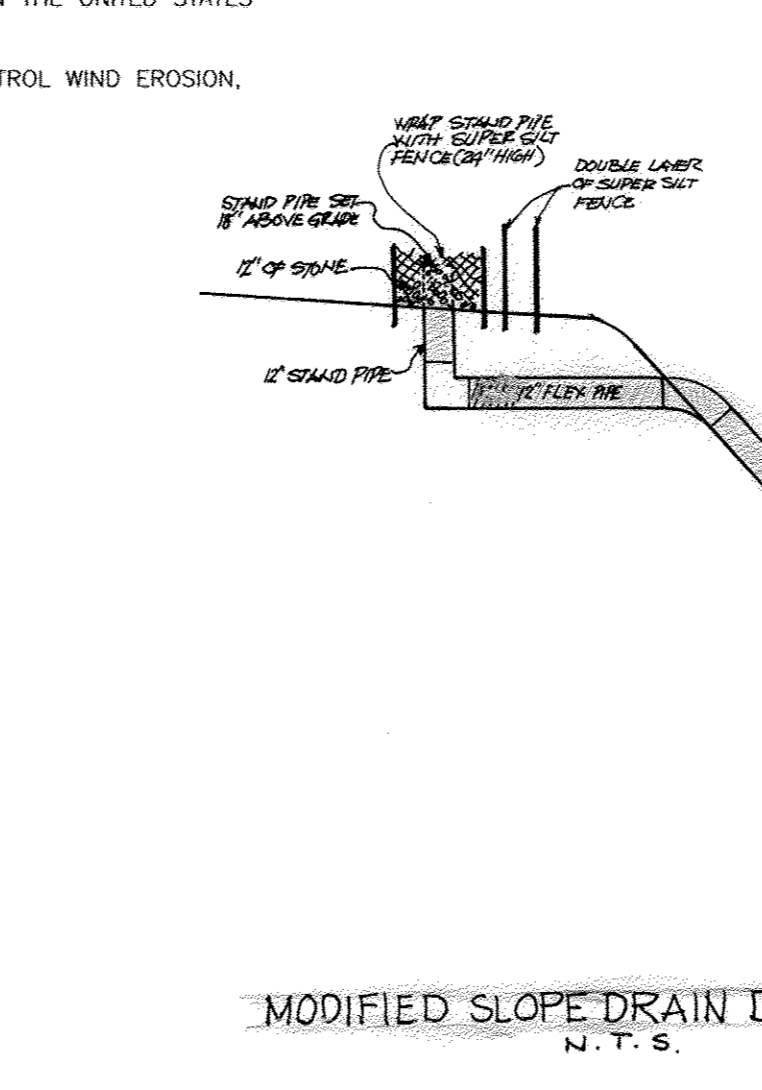
SEDIMENT CONTROL NOTES

- A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSE AND PERMITS SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (410-313-1855).

MODIFIED SLOPE DRAIN DETAIL



MODIFIED SLOPE DRAIN DETAIL



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION

BY THE DEVELOPER:
I CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL AND ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEING ON THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.

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

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

OWNER
MILLSTONE ASSOCIATES LP
BY: HCH PARTNERS III LLC, GENERAL PARTNER
BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
BY: STACY SPAN, EXECUTIVE DIRECTOR
6751 COLUMBIA GATEWAY DR.
3RD FLOOR
COLUMBIA, MD 21046
(410) 313-6320

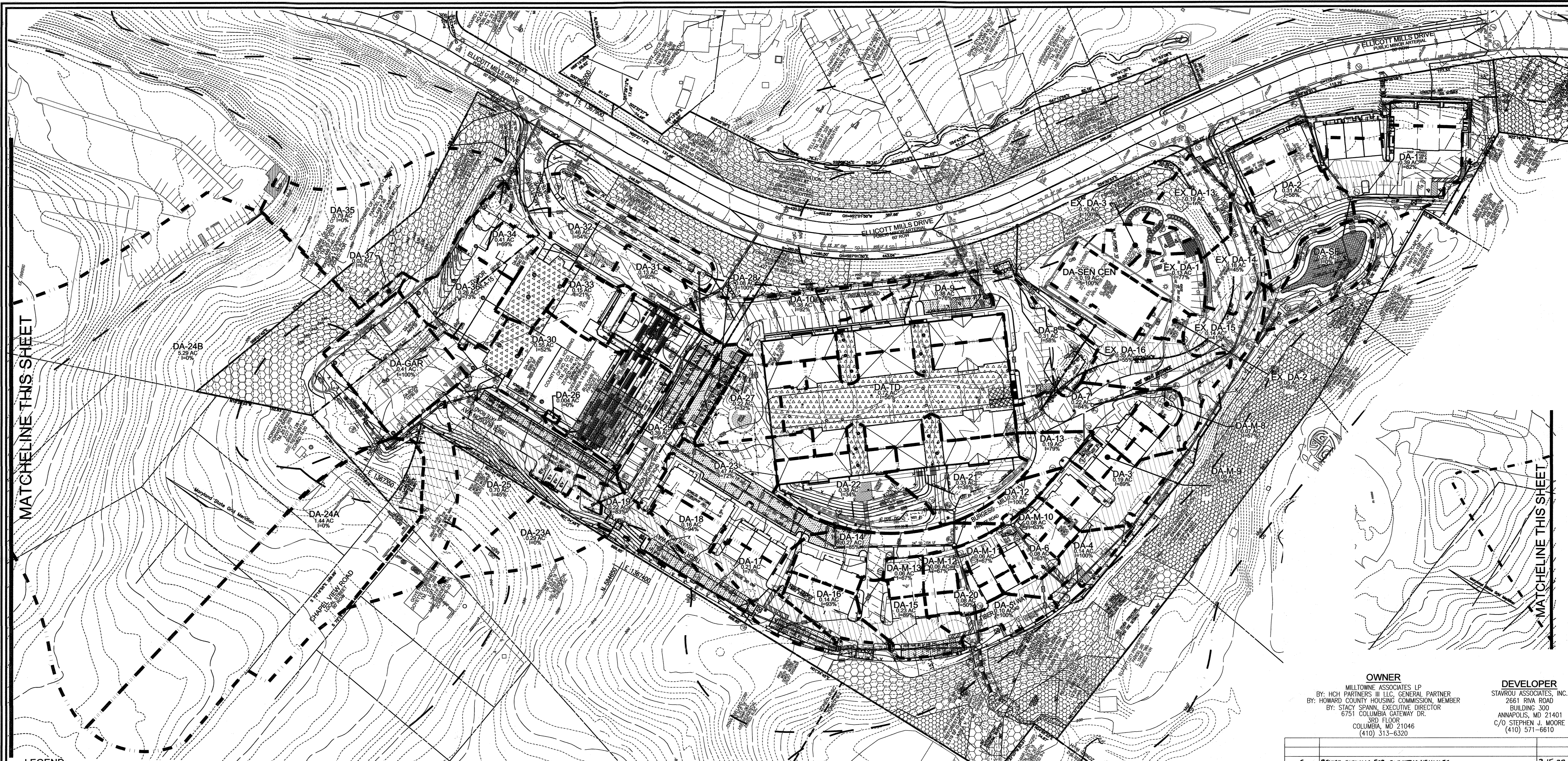
DEVELOPER
STAVROU ASSOCIATES, INC.
2661 RIVA ROAD
BUILDING 300
EXECUTIVE DIRECTOR
ANNAPOLIS, MD 21401
C/O STEPHEN J. MOORE
(410) 571-6610

Table with 4 columns: NO., REVISION NUMBER, REVISION, DATE

REVISED SITE DEVELOPMENT PLAN
HILLTOP REDEVELOPMENT-PHASE 1
RESIDENTIAL TOWNHOUSES, APARTMENTS AND RECREATION CENTER
THE RECREATION CENTER IS A GREEN BUILDING
L.477E-718, L.456IF-448, L.448IF-46, F.12-008
SEDIMENT AND EROSION CONTROL NOTES AND DETAILS
TAX MAP: 25 PARCELS: A, C, D, AND E BLOCK: 07 ZONINGS: R-VH, R-A-15, POR 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL
ENGINEERS SURVEYORS PLANNERS
8407 MAIN STREET
ELLCOTT CITY, MD 21043
TEL: 410-461-7666
FAX: 410-461-8961

DESIGN BY: JTD
DRAWN BY: KC
CHECKED BY: JTD
DATE: OCTOBER 2011
SCALE: AS SHOWN
W.O. NO.: AS-20-11
14 SHEET OF 50



LEGEND:

- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING UTILITY POLE
- PROPOSED UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- SOILS BOUNDARY
- PROPOSED SIDEWALK
- EX. FOREST CONSERVATION EASEMENT (RESTORATION)
- FOREST CONSERVATION EASEMENT (RETENTION) PER F-11-008
- PERMEABLE PAVEMENT
- EXISTING WATER LINE
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN INLETS
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING BGE LINE
- EXISTING COMCAST LINE
- PAINTED METAL FENCE
- PROPERTY LIGHT
- PROPERTY SIGN
- MICRO BIO RETENTION
- 20' PUBLIC WATER & UTILITY EASEMENT
- EXISTING WATER LINE
- PROPOSED STORM DRAIN
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING BGE LINE
- EXISTING COMCAST LINE
- PAINTED METAL FENCE
- PROPERTY LIGHT
- PROPERTY SIGN
- MICRO BIO RETENTION
- 20' PUBLIC WATER & UTILITY EASEMENT
- VARIABLE WIDTH PUBLIC SEWER, WATER & UTILITY EASEMENT
- 20' PUBLIC SEWER & UTILITY EASEMENT
- TRANSFORMER
- WATER ROOM
- ELECTRIC ROOM

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	GROUP
GB	GLADSTONE-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B
GFC	GLADSTONE-URBAN LAND COMPLEX, 8 TO 15 PERCENT SLOPES	B
MgD	MANOR-BANNERTOWN SANDY LOAMS, 15 TO 25 PERCENT SLOPES, ROCKY	B
MgF	MANOR-BANNERTOWN SANDY LOAMS, 25 TO 65 PERCENT SLOPES, ROCKY	B

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 10/26/11
 CHIEF, DEVELOPMENT ENGINEERING DIVISION 410
 DATE

[Signature] 10/27/11
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE

[Signature] 10/27/11
 DIRECTOR
 DATE

PLAN VIEW
SCALE: 1"=80'

Project: Hilltop Retaining Wall Investigation
Job #: 11108 Date: 02/22/11

Map Unit	Map Unit Name	Component Name	Hydro	Stability	Rating	Embankment Factor	Embankment Factor	Wind
Code	Code	Code	Code	Code	Code	Code	Code	Code
GM	Classical Urban Land complex, 0 to 8 percent slopes, only	Urban Land (20%)	Not Hydro	Stable	Stability (20%)	0.32	0.28	5
GM	Classical Urban Land complex, 8 to 15 percent slopes, only	Urban Land (20%)	Not Hydro	Stable	Stability (20%)	0.32	0.28	5
MgD	Manor-Bannertown sandy loams, 15 to 25 percent slopes, only	Manor (20%)	Not Hydro	Stable	Stability (20%)	0.37	0.32	5
MgF	Manor-Bannertown sandy loams, 25 to 65 percent slopes, only	Manor (20%)	Not Hydro	Stable	Stability (20%)	0.37	0.32	5

Rating Descriptions:

The rating indicates the proportion of map units that meet the criteria for hydrology. Map units are composed of one or more map unit components or soil types, each of which is rated as "not hydro" or "hydro". Map units that are "not hydro" are composed of "not hydro" components. Map units that are "hydro" are composed of "hydro" components. The rating is based on the "not hydro" components. "Not hydro" means that all components listed for a given map unit are rated as "not hydro". "Hydro" means that at least one component is rated as "hydro". "Hydro" means that at least one component is rated as "hydro". "Hydro" means that at least one component is rated as "hydro". "Hydro" means that at least one component is rated as "hydro".

RECOMMENDATIONS FOR ERODIBLE SOILS BY GEOTECHNICAL ENGINEER

We recommend that soil loss in areas with site soils described as erodible in the NRCS USDA soil survey be mitigated by establishing vegetation, installing stabilizing geotextiles and removal and replacement of erodible soils in certain areas when determined to be necessary in the field by the site and/or geotechnical engineer.

STORM DRAIN DRAINAGE AREAS

DA	AREA (AC)	% IMP.	C FACTOR	DA	AREA (AC)	% IMP.	C FACTOR	DA	AREA (AC)	% IMP.	C FACTOR
1	0.39	82	0.74	21	0.33	38	0.43	37	0.02	0	0.20
2	0.31	58	0.57	22	0.38	34	0.40	GAR	0.41	100	0.86
3	0.19	75	0.69	23	0.47	72	0.67	TD	0.72	56	0.38
4	0.14	100	0.86	23A	0.29	0	0.33	EX-8	0.10	100	0.86
5	0.10	100	0.86	24	0.30	0	0.33	EX-2	0.05	60	0.60
6	0.08	63	0.60	24A	1.44	0	0.33	EX-8	0.10	100	0.86
7	0.22	64	0.61	24B	5.29	0	0.28	EX-13	0.19	16	0.30
8	0.31	58	0.57	25	0.70	45	0.48	EX-14	0.18	35	0.71
9	0.38	76	0.71	26	0.004	0	0.86	EX-15	0.14	41	0.50
10	0.38	80	0.81	27	0.22	32	0.39	EX-16	0.35	55	0.56
12	0.37	100	0.86	28	0.08	100	0.86	M-8	0.07	52	0.58
13	0.19	79	0.71	29	0.39	95	0.83	M-9	0.05	80	0.73
14	0.27	85	0.76	30	0.55	52	0.52	M-10	0.08	63	0.61
15	0.23	89	0.71	31	0.13	92	0.81	M-11	0.06	67	0.64
16	0.14	93	0.81	32	0.46	54	0.56	M-12	0.06	67	0.64
17	0.21	76	0.69	33	0.15	21	0.34	M-13	0.06	67	0.64
18	0.16	94	0.82	34	0.41	59	0.66	SEN-CEN	0.19	100	0.86
19	0.22	83	0.61	35	0.79	0	0.04	SF	0.26	0	0.20
20	0.08	50	0.65	36	0.26	73	0.68				

OWNER
MILLTOWNE ASSOCIATES LP
BY: HCH PARTNERS III L.L.C. GENERAL PARTNER
BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
BY: STACY SPANN, EXECUTIVE DIRECTOR
6751 COLUMBIA GATEWAY DR.
300 FLOOR
COLUMBIA, MD 21046
(410) 313-6320

DEVELOPER
STAVROU ASSOCIATES, INC.
2661 RVA ROAD
BUILDING 300
ANNAPOLIS, MD 21401
C/O STEPHEN J. MOORE
(410) 571-6610

REVISION

NO.	REVISION	DATE
6	REVISE PARKING FOR ELECTRIC VEHICLES	3-15-22
4	REVISE TO MODIFY RECREATIONAL OPEN SPACE BY REMOVING NATURE RETRAIL AND MONKEY PARKER PARK. SHOW REPAIR OF DAMAGED SAND FILTER.	01/09/17

**SITE DEVELOPMENT PLAN
HILLTOP REDEVELOPMENT-PHASE 1
RESIDENTIAL TOWNHOUSES, APARTMENTS
AND RECREATION CENTER
THE RECREATION CENTER IS A GREEN BUILDING
L4717F-718, L4556F-448, L448F-46, F-12-008
STORM DRAIN DRAINAGE AREA MAP
AND SOILS MAP**

TAX MAP: 25 PARCELS: A, C, D, AND E
BLOCK: 07 ZONINGS: R-VH, R-A-15, POR
2ND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

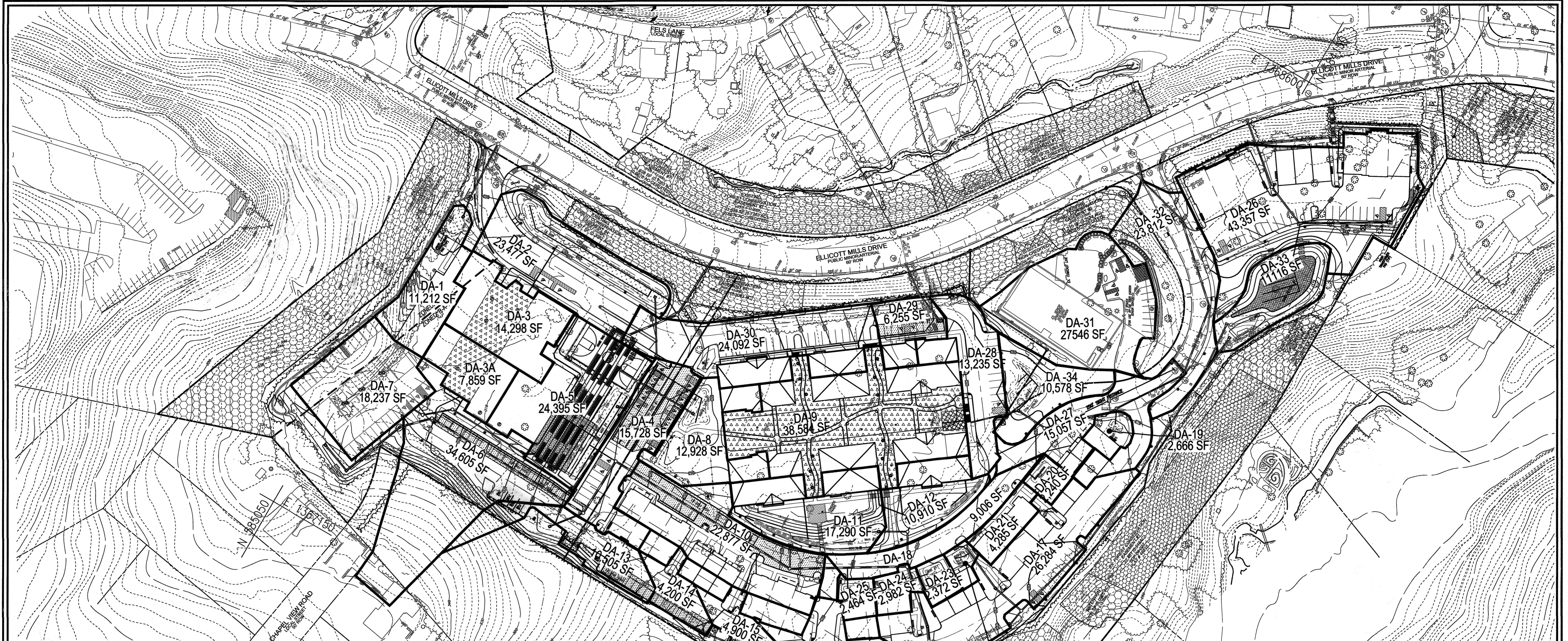
**ROBERT H. VOGEL
ENGINEERING, INC.**
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

PROFESSIONAL CERTIFICATE

DESIGN BY: JTD
DRAWN BY: KC
CHECKED BY: JTD
DATE: OCTOBER 2011
SCALE: AS SHOWN
W.O. NO.: 10-24

15 SHEET OF 50

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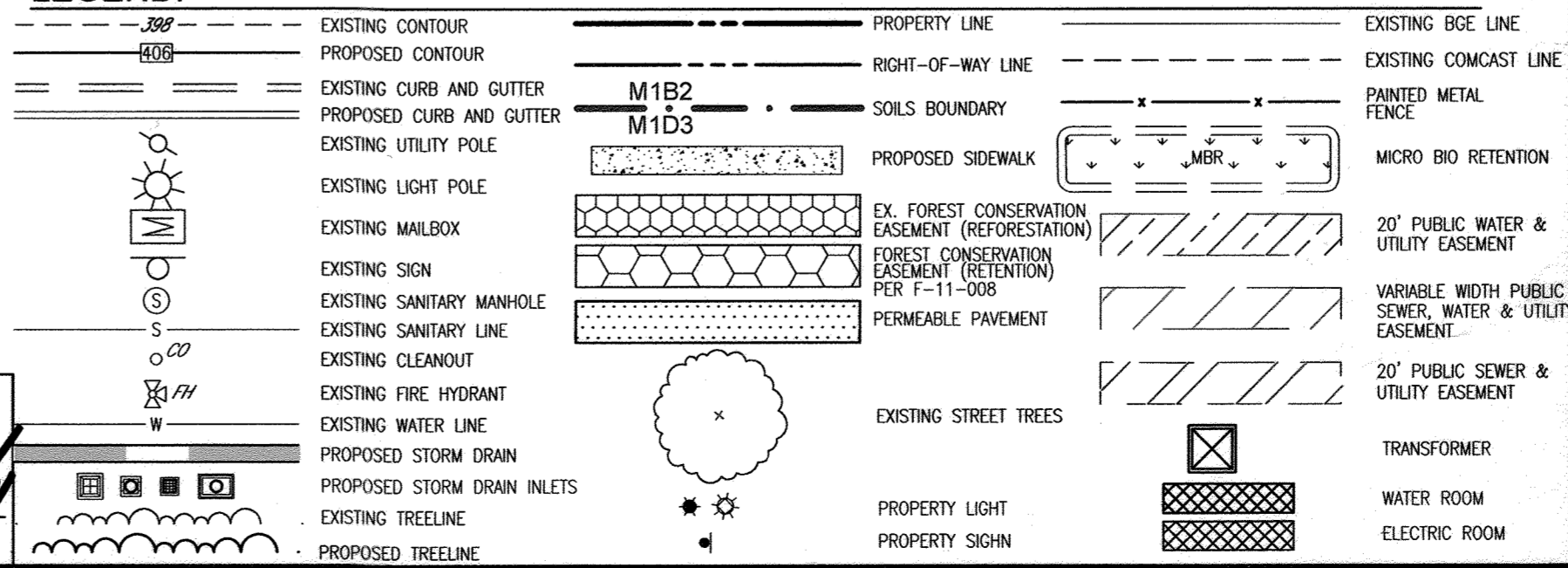


SWM DRAINAGE AREA CHART

FACILITY	DA#	DA SF	% IMP	AREA IMP SF	Pe CREDIT In	ESDv REQD CF	ESDv PROV CF	TYPE OF FACILITY
MBR #1	1	11212	56	6279	2.0	746	994	MICRO BIORETENTION
MBR #2	2 & 3	37775	75	28331	2.0	3364	4486	MICRO BIORETENTION
MBR #3	8	12928	25	3232	2.6	499	665	MICRO BIORETENTION
MBR #4	5	24395	90	21956	1.0	1304	2547	MICRO BIORETENTION
MBR #5	11	17290	36	6224	2.6	961	1282	MICRO BIORETENTION
MBR #6	12	10910	35	3819	2.6	589	786	MICRO BIORETENTION
MBR #7	28 & 34	23813	63	15002	1.0	891	1985	MICRO BIORETENTION
MBR #8	19	2666	40	1066	2.6	165	220	MICRO BIORETENTION
MBR #9	20	2240	68	1523	1.0	90	178	MICRO BIORETENTION
MBR #10	22	1703	69	1175	2.6	181	242	MICRO BIORETENTION
MBR #11	23	2372	60	1423	2.6	220	293	MICRO BIORETENTION
MBR #12	24	2962	50	1491	2.0	177	269	MICRO BIORETENTION
MBR #13	25	2464	60	1478	2.6	220	304	MICRO BIORETENTION
PERV PAVE #1	4	15728	100	15728	2.6	1741	1741	PERVIOUS PAVEMENT
PERV PAVE #2	6	34605	30	10382	2.6	1400	1400	PERVIOUS PAVEMENT
PERV PAVE #3	10	22877	90	20589	2.6	1875	1875	PERVIOUS PAVEMENT
PERV PAVE #4	13	10050	63	6332	2.0	743	743	PERVIOUS PAVEMENT
PERV PAVE #5	15	4900	93	4557	2.6	537	537	PERVIOUS PAVEMENT
PERV PAVE #6	16	9270	100	9270	2.0	540	540	PERVIOUS PAVEMENT
PERV PAVE #7	29	6255	89	5567	2.0	619	619	PERVIOUS PAVEMENT
SAND FILTER #1	17,18,20-222, 31 & 33	84562	50	42276	2.0	7872	9663	SAND FILTER #1
GARDEN PODIUM	9	38584	41	15819	2.0	2199	2725	GREENROOF
REC CENTER	3	14298	68	9723	1.0	772	612	GREENROOF
REC CENTER	3A	7859	53	4165	1.0	329	491	GREENROOF
UNTREATED	26	43357	72					NO TREATMENT REQUIRED
UNTREATED	27	15057	91					NO TREATMENT REQUIRED
UNTREATED	30	24092	90					NO TREATMENT REQUIRED
UNTREATED	32	23812						NO TREATMENT REQUIRED

PLAN VIEW
SCALE: 1"=60'

LEGEND:



OWNER
MILLTOWNE ASSOCIATES LP
BY: HCH PARTNERS III LLC, GENERAL PARTNER
BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
BY: STACY SPANN, EXECUTIVE DIRECTOR
6751 COLUMBIA GATEWAY DR.
3RD FLOOR
COLUMBIA, MD 21046
(410) 313-6320

DEVELOPER
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2661 RIVA ROAD
BUILDING 300
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6	REVISE PARKING FOR ELECTRIC VEHICLES	3-15-22
4	REVISE TO MODIFY RECREATION OPEN SPACE TO REMOVE NATURE TRAIL AND MODIFY POCKET PARK. SIGNAL REPAIR TO DAMAGED SAND FILTER	2/05/17
NO.	REVISION	DATE

SITE DEVELOPMENT PLAN
HILLTOP REDEVELOPMENT-PHASE 1
RESIDENTIAL TOWNHOUSES, APARTMENTS
AND RECREATION CENTER
THE RECREATION CENTER IS A GREEN BUILDING
L-4771F-718, L-4561F-448, L-4481F-46, F-12-008
STORMWATER MANAGEMENT
DRAINAGE AREA MAP

TAX MAP: 25 PARCELS: A, C, D, AND E BLOCK: 07 ZONINGS: R-VH, R-A-15, POR
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21438 EXPIRATION DATE: 12-16-2012

DESIGN BY: JTD
DRAWN BY: KG
CHECKED BY: JTD
DATE: OCTOBER 2011
SCALE: AS SHOWN
W.O. NO.: 10-24

19 SHEET OF 50

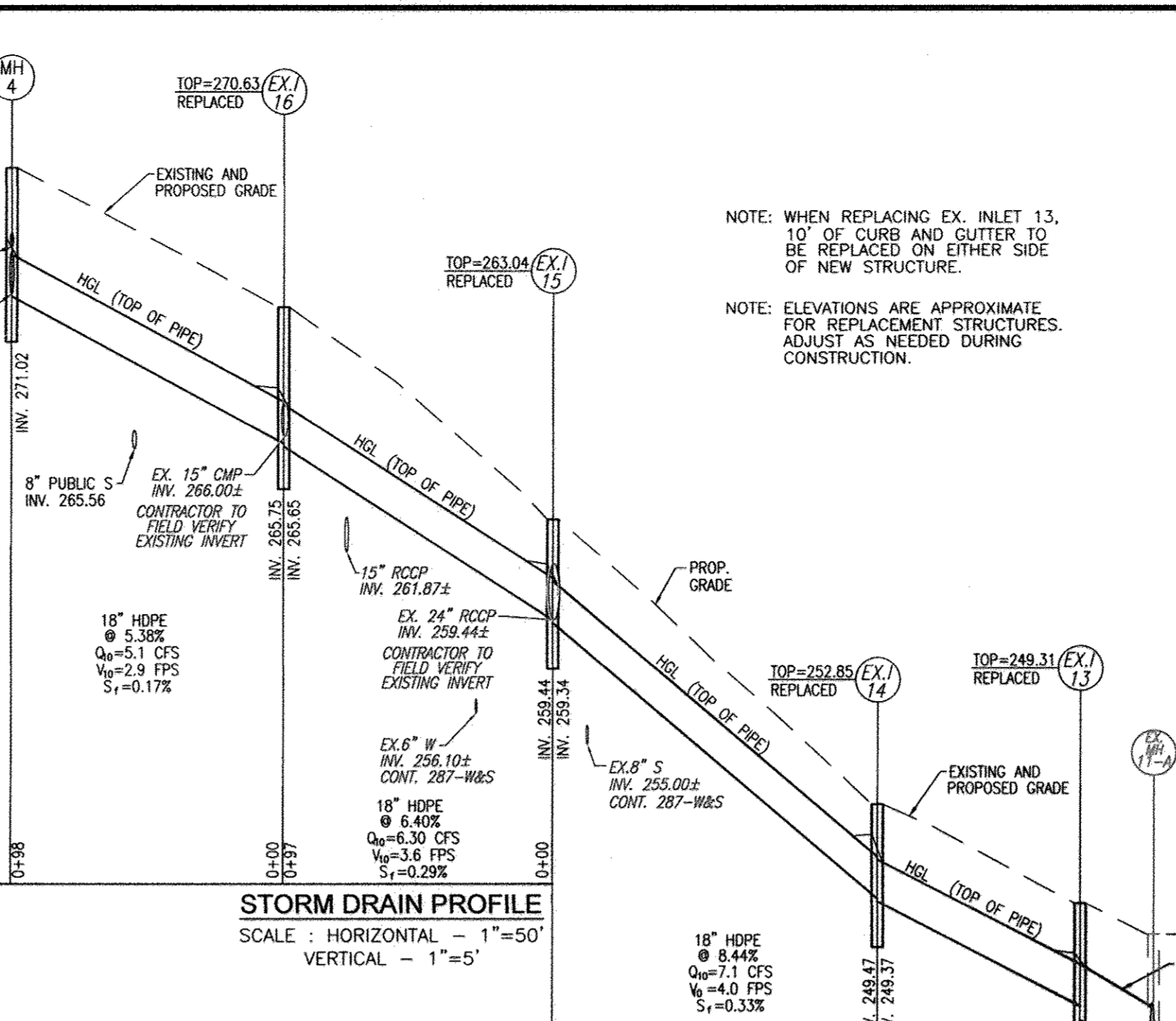
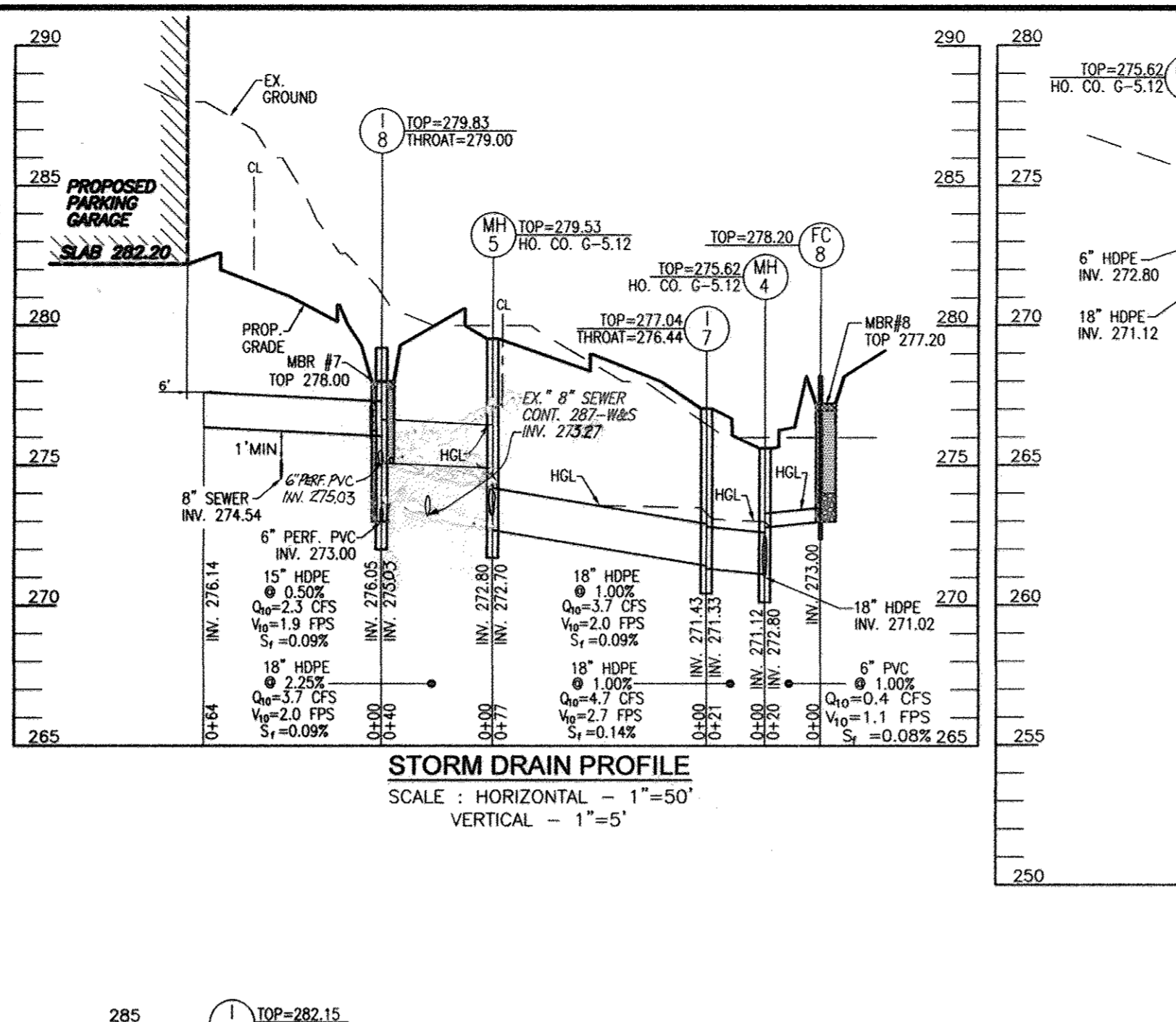
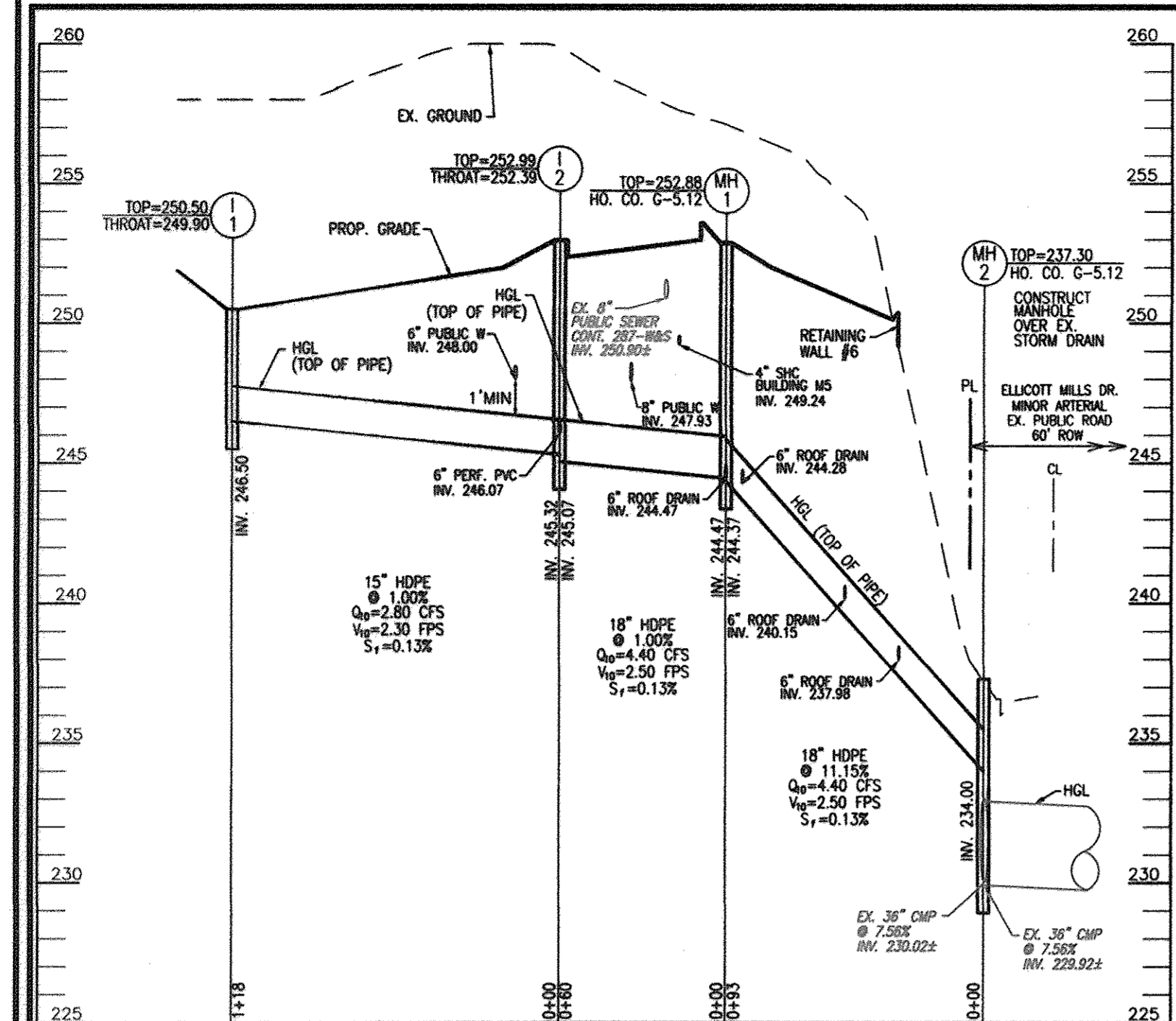
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

BY THE DEVELOPER:
[Signature] DATE: 10/27/11
[Signature] DATE: 10/27/11
[Signature] DATE: 10/27/11

BY THE ENGINEER:
[Signature] DATE: 10/10/11
[Signature] DATE: 10/10/11

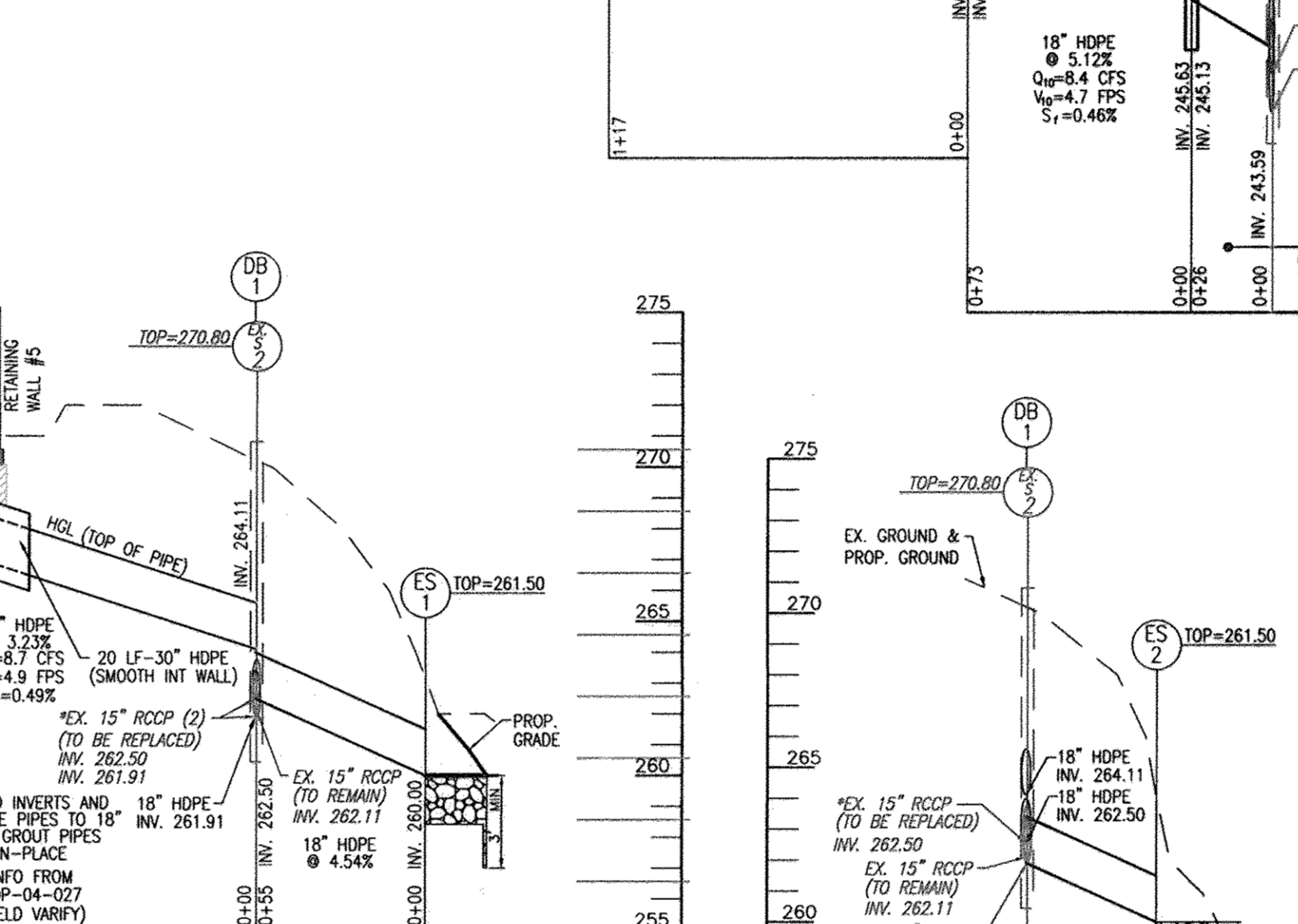
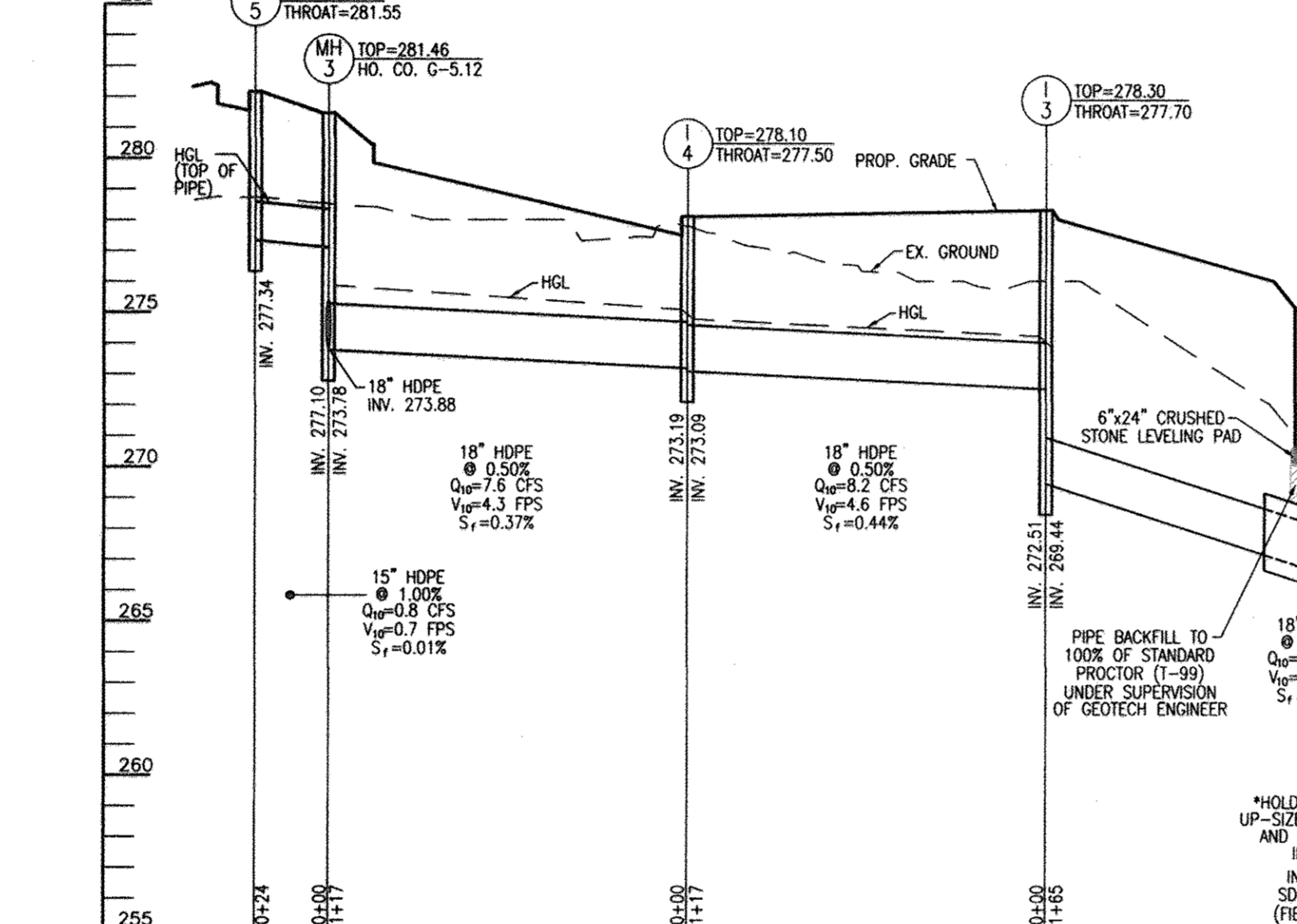
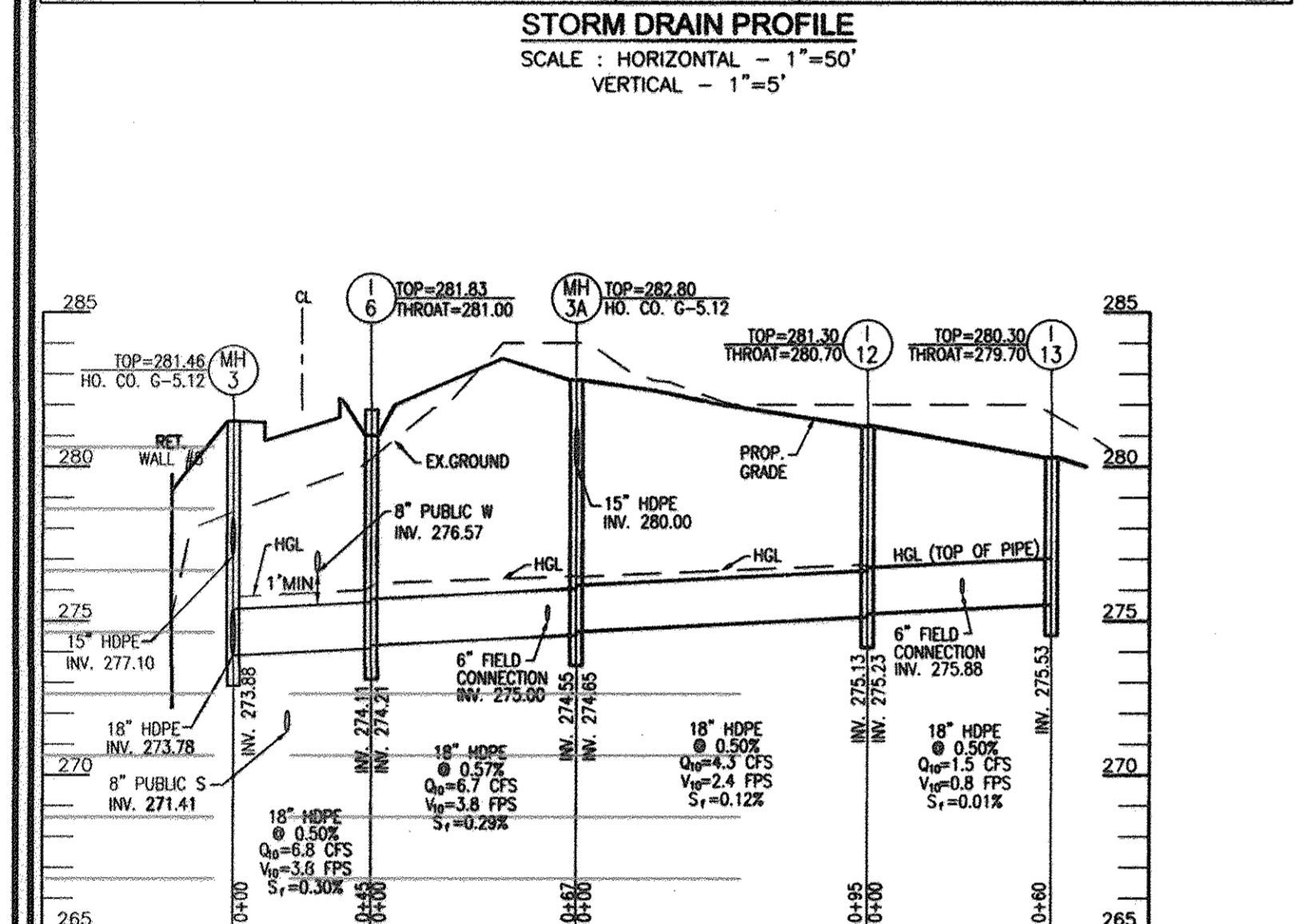
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY HOWARD COUNTY SOIL CONSERVATION DISTRICT.
[Signature] DATE: 10/10/11

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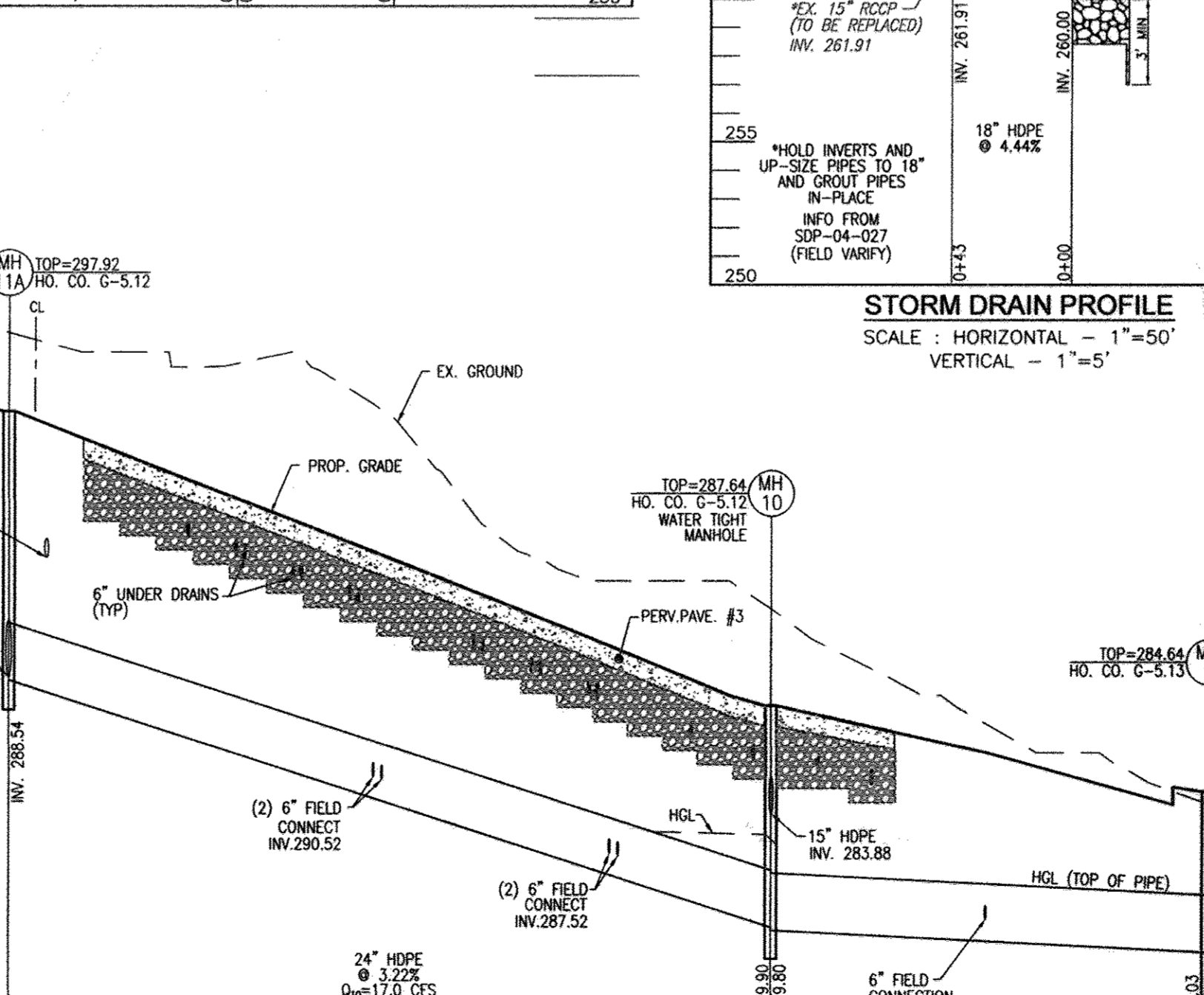
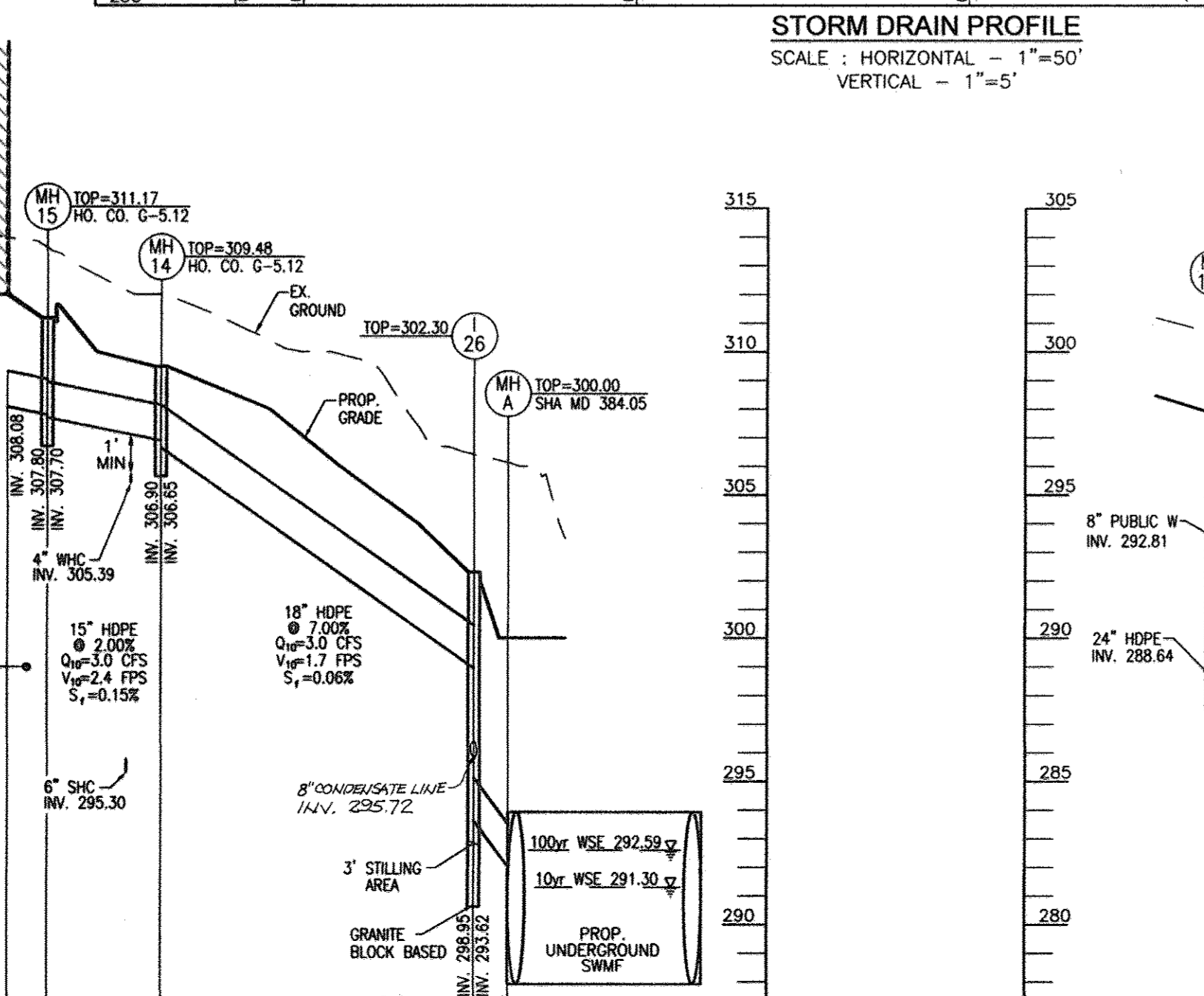
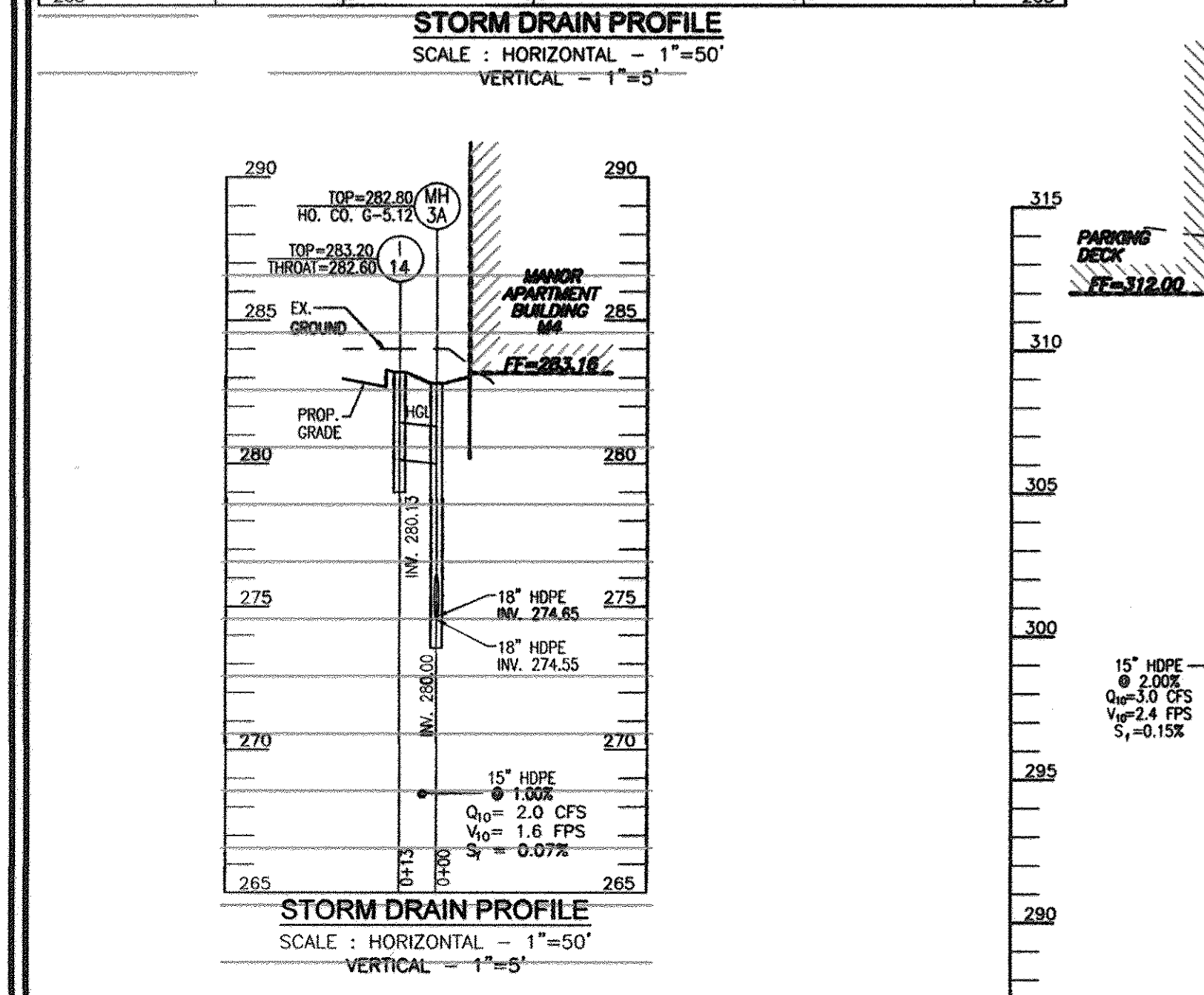
STORM DRAIN STRUCTURE SCHEDULE

NO.	TYPE	LOCATION	TOP ELEV.	THROAT ELEV.	INV. IN.	INV. OUT.	COMMENTS
I-1	TYPE 'A'-5' INLET	N 583668.19 E 1368344.12	250.50	249.50	246.50	246.50	HO. CO. STD D-4.01
I-2	TYPE 'A'-5' INLET	N 584068.12 E 1368283.96	252.99	252.39	245.07	245.07	HO. CO. STD D-4.01
I-3	TYPE 'A'-5' INLET	N 584086.74 E 1367895.12	278.30	277.70	272.51	268.05	HO. CO. STD D-4.01
I-4	TYPE 'A'-5' INLET	N 584100.91 E 1367778.97	278.10	277.50	273.09	273.09	HO. CO. STD D-4.01
I-5	TYPE 'A'-5' INLET	N 584135.15 E 1367642.28	282.15	281.55	277.34	277.34	HO. CO. STD D-4.01
I-6	TYPE 'A'-5' INLET	N 584174.91 E 1367574.34	281.83	281.23	274.21	274.21	HO. CO. STD D-4.01
I-7	TYPE 'A'-5' INLET	N 584168.92 E 1367638.18	277.04	276.44	271.43	271.43	HO. CO. STD D-4.01
I-8	TYPE 'D' INLET	N 584264.94 E 1367899.78	279.83	279.00	273.70	273.70	HO. CO. STD D-4.01
I-9	DOUBLE TYPE 'S' INLET	N 584412.68 E 1367939.79	280.66	280.66	273.50	273.50	HO. CO. STD D-4.23
I-10	TYPE 'A'-5' INLET	N 584502.02 E 1367910.98	282.91	282.31	278.01	278.01	HO. CO. STD D-4.01
I-11	TYPE 'A'-5' INLET	N 584216.02 E 1367794.38	281.30	280.70	275.23	275.23	HO. CO. STD D-4.01
I-12	TYPE 'A'-5' INLET	N 584298.04 E 1367434.27	289.85	289.25	282.20	281.95	HO. CO. STD D-4.01
I-13	TYPE 'A'-5' INLET	N 584592.92 E 1367453.80	293.98	293.38	288.30	288.30	HO. CO. STD D-4.01
I-14	TYPE 'A'-5' INLET	N 584246.11 E 1367693.73	283.20	282.60	278.13	278.13	HO. CO. STD D-4.01
I-15	TYPE 'A'-5' INLET	N 584292.05 E 1367483.76	285.83	285.00	278.50	278.40	HO. CO. STD D-4.01
I-16	TYPE 'A'-5' INLET	N 584355.99 E 1367448.68	287.11	286.51	279.26	279.16	HO. CO. STD D-4.01
I-17	TYPE 'A'-5' INLET	N 584489.28 E 1367434.27	289.85	289.25	282.20	281.95	HO. CO. STD D-4.01
I-18	TYPE 'A'-5' INLET	N 584592.92 E 1367453.80	293.98	293.38	288.30	288.30	HO. CO. STD D-4.01
I-19	TYPE 'A'-5' INLET	N 584227.00 E 1367586.36	283.83	283.00	274.48	274.38	HO. CO. STD D-4.01
I-20	TYPE 'D' INLET	N 584344.10 E 1367661.86	286.83	286.00	280.50	280.50	HO. CO. STD D-4.01
I-21	TYPE 'A'-5' INLET	N 584435.55 E 1367588.46	288.34	287.74	286.52	286.24	HO. CO. STD D-4.01
I-22	TYPE 'D' INLET	N 584270.73 E 1367453.09	302.11	301.28	295.00	295.00	HO. CO. STD D-4.10
I-23	TYPE 'D' INLET	N 584298.04 E 1367434.27	289.85	289.25	282.20	281.95	HO. CO. STD D-4.10
I-24	TYPE 'D' INLET	N 584592.92 E 1367453.80	293.98	293.38	288.30	288.30	HO. CO. STD D-4.10
I-25	TYPE 'D' INLET	N 584246.11 E 1367693.73	283.20	282.60	278.13	278.13	HO. CO. STD D-4.10
I-26	TYPE 'D' INLET	N 584292.05 E 1367483.76	285.83	285.00	278.50	278.40	HO. CO. STD D-4.10
I-27	TYPE 'D' INLET	N 584355.99 E 1367448.68	287.11	286.51	279.26	279.16	HO. CO. STD D-4.10
I-28	TYPE 'D' INLET	N 584489.28 E 1367434.27	289.85	289.25	282.20	281.95	HO. CO. STD D-4.10
I-29	TYPE 'D' INLET	N 584592.92 E 1367453.80	293.98	293.38	288.30	288.30	HO. CO. STD D-4.10
I-30	TYPE 'D' INLET	N 584227.00 E 1367586.36	283.83	283.00	274.48	274.38	HO. CO. STD D-4.10
I-31	TYPE 'A'-5' INLET	N 584170.20 E 1367715.25	298.39	297.79	293.61	293.36	HO. CO. STD D-4.01
I-32	TYPE 'D' INLET	N 584750.90 E 1367780.43	297.83	297.00	291.00	291.00	HO. CO. STD D-4.10
I-33	TYPE 'D' INLET	N 585029.84 E 1367772.95	297.33	296.50	293.85	293.85	HO. CO. STD D-4.10
I-34	TYPE 'D' INLET	N 584123.25 E 1368307.35	252.88	252.88	244.47	244.37	HO. CO. STD G-5.12
I-35	TYPE 'D' INLET	N 584194.65 E 1368366.91	237.30	237.30	229.92	229.92	HO. CO. STD G-5.12
I-36	TYPE 'D' INLET	N 58430.91 E 1367685.81	281.48	281.48	273.78	273.78	HO. CO. STD G-5.12
I-37	TYPE 'D' INLET	N 584236.04 E 1367701.81	282.80	282.80	274.85	274.85	HO. CO. STD G-5.12
I-38	TYPE 'D' INLET	N 584155.11 E 1367650.55	275.62	275.62	271.02	271.02	HO. CO. STD G-5.12
I-39	TYPE 'D' INLET	N 584224.09 E 1367887.11	279.53	279.53	272.80	272.80	HO. CO. STD G-5.12
I-40	TYPE 'D' INLET	N 584451.85 E 1367955.66	281.27	281.27	273.79	273.79	HO. CO. STD G-5.12
I-41	TYPE 'D' INLET	N 584196.07 E 1367544.54	284.00	284.00	278.00	278.00	SHA MD DETAIL 374.88
I-42	TYPE 'D' INLET	N 584196.07 E 1367544.54	284.00	284.00	278.00	278.00	SHA MD DETAIL 374.88
I-43	TYPE 'D' INLET	N 584196.07 E 1367544.54	284.00	284.00	278.00	278.00	SHA MD DETAIL 374.88
I-44	TYPE 'D' INLET	N 584196.07 E 1367544.54	284.00	284.00	278.00	278.00	SHA MD DETAIL 374.88
I-45	TYPE 'D' INLET	N 584196.07 E 1367544.54	284.00	284.00	278.00	278.00	SHA MD DETAIL 374.88
I-46	TYPE 'D' INLET	N 584196.07 E 1367544.54	284.00	284.00	278.00	278.00	SHA MD DETAIL 374.88
I-47	TYPE 'D' INLET	N 584196.07 E 1367544.54	284.00	284.00	278.00	278.00	SHA MD DETAIL 374.88
I-48	TYPE 'D' INLET	N 584196.07 E 1367544.54	284.00	284.00	278.00	278.00	SHA MD DETAIL 374.88
I-49	TYPE 'D' INLET	N 584196.07 E 1367544.54	284.00	284.00	278.00	278.00	SHA MD DETAIL 374.88
I-50	TYPE 'D' INLET	N 584196.07 E 1367544.54	284.00	284.00	278.00	278.00	SHA MD DETAIL 374.88



PIPE SCHEDULE

SIZE	TYPE	LENGTH	SIZE	TYPE	LENGTH
6"	PERF. PVC	3,113 LF	24"	HDPE	1,053 LF
6"	PVC	146 LF	36"	HDPE	134 LF
15"	HDPE	961 LF	48"	HDPE	62 LF
18"	HDPE	2,139 LF	72"	AL-CMP	860 LF



OWNER

MILLTOWNE ASSOCIATES LP
 BY: HCH PARTNERS III LLC, GENERAL PARTNER
 BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
 BY: STACY SPANAN, EXECUTIVE DIRECTOR
 6751 COLUMBIA GATEWAY DR.
 COLUMBIA, MD 21046
 (410) 313-6320

DEVELOPER

STARVU ASSOCIATES, INC.
 2661 RIVA ROAD
 BUILDING 300
 ANNAPOLIS, MD 21401
 C/O STEPHEN J. MOORE
 (410) 571-6610

REVISION SHEET

NO.	REVISION	DATE
4	REVISE SHEET NUMBER	01/09/17
1	REDLINES PER AS-BUILT MODIFICATIONS	03/01/15

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 10/26/11

CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 10/27/11

DIRECTOR
 DATE: 10/27/11

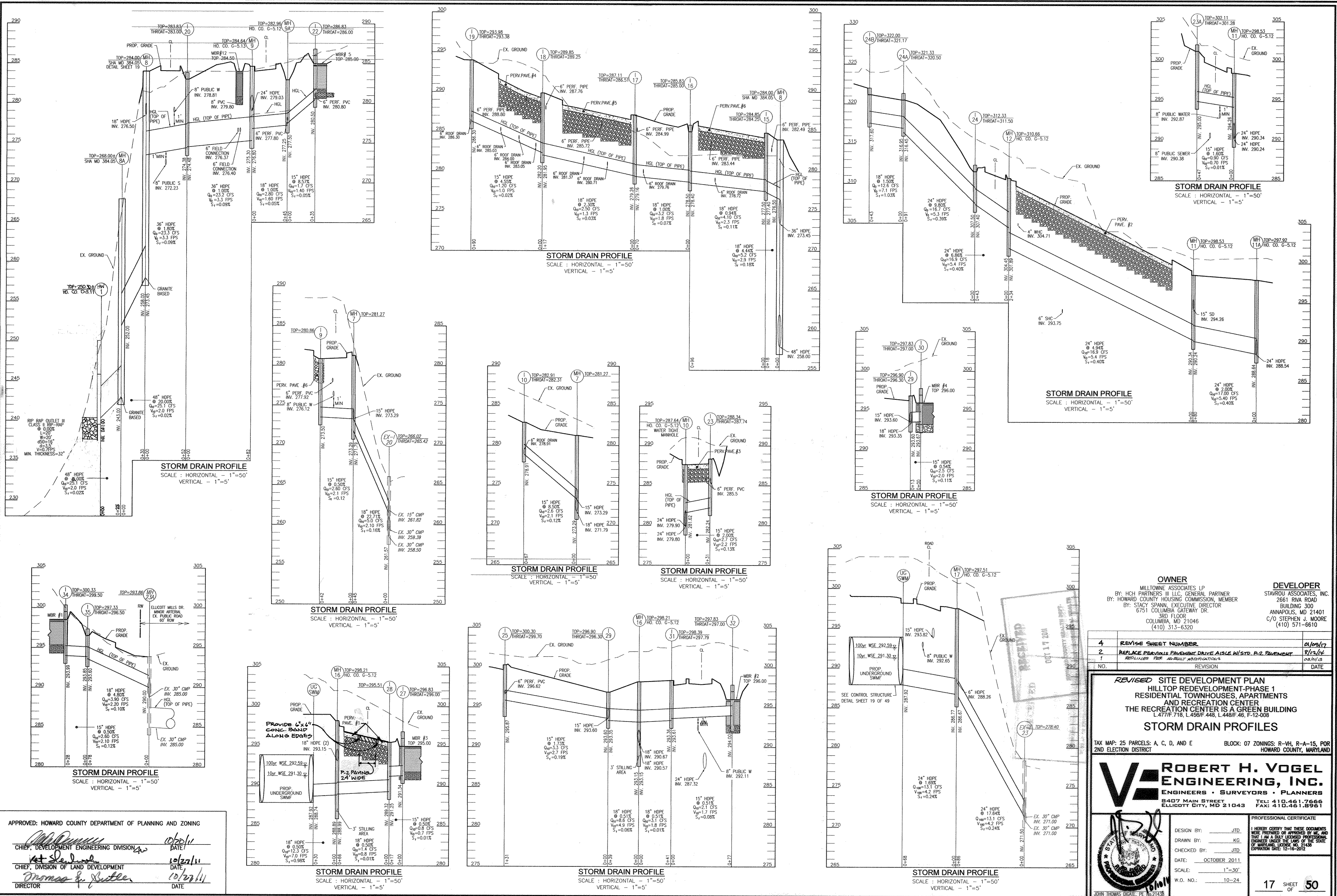
ROBERT H. VOGEL
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 ELICOTT CITY, MD 21043
 TEL: 410-461-7666
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DESIGN BY: JTD
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 DATE: OCTOBER 2011
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 W.O. NO.: 10-24
 16 SHEET OF 50

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APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 10/27/11
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 10/27/11
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 10/27/11
DIRECTOR DATE

NO.	REVISION	DATE
4	REVISE SHEET NUMBER	01/05/17
2	REPLACE PERVIOUS PAVEMENT DRIVE AISLE W/STD. R-2 PAVEMENT	8/12/14
1	REDLINES FOR AS-BUILT MODIFICATIONS	08/01/13

OWNER
MILLTOWNE ASSOCIATES LP
BY: HCH PARTNERS III LLC, GENERAL PARTNER
BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
BY: STACY SPANN, EXECUTIVE DIRECTOR
300 FLOOR
COLUMBIA GATEWAY DR.
COLUMBIA, MD 21046
(410) 313-6320

DEVELOPER
STAVROU ASSOCIATES, INC.
2661 RINA ROAD
BUILDING 300
ANNAPOLIS, MD 21401
C/O STEPHEN J. MOORE
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REVISED SITE DEVELOPMENT PLAN
HILLTOP REDEVELOPMENT-PHASE 1
RESIDENTIAL TOWNHOUSES, APARTMENTS
AND RECREATION CENTER
THE RECREATION CENTER IS A GREEN BUILDING
L 471/F 718, L 468/F 448, L 448/F 46, F 12-008

STORM DRAIN PROFILES

TAX MAP: 25 PARCELS: A, C, D, AND E BLOCK: 07 ZONINGS: R-W, R-A-15, POR
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET TEL: 410.461.7666
ELLCOTT CITY, MD 211043 FAX: 410.461.8961

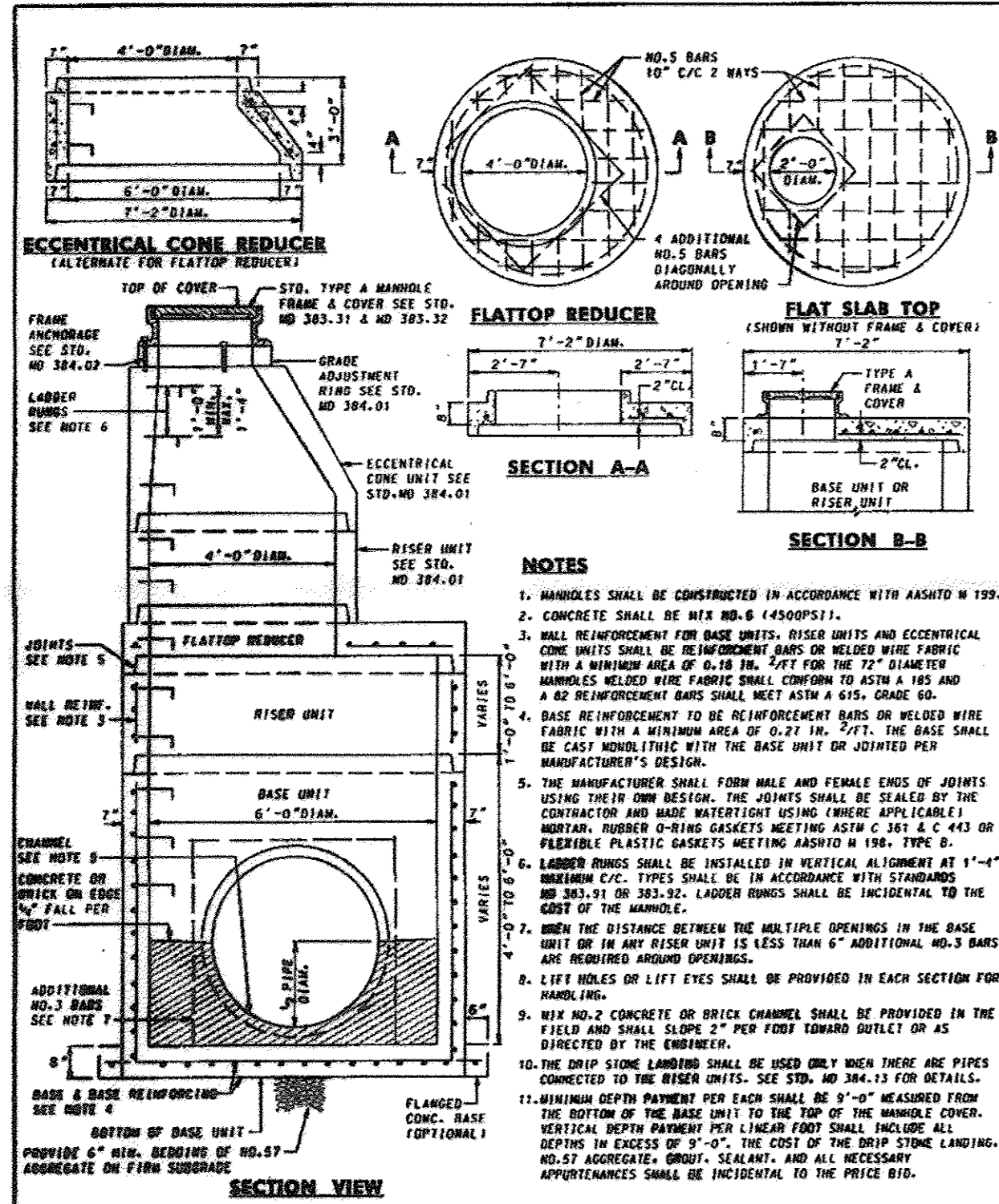
PROFESSIONAL CERTIFICATE

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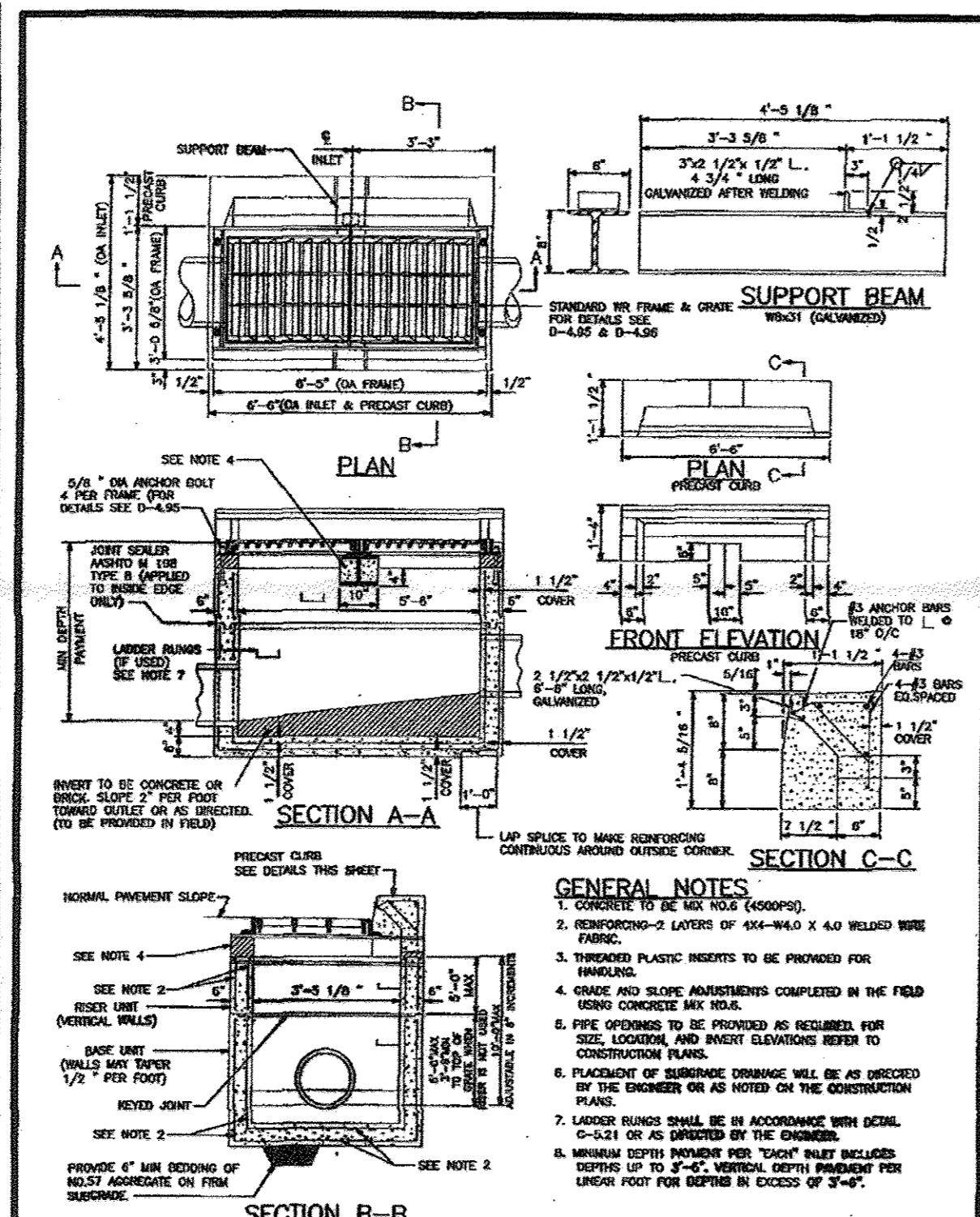
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21438 EXPIRATION DATE: 12-16-2012

17 SHEET OF 50

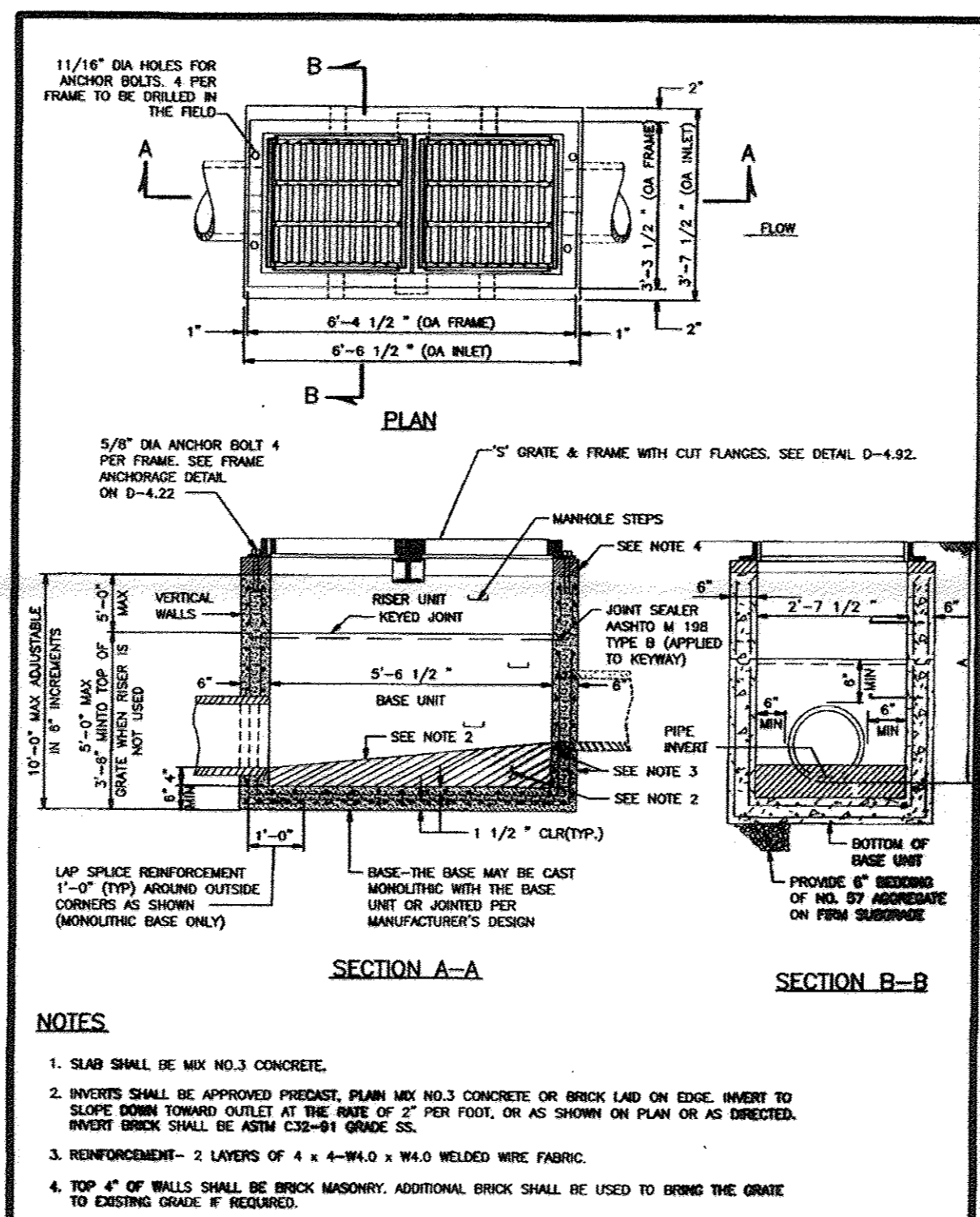
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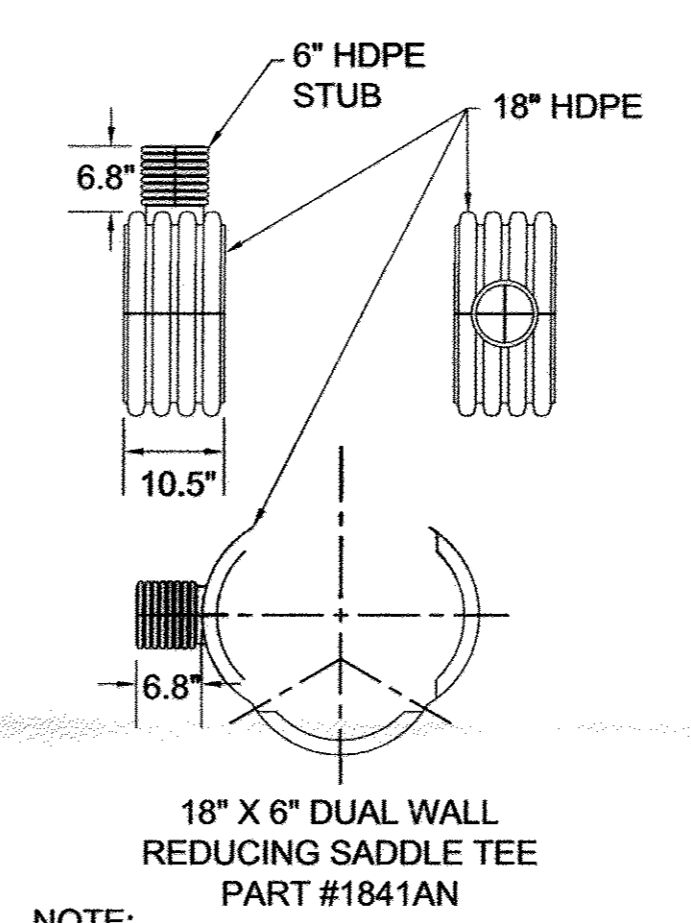
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
72" DIAMETER PRECAST MANHOLE FOR 42" & 48" PIPES
 STANDARD NO. MD 384.05



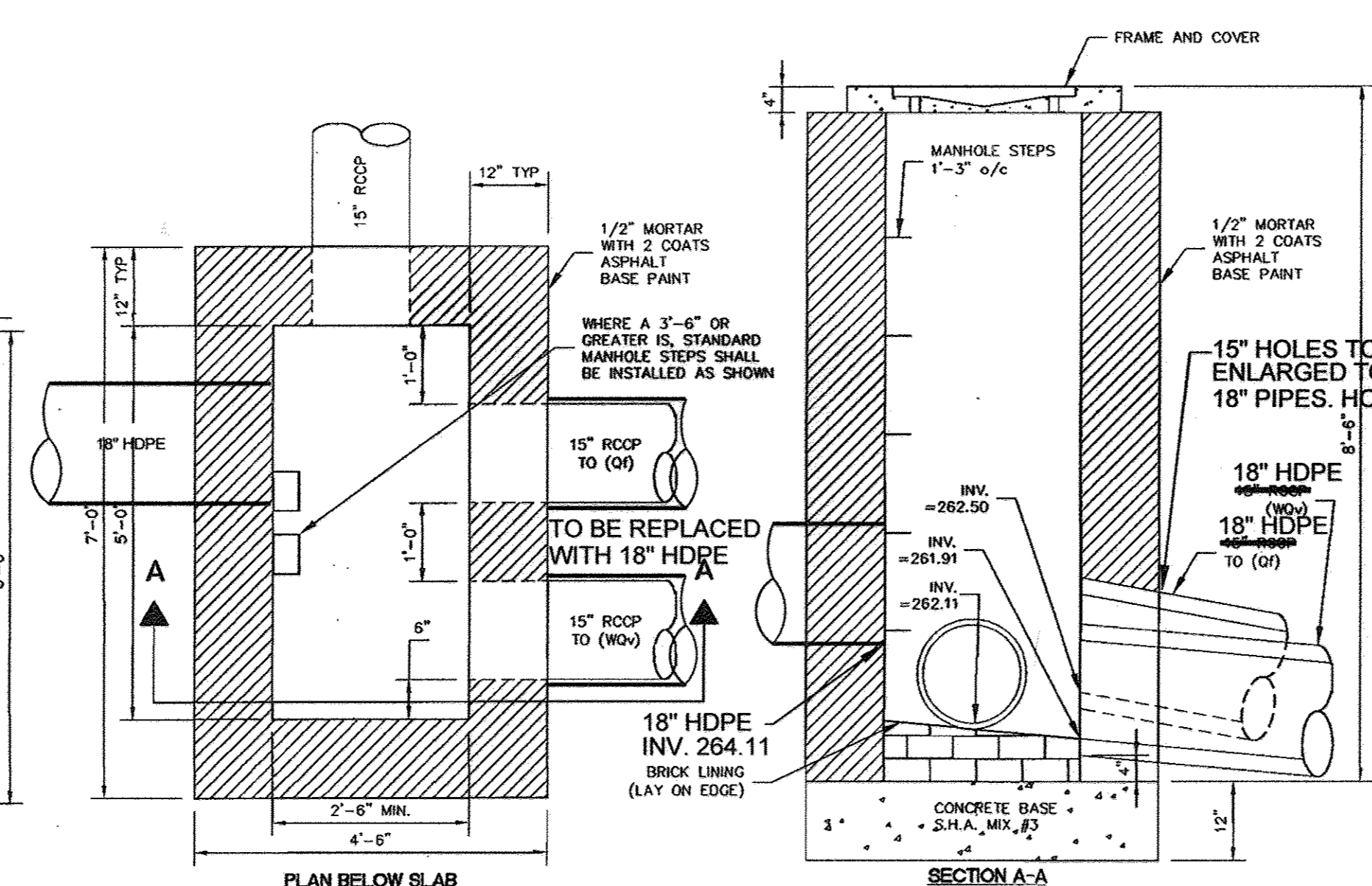
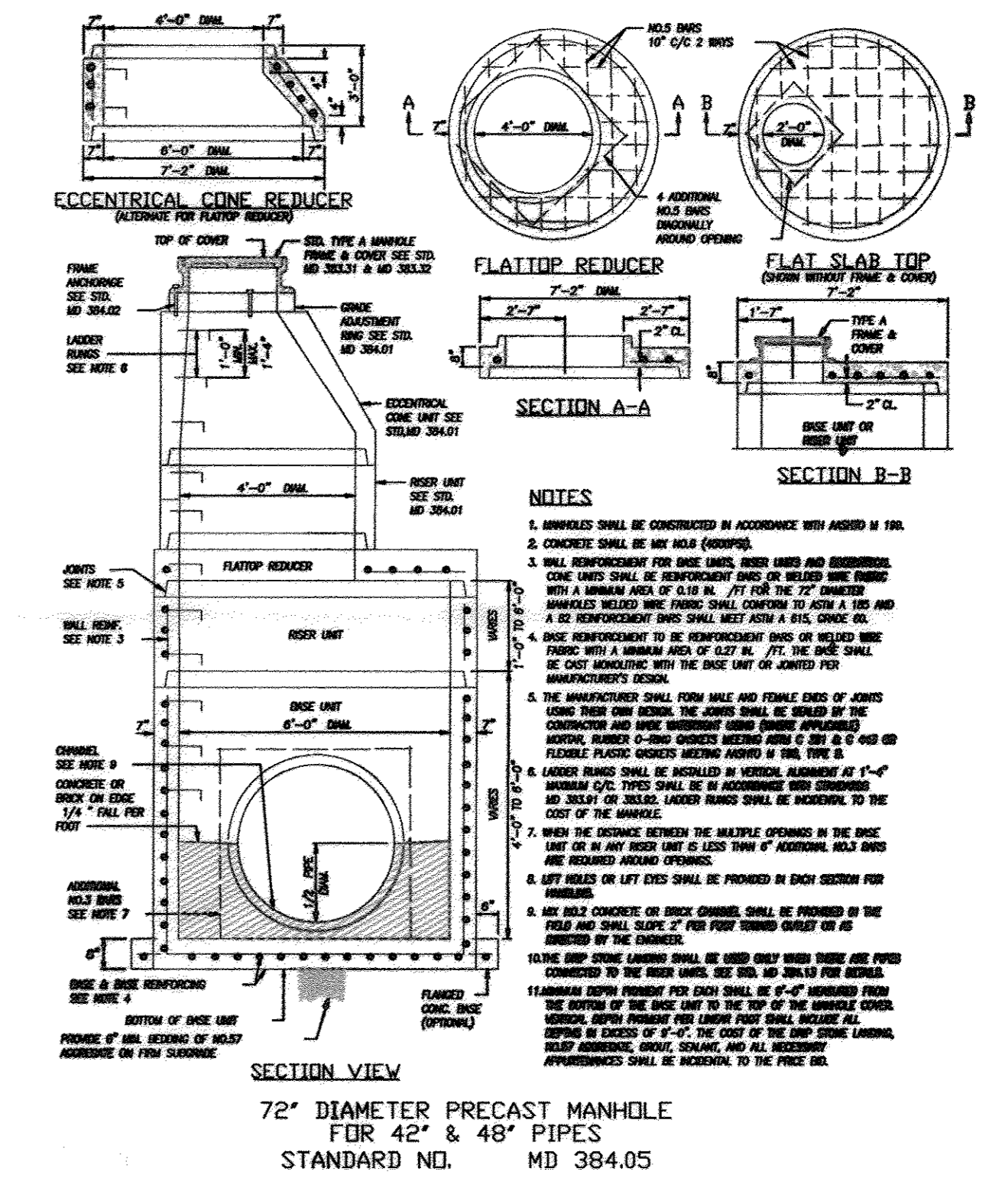
Howard County, Maryland
 Department of Public Works
 Double WR Inlet
 Precast
 Detail
 D-4.35



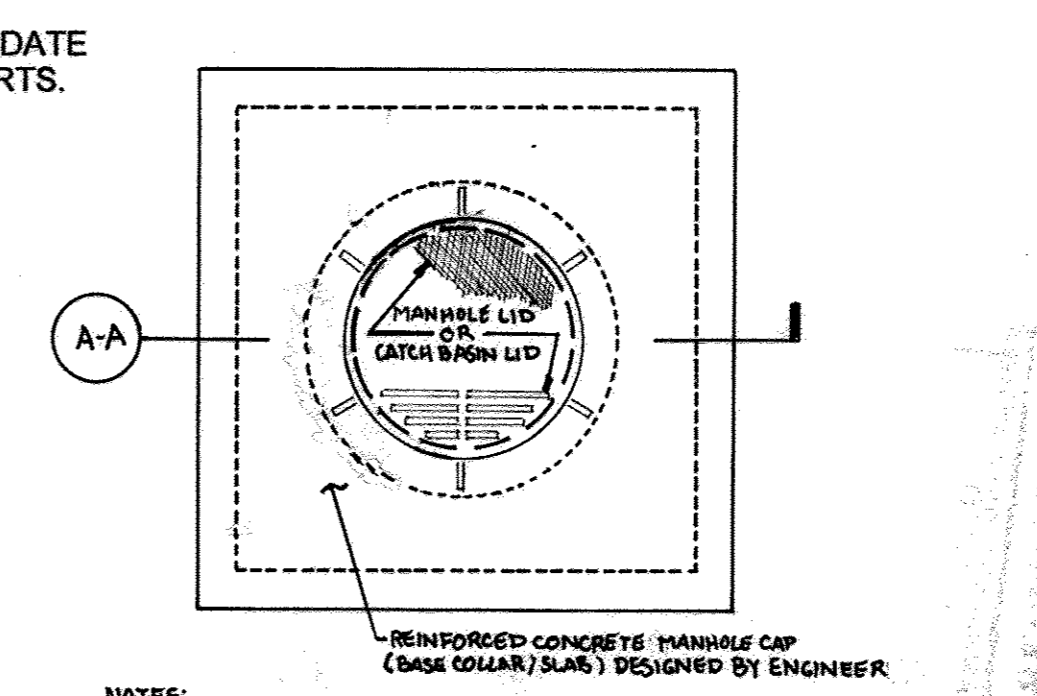
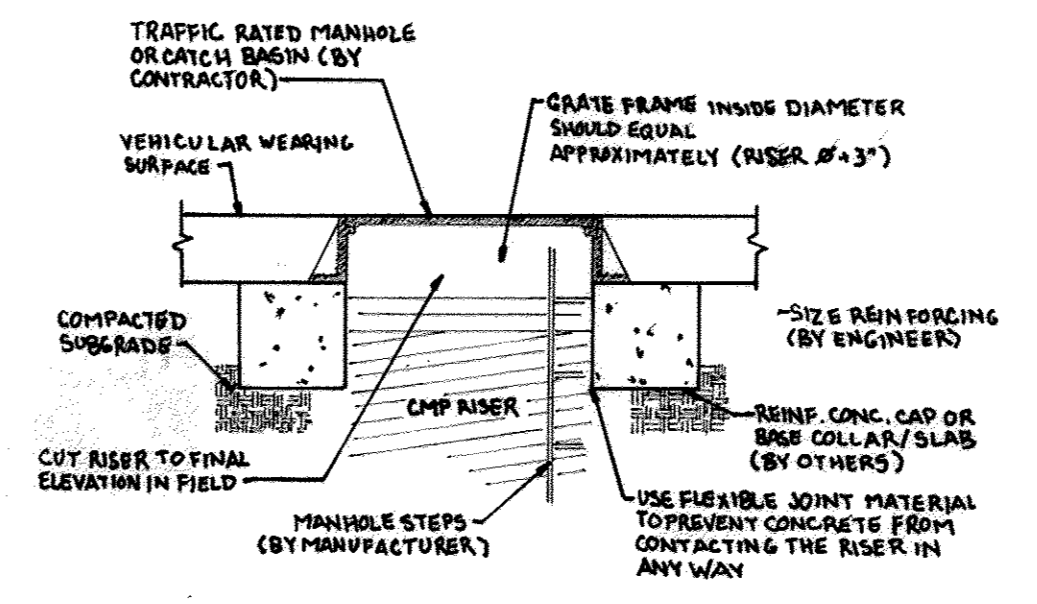
Howard County, Maryland
 Department of Public Works
 Double Type 'S' Inlet
 Precast
 Detail
 D-4.23



THIS FITTING CAN BE SUPPLIED FOR 15", 18", 24" OR 36" PIPE. THESE WILL BE USED TO TIE IN THE UNDER DRAINS AND THE MBR OUTLET.



S-2 ISOLATION/DIVERSION MODIFIED
 A-5 INLET CAST IN PLACE DETAIL PER SDP-04-27
 EXISTING STRUCTURE DB-1
 MODIFICATIONS
 NOT TO SCALE



MANHOLE CAP DETAIL
 SCALE: N.T.S.
 TRAFFIC BEARING MH COVER DETAIL
 FOR MH-B
 SCALE: N.T.S.

OWNER
 MILLTOWNE ASSOCIATES LP
 BY: HCH PARTNERS III LLC, GENERAL PARTNER
 COUNTY HOUSING COMMISSION, MEMBER
 BY: STACY SPANN, EXECUTIVE DIRECTOR
 6751 COLUMBIA GATEWAY DR.
 3RD FLOOR
 COLUMBIA, MD 21046
 (410) 313-6320

DEVELOPER
 STAVROU ASSOCIATES, INC.
 2661 RIVA ROAD
 BUILDING 300
 ANNAPOLIS, MD 21401
 C/O STEPHEN J. MOORE
 (410) 571-6610

NO.	REVISION	DATE
1	REVISE SHEET NUMBER	01/05/17

SITE DEVELOPMENT PLAN
 HILLTOP REDEVELOPMENT-PHASE 1
 RESIDENTIAL TOWNHOUSES, APARTMENTS
 AND RECREATION CENTER
 THE RECREATION CENTER IS A GREEN BUILDING
 L477/F.718, L456/F.448, L448/F.46, F-12-008
STORM DRAIN PROFILES
 TAX MAP: 25 PARCELS: A, C, D, AND E BLOCK: 07 ZONINGS: R-VH, R-A-15, POR
 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

DESIGN BY: JTD
 DRAWN BY: KC
 CHECKED BY: JTD
 DATE: OCTOBER 2011
 SCALE: 1"=30'
 W.O. NO.: 10-24

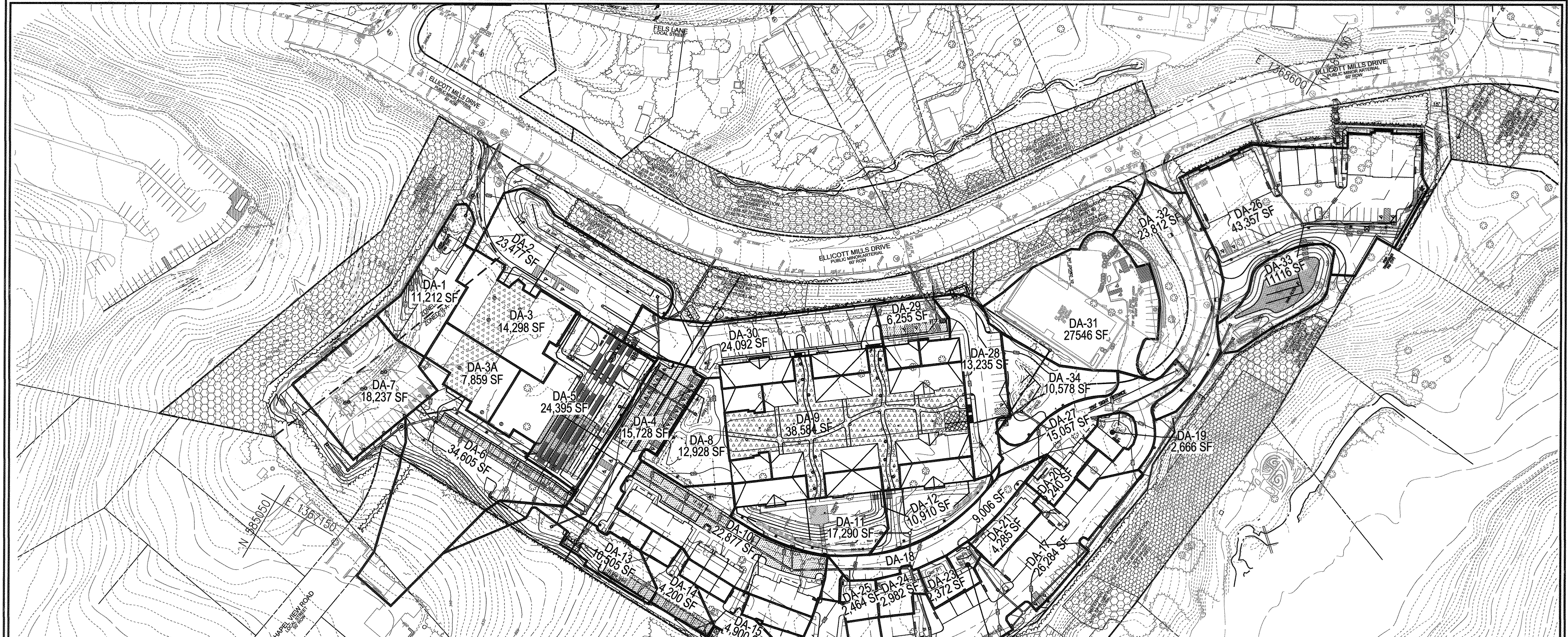
PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 14838 EXPIRATION DATE: 12-16-2012

18 SHEET OF 50

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature]
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 10/20/11

[Signature]
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 10/23/11

[Signature]
 DIRECTOR
 DATE: 10/23/11

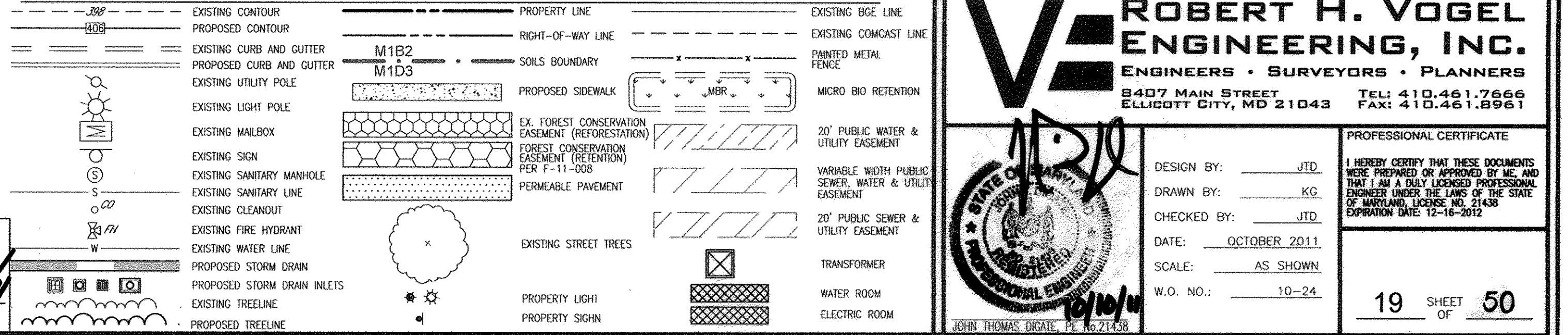


SWM DRAINAGE AREA CHART

FACILITY	DA#	DA SF	% IMP	AREA IMP SF	Pe	CREDIT In	ESDv REQD CF	ESDv PROV CF	TYPE OF FACILITY
MBR #1	1	11212	56	6279	2.0	746	994		MICRO BIORETENTION
MBR #2	2 & 3	37775	75	28331	2.0	3364	4486		MICRO BIORETENTION
MBR #3	8	12928	25	3232	2.6	499	665		MICRO BIORETENTION
MBR #4	5	24395	90	21956	1.0	1304	2547		MICRO BIORETENTION
MBR #5	11	17290	36	6224	2.6	961	1282		MICRO BIORETENTION
MBR #6	12	10910	35	3819	2.6	589	786		MICRO BIORETENTION
MBR #7	28 & 34	23813	63	15002	1.0	891	1985		MICRO BIORETENTION
MBR #8	19	2666	40	1066	2.6	165	220		MICRO BIORETENTION
MBR #9	20	2240	68	1523	1.0	90	178		MICRO BIORETENTION
MBR #10	22	1703	69	1175	2.6	181	242		MICRO BIORETENTION
MBR #11	23	2372	60	1423	2.6	220	293		MICRO BIORETENTION
MBR #12	24	2982	50	1491	2.0	177	269		MICRO BIORETENTION
MBR #13	25	2464	60	1478	2.6	220	304		MICRO BIORETENTION
PERV PAVE #1	4	15728	100	15728	2.6	1741	1741		PERVIOUS PAVEMENT
PERV PAVE #2	6	34605	30	10382	2.6	1400	1400		PERVIOUS PAVEMENT
PERV PAVE #3	10	22877	90	20589	2.6	1875	1875		PERVIOUS PAVEMENT
PERV PAVE #4	13	10050	63	6332	2.0	743	743		PERVIOUS PAVEMENT
PERV PAVE #5	15	4900	93	4567	2.6	537	537		PERVIOUS PAVEMENT
PERV PAVE #6	16	9270	100	9270	2.0	540	540		PERVIOUS PAVEMENT
PERV PAVE #7	29	6255	89	5567	2.0	619	619		PERVIOUS PAVEMENT
SAND FILTER #1	17,18,20-22, 31 & 33	84552	50	42276	2.0	7872	9863		SAND FILTER #1
GARDEN PODIUM	9	38584	41	15819	2.0	2199	2725		GREENROOF
REC CENTER	3	14298	68	9723	1.0	772	612		GREENROOF
REC CENTER	3A	7859	53	4165	1.0	329	491		GREENROOF
UNTREATED	26	43357	72						NO TREATMENT REQUIRED
UNTREATED	27	15057	91						NO TREATMENT REQUIRED
UNTREATED	30	24092	90						NO TREATMENT REQUIRED
UNTREATED	32	23812							NO TREATMENT REQUIRED

PLAN VIEW
SCALE: 1"=60'

LEGEND:



OWNER
MILLTOWNE ASSOCIATES LP
BY: HCH PARTNERS III LLC, GENERAL PARTNER
BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
BY: STACY SPANN, EXECUTIVE DIRECTOR
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2661 RIVA ROAD
BUILDING 300
ANNAPOLIS, MD 21401
C/O STEPHEN J. MOORE
(410) 571-6610

REVISE TO MODIFY RECREATION OPEN SPACE TO REMOVE NATURE TRAIL AND MODIFY POCKET PARK. SHOW RETAIN TO DAMAGED SAND FILTER.

SITE DEVELOPMENT PLAN
HILLTOP REDEVELOPMENT-PHASE 1
RESIDENTIAL TOWNHOUSES, APARTMENTS
AND RECREATION CENTER
THE RECREATION CENTER IS A GREEN BUILDING
STORMWATER MANAGEMENT
DRAINAGE AREA MAP

TAX MAP: 25 PARCELS: A, C, D, AND E BLOCK: 07 ZONINGS: R-VH, R-A-15, POR
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

PROFESSIONAL CERTIFICATE
DESIGN BY: JTD
DRAWN BY: KG
CHECKED BY: JTD
DATE: OCTOBER 2011
SCALE: AS SHOWN
W.O. NO.: 10-24

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19 SHEET OF 50

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 10/27/11

CHIEF, DIVISION OF LAND DEVELOPMENT
DATE: 10/27/11

DIRECTOR
DATE: 10/27/11

BY THE DEVELOPER:

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

SIGNATURE OF DEVELOPER
DATE: 10/10/11

BY THE ENGINEER:

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

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

SIGNATURE OF ENGINEER
DATE: 10/10/11

HOWARD S.C.D.

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

1. **MATERIAL SPECIFICATIONS**
THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.

2. **FILTERING MEDIA OR PLANTING SOIL**
THE MEDIA SHALL BE A UNIFORM MIX OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE MICRO-BIORETENTION PRACTICE THAT WILL BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDERANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERBERIS GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOxious WEEDS OR OTHER UNDESIRABLE VEGETATION.

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

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

5. **PLANT INSTALLATION**
COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE APPLIED IN A UNIFORM THICKNESS OF 2" TO 3". SHREDDED OR CHIPPED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDDED MULCH MUST BE WELL AGED (6 TO 12 MONTHS) FOR ACCEPTANCE. ROOTSTOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/2" OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRIKE DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION. TREES SHALL BE BRACED USING 2" BY 2" STRIKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STRIKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL. GRASSES AND LEGUME SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLUS SHOULD BE PLANTED FOLLOWING THE NON-CROSS GROUND COVER PLANTING SPECIFICATIONS.

6. **UNDERDRAINS**
UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:
• PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F758, TYPE PS 28, OR AASHTO M-278) IN A GRAVEL LAYER. THE PREFERRRED 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 INCH. PER FOR PERFORATED PIPE IS 1/4" (NO. 4 OR 4N) GALVANIZED IRONWARE CLOTH.
• GRVEL - THE GRAVEL LAYER (NO. 57 STONE) SHOULD BE AT LEAST 2" 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 POINT AND MONITOR PERFORMANCE OF THE FILTER.
• A 4" LAYER OF PER GRAVEL (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BOTH THICKNESS EXCEEDS 24". THIS MAIN COLLECTOR PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELLS AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1,000 SQUARE FEET OF SURFACE AREA).

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

OPERATION AND MAINTENANCE SCHEDULE FOR MICROBIORETENTION AREAS

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. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARLANDA STORMWATER DESIGN MANUAL VOLUME 4, TABLE 4.4.1 AND 2.

2. **SCHEDULE OF PLANT INSPECTION** WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, TREATMENT OF ALL INSECT TREES AND SHRUBS AND REPLACEMENT OF ALL DEFICIENT STRAKES AND WIRRES.

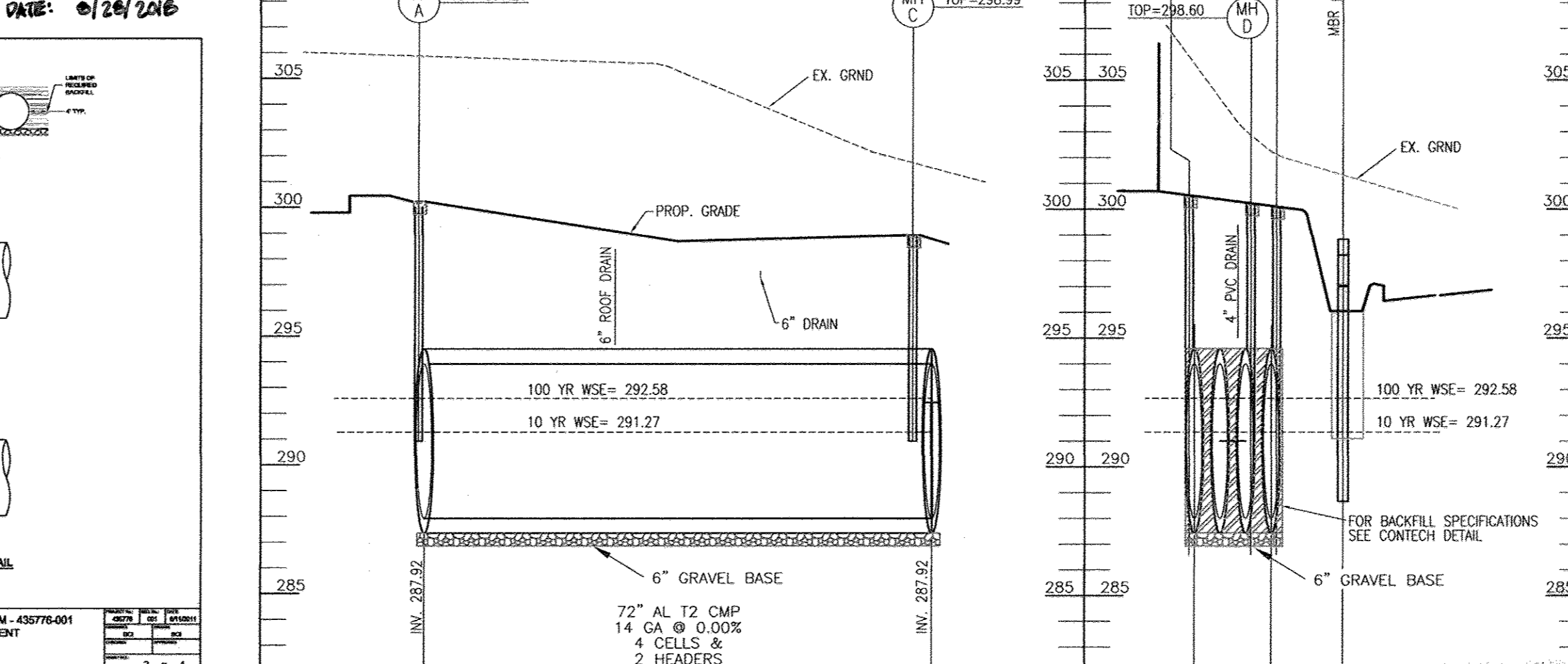
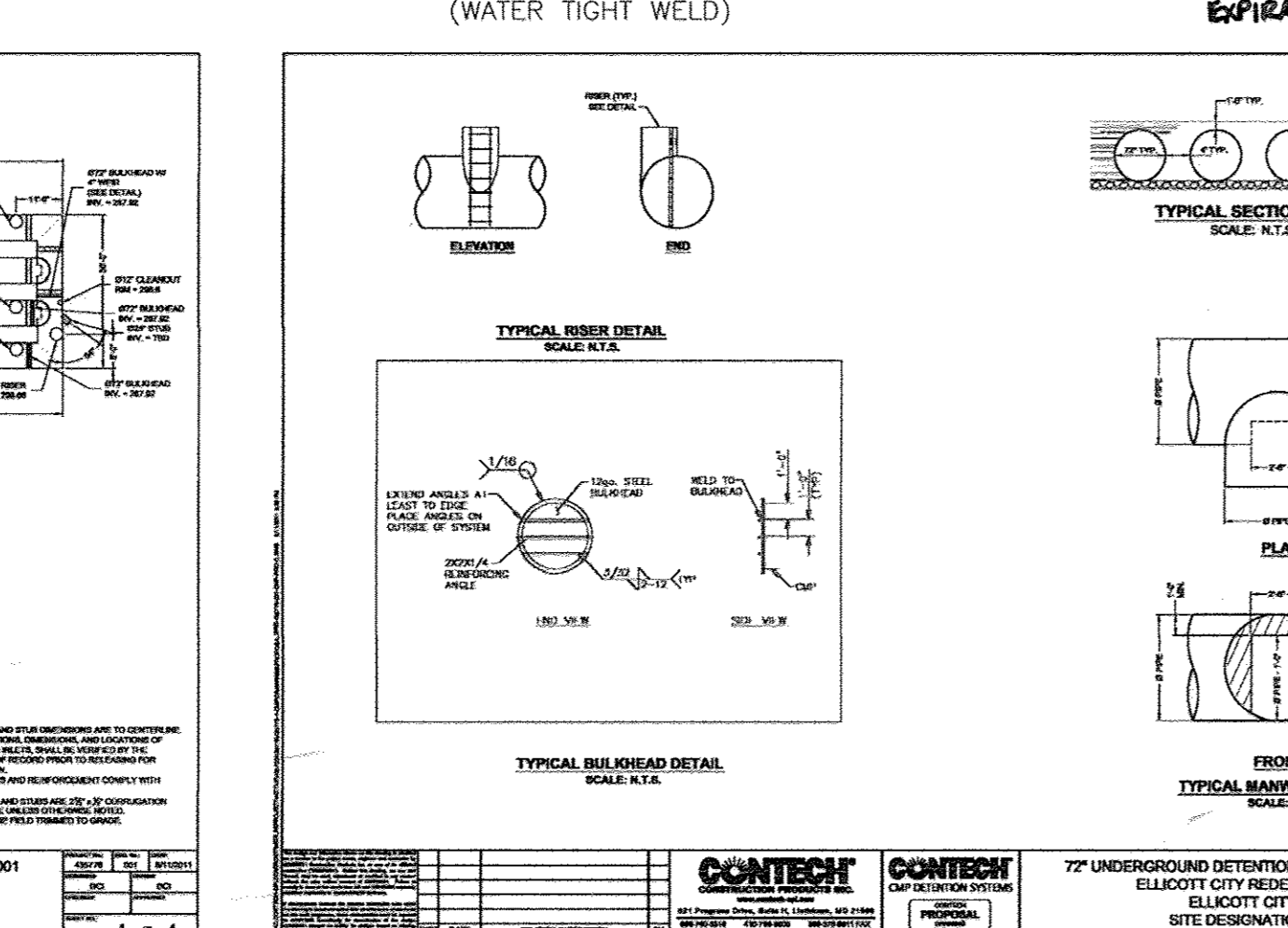
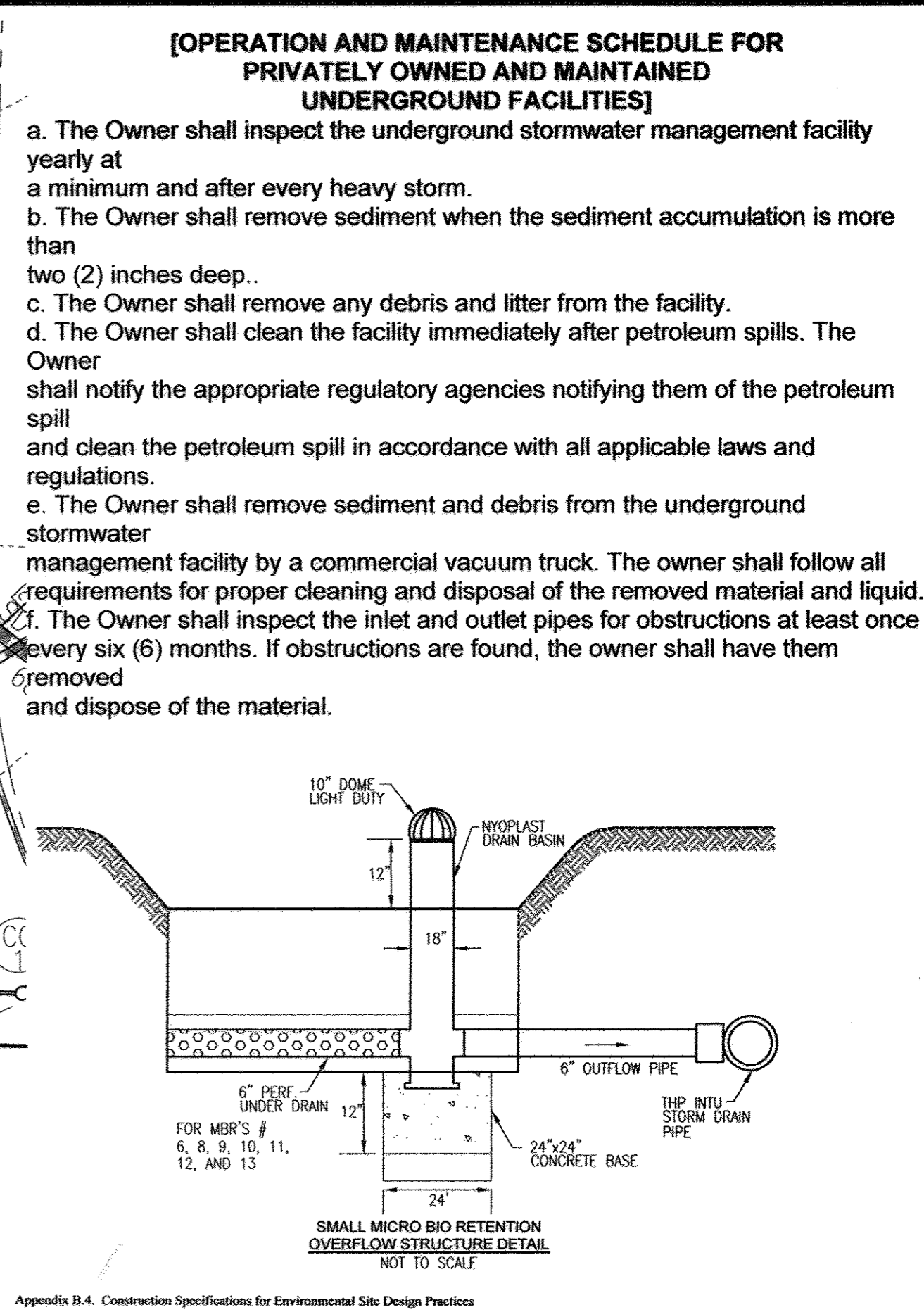
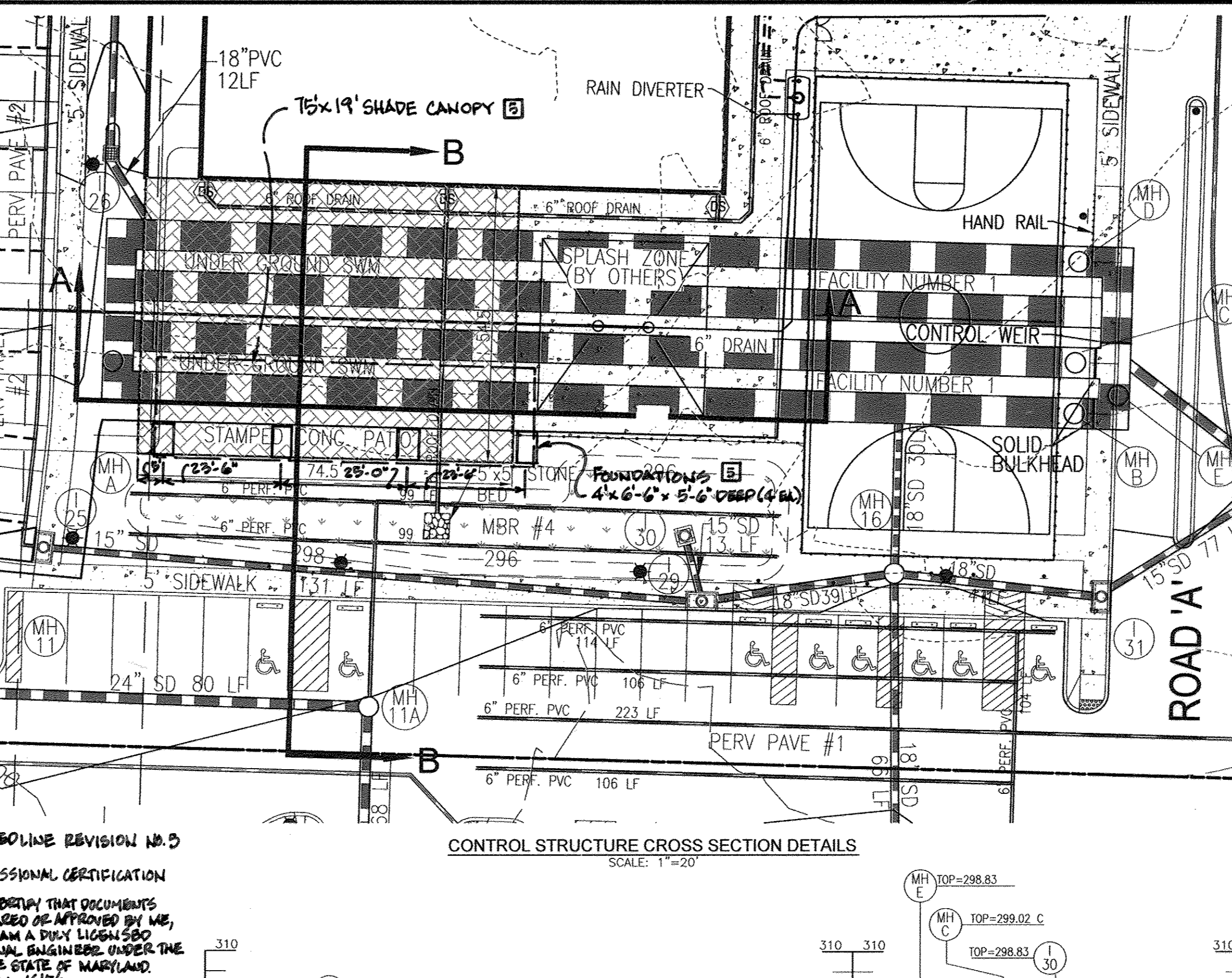
3. **MULCH** SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER. ONCE EVERY 2 TO 3 YEARS. SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.

B.4.B SPECIFICATIONS FOR PERMEABLE PAVEMENTS & REINFORCED TURF
THESE SPECIFICATIONS INCLUDE INFORMATION ON ACCEPTABLE MATERIALS FOR PLANT APPLICATIONS AND ARE NOT EXCLUSIVE OR LIMITING. THE DESIGNER IS RESPONSIBLE FOR DEVELOPING SPECIFICATIONS FOR INDIVIDUAL PROJECTS AND SPECIFIC CONDITIONS.

1. **PERVIOUS CONCRETE SPECIFICATIONS**
DESIGN THICKNESS - PERVIOUS CONCRETE APPLICATIONS SHALL BE DESIGNED SO THAT THE THICKNESS OF THE CONCRETE SLAB SHALL SUPPORT THE TRAFFIC AND VEHICLE TYPES THAT WILL BE CARRIED. APPLICATIONS MAY BE DESIGNED USING EITHER STANDARD PAVEMENT PROCEDURES (E.G., AASHTO, A132.9R, A133.0R) 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 TIME AGGREGATE CONTENT. COMMONLY USED AGGREGATES INCLUDE ASTM C 33 NO. 67 (3/4 IN. TO NO. 10), 100 (3/8 IN. TO NO. 16) AND NO.89 (3/8 IN. TO NO.30) SIZES. SINGLE-SIZED AGGREGATE (UP TO 1 INCH) MAY ALSO BE USED. WATER CONTENT - WATER-TO-CEMENT RATIOS BETWEEN 0.27 AND 0.30 ARE USED ROUTINELY WITH PROPER INCLUSION OF CHEMICAL ADMIXTURES. WATER QUALITY SHOULD MEET AQA 306 AS A GENERAL RULE. PORTABLE 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)**
POWER BLOCKS - BLOCKS SHOULD BE EITHER 39 IN. OR 4 IN. THICK AND MEET ASTM C 936 OR CSA 4331.2 REQUIREMENTS. APPLICATIONS SHOULD HAVE 20% OR MORE (PREFERRED) OF THE SURFACE AREA OPEN. INSTALLATION SHOULD FOLLOW MANUFACTURER'S INSTRUCTIONS, EXCEPT THAT INFILL AND BASE COURSE MATERIALS AND DIMENSIONS SPECIFIED IN THIS APPENDIX SHALL BE FOLLOWED.
INFILL MATERIALS AND LEVELING COURSE - OPENINGS SHALL BE FILLED WITH ASTM C-33 GRADED SAND OR SANDY LOAM. PICP BLOCKS SHALL BE PLACED ON A ONE-INCH THICK LEVELING COURSE OF ASTM C-33 SAND.
BASE COURSE - THE BASE COURSE SHALL BE AASHTO NO. 3 OR 4 COURSE AGGREGATE WITH AN ASSUMED OPEN PORE SPACE OF 30% (n=0.30).

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



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

Table B.4.1 Materials Specifications for Micro-Bioretenion, Rain Gardens & Landscape Infiltration:

Material	Specification	Requirements are site-specific
Planting soil (12" to 6" deep)	See Appendix A, Table A.4.1	Plantings are site-specific
Filtering media	Uniform mix of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped with the micro-bioretenion practice that will be harmful to plant growth, or prove a hinderance to the planting or maintenance operations. The planting soil shall be free of berberis grass, quackgrass, johnson grass, or other noxious weeds or other undesirable vegetation.	USDA soil types loamy sand or sandy loam; clay content < 3%
Organic content	Min. 10% by dry weight (ASTM D 2019)	aged 6 months; minimum no pine or wood chips
Permeable concrete	Perforated pipe (ASTM M-278) or AASHTO M-278	aged 6 months; minimum no pine or wood chips
Perforated pipe	Perforated pipe (ASTM M-278) or AASHTO M-278	aged 6 months; minimum no pine or wood chips
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CONTECH logo and project information for 72" UNDERGROUND DETENTION SYSTEM.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION
10/20/11 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT
10/27/11 DATE

DIRECTOR
10/27/11 DATE

PERVIOUS PAVEMENT VOLUME CHART

FACILITY	IN DEPTH OF STONE (IN)	AF	VOL. PROV
PERV PAVE #1	24	7269	4361
PERV PAVE #2	30	3580	2885
PERV PAVE #3	20	11480	5740
PERV PAVE #4	30	1620	1215
PERV PAVE #5	30	1295	971
PERV PAVE #6	28	1490	1043
PERV PAVE #7	24	1660	996

UNDERGROUND SWM SECTIONS

SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'

LEGEND:

- PRIVATE PERMEABLE CONCRETE
- OVERDRAIN 2" MIN PERFORATED OR SLOTTED CONCRETE (THIS DRAINS TO STORM DRAIN)
- PERMEABLE CONCRETE
- ASTM C 33 3/4" TO 2" STONE
- UNDERDRAIN 3" MIN. SLOPED TO OUTLET PERFORATED OR SLOTTED WITHIN SUBBASE (THIS DRAINS TO STORM DRAIN STRUCTURES)

SCHEMATIC PERMEABLE INTERLOCKING CONCRETE PAVEMENT REPLACEMENT

2" ASTM No. 8 & STONE
4" ASTM No. 57 STONE BEDDING

CONTRACTOR TO UTILIZE MANUFACTURERS SPEC.

GEOTECH TO CONFIRM SECTION & CONFIRM EX. STONE HAS NOT BEEN CONTAMINATED

CROSS SECTION PERMEABLE CONCRETE DETAIL (A-1) NOT TO SCALE

SIDE PROFILE SECTION PERMEABLE CONCRETE DETAIL (A-1) NOT TO SCALE

OWNER: MILLTOWNE ASSOCIATES LP
BY: HCH PARTNERS III LLC, GENERAL PARTNER
BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
BY: STACY SPAN, EXECUTIVE DIRECTOR
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C/O STEPHEN J. MOORE
(410) 571-6610

REVISIONS:

NO.	REVISION	DATE
1	SELECTIVE REMOVAL OF PERMEABLE CONCRETE AND REPLACE WITH PERMEABLE PAVERS	7/4/15
4	REVISE SHEET NUMBER	06/08/17
5	ADDED SHADE CANOPY	04/16/18

SITE DEVELOPMENT PLAN
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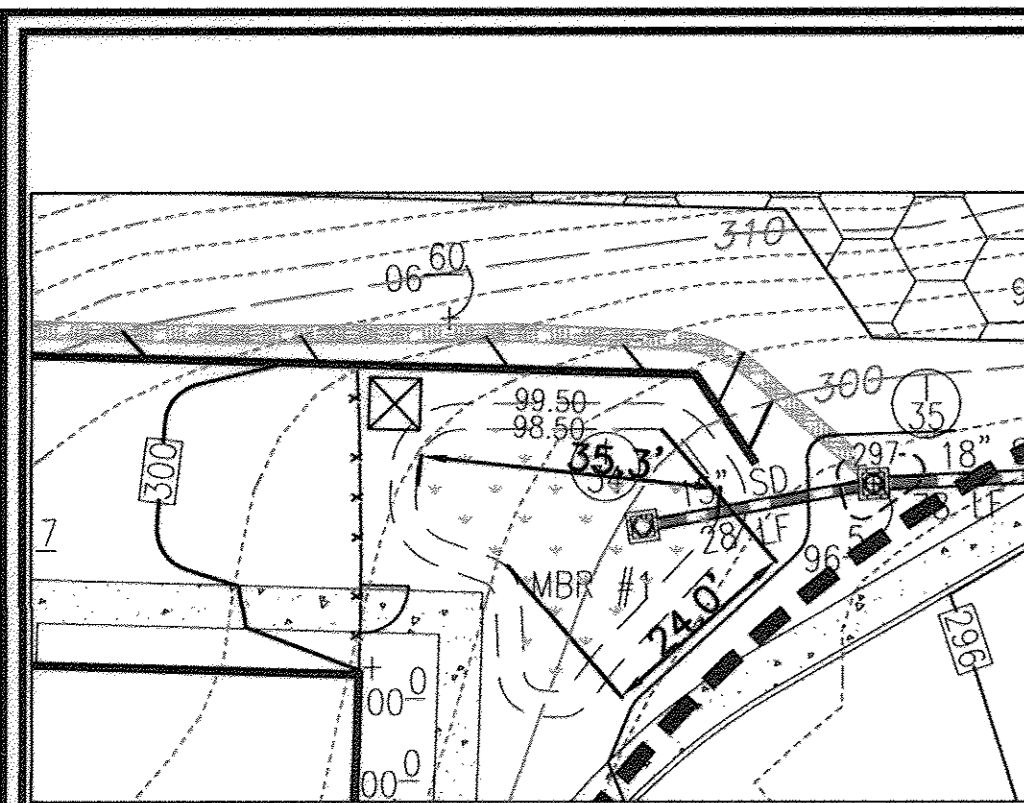
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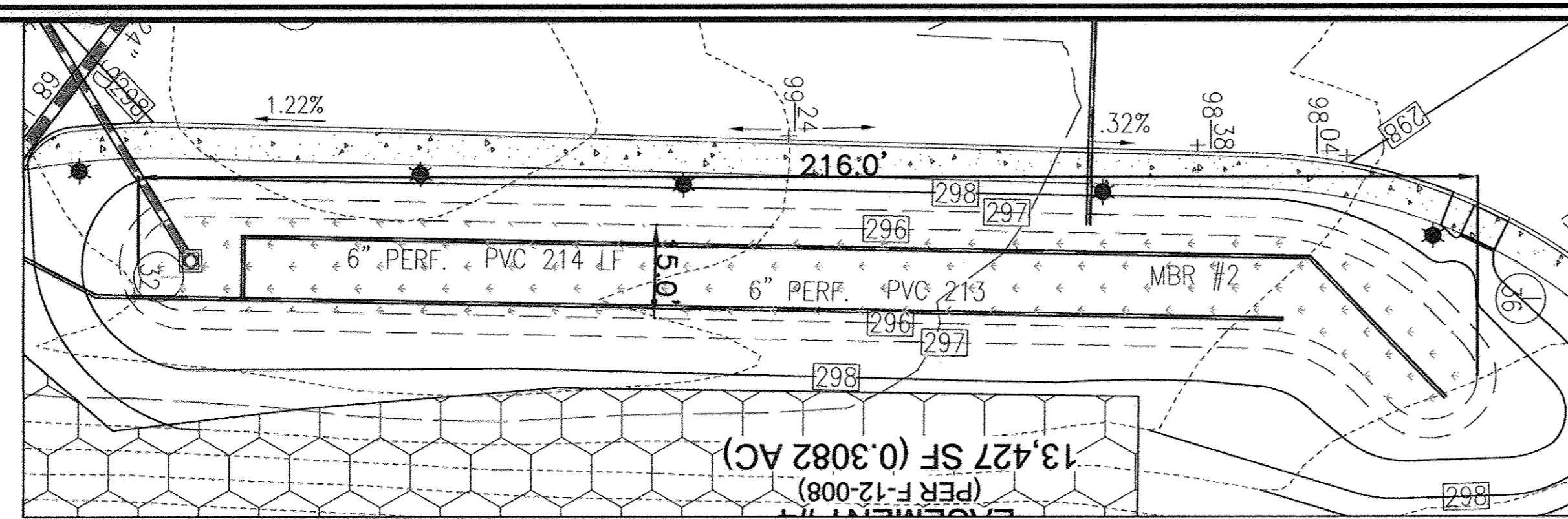
DESIGN BY: JTD
DRAWN BY: KG
CHECKED BY: JTD
DATE: OCTOBER 2011
SCALE: AS SHOWN
W.D. NO.: 10-24

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 21438 EXPIRATION DATE: 12-16-2012

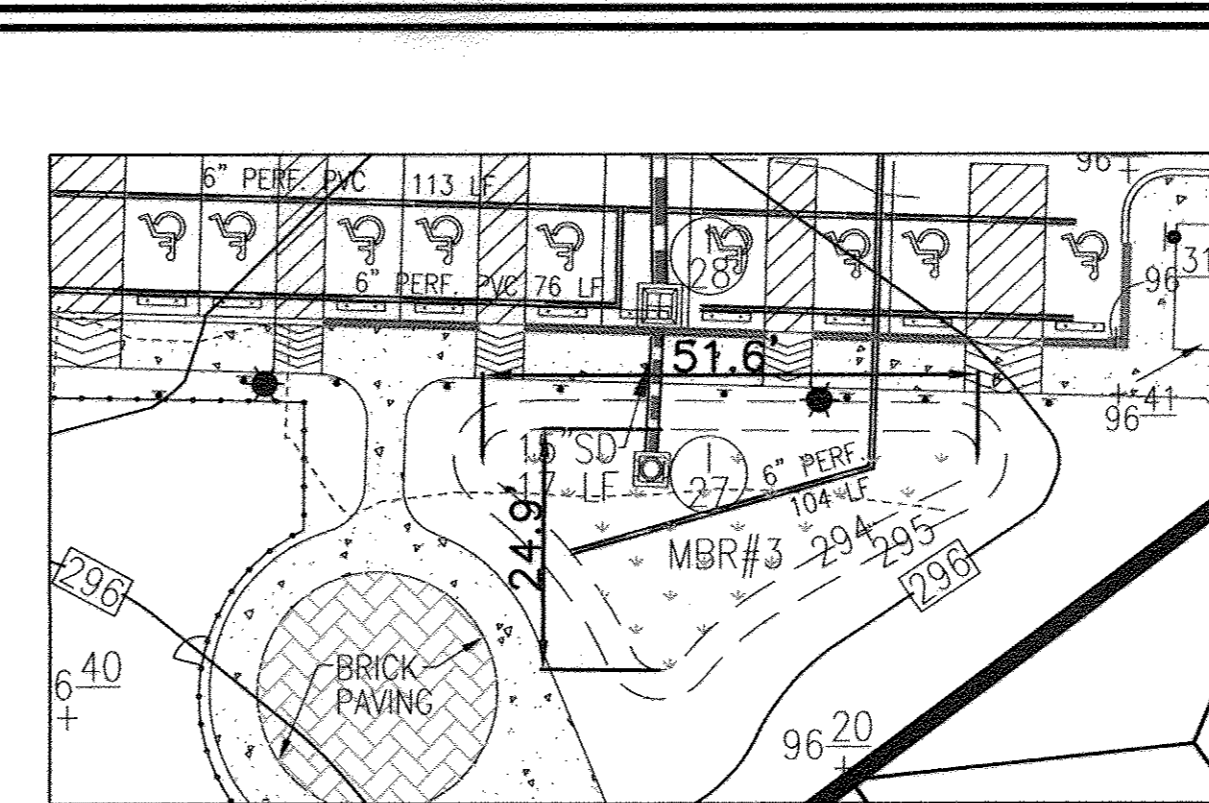
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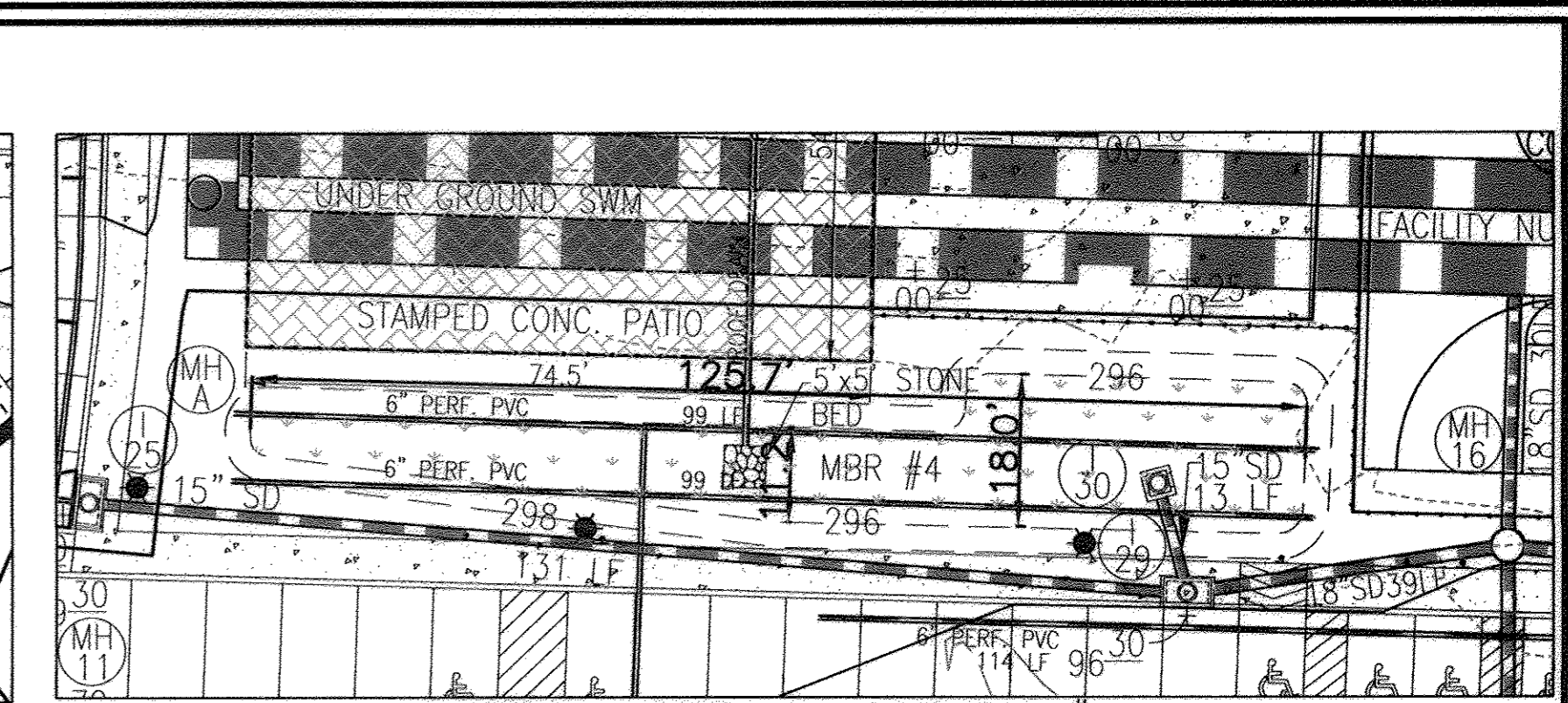
DETAIL - MICRO BIO-RETENTION #1
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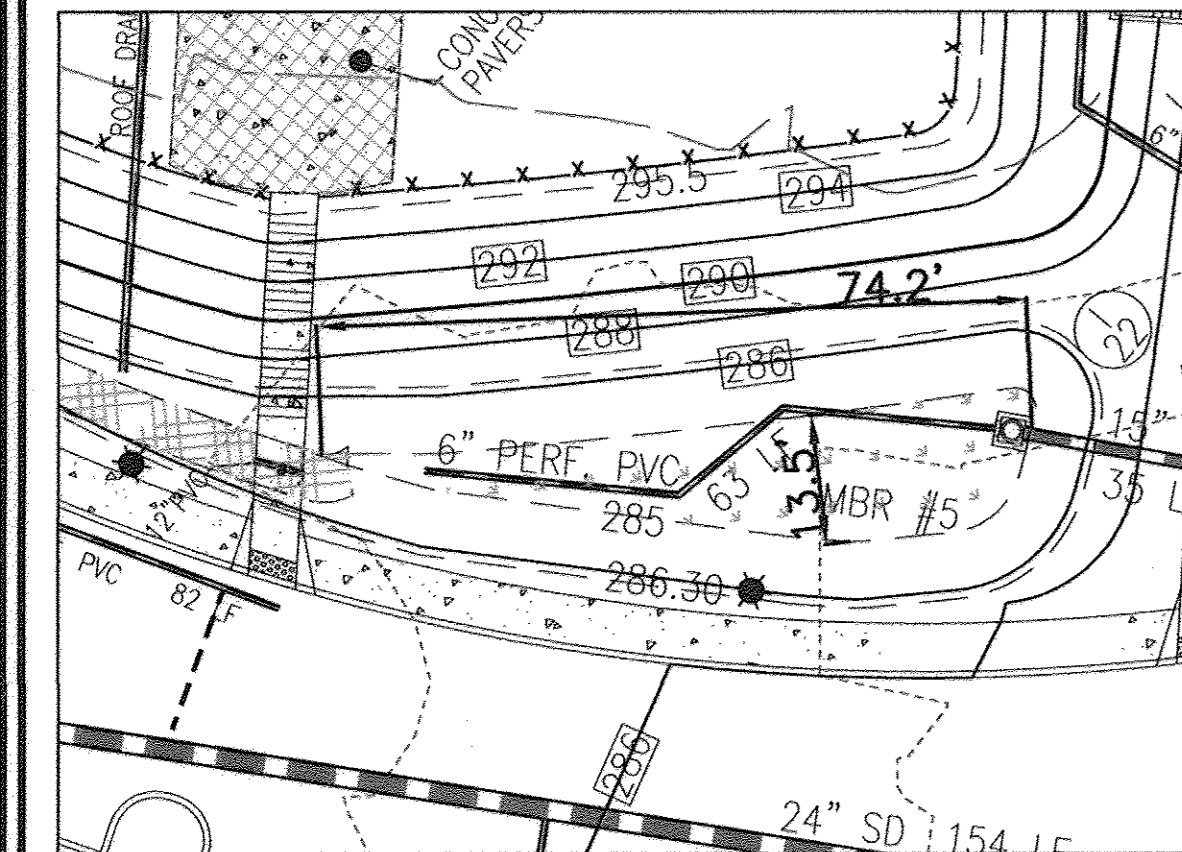
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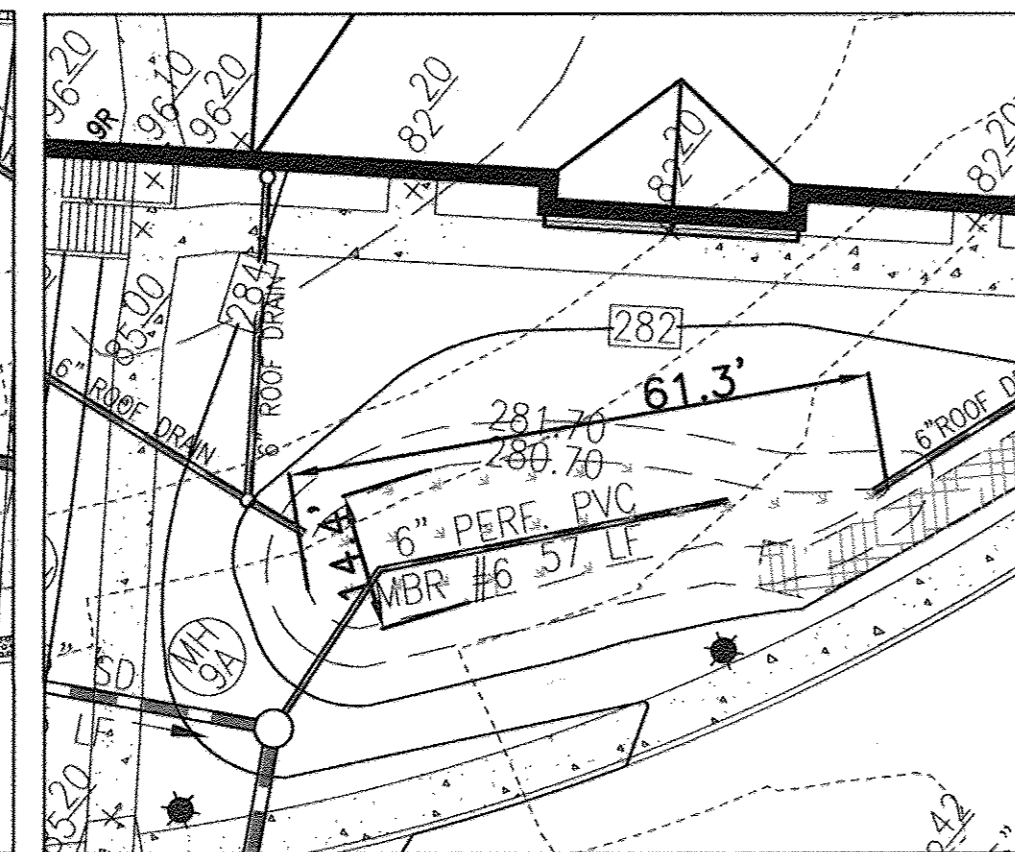
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SCALE: 1"=20'



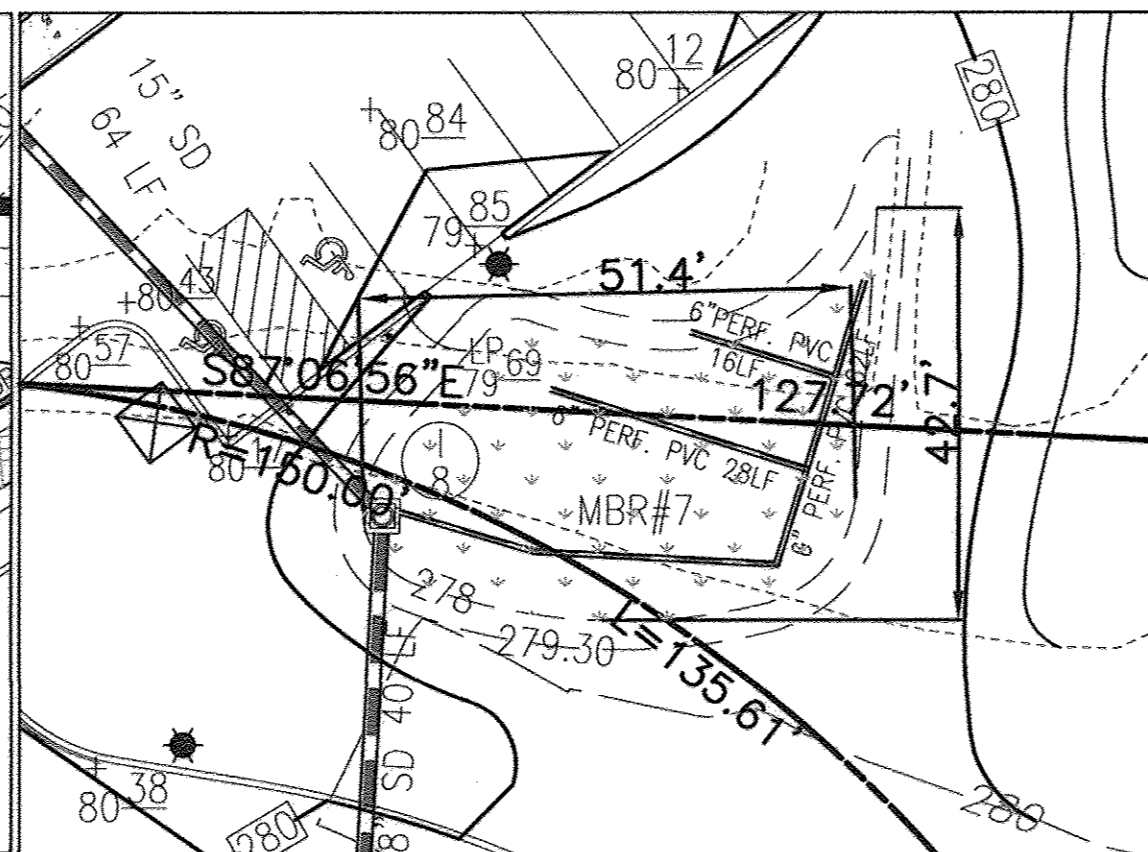
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SCALE: 1"=20'



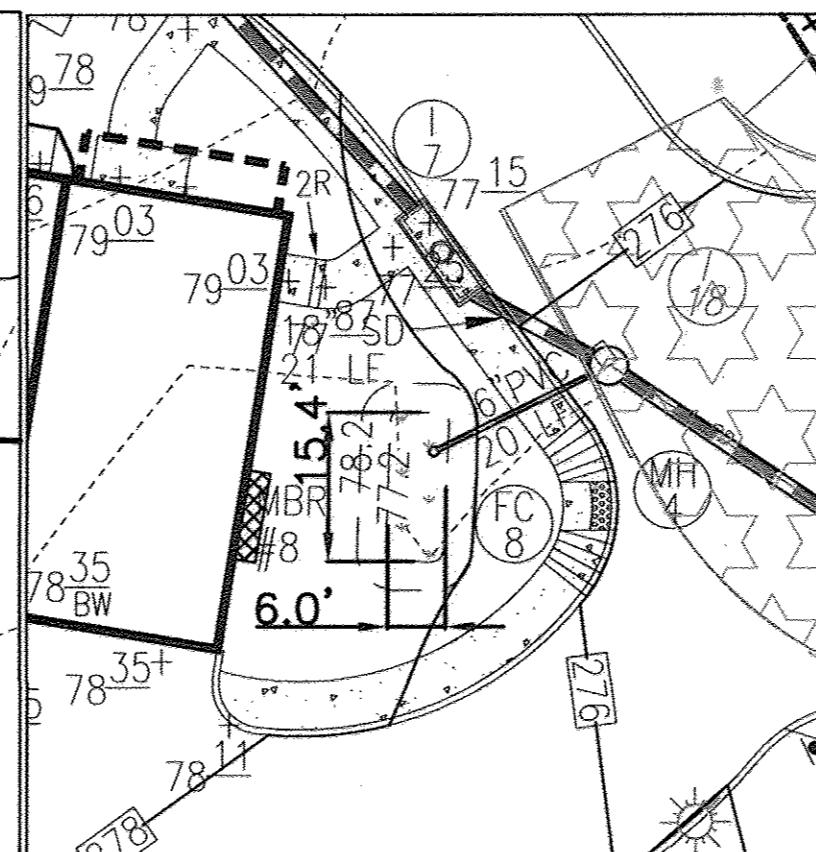
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SCALE: 1"=20'



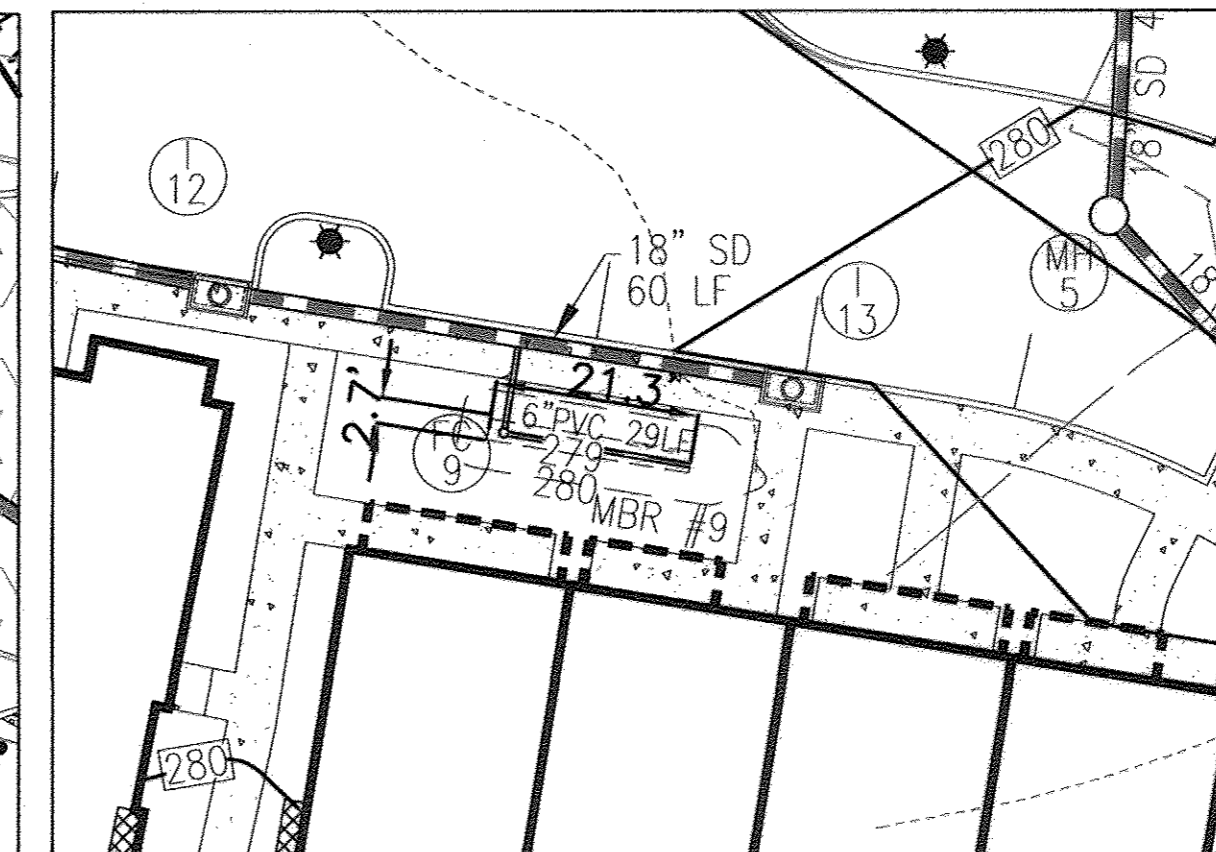
DETAIL - MICRO BIO-RETENTION #6
SCALE: 1"=20'



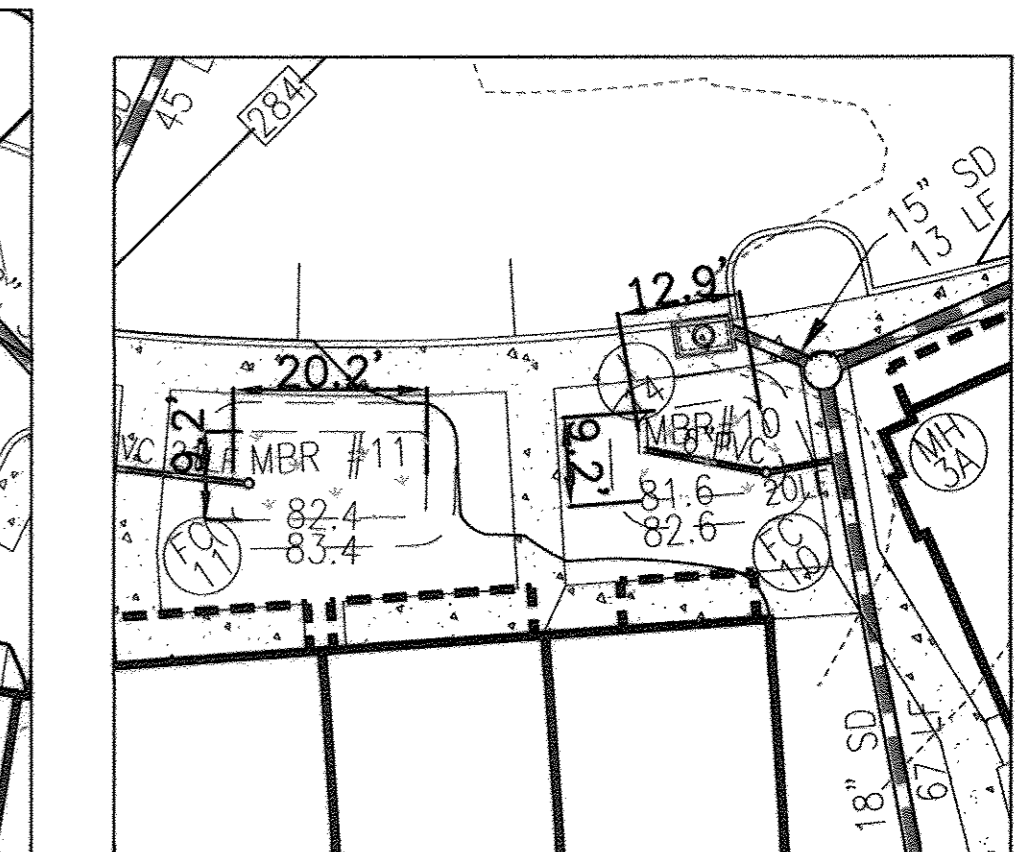
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SCALE: 1"=20'



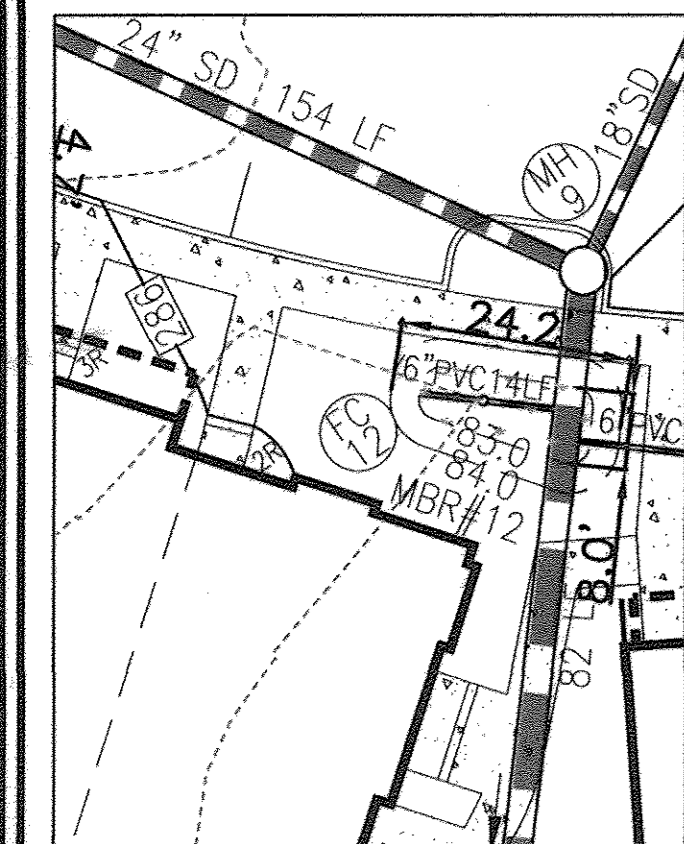
DETAIL - MICRO BIO-RETENTION #8
SCALE: 1"=20'



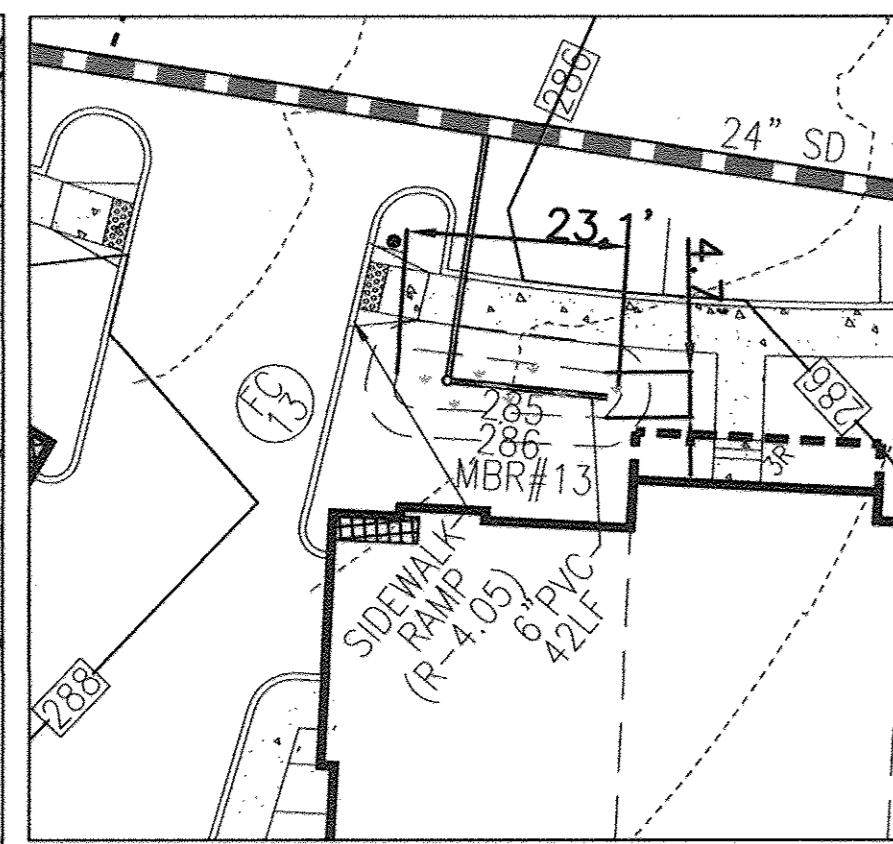
DETAIL - MICRO BIO-RETENTION #9
SCALE: 1"=20'



DETAIL - MICRO BIO-RETENTION #10 & #11
SCALE: 1"=20'



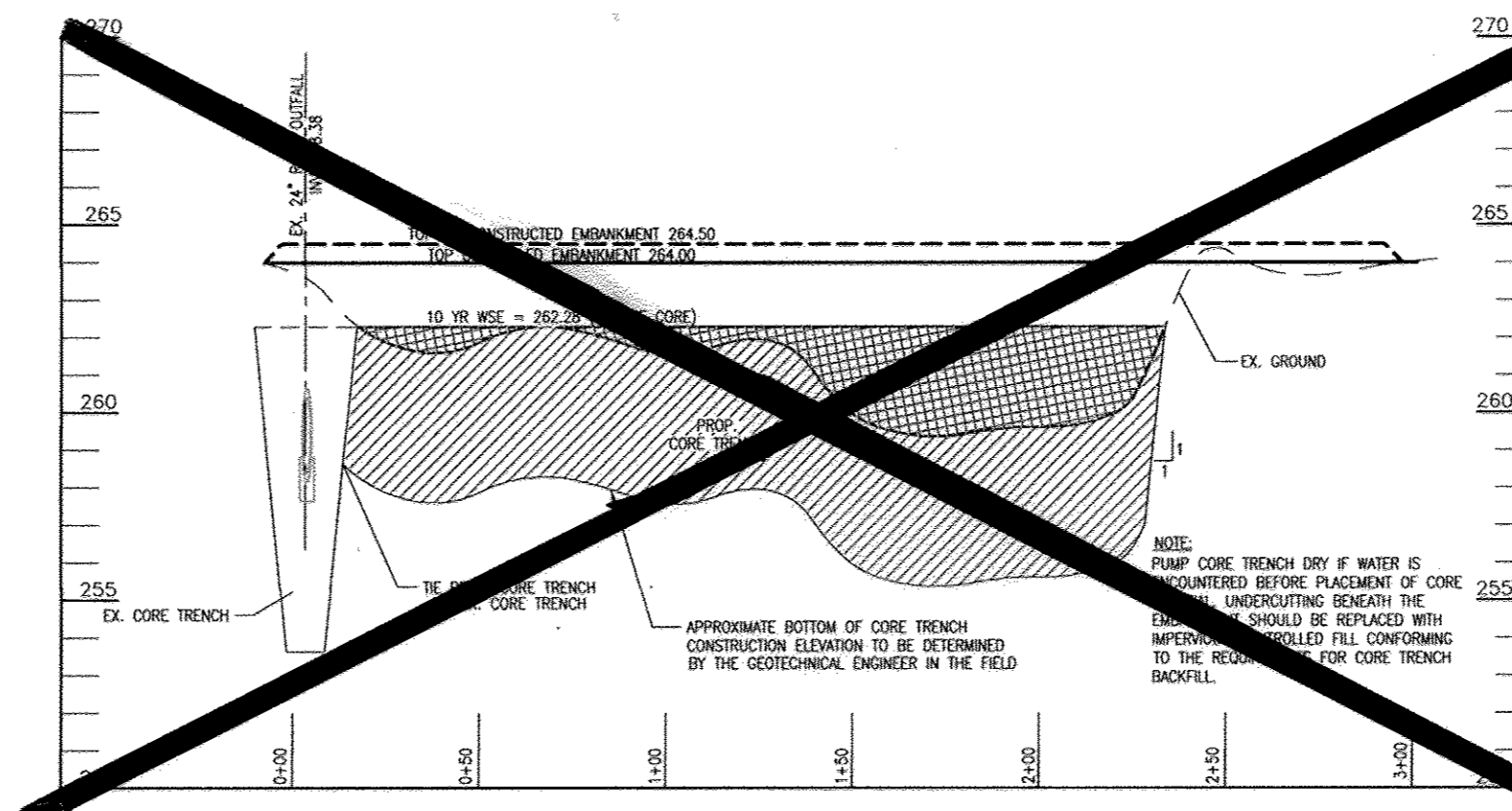
DETAIL - MICRO BIO-RETENTION #12
SCALE: 1"=20'



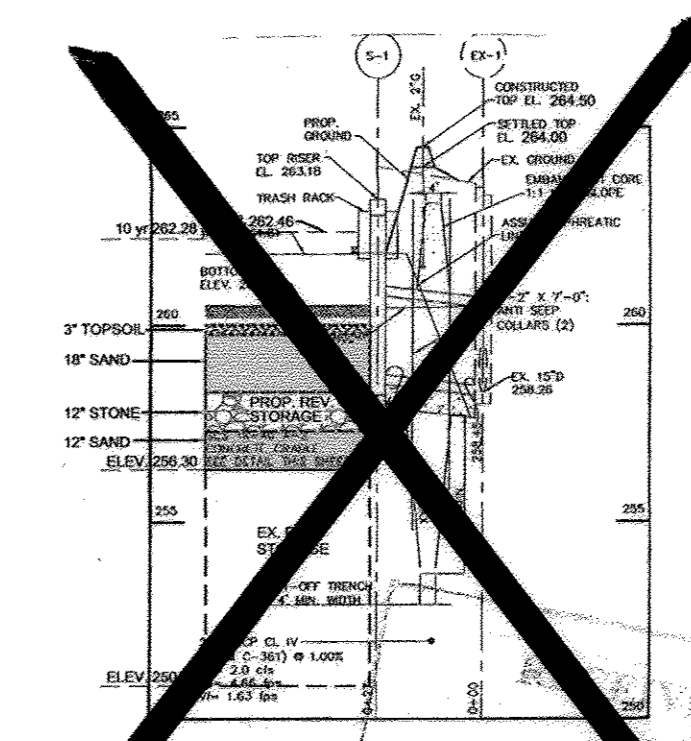
DETAIL - MICRO BIO-RETENTION #13
SCALE: 1"=20'

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED SURFACE STORMWATER FILTRATION SYSTEMS (F-1, F-4, AND F-5)

- The Owner shall inspect the stormwater wetland facility annually and after every heavy storm. Inspections shall be performed during wet weather to determine if the facility is functioning properly.
- The Owner shall mow the top and side slopes of the embankment a minimum of once per year, when vegetation reaches 18" in height or as needed.
- The Owner shall mow filters that have a grass cover of a minimum of three (3) times per growing season to maintain a maximum grass height of less than 12 inches.
- The Owner shall remove any debris and litter from the facility.
- The Owner shall repair any erosion in the facility as soon as it is noticed.
- The Owner shall remove silt when it exceeds four (4) inches deep in the forebay.
- When water ponds on the surface of the filter bed for more than seventy-two (72) hours, the Owner shall replace the top few inches of discolored material with fresh material. Proper cleaning and disposal of the removed materials and liquid must be followed by the Owner.
- The Owner shall maintain a log book to determine the rate at which the facility drains.
- The maintenance log book shall be available to Howard County for inspection to insure compliance with operation and maintenance criteria.
- Once the performance characteristics of the infiltration system have been verified, the monitoring schedule can be reduced to an annual basis unless the performance data indicates that a more frequent schedule is required.



CENTERLINE DAM PROFILE EXPANDED SAND FILTER
SCALE: HORIZONTAL=50' VERTICAL=5'



EXTERIOR PRINCIPAL SPILLWAY PROFILE EXPANDED SAND FILTER
SCALE: HORIZONTAL=50' VERTICAL=5'

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED GREEN ROOF (A-1)

THE FOLLOWING OPERATION AND MAINTENANCE SCHEDULE SHALL BE IMPLEMENTED TO THE FUNCTION OF THE GREEN ROOF SYSTEM IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE "GREEN ROOF SYSTEM DISTRIBUTOR":

WEED - ON AN ANNUAL BASIS REMOVE UNWANTED PLANT MATERIAL. REPLACE FAILED PLANT MATERIAL WHEN THE FAILED PLANT AREA EXCEEDS FIVE PERCENT (5%) OF THE ROOF AREA.

IRRIGATION - A PERMANENTLY INSTALLED ROOF SHOULD BE IRRIGATED DURING THE FIRST GROWING SEASON. SATURATE THE GREEN ROOF AT LEAST ONCE A WEEK DURING THIS FIRST GROWING SEASON. AFTER VEGETATION IS ESTABLISHED, IRRIGATION MAY BE REQUIRED PERIODICALLY DURING DRY PERIODS.

NUTRIENT - THE APPLICATION OF A SLOW-RELEASE FERTILIZER IN THE SPRING IS RECOMMENDED ON AN ANNUAL BASIS.

INSPECT FOR DAMAGE - AFTER EACH SIGNIFICANT RAINFALL INSPECT DOWNSPOUTS OR DRAINAGE CHANNELS/COURSES FOR CLOGS.

INSPECT FOR LEAKS - AFTER EACH SIGNIFICANT RAINFALL INSPECT GREEN ROOF FOR LEAKS.

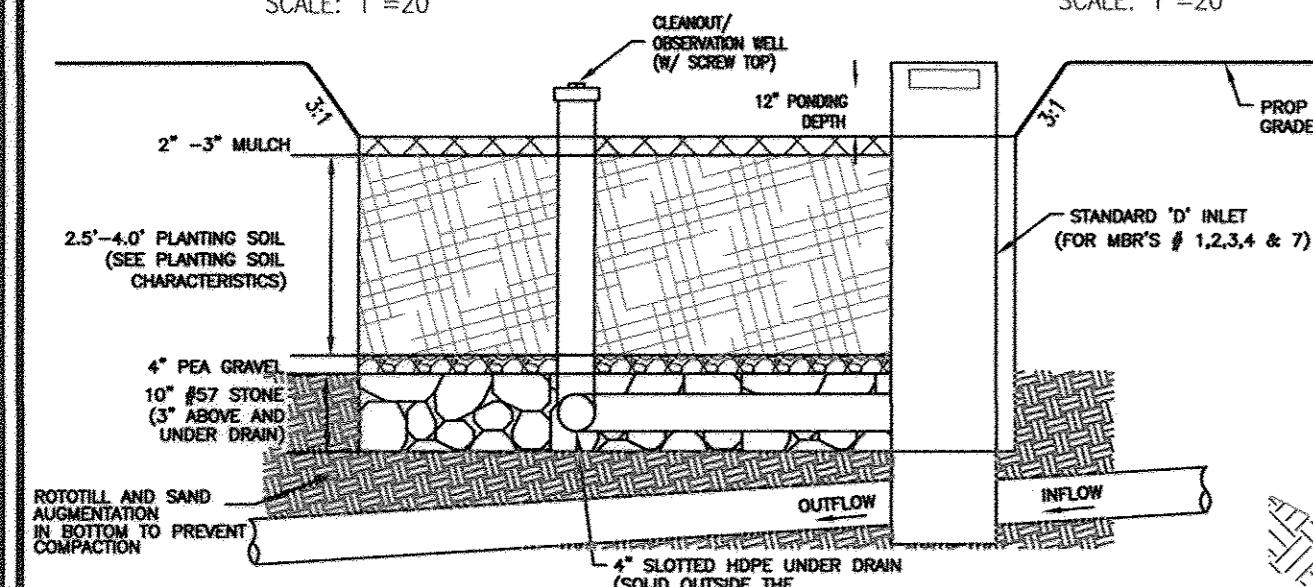
SEE SHEET 50 FOR SAND FILTER REBUILD DETAILS

NOTE: FOR MICROBIORETENTION PLANTING SCHEDULE PLEASE SEE LANDSCAPE PLAN.

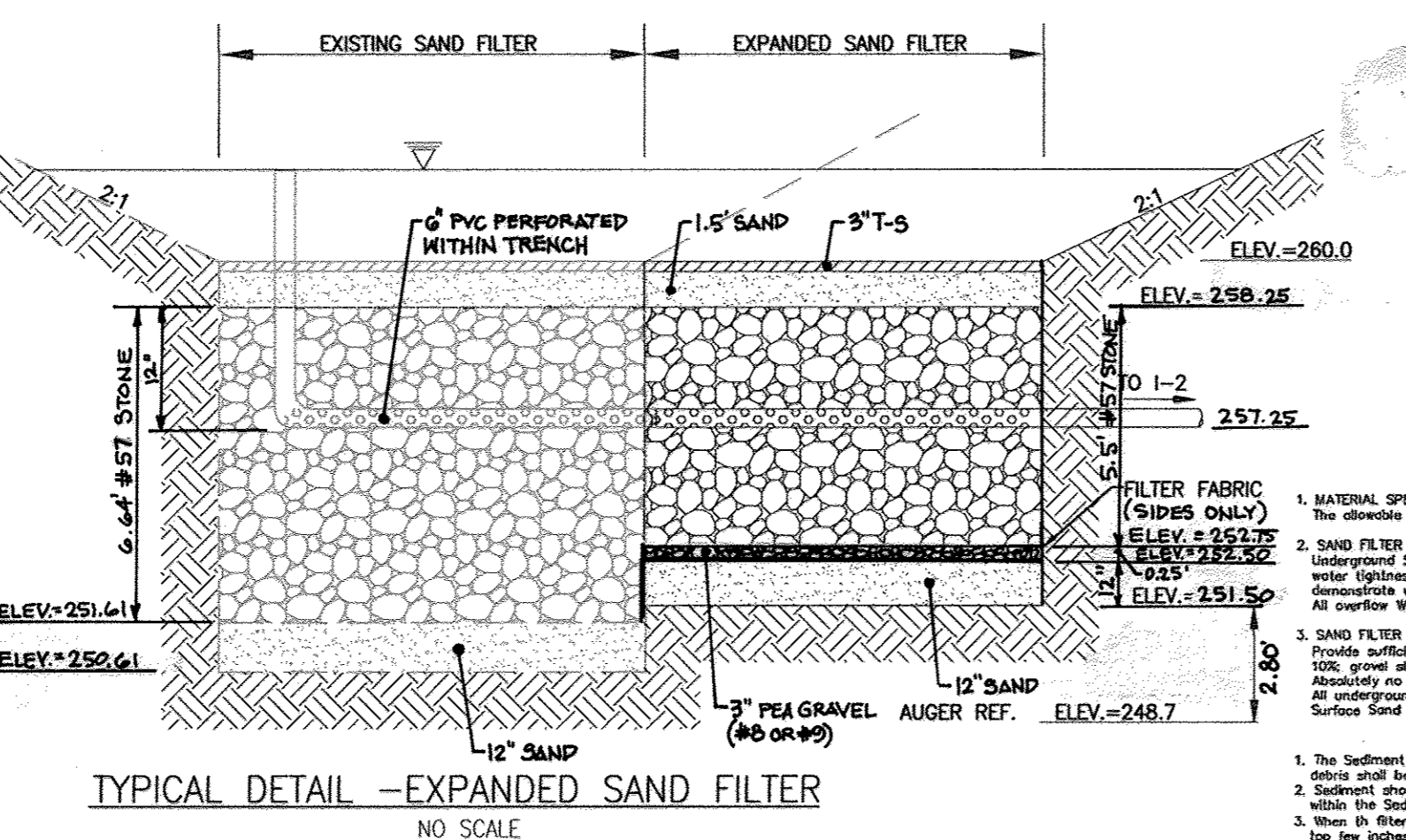
MICROBIORETENTION CHART					
FACILITY	BOTTOM ELEVATION	AREA (SF)	PLANTING MEDIA	VOL. OF COV.	VOL. PROV. COV.
MBR#1	298.50	639	36"	6758	6887
MBR#2	296.00	3257	36"	12566	13422
MBR#3	294.00	698	36"	3965	3965
MBR#4	296.00	1483	24"	906	1003
MBR#5	285.00	1099	36"	1094	2537
MBR#6	280.70	587	24"	1011	1271
MBR#7	278.00	1375	36"	2633	2650
MBR#8	277.20	93	36"	237	255
MBR#9	280.00	47	36"	176	176
MBR#10	281.60	132	36"	273	331
MBR#11	282.40	181	24"	333	396
MBR#12	284.00	118	36"	308	308
MBR#13	285.00	122	36"	327	327
SAND FILTER #1	260.00	3804	36"	3927	15144

OWNER
MILLTOWNE ASSOCIATES LP
BY: HCH PARTNERS III LLC, GENERAL PARTNER
BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
BY: STACY SPAN, EXECUTIVE DIRECTOR
6751 COLUMBIA GATEWAY DR.
3RD FLOOR
COLUMBIA, MD 21046
(410) 313-6320

DEVELOPER
STAVROU ASSOCIATES, INC.
2661 RIVA ROAD
BUILDING 300
ANNAPOLIS, MD 21401
C/O STEPHEN J. MOORE
(410) 571-6610



DETAIL - MICROBIORETENTION (M-6)
NOT TO SCALE



TYPICAL DETAIL - EXPANDED SAND FILTER
NO SCALE

- SAND FILTER SPECIFICATIONS**
- MATERIAL SPECIFICATIONS FOR SAND FILTERS: The aggregate materials for Sand Filter construction are detailed in Table B.3.1.
 - SAND FILTER TESTING SPECIFICATIONS: Underdrain Sand Filter, Facilities with sensitive groundwater Aquifers and Filters designed to serve urban hot spots are to be tested for water tightness prior to placement of Filter media. Entrances and exits should be plugged and the system completely filled with water to demonstrate water tightness. Underdrains should be inspected for a period of 2 hours.
 - OVERFLOW: Multiple Orifices and Flow Distribution: Sites are to be field-tested to verify appropriate distribution of flows.
 - PROVIDE SUFFICIENT MAINTENANCE ACCESS (MIN. 12" WIDE ROOST WITH LEGITIMATE RECORDS): Vegetated access slopes are to be a maximum of 10% greater slopes to 15% or steeper to 20%.
 - ABSOLUTELY NO RAINFALL TO ENTER THE FILTER UNTIL ALL CONTRIBUTING DRAINAGE COVERS HAVE BEEN ESTABLISHED. SURFACE OF FILTER BED IS TO BE LEVEL. ALL UNDERDRAIN SAND FILTERS SHOULD BE CLEARLY DEMARCATED WITH SIGNS TO INDICATE THAT THEY MAY BE LOCATED WITHIN MAINTENANCE SLOPE.
 - SURFACE SAND FILTERS MAY BE PLANTED WITH APPROPRIATE GRASSES; SEE APPENDIX A.
- FILTERING MAINTENANCE CRITERIA**
- The Sediment Chamber outlet device shall be cleaned/inspected when sediment times within the chamber exceeds 30 hours. Trash and debris shall be removed as necessary.
 - The Sediment Chamber shall be cleaned/inspected when sediment times within the chamber exceeds 30 hours. Vegetation within the Sediment Chamber should be limited to a height of 18 inches.
 - When the filtering capacity of the Filter declines (i.e., when the water ponding on the surface of the Filter bed for more than 72 hours), the top few inches of discolored material shall be removed and replaced with fresh material. The removed sediments should be disposed in an approved manner (e.g., LANDFILL). Sediment should be removed from the Filter bed when the accumulation exceeds one inch.
 - Organic Filters (F-4) or Surface Sand Filters (F-1) that have a grass cover should be mowed a minimum of 3 times per growing season to maintain maximum grass height less than 12 inches.
 - Direct maintenance access shall be provided to the Preliminary and the Filter bed.
 - Maintenance shall be provided to the owner, Howard County, Maryland Housing & Community Development.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 10/20/11
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 10/27/11
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 10/27/11
DIRECTOR DATE

REVISE TO MODIFY REG OPEN SPACE BY REMOVING NATURE TRAIL AND MODIFY POCKET PARK, SHOW REPAIR OF DAMAGED SAND FILTER 01/05/17

SITE DEVELOPMENT PLAN
HILLTOP REDEVELOPMENT-PHASE 1
RESIDENTIAL TOWNHOUSES, APARTMENTS
AND RECREATION CENTER
THE RECREATION CENTER IS A GREEN BUILDING
L477/F-118, L456/F-448, L448/F-46, F-12-008

STORMWATER MANAGEMENT NOTES AND DETAILS

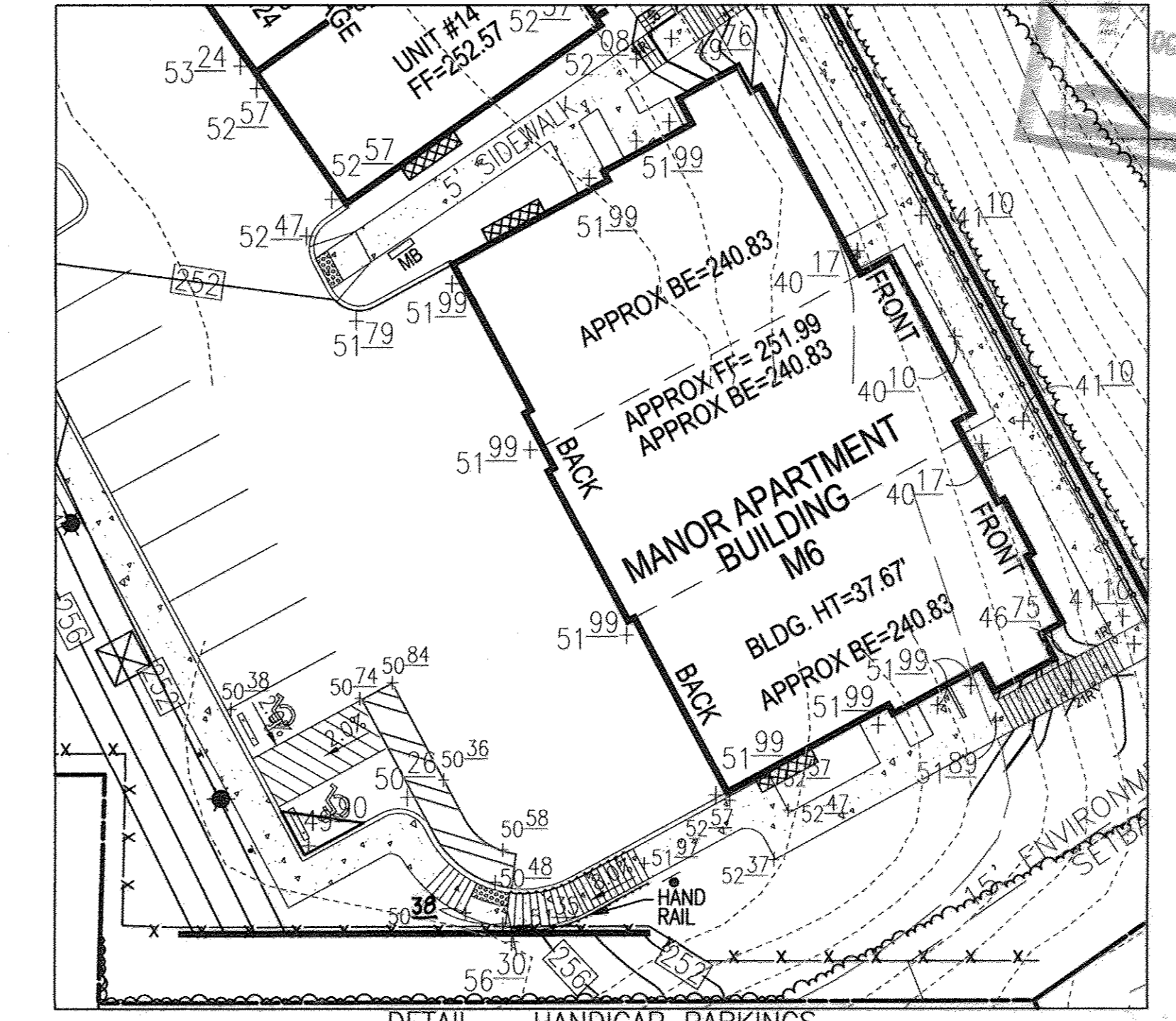
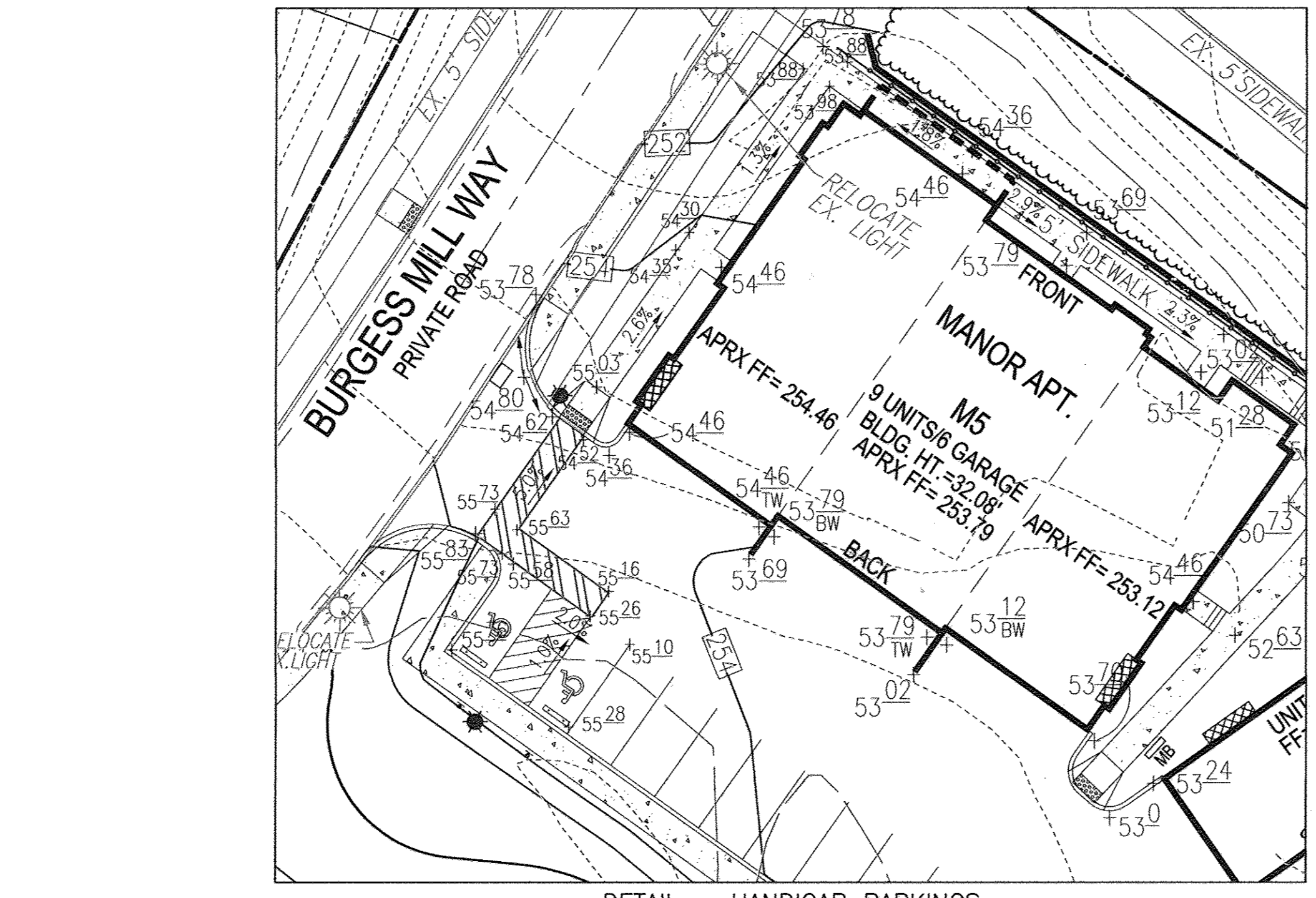
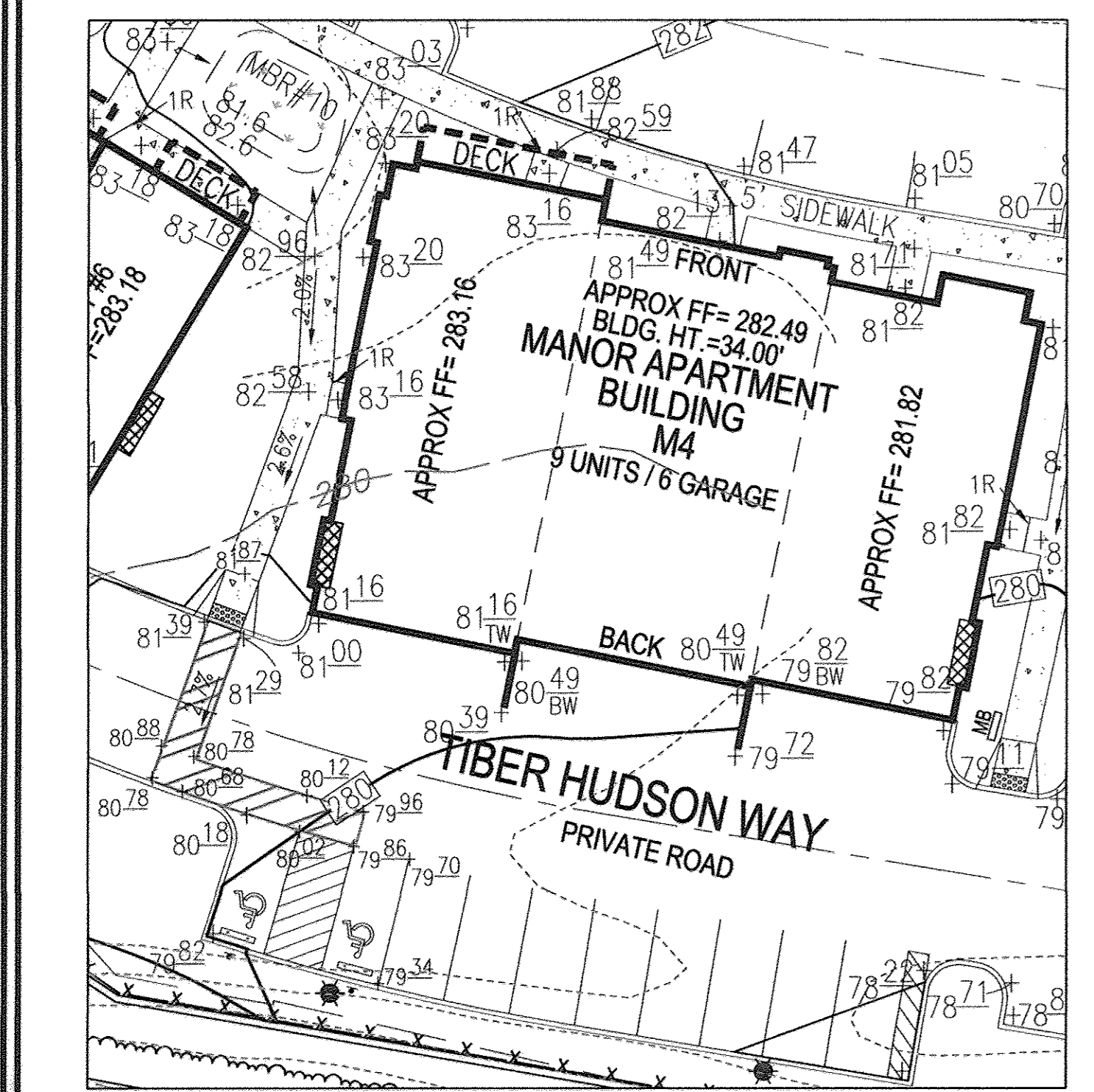
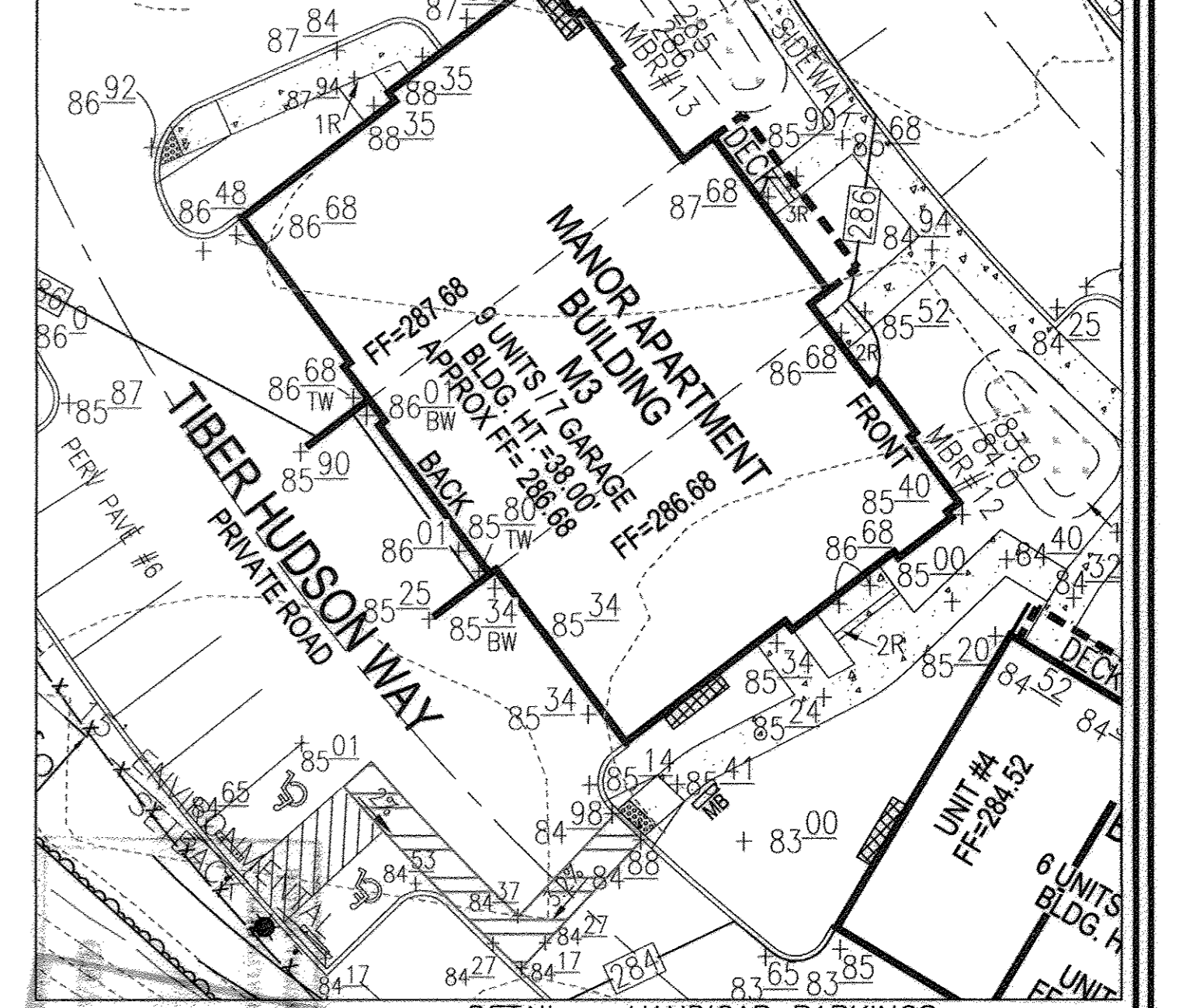
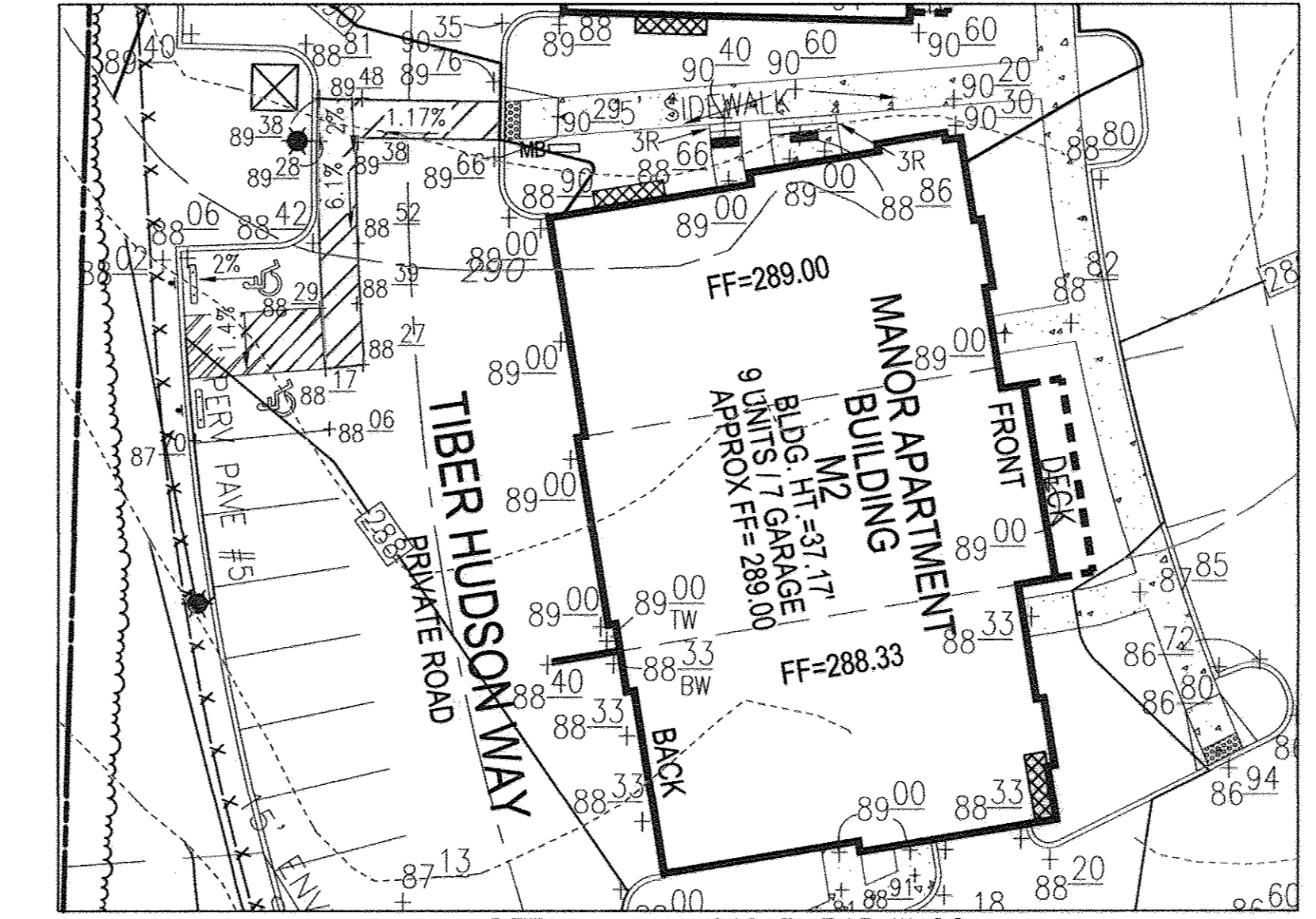
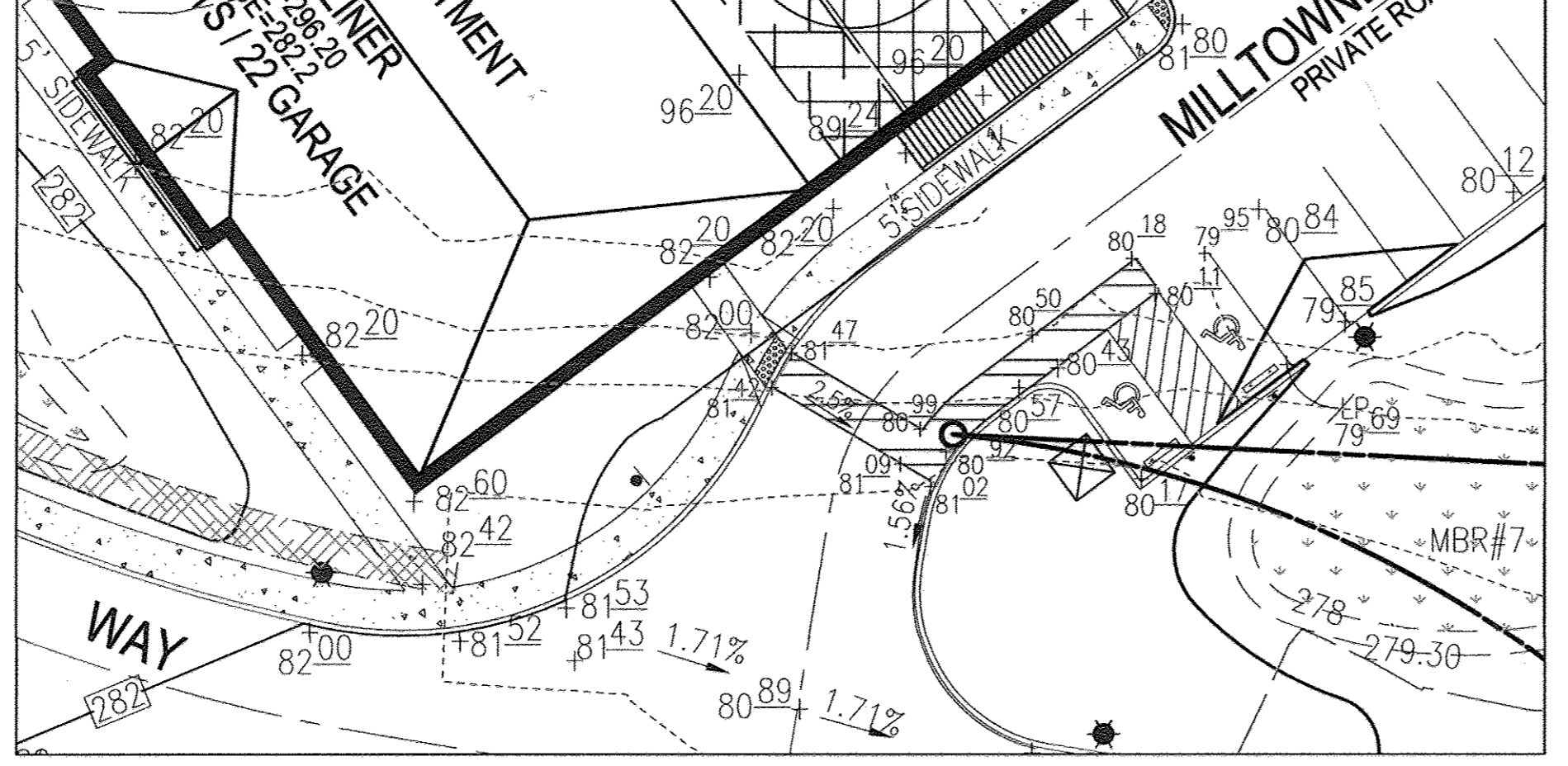
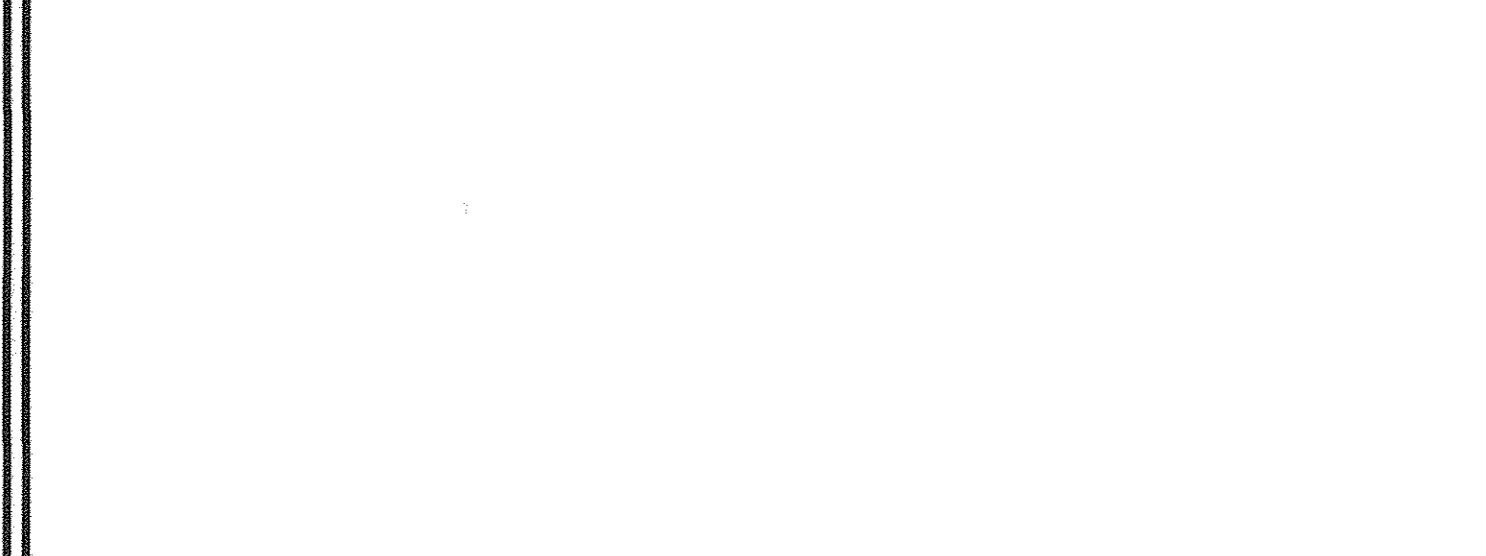
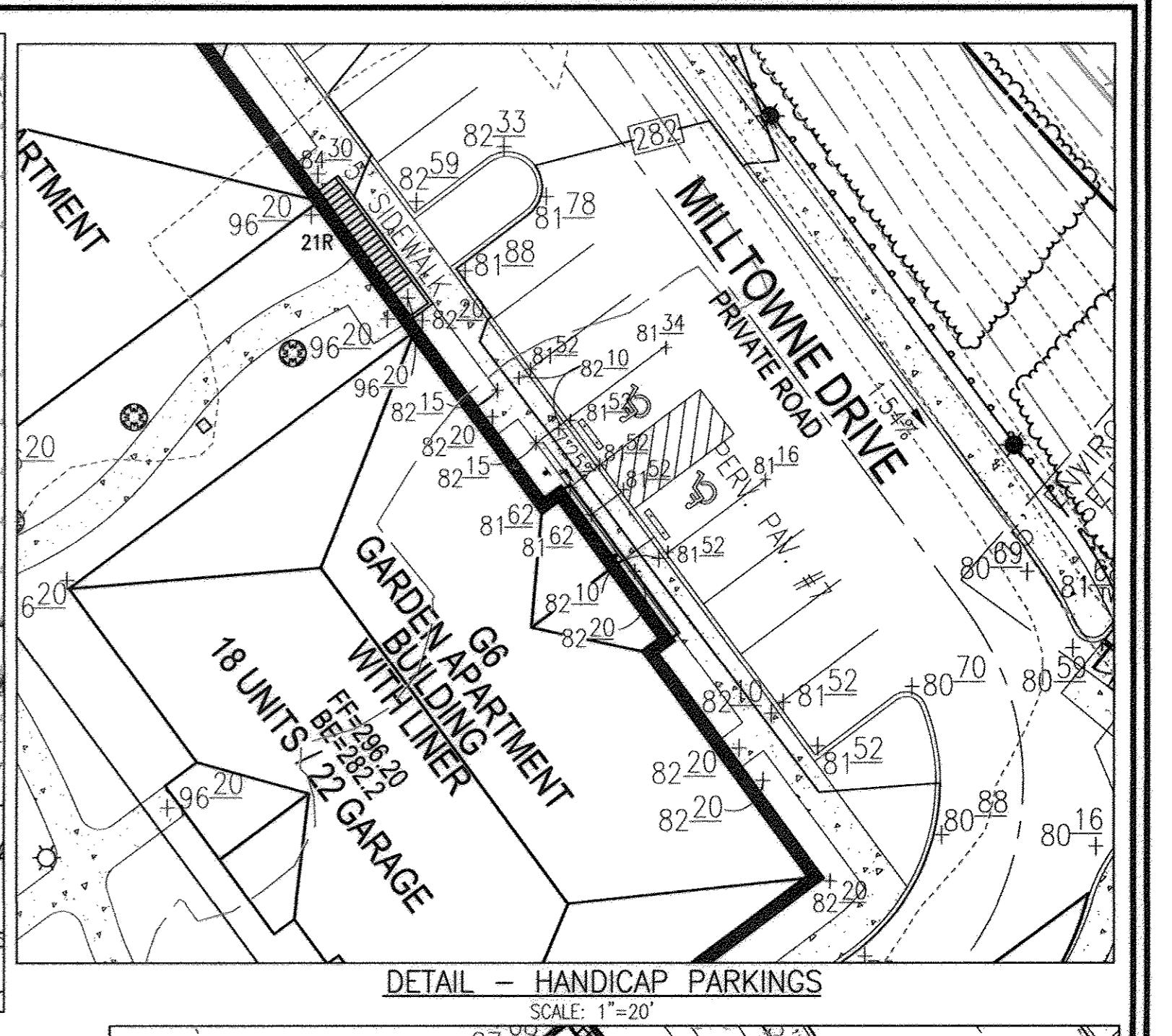
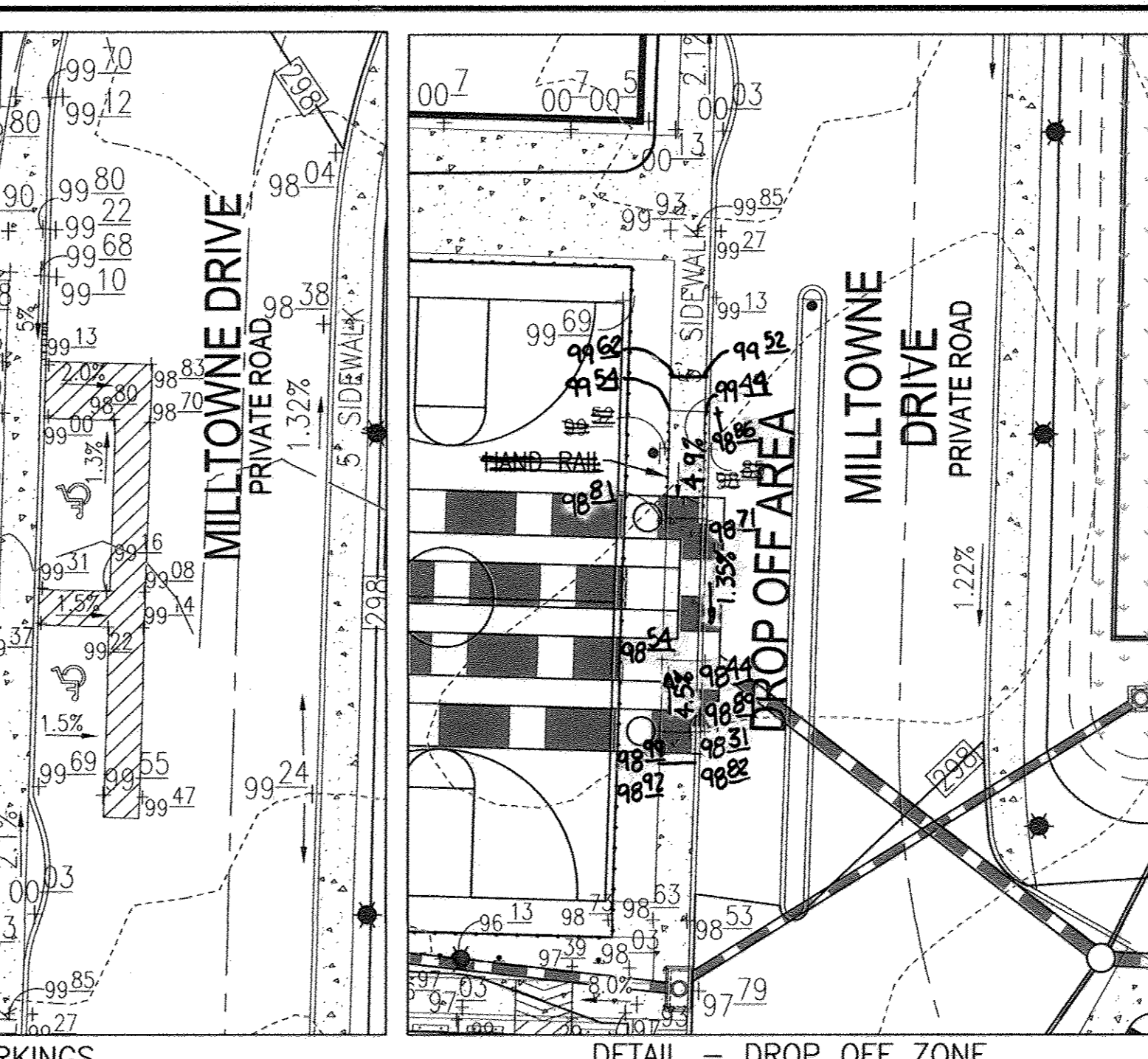
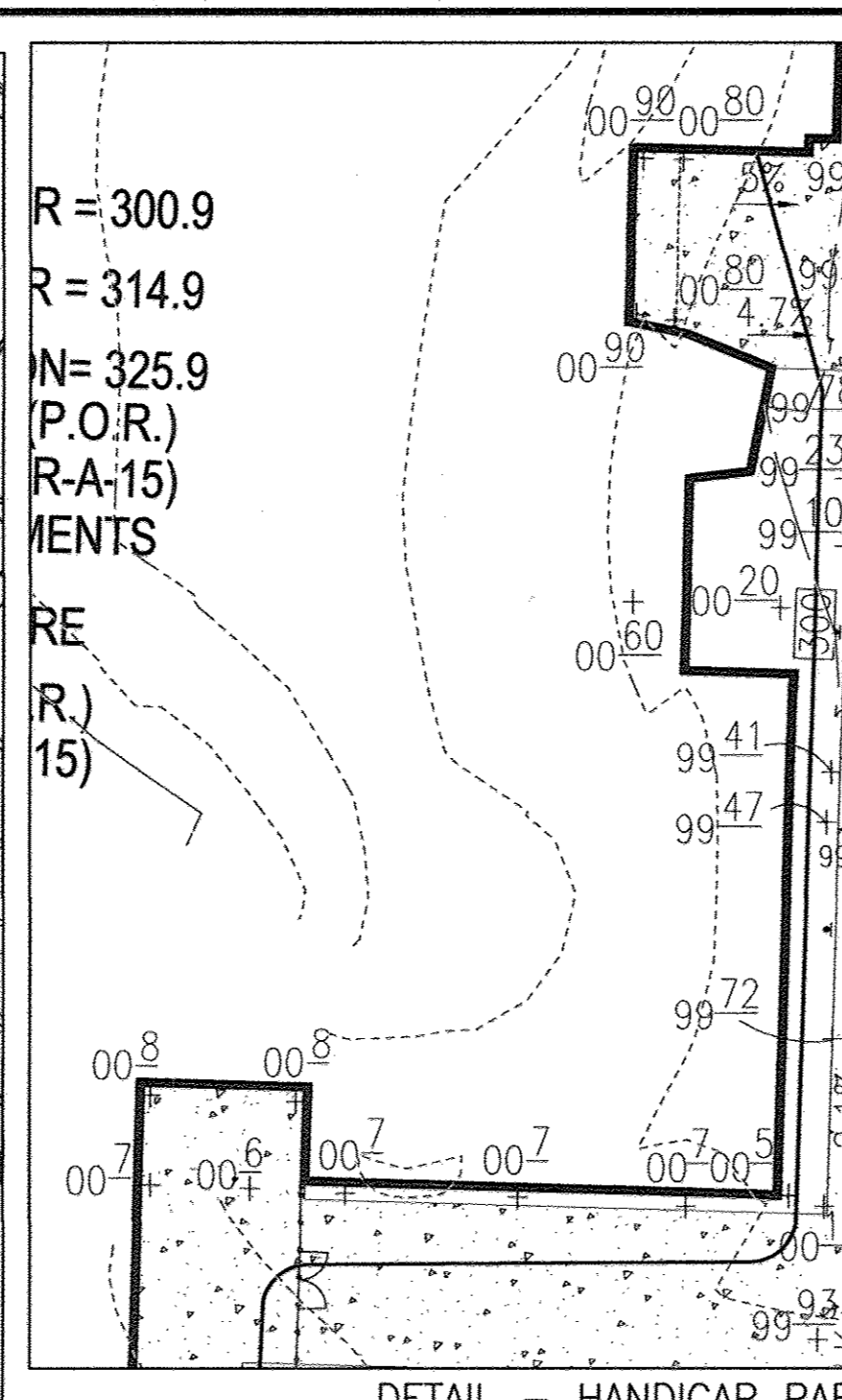
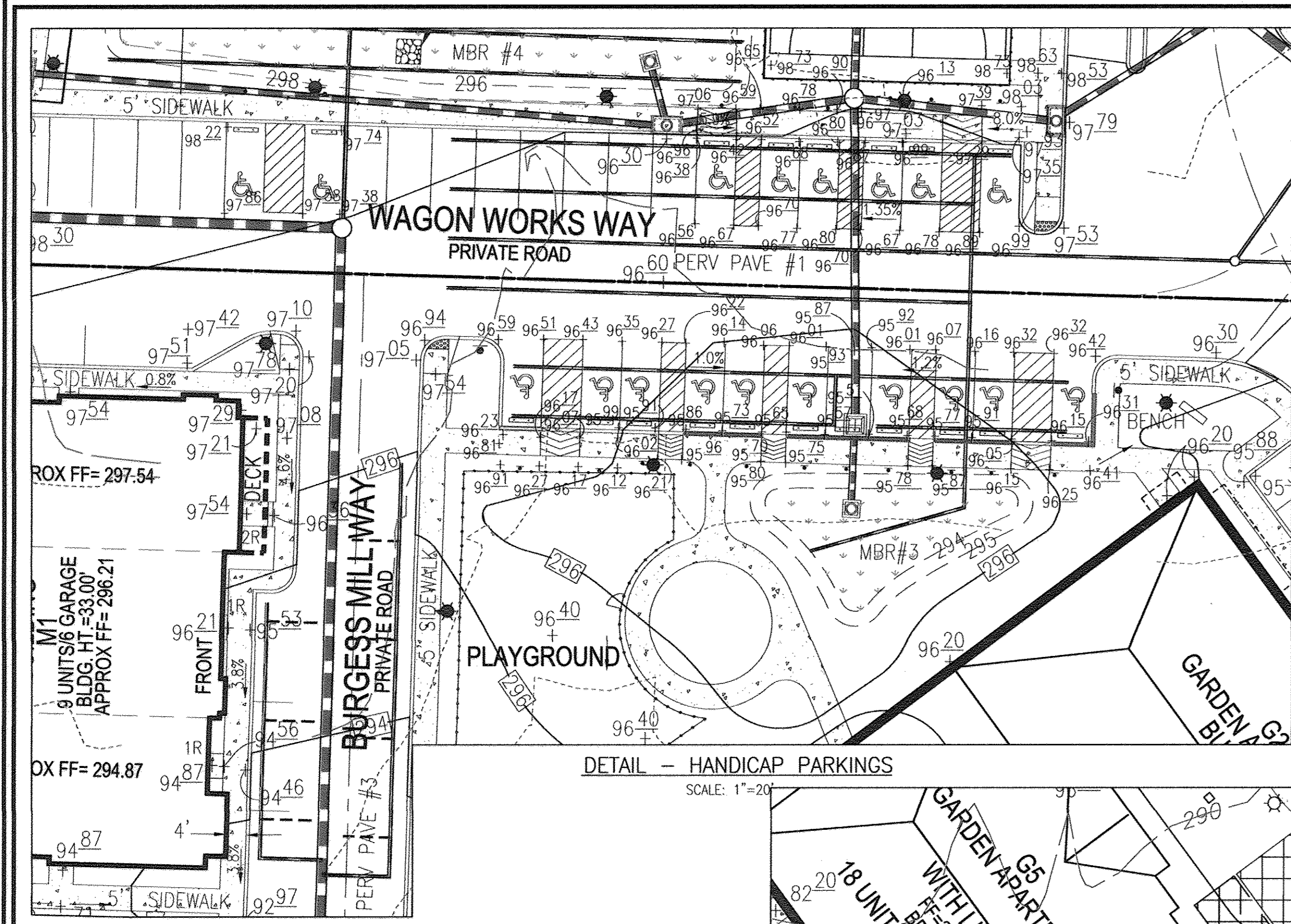
TAX MAP: 25 PARCELS: A, C, D, AND E BLOCK: 07 ZONINGS: R-VH, R-A-15, POR
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET ELLICOTT CITY, MD 21043 TEL: 410-461-7666 FAX: 410-461-8961

DESIGN BY: JTD
DRAWN BY: KC
CHECKED BY: JTD
DATE: OCTOBER 2011
SCALE: AS SHOWN
W.O. NO.: 10-24

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A duly licensed PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 1408 EXPIRATION DATE: 12-18-2012

21 SHEET OF 50



OWNER
MILLTOWNE ASSOCIATES LP
BY: HCH PARTNERS III LLC, GENERAL PARTNER
BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
BY: STACY SPAN, EXECUTIVE DIRECTOR
6751 COLUMBIA GATEWAY DR.
3RD FLOOR
COLUMBIA, MD 21046
(410) 313-6320

DEVELOPER
STAVROU ASSOCIATES, INC.
2661 RIVA ROAD
BUILDING 300
ANNAPOLIS, MD 21401
C/O STEPHEN J. MOORE
(410) 571-6610

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 10/27/11
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 10/27/11
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 10/27/11
DIRECTOR DATE

NO.	4	REVISE SHEET NUMBER	DATE
NO.		REVISION	DATE

SITE DEVELOPMENT PLAN
HILLTOP REDEVELOPMENT-PHASE 1
RESIDENTIAL TOWNHOUSES, APARTMENTS
AND RECREATION CENTER IS A GREEN BUILDING
L 477/F 718, L 456/F 448, L 448/F 46, F-12-008

HANDICAP PARKING DETAILS

TAX MAP: 25 PARCELS: A, C, D, AND E BLOCK: 07 ZONINGS: R-VH, R-A-15, POR
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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ENGINEERS • SURVEYORS • PLANNERS
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ELIGOTT CITY, MD 21043 FAX: 410-461-8961

DESIGN BY: JTD
DRAWN BY: KG
CHECKED BY: JTD
DATE: OCTOBER 2011
SCALE: AS SHOWN
W.O. NO.: 10-24

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22 SHEET OF 50



NO.	REVISION	DATE
4	REVISE SHEET NUMBER	01/05/17

RECOMMENDATIONS

- We recommend that only the proposed SWM facilities described in the above sections as feasible for infiltration be designed as infiltration facilities. However, the facilities described as not feasible due to seepage refusal in the borings within 4 feet of the facility bottom may be overexcavated.
- We recommend that a test pit investigation be performed in the area of MBR#1 after the construction of the proposed retaining wall, to ensure that groundwater is not located within 4 feet of the bottom of the facility.
- We recommend that increased foundation waterproofing and typical foundation underdrains be utilized for proposed Manor Building #60, as described above, to control water that could possibly migrate from the sand filter facility.
- We recommend that the proposed underground facility include a gravity underdrain. The underdrain must be constructed as described in the Conclusions section of this report.
- We recommend that the previous pavement section be comparable to the Howard County rigid pavement detail. Therefore, we recommend that the previous concrete be 7-inches in thickness. The previous concrete must have a 28-day specified compressive strength of 3,500 psi (MIX No. 3, MD 24H 902.10.03). We recommend that a submittal be obtained from the concrete supplier for the 3,500 psi previous concrete, for review by the design engineer and this office, prior to the finalization of the pavement design.
- We recommend that soil loss in areas with site soils described as erodible in the NRCS USDA soil survey be mitigated by establishing vegetation, installing stabilizing geotextiles and removal and replacement of erodible soils in certain areas when determined to be necessary in the field by the site and/or geotechnical engineer.
- We recommend that the foundations for the SWM structures be proportioned for an allowable soil pressure of 2,000 psf and that foundation soils be tested and confirmed during construction.
- We recommend that the earth pressure against structures be computed based on an angle of internal friction of 32 degrees and unit weight of 130 pounds per cubic foot, as described in our previously referenced geotechnical report.
- We recommend that the proposed final stormwater management design be reviewed by this office. A final review with modified final recommendations, if deemed necessary, will be prepared.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 10/20/11
 CHIEF, DEVELOPMENT ENGINEERING DIVISION **AD** DATE

[Signature] 10/27/11
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 10/23/11
 DIRECTOR DATE

LOCATION PLAN
 SCALE: 1"=80'

- RECORD OF SOIL EXPLORATION**
- Project: Hilltop Redevelopment Project - Phase 1
 Date: 11/27/11
 Location: [Address]
- Soil Description: [Detailed soil log data including depth, soil type, and moisture content]

OWNER
 MINTOWNE ASSOCIATES LP
 BY: HCH PARTNERS III LLC, GENERAL PARTNER
 BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
 BY: STACY SPANN, EXECUTIVE DIRECTOR
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 AND RECREATION CENTER
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 L 477/F 718, L 456/F 448, L 448/F 46, F-12-008

STORMWATER MANAGEMENT BORINGS

TAZ MAP: 25 PARCELS: A, C, D, AND E BLOCK: 07 ZONINGS: R-VH, R-A-15, POR
 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

DESIGN BY: JTD
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23 SHEET OF 50

NET TRACT AREA:

A. Total tract area	22.84
B. Land dedication acres (parks, county facility, etc.)	0.00
C. Land dedication for roads or utilities (not being constructed by this plan)	6.08
D. Area to remain in commercial agricultural production use	0.00
E. Other deductions (specify)	0.00
F. Net Tract Area	16.76

LAND USE CATEGORY: (from *Tree Technical Manual*)
Input the number "1" under the appropriate land use, limit to only one entry.

ARA	MDR	IDA	HDR	MPD	CA
0	0	0	1	0	0

G. Afforestation Threshold ... 15% x F = 2.51
H. Conservation Threshold ... 20% x F = 3.35

EXISTING FOREST COVER:

I. Existing forest cover	7.17
J. Area of forest above afforestation threshold	4.66
K. Area of forest above conservation threshold	3.82

BREAK EVEN POINT:

L. Forest retention above threshold with no mitigation	4.12
M. Clearing permitted without mitigation	3.05

PROPOSED FOREST CLEARING:

N. Total area of forest to be cleared	3.39
O. Total area of forest to be retained	3.78

PLANTING REQUIREMENTS:

P. Reforestation for clearing above conservation threshold	0.85
Q. Reforestation for clearing below conservation threshold	0.00
R. Credit for retention above conservation threshold	0.43
S. Total reforestation required	0.42
T. Total afforestation required	0.00
U. Credit for landscaping (may not exceed 20% of "S")	0.00
V. Total reforestation and afforestation required	0.42

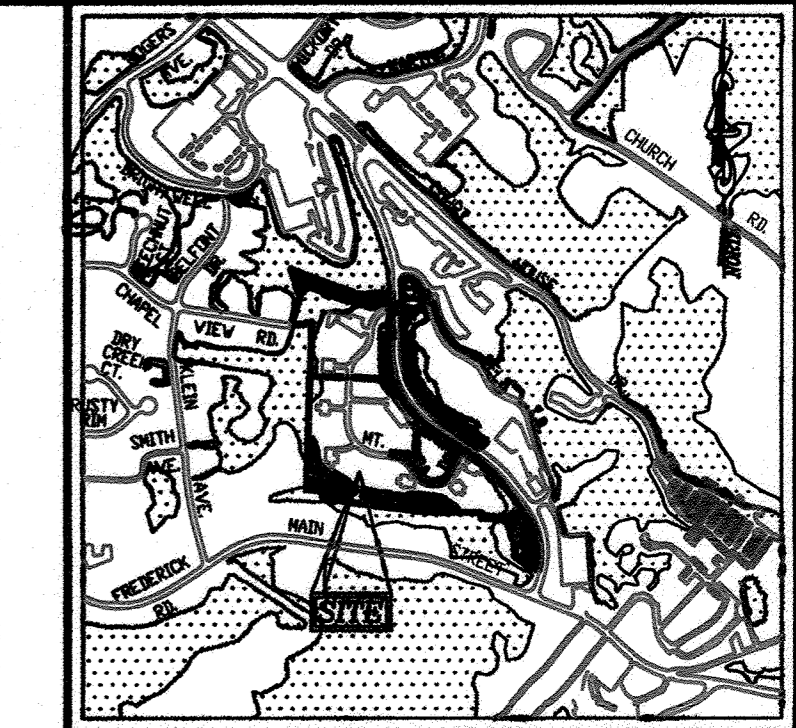
SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	GROUP
GIB	GLADSTONE-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B
GIC	GLADSTONE-URBAN LAND COMPLEX, 8 TO 15 PERCENT SLOPES	B
GuB	GLENVILLE-URBAN LAND-UDORHENTIS COMPLEX, 0 TO 8 PERCENT SLOPES	C
MgD	MANOR-BANNERTOWN SANDY LOAMS, 15 TO 25 PERCENT SLOPES, ROCKY	B
MgF	MANOR-BANNERTOWN SANDY LOAMS, 25 TO 65 PERCENT SLOPES, ROCKY	B

FOREST CONSERVATION PLAN

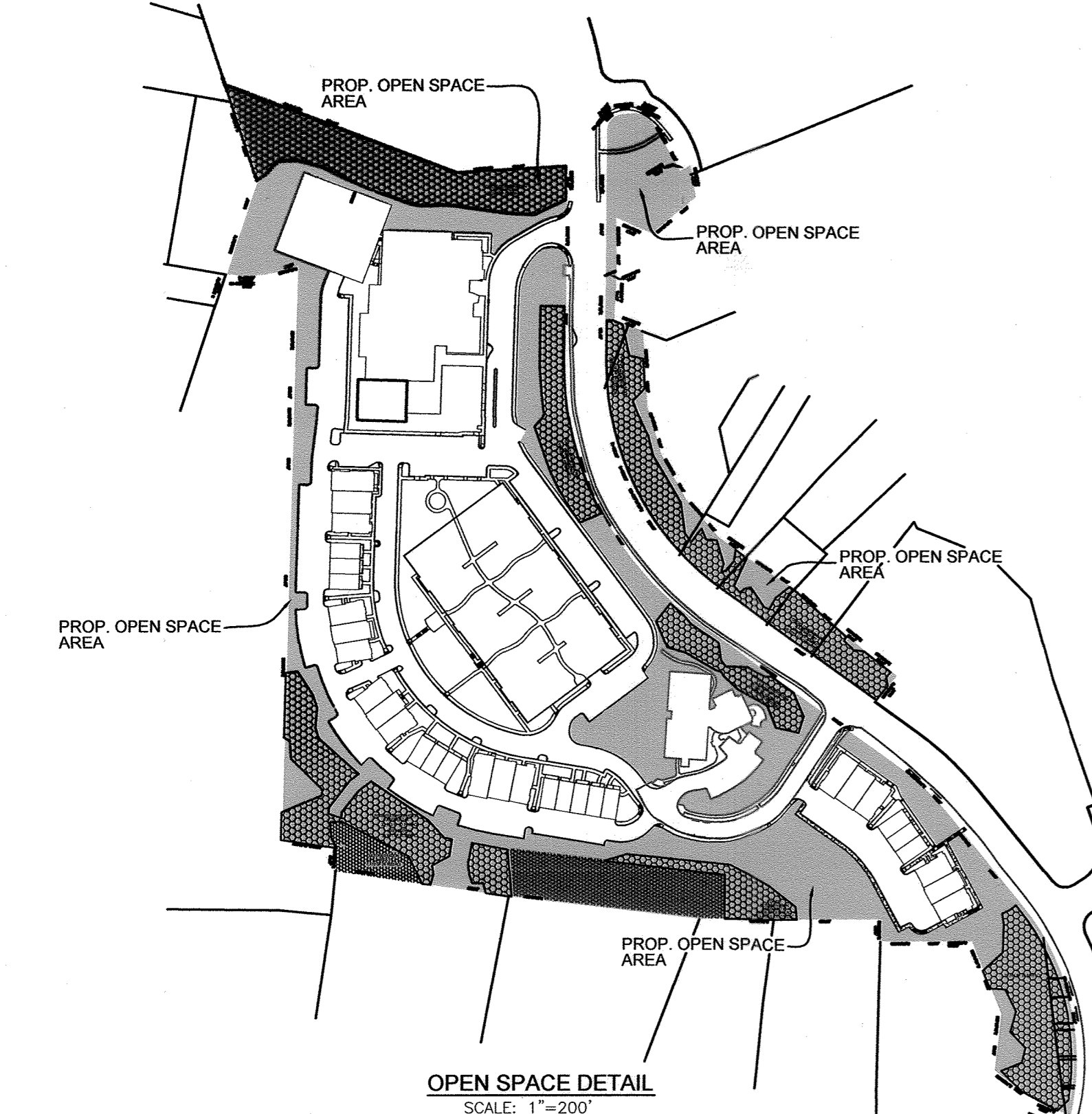
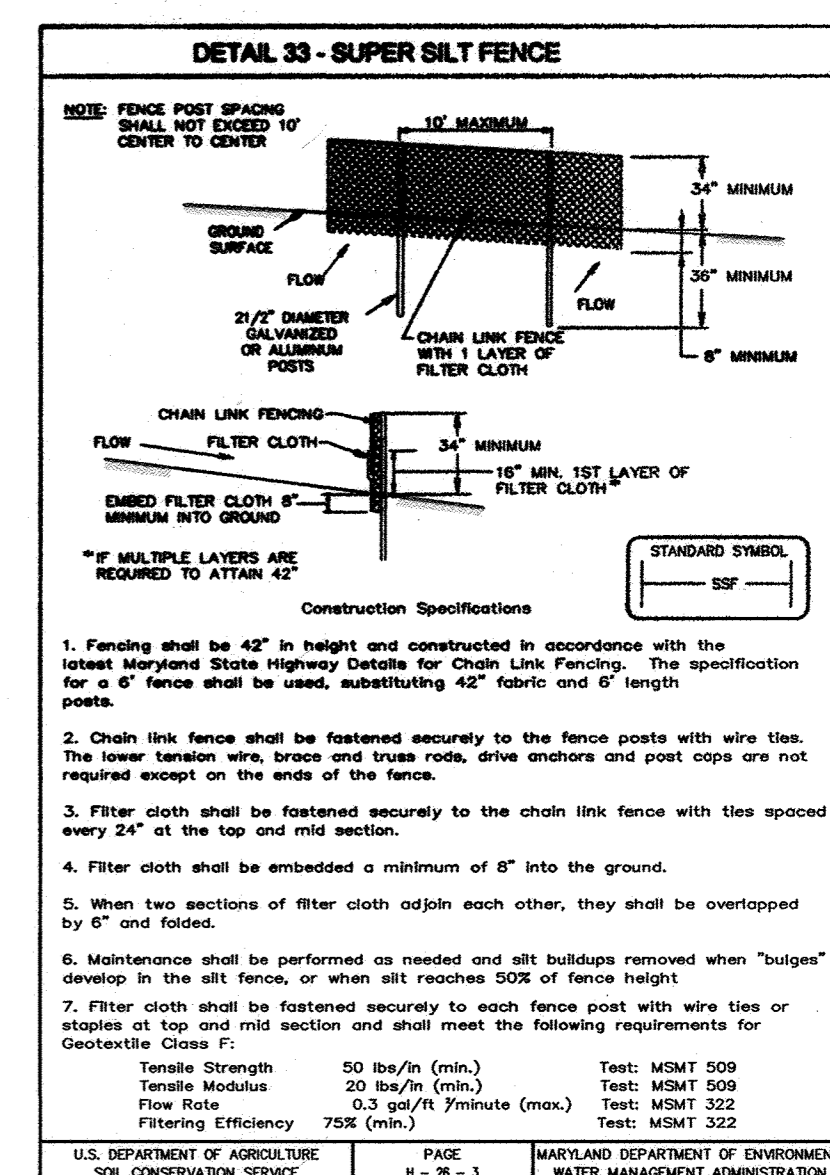
HILLTOP ELLICOTT CITY REDEVELOPMENT

ALONG ELLICOTT MILLS DRIVE



LEGEND

EXISTING CONTOUR	EXISTING CLEANOUT
PROPOSED CONTOUR	EXISTING FIRE HYDRANT
EXISTING CURB AND GUTTER	EXISTING FENCE
PROPOSED CURB AND GUTTER	PROPERTY LINE
EXISTING UTILITY POLE	RIGHT-OF-WAY LINE
EXISTING LIGHT POLE	SOILS BOUNDARY
EXISTING MAILBOX	EXISTING TREELINE
EXISTING SIGN	MODERATE SLOPES (15% - 24.99%)
EXISTING SANITARY MANHOLE	STEEP SLOPE (25%+)
EXISTING SANITARY LINE	PROP. FOREST CONSERVATION EASEMENT (RETENTION) PER F-11-057
EXISTING WATER LINE	PROP. FOREST CONSERVATION EASEMENT (REFORESTATION)
EXISTING COMCAST LINE	FOREST CONSERVATION SIGNAGE
EXISTING BGE LINE	SUPER SILT FENCE
AREA OF TREE CLEARING	TREE PROTECTION FENCE
TRANSFORMER	



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Robert H. Vogel
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 6/20/13

V. Schuler
CHIEF, DIVISION OF LAND DEVELOPMENT
DATE: 7/18/13

Paul A. Laugel
DIRECTOR
DATE: 7/18/13

NOTE:
THERE ARE NO FLOODPLAIN, WETLANDS, STATE CHAMPION TREES, HISTORIC STRUCTURES, RARE, THREATENED OR ENDANGERED SPECIES OR THEIR HABITATS ON THIS SITE.
THERE ARE STEEP SLOPES AND AN INTERMITTENT STREAM LOCATED ON SITE.

CONSTRUCTION PERIOD PROTECTION AND MANAGEMENT NOTES FOR FOREST CONSERVATION

PRE-CONSTRUCTION PHASE

- FOR RETENTION AREAS, INSTALL BLAZE ORANGE FENCE AND RETENTION SIGNS BEFORE CONSTRUCTION BEGINS.
- SUPER SILT FENCE SHALL BE PLACED ALONG ANY FOREST RETENTION AREAS THAT CONTAIN ENVIRONMENTAL FEATURES INCLUDING STEEP SLOPES, STREAMS, AND STREAM BUFFERS.
- FENCING SHALL BE MAINTAINED IN GOOD CONDITION AND PROMPTLY REPAIRED OR RESTORED AS THE SITUATION WARRANTS. TREE PROTECTION FENCING OR SUPER SILT FENCING WILL BE UTILIZED.
- A QUALIFIED TREE CARE EXPERT SHALL DETERMINE IF ROOT PRUNING IS REQUIRED ALONG THE LIMIT OF DISTURBANCE. ROOT PRUNE TREES AS REQUIRED. WATER ANY ROOT-PRUNED TREES IMMEDIATELY AFTER ROOT-PRUNING AND MONITOR FOR SIGNS OF STRESS DURING CONSTRUCTION.

CONSTRUCTION PHASE

- NO DISTURBANCE OR DUMPING IS ALLOWED INSIDE THE TREE RETENTION AREA.
- NO EQUIPMENT SHALL BE OPERATED INSIDE THE TREE RETENTION AREA INCLUDING TREE CANOPIES.
- IN THE EVENT OF DROUGHT, THE PROTECTED TREES SHALL BE MONITORED FOR SIGNS OF STRESS AND WATERED AS NEEDED.

POST-CONSTRUCTION PHASE

- AT THE DIRECTION OF A QUALIFIED TREE CARE EXPERT, DAMAGES TO RETAINED TREES SHALL BE REPAIRED BY THE CONTRACTOR.
- FENCE REMOVAL AND STABILIZATION SHALL BE AS PER THE SEDIMENT AND EROSION CONTROL PLAN.
- DO NOT REMOVE SIGNS.

OWNER: MILLTOWNE ASSOCIATE LP
BY: HCH PARTNERS III LLC, GENERAL PARTNER
BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
BY: STACY SPANN, EXECUTIVE DIRECTOR
6751 COLUMBIA GATEWAY DR.
3RD FLOOR
COLUMBIA, MD 21046
(410) 313-6320

DEVELOPER: STAVROU ASSOCIATES, INC.
441 DEFENSE HIGHWAY, SUITE C
ANNAPOLIS, MD 21401
C/O STEPHEN J. MOORE
(410) 571-6610

CONSTRUCTION PERIOD PROTECTION AND MANAGEMENT NOTES FOR FOREST CONSERVATION

SPECIMEN TREES: DO NOT REMOVE, MACHINERY, DUMPING OR STORAGE OF ANY MATERIALS IS PROHIBITED. VIOLATORS ARE SUBJECT TO FINES AS IMPOSED BY THE MARYLAND FOREST CONSERVATION ACT OF 1991.

FOREST RETENTION AREA: DO NOT DISTURB, MACHINERY, DUMPING OR STORAGE OF ANY MATERIALS IS PROHIBITED. VIOLATORS ARE SUBJECT TO FINES AS IMPOSED BY THE MARYLAND FOREST CONSERVATION ACT OF 1991.

FOREST CONSERVATION AREA: DO NOT DISTURB, MACHINERY, DUMPING OR STORAGE OF ANY MATERIALS IS PROHIBITED. VIOLATORS ARE SUBJECT TO FINES AS IMPOSED BY THE MARYLAND FOREST CONSERVATION ACT OF 1991.

NOTE:

- BOTTOM OF SIGNS TO BE HIGHER THAN TOP OF TREE PROTECTION FENCE.
- SIGNS TO BE PLACED APPROXIMATELY 50-100' FEET APART, CONDITIONS ON SITE AFFECTING VISIBILITY MAY WARRANT PLACING SIGNS CLOSER OR FARTHER APART.
- ATTACHMENT OF SIGNS TO TREES IS PROHIBITED.
- ALL FOREST CONSERVATION SIGNAGE SHALL BE IN PLACE FOR PERPETUITY.

NOT TO SCALE

DESIGNED BY: JTD
DRAWN BY: KG
CHECKED BY: JTD
DATE: OCTOBER 2011
SCALE: 1"=50'
W.O. NO.: 10-24

PROFESSIONAL CERTIFICATE

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21438 EXPIRES DATE 12-16-2012

24 SHEET OF 50

1	REVISE FOREST CONSERVATION TABLES AND SURETY NOTE	12/7/12
4	REVISE TREE PROTECTION FENCE OPEN SPACE TO REFLECT NATURE TRAILS & MICHIGAN PARK. SIGN REPAIR OF DAMAGED SAND FILTER	01/05/17
6	REVISE PARKING FOR ELECTRIC VEHICLES	3-15-22

REVISED SITE DEVELOPMENT PLAN
HILLTOP
ELLICOTT CITY REDEVELOPMENT
ALONG ELLICOTT MILLS DRIVE
L477/F.718, L456/F.448, L448/F.46

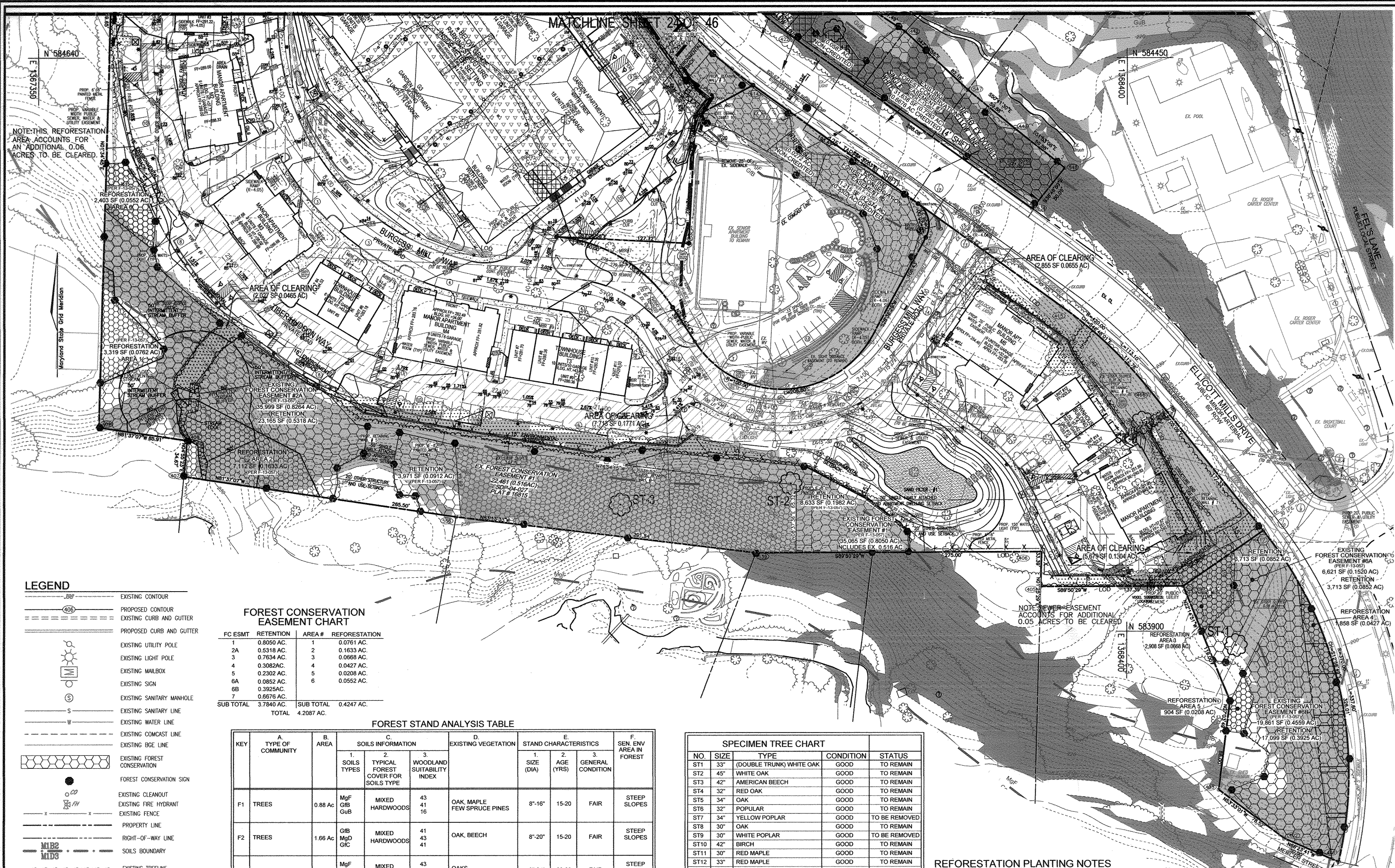
FOREST CONSERVATION PLAN

TAX MAP: 25 PARCELS: 12, 291
BLOCK: 07 ZONINGS: R-HV, R-A-15, POR
2ND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

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

DESIGN BY: JTD
DRAWN BY: KG
CHECKED BY: JTD
DATE: OCTOBER 2011
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W.O. NO.: 10-24

24 SHEET OF 50



NOTE: THIS REFORESTATION AREA ACCOUNTS FOR AN ADDITIONAL 0.06 ACRES TO BE CLEARED.

LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING WATER LINE
- EXISTING COMCAST LINE
- EXISTING BIDE LINE
- EXISTING FOREST CONSERVATION
- FOREST CONSERVATION SIGN
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- SOILS BOUNDARY
- EXISTING TREDLINE
- MODERATE SLOPES (15% - 24.99%)
- STEEP SLOPE (>25%)
- PROP. FOREST CONSERVATION EASEMENT (RETENTION)
- PROP. FOREST CONSERVATION EASEMENT (REFORESTATION)
- PROP. NON-CREDIT FOREST CONSERVATION
- AREA OF TREE CLEARING
- FOREST CONSERVATION SIGNAGE
- PROPERTY LIGHT
- PROPERTY SIGN
- SUPER SILT FENCE
- TREE PROTECTION FENCE

FOREST CONSERVATION EASEMENT CHART

FC ESMT	RETENTION	AREA #	REFORESTATION
1	0.8050 AC.	1	0.0761 AC.
2A	0.5318 AC.	2	0.1633 AC.
3	0.7634 AC.	3	0.0668 AC.
4	0.3082 AC.	4	0.0427 AC.
5	0.2302 AC.	5	0.0208 AC.
6A	0.0852 AC.	6	0.0552 AC.
6B	0.3925 AC.		
7	0.6676 AC.		
SUB TOTAL	3.7840 AC.	SUB TOTAL	0.4247 AC.
	TOTAL		4.2087 AC.

FOREST STAND ANALYSIS TABLE

KEY	A. TYPE OF COMMUNITY	B. AREA	C. SOILS INFORMATION			D. EXISTING VEGETATION	E. STAND CHARACTERISTICS			F. SEN. EW AREA IN FOREST
			1. SOILS TYPES	2. TYPICAL FOREST COVER FOR SOILS TYPE	3. WOODLAND SUITABILITY INDEX		1. SIZE (DIA)	2. AGE (YRS)	3. GENERAL CONDITION	
F1	TREES	0.88 AC.	MgF GB GuB	MIXED HARDWOODS	43 41 16	OAK, MAPLE FEW SPRUCE PINES	8"-16"	15-20	FAIR	STEEP SLOPES
F2	TREES	1.66 AC.	GB MgD GIC	MIXED HARDWOODS	41 43 41	OAK, BEECH	8"-20"	15-20	FAIR	STEEP SLOPES
F3	TREES	2.57 AC.	MgF GB GIC	MIXED HARDWOODS	43 41 41	OAKS	8"-24"	20-30	FAIR	STEEP SLOPES
F4	TREES	0.93 AC.	MgF GB GIC	MIXED HARDWOODS	41 41 41	OAK, BEECH	8"-14"	15-20	FAIR	STEEP SLOPES
F5	TREES	1.13 AC.	MgF GIC	MIXED HARDWOODS	43 41	OAK, BEECH	8"-22"	25-30	FAIR	STEEP SLOPES
AF1	FIELD	0.25	GIC		41	GRASSES AND BRUSH				
L1- L8	LAWN	9.18 AC.	GB		41	LANDSCAPE TREES, SHRUBS AND LAWN				

SPECIMEN TREE CHART

NO.	SIZE	TYPE	CONDITION	STATUS
ST1	33"	(DOUBLE TRUNK) WHITE OAK	GOOD	TO REMAIN
ST2	45"	WHITE OAK	GOOD	TO REMAIN
ST3	42"	AMERICAN BEECH	GOOD	TO REMAIN
ST4	32"	RED OAK	GOOD	TO REMAIN
ST5	34"	OAK	GOOD	TO REMAIN
ST6	32"	POPULAR	GOOD	TO REMAIN
ST7	34"	YELLOW POPLAR	GOOD	TO BE REMOVED
ST8	30"	OAK	GOOD	TO REMAIN
ST9	30"	WHITE POPLAR	GOOD	TO BE REMOVED
ST10	42"	BIRCH	GOOD	TO REMAIN
ST11	30"	RED MAPLE	GOOD	TO REMAIN
ST12	33"	RED MAPLE	GOOD	TO REMAIN
ST13	42"	WHITE OAK	GOOD	TO REMAIN
ST14	32"	BIRCH	GOOD	TO REMAIN
ST15	31"	OAK	GOOD	TO REMAIN

SPECIMEN TREE 7 AND 9 ARE TO BE REMOVED AS APPROVED UNDER WP-11-204.

SUPPLEMENTAL INFORMATION

GROSS SITE AREA 22.84 ACRES
 AREA OF EX. RIGHT-OF-WAY 6.09 ACRES
 ZONED R-HV, R-A-15, POR
 EXISTING USE RESIDENTIAL
 PROPOSED USE RESIDENTIAL

FOREST STAND TOTALS

STAND L-1	1.13 ACRES
STAND L-2	1.05 ACRES
STAND L-3	2.37 ACRES
STAND L-4	0.48 ACRES
STAND L-5	0.86 ACRES
STAND L-6	0.21 ACRES
STAND L-7	0.88 ACRES
STAND L-8	2.20 ACRES
STAND F-1	0.88 ACRES
STAND F-2	1.66 ACRES
STAND F-3	2.57 ACRES
STAND F-4	0.93 ACRES
STAND F-5	1.13 ACRES
STAND AF-1	0.25 ACRES
TOTAL	16.60 ACRES

L - LAWN
 F - FOREST
 AF - ABANDONED FIELD

REFORESTATION PLANTING NOTES

- AFFORESTATION AREAS MAY BE PLANTED AS SOON AS REASONABLE TO DO SO. LATE WINTER-EARLY SPRING PLANTINGS ARE PREFERRED. EARLIEST PLANTING DATES WILL VARY FROM YEAR TO YEAR BUT PLANTING MAY GENERALLY BEGIN AS SOON AS THE GROUND IS NO LONGER FROZEN. ALTERNATE PLANTING DATES MAY BE CONSIDERED AS CONDITION WARRANTS.
- SOIL AMENDMENTS AND FERTILIZATION RECOMMENDATIONS WILL BE MADE BASED UPON THE RESULTS OF SOIL ANALYSIS FOR NITROGEN, PHOSPHORUS, POTASSIUM, ORGANIC MATTER CONTENT AND pH. IF REQUIRED, FERTILIZER WILL BE PROVIDED USING A SLOW RELEASE SOLUBLE 16-8-16 ANALYSIS DESIGNED TO LAST 5-8 YEARS CONTAINED IN POLYETHYLENE PERFORATED BAGS SUCH AS MANUFACTURED BY ADCO WORKS, P.O. BOX 310 HOLLIS, N.Y. 11423 OR APPROVED EQUAL.
- PLANT MATERIALS SHALL BE PLANTED IN ACCORDANCE WITH THE PLANTING DETAILS AND PLANT SCHEDULE.
- PLANT MATERIAL SHALL BE NURSERY GROWN AND INSPECTED PRIOR TO PLANTING. PLANTS NOT CONFORMING TO THE AMERICAN STANDARD FOR NURSERY STOCK SPECIFICATIONS FOR SIZE, FORM, VIGOR, OR ROOTS, OR DUE TO TRUNK WOUNDS, BREAKAGE, DESICCATION, INSECT OR DISEASE MUST BE REPLACED.
- PLANTING STOCK MUST BE PROTECTED FROM DESICCATION AT ALL TIMES PRIOR TO PLANTING. MATERIALS HELD FOR PLANTING SHALL BE MOISTENED AND PLACED IN COOL SHADY AREAS UNTIL READY FOR PLACEMENT.
- NEWLY PLANTED TREES MAY REQUIRE WATERING AT LEAST ONCE PER WEEK DURING THE FIRST GROWING SEASON DEPENDING ON RAINFALL IN ORDER TO GET ESTABLISHED. THE INITIAL PLANTING OPERATION SHOULD ALLOW FOR WATERING DURING INSTALLATION TO COMPLETELY SOAK BACKFILL MATERIAL.
- MULCH SHALL BE APPLIED IN ACCORDANCE WITH THE DIAGRAM PROVIDED AND SHALL CONSIST OF COMPOSTED, SHREDDED HARDWOOD BARK MULCH, FREE OF WOOD ALCOHOL.
- ALL NURSERY STOCK TO BE SPRAYED WITH DEER REPELLENT CONTAINING BITREX, SUCH AS REPELLEX. ALL NURSERY STOCK TO BE GROWN WITH DEER REPELLENT TABLETS IN GROWING MEDIUM, SUCH AS REPELLEX TABLETS.

REFORESTATION AREA MONITORING NOTES

- MONTHLY VISITS DURING THE FIRST GROWING SEASON ARE TO ASSESS THE SUCCESS OF THE PLANTINGS AND TO DETERMINE IF SUPPLEMENTAL WATERING, PEST CONTROL, OR OTHER ACTIONS ARE NECESSARY. EARLY SPRING VISITS WILL DOCUMENT WINTER KILL AND AUTUMN VISITS WILL DOCUMENT SUMMER KILL.
- THE MINIMUM SURVIVAL RATE SHALL BE 75% OF THE TOTAL NUMBER OF TREES PLANTED PER ACRE AT THE END OF THE TWO YEAR MAINTENANCE PERIOD. WILD TREE SEEDLINGS FROM NATURAL REGENERATION ON THE PLANTING SITE MAY BE COUNTED UP TO 50% TOWARD THE TOTAL SURVIVAL NUMBER IF THE ARE HEALTHY NATIVE SPECIES AT LEAST 12 INCHES TALL.
- SURVIVAL WILL BE DETERMINED BY A STRATIFIED RANDOM SAMPLING OF THE PLANTINGS. THE SPECIES COMPOSITION OF THE SAMPLE POPULATION SHOULD BE PROPORTIONATE TO THE AMOUNT OF EACH SPECIES IN THE ENTIRE PLANTING TO BE SAMPLED.
- EFFECTIVE MONITORING WILL ASSESS PLANT SURVIVABILITY DURING THE FIRST GROWING SEASON AND MAKE RECOMMENDATIONS FOR REINFORCEMENT PLANTINGS IF REQUIRED AT THAT TIME.

REFORESTATION - AREA-1	REFORESTATION - AREA-3
0.08 ACRES 1.5" CALIPER TREES 16 TREES @ 200 TREES PER ACRE	0.07 ACRES 1.5" CALIPER TREES 14 TREES @ 200 TREES PER ACRE
REFORESTATION - AREA-2	REFORESTATION - AREA-4
0.16 ACRES 1.5" CALIPER TREES 33 TREES @ 200 TREES PER ACRE	0.04 ACRES 1.5" CALIPER TREES 8 TREES @ 200 TREES PER ACRE
REFORESTATION - AREA-5	REFORESTATION - AREA-6
0.02 ACRES 1.5" CALIPER TREES 4 TREES @ 200 TREES PER ACRE	0.06 ACRES 1.5" CALIPER TREES 12 TREES @ 200 TREES PER ACRE

PLANT SCHEDULE

QUANTITIES FOR AFFORESTATION AREAS

BOTANICAL NAME	AREA 1	AREA 2	AREA 3	AREA 4	AREA 5	AREA 6	SIZE	SPACING (FT)
Acer rubrum 'October Glory'	3	9	3	2	1	2	1.5" Cal.	15 X 15
Red Maple (Seedless)								
Liquidambar styraciflua	3	6	3	2	1	2	1.5" Cal.	15 X 15
American Sweetgum								
Amelanchier canadensis	3	6	3	2	1	2	1.5" Cal.	15 X 15
Serviceberry								
Quercus coccinea	3	6	3	1	1	3	1.5" Cal.	15 X 15
Scarlet Oak								
Cercis canadensis	4	6	2	1	0	3	1.5" Cal.	15 X 15
Eastern Redbud								

ALL TREE SUBSTITUTIONS MUST BE APPROVED BY THE DEPARTMENT OF PLANNING AND ZONING. NOTE: ALL TREES HAVE BEEN UP SIZED TO 1.5" CALIPER SO THAT THEY CAN BE CREDITED TOWARDS THE STREET TREE COUNT ON HUDSON TIBER WAY, MILLTOWNE DRIVE & BURGESS MILL WAY.

OWNER
 MILLTOWNE ASSOCIATE LP
 BY: HCH PARTNERS III LLC, GENERAL PARTNER
 BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
 BY: STACY SPAN, EXECUTIVE DIRECTOR
 6/51 COLUMBIA GATEWAY DR.
 3RD FLOOR
 COLUMBIA, MD 21046
 (410) 313-8320

DEVELOPER
 STAVROU ASSOCIATES, INC.
 441 DEFENSE HIGHWAY, SUITE C
 ANNAPOLIS, MD 21401
 C/O STEPHEN J. MOORE
 (410) 571-6610

NO.	REVISION	DATE
1	REVISE EX. FOREST CONSERVATION EASEMENTS AND TABLES	12/7/12
4	REVISE SHEET NUMBER	1/05/13

REVISED SITE DEVELOPMENT PLAN
 HILLTOP
 ELLICOTT CITY REDEVELOPMENT
 ALONG ELLICOTT MILLS DRIVE
 L.477/F.718, L.456/F.448, L.448/F.46
FOREST CONSERVATION PLAN

TAX MAP: 25 PARCELS: 12, 291 BLOCK: 07 ZONINGS: R-HV, R-A-15, POR
 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

PROFESSIONAL CERTIFICATE

DESIGN BY: JTD
 DRAWN BY: KC
 CHECKED BY: JTD
 DATE: OCTOBER 2011
 SCALE: 1"=50'
 W.O. NO.: 10-24

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAW OF THE STATE OF MARYLAND. EXPIRES 12-16-2012

25 SHEET OF 50

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

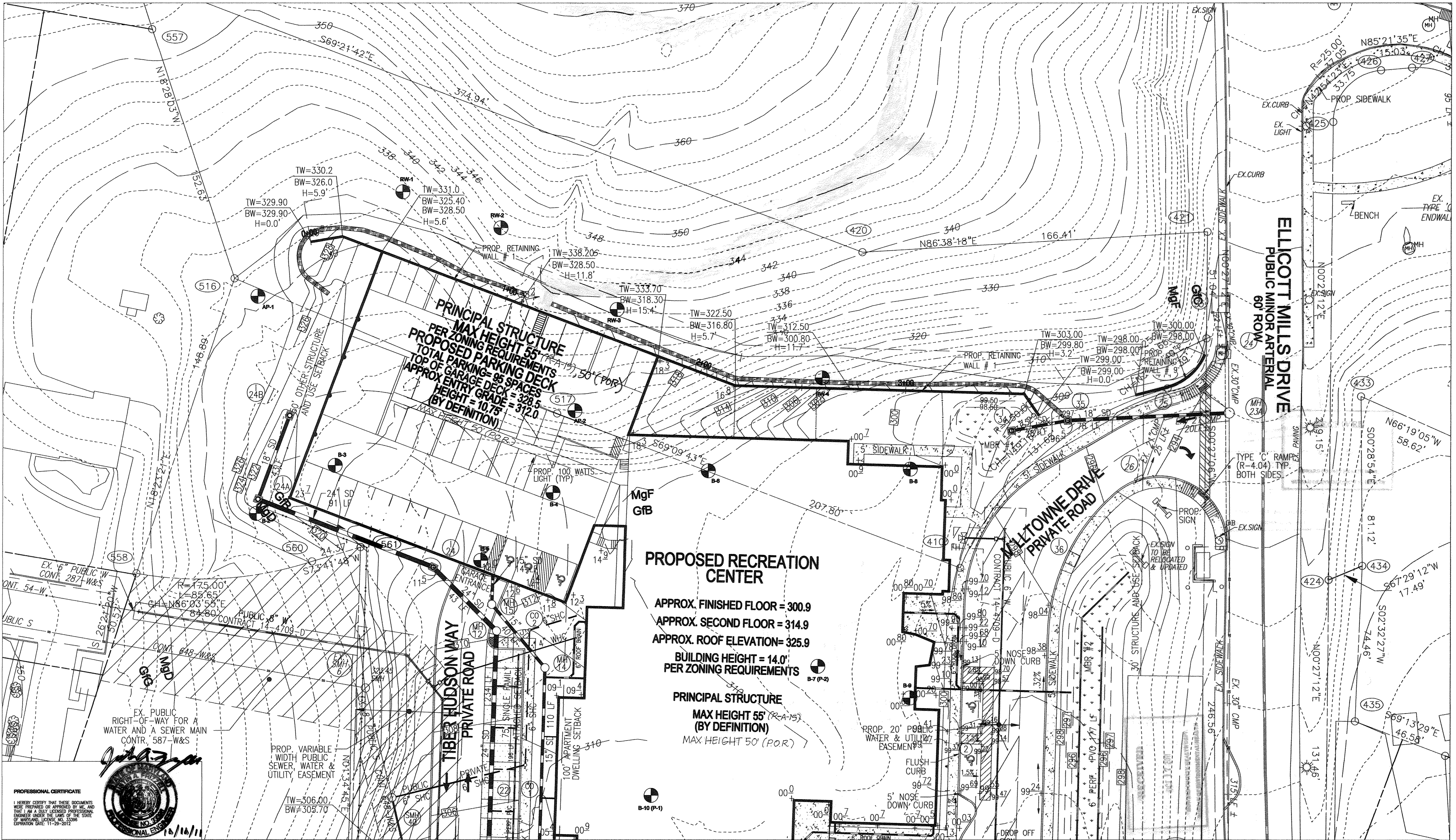
Chief, Development Engineering Division
 Chief, Division of Land Development
 Director

DATE: 10/28/13
 DATE: 7/10/13
 DATE: 7/10/13

CLEARING NOTE

THIS SITE HAS BEEN DESIGNED TO MINIMIZE THE CLEARING AND DISTURBANCE TO THE EXISTING FOREST AND ENVIRONMENTAL FEATURES ON SITE. A MAJORITY OF THE EXISTING ON SITE FOREST WILL BE MAINTAINED IN EASEMENT. ADDITIONAL PLANTING (REFORESTATION) IS PROVIDED TO FULFILL THE FOREST CONSERVATION OBLIGATIONS.

CHRIS OGLE
 QUALIFIED FOREST PROFESSIONAL



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 10/27/11
 DIRECTOR
 DATE: 10/27/11

No.	Date	Revision	By
1	08/17/2011	REVISED GRADING PLAN. CHANGE PAGE NUMBER. ADD FENCE. ADD EASEMENT.	JAF
2	09/07/2011	REVISED TITLE	JAF
3	10/2011	REVISED FOR MYLAR WITH WET STAMP	JAF
4	01/09/17	REVISE TO MODIFY RECREATIONAL OPEN SPACE TO REMOVE NATURE TRAIL AND MODIFY POCKET PARK. SHOW REPAIR OF DAMAGED SAND FILTER	VOGEL

HILLTOP REDEVELOPMENT
ELLCOTT MILLS DRIVE
RESIDENTIAL AND RECREATION CENTER
 L477F.718, L488F.448, L448F.46
 TAX MAP: 25 PARCELS: 12, 291
 2ND ELECTION DISTRICT
 BLOCK: 07 ZONINGS: R-W, R-A-15, POR
 HOWARD COUNTY, MARYLAND

OWNER
 MILLTOWNE ASSOCIATE LP
 BY: IGH PARTNERS III LLC, GENERAL PARTNER
 BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
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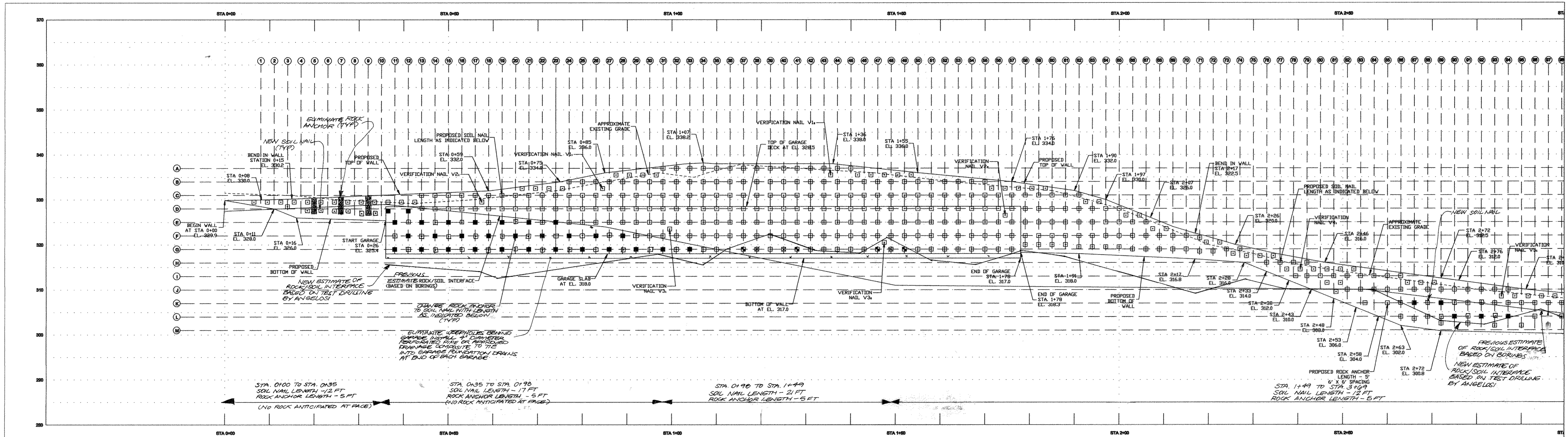
DEVELOPER
 STABROU ASSOCIATES, INC.
 2661 RIVA ROAD
 BUILDING 320
 ANNAPOLIS, MD 21401
 C/O STEPHEN J. MOORE
 (410) 571-6610

HARDIN-KIGHT ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS
 7524 WB&A ROAD, SUITE 100
 GLEN BURNIE, MARYLAND
 (410) 553-0802
 (410) 553-0808

Designed By: JAF
 Checked By: SEK
 Scale: 1 INCH = 20 FEET

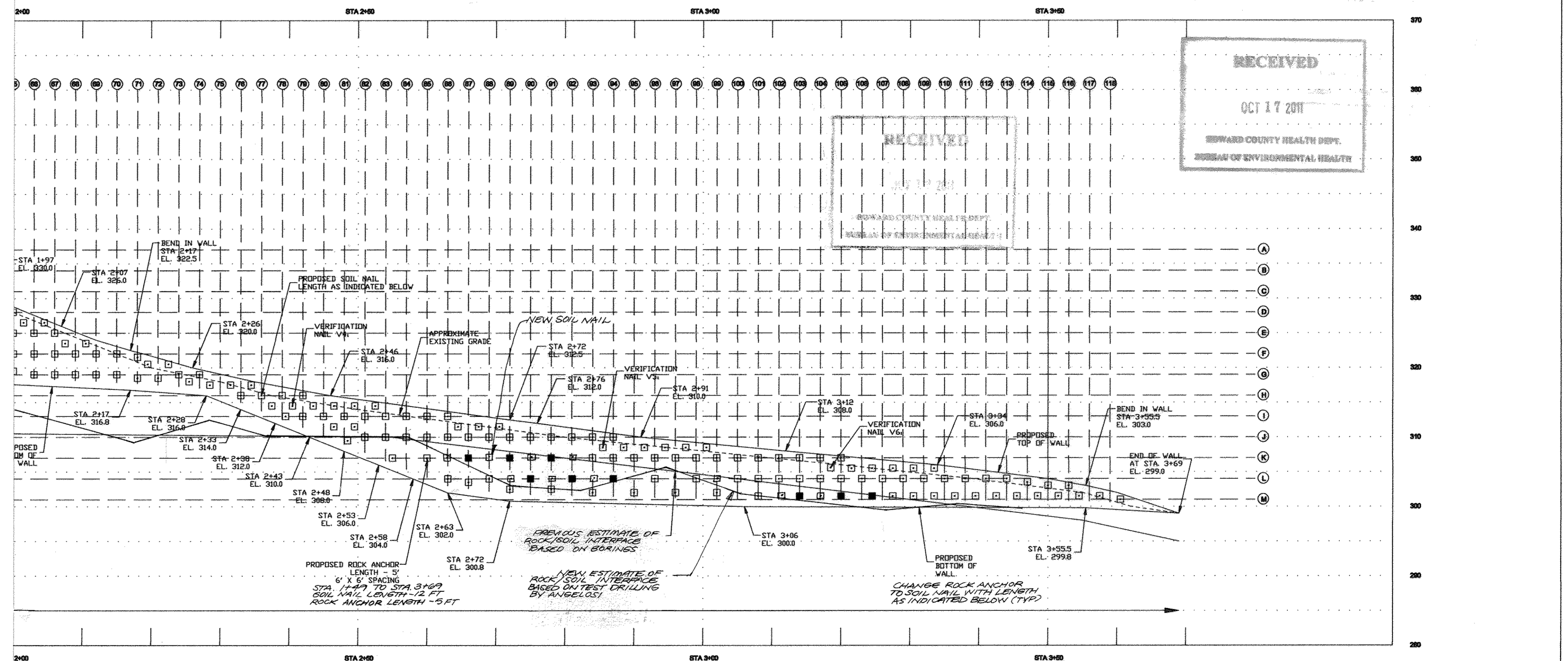
Title: **RETAINING WALL #1 LOCATION PLAN**
 Project: **ROGER CARTER RECREATION CENTER - GARAGE**
RETAINING WALL PLANS AND DETAILS
RETAINING WALL #1

Date: June 25, 2011
 Project No: 11158
 Drawing No: 26 OF 50



CONSTRUCTION SEQUENCE

1. INSTALL CONTROLLED FILL AT TOP OF WALL PRIOR TO BEGINNING WALL EXCAVATIONS. FILL MUST BE PLACED IN 8" LOOSE LIFTS AND COMPACTED TO 100% OF DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR (AASHTO T-99, ASTM D698).
2. WALLS SHALL BE BUILT FROM THE TOP DOWN IN ACCORDANCE WITH THE STAGED EXCAVATION LIFTS AS SHOWN
3. THE FOLLOWING WALL CONSTRUCTION SEQUENCE FOR EACH EXCAVATION LIFT SHALL BE COMPLETED PRIOR TO INITIATING WORK ON THE NEXT EXCAVATION LIFT UNLESS OTHERWISE APPROVED BY THE ENGINEER.
 - 3.1 EXCAVATE TO STAGE GRADE LIMITS.
 - 3.2 TRIM TO FINAL WALL FACE EXCAVATION LINE.
 - 3.3 DRILL, INSTALL AND GROUT SOIL NAILS.
 - 3.4 INSTALL GEOSYNTHETIC DRAINAGE COMPOSITE PANELS AS SHOWN.
 - 3.5 PLACE REINFORCING AND APPLY SHOTCRETE. NO EXCAVATION WHICH HAS EXPOSED WALL FACE SHALL BE LEFT UNSTABILIZED BY SHOTCRETE AT THE END OF THE WORK DAY UNLESS ENGINEER APPROVES OTHERWISE.
4. CONSTRUCT FINAL STAGE SHOTCRETE FACING.
5. INSTALL PERMANENT SHOTCRETE FACING.
6. INSTALL PVC CONNECTOR PIPES TO PROVIDE OUTLET OF THE GEOSYNTHETIC DRAINAGE PANELS, AS SHOWN AND DIRECTED BY CIVIL ENGINEER.



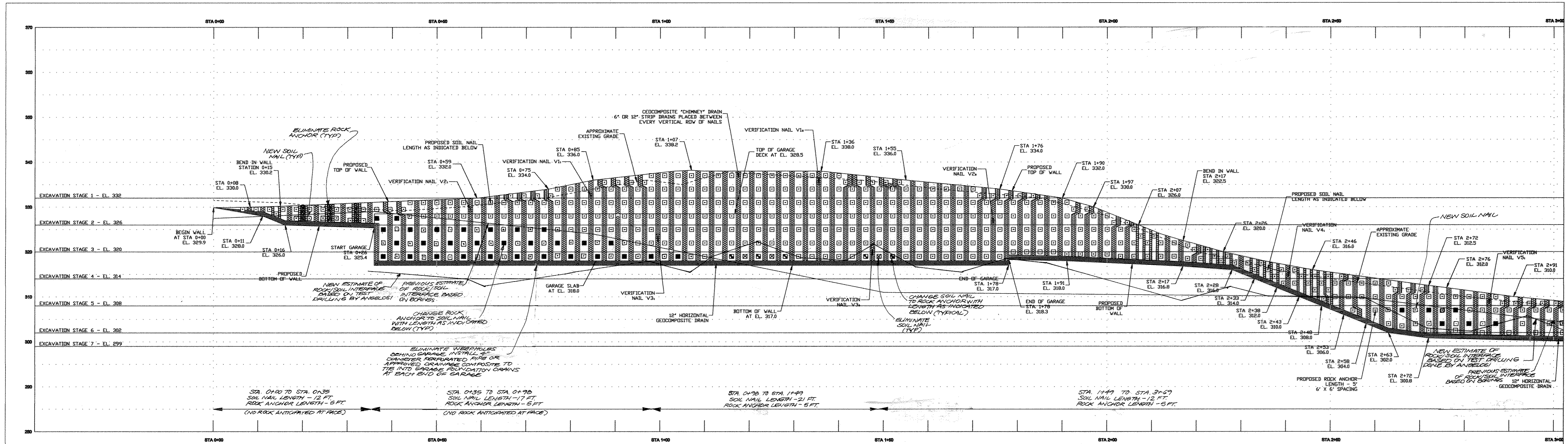
RECEIVED
OCT 17 2011
HOWARD COUNTY HEALTH DEPT.
BUREAU OF ENVIRONMENTAL HEALTH

John A. Vogel

 PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 1010/11, EXPIRATION DATE: 11-29-2012

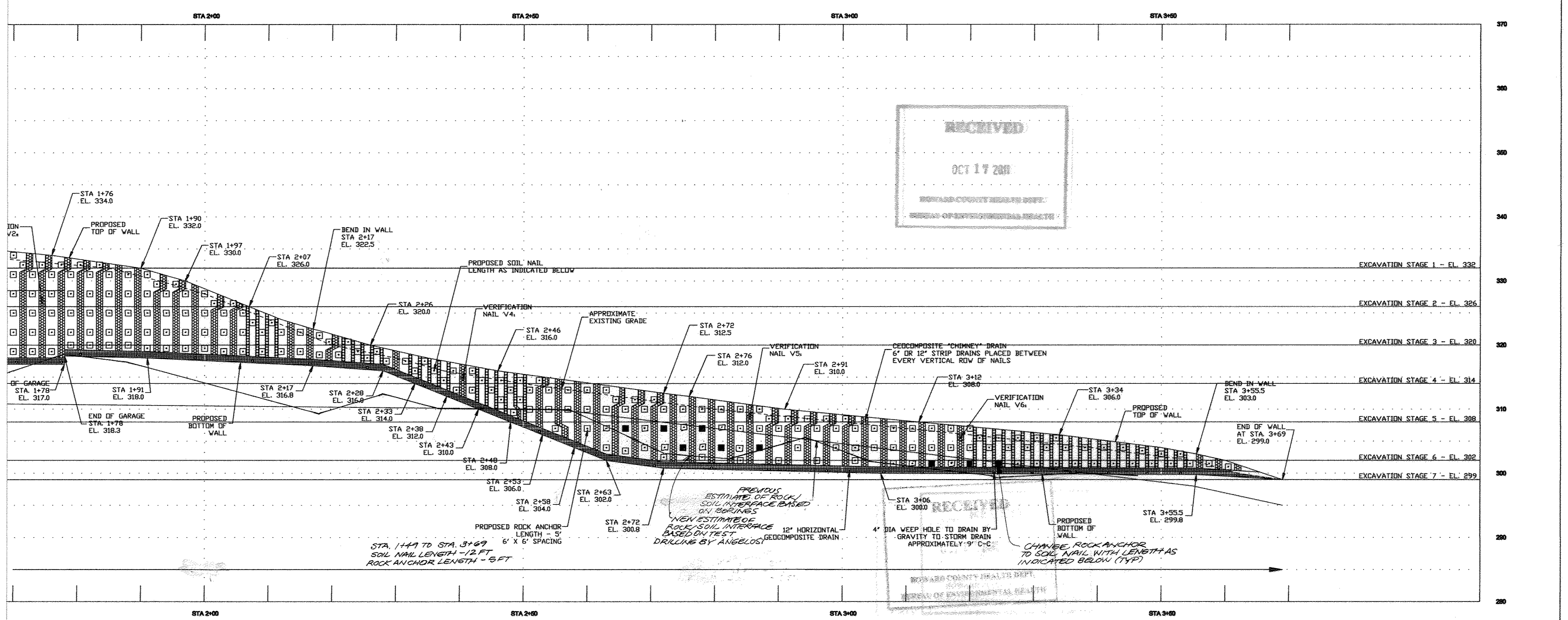
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING <i>[Signature]</i> CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 10/27/11	<table border="1"> <thead> <tr> <th>No.</th> <th>Date</th> <th>Revision</th> <th>By</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>08/16/2011</td> <td>REVISED GRADING PLAN. CHANGE PAGE NUMBER.</td> <td>JAF</td> </tr> <tr> <td>2</td> <td>09/07/2011</td> <td>REVISED TITLE</td> <td>JAF</td> </tr> <tr> <td>3</td> <td>10/2011</td> <td>REVISED FOR MYLAR WITH WET STAMP</td> <td>JAF</td> </tr> <tr> <td>4</td> <td>11/16/2012</td> <td>REVISE NAILS FOR ROCK DEPTHS ENCOUNTERED BY TEST DRILLING</td> <td>JAF</td> </tr> <tr> <td>5</td> <td>01/09/17</td> <td>REVISE SHEET NUMBER</td> <td>VOGEL</td> </tr> </tbody> </table>	No.	Date	Revision	By	1	08/16/2011	REVISED GRADING PLAN. CHANGE PAGE NUMBER.	JAF	2	09/07/2011	REVISED TITLE	JAF	3	10/2011	REVISED FOR MYLAR WITH WET STAMP	JAF	4	11/16/2012	REVISE NAILS FOR ROCK DEPTHS ENCOUNTERED BY TEST DRILLING	JAF	5	01/09/17	REVISE SHEET NUMBER	VOGEL	HILLTOP REDEVELOPMENT ELLICOTT MILLS DRIVE RESIDENTIAL AND RECREATION CENTER L477/F.718, L488/F.448, L448/F.48 TAX MAP: 25 PARCELS: 12, 291 2ND ELECTION DISTRICT BLOCK: 07 ZONINGS: R-VH, R-A-15, POR HOWARD COUNTY, MARYLAND	OWNER MILLTOWNE ASSOCIATE LP BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER BY: STACY SPANN, EXECUTIVE DIRECTOR 6751 COLUMBIA GATEWAY DR. COLUMBIA, MD 21046 (410) 313-6320	DEVELOPER STARVOI ASSOCIATES, INC. 2661 RIVA ROAD BUILDING 320 ANNAPOLIS, MD 21401 C/O STEPHEN J. MOORE (410) 571-6610	HARDIN-KIGHT ASSOCIATES, INC. GEOTECHNICAL CONSULTANTS 7524 WB&A ROAD, SUITE 100 GLEN BURNIE, MARYLAND (410) 553-0802 (410) 553-0808	Designed By: JAF Checked By: SEK Scale: 1 IN. = 10 FEET	Title: RETAINING WALL #1 PROFILE SOIL NAIL AND ROCK ANCHOR LAYOUT Project: ROGER CARTER RECREATION CENTER - GARAGE RETAINING WALL PLANS AND DETAILS RETAINING WALL #1	Date: June 25, 2011 Project No: 11160 Drawing No: 27 OF 50
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SOP-11-051



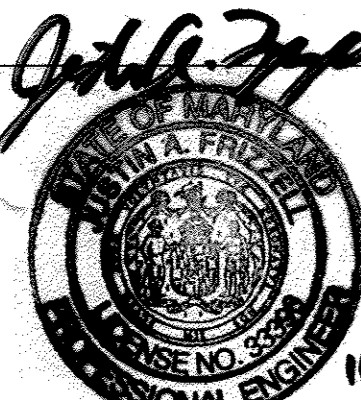
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 - 3.1 EXCAVATE TO STAGE GRADE LIMITS.
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 - 3.3 DRILL, INSTALL AND GROUT SOIL NAILS.
 - 3.4 INSTALL GEOSYNTHETIC DRAINAGE COMPOSITE PANELS AS SHOWN.
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4. CONSTRUCT FINAL STAGE SHOTCRETE FACING.
5. INSTALL PERMANENT SHOTCRETE FACING.
6. INSTALL PVC CONNECTOR PIPES TO PROVIDE OUTLET OF THE GEOSYNTHETIC DRAINAGE PANELS, AS SHOWN AND DIRECTED BY CIVIL ENGINEER.



PROFESSIONAL CERTIFICATE

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APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Howard County Department of Planning and Zoning
 Chief, Development Engineering Division
 DATE: 10/20/11
Director
 DATE: 10/23/11

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1	08/16/2011	REVISED GRADING PLAN. REVISED FACING. CHANGE PAGE NUMBER.	JAF
2	09/07/2011	REVISED TITLE	JAF
3	10/2011	REVISED FOR MYLAR WITH WET STAMP	JAF
4	2/16/2012	REVISE DRAINAGE BASED ON REVISED NAILS AND GARAGE DRAINAGE	
5	01/05/17	REVISE SHEET NUMBER	VOGEL

HILLTOP REDEVELOPMENT
 ELLICOTT MILLS DRIVE
 RESIDENTIAL AND RECREATION CENTER
 L477/F.718, L488/F.448, L448/F.48

TAX MAP: 25 PARCELS: 12, 291
 2ND ELECTION DISTRICT

BLOCK: 07 ZONINGS: R-VH, R-A-15, POR
 HOWARD COUNTY, MARYLAND

OWNER
 MILLTOWNE ASSOCIATE LP
 BY: HOWARD COUNTY HOUSING COMMISSION MEMBER
 BY: STACY SPANN, EXECUTIVE DIRECTOR
 6751 COLUMBIA GATEWAY DR.
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HARDIN-KIGHT ASSOCIATES, INC.
 GEOTECHNICAL CONSULTANTS

7524 WB&A ROAD, SUITE 100
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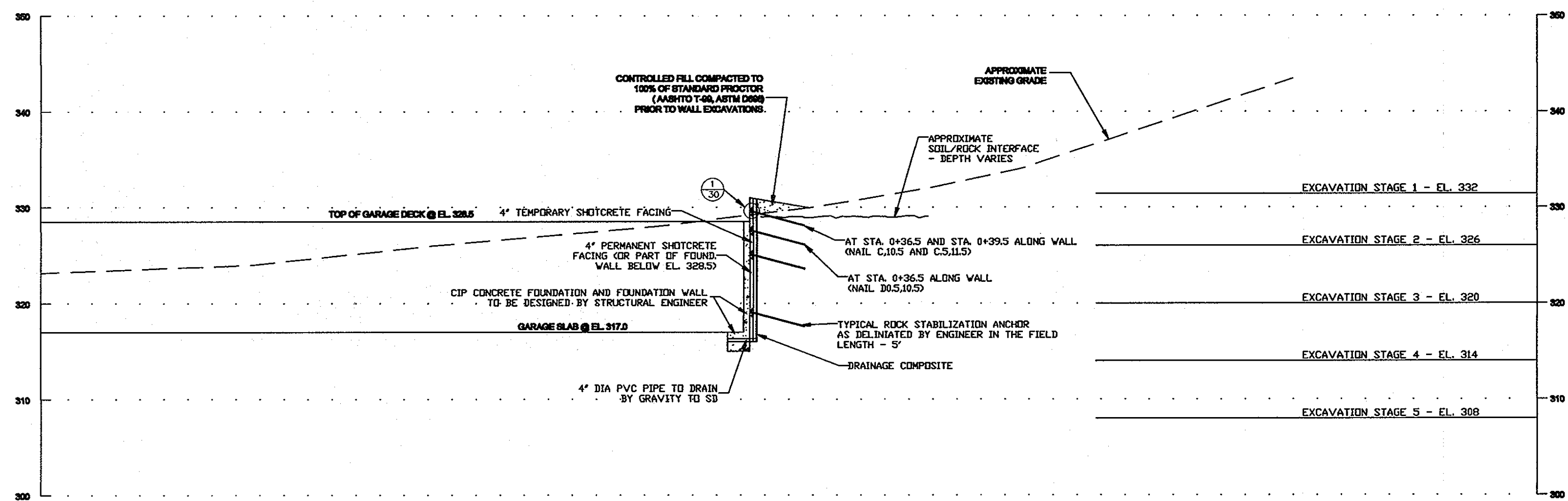
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 Scale: 1 IN. = 10 FEET

Title: **RETAINING WALL #1 PROFILE DRAINAGE AND EXCAVATION STAGE LAYOUT**

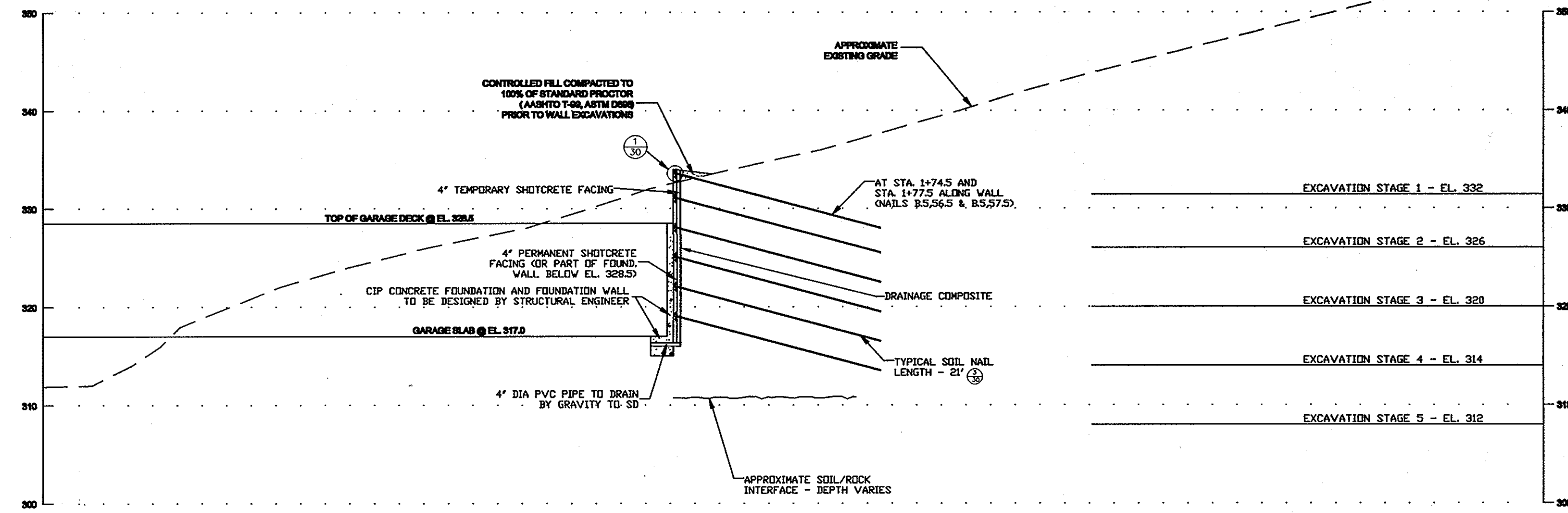
Project: **ROGER CARTER RECREATION CENTER - GARAGE RETAINING WALL PLANS AND DETAILS RETAINING WALL #1**

Date: June 25, 2011
 Project No: 11160
 Drawing No: 28 OF 50

SDP-11-057



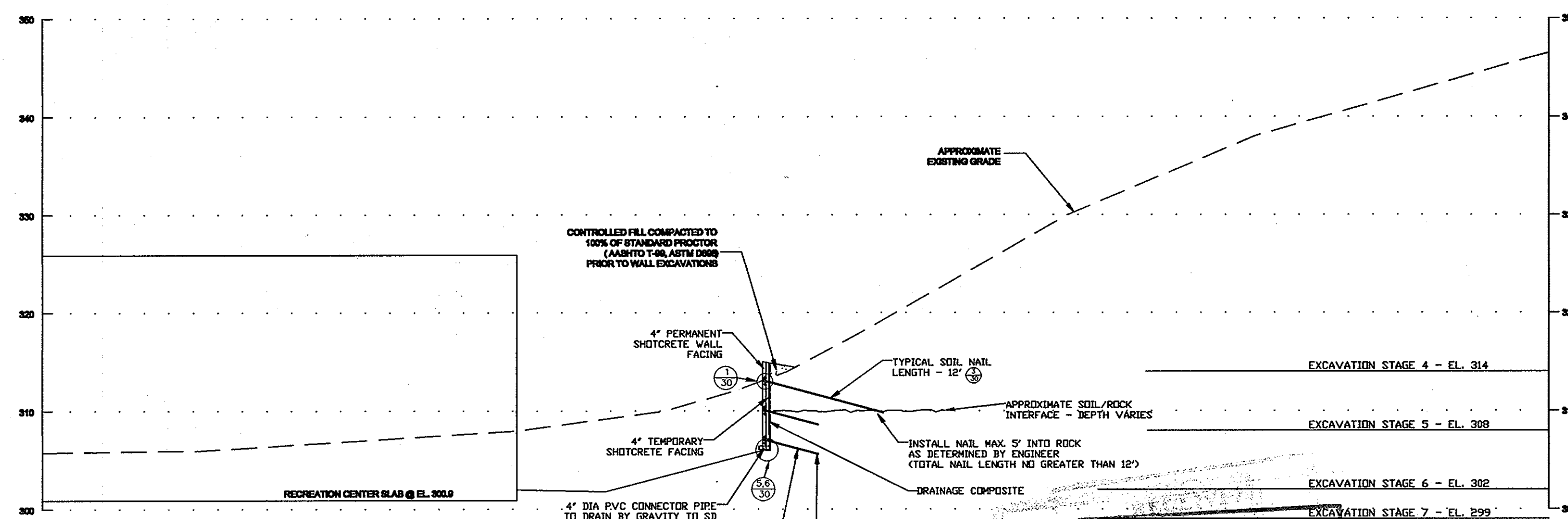
SECTION AT STATION 0+38
(COLUMN 11)



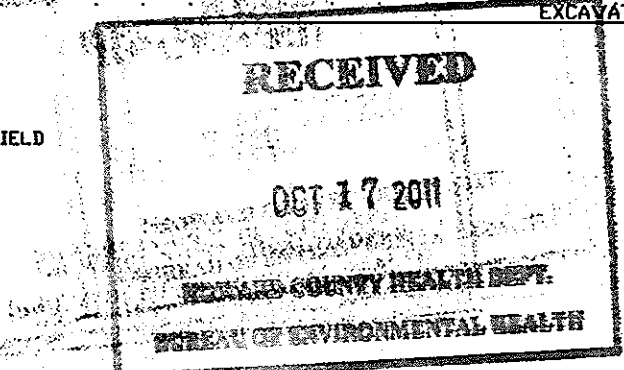
SECTION AT STATION 1+76
(COLUMN 57)

CONSTRUCTION SEQUENCE

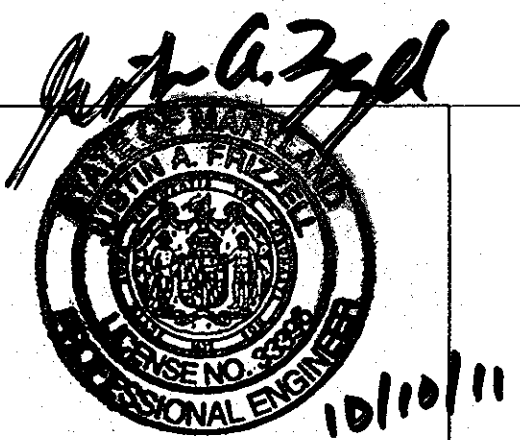
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SECTION AT STATION 2+54
(COLUMN 83)



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I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33206, EXPIRATION DATE: 11-29-2012



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 10/20/11
 CHIEF, DEVELOPMENT ENGINEERING DIVISION, DATE
 [Signature] 10/27/11
 CHIEF, DIVISION OF LAND DEVELOPMENT, DATE
 [Signature] 10/27/11
 DIRECTOR, DATE

No.	Date	Revision	By
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HILLTOP REDEVELOPMENT
 ELLICOTT MILLS DRIVE
 RESIDENTIAL AND RECREATION CENTER
 L477/F.718, L468/F.448, L448/F.48
 TAX MAP: 25 PARCELS: 12, 291
 2ND ELECTION DISTRICT
 BLOCK: 07 ZONINGS: R-VH, R-A-15, POR
 HOWARD COUNTY, MARYLAND

OWNER
 MILLTOWNE ASSOCIATE LP
 BY: HCH PARTNERS II LLC, GENERAL PARTNER
 BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
 BY: STACY SPANN, EXECUTIVE DIRECTOR
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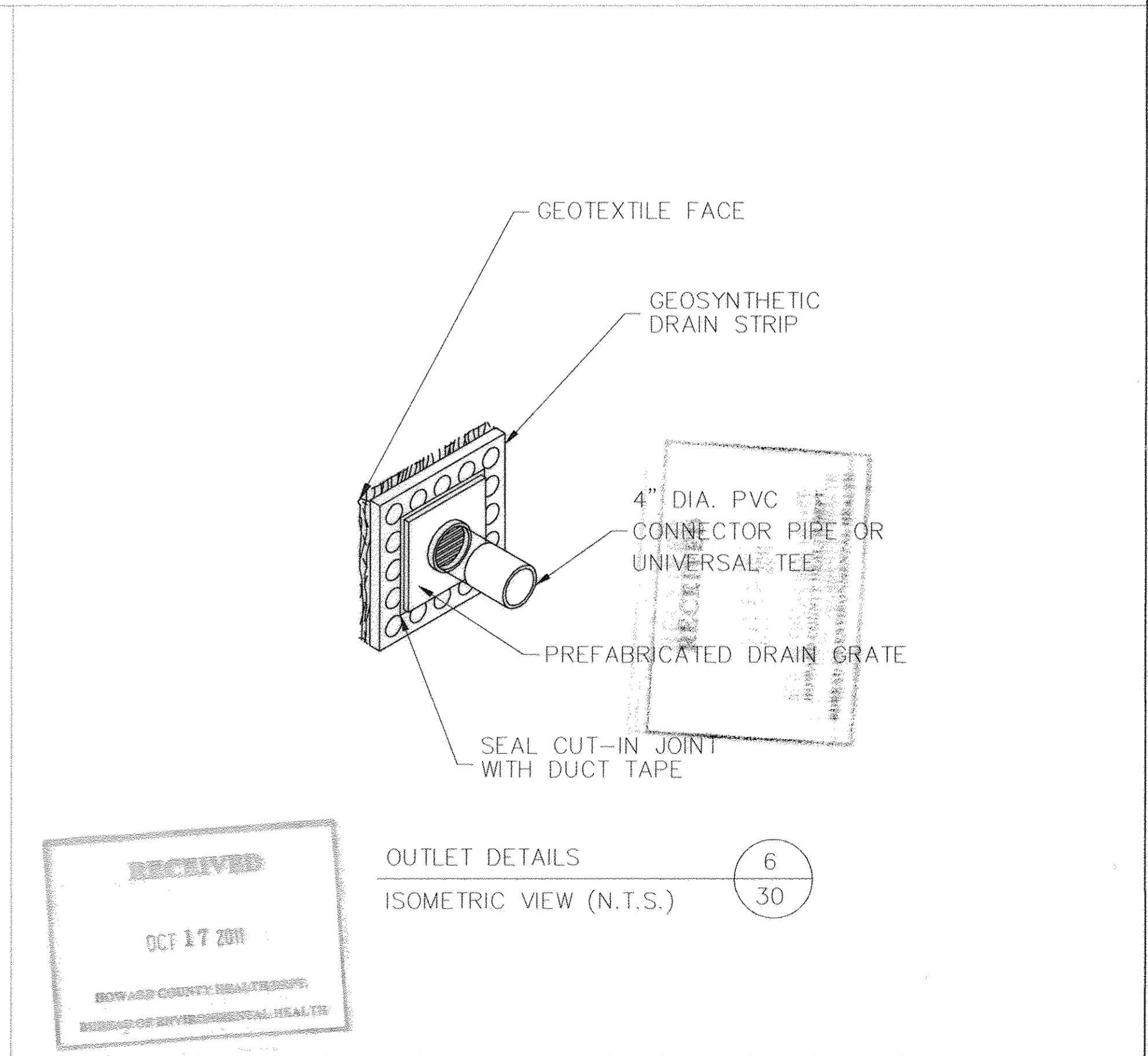
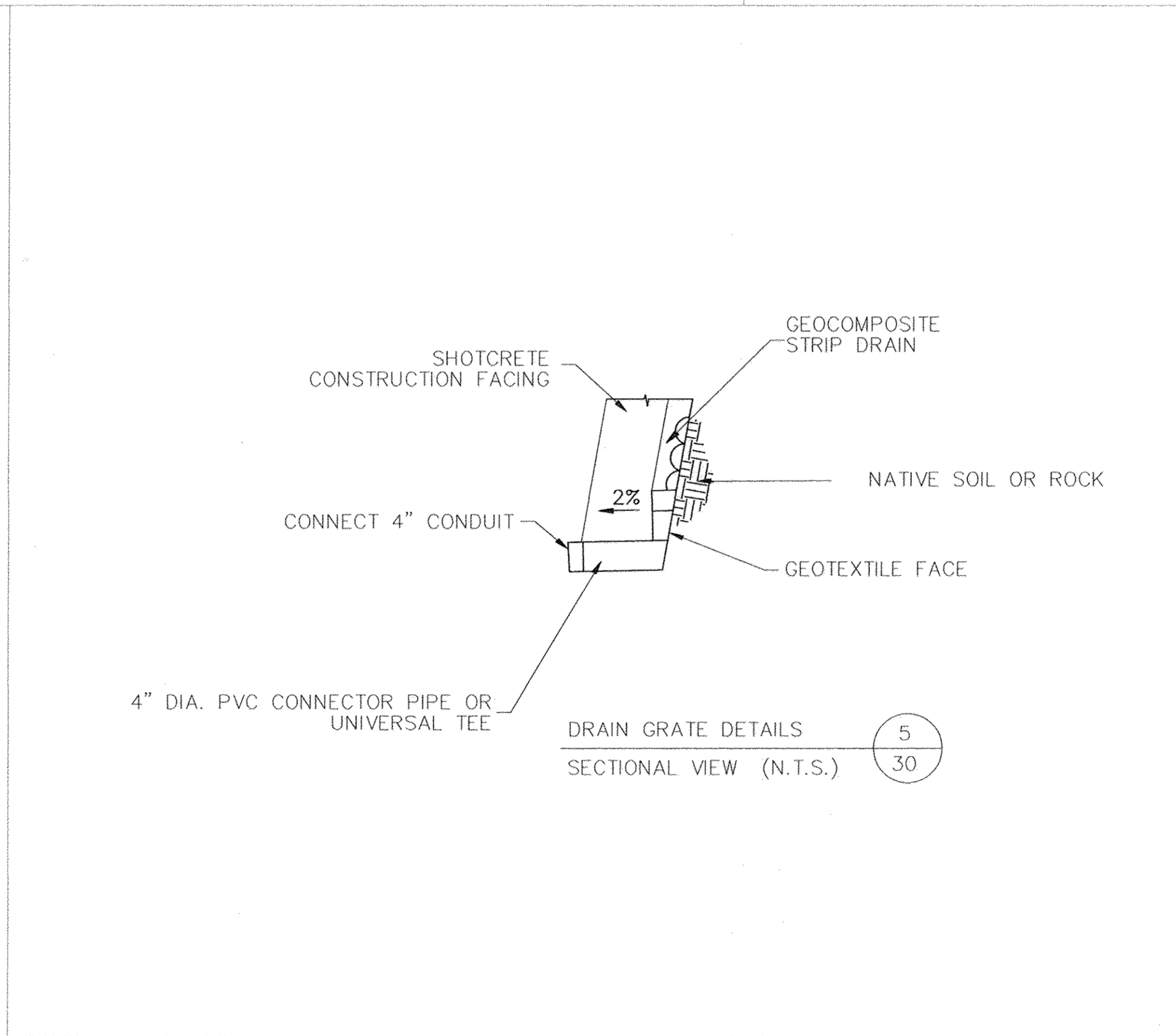
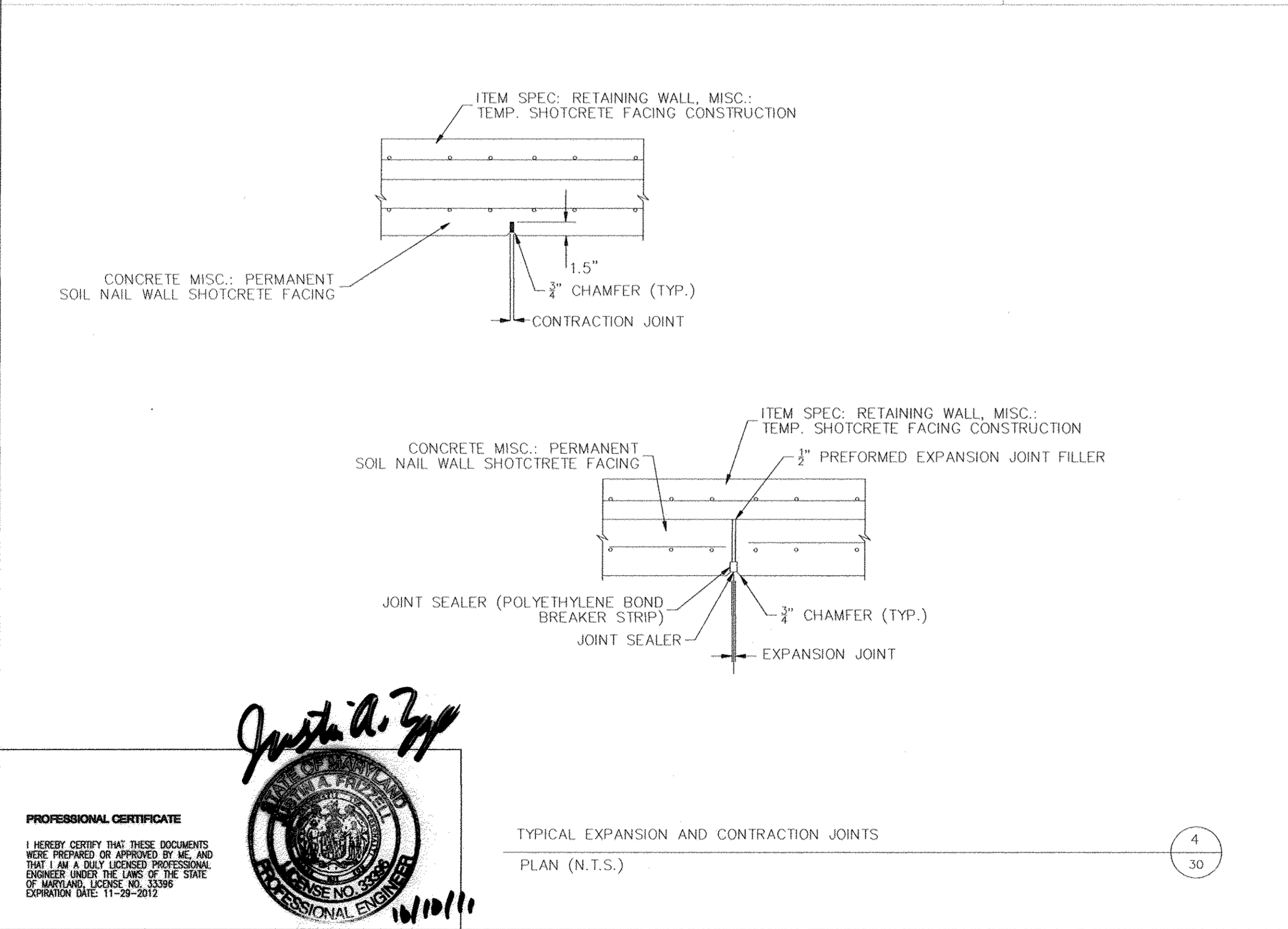
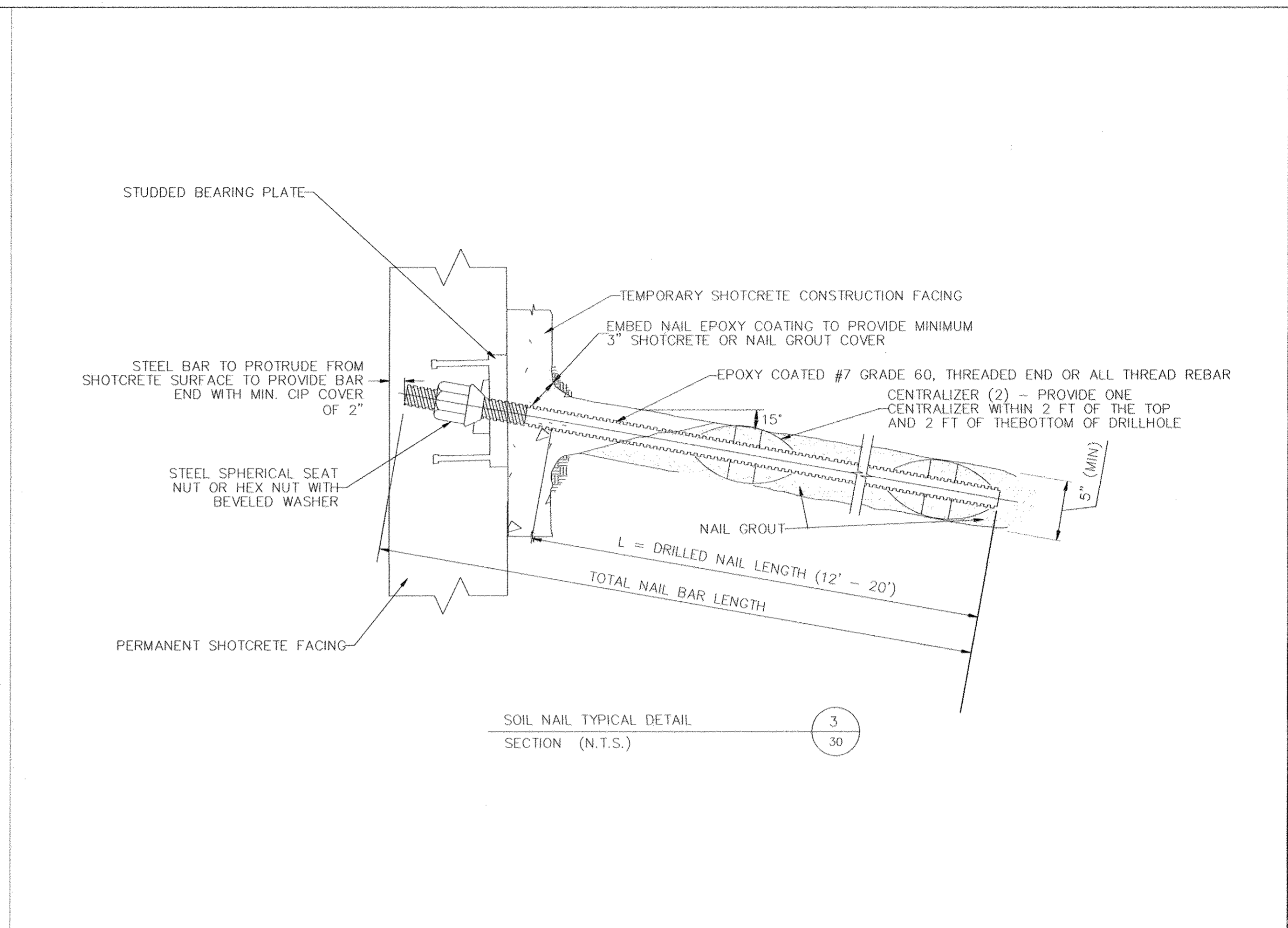
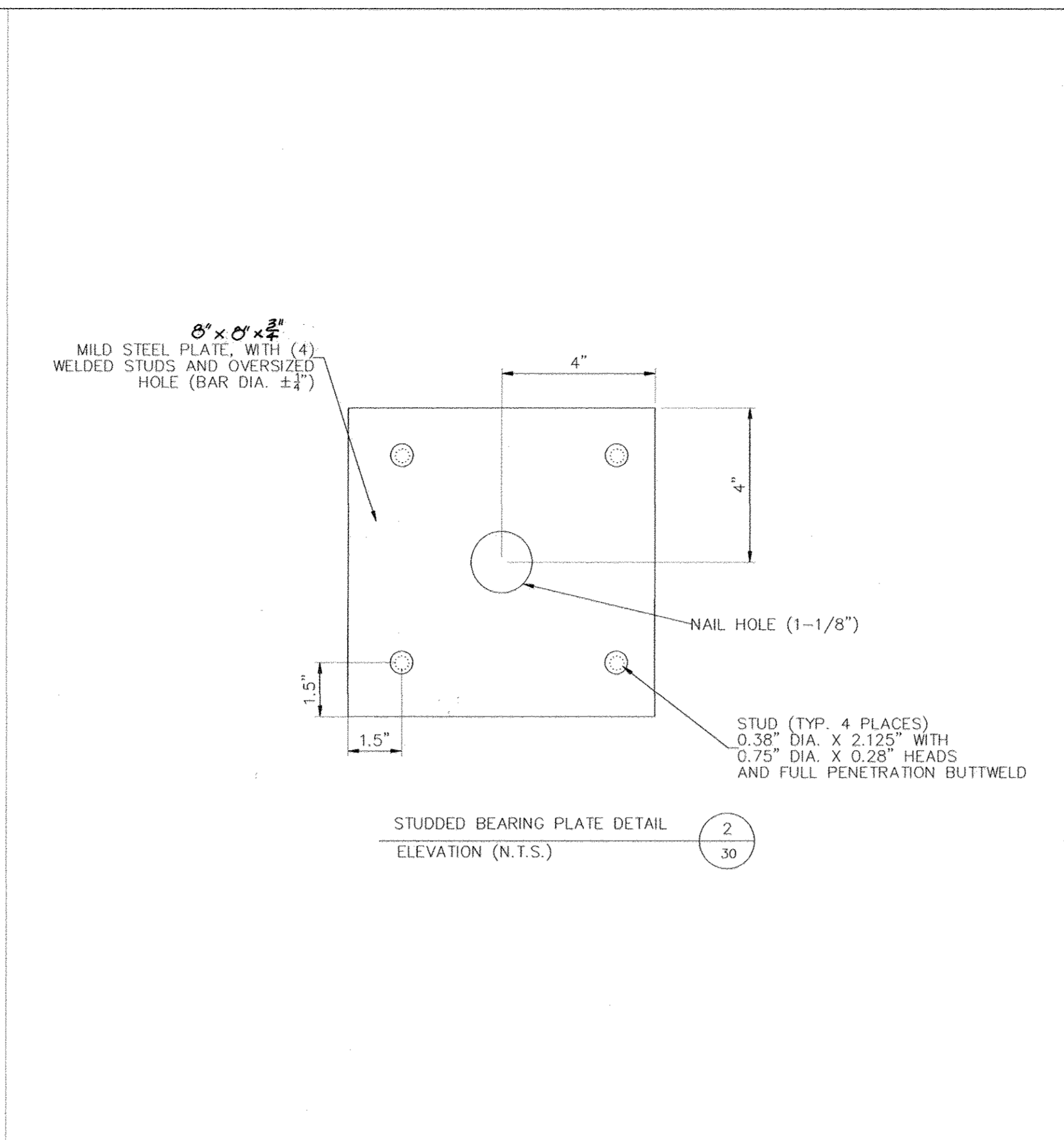
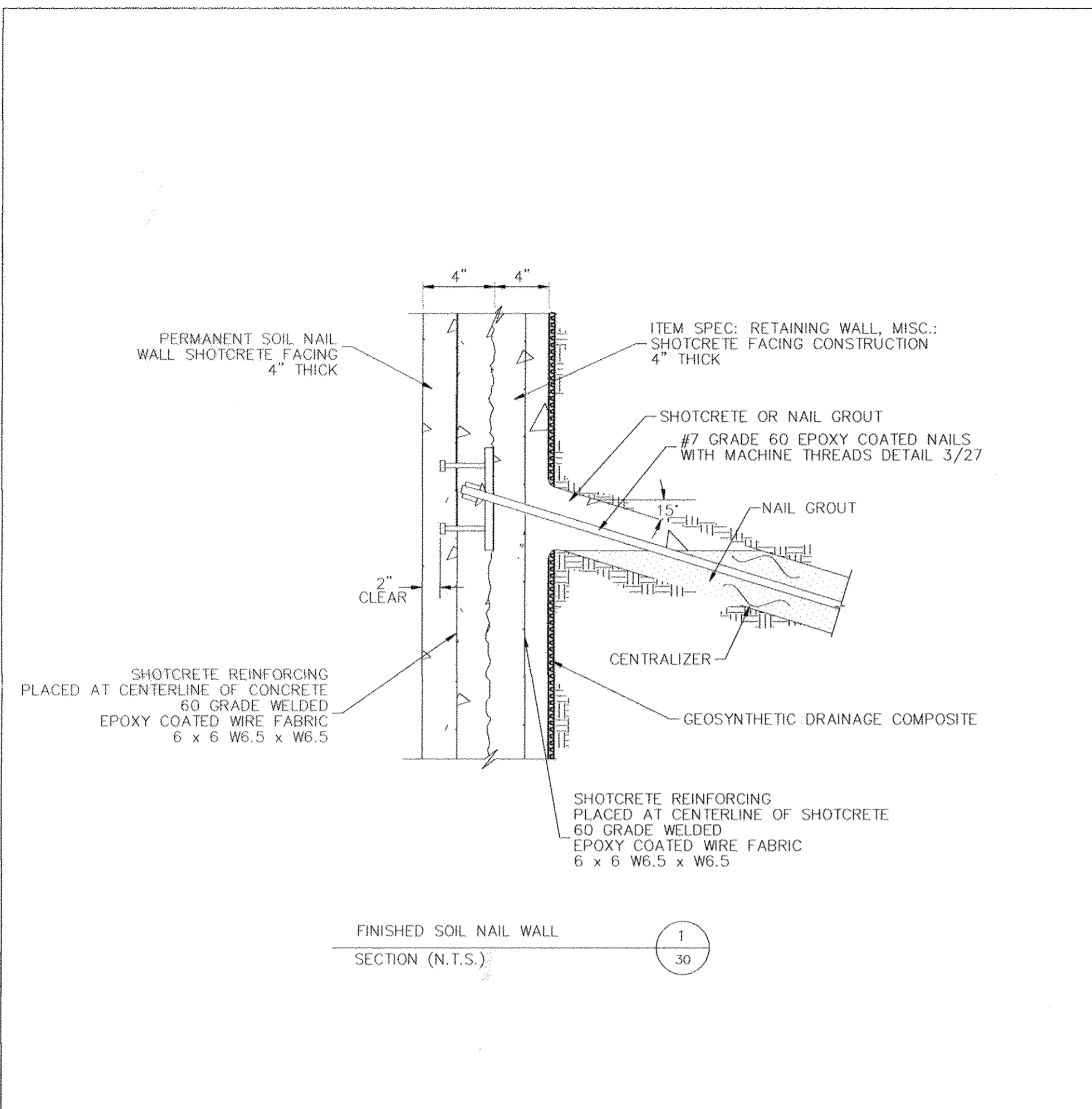
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 (410) 553-0808

Designed By:
JAF
 Checked By:
SEK
 Scale:
1 IN. = 10 FEET

Title:
RETAINING WALL #1 TYPICAL SECTIONS
 Project:
ROGER CARTER RECREATION CENTER - GARAGE
 RETAINING WALL PLANS AND DETAILS
 RETAINING WALL #1

Date:
June 25, 2011
 Project No:
11160
 Drawing No:
29



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 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33396, EXPIRATION DATE 11-25-2012.

Justin A. Zipp
 JUSTIN A. ZIPP
 PROFESSIONAL ENGINEER

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 10/20/11
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE

[Signature] 10/27/11
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE

[Signature] 10/23/11
 DIRECTOR
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4	2/16/12	REVISE STUDDED BEARING PLATE DETAIL	JAF
5	1/05/17	REVISE SHEET NUMBER	VOGEL

HILLTOP REDEVELOPMENT
 ELLICOTT MILLS DRIVE
 RESIDENTIAL AND RECREATION CENTER
 L477/F.718, L486/F.448, L448/F.46

TAX MAP: 25 PARCELS: 12, 291
 2ND ELECTION DISTRICT

BLOCK: 07 ZONINGS: R-VH, R-A-15, POR
 HOWARD COUNTY, MARYLAND

OWNER
 MILLTOWNE ASSOCIATE LP
 BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
 BY: STACY SPANN, EXECUTIVE DIRECTOR
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 (410) 553-0802
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Designed By:
JAF

Checked By:
SEK

Scale:
 NTS OR AS SHOWN

Title:
RETAINING WALL #1 DETAILS

Project:
**ROGER CARTER RECREATION CENTER - GARAGE
 RETAINING WALL PLANS AND DETAILS
 RETAINING WALL #1**

Date:
June 25, 2011

Project No:
11180

Drawing No:
30 of 50

SOIL NAIL AND ROCK ANCHOR RETAINING WALL DESIGN NOTES

1.0 DESCRIPTION

THIS WORK CONSISTS OF CONSTRUCTING A SOIL NAIL AND ROCK ANCHOR RETAINING WALL. THE SOIL NAIL WALL SHALL BE BUILT BY TOP DOWN METHODS IN SPECIFIC STAGED EXCAVATION LIFTS AS DESCRIBED HEREIN AND AS SHOWN ON THE PLANS.

2.0 CONSTRUCTION CONSIDERATIONS

2.1 DESIGN DATA

DIAMETER OF DRILLED HOLE IS 5 INCHES. THE DESIGN LENGTH OF THE SOIL NAIL IS 12 TO 21 FEET (AS SHOWN ON DRAWINGS). THE DESIGN ULTIMATE BOND STRESS OF 8.7 PSI. THE REQUIRED ALLOWABLE SOIL NAIL PULLOUT RESISTANCE OF 1.64 KIPS/ FOOT. THE DESIGN TEST LOAD (DTL) = 19.7 KIPS FOR 12 FOOT NAILS, 27.9 KIPS FOR 17 FOOT NAILS AND 34.4 KIPS FOR 21 FOOT NAILS.

2.2 DESIGN STRESSES

CONCRETE CLASS C – COMPRESSIVE STRENGTH 4,000 PSI
 SHOTCRETE – COMPRESSIVE STRENGTH 4,000 PSI
 REINFORCING STEEL – WELDED WIRE FABRIC GRADE 60 MINIMUM YIELD (EPOXY COATED) STRENGTH 60 KSI
 SOIL NAILS – GRADE 60 OR 75 KSI (EPOXY COATED)
 STRUCTURAL STEEL – ASTM A36 YIELD STRENGTH 36 KSI.

3.0 CONSTRUCTION PLAN

AT LEAST 30 DAYS BEFORE STARTING SOIL NAIL RETAINING WALL WORK, CONTRACTOR SHALL SUBMIT THE FOLLOWING TO THE ENGINEER:

1. START DATE AND PROPOSED RETAINING WALL CONSTRUCTION SEQUENCE. INCLUDE THE PROPOSED METHOD OF EXCAVATING TO ENSURE WALL AND SLOPE STABILITY.
2. DRILLING METHODS AND EQUIPMENT. INCLUDE DRILL HOLE DIAMETER TO ACHIEVE THE SPECIFIED PULLOUT RESISTANCE VALUES AND ANY VARIATION OF DRILL HOLE DIAMETER OR SPECIFIC PULLOUT RESISTANCE ALONG THE WALL ALIGNMENT.
3. SOIL NAIL TESTING METHODS AND EQUIPMENT SETUP.
4. IDENTIFICATION NUMBER AND CALIBRATION TEST RESULTS FOR EACH TEST JACK AND PRESSURE GAUGE. CALIBRATE THE TEST JACK AND PRESSURE GAUGE AS ONE UNIT. SUBMIT RESULTS FROM CALIBRATION TESTS CONDUCTED BY AN INDEPENDENT TESTING LABORATORY WITHIN THE PREVIOUS 90 DAYS.

4.0 MATERIALS

THE SOIL NAIL WALL MATERIALS SHALL CONFORM TO APPLICABLE ASTM AND ASSHTO REQUIREMENTS FOR THE MATERIALS MIX DESIGNS, AND MATERIAL SUBMITTALS SHALL BE SENT TO THE ARCHITECT FOR APPROVAL AT LEAST 2 WEEKS IN ADVANCE OF MOBILIZATION. THE MATERIALS SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS:

4.1 CONCRETE WORK

1. REINFORCING STEEL – AASHTO (1996), SECTION 9 "REINFORCING STEEL".
2. PERMANENT SHOTCRETE (SPECIFIED HEREIN).
3. FALSEWORK AND FORMS – USE HOWARD COUNTY STANDARD SPECIFICATIONS.

ITEM – SPECIAL, RETAINING WALL, MISC. : PERMANENT SOIL NAILS

1.0 DESCRIPTION OF WORK

THIS WORK CONSISTS OF INSTALLATION OF PERMANENT SOIL NAILS AND ALL MATERIALS NEEDED FOR INSTALLATION. A PERMANENT SOIL NAIL CONSISTS OF THE NAIL, GROUT, SOIL NAIL APPURTENANCES, BEARING PLATES, NUTS, AND WELDED STUD SHEAR CONNECTORS. SOIL NAIL HENCEFORTH IN THESE SPECIFICATIONS REFERS TO BOTH SOIL NAILS AND ROCK ANCHORS.

2.0 SOIL NAILS

2.1 NAILS

SOLID #7 BAR, GRADE 60 DEFORMED BAR, (EPOXY COATED) CONTINUOUS WITHOUT SPLICES OR WELDS, NEW, STRAIGHT, UNDEFORMED, EPOXY-COATED, AND ENCAPSULATED AS SHOWN ON THE PLANS. THREADED, A MINIMUM OF 6 IN. ON THE WALL ANCHORAGE END, TO ALLOW PROPER ATTACHMENT OF BEARING PLATE AND NUT. THREADING MAY BE CONTINUOUS SPIRAL DEFORMED RIBBING PROVIDED BY THE BAR DEFORMATIONS (CONTINUOUS THREAD BARS) OR MAY BE CUT INTO A REINFORCING BAR. IF THREADS ARE CUT INTO A REINFORCING BAR, PROVIDE THE NEXT-LARGER BAR NUMBER DESIGNATION FROM THAT IS SHOWN ON THE PLANS, AT NO ADDITIONAL COST.

2.2 SOIL NAIL APPURTENANCES

1. CENTRALIZER, MANUFACTURED FROM SCHEDULE 40 PVC PIPE OR TUBE, STEEL, OR OTHER MATERIAL NOT DETRIMENTAL TO THE NAIL STEEL (WOOD SHALL NOT BE USED); SECURELY ATTACHED TO THE NAIL BAR; SIZED TO POSITION THE NAIL BAR WITHIN 1 IN. OF THE CENTER OF THE DRILLHOLE; SIZED TO ALLOW TREMIE PIPE INSERTION TO THE BOTTOM OF THE DRILLHOLE; AND SIZED TO ALLOW GROUT TO FREELY FLOW UP THE DRILLHOLE.
2. NAIL GROUT – NEAT CEMENT OR SAND/CEMENT MIXTURE WITH A MINIMUM 3-DAY COMPRESSIVE STRENGTH OF 10.5 MPa (1,500 PSI) AND A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 21 MPa (3,000 PSI), PER AASHTO T106/ASTM C109.
3. FINE AGGREGATE – AASHTO M6/ASTM C33.
4. PORTLAND CEMENT – AASHTO M85/ASTM C150, TYPE I, II, III, OR V. E-4.
5. ADMIXTURES – AASHTO M194/ASTM C494. ADMIXTURES THAT CONTROL BLEED, IMPROVE FLOWABILITY, REDUCE WATER CONTENT, AND RETARD SET MAY BE USED IN THE GROUT SUBJECT TO REVIEW AND ACCEPTANCE BY THE ENGINEER. ACCELERATORS ARE NOT PERMITTED. ADMIXTURES SHALL BE COMPATIBLE WITH THE GROUT AND MIXED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

2.3 BEARING PLATES, NUTS, AND WELDED STUD SHEAR CONNECTORS

1. BEARING PLATES – AASHTO M183/ASTM A36.
2. NUTS – AASHTO M291, GRADE B, HEXAGONAL, FITTED WITH BEVELED WASHER OR SPHERICAL SEAT TO PROVIDE UNIFORM BEARING.
3. SHEAR CONNECTORS – AASHTO CONSTRUCTION SPECIFICATIONS, SECTION 11.3.3.1.

3.0 CONTROLLED FILL AND EXCAVATION

COMPLETE ANY CLEARING AND EXCAVATION ABOVE THE WALL AREA IN ACCORDANCE WITH CARROLL COUNTY AND STATE OF MD REQUIREMENTS BEFORE COMMENCING WALL EXCAVATION. DO NOT PERFORM ANY OF THE WALL EXCAVATION BEFORE BEGINNING THE WALL CONSTRUCTION. PLACE THE UP TO APPROXIMATELY 6 FEET OF FILL REQUIRED BY THE SITE PLANS IN THE AREA AT THE TOP OF THE WALL. THE FILL MATERIAL MUST BE APPROVED BY THE GEOTECHNICAL ENGINEER AND COMPACTED TO A MINIMUM OF 100% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR (AASHTO T-99, ASTM D698) UNDER THE SUPERVISION OF THE GEOTECHNICAL ENGINEERS QUALIFIED REPRESENTATIVE. PERFORM EXCAVATION FOR THE WALL IN LIFTS CONCURRENT WITH SOIL NAIL INSTALLATION AND SHOTCRETE PLACEMENT. DO NOT ALLOW THE EXPOSED UNSUPPORTED FINAL EXCAVATION FACE CUT HEIGHT TO EXCEED THE VERTICAL NAIL SPACING PLUS THE REQUIRED REINFORCING LAP OR THE SHORT-TERM STAND-UP HEIGHT OF THE GROUND, WHICHEVER IS LESS. COMPLETE EXCAVATION TO THE FINAL WALL EXCAVATION LINE AND APPLICATION OF THE SHOTCRETE IN THE SAME WORK SHIFT.

IF IT CAN BE DEMONSTRATED THE DELAY WILL NOT ADVERSELY AFFECT THE EXCAVATION FACE STABILITY. A STABILIZING BERM OF SOIL MAY BE LEFT IN PLACE TO CONTAIN THE LIFT FACE DURING NAIL INSTALLATION. DO NOT EXCAVATE TO THE NEXT LOWER LIFT UNTIL NAIL INSTALLATION, REINFORCED SHOTCRETE PLACEMENT, ATTACHMENT OF BEARING PLATES AND NUTS, AND NAIL TESTING HAVE BEEN COMPLETED AND ACCEPTED IN THE CURRENT LIFT. CURE GROUT AND SHOTCRETE AT LEAST 72 HOURS OR ATTAIN THE SPECIFIED 3-DAY COMPRESSIVE STRENGTH BEFORE EXCAVATING THE NEXT UNDERLYING LIFT.

4.0 NAIL INSTALLATION

4.1 STORING AND HANDLING

STORE AND HANDLE SOIL NAILS IN A MANNER THAT AVOIDS DAMAGE OR CORROSION. REPLACE NAILS EXHIBITING ABRASIONS, CUTS, WELD SPLATTER, CORROSION, OR PITTING. REPAIR OR REPLACE ANY NAILS EXHIBITING DAMAGE TO THE ENCAPSULATION OR EPOXY COATING.

4.2 FABRICATION

PROVIDE NAILS THREADED A MINIMUM OF 6 INCHES TO ALLOW PROPER ATTACHMENT OF BEARING PLATE AND NUT. THREADING MAY BE CONTINUOUS SPIRAL DEFORMED RIBBING PROVIDED BY THE BAR DEFORMATIONS OR MAY BE CUT INTO THE REINFORCING BAR. USE THE NEXT LARGER BAR SIZE IF THREADS ARE CUT INTO THE REINFORCING BAR. WHEN APPROPRIATE, REPAIR DAMAGE TO THE EPOXY COATING. PROVIDE CENTRALIZERS SIZED TO POSITION THE NAIL WITHIN 1 INCH OF THE CENTER OF THE DRILL HOLE. POSITION CENTRALIZERS A MAXIMUM OF 10 FEET APART AND WITHIN 24 INCHES FROM THE TOP AND BOTTOM OF THE NAIL. USE CENTRALIZERS THAT DO NOT IMPEDE THE FREE FLOW OF GROUT INTO THE DRILL HOLE.

4.3 DRILLING

DRILL 5 IN. (MINIMUM) DIAMETER HOLES FOR THE SOIL NAILS AT THE LOCATIONS AND TO THE ORIENTATION SHOWN ON THE PLANS. SELECT DRILLING EQUIPMENT AND METHODS SUITABLE FOR THE GROUND CONDITIONS. DO NOT USE WATER, DRILLING MUD, OR OTHER FLUIDS FOR DRILLING OR REMOVING CUTTINGS. IF UNSTABLE GROUND IS ENCOUNTERED, USE CASED DRILLING METHODS TO SUPPORT THE CIRCUMFERENCE OF THE DRILL HOLES. SELF-DRILLING NAILS ARE NOT ACCEPTABLE.

4.4 SOIL NAIL AND ROCK ANCHOR DISTINCTION

THE SOIL NAIL INSTALLATION AND TESTING WILL BE MONITORED ON A FULL TIME BASIS BY THE GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE. NAILS INSTALLED IN THE ABSENCE OF THE GEOTECHNICAL ENGINEERING REPRESENTATIVE (GER) WILL BE REJECTED. THE GER WILL APPROVE EACH NAIL BASED ON THE TEST RESULTS AND CONFIRMATION THAT THE NAILS WERE INSTALLED TO THE MINIMUM EMBEDMENT PER THE DESIGN OR AS AMENDED BASED ON TEST RESULTS AND AUTHORIZED BY THE GEOTECHNICAL ENGINEER. NAILS THAT ARE LOCATED PARTIALLY IN SOIL AND ROCK WILL BE APPROVED BASED ON A MINIMUM EMBEDMENT OF 5 FEET INTO ROCK OR A MAXIMUM EMBEDDED LENGTH OF 12-21 FEET (PER DESIGN), OR AS AUTHORIZED BY THE GER BASED ON TEST RESULTS.

4.5 GROUTING

INSERT THE NAIL INTO THE HOLE AND GROUT THE DRILL HOLE WITHIN 2 HOURS OF COMPLETING DRILLING. INJECT THE GROUT AT THE LOWEST POINT OF EACH DRILL HOLE THROUGH A GROUT TUBE, CASING, HOLLOW-STEM AUGER, OR DRILL RODS. COMPLETELY FILL THE DRILL HOLE IN ONE CONTINUOUS OPERATION. TO PREVENT VOIDS, KEEP THE OUTLET END OF THE GROUT CONDUIT BELOW THE SURFACE OF THE GROUT AS THE CONDUIT IS WITHDRAWN. COLD JOINTS IN THE GROUT COLUMN ARE ONLY ALLOWED AT THE TOP OF THE TEST BOND LENGTH OF PROOF-TESTED PRODUCTION NAILS. MAINTAIN THE TEMPORARY UNBONDED LENGTH OF PROOF TEST NAILS OPEN FOR SUBSEQUENT GROUTING. IF THE UNBONDED TEST LENGTH OF PRODUCTION PROOF TEST NAILS CANNOT BE SATISFACTORILY GROUTED SUBSEQUENT TO TESTING, INSTALL A NEW NAIL IN ITS PLACE.

4.6 ACCEPTANCE

ALL SOIL NAILS WILL BE EVALUATED BASED ON THE RESULT OF THE TESTING SPECIFIED IN ITEM-SPECIAL RETAINING WALL MISC.: SOIL NAIL PROOF TESTS

5.0 MEASUREMENT

MEASURE ITEM SPECIAL – RETAINING WALL MISC.: PERMANENT SOIL NAIL BY EACH NAIL FOR EVERY SOIL NAIL ACCEPTED BY THE PROJECT ENGINEER.

6.0 PAYMENT

THE ACCEPTED QUANTITIES WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER UNIT OF MEASUREMENT FOR THE PAY ITEMS LISTED IN THE BID SCHEDULE. PAYMENT WILL BE FULL COMPENSATION FOR THE WORK.

ITEM	DESCRIPTION	UNIT
SPECIAL	RETAINING WALL MISC.: PERMANENT SOIL NAIL	EA.

ITEM – SPECIAL, RETAINING WALL, MISC. : SOIL NAIL PROOF TESTS

1.1 NAIL TESTING

PERFORM PROOF TESTING ON 35 SOIL NAILS DESIGNATED BY THE ENGINEER. DO NOT TEST ANY NAIL UNTIL THE NAIL GROUT AND SHOTCRETE FACING HAVE CURED FOR AT LEAST 72 HOURS AND ATTAINED THE SPECIFIED 3-DAY COMPRESSIVE STRENGTH.

FURNISH TWO DIAL GAUGES, DIAL GAUGE SUPPORT, JACK AND PRESSURE GAUGE, AND A REACTION FRAME. USE PRESSURE GAUGES GRADUATED IN NO GREATER THAN 100-POUND PER SQUARE INCH INCREMENTS. MEASURE THE NAIL HEAD MOVEMENT WITH A MINIMUM OF TWO DIAL GAUGES CAPABLE OF MEASURING TO 0.001 INCH.

1.2 PROOF TESTING OF PRODUCTION NAILS

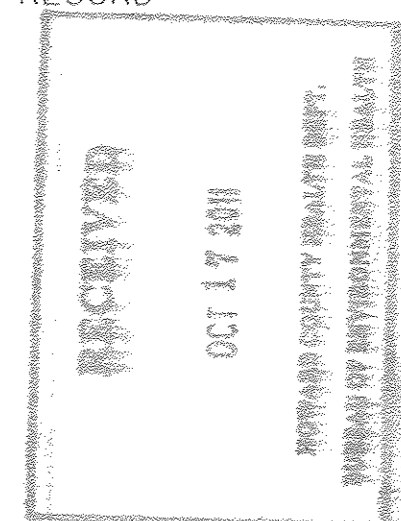
PERFORM PROOF TESTS ON PRODUCTION NAILS AT LOCATIONS SELECTED BY THE PROJECT ENGINEER. PERFORM SUCCESSFUL PROOF TESTING ON 5 PERCENT OF THE PRODUCTION NAILS IN EACH NAIL HORIZONTAL ROW OR A MINIMUM OF 1 PER ROW. PERFORM PROOF TESTS BY INCREMENTALLY LOADING THE PROOF TEST NAIL TO 150 PERCENT OF THE DESIGN LOAD AS INDICATED IN TABLE 1. MEASURE AND RECORD SOIL NAIL MOVEMENT AT EACH LOAD INCREMENT.

TABLE 1

TEST LOAD INCREMENT	HOLD TIME (MINUTES)
AL (0.05DTL MAX.)	UNTIL STABLE
0.25DTL	UNTIL STABLE
0.50DTL	UNTIL STABLE
0.75DTL	UNTIL STABLE
1.00DTL	UNTIL STABLE
1.25DTL	UNTIL STABLE
1.50DTL (MAXIMUM LOAD)	SEE BELOW

NOTE: AL = ALIGNMENT LOAD; DTL = DESIGN TEST LOAD.

THE ALIGNMENT LOAD SHOULD BE THE MINIMUM LOAD REQUIRED TO ALIGN THE TESTING APPARATUS AND SHOULD NOT EXCEED 5 PERCENT OF THE DESIGN TEST LOAD. SET DIAL GAUGES TO "ZERO" AFTER THE ALIGNMENT LOAD HAS BEEN APPLIED. PERFORM EITHER 10-MINUTE OR 60-MINUTE CREEP TESTS AT THE MAXIMUM LOAD. START THE CREEP PERIOD AFTER THE MAXIMUM TEST LOAD IS APPLIED. MEASURE AND RECORD NAIL MOVEMENT AT 1, 2, 3, 5, 10, AND 10 MINUTES. WHEN THE NAIL MOVEMENT BETWEEN 1 MINUTE AND 10 MINUTES EXCEEDS 0.04 INCHES, MAINTAIN THE MAXIMUM TEST LOAD AN ADDITIONAL 50 MINUTES, RECORDING MOVEMENT AT 20, 30, 50, AND 60 MINUTES. MAINTAIN ALL LOAD INCREMENTS WITHIN 5 PERCENT OF THE INTENDED LOAD.



PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33396, EXPIRATION DATE: 11-22-2012.

John A. Zapp
 10/27/11
 10/27/11
 10/27/11

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 10/27/11	<table border="1"> <thead> <tr> <th>No.</th> <th>Date</th> <th>Revision</th> <th>By</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>08/16/2011</td> <td>REVISED GRADING PLAN. REVISED FACING. CHANGE PAGE NUMBER.</td> <td>JAF</td> </tr> <tr> <td>2</td> <td>09/07/2011</td> <td>REVISED TITLE</td> <td>JAF</td> </tr> <tr> <td>3</td> <td>10/20/11</td> <td>REVISED FOR MYLAR WITH WET STAMP</td> <td>JAF</td> </tr> <tr> <td>4</td> <td>01/03/17</td> <td>REVISE SHEET NUMBER</td> <td>VOGEL</td> </tr> </tbody> </table>	No.	Date	Revision	By	1	08/16/2011	REVISED GRADING PLAN. REVISED FACING. CHANGE PAGE NUMBER.	JAF	2	09/07/2011	REVISED TITLE	JAF	3	10/20/11	REVISED FOR MYLAR WITH WET STAMP	JAF	4	01/03/17	REVISE SHEET NUMBER	VOGEL	HILLTOP REDEVELOPMENT ELLICOTT MILLS DRIVE RESIDENTIAL AND RECREATION CENTER L477/F.718, L488/F.448, L448/F.46 TAX MAP: 25 PARCELS: 12, 291 2ND ELECTION DISTRICT BLOCK: 07 ZONINGS: R-VH, R-A-15, POR HOWARD COUNTY, MARYLAND	OWNER MILLTOWNE ASSOCIATE LP BY: HCH PARTNERS IN LLC, GENERAL PARTNER BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER BY: STACY SPANN, EXECUTIVE DIRECTOR 6751 COLUMBIA GATEWAY DR. 5RD FLOOR COLUMBIA, MD 21046 (410) 313-6320	DEVELOPER STAVROU ASSOCIATES, INC. 2661 RIVA ROAD BUILDING 320 ANNAPOLIS, MD 21401 C/O STEPHEN J. MOORE (410) 571-6610	HARDIN-KIGHT ASSOCIATES, INC. GEOTECHNICAL CONSULTANTS 7524 WB&A ROAD, SUITE 100 GLEN BURNIE, MARYLAND (410) 553-0802 (410) 553-0808	Designed By: JAF Checked By: SEK Scale:	Title: RETAINING WALL #1 SPECIFICATIONS 1 Project: ROGER CARTER RECREATION CENTER - GARAGE RETAINING WALL PLANS AND DETAILS RETAINING WALL #1	Date: June 25, 2011 Project No: 11160 Drawing No: 31 of 50
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1.3 VERIFICATION TEST.

PERFORM VERIFICATION TESTS ON SACRIFICIAL TEST NAILS AT LOCATIONS SHOWN ON THE PLANS. PERFORM VERIFICATION TESTS BEFORE INSTALLATION OF PRODUCTION NAILS TO VERIFY DRILLING AND INSTALLATION METHODS, NAIL PULLOUT RESISTANCE, AND DESIGN ASSUMPTIONS.

PERFORM TESTS BY INCREMENTALLY LOADING THE VERIFICATION TEST NAILS AS INDICATED IN TABLE 2. MEASURE AND RECORD SOIL NAIL MOVEMENT AT EACH LOAD INCREMENT. THE ALIGNMENT LOAD IS THE MINIMUM LOAD REQUIRED TO ALIGN THE TESTING APPARATUS AND SHOULD NOT EXCEED 5 PERCENT OF THE DESIGN TEST LOAD. SET DIAL GAUGES TO "ZERO" AFTER APPLYING THE ALIGNMENT LOAD. FOLLOWING APPLICATION OF THE MAXIMUM LOAD, REDUCE THE LOAD TO THE ALIGNMENT LOAD AND RECORD THE PERMANENT SET. HOLD EACH LOAD INCREMENT FOR AT LEAST 10 MINUTES. MONITOR THE VERIFICATION TEST NAIL FOR CREEP AT THE 1.50 DTL LOAD INCREMENT BY MEASURING AND RECORDING NAIL MOVEMENT AT 1,2,3,5,6,10, 20, 30, 50 AND 60 MINUTES. MAINTAIN THE LOAD DURING THE CREEP TEST WITHIN 2 PERCENT OF THE INTENDED LOAD BY USE OF THE LOAD CELL.

TABLE 2
VERIFICATION TEST LOAD SCHEDULE

TEST LOAD INCREMENT	HOLD TIME (MINUTES)
AL (0.05DTL MAX.)	1
0.25DTL	10
0.50DTL	10
0.75DTL	10
1.00DTL	10
1.25DTL	10
1.50DTL (CREEP TEST)	60
1.75DTL	10
2.00DTL (MAXIMUM LOAD)	10
AL	1

NOTE: AL = ALIGNMENT LOAD; DTL = DESIGN TEST LOAD.

ITEM SPECIAL - VERIFICATION TEST SOIL NAILS

MEASURE VERIFICATION TEST NAILS BY THE UNIT OF EACH NAIL. DO NOT MEASURE FAILED VERIFICATION TEST NAILS OR ADDITIONAL VERIFICATION TEST NAILS INSTALLED TO VERIFY ALTERNATIVE NAIL INSTALLATION METHODS PROPOSED BY THE CONTRACTOR.

1.4 ACCEPTANCE.

INSTALLED SOIL NAILS WILL BE EVALUATED BASED ON THE CRITERIA IN TABLE 3.

IF A PROOF TEST FAILS, REPLACE ALL OF THE INSTALLED PRODUCTION NAILS BETWEEN THE FAILED PROOF TEST NAIL AND THE NEXT PROOF TEST NAIL IN THE ROW, AS DIRECTED. ALTERNATIVELY, INSTALL ADDITIONAL PROOF TEST NAILS WITHIN THIS AREA TO ENSURE THAT THE ACCEPTANCE CRITERIA IS BEING MET WITHIN THIS AREA. PROPOSE ALTERNATIVE METHODS BEFORE INSTALLING ADDITIONAL SOIL NAILS.

TABLE 3

TYPE OF NAIL TEST	TOTAL CREEP MOVEMENT AT MAXIMUM LOAD (1)	TOTAL MOVEMENT (2)	PULLOUT FAILURE (3)
PROOF	<0.040 INCHES BETWEEN 1 AND 10 MIN OR	>80%	NO
	<0.080 INCHES BETWEEN 6 AND 60 MIN(1)		

- (1) AND THE CREEP RATE IS LINEAR OR DECREASING THROUGHOUT THE CREEP TEST LOAD HOLD PERIOD.
- (2) PERCENT OF THE THEORETICAL ELASTIC ELONGATION OF THE TEST NAIL UNBONDED LENGTH.
- (3) PULLOUT FAILURE IS DEFINED AS THE INABILITY TO FURTHER INCREASE THE TEST LOAD WHILE THERE IS CONTINUED PULLOUT MOVEMENT OF THE TEST NAIL. RECORD THE PULLOUT FAILURE LOAD AS PART OF THE TEST DATA. IF A VERIFICATION TEST FAILS, PROPOSE ALTERNATE INSTALLATION METHODS BEFORE INSTALLING ADDITIONAL VERIFICATION TEST NAILS AND INSTALL A REPLACEMENT VERIFICATION TEST NAIL.

2.0 METHOD OF MEASUREMENT

ITEM SPECIAL - RETAINING WALL MISC.: SOIL NAIL PROOF TESTS MEASURE SOIL NAIL PROOF TEST BY UNITS OF EACH TEST FOR EVERY TEST ACCEPTED BY THE PROJECT ENGINEER.

3.0 PAYMENT

THE ACCEPTED QUANTITIES WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER UNIT OF MEASUREMENT FOR THE PAY ITEMS LISTED IN THE BID SCHEDULE. PAYMENT WILL BE FULL COMPENSATION FOR THE WORK.

ITEM	DESCRIPTION	UNIT
SPECIAL	RETAINING WALL MISC.: SOIL NAIL PROOF TESTS	EA.

ITEM- SPECIAL, RETAINING WALL, MISC. : SHOTCRETE FACING CONSTRUCTION

1.0 SHOTCRETE

PROVIDE CONSTRUCTION SHOTCRETE FACING AS SHOWN ON THE PLANS. WHERE SHOTCRETE IS USED TO COMPLETE THE TOP UNGROUTED ZONE OF THE NAIL DRILL HOLE NEAR THE FACE, POSITION THE NOZZLE INTO THE MOUTH OF THE DRILL HOLE TO COMPLETELY FILL THE VOID.

2.0 MATERIALS

MINIMUM MATERIAL LIST
 AIR-ENTRAINING ADMIXTURE - AASHTO M154
 CHEMICAL ADMIXTURES - ASTM C494
 CURING MATERIAL - AASHTO M182, M171; ASTM C309
 HYDRAULIC CEMENT - ASTM C150
 POZZOLANS - ASTM C618
 WELDED WIRE FABRIC 6 x 6 W 6.5 x W 6.5, (EPOXY COATED)

3.0 EQUIPMENT

3.1 WATER SUPPLY SYSTEM.

FOR DRY MIX, PROVIDE A WATER STORAGE TANK AT THE JOB SITE. PROVIDE A POSITIVE DISPLACEMENT PUMP WITH A REGULATING VALVE THAT IS ACCURATELY CONTROLLED TO PROVIDE WATER IN THE PRESSURES AND VOLUMES RECOMMENDED BY THE DELIVERY MACHINE MANUFACTURER.

3.2 MIXING.

USE EQUIPMENT CAPABLE OF HANDLING AND APPLYING SHOTCRETE CONTAINING THE SPECIFIED MAXIMUM SIZE AGGREGATE AND ADMIXTURES. PROVIDE AN AIR HOSE AND BLOWPIPE TO CLEAR DUST AND REBOUND DURING SHOTCRETE APPLICATION.

3.3 AIR SUPPLY SYSTEM.

USE AN AIR SUPPLY SYSTEM CAPABLE OF SUPPLYING THE DELIVERY MACHINE AND HOSE WITH AIR AT THE PRESSURES AND VOLUMES RECOMMENDED BY THE MACHINE MANUFACTURER. DO NOT USE AIR SUPPLY SYSTEMS THAT DELIVER OIL-CONTAMINATED AIR OR ARE INCAPABLE OF MAINTAINING CONSTANT PRESSURE.

3.4. DELIVERY MACHINE.

USE A DELIVERY MACHINE CAPABLE OF SUPPLYING MATERIAL TO THE DELIVERY HOSE AT A UNIFORM RATE. THE EJECTION FROM THE NOZZLE MUST ADHERE TO THE TREATED SURFACE WITH MINIMUM REBOUND AND MAXIMUM DENSITY WHEN THE NOZZLE IS HELD IN THE RANGE OF 3 TO 6 FT FROM THE TARGET SURFACE.

4.0 COMPOSITION (SHOTCRETE MIX DESIGN)

DESIGN AND PRODUCE SHOTCRETE MIXTURES CONFORMING TO TABLE 4 FOR THE TYPE OF SHOTCRETE USED. USE THE AMOUNT OF WATER REQUIRED TO PRODUCE SHOTCRETE OF SUITABLE STRENGTH, CONSISTENCY, QUALITY, AND UNIFORMITY WITH THE MINIMUM AMOUNT OF REBOUND. USE THE SAME MATERIAL TYPES AND SOURCES AS SUBMITTED WITH THE MIX DESIGN IN THE FIELD TRIALS AND PRODUCTION WORK.

1. FIBERS - IF FIBERS ARE REQUIRED, ADD THEM TO THE MIX IN THE PROPORTIONS RECOMMENDED BY THE MANUFACTURER.

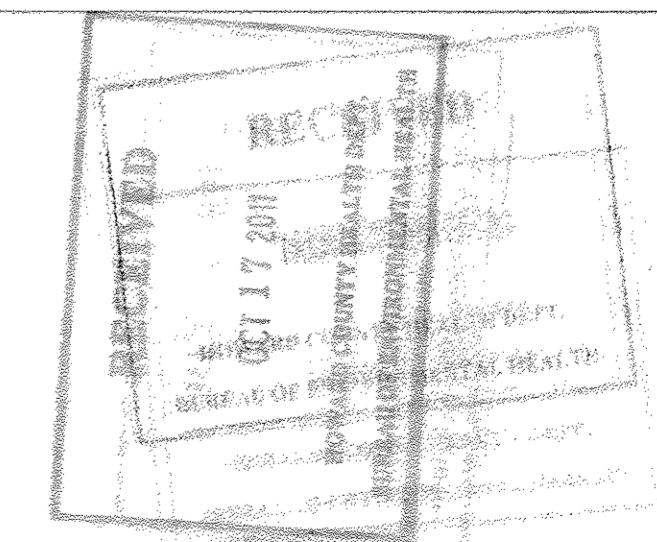
2. HYDRATION STABILIZING ADMIXTURES - HYDRATION STABILIZING ADMIXTURES MAY BE USED TO EXTEND THE ALLOWABLE DELIVERY TIME FOR SHOTCRETE. DOSAGE IS BASED ON THE TIME NEEDED TO DELAY THE INITIAL SET OF THE SHOTCRETE FOR DELIVERY AND DISCHARGE ON THE JOB. DESIGN SHALL INCLUDE DISCHARGE TIME LIMIT IN THE DOSAGE SUBMITTAL. DOSAGE REQUIRED TO STABILIZE SHOTCRETE SHALL BE DETERMINED USING JOB SITE MATERIAL AND FIELD TRIAL MIXTURES. THE EXTENDED-SET ADMIXTURE SHALL CONTROL THE HYDRATION OF ALL CEMENT MINERALS AND GYPSUM. THE MAXIMUM ALLOWABLE DESIGN DISCHARGE TIME IS 3.50 HOURS.

3. DOSAGE AND TYPE OF EXTENDED - SET ADMIXTURE SHALL BE INCLUDED WITH PROPOSED MIX DESIGN. WHEN REQUESTED, THE ADMIXTURE MANUFACTURER SHALL PROVIDE THE SERVICE OF QUALIFIED PERSON TO ASSIST IN ESTABLISHING THE PROPER DOSE OF EXTENDED-SET ADMIXTURE AND MAKE DOSAGE ADJUSTMENTS REQUIRED TO MEET ANY CHANGING JOB SITE CONDITIONS.

TABLE 4

Type of Shotcrete Process	Minimum Cement Content (lb/cys)	Maximum W/C Ratio	Air Content Range (%)	Minimum 28-Day Compressive Strength (psi)
WET	550	0.55	NA	4000
DRY	550	0.5	NA	4000
WET(W/EA) ⁽²⁾	550	0.45	MIN. 5	4000
DRY(W/EA) ⁽²⁾	550	0.45	MIN. 5	4000

- NOTES:
 (1) W/C = WATER/CEMENT (BY WEIGHT).
 (2) EA = ENTRAINED AIR.
 (3) ACCORDING TO AASHTO T 23.



PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 11160, EXPIRATION DATE: 11-29-2012

Robert Carter
 10/19/11

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING 	<table border="1"> <thead> <tr> <th>No.</th> <th>Date</th> <th>Revision</th> <th>By</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>08/16/2011</td> <td>REVISED GRADING PLAN. REVISED FACING. CHANGE PAGE NUMBER.</td> <td>JAF</td> </tr> <tr> <td>2</td> <td>09/07/2011</td> <td>REVISED TITLE</td> <td>JAF</td> </tr> <tr> <td>3</td> <td>10/2011</td> <td>REVISED FOR MYLAR WITH WET STAMP</td> <td>JAF</td> </tr> <tr> <td>4</td> <td>01/05/17</td> <td>REVISE SHEET NUMBER</td> <td>VOGEL</td> </tr> </tbody> </table>	No.	Date	Revision	By	1	08/16/2011	REVISED GRADING PLAN. REVISED FACING. CHANGE PAGE NUMBER.	JAF	2	09/07/2011	REVISED TITLE	JAF	3	10/2011	REVISED FOR MYLAR WITH WET STAMP	JAF	4	01/05/17	REVISE SHEET NUMBER	VOGEL	HILLTOP REDEVELOPMENT ELLICOTT MILLS DRIVE RESIDENTIAL AND RECREATION CENTER L477/F.718, L.488/F.448, L.448/F.48 TAX MAP: 25 PARCELS: 12, 291 2ND ELECTION DISTRICT BLOCK: 07 ZONINGS: R-VH, R-A-15, POR HOWARD COUNTY, MARYLAND	OWNER MILLTOWNE ASSOCIATE LP BY: HOH PARTNERS III LLC, GENERAL PARTNER BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER BY: STACY SPANN, EXECUTIVE DIRECTOR 6751 COLUMBIA GATEWAY DR. 3RD FLOOR COLUMBIA, MD 21046 (410) 313-6320	DEVELOPER STARBUCK ASSOCIATES, INC. 2861 RIVA ROAD BUILDING 320 ANNAPOLIS, MD 21401 C/O STEPHEN J. MOORE (410) 571-6610	HARDIN-KIGHT ASSOCIATES, INC. GEOTECHNICAL CONSULTANTS 7524 WB&A ROAD, SUITE 100 GLEN BURNIE, MARYLAND (410) 553-0802 (410) 553-0808	Designed By: JAF Checked By: SEK Scale: NTS OR AS SHOWN	Title: RETAINING WALL #1 SPECIFICATIONS 2 Project: ROGER CARTER RECREATION CENTER - GARAGE RETAINING WALL PLANS AND DETAILS RETAINING WALL #1	Date: June 25, 2011 Project No: 11160 Drawing No: 32 OF 50
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5.0 CONSTRUCTION REQUIREMENTS

5.1 SHOTCRETE FACE FINISH.

SHOTCRETE FINISH SHALL BE EITHER AN UNDISTURBED GUN FINISH AS APPLIED FROM THE NOZZLE OR A ROD, BROOM, WOOD FLOAT, RUBBER FLOAT, STEEL TROWEL OR ROUGH SCREEDED FINISH. PERMANENT FACING SHALL BE STEEL TROWELED.

PERMANENT SHOTCRETE FACING INCLUDES EXPANSION AND CONTRACTION JOINTS AS SHOWN ON THE PLANS.

5.2 ATTACHMENT OF NAIL HEAD BEARING PLATE AND NUT.

ATTACH A BEARING PLATE, WASHERS, AND NUT TO EACH NAIL HEAD AS SHOWN ON THE PLANS. WHILE THE SHOTCRETE CONSTRUCTION FACING IS STILL PLASTIC AND BEFORE ITS INITIAL SET, UNIFORMLY SEAT THE PLATE ON THE SHOTCRETE BY HAND-WRENCH TIGHTENING THE NUT. WHERE UNIFORM CONTACT BETWEEN THE PLATE AND THE SHOTCRETE CANNOT BE PROVIDED, SET THE PLATE IN A BED OF GROUT. AFTER GROUT HAS SET FOR 24 HOURS, HAND-WRENCH TIGHTEN THE NUT. ENSURE BEARING PLATES WITH HEADED STUDS ARE LOCATED WITHIN THE TOLERANCES DEFINED IN SECTION 5.3.

5.3 WALL CONSTRUCTION.

PLACE STEEL WELDED WIRE MESH ACCORDING TO PLANS. CONSTRUCT SHOTCRETE FACING ACCORDING TO THE NOTES HEREIN. COMPLETELY FILL THE TOP UNGROUTED ZONE OF ANY NAIL DRILL HOLES OR OTHER VOIDS WITH SHOTCRETE. ATTACH A BEARING PLATE AND NUT TO EACH NAIL HEAD. WHILE THE SHOTCRETE IS STILL PLASTIC, UNIFORMLY SEAT THE PLATE BY TIGHTENING THE NUT WITH A HAND WRENCH. WHERE UNIFORM CONTACT BETWEEN THE PLATE AND THE SHOTCRETE CANNOT BE PROVIDED, SET THE PLATE IN A BED OF GROUT AND TIGHTEN THE NUT WITH A HAND WRENCH AFTER THE GROUT HAS SET FOR 24 HOURS. CONSTRUCTION TOLERANCES FOR WALL ELEMENTS ARE SHOWN IN TABLE 5.

TABLE 5: WALL ELEMENT CONSTRUCTION TOLERANCES

WALL ELEMENT	TOLERANCE
HORIZONTAL LOCATION OF HEADED STUDS, FROM PLAN LOCATION	3/8 INCH
LOCATION OF HEADED STUDS ON BEARING PLATE, FROM PLAN LOCATION	1/4 INCH
NAIL HEAD BEARING PLATE, DEVIATION FROM PARALLEL TO WALL FACE	15 DEGREES

5.4 CONSTRUCTION FACING TOLERANCES.

CONSTRUCTION TOLERANCES FOR THE SHOTCRETE FACING FROM PLAN LOCATION AND PLAN DIMENSIONS ARE AS FOLLOWS:

- HORIZONTAL LOCATION OF WELDED WIRE MESH AND HEADED STUDS: 0.4 INCH.
- LOCATION OF HEADED STUDS ON BEARING PLATE: 0.25 INCH
- SPACING BETWEEN REINFORCING BARS: 1-INCH.
- REINFORCING LAP, FROM SPECIFIED DIMENSION: 1-INCH.
- COMPLETE THICKNESS OF SHOTCRETE:
 - IF TROWELED OR SCREEDED: 0.6-INCH.
 - PLANENESS OF FINISH FACE SURFACE-GAP UNDER 10-FT STRAIGHTEDGE: IF LEFT AS SHOT: 1.2-INCH.
- NAIL HEAD BEARING PLATE DEVIATION FROM PARALLEL TO WALL FACE: 10 DEGREES

5.5 RETAINING WALL, MISC.: SHOTCRETE FACING CONSTRUCTION.

SUBMIT FOR APPROVAL, ALL MATERIALS, METHODS, AND CONTROL PROCEDURES FOR THIS WORK.

6.0 METHOD OF MEASUREMENT

SHOTCRETE SHALL BE MEASURED PER EACH SQUARE FOOT OF NOMINAL 4-INCH THICKNESS OF SHOTCRETE AUTHORIZED AND ACCEPTED.

7.0 PAYMENT

THIS ITEM SHALL BE PAID AT THE CONTRACT UNIT PRICE AND SHALL INCLUDE ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO COMPLETE THE WORK. THE BASIS OF PAYMENT SHALL BE AS FOLLOWS:

ITEM	DESCRIPTION	UNIT
SPECIAL	RETAINING WALL, MISC.: SHOTCRETE FACING CONSTRUCTION	SQ FT

ITEM - SPECIAL, RETAINING WALL, MISC. : GEOCOMPOSITE WALL DRAINAGE

1.0 DESCRIPTION OF WORK.

INSTALL AND SECURE ALL ELEMENTS OF THE WALL DRAINAGE NETWORK AS SHOWN ON THE PLANS. THE DRAINAGE NETWORK SHALL CONSIST OF INSTALLING GEOCOMPOSITE DRAIN PANELS, PVC OR ABS CONNECTION PIPES, WALL FOOTING DRAINS, AND WEEPHOLES AS SHOWN ON THE PLANS. EXCLUSIVE OF THE WALL FOOTING DRAINS AND WEEPHOLES, ALL ELEMENTS OF THE DRAINAGE NETWORK SHALL BE INSTALLED PRIOR TO SHOTCRETING.

2.0 GEOCOMPOSITE DRAINAGE

MANUFACTURED WITH A DRAINAGE CORE AND A DRAINAGE GEOTEXTILE ATTACHED TO OR ENCAPSULATING THE CORE. DRAINAGE CORE TO BE MANUFACTURED FROM LONG CHAIN SYNTHETIC POLYMERS COMPOSED OF AT LEAST 85 PERCENT BY MASS OF POLYPROPYLENES, POLYESTER, POLYAMINE, POLYVINYL CHLORIDE, POLYOLEOFIN, OR POLYSTYRENE AND HAVING A MINIMUM COMPRESSIVE STRENGTH OF 40 PSI WHEN TESTED IN ACCORDANCE WITH ASTM D 1621 PROCEDURE A. THE DRAINAGE CORE WITH THE GEOTEXTILE FULLY ENCAPSULATING THE CORE SHALL HAVE A MINIMUM FLOW RATE OF 12.5 GALLONS PER MINUTE PER FOOT OF WIDTH TESTED IN ACCORDANCE WITH ASTM D 4716. THE TEST CONDITIONS SHALL BE UNDER AN APPLIED LOAD OF 10 PSI AT A GRADIENT OF 1.0 AFTER A 100-HOUR SEATING PERIOD.

THE GEOCOMPOSITE DRAIN LAYER IS A TWO-PART PREFABRICATED SHEET DRAIN, WHICH CONSISTS OF A FORMED POLYSTYRENE CORE COVERED WITH A NONWOVEN, NEEDLE-PUNCHED POLYPROPYLENE FILTER FABRIC ON THE DIMPLE SIDE OF THE CORE. THE FABRIC ALLOWS WATER TO PASS INTO THE DRAIN CORE. THE CORE ALLOWS THE WATER TO FLOW TO DESIGNATED DRAINAGE EXITS. MATERIAL WILL MEET THE REQUIREMENTS OF AMERICAN WICK DRAIN CORPORATION'S AMERDRAIN SITEDRAIN C-90 OR APPROVED EQUAL.

2.1 GEOCOMPOSITE CHIMNEY DRAIN SYSTEM

INSTALL VERTICAL DRAIN STRIPS CENTERED BETWEEN THE COLUMNS OF NAILS AS SHOWN ON THE PLANS. THE DRAIN STRIPS SHALL BE AT LEAST 6 OR 12 IN. WIDE (AS INDICATED ON THE PLAN) AND PLACED WITH THE GEOTEXTILE SIDE AGAINST THE GROUND. SECURE THE STRIPS TO THE EXCAVATION FACE AND PREVENT SHOTCRETE FROM CONTAMINATING THE GEOTEXTILE. TO ATTACH DRAIN TO BARE EARTH, USE 4"- 8" ANCHOR PINS WITH WASHERS. DRAIN STRIPS WILL BE VERTICALLY CONTINUOUS. MAKE SPLICES WITH A 12 IN. MINIMUM OVERLAP SUCH THAT THE FLOW OF WATER IS NOT IMPEDED. REPAIR DAMAGE TO THE GEOCOMPOSITE DRAIN STRIP, WHICH MAY INTERRUPT THE FLOW OF WATER.

INSTALL HORIZONTAL DRAINS AT THE BOTTOM OF THE WALL AS SHOWN ON SHEETS 25 - 27. ATTACH THEM TO THE DRAIN STRIPS. HORIZONTAL DRAIN SECTION SHALL BE AT LEAST 12 IN. TALL AND PLACED WITH THE GEOTEXTILE SIDE AGAINST THE GROUND. SECURE THE STRIPS TO THE EXCAVATION FACE AND PREVENT SHOTCRETE FROM CONTAMINATING THE GEOTEXTILE. TO ATTACH DRAIN TO BARE EARTH, USE 4"- 8" ANCHOR PINS WITH WASHERS. THE CONNECTION BETWEEN VERTICAL DRAINS AND HORIZONTAL STRIP DRAINS WILL BE VERTICALLY CONTINUOUS. MAKE SPLICES WITH A 12 IN. MINIMUM OVERLAP SUCH THAT THE FLOW OF WATER IS NOT IMPEDED. INSTALL DRAIN GRATE AND CONNECTOR PIPE OR UNIVERSAL TEE OUTLET AT BASE OF EACH STRIP. REPAIR DAMAGE TO THE GEOCOMPOSITE DRAIN CHIMNEY DRAIN SYSTEM, WHICH MAY INTERRUPT THE FLOW OF WATER.

2.2 DRAIN GRATE.

ATTACH THE OUTLET DRAIN TO GEOCOMPOSITE DRAIN STRIP FOLLOWING MANUFACTURER'S RECOMMENDATIONS DRAIN GRATES SUCH AS AMERICAN WICK DRAIN'S UNIVERSAL TEE OUTLET TOTAL DRAIN TEE FITTING OR EQUIVALENT. USE RAZOR KNIFE AND CUT A V NOTCH IN THE BOTTOM PORTION OF THE STRIP DRAIN APPROXIMATELY 3 INCHES WIDE AT THE BOTTOM AND 4 INCHES HIGH AND DISCARD.

3.0 METHOD OF MEASUREMENT

DRAINAGE SHALL BE MEASURED PER EACH SQUARE FOOT OF MATERIAL AUTHORIZED AND ACCEPTED.


4.0 PAYMENT

THIS ITEM SHALL BE PAID AT THE CONTRACT UNIT PRICE AND SHALL INCLUDE ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO COMPLETE THE WORK. THE BASIS OF PAYMENT SHALL BE AS FOLLOWS:

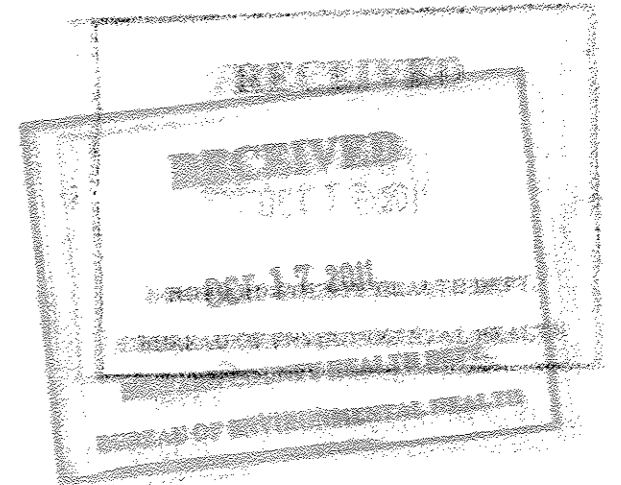
ITEM	DESCRIPTION	UNIT
SPECIAL	RETAINING WALL MISC.: GEOCOMPOSITE WALL DRAINAGE	SQ FT

ESTIMATED QUANTITIES - SOIL NAIL WALL: TO BE PROVIDED UPON REQUEST

PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33396, EXPIRATION DATE 11-29-2012.



10/10/11



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Thomas G. Butler
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 10/27/11

Thomas G. Butler
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 10/27/11

Thomas G. Butler
 DIRECTOR
 DATE: 10/27/11

No.	Date	Revision	By
1	08/16/2011	REVISED GRADING PLAN. REVISED FACING. CHANGE PAGE NUMBER.	JAF
2	09/07/2011	REVISED TITLE.	JAF
3	10/2011	REVISED FOR MYLAR WITH WET STAMP	JAF
4	01/05/11	REVISE SHEET NUMBER	VOGEL

HILLTOP REDEVELOPMENT
 ELLICOTT MILLS DRIVE
 RESIDENTIAL AND RECREATION CENTER
 L477F.716, L486F.448, L448F.46

TAX MAP: 25 PARCELS: 12, 291
 2ND ELECTION DISTRICT

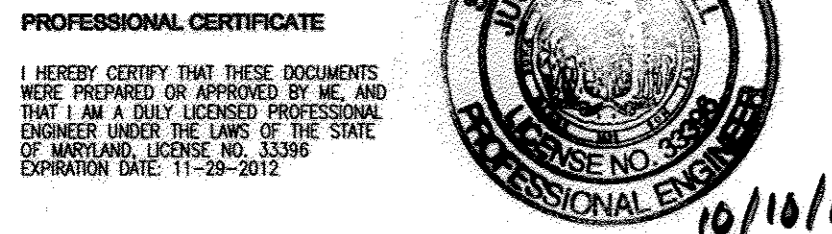
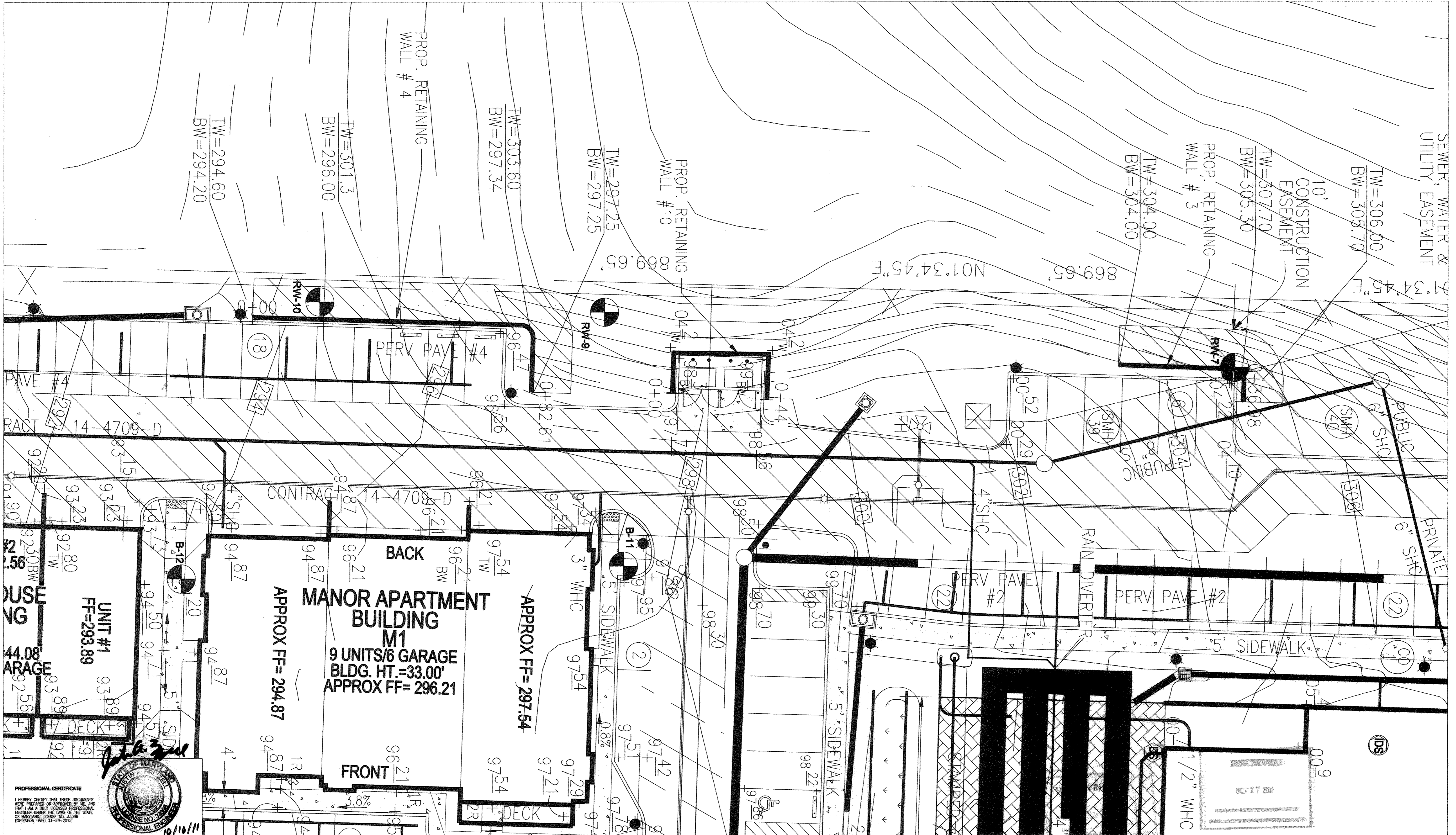
BLOCK: 07 ZONINGS: R-VH, R-A-15, POR
 HOWARD COUNTY, MARYLAND

OWNER
 MILLTOWNE ASSOCIATE LP
 BY: HCH PARTNERS III LLC, GENERAL PARTNER
 BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
 BY: STACY SPANN, EXECUTIVE DIRECTOR
 6751 COLUMBIA GATEWAY DR.
 3RD FLOOR
 COLUMBIA, MD 21046
 (410) 313-6320

DEVELOPER
 STAVROU ASSOCIATES, INC.
 2661 RIVA ROAD
 BUILDING 302
 ANNAPOLIS, MD 21401
 C/O STEPHEN J. MOORE
 (410) 571-6610

HARDIN-KIGHT ASSOCIATES, INC.
 GEOTECHNICAL CONSULTANTS
 7524 WB&A ROAD, SUITE 100
 GLEN BURNIE, MARYLAND
 (410) 553-0802
 (410) 553-0808

Designed By: JAF	Title: RETAINING WALL #1 SPECIFICATIONS 3	Date: June 25, 2011
Checked By: SEK	Project: ROGER CARTER RECREATION CENTER - GARAGE RETAINING WALL PLANS AND DETAILS RETAINING WALL #1	Project No: 11160
Scale: NTS OR AS SHOWN		Drawing No: 33 OF 50



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 10/22/11
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE

[Signature] 10/23/11
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE

[Signature] 10/23/11
 DIRECTOR
 DATE

No.	Date	Revision	By
1	08/17/2011	CHANGE PAGE NUMBER. ADD FENCE. ADD EASEMENT.	JAF
2	09/29/2011	ADD WALL #10	JAF
3	10/2011	REVISE FOR MYLAR WITH WET STAMP	JAF
4	01/05/17	REVISE SHEET NUMBER	VOGEL

HILLTOP REDEVELOPMENT
 ELLICOTT MILLS DRIVE
 RESIDENTIAL AND RECREATION CENTER
 L477F.718, L458F.448, L448F.46

TAX MAP: 25 PARCELS: 12, 291
 2ND ELECTION DISTRICT

BLOCK: 07 ZONINGS: R-VH, R-A-15, POR
 HOWARD COUNTY, MARYLAND

OWNER
 MILLTOWNE ASSOCIATE LP
 BY: HCH PARTNERS III LLC, GENERAL PARTNER
 BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
 BY: STACY SPANK, EXECUTIVE DIRECTOR
 6751 COLUMBIA GATEWAY DR.
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DEVELOPER
 STAIRGOU ASSOCIATES, INC.
 2661 RIVA ROAD
 BUILDING 320
 ANNAPOLIS, MD 21401
 C/O STEPHEN J. MOORE
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HARDIN-KIGHT ASSOCIATES, INC.
 GEOTECHNICAL CONSULTANTS

7524 WB&A ROAD, SUITE 100
 GLEN BURNIE, MARYLAND
 (410) 553-0802
 (410) 553-0808

Designed By:
 JAF

Checked By:
 SEK

Scale:
 1 INCH = 10 FEET

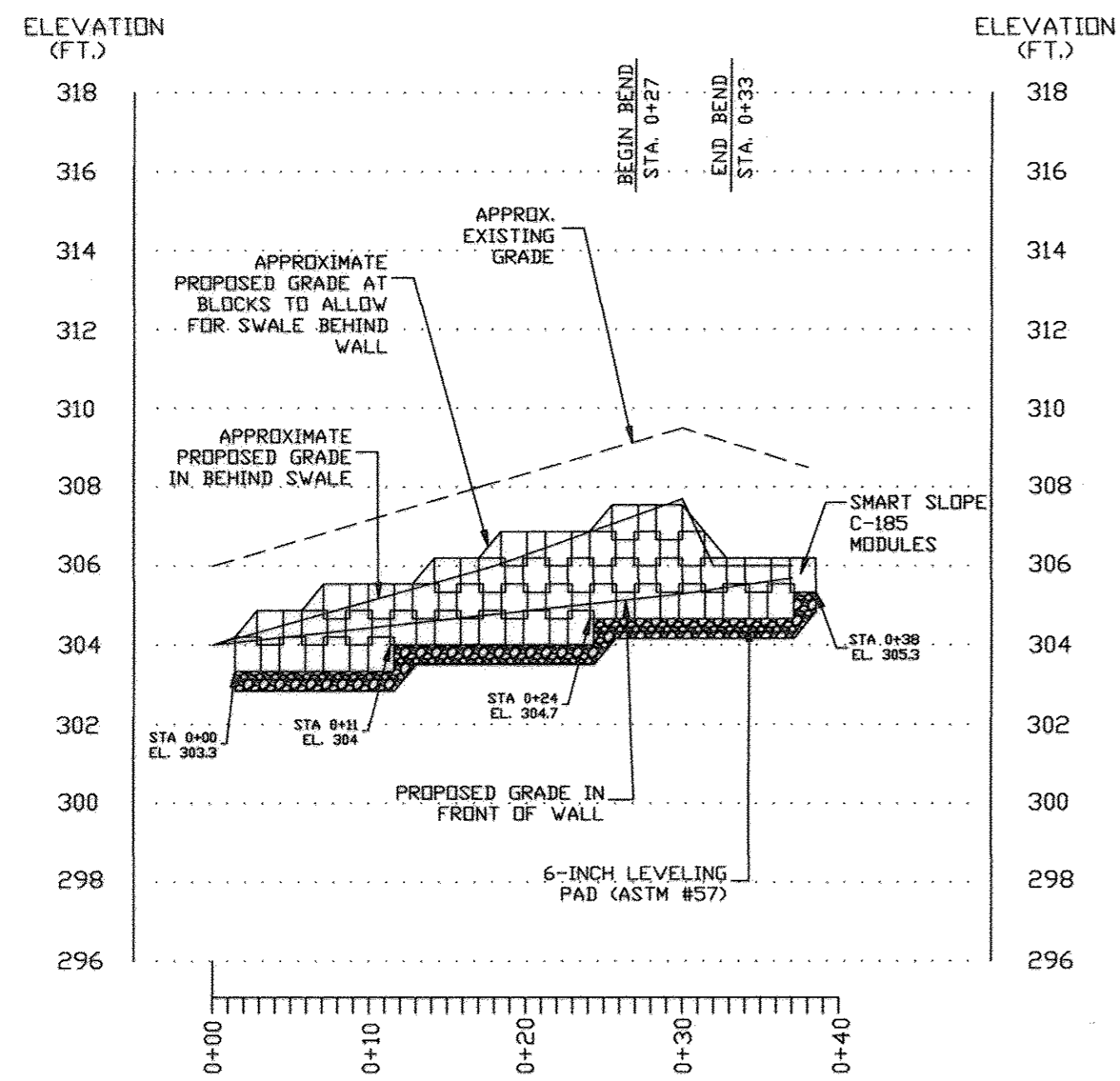
Title:
RETAINING WALLS #3,4 & 10 LOCATION PLAN

Project:
**HILLTOP REDEVELOPMENT PROJECT
 RETAINING WALL PLANS AND DETAILS
 RETAINING WALLS #3, 4 & 10**

Date:
 June 25, 2011

Project No:
 11158

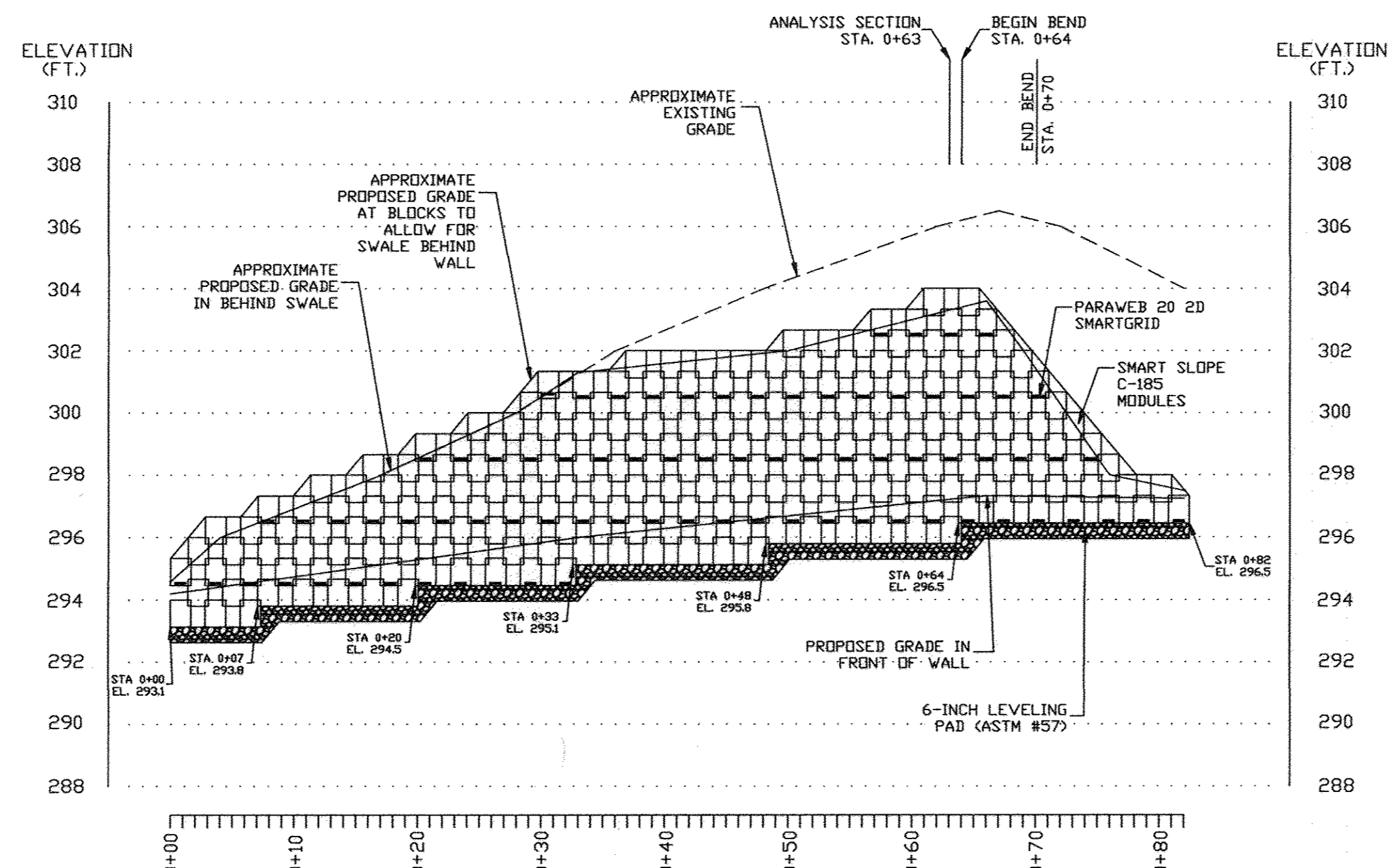
Drawing No:
 34 OF 50



RETAINING WALL #3 PROFILE

SCALE: HORIZ. 1"=10'
VERT. 1"=4'

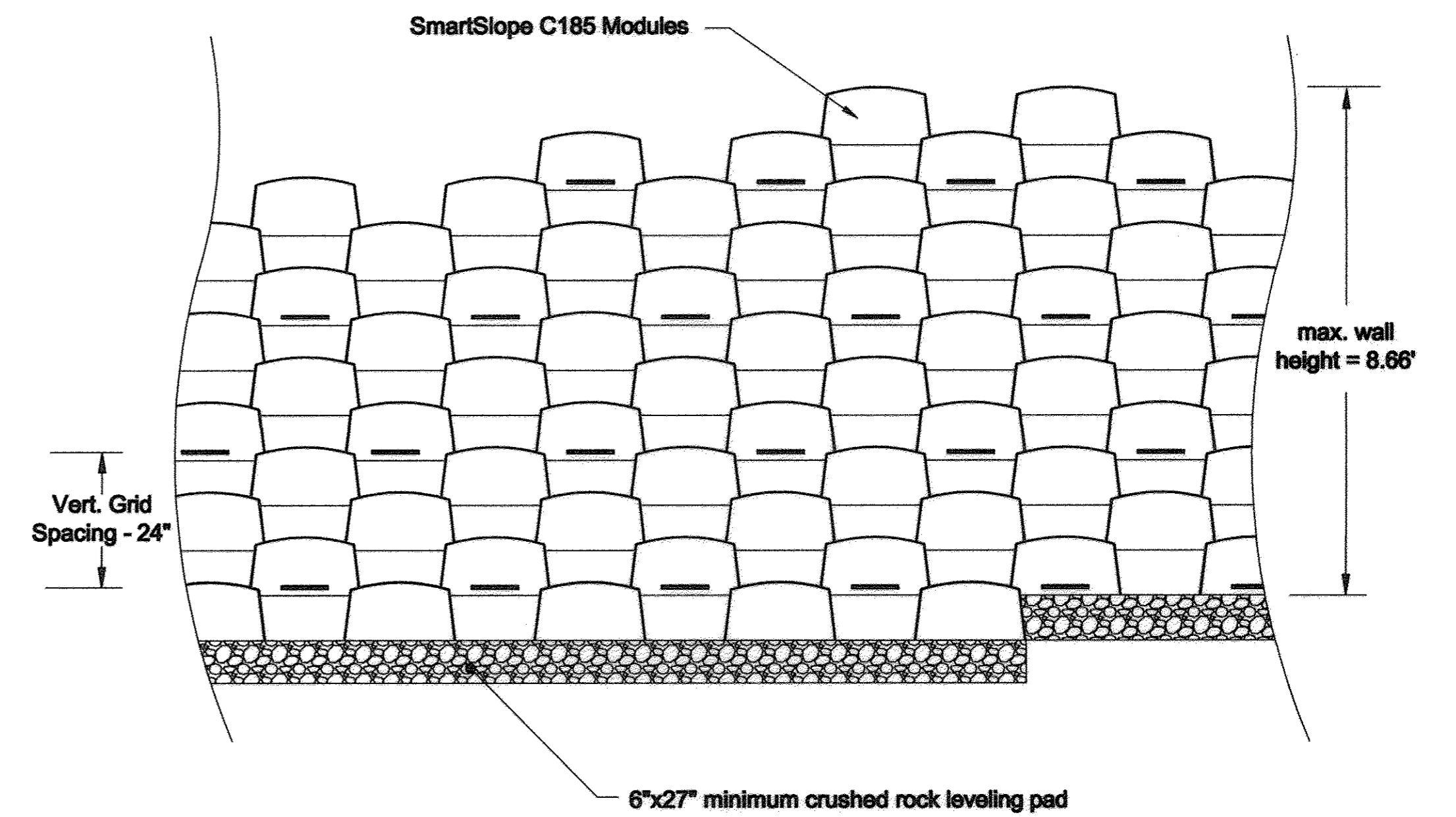
NOTES:
GRAVITY WALL ONLY - NO GRID REQUIRED



RETAINING WALL #4 PROFILE

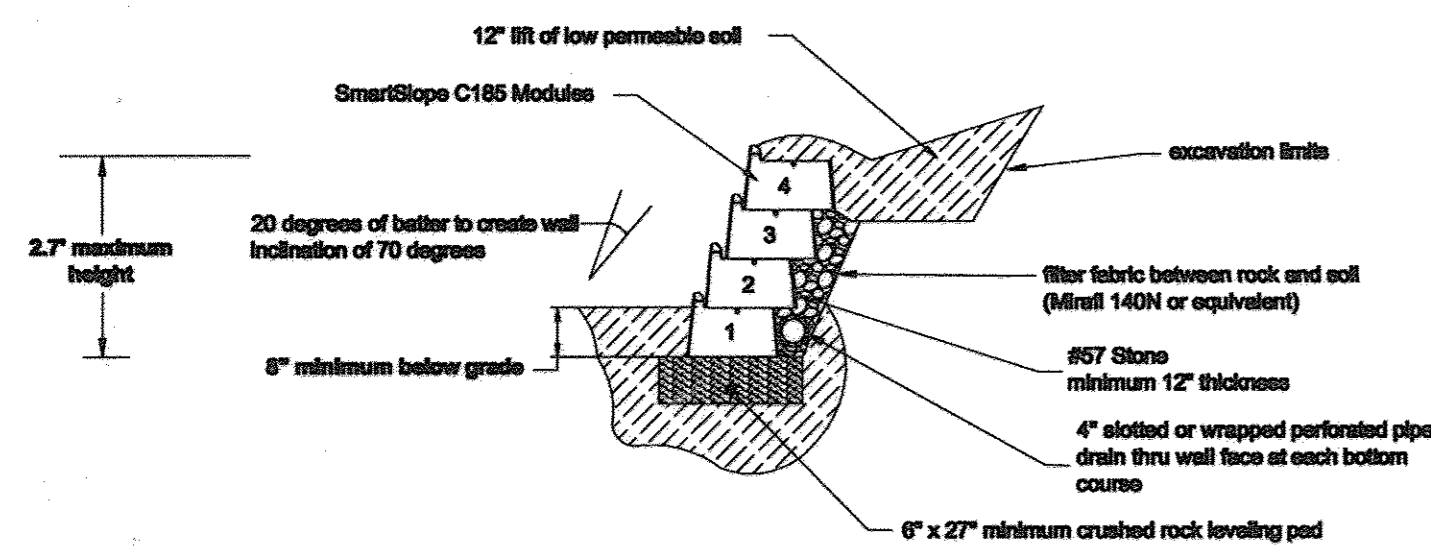
SCALE: HORIZ. 1"=10'
VERT. 1"=4'

NOTES:
GRID TYPE: PARAWEB 20 2D
GRID LENGTH: 6 FEET

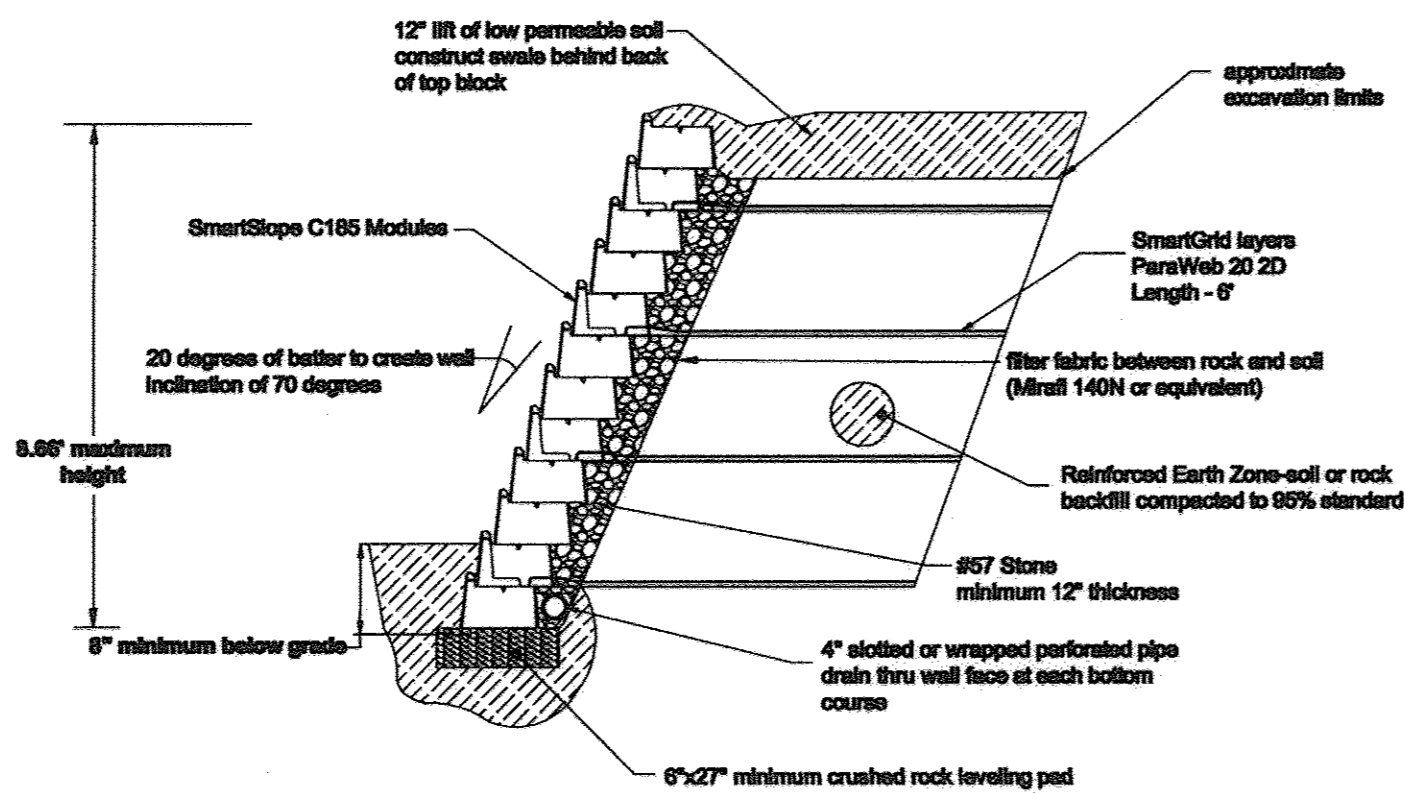


Reinforcement Schedule - Wall #4 (NTS)

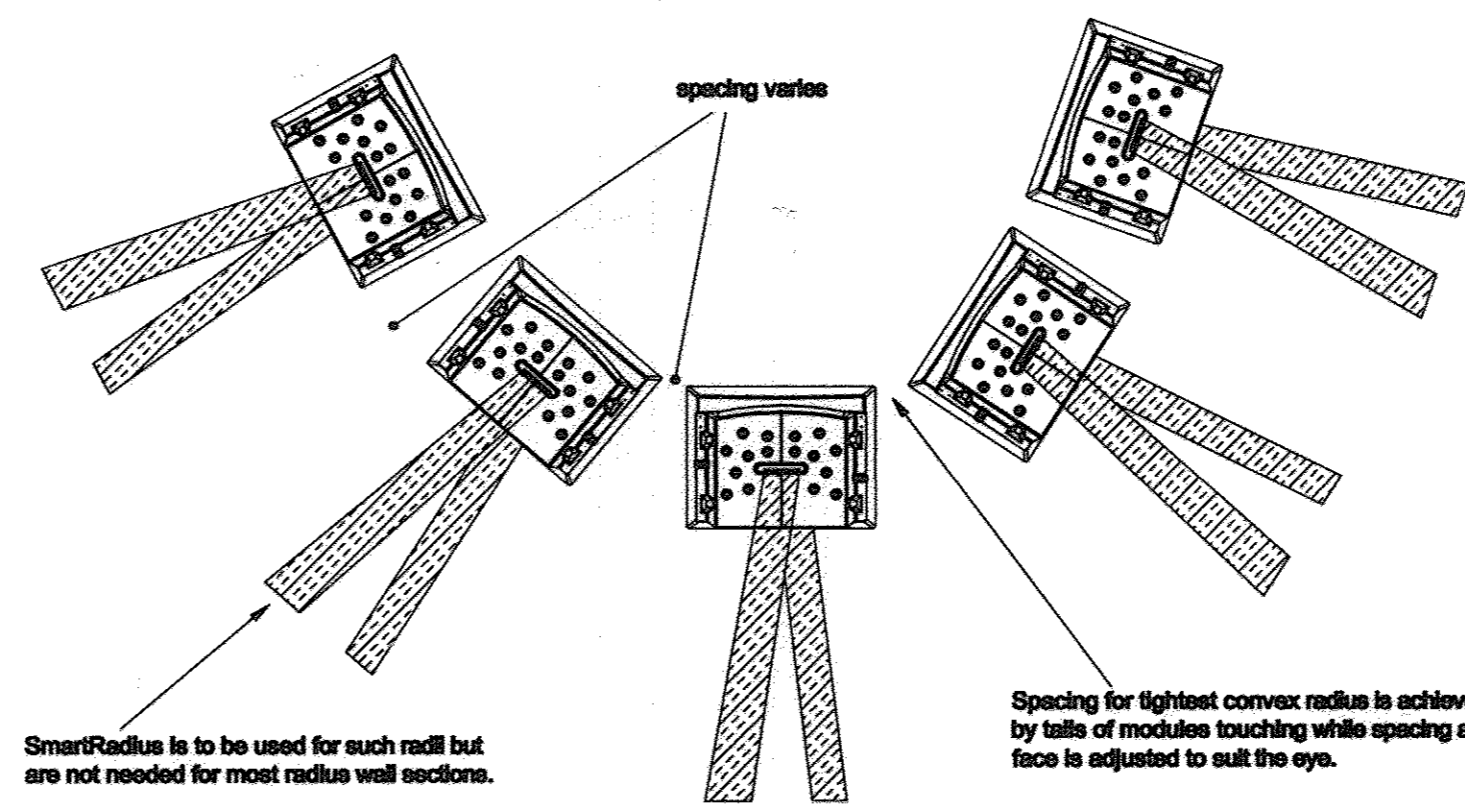
Approximately Station 0+51 to Station 0+68



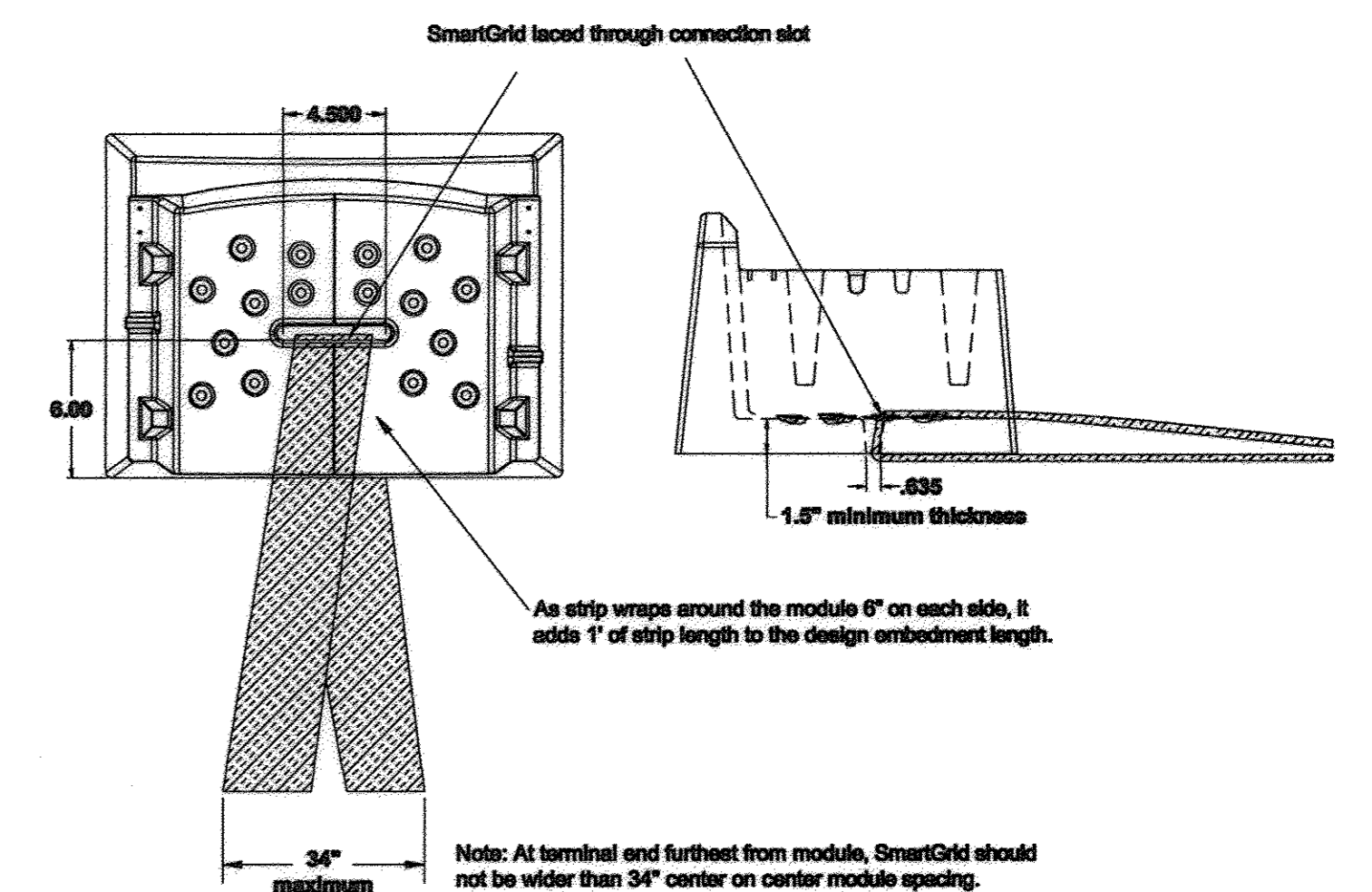
Typical Wall Section - Wall #3 Station 0+20 (NTS)



Typical Wall Section - Wall #4 Station 0+63 (NTS)



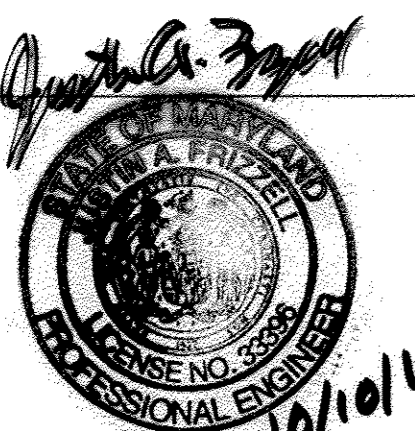
Concave Radius Detail (NTS)



Reinforcement Detail (NTS)

PROFESSIONAL CERTIFICATE

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33396, EXPIRATION DATE 11-29-2012



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 10/20/11

 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 10/27/11

 DIRECTOR
 DATE: 10/23/11

No.	Date	Revision	By
1	08-12-11	CHANGE PAGE NUMBER	JAF
2	10/20/11	REVISED FOR MYLAR WITH WET STAMP	JAF
3	01/05/17	REVISE SHEET NUMBER	VOCEL

HILLTOP REDEVELOPMENT
 ELLICOTT MILLS DRIVE
 RESIDENTIAL AND RECREATION CENTER
 L477/F.718, L488/F.448, L448/F.46
 TAX MAP: 25 PARCELS: 12, 291
 2ND ELECTION DISTRICT
 BLOCK: 07 ZONINGS: R-VH, R-A-15, POR
 HOWARD COUNTY, MARYLAND

OWNER
 MILLTOWNE ASSOCIATE LP
 BY: HCH PARTNERS III LLC, GENERAL PARTNER
 BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
 BY: STACY SPANN, EXECUTIVE DIRECTOR
 6751 COLUMBIA GATEWAY DR.
 3RD FLOOR
 COLUMBIA, MD 21046
 (410) 313-6320

DEVELOPER
 STAVROU ASSOCIATES, INC.
 2661 RVA ROAD
 BUILDING 302
 ANNAPOLIS, MD 21401
 C/O STEPHEN J. MOORE
 (410) 571-6610

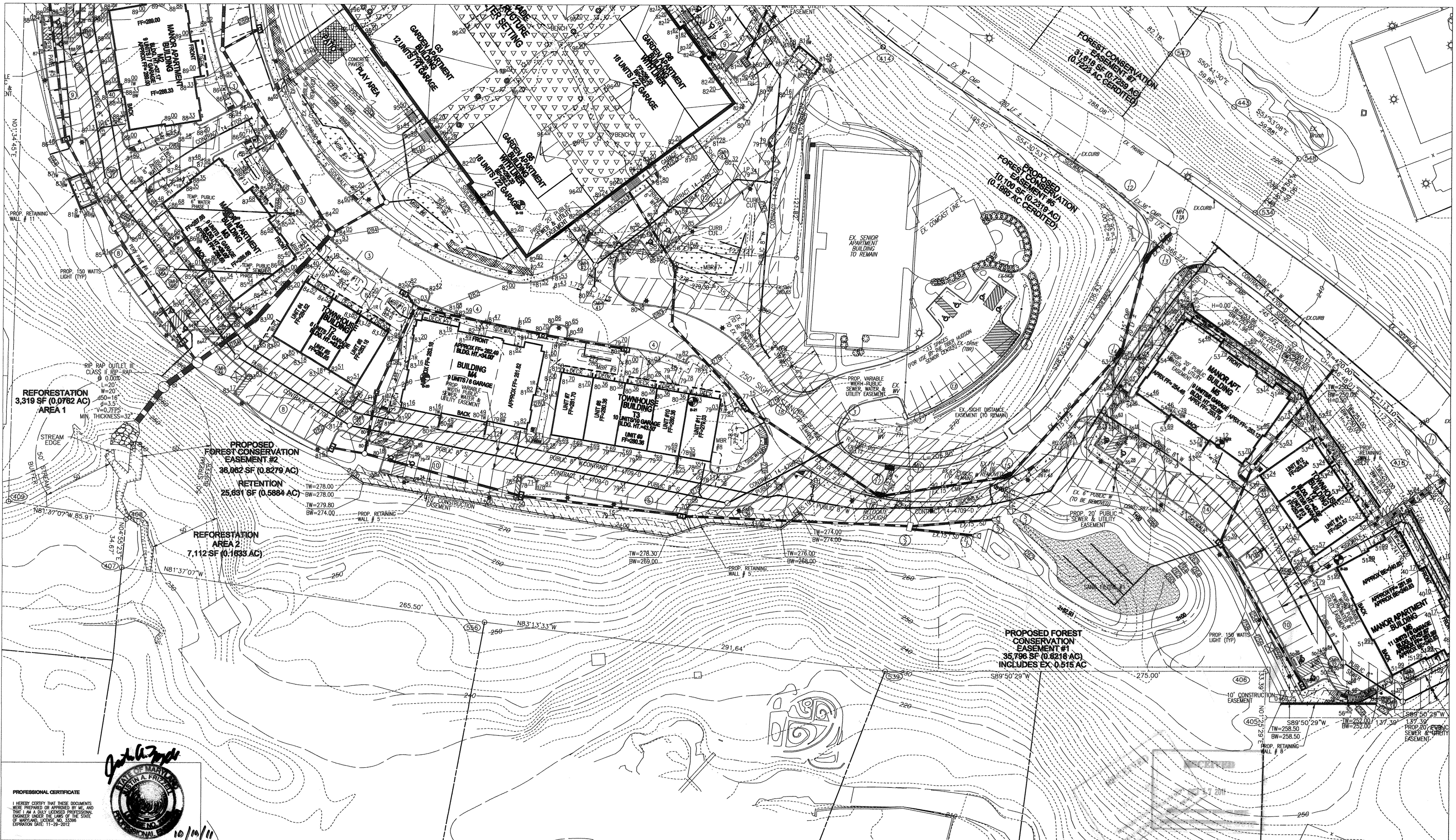
HARDIN-KIGHT ASSOCIATES, INC.
 GEOTECHNICAL CONSULTANTS
 7524 WB&A ROAD, SUITE 100
 GLEN BURNIE, MARYLAND
 (410) 553-0802
 (410) 553-0808

Designed By: JAF
 Checked By: SEK
 Scale: NTS OR AS SHOWN

Title: **RETAINING WALLS #3 & #4 PROFILE, SECTION & DETAILS**
 Project: **HILLTOP REDEVELOPMENT PROJECT RETAINING WALL PLANS AND DETAILS RETAINING WALLS #3 & #4**

Date: June 25, 2011
 Project No: 11158
 Drawing No: 35 OF 50

SDP-11-051



PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33396, EXPIRATION DATE: 11-29-2012.

John A. Smith
 JOHN A. SMITH
 PROFESSIONAL ENGINEER
 10/09/11

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 10/27/11
 CHIEF, DEVELOPMENT ENGINEERING DIVISION 4w
 DATE

[Signature] 10/27/11
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE

[Signature] 10/27/11
 DIRECTOR
 DATE

No.	Date	Revision	By
1	06-17-11	INCREASE PAPER SIZE TO 24x36, ADD TO TITLE BLOCK	JAF
2	08-17-11	CHANGE PAGE NUMBER. ADD FENCE. ADD EASEMENT.	JAF
3	09-29-11	ADD WALL #11	JAF
4	10/2011	REVISE FOR MYLAR WITH WET STAMP	JAF
5	01/05/17	REVISE SHEET NUMBER	VOGEL

HILLTOP REDEVELOPMENT
 ELLICOTT MILLS DRIVE
 RESIDENTIAL AND RECREATION CENTER
 L477/F.718, L480/F.448, L448/F.46

TAX MAP: 25 PARCELS: 12, 291
 2ND ELECTION DISTRICT

BLOCK: 07 ZONINGS: R-VH, R-A-15, POR
 HOWARD COUNTY, MARYLAND

OWNER
 MILLTOWNE ASSOCIATE LP
 BY: HCH PARTNERS III LLC, GENERAL PARTNER
 BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
 BY: STACY SPANN, EXECUTIVE DIRECTOR
 6751 COLUMBIA GATEWAY DR.
 3RD FLOOR
 ANNAPOLIS, MD 21406
 (410) 313-6320

DEVELOPER
 STARVOR ASSOCIATES, INC.
 2861 RIVA ROAD
 BUILDING 320
 ANNAPOLIS, MD 21401
 C/O STEPHEN J. MOORE
 (410) 571-6610

HARDIN-KIGHT ASSOCIATES, INC.
 GEOTECHNICAL CONSULTANTS

7524 WB&A ROAD, SUITE 100
 GLEN BURNIE, MARYLAND
 (410) 563-0802
 (410) 563-0808

Designed By:
 JAF

Checked By:
 SEK

Scale:
 1 INCH = 30 FEET

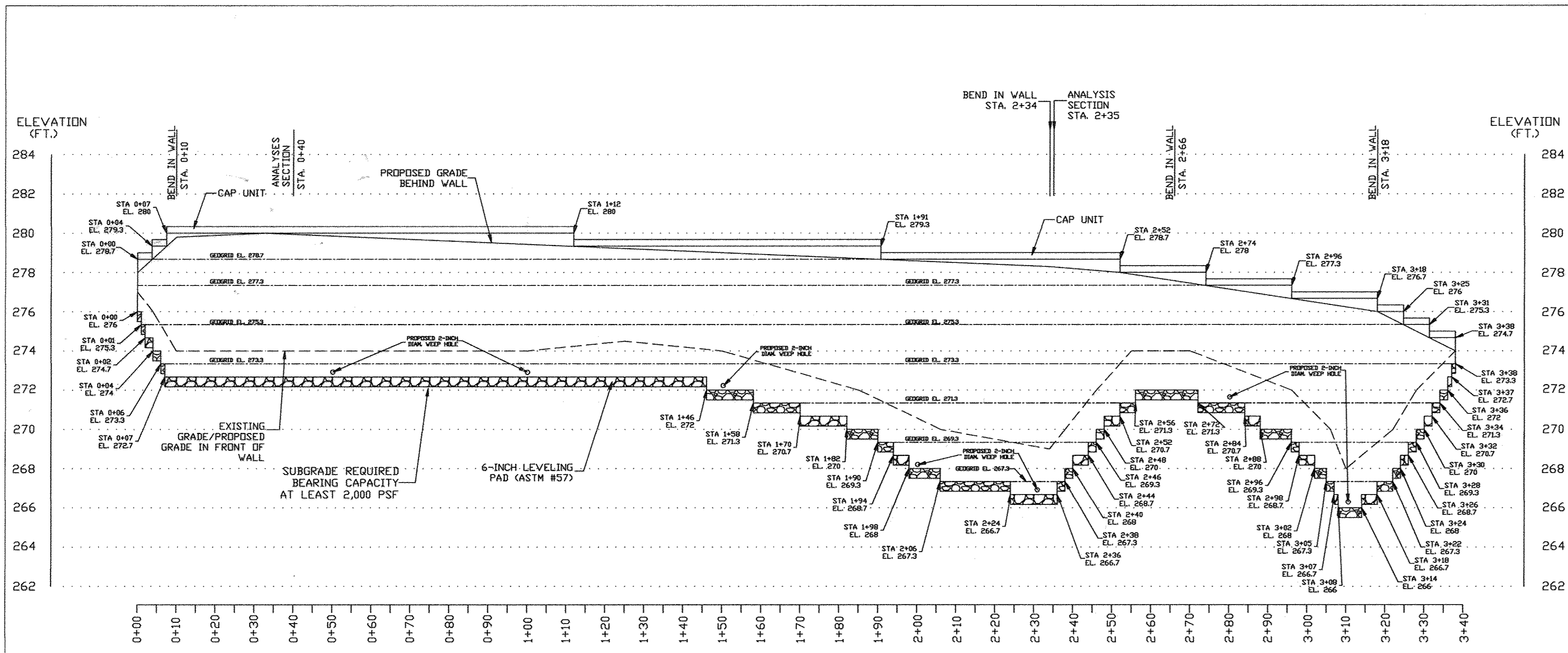
Title:
RETAINING WALLS #5, 8 & 11 LOCATION PLAN

Project:
**HILLTOP REDEVELOPMENT PROJECT
 RETAINING WALL PLANS AND DETAILS
 RETAINING WALLS #5, 8 & 11**

Date:
 JUNE 17, 2011

Project No:
 11158

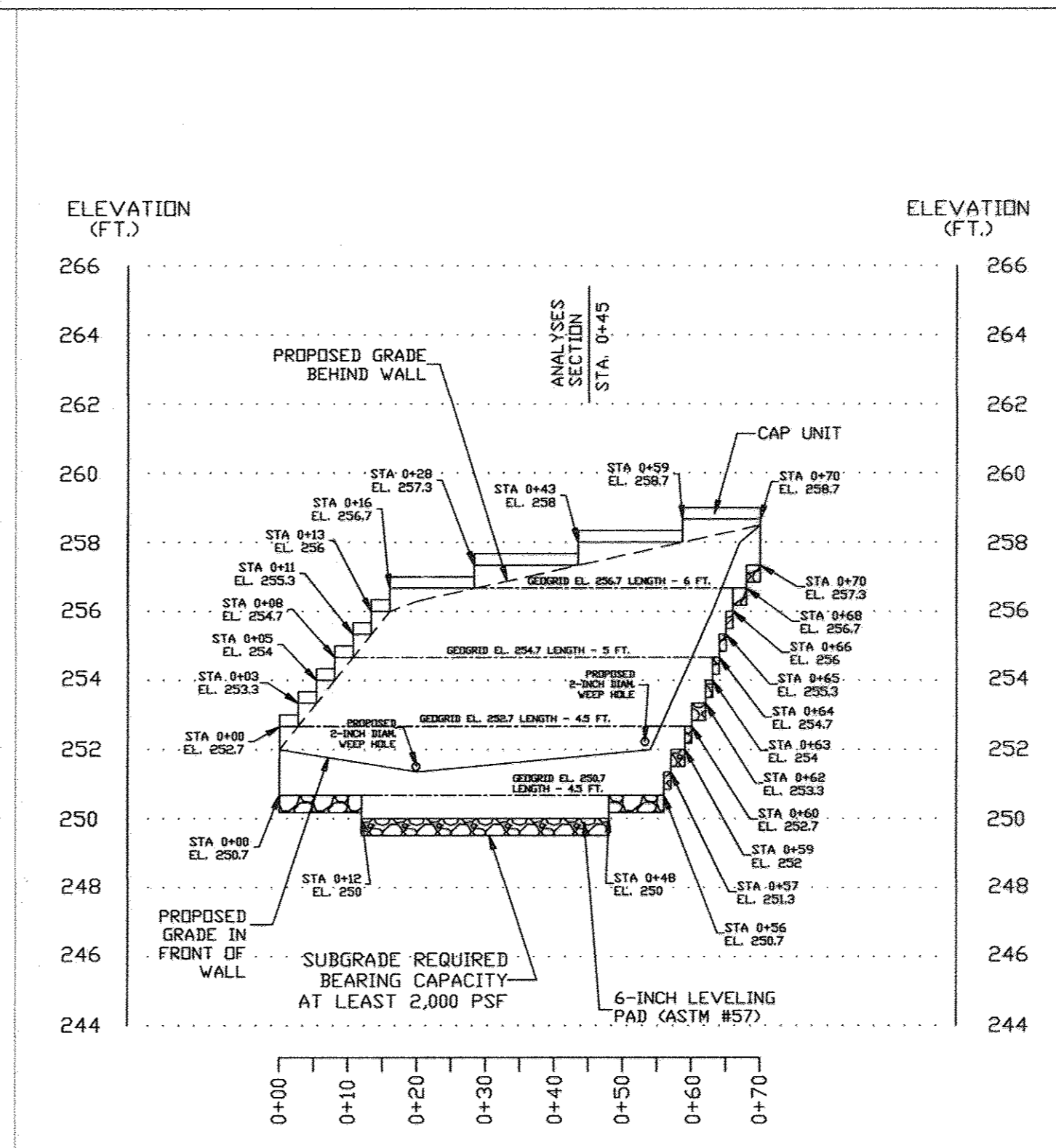
Drawing No:
 36 OF 50



RETAINING WALL #5 PROFILE

SCALE: HORIZ. 1"=20'
VERT. 1"=4'

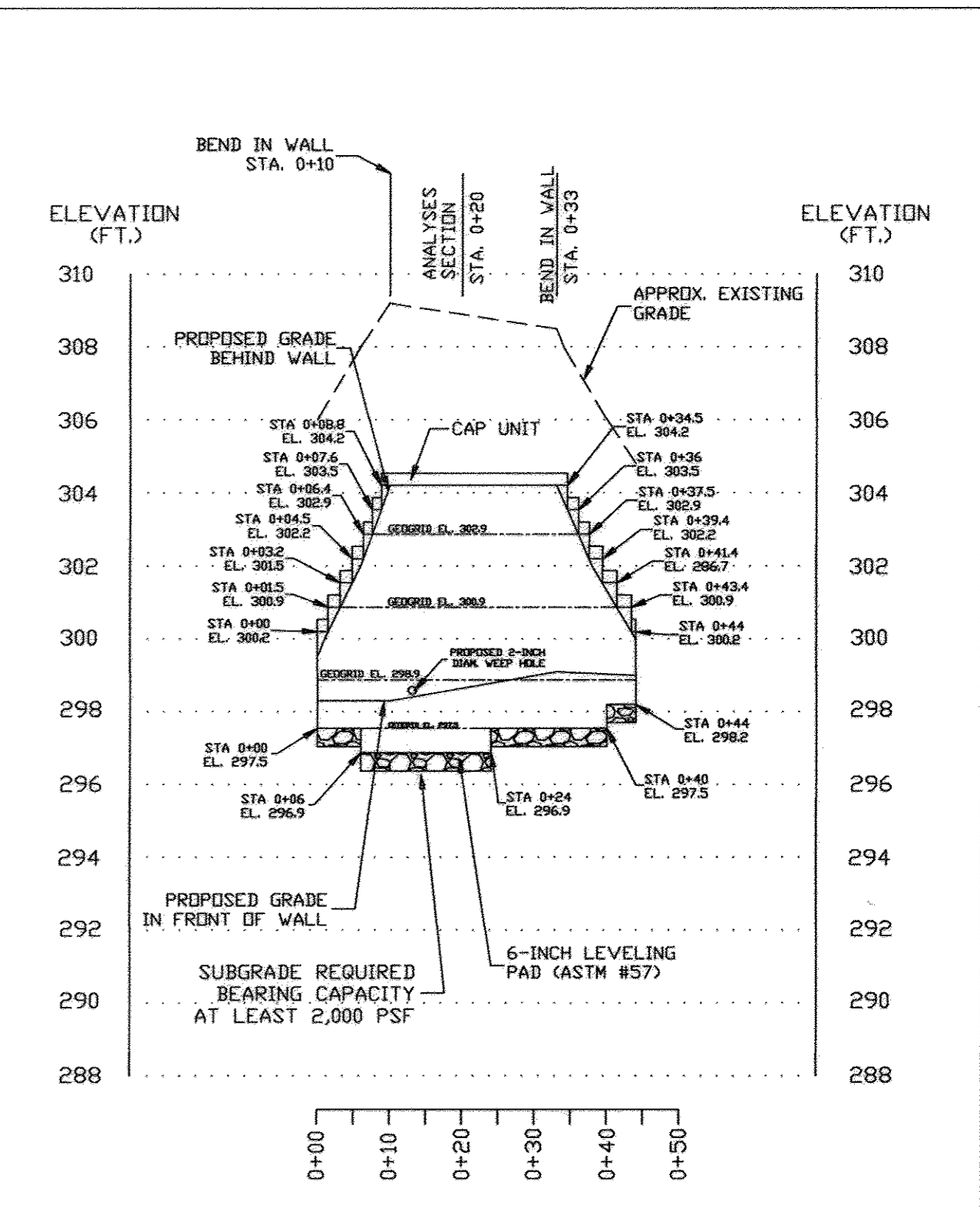
NOTES:
GRID TYPE - MIRAFI 3XT
GRID LENGTH: STA. 0+00 TO STA. 1+70 - 6 FT.
STA. 1+70 TO STA. 3+38 - 8 FT.



RETAINING WALL #8 PROFILE

SCALE: HORIZ. 1"=20'
VERT. 1"=4'

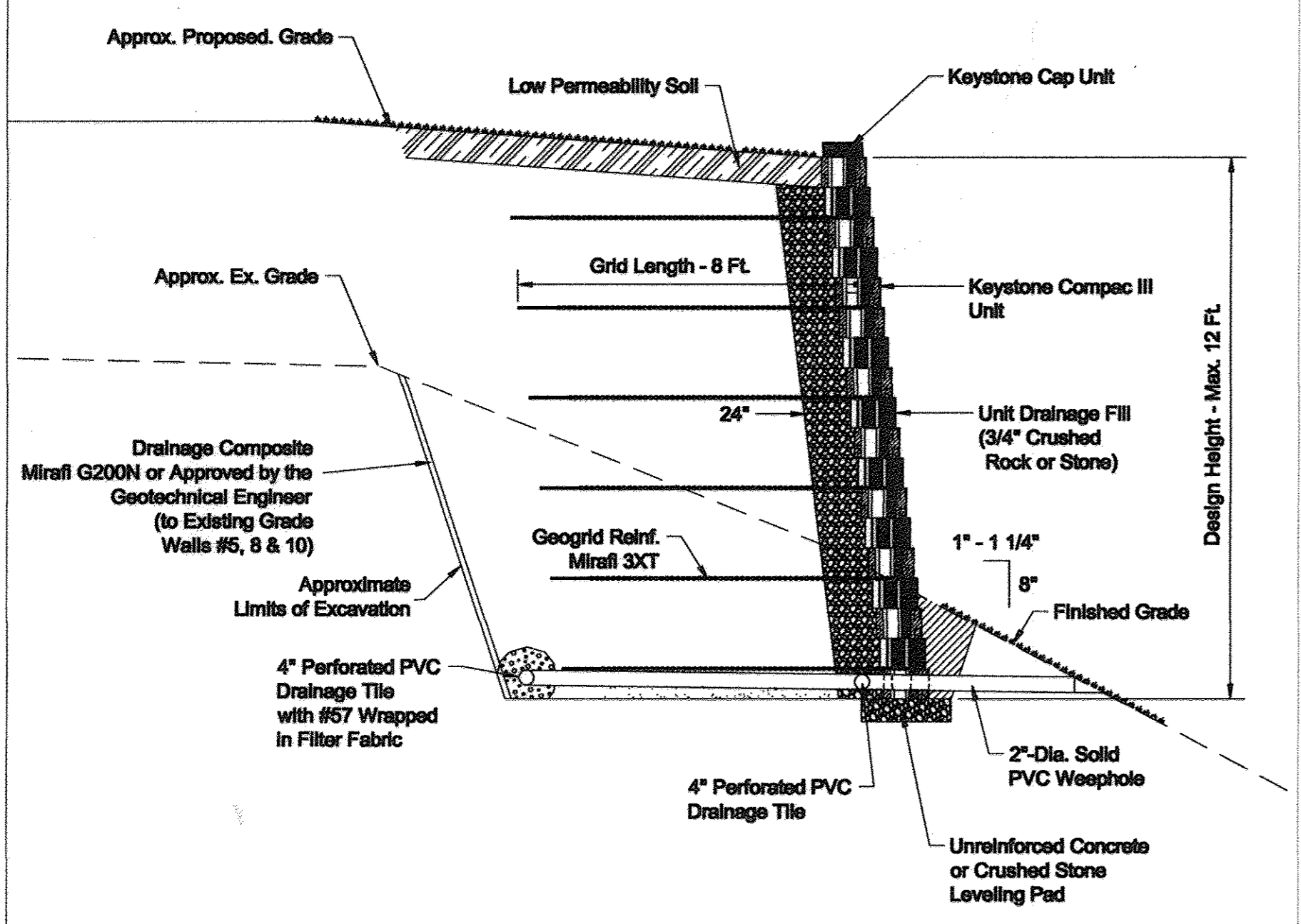
NOTES:
GRID TYPE - MIRAFI 3XT
GRID LENGTH: AS SHOWN



RETAINING WALL #10 PROFILE

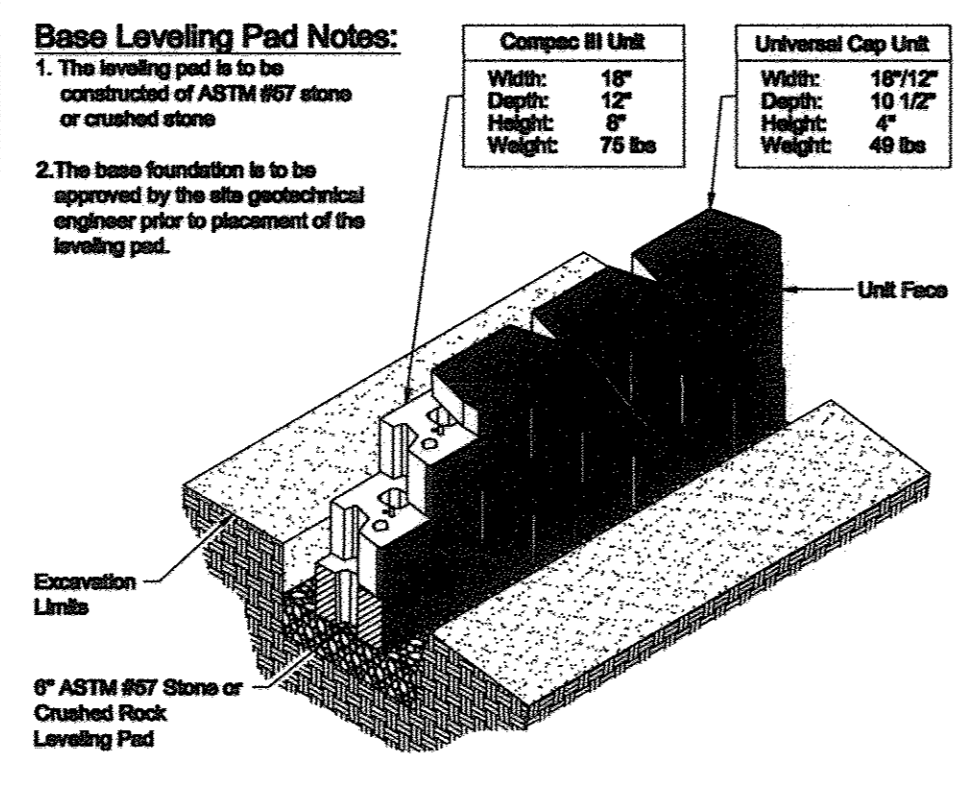
SCALE: HORIZ. 1"=20'
VERT. 1"=4'

NOTES:
GRID TYPE - MIRAFI 3XT
GRID LENGTH: 7 FEET

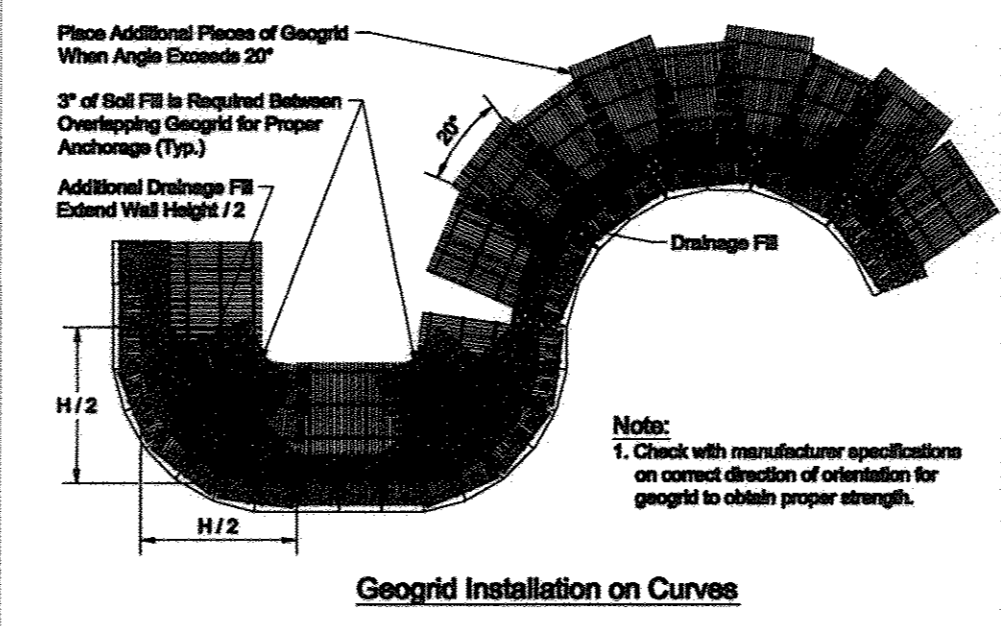


Typical Wall Section - Wall #5 Station 2+35

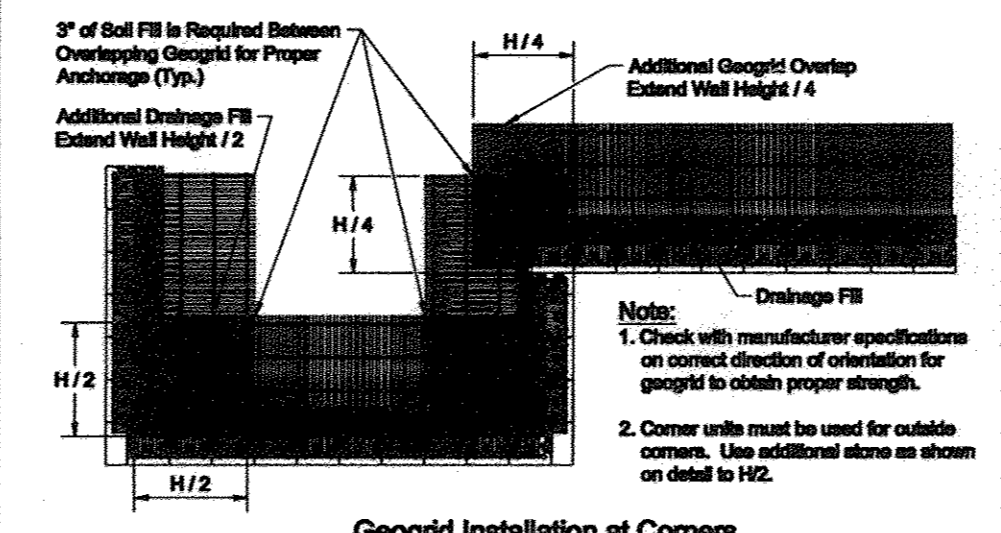
SCALE: 1 IN. = 3 FT.



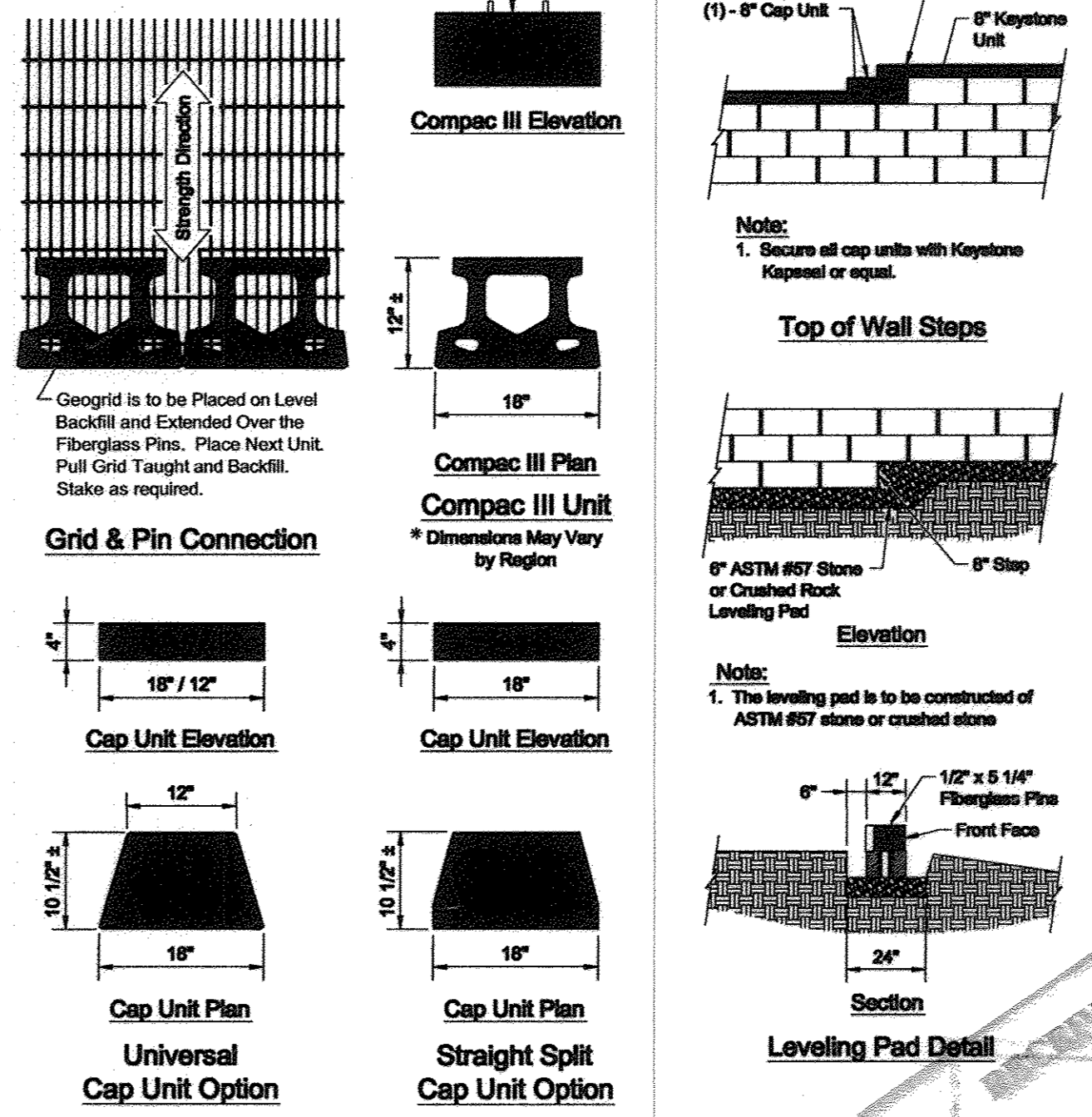
Compac III Unit/Base Pad Isometric Section View



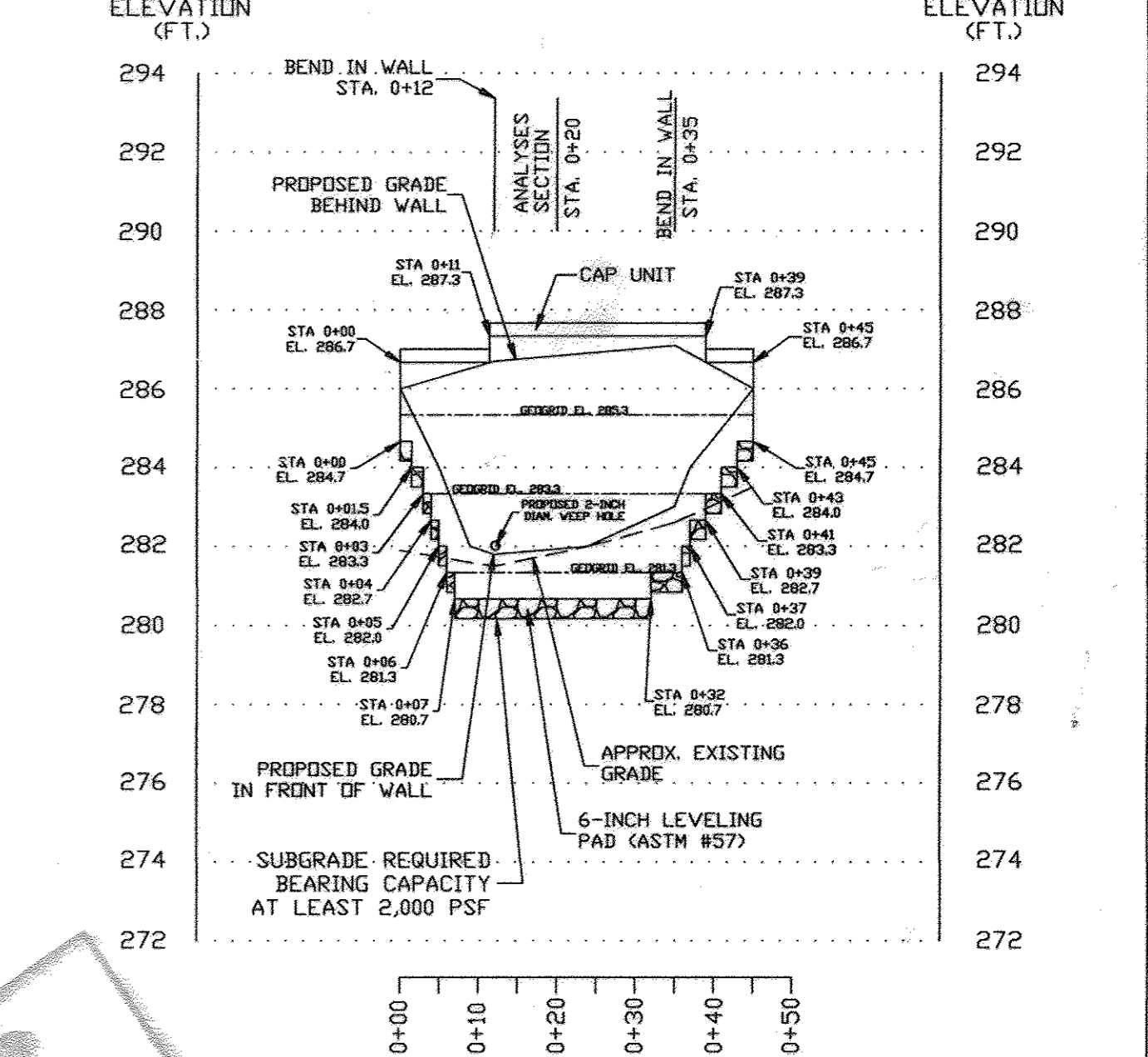
Geogrid Installation on Curves



Geogrid Installation at Corners



Grid & Pin Connection

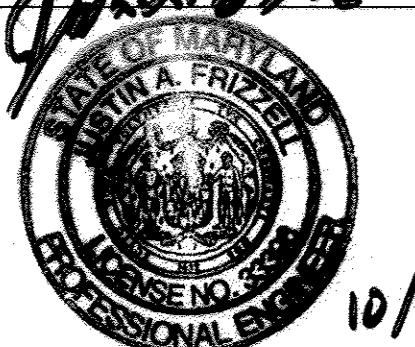


RETAINING WALL #11 PROFILE

SCALE: HORIZ. 1"=20'
VERT. 1"=4'

NOTES:
GRID TYPE - MIRAFI 3XT
GRID LENGTH: 5 FEET

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33398 EXPIRATION DATE: 11-22-2012



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 Chief, Development Engineering Division: *Kevin A. Frizell* 10/20/11
 Chief, Division of Land Development: *Kurt Sheehy* 10/27/11
 Director: *Mona J. Butler* 10/27/11

No.	Date	Revision	By
1	06-17-11	INCREASE PAPER SIZE TO 24x36, ADD TO TITLE BLOCK	JAF
2	08-12-11	CHANGE PAGE NUMBER	JAF
3	09-28-11	ADD WALL #10 & 11 PROFILES	JAF
4	10/2011	REVISED FOR MYLAR WITH WET STAMP	JAF
5	01/05/17	REVISED SHEET NUMBER	YOGEL

HILLTOP REDEVELOPMENT
 ELLICOTT MILLS DRIVE
 RESIDENTIAL AND RECREATION CENTER
 L477F.718, L488F.448, L448F.46

OWNER
 MILLTOWNE ASSOCIATE LP
 BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
 BY: STACY SPANN, EXECUTIVE DIRECTOR
 6751 COLUMBIA GATEWAY DR.
 3RD FLOOR
 COLUMBIA, MD 21046
 (410) 313-6320

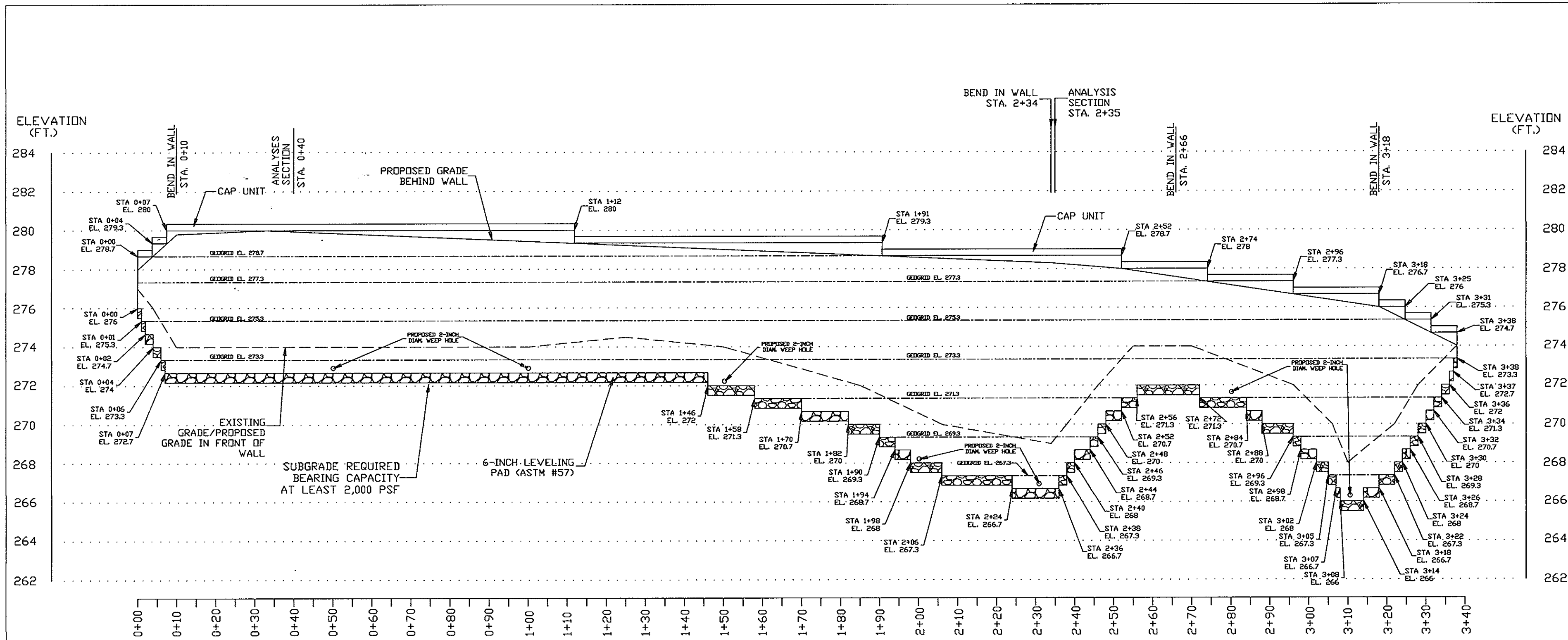
DEVELOPER
 STAVROU ASSOCIATES, INC.
 BUILDING 309
 ANNAPOLIS, MD 21401
 C/O STEPHEN J. MOORE
 (410) 571-6610

HARDIN-KIGHT ASSOCIATES, INC.
 GEOTECHNICAL CONSULTANTS
 7524 WB&A ROAD, SUITE 100
 GLEN BURNIE, MARYLAND
 (410) 553-0802

Designed By: JAF
 Checked By: SEK
 Scale: NTS OR AS SHOWN

Title: RETAINING WALLS #5 & #8 PROFILE, SECTION & DETAILS
 Project: HILLTOP REDEVELOPMENT PROJECT
 RETAINING WALL PLANS AND DETAILS
 RETAINING WALLS #5 & #8

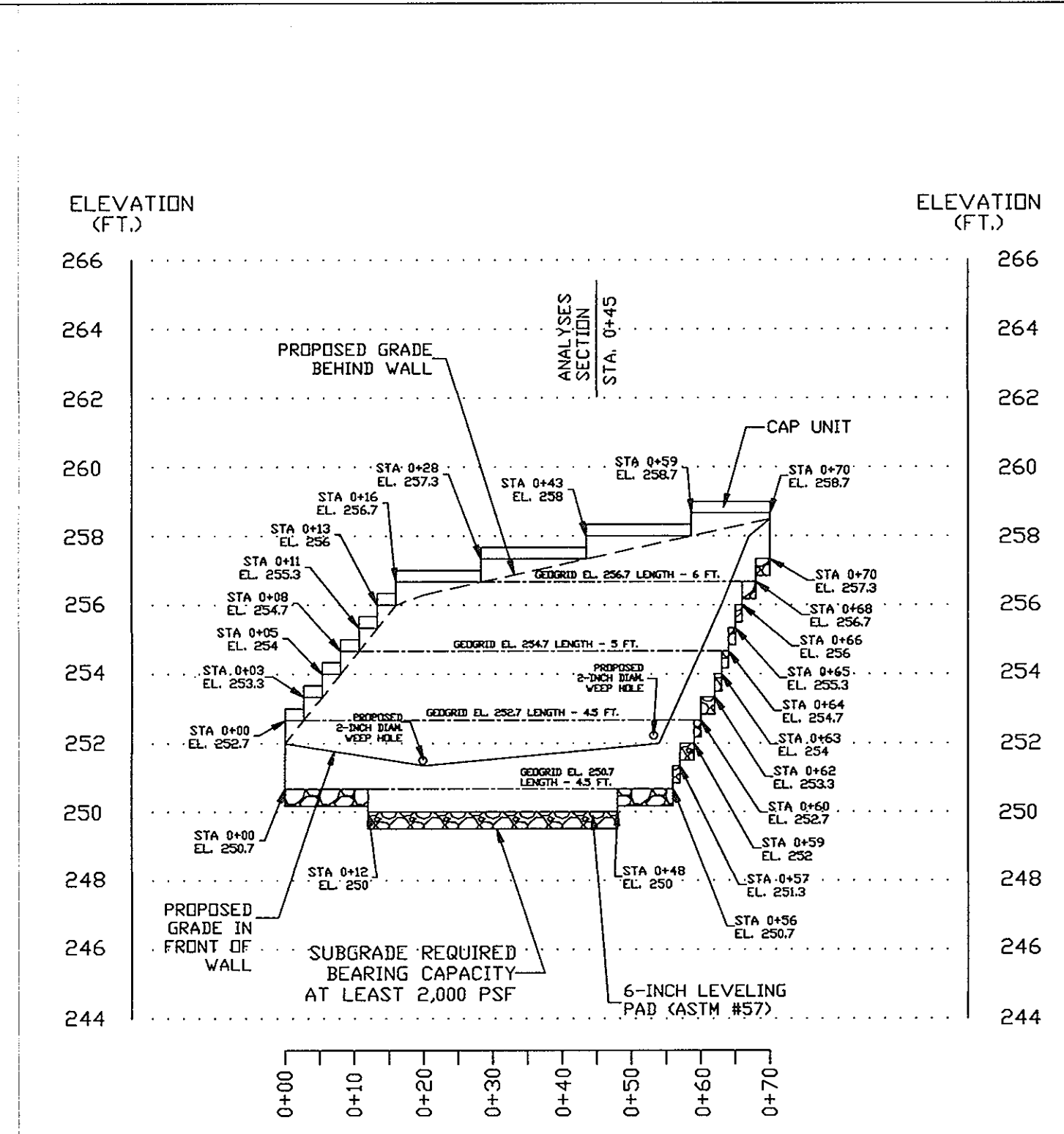
Date: June 17, 2011
 Project No: 11158
 Drawing No: 37 OF 50



RETAINING WALL #5 PROFILE

SCALE: HORIZ. 1"=20'
VERT. 1"=4'

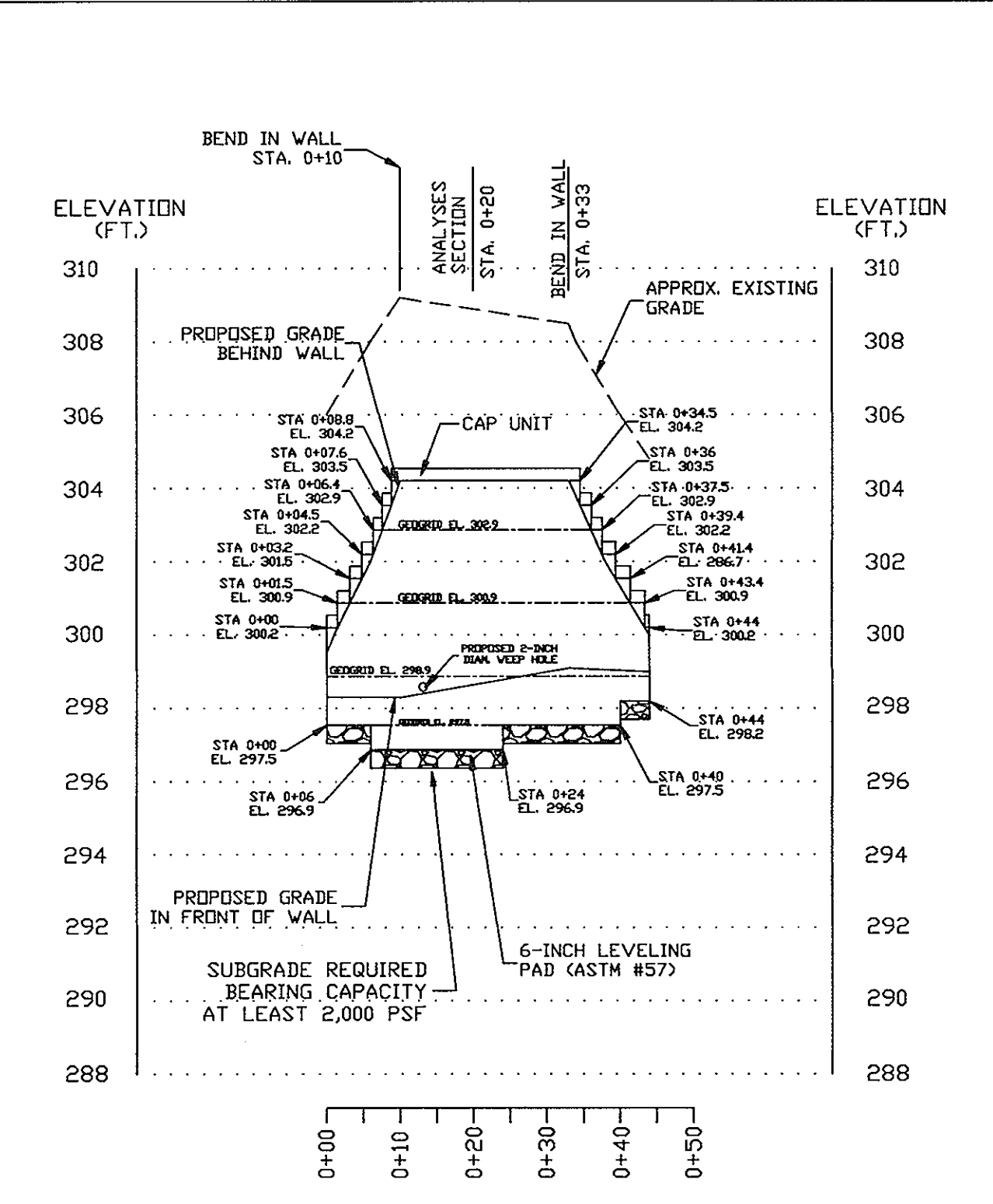
NOTES:
GRID TYPE - MIRAFI 3XT
GRID LENGTH: STA. 0+00 TO STA. 1+70 - 6 FT.
STA. 1+70 TO STA. 3+38 - 8 FT.



RETAINING WALL #8 PROFILE

SCALE: HORIZ. 1"=20'
VERT. 1"=4'

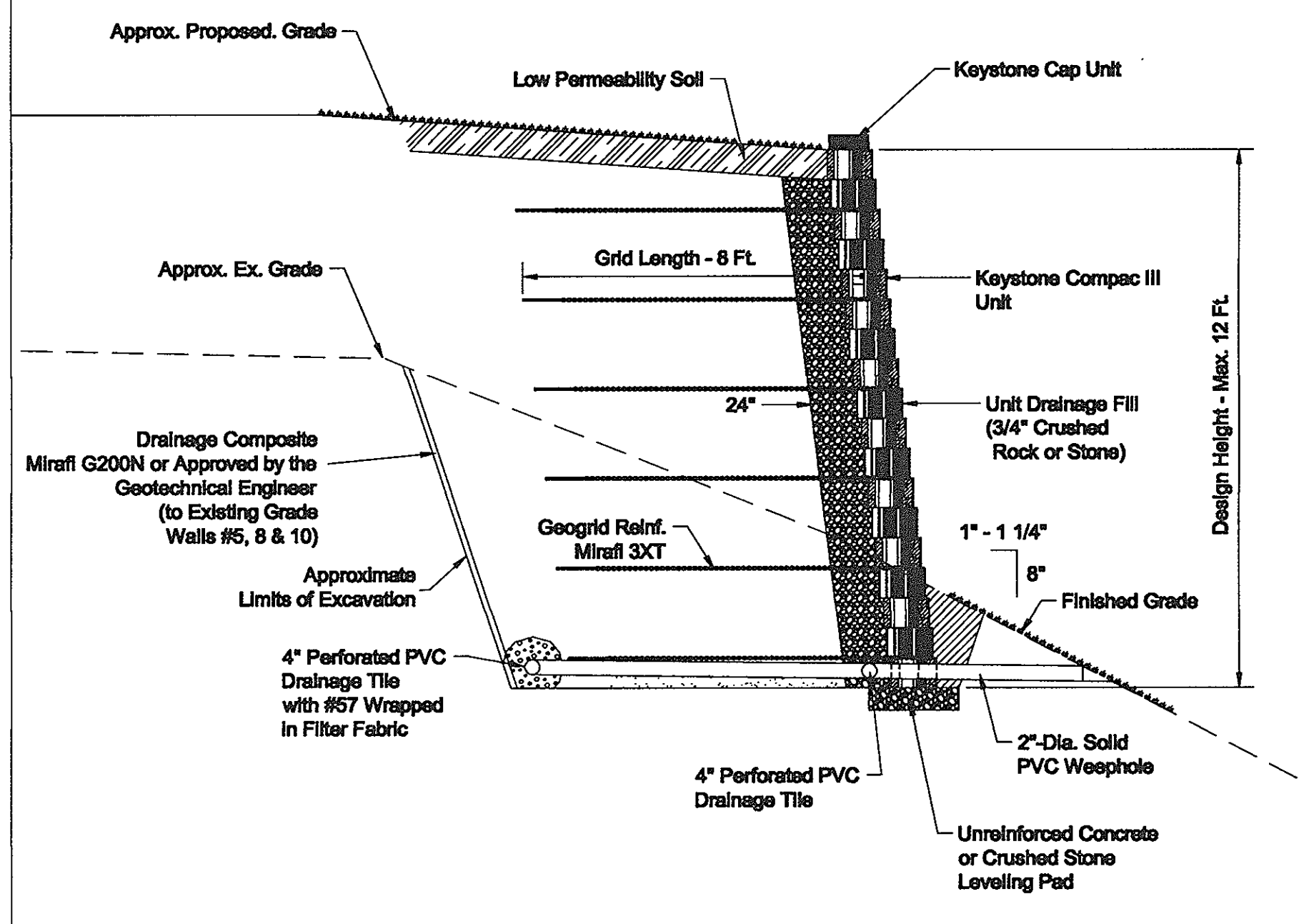
NOTES:
GRID TYPE - MIRAFI 3XT
GRID LENGTH: AS SHOWN



RETAINING WALL #10 PROFILE

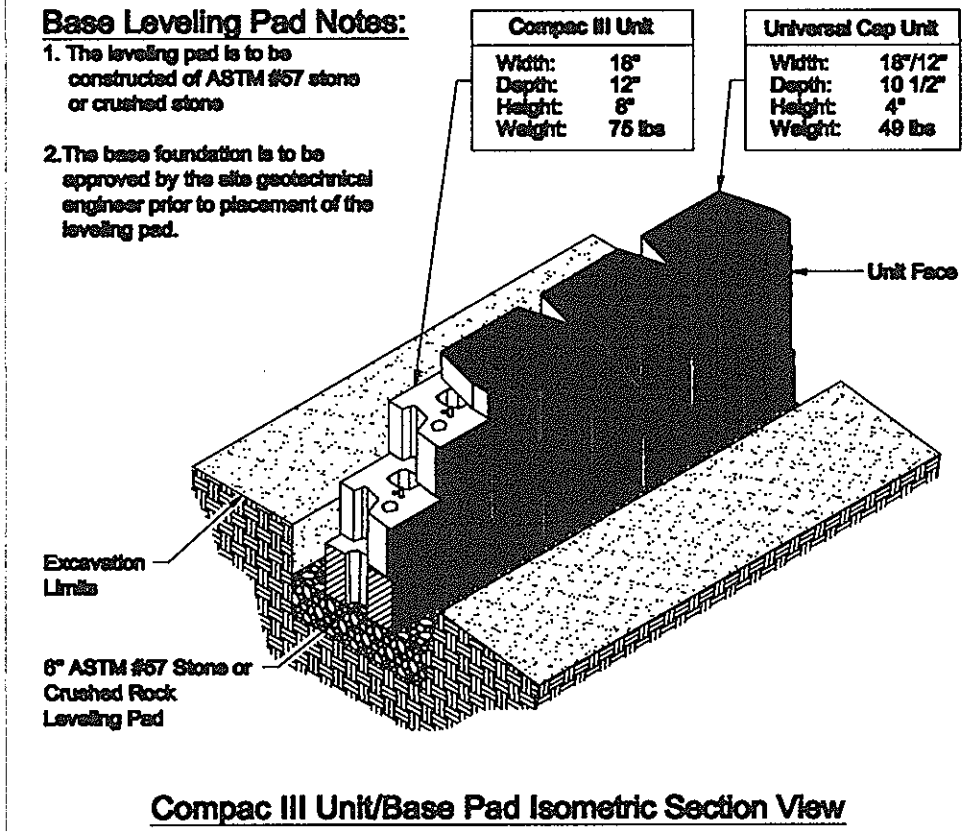
SCALE: HORIZ. 1"=20'
VERT. 1"=4'

NOTES:
GRID TYPE - MIRAFI 3XT
GRID LENGTH: 7 FEET

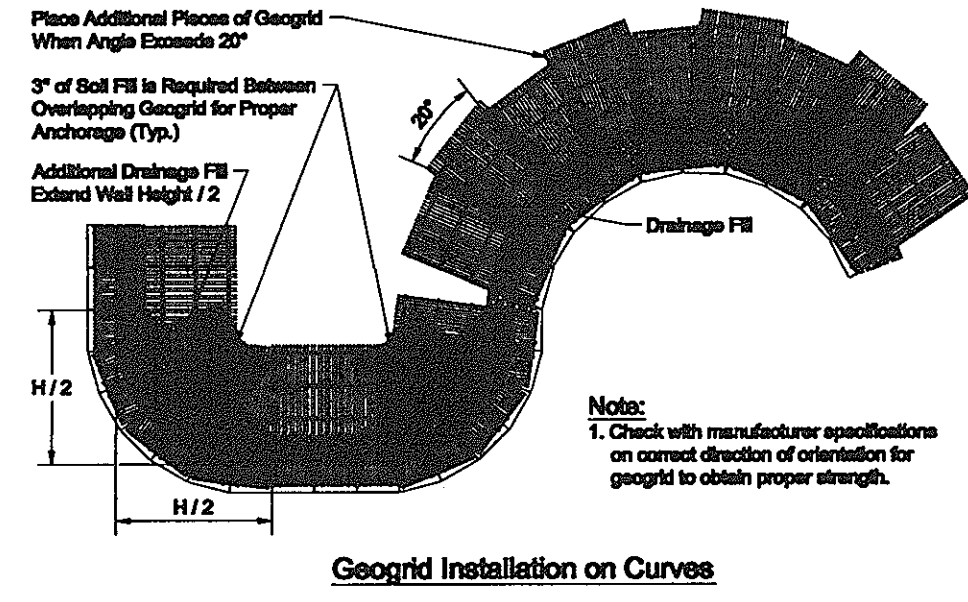


Typical Wall Section - Wall #5 Station 2+35
Compac III Unit - 1" Setback

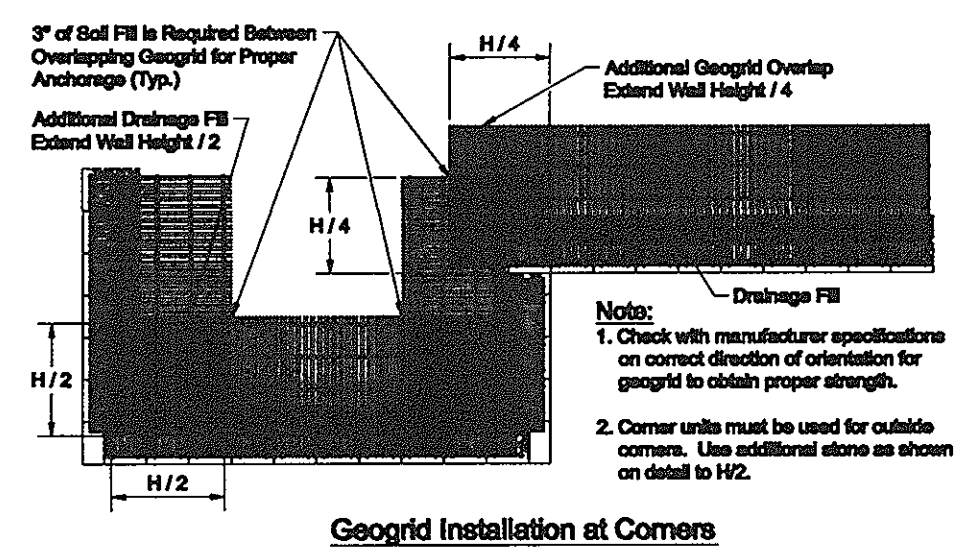
SCALE: 1 IN. = 3 FT.



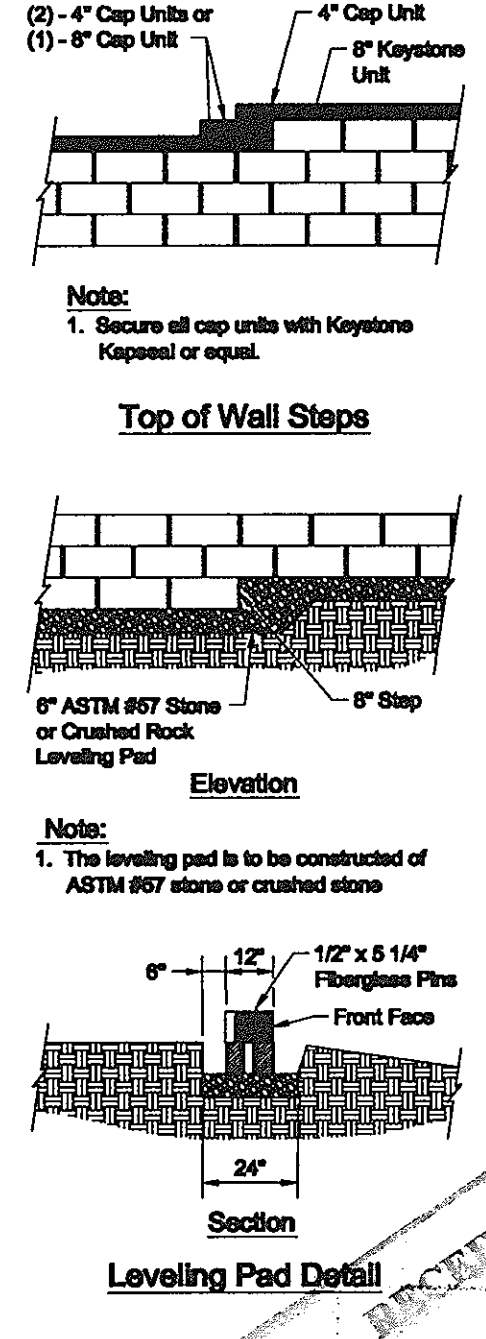
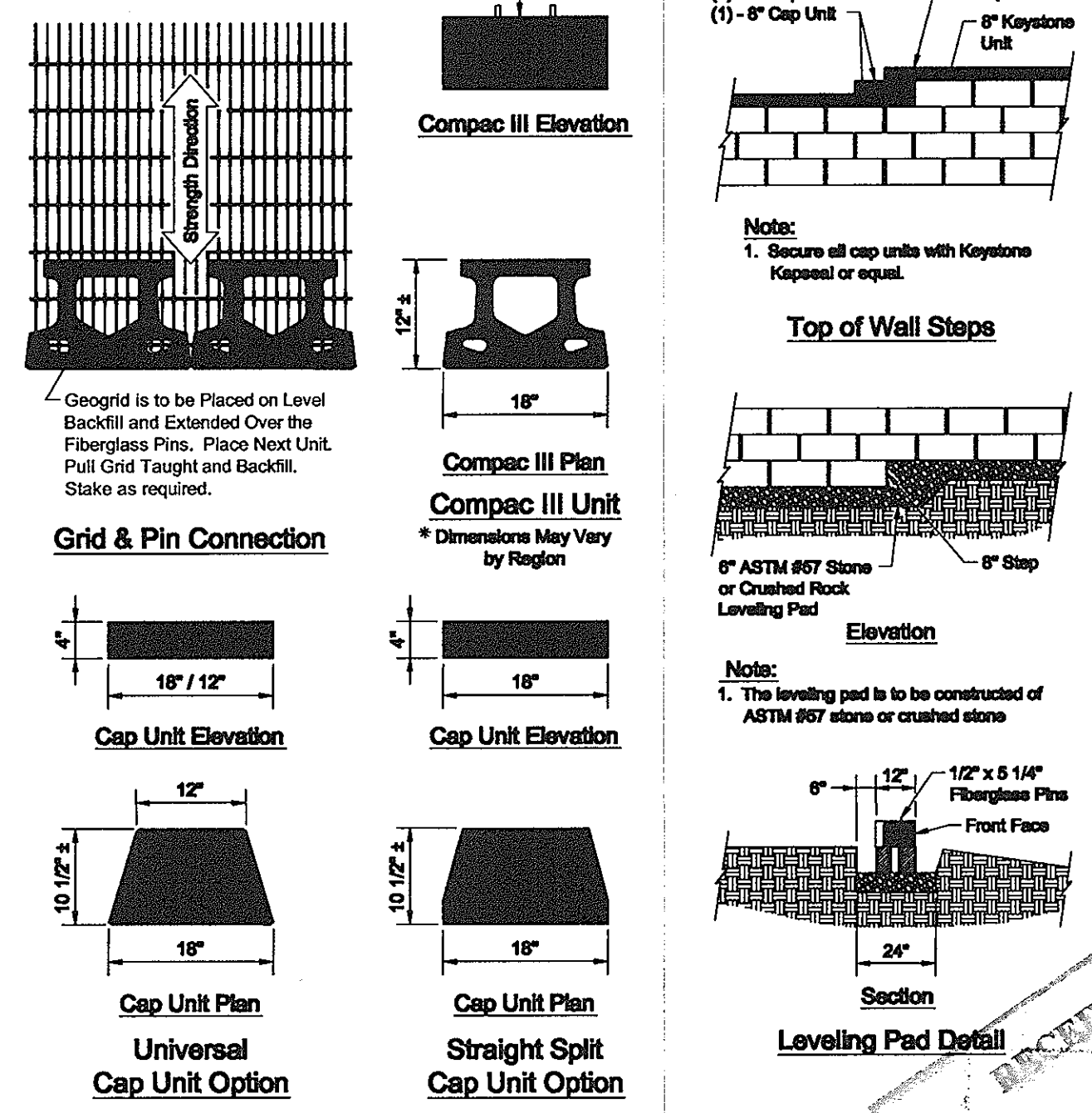
Compac III Unit/Base Pad Isometric Section View



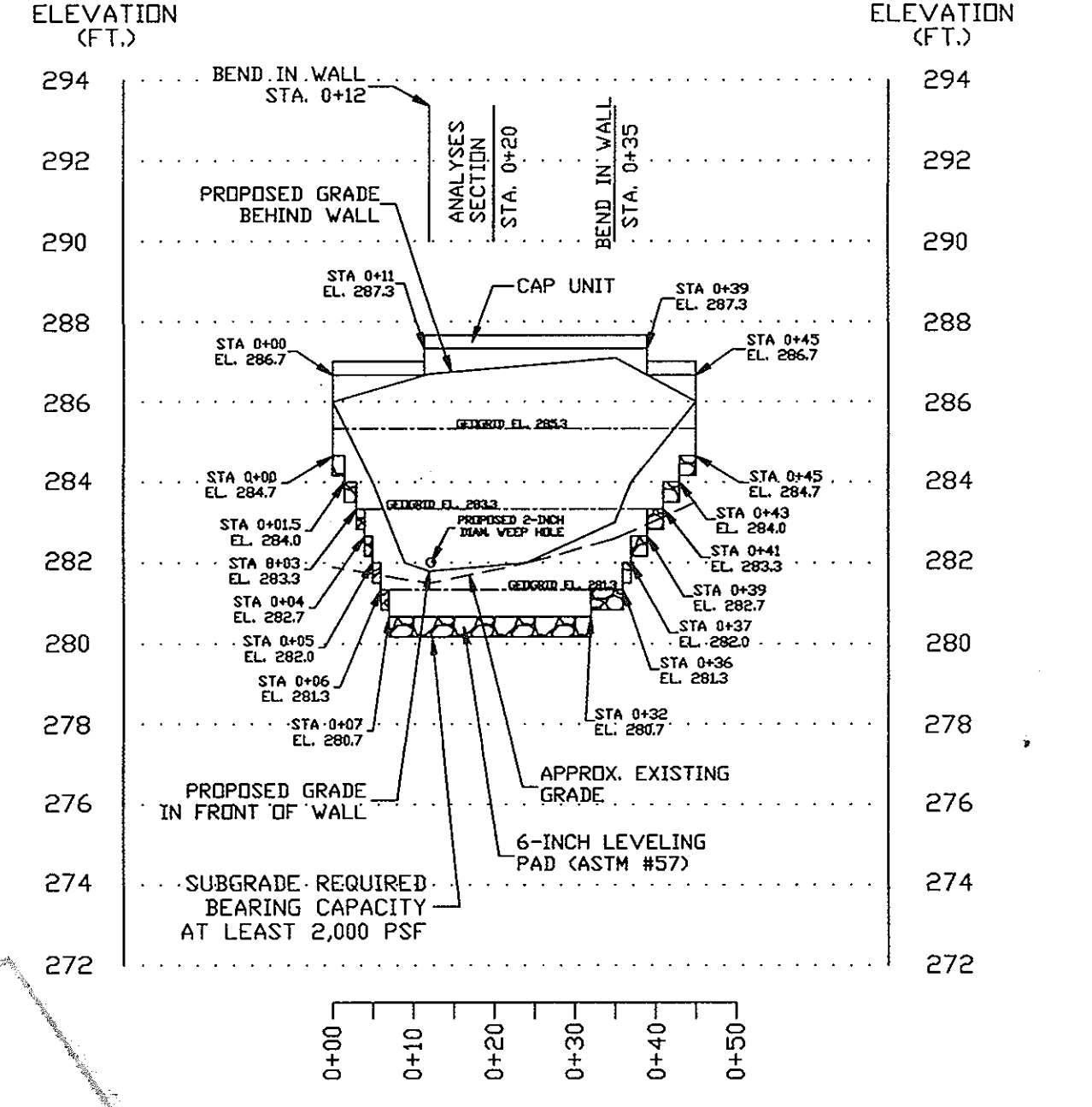
Geogrid Installation on Curves



Geogrid Installation at Corners



Leveling Pad Detail



RETAINING WALL #11 PROFILE

SCALE: HORIZ. 1"=20'
VERT. 1"=4'

NOTES:
GRID TYPE - MIRAFI 3XT
GRID LENGTH: 5 FEET

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33396, EXPIRATION DATE: 11-29-2012.
John A. Butler
10/10/11

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION
CHIEF, DIVISION OF LAND DEVELOPMENT
DIRECTOR

No.	Date	Revision	By
1	06-17-11	INCREASE PAPER SIZE TO 24x36, ADD TO TITLE BLOCK	JAF
2	08-12-11	CHANGE PAGE NUMBER	JAF
3	09-28-11	ADD WALL #10 & 11 PROFILES	JAF
4	10/2011	REVISED FOR MYLAR WITH WET STAMP	JAF

HILLTOP REDEVELOPMENT
ELLICOTT MILLS DRIVE
RESIDENTIAL AND RECREATION CENTER
L477/F.718, L.458/F.448, L.448/F.48
TAX MAP: 25 PARCELS: 12, 291
2ND ELECTION DISTRICT
BLOCK: 07 ZONINGS: R-VH, R-A-15, POR
HOWARD COUNTY, MARYLAND

OWNER
MILLTOWNE ASSOCIATE LP
BY: HCH PARTNERS II LLC, GENERAL PARTNER
BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
BY: STACY SPANN, EXECUTIVE DIRECTOR
6751 COLUMBIA GATEWAY DR.
3RD FLOOR
COLUMBIA, MD 21046
(410) 313-6320

DEVELOPER
STAVROU ASSOCIATES, INC.
2661 RIVA ROAD
BUILDING 300
ANNAPOLIS, MD 21401
C/O STEPHEN J. MOORE
(410) 571-8610

DESIGNED BY: JAF
CHECKED BY: SEK
SCALE: NTS OR AS SHOWN

RETAINING WALLS #5 & #8
PROFILE, SECTION & DETAILS
HILLTOP REDEVELOPMENT PROJECT
RETAINING WALL PLANS AND DETAILS
RETAINING WALLS #5 & #8
DATE: June 17, 2011
PROJECT NO: 11158
DRAWING NO: 37



July 1, 2013
 Project No.: 11158

The Severn Companies
 2681 River Road
 Building 300, Suite 320
 Annapolis, Maryland 21401

Attention: Mr. Scott Link
 Reference: Retaining Wall #13 Design
 Hilltop Redevelopment Project - Phase 1
 Howard County, Maryland

Dear Mr. Link:
 We have completed the design of the geogrid reinforced block Retaining Wall #13 for the subject project. The design, plans and specifications for the proposed retaining wall have been presented separately. Retaining Wall #13 is to be approximately 24 feet in length and will have a maximum exposed height of approximately 4.5 feet. We understand that this retaining wall is necessary in order to obtain the grades for the proposed transformer pad for the project located in Silverdale, Maryland.

The retaining wall design is based on the Site Plans prepared by Robert H. Vogel Engineering, Inc. (RVE). A plan of the retaining wall location, profile and details can be found in the site plans on page 37B. The Retaining Wall Location Plan is a revision of the Site Plans, added to show the retaining wall location.

The soil parameters utilized in design for the existing materials were derived from our investigation report dated February 21, 2011. Multiple borings were drilled across the site, including some in the relative vicinity of the proposed retaining wall.

The soil parameters used during the retaining wall design are outlined on page 7 of the attached specifications. The validity of the retaining wall design is based on the retaining wall being constructed in accordance with the specifications. The retaining wall construction must be conducted under the supervision of HKA.

drawings must be installed into the grade. Only the front face of the units should be visible from the side of the wall.

PART I GENERAL
 1.1 Work includes furnishing and installing geogrid reinforcement, wall fill, and backfill to the lines and grades designated on the construction drawings. Also included is the furnishing and installing all equipment materials required for construction of the geogrid reinforced retaining wall as shown on the construction drawings.

1.2 REFERENCE STANDARDS
 A. ASTM D 638 - Test Method for Tensile Properties of Plastic
 B. ASTM D 1248 - Specification of Polyethylene Plastic Molding and Extrusion Materials
 C. ASTM D 4218 - Test Method for Carbon Black Content in Polyethylene Compounds by the Muffle Furnace Technique
 D. ASTM D 1785 - Specification for PVC Plastic Pipe, Schedule 20, 40, 60 and 120

1.3 DELIVERY STORAGE AND HANDLING
 A. GEOGRID
 1. Contractor must check the geogrid upon delivery to assure that the proper material has been received.
 2. Geogrids must be stored above 30 degrees F.
 3. Contractor must prevent excessive mud, wet cement, epoxy and the materials, which may adhere themselves to the grid-work, from coming in contact with the geogrid.
 4. Maximum geogrid spacing must be at least 2 feet or as shown on the drawings.

2.1 DEFINITIONS
 A. Geogrid is a soil reinforcement grid, used in reinforced zone.
 B. Concrete retaining wall units are as detailed on the drawings and are specified under PART 2.2, 1.4 Concrete Units.
 C. Backfill is the soil which is used as fill for the reinforced soil mass.
 D. Foundation soil is the soil site or compacted fill at foundation level.

2.2 PACKAGING
 A. Geogrid must be Mirafix 3XT as shown on the attached drawings, or equivalent as approved by the engineer.

3.1 FOUNDATION SOIL PREPARATION
 A. The wall excavation must be excavated as shown on the drawings.
 B. Foundation soil must be excavated to the lines and grades as shown or as directed by the Engineer.
 C. Foundation soil must be examined by the Engineer to ensure that the actual foundation soil strength meets or exceeds assumed design strength. The engineer may require proof-roll of the foundation soil prior to fill and geogrid placement.
 D. Over-compacted areas must be filled with compacted granular material.
 E. Existing fill must be removed and replaced with compacted granular material.

3.2 GEOGRID INSTALLATION FOR RETAINING WALLS
 A. The geogrid soil reinforcement must be laid horizontally on compacted backfill, connected to the concrete wall units. Hook and over the fiberglass connector, pad bed, and geogrid before backfill is placed on the geogrid.
 B. Slack in the geogrid at the wall connections must be removed in a manner, and to each design, as approved by the Engineer.
 C. Geogrid must be laid at the proper elevation and orientation as shown on the construction drawings or as directed by the Engineer.
 D. Correct orientation (wall direction) of the geogrid must be verified by the Contractor.

Hilltop Redevelopment Project
 Retaining Wall #13 Design
 Project No.: 11158

July 1, 2013
 Phase No. 2

We recommend that the proposed retaining wall be founded only on natural ground or controlled compacted fill. Uncontrolled fill material is not acceptable for the foundation of the proposed wall. If uncontrolled fill is present, it must be completely removed and replaced with controlled, compacted fill under the direction of Hardin-Kight Associates, Inc. (HKA). The retaining wall is designed for an allowable bearing capacity of 1,600 psf. HKA must support the retaining wall foundations during construction. If soft or loose materials are encountered, they will require removal and replacement as directed by HKA.

The proposed retaining walls are to be constructed with Keystone Compac III blocks. The reinforced zone of the retaining walls must be filled with coarse-grained material classified as USCS S&G or more granular. The density and moisture content of the material at least 28 degrees. The soil must be compacted to a minimum of 80% of the maximum dry density in accordance with the standard proctor density relationship test (ASTM D 1557 - 04), unless the Engineer directs otherwise.

Retaining Wall #13 is to include feet 90 degree corners. The corners must be constructed with Keystone corner units in accordance with Keystone recommendations for 90 degree corners. The drainage fill behind the corner units must extend to a distance of approximately 4 feet (height of wall) behind the back of the units, as shown on the detail on page 37 of the site plan. The amount of stone may be reduced by approving the corners to be made.

Enclosed are copies of the specifications and analysis files. Thank you for the opportunity to be of assistance. If you have any questions or require additional information, please contact our office.

Very truly yours,
 HARDIN-KIGHT ASSOCIATES, INC.
 Justin A. Frazier, P.E.
 Vice President



PART 2 MATERIALS
 2.1 DEFINITIONS

2.2 PACKAGING
 A. Geogrid must be Mirafix 3XT as shown on the attached drawings, or equivalent as approved by the engineer.

3.1 FOUNDATION SOIL PREPARATION
 A. The wall excavation must be excavated as shown on the drawings.
 B. Foundation soil must be excavated to the lines and grades as shown or as directed by the Engineer.
 C. Foundation soil must be examined by the Engineer to ensure that the actual foundation soil strength meets or exceeds assumed design strength. The engineer may require proof-roll of the foundation soil prior to fill and geogrid placement.
 D. Over-compacted areas must be filled with compacted granular material.
 E. Existing fill must be removed and replaced with compacted granular material.

3.2 GEOGRID INSTALLATION FOR RETAINING WALLS
 A. The geogrid soil reinforcement must be laid horizontally on compacted backfill, connected to the concrete wall units. Hook and over the fiberglass connector, pad bed, and geogrid before backfill is placed on the geogrid.
 B. Slack in the geogrid at the wall connections must be removed in a manner, and to each design, as approved by the Engineer.
 C. Geogrid must be laid at the proper elevation and orientation as shown on the construction drawings or as directed by the Engineer.
 D. Correct orientation (wall direction) of the geogrid must be verified by the Contractor.

July 1, 2013
 HILLTOP REDEVELOPMENT PROJECT - PHASE I
 RESIDENTIAL RETAINING WALL SPECIFICATIONS

1.1 WORK INCLUDES
 Work includes furnishing and installing modular block retaining wall units to the lines and grades designated on the construction drawings and as specified herein.

1.2 REFERENCE STANDARDS
 A. ASTM C90-75 (1981 rev) - Hollow Load Bearing Masonry Units
 B. ASTM C140-70 (1981 rev) - Sampling and Testing Concrete Masonry Units
 C. ASTM C145-75 (1981 rev) - Solid Load Bearing Concrete Masonry Units

1.3 DELIVERY, STORAGE AND HANDLING
 A. Contractor must check the materials upon delivery to assure that the proper material has been received.
 B. Contractor must prevent excessive mud, wet cement, epoxy, and the materials, which may adhere themselves to the grid-work, from coming in contact with the materials.
 C. Contractor must protect the materials from damage. Damaged material must not be incorporated into the reinforced retaining wall.

2.1 MATERIALS
 A. Concrete Units
 1. Masonry units must be Keystone Retaining Wall Compac III units as indicated on the drawings.
 2. Concrete wall units must have a minimum 28 day compressive strength of 3,000 psi, in accordance with ASTM C-90. The concrete must have adequate freeze/thaw protection with a maximum moisture absorption of 6 to 8 percent.
 3. Exterior dimensions may vary. Units are required to have a minimum of one square foot of face area each.

2.2 GEOGRID
 Geogrid must be secured in-place with staples, pins, sand bags, or backfill as required by fill properties. All placement procedures, or weather conditions, or as directed by the Engineer.

3.1 FOUNDATION SOIL PREPARATION
 A. The wall excavation must be excavated as shown on the drawings.
 B. Foundation soil must be excavated to the lines and grades as shown or as directed by the Engineer.
 C. Foundation soil must be examined by the Engineer to ensure that the actual foundation soil strength meets or exceeds assumed design strength. The engineer may require proof-roll of the foundation soil prior to fill and geogrid placement.
 D. Over-compacted areas must be filled with compacted granular material.
 E. Existing fill must be removed and replaced with compacted granular material.

3.2 GEOGRID INSTALLATION FOR RETAINING WALLS
 A. The geogrid soil reinforcement must be laid horizontally on compacted backfill, connected to the concrete wall units. Hook and over the fiberglass connector, pad bed, and geogrid before backfill is placed on the geogrid.
 B. Slack in the geogrid at the wall connections must be removed in a manner, and to each design, as approved by the Engineer.
 C. Geogrid must be laid at the proper elevation and orientation as shown on the construction drawings or as directed by the Engineer.
 D. Correct orientation (wall direction) of the geogrid must be verified by the Contractor.

4. FILL PLACEMENT
 A. Wall backfill material must be placed in 6-inch lifts and compacted to 95 percent of Standard Proctor (ASTM D 1557). Where 857 stone is used it must be placed into place with the compaction equipment.
 B. Backfill must be placed, spread, and compacted in such a manner that minimizes the development of wrinkles in another movement of the geogrid.
 C. Only hand-operated compaction equipment shall be allowed within 4 feet of the wall face.
 D. Backfill must be placed from the wall outward to insure that the geogrid remains flat.
 E. Tensioned construction equipment must not be operated behind or above the wall.
 F. Tensioned equipment may pass over the geogrid reinforcement at slow speeds, less than 10 MPH. Sudden braking and sharp turning must be avoided.

5. DRAINAGE
 A. Positive drainage must be maintained during and after construction. Soils within the reinforced zone that become wet during construction must be dried to optimum moisture or removed.
 B. Drainage fill must be placed behind the wall to the limits shown. The drainage fill must be ASTM #57 stone.
 C. The #57 drainage fill in the reinforced zone must discharge by gravity at the ends of the wall.

4. Units must be interlocked with non-corrosive reinforced fiberglass pins.
B. Fiberglass Connecting pins
 1. The most isotropic polyester resin pultruded fiberglass reinforcement rods (1/2" dia.).
 2. Pins must have a minimum tensile strength of 125,000 psi and short beam shear of 5,400 psi.

C. Base Material
 1. Material for footing must consist of compacted fine-grained coarse aggregate meeting the requirements of ASTM #57 Graded Stone aggregate (see 2.2, C.2 below). A minimum of 6 inches deep and 24 inches wide compacted base is required. The base materials must be approved by a Maryland Registered Professional Engineer.

D. Reinforced Backfill
 1. Reinforced backfill soils behind the walls must be "select fill" consisting of approved soil USCS S&G or more granular, as indicated on the retaining wall plans and details, and be approved by Hardin-Kight Associates, Inc.

2.2 RETAINING WALL INSTALLATION
 A. Excavation
 1. The contractor must excavate to the lines and grades shown on the construction drawings where required. Under no circumstances should the excavation lines and grades be suspended, except with owner's approval. The contractor must protect the excavation from sloughing by placing a membrane over the face of the excavation.

B. Foundation Soil Preparation
 1. Foundation soil must be examined as required for footing dimensions shown on the construction drawings, or as directed by the Engineer.
 2. Foundation soil must be examined by the Engineer to assure that the actual foundation soil strength meets or exceeds assumed

3. Foundation strength - Soils not meeting required strength must be removed and replaced with controlled, compacted material.
 Foundation soil must be examined by the Engineer to assure that it consists of natural material, or controlled, compacted fill. Existing fill is not considered adequate for direct foundation support.
 Over-compacted areas or fill areas must be filled with selected material and compacted to 95 percent of maximum dry density in accordance with ASTM D 1557 (Standard Proctor).
 Bearing capacity for the retaining wall must be at least 1,600 psf.

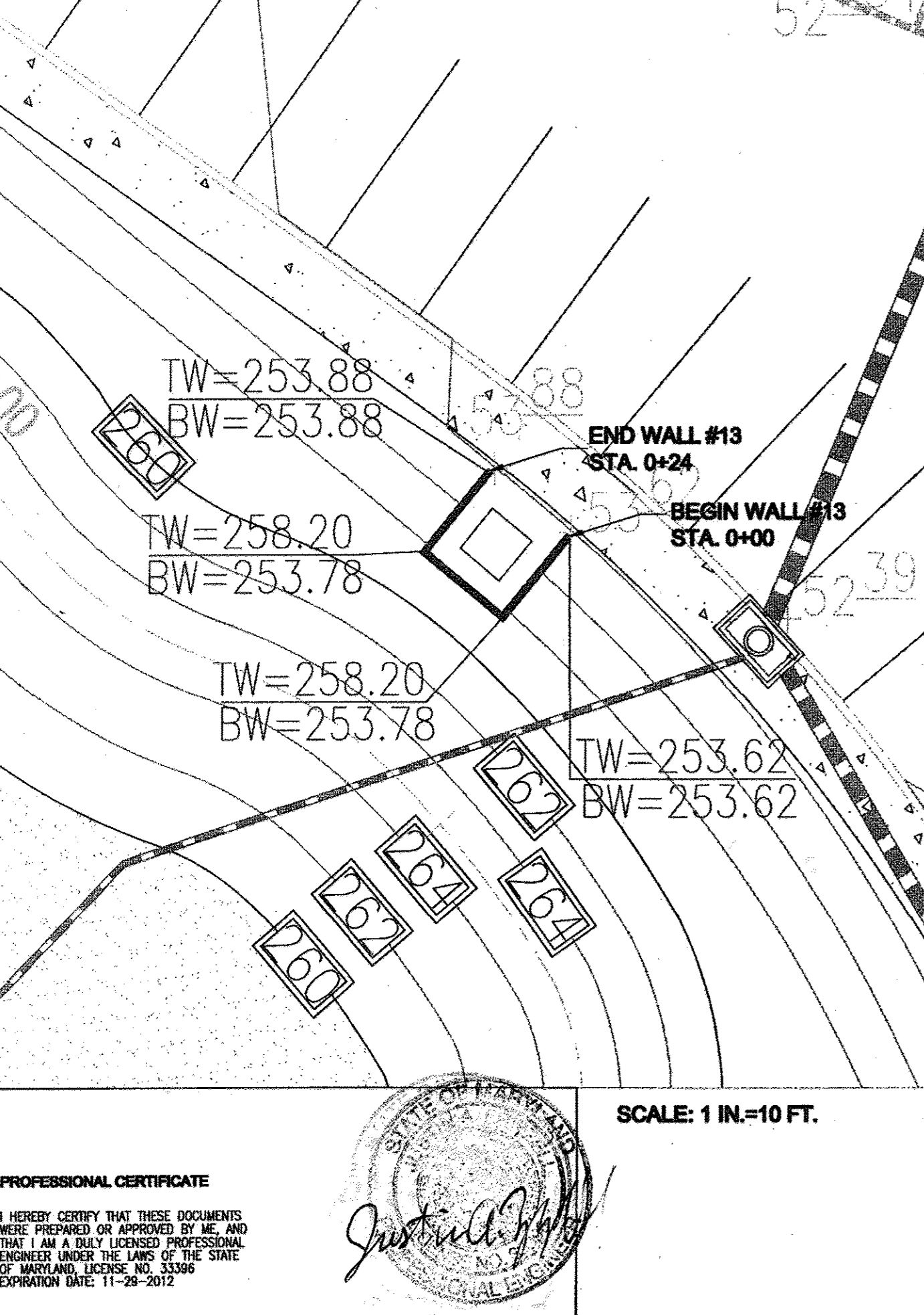
C. Base Footing
 1. The footing and footing must be placed as shown on the construction drawings with a minimum thickness of 6 inches. The footing and footing must consist of crushed stone meeting the gradation requirements for ASTM #57 graded stone or as approved by a registered professional geotechnical engineer.
 2. Laying and footing materials must be installed upon undisturbed in-situ soils or controlled, compacted material.
 3. Material must be compacted in place to provide a level finish surface on which to place the first course of units.
 4. Footing must be prepared to insure complete contact of retaining wall unit with base. Gaps must not be allowed.

U. Unit Installation
 1. First course of concrete wall units must be placed on the footing. The units must be checked for level and alignment. The first course is the most important to insure accurate and acceptable results.
 2. Ensure that units are in full contact with base.
 3. Units are placed side by side for full length of wall alignment. Alignment may be done by means of a string line or offset from tape line.
 4. Install fiberglass connector.
 5. Lay up each course ensuring that the connector pins are inserted through the face and rear slots of the unit, and into the receiving slot in the course beneath. Repeat procedure to the extent of wall height.
 6. At the end of each course where the wall changes elevation, units must be turned into the backfill. Units must be laid so to create the minimum radius possible. A minimum of 1 unit or as shown on the

RETAINING WALL #13 PROFILE

GRID TYPE - MIRAFIX 3XT OR EQUIV. GRID LENGTH - 5 FT.

SCALE: 1 IN.=10 FT.

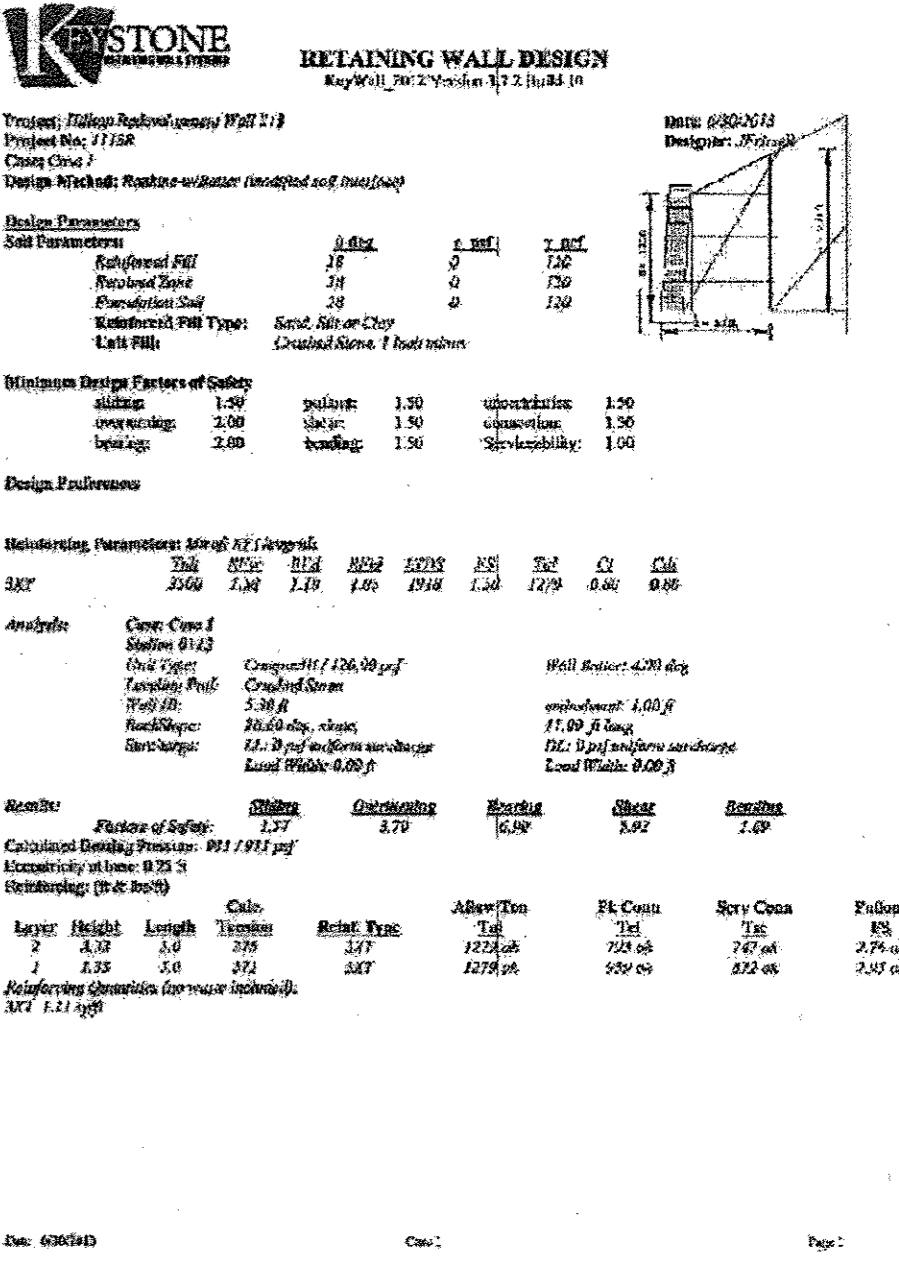
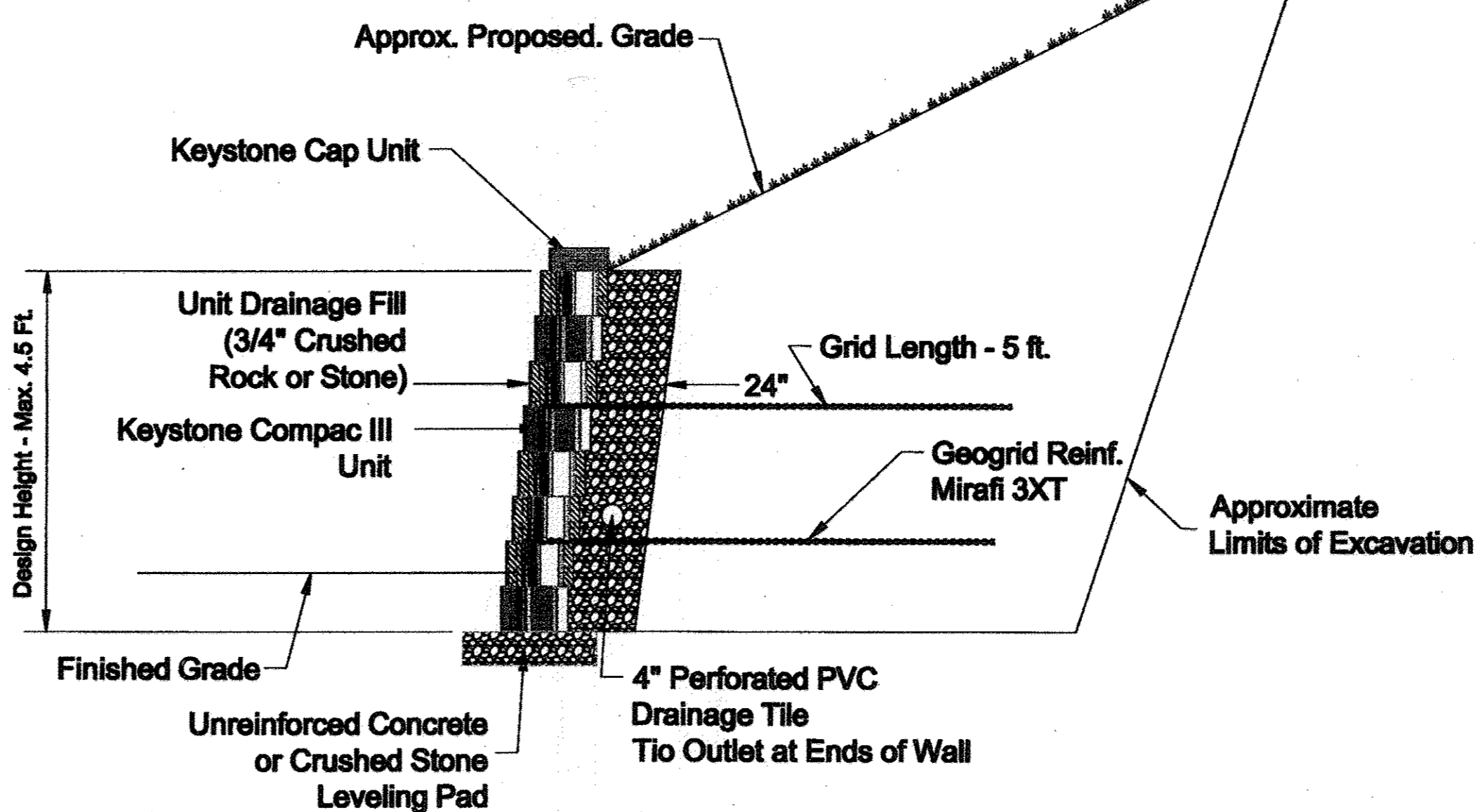


PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33346 EXPIRATION DATE: 11-28-2012

Typical Wall Section - Wall #13 Station 0+12

Compac III Unit - 1" Setback

SCALE: 1 IN.=2 FT.



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

No.	Date	Revision	By
1	01/05/17	REVISE SHEET NUMBER	VOGEL

HILLTOP REDEVELOPMENT
 ELLICOTT MILLS DRIVE
 RESIDENTIAL AND RECREATION CENTER
 L477/F.718, L480/F.448, L448/F.48

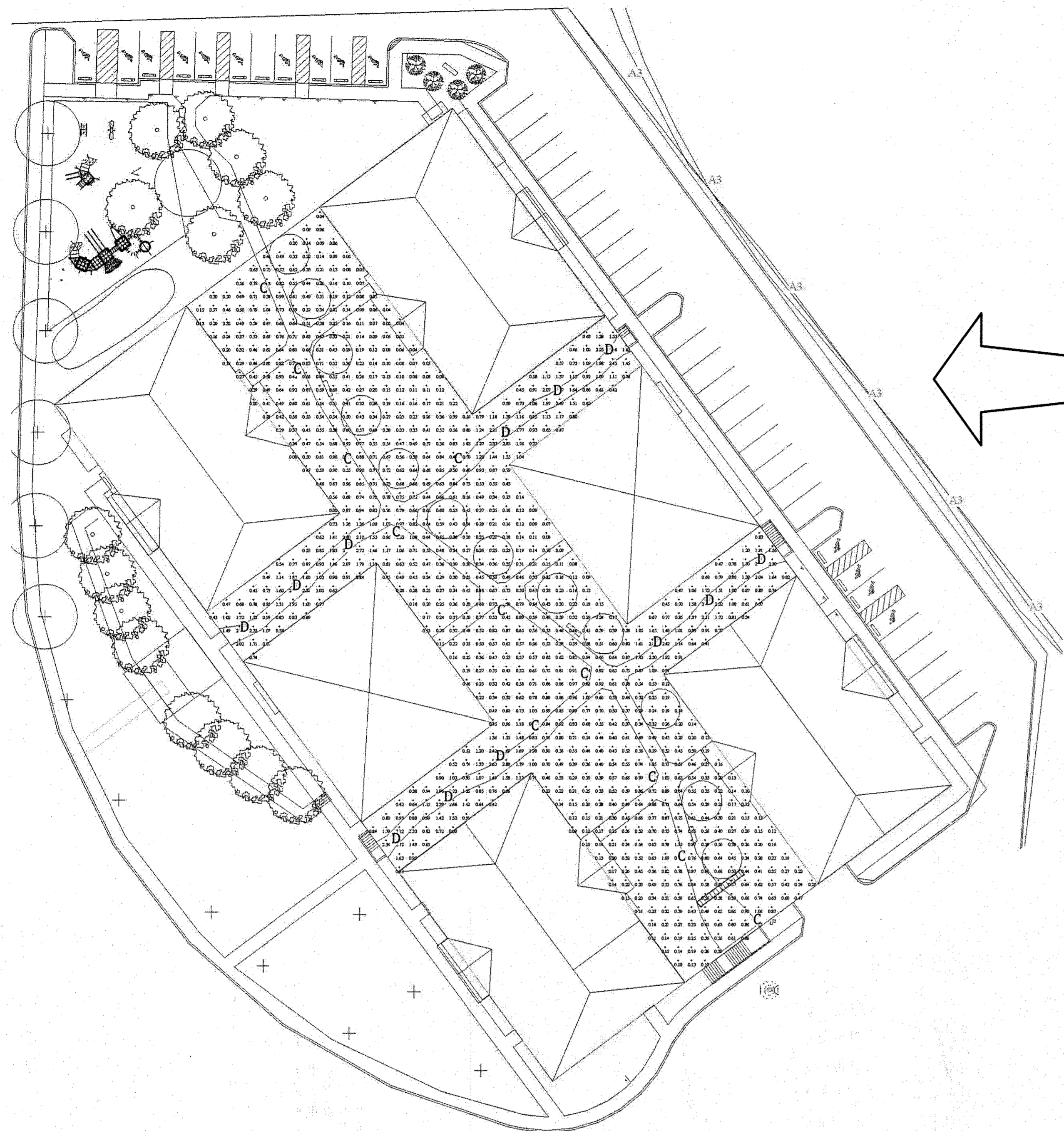
TAX MAP: 25 PARCELS: 12, 291
 2ND ELECTION DISTRICT
 BLOCK: 07 ZONINGS: R-W, R-A-15, POR
 HOWARD COUNTY, MARYLAND

OWNER
 MILLTOWN ASSOCIATE LP
 BY: HCH PARTNERS III LLC, GENERAL PARTNER
 BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
 BY: STACY SPAN, EXECUTIVE DIRECTOR
 6751 COLUMBIA GATEWAY DR.
 3RD FLOOR
 COLUMBIA, MD 21046
 (410) 313-6320

DEVELOPER
 STAVROW ASSOCIATES, INC.
 2681 IRVA ROAD
 BUILDING 320
 ANNAPOLIS, MD 21401
 C/O STEPHEN J. MOORE
 (410) 571-6610

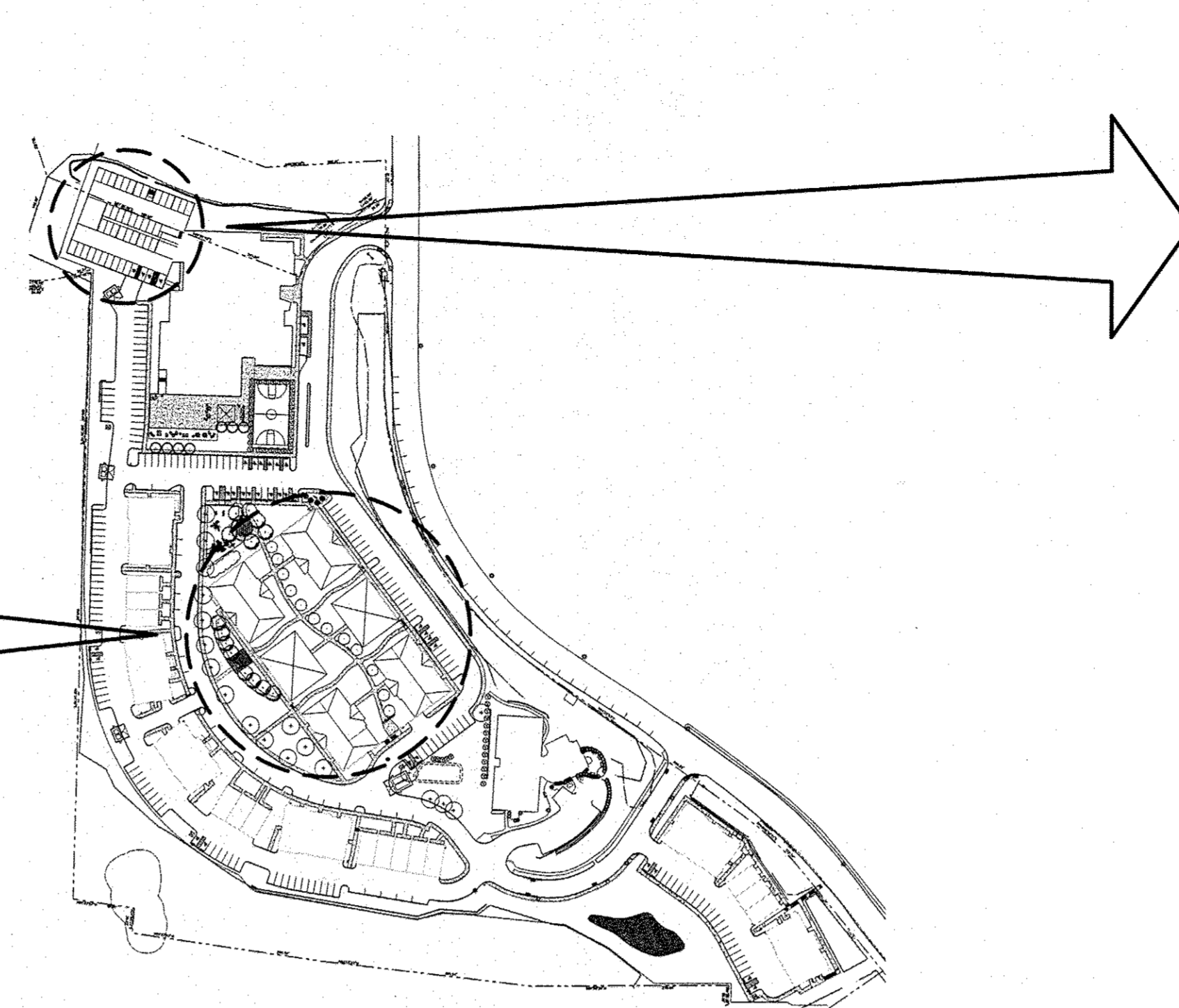
Designed By:	JAF	Title:	RETAINING WALL #13 PROFILE, SECTION & DETAILS	Date:	June 30, 2013
Checked By:	SEK	Project:	HILLTOP REDEVELOPMENT PROJECT RETAINING WALL PLANS AND DETAILS RETAINING WALL #13	Project No.:	11158
Scale:	NTS OR AS SHOWN	Drawing No.:	37B OF 50		

SDP-11-051



**PART SITE PLAN - PODIUM LEVEL
LIGHTING - POINT TO POINT CALCULATION**

SCALE: 1" = 30'-0"



SITE KEY PLAN

SCALE: NONE



**PART SITE PLAN - GARAGE AREA
LIGHTING - POINT TO POINT CALCULATION**

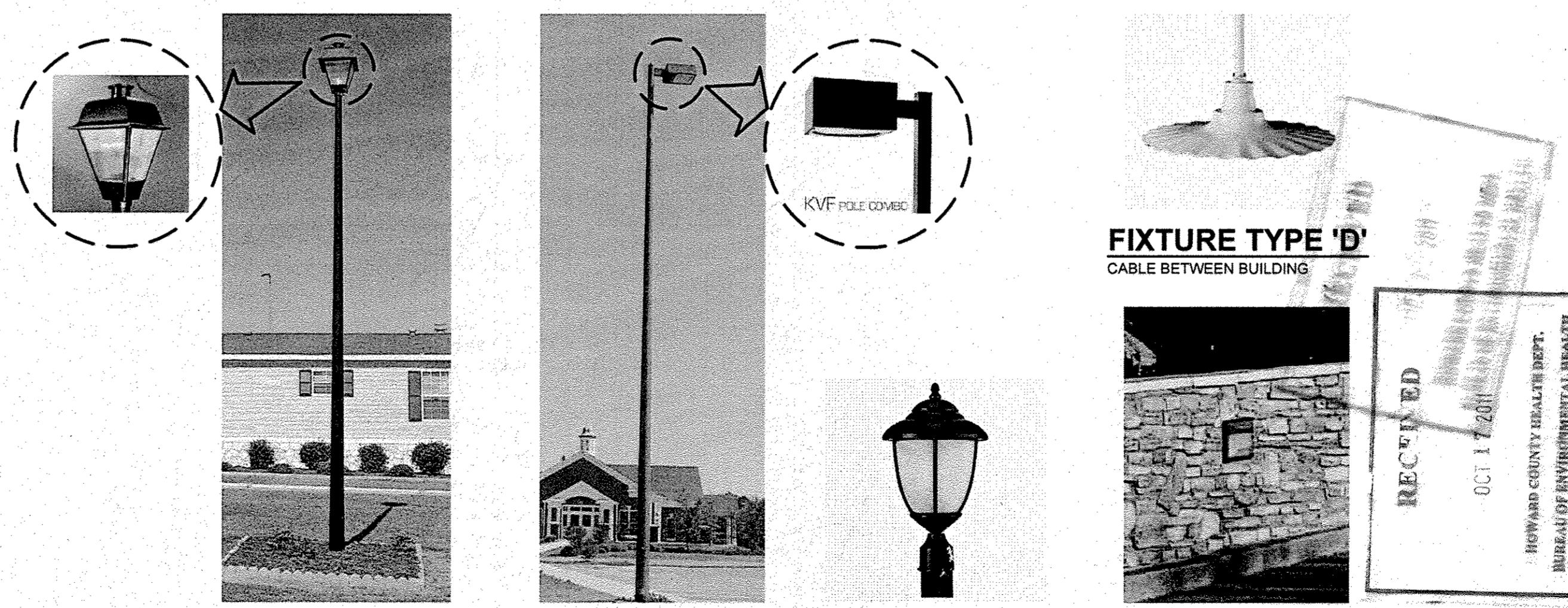
SCALE: 1" = 30'-0"



TYPE	DESCRIPTION	MOUNTING	VOLTS	LAMP DATA			MANUFACTURER & CATALOG NO.	NOTES
				NO.	WATTS	CODE		
A3	PARKING AREA POLE MOUNTED FIXTURE WITH DISTRIBUTION TYPE 3 & POLE ASSEMBLY.	CONC. BASE	-	1	150	150 MH	COOPER #UTR 15 M 8 33 POLE: RSS 4A 14'	BY BGE
A3H	SAME AS TYPE 'A3' ABOVE EXCEPT WITH 'HOUSE SIDE SHIELD.	↑	↑	↑	↑	↑	COOPER #UTR 15 M 8 33 B POLE: RSS 4A 14'	BY BGE
A5	PARKING AREA POLE MOUNTED FIXTURE WITH DISTRIBUTION TYPE 5 & POLE ASSEMBLY.	↑	↑	↑	↑	↑	COOPER #UTR 15 M 8 55 POLE: RSS 4A 14'	BY BGE
B	GARAGE AREA LIGHTING FIXTURE WITH SHORT CUT-OFF DISTRIBUTION AND POLE ASSEMBLY.	CONC. BASE	277	1	100	100 MH	LITHONIA #KVF1 100MHC SR4SC 277 RP POLE: RSS 4A 12'	
C	FLUORESCENT PEDESTRIAN POLE LIGHT MOUNTED ON 8 FT POLE.	CONC. BASE	120	1	26	26W CFL	SEAGULL LIGHTING YORKTOWNE #B2950PBLE-12	
D	EXTERIOR LED PATH LIGHTING SUSPENDED FROM CABLE & PENDANT	CC 10 FT	120	1	10	10W LED	LSI #RWD200 LED 120	
E	WALL MOUNTED GARAGE LIGHTING	WS 4 FT	277	1	26	F26 TRT	MOLDCAST #MDL 1 PL CF 227 RDE	

OWNER
MILLTOWNE ASSOCIATE LP
B: HCH PARTNERS III LLC, GENERAL PARTNER
BY: HOWARD COUNTY HOUSING COMMISSION, MEMBER
BY: STACY SPANN, EXECUTIVE DIRECTOR
6751 COLUMBIA GATEWAY DR.
3RD FLOOR
COLUMBIA, MD 21046
(410) 313-6320

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ANNAPOLIS, MD 21401
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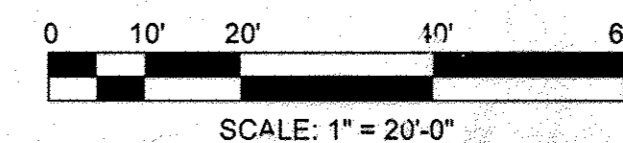


FIXTURE TYPE 'A'
MOUNTED ON 14'-0" POLE

FIXTURE TYPE 'B'
MOUNTED ON 12'-0" POLE

FIXTURE TYPE 'C'
MOUNTED ON 8'-0" POLE

FIXTURE TYPE 'E'
WALL MOUNTED



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

John P. ... 10/20/11
CHIEF, DEVELOPMENT ENGINEERING DIVISION, DATE

Victor ... 10/27/11
CHIEF, DIVISION OF LAND DEVELOPMENT, DATE

Monica ... 10/27/11
DIRECTOR, DATE

NO.	REVISION SHEET NUMBER	REVISION	DATE
A			

**SITE DEVELOPMENT PLAN
HILLTOP REDEVELOPMENT
RESIDENTIAL AND RECREATION CENTER**
L477/F.718, L486/F.448, L448/F.46

TAX MAP: 25 PARCELS: 12, 291
BLOCK: 07 ZONINGS: R-WH, R-A-15, POR
2ND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

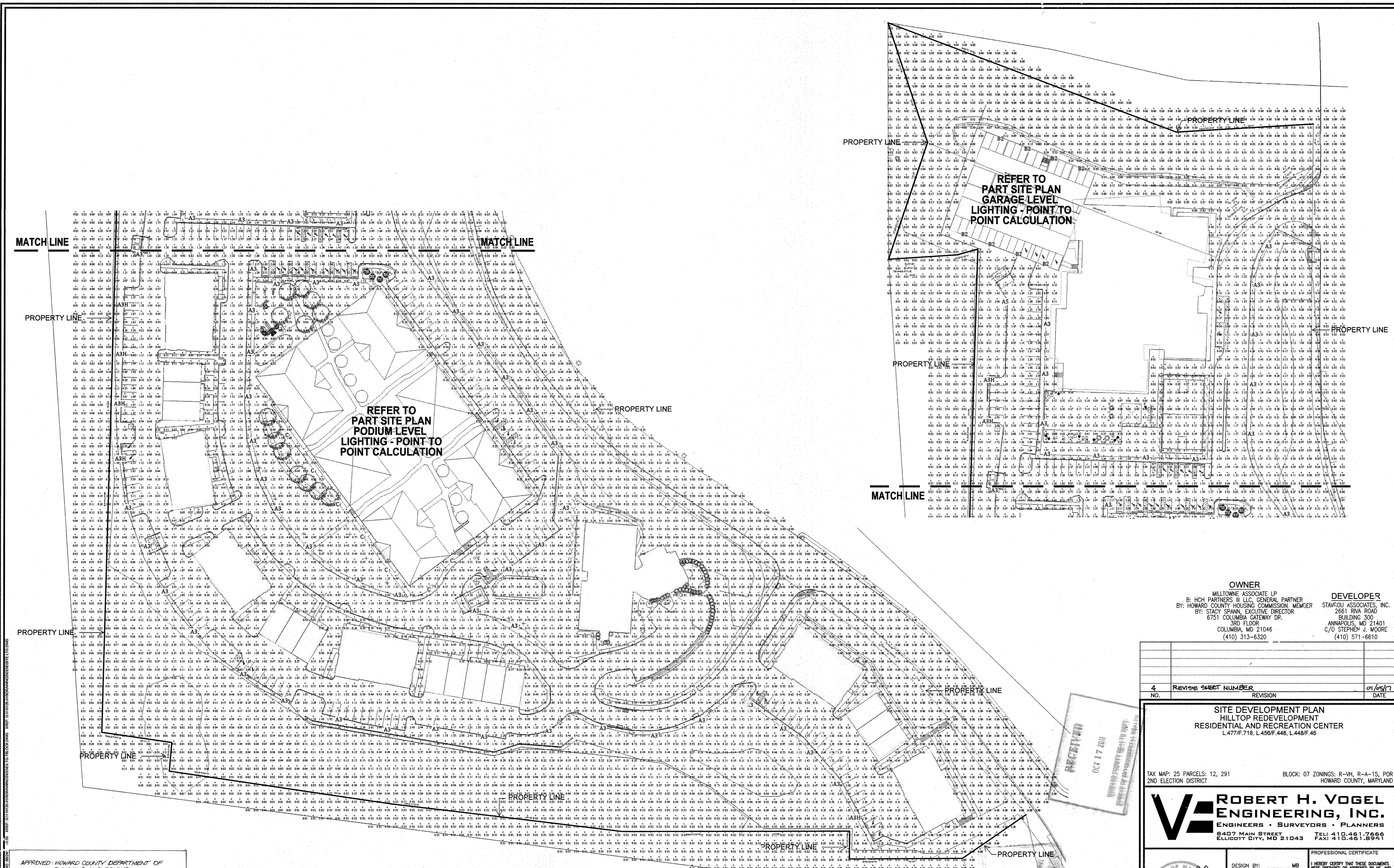
**ROBERT H. VOGEL
ENGINEERING, INC.**
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLCOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

PROFESSIONAL CERTIFICATE

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 20613 EXPIRATION DATE: 7-17-2012

DESIGN BY: _____ MB
DRAWN BY: _____ MB
CHECKED BY: _____ LSF
DATE: _____ OCT. 2011
SCALE: _____ AS NOTED
W.O. NO.: _____ 10-24

38 SHEET OF 50



MATCH LINE

MATCH LINE

REFER TO
PART SITE PLAN
PODIUM-LEVEL
LIGHTING - POINT TO
POINT CALCULATION

REFER TO
PART SITE PLAN
GARAGE LEVEL
LIGHTING - POINT TO
POINT CALCULATION

PROPERTY LINE

PROPERTY LINE

PROPERTY LINE

PROPERTY LINE

PROPERTY LINE

MATCH LINE

PROPERTY LINE

PROPERTY LINE

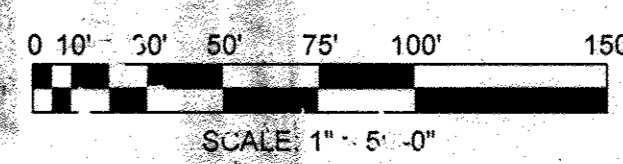
PROPERTY LINE

PROPERTY LINE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 10/27/11
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
[Signature] 10/27/11
 CHIEF, DIVISION OF LAND DEVELOPMENT
[Signature] 10/27/11
 DIRECTOR

SITE PLAN - LIGHTING - POINT TO POINT CALCULATION

SCALE: 1" = 50'-0"



OWNER
 MILLTOWNE ASSOCIATE LP
 BY: HCH PARTNERS III LLC, GENERAL PARTNER
 BY: HOWARD COUNTY HOUSING COMMISSION MEMBER
 BY: STACY SPANN, EXECUTIVE DIRECTOR
 6751 COLUMBIA GATEWAY DR.
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 C/O STEPHEN J. MOORE
 (410) 571-6610

NO.	REVISE SHEET NUMBER	REVISION	DATE
4			10/27/11

SITE DEVELOPMENT PLAN
 HILLTOP REDEVELOPMENT
 RESIDENTIAL AND RECREATION CENTER
 L477/F.718, L459/F.448, L448/F.46

TAX MAP: 25 PARCELS: 12, 291
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 ELLICOTT CITY, MD 21043
 TEL: 410.461.7666
 FAX: 410.461.8951

PROFESSIONAL CERTIFICATE

DESIGN BY: MB
 DRAWN BY: MB
 CHECKED BY: LSF
 DATE: OCT. 2011
 SCALE: AS NOTED
 W.O. NO.: 10-24

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A duly LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 20613 EXPIRATION DATE: 7-17-2012

39 SHEET OF 50

Owner
 Milltown Associates LP
 By: HCH Partners III LLC, General Partner
 By: Howard County Housing Commission, Member
 By: Stacy Spann, Executive Director
 6751 Columbia Gateway Dr., 3rd Floor
 Columbia, MD 21046
 (410) 313-6320

Developer
 Stavrou Associates, Inc.
 2661 Rive Road, Building 300, Building 300
 Annapolis, MD 21401
 c/o Stephen J. Moore, (410) 571-6610

Notes in Relation to Howard County Regulations and Responsibilities of Owner

- This Plan has been prepared in accordance with Section 16.124 of the Howard County Code and the Landscape Manual. Landscape surety for 93 Evergreens and 330 Shade Trees shall be \$112,950 for required landscaping, posted with the Developer's Agreement.

Street Trees	Internal Shade Trees	Evergreen Trees
Required Shade Trees Milltown Drive: 48	Required Total Perimeter Shade Trees (all Perimeters): 49	Project Total Required Perimeter Trees: 93
Required Shade Trees for Burgess Mill Way: 56	Required Total Parking Lot Internal Trees: 20	
Required Shade Trees for Tiber Hudson Way: 60	Required Total Residential Internal Landscaping Trees: 85	
Required Shade Trees for Wagon Works Way: 12	Project Total Required Internal Shade Trees: 154	
Project Total Required Street Trees: 176		
- The Owner, Tenant, and/or their Agents shall be responsible for maintenance of the required landscaping, plant materials, berms, fences, and walls. All plants shall be maintained in good growing condition and, when necessary, replaced with new materials to ensure continued compliance with applicable regulation, all required landscaping shall be permanently maintained in good condition, and when necessary, repaired or replaced.
- At the time of installation, all plantings listed hereunder and approved for this site shall be of the proper height requirements in accordance with the project Construction Drawings and Specifications and the Howard County Landscape Manual. In addition, no prior review and approval from the Department of Planning and Zoning, any deviation from this approved Landscape Plan may result in denial or delay in the release of the landscape surety until such time as all required materials are planted and/or revisions are made to applicable plans and certificates.
- This plan includes the removal of (2) Specimen Trees, Identified on the Plan to the right. A formal letter of request has been submitted to the County by Robert Vogel, PE, the 3rd week of June, 2011.
- This plan includes no BGE overhead utility lines, including along Ellicott Mills Drive or within the property itself. Robert Vogel, PE, will be submitting a letter to BGE Supervisor Danny Davis for official documentation.
- Specifications for the Perimeter Fence noted on the plan are as follows and as shown in the details below: By Amstar Fence, Montage Commercial 3/4 Rail Classic Panel; 6" High, Steel, Black
- Schedules below do not include a Schedule D Stormwater Area Management Landscaping because the stormwater micro-bioretention facilities have been specifically designed to be inextricably integrated into the holistic and urban fabric of the larger development. Unlike typical micro-bioretention facilities (MRFs) that are segregated from development, in part, because they are typically unattractive and unobtrusive, MRFs' SWM facilities have been designed as gardens that significantly contribute to the verdant environment of the development. As such, these plans do not include a "Typical" planting detail for micro-bioretention, as each MRF has received individual attention and specific species according to the larger design.
- The Owner and/or its agents shall be responsible for the maintenance of the required landscaping, including both plants, fences, and walls. All plants shall be maintained in good growing condition and, when necessary, replaced with new materials to ensure continued compliance with applicable regulations.
- Should any tree designated for preservation for which landscaping credit is given die prior to release of bonds, the owner will be required to replace the tree with the equivalent species of with a tree that will obtain the same height, spread, and growth characteristics. The replacement tree must be a minimum of 3 inches in caliper and installed as required in the Howard County Landscape Manual.
- Plantings shown hereon are the responsibility of the Developer to install during the construction of the final plan.

SCHEDULE A PERIMETER LANDSCAPE EDGE

See Plant Schedules for details on species identification, sizes, condition, spacing, and other information. All quantities confirmed in detail in accompanying Plant Schedules and LF Site Plan Denotation this page.

CATEGORY	PERIMETER 1A*	PERIMETER 1B	PERIMETER 2	PERIMETER 3	PERIMETER 4
PERIMETER/FRONTAGE DESIGNATION	A	B	A	C	C
LANDSCAPE TYPE	2 Sections separated by Perimeter 1B Section: 956' + 366' (1362' TOTAL)	2 Manor Houses (APTs) of 140' + 130' (270' TOTAL)	541'	693'	2052'
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER					
CREDIT FOR EXISTING VEGETATION		NO	541' for Existing Trees in Forest Conservation Retention Easements	153' for Existing Trees in Forest Conservation Retention Easements	862' for Existing Trees in Forest Conservation Retention Easements
CREDIT FOR WALL, FENCE, OR BERM	REMAINDER OF 1362'-Due to Grade Change in which the development is at least 20' higher than the road for entirety of 1362'	NO	NO	NO	NO
NUMBER OF PLANTS REQUIRED FOR LF REMAINING					
SHADE TREES	N/A	1:50 = 5 Shade	540'	1:40 = 14 Shade	1:20 = 30 Shade
EVERGREEN TREES		1:40 = 7 Evergreen	0	1:20 = 27 Evergreen	1:20 = 59 Evergreen
SHRUBS					
NUMBER OF PLANTS PROVIDED					
SHADE TREES		3 Shade	10 Shade	8 Ornamental for 4 Credits	24 Shade
ORNAMENTAL TREES (2:1 SUBSTITUTION)		4 Ornamental for 2 Credits	0	8 Ornamental for 4 Credits	12 Ornamental for 6 Credits
EVERGREEN TREES		7 Evergreen	0	27 Evergreen	59 Evergreen

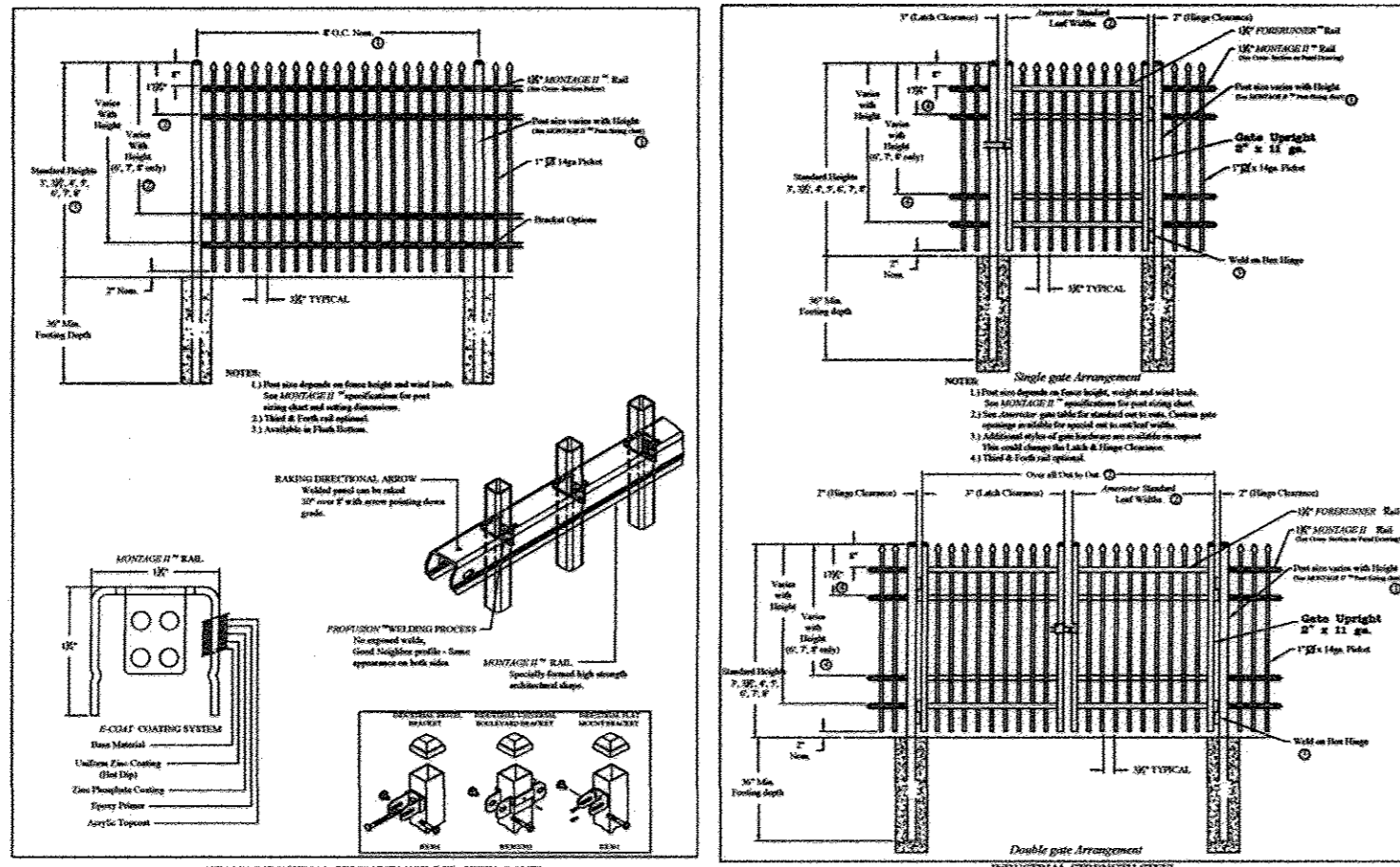
*Portion of Perimeter 1A does not require Perimeter Planting because the units are Single Family Attached, Front Orientation of Structure to Roadway, per Table 2 of the Howard County Landscape Manual. In addition, the units are separated from Ellicott Mills Drive by a 25'± grade difference above the roadway. It should also be noted that the units will receive tree and shrub planting as indicated on the Community Planting Plan-South.

SCHEDULE B PARKING LOT INTERNAL LANDSCAPING

See Plant Schedules for details on species identification, sizes, condition, spacing, and other information. All quantities confirmed in detail in accompanying Plant Schedules and LF Site Plan Denotation this page.

RECREATION CENTER	RESIDENTIAL	
NUMBER OF PARKING SPACES	57 AT GRADE 168 AT GRADE	Planting is included on top of Recreation Center and Residential Parking Structures but is not part of this requirement
NUMBER OF TREES REQUIRED	(1:20) 3	(1:10) 17
NUMBER OF TREES PROVIDED	6	19
SHADE TREES		
ORNAMENTAL TREES (2:1 SUBSTITUTION)		

No parking lot island trees are required for on-street parallel parking, only parking LOT spaces require islands with required landscape trees.



SCHEDULE C RESIDENTIAL INTERNAL LANDSCAPING

See Plant Schedules for details on species identification, sizes, condition, spacing, and other information. All quantities confirmed in detail in accompanying Plant Schedules and LF Site Plan Denotation this page.

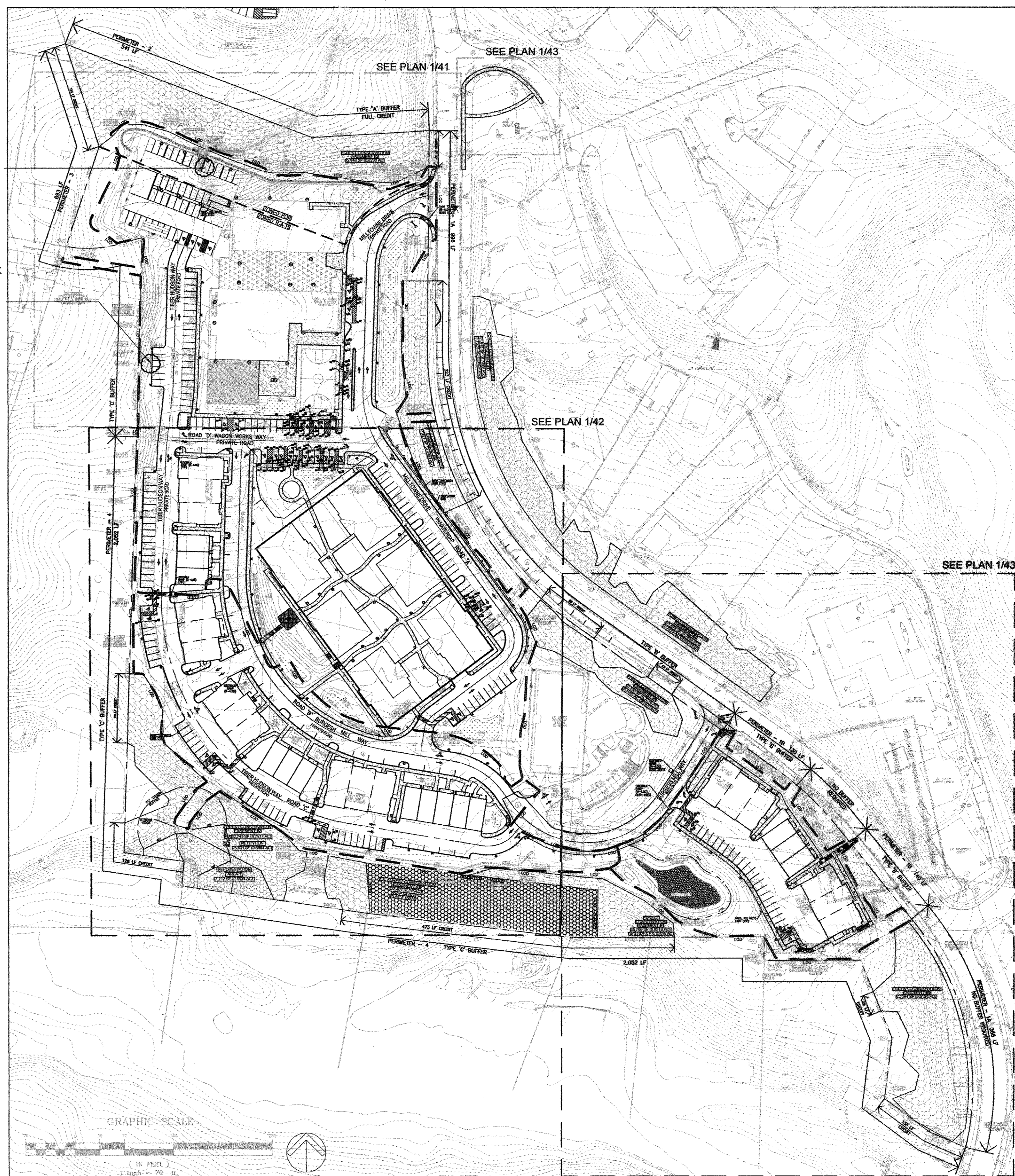
NUMBER OF DWELLING UNITS	170 APTS + 28 TOWNHOUSES = 198 UNITS
NUMBER OF TREES REQUIRED	1.3/APT (57) + 1.1/TH (28) = 85 TREES
NUMBER OF TREES PROVIDED	
INTERNAL SHADE TREES (Labeled IS)	27
ORNAMENTAL TREES (Labeled IO (2:1 SUBSTITUTION))	41
INTERNAL PARKING TREES (Labeled RP)	17
SHRUBS (10:1 SUBSTITUTION) (Labeled ISH)	67
MICRO-BIORETENTION SHRUBS	80

Internal Shade Trees + Ornamental Trees = 62 Trees. Compliance with 85 required trees is achieved with the 10:1 Shrub substitution OR by including the Internal Parking Trees, both of which were approved as strategies through verbal communication between Vogel Engineering and the County during the development of the plans. As the Table indicates, the project meets the requirement through EITHER strategy and even exceeds compliance requirements by 67 credits if BOTH strategies are utilized. If the 80 Micro-Bioretention shrub credits are included, then the project exceeds County requirements by 283%.

STREET TREE CALCULATIONS

STREET	LF	TREES REQ'D	TREES PROVIDED
MILLTOWN DRIVE (Trees Labeled "Road A") - PRIVATE ROAD	1902	(1:40) 48	24 Shade Trees + 3 Ornamental Trees (2:1) = 26 Credits per NOTES
BURGESS MILL WAY (Trees Labeled "Road B") - PRIVATE ROAD	2236	(1:40) 56	25 Shade Trees + 3 Ornamental Trees (2:1) = 28 Credits per NOTES
TIBER HUDSON WAY - PRIVATE ROAD	2410	(1:40) 60	19 Shade Trees Provided via Internal Parking Trees = 18 Credits
WAGON WORKS WAY - PRIVATE ROAD	468	(1:40) 12	6 Shade Trees Provided via Commercial Internal Parking Trees = 6 Credits
INTERNAL ORNAMENTAL TREES IMMEDIATELY ADJACENT TO BURGESS MILL WAY (Trees Labeled "IMV" in addition to IO)	N/A	--	21 Ornamental Trees (2:1) = 11 Credits
PERIMETER 4 SHADE TREES IMMEDIATELY ADJACENT TO TIBER HUDSON WAY (Trees Labeled "THW" in addition to P4S)	N/A	--	5
PERIMETER 4 EVERGREEN TREES IMMEDIATELY ADJACENT TO TIBER HUDSON WAY (Trees Labeled "THW" in addition to P4E)	N/A	--	30 Trees (2:1) = 15 Credits
PERIMETER 3 SHADE TREES IMMEDIATELY ADJACENT TO TIBER HUDSON WAY (Trees Labeled "THW" in addition to P3S)	N/A	--	10
ELICOTT MILLS DRIVE - PUBLIC ROAD	N/A	--	13
REFORESTATION TREES	N/A	--	59
TOTAL STREET TREES		176	192

All trees in Reforestation Areas 1, 2, & 3 have been updated to 1-1/2" caliper so that they may be credited toward the Street Trees for Milltown Drive, Burgess Mill Way, Tiber Hudson Way, and Wagon Works Way.



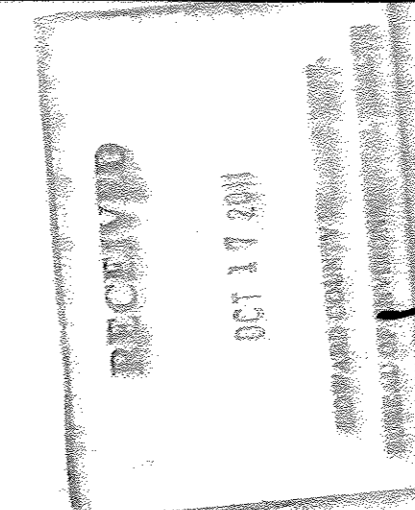
1 SITE PLAN DENOTING PERIMETERS AND KEY CONTEXT ELEMENTS

SCALE: 1" = 70'

NOTES

- 2 x 60' LF - 1902 LF. Tree Requirement @ 40:1 = 48 Trees. As many Shade Trees as feasible have been scheduled for the East Side of the Road @ an average of 27' on center and avoiding light poles and Forest Conservation Areas for a total of 21 trees. It is not advisable for survivability or maintenance that trees be placed any closer than this. Total Trees Provided on East Side = 21 Credits. On the West Side of the Road, due to buildings, parking, walk intersections, easements, required setbacks at intersections, Street Tree Planting is possible ONLY in 3 small islands, and other trees islands. ONLY ornamental trees are allowed under the Landscape Guidelines due to existing square footage requirements. Total Trees Provided on West Side: 3 Shade Trees + 3 Ornamental Trees = 6 Credits. Therefore, Total Credits for Milltown Drive, Road A = 26 Credits.
- 1 x 118' LF - 2236 LF. Tree Requirement @ 40:1 = 56 Trees. As many Shade Trees as feasible have been scheduled for the East Side of the Road @ an average of 27' on center and avoiding light poles, buildings, and walk intersections for a total of 25 trees. It is not advisable for survivability or maintenance that trees be placed any closer than this. Total Trees Provided on East Side = 25 Shade Trees + 2 Ornamental Trees = 26 Credits. On the West Side of the Road, due to buildings, parking, and walk intersections, Street Tree Planting is possible ONLY in 4 islands in which ONLY ornamental trees are allowed under the Landscape Guidelines due to existing square footage requirements. Total Trees Provided on West Side: 4 Ornamental Trees = 2 Credits. Therefore, Total Credits for Burgess Mill Way, Road B = 28 Credits.
- 2 x 2410' LF - 2410 LF. Tree Requirement @ 40:1 = 60 Trees. As many Shade Trees as feasible have been scheduled for the West Side of the Road. Buildings, easements, walks, and other impediments on the East side of the Road make planting impossible.

4	REVISE TO MODIFY RECREATIONAL OPEN SPACE AND REMOVE NATURE TRAIL AND MUDGY POCKET PARK. SHOW REPAIR OF DAMAGED SAND FILTER.	01/05/17
NO.	REVISION	DATE



DEVELOPER'S/BUILDER'S CERTIFICATE

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

SIGNATURE OF DEVELOPER: *[Signature]* DATE: 10/20/11

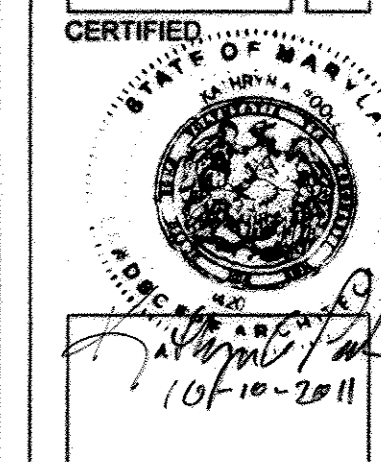
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION: *[Signature]* DATE: 10/27/11

CHIEF, DIVISION OF LAND DEVELOPMENT: *[Signature]* DATE: 10/27/11

DIRECTOR: *[Signature]* DATE: 10/27/11

MARKS, THOMAS ARCHITECTS
 1414 KEY HIGHWAY, 2ND FLOOR, BALTIMORE, MD 21220 PHONE: 410 539 4800



POOLE DESIGN, LLC
 10000 RIVERCHASE DRIVE, SUITE 100
 GREENBELT, MD 21740
 410-440-0000

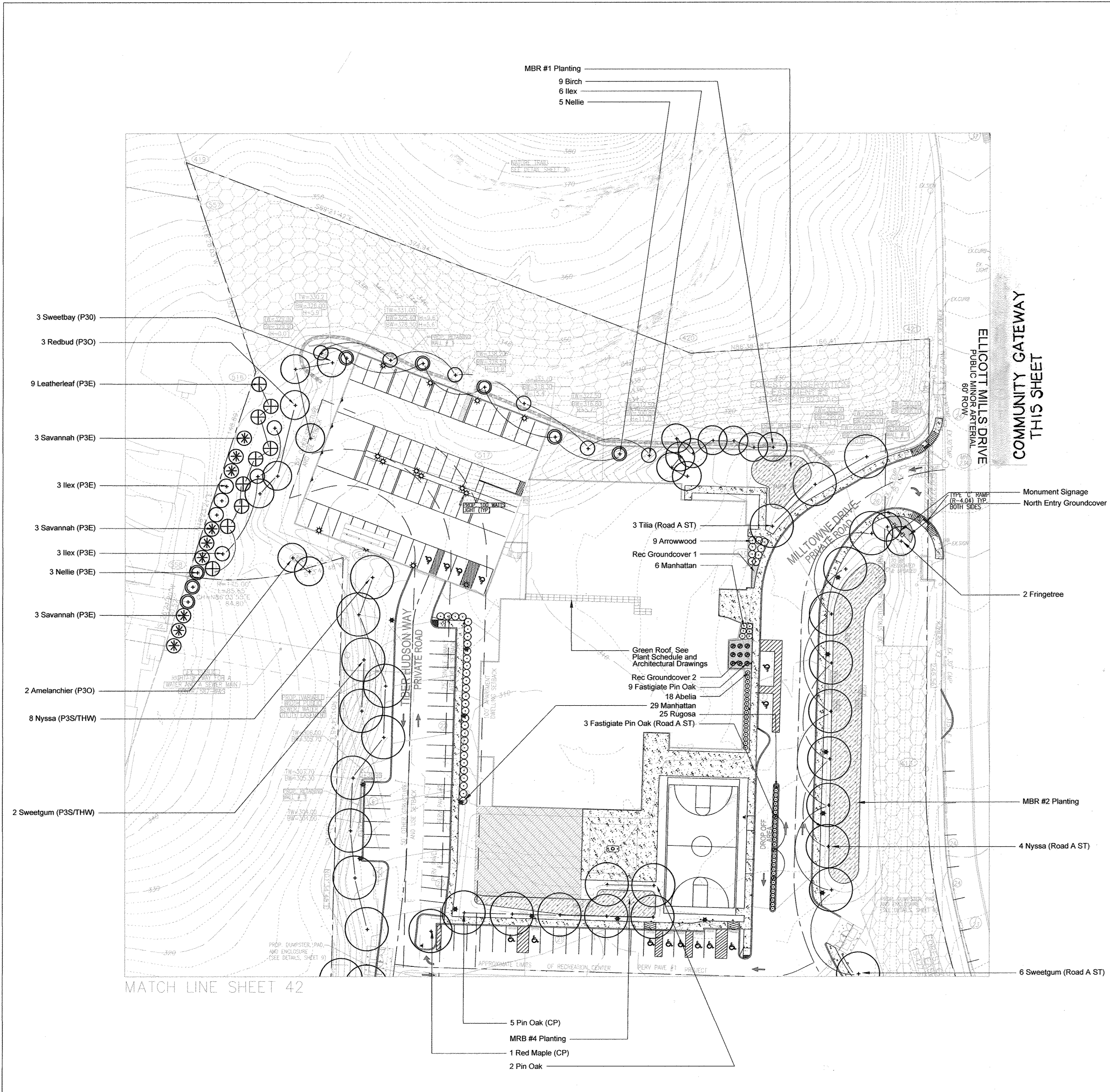
HILLTOP REDEVELOPMENT
 3624 MOUNT IDA DRIVE,
 ELLICOTT CITY, MD.

SHEET TITLE
 LANDSCAPE SCHEDULES & DATA

Project Number: 10239 Date: October 2011
 Drawn by: [Name] Checked by: [Name]

SITE DEVELOPMENT PLAN
 HILLTOP REDEVELOPMENT
 PHASE I
 RESIDENTIAL TOWNHOUSES, APARTMENTS, AND RECREATION CENTER
 THE RECREATION CENTER IS A GREEN BUILDING
 14778 FIBER LANE, SUITE 448,
 L-448F-46

40 of 50



- MBR #1 Planting
- 9 Birch
 - 6 Ilex
 - 5 Nellie

- 3 Sweetbay (P30)
- 3 Redbud (P30)
- 9 Leatherleaf (P3E)
- 3 Savannah (P3E)
- 3 Ilex (P3E)
- 3 Savannah (P3E)
- 3 Ilex (P3E)
- 3 Nellie (P3E)
- 3 Savannah (P3E)
- 2 Amelanchier (P30)
- 8 Nyssa (P3S/THW)
- 2 Sweetgum (P3S/THW)

- 3 Tilia (Road A ST)
- 9 Arrowwood
- Rec Groundcover 1
- 6 Manhattan
- Green Roof. See Plant Schedule and Architectural Drawings
- Rec Groundcover 2
- 9 Fastigate Pin Oak
- 18 Abelia
- 29 Manhattan
- 25 Rugosa
- 3 Fastigate Pin Oak (Road A ST)

COMMUNITY GATEWAY
PUBLIC MINOR ARTERIAL
80' ROW

Monument Signage
North Entry Groundcover

2 Fringetree

MBR #2 Planting

4 Nyssa (Road A ST)

6 Sweetgum (Road A ST)

MATCH LINE SHEET 42

- 5 Pin Oak (CP)
- MRB #4 Planting
- 1 Red Maple (CP)
- 2 Pin Oak

Planting for all Micro-Bioretenation facilities is included in Plant Schedule, Sheet 46

RECREATION CENTER PLANTING PLAN + COMMUNITY PLANTING PLAN - NORTH
SCALE: 1" = 30'

DEVELOPER'S/BUILDER'S CERTIFICATE

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

SIGNATURE OF DEVELOPER: *[Signature]* DATE: 10/10/11

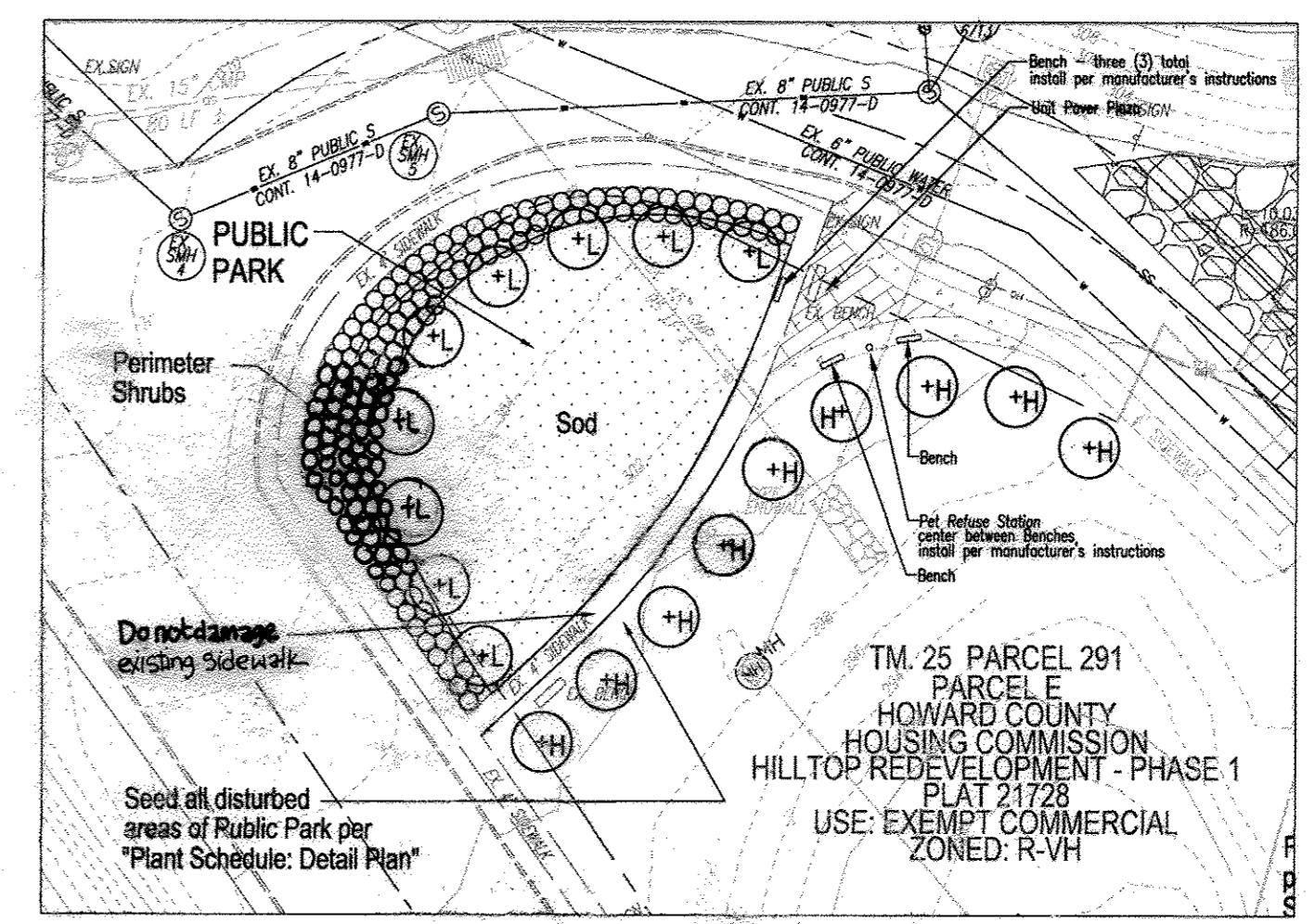
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION: *[Signature]* DATE: 10/27/11

CHIEF, DIVISION OF LAND DEVELOPMENT: *[Signature]* DATE: 10/27/11

DIRECTOR: *[Signature]* DATE: 10/27/11

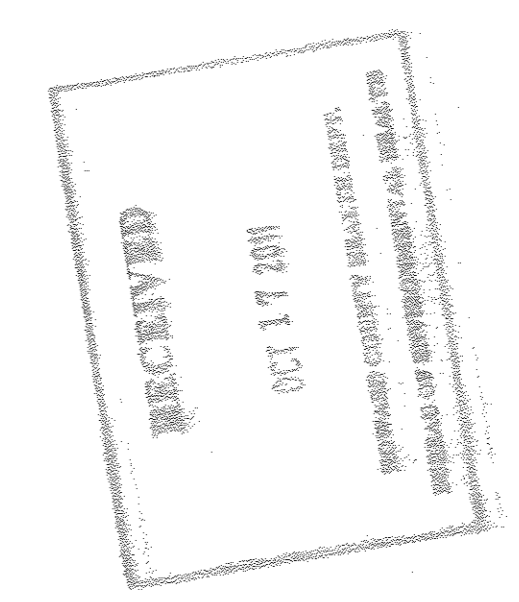
NO.	REVISION	DATE
4	REVISE TO MODIFY RECREATIONAL OPEN SPACE BY REMOVING NATURE TRAIL AND MODIFY POCKET PARK. SHOW REPAIR OF DAMAGED SAND FILTER.	01/05/17



COMMUNITY PLANTING PLAN - GATEWAY
SCALE: 1" = 20'

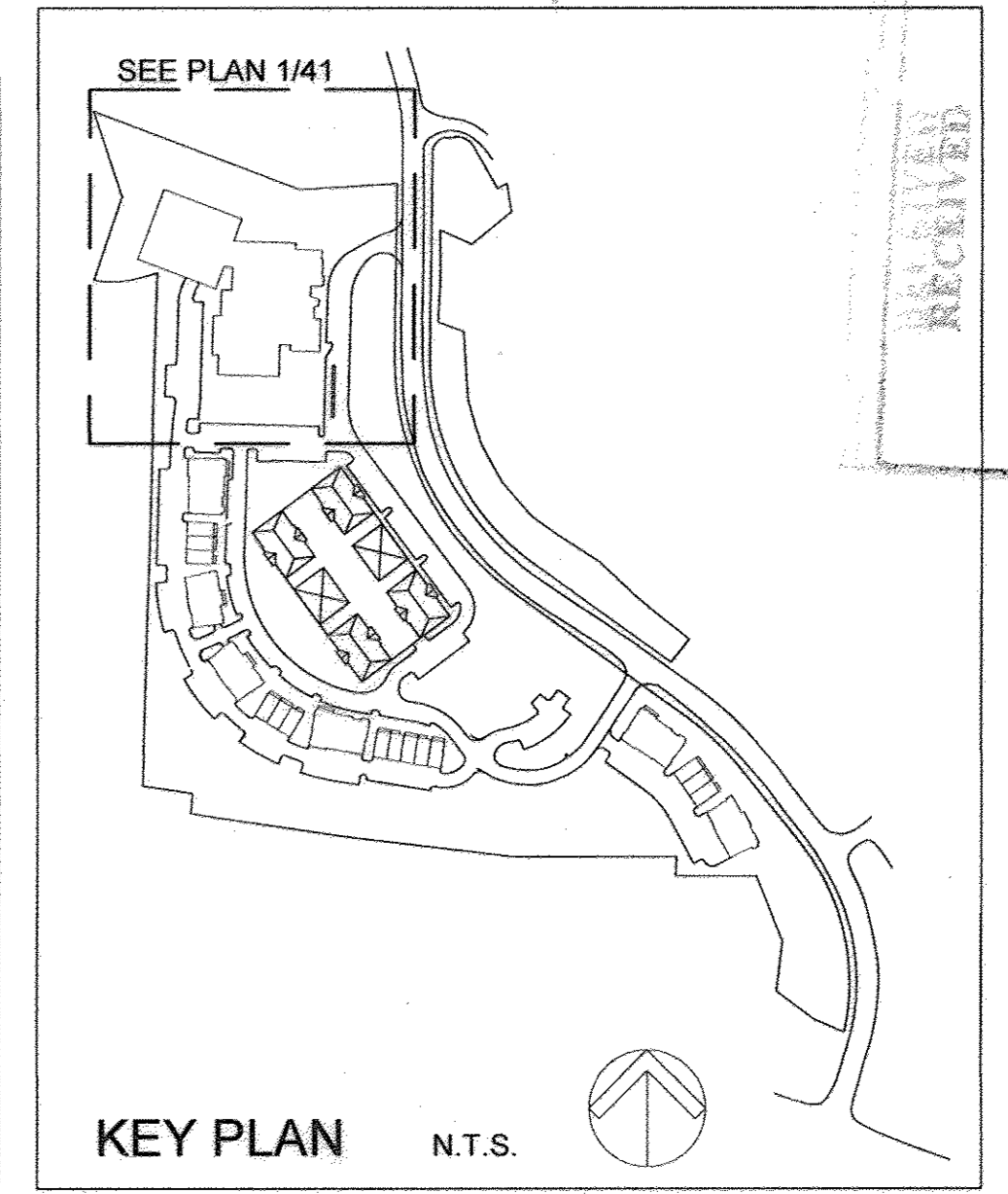
PLANT SCHEDULE: Community Planting - Gateway

Quantity	Notation	Botanical Name	Common Name	Plant Amount	Condition
9	H	<i>Ilex x 'Nellie R. Stevens'</i>	Nellie R. Stevens Holly	at height minimum	B&B/Container
9	L	<i>Lagerstroemia indica 'Red Rocket'</i> or equal	Red Blooming Crape Myrtle (deep, full red)	at height minimum	B&B/Container
152	Perimeter Shrubs	<i>Kiautschovicus 'Manhattan'</i>	Manhattan Euonymous	10 gallon minimum	Container
3324 sf	Sod	Mix of Tall Fescue, Kentucky Bluegrass, and Perennial Ryegrass	Lawn		Must be Maryland Certified SOD
Contractor Takeoff	Seed	Mix of Tall Fescue, Kentucky Bluegrass, and Perennial Ryegrass			Must be Maryland Certified Seed



KEY TO HC REQUIREMENT DESIGNATIONS FOR TREE + EVERGREEN CATEGORIES

(RP)	RESIDENTIAL PARKING
(CP)	COMMERCIAL PARKING
(IS)	INTERNAL SHADE TREE
(IO)	INTERNAL ORNAMENTAL TREE
(IE)	INTERNAL EVERGREEN
(ISH)	INTERNAL SHRUB
(P1BS)	PERIMETER 1B SHADE TREE
(P1BO)	PERIMETER 1B ORNAMENTAL TREE
(P1BE)	PERIMETER 1B EVERGREEN
(P3S)	PERIMETER 3 SHADE TREE
(P3O)	PERIMETER 3 ORNAMENTAL TREE
(P3E)	PERIMETER 3 EVERGREEN
(P4S)	PERIMETER 4 SHADE TREE
(P4O)	PERIMETER 4 ORNAMENTAL TREE
(P4E)	PERIMETER 4 EVERGREEN
(ROAD A ST)	MILLTOWNE DRIVE STREET TREE
(ROAD B ST)	BURGESSMILL WAY STREET TREE
(ELLICOTT MILLS ST)	ELLICOTT MILLS STREET TREE
(P3S/THW)	PERIMETER 3 SHADE TREE/TIBER HUDSON WAY STREET TREE
(P4S/THW)	PERIMETER 4 SHADE TREE/TIBER HUDSON WAY STREET TREE
(P4E/THW)	PERIMETER 4 EVERGREEN/TIBER HUDSON WAY STREET TREE
(IO/VMW)	INTERNAL ORNAMENTAL/BURGESS MILL WAY STREET TREE



KEY PLAN N.T.S.

CERTIFIED

POOLE DESIGN, LLC
14710 WOODBURN LANE
BALTIMORE, MARYLAND 21221
410.488.2207

MARKS, THOMAS ARCHITECTS
1414 KEY HIGHWAY, 2ND FLOOR, BALTIMORE, MD 21202, PHONE: 410.539.4900

HILLTOP REDEVELOPMENT

3624 MOUNT IDA DRIVE,
ELLICOTT CITY, MD.

SHEET TITLE
Recreation Planting + Community Planting Plan - North

Project Number: 16238 Date: October 2011

SITE DEVELOPMENT PLAN
HILLTOP REDEVELOPMENT - PHASE I
RESIDENTIAL TOWNHOUSES, APARTMENTS, AND RECREATION CENTER
THE RECREATION CENTER IS A GREEN BUILDING
1477E 716, L 4506F 448, L 448F 46

41 OF 50

COMMUNITY PLANTING PLAN NOTES

1. Provide Pergola Seating Structures in locations shown per source and specifications noted on Sheet 44 Detailed Layout Plans. Podium Area includes (3) total structures. Other areas include additional structures, as noted on Sheet 44.
2. Provide (12) fiberglass pots for "12 Ilex Potted": Allied Molded Products (www.alliedfiberglass.com). Style: Sarasota Round Planter, 36" H x 48" OD (37" ID), 72 lbs each. Color: Multi Spec Sandstone.
3. All areas that do not indicate planting or sod receive hydroseeded grass per the Specifications.
4. Unlike all other lawn areas for the project, the Podium and contiguous landscape north shall receive sod per the Specifications.
For entire Podium area--in which soil and planting are atop Underground Parking--provide approximately 7" topsoil and 1" course, narrow graded sand.
5. See Electrical Plans for Community Landscape lighting.
6. See 2/44 for Trellis/Screen Detail.
7. See Plant Schedule Sheet 47 for Micro-Bioretenation Planting.
8. Along Ellicott Mills Drive, both at the top and bottom of slope, planting shown is in addition to existing vegetation, which is to remain and to be protected (except in the case of invasive species, which if found, should be brought to the attention of the Landscape Architect and removed if she directs this course of action).

For planting along Ellicott Mills Drive, existing vegetation to remain, see note 8

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.19 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MAINTENANCE ORDINANCE. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE MAINTENANCE WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING. THIS CERTIFICATE IS VALID FOR ONE (1) YEAR FROM THE DATE OF SIGNATURE OF DEVELOPER.

DATE: 10/10/11

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

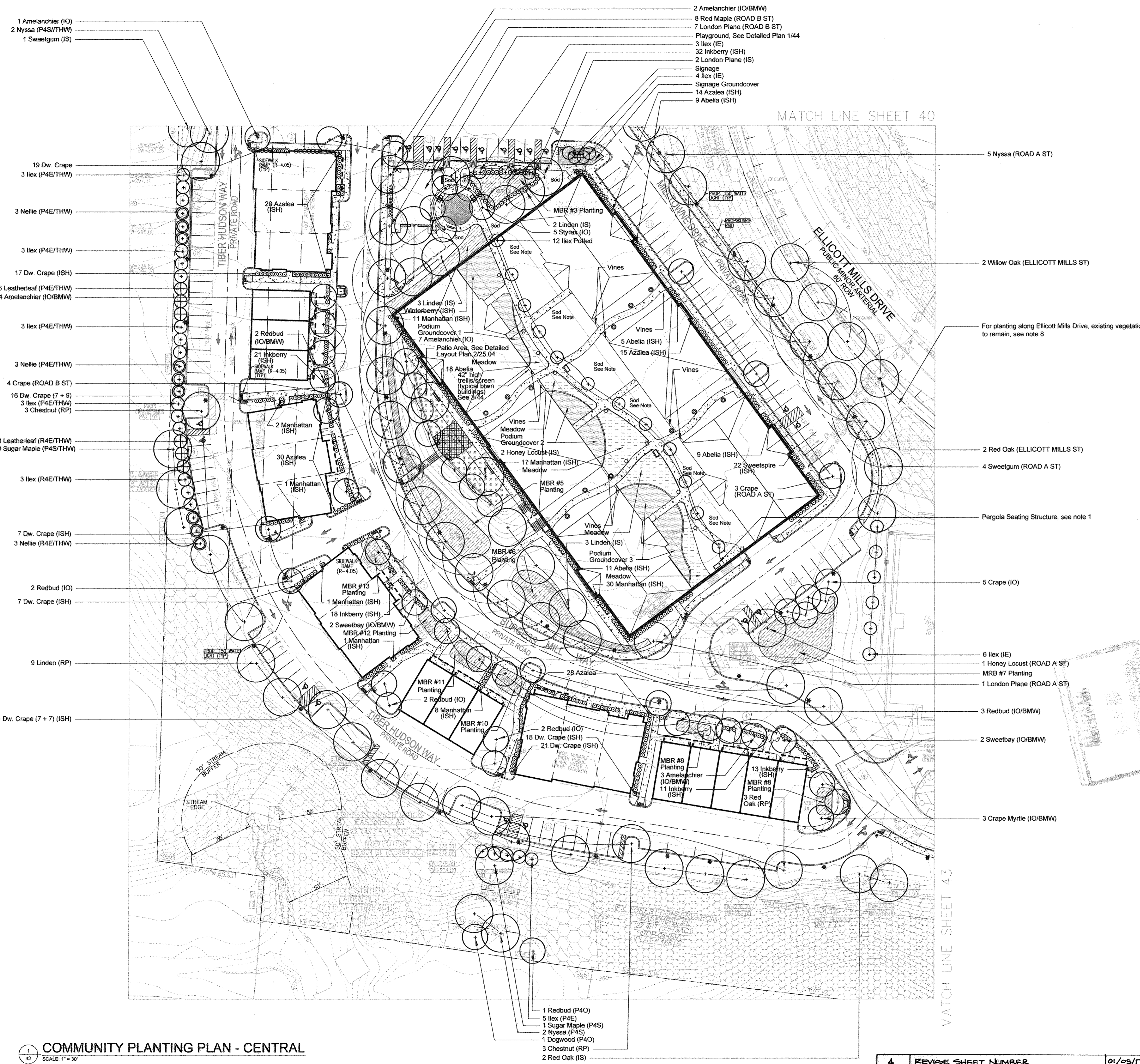
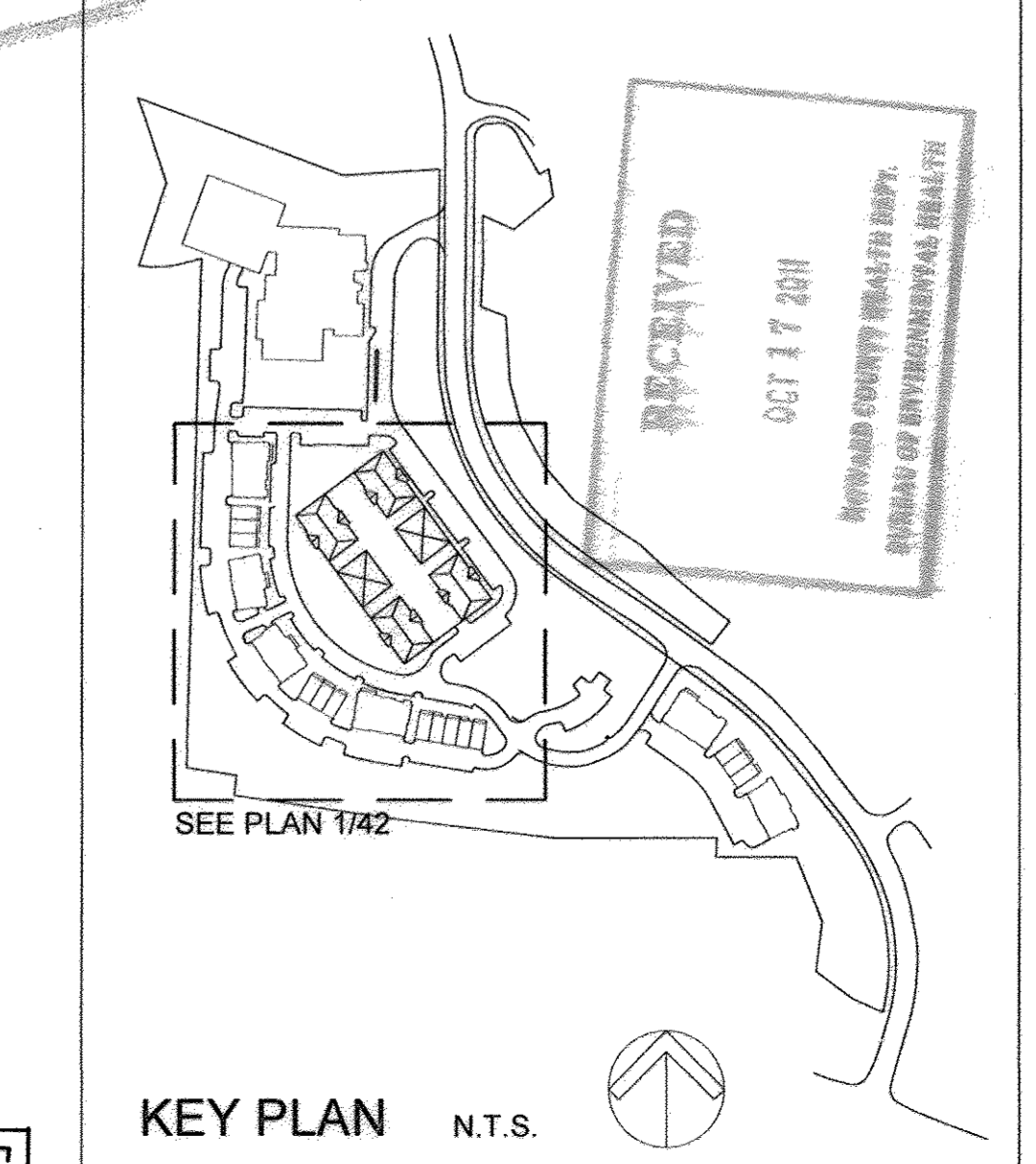
CHIEF, DEVELOPMENT ENGINEERING DIVISION: [Signature] DATE: 10/27/11

CHIEF, DIVISION OF LAND DEVELOPMENT: [Signature] DATE: 10/27/11

DIRECTOR: [Signature] DATE: 10/27/11

KEY TO HC REQUIREMENT DESIGNATIONS FOR TREE + EVERGREEN CATEGORIES

(RP)	RESIDENTIAL PARKING
(CP)	COMMERCIAL PARKING
(S)	INTERNAL SHADE TREE
(O)	INTERNAL ORNAMENTAL TREE
(E)	INTERNAL EVERGREEN
(SR)	INTERNAL SHRUB
(P1B)	PERIMETER 1B SHADE TREE
(P1O)	PERIMETER 1B ORNAMENTAL TREE
(P1E)	PERIMETER 1B EVERGREEN
(P3S)	PERIMETER 3 SHADE TREE
(P3O)	PERIMETER 3 ORNAMENTAL TREE
(P3E)	PERIMETER 3 EVERGREEN
(P4S)	PERIMETER 4 SHADE TREE
(P4O)	PERIMETER 4 ORNAMENTAL TREE
(P4E)	PERIMETER 4 EVERGREEN
(ROAD A ST)	MILLTOWNE DRIVE STREET TREE
(ROAD B ST)	BURGESSMILL WAY STREET TREE
(ELLICOTT MILLS ST)	ELLICOTT MILLS STREET TREE
(P3S/THW)	PERIMETER 3 SHADE TREE/FIBER HUDSONWAY STREET TREE
(P4S/THW)	PERIMETER 4 SHADE TREE/FIBER HUDSONWAY STREET TREE
(P4E/THW)	PERIMETER 4 EVERGREEN/FIBER HUDSONWAY STREET TREE
(O/BIWM)	INTERNAL ORNAMENTAL/BURGESS MILL WAY STREET TREE



- 1 Amelanchier (IO)
- 2 Nyssa (P4S/THW)
- 1 Sweetgum (IS)
- 19 Dw. Crape
- 3 Ilex (P4E/THW)
- 3 Nellie (P4E/THW)
- 3 Ilex (P4E/THW)
- 17 Dw. Crape (ISH)
- 3 Leatherleaf (P4E/THW)
- 4 Amelanchier (IO/BIWM)
- 3 Ilex (P4E/THW)
- 3 Nellie (P4E/THW)
- 4 Crape (ROAD B ST)
- 16 Dw. Crape (7 + 9)
- 3 Ilex (P4E/THW)
- 3 Chestnut (RP)
- 3 Leatherleaf (R4E/THW)
- 3 Sugar Maple (P4S/THW)
- 3 Ilex (R4E/THW)
- 7 Dw. Crape (ISH)
- 3 Nellie (R4E/THW)
- 2 Redbud (IO)
- 7 Dw. Crape (ISH)
- 9 Linden (RP)
- 14 Dw. Crape (7 + 7) (ISH)
- 1 Redbud (P4O)
- 5 Ilex (P4E)
- 1 Sugar Maple (P4S)
- 2 Nyssa (P4S)
- 1 Dogwood (P4O)
- 3 Chestnut (RP)
- 2 Red Oak (IS)

- 2 Amelanchier (IO/BIWM)
- 8 Red Maple (ROAD B ST)
- 7 London Plane (ROAD B ST)
- Playground, See Detailed Plan 1/44
- 3 Ilex (IE)
- 32 Inkberry (ISH)
- 2 London Plane (IS)
- Signage
- 4 Ilex (IE)
- Signage Groundcover
- 14 Azalea (ISH)
- 9 Abelia (ISH)

4	REVISE SHEET NUMBER	01/05/11
NO.	REVISION	DATE

1414 KEY HIGHWAY AND FLOOR, BALTIMORE, MD 21202 PHONE: 410 536 4500

MARKS, THOMAS ARCHITECTS

POOLE DESIGN, LLC
1414 Key Highway
Baltimore, Maryland 21202
410 536 4500

HILLTOP REDEVELOPMENT

3624 MOUNT IDA DRIVE, ELLICOTT CITY, MD.

SHEET TITLE
Community Planting Plan - Central

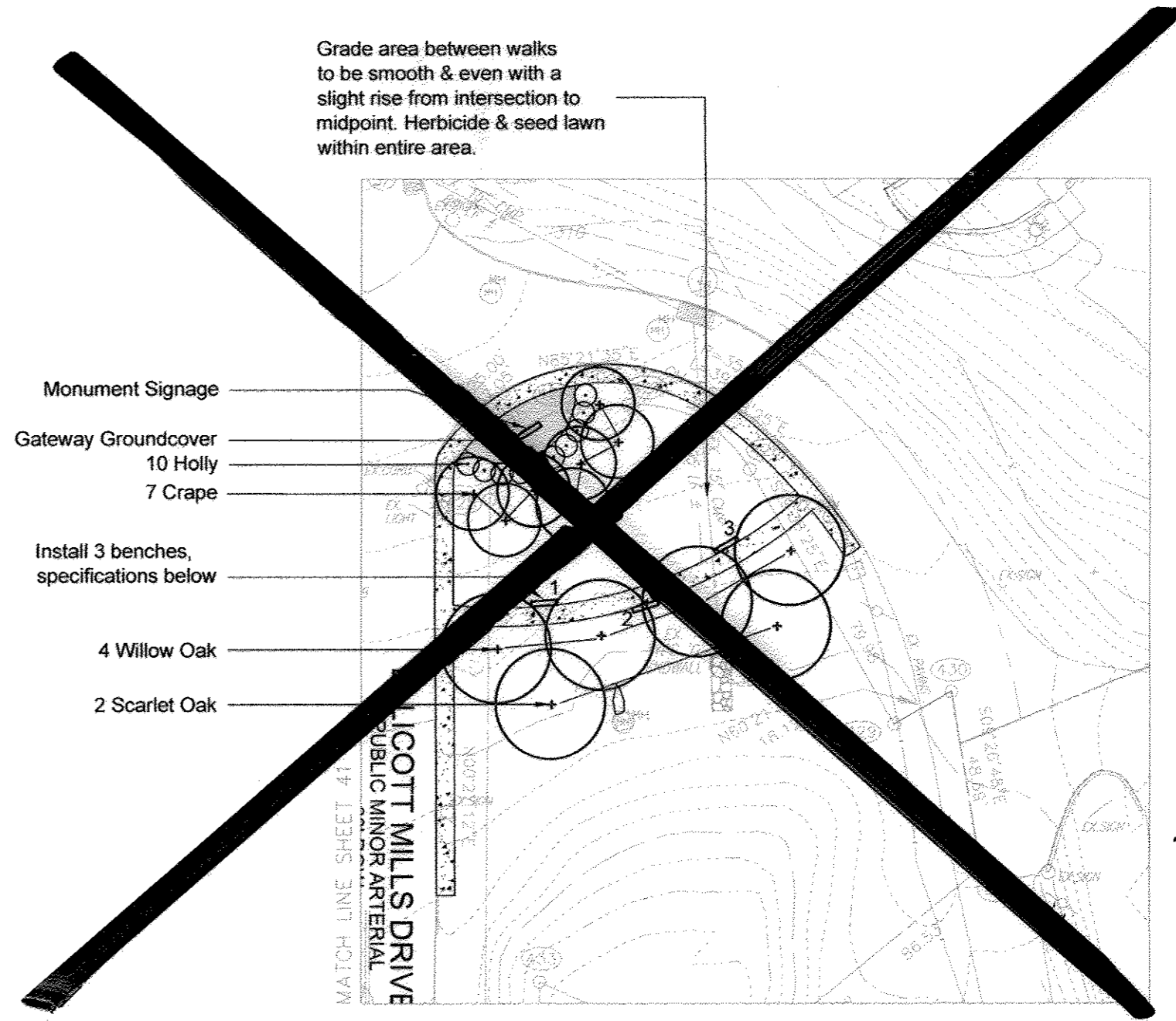
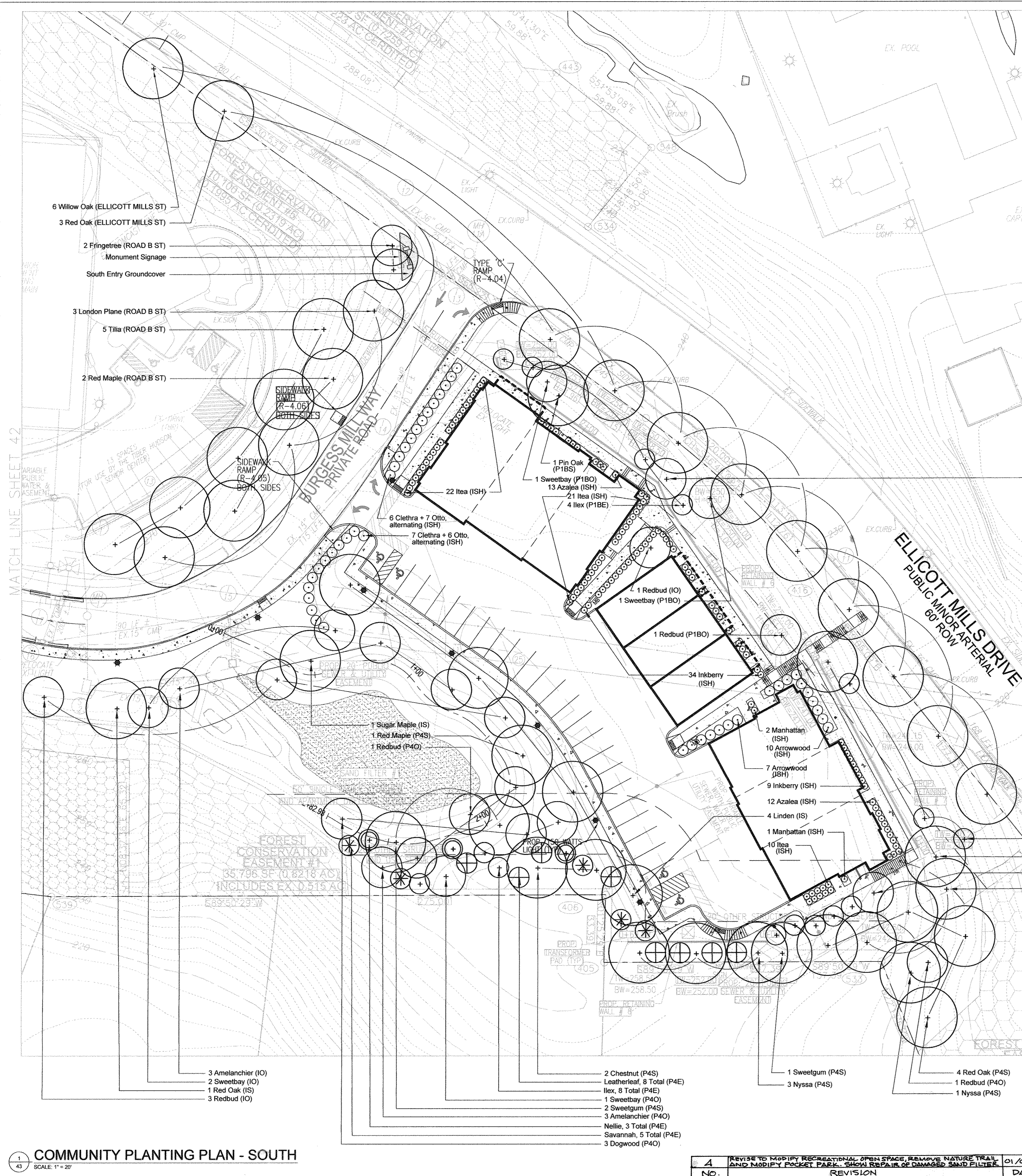
Project Number: 10238 Date: October 2011

Drawn by: [Name] Checked by: [Name]

SITE DEVELOPMENT PLAN HILLTOP REDEVELOPMENT - PHASE I
RESIDENTIAL TOWNHOUSES, APARTMENTS, AND RECREATION CENTER
THE RECREATION CENTER IS A GREEN BUILDING
1477E 716, L456F/448, L448F/46

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42 OF 50



1. Benches by Gametime, Straight Leg Park Bench, Douglas Fir. In ground mount. 3 total Benches @ 8' (#4067). Benches 1 and 3 face north. Bench 2 faces south.

NOTE: SEE SHEET 41 FOR COMMUNITY PLANTING PLAN - GATEWAY

COMMUNITY PLANTING PLAN NOTES--SOUTH

- See Plant Schedule Sheet 48 for Micro-Bioretenation Planting.
- Along Ellicott Mills Drive, both at the top and bottom of slope, planting shown is in addition to existing vegetation, which is to remain and to be protected (except in the case of invasive species, which if found, should be brought to the attention of the Landscape Architect and removed if she directs this course of action).

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SPECIFICATIONS, AND THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MAINTENANCE AND CARE SCHEDULE. I/WE CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE MAINTENANCE AND CARE WILL BE PROVIDED TO THE DEPARTMENT OF PLANNING AND ZONING. I/WE WARRANT THAT THE PLANTING MATERIALS LISTED ARE AVAILABLE AND WILL BE SUPPLIED TO THE DEPARTMENT OF PLANNING AND ZONING.

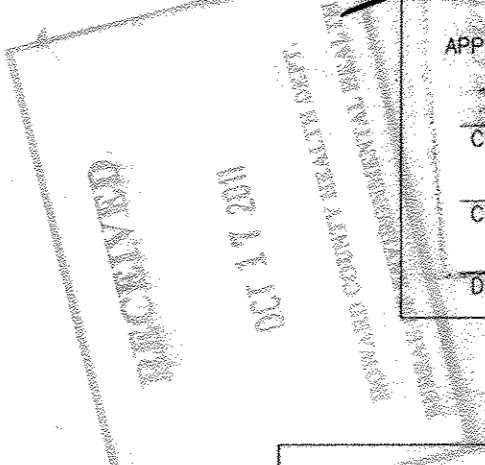
DATE: 10/10/11

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION: 10/20/11

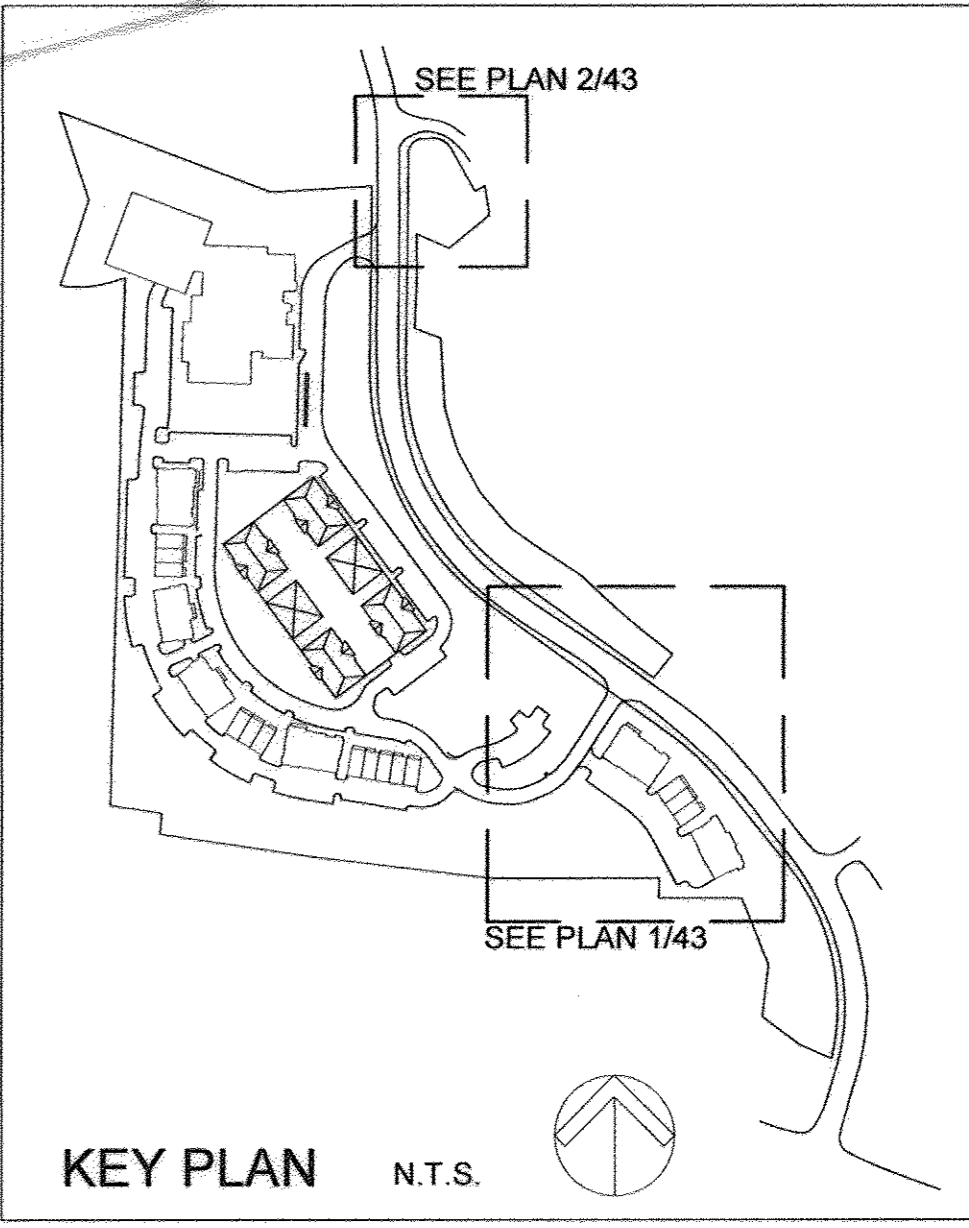
CHIEF, DIVISION OF LAND DEVELOPMENT: 10/27/11

DIRECTOR: 10/27/11



KEY TO HC REQUIREMENT DESIGNATIONS FOR TREE + EVERGREEN CATEGORIES

(RP)	RESIDENTIAL PARKING
(CP)	COMMERCIAL PARKING
(IS)	INTERNAL SHADE TREE
(IO)	INTERNAL ORNAMENTAL TREE
(IE)	INTERNAL EVERGREEN
(ISH)	INTERNAL SHRUB
(P1BS)	PERIMETER 1B SHADE TREE
(P1BO)	PERIMETER 1B ORNAMENTAL TREE
(P1BE)	PERIMETER 1B EVERGREEN
(P3S)	PERIMETER 3 SHADE TREE
(P3O)	PERIMETER 3 ORNAMENTAL TREE
(P3E)	PERIMETER 3 EVERGREEN
(P4S)	PERIMETER 4 SHADE TREE
(P4O)	PERIMETER 4 ORNAMENTAL TREE
(P4E)	PERIMETER 4 EVERGREEN
(ROAD A ST)	MILLTOWNE DRIVE STREET TREE
(ROAD B ST)	BURGESSMILL WAY STREET TREE
(ELLCOTT MILLS ST)	ELLCOTT MILLS STREET TREE



NO.	REVISION	DATE
4	REVISE TO MODIFY RECREATIONAL OPEN SPACE, REMOVE NATURE TRAIL AND MODIFY POCKET PARK. SHOW REPAIR OF DAMAGED SAND FILTER	01/09/17

HILLTOP REDEVELOPMENT
3624 MOUNT IDA DRIVE, ELLICOTT CITY, MD.

MARKS, THOMAS ARCHITECTS
1414 KEY HIGHWAY, 2ND FLOOR, BALTIMORE, MD 21202, PHONE: 410 539 4000

POOLE DESIGN, LLC
Landscape Architecture • Urban Design • Engineering/Management
11415 WOODBINE DRIVE, SUITE 100, ELICOTT CITY, MD 21117
410.483.2525

DEVELOPER'S/BUILDER'S CERTIFICATE (Stamp)

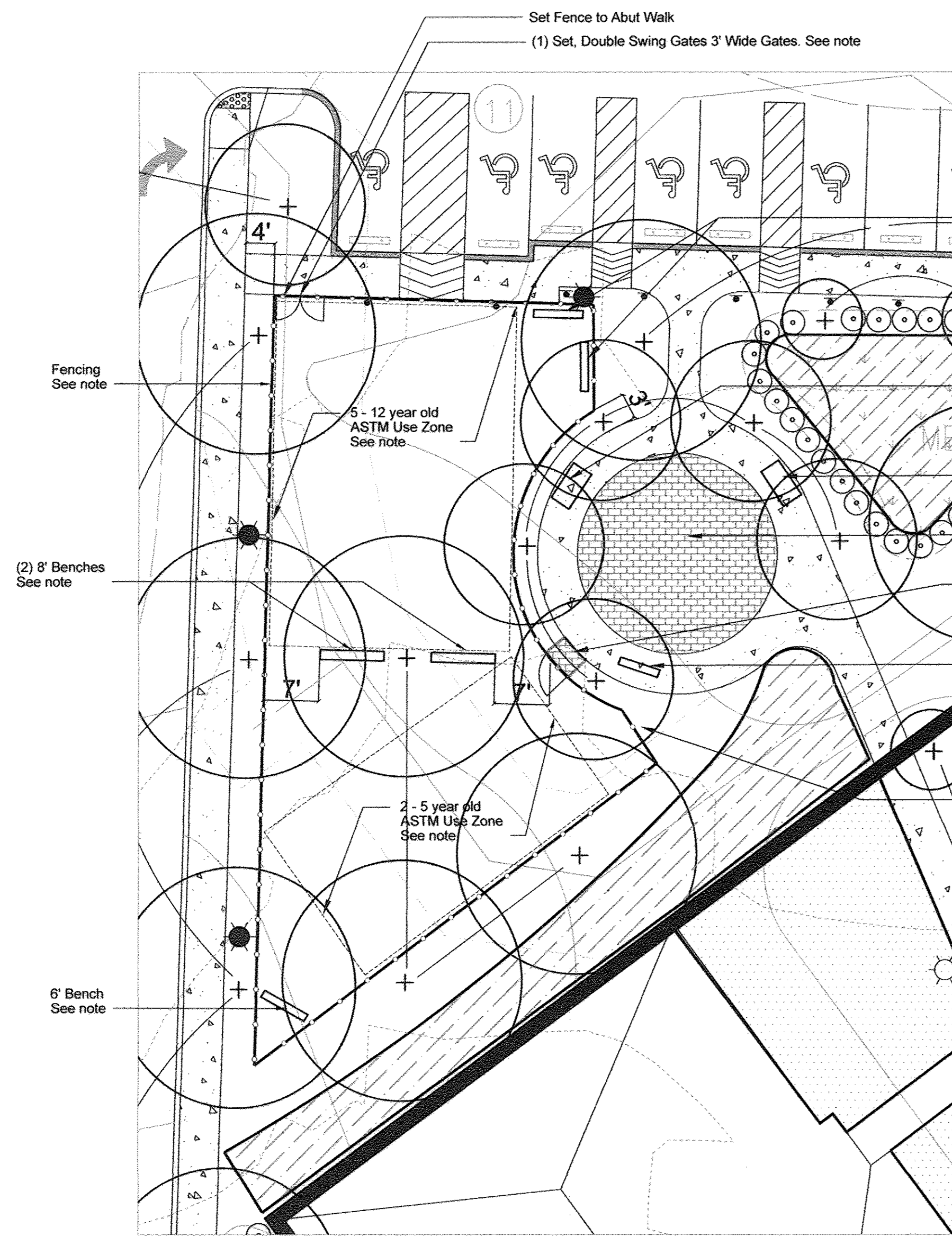
RECEIVED (Stamp)

KEY PLAN N.T.S.

43 OF 50

PLAYGROUND AREA LAYOUT NOTES

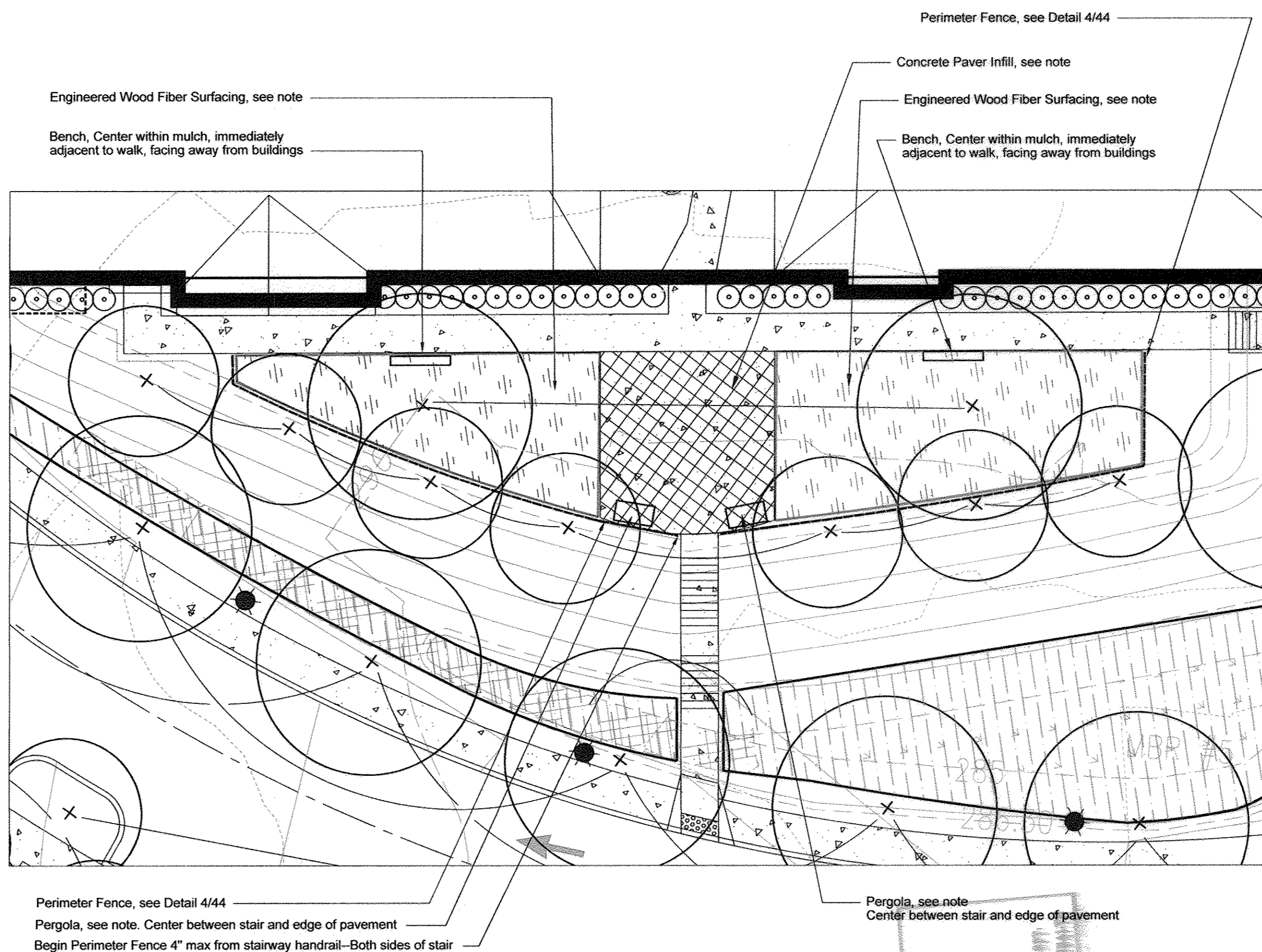
- Surfacing: Entire area within fencing to receive ADA Accessible Safety Surfacing
 - GTIMPAX Engineered Wood Fibers or approved equal
 - 8" Compacted Depth (8' maximum fall height)
 - Single Layer Geotextile Fabric
 - Contractor responsible for setting grades to ensure that finished surface of Playground is flush with finished surfaces of adjacent walks.
- Fencing: By Ameristar Fence or approved equal: Montage Line, Majestic Style, Aluminum, Black, 4' Height. Swing gates equipped with swing hinges and gravity latches. Swing gates: Montage ATF, Majestic Style, 3-1/2" width. Provide Shop Drawing of Layout to verify layout and gate locations. (www.ameristarfence.com)
- Play Equipment: Design and Specifications by West Recreation, Inc., Contact: Gini Baylor, CPSI, t. 410-997-0630. Color Scheme: Delightful. Design under development and will meet applicable ASTM standards. 5-12 Year Old ASTM Use Zone Budget: \$20,000. 2-5 Year ASTM Use Zone Budget: \$6000.
- Benches by Gametime, Straight Leg Park Bench, Douglas Fir. In ground mount. 3 total Benches @ 6' (#P4066). 2 total Benches @ 8' (#4067).
- Bike Rack: By Gametime, Loop Bike Rack, Surface Mount 7 Bikes, Blue (#F7702).
- Concrete Paver Connector: Hanover Concrete Pavers or approved equal: Running bond; steel edging; compacted subbase/gravel/sand section to be compatible with adjacent concrete walk.
- Concrete Paver Infill: Hanover Concrete Pavers or approved equal: Running bond; compacted subbase/gravel/sand section to be compatible with adjacent concrete walk.
- Pergola Seating: By Forever Redwood, Annapolis Garden Arbor, WITH BENCH, 15-year warranty Redwood, Transparent Premium Sealant. Detailed Layout Plan denotes 2 Pergola Seating Structures. Contractor should take note that other drawings show additional Pergola structures: Community Planting Plan Central denotes 2 Pergola Seating Structures and Detailed Layout Plan - Patio Area denotes 2 Pergolas without benches. Pergolas should be secured to pavement by drilling, bolting, and caulking four (4) steel L-angles to the INTERIOR faces of the pergolas so that 1) the attachments are not located too close to the edges of the pavement and 2) the attachments are relatively unseen and less likely vandalized by users. (www.foreverredwood.com)



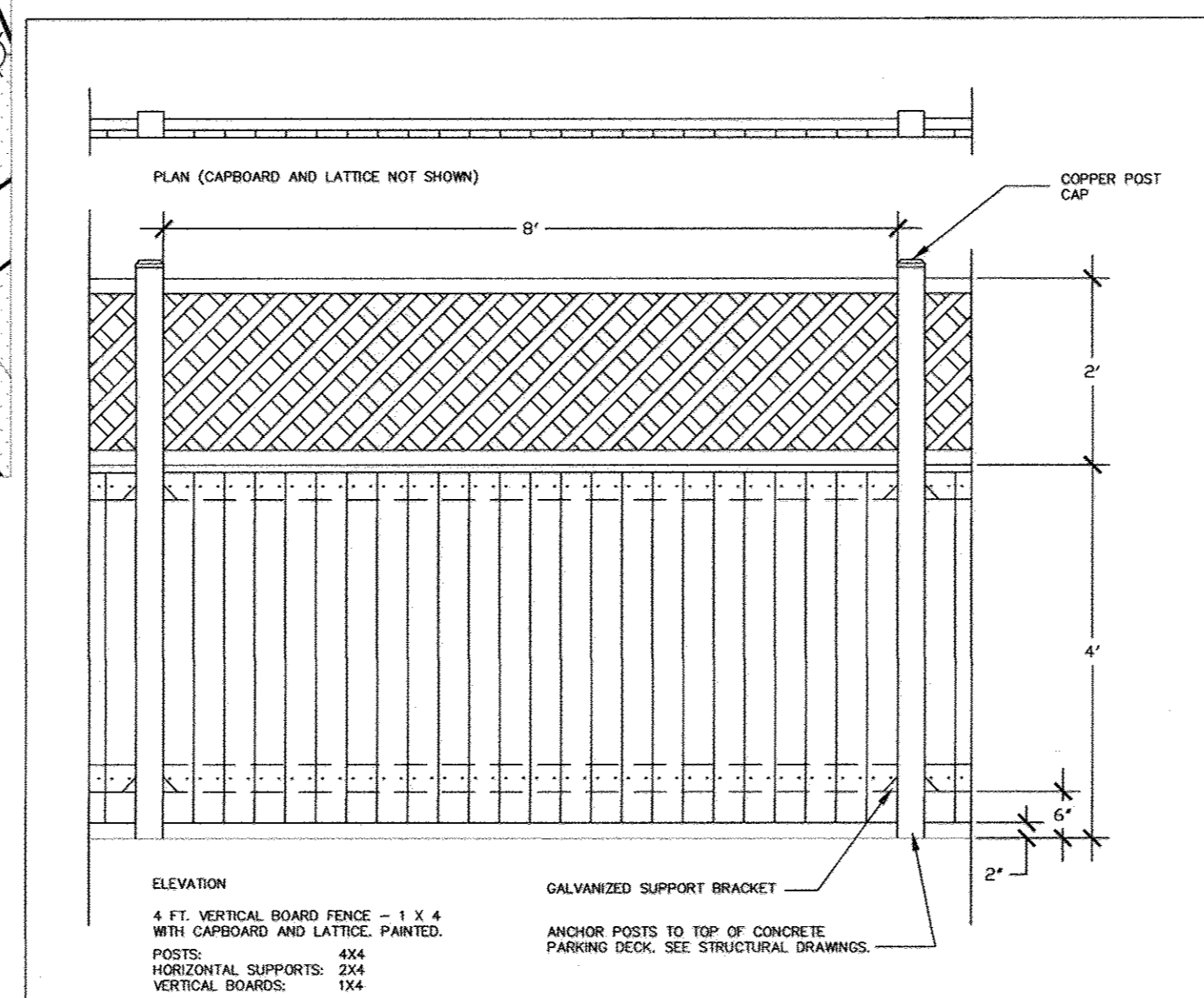
1 DETAILED LAYOUT PLAN - PLAYGROUND AREA
SCALE: 1" = 10'

PATIO AREA LAYOUT NOTES

- Concrete Paver Infill: Hanover Concrete Pavers or approved equal: Running bond; compacted subbase. 1-1/2" gravel, 1" sand section. Secure edges other than walk with steel edging.
- Entire area within walk and Fencing to receive ADA Accessible Safety Surfacing:
 - GTIMPAX Engineered Wood Fibers or approved equal
 - 4" Compacted Depth (4' maximum fall height)
 - Single Layer Geotextile Fabric
 - Contractor responsible for setting grades to ensure that finished surface of area is flush with finished surfaces of adjacent walks.
- Benches by Gametime, Straight Leg Park Bench, Douglas Fir. In ground mount. 2 total @ 8' (#4067).

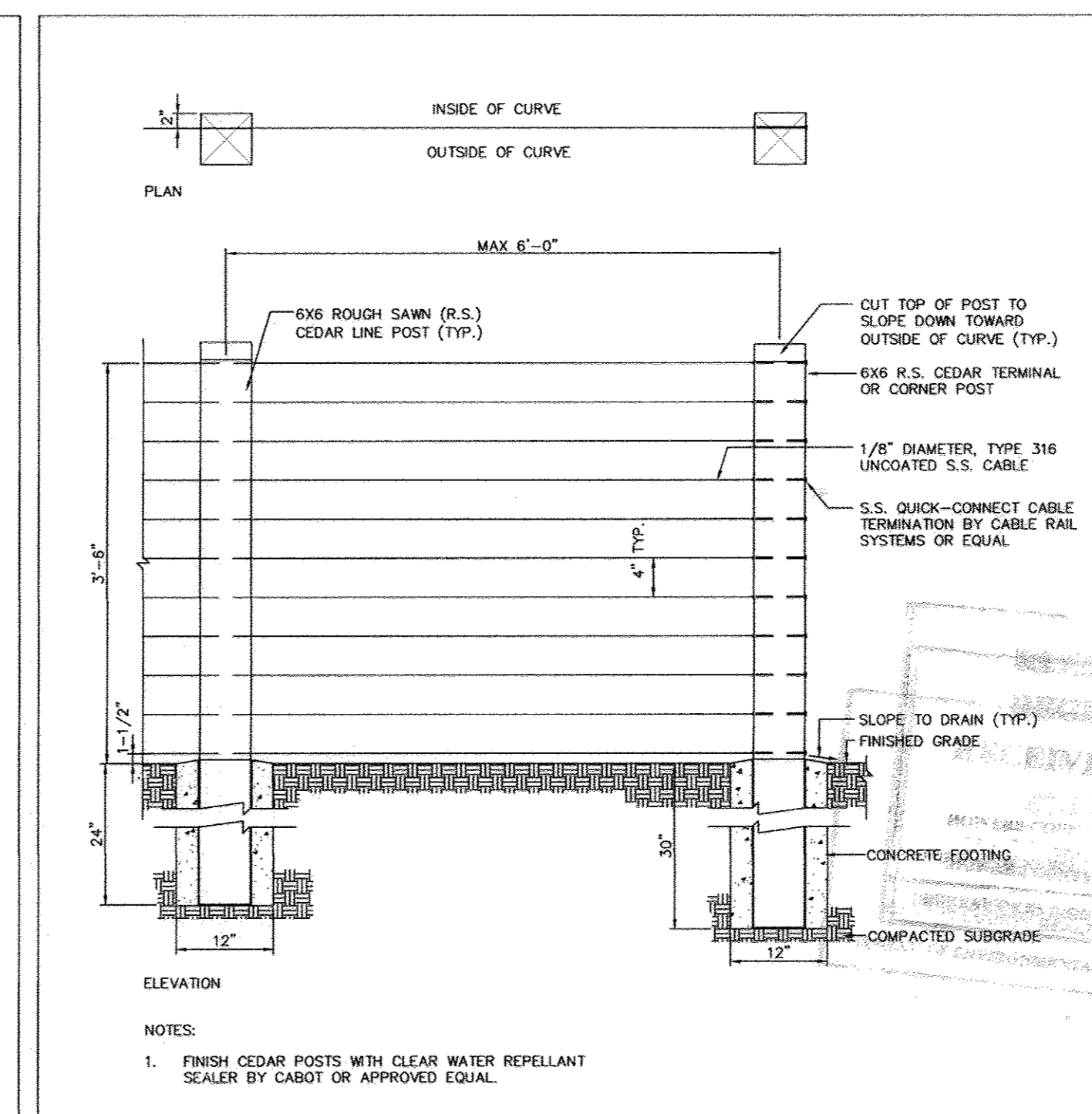


2 DETAILED LAYOUT PLAN - PATIO AREA
SCALE: 1" = 10'



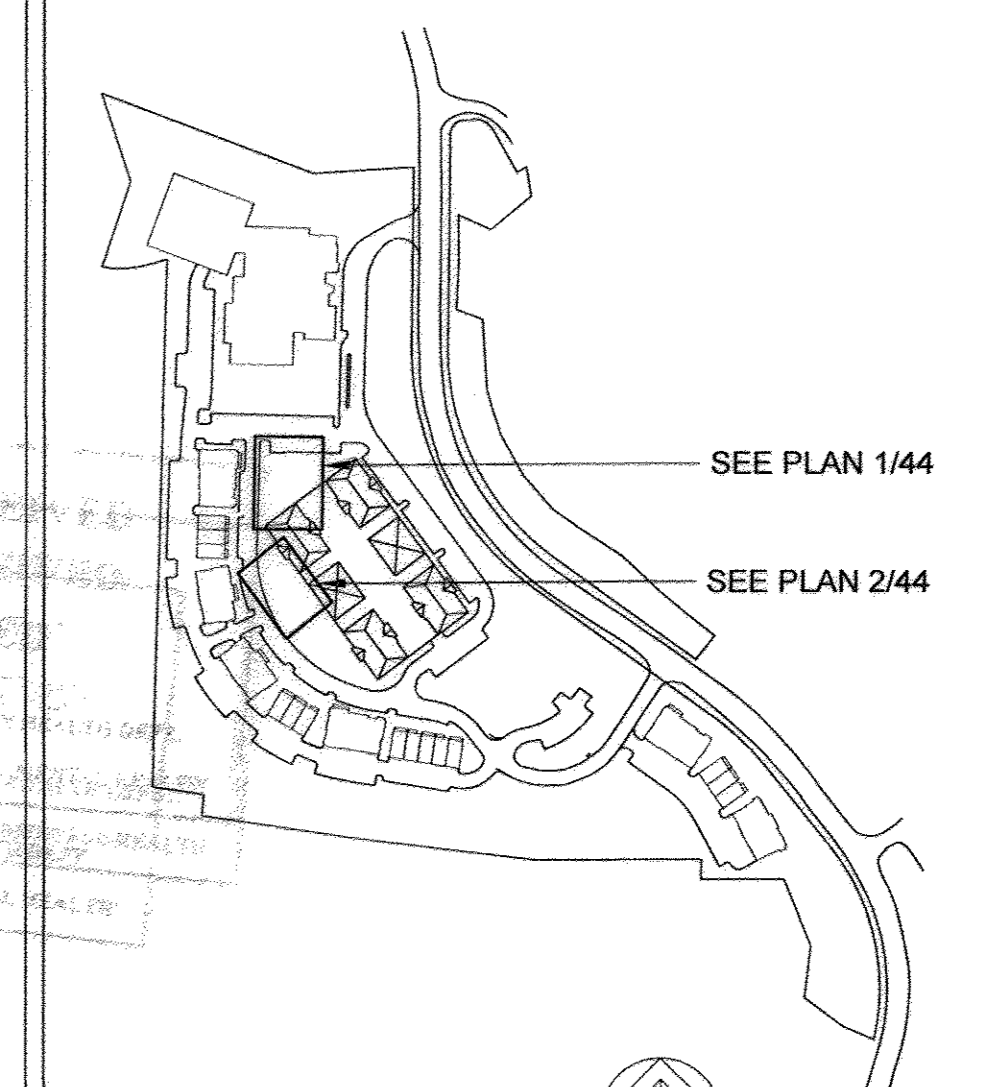
- Trellis/Screens between Podium buildings provided by Long Fence or approved equal.
- Trellis/Screens are composed of various lengths. Contractor to provide shop drawings verifying the following:
 - Front Elevation and Sectional Drawings indicating materials and construction methods, finishes, and material quality and sources
 - Length of each segment
 - Method for resolving modularity of fence design in the event of odd segment lengths
 - Paint Color
- Contractor to provide color sample(s) per Architect's instructions.
- All Trellis/Screens located at least 18" from face of building and without interference of or access to utility boxes/condensers, etc. If locational conflicts in the field arise, contact Architect for resolution.
- Trellis/Screens between each pair of buildings must be located to align with each other across the walk.
- Provide eye bolts and stainless steel cable to support vines per Plant Schedule, 4 vertical cables per 4' panel.

3 TRELLIS/SCREEN DETAIL
SCALE: N.T.S.



4 PATIO AREA FENCE DETAIL
SCALE: 1/2" = 1'-0"

4	REVISE SHEET NUMBER	01/05/17
No.	REVISION	DATE



DEVELOPER'S/BUILDER'S CERTIFICATE

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

DATE: 10/10/11

SIGNATURE OF DEVELOPER

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 10/20/11

CHIEF, DIVISION OF LAND DEVELOPMENT DATE: 10/27/11

DIRECTOR DATE: 10/27/11

HILLTOP REDEVELOPMENT
 3624 MOUNT IDA DRIVE,
 ELLICOTT CITY, MD.

POOLE DESIGN, LLC
 Landscape Architecture • Urban Design • Planning
 1414 KEY HIGHWAY, 2ND FLOOR, BALTIMORE, MD 21230 PHONE: 410 639 4300
 1-141-639-4300

MARKS, THOMAS ARCHITECTS
 1414 KEY HIGHWAY, 2ND FLOOR, BALTIMORE, MD 21230 PHONE: 410 639 4300

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 OFFICE OF ENVIRONMENTAL HEALTH

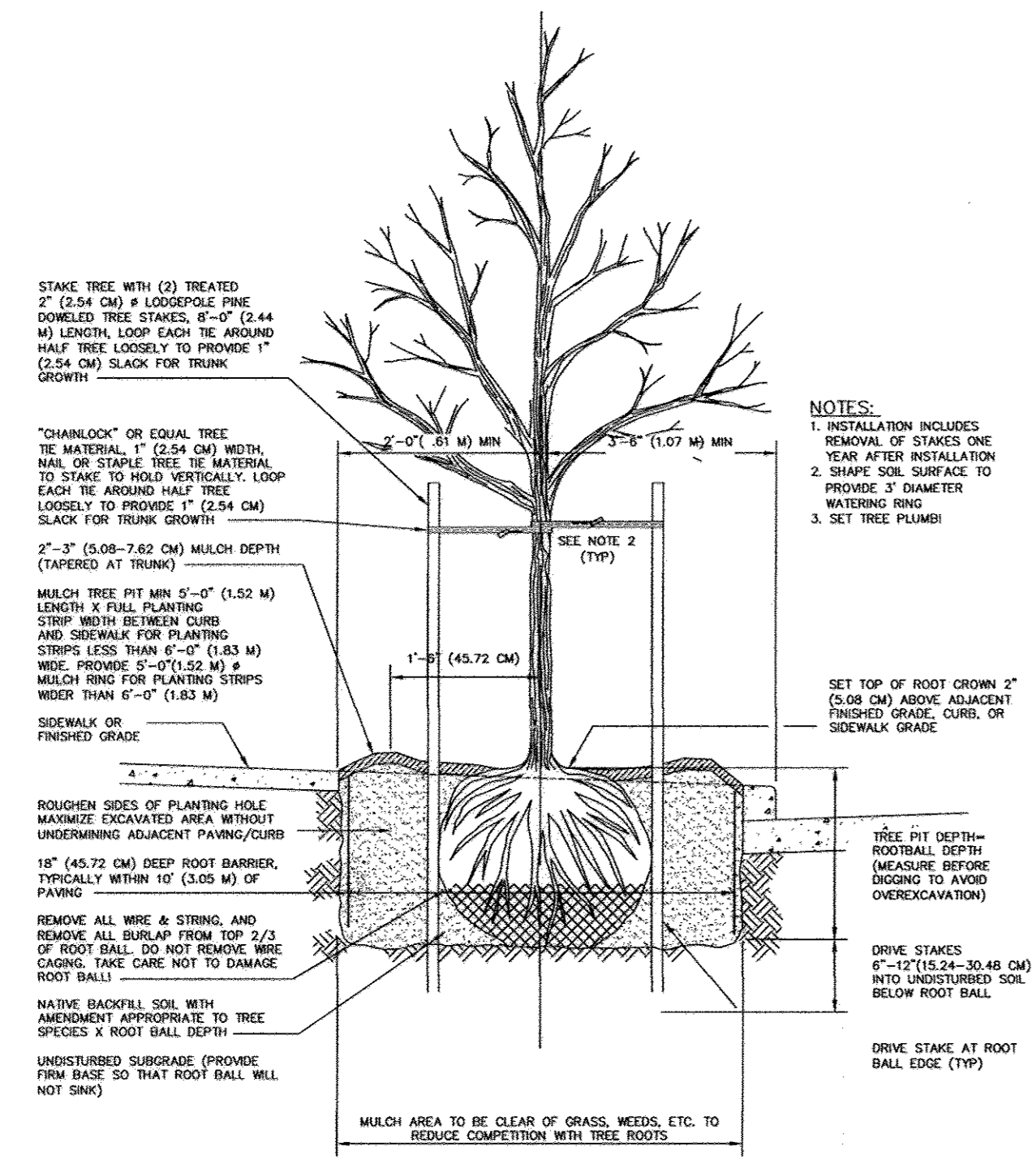
SHEET TITLE
 Detailed Landscape
 Layout Plans +
 Details

Project Number: 10228 Date: October 2011
 Drawn by: Checked by:

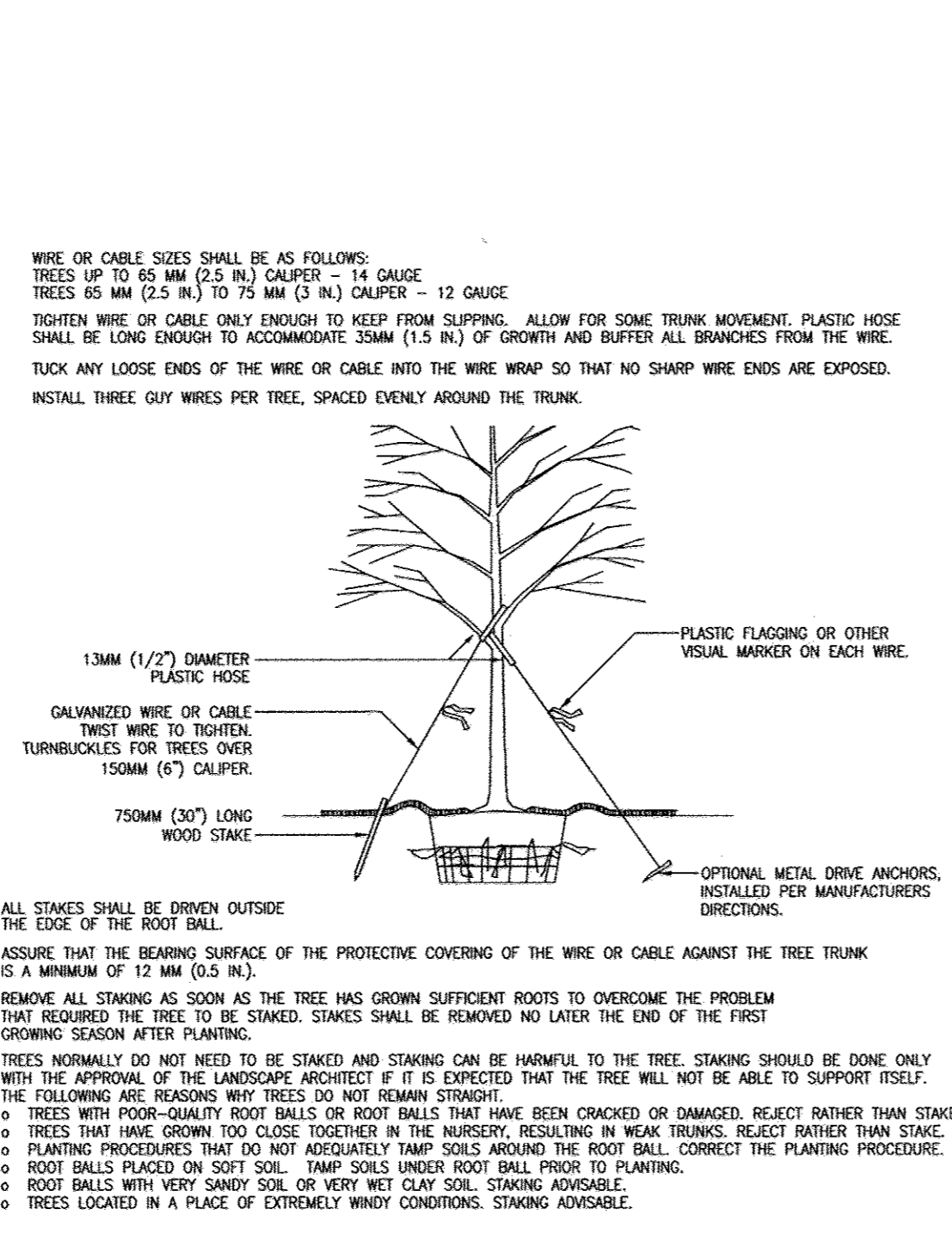
SITE DEVELOPMENT PLAN
 HILLTOP REDEVELOPMENT
 - PHASE I
 RESIDENTIAL
 TOWNHOUSES,
 APARTMENTS, AND
 RECREATION CENTER
 THE RECREATION CENTER
 IS A GREEN BUILDING
 L477F 716, L466F 448,
 L448F 46

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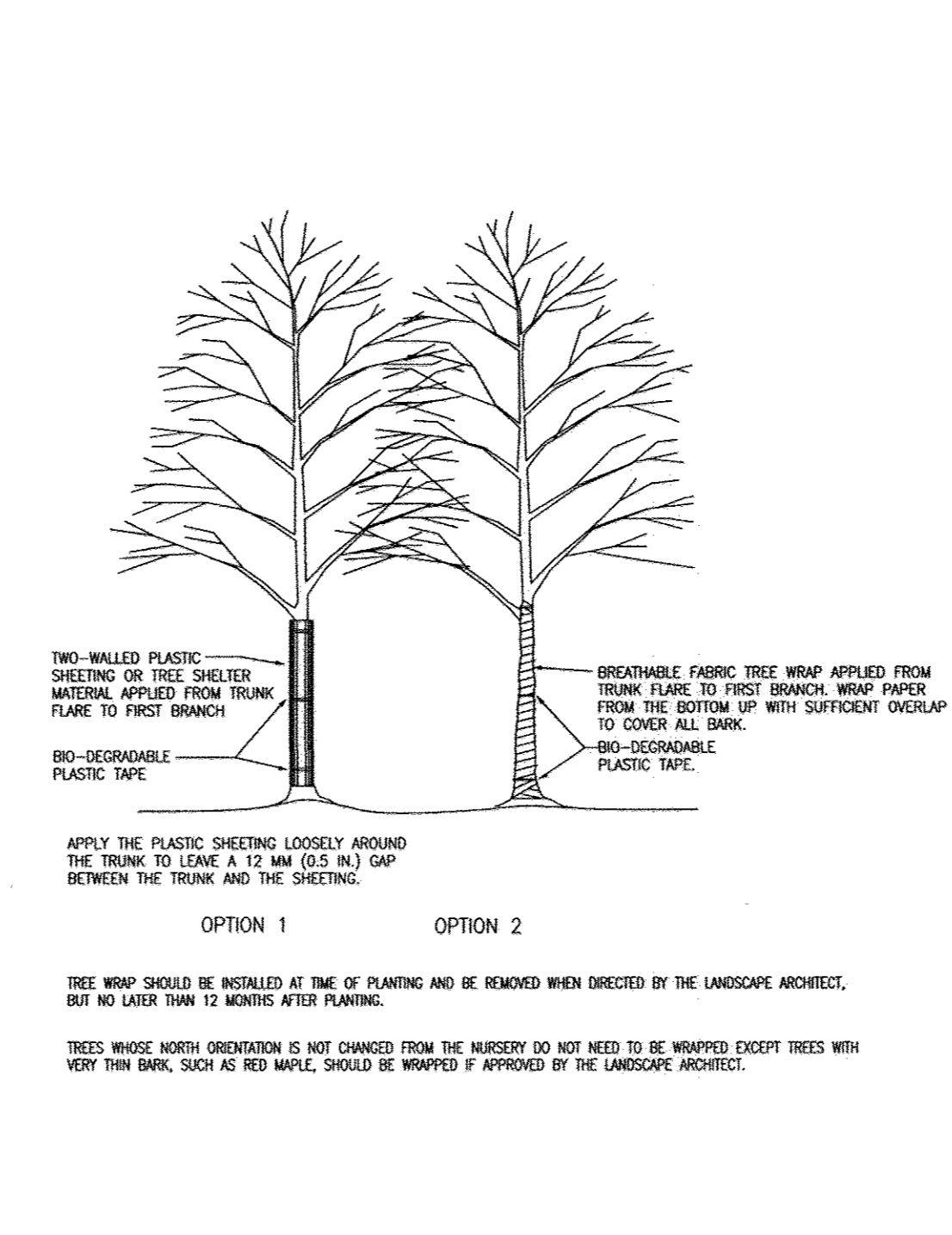
44 OF 50



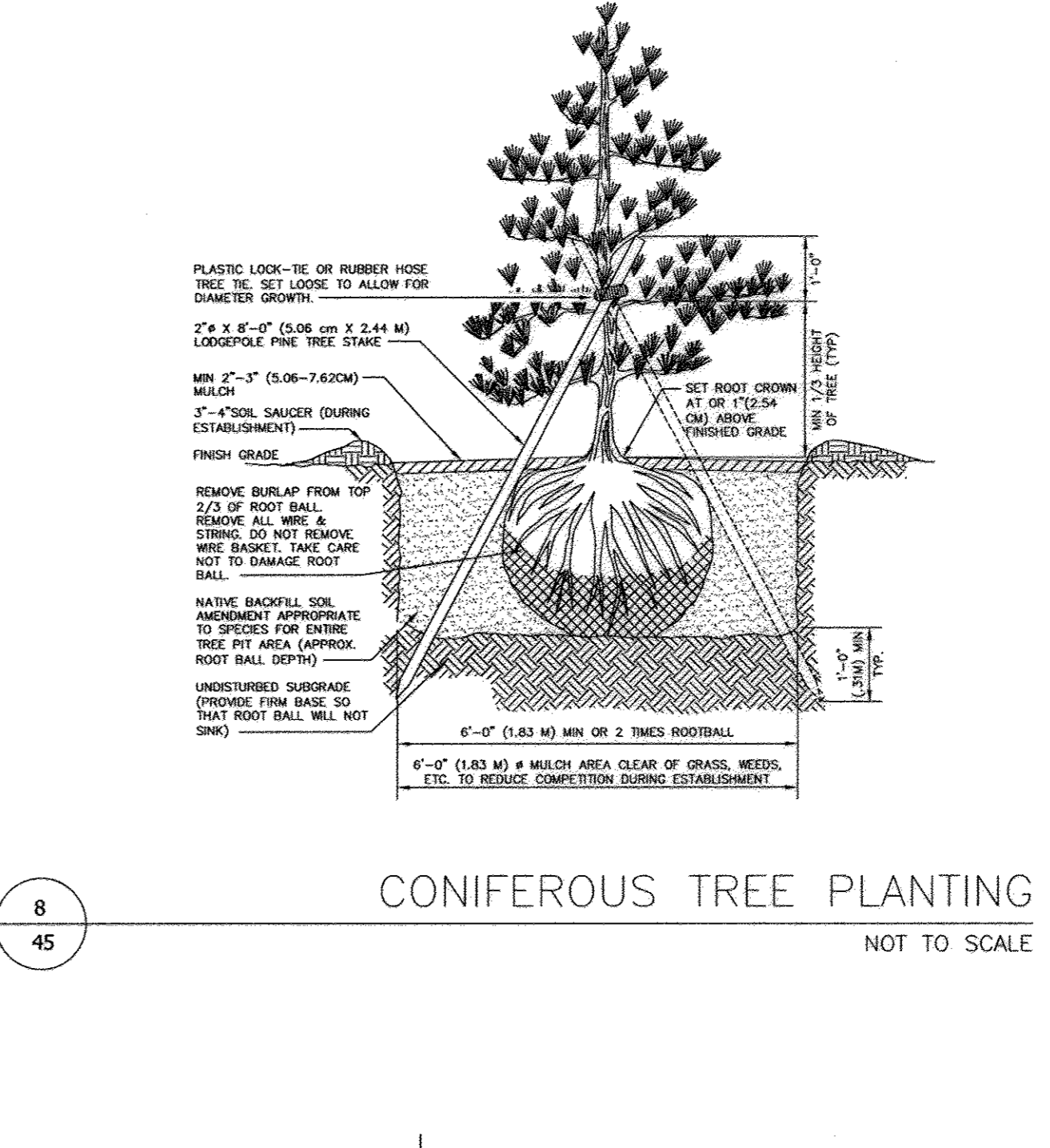
1 DECIDUOUS TREE PLANTING NOT TO SCALE



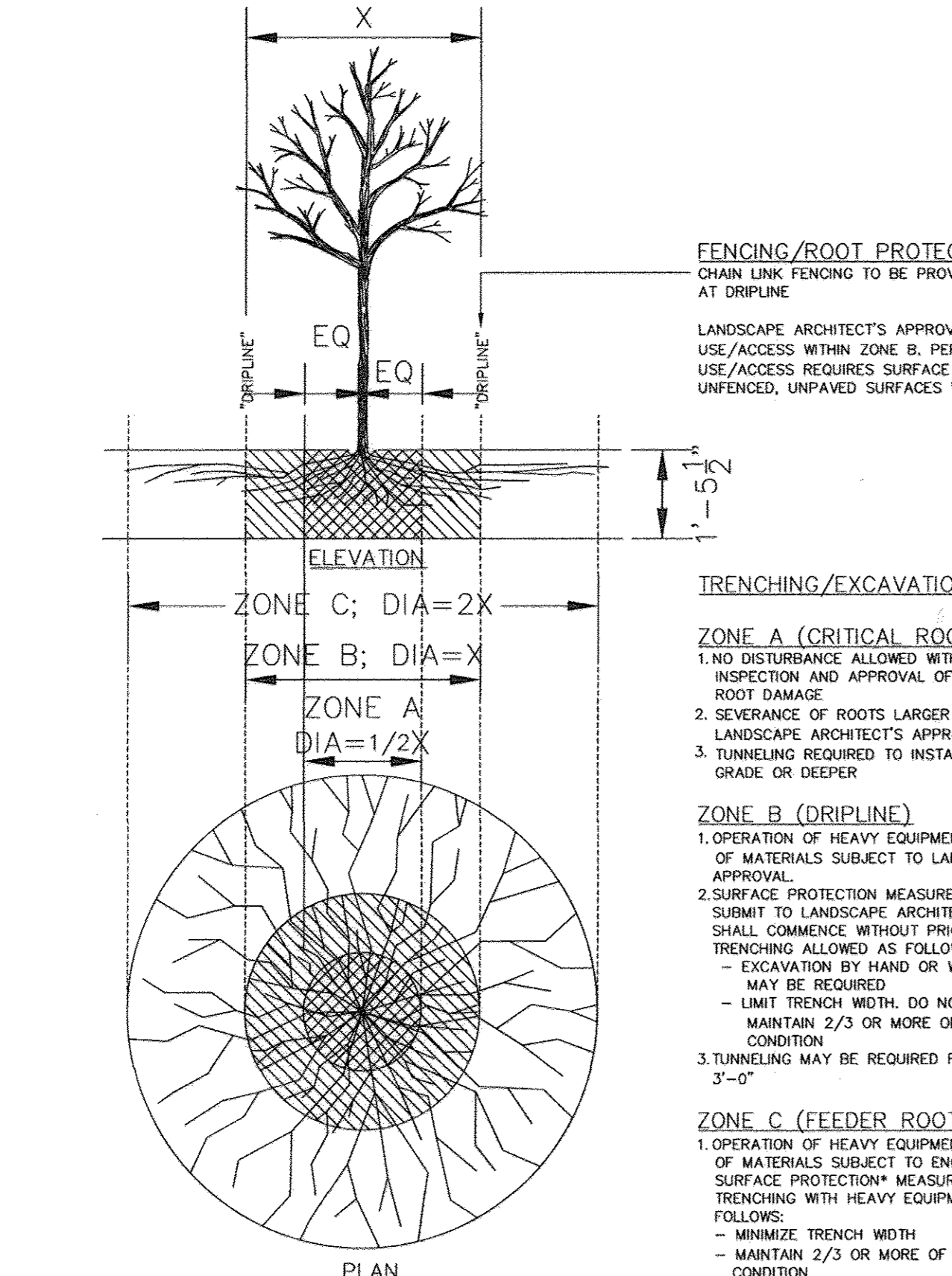
2 STAKING OF 3" CALIPER TREES NOT TO SCALE



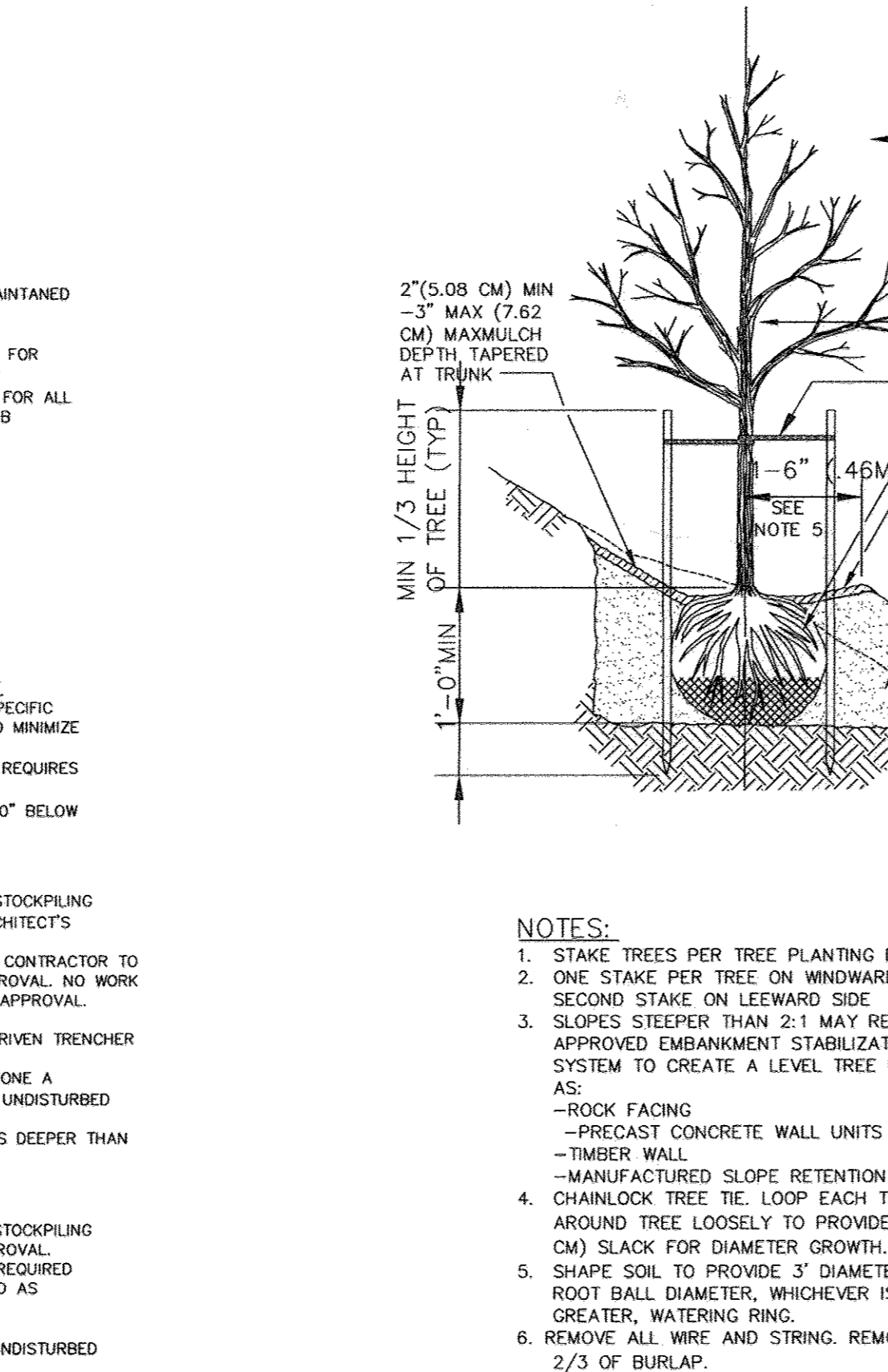
3 TREE TAPE NOT TO SCALE



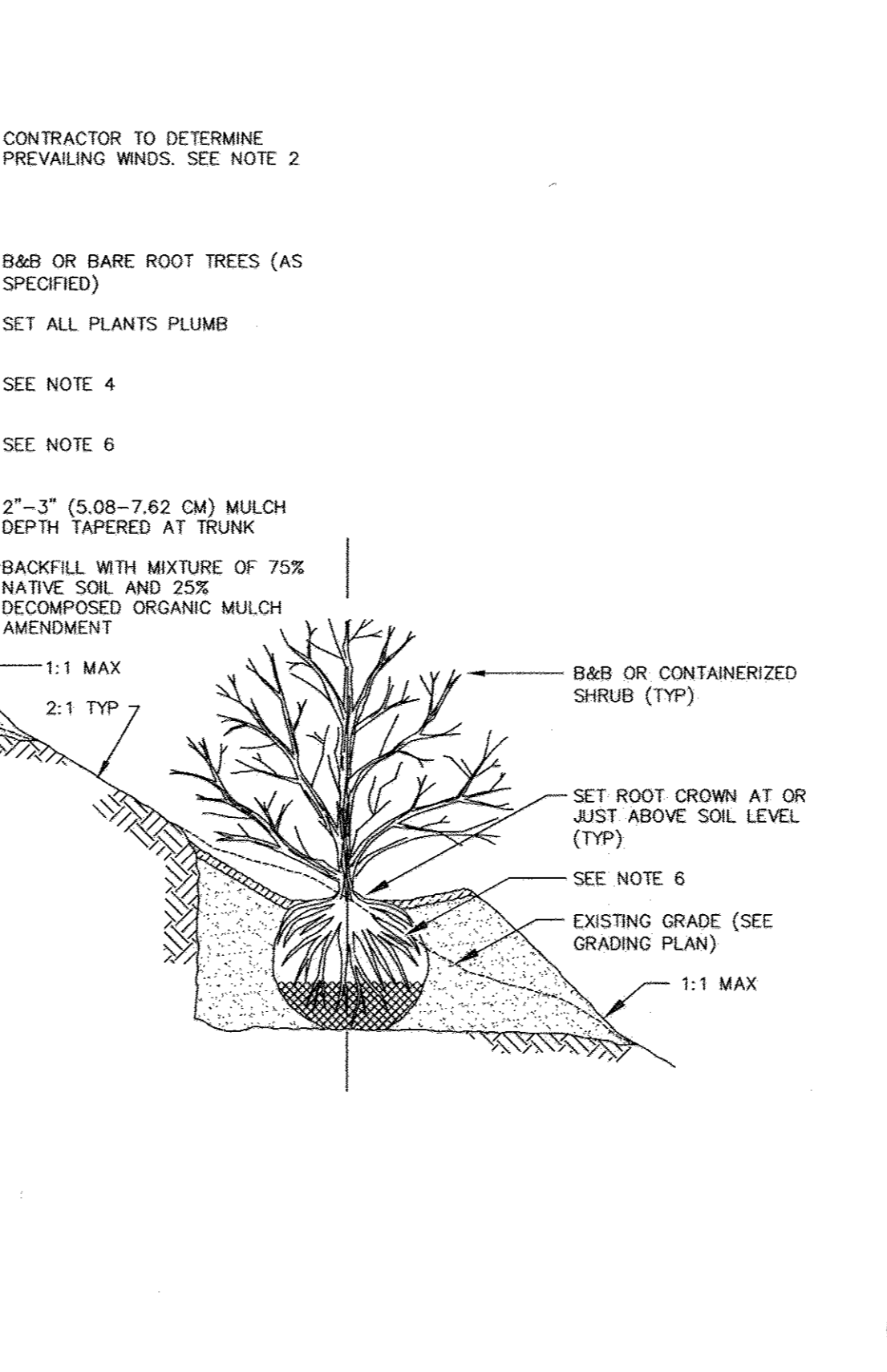
8 CONIFEROUS TREE PLANTING NOT TO SCALE



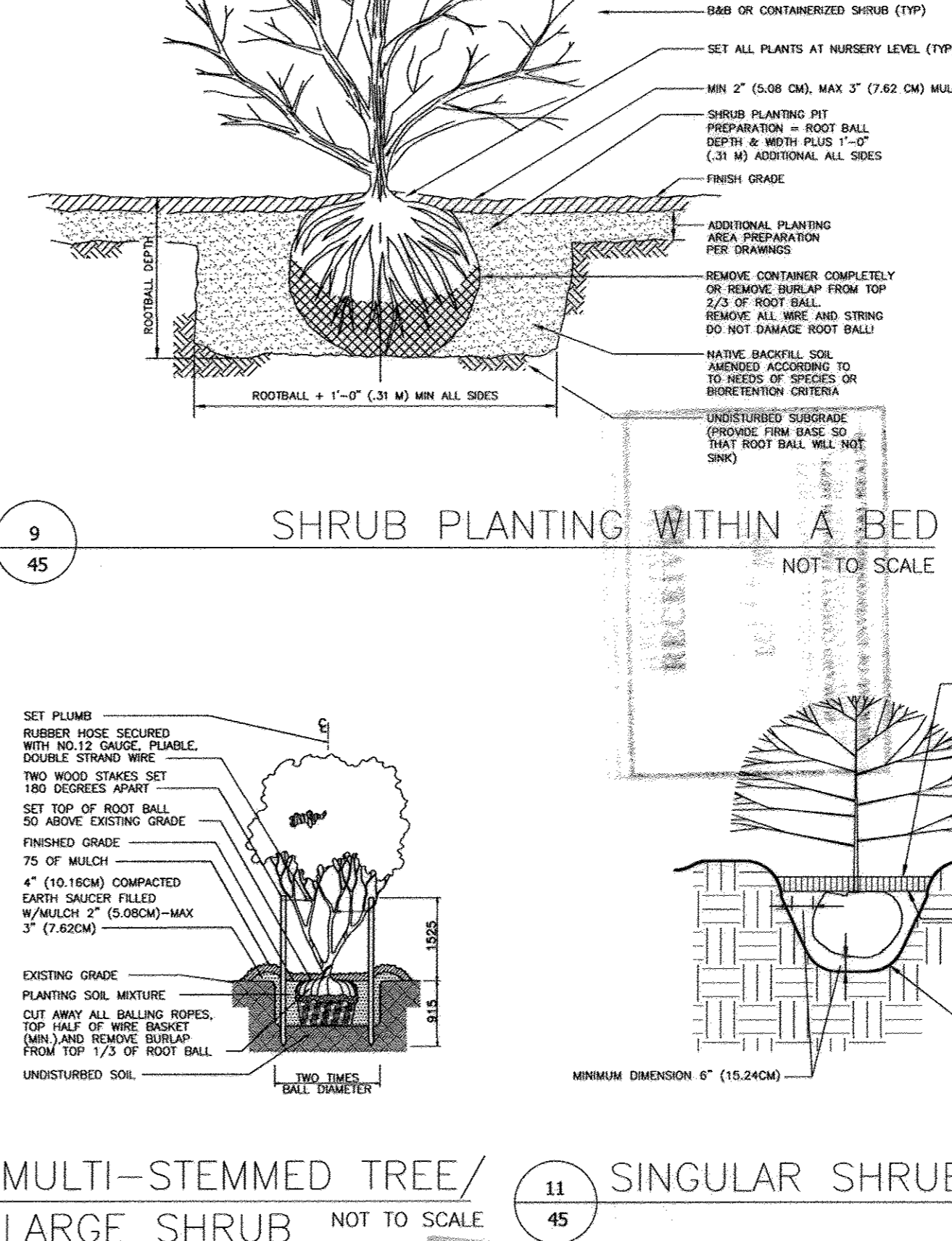
4 TREE PROTECTION DURING CONSTRUCTION NOT TO SCALE



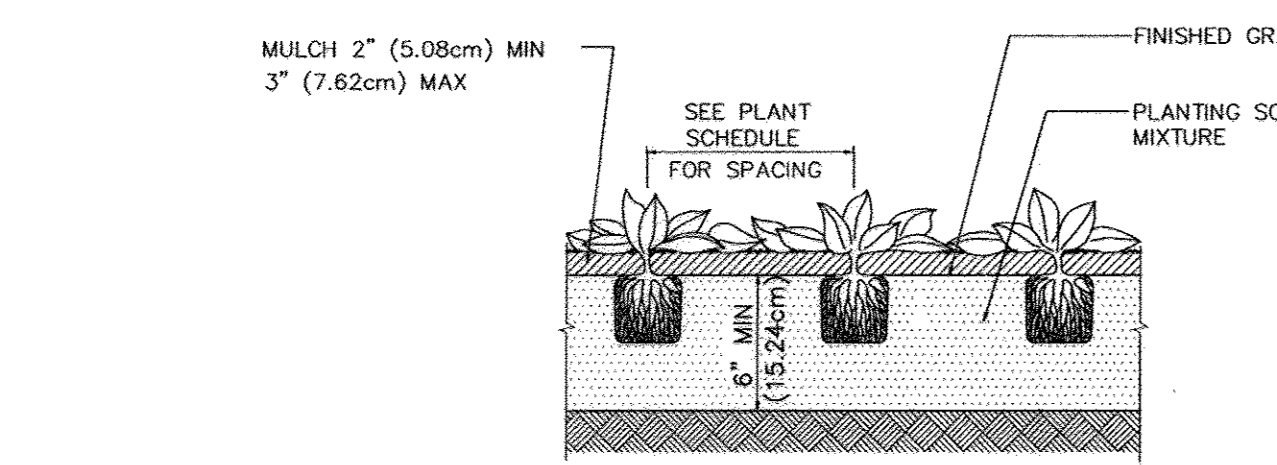
5 TREE & SHRUB PLANTING ON SLOPES NOT TO SCALE



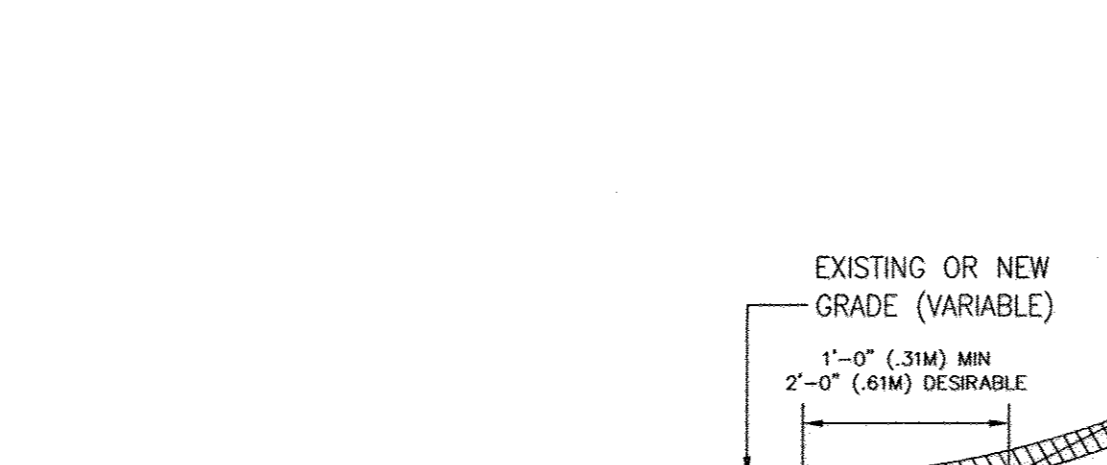
9 SHRUB PLANTING WITHIN A BED NOT TO SCALE



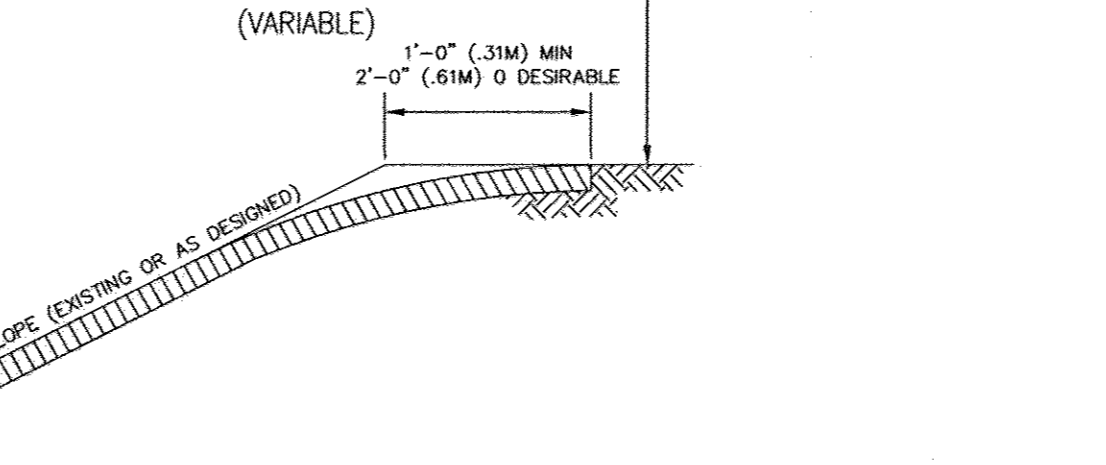
10 MULTI-STEMMED TREE / LARGE SHRUB NOT TO SCALE



6 GROUNDCOVER PLANTING NOT TO SCALE



7 SLOPE ROUNDING NOT TO SCALE



11 SINGULAR SHRUB PLANTING NOT TO SCALE

MARKS, THOMAS ARCHITECTS
1414 KEY HIGHWAY AND FLOOR BALTIMORE, MD 21220 PHONE: 410.539.8300

POOLE DESIGN, LLC
Landscape Architecture - Urban Design - Building Information Modeling
1010 W. BALTIMORE AVE. BALTIMORE, MD 21201

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HOWARD COUNTY HEALTH DEPT.
DESIGNER/ENVIRONMENTAL HEALTH

HILLTOP REDEVELOPMENT
3624 MOUNT IDA DRIVE, ELLICOTT CITY, MD.

SHEET TITLE
Planting Details

Project Number: 10238
Date: October 2011

SITE DEVELOPMENT PLAN
HILLTOP REDEVELOPMENT - PHASE I
RESIDENTIAL TOWNHOUSES, APARTMENTS, AND RECREATION CENTER
IS A GREEN BUILDING
1477E 716 L 456F 44A L 448F 46

DEVELOPER'S/BUILDER'S CERTIFICATE

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT AND ZONING DIVISION
CHIEF, DIVISION OF LAND DEVELOPMENT

DATE: 10/20/11
DATE: 10/27/11
DATE: 10/26/11

REVISION

NO.	REVISION	DATE
4	REVISE SHEET NUMBER	01/05/11

45 OF 50

PLANT SCHEDULE

RECREATION CENTER SITE									HOWARD COUNTY LANDSCAPE REQUIREMENTS	Value
Quantity	Notation	Botanic Name	Common Name	Size/ Amount	Condition	Form	Spacing	Notes	Requirement Notation	
5	Pin Oak	<i>Quercus palustris</i>	Pin Oak	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(CP)	5
1	Red Maple	<i>Acer rubrum 'October Glory' or approved equal</i>	October Glory Red Maple	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles. Straight trunk.	As shown		(CP)	1
2	Pin Oak	<i>Quercus palustris</i>	Pin Oak	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown			
12	Fastigate Pin Oak	<i>Quercus palustris 'Green Pillar' or equal</i>	Fastigate Pin Oak	8' height min	B&B/Cont.	Full, vigorous, straight trunk, columnar form, no horizontal suckers.	As shown	MUST be fastigate.		
3	Tilia	<i>Tilia americana 'Redmond'</i>	'Redmond' American Linden	Min. 2-1/2" caliper	B&B/Cont.	Full, vigorous, evenly branching Straight trunk.	As shown		(Road A ST)	3
35	Manhattan	<i>Euonymus kiautschovicus 'Manhattan'</i>	Manhattan Euonymus	5 gal min	Cont.	Vigorous, evenly branching, fully developed root system	As shown			
MBR #1—Include the species immediately below										
56		<i>Cornus sericea</i>	Red Osier Dogwood	1 gal min	Cont.			Field staked @ direction of Landscape Architect		
40		<i>Ilex verticillata</i>	Winterberry	1 gal min	Cont.			Approximately 5' o.c.		Ensure Male and Female mix support fertilization
MBR #4—Include the 3 species immediately below										
52		<i>Cornus sericea</i>	Red Osier Dogwood	1 gal min	Cont.			Field staked @ direction of Landscape Architect		
38		<i>Ilex verticillata</i>	Winterberry	1 gal min	Cont.			Approximately 5' o.c.		Ensure Male and Female mix support fertilization
37		<i>Aronia arbutifolia</i>	Red Chokeberry	1 gal min	Cont.			Approximately 5' o.c.		Approximately 5' o.c.
9	Arrowwood	<i>Viburnum dentatum 'Blue Muffin' or 'Rastam'</i>	Dwarf Arrowwood Viburnum	5 gal min	Cont.	Full, vigorous.	As shown			MUST be dwarf.
18	Abelia	<i>Abelia grandiflora 'Little Richard' or equal</i>	Dwarf Abelia	5 gal min	Cont.	Vigorous, evenly branching, fully developed root system	As shown			Approximately 3' o.c.
25	Rugosa	<i>Rosa rugosa</i>	Salt spray Rose	5 gal min	Cont.	Vigorous, evenly branching, fully developed root system	As shown			
44	Rec Groundcover 1	<i>Liriope spicata</i>	Liriope/Monkey Grass	1 gallon min	Cont.	Healthy, vigorous	12" o.c., triangular spacing			
90	Rec Groundcover 2	<i>Vinca minor</i>	Littleleaf Vinca/Periwinkle	1 gallon min	Cont.	Healthy, vigorous, 3 runners, each 12" long	24" o.c., triangular spacing			
Rock Wall Planting										
6	Ilex	<i>Ilex opaca</i>	American holly	Min. 6' height	B&B/Cont.	Full, vigorous, evenly branching. Only columnar form accepted!	As shown			
5	Nellie	<i>Ilex 'Nellie R. Stevens'</i>	Nellie R. Stevens holly	Min. 6' height	B&B/Cont.	Full, vigorous, evenly branching. Only columnar form accepted!	As shown			
9	Birch	<i>Betula nigra 'Dura Heat'</i>	Heat Resistant River Birch	12' height min	B&B	Full, vigorous. 3-4 stems	As shown			MUST be Dura Heat variety or approved, heat-resistant equivalent
Green Roof										
Green Roof										
				Intensive Type (8" of soil)	Green Grid System	See Architectural Drawings for details	Per manufacturer			Sedum mix per manufacturer's recommendation
Perimeter 3										
Quantity	Notation	Botanic Name	Common Name	Size/ Amount	Condition	Form	Spacing	Notes		
8	Nyssa	<i>Nyssa sylvatica</i>	Tupelo/Black Gum	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branching angles.	As shown		(P3S)	8
2	Sweetgum	<i>Liquidambar styraciflua</i>	Sweetgum	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles. Straight trunk.	As shown		(P3S)	2
3	Sweetbay	<i>Magnolia virginiana</i>	Sweetbay Magnolia	1-1/2" cal min	B&B/Cont.	Multi-stemmed, 3 minimum. Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(P3O)	2
3	Redbud	<i>Cercis canadensis</i>	Eastern Redbud	1-1/2" cal min	B&B/Cont.	Single stem. Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(P3O)	2
2	Amelanchier	<i>Amelanchier canadensis</i>	Shadbush/ Serviceberry	1-1/2" cal min	B&B/Cont.	Multi-stemmed, 3 minimum. Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(P3O)	1
									Total Perimeter Trees	14
6	Ilex	<i>Ilex opaca</i>	American holly	Min. 12' height	B&B/Cont.	Full, vigorous, evenly branching. Only columnar form accepted!	As shown		(P3E)	6
3	Nellie	<i>Ilex 'Nellie R. Stevens'</i>	Nellie R. Stevens holly	Min. 12' height	B&B/Cont.	Full, vigorous, evenly branching. Only columnar form accepted!	As shown		(P3E)	3
9	Leatherleaf	<i>Vincetoxicum virginicum</i>	Eastern Red Cedar	Min. 12' height	B&B/Cont.	Full, vigorous, evenly branching. Only columnar form accepted!	As shown		(P3E)	9
9	Savannah	<i>Ilex x attenuata 'Savannah'</i>	Savannah holly	Min. 12' height	B&B/Cont.	Full, vigorous, evenly branching. Only columnar form accepted!	As shown		(P3E)	9
									Total Perimeter Evergreens	27
COMMUNITY										
Community Planting North										
Quantity	Notation	Botanic Name	Common Name	Size/ Amount	Condition	Form	Spacing	Notes		
Street Trees										
5	Nyssa	<i>Nyssa sylvatica</i>	Tupelo/Black Gum	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branching angles.	As shown		(Road A ST)	5
5	Sweetgum	<i>Liquidambar styraciflua 'Rotundiloba'</i>	Seedless Sweetgum	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown	Contractor must provide verification of seedless variety	(Road A ST)	5
Internal Planting										
2	Fringetree	<i>Chionanthus virginicus</i>	Fringetree	2-1/2" cal. min	B&B/Cont.	Full, vigorous, even form.				
North Entry Groundcover—Mix of species immediately below										
129		<i>Vinca minor</i>	Littleleaf Vinca/Periwinkle	1 gallon min	Cont.	Healthy, vigorous, 3 runners, each 12" long	18" o.c., triangular spacing			
60		<i>Narcissus</i>	Narcissus/Buttercup	Bulb	Bulb	Yellow only	Interplanted among Vinca, evenly spaced, triangular spacing			
60		<i>Hyacinth spp.</i>	Hyacinth	Bulb	Bulb	White only	Interplanted among Vinca, evenly spaced, triangular spacing			
MBR #2 Planting										
98		<i>Copalanthus occidentalis</i>	Buttonbush	5 gallon min	Cont.	Full, vigorous, evenly branching.	Approximately 6' o.c.			
52		<i>Lindera benzoin</i>	Spicebush	5 gallon min	Cont.	Full, vigorous, evenly branching.	Approximately 6' o.c.			

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OCT 17 2011
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BUREAU OF ENVIRONMENTAL HEALTH

KEY TO HC REQUIREMENT DESIGNATIONS FOR TREE + EVERGREEN CATEGORIES

(RP)	RESIDENTIAL PARKING
(CP)	COMMERCIAL PARKING
(IS)	INTERNAL SHADE TREE
(IO)	INTERNAL ORNAMENTAL TREE
(IE)	INTERNAL EVERGREEN
(ISH)	INTERNAL SHRUB
(P1BS)	PERIMETER 1B SHADE TREE
(P1BO)	PERIMETER 1B ORNAMENTAL TREE
(P1BE)	PERIMETER 1B EVERGREEN
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(P3O)	PERIMETER 3 ORNAMENTAL TREE
(P3E)	PERIMETER 3 EVERGREEN
(P4S)	PERIMETER 4 SHADE TREE
(P4O)	PERIMETER 4 ORNAMENTAL TREE
(P4E)	PERIMETER 4 EVERGREEN
(ROAD A ST)	MILLTOWNE DRIVE STREET TREE
(ROAD B ST)	BURGESSMILL WAY STREET TREE
(ELLCOTT MILLS ST)	ELLCOTT MILLS STREET TREE

DEVELOPER'S/BUILDER'S CERTIFICATE

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

SIGNATURE OF DEVELOPER DATE 10/10/11

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 10/20/11

CHIEF, DIVISION OF LAND DEVELOPMENT DATE 10/27/11

DIRECTOR DATE 10/27/11

1414 KEY HIGHWAY, 2ND FLOOR, BALTIMORE, MD 21225 PHONE: 410 539-4800

MARKS, THOMAS ARCHITECTS

CERTIFIED
STATE OF MARYLAND
PROFESSIONAL LANDSCAPE ARCHITECT
10/10/2011

POOLE DESIGN, LLC
4000 Rockville Lane
Rockville, Maryland 20852
410-883-3707

HILLTOP REDEVELOPMENT

3624 MOUNT IDA DRIVE,
ELLCOTT CITY, MD.

SHEET TITLE
Plant Schedule
Part 1

Project Number: 10238 Date: October 2011
Drawn by: Checked by:

SITE DEVELOPMENT PLAN
HILLTOP REDEVELOPMENT
- PHASE I
RESIDENTIAL TOWNHOUSES,
APARTMENTS, AND
RECREATION CENTER
IS A GREEN BUILDING
1-477F-718, L-460F-44B,
L-460F-46

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46 OF 50

4	REVISE SHEET NUMBER	01/05/17
1	RED LINES PER AS-BUILT MODIFICATIONS	03/01/13
NO.	REVISION	DATE

PLANT SCHEDULE

Community Planting Central										
Quantity	Notation	Botanic Name	Common Name	Size/Amount	Condition	Form	Spacing	Notes	Requirement Notation	Value
Street Trees										
8	Red Maple	<i>Acer rubrum</i> 'October Glory' or approved equal	October Glory Red Maple	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(Road B ST)	8
7	London Plane	<i>Platanus x acerifolia</i>	London Plane	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(Road B ST)	7
4	Crape	<i>Lagerstroemia indica</i>	Red Crape Myrtle	8' height min	B&B/Cont.	Full, vigorous, multi-stem (4 stems minimum), evenly branching from base.	As shown		(Road B ST)	2
2	Willow Oak	<i>Quercus phellos</i>	Willow Oak	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(Ellicott Mills ST)	2
2	Red Oak	<i>Quercus rubra</i>	Northern Red Oak	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branching angles.	As shown		(Ellicott Mills ST)	2
3	Crape	<i>Lagerstroemia indica</i>	Red Crape Myrtle	8' height min	B&B/Cont.	Full, vigorous, multi-stem (4 stems minimum), evenly branching from base.	As shown		(Road A ST)	2
1	Honey Locust	<i>Gleditsia triacanthos</i> 'Thornless'	Thornless Honey Locust	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(Road A ST)	1
5	Nyssa	<i>Nyssa sylvatica</i>	Tupelo/Black Gum	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branching angles.	As shown		(Road A ST)	5
4	Sweetgum	<i>Liquidambar styraciflua</i>	Sweetgum	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(Road A ST)	4
1	London Plane	<i>Platanus x acerifolia</i>	London Plane	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(Road A ST)	1
Parking Planting										
9	Linden	<i>Tilia cordata</i> 'Greenspire'	Greenspire Littleleaf Linden	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(RF)	9
2	Red Oak	<i>Quercus rubra</i>	Northern Red Oak	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branching angles.	As shown		(RF)	2
6	Chestnut	<i>Aesculus hippocastanum</i> 'Baumann'	Baumann Horsechestnut	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching.	As shown		(RF)	6
									Parking Planting Total- Shade Trees	17
Internal Planting										
2	Honey Locust	<i>Gleditsia triacanthos</i> 'Thornless'	Thornless Honey Locust	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(IS)	2
1	Sweetgum	<i>Liquidambar styraciflua</i>	Sweetgum	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(IS)	1
6	Linden	<i>Tilia cordata</i> 'Greenspire'	Greenspire Littleleaf Linden	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(IS)	6
2	London Plane	<i>Platanus x acerifolia</i>	London Plane	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(IS)	2
2	Red Oak	<i>Quercus rubra</i>	Northern Red Oak	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branching angles.	As shown		(IS)	2
									Community Planting - Central, Subtotal Shade Trees	15
12	Ilex Potted	<i>Ilex opaca</i>	American holly	Min. 6' height	B&B/Cont.	Full, vigorous, evenly branching.	As shown	Planted in pots. See note. Root ball MUST fit into 36" x 36" pot.	(IE)	7
13	Ilex	<i>Ilex opaca</i>	American holly	Min. 6' height	B&B/Cont.	Full, vigorous, evenly branching.	As shown		(IO)	3
5	Syrax	<i>Syrax japonicus</i>	Japanese Snowbell	1-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(IO)	4
8	Crape	<i>Lagerstroemia indica</i>	Red Crape Myrtle	Min. 8' height	B&B/Cont.	Full, vigorous, multi-stem (4 stems minimum), evenly branching from base.	As shown		(IO)	6
11	Redbud	<i>Cercis canadensis</i>	Eastern Redbud	Min. 8' height	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(IO)	9
17	Amelanchier	<i>Amelanchier x grandiflora</i> 'Autumn Brilliance'	Amelanchier/ Shadbush	Min. 8' height	B&B/Cont.	Full, vigorous, multi-stem (4 stems minimum), evenly branching from base.	As shown		(IO)	2
4	Sweetbay	<i>Magnolia virginiana</i>	Sweetbay Magnolia	Min. 8' height	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(IO)	2
									Community Planting - Central, Subtotal Ornamental Trees	29
71	Manhattan	<i>Euonymus kiautschovicus</i> 'Manhattan'	Manhattan Euonymus	5 gal min	Cont.	Vigorous, evenly branching, fully developed root system	As shown		(ISH)	7
107	Azalea	<i>Azalea</i> 'Delaware Valley White'	Delaware White Azalea	5 gal min	Cont.	Vigorous, evenly branching, fully developed root system	Approximately 3' o.c.		(ISH)	11
95	Inkberry	<i>Ilex glabra</i> 'Compacta'	Compact Inkberry	5 gal min	Cont.	Vigorous, evenly branching, fully developed root system	Approximately 3' o.c.	MUST be compact variety. Provide verification.	(ISH)	10
119	Dw. Crape	<i>Lagerstroemia indica</i> DWARF varieties in red, pink, and purple IN THE CORRECT QUANTITIES PER ROW	3 Different Colors Dwarf Crape Myrtle	5 gal min	Cont.	Vigorous, evenly branching, fully developed root system	Approximately 3' o.c.	MUST provide 3 different colors. MUST be compact variety. MUST have a mature height & spread of more than 3' but less than 5'. Contractor MUST SUBMIT Planting Plan Sketch showing placement of each variety and verifying that the quantity matches the number required by the row of plants on the Planting Plan. Contractor is URGED TO CONTACT LANDSCAPE ARCHITECT to coordinate and to do so in adequate time for order and delivery	(ISH)	12
22	Sweetpire	<i>Ilex virginica</i> 'Little Henry'	Dwarf Sweetpire	5 gal min	Cont.	Vigorous, evenly branching, fully developed root system	Approximately 3' o.c.	MUST be dwarf. Provide verification.	(ISH)	2
62	Abelia	<i>Abelia grandiflora</i> 'Little Richard' or equal	Dwarf Abelia	5 gal min	Cont.	Vigorous, evenly branching, fully developed root system	Approximately 3' o.c.		(ISH)	5
36	Winterberry	<i>Ilex verticillata</i> 'Red Sprite'	Dwarf Winterberry	5 gal min	Cont.	Vigorous, evenly branching, fully developed root system	Approximately 5' o.c.		(ISH)	4
									Community Planting - Central, Subtotal Shrubs	50
MBR #3 Planting-Include species immediately below										
36		<i>Aronia melanocarpa</i> 'Morton' or equal	Dwarf Black Chokeberry	5 gal min	Cont.	Full, vigorous.	Approximately 4' o.c.	Must be dwarf		
MBR #5 Planting-Include species immediately below										
70		<i>Ilex virginica</i>	Sweetpire	5 gal min	Cont.	Full, vigorous, even form.	Approximately 4' o.c.	Dwarf variety		
40		<i>Lindera benzoin</i>	Spicebush	5 gal min	Cont.	Full, vigorous, evenly branching.	Approximately 5' o.c.			
MBR #6 Planting-Include species immediately below										
50		<i>Ilex virginica</i>	Sweetpire	5 gal min	Cont.	Full, vigorous, even form.	Approximately 4' o.c.	Not dwarf variety		
34		<i>Cephalanthus occidentalis</i>	Butterbush	5 gal min	Cont.	Full, vigorous, even form.	Approximately 5' o.c.			
MBR #7 Planting-Include species immediately below										
32		<i>Clethra alnifolia</i>	Summersweet	5 gal min	Cont.	Full, vigorous, even form.	Approximately 6' o.c.			
32		<i>Cornus sericea</i>	Red Osier Dogwood	5 gal min	Cont.	Full, vigorous, even form.	Approximately 6' o.c.			
MBR #8 Planting-Include species immediately below										
17		<i>Ilex verticillata</i> 'Red Sprite'	Dwarf Winterberry	5 gal min	Cont.	Vigorous, evenly branching, fully developed root system	Approximately 4' o.c.			
MBR #9 Planting-Include species immediately below										
16		<i>Clethra alnifolia</i> 'Hummingbird' or equal	Dwarf Summersweet	5 gal min	Cont.	Full, vigorous, even form.	Approximately 4' o.c.			
MBR #10 Planting-Include species immediately below										
22		<i>Ilex virginica</i> 'Little Henry'	Dwarf Sweetpire	5 gal min	Cont.	Full, vigorous, even form.	Approximately 4' o.c.			
MBR #11 Planting-Include species immediately below										
28		<i>Clethra alnifolia</i> 'Hummingbird' or equal	Dwarf Summersweet	5 gal min	Cont.	Full, vigorous, even form.	Approximately 4' o.c.			
MBR #12 Planting-Include species immediately below										
22		<i>Ilex virginica</i> 'Little Henry'	Dwarf Sweetpire	5 gal min	Cont.	Full, vigorous, even form.	Approximately 4' o.c.			
MBR #13 Planting-Include species immediately below										
22		<i>Ilex virginica</i> 'Little Henry'	Dwarf Sweetpire	5 gal min	Cont.	Full, vigorous, even form.	Approximately 4' o.c.			
Signage Groundcover										
129		<i>Vinca minor</i>	Littleleaf Vinca/Periwinkle	1 gallon min	Cont.	Healthy, vigorous, 3 runners, each 12" long	18" o.c., triangular spacing			
30		<i>Narcissus</i>	Buttercup	Bub	Bub	Yellow only	Interplanted among Vinca, evenly spaced, triangular spacing			
30		<i>Hyacinth spp.</i>	Hyacinth	Bub	Bub	White only	Interplanted among Vinca, evenly spaced, triangular spacing			
30		<i>Echinacea purpurea</i>	Coneflower	Bub	Bub		Interplanted among Vinca, evenly spaced, triangular spacing			
Podium Groundcover 1-Field Directed Layout by Landscape Architect										
64		<i>Parthenocissus quinquefolia</i>	Virginia Creeper	1 gallon min	Cont.	Healthy, vigorous, 3 runners, each 18" long	3' o.c.	Mulch entire area		
64		<i>Campsis radicans</i>	Trumpet Vine	1 gallon min	Cont.	Healthy, vigorous, 3 runners, each 18" long	3' o.c.			
64		<i>Vinca minor</i>	Littleleaf Vinca/Periwinkle	1 gallon min	Cont.	Healthy, vigorous, 3 runners, each 12" long	3' o.c.			
Podium Groundcover 2-Field Directed Layout by Landscape Architect										
114		<i>Carex spp. Mix</i>	Carex Grasses-4 species min	1 gallon min	Cont.	Healthy, full	3' o.c.	Mix of species to be approved by Landscape Architect. Effect is to be mosaic of various colors.		
Podium Groundcover 3-Field Directed Layout by Landscape Architect										
60		<i>Rosa banksia</i>	Banks Rose	1 gallon min	Cont.	Healthy, vigorous, 3 runners, each 18" long	3' o.c.	Mulch entire area		
60		<i>Lonicera sempervirens</i>	Trumpet Honeysuckle	1 gallon min	Cont.	Healthy, vigorous, 3 runners, each 18" long	3' o.c.			
60		<i>Cotoneaster adpressus</i>	Creeping Cotoneaster	1 gallon min	Cont.	Healthy, vigorous, meets standard	3' o.c.			
Vines-Include species immediately below-1 Vine per 2'-mix species. Plant on Podium Internal side, not alley side of trellis/screen										
18		<i>Clematis spp. Type 1</i>	White Clematis	1 gallon min	Cont.	Healthy, vigorous, 3 runners, each 18" long				
18		<i>Parthenocissus quinquefolia</i>	Virginia Creeper	1 gallon min	Cont.	Healthy, vigorous, 3 runners, each 18" long				
18		<i>Campsis radicans</i>	Trumpet Vine	1 gallon min	Cont.	Healthy, vigorous, 3 runners, each 18" long				
18		<i>Clematis spp. Type 2</i>	Yellow Clematis	1 gallon min	Cont.	Healthy, vigorous, 3 runners, each 18" long				
per sf	Meadow	<i>Native Wildflower Mix</i>			per manufacturer's recommendation	per manufacturer's recommendation		Custom blend of 'Maryland Upland Mix' (ERMx-172) Provider: Ernst Conservation Seeds, 9006 Mercor Pike, Meadville, PA 16335. www.emtseed.com. Tel: 800.873.3321		

(RP)	RESIDENTIAL PARKING
(CP)	COMMERCIAL PARKING
(IS)	INTERNAL SHADE TREE
(IO)	INTERNAL ORNAMENTAL TREE
(IE)	INTERNAL EVERGREEN
(ISH)	INTERNAL SHRUB
(P1B)	PERIMETER 1B SHADE TREE
(P1B)	PERIMETER 1B ORNAMENTAL TREE
(P1E)	PERIMETER 1B EVERGREEN
(P3S)	PERIMETER 3 SHADE TREE
(P3O)	PERIMETER 3 ORNAMENTAL TREE
(P3E)	PERIMETER 3 EVERGREEN
(P4S)	PERIMETER 4 SHADE TREE
(P4O)	PERIMETER 4 ORNAMENTAL TREE
(P4E)	PERIMETER 4 EVERGREEN
(ROAD A ST)	MILLTOWNE DRIVE STREET TREE
(ROAD B ST)	BURGESSMILL WAY STREET TREE
(ELICOTT MILLS ST)	ELICOTT MILLS STREET TREE

RECEIVED
 OCT 17 2011
 PLANNING AND ZONING DEPARTMENT
 3624 MOUNT IDA DRIVE
 ELLICOTT CITY, MD 21117

DEVELOPER'S/BUILDER'S CERTIFICATE
 I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXERCISED ONE (1) YEAR GUARANTEE OF PLANT MATERIAL, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.
 SIGNATURE OF DEVELOPER: _____ DATE: 10/10/11
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION: _____ DATE: 10/20/11
 CHIEF, DIVISION OF LAND DEVELOPMENT: _____ DATE: 10/27/11
 DIRECTOR: _____ DATE: 10/27/11

HILLTOP REDEVELOPMENT
 3624 MOUNT IDA DRIVE,
 ELLICOTT CITY, MD.

POOLE DESIGN, LLC
 Landscape Architecture • Urban Design • Ecological Urbanism
 1414 KEY HIGHWAY, 2ND FLOOR, BALTIMORE, MD 21202 PHONE: 410.539.4300

MARKS, THOMAS ARCHITECTS
 CERTIFIED

SHEET TITLE
 Plant Schedule
 Part 2

Project Number: 10238 Date: October 2011
 Drawn by: _____

SITE DEVELOPMENT PLAN
 HILLTOP REDEVELOPMENT
 - PHASE I
 RESIDENTIAL
 TOWNHOUSES,
 APARTMENTS, AND
 RECREATION CENTER
 THE RECREATION CENTER
 IS A GREEN BUILDING
 L477E-716, L450F-448,
 L448F-46

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PLANT SCHEDULE

Community Planting South

Quantity	Notation	Botanic Name	Common Name	Size/Amount	Condition	Form	Spacing	Notes	HC Requirement Notation	Value
Street Trees										
6		<i>Quercus phellos</i>	Willow Oak	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(Ellicott Mills ST)	6
3		<i>Quercus rubra</i>	Northern Red Oak	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branching angles.	As shown		(Ellicott Mills ST)	3
2		<i>Chionanthus virginicus</i>	Fringetree	2-1/2" cal. min	B&B/Cont.	Full, vigorous, even form.	As shown		(ROAD B ST)	1
2		<i>Acer rubrum</i> 'October Glory' or approved equal	October Glory Red Maple	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(ROAD B ST)	2
5		<i>Tilia americana</i> 'Redmond'	Redmond American Linden	Min. 2-1/2" caliper	B&B/Cont.	Full, vigorous, evenly branching Straight trunk.	As shown		(ROAD B ST)	5
3		<i>Platanus x acerifolia</i>	London Plane	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(ROAD B ST)	3
Internal Planting										
4		<i>Tilia cordata</i> 'Greenspire'	Greenspire Littleleaf Linden	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(IS)	4
1		<i>Acer saccharum</i>	Sugar Maple	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branching angles.	As shown		(IS)	1
1		<i>Quercus rubra</i>	Northern Red Oak	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branching angles.	As shown		(IS)	1
South Entry Groundcover-Mix of species immediately below										
129		<i>Vinca minor</i>	Littleleaf Vinca/Periwinkle	1 gallon min	Cont.	Healthy, vigorous, 3 runners, each 12" long	18" o.c., triangular spacing			
60		<i>Narcissus</i>	Narcissus/Buttercup	Bulb	Bulb	Yellow only	Interplanted among Vinca, evenly spaced, triangular spacing			
60		<i>Hyacinth spp.</i>	Hyacinth	Bulb	Bulb	White only	Interplanted among Vinca, evenly spaced, triangular spacing			
3		<i>Amelanchier x grandiflora</i> 'Autumn Brilliance'	Amelanchier Shadbush	1-1/2" cal min	B&B/Cont.	Full, vigorous, multi-stem (4 stems minimum), evenly branching from base.	As shown		(IO)	2
4		<i>Cercis canadensis</i>	Eastern Redbud	6' height min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(IO)	2
2		<i>Magnolia virginiana</i>	Sweetbay Magnolia	6' height min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(IO)	1
Community Planting -South-Subtotal Ornamental Trees										
13		<i>Clethra alnifolia</i>	Clethra	5 gal min	Cont.	Full size variety, not dwarf/compact. Full, vigorous.			(ISH)	1
13		<i>Prunus laurocerasus</i> 'Otto Luyken'	Otto Luyken Cherry Laurel	5 gal min	Cont.	Full, vigorous.			(ISH)	1
17		<i>Viburnum dentatum</i> 'Blue Muffin' or 'Rastzani'	Dwarf Arrowwood Viburnum	5 gal min	Cont.	Full, vigorous.	As shown	MUST be dwarf.	(ISH)	2
3		<i>Euonymus kiautschovicus</i> 'Manhattan'	Manhattan Euonymus	5 gal min	Cont.	Vigorous, evenly branching, fully developed root system	As shown		(ISH)	0
25		<i>Azalea</i> 'Delaware Valley White'	Delaware White Azalea	5 gal min	Cont.	Vigorous, evenly branching, fully developed root system	As shown		(ISH)	3
43		<i>Ilex glabra</i> 'Compacta'	Compact Inkberry	5 gal min	Cont.	Vigorous, straight trunk, evenly branching, fully developed root system	As shown	MUST be compact variety. Provide verification.	(ISH)	4
53		<i>Itea virginica</i> 'Henry's Garnet' or equal	Dwarf Sweetpire	5 gal min	Cont.	Full, vigorous, even form.	Approximately 3" o.c.	MUST be dwarf variety	(ISH)	5
Community Planting -South-Subtotal Shrubs										
Perimeter 4										
1		<i>Acer rubrum</i> 'October Glory' or approved equal	October Glory Red Maple	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(P4S)	1
8		<i>Nyssa sylvatica</i>	Tupelo/Black Gum	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branching angles.	As shown		(P4S)	8
4		<i>Acer saccharum</i>	Sugar Maple	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branching angles.	As shown		(P4S)	4
4		<i>Quercus rubra</i>	Northern Red Oak	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branching angles.	As shown		(P4S)	4
2		<i>Quercus palustris</i>	Pin oak	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(P4S)	2
2		<i>Aesculus hippocastanum</i> 'Baumann'	Baumann Horsechestnut	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching.	As shown		(P4S)	2
3		<i>Liquidambar styraciflua</i>	Sweetgum	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(P4S)	3
4		<i>Cornus florida</i> 'Appalachian Spring'	Appalachian Spring Dogwood	1-1/2" cal min	B&B/Cont.	Single stem. Full, vigorous, evenly branching, no overly acute branch angles.	As shown	Contractor must provide proof of anthracnose resistant variety	(P4O)	2
1		<i>Magnolia virginiana</i>	Sweetbay Magnolia	6' height min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(P4O)	1
4		<i>Cercis canadensis</i>	Eastern Redbud	6' height min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(P4O)	2
3		<i>Amelanchier x grandiflora</i> 'Autumn Brilliance'	Amelanchier Shadbush	1-1/2" cal min	B&B/Cont.	Full, vigorous, multi-stem (4 stems minimum), evenly branching from base.	As shown		(P4O)	2
Total Perimeter Trees										
Perimeter 1B										
3		<i>Quercus palustris</i>	Pin Oak	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(P1BS)	3
2		<i>Magnolia virginiana</i>	Sweetbay Magnolia	6' height min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(P1BO)	1
2		<i>Cercis canadensis</i>	Eastern Redbud	6' height min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(P1BO)	1
7		<i>Ilex opaca</i>	American holly	Min. 6' height	B&B/Cont.	Full, vigorous, evenly branching.	As shown		(P1BE)	7
Community Planting Gateway										
4		<i>Quercus phellos</i>	Willow Oak	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching, no overly acute branch angles.	As shown		(IS)	4
2		<i>Quercus coccinea</i>	Scarlet Oak	2-1/2" cal. min	B&B/Cont.	Full, vigorous, evenly branching Straight trunk.	As shown		(IS)	2
7		<i>Lagerstroemia indica</i>	Red Crape Myrtle	8' height min	B&B/Cont.	Full, vigorous, multi-stem (4 stems minimum), evenly branching from base.	As shown		(IO)	4
10		<i>Ilex cornuta</i> 'Burfordii Nana'	Dwarf Burford Holly	10 gallon min	Cont.	Full, vigorous.	As shown		(IE)	5
Gateway Groundcover-Includes all of the species immediately below										
180		<i>Liriope spicata</i> 'Majestic' or similar	Liriope/Monkey grass non-variegated	Quart	Cont.	Full, vigorous	Triangular spacing, 18" o.c.	No variegated varieties accepted.		
60		<i>Hemerocallis</i>	White and Light Yellow Daylily	Quart	Cont.		Interplanted among Liriope, evenly spaced	Must submit examples of chosen varieties to landscape architect PRIOR to planting and with adequate advanced notice in order to meet construction/installation schedule.		

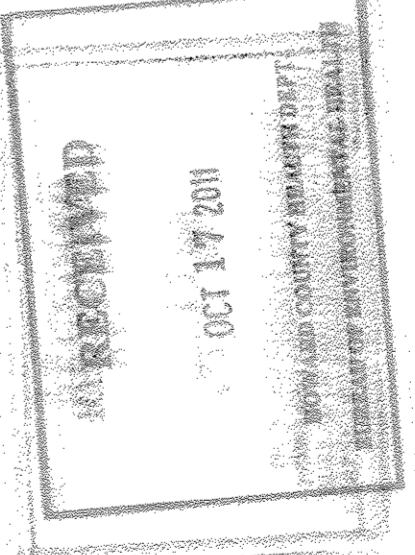
**BURGESS MILL STATION - PHASES 1 AND 2
RECREATIONAL OPEN SPACE CALCULATIONS**

Burgess Mill Phases 1 and 2 Totals:		
Burgess Mill - Phase 1 and 2 Units	251 units	
Recreational Open Space Required	100,400 sf	
Total Amenity Area Provided:	85,466 sf	
Total Amenity Credit Provided:	15,433 sf	
Total Rec. Open Space Provided:	104,909 sf	

Burgess Mill Station - Phase 1			Burgess Mill Station - Phase 2		
Number of Units	158 units		93 units		
Recreational Open Space Required	79200 sf		21200 sf		
Recreation Center:	43870 sf		0 sf		
Community Center Credit	10 credit/unit		53 units	530 sf credit	
	43870 sf		TOTAL CREDIT =	530 sf credit	
Recreation Center Tot Lot:	1860 sf		0 sf		
Play Ground Equipment	2000 credit		0 credit		
Picnic Table	500 credit		0 ea.	0 sf credit	
	2500 credit		TOTAL CREDIT =	0 sf credit	
Recreation Center Outdoor Pool and Deck:	8550 sf		0 sf		
Swimming Pool Credit	198 units	1980 sf credit	53 units	530 sf credit	
Bench	4 ea.	800 sf credit	0 ea.	0 sf credit	
	2000 credit		TOTAL CREDIT =	530 sf credit	
Recreation Center Sports Court:	7000 sf		0 sf		
Paved Sport Court Credit	198 units	1980 sf credit	53 units	530 sf credit	
	2000 credit		TOTAL CREDIT =	530 sf credit	
Burgess Mill 1 Wagon Works Way Tot Lot:	2800 sf		0 sf		
Play Ground Equipment	2000 credit		0 credit		
	2000 credit		TOTAL CREDIT =	0 sf credit	
Burgess Mill 1 Wagon Works Way Seating Area:	950 sf		0 sf		
Bench	4 ea.	800 sf credit	0 ea.	0 sf credit	
	200 credit		TOTAL CREDIT =	0 sf credit	
Gateway Area (Fels Lane and Ellicott Mills Drive):	16397 sf		0 sf		
Bench	3 ea.	600 sf credit	0 ea.	0 sf credit	
	200 credit		TOTAL CREDIT =	600 sf credit	
Burgess Mill 2 Tot Lot Area:	0 sf		1432 sf		
Play Ground Equipment	2000 credit		1 ea.	2000 sf credit	
Bench	200 credit		4 ea.	800 sf credit	
Asphalt Path	3 credit		130 sf	360 sf credit	
	2000 credit		TOTAL CREDIT =	4622 sf credit	
Burgess Mill 2 Picnic Area:	0 sf		607 sf		
Picnic Table	500 credit		2 ea.	1000 sf credit	
Asphalt Path	3 credit		41 sf	123 sf credit	
Grill Station	200 credit		0 ea.	0 sf credit	
	2000 credit		TOTAL CREDIT =	2123 sf credit	
Total Amenity Area = 85466 sf			Total Amenity Area = 85466 sf		
Total Amenity Area Credit = 13140 sf credit			Total Amenity Area Credit = 13140 sf credit		
Total Provided = 96606 sf			Total Provided = 96606 sf		

KEY TO HC REQUIREMENT DESIGNATIONS FOR TREE + EVERGREEN CATEGORIES

(RP)	RESIDENTIAL PARKING
(CP)	COMMERCIAL PARKING
(IS)	INTERNAL SHADE TREE
(IO)	INTERNAL ORNAMENTAL TREE
(IE)	INTERNAL EVERGREEN
(ISH)	INTERNAL SHRUB
(P1BS)	PERIMETER 1B SHADE TREE
(P1BO)	PERIMETER 1B ORNAMENTAL TREE
(P1BE)	PERIMETER 1B EVERGREEN
(P3S)	PERIMETER 3 SHADE TREE
(P3O)	PERIMETER 3 ORNAMENTAL TREE
(P3E)	PERIMETER 3 EVERGREEN
(P4S)	PERIMETER 4 SHADE TREE
(P4O)	PERIMETER 4 ORNAMENTAL TREE
(P4E)	PERIMETER 4 EVERGREEN
(ROAD A ST)	MILLTOWNE DRIVE STREET TREE
(ROAD B ST)	BURGESSMILL WAY STREET TREE
(MILLS ST)	ELLICOTT MILLS STREET TREE



DEVELOPER'S/BUILDER'S CERTIFICATE

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

SIGNATURE OF DEVELOPER: *[Signature]* DATE: 10/10/11

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION: *[Signature]* DATE: 10/20/11
 CHIEF, DIVISION OF LAND DEVELOPMENT: *[Signature]* DATE: 10/27/11
 DIRECTOR: *[Signature]* DATE: 10/28/11

1414 KEY HIGHWAY, 2ND FLOOR, BALTIMORE, MD 21202 PHONE: 410 538-0300

MARKS, THOMAS ARCHITECTS

CERTIFIED

POOLE DESIGN, LLC
 Landscape Architecture • Urban Design
 4300 Washington Lane • Baltimore, Maryland 21222
 410-538-0300 • www.poole-design.com

10-10-2011

HILLTOP REDEVELOPMENT

3624 MOUNT IDA DRIVE,
ELLICOTT CITY, MD.

SHEET TITLE
Plant Schedule
Part 3

Project Number: 10288 Date: October 2011
 Drawn by: [Name] Checked by: [Name]

SITE DEVELOPMENT PLAN
HILLTOP REDEVELOPMENT
- PHASE 1
RESIDENTIAL TOWNHOUSES,
APARTMENTS, AND
RECREATION CENTER
THE RECREATION CENTER
IS A GREEN BUILDING
1-477F-F16, L-466F-48,
L-466F-49

48 OF 50

NO.	REVISION	DATE
4	REVISE TO MODIFY RECREATIONAL OPEN SPACE TO REMOVE NATURE TRAIL AND MONKEY POCKET PARK. SHOW REPAIR TO DAMAGED SAND FILTER.	01/05/17

General Landscape Notes

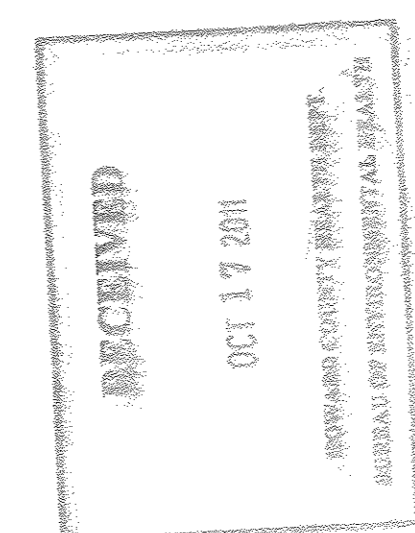
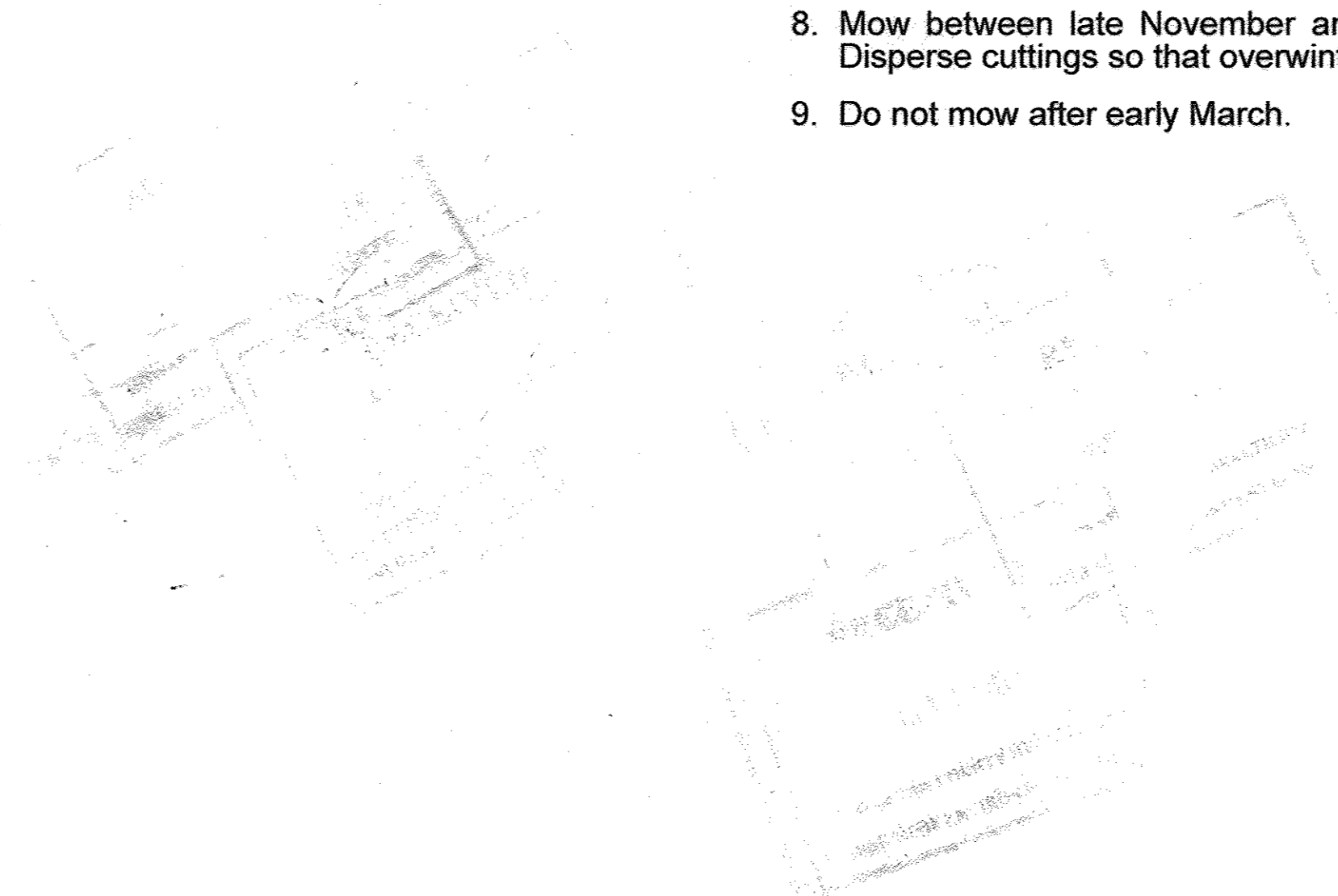
1. Installer is responsible for familiarizing him/herself with project conditions beyond specific planting work to ensure proper coordination and prevent any disruption or damage of others' work.
2. Subsurface irrigation is not included in the project. Contractor is responsible for maintaining water source for vegetation included in the Planting Plan and Plant Schedule.
3. Installer is responsible for ensuring that the grading indicated on the Civil Engineering drawings has been achieved before beginning any staking or planting.
4. Provide positive drainage away from all building structures.
5. Landscape Architect shall approve staking before any planting. Staking approvals shall occur per the "Planting Timetable" submittal required per the "Submittals" section of the Plants Specifications 329313. Installer is required to confirm Landscape Architect's availability for staking/approval dates at least 2 weeks in advance.
6. Quantity counts contained within the Plant Schedule are included as a courtesy. Contractor is responsible for verifying quantities for each species before bidding. If discrepancies between the Plans and the Plant Schedule exist, the plan shall govern. In addition, in the case of discrepancies, Contractor is responsible for contacting Landscape Architect immediately and seeking clarification and/or reconciliation.
7. Contractor will be strictly held to the requirements for "Installer Qualifications" noted in Plants Specifications 329313, including years of experience and project examples for successful wetland and meadow installation.
8. Landscape Architect will consider plant substitutions provided adequate documentation of the substitutions' meeting of the design intent of the project. By the same token, given the amount of lead time available for locating and/or growing plants, substitutions requested within the 90-day mandatory time period of the "Plant Procurement Plan" submissions have a very low likelihood of acceptance.
8. Landscape design and drawings assume that stripped topsoil will be available for reuse. Contractor is responsible for verifying installation needs per the Planting Plans. Note that Contractor is responsible for maintaining separate stockpiles for 1) Stripped Topsoil that will be reused on-site and 2) Excavated Fill that is unsuitable for topsoil material but that may be used for fill below specified topsoil depths.
9. All areas within Limit of Disturbance not specifically indicated to receive planting or sod as noted in 25.00 series drawings (Landscape Drawings) shall be seeded lawn as noted in Specifications.
10. All Micro-Bioretenion Areas (MBRs) shall receive no less than 2" and no more than 3" of mulch over entire area, and all planting beds shall receive no less than 2" and not more than 3" of mulch over entire bed, mulch type appropriate to the life needs of the plant (hardwood vs. pine bark).
11. All plantings shown on the plans with layouts in rows or areas shall constitute a planting bed, and all planting beds shall receive no less than 2" and not more than 3" of mulch over entire bed, mulch type appropriate to the life needs of the plant (hardwood vs. pine bark).
12. For all shrub and/or groundcover plantings adjacent to buildings, the mulched bed shall be understood as the area from the outermost edge of plant to the face of the building, and said area shall receive mulch.
13. Final location of plant material may need to vary to meet final field conditions.
14. Contractor shall verify location of all underground utilities prior to digging.
15. All planted areas shall receive topsoil per Specifications Section 02911:
 - For Podium area, see notes on Sheet 37.
 - For areas receiving seeded grass or sod (excluding the Podium area), topsoil shall be a minimum of 6"
 - For areas to be planted with herbaceous and woody plants, topsoil shall be a minimum of 6"
16. Contractor is responsible for ensuring 2-weeks' notice to obtain Landscape Architect's approval of staking before planting.
17. Contractor is responsible for thoroughly familiarizing him/herself with Howard County Landscape Manual (1998) ensuring that all planting is in accordance with requirements therein. If any field conditions raise concerns that Howard County's standards might not be met, Contractor is responsible for immediately notifying Landscape Architect and obtaining direction before proceeding.

MEADOW PLANTING

- A. Plan to seed meadow between 15 March and 30 April. If this time period cannot be met due to construction sequencing or unforeseen weather and site conditions, consult Landscape Architect to determine if Fall planting (15 September through 31 October) or Summer (1 May through 15 September) is possible. Note that planting in times other than Spring or when the soil temperature is greater than 55 degree F are not likely to be approved.
- B. Establish proper soil mix.
- C. Plant all trees before final meadow soil preparation and seeding.
 1. Closely mow the area to stimulate weed growth at least two weeks before herbicide application.
 2. Eradicate all existing vegetation by having a licensed spray technician apply an approved glyphosate herbicide.
 3. Protect trees from herbicide within meadow area, adjacent wetland plants, and adjacent existing plants.
 4. Repeat herbicide spraying in approximately two weeks with adjustments for weather.
 5. If weeds reoccur within two weeks, apply a third herbicide treatment.
- E. Seed: Seed meadow according to seed provider's instructions, including light raking and rolling.
- F. Water: Installer is responsible for ensuring the availability of a daily water source from planting until 30 days after planting. Installer is responsible for ensuring a distribution system for daily watering that simulates light rain; no hose watering or systems that create visually perceivable drainageways within the meadow will be accepted and damages must be repaired.
 1. Thoroughly water after seeding.
 2. Keep the meadow moist for 2 to 4 weeks after seeding.
- G. Fertilizer: Do not fertilize.
- H. Mowing: Do not mow until the following winter.

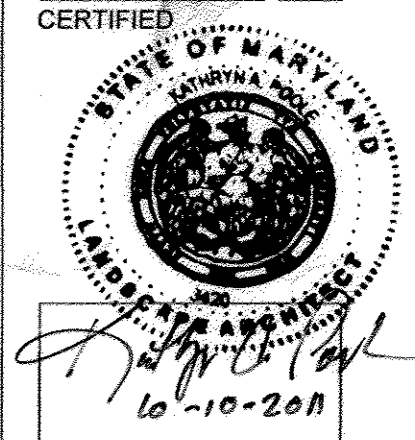
Meadow Maintenance:

1. Remove woody plants by cutting or digging when they are first observed.
2. Remove colonial broadleaf weeds (including thistle, dogbane, and certain goldenrods) with appropriate herbicides or digging when they are first observed.
3. Remove non-colonial broadleaf weeds that grow less than 2 feet tall (including dandelion, plantain, and dock) by digging or appropriate herbicides when they are first observed.
4. Remove bunchgrass weeds (including orchardgrass and tall fescue) by hand or appropriate herbicide when they are first observed s.
5. Remove annual grass weeds (including goosegrass and giant foxtail) with appropriate herbicides when they are first observed.
6. Remove annual broadleaf weeds (including ragwort, marestail, lambsquarters, and pigweed) by hand when they are first observed or by cutting their stems low to the ground before they set seed.
7. During prolonged drought, water deeply once or twice during drought to maintain flowering and live green groundcover of meadow.
8. Mow between late November and early March to a height of 7 to 10 inches with a rotary or flail mower. Disperse cuttings so that overwintering so that plants are not matted under thick clumps of debris.
9. Do not mow after early March.



4	REVISE SHEET NUMBER	01/09/17
NO.	REVISION	DATE
DEVELOPER'S/BUILDER'S CERTIFICATE		
I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MAINTENANCE, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.		
		10/10/11
SIGNATURE OF DEVELOPER		DATE
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING		
		10/20/11
CHIEF, DEVELOPMENT ENGINEERING DIVISION		DATE
		10/27/11
CHIEF, DIVISION OF LAND DEVELOPMENT		DATE
		10/27/11
DIRECTOR		DATE

MARKS, THOMAS ARCHITECTS
 1414 KEY HIGHWAY, 2ND FLOOR, BALTIMORE, MD 21220 PHONE: 410 536 4200



POOLE DESIGN, LLC
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 Suite 200
 Rockledge, FL 32955
 www.poole-design.com

HILLTOP REDEVELOPMENT
 3624 MOUNT IDA DRIVE,
 ELLICOTT CITY, MD.

SHEET TITLE
Landscape Notes

Project Number:	10238	Date:	October 2011
Drawn by:		Checked by:	

SITE DEVELOPMENT PLAN
 HILLTOP REDEVELOPMENT
 PHASE I
 RESIDENTIAL TOWNHOUSES,
 APARTMENTS, AND
 RECREATION CENTER
 THE RECREATION CENTER
 IS A GREEN BUILDING
 1477IF-716, L460F-448,
 L460F-46

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