

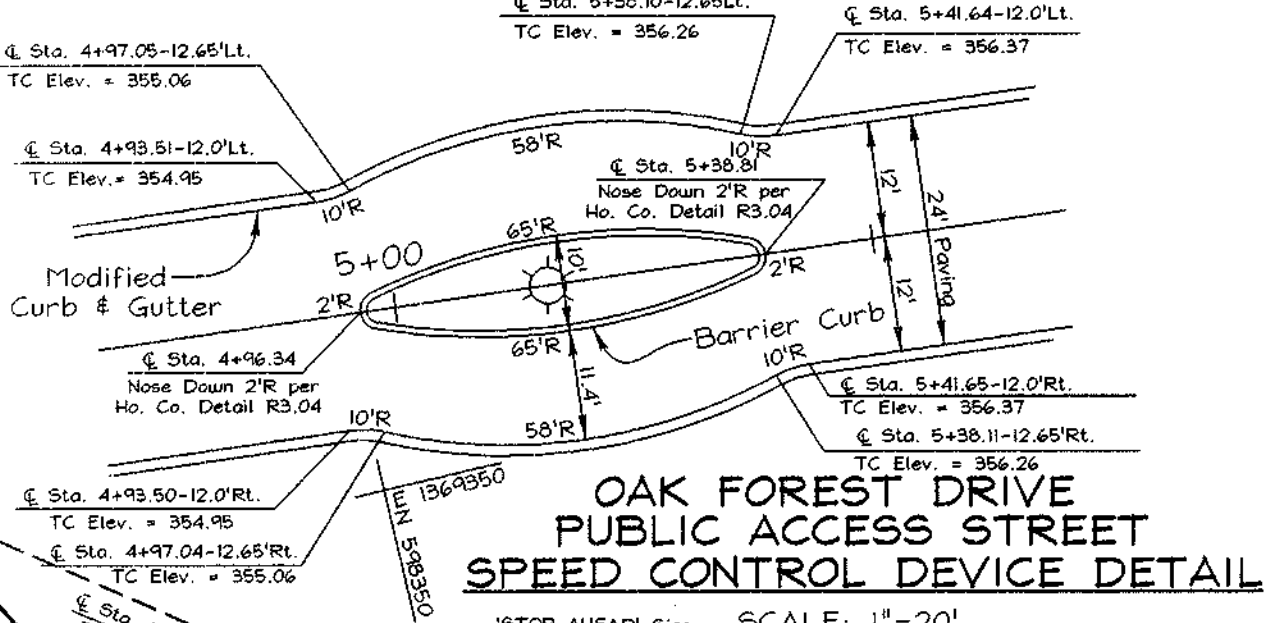
**ROAD PROFILE  
OAK FOREST DRIVE  
PUBLIC ACCESS STREET  
VERTICAL DESIGN SPEED-30 MPH**  
SCALE: HORIZONTAL - 1"=50'  
VERTICAL - 1"=5'

**STREET TREE CALCULATIONS**

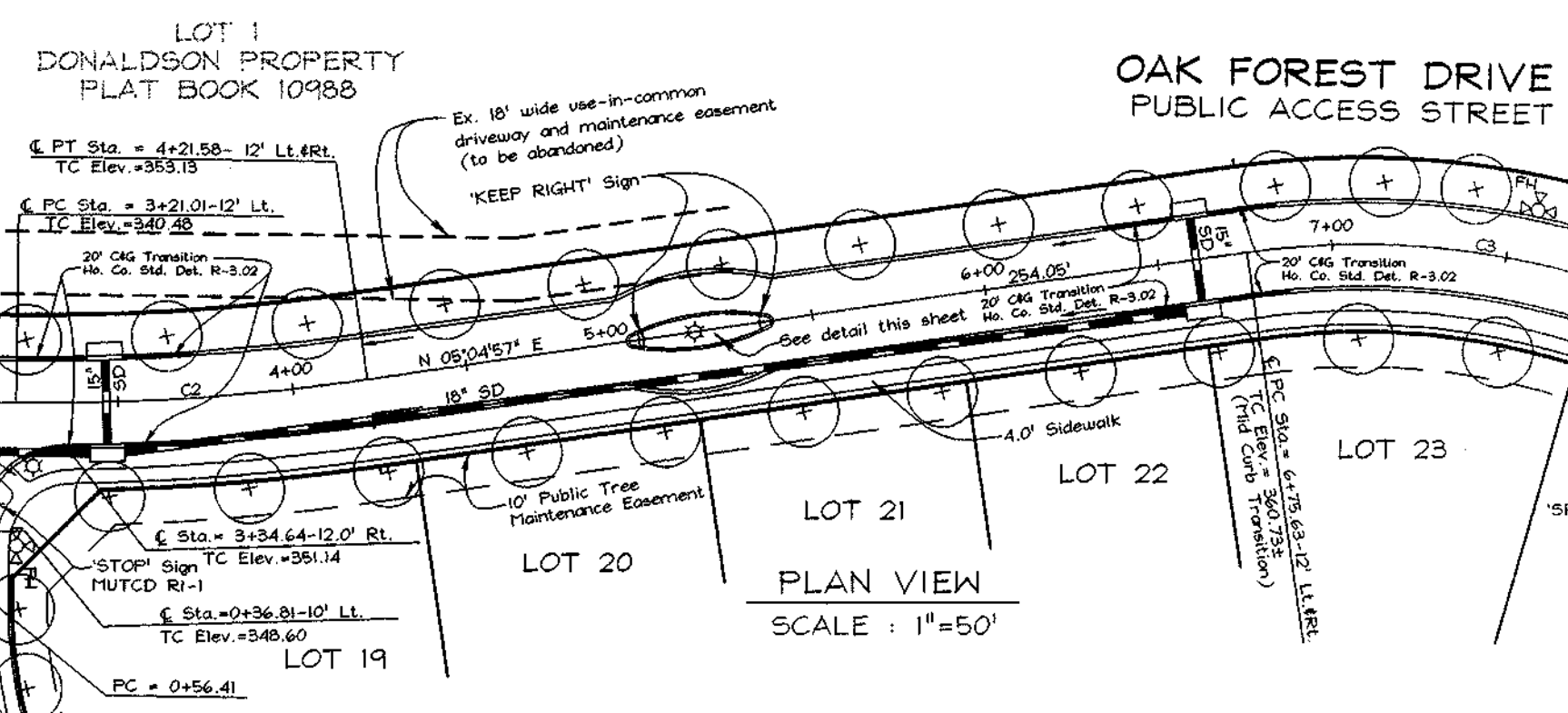
Street Name	Linear Feet	Required Trees	Provided Trees
Oak Forest Drive	2017/40	50	50

**CURVE TABLE**

CURVE	LENGTH	RADIUS	TANGENT CHORD	BEARING	DELTA
C1	92.85	150.00	42.51	61.50	50°43'46"E
C2	100.57	650.00	50.35	100.47	N08°30'54"E
C3	137.09	250.00	70.22	185.02	S02°23'00"W
C4	340.56	250.00	224.29	324.76	N09°43'24"E



**OAK FOREST DRIVE  
PUBLIC ACCESS STREET  
SPEED CONTROL DEVICE DETAIL**  
SCALE: 1"=20'



**PLAN VIEW  
SCALE: 1"=50'**

NOTE: For Storm Drain Types, Sizes and Lengths see Grading Plans sheets 6 & 7 of 18, and Profiles sheets 9 & 10 of 18

**STREET LIGHT LOCATION CHART**

STREET NAME	CENTERLINE STATION	CENTERLINE OFFSET
Oak Forest Drive	0+43.21	43.40 RL
Oak Forest Drive	3+25.98	16.50 RL
Oak Forest Drive	5+16.00	0.00 RL
Oak Forest Drive	7+76.01	18.00 LL
Oak Forest Drive	10+23.21	16.87 RL

\* to be Provided: 150-watt MHPS Vapor Pendant fixture (outlet) mounted at 5' on a 1/2" x 1/2" fiberglass pole using a 12" arm  
all others to be Traditional: 150-watt MHPS Vapor Traditional Post Top fixture mounted on a 1 1/2" x 1 1/2" fiberglass pole

**MICHAEL S RIDGE  
PUBLIC ACCESS PLACE**  
(see Hollifield Estates Section Two Road Construction Plans F-99-76)

**OWNER/DEVELOPER**  
Mr. Charles Skirven, Esq.  
5401 Twin Knolls Road, Suite 10  
Columbia, Maryland 21046  
(410) 995-0081

**ROAD PROFILES  
HOLLIFIELD ESTATES I  
SECTION ONE**

TAX MAP #18  
2nd ELECTION DISTRICT

PARCEL 1  
HOWARD COUNTY, MARYLAND

**VOGEL & ASSOCIATES**  
ENGINEERS-SURVEYORS-PLANNERS

3891 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
Tel 410.461.5828 Fax 410.465.3966

DESIGN BY: GAH  
DRAWN BY: PS  
CHECKED BY: GAH  
DATE: Oct. 12, 1999  
SCALE: As Shown  
W.O. NO.: 99-013

STATE OF MARYLAND  
REGISTERED PROFESSIONAL ENGINEER  
ROBERT D. VOGEL, P.E. No. 16193

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

*Howard Skirven* 3/29/00  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

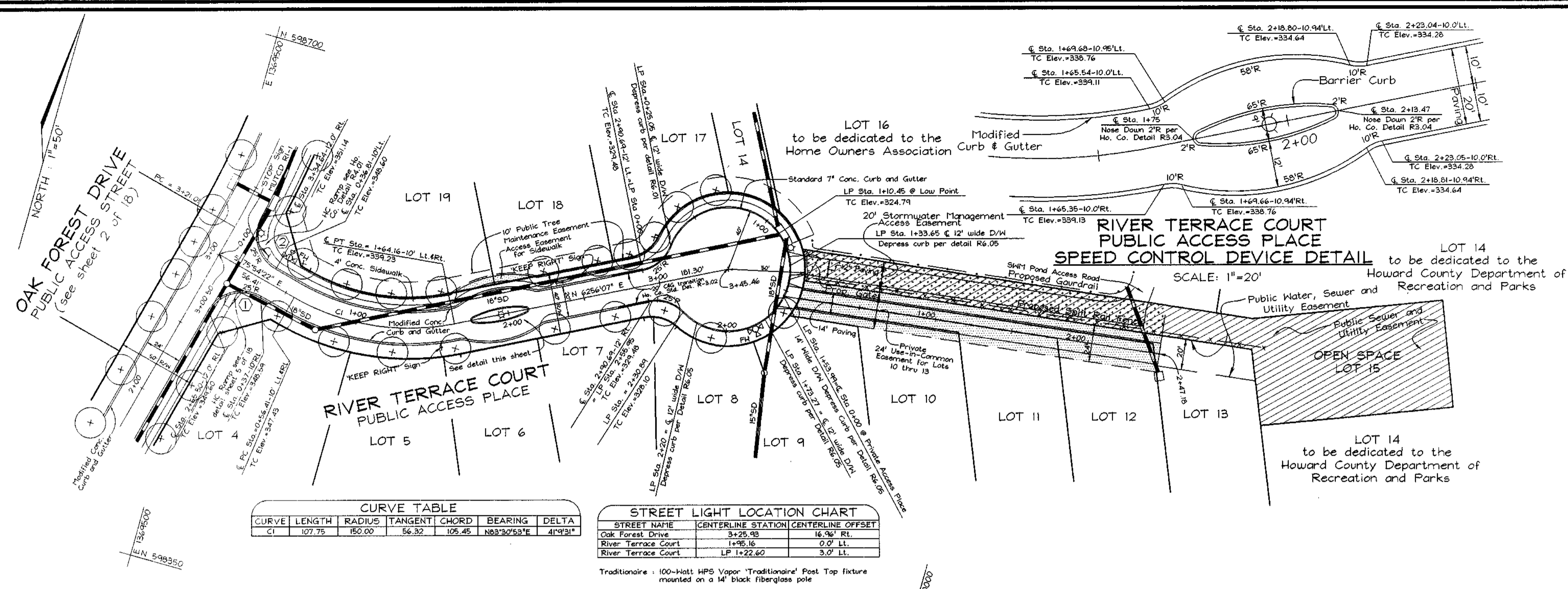
*Cindy Hamilton* 7/12/00  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Robert D. Vogel* 4/3/00  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

NO.	REVISION	DATE

AS-BUILT CERTIFICATE

DATE



**CURVE TABLE**

CURVE	LENGTH	RADIUS	TANGENT	CHORD	BEARING	DELTA
C1	107.75	150.00	56.82	105.45	N83°20'53"E	41°49'21"

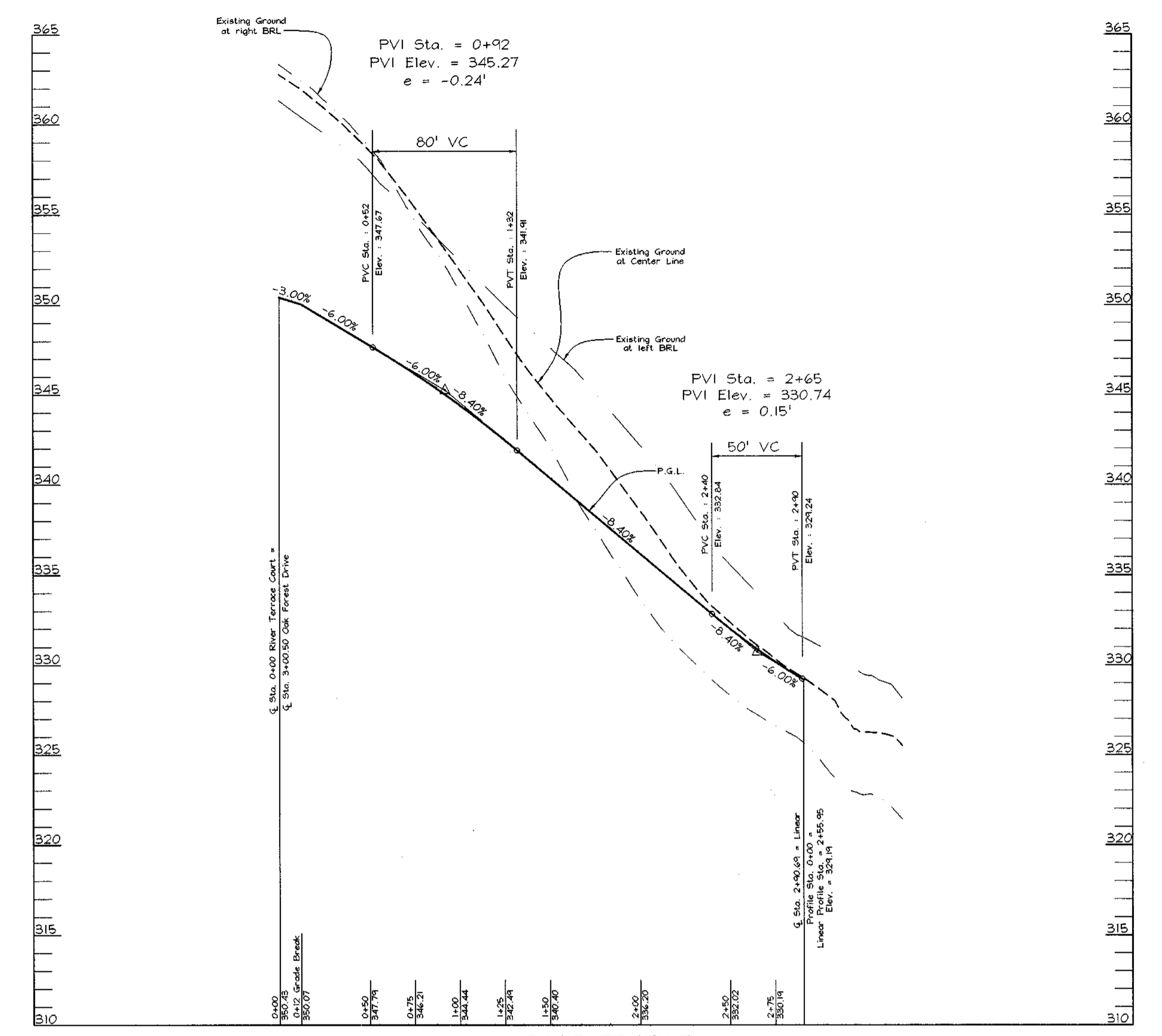
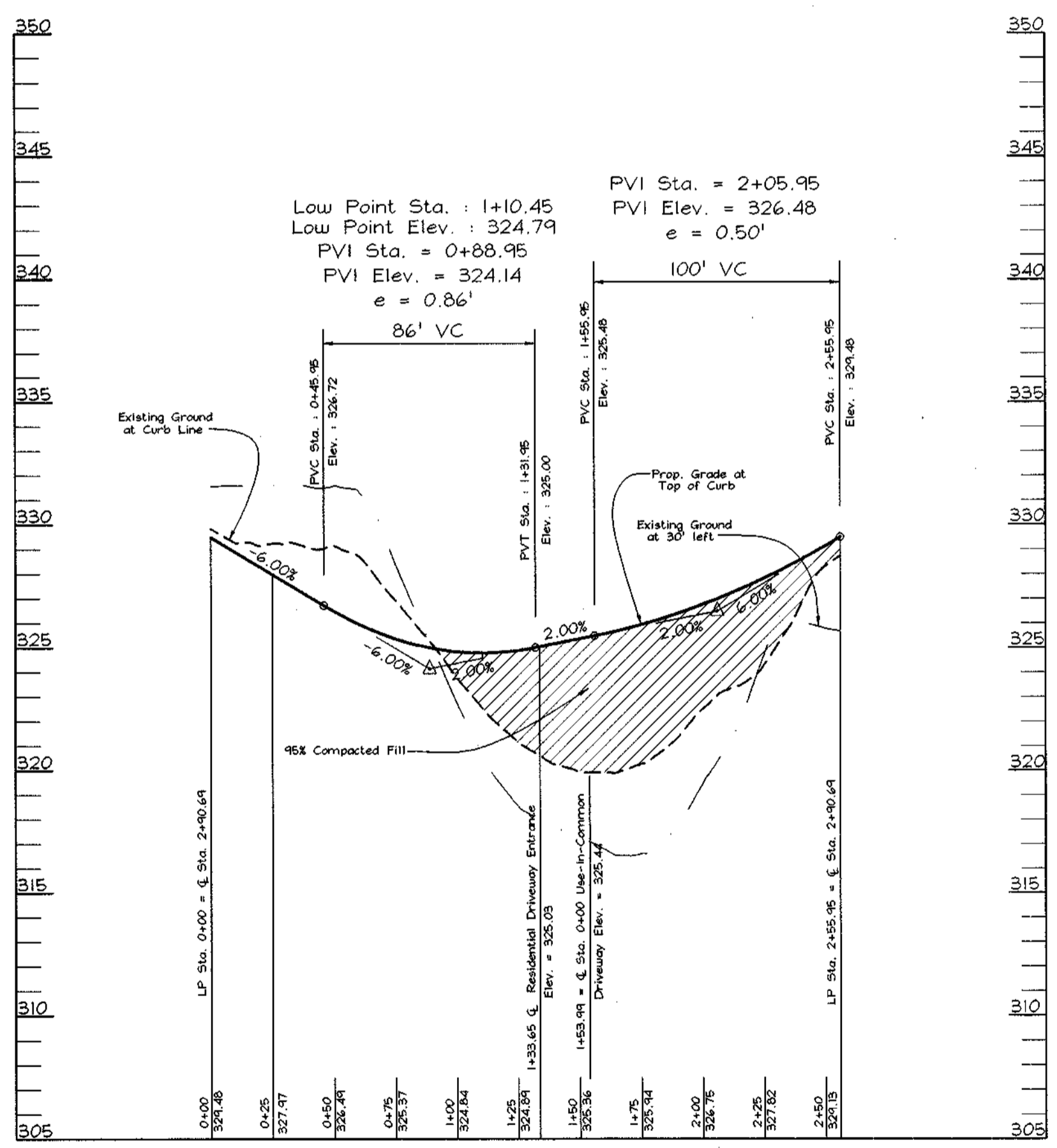
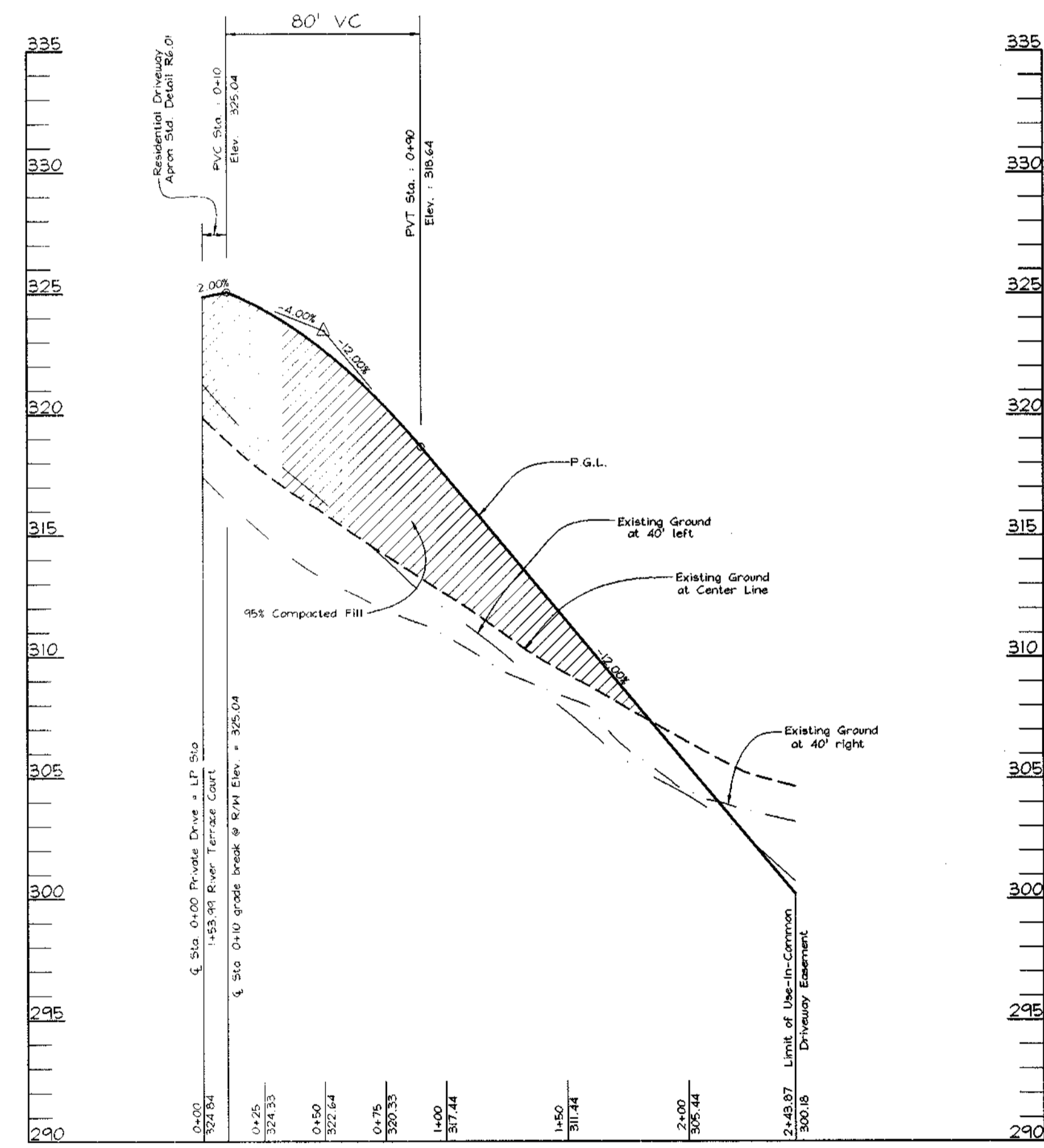
**STREET LIGHT LOCATION CHART**

STREET NAME	CENTERLINE STATION	CENTERLINE OFFSET
Oak Forest Drive	3+25.93	16' 9" RL
River Terrace Court	1+75.16	0' 0" LL
River Terrace Court	LP 1+22.80	3' 0" LL

**STREET TREE CALCULATIONS**

Street Name	Linear Feet	Required Trees	Provided Trees
River Terrace Court	767/40	19	19

PVI Sta. = 0+50  
PVI Elev. = 323.44  
e = -0.80'

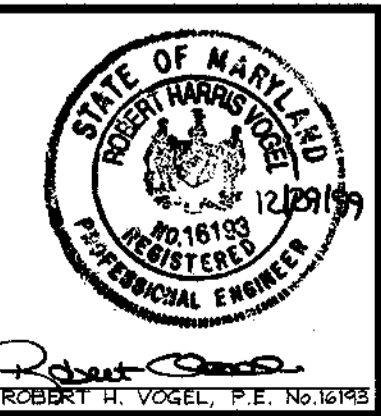


**ROAD PLAN AND PROFILES  
HOLLIFIELD ESTATES I  
SECTION ONE**

TAX MAP #18 PARCEL 1  
2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**VOGEL & ASSOCIATES**  
ENGINEERS-SURVEYORS-PLANNERS

3891 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
Tel 410.461.5528 Fax 410.465.3965



DESIGN BY: GAH  
DRAWN BY: PS  
CHECKED BY: GAH  
DATE: Oct. 12, 1999  
SCALE: As Shown  
W.O. NO.: 99-013

3 SHEET OF 18

NO.	REVISION	DATE
AS-BUILT CERTIFICATE		
DATE		

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

*Howard Stiller* 3/2/01  
CHIEF, BUREAU OF HIGHWAYS DATE

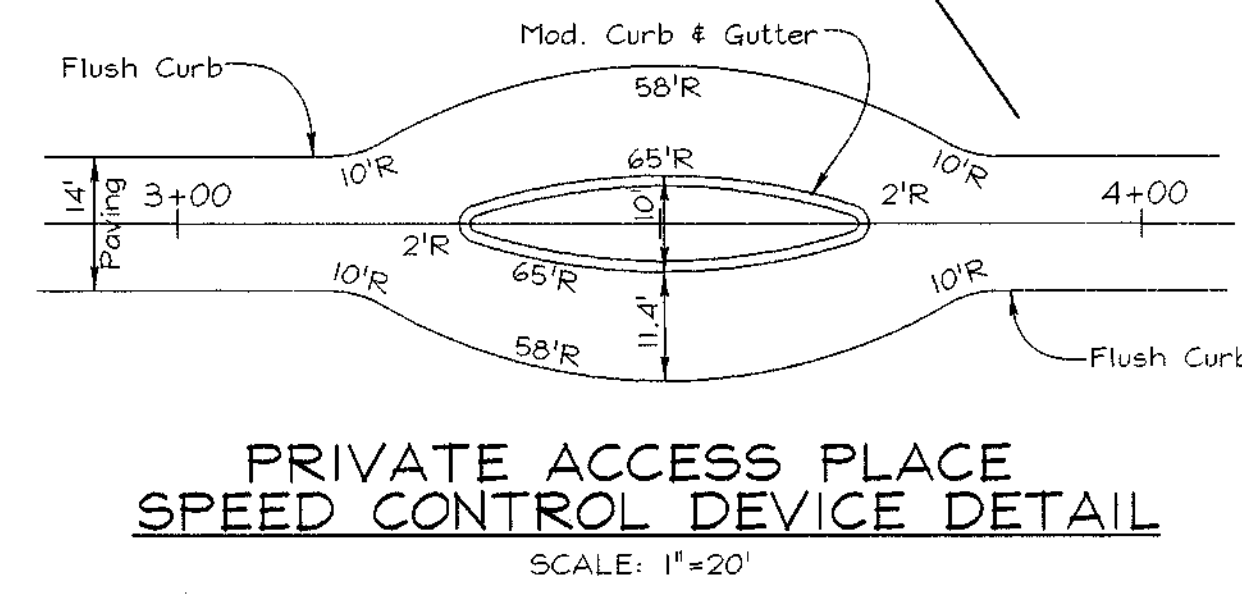
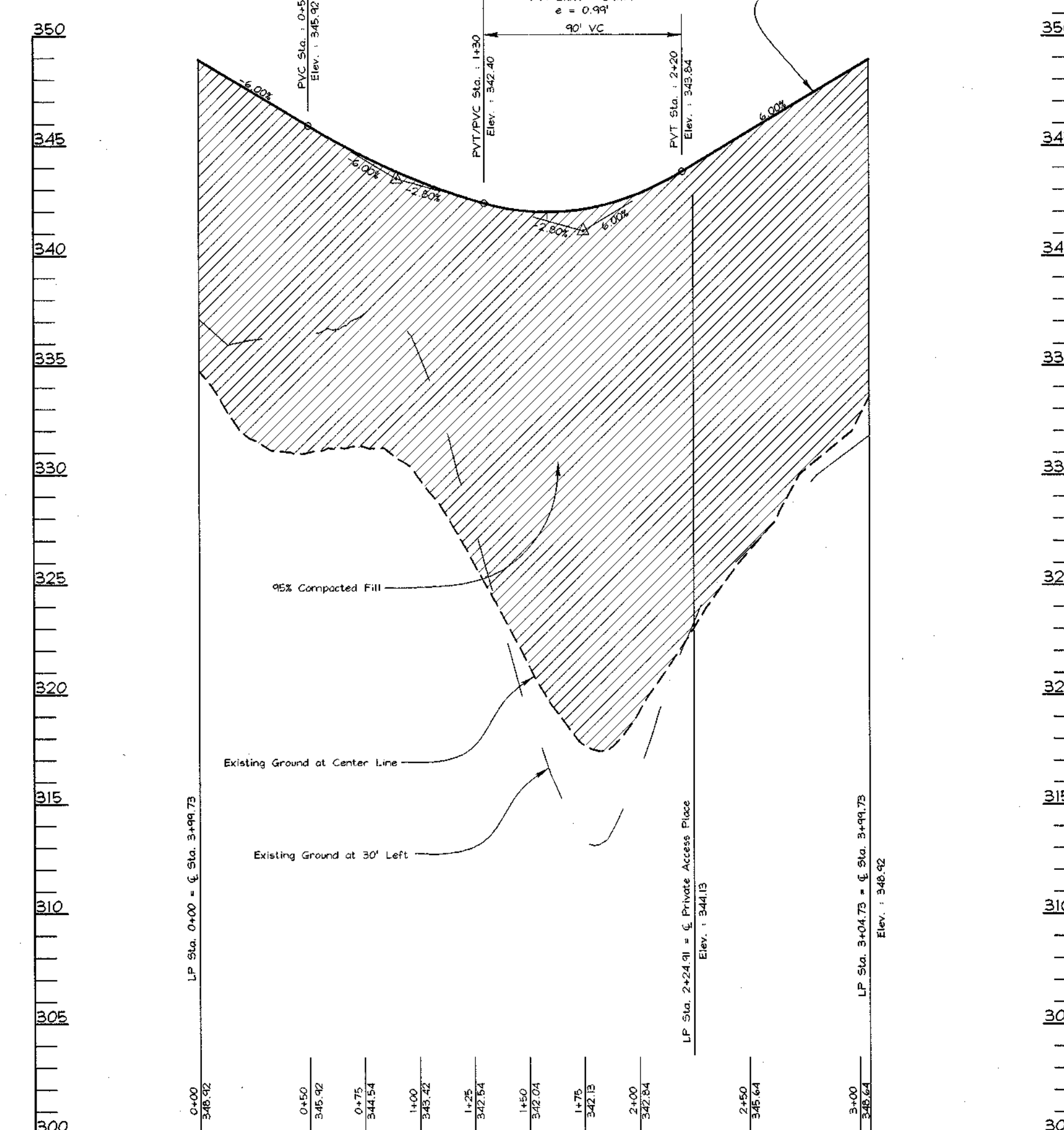
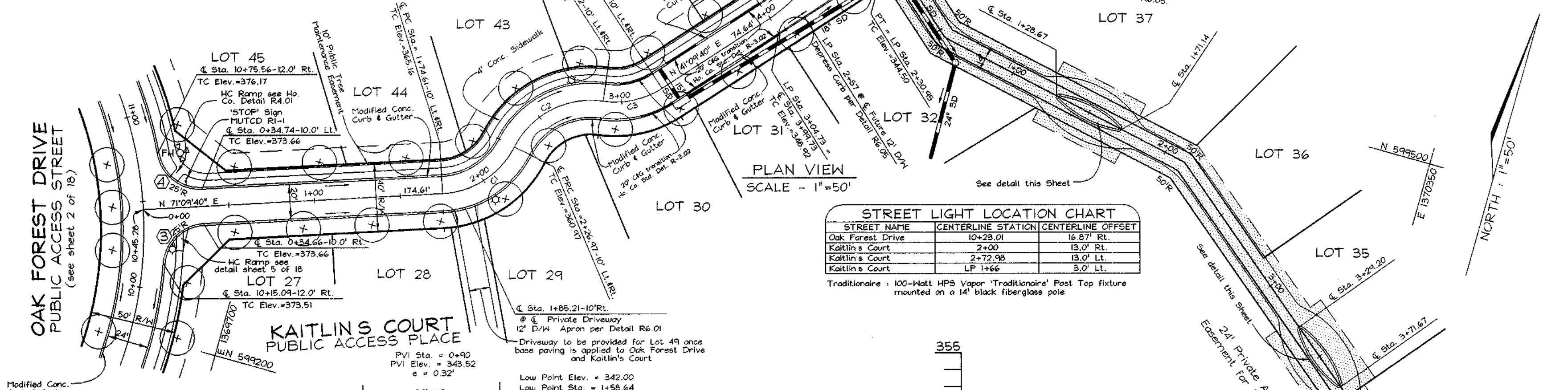
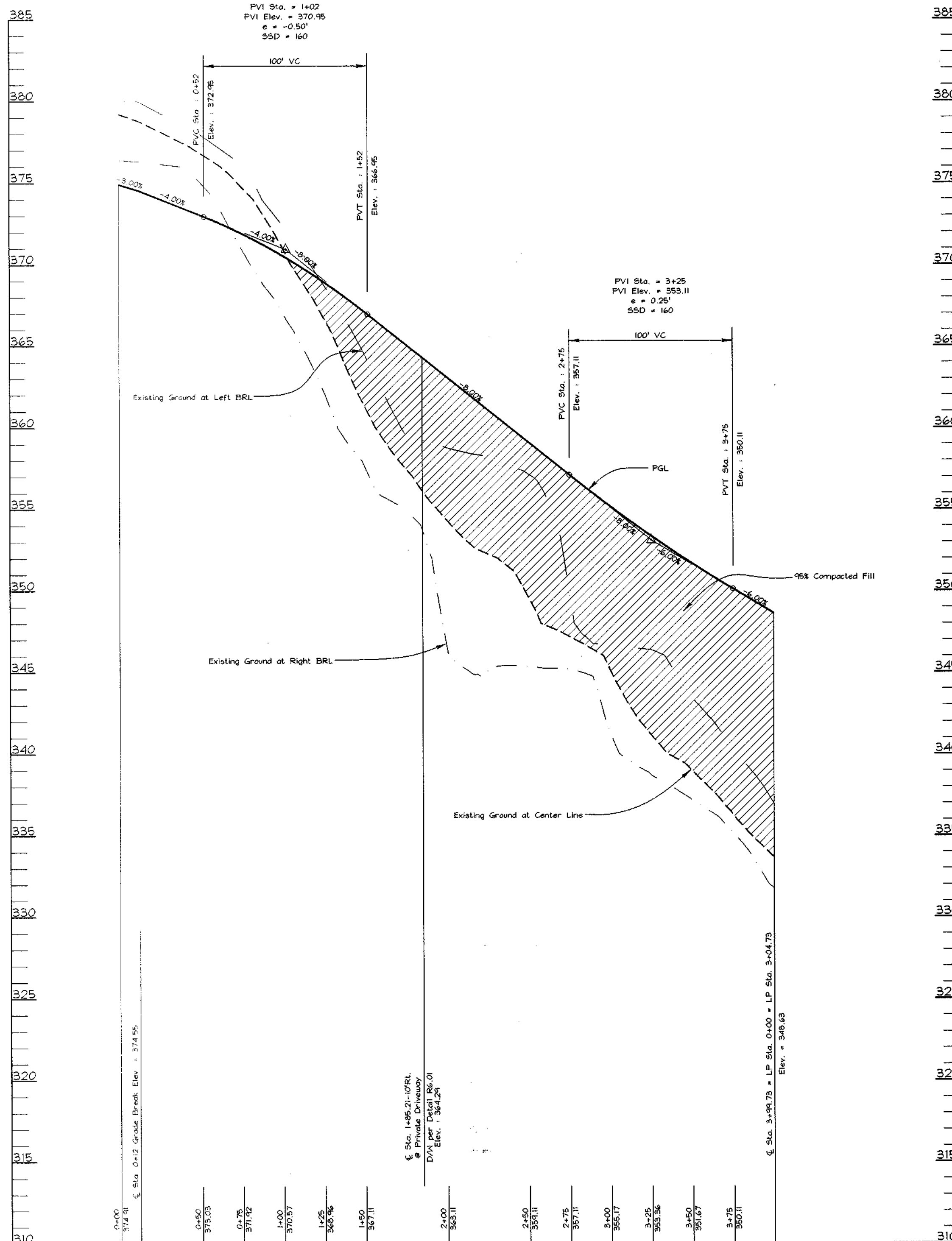
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Cindy Hamilton* 4/14/01  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Chris DeLuca* 4/3/01  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

CURVE	LENGTH	RADIUS	TANGENT	CHORD	BEARING	DELTA
C1	52.36	50.00	28.87	50.00	N40°04'47"E	60°00'
C2	42.16	50.00	39.21	50.00	S44°46'07"W	71°03'37"
C3	36.97	50.00	18.80	36.20	N61°46'07"E	41°23'7"
C4	64.01	104.62	39.64	67.68	N27°21'47"E	34°45'1"

STREET TREE CALCULATIONS			
Street Name	Linear Feet	Required Trees	Provided Trees
Kaitlin's Court	1009/40	25	25



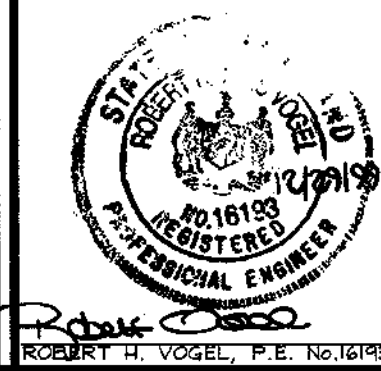
**OWNER/DEVELOPER**  
 Mr. Charles Skirven, Esq.  
 5401 Twin Knolls Road, Suite 10  
 Columbia, Maryland 21046  
 (410) 995-0081

**ROAD PROFILES**  
**HOLLIFIELD ESTATES I**  
**SECTION ONE**

TAX MAP #18 PARCEL 1  
 2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND



3691 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
 Tel 410.461.5828 Fax 410.465.3965



DESIGN BY: GAH  
 DRAWN BY: PS  
 CHECKED BY: GAH  
 DATE: Oct. 12, 1999  
 SCALE: As Shown  
 W.O. NO.: 99-013

4 SHEET OF 18

NO.	REVISION	DATE
AS-BUILT CERTIFICATE		
DATE _____		

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.  
*Howard's Seal* 3/29/00  
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Cinda Hamstra* 4/14/00  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
*Robert H. Vogel* 4/13/00  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



- LEGEND**
- STABILIZED CONSTRUCTION ENTRANCE
  - BASIN / TRAP CONTOURS
  - PROPOSED GRADE
  - EROSION CONTROL MATTING
  - SUPER SILT FENCE
  - SILT FENCE
  - LIMIT OF DISTURBANCE

**TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET**

Computed by: B.D.V. Date: 04/26/99 Rev: 12/21/99 Checked by: \_\_\_\_\_ Date: \_\_\_\_\_  
 Project name: HOLLIFIELD ESTATES I Location: HOWARD COUNTY, MARYLAND Basin #: \_\_\_\_\_

Total area draining to basin: 10.25 acres (ac)

**Basin Inflow Design**

Note: 1. also see Surface Area Design #30. this form.

1. Min. required vol. = 3600 cu.ft./ac x 10.25 ac drainage = 36,900 cu.ft.
2. Actual Volume of basin = 39,524 cu.ft.
3. Excavate 2,624 cu.ft. (1,752 cu.ft.) to retain required capacity
4. Vol. of dewatering elev. = 1800 cu.ft./ac x 10.25 ac = 18,450 cu.ft.
5. Vol. of basin at dewater. = 900 cu.ft./ac x 10.25 ac = 9,225 cu.ft.
6. Elevation corresponding to min. required volume of basin (riser crest elevation) 283.50 ft.
7. Permanent pool elevation = 281.20 ft.
8. Distance from riser crest elevation to permanent pool elevation 2.30 ft.
9. Basin cleanup elevation 280.00 ft.
10. Distance from riser crest elevation to cleanup elevation 4.20 ft.

**Spillway Design**

11.  $Q_p = 24.72$  cfs (peak discharge from 10-yr. 24-hr storm event, attach computations)

**Principal Spillway (Barrel) (See Detail 11) (SEE COMPUTATION & DETAILS OF PERMANENT SWM POND)**

12. Design Principal Spillway (Barrel) discharge, Design  $Q_p = 24.72$  cfs (min. 10% of 10-yr peak or 8" pipe)
13.  $W =$  \_\_\_\_\_ ft. Barrel length = \_\_\_\_\_ ft.
14. Barrel Diam. = \_\_\_\_\_ in. Note: Use must start or exceed Design  $Q_p$
15.  $Q_{max} = Q$  (from Table 13 or 14) x (length correction factor) = \_\_\_\_\_ cfs.
16. Riser Diameter = \_\_\_\_\_ in.; Riser Height = \_\_\_\_\_ ft.; Riser Head (h) = \_\_\_\_\_ ft.
17. Trash Rock Diam. = \_\_\_\_\_ in.; Trash Rock Height = \_\_\_\_\_ in.

**Emergency Spillway (Detail: N/A)**

17. Emergency spillway cap.  $Q_{em} = Q_p - Q_{pr} =$  \_\_\_\_\_ cfs.
18. Width = \_\_\_\_\_ ft. H<sub>em</sub> = \_\_\_\_\_ ft.
19. Entrance channel slope = \_\_\_\_\_ %
20. Exit channel slope = \_\_\_\_\_ %

**Anti-Surge Spillway Design (for open barrel) (SEE COMPUTATION & DETAILS OF PERMANENT SWM POND)**

21.  $y =$  \_\_\_\_\_ ft.  $z =$  \_\_\_\_\_ ft. pipe slope = \_\_\_\_\_ %
22. Use = \_\_\_\_\_ colors, \_\_\_\_\_ ft. = \_\_\_\_\_ sq. ft. projection = \_\_\_\_\_ sq. ft.

**Design Elevations**

23. Riser Crest = 286.15 ft. 24. Design High Water = 287.03 ft.
25. Emergency Spillway Crest = 282.20 ft. 26. Min. settled top of dam = 300.00 ft.
27. Permanent pool = 281.20 ft. 28. Bottom of Basin = 288.00 ft.
29. Draw-down orifice invert = 288.00 ft.

**Surface Area Design**

30. Min. basin surface area;  $SA \geq 0.0031 \times G_{10} + 0.0035 \times$  \_\_\_\_\_ cfs  $\times$  \_\_\_\_\_ ac.

**Draw-down Device**

31. Draw-down device orifice diameter = 3.48 in. (From Table 11)
32.  $A =$  Total area of perforations = \_\_\_\_\_ sq. ft.
- $A_1 =$  (if of perforations/foot)(perforation area ft<sup>2</sup>)(perforated section length ft.)
- $A_2 =$  (12 perforations/foot)(0.0055 sq. ft.)(6 ft.)
- $A_3 =$  0.22 sq. ft.
- $A =$  Internal orifice area (from Table 11 or computed) = 0.20 sq. ft.
- $A_4 =$  0.22 sq. ft.
- $C = 10 - 10 \& 11$

SEE MATCHLINE SHEET 7 OF 18

FOREST CONSERVATION EASEMENT "C" RETENTION 0.33 ACRES (FUTURE)

FOREST CONSERVATION EASEMENT "E" RETENTION 0.18 ACRES

MATCHLINE SHEET 7 OF 18

NO	REVISION	DATE

**DEVELOPER'S CERTIFICATE**

"I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

*Charles Skirven* 12/23/99  
 SIGNATURE OF DEVELOPER DATE  
 CHARLES SKIRVEN

**ENGINEER'S CERTIFICATE**

"I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

*Robert H. Vogel* 12/23/99  
 SIGNATURE OF ENGINEER DATE  
 ROBERT H. VOGEL

THESE PLANS HAVE BEEN REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

*Cheryl Sijm* 3/24/00  
 USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

*Robert H. Vogel* 3/24/00  
 HOWARD SOIL CONSERVATION DISTRICT DATE

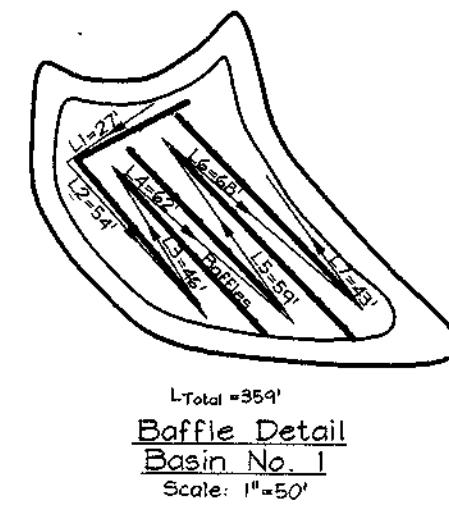
"AS-BUILT" CERTIFICATION  
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS APPROVED PLANS AND SPECIFICATIONS.  
 ROBERT H. VOGEL, P.E. NO. 16193 DATE \_\_\_\_\_  
 CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ONSITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ONSITE SITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERING STANDARDS CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

*Howard Hill* 3/24/00  
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Andy Hamble* 4/14/00  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
*Robert H. Vogel* 4/3/00  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



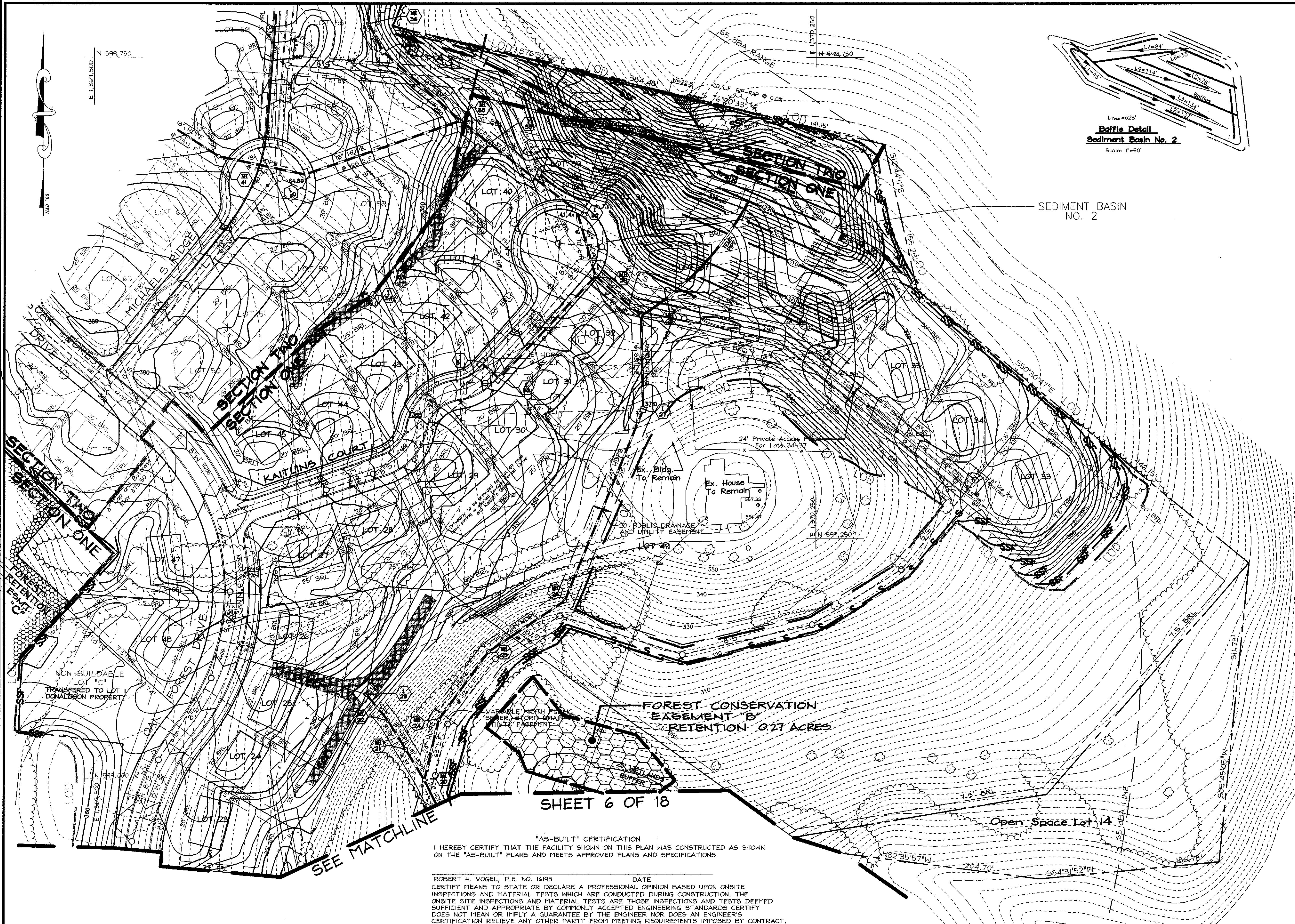
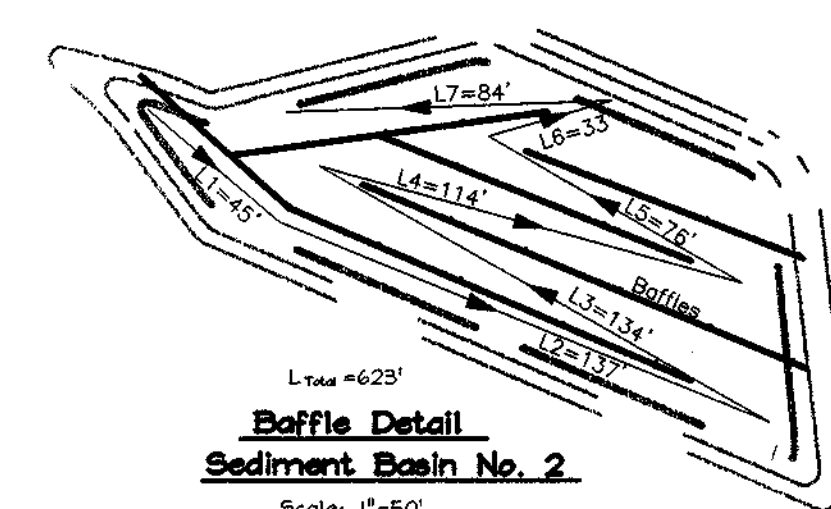
**GRADING, SEDIMENT AND EROSION CONTROL PLAN**  
**HOLLIFIELD ESTATES I**  
 SECTION ONE  
 TAX MAP #18 PARCEL 1  
 2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

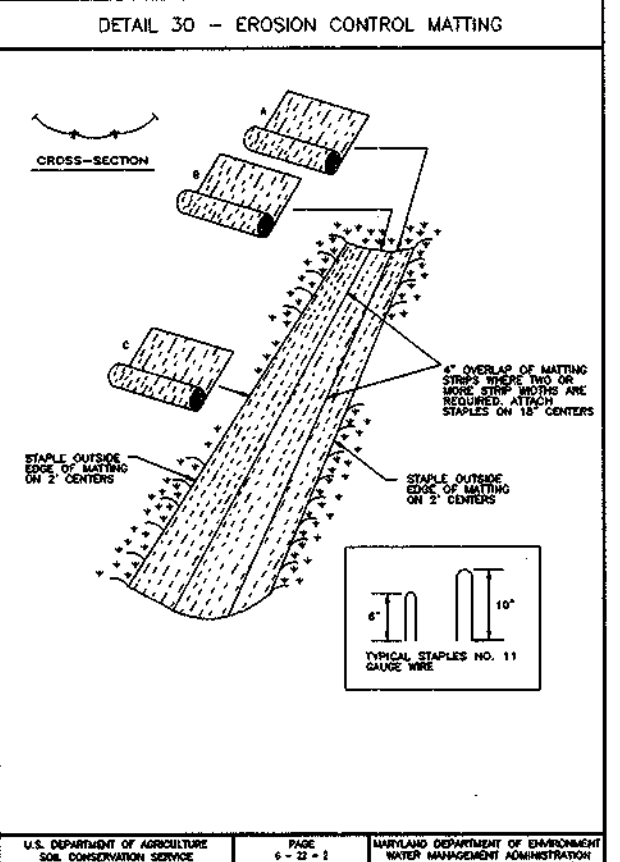
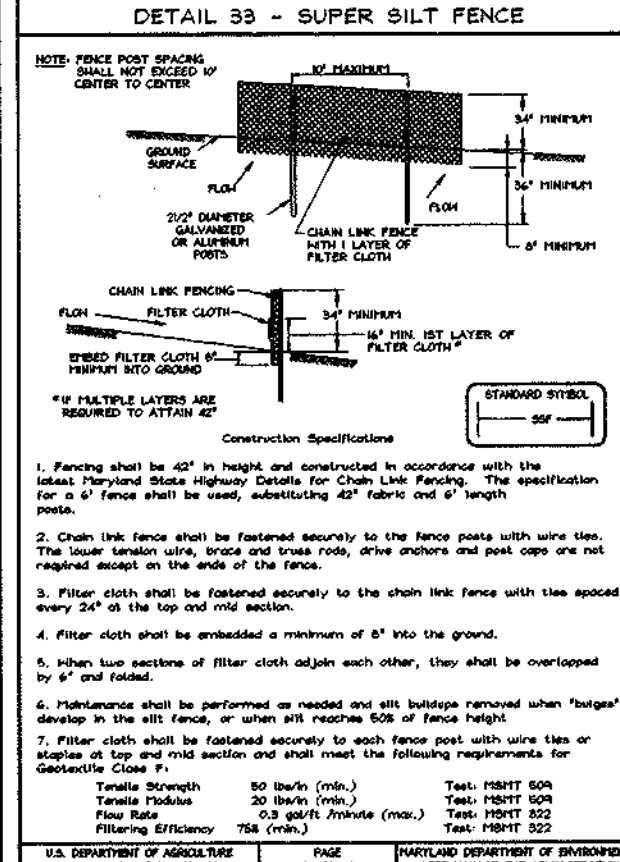
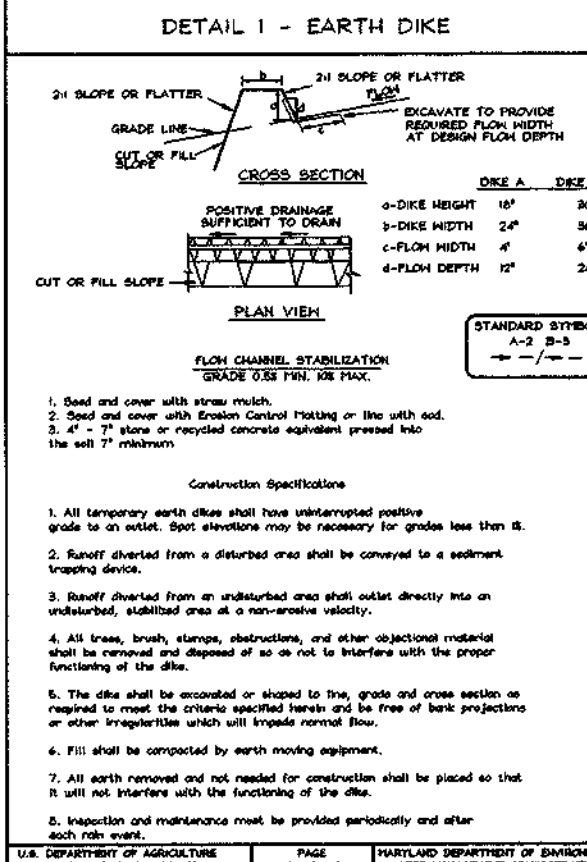
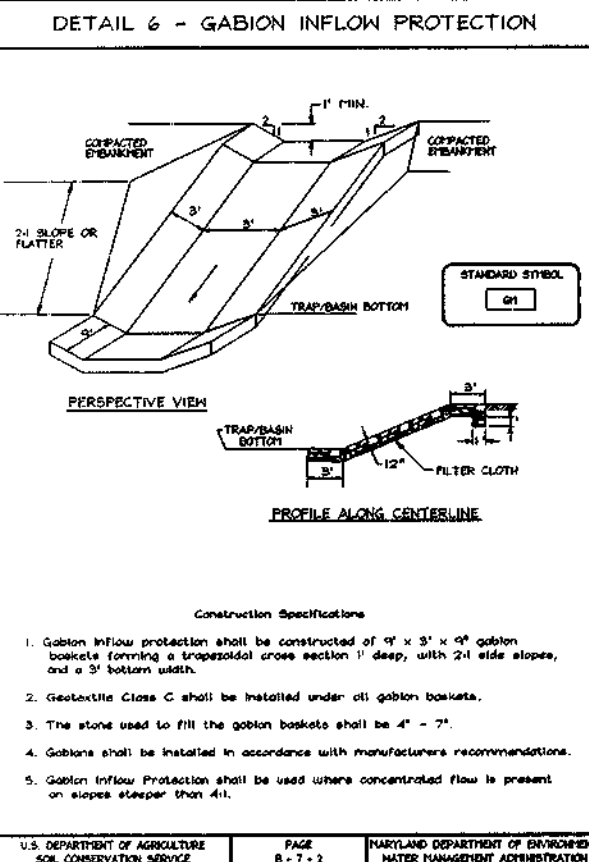
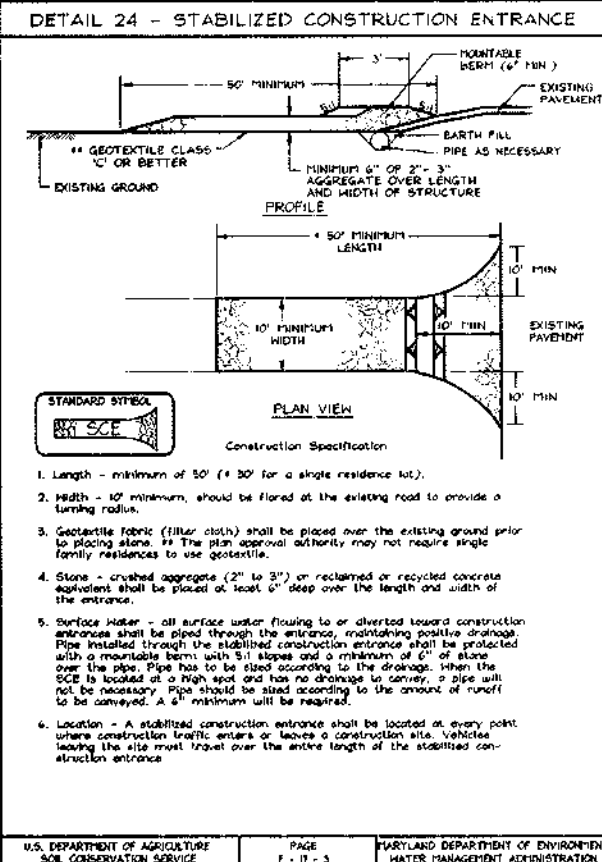
**VOGEL & ASSOCIATES**  
 ENGINEERS/SURVEYORS/PLANNERS  
 3601 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
 Tel 410.461.5828 Fax 410.465.3966

DESIGN BY: G.A.H.  
 DRAWN BY: J.E.R.  
 CHECKED BY: R.H.V.  
 DATE: Oct. 18, 1999  
 SCALE: 1"=50'  
 W.O. NO.: 99-015  
 6 SHEET OF 18

Total area draining to basin: 8.97 acres (ac)  
 Note: 1. also see Surface Area Design #30, this form.

- Basin Volume Design**
- Min. required vol. = 3600 cu.ft./ac x 8.97 ac drainage = 32,292 cu.ft.
  - Actual Volume of basin = 22,010 cu.ft.
  - Excavate 26,050 cu.ft. (365 cu.yd.) to obtain required capacity.
  - Vol. of dewatering elev. = 1850 cu.ft./ac x 8.97 ac = 16,598 cu.ft.
  - Vol. of basin at cleanout = 900 cu.ft./ac x 8.97 ac = 8,072 cu.ft.
  - Elevation corresponding to min. required volume of basin (riser crest elevation) 284.60 ft.
  - Permanent pool elevation = 281.65 ft.
  - Distance from riser crest elevation to permanent pool elevation = 2.95 ft.
  - Basin cleanout elevation 280.50 ft.
  - Distance from riser crest elevation to cleanout elevation = 4.10 ft.
- Spillway Design**
- $Q_p = 41.28$  cfs (peak discharge from 10-yr., 24-hr storm event, attach computations)
- Principal Spillway (Q<sub>10</sub>) (See Detail 11)**
- Design Principal Spillway (Barrel) discharge, Design  $Q_{10} = 41.28$  cfs (min. 10% of 10-yr peak or 6" pipe)
  - H = 6.04 ft.; Barrel length = 50.0 ft.
  - Barrel Diam. = 30 in. Note:  $Q_{10}$  must equal or exceed Design  $Q_{10}$ .
  - $Q_{10} = Q$  (from Table 13 or 14) 46.28 x (length correction factor) 1.09 = 50.41 cfs.
  - Riser Diameter 32 in.; Riser Height 5.2 ft.; Riser Head (H) = 1.02 ft.
  - Trash Rack Diam. 50 in.; Trash Rack Height 19 in.
- Emergency Spillway (Q<sub>100</sub>) (N/A)**
- Emergency spillway cap.  $Q_{100} = Q_{10} - Q_{10} = \dots = \dots$  cfs.
  - Width = 1.0 ft.; H<sub>100</sub> = 1.0 ft.
  - Entrance channel slope = 1.0%.
  - Exit channel slope = 1.0%.
- Anti-Seep Collar Design (for each Barrel)**
- $y = 6.29$ ;  $z = 2.1$ ; pipe slope = 2.0%;  $L_s = 41.02$  ft.
  - Use = 1 collar, 8 ft. x 10 in. square; projection = 3.7 ft.
- Design Elevations**
- Riser Crest = 285.20 ft.
  - Design High Water = 286.29 ft.
  - Emergency Spillway Crest = 287.28 ft.
  - Min. settled top of dam = 287.60 ft.
  - Permanent pool = 281.65 ft.
  - Bottom of Basin = 280.50 ft.
  - Draw-down orifice invert = 280.00 ft.
- Surface Area Design**
- Min. basin surface area:  $SA \geq 0.0035 \times Q_{10} = 0.0035 \times 46.53$  cfs  $\leq 0.16$  ac.
- Draw-down Device**
- Draw-down device orifice diameter = 4 in. (From Table 11)
  - $A_1 =$  Total area of perforations  $\geq 4A_2$   
 (if perforations/foot)(perforation area ft<sup>2</sup>) perforated section length ft.)  
 $A_1 = (12 \text{ perforations/foot})(0.0055 \text{ sq. ft.})(6 \text{ ft.})$   
 $A_1 = 0.38$  sq. ft.  
 $A_2 =$  Internal orifice area (from Table 11 or computed) = 0.35 sq. ft.





Construction Specifications

1. Site Preparation: Perimeter sediment control devices must be installed prior to clearing and grubbing. Areas where the embankment is to be placed shall be cleared, grubbed, and stripped of topsoil to remove trees, vegetation, roots or other objectionable material. The pool area shall not be cleared until completion of the dam embankment unless the pool area is to be used for borrow. In order to facilitate clean-out and restoration, the pool area (measured at the top of the pipe spillway) shall be cleared of all brush, trees, and other objectionable materials.

2. Cut-off Trench: A cut-off trench shall be excavated along the centerline of earth fill embankments. The minimum depth shall be four feet. The cut-off trench shall extend up both abutments to the riser crest elevation. The minimum bottom width shall be two feet, but will be allowed to permit operation of excavation and compaction equipment. The side slopes shall not be steeper than 1:1. Compaction requirements shall be the same as those for the embankment. The trench shall be dewatered during the backfilling-compaction operations. For dewatering see Section D.

3. Embankment: The fill material shall be taken from approved areas shown on the plans. It shall be clean mineral soil free of roots, woody vegetation, oversized stones, rocks, or other objectionable material. Relatively pervious materials such as sand or gravel (Unified Soil Classes GW, GP, SW & SP) or organic materials (Unified Soil Classes OH) shall not be placed in the embankment. Areas on which fill is to be placed shall be scarified prior to placement of fill. The fill material shall contain sufficient moisture so that it can be formed by hand into a ball without crumbling. If water can be squeezed out of the ball, it is too wet for proper compaction. Fill material shall be placed in six-inch to eight-inch thick continuous lifts over the entire length of the fill. Compaction shall be obtained by routing and hauling the construction equipment over the fill so that the entire surface of each layer of the fill is traversed by at least one wheel or tread track of the equipment or by the use of a compactor. The embankment shall be constructed to an elevation 10 percent higher than the design height to allow for settlement.

4. Principal Spillway: Steel risers shall be securely attached to the barrel or barrel stub by welding the full circumference making a watertight structural connection. Concrete risers shall be poured with the principal spillway in place or precast with voids around the principal spillway filled with concrete or shrink proof grout for watertight connection. The barrel stub must be attached to the riser and the riser base shall be watertight. All connections between barrel sections must be achieved by approved watertight band assemblies. The barrel and riser shall be placed on a firm, smooth foundation of impervious soil as the embankment is constructed. Breaching the embankment to install the barrel is unacceptable. Pervious materials such as sand, gravel, or crushed stone shall not be used as backfill around the pipe or anti-seep collars. The fill material around the pipe spillway shall be placed in four inch lifts and hand compacted under and around the pipe to at least the same density as the adjacent embankment. A depth of 1.5 times the pipe diameter (min.) shall be backfilled over the principal spillway and hand compacted before crossing it with construction.

5. Emergency Spillway: The emergency spillway shall be installed in undisturbed ground. The achievement of planned elevations, grades, design width, entrance and exit channel slopes are critical to the successful operation of the emergency spillway and must be constructed within a tolerance of +/- 0.2 feet.

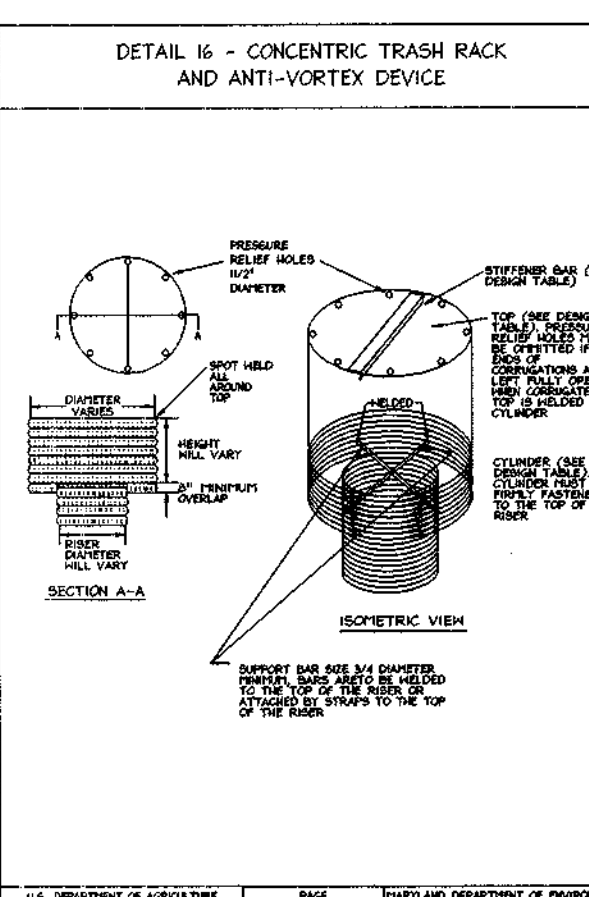
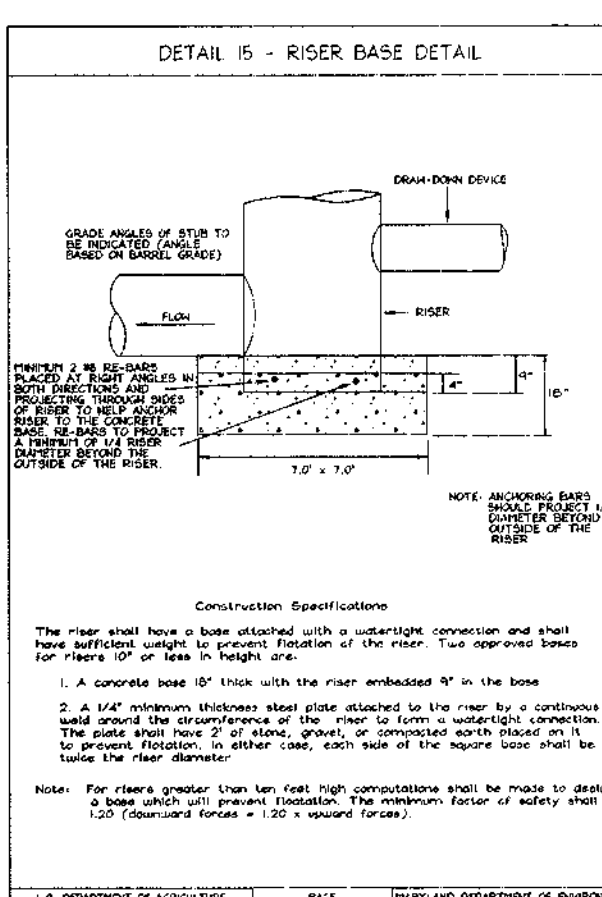
6. Vegetative Treatment: Stabilize the embankment in accordance with the appropriate vegetative Standard and Specifications immediately following construction. In no case shall the embankment remain unstabilized for more than seven (7) days. Once constructed, the top and outside face of the embankment shall be stabilized with seed and mulch. The remainder of the interior slopes should be stabilized (one time) with seed and mulch upon basin completion and monitored and maintained erosion free during the life of the basin.

7. Safety: Local requirements concerning fencing and signs shall be met, warning the public of hazards of soft sediment and floodwater.

8. Maintenance: Repair all damage caused by soil erosion and construction equipment at or before the end of each working day. Sediment shall be removed from the basin when it reaches the specified distance below the top of the riser as shown on the riser. This sediment shall be placed in such a manner that it will not erode from the site. The sediment shall not be deposited downstream from the embankment, adjacent to a stream or floodplain. Disposal areas must be stabilized.

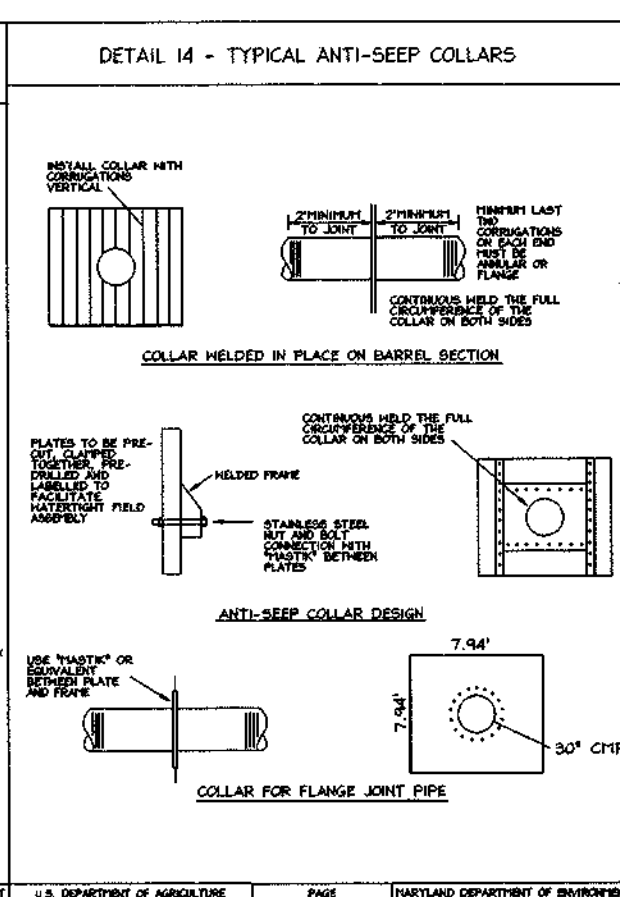
9. Final Disposal: When temporary structures have served their intended purpose and the contributing drainage area has been properly stabilized, the embankment and resulting sediment deposits are to be leveled or otherwise disposed of in accordance with the approved sediment control plan. The proposed use of a sediment basin site will often dictate final disposition of the basin and any sediment contained therein. If the site is scheduled for future construction, then the basin material and trapped sediments must be removed and safely disposed of and the basin shall be backfilled with a structural fill. When the basin area is to remain open space, the pond may be pumped dry (using methods in Section D - Dewatering), graded, and back filled.

10. Conversion to Stormwater Management Structure: After permanent stabilization of all disturbed contributory drainage areas, temporary sediment basins, if initially built and certified to meet permanent standards, may be converted to permanent stormwater management structures. To convert the basin from temporary to permanent use, the outlet structure must be modified in accordance with approved stormwater management design plans. Additional grading may also be necessary to provide the required storage volume in the basin. Conversion can only take place after all disturbed areas have been permanently stabilized.



DETAIL 16 - CONCENTRIC TRASH RACK AND ANTI-VORTEX DEVICE (continued)

Clear	Trash Rack	Minimum	Minimum	Minimum
Depth	Spacing	Bar Size	Bar Spacing	Bar Spacing
14	18	1/2"	18"	18"
16	24	3/4"	18"	18"
18	30	1"	18"	18"
20	36	1 1/4"	18"	18"
24	48	1 3/4"	18"	18"
27	54	2"	18"	18"
30	60	2 1/4"	18"	18"
36	72	3"	18"	18"
42	84	3 1/2"	18"	18"
48	96	4"	18"	18"
54	108	4 1/2"	18"	18"
60	120	5"	18"	18"
66	132	5 1/2"	18"	18"
72	144	6"	18"	18"
78	156	6 1/2"	18"	18"
84	168	7"	18"	18"
90	180	7 1/2"	18"	18"



PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO REDISTURBANCE. FURTHER DISTURBANCE REQUIRES A PERMANENT LONG-LIVED VEGETATIVE COVER IS NEEDED.

SEEDING PREPARATION: Loosen upper three inches of soil by raking, digging or other acceptable means before seeding. If not previously loosened, apply 400 lbs. per acre of 10-10-10 fertilizer.

SOIL AMENDMENTS: In lieu of soil test recommendations, use one of the following:

1) Fertilizer: Apply 2 tons per acre of 10-10-10 fertilizer (20 lbs. N, 20 lbs. P, 20 lbs. K) before seeding. Or, use 1/2 ton per acre of 10-10-10 fertilizer (10 lbs. N, 10 lbs. P, 10 lbs. K) before seeding. Or, use 1/2 ton per acre of 10-10-10 fertilizer (10 lbs. N, 10 lbs. P, 10 lbs. K) before seeding. Or, use 1/2 ton per acre of 10-10-10 fertilizer (10 lbs. N, 10 lbs. P, 10 lbs. K) before seeding.

2) Topsoil: Apply 2 tons per acre of 10-10-10 fertilizer (20 lbs. N, 20 lbs. P, 20 lbs. K) before seeding. Or, use 1/2 ton per acre of 10-10-10 fertilizer (10 lbs. N, 10 lbs. P, 10 lbs. K) before seeding. Or, use 1/2 ton per acre of 10-10-10 fertilizer (10 lbs. N, 10 lbs. P, 10 lbs. K) before seeding.

3) Topsoil: Apply 2 tons per acre of 10-10-10 fertilizer (20 lbs. N, 20 lbs. P, 20 lbs. K) before seeding. Or, use 1/2 ton per acre of 10-10-10 fertilizer (10 lbs. N, 10 lbs. P, 10 lbs. K) before seeding. Or, use 1/2 ton per acre of 10-10-10 fertilizer (10 lbs. N, 10 lbs. P, 10 lbs. K) before seeding.

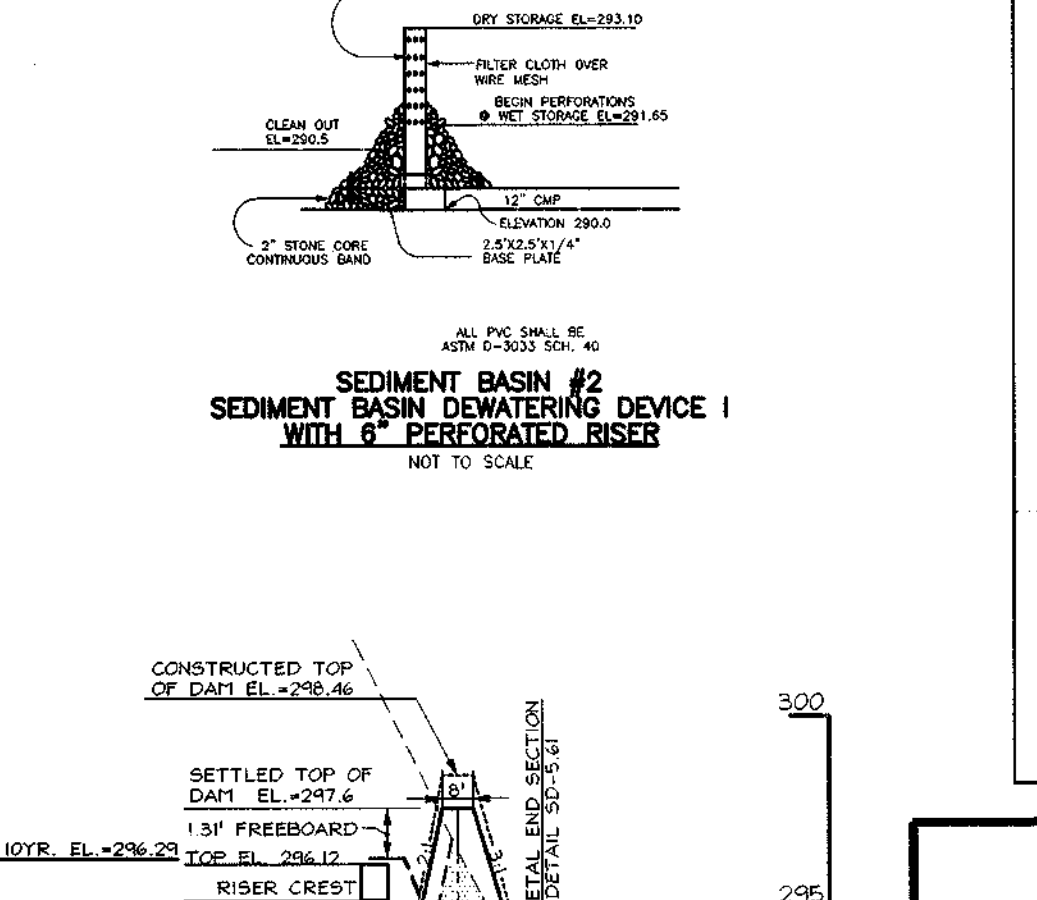
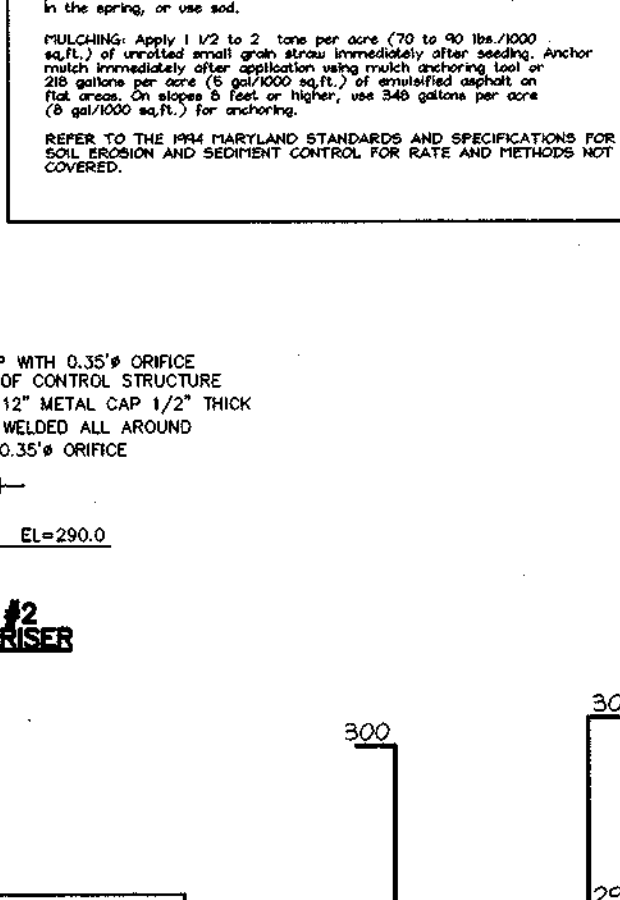
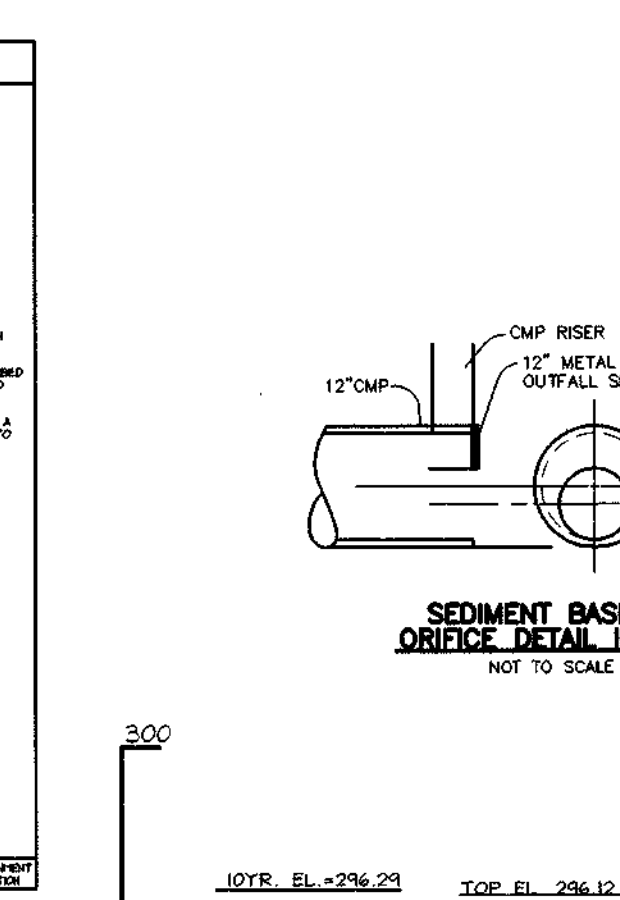
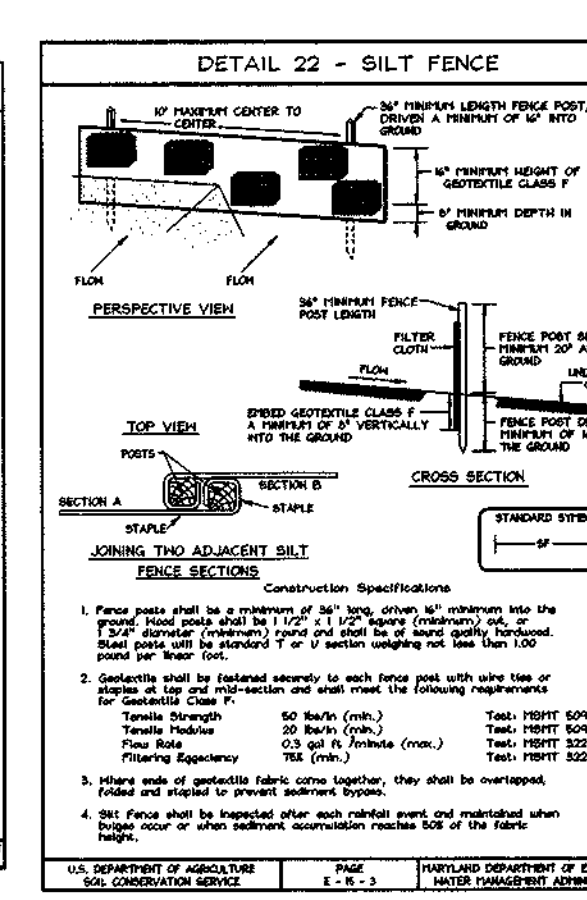
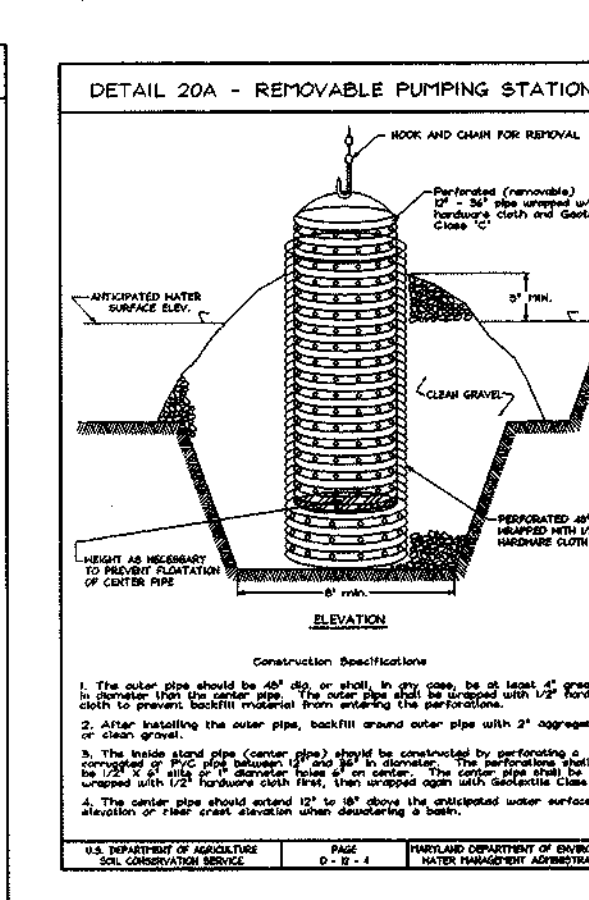
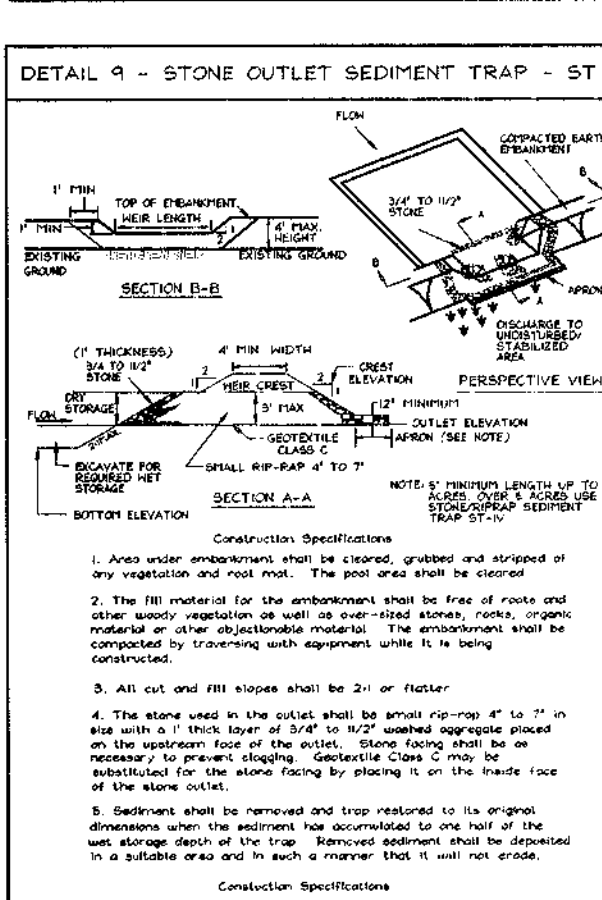
4) Topsoil: Apply 2 tons per acre of 10-10-10 fertilizer (20 lbs. N, 20 lbs. P, 20 lbs. K) before seeding. Or, use 1/2 ton per acre of 10-10-10 fertilizer (10 lbs. N, 10 lbs. P, 10 lbs. K) before seeding. Or, use 1/2 ton per acre of 10-10-10 fertilizer (10 lbs. N, 10 lbs. P, 10 lbs. K) before seeding.

TEMPORARY SEEDING NOTES

SEEDING PREPARATION: Loosen upper three inches of soil by raking, digging or other acceptable means before seeding. If not previously loosened, apply 400 lbs. per acre of 10-10-10 fertilizer.

SOIL AMENDMENTS: Apply 400 lbs. per acre of 10-10-10 fertilizer.

SEEDING: For the period March 1 thru April 30, and August 1 thru October 31, seed with 20 lbs. per acre (14 lbs. 10-10-10 fertilizer, 6 lbs. 10-10-10 fertilizer) before seeding. During the period May 1 thru July 31, seed with 20 lbs. per acre (14 lbs. 10-10-10 fertilizer, 6 lbs. 10-10-10 fertilizer) before seeding. During the period November 1 thru February 28, seed with 20 lbs. per acre (14 lbs. 10-10-10 fertilizer, 6 lbs. 10-10-10 fertilizer) before seeding. During the period March 1 thru April 30, and August 1 thru October 31, seed with 20 lbs. per acre (14 lbs. 10-10-10 fertilizer, 6 lbs. 10-10-10 fertilizer) before seeding. During the period May 1 thru July 31, seed with 20 lbs. per acre (14 lbs. 10-10-10 fertilizer, 6 lbs. 10-10-10 fertilizer) before seeding. During the period November 1 thru February 28, seed with 20 lbs. per acre (14 lbs. 10-10-10 fertilizer, 6 lbs. 10-10-10 fertilizer) before seeding.



210 STANDARDS AND SPECIFICATIONS FOR TOPSOIL

Definition: Placement of topsoil over a prepared subgrade prior to establishment of permanent vegetation.

Purpose: To provide a suitable soil medium for vegetation growth. Soil of course from the natural source, the natural limits, but not, moderate soil to plants, and/or moderate soil to plants, and/or moderate soil to plants.

Conditions Where Practice Applies:

1. This practice is limited to areas having 24 or flatter slopes where:

a. The texture of the exposed subgrade material is not adequate to produce moderate growth.

b. The soil moisture is to be adequate to the working zone to a depth equal to vegetation roots or furnish containing supplies of moisture and plant nutrients.

c. The original soil to be vegetated contains greater than 1% organic matter.

d. No acid soil is to be placed on soil which has been treated with lime or other chemicals.

e. The soil is to be placed on soil which has been treated with lime or other chemicals.

f. The soil is to be placed on soil which has been treated with lime or other chemicals.

Construction and Material Specifications:

1. Topsoil salvaged from the existing site may be used provided that it meets the standards set forth in these specifications. Topsoil salvaged from other sites is allowed for a given site type as set forth in the specifications for topsoil section in the Soil Survey published by NRCS in cooperation with Maryland Agricultural Experiment Station.

2. Topsoil Specifications - Soil to be used as topsoil must meet the following:

a. Topsoil shall be a loam, sandy loam, clay loam, silty loam, sandy clay loam, heavy sand, or other soils may be used if approved by the engineer. Other soils may be used if approved by the engineer.

b. Topsoil shall be a minimum of 6 inches thick and shall not be a mixture of contrasting textures, colors, or other characteristics. Topsoil shall be uniform in texture, color, and other characteristics. Topsoil shall be uniform in texture, color, and other characteristics.

c. Topsoil shall be free of stones or plant parts such as twigs, grass, weeds, or other materials which are objectionable to the user.

d. Topsoil shall not be placed on soil which has been treated with lime or other chemicals.

e. Topsoil shall not be placed on soil which has been treated with lime or other chemicals.

f. Topsoil shall not be placed on soil which has been treated with lime or other chemicals.

SEDIMENT CONTROL NOTES

1. A minimum of 40 hours notice must be given to the Howard County Department of Inspection, License and Permit Services prior to the start of any construction. Construction shall be in accordance with the 1982 HANDBOOK OF STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL and the following practices:

2. All vegetation and structural practices are to be installed according to the procedures of this plan and are to be in accordance with the 1982 HANDBOOK OF STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL and the following practices:

3. Following initial soil disturbance or redisturbance, permanent or temporary stabilization shall be completed within (a) 7 calendar days for all permanent sediment control structures, (b) 14 calendar days for all temporary stabilization structures, and (c) 30 calendar days for all slopes greater than 5:1. (5) 14 days or all other disturbed or graded areas on the project site.

4. All sediment traps/basins shall be fenced and warning signs posted around their perimeter in accordance with Vol. 1, Chapter 7, HOWARD COUNTY DESIGN MANUAL, Storm Drainage.

5. All disturbed areas must be stabilized within the three period specified above. Areas to be seeded or planted shall be in accordance with the 1982 HANDBOOK OF STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. For permanent seeding, seed, temporary seeding, and mulch shall be applied to the disturbed area. For temporary seeding, seed and mulch shall be applied to the disturbed area. For permanent seeding, seed, temporary seeding, and mulch shall be applied to the disturbed area. For temporary seeding, seed and mulch shall be applied to the disturbed area.

6. All sediment control structures are to remain in place and are to be maintained in operative condition until permanent structures are installed. Areas having slopes steeper than 2:1 shall have the appropriate stabilization from the plan.

7. Site Analysis:

Total Area	44.95 Acres
Area Disturbed	23.32 Acres
Area to be vegetatively stabilized	23.32 Acres
Total Cut	53,825 cu. yd.
Total Fill	53,825 cu. yd.

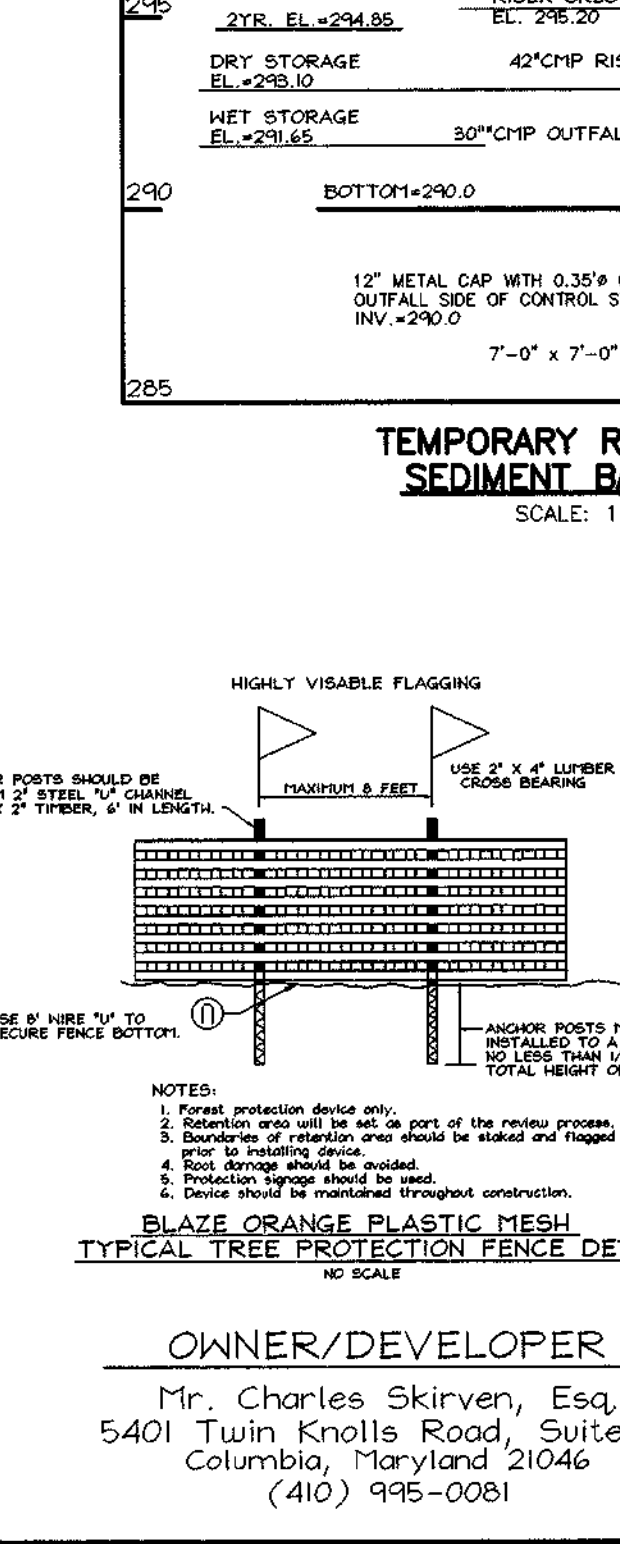
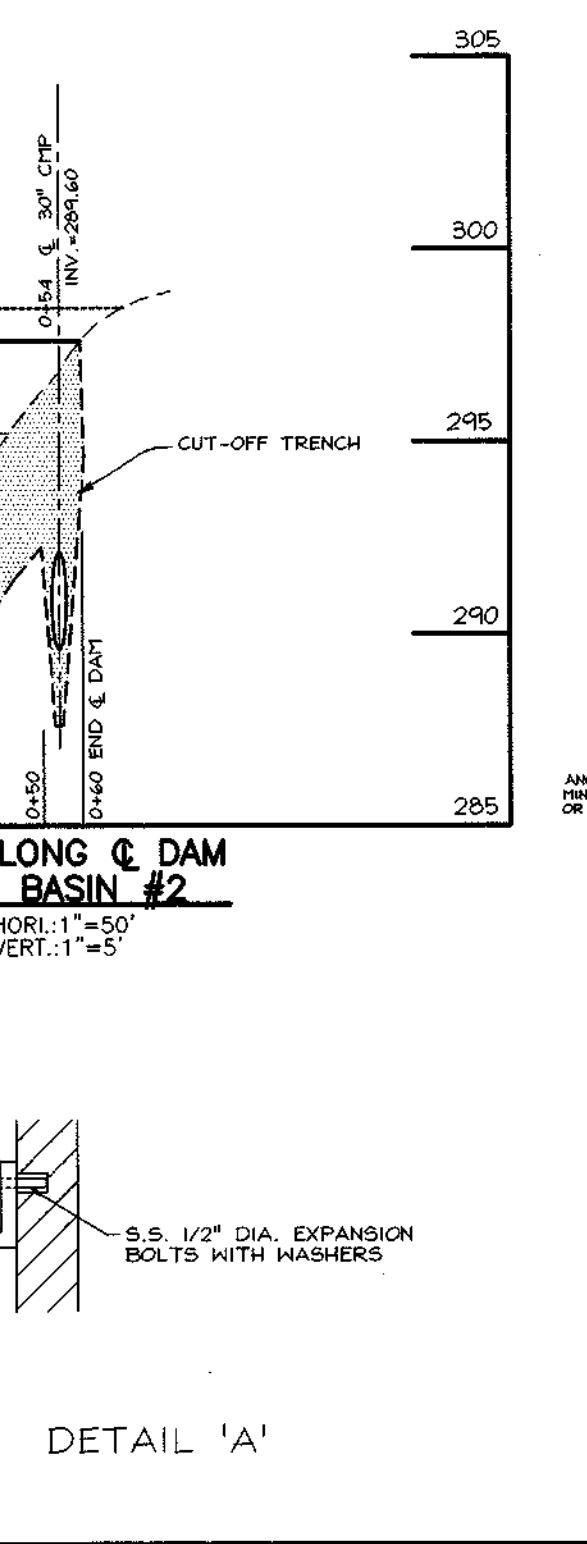
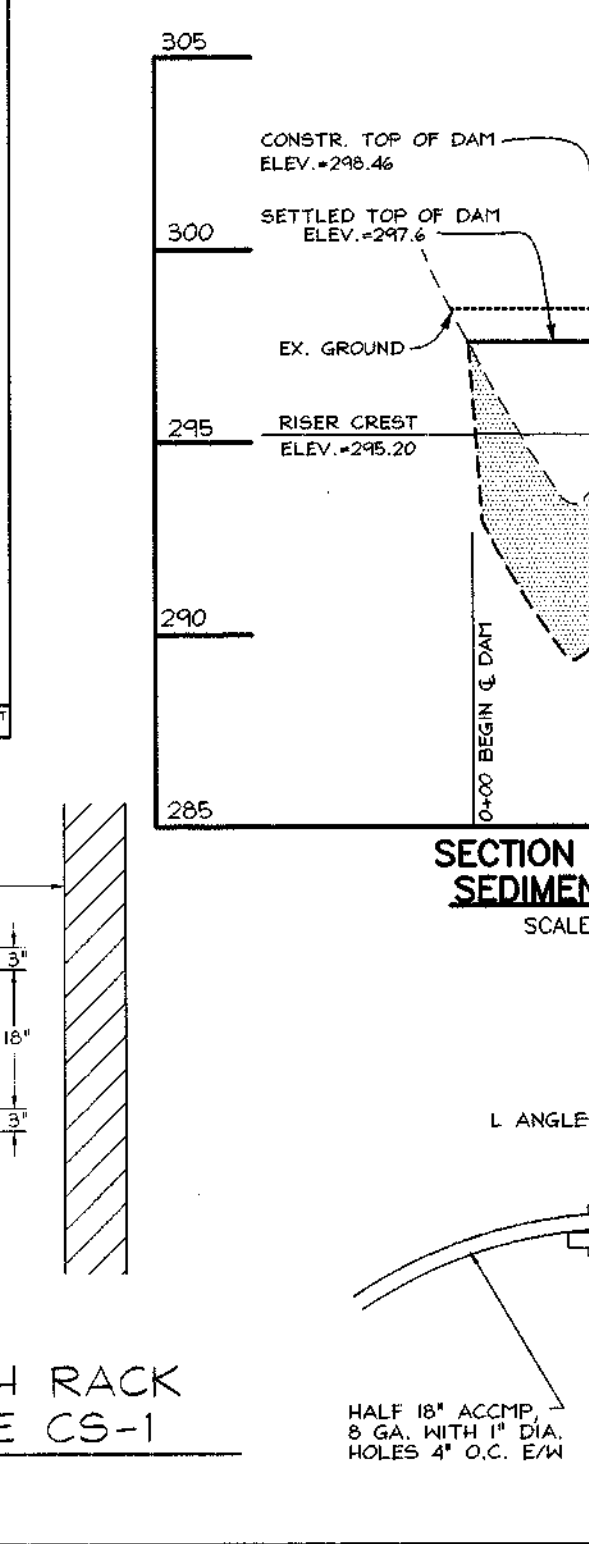
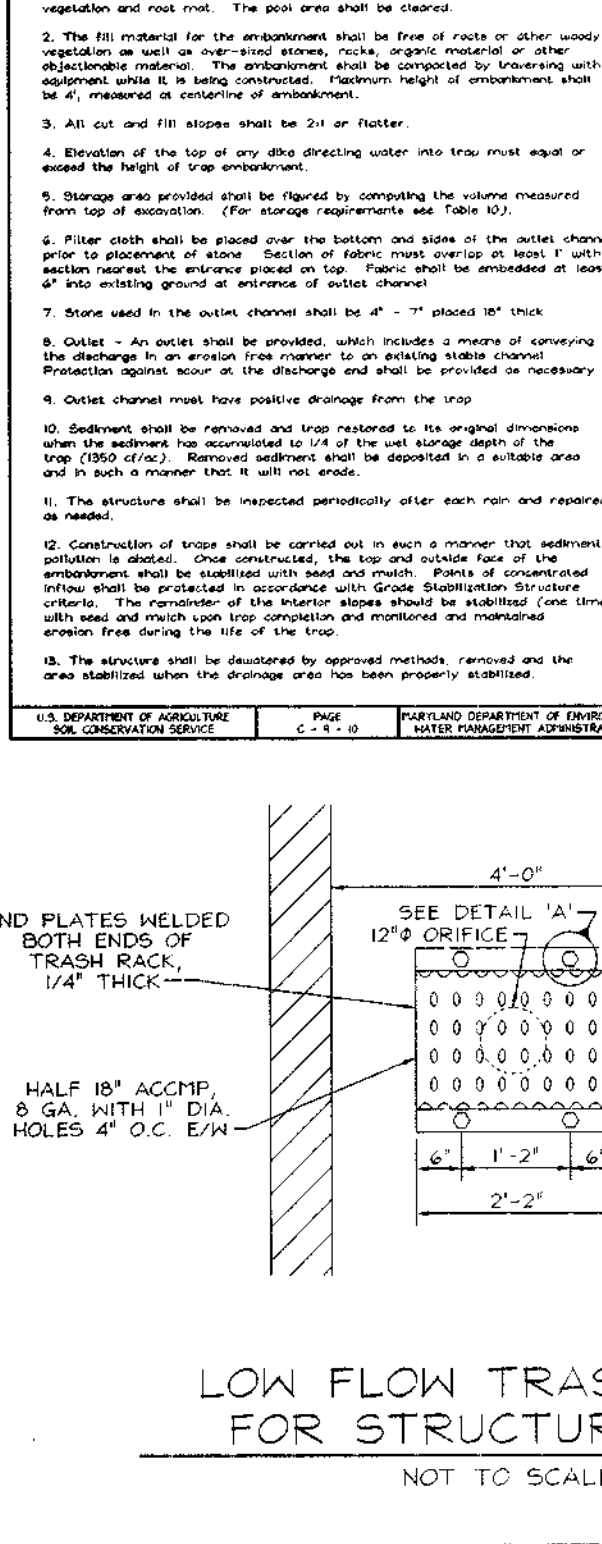
8. Off-site sedimentation area location.

9. Any sediment control practice which is disturbed by grading activity for placement of other structures shall be repaired within the same day of disturbance. Other holding or grading inspection reports may be authorized until this initial approval by the inspection agency is made.

10. On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be obtained upon completion of installation of permanent erosion and sediment controls, but before proceeding with any other soil disturbance or grading. Other holding or grading inspection reports may be authorized until this initial approval by the inspection agency is made.

11. Trenches for the construction of utilities is limited to three pipe lengths or less, which shall be back-filled and stabilized within one working day, whichever is shorter.

12. To be determined by contractor, with pre-approval of the Sediment Control Inspector with an approved active grading permit.



"AS-BUILT" CERTIFICATION

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS APPROVED PLANS AND SPECIFICATIONS.

ROBERT H. VOGEL, P.E. NO. 16193 DATE 12/23/99

CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ONSITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ONSITE SITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERING STANDARDS. CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

ENGINEERS CERTIFICATE

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

OWNER/DEVELOPER

Mr. Charles Skirven, Esq.  
5401 Twin Knolls Road, Suite 10  
Columbia, Maryland 21046  
(410) 995-0081

DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE WITH THESE PLANS AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT."

DATE 12/23/99

SIGNATURE OF DEVELOPER

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

APPROVED: CHIEF, BUREAU OF HIGHWAYS

THESE PLANS HAVE BEEN REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SOIL EROSION AND SEDIMENT CONTROL.

DATE 3/24/00

DATE 3/24/00

DATE 3/24/00

SEDIMENT AND EROSION CONTROL DETAILS

HOLLIFIELD ESTATES I SECTION ONE

TAX MAP #18 2nd ELECTION DISTRICT

PARCEL 1 HOWARD COUNTY, MARYLAND

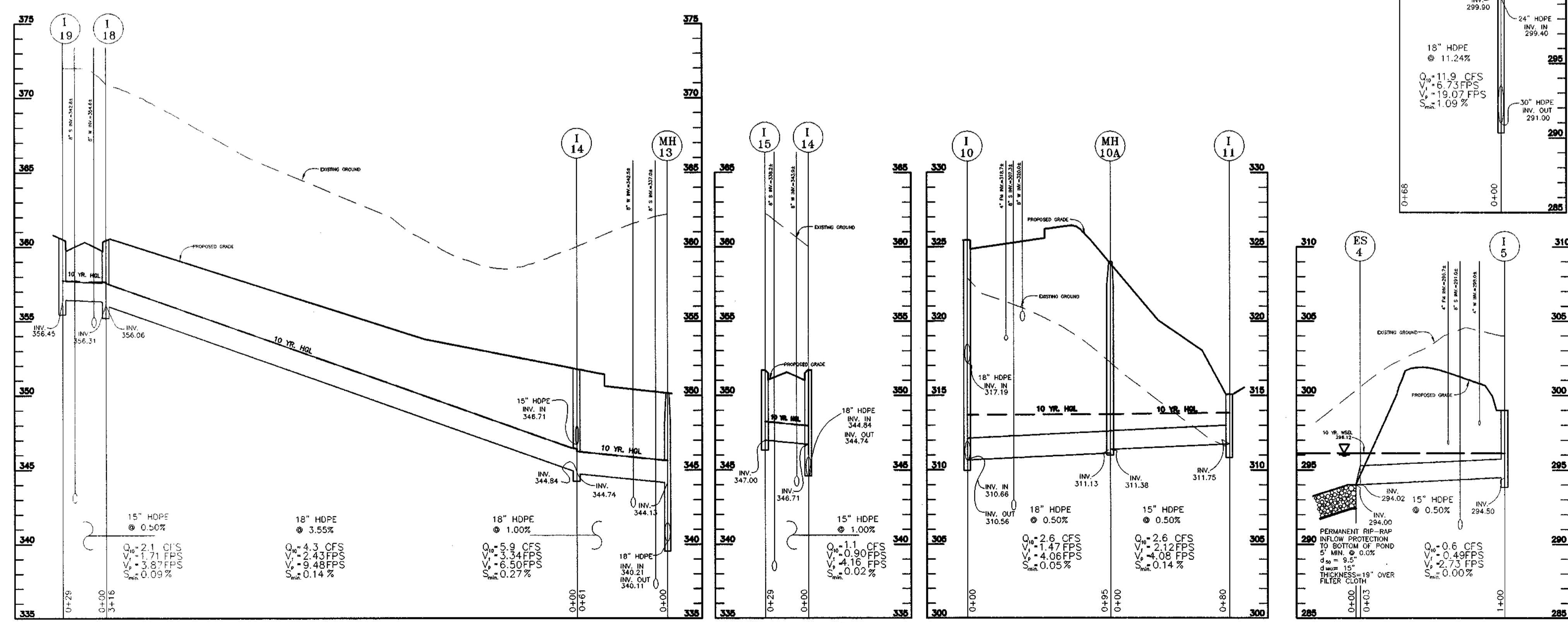
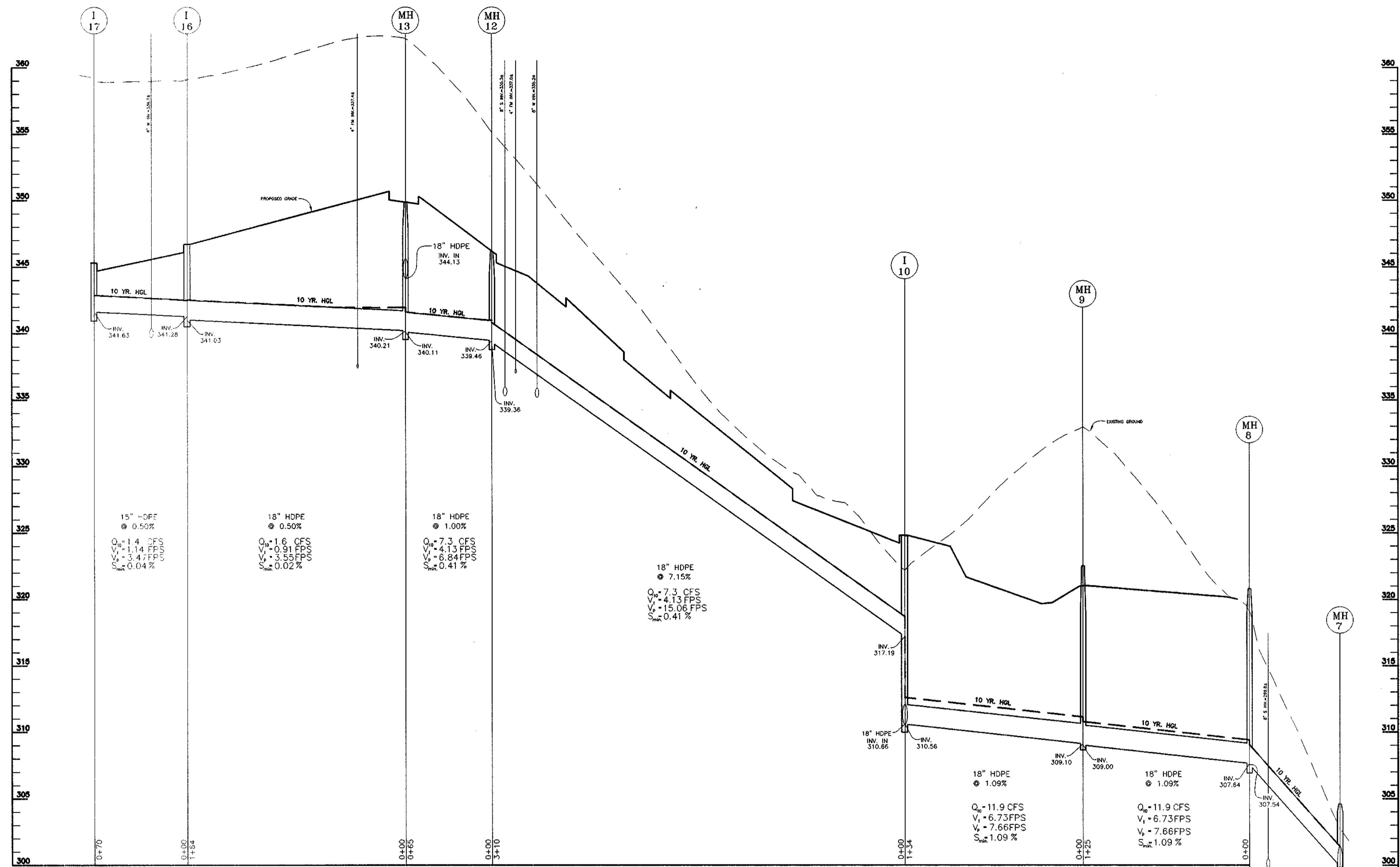
VOGEL & ASSOCIATES ENGINEERS SURVEYORS-PLANNERS

3691 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
Tel 410-491-5828 Fax 410-495-3966

DESIGN BY: GAH  
DRAWN BY: PS  
CHECKED BY: RAV  
DATE: Oct. 18, 1999  
SCALE: As Shown  
I.W.O. NO.: 99-013

8 SHEET OF 18





STRUCTURE SCHEDULE

NO.	TYPE	TOP EL.	INV. IN.	INV. OUT.	LOCATION	REMARKS
EW-1	TYPE A HEADWALL	273.50	-	269.00	N 598860.5742 E 1370066.4184	SD 5.11
MH-2	STD. MANHOLE	279.00	271.20	269.19	N 598853.7591 E 1370051.9152	G 5.01
S-8	CONCRETE RISER	297.80	287.90	283.50	N 598809.6020 E 1369957.2635	SEE DETAILS
ES-4	15" HDPE END SECTION	295.44	294.02	294.00	N 598722.5400 E 1370055.4413	ADS N-12
I-5	YARD INLET	299.00	-	294.50	N 598843.8107 E 1370111.7340	SD 4.14
ES-8	30" HDPE END SECTION	292.85	290.10	290.00	N 598879.2325 E 1369895.1542	ADS N-12
MH-7	4' STD. PRECAST MANHOLE *	304.50	299.90	291.00	N 598930.2489 E 1369877.4531	G 5.12
MH-8	4' STD. PRECAST MANHOLE	320.50	307.64	307.54	N 598906.3138 E 1369813.8048	G 5.12
MH-9	4' STD. PRECAST MANHOLE	322.50	309.10	309.00	N 598784.7573 E 1369786.8523	G 5.12
I-10	PRECAST 'A-10' INLET *	324.79	317.19	310.66	N 598667.3362 E 1369850.4497	SD 4.41
MH 10A	4' STD. PRECAST MANHOLE	324.00	311.38	311.13	N 598576.3745 E 1369863.8431	G 5.12
I-11	PRECAST TYPE 'D' INLET	315.83	-	311.75	N 598501.5751 E 1369876.7913	SD 4.39 2 SIDES
MH-12	4' STD. PRECAST MANHOLE	346.27	339.46	339.36	N 598522.7854 E 1369575.6108	G 5.12
MH-13	4' STD. PRECAST MANHOLE *	349.45	344.13	340.21	N 598537.2057 E 1369512.2938	G 5.12
I-14	PRECAST 'A-5' INLET	351.68	344.84	344.74	N 598595.9965 E 1369527.1751	SD 4.40
I-15	PRECAST 'A-10' INLET	351.68	-	347.00	N 598601.8557 E 1369498.7455	SD 4.41
I-16	PRECAST 'A-5' INLET	346.68	341.28	341.03	N 598377.9783 E 1369473.0113	SD 4.40
I-17	PRECAST 'A-10' INLET	345.29	-	341.63	N 598318.4721 E 1369438.6073	SD 4.41
I-18	PRECAST 'A-5' INLET	360.39	356.31	356.06	N 598910.1693 E 1369559.5411	SD 4.40
I-19	PRECAST 'A-5' INLET	360.39	-	356.45	N 598912.7189 E 1369530.8262	SD 4.41
MH-20	4' STD. PRECAST MANHOLE	311.00	304.50	302.40	N 598999.2187 E 1369843.7115	G 5.12
MH-21	4' STD. PRECAST MANHOLE *	322.00	314.75	310.05	N 599030.7815 E 1369824.4037	G 5.12
MH-22	4' STD. PRECAST MANHOLE *	344.00	336.70	321.05	N 599060.6382 E 1369806.1396	G 5.12
I-23	PRECAST TYPE 'D' INLET	351.83	-	343.00	N 599088.4825 E 1369783.3281	SD 4.39 2 SIDES
MH-24	4' STD. PRECAST MANHOLE	316.00	307.82	307.72	N 599061.7895 E 1369858.5194	G 5.12
MH-25	4' STD. PRECAST MANHOLE	321.50	310.50	310.40	N 599132.9585 E 1368910.2782	G 5.12
MH-26	4' STD. PRECAST MANHOLE	329.00	323.00	318.50	N 599185.6988 E 1369989.2938	G 5.12
I-27	PRECAST TYPE 'D' INLET	337.83	329.57	329.47	N 599384.2042 E 1370070.5323	SD 4.39 2 SIDES
MH-28	4' STD. PRECAST MANHOLE	341.80	330.16	330.06	N 599481.8934 E 1370068.3544	G 5.12
MH-29	4' STD. PRECAST MANHOLE *	343.93	336.22	330.48	N 599523.1190 E 1370020.8034	G 5.12
I-30	PRECAST 'A-10' INLET	353.29	349.52	349.27	N 599416.4278 E 1369921.1287	SD 4.41
I-31	PRECAST 'A-10' INLET	353.29	-	350.02	N 599433.0305 E 1369902.1711	SD 4.41
I-32	PRECAST 'A-10' INLET	342.00	331.03	330.93	N 599590.0595 E 1370001.4974	SD 4.41
I-33	YARD INLET	337.00	333.60	331.59	N 599660.8647 E 1369910.7626	SD 4.14
I-34	YARD INLET	355.00	-	351.51	N 599503.0552 E 1369789.6542	SD 4.14
MH-35	4' STD. PRECAST MANHOLE *	345.50	338.79	332.39	N 599684.4005 E 1369880.4543	G 5.12

NOTES:  
 1. TOP ELEVATIONS ARE TO CENTERLINE TOP FACE OF CURB FOR TYPE A INLETS, CENTERLINE TOP OF SLAB FOR TYPE D INLETS AND CENTERLINE TOP OF GRATE FOR YARD INLETS. STRUCTURE LOCATION COORDINATES ARE TO CENTER OF STRUCTURE.  
 2. SEE HOLLIFIELD ESTATES I, SECTION TWO FOR STRUCTURES I-35A THRU I-45.  
 3. \* GRANITE BLOCK BOTTOM

STORM DRAIN PROFILES

SCALE: HORIZ.: 1"=50'  
 VERT.: 1"=5'

OWNER/DEVELOPER  
 Mr. Charles Skirven, Esq.  
 5401 Twin Knolls Road, Suite 10  
 Columbia, Maryland 21046  
 (410) 995-0081

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Cindy Hamilton* 9/15/00  
 CHIEF, DIVISION OF LAND DEVELOPMENT \* DATE  
*William Dammann* 4/3/00  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION \* DATE

NO.	REVISION	DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.  
*Hamilton* 3/29/00  
 CHIEF, BUREAU OF HIGHWAYS DATE

AS-BUILT CERTIFICATE

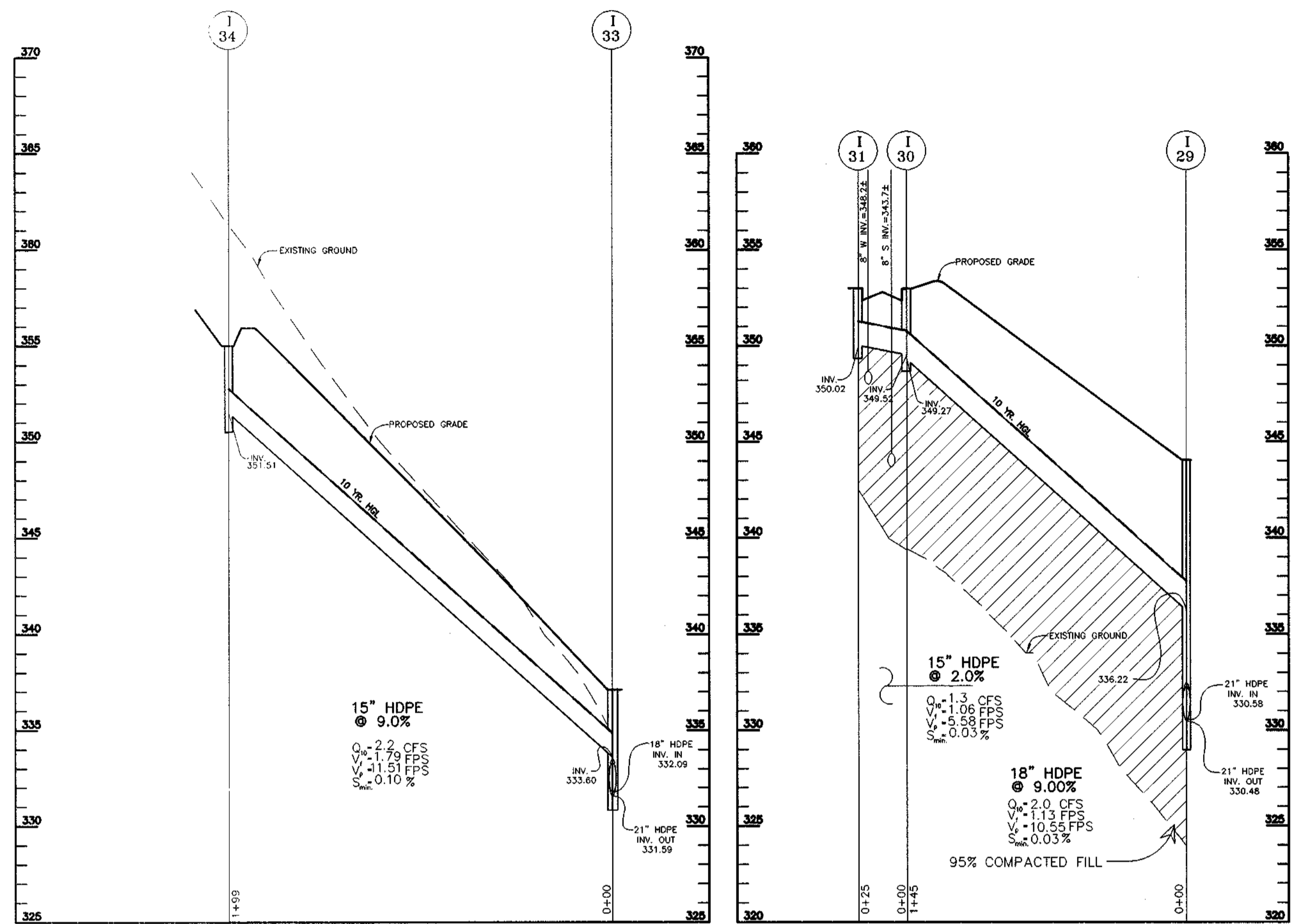
DATE

STORM DRAIN PROFILES  
 HOLLIFIELD ESTATES I  
 SECTION ONE  
 TAX MAP #18 PARCEL I  
 2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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 3091 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
 Tel 410.461.5829 Fax 410.465.3966

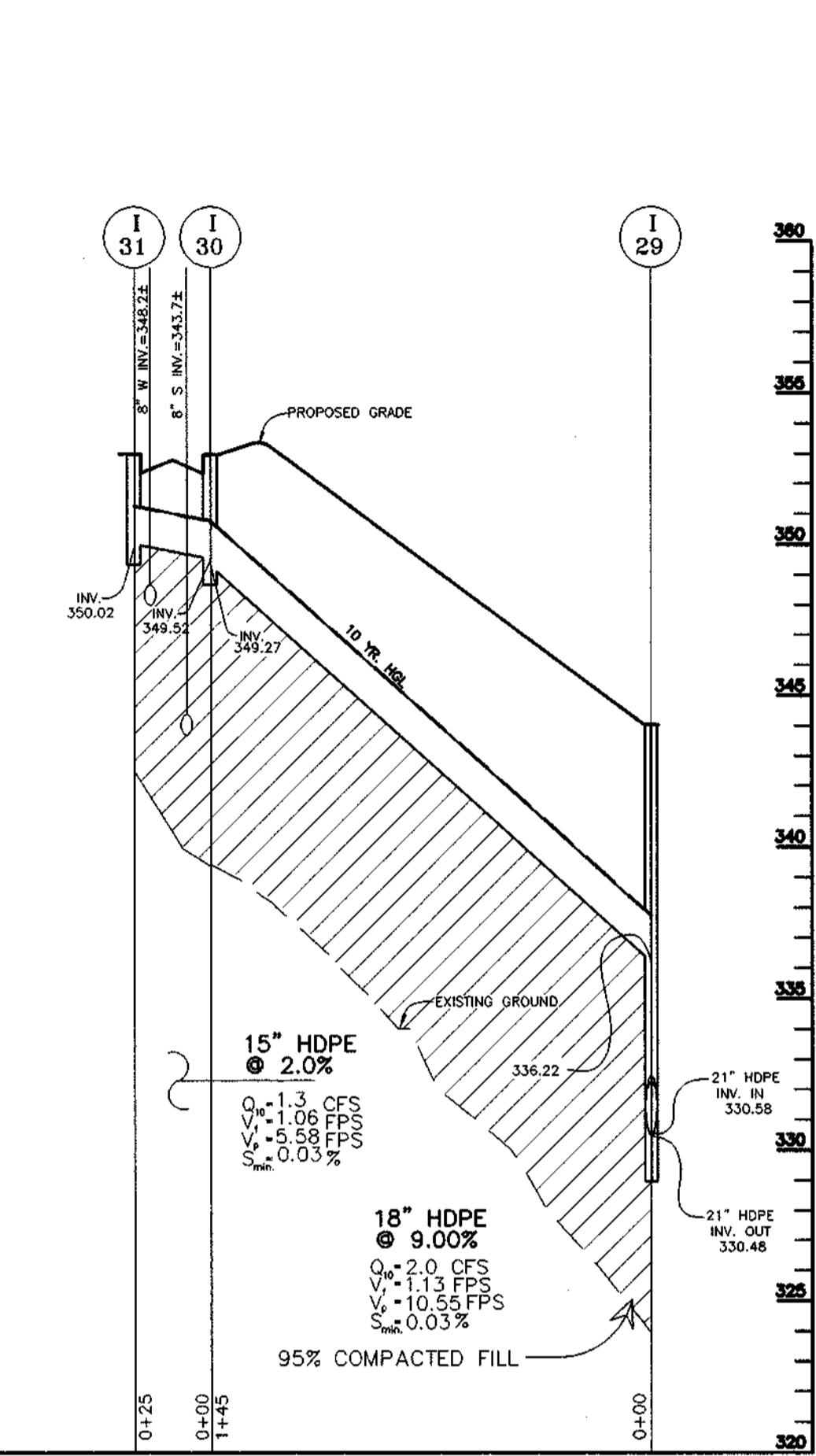
DESIGN BY: GAH  
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 DATE: Oct. 18, 1999  
 SCALE: AS SHOWN  
 W.O. NO.: 99-013

9 SHEET OF 18



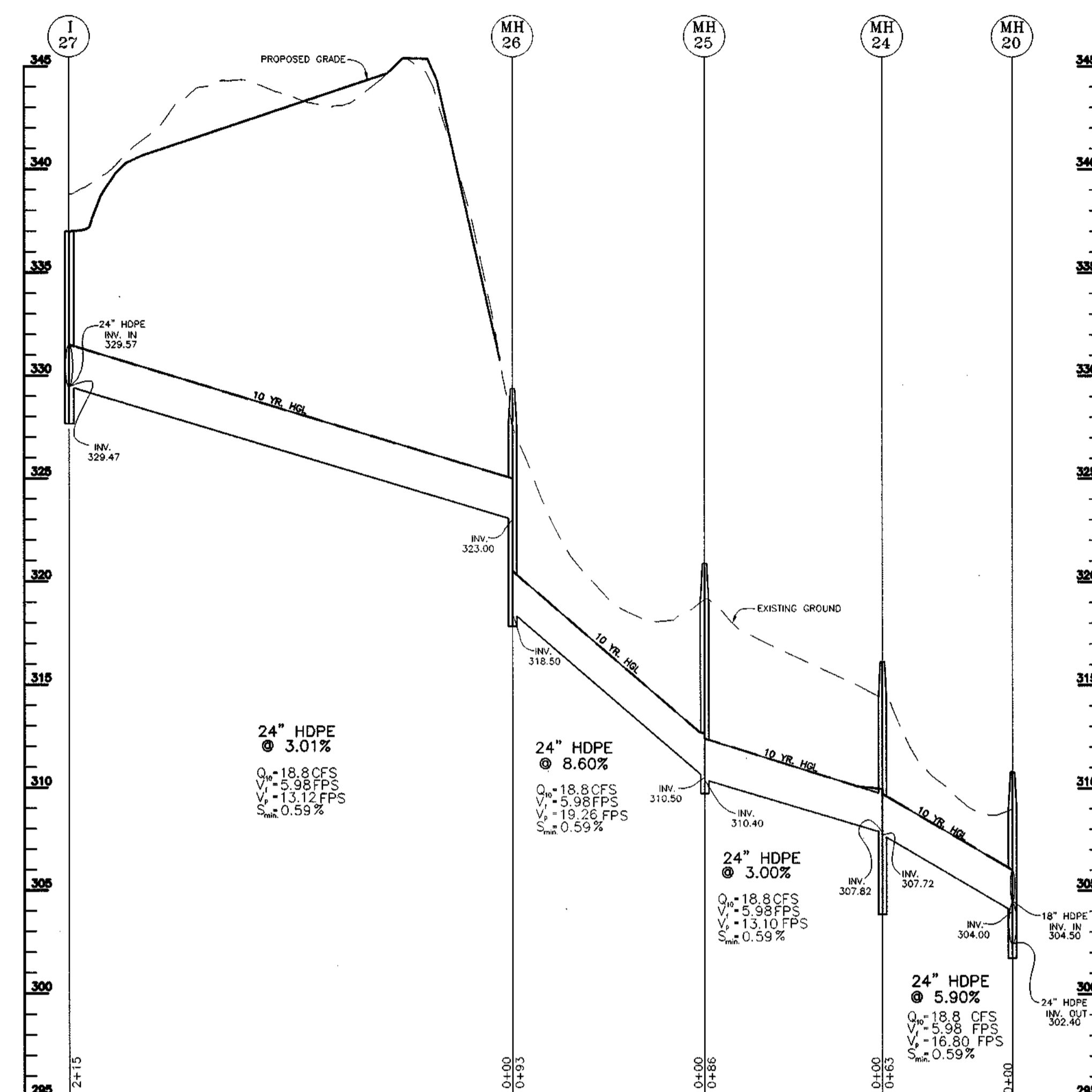
**STORM DRAIN PROFILES**

SCALE 1" = 50' HOR.  
1" = 5' VERT.



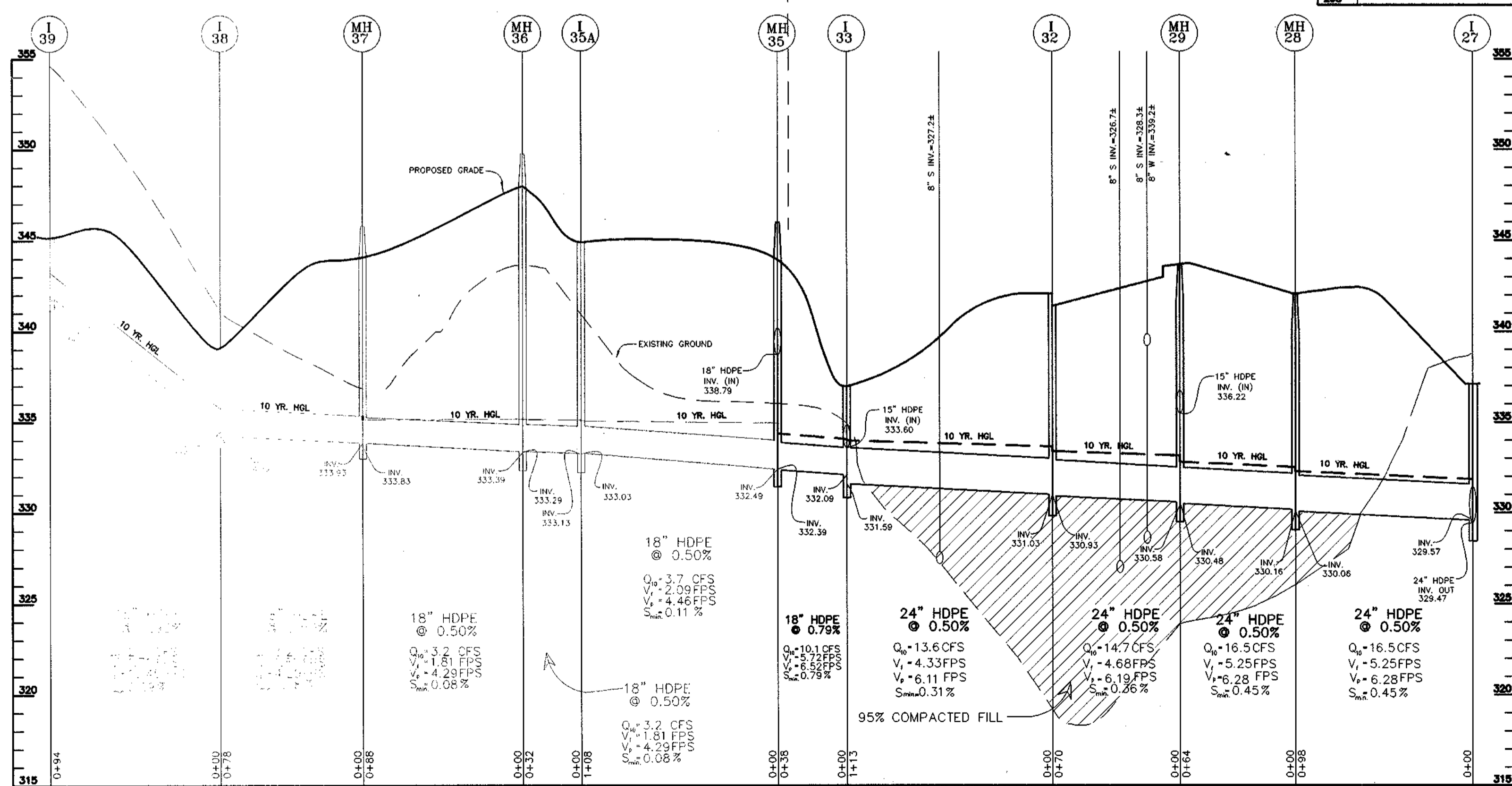
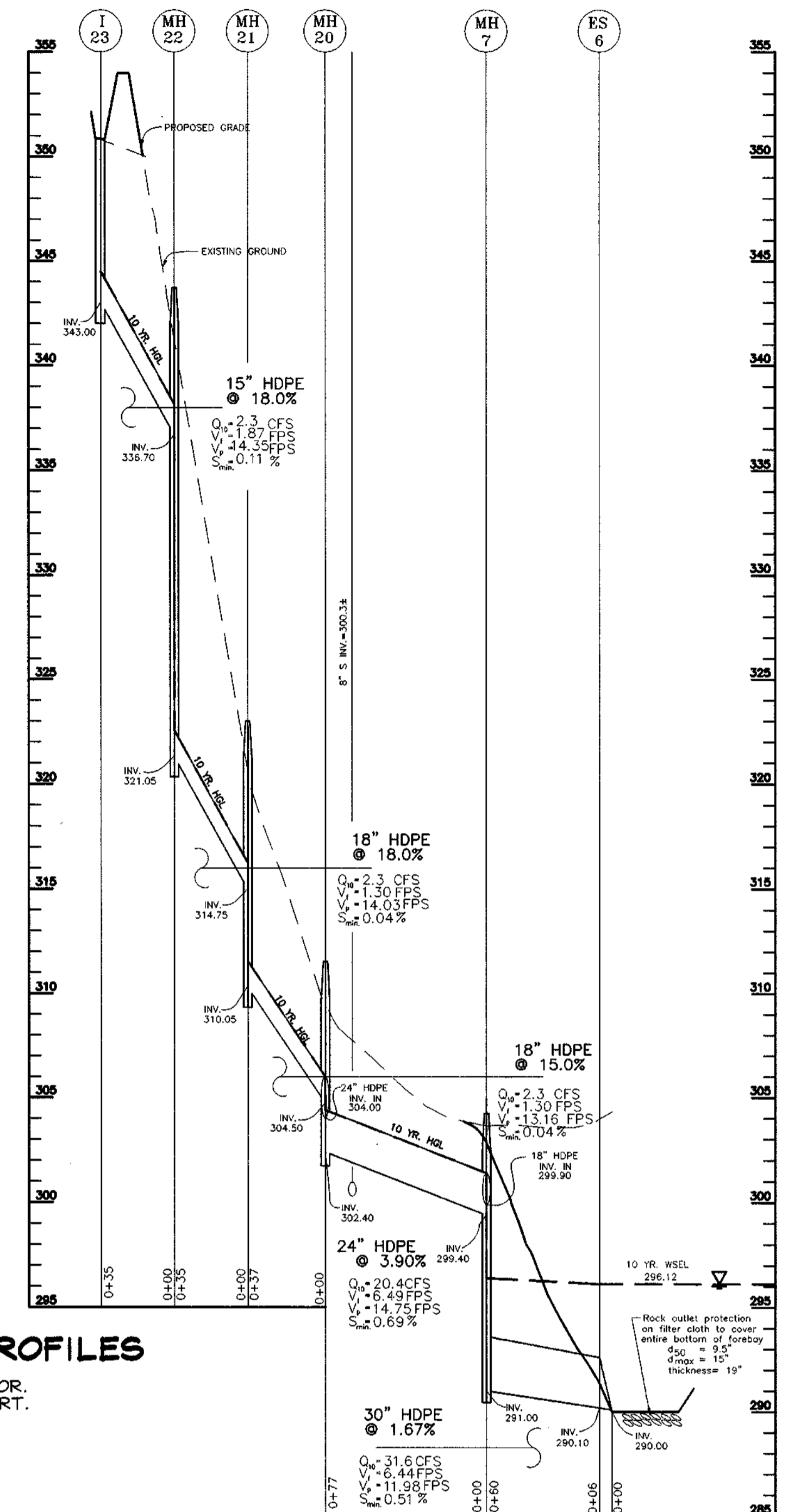
**STORM DRAIN PROFILES**

SCALE 1" = 50' HOR.  
1" = 5' VERT.



**STORM DRAIN PROFILES**

SCALE 1" = 50' HOR.  
1" = 5' VERT.



**STORM DRAIN PROFILES**

SCALE 1" = 50' HOR.  
1" = 5' VERT.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

OWNER/DEVELOPER  
Mr. Charles Skirven, Esq.  
5401 Twin Knolls Road, Suite 10  
Columbia, Maryland 21046  
(410) 995-0081

NO.	REVISION	DATE
	AS-BUILT CERTIFICATE	

DATE

NO.	REVISION	DATE

**STORM DRAIN PROFILES**

**HOLLIFIELD ESTATES I**

SECTION ONE

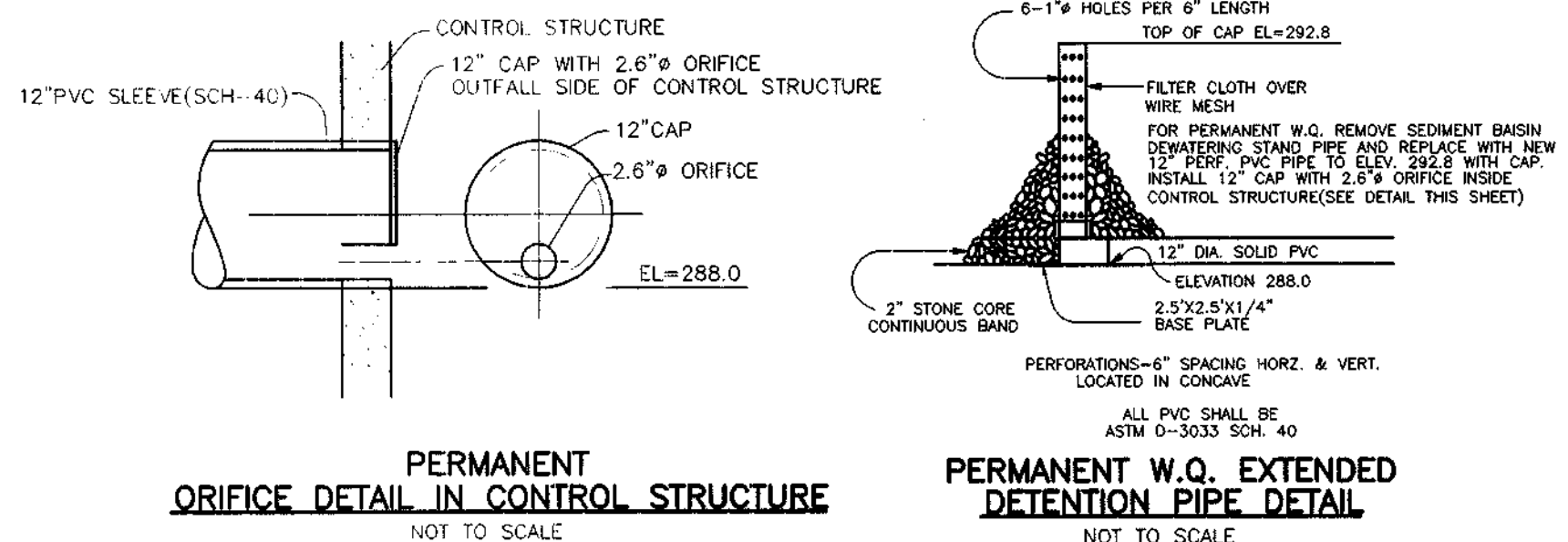
TAX MAP #18 PARCEL I  
2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**VOGEL & ASSOCIATES**  
ENGINEERS-SURVEYORS-PLANNERS

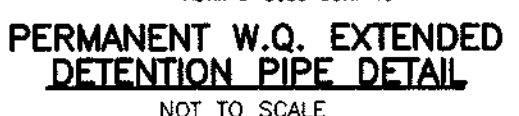
3691 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
Tel 410.461.5828 Fax 410.463.3866

DESIGN BY: G.A.H.  
DRAWN BY: J.E.R.  
CHECKED BY: R.H.V.  
DATE: Oct. 18, 1999  
SCALE: AS SHOWN  
W.O. NO.: 99-013

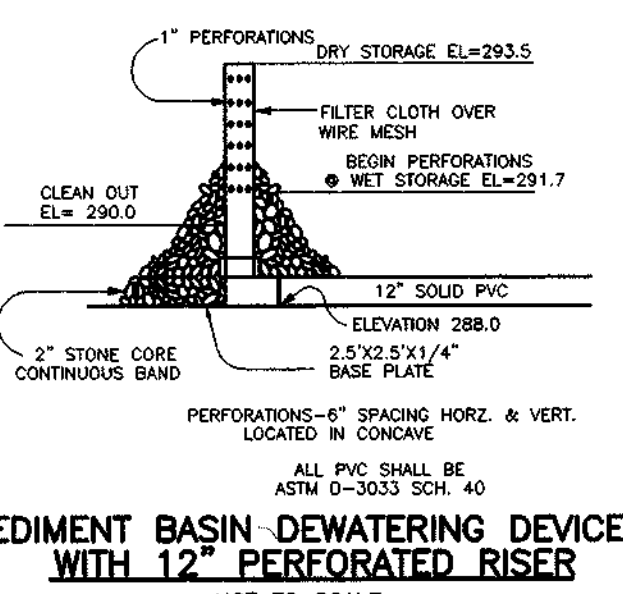
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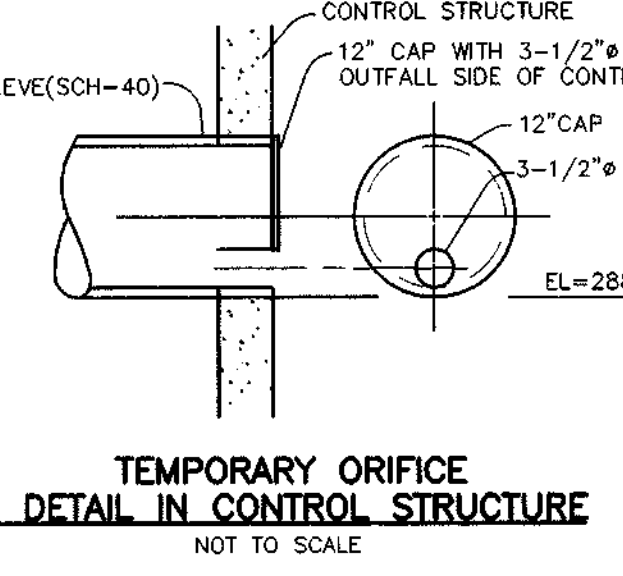
PERMANENT ORIFICE DETAIL IN CONTROL STRUCTURE  
NOT TO SCALE



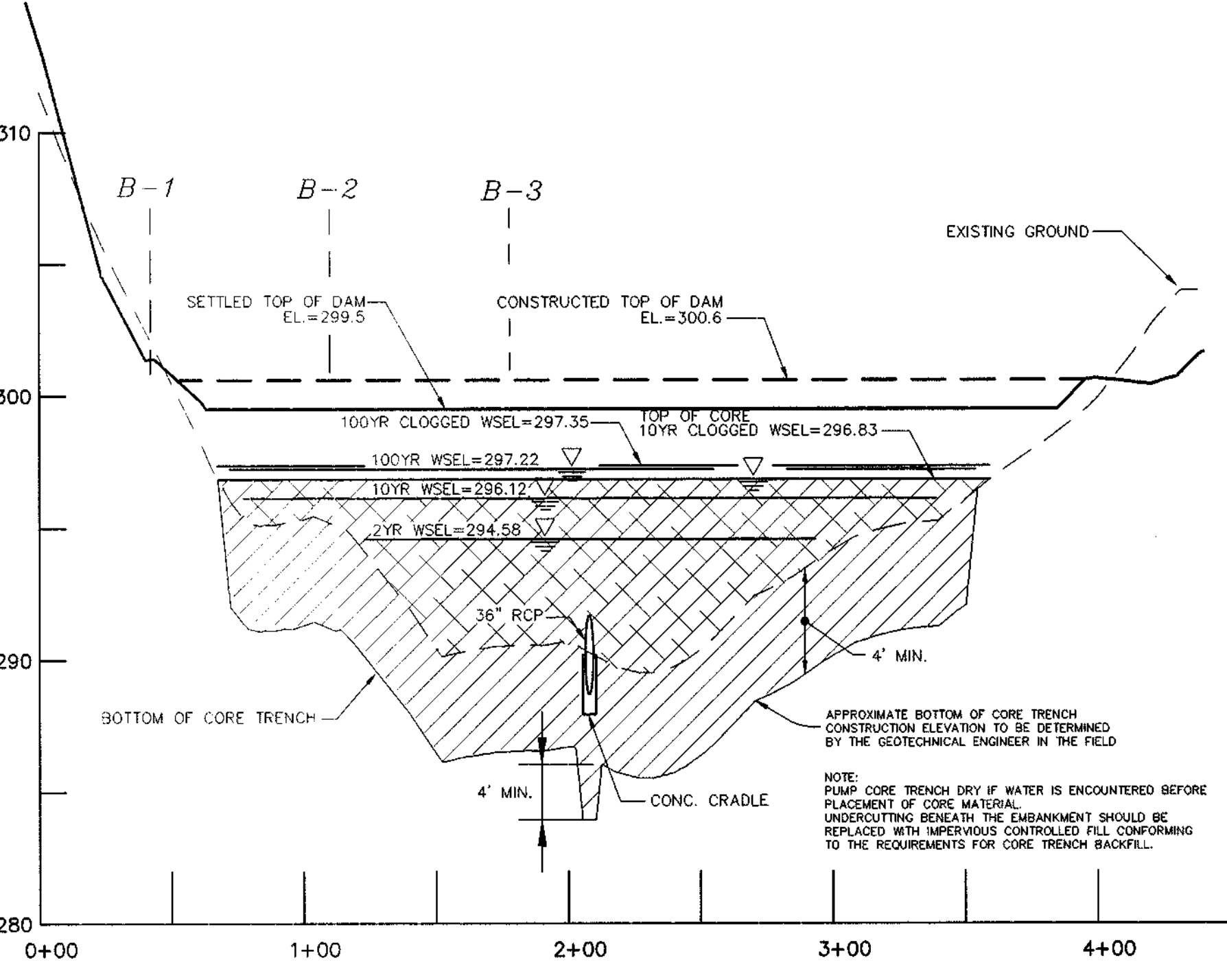
PERMANENT W.Q. EXTENDED DETENTION PIPE DETAIL  
NOT TO SCALE



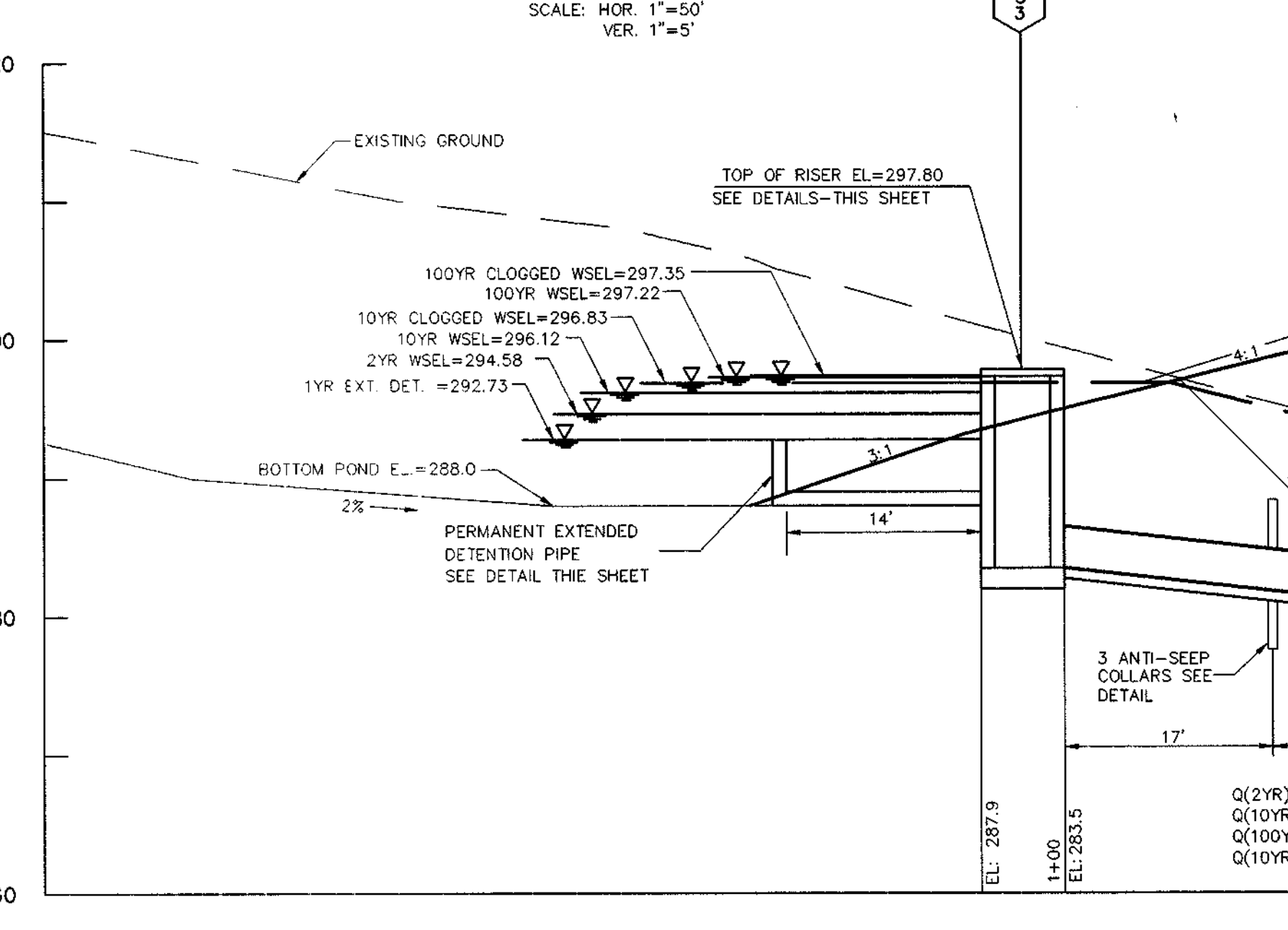
SEDIMENT BASIN DEWATERING DEVICE I WITH 12\"/>



TEMPORARY ORIFICE DETAIL IN CONTROL STRUCTURE  
NOT TO SCALE

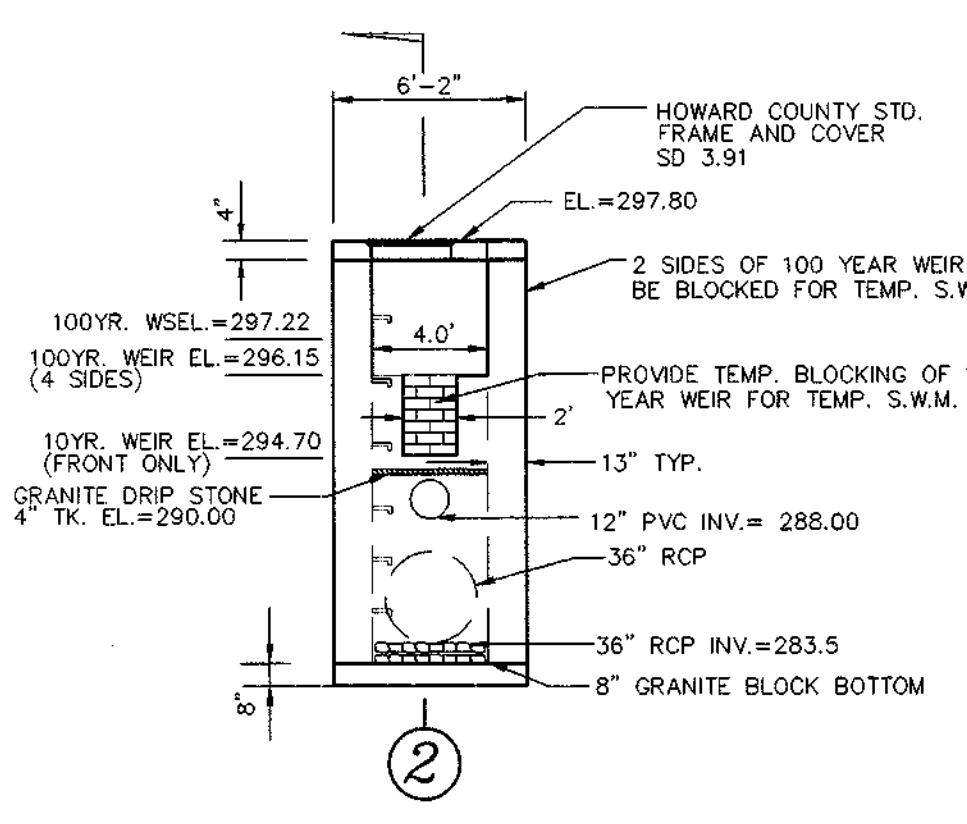


CENTERLINE DAM PROFILE

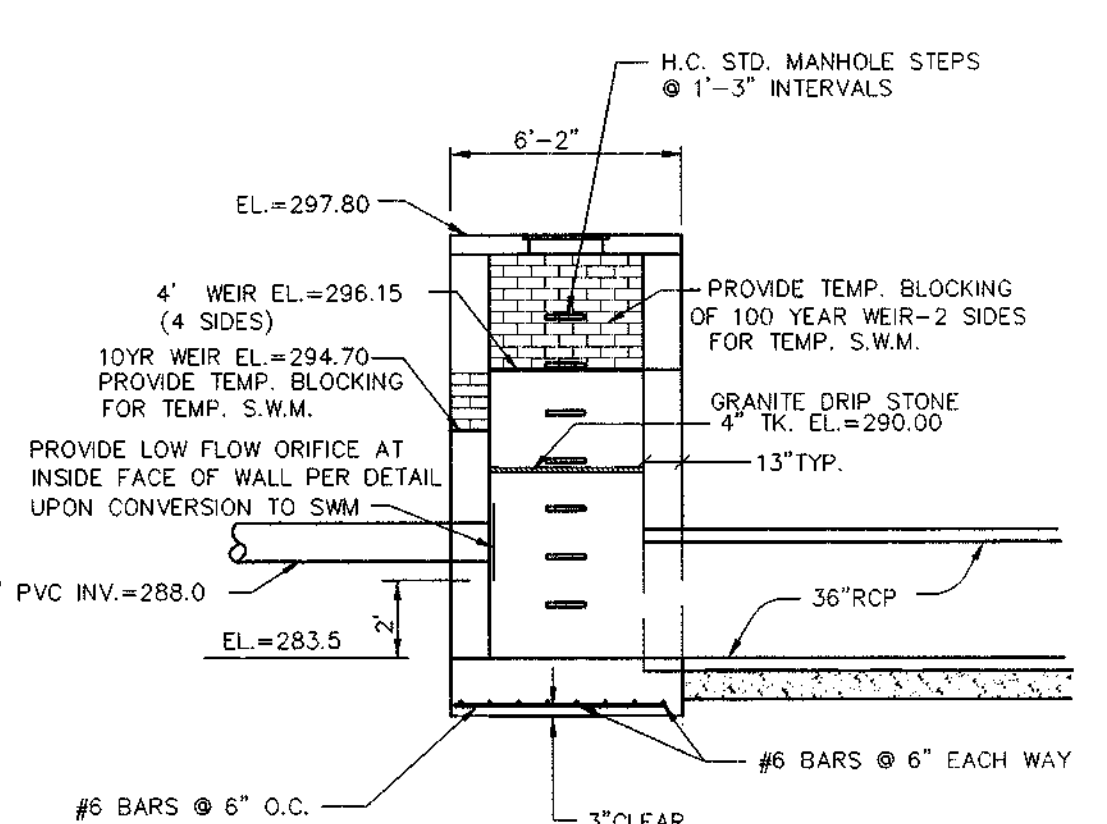


PRINCIPLE SPILLWAY PROFILE  
SCALE: 1"=10'

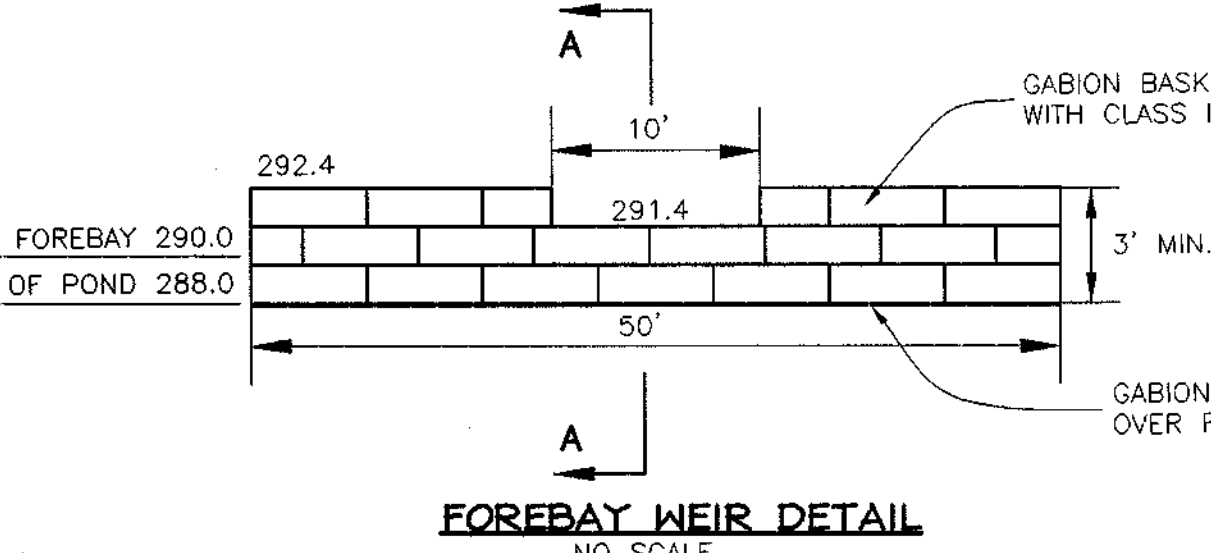
- SEQUENCE OF CONSTRUCTION**
1. Obtain grading permits, grading permits for F-99-75 and F-99-76 must be issued to run concurrently. (One Day)
  2. Notify Howard County Bureau of Inspections and Permits at (410)313-1800 at least 24 hours before starting any work. (One Day)
  3. Install Stabilized Construction Entrances, Tree Protection Fences, Silt Fence and Super Silt Fence at Limits of Disturbance. (One-Two Weeks)
  4. Install Traps and Basins and make temporary modifications to permanent Stormwater Management Facility No. 1 and obtain permission from inspector before proceeding. (Three - Four Weeks)
  5. Install Earth Dikes to traps and basins. (One-Two Weeks)
  6. Obtain permission from inspector before proceeding with clearing and grading operations.
  7. Clear and grade site. (One Week)
  8. Rough grade site. Grade sump areas to provide positive drainage to traps and basins. Maintain access drive for existing homes. (See sheet 3 of 18 - Section 1)
  9. All roads and house pads located in fill areas shall be brought to grade with compacted structural fill. A Geotechnical Engineer shall be on-site during placement of structural fills, to insure proper material and compaction. Over control measures to be utilized as necessary per SCS Det. H-30-1. (3-4 Weeks)
  10. Install Storm drains, excluding pipe from M-36 thru M-38. Provide temporary blocking at upstream opening of M-36 and at permanent downstream opening of M-20. Install temporary blocking and temporary pipe diversion to Basin #2. (Three-Four Weeks)
  11. Install Hider and Sewer Contract No. 14-3001-D and 14-3002-D. (Three-Four Weeks)
  12. Construct Curb and Gutter and collect water at residential driveway entrances where shown. (Three-Four Weeks)
  13. Rough Grade any remaining areas, fine grade sump areas to collect water at inlets and stabilize disturbed areas. (One-Two Weeks)
  14. Stabilize Basin/Stormwater Management Facility No. 1 and install landscaping. (Two Weeks)
  15. During grading and after each rainfall, the contractor shall inspect and provide necessary maintenance to sediment control measures.
  16. Following initial soil disturbance or redistribution, permanent or temporary stabilization shall be completed with:
    - A. 7 calendar days for all perimeter Sediment Control Structures, Dikes, Suddes, ditch perimeter slopes and all slopes greater than 3:1.
    - B. 14 calendar days for all other disturbed areas.
  17. Obtain permission from inspector before proceeding with removal of sediment controls.
  18. Once site is completely stabilized, (Section 1 and Section 2) flush storm drain system, remove temporary sediment blocking, earth dikes traps and temporary sediment basin no. 2 and install remaining storm drain from M-36 thru M-38. Convert sediment basin no. 1 to a permanent stormwater management facility by replacing dewatering device with extended detention pipe and cap as shown in details. Remove any temporary blocking from structure. (Three weeks)
  19. Upon stabilization of all disturbed areas and with approval of sediment control inspector, remove all remaining sediment control devices and install surface paving. (One Week)



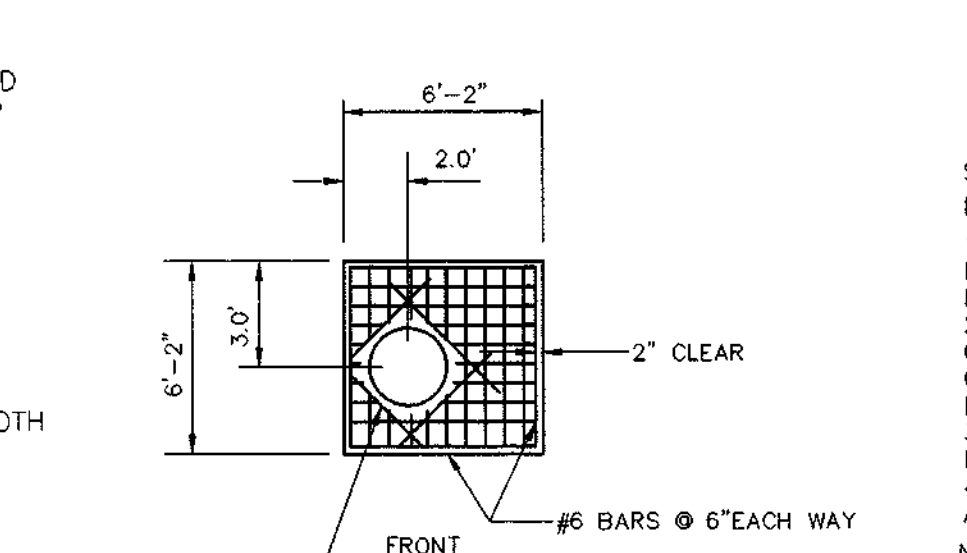
FRONT WALL ELEVATION  
N.T.S.



SECTION 2  
N.T.S.



FOREBAY WEIR DETAIL  
NO SCALE



TOP SLAB DETAIL  
N.T.S.

**OPERATION AND MAINTENANCE SCHEDULE FOR STORMWATER MANAGEMENT DETENTION FACILITY**

STORMWATER MANAGEMENT FACILITY  
ROUTINE MAINTENANCE: Home Owner's Association

1. FACILITY WILL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHOULD BE PERFORMED DURING WET WEATHER TO DETERMINE IF FUNCTIONING PROPERLY.
2. TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES A YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHALL BE MOWED AS NEEDED.
3. DEBRIS AND LITTER NEXT TO THE OUTLET STRUCTURE SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
4. VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS RIPRAP OUTLET AREAS SHALL BE REPAIRED AS SOON AS IT IS NOTICED.

NON-ROUTINE MAINTENANCE: Howard County Department of Public Works

1. STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE RISER, AND THE PIPES SHALL BE REPAIRED UPON DETECTION OF ANY DAMAGE. THE COMPONENTS SHOULD BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
2. SEDIMENT SHOULD BE REMOVED WHEN ITS ACCUMULATION SIGNIFICANTLY REDUCES THE DESIGN STORAGE, INTERFERE WITH THE FUNCTION OF THE RISER, WHEN DEEMED NECESSARY FOR AESTHETIC REASONS, OR WHEN DEEMED NECESSARY BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

**POND SUMMARY**

	2 YEAR	10 YEAR	100 YEAR
FLOW INTO POND	25.95 c.f.s.	60.67 c.f.s.	102.41 c.f.s.
FLOW OUT OF POND	0.46 c.f.s.	10.98 c.f.s.	73.76 c.f.s.
W.S. ELEVATION	294.58	296.12	297.22
STORAGE VOLUME	1.19 AC FT	1.74 AC FT	2.24 AC FT

24.0 MATERIALS SPECIFICATIONS  
TABLE 27 GEOTEXTILE FABRICS

CLASS	APPARENT OPENING SIZE MM. MAX.	GRAB TENSILE STRENGTH LB. MIN.	BURST STRENGTH P.S.I. MIN.
A	0.30	250	500
B	0.60	200	320
C	0.30	200	320
D	0.60	90	145
E	0.30	90	145
F (SILT FENCE)	0.40-0.80*	90	190

**OPERATION, MAINTENANCE AND INSPECTION**

INSPECTION OF THE POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, SCS STANDARDS AND SPECIFICATIONS FOR PONDS (MD-378). THE POND OWNER(S) AND ANY HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION, AND MAINTENANCE THEREOF. THE POND OWNER(S) SHALL PROMPTLY NOTIFY THE SOIL CONSERVATION DISTRICT OF ANY UNUSUAL OBSERVATIONS THAT MAY BE INDICATORS OF DISTRESS SUCH AS EXCESSIVE SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.

**"AS-BUILT" CERTIFICATION**

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS APPROVED PLANS AND SPECIFICATIONS.

ROBERT H. VOGEL, P.E. NO. 16193 DATE \_\_\_\_\_

CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ONSITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ONSITE SITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERING STANDARDS CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

THESE PLANS HAVE BEEN REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

*Cheryl Simon/G.S. 3/28/00*  
USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

*Robert H. Vogel 3/28/00*  
HOWARD SOIL CONSERVATION DISTRICT DATE

**ENGINEERS CERTIFICATE**

"I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

*Robert H. Vogel 12/29/99*  
SIGNATURE OF ENGINEER DATE  
ROBERT H. VOGEL

**DEVELOPER'S CERTIFICATE**

"I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

*Charles Skirven 12/23/99*  
SIGNATURE OF DEVELOPER DATE  
CHARLES SKIRVEN

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

*Charles Skirven 3/29/00*  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Chris Hender 4/14/00*  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Robert H. Vogel 4/6/00*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

NO.	REVISION	DATE

**SWM POND, PROFILES AND DETAILS**  
**HOLLIFIED ESTATES I**  
SECTION ONE

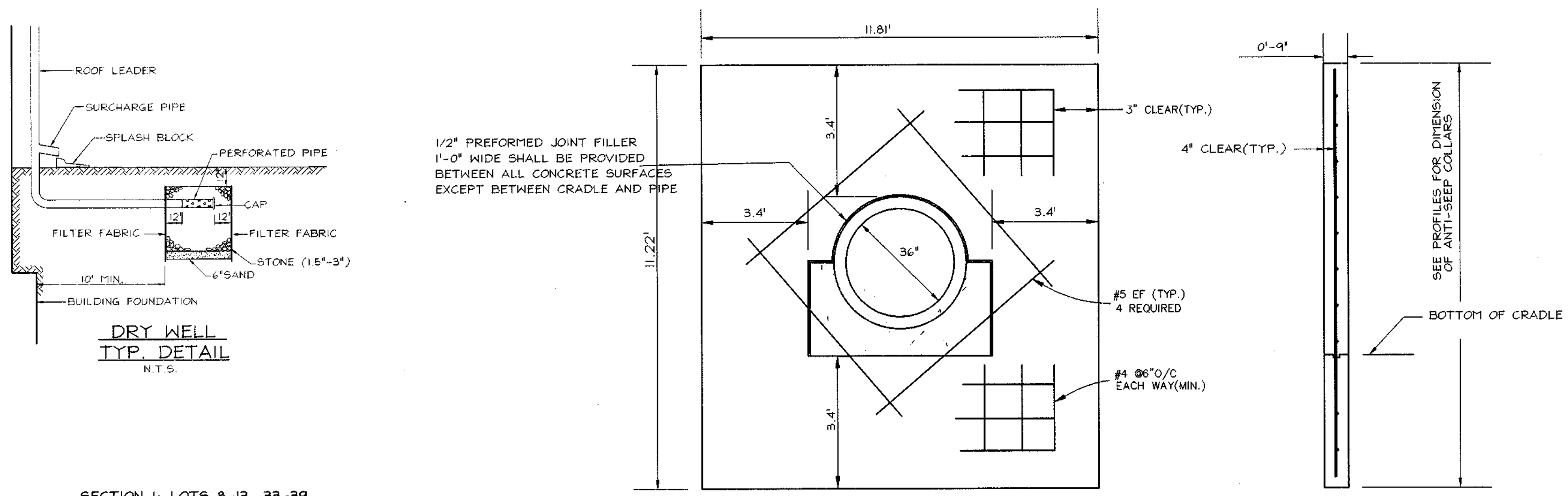
TAX MAP #18 PARCEL 1  
2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**VOGEL & ASSOCIATES**  
ENGINEERS-SURVEYORS-PLANNERS

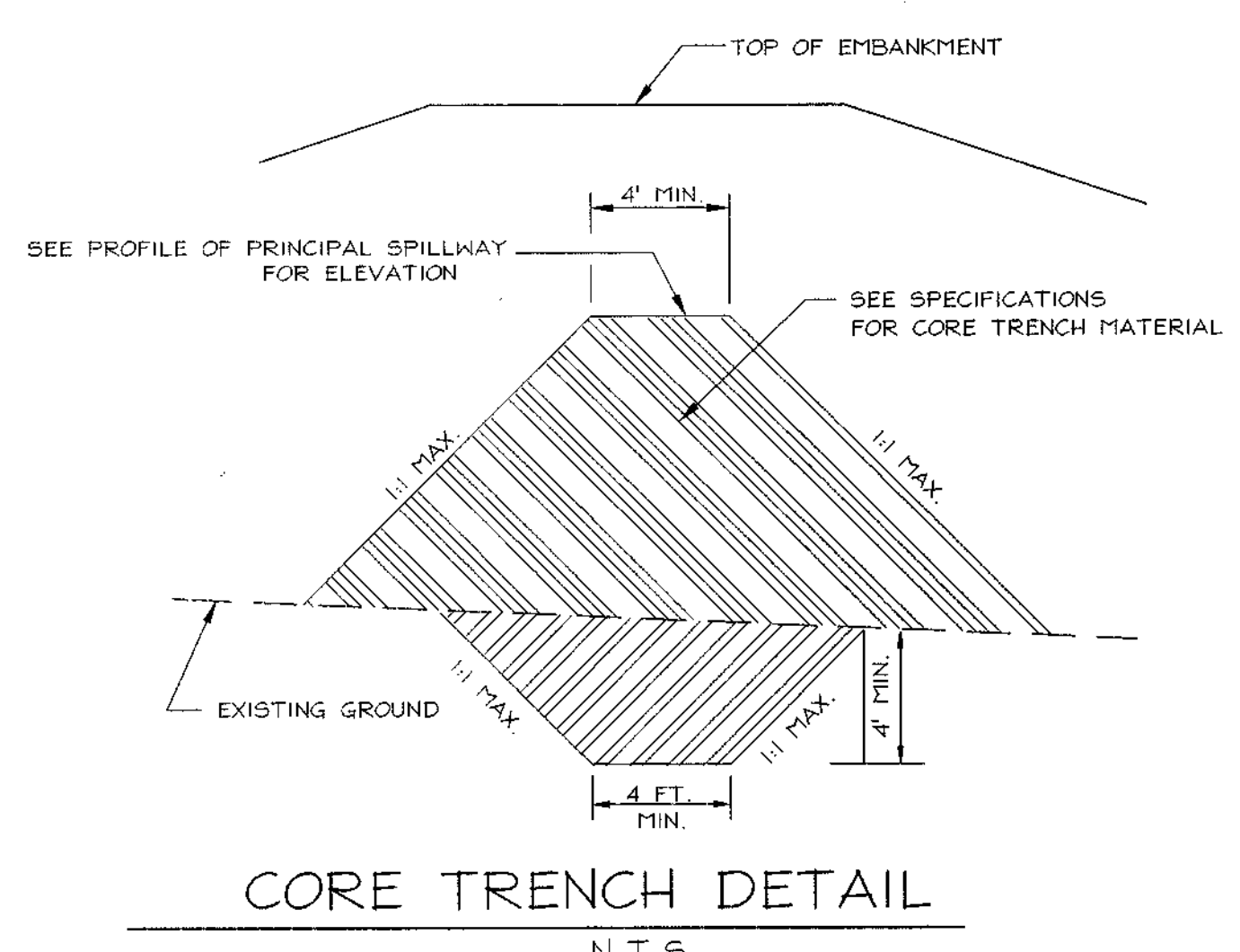
3691 Park Avenue, Suite 101 • Elliott City, Maryland 21833  
Tel 410.461.5028 Fax 410.465.3966

DESIGN BY: G.A.H.  
DRAWN BY: J.C.O.  
CHECKED BY: R.H.V.  
DATE: Oct. 18, 1999  
SCALE: 1"=50'  
W.O. NO.: 99-013

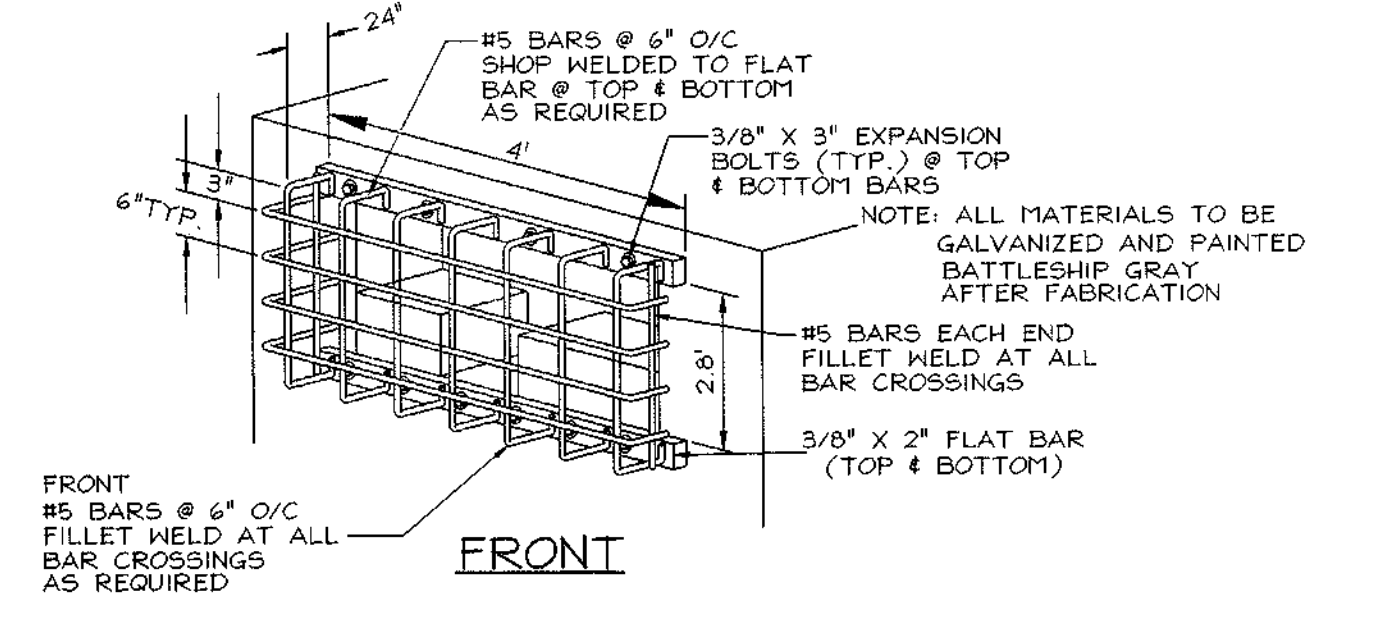
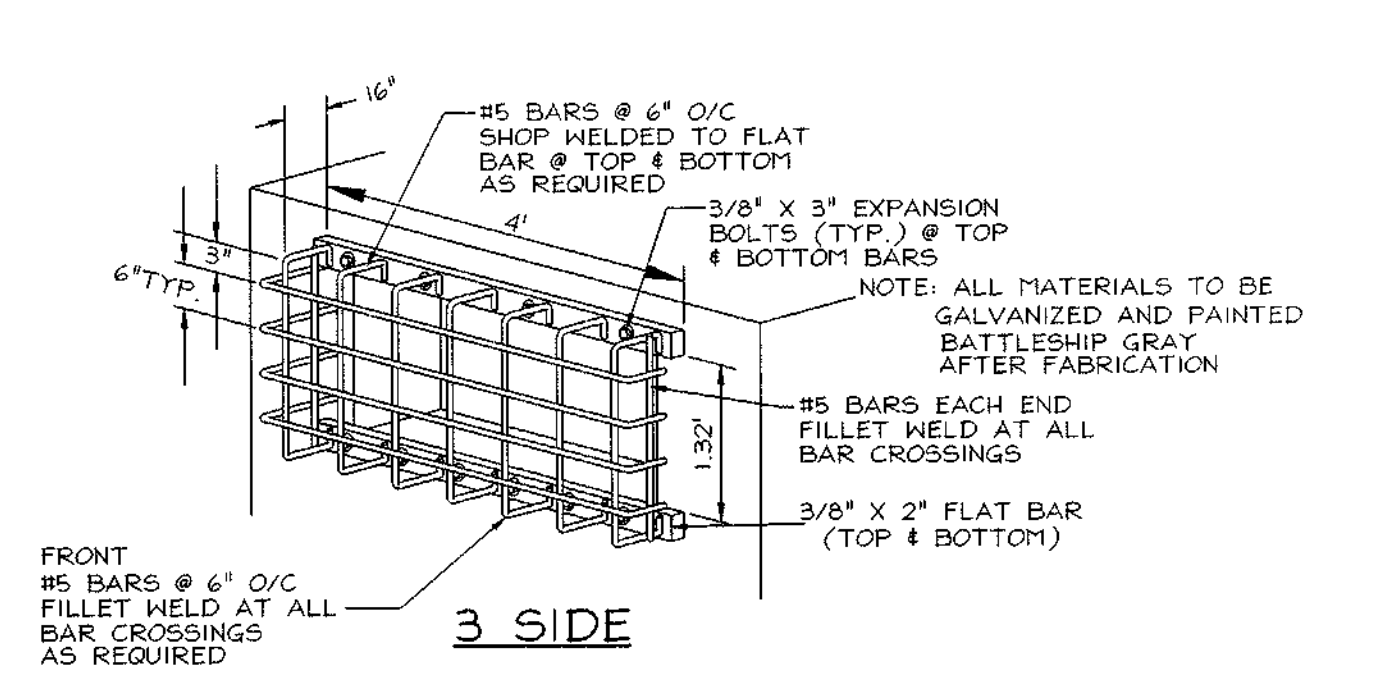
11 SHEET OF 18



CONCRETE ANTI-SEEP COLLAR DETAIL  
N.T.S.



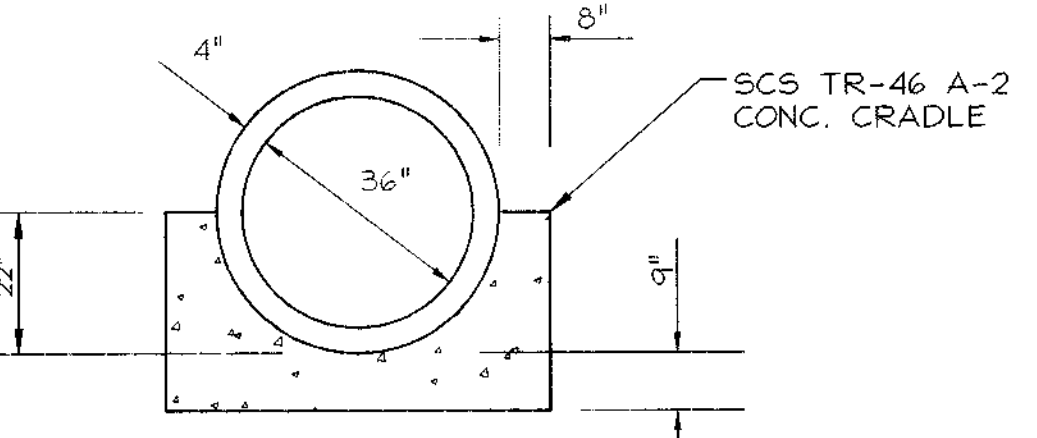
CORE TRENCH DETAIL  
N.T.S.



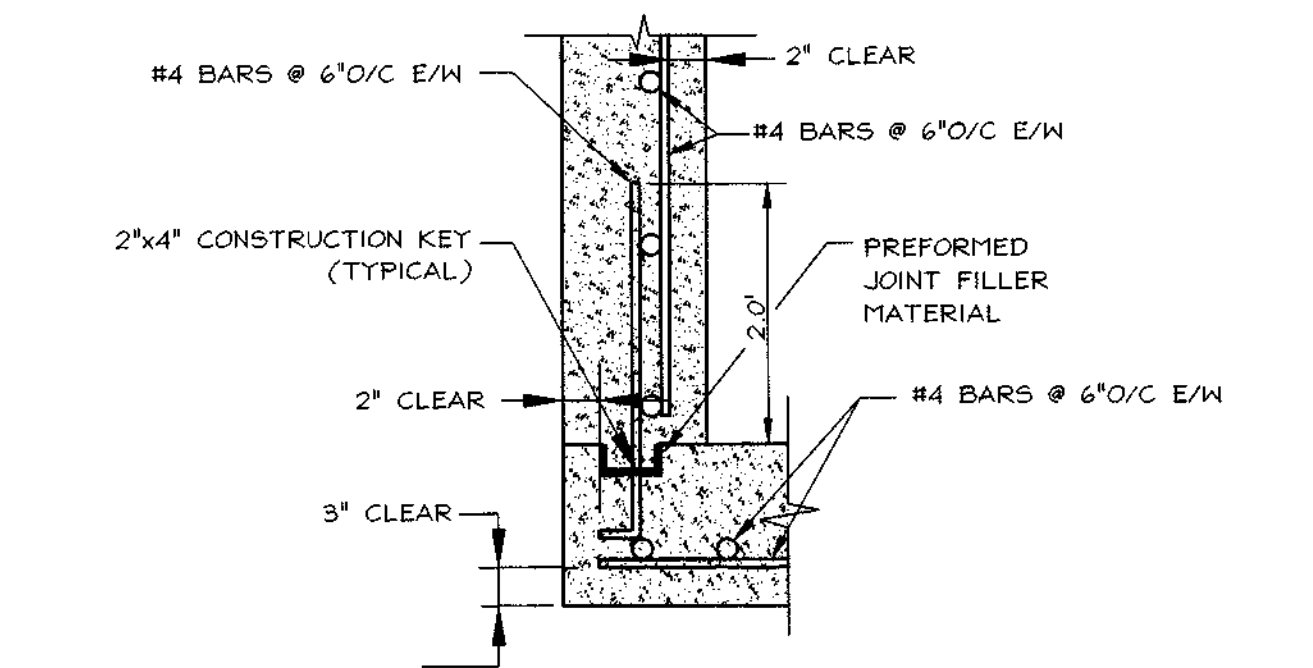
TRASH RACK DETAIL  
N.T.S.

SECTION 1: LOTS 8-13, 33-39  
SECTION 2: LOTS 69-73

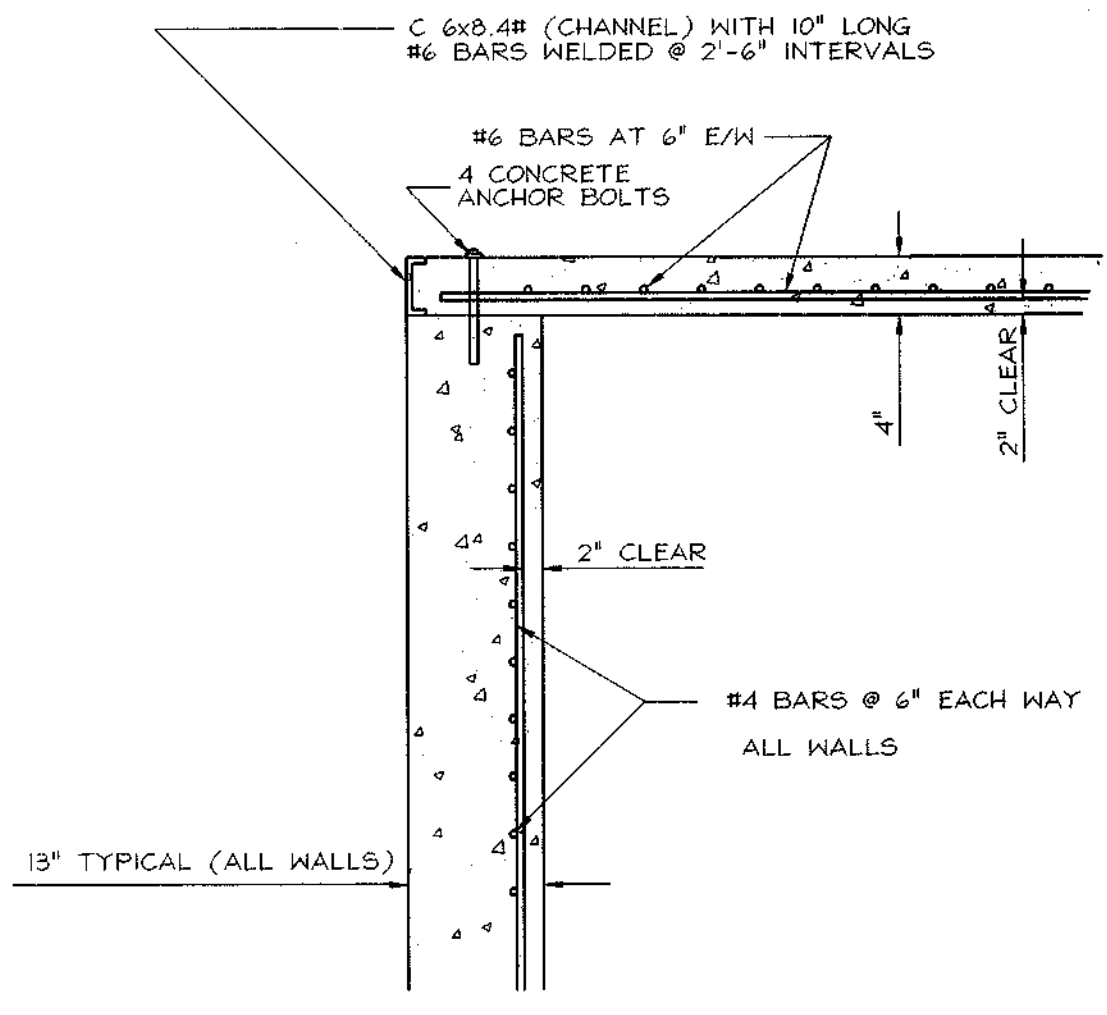
NOTE: DRY WELLS ARE TO BE PROVIDED AT EACH DOWNSPOUT DRAINING AWAY FROM THE ROAD.  
DRY WELLS CANNOT BE PLACED IN DISTRIBUTED SOIL.  
DRY WELLS TO BE SIZED AT TIME OF SITE DEVELOPMENT PLAN.



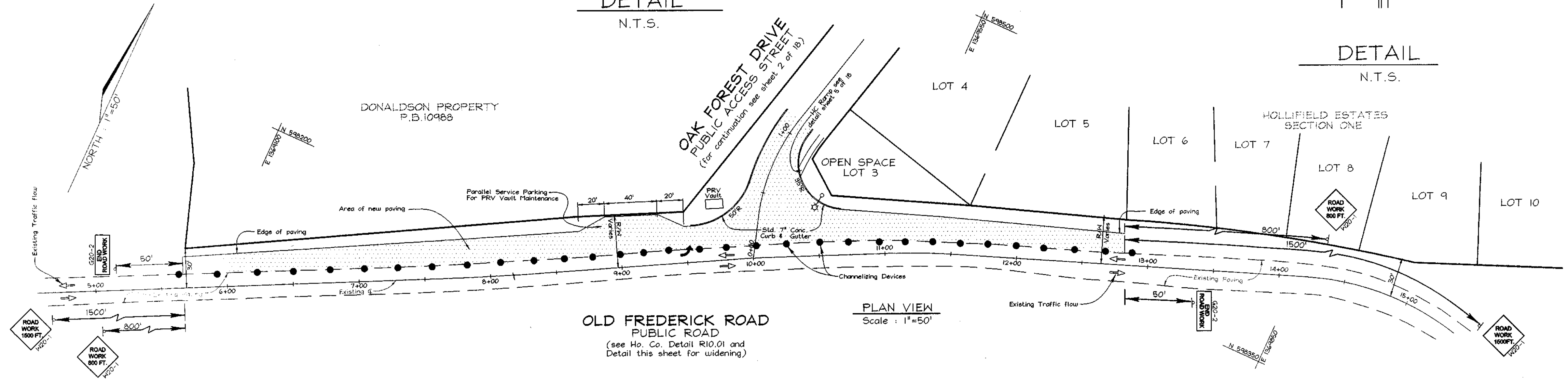
DETAIL OF CONCRETE CRADLE  
N.T.S.



WALL TO BOTTOM SLAB CONNECTION  
DETAIL  
N.T.S.



DETAIL  
N.T.S.



TRAFFIC CONTROL PLAN  
SCALE: 1"=50'

**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.

**Conditions Where Practice Applies**  
This practice is applicable to areas subject to dust blowing and movement where on and off-site damage is likely without treatment.

**Specifications**

**Temporary Methods**

- Mulches - See standards for vegetative stabilization with mulches only. Mulch should be crimped or tacked to prevent blowing.
- Vegetative Cover - See standards for temporary vegetative cover.
- Tillage - To roughen surface and bring clods to the surface. This is an emergency measure which should be used before soil blowing starts. Begin plowing on windward side of site. Chisel-type plows spaced about 12' apart, spring-toothed hoes, and similar plows are examples of equipment which may produce the desired effect.
- Irrigation - This is generally done as an emergency treatment. Site is sprinkled with water until the surface is moist. Repeat as needed. At no time should the site be irrigated to the point that runoff begins to flow.
- Barriers - Solid board fences, silt fences, snow fences, burlap fences, straw bales, and similar material can be used to control air currents and soil blowing. Barriers placed at right angles to prevailing currents at intervals of about 10 times their height are effective in controlling soil blowing.
- Calcium Chloride - Apply at rates that will keep surface moist. May need retreatment.

**Permanent Methods**

- Permanent vegetation - See standards for permanent vegetative cover, and permanent stabilization with sod. Existing trees or large shrubs may afford valuable protection if left in place.
- Topsailing - Covering with less erosive soil materials. See standards for Topsailing.
- Stone - Cover surface with crushed stone or coarse gravel.

**References**

- Agricultural Handbook 346. Wind Erosion Forces in the United States and Their Use in Predicting Soil Loss.
- Agricultural Information Bulletin 354. How to Control Wind Erosion, USDA-ARS.

"AS-BUILT" CERTIFICATION

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS APPROVED PLANS AND SPECIFICATIONS.

ROBERT H. VOGEL, P.E. NO. 16193 DATE \_\_\_\_\_

CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ON-SITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ON-SITE SITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERING STANDARDS. CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

THESE PLANS HAVE BEEN REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

*Chad Simms* 3/20/00  
USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

*Mark Stig* 3/20/00  
HOWARD SOIL CONSERVATION DISTRICT DATE

**ENGINEER'S CERTIFICATE**

"I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

*Robert H. Vogel* 12/29/99  
SIGNATURE OF ENGINEER DATE  
ROBERT H. VOGEL

**DEVELOPER'S CERTIFICATE**

"I HEREBY CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

*Charles Skirven* 12/23/99  
SIGNATURE OF DEVELOPER DATE  
CHARLES SKIRVEN

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

*Charles Skirven* 3/20/00  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Cheryl Hamilton* 4/14/00  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Mark DeWitt* 4/13/00  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

NO.	REVISION	DATE

**SWM MISCELLANEOUS DETAILS AND TRAFFIC CONTROL PLAN**

**HOLLIFIELD ESTATES I SECTION ONE**

TAX MAP #18 PARCEL 1  
2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**VOGEL & ASSOCIATES**  
ENGINEERS/SURVEYORS/PLANNERS  
3891 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
Tel 410.461.5528 Fax 410.465.3995

DESIGN BY: G.A.H.  
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12 SHEET OF 18

# POND SPECIFICATIONS

THESE SPECIFICATIONS ARE APPROPRIATE TO ALL PONDS WITHIN THE SCOPE OF THE STANDARD FOR PRACTICE MD-378. ALL REFERENCES TO ASTM AND AASHTO SPECIFICATIONS APPLY TO THE MOST RECENT VERSION.

## SITE PREPARATION

AREAS DESIGNATED FOR BORROW AREAS, EMBANKMENT, AND STRUCTURAL WORKS SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL. ALL TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED. CHANNEL BANKS AND SHARP BREAKS SHALL BE SLOPED TO NO STEEPER THAN 1:1.

AREAS TO BE COVERED BY THE RESERVOIR WILL BE CLEARED OF ALL TREES, BRUSH, LOGS, RUBBISH AND OTHER OBJECTIONABLE MATERIAL UNLESS OTHERWISE DESIGNATED TO THE PLANS. TREES, BRUSH AND STUMPS SHALL BE CUT APPROXIMATELY LEVEL WITH THE GROUND SURFACE. FOR DRY STORMWATER MANAGEMENT PONDS, A MINIMUM OF A 50 FOOT RADIUS AROUND THE INLET STRUCTURE SHALL BE CLEARED.

ALL CLEARED AND GRUBBED MATERIAL SHALL BE DISPOSED OF OUTSIDE AND BELOW THE LIMITS OF THE DAM AND RESERVOIR AS DIRECTED BY THE OWNER OR HIS REPRESENTATIVE. WHEN SPECIFIED, A SUFFICIENT QUALITY OF TOPSOIL WILL BE STOCKPILED IN A SUITABLE LOCATION FOR USE ON THE EMBANKMENT AND OTHER DESIGNATED AREAS.

## EARTH FILL

MATERIAL - THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREAS. IT SHALL BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN 6" FROZEN OR OTHER OBJECTIONABLE MATERIALS. FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT AND CUT OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL. CONSIDERATION MAY BE GIVEN TO THE USE OF OTHER MATERIALS IN THE EMBANKMENT IF DESIGN AND CONSTRUCTION ARE SUPERVISED BY A GEOTECHNICAL ENGINEER.

PLACEMENT - AREAS ON WHICH FILL IS TO BE SHALL BE SCARIFIED PRIOR TO PLACEMENT OF FILL. FILL MATERIALS SHALL BE LAYED IN MAXIMUM 6" INCH THICK (BEFORE COMPACTION) LAYERS WHICH ARE TO BE CONTINUOUS OVER THE ENTIRE LENGTH OF THE FILL. THE MOST PERMEABLE BORROW MATERIAL SHALL BE PLACED IN THE DOWNSTREAM PORTIONS OF THE EMBANKMENT. THE PRINCIPAL SPILLWAY MUST BE INSTALLED CONCURRENTLY WITH FILL PLACEMENT AND NOT EXCAVATED INTO THE EMBANKMENT.

COMPACTION - THE MOVEMENT OF AND SPREADING EQUIPMENT OVER THE FILL SHALL BE CONTROLLED SO THAT THE ENTIRE SURFACE OF EACH LIFT SHALL BE TRAVERSED BY NOT LESS THAN ONE TREAD TRACK OF THE EQUIPMENT OR COMPACTION SHALL BE ACHIEVED BY A MINIMUM OF FOUR COMPLETE PASSES OF A SHEEPSFOOT RUBBER TIRE OR VIBRATORY ROLLER. FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SUCH THAT THE REQUIRED DEGREE OF COMPACTION WILL BE OBTAINED WITH THE EQUIPMENT USED. THE FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SO THAT IF FORMED INTO A BALL, IT WILL NOT CRUMBLE YET NOT BE SO WET THAT WATER CAN BE SQUEEZED OUT.

WHERE A MINIMUM REQUIRED DENSITY IS SPECIFIED, IT SHALL NOT BE LESS 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN + 2% OF THE OPTIMUM. EACH LAYER OF FILL SHALL BE COMPACTED AS NECESSARY TO OBTAIN THAT DENSITY, AND IS TO BE CERTIFIED BY THE ENGINEER AT THE TIME OF CONSTRUCTION. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T-99.

CUT OFF TRENCH - THE CUT OFF TRENCH SHALL BE EXCAVATED INTO IMPERVIOUS MATERIAL ALONG OR PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE BOTTOM WIDTH OF THE TRENCH SHALL BE GOVERNED BY THE EQUIPMENT USED FOR EXCAVATION, WITH THE MINIMUM WIDTH BEING FOUR FEET. THE DEPTH SHALL BE AT LEAST FOUR FEET BELOW EXISTING GRADE OR AS SHOWN ON THE PLANS. THE SIDE SLOPES OF THE TRENCH SHALL BE 1 TO 1 OR FLATTER. THE BACKFILL SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY.

## STRUCTURE BACKFILL

BACKFILL ADJACENT TO PIPES OR STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL. THE FILL MATERIAL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL NEEDS TO FILL COMPLETELY ALL SPACES UNDER AND ADJACENT TO THE PIPE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE, UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A CONCRETE FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE.

## PIPE CONDUITS

ALL PIPES SHALL BE CIRCULAR IN CROSS SECTION.

CORRUGATED METAL PIPE - ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR CORRUGATED METAL PIPE.

1. MATERIALS - (STEEL PIPE) - THIS PIPE AND ITS APPURTENANCES SHALL BE GALVANIZED AND FULLY BITUMINOUS COATED AND SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-190 TYPE A WITH WATER TIGHT COUPLING BANDS. ANY BITUMINOUS COATING DAMAGED OR OTHERWISE REMOVED SHALL BE REPLACED WITH COLD APPLIED BITUMINOUS COATING COMPOUND. STEEL PIPES WITH POLYMERIC COATINGS SHALL HAVE A MINIMUM COATING THICKNESS OF 0.01 INCH (10 MIL) ON BOTH SIDES OF THE PIPE. THE FOLLOWING COATINGS OR AN APPROVED EQUAL MAY BE USED: NEXON, PLASTI-COTE, BLAC-KLAD, AND BETH-CJ-101. COATED CORRUGATED STEEL PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M-245 AND M-246.

MATERIALS - (ALUMINUM COATED STEEL PIPE) - THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-274 WITH WATER TIGHT COUPLING BANDS OR FLANGES. ANY ALUMINUM COATING DAMAGED OR OTHERWISE REMOVED SHALL BE REPLACED WITH COLD APPLIED BITUMINOUS COATING COMPOUND.

MATERIALS - (ALUMINUM PIPE) - THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-196 OR M-211 WITH WATER TIGHT COUPLING BANDS OR FLANGES. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER. HOT DIP GALVANIZED BOLTS MUST BE USED FOR CONNECTIONS. THE PH OF THE SURROUNDING SOILS SHALL BE BETWEEN 4 AND 9.

2. COUPLING BANDS, ANTI-SEEP COLLARS, END SECTIONS, ETC., MUST BE COMPOSED OF THE SAME MATERIAL AS THE PIPE. METALS MUST BE INSULATED FROM DISSIMILAR MATERIALS WITH USE RUBBER OR PLASTIC INSULATING MATERIALS AT LEAST 24 MILS IN THICKNESS.

3. CONNECTIONS - ALL CONNECTIONS WITH PIPES MUST BE COMPLETELY WATER TIGHT. THE DRAIN PIPE OR BARREL CONNECTION TO THE RISER SHALL BE WELDED ALL AROUND WHEN THE PIPE AND RISER ARE METAL. ANTI-SEEP COLLARS SHALL BE CONNECTED TO THE PIPE IN SUCH A MANNER AS TO BE COMPLETELY WATER TIGHT. SIMPLE BANDS ARE NOT CONSIDERED TO BE COMPLETELY WATER TIGHT.

ALL CONNECTIONS SHALL USE A RUBBER OR NEOPRENE CASSET WHEN JOINING PIPE SECTIONS. THE END OF EACH PIPE SHALL BE ROLLED AND ADEQUATE NUMBER OF CORRUGATIONS TO ACCOMMODATE THE BAND WIDTH. THE FOLLOWING TYPE CONNECTIONS ARE ACCEPTABLE FOR PIPE LESS THAN 24" IN DIAMETER: FLANGES ON BOTH ENDS OF THE PIPE, A 12" WIDE STANDARD LAP TYPE BAND WITH 1/2" WIDE BY 3/8" THICK CLOSED CELL CIRCULAR NEOPRENE GASKET AND A 12" WIDE HUGGER TYPE BAND WITH O-RING CASSETS HAVING MINIMUM DIAMETER OF 1/2" GREATER THAN THE CORRUGATION DEPTH. PIPES 24" IN DIAMETER AND LARGER SHALL BE CONNECTED BY A 24" LONG ANNUULAR CORRUGATED BAND USING ROOFS AND LIVES. A 12" WIDE BY 3/8" THICK CLOSED CELL CIRCULAR NEOPRENE GASKET WILL BE INSTALLED ON THE END OF EACH PIPE FOR A TOTAL OF 24".

HELICALLY CORRUGATED PIPE SHALL HAVE EITHER CONTINUOUSLY WELDED SEAMS OR HAVE LOCK SEAMS WITH INTERNAL CAULKING OR A NEOPRENE BED.

4. BEDDING - THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.

5. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL."

6. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

REINFORCED CONCRETE PIPE - ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR REINFORCED CONCRETE PIPE:

1. MATERIALS - REINFORCED CONCRETE PIPE SHALL HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS AND SHALL EQUAL OR EXCEED ASTM DESIGNATION C-361.

2. BEDDING - ALL REINFORCED CONCRETE PIPE CONDUITS SHALL BE LAID IN A CONCRETE BEDDING FOR THEIR ENTIRE LENGTH. THIS BEDDING SHALL CONSIST OF HIGH SLUMP CONCRETE PLACED UNDER THE PIPE AND UP THE SIDES OF THE PIPE AT LEAST 10% OF ITS OUTSIDE DIAMETER WITH A MINIMUM THICKNESS OF 3 INCHES, OR AS SHOWN ON THE DRAWINGS.

3. LAYING PIPE - BELL AND SPIGOT PIPE SHALL BE PLACED WITH THE BELL END UPSTREAM. JOINTS SHALL BE MADE IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL. AFTER THE JOINTS ARE SEALED FOR THE ENTIRE LINE, THE BEDDING SHALL BE PLACED SO THAT ALL SPACES UNDER THE PIPE ARE FILLED. CARE SHALL BE EXERCISED TO PREVENT ANY DEVIATION FROM THE ORIGINAL LINE AND GRADE OF THE PIPE. THE FIRST JOINT MUST BE LOCATED WITHIN 2 FEET FROM THE RISER.

4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL."

5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

POLYVINYL CHLORIDE (PVC) PIPE - ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR POLYVINYL CHLORIDE (PVC) PIPE:

1. MATERIALS - PVC PIPE SHALL BE PVC-1120 OR PVC-1220 CONFORMING TO ASTM D-1785 OR ASTM D-2241.

2. JOINTS AND CONNECTIONS TO ANTI-SEEP COLLARS SHALL BE COMPLETELY WATER TIGHT.

3. BEDDING - THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.

4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL."

5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

## CONCRETE

CONCRETE SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 905.

THE RIPRAP SHALL BE PLACED TO THE REQUIRED THICKNESS IN ONE OPERATION. THE ROCK SHALL BE DELIVERED AND PLACED IN A MANNER THAT WILL INSURE THE RIPRAP IN PLACE SHALL BE REASONABLY HOMOGENEOUS WITH THE LARGER ROCKS UNIFORMLY DISTRIBUTED AND FIRMLY IN CONTACT ONE TO ANOTHER WITH THE SMALLER ROCKS FILLING THE VOIDS BETWEEN THE LARGER ROCKS. FILTER CLOTH SHALL BE REPLACED UNDER ALL RIPRAP AND SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 919.12.2.

## CARE OF WATER DURING CONSTRUCTION

ALL WORK ON THE PERMANENT STRUCTURES SHALL BE CARRIED OUT IN AREAS FREE FROM WATER. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ALL TEMPORARY DIKES, LEVEES, COFFERDAMS, DRAINAGE CHANNELS, AND STREAM DIVERSIONS NECESSARY TO PROTECT THE AREAS TO BE OCCUPIED BY THE PERMANENT WORKS. THE CONTRACTOR SHALL ALSO FURNISH, INSTALL, OPERATE AND MAINTAIN ALL NECESSARY PUMPING AND OTHER EQUIPMENT REQUIRED FOR REMOVAL OF WATER FROM THE VARIOUS PARTS OF THE WORK AND FOR MAINTAINING THE EXCAVATIONS, FOUNDATION AND OTHER PARTS OF THE WORK FREE FROM WATER AS REQUIRED OR DIRECTED BY THE ENGINEER FOR CONSTRUCTING EACH PART OF THE WORK. AFTER HAVING SERVED THEIR PURPOSE, ALL TEMPORARY PROTECTIVE WORKS SHALL BE REMOVED OR LEVELED AND GRADED TO THE EXTENT REQUIRED TO PREVENT OBSTRUCTION IN ANY DEGREE WHATSOEVER OF THE FLOW OF WATER TO THE SPILLWAY OR OUTLET WORKS AND SO AS NOT TO INTERFERE IN ANY WAY WITH THE OPERATION AND MAINTENANCE OF THE STRUCTURES TO BE CONSTRUCTED. THE REMOVAL OF WATER FROM THE REQUIRED EXCAVATION AND THE FOUNDATION SHALL BE ACCOMPLISHED IN A MANNER AND TO THE EXTENT THAT WILL MAINTAIN STABILITY OF THE EXCAVATED SLOPES AND BOTTOM OF THE REQUIRED EXCAVATIONS AND WILL ALLOW SATISFACTORY PERFORMANCE OF ALL AND CONSTRUCTION OPERATIONS. DURING THE PLACING AND COMPACTION OF MATERIAL IN REQUIRED EXCAVATIONS, THE WATER LEVEL AT THE LOCATIONS BEING REFILLED SHALL BE MAINTAINED BELOW THE BOTTOM OF THE EXCAVATION AT SUCH LOCATIONS WHICH MAY REQUIRE DRAINING THE WATER TO SUMPS FROM WHICH THE WATER SHALL BE PUMPED.

## STABILIZATION

ALL BORROW AREAS SHALL BE GRADED TO PROVIDE PROPER DRAINAGE AND LEFT IN A SLIGHTLY CONDITION. ALL EXPOSED SURFACES OF THE EMBANKMENT, SPILLWAY, SPOIL AND BORROW AREAS, AND BERMS SHALL BE STABILIZED BY SEEDING, LIMING, FERTILIZING AND MULCHING IN ACCORDANCE WITH THE MARYLAND SOIL CONSERVATION SERVICE STANDARDS AND SPECIFICATIONS FOR CRITICAL AREA PLANTING (MD-342) OR AS SHOWN ON THE ACCOMPANYING DRAWINGS.

## EROSION AND SEDIMENT CONTROL

CONSTRUCTION OPERATIONS WILL BE CARRIED OUT IN SUCH A MANNER THAT EROSION WILL BE CONTROLLED AND WATER AND AIR POLLUTION MINIMIZED. STATE AND LOCAL LAWS CONCERNING POLLUTION ABATEMENT WILL BE FOLLOWED. CONSTRUCTION PLANS SHALL DETAIL EROSION AND SEDIMENT CONTROL MEASURES TO BE EMPLOYED DURING THE CONSTRUCTION PROCESS.

## SWM POND MAINTENANCE REQUIREMENTS

- a. SILT SHALL BE REMOVED WHEN ACCUMULATION EXCEEDS SIX (6) INCHES IN BASINS WITHOUT FOREBAYS, IN BASIN WITH FOREBAYS, SILT SHALL BE REMOVED WHEN THE ACCUMULATION EXCEEDS FOUR (4) INCHES IN THE FOREBAY.
- b. ACCUMULATED PAPER, TRASH AND DEBRIS SHALL BE REMOVED AS NECESSARY.
- c. VEGETATION GROWING ON THE EMBANKMENT TOP AND FACES IS NOT ALLOWED TO EXCEED 18 INCHES IN HEIGHT AT ANY TIME.
- d. ANNUAL INSPECTION AND REPAIR, IF REQUIRED, OF THE STRUCTURE SHALL BE PERFORMED.

## OPERATION, MAINTENANCE AND INSPECTION

INSPECTION OF THE POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, SCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378). THE POND OWNER(S) AND THE HEIRS, SUCCESSORS OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION AND MAINTENANCE THEREOF. THE POND OWNER(S) SHALL PROMPTLY NOTIFY THE SOIL CONSERVATION DISTRICT OF ANY UNUSUAL OBSERVATIONS THAT MAY BE INDICATIONS OF DISTRESS SUCH AS EXCESSIVE SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION BORING # B-1 LOCATION HOWARD COUNTY, MARYLAND, JOB # 97226A

PROJECT NAME: HOLLIFIELD ESTATES BORING # B-1 LOCATION: HOWARD COUNTY, MARYLAND, JOB # 97226A

DATE STARTED: 9-2-97 DATE COMPLETE: 9-2-97

ELEV.	SOIL DESCRIPTION	DEPTH	SCALE	SAMPLER	NO.	BORING & SAMPLING NOTES
0.0	SURFACE	0.0	1	3-2-4	1	13' 5" TOPSOIL
1.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	1.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
1.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	1.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
2.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	2.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
2.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	2.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
3.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	3.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
3.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	3.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
4.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	4.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
4.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	4.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
5.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	5.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
5.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	5.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
6.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	6.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
6.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	6.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
7.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	7.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
7.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	7.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
8.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	8.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
8.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	8.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
9.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	9.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
9.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	9.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
10.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	10.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
10.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	10.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
11.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	11.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
11.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	11.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
12.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	12.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
12.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	12.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
13.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	13.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
13.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	13.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
14.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	14.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
14.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	14.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
15.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	15.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
15.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	15.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
16.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	16.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
16.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	16.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
17.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	17.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
17.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	17.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
18.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	18.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
18.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	18.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
19.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	19.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
19.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	19.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
20.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	20.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING

GROUND WATER DEPTH AT COMPLETION: 10.5 FT. AFTER 24 HR. REST: 10.5 FT.

BORING METHOD: HSA-HOLLOW STEM AUGERS OF CORE FLIGHT AUGERS INCLUDING CASING NO-400 DRILLING

SAMPLER TYPE: GROUND SPLIT SPOON UNLESS OTHERWISE NOTED

SAMPLER CONDITIONS: D-DISCONTINUED, H-HANDHELD, L-LOST

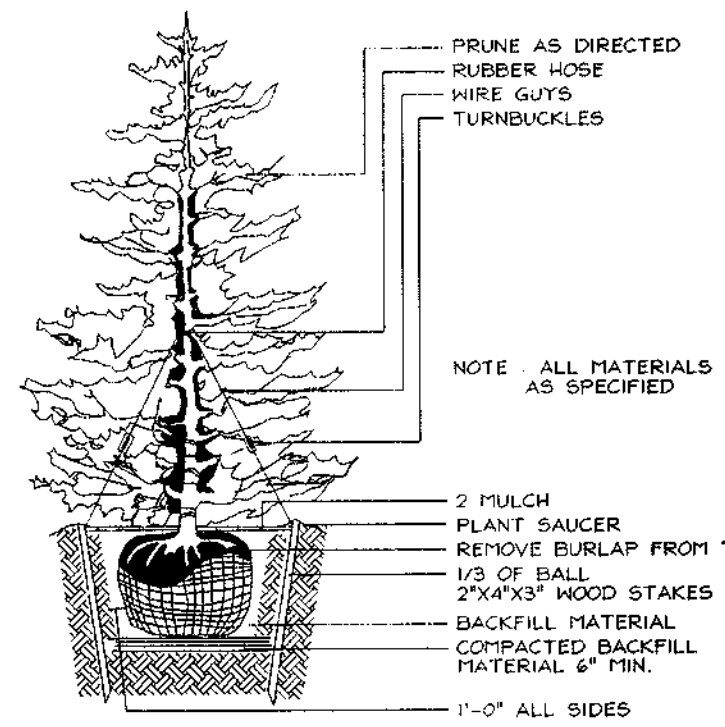
STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION BORING # B-2 LOCATION HOWARD COUNTY, MARYLAND, JOB # 97226A

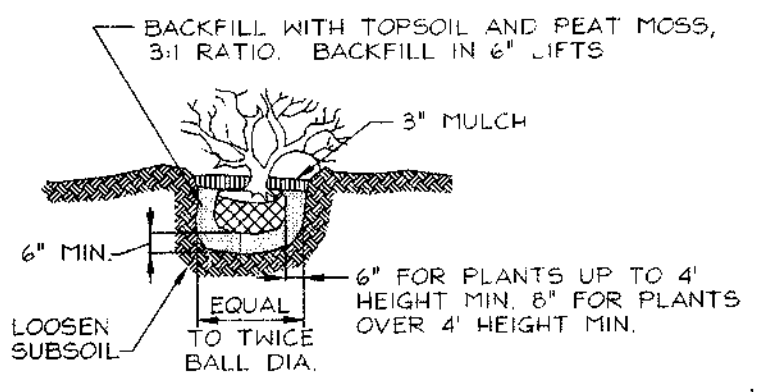
PROJECT NAME: HOLLIFIELD ESTATES BORING # B-2 LOCATION: HOWARD COUNTY, MARYLAND, JOB # 97226A

DATE STARTED: 9-2-97 DATE COMPLETE: 9-2-97

ELEV.	SOIL DESCRIPTION	DEPTH	SCALE	SAMPLER	NO.	BORING & SAMPLING NOTES
0.0	SURFACE	0.0	1	3-2-4	1	13' 5" TOPSOIL
1.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	1.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
1.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	1.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
2.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	2.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
2.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	2.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
3.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	3.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
3.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	3.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
4.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	4.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
4.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	4.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
5.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	5.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
5.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	5.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
6.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	6.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
6.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	6.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
7.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	7.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
7.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	7.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
8.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	8.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
8.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	8.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
9.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	9.0	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
9.5	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	9.5	1	3-2-4	1	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
10.0	BROWN, MEDIUM TO MEDIUM SAND, MEDIUM TO MEDIUM SILT (SM) (LOAMY SAND)	10.0				



TYPICAL EVERGREEN TREE PLANTING DETAIL  
NOT TO SCALE



SHRUB PLANTING DETAIL  
NOT TO SCALE

STREET TREE CALCULATIONS			
Street Name	Linear Feet	Required Trees	Provided Trees
Old Frederick Road	816/40	21	21
River Terrace Drive	127/40	16	16
Oak Forest Drive	207/40	50	50
Kaitlin's Court	1009/40	26	26
<b>Total Trees</b>		<b>115</b>	<b>115</b>

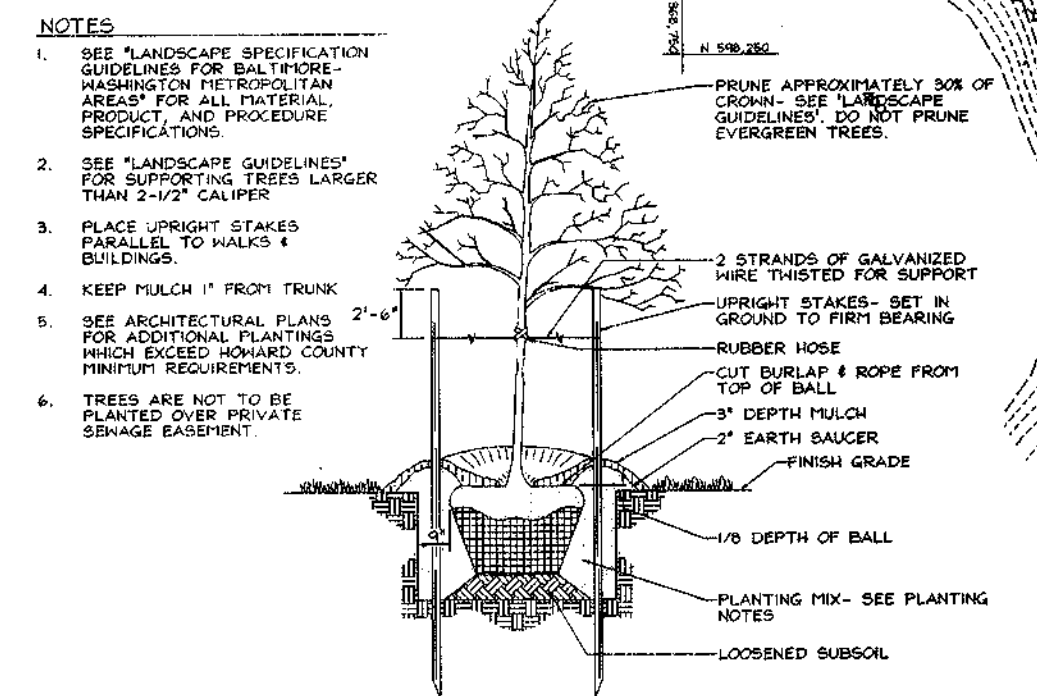
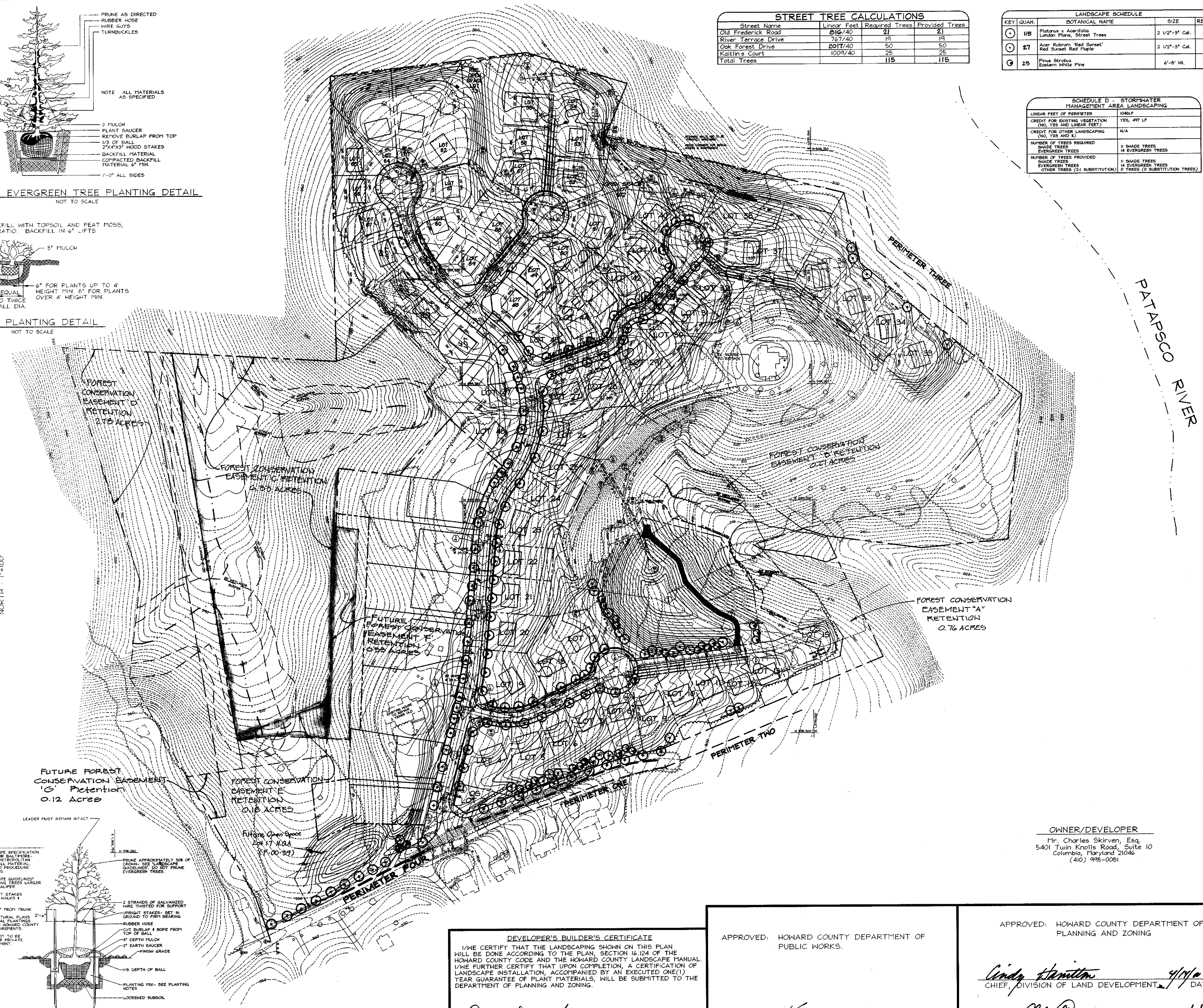
LANDSCAPE SCHEDULE			
KEY	QUAN.	BOTANICAL NAME	REMARKS
115		Platanus x Acerifolia London Plane, Street Trees	2 1/2"-3" Cal. 40' o/c
27		Acer Rubrum 'Red Sunset' Red Sunset Red Maple	2 1/2"-3" Cal. B 4 B
25		Pinus Strobus Eastern White Pine	6'-8' HL. B 4 B

SCHEDULE D - STORMWATER MANAGEMENT AREA LANDSCAPING			
LINEAR FEET OF PERIMETER	1046 LF	YES, ANY LF	
CREDIT FOR EXISTING VEGETATION (NO. TREES AND LINEAR FEET)			
CREDIT FOR OTHER LANDSCAPING (NO. TREES AND LF)			
NUMBER OF TREES REQUIRED	11 SHADE TREES 14 EVERGREEN TREES		
NUMBER OF TREES PROVIDED	11 SHADE TREES 14 EVERGREEN TREES OTHER TREES (21 SUBSTITUTION)		

SCHEDULE A PERIMETER LANDSCAPE EDGE					
CATEGORY	ADJACENT TO ROADSIDES		ADJACENT TO PERIMETER PROPERTIES		
	One	Four	Two	Three	
Perimeter/Frontage Designation	B	B	A	A	
Length of Roadway Frontage/Perimeter	341	200	300	420	
Credit for Existing Vegetation (Yes, No, Linear Feet. Describe below if needed)	No	No	1760	142	
Credit for Wall, Fence or Berm (Yes, No, Linear Feet. Describe below if needed)	No	150	No	No	
Number of Plants Required	150	140	140	140	
Shade Trees	150	140	140	140	
Evergreen Trees	150	140	140	140	
Number of Plants Provided	7	1	3	5	
Shade Trees	7	1	3	5	
Evergreen Trees	0	0	0	0	
Other Trees (21 Substitution)	-	-	-	-	
Shade (21 Substitution)	-	-	-	-	
Describe Plant Substitution Credits Below if needed					

GENERAL NOTES

- Financial Surety for the required landscaping must be posted as part of the Developers Agreement in the amount of \$11,850.00 for 27 shade trees and 25 evergreen trees.
- This plan has been prepared in accordance with the provisions of Section 16.124 of the Howard County Code and the Landscape Manual.



TREE PLANTING AND STAKING  
DECIDUOUS TREES UP TO 2-1/2" CALIPER  
NOT TO SCALE

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.

*Charles A. Akard* 12/23/99  
SIGNATURE OF DEVELOPER DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

*Robert H. Vogel* 3/29/00  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Cindy Hamilton* 4/1/00  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Mr. [Signature]* 4/2/00  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

NO.	REVISION	DATE

AS-BUILT CERTIFICATE

DATE

LANDSCAPE PLAN  
HOLLIFIELD ESTATES I  
SECTION ONE

TAX MAP #18 PARCEL 1  
2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**VOGEL & ASSOCIATES**  
ENGINEERS/SURVEYORS/PLANNERS

3091 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
Tel 410.461.5828 Fax 410.465.3965

DESIGN BY: PS  
DRAWN BY: PS  
CHECKED BY: RHV  
DATE: Oct. 18, 1999  
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W.O. NO.: 99-013

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NOTE: THE FIVE FOREST CONSERVATION RETENTION EASEMENTS TOTALING 10.92 ± ACRES, LOCATED ON OPEN SPACE LOTS 14 AND 46 AND NON-BUILDABLE PARCEL 'C' OF THIS SUBDIVISION, HAVE BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE, FOREST CONSERVATION ACT, FOR THIS SUBDIVISION, (F-99-75); AND HOLLIFIELD ESTATES I, SECTION 2, (F-99-76). SURPLUS FOREST RETENTION AREAS IN EXCESS OF THE MINIMUM REQUIRED (1.14 ACRES) TO BE CREDITED TO FUTURE HOLLIFIELD ESTATES II, (F-00-39).

NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT, HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.

FOREST CONSERVATION DATA	HOLLIFIELD ESTATES I (F-99-75 & F-99-76 ONLY)	HOLLIFIELD ESTATES I & II (OVERALL SITE CALCULATION F-99-75, F-99-76 & F-00-39)
GROSS SITE AREA	44.95	51.82
AREA WITHIN 100 YEAR FLOODPLAIN	0.00	0.00
AREA WITHIN AGRICULTURAL USE OR PRESERVATION PARCEL	0.00	0.00
AREA WITHIN EXISTING STATE OF MARYLAND ROW	0.92	1.46
NET TRACT AREA	44.03	50.36
LAND USE CATEGORY	RESIDENTIAL (SUBURBAN)	
II. FOREST CONSERVATION WORKSHEET DATA SUMMARY		
B. REFORESTATION THRESHOLD (20%)	8.81	10.07
C. AFFORESTATION MINIMUM (15%)	6.60	7.55
D. EXISTING FOREST ON NET TRACT AREA	12.30	14.30
E. FOREST AREAS TO BE CLEARED	2.06	3.33
F. FOREST AREAS TO BE RETAINED	10.92	10.91
IV. REFORESTATION CALCULATIONS		
G. FOREST AREAS CLEARED ABOVE REFORESTATION THRESHOLD	2.06	3.33
H. FOREST AREAS CLEARED BELOW REFORESTATION THRESHOLD	0.00	0.00
I. FOREST AREAS RETAINED ABOVE REFORESTATION THRESHOLD	1.51	0.90
REFORESTATION FOR CLEARING ABOVE THRESHOLD	0.52	0.88
CREDIT FOR FOREST AREAS RETAINED ABOVE THRESHOLD	1.51	0.90
TOTAL REFORESTATION REQUIRED	-0.99 (TO BE CREDITED TO HOLLIFIELD ESTATES II)	-0.07 = 0

**SPECIMEN AND SIGNIFICANT TREE LIST**

THE LOCATIONS AND GENERAL INFORMATION FOR THE FOLLOWING THREE OF FIVE SPECIMEN TREES WERE TAKEN FROM A FOREST STAND DELINEATION PREPARED BY CHESAPEAKE ENVIRONMENTAL MANAGEMENT, INC. IN FEBRUARY, 1996.

Tree ID#	Scientific Name	Common Name	DBH#	Vigor**
1	Liriodendron tulipifera	Tulip Poplar	44.0	Excellent
2	Ulmus americana	American Elm	42.0	Good
3	Quercus alba	White Oak	36.0	Good

# DBH: Diameter at Breast Height (4.5' High on Uphill Side of Tree)  
\*\* Vigor: Estimate of Health and Growth Potential of the Tree (Based on Appearance, Tightness of Bark, Evidence of Rot or Damage, etc.)

**CONSTRUCTION MONITORING**

- THE SITE SHALL BE INSPECTED PERIODICALLY DURING THE CONSTRUCTION PHASE OF THE PROJECT. A QUALIFIED PROFESSIONAL SHALL BE RESPONSIBLE FOR IDENTIFYING DAMAGE TO PROTECTED FOREST AREAS OR INDIVIDUAL TREES WHICH MAY HAVE BEEN CAUSED BY CONSTRUCTION ACTIVITIES, SUCH AS SOIL COMPACTION, ROOT INJURY, TRUNK WOUNDS, LIMB INJURY, OR STRESS CAUSED BY FLOODING OR DROUGHT CONDITIONS. ANY SUCH DAMAGE THAT MAY OCCUR SHALL BE REPAIRED IMMEDIATELY USING APPROPRIATE MEASURES. SEVERE PROBLEMS MAY REQUIRE CONSULTATION WITH A PROFESSIONAL ARBORIST.
- THE CONSTRUCTION PROCEDURE SHALL NOT DAMAGE AREAS OUTSIDE OF THE LIMITS OF DISTURBANCE AS DESIGNATED ON THE PLANS. ANY DAMAGE SHALL BE RESTORED BY THE CONTRACTOR AT HIS EXPENSE AND TO THE SATISFACTION OF THE DESIGN TEAM OR ENGINEER.

**NOTE:**

THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST CONSERVATION EASEMENTS EXCEPT AS PERMITTED BY THE HOWARD COUNTY FOREST CONSERVATION PROGRAM.

THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION, SOIL COMPACTION, OR EXCAVATION, INTRODUCTION OF TOXIC CHEMICALS OR OTHER DISTURBANCES DETRIMENTAL TO THE LIVE SPECIMEN TREES OR CRITICAL ROOT ZONES FOR THESE TREES EXCEPT AS PERMITTED BY THE HOWARD COUNTY FOREST CONSERVATION PROGRAM.

FINANCIAL SURETY FOR THE REQUIRED FOREST CONSERVATION MUST BE POSTED UNDER THE DEVELOPER AGREEMENT FOR F-99-75 IN THE AMOUNT OF \$ 44,953.92

**GENERAL NOTES**

**FOREST PROTECTION**

- ALL FOREST RETENTION AREAS SHALL BE TEMPORARILY PROTECTED BY WELL ANCHORED BLAZE ORANGE PLASTIC MESH FENCING AND SIGNAGE AS INDICATED ON THE PLANS. THE DEVICES SHALL BE INSTALLED ALONG THE FOREST RETENTION BOUNDARY PRIOR TO ANY LAND CLEARING, GRUBBING, OR GRADING ACTIVITIES.
- THE FOREST PROTECTION DEVICES SHALL BE INSTALLED SUCH THAT THE CRITICAL ROOT ZONES OF ALL TREES WITHIN THE RETENTION AREA NOT OTHERWISE PROTECTED WILL BE WITHIN FOREST PROTECTION DEVICES.
- ALL PROTECTION DEVICES SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION, INCLUDING SILT FENCE BEING USED AS PROTECTIVE FENCING. ALL DEVICES SHALL REMAIN IN PLACE UNTIL ALL CONSTRUCTION HAS CEASED IN THE IMMEDIATE VICINITY.
- ATTACHMENT OF SIGNS OR ANY OTHER OBJECTS TO TREES IS PROHIBITED. NO EQUIPMENT, MACHINERY, VEHICLES, MATERIALS OR EXCESSIVE PEDESTRIAN TRAFFIC SHALL BE ALLOWED WITHIN THESE PROTECTED AREAS.
- INSTALLATION AND MAINTENANCE OF PROTECTIVE FENCING AND SIGNAGE SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THE GENERAL CONTRACTOR SHALL TAKE THE UTMOST CARE TO PROTECT TREE ROOT SYSTEMS AND CANOPIES DURING ALL CONSTRUCTION ACTIVITIES. TREE ROOT SYSTEMS SHALL BE PROTECTED FROM SMOTHERING, FLOODING, EXCESSIVE WETTING FROM DE-WATERING OPERATIONS, OFF-SITE RUN OFF, SPILLAGE AND DRAINING OF MATERIALS THAT MAY BE HARMFUL TO TREES.
- THE GENERAL CONTRACTOR SHALL PREVENT PARKING OF CONSTRUCTION VEHICLES AND EQUIPMENT, AND THE STORING OF BUILDING SUPPLIES OR STOCKPILING OF EARTH WITHIN FOREST CONSERVATION EASEMENTS. AREA SHALL BE PROHIBITED.
- THE GENERAL CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY TREES DAMAGED OR DESTROYED WITHIN THE FOREST CONSERVATION EASEMENTS. ROOT PRUNING SHALL BE USED AT THE LIMIT OF DISTURBANCE OR LIMIT OF GRADING WITHIN AND ADJACENT TO ALL PRESERVATION AREAS, AS NECESSARY. FOREST CONSERVATION OBLIGATIONS FOR SECTION TWO ARE PROVIDED UNDER SECTION ONE.

**PRE-CONSTRUCTION MEETING**

- AFTER THE BOUNDARIES OF THE FOREST RETENTION AREAS HAVE BEEN FIELD LOCATED AND MARKED, AND AFTER THE FOREST PROTECTION DEVICES HAVE BEEN INSTALLED, BUT BEFORE ANY OTHER DISTURBANCE HAS TAKEN PLACE ON SITE, A PRE-CONSTRUCTION MEETING SHALL TAKE PLACE ON SITE. THE DEVELOPER, CONTRACTOR OR PROJECT MANAGER, AND HOWARD COUNTY INSPECTORS SHALL ATTEND. THE PURPOSE OF THIS MEETING WILL BE:
  - TO IDENTIFY THE LOCATIONS OF THE FOREST RETENTION AREAS, SPECIMEN TREES WITHIN 50 FEET OF THE LIMIT OF DISTURBANCE, LIMITS OF CONSTRUCTION, EMPLOYEE PARKING AREAS AND EQUIPMENT STAGING AREAS.
  - INSPECT ALL FLAGGED BOUNDARIES AND PROTECTION DEVICES.
  - MAKE ALL NECESSARY ADJUSTMENTS.
  - ASSIGN RESPONSIBILITIES AS APPROPRIATE AND DISCUSS PENALTIES.

**OWNER/DEVELOPER**

Mr. Charles Skirven, Esq.  
5401 Tuin Knolls Road, Suite 10  
Columbia, Maryland 21046  
(410) 995-0081

NO.	REVISION	DATE

**FOREST CONSERVATION PLAN  
HOLLIFIELD ESTATES I  
SECTION ONE**

(AND FUTURE HOLLIFIELD ESTATES I, SECTION 2)

TAX MAP #18 PARCEL 1  
2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

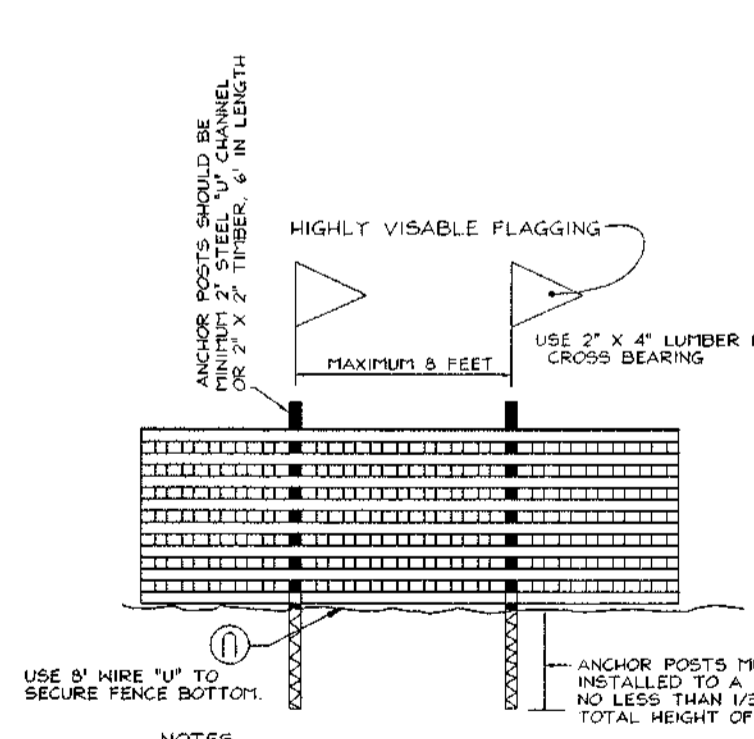
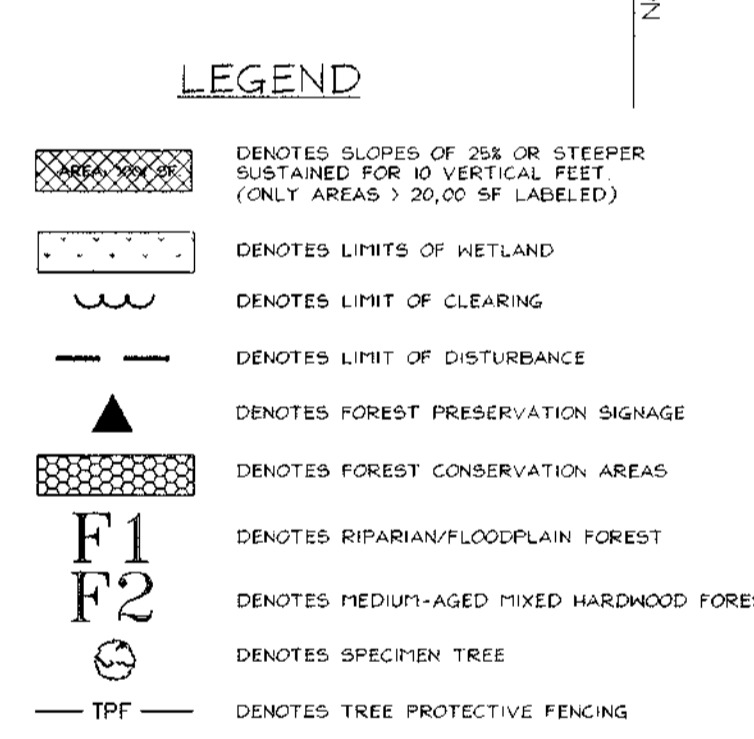
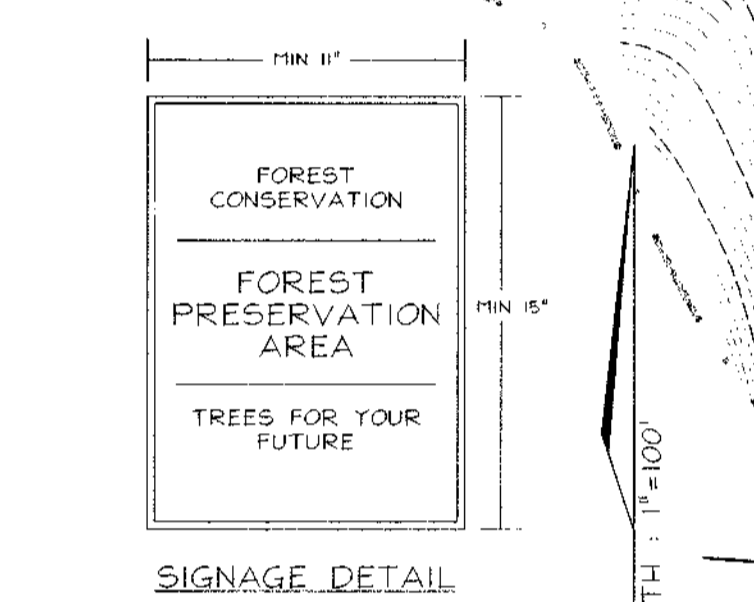


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Tel 410.461.5828 Fax 410.465.3666



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DRAWN BY: PS  
CHECKED BY: RHV  
DATE: Oct. 18, 1999  
SCALE: 1"=100'  
W.O. NO.: 99-013

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NOTES:  
1. Forest protection device only.  
2. Retention area will be set as part of the review process.  
3. Boundaries of retention area should be staked and flagged prior to installing device.  
4. Root damage should be avoided.  
5. Protection signage should be used.  
6. No change be introduced throughout construction.

BLAZE ORANGE PLASTIC MESH  
TYPICAL TREE PROTECTION FENCE DETAIL  
NO SCALE

This plan is based on environmental information provided by Mildenberg, Boender & Associates.

I certify that this plan has been prepared in accordance with section 16.1200 of the Howard County Forest Conservation Act and the Howard County Forest Conservation Manual.

Mary Hamilton McCona 2039  
Mary Hamilton McCona MD Reg. No.



**SOILS LEGEND**

SYMBOL	NAME / DESCRIPTION	K <sup>1</sup> FACTOR
Ba	Baile Silt Loam	43
BrB2	Brandywine Loam, 3 to 8 percent slopes, moderately eroded	24
BrC2	Brandywine Loam, 8 to 15 percent slopes, moderately eroded	24
ChC2	Chester Silt Loam, 8 to 15 percent slopes, moderately eroded	32
ChD2	Chester Silt Loam, 15 to 25 percent slopes, moderately eroded	32
DeB2	Delmarva Silt Loam, 3 to 8 percent slopes, moderately eroded	37
Enc2	Elmhurst Loam, 8 to 15 percent slopes, moderately eroded	37
Gic2	Glennig Loam, 8 to 15 percent slopes, moderately eroded	32
Gid2	Glennig Loam, 15 to 25 percent slopes, moderately eroded	32
Loe2	Lowrie Silt, 8 to 15 percent slopes, moderately eroded	37
Mib2	Manor Loam, 3 to 8 percent slopes, moderately eroded	37
Mic3	Manor Loam, 8 to 15 percent slopes, severely eroded	37
Mid3	Manor Loam, 15 to 25 percent slopes, severely eroded	37
Mie	Manor Loam, 25 to 45 percent slopes	37
Mif	Manor very stony Loam, 25 to 40 percent slopes	32
MifE	Montalto and Relay Silt, 15 to 45 percent slopes	24
MisD	Montalto and Relay, very stony Silt Loams, 3 to 25 percent slopes	32
MisF	Montalto and Relay very stony Silt Loams, 25 to 40 percent slopes	32

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Howard Skirven* 3/29/00  
CHIEF, BUREAU OF HIGHWAYS DATE

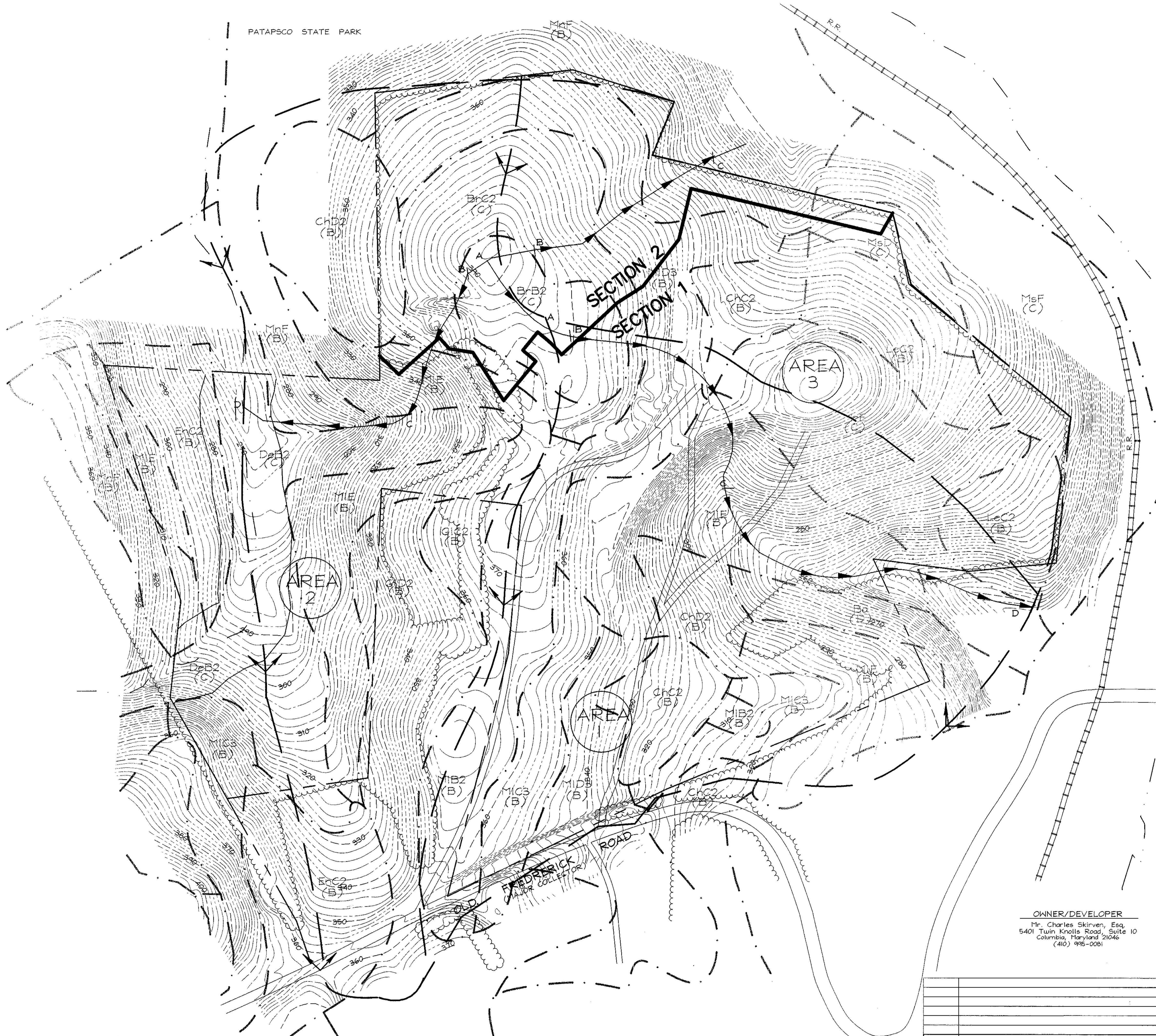
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Cindy Stead* 4/1/00  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Chris D... ..* 4/3/00  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

NOTE: THIS PLAN IS TO BE USED FOR FOREST CONSERVATION PURPOSES ONLY.

PATAPSCO STATE PARK



SYMBOL	NAME / DESCRIPTION	SOIL GROUP
Ba	Baile Silt Loam	D
BrB2	Brandywine Loam, 3 to 8 percent slopes, moderately eroded	C
BrC2	Brandywine Loam, 8 to 15 percent slopes, moderately eroded	C
ChC2	Chester Silt Loam, 8 to 15 percent slopes, moderately eroded	B
ChD2	Chester Silt Loam, 15 to 25 percent slopes, moderately eroded	B
ChB2	Delaware Silt Loam, 3 to 8 percent slopes, moderately eroded	C
ErC2	Elainboro Loam, 8 to 15 percent slopes, moderately eroded	B
GlC2	Glenelg Loam, 8 to 15 percent slopes, moderately eroded	B
GlD2	Glenelg Loam, 15 to 25 percent slopes, moderately eroded	B
LeC2	Lagers Silt, 8 to 15 percent slopes, moderately eroded	B
M1B2	Minor Loam, 3 to 8 percent slopes, moderately eroded	B
M1C3	Minor Loam, 8 to 15 percent slopes, severely eroded	B
M1D3	Minor Loam, 15 to 25 percent slopes, severely eroded	B
M1E	Minor Loam, 25 to 45 percent slopes	B
M1F	Minor very stony Loam, 25 to 60 percent slopes	B
M1E	Montalto and Relay Soils, 15 to 45 percent slopes	C
M1D	Montalto and Relay very stony Silt Loams, 3 to 25 percent slopes	C
M1F	Montalto and Relay very stony Silt Loams, 25 to 60 percent slopes	C

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

*Howard S. L. Jr.* 3/29/00  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Wanda Hanada* 4/19/00  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*David Dammann* 4/3/00  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

**STORM WATER MANAGEMENT DRAINAGE AREA MAP EXISTING CONDITIONS HOLLIFIELD ESTATES I SECTION ONE**

TAX MAP #18 PARCEL 1  
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND



3681 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
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DESIGN BY: GAH  
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OWNER/DEVELOPER  
Mr. Charles Skirven, Esq.  
5401 Twin Knolls Road, Suite 10  
Columbia, Maryland 21046  
(410) 995-0081

NO.	REVISION	DATE





DRAINAGE AREA TABULATIONS					
NO.	AREA	"C"	% IMP.	SOIL TYPES	ZONE
5	0.23 AC	.33	38%	B	R-ED
10	1.01 AC	.33	38%	B	R-ED
11	1.03 AC	.33	38%	B	R-ED
14	0.28 AC	.33	38%	B	R-ED
15	0.50 AC	.33	38%	B	R-ED
16	0.12 AC	.33	38%	B	R-ED
17	0.64 AC	.33	38%	B	R-ED
18	0.37 AC	.34	38%	B/C	R-ED
19	0.67 AC	.32	38%	B/C	R-ED
23	0.91 AC	.33	38%	B/C	R-ED
27	1.09 AC	.34	38%	B/C	R-ED
30	0.35 AC	.34	38%	B/C	R-ED
31	0.53 AC	.35	38%	B/C	R-ED
32	0.54 AC	.33	38%	B	R-ED
33	0.66 AC	.33	38%	B	R-ED
34	0.84 AC	.35	38%	B/C	R-ED
35A	0.23 AC	.33	38%	B	R-ED
38	0.45 AC	.34	38%	B/C	R-ED
39	0.80 AC	.35	38%	B/C	R-ED
40	0.75 AC	.36	38%	B/C	R-ED
42	0.74 AC	.36	38%	B/C	R-ED
45	1.00 AC	.36	38%	B/C	R-ED

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**DRAINAGE AREA MAP  
 FOR STORM DRAINAGE  
 HOLLIFIELD ESTATES I  
 SECTION ONE**

TAX MAP #18 PARCEL 1  
 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**VOGEL &  
 ASSOCIATES**  
 ENGINEERS-SURVEYORS-PLANNERS

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17 OF 18 SHEETS

A5-BUILT CERTIFICATE  
 \_\_\_\_\_ DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 \_\_\_\_\_ DATE  
 CHIEF, BUREAU OF HIGHWAYS

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

SOILS LEGEND		
SYMBOL	NAME / DESCRIPTION	SOIL GROUP
Bs	Baile Silt Loam	D
BrB2	Brandywine Loam, 3 to 8 percent slopes, moderately eroded	C
BrC2	Brandywine Loam, 8 to 15 percent slopes, moderately eroded	C
ChC2	Chester Silt Loam, 8 to 15 percent slopes, moderately eroded	B
ChD2	Chester Silt Loam, 15 to 25 percent slopes, moderately eroded	B
DdB2	Deltaco Silt Loam, 3 to 8 percent slopes, moderately eroded	C
EnC2	Elanboro Loam, 8 to 15 percent slopes, moderately eroded	B
GIC2	Glenela Loam, 8 to 15 percent slopes, moderately eroded	B
GID2	Glenela Loam, 15 to 25 percent slopes, moderately eroded	B
LcC2	Looness Silt, 8 to 15 percent slopes, moderately eroded	B
MIB2	Minor Loam, 3 to 8 percent slopes, moderately eroded	B
MIC3	Minor Loam, 8 to 15 percent slopes, severely eroded	B
MID3	Minor Loam, 15 to 25 percent slopes, severely eroded	B
MIE	Minor Loam, 25 to 45 percent slopes	B
MNF	Minor very stony Loam, 25 to 60 percent slopes	B
MRF	Montalto and Relay Soils, 15 to 45 percent slopes	C
MsD	Montalto and Relay very stony Silt Loams, 3 to 25 percent slopes	C
Msf	Montalto and Relay very stony Silt Loams, 25 to 60 percent slopes	C



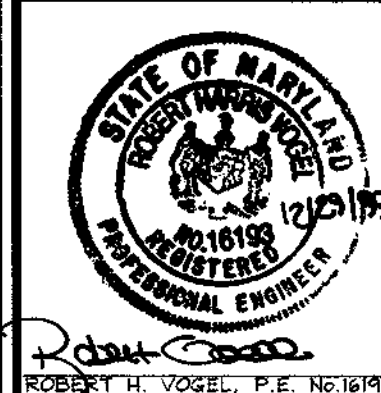
OWNER/DEVELOPER  
 Mr. Charles Skirven, Esq.  
 5401 Twin Knolls Road, Suite 10  
 Columbia, Maryland 21046  
 (410) 995-0081

NO.	REVISION	DATE

**DRAINAGE AREA MAP**  
**STORM WATER MANAGEMENT**  
**HOLLIFIELD ESTATES I**  
 SECTION ONE  
 TAX MAP #18 PARCEL 1  
 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**VOGEL & ASSOCIATES**  
 ENGINEERS-SURVEYORS-PLANNERS

3691 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
 Tel 410.461.5828 Fax 410.465.3965



DESIGN BY: GAH  
 DRAWN BY: PS  
 CHECKED BY: RHV  
 DATE: Oct. 18, 1999  
 SCALE: 1" = 100'  
 W.O. NO.: 99-013

18 SHEET OF 18

HOLLIFIELD ESTATES 2 (SP-98-17) LAYOUT SHOWN FOR INFORMATIONAL PURPOSES ONLY.

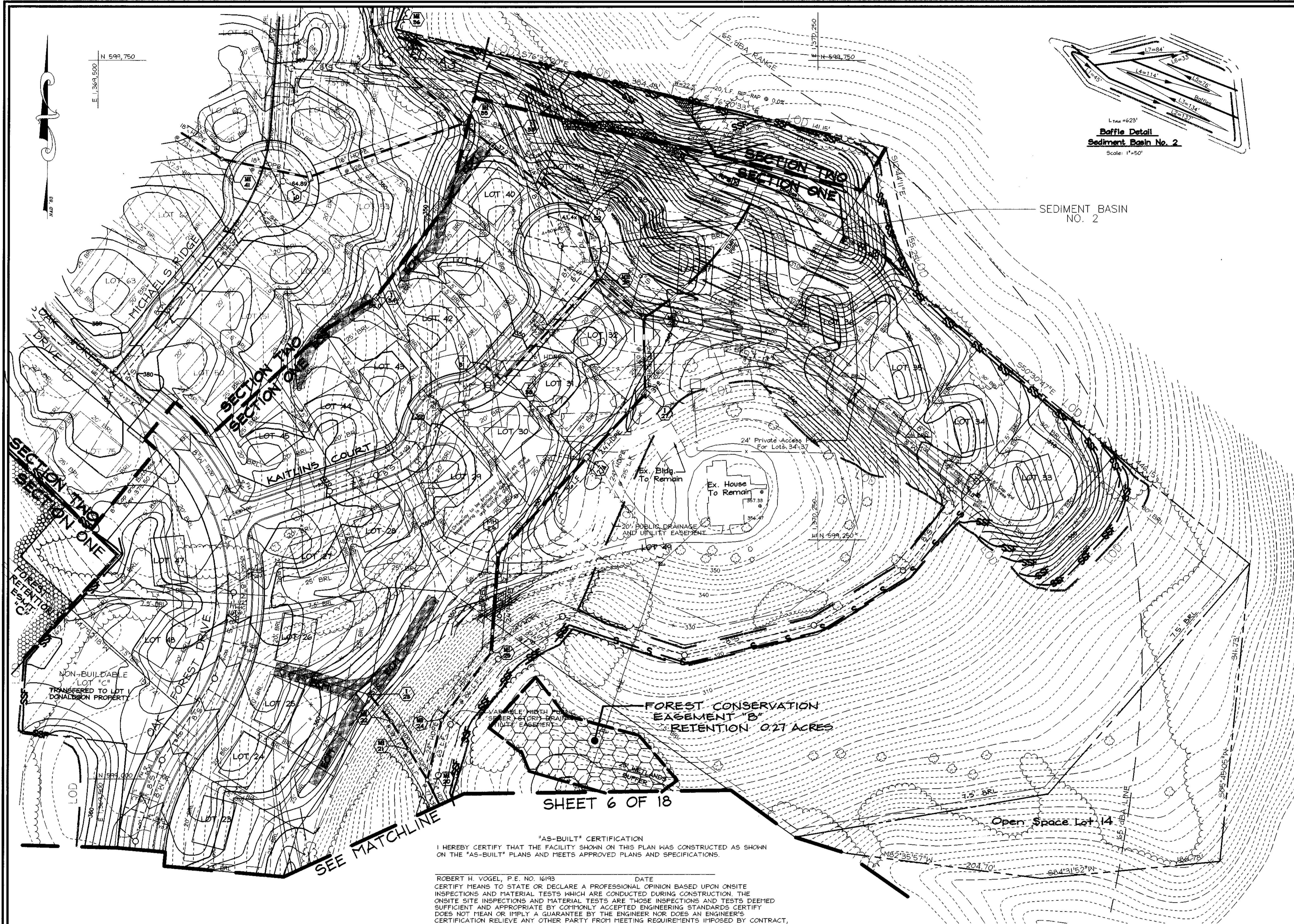
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

*Lawrence S. ...* 3/29/00  
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Cindy Hamata* 4/14/00  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*William ...* 4/2/00  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

Computed by: G.A.H. Date: 4/20/99 Rev: 12/21/99 Checked by: \_\_\_\_\_ Date: \_\_\_\_\_  
 Project name: HOLLIFIELD ESTATES I Basin #: 2  
 Location: HOWARD COUNTY, MARYLAND

Total area draining to basin: 8.97 acres (ac)

**Basin Volume Design**

Note: 1. also see Surface Area Design #30, this form.

- Min. required vol = 3600 cu ft / ac x 8.97 ac drainage = 32,292 cu ft.
- Actual Volume of basin = 32,610 cu ft.
- Excavate 26,050 cu ft. (265 cu yd) to obtain required capacity.
- Vol. at elevating elev. = 1930 cu ft / ac x 8.97 ac = 17,318 cu ft.
- Vol. of basin at cleanout = 900 cu ft / ac x 8.97 ac = 8,073 cu ft.
- Elevation corresponding to min. required volume of basin (riser crest elevation) 294.60 ft.
- Permanent pool elevation = 291.65 ft.
- Distance from riser crest elevation to permanent pool elevation = 2.95 ft.
- Basin cleanout elevation 290.50 ft.
- Distance from riser crest elevation to cleanout elevation = 4.10 ft.

**Spillway Design**

- $Q_p = 41.28$  cfs (peak discharge from 10-yr, 24-hr storm event, attach computations)

**Principal Spillway (Ops) (See Detail 11)**

- Design Principal Spillway (Barrel) discharge, Design  $Q_p = 41.28$  cfs (min. 10% of 10-yr peak or 5" pipe)
- H = 6.04 ft; Barrel length = 50.0 ft.
- Barrel Diam. = 30 in. Note:  $Q_w$  must equal or exceed Design  $Q_p$ .
- $Q_w = Q$  (from Table 13 or 14) 65.32 x (length correction factor) 1.08 = 50.61 cfs.
- Riser Diameter 32 in.; Riser Height 5.2 ft; Riser Head (h) = 1.02 ft.
- Trash Rack Diam. 50 in.; Trash Rack Height 12 in.

**Emergency Spillway (Ops) (N/A)**

- Emergency spillway cap,  $Q_{em} = 0.10 - Q_p = \dots$  cfs.
- Width = 10 ft; H = 10 ft.
- Entrance channel slope = 1%.
- Exit channel slope = 1%.

**Anti-Seep Collar Design (for each Barrel)**

- y = 6.29; z = 2.1; pipe slope = 2.0%; Ls = 41.02 ft.
- Use = 1 collars, 3 ft. - 10 in. square; projection = 3.7 ft.

**Design Elevations**

- Riser Crest = 295.20 ft.
- Design High Water = 296.29 ft.
- Emergency Spillway Crest = 291.65 ft.
- Min. settled top of dam = 297.60 ft.
- Permanent pool = 291.65 ft.
- Bottom of Basin = 290.00 ft.
- Draw-down orifice invert = 290.00 ft.

**Surface Area Design**

- Min. basin surface area; SA  $\geq 0.0035 \times Q_p = 0.0035 \times 46.53$  cfs  $\leq 0.16$  ac.

**Draw-down Device**

- Draw-down device orifice diameter = 4 in. (From Table 11)

**Draw-down Basin**

- $A_1 = (\# \text{ of perforations} / \text{foot}) (\text{perforation area} (\text{ft}^2) (\text{perforated section length ft}))$
- $A_1 = (12 \text{ perforations} / \text{foot}) (0.0055 \text{ sq. ft.} \times 6 \text{ ft.})$
- $A_1 = 0.38$  sq. ft.
- $A_2 = \text{Internal orifice area (from Table 11 or computed)} = 0.35$  sq. ft.

C - 10 - 10 & 11

**LEGEND**

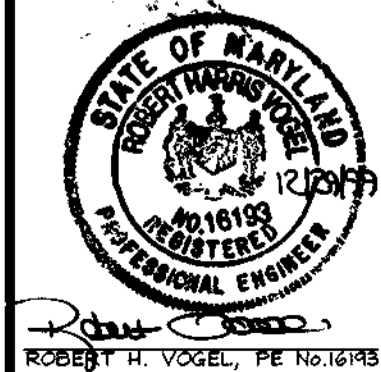
- STABILIZED CONSTRUCTION ENTRANCE
- PROP. TREELINE
- BASIN / TRAP CONTOURS
- PROPOSED GRADE
- EROSION CONTROL MATTING
- LOD - LIMIT OF DISTURBANCE
- SILT FENCE
- SUPER SILT FENCE
- EARTH DIKE
- TEMP. SEDIMENT TRAP CONTOURS
- PROP. CONTOURS

**OWNER/DEVELOPER**  
 Mr. Charles Skirven, Esq.  
 5401 Tuim Knolls Road, Suite 10  
 Columbia, Maryland 21046  
 (410) 995-0081

NO.	REVISION	DATE
2	REVISE STORMDRAIN & REGRADE I-27, I-27A & MH 26	4/9/01

**GRADING, SEDIMENT AND EROSION CONTROL PLAN**  
**HOLLIFIELD ESTATES I**  
 SECTION ONE  
 TAX MAP #18 PARCEL I  
 2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**VAVOGEL & ASSOCIATES**  
 ENGINEERS-SURVEYORS-PLANNERS  
 3881 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
 Tel 410.461.8228 Fax 410.465.3966



DESIGN BY: G.A.H.  
 DRAWN BY: J.E.R.  
 CHECKED BY: R.H.V.  
 DATE: Oct. 18, 1999  
 SCALE: 1"=50'  
 W.O. NO.: 99-013

7 SHEET OF 18

"AS-BUILT" CERTIFICATION  
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS APPROVED PLANS AND SPECIFICATIONS.

ROBERT H. VOGEL, P.E. NO. 16193 DATE 12/29/99  
 CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ON-SITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ON-SITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERING STANDARDS CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

**ENGINEER'S CERTIFICATE**  
 I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

Signature: Robert H. Vogel  
 DATE: 12/29/99

**DEVELOPER'S CERTIFICATE**  
 I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

Signature: Charles Skirven  
 DATE: 12/23/99

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.  
 Signature: Howard Skidmore  
 DATE: 3/29/00  
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 Signature: Craig Hamilton  
 DATE: 4/14/00  
 CHIEF, DIVISION OF LAND DEVELOPMENT

THESE PLANS HAVE BEEN REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

Signature: Cheryl Simon/O.S. 3/26/00  
 USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE

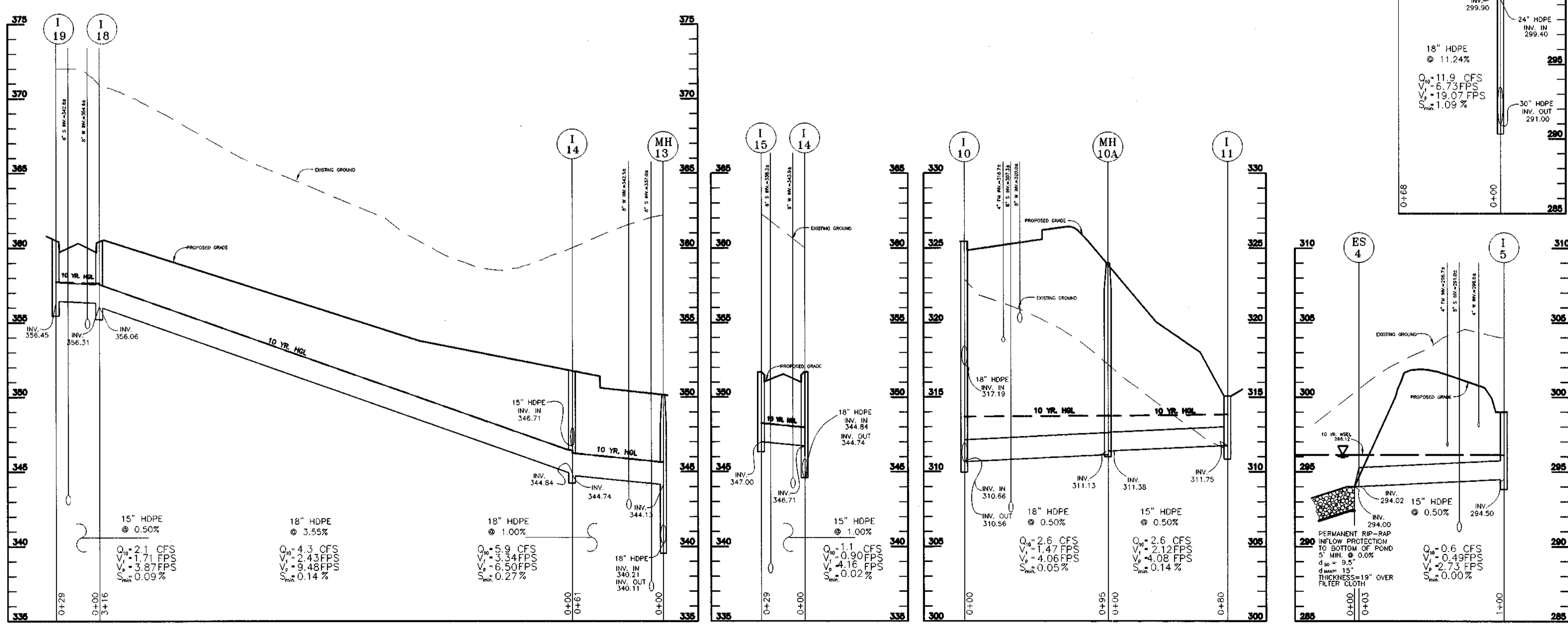
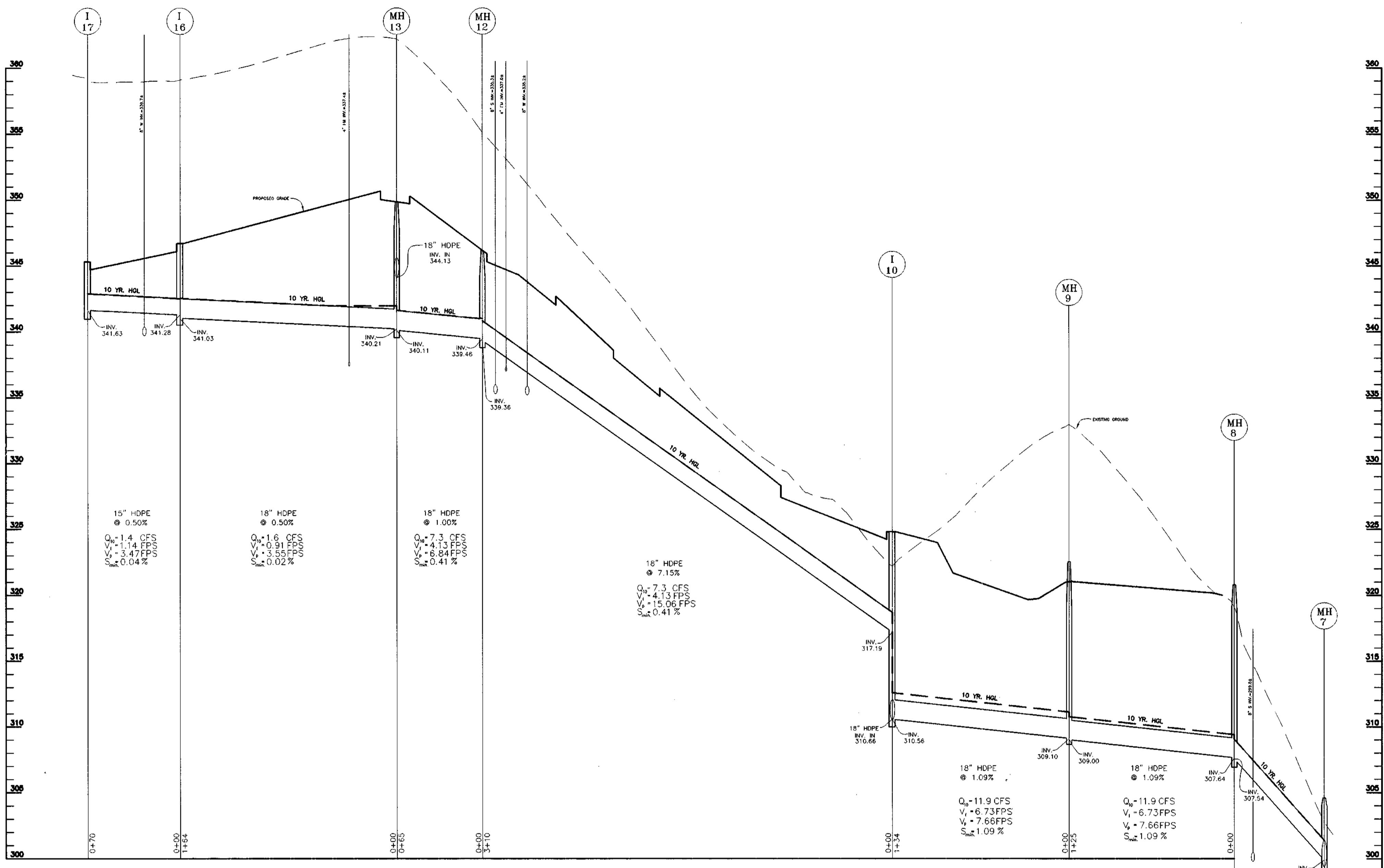
THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Signature: Robert H. Vogel  
 DATE: 12/29/99  
 HOWARD SOIL CONSERVATION DISTRICT

STRUCTURE SCHEDULE

NO.	TYPE	TOP EL.	INV. IN.	INV. OUT.	LOCATION	REMARKS
EW-1	TYPE A HEADWALL	273.50	-	269.00	N 598860.5742 E 1370066.4184	SD 5.11
MH-2	STD. MANHOLE	279.00	271.20	269.19	N 598853.7591 E 1370051.9152	G 5.01
S-3	CONCRETE RISER	297.80	287.90	283.50	N 598809.6020 E 1369957.2635	SEE DETAILS
ES-4	15" HDPE END SECTION	295.44	294.02	294.00	N 598722.5400 E 1370055.4413	ADS N-12
I-5	YARD INLET	299.00	-	294.50	N 598643.8107 E 1370111.7340	SD 4.14
ES-6	30" HDPE END SECTION	292.85	290.10	290.00	N 598879.2325 E 1369895.1542	ADS N-12
MH-7	4' STD. PRECAST MANHOLE *	304.50	299.90 299.40	291.00	N 598930.2489 E 1369877.4531	G 5.12
MH-8	4' STD. PRECAST MANHOLE	320.50	307.64	307.54	N 598906.3138 E 1369813.8048	G 5.12
MH-9	4' STD. PRECAST MANHOLE	322.50	309.10	309.00	N 598784.7573 E 1369786.8523	G 5.12
I-10	PRECAST 'A-10' INLET *	324.79	317.19 310.66	310.56	N 598667.3362 E 1369850.4497	SD 4.41
MH 10A	4' STD. PRECAST MANHOLE	324.00	311.38	311.13	N 598576.3745 E 1369863.8431	G 5.12
I-11	PRECAST TYPE 'D' INLET	315.83	-	311.75	N 598501.5751 E 1369876.7913	SD 4.39 2 SIDES
MH-12	4' STD. PRECAST MANHOLE	346.27	339.46	339.36	N 598522.7854 E 1369575.6108	G 5.12
MH-13	4' STD. PRECAST MANHOLE *	349.45	344.13 340.21	340.11	N 598537.2057 E 1369512.2936	G 5.12
I-14	PRECAST 'A-5' INLET	351.68	344.84 346.71	344.74	N 598595.9965 E 1369527.1751	SD 4.40
I-15	PRECAST 'A-10' INLET	351.68	-	347.00	N 598601.8557 E 1369498.7455	SD 4.41
I-16	PRECAST 'A-5' INLET	346.68	341.28	341.03	N 598377.9783 E 1369473.0113	SD 4.40
I-17	PRECAST 'A-10' INLET	345.29	-	341.63	N 598318.4721 E 1369438.6073	SD 4.41
I-18	PRECAST 'A-5' INLET	360.39	356.31	356.06	N 598910.1693 E 1369559.5411	SD 4.40
I-19	PRECAST 'A-5' INLET	360.39	-	356.45	N 598912.7189 E 1369530.6262	SD 4.41
MH-20	4' STD. PRECAST MANHOLE	311.00	304.50 304.00	302.40	N 598999.2187 E 1369843.7115	G 5.12
MH-21	4' STD. PRECAST MANHOLE *	322.00	314.75	310.05	N 599030.7815 E 1369824.4037	G 5.12
MH-22	4' STD. PRECAST MANHOLE *	344.00	336.70	321.05	N 599060.6382 E 1369806.1396	G 5.12
I-23	PRECAST TYPE 'D' INLET	351.83	-	343.00	N 599088.4825 E 1369783.3281	SD 4.39 2 SIDES
MH-24	4' STD. PRECAST MANHOLE	316.00	307.82	307.72	N 599061.7895 E 1369858.5194	G 5.12
MH-25	4' STD. PRECAST MANHOLE	321.50	310.50	310.40	N 599132.9585 E 1369910.2782	G 5.12
MH-26	4' STD. PRECAST MANHOLE *	351.0	323.33 326.33	326.33	N 599236.6 E 1369919.2	G 5.12
I-27	PRECAST TYPE 'D' INLET *	337.83	329.66 329.56	329.56	N 599400.3 E 1370069.8	SD 4.39 2 SIDES
MH-28	4' STD. PRECAST MANHOLE	341.80	330.16	330.06	N 599481.8934 E 1370068.3544	G 5.12
MH-29	4' STD. PRECAST MANHOLE *	343.93	336.22 330.58	330.48	N 599523.1190 E 1370020.8034	G 5.12
I-30	PRECAST 'A-10' INLET	353.29	349.52	349.27	N 599416.4278 E 1369921.1287	SD 4.41
I-31	PRECAST 'A-10' INLET	353.29	-	350.02	N 599433.0305 E 1369902.1711	SD 4.41
I-32	PRECAST 'A-10' INLET	342.00	331.03	330.93	N 599590.0595 E 1370001.4974	SD 4.41
I-33	YARD INLET	337.00	333.60 332.09	331.59	N 599660.8647 E 1369910.7626	SD 4.14
I-34	YARD INLET	355.00	-	351.51	N 599503.0552 E 1369789.6542	SD 4.14
MH-35	4' STD. PRECAST MANHOLE *	345.50	338.79 332.49	332.39	N 599684.4005 E 1369880.4543	G 5.12
I-35A	PRECAST TYPE 'D' INLET	338.83	329.11 329.01	329.01	N 599334.2 E 1370009.6	SD 4.39

NOTES:  
 1. TOP ELEVATIONS ARE TO CENTERLINE TOP FACE OF CURB FOR TYPE A INLETS, CENTERLINE TOP OF SLAB FOR TYPE D INLETS AND CENTERLINE TOP OF GRATE FOR YARD INLETS. STRUCTURE LOCATION COORDINATES ARE TO CENTER OF STRUCTURE.  
 2. SEE HOLLIFIELD ESTATES I, SECTION TWO FOR STRUCTURES I-35A THRU I-45.  
 3. \* GRANITE BLOCK BOTTOM



STORM DRAIN PROFILES

SCALE: HORIZ. 1"=50'  
 VERT. 1"=5'

OWNER/DEVELOPER

Mr. Charles Skirven, Esq.  
 5401 Twin Knolls Road, Suite 10  
 Columbia, Maryland 21046  
 (410) 995-0081

NO.	REVISION	DATE
2	UPDATE STRUCTURE SCHEDULE	4/9/01

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS DATE

AS-BUILT CERTIFICATE

DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development DATE

Chief, Development Engineering Division DATE

STORM DRAIN PROFILES

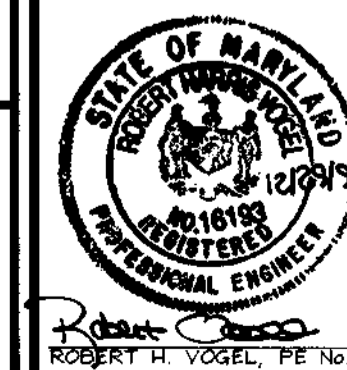
HOLLIFIELD ESTATES I

SECTION ONE

TAX MAP #18 PARCEL 1  
 2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

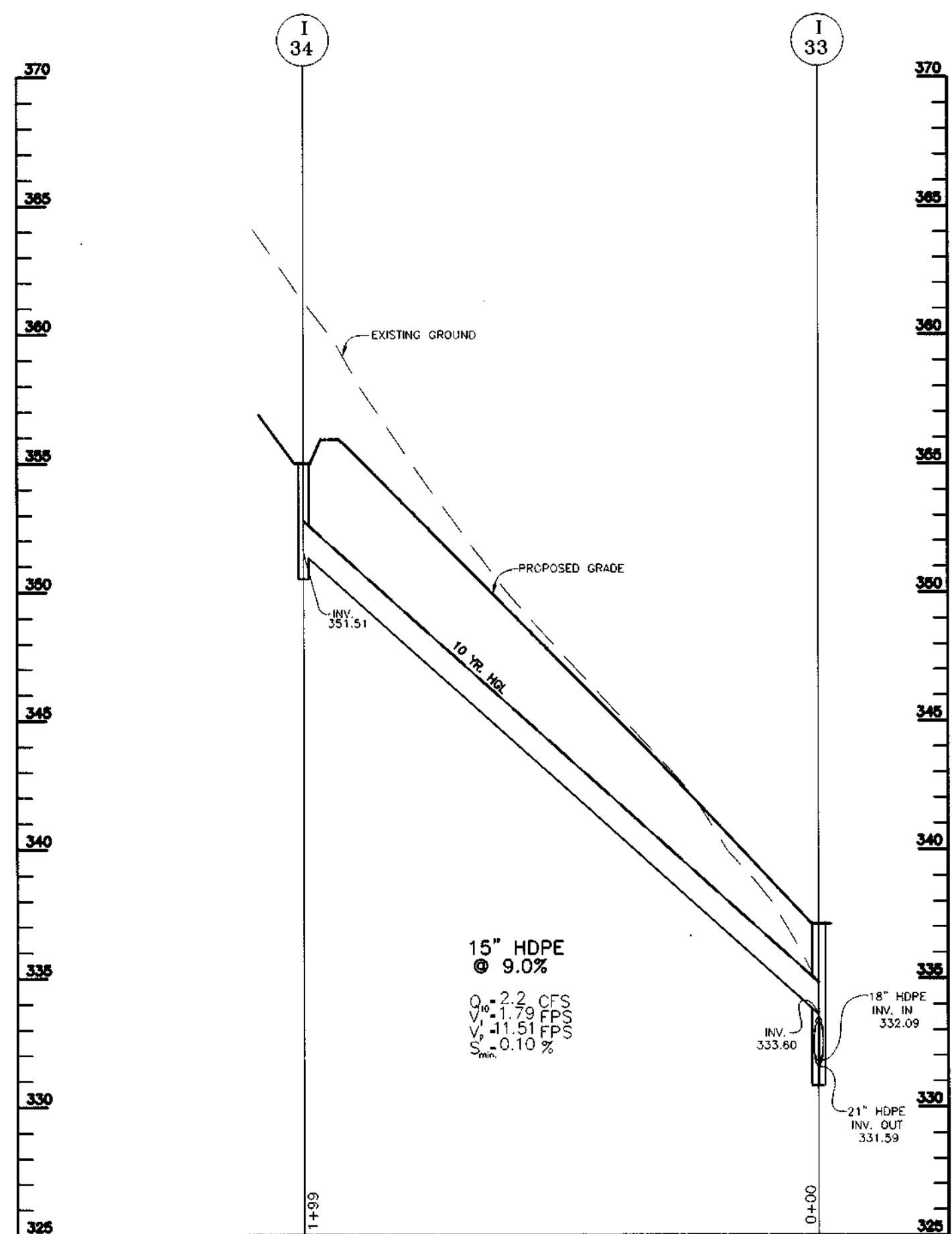
**VOGEL & ASSOCIATES**  
 ENGINEERS-SURVEYORS-PLANNERS

3991 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
 Tel 410.461.2828 Fax 410.465.3966

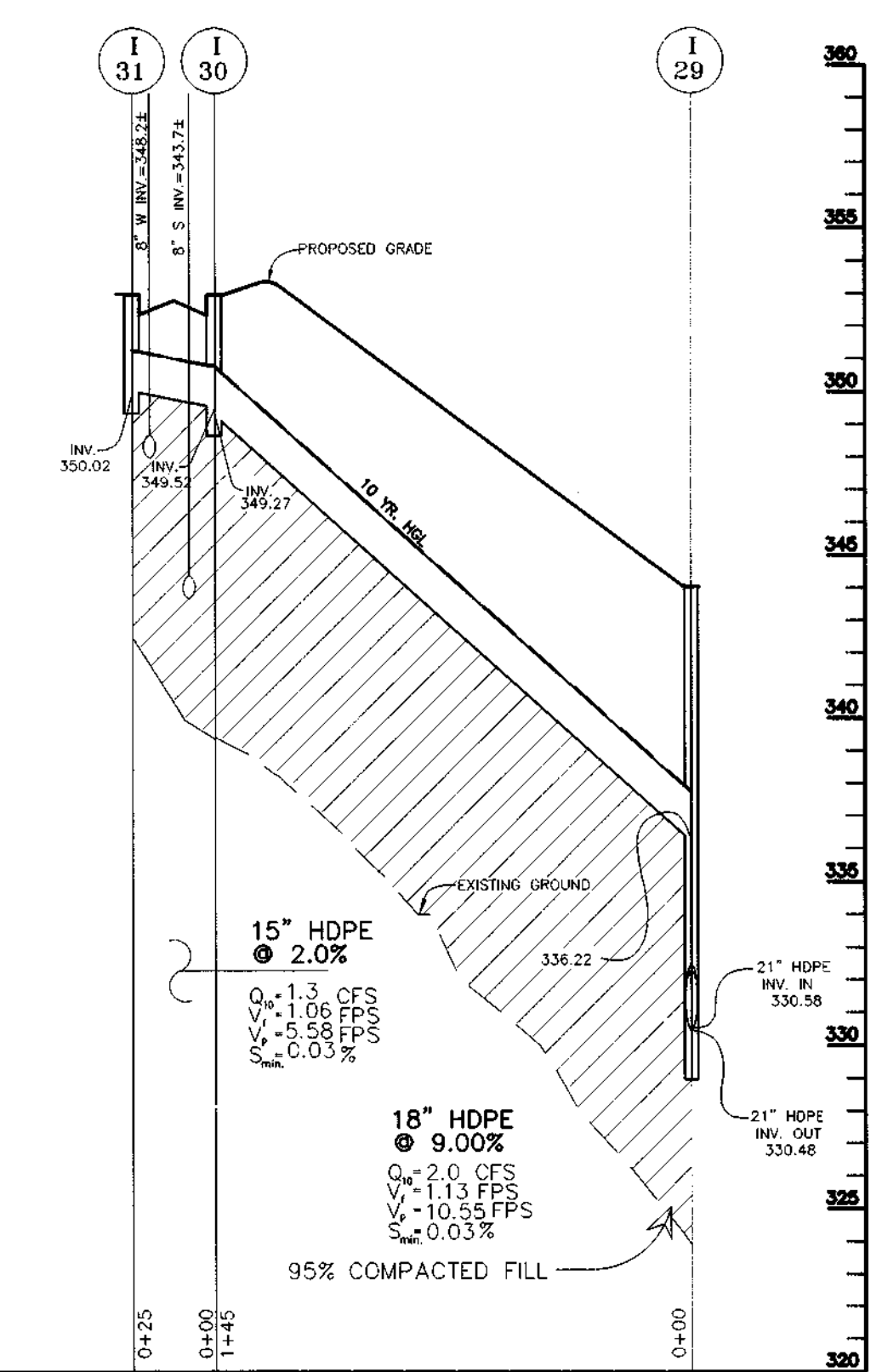


DESIGN BY: GAH  
 DRAWN BY: JER  
 CHECKED BY: RHV  
 DATE: Oct. 18, 1999  
 SCALE: AS SHOWN  
 P.L.O. NO.: 99-013

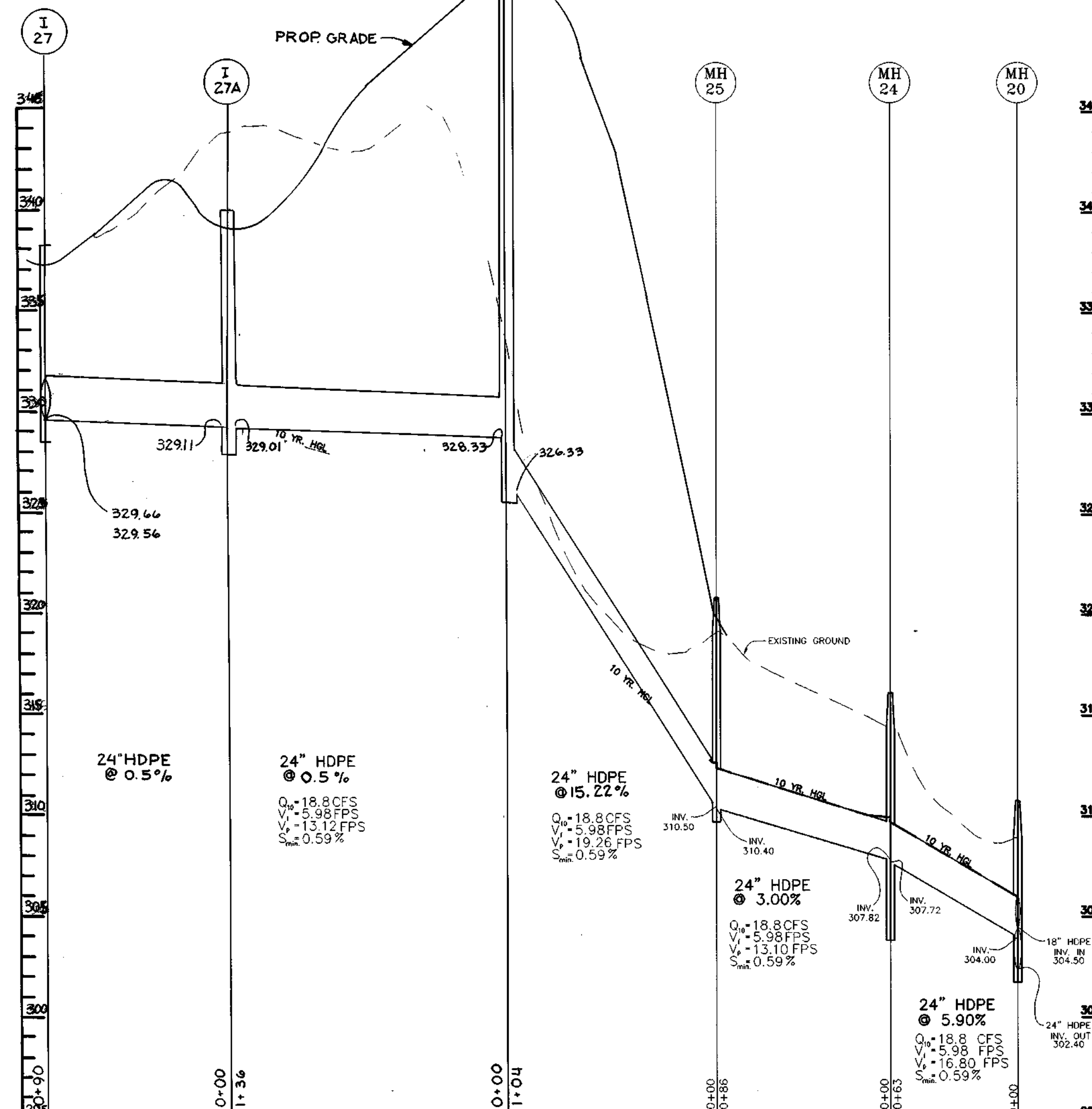
9 SHEET OF 18



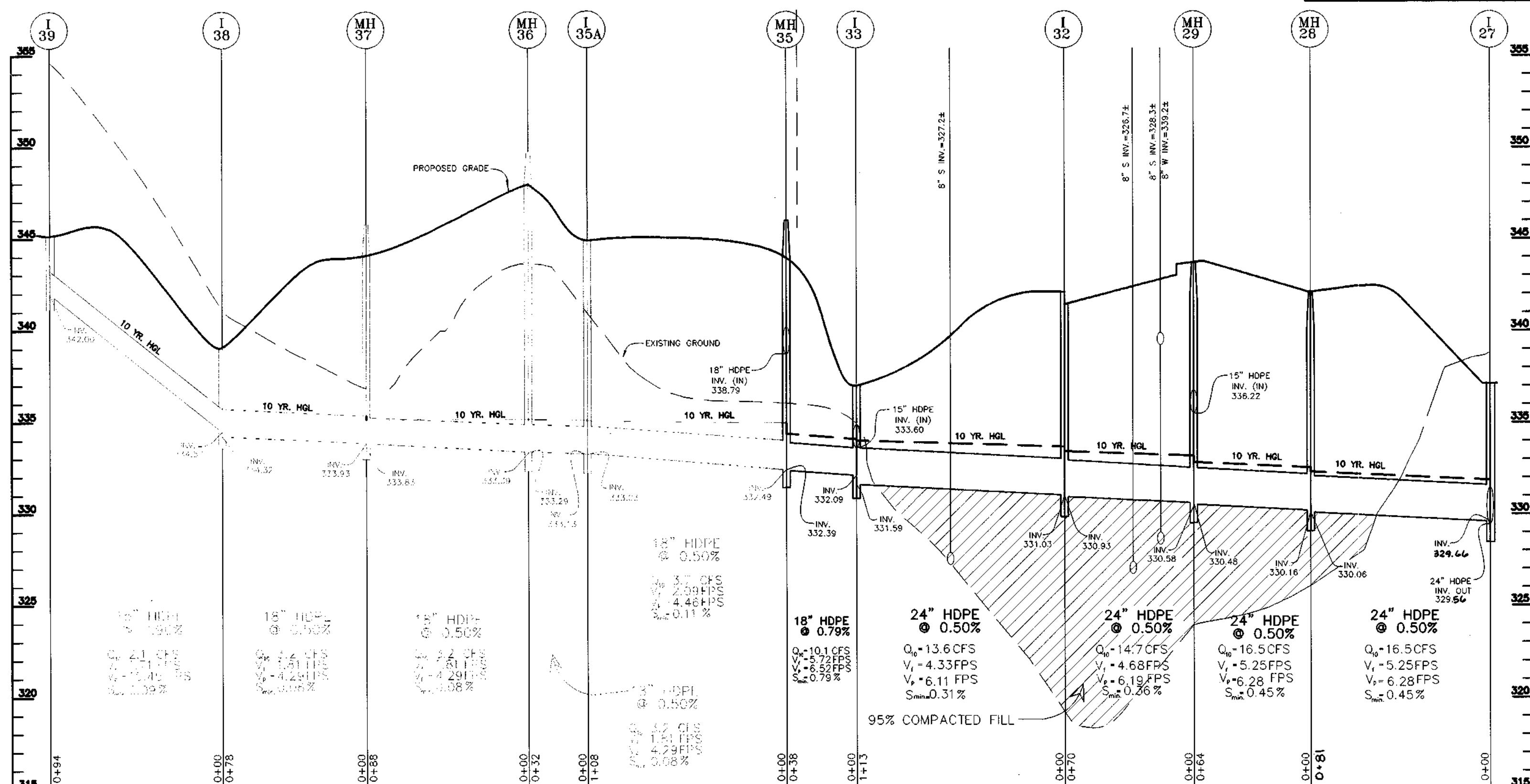
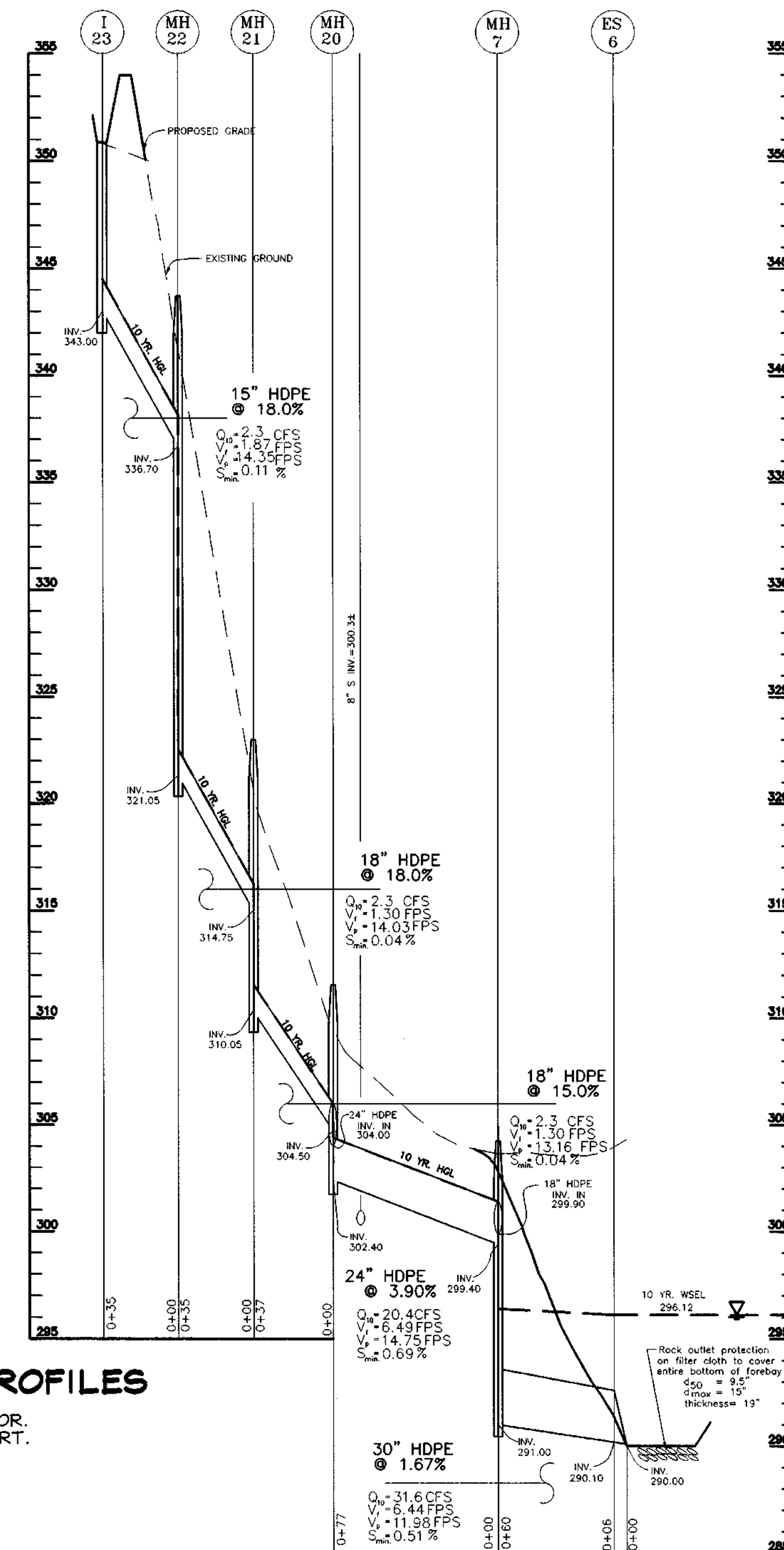
**STORM DRAIN PROFILES**  
SCALE 1" = 50' HOR.  
1" = 5' VERT.



**STORM DRAIN PROFILES**  
SCALE 1" = 50' HOR.  
1" = 5' VERT.



**STORM DRAIN PROFILES**  
SCALE 1" = 50' HOR.  
1" = 5' VERT.



**STORM DRAIN PROFILES**  
SCALE 1" = 50' HOR.  
1" = 5' VERT.

**OWNER/DEVELOPER**  
Mr. Charles Skirven, Esq.  
5401 Twin Knolls Road, Suite 10  
Columbia, Maryland 21046  
(410) 995-0081

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS DATE 3/29/00

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT DATE 4/14/00

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 4/20/00

NO.	REVISION	DATE
2	RELOCATE STRUCTURES I-27, I-27A AND MH-26	4-9-01
	REVISION	DATE

AS-BUILT CERTIFICATE

DATE

**STORM DRAIN PROFILES**  
**HOLLIFIELD ESTATES I**  
SECTION ONE  
PARCEL 1  
TAX MAP #18  
2nd ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

**VOGEL & ASSOCIATES**  
ENGINEERS/SURVEYORS/PLANNERS  
3891 Park Avenue, Suite 101 • Elkott City, Maryland 21043  
Tel 410.461.5828 Fax 410.465.3986

DESIGN BY: G.A.H.  
DRAWN BY: J.E.R.  
CHECKED BY: R.H.V.  
DATE: Oct. 18, 1999  
SCALE: AS SHOWN  
W.O. NO.: 99-018

10 SHEET OF 18

- LEGEND**
- STABILIZED CONSTRUCTION ENTRANCE
  - BASIN / TRAP CONTOURS
  - PROPOSED GRADE
  - EROSION CONTROL MATTING
  - SUPER SILT FENCE
  - SILT FENCE
  - LIMIT OF DISTURBANCE

**TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET**

Computed by: R.H.V. Date: 04/20/99 Rev: 12/21/99 Checked by: \_\_\_\_\_ Date: \_\_\_\_\_  
 Project name: HOLLIFIELD ESTATES I Basin #: \_\_\_\_\_  
 Location: HOWARD COUNTY, MARYLAND

Total area draining to basin: 10.25 acres (ac)  
 Basin Volume Design

Note: 1. also see Surface Area Design #30, this form.

1. Min. required vol. = 3600 cu ft./ac x 10.25 ac. drainage = 36,900 cu ft.
2. Actual Volume of basin = 42,525 cu ft.
3. Excess vol. = 5,625 cu ft. (15.33 cu ft./sq. ft. to obtain required capacity)
4. Vol. of dewatering elev. = 1800 cu ft./sq. x 10.25 ac. = 18,450 cu ft.
5. Vol. of basin at cleanout = 300 cu ft./sq. x 10.25 ac. = 3,075 cu ft.
6. Elevation corresponding to min. required volume of basin (riser crest elevation) 292.50 ft.
7. Permanent pool elevation = 291.20 ft.
8. Distance from riser crest elevation to permanent pool elevation 1.30 ft.
9. Basin cleanout elevation 292.00 ft.
10. Distance from riser crest elevation to cleanout elevation 0.70 ft.

Principal Spillway (Barrel) (See Detail 11) (SEE COMPUTATION & DETAILS OF PERMANENT SWM POND)

12. Design Principal Spillway (Barrel) discharge, Design  $Q_p = 24.72$  cfs (min. 10% of 10-yr peak or 5" pipe)
13. H = \_\_\_\_\_ ft.; Barrel length = \_\_\_\_\_ ft.
14. Barrel Diam. = \_\_\_\_\_ in. Note:  $Q_p$  must equal or exceed Design  $Q_p$
15. Riser Diameter = \_\_\_\_\_ in.; Riser Height = \_\_\_\_\_ ft.; Riser Head (h) = \_\_\_\_\_ ft.
16. Trash Rack Diam. = \_\_\_\_\_ in.; Trash Rack Height = \_\_\_\_\_ in.

Emergency Spillway (See Detail 12) (SEE COMPUTATION & DETAILS OF PERMANENT SWM POND)

17. Emergency spillway  $Q_{em} = Q_p - Q_p = 0$  cfs
18. Width = \_\_\_\_\_ ft.; Hp = \_\_\_\_\_ ft.
19. Entrance channel slope = \_\_\_\_\_ %
20. Exit channel slope = \_\_\_\_\_ %

Anti-Seep Collar Design (for each Barrel) (SEE COMPUTATION & DETAILS OF PERMANENT SWM POND)

21.  $y = \frac{z}{L}$ ; pipe slope = \_\_\_\_\_ %; L = \_\_\_\_\_ ft.
22. Use = \_\_\_\_\_ color, \_\_\_\_\_ ft. \_\_\_\_\_ in. square projection = \_\_\_\_\_ ft.

Design Elevations

23. Riser Crest = 292.50 ft.
24. Design High Water = 292.03 ft.
25. Emergency Spillway Crest = 291.20 ft.
26. Min. settled top of dam = 300.00 ft.
27. Permanent pool = 291.20 ft.
28. Bottom of Basin = 288.00 ft.
29. Draw-down orifice invert = 288.00 ft.

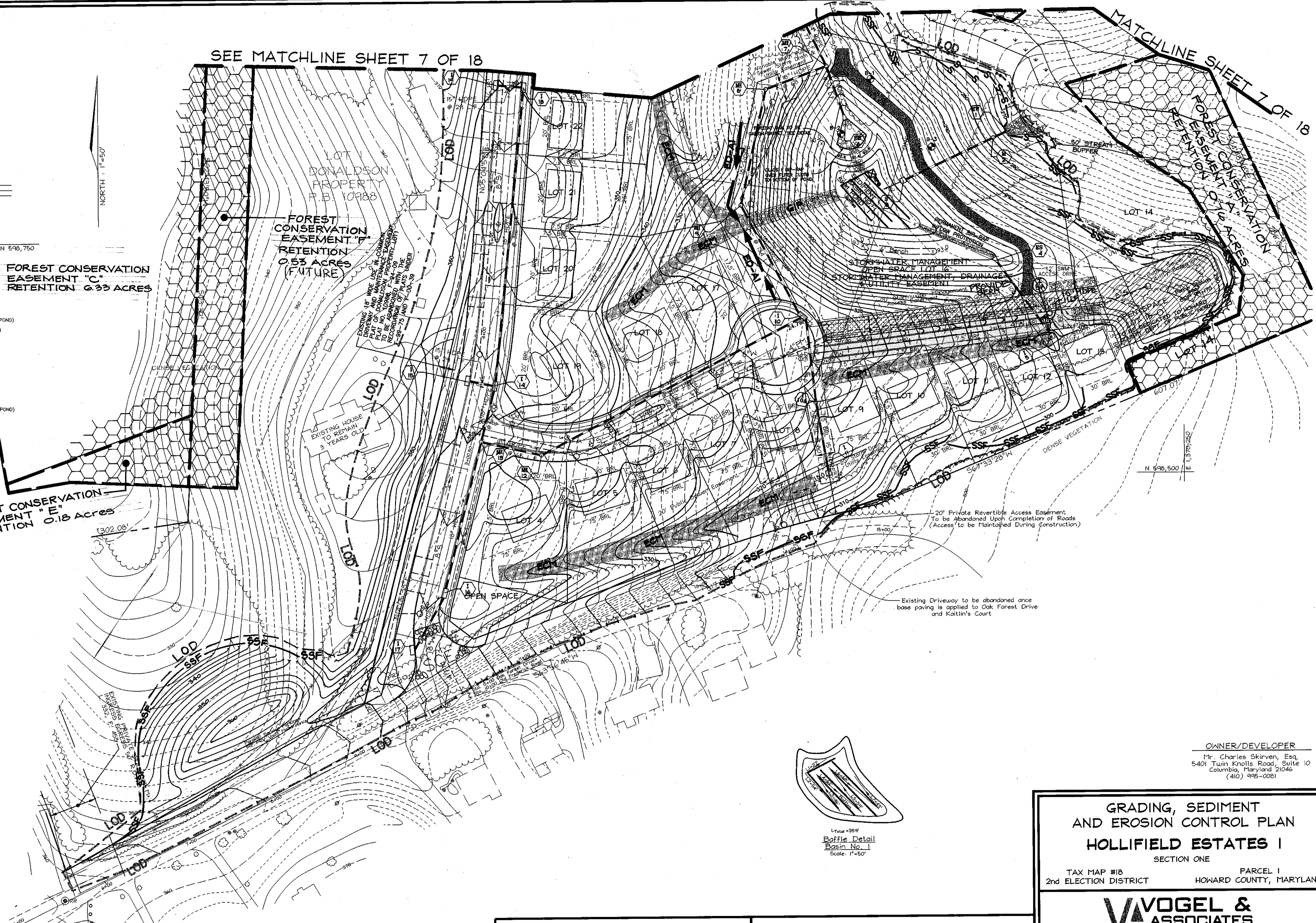
Surface Area Design

30. Min. basin surface area;  $SA \geq 0.0035 \times Q_p = 0.0035 \times 24.72$  cfs  $\leq 0.08$  ac.
- Draw-down Device
31. Draw-down device orifice diameter = 3.48 in. (From Table 11)
32. A = Total area of perforations  $\geq 4A_o$
- $A_o = (\# \text{ of perforations/foot})(\text{perforation area ft}^2)(\text{perforated section length ft.})$
- $A_o = (12 \text{ perforations/foot})(0.0055 \text{ sq. ft.})(6 \text{ ft.})$
- $A_o = 0.22 \text{ sq. ft.}$
- A = Internal orifice area (from Table 11 or computed) = 0.20 sq. ft.
- $A_o = 0.22 \text{ sq. ft.}$

C - 10 - 10 & 11

SEE MATCHLINE SHEET 7 OF 18

MATCHLINE SHEET 7 OF 18



NO.	ADDENDUM I-5A	REVISION	DATE
			12-10-02

**DEVELOPER'S CERTIFICATE**

"I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

*Charles Skirven* 12/23/99  
 SIGNATURE OF DEVELOPER DATE  
 CHARLES SKIRVEN

**ENGINEER'S CERTIFICATE**

"I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

*Robert H. Vogel* 12/23/99  
 SIGNATURE OF ENGINEER DATE  
 ROBERT H. VOGEL

THESE PLANS HAVE BEEN REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

*Cheryl Sperry/GS 3/24/00*  
 USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

*Robert Skirven 3/24/00*  
 HOWARD SOIL CONSERVATION DISTRICT DATE

**"AS-BUILT" CERTIFICATION**

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS APPROVED PLANS AND SPECIFICATIONS.

ROBERT H. VOGEL, P.E. NO. 16193 DATE  
 CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ON-SITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ON-SITE SITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERING STANDARDS. CERTIFICATION DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

*Charles Skirven for* 3/24/00  
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Chris Hamble* 4/14/00  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Robert H. Vogel* 4/3/00  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

**OWNER/DEVELOPER**  
 Mr. Charles Skirven, Esq.  
 5401 Twin Knolls Road, Suite 10  
 Columbia, Maryland 21046  
 (410) 936-0081

**GRADING, SEDIMENT AND EROSION CONTROL PLAN**  
**HOLLIFIELD ESTATES I**  
 SECTION ONE

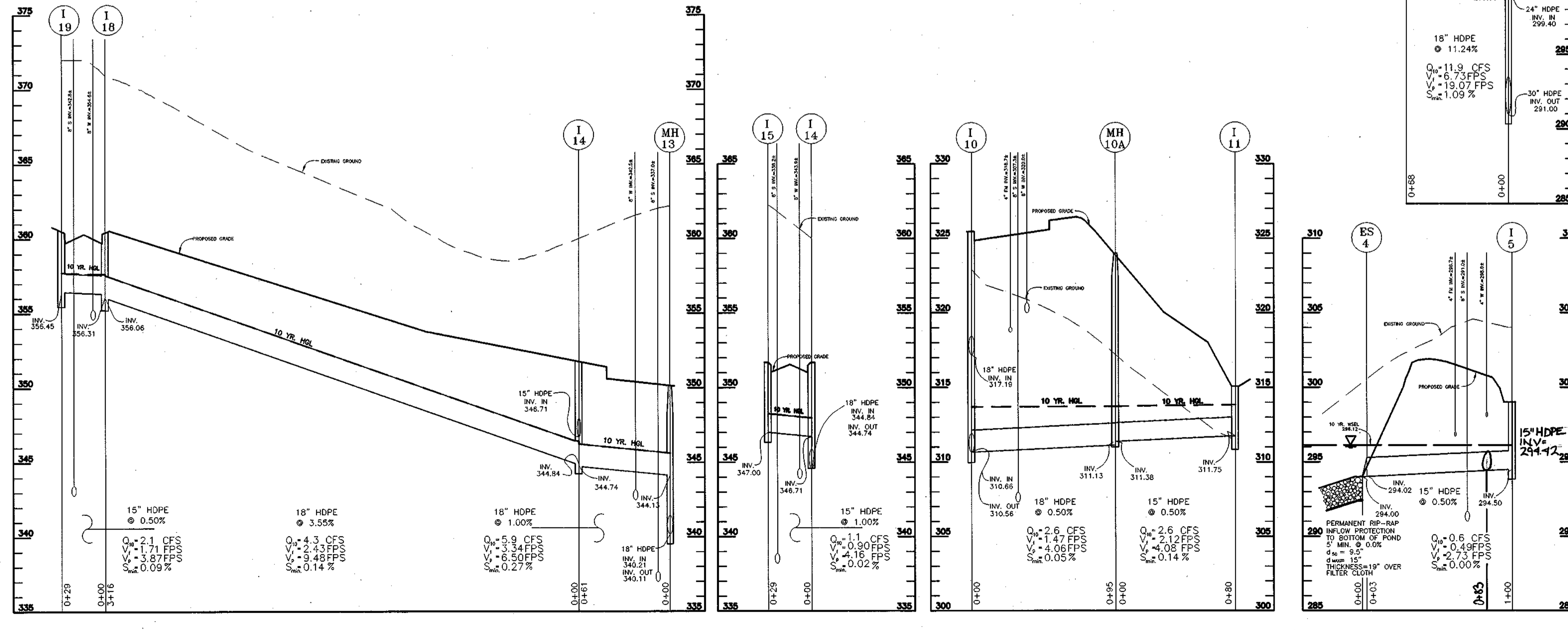
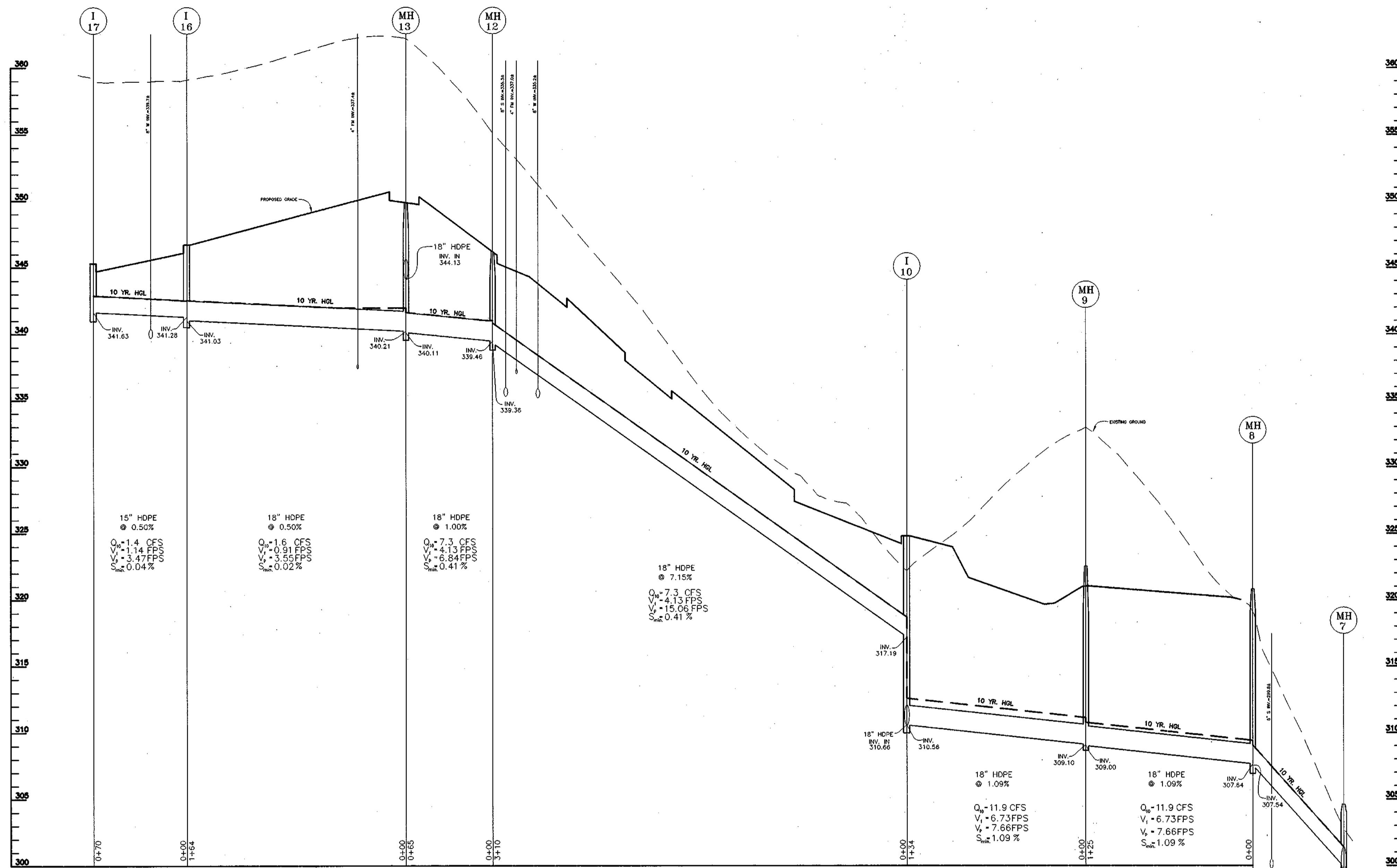
TAX MAP #18 PARCEL 1  
 2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**VOGEL & ASSOCIATES**  
 ENGINEERS-SURVEYORS-PLANNERS

3691 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
 Tel: 410.461.9928 Fax: 410.465.3966

DESIGN BY: G.A.H.  
 DRAWN BY: J.E.R.  
 CHECKED BY: R.H.V.  
 DATE: Oct. 18, 1999  
 SCALE: 1"=50'  
 N.O. NO.: 99-013

6 SHEET OF 18



### STRUCTURE SCHEDULE

NO.	TYPE	TOP EL.	INV. IN.	INV. OUT.	LOCATION	REMARKS
BW-1	TYPE A HEADWALL	273.50	-	269.00	N 598860.5742 E 1370066.4184	SD 5.11
MH-2	STD. MANHOLE	279.00	271.20	269.19	N 598853.7591 E 1370051.9152	G 5.01
S-3	CONCRETE RISER	297.80	287.90	283.50	N 598809.6020 E 1369957.2635	SEE DETAILS
ES-4	15" HDPE END SECTION	295.44	294.02	294.00	N 598722.5400 E 1370055.4413	ADS N-12
I-6	YARD INLET	299.00	-	294.50	N 598643.8107 E 1370111.7340	SD 4.14
ES-6	30" HDPE END SECTION	292.85	290.10	290.00	N 598879.2325 E 1369895.1542	ADS N-12
MH-7	4' STD. PRECAST MANHOLE *	304.50	299.90 / 299.40	281.00	N 598930.2489 E 1369877.4531	G 5.12
MH-8	4' STD. PRECAST MANHOLE	320.50	307.64	307.54	N 598906.3138 E 1369813.8048	G 5.12
MH-9	4' STD. PRECAST MANHOLE	322.50	309.10	309.00	N 598784.7573 E 1369786.8523	G 5.12
I-10	PRECAST 'A-10' INLET *	324.79	317.19 / 310.66	310.56	N 598667.3362 E 1369850.4497	SD 4.41
MH 10A	4' STD. PRECAST MANHOLE	324.00	311.38	311.13	N 598576.3745 E 1369863.8431	G 5.12
I-11	PRECAST TYPE 'D' INLET	315.83	-	311.75	N 598501.5751 E 1369876.7913	SD 4.39 2 SIDES
MH-12	4' STD. PRECAST MANHOLE	346.27	339.46	339.36	N 598522.7854 E 1369575.6108	G 5.12
MH-13	4' STD. PRECAST MANHOLE *	349.45	344.13 / 340.21	340.11	N 598537.2057 E 1369512.2936	G 5.12
I-14	PRECAST 'A-5' INLET	351.68	344.84 / 346.71	344.74	N 598595.9965 E 1369527.1751	SD 4.40
I-15	PRECAST 'A-10' INLET	351.68	-	347.00	N 598601.8557 E 1369498.7455	SD 4.41
I-16	PRECAST 'A-5' INLET	346.68	341.28	341.03	N 598377.9783 E 1369473.0113	SD 4.40
I-17	PRECAST 'A-10' INLET	345.29	-	341.63	N 598318.4721 E 1369438.6073	SD 4.41
I-18	PRECAST 'A-5' INLET	360.39	356.31	356.06	N 598910.1693 E 1369559.5411	SD 4.40
I-19	PRECAST 'A-5' INLET	360.39	-	356.45	N 598912.7189 E 1369530.6262	SD 4.41
MH-20	4' STD. PRECAST MANHOLE	311.00	304.50 / 304.00	302.40	N 598999.2187 E 1369843.7115	G 5.12
MH-21	4' STD. PRECAST MANHOLE *	322.00	314.75	310.05	N 599030.7815 E 1369824.4037	G 5.12
MH-22	4' STD. PRECAST MANHOLE	344.00	336.70	321.05	N 599060.6382 E 1369806.1396	G 5.12
I-23	PRECAST TYPE 'D' INLET	351.83	-	343.00	N 599088.4825 E 1369783.3281	SD 4.39 2 SIDES
MH-24	4' STD. PRECAST MANHOLE	316.00	307.82	307.72	N 599061.7895 E 1369858.5194	G 5.12
MH-25	4' STD. PRECAST MANHOLE	321.50	310.50	310.40	N 599132.9585 E 1369910.2782	G 5.12
MH-26	4' STD. PRECAST MANHOLE	351.0	323.33	326.33	N 599236.6 E 1369919.2	G 5.12
I-27	PRECAST TYPE 'D' INLET	337.83	329.66 / 329.56	329.56	N 599400.3 E 1370069.8	SD 4.39 2 SIDES
MH-28	4' STD. PRECAST MANHOLE	341.80	330.16	330.06	N 599481.8934 E 1370068.3544	G 5.12
MH-29	4' STD. PRECAST MANHOLE *	343.93	336.22 / 330.58	330.48	N 599523.1190 E 1370020.8034	G 5.12
I-30	PRECAST 'A-10' INLET	353.29	349.52	349.27	N 599416.4278 E 1369921.1287	SD 4.41
I-31	PRECAST 'A-10' INLET	353.29	-	350.02	N 599433.0305 E 1369902.1711	SD 4.41
I-32	PRECAST 'A-10' INLET	342.00	331.03	330.93	N 599590.0595 E 1370001.4974	SD 4.41
I-33	YARD INLET	338.8	333.60 / 332.09	331.59	N 599660.8647 E 1369910.7626	SD 4.14
I-34	YARD INLET	355.00	-	351.51	N 599503.0552 E 1369789.6542	SD 4.14
MH-35	4' STD. PRECAST MANHOLE *	345.50	338.79 / 332.49	332.39	N 599684.4005 E 1369880.4543	G 5.12
I-37A	PRECAST TYPE 'D' INLET	338.85	329.11 / 329.01	329.01	N 599334.2 E 1370099.6	SD 4.39
I-37B	PRECAST TYPE 'D' INLET	299.97	294.83	294.83	N 598660.5 E 1370111.7	SD 4.39

NOTES:  
 1. TOP ELEVATIONS ARE TO CENTERLINE TOP FACE OF CURB FOR TYPE A INLETS, CENTERLINE TOP OF GRATE FOR TYPE D INLETS AND CENTERLINE TOP OF GRATE FOR YARD INLETS. STRUCTURE LOCATION COORDINATES ARE TO CENTER OF STRUCTURE.  
 2. SEE HOLLIFIELD ESTATES I, SECTION TWO FOR STRUCTURES I-35A THRU I-45.  
 3. \* GRANITE BLOCK BOTTOM

### STORM DRAIN PROFILES

SCALE: HORI.: 1"=50'  
 VERT.: 1"=5'

#### OWNER/DEVELOPER

Mr. Charles Skirven, Esq.  
 5401 Twin Knolls Road, Suite 10  
 Columbia, Maryland 21046  
 (410) 995-0081

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Wendy Stender* 4/10/01  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*W. D. ...* 4/13/00  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

NO.	REVISION	DATE
1	ADD INLET I-5A	12-10-02
3	REVISE TO INLET I-33	10-3-02
2	UPDATE STRUCTURE SCHEDULE	4/9/01

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

*Handwritten Signature* 3/29/01  
 CHIEF, BUREAU OF HIGHWAYS DATE

AS-BUILT CERTIFICATE

DATE

### STORM DRAIN PROFILES

### HOLLIFIELD ESTATES I

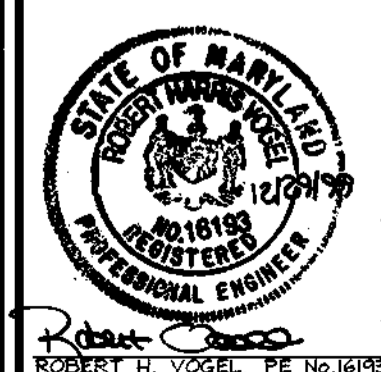
SECTION ONE

TAX MAP #18 PARCEL 1  
 2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

### VOGEL & ASSOCIATES

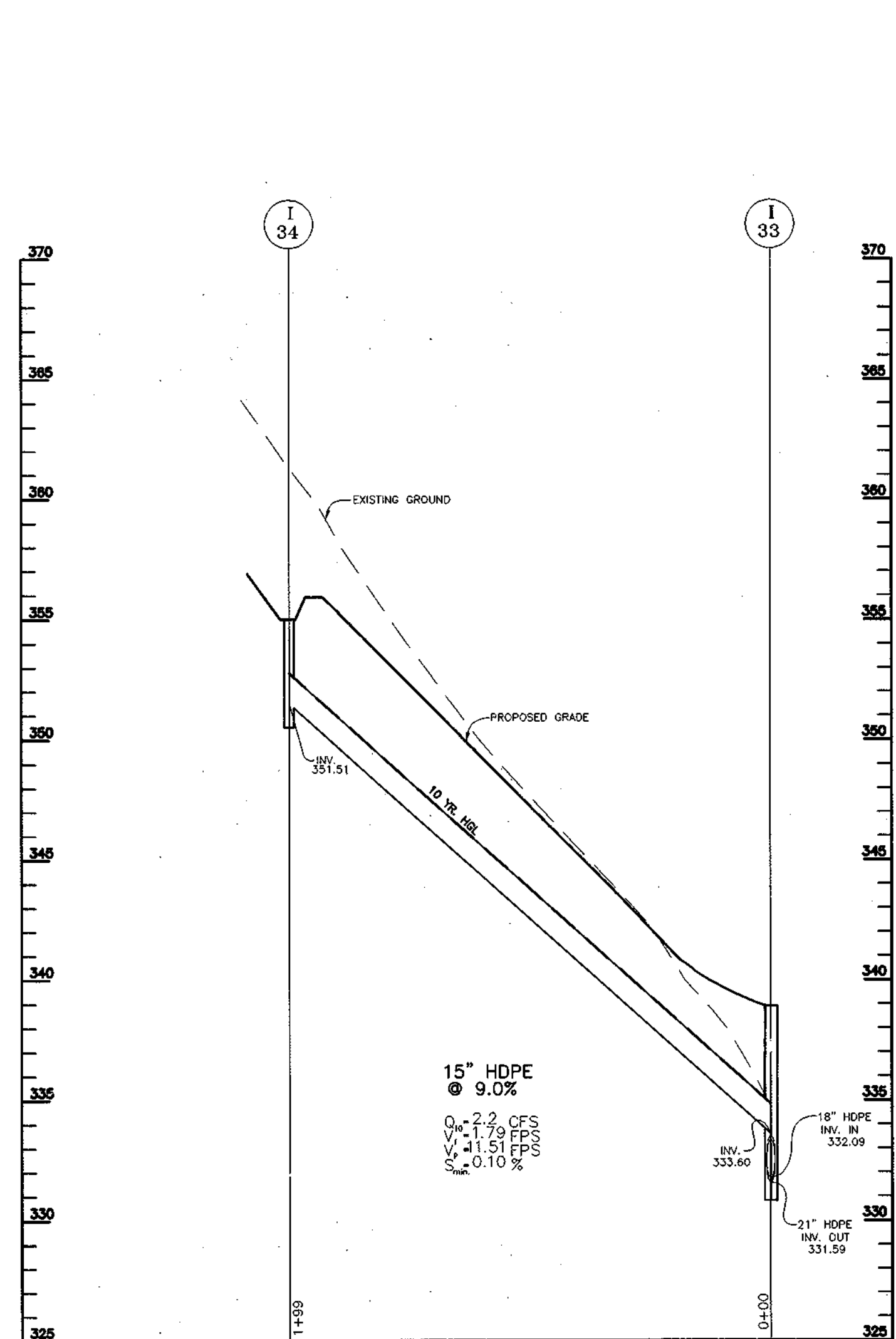
ENGINEERS-SURVEYORS-PLANNERS

3681 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
 Tel 410.461.5828 Fax 410.465.3995

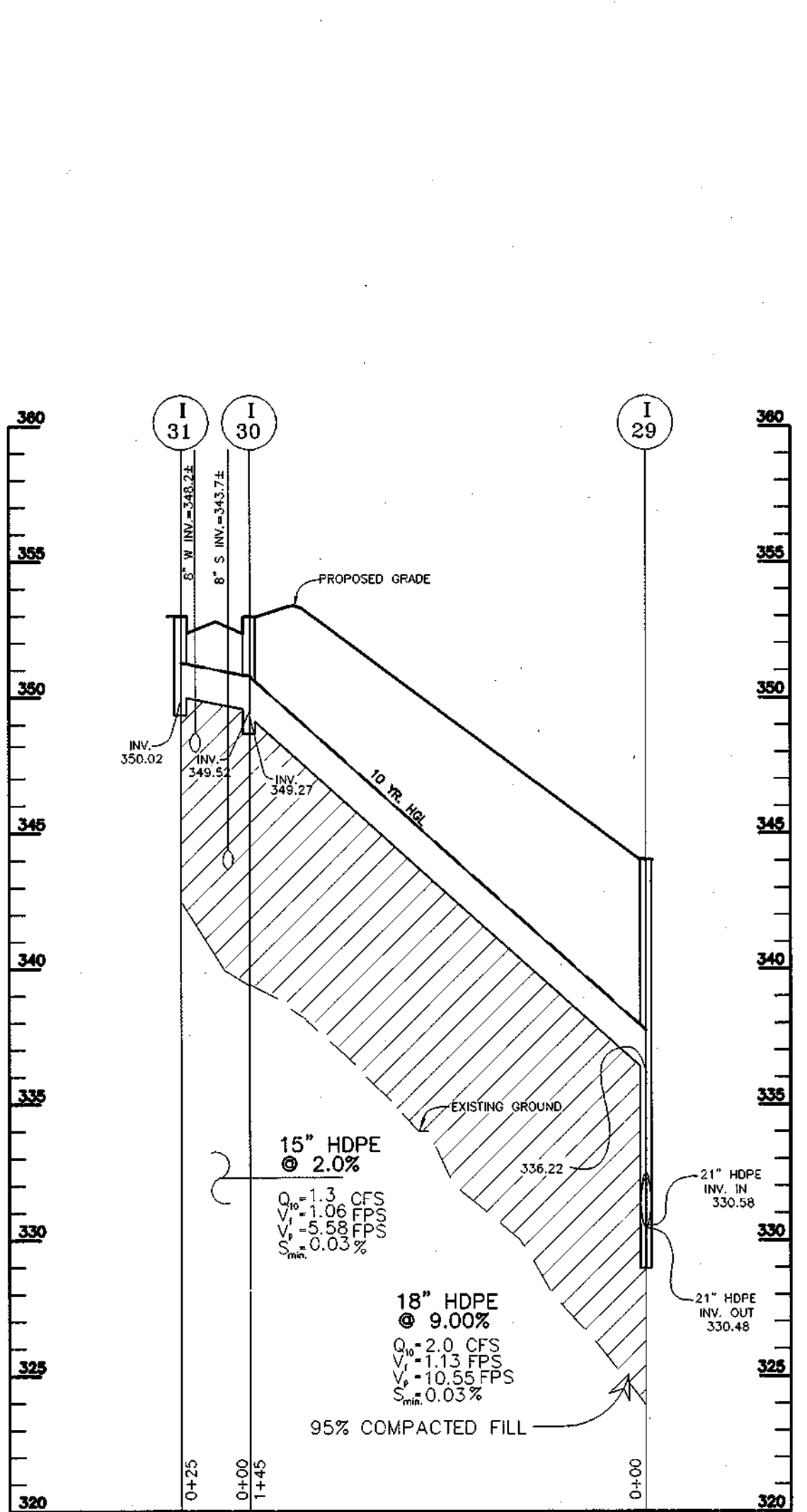


DESIGN BY: GAH  
 DRAWN BY: JER  
 CHECKED BY: RHV  
 DATE: Oct. 18, 1999  
 SCALE: AS SHOWN  
 H.O. NO.: 99-013

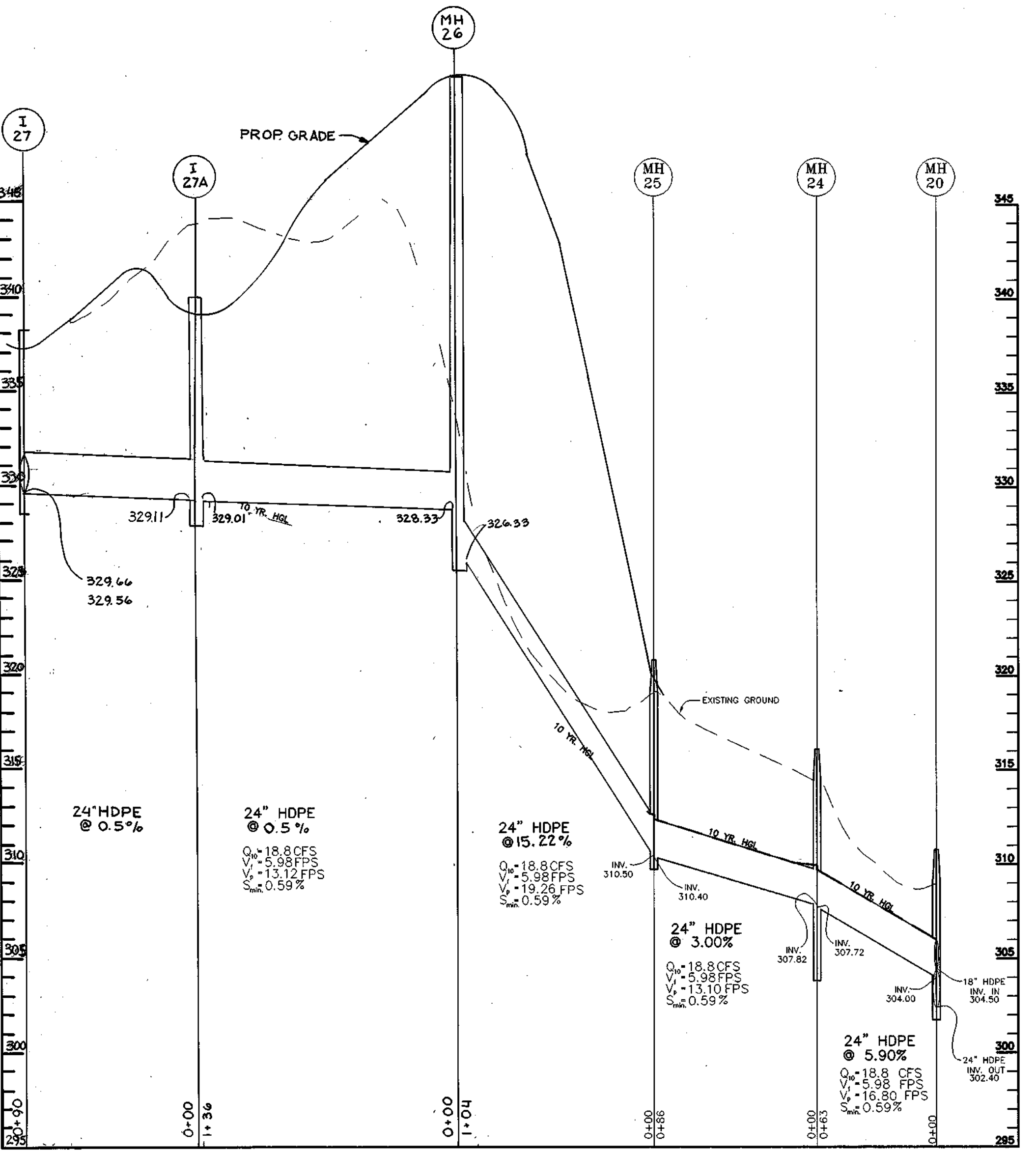
9 SHEET OF 18



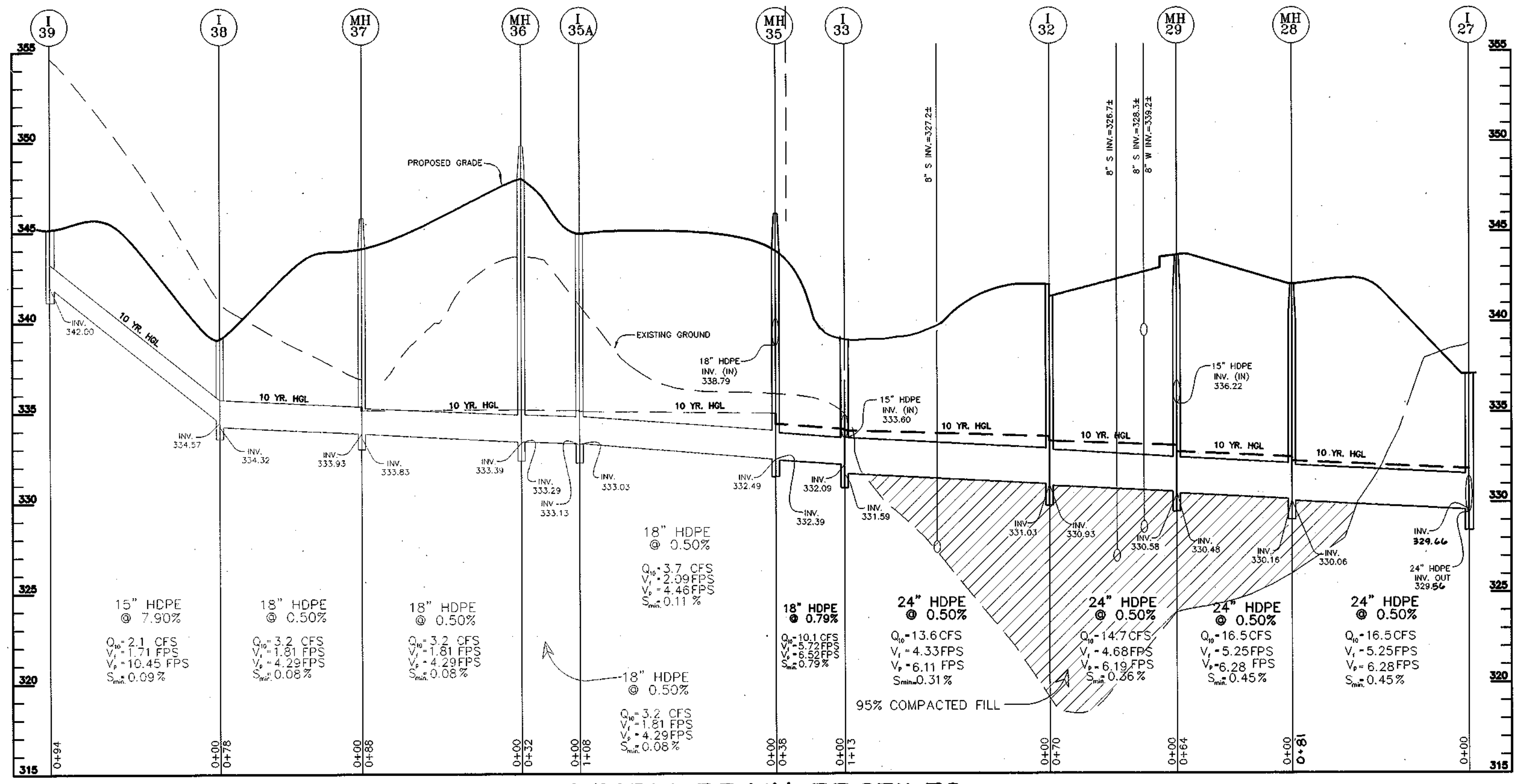
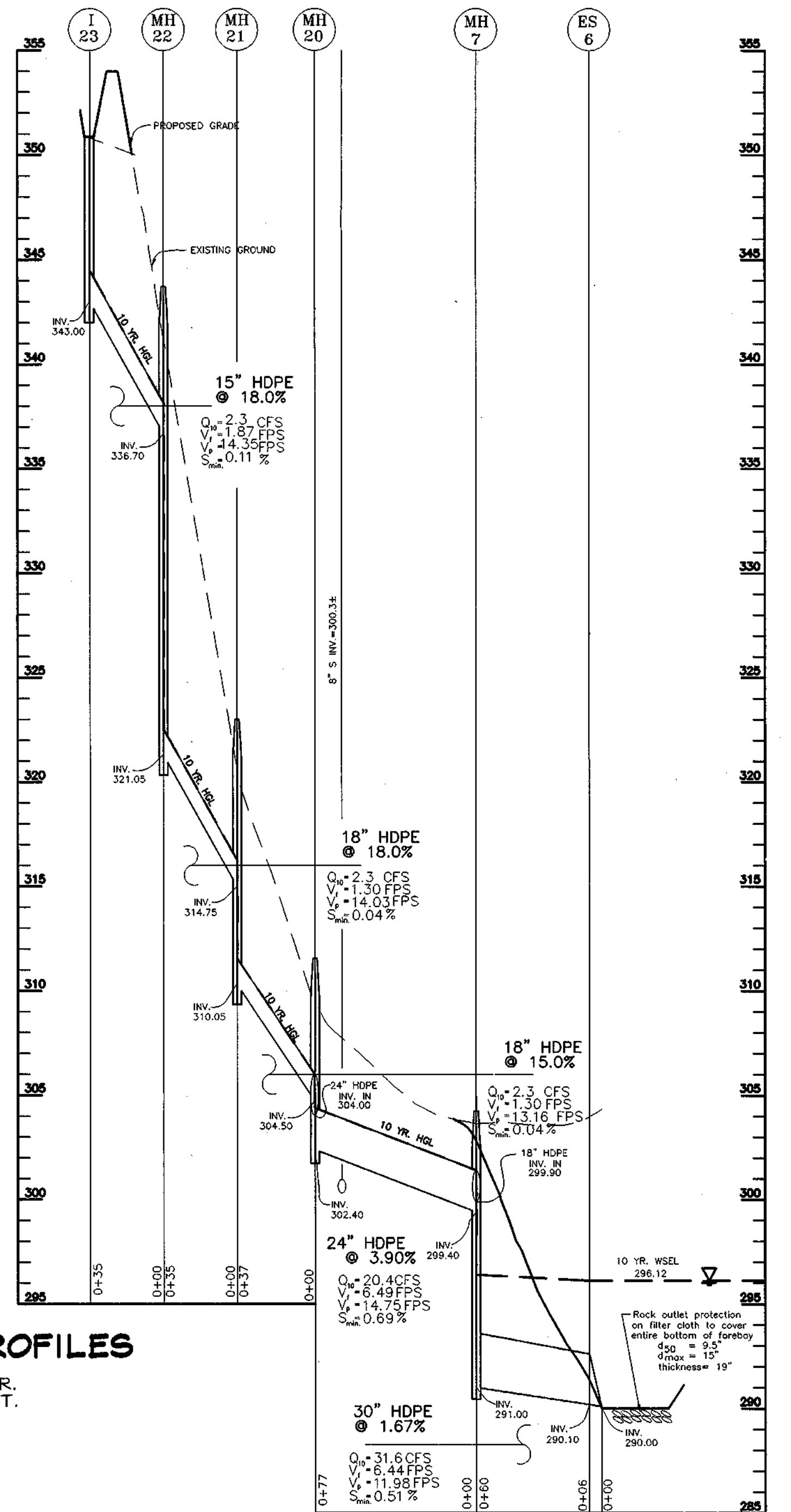
**STORM DRAIN PROFILES**  
SCALE 1" = 50' HOR.  
1" = 5' VERT.



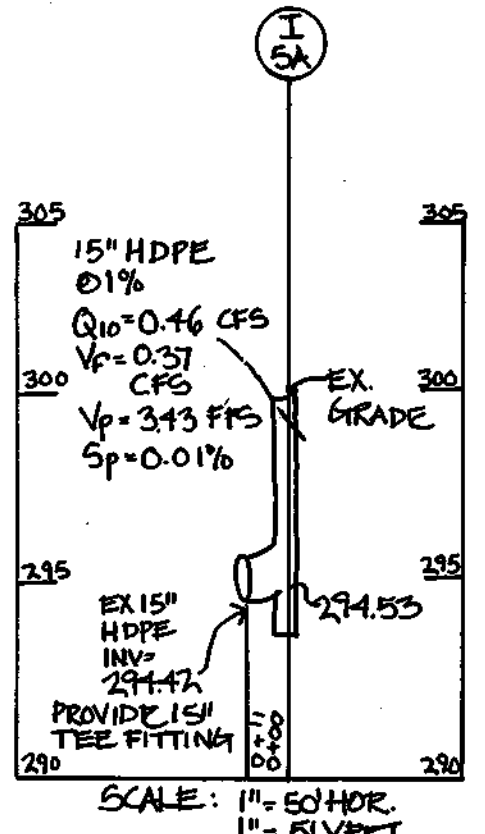
**STORM DRAIN PROFILES**  
SCALE 1" = 50' HOR.  
1" = 5' VERT.



**STORM DRAIN PROFILES**  
SCALE 1" = 50' HOR.  
1" = 5' VERT.



**STORM DRAIN PROFILES**  
SCALE 1" = 50' HOR.  
1" = 5' VERT.



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.  
*Howard Smith* 3/29/00  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Cinda Hamilton* 4/14/00  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

OWNER/DEVELOPER  
Mr. Charles Skirven, Esq.  
5401 Twin Knolls Road, Suite 10  
Columbia, Maryland 21046  
(410) 995-0081

NO.	REVISION	DATE
1	AS-BUILT CERTIFICATE	

DATE

NO.	REVISION	DATE
1	ADD INLET I-5A	12-10-02
2	REVISE TO INLET I-33	10-3-02
3	RELOCATE STRUCTURES I-27, I-27A AND MH-26	4-9-01

**STORM DRAIN PROFILES**  
**HOLLIFIELD ESTATES I**  
SECTION ONE

TAX MAP #18 PARCEL 1  
2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**VOGEL & ASSOCIATES**  
ENGINEERS/SURVEYORS/PLANNERS  
3891 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
Tel 410.461.5828 Fax 410.465.3966

DESIGN BY: G.A.H.  
DRAWN BY: J.E.R.  
CHECKED BY: R.H.V.  
DATE: Oct. 18, 1999  
SCALE: AS SHOWN  
H.O. NO.: 99-013

10 SHEET OF 18



DRAINAGE AREA TABULATIONS					
NO.	AREA	"C"	% IMP.	SOIL TYPES	ZONE
5	0.23 AC	.33	38%	B	R-ED
10	1.01 AC	.33	38%	B	R-ED
11	1.03 AC	.33	38%	B	R-ED
14	0.28 AC	.33	38%	B	R-ED
15	0.50 AC	.33	38%	B	R-ED
16	0.12 AC	.33	38%	B	R-ED
17	0.64 AC	.33	38%	B	R-ED
18	0.37 AC	.34	38%	B/C	R-ED
19	0.67 AC	.32	38%	B/C	R-ED
23	0.91 AC	.33	38%	B/C	R-ED
27	1.09 AC	.34	38%	B/C	R-ED
30	0.35 AC	.34	38%	B/C	R-ED
31	0.53 AC	.35	38%	B/C	R-ED
32	0.54 AC	.33	38%	B	R-ED
33	0.66 AC	.33	38%	B	R-ED
34	0.84 AC	.35	38%	B/C	R-ED
35A	0.23 AC	.33	38%	B	R-ED
38	0.45 AC	.34	38%	B/C	R-ED
39	0.80 AC	.35	38%	B/C	R-ED
40	0.75 AC	.36	38%	B/C	R-ED
42	0.74 AC	.36	38%	B/C	R-ED
45	1.00 AC	.36	38%	B/C	R-ED



NORTH : 1"=100'

OWNER/DEVELOPER  
 Mr. Charles Skirven, Esq.  
 5401 Twin Knolls Road, Suite 10  
 Columbia, Maryland 21046  
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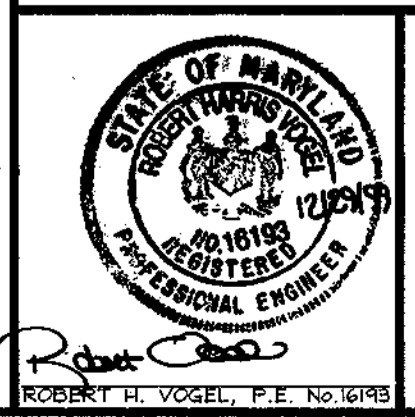
NO.	ADDINLET T-5A	REVISION	DATE
			12-10-02

**DRAINAGE AREA MAP  
 FOR STORM DRAINAGE  
 HOLLIFIELD ESTATES I  
 SECTION ONE**

TAX MAP #18 PARCEL 1  
 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND



3691 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
 Tel 410.461.5828 Fax 410.465.3966



DESIGN BY: GAH  
 DRAWN BY: PS  
 CHECKED BY: RHV  
 DATE: Oct. 18, 1999  
 SCALE: 1"= 100'  
 W.O. NO.: 99-013

17 SHEET OF 18

AS-BUILT CERTIFICATE  
 \_\_\_\_\_ DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.  
 \_\_\_\_\_ DATE  
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 \_\_\_\_\_ DATE  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 \_\_\_\_\_ DATE  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

**GENERAL NOTES**

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/CONSTRUCTION INSPECTIONS DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE (5) DAYS PRIOR TO ANY EXCAVATION WORK:
  - MISS UTILITY 1-800-257-7777
  - BELL ATLANTIC TELEPHONE COMPANY (410) 725-9976
  - HOWARD COUNTY BUREAU OF UTILITIES (410) 313-4900
  - AT&T CABLE LOCATION DIVISION (410) 393-3533
  - BALTIMORE GAS & ELECTRIC (410) 685-0123
  - STATE HIGHWAY ADMINISTRATION (410) 531-5533
  - HOWARD COUNTY DEPT. OF PUBLIC WORKS/ CONSTRUCTION INSPECTION DIVISION (410) 313-1880
- PROJECT BACKGROUND:  
 ALL DATA TO INCLUDE HOLLIFIELD ESTATES, LOT 2 (F-99-61, WP-99-39, 10/19/98)  
 LOCATION: SECOND ELECTION DISTRICT - TAX MAP 18 - PARCEL 1  
 ZONING: R-ED  
 NUMBER OF PROPOSED BUILDABLE LOTS: 42  
 NUMBER OF PROPOSED BULK PARCELS: 4  
 NUMBER OF OPEN SPACE LOTS: 5  
 AREA OF PROPOSED BUILDABLE LOTS: 15.3579 ACRES ±  
 PROPOSED ROAD DEDICATION: 2.8587 ACRES ±  
 TOTAL TRACT AREA (INCLUDING LOT 2): 44.9457 ACRES ±  
 DPZ REFERENCE #:
  - S-96-16 APPROVED ON 8/1/96.
  - F-98-11 APPROVED ON 5/7/98.
  - F-99-61 SUBMITTED ON 10/19/98.
  - WP-99-39 SUBMITTED ON 10/19/98.

\* EXCESS RECREATIONAL OPEN SPACE IS BEING DEDICATED IN HOLLIFIELD ESTATES, SECTION TWO (F-99-76) FOR THE LOTS IN HOLLIFIELD ESTATES I, SECTION ONE (F-99-75), HOLLIFIELD ESTATES I, LOT 2 AND FUTURE HOLLIFIELD ESTATES II, (F-00-39).
- TWO FOOT CONTOUR TOPOGRAPHY AND EXISTING CONDITIONS BASED ON AERIAL TOPOGRAPHIC SURVEY BY WINGS AERIAL MAPPING CO., INC. FLOWN ON MARCH 25, 1995.
- HORIZONTAL AND VERTICAL DATUMS BASED ON (NAD'83) MARYLAND STATE COORDINATE SYSTEM AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS.
 

STA No. 17FA	N 594,949.55	EL. = 477.52
	E 1,364,629.51	
STA No. 17F7	N 595,830.83	EL. = 470.19
	E 1,363,091.09	
- STREET LIGHTS WILL BE REQUIRED IN THIS DEVELOPMENT IN ACCORDANCE WITH THE DESIGN MANUAL STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURE AND POLE SELECTED SHALL BE IN ACCORDANCE WITH THE LATEST HOWARD COUNTY DESIGN MANUAL, VOLUME III (1993) AND AS MODIFIED BY "GUIDELINES FOR STREET LIGHTS IN RESIDENTIAL DEVELOPMENTS (JUNE 1993)." THE JUNE 1993 POLICY INCLUDES GUIDELINES FOR LATERAL AND LONGITUDINAL PLACEMENT. A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
- WATER AND SEWER ARE PUBLIC, CONTRACT #14-3801-D.
- STORMWATER MANAGEMENT CONTROL WILL BE PROVIDED BY THE METHOD OF EXTENDED DETENTION. THE STORMWATER MANAGEMENT FACILITY WILL BE PRIVATELY OWNED AND JOINTLY MAINTAINED BY HOWARD COUNTY AND THE H.O.A.
- HOUSES NOT CONTROLLED BY THE SWM POND TO HAVE DRY WELLS AT SDP STAGE.
- GEOTECHNICAL REPORT PREPARED BY HILLIS-CARNES ENGINEERING ASSOCIATES INC, IN JULY 11, 1997.
- TRAFFIC CONTROL DEVICES, MARKINGS, AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
- COMPACTION IN FILL AREAS TO BE 98% AS DETERMINED BY AASHTO T-180.
- CONTRACTOR TO VERIFY THE LOCATION OF ALL EXISTING UTILITIES ON SITE PRIOR TO COMMENCING CONSTRUCTION.
- THE FIVE FOREST CONSERVATION RETENTION EASEMENTS TOTALING 10.92 ± ACRES, LOCATED ON OPEN SPACE LOTS 14 AND 46 AND NON-BUILDABLE PARCEL 'C' OF THIS SUBDIVISION, HAVE BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE, FOREST CONSERVATION ACT, FOR THIS SUBDIVISION, (F-99-75); AND HOLLIFIELD ESTATES I, SECTION 2, (F-99-76). SURPLUS FOREST RETENTION AREAS IN EXCESS OF THE MINIMUM REQUIRED (1.14 ACRES) TO BE CREDITED TO FUTURE HOLLIFIELD ESTATES II, (F-00-39). NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT; HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.
- WETLAND AND STREAM DELINEATION PERFORMED BY CHESAPEAKE ENVIRONMENTAL MANAGEMENT, INC. DATED FEBRUARY, 1996.
- PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
- OPEN SPACE LOT 14 TO BE OWNED BY HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS. OPEN SPACE LOTS 3, 16, & 46 TO BE OWNED BY THE H.O.A. OPEN SPACE LOT 15 TO BE OWNED BY HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
- ALL EXISTING STRUCTURES TO BE REMOVED, UNLESS OTHERWISE NOTED.
- ALL STORM DRAIN PIPES TO BE HDPE PIPES UNLESS OTHERWISE NOTED.
- THE FOLLOWING RESTRICTIONS SHALL APPLY TO ALL LOTS WHICH HAVE ENCROACHMENTS FOR UTILITY EASEMENTS:
  - ANY STRUCTURE OR PART OF A STRUCTURE SHALL BE A MINIMUM OF 2 FEET FROM THE EASEMENT LINES.
  - NO FOOTER SHALL EXTEND INTO THE EASEMENT.
  - NO DECKS, ADDITIONS OR OTHER IMPROVEMENTS SHALL BE LOCATED WITHIN OR EXTEND OVER THE EASEMENT.
  - THE MINIMUM DISTANCE BETWEEN UNITS IS 15 FEET.
- GRADING PERMITS FOR F-99-75 AND F-99-76 MUST BE ISSUED TO RUN CONCURRENTLY.

# ROAD CONSTRUCTION PLANS

# HOLLIFIELD ESTATES I

## SECTION ONE

## LOTS 3 THRU 48 AND BULK PARCEL D

## A RESUBDIVISION OF

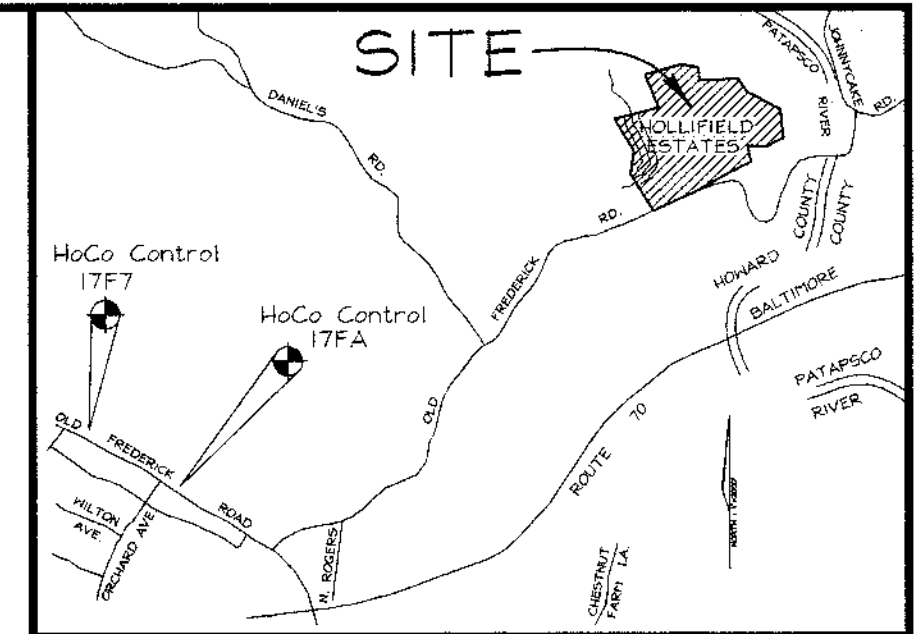
# HOLLIFIELD ESTATES, BULK PARCEL A

### SECOND ELECTION DISTRICT

### HOWARD COUNTY, MARYLAND

**LEGEND**

- EXISTING CONTOUR - - - - -
- PROPOSED CONTOUR - - - - -
- SPOT ELEVATION - 82.1
- DIRECTION OF FLOW ->
- EXISTING TREES TO REMAIN - [Symbol]
- LIGHT POLES - [Symbol]



**BENCHMARKS**

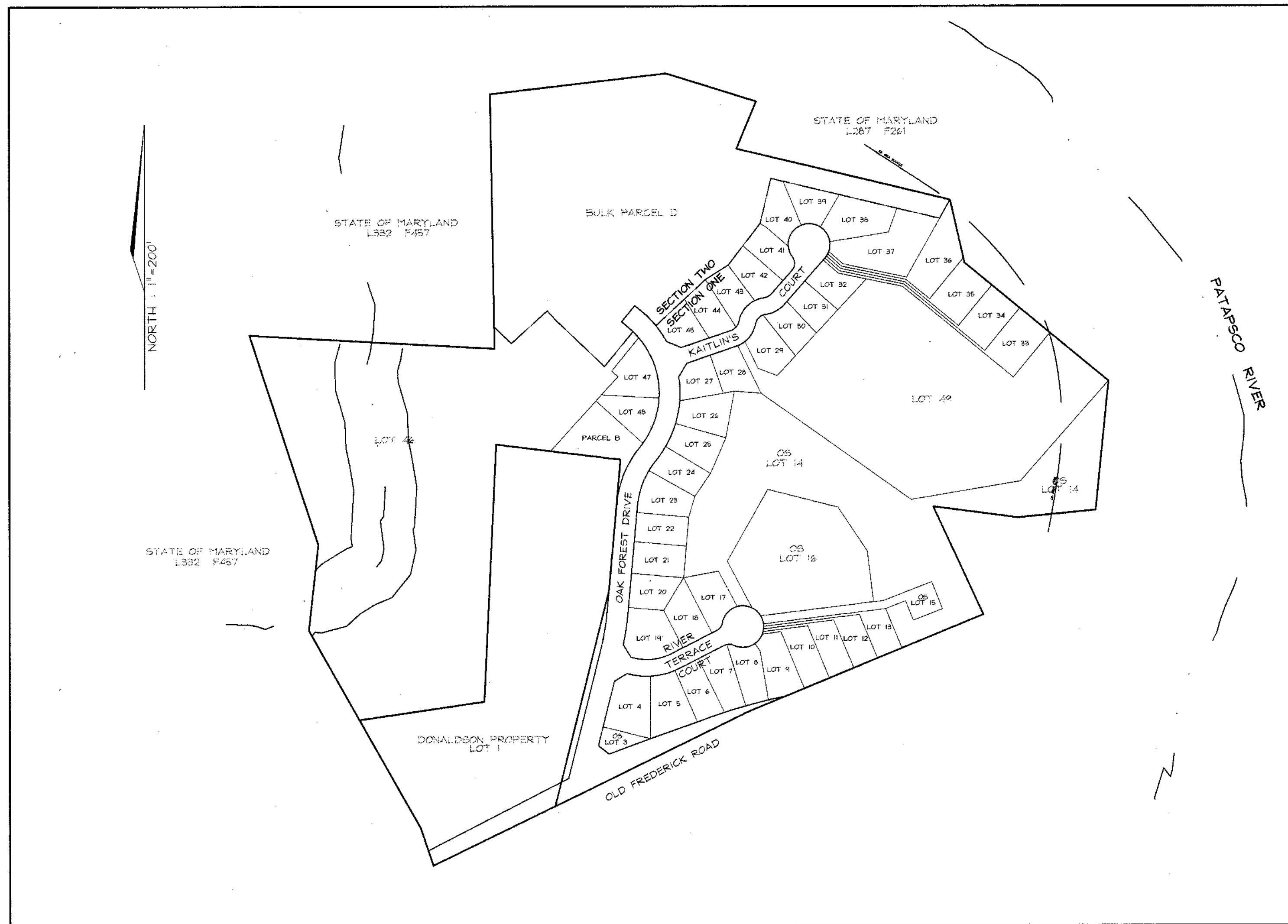
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17F7	N595,830.83	E 1,363,091.09	EL.=470.19

**VICINITY MAP**

SCALE: 1"=2000'

**SHEET INDEX**

DESCRIPTION	SHEET NO.
Cover Sheet	1 of 18
Road Plan and Profile	2 of 18
Road Plan and Profile	3 of 18
Road Plan and Profile	4 of 18
Old Frederick Road Widening and Striping Plan, Profiles and Details	5 of 18
Grading, Sediment and Erosion Control Plan	6 of 18
Grading, Sediment and Erosion Control Plan	7 of 18
Sediment Control Details	8 of 18
Storm Drain Profiles	9 of 18
Storm Drain Profiles	10 of 18
SWM Pond Plan, Profiles and Details	11 of 18
SWM Miscellaneous Details and Traffic Control Plan	12 of 18
Pond Specifications and Soil Borings	13 of 18
Landscape Plan	14 of 18
Forest Conservation Plan	15 of 18
Drainage Area Map, Existing Conditions	16 of 18
Drainage Area Map, Storm Drainage	17 of 18
Drainage Area Map, Stormwater Management	18 of 18



**LOCATION MAP**  
SCALE: 1"=200'

OWNER/DEVELOPER  
 Mr. Charles Skirven, Esq.  
 5401 Twin Knolls Road, Suite 10  
 Columbia, Maryland 21046  
 (410) 996-0081

**COVER SHEET**  
**HOLLIFIELD ESTATES I**  
 SECTION ONE  
 A RESUBDIVISION OF BULK PARCEL A

TAX MAP #18 PARCEL 1  
 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**VOGEL & ASSOCIATES**  
ENGINEERS-SURVEYORS-PLANNERS

3691 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
 Tel 410.461.5828 Fax 410.465.3966

NO. \_\_\_\_\_ REVISION \_\_\_\_\_ DATE \_\_\_\_\_

AS-BUILT CERTIFICATE

1/10/05  
DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

*Howard Shil* 3/2/05  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

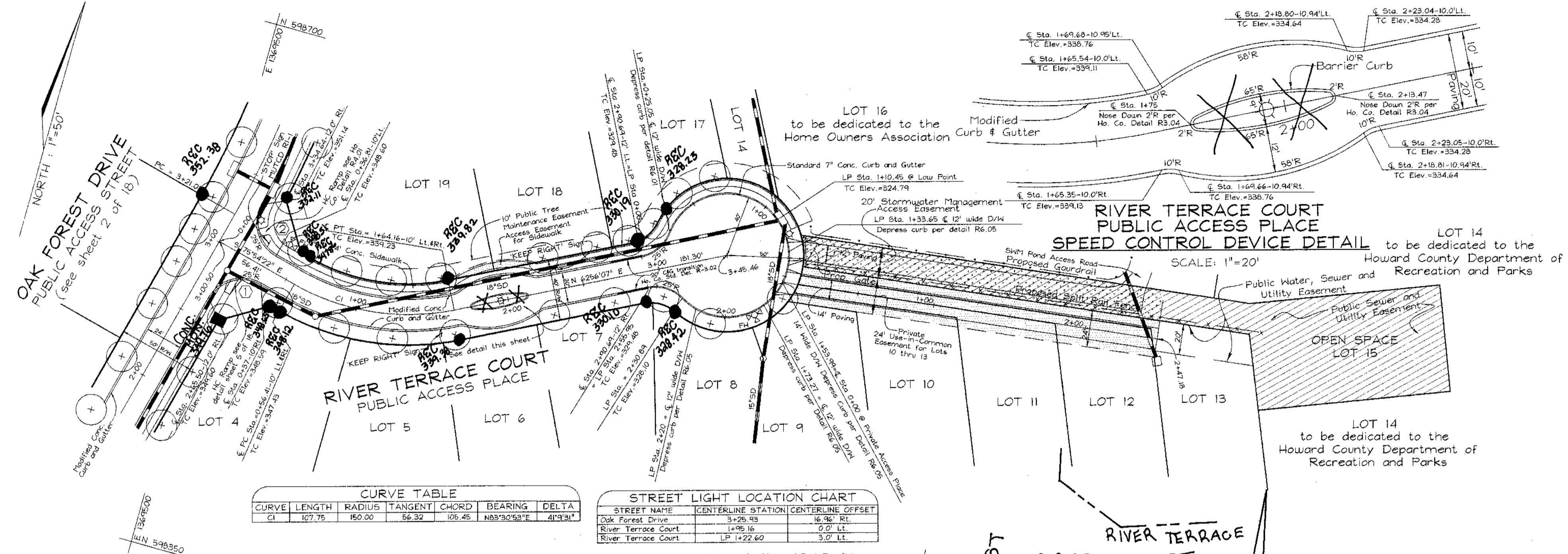
*Cindy Hamstra* 4/14/00  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*John DeGarmo* 4/5/00  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

DESIGN BY: GAH  
 DRAWN BY: PS  
 CHECKED BY: RHY  
 DATE: Oct. 18, 1999  
 SCALE: As Shown  
 H.C. NO.: 99-013

1 SHEET OF 18

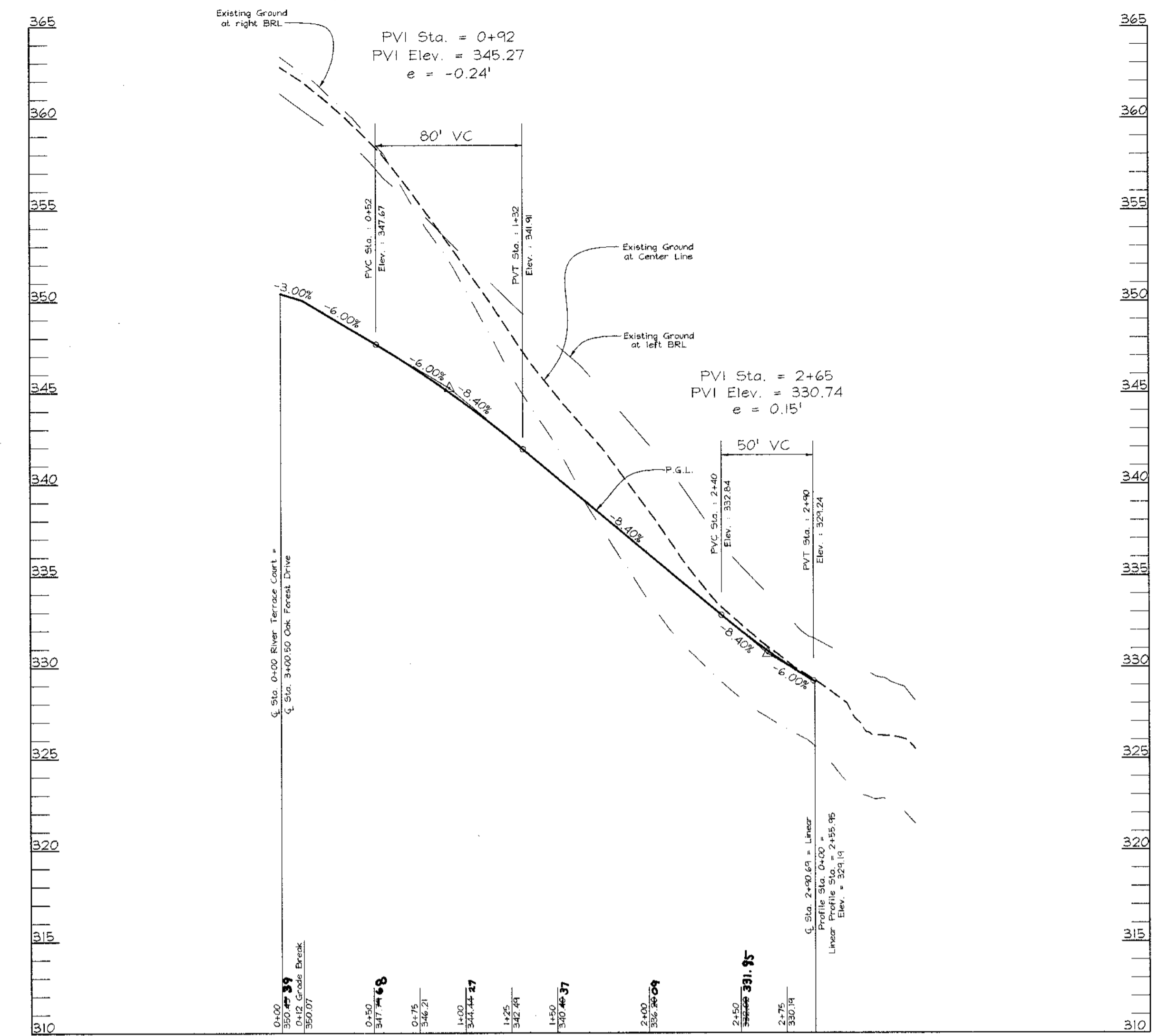




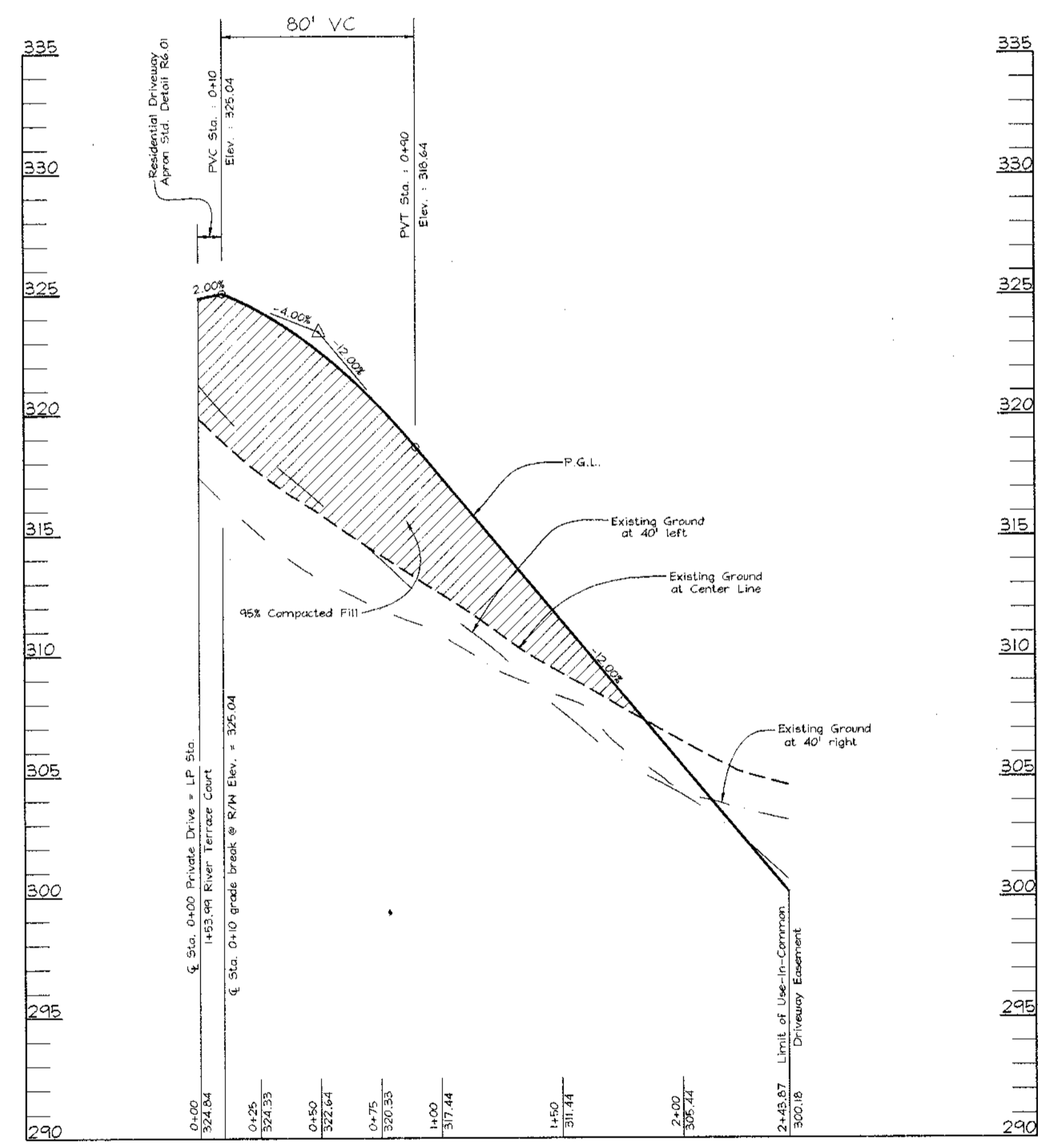
CURVE TABLE					
CURVE	LENGTH	RADIUS	TANGENT CHORD	BEARING DELTA	
C1	127.75	150.00	66.32	N83°30'24"E	41°34'17"

STREET LIGHT LOCATION CHART		
STREET NAME	CENTERLINE STATION	CENTERLINE OFFSET
Oak Forest Drive	3+25.93	16.98' RI
River Terrace Court	1+09.18	0.0' LI
River Terrace Court	LP 1+22.62	3.0' LI

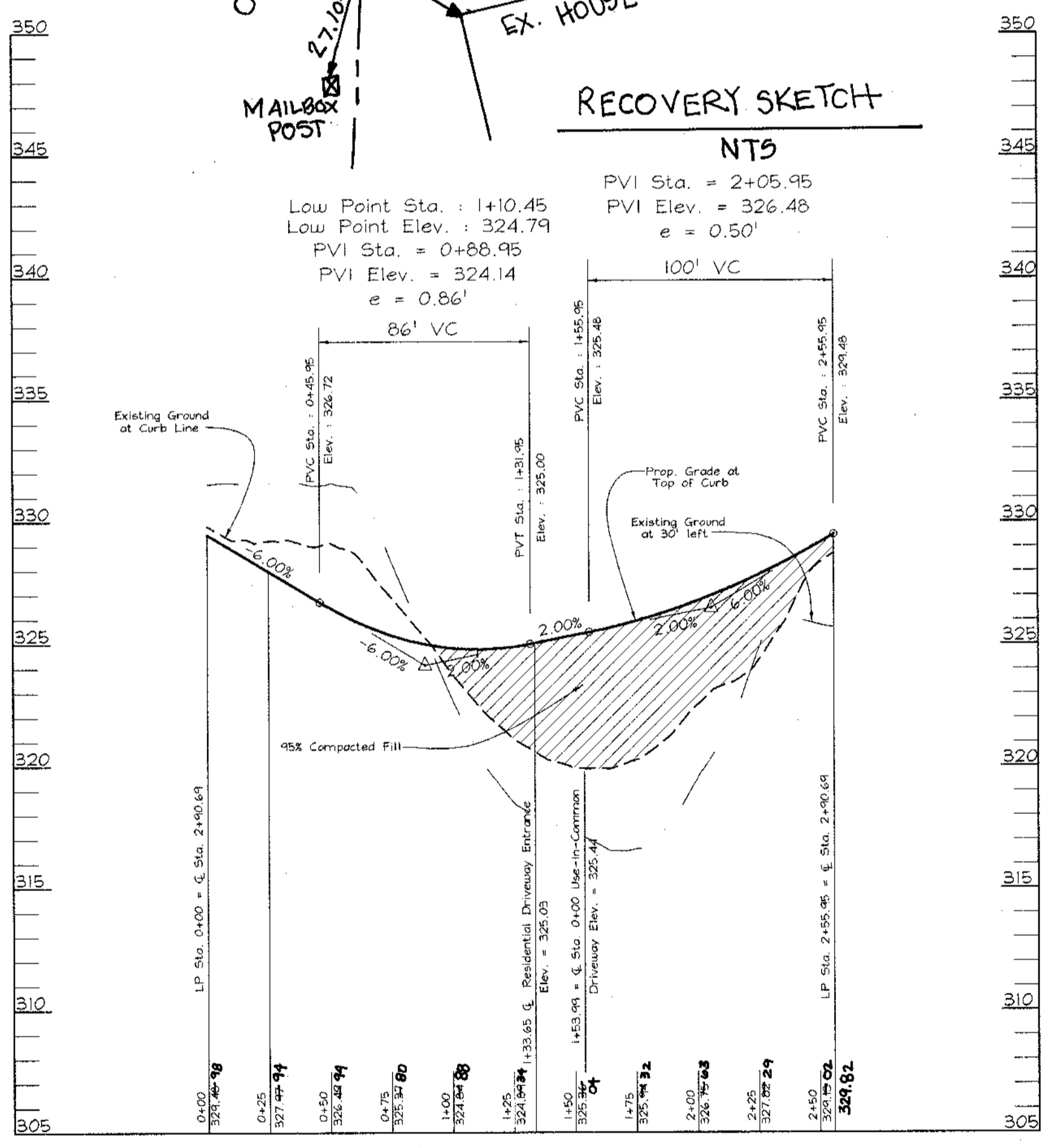
STREET TREE CALCULATIONS			
Street Name	Linear Feet	Required Trees	Provided Trees
River Terrace Court	767.40	19	19



ROAD PROFILE  
RIVER TERRACE COURT  
PUBLIC ACCESS PLACE  
VERTICAL DESIGN SPEED-25 MPH  
SCALE: HORIZONTAL - 1"=50'  
VERTICAL - 1"=5'



PRIVATE USE-IN-COMMON DRIVEWAY  
LOTS 10 THRU 13  
SCALE: HORIZONTAL - 1"=50'  
VERTICAL - 1"=5'



LINEAR PROFILE  
RIVER TERRACE COURT  
PUBLIC ACCESS PLACE  
SCALE: HORIZONTAL - 1"=50'  
VERTICAL - 1"=5'

**ROAD PLAN AND PROFILES**  
**HOLLIFIELD ESTATES I**  
SECTION ONE

TAX MAP #18 PARCEL 1  
2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**VOGEL & ASSOCIATES**  
ENGINEERS-SURVEYORS-PLANNERS  
3591 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
Tel 410.461.5828 Fax 410.465.3968

OWNER/DEVELOPER  
Mr. Charles Skirven, Esq.  
5401 Twin Knolls Road, Suite 10  
Columbia, Maryland 21046  
(410) 995-0061

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

DESIGN BY: GAH  
DRAWN BY: PS  
CHECKED BY: GAH  
DATE: Oct. 12, 1999  
SCALE: As Shown  
W.O. NO.: 99-013

3 SHEET OF 18

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

APPROVED: *Cindy Hamilton* 4/11/00  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

APPROVED: *Charles Skirven* 3/29/00  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: *John DeMunn* 4/3/00  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

NO. REVISION

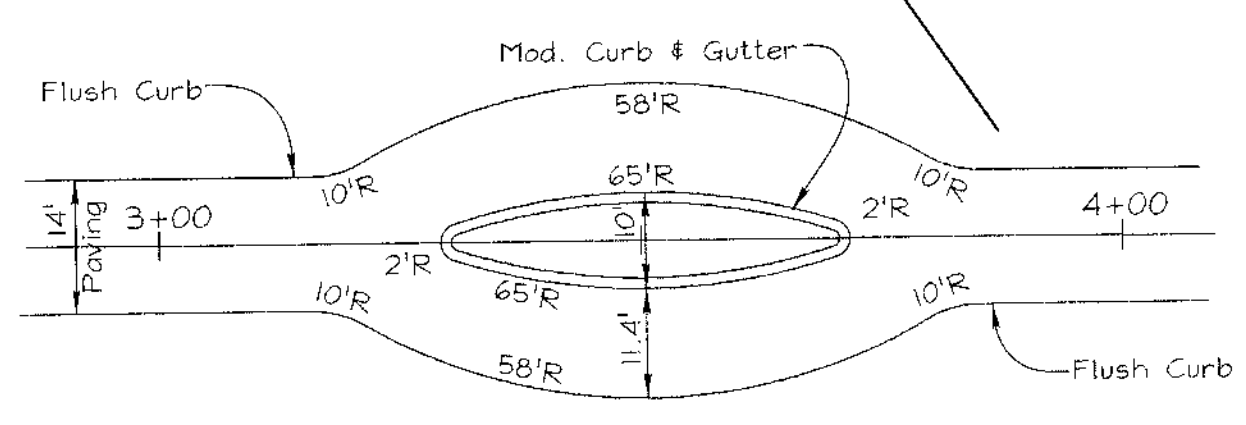
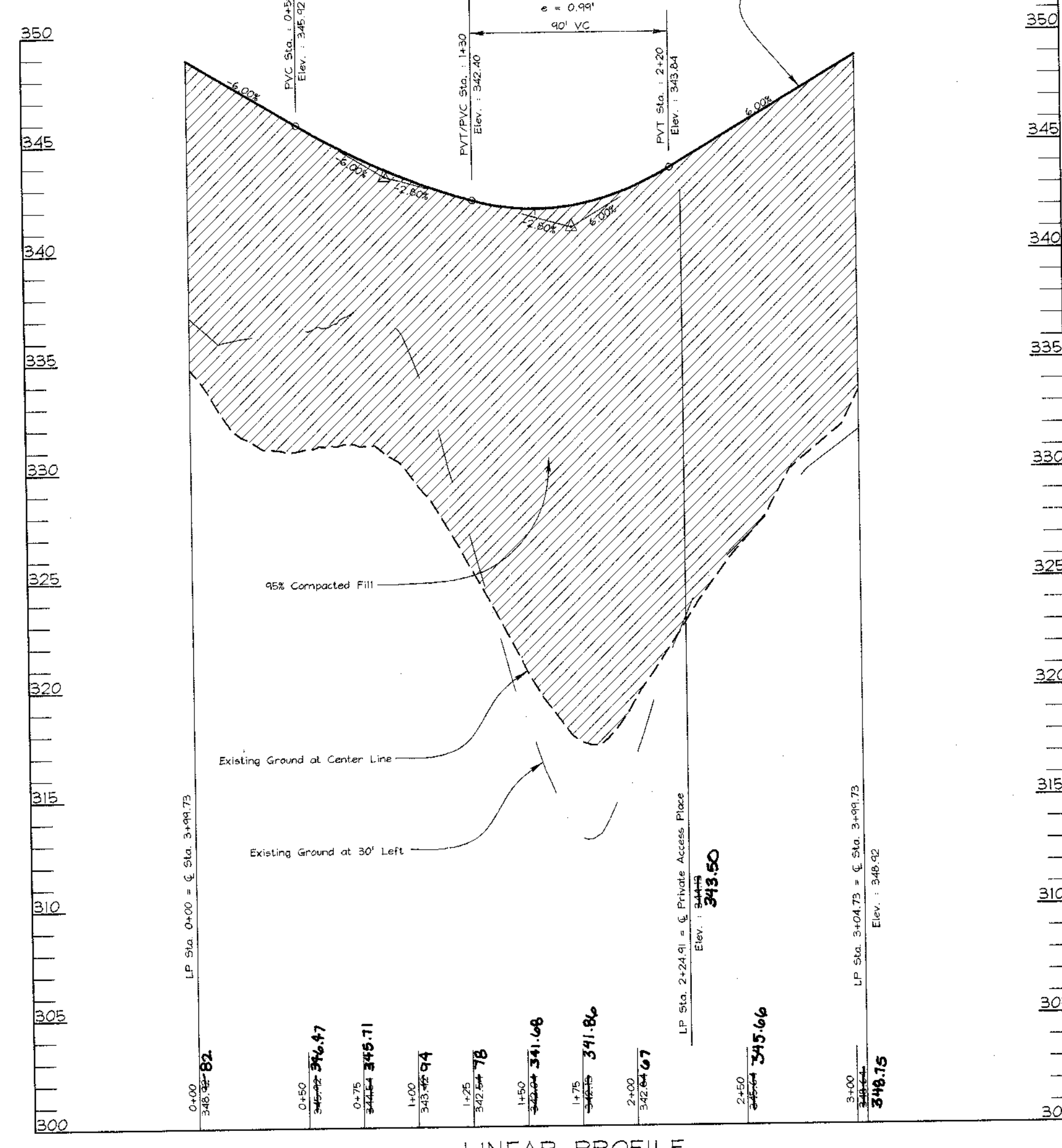
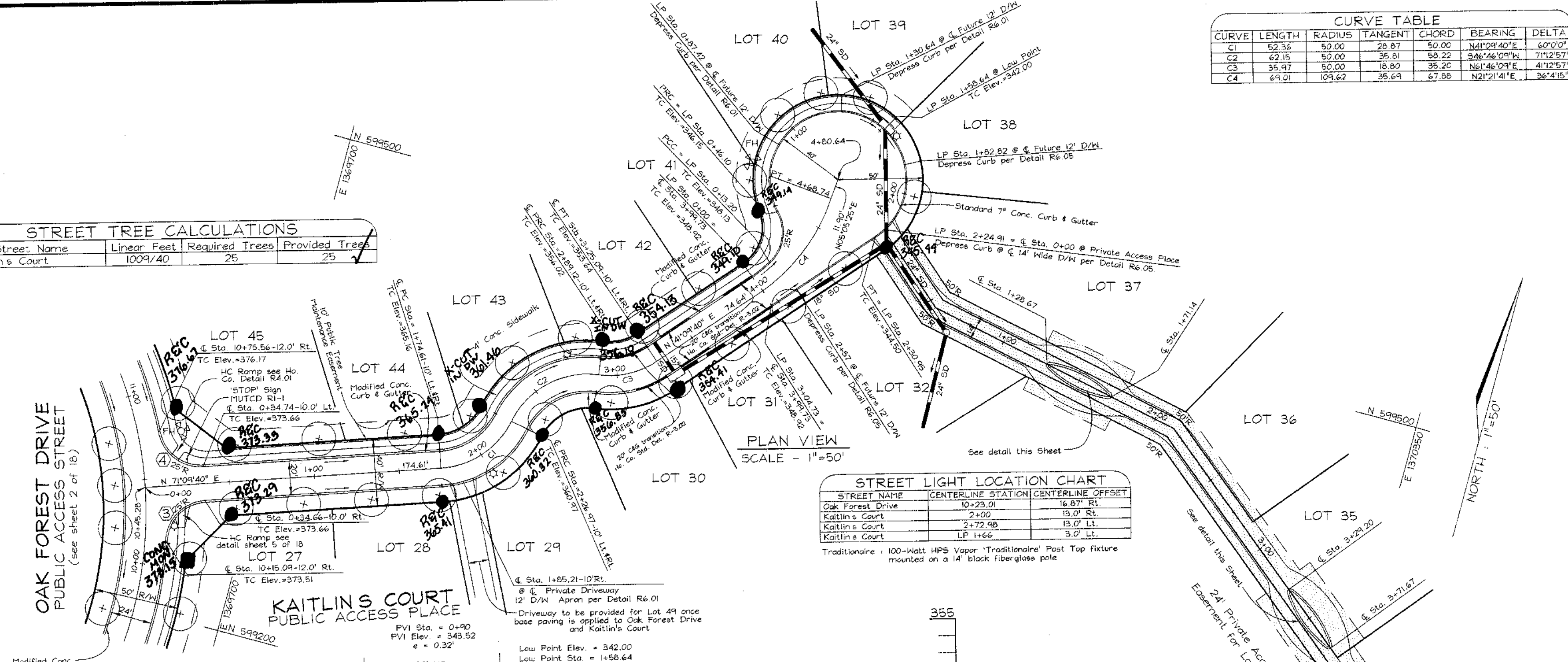
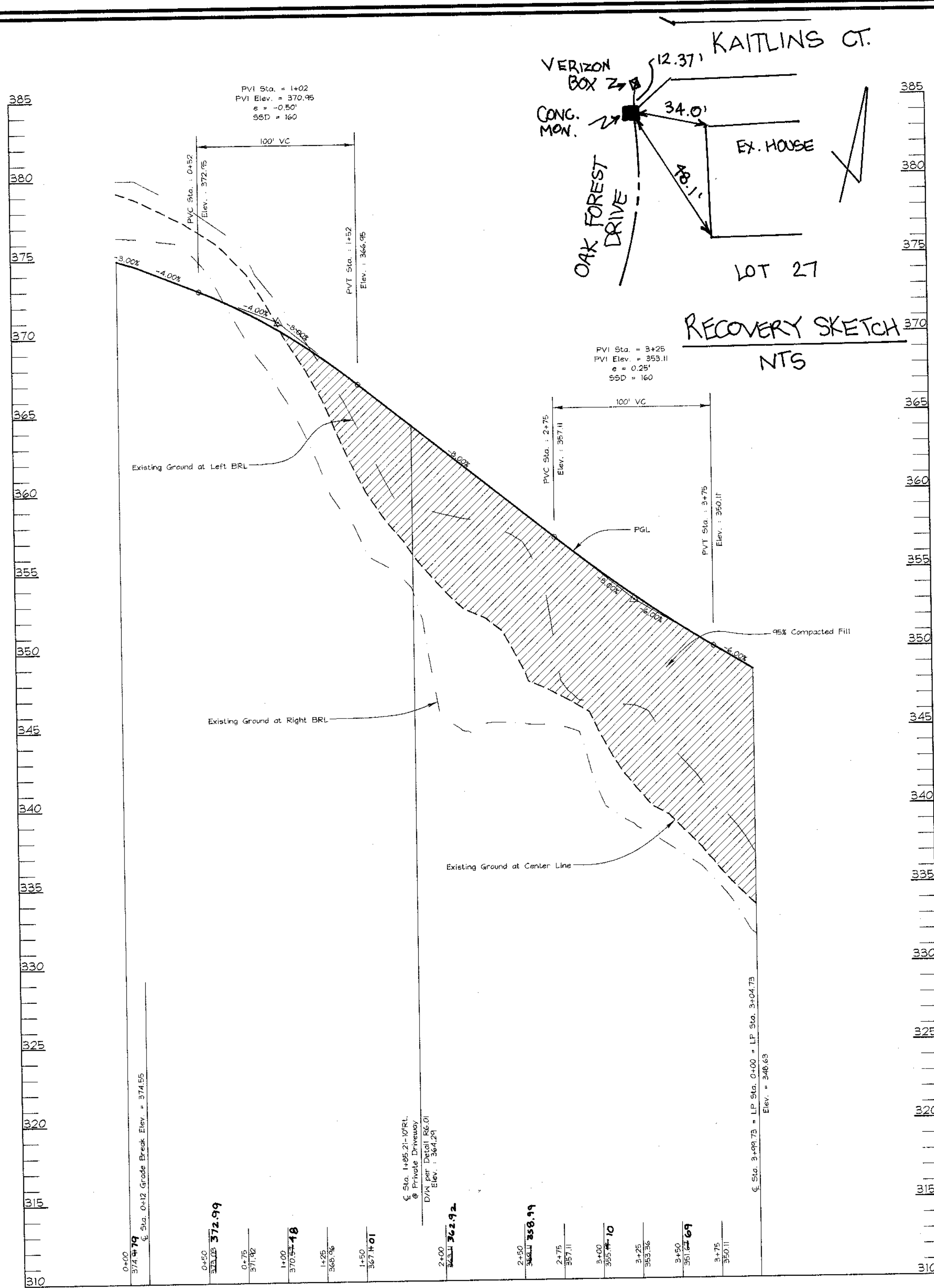
AS-BUILT CERTIFICATE

*John DeMunn* 4/10/00 DATE

CURVE	LENGTH	RADIUS	TANGENT	CHORD	BEARING	DELTA
C1	52.36	50.00	20.67	50.00	N41°09'40"E	62°02'07"
C2	42.75	50.00	20.67	50.00	S46°46'09"E	77°23'57"
C3	39.97	50.00	19.80	35.20	N61°46'09"E	41°25'27"
C4	44.21	104.62	35.64	67.86	N42°21'41"E	30°41'07"

STREET NAME	LINEAR FEET	REQUIRED TREES	PROVIDED TREES
Kaitlin's Court	1009/40	25	25

STREET NAME	CENTERLINE STATION	CENTERLINE OFFSET
Oak Forest Drive	10+25.00	16.67' RL
Kaitlin's Court	2+00	13.0' RL
Kaitlin's Court	2+72.48	13.0' RL
Kaitlin's Court	11+66	3.0' RL



OWNER/DEVELOPER  
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5401 Twin Knolls Road, Suite 10  
Columbia, Maryland 21046  
(410) 995-0081

**ROAD PROFILES  
HOLLIFIELD ESTATES I  
SECTION ONE**

TAX MAP #18 PARCEL 1  
2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**VOGEL &  
ASSOCIATES**  
ENGINEERS-SURVEYORS-PLANNERS  
3691 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
Tel 410.461.5828 Fax 410.465.3566

DESIGN BY: GAH  
DRAWN BY: PS  
CHECKED BY: GAH  
DATE: Oct. 12, 1999  
SCALE: As Shown  
N.O. NO.: 99-013

4 SHEET 18  
OF

NO.	REVISION	DATE

AS-BUILT CERTIFICATE

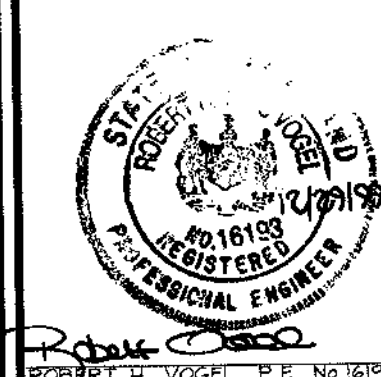
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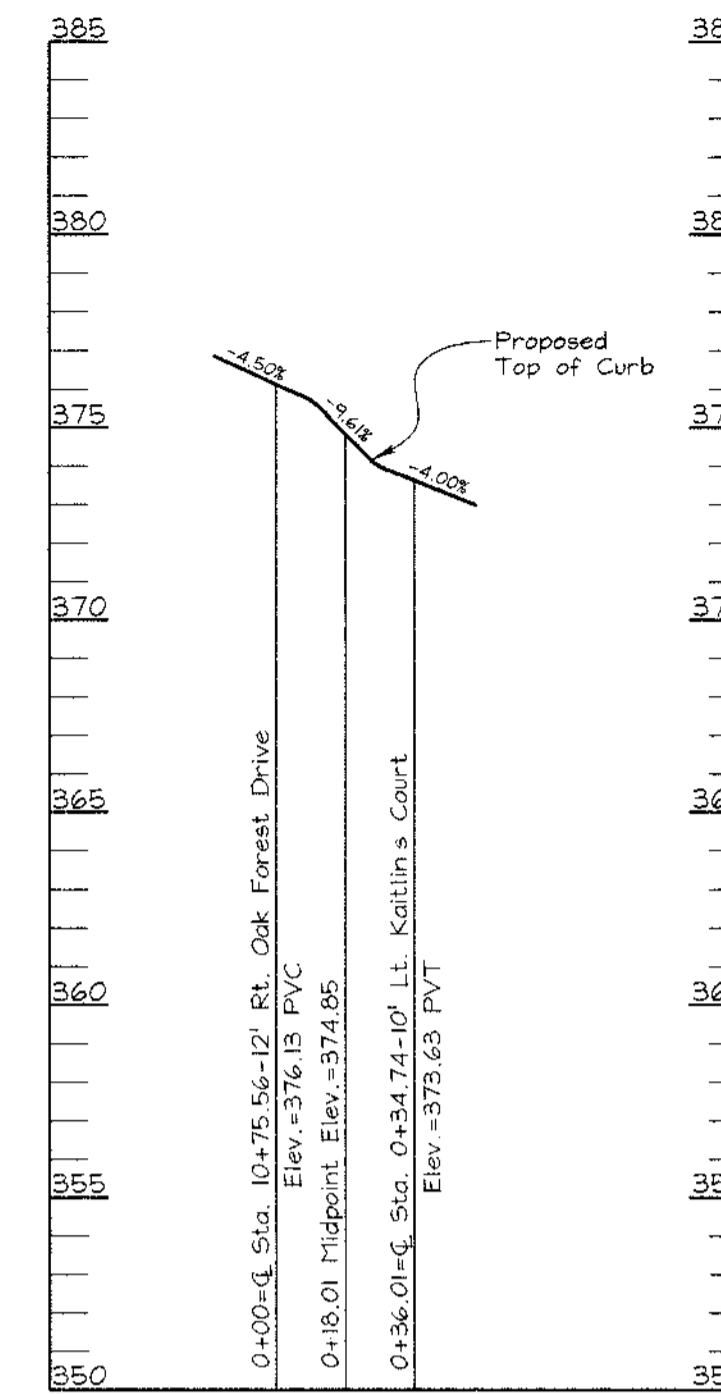
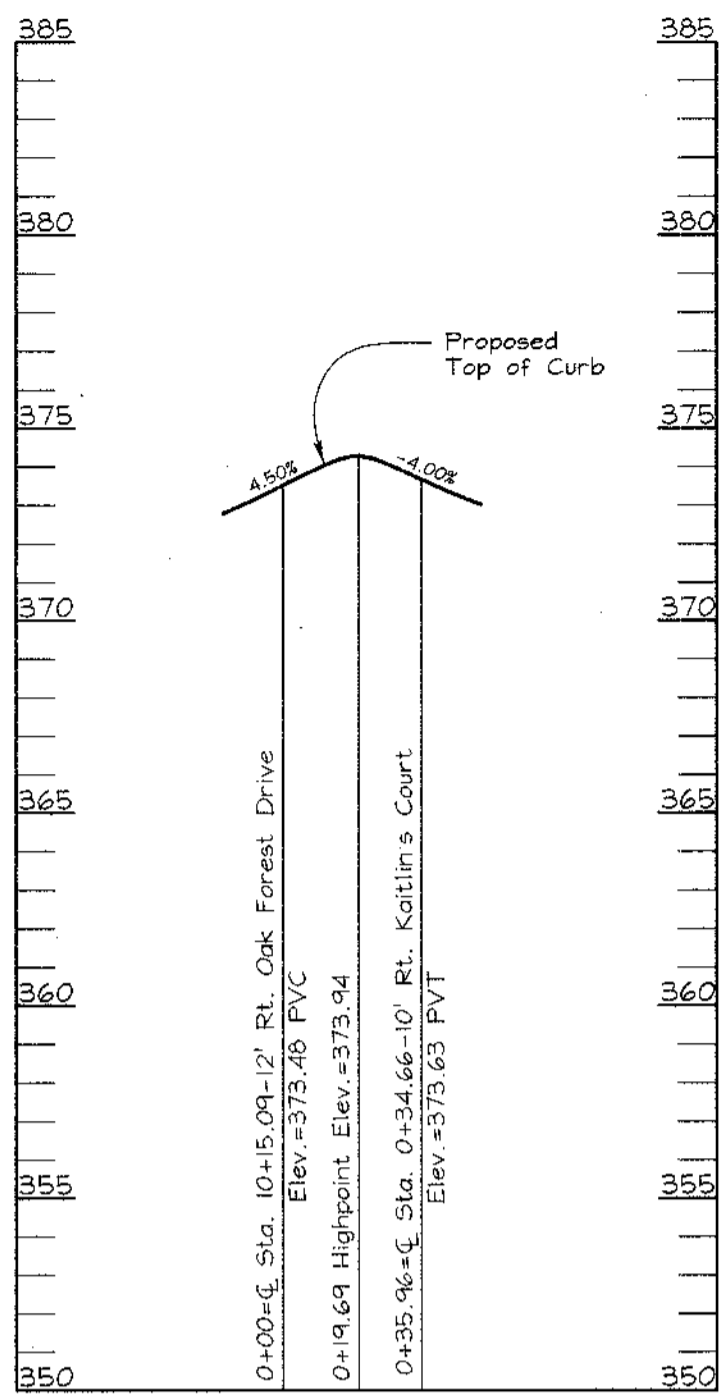
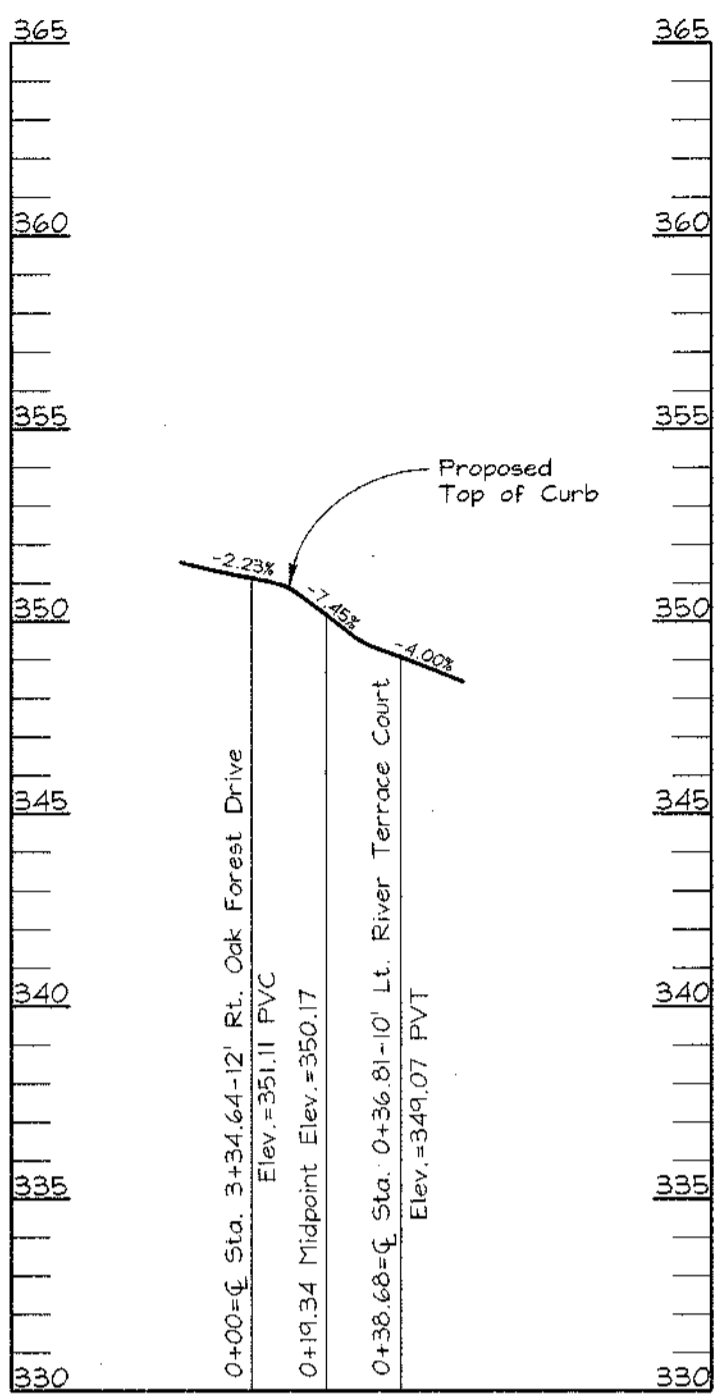
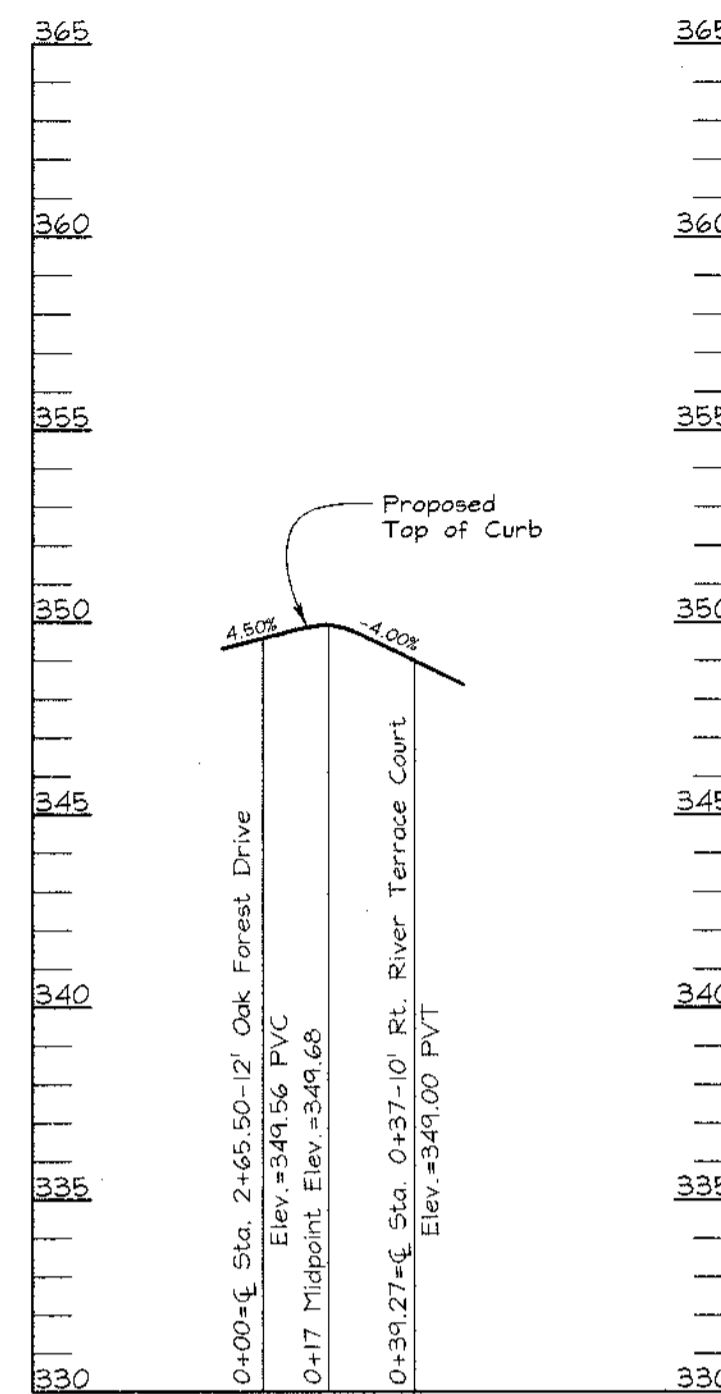
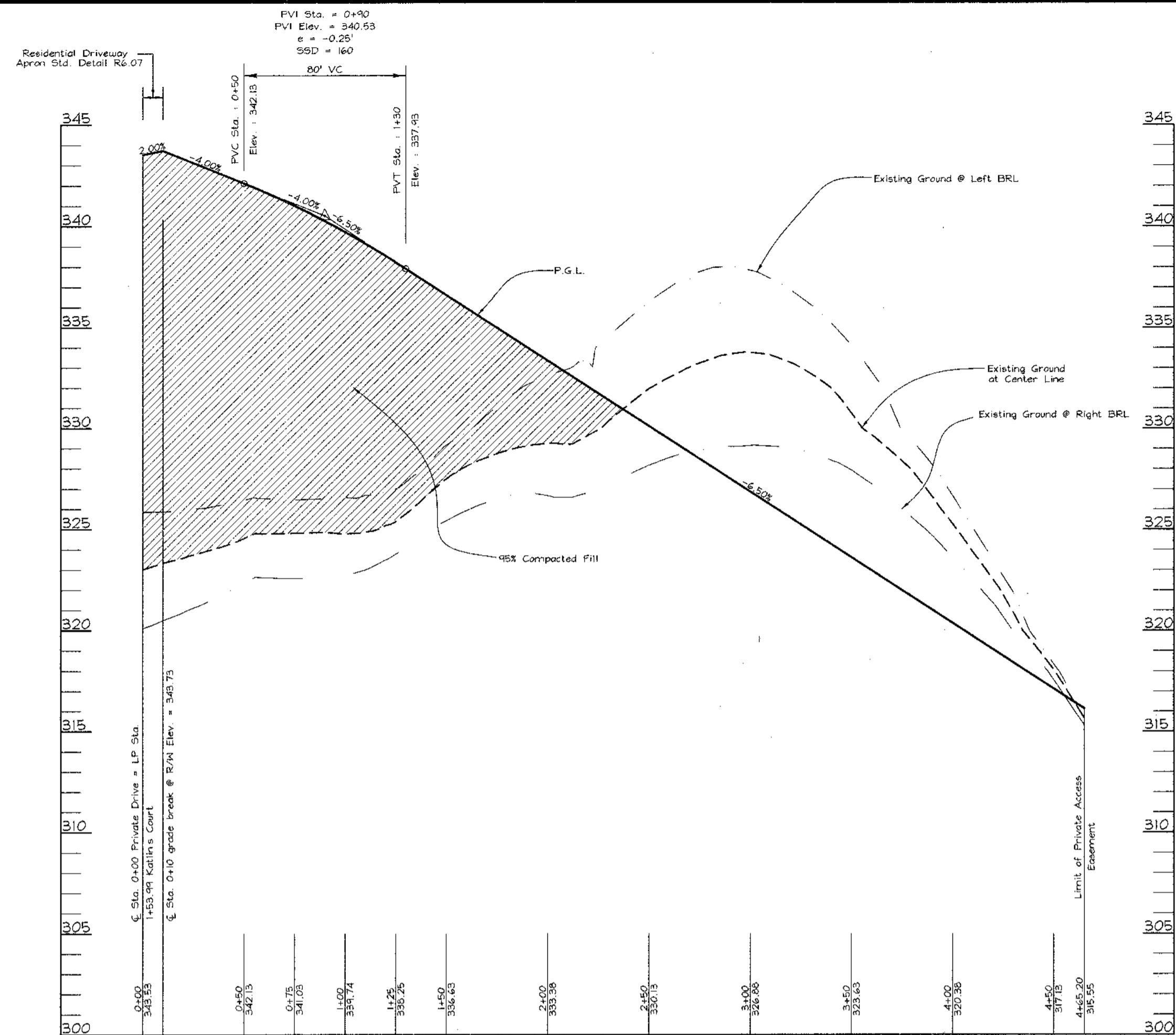
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

*[Signature]* 3/29/00 DATE  
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 4/12/00 DATE  
CHIEF, DEVELOPMENT ENGINEERING DIVISION





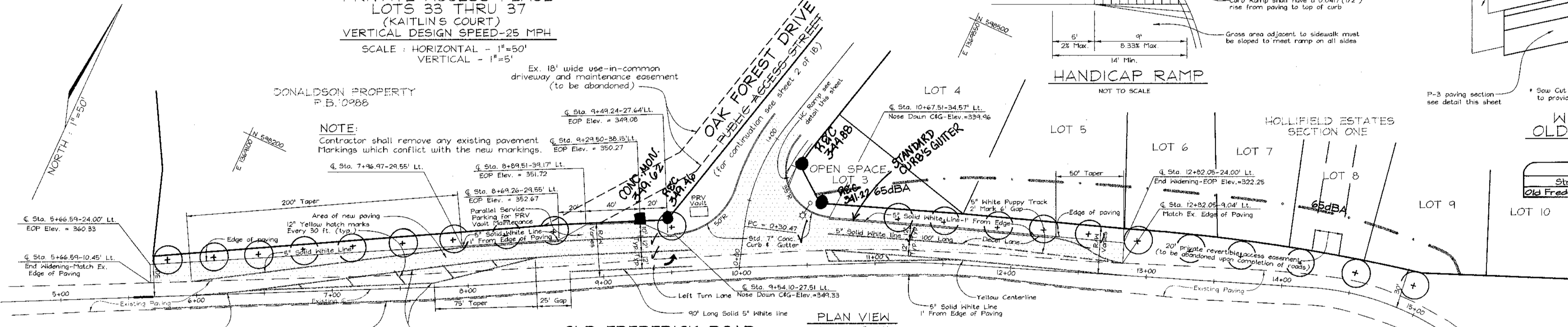
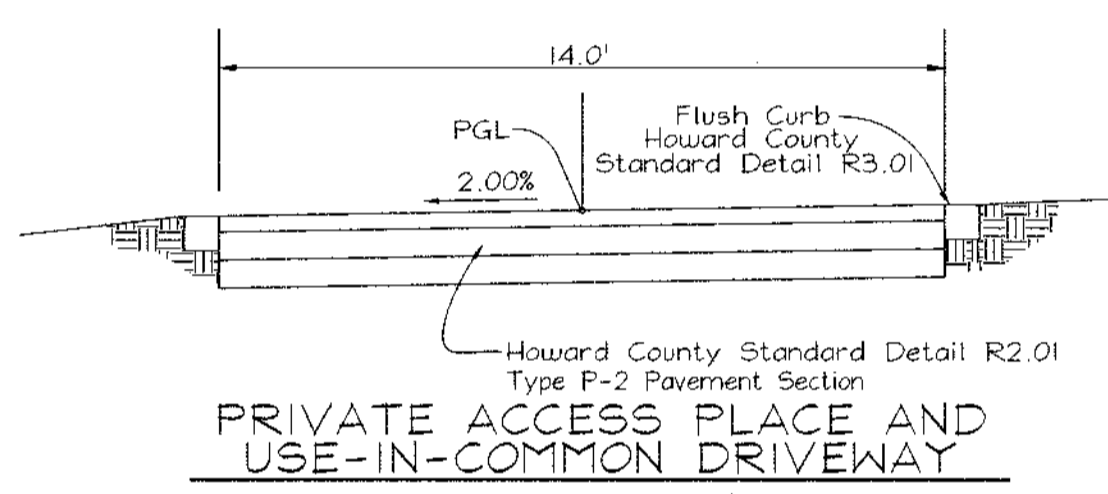
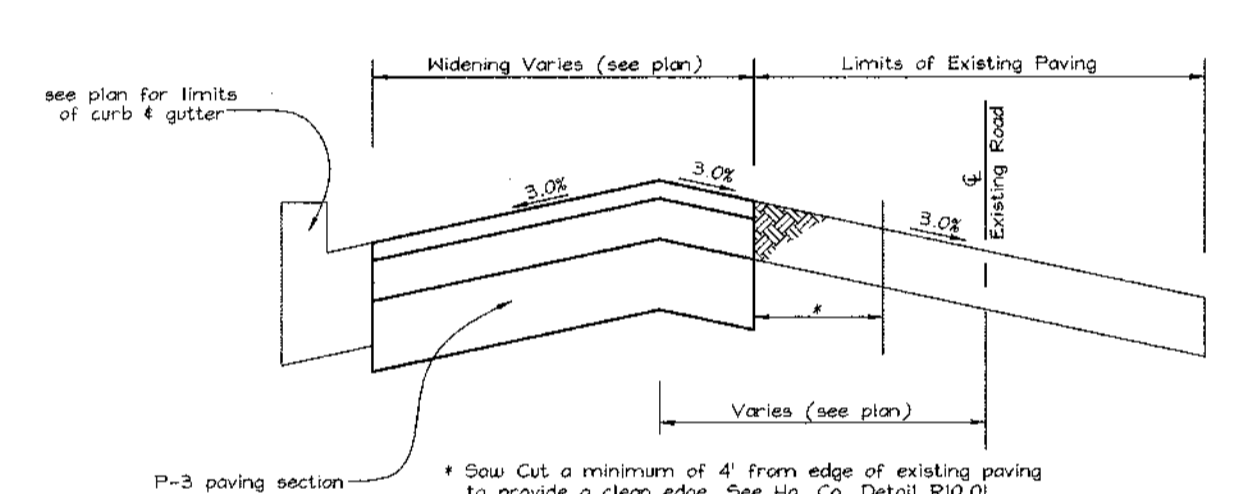
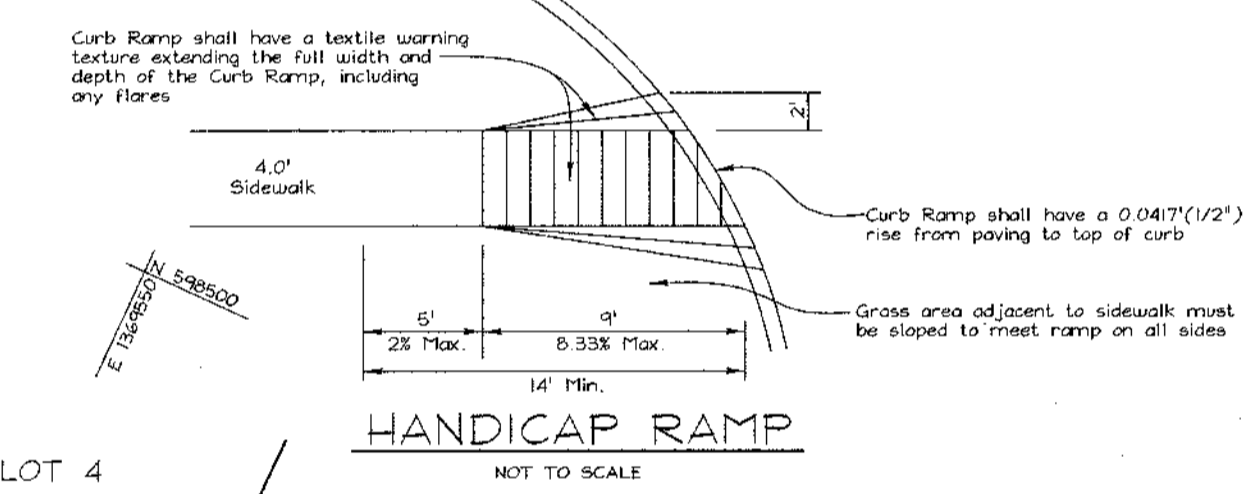
**PRIVATE ACCESS PLACE  
LOTS 33 THRU 37  
(KAITLIN'S COURT)  
VERTICAL DESIGN SPEED=25 MPH**  
SCALE: HORIZONTAL - 1"=50'  
VERTICAL - 1"=5'

**① FILLET PROFILE  
RIVER TERRACE COURT  
PUBLIC ACCESS PLACE**  
SCALE: HORIZONTAL - 1"=50'  
VERTICAL - 1"=5'

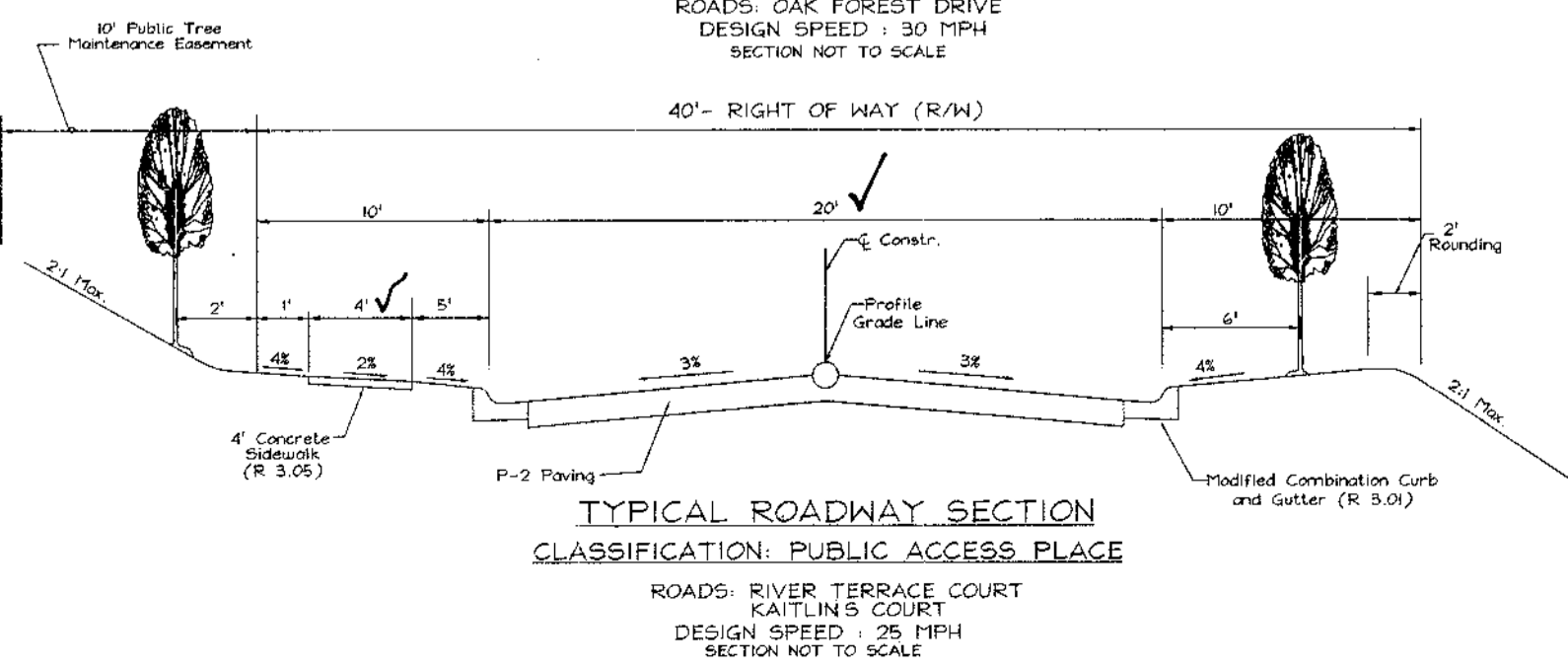
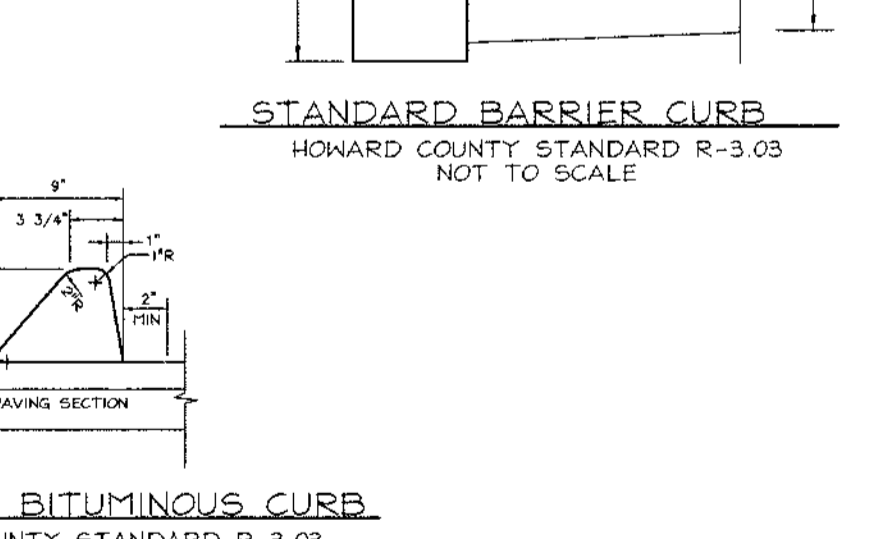
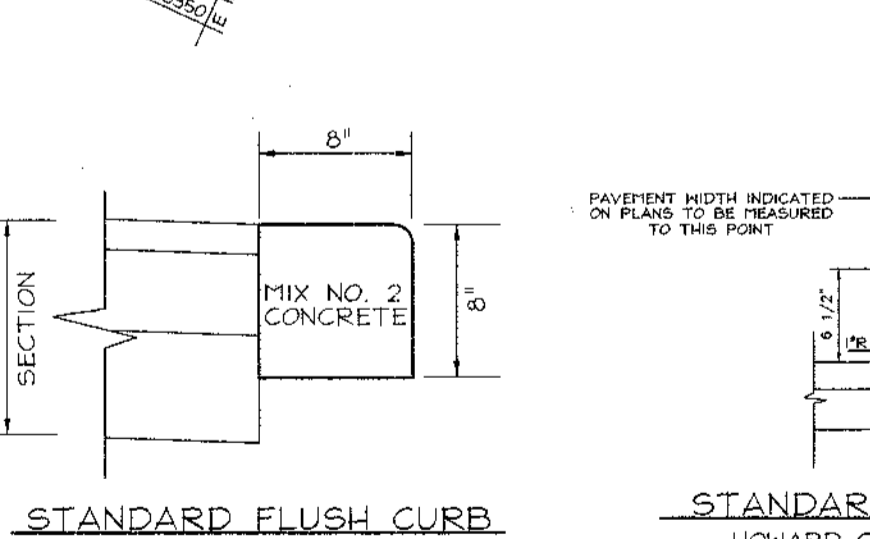
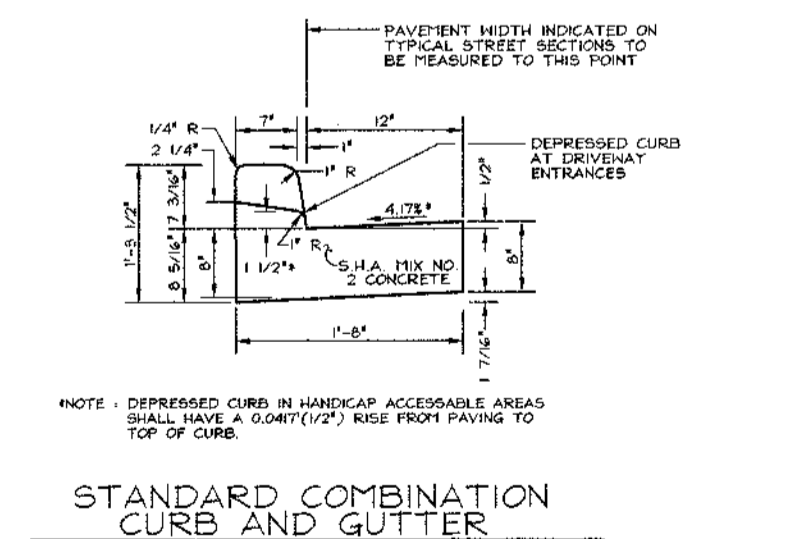
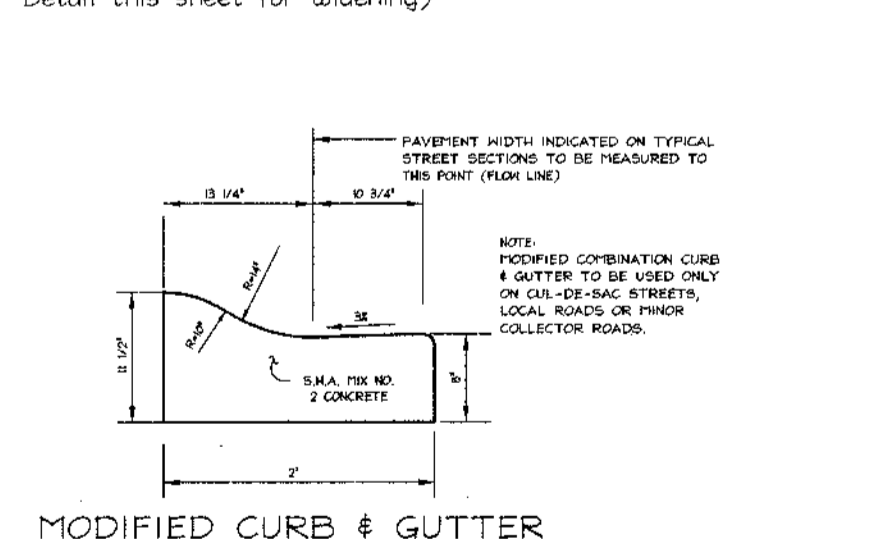
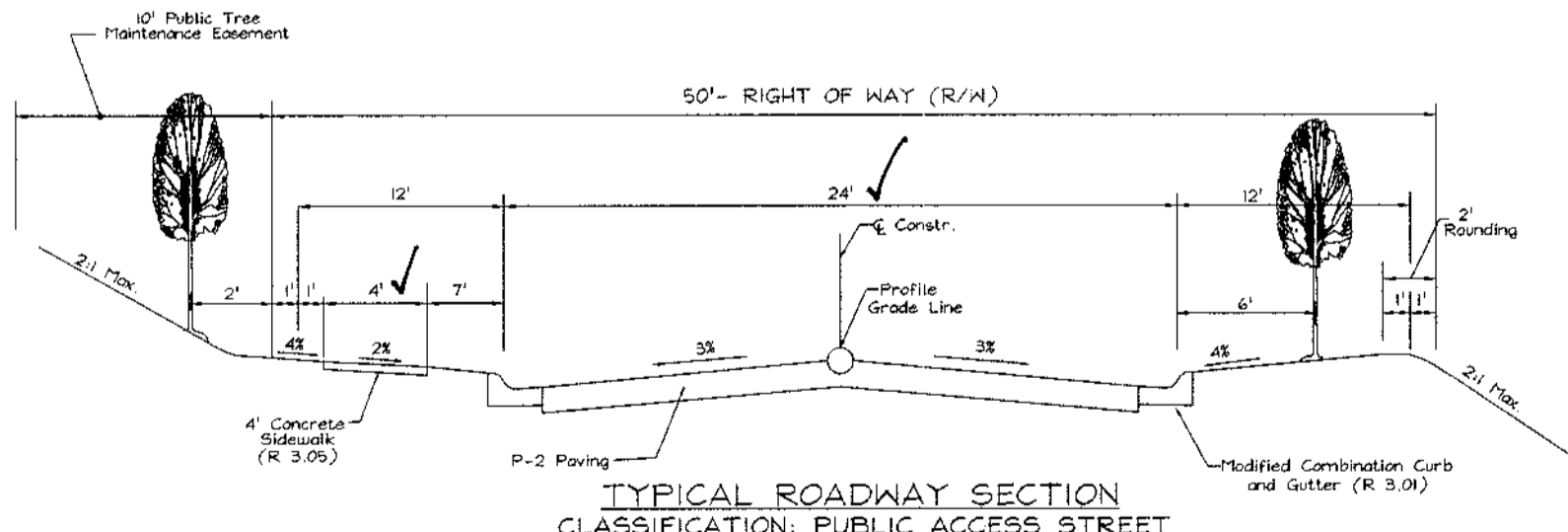
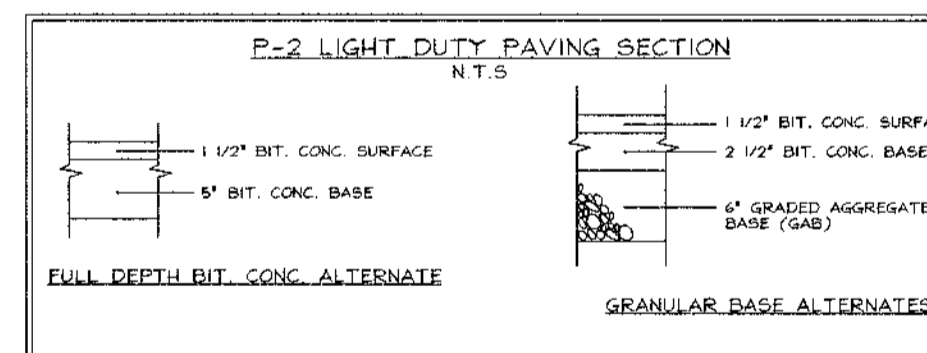
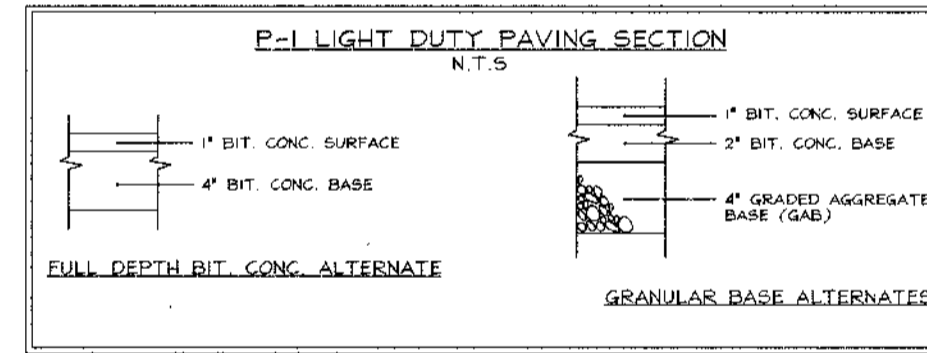
**② FILLET PROFILE  
RIVER TERRACE COURT  
PUBLIC ACCESS PLACE**  
SCALE: HORIZONTAL - 1"=50'  
VERTICAL - 1"=5'

**③ FILLET PROFILE  
KAITLIN'S COURT  
PUBLIC ACCESS PLACE**  
SCALE: HORIZONTAL - 1"=50'  
VERTICAL - 1"=5'

**④ FILLET PROFILE  
KAITLIN'S COURT  
PUBLIC ACCESS PLACE**  
SCALE: HORIZONTAL - 1"=50'  
VERTICAL - 1"=5'



STREET TREE CALCULATIONS			
Street Name	Linear Feet	Required Trees	Provided Trees
Old Frederick Road	616/40	21	21



NO.	REVISION

AS-BUILT CERTIFICATE

DATE: 1/10/05

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

DATE: 3/29/00

CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

DATE: 4/13/00

CHIEF, DEVELOPMENT ENGINEERING DIVISION

**OLD FREDERICK ROAD WIDENING AND STRIPING PLAN, PROFILES AND DETAILS**

**HOLLIFIELD ESTATES I SECTION ONE**

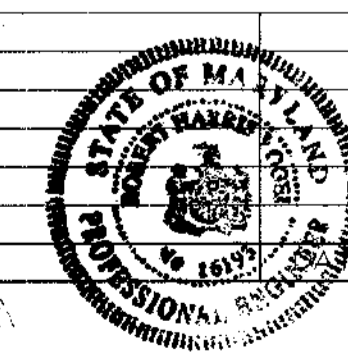
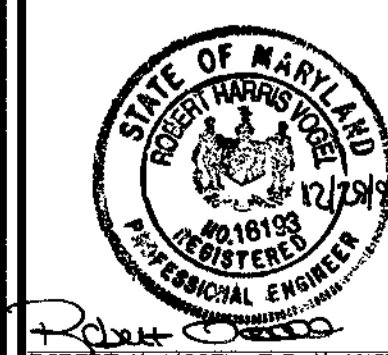
TAX MAP #18 PARCEL 1  
2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**VOGEL & ASSOCIATES**  
ENGINEERS-SURVEYORS-PLANNERS

3891 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
Tel 410.461.5828 Fax 410.463.3996

DESIGN BY: GAH  
DRAWN BY: PS  
CHECKED BY: RHV  
DATE: Oct 18, 1999  
SCALE: As Shown  
H.O. NO.: 99-013

5 SHEET OF 18





Computed by: G.A.H. Date: 2/20/99 Rev: 12/21/99 Checked by: \_\_\_\_\_  
 Project name: HOLLIFIELD ESTATES I Draw # 2  
 Location: HOWARD COUNTY, MARYLAND

Total area draining to basin: 8.97 acres (ac)  
 Basin Volume Design  
 Note: 1. also see Surface Area Design #30, this form.

1. Min. required vol. = 3600 cu ft./ac x 8.97 ac drainage = 32,292 cu ft.
2. Actual Volume of basin = 52,010 cu ft.
3. Excavate 20,000 cu ft. (963 cu yd) to obtain required capacity.
4. Vol. of detaining elev. = 1800 cu ft./ac x 8.97 ac = 16,146 cu ft.
5. Vol. of basin of cleanout = 900 cu ft./ac x 8.97 ac = 8,073 cu ft.
6. Elevation corresponding to min. required volume of basin (riser crest elevation) 224.60 ft.
7. Permanent pool elevation = 221.65 ft.
8. Distance from riser crest elevation to permanent pool elevation 2.95 ft.
9. Basin cleanout elevation 220.50 ft.
10. Distance from riser crest elevation to cleanout elevation 4.10 ft.

- Spillway Design
11.  $Q_p = 41.28$  cfs (peak discharge from 10-yr., 24-hr storm event, attach computations)
  12. Design Principal Spillway (Barrel) discharge, Design  $Q_p = 41.28$  cfs (min. 10% of 10-yr peak or 8" pipe)
  13. H = 6.04 ft.; Barrel length = 50.0 ft.
  14. Barrel Diam. = 30 in. Note  $Q_m$  must equal or exceed Design  $Q_p$ .
  15.  $Q_m = Q$  (from Table 13 or 14) 46.22 x (length correction factor) 1.02 = 50.43 cfs.
  16. Riser Diameter 32 in.; Riser Height 3.2 ft.; Riser Head (h) = 1.09 ft.
  17. Trash Rack Diam. 50 in.; Trash Rack Height 12 in.
  18. Emergency Spillway (Oes.) (N/A)
  19. Emergency spillway cap.  $Q_m = Q_p = Q_m =$  \_\_\_\_\_ cfs.
  20. Wash \_\_\_\_\_ ft.; Hp \_\_\_\_\_ ft.
  21. Entrance channel slope \_\_\_\_\_ %
  22. Exit channel slope \_\_\_\_\_ %

- Anti-Spill Collar Design (for each Barrel)
23.  $y = 6.22$ ;  $z = 2.1$ ; pipe slope = 2.0 %;  $ts = 41.02$  ft.
  24. Use \_\_\_\_\_ collars, 8 ft. x 10 in. square; projection = 3.2 ft.
- Design Elevations
25. Riser Crest = 225.20 ft.
  26. Design High Water = 226.29 ft.
  27. Emergency Spillway Crest = 224.60 ft.
  28. Min. settled top of dam = 227.66 ft.
  29. Permanent pool = 221.65 ft.
  30. Bottom of Basin = 220.00 ft.
  31. Draw-down orifice invert = 220.00 ft.

- Surface Area Design
32. Min. basin surface area;  $SA \geq 0.0035 \times Q_p \times 46.53$  cfs  $\leq 0.18$  ac.
- Draw-down Device
33. Draw-down device orifice diameter = 8 in. (from Table 11)
  34.  $A_1 =$  Total area of perforations  $\geq 4A_2$
  - $A_1 =$  (# of perforations/foot)(perforation area ft<sup>2</sup>)(perforated section length ft.)
  - $A_2 =$  (12 perforations/foot)(0.0055 sq ft.)(6 ft.)
  - $A_1 = 0.38$  sq ft.
  - $A_0 =$  Internal orifice area (from Table 11 or computed) = 0.35 sq ft.
- C - 10 - 10 & 11

- LEGEND
- S.C.E. STABILIZED CONSTRUCTION ENTRANCE
  - PROP. TREELINE
  - BASIN / TRAP CONTOURS
  - PROPOSED GRADE
  - E.C.M. EROSION CONTROL MATTING
  - LOD LIMIT OF DISTURBANCE
  - S-S-S SILT FENCE
  - SSF SUPER SILT FENCE
  - EARTH DIKE
  - TEMP. SEDIMENT TRAP CONTOURS
  - PROP. CONTOURS

OWNER/DEVELOPER  
 Mr. Charles Skirven, Esq.  
 5401 Twin Knolls Road, Suite 10  
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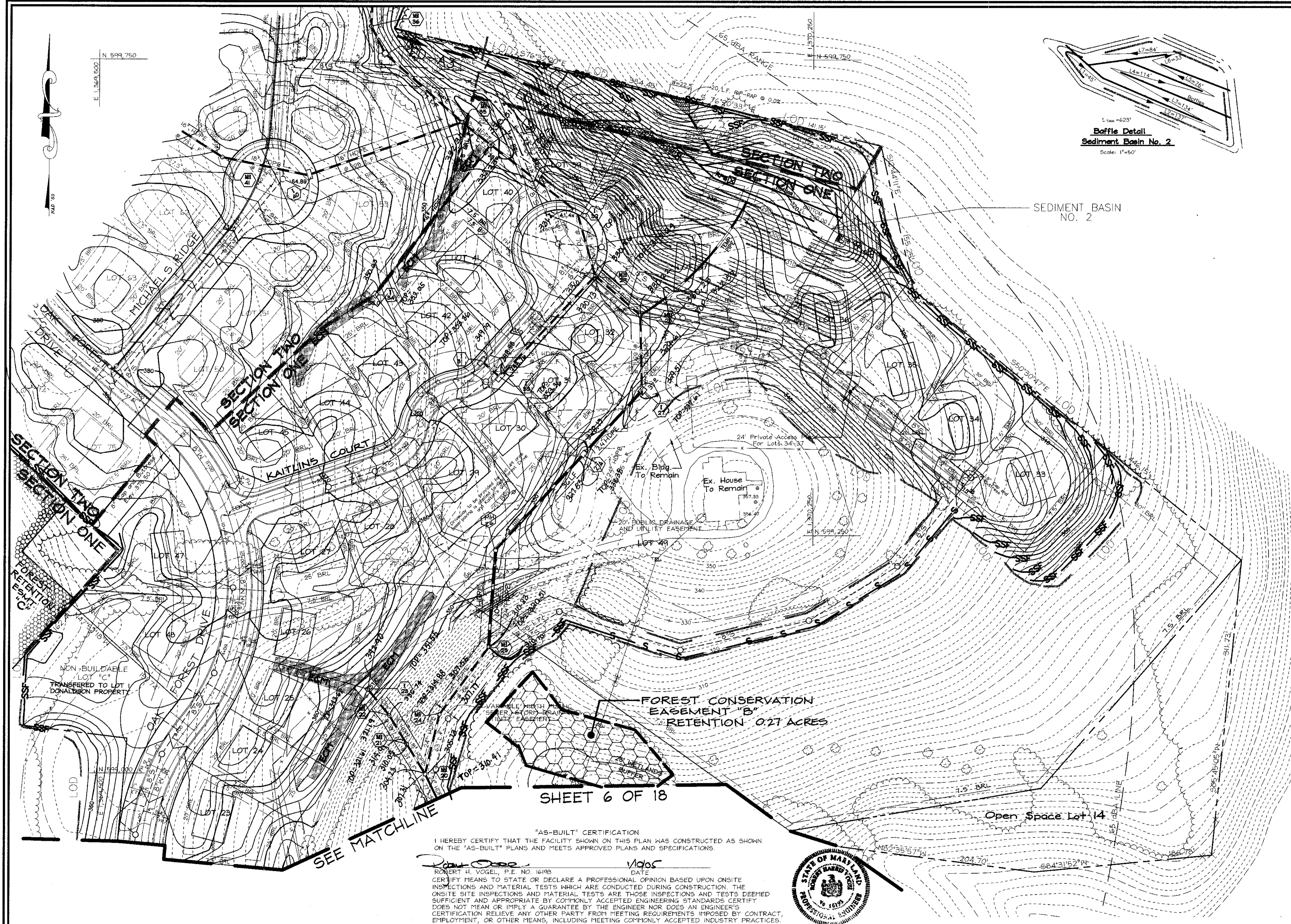
NO.	REVISION	DATE
3	REGRADE TO INLET I-33	10.3.02
2	REVISE STORMDRAIN & REGRADE I-27, I-27A & MH 26	4/19/01
1	REVISION	DATE

GRADING, SEDIMENT AND EROSION CONTROL PLAN  
 HOLLIFIELD ESTATES I  
 SECTION ONE

TAX MAP #18 PARCEL 1  
 2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

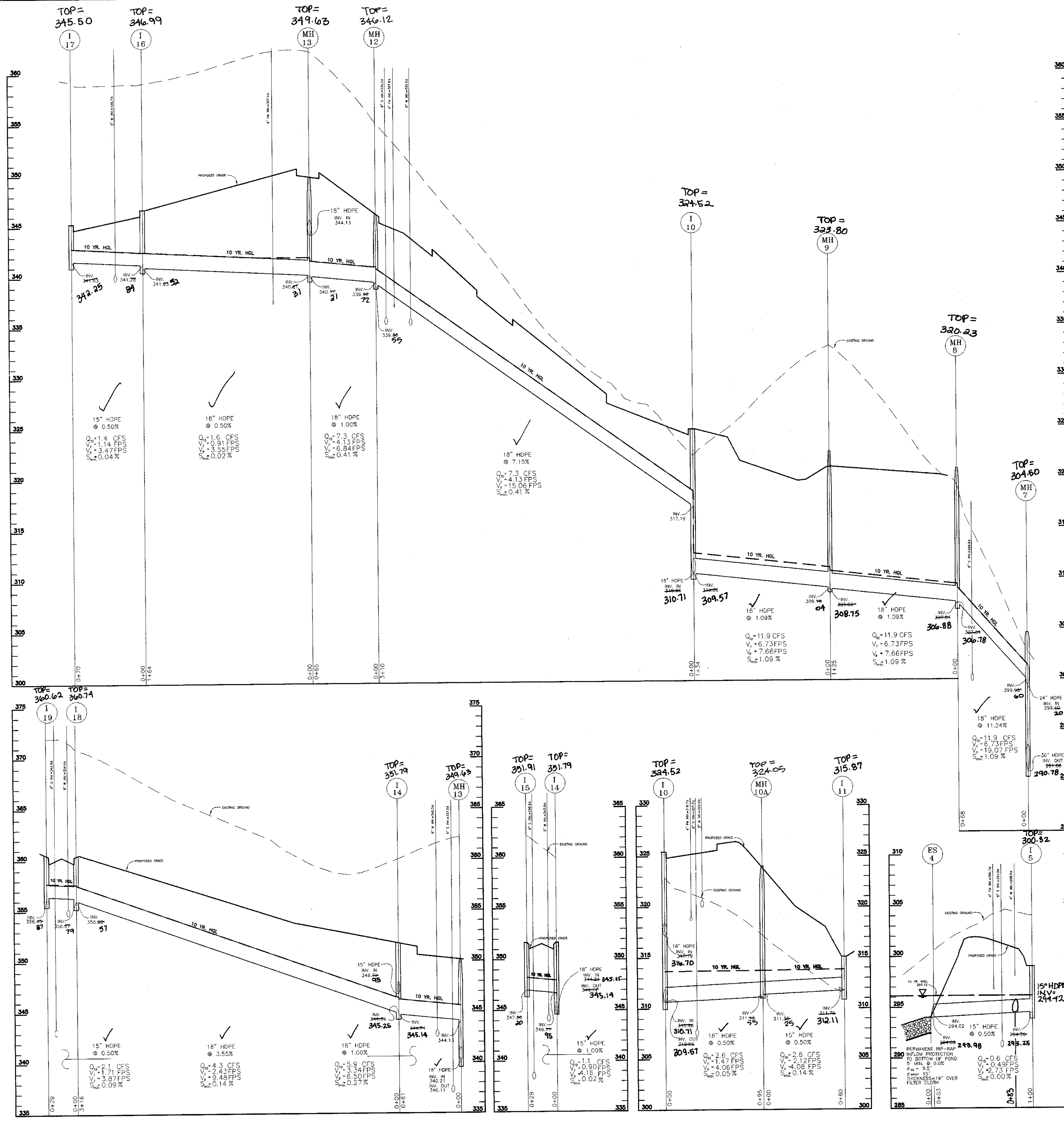
**V**VOGEL & ASSOCIATES  
 ENGINEERS/SURVEYORS/PLANNERS  
 3591 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
 Tel 410.461.5828 Fax 410.465.3966

DESIGN BY: G.A.H.  
 DRAWN BY: J.E.R.  
 CHECKED BY: R.H.V.  
 DATE: Oct. 18, 1999  
 SCALE: 1"=50'  
 W.O. NO.: 99-013  
 7 SHEET OF 18









STRUCTURE SCHEDULE

NO.	TYPE	TOP EL.	INV. IN.	INV. OUT.	LOCATION	REMARKS
EW-1	TYPE A HEADWALL	273.50	-	269.00	N 598860.5742 E 1370066.4184	SD 5.11
MH-2	STD. MANHOLE	279.00	271.20	269.19	N 598853.7591 E 1370051.9152	G 5.01
S-3	CONCRETE RISER	297.80	287.90	283.50	N 598809.6020 E 1369957.2635	SEE DETAILS
ES-4	15" HDPE END SECTION	285.44	294.02	294.00	N 598722.5400 E 1370055.4413	ADS N-12
I-6	YARD INLET	299.00	-	294.50	N 598643.8107 E 1370111.7340	SD 4.14
ES-6	30" HDPE END SECTION	292.85	290.10	290.00	N 598879.2325 E 1369895.1542	ADS N-12
MH-7	4' STD. PRECAST MANHOLE	304.50	299.90	291.00	N 598930.2489 E 1369877.4531	G 5.12
MH-8	4' STD. PRECAST MANHOLE	320.50	307.64	307.54	N 598906.3138 E 1369813.8048	G 5.12
MH-9	4' STD. PRECAST MANHOLE	322.50	309.10	309.00	N 598784.7573 E 1369786.8523	G 5.12
I-10	PRECAST 'A-10' INLET	324.79	317.19	310.66	N 598667.3362 E 1369850.4497	SD 4.41
MH 10A	4' STD. PRECAST MANHOLE	324.00	311.38	311.13	N 598576.3745 E 1369863.8431	G 5.12
I-11	PRECAST TYPE 'D' INLET	315.83	-	311.75	N 598501.5751 E 1369876.7913	SD 4.39 2 SIDES
MH-12	4' STD. PRECAST MANHOLE	346.27	339.46	339.36	N 598522.7854 E 1369575.6108	G 5.12
MH-13	4' STD. PRECAST MANHOLE	349.45	344.13	340.21	N 598537.2057 E 1369512.2936	G 5.12
I-14	PRECAST 'A-5' INLET	351.68	344.84	344.74	N 598595.9965 E 1369527.1751	SD 4.40
I-15	PRECAST 'A-10' INLET	351.68	-	347.00	N 598601.8557 E 1369498.7455	SD 4.41
I-16	PRECAST 'A-5' INLET	346.68	341.28	341.03	N 598377.9783 E 1369473.0113	SD 4.40
I-17	PRECAST 'A-10' INLET	345.29	-	341.63	N 598318.4721 E 1369438.6073	SD 4.41
I-18	PRECAST 'A-5' INLET	360.39	356.31	356.06	N 598910.1693 E 1369559.5411	SD 4.40
I-19	PRECAST 'A-5' INLET	360.39	-	356.45	N 598912.7189 E 1369530.6282	SD 4.41
MH-20	4' STD. PRECAST MANHOLE	311.00	304.50	302.40	N 598999.2187 E 1369843.7115	G 5.12
MH-21	4' STD. PRECAST MANHOLE	322.00	314.75	310.05	N 599030.7815 E 1369824.4037	G 5.12
MH-22	4' STD. PRECAST MANHOLE	344.00	336.70	321.05	N 599080.6382 E 1369806.1396	G 5.12
I-23	PRECAST TYPE 'D' INLET	351.83	-	343.00	N 599088.4825 E 1369783.3281	SD 4.39 2 SIDES
MH-24	4' STD. PRECAST MANHOLE	316.00	307.82	307.72	N 599061.7895 E 1369858.5194	G 5.12
MH-25	4' STD. PRECAST MANHOLE	321.50	310.50	310.40	N 599132.9585 E 1369910.2782	G 5.12
MH-26	4' STD. PRECAST MANHOLE	351.00	323.33	326.33	N 599236.6 E 1369919.2	G 5.12
I-27	PRECAST TYPE 'D' INLET	337.83	329.66	329.56	N 599400.3 E 1370069.8	SD 4.39 2 SIDES
MH-28	4' STD. PRECAST MANHOLE	341.80	330.16	330.06	N 599481.8934 E 1370068.3544	G 5.12
MH-29	4' STD. PRECAST MANHOLE	343.93	336.22	330.58	N 599523.1190 E 1370020.8034	G 5.12
I-30	PRECAST 'A-10' INLET	353.29	349.52	349.27	N 599416.4278 E 1369921.1287	SD 4.41
I-31	PRECAST 'A-10' INLET	353.29	-	350.02	N 599433.0305 E 1369902.1711	SD 4.41
I-32	PRECAST 'A-10' INLET	342.00	331.03	330.93	N 599590.0595 E 1370001.4974	SD 4.41
I-33	YARD INLET	358.8	333.60	331.59	N 599680.8647 E 1369910.7626	SD 4.14
I-34	YARD INLET	355.00	-	351.51	N 599503.0552 E 1369789.6542	SD 4.14
MH-36	4' STD. PRECAST MANHOLE	345.50	338.79	332.49	N 599684.4005 E 1369880.4543	G 5.12
I-37A	PRECAST TYPE 'D' INLET	338.83	329.11	329.01	N 599334.2 E 1370009.6	SD 4.39

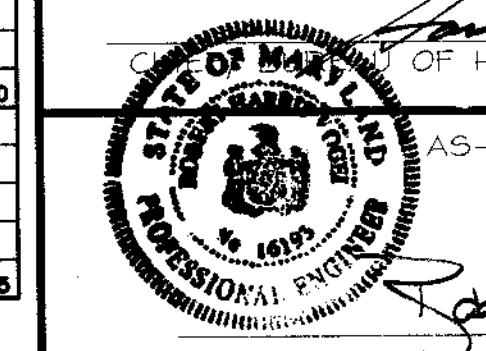
STORM DRAIN PROFILES

SCALE: HORIZ. 1"=50'  
VERT. 1"=5'

OWNER/DEVELOPER  
Mr. Charles Skirven, Esq.  
5401 Twin Knolls Road, Suite 10  
Columbia, Maryland 21046  
(410) 995-0081

1	ADD INLET I-5A	12-10-02
3	REVISE TO INLET I-33	10.3.02
2	UPDATE STRUCTURE SCHEDULE	4/9/01
NO	REVISION	DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Cindy Hamilton* 4/11/02  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

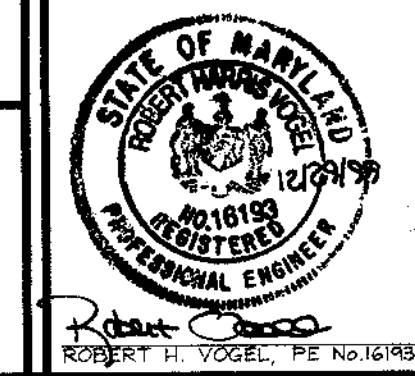
*William Dammann* 4/3/00  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

STORM DRAIN PROFILES  
HOLLIFIELD ESTATES I  
SECTION ONE

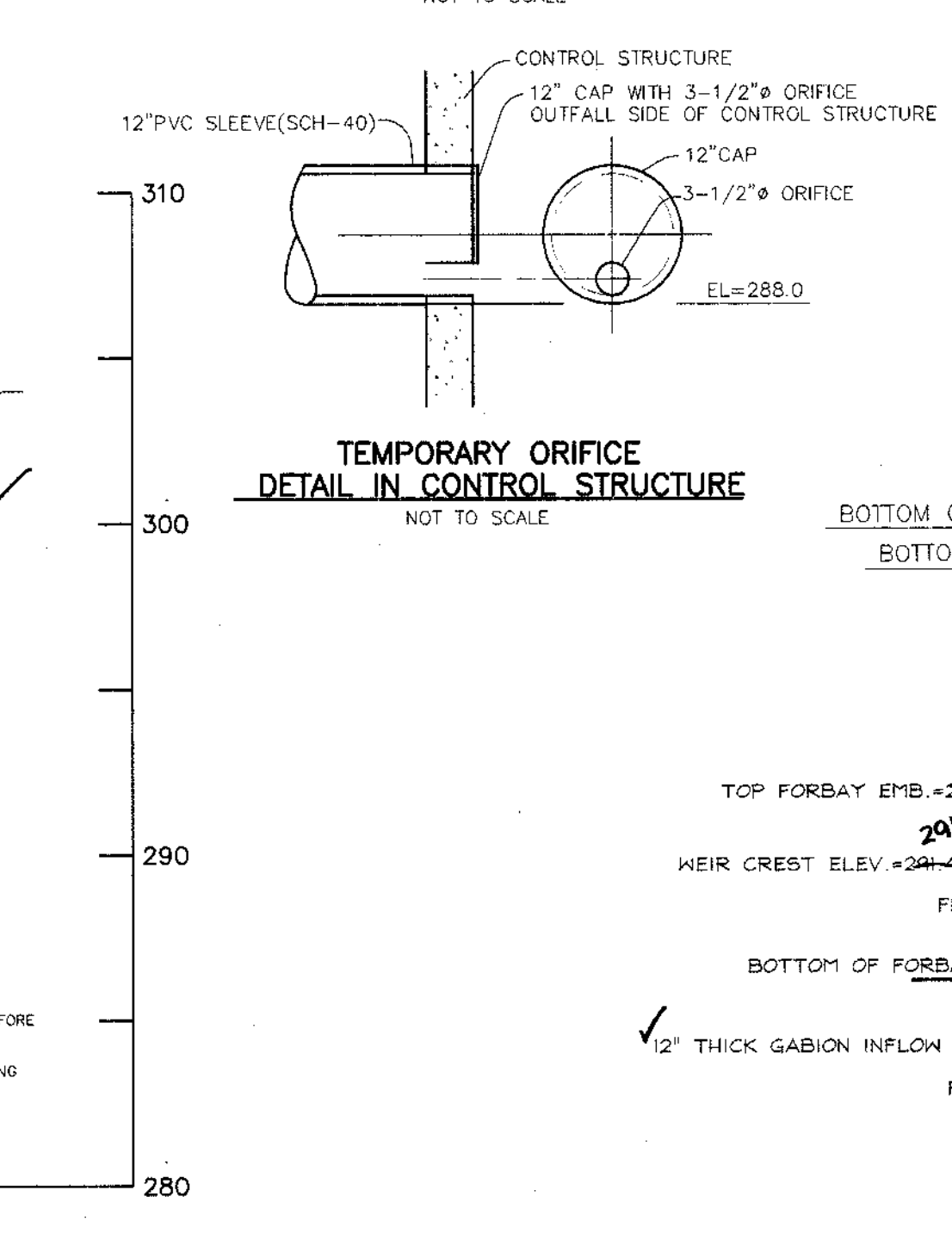
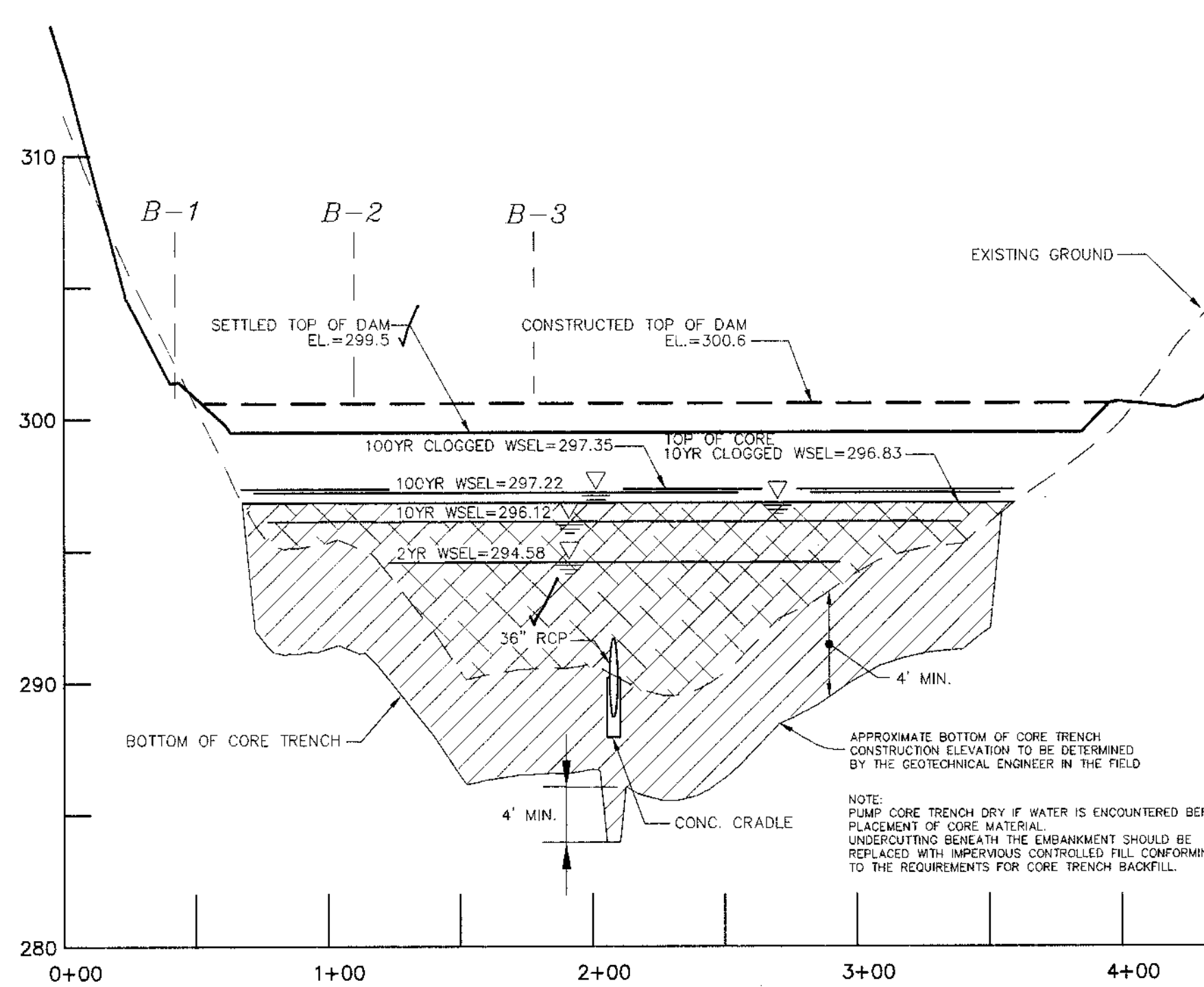
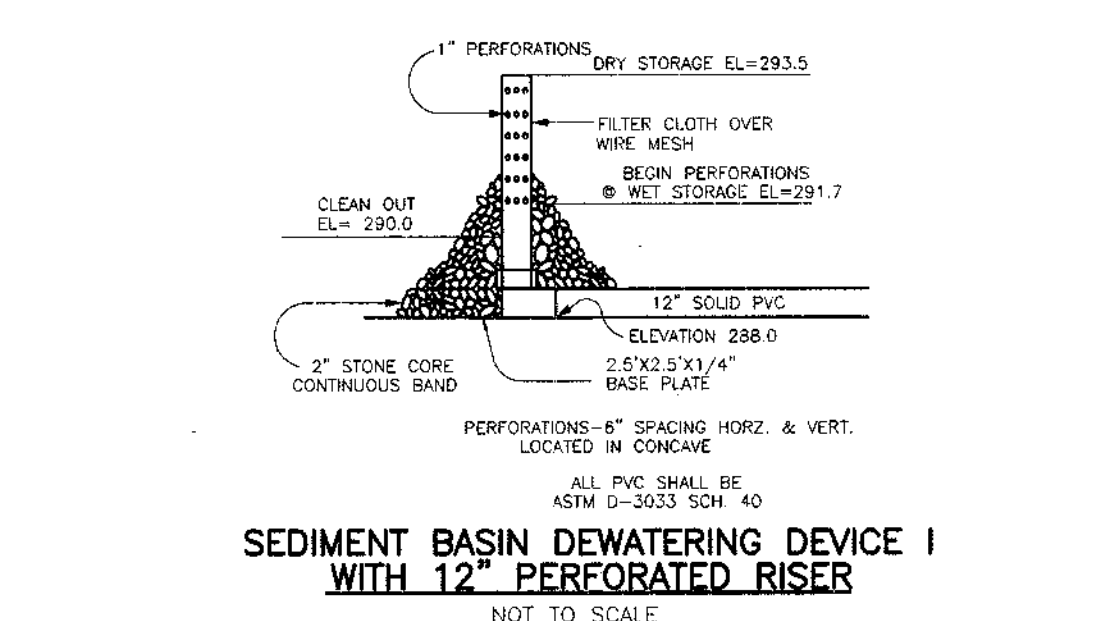
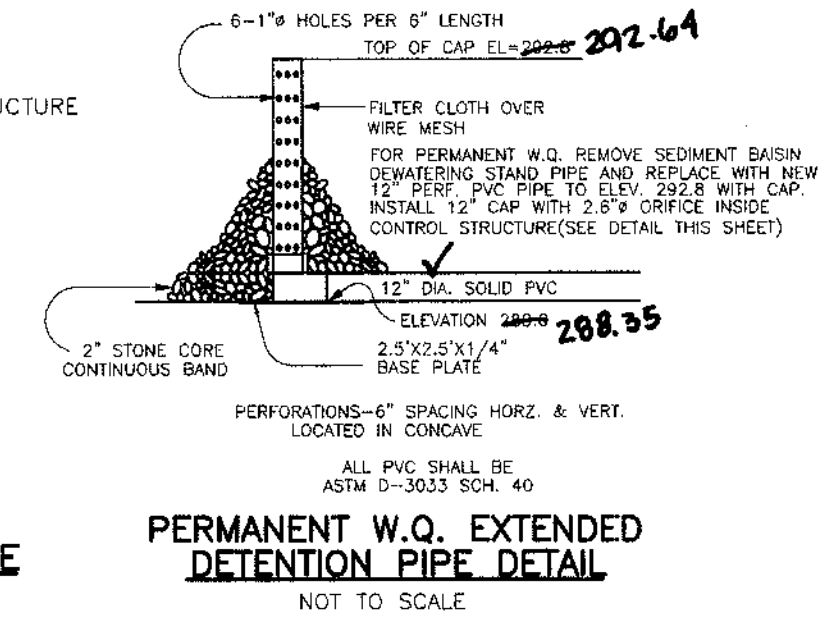
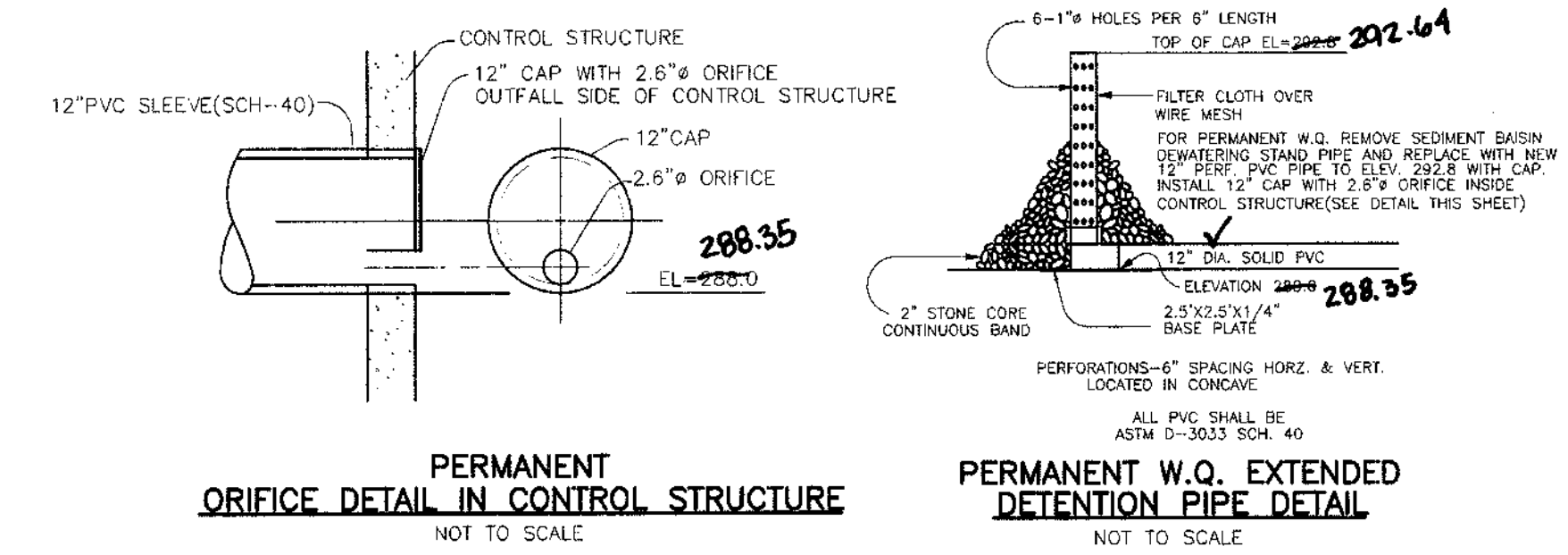
TAX MAP #18 PARCEL 1  
2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**VOGEL & ASSOCIATES**  
ENGINEERS/SURVEYORS/PLANNERS  
3691 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
Tel 410.461.5828 Fax 410.465.3996

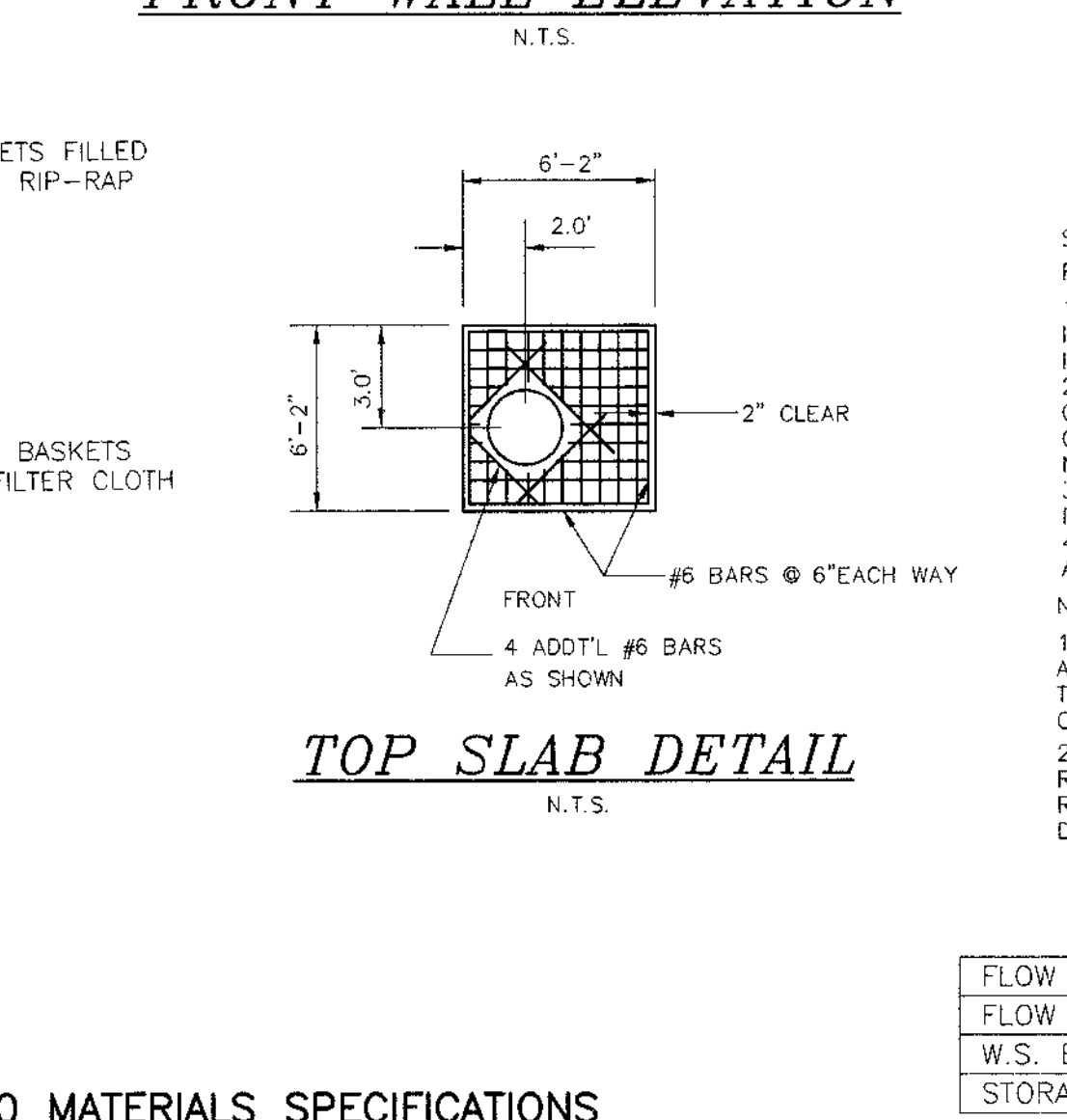
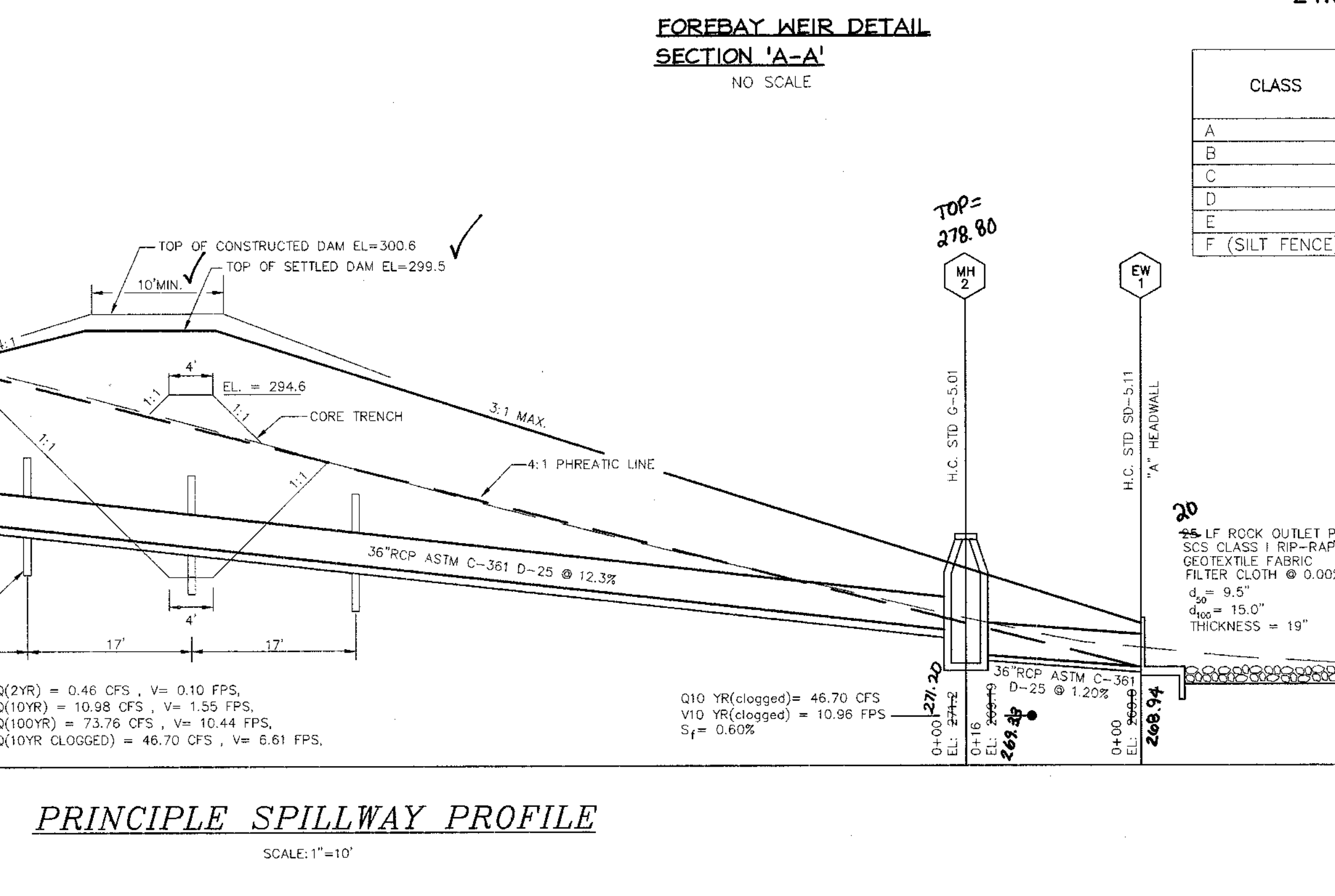
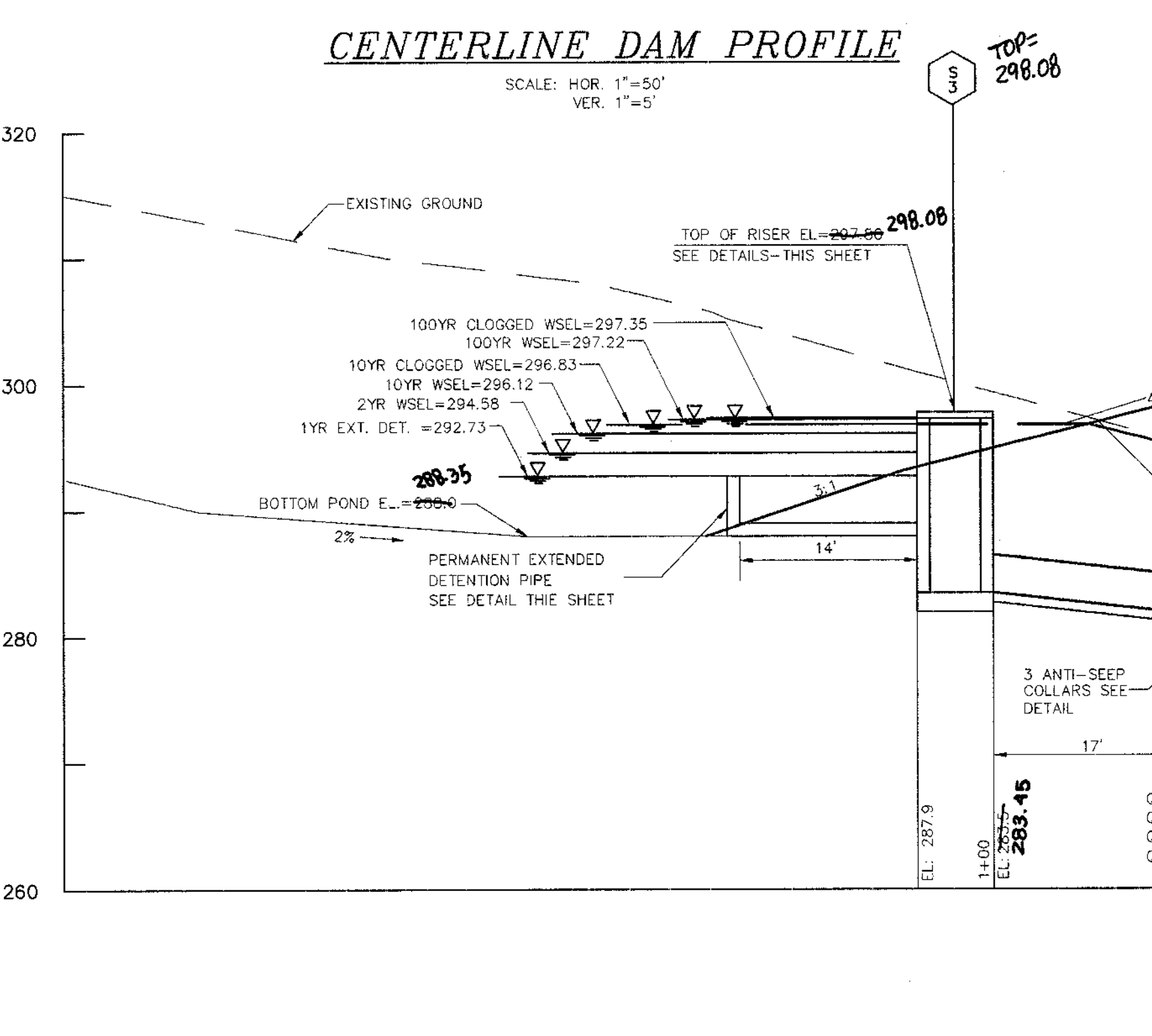
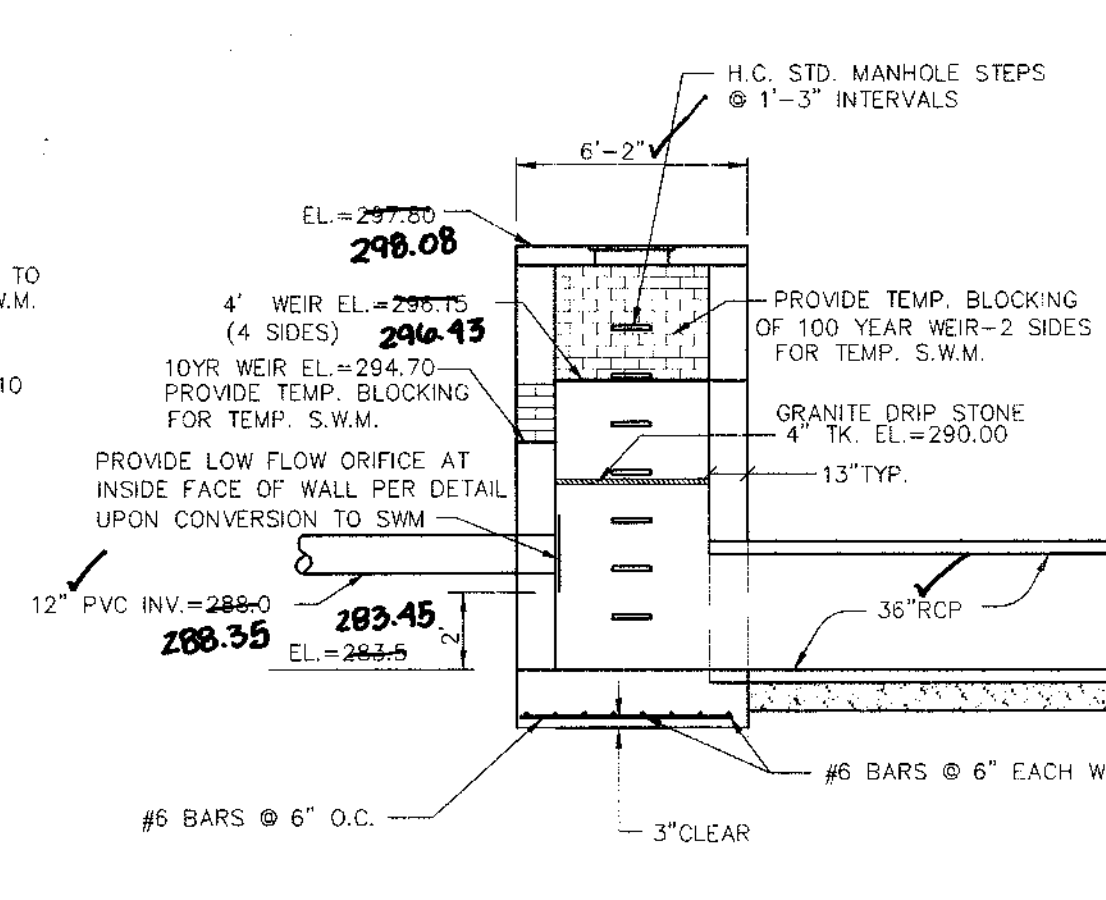
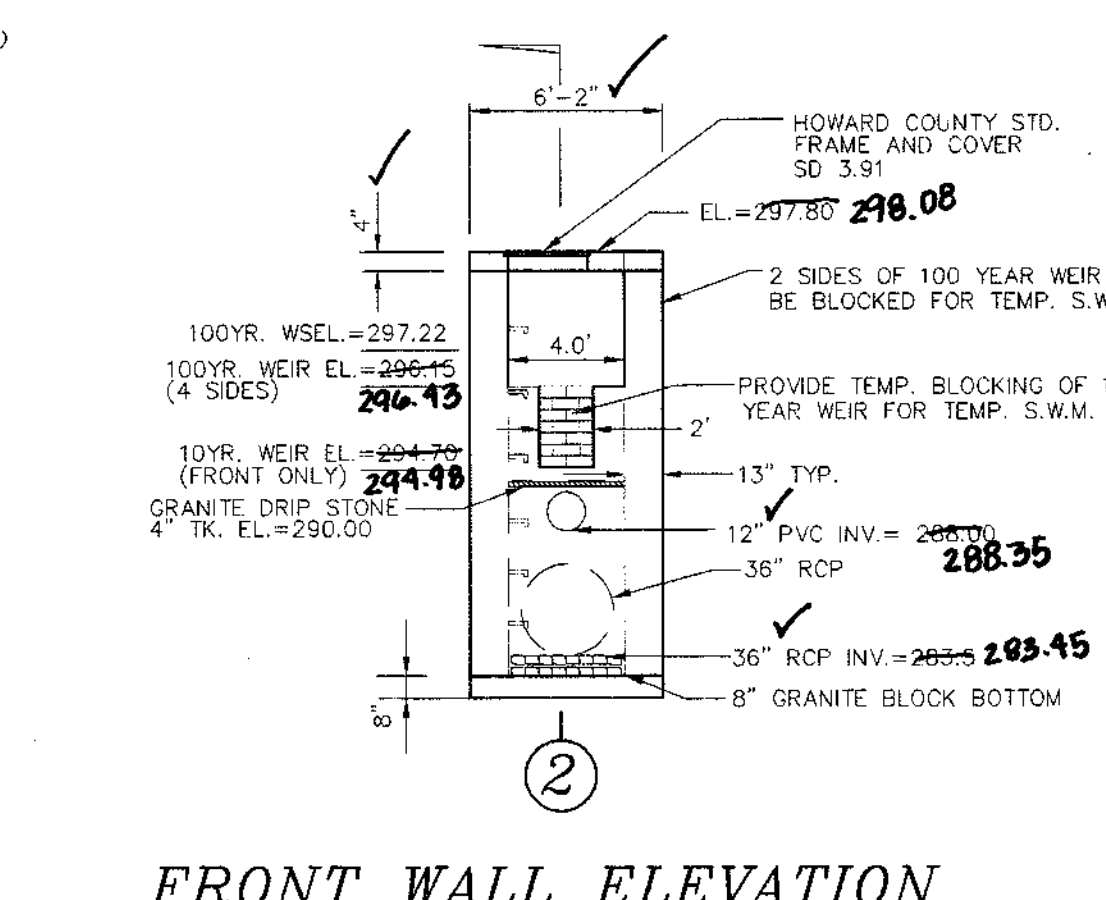
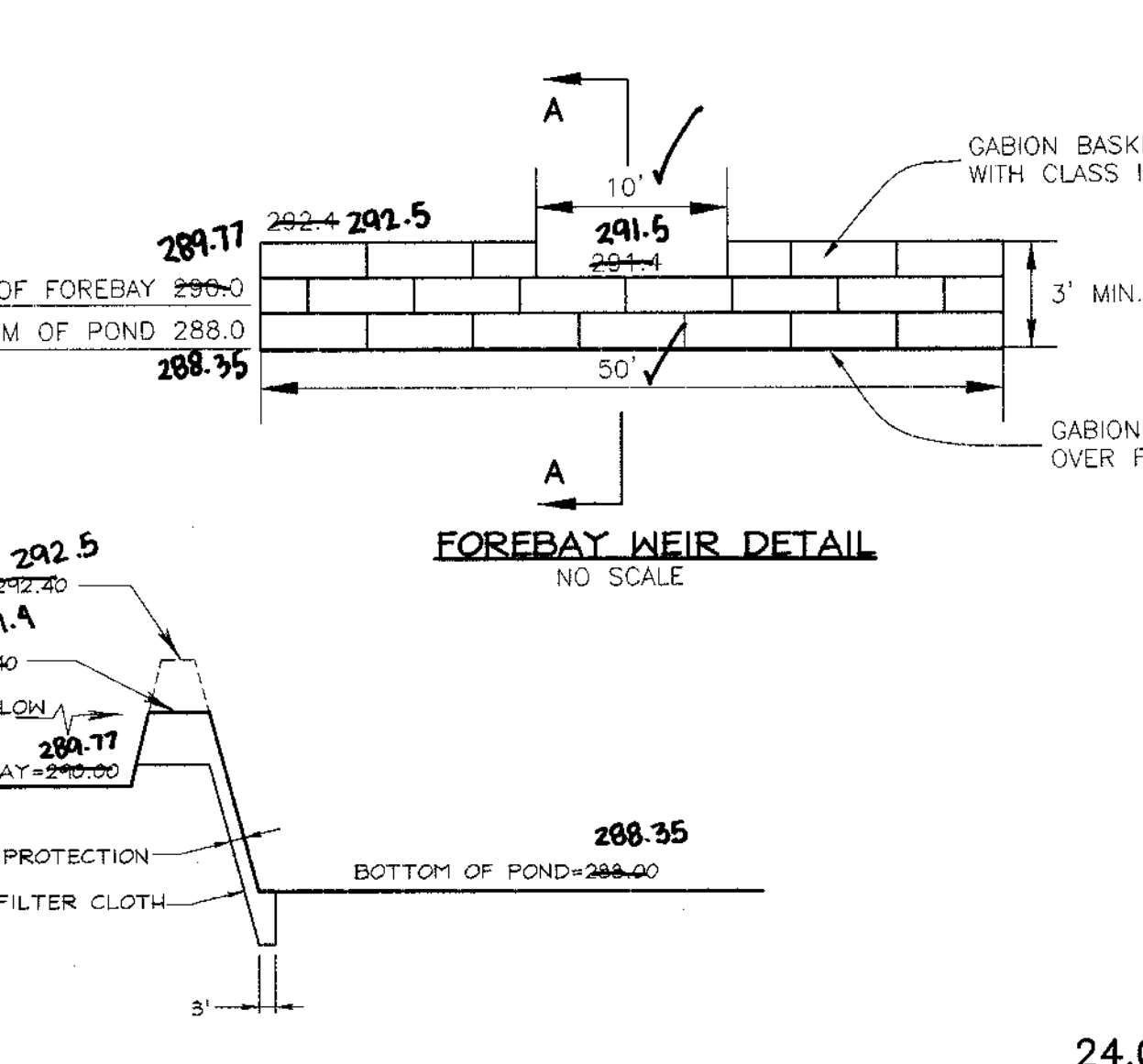
DESIGN BY: GAH  
DRAWN BY: JER  
CHECKED BY: RHV  
DATE: Oct. 18, 1999  
SCALE: AS SHOWN  
W.O. NO.: 99-013







- SEQUENCE OF CONSTRUCTION**
- NOTE: Section One (F-99-75) and Section Two (F-99-76) will be constructed concurrently.
- Obtain grading permits for F-99-75 and F-99-76 to be issued to run concurrently. (One Day)
  - Notify Howard County Bureau of Inspections and Permits at (410)315-1600 at least 24 hours before starting any work. (One Day)
  - Install Stabilized Construction Entrances, Tree Protection Fences, Silt Fence and Super Silt Fence at Limits of Disturbance. (One-Two Weeks)
  - Install Traps and Basins and make temporary modifications to permanent Stormwater Management Facility No. 1 and obtain permission from Inspector before proceeding. (Three - Four Weeks)
  - Install Earth Dikes to traps and basins. (One-Two Weeks)
  - Obtain permission from Inspector before proceeding with clearing and grading.
  - Clear and grade site. (One Week)
  - Rough grade site. Grade sump areas to provide positive drainage to traps and basins. Maintain access drive for existing homes. (See sheet 3 of 19 - Section 1)
  - All roads and house pads located in fill areas shall be brought to grade with compacted structural fill. A Geotechnical Engineer shall be on-site during placement of structural fill, to insure proper moisture and compaction. Dist control measures to be utilized as necessary per RCSD (2011-11-30) (3-4 Weeks)
  - Install storm drains, excluding pipe from P1-36 thru I-39. Provide temporary blocking of upstream opening of P1-36 and at permanent downstream opening of P1-26. Install temporary blocking and temporary pipe diversion to Basin #2. (Three-Four Weeks)
  - Install Weir and Sump Control No. 14-3501-D and 14-3502-D. (Three-Four Weeks)
  - Construct Curbs and Gutters and base paving, sidewalk and residential driveway entrance where shown. (Three-Four Weeks)
  - Rough Grade any remaining areas, fine grade sump areas to collect water at inlets and stabilize disturbed areas. (One-Two Weeks)
  - Stabilize Basin/Stormwater Management Facility No. 1 and install landscaping. (Two Weeks)
  - During grading and after each rainfall, the contractor shall inspect and provide necessary maintenance to sediment control measures.
  - Following initial soil disturbance or disturbance, permanent or temporary stabilization shall be completed with:
    - 7 calendar days for all perimeter Sediment Control Structures, Dikes, Swales, ditch perimeter slopes and all slopes greater than 3:1.
    - 14 calendar days for all other disturbed areas.
  - Obtain permission from Inspector before proceeding with removal of sediment controls.
  - Once site is completely stabilized, (Section 1 and Section 2), flush Storm drain system, remove temporary pipe and temporary blocking, earth dikes traps and temporary sediment basin no. 2 and install remaining storm drain from P1-36 thru I-39. Convert sediment basin no. 1 to a permanent stormwater management facility, by replacing dewatering device with extended detention/pipe and cap as shown in details. Remove any temporary blocking from structure. (Three weeks)
  - Upon stabilization of all disturbed areas and with approval of sediment control inspector, remove all remaining sediment control devices and install surface paving. (One Week)



**24.0 MATERIALS SPECIFICATIONS**

TABLE 27 GEOTEXTILE FABRICS

CLASS	APPARENT OPENING SIZE MM. MAX.	GRAB TENSILE STRENGTH LB. MIN.	BURST STRENGTH P.S.I. MIN.
A	0.30	250	500
B	0.60	200	320
C	0.30	200	320
D	0.60	90	145
E	0.30	90	145
F (SILT FENCE)	0.40-0.80*	90	190

**OPERATION AND MAINTENANCE SCHEDULE FOR STORMWATER MANAGEMENT DETENTION FACILITY**

STORMWATER MANAGEMENT FACILITY  
ROUTINE MAINTENANCE: Home Owners Association

- FACILITY WILL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHOULD BE PERFORMED DURING WET WEATHER TO DETERMINE IF FUNCTIONING PROPERLY.
- TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES A YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHOULD BE MOWED AS NEEDED.
- DEBRIS AND LITTER NEXT TO THE OUTLET STRUCTURE SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
- VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS RIPRAP OUTLET AREAS SHALL BE REPAIRED AS SOON AS IT IS NOTICED.

NON-ROUTINE MAINTENANCE: Howard County Department of Public Works

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

**POND SUMMARY**

	2 YEAR	10 YEAR	100 YEAR
FLOW INTO POND	25.95 c.f.s.	60.67 c.f.s.	102.41 c.f.s.
FLOW OUT OF POND	0.46 c.f.s.	10.98 c.f.s.	73.76 c.f.s.
W.S. ELEVATION	294.58	296.12	297.22
STORAGE VOLUME	1.19 AC FT	1.74 AC FT	2.24 AC FT

**OPERATION, MAINTENANCE AND INSPECTION**

INSPECTION OF THE POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, SCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-375). THE POND OWNER(S), AND ANY HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION, AND MAINTENANCE THEREOF. THE POND OWNER(S) SHALL PROMPTLY NOTIFY THE SOIL CONSERVATION DISTRICT OF ANY UNUSUAL OBSERVATIONS THAT MAY BE INDICATORS OF DISTRESS SUCH AS EXCESSIVE SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.

THESE PLANS HAVE BEEN REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

*Cheryl Simon/B.* 3/26/00  
USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

*Robert H. Vogel* 3/26/00  
HOWARD SOIL CONSERVATION DISTRICT DATE

**ENGINEERS CERTIFICATE**

"I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

*Robert H. Vogel* 12/29/99  
SIGNATURE OF ENGINEER DATE  
ROBERT H. VOGEL

**DEVELOPER'S CERTIFICATE**

"I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

*Charles Skirven* 12/23/99  
SIGNATURE OF DEVELOPER DATE  
CHARLES SKIRVEN

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

*Charles Skirven* 3/29/00  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Condy Hamilton* 4/11/00  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Robert H. Vogel* 4/11/00  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

"AS-BUILT" CERTIFICATION

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED ON THE "AS-BUILT" PLANS AND MEETS APPROVED PLANS AND SPECIFICATIONS.

*Robert H. Vogel* 4/11/00  
ROBERT H. VOGEL, P.E. NO. 16193 DATE

CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ON-SITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ON-SITE SITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERING STANDARDS. CERTIFICATION DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

NO.	REVISION	DATE

**SWM POND, PROFILES AND DETAILS HOLLIFIELD ESTATES I SECTION ONE**

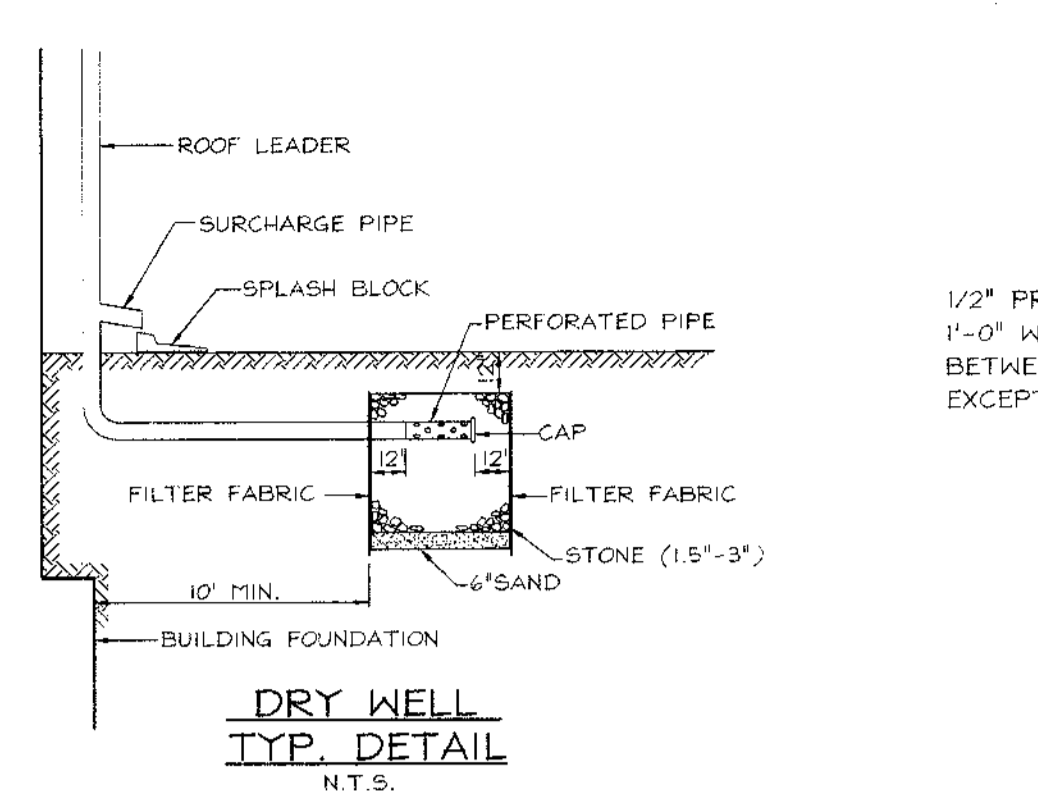
TAX MAP #18 PARCEL 1  
2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**VOGEL & ASSOCIATES**  
ENGINEERS-SURVEYORS-PLANNERS

3501 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
Tel 410.461.5828 Fax 410.465.3966

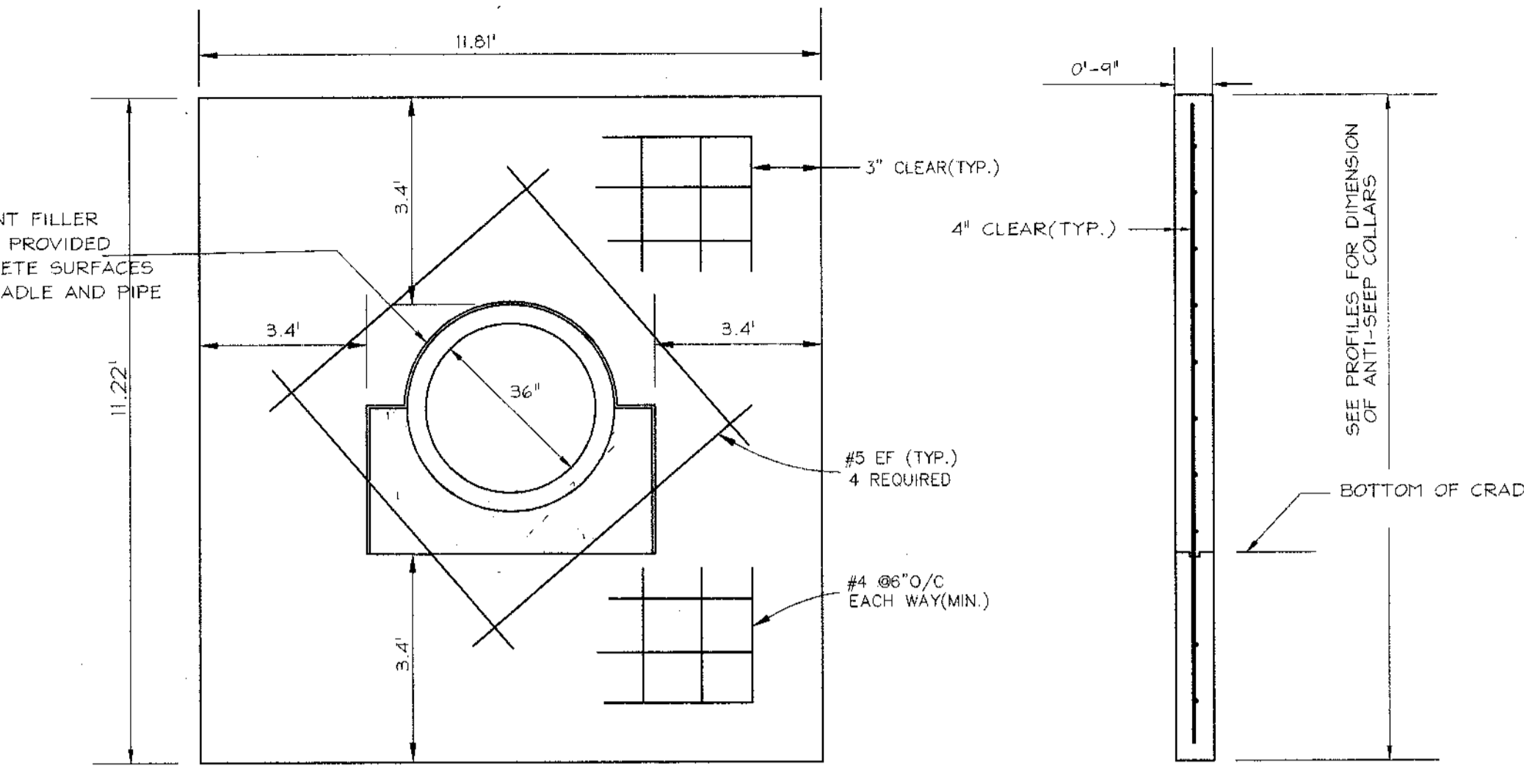
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DRAWN BY: J.C.O.  
CHECKED BY: R.H.V.  
DATE: Oct. 15, 1999  
SCALE: 1"=50'  
H.O. NO.: 99-013

11 SHEET OF 18

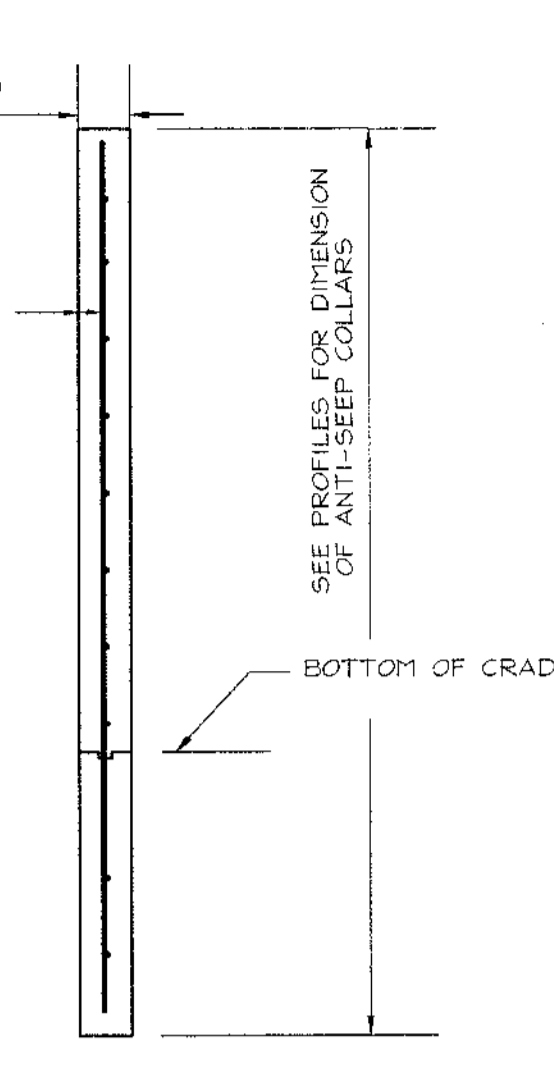


SECTION 1: LOTS 8-13, 33-39  
SECTION 2: LOTS 69-73

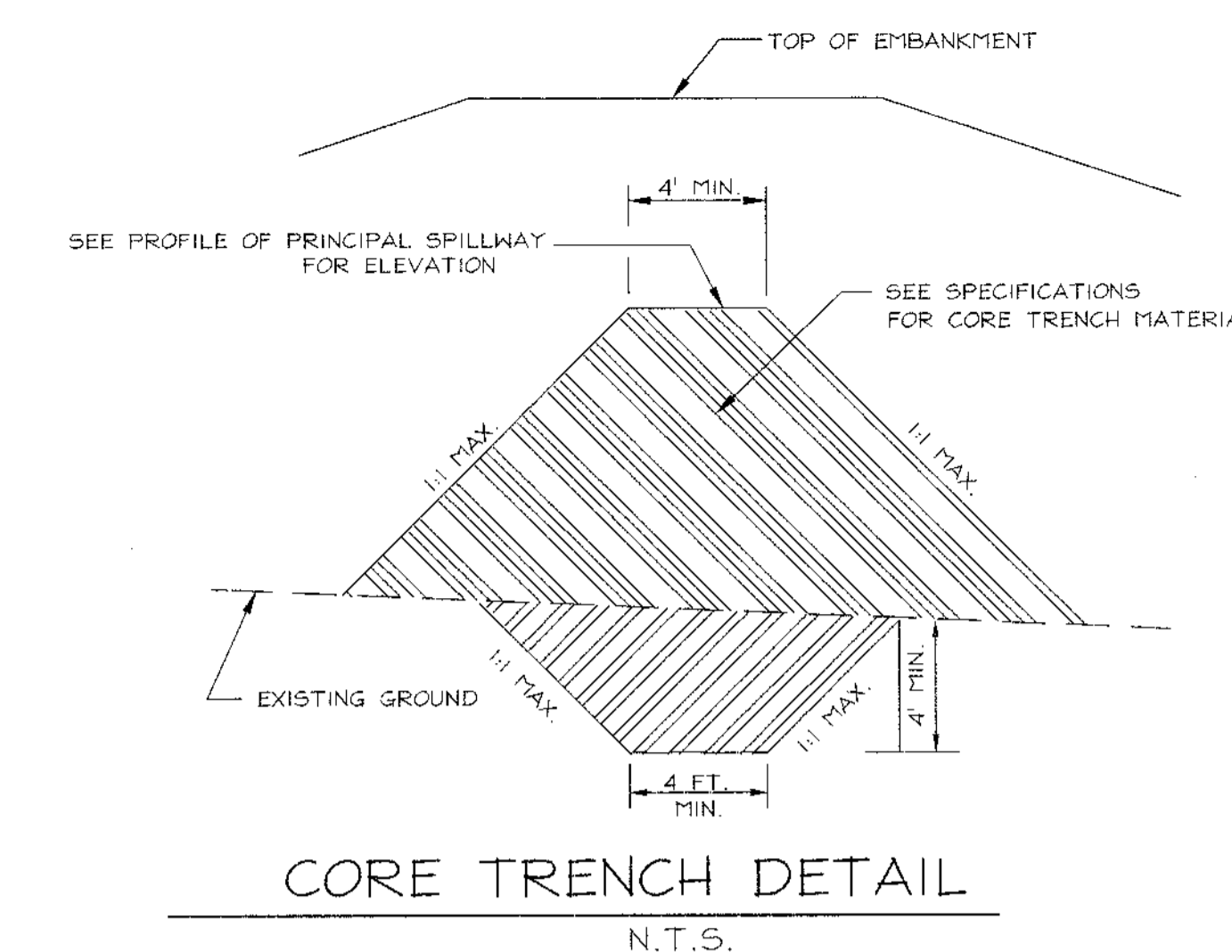
NOTE: DRY WELLS ARE TO BE PROVIDED AT EACH DOWNSPOUT DRAINING AWAY FROM THE ROAD.  
DRY WELLS CANNOT BE PLACED IN DISTRIBUTED SOIL.  
DRY WELLS TO BE SIZED AT TIME OF SITE DEVELOPMENT PLAN.



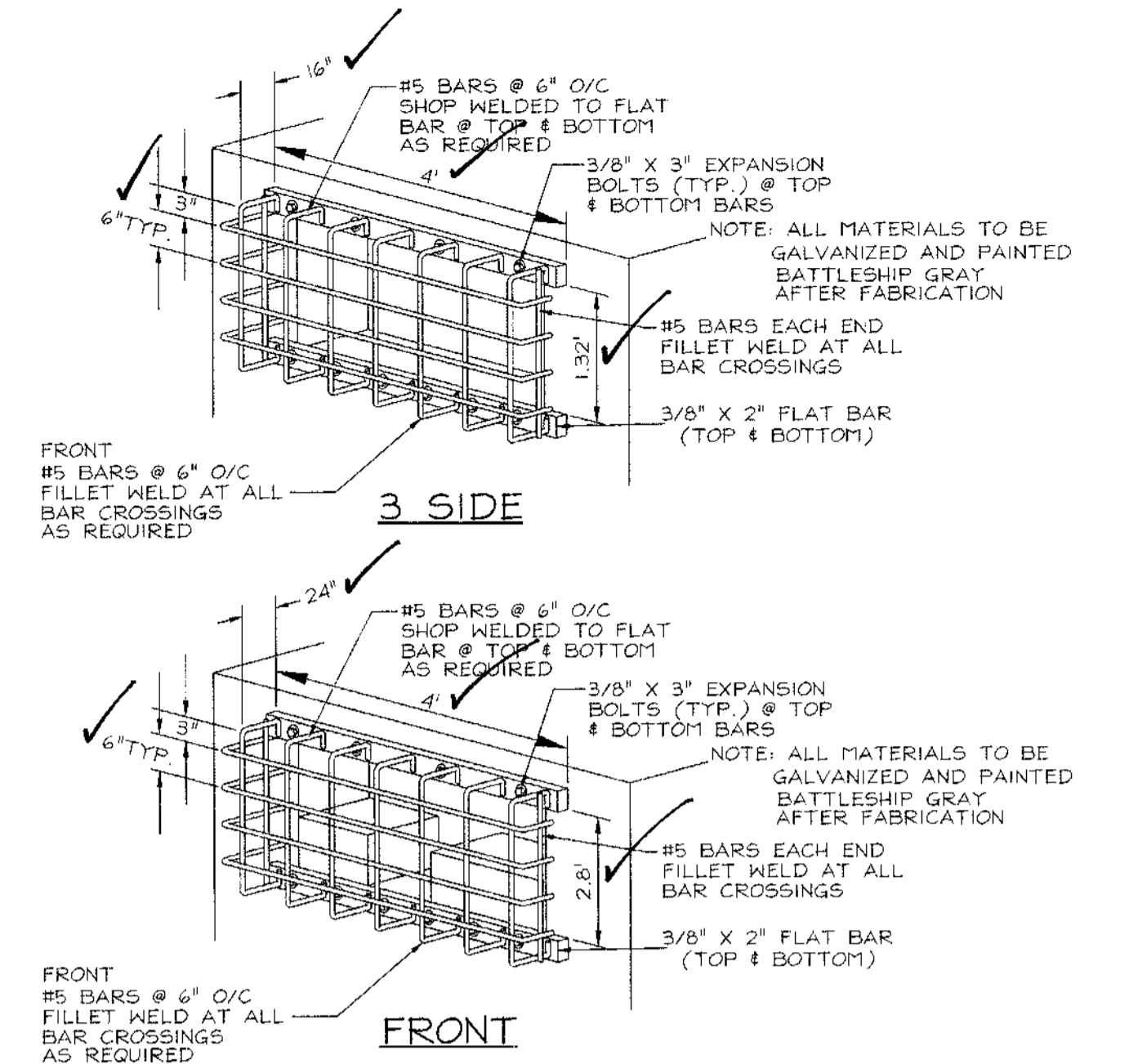
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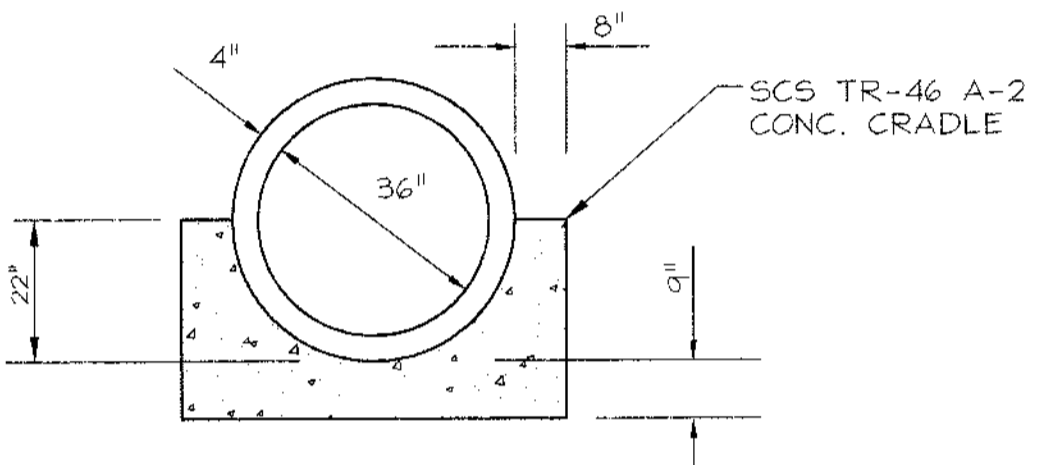
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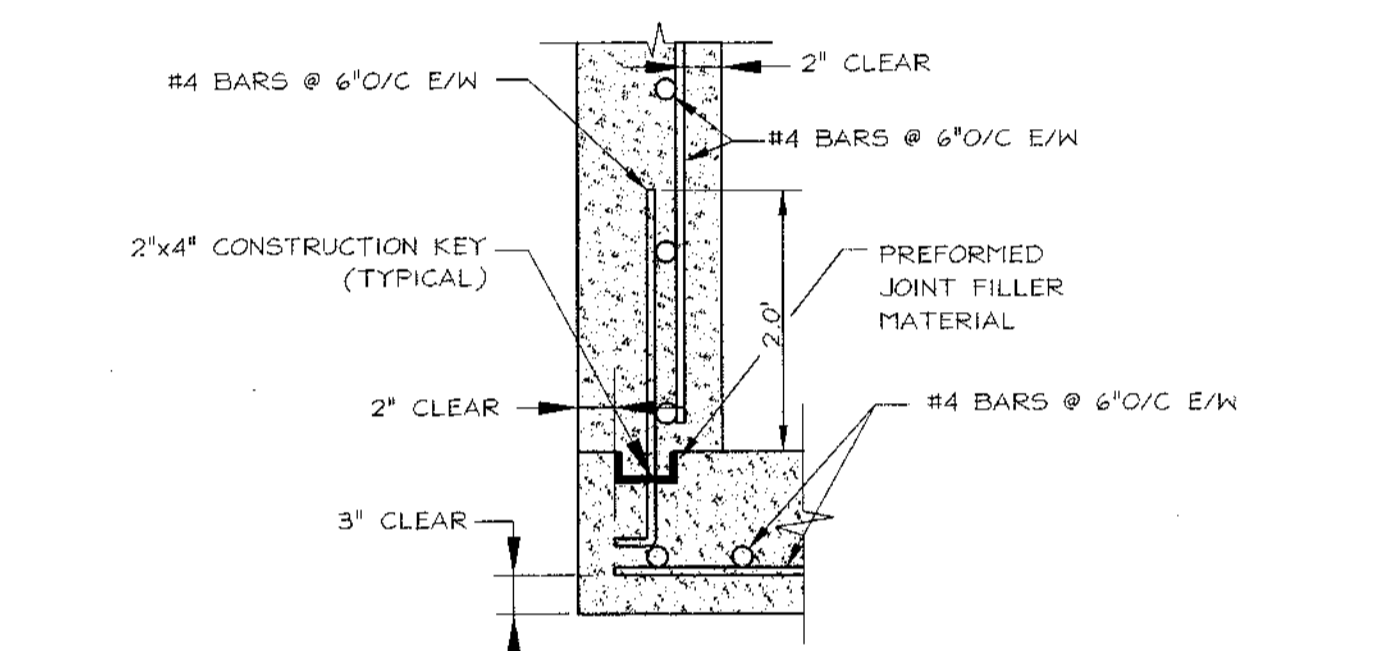
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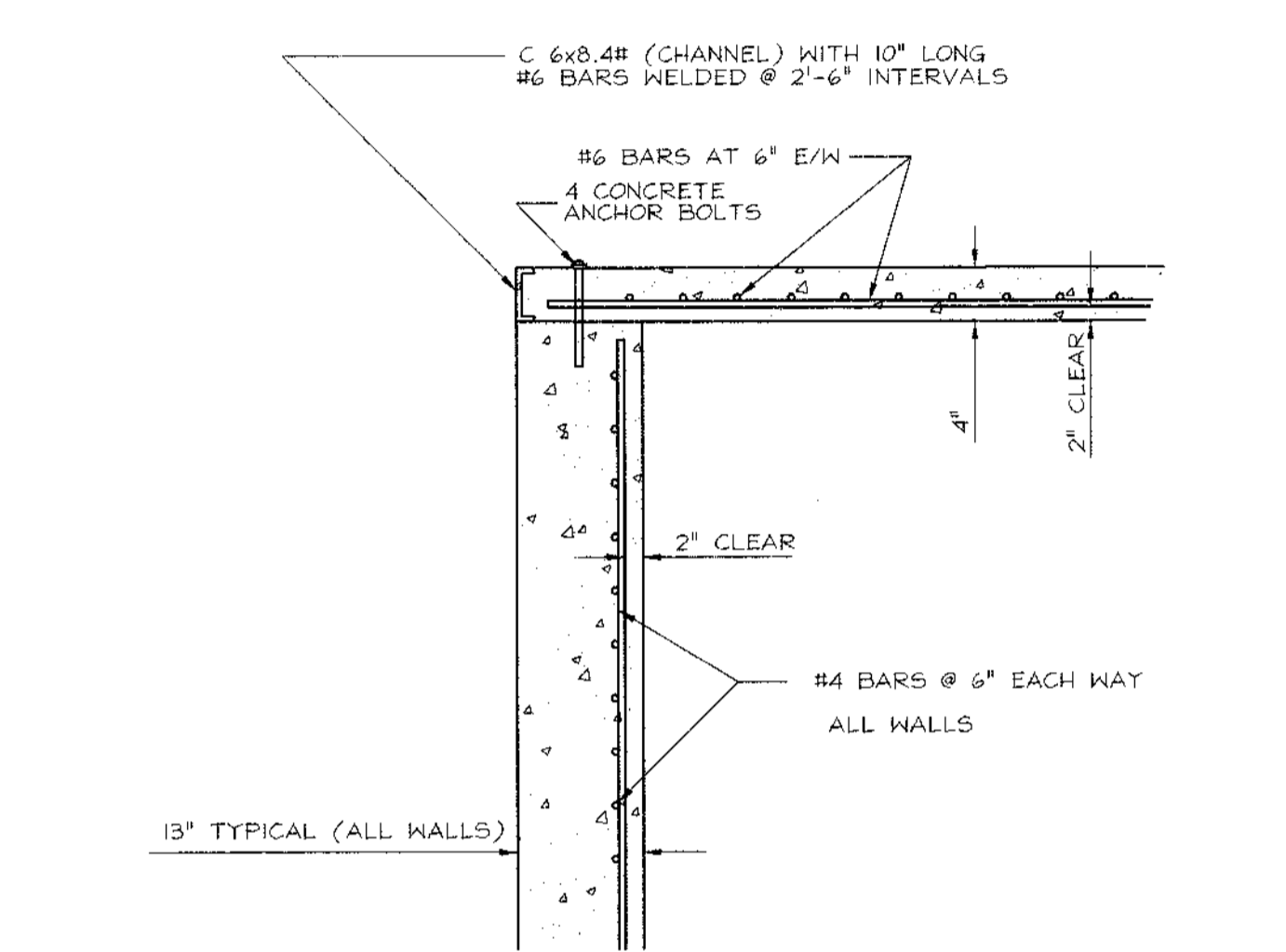
TRASH RACK DETAIL  
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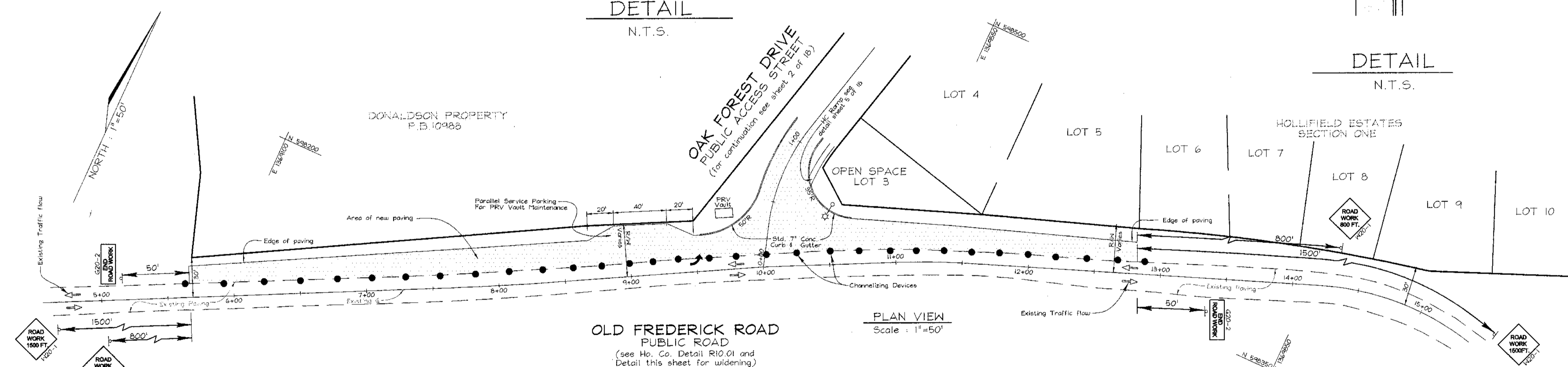
DETAIL OF CONCRETE CRADLE  
N.T.S.



WALL TO BOTTOM SLAB CONNECTION  
DETAIL  
N.T.S.



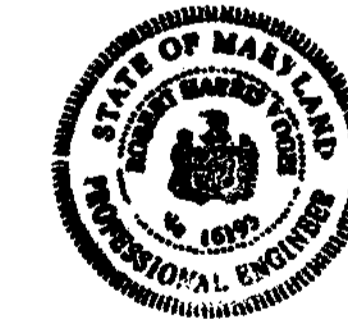
DETAIL  
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TRAFFIC CONTROL PLAN  
SCALE: 1"=50'

**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.  
Conditions Where Practice Applies  
This practice is applicable to areas subject to dust blowing and movement where on and off-site damage is likely without treatment.  
Specifications  
Temporary Methods  
1. Mulches - See standards for vegetative stabilization with mulches only. Mulch should be crimped or tacked to prevent blowing.  
2. Vegetative Cover - See standards for temporary vegetative cover.  
3. Tillage - To roughen surface and bring clods to the surface. This is an emergency measure which should be used before soil blowing starts. Begin plowing on windward side of site. Chisel-type plows spaced about 12' apart, spring-toothed harrows, and similar plows are examples of equipment which may produce the desired effect.  
4. Irrigation - This is generally done as an emergency treatment. Site is sprinkled with water until the surface is moist. Repeat as needed. At no time should the site be irrigated to the point that runoff begins to flow.  
5. Barriers - Solid board fences, silt fences, snow fences, burlap fences, straw bales, and similar material can be used to control air currents and soil blowing. Barriers placed at right angles to prevailing currents at intervals of about 10 times their height are effective in controlling soil blowing.  
6. Calcium Chloride - Apply at rates that will keep surface moist. May need retreatment.  
Permanent Methods  
1. Permanent vegetation - See standards for permanent vegetative cover, and permanent stabilization with sod. Existing trees or large shrubs may afford valuable protection if left in place.  
2. Topping - Covering with less erosive soil materials. See standards for Topping.  
3. Stone - Cover surface with crushed stone or coarse gravel.  
References  
1. Agricultural Handbook 346. Wind Erosion Forces in the United States and Their Use in Predicting Soil Loss.  
2. Agricultural Information Bulletin 354. How to Control Wind Erosion, USDA-ARS.

"AS-BUILT" CERTIFICATION  
I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS APPROVED PLANS AND SPECIFICATIONS.  
ROBERT H. VOGEL, P.E. NO. 16193  
DATE 1/10/05



DEVELOPER'S CERTIFICATE  
"I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."  
CHARLES SKIRVEN  
DATE 12/23/99

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.  
CHIEF, BUREAU OF HIGHWAYS  
DATE 3/29/00

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE 4/3/00

OWNER/DEVELOPER  
Mr. Charles Skirven, Esq.  
5401 Twin Knolls Road, Suite 10  
Columbia, Maryland 21046  
(410) 995-0081

NO.	REVISION	DATE

**SWM MISCELLANEOUS DETAILS AND TRAFFIC CONTROL PLAN**  
**HOLLIFIELD ESTATES I**  
SECTION ONE  
TAX MAP #18 PARCEL 1  
2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**VOGEL & ASSOCIATES**  
ENGINEERS-SURVEYORS-PLANNERS  
3691 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
Tel 410.461.5828 Fax 410.465.3966

THESE PLANS HAVE BEEN REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.  
USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE  
Cheryl Simms/B. Skirven

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.  
HOWARD SOIL CONSERVATION DISTRICT DATE  
Mark Skirven 3/24/00

ENGINEER'S CERTIFICATE  
"I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."  
ROBERT H. VOGEL  
DATE 12/23/99

SIGNATURE OF DEVELOPER  
CHARLES SKIRVEN  
DATE 12/23/99

SIGNATURE OF ENGINEER  
ROBERT H. VOGEL  
DATE 12/23/99

SIGNATURE OF CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE 4/3/00

DESIGN BY: G.A.H.  
DRAWN BY: J.C.O.  
CHECKED BY: R.H.V.  
DATE: Oct. 12, 1999  
SCALE: 1"=50'  
W.O. NO.: 99-013  
12 SHEET OF 18

# POND SPECIFICATIONS

THESE SPECIFICATIONS ARE APPROPRIATE TO ALL PONDS WITHIN THE SCOPE OF THE STANDARD FOR PRACTICE MD-378. ALL REFERENCES TO ASTM AND AASHTO SPECIFICATIONS APPLY TO THE MOST RECENT VERSION.

## SITE PREPARATION

AREAS DESIGNATED FOR BORROW AREAS, EMBANKMENT, AND STRUCTURAL WORKS SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL. ALL TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED. CHANNEL BANKS AND SHARP BREAKS SHALL BE SLOPED TO NO STEEPER THAN 1:1 AREAS TO BE COVERED BY THE RESERVOIR WILL BE CLEARED OF ALL TREES, BRUSH, LOGS, RUBBISH AND OTHER OBJECTIONABLE MATERIAL UNLESS OTHERWISE DESIGNATED TO THE PLANS. TREES, BRUSH AND STUMPS SHALL BE CUT APPROXIMATELY LEVEL WITH THE GROUND SURFACE. FOR DRY STORMWATER MANAGEMENT PONDS, A MINIMUM OF A 50 FOOT RADIUS AROUND THE INLET STRUCTURE SHALL BE CLEARED.

ALL CLEARED AND GRUBBED MATERIAL SHALL BE DISPOSED OF OUTSIDE AND BELOW THE LIMITS OF THE DAM AND RESERVOIR AS DIRECTED BY THE OWNER OR HIS REPRESENTATIVE. WHEN SPECIFIED, A SUFFICIENT QUANTITY OF TOPSOIL WILL BE STOCKPILED IN A SUITABLE LOCATION FOR USE ON THE EMBANKMENT AND OTHER DESIGNATED AREAS.

## EARTH FILL

MATERIAL - THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREAS. IT SHALL BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN 6", FROZEN OR OTHER OBJECTIONABLE MATERIALS. FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT AND CUT OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL. CONSIDERATION MAY BE GIVEN TO THE USE OF OTHER MATERIALS IN THE EMBANKMENT IF DESIGN AND CONSTRUCTION ARE SUPERVISED BY A GEOTECHNICAL ENGINEER.

PLACEMENT - AREAS ON WHICH FILL IS TO BE SHALL BE SCARIFIED PRIOR TO PLACEMENT OF FILL. FILL MATERIALS SHALL BE PLACED IN MAXIMUM 8 INCH THICK (BEFORE COMPACTION) LAYERS WHICH ARE TO BE CONTINUOUS OVER THE ENTIRE LENGTH OF THE FILL. THE MOST PERMEABLE BORROW MATERIAL SHALL BE PLACED IN THE DOWNSTREAM PORTIONS OF THE EMBANKMENT. THE PRINCIPAL SPILLWAY MUST BE INSTALLED CONCURRENTLY WITH FILL PLACEMENT AND NOT EXCAVATED INTO THE EMBANKMENT.

COMPACTION - THE MOVEMENT OF AND SPREADING EQUIPMENT OVER THE FILL SHALL BE CONTROLLED SO THAT THE ENTIRE SURFACE OF EACH LIFT SHALL BE TRAVEL BY NOT LESS THAN ONE TREAD TRACK OF THE EQUIPMENT OR COMPACTION SHALL BE ACHIEVED BY A MINIMUM OF FOUR COMPLETE PASSES OF A SHEEPSFOOT RUBBER TIED OR VIBRATORY ROLLER. FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SUCH THAT THE REQUIRED DEGREE OF COMPACTION WILL BE OBTAINED WITH THE EQUIPMENT USED. THE FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SO THAT IF FORMED INTO A BALL, IT WILL NOT CRUMBLE YET NOT BE SO WET THAT WATER CAN BE SQUEEZED OUT.

WHERE A MINIMUM REQUIRED DENSITY IS SPECIFIED, IT SHALL NOT BE LESS 90% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN +/- 2% OF THE OPTIMUM. EACH LAYER OF FILL SHALL BE COMPACTED AS NECESSARY TO OBTAIN THAT DENSITY, AND IS TO BE CERTIFIED BY THE ENGINEER AT THE TIME OF CONSTRUCTION. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T-99.

CUT OFF TRENCH - THE CUT OFF TRENCH SHALL BE EXCAVATED INTO IMPERVIOUS MATERIAL ALONG OR PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE BOTTOM WIDTH OF THE TRENCH SHALL BE GOVERNED BY THE EQUIPMENT USED FOR EXCAVATION, WITH THE MINIMUM WIDTH BEING FOUR FEET. THE DEPTH SHALL BE AT LEAST FOUR FEET BELOW EXISTING GRADE OR AS SHOWN ON THE PLANS. THE SIDE SLOPES OF THE TRENCH SHALL BE 1 TO 1 OR FLATTER. THE BACKFILL SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY.

## STRUCTURE BACKFILL

BACKFILL ADJACENT TO PIPES OR STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL. THE FILL MATERIAL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL NEEDS TO BE PLACED COMPLETELY UNDER AND ADJACENT TO THE PIPE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A CONCRETE FT OF 24" OR GREATER OVER THE STRUCTURE OR PIPE.

## PIPE CONDUITS

ALL PIPES SHALL BE CIRCULAR IN CROSS SECTION.

CORRUGATED METAL PIPE - ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR CORRUGATED METAL PIPE:

1. MATERIALS - (STEEL PIPE) - THIS PIPE AND ITS APPURTENANCES SHALL BE GALVANIZED AND FULLY BITUMINOUS COATED AND SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-190 TYPE A WITH WATER TIGHT COUPLING BANDS. ANY BITUMINOUS COATING DAMAGED OR OTHERWISE REMOVED SHALL BE REPLACED WITH COLD APPLIED BITUMINOUS COATING COMPOUND. STEEL PIPES WITH POLYMERIC COATINGS SHALL HAVE A MINIMUM COATING THICKNESS OF 0.01 INCH (0.10 MIL) ON BOTH SIDES OF THE PIPE. THE FOLLOWING COATINGS OR AN APPROVED EQUAL MAY BE USED: NEXON, PLASTICOTE, BLAC-KLAD, AND BETH-CU-LOY. COATED CORRUGATED STEEL PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M-245 AND M-246.

2. MATERIALS - (ALUMINUM COATED STEEL PIPE) - THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-274 WITH WATER TIGHT COUPLING BANDS OR FLANGES. ANY ALUMINUM COATING DAMAGED OR OTHERWISE REMOVED SHALL BE REPLACED WITH COLD APPLIED BITUMINOUS COATING COMPOUND.

3. MATERIALS - (ALUMINUM PIPE) - THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-196 OR M-211 WITH WATER TIGHT COUPLING BANDS OR FLANGES. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER. HOT DIP GALVANIZED BOLTS MAY BE USED FOR CONNECTIONS. THE PH OF THE SURROUNDING SOILS SHALL BE BETWEEN 4 AND 9.

4. COUPLING BANDS, ANTI-SEEP COLLARS, END SECTIONS, ETC., MUST BE COMPOSED OF THE SAME MATERIAL AS THE PIPE. METALS MUST BE INSULATED FROM DISSIMILAR MATERIALS WITH USE RUBBER OR PLASTIC INSULATING MATERIALS AT LEAST 24 MILS IN THICKNESS.

3. CONNECTIONS - ALL CONNECTIONS WITH PIPES MUST BE COMPLETELY WATER TIGHT. THE DRAIN PIPE OR BARREL CONNECTION TO THE RISER SHALL BE WELDED ALL AROUND WHEN THE PIPE AND RISER ARE METAL. ANTI-SEEP COLLARS SHALL BE CONNECTED TO THE PIPE IN SUCH A MANNER AS TO BE COMPLETELY WATER TIGHT. DIMPLE BANDS ARE NOT CONSIDERED TO BE WATER TIGHT.

ALL CONNECTIONS SHALL USE A RUBBER OR NEOPRENE GASKET WHEN JOINING PIPE SECTIONS. THE END OF EACH PIPE SHALL BE ROLLED AND ADEQUATE NUMBER OF CORRUGATIONS TO ACCOMMODATE THE BAND GASKETS HAVING MINIMUM DIAMETER OF 1/2" GREATER THAN THE CORRUGATION DEPTH. PIPES 24" IN DIAMETER OR LARGER SHALL BE CONNECTED BY A 24" LONG ANNUAL CORRUGATED BAND USING RODS AND LUGS. A 12" WIDE BY 3/8" THICK CLOSED CELL CIRCULAR NEOPRENE GASKET WILL BE INSTALLED ON THE END OF EACH PIPE FOR A TOTAL OF 24".

HELICALLY CORRUGATED PIPE SHALL HAVE EITHER CONTINUOUSLY WELDED SEAMS OR HAVE LOCK SEAMS WITH INTERNAL CAULKING OR A NEOPRENE BEAD.

4. BEDDING - THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.

5. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL."

6. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

REINFORCED CONCRETE PIPE - ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR REINFORCED CONCRETE PIPE:

1. MATERIALS - REINFORCED CONCRETE PIPE SHALL HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS AND SHALL EQUAL OR EXCEED ASTM DESIGNATION C-351.

2. BEDDING - ALL REINFORCED CONCRETE PIPE CONDUITS SHALL BE LAID IN A CONCRETE BEDDING FOR THEIR ENTIRE LENGTH. THIS BEDDING SHALL CONSIST OF HIGH SLUMP CONCRETE PLACED UNDER THE PIPE AND UP THE SIDES OF THE PIPE AT LEAST 10% OF ITS OUTSIDE DIAMETER WITH A MINIMUM THICKNESS OF 3 INCHES, OR AS SHOWN ON THE DRAWINGS.

3. LAYING PIPE - BELL AND SPIGOT PIPE SHALL BE PLACED WITH THE BELL END UPSTREAM. JOINTS SHALL BE MADE IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL. AFTER THE JOINTS ARE SEALED FOR THE ENTIRE LINE, THE BEDDING SHALL BE PLACED SO THAT ALL SPACES UNDER THE PIPE ARE FILLED. CARE SHALL BE EXERCISED TO PREVENT ANY DEVIATION FROM THE ORIGINAL LINE AND GRADE OF THE PIPE. THE FIRST JOINT MUST BE LOCATED WITHIN 2 FEET FROM THE RISER.

4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL."

5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

POLYVINYL CHLORIDE (PVC) PIPE - ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR POLYVINYL CHLORIDE (PVC) PIPE:

1. MATERIALS - PVC PIPE SHALL BE PVC-1120 OR PVC-1220 CONFORMING TO ASTM D-1785 OR ASTM D-2241.

2. JOINTS AND CONNECTIONS TO ANTI-SEEP COLLARS SHALL BE COMPLETELY WATER TIGHT.

3. BEDDING - THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.

4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL."

5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

## CONCRETE

CONCRETE SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 905.

THE RIPRAP SHALL BE PLACED TO THE REQUIRED THICKNESS IN ONE OPERATION. THE ROCK SHALL BE DELIVERED AND PLACED IN A MANNER THAT WILL INSURE THE RIPRAP IN PLACE SHALL BE REASONABLY HOMOGENEOUS WITH THE LARGER ROCKS UNIFORMLY DISTRIBUTED AND FIRMLY IN CONTACT ONE TO ANOTHER WITH THE SMALLER ROCKS FILLING THE VOIDS BETWEEN THE LARGER ROCKS. FILTER CLOTH SHALL BE REPLACED UNDER ALL RIPRAP AND SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 915.12.9.

## CARE OF WATER DURING CONSTRUCTION

ALL WORK ON THE PERMANENT STRUCTURES SHALL BE CARRIED OUT IN AREAS FREE FROM WATER. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ALL TEMPORARY DIKES, LEVEES, COFFERDAMS, DRAINAGE CHANNELS, AND STREAM DIVERSIONS NECESSARY TO PROTECT THE AREAS TO BE OCCUPIED BY THE PERMANENT WORKS. THE CONTRACTOR SHALL ALSO FURNISH, INSTALL, OPERATE AND MAINTAIN ALL NECESSARY PUMPING AND OTHER EQUIPMENT REQUIRED FOR REMOVAL OF WATER FROM THE VARIOUS PARTS OF THE WORK AND FOR MAINTAINING THE EXCAVATIONS, FOUNDATION AND OTHER PARTS OF THE WORK FREE FROM WATER AS REQUIRED OR DIRECTED BY THE ENGINEER FOR CONSTRUCTING EACH PART OF THE WORK. AFTER HANDING OVER THE PROJECT, THE CONTRACTOR SHALL REMOVE OR LEVELED AND GRADED TO THE EXTENT REQUIRED TO PREVENT OBSTRUCTION IN ANY DEGREE WHATSOEVER OF THE FLOW OF WATER TO THE SPILLWAY OR OUTLET WORKS AND SO AS NOT TO INTERFERE IN ANY WAY WITH THE OPERATION OR MAINTENANCE OF THE STRUCTURE. STREAM DIVERSIONS SHALL BE MAINTAINED UNTIL THE FULL FLOW CAN BE PASSED THROUGH THE PERMANENT WORKS. THE REMOVAL OF WATER FROM THE REQUIRED EXCAVATION AND THE FOUNDATION SHALL BE ACCOMPLISHED IN A MANNER AND TO THE EXTENT THAT WILL MAINTAIN THE STABILITY OF THE EXCAVATED SLOPES AND BOTTOM OF THE REQUIRED EXCAVATIONS AND WILL ALLOW SATISFACTORY PERFORMANCE OF ALL AND CONSTRUCTION OPERATIONS. DURING THE PLACING AND COMPACTION OF MATERIAL IN REQUIRED EXCAVATIONS, THE WATER LEVEL AT THE LOCATIONS BEING REFILLED SHALL BE MAINTAINED BELOW THE BOTTOM OF THE EXCAVATION AT SUCH LOCATIONS WHICH MAY REQUIRE DRAINING THE WATER TO SUMPS FROM WHICH THE WATER SHALL BE PUMPED.

## STABILIZATION

ALL BORROW AREAS SHALL BE GRADED TO PROVIDE PROPER DRAINAGE AND LEFT IN A SLIGHTLY CONDITION. ALL EXPOSED SURFACES OF THE EMBANKMENT, SPILLWAY, SPOIL AND BORROW AREAS, AND BERMS SHALL BE STABILIZED BY SEEDING, LIMING, FERTILIZING AND MULCHING IN ACCORDANCE WITH THE MARYLAND SOIL CONSERVATION SERVICE STANDARDS AND SPECIFICATIONS FOR CRITICAL AREA PLANTING (MD-342) OR AS SHOWN ON THE ACCOMPANYING DRAWINGS.

## EROSION AND SEDIMENT CONTROL

CONSTRUCTION OPERATIONS WILL BE CARRIED OUT IN SUCH A MANNER THAT EROSION WILL BE CONTROLLED AND WATER AND AIR POLLUTION MINIMIZED. STATE AND LOCAL LAWS CONCERNING POLLUTION ABATEMENT WILL BE FOLLOWED. CONSTRUCTION PLANS SHALL DETAIL EROSION AND SEDIMENT CONTROL MEASURES TO BE EMPLOYED DURING THE CONSTRUCTION PROCESS.

## SWM POND MAINTENANCE REQUIREMENTS

- SILT SHALL BE REMOVED WHEN ACCUMULATION EXCEEDS SIX (6) INCHES IN BASINS WITHOUT FOREBAYS, IN BASIN WITH FOREBAYS, SILT SHALL BE REMOVED WHEN THE ACCUMULATION EXCEEDS FOUR (4) INCHES IN THE FOREBAY.
- ACCUMULATED PAPER, TRASH AND DEBRIS SHALL BE REMOVED AS NECESSARY.
- VEGETATION GROWING ON THE EMBANKMENT TOP AND FACES IS NOT ALLOWED TO EXCEED 18 INCHES IN HEIGHT AT ANY TIME.
- ANNUAL INSPECTION AND REPAIR, IF REQUIRED, OF THE STRUCTURE SHALL BE PERFORMED.

## OPERATION, MAINTENANCE AND INSPECTION

INSPECTION OF THE POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, SCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378), THE POND OWNER(S) AND THE HEIRS SUCCESSORS OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION AND MAINTENANCE THEREOF. THE POND OWNER(S) SHALL PROMPTLY NOTIFY THE SOIL CONSERVATION DISTRICT OF ANY UNUSUAL OBSERVATIONS THAT MAY BE INDICATIONS OF DISTRESS SUCH AS EXCESSIVE SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.

HILLS - CARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION									
PROJECT NAME: HOLLIFIELD ESTATES BORING # B-1									
LOCATION: HOWARD COUNTY, MARYLAND JOB # 97226A									
DATE STARTED: 9-2-97		HAMMER WT. 140 LBS.		HOLE DIAMETER 6"		FOREMAN M. SHANBERGER		INSPECTOR	
DATE COMPLETE: 9-2-97		PIPE SIZE 2.0 INCHES OD BORING METHOD JSA		ROCK CORE DIA.		BORING METHOD JSA		DATE COMPLETE: 9-2-97	
ELEV.	SOIL DESCRIPTION	STRATA DEPTH	DEPTH SCALE	SAMPLE BLOWS	NO.	REC.	BORING & SAMPLING NOTES		
...	SURFACE	0.0	1	5-10-9	1	14"	TOPSOIL		
...	BROWN, MEDIUM TO VERY SANDY, DRY TO MOIST, MEDIUM GRAIN, MICROSCOPIC SAND, LITTLE TO SOME SILT (CLAY SAND)	0.0	1	5-10-9	1	14"	TOPSOIL		
...	BROWN, MEDIUM TO VERY SANDY, DRY TO MOIST, MEDIUM GRAIN, MICROSCOPIC SAND, LITTLE TO SOME SILT (CLAY SAND)	1.5	1	10-17-18	2	17"	NO GROUNDWATER ENCOUNTERED WHILE DRILLING		
...	BROWN, MEDIUM TO VERY SANDY, DRY TO MOIST, MEDIUM GRAIN, MICROSCOPIC SAND, LITTLE TO SOME SILT (CLAY SAND)	5	1	7-6-8	3	17"	CAVED IN TO 6" AT COMPLETION		
...	BROWN, MEDIUM TO VERY SANDY, DRY TO MOIST, MEDIUM GRAIN, MICROSCOPIC SAND, LITTLE TO SOME SILT (CLAY SAND)	10	1	15-10-15	4	17"	CAVED IN TO 6" AFTER 24 HOURS		
...	BROWN, MEDIUM TO VERY SANDY, DRY TO MOIST, MEDIUM GRAIN, MICROSCOPIC SAND, LITTLE TO SOME SILT (CLAY SAND)	15	1	7-10-12	5	14"			
...	BOTTOM OF HOLE AT 15'	15.5	1						

HILLS - CARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION									
PROJECT NAME: HOLLIFIELD ESTATES BORING # B-2									
LOCATION: HOWARD COUNTY, MARYLAND JOB # 97226A									
DATE STARTED: 9-2-97		HAMMER WT. 140 LBS.		HOLE DIAMETER 6"		FOREMAN M. SHANBERGER		INSPECTOR	
DATE COMPLETE: 9-2-97		PIPE SIZE 2.0 INCHES OD BORING METHOD JSA		ROCK CORE DIA.		BORING METHOD JSA		DATE COMPLETE: 9-2-97	
ELEV.	SOIL DESCRIPTION	STRATA DEPTH	DEPTH SCALE	SAMPLE BLOWS	NO.	REC.	BORING & SAMPLING NOTES		
...	SURFACE	0.0	1	3-2-4	1	13"	TOPSOIL		
...	BROWN, MEDIUM TO VERY SANDY, DRY TO MOIST, MEDIUM GRAIN, MICROSCOPIC SAND, LITTLE TO SOME SILT (CLAY SAND)	0.0	1	3-2-4	1	13"	TOPSOIL		
...	BROWN, MEDIUM TO VERY SANDY, DRY TO MOIST, MEDIUM GRAIN, MICROSCOPIC SAND, LITTLE TO SOME SILT (CLAY SAND)	5	1	6-10-10	3	17"	NO GROUNDWATER ENCOUNTERED WHILE DRILLING		
...	BROWN, MEDIUM TO VERY SANDY, DRY TO MOIST, MEDIUM GRAIN, MICROSCOPIC SAND, LITTLE TO SOME SILT (CLAY SAND)	10	1	6-8-11	4	17"	CAVED IN TO 6" AT COMPLETION		
...	BROWN, MEDIUM TO VERY SANDY, DRY TO MOIST, MEDIUM GRAIN, MICROSCOPIC SAND, LITTLE TO SOME SILT (CLAY SAND)	15	1	21-37-38	5	17"	CAVED IN TO 6" AFTER 24 HOURS		
...	BOTTOM OF HOLE AT 15'	15.5	1						

HILLS - CARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION									
PROJECT NAME: HOLLIFIELD ESTATES BORING # B-3									
LOCATION: HOWARD COUNTY, MARYLAND JOB # 97226A									
DATE STARTED: 9-2-97		HAMMER WT. 140 LBS.		HOLE DIAMETER 6"		FOREMAN M. SHANBERGER		INSPECTOR	
DATE COMPLETE: 9-2-97		PIPE SIZE 2.0 INCHES OD BORING METHOD JSA		ROCK CORE DIA.		BORING METHOD JSA		DATE COMPLETE: 9-2-97	
ELEV.	SOIL DESCRIPTION	STRATA DEPTH	DEPTH SCALE	SAMPLE BLOWS	NO.	REC.	BORING & SAMPLING NOTES		
...	SURFACE	0.0	1	4-3-3	1	12"	TOPSOIL		
...	BROWN, MEDIUM TO VERY SANDY, DRY TO MOIST, MEDIUM GRAIN, MICROSCOPIC SAND, LITTLE TO SOME SILT (CLAY SAND)	0.0	1	4-3-3	1	12"	TOPSOIL		
...	BROWN, MEDIUM TO VERY SANDY, DRY TO MOIST, MEDIUM GRAIN, MICROSCOPIC SAND, LITTLE TO SOME SILT (CLAY SAND)	4.5	1	5-6-8	2	14"	NO GROUNDWATER ENCOUNTERED WHILE DRILLING		
...	BROWN, MEDIUM TO VERY SANDY, DRY TO MOIST, MEDIUM GRAIN, MICROSCOPIC SAND, LITTLE TO SOME SILT (CLAY SAND)	7.0	1	17-20-17	3	17"	CAVED IN TO 6" AT COMPLETION		
...	BROWN, MEDIUM TO VERY SANDY, DRY TO MOIST, MEDIUM GRAIN, MICROSCOPIC SAND, LITTLE TO SOME SILT (CLAY SAND)	10	1	49-49-37	4	14"	CAVED IN TO 6" AFTER 24 HOURS		
...	BOTTOM OF HOLE AT 15'	15.5	1	31-27-37	5	17"			

## HOLLIFIELD ESTATE SWM EVALUATION

Embarkment and Cut-off Trench Construction

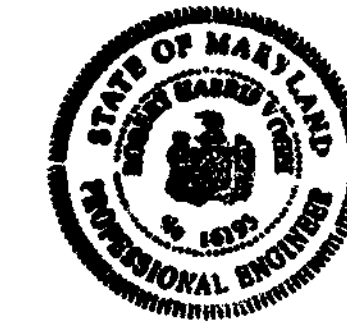
The site should be stripped of topsoil and any other suitable materials from the embankment or structure area in accordance with Soil Conservation Guidelines. After stripping operations have been completed, the exposed subgrade materials should be protected with a loaded dump truck or similar equipment in the presence of a geotechnical engineer or his representative. For areas that are not accessible to dump truck, the exposed materials should be observed and tested by a geotechnical engineer or his representative using a Dynamic Cone Penetrometer. Any excessively soft or loose materials identified by profiling or Penetrometer testing should be excavated to suitable firm soil, and then graded and re-established by backfilling with suitable soil.

A representative of the Geotechnical Engineer should be present to monitor placement and compaction of fill for the embankment and cut-off trench. In accordance with Maryland Soil Conservation Specification 378 soils considered suitable for the center of embankment and cut-off trench shall conform to Unified Soil Classification GC, SC, CH, or CL. A review of the site borings did not indicate the presence of suitable core or cut-off trench materials at the test locations. All fill materials must be placed and compacted in accordance with MD SCS 378 specifications.

Reference:

STORMWATER MANAGEMENT EVALUATION HOLLIFIELD ESTATES, HILLS - CARNES ENGINEERING ASSOCIATES, INC., SEPTEMBER 24, 1997

"AS-BUILT" CERTIFICATION  
I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS APPROVED PLANS AND SPECIFICATIONS.  
ROBERT H. VOGEL, P.E. No. 16193 DATE 10/05/99  
CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ONSITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ONSITE SITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERING STANDARDS CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.



THESE PLANS HAVE BEEN REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.  
USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE 10/05/99  
THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.  
HOWARD SOIL CONSERVATION DISTRICT DATE 10/05/99

ENGINEER'S CERTIFICATE  
I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.  
SIGNATURE OF ENGINEER ROBERT H. VOGEL DATE 10/05/99

DEVELOPER'S CERTIFICATE  
I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.  
SIGNATURE OF DEVELOPER DATE 10/05/99

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
PUBLIC WORKS  
SIGNATURE OF CHIEF, BUREAU OF HIGHWAYS DATE 10/05/99

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
SIGNATURE OF CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 10/05/99

NO. REVISION DATE

POND SPECIFICATIONS AND SOIL BORINGS  
HOLLIFIELD ESTATES I  
SECTION ONE

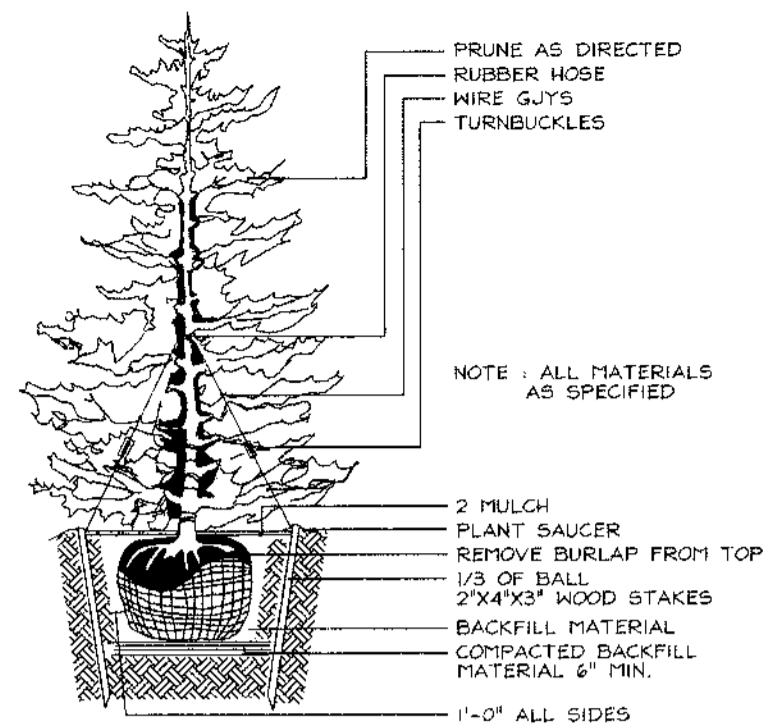
TAX MAP #18 PARCEL I  
2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

OWNER/DEVELOPER  
Mr. Charles Skirven, Esq.  
5401 Twin Knolls Road, Suite 10  
Columbia, Maryland 21046  
(410) 995-0001

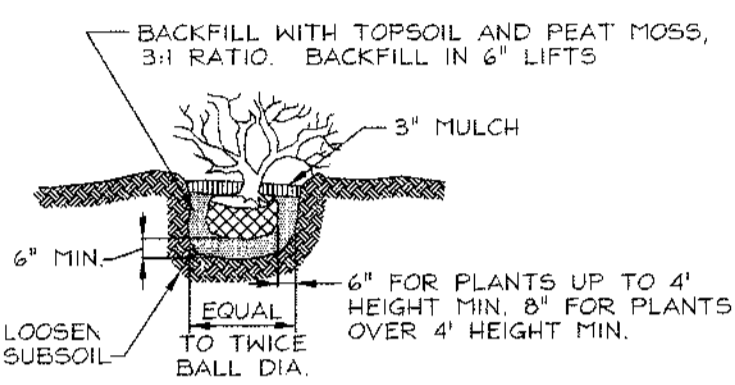
VAVOGL & ASSOCIATES  
ENGINEERS - SURVEYORS - PLANNERS  
3601 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
Tel 410.461.5828 Fax 410.465.3956

DESIGN BY: RHV  
DRAWN BY: PS  
CHECKED BY: RHV  
DATE: Oct. 12, 1999  
SCALE: No Scale  
W.O. NO.: 99-013

13 SHEET OF 18



TYPICAL EVERGREEN TREE PLANTING DETAIL  
NOT TO SCALE



SHRUB PLANTING DETAIL  
NOT TO SCALE

STREET TREE CALCULATIONS			
Street Name	Linear Feet	Required Trees	Provided Trees
Old Frederick Road	2167/40	21	21
River Terrace Drive	767/40	19	19
Oak Forest Drive	2017/40	50	50
Katlin's Court	1009/40	25	25
<b>Total Trees</b>		<b>115</b>	<b>115</b>

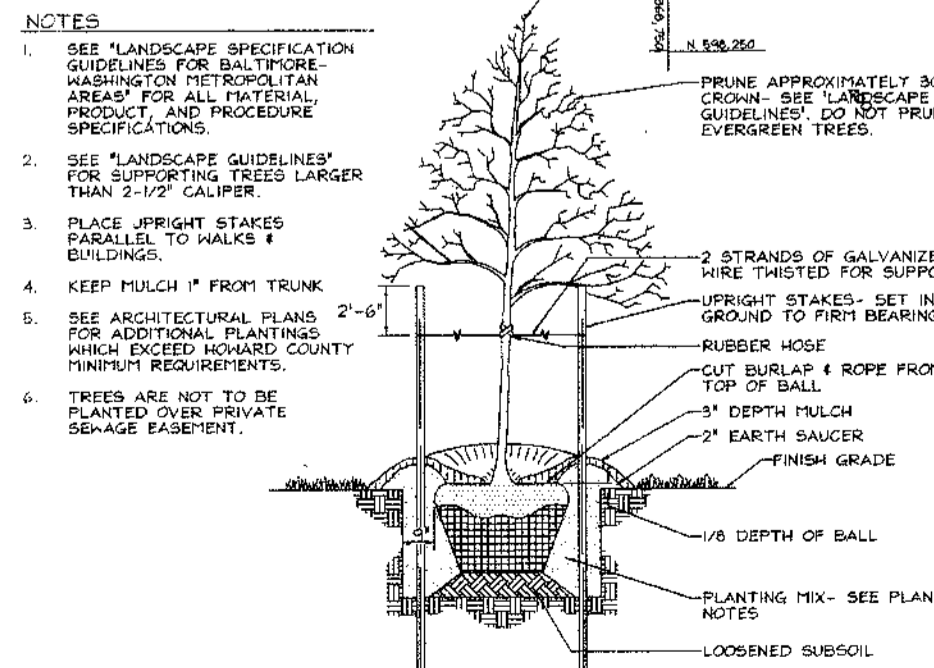
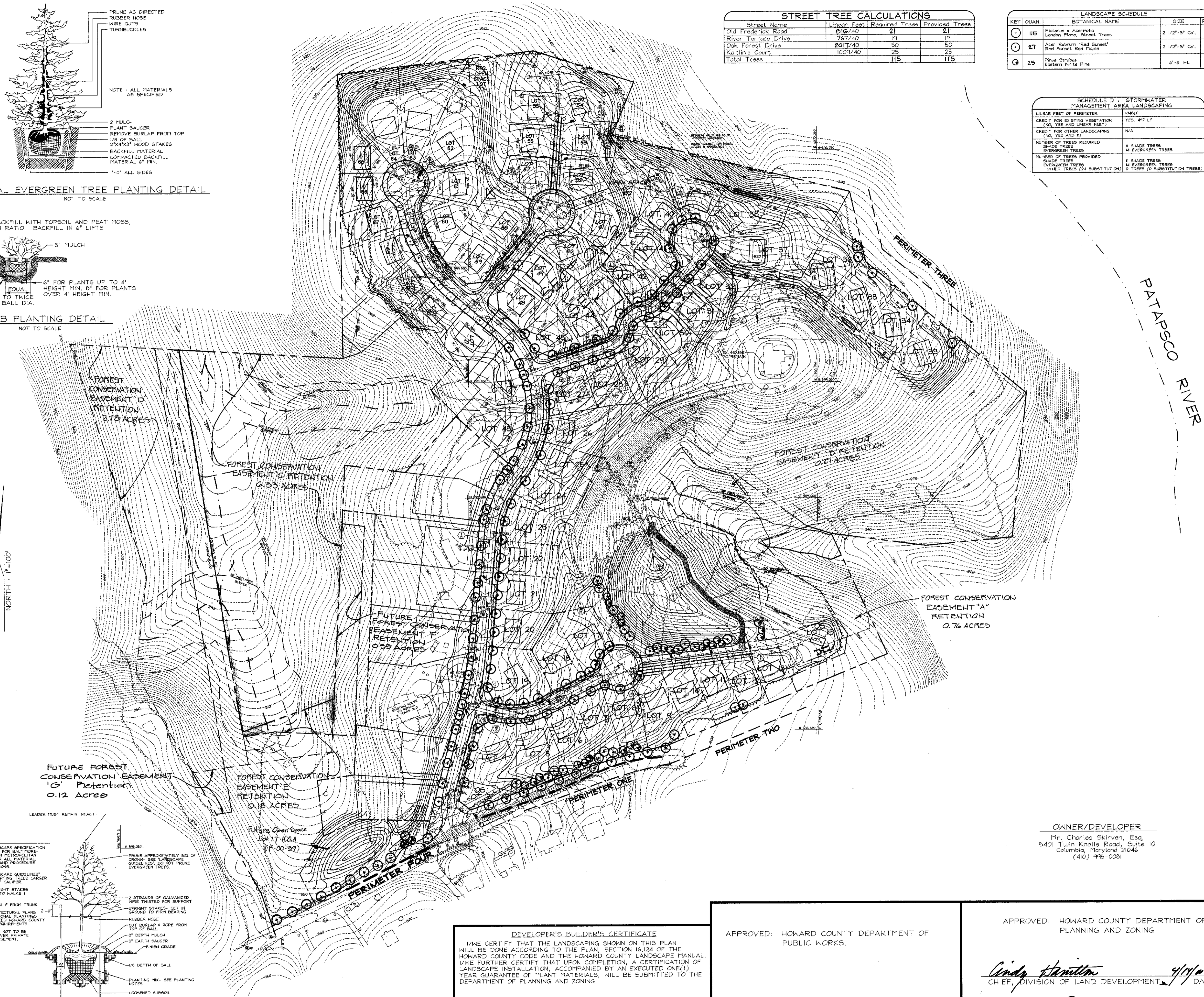
LANDSCAPE SCHEDULE			
KEY	QUAN.	BOTANICAL NAME	REMARKS
C	115	Platanus x Acerifolia London Plane, Street Trees	2 1/2'-3' Cal., 40' c/c
C	27	Acer Rubrum 'Red Sunset' Red Sunset Red Maple	2 1/2'-3' Cal., B + B
G	25	Pinus Strobus Eastern White Pine	6'-8' HL, B + B

SCHEDULE D - STORMWATER MANAGEMENT AREA LANDSCAPING	
LINEAR FEET OF PERIMETER	1064LF
CREDIT FOR EXISTING VEGETATION (NO, YES AND LINEAR FEET)	YES, 497 LF
CREDIT FOR OTHER LANDSCAPING (NO, YES AND #)	N/A
NUMBER OF TREES REQUIRED	11 SHADE TREES 14 EVERGREEN TREES
NUMBER OF TREES PROVIDED	11 SHADE TREES 14 EVERGREEN TREES 0 OTHER TREES (2:1 SUBSTITUTION) 0 OTHER TREES (0 SUBSTITUTION TREES)

SCHEDULE A PERIMETER LANDSCAPE EDGE					
CATEGORY	ADJACENT TO ROADWAYS		ADJACENT TO PERIMETER PROPERTIES		
	One Side	Four Sides	Two Sides	Three Sides	
Perimeter/Frontage Designation	One Side	Four Sides	Two Sides	Three Sides	
Linear Feet of Roadway Frontage/Perimeter	541	200	300	420	
Credit for Existing Vegetation (Yes, No, Linear Feet)	No	No	*Yes 162	*Yes 100	
Credit for Hill, Fence, or Berm (Yes, No, Linear Feet, if needed)	No	Yes 150	No	No	
Number of Plants Required	150	150	160	160	
Shade Trees	140	140	140	140	
Evergreen Trees	10	10	20	20	
Other Trees (2:1 Substitution)	-	-	-	-	
Strubs (0:1 Substitution)	-	-	-	-	
Describe Plant Substitution Credits Below, if needed					

GENERAL NOTES

- Financial Surety for the required landscaping must be posted as part of the Developers Agreement in the amount of \$11,250.00 for 27 shade trees and 25 evergreen trees.
- This plan has been prepared in accordance with the provisions of Section 16.124 of the Howard County Code and the Landscape Manual.



TREE PLANTING AND STAKING  
DECIDUOUS TREES UP TO 2-1/2\"/>

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.

*Charles A. Akers* 12/23/99  
SIGNATURE OF DEVELOPER DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

*Robert H. Vogel* 4/2/00  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Cindy Hamilton* 4/1/00  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Mark Pennington* 4/2/00  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

NO. \_\_\_\_\_ REVISION \_\_\_\_\_  
AS-BUILT CERTIFICATE  
*John Ouse* 1/10/05  
DATE

LANDSCAPE PLAN  
HOLLIFIELD ESTATES I  
SECTION ONE

TAX MAP #18 PARCEL 1  
2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**VOGEL & ASSOCIATES**  
ENGINEERS/SURVEYORS/PLANNERS  
3691 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
Tel 410.461.5828 Fax 410.465.3866

DESIGN BY: PS  
DRAWN BY: PS  
CHECKED BY: RHV  
DATE: Oct. 18, 1999  
SCALE: 1"=100'  
W.O. NO.: 99-013

14 SHEET OF 18

NOTE: THE FIVE FOREST CONSERVATION RETENTION EASEMENTS TOTALING 10.92 ± ACRES, LOCATED ON OPEN SPACE LOTS 14 AND 46 AND NON-BUILDABLE PARCEL 'C' OF THIS SUBDIVISION, HAVE BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE, FOREST CONSERVATION ACT, FOR THIS SUBDIVISION, (F-99-75), AND HOLLIFIELD ESTATES I, SECTION 2, (F-99-76). SURPLUS FOREST RETENTION AREAS IN EXCESS OF THE MINIMUM REQUIRED (1.14 ACRES) TO BE CREDITED TO FUTURE HOLLIFIELD ESTATES II, (F-00-39).

NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT, HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.

FOREST CONSERVATION DATA	HOLLIFIELD ESTATES I (F-99-75 & F-99-76 ONLY)	HOLLIFIELD ESTATES I & II (OVERALL SITE CALCULATION F-99-75, F-99-76 & F-00-39)
GROSS SITE AREA	44.36	51.82
AREA WITHIN 100 YEAR FLOODPLAIN	0.00	0.00
AREA WITHIN AGRICULTURAL USE OR PRESERVATION PARCEL	0.00	0.00
AREA WITHIN EXISTING STATE OF MARYLAND ROW	0.42	0.46
NET TRACT AREA	44.03	50.36
LAND USE CATEGORY	RESIDENTIAL (SUBURBAN)	
II. FOREST CONSERVATION WORKSHEET DATA SUMMARY		
B. REFORESTATION THRESHOLD (20%)	8.81	10.07
C. AFFORESTATION MINIMUM (15%)	6.60	7.55
D. EXISTING FOREST ON NET TRACT AREA	14.30	14.30
E. FOREST AREAS TO BE CLEARED	2.06	3.33
F. FOREST AREAS TO BE RETAINED	10.92	10.97
IV. REFORESTATION CALCULATIONS		
G. FOREST AREAS CLEARED ABOVE REFORESTATION THRESHOLD	2.06	3.33
H. FOREST AREAS CLEARED BELOW REFORESTATION THRESHOLD	0.00	0.00
I. FOREST AREAS RETAINED ABOVE REFORESTATION THRESHOLD	0.52	0.83
REFORESTATION FOR CLEARING ABOVE THRESHOLD	1.51	0.90
CREDIT FOR FOREST AREAS RETAINED ABOVE THRESHOLD	-0.99	-0.07
TOTAL REFORESTATION REQUIRED	(TO BE CREDITED TO HOLLIFIELD ESTATES II)	-0.07 = 0

**SPECIMEN AND SIGNIFICANT TREE LIST**

THE LOCATIONS AND GENERAL INFORMATION FOR THE FOLLOWING THREE OF FIVE SPECIMEN TREES WERE TAKEN FROM A FOREST STAND DELINEATION PREPARED BY CHESAPEAKE ENVIRONMENTAL MANAGEMENT, INC. IN FEBRUARY, 1996.

Tree ID#	Scientific Name	Common Name	DBH*	Vigor**
3	Liriodendron tulipifera	Tulip Poplar	44.0	Excellent
4	Ulmus americana	American Elm	22.0	Good
5	Quercus alba	White Oak	36.0	Good

\* DBH: Diameter at Breast Height (4.5' High on Uphill Side of Tree)  
\*\* Vigor: Estimate of Health and Growth Potential of the Tree (Based on Appearance, Tightness of Bark, Evidence of Rot or Damage, etc.)

**CONSTRUCTION MONITORING**

- THE SITE SHALL BE INSPECTED PERIODICALLY DURING THE CONSTRUCTION PHASE OF THE PROJECT. A QUALIFIED PROFESSIONAL SHALL BE RESPONSIBLE FOR IDENTIFYING DAMAGE TO PROTECTED FOREST AREAS OR INDIVIDUAL TREES WHICH MAY HAVE BEEN CAUSED BY CONSTRUCTION ACTIVITIES, SUCH AS SOIL COMPACTION, ROOT INJURY, TRUNK GOUNDS, LIMB INJURY, OR STRESS CAUSED BY FLOODING OR DROUGHT CONDITIONS. ANY SUCH DAMAGE THAT MAY OCCUR SHALL BE REMEDIATED IMMEDIATELY USING APPROPRIATE MEASURES. SEVERE PROBLEMS MAY REQUIRE CONSULTATION WITH A PROFESSIONAL ARBORIST.
- THE CONSTRUCTION PROCEDURE SHALL NOT DAMAGE AREAS OUTSIDE OF THE LIMITS OF DISTURBANCE AS DESIGNATED ON THE PLANS. ANY DAMAGE SHALL BE RESTORED BY THE CONTRACTOR AT HIS EXPENSE AND TO THE SATISFACTION OF THE DESIGN TEAM OR ENGINEER.

**NOTE:**

THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST CONSERVATION EASEMENTS EXCEPT AS PERMITTED BY THE HOWARD COUNTY FOREST CONSERVATION PROGRAM.

THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION, SOIL COMPACTION, OR EXCAVATION, INTRODUCTION OF TOXIC CHEMICALS OR OTHER DISTURBANCES DETRIMENTAL TO THE LIVE SPECIMEN TREES OR CRITICAL ROOT ZONES FOR THESE TREES EXCEPT AS PERMITTED BY THE HOWARD COUNTY FOREST CONSERVATION PROGRAM.

FINANCIAL SURETY FOR THE REQUIRED FOREST CONSERVATION MUST BE POSTED UNDER THE DEVELOPER AGREEMENT FOR F-99-75 IN THE AMOUNT OF \$ 44,953.92

**GENERAL NOTES**

**FOREST PROTECTION**

- ALL FOREST RETENTION AREAS SHALL BE TEMPORARILY PROTECTED BY WELL ANCHORED BLAZE ORANGE PLASTIC MESH FENCING AND SIGNAGE AS INDICATED ON THE PLANS. THE DEVICES SHALL BE INSTALLED ALONG THE FOREST RETENTION BOUNDARY PRIOR TO ANY LAND CLEARING, GRUBBING, OR GRADING ACTIVITIES.
- THE FOREST PROTECTION DEVICES SHALL BE INSTALLED SUCH THAT THE CRITICAL ROOT ZONES OF ALL TREES WITHIN THE RETENTION AREA NOT OTHERWISE PROTECTED WILL BE WITHIN FOREST PROTECTION DEVICES.
- ALL PROTECTION DEVICES SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION, INCLUDING SILT FENCE BEING USED AS PROTECTIVE FENCING. ALL DEVICES SHALL REMAIN IN PLACE UNTIL ALL CONSTRUCTION HAS CEASED IN THE IMMEDIATE VICINITY.
- ATTACHMENT OF SIGNS, OR ANY OTHER OBJECTS TO TREES IS PROHIBITED. NO EQUIPMENT, MACHINERY, VEHICLES, MATERIALS OR EXCESSIVE PEDESTRIAN TRAFFIC SHALL BE ALLOWED WITHIN THESE PROTECTED AREAS.
- INSTALLATION AND MAINTENANCE OF PROTECTIVE FENCING AND SIGNAGE SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THE GENERAL CONTRACTOR SHALL TAKE THE UTMOST CARE TO PROTECT TREE ROOT SYSTEMS AND CANOPIES DURING ALL CONSTRUCTION ACTIVITIES. TREE ROOT SYSTEMS SHALL BE PROTECTED FROM SMOTHERING, FLOODING, EXCESSIVE WETTING FROM DE-WATERING OPERATIONS, OFF-SITE RUN OFF, SPILLAGE AND DRAINING OF MATERIALS THAT MAY BE HARMFUL TO TREES.
- THE GENERAL CONTRACTOR SHALL PREVENT PARKING OF CONSTRUCTION VEHICLES AND EQUIPMENT, AND THE STORING OF BUILDING SUPPLIES OR STOCKPILING OF EARTH WITHIN FOREST CONSERVATION EASEMENTS. REMOVAL OF TOPSOIL OR ROOT MAT WITHIN THE TREE PRESERVATION AREA SHALL BE PROHIBITED.
- THE GENERAL CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY TREES DAMAGED OR DESTROYED WITHIN THE FOREST CONSERVATION EASEMENTS. ROOT PRUNING SHALL BE USED AT THE LIMIT OF DISTURBANCE OR LIMIT OF GRADING WITHIN AND ADJACENT TO ALL PRESERVATION AREAS, AS NECESSARY.
- FOREST CONSERVATION OBLIGATIONS FOR SECTION TWO ARE PROVIDED UNDER SECTION ONE.

**PRE-CONSTRUCTION MEETING**

- AFTER THE BOUNDARIES OF THE FOREST RETENTION AREAS HAVE BEEN FIELD LOCATED AND MARKED, AND AFTER THE FOREST PROTECTION DEVICES HAVE BEEN INSTALLED, BUT BEFORE ANY OTHER DISTURBANCE HAS TAKEN PLACE ON SITE, A PRE-CONSTRUCTION MEETING SHALL TAKE PLACE ON SITE. THE DEVELOPER, CONTRACTOR OR PROJECT MANAGER, AND HOWARD COUNTY INSPECTORS SHALL ATTEND. THE PURPOSE OF THIS MEETING WILL BE:
  - TO IDENTIFY THE LOCATIONS OF THE FOREST RETENTION AREAS, SPECIMEN TREES WITHIN 50 FEET OF THE LIMIT OF DISTURBANCE, LIMITS OF CONSTRUCTION, EMPLOYEE PARKING AREAS AND EQUIPMENT STAGING AREAS.
  - INSPECT ALL FLAGGED BOUNDARIES AND PROTECTION DEVICES.
  - MAKE ALL NECESSARY ADJUSTMENTS.
  - ASSIGN RESPONSIBILITIES AS APPROPRIATE AND DISCUSS PENALTIES.

**OWNER/DEVELOPER**

Mr. Charles Skirven, Esq.  
5401 Twin Knolls Road, Suite 10  
Columbia, Maryland 21046  
(410) 996-0081

NO.	REVISION	DATE

**FOREST CONSERVATION PLAN  
HOLLIFIELD ESTATES I  
SECTION ONE**

(AND FUTURE HOLLIFIELD ESTATES I, SECTION 2)

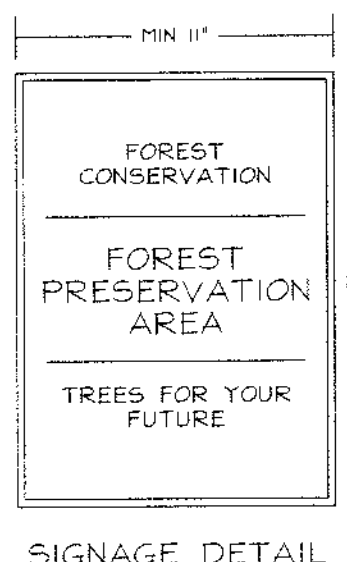
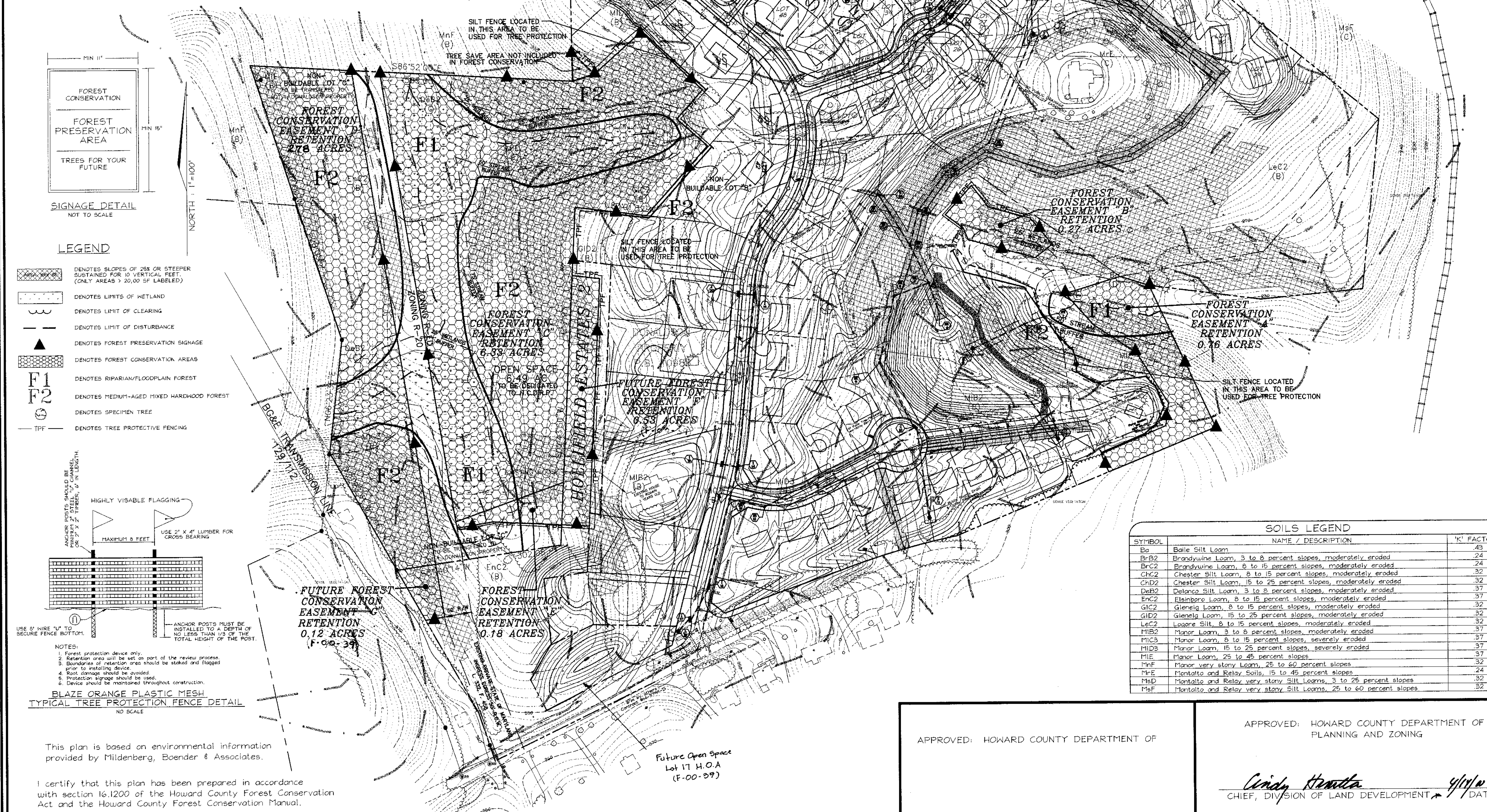
TAX MAP #18 PARCEL I  
2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**VOGEL & ASSOCIATES**  
ENGINEERS/SURVEYORS/PLANNERS

3691 Park Avenue, Suite 101 • Ellicott City, Maryland 21043  
Tel 410.461.5228 Fax 410.465.3586

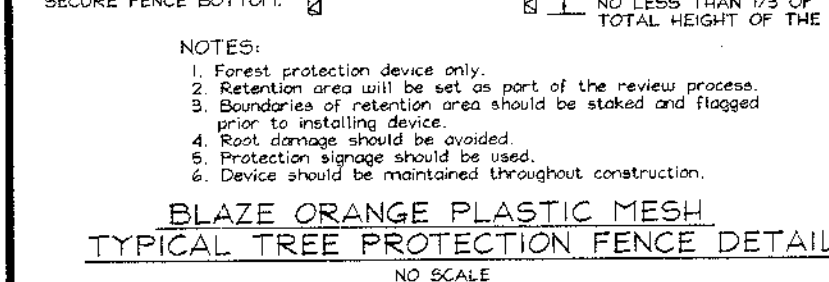
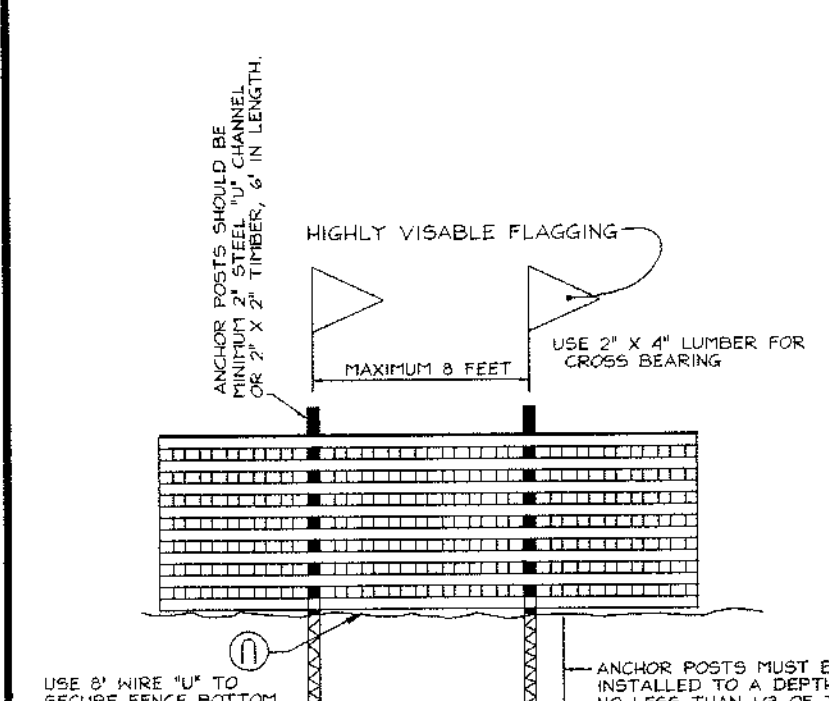
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CHECKED BY: RHY	
DATE: Oct. 15, 1999	
SCALE: 1"=100'	
W.O. NO.: 99-013	

AS-BUILT 01-03-05 F-99-75



**LEGEND**

- DENOTES SLOPES OF 25% OR STEEPER SUSTAINED FOR 10 VERTICAL FEET. (ONLY AREAS > 20,00 SF LABELED)
- DENOTES LIMITS OF WETLAND
- DENOTES LIMIT OF CLEARING
- DENOTES LIMIT OF DISTURBANCE
- DENOTES FOREST PRESERVATION SIGNAGE
- DENOTES FOREST CONSERVATION AREAS
- DENOTES RIPARIAN/FLOODPLAIN FOREST
- DENOTES MEDIUM-AGED MIXED HARDWOOD FOREST
- DENOTES SPECIMEN TREE
- DENOTES TREE PROTECTIVE FENCING



This plan is based on environmental information provided by Mildenberg, Boender & Associates.

I certify that this plan has been prepared in accordance with section 16.1200 of the Howard County Forest Conservation Act and the Howard County Forest Conservation Manual.

Mary Hamilton McKenna 2039  
Mary Hamilton McKenna MD Reg. No.

NOTE: THIS PLAN IS TO BE USED FOR FOREST CONSERVATION PURPOSES ONLY.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Cindy Hendra 4/10/00  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

3/29/00  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

4/3/00  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

**SOILS LEGEND**

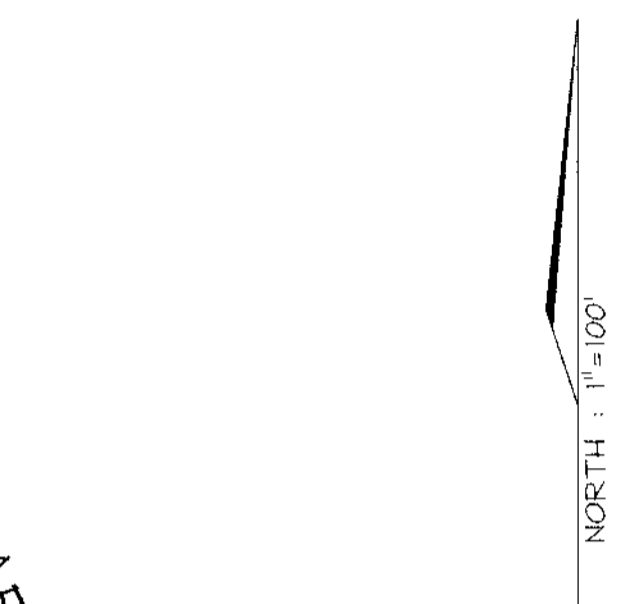
SYMBOL	NAME / DESCRIPTION	% FACTOR
Bs	Belle Silt Loam	43
BrB2	Brandywine Loam, 3 to 6 percent slopes, moderately eroded	24
Brc2	Brandywine Loam, 6 to 15 percent slopes, moderately eroded	24
ChC2	Chester Silt Loam, 8 to 15 percent slopes, moderately eroded	32
ChD2	Chester Silt Loam, 15 to 25 percent slopes, moderately eroded	37
DmB2	Deltava Silt Loam, 3 to 8 percent slopes, moderately eroded	32
Enc2	Elasmagne Loam, 8 to 15 percent slopes, moderately eroded	37
Gic2	Glenside Loam, 8 to 15 percent slopes, moderately eroded	32
Gid2	Glenside Loam, 15 to 25 percent slopes, moderately eroded	32
LeC2	Loamie Silt, 8 to 15 percent slopes, moderately eroded	37
MhB2	Major Loam, 3 to 8 percent slopes, moderately eroded	32
Mic3	Minor Loam, 8 to 15 percent slopes, severely eroded	37
Mid3	Minor Loam, 15 to 25 percent slopes, severely eroded	37
Mie	Minor Loam, 25 to 45 percent slopes	37
MhF	Major very stony Loam, 25 to 45 percent slopes	24
MhE	Major and Relay Silt, 15 to 45 percent slopes	24
MdF	Major and Relay very stony Silt Loams, 3 to 25 percent slopes	32
MhF	Major and Relay very stony Silt Loams, 25 to 60 percent slopes	32



PATAPSCO STATE PARK



SYMBOL	NAME / DESCRIPTION	SOIL GROUP
Ba	Baile Silt Loam	D
BrB2	Brandywine Loam, 3 to 8 percent slopes, moderately eroded	C
BrC2	Brandywine Loam, 8 to 15 percent slopes, moderately eroded	C
ChC2	Chester Silt Loam, 8 to 15 percent slopes, moderately eroded	B
ChD2	Chester Silt Loam, 15 to 25 percent slopes, moderately eroded	B
DeB2	Dalman Silt Loam, 3 to 8 percent slopes, moderately eroded	C
EnC2	Elkinsburg Loam, 8 to 15 percent slopes, moderately eroded	B
GlC2	Glenelg Loam, 8 to 15 percent slopes, moderately eroded	B
GlD2	Glenelg Loam, 15 to 25 percent slopes, moderately eroded	B
LoC2	Loose Silt, 8 to 15 percent slopes, moderately eroded	B
MIB2	Manor Loam, 3 to 8 percent slopes, moderately eroded	B
MIC3	Manor Loam, 8 to 15 percent slopes, severely eroded	B
MID3	Manor Loam, 15 to 25 percent slopes, severely eroded	B
MIE	Manor Loam, 25 to 45 percent slopes	B
MIF	Manor very stony Loam, 25 to 60 percent slopes	B
MRE	Montalto and Relay Soils, 15 to 45 percent slopes	C
MSD	Montalto and Relay very stony Silt Loams, 3 to 25 percent slopes	C
MtF	Montalto and Relay very stony Silt Loams, 25 to 60 percent slopes	C



PATAPSCO RIVER

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Howard Skirven* 3/29/00  
 CHIEF, BUREAU OF HIGHWAYS DATE

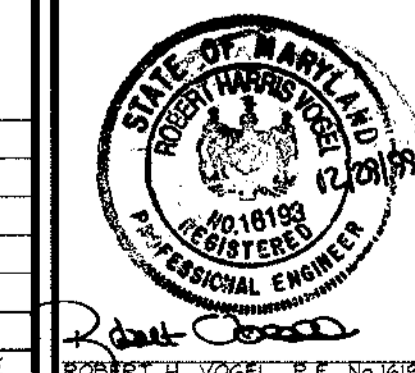
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Wanda Hanota* 4/19/00  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Robert Deussen* 4/13/00  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

**STORM WATER MANAGEMENT DRAINAGE AREA MAP EXISTING CONDITIONS HOLLIFIELD ESTATES I SECTION ONE**  
 TAX MAP #18 PARCEL 1  
 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

OWNER/DEVELOPER  
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 (410) 995-0081

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 W.O. NO.: 99-013

NO.	REVISION	DATE

16 SHEET OF 18

DRAINAGE AREA TABULATIONS					
NO.	AREA	"C"	% IMP.	SOIL TYPES	ZONE
5	0.23 AC	.33	38%	B	R-ED
10	1.01 AC	.33	38%	B	R-ED
11	1.03 AC	.33	38%	B	R-ED
14	0.28 AC	.33	38%	B	R-ED
15	0.50 AC	.33	38%	B	R-ED
16	0.12 AC	.33	38%	B	R-ED
17	0.64 AC	.33	38%	B	R-ED
18	0.37 AC	.34	38%	B/C	R-ED
19	0.67 AC	.32	38%	B/C	R-ED
23	0.91 AC	.33	38%	B/C	R-ED
27	1.09 AC	.34	38%	B/C	R-ED
30	0.35 AC	.34	38%	B/C	R-ED
31	0.53 AC	.35	38%	B/C	R-ED
32	0.54 AC	.33	38%	B	R-ED
33	0.66 AC	.33	38%	B	R-ED
34	0.84 AC	.35	38%	B/C	R-ED
35A	0.23 AC	.33	38%	B	R-ED
38	0.45 AC	.34	38%	B/C	R-ED
39	0.80 AC	.35	38%	B/C	R-ED
40	0.75 AC	.36	38%	B/C	R-ED
42	0.74 AC	.36	38%	B/C	R-ED
45	1.00 AC	.36	38%	B/C	R-ED



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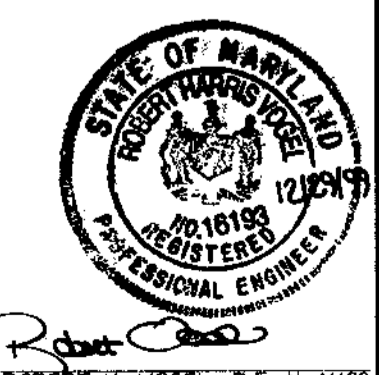
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			12-10-02

**DRAINAGE AREA MAP  
 FOR STORM DRAINAGE  
 HOLLIFIELD ESTATES I  
 SECTION ONE**

TAX MAP #18      PARCEL 1  
 2ND ELECTION DISTRICT      HOWARD COUNTY, MARYLAND

**VOGEL &  
 ASSOCIATES**  
 ENGINEERS-SURVEYORS-PLANNERS

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 Tel 410.461.5828 Fax 410.465.3966



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 W.O. NO.: 99-013

17 SHEET OF 18

AS-BUILT CERTIFICATE

*[Signature]* 1/1995 DATE



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

*[Signature]* 3/29/00 DATE  
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 4/14/00 DATE  
 CHIEF, DIVISION OF LAND DEVELOPMENT

*[Signature]* 4/23/00 DATE  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

SOILS LEGEND		
SYMBOL	NAME / DESCRIPTION	SOIL GROUP
Ba	Baile Silt Loam	D
Bb2	Brandywine Loam, 3 to 8 percent slopes, moderately eroded	C
Bc2	Brandywine Loam, 8 to 15 percent slopes, moderately eroded	C
Ch2	Chester Silt Loam, 8 to 15 percent slopes, moderately eroded	B
Ch22	Chester Silt Loam, 15 to 25 percent slopes, moderately eroded	B
De2	Delancey Silt Loam, 3 to 8 percent slopes, moderately eroded	C
De22	Delancey Silt Loam, 8 to 15 percent slopes, moderately eroded	B
El2	Elmhurst Loam, 3 to 8 percent slopes, moderately eroded	B
El22	Elmhurst Loam, 8 to 15 percent slopes, moderately eroded	B
Gl2	Glennville Loam, 8 to 15 percent slopes, moderately eroded	B
Gl22	Glennville Loam, 15 to 25 percent slopes, moderately eroded	B
Le2	Lopoke Silt, 8 to 15 percent slopes, moderately eroded	B
Mb2	Manor Loam, 3 to 8 percent slopes, moderately eroded	B
Mb22	Manor Loam, 8 to 15 percent slopes, severely eroded	B
Md2	Manor Loam, 15 to 25 percent slopes, severely eroded	B
Mf	Manor Loam, 25 to 45 percent slopes	B
Mf2	Manor very stony Loam, 25 to 40 percent slopes	B
Mf22	Montalto and Relay Silt, 15 to 45 percent slopes	C
Mf222	Montalto and Relay very stony Silt Loams, 3 to 25 percent slopes	C
Mf2222	Montalto and Relay very stony Silt Loams, 25 to 40 percent slopes	C



PATAPSCO RIVER

NORTH 1"=100'

OWNER/DEVELOPER  
 Mr. Charles Skirven, Esq.  
 5401 Twin Knolls Road, Suite 10  
 Columbia, Maryland 21046  
 (410) 995-0091

NO.	REVISION	DATE

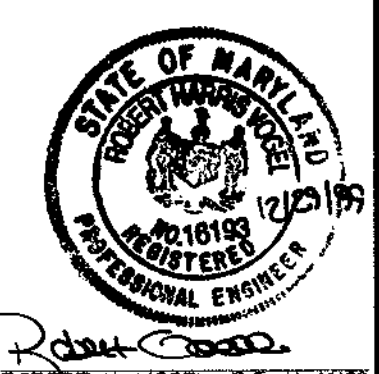
**DRAINAGE AREA MAP  
 STORM WATER MANAGEMENT  
 HOLLIFIELD ESTATES I**

SECTION ONE  
 TAX MAP #18 PARCEL 1  
 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**VOGEL &  
 ASSOCIATES**  
 ENGINEERS • SURVEYORS • PLANNERS

3691 Park Avenue, Suite 121 • Elkridge City, Maryland 21043  
 Tel. 410.461.5828 Fax 410.465.3955

F99-75



DESIGN BY: GAH  
 DRAWN BY: PS  
 CHECKED BY: RHV  
 DATE: Oct. 18, 1999  
 SCALE: 1" = 100'  
 H.C. NO.: 99-013

18 SHEET OF 18

HOLLIFIELD ESTATES 2  
 (SP-98-17) LAYOUT SHOWN  
 FOR INFORMATIONAL  
 PURPOSES ONLY.

APPROVED: HOWARD COUNTY DEPARTMENT OF  
 PUBLIC WORKS.

*Lawrence S. ...* 3/29/00  
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF  
 PLANNING AND ZONING

*Cindy ...* 4/14/00  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Robert H. Vogel* 4/3/00  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE