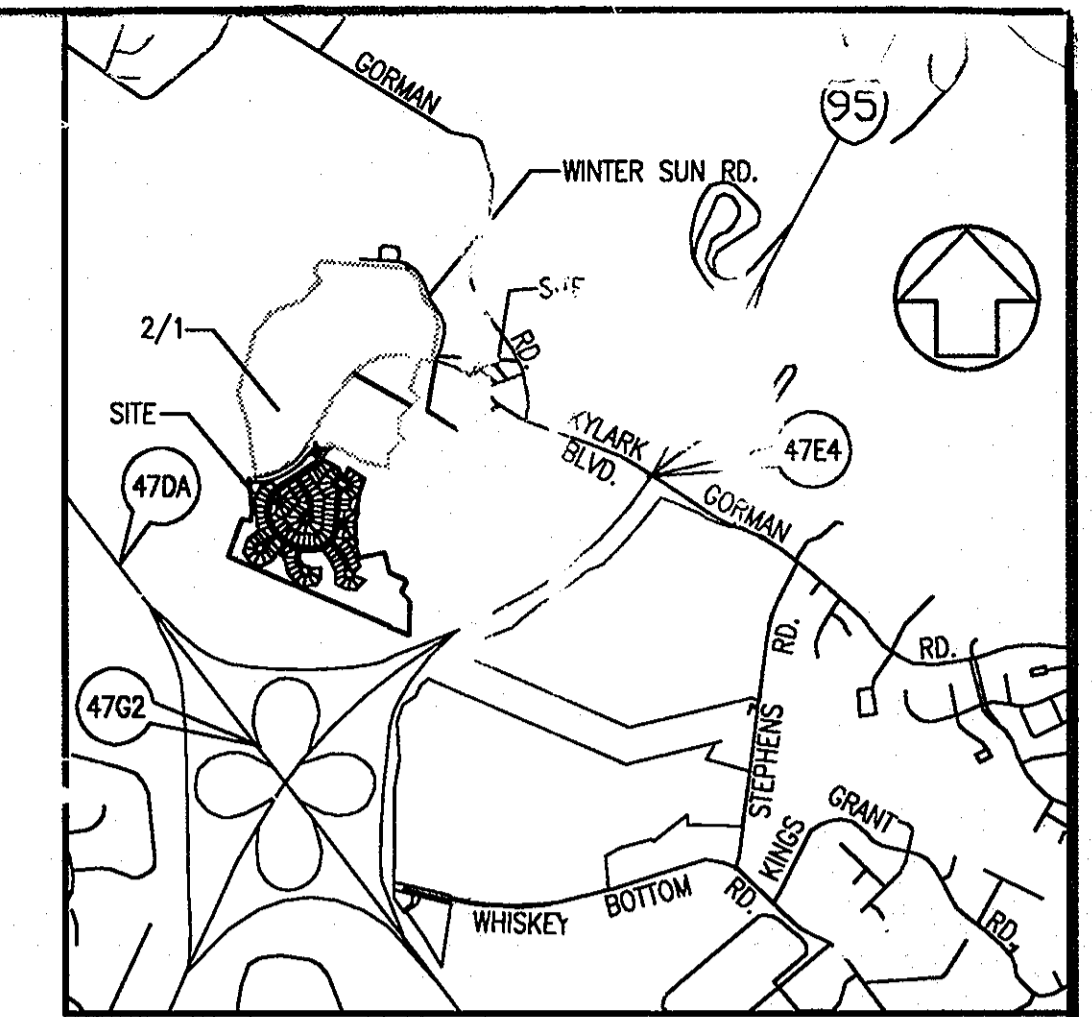


# EMERSON ROADS AND STORM DRAINS SECTION 2, PHASE 4

LOTS 1-120 & OPEN SPACE LOTS 121-124  
HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS



VICINITY MAP  
SCALE: 1" = 2000'

**BENCHMARKS**

47DA NORTHING: 535405.485 FT.  
EASTING: 1349362.707 FT.  
ELEVATION: 315.20 FT.

47E4 NORTHING: 535845.138 FT.  
EASTING: 1355431.199 FT.  
ELEVATION: 336.23 FT.

47G2 NORTHING: 532938.964 FT.  
EASTING: 1351224.095 FT.  
ELEVATION: 363.53 FT.

**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/Bureau of Engineering/Construction Inspection division at 410-313-1880 at least five (5) working days prior to the start of work.
- The contractor shall notify "Miss Utility" at 1-800-257-7777 at least 48 hours prior to any excavation work begin done.
- Traffic control devices, markings and signing shall be in accordance with the latest edition of the Manual of Uniform Traffic Control Devices (MUTCD). All street and regulatory signs be in place prior to the placement of any asphalt.
- Street light placement and the type of fixture and pole shall be in accordance with the Howard County Design Manual, Volume III (1993) and as modified by "Guidelines for Street Lights in Residential Developments (June 1993)." A minimum spacing of 20' shall be between a light and any tree.
- The existing topography is taken from aerial survey with 2' contour intervals prepared by Air Survey Corporation dated 4-3-98.
- The coordinates shown hereon are based upon the Howard County Geodetic Control which is based upon the Maryland State Plane Coordinate System. Howard County Monument Nos. 2964 and 2965 were used for the project.
- The traffic study for this project was prepared by Wells and Associates, and was approved on September 29, 2000.
- Sidewalk ramps shall meet current ADA requirements.
- Project background information:  
Subdivision Name: Emerson  
Tax Map: 47
- Lot/P/Parcel: P/O: P.837, P.3, P.462  
Zoning: PEG-MXD-3 AND R-SC-MXD-3  
Election District: 6th  
Total Tract Area: 44.54 acres  
Section 2, Phase 4  
Preliminary Plan Approval Date: 7-26-2002  
Total number of lots: 104  
File numbers: 1-973M, PB-339, S-99-12, WP-99-96, P-02-15, PB-359 AND WP-03-53
- All sidewalks at intersections to have handicap ramps. See detail on Sheet 10.
- Street trees shall be planted at least 5' from any inlet structure.
- The environmental disturbances next to lot 77 (utility connection) and lots 88-89 (sewer connection) and behind lots 103-104 (sewer connection) are considered necessary in accordance with section 16.115.c.(2) and 16.116.(6) per Howard County DPZ's instrument letter dated Sept. 30, 2002.
- Development of Emerson 2, Phase 4 under the current Forest Conservation Act involves the clearing of approximately 5.48 acres of forest, and the retention of approximately 5.20 acres on the net tract area. When evaluated cumulatively with the previous phases of the project, 4715+/- acres of forest clearing and 51.03+/- acres of retention proposed, and no reforestation is required. Approximately 5.03 acres of reforestation was provided in previous phases and may be used to offset reforestation requirements for future phases of this development. The Forest Conservation plan surety is in the amount of \$45,302.40.
- WP-03-46 approved December 17, 2002 with the following conditions:
  - The vegetation along Gorman Road to be maintained.
  - Locate the proposed future houses on lots 117-120 as far from Gorman Road as possible.
  - Compliance with the DED comments:
- Financial surety for the required landscaping must be posted as part of the developer's agreement in the amount of \$7,650.00.
- WP-03-53 - Planning & Zoning has determined and the planning director has concurred that the project missed its deadline date of 2/20/03 to submit additional information for SCR consideration and therefore the plan submission has been voided.
- 95% COMPACTION TO BE PROVIDED IN FILL AREAS AS PER AASHTO T-190.
- THE STORMWATER MANAGEMENT FACILITY IS AN EXTENDED DETENTION POND, OWNED AND MAINTAINED BY HOMEOWNER ASSOCIATION.



LOCATION PLAN

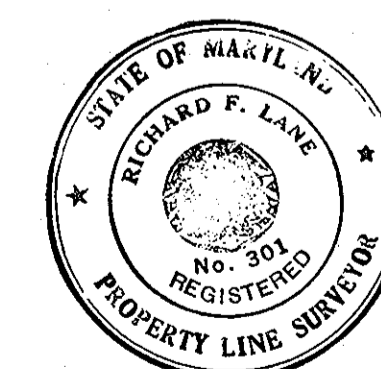


DRAWING LIST	
NO.	
1 OF 29	COVER SHEET
2 OF 29	ROAD CONSTRUCTION PLAN
3 OF 29	ROAD CONSTRUCTION PLAN
4 OF 29	ROAD CONSTRUCTION PLAN
5 OF 29	ROAD CONSTRUCTION PLAN
6 OF 29	ROAD CONSTRUCTION PLAN
7 OF 29	ROAD CONSTRUCTION PLAN
8 OF 29	ROAD CONSTRUCTION PLAN
9 OF 29	ROAD CONSTRUCTION PLAN
10 OF 29	ROAD CONSTRUCTION DETAILS
11 OF 29	DRAINAGE AREA MAP
12 OF 29	STORM DRAIN PROFILES
13 OF 29	STORM DRAIN PROFILES
14 OF 29	STORM DRAIN PROFILES
15 OF 29	EROSION AND SEDIMENT CONTROL PLAN
16 OF 29	EROSION AND SEDIMENT CONTROL PLAN
17 OF 29	EROSION AND SEDIMENT CONTROL PLAN
18 OF 29	EROSION AND SEDIMENT CONTROL PLAN
19 OF 29	EROSION AND SEDIMENT CONTROL DETAILS
20 OF 29	EROSION AND SEDIMENT CONTROL DETAILS
21 OF 29	SWM DRAINAGE AREA MAP
22 OF 29	SWM PLAN
23 OF 29	SWM DETAILS
24 OF 29	SWM DETAILS
25 OF 29	BORING LOGS
26 OF 29	LANDSCAPE PLAN
27 OF 29	FOREST CONSERVATION PLAN
28 OF 29	FOREST CONSERVATION PLAN
29 OF 29	FOREST CONSERVATION PLAN

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS  
*Richard M. Quaker* 4-22-03  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING  
*Andy Hamat* 5/5/03  
 Chief, Division of Land Development  
 DATE

*Michael J. Jones* 4/22/03  
 Chief, Development Engineering Division  
 DATE



SHANABERGER & LANE  
 8726 TOWN & COUNTRY BLVD.  
 SUITE 201  
 ELLICOTT CITY, MARYLAND 21043

*Richard F. Lane*  
 ROAD & STORM DRAIN AS-BUILT

**CENTURY ENGINEERS & ARCHITECTS, INC.**  
 CONSULTING ENGINEERS, PLANNERS & ARCHITECTS  
 32 WEST ROAD  
 TOWSON, MARYLAND 21286  
 (410) 823-8070

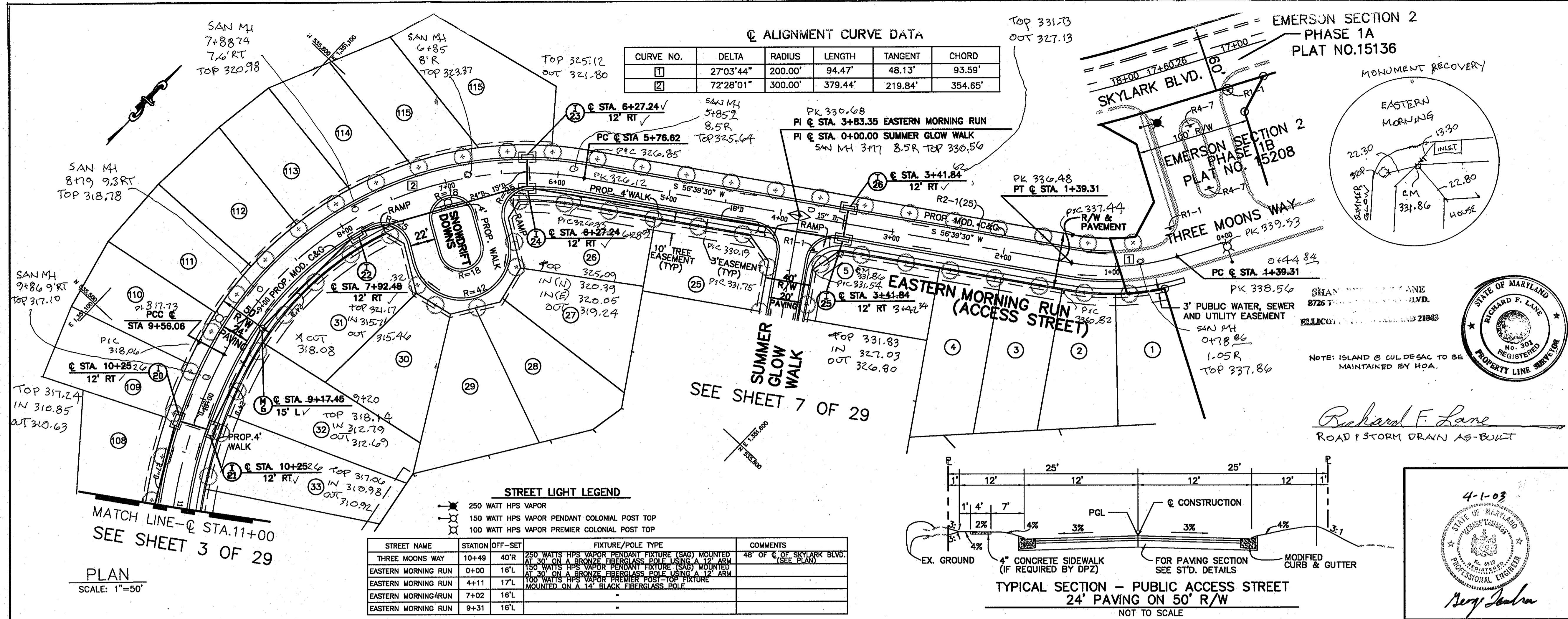
DATE	REVISION	BY	APP'R.

PREPARED FOR:

COVER SHEET

**EMERSON  
 (KEY PROPERTY)  
 SECTION 2, PHASE 4**  
 TAX MAP 47 P/O PARCEL P.837, P.3, P.462  
 6TH ELECTION DISTRICT OF HOWARD COUNTY, MARYLAND

SCALE	ZONING	C.E.I. FILE No.
AS SHOWN	PEG-MXD-3	21125.0
DATE	TAX MAP No.	SHEET
OCT. 2002	47	1 OF 29



APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS  
*Richard M. Shuler* 4-22-03  
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING  
*Cindy Hamrick* 5/5/03  
Chief, Division of Land Development

Chief, Development Engineering Division MK

PROJECT: EMERSON SECTION 2 (KEY PROPERTY) PHASE 4 LOTS 1-120 & OPEN SPACE LOTS 121-124

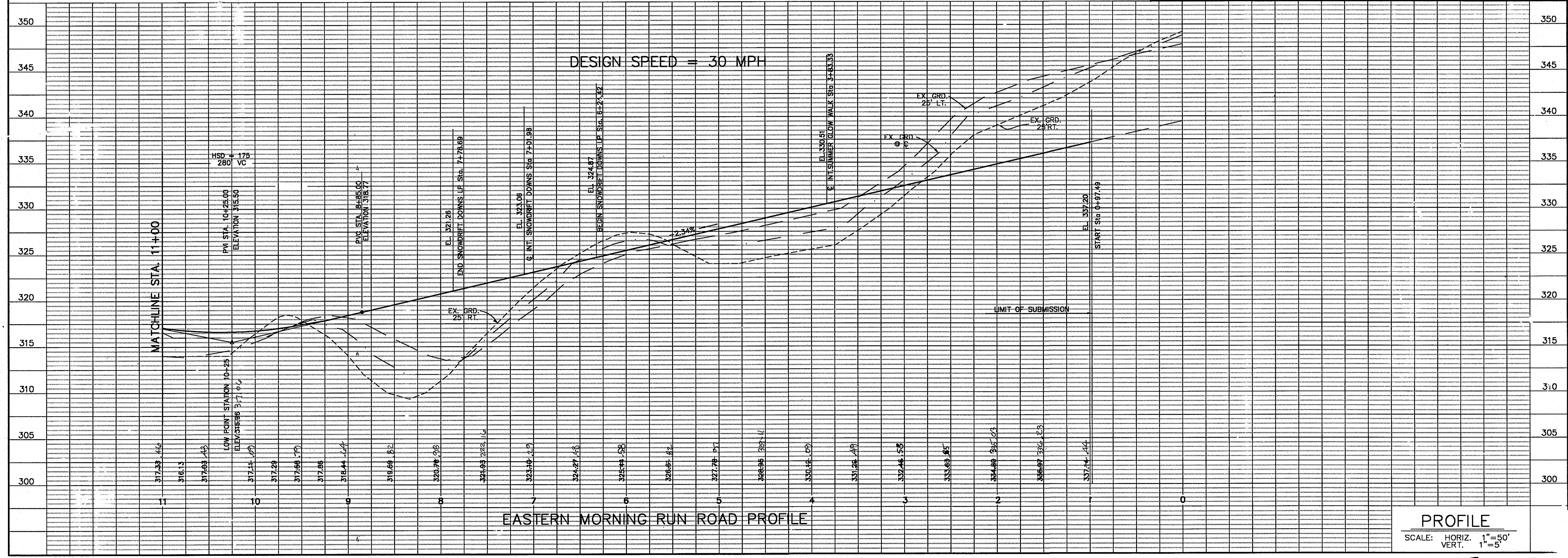
TAX MAP NO. 47 ZONED: PEC-MXD-3  
PARCEL P.837, P.3, P.452  
BLOCK 2, 7, 8, 9, 14, 15, 20, & 21  
ELECTION DISTRICT No.6 HOWARD COUNTY, MARYLAND

**CENTURY ENGINEERING, INC.**  
CONSULTING ENGINEERS, PLANNERS  
32 WEST ROAD  
TOWSON, MARYLAND 21204

OWNER/DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION  
THE ROUSE BUILDING  
10275 LITTLE PATUXENT PARKWAY  
COLUMBIA, MARYLAND 21044  
PHONE: (410) 992-6084

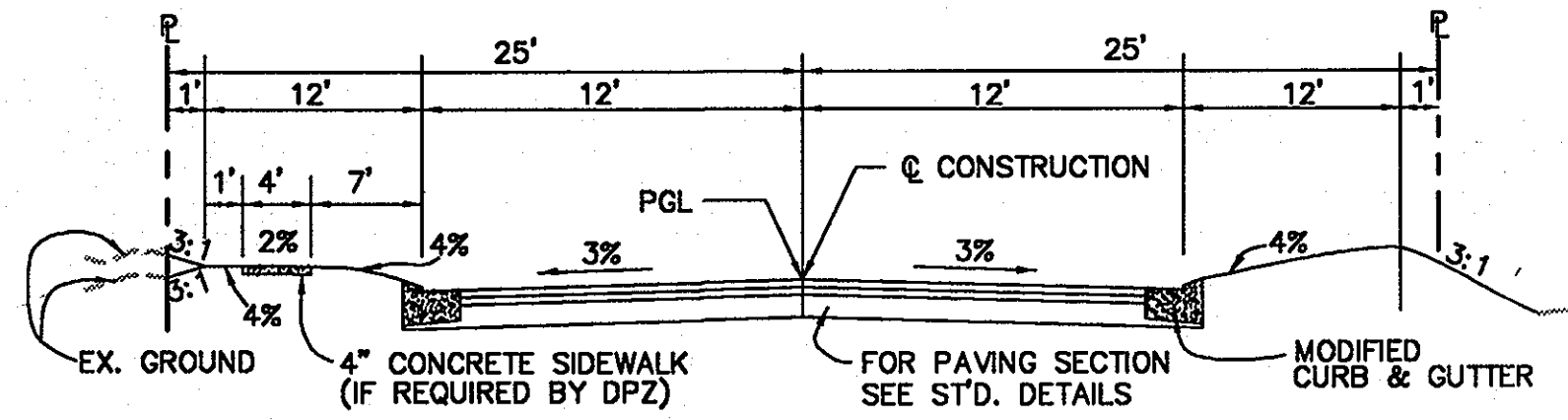
TITLE: EASTERN MORNING RUN ROAD CONSTRUCTION PLAN

Des By K.D. Scale 1"=50' Proj No 21125.01  
Dwn By M.C.A. Date OCT. 2002 DRAWING NO  
Chk By G.K. Approved 2 OF 29



FOR CONTINUATION  
SEE SHEET 7 OF 29

SEE SHEET 4 OF 29  
MATCH LINE - @ STA. 21+00



TYPICAL SECTION - PUBLIC ACCESS STREET  
24' PAVING ON 50' R/W  
NOT TO SCALE

STREET LIGHT LEGEND

- 250 WATT HPS VAPOR
- 150 WATT HPS VAPOR PENDANT COLONIAL POST TOP
- 100 WATT HPS VAPOR PREMIER COLONIAL POST TOP

STREET NAME	STATION	OFF-SET	FIXTURE/POLE TYPE	COMMENTS
EASTERN MORNING RUN	13+91	19'R	100 WATT HPS VAPOR PREMIER POST-TOP FIXTURE MOUNTED ON A 1 1/2" BLACK FIBERGLASS POLE	
EASTERN MORNING RUN	17+33	19'R		
EASTERN MORNING RUN	19+48	16'R		

ALIGNMENT CURVE DATA

CURVE NO.	DELTA	RADIUS	LENGTH	TANGENT	CHORD
3	88°12'14"	435.00'	669.66'	421.57'	605.47'
4	72°13'47"	230.00'	289.95'	167.81'	271.13'

NOTE:  
ISLAND @ CULDE SAC TO BE MAINTAINED BY OWNER.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

*Richard F. Lane*  
CHIEF, BUREAU OF HIGHWAYS  
4-22-03  
DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

*Chris Harvath*  
Chief, Division of Land Development  
4/5/03  
Date  
*M.K.*  
Chief, Development Engineering Division  
4/16/03  
Date

Date No Revision Description

PROJECT:  
EMERSON SECTION 2  
(KEY PROPERTY)  
PHASE 1  
LOTS 1-120 & OPEN SPACE LOTS 121-124

TAX MAP NO. 47 ZONED: PEC-MXD-3  
PARCEL P.837, P.3, P.482  
BLOCK 2, 7, 8, 9, 14, 15, 20, & 21  
ELECTION DISTRICT No.8 HOWARD COUNTY, MARYLAND

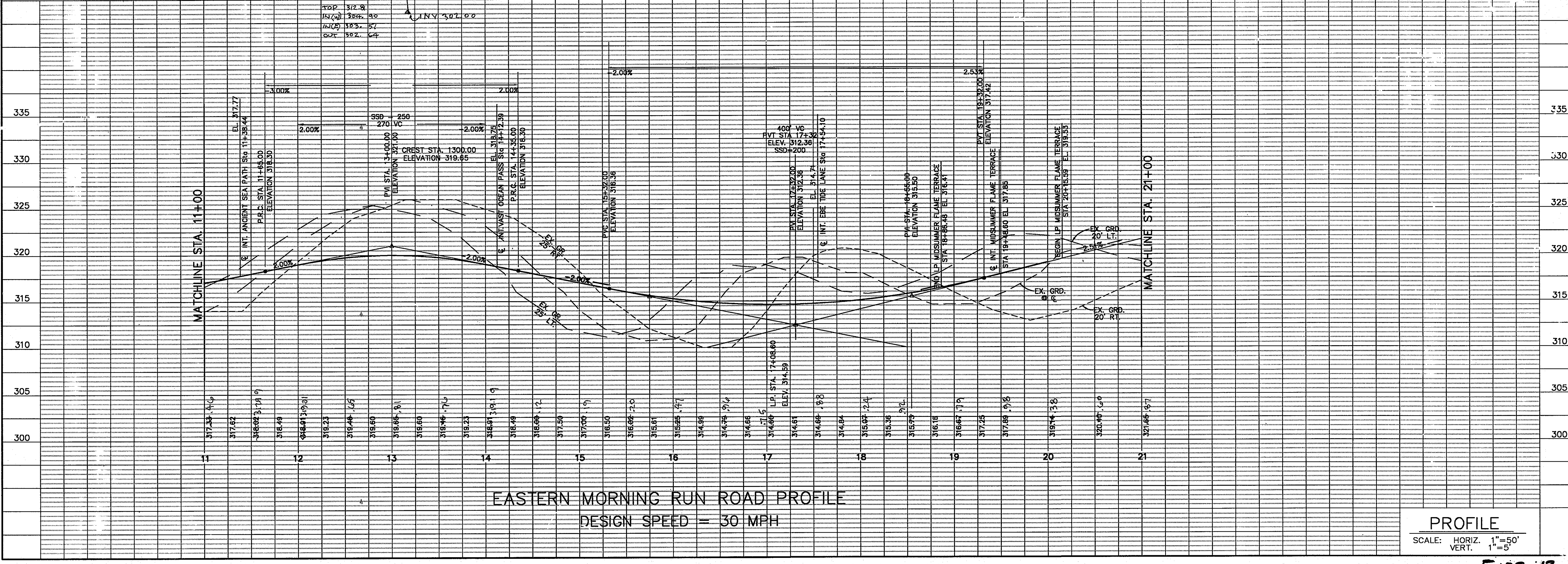
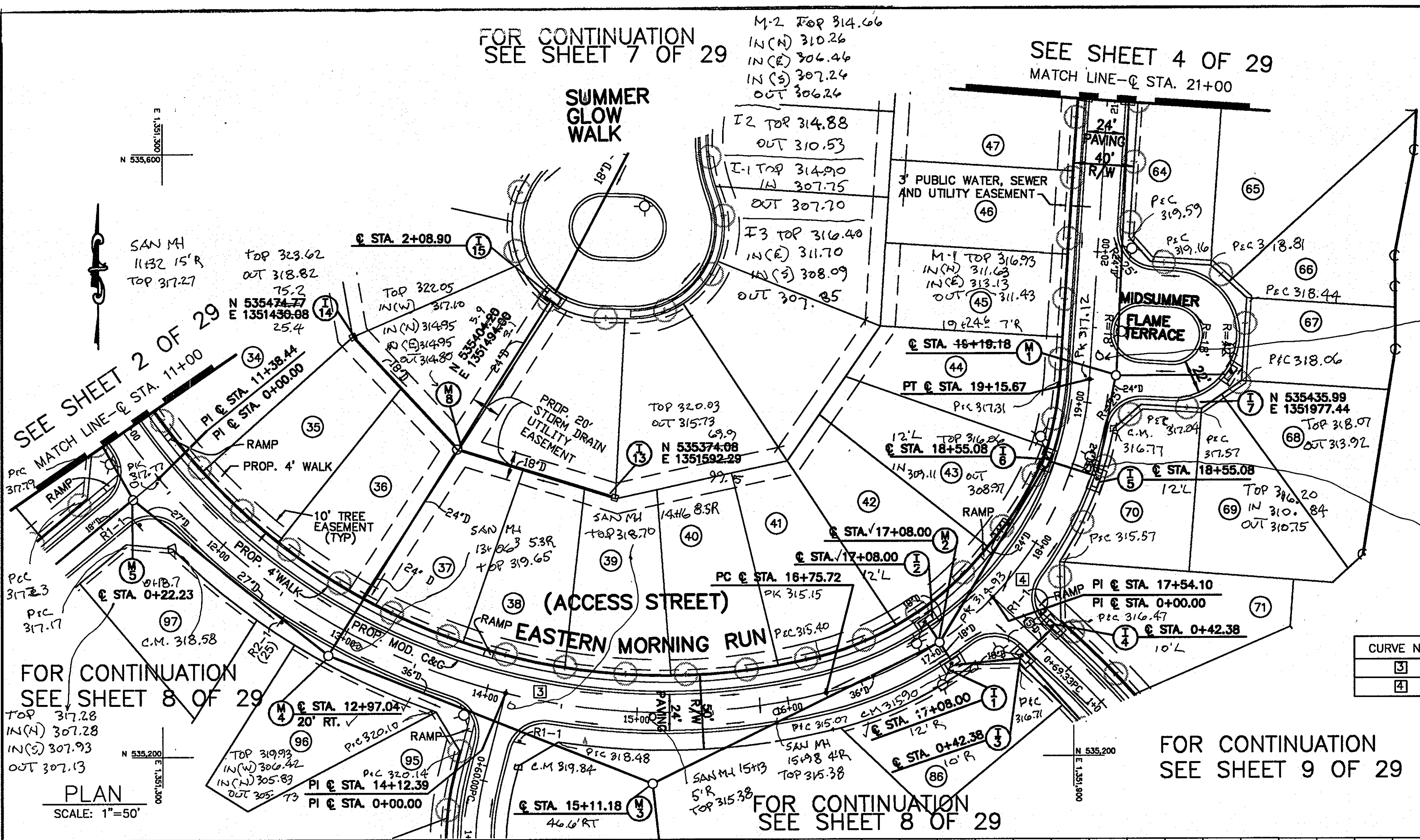
CENTURY ENGINEERING, INC.

CONSULTING ENGINEERS, PLANNERS  
32 WEST ROAD  
TOWSON, MARYLAND 21284

OWNER/DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION  
THE ROUSE BLDG.  
10275 LITTLE PATUENT PARKWAY  
COLUMBIA, MARYLAND 21044  
PHONE: (410) 992-6084

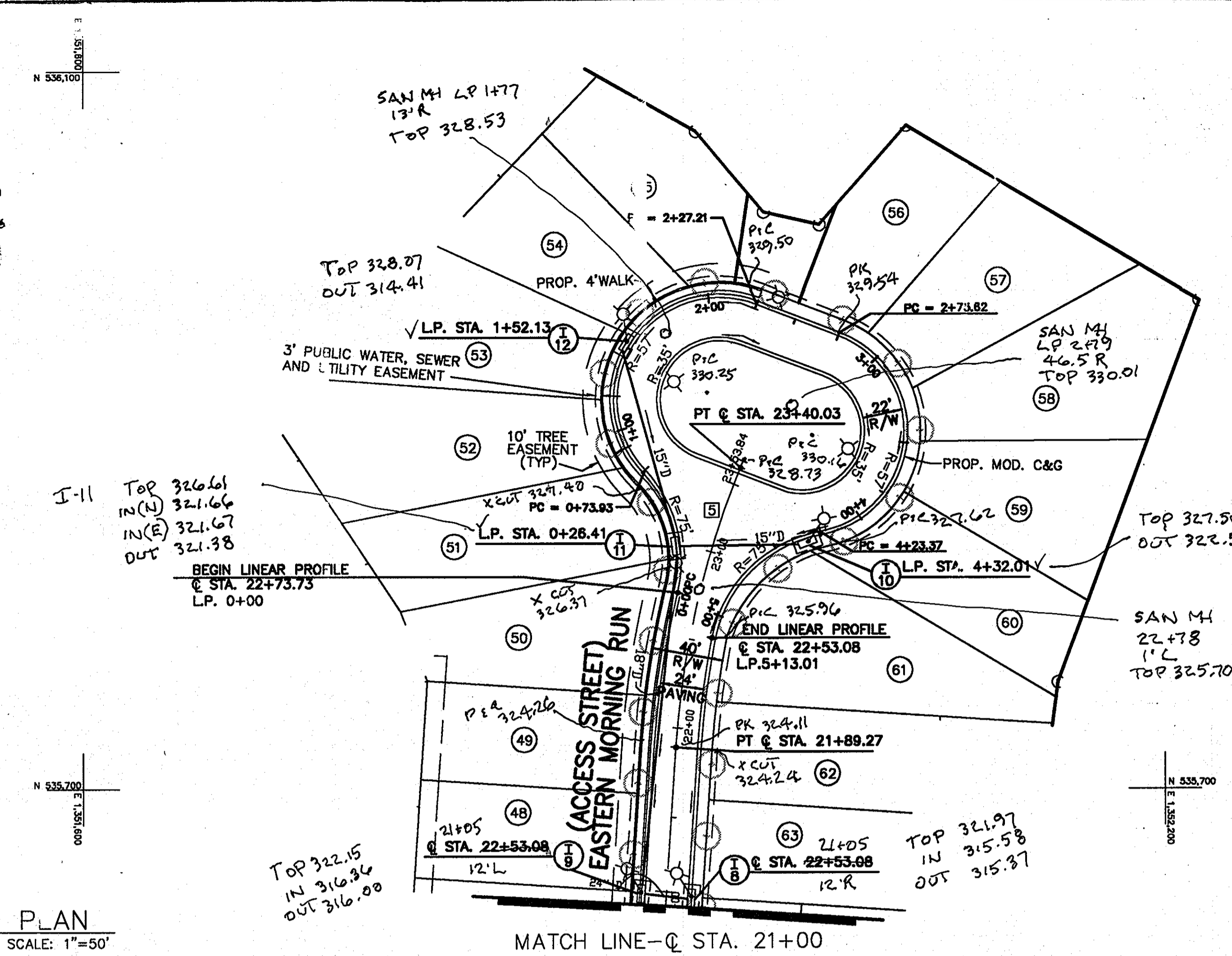
TITLE  
EASTERN MORNING RUN  
ROAD CONSTRUCTION PLAN

Des By	K.D.	Scale	1"=50'	Proj No	21125.01
Dwn By	M.C.A.	Date	OCT. 2002	DRAWING NO	3 OF 29
Chk By	G.K.	Approved			



EASTERN MORNING RUN ROAD PROFILE  
DESIGN SPEED = 30 MPH

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



**STREET LIGHT LEGEND**

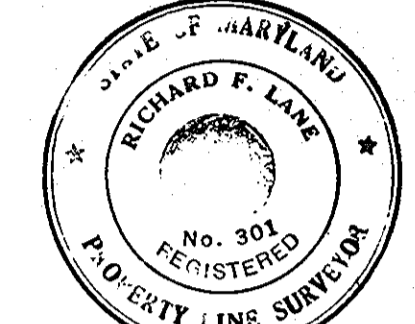
- 250 WATT HPS VAPOR
- 150 WATT HPS VAPOR PENDANT COLONIAL POST TOP
- 100 WATT HPS VAPOR PREMIER COLONIAL POST TOP

STREET NAME	STATION	OFF-SET	FIXTURE/POLE TYPE	COMMENTS
EASTERN MORNING RUN	22+91	16'R	100 WATT HPS VAPOR PREMIER POST-TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE	
EASTERN MORNING RUN	LP 1+52	27'R		IN ISLAND
EASTERN MORNING RUN	LP 3+50	27'R		IN ISLAND

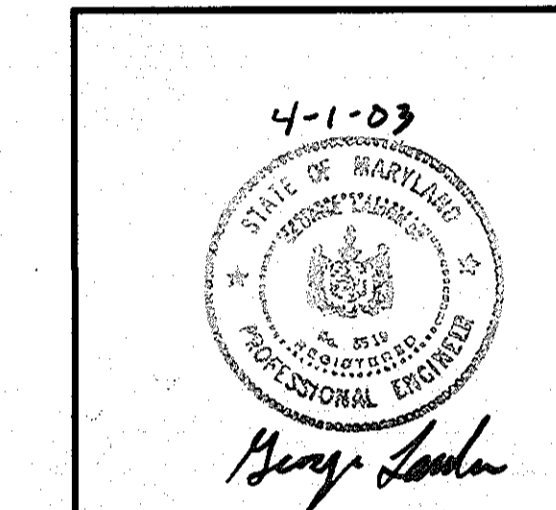
**ALIGNMENT CURVE DATA**

CURVE NO.	DELTA	RADIUS	LENGTH	TANGENT	CHORD
5	17°16'35"	500.00'	150.76'	75.96'	150.19'

SHANABERGER & LANE  
8726 TOWN & COUNTRY BLVD.  
SUITE 201  
BELLICOTT CITY, MARYLAND 21043



*Richard F. Lane*  
ROAD & STORM DRAIN AS-BUILT



APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS  
*Andrew M. Drake* 4-22-03  
CHIEF, BUREAU OF HIGHWAYS AS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING  
*Cindy Hamilton* 5/5/02  
Chief, Division of Land Development: HB Date

Chief, Development Engineering Division MK 1/10/02  
Date

PROJECT: EMERSON SECTION 2  
(KEY PROPERTY)  
PHASE 4  
LOTS 1-120 & OPEN SPACE LOTS 121-124

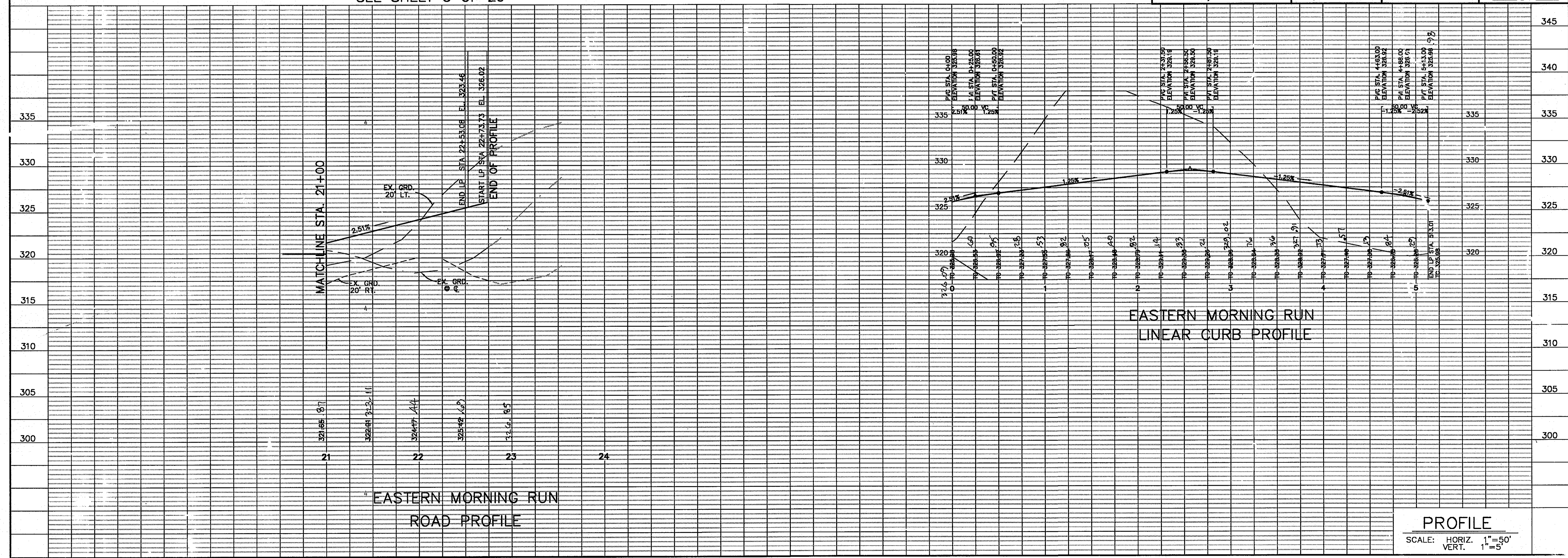
TAX MAP NO. 47 ZONED: PEC-MXO-3  
PARCEL P.837, P.3, P.462  
BLOCK 2, 7, 8, 9, 14, 15, 20, & 21  
ELECTION DISTRICT No.6 HOWARD COUNTY, MARYLAND

**CENTURY ENGINEERING, INC.**  
CONSULTING ENGINEERS, PLANNERS  
32 WEST ROAD  
TOWSON, MARYLAND 21204

OWNER/DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION  
THE ROUSE BUILDING  
10275 LITTLE PATUXENT PARKWAY  
COLUMBIA, MARYLAND 21044  
PHONE: (410) 992-6084

TITLE: EASTERN MORNING RUN  
ROAD CONSTRUCTION PLAN

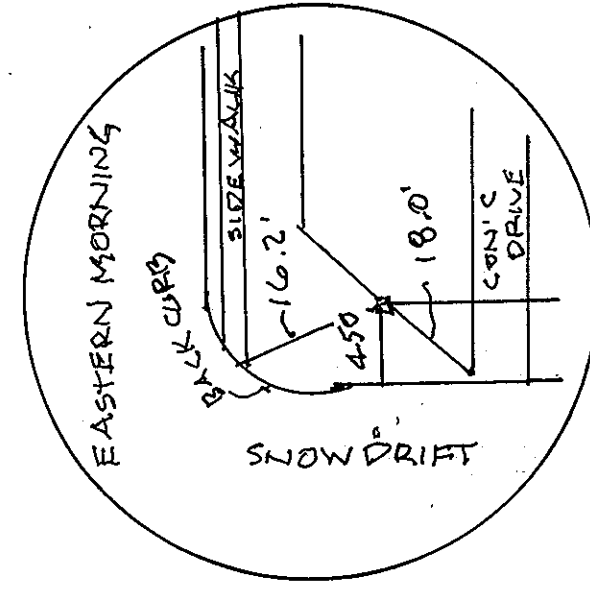
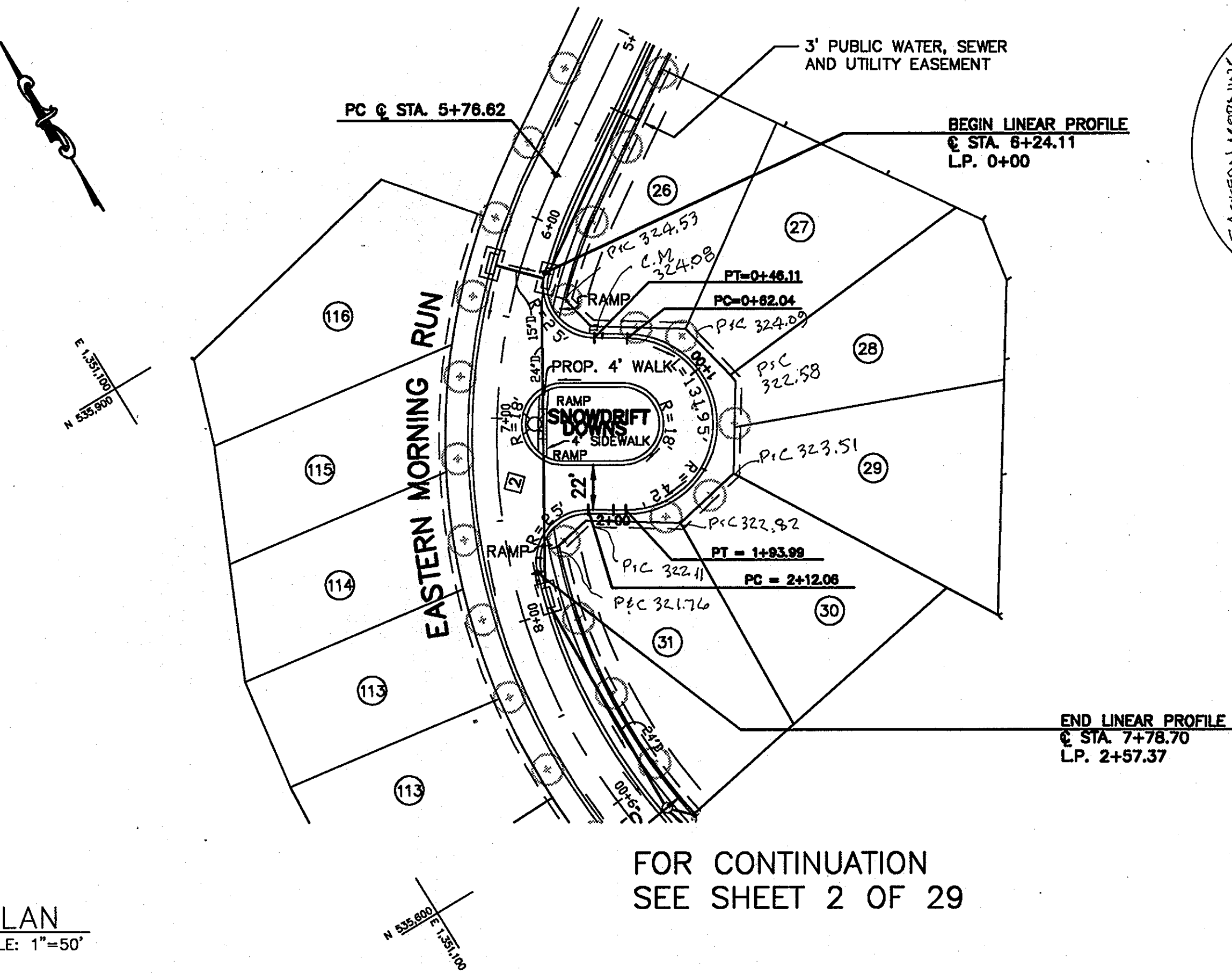
Des By: K.D. Scale: 1"=50' Proj No: 21125.01  
Dwn By: M.C.A. Date: OCT. 2002 DRAWING NO: 4 OF 29  
Chk By: G.K. Approved



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

FOR CONTINUATION  
SEE SHEET 2 OF 29

MONUMENT RECOVERY



**STREET LIGHT LEGEND**

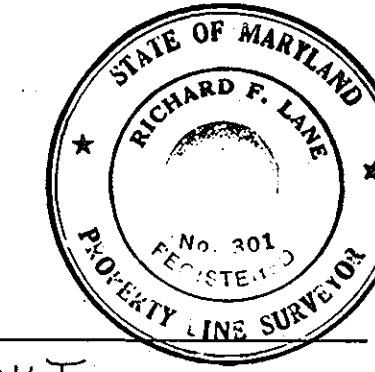
☒ 100 WATT HPS VAPOR PREMIER COLONIAL POST TOP

STREET NAME	STATION	OFF-SET	FIXTURE/POLE TYPE	COMMENTS
EASTERN MORNING RUN	7+02	16'L	100 WATT'S HPS VAPOR PREMIER POST-TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE	

**ALIGNMENT CURVE DATA**

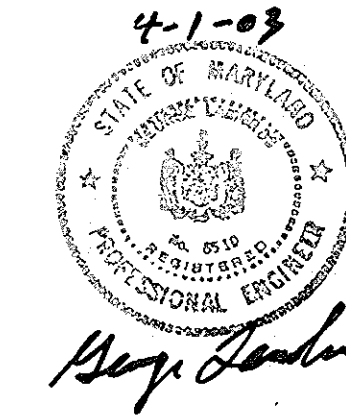
CURVE NO.	DELTA	RADIUS	LENGTH	TANGENT	CHORD
2	72°28'01"	300.00'	379.44'	219.84'	354.65'

SHANABERGER & LANE  
8126 TOWN & COUNTRY BLVD.  
SUITE 201  
BELLEVILLE CITY, MARYLAND 21043



*Richard F. Lane*  
ROAD & STORM DRAIN AS BUILT

NOTE:  
ISLAND & CUL DE SAC TO BE MAINTAINED BY HOA.



APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

*Gregory M. Zander* 4-22-03  
CHIEF, BUREAU OF HIGHWAYS HB DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

*Cindy Harwood* 5/15/02  
Chief, Division of Land Development HB Date  
*M.K.* 4/24/02  
Chief, Development Engineering Division MK Date

Date No Revision Description

PROJECT: EMERSON SECTION 2  
(KEY PROPERTY)  
PHASE 4  
LOTS 1-120 & OPEN SPACES LOTS 121-124

TAX MAP NO. 47 ZONED: PEC-MXD-3  
PARCEL P.837, P.3, P.462  
BLOCK 2, 7, 8, 9, 14, 15, 20, & 21  
ELECTION DISTRICT No.8 HOWARD COUNTY, MARYLAND

**CENTURY ENGINEERING, INC.**

CONSULTING ENGINEERS, PLANNERS  
32 WEST ROAD  
TOWSON, MARYLAND 21204

OWNER/DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION

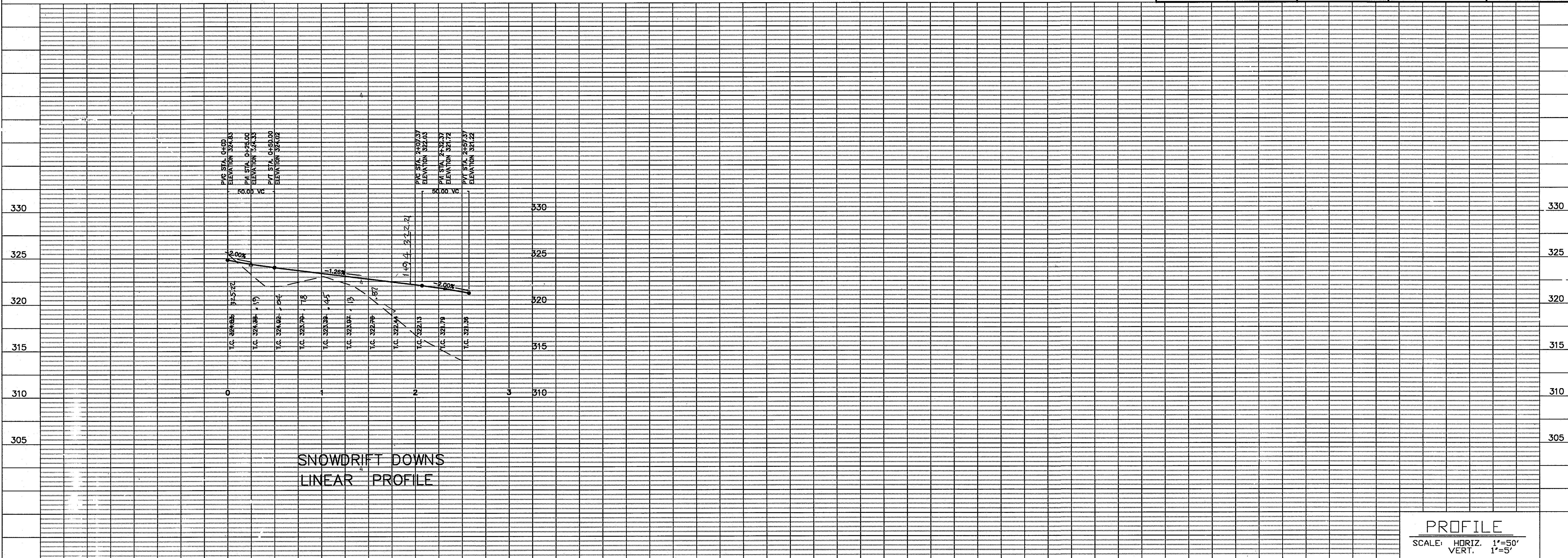
THE ROUSE BUILDING  
10275 LITTLE PATUXENT PARKWAY  
COLUMBIA, MARYLAND 21044  
PHONE: (410) 992-6084

TITLE: SNOWDRIFT DOWNS  
ROAD CONSTRUCTION PLAN

Des By	K.D.	Scale	1"=50'	Proj No	21125.01
Drn By	M.C.A.	Date	OCT. ,2002	DRAWING NO	
Chk By	G.K.	Approved			5 OF 29

PLAN  
SCALE: 1"=50'

FOR CONTINUATION  
SEE SHEET 2 OF 29

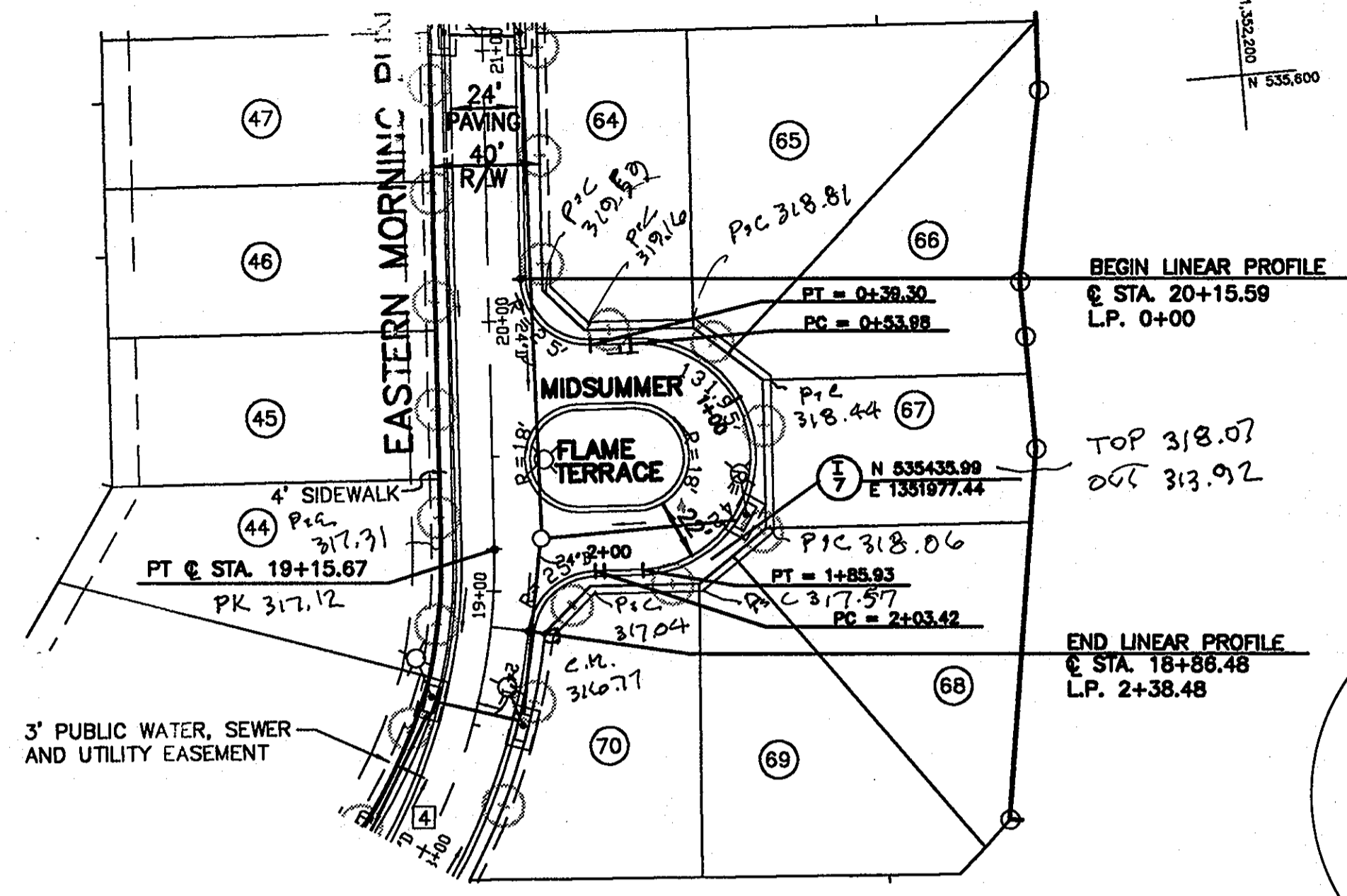


PROFILE  
SCALE: HORIZ. 1"=50'  
VERT. 1"=5'

FOR CONTINUATION  
SEE SHEET 3 OF 29

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS  
*Christopher M. Davelle* 4-22-03  
CHIEF, BUREAU OF HIGHWAYS HB DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING  
*Cindy Hamelin* 5/5/03  
Chief, Division of Land Development HB Date  
*MK* 4/10/03  
Chief, Development-Engineering Division MK Date



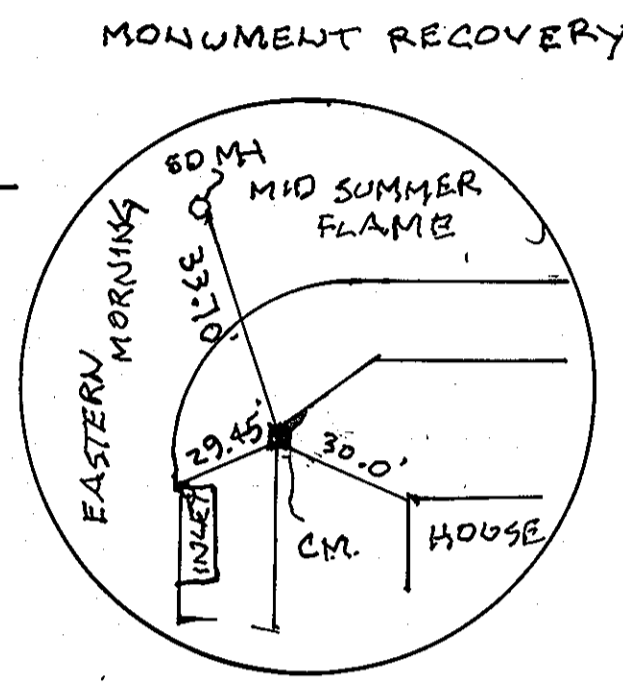
**STREET LIGHT LEGEND**

☒ 100 WATT HPS VAPOR PREMIER COLONIAL POST TOP

STREET NAME	STATION	OFF-SET	FIXTURE/POLE TYPE	COMMENTS
EASTERN MORNING RUN	19+48	16'R	100 WATT HPS VAPOR PREMIER POST-TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE	

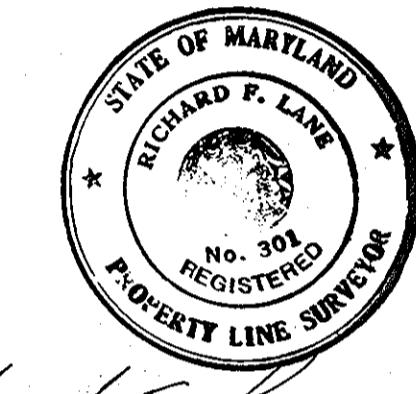
**ALIGNMENT CURVE DATA**

CURVE NO.	DELTA	RADIUS	LENGTH	TANGENT	CHORD
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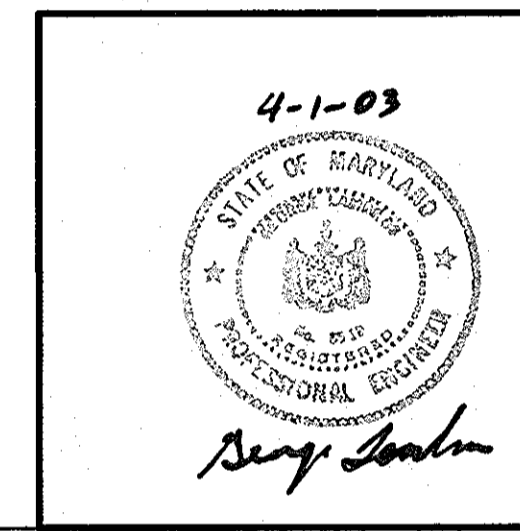


NOTE:  
ISLAND @ CUL DE SAC TO BE MAINTAINED BY HOA.

SHANABERGER & LANE  
8726 TOWN & COUNTRY BLVD.  
SUITE 201  
ELLICOTT CITY, MARYLAND 21043



*Richard F. Lane*  
ROAD & STORM DRAIN AS-BUILT



PROJECT: EMERSON SECTION 2  
(KEY PROPERTY)  
PHASE 4  
LOTS 1-120 & OPEN SPACELOTS 121-124  
TAX MAP NO. 47 ZONED: PEC-300-3  
PARCEL P.837, P.3, P.462  
BLOCK 2, 7, 8, 9, 14, 15, 20, & 21  
ELECTION DISTRICT No.6 HOWARD COUNTY, MARYLAND

**CENTURY ENGINEERING, INC.**  
CONSULTING ENGINEERS, PLANNERS  
32 WEST ROAD  
TOWSON, MARYLAND 21204

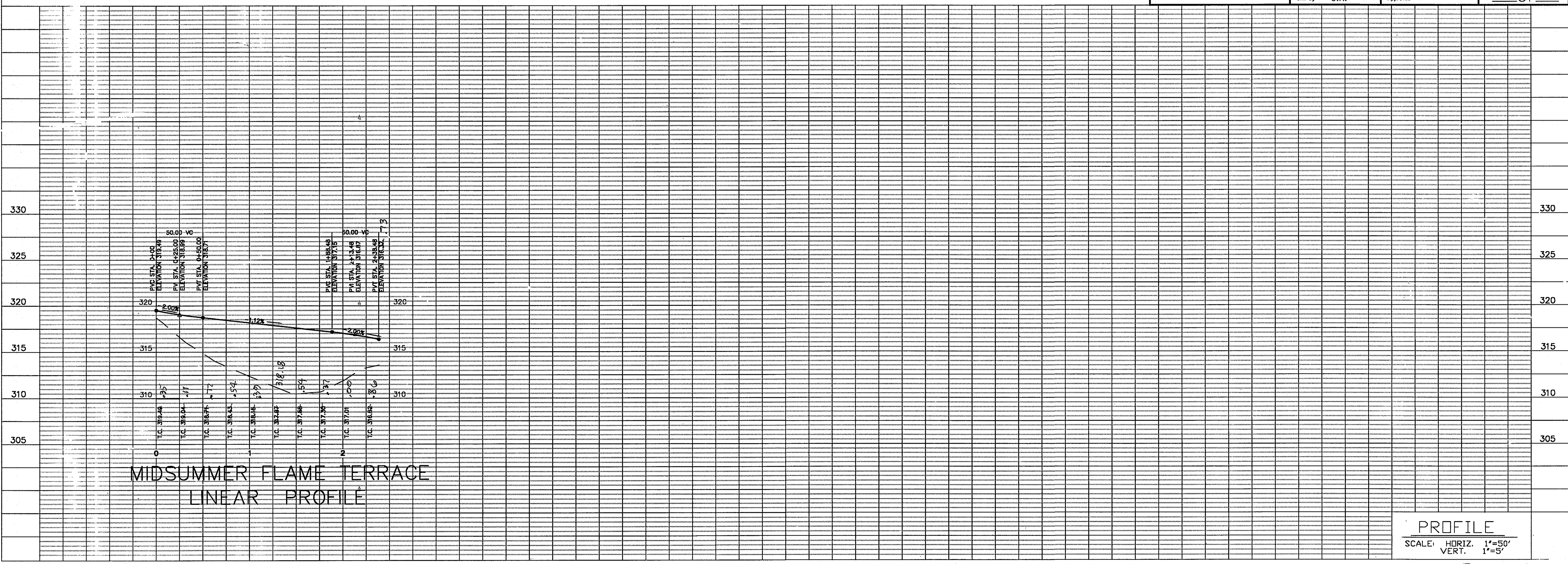
OWNER/DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION  
THE ROUSE BUILDING  
10275 LITTLE PATENT PARKWAY  
COLUMBIA, MARYLAND 21044  
PHONE: (410) 992-6084

TITLE: MIDSUMMER FLAME TERRACE  
ROAD CONSTRUCTION PLAN

Des By	K.D.	Scale	1"=50'	Proj No	21125.01
Drn By	M.C.A.	Date	OCT. ,2002	DRAWING NO	
Chk By	G.K.	Approved			6 OF 29

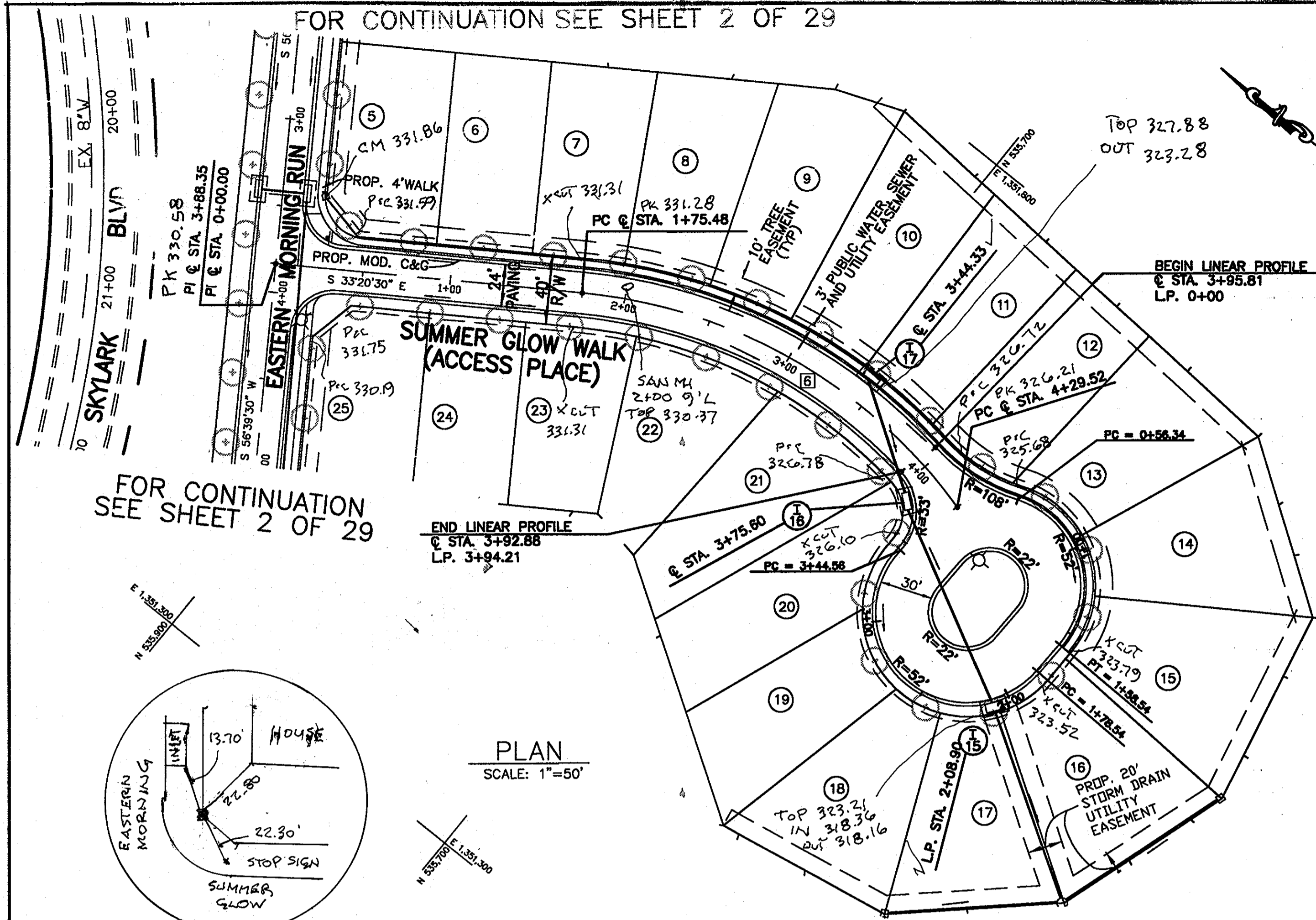
FOR CONTINUATION  
SEE SHEET 3 OF 29

PLAN  
SCALE: 1"=50'

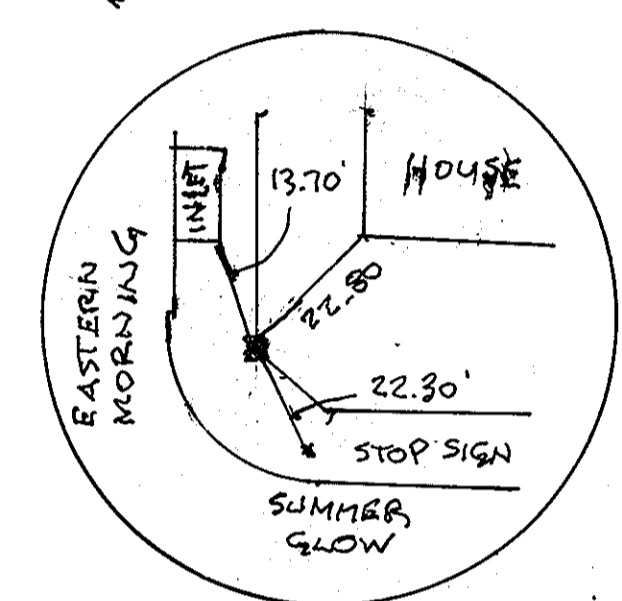


PROFILE  
SCALE: HORIZ. 1"=50'  
VERT. 1"=5'

FOR CONTINUATION SEE SHEET 2 OF 29

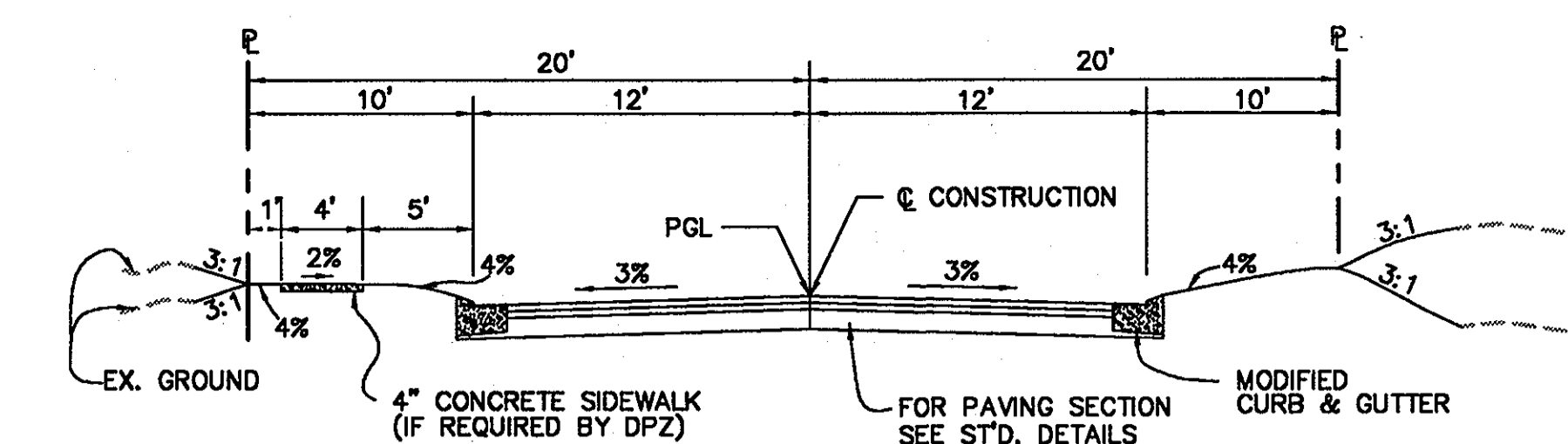


FOR CONTINUATION SEE SHEET 2 OF 29



END LINEAR PROFILE  
 @ STA. 3+92.88  
 L.P. 3+94.21

PLAN  
 SCALE: 1"=50'



TYPICAL SECTION - PUBLIC ACCESS PLACE  
 24" PAVING ON 40' R/W  
 NOT TO SCALE

SHANBERGER & LANE  
 8726 TOWN & COUNTRY BLVD.  
 SUITE 201  
 ELLICOTT CITY, MARYLAND 21043

STREET LIGHT LEGEND

- 250 WATT HPS VAPOR
- 150 WATT HPS VAPOR PENDANT COLONIAL POST TOP
- 100 WATT HPS VAPOR PREMIER COLONIAL POST TOP

STREET NAME	STATION	OFF-SET	FIXTURE/POLE TYPE	COMMENTS
SUMMER GLOW WALK	LP 0+40	39'R	100 WATTS HPS VAPOR PREMIER POST-TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE	IN ISLAND

NOTE:  
 ISLAND @ CUL-DE-SAC TO BE MAINTAINED BY HOA.

ALIGNMENT CURVE DATA

CURVE NO.	DELTA	RADIUS	LENGTH	TANGENT	CHORD
5	48°31'02"	300.00'	254.03'	135.19'	246.51'

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS  
 [Signature] 4-22-03  
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING  
 [Signature] 5/6/03  
 Chief, Division of Land Development

Chief, Development Engineering Division [Signature] 4/24/03

Date No Revision Description

PROJECT: EMERSON SECTION 2 (KEY PROPERTY)  
 PHASE 4  
 LOTS 1-120 & OPEN SPACE LOTS 121-124

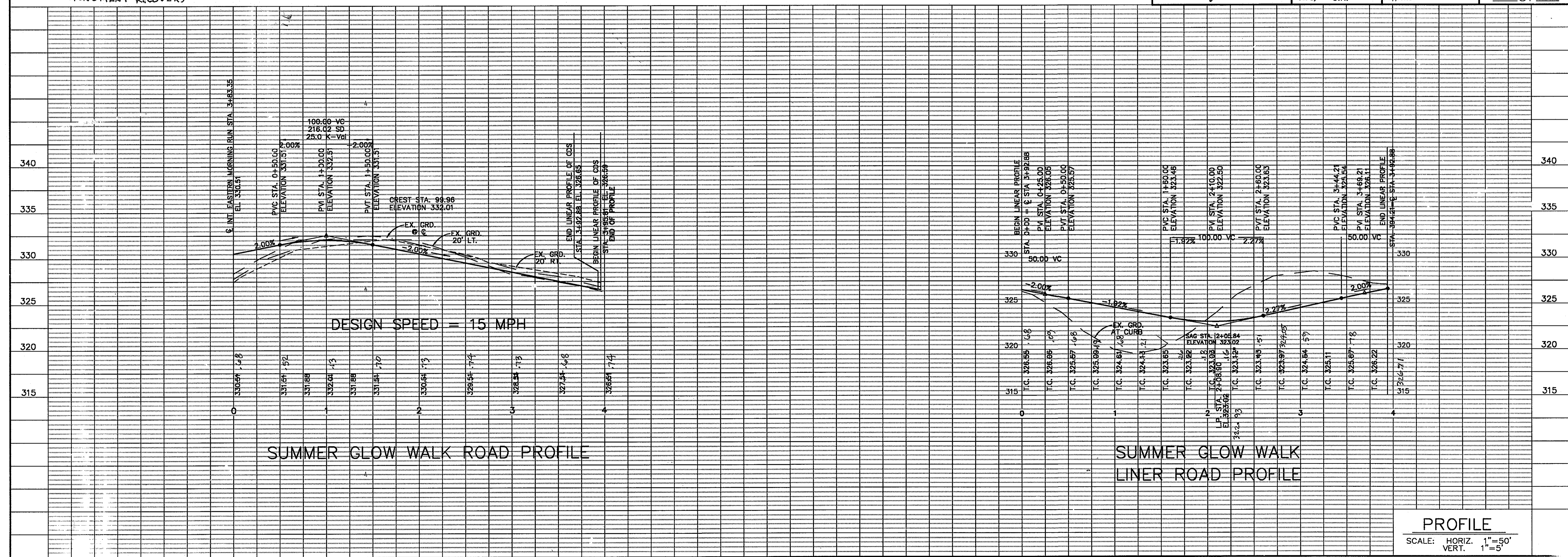
TAX MAP NO. 47 ZONED: PEC-MXD-3  
 PARCEL P.837, P.3, P.462  
 BLOCK 2, 7, 8, 9, 14, 15, 20, & 21  
 ELECTION DISTRICT No.6 HOWARD COUNTY, MARYLAND

**CENTURY ENGINEERING, INC.**  
 CONSULTING ENGINEERS, PLANNERS  
 32 WEST ROAD  
 TOWSON, MARYLAND 21204

OWNER/DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION  
 THE ROUSE BUILDING  
 10275 LITTLE PATUXENT PARKWAY  
 COLUMBIA, MARYLAND 21044  
 PHONE: (410) 992-6084

TITLE: SUMMER GLOW WALK ROAD CONSTRUCTION PLAN

Des By	K.D.	Scale	1"=50'	Proj No	21125.01
Drn By	M.C.A.	Date	OCT. ,2002	DRAWING NO	7 OF 29
Chk By	G.K.	Approved			



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





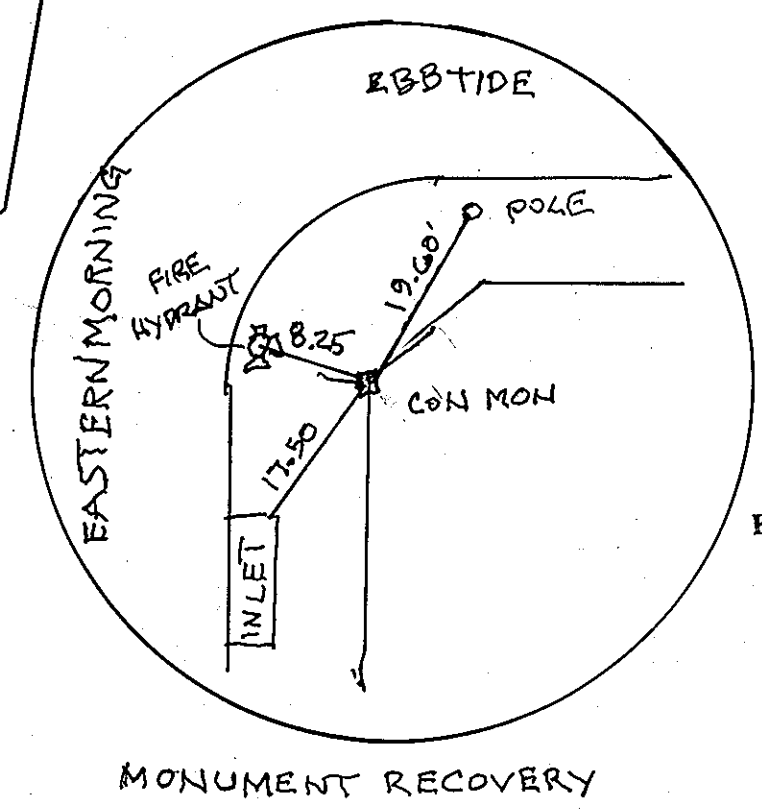
**STREET LIGHT LEGEND**

- 250 WATT HPS VAPOR
- 150 WATT HPS VAPOR PENDANT COLONIAL POST TOP
- 100 WATT HPS VAPOR PREMIER COLONIAL POST TOP

STREET NAME	STATION	OFF-SET	FIXTURE/POLE TYPE	COMMENTS
EBB TIDE LANE	LP 0+72	3'L	100 WATTS HPS VAPOR PREMIER POST-TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE	

**ALIGNMENT CURVE DATA**

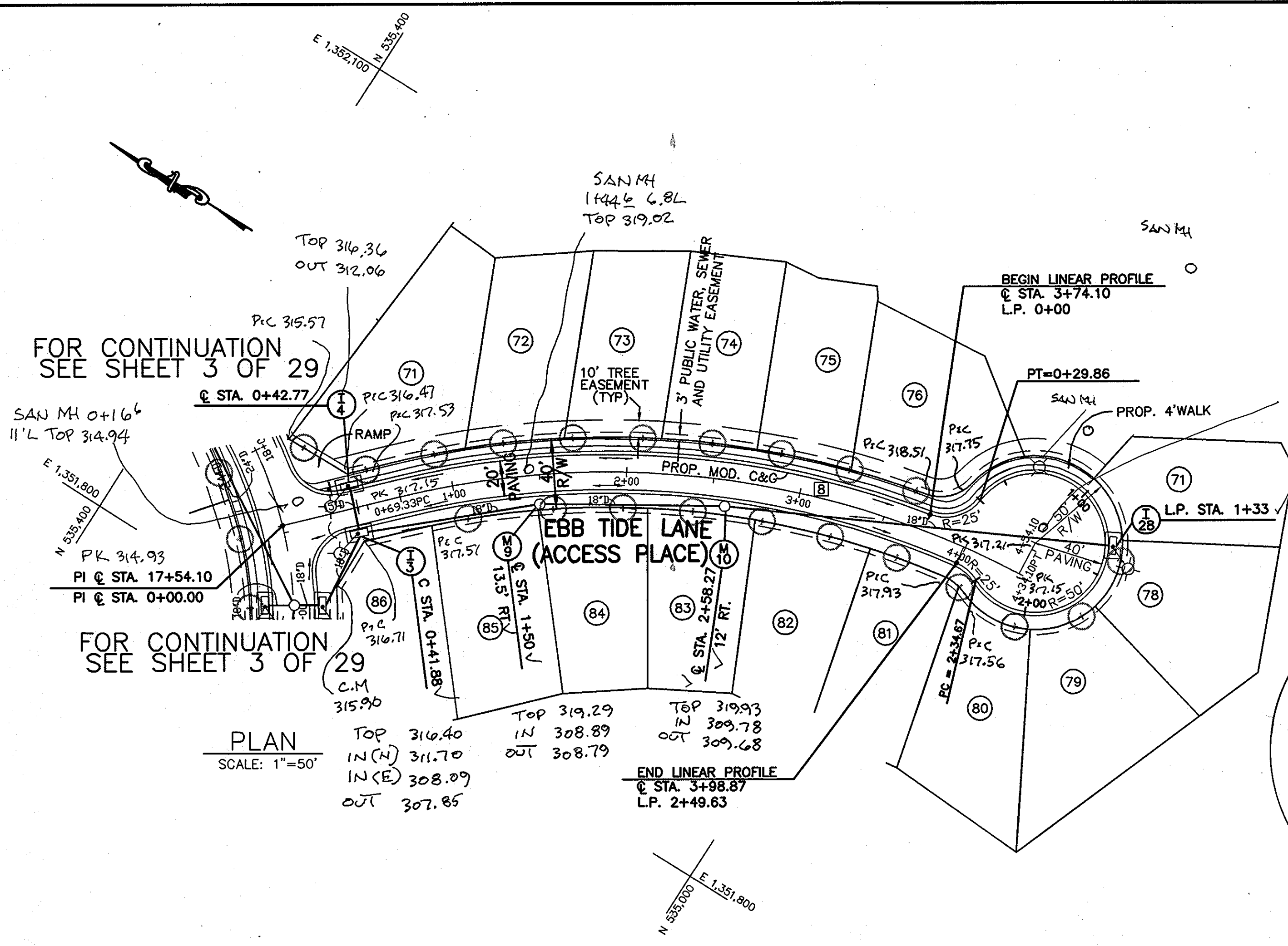
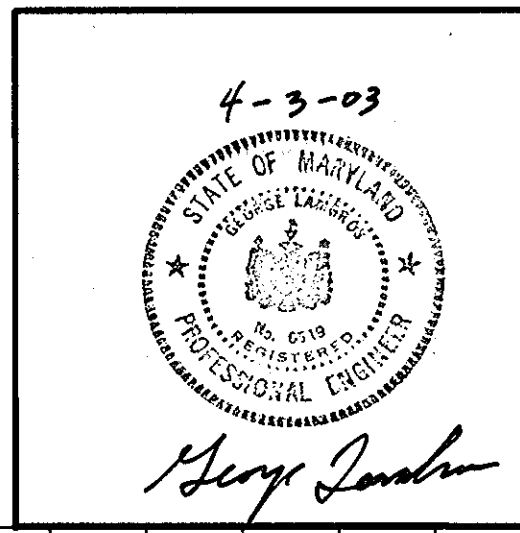
CURVE NO.	DELTA	RADIUS	LENGTH	TANGENT	CHORD
1	41°47'57"	500.00'	364.77'	190.93'	356.73'



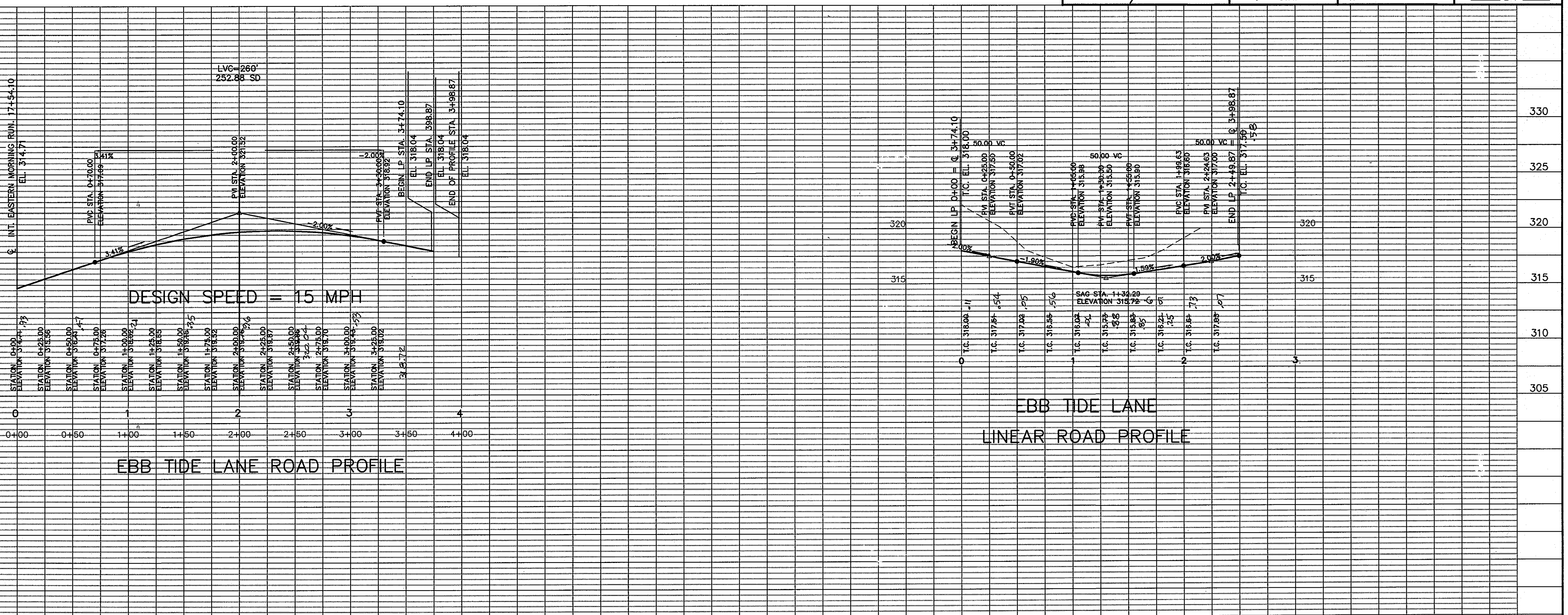
SHANABERGER & LANE  
 8726 TOWN & COUNTRY BLVD.  
 SUITE 201  
 ELLICOTT CITY, MARYLAND 21043



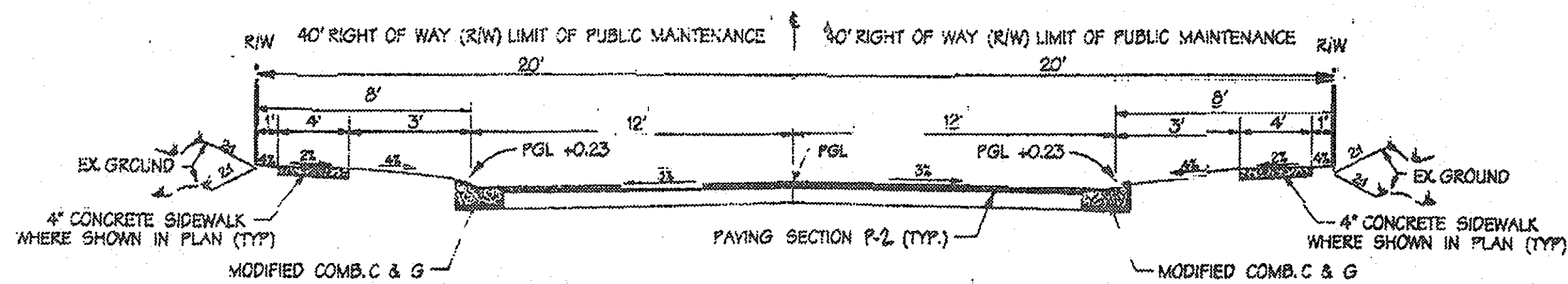
*Richard F. Lane*  
 ROAD & STORM DRAIN AS-BUILT



PLAN  
 SCALE: 1"=50'



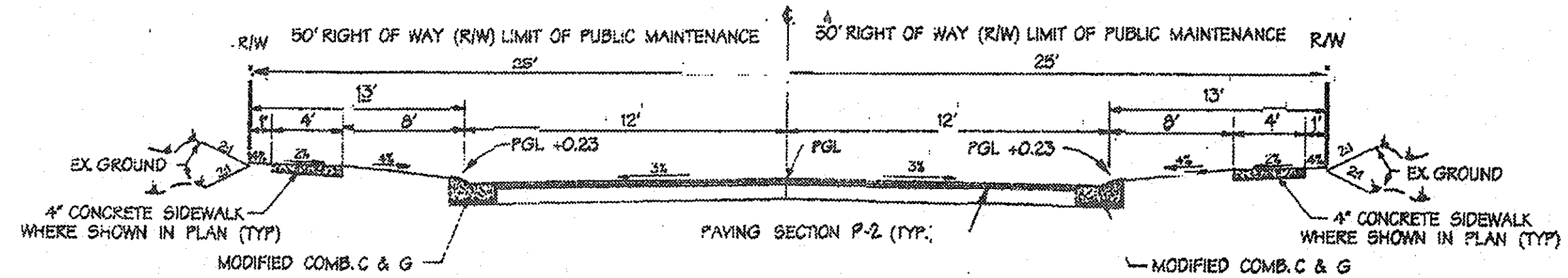
PROFILE  
 SCALE: HORIZ. 1"=50'  
 VERT. 1"=5'



TYPICAL SECTION  
24' PAV. ON 40' R/W

NOT TO SCALE  
DESIGN SPEED: 30MPH

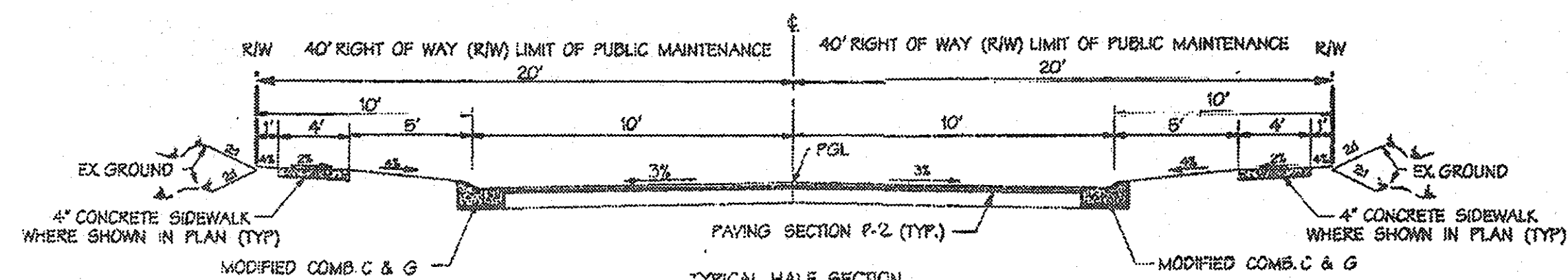
EASTERN MORNING STA. 17+50 TO THE END  
OF SUMMER GLOW WALK



TYPICAL SECTION  
24' PAV. ON 50' R/W

NOT TO SCALE  
DESIGN SPEED: 30MPH

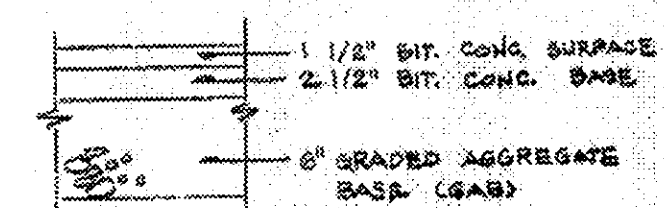
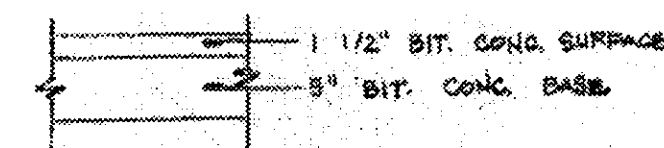
EASTERN MORNING STA. 0+00 TO STA. 17.50



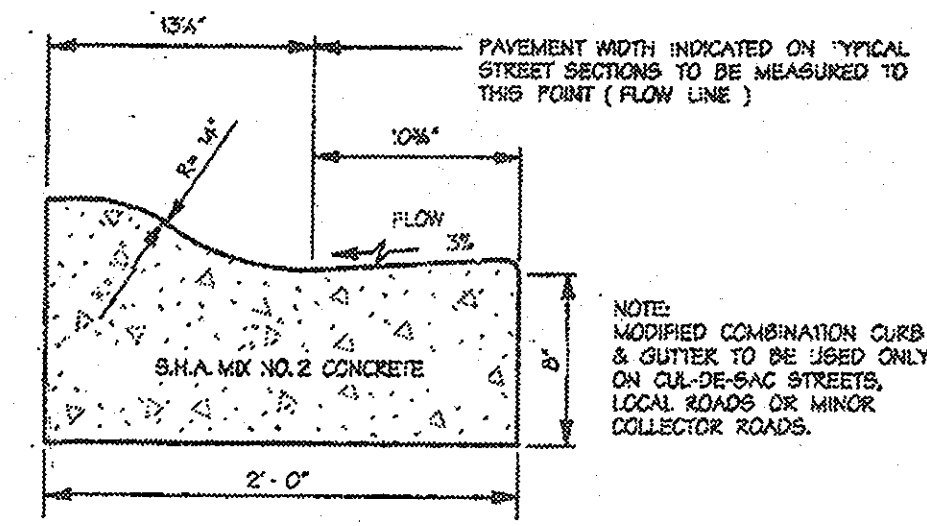
TYPICAL HALF SECTION  
20' PAV. ON 40' R/W

NOT TO SCALE  
DESIGN SPEED: 30MPH

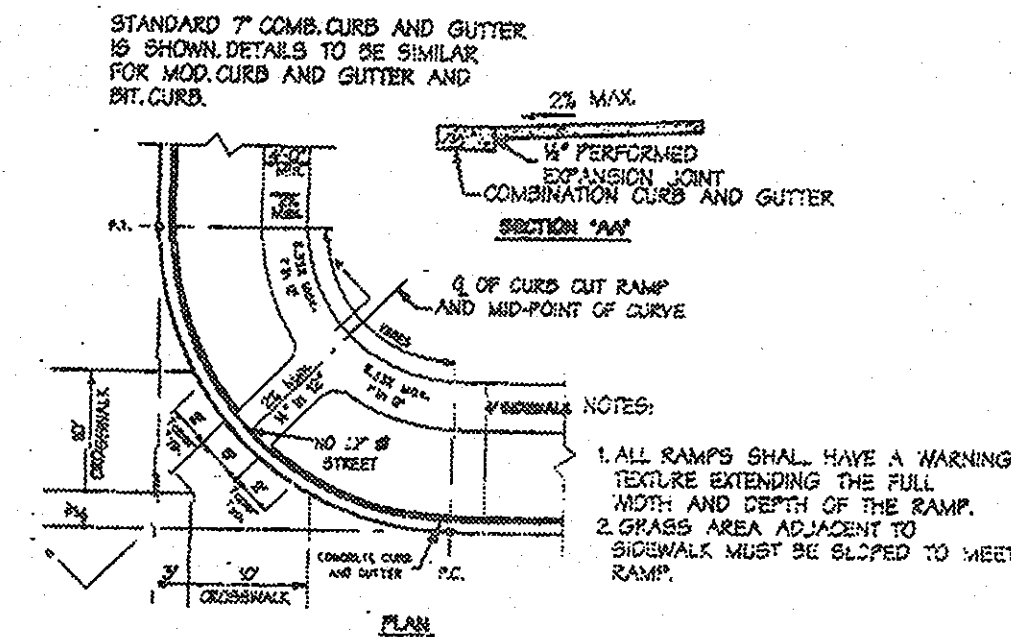
EBB TIDE LANE, VAST OCEAN PASS  
ANCIENT SEA PATH



PAVING SECTION P-2  
NO SCALE



MODIFIED COMBINATION  
CURB & GUTTER  
NO SCALE



SIDEWALK RAMP  
TYPE 'A'

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

*Richard M. Deane*  
CHIEF, BUREAU OF HIGHWAYS

4-22-03  
DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

*Cindy Hamels*  
Chief, Division of Land Development

5/5/03  
Date  
4/22/03  
Date

Date	No	Revision Description

PROJECT: EMERSON SECTION 2  
(KEY PROPERTY)  
PHASE 4  
LOTS 1-120 & OPEN SPACE LOTS 121-124  
TAX MAP NO. 47 ZONED: PEC-MXD-3  
PARCEL P.837, P.3, P.462  
BLOCK 2, 7, 8, 9, 14, 15, 20, & 21  
ELECTION DISTRICT No.6 HOWARD COUNTY, MARYLAND

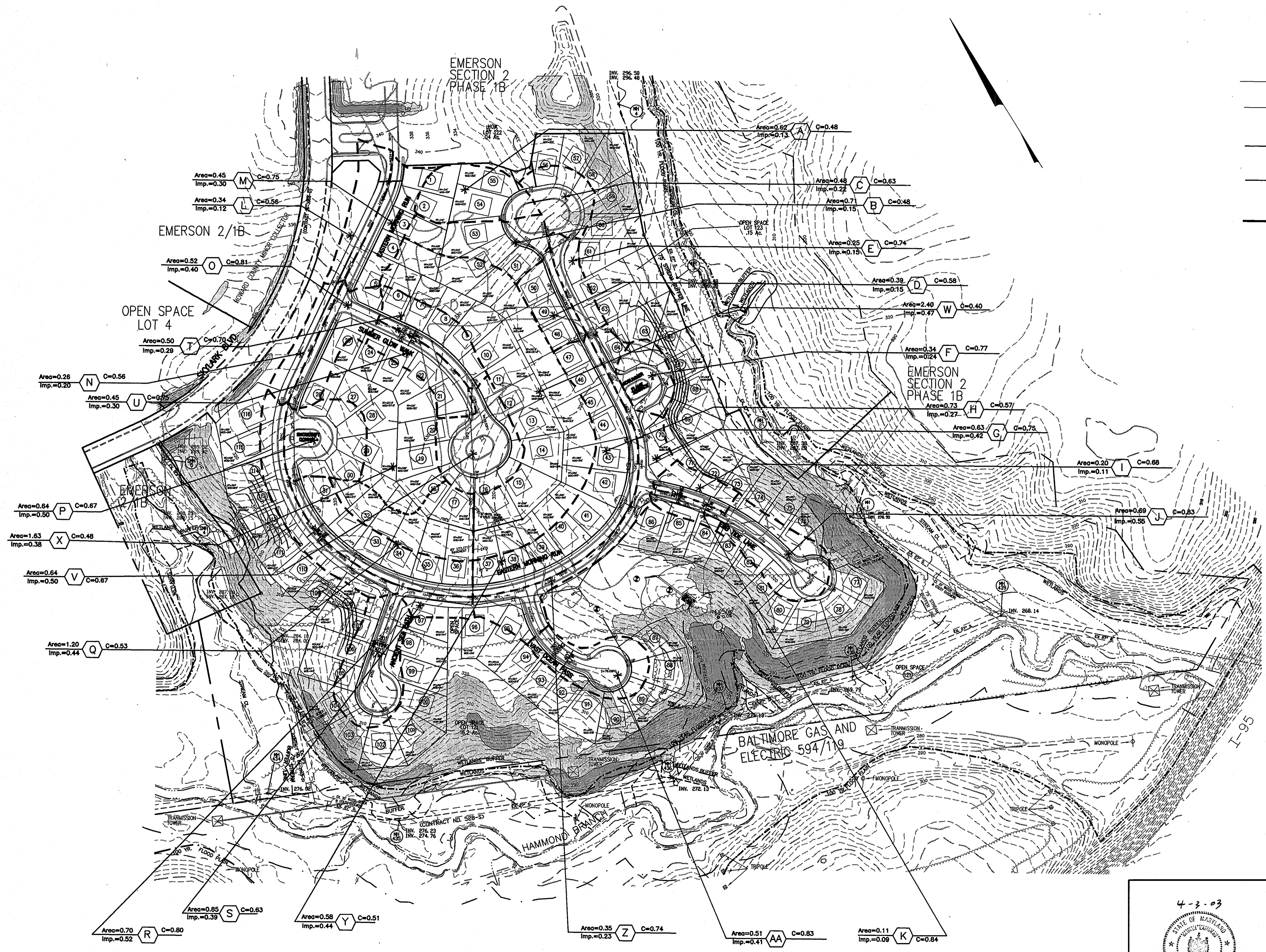
**CENTURY ENGINEERING, INC.**  
CONSULTING ENGINEERS, PLANNERS  
32 WEST ROAD  
TOWSON, MARYLAND 21204

OWNER/DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION  
THE ROUSE BUILDING  
10275 LITTLE PATUXENT PARKWAY  
COLUMBIA, MARYLAND 21044  
PHONE: (410) 992-6084

TITLE ROAD CONSTRUCTION DETAILS

Des By K.D.	Scale 1"=50'	Proj No 21125.01
Drn By M.C.A.	Date OCT. ,2002	DRAWING NO
Chk By G.K.	Approved	10 OF 29





**LEGEND**

- 340 — EXISTING CONTOUR
- 340 — PROPOSED CONTOUR
- 15" D — PROPOSED STORM DRAIN
- — PROPOSED DRAINAGE AREA LIMIT

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS  
*Richard W. Daniels* 4-22-07  
 CHIEF, BUREAU OF HIGHWAYS #3 DATE

~~APPROVED FOR PUBLIC (OR PRIVATE) WATER AND PUBLIC OR PRIVATE SEWERAGE SYSTEMS~~

COUNTY HEALTH OFFICER \_\_\_\_\_ DATE  
 HOWARD COUNTY HEALTH DEPARTMENT

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

*Andi Strout* 5/5/03  
 Chief, Division of Land Development #B Date

*[Signature]* 4/15/03  
 Chief, Development Engineering Division MK Date

Date	No	Revision Description

PROJECT: EMERSON SECTION 2  
 (KEY PROPERTY)  
 PHASE 4  
 LOTS 1-120 & OPEN SPACE LOTS 121-124

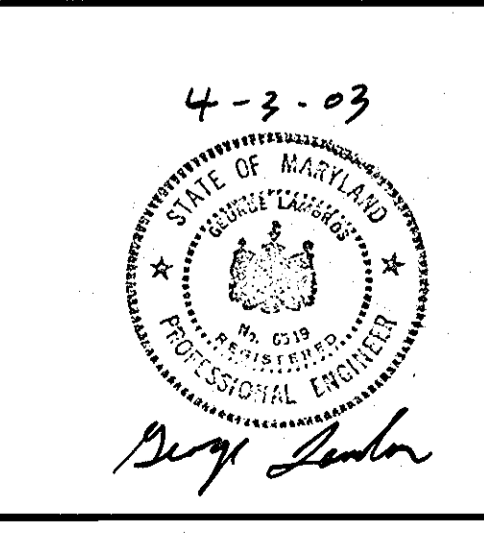
TAX MAP NO. 47 ZONED: PEC-MXD-3  
 PARCEL P.837, P.3, P.462  
 BLOCK 2, 7, 8, 9, 14, 15, 20, & 21  
 ELECTION DISTRICT No.6 HOWARD COUNTY, MARYLAND

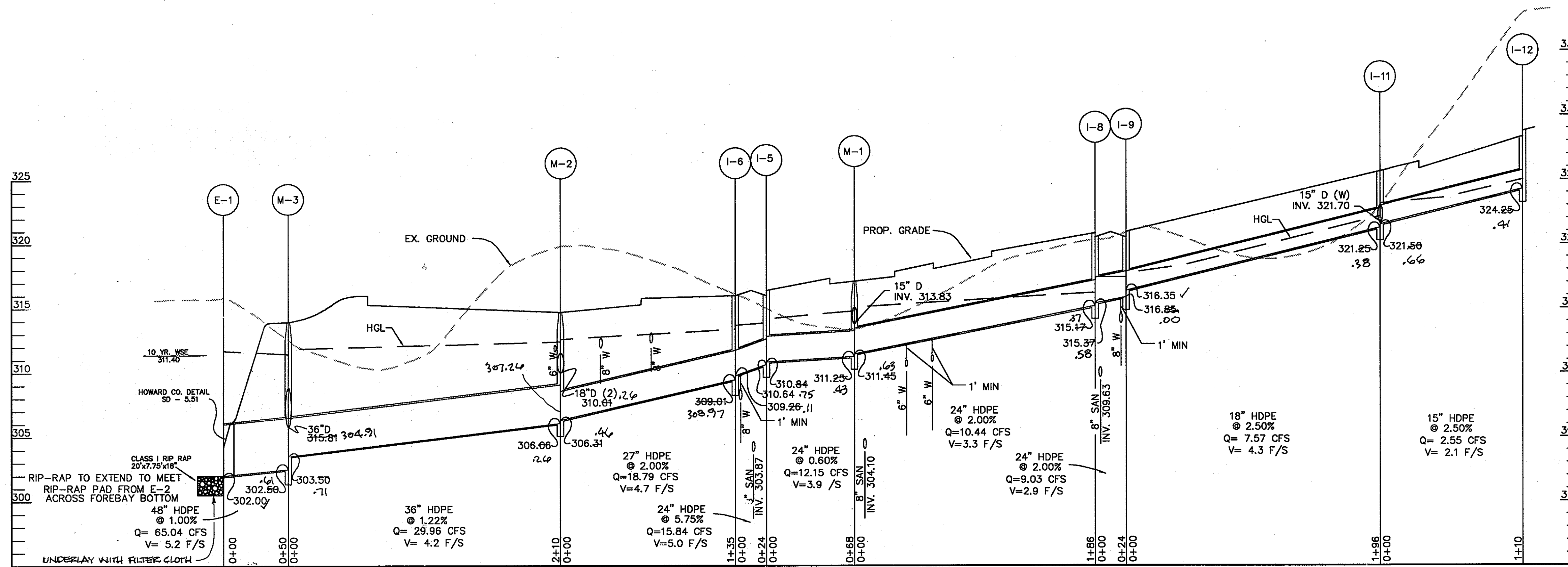
**CENTURY ENGINEERING, INC.**  
 CONSULTING ENGINEERS, PLANNERS  
 32 WEST ROAD  
 TOWSON, MARYLAND 21204

OWNER/DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION  
 THE ROUSE BUILDING  
 10275 LITTLE PATUXENT PARKWAY  
 COLUMBIA, MARYLAND 21044  
 PHONE: (410) 992-6084

TITLE: STORM DRAIN DRAINAGE AREA MAP

Des By	K.D.	Scale	1"=100'	Proj No	21125.01
Drn By	MCA/MLA	Date	OCT. ,2002	DRAWING NO	
Chk By	G.K.	Approved			11 OF 29





**PROFILE**

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

**MANHOLE SCHEDULE**

NO.	TYPE	SIZE	INV. OUT	TOP. EL.
1	ST MH G5.14	48"	311.25 .43	317.44 31.6
2	ST MH G5.13	60"	306.06 .26	317.64 31.4
3	ST MH G5.03	60"	302.50 .61	316.00 31.2
4	ST MH G5.13	60"	300.30 305.73	319.99 .93
5	ST MH G5.13	60"	307.72 .13	317.55 .23
6	ST MH G5.14	48"	312.77 .69	318.08 .14
7	ST MH G5.14	48"	309.08 308.76	313.36 .76
8	ST MH G5.14	60"	314.36 .80	321.75 32.2
9	ST MH G5.14	48"	308.63 .79	320.52 31.9
10	ST MH G5.14	48"	309.47 .68	320.36 31.9
E-1	HDPE END SEC.		302.00	-
E-2	HDPE END SEC.		302.00 .09	-

**INLET SCHEDULE**

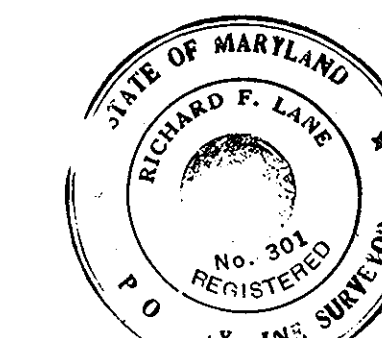
NO.	TYPE	Q10	INV. OUT	TOP. EL.*
1	A-10, SD4.02	2.54	310.25 307.70	314.89 TC .90
2	A-10, SD4.02	2.93	310.25 .53	314.89 TC .88
3	A-5, SD4.01	0.77	306.00 307.85	316.00 TC .40
4	A-5, SD.01	1.19	311.80 312.06	316.00 TC .36
5	A-10, SD4.02	4.59	310.64 .75	316.00 TC .20
6	A-10	3.57	309.01 308.97	316.00 TC .07
7	A-10	2.54	314.25 313.92	317.48 TC 31.8
8	A-10	1.62	315.17 .37	325.43 TC 32.1
9	A-10	1.96	316.85 .00	325.43 TC 32.1
10	A-10	2.55	322.75 .58	327.42 TC .50
11	A-10	2.89	321.25 .38	326.56 TC .62
12	A-10, SD4.02	2.55	324.25 .41	328.20 TC .07
13	YARD, SD4.11	7.20	318.75 315.73	OPEN 320.03
14	YARD, SD4.11	5.85	315.50 318.82	OPEN 323.62
15	A-10, SD4.02	4.20	319.03 .16	323.02 TC 32.2
16	A-10, SD4.02	2.89	321.59 .33	327.04 TC 32.6
17	A-10, SD4.02	2.98	323.50 .28	327.56 TC 32.8
19	A-10, SD4.02	3.51	309.32 .30	312.65 TC .95
20	A-10, SD4.02	5.27	310.55 .63	316.45 TC 31.7
21	A-10, SD4.02	5.44	310.99 .92	316.45 TC 31.7
22	A-10, SD4.02	3.66	315.73 .46	320.87 TC 32.1
23	A-10, SD4.02	1.28	321.25 .32	324.73 TC 32.5
24	A-10, SD4.02	3.57	319.68 .38	324.73 TC 32.5
25	A-10, SDR.02	2.89	326.54 .80	331.44 TC .83
26	A-10, SDR.02	1.62	327.00 .13	331.44 TC .72
28	A-10, SDR.02	5.56	311.00 310.90	315.72 TC .93
29	A-10, SDR.02	5.10	313.75 312.05	316.68 TC 31.7

\*ADJUST TO ELEVATIONS FOR INLET HEADPIECE

**PIPE SCHEDULE**

48" HDPE	50 LF
36" HDPE	440 LF
27" HDPE	442 LF
24" HDPE	898 LF
18" HDPE	1630 LF
15" HDPE	499 LF

SHANABERGER & LANE  
8726 TOWN & COUNTRY BLVD.  
SUITE 201  
BELLICOTT CITY, MARYLAND 21043



Richard F. Lane  
ROAD 1 STORM DRAIN AS-BUILT

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS  
*Richard M. Deady* 4-22-03  
CHIEF, BUREAU OF HIGHWAYS 710 DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*[Signature]* 4/10/03  
CHIEF-DEVELOPMENT ENGINEERING DIVISION 1111 DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
HOWARD COUNTY HEALTH DEPARTMENT  
*Cindy Hammet* 4/5/03  
CHIEF-DIVISION OF LAND DEVELOPMENT 1111 DATE

APPROVED: COUNTY HEALTH OFFICER \_\_\_\_\_ DATE \_\_\_\_\_

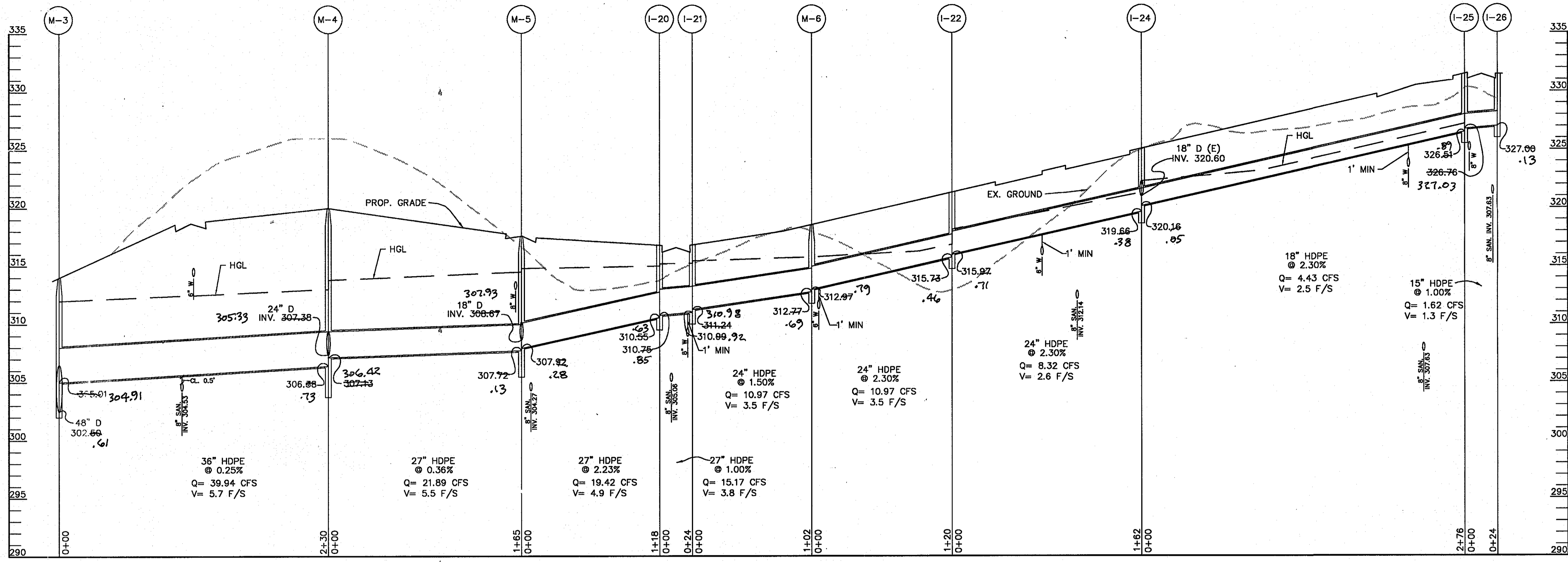
PROJECT: EMERSON SECTION 2 (KE' PROPERTY) PHASE 4 LOTS 1-120 & OPEN SPACE LOTS 121-124  
TAX MAP NO. 47 ZONED: PEC-MXD-3  
PARCEL: P-37, P-3, P-462  
BLOCK 2, 7, 8, 9, 14, 15, 20, & 21  
ELECTION DISTRICT No. 6 HOWARD COUNTY, MARYLAND

**CENTURY ENGINEERING, INC.**  
CONSULTING ENGINEERS, PLANNERS  
32 WEST ROAD  
TOWSON, MARYLAND 21204

OWNER/DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION  
THE ROUSE BUILDING  
10275 LITTLE PATUXENT PARKWAY  
COLUMBIA, MARYLAND 21044  
PHONE: (410) 932-6084

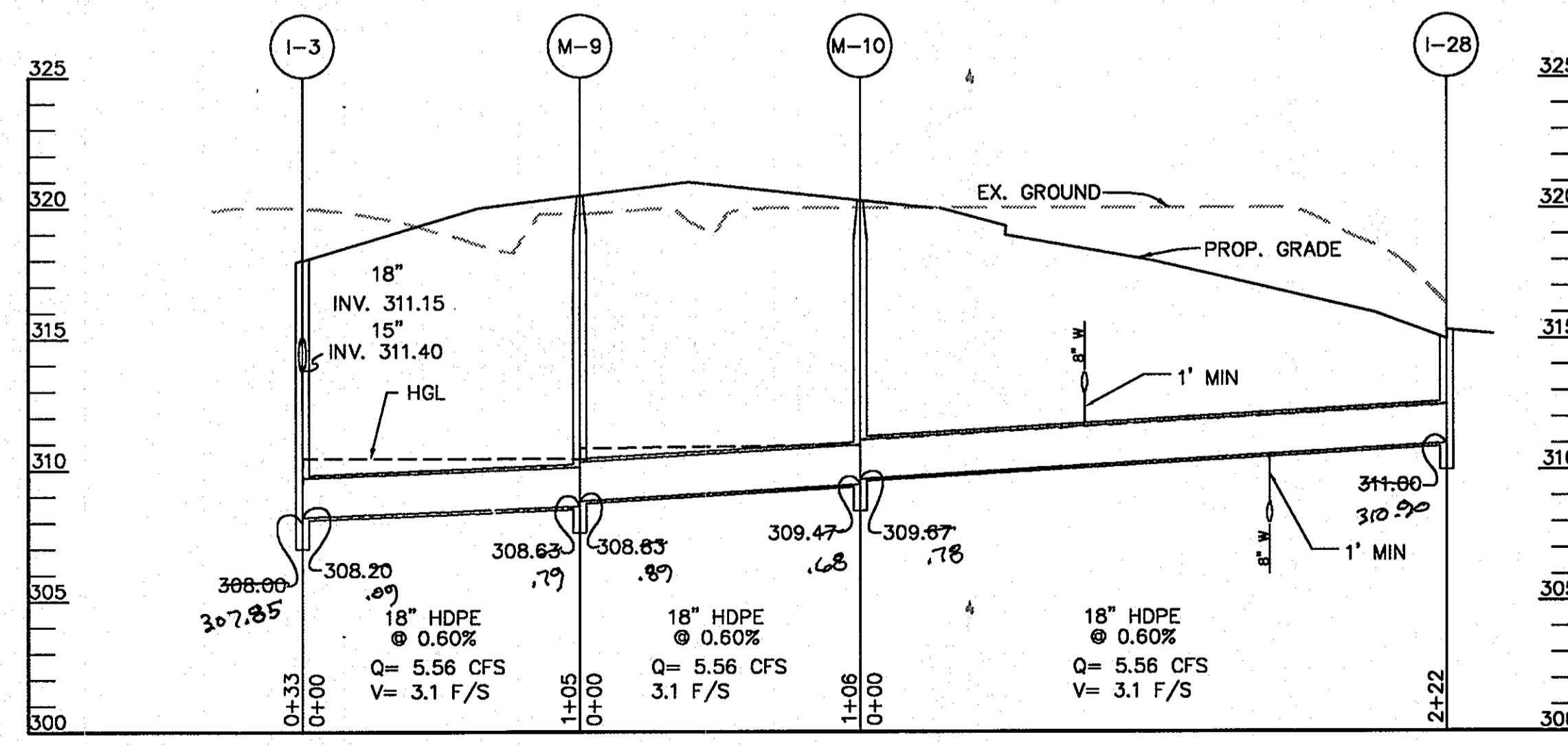
TITLE: STORM DRAIN PROFILE

Des By K.D. Scale 1"=50' Proj No 21125.01  
Dwn By MCA/MLA Date OCTOBER, 2002 DRAWING NO  
Chk By G.K. Approved 12 OF 29



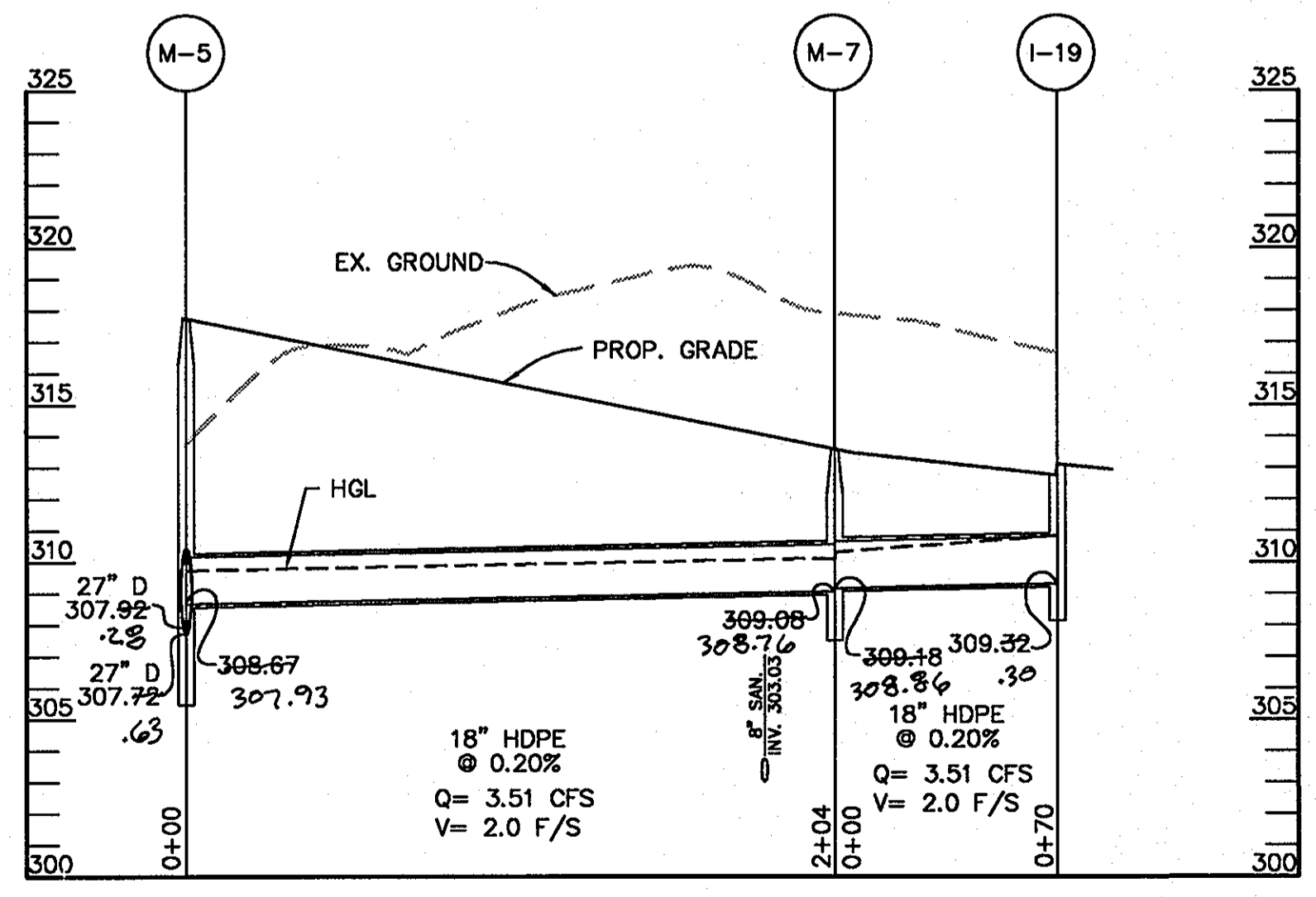
PROFILE

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



PROFILE

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



PROFILE

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

SHANABERGER & LANE  
8726 TOWN & COUNTRY BLVD.  
SUITE 201  
ELLICOTT CITY, MARYLAND 21043



*Richard F. Lane*  
ROAD/STORM DRAIN AS-BUILT

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS  
*Andrew M. Dwyer* 4-22-03  
CHIEF, BUREAU OF HIGHWAYS JB DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*Mark* 4/22/03  
CHIEF-DEVELOPMENT ENGINEERING DIVISION MK DATE  
*Cindy Hamant* 5/4/03  
CHIEF-DIVISION OF LAND DEVELOPMENT JB DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
HOWARD COUNTY HEALTH DEPARTMENT.  
COUNTY HEALTH OFFICER DATE

PROJECT: EMERSON SECTION 2 (KEY PROPERTY)  
PHASE 4  
LOTS 1-120 & OPEN SPACE LOTS 121-124  
TAX MAP NO. 47 ZONED: PEC-MXD-3  
PARCEL: P.837, P.3, P.462  
BLOCK 2, 7, 8, 9, 14, 15, 20, & 21  
ELECTION DISTRICT No. 6 HOWARD COUNTY, MARYLAND

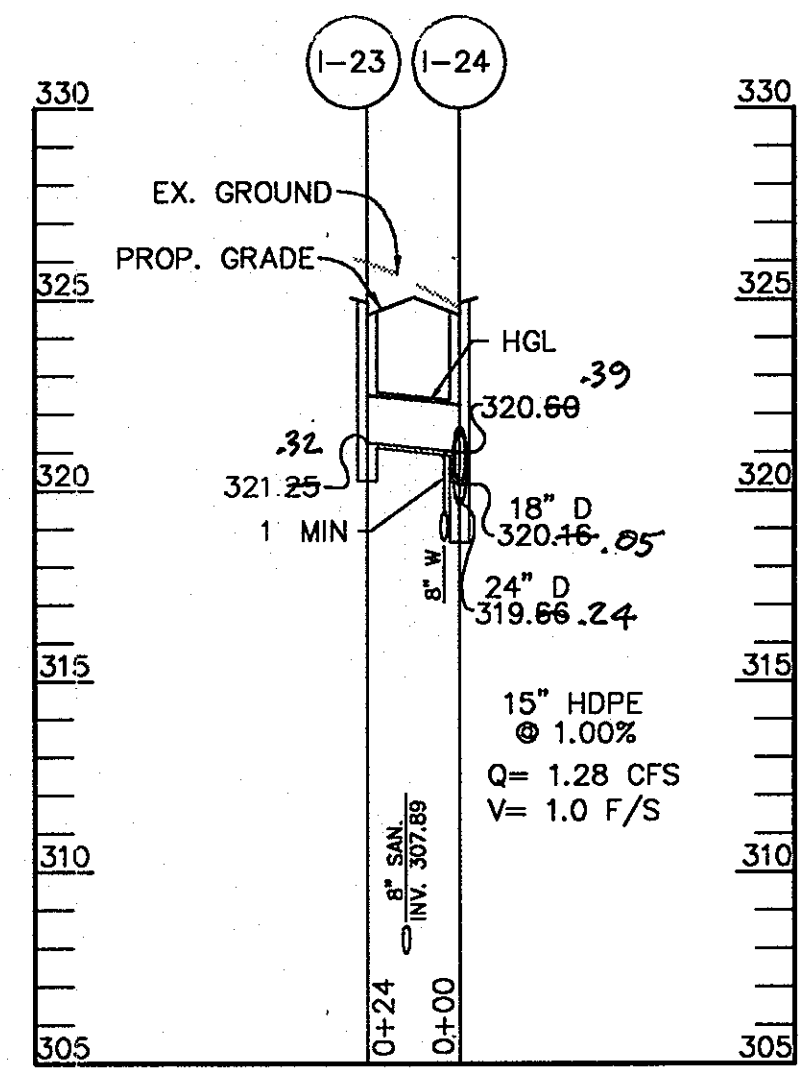
CENTURY ENGINEERING, INC.  
CONSULTING ENGINEERS, PLANNERS  
32 WEST ROAD  
TOWSON, MARYLAND 21204

OWNER/DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION  
THE ROUSE BUILDING  
10275 LITTLE PATUXENT PARKWAY  
COLUMBIA, MARYLAND 21044  
PHONE: (410) 992-6084

TITLE: STORM DRAIN PROFILE

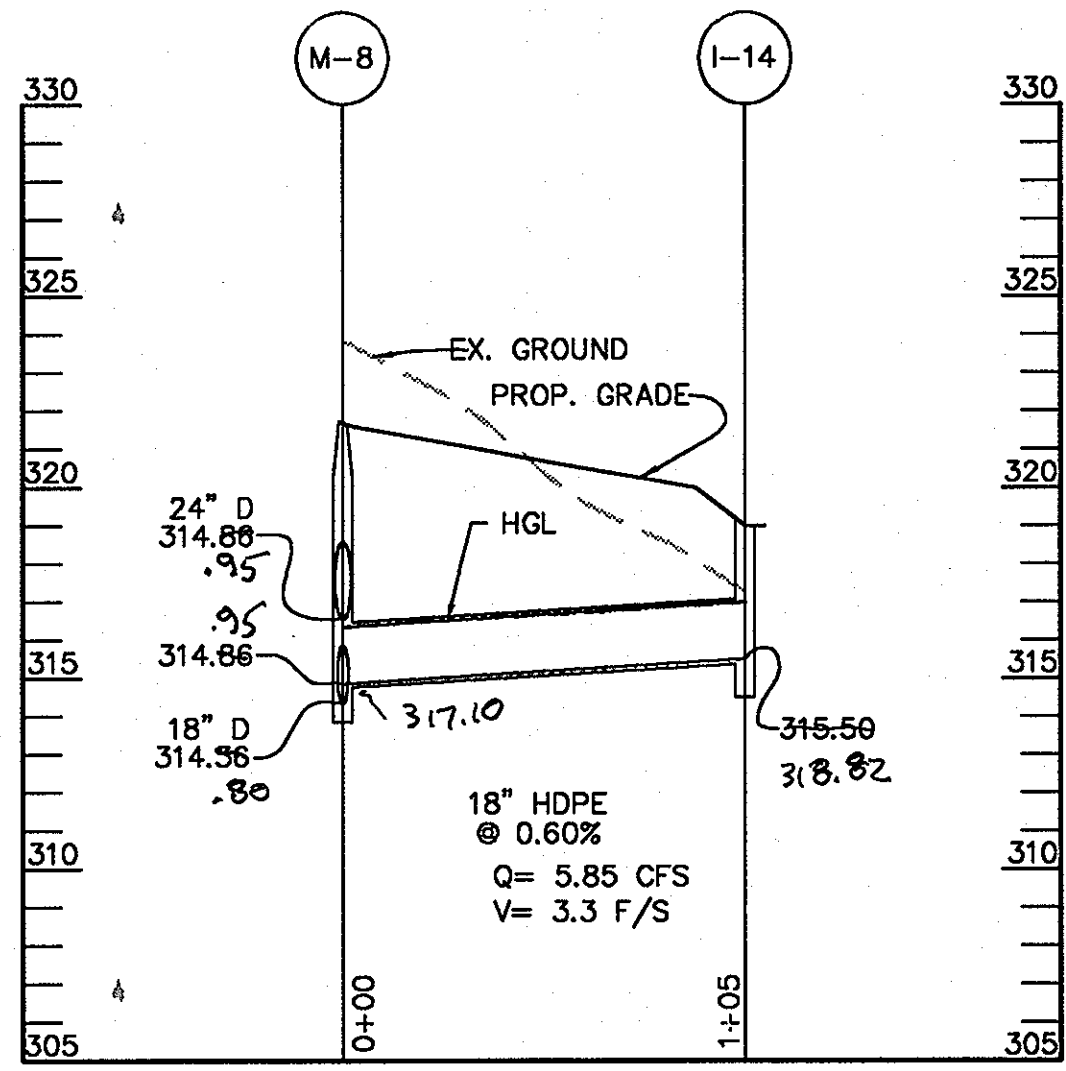
Des By K.D. Scale 1"=50' Proj No 21125.01  
Dwn By MCA/MLA Date OCTOBER, 2002 DRAWING NO  
Chk By G.K. Approved 13 OF 29





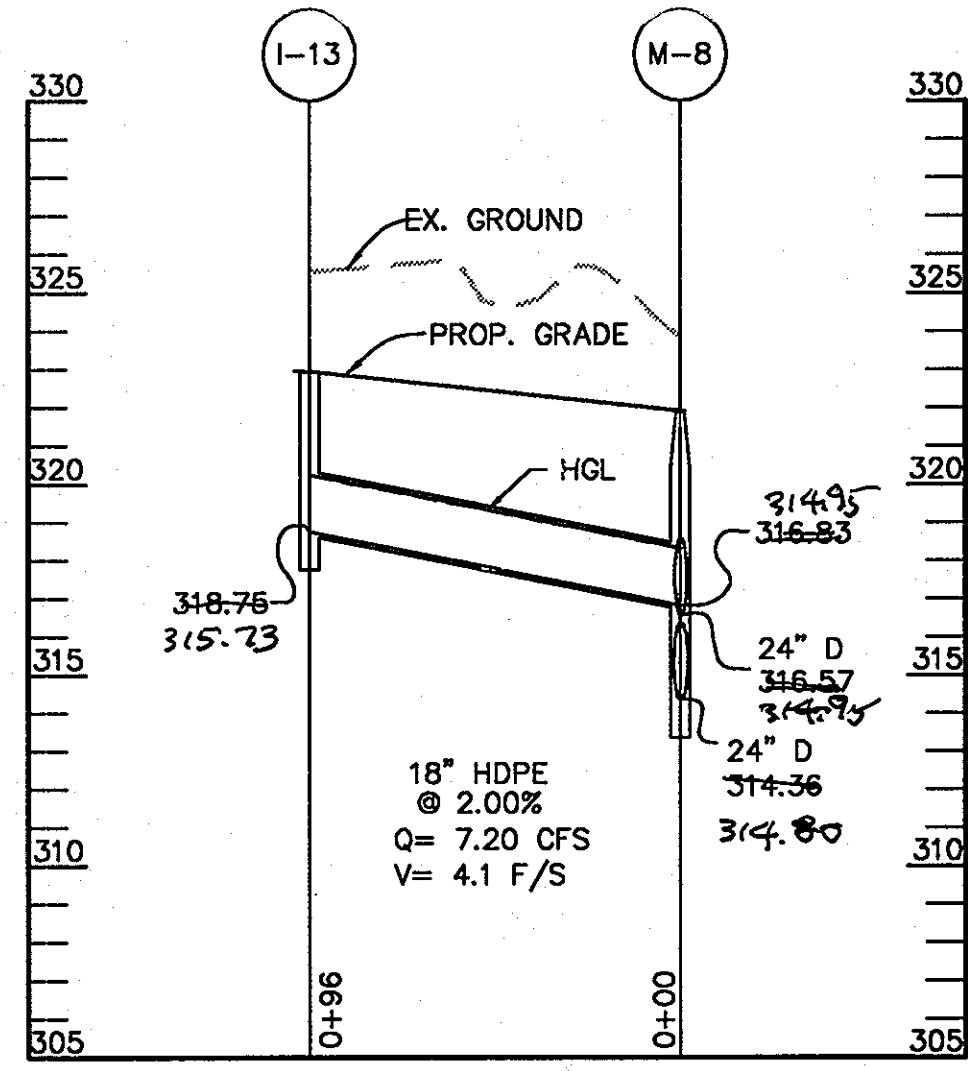
PROFILE

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



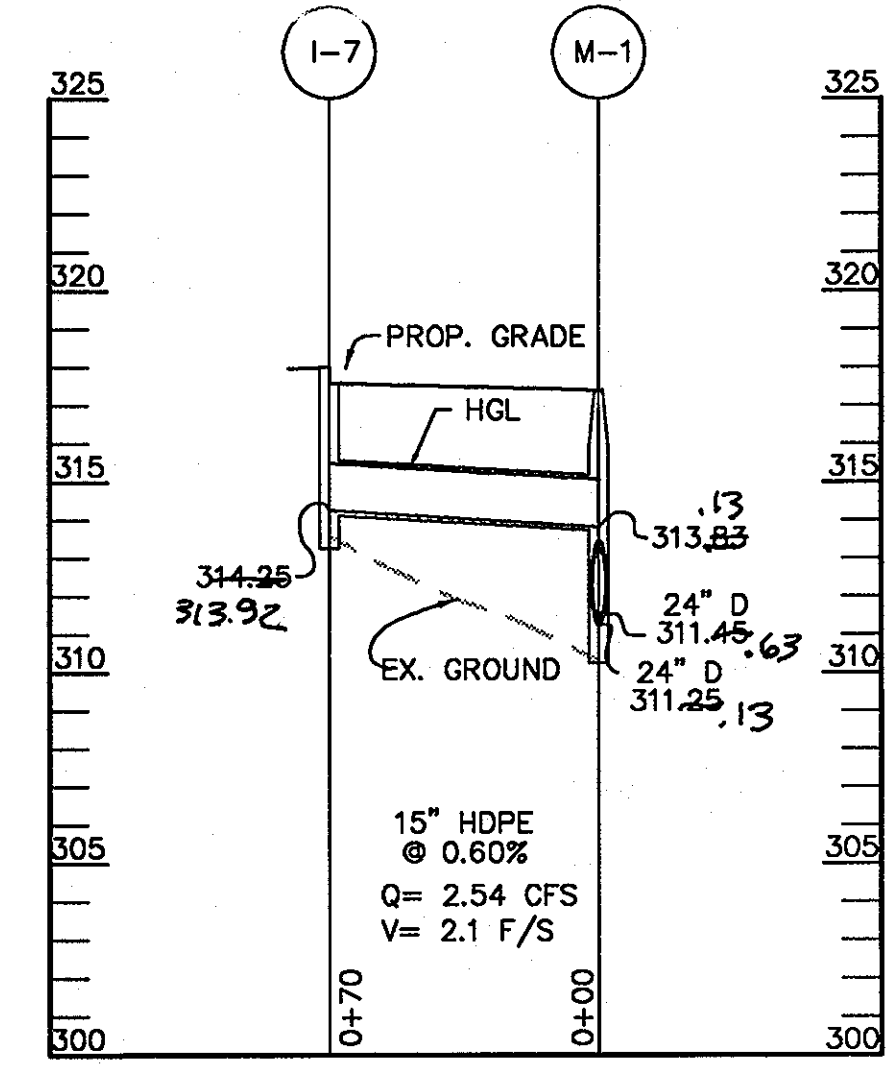
PROFILE

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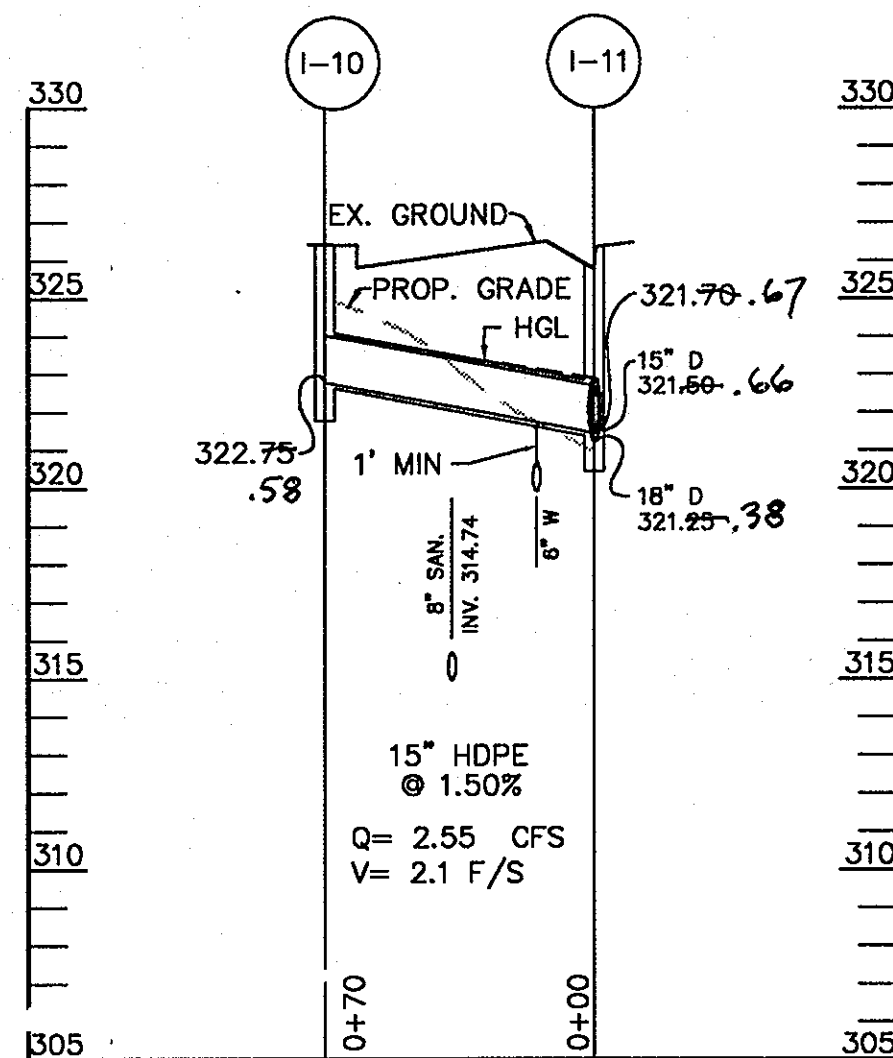
PROFILE

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VERT. 1"=5'



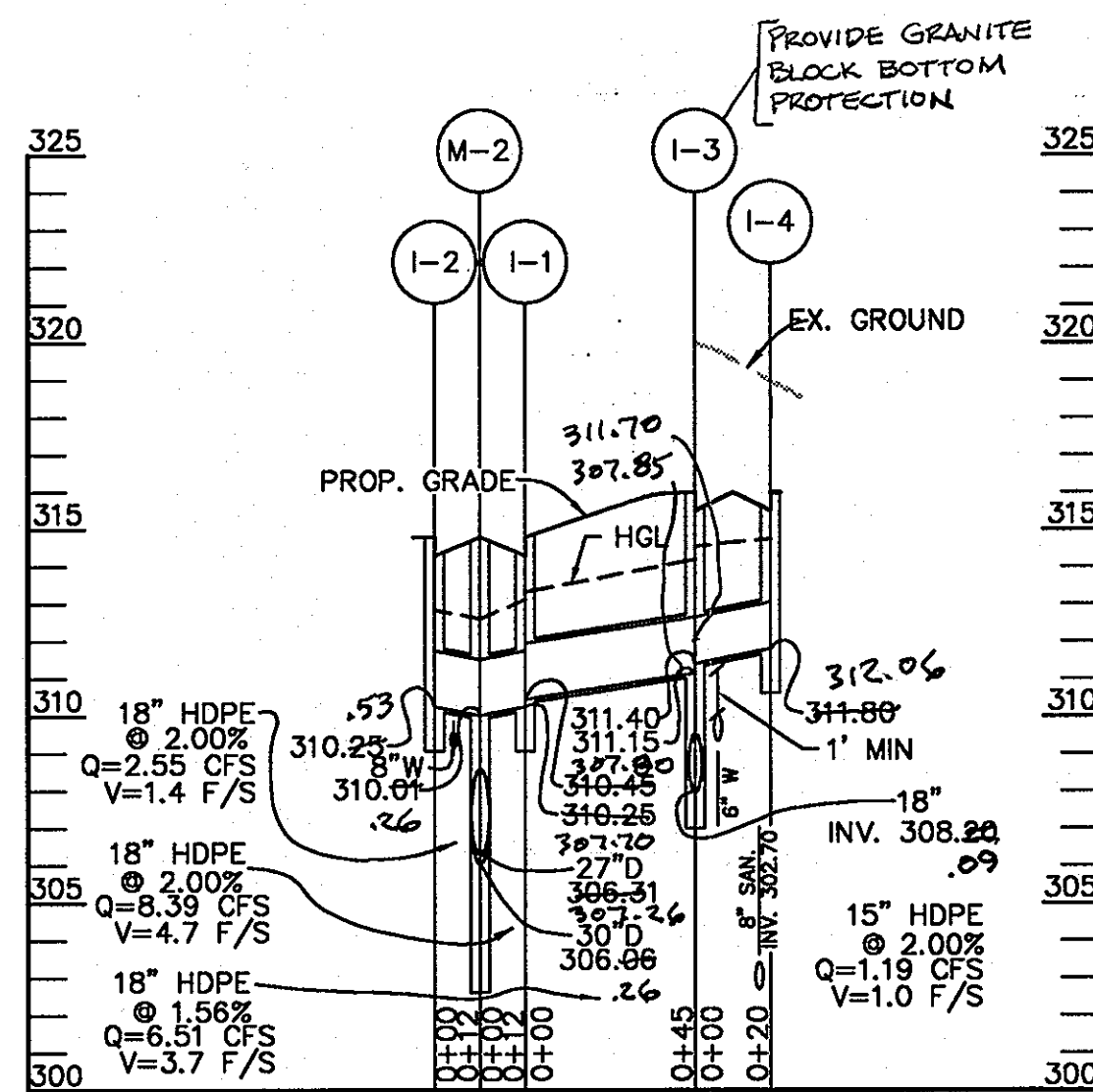
PROFILE

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VERT. 1"=5'



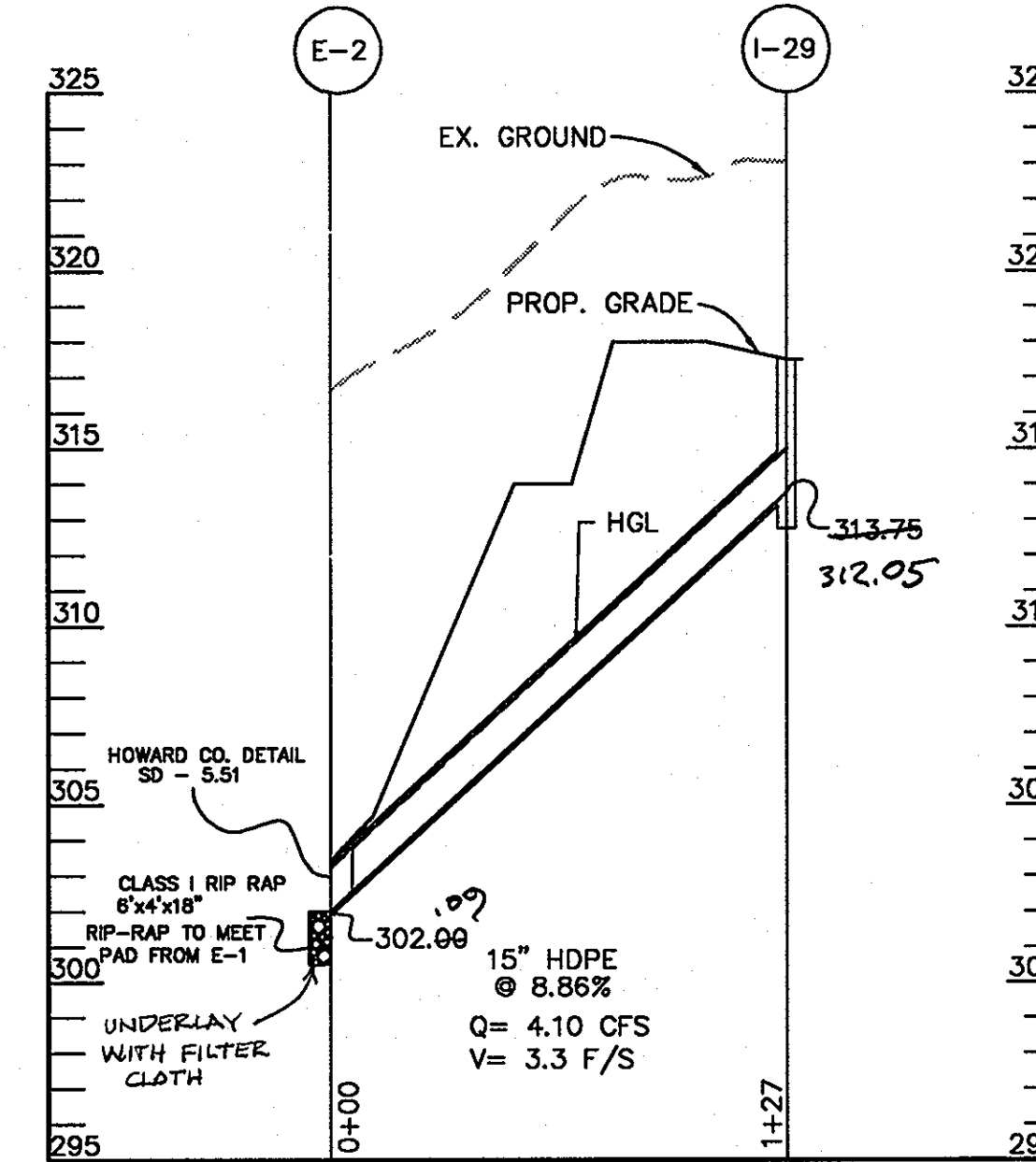
PROFILE

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VERT. 1"=5'



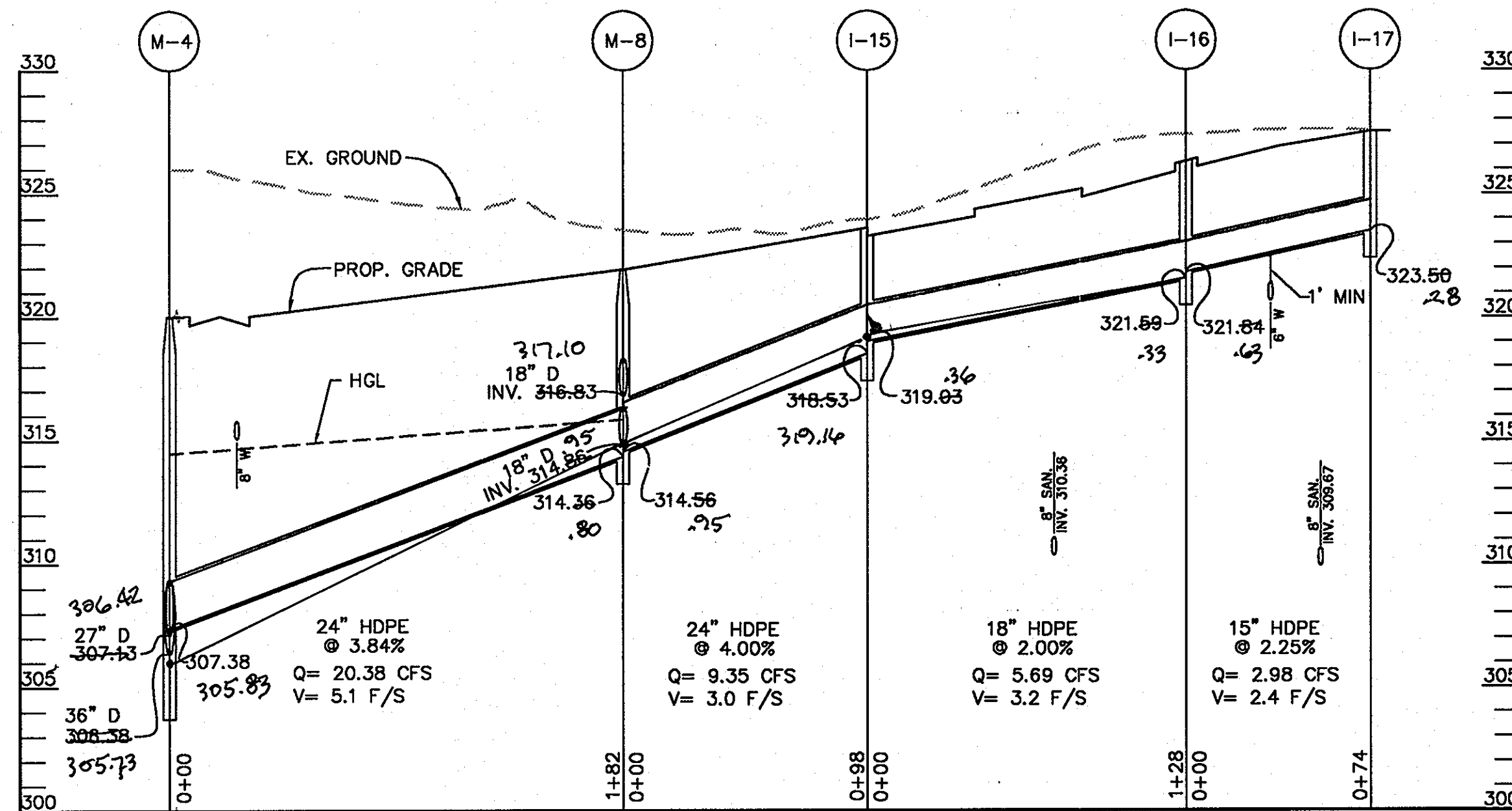
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VERT. 1"=5'



PROFILE

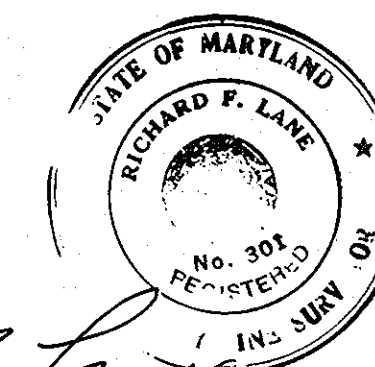
SCALE: HORZ. 1"=50'  
VERT. 1"=5'



PROFILE

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

SHANABERGER & LANE  
8726 TOWN & COUNTRY BLVD.  
SUITE 201  
ELLICOTT CITY, MARYLAND 21043



*Richard F. Lane*  
ROAD & STORM DRAIN AS BUILT

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

*Richard M. Danaher* 4-22-03  
CHIEF, BUREAU OF HIGHWAYS HB DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

*Cindy Hamata* 5/5/03  
CHIEF-DIVISION OF LAND DEVELOPMENT HB DATE

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

COUNTY HEALTH OFFICER DATE

PROJECT:  
EMERSON SECTION 2  
(KEY PROPERTY)  
PHASE 4  
LOTS 1-120 & OPEN SPACE LOTS 121-124

TAX MAP NO. 47 ZONED: PEC-MXD-3  
PARCEL: P-837, P-3, P-462  
BLOCK 2, 7, 8, 9, 14, 15, 20, & 21  
ELECTION DISTRICT No. 6 HOWARD COUNTY, MARYLAND

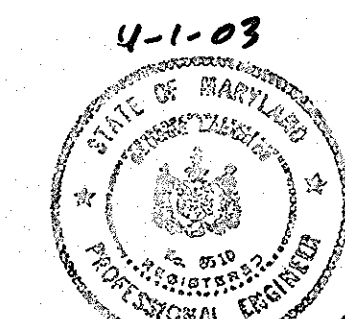
CENTURY ENGINEERING, INC.

CONSULTING ENGINEERS, PLANNERS  
32 WEST ROAD  
TOWSON, MARYLAND 21204

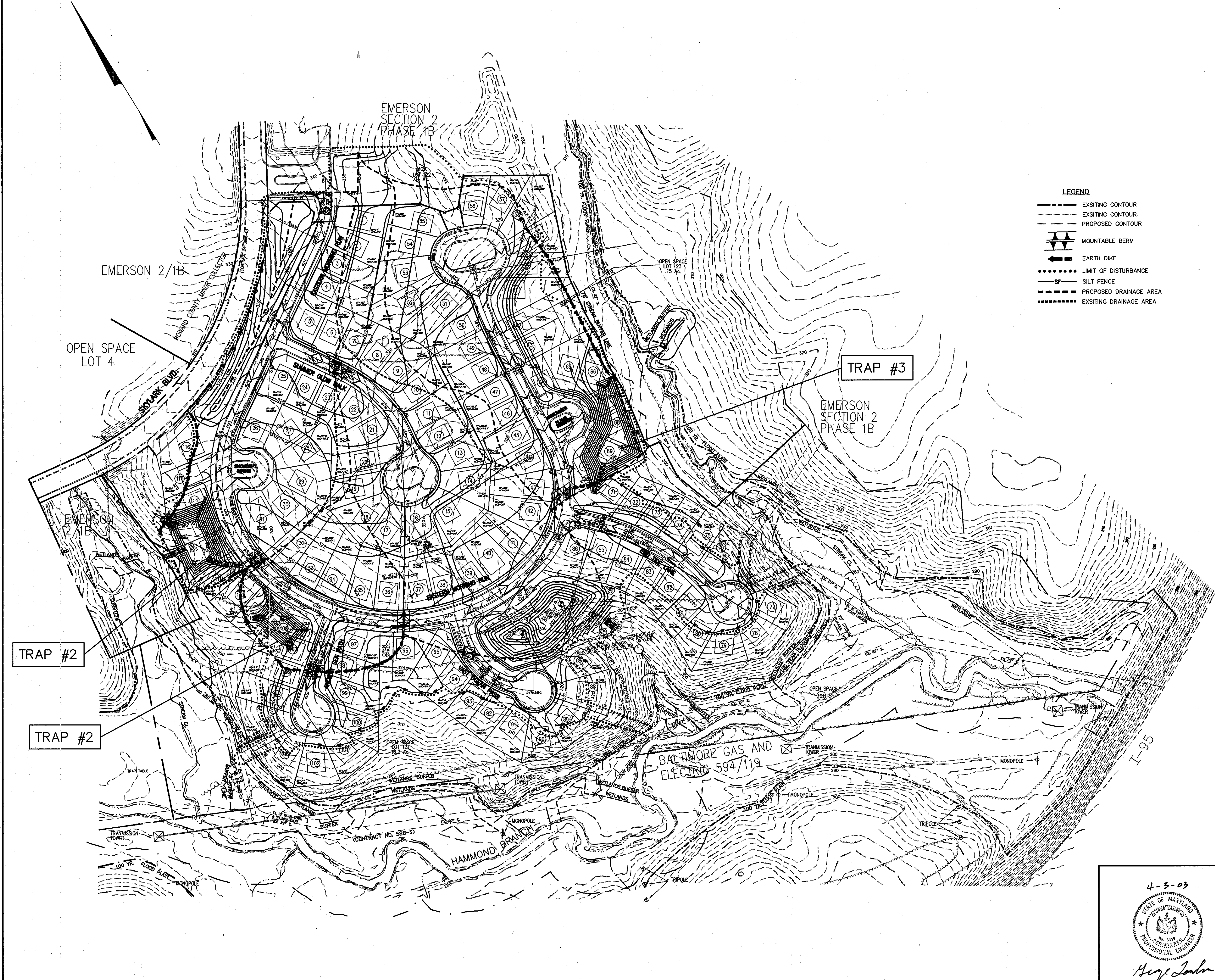
OWNER/DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION  
THE ROUSE BUILDING  
10275 LITTLE PATUXENT PARKWAY  
COLUMBIA, MARYLAND 21044  
PHONE: (410) 982-6084

TITLE  
STORM DRAIN  
PROFILE

Des By	K.D.	Scale	1"=50'	Proj No	21125.01
Dwn By	MCA/MLA	Date	OCTOBER, 2002	DRAWING NO	14 OF 29
Chk By	G.K.	Approved			



*Bery, Saha*



- LEGEND**
- EXISTING CONTOUR
  - - - EXISTING CONTOUR
  - PROPOSED CONTOUR
  - ▲▲▲ MOUNTABLE BERM
  - ← EARTH DIKE
  - ..... LIMIT OF DISTURBANCE
  - SILT FENCE
  - PROPOSED DRAINAGE AREA
  - ..... EXISTING DRAINAGE AREA

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS  
*Richard M. Daniels* 4-22-07  
 CHIEF, BUREAU OF HIGHWAYS MS DATE

Date	No	Revision Description
		APPROVED: DEPARTMENT OF PLANNING AND ZONING
		CHIEF-DEVELOPMENT ENGINEERING DIVISION MK 4/25/07 DATE
		CHIEF-DIVISION OF LAND DEVELOPMENT HB 5/5/07 DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYST.:MS  
 HOWARD COUNTY HEALTH DEPARTMENT.

COUNTY HEALTH OFFICER \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT: EMERSON SECTION 2  
 (KEY PROPERTY)  
 PHASE 4  
 LOTS 1-120 & OPEN SPACE LOTS 121-124

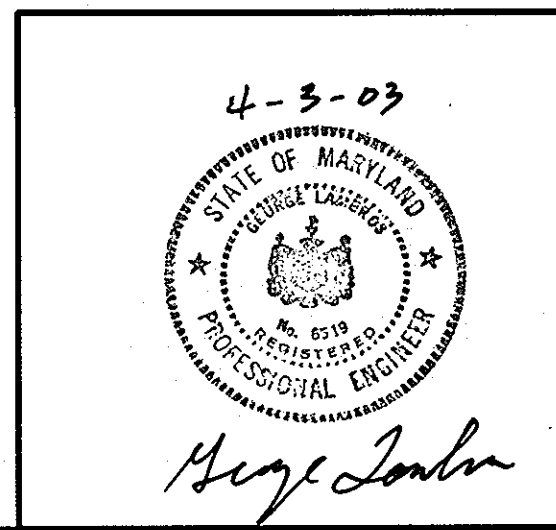
TAX MAP NO. 47 ZONED: PEC-MXD-3  
 PARCEL: P-837, P-3, P-462  
 BLOCK 2, 7, 8, 9, 14, 15, 20, & 21  
 ELECTION DISTRICT No.6 HOWARD COUNTY, MARYLAND

**CENTURY ENGINEERING, INC.**  
 CONSULTING ENGINEERS, PLANNERS  
 32 WEST ROAD  
 TOWSON, MARYLAND 21204

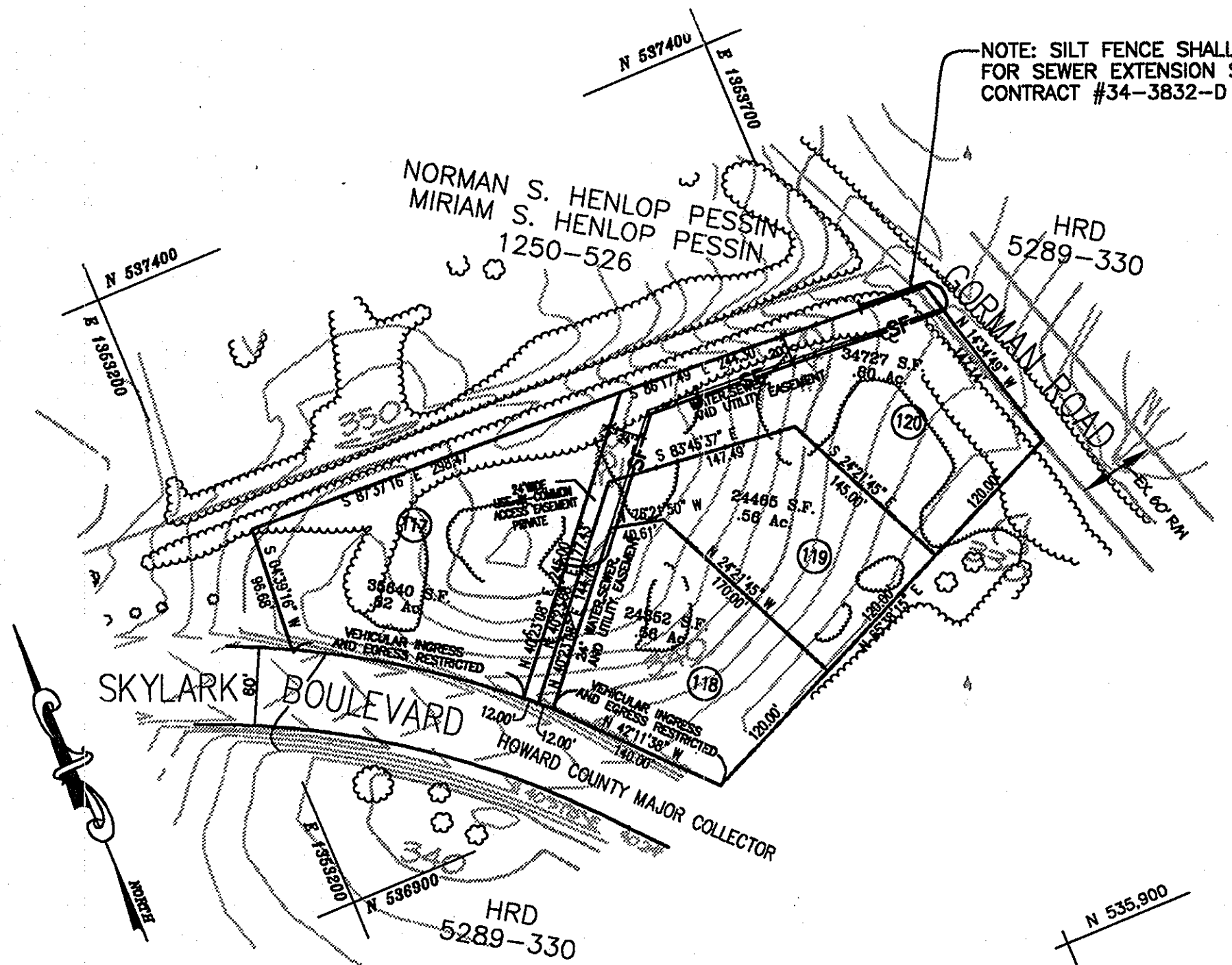
OWNER/DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION  
 THE ROUSE BUILDING  
 10275 LITTLE PATUXENT PARKWAY  
 COLUMBIA, MARYLAND 21044  
 PHONE: (410) 992-8084

TITLE: DRAINAGE AREA MAP

Des By K.D.	Scale 1"=100'	Proj No 21125.01
Drn By MCA/MLA	Date OCT. ,2002	DRAWING NO
Chk By G.K.	Approved	15 OF 29



F-03-13



SCALE: 1"=100'

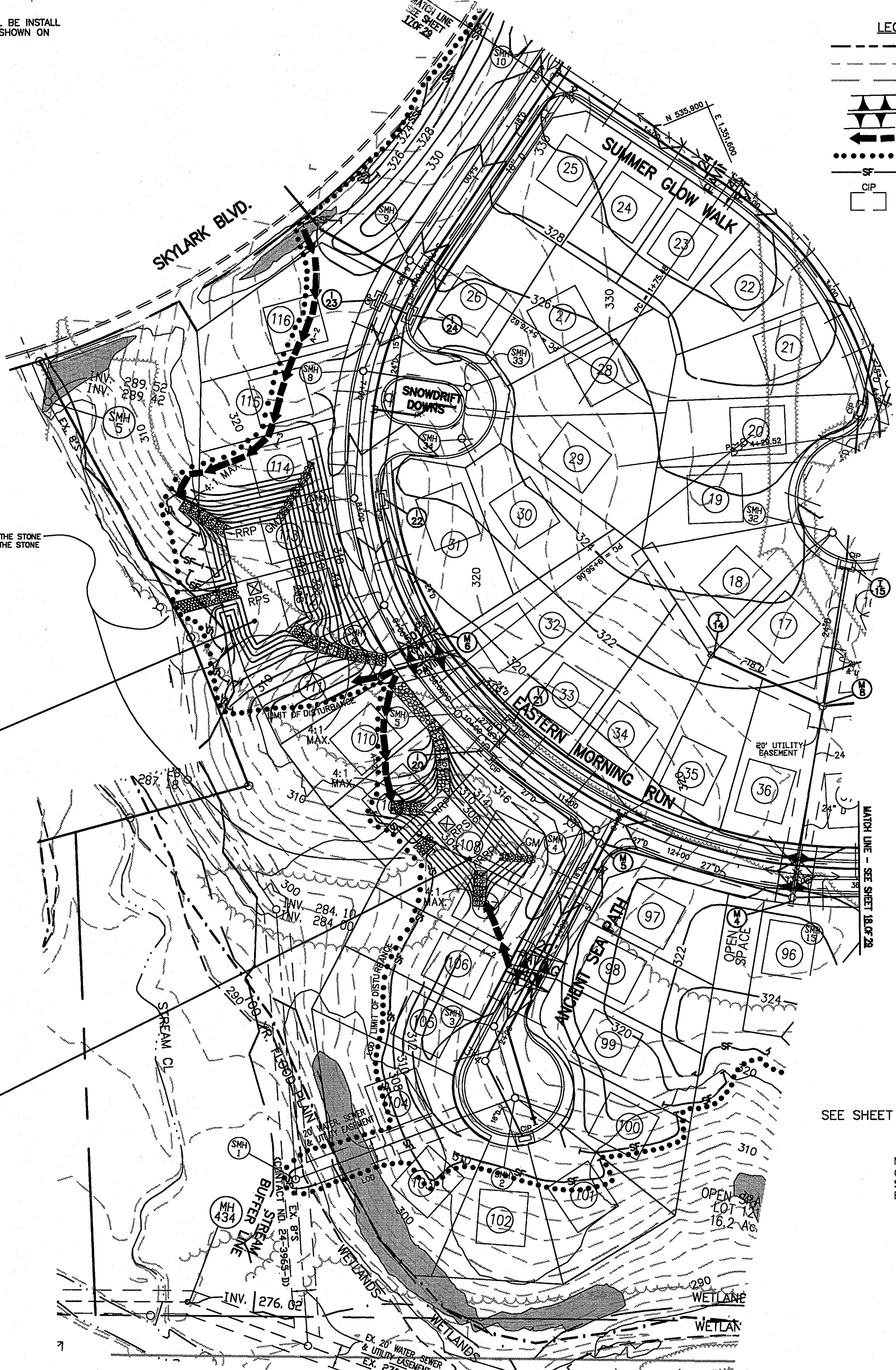
GEOTEXTILE CLASS C MAY BE SUBSTITUTED FOR THE STONE FACING BY PLACING IT ON THE INSIDE FACE OF THE STONE OUTLET.

TRAP TABLE

TRAP NUMBER		1
TRAP TYPE		ST-11
EXISTING DRAINAGE AREA AC.		4.7
INTERIM DRAINAGE AREA AC.		4.9
PROPOSED DRAINAGE AREA AC.		4.9
STORAGE REQUIRED C.F.	WET	8,820
	DRY	8,820
	TOTAL	17,640
STORAGE PROVIDED C.F.	WET	11,372
	DRY	15,572
	TOTAL	26,944
EXISTING GROUND ELEVATION		299.0
TOP EMBANKMENT ELEVATION		304.0
WEIR CREST ELEVATION		302.0
WET STORAGE ELEVATION		298.5
CLEANOUT ELEVATION		299.5
BOTTOM ELEVATION		298.0
DEPTH OF CHANNEL (d)		N/A
OUTLET WIDTH (b)		12.0'
BOTTOM DIMENSION - SEE PLAN		50'x101'
TRAP SIDESLOPES		2:1
TRAP DEPTH	WET	2'
	DRY	2'
	TOTAL	4'
BARREL DIAMETER		N/A
RISER DIAMETER		N/A
WET STORAGE ZONE ELEVATION		298-300
DRY STOR/2-YR. MGMT ZONE ELEVATION		300-302
EXISTING 2-YR. Q		2.4 CFS
PROPOSED 2-YR. Q		2.80 CFS

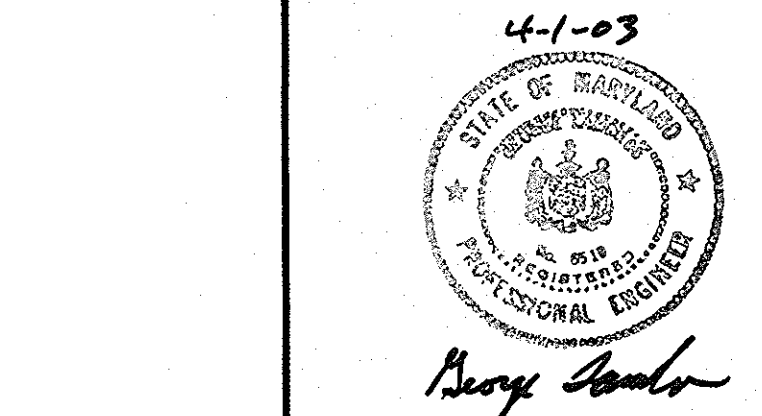
TRAP TABLE

TRAP NUMBER		2
TRAP TYPE		ST-11
EXISTING DRAINAGE AREA AC.		2.2
INTERIM DRAINAGE AREA AC.		2.4
PROPOSED DRAINAGE AREA AC.		2.4
STORAGE REQUIRED C.F.	WET	4,320
	DRY	4,320
	TOTAL	8,640
STORAGE PROVIDED C.F.	WET	4,614
	DRY	6,470
	TOTAL	11,084
EXISTING GROUND ELEVATION		307.0
TOP EMBANKMENT ELEVATION		310.0
WEIR CREST ELEVATION		308.0
WET STORAGE ELEVATION		306.0
CLEANOUT ELEVATION		304.5
BOTTOM ELEVATION		304.0
DEPTH OF CHANNEL (d)		N/A
OUTLET WIDTH (b)		7.0'
BOTTOM DIMENSION - SEE PLAN		75'x25'
TRAP SIDESLOPES		2:1
TRAP DEPTH	WET	2'
	DRY	2'
	TOTAL	4'
BARREL DIAMETER		N/A
RISER DIAMETER		N/A
WET STORAGE ZONE ELEVATION		304-306
DRY STOR/2-YR. MGMT ZONE ELEVATION		306-308
EXISTING 2-YR. Q		1.10 CFS
PROPOSED 2-YR. Q		1.10 CFS



SEE SHEET 18 OF 29

NOTE: CONTRACTOR TO EXTEND SF/SSF SF/SSF SEGMENT ENDS UPHILL BY 2' IN ELEVATION



- LEGEND
- PROPERTY LINE
  - - - EXISTING CONTOUR
  - PROPOSED CONTOUR
  - ▲ MOUNTABLE BERM
  - ← EARTH DIKE
  - LIMIT OF DISTURBANCE
  - SF SILT FENCE
  - CIP CURB INLET PROTECTION

INTERIM CONDITION HYDROLOGY TABLE

FACILITY	DA	RCN	TC
TRAP 1	4.9 AC.	77	.28
TRAP 2	2.4 AC.	77	.23
TRAP 3	5.0 AC.	78	.24
TRAP 4	INTERIM	INTERIM	INTERIM

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS  
*Richard M. Dore* 4-22-03  
 CHIEF, BUREAU OF HIGHWAYS DATE

Date	No	Revision Description

BY THE DEVELOPER:  
 I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A 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. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD CONSERVATION DISTRICT.  
*Paul G. Constantinou* 4/1/03  
 SIGNATURE OF DEVELOPER DATE  
 PRINT NAME BELOW SIGNATURE

BY THE ENGINEER:  
 I 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.  
*George Lambros* 4-1-03  
 SIGNATURE OF ENGINEER DATE  
 PRINT NAME BELOW SIGNATURE

THESE PLAN HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.  
*Jim Myers* 4/9/03  
 U.S. NATURAL RESOURCES CONSERVATION SERVICE DATE

THESE PLAN FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS, OF THE HOWARD SOIL CONSERVATION DISTRICT.  
*John Kelly* 4/9/03  
 HOWARD S.C.D. DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 CHIEF-DEVELOPMENT ENGINEERING DIVISION *MK* 4/1/03 DATE  
 CHIEF-DIVISION OF LAND DEVELOPMENT *JP* 5/5/03 DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
 HOWARD COUNTY HEALTH DEPARTMENT.  
 COUNTY HEALTH OFFICER \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT: EMERSON SECTION 2 (KEY PROPERTY) PHASE 4 LOTS 1-120 & OPEN SPACE LOTS 121-124  
 TAX MAP NO. 47 ZONED: PEC-MXD-3  
 PARCEL: P-837, P-3, P-462  
 BLOCK 2, 7, 8, 9, 14, 15, 20, & 21  
 ELECTION DISTRICT No. 6 HOWARD COUNTY, MARYLAND

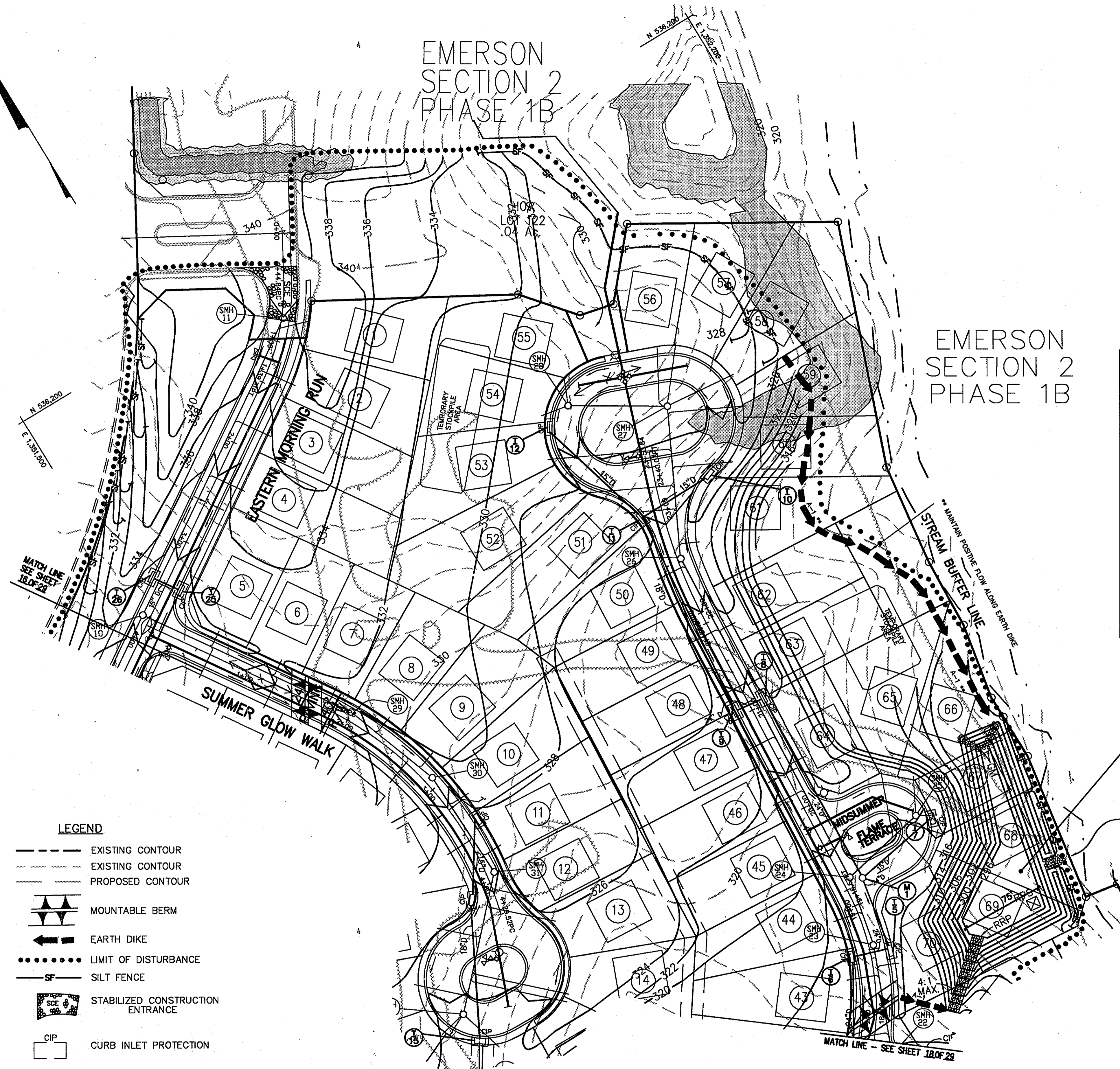
CENTURY ENGINEERING, INC.  
 CONSULTING ENGINEERS, PLANNERS  
 32 WEST ROAD  
 TOWSON, MARYLAND 21204

OWNER/DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION  
 THE ROUSE BUILDING  
 10275 LITTLE PATUXENT PARKWAY  
 COLUMBIA, MARYLAND 21044  
 PHONE: (410) 982-6084

TITLE: GRADING AND EROSION AND SEDIMENT CONTROL PLAN

Des By	K.D.	Scale	1"=50'	Proj No	21125.01
Dwn By	MCA/MLA	Date	OCT. ,2002	DRAWING NO	
Chk By	G.K.	Approved		16 OF 29	





EMERSON SECTION 2 PHASE 1B

EMERSON SECTION 2 PHASE 1B

TRAP TABLE

TRAP NUMBER	3
TRAP TYPE	ST-11
EXISTING DRAINAGE AREA AC.	4.2
INTERIM DRAINAGE AREA AC.	5.0
PROPOSED DRAINAGE AREA AC.	5.0
STORAGE REQUIRED C.F.	WET 9,000 DRY 9,000 TOTAL 18,000
STORAGE PROVIDED C.F.	WET 18,000 DRY 28,750 TOTAL 28,750
EXISTING GROUND ELEVATION	301.0
TOP EMBANKMENT ELEVATION	304.0
WEIR CREST ELEVATION (BOTT. RIPRAP)	300.0
WET STORAGE ELEVATION	298.0
CLEANOUT ELEVATION	297.0
BOTTOM ELEVATION	296.0
DEPTH OF CHANNEL (Ø)	N/A
OUTLET WIDTH (Ø)	12.0'
BOTTOM DIMENSION - SEE PLAN	
TRAP SIDE SLOPES	WET 2:1 DRY 2:1 TOTAL 4:1
BARREL DIAMETER	N/A
RISER DIAMETER	N/A
WET STORAGE ZONE ELEVATION	296-298
DRY STOR/2-YR. MGMT ZONE ELEVATION	298-300
EXISTING 2-YR. Q	2.20 CFS
PROPOSED 2-YR. Q	0.60 CFS

- LEGEND**
- EXISTING CONTOUR
  - - - EXISTING CONTOUR
  - PROPOSED CONTOUR
  - ▲▲ MOUNTABLE BERM
  - ← EARTH DIKE
  - ..... LIMIT OF DISTURBANCE
  - SF SILT FENCE
  - SEB STABILIZED CONSTRUCTION ENTRANCE
  - CIP CURB INLET PROTECTION

NOTE: GEOTEXTILE CLASS C MAY BE SUBSTITUTED FOR THE STONE FACING BY PLACING IT ON THE INSIDE FACE OF THE STONE OUTLET.

NOTE: CONTRACTOR TO EXTEND SF/SSF SF/SSF SEGMENT ENDS UPHILL BY 2' IN ELEVATION

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS  
*Andrew M. Double* 4-22-03  
 CHIEF, BUREAU OF HIGHWAYS MS DATE

Date	No	Revision Description

BY THE DEVELOPER:  
 I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A 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. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD CONSERVATION DISTRICT.  
*Paul G. Conover* 4/1/03  
 SIGNATURE OF DEVELOPER DATE  
 PRINT NAME BELOW SIGNATURE

BY THE ENGINEER:  
 I 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.  
*George Lambros* 4-1-03  
 SIGNATURE OF ENGINEER DATE  
 PRINT NAME BELOW SIGNATURE

THESE PLAN HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.  
*Jin Nye* 4/4/03  
 U.S. NATURAL RESOURCES CONSERVATION SERVICE DATE

THESE PLAN FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS, OF THE HOWARD SOIL CONSERVATION DISTRICT.  
*John S. ...* 4/9/03  
 HOWARD S.C.D. DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 CHIEF DEVELOPMENT ENGINEERING DIVISION *MK* 4/1/03 DATE  
 CHIEF-DIVISION OF LAND DEVELOPMENT *HB* 4/5/03 DATE

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

COUNTY HEALTH OFFICER \_\_\_\_\_ DATE \_\_\_\_\_

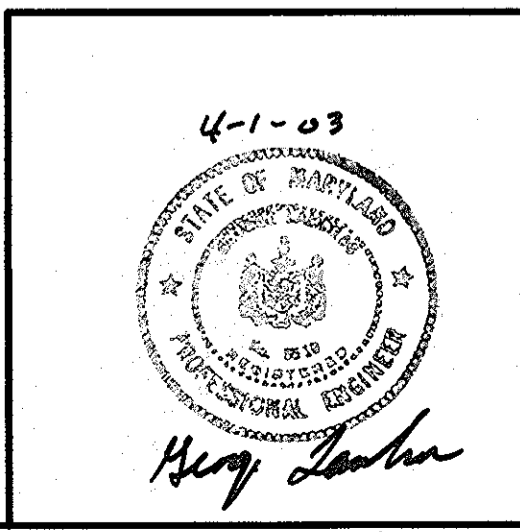
PROJECT: EMERSON SECTION 2 (KEY PROPERTY) PHASE 4  
 LOTS 1-120 & OPEN SPACE LOTS 121-124  
 TAX MAP NO. 47 ZONED: PEC-MXD-3  
 PARCEL P.837, P.3, P.462  
 BLOCK 2, 7, 8, 9, 14, 15, 20, & 21  
 ELECTION DISTRICT No.6 HOWARD COUNTY, MARYLAND

**CENTURY ENGINEERING, INC.**  
 CONSULTING ENGINEERS, PLANNERS  
 32 WEST ROAD  
 TOWSON, MARYLAND 21204

OWNER/DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION  
 THE ROUSE BUILDING  
 10275 LITTLE PATUXENT PARKWAY  
 COLUMBIA, MARYLAND 21044  
 PHONE: (410) 992-6084

TITLE: GRADING AND EROSION AND SEDIMENT CONTROL PLAN

Des By	K.D.	Scale	1"=50'	Proj No	21125.01
Dm By	MCA/MLA	Date	OCT. ,2002	DRAWING NO	
Chk By	G.K.	Approved			17 OF 29



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

U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE

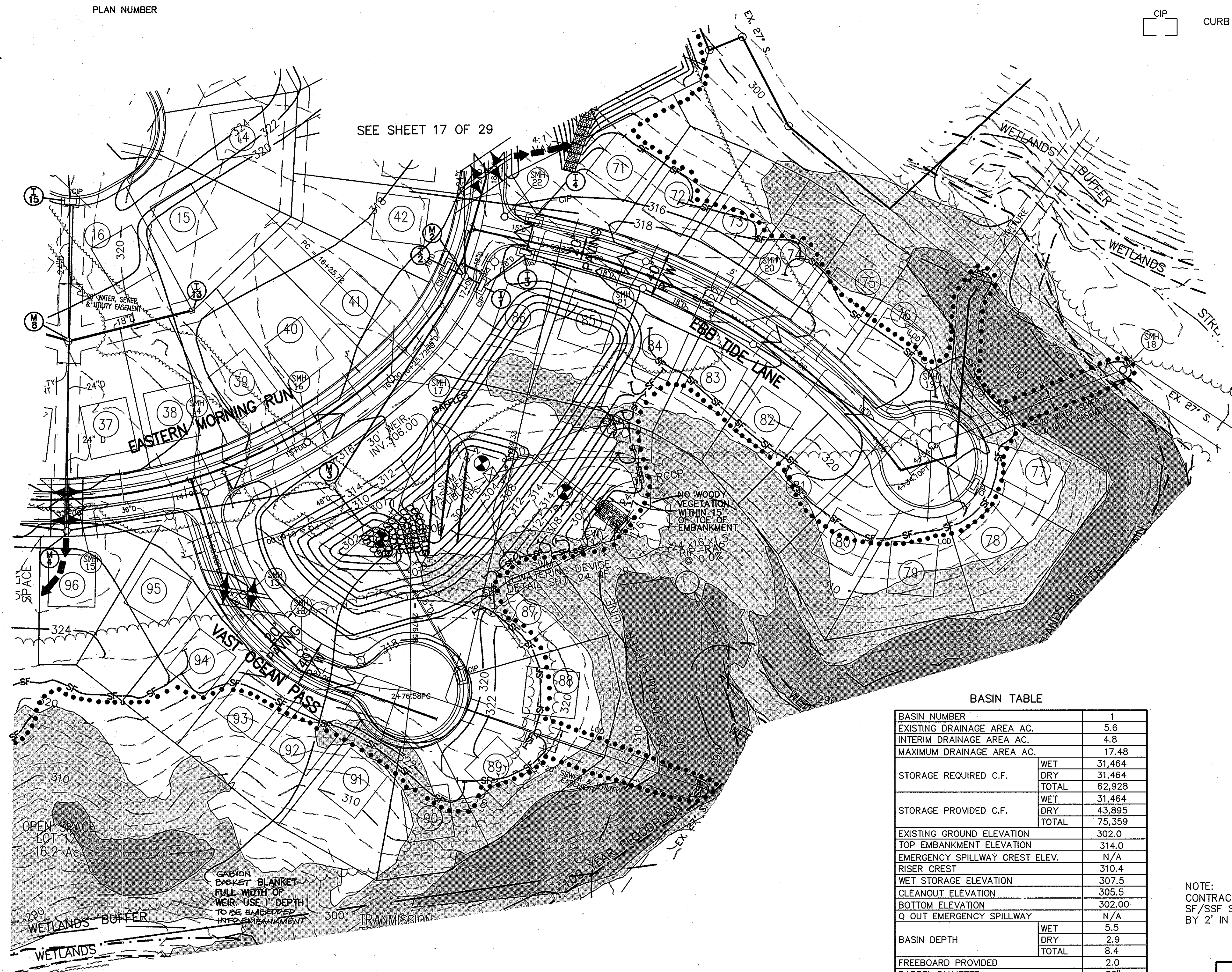
THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF HOWARD SOIL CONSERVATION DISTRICT.

APPROVED: HOWARD SOIL CONSERVATION DISTRICT

PLAN NUMBER

**LEGEND**

- EXISTING CONTOUR
- - - EXISTING CONTOUR
- PROPOSED CONTOUR
- ▲▲▲ MOUNTABLE BERM
- ← EARTH DIKE
- LIMIT OF DISTURBANCE
- SF SILT FENCE
- CIP CURB INLET PROTECTION



SEE SHEET 17 OF 29

SEE SHEET 16 OF 29

**BASIN TABLE**

BASIN NUMBER	1
EXISTING DRAINAGE AREA AC.	5.6
INTERIM DRAINAGE AREA AC.	4.8
MAXIMUM DRAINAGE AREA AC.	17.48
STORAGE REQUIRED C.F.	WET 31,464
	DRY 31,464
	TOTAL 62,928
STORAGE PROVIDED C.F.	WET 31,464
	DRY 43,895
	TOTAL 75,359
EXISTING GROUND ELEVATION	302.0
TOP EMBANKMENT ELEVATION	314.0
EMERGENCY SPILLWAY CREST ELEV.	N/A
RISER CREST	310.4
WET STORAGE ELEVATION	307.5
CLEANOUT ELEVATION	305.5
BOTTOM ELEVATION	302.00
Q OUT EMERGENCY SPILLWAY	N/A
	WET 5.5
	DRY 2.9
	TOTAL 8.4
FREEBOARD PROVIDED	2.0
BARREL DIAMETER	36"
RISER DIMENSIONS	4'x4'
EMERGENCY SPILLWAY WIDTH	N/A
WET STORAGE ZONE ELEV.	302.0-307.5
DRY STORAGE ZONE ELEV.	307.5-310.4
BOTTOM DIMENSIONS	170'x35'
EXISTING 1-YR. Q	0.7 CFS
PROPOSED 1-YR. Q	1.3 CFS

NOTE:  
CONTRACTOR TO EXTEND SF/SFF  
SF/SFF SEGMENT ENDS UPHILL  
BY 2' IN ELEVATION

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS  
*Paul G. Cavanaugh* 4-22-03  
 CHIEF, BUREAU OF HIGHWAYS DATE

Date	No	Revision Description

BY THE DEVELOPER:  
 I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A 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. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD CONSERVATION DISTRICT.  
*Paul G. Cavanaugh* 4/4/03  
 SIGNATURE OF DEVELOPER DATE  
 PRINT NAME BELOW SIGNATURE

BY THE ENGINEER:  
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*George Lambros* 4-3-03  
 SIGNATURE OF ENGINEER DATE  
 PRINT NAME BELOW SIGNATURE

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.  
*Jim Meyer* 4/6/03  
 U.S. 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.  
*George Lambros* 4/9/03  
 HOWARD S.C.D. DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 CHIEF-DEVELOPMENT ENGINEERING DIVISION *MK* 4/15/03 DATE  
 CHIEF-DIVISION OF LAND DEVELOPMENT *pb* 5/5/03 DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
 HOWARD COUNTY HEALTH DEPARTMENT.  
 COUNTY HEALTH OFFICER \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT: EMERSON SECTION 2  
 (KEY PROPERTY)  
 PHASE 4  
 LOTS 1-120 & OPEN SPACE LOTS 121-124  
 TAX MAP NO. 47 ZONED: PEC-MXD-3  
 PARCEL P.537, P.3, P.462  
 BLOCK 2, 7, 8, 9, 14, 15, 20, & 21  
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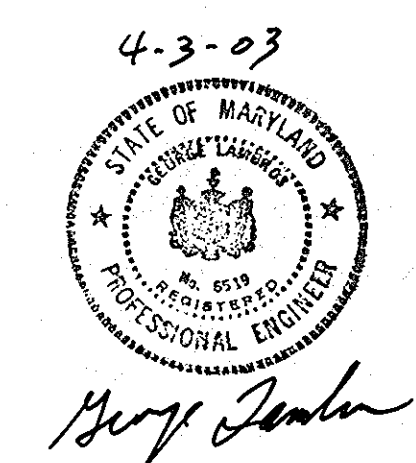
**CENTURY ENGINEERING, INC.**  
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 32 WEST ROAD  
 TOWSON, MARYLAND 21204

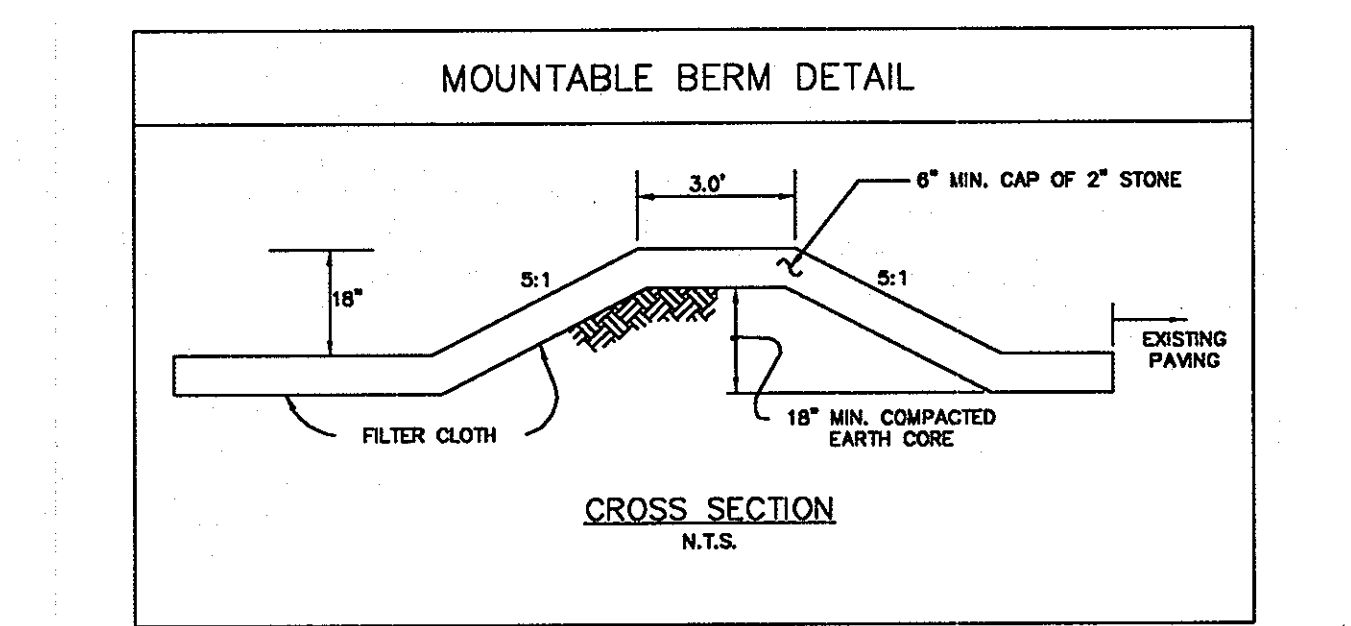
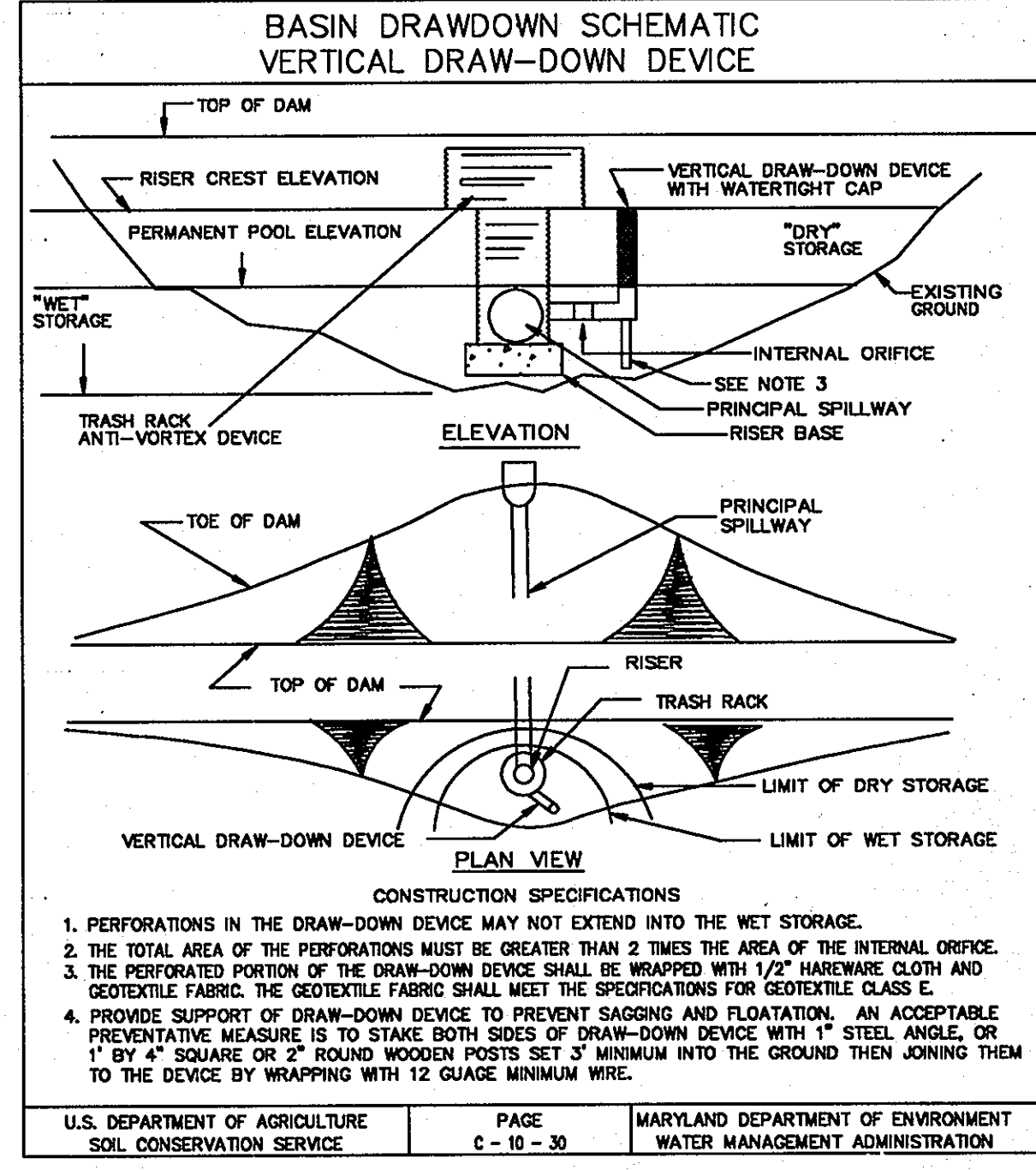
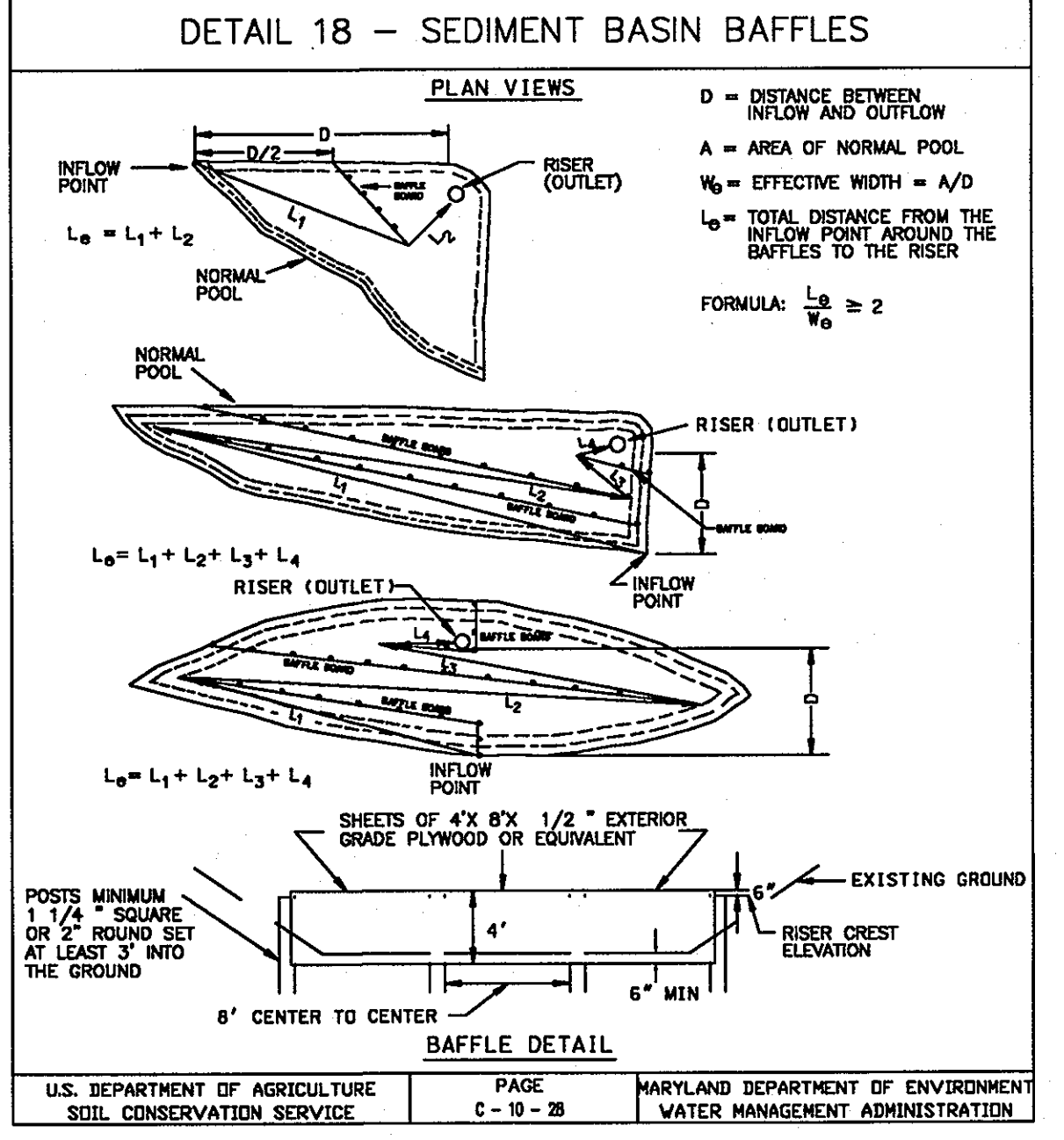
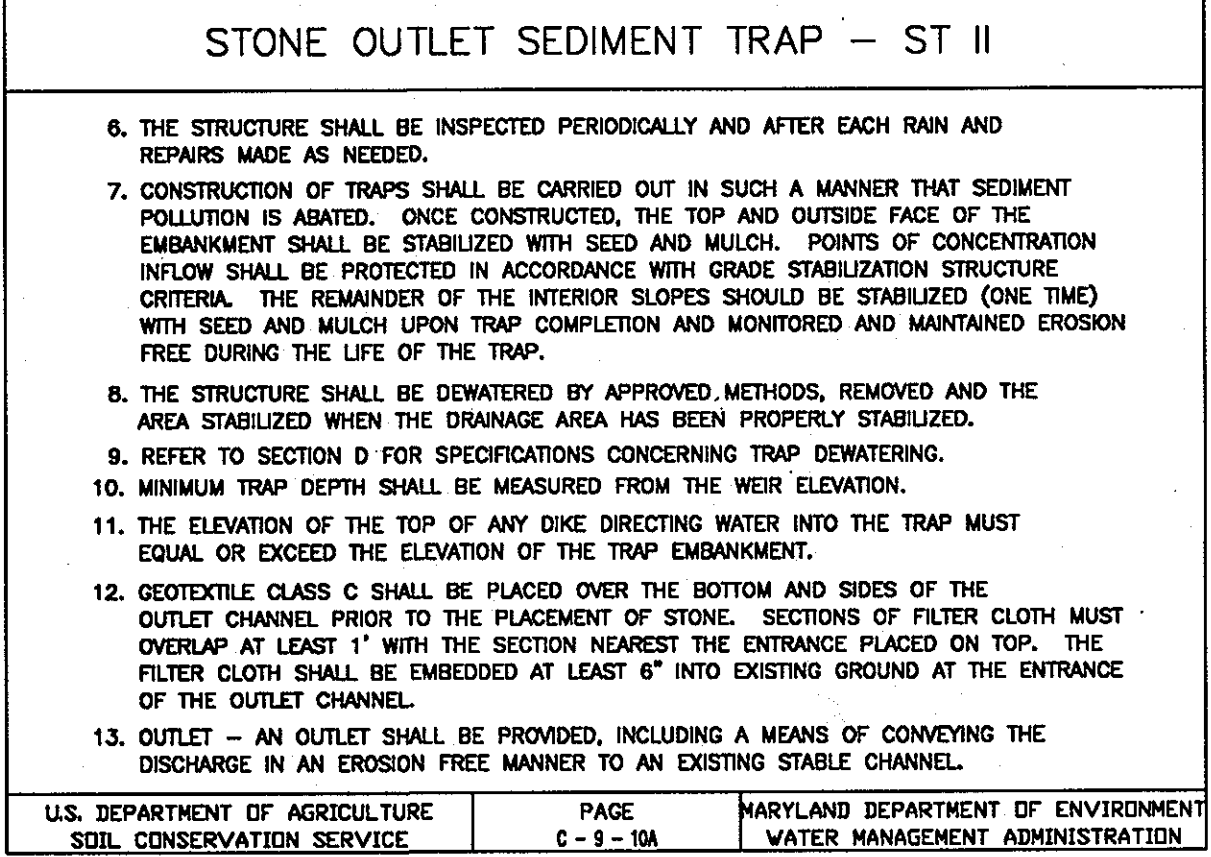
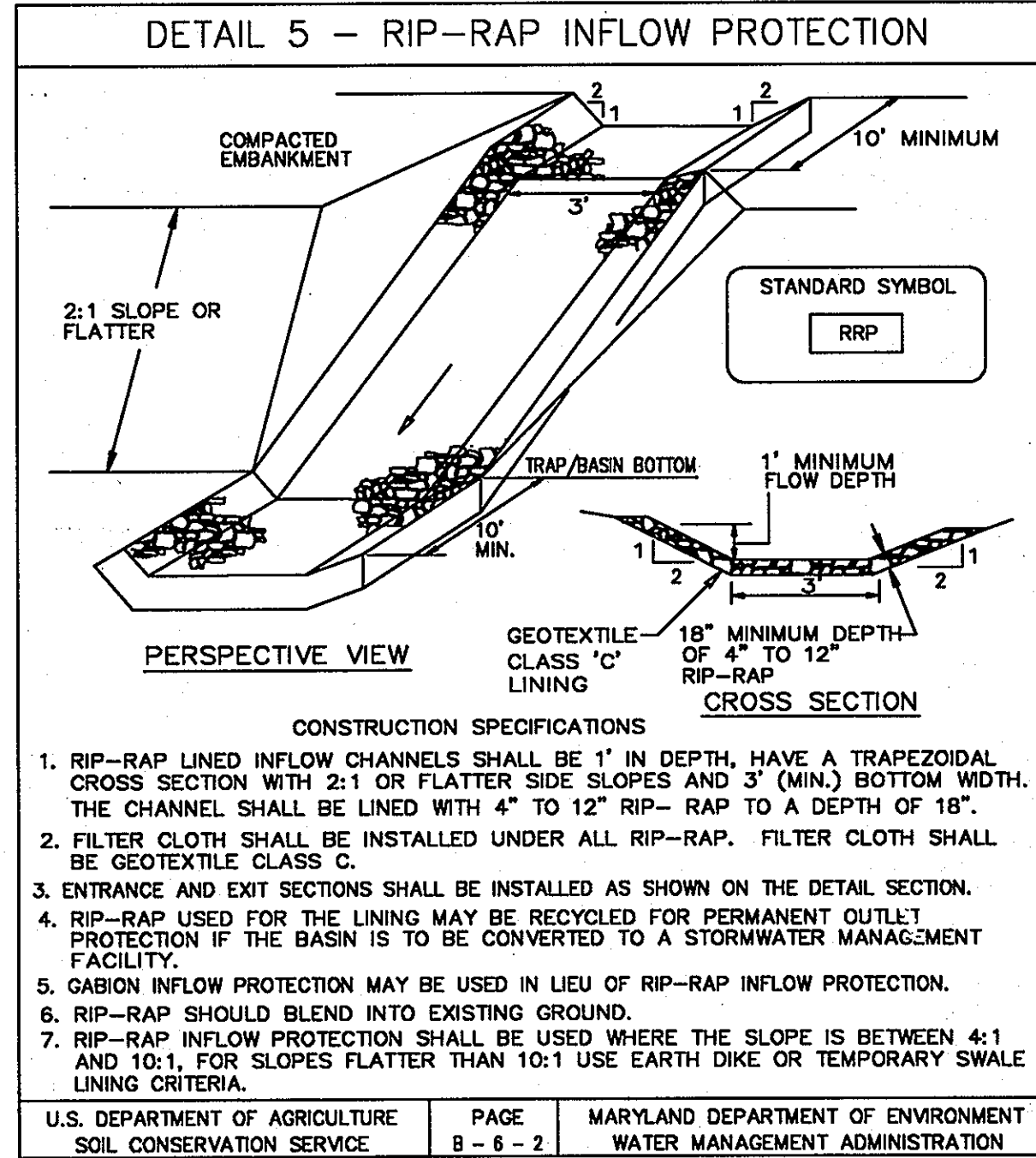
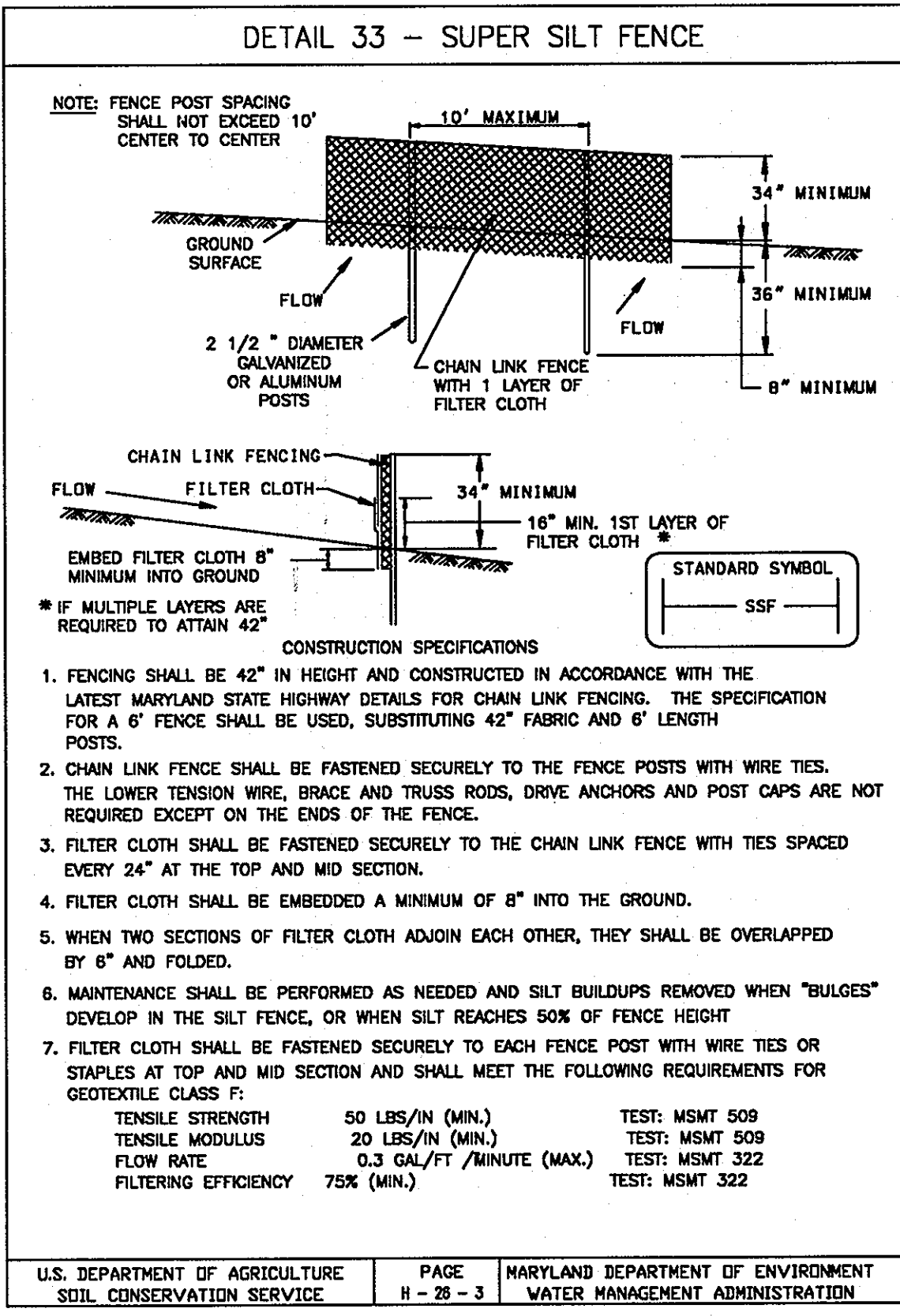
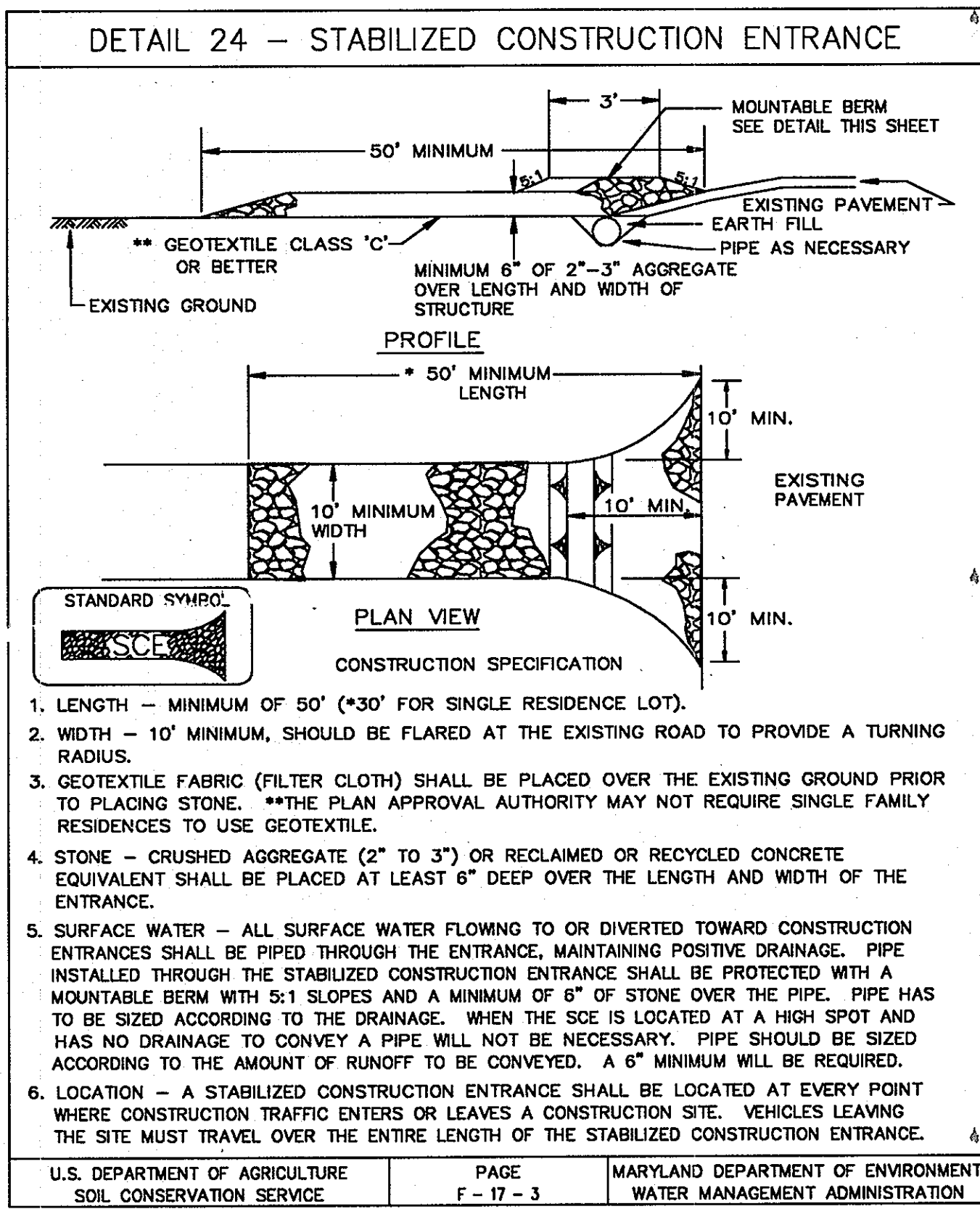
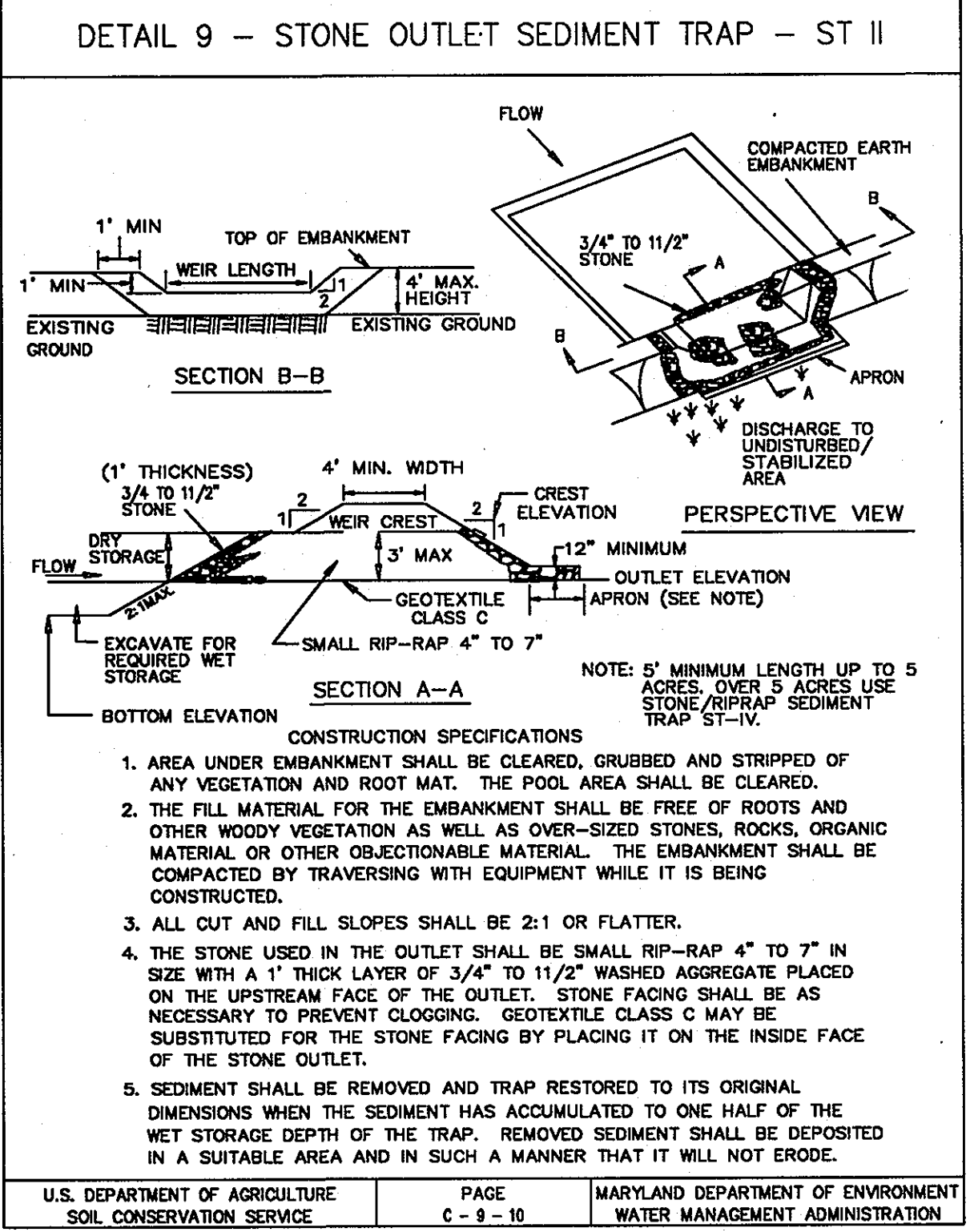
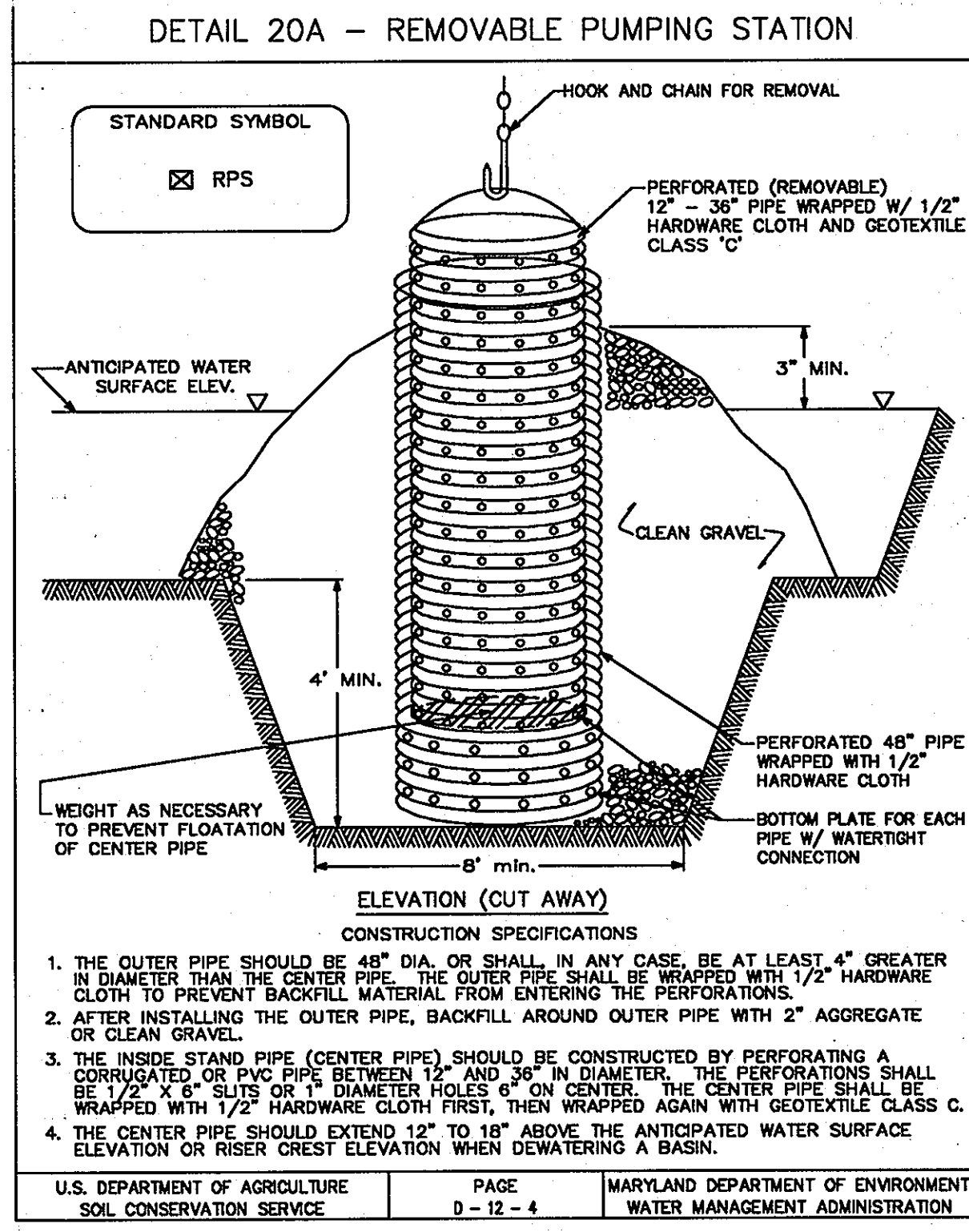
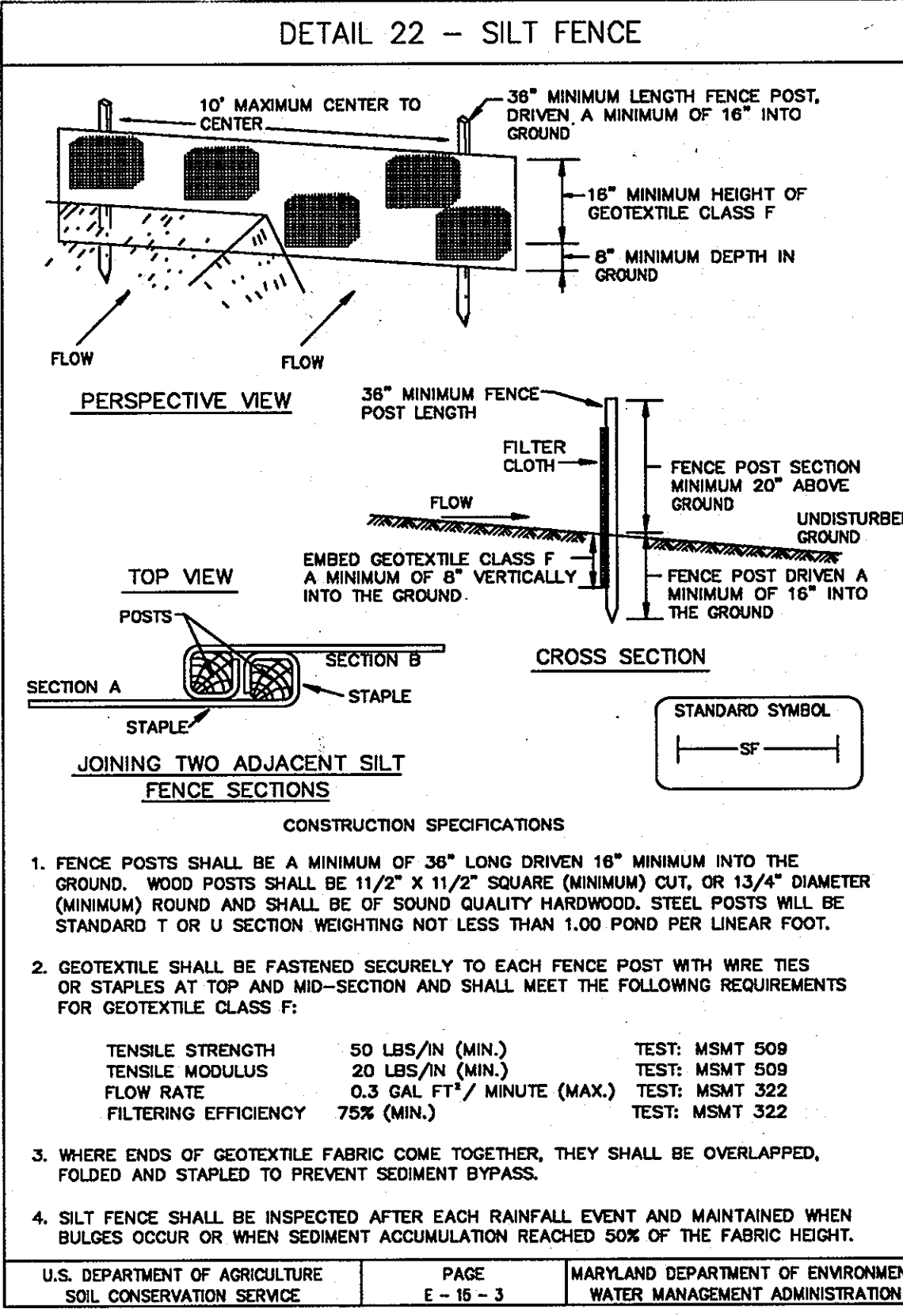
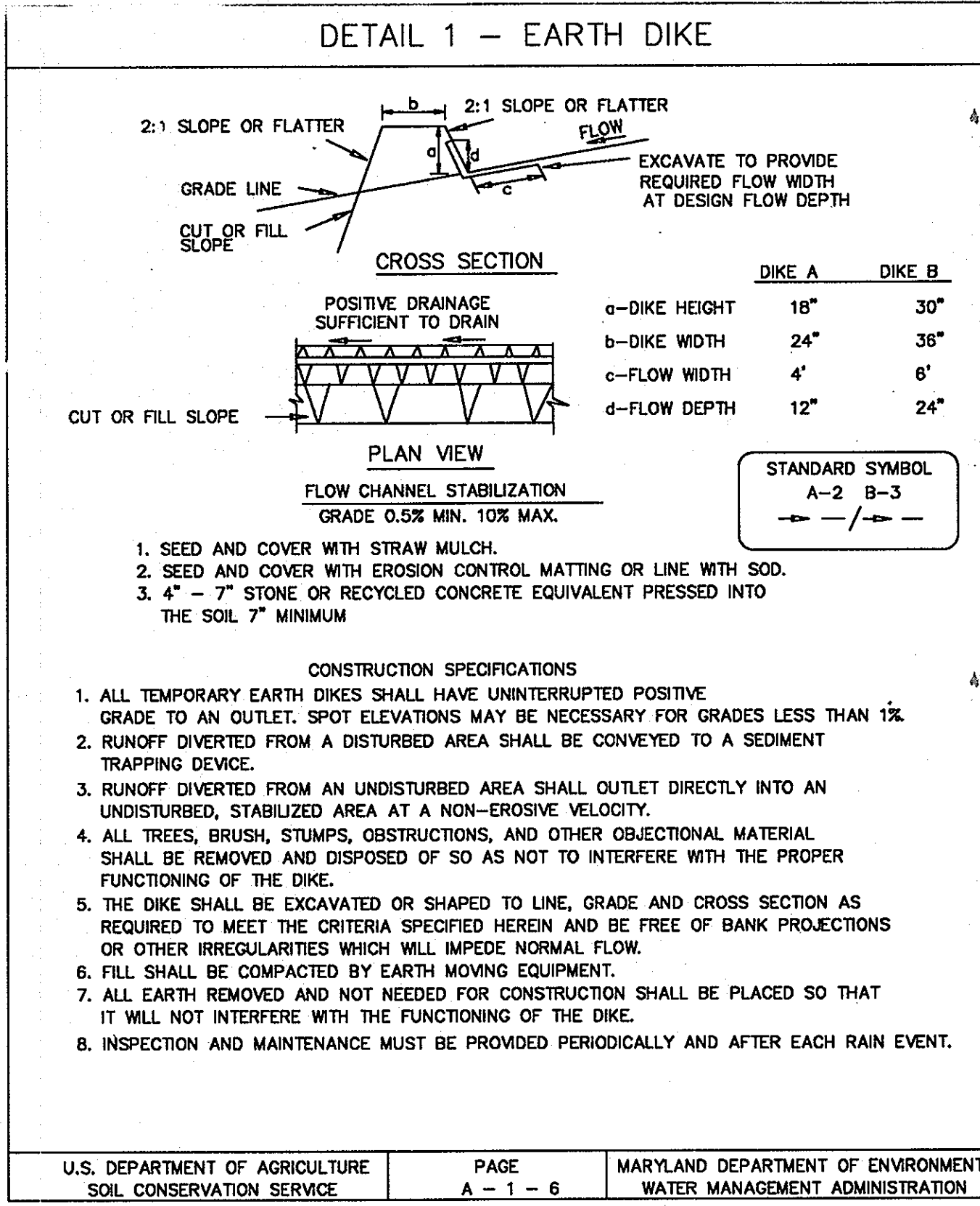
OWNER/DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION  
 THE ROUSE BUILDING  
 10275 LITTLE PATUXENT PARKWAY  
 COLUMBIA, MARYLAND 21044  
 PHONE: (410) 992-8084

TITLE: GRADING AND EROSION AND SEDIMENT CONTROL PLAN

Des By	K.D.	Scale	1"=50'	Proj No	21125.01
Drn By	MCA/MLA	Date	OCT., 2002	DRAWING NO	
Chk By	G.K.	Approved			18 OF 29

F-03-13





APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

*George Lambros* 4-22-03  
CHIEF, BUREAU OF HIGHWAYS DATE

Date	No	Revision Description

BY THE DEVELOPER:

"I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A 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. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD CONSERVATION DISTRICT."

*Paul G. Conner* 4/1/03  
SIGNATURE OF DEVELOPER DATE  
PRINT NAME BELOW SIGNATURE

BY THE ENGINEER:

"I 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."

*George Lambros* 4-1-03  
SIGNATURE OF ENGINEER DATE  
PRINT NAME BELOW SIGNATURE

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

*Jim Myers* 4/9/03  
S.U. NATURAL RESOURCES CONSERVATION SERVICE DATE

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

*Howard S.C.D.* 4/9/03  
HOWARD S.C.D. DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

*George Lambros* 4/1/03  
CHIEF-DEVELOPMENT ENGINEERING DIVISION DATE

*Cindy Hansen* 5/5/03  
CHIEF-DIVISION OF LAND DEVELOPMENT DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

HOWARD COUNTY HEALTH DEPARTMENT.

COUNTY HEALTH OFFICER DATE

PROJECT: EMERSON SECTION 2 (KEY PROPERTY) PHASE 4 LOTS 1-120 & OPEN SPACE LOTS 121-124

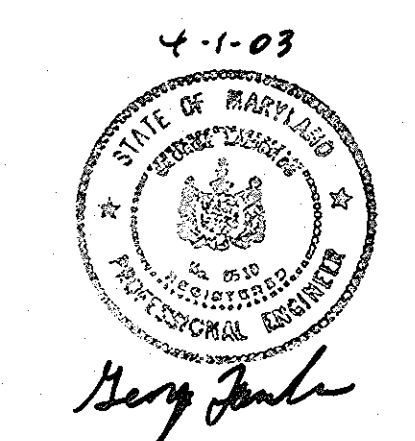
TAX MAP NO. 47 ZONED:PEC-MXD-3  
PARCEL P.837, P.3, P.4-62  
BLOCK 2, 7, 8, 9, 14, 15, 20, & 21  
ELECTION DISTRICT No.6 HOWARD COUNTY, MARYLAND

CENTURY ENGINEERING, INC.  
CONSULTING ENGINEERS, PLANNERS  
32 WEST ROAD  
TOWSON, MARYLAND 21204

OWNER/DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION  
THE ROUSE BUILDING  
10275 LITTLE PATUXENT PARKWAY  
COLUMBIA, MARYLAND 21044  
PHONE: (410) 992-6084

TITLE: EROSION AND SEDIMENT CONTROL DETAILS

Des By	K.D.	Scale	1"=50'	Proj No	21125.01
Dwn By	MCA/MLA	Date	OCT. 2002	DRAWING NO	
Chk By	G.K.	Approved		19 OF 29	



STANDARD AND SPECIFICATIONS

FOR TOPSOIL DEFINITION

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

PURPOSE

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

CONDITIONS WHERE PRACTICE APPLIES

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

CONSTRUCTION AND MATERIAL SPECIFICATIONS

- I. TOPSOIL SALVAGED FROM THE EXISTING SITE MAY BE USED PROVIDED THAT IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS.
II. TOPSOIL SPECIFICATIONS - SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING:
A. TOPSOIL SHALL BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, LOAMY SAND, OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY.
B. THE PH FOR TOPSOIL SHALL BE BETWEEN 6.0 AND 7.5.
C. ORGANIC CONTENT OF TOPSOIL SHALL BE NOT LESS THAN 1.5 PERCENT BY WEIGHT.
D. NO SOD OR SEED SHALL BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL.

- V. TOPSOIL APPLICATION
I. WHEN TOPSOILING, MAINTAIN NEEDED EROSION AND SEDIMENT CONTROL PRACTICES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, EARTH DIKES, SLOPE SILT FENCE AND SEDIMENT TRAPS AND BASINS.
II. GRADES ON THE AREAS TO BE TOPSOILED, WHICH HAVE BEEN PREVIOUSLY ESTABLISHED, SHALL BE MAINTAINED, ALBEIT 4" - 8" HIGHER IN ELEVATION.
III. TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED IN A 4" - 8" LAYER AND LIGHTLY COMPACTED TO A MINIMUM THICKNESS OF 4".

DUST CONTROL SPECIFICATIONS
TEMPORARY METHODS:
1. MULCHES - SEE STANDARDS FOR VEGETATIVE STABILIZATION WITH MULCHES ONLY.
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.
PERMANENT METHODS:
1. PERMANENT VEGETATION - SEE STANDARDS FOR PERMANENT VEGETATIVE COVER AND PERMANENT STABILIZATION WITH SOIL EXISTING TREES OR LARGE SHRUBS MAY AFFORD VALUABLE PROTECTION IF LEFT IN PLACE.
2. TOPSOILING - COVERING WITH LESS ERODIBLE SOIL MATERIALS.
3. STONE COVER SURFACE WITH CRUSHED STONE OR COARSE GRAVEL.

HOWARD SOIL CONSERVATION DISTRICT PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LIVED VEGETATIVE COVER IS NEEDED.
SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.
SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES:
1. PREFERRED - APPLY 2 TONS/ACRE DOLOMITIC LIMESTONE (92,000 LBS/1000 SQ. FT.) AND 600 LBS/ACRE 10-10-10 FERTILIZER (14 LBS/1000 SQ. FT.) BEFORE SEEDING.
2. ACCEPTABLE - APPLY 2 TONS/ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQ. FT.) AND 1000 LBS/ACRE 10-10-10 FERTILIZER (23 LBS/1000 SQ. FT.) BEFORE SEEDING.

TEMPORARY SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS LIKELY TO BE RE-DISTURBED WHERE A SHORT-TERM VEGETATIVE COVER IS NEEDED.
SEEDBED PREPARATION - LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISKING OR OTHER MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.
SOIL AMENDMENTS - APPLY 600 LBS/ACRE 10-10-10 FERTILIZER (14 LBS/1000 SQ. FT.).
SEEDING - FOR PERIOD MARCH 1 - APRIL 30 FROM AUGUST 15 - OCTOBER 15, SEED WITH 2 1/2 BUSHEL PER ACRE OF ANNUAL RYE (3.2 LBS/1000 SQ. FT.).
MULCHING - APPLY 1 1/2 TONS/ACRE (70 TO 90 LBS/1000 SQ. FT.) OF UNROTTED WEED-FREE, SMALL GRASS STRAW IMMEDIATELY AFTER SEEDING.

ROCK OUTLET PROTECTION
Construction Specifications
1. The subgrade for the filter, rip-rap, or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.
2. The rock or gravel shall conform to the specified grading limits when installed respectively in the rip-rap or filter.
3. Geotextile shall be protected from punching, cutting, or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of geotextile over the damaged part or by completely replacing the geotextile.

DETAIL 26 - ROCK OUTLET PROTECTION II
PLAN VIEW, ELEVATION, SECTION A-A
Construction Specifications
1. Filter cloth lining must extend at least 6" from edge of rip-rap and be embedded at least 4" at sides of the rip-rap.
2. Minimum depth of rip-rap - maximum depth of flow, (downstream normal depth or discharge depth whichever is greater).

HOWARD COUNTY SEDIMENT CONTROL GENERAL NOTES

- 1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1855).
2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
A. SEVEN CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES STEEPER THAN 3:1.
B. FOURTEEN DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
4. ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. CHAPTER 12, OF THE "HOWARD COUNTY DESIGN MANUAL" STORM DRAINAGE.

SEQUENCE OF CONSTRUCTION
1. OBTAIN GRADING PERMIT 2 DAYS
2. NOTIFY HOWARD COUNTY DEPARTMENTS OF PERMITS AND LICENSES, GRADING AND SEDIMENT CONTROL INSPECTIONS @ 41C-313-1855 AT LEAST 48 HOURS PRIOR TO BEGINNING WORK. 1 DAY
3. CLEAR AND GRUB FOR SEDIMENT AND EROSION CONTROL MEASURES 7 DAYS
4. INSTALL THE STABILIZED CONSTRUCTION ENTRANCE AT THREE MOONS WAY. 1 DAY
5. INSTALL SILT FENCE AND TREE PROTECTION FENCING IN ACCORDANCE WITH FCP. 7 DAYS
6. INSTALL EARTH DIKES, THE EROSION AND SEDIMENT CONTROL BASIN AND TRAPS. 21 DAYS

DETAIL 6 - GABION INFLOW PROTECTION
PERSPECTIVE VIEW, PROFILE ALONG CENTERLINE
Construction Specifications
1. Gabion inflow protection shall be constructed of 9' x 3' x 9' gabion baskets forming a trapezoidal cross section 1' deep, with 2:1 side slopes, and a 3' bottom width.
2. Geotextile Class C shall be installed under all gabion baskets.
3. The stone used to fill the gabion baskets shall be 4" - 7".
4. Gabions shall be installed in accordance with manufacturers recommendations.
5. Gabion Inflow Protection shall be used where concentrated flow is present on slopes steeper than 4:1.

CONTRACTOR SHALL NOTIFY MISS UTILITY AT LEAST 48 HOURS BEFORE STARTING WORK SHOWN ON THESE DRAWINGS: MISS UTILITY - (800) 257-7777

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
Chief, Bureau of Highways 4-22-03

Table with columns: Date, No, Revision Description

BY THE DEVELOPER:
I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT.
Signature: Paul G. Connerlyth 4/1/03

BY THE ENGINEER:
I 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: Gary Jordan 4-1-03

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

U.S. NATIONAL RESOURCE CONSERVATION SERVICE 4/9/03

THESE PLAN FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS, OF THE HOWARD SOIL CONSERVATION DISTRICT. 4/9/03

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF-DEVELOPMENT ENGINEERING DIVISION 4/1/03
CHIEF-DIVISION OF LAND DEVELOPMENT 4/4/03

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

COUNTY HEALTH OFFICER DATE

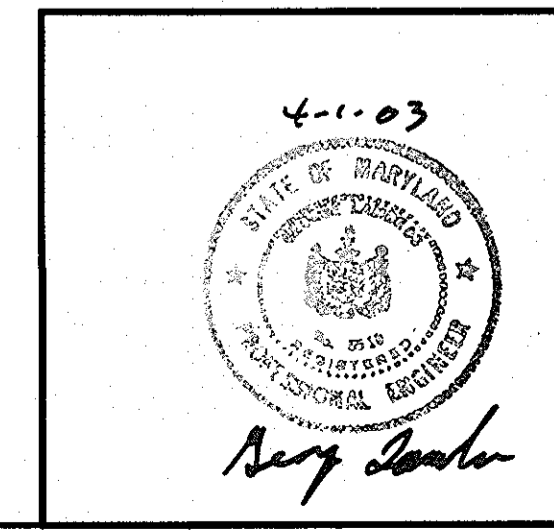
PROJECT: EMERSON SECTION 2 (KEY PROPERTY) PHASE 4 LOTS 1-120 & OPEN SPACE LOTS 121-124
TAX MAP NO. 47 ZONED: PEC-MXD-3
PARCEL: P-837, P-3, P-462
BLOCK 2, 7, 8, 9, 15, 20, & 21
ELECTION DISTRICT No. 6 HOWARD COUNTY, MARYLAND

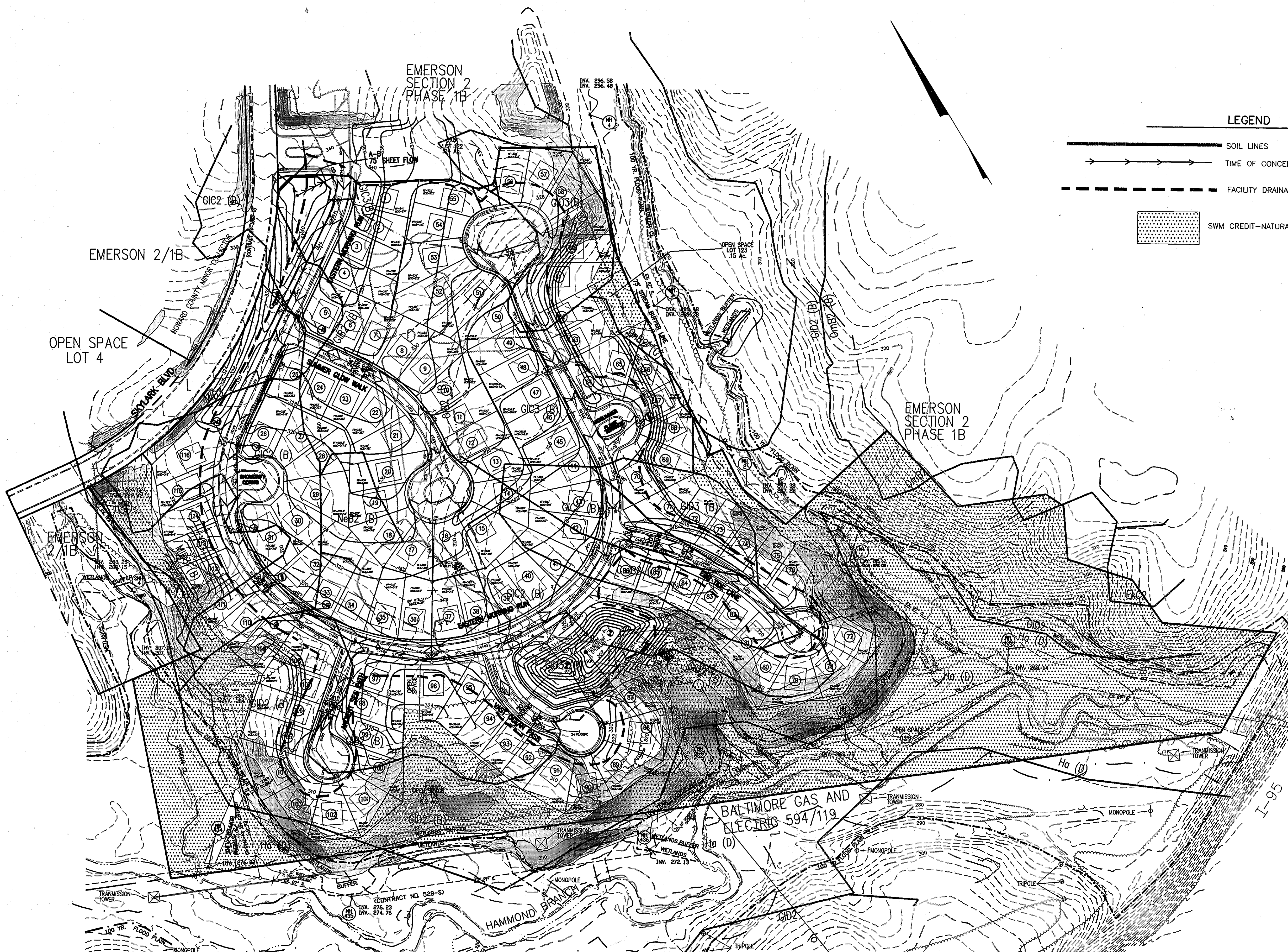
CENTURY ENGINEERING, INC. CONSULTING ENGINEERS, PLANNERS 32 WEST ROAD TOWSON, MARYLAND 21204

OWNER/DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION THE ROUSE BUILDING 10275 LITTLE PATUXENT PARKWAY COLUMBIA, MARYLAND 21044 PHONE: (410) 982-6084

TITLE: EROSION AND SEDIMENT CONTROL NOTES AND SPECIFICATIONS

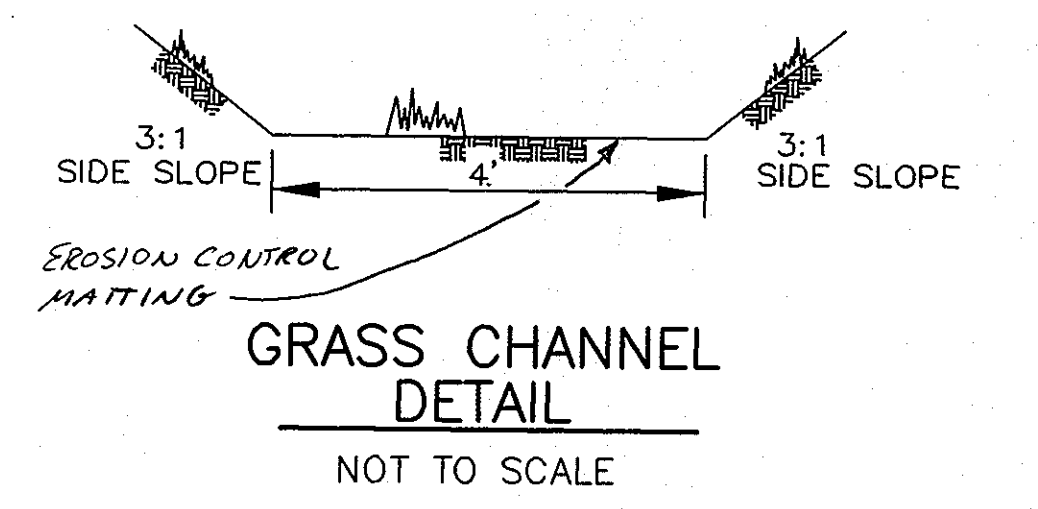
Des By K.D. Scale 1"=50' Proj No 21125.01
Dm By MCA/MLA Date OCT. ,2002 DRAWING NO
Chk By G.K. Approved 20 OF 29





**LEGEND**

- SOIL LINES
- TIME OF CONCENTRATION PATH
- FACILITY DRAINAGE BOUNDARY
- SWM CREDIT-NATURAL AREA CONSERVATION



SITE DRAINAGE AREA  
A=41.85 AC.

DRAINAGE AREA 1  
FOR SWM FACILITY 1  
A=17.48 AC.  
RCN=80  
TC=0.21 hr.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS  
*Christopher M. Paulk* 4-22-03  
CHIEF, BUREAU OF HIGHWAYS DATE

~~APPROVED FOR PUBLIC (OR PRIVATE) WATER AND PUBLIC/OR PRIVATE SEWERAGE SYSTEMS~~

COUNTY HEALTH OFFICER DATE  
HOWARD COUNTY HEALTH DEPARTMENT

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING  
*Cindy Hamilton* 5/6/03  
Chief, Division of Land Development #B Date

*[Signature]* 4/20/03  
Chief, Development Engineering Division Date

Date	No	Revision Description

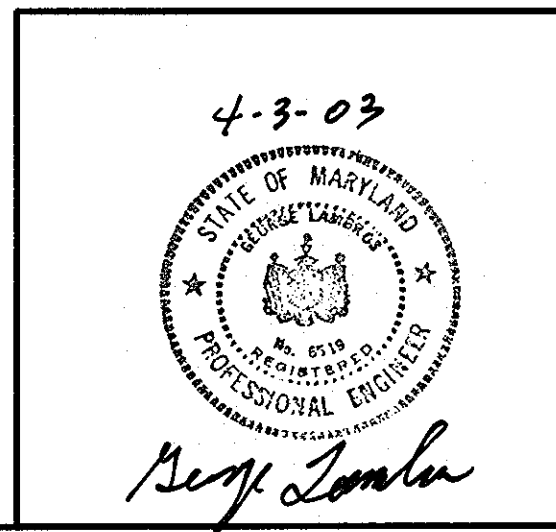
PROJECT: EMERSON SECTION 2  
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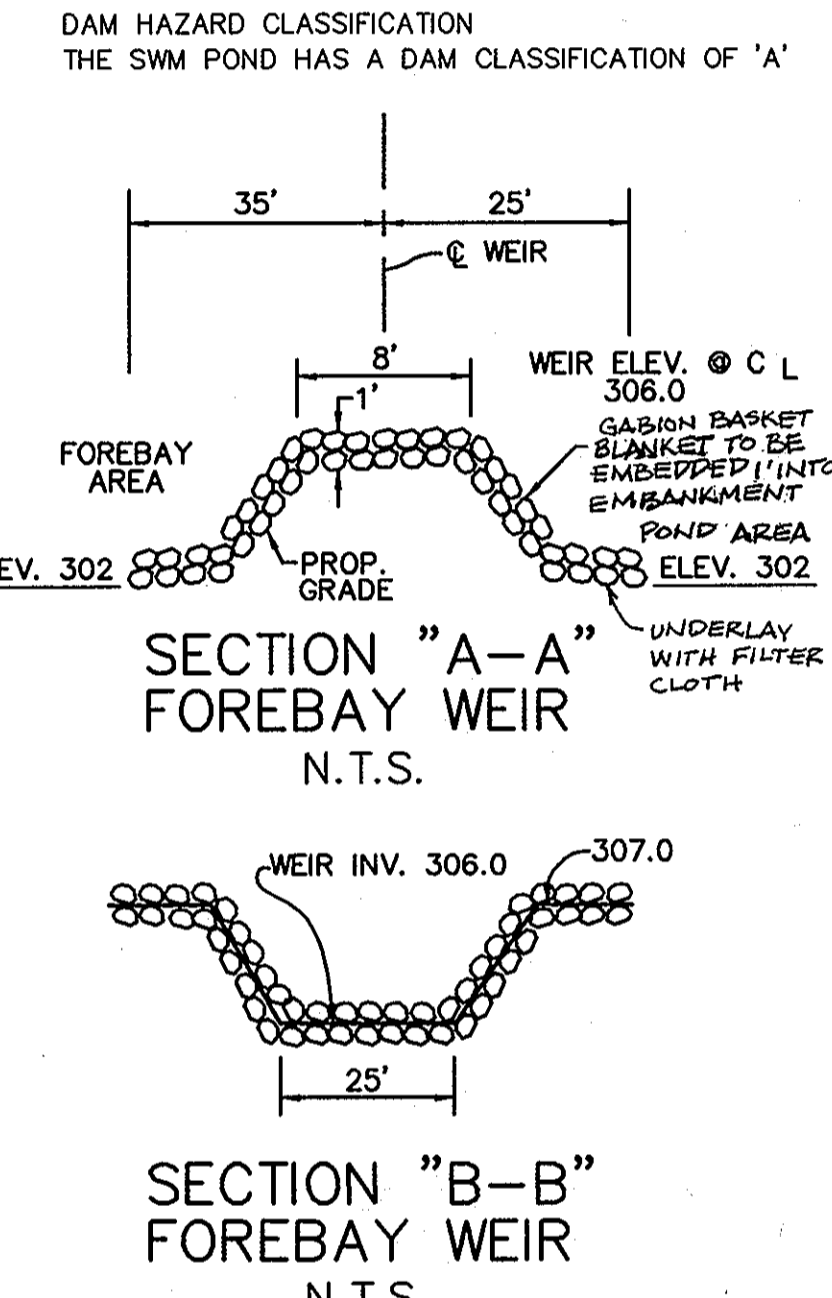
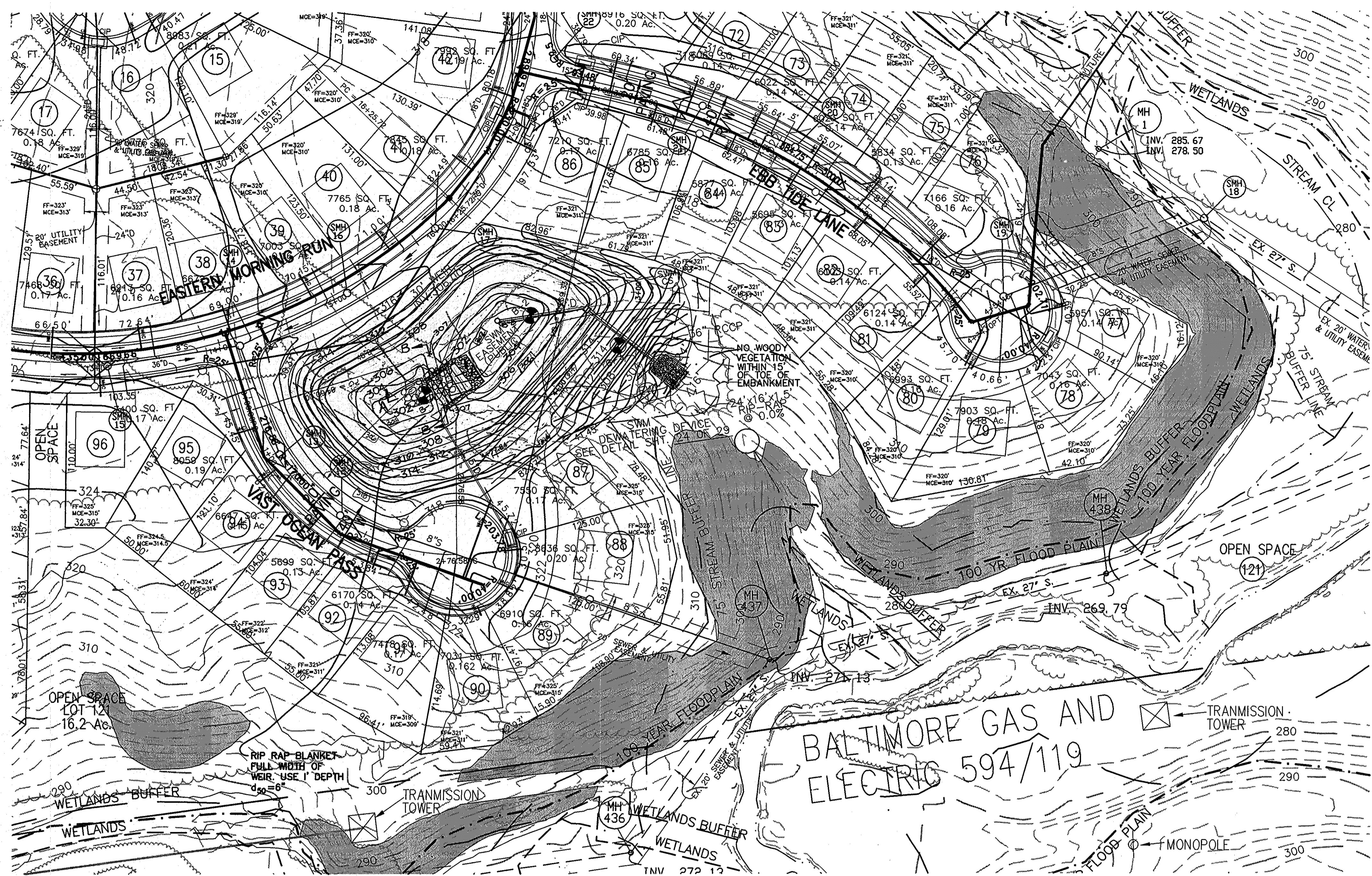
**CENTURY ENGINEERING, INC.**  
CONSULTING ENGINEERS, PLANNERS  
32 WEST ROAD  
TOWSON, MARYLAND 21204

OWNER/DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION  
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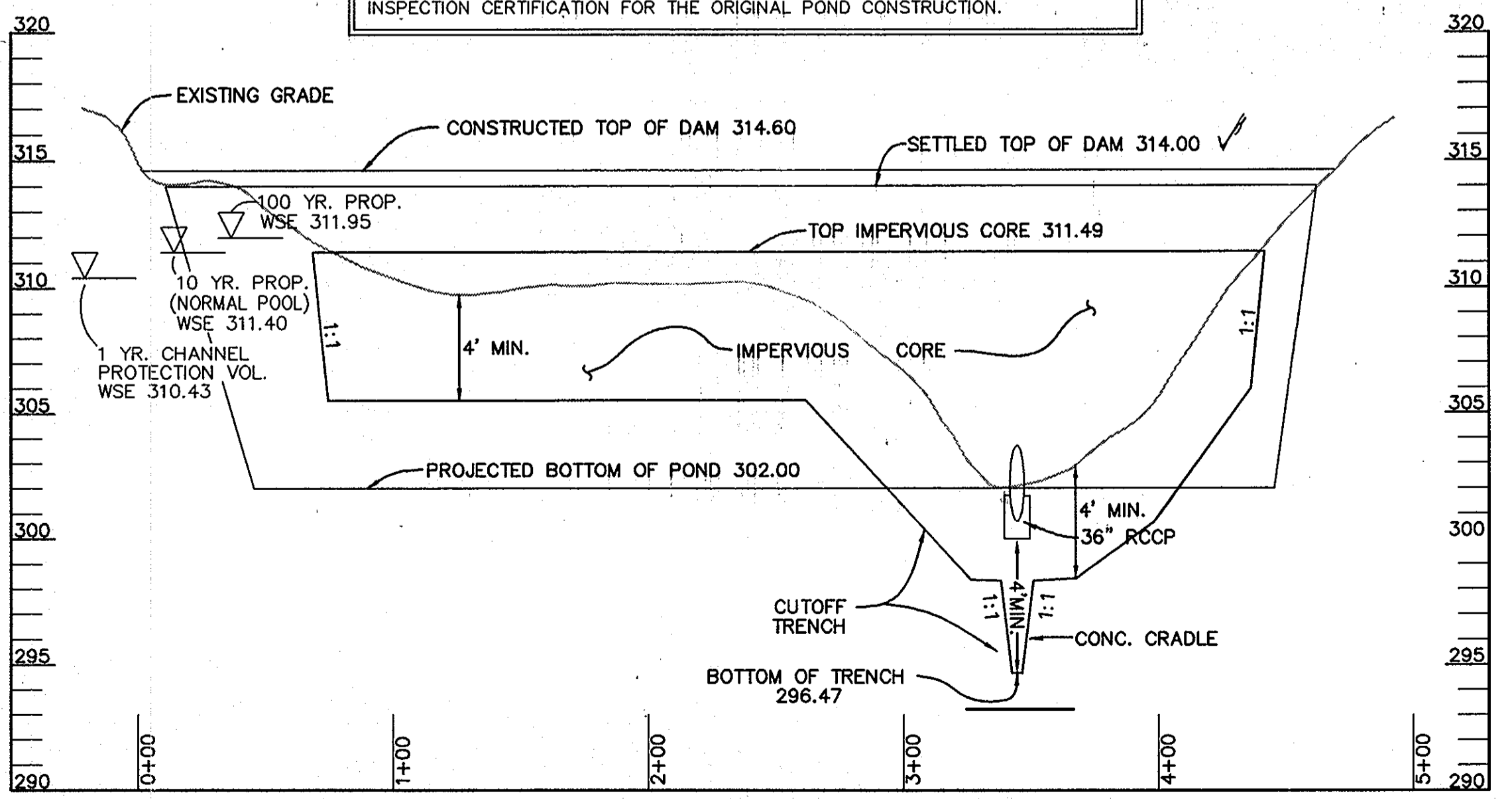
TITLE: STORMWATER MANAGEMENT DRAINAGE AREA MAP

Des By	K.D.	Scale	1"=100'	Proj No	21125.01
Drn By	MCA/MLA	Date	OCT., 2002	DRAWING NO	
Chk By	G.K.	Approved			21 OF 29





**SWM POND \* AS BUILT NOTE**  
 THE DEVELOPER WILL PROVIDE AN AS-BUILT SURVEY, WHICH WILL SHOW THE EXISTING POND WITH ALL PROPOSED IMPROVEMENTS. THE DEVELOPER WILL ALSO WORK WITH THE CONTRACTOR TO PROVIDE AN AS-BUILT CONSTRUCTION INSPECTION CERTIFICATION FOR THE ORIGINAL POND CONSTRUCTION.



PROFILE ALONG CENTERLINE OF EMBANKMENT SWM  
 SCALE: HORIZ. - 1" = 50'  
 VERT. - 1" = 5'

**ENGINEER'S CERTIFICATION:**  
 I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED BY ME OR UNDER MY SUPERVISION AND MEETS THE MINIMUM STANDARDS OF THE HOWARD COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND RESOURCE MANAGEMENT AND THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.

SIGNATURE: \_\_\_\_\_ P.E. NO. 6519  
 PRINT NAME: GEORGE LAMBROS 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 THE APPROVED PLANS AND SPECIFICATIONS.

SIGNATURE: \_\_\_\_\_ P.E. NO.  
 PRINT NAME: \_\_\_\_\_ DATE

**LANDOWNER'S/DEVELOPER'S CERTIFICATION:**  
 I/WE HEREBY CERTIFY THAT ALL WORK SHOWN ON THESE CONSTRUCTION DRAWINGS WILL BE ACCOMPLISHED PURSUANT TO THESE PLANS. I/WE ALSO UNDERSTAND THAT IT IS MY/OUR RESPONSIBILITY TO HAVE THE CONSTRUCTION SUPERVISED AND CERTIFIED, INCLUDING THE SUBMITTAL OF "AS-BUILT" PLANS WITHIN THIRTY (30) DAYS OF COMPLETION, BY A REGISTERED PROFESSIONAL ENGINEER.

SIGNATURE: \_\_\_\_\_ DATE  
 PRINT NAME: \_\_\_\_\_

**OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND JOINTLY MAINTAINED STORMWATER MANAGEMENT PONDS**

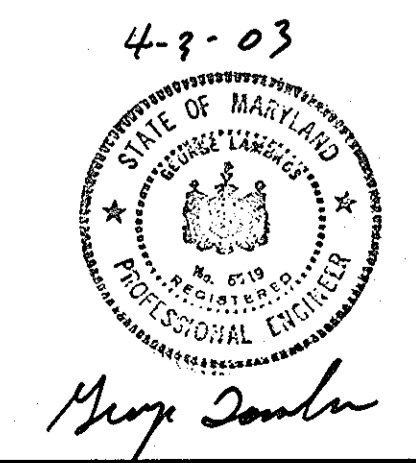
- ROUTINE MAINTENANCE BY HOA**
1. FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS, INSPECTIONS SHALL BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE POND IS FUNCTIONING PROPERLY.
  2. TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES PER YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER, OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHALL BE MOWED AS NEEDED.
  3. DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
  4. VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS THE RIP-RAP OR GABION OUTLET AREA SHALL BE REPAIRED AS SOON AS IT IS NOTICED.

- NON-ROUTINE MAINTENANCE BY HOA**
1. STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, RISER AND THE PIPES SHALL BE REPAIRED UPON THE DETECTION OF ANY DAMAGE. THE COMPONENTS SHALL BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
  2. SEDIMENT SHALL BE REMOVED FROM THE POND AND FOREBAY NO LATER THAN THE CAPACITY OF THE POND OR FOREBAY IS HALF FULL OF SEDIMENT OR WHEN DEEDED NECESSARY FOR AESTHETIC REASONS. UPON APPROVAL FROM THE DEPARTMENT OF PUBLIC WORKS.

SHANABERGER & LANE  
 8726 TOWN & COUNTRY BLVD.  
 SUITE 201  
 ELLICOTT CITY, MARYLAND 21043



Richard F. Lane  
 ROAD 1 STORM DRAIN AS-BUILT



George Lambros

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS  
 Chief, Bureau of Highways  
 DATE: 4-22-03

Date	No	Revision Description

BY THE DEVELOPER:  
 I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A 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. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD CONSERVATION DISTRICT.

Paul G. Cavonius  
 SIGNATURE OF DEVELOPER  
 PRINT NAME BELOW SIGNATURE  
 DATE: 4/4/03

BY THE ENGINEER:  
 I 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.

George Lambros  
 SIGNATURE OF ENGINEER  
 PRINT NAME BELOW SIGNATURE  
 DATE: 4-3-03

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

Jin Nguyen  
 U.S. NATURAL RESOURCES CONSERVATION SERVICE  
 DATE: 4/9/03

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

Howard S.O.D.  
 DATE: 4/9/03

APPROVED FOR PUBLIC (OR PRIVATE) WATER AND PUBLIC/PRIVATE SEWERAGE SYSTEMS

COUNTY HEALTH OFFICER  
 HOWARD COUNTY HEALTH DEPARTMENT  
 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Cindy Hamilton  
 Chief, Division of Land Development  
 DATE: 4/15/03

Chief, Development Engineering Division  
 DATE: 4/15/03

Date	No	Revision Description
7-24-06	1	REVISED SWM POND GRADING TO SHOW BENCHES

PROJECT: EMERSON SECTION 2  
 (KEY PROPERTY)  
 PHASE 4  
 LOTS 1-120 & OPEN SPACE LOTS 121-124  
 TAX MAP NO. 47 ZONED: PEC-MXD-3  
 PARCEL P.837, P.3, P.462  
 BLOCK 2, 7, 8, 9, 14, 15, 20, & 21  
 ELECTION DISTRICT No.6 HOWARD COUNTY, MARYLAND

**CENTURY ENGINEERING, INC.**  
 CONSULTING ENGINEERS, PLANNERS  
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 TOWSON, MARYLAND 21284

OWNER/DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION  
 THE ROUSE BUILDING  
 10275 LITTLE PATUXENT PARKWAY  
 COLUMBIA, MARYLAND 21044  
 PHONE: (410) 992-6084

TITLE: **STORMWATER MANAGEMENT PLAN**

Des By	K.D.	Scale	1"=50'	Proj No	21125.01
Drn By	M.C.A.	Date	OCT. ,2002	DRAWING NO	
Chk By	G.K.	Approved			22 OF 29

CONSTRUCTION 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 slopes shall be graded to a minimum of 1:1. All trees shall be cleared and grubbed within 15 feet of the toe of the embankment.

Areas to be covered by the reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush, and stumps shall be cut approximately level with the ground surface. For dry stormwater management ponds, a minimum of a 10-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 or 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 CC, SC, CL or CL and must have at least 30% passing the #200 sieve. Consideration may be given to the use of other materials in the embankment if designed by a geotechnical engineer. Such special designs must have construction supervised by a geotechnical engineer.

Materials used in the outer shell of the embankment must have the capability to support vegetation of the quality required and to prevent erosion of the embankment.

Placement - Areas on which fill is to be placed 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 the hauling and spreading equipment over the fill shall be controlled so that the tire surfaces of each lift shall be traversed at less than one tread track of heavy equipment or compaction shall be achieved by a minimum of four complete passes of a sheepfoot, rubber tired 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.

When required by the reviewing agency the minimum required density shall not be less than 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 (Standard Proctor).

Cut Off Trench - The cutoff 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.

Embankment Core - The core shall be parallel to the centerline of the embankment as shown on the plans. The top width of the core shall be a minimum of four feet. The height shall extend up to at least 10-year water elevation or as shown on the plans. The side slopes shall be 1 to 1 or flatter. The core shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability. In addition, the core shall be placed concurrently with the outer shell of the embankment.

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 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 structure or pipe, unless there is a compacted fill of 24" or greater over the structure or pipe.

Structure backfill may be flowable fill meeting the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 313 as modified. The mixture shall have a 100-200 psi; 28 day unconfined

compressive strength. The flowable fill shall have a minimum pH of 4.0 and a minimum resistivity of 2,000 ohm-cm. Material shall be placed such that a minimum of 6" (measure) perpendicular to the outside of the pipe) of flowable fill shall be under (bedding), over and on the sides of the pipe. It only needs to extend up to the spring line for rigid conduits. Average slump of the fill shall be 7" to assure flowability of the material. Adequate measures shall be taken (sand bags, etc.) to prevent floating the pipe. When using flowable fill, all metal pipe shall be bituminous coated. Any adjoining soil fill 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 shall completely fill all voids adjacent to the flowable fill zone. 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 structure or pipe unless there is a compacted fill of 24" or greater over the structure or pipe. Backfill material outside the structural backfill (flowable fill) zone shall be of the type and quality conforming to that specified for the core of the embankment or other embankment materials.

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 - (Polymer Coated steel pipe) - Steel pipes with polymeric coatings shall have a minimum coating thickness of 0.01 inch (10 mil) on both sides of the pipe. This pipe and its appurtenances shall conform to the requirements of AASHTO Specifications M-245 & M-246 with watertight coupling bands or flanges.

Materials - (Aluminum Coated Steel Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-245 & M-246 with watertight coupling bands or flanges.

Materials - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-198 or M-211 with watertight coupling bands or flanges. Aluminum Pipe, when used with flowable fill or when soil and/or water conditions warrant the need for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-199 Type A. Any aluminum coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt.

Materials - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-198 or M-211 with watertight coupling bands or flanges. Aluminum Pipe, when used with flowable fill or when soil and/or water conditions warrant for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-199 Type A. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt. Hot dip galvanized bolts may be used for connections. The pH of the surrounding soils shall be between 4 and 9.

2. Coupling bands, anti-seep collars, and sections, etc., must be composed of the same material and coatings as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials at least 24 mils in thickness.

3. Connections - All connections with pipes must be completely watertight. 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 watertight. Dimple bands are not considered to be watertight.

All connections shall use a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re-rolled on adequate number of corrugations to accommodate the bandwidth. The following type connections are acceptable for pipes less than 24 inches in diameter: flanges on both ends of the pipe with a circular 3/8 inch closed cell neoprene gasket, pre-punched to the flange bolt circle, sandwiched between adjacent flanges; a 12-inch wide standard lap type band with 12-inch wide by 3/8-inch thick closed cell circular neoprene gasket; and a 12-inch wide huffer type band with o-ring gaskets having a minimum diameter of 1/2 inch greater than the corrugation depth. Pipes 24 inches in diameter and larger shall be connected by a 24 inch long annular corrugated band using a minimum of 4 (four) rods and lugs, 2 on each connecting pipe end. A 24-inch wide by 3/8-inch thick closed cell circular neoprene gasket will be installed with 12 inches on the end of each pipe. Ringed joints with 3/8 inch closed cell gaskets the full width of the flange is also acceptable.

Helically corrugated pipe shall have either continuously welded sections 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 C-361.

2. Bedding - Reinforced concrete pipe conduits shall be laid in a concrete bedding / cradle for their entire length. This bedding / cradle shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 50% of its outside diameter with a minimum thickness of 6 inches. Where a concrete cradle is not needed for structural reasons, flowable fill may be used as described in the "Structure Backfill" section of this standard. Gravel bedding is not permitted.

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 4 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.

Plastic Pipe - The following criteria shall apply for plastic pipe:

1. Materials - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241. Corrugated High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following: 4" - 10" inch pipe shall meet the requirements of AASHTO M282 Type S, and 12" through 24" inch shall meet the requirements of AASHTO M294 Type S.

2. Joints and connections to anti-seep collars shall be completely watertight.

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.

Drainage Diaphragms - When a drainage diaphragm is used, a registered professional engineer will supervise the design and construction inspection.

Concrete - Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 414, Mix No. 3.

Rock Riprap - Rock riprap shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 921.09, Class C.

Core of Water during Construction

All work on 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 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 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 stability of the excavated slopes and bottom required excavations and will allow satisfactory performance of all construction operations. During the placing and compacting 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 pumps 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 Natural Resources 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.

Maintenance Schedule/Requirements

The Stormwater Management Facility shall be maintained by the property owner as follows:

- 1. Removal of forestry silt shall occur when the accumulation exceeds four (4) inches.
2. Removal of accumulated paper, trash and debris as necessary.
3. Corrective maintenance is required any time the forestry does not drain completely within 60 hours. No standing water is allowed.
4. Annual inspection and repair of the structure and storage pipe.
5. Vegetation growing on the embankment top or faces is not allowed to exceed 18 inches at any time.

GENERAL NOTES

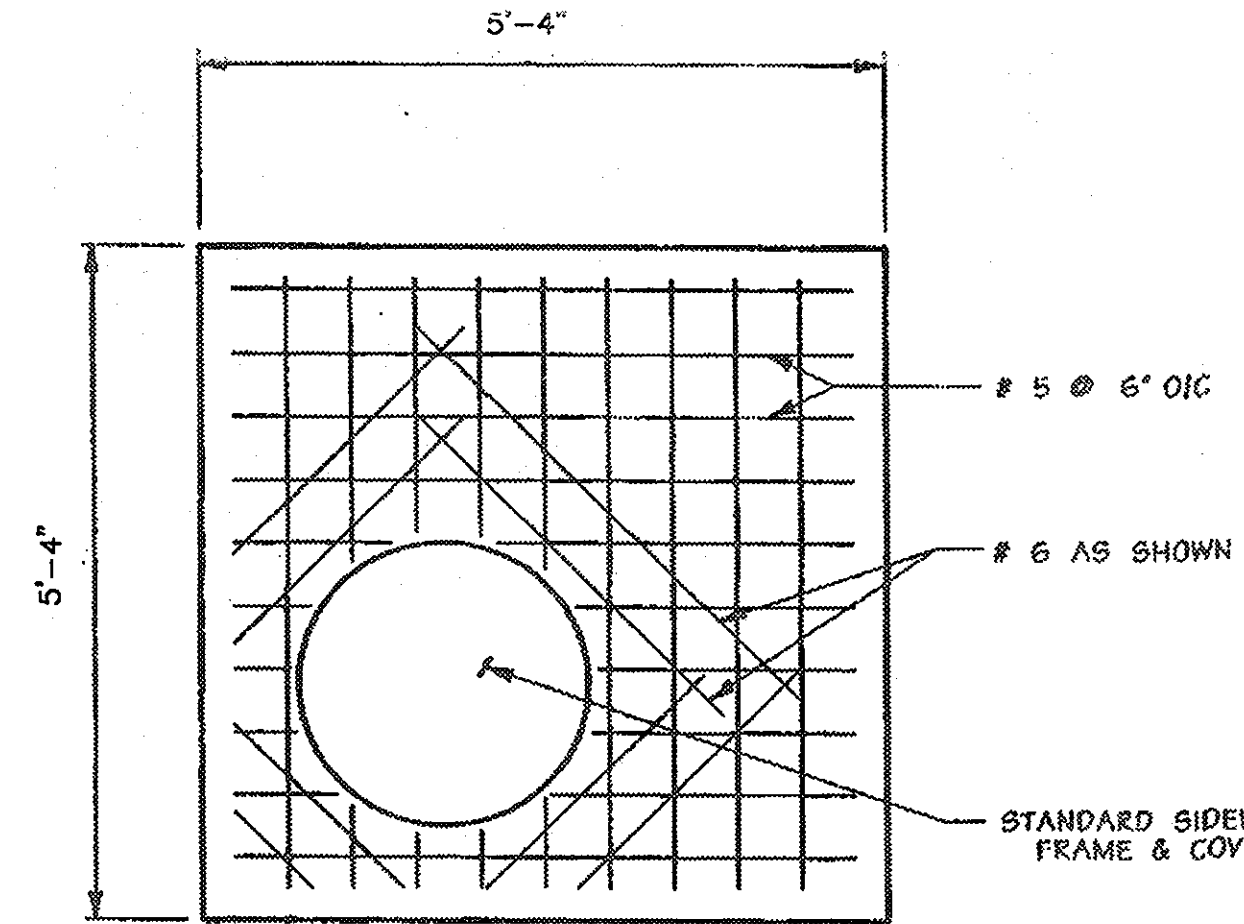
1. UTILITIES AND TOPOGRAPHICAL FEATURES SHOWN ON THESE PLANS ARE ONLY FOR THE CONVENIENCE OF THE USER AND THERE IS NO WARRANTY OR GUARANTEE OF THE CORRECTNESS OF THE COMPLETENESS OF THE INFORMATION GIVEN. THE USER OF THESE DRAWINGS MUST VERIFY ALL SUCH INFORMATION TO HIS OWN SATISFACTION.

2. AS-BUILT PLANS AND CERTIFICATION ARE REQUIRED FOR THIS STORMWATER MANAGEMENT FACILITY. THESE MUST BE PREPARED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER. HOWARD COUNTY WILL NOT PERFORM THE INSPECTION OR PREPARE THE AS-BUILT PLANS OR CERTIFICATION. THE STORMWATER MANAGEMENT PERMIT SECURITY WILL NOT BE RELEASED UNTIL THE AS-BUILT PLANS AND CERTIFICATION ARE APPROVED BY HOWARD COUNTY.

3. IN ORDER TO PREPARE THE REQUIRED AS-BUILT PLANS AND CERTIFICATION, THIS STORMWATER MANAGEMENT FACILITY MUST BE INSPECTED BY THE ENGINEER AT SPECIFIC STAGES DURING CONSTRUCTION AS REQUIRED BY THE CURRENT HOWARD COUNTY STORMWATER MANAGEMENT POLICY AND DESIGN MANUAL. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST FIVE (5) WORKING DAYS PRIOR TO STARTING ANY WORK SHOWN ON THESE PLANS.

4. UNLESS OTHERWISE NOTED, ALL CONSTRUCTION AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION.

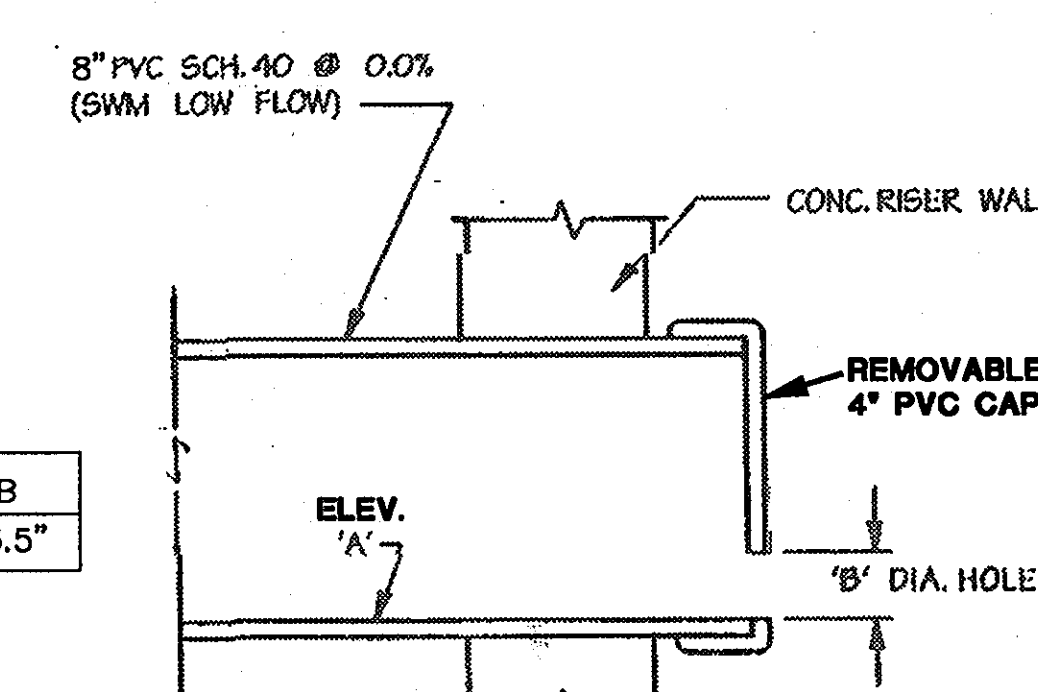
SOIL CONSERVATION SERVICE MARYLAND STANDARDS AND SPECIFICATIONS POND CODE 378 NOVEMBER, 2000. MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION, JANUARY, 1982, STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIAL.



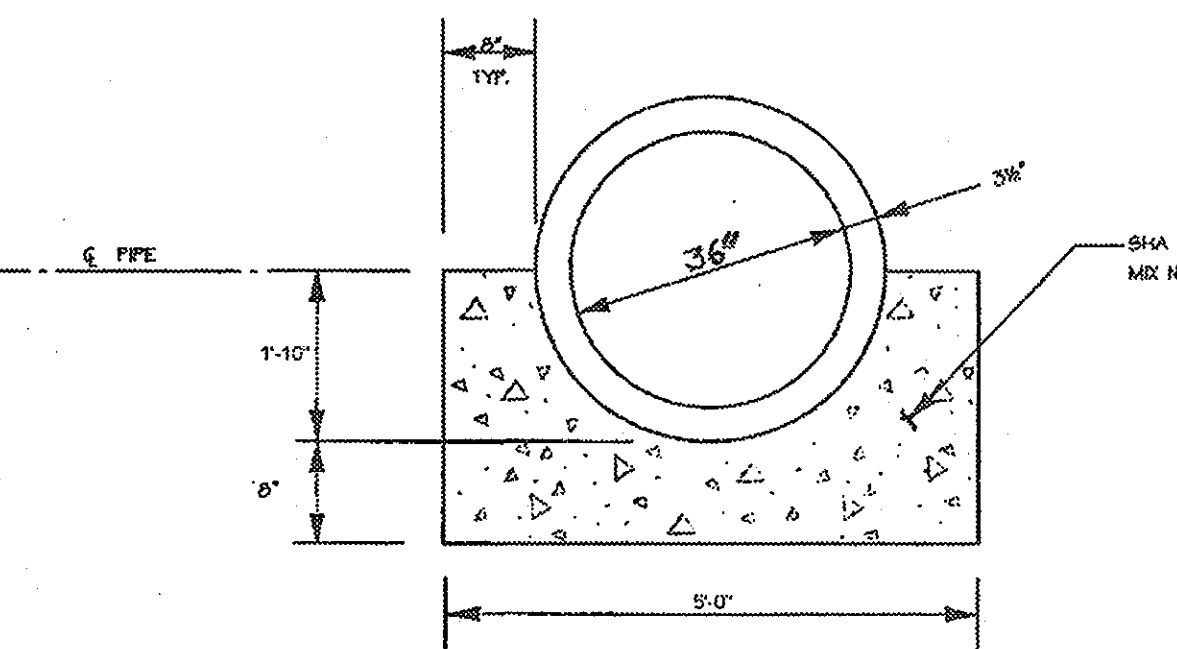
- NOTES:
1. BOLT TOP SLAB TO RISER WITH (4) 1/2" x 6" I.G. HEX HEAD GALVANIZED BOLTS.
2. THE SIDE AND THE SLAB OF THE FRAME AND COVER WILL LINE UP WITH THE SIDE OF THE RISER WITH STANDARD MANHOLE STEPS.

TOP SLAB

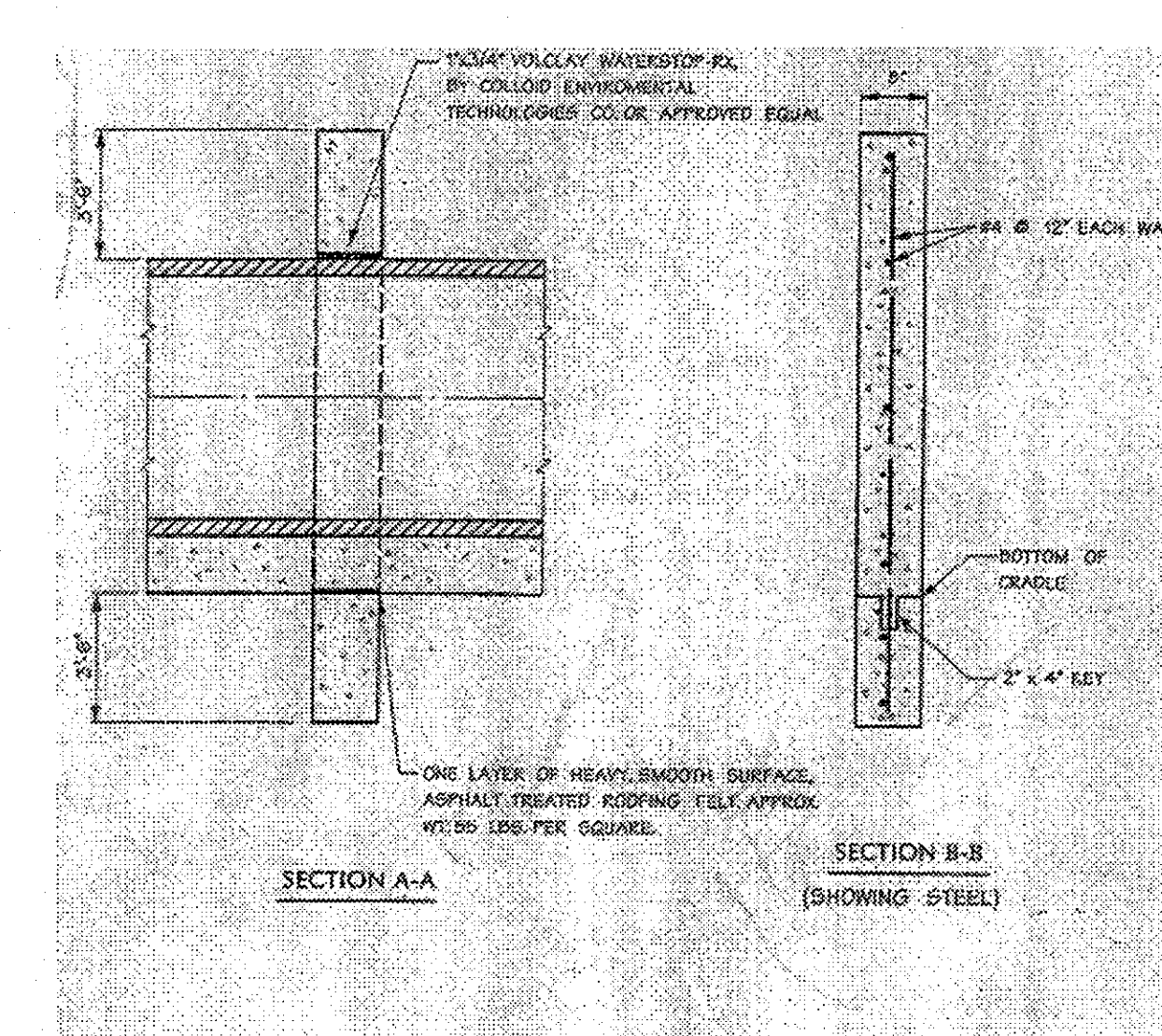
CAST IN PLACE



SWM LOW FLOW CONTROL DETAIL



CONCRETE CRADLE DETAIL-SWM CS NOT TO SCALE



ANTI-SEEP COLLAR DETAIL-SWM CS CAST IN PLACE-NOT TO SCALE

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
Signature: [Signature]
Date: 4-22-03

Table with columns: Date, No, Revision Description

BY THE DEVELOPER:
I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A 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. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD CONSERVATION DISTRICT.
Signature: [Signature]
Date: 4/1/03

BY THE ENGINEER:
I 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: [Signature]
Date: 4-1-03

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.
Signature: [Signature]
Date: 4/9/03

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
Signature: [Signature]
Date: 4/9/03

APPROVED FOR PUBLIC (OR PRIVATE) WATER AND PUBLIC/OR PRIVATE SEWERAGE SYSTEMS
Signature: [Signature]
Date: [Date]

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Signature: [Signature]
Date: 5/5/03

Signature: [Signature]
Date: 4/10/03

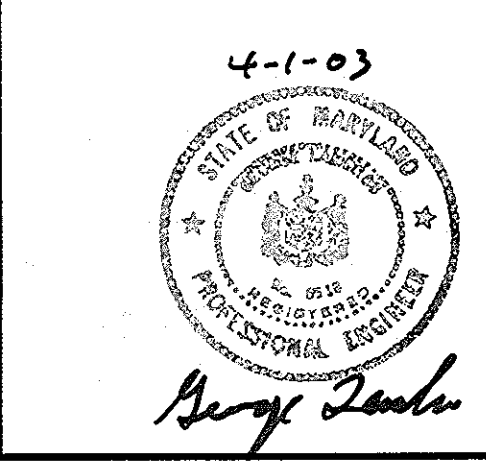
Table with columns: Date, No, Revision Description

PROJECT: EMERSON SECTION 2 (KEY PROPERTY) PHASE 4 LOTS 1-120 & OPEN SPACE LOTS 121-124 TAX MAP NO. 47 ZONED: PEC-MXD-3 PARCEL P-837, P-3, P-462 BLOCK 2, 7, 8, 9, 14, 15, 20, & 21 ELECTION DISTRICT No. 6 HOWARD COUNTY, MARYLAND

CENTURY ENGINEERING, INC. CONSULTING ENGINEERS, PLANNERS 32 WEST ROAD TOWSON, MARYLAND 21204

OWNER/DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION THE ROUSE BUILDING 10275 LITTLE PATUXENT PARKWAY COLLEMBIA, MARYLAND 21044 PHONE: (410) 992-6084

TITLE: STORMWATER MANAGEMENT GENERAL DETAILS AND SPECIFICATIONS
Des By: K.D. Scale: AS SHOWN Proj No: 21125.01
Dwn By: MCA/MLA Date: OCT., 2002 DRAWING NO
Chk By: G.K. Approved: 23 OF 29



**OPERATION AND MAINTENANCE SCHEDULE FOR  
PRIVATELY OWNED AND MAINTAINED  
STORMWATER PONDS**

**OPERATION, MAINTENANCE AND INSPECTION**

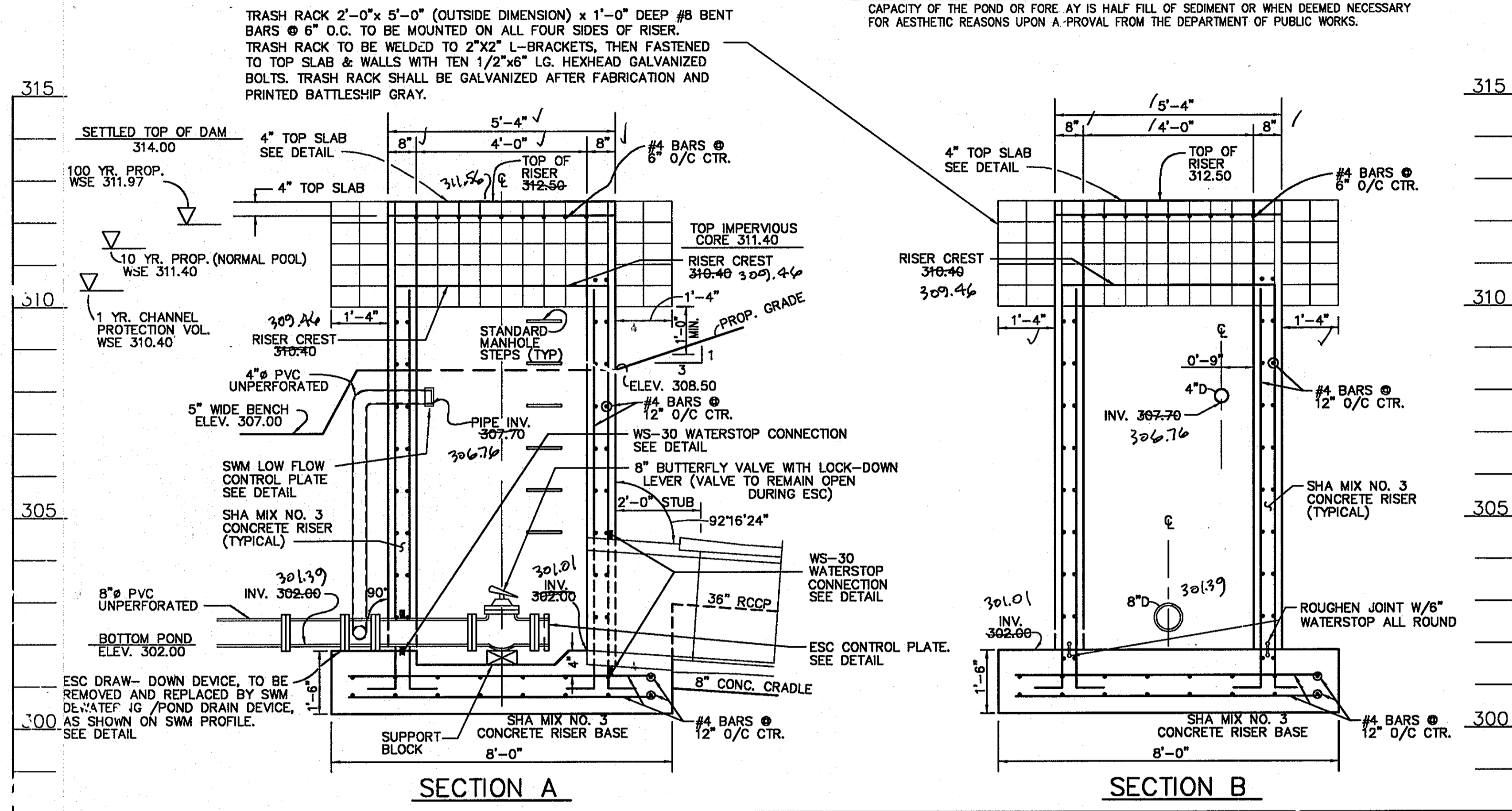
INSPECTION OF THE POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, SCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378). THE POND OWNER(S) AND ANY HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE 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 INDICATIONS OF DISTRESS SUCH AS EXCESSIVE SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.

**ROUTINE MAINTENANCE:**

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

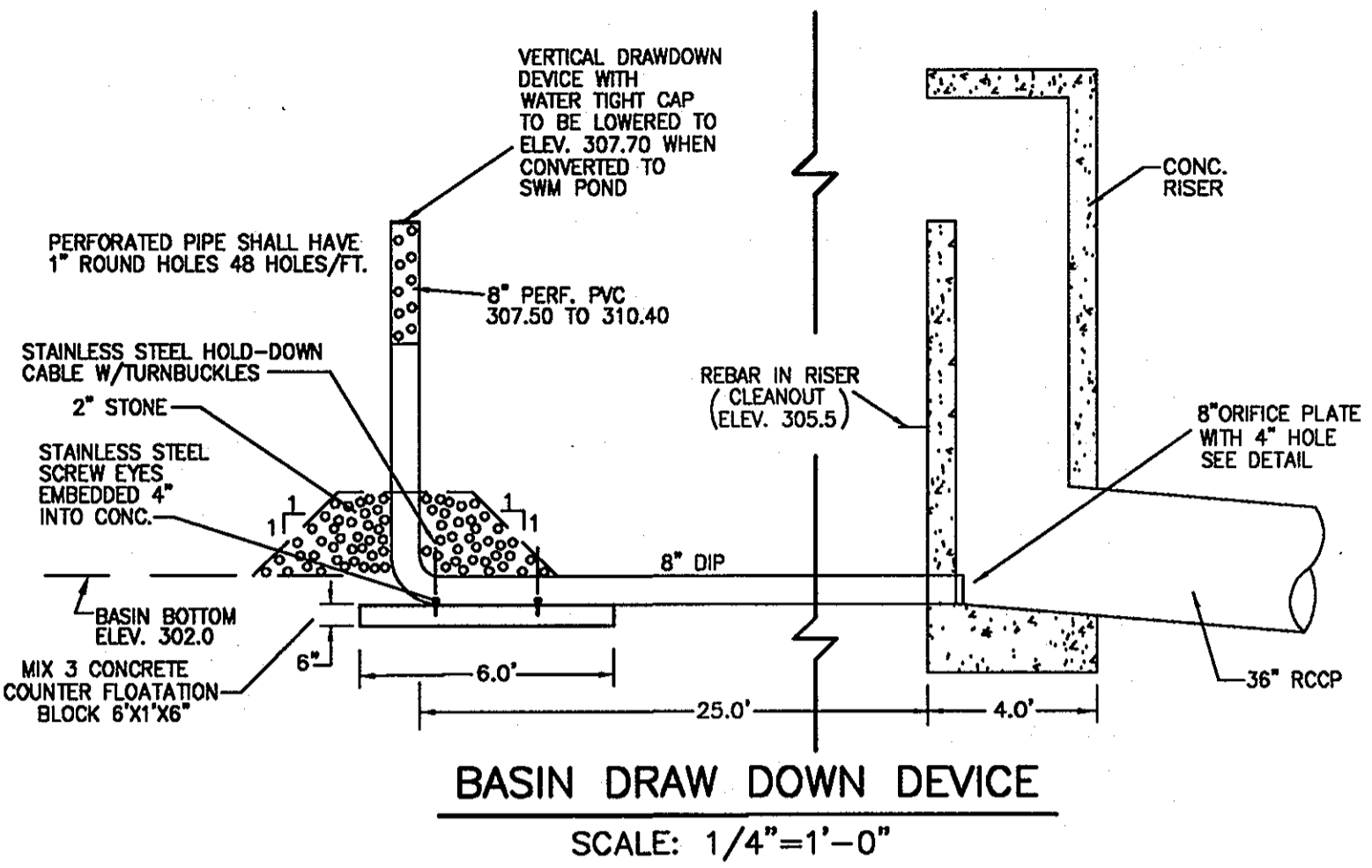
**NON-ROUTINE MAINTENANCE:**

- STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE RISER AND THE PIPES SHALL BE REPAIRED UPON THE DETECTION OF ANY DAMAGE THE COMPONENTS SHALL BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
- SEDIMENT SHALL BE REMOVED FROM THE POND AND FOREBAY NO LATER THAN WHEN THE CAPACITY OF THE POND OR FOREBAY IS HALF FULL OF SEDIMENT OR WHEN DEEMED NECESSARY FOR AESTHETIC REASONS UPON A PROVAL FROM THE DEPARTMENT OF PUBLIC WORKS.



**RISER DETAIL FOR POND-SWM DS**

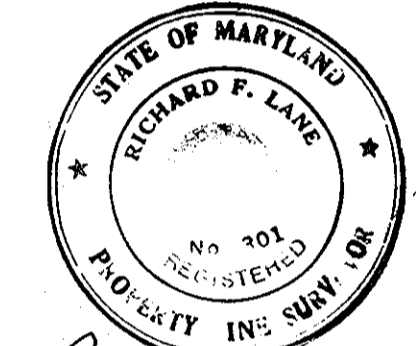
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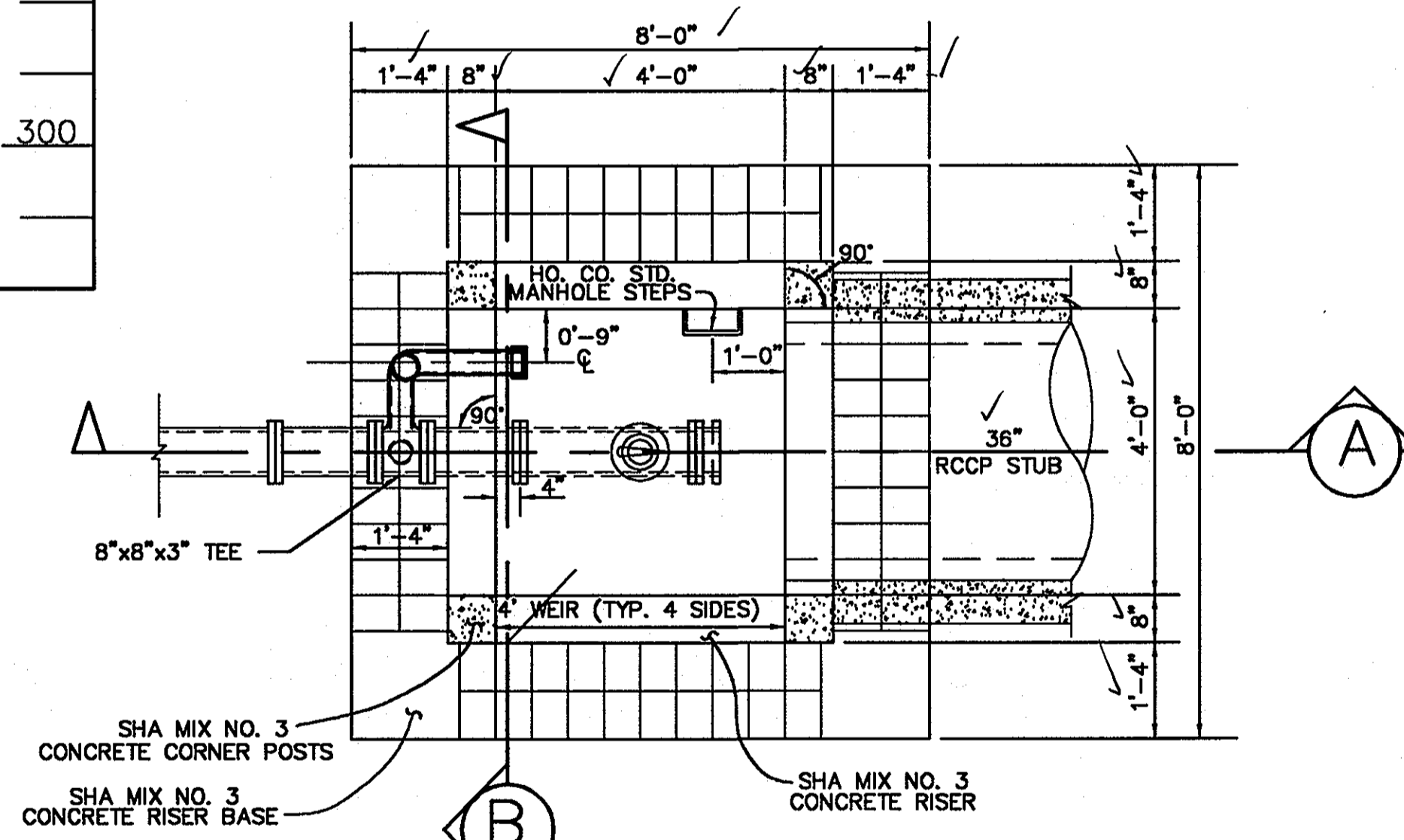
**BASIN DRAW DOWN DEVICE**

SCALE: 1/4"=1'-0"

SHANABERGER & LANE  
8726 TOWN & COUNTRY BLVD.  
SUITE 201  
ELLICOTT CITY, MARYLAND 21043

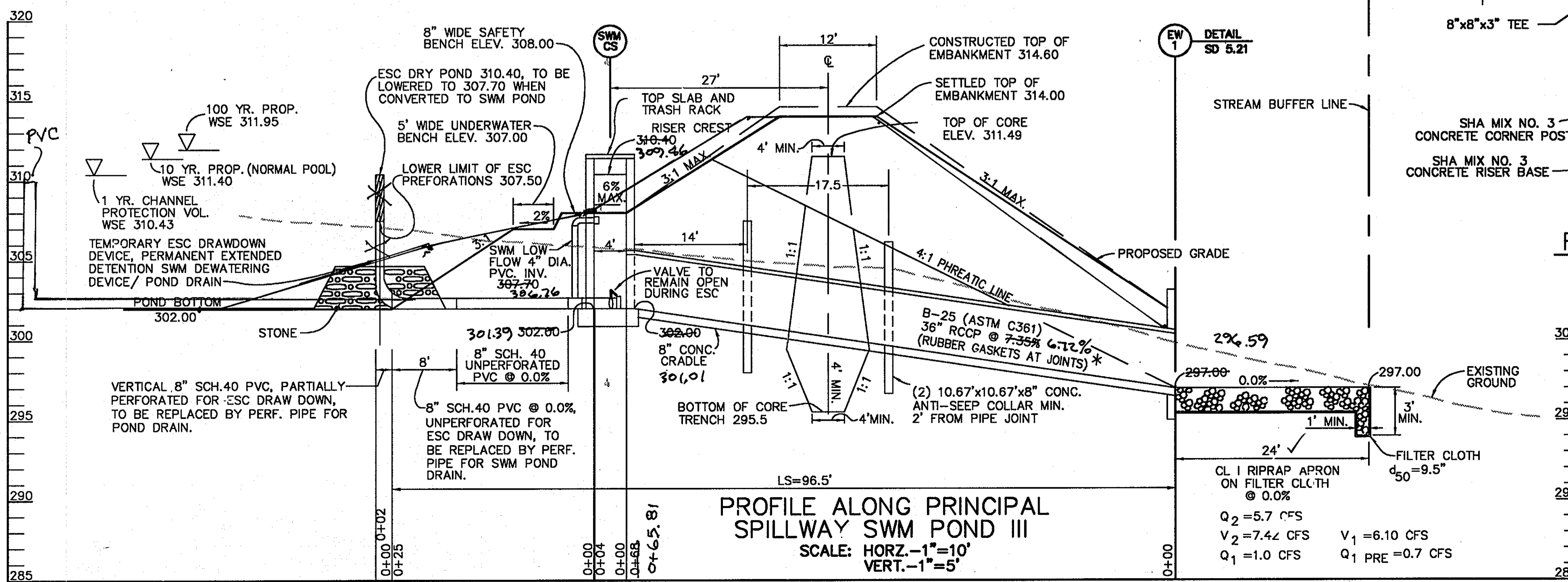


*Richard F. Lane*  
ROAD 1 STORM DRAIN AS-BUILT



**R-1 RISER PLAN (TOP SLAB REMOVED)-SWM III**

SCALE: 1/2"=1'-0"  
CAST IN PLACE



**PROFILE ALONG PRINCIPAL  
SPILLWAY SWM POND III**

SCALE: HORIZ.-1"=10'  
VERT.-1"=5'

\*NOTE:  
CONTRACTOR CAN USE MASTIC  
GROUT FOR BARREL JOINTS  
IN ADDITION OF RUBBER GASKETS,  
DETAILS AVAILABLE UPON  
REQUEST.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

*Howard County Seal* 4-22-03  
DATE

Date	No	Revision Description

BY THE DEVELOPER:

"I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A 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. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD CONSERVATION DISTRICT."

*Paul G. ...* 4/1/03  
SIGNATURE OF DEVELOPER DATE  
PRINT NAME BELOW SIGNATURE

BY THE ENGINEER:

"I 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."

*George Landros* 4-1-03  
SIGNATURE OF ENGINEER DATE  
PRINT NAME BELOW SIGNATURE

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

*Joe ...* 4/9/03  
U.S. 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.

*Howard S.C.D.* 4/9/03  
HOWARD S.C.D. DATE

APPROVED FOR PUBLIC (OR PRIVATE) WATER AND PUBLIC OR PRIVATE SEWERAGE SYSTEMS

COUNTY HEALTH OFFICER  
HOWARD COUNTY HEALTH DEPARTMENT

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

*Cindy ...* 4/5/03  
Chief, Division of Land Development DATE  
*...* 4/15/03  
Chief, Development Engineering Division DATE

Date	No	Revision Description

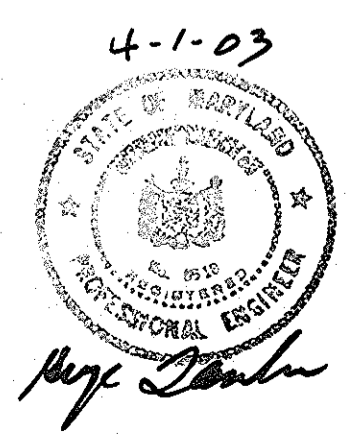
PROJECT: EMERSON SECTION 2  
(KEY PROPERTY)  
PHASE 4  
LOTS 1-120 & OPEN SPACE LOTS 121-124  
TAX MAP NO. 47 ZONED: PEC-MXD-3  
PARCEL P.637, P.3, P.162  
BLOCK 2, 7, 8, 9, 14, 15, 20, & 21  
ELECTION DISTRICT No.6 HOWARD COUNTY, MARYLAND

**CENTURY ENGINEERING, INC.**  
CONSULTING ENGINEERS, PLANNERS  
32 WEST ROAD  
TOWSON, MARYLAND 21204

OWNER/DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION  
THE ROUSE BUILDING  
10275 LITTLE PATENT PARKWAY  
COLUMBIA, MARYLAND 21044  
PHONE: (410) 992-6084

TITLE: STORMWATER MANAGEMENT DETAILS

Des By: K.D.	Scale: 1"=10'	Proj No: 21125.01
Drn By: MCA/MLA	Date: OCT., 2002	DRAWING NO
Chk By: G.K.	Approved	24 OF 29





hole, remove the saturated soils, and re-test the adequacy of the bearing surface to support the design pressure prior to placing concrete.

6. CONSTRUCTION CONSIDERATIONS

6.1. General Earthwork Requirements

Controlled compacted fill will be required for the embankments around the SWM ponds. The fill for these areas was assumed to be obtained from the SWM pond areas as well as other nearby regions.

The maximum dry density (AASHTO T-99) for the residual soil sample was 112.0 pcf with optimum moisture content of 14.6%. The natural moisture content of the fill materials on site was generally above the optimum moisture content. Based on these conditions, significant drying of the soil by discing and aeration or other means of manipulation can be anticipated during the earthwork process. Furthermore, the micaceous component of the on-site soils makes it susceptible to loss of strength upon exposure to free water. Therefore, it would be prudent to schedule clearing and grubbing, stripping, and earthwork operations for the warmer, dryer periods of the year (if possible) so that construction schedules will not be delayed due to inclement weather.

All fill placed for the embankment, utility backfill, or any other location requiring stable support or minimal settlement shall be constructed as controlled compacted fill. Controlled compacted fill and foundation excavations shall meet the following requirements:

- a) Within the described construction areas, strip the vegetation, topsoil, and any organic, contaminated, or otherwise unsuitable materials to expose clean soils. The subject area shall encompass the SWM ponds and extend outward from the edges a minimum of 5 feet plus 1 additional foot horizontally for every foot of new fill to be placed, or cut to be excavated.
- b) Any material used for controlled fill shall be inspected and approved for use by a geotechnical engineer or qualified soils technician prior to use on the site. All fill shall be free from topsoil, boulders, cobbles, roots, organic matter, and debris. Preliminary approval of the borrow material shall not constitute general acceptance of all materials in the deposit or source of supply, and the acceptance shall be subject to field tests taken at the discretion of the geotechnical engineer or qualified soils technician.
- c) Compacted fill should be placed in horizontal, successive, uniform layers having a maximum uncompacted lift thickness of 8 inches. Each lift should be compacted uniformly to a minimum of 95 percent of the Standard Proctor maximum dry density as determined by AASHTO T-99 (ASTM D-698). The moisture content of the materials shall be maintained within ±

Table 2-Potential Excavation Problems

Boring	Existing Elevation	Proposed Bottom Elevation	Elevation to SPT resistances of:		
			50 blows/6 inches <sup>(1)</sup>	50 blows/3 to 6 inches <sup>(2)</sup>	50 blows/3 inches or less <sup>(3)</sup>
B-1	314.0	304	---	---	---
B-2	307.5	304	---	299.0	---
B-3	304.0	304	---	---	---

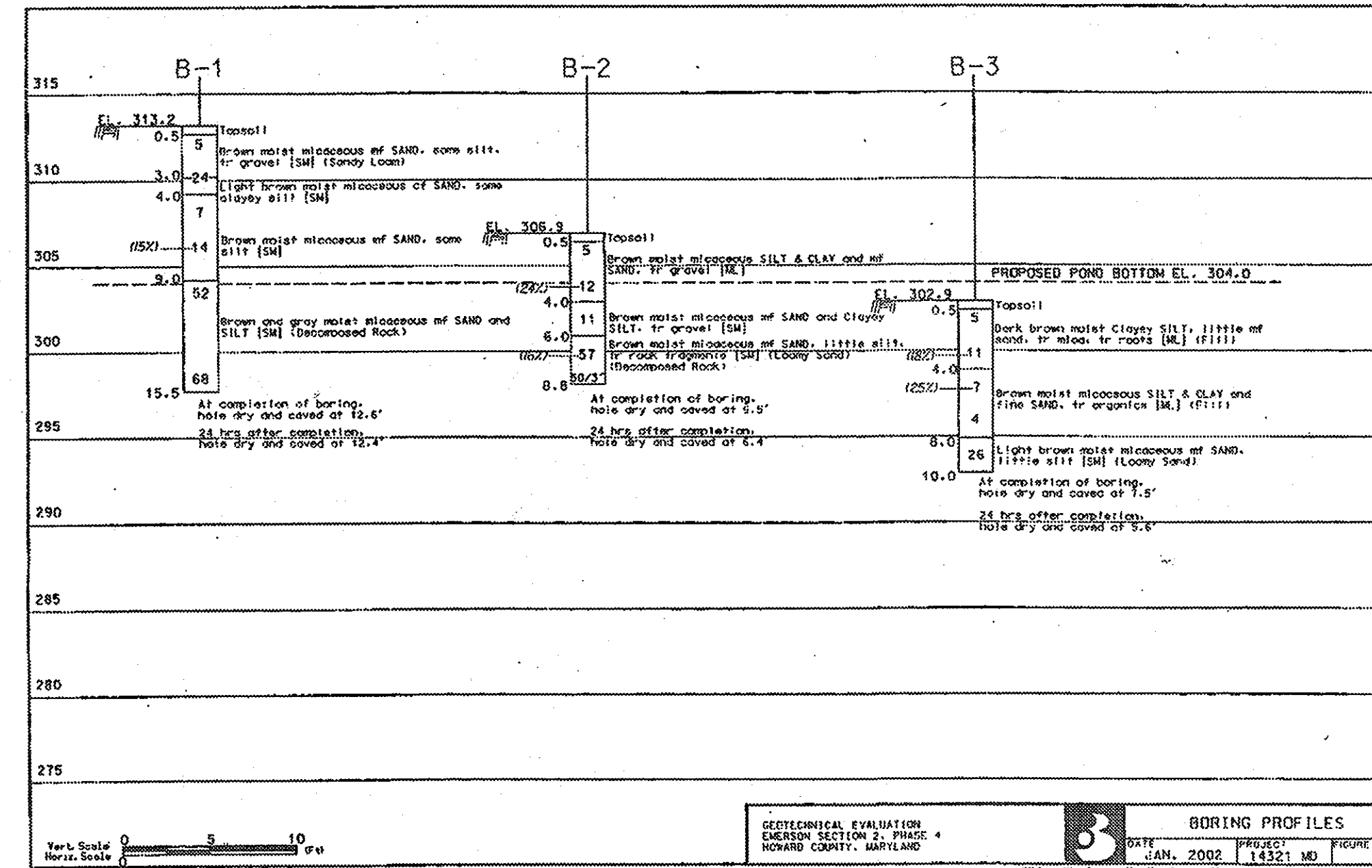
NOTES:

- (1) Excavation of materials exhibiting this range of blow counts are typically accomplished through normal mass excavation techniques, i.e. excavation by loader, pan, backhoe, etc. Some limited ripping or jack hammering of materials may be required, especially in trenches.
- (2) Excavation of materials exhibiting this range of blow counts will typically require ripping, jack hammering or hoe ramming for excavation, especially in trenches or other confined areas.
- (3) Excavation of materials exhibiting this range of blow counts will typically require hard ripping or extensive jack hammering. Blasting or other hard excavation techniques may be required, especially in trenches or other confined areas.

It must be noted that the physical characteristics of the rock materials (e.g., jointing, fracturing, and foliation), along with the type of equipment used and the degree of access (confined or not), will greatly affect difficulty of excavation. It should also be noted that the data presented on the profiles represent the general subsurface conditions at the respective boring locations. Deviations in the excavation characteristics due to differing degrees of weathering, as well as the physical characteristics of the subject materials, must be anticipated. Also, the excavation conditions, and the SPT values used to differentiate them, tend to vary and overlap. Accordingly, strata with similar SPT results may differ in excavation difficulty, and materials with similar excavation characteristics may have different SPT results.

7. GEOTECHNICAL OBSERVATION AND TESTING

As variations in soil conditions can be expected to some degree on any project, it is important that The Robert B. Balter Company, as the geotechnical engineer of record, provide full time, on-site observation and testing of all soil related aspects of construction. This is to assure compliance with design concepts and recommendations, and to verify that the subsurface conditions are consistent with those anticipated prior to construction. The services shall include observation and testing of all stripping, proof rolling, undercutting, mass grading, excavation, backfill of footings, utility lines and other buried structures, and any other soil related activities.



3% of the optimum moisture content in order to attain the required degree of compaction. Each lift should be uniformly and evenly blade mixed during spreading to ensure uniformity of the material in each layer. If the work deteriorates prior to placement of the next lift, the layer shall be recompact and reshaped accordingly.

- d) Successive lifts of compacted fill shall not be placed until the layer under construction has been compacted to the required density as measured by a geotechnical engineer or qualified soils technician. Successive runs of equipment shall be staggered over the width of each layer.
- e) Where fills are to be placed on slopes, the original ground should be deeply scarified or where slopes are steeper than 5 horizontal to 1 vertical the slope should be stepped or benched, when considered necessary by the Engineer, in order that the placement of fill may be accomplished in horizontal lifts.

It is noted that this methodology is recommended both as preparation for areas to receive new fill, as well as locations where cut is required to establish the proposed grades such as foundation excavations. In cut areas, the proofrolling and selective undercutting shall be accomplished after excavation down to the proposed grades has been completed.

6.2. Excavation Issues

Conventional excavation methods should likely prove feasible for most of the excavations. However, it must be anticipated that dense to very dense decomposed rock or 'floating' boulders may be encountered during earthwork, possibly requiring the use of specialized excavation equipment and methods for difficult excavation.

It is our experience that the degree of difficulty in excavation can, in a general sense, be correlated to the N-values, the physical characteristics of the materials and the material's resistance to our drilling equipment. Typically, mass excavation of strata exhibiting N-values of less than 50 blows per 6 inches could generally be accomplished using conventional earthwork techniques. However, limited ripping or jack hammering of harder materials may be required in narrow excavations or trenches. Materials with N-values of 50 blows per 3 inches to 6 inches, or which required very hard augering to penetrate with our drilling equipment, usually require ripping, jack hammering, or hoe ramming for removal, especially in trenches. Any excavations below the depths of auger refusal, or in materials with N-values of 50 blows per 3 inches or less, will most likely require hard ripping, extensive jack hammering or blasting. Table 2 presents depths of potential excavation problems at respective boring locations.

Additionally, in accordance with good construction practice and continuity of inspection, it is recommended that the on-site construction monitoring services also encompass the structural aspects of the project, such as concrete placement and placement of reinforcing steel, if necessary.

8. GENERAL COMMENTS

As variations in soil conditions can be expected to some degree on any project, it is important that The Robert B. Balter Company, as the geotechnical engineer of record, be retained to provide full time, on-site observation and testing of all soil related aspects of construction. This is to assure compliance with design concepts and recommendations, and to verify that the subsurface conditions are consistent with those anticipated prior to construction.

This evaluation was based on the finite data obtained from the borings and tests which are presented within this report. If significant differences are discovered in the field during construction, it may be necessary to re-evaluate the geotechnical conditions and revise these recommendations.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS  
*Christopher M. Dangle* 4-22-03  
CHIEF, BUREAU OF HIGHWAYS DATE

~~APPROVED FOR PUBLIC (OR PRIVATE) WATER AND PUBLIC/OR PRIVATE SEWERAGE SYSTEMS~~

COUNTY HEALTH OFFICER  
HOWARD COUNTY HEALTH DEPARTMENT DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING  
*Cindy Hammett* 5/5/03  
Chief, Division of Land Development HB Date  
*[Signature]* 1/17/03  
Chief, Development Engineering Division MK Date

Date	No	Revision	Description

PROJECT: EMERSON SECTION 2  
(KEY PROPERTY)  
PHASE 4  
LOTS 1-120 & OPEN SPACE LOTS 121-124  
TAX MAP NO. 47 ZONED: PEC-MXD-3  
PARCEL P-837, P-3, P-462  
BLOCK 2, 7, 8, 9, 14, 15, 20, & 21  
ELECTION DISTRICT No. 6 HOWARD COUNTY, MARYLAND

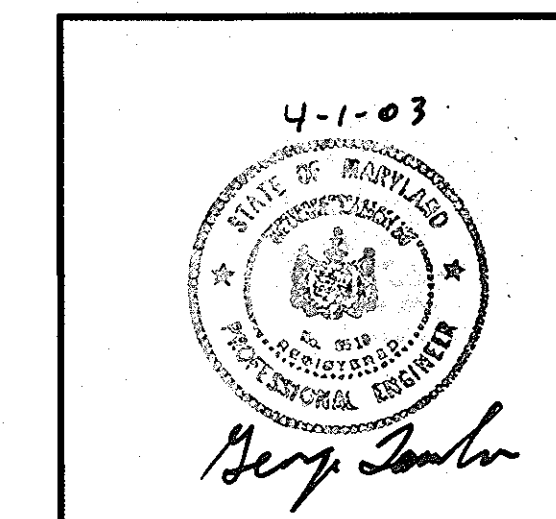
**CENTURY ENGINEERING, INC.**  
CONSULTING ENGINEERS, PLANNERS  
32 WEST ROAD  
TOWSON, MARYLAND 21204

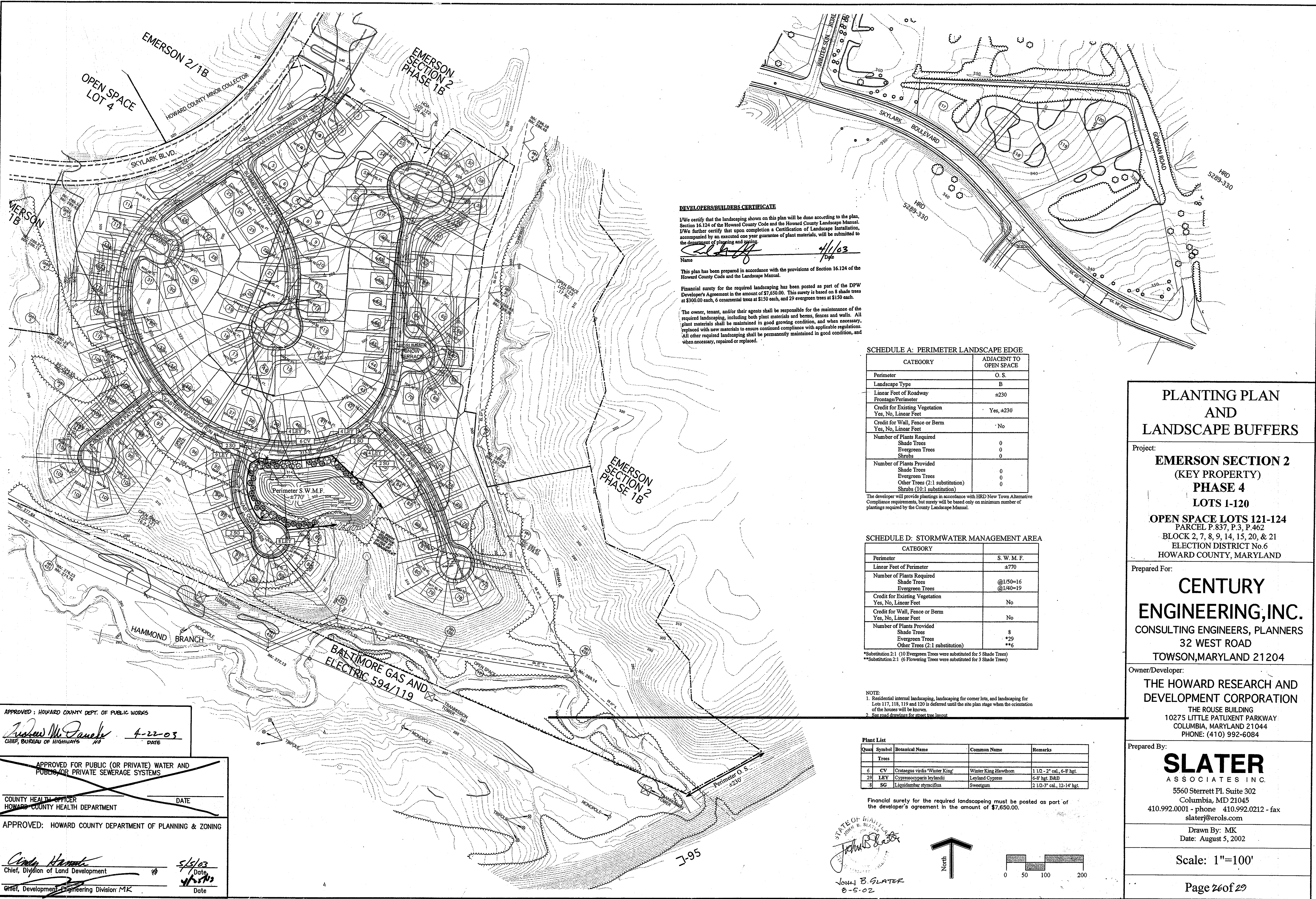
OWNER/DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION  
THE ROUSE BUILDING  
10275 LITTLE PATUXENT PARKWAY  
COLUMBIA, MARYLAND 21044  
PHONE: (410) 992-6084

TITLE: BORING PLAN

Des By	K.D.	Scale	1"=50'	Proj No	21125.01
Drn By	M.C.A.	Date	OCT. 2002	DRAWING NO	25 OF 29
Chk By	G.K.	Approved			

F-03-13





**DEVELOPERS/BUILDERS CERTIFICATE**

I/We certify that the landscaping shown on this plan will be done according to the plan, Section 16.124 of the Howard County Code and the Howard County Landscape Manual. I/We further certify that upon completion a Certification of Landscape Installation, accompanied by an executed one year guarantee of plant materials, will be submitted to the department of planning and zoning.

Name: John B. Slater Date: 4/1/03

This plan has been prepared in accordance with the provisions of Section 16.124 of the Howard County Code and the Landscape Manual.

Financial surety for the required landscaping has been posted as part of the DPW Developer's Agreement in the amount of \$7,650.00. This surety is based on 8 shade trees at \$300.00 each, 6 ornamental trees at \$150 each, and 29 evergreen trees at \$150 each.

The owner, tenant, and/or their agents shall be responsible for the maintenance of the required landscaping, including both plant materials and berms, fences and walls. All plant materials shall be maintained in good growing condition, and when necessary, replaced with new materials to ensure continued compliance with applicable regulations. All other required landscaping shall be permanently maintained in good condition, and when necessary, repaired or replaced.

**SCHEDULE A: PERIMETER LANDSCAPE EDGE**

CATEGORY	ADJACENT TO OPEN SPACE
Perimeter	O. S.
Landscape Type	B
Linear Feet of Roadway Frontage/Perimeter	±230
Credit for Existing Vegetation Yes, No, Linear Feet	Yes, ±230
Credit for Wall, Fence or Berm Yes, No, Linear Feet	No
Number of Plants Required	
Shade Trees	0
Evergreen Trees	0
Shrubs	0
Number of Plants Provided	
Shade Trees	0
Evergreen Trees	0
Other Trees (2:1 substitution)	0
Shrubs (10:1 substitution)	0

The developer will provide plantings in accordance with HRD New Town Alternative Compliance requirements, but surety will be based only on minimum number of plantings required by the County Landscape Manual.

**SCHEDULE D: STORMWATER MANAGEMENT AREA**

CATEGORY	S. W. M. F.
Perimeter	S. W. M. F.
Linear Feet of Perimeter	±770
Number of Plants Required	
Shade Trees	@1/50=16
Evergreen Trees	@1/40=19
Credit for Existing Vegetation Yes, No, Linear Feet	No
Credit for Wall, Fence or Berm Yes, No, Linear Feet	No
Number of Plants Provided	
Shade Trees	8
Evergreen Trees	**29
Other Trees (2:1 substitution)	**6

\*Substitution 2:1 (10 Evergreen Trees were substituted for 5 Shade Trees)  
 \*\*Substitution 2:1 (6 Flowering Trees were substituted for 3 Shade Trees)

NOTE:  
 1. Residential internal landscaping, landscaping for corner lots, and landscaping for Lots 117, 118, 119 and 120 is deferred until the site plan stage when the orientation of the houses will be known.  
 2. See road drawings for street tree layout.

**Plant List**

Quant	Symbol	Botanical Name	Common Name	Remarks
<b>Trees</b>				
6	CV	<i>Crataegus viridis</i> 'Winter King'	Winter King Hawthorn	1 1/2' - 2" cal., 6-8 hgt.
29	LEY	<i>Cyperocyparis leylandii</i>	Leyland Cypress	6-8' hgt. B&B
8	SG	<i>Liquidambar styraciflua</i>	Sweetgum	2 1/2-3" cal., 12-14' hgt.

Financial surety for the required landscaping must be posted as part of the developer's agreement in the amount of \$7,650.00.

STATE OF MARYLAND  
 JOHN B. SLATER  
 JOHN B. SLATER  
 8-5-02

North ↑

0 50 100 200

**PLANTING PLAN AND LANDSCAPE BUFFERS**

Project:  
**EMERSON SECTION 2 (KEY PROPERTY) PHASE 4 LOTS 1-120**  
 OPEN SPACE LOTS 121-124  
 PARCEL P. 837, P. 3, P. 462  
 BLOCK 2, 7, 8, 9, 14, 15, 20, & 21  
 ELECTION DISTRICT No. 6  
 HOWARD COUNTY, MARYLAND

Prepared For:  
**CENTURY ENGINEERING, INC.**  
 CONSULTING ENGINEERS, PLANNERS  
 32 WEST ROAD  
 TOWSON, MARYLAND 21204

Owner/Developer:  
**THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION**  
 THE ROUSE BUILDING  
 10275 LITTLE PATUXENT PARKWAY  
 COLUMBIA, MARYLAND 21044  
 PHONE: (410) 992-6084

Prepared By:  
**SLATER ASSOCIATES INC.**  
 5560 Sterrett Pl. Suite 302  
 Columbia, MD 21045  
 410.992.0001 - phone 410.992.0212 - fax slaterj@erols.com

Drawn By: MK  
 Date: August 5, 2002

Scale: 1"=100'

Page 26 of 29

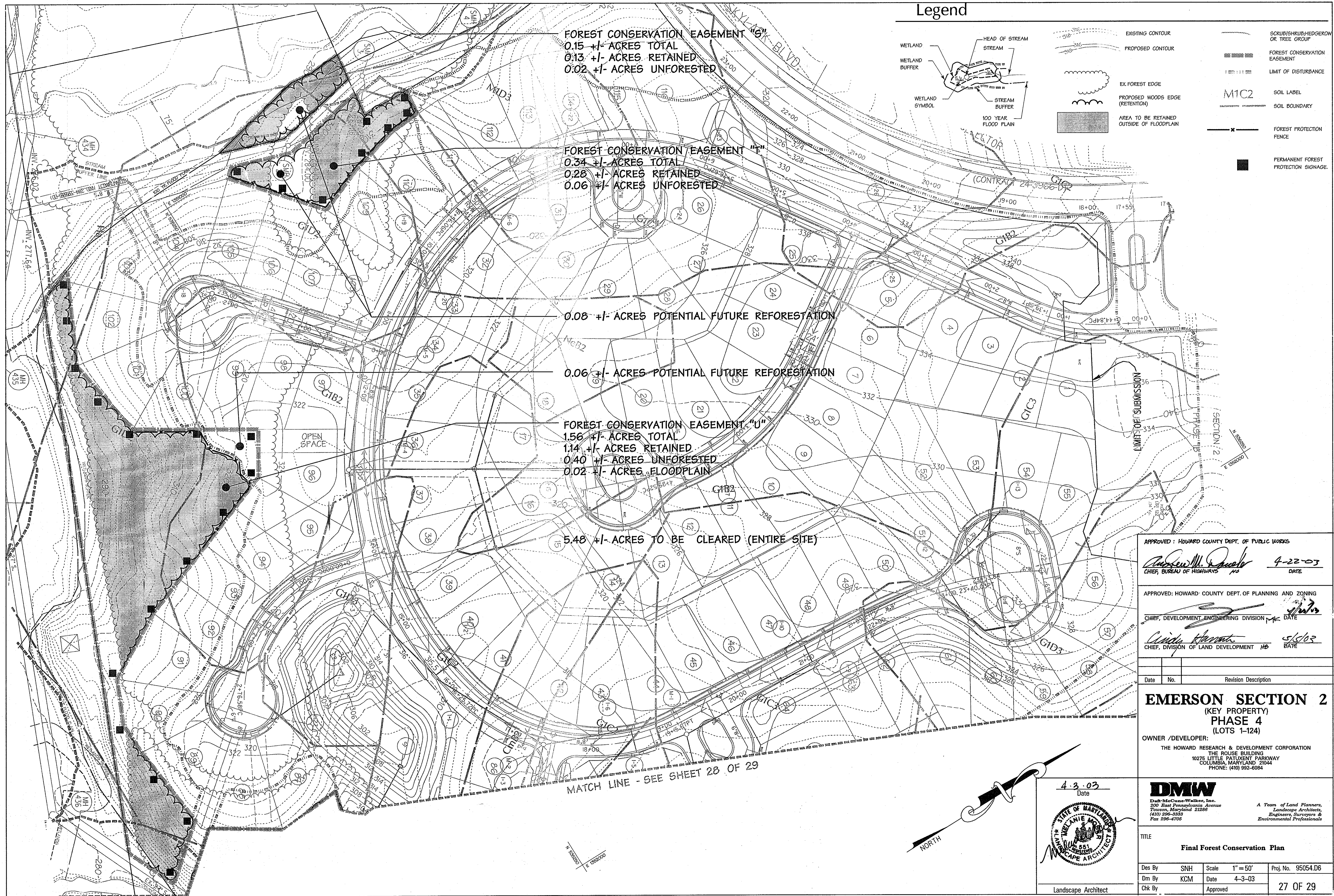
APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS  
*Andrew McPhee* 4-22-03  
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED FOR PUBLIC (OR PRIVATE) WATER AND PUBLIC (OR PRIVATE) SEWERAGE SYSTEMS

COUNTY HEALTH OFFICER  
 HOWARD COUNTY HEALTH DEPARTMENT DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

*Cindy Hamrick* 5/5/03  
 Chief, Division of Land Development Date  
*John B. Slater* 4/5/03  
 Chief, Development Engineering Division MK Date



FOREST CONSERVATION EASEMENT #6  
 0.15 +/- ACRES TOTAL  
 0.13 +/- ACRES RETAINED  
 0.02 +/- ACRES UNFORESTED

FOREST CONSERVATION EASEMENT #7  
 0.34 +/- ACRES TOTAL  
 0.28 +/- ACRES RETAINED  
 0.06 +/- ACRES UNFORESTED

0.08 +/- ACRES POTENTIAL FUTURE REFORESTATION

0.06 +/- ACRES POTENTIAL FUTURE REFORESTATION

FOREST CONSERVATION EASEMENT #U  
 1.56 +/- ACRES TOTAL  
 1.14 +/- ACRES RETAINED  
 0.40 +/- ACRES UNFORESTED  
 0.02 +/- ACRES FLOODPLAIN

5.48 +/- ACRES TO BE CLEARED (ENTIRE SITE)

MATCH LINE - SEE SHEET 28 OF 29

Legend

- WETLAND
- WETLAND BUFFER
- WETLAND SYMBOL
- HEAD OF STREAM
- STREAM
- STREAM BUFFER
- 100 YEAR FLOOD PLAIN
- EXISTING CONTOUR
- PROPOSED CONTOUR
- EX FOREST EDGE
- PROPOSED WOODS EDGE (RETENTION)
- AREA TO BE RETAINED OUTSIDE OF FLOODPLAIN
- SCRUBSHRUB/HEDGEROW OR TREE GROUP
- FOREST CONSERVATION EASEMENT
- LIMIT OF DISTURBANCE
- M1C2 SOIL LABEL
- SOIL BOUNDARY
- FOREST PROTECTION FENCE
- PERMANENT FOREST PROTECTION SIGNAGE

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS  
*Andrew M. Davelos* 4-22-03  
 CHIEF, BUREAU OF HIGHWAYS HS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING  
*[Signature]* [Signature]  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Cindy Stewart* 5/5/03  
 CHIEF, DIVISION OF LAND DEVELOPMENT HS DATE

Date	No.	Revision Description

**EMERSON SECTION 2**  
 (KEY PROPERTY)  
**PHASE 4**  
 (LOTS 1-124)  
 OWNER / DEVELOPER:  
 THE HOWARD RESEARCH & DEVELOPMENT CORPORATION  
 THE ROUSE BUILDING  
 10275 LITTLE PATUXENT PARKWAY  
 COLUMBIA, MARYLAND 21044  
 PHONE: (410) 992-6084

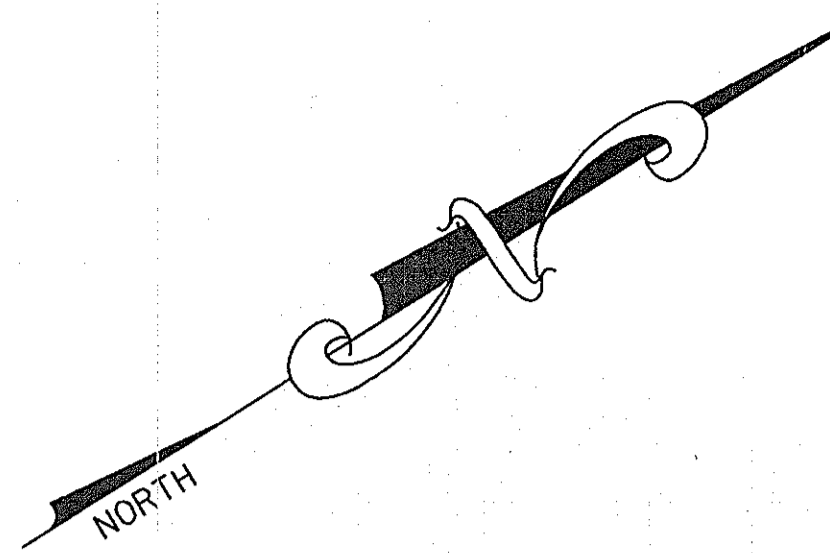
4-3-03  
 Date  
**DMW**  
 Daft McCune-Walker, Inc.  
 200 East Pennsylvania Avenue  
 Towson, Maryland 21286  
 (410) 296-3333  
 Fax 296-4705  
 A Team of Land Planners,  
 Landscape Architects,  
 Engineers, Surveyors &  
 Environmental Professionals



TITLE  
**Final Forest Conservation Plan**

Des By	SNH	Scale	1" = 50'	Proj. No.	95054.D6
Dm By	KCM	Date	4-3-03		
Chk By	Approved				27 OF 29

Landscape Architect



MATCH LINE - SEE SHEET 27 OF 29

MATCH LINE - SEE SHEET 29 OF 29

**Legend**

	WETLAND		HEAD OF STREAM		SCRUB/SHRUB/HEDGE ROW OR TREE GROUP
	WETLAND BUFFER		STREAM		FOREST CONSERVATION EASEMENT
	WETLAND SYMBOL		STREAM BUFFER		LIMIT OF DISTURBANCE
	100 YEAR FLOOD PLAN		EX FOREST EDGE		M1C2 SOIL LABEL
	PROPOSED WOODS EDGE (RETENTION)		SOIL BOUNDARY		FOREST PROTECTION FENCE
	AREA TO BE RETAINED OUTSIDE OF FLOODPLAIN		PERMANENT FOREST PROTECTION SIGNAGE		
	EXISTING CONTOUR				
	PROPOSED CONTOUR				

FOREST CONSERVATION EASEMENT "V"  
 2.13 +/- ACRES TOTAL  
 1.28 +/- ACRES RETAINED  
 0.04 +/- ACRES UNFORESTED  
 0.81 +/- ACRES FLOODPLAIN

5.48 +/- ACRES TO BE CLEARED (ENTIRE SITE)

0.16 +/- ACRES POTENTIAL FUTURE REFORESTATION

0.65 +/- ACRES POTENTIAL FUTURE REFORESTATION

LIMIT OF SUBMISSION

MATCH LINE - SEE SHEET 29 OF 29

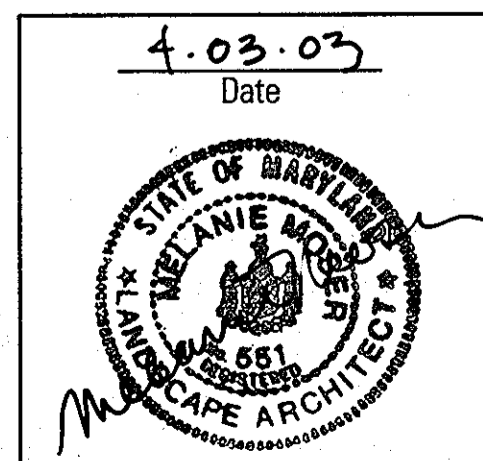
APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS  
*Andrew M. Daulton* 4-22-03  
 CHIEF, BUREAU OF HIGHWAYS HB DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING  
*[Signature]* 4/24/03  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION MK DATE

*[Signature]* 5/6/02  
 CHIEF, DIVISION OF LAND DEVELOPMENT HB DATE

Date	No.	Revision Description

**EMERSON SECTION 2**  
 (KEY PROPERTY)  
**PHASE 4**  
 (LOTS 1-124)  
 OWNER /DEVELOPER:  
 THE HOWARD RESEARCH & DEVELOPMENT CORPORATION  
 THE ROUSE BUILDING  
 10275 LITTLE PATUXENT PARKWAY  
 COLUMBIA, MARYLAND 21044  
 PHONE: (410) 992-6084



Date: 4-03-03  
**DMW**  
 Daft-McCune-Walker, Inc.  
 200 East Pennsylvania Avenue  
 Towson, Maryland 21286  
 (410) 296-3333  
 Fax 296-4705  
 A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

TITLE <b>Final Forest Conservation Plan</b>			
Des By	SNH	Scale	1" = 50'
Proj. No.	95054.D6		
Dwn By	KCM	Date	1-22-03
28 OF 29			
Chk By		Approved	

