HOWARD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS

CAPITAL PROJECT NO. D-1069
CONTRACT NO. 136

REVIEWED FOR HOWARD S.C.D.
AND MEETS TECHNICAL REQUIREMENTS

U.S. SOIL CONSERVATION SERVICE DATE

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

HOWARD S.C.D. DATE

ENGINEER'S CERTIFICATION

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

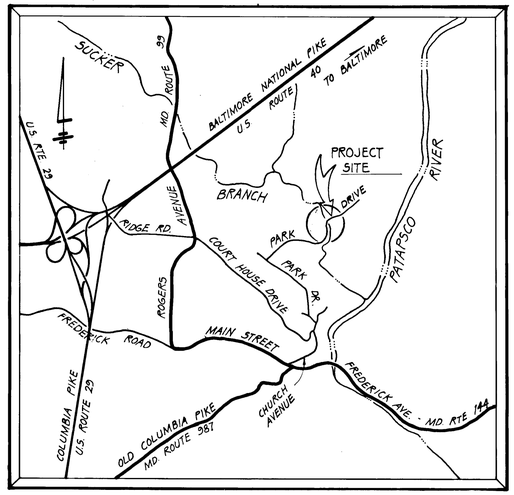
Donald E. Hicks Jan. 28, 1987

DONALD E. HICKS, P.E. DATE
HICKS ENGINEERING COMPANY, INC.
200 EAST JOPPA ROAD - SUITE 402
TOWSON, MD 21204

DEVELOPER'S CERTIFICATION

I/ WE CERTIFY THAT ALL DEVELOPMENT AND 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 NATURAL RESOURCES APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

WILLIAM E. RILEY, P.E. DATE



VICINITY MAP
SCALE : 1" = 2000'

INDEX OF SHEETS		
SHEET NO.	DESCRIPTION	LOCATION
1	TITLE SHEET	
2	DRAINAGE AREA MAP	
3	DETAILS & GENERAL NOTES	
4	PLAN & CHANNEL SECTIONS	PARK DRIVE @ SUCKER BRANCH
5	PROFILES	PARK DRIVE & SUCKER BRANCH
6	STRUCTURAL DETAILS	
7	SEDIMENT CONTROL PLAN	

STORM DRAINAGE IMPROVEMENTS
ELLICOTT CITY AREA
PARK DRIVE CULVERT @ SUCKER BRANCH
ELECTION DISTRICT: ELLICOTT CITY NO. 2

C1071A#1

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS DATE
CHIEF, BUREAU OF ENGINEERING DATE
CHIEF, DIVISION OF ROADS, BRIDGES AND STORM DRAINAGE DATE

HICKS ENGINEERING COMPANY, INC.
· CIVIL ENGINEERS ·
200 EAST JOPPA ROAD
SUITE 402
TOWSON, MD 21204

STATE OF MARYLAND — DONALD EDWIN HICKS — 5576 — REGISTERED PROFESSIONAL ENGINEER

DES:
DRN:
CHK: D.E.H.
DATE:

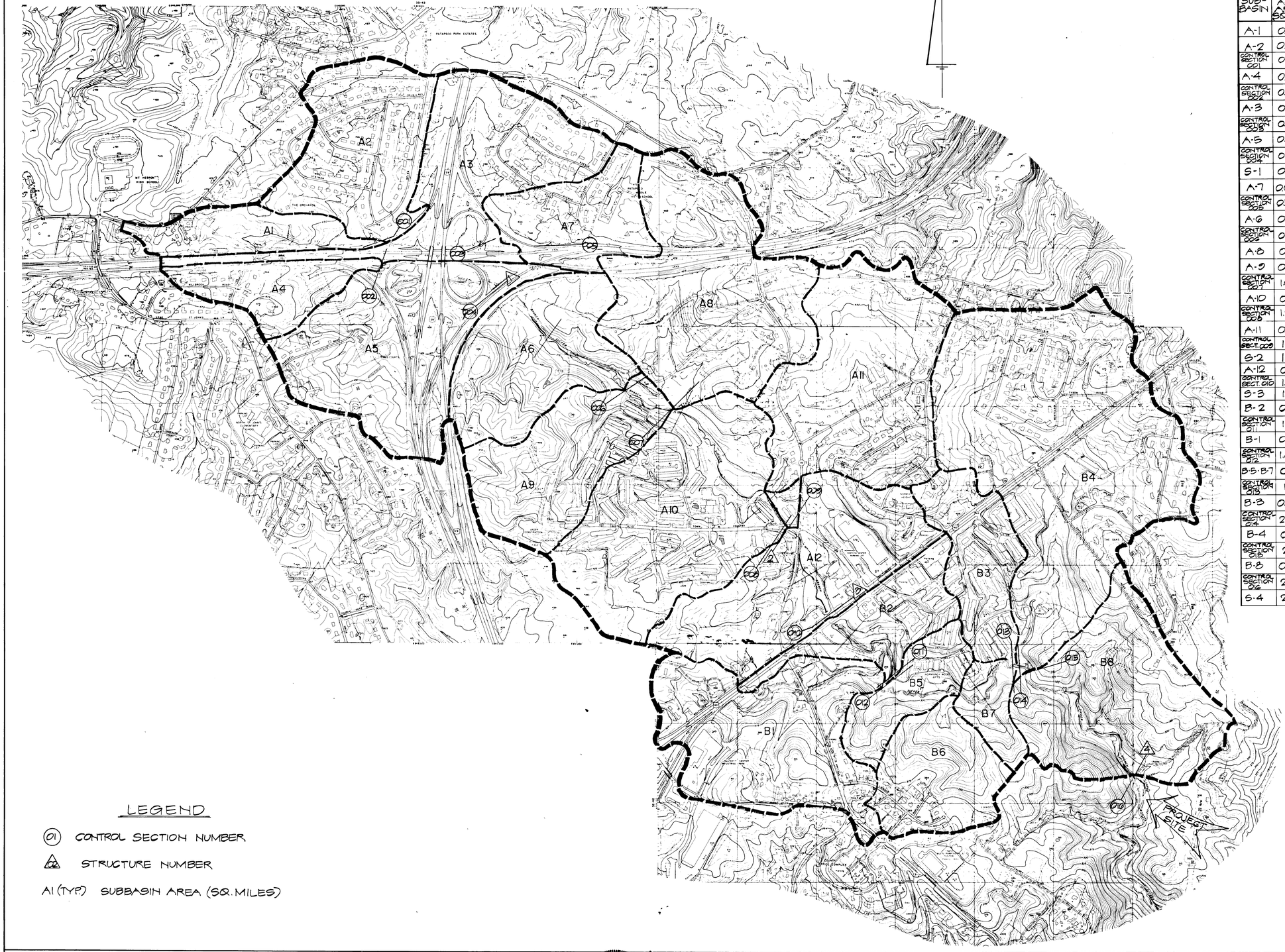
BY	NO.	REVISION	DATE

ELLICOTT CITY
CAPITAL PROJECT D-1069
CONTRACT NO. 136
600' SCALE MAP NO. _____ BLOCK NO. _____

STORM DRAINAGE IMPROVEMENTS
FOR
ELLICOTT CITY AREA

SCALE AS SHOWN
SHEET 1 OF 8

MARCH 20, 1987



LEGEND

(01) CONTROL SECTION NUMBER

△ STRUCTURE NUMBER

A1 (TYP) SUBBASIN AREA (SQ. MILES)

DESIGN DATA

SUB-BASIN	DRAINAGE AREA (SQ MI)	RCN		TIME OF CONC. (Tc)	PEAK DESIGN (CFS) DESIGN FREQUENCY STORM					
					EXISTING CONDITION			FUTURE CONDITION		
		EXISTING	FUTURE		2-YR	10-YR	100-YR	2-YR	10-YR	100-YR
A-1	0.04	74	73.8	031	26	68	109	26	68	108
A-2	0.11	70.5	71.1	045	50	137	250	52	141	254
CONTROL SECTION 001	0.15				73	195	349	75	198	354
A-4	0.05	62.7	70.3	031	13	49	100	26	71	127
CONTROL SECTION 002	0.20				86	243	445	100	266	476
A-3	0.16	71.0	76.7	025	104	265	465	138	313	522
CONTROL SECTION 003	0.36				184	496	891	232	566	976
A-5	0.15	70.3	71.8	061	54	151	275	60	160	287
CONTROL SECTION 004	0.51				219	605	1,096	271	681	1,189
S-1	0.51				219	605	1,096	271	681	1,180
A-7	0.08	73.6	75.2	018	68	162	277	74	171	288
CONTROL SECTION 005	0.59				190	462	713	238	499	752
A-6	0.12	64.4	80.5	054	28	99	198	133	240	358
CONTROL SECTION 006	0.71				198	516	885	320	684	1,029
A-8	0.21	72.7	80.0	034	126	321	562	192	410	664
A-9	0.10	69.3	91.0	064	30	87	162	98	174	256
CONTROL SECTION 007	1.02				305	843	1472	560	1,100	1,850
A-10	0.21	78.1	86.8	025	196	432	710	291	545	827
CONTROL SECTION 008	1.23				340	984	1,776	645	1386	2219
A-11	0.10	75.8	94.9	031	109	286	508	136	325	554
CONTROL SECT. 009	1.42				453	1248	2249	771	1682	2733
S-2	1.42				453	1248	2249	771	1682	2738
A-12	0.16	75.7	80.0	023	142	320	554	268	477	705
CONTROL SECT. 010	1.58				581	1,533	2732	999	2084	3339
S-3	1.58				581	1,533	2732	999	2084	3339
B-2	0.07	88.9	90.9	0.18	111	199	296	118	206	303
CONTROL SECTION 011	1.64				630	1443	2154	992	1,796	2436
B-1	0.16	78.0	83.4	0.15	178	387	682	228	448	696
CONTROL SECTION 012	1.81				788	1,700	2583	1150	2078	2880
B-5-B-7	0.15	67.9	79.6	038	58	1.74	326	125	270	440
CONTROL SECTION 013	1.96				758	1768	2761	1104	2232	3,178
B-3	0.07	76.1	86.0	031	55	127	214	80	169	258
CONTROL SECTION 014	2.03				807	1879	2958	1275	2382	3417
B-4	0.34	71.3	75.0	0.57	136	368	662	175	425	731
CONTROL SECTION 015	2.37				925	2215	3565	1430	2774	4.081
B-8	0.16	69.3	75.1	0.22	94	259	470	137	322	544
CONTROL SECTION 016	2.53				902	2223	3628	1,416	2791	4,188
S-4	2.53				902	2223	3628	1,416	2791	4,188

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE — CHIEF, BUREAU OF ENGINEERING — DATE

CHEIF, DIVISION OF ROADS, BRIDGES AND STORM DRAINAGE — DATE

HICKS ENGINEERING COMPANY, INC
· CIVIL ENGINEERS ·
200 EAST JOPPA ROAD
SUITE 402
TOWSON, MD. 21204

STATE OF MARYLAND — DONALD EDWIN HICKS — No. 5813 — REGISTERED PROFESSIONAL ENGINEER

DES:
DRN:
CHK: D.E.H.
DATE:

BY	NO.	REVISION	DATE

ELLICOTT CITY
CAPITAL PROJECT D-1069
CONTRACT NO. 136

600' SCALE MAP NO. ____ BLOCK NO. ____

STORM DRAINAGE IMPROVEMENTS
DRAINAGE AREA MAP & DESIGN DATA
PARK DRIVE CULVERT
AT SUCKER BRANCH

ELECTION DISTRICT: ELLICOTT CITY NO. 2

SCALE AS SHOWN

SHEET 2 OF 8

MARCH 16, 1987

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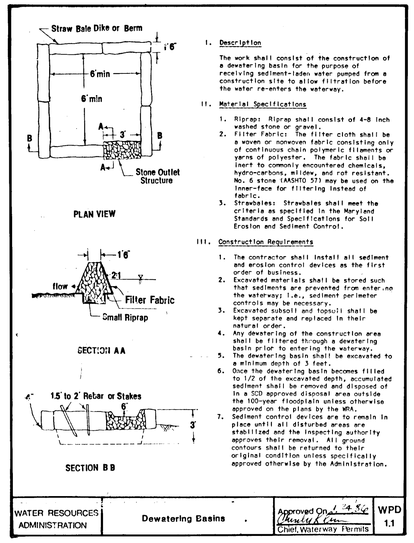


I. Description

The work shall consist of the construction of a dewatering basin for the purpose of receiving sediment-laden water pumped from a construction site to allow filtration before the water re-enters the waterway.

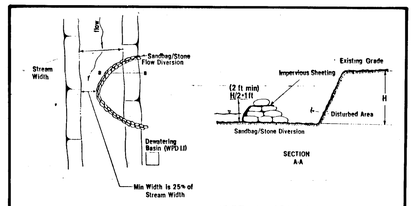
II. Material Specifications

1. Riprap: Riprap shall consist of 4-8 inch washed stone or gravel.
2. Filter Fabric: The filter cloth shall be a woven or nonwoven fabric consisting only of continuous chain polymeric filaments or yarns of polyester. The fabric shall be inert to commonly encountered chemicals, hydrocarbons, mildew, and rot resistant. No. 6 stone (AASHTO 57) may be used on the inner-face for filtering instead of fabric.
3. Strawbales: Strawbales shall meet the criteria as specified in the Maryland Standards and Specifications for Soil Erosion and Sediment Control.

III. Construction Requirements

1. The contractor shall install all sediment and erosion control devices as the first order of business.
2. Excavated materials shall be stored such that sediments are prevented from entering the waterway; i.e., sediment perimeter controls may be necessary.
3. Excavated subsoil and topsoil shall be kept separate and replaced in their natural order.
4. Any dewatering of the construction area shall be filtered through a dewatering basin prior to entering the waterway.
5. The dewatering basin shall be excavated to a minimum depth of 3 feet.
6. Once the dewatering basin becomes filled to 1/2 of the excavated depth, accumulated sediment shall be removed and disposed of in a SCD approved disposal area outside the 100-year floodplain unless otherwise approved on the plans by the MBA.
7. Sediment control devices are to remain in place until all disturbed areas are stabilized and the inspecting authority approves their removal. All ground contours shall be returned to their original condition unless specifically approved otherwise by the Administration.

WATER RESOURCES ADMINISTRATION	Dewatering Basins	Approved On 1-24-84 Chief, Waterway Permits	WPD 1.1



I. Description

The work shall consist of installing flow diversions for the purpose of erosion control when construction activities take place within the stream channel such as bank stabilization or bridge abutment construction.

II. Material Specifications

1. Sandbags: Sandbags shall consist of materials which are resistant to ultraviolet radiation, tearing and puncture and woven tightly enough to prevent leakage of fill material (i.e., sand, fine gravel, etc.).
2. Stone: Stone shall be washed and have a minimum diameter of 6 inches.
3. Sheetings: Sheeting shall consist of polyethylene or other material which is impervious and resistant to puncture and tearing.

III. Construction Requirements

1. All erosion and sediment control devices shall be installed as the first order of work.
2. The diversion structure shall be installed from upstream to downstream.
3. The height of the diversion structure shall be one half the distance from stream bed to stream bank plus one foot, as indicated on the cross-section view.
4. All excavated materials shall be disposed of in a SCD approved disposal area outside the 100-year floodplain unless otherwise approved on the plans by the MBA.
5. All dewatering of the construction area shall be pumped to a dewatering basin prior to re-entering the stream.
6. Sheeting shall be overlapped such that the upstream portion covers the downstream portion with at least an 18-inch overlap.
7. Sediment control devices are to remain in place until all disturbed areas are stabilized in accordance with an approved sediment and erosion control plan and the inspecting authority approves their removal.

WATER RESOURCES ADMINISTRATION	Sandbag/Stone Diversion	Approved On 1/24/84 Chief, Waterway Permits	WPD 2.3

SEDIMENT CONTROL NOTES

1) A minimum of 24 hours notice must be given to the Howard County Office of Inspection and Permits prior to the start of any construction. (992-2437)

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 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.

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

4) All sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with Vol. 1, Chaper 12, of the HOWARD COUNTY DESIGN MANUAL, Storm Drainage.

5) All disturbed areas must be stabilized within the time period specified above in accordance with the 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seedings (Sec. 51) sod (Sec. 54), temporary seeding (Sec. 50) and mulching (Sec. 52.) Temporary stabilization with mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.

6) All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector

7) Site Analysis:

Total Area of Site	0.71 Acres
Area Disturbed	0.58 Acres
Area to be roofed or paved	0.23 Acres
Area to be vegetatively stabilized	0.35 Acres
Total Cut	— Cu. yds
Total Fill	— Cu. yds
Offsite waste/borrow area location	TO BE DETERMINED

8) Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.

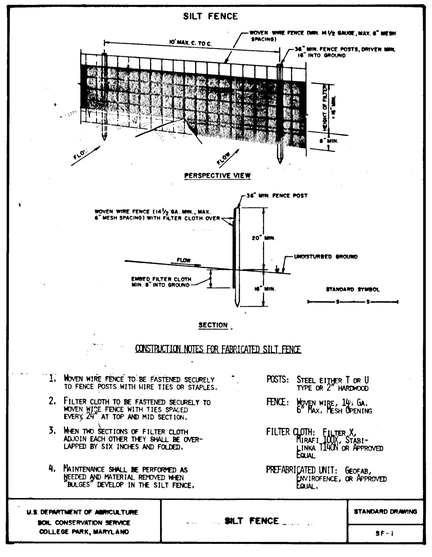
9) Additional sediment controls must be provided, if deemed necessary by the Howard County DPW sediment control inspector.

10) On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.

GENERAL NOTES

1. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 FOR UNDERGROUND UTILITY LOCATIONS, AT LEAST FIVE DAYS PRIOR TO COMMENCING WORK SHOWN ON THE PLANS.
2. ALL TOP ELEVATIONS FOR THE PROPOSED INLETS AND MANHOLES ARE APPROXIMATE, AND ARE TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR AND THE ENGINEER.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE RESTORATION OF ALL EXISTING DRIVEWAYS DAMAGED DURING CONSTRUCTION. SEE MEASUREMENT AND PAYMENT IN SPECIAL PROVISIONS. EXISTING BITUMINOUS CONCRETE DRIVEWAYS SHALL BE RESTORED AS FOLLOWS :
   1.) 4-INCH DEPTH OF BITUMINOUS CONCRETE BASE COURSE
   2.) 1-INCH DEPTH OF BITUMINOUS CONCRETE SURFACE COURSE
4. TREES ARE TO BE PROTECTED FROM DAMAGE TO MAXIMUM EXTENT POSSIBLE. TREES LOCATED WITHIN THE CONSTRUCTION STRIP ARE NOT TO BE REMOVED OR DAMAGED BY THE CONTRACTOR. CONSTRUCTION STRIP SHOWN THUSLY : ▨
5. CONTRACTOR TO GRADE AROUND THE TOP OF THE PROPOSED INLETS IN ORDER TO PROVIDE POSITIVE DRAINAGE TO THE INLETS. LINING SHALL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
6. COORDINATES ARE BASED ON THE MARYLAND STATE GRID AS PROJECTED BY THE HOWARD COUNTY GEODETIC CONTROL STATIONS
7. THE EXISTING UTILITIES AND OBSTRUCTIONS SHOWN ON THE PLANS ARE FROM THE BEST AVAILABLE RECORDS AND SHALL BE VERIFIED BY THE CONTRACTOR TO HIS OWN SATISFACTION BEFORE STARTING CONSTRUCTION. THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS DOES NOT GUARANTEE THE COMPLETENESS OR CORRECTNESS OF THIS INFORMATION.
8. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING UTILITIES. ANY DAMAGE DUE TO THE CONTRACTOR'S NEGLIGENCE SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE. ALL UTILITIES SHALL BE CLEARED BY A MINIMUM OF 12-INCHES.
9. TEST PITS SHALL BE DUG AT ALL UTILITY CROSSINGS TO DETERMINE EXISTING HORIZONTAL AND VERTICAL ALIGNMENT OF UTILITIES. TEST PITS SHALL BE DUG A SUFFICIENT AMOUNT OF TIME IN ADVANCE OF THE CONSTRUCTION OR TRENCHING OPERATION, IN ORDER TO ALLOW FOR NECESSARY ADJUSTMENTS.
10. WHERE TEST PITS HAVE BEEN MADE ON EXISTING UTILITIES, THEY ARE NOTED BY THE SYMBOL ■. THE RESULTS OF TEST PITS ARE INCLUDED ON THE STORM DRAIN PROFILES. HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS DOES NOT GUARANTEE THE COMPLETENESS OR CORRECTNESS OF THIS INFORMATION.
11. ALL UTILITY POLES MUST BE CLEARED BY 2-FEET, OR THE PROPOSED STORM DRAIN SHALL BE PLACED BY TUNNELING. ALL COSTS FOR TUNNELING ARE TO BE INCLUDED IN THE UNIT PRICE BID FOR FURNISHING AND LAYING THE STORM DRAIN PIPE.
12. ALL VERTICAL CONTROLS ARE BASED ON U.S.G.S. DATUM OF 1929.
13. ALL PIPE ELEVATIONS SHOWN ARE INVERT ① ELEVATIONS.
14. CONTRACTOR SHALL REMOVE TREES, STUMPS AND ROOTS ALONG THE LINE OF EXCAVATION AS DIRECTED BY THE ENGINEER. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR FURNISHING AND LAYING STORM DRAIN PIPE.
15. FOR DETAILS NOT SHOWN ON THE DRAWINGS, AND FOR MATERIALS AND CONSTRUCTION METHODS, THE CONTRACTOR SHALL ABIDE BY THE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, "STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION" AND THE SPECIAL PROVISIONS.
16. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE (5) DAYS BEFORE STARTING WORK SHOWN HEREON :

BALTIMORE GAS & ELECTRIC CO., UNDERGROUND ELECTRIC DISTRIBUTION ENGINEERING DAMAGE CONTROL	234-5691
BALTIMORE GAS & ELECTRIC CO., UNDERGROUND GAS DISTRIBUTION ENGINEERING	234-5533
CHESAPEAKE AND POTOMAC TELEPHONE CO.	725-9976
COLONIAL PIPELINE COMPANY	781-4641
HOWARD COUNTY BUREAU OF UTILITIES	992-2366
CONSTRUCTION INSPECTION / SURVEYS DIVISION	992-2417



CONSTRUCTION NOTES FOR FABRICATED SILT FENCE

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

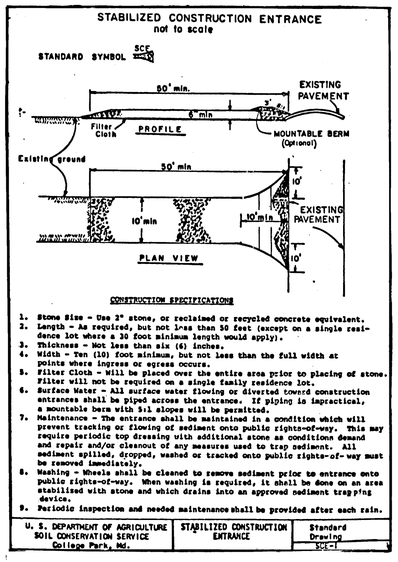
POSTS: STEEL EITHER T OR U TYPE OR 2" HARDWOOD

FENCE: WOVEN WIRE, 14½ GA. 6" MAX. MESH OPENING

FILTER CLOTH: FILTER X, MIRAFI 100X, STABILINKA T140N OR APPROVED EQUAL

PREFABRICATED UNIT: GEOFAB, ENVIROFENCE, OR APPROVED EQUAL.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE COLLEGE PARK, MARYLAND	SILT FENCE	STANDARD DRAWING SF-1



CONSTRUCTION SPECIFICATIONS

1. Stone Size - Use 2" stone, or reclaimed or recycled concrete equivalent.
2. Length - As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum length would apply).
3. Thickness - Not less than six (6) inches.
4. Width - Ten (10) foot minimum, but not less than the full width at points where ingress or egress occurs.
5. Filter Cloth - Will be placed over the entire area prior to placing of stone. Filter will not be required on a single family residence lot.
6. Surface Water - All surface water flowing or diverted toward construction entrances shall be piped across the entrance. If piping is impractical, a mountable berm with 5:1 slopes will be permitted.
7. Maintenance - The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed or tracked onto public rights-of-way must be removed immediately.
8. Washing - Wheels shall be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with stone and which drains into an approved sediment trapping device.
9. Periodic inspection and needed maintenance shall be provided after each rain.

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE College Park, Md.	STABILIZED CONSTRUCTION ENTRANCE	Standard Drawing SCE-1

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, discing or other acceptable means before seeding.

Soil Amendments: In lieu of soil test recommendations, use one of the following schedules:

1) Preferred - Apply 2 tons per acre dolomitic limestone (92 lbs/1000 square ft) and 600 lbs per acre 10-10-10 fertilizer (14 lbs/1000 sq ft) before seeding. Harrow or disc into upper three inches of soil. At time of seeding, apply 400 lbs per acre 30-0-0 ureaform fertilizer (9 lbs/1000 sq ft).
2) Acceptable - Apply 2 tons per acre dolomitic limestone (92 lbs/1000 sq ft) and 1000 lbs per acre 10-10-10 fertilizer (23 lbs/1000 sq ft) before seeding. Harrow or disc into upper three inches of soil.

Seeding - For the periods March 1 thru April 30, and August 1 thru October 15, seed with 60 lbs per acre (1.4 lbs/1000 sq ft) of Kentucky 31 Tall Fescue. For the period May 1 thru July 31, seed with 60 lbs Kentucky 31 Tall Fescue per acre and 2 lbs per acre (.05 lbs/1000 sq ft) of weeping lovegrass. During the period of October 16 thru February 28, protect site by: Option (1) 2 tons per acre of well anchored straw mulch and seed as soon as possible in the spring. Option (2) Use sod. Option (3) Seed with 60 lbs/acre Kentucky 31 Tall Fescue and mulch with 2 tons/acre well anchored straw.

Mulching - Apply 1½ to 2 tons per acre (70 to 90 lbs/1000 sq ft) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gallons per acre (5 gal/1000 sq ft) of emulsified asphalt on flat areas. On slopes 8 feet or higher, use 348 gallons per acre (8 gal/1000 sq ft) for anchoring.

Maintenance - Inspect all seeded areas and make needed repairs, replacements and reseedings.

TEMPORARY SEEDING NOTES

Apply to graded or cleared areas likely to be redisturbed where a short-term vegetative cover is needed.

Seedbed Preparation: Loosen upper three inches of soil by raking, discing or other acceptable means before seeding.

Soil Amendments: Apply 600 lbs per acre 10-10-10 fertilizer (14 lbs/1000 sq ft)

Seeding: For periods March 1 thru April 30 and from August 15 thru November 15, seed with 2½ bushel per acre of annual rye (3.2 lbs/1000 sq ft). For the period May 1 thru August 14, seed with 3 lbs per acre of weeping lovegrass (.07 lbs/1000 sq ft). For ther period November 16 thru February 28, protect site by applying 2 tons per acre of well anchored straw mulch and seed as soon as possible in the spring, or use sod.

Mulching: Apply 1½ to 2 tons per acre 470 to 90 lbs/1000 sq ft) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gal per acre (5 gal/1000 sq ft) of emulsified asphalt on flat areas. On slopes, 8 ft or higher, use 348 gal per acre (8 gal/1000 sq ft) for anchoring.

Refer to the 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for rate and methods not covered.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE
CHIEF, BUREAU OF ENGINEERING — DATE
CHIEF, DIVISION OF ROADS, BRIDGES AND STORM DRAINAGE — DATE

HICKS ENGINEERING COMPANY, INC.
· CIVIL ENGINEERS ·
200 EAST JOPPA ROAD
SUITE 402
TOWSON, MD 21204

STATE OF MARYLAND — DONALD EDWIN HICKS — No. 8676 — REGISTERED PROFESSIONAL ENGINEER

DES:
DRN:
CHK: D.E.H.
DATE:

BY	NO.	REVISION	DATE

ELLICOTT CITY
CAPITAL PROJECT D-1069
CONTRACT NO. 136
600' SCALE MAP NO. ____ BLOCK NO. ____

STORM DRAINAGE IMPROVEMENTS
DETAILS AND GENERAL NOTES
PARK DRIVE CULVERT
AT SUCKER BRANCH
ELECTION DISTRICT: ELLICOTT CITY NO. 2

SCALE AS SHOWN

SHEET 3 OF 8

MARCH 20, 1987

B.M. Ex. MH No. 78 Elev. 214.83

Cross cut (+) in frame of sanitary manhole.

National Foundation Engineering, Inc.

RECORD OF SOIL EXPLORATION

Contracted With: Hicks Engineering — Boring #: SB-1
Project Name: Park Drive Culvert — Job #: 86-2150
Location: Ellicott City, Maryland

SAMPLER — Hammer Wt.: 140 lbs. — Hammer Drop: 30 in. — Pipe Size: ID 1 3/8 in. — Hole Diameter: 7" — Boring Method: HSA — Foreman: M. Ebert — Date Started: 9-12-86 — Date Completed: 9-12-86

Elev.	Soil Description	Stra. Depth	Cond.	Blows/6"	No.	Type	Rec.	Boring & Sampling Notes
	Brown micaceous silty sand; gradual increase in grain size with depth; weathered rock fragments from 5 ft.		I	1-1-1	1	DS	1.5	Refusal @ 3 ½ ft. Moved up 5.0 ft. Refusal @ 8.0 ft. Hole backfilled.
			I	1-1-2	2	DS	1.5	
			I	2-4-7	3	DS	1.5	
	Bottom of boring @ 8.0 ft.							

Ground Water Depth at completion: Dry

Sample conditions: D — Disintegrated; I — Intact; U — Undisturbed; L — Lost. Sampler type: DS — Driven split spoon; PT — Pressed Shelby tube; CA — Continuous flight auger; RC — Rock core. Boring method: HSA — Hollow Stem Augers; CFA — Continuous Flight Augers; DC — Driving Casing; MD — Mud Drilling.

National Foundation Engineering, Inc.

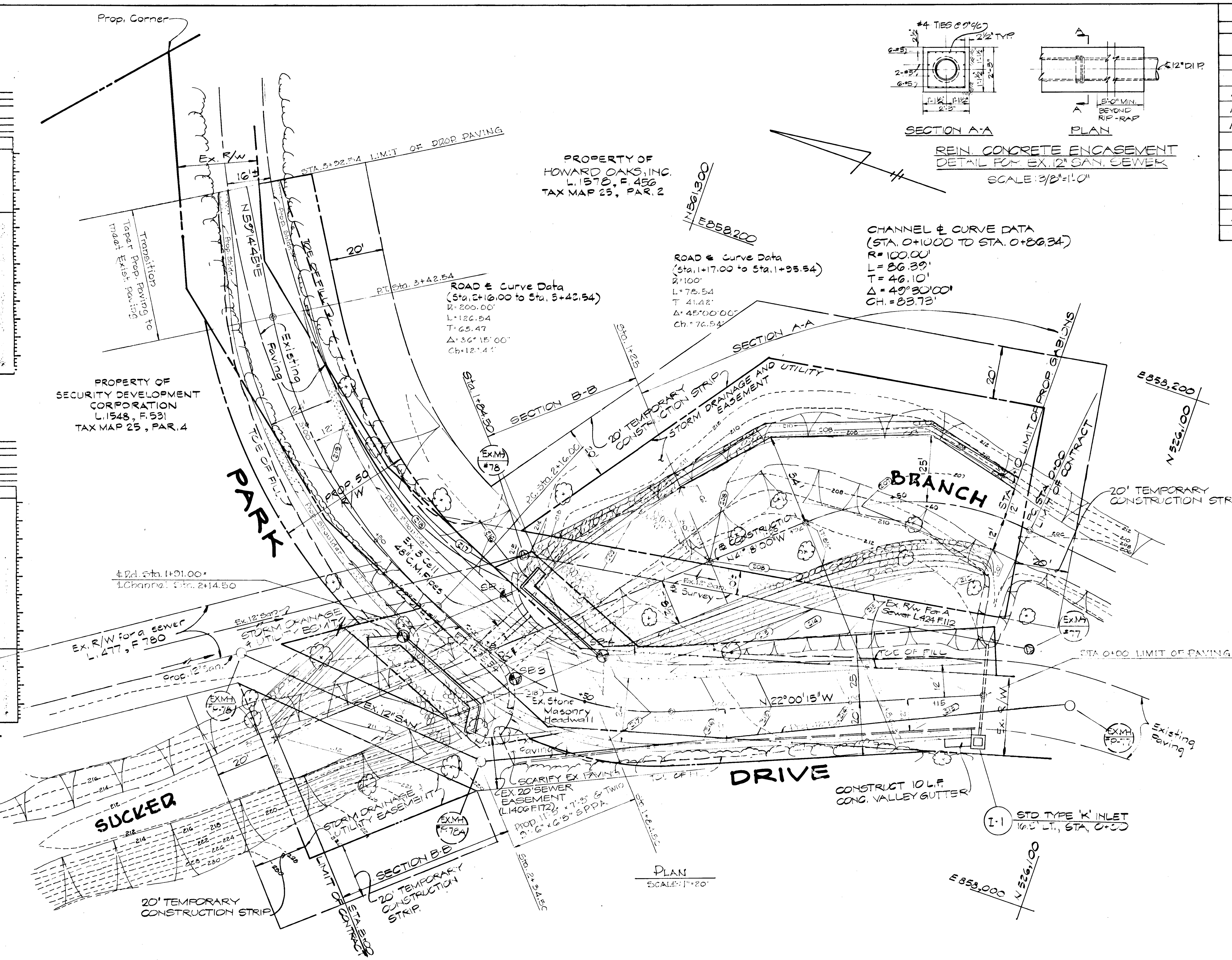
RECORD OF SOIL EXPLORATION

Contracted With: Hicks Engineering — Boring #: SB-2
Project Name: Park Drive Culvert — Job #: 86-2150
Location: Ellicott City, Maryland

SAMPLER — Hammer Wt.: 140 lbs. — Hammer Drop: 30 in. — Pipe Size: ID 1 3/8 in. — Hole Diameter: 7" — Boring Method: HSA — Foreman: M. Ebert — Date Started: 9-12-86 — Date Completed: 9-12-86

Elev.	Soil Description	Stra. Depth	Cond.	Blows/6"	No.	Type	Rec.	Boring & Sampling Notes
	Greenish brown micaceous silty sand' trace of quartz gravel	2.0	I	1-2-2	1	DS	1.5	Asphalt = 3" Hole backfilled.
	Brown micaceous silty sand with rock fragments; gradual increase in grain size with depth		I	3-3-3	2	DS	1.5	
			I	3-3-3	3	DS	1.5	
		12.0	I	4-4-4	4	DS	1.5	
	Brown/light tan micaceous slightly silty sand		I	7-16-10	5	DS	1.5	
			I	50/2	6	DS	0.2	
	Bottom of boring @ 20.0 ft.							

Ground Water Depth at completion: 8.3 ft.



SURVEY CONTROL DATA

℄ CONSTRUCTION - PARK DRIVE

STATIONS	CO-ORDINATES NORTH	EAST
0+00	N 526,138.25	E 858,070.00
P.C. 1+17.00	N 526,246.73	E 858,026.16
P.T. 1+95.54	N 526,373.26	E 858,026.83
P.C. 2+16.00	N 526,342.05	E 858,034.82
P.T. 3+42.54	N 526,435.84	E 858,116.66
3+92.54	N 526,461.41	E 858,159.63

℄ CONSTRUCTION - SUCKER BRANCH

STATIONS	CO-ORDINATES NORTH	EAST
P.C. 0+00	N 526,143.00	E 858,133.75
P.T. 0+86.39	N 526,223.26	E 858,109.90
3+00	N 526,383.74	E 858,968.92

National Foundation Engineering, Inc.

RECORD OF SOIL EXPLORATION

Contracted With: Hicks Engineering — Boring #: SB-3
Project Name: Park Drive Culvert — Job #: 86-2150
Location: Ellicott City, Maryland

SAMPLER — Hammer Wt.: 140 lbs. — Hammer Drop: 30 in. — Pipe Size: ID 1 3/8 in. — Hole Diameter: 7" — Boring Method: HSA — Foreman: M. Ebert — Date Started: 9-12-86 — Date Completed: 9-12-86

Elev.	Soil Description	Stra. Depth	Cond.	Blows/6"	No.	Type	Rec.	Boring & Sampling Notes
	Tan silty sand; trace of mica		I	1-2-2	1	DS	1.5	Asphalt = 18" Hole backfilled.
		5.0	I	1-2-3	2	DS	1.5	
	Light gray/tan micaceous silty sand/ sandy silt	8.0	I	2-3-3	3	DS	1.5	
	Brown micaceous silty to slightly silty sand with micaceous schist fragments; decreasing fines with depth		I	6-8-23	4	DS	1.5	
			I	8-11-11	5	DS	1.5	
			I	50/4	6	DS	0.4	
	Bottom of boring @ 20.0 ft.							

Ground Water Depth at completion: 16.3 ft.

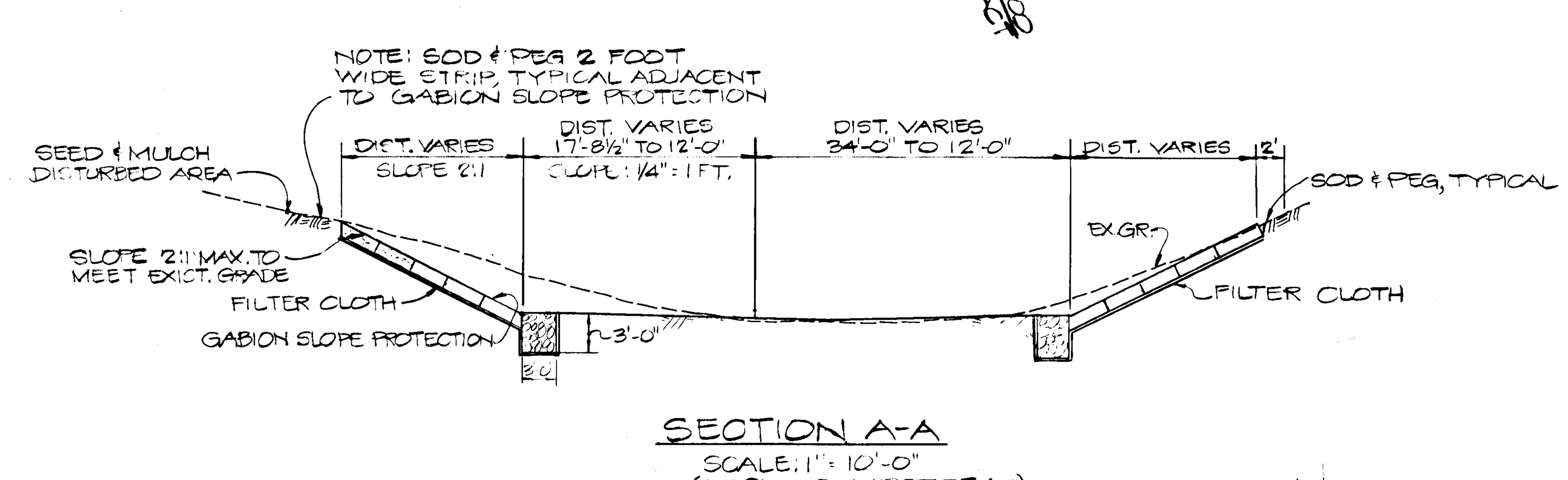
National Foundation Engineering, Inc.

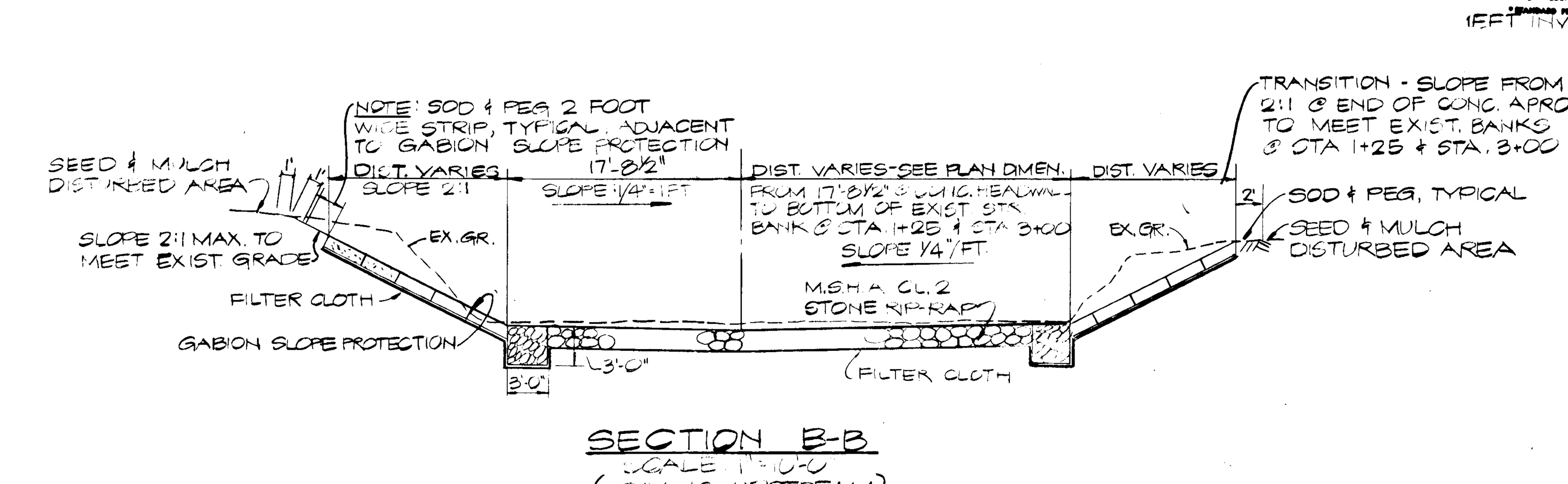
RECORD OF SOIL EXPLORATION

Contracted With: Hicks Engineering — Boring #: SB-4
Project Name: Park Drive Culvert — Job #: 86-2150
Location: Ellicott City, Maryland

Elev.	Soil Description	Stra. Depth	Cond.	Blows/6"	No.	Type	Rec.	Boring & Sampling Notes
	Brown/tan brown silty sand; trace of mica		I	2-2-2	1	DS	1.5	Asphalt = 3" Hole backfilled.
		5.0	I	2-3-6	2	DS	1.5	
	Brown micaceous silty sand/slightly silty sand with micaceous schist fragments and quartz gravel; thin layer of rock fragments @ 6 ft.		I	5-5-14	3,3A	DS	1.4	
			I	7-8-17	4	DS	1.5	
			I	13-50/1	5	DS	0.6	
			I	25-50/2	6	DS	0.6	
	Bottom of boring @ 20.0 ft.							

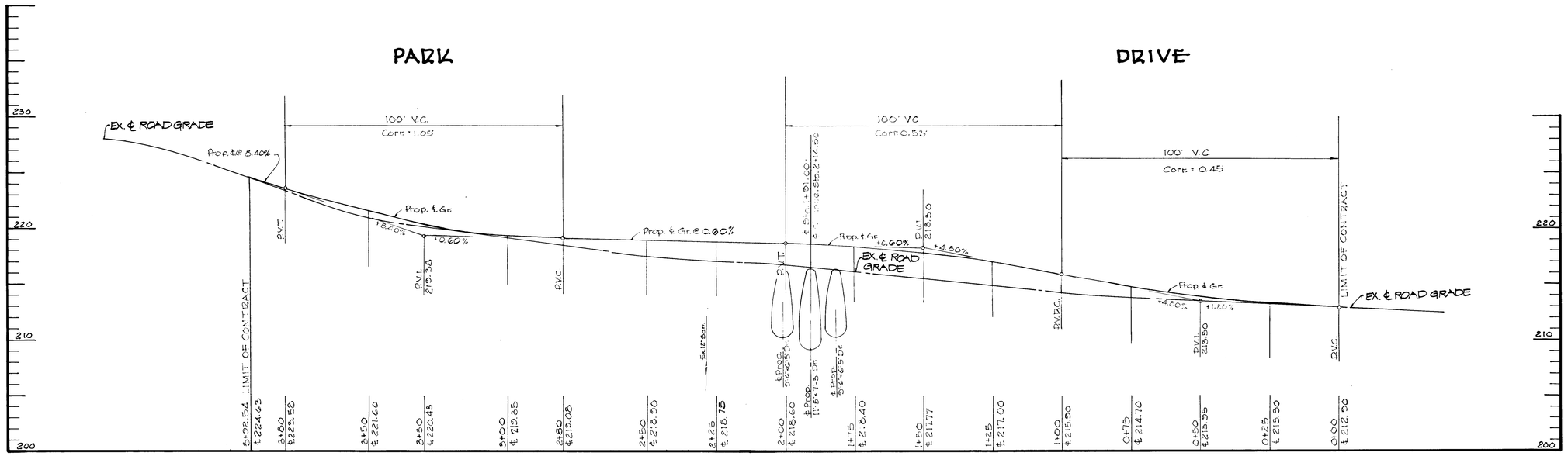
Ground Water Depth at completion: 16.0 ft.



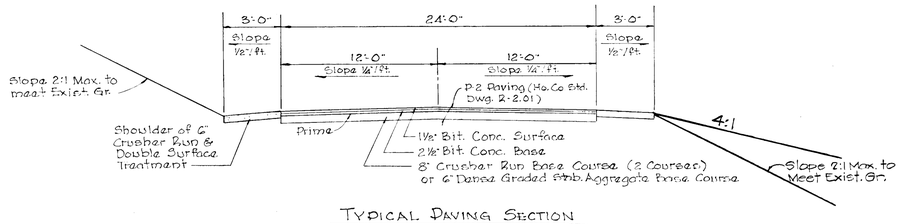


DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	HICKS ENGINEERING COMPANY, INC · CIVIL ENGINEERS · 200 EAST JOPPA ROAD SUITE 402 TOWSON, MD 21204	STATE OF MARYLAND DONALD EDWIN HICKS PROFESSIONAL ENGINEER	DES: DRN: CHK: D.E.H. DATE:	BY / NO. / REVISION / DATE	ELLICOTT CITY CAPITAL PROJECT D-1069 CONTRACT NO. 136	STORM DRAINAGE IMPROVEMENTS PLAN & CHANNEL SECTIONS PARK DRIVE CULVERT AT SUCKER BRANCH	SCALE AS SHOWN
DIRECTOR OF PUBLIC WORKS / DATE / CHIEF, BUREAU OF ENGINEERING / DATE					600' SCALE MAP NO. / BLOCK NO.	ELECTION DISTRICT · ELLICOTT CITY NO 2	SHEET 4 OF 8
CHIEF, DIVISION OF ROADS, BRIDGES AND STORM DRAINAGE / DATE							

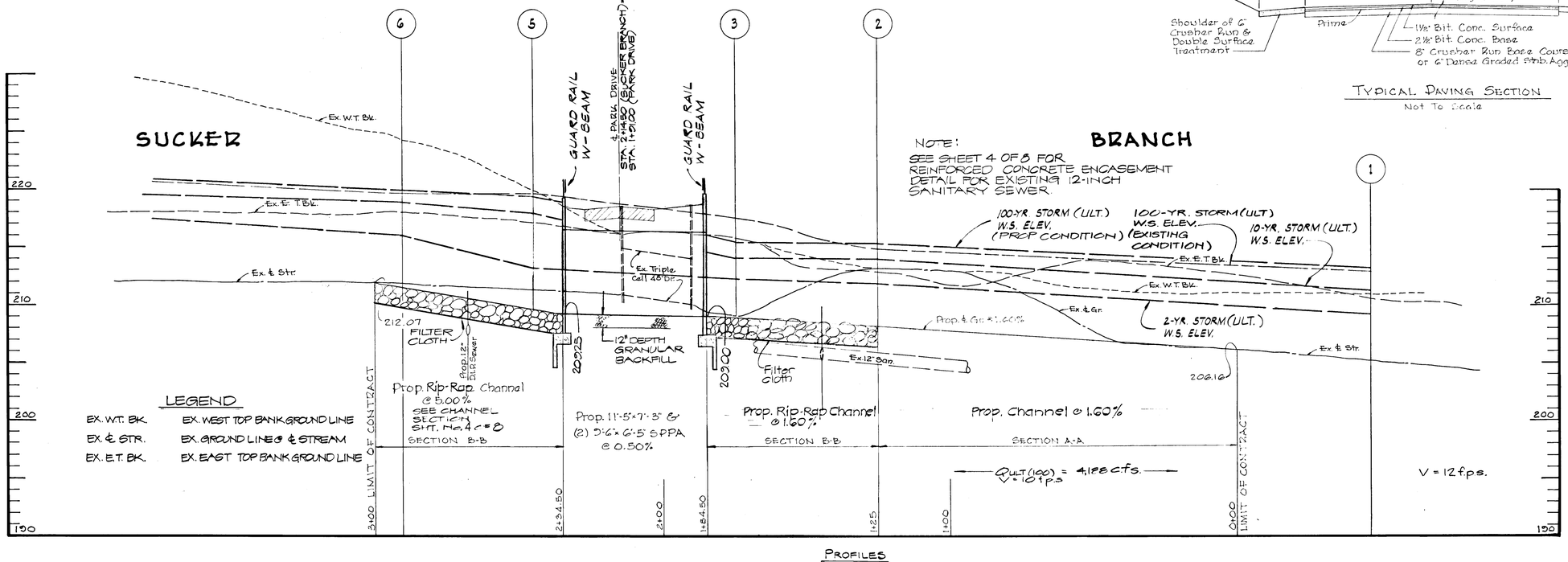
MARCH 20, 1987



PROFILES
Scale: Hor 1"=20'
Vert 1"=5'



TYPICAL PAVING SECTION
Not To Scale



NOTE:
SEE SHEET 4 OF 8 FOR REINFORCED CONCRETE ENCASEMENT DETAIL FOR EXISTING 12-INCH SANITARY SEWER.

LEGEND

EX. W.T. BK.	EX. WEST TOP BANK GROUND LINE
EX. & STR.	EX. GROUND LINE @ & STREAM
EX. E.T. BK.	EX. EAST TOP BANK GROUND LINE

PROFILES
Scale: Hor 1"=20'
Vert. 1"=5'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE
CHIEF, BUREAU OF ENGINEERING — DATE
CHIEF, DIVISION OF ROADS, BRIDGES AND STORM DRAINAGE — DATE

HICKS ENGINEERING COMPANY, INC.
· CIVIL ENGINEERS ·
200 EAST JOPPA ROAD
SUITE 402
TOWSON, MD 21204

STATE OF MARYLAND — DONALD EDWIN HICKS — No. 6676 — PROFESSIONAL ENGINEER

DES:
DRN:
CHK: D.E.H.
DATE:

BY	NO.	REVISION	DATE

ELLICOTT CITY
CAPITAL PROJECT D-1069
CONTRACT NO. 136
600' SCALE MAP NO. ____ BLOCK NO. ____

STORM DRAINAGE IMPROVEMENTS
PROFILES
PARK DRIVE CULVERT AT SUCKER BRANCH
ELECTION DISTRICT: ELLICOTT CITY NO. 2

SCALE AS SHOWN
SHEET 5 OF 8

MARCH 20, 1987

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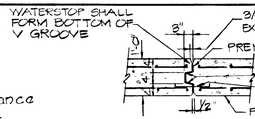
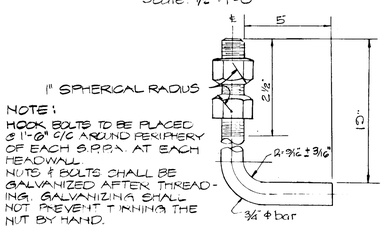
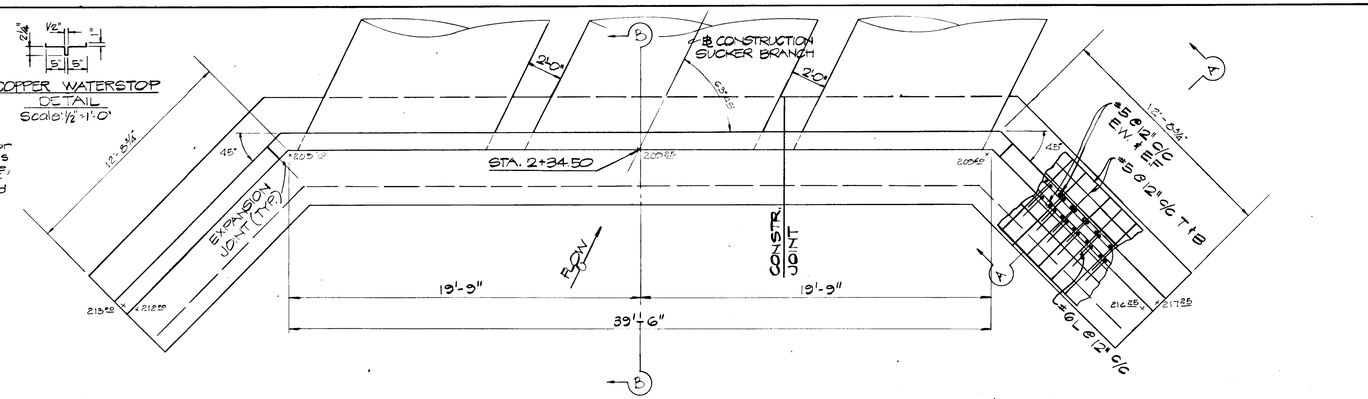
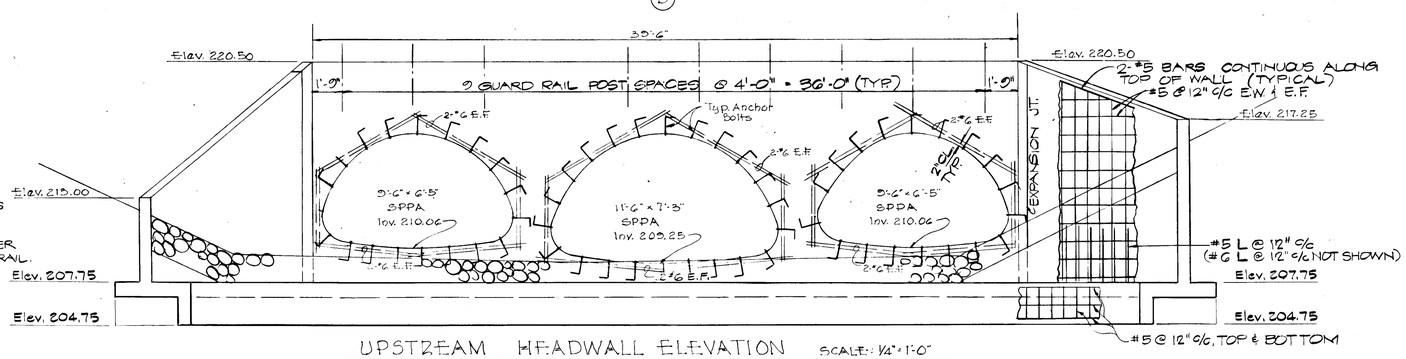








GENERAL NOTES

1. CONCRETE:
   - a. All concrete, both plain and reinforced, shall be in accordance with the latest Howard Co. Stand. Specs. for Construction.
   - b. All structural concrete shall develop a minimum ultimate compressive strength of 4,000 p.s.i. at the end of 28 days.
   - c. Reinforcing bars shall conform to A.S.T.M. A-615, Grade 40
   - d. Reinforcing steel shall be lapped a minimum of 24 bar diameters when spliced.
   - e. Chamfer corners of all exposed concrete 3/4" × 3/4" unless otherwise noted.
2. STEEL:
   - a. Structural Plate for the 11'-6" × 7'-3" and 9'-6" × 6'-5" S.P.P.A. shall be No. 10 Guage galvanized steel with 6" × 2" corrugations.
   - b. Bolts and Nuts shall be 3/4" diameter conforming to A.S.T.M. A-449, galvanized according to A.S.T.M. A-153. Bolts shall be spaced such that at least 4 bolts per foot of longitudinal seam are provided.
   - c. Anchor bolts shall be 3/4" diameter conforming to A.S.T.M. A-307 (with nuts conforming to A.S.T.M. A-563, Grade C) spaced no greater than 18" c/c, and galvanized to conform to A.S.T.M. A-153.
3. SPECIFICATIONS:
   - a. A.A.S.H.T.O. Standard Specifications for Highway Bridges, dated 1983, and Interim Specifications; Howard County Standard Specifications for Construction, dated 1984, and Interim Specifications.
4. No Construction equipment shall be permitted to pass over the culvert until a minimum of three feet of compacted fill has been placed over the culvert

NOT FOR JOINT IN WINGWALLS
Chamfer for exp. jt. (and V Groove for constr. jt. - if any) shall be continuous starting at top of footing for free face, and shall be extended across top of wall and down to 6" min. below ground for outside wall.

DETAIL OF EXPANSION JOINT
Scale: 1/2" = 1'-0"

COPPER WATERSTOP DETAIL
Scale: 1/2" = 1'-0"

NOTE:
HOOK BOLTS TO BE PLACED @ 1'-6" C/C AROUND PERIPHERY OF EACH S.P.P.A. AT EACH HEADWALL.
NUTS & BOLTS SHALL BE GALVANIZED AFTER THREADING. GALVANIZING SHALL NOT PREVENT TURNING THE NUT BY HAND.

ANCHOR BOLT DETAIL
NO SCALE

UPSTREAM HEADWALL ELEVATION SCALE: 1/4" = 1'-0"

PLAN

ELEVATION

GUARD RAIL DETAILS
Scale: 1" = 1'-0"

CONSTRUCTION JOINT DETAIL
Scale: 1/2" = 1'-0"

* Perforated, Sloped to Drain to each Outlet Pipe (Minimum Slope 1/2" / Ft.)

SECTION A-A
Scale: 1/4" = 1'-0"

Porous Backfill shall be Stone, conforming to AASHTO M43, Size No. 57

SECTION B-B
Scale: 1/4" = 1'-0"

DOWNSTREAM HEADWALL ELEVATION
Scale: 1/4" = 1'-0"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS DATE
CHIEF, BUREAU OF ENGINEERING DATE
CHIEF, DIVISION OF ROADS, BRIDGES AND STORM DRAINAGE DATE

HICKS ENGINEERING COMPANY, INC.
· CIVIL ENGINEERS ·
200 EAST JOPPA ROAD
SUITE 402
TOWSON, MD 21204

DONALD EDWIN HICKS
6876

DES:
DRN:
CHK: D.E.H.
DATE:

BY	NO.	REVISION	DATE

ELLICOTT CITY
CAPITAL PROJECT D-1069
CONTRACT NO. 136

600' SCALE MAP NO. BLOCK NO.

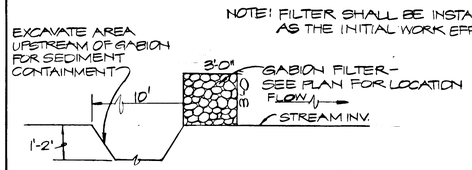
STORM DRAINAGE IMPROVEMENTS
STRUCTURAL DETAILS
PARK DRIVE CULVERT
AT SUCKER BRANCH

ELECTION DISTRICT: ELLICOTT CITY NO. 2

SCALE AS SHOWN

SHEET 6 OF 8

MARCH 20, 1987



B.M. Ex. MH Nº 78 Elev. 214.83
Cross cut (+) in frame of sanitary manhole.

NOTE: FILTER SHALL BE INSTALLED AS THE INITIAL WORK EFFORT

TEMPORARY-GABION FILTER
SCALE: 3/8" = 1'-0"

PLAN
SCALE: 1" = 20'

LEGEND

—(201)—	PROPOSED CONTOUR
- - -201- - -	EXISTING CONTOUR
—△—	TRAVERSE STATION
··············	LIMITS OF DISTURBANCE (L.O.D.)
—s—	SILT FENCE
━━━	SAND BAG FLOW DIVERSION
▨	GABION FILTER
⧉	INLET PROTECTION

SUGGESTED CONSTRUCTION SEQUENCE

THE FOLLOWING SEQUENCE OF CONSTRUCTION HAS BEEN DESIGNED TO ALLOW ONE LANE OF TRAFFIC CROSSING ACCESS DURING THE REMOVAL, IN SEGMENTS, OF THE EXISTING TRIPLE-CELL STRUCTURE AND THE INSTALLATION OF THE PROPOSED TRIPLE-CELL PIPE ARCHES:

STAGE 1:

A. INSTALL SEDIMENT CONTROLS.

B. ERECT A TRAFFIC BARRIER TO PROVIDE ONE LANE OF TRAFFIC.

C. PLACE SANDBAG FLOW DIVERSION.

D. REMOVE UPSTREAM MASONRY HEADWALL.

E. EXCAVATE FOR AND INSTALL THE FIRST SEGMENT OF 2 OF THE PROPOSED TRIPLE-CELL PIPE ARCHES AND CONSTRUCT A SECTION OF THE PROPOSED UPSTREAM HEADWALL.

F. STABILIZE THE STREAMBED INLET AND EXCAVATED SIDE SLOPES WITH CLASS 2 STONE RIPRAP AND GABION SLOPE PROTECTION, RESPECTIVELY.

STAGE 2:

A. REARRANGE THE SAND BAGS TO RE-DIRECT THE STREAM FLOW THRU THE CENTER CELL OF THE INSTALLED S.P.P. ARCHES.

B. EXCAVATE FOR AND INSTALL THE THIRD CELL OF THE S.P.P. ARCH AND CONSTRUCT THE REMAINING PORTION OF THE UPSTREAM HEADWALL.

C. STABILIZE THE REMAINING SEGMENT OF THE STREAMBED INLET AND SIDE SLOPES WITH CLASS 2 RIPRAP AND GABION SLOPE PROTECTION, RESPECTIVELY.

D. BACKFILL TO GRADE, ADJUST THE TRAFFIC BARRIER, AND PLACE A TEMPORARY ROADWAY ACROSS THE UPSTREAM INSTALLED SEGMENT OF THE TRIPLE CELL STRUCTURE.

STAGE 3:

A. ARRANGE THE UPSTREAM AND DOWNSTREAM SAND BAGS TO DIRECT THE STREAM FLOW THRU A SINGLE CELL OF THE TRIPLE CELL CULVERT.

B. REMOVE THE DOWNSTREAM MASONRY HEADWALL.

C. EXCAVATE FOR AND INSTALL THE REMAINING SEGMENT OF EITHER ONE OR TWO CELLS, AS CONDITIONS PERMIT, OF THE PROPOSED TRIPLE CELL STRUCTURE AND CONSTRUCT A SECTION OF THE HEADWALL.

D. STABILIZE THE STREAMBED INLET AND STREAM SIDE SLOPES WITH RIPRAP AND GABION SLOPE PROTECTION, AS INDICATED ON THE PLANS.

STAGE 4:

A. ADJUST THE UPSTREAM AND DOWNSTREAM SAND BAGS TO DIRECT THE STREAM FLOW THRU THE COMPLETED CELL OF THE TRIPLE CELL CULVERT, SPPA ③

B. REMOVE THE REMAINING PORTION OF THE EXISTING PIPE STRUCTURE.

C. EXCAVATE FOR AND INSTALL THE REMAINING SEGMENT OF THE PROPOSED CULVERTS AND CONSTRUCT THE REMAINING SECTION OF THE HEADWALL.

D. STABILIZE THE STREAMBED INLET AND STREAM SIDE SLOPES WITH RIPRAP AND GABION SLOPE PROTECTION AS SHOWN ON THE PLANS.

E. COMPLETE BACKFILL TO GRADE.

F. REMOVE THE TRAFFIC BARRIERS.

CONSTRUCT THE REMAINING LENGTH OF THE ROADWAY.

STABILIZE ALL DISTURBED AREAS WITH SOD OR SEED AND MULCH AS INDICATED ON THE PLANS.

REMOVE SEDIMENT CONTROL DEVICES.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS ____ DATE ____
CHIEF, BUREAU OF ENGINEERING ____ DATE ____
CHIEF, DIVISION OF ROADS, BRIDGES AND STORM DRAINAGE ____ DATE ____

HICKS ENGINEERING COMPANY, INC.
· CIVIL ENGINEERS ·
200 EAST JOPPA ROAD
SUITE 402
TOWSON, MD 21204

DONALD EDWIN HICKS

DES:
DRN:
CHK: D.E.H.
DATE:

BY	NO.	REVISION	DATE

ELLICOTT CITY
CAPITAL PROJECT D-1069
CONTRACT NO. 136
600' SCALE MAP NO. ____ BLOCK NO. ____

STORM DRAINAGE IMPROVEMENTS
SEDIMENT CONTROL PLAN
PARK DRIVE CULVERT
AT SUCKER BRANCH
ELECTION DISTRICT: ELLICOTT CITY NO. 2

SCALE AS SHOWN

SHEET 7 OF 8

MARCH 20, 1987

36950
OZALID

B.M. Ex. MH No 78 Elev. 214.83

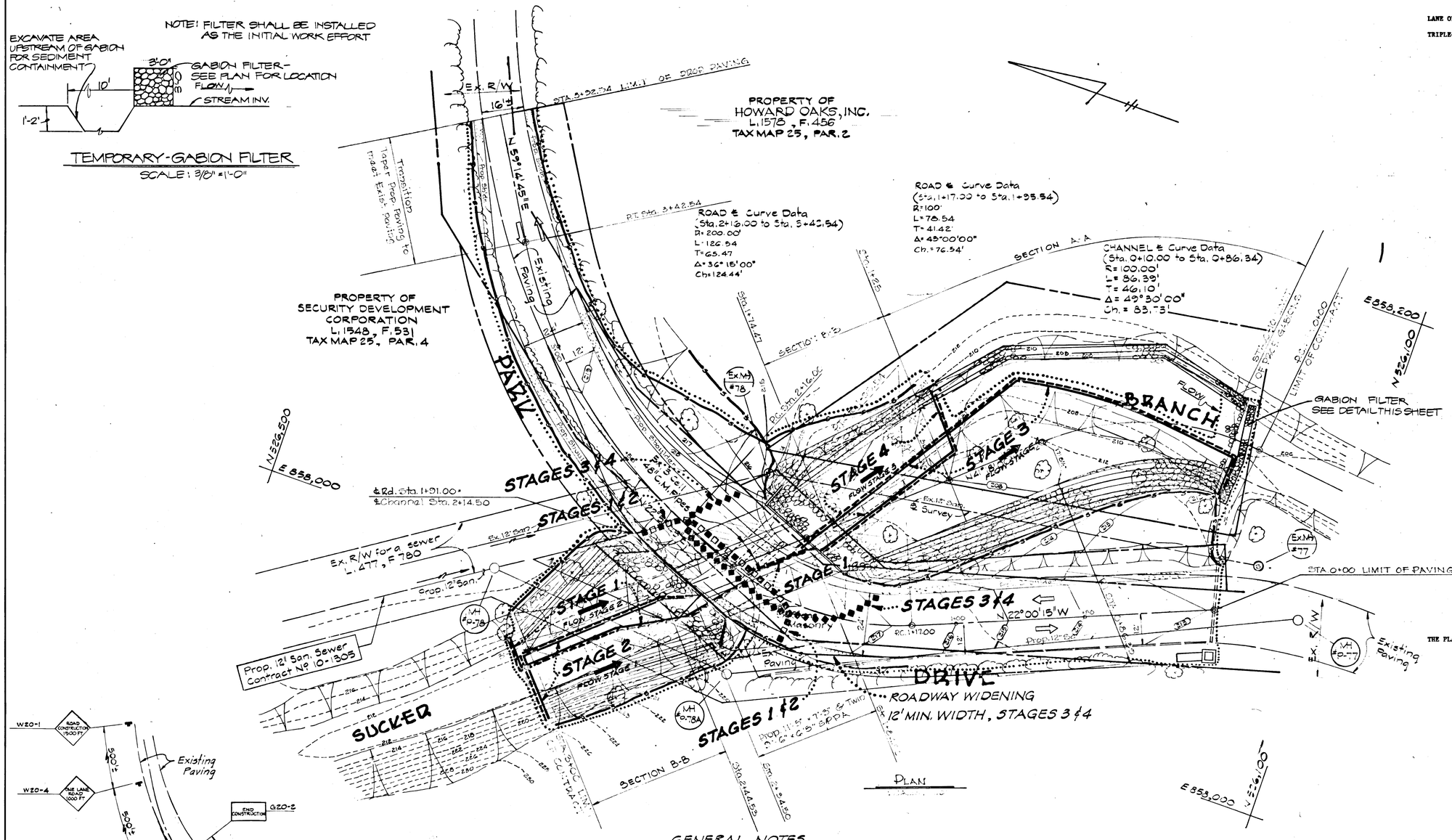
Cross cut (+) in frame of sanitary manhole.

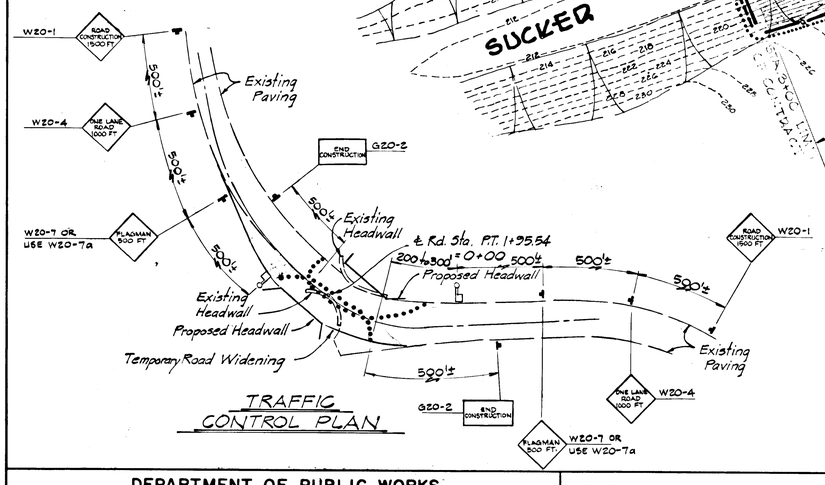
Prop. Corner Stone

NOTE: FILTER SHALL BE INSTALLED AS THE INITIAL WORK EFFORT

TEMPORARY-GABION FILTER

SCALE: 3/8" = 1'-0"





GENERAL NOTES

1. Warning lights shall be used to mark channelizing devices at night, as needed.
2. Channelizing devices are to be extended to a point where they are visible to approaching traffic.

KEY

- CHANNELIZING DEVICES (Barriers)
- SIGN SUPPORT / FACE OF SIGN
- DIRECTION OF VEHICULAR TRAFFIC
- DIRECTION OF STREAM FLOW

SUGGESTED CONSTRUCTION SEQUENCE

THE FOLLOWING SEQUENCE OF CONSTRUCTION HAS BEEN DESIGNED TO ALLOW ONE LANE OF TRAFFIC CROSSING ACCESS DURING THE REMOVAL, IN SEGMENTS, OF THE EXISTING TRIPLE-CELL STRUCTURE AND THE INSTALLATION OF THE PROPOSED TRIPLE-CELL PIPE ARCHES:

STAGE 1:

A. INSTALL SEDIMENT CONTROLS.

B. ERECT A TRAFFIC BARRIER TO PROVIDE ONE LANE OF TRAFFIC.

C. PLACE SANDBAG FLOW DIVERSION.

D. REMOVE UPSTREAM MASONRY HEADWALL.

E. EXCAVATE FOR AND INSTALL THE FIRST SEGMENT OF 2 OF THE PROPOSED TRIPLE-CELL PIPE ARCHES AND CONSTRUCT A SECTION OF THE PROPOSED UPSTREAM HEADWALL.

F. STABILIZE THE STREAMBED INLET AND EXCAVATED SIDE SLOPES WITH CLASS 2 STONE RIPRAP AND GABION SLOPE PROTECTION, RESPECTIVELY.

STAGE 2:

A. REARRANGE THE SAND BAGS TO RE-DIRECT THE STREAM FLOW THRU THE CENTER CELL OF THE INSTALLED S.P.F. ARCHES.

B. EXCAVATE FOR AND INSTALL THE THIRD CELL OF THE S.P.F. ARCH AND CONSTRUCT THE REMAINING PORTION OF THE UPSTREAM HEADWALL.

C. STABILIZE THE REMAINING SEGMENT OF THE STREAMBED INLET AND SIDE SLOPES WITH CLASS 2 RIPRAP AND GABION SLOPE PROTECTION, RESPECTIVELY.

D. BACKFILL TO GRADE, ADJUST THE TRAFFIC BARRIER, AND PLACE A TEMPORARY ROADWAY ACROSS THE UPSTREAM INSTALLED SEGMENT OF THE TRIPLE CELL STRUCTURE.

STAGE 3:

A. ARRANGE THE UPSTREAM AND DOWNSTREAM SAND BAGS TO DIRECT THE STREAM FLOW THRU A SINGLE CELL OF THE TRIPLE CELL CULVERT.

B. REMOVE THE DOWNSTREAM MASONRY HEADWALL.

C. EXCAVATE FOR AND INSTALL THE REMAINING SEGMENT OF EITHER ONE OR TWO CELLS, AS CONDITIONS PERMIT, OF THE PROPOSED TRIPLE CELL STRUCTURE AND CONSTRUCT A SECTION OF THE HEADWALL.

D. STABILIZE THE STREAMBED INLET AND STREAM SIDE SLOPES WITH RIPRAP AND GABION SLOPE PROTECTION, AS INDICATED ON THE PLANS.

STAGE 4:

A. ADJUST THE UPSTREAM AND DOWNSTREAM SAND BAGS TO DIRECT THE STREAM FLOW THRU THE COMPLETED CELL OF THE TRIPLE CELL CULVERT.

B. REMOVE THE REMAINING PORTION OF THE EXISTING PIPE STRUCTURE.

C. EXCAVATE FOR AND INSTALL THE REMAINING SEGMENT OF THE PROPOSED CULVERTS AND CONSTRUCT THE REMAINING SECTION OF THE HEADWALL.

D. STABILIZE THE STREAMBED INLET AND STREAM SIDE SLOPES WITH RIP-RAP AND GABION SLOPE PROTECTION AS SHOWN ON THE PLANS.

E. COMPLETE BACKFILL TO GRADE.

F. REMOVE THE TRAFFIC BARRIERS.

CONSTRUCT THE REMAINING LENGTH OF THE ROADWAY.

STABILIZE ALL DISTURBED AREAS WITH SOD OR SEED AND MULCH AS INDICATED ON THE PLANS.

REMOVE SEDIMENT CONTROL DEVICES.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE — CHIEF, BUREAU OF ENGINEERING — DATE

CHIEF, DIVISION OF ROADS, BRIDGES AND STORM DRAINAGE — DATE

HICKS ENGINEERING COMPANY, INC.
· CIVIL ENGINEERS ·
200 EAST JOPPA ROAD
SUITE 402
TOWSON, MD 21204

STATE OF MARYLAND — DONALD EDWIN HICKS — No. 8651 — REGISTERED PROFESSIONAL ENGINEER

DES:	
DRN:	
CHK: D.E.H.	
DATE:	

BY	NO.	REVISION	DATE

ELLICOTT CITY
CAPITAL PROJECT D-1069
CONTRACT NO. 136

600' SCALE MAP NO. _____ BLOCK NO. _____

STORM DRAINAGE IMPROVEMENTS
SUGGESTED PLAN FOR MAINTENANCE OF TRAFFIC
PARK DRIVE CULVERT
AT SUCKER BRANCH
ELECTION DISTRICT 1 ELLICOTT CITY NO. 2

SCALE AS SHOWN

SHEET 8 OF 8

MARCH 20, 1987

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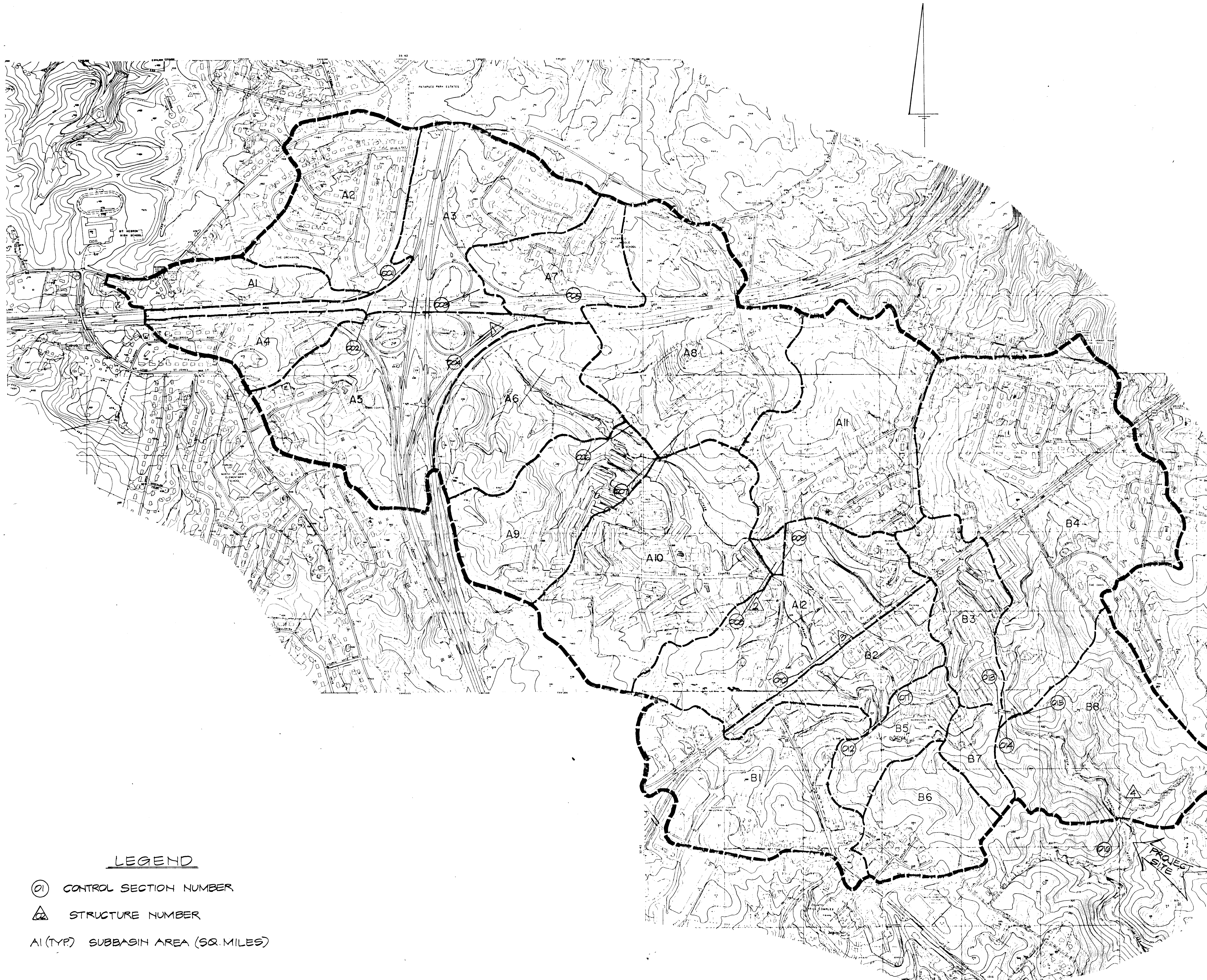


DESIGN DATA

SUB-BASIN	DRAIN-AGE AREA (SQ.MI.)	RCN EXISTING	RCN FUTURE	TIME OF CONC. (tc)	PEAK DESIGN (CFS) DESIGN FREQUENCY STORM EXISTING CONDITION 2-YR	EXISTING CONDITION 10-YR.	EXISTING CONDITION 100-YR	FUTURE CONDITION 2-YR.	FUTURE CONDITION 10-YR	FUTURE CONDITION 100-YR.
A-1	0.04	74	73.8	0.31	26	63	109	26	63	108
A-2	0.11	70.5	71.1	0.45	50	137	250	52	141	254
CONTROL SECTION 001	0.15				73	195	349	75	198	354
A-4	0.05	62.7	70.3	0.31	13	49	100	26	71	127
CONTROL SECTION 002	0.20				86	243	445	100	266	476
A-3	0.16	71.9	76.7	0.25	104	265	465	138	313	522
CONTROL SECTION 003	0.36				184	496	891	232	566	976
A-5	0.15	70.3	71.8	0.61	54	151	275	60	160	287
CONTROL SECTION 004	0.51				219	605	1,096	271	681	1,189
S-1	0.51				219	605	1,096	271	681	1,189
A-7	0.08	73.6	75.2	0.18	68	162	277	74	171	288
CONTROL SECTION 005	0.59				190	462	713	233	499	752
A-6	0.12	64.4	89.5	0.54	28	99	198	133	240	358
CONTROL SECTION 006	0.71				198	516	835	329	684	1,029
A-8	0.21	72.7	80.0	0.34	126	321	562	192	410	664
A-9	0.10	69.3	91.0	0.64	30	87	162	98	174	256
CONTROL SECTION 007	1.02				305	843	1472	569	1,190	1859
A-10	0.21	78.1	86.8	0.25	196	432	710	291	545	827
CONTROL SECTION 008	1.23				349	984	1,776	645	1386	2219
A-11	0.19	75.8	94.9	0.31	109	286	508	136	325	554
CONTROL SECT. 009	1.42				453	1248	2249	771	1682	2733
S-2	1.42				453	1248	2249	771	1682	2733
A-12	0.16	75.7	89.9	0.23	142	329	554	268	477	705
CONTROL SECT. 010	1.58				581	1,533	2732	999	2084	3339
S-3	1.58				581	1,533	2732	999	2084	3339
B-2	0.07	88.9	90.9	0.18	111	199	296	118	206	303
CONTROL SECTION 011	1.64				630	1443	2154	992	1,796	2436
B-1	0.16	78.0	83.4	0.15	178	387	632	228	448	696
CONTROL SECTION 012	1.81				788	1,700	2583	1159	2078	2889
B-5-B-7	0.15	67.9	79.6	0.38	58	1.74	326	125	270	440
CONTROL SECTION 013	1.96				758	1768	2,761	1,194	2232	3,178
B-3	0.07	76.1	86.0	0.31	55	127	214	89	169	258
CONTROL SECTION 014	2.03				807	1,879	2,958	1275	2382	3417
B-4	0.34	71.3	75.0	0.57	136	368	662	175	425	731
CONTROL SECTION 015	2.37				925	2,215	3,565	1,430	2,774	4.081
B-8	0.16	69.3	75.1	0.22	94	259	470	137	322	544
CONTROL SECTION 016	2.53				902	2,223	3,628	1,416	2,791	4,188
S-4	2.53				902	2,223	3,628	1,416	2,791	4,188

LEGEND

(01) CONTROL SECTION NUMBER

(A) STRUCTURE NUMBER

A1 (TYP.) SUBBASIN AREA (SQ. MILES)

C1071B∅2

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS DATE
CHIEF, BUREAU OF ENGINEERING DATE
CHEIF, DIVISION OF ROADS, BRIDGES AND STORM DRAINAGE DATE

HICKS ENGINEERING COMPANY, INC
· CIVIL ENGINEERS ·
200 EAST JOPPA ROAD
SUITE 40

STATE OF MARYLAND
DONALD EDWIN
No. 8676
REGISTERED
PROFESSIONAL ENGINEER

DES:
DRN:
CHK: D.E.H.
DATE:

BY	NO.	REVISION	DATE

ELLICOTT CITY
CAPITAL PROJECT D-1069
CONTRACT NO. 136

600' SCALE MAP NO. ________ BLOCK NO. ________

STORM DRAINAGE IMPROVEMENTS
DRAINAGE AREA MAP & DESIGN DATA
PARK DRIVE CULVERT
AT SUCKER BRANCH

ELECTION DISTRICT: ELLICOTT CITY NO. 2

SCALE AS SHOWN

SHEET 2 OF 8

B.M. Ex. MH No 78 Elev. 214.83

Cross cut (+) in frame of sanitary manhole.

National Foundation Engineering, Inc.

RECORD OF SOIL EXPLORATION

Contracted With: Hicks Engineering — Boring #: SB-1
Project Name: Park Drive Culvert — Job #: 86-2150
Location: Ellicott City, Maryland

SAMPLER — Hammer Wt.: 140 lbs. — Hammer Drop: 30 in. — Pipe Size: ID 1 3/8 in. — Hole Diameter: 7" — Boring Method: HSA — Foreman: M. Ebert — Date Started: 9-12-86 — Date Completed: 9-12-86

Elev.	Soil Description	Stra. Depth	Sample Cond.	Blows/6"	No.	Type	Rec.	Boring & Sampling Notes
	Brown micaceous silty sand; gradual increase in grain size with depth; weathered rock fragments from 5 ft.		I	1-1-1	1	DS	1.5	Refusal @ 3 ½ ft. Moved up 5.0 ft. Refusal @ 8.0 ft. Hole backfilled.
			I	1-1-2	2	DS	1.5	
			I	2-4-7	3	DS	1.5	
	Bottom of boring @ 8.0 ft.							

Ground water depth at completion: Dry

National Foundation Engineering, Inc.

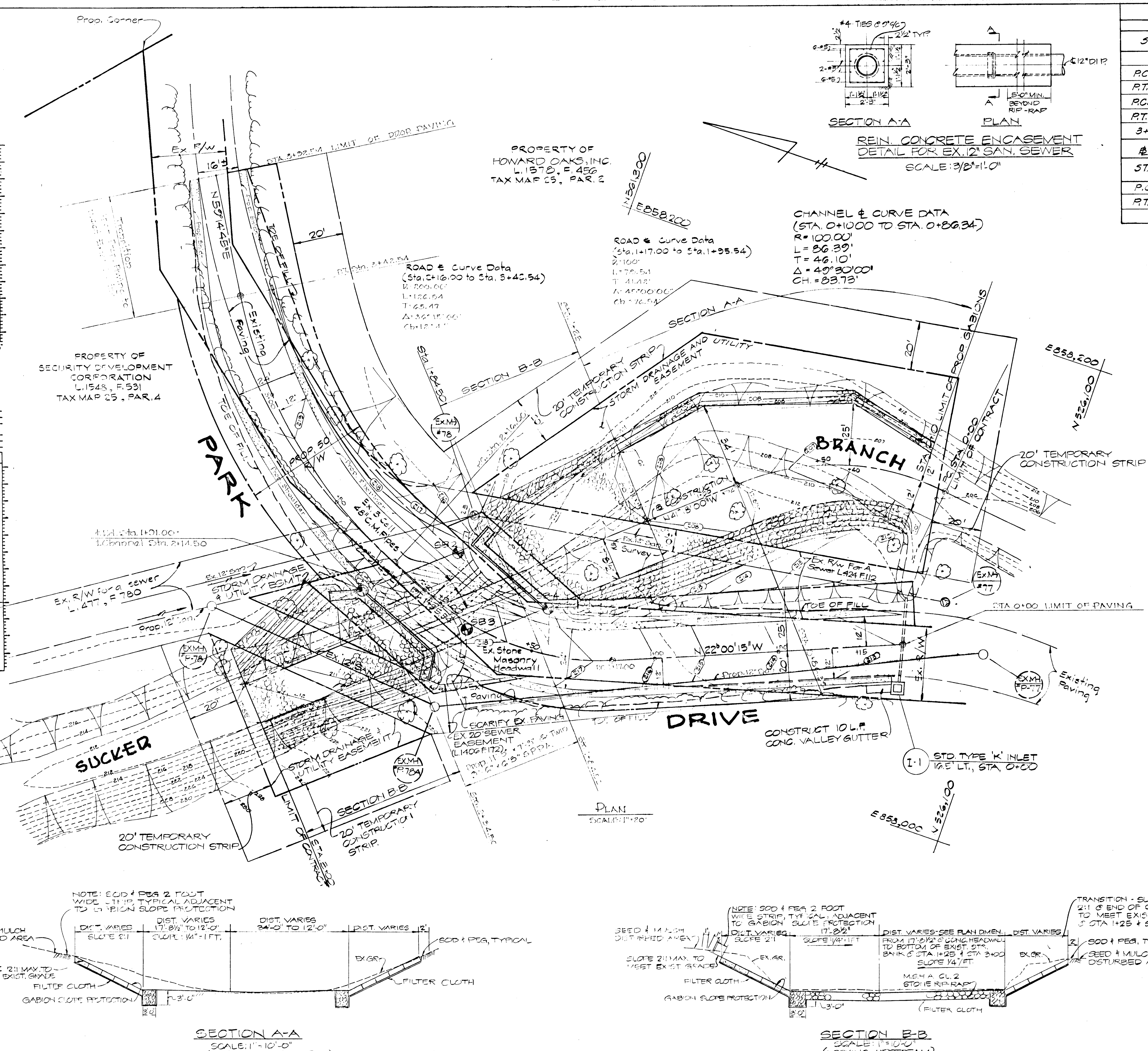
RECORD OF SOIL EXPLORATION

Contracted With: Hicks Engineering — Boring #: SB-2
Project Name: Park Drive Culvert — Job #: 86-2150
Location: Ellicott City, Maryland

SAMPLER — Hammer Wt.: 140 lbs. — Hammer Drop: 30 in. — Pipe Size: ID 1 3/8 in. — Hole Diameter: 7" — Boring Method: HSA — Foreman: M. Ebert — Date Started: 9-12-86 — Date Completed: 9-12-86

Elev.	Soil Description	Stra. Depth	Sample Cond.	Blows/6"	No.	Type	Rec.	Boring & Sampling Notes
	Greenish brown micaceous silty sand' trace of quartz gravel	2.0	I	1-2-2	1	DS	1.5	Asphalt = 3" Hole backfilled.
	Brown micaceous silty sand with rock fragments; gradual increase in grain size with depth		I	3-3-3	2	DS	1.5	
			I	3-3-3	3	DS	1.5	
		12.0	I	4-4-4	4	DS	1.5	
	Brown/light tan micaceous slightly silty sand		I	7-16-10	5	DS	1.5	
			I	50/2	6	DS	0.2	
	Bottom of boring @ 20.0 ft.							

Ground water depth at completion: 8.3 ft.



SURVEY CONTROL DATA

℄ CONSTRUCTION - PARK DRIVE

STATIONS	CO-ORDINATES NORTH	EAST
0+00	N 526,138.25	E 858,070.00
P.C. 1+17.00	N 526,246.73	E 858,026.16
P.T. 1+95.54	N 526,373.26	E 858,026.83
P.C. 2+16.00	N 526,342.09	E 858,034.82
P.T. 3+42.54	N 526,435.84	E 858,116.66
3+92.54	N 526,461.41	E 858,159.63

℄ CONSTRUCTION - SUCKER BRANCH

STATIONS	CO-ORDINATES NORTH	EAST
P.C. 0+00	N 526,143.00	E 858,133.75
P.T. 0+86.39	N 526,223.26	E 858,109.90
3+00	N 526,383.74	E 858,968.92

National Foundation Engineering, Inc.

RECORD OF SOIL EXPLORATION

Contracted With: Hicks Engineering — Boring #: SB-3
Project Name: Park Drive Culvert — Job #: 86-2150
Location: Ellicott City, Maryland

SAMPLER — Hammer Wt.: 140 lbs. — Hammer Drop: 30 in. — Pipe Size: ID 1 3/8 in. — Hole Diameter: 7" — Boring Method: HSA — Foreman: M. Ebert — Date Started: 9-12-86 — Date Completed: 9-12-86

Elev.	Soil Description	Stra. Depth	Sample Cond.	Blows/6"	No.	Type	Rec.	Boring & Sampling Notes
	Tan silty sand; trace of mica		I	2-2-2	1	DS	1.5	Asphalt = 18" Hole backfilled.
		5.0	I	1-2-3	2	DS	1.5	
	Light gray/tan micaceous silty sand/ sandy silt	8.0	I	2-3-3	3	DS	1.5	
	Brown micaceous silty to slightly silty sand with micaceous schist fragments; decreasing fines with depth		I	6-8-23	4	DS	1.5	
			I	8-11-11	5	DS	1.5	
			I	50/4	6	DS	0.4	
	Bottom of boring @ 20.0 ft.							

Ground water depth at completion: 16.3 ft.

National Foundation Engineering, Inc.

RECORD OF SOIL EXPLORATION

Contracted With: Hicks Engineering — Boring #: SB-4
Project Name: Park Drive Culvert — Job #: 86-2150
Location: Ellicott City, Maryland

Elev.	Soil Description	Stra. Depth	Sample Cond.	Blows/6"	No.	Type	Rec.	Boring & Sampling Notes
	Brown/tan brown silty sand; trace of mica		I	2-2-2	1	DS	1.5	Asphalt = 3" Hole backfilled.
		5.0	I	2-3-6	2	DS	1.5	
	Brown micaceous silty sand/slightly silty sand with micaceous schist fragments and quartz gravel; thin layer of rock fragments @ 6 ft.		I	5-5-14	3,3A	DS	1.4	
			I	7-8-17	4	DS	1.5	
			I	13-50/1	5	DS	0.6	
			I	25-50/2	6	DS	0.6	
	Bottom of boring @ 20.0 ft.							

Ground water depth at completion: 16.0 ft.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE — CHIEF, BUREAU OF ENGINEERING — DATE

CHIEF, DIVISION OF ROADS, BRIDGES AND STORM DRAINAGE — DATE

HICKS ENGINEERING COMPANY, INC
· CIVIL ENGINEERS ·
200 EAST JOPPA ROAD
SUITE 402
TOWSON, MD 21204

DES:
DRN:
CHK: D.F.H.
DATE:

BY — NO — REVISION — DATE

ELLICOTT CITY
CAPITAL PROJECT D-1069
CONTRACT NO. 136

GOU SCALE MAP NO. ______ BLOCK NO. ______

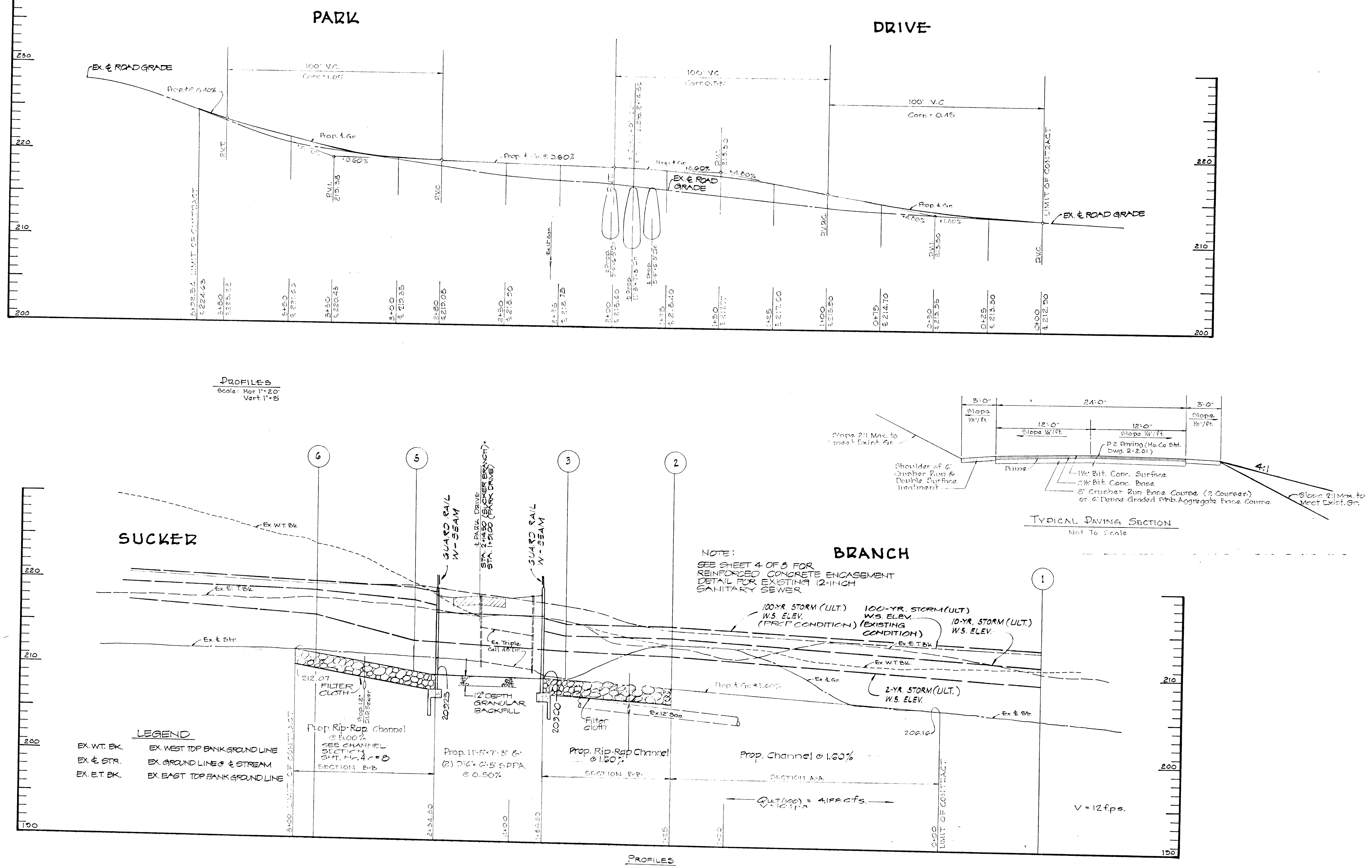
STORM DRAINAGE IMPROVEMENTS
PLAN & CHANNEL SECTIONS
PARK DRIVE CULVERT AT SUCKER BRANCH

ELECTION DISTRICT ELLICOTT CITY NO 2

SCALE AS SHOWN

SHEET 4 OF 8

MARCH 20, 1987



DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	HICKS ENGINEERING COMPANY, INC. · CIVIL ENGINEERS · 200 EAST JOPPA ROAD SUITE 402 TOWSON, MD 21204	DES: DRN: CHK: D.E.H. DATE:	ELLICOTT CITY CAPITAL PROJECT D-1069 CONTRACT NO. 136	STORM DRAINAGE IMPROVEMENTS PROFILES PARK DRIVE CULVERT AT SUCKER BRANCH ELECTION DISTRICT: ELLICOTT CITY NO. 2	SCALE AS SHOWN SHEET 5 OF 8

DIRECTOR OF PUBLIC WORKS DATE · CHIEF, BUREAU OF ENGINEERING DATE

CHIEF, DIVISION OF ROADS, BRIDGES AND STORM DRAINAGE DATE

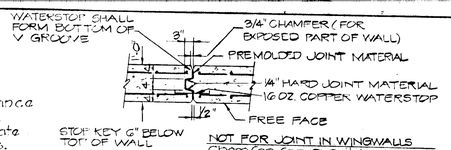
BY · NO. · REVISION · DATE

600' SCALE MAP NO. · BLOCK NO.

MARCH 20, 1987

GENERAL NOTES

1. CONCRETE:
   a. All concrete, both plain and reinforced, shall be in accordance with the latest Howard Co. Stand. Specs. for Construction.
   b. All structural concrete shall develop a minimum ultimate compressive strength of 4,000 p.s.i. at the end of 28 days.
   c. Reinforcing bars shall conform to A.S.T.M. A-615, Grade 40
   d. Reinforcing steel shall be lapped a minimum of 24 bar diameters when spliced.
   e. Chamfer corners of all exposed concrete ¾"x¾" unless otherwise noted.
2. STEEL:
   a. Structural Plate for the 11'-6"x7'-3" and 9'-6"x6'-5" S.P.P.A. shall be No. 10 Gauge galvanized steel with 6"x2" corrugations.
   b. Bolts and Nuts shall be ¾" diameter conforming to A.S.T.M. A-449, galvanized according to A.S.T.M. A-153. Bolts shall be spaced such that at least 4 bolts per foot of longitudinal seam are provided.
   c. Anchor bolts shall be ¾" diameter conforming to A.S.T.M. A-307 (with nuts conforming to A.S.T.M. A-563, Grade C.) spaced no greater than 18"c, and galvanized to conform to A.S.T.M. A-153.
3. SPECIFICATIONS:
   a. A.S.S.H.T.O. Standard Specifications for Highway Bridges, dated 1983, and Interim Specifications; Howard County Standard Specifications for Construction, dated 1984, and Interim Specifications.
4. No Construction equipment shall be permitted to pass over the culvert until a minimum of three feet of compacted fill has been placed over the culvert

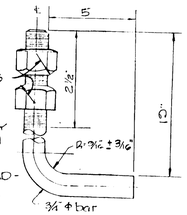


NOT FOR JOINT IN WINGWALLS

Chamfer, for exp. jt. and V groove for constr. jt. - if any) shall be continuous starting at top of footing for free face, and shall be extended across top of wall and down to 6" min. below ground for outside wall.

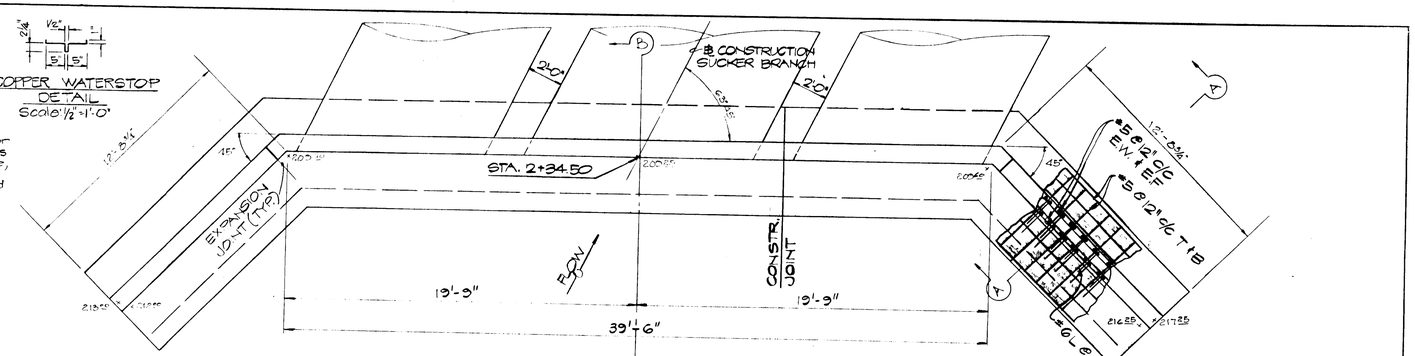
COPPER WATERSTOP DETAIL
Scale: 1½"=1'-0"

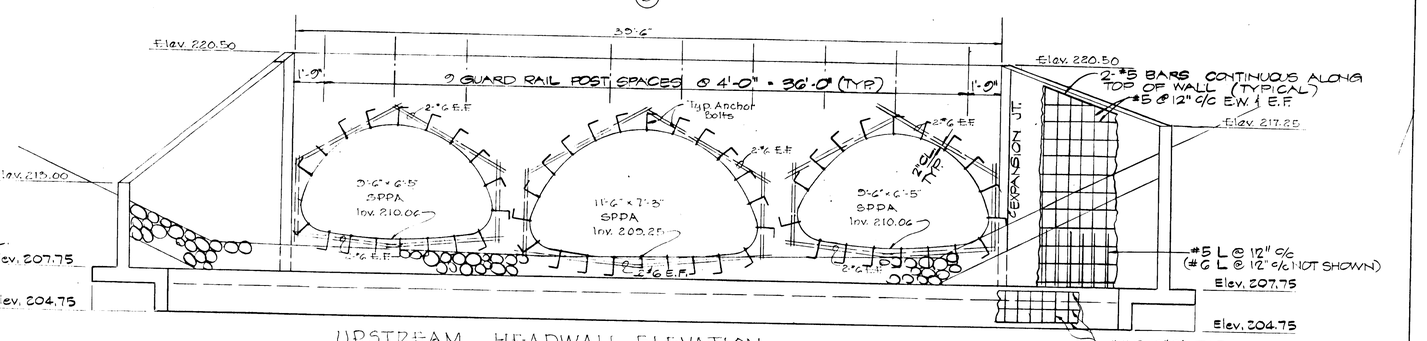
DETAIL OF EXPANSION JOINT
Scale: ½"=1'-0"



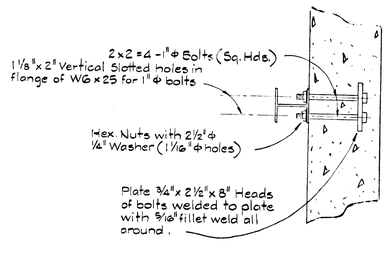
NOTE:
HOOK BOLTS TO BE PLACED @ 1'-0" C/C AROUND PERIPHERY OF EACH S.P.P.A. AT EACH HEADWALL
NUTS & BOLTS SHALL BE GALVANIZED AFTER THREADING. GALVANIZING SHALL NOT PREVENT TURNING THE NUT BY HAND

ANCHOR BOLT DETAIL
No SCALE

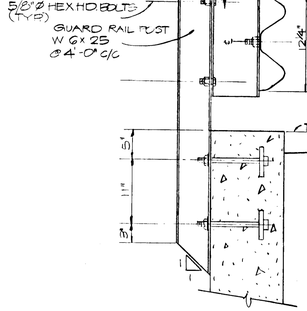




UPSTREAM HEADWALL ELEVATION SCALE: ¼"=1'-0"

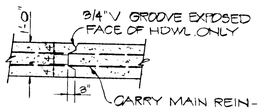


PLAN

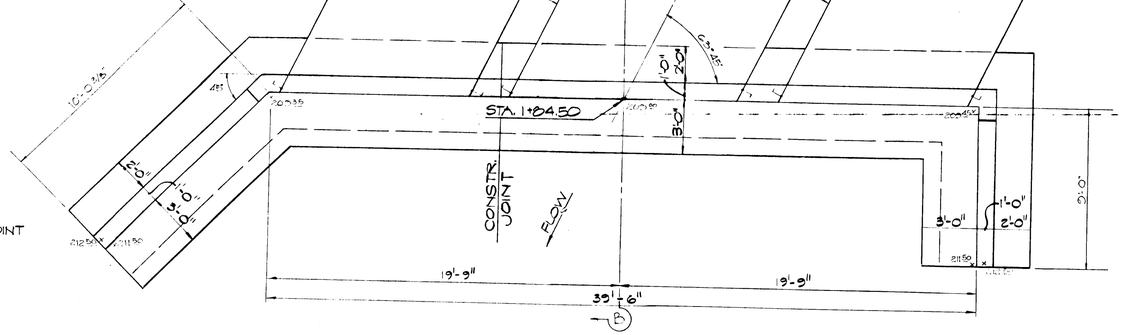


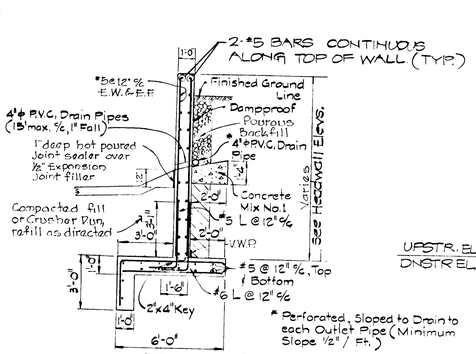
ELEVATION

GUARD RAIL DETAILS
Scale: 1"=1'-0"



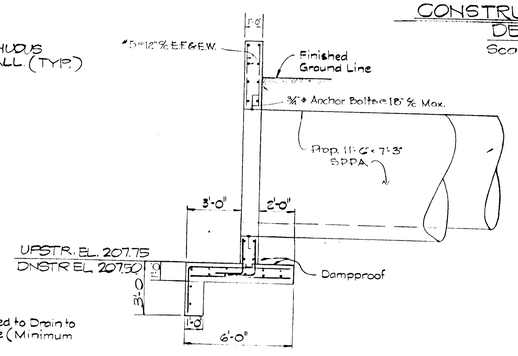
CONSTRUCTION JOINT DETAIL
Scale: ½"=1'-0"



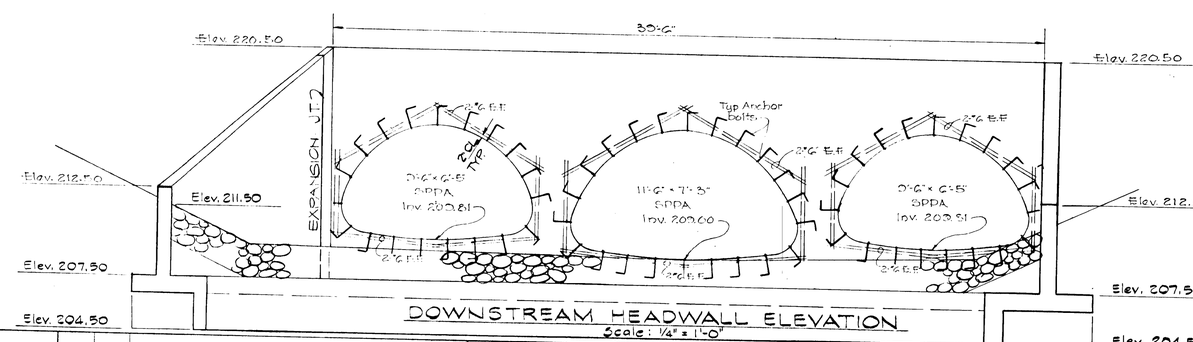


SECTION A-A
Scale: ½"=1'-0"

Porous Backfill shall be Stone, conforming to AASHTO M43, Size No. 57



SECTION B-B
Scale: ½"=1'-0"



DOWNSTREAM HEADWALL ELEVATION
Scale: ¼"=1'-0"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE
CHIEF, BUREAU OF ENGINEERING — DATE
CHIEF, DIVISION OF ROADS, BRIDGES AND STORM DRAINAGE — DATE

HICKS ENGINEERING COMPANY, INC.
· CIVIL ENGINEERS ·
200 EAST JOPPA ROAD
SUITE 402
TOWSON, MD 21204

STATE OF MARYLAND — DONALD TOWN HICKS — No. 6618 — PROFESSIONAL ENGINEER

DES:	
DRN:	
CHK: D.E.H.	
DATE:	

BY	NO.	REVISION	DATE

ELLICOTT CITY
CAPITAL PROJECT D-1069
CONTRACT NO. 136
600' SCALE MAP NO. ____ BLOCK NO. ____

STORM DRAINAGE IMPROVEMENTS
STRUCTURAL DETAILS
PARK DRIVE CULVERT AT SUCKER BRANCH
ELECTION DISTRICT 1 ELLICOTT CITY NO. 2

SCALE AS SHOWN

SHEET 6 OF 8

MARCH 20, 1987

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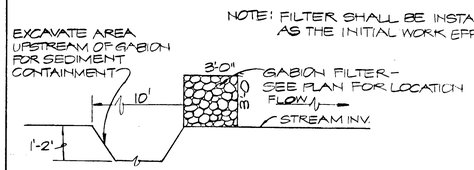

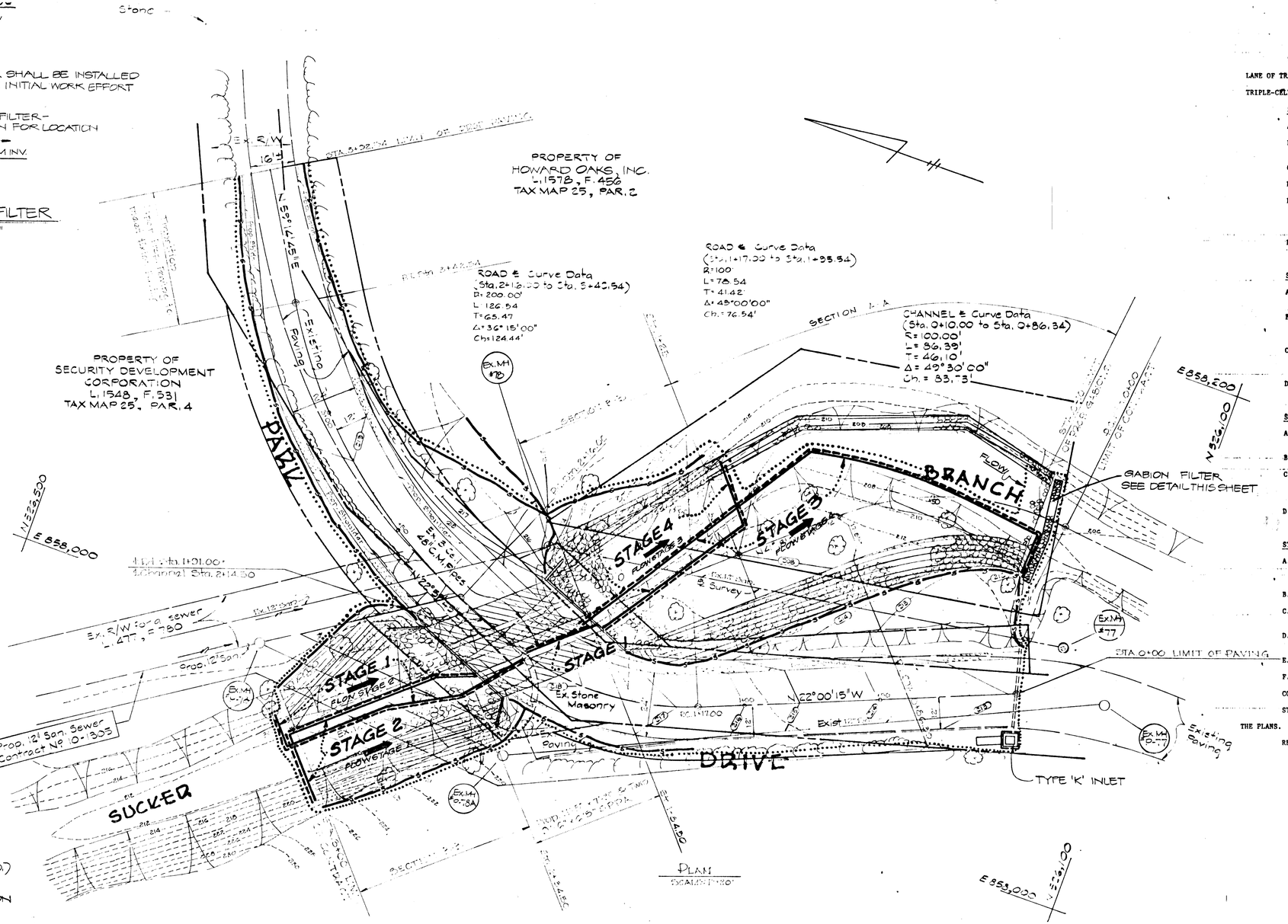

Cross cut (+) in frame of sanitary manhole.

Stone

NOTE: FILTER SHALL BE INSTALLED AS THE INITIAL WORK EFFORT

TEMPORARY GABION FILTER
SCALE: 3/8" = 1'-0"

LEGEND

- ——(201)—— PROPOSED CONTOUR
- - - - 201 - - - - EXISTING CONTOUR
- ——△—— TRAVERSE STATION
- ·············· LIMITS OF DISTURBANCE (L.O.D.)
- ——S—— SILT FENCE
- ━━━━ SAND BAG FLOW DIVERSION
- ▨ GABION FILTER
- ⧉ INLET PROTECTION

SUGGESTED CONSTRUCTION SEQUENCE

THE FOLLOWING SEQUENCE OF CONSTRUCTION HAS BEEN DESIGNED TO ALLOW ONE LANE OF TRAFFIC CROSSING ACCESS DURING THE REMOVAL, IN SEGMENTS, OF THE EXISTING TRIPLE-CELL STRUCTURE AND THE INSTALLATION OF THE PROPOSED TRIPLE-CELL PIPE ARCHES:

STAGE 1:

A. INSTALL SEDIMENT CONTROLS.

B. ERECT A TRAFFIC BARRIER TO PROVIDE ONE LANE OF TRAFFIC.

C. PLACE SANDBAG FLOW DIVERSION.

D. REMOVE UPSTREAM MASONRY HEADWALL.

E. EXCAVATE FOR AND INSTALL THE FIRST SEGMENT OF 2 OF THE PROPOSED TRIPLE-CELL PIPE ARCHES AND CONSTRUCT A SECTION OF THE PROPOSED UPSTREAM HEADWALL.

F. STABILIZE THE STREAMBED INLET AND EXCAVATED SIDE SLOPES WITH CLASS 2 STONE RIPRAP AND GABION SLOPE PROTECTION, RESPECTIVELY.

STAGE 2:

A. REARRANGE THE SAND BAGS TO RE-DIRECT THE STREAM FLOW THRU THE CENTER CELL OF THE INSTALLED S.P.P. ARCHES.

B. EXCAVATE FOR AND INSTALL THE THIRD CELL OF THE S.P.P. ARCH AND CONSTRUCT THE REMAINING PORTION OF THE UPSTREAM HEADWALL.

C. STABILIZE THE REMAINING SEGMENT OF THE STREAMBED INLET AND SIDE SLOPES WITH CLASS 2 RIPRAP AND GABION SLOPE PROTECTION, RESPECTIVELY.

D. BACKFILL TO GRADE, ADJUST THE TRAFFIC BARRIER, AND PLACE A TEMPORARY ROADWAY ACROSS THE UPSTREAM INSTALLED SEGMENT OF THE TRIPLE CELL STRUCTURE.

STAGE 3:

A. ARRANGE THE UPSTREAM AND DOWNSTREAM SAND BAGS TO DIRECT THE STREAM FLOW THRU A SINGLE CELL OF THE TRIPLE CELL CULVERT.

B. REMOVE THE DOWNSTREAM MASONRY HEADWALL.

C. EXCAVATE FOR AND INSTALL THE REMAINING SEGMENT OF EITHER ONE OR TWO CELLS, AS CONDITIONS PERMIT, OF THE PROPOSED TRIPLE CELL STRUCTURE AND CONSTRUCT A SECTION OF THE HEADWALL.

D. STABILIZE THE STREAMBED INLET AND STREAM SIDE SLOPES WITH RIPRAP AND GABION SLOPE PROTECTION, AS INDICATED ON THE PLANS.

STAGE 4:

A. ADJUST THE UPSTREAM AND DOWNSTREAM SAND BAGS TO DIRECT THE STREAM FLOW THRU THE COMPLETED CELL OF THE TRIPLE CELL CULVERT, SPPA ③

B. REMOVE THE REMAINING PORTION OF THE EXISTING PIPE STRUCTURE.

C. EXCAVATE FOR AND INSTALL THE REMAINING SEGMENT OF THE PROPOSED CULVERTS AND CONSTRUCT THE REMAINING SECTION OF THE HEADWALL.

D. STABILIZE THE STREAMBED INLET AND STREAM SIDE SLOPES WITH RIPRAP AND GABION SLOPE PROTECTION AS SHOWN ON THE PLANS.

E. COMPLETE BACKFILL TO GRADE.

F. REMOVE THE TRAFFIC BARRIERS.

CONSTRUCT THE REMAINING LENGTH OF THE ROADWAY.

STABILIZE ALL DISTURBED AREAS WITH SOD OR SEED AND MULCH AS INDICATED ON THE PLANS.

REMOVE SEDIMENT CONTROL DEVICES.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS ______ DATE ______ CHIEF, BUREAU OF ENGINEERING ______ DATE ______

CHIEF, DIVISION OF ROADS, BRIDGES AND STORM DRAINAGE ______ DATE ______

HICKS ENGINEERING COMPANY, INC.
· CIVIL ENGINEERS ·
200 EAST JOPPA ROAD
SUITE 402
TOWSON, MD 21204

DONALD EDWIN HICKS

Donald E. Hicks

DES:				
DRN:				
CHK: D.E.H.				
DATE:				
	BY	NO.	REVISION	DATE

ELLICOTT CITY
CAPITAL PROJECT D-1069
CONTRACT NO. 136

600' SCALE MAP NO. ______ BLOCK NO. ______

STORM DRAINAGE IMPROVEMENTS
SEDIMENT CONTROL PLAN
PARK DRIVE CULVERT AT SUCKER BRANCH

ELECTION DISTRICT: ELLICOTT CITY NO. 2

SCALE AS SHOWN

SHEET 7 OF 8

MARCH 20, 1987

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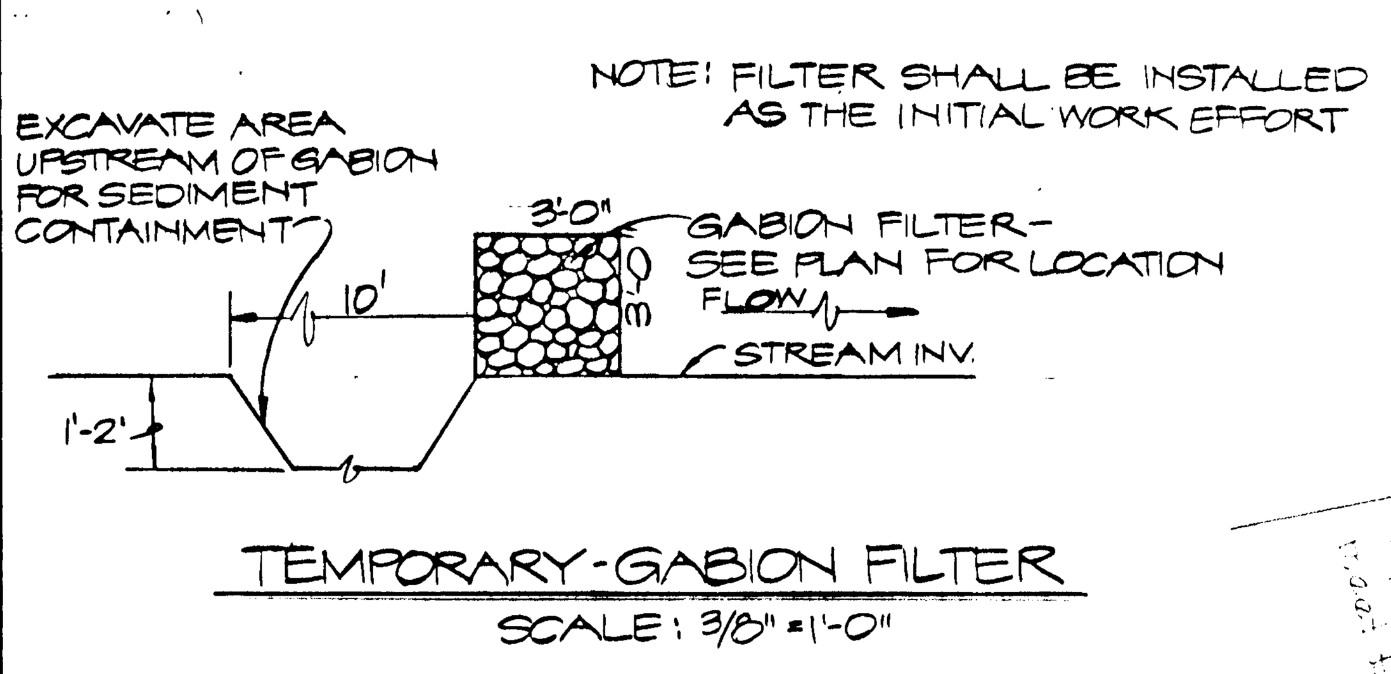

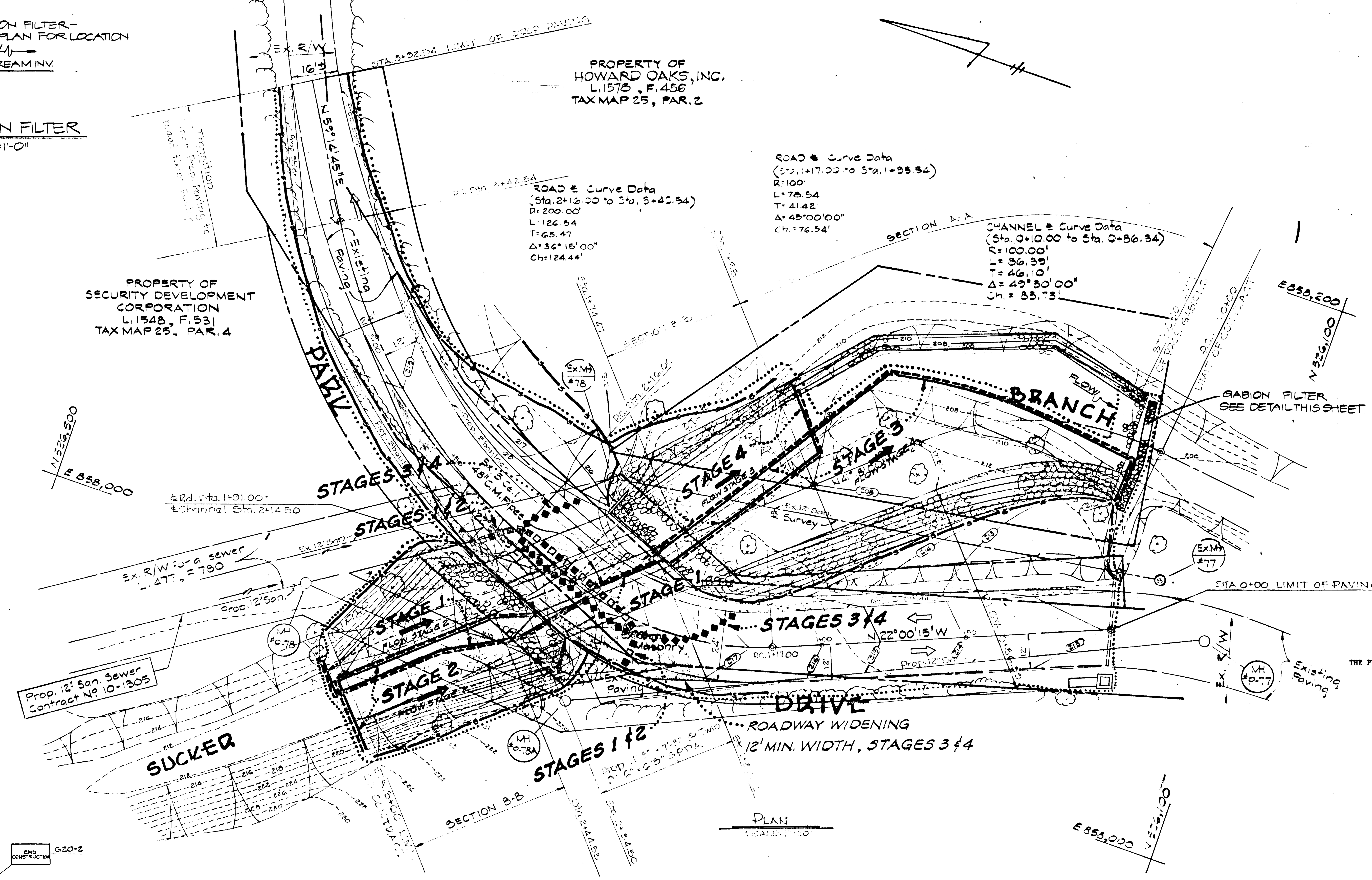

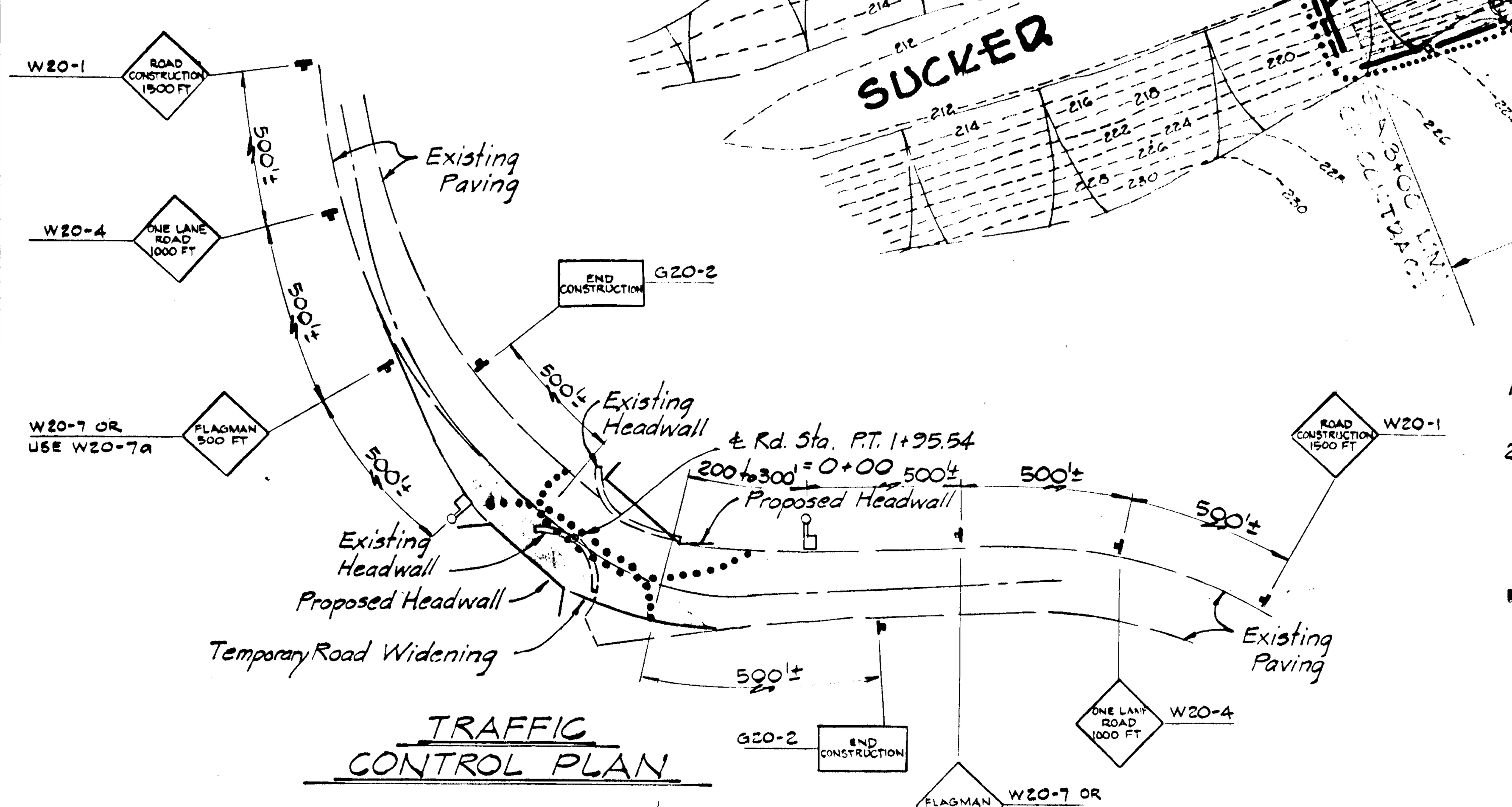

SUGGESTED CONSTRUCTION SEQUENCE

THE FOLLOWING SEQUENCE OF CONSTRUCTION HAS BEEN DESIGNED TO ALLOW ONE LANE OF TRAFFIC CROSSING ACCESS DURING THE REMOVAL, IN SEGMENTS, OF THE EXISTING TRIPLE-CELL STRUCTURE AND THE INSTALLATION OF THE PROPOSED TRIPLE-CELL PIPE ARCHES:

STAGE 1:

A. INSTALL SEDIMENT CONTROLS.

B. ERECT A TRAFFIC BARRIER TO PROVIDE ONE LANE OF TRAFFIC.

C. PLACE SANDBAG FLOW DIVERSION.

D. REMOVE UPSTREAM MASONRY HEADWALL.

E. EXCAVATE FOR AND INSTALL THE FIRST SEGMENT OF 2 OF THE PROPOSED TRIPLE-CELL PIPE ARCHES AND CONSTRUCT A SECTION OF THE PROPOSED UPSTREAM HEADWALL.

F. STABILIZE THE STREAMBED INLET AND EXCAVATED SIDE SLOPES WITH CLASS 2 STONE RIPRAP AND GABION SLOPE PROTECTION, RESPECTIVELY.

STAGE 2:

A. REARRANGE THE SAND BAGS TO RE-DIRECT THE STREAM FLOW THRU THE CENTER CELL OF THE INSTALLED S.P.P. ARCHES.

B. EXCAVATE FOR AND INSTALL THE THIRD CELL OF THE S.P.P. ARCH AND CONSTRUCT THE REMAINING PORTION OF THE UPSTREAM HEADWALL.

C. STABILIZE THE REMAINING SEGMENT OF THE STREAMBED INLET AND SIDE SLOPES WITH CLASS 2 RIPRAP AND GABION SLOPE PROTECTION, RESPECTIVELY.

D. BACKFILL TO GRADE, ADJUST THE TRAFFIC BARRIER, AND PLACE A TEMPORARY ROADWAY ACROSS THE UPSTREAM INSTALLED SEGMENT OF THE TRIPLE CELL STRUCTURE.

STAGE 3:

A. ARRANGE THE UPSTREAM AND DOWNSTREAM SAND BAGS TO DIRECT THE STREAM FLOW THRU A SINGLE CELL OF THE TRIPLE CELL CULVERT.

B. REMOVE THE DOWNSTREAM MASONRY HEADWALL.

C. EXCAVATE FOR AND INSTALL THE REMAINING SEGMENT OF EITHER ONE OR TWO CELLS, AS CONDITIONS PERMIT, OF THE PROPOSED TRIPLE CELL STRUCTURE AND CONSTRUCT A SECTION OF THE HEADWALL.

D. STABILIZE THE STREAMBED INLET AND STREAM SIDE SLOPES WITH RIPRAP AND GABION SLOPE PROTECTION, AS INDICATED ON THE PLANS.

STAGE 4:

A. ADJUST THE UPSTREAM AND DOWNSTREAM SAND BAGS TO DIRECT THE STREAM FLOW THRU THE COMPLETED CELL OF THE TRIPLE CELL CULVERT.

B. REMOVE THE REMAINING PORTION OF THE EXISTING PIPE STRUCTURE.

C. EXCAVATE FOR AND INSTALL THE REMAINING SEGMENT OF THE PROPOSED CULVERTS AND CONSTRUCT THE REMAINING SECTION OF THE HEADWALL.

D. STABILIZE THE STREAMBED INLET AND STREAM SIDE SLOPES WITH RIP-RAP AND GABION SLOPE PROTECTION AS SHOWN ON THE PLANS.

E. COMPLETE BACKFILL TO GRADE.

F. REMOVE THE TRAFFIC BARRIERS.

CONSTRUCT THE REMAINING LENGTH OF THE ROADWAY.

STABILIZE ALL DISTURBED AREAS WITH SOD OR SEED AND MULCH AS INDICATED ON THE PLANS.

REMOVE SEDIMENT CONTROL DEVICES.

GENERAL NOTES

1. *Warning lights shall be used to mark channelizing devices at night, as needed.*
2. *Channelizing devices are to be extended to a point where they are visible to approaching traffic.*

KEY

- CHANNELIZING DEVICES (Barriers)
- SIGN SUPPORT / FACE OF SIGN
- DIRECTION OF VEHICULAR TRAFFIC
- DIRECTION OF STREAM FLOW

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND DIRECTOR OF PUBLIC WORKS DATE / CHIEF, BUREAU OF ENGINEERING DATE CHIEF, DIVISION OF ROADS, BRIDGES AND STORM DRAINAGE DATE	HICKS ENGINEERING COMPANY, INC. · CIVIL ENGINEERS · 200 EAST JOPPA ROAD SUITE 402 TOWSON, MD 21204	DES: DRN: CHK: D.E.H. DATE: BY / NO. / REVISION / DATE	ELLICOTT CITY CAPITAL PROJECT D-1069 CONTRACT NO. 136 600' SCALE MAP NO. ______ BLOCK NO. ______
STORM DRAINAGE IMPROVEMENTS SUGGESTED PLAN FOR MAINTENANCE OF TRAFFIC PARK DRIVE CULVERT AT SUCKER BRANCH ELECTION DISTRICT: ELLICOTT CITY NO. 2	SCALE AS SHOWN	SHEET 8 of 8	

MARCH 20, 1987