

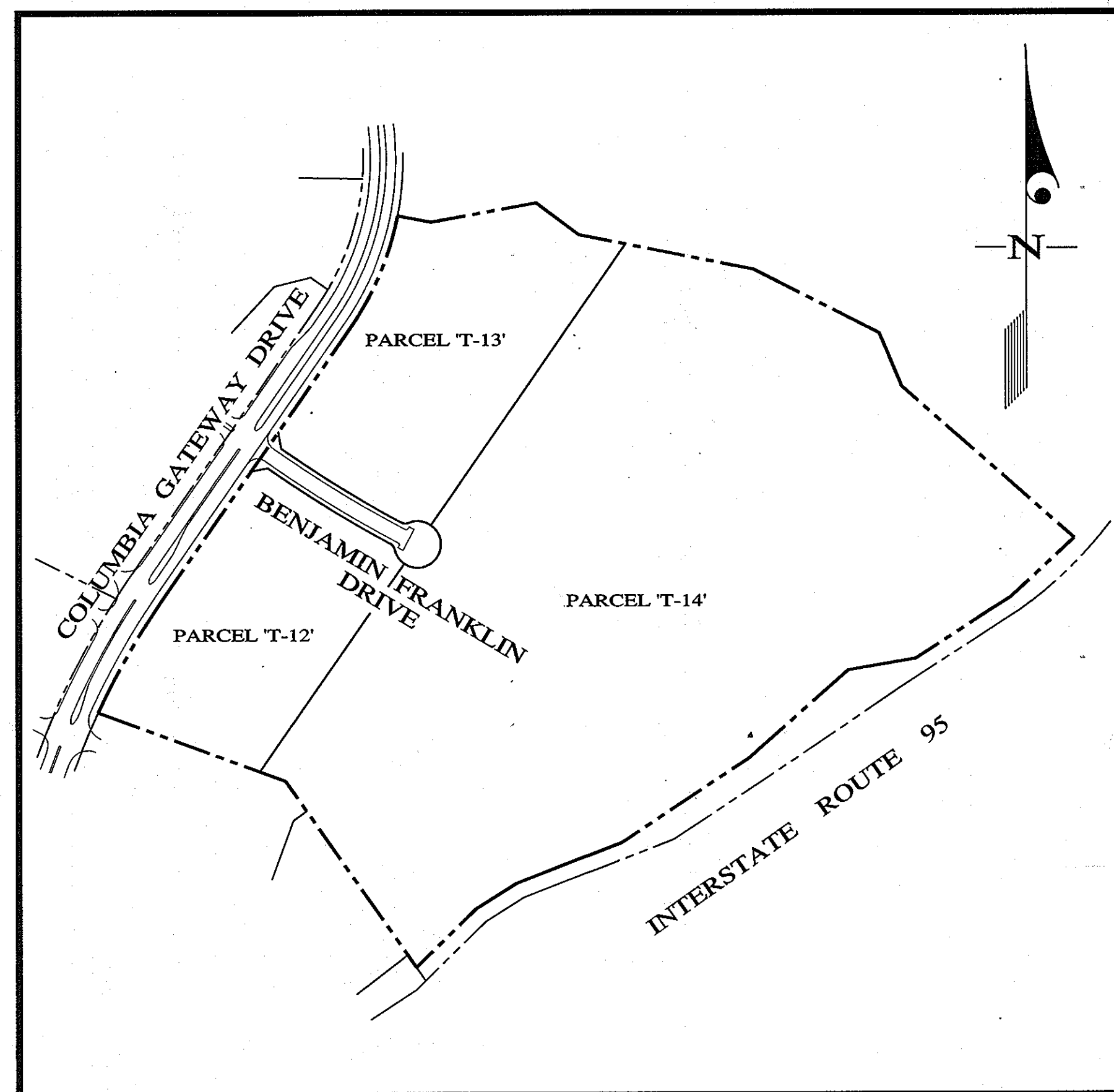
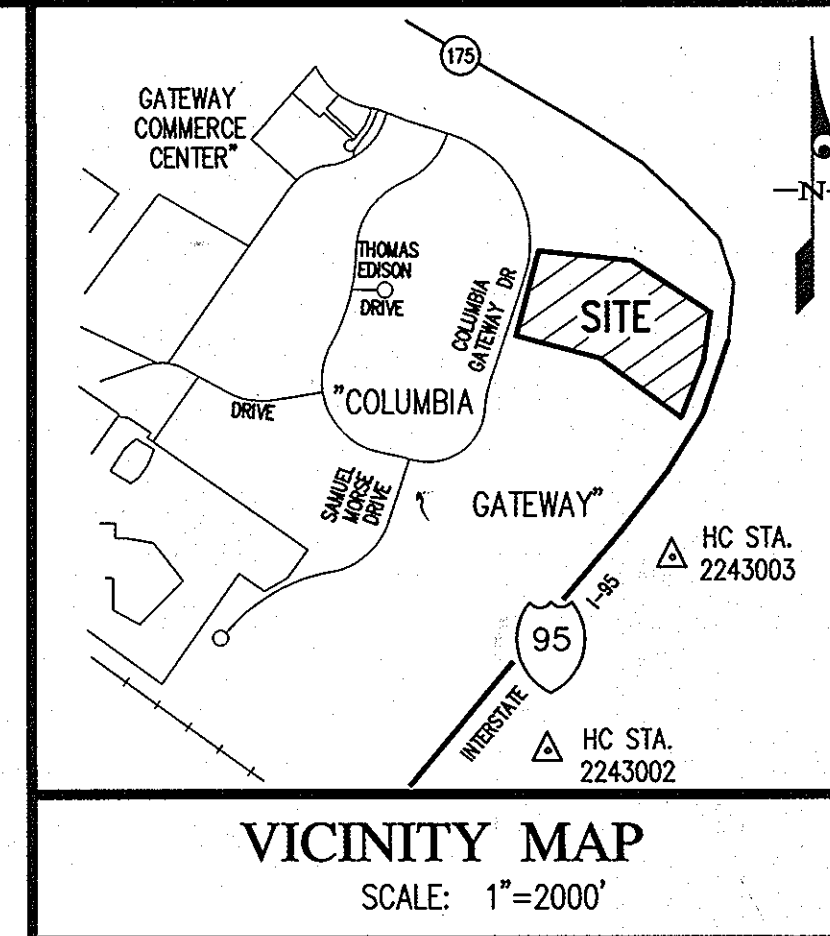
GENERAL NOTES

- The project is in conformance with the latest Howard County Standards unless waivers have been approved.
- Project background:
Location: Columbia Gateway Drive, 1500'± North of Albert Einstein Drive.
Tax Map: 43 Parcels: p/o 671
Zoning: M-1
Election District: 6
Gross Area of Tract: 58.4 Ac.
Preliminary Plan File, Number and Approval Date:
Waiver of preliminary & sketch plan under WP-00-98
- See County File Nos.: P-86-22, S-84-44, S-85-28, WP-88-47, VP-84-150, VP-85-34, VP-85-35, VP-86-61, VP-86-73, VP-86-119, F-86-127, F-86-182, F-87-63, F-87-123, F-99-81 & WP-00-98
- Topography shown has a 2' contour interval and was determined by "Maps Inc.", and a field survey performed by Gutschick, Little & Weber, P.A.
- Water and Sewer for this project is public and will be constructed under Contract No. 24-3814-D. The system is within the Little Patuxent Drainage Area.
- Horizontal and Vertical Control based on NAD '27 Maryland Coordinate System as projected by Howard County Geodetic Control Stations 2243002 and 2243003.
- Existing utilities were located by field survey and available records.
- Information concerning underground utilities was obtained from best available records. The contractor must determine the exact location and elevation of the mains by digging test pits by hand at all crossings well in advance of construction. Any discrepancies must be communicated to the engineer at once.
- All construction shall be in accordance with the latest standards and specifications of Howard County and MSHA standards and specifications, if applicable.
- The contractor shall notify the Department of Public Works/Bureau of Construction Inspection at (410) 313-1880 at least five (5) working days prior to the start of work.
- The contractor shall notify the following utilities or agencies at least five (5) working days before starting work shown on the plans.

Miss Utility	1-800-257-7777
Bell Atlantic Company	725-9976
Howard County Bureau of Utilities	313-4900
AT&T Cable Location Division	393-3553
Baltimore Gas & Electric Co.	850-4620 & 787-9068
State Highway Administration	531-5533
- Types of storm drains refer to the standard details of Howard County and MSHA, unless otherwise noted.
- Trench compaction for storm drains within roads and street right-of-ways limits shall be in accordance with "Howard County Design Manual", Vol. IV, Standard G-2.01.
- Concrete sidewalk ramps shall be provided at all intersections and as indicated on the plans. The ramps shall conform to the Americans With Disabilities Act (ADA) 1992, and shall be constructed in accordance with "Howard County Design Manual", Vol. IV.
- Sediment control shall be provided in accordance with "1994 Maryland Standards and Specifications For Soils Erosion and Sediment Control".
- Street trees locations shown are tentative and are to be used for bond purposes only. The final location and variety of trees may vary to accommodate field conditions and builder's landscape program. Financial surety for the required trees in the amount of _____ shall be part of the Developers Agreement.
- See sheet G of I7 for street tree detail.
- Traffic control devices, markings, and signing shall be in accordance with the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD).
- Street trees shall be planted a minimum of five (5) feet from storm drain, waterline or sewer pipe manholes; also a minimum of twenty (20) feet from street lights.
- Light poles and fixtures for street lights shall be in accordance with the latest Howard County Design Manual, Volume III, Roads and Bridges.
- Stormwater Management quantity for the improvements under this subdivision will be provided for by the construction of an on-site SWM pond.
- All pipe elevations shown are inverts.
- The floodplain study was prepared by Wallace, Montgomery & Associates.
- There are no non-tidal wetlands on this site.
- Provide temporary brick bulkheads for all storm drain stubs.
- Geotechnical report prepared by Hillis-Carnes, Inc.
- Minimum building restriction from property lines and the right-of-way of a public road will be in accordance with the Howard County Zoning Ordinance.
- See Soils Map # 30.
- Slopes of 25% or greater exist on this site.
- Sag and crest vertical curves were designed in accordance with "Howard County Design Manual", Vol. III.

MDE TRACKING No. = 200160700

COLUMBIA GATEWAY PARCELS 'T-12' THRU 'T-15' ROAD CONSTRUCTION PLAN HOWARD COUNTY, MARYLAND



KEY MAP

SCALE: 1" = 300'

DRAWING LIST	
NO.	DESCRIPTION
1	Cover Sheet
2	Map Grading Plan
3	Road Construction Plan
4	Grading and storm drain plans
5	Grading, storm drain, SWM plans
6	Typical Details
7	Storm Drain Profiles
8	Storm Drain Details
9	Stormwater Management Details
10	Stormwater Management Details
11	Stormwater Management Notes
12	Sediment Control Plan
13	Sediment Control Plan
14	Sediment Control Plan
15	Sediment Control Notes & Details

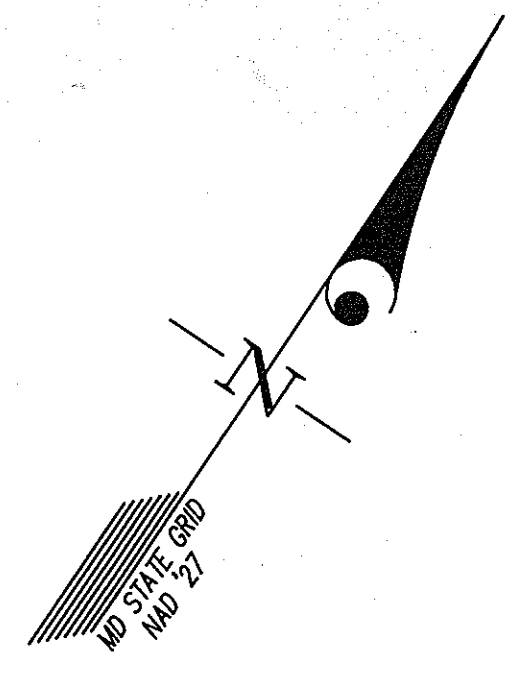
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Richard M. Casale 10-16-00
 Chief, Bureau of Highways HCS Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Cindy Hamilton 11/20/00
 Chief, Division of Land Development Date

Michael M. ... 11/7/00
 Chief, Development Engineering Division MK Date



GLW GUTSCHICK LITTLE & WEBER, P.A. CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS 3909 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK BURTONSVILLE, MARYLAND 20866 TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186 \DRAWINGS\98065\DESIGN\9865RPL.DWG DES. GPU DRN. CAD CHK. TWR	PREPARED FOR: THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION 10275 LITTLE PATUXENT PARKWAY COLUMBIA, MD. 21044 PH: 410-992-6027 ATTN: MR. AL EDWARDS	COVER SHEET COLUMBIA GATEWAY PARCELS 'T-12' THRU 'T-15'			SCALE AS SHOWN	ZONING M-1	G. L. W. FILE No. 98065
		DATE JANUARY, 2000	TAX MAP No. 43 - 2	SHEET 1 OF 15			



E 899,250 N 489,500

E 899,250 N 489,500

E 899,250 N 489,500

COLUMBIA GATEWAY
PARCEL 'S-24'
PLAT No. 13004
ZONED: M-1

COLUMBIA GATEWAY
PARCEL 'S-23'
PLAT No. 13005
ZONED: M-1

COLUMBIA GATEWAY
PARCEL 'S-21'
PLAT No. 12882
ZONED: M-1

COLUMBIA GATEWAY
PARCEL 'T-10'
PLAT No.
ZONED: M-1

COLUMBIA GATEWAY
PARCEL 'T-1'
PLAT No. 13463
ZONED: M-1

COLUMBIA GATEWAY
PARCEL 'T-2'
PLAT No. 13463
ZONED: M-1

COLUMBIA GATEWAY
PARCEL 'T-5'
PLAT No. 13463
ZONED: M-1

COLUMBIA GATEWAY
PARCEL 'T-10'
PLAT No.
ZONED: M-1

COLUMBIA GATEWAY DRIVE
(100' PUBLIC R/W)
PLAT Nos. 6770 & 7540

BURNING WOOD DRIVE

PARCEL 'T-12'

PARCEL 'T-13'

PARCEL 'T-14'

PARCEL 'T-16'

INTERSTATE ROUTE 95
(VARIABLE WIDTH PUBLIC R/W)
M.S.H.A. R/W PLAT Nos. 34745 & 34746

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Richard M. Canale 10-16-00
Chief, Bureau of Highways Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Christy Hamble 11/20/00
Chief, Division of Land Development Date
William M. ... 11/17/00
Chief, Development Engineering Division MK Date



GLW GUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

PREPARED FOR:
THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
10275 LITTLE PATENT PARKWAY
COLUMBIA, MD 21044
PH: 410-992-6027
ATTN: MR. AL EDWARDS

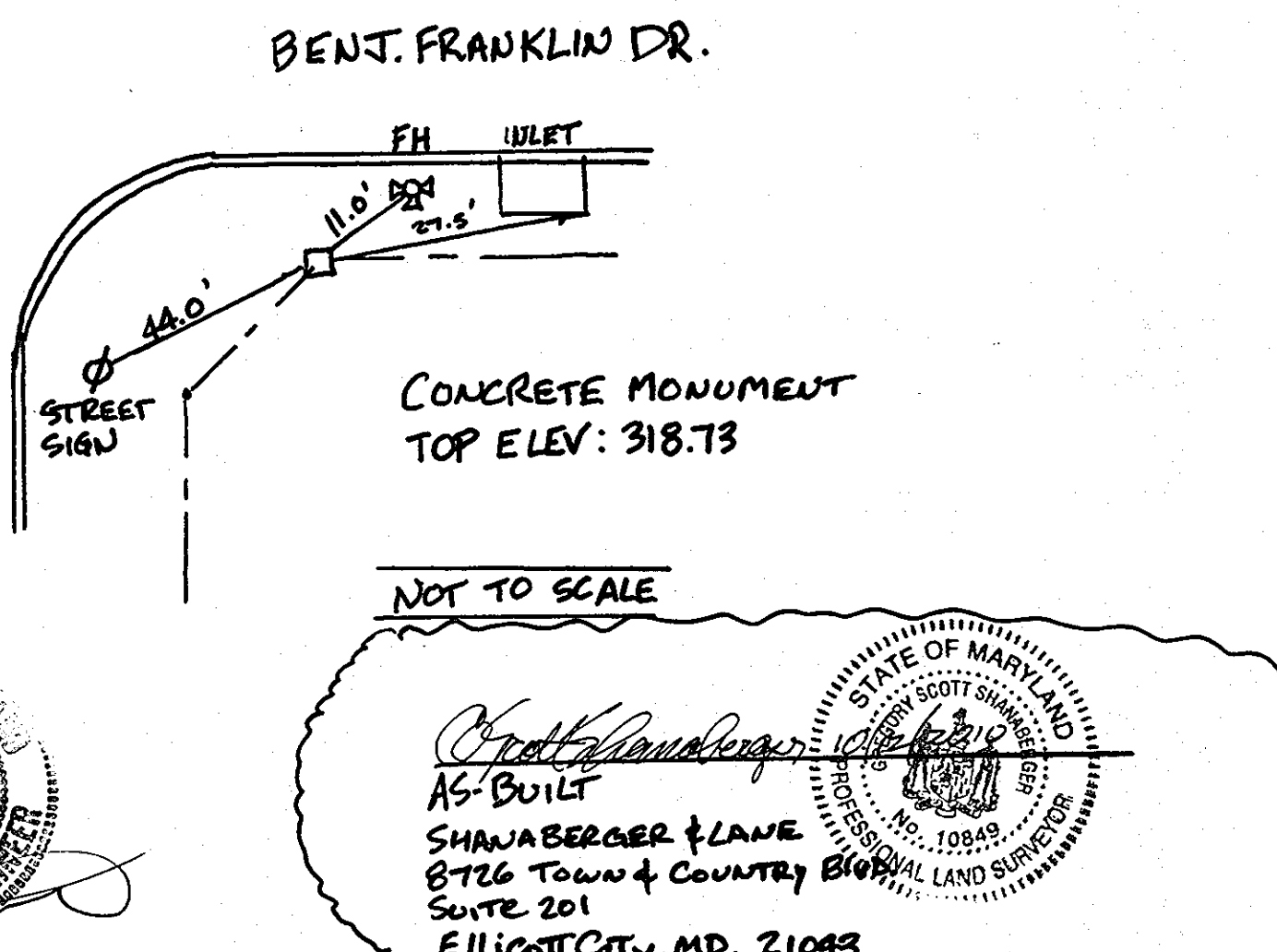
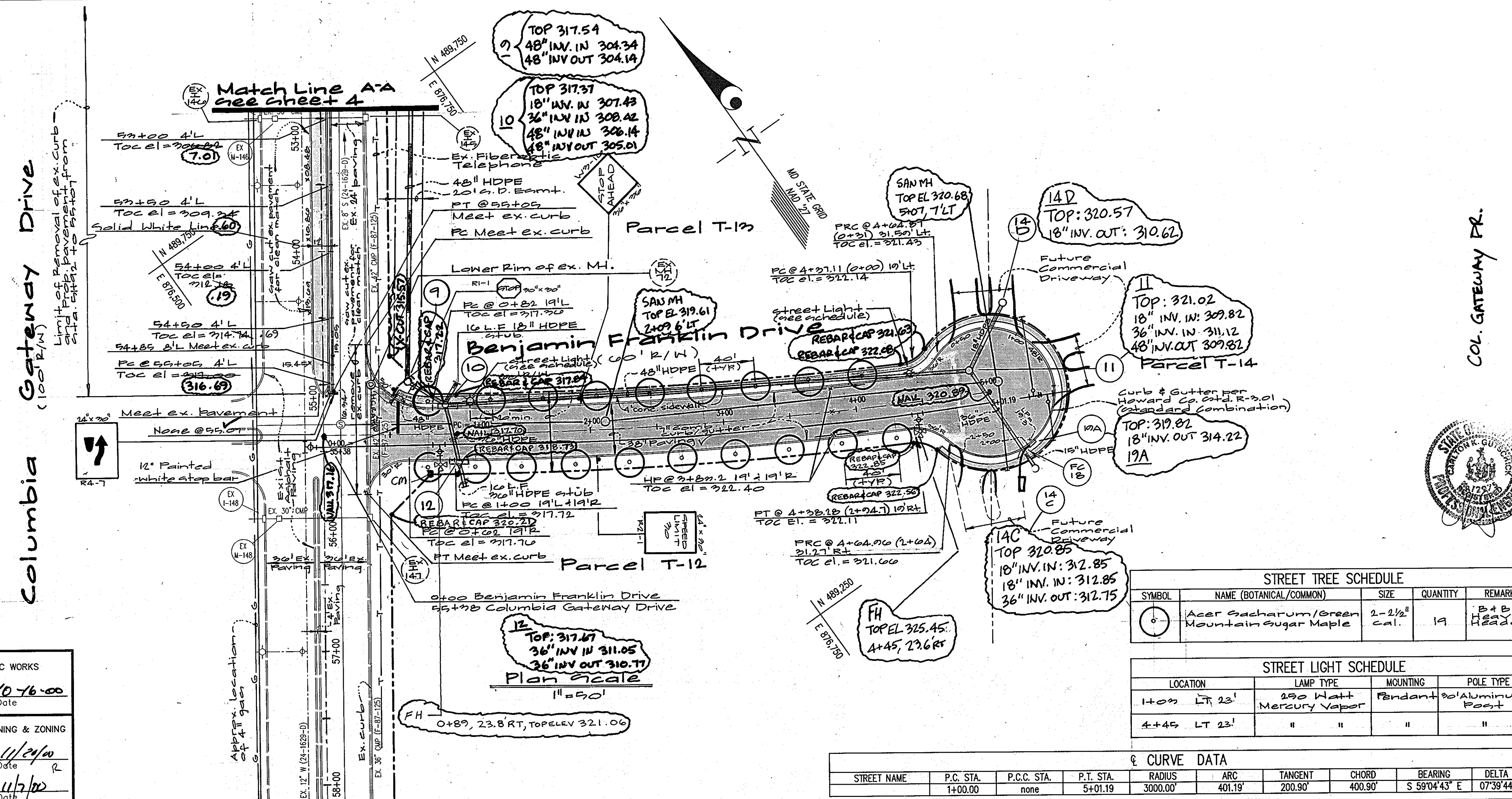
MASS GRADING PLAN
COLUMBIA GATEWAY
PARCELS 'T-12' THRU 'T-15'

SCALE	ZONING	G. L. W. FILE No.
1"=100'	M-1	98065
DATE	TAX MAP - GRID	SHEET
SEPTEMBER 2000	43 - 2	2 OF 15

DATE	REVISION	BY	APP'R.

GULFORD ELECTION DISTRICT No. 6

HOWARD COUNTY, MARYLAND



STREET TREE SCHEDULE

SYMBOL	NAME (BOTANICAL/COMMON)	SIZE	QUANTITY	REMARKS
○	Acer Saccharum / Green Mountain Sugar Maple	2-2 1/2" Cal.	19	B+B HEADZ

STREET LIGHT SCHEDULE

LOCATION	LAMP TYPE	MOUNTING	POLE TYPE
1+00 LTR 23'	250 Watt Mercury Vapor	Pendant	2" Aluminum Post
4+45 LTR 23'	"	"	"

CURVE DATA

STREET NAME	P.C. STA.	P.C.C. STA.	P.T. STA.	RADIUS	ARC	TANGENT	CHORD	BEARING	DELTA
	1+00.00	none	5+01.19	3000.00'	401.19'	200.90'	400.90'	S 59°04'43" E	07°39'44"

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Richard M. Daniels 10/16/00
 Chief, Bureau of Highways MS Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Linda Harvatta 11/21/00
 Chief, Division of Land Development Date

W. D. ... 11/7/00
 Chief, Development Engineering Division MK Date

GLW GUTSCHICK LITTLE & WEBER, P.A.
 CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
 3909 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
 BURTONSVILLE, MARYLAND 20866
 TEL: 301-421-4024 BAL: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

DESIGNED Road Construction Plan
Columbia Gateway
 Parcels T-12 thru T-15

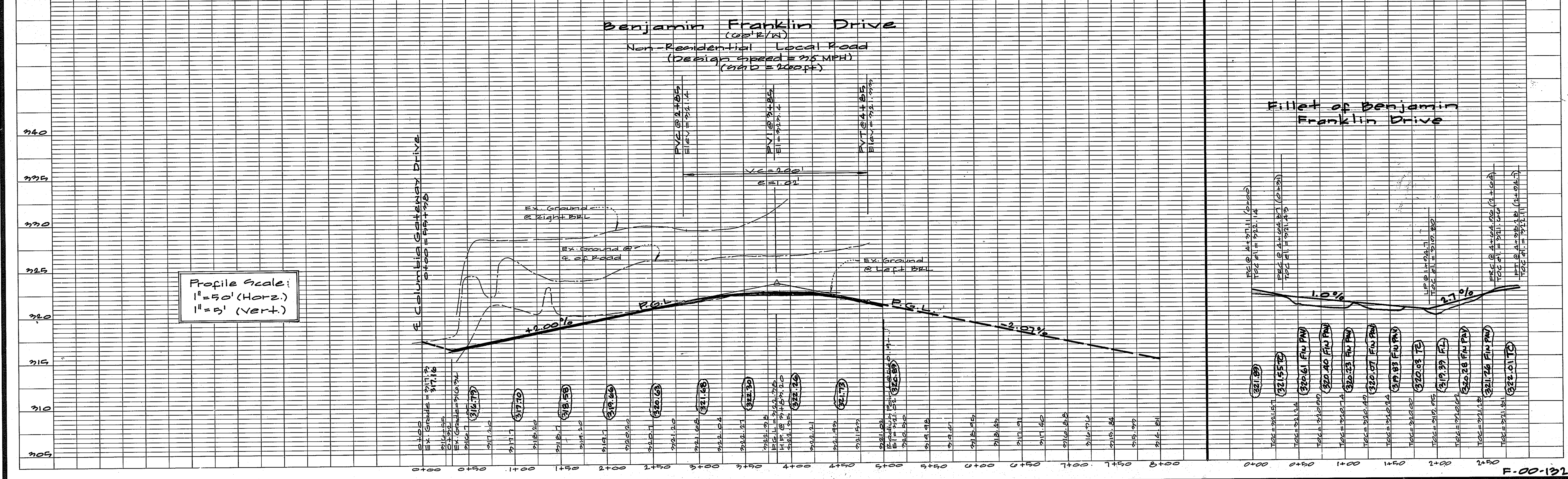
DRAWN SCALE 1"=50'

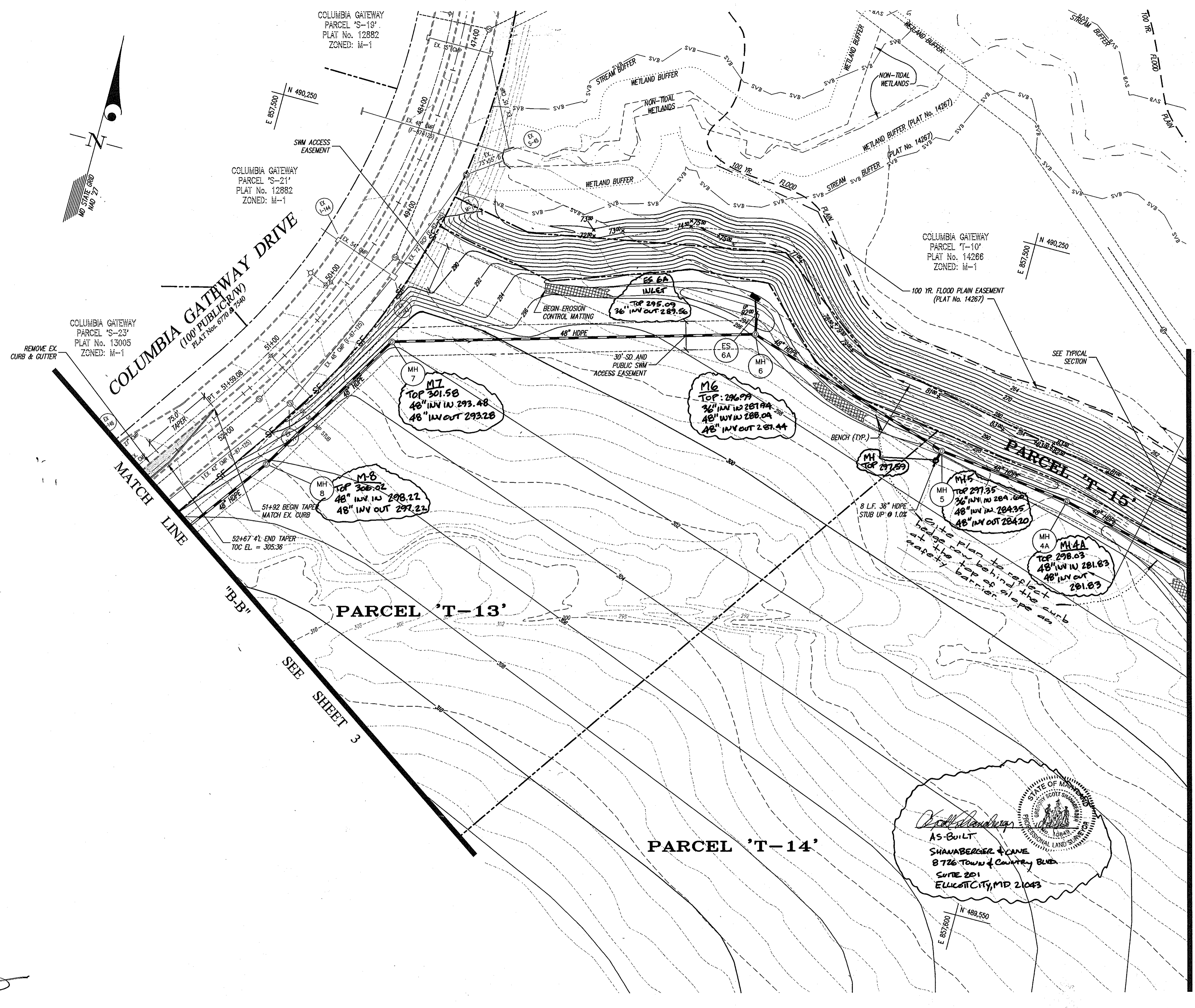
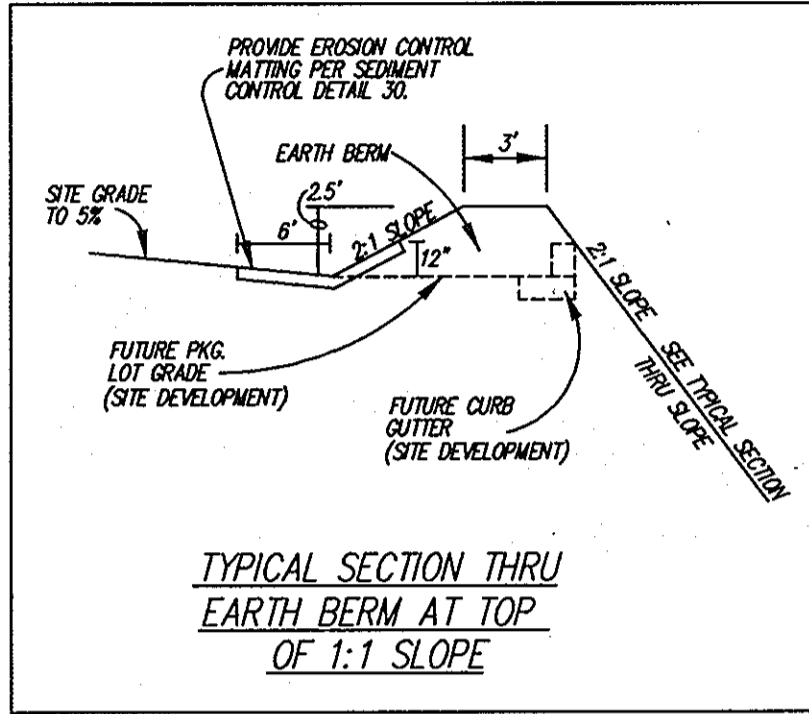
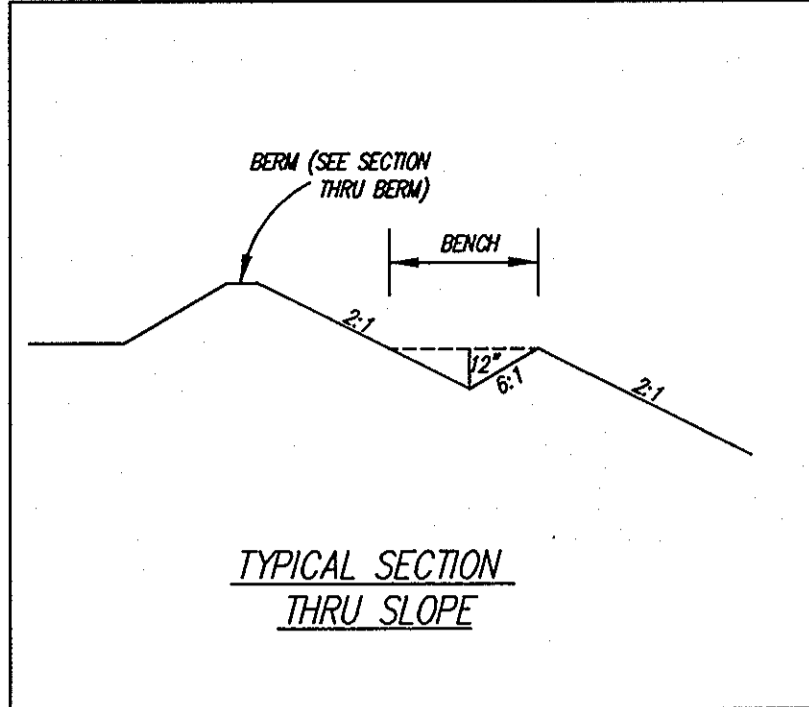
CHECKED Guilford Election District No. 6
 Howard County, Maryland
 ZONING 7 of 15

DATE Jan. 2000
 REV 12-11-06

OWNER The Howard Research & Development Corp.
 10275 Little Patuxent Parkway
 Columbia, Md 21044
 Attn: Mr. Al Edwards
 Tel: (410) 992-0027

JOB No. 96005





APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Andrew M. Dangle 10-16-00
 Chief, Bureau of Highways Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Cindy Hamada 11/21/00
 Chief, Division of Land Development Date

Mark 11/7/00
 Chief, Development Engineering Division Date



GLW GUTSCHICK LITTLE & WEBER, P.A.
 CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
 3909 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
 BURTONSVILLE, MARYLAND 20866
 TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-993-2524 FAX: 301-421-4188

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MD. 21044
 PH: 410-992-6027
 ATTN: MR. AL EDWARDS

GRADING & STORM DRAIN PLAN
COLUMBIA GATEWAY
PARCELS 'T-12' THRU 'T-15'
 PLAT No.

GUILFORD ELECTION DISTRICT No. 6

HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=50'	M-1	98065
DATE	TAX MAP - GRID	SHEET
SEPTEMBER 2000	43 - 2	4 OF 15

MATCH LINE "A-A" SEE SHEET 5

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.

J.C. Wardfield / *4/13/00*
 Natural Resources Conservation Service / Date

These Plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.

[Signature] / *4/13/00*
 Howard Soil Conservation District / Date

DEVELOPER'S/BUILDER'S CERTIFICATE

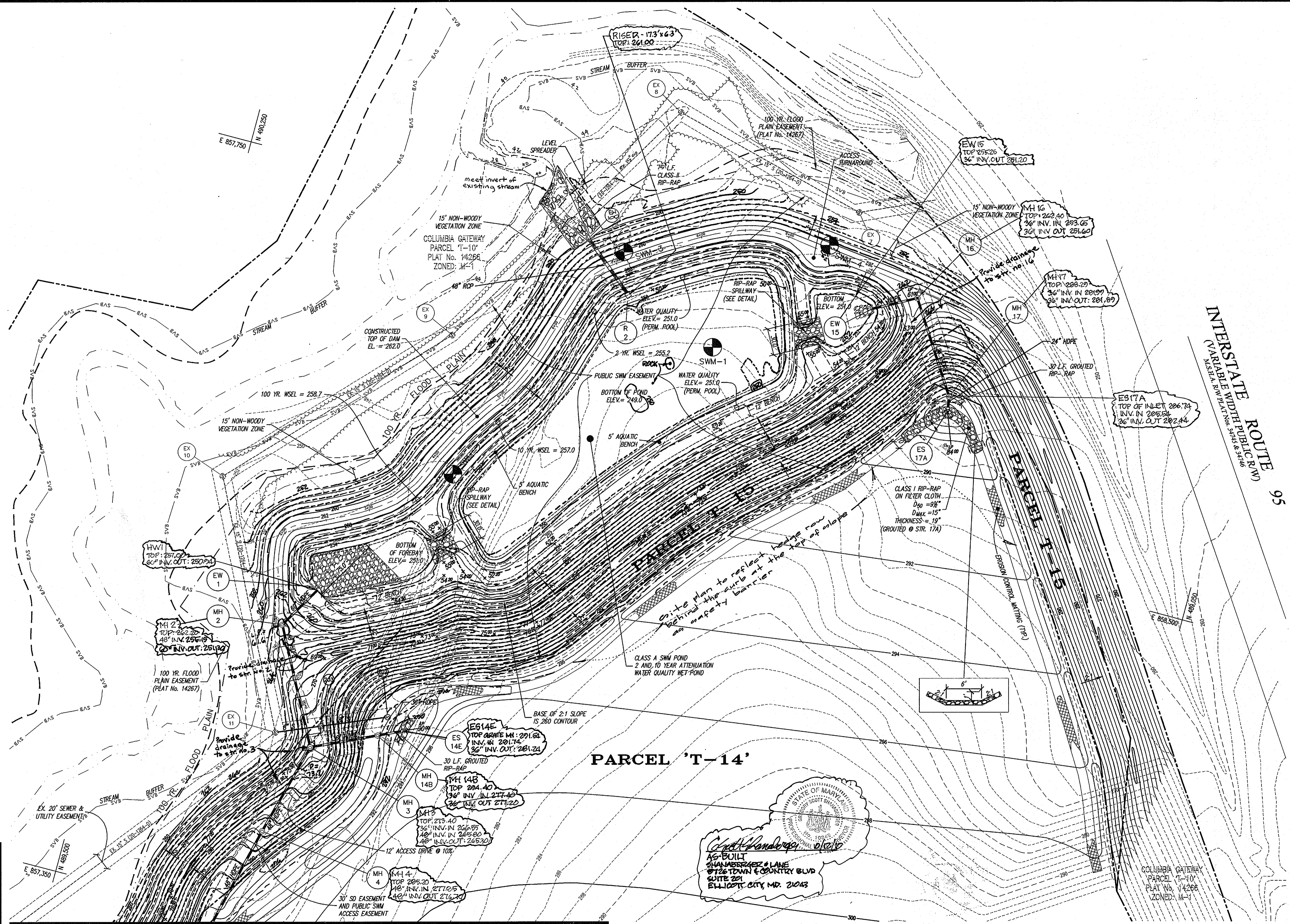
"I/We certify that all development and/or construction will be done according to these plans, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Maryland Department of the Environment Approved Training Program for the Control of Sediment 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 Soil Conservation District.

[Signature] / *3-8-00*
 Signature of Developer/Builder / Date

ENGINEER'S CERTIFICATE

"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] / *1-19-00*
 Date



INTERSTATE ROUTE 95
 VARIABLE WIDTH PUBLIC ROW
 MASTER PLAN PLATS 5975 & 5976

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature] / *10-16-00*
 Chief, Bureau of Highways / Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
[Signature] / *11/24/00*
 Chief, Division of Land Development / Date

[Signature] / *11/7/00*
 Chief, Development Engineering Division MKK / Date

MATCH LINE "A-A" SEE PAGE 4

GLW GUTSCHICK LITTLE & WEBER, P.A.
 CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
 3909 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
 BURTONSVILLE, MARYLAND 20866
 TEL: 301-421-4024 FAX: 410-880-1820 DC/VA: 301-988-2524 FAX: 301-421-4186

PREPARED FOR:
 THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MD. 21044
 PH: 410-992-6027
 ATTN: MR. AL EDWARDS

GRADING, STORM WATER MANAGEMENT & STORM DRAIN PLAN
 COLUMBIA GATEWAY
 PARCELS 'T-12' THRU 'T-15'
 PLAT No.

SCALE	ZONING	G. L. W. FILE No.
1"=50'	M-1	98065
DATE	TAX MAP - GRID	SHEET
SEPTEMBER 2000	43 - 2	5 OF 15

\\DRAWINGS\98065\DESIGN\9865SP3.DWG DES. TMR DRN. MKK/CHK

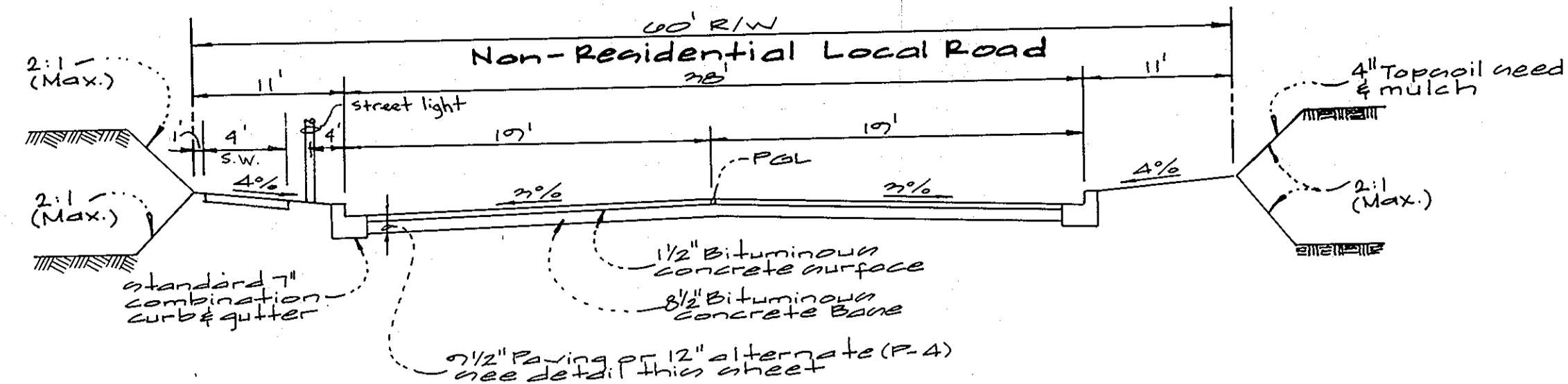
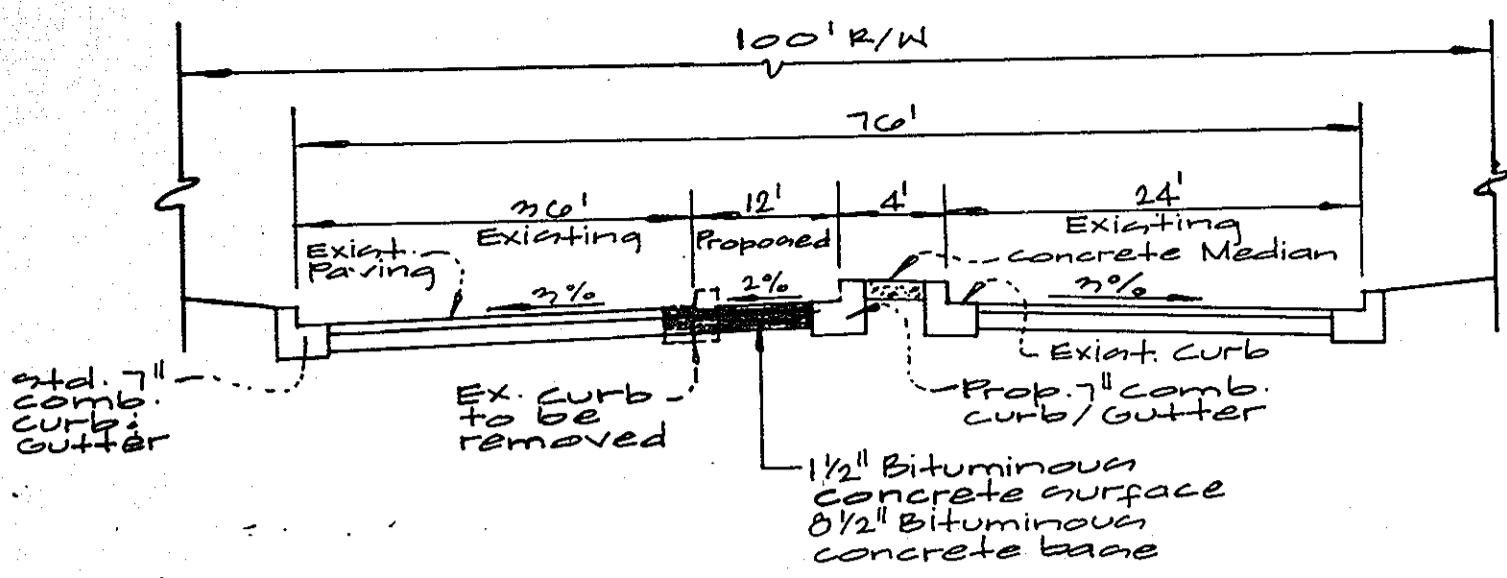
DATE	REVISION	BY	APPR.

GUILFORD ELECTION DISTRICT No. 6

HOWARD COUNTY, MARYLAND

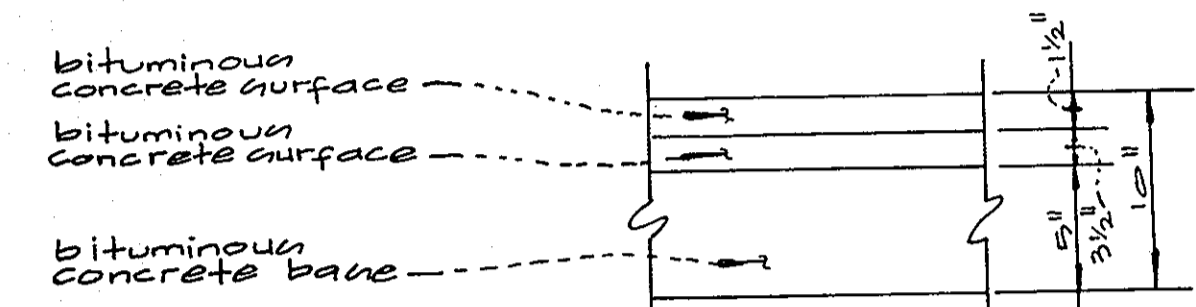
Design Speed 35 mph

Design Speed 35 mph

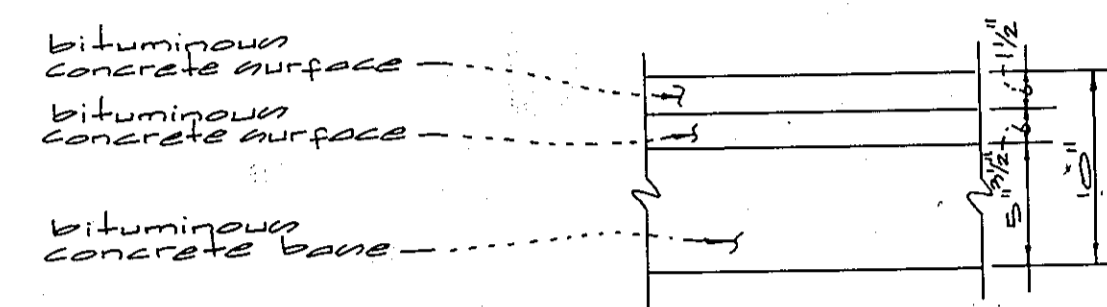


Typical section - Benjamin Franklin Drive
no scale

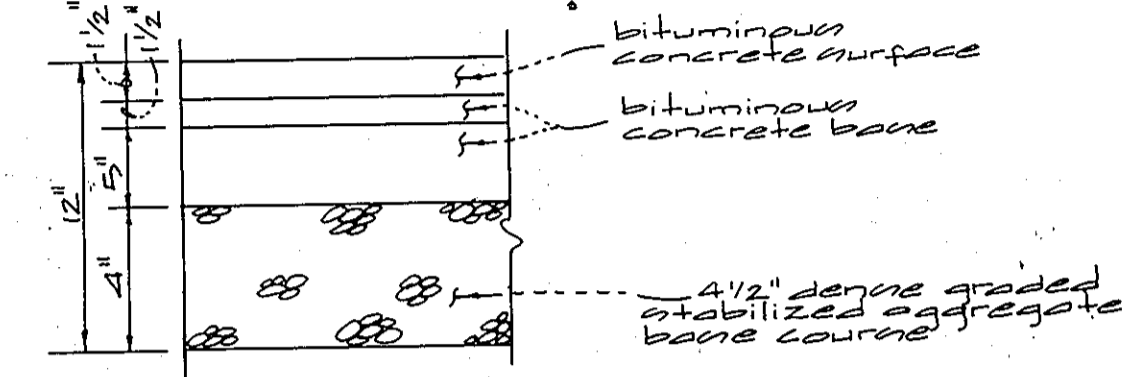
Typical section - Columbia Gateway Drive
Left Turn Lane
N.T.S.



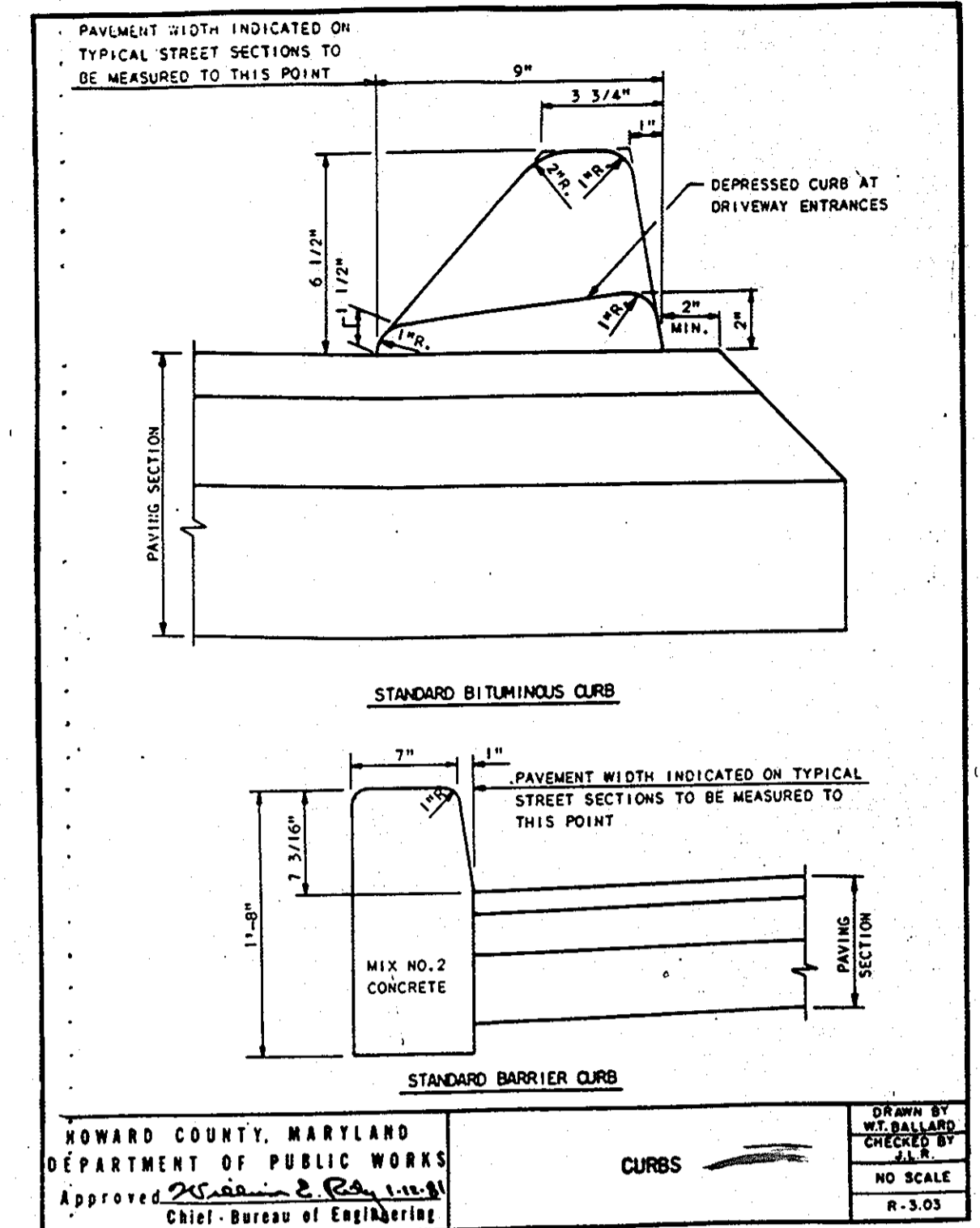
P-4 Full Depth Bituminous Concrete
N.T.S.



P-4 Full Depth Bituminous Concrete
no scale

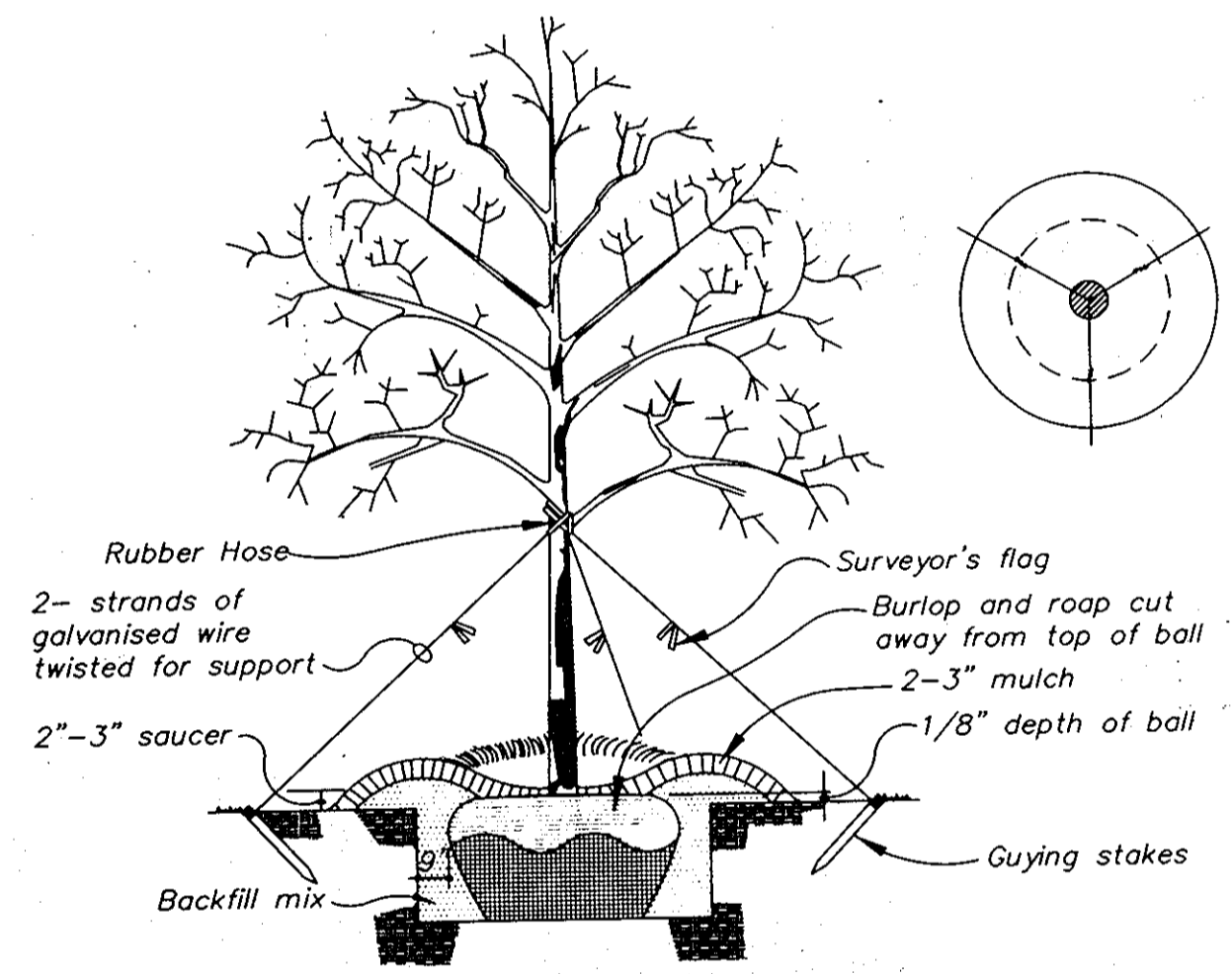


P-4 Granular Base (Alternate)
no scale

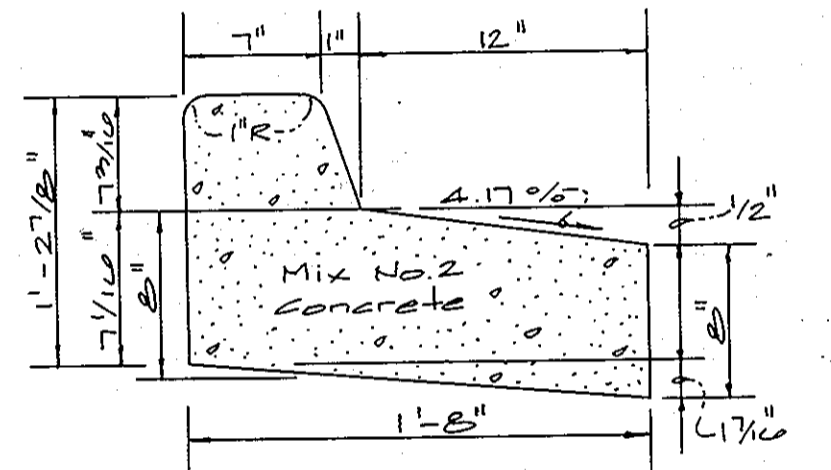


HOWARD COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS
Approved: *[Signature]*
Chief, Bureau of Engineering

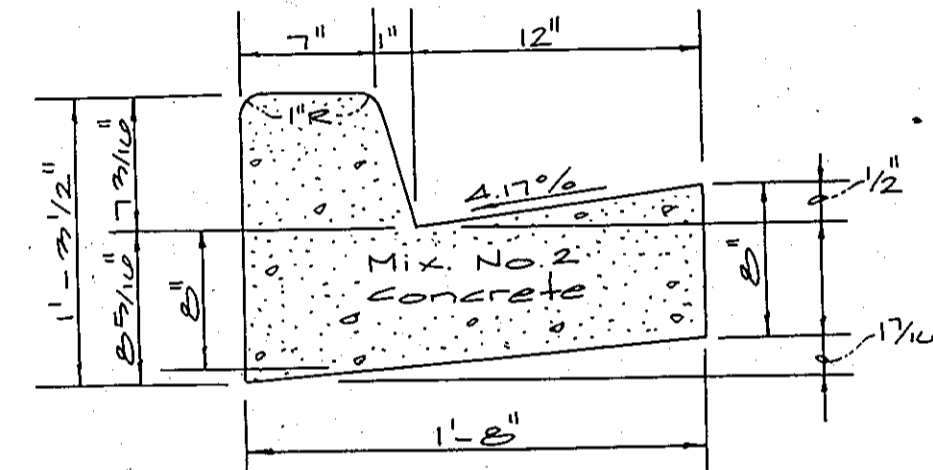
DRAWN BY: W.T. BALLARD
CHECKED BY: J.L. B...
NO SCALE
R-5.03



Typical Tree Guying Detail
N.T.S.



Reverse 7\"/>



Standard 7\"/>

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature] 10/16/00
Chief, Bureau of Highways Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
[Signature] 11/24/00
Chief, Division of Land Development Date

[Signature] 11/7/00
Chief, Development Engineering Division MK Date



GLW GUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

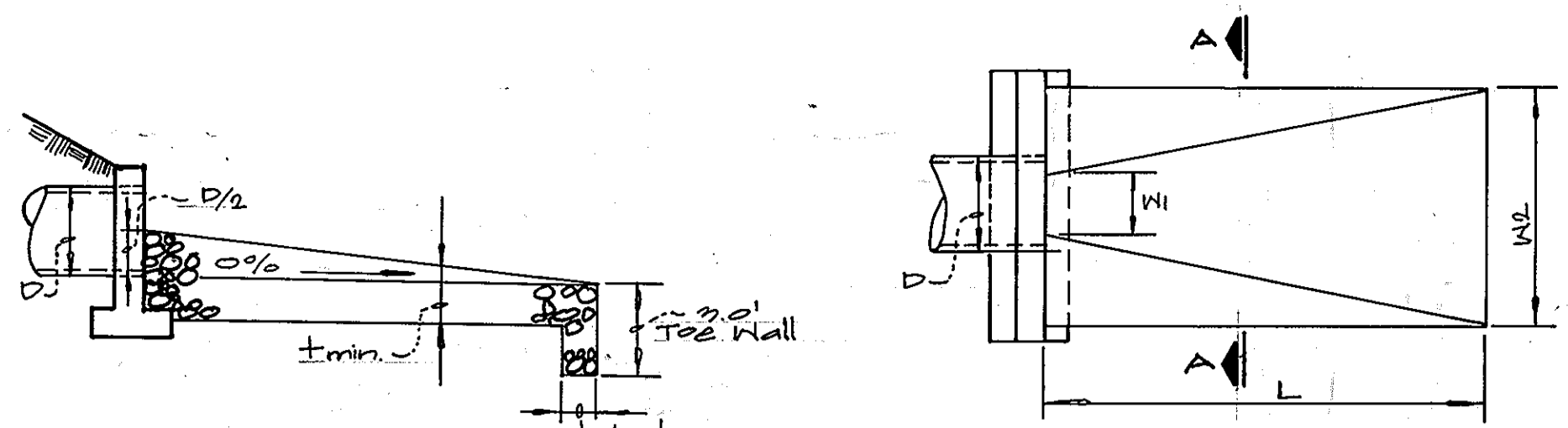
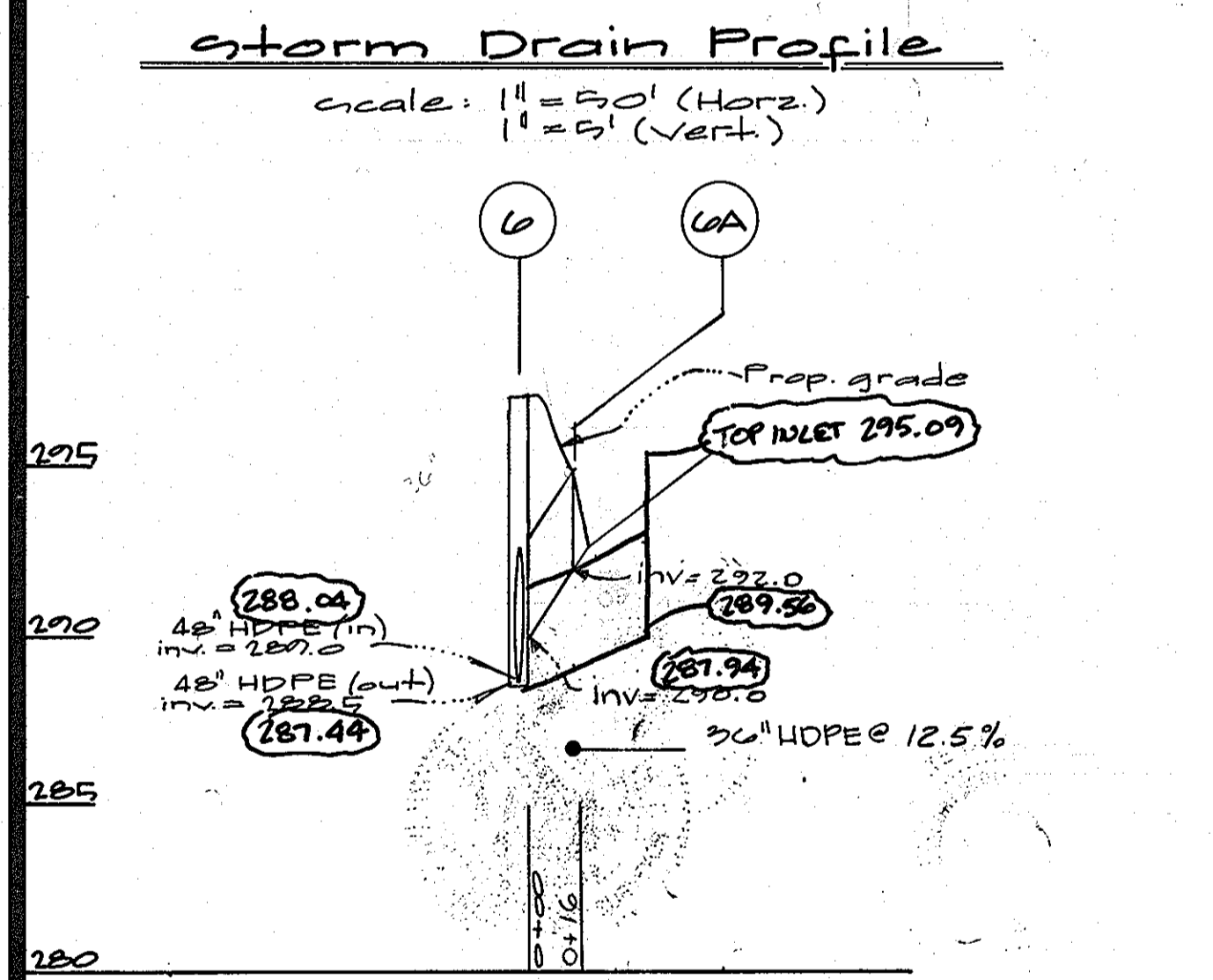
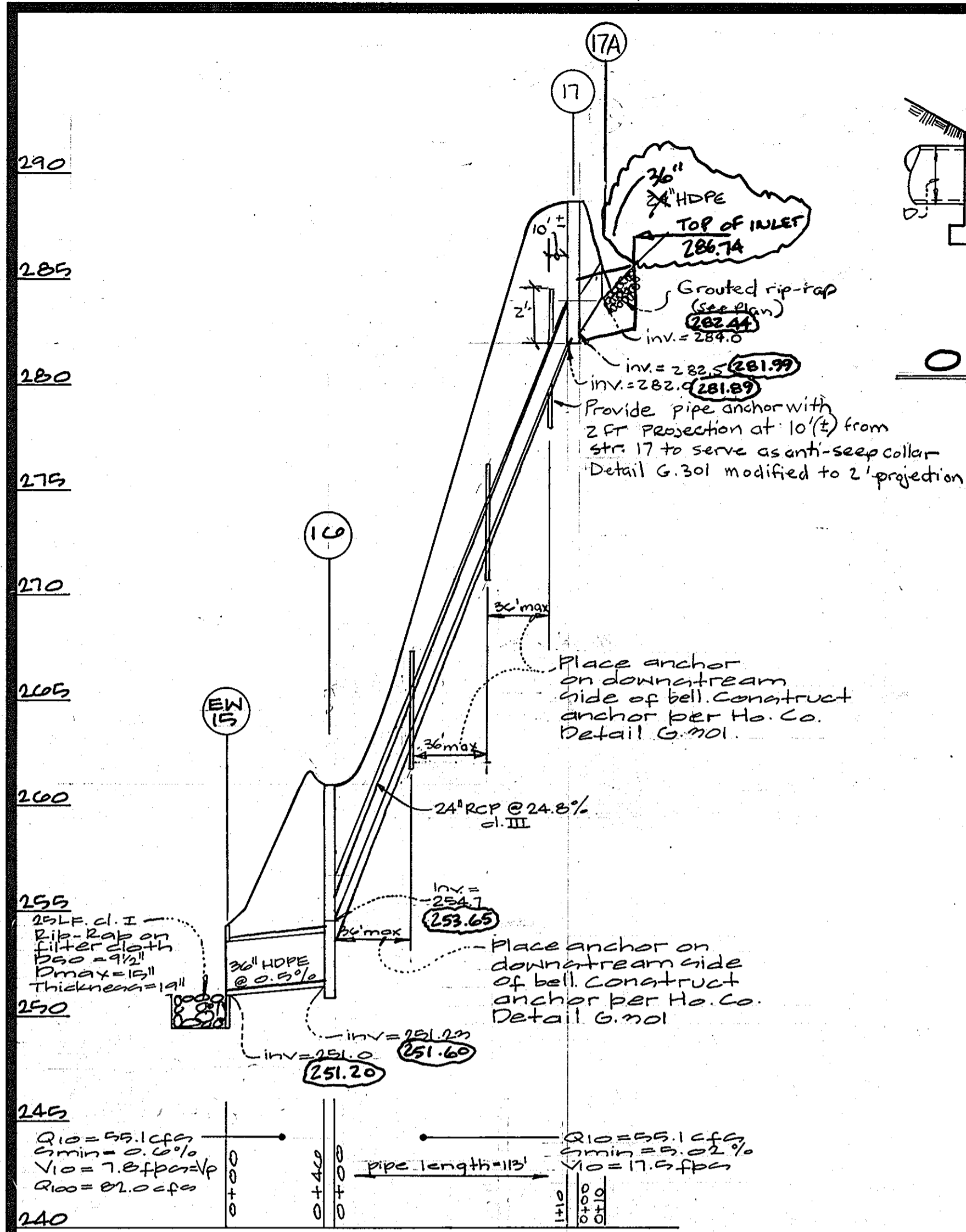
DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 LITTLE PATIENT PARKWAY
COLUMBIA, MD. 21044
(410) 392-6027
ATTN: MR. AL EDWARDS

TYPICAL DETAILS
COLUMBIA GATEWAY
Parcels T-12 thru T-15
ELECTION DISTRICT No. 6

SCALE	ZONING	G. L. W. FILE NO.
AS SHOWN	M-1	98065
DATE	TAX MAP - GRID	SHEET
Jan. 2000	43-7	6 OF 15

F-00-132



Outfall Details for EW-1 & EW-15

Rip Rap Schedule

STR.	D	L	W1	W2	Tmin.	D50	MSHA CLASS
EW-1	60"	75'	3'	20'	19"	9.5"	I
EW-15	36"	25'	2'	27'	19"	9.5"	I
EW-100	48"	75'	3'	41'	32"	16"	II

Rock Outlet Protection I

- Construction Specifications**
- The subgrade for the filter, rip-rap, or gabion shall be prepared to the required lines & grades. Any fill required in the subgrade shall be compacted to a density of approx. that of the surrounding undisturbed material.
 - The rock or gravel shall conform to the specified grading limits when installed respectively in the rip-rap or filter.
 - 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. All overlaps, whether for repairs or for joining 2 pieces of geotextile shall be a min. of 1 foot.
 - Stones for the rip-rap or gabion outlets may be placed by equipment. They shall be constructed to the full course thickness in one operation & in such a manner as to avoid displacement of underlying materials. The stone for rip-rap or gabion outlets shall be delivered & placed in a manner that will ensure that it is reasonably homogeneous w/ the smaller stones & spalls filling the voids between the larger stones. Rip-rap shall be placed in a manner to prevent damage to the filter blanket or geotextile. Hand placement will be required to the extent necessary to prevent damage to the permanent works.
 - The stone shall be placed so that it blends in w/ the existing ground. If the stone is placed too high then the flow will be forced out of the channel & scour adjacent to the stone will occur.

PIPE SCHEDULE

SIZE	TYPE	QUANTITY (L)	REMARKS
18"	HDPE		
24"	HDPE		
36"	HDPE		
48"	HDPE		
60"	HDPE		
24"	RCP		

HDPE: High density Polyethylene double wall, smooth interior. HI-Q by Hancor or N-12 by A.D.C.

18" thru 36" HDPE shall conform to AASHTO M 294 Type 'G' and AASHTO M 795 Type 'G'.

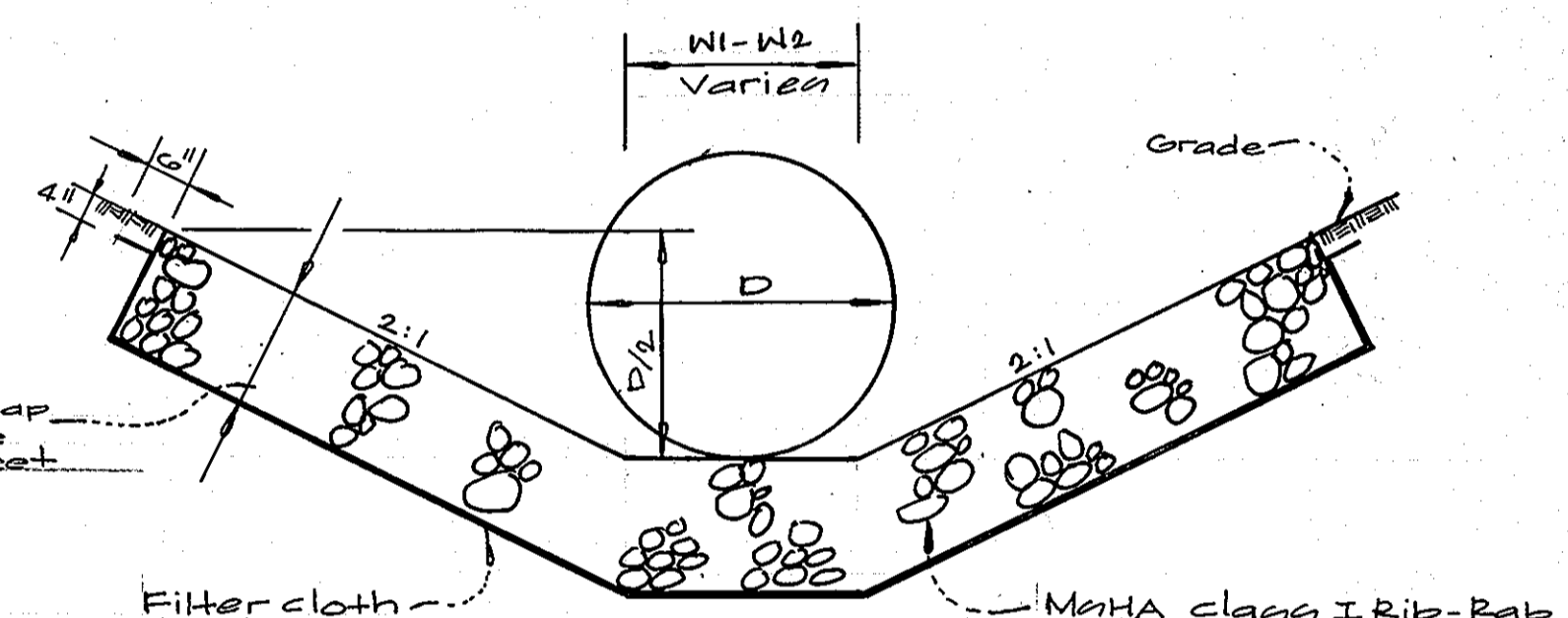
48" HDPE shall conform to AASHTO M 294 Type 'D'.

60" HDPE shall conform to AASHTO M 797 Type 'D'.

STRUCTURE SCHEDULE

NO	TYPE	DIA. (INSIDE)	TOP ELEVATION		INVERT ELEVATION		STD. DETAIL	LOCATIONS	REMARKS
			UPPER	LOWER	UPPER	LOWER			
1	End Wall	60"	287.00	287.00	287.00	287.00		see Plan	see Mod. Plan
2	Pre-cast M.H.	7' x 7'	287.00	287.00	287.00	287.00	G.S. 13 Below	see Plan	Provide grate in rim
3	Pre-cast M.H.	7' x 7'	287.00	287.00	287.00	287.00		see Plan	Provide grate in rim
4		72"	287.00	287.00	287.00	287.00		see Plan	see Mod. Plan
4A		72"	287.00	287.00	287.00	287.00		see Plan	
5		72"	287.00	287.00	287.00	287.00		see Plan	
6		72"	287.00	287.00	287.00	287.00		see Plan	
7	SHALLOW PRE-CAST M.H.	72"	287.00	287.00	287.00	287.00		see Plan	
8	Pre-cast	72"	287.00	287.00	287.00	287.00		see Plan	
9	Manhole	72"	287.00	287.00	287.00	287.00		see Plan	
10	A-10 C.I. G Inlet	72"	287.00	287.00	287.00	287.00		see Plan	
11	Manhole	72"	287.00	287.00	287.00	287.00	MD-374.02	see Plan	see Mod. Plan
12	A-10 C.I. G Inlet	72"	287.00	287.00	287.00	287.00	MD-374.02	see Plan	see Mod. Plan
14B	Manhole	72"	287.00	287.00	287.00	287.00	G.S. 13	see Plan	see Mod. Plan
14C	Manhole	72"	287.00	287.00	287.00	287.00	G.S. 13	see Plan	
14D	Manhole	72"	287.00	287.00	287.00	287.00	G.S. 13	see Plan	
15	End Wall	48"	287.00	287.00	287.00	287.00		see Plan	
17	Manhole	48"	287.00	287.00	287.00	287.00	G.S. 13	see Plan	Provide grate in rim
17	Manhole	48"	287.00	287.00	287.00	287.00	G.S. 13	see Plan	see Mod. Plan
GA	End Wall	48"	287.00	287.00	287.00	287.00		see Plan	
14E	Pre-cast M.H.	36"	287.00	287.00	287.00	287.00		see Plan	
17A	Pre-cast M.H.	24"	287.00	287.00	287.00	287.00		see Plan	
FC-1B	Field Connection	15" x 20"	287.00	287.00	287.00	287.00		see Plan	
10A	Pre-cast C.I. G	24" Dia.	287.00	287.00	287.00	287.00	MSHA Std. MD-374.02	see Plan	Provide grate in rim and 1/2" x 1/2" x 1/2" grate

* For M.H. diameters greater than 60-inch, provide base section per MSHA STD. MD-374.01 or MD-374.02. Provide open grate in structures no. 2, 3, and 16.

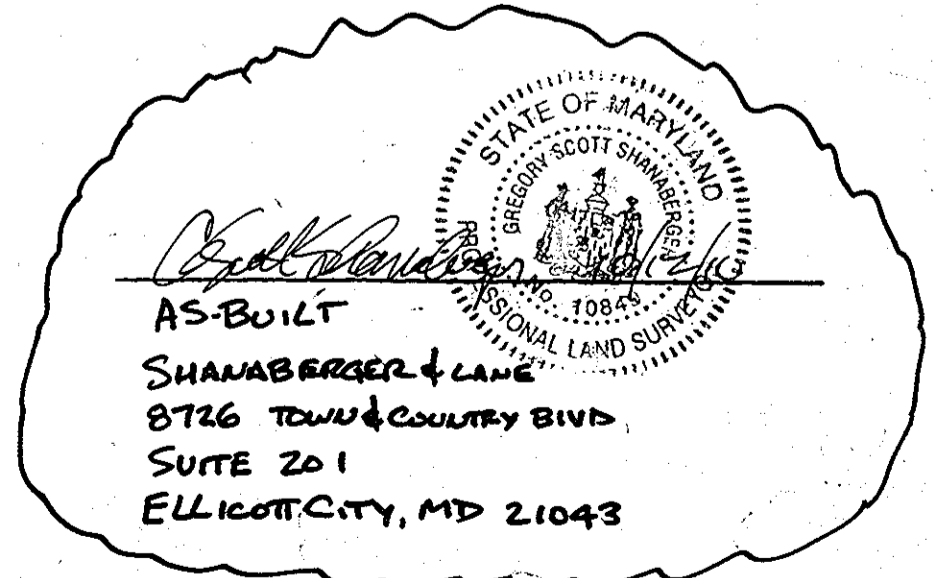


Section A-A
Rip-Rap Detail
Typical section @ EW-1 + EW-15
N.T.S.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Richard M. Cawley 10-16-00
 Chief, Bureau of Highways

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chris Hamilton 11/16/00
 Chief, Division of Land Development

Mark Pennington 11/16/00
 Chief, Development Engineering Division MK



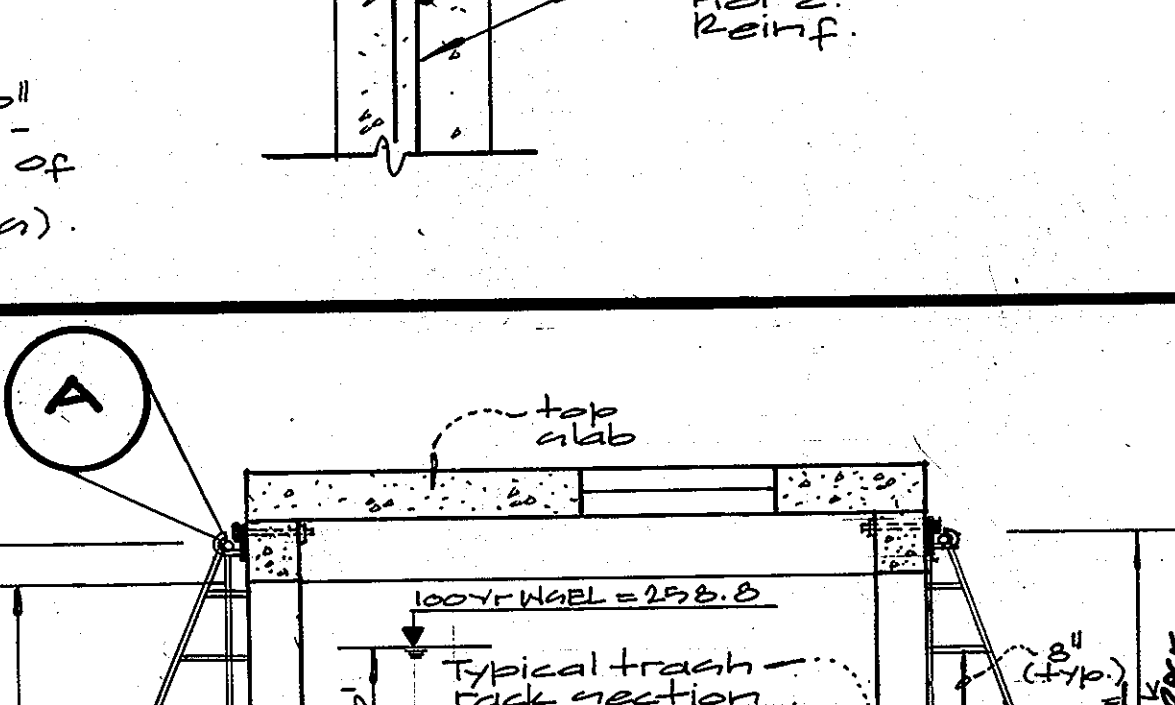
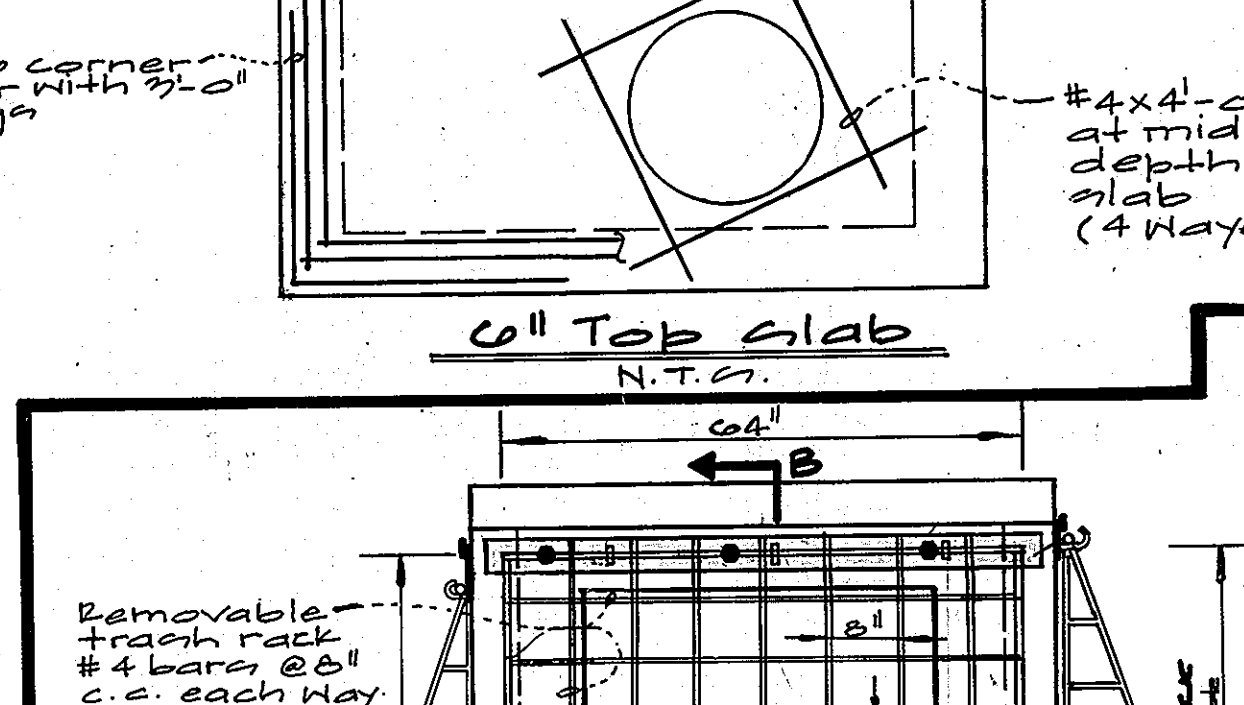
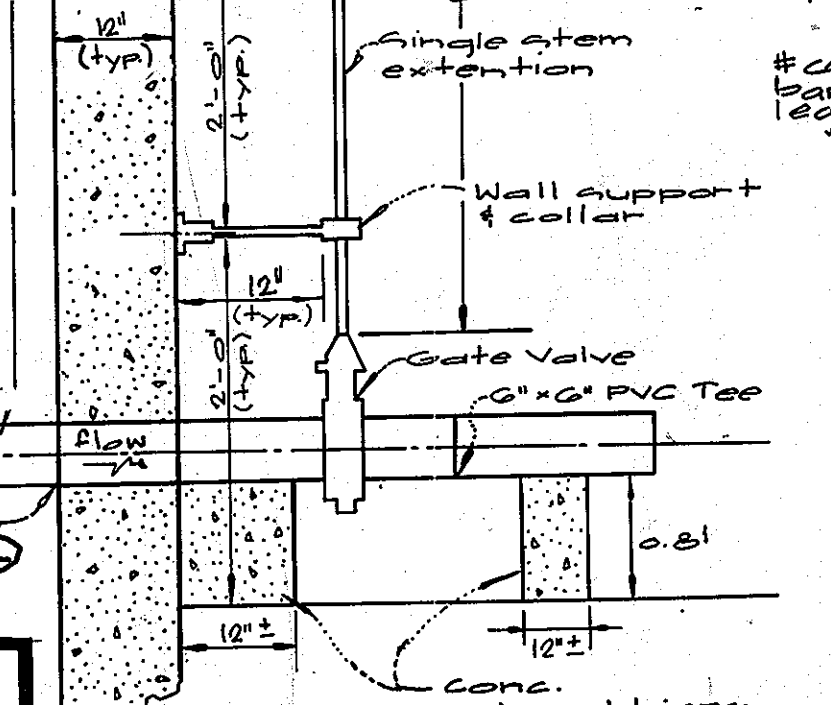
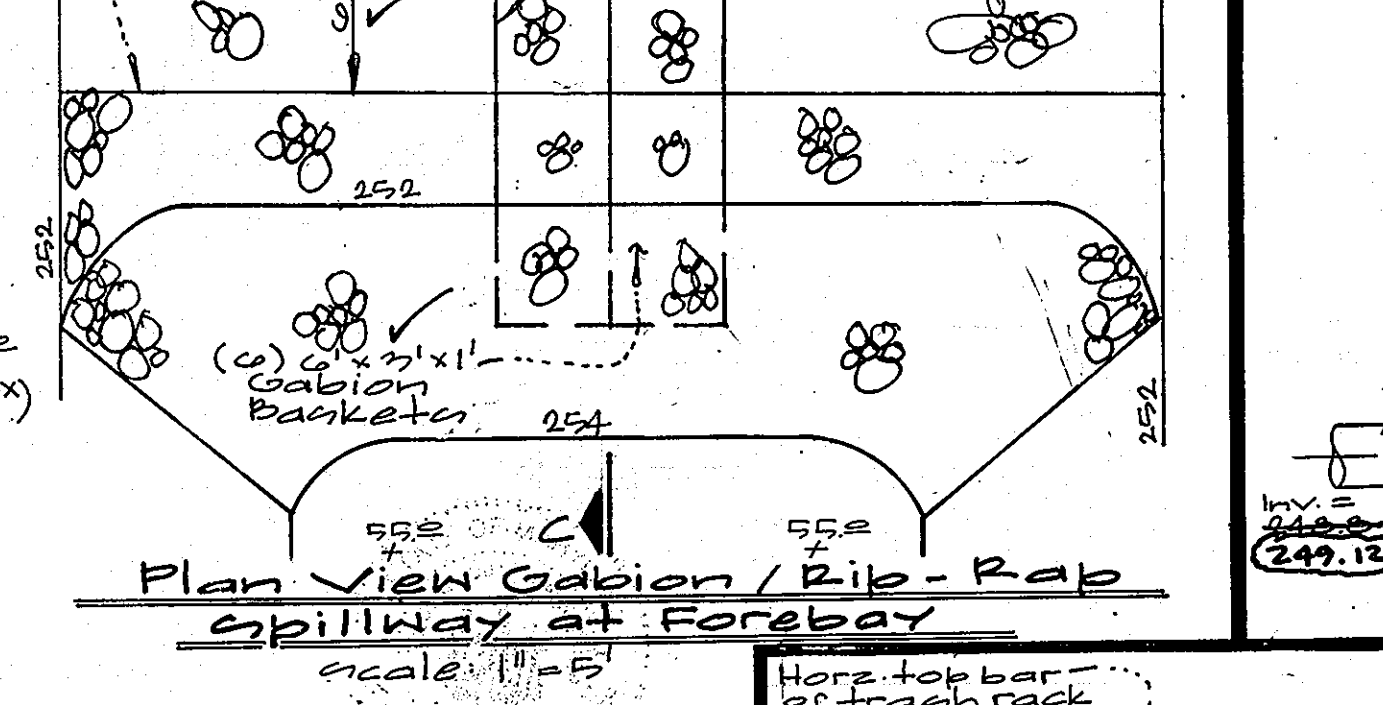
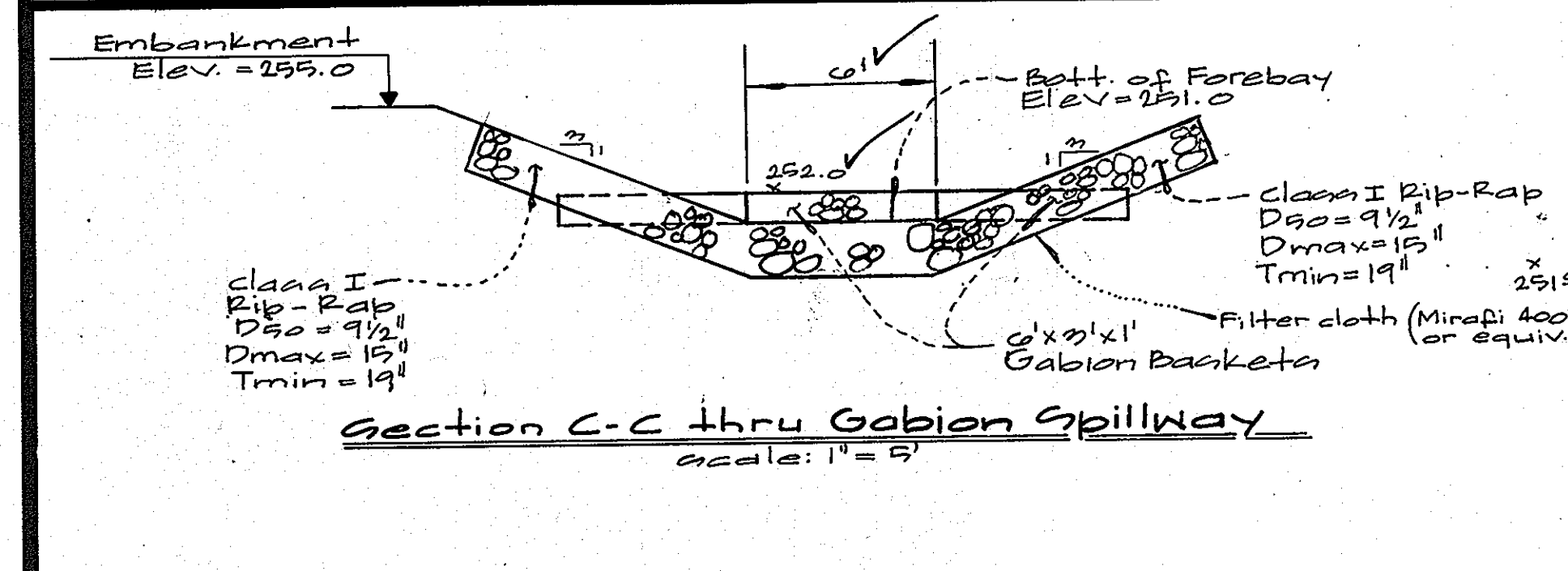
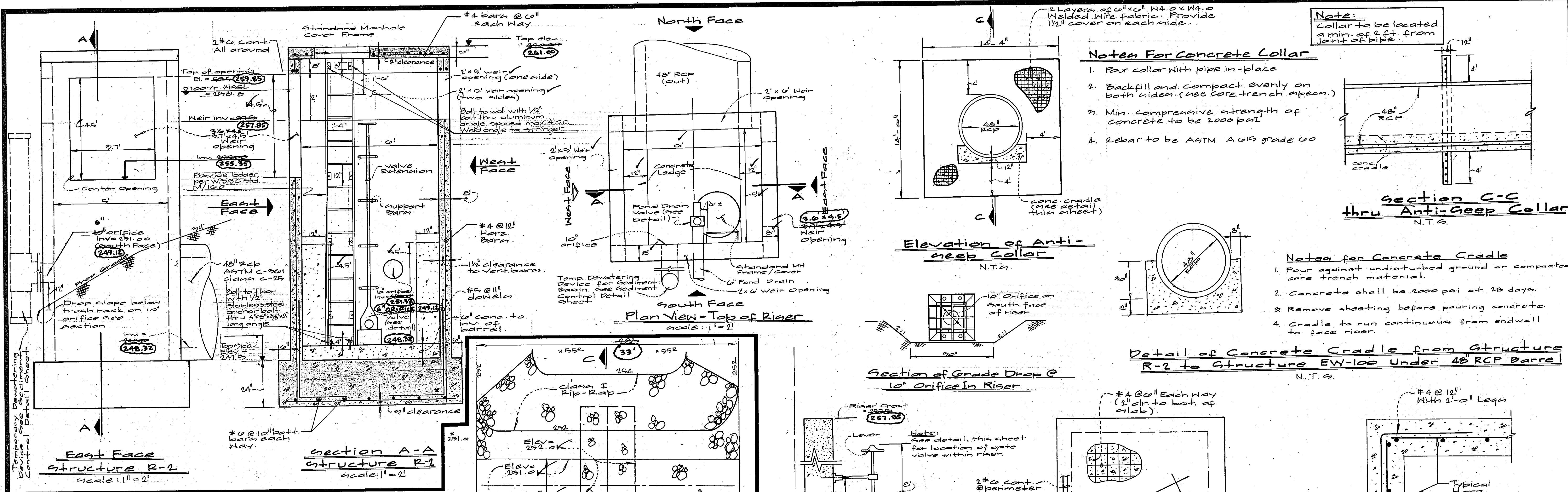
GLW GUTSCHICK LITTLE & WEBER, P.A.
 CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
 3909 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
 BURTONSVILLE, MARYLAND 20886
 TEL: 301-421-4024 BALT: 410-891-1800 DC/VA: 301-589-2524 FAX: 301-421-4186

PREPARED FOR:
THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MD. 21044
 PH: 410-992-6027
 ATTN: MR. AL EDWARDS

Storm Drain Profiles + Details
COLUMBIA GATEWAY
 PARCELS T-12' THRU T-15'
 PLAT No.

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	M-1	98065
DATE	TAX MAP - GRID	SHEET
Jan. 2000	43-2	8 OF 15

HOWARD COUNTY, MARYLAND
 GUILFORD ELECTION DISTRICT No. 6



DEVELOPER'S/BUILDER'S CERTIFICATE

I/We certify that all development and/or construction will be done according to these plans, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Maryland 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 Soil Conservation District.

Signature of Developer/Builder: *[Signature]* Date: 3-8-00

AS-BUILT
SHAWBERGER & LAINE
SURVEYORS & LAND SURVEYORS
SUITE 201
ELLCOTT CITY, MD. 21043

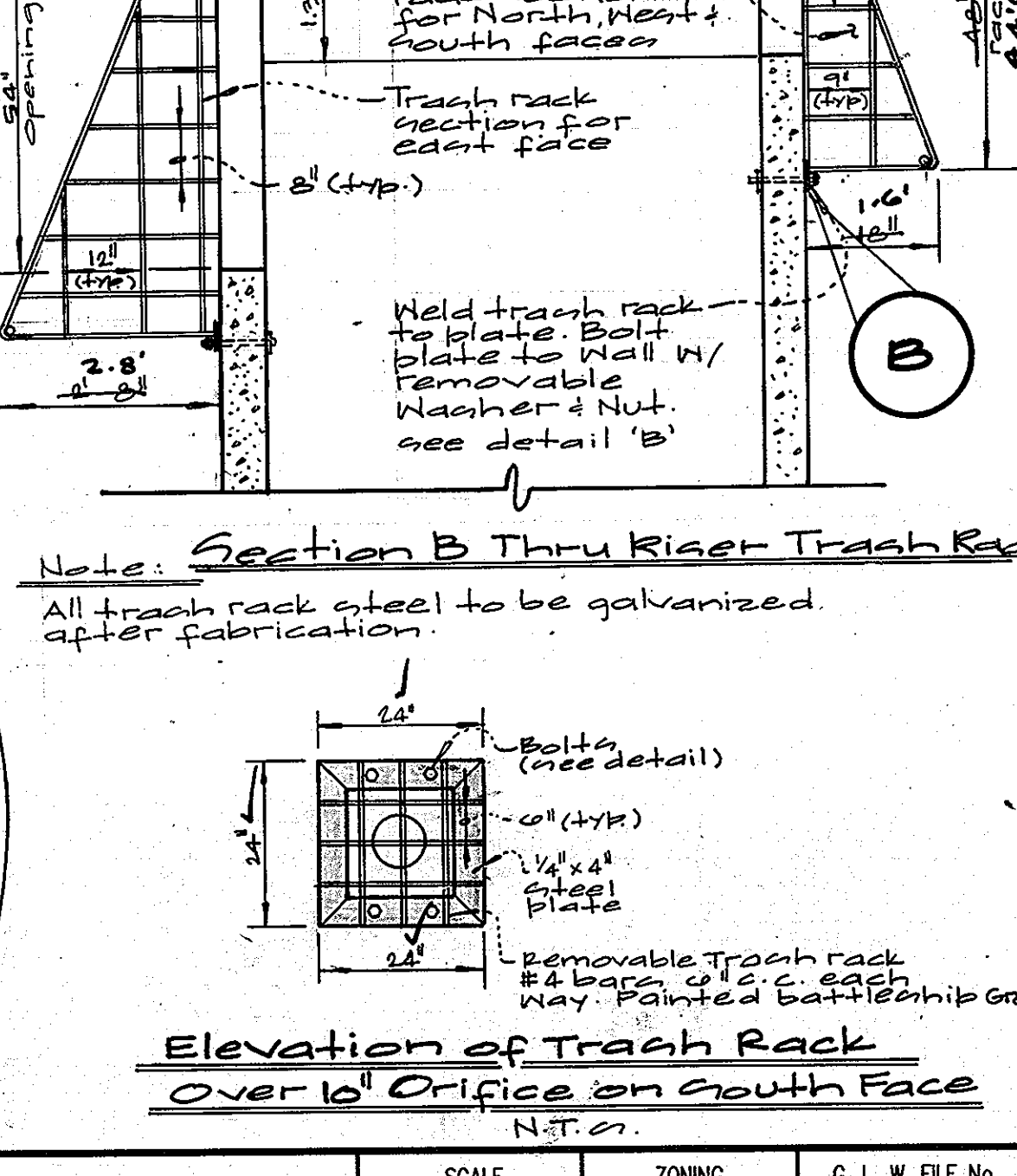
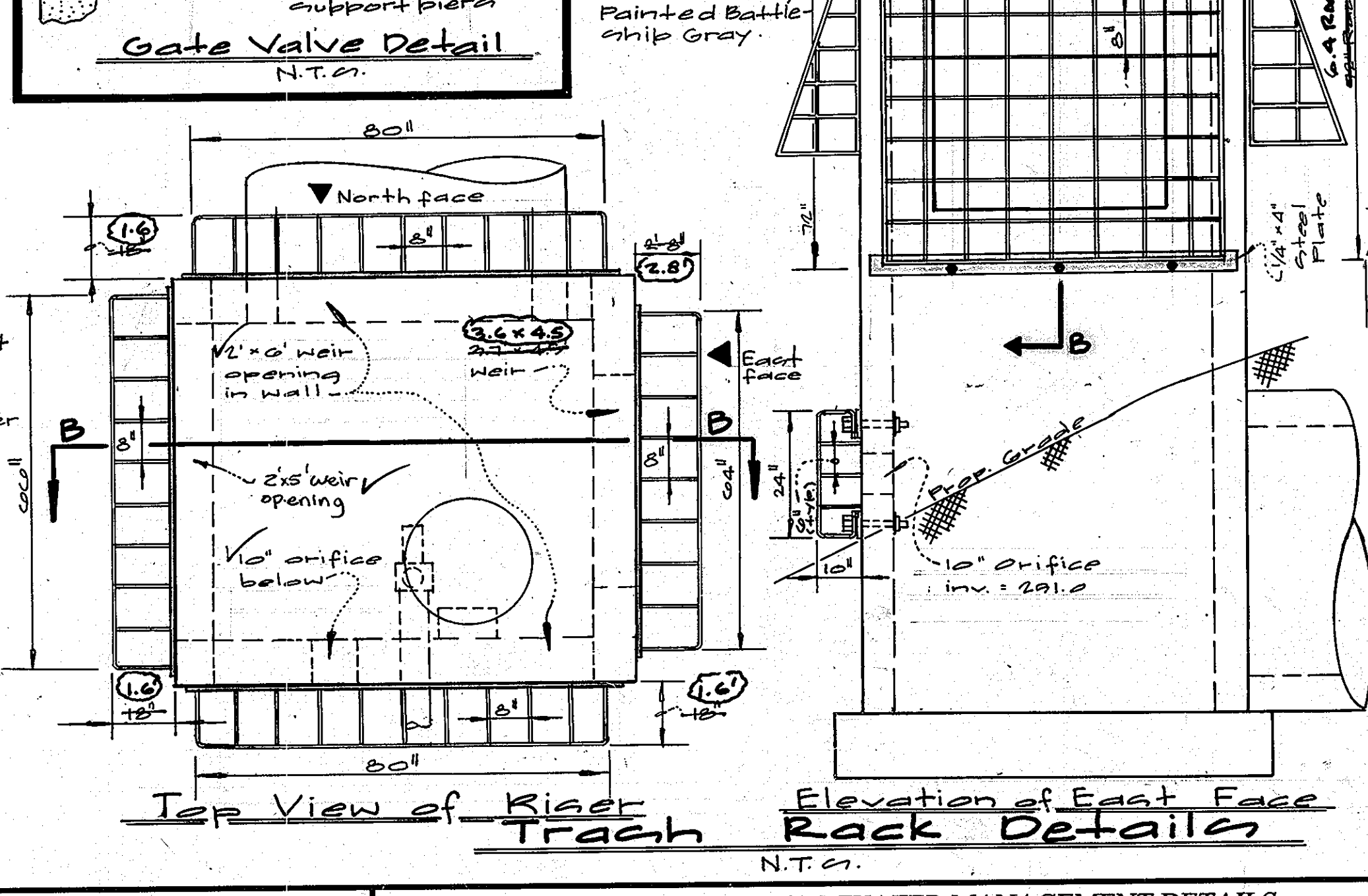
ENGINEER'S CERTIFICATE

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: 1-19-00

DETAIL A
N.T.S.

DETAIL B
N.T.S.



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Signature: *[Signature]* Date: 10-16-00
Chief, Bureau of Highways MS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Signature: *[Signature]* Date: 11/20/00
Chief, Division of Land Development R

APPROVED: HOWARD COUNTY DEPARTMENT OF ENGINEERING
Signature: *[Signature]* Date: 11/10/00
Chief, Development Engineering Division MK

GLW GUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE - SUITE 250 - BURTONVILLE OFFICE PARK
BURTONVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4188

DATE	REVISION	BY	APP'R.

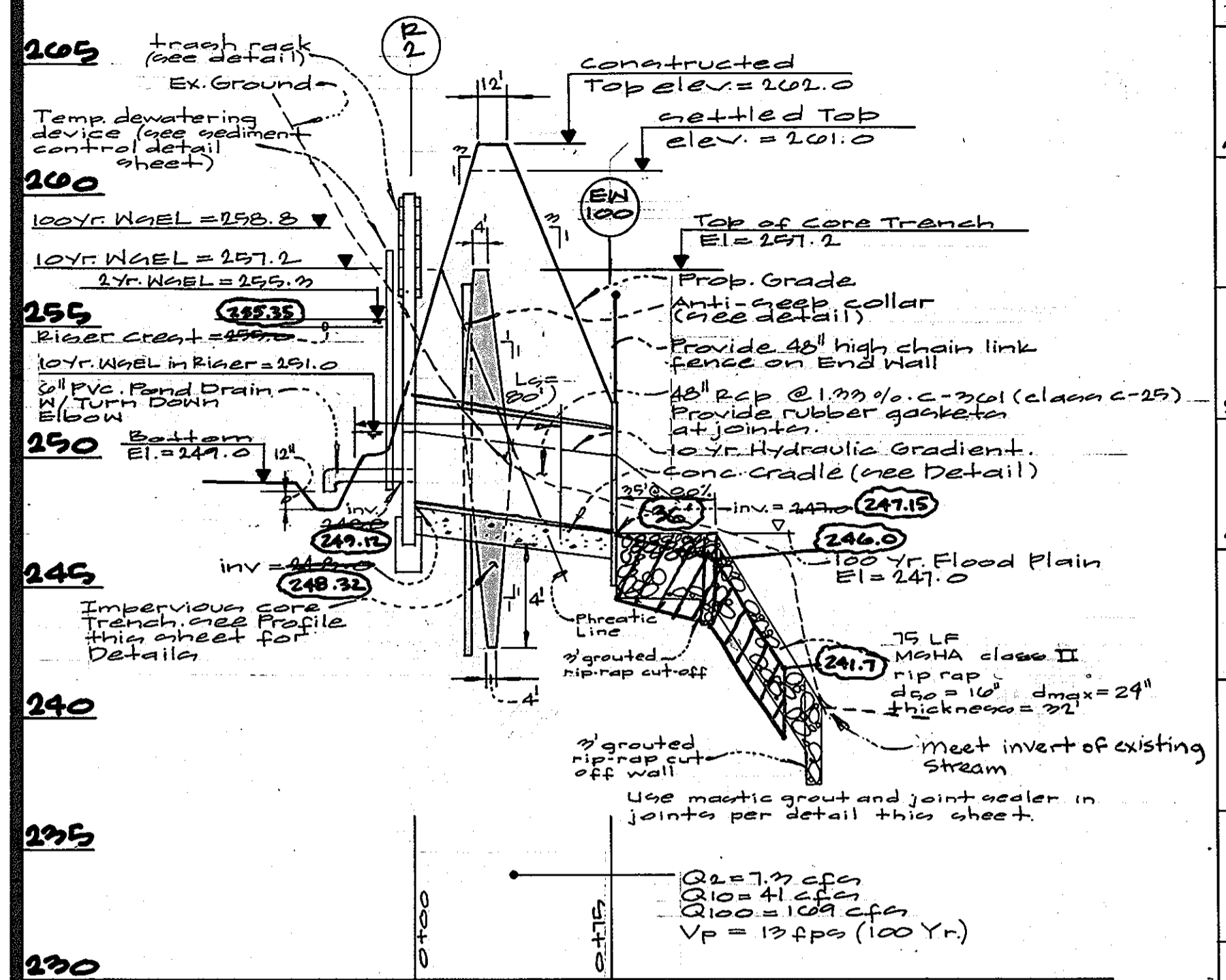
PREPARED FOR:
THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MD. 21044
PH: 410-992-6027
ATTN: MR. AL EDWARDS

STORMWATER MANAGEMENT DETAILS

COLUMBIA GATEWAY
PARCELS T-12 THRU T-15'
PLAT No. 1111

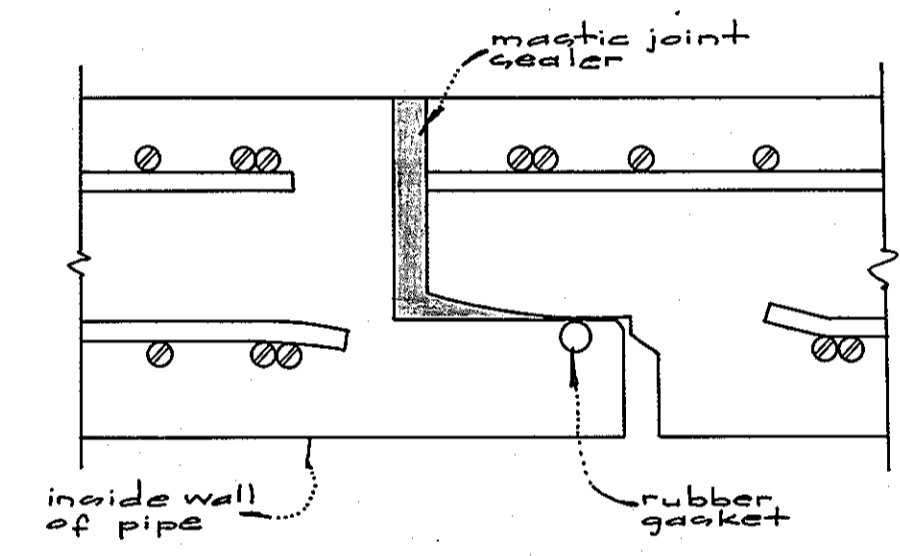
HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	M-1	98065
DATE	TAX MAP - GRID	SHEET
Jan. 2000	43-2	9 OF 15



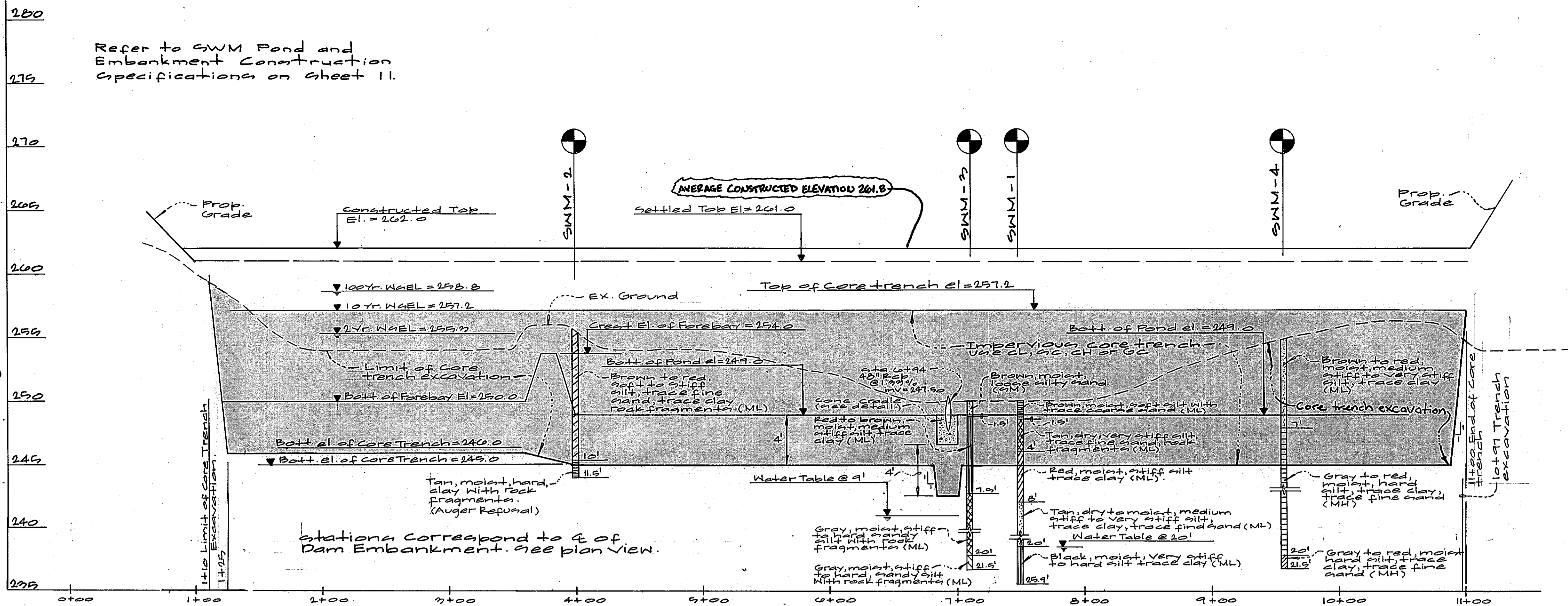
Cross Section thru Dam

Scale: 1" = 50' (Horz.)
1" = 5' (Vert.)



ASTM Designation C 301
Diameters 12 thru 160 inch
Pressures to 125 feet of head

Refer to SWM Pond and Embankment Construction Specifications on sheet 11.

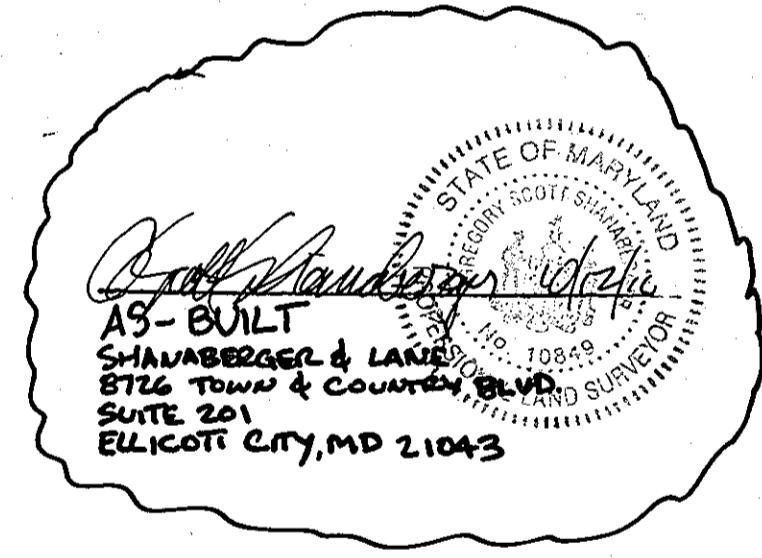


Profile Along E of Embankment

Scale: 1" = 50' (Horz.)
1" = 5' (Vert.)

SWM Summary D.A. = 62 Acres

	Inflow Discharge (cfs)	Design Discharge (cfs)	Actual Discharge (cfs)	WSEL	Volume @ WSEL (Ac-ft.)
2yr storm	194	8.5	7.2	255.7	7.8
10yr storm	291	48	41	257.2	17.0



DEVELOPER'S/BUILDER'S CERTIFICATE

"I/We certify that all development and/or construction will be done according to these plans, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Maryland 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 Soil Conservation District.

Signature of Developer/Builder: *[Signature]* Date: 3-8-00

ENGINEER'S CERTIFICATE

"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: 1-19-00



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Signature: *[Signature]* Date: 10-16-00
Chief, Bureau of Highways

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Signature: *[Signature]* Date: 11/21/00
Chief, Division of Land Development
Signature: *[Signature]* Date: 11/7/00
Chief, Development Engineering Division MK

These Plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.

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.

GLW GUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
BURTONSVILLE MARYLAND 20866
TEL: 301-421-4024 BAL: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4188

REVISION	DATE	BY	APPR.

PREPARED FOR:
THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MD 21044
PH: 410-992-8027
ATTN: MR. AL EDWARDS

STORMWATER MANAGEMENT DETAILS
COLUMBIA GATEWAY
PARCELS 'T-12' THRU 'T-15'
PLAT No.
GUILFORD ELECTION DISTRICT No. 6
HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	M-1	98065
DATE	TAX MAP - GRID	SHEET
Jan. 2000	43-2	10 OF 15

POND 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 sharp breaks shall be sloped to no steeper than 1:1.

Areas to be covered by the reservoir will be cleared of all trees, brush, logs, 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 50 foot radius around the inlet structure shall be cleared.

All cleared and grubbed material shall be disposed of outside and below the limits of the dam and reservoir as directed by the owner or his representative. When specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the embankment and other designated areas.

Earth Fill

Material - The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, stones greater than 6", frozen or other objectionable materials. Fill material for the center of the embankment and cut off trench shall conform to Unified Soil Classification GC, SC, CH or CL. Consideration may be given to the use of other materials in the embankment if design and construction are supervised by a geotechnical engineer.

Placement - Area on which fill is to be placed shall be specified 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 in to the embankment.

Compaction - The movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each lift shall be traversed by not less than one tread track of the equipment or compaction shall be achieved by a minimum of four complete passes of a sheepsfoot, rubber 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.

Where a minimum required density is specified, it 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.

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.

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.

Pipe Conduits

All pipes shall be circular in cross section.

Corrugated Metal Pipe - All of the following criteria shall apply for corrugated metal pipe:

- Materials** - (Steel Pipe) - This pipe and its appurtenances shall be galvanized and fully bituminous coated and shall conform to the requirements of AASHTO Specification M-190 Type A with watertight coupling bands. Any bituminous coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound. Steel pipes with polymeric coatings shall have a minimum coating thickness of 0.01 inch (10 mil) on both sides of the pipe. The following coatings or an approved equal may be used: Nexon, Plasti-Cote, Bloc-Klad, and Beth-Cu-Loy. Coated corrugated steel pipe shall meet the requirements of AASHTO M-245 and M-246.

Materials - (Aluminum Coated Steel Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-274 with watertight coupling bands or flanges. Any aluminum coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound.

Material - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-195 or M-291 with watertight coupling bands or flanges. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer. Hot dip galvanized bolts may be used for connections. The pH of the surrounding soils shall be between 4 and 9.

- Coupling bands, anti-seep collars, end sections, etc.**, must be composed of the same material as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials at least 24 mils in thickness.
- 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 & 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 an adequate number of corrugations to accommodate the band width. The following type connections are acceptable for pipes less than 24" in diameter: flanges on both ends of the pipe, a 12" wide standard tap type band with 12" wide by 3/8" thick closed cell circular neoprene gasket; and a 12" wide hugger type band with O-ring gaskets having a minimum diameter of 1/2" greater than the corrugation depth. Pipes 24" in diameter and larger shall be connected by a 24" long annular corrugated band using rods and lugs. A 12" wide by 3/8" thick closed cell circular neoprene gasket will be installed on the end of each pipe for a total of 24".

Helically corrugated pipe shall have either continuously welded seams or have lock seams.

- 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.
- Backfilling** shall conform to "Structure Backfill".
- 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:

- Materials** - Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM Designation C-361.
- Bedding** - All reinforced concrete pipe conduits shall be laid in a concrete bedding for their entire length. This bedding shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 10% of its outside diameter with a minimum thickness of 3 inches, or as shown on the drawings.
- Laying pipe** - Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 2 feet from the riser.

- Backfilling** shall conform to "Structure Backfill".
- Other details** (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Polyvinyl Chloride (PVC) Pipe - All of the following criteria shall apply for polyvinyl chloride (PVC) pipe:

- Materials** - PVC pipe shall be PVC - 1120 or PVC - 1220 conforming to ASTM D-1785 or ASTM D-2241.
- Joints and connections** to anti-seep collars shall be completely watertight.
- 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.
- Backfilling** shall conform to "Structure Backfill".
- Other details** (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Concrete

Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standards Specifications for Construction and Materials, Section 608, 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 905.

The rip rap shall be placed to the required thickness in one operation. The rock shall be delivered and placed in a manner that will insure the riprap in place shall be reasonably homogeneous with the larger rocks uniformly distributed and firmly in contact one to another with the smaller rocks filling the voids between the larger rocks. Filter cloth shall be placed under all riprap and shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 919.12.

Care 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 the various parts of the work and for maintaining the excavations, foundation, and other parts of the work free from water as required or directed by the engineer for constructing each part of the work. After having served their purpose, all temporary protective works shall be removed or leveled and graded to the extent required to prevent obstruction in any degree whatsoever of the flow of water to the spillway or outlet works and so as not to interfere in any way with the operation 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 manner and to the extent that will maintain stability of the excavated slopes and bottom of 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 to sumps from which the water shall be pumped.

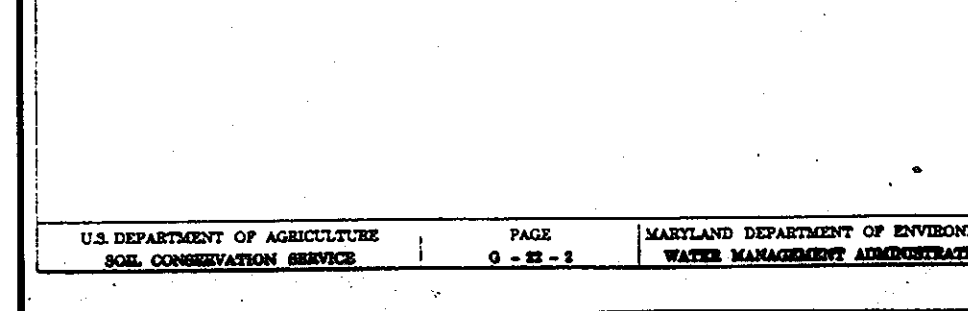
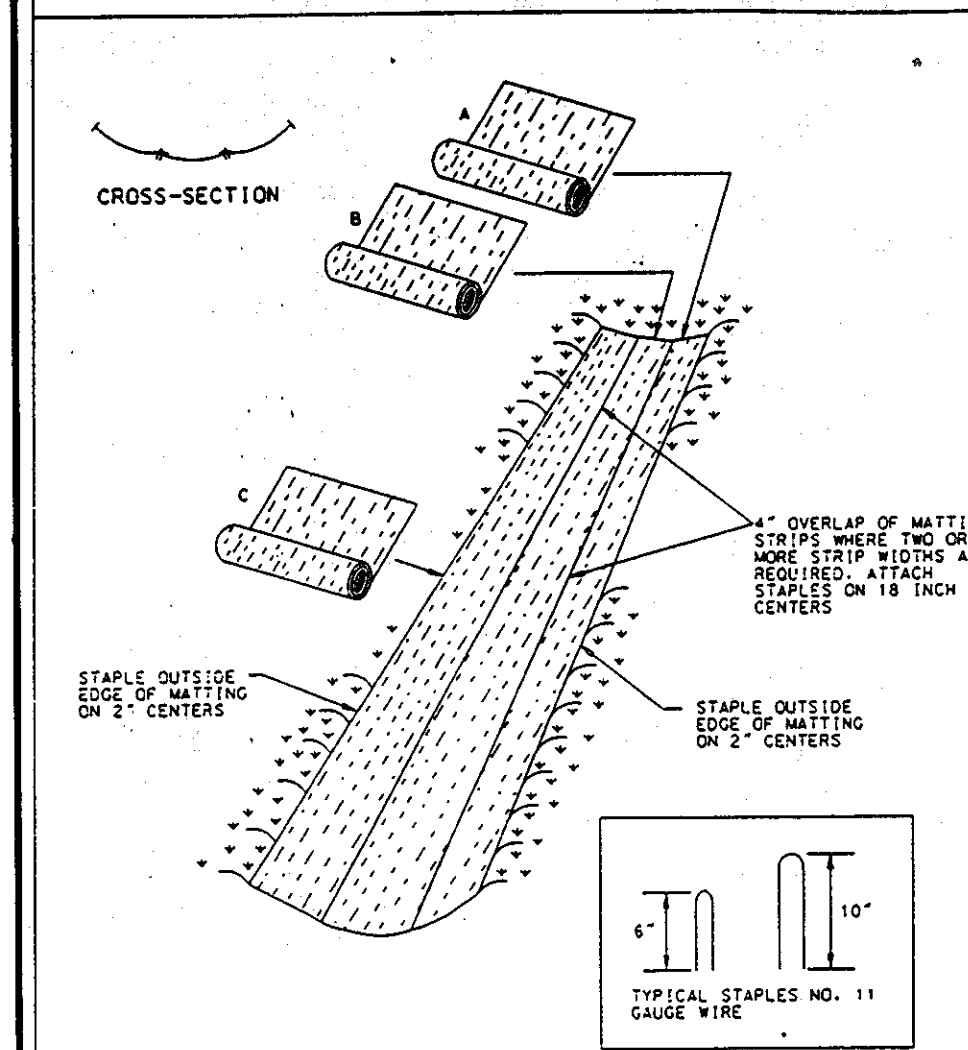
Stabilization

All borrow areas shall be graded to provide proper drainage and left in a slightly condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and berms shall be stabilized by seeding, liming, fertilizing and mulching in accordance with the Maryland Soil Conservation Service Standards and Specifications for Critical Area Planting (MD-342) or as shown on the accompanying drawings.

Erosion and Sediment Control

Construction operations will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures to be employed during the construction process.

DETAIL 80 EROSION CONTROL MATTING



EROSION CONTROL MATTING

Construction Specifications

- Key-in the matting by placing the top ends of the matting in a narrow trench, 6" in depth. Backfill the trench and top firmly to conform to the channel cross-section. Secure with a row of staples about 4" down slope from the trench. Spacing between staples is 6".
 - Staple the 4" overlap in the channel center using on 18" spacing between staples.
 - Before stapling the outer edges of the matting, make sure the matting is smooth and in firm contact with the soil.
 - Staples shall be placed 2' apart with 4 rows for each strip, 2 outer rows, and 2 centering rows down the center.
 - Where one roll of matting ends and another begins, the end of the top strip shall overlap the upper end of the lower strip by 4" slanted fashion. Reinforce the overlap with a double row of staples, spaced 6" apart in a staggered pattern on either side.
 - The discharge end of the matting liner should be similarly secured with 2 double rows of staples.
- Note: If flow will enter from the edge of the matting then the area affected by the flow must be seeped.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE 0 - 21 - 2A MARYLAND DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES WATER MANAGEMENT ADMINISTRATION

REMARKS

We appreciate having had the opportunity to provide this consultation. Should you have any questions concerning this letter, please contact this office.

Very truly yours,

Michael P. Johnson, P.E.

GEOTECHNICAL SPECIFICATIONS FOR SWM EMBANKMENT CONSTRUCTION

HILLS-CARNES

September 21, 2000
 17011 Columbia Road, Suite 118
 P.O. Box 341
 Annapolis, MD 20701
 Phone: 410-840-0700
 Fax: 410-840-0722
 FID: 110-840-038

Attention: Mr. Todd Redden
 Re: Additional SWM Recommendations
 Columbia Gateway Parcels T-12 - T-14
 Howard County, Maryland
 HCEA Project No. 95381A

Gentlemen:
 Hills-Carnes Engineering Associates, Inc. (HCEA) is pleased to submit this letter containing additional recommendations for the proposed SWM facility for the above-referenced project. HCEA prepared a preliminary geotechnical report for this project (report dated January 17, 2000).

As requested, HCEA is providing additional site preparation and construction recommendations for the proposed SWM facility. The following modifications have been developed on the basis of the project characteristics and subsurface conditions that were outlined in our original preliminary report. If there are any changes to the project characteristics or different subsurface conditions encountered during construction, HCEA should be consulted so that the recommendations of this report can be reviewed and revised, if necessary.

Embankment Construction

The following procedures should be utilized to prepare the subgrade for embankment support and to construct the proposed embankments.

All trees, topsoil, organic materials, frozen, wet, soft or loose soils and other deleterious materials should be removed from the areas of proposed embankment and wasted prior to the placement of fill. These stripping operations should be performed in a manner consistent with good erosion and sediment control practices and in accordance with Soil Conservation Guidelines.

After stripping operations have been completed, the exposed subgrade materials should be profiled with a loaded dump truck or similar equipment in the presence of a geotechnical engineer or his representative. For areas that are not accessible to a dump truck, the exposed materials should be observed and tested by a geotechnical engineer or his representative utilizing a Dynamic Cone penetrometer. Any excessively soft or loose materials identified by profiling or penetrometer testing should be excavated to suitable firm soil, and then grades re-established by backfilling with suitable soil.

Groundwater levels encountered in the borings during our field exploration indicated that groundwater is located at depths as shallow as 3' to 4' below existing surface grades. It is possible that groundwater may have an effect on the proposed construction, particularly during the excavation for and construction of a core trench.

Any water infiltration resulting from a shallow intersection of the groundwater surface runoff, or perched water, if not too extensive, should be able to be controlled by means of sump pit and pump, or by gravity ditching procedures provided that the groundwater level must only be lowered by a depth of 12" to 24". If the groundwater must be lowered by more than 12" to 24", or if lesser amounts of water cannot be satisfactorily lowered by pumping, then the use of a more extensive dewatering system such as deep wells or well points will be required.

Excavation for the core trench may require dewatering. It may be necessary to provide a "mud mat" to plug the water flow into the excavation. An uncompacted strip of 18" is not recommended since this will not provide sufficient foundation support for the embankment and would also provide a path of water flow.

Fill Material Suitability

All materials to be used as fill in the embankment should be inspected, tested and approved by the Geotechnical Engineer. Based on our evaluation of the soils encountered in borings conducted on the site, it appears that the on-site soils that are free from organics and other deleterious materials can be used for construction of the embankment. Moisture conditioning that is, wetting or drying of the materials may be required in order to achieve proper compaction depending on the season of the year. The moisture contents of the soils should be properly controlled to avoid excessive construction delays. Additional laboratory tests should be performed on the borrow materials prior to their use in the compacted fill.

Imported fill materials must be of equal or greater quality than the on-site materials and should be approved for use by the Geotechnical Engineer.

Fill Placement and Compaction

All fill materials must be placed and compacted in accordance with MD SCS 378 specifications. In particular, fill materials should be placed in relatively horizontal loose lifts of 8-inch maximum thickness and should be compacted to dry densities of at least 95 percent of the Standard Proctor maximum dry density (ASTM D-698). Moisture contents should be maintained within ±2 percent of optimum moisture content, and preferably between optimum moisture content and +2 percent of optimum moisture content.

An experienced soils technician under the direction of a Geotechnical Engineer should perform field density tests on the embankment fill, as necessary, to verify that adequate compaction is achieved. If any compaction problems are encountered during construction, the Geotechnical Engineer should be contacted for advice as modifications to the compaction procedures may be appropriate.

Cut-off Trench Construction

A representative of the Geotechnical Engineer should be present to monitor placement and construction of fill for the embankment and cut-off trench. In accordance with Maryland Soil Conservation Specification 378 soils considered suitable for the center of embankment and cut-off trench shall conform to Unified Soil Classification GC, SC, CH or CL.

It is our professional opinion that in addition to the soil materials described above a fine-grained soil, including SE (ML) with a plasticity index of 10 or more can be utilized for the center of the embankment and core trench.

These Plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.

STORMWATER MANAGEMENT FACILITY OPERATIONS AND MAINTENANCE GUIDELINES

Operations:

- Owner shall keep accurate records of inspections and maintenance type repairs. These records should also include a copy of the "as-built" plans and small pond summary sheet.
- Owner shall make a visual inspection of the facility at least twice a year. Once in the summer after the facility has been mowed and during the winter when the vegetation is inactive. Additional inspections shall be made during and after extreme rainfalls.
- During the extreme weather or rainfall events, the owner shall check for overlapping, seepage, or dam failure. In order to avoid overlapping, either place sandbags on top of the embankment or lower the water elevation by using a dewatering device.
- If a severe problem develops, the owner shall contact a Professional Engineer to assess the problem and make a suggestion to remedy the situation. The Howard Soil Conservation District or Maryland Dam Safety Division shall be contacted before major repairs are made.

Maintenance

During the semi-annual visual inspections, the following items must be checked and documented by the owner:

- Spillways and Outlet Device**
 - Pipes - check for sagging, misalignment, gaps at joints, cracks, leaks, and wear along inside surface of pipes. Also remove any blockages.
 - Trash Racks - inspect and replace if necessary. Actual time for removal of trash racks should be limited. Trash racks shall be painted once a year.
 - Concrete Surfaces - check for cracks or any other signs of failure.
 - Forebay and Spillway - check for stone & wire mesh deterioration or loss and spillway failure.
 - Rip Rap Outlet - check for stone deterioration or stone loss.
 - Dewatering Device - remove blockages.

II. Embankments

- Vegetation** - proper vegetative cover is required on all embankments. The owner shall follow proper seeding specifications for reseeding.
- Trees and Brush** - trees and brush shall be removed from the embankment. Stumps can be removed using silvicide.
- Mowing** - mowing is necessary to control the establishment of woody growth and to maintain the vegetative cover. The embankment, a 25-foot wide (except in wetland/stream buffers) strip adjacent to the toe, upstream and downstream of the embankment, and the area within 50 feet of the control structures need to be mowed. Mowing shall be done at least once a year (mid to late summer) but may be done more often.
- Seepage** - the following warning signs should be looked for when inspecting for seepage problems: cracks (longitudinal and vertical), soft spots or boggy areas on downstream embankment, seepage along downstream toe of embankment.
- Stability** - large cracks, slides, sloughing and excessive settlement are signs of embankment instability and a need for repair. Repairs must be approved by Howard Soil Conservation District.
- Rodents** - check for burrows, which can lead to seepage, and remove rodents when encountered.

NOTE:
 In addition to the Howard County Standard Specifications, and those on this sheet, the construction of the Stormwater Management facility shall be in accordance with the recommendations contained in the geotechnical report by
 If the provisions of the report conflict with Howard County's specifications or those on this sheet in any way, the more stringent requirement shall apply. The private geotechnical engineer hired by

shall be on the site to observe all Stormwater management construction and to provide testing and approvals where needed for proper implementation of the plans and specifications and to provide information for future as-builts.

Approved by Howard County Department of Public Works
 Chief, Bureau of Highways
 10/16/00

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development and Research
 Date: 11/2/00

Chief, Development Engineering Division MK
 Date: 11/7/00



ENGINEER'S CERTIFICATE

"I certify that this plan for pond construction, erosion and sediment control represents a practical and workable plan based on the professional 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: 1-19-00

DEVELOPER'S/BUILDER'S CERTIFICATE

"We certify that all development and/or construction will be done according to these plans, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Maryland 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 Soil Conservation District."

Signature: [Signature]
 Date: 3-9-00

These Plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.

Signature: [Signature]
 Date: 1/13/00

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: 1/13/00

GLW GUTSCHICK LITTLE & WEBER, P.A. CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS 3909 NATIONAL DRIVE - SUITE 250 - BURTNSVILLE OFFICE PARK BURTNSVILLE, MARYLAND, 20886 TEL: 301-421-4024 FAX: 410-880-1820 DC/VA: 301-589-2524 FAX: 301-421-4186	DES.	DRN.	CHK.	DATE	REVISION	BY	APPR.
PREPARED FOR: THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION 10275 LITTLE PATENT PARKWAY COLUMBIA, MD. 21044 PH: 410-892-6027 ATTN: MR. AL EDWARDS		STORMWATER MANAGEMENT NOTES COLUMBIA GATEWAY PARCELS T-12' THRU T-15' PLAT No.		SCALE	ZONING	G. L. W. FILE No.	
GULFORD ELECTION DISTRICT No. 6		HOWARD COUNTY, MARYLAND		N/A	M-1	98065	
				DATE	TAX MAP - GRID	SHEET	
				SEPTEMBER 2000	43 - 2	11 OF 15	

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.

These Plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.

J. G. [Signature]
Natural Resources Conservation Service
11/13/00
Date

[Signature]
Howard Soil Conservation District
11/13/00
Date

DEVELOPER'S/BUILDER'S CERTIFICATE

"I/we certify that all development and/or construction will be done according to these plans, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Maryland 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 Soil Conservation District.

COLUMBIA GATEWAY
PARCEL 'S-24'
PLAT No. 13094
ZONED: M-1

[Signature]
Signature of Developer/Builder
3-8-00
Date

ENGINEER'S CERTIFICATE

"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."

COLUMBIA GATEWAY
PARCEL 'T-1'
PLAT No. 13463
ZONED: M-1

[Signature]
Date
1-19-00

- LEGEND**
- SSF _____ SSF SUPER SILT FENCE
 - SF _____ SF SILT FENCE
 - P.S.D. _____ PIPE SLOPE DRAIN
 - ← → _____ EARTH DIKE (FINAL LOCATION)
 - ← → _____ EARTH DIKE (INITIAL LOCATION)
 - RRP _____ RIP RAP INFLOW PROTECTION
 - _____ STABILIZED CONSTRUCTION ENTRANCE
 - _____ DRAINAGE DIVIDE
 - ● ● ● ● LIMIT OF DISTURBANCE



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature]
Chief, Bureau of Highways
10-16-00
Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
[Signature]
Chief, Division of Land Development
11/21/00
Date
[Signature]
Chief, Development Engineering Division
11/17/00
Date

GLW GUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE - SUITE 250 - BURTNSVILLE OFFICE PARK
BURTNSVILLE, MARYLAND 20886
TEL: 301-421-4024 BALT: 410-980-1820 DC/WA: 301-989-2524 FAX: 301-421-4186

DATE	REVISION	BY	APPR.

PREPARED FOR:
THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MD 21044
PH: 410-392-8027
ATTN: MR. AL EDWARDS

SEDIMENT CONTROL PLAN
COLUMBIA GATEWAY
PARCELS 'T-12' THRU 'T-15'

SCALE	ZONING	G. L. W. FILE No.
1"=100'	M-1	98065
DATE	TAX MAP - GRID	SHEET
SEPTEMBER 2000	43 - 2	12 OF 15

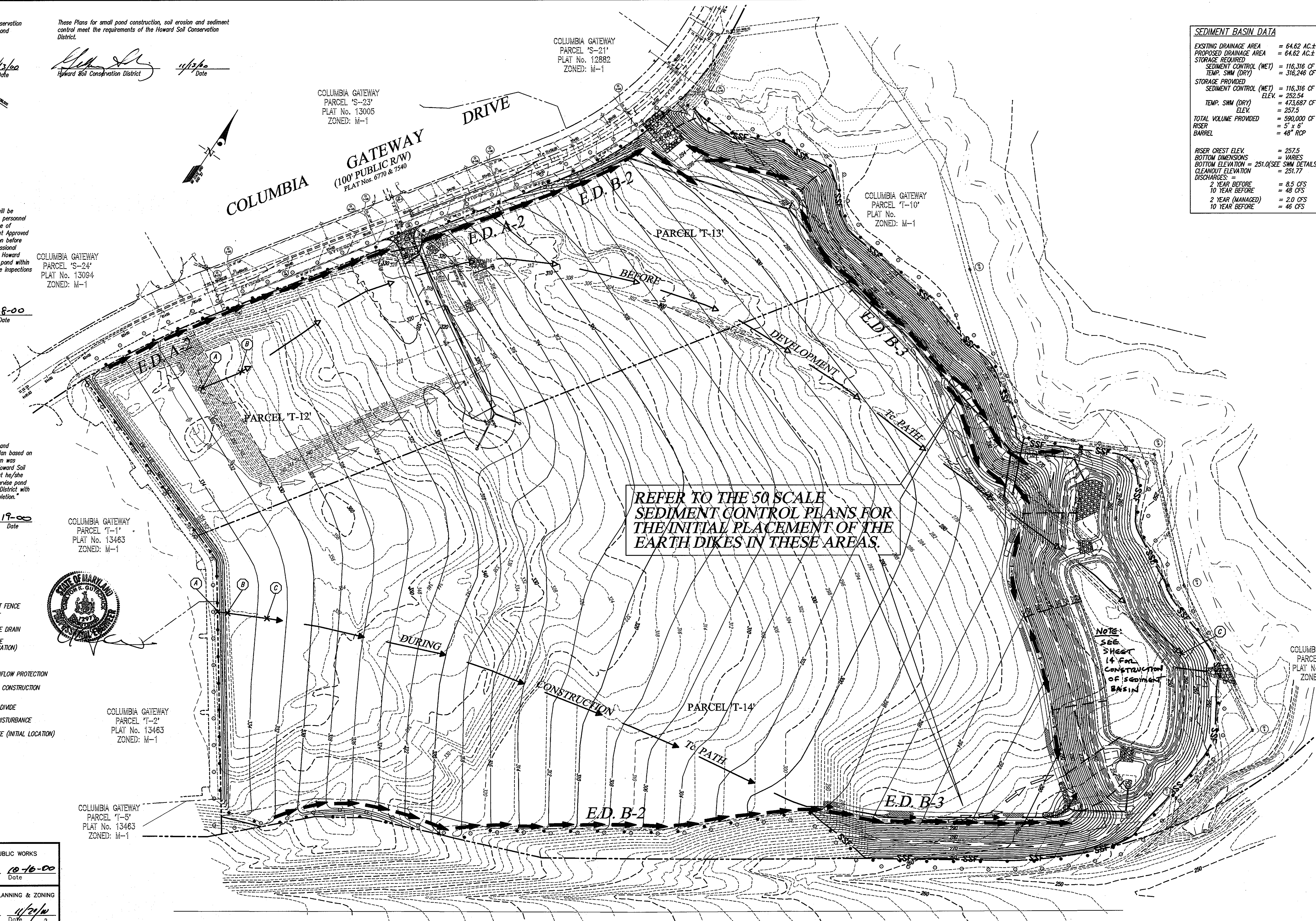
{DRAWINGS} 98065 {DESIGN} 988505C

DATE REVISION BY APPR.

GULFORD ELECTION DISTRICT No. 6

HOWARD COUNTY, MARYLAND

F-00-132



SEDIMENT BASIN DATA

EXISTING DRAINAGE AREA	= 64.62 AC.±
PROPOSED DRAINAGE AREA	= 64.62 AC.±
STORAGE REQUIRED	= 116,316 CF
SEDIMENT CONTROL (WET)	= 316,246 CF
TEMP. SHM (DRY)	= 473,687 CF
STORAGE PROVIDED	= 116,316 CF
SEDIMENT CONTROL (WET)	ELEV. = 252.54
TEMP. SHM (DRY)	ELEV. = 257.5
TOTAL VOLUME PROVIDED	= 590,000 CF
RISER	= 5' x 6'
BARREL	= 48" RCP
RISER CREST ELEV.	= 257.5
BOTTOM DIMENSIONS	= VARIES
BOTTOM ELEVATION	= 251.0 (SEE SHM DETAILS)
CLEANOUT ELEVATION	= 251.77
DISCHARGES:	
2 YEAR BEFORE	= 8.5 CFS
10 YEAR BEFORE	= 48 CFS
2 YEAR (MANAGED)	= 2.0 CFS
10 YEAR BEFORE	= 46 CFS

REFER TO THE 50 SCALE
SEDIMENT CONTROL PLANS FOR
THE INITIAL PLACEMENT OF THE
EARTH DIKES IN THESE AREAS.

NOTE:
SEE
SHEET
14 FOR
CONSTRUCTION
OF SEDIMENT
BASIN

THIS PLAN IS FOR SEDIMENT CONTROL ONLY

