SHEET INDEX	
SHEET No.	DESCRIPTION
1	TITLE SHEET
2	HIDDEN HAVEN COURT PLAN AND PROFILE
3	STREET TREE, GRADING, AND SEDIMENT CONTROL PLAN
4	DRAINAGE AREA MAP AND LANDSCAPE PLAN
5	STORM DRAIN PROFILES AND TYP. ROADWAY SECTION
6	STORMWATER MANAGEMENT DETAILS
7	SEDIMENT CONTROL NOTES AND DETAILS

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 8-11-99

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 8/24/99

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 8/20/99

FINAL ROAD CONSTRUCTION, GRADING AND STORMWATER MANAGEMENT PLANS

OLD MILL OVERLOOK

LOTS 1 THRU 12 AND PARCEL 'A' & 'B'

ZONED R-20

TAX MAP NO. 17 PARCEL NO. 29

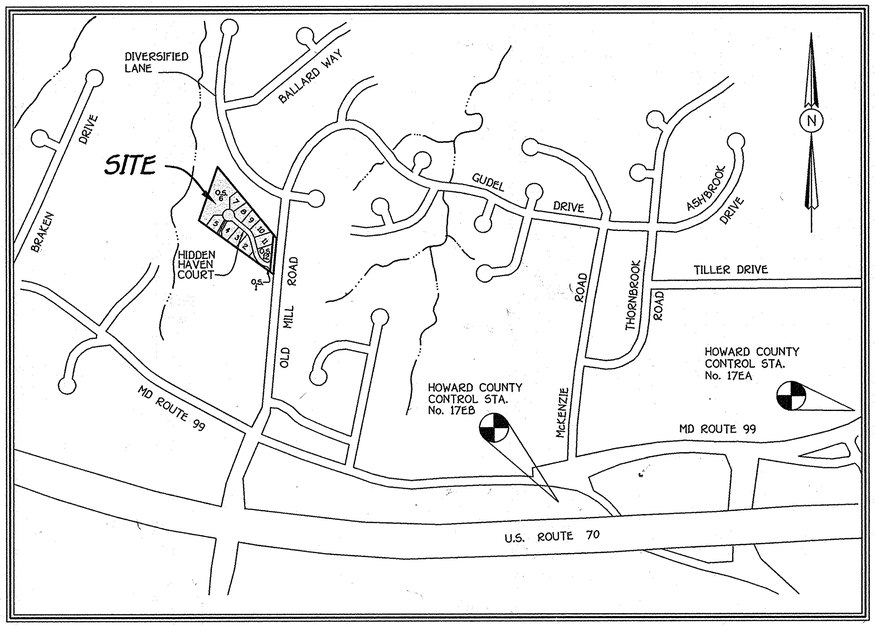
SECOND ELECTION DISTRICT

HOWARD COUNTY, MARYLAND

STREET LIGHT CHART				
DWG. No.	STREET NAME	STATION	OFF-SET	FIXTURE/POLE TYPE
2	OLD MILL ROAD	---	---	150-WATT H.P.S. VAPOR PENDANT (CUT-OFF) MOUNTED AT 30' ON RELOCATED BGE POLE #224124 USING A 12' ARM.
2	HIDDEN HAVEN COURT	L.P. STA. 1+27	2'	100-WATT "TRADITIONAIRE" H.P.S. VAPOR FIXTURE POST TOP FIXTURE MOUNTED ON A 14-FOOT BLACK FIBERGLASS POLE.

TRAFFIC CONTROL SIGNS				
STREET NAME	STATION	OFFSET	POSTED SIGN	SIGN CODE
HIDDEN HAVEN COURT	0+34	18'L	STOP	R1-1
HIDDEN HAVEN COURT	1+65	12'R	SPEED LIMIT 25	R2-1
HIDDEN HAVEN COURT	1+50	12'R	ROAD NARROWS	W5-1
HIDDEN HAVEN COURT	3+15	12'R	ROAD NARROWS	W5-1
HIDDEN HAVEN COURT	4+60	12'R	ROAD NARROWS	W5-1
HIDDEN HAVEN COURT	2+00	12'L	ROAD NARROWS	W5-1
HIDDEN HAVEN COURT	4+20	12'L	ROAD NARROWS	W5-1
HIDDEN HAVEN COURT	5+15	12'L	ROAD NARROWS	W5-1

ROAD CLASSIFICATION CHART		
ROAD NAME	CLASSIFICATION	R/W WIDTH
HIDDEN HAVEN COURT	PUBLIC ACCESS PLACE	40'



VICINITY MAP

SCALE 1":600'

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
2. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS / BUREAU OF ENGINEERING / CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST (5) WORKING DAYS PRIOR TO THE START OF WORK.
3. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
4. TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
5. STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURE AND POLE SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (1993) AND AS MODIFIED BY "GUIDELINES FOR STREET LIGHTS IN RESIDENTIAL DEVELOPMENTS (JUNE 1993)".

   NOTE: MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
6. 2 FOOT CONTOUR TOPOGRAPHY AND EXISTING CONDITIONS BASED ON FIELD RUN SURVEY PREPARED BY FISHER, COLLINS & CARTER, INC. ON OR ABOUT NOVEMBER 6, 1997.
7. THE COORDINATES SHOWN HEREON ARE BASED UPON HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT Nos. 17EA AND 17EB WERE USED FOR THIS PROJECT.

   17EA N 594,357.629
   E 1,357,519.340

   17EB N 593,813.908
   E 1,355,731.952
8. WATER IS PUBLIC, CONTRACT No. 24-3746-D AND THE DRAINAGE AREA IS THE PATAPSCO.
9. SEWER IS PUBLIC, CONTRACT No. 24-3746-D AND THE DRAINAGE AREA IS THE PATAPSCO.
10. S.W.M. WILL BE PROVIDED BY RETENTION FACILITY. FOR MAINTENANCE RESPONSIBILITIES, SEE MAINTENANCE SCHEDULE, SHEET 6.
11. EXISTING UTILITIES ARE BASED ON CONT. Nos. 2739-S, 24-1742-D & 24-1752-D
12. THERE IS NO FLOODPLAIN ON THIS SITE.
13. THERE IS NO WETLANDS ON THIS SITE.
14. THE TRAFFIC STUDY FOR THIS PROJECT WAS PREPARED BY THE TRAFFIC GROUP, INC. AND WAS APPROVED BY HOWARD COUNTY ON 5/16/97 UNDER S97-13.
15. BACKGROUND INFORMATION:
    A. SUBDIVISION NAME: OLD MILL OVERLOOK
    B. TAX MAP NO.: 17
    C. PARCEL NO.: 29
    D. ZONING: R-20
    E. ELECTION DISTRICT: SECOND
    F. TOTAL TRACT AREA: 5.96 AC.±
    G. NO. OF BUILDABLE LOTS: 9
    H. NO. OF OPEN SPACE LOTS: 3
    I. OPEN SPACE REQUIRED: (MIN. LOT SIZE 14,000 SQ. FT.) = 5.96 AC. x 30% = 1.79 AC.±
    J. OPEN SPACE PROVIDED: 1.92 AC.±
    K. PRELIMINARY PLAN APPROVAL DATE: 6/10/98 (P98-18)
    L. PREVIOUS FILE Nos. : S97-13, P98-18
16. NO CEMETERIES EXIST ON THE PROPERTY.
17. FOREST STAND DELINEATION PROVIDED BY ECO-SCIENCE PROFESSIONALS UNDER S97-13 DATED 5/16/97.
18. CONTRACTOR SHALL CONTACT BALTIMORE GAS & ELECTRIC AND OBTAIN CONCURRENCE FROM B.G. & E. BEFORE ANY GRADING ACTIVITIES AROUND THE POLES / GUY WIRES ON OPEN SPACE LOT 1.
19. The Forest Conservation obligation associated with this project will be met through the payment of a # 37,897.20 fee-in-lieu.

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

30581 TITLE SHEET.dwg

OWNER

MR. DAVID BRANDENBURG, EXECUTOR
NAGENGAST ESTATE
1176 CATON ROAD
HAMPSTEAD, MARYLAND 21074

DEVELOPER

B.E.T.C. PARTNERSHIP
P.O. BOX 1371
ELLICOTT CITY, MARYLAND 21042

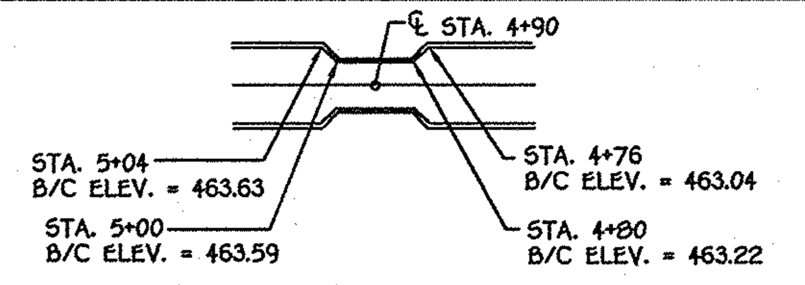
STATE OF MARYLAND — JAYESH VINUBHAI PANCHOLI — No. 21158 — REGISTERED PROFESSIONAL ENGINEER

Jayesh Pancholi 1-12-99

JAYESH V. PANCHOLI DATE

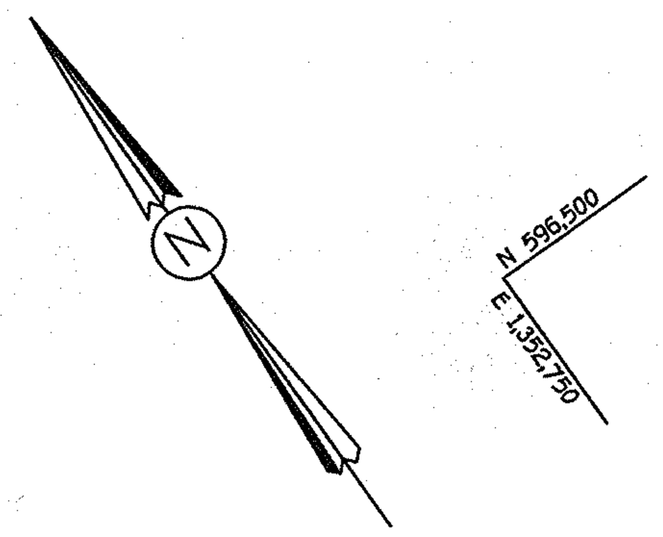
OLD MILL OVERLOOK
LOTS 1 THRU 12 AND PARCEL 'A' & 'B'
ZONED: R-20
TAX MAP No. 17 PARCEL NO. 29
SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE: OCTOBER 1, 1998
SHEET 1 OF 7

F-99-57



ELEVATIONS AT SPEED CALMING DEVICE NO. 3

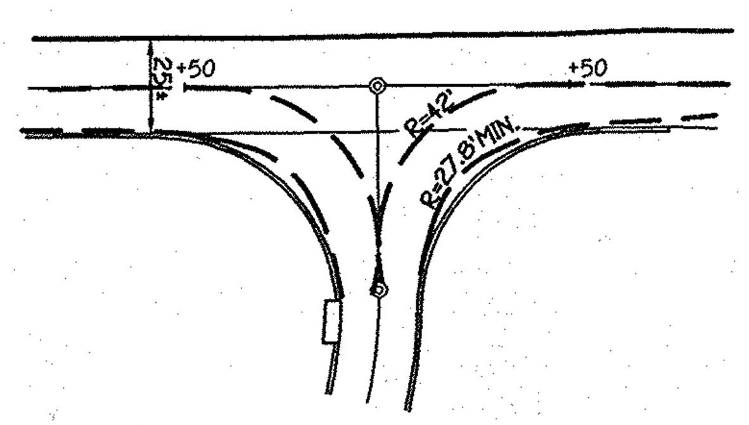
NO SCALE



℄ CURVE DATA
HIDDEN HAVEN COURT
STA. 0+53.02 TO STA. 2+06.52
RADIUS = 125.00'
LENGTH = 153.50'
Δ = 70°21'35"
TAN. = 88.11'
CHORD. = N 50°30'45" W, 144.04'

℄ CURVE DATA
HIDDEN HAVEN COURT
STA. 3+33.34 TO STA. 4+25.00
RADIUS = 150.00'
LENGTH = 91.67'
Δ = 35°00'50"
TAN. = 47.31'
CHORD. = N 32°50'25" W, 90.25'

OLD MILL ROAD



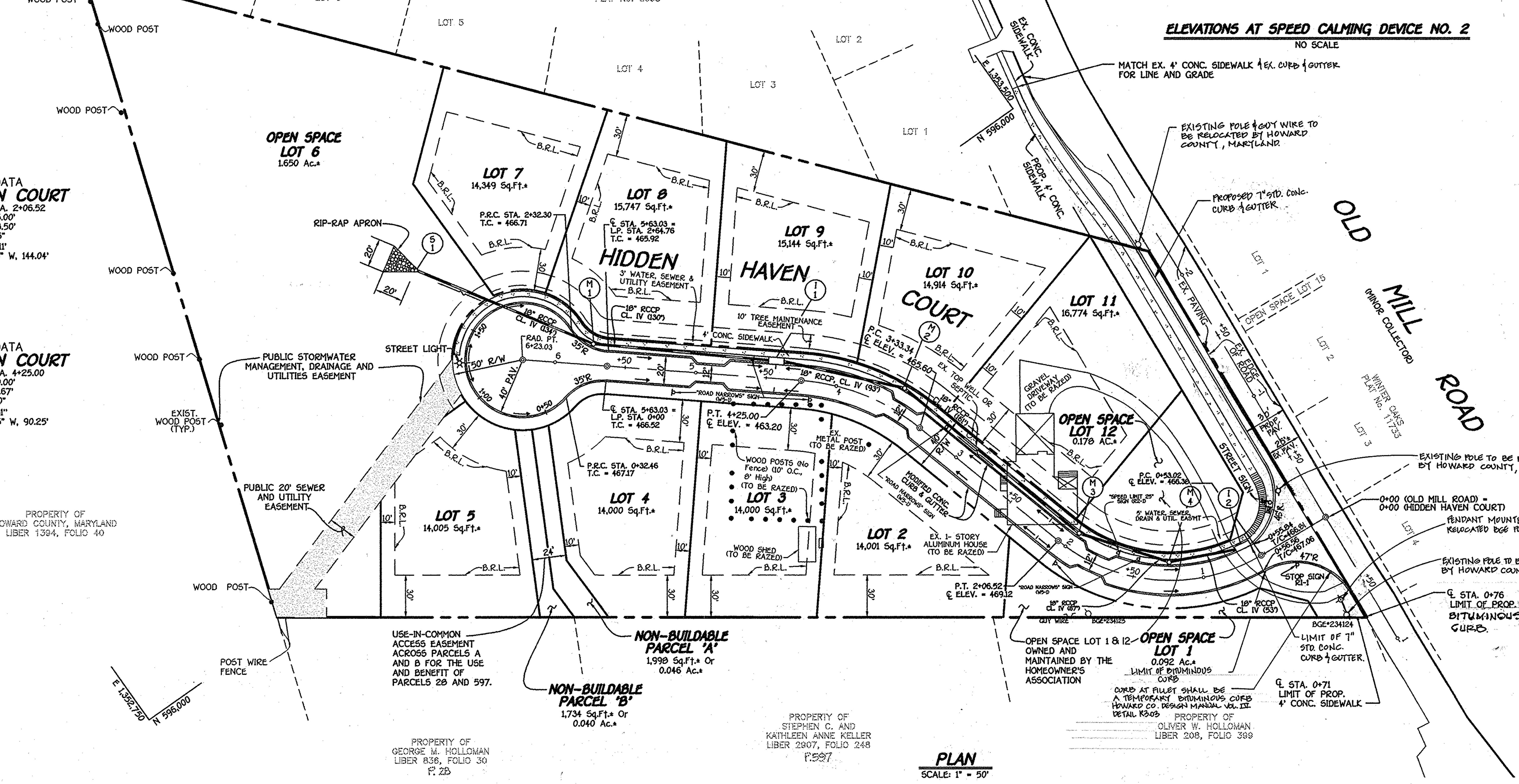
TURNING MOVEMENT FOR SU VEHICLE

SCALE: 1" = 50'

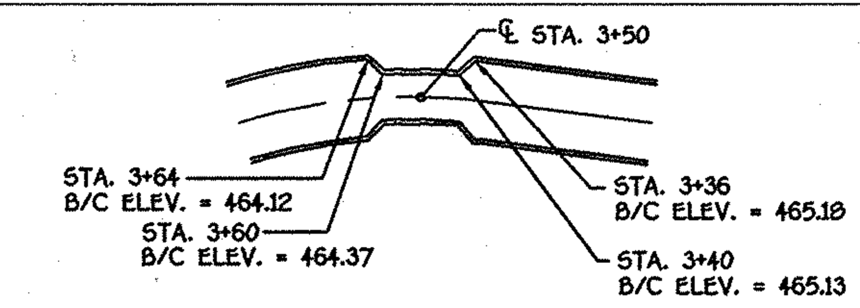
APPROVED
DEPARTMENT OF PLANNING AND ZONING
[signature] 8/24/99
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

APPROVED
DEPARTMENT OF PLANNING AND ZONING
[signature] 8/20/99
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE

APPROVED
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[signature] 8-11-99
CHIEF, BUREAU OF HIGHWAYS HS — DATE

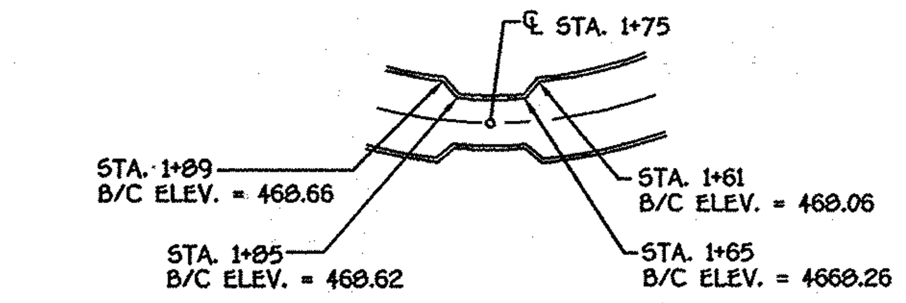


PLAN
SCALE: 1" = 50'



ELEVATIONS AT SPEED CALMING DEVICE NO. 2

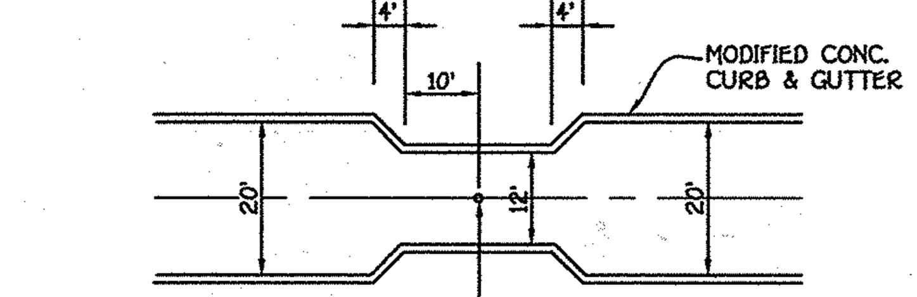
NO SCALE



ELEVATIONS AT SPEED CALMING DEVICE NO. 1

NO SCALE

NOTE: THE PAVEMENT WIDENING, AND POLE RELOCATIONS ARE THE RESPONSIBILITY OF HOWARD COUNTY, MARYLAND.



NO.	ROAD NAME	℄ STA.
1	HIDDEN HAVEN COURT	1+75
2		3+50
3		4+90

SPEED CALMING DEVICE

NO SCALE

OLD MILL OVERLOOK
LOTS 1 THRU 12 AND PARCELS 'A' & 'B'
ZONED R-20
TAX MAP NO. 17 PARCEL NO. 29
SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

HIDDEN HAVEN COURT
PLAN AND PROFILE

OWNER
Mr. David Brandenburg, Executor
Nagengast Estate
1176 Caton Road
Hampstead, MD 21074

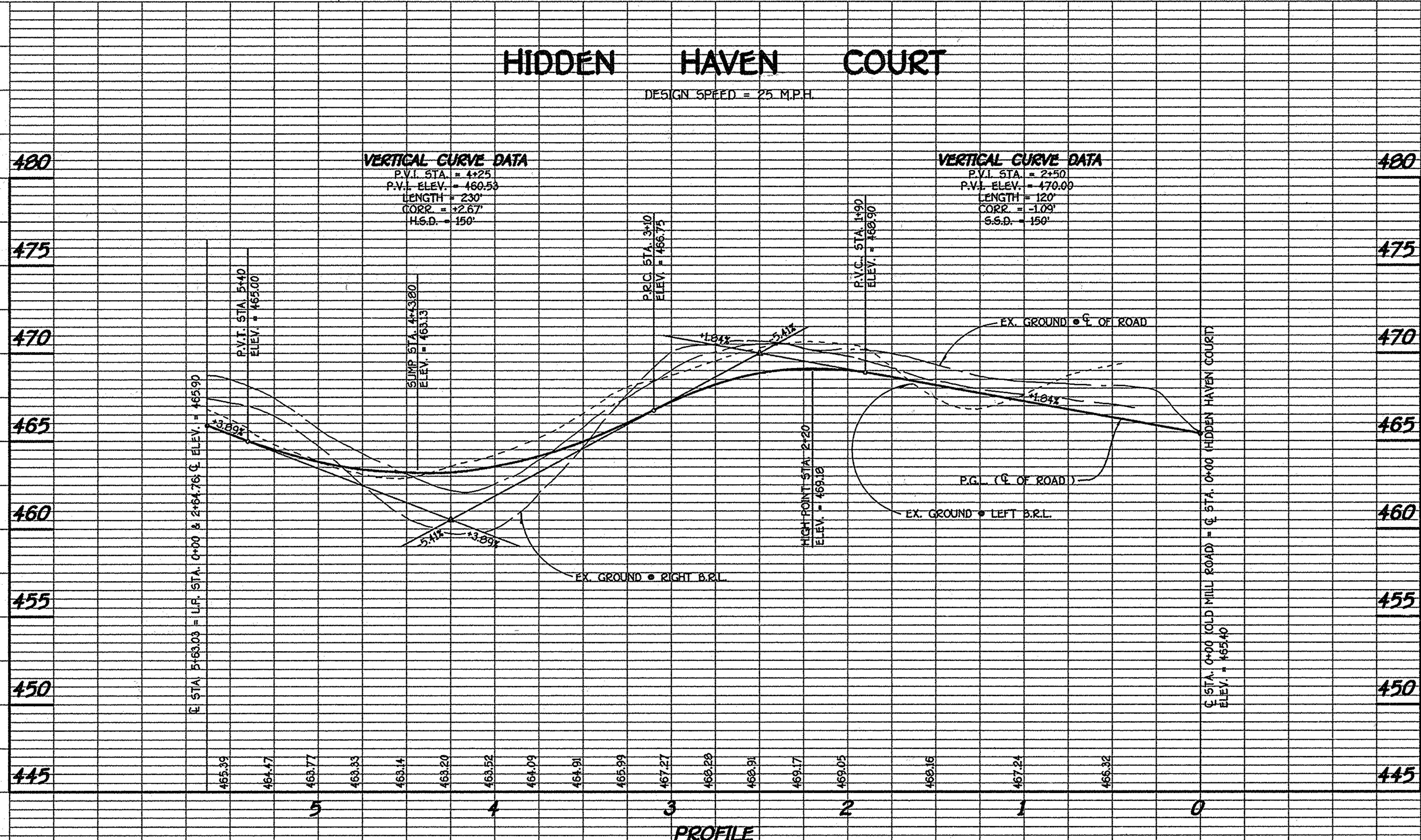
DEVELOPER
B.E.T.C. Partnership
P.O. Box 1371
Ellicott City, MD 21041

SCALE: AS SHOWN	DATE: OCT. 1, 1998	DWG. NO. 2 OF 7
DES. J.V.P.	DRN. J.C.L.	CHK. Z .F.

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855
F.C.C. *30581ROAD1.DWG

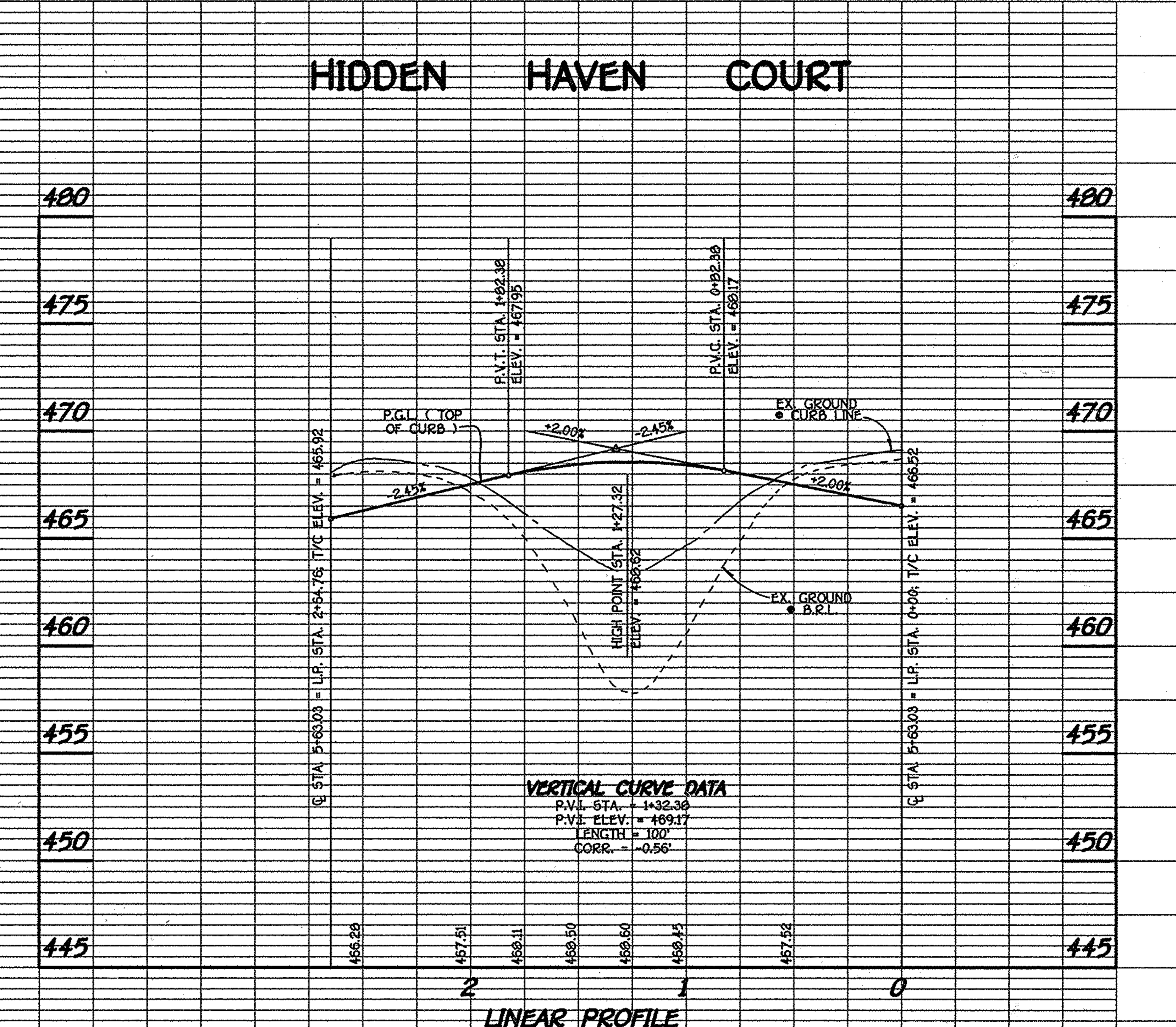
HIDDEN HAVEN COURT

DESIGN SPEED = 25 M.P.H.



PROFILE
SCALE: HOR.: 1" = 50'
VER.: 1" = 5'

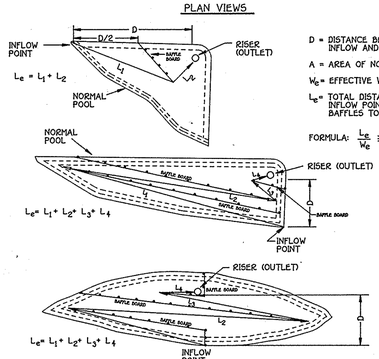
HIDDEN HAVEN COURT



LINEAR PROFILE
SCALE: HOR.: 1" = 50'
VER.: 1" = 5'

F-99-57

PLAN VIEWS



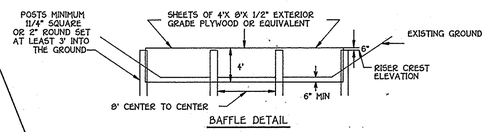
D = DISTANCE BETWEEN INFLOW AND OUTFLOW

A = AREA OF NORMAL POOL

W_e = EFFECTIVE WIDTH = A/D

L_e = TOTAL DISTANCE FROM THE INFLOW POINT AROUND THE BAFFLES TO THE RISER

FORMULA: $\frac{L_e}{W_e} \geq 2$



SEDIMENT BASIN BAFFLES

SEDIMENT BASIN

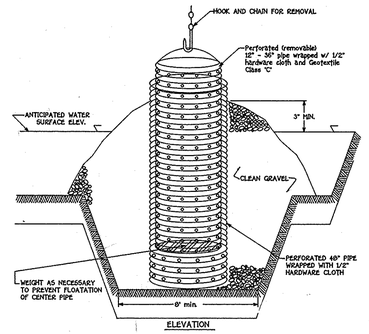
DRAINAGE AREA = 3.04 AC.
STORAGE REQUIRED = 10,944 CU. FT.
STORAGE PROVIDED = 11,438 CU. FT. AT ELEV. = 445.15
BOTTOM ELEV. = 441.00
SIDE SLOPES: 3:1
CLEANOUT ELEV. = 443.00
DEWATERING ELEV. = 445.15
INV. OF 3" DIA. ORIFICE = 444.00
(TEMP. SWM CONTROL)
INV. OF 3" PVC DEWATERING PIPE = 441.00
STORAGE REQUIRED AT CLEANOUT ELEV. =
3.04 AC. x 900 CU. FT. = 2,736 CU. FT.
STORAGE PROVIDED AT CLEANOUT ELEV. = 3,700 CU. FT.
STORAGE REQUIRED AT DEWATERING ELEV. =
3.04 AC. x 1800 CU. FT. = 5,472 CU. FT.
STORAGE PROVIDED AT DEWATERING ELEV. = 5,550 CU. FT.

STREET TREE SCHEDULE

SYMBOL	BOTANICAL AND COMMON NAME	SIZE	COMMENTS
⊕	ACER RUBRUM 'OCTOBER GLORY' RED MAPLE	2 1/2-3" CAL.	40' APART ON PUBLIC R/W

NOTE: STREET TREE IS ONLY A RECOMMENDATION. THIS MAY BE REVISED TO A COUNTY ACCEPTABLE EQUIVALENT.

TOTAL NUMBER OF STREET TREES: 38 TREES



Construction Specifications

1. The outer pipe should be 48" dia. or 24" in any case, be at least 4" greater in diameter than the center pipe. The outer pipe shall be wrapped with 1/2" hardware cloth to prevent blockage material from entering the perforations.

2. After installing the outer pipe, backfill around outer pipe with 2" aggregate or clean gravel.

3. The inside sealed pipe (center pipe) should be constructed by perforating a corrugated or PVC pipe between 12" and 36" in diameter. The perforations shall be 1/2" X 4" slots or 1" diameter holes 6" on center. The center pipe shall be wrapped with 1/2" hardware cloth first, then wrapped again with Geotextile Class C.

4. The center pipe should extend 12" to 18" above the anticipated water surface elevation or riser crest elevation when dewatering a basin.

REMOVABLE PUMPING STATION

PLAN
SCALE: 1" = 50'

NOTE: FENCE POST SPACING SHALL NOT EXCEED 10' CENTER TO CENTER

Construction Specifications

1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.

2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.

3. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.

4. Filter cloth shall be embedded a minimum of 8" into the ground.

5. Where two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.

6. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height

7. Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal/ft²/min/ft (max.)	Test: MSMT 322
Filtering Efficiency	75% (min)	Test: MSMT 322

SUPER SILT FENCE

LEGEND

SS — SUPER-SILT FENCE
S — S — S — SILT FENCE
X — X — X — TREE PROTECTION FENCE
S.C.E. — STABILIZED CONSTRUCTION ENTRANCE
A-2 → A-2 — EARTH DIKE
LIMIT OF DISTURBANCE
R.R.P. — RIP-RAP INFLOW PROTECTION

OWNER
MR. DAVID BRANDENBURG, EXECUTOR
NAGENGAST ESTATE
1176 CATON ROAD
HAMPSTEAD, MARYLAND 21074

DEVELOPER
B.E.T.C. PARTNERSHIP
P.O. BOX 1371
ELLICOTT CITY, MARYLAND 21041

By The Developer:

"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 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 — 11/12/99 Date

BRIAN KNAUFF
Printed Name Of Developer

By The Engineer:

"I Certify That This Plan For Pond Construction, Erosion And Sediment Control Represents A Practical And Workable Plan Based On My Personal Knowledge Of The Site Conditions. This Plan Was Prepared In Accordance With The Requirements Of The Howard Soil Conservation District. I Have Notified The Developer That He/She Should Engage A Registered Professional Engineer To Supervise Pond Construction And Provide The Howard Soil Conservation District With An "As-Built" Plan Of The Pond Within 30 Days Of Completion."

Signature Of Engineer — 1-12-99 Date

JAYESH PANCHOLI
Printed Name Of Engineer

STATE OF MARYLAND — JAYESH PANCHOLI — No. 21440 — REGISTERED PROFESSIONAL ENGINEER

These Plans Have Been Reviewed For Howard Soil Conservation District And Meet The Technical Requirements For Small Pond Construction, Soil Erosion And Sediment Control.

USDA-Natural Resources Conservation Service — 08/04/99 Date

These Plans For Small Pond Construction, Soil Erosion And Sediment Control Meet The Requirements Of The Howard Soil Conservation District.

Howard Soil Conservation District — 8/4/99 Date

Approved: Department Of Public Works

Chief Bureau Of Highways — 8-11-99 Date

Approved: Department Of Planning And Zoning

Chief, Division Of Land Development — 8/24/99 Date

Chief, Development Engineering Division — 8/20/99 Date

AS-BUILT CERTIFICATION

I Hereby Certify That The Facility Shown On This Plan Was Constructed As Shown On The " As-Built" Plans And Meets The Approved Plans And Specifications.

Signature — P.E. No. — Date:

Certify Means To State Or Declare A Professional Opinion Based Upon Onsite Inspections And Material Tests Which Are Conducted During Construction. The Onsite Inspections And Material Tests Are Those Inspections And Tests Deemed Sufficient And Appropriate Commonly Accepted Engineering Standards. Certify Does Not mean Or Imply A Guarantee By The Engineer Nor Does An Engineer's Certification Relieve Any Other Party From Meeting Requirements Imposed By Contract, Employment, Or Other Means, Including Meeting Commonly Accepted Industry Practices.

STREET TREE, GRADING AND SEDIMENT CONTROL PLAN

OLD MILL OVERLOOK

LOTS 1 THRU 12 AND PARCEL 'A' & 'B'
ZONED R-20
TAX MAP NO. 17 PARCEL NO. 29
SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE: OCTOBER 1, 1998
SCALE: AS SHOWN
SHEET 3 OF 7

F-99-57

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

F.C.C.#30581 GRADING PLAN

SCHEDULE A PERIMETER LANDSCAPE EDGE												
PERIMETER	CATEGORY (PROPERTIES/ ROADWAYS)	LANDSCAPE TYPE	LINEAR FEET OF ROADWAY FRONTAGE PERIMETER	CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NUMBER OF PLANTS REQUIRED			NUMBER OF PLANTS PROVIDED			
						SHADE TREES	EVERGREEN TREES	SHRUBS	SHADE TREES	EVERGREEN TREES	OTHER TREES (2:1 SUBSTITUTION)	SHRUBS (10:1 SUBSTITUTION)
						(DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)						
P-1	ADJACENT TO ROADWAY	B	211.93'	NO	NO	4	5	-	4	5	-	-
P-2	ADJACENT TO PERIMETER	A	473.19'	YES (353')	NO	2	-	-	2	-	-	-
P-3	ADJACENT TO PERIMETER	A	441.03'	YES (199')	NO	5	-	-	5	-	-	-
P-4	ADJACENT TO ROADWAY	C	222.47'	NO	NO	5	11	-	5	11	-	-

LANDSCAPING PLANT LIST			
QTY.	KEY	NAME	SIZE
30		ACER RUBRUM 'OCTOBER GLORY' (OCTOBER RED MAPLE)	2 - 2 1/2" CALIPER FULL CROWN, B&B
34		CEDRUS DEODORA/ DEODAR CEDAR	6'-8' HT.

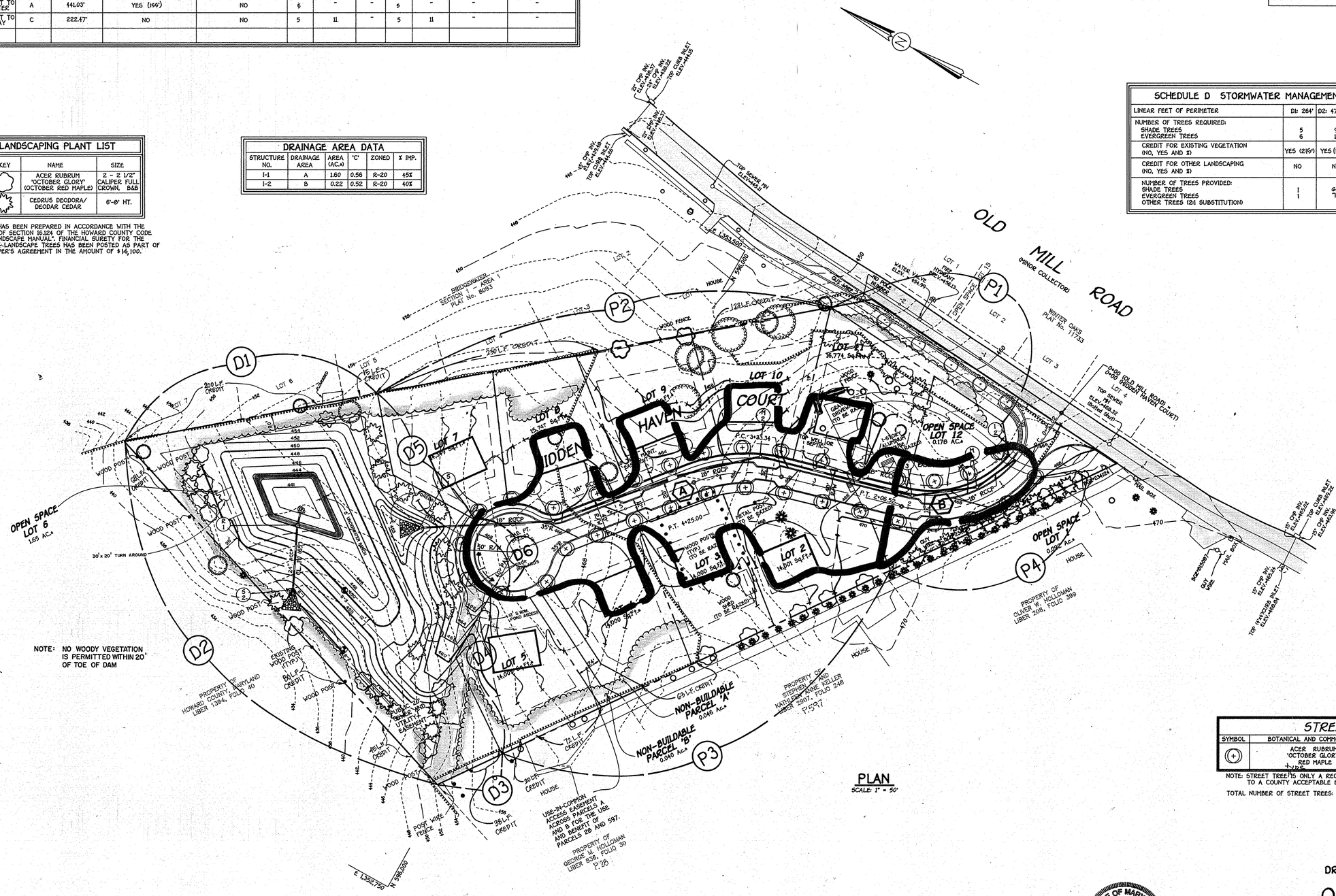
*THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE REQUIRED 64 LANDSCAPE TREES HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF $16,100.

DRAINAGE AREA DATA					
STRUCTURE NO.	DRAINAGE AREA	AREA (AC.±)	'C'	ZONED	% IMP.
I-1	A	1.60	0.56	R-20	45%
I-2	B	0.22	0.52	R-20	40%

SCHEDULE D STORMWATER MANAGEMENT AREA LANDSCAPING						
LINEAR FEET OF PERIMETER	D1: 264'	D2: 477.72'	D3: 73.40'	D4: 184.20'	D5: 183.33	D6: 85'
NUMBER OF TREES REQUIRED: SHADE TREES / EVERGREEN TREES	5 / 6	9 / 11	1 / 1	3 / 4	3 / 4	1 / 2
CREDIT FOR EXISTING VEGETATION (NO, YES AND #)	YES (216')	YES (193')	YES (136')	NO	NO	NO
CREDIT FOR OTHER LANDSCAPING (NO, YES AND #)	NO	NO	NO	NO	NO	NO
NUMBER OF TREES PROVIDED: SHADE TREES / EVERGREEN TREES / OTHER TREES (2:1 SUBSTITUTION)	1 / 1	6 / 7	0 / 0	3 / 4	3 / 4	1 / 2

Approved: Department Of Public Works
Chief Bureau Of Highways — Date 8-11-99

Approved: Department Of Planning And Zoning
Chief, Division Of Land Development — Date 8/20/99
Chief, Development Engineering Division MK — Date 8/20/99



NOTE: NO WOODY VEGETATION IS PERMITTED WITHIN 20' OF TOE OF DAM

PLAN
SCALE: 1" = 50'

STREET TREE SCHEDULE			
SYMBOL	BOTANICAL AND COMMON NAME	SIZE	COMMENTS
⊕	ACER RUBRUM 'OCTOBER GLORY' RED MAPLE	2 1/2-3" CAL.	40' APART ON PUBLIC R/W

NOTE: STREET TREE IS ONLY A RECOMMENDATION. THIS MAY BE REVISED TO A COUNTY ACCEPTABLE EQUIVALENT.

TOTAL NUMBER OF STREET TREES: 38 TREES

DRAINAGE AREA MAP AND LANDSCAPE PLAN

OLD MILL OVERLOOK

LOTS 1 THRU 12 AND PARCEL 'A' & 'B'

ZONED R-20
TAX MAP NO. 17 PARCEL NO. 29
SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE: OCTOBER 1, 1998
SCALE: AS SHOWN
SHEET 4 OF 7

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(401) 461 - 2855

F.C.C.-30501 GRADING PLAN

OWNER
MR. DAVID BRANDENBURG, EXECUTOR
NAGENGAST ESTATE
1176 CATON ROAD
HAMPSTEAD, MARYLAND 21074

DEVELOPER
B.E.T.C. PARTNERSHIP
P.O. BOX 1371
ELLICOTT CITY, MARYLAND 21041

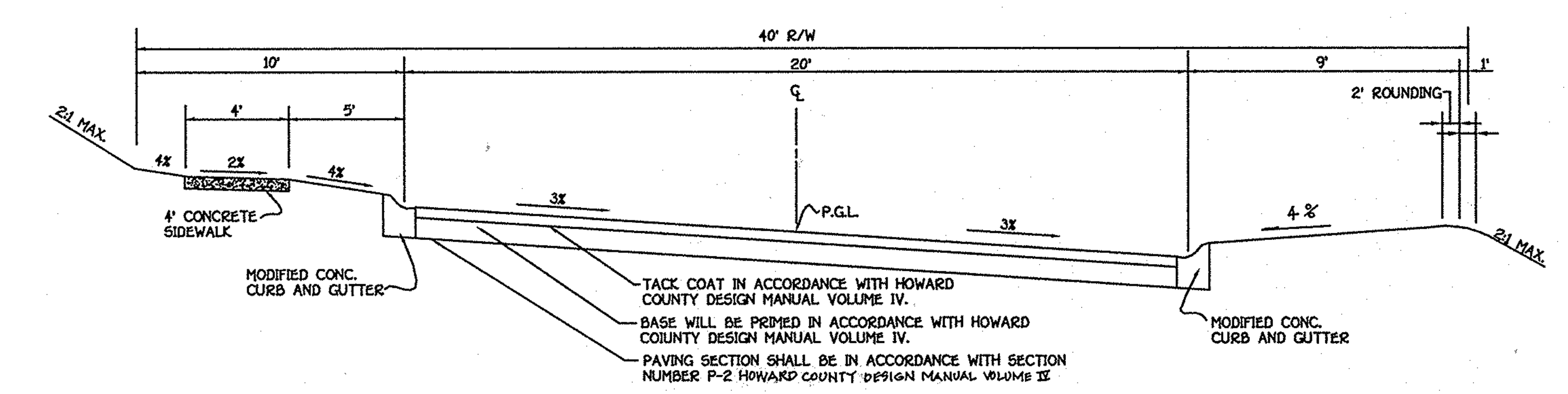
STATE OF MARYLAND — JAMES WITHINGTON FISHER — No. 21167 — REGISTERED PROFESSIONAL ENGINEER

F-99-57

STRUCTURE SCHEDULE

STRUCTURE NO.	TOP ELEVATION	INV.IN	INV.OUT	ROAD NAME	ROAD STA.	OFFSET	TYPE	REMARKS
I-1	463.15	457.01	456.76	HIDDEN HAVEN COURT	C.L. STA. 4+43.80	10.43'R	A-10	S.D. 4.41
I-2	466.81	-----	461.50	HIDDEN HAVEN COURT	C.L. STA. 0+62	10.43'R	A-10	S.D. 4.41
M-1	466.49	455.46	455.21	HIDDEN HAVEN COURT	C.L. STA. 5+74	15'R	STD. MANHOLE	G. 5.01
M-2	464.91	458.19	457.94	HIDDEN HAVEN COURT	C.L. STA. 3+57	17'R	STD. MANHOLE	G. 5.01
M-3	469.14	460.05	459.80	HIDDEN HAVEN COURT	C.L. STA. 1+98	12.5'R	STD. MANHOLE	G. 5.01
M-4	467.82	460.97	460.72	HIDDEN HAVEN COURT	C.L. STA. 1+25	12.5'R	STD. MANHOLE	G. 5.01
R-1	448.00	440.80	440.70	----------	N 596,262.39 E 1,353,029.88	-----	CONC. RISER	-----
S-1	454.50	453.00	453.00	----------	N 596,149.46 E 1,353,090.19	-----	CONC. END SECTION	S.D. 5.52
S-2	440.50	439.00	439.00	----------	N 596,234.99 E 1,352,971.07	-----	CONC. END SECTION	S.D. 5.52

NOTE: OFFSET DIMENSION FOR I-1 AND I-2 IS FROM CENTERLINE TO FACE OF INLET.



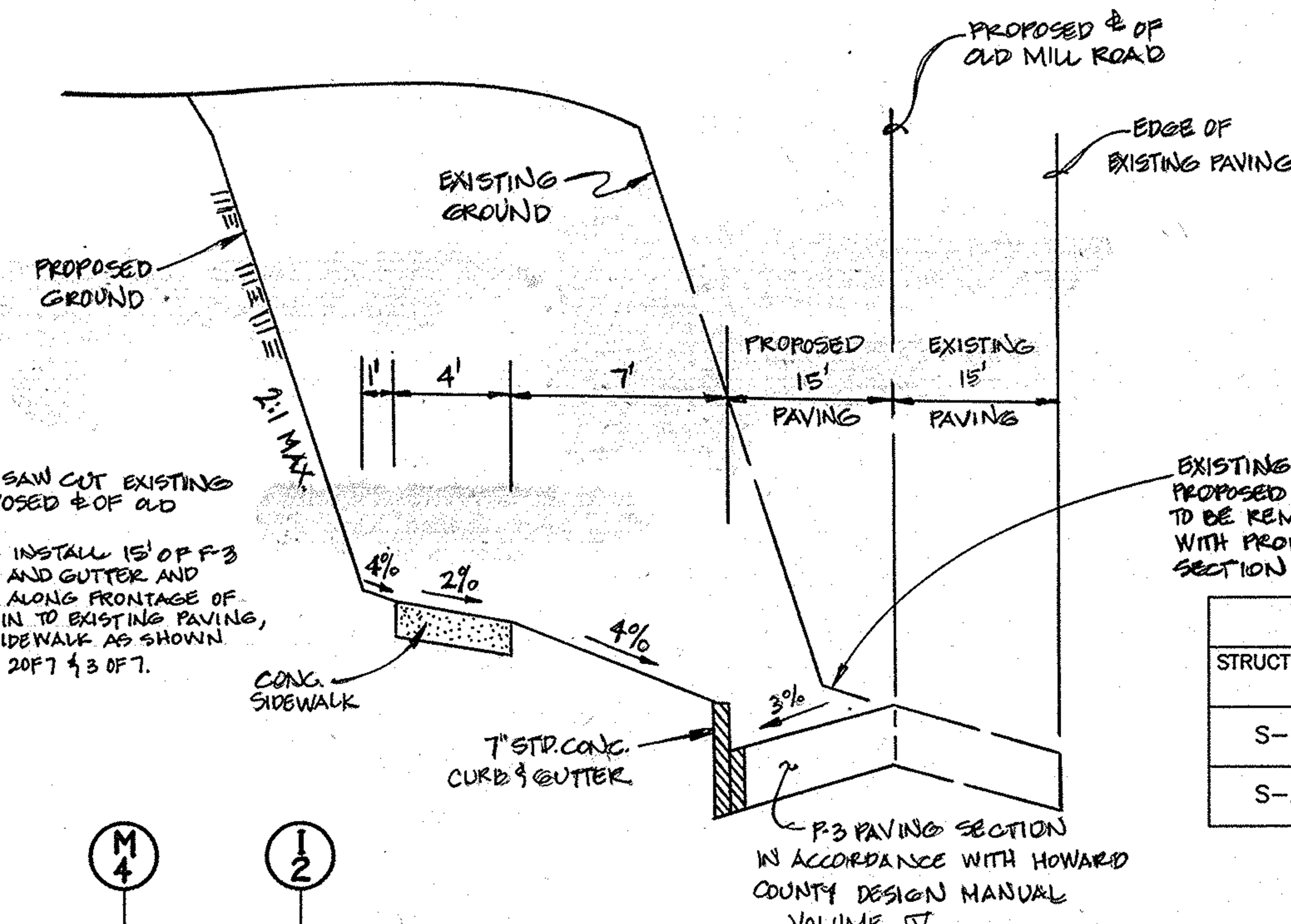
TYPICAL ROADWAY SECTION

NO SCALE

ROADWAY INFORMATION CHART

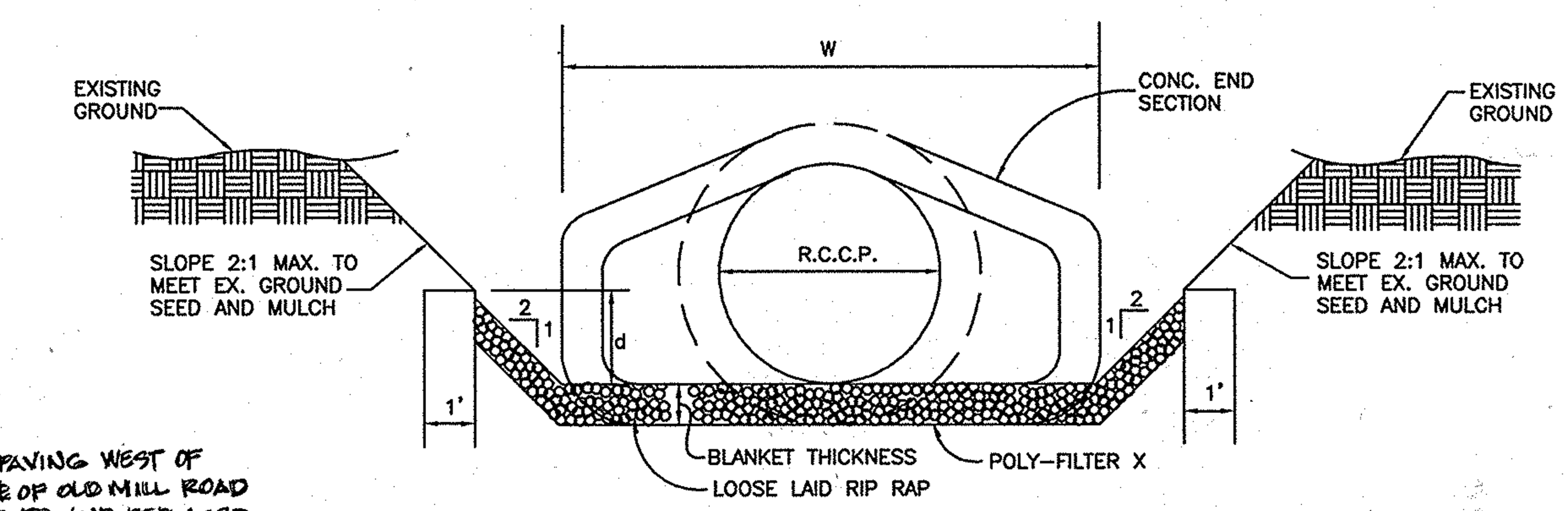
ROAD NAME	CLASSIFICATION	DESIGN SPEED	ZONING	℄ STATION LIMITS	R/W	PAVING SECTION
HIDDEN HAVEN COURT	PUBLIC ACCESS PLACE	25 M.P.H.	R-20	0+00 TO 6+23.03	40'	P-2

NOTES: 1. CONTRACTOR SHALL SAW CUT EXISTING PAVEMENT AT PROPOSED ℄ OF OLD MILL ROAD.
2. CONTRACTOR SHALL INSTALL 15' OF P-3 PAVING, CONC. CURB AND GUTTER AND CONCRETE SIDEWALK ALONG FRONTAGE OF PROPERTY AND TIE-IN TO EXISTING PAVING, CURB & GUTTER AND SIDEWALK AS SHOWN ON PLAN VIEW SHEET 2 OF 7 & 3 OF 7.



TYPICAL WIDENING SECTION ALONG OLD MILL ROAD

NOT TO SCALE



RIP RAP CHANNEL DETAIL

NO SCALE

RIP-RAP CHANNEL DESIGN DATA

STRUCTURE	AREA (SQ. FT.)	WETTED PERIMETER	R (FT.)	R 2/3	S (FT./FT.)	S 1/2	W	d	N	V (FPS)	Q (CFS)	RIP-RAP SIZE D_{50}	RIP-RAP SIZE D_{MAX}	BLANKET THICKNESS	Q10 (CFS)	DIA.
S-1	3.84	6.68	0.57	0.69	0.005	0.0707	4.0'	0.6'	0.035	2.07	7.95	9.5"	15"	19"	6.37	18"
S-2	3.84	6.68	0.57	0.69	0.005	0.0707	4.0'	0.6'	0.035	2.07	7.95	9.5"	15"	19"	1.26	18"

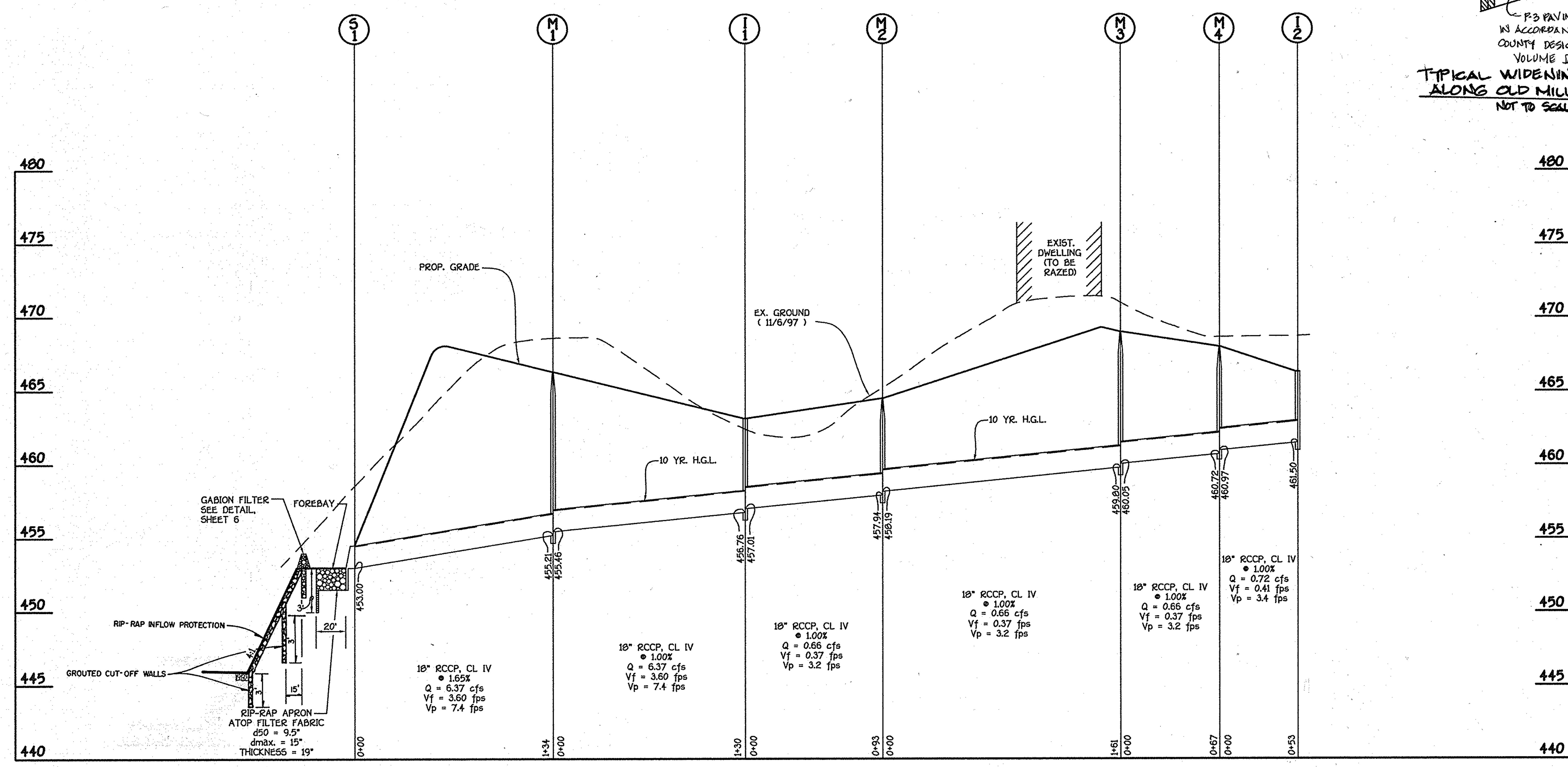
CONSTRUCTION SPECIFICATIONS FOR RIP-RAP OUTFALLS

1. The subgrade for the filter, riprap or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.

2. The rock or gravel shall conform to the specified grading limits when installed respectively in the riprap or filter.

3. Filter cloth shall be protected from punching, cutting or tearing. Any damage other than an occasional shall hole shall be repaired by placing another piece of cloth over the damaged part or by completely replacing the cloth. All overlaps whether for repairs or for joining two pieces of cloth shall be a minimum of one foot.

4. Stone for the riprap or gabion outlets may be placed by equipment. Both shall each be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The stone for riprap or gabion outlets shall be delivered and placed in a manner that will insure that it is reasonably homogenous with the smaller stones and spalls filling the voids between the larger stones. Riprap shall be placed in a manner to prevent damage to the filter blanket or filter cloth. Hand placement will be required to the extent necessary to prevent damage to the permanent works.



PROFILE

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

SEQUENCE OF CONSTRUCTION

1. OBTAIN ALL REQUIRED GRADING PERMITS, APPROVALS AND LICENSES FROM APPROPRIATE AGENCIES.
2. NOTIFY HOWARD COUNTY OFFICE OF CONSTRUCTION / INSPECTION DIVISION (410) 313-1870 AT LEAST FIVE (5) WORKING DAYS PRIOR TO STARTING WORK ON THESE PLANS. NOTIFY "MISS UTILITY" 48 HOURS BEFORE BEGINNING ANY WORK AT 1-800-257-7777.
3. INSTALL ALL TREE PROTECTION FENCE FOR TREES TO BE UNDISTURBED AS INDICATED ON THE PLANS. (2 DAYS)
4. CLEAR AND GRUB FOR SEDIMENT CONTROL MEASURES ONLY. INSTALL STABILIZED CONSTRUCTION ENTRANCE. (3 DAYS)
5. INSTALL REMAINING SEDIMENT CONTROL MEASURES, SEDIMENT TRAP/S.W.M. FACILITY, EARTH DIKES AND SILT FENCE AS INDICATED ON THE PLANS. NO BLASTING WILL BE PERMITTED FOR EXCAVATION OF THE PROPOSED TRAP. WHERE NECESSARY, RIPPING AND SACK HAMMERING SHOULD BE UTILIZED IN THE EXCAVATION OF THE FACILITY WITH PERMISSION REQUIRED FROM THE INSPECTOR TO PROCEED. (10 DAYS)
6. CLEAR AND GRUB THE REMAINDER OF THE SITE. (5 DAYS)
7. GRADE SITE TO THE PROPOSED SUB-GRADE AND INSTALL THE PROPOSED STORM DRAIN SYSTEM. STABILIZE ALL SLOPES IMMEDIATELY UPON COMPLETION OF GRADING. (4 WEEKS)
8. THE CONTRACTOR SHALL INSPECT AND PROVIDE NECESSARY MAINTENANCE ON ALL SEDIMENT AND EROSION CONTROL STRUCTURES SHOWN HEREON AFTER EACH RAINFALL AND ON A DAILY BASIS. REMOVE SEDIMENTS FROM TRAP WHEN CLEANOUT ELEVATION HAS BEEN REACHED. ALL SEDIMENTS MUST BE PLACED UPSTREAM OF AN APPROVED TRAPPING DEVICE.
9. CONSTRUCT CURB AND GUTTER AND ROAD BASE COARSE. (10 DAYS)
10. STABILIZE ALL DISTURBED AREAS AND OBTAIN PERMISSION FROM THE SEDIMENT CONTROL INSPECTORS TO PROCEED.
11. WHEN ALL CONTRIBUTING AREAS TO THE SEDIMENT CONTROL DEVICES AND TRAP HAVE BEEN STABILIZED AND WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, THE DEVICE MAY BE REMOVED AND/OR BACKFILLED AND THE REMAINING AREAS BROUGHT TO FINAL DESIGN GRADE. STABILIZE ALL REMAINING AREAS IN ACCORDANCE WITH PERMANENT SEEDING NOTES. (10 DAYS)
12. NOTIFY HOWARD COUNTY OFFICE OF INSPECTIONS AND PERMITS FOR FINAL INSPECTION OF THE COMPLETED PROJECT.

Approved: Department Of Public Works
Chief Bureau Of Highways — Date: 8-11-99

Approved: Department Of Planning And Zoning
Chief, Division Of Land Development — Date: 8/24/99
Chief, Development Engineering Division MK — Date: 8/20/99

FISHER, COLLINS & CARTER, INC.
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F.C.C.#30581 STORMDRAINS.DWG

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NAGENGAST ESTATE
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STATE OF MARYLAND — REGISTERED PROFESSIONAL ENGINEER — No. 21147

STORM DRAIN PROFILES AND TYP. ROADWAY SECTION

OLD MILL OVERLOOK

LOTS 1 THRU 12 AND PARCEL 'A' & 'B'

ZONED R-20
TAX MAP NO. 17 PARCEL NO. 29
SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE: OCTOBER 1, 1998
SCALE: AS SHOWN
SHEET 5 OF 7

F99-57

BORING B-1

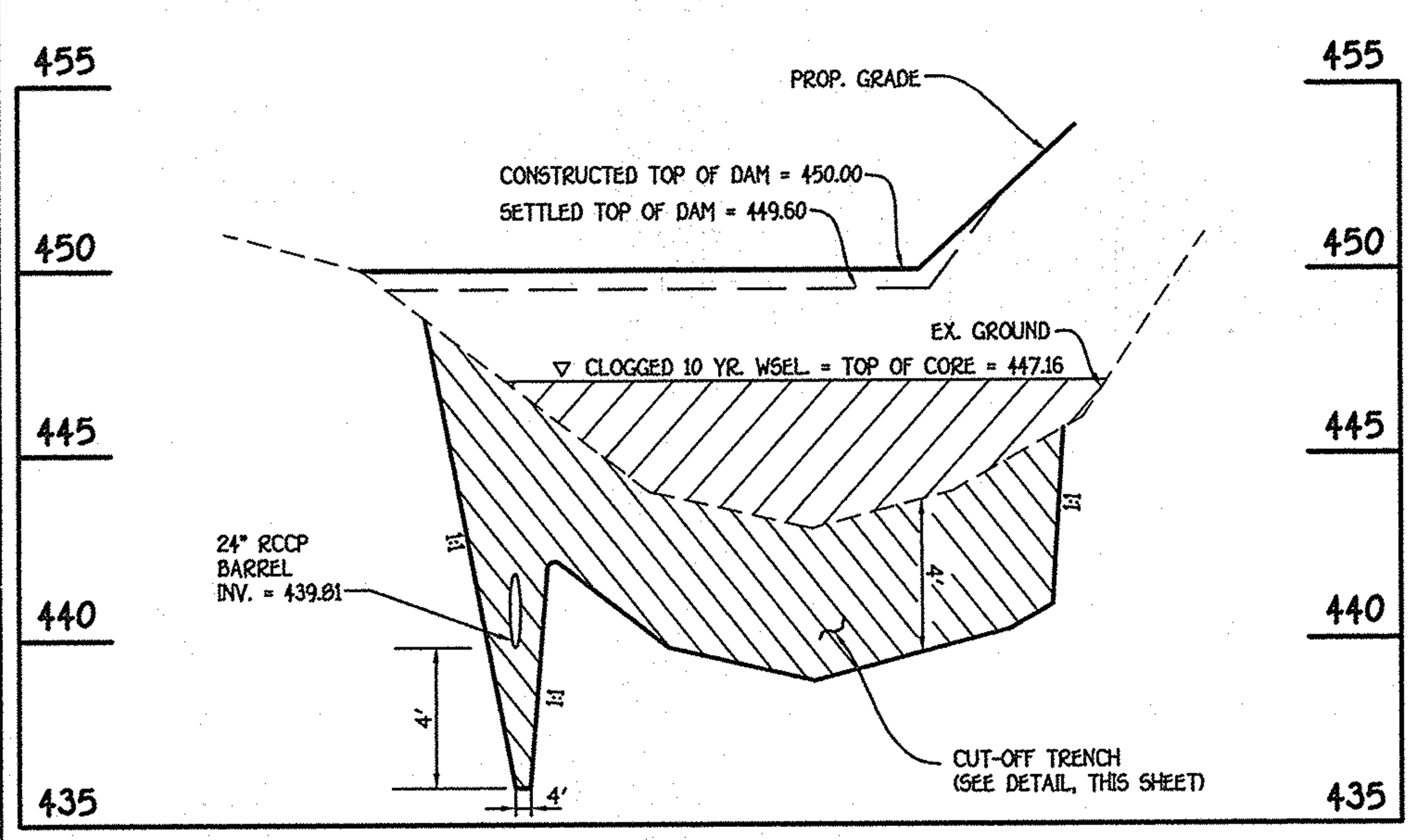
DESCRIPTION OF MATERIALS	DEPTH	REMARKS
	SURFACE	12" TOPSOIL
BROWN, MOIST, SOFT, SILT w/ TRACE SAND, MICA AND ORGANICS (ML)		
	1.5	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
ORANGISH BROWN TO GREENISH BROWN, DRY TO MOIST, MEDIUM DENSE, FINE TO MEDIUM MICACEOUS SILTY SAND WITH WEATHERED ROCK FRAGMENTS (SM) USDA- SANDY LOAM		CAVED TO 8.0' AT COMPLETION
	11.5	
BOTTOM OF HOLE AT 11.5'		

BORING B-2

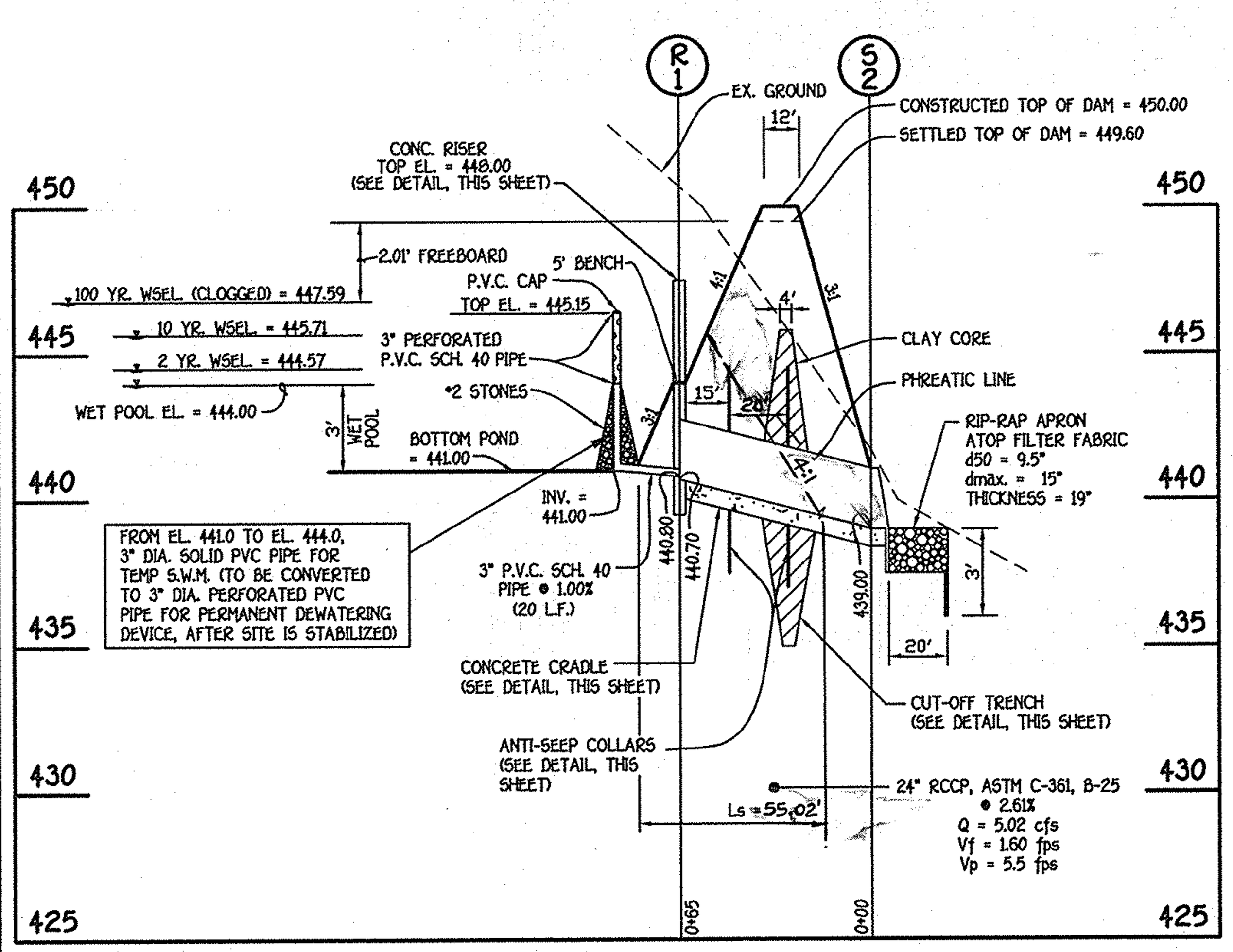
DESCRIPTION OF MATERIALS	DEPTH	REMARKS
	SURFACE	6" TOPSOIL
BROWN, MOIST, VERY SOFT, FINE SANDY SILT WITH TRACE MICA AND ROOTS (ML)		
	2.0	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
LIGHT BROWN TO ORANGISH BROWN, DRY TO MOIST, MEDIUM DENSE TO LOOSE, FINE TO COARSE MICACEOUS SILTY SAND WITH WEATHERED ROCK FRAGMENTS (SM) USDA- LOAM SAND		CAVED TO 9.5' AT COMPLETION
	11.5	
BOTTOM OF HOLE AT 11.5'		

BORING B-3

DESCRIPTION OF MATERIALS	DEPTH	REMARKS
	SURFACE	6" TOPSOIL
BROWN, MOIST, VERY SOFT, FINE SANDY SILT WITH TRACE MICA (ML)		
	2.0	NO GROUNDWATER ENCOUNTERED WHILE DRILLING
BROWN TO ORANGISH BROWN, DRY TO MOIST, MEDIUM DENSE, FINE TO MEDIUM MICACEOUS SILTY SAND WITH WEATHERED ROCK FRAGMENTS (SM) USDA- SANDY LOAM		CAVED TO 8.5' AT COMPLETION
	11.5	
BOTTOM OF HOLE AT 11.5'		



PROFILE ALONG ℄ OF DAM
SCALE: HOR. : 1" = 50'
VER. : 1" = 5'



PROFILE ALONG PRINCIPAL SPILLWAY
SCALE: HOR. : 1" = 50'
VER. : 1" = 5'

378 - 12 Pond
SPECIFICATIONS

These specifications are appropriate to all ponds within the scope of the Standard for practice MD-378. All references to ASTM and AASHTO specifications apply to the most recent version.

Site Preparation

Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped of topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Channel banks and sharp breaks shall be sloped to no steeper than 1:1.

Areas to be covered by the reservoir will be cleared of all trees, brush, logs, 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 - Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in maximum 8 inch thick (before compaction) layers which are to be continuous over the eritire length of the fill. The most permeable borrow material shall be placed in the downstream portions of the embankment The principal spillway must be installed concurrently with fill placement and not excavated into the embankment.

Compaction - The movement of the hauling and spreading equipment over the fill shall be controlled so that the 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 adjoinng 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.

Reinforced Concrete Pipe - All of the following criteria shall apply for reinforced concrete pipe:

1. Materials - Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM Designation C-361.

2. Bedding - All reinforced concrete pipe conduits shall be laid in a concrete bedding for their entire length. This bedding shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 10% of its outside diameter with a minimum thickness of 3 inches, or as shown on the drawings.

3. Laying pipe - Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 2 feet from the riser.

4. Backfilling shall conform to "Structure Backfill".

5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

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

1. Materials-PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241.

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

3. Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

4. Backfilling shall conform to "Structure Backfill".

5. Otherdetails (anti-seep collars ,valves, etc.) shall be as shown on the drawings.

Concrete

Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 608; Mix No. 3.

Rock Riprap

Rock riprap shall meet the requirements of Maryland Department of Transporation, State Highway Administration Standard Specifications for Construction and Materials, Section 905.

The riprap shall be placed to the required thickness in one operation. The rock shall be delivered and placed in a manner that will insure the riprap in place shall 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 a 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 sightly 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 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.

STORMWATER MANAGEMENT POND MAINTENANCE SCHEDULE

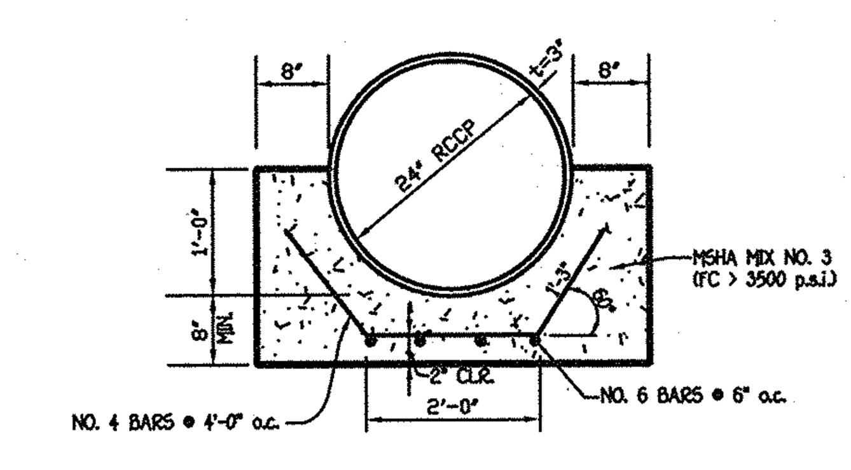
(PUBLIC FACILITY)

A. ROUTINE MAINTENANCE

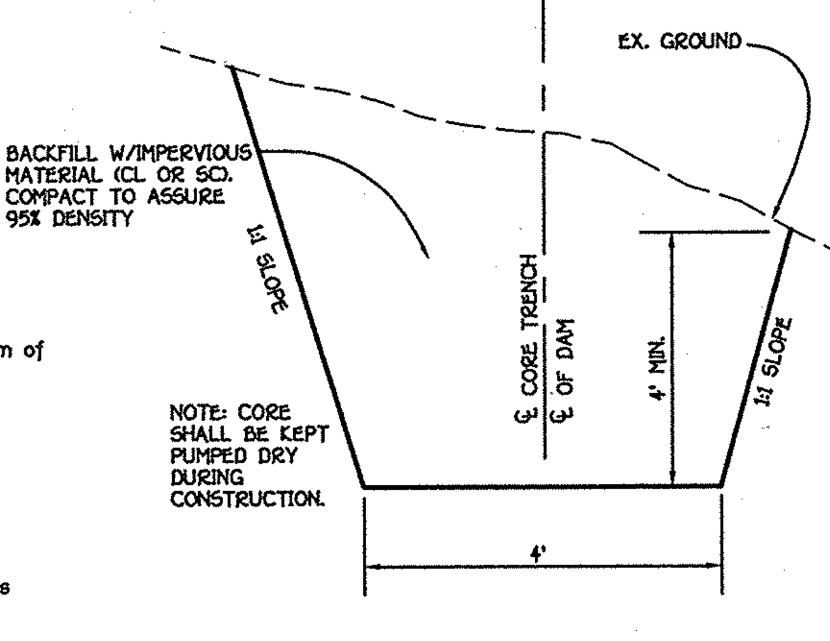
1. Facility shall be inspected annually and after major storms. Inspections should be performed during wet weather to determine if the pond is functioning properly.
2. Top and side slopes of the embankment shall be mowed a minimum of two (2) times a year, once in June and once in September. Other side slopes, the bottom of the pond, and maintenance access should be mowed as needed.
3. Debris and litter next to the outlet structure shall be removed during regular mowing operations and as needed.
4. Visible signs of erosion in the pond as well as rip-rap putlet area shall be repaired as soon as it is noticed.

B. NON-ROUTINE MAINTENANCE

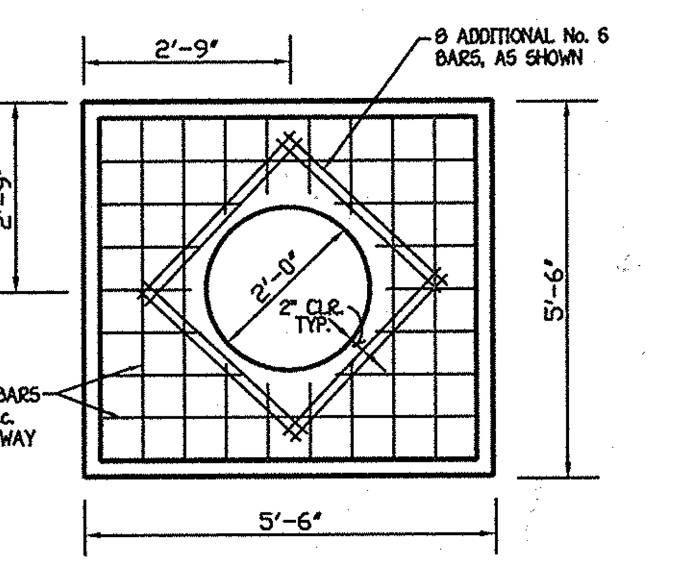
1. Structural components of teh pond such as the dam, riser structure and the pipes shall be repaired upon the detectionof any damage. The components should be inspected during maintenance operations.
2. Sediment should be removed when its accumalation significantly reduces the design storage, interferes with the function of the riser, when deemed necessary for aesthetic reasons, or when deemed necessary by the Howard County's Department of Public Works.



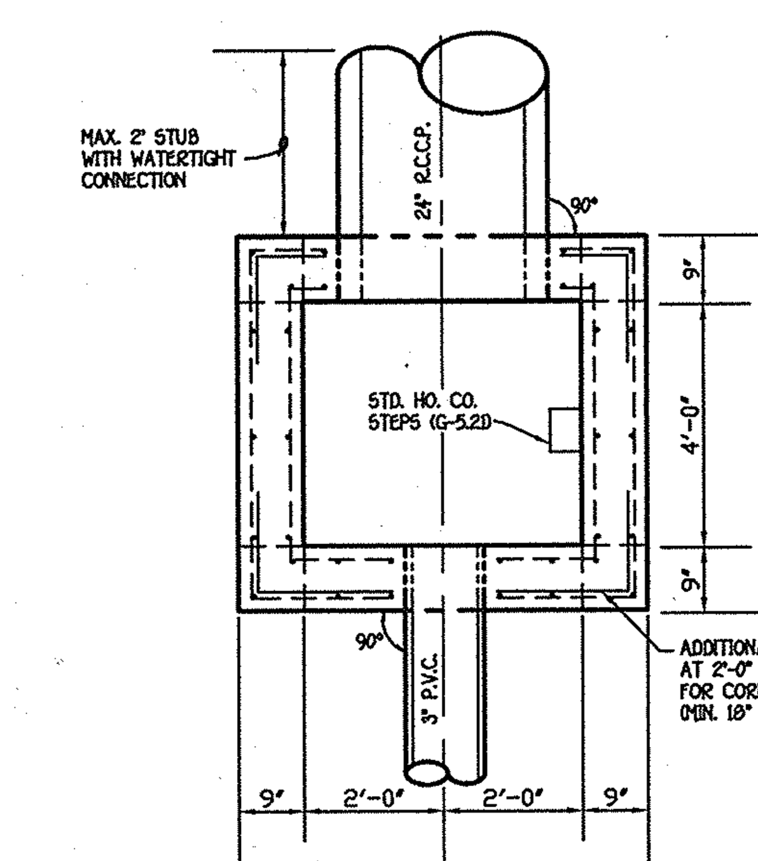
A2 CRADLE
NOT TO SCALE



CORE TRENCH DETAIL
NOT TO SCALE



TOP SLAB
NO SCALE



PLAN VIEW
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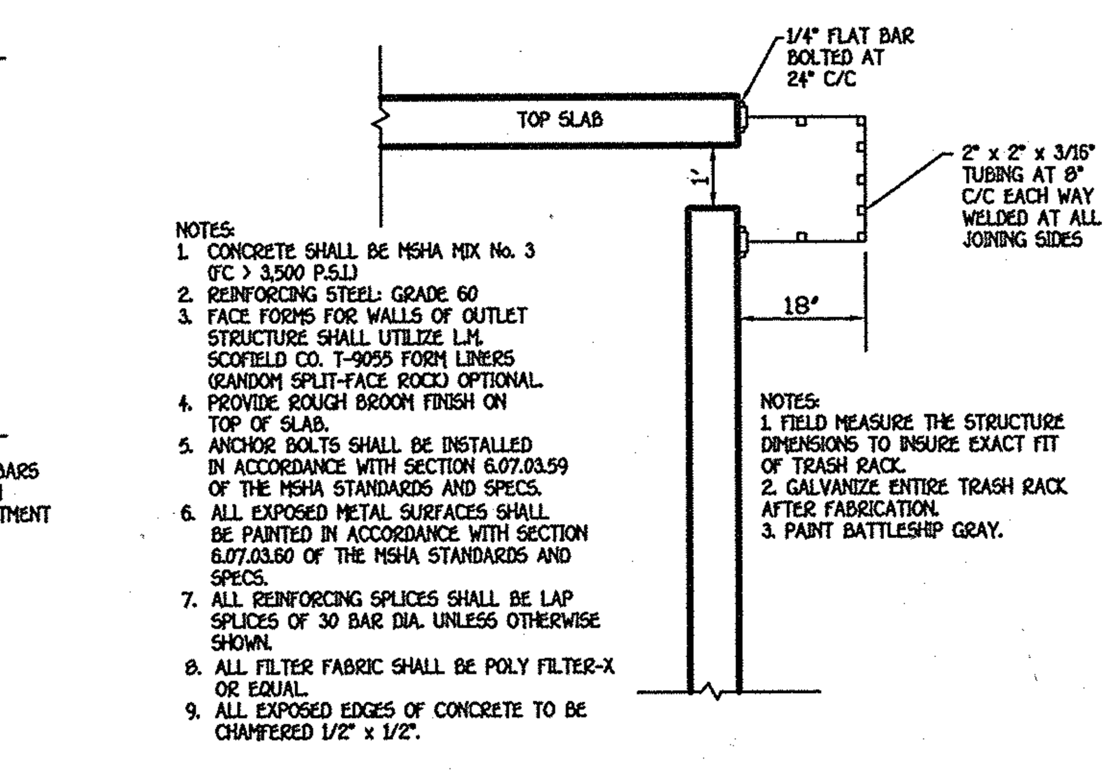
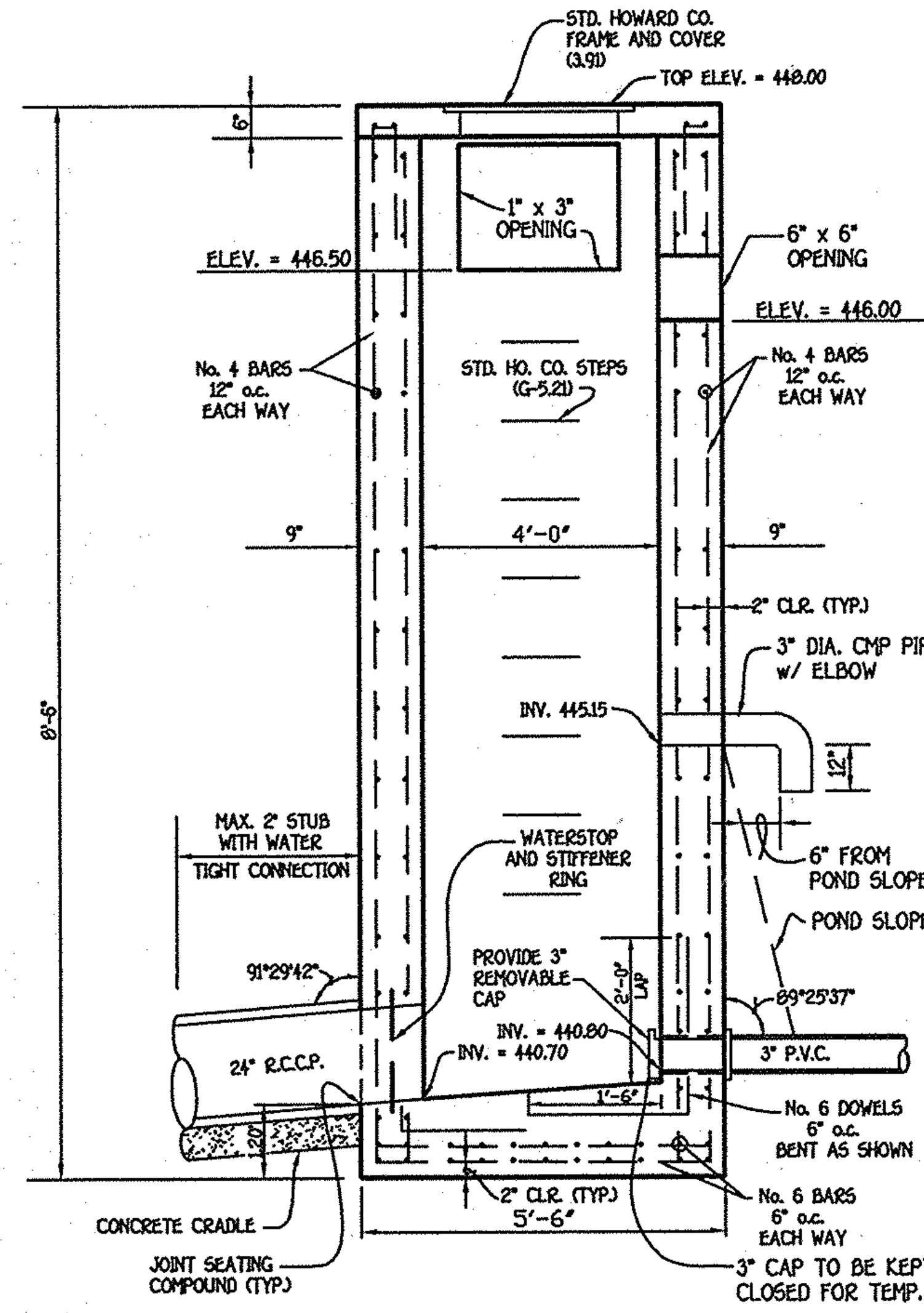
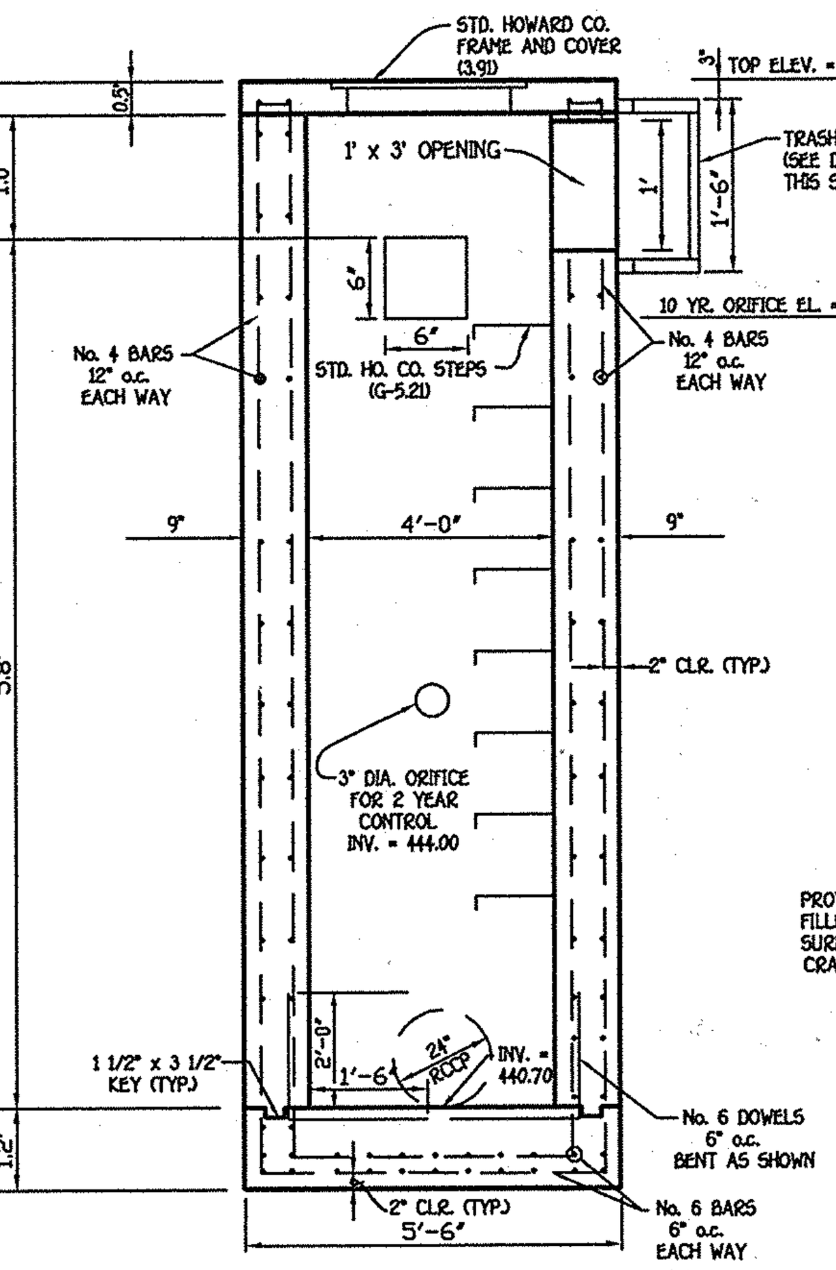


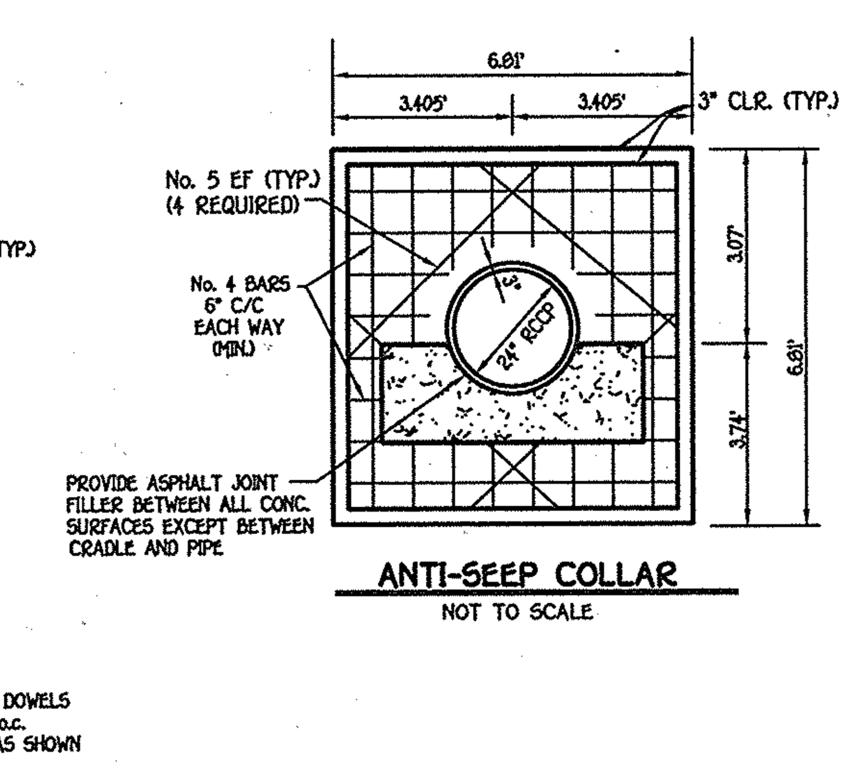
TRASH RACK DETAIL
NO SCALE



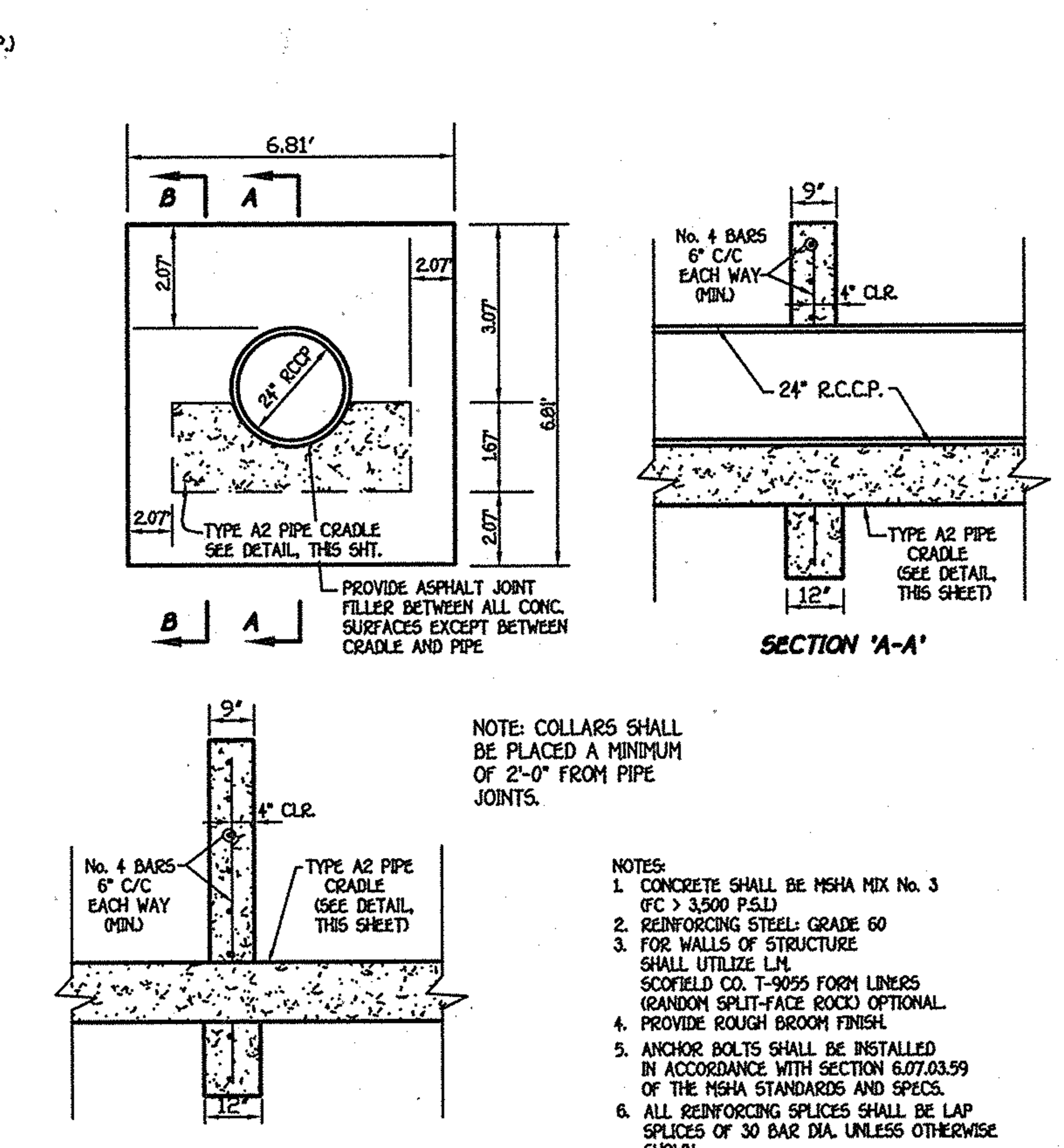
PROFILE VIEW A
CONCRETE RISER DETAIL
NO SCALE



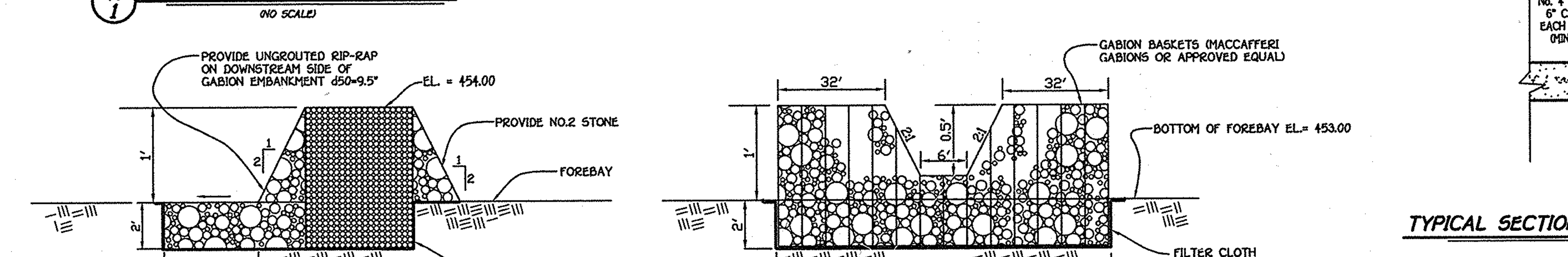
PROFILE VIEW B
CONCRETE RISER DETAIL
NO SCALE



ANTI-SEEP COLLAR
NOT TO SCALE



TYPICAL SECTION THROUGH BARREL, CRADLE AND ANTI-SEEP COLLAR
NO SCALE



GABION FILTER AT FOREBAY
NO SCALE

By The Developer:

"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 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] 1/12/99
Signature Of Developer — Date

BRIAN KNAUFF
Printed Name Of Developer

By The Engineer:

"I Certify That This Plan For Pond Construction, Erosion And Sediment Control Represents A Practical And Workable Plan Based On My Personal Knowledge Of The Site Conditions. This Plan Was Prepared In Accordance With The Requirements Of The Howard Soil Conservation District. I Have Notified The Developer That He/She Must Engage A Registered Professional Engineer To Supervise Pond Construction And Provide The Howard Soil Conservation District With An "As-Built" Plan Of The Pond Within 30 Days Of Completion."

[signature] 1-12-99
Signature Of Engineer — Date

Printed Name Of Engineer

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] 08/04/99
USDA-Natural Resources Conservation Service — Date

These Plans For Small Pond Construction, Soil Erosion And Sediment Control Meet The Requirements Of The Howard Soil Conservation District.

[signature] 8/4/99
Howard Soil Conservation District — Date

Approved: Department Of Public Works
[signature] 8-11-99
Chief Bureau Of Highways — Date

Approved: Department Of Planning And Zoning
[signature] 7/24/99
Chief, Division Of Land Development — Date

[signature] 8/20/99
Chief, Development Engineering Division MK — Date

AS-BUILT CERTIFICATION

I Hereby Certify That The Fcaility Shown On This Plan Was Constructed As Shown On The " As-Built" Plans And Meets The Approved Plans And Specifications.

Signature — P.E. No.

Date:

Certify Means To State Or Declare A Professional Opinion Based Upon Onsite Inspections And Material Tests Which Are Conducted During Construction. The Onsite Inspections And Material Tests Are Those Inspections And Tests Deemed Sufficient And Appropriate Commonly Accepted Engineering Standards. Certify Does Not mean Or Imply A Guarantee By The Engineer Nor Does An Engineer's Certification Relieve Any Other Party From Meeting Requirements Imposed By Contract, Employment, Or Other Means, Including Meeting Commonly Accepted Industry Practices.

OPERATION, MAINTENANCE AND INSPECTION

Inspection of the pond(s) shown hereon shall be performed at least annually, in accordance with the checklist and requirements contained within USDA, SCS "Standards And Specifications For Ponds" (MD-378). The pond owner(s) and any heirs, successors, or assigns shall be responsible for the safety of the pond and the continued operation, surveillance, inspection, and maintenance thereof. The pond owner)s) shall promptly notify the Soil Conservation District of any unusual observations that may be indications of distress such as excessive seepage, turbid seepage, sliding or slumping.

GEOTECHNICAL RECOMMENDATIONS FOR EMBANKMENT AND CUT-OFF TRENCH CONSTRUCTION

THE SITE SHOULD BE STRIPPED OF TOPSOIL AND ANY OTHER UNSUITABLE MATERIALS FROM THE EMBANKMENT OR STRUCTURE AREA IN ACCORDANCE WITH SOIL CONSERVATION GUIDELINES. AFTER STRIPPING OPERATIONS HAVE BEEN COMPLETED, THE EXPOSED SUBGRADE MATERIALS SHOULD BE PROOFROLLED 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 GEOTECHICAL ENGINEER OR HIS REPRESENTATIVE UTILIZING A DYNAMIC CONE PENETROMETER. ANY EXCESSIVELY SOFT OR LOOSE MATERIALS IDENTIFIED BY PROOFROLLING OR PENETROMETER TESTING SHOULD BE EXCAVATED TO SUITABLE FIRM SOIL, AND THEN GRADES RE-ESTABLISHED BY BACKFILLING WITH SUITABLE SOIL.

A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER SHOULD BE PRESENT TO MONITOR PLACEMENT AND COMPACTION OF FILL FOR THE EMBANKMENT AND CUT-OFF TRENCH. IN ACCORDANCE WITH MARYLAND SOIL CONSERVATION SPECIFICATION 378 SOILS CONSIDERED SUITABLE FOR THE CENTER OF EMBANKMENT AND CUT-OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH OR CL. ALL FILL MATERIALS MUST BE PLACED AND COMPACTED IN ACCORDANCE WITH MD SCS 378 SPECIFICATIONS.

DESIGN SUMMARY

DESIGN STORM	ALLOWABLE RELEASE RATE	FACILITY INFLOW	FACILITY DISCHARGE	WATER SURFACE ELEVATION	STORAGE VOLUME (AC.FT.)
2 YEAR	0.39 CFS	2.89 CFS	0.13 CFS	444.57	0.1944
10 YEAR	0.35 CFS	8.20 CFS	0.30 CFS	445.71	0.2109
100 YEAR	N/A	15.04 CFS	1.26 CFS	446.81	0.5401

STORAGE - 0.5401 AC.FT. x 5.81' = 3.14
WATERSHED AREA TO FACILITY (ACRES): 3.04 AC.

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
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OWNER
MR. DAVID BRANDENBURG, EXECUTOR
NAGENGAST ESTATE
1176 CATON ROAD
HAMPSTEAD, MARYLAND 21074

DEVELOPER
B.E.T.C. PARTNERSHIP
P.O. BOX 1371
ELLICOTT CITY, MARYLAND 21041

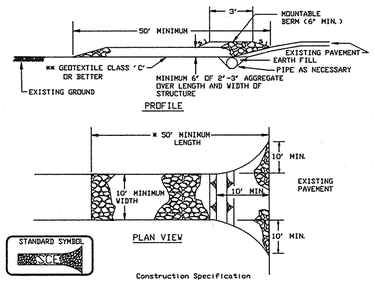
STORMWATER MANAGEMENT DETAILS

OLD MILL OVERLOOK

LOTS 1 THRU 12 AND PARCELS 'A' & 'B'

ZONED R-20
TAX MAP NO. 17 PARCEL NO. 29
SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE: OCTOBER 1, 1998
SHEET 6 OF 7

F99-57



Construction Specification

1. Length – minimum of 50' (*30' for single residence lot).

2. Width – 10' minimum, should be flared at the existing road to provide a turning radius.

3. Geotextile fabric (Filter cloth) shall be placed over the existing ground prior to placing stone. **The plan approval authority may not require single family residences to use geotextile.

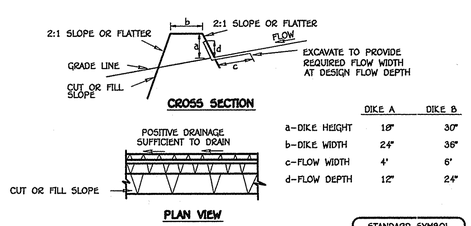
4. Stone – crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.

5. Surface Water – all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.

6. Location – A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.

STABILIZED CONSTRUCTION ENTRANCE – 2

NOT TO SCALE



	DIKE A	DIKE B
a–DIKE HEIGHT	18"	30"
b–DIKE WIDTH	24"	36"
c–FLOW WIDTH	4'	6'
d–FLOW DEPTH	12"	24"

FLOW CHANNEL STABILIZATION
GRADE 0.5% MIN. 10% MAX.

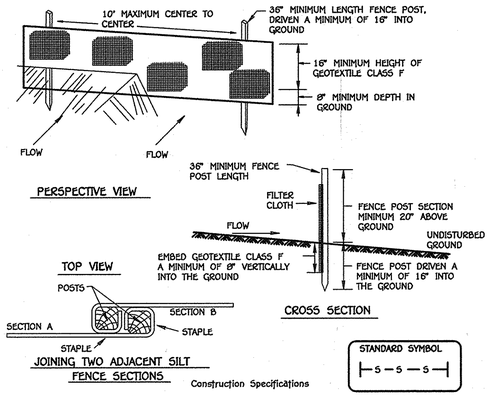
1. Seed and cover with straw mulch.
2. Seed and cover with Erosion Control Matting or line with sod.
3. 4" – 7" stone or recycled concrete equivalent pressed into the soil 7" minimum

Construction Specifications

1. All temporary earth dikes shall have uninterrupted positive grade to an outlet. Spot elevations may be necessary for grades less than1%
2. Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.
3. Runoff diverted from an undisturbed area shall outlet directly into an undisturbed, stabilized area at a non-erosive velocity.
4. All trees, brush, stumps, obstructions, and other objectionable material shall be removed and disposed of so as not to interfere with the proper functioning of the dike.
5. The dike shall be excavated or shaped to line, grade and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.
6. Fill shall be compacted by earth moving equipment.
7. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the dike.
8. Inspection and maintenance must be provided periodically and after each rain event.

EARTH DIKE

NOT TO SCALE



Construction Specifications

1. Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 11/2" x 11/2" square (minimum) cut, or 13/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighting not less than 1.00 pond per linear foot.

2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

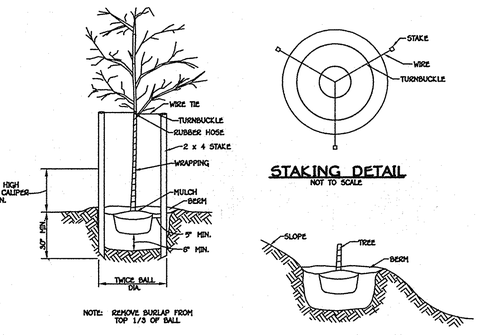
Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal ft / minute (max)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

3. Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.

4. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

DETAIL 22 – SILT FENCE

NOT TO SCALE



NOTE: REMOVE BURLAP FROM TOP 1/3 OF BALL

STAKING DETAIL

NOT TO SCALE

TREE PLANTING

NOT TO SCALE

GRADING FOR PLANTING ON SLOPES

NOT TO SCALE

SEDIMENT CONTROL NOTES

1) A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313–1855).
2) ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
3) FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: a) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES STEEPER 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, CHAPTER 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 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING (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	5.98 ACRES
AREA DISTURBED	5.00 ACRES
AREA TO BE ROOFED OR PAVED	1.50 ACRES
AREA TO BE VEGETATIVELY STABILIZED	3.50 ACRES
TOTAL CUT	6,000 CU.YDS.
TOTAL FILL	6,000 CU.YDS.
OFFSITE WASTE/BORROW AREA LOCATION	N/A CU.YDS.

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 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.
11) TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.

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20.0 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

DEFINITION

PURPOSE

Using vegetation as cover for barren soil to protect it from forces that cause erosion.

Vegetative stabilization specifications are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and run-off to downstream areas, and improving wildlife habitat and visual resources.

CONDITIONS WHERE PRACTICE APPLIES

This practice shall be used on denuded areas as specified on the plans and may be used on highly erodible or critically eroding areas. This specification is divided into Temporary Seeding, to quickly establish vegetative cover for short duration (Oup to one year), and Permanent Seeding, for long term vegetative cover. Examples of applicable areas for Temporary Seeding are temporary Soil Stockpiles, cleared areas being left idle between construction phases, earth dikes, etc. and for Permanent Seeding are lawns, dams, cut and fill slopes and other areas at final grade, former stockpile and staging areas, etc.

EFFECTS ON WATER QUALITY AND QUANTITY

Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of runoff, infiltration evaporation, transpiration, percolation, and groundwater recharge. Vegetation, over time, will increase organic matter content and improve the water holding capacity of the soil and subsequent plant growth.

Vegetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone.

Sediment control devices must remain in place during grading, seedbed preparation, seeding, mulching and vegetative establishment to prevent large quantities of sediment and associated chemicals and nutrients from washing into surface waters.

SECTION 1 – VEGETATIVE STABILIZATION METHODS AND MATERIALS

A. Site Preparation
   i. Install erosion and sediment control structures (either temporary or permanent) such as diversions, grade stabilization structures, berms, waterways, or sediment control basins.
   ii. Perform all grading operations at right angles to the slope. Final grading and shaping is not usually necessary for temporary seeding.
   iii. Schedule required soil tests to determine soil amendment composition and application rates for sites having disturbed area over 5 acres.

B. Soil Amendments (Fertilizer and Lime Specifications)
   i. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas over 5 acres. Soil analysis may be performed by the University of Maryland or a recognized commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
   ii. Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers shall all be delivered to the site fully labeled according to the applicable state fertilizer laws and shall bear the name, trade name or trademark and warrantee of the producer.
   iii. Lime materials shall be ground limestone (hydrated or burnt lime may be substituted) which contains at least 50% total oxides (calcium oxide plus magnesium oxide). Limestone shall be ground to such fineness that at least 50% will pass through a #100 mesh sieve and 98–100% will pass through a #20 mesh sieve.
   iv. Incorporate lime and fertilizer into the top 3–5" of soil by disking or other suitable means.

C. Seedbed Preparation
   i. Temporary Seeding
      a. Seedbed preparation shall consist of loosening soil to a depth of 3" to 5" by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened it should not be rolled or dragged smooth, but left in the roughened condition. Sloped areas (greater than 3:1) should be tracked leaving the surface in an irregular condition with ridges running parallel to the contour of the slope.
      b. Apply fertilizer and lime as prescribed on the plans.
      c. In corporate lime and fertilizer into the top 3–5" of soil by disking or other suitable means.
   ii. Permanent Seeding
      a. Minimum soil conditions required for permanent vegetative establishment:
         1. Soil pH shall be between 6.0 and 7.0.
         2. Soluble salts shall be less than 500 parts per million (ppm).
         3. The soil shall contain less than 40% clay, but enough fine grained material (>30% silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception is if lovegrass or serecia leepedezas is to be planted, then a sandy soil (<30% silt plus clay) would be acceptable.
         4. Soil shall contain 1.5% minimum organic matter by weight.
         5. Soil must contain sufficient pore space to permit adequate root penetration.
         6. If these conditions cannot be met by soils on site, adding topsoil is required in accordance with Section 21 Standard and Specification for Topsoil.
      b. Areas previously graded in conformance with the drawings shall be maintained in a true and even grade, then scarified or otherwise loosened to a depth of 3–5" to permit bonding of the topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil from sliding down a slope.
      c. Apply soil amendments as per soil test or as included on the plans.
      d. Mix soil amendments into the top 3–5" of topsoil by disking or other suitable means. Lawn areas should be raked to smooth the surface, remove large objects like stones and branches, and ready the area for seed and application. Where site conditions will not permit normal seedbed preparation, loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface. Steep slopes (steeper than 3:1) should be tracked by a dozer leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. The top 1–3" of soil should be loose and friable. Seedbed loosening may not be necessary on newly disturbed areas.

D. Seed Specifications
   i. All seed must meet the requirements of the Maryland State Seed Law. All seed shall be subject to re-testing by a recognized seed laboratory. All seed used shall have been tested within the 6 months immediately preceding the date of sowing such material on this job.
   Note: Seed tags shall be made available to the inspector to verify type and rate of seed used.
   ii. Inoculant – The inoculant for treating legume seed in the seed mixtures shall be a pure culture of nitrogen-fixing bacteria prepared specifically for the species. Inoculants shall not be used later than the date indicated on the container. Add fresh inoculant as directed on package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75°–80° F. can weaken bacteria and make the inoculant less effective.

E. Methods of Seeding
   i. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer), broadcast or drop seeded, or a cultipacker seeder.
      a. If fertilizer is being applied at the time of seeding, the application rates amounts will not exceed the following: nitrogen: maximum of 100 lbs. per acre total of soluble nitrogen; P2O5 (phosphorous): 200 lbs/ac; K2O (potassium): 200 lbs/ac.
      b. Lime – use only ground agricultural limestone, (Up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.
      c. Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.
   ii. Dry Seeding: This includes use of conventional drop or broadcast spreaders.
      a. Seed spread dry shall be incorporated into the subsoil at the rates prescribed on the Temporary or Permanent Seeding Summaries or Tables 26 or 27. The area shall then be rolled with a weighted roller to provide good seed to soil contact.
      b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.
   iii. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
      a. Cultipackers are required to bury the seed in such a fashion as to provide at least 1/4" inch of soil covering. Seedbed must be firm after planting.
      b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

F. Mulch Specifications (in order of preference)
   i. Straw shall consist of thoroughly threshed wheat, rye or oat straw, reasonable bright in color, and shall not be musty, moldy, caked, decayed, or excessively dusty and shall be free of noxious weed seeds as specified in the Maryland Seed Law.
   ii. Wood Cellulose Fiber Mulch (Current)
      a. WCFM shall consist of specially prepared wood cellulose processed into a uniform fibrous physical state.
      b. WCFM shall be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformity spread slurry.
      c. WCFM, including dye, shall contain no germination or growth inhibiting factors.
      d. WCFM materials shall be manufactured and processed in such a manner that the wood cellulose fiber much will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogenous slurry. The mulch material shall form a blotter-like ground cover, on application, having moisture absorption and percolation properties and shall cover and hold grass seed in contact with the soil without inhibiting the growth of the seedlings.
      e. WCFM material shall contain no elements or compounds at concentration levels that will be phytol-toxic.
      f. WCFM must conform to the following physical requirements: fiber length to approximately 10 mm., diameter approximately 1 mm., pH range of 4.0 to 8.5, ash content of 1.6% maximum and water holding capacity of 90% minimum.
   Note: Only sterile straw mulch should be used in areas where one species of grass is desired.

G. Mulching Seeded Areas – Mulch shall be applied to all seeded areas immediately after seeding.
   i. If grading is completed outside of the seeding season, mulch along shall be applied as prescribed in this section and maintained until the seeding season returns and seeding can be performed in accordance with these specifications.
   ii. When straw mulch is used, it shall be spread over all seeded areas at the rate of 2 tons/acre. Mulch shall be applied to a uniform loose depth of between 1" and 2". Mulch applied shall achieve a uniform distribution and depth so that the soil surface is not exposed. If a mulch anchoring tool is to be used, the rate should be increased to 2.5 tons/acre.
   iii. Wood cellulose fiber used as a mulch shall be applied at a net dry weight of 1,500 lbs. per acre. The wood cellulose fiber shall be mixed with water, and the mixture shall contain a maximum of 50 lbs. of wood cellulose fiber per 100 gallons of water.

H. Securing Straw Mulch (Mulch Anchoring): Mulch anchoring shall be performed immediately following mulch application to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon size of area and erosion hazard:
   i. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of two (2) inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should be used on the contour if possible.
   ii. Wood cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 pounds/Acre. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
   iii. Application of liquid binders should be heavier at the edges where wind catches mulch, such as in valleys and crest of banks. The remainder of area should be appear uniform after binder application. Synthetic binders – such as Acrylic DLR (Agro-Tack), DCA-70 Petronet, Terra Tax II, Terra Tack AR or other approved equal may be used at rates recommended by the manufacturer to anchor mulch.
   iv. Lightweight plastic netting may be stapled over the mulch according to manufacturer's recommendations. Netting is usually available in rolls 4' to 15' feet wide and 300 to 3,000 feet long.

I. Incremental Stabilization – Cut Slopes
   i. All cuts slopes shall be dressed, prepared, seeded and mulched as the work progresses. Slopes shall be excavated and stabilized in equal increments not to exceed 15'.
   ii. Construction sequence (Refer to Figure 3 below):
      a. Excavate and stabilize all temporary swales, side ditches, or berms that will be used to convey runoff from the excavation.
      b. Perform Phase 1 excavation, dress, and stabilize.
      c. Perform Phase 2 excavation, dress and stabilize. Overseed Phase 1 areas as necessary.
      d. Perform final phase excavation, dress and stabilize. Overseed previously seeded areas as necessary.

Note: Once excavation has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions int he operation of completing the operation out of the seeding season will necessitate the application of temporary stabilization.

J. Incremental Stabilization of Embankments – Fill Slopes
   i. Embankments shall be constructed in lifts as prescribed on the plans.
   ii. Slopes shall be stabilized immediately when the vertical height of the multiple lifts reaches 15', or when the grading operation ceases as prescribed in the plans.
   iii. At the end of each day, temporary berms and pipe slope drains should be constructed along the top edge of the embankment to intercept surface runoff and convey it down the slope in a non-erosive manner to a sediment trapping device.
   iv. Construction sequence: Refer to Figure 4 (below).
      a. Excavate and stabilize all temporary swales, side ditches, or berms that will be used to divert runoff around the fill. Construct slope silt fence on low side of fill as shown in Figure 5, unless other methods shown on the plans address this area.
      b. Place Phase 1 embankment, dress and stabilize.
      c. Place Phase 2 embankment, dress and stabilize.
      d. Place final phase embankment, dress and stabilize. Overseed previously seeded areas as necessary.

Note: Once the placement of fill has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

OWNER

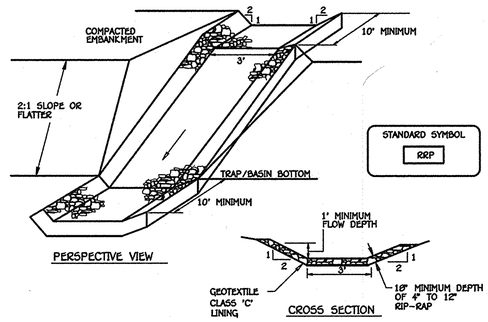
MR. DAVID BRANDENBURG, EXECUTOR
NAGENGAST ESTATE
1176 CATON ROAD
HAMPSTEAD, MARYLAND 21074

DEVELOPER

B.E.T.C. PARTNERSHIP
P.O. BOX 1371
ELLICOTT CITY, MARYLAND 21041

RIP-RAP INFLOW PROTECTION

NOT TO SCALE



Construction Specifications

1. Rip-rap lined inflow channels shall be 1' in depth, have a trapezoidal cross section with 2:1 or flatter side slopes and 3' (min.) bottom width. The channel shall be lined with 4" to 12" rip- rap to a depth of 18".

2. Filter cloth shall be installed under all rip-rap. Filter cloth shall be Geotextile Class C.

3. Entrance and exit sections shall be installed as shown on the detail section.

4. Rip-rap used for the lining may be recycled for permanent outlet protection if the basin is to be converted to a stormwater management facility.

5. Gabion inflow Protection may be used in lieu of Rip-rap inflow Protection.

6. Rip-rap should blend into existing ground.

7. Rip-rap inflow Protection shall be used where the slope is between 4:1 and 10:1, for slopes flatter than 10:1 use Earth Dike or Temporary Swale lining criteria.

DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND THAT ANY RESPONSIBLE PERSONNEL 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 OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY."

SIGNATURE OF DEVELOPER — DATE 1-12-99

ENGINEER'S CERTIFICATE

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

SIGNATURE OF ENGINEER — DATE 1-12-99

REVIEW FOR HOWARD COUNTY SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS.

U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE — DATE 08-04-99

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 8/4/99

APPROVED: DEPARTMENT OF PLANNING AND ZONING

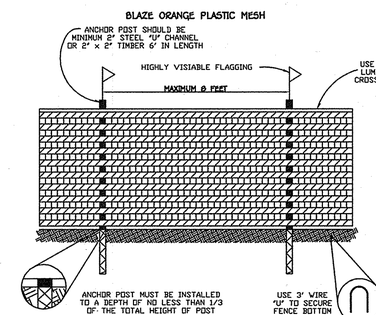
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 8/24/99

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 8/25/99

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 8-11-99



NOTES:

1. FOREST PROTECTION DEVICE ONLY.
2. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
3. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
4. ROOT DAMAGE SHOULD BE AVOIDED.
5. PROTECTIVE SIGNAGE MAY ALSO BE USED.
6. DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.

TREE PROTECTION DETAIL

NOT TO SCALE

SEDIMENT CONTROL NOTES AND DETAILS

OLD MILL OVERLOOK

LOTS 1 THRU 12 AND PARCELS 'A' & 'B'

ZONED R-20

TAX MAP NO. 17 PARCEL NO. 29

SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

DATE: OCTOBER 1, 1998

SHEET 7 OF 7

F99-57