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FINAL ROAD CONSTRUCTION, GRADING AND STORM WATER MANAGEMENT PLANS FOR GTW'S WAVERLY WOODS SECTION 4, AREA 2 LOTS 20 THRU 45 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND

APPROVED:
DEPARTMENT OF PLANNING AND ZONING

Jim Summerville 3/26/96
CHIEF, OFFICE OF LAND DEVELOPMENT & PLANNING

John D. ... 2/26/96
CHIEF, DEPARTMENT OF PUBLIC WORKS

APPROVED:
DEPARTMENT OF PUBLIC WORKS

Richard M. ... 2-6-96
CHIEF, BUREAU OF HIGHWAYS

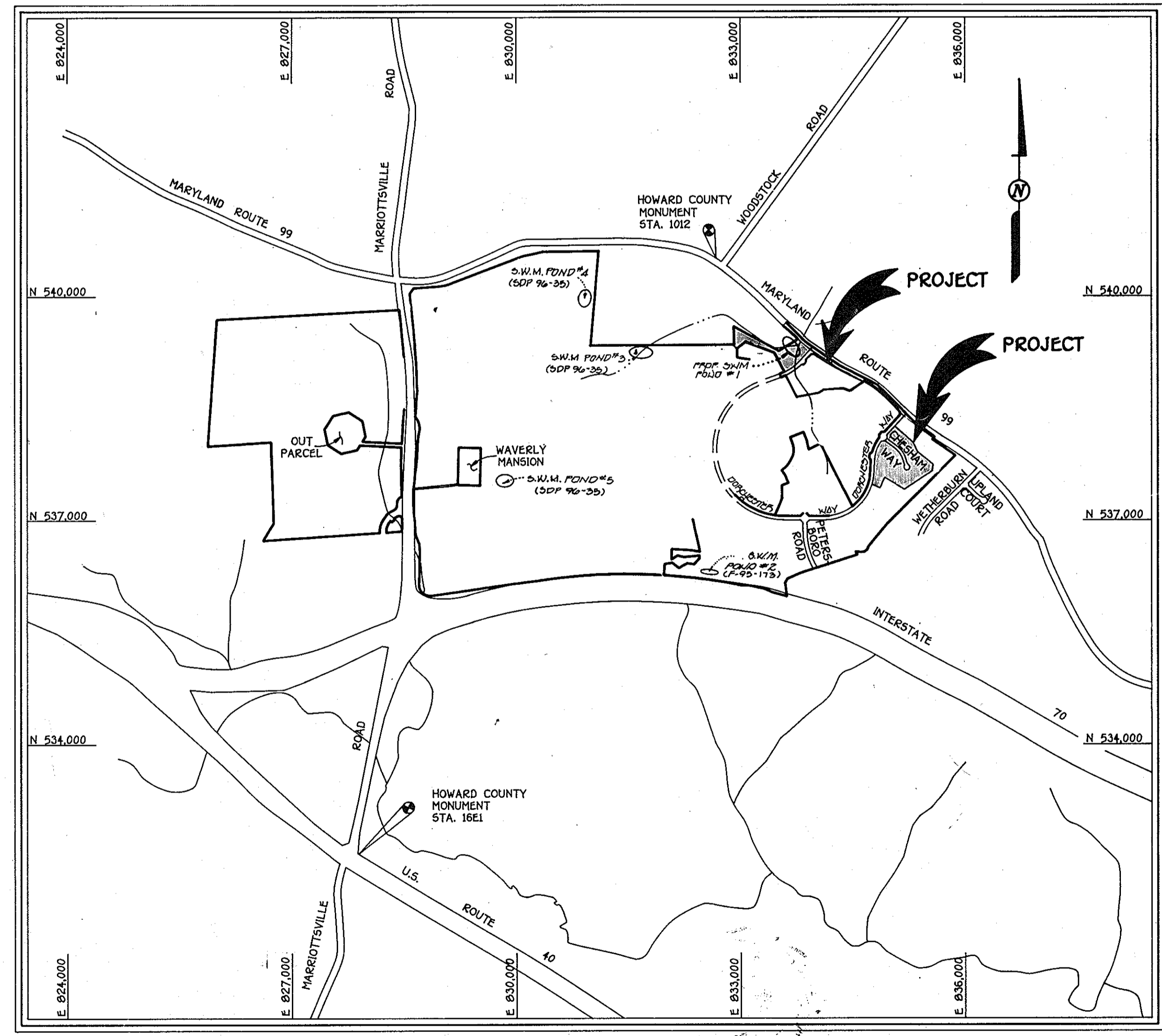
TRAFFIC CONTROL SIGNS			
STREET NAME	STATION	POSTED SIGN	SIGN CODE
DORCHESTER WAY	58+47	STOP	R1-1
DORCHESTER WAY	56+03	SPEED LIMIT 30	R2-1
DORCHESTER WAY	57+56	STOP AHEAD	W3-1a
CHESHAM WAY	0+48	STOP	R1-1

STREET LIGHT CHART			
STREET NAME	STATION	OFF-SET	FIXTURE/POLE TYPE
CHESHAM WAY	LP 1+05	3'	100-WATT "TRADITIONAL" HPS VAPOR POST TOP FIXTURE ON A 14-FOOT BLACK FIBERGLASS POLE
OLD FREDERICK RD (MD RT. 99)	-14+96	43L	250-WATT HIGH PRESSURE SODIUM VAPOR FIXTURE (GRAY) WITH CUTOFF OPTICS MOUNTED AT 30° ON A GALVANIZED STEEL POLE AND ALUMINUM BREAKAWAY TRANSFORMER BASE USING A 15' ARM
DORCHESTER WAY	56+66	22'R	150-WATT HPS VAPOR PENDANT FIXTURE (CUTOFF) MOUNTED ON A 25-FOOT GALVANIZED STEEL POLE

- POND 1
OPERATION AND MAINTENANCE SCHEDULE
OF PRIVATELY OWNED AND MAINTAINED
STORMWATER MANAGEMENT FACILITY
RETENTION POND**
- ROUTINE MAINTENANCE**
- FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHOULD BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE POND IS FUNCTIONING PROPERLY.
 - TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES 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.
 - DEBRIS AND LITTER NEXT TO THE OUTLET STRUCTURE SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
 - VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS RIPRAP OUTLET AREA SHALL BE REPAIRED AS SOON AS IT IS NOTICED.
- NON-ROUTINE MAINTENANCE**
- STRUCTURAL COMPONENTS OF THE POND, SUCH AS THE DAM, THE RISER, AND THE PIPES SHALL BE REPAIRED UPON THE DETECTION OF ANY DAMAGE. THE COMPONENTS SHOULD BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
 - SEDIMENT SHOULD BE REMOVED WHEN ITS ACCUMULATION 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 DEPARTMENT OF PUBLIC WORKS.

- GENERAL NOTES**
- UNLESS OTHERWISE NOTED, ALL CONSTRUCTION IS TO BE IN ACCORDANCE WITH THE FOLLOWING:
 - HOWARD COUNTY STANDARD SPECIFICATION AND DETAILS FOR CONSTRUCTION VOLUME IV.
 - MARYLAND STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, AS AMENDED.
 - SOIL CONSERVATION SERVICE 1983 MARYLAND STANDARD AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
 - SOIL CONSERVATION SERVICE 1993 MARYLAND STANDARDS AND SPECIFICATION FOR POND CONSTRUCTION (CODE 378).
 - EXISTING UTILITIES ARE BASED ON FIELD RUN TOPOGRAPHY.
 - THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF DEPARTMENT OF PUBLIC WORKS, DIVISION OF CONSTRUCTION INSPECTION AT 410-313-1000 AT LEAST (5) WORKING DAYS PRIOR TO THE START OF CONSTRUCTION.
 - THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION.
 - TOPOGRAPHY SHOWN HEREON IS FROM AERIAL MAPS FLOWN ON 2/12/89 BY PHOTO SCIENCE ON A 2" CONTOUR INTERVAL.
 - STORMWATER MANAGEMENT FOR THIS DEVELOPMENT WILL BE BY THE RETENTION METHOD FOR PONDS 1 & 2. POND 1 AND 2 SHALL BE PROBABLY MAINTAINED BY HOMEOWNERS' ASSOCIATION. THE S.W.M. REPORT IS PROVIDED BY HILDENBURG ASSOCIATES, INC.
 - THIS HORIZONTAL AND VERTICAL DATUM SHOWN ARE BASED ON THE FOLLOWING NAD83 HOWARD COUNTY CONTROL STATIONS:

HOWARD COUNTY MONUMENT 1012	N 601060.177	ELEV. = 445.577
	E 114538.7580	
HOWARD COUNTY MONUMENT 1061	N 593250.9322	ELEV. = 509.924
	E 1340192.710	
 - NOISE STUDY WAS PROVIDED BY Wildman Environmental Services, Inc. and approved on November 1, 1994.
 - FOREST DELINEATION AND WAS PROVIDED BY ENVIRONMENTAL SYSTEMS ANALYSIS, INC. AND APPROVED ON 11-30-93.
 - THE 100 YR. FLOODPLAIN AS SHOWN ON THESE PLANS ARE BASED ON THE ENCLOSED FLOODPLAIN STUDY THAT WAS PROVIDED BY Hildenburg Associates, Inc. STUDY WAS APPROVED AT PRELIMINARY STAGE ON 3-3-95.
 - THE WETLANDS STUDY WAS PREPARED BY Exploration Research, Inc. AND WAS COMPLETED ON 3/5/94.
 - THE TRAFFIC STUDY WAS PROVIDED BY The Traffic Group AND APPROVED ON JULY 14, 1994.
 - THE SOILS INVESTIGATION REPORT WAS PREPARED BY LTI, Inc. ON JUNE 28, 1994.
 - THIS PLAN IS SUBJECT TO WAIVER PETITION # WP-95-23 FROM SECTION 16.116.1 & SECTION 16.116.2 OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS WHICH RESTRICTS GRADING AND REMOVAL OF VEGETATIVE COVER FROM WETLANDS AND STREAM BUFFER AND FROM SECTION 16.116.1, WHICH RESTRICTS GRADING OF STEEP SLOPES OF 25% OR GREATER AND SECTION 16.115.A, WHICH RESTRICTS DEVELOPMENT WITHIN THE 100 YEAR FLOODPLAIN.
 - THE SKETCH PLAN 5 94-07 WAS APPROVED ON 11/30/93. THE PRELIMINARY PLAN P 95-07 WAS APPROVED ON 3/3/95.
 - THE WAIVER PETITION WAS APPROVED ON JULY 23, 1995.
 - 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.
 - 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, 1994).
 - A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
 - PUBLIC WATER AND PUBLIC SEWER WILL BE USED WITHIN THIS DEVELOPMENT. CONTRACT NO. 24-3407-R.
 - EXISTING UTILITIES ARE BASED ON CONTRACT NO. 24-1702-R AND HOWARD COUNTY AS-BUILTS FOR THE REFERENCED CONTRACT.
 - PERMITS APPLICABLE FOR THIS SUBDIVISION ARE AS FOLLOWS:
WETLAND PERMIT AUTHORIZATION No. - CENAB-CP-RP(GTW PROPERTY) 91-0921-5
WIDE WATER QUALITY CERTIFICATION No. - 91-WQ-0488 AND WIDE WATER MANAGEMENT ADMINISTRATION LETTER OF RECEIPT TRACKING No's - 199100921 AND 199191509 (91-WQ-0812).



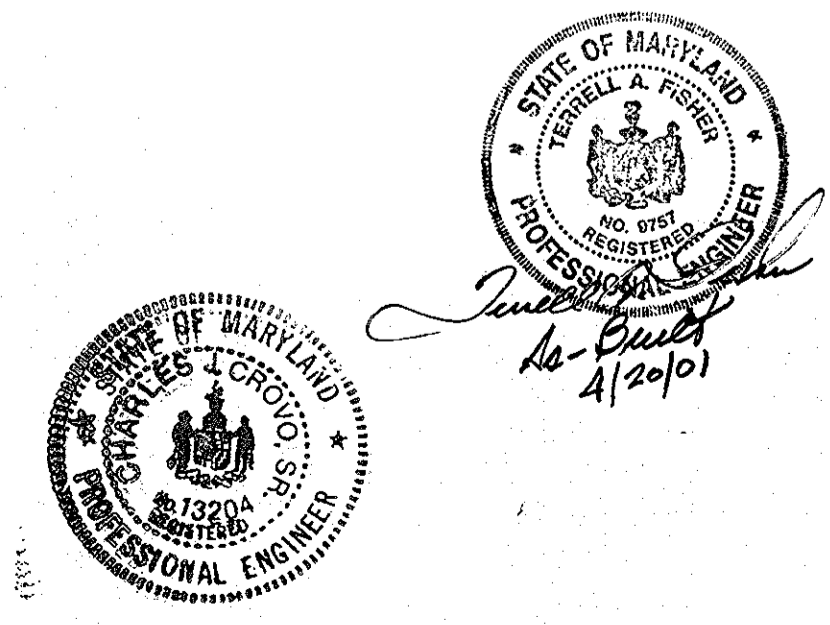
VICINITY MAP
SCALE: 1" = 1200'

1253

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
970 BALTIMORE NATIONAL FIRE SITE, SUITE 200
ELICOTT CITY, MARYLAND 21042
(410) 461-2955

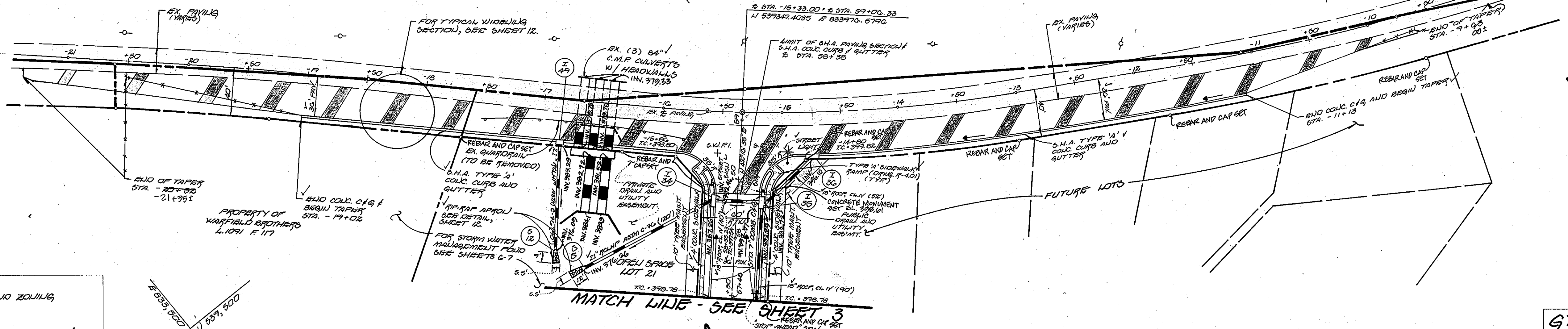
OWNER AND DEVELOPER
GTW JOINT VENTURE
c/o LAND DESIGN AND DEVELOPMENT
10805 HICKORY RIDGE ROAD
COLUMBIA, MARYLAND 21044

Charles J. Grovo, Sr.
CHARLES J. GROVO, SR.
DATE

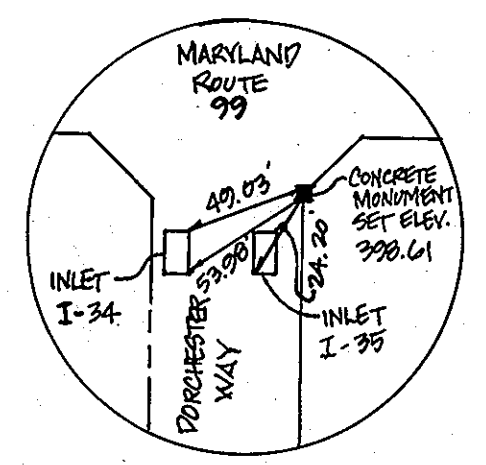


GTW'S WAVERLY WOODS
SECTION 4, AREA 2
LOTS 20 THRU 45
A RESUBDIVISION OF PARCEL 'A'
GTW'S WAVERLY WOODS SECTION 4, AREA 1
PART OF TAX PARCEL 21 TAX MAP 16
ZONING R-20 AND RS-A-8
TAX MAP No. 16, PART OF PARCEL No. 21
THIRD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
DATE: MAY 8, 1995
SHEET 1 OF 21

MARYLAND ROUTE 99



DORCHESTER WAY



PLAN
SCALE: 1" = 50'

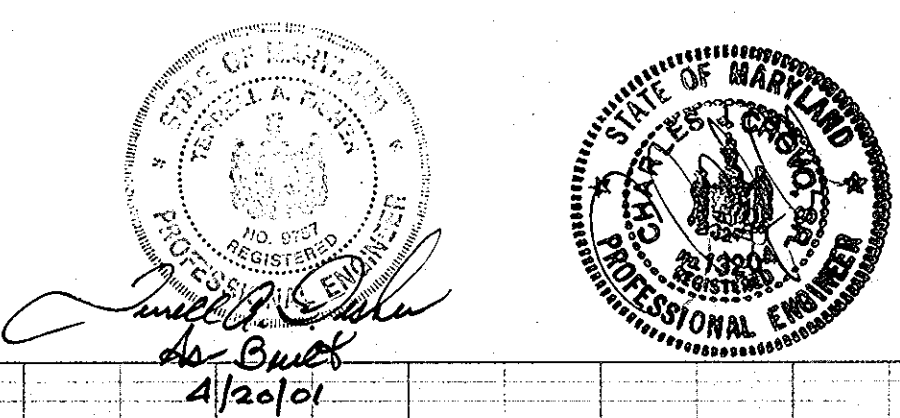
GTK'S WAVERLY WOODS
SECTION 4 AREA 2
LOTS 20 THRU 43
3RD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

MARYLAND ROUTE 99
PLAN AND PROFILE
DORCHESTER WAY
(PLAN)

OWNER AND DEVELOPER
GTK JOINT VENTURE
56 LAUD ORSINI AND DEVELOPMENT
10805 HICKORY RIDGE ROAD
COLUMBIA, MARYLAND 21044

SCALE AS SHOWN DATE MAY 20, 1996 DWG. NO. 2 OF 21
DES. B.J.K. DRN. J.C.L. CHK. C.J.C.

FISHER, COLLINS AND CARTER, INC.
CIVIL ENGINEERS AND LAND SURVEYORS
9171 BALTO. NAT. PIKE, SUITE 100, BELLETT CITY, MD. 21042



APPROVED:
DEPARTMENT OF PLANNING AND ZONING

Anna L. Williams 3/26/96
CHIEF, DIVISION OF LAND DEVELOPMENT AND RESEARCH

Chris Dammus 2/6/96
CHIEF, DEVELOPMENT REGULATIONS DIVISION

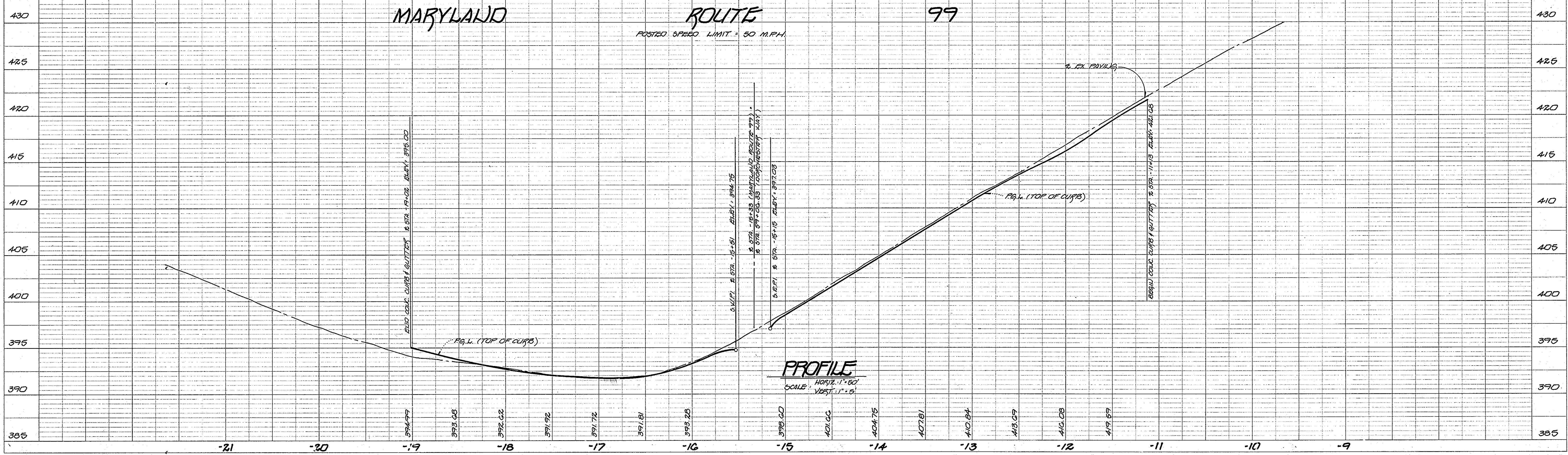
APPROVED:
DEPARTMENT OF PUBLIC WORKS

Andrew M. Danke 2-6-96
CHIEF, BUREAU OF HIGHWAYS

PLAN
SURVEYED, PLOTTED, ALIGNED, CHECKED, NOTE BOOK NO. DATE

PROFILE
SURVEYED, PLOTTED, GRADES CHECKED, STRUCTURE NOTATION CHKD, NOTE BOOK NO. DATE

MARYLAND ROUTE 99
POSTED SPEED LIMIT = 50 MPH



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

1253

1253

DATE	
BY	
NO.	
PLANNING	
DESIGN	
CHECKED	
APPROVED	

DATE	
BY	
NO.	
PROFILES	
DESIGN	
CHECKED	
APPROVED	

APPROVED
DEPARTMENT OF PLANNING AND ZONING

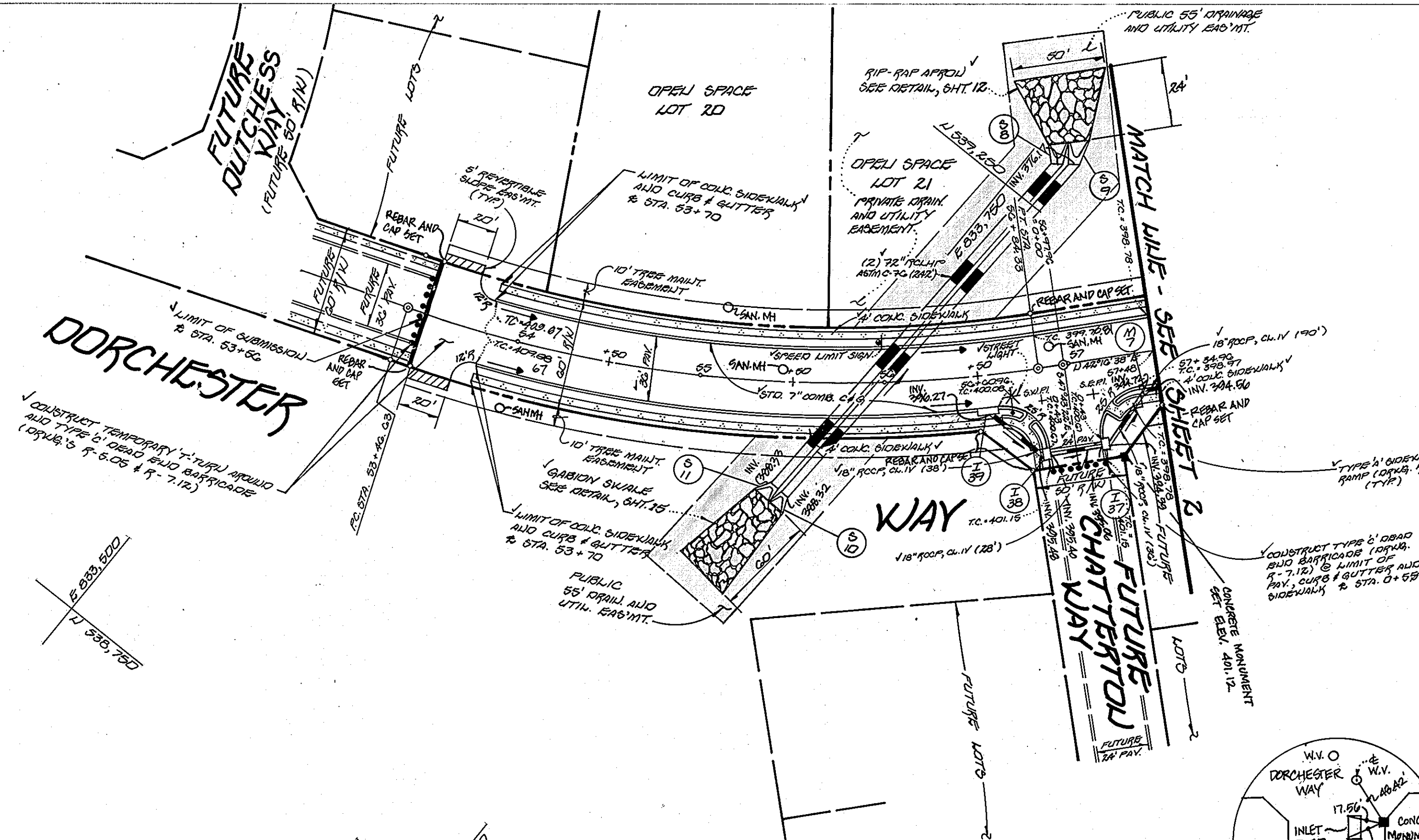
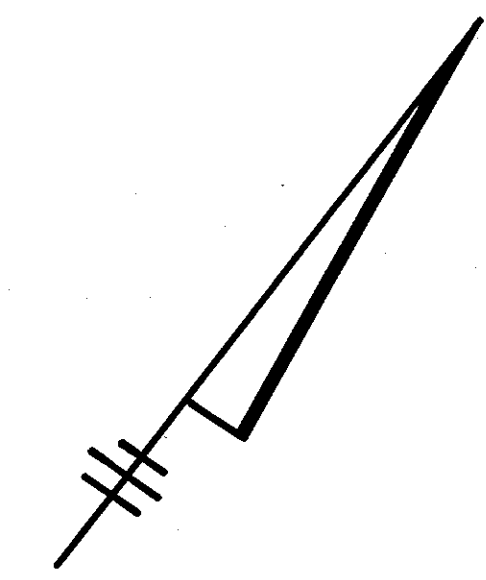
Jim Summerville 3/24/96
CHIEF, DIVISION OF LAND DEVELOPMENT AND RESEARCH

Robert P. ... 2/2/96
CHIEF, DEVELOPMENT ENGINEERING DIVISION

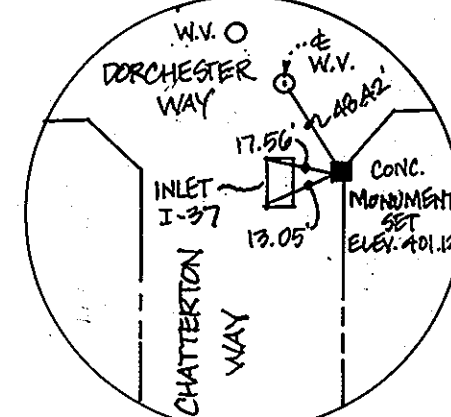
APPROVED
DEPARTMENT OF PUBLIC WORKS

Richard M. ... 2-6-96
CHIEF, BUREAU OF HIGHWAYS

2 CURVE DATA
DORCHESTER WAY
STA. 53+46.63 to STA. 56+84.33
R = 700.00'
L = 337.70'
Δ = 27°38'28"
T = 176.20'
CHD. = N 56°05'32"E, 334.43'



PLAN
SCALE: 1" = 50'



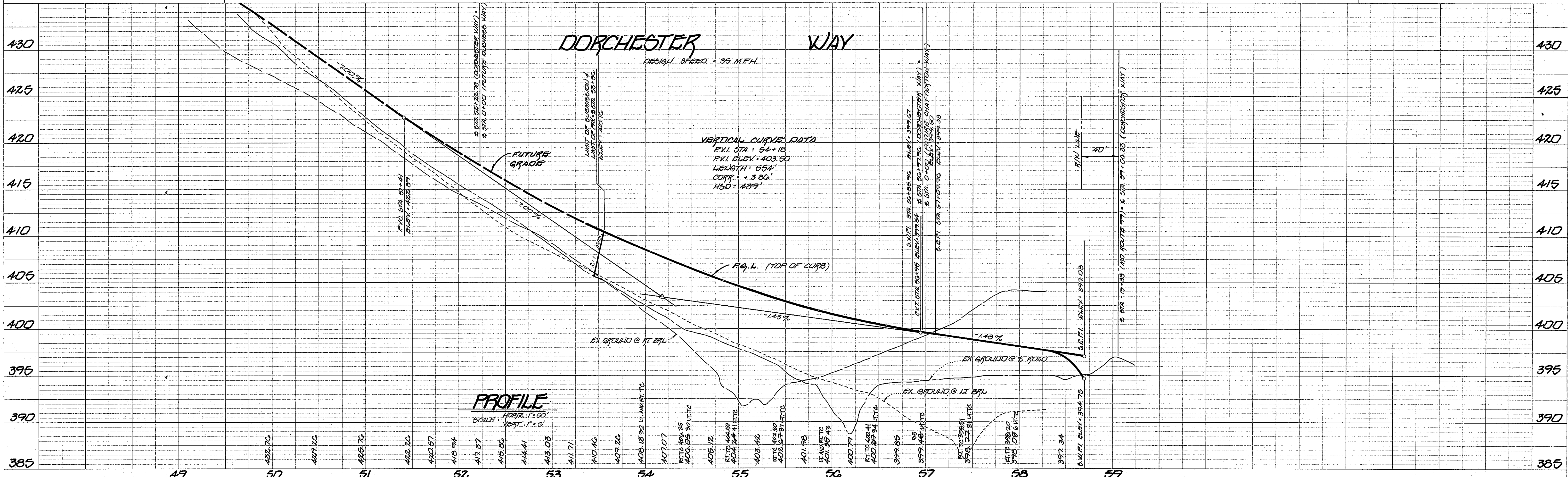
GTK'S WAVERLY WOODS
SECTION 4 AREA 2
LOTS 20 THRU 25
3rd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

DORCHESTER WAY
PLAN AND PROFILE

OWNER AND DEVELOPER
GTK'S WAVERLY WOODS
% LAND DESIGN AND DEVELOPMENT
10806 HICKORY RIDGE ROAD
COLUMBIA, MARYLAND 21044

SCALE: AS SHOWN DATE: MAY 22, 1995 DWG. NO. 3 OF 21
DES. B.J.F. DRN. J.C.L. CHK. C.J.C.

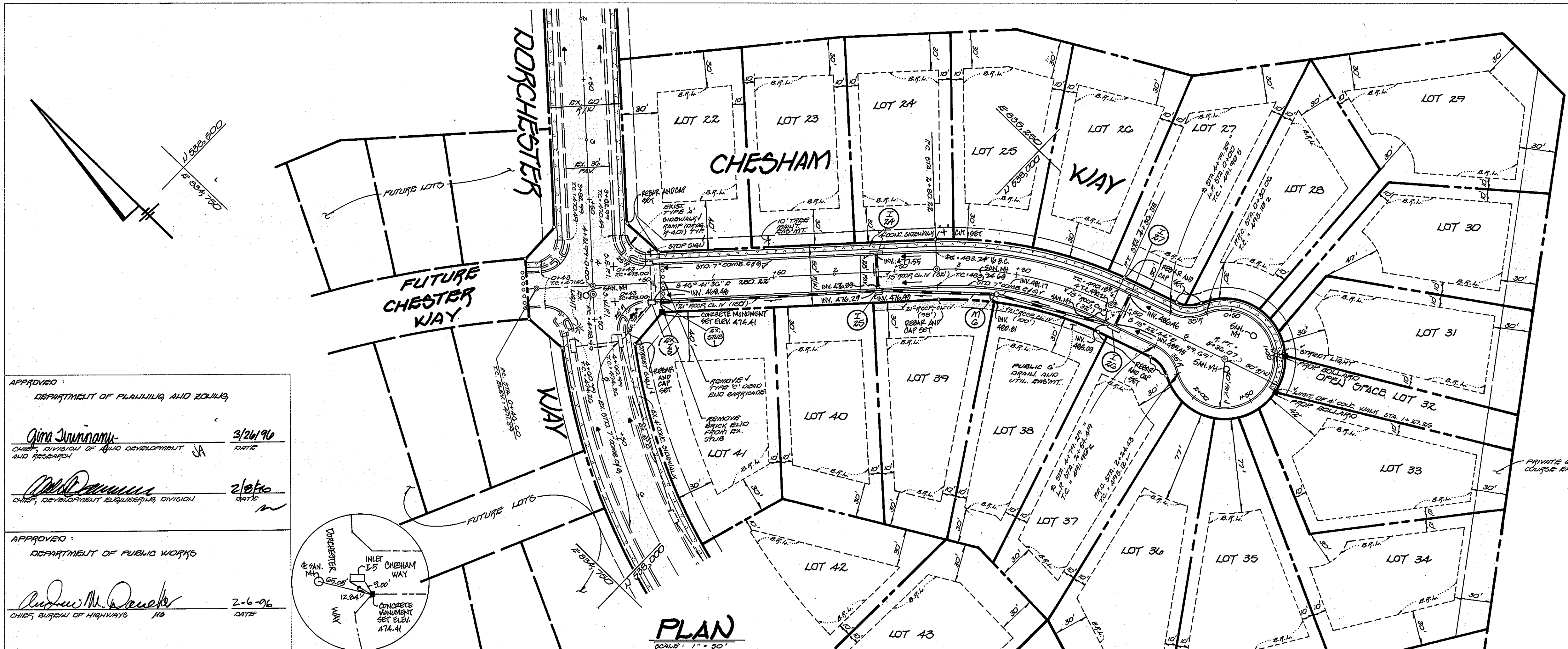
FISHER, COLLINS AND CARTER, INC.
CIVIL ENGINEERS AND LAND SURVEYORS
9171 BANTO LANE PIKE, SUITE 100, BELLGATE CITY, MD. 21042



1253

DATE	BY

DATE	BY



**2 CURVE DATA
CHESHAM WAY**
 STA. 2+80.22 to STA. 4+30.38
 R = 316.00'
 L = 156.10'
 Δ = 28° 18' 52"
 T = 79.71'
 CHD = 5 32' 32" 10" E, 154.50'

APPROVED
 DEPARTMENT OF PLANNING AND ZONING
Uma Sourin 3/26/96
 CHIEF, DIVISION OF LAND DEVELOPMENT AND RESEARCH

APPROVED
 DEPARTMENT OF PUBLIC WORKS
Andrew M. Decker 2-6-96
 CHIEF, BUREAU OF HIGHWAYS

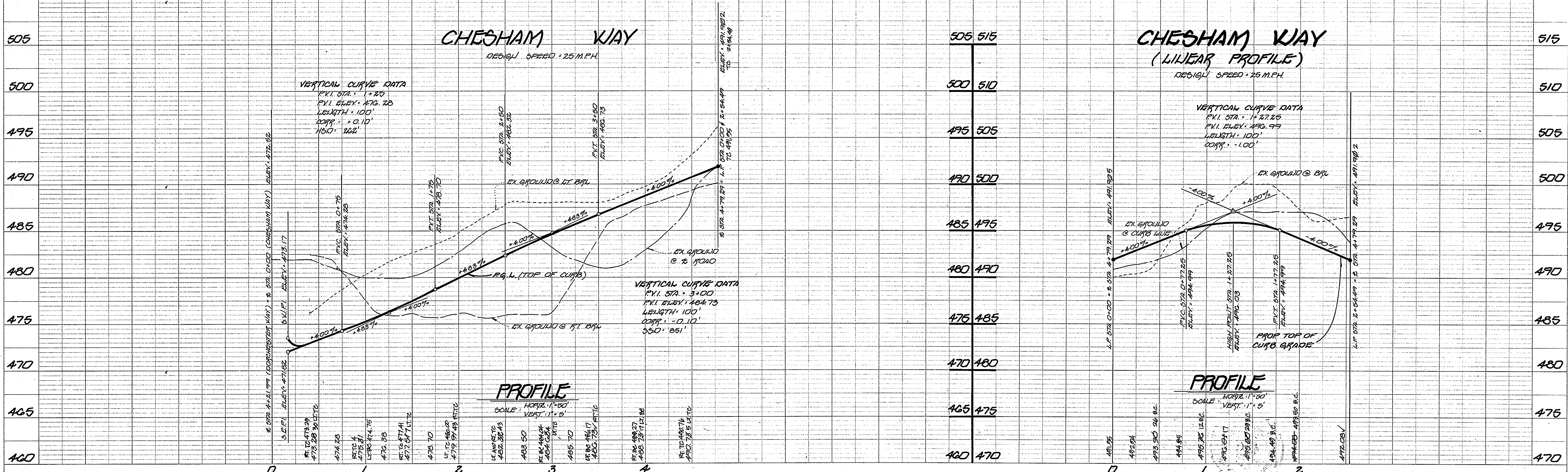
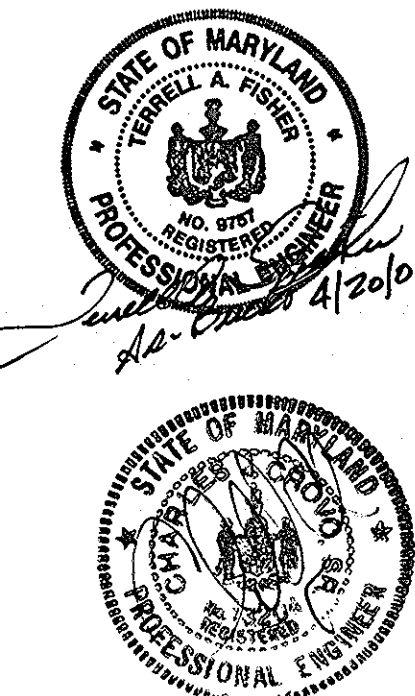
GTW'S WAVERLY WOODS
 SECTION A AREA 2
 LOTS 20 THRU 45
 3rd ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

CHESHAM WAY
 PLAN AND PROFILE

OWNER AND DEVELOPER
 B.T.M. SCHULT VENTURES
 96 WILD DESIGN AND DEVELOPMENT
 10805 HICKORY RIDGE ROAD
 COLUMBIA, MARYLAND 21044

SCALE AS SHOWN DATE MAY 22, 1995 DWG. NO. A OF 21
 DES. B.J.H. DRN. J.C.L. CHK. C.J.C.

FISHER, COLLINS AND CARTER, INC.
 CIVIL ENGINEERS AND LAND SURVEYORS
 9711 BAYVIEW LANE, SUITE 100, BELMONT, MARYLAND 21034



SCHEDULE A - PERIMETER LANDSCAPE EDGE

PERIMETER	1	2	3	4	5
CATEGORY	ADJACENT TO PERIMETER PROPERTIES	ADJACENT TO PERIMETER PROPERTIES	ADJACENT TO PERIMETER PROPERTIES	ADJACENT TO PERIMETER PROPERTIES	ADJACENT TO PERIMETER PROPERTIES
LANDSCAPE TYPE	A	A	A	A	A
LINEAR FEET OF ROADWAY FRONTAGE / PERIMETER	330'	100'	209'	72'	449'
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR)	NO	NO	NO	NO	NO
DECREASE BELOW IF USED					
CREDIT FOR WALL, FENCE OR SIGN (YES, NO, LINEAR)	NO	NO	NO	NO	NO
DECREASE IF USED					
NUMBER OF PLANTS REQUIRED	6	3	4	1	0
SHADE TREES					
EVERGREEN TREES					
SHRUBS					
NUMBER OF PLANTS PROVIDED	6	3	4	1	0
SHADE TREES					
EVERGREEN TREES					
OTHER TREES (2:1 SUBSTITUTION)					
SHRUBS (10:1 SUBSTITUTION)					
DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF USED					

PLANT LIST

QTY	KEY	NAME	SIZE
0	○	PEAR PLUM (OCTOBER 1997)	2-2 1/2" CALIPER FULL CROWN 040
22	⊙	TRINUS STRATUS (WHITE PINE)	6'-0" HEIGHT

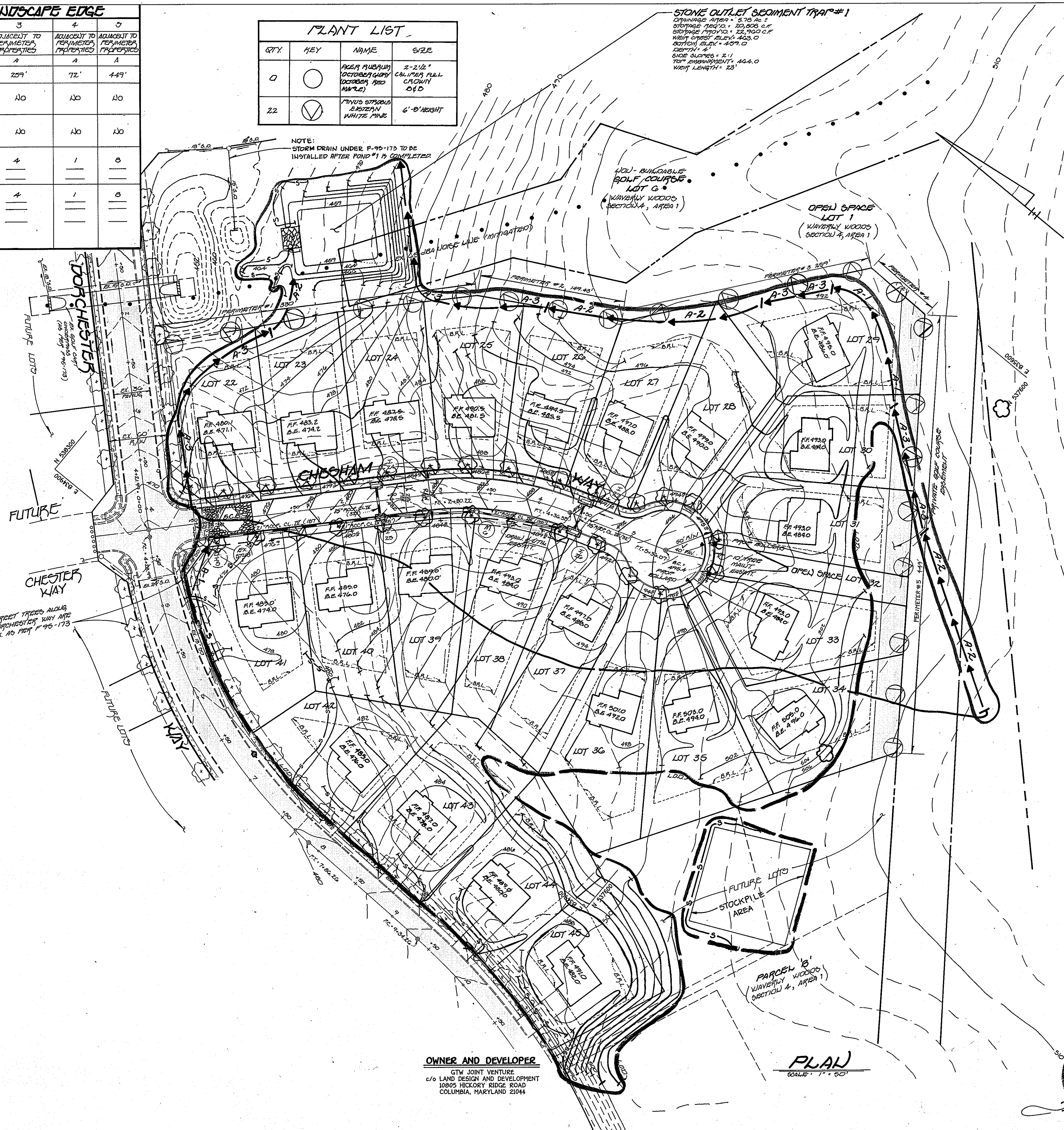
NOTE: STORM DRAIN UNDER F-95-173 TO BE INSTALLED AFTER POND #1 IS COMPLETED

STONE OUTLET SEDIMENT TRAP #1
 CAPACITY: 570 AC FT
 STORAGE: 17000 C.F.
 STORAGE PROVIDED: 22,700 C.F.
 MAIN CHUTE: 42.0
 BOTTOM CHUTE: 42.0
 DRAIN: 4.1
 SIDE SLOPES: 2:1
 TOP EMBANKMENT: 44.0
 MAIN LENGTH: 122

STREET TREE SCHEDULE

SYMBOL	BOTANICAL AND COMMON NAME	SIZE	COMMENTS
⊙	PLATANUS OCCIDENTALIS (LONDON PLATANUS)	2 1/2" - 3" CAL.	ADJACENT TO PUBLIC HWY

NOTE: STREET TREE IS ONLY A RECOMMENDATION THIS MAY BE REVISED TO A COUNTY ACCEPTABLE EQUIVALENT. TOTAL NUMBER OF STREET TREES = 27 TREES



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 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: *[Signature]* DATE: 11-21-95

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: *[Signature]* DATE: 11/1/95

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

Signature: *[Signature]* DATE: 2/1/96
 U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE

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

Signature: *[Signature]* DATE: 2/1/96
 HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Signature: *[Signature]* DATE: 3/26/96
 CHIEF, DIVISION OF LAND DEVELOPMENT AND RESEARCH

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Signature: *[Signature]* DATE: 4/10/96
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Signature: *[Signature]* DATE: 2-6-96
 CHIEF, BUREAU OF HIGHWAYS

NOTE: NO GRADING MAY OCCUR WITHIN OUR LIMITS OF CONSTRUCTION UNTIL STORMDRAIN SYSTEM IN SECTION 4 AREA 1 IS COMPLETED & STABILIZED.

- LEGEND**
- DENOTES LIMIT OF 5/8" PAVING SECTION
 - DENOTES STABILIZED CONSTRUCTION ENTRANCE
 - S- DENOTES SILT FENCE
 - DENOTES LIMIT OF DISTURBANCE
 - A-2 DENOTES EARTH DIKE (TYPE)

NOTE: 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 (JULY 1993)". A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.



STREET TREE, GRADING AND SEDIMENT CONTROL PLAN
GTW'S WAVERLY WOODS
 SECTION 4, AREA 2
 LOTS 20 thru 45
 (A RESUBDIVISION OF PARCEL #1, GTW'S WAVERLY WOODS, SECTION 4 AREA 1 PART OF TAX PARCEL 21, TAX MAP 16) ZONING: R-20 AND R5-A-8
 TAX MAP No: 16 PARCEL No: 21
 THIRD ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND
 DATE: MAY 26, 1995
 SHEET 5 OF 21

OWNER AND DEVELOPER
 GTW JOINT VENTURE
 c/o LAND DESIGN AND DEVELOPMENT
 10805 HICKORY RIDGE ROAD
 COLUMBIA, MARYLAND 21044

PLAN
 SCALE: 1" = 50'

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 9171 BALTIMORE NATIONAL PIKE, SUITE 100
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-2855

12521

POND 1
HAZARD CLASSIFICATION: "A"
TOTAL DRAINAGE AREA: 431.9 AC.
EXISTING RCN: 61
PROPOSED RCN: 24
EXISTING TC: NA, ROUTED MODEL
PROPOSED TC: NA, ROUTED MODEL
WATER QUALITY TYPE: RETENTION
DESIGN FLOW: 37,000 G.P.
WET POOL EL.: 383.02
2 YEAR STORM POOL EL.: 385.92
10 YEAR STORM POOL EL.: 388.04
100 YEAR STORM POOL EL.: 393.98

NO.	REVISIONS	DATE
1	ADD BYPASS PIPES 1 & 2	12-28-96
2	ADD 24 TREES FROM F-95-173	4-1-02

NOTE: SEE SHEET 13 FOR SOIL BORING DATA

SCHEDULE D POND No. 1	
STORMWATER MANAGEMENT/WATER QUALITY POND AREA LANDSCAPING	
LANDSCAPE TYPE	B
LINEAR FEET OF PERIMETER	2247 LF
NUMBER OF TREES REQUIRED:	
SHADE TREES (1/80 LF)	47
EVERGREEN TREES (1/40 LF)	56
CREDIT FOR EXISTING VEGETATION (NO, YES AND PERCENT)	YES 6% (110 LF)
CREDIT FOR OTHER LANDSCAPING (NO, YES AND PERCENT)	YES 13% (300 LF)
NUMBER OF TREES PROVIDED:	
SHADE TREES	49 (INCLUDES 10 FROM F-95-173)
EVERGREEN TREES	63 (INCLUDES 14 FROM F-95-173)
OTHER TREES (21 SUBSTITUTION)	

PLANT LIST			
QTY	KEY	NAME	SIZE
49	○	ACER PLATANUS 'OCTOBER GLORY' (OCTOBER RED MAPLE)	2-2 1/2" CALIPUT FULL CROWN 10' D
63	⊖	FRAXINUS VIRGINICA 'EMERALD WHITE PINE'	6"-8" HEIGHT

DEVELOPER'S CERTIFICATE
I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL 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 ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.
Signature of Developer: *Paul R. Dy...* DATE: 11-21-97

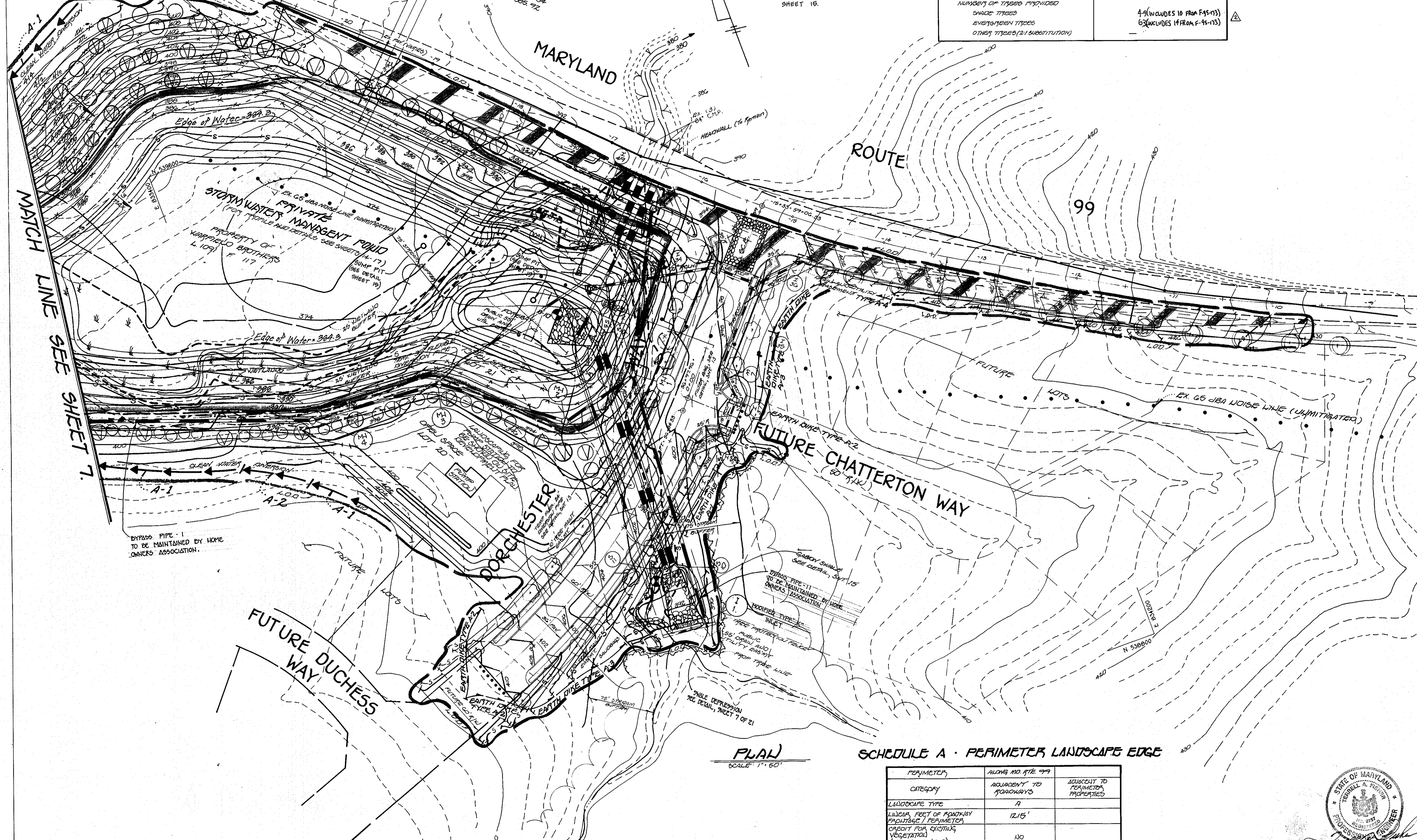
ENGINEER'S CERTIFICATE
I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
Signature of Engineer: *Patricia Engler* DATE: 2/1/98

REVIEW FOR HOWARD SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS
Signature: *Patricia Engler* DATE: 2/1/98
U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
Signature: *Robert Zickler* DATE: 2/1/98
HOWARD SOIL CONSERVATION DISTRICT

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Signature: *Andrew M. Danek* DATE: 2-6-98
CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Signature: *Uma Summerville* DATE: 3/24/98
CHIEF, DIVISION OF LAND DEVELOPMENT AND RESEARCH
Signature: *John J. ...* DATE: 2/6/98
CHIEF, DEVELOPMENT ENGINEERING DIVISION



LEGEND

- DENOTES LIMIT OF SHA PAVING SECTION
- DENOTES STABILIZED CONSTRUCTION ENTRANCE
- o-o- DENOTES Silt FENCE
- DENOTES LIMIT OF DISTURBANCE
- a-a- DENOTES EARTH DIKE TYPE
- x-x- DENOTES TREE PROTECTION FENCE

NOTE: 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 INDICATED BY "GUIDELINES FOR STREET LIGHTS IN RESIDENTIAL DEVELOPMENTS" (JUNE 1993). A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.

STREET TREE SCHEDULE			
SYMBOL	BOTANICAL AND COMMON NAME	SIZE	COMMENTS
○	ACER PLATANUS 'OCTOBER GLORY' RED MAPLE	2 1/2"-3" CAL.	40' SPACED ON PUBLIC RIGHT-OF-WAY
⊖	ACER PLATANUS 'AUTUMN FLAME'	2 1/2"-3" CAL.	50' SPACED ON PUBLIC RIGHT-OF-WAY

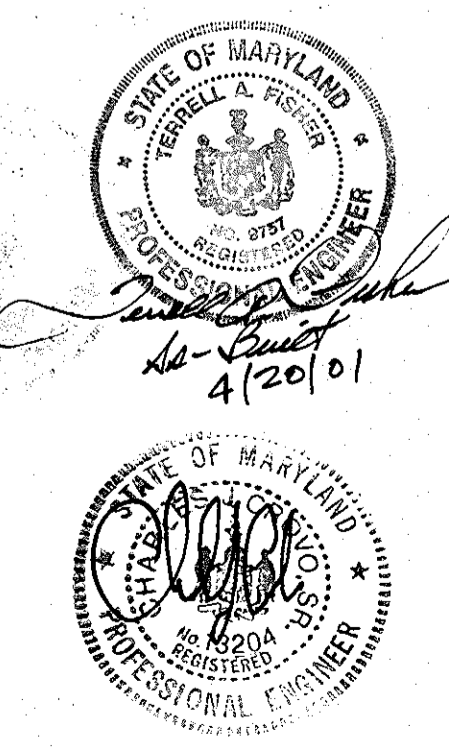
NOTE: STREET TREES ARE ONLY A RECOMMENDATION. THIS MAY BE REVISED TO A COUNTY ACCEPTABLE EQUIVALENT.
TOTAL NUMBER OF STREET TREES:
- 24 STREET TREES
- 12 STREET TREES

PLAN
SCALE: 1" = 60'

PERIMETER CATEGORY	ALONG MD. RTE 99	ADJACENT TO PERIMETER PROPERTIES
LANDSCAPE TYPE	A	
LINEAR FEET OF ROADWAY FRONTAGE / PERIMETER	1215'	
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR) DESCRIBE BELOW IF NEEDED	NO	
CREDIT FOR WALL, FENCE OR BARRIER (YES, NO, LINEAR) DESCRIBE IF NEEDED	YES 005'	
NUMBER OF PLANTS REQUIRED:		
SHADE TREES	12	
EVERGREEN TREES	15	
SHRUBS		
NUMBER OF PLANTS PROVIDED:		
SHADE TREES	12	
EVERGREEN TREES	15	
OTHER TREES (2:1 SUBSTITUTION) SHRUBS (0:1 SUBSTITUTION)		
DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED	SCHEDULE D S.W.M. LANDSCAPE	

OWNER AND DEVELOPER
GTW JOINT VENTURE
c/o LAND DESIGN AND DEVELOPMENT
10805 HICKORY RIDGE ROAD
COLUMBIA, MARYLAND 21044

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
9171 BALTIMORE NATIONAL PIKE, SUITE 100
ELLICOTT CITY, MARYLAND 21042
(410) 481-2855



STREET TREE, GRADING, LANDSCAPING AND SEDIMENT CONTROL PLAN
GTW'S WAVERLY WOODS
SECTION 4, AREA 2
LOTS 20 thru 45
(A RESUBDIVISION OF PARCEL 'A', GTW'S WAVERLY WOODS SECTION 4, AREA 1) PART OF TAX PARCEL 21, TAX MAP 161 ZONING R-20 AND R5-A-B TAX MAP No. 16, PART OF PARCEL No. 21 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND DATE: MAY 22, 1995
SHEET 6 OF 21

12521

NOTE: THIS PLAN FOR DRAINAGE AREAS ONLY. FOR POND SIZING, SEE SHEET C & F.

* NOTE: SEE SHEET C & F FOR POND OUTFALLS TO POND.

NOTE: SWIM POOL TO BE UTILIZED AS BEACH.

DRAINAGE AREA DATA					
W/LET	DRAINAGE AREA	AREA (Acres)	'C'	ZONED	PERCENT IMP.
I-34	A	1.79	0.34	R-20	13%
I-35	C	0.40	0.45	R-20	30%
I-36	F	1.00	0.58	R-20	46%
I-37	E	0.76	0.45	R-20	28%
I-38	D	0.66	0.53	R-20	37%
I-39	B	0.44	0.57	R-20	46%
I-47	G	0.51	0.94	R-20	90%

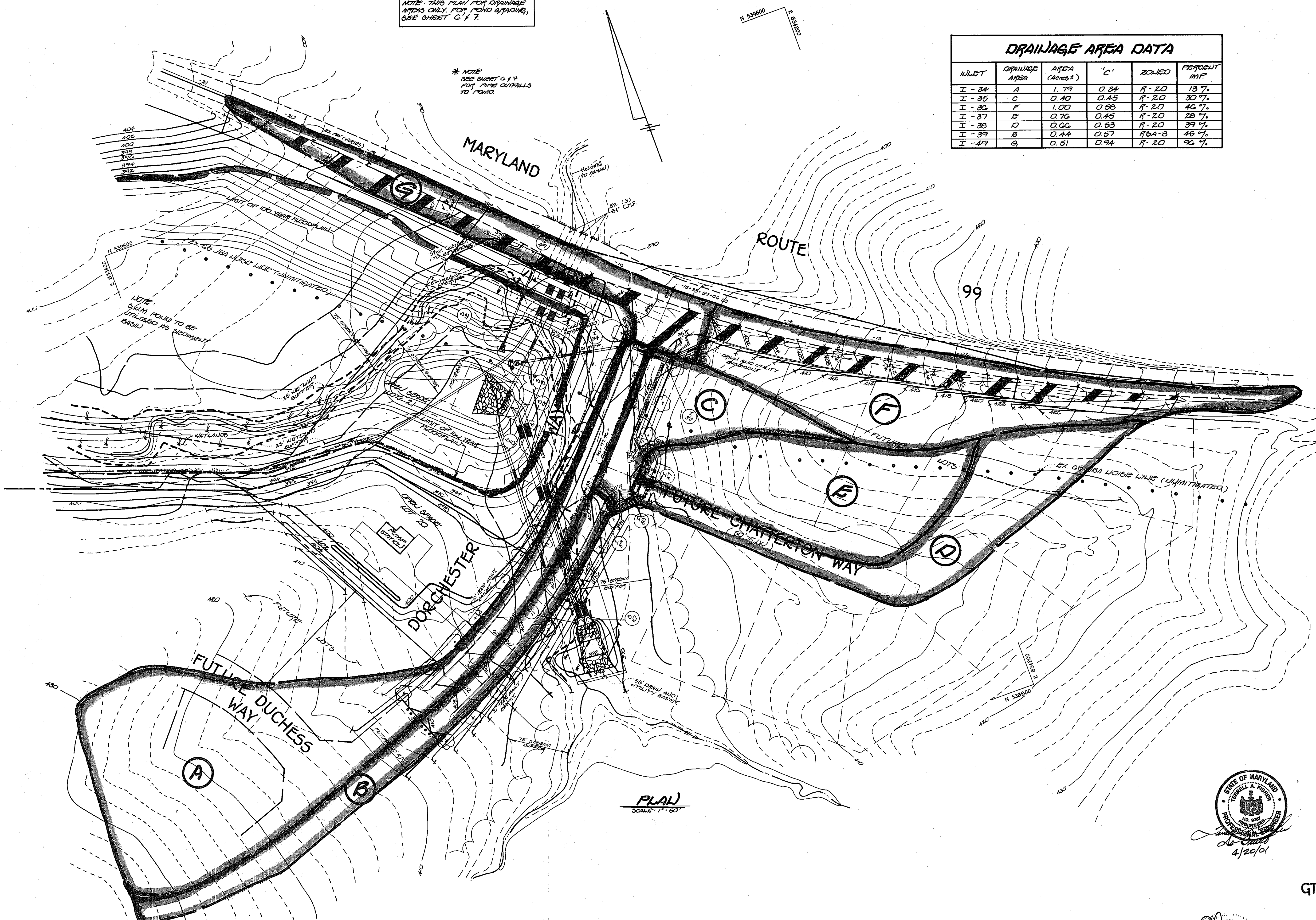
APPROVED
DEPARTMENT OF PLANNING AND ZONING

Jim Jaraman 3/28/96
CHIEF, DIVISION OF LAND DEVELOPMENT AND RESEARCH DATE

Bob Deane 2/6/96
CHIEF, DEVELOPMENT REGULATIONS DIVISION DATE

APPROVED
DEPARTMENT OF PUBLIC WORKS

Richard M. Dineke 2-6-96
CHIEF, BUREAU OF HIGHWAYS HS DATE



PLAN
SCALE: 1" = 50'



DRAINAGE AREA MAP
GTW'S WAVERLY WOODS
SECTION 4, AREA 2
LOTS 20 thru 45
A RESUBDIVISION OF PARCEL 'A',
GTW'S WAVERLY WOODS SECTION 4, AREA 2
PART OF TAX PARCEL 21, TAX MAP 161
ZONING R-20 AND RS-A-B
TAX MAP No. 16, PART OF PARCEL No. 21
THIRD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
DATE: MAY 24 1995
SHEET C & D 21

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
9171 BALTIMORE NATIONAL PIKE, SUITE 100
ELLICOTT CITY, MARYLAND 21042
(410) 461-2955

OWNER AND DEVELOPER
GTW JOINT VENTURE
c/o LAND DESIGN AND DEVELOPMENT
10805 HICKORY RIDGE ROAD
COLUMBIA, MARYLAND 21044

AS-BUILT 4-20-01

F95-174

1253

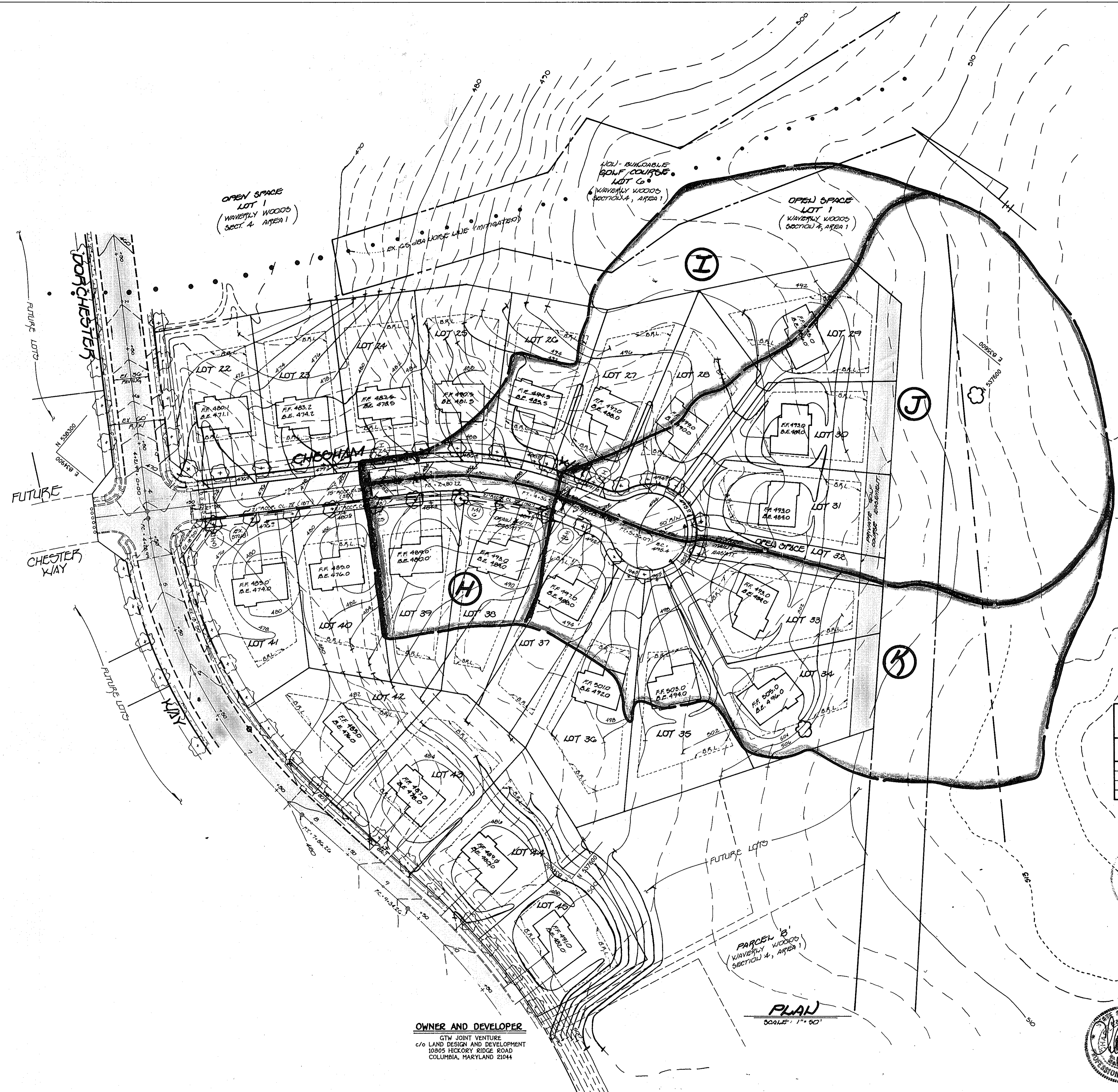
APPROVED
 DEPARTMENT OF PLANNING AND ZONING

Aime Jaramani 3/26/96
 CHIEF, DIVISION OF LAND DEVELOPMENT AND REDEVELOPMENT

Rob Dammann 2/28/96
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

APPROVED
 DEPARTMENT OF PUBLIC WORKS

Robert M. Dwyer 2-6-96
 CHIEF, DIVISION OF HIGHWAYS



DRAINAGE AREA DATA

INLET	DRAINAGE AREA	AREA (Acres ±)	'C'	ROWED	PERCENT IMP
I-24	I	1.77	0.37	R-20	17%
I-26	H	0.66	0.42	R-20	24%
I-28	K	2.38	0.37	R-20	17%
I-27	J	3.18	0.34	R-20	13%

STATE OF MARYLAND
 PROFESSIONAL ENGINEER
[Signature]
 4/20/01

DRAINAGE AREA MAP
GTW'S WAVERLY WOODS
 SECTION 4, AREA 2
 LOTS 20 thru 45
 A RESUBDIVISION OF PARCEL A,
 GTW'S WAVERLY WOODS SECTION 4, AREA 1
 PART OF TAX PARCEL 21, TAX MAP 16)
 ZONING R-20 AND R5-A-B
 TAX MAP No. 16, PART OF PARCEL No. 21
 THIRD ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND
 DATE: MAY 22, 1995
 SHEET # 01 OF 21

OWNER AND DEVELOPER
 GTV JOINT VENTURE
 c/o LAND DESIGN AND DEVELOPMENT
 10905 HECKORY RIDGE ROAD
 COLUMBIA, MARYLAND 21044

PLAN
 SCALE: 1" = 50'

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 9171 BALTIMORE NATIONAL PIKE, SUITE 100
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-2855

1253

STRUCTURE SCHEDULE

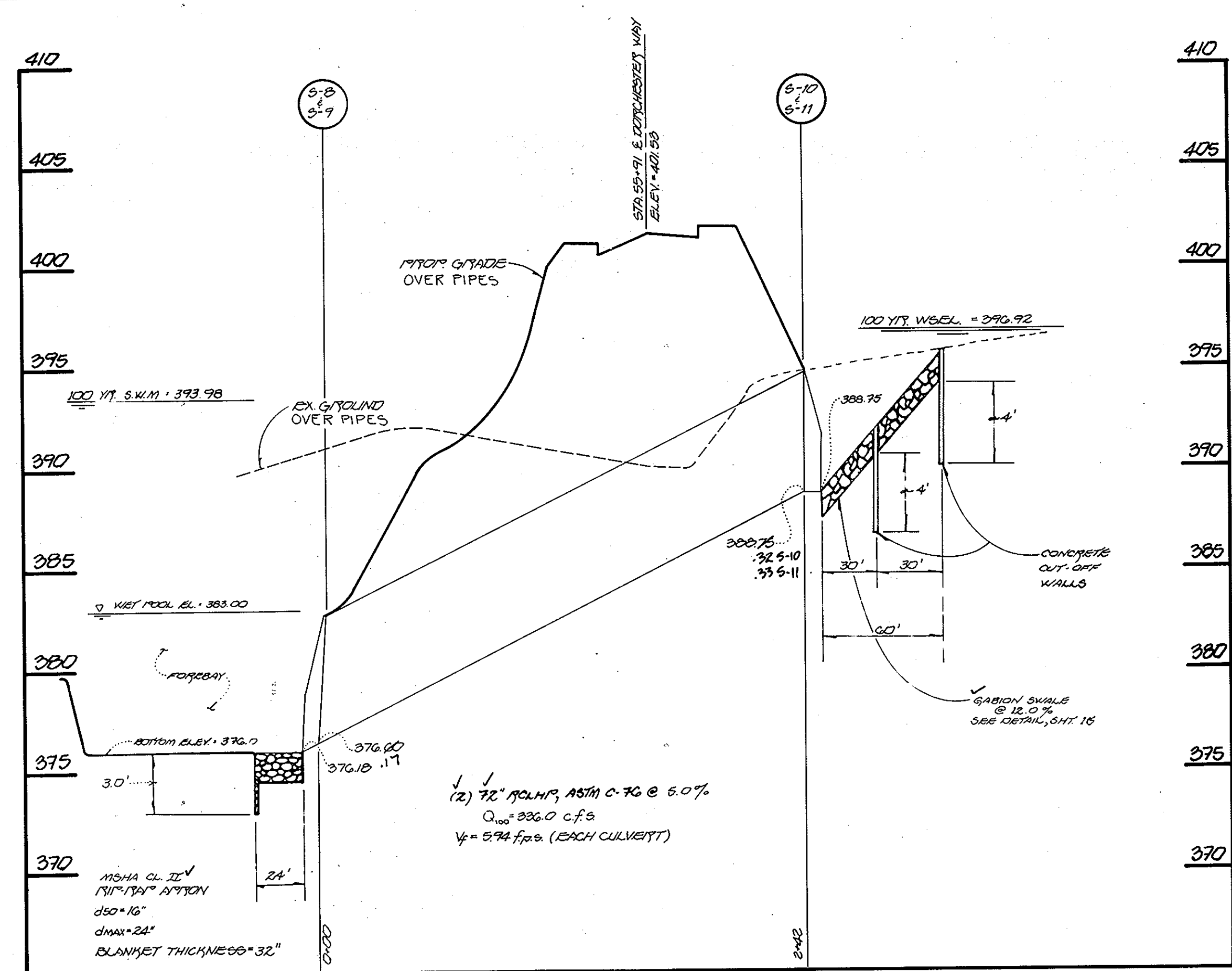
STRUCTURE NO.	TOP ELEVATION	INV. IN	INV. OUT	ROAD NAME	ROAD STA.	OFFSET	TYPE	REMARKS
I-1	458.17	451.15	451.15	MARYLAND ROUTE 99	0+60	36' RT.	10' C.O.G.	SHA 374.31
I-3	458.62	449.74	449.54	DORCHESTER WAY	0+76	18' RT.	A-5	S.D. 4.40
I-2	458.62	450.63	450.33	DORCHESTER WAY	0+76	18' LT.	A-5	S.D. 4.40
I-4	473.20	467.73	467.48	CHESHAM WAY	0+48	14' LT.	A-5	S.D. 4.40
I-5	473.20	468.25	468.55	CHESHAM WAY	0+48	14' RT.	A-5	S.D. 4.40
I-6	474.58	470.00	470.00	DORCHESTER WAY	4+69	18' RT.	A-10	S.D. 4.41
I-7	474.58	469.60	469.35	DORCHESTER WAY	4+69	18' LT.	A-10	S.D. 4.41
I-8	478.60	473.63	473.38	DORCHESTER WAY	6+28	18' LT.	A-10	S.D. 4.41
I-9	480.03	475.50	475.50	DORCHESTER WAY	7+71	18' RT.	A-10	S.D. 4.41
I-10	480.03	475.10	474.85	DORCHESTER WAY	7+71	18' LT.	A-5	S.D. 4.40
I-11	483.80	478.83	478.58	DORCHESTER WAY	9+15	18' LT.	A-5	S.D. 4.40
I-12	486.62	481.71	481.71	DORCHESTER WAY	10+17	18' LT.	A-5	S.D. 4.40
I-13	478.70	473.33	473.08	DORCHESTER WAY	15+61	18' RT.	A-10	S.D. 4.41
I-14	478.70	473.98	473.73	DORCHESTER WAY	15+61	18' LT.	A-10	S.D. 4.41
I-15	487.32	482.00	482.00	DORCHESTER WAY	18+74	18' RT.	A-10	S.D. 4.41
I-16	486.48	481.31	481.06	DORCHESTER WAY	18+53	18' LT.	15' C.O.G.	SHA 374.31
I-17	493.84	489.30	488.45	DORCHESTER WAY	20+37	18' LT.	A-10	S.D. 4.41
I-18	500.38	494.48	494.23	PETERSBORO ROAD	22+68	15' RT.	A-5	S.D. 4.40
I-19	500.38	495.07	494.82	PETERSBORO ROAD	22+68	15' LT.	A-10	S.D. 4.41
I-20	500.47	495.70	495.45	DORCHESTER WAY	22+24	18' LT.	A-10	S.D. 4.41
I-21	500.47	496.10	496.10	DORCHESTER WAY	22+24	18' RT.	A-5	S.D. 4.40
I-22	488.00	483.16	482.91	PETERSBORO ROAD	16+34	15' RT.	A-10	S.D. 4.41
I-23	488.00	483.50	483.50	PETERSBORO ROAD	16+34	15' LT.	15' C.O.G.	SHA 374.31
I-24	481.66	476.89	476.59	CHESHAM WAY	2+38	14' LT.	A-10	S.D. 4.41
I-25	481.66	476.89	476.59	CHESHAM WAY	2+38	14' RT.	A-5	S.D. 4.41
I-26	490.48	485.46	485.46	CHESHAM WAY	4+43	14' RT.	A-10	S.D. 4.40
I-27	490.48	486.04	486.04	CHESHAM WAY	4+43	14' LT.	A-10	S.D. 4.41
I-34	397.67	392.46	387.00	DORCHESTER WAY	58+30	18' LT.	15' C.O.G.	SHA 374.31
I-35	397.67	392.46	387.00	DORCHESTER WAY	58+30	18' RT.	A-10	S.D. 4.41
I-36	400.44	397.00	392.00	MD. RTE. 99	-14+74	36' LT.	15' C.O.G.	S.H.A. 374.31/ SECT 4 AREA 2
I-37	400.78	395.25	395.25	CHATTERTON WAY	0+48	12' LT.	A-10	S.D. 4.41
I-38	400.78	395.25	395.25	CHATTERTON WAY	0+48	12' RT.	A-10	S.D. 4.41
I-39	400.20	396.16	396.16	DORCHESTER WAY	56+55	18' RT.	A-10	S.D. 4.41
I-40	509.31	504.32	502.07	BIRMINGHAM WAY	0+50	22' RT.	A-10	S.D. 4.41
I-41	509.31	504.32	504.80	BIRMINGHAM WAY	0+50	22' LT.	A-10	S.D. 4.41
I-42	501.19	495.80	495.65	DORCHESTER WAY	25+69	18' RT.	A-10	S.D. 4.41
I-43	501.19	496.82	496.30	DORCHESTER WAY	25+69	18' LT.	A-10	S.D. 4.41
I-44	503.09	499.09	499.09	DORCHESTER WAY	26+97	18' LT.	A-10	S.D. 4.41
I-49	391.52	383.29	383.29	MD. ROUTE 99	-16+84	36' LT.	10' C.O.G.	S.H.A. 374.31 SECT 4 AREA 2
I-300	470.07	409.09	409.09					
HW-100	460.00	408.00	408.00					
M-1	460.00	448.53	448.37					
M-2	450.00	444.15	440.00					
M-3	479.33	472.81	471.39	DORCHESTER WAY	15+11.5	21.5' RT.	STD. MANHOLE	G-5.13
M-4	481.75	476.97	476.52	DORCHESTER WAY	17+27	21.5' LT.	SHALLOW MANHOLE	G-5.05
M-5	497.98	493.86	493.00	DORCHESTER WAY	21+37	21.5' LT.	SHALLOW MANHOLE	G-5.05
M-6	486.28	481.18	480.81	CHESHAM WAY	3+38	21.5' RT.	SHALLOW MANHOLE	G-5.05 SECT 4 AREA 2
M-7	399.08	394.66	394.45	DORCHESTER WAY	57+40	21.5' RT.	SHALLOW MANHOLE	G-5.05 SECT 4 AREA 2
M-8	505.58	501.54	501.29	DORCHESTER WAY	31+82.44	21.5' LT.	SHALLOW MANHOLE	G-5.05
M-9	501.87	497.65	497.40	DORCHESTER WAY	26+25	21.5' LT.	SHALLOW MANHOLE	G-5.05
M-100	460.00	408.50	408.80					
M-200	471.25	465.00	465.30					
E-1	438.03	430.88	430.84					
S-1	463.26	461.16	461.16					
S-2	465.50	463.00	462.87	DORCHESTER WAY	14+88	84' RT.	CONC. END SECT.	S.D. 5.51
S-3	474.10	472.16	472.10	DORCHESTER WAY	15+33	45' LT.	CONC. END SECT.	S.D. 5.51
S-4	483.65	482.15	482.09	PETERSBORO ROAD	16+18	92' RT.	CONC. END SECT.	S.D. 5.51
S-5	377.33	376.00	376.00	DORCHESTER WAY	57+69	125' LT.	CONC. END SECT.	S.D. 5.51 SECT 4 AREA 2
S-6	473.88	471.78	471.78					
S-7	487.00	488.00	488.00					
S-8	382.80	376.80	376.18	DORCHESTER WAY	57+11	108' LT.	CONC. END SECT.	S.D. 5.51 SECT 4 AREA 2
S-9	382.80	376.80	376.18	DORCHESTER WAY	57+20	106' RT.	CONC. END SECT.	S.D. 5.51 SECT 4 AREA 2
S-10	394.75	388.75	388.75	DORCHESTER WAY	55+47	62' RT.	CONC. END SECT.	S.D. 5.51 SECT 4 AREA 2
S-11	394.75	388.75	388.75	DORCHESTER WAY	55+42	58' RT.	CONC. END SECT.	S.D. 5.51 SECT 4 AREA 2
S-12	377.50	376.00	376.00	MD ROUTE 99	-16+84	126' LT.	CONC. END SECT.	S.D. 5.51 SECT 4 AREA 2
M-84	502.00	479.52	488.76					

LEGEND
 V_p = DENOTES PARTIAL FLOW VELOCITY
 V_f = DENOTES FULL FLOW VELOCITY
 H.G. = DENOTES HYDRAULIC GRADIENT FOR 10 YEAR STORM

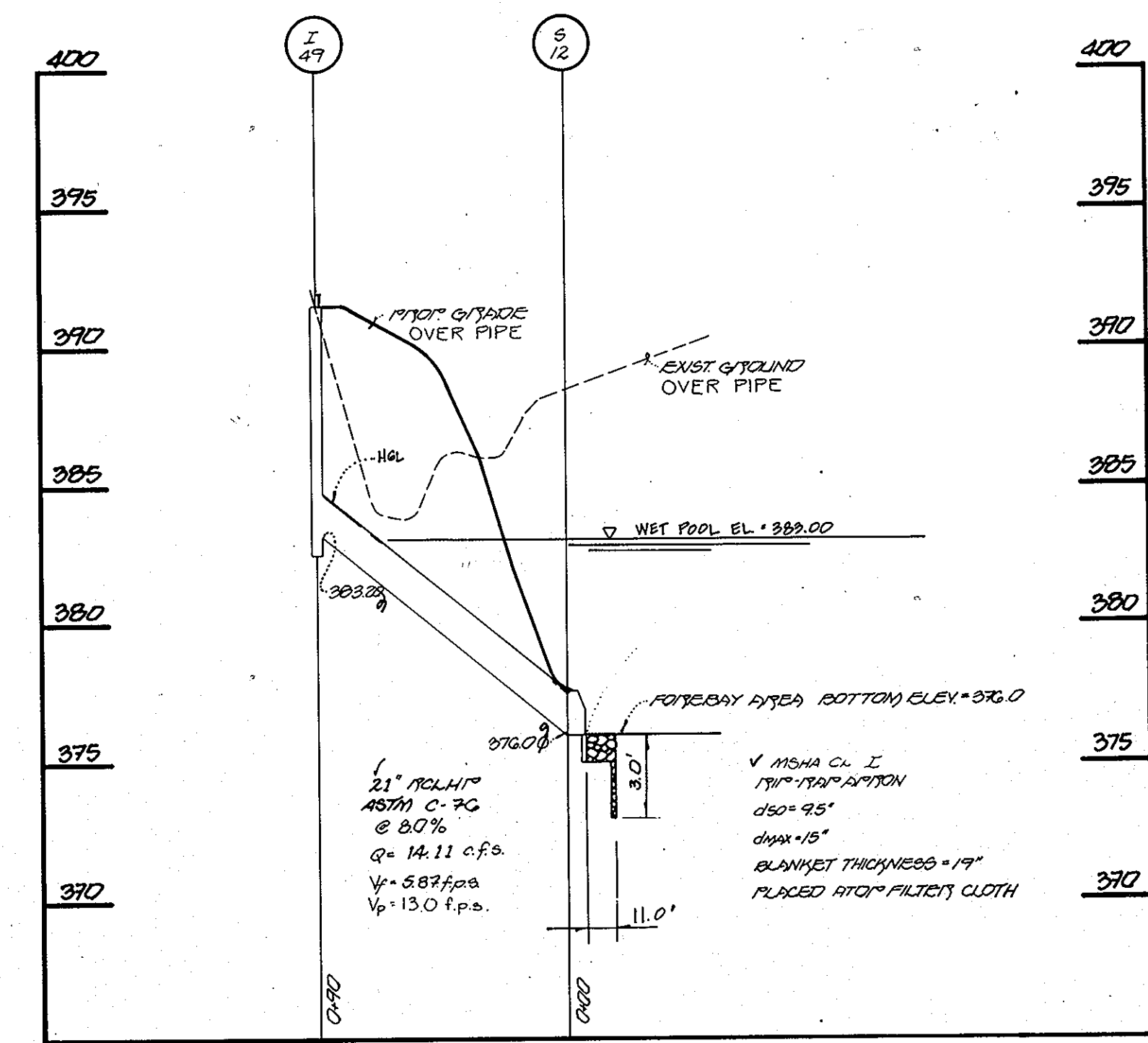
NO.	REVISION DESCRIPTION	DATE
1	REV. STRUCTURE SCHEDULE	12-25-00

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 971 BALTIMORE NATIONAL PK. SUITE 100
 ELLICOTT CITY, MARYLAND 21114
 (301) 461-2855

OWNER AND DEVELOPER
 GTW JOINT VENTURE
 C/O LAND DESIGN AND DEVELOPMENT
 10805 HICKORY RIDGE ROAD
 COLUMBIA, MARYLAND 21044



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



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

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 Chief, Bureau of Highways
 Chief, Department of Planning and Zoning
 Chief, Division of Land Development and Research
 Chief, Development Engineering Division
 DATE: 2-6-06
 DATE: 3/26/06
 DATE: 2/28/06

STATE OF MARYLAND
 PROFESSIONAL ENGINEER
 JAMES M. FISHER
 No. 10101
 4/20/01

STATE OF MARYLAND
 PROFESSIONAL ENGINEER
 JAMES M. FISHER
 No. 10101
 4/20/01

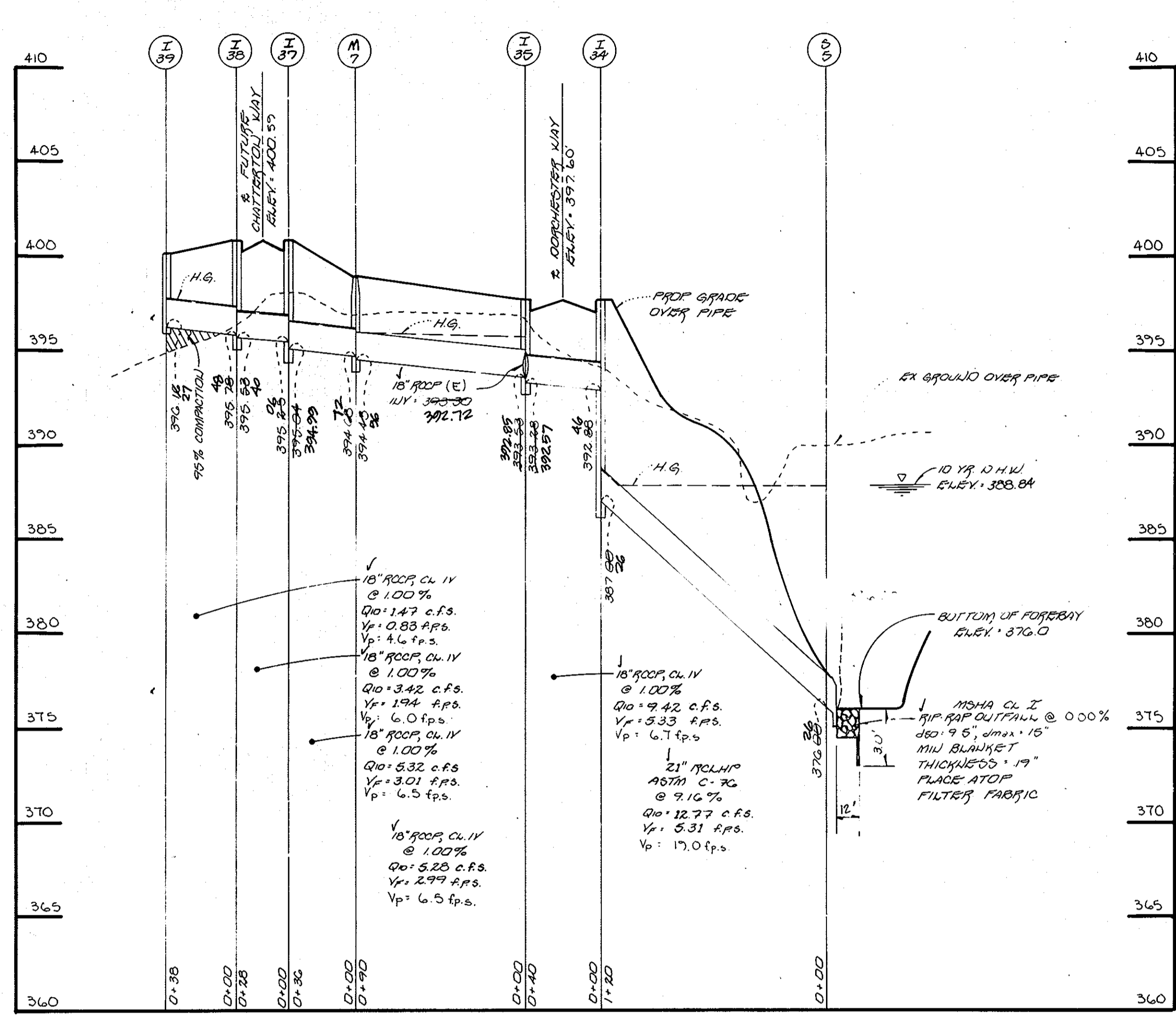
STORM DRAIN PROFILES
GTW'S WAVERLY WOODS
 SECTION 4, AREA 2
 LOTS 20 thru 45
 (A RESUBDIVISION OF PARCEL 'A'
 GTW'S WAVERLY WOODS SECTION 4, AREA 1)
 PART OF TAX PARCEL 21, TAX MAP 16
 ZONING R-20 AND R5-A-B
 TAX MAP No. 16, PART OF PARCEL No. 21
 THIRD ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND
 DATE: MAY 26, 1995
 SHEET 10 OF 21

AS-BUILT 4-20-01

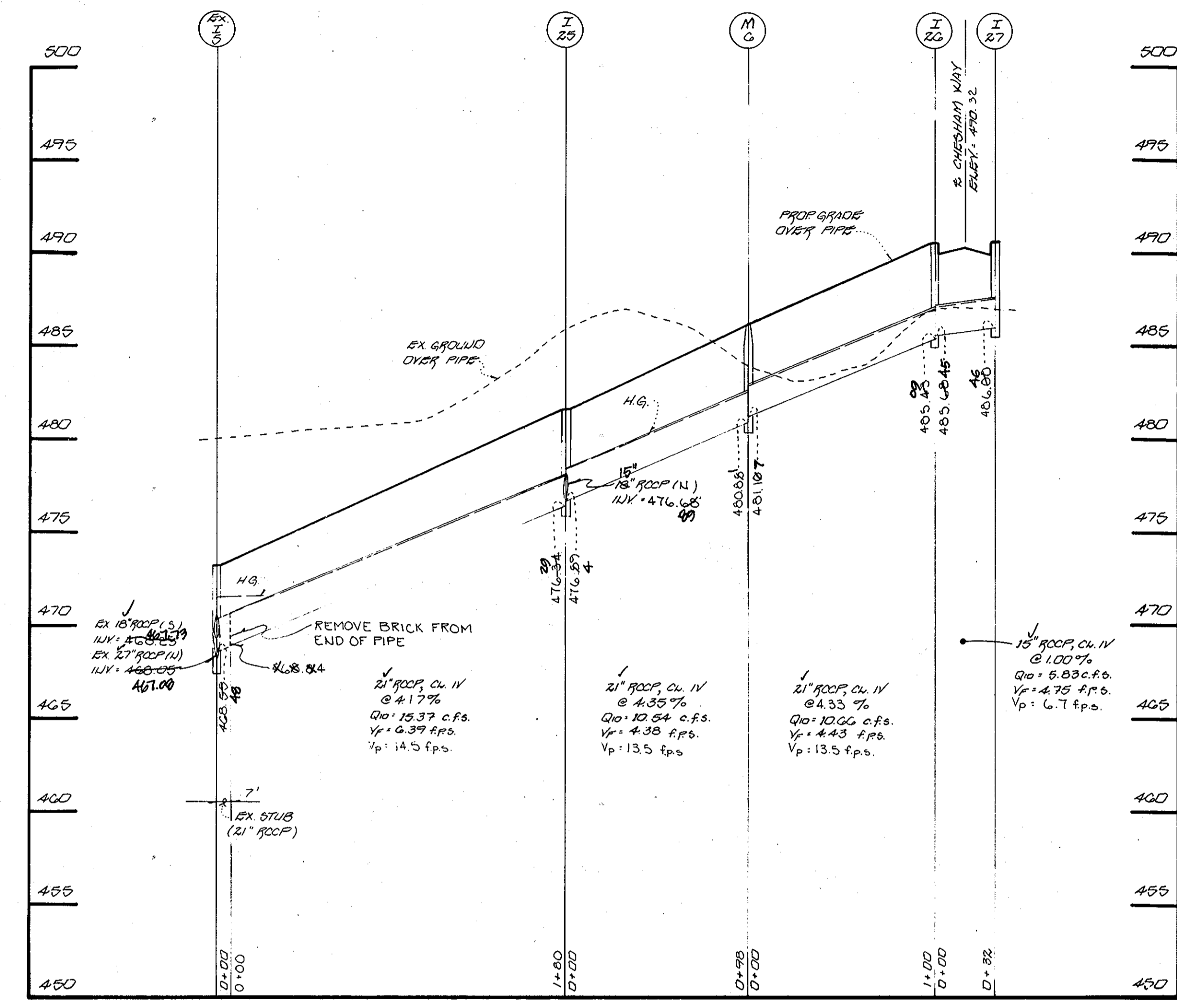
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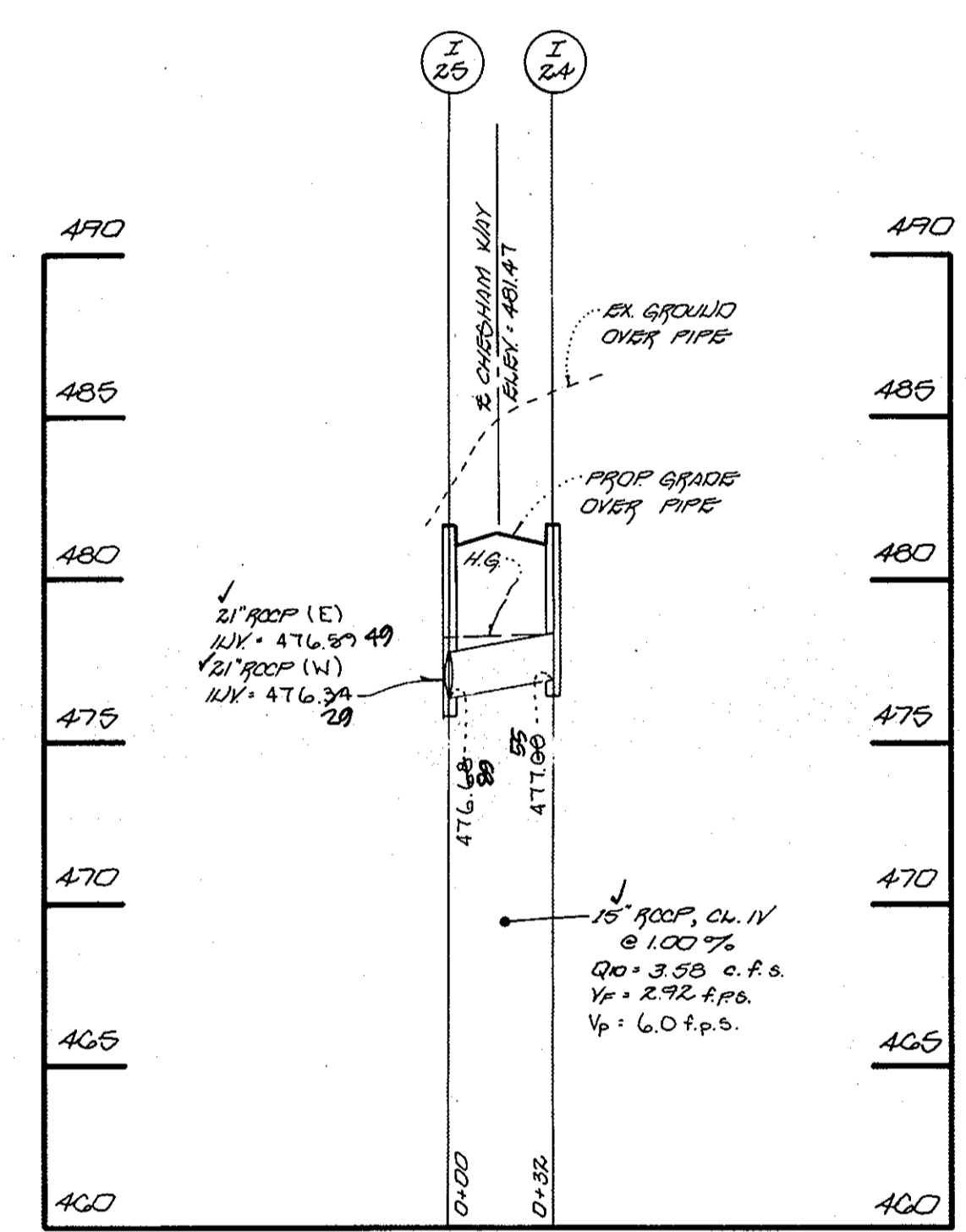
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Robert M. Dancka 2-6-96
 CHIEF, BUREAU OF HIGHWAYS 1/8 DATE
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
Aina Spurrman 2/26/96
 CHIEF, DIVISION OF LAND DEVELOPMENT AND RESEARCH 1/8 DATE
Mr. [Signature] 2/18/96
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



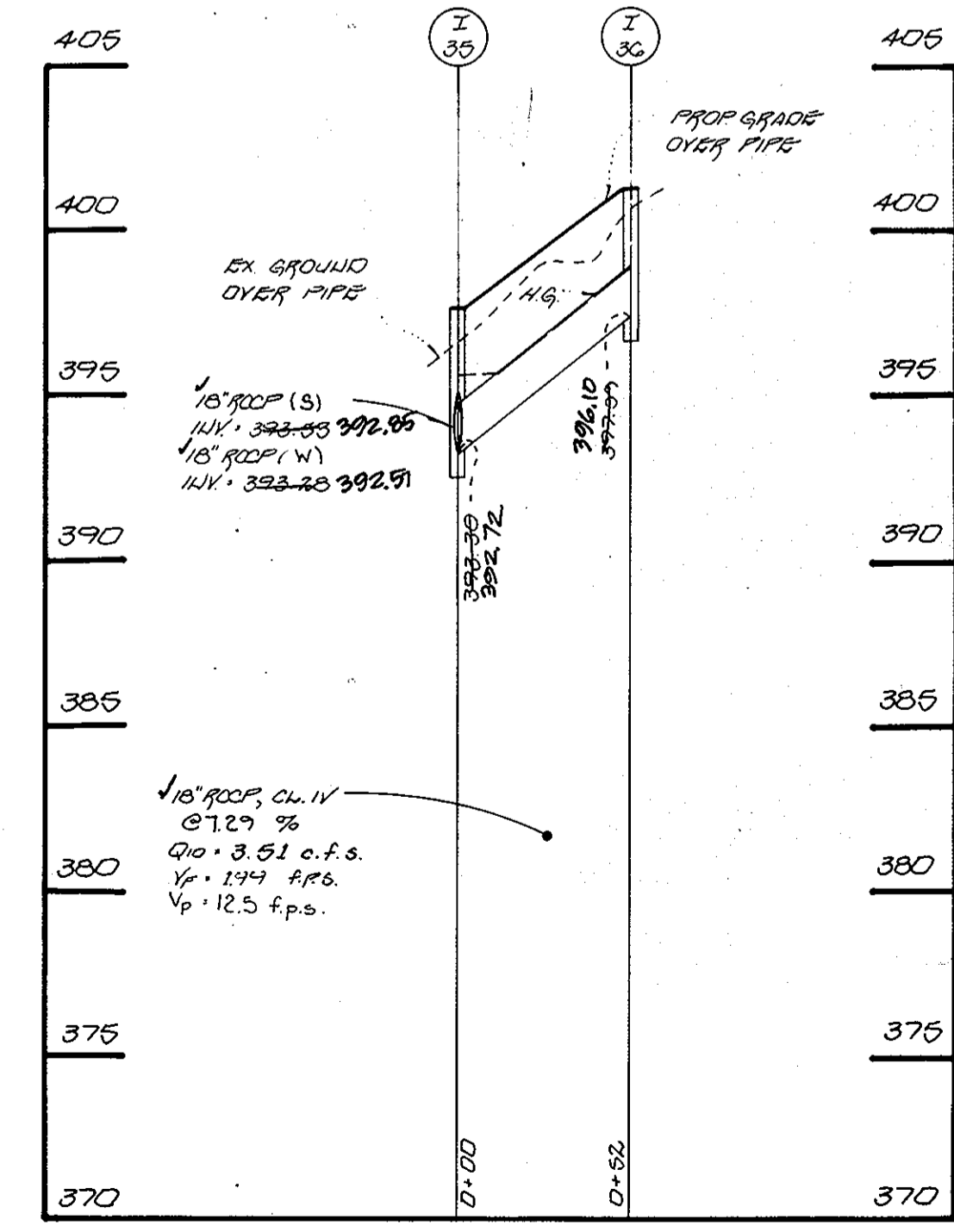
PROFILE
 SCALE: HORIZ: 1" = 50"
 VERT: 1" = 5'



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



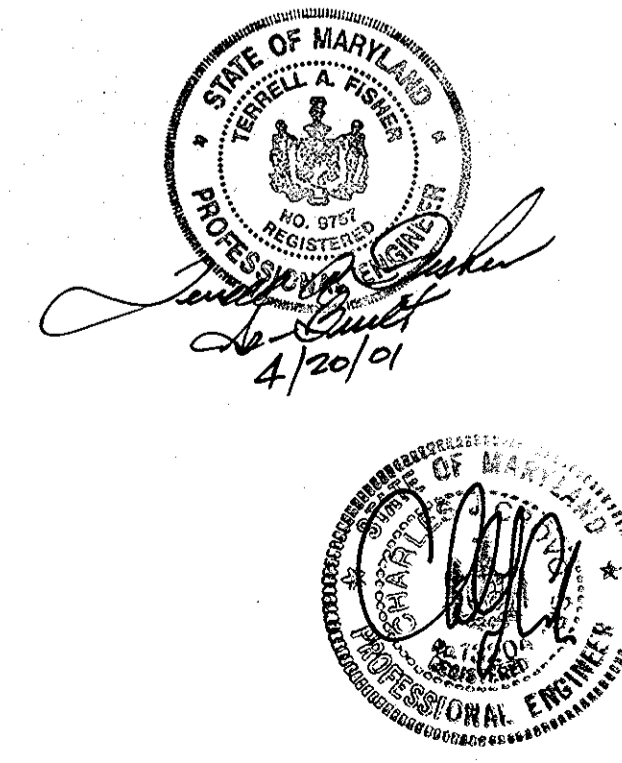
PROFILE
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PROFILE
 SCALE: HORIZ: 1" = 50"
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LEGEND
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 FOR 10 YEAR STORM

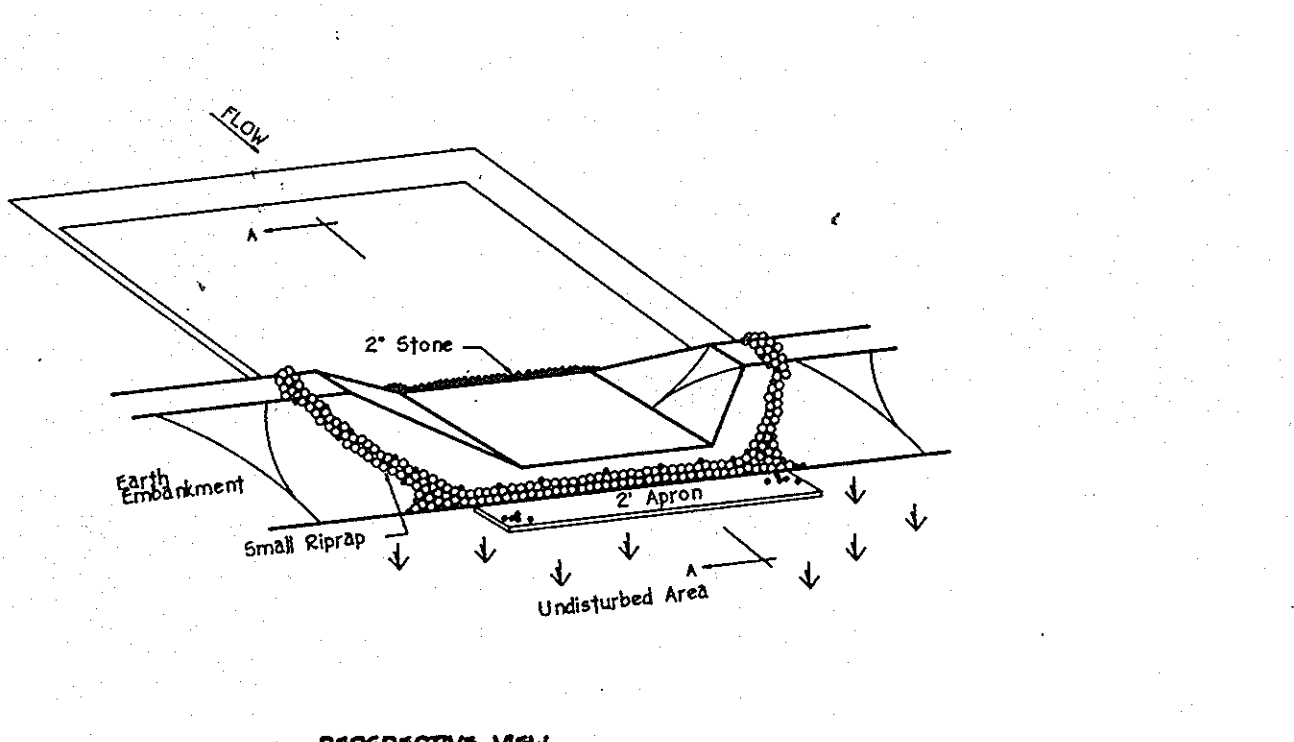
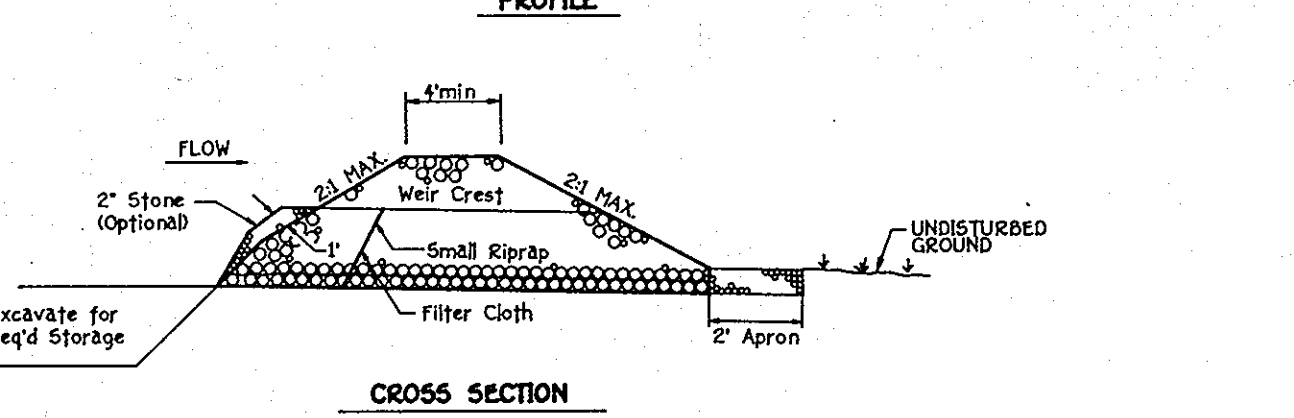
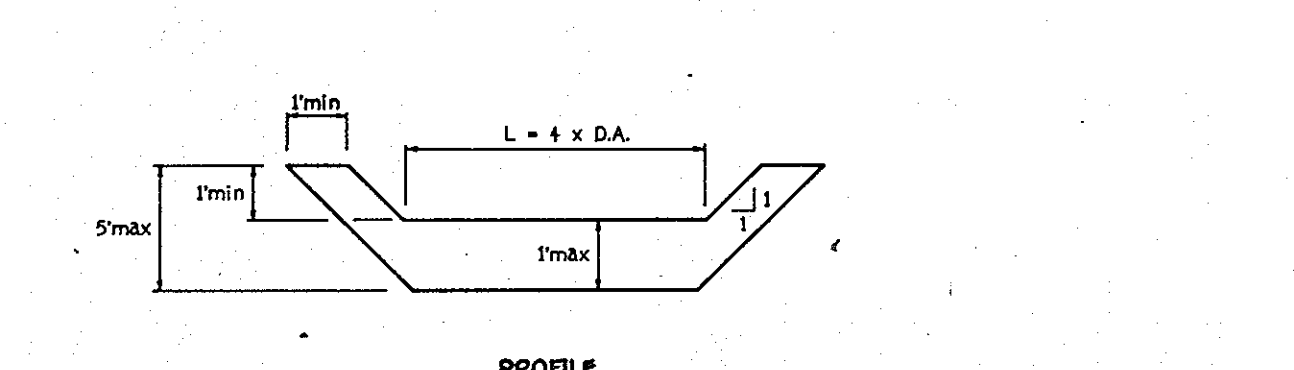
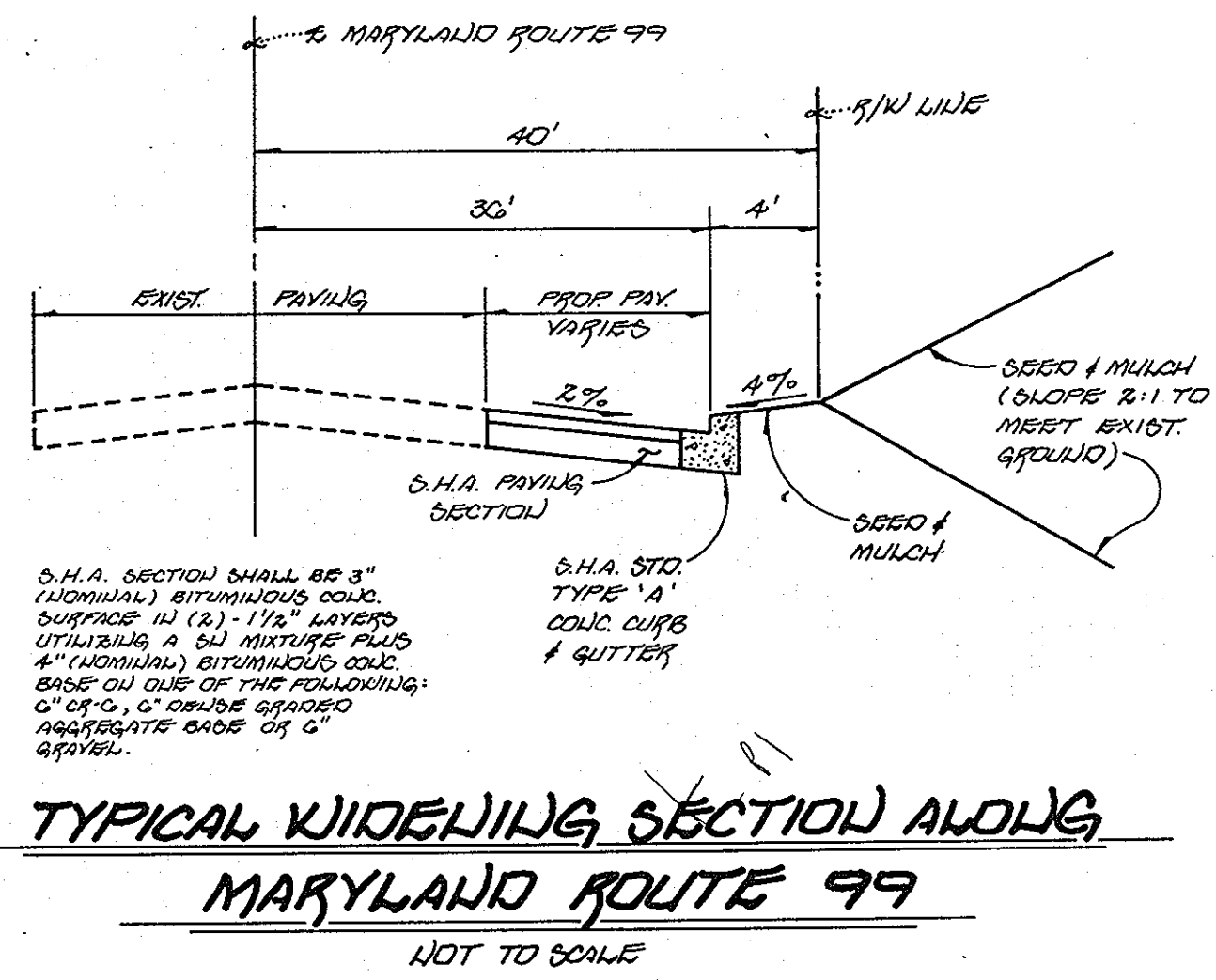
OWNER / DEVELOPER
 STU JOINT VENTURE
 % LAND DESIGN AND DEVELOPMENT
 10808 HICKORY RIDGE ROAD
 COLUMBIA, MARYLAND 21044



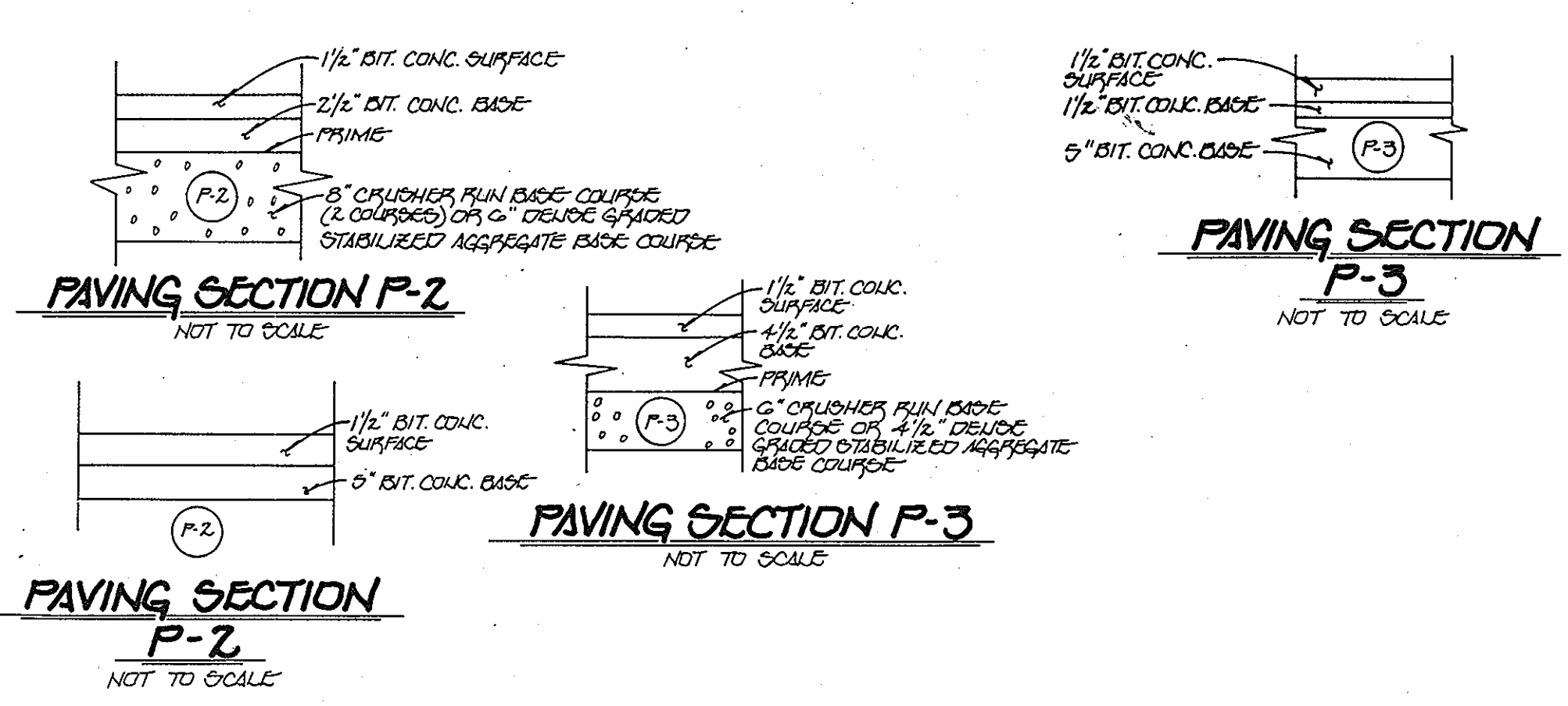
STORM DRAIN PROFILES
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 LOTS 27 thru 45
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 GTW'S WAVERLY WOODS SECTION 4, AREA 2
 PART OF TAX PARCEL 21, TAX MAP 16)
 ZONING: R-20 AND RS-A-8
 TAX MAP No. 16, PART OF PARCEL No. 21
 THIRD ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND
 DATE: MAY 26, 1995
 SHEET 11 OF 21

1253

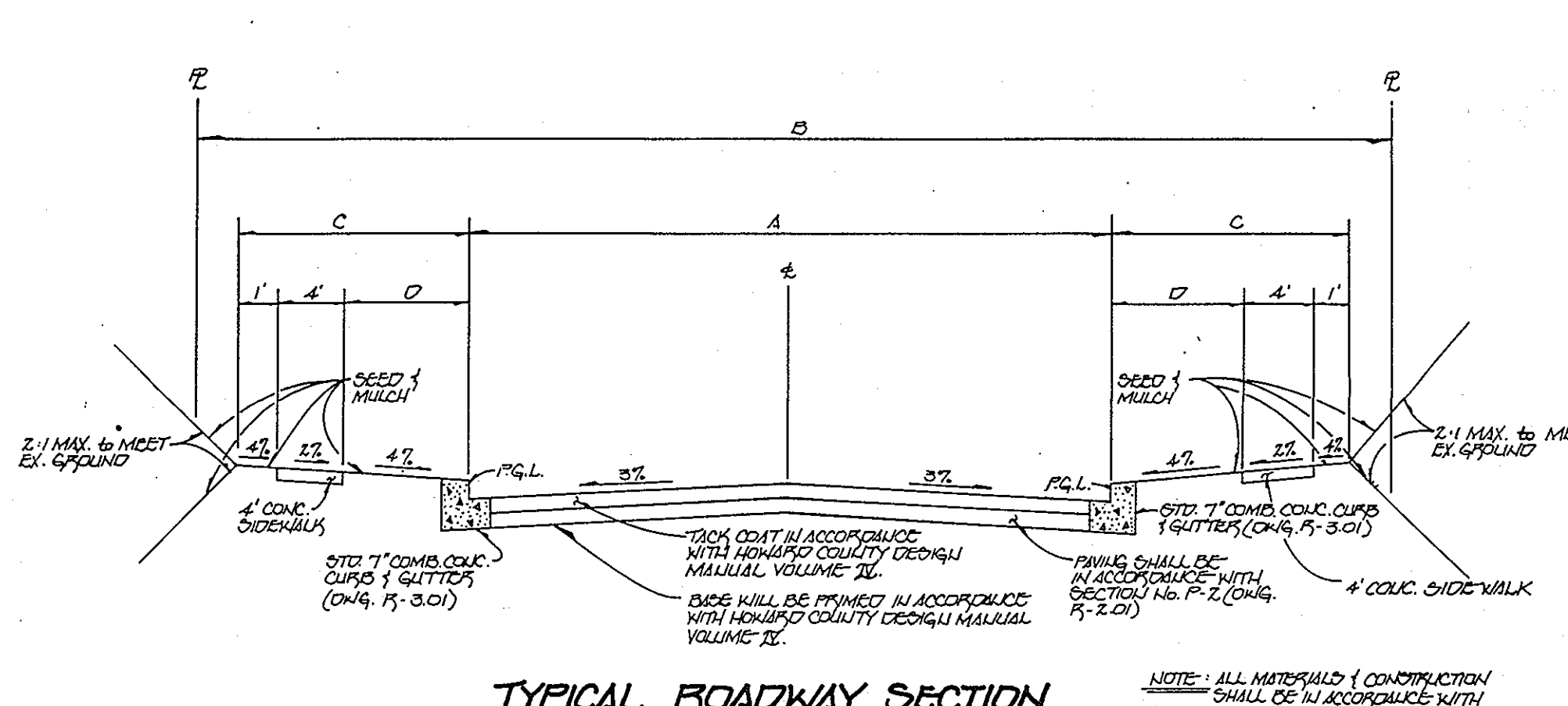
FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 9711 BALTIMORE NATIONAL PIKE, SUITE 100
 ELLICOTT CITY, MARYLAND 21114
 (301) 461-2855



TYPICAL WIDENING SECTION ALONG MARYLAND ROUTE 99
NOT TO SCALE



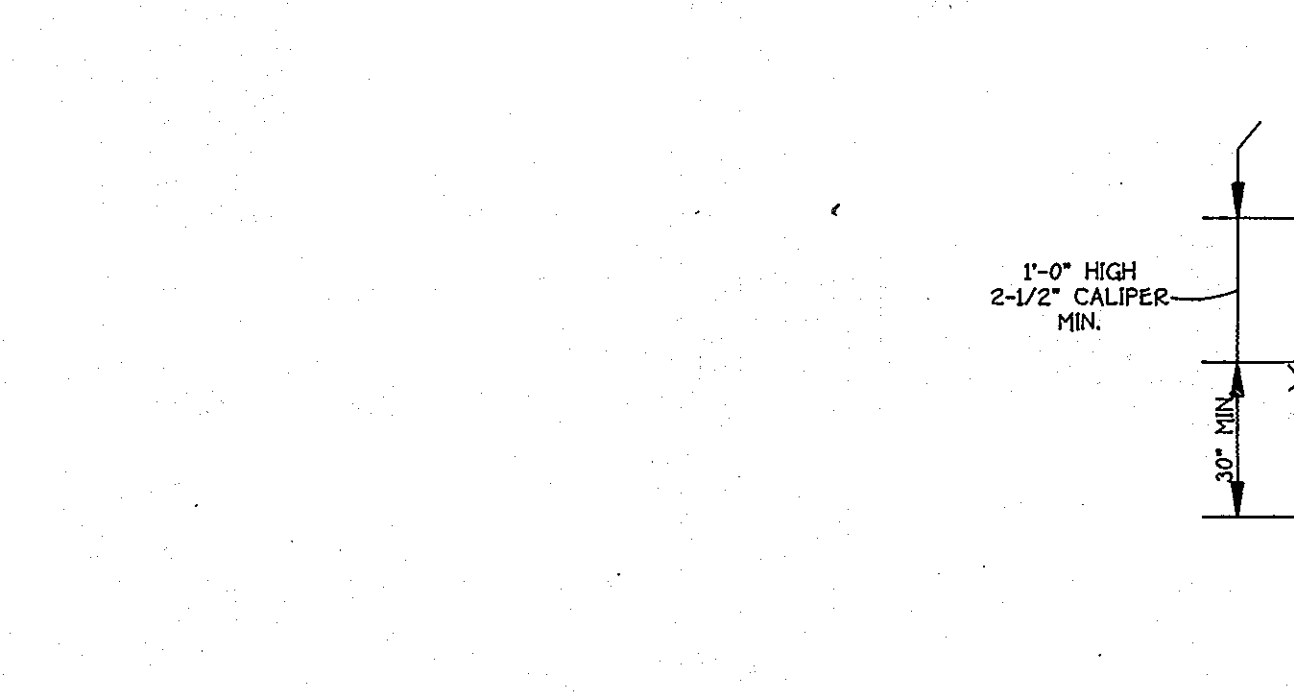
PAVING SECTION P-2 NOT TO SCALE
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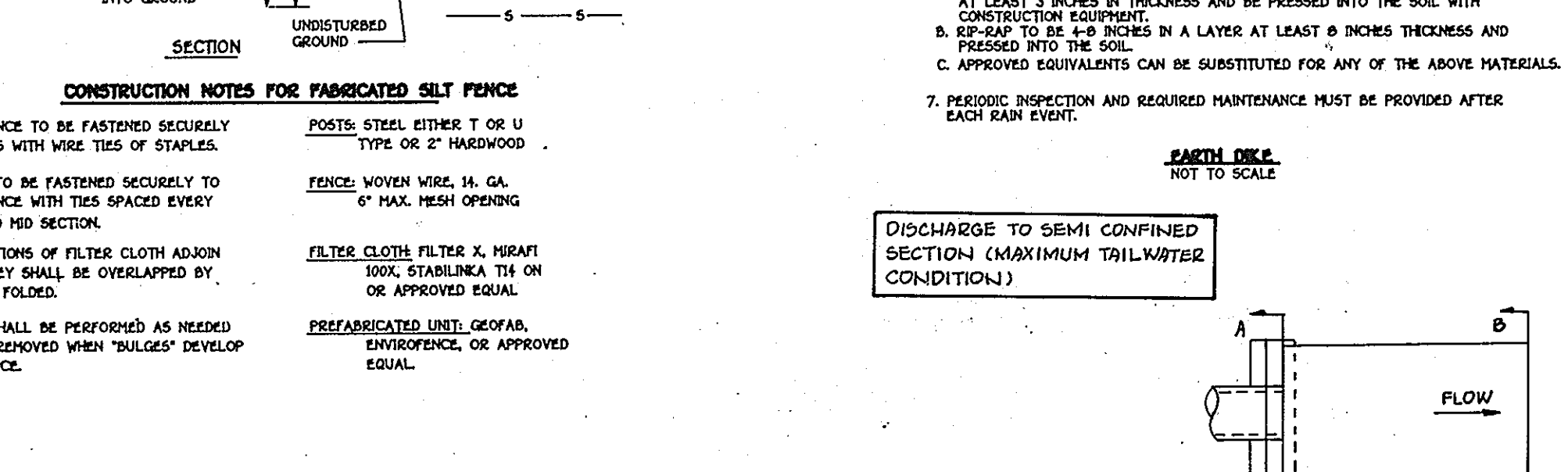
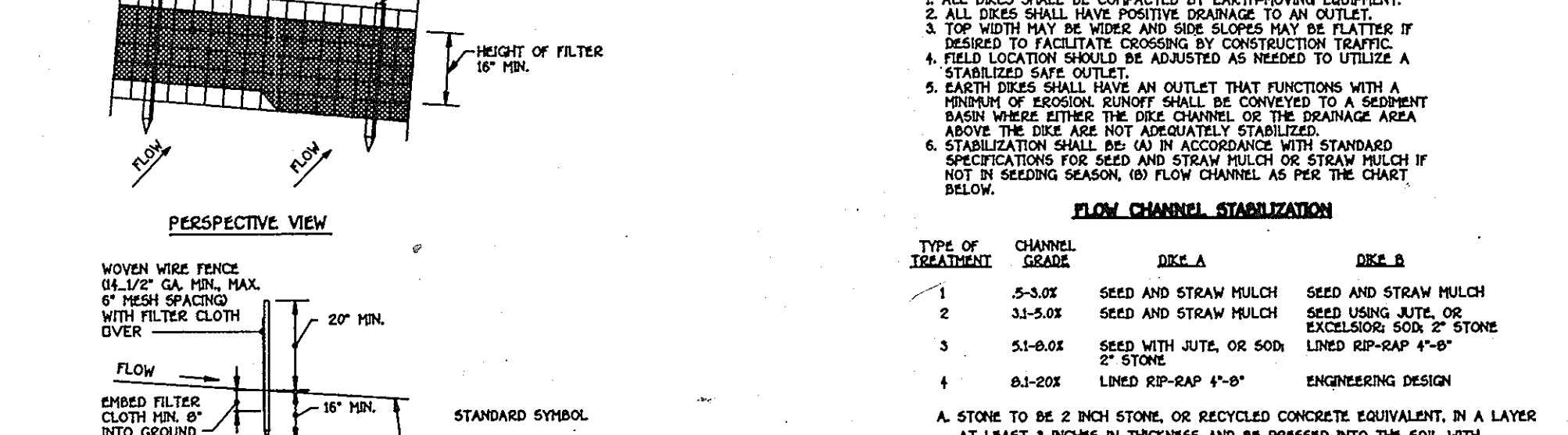
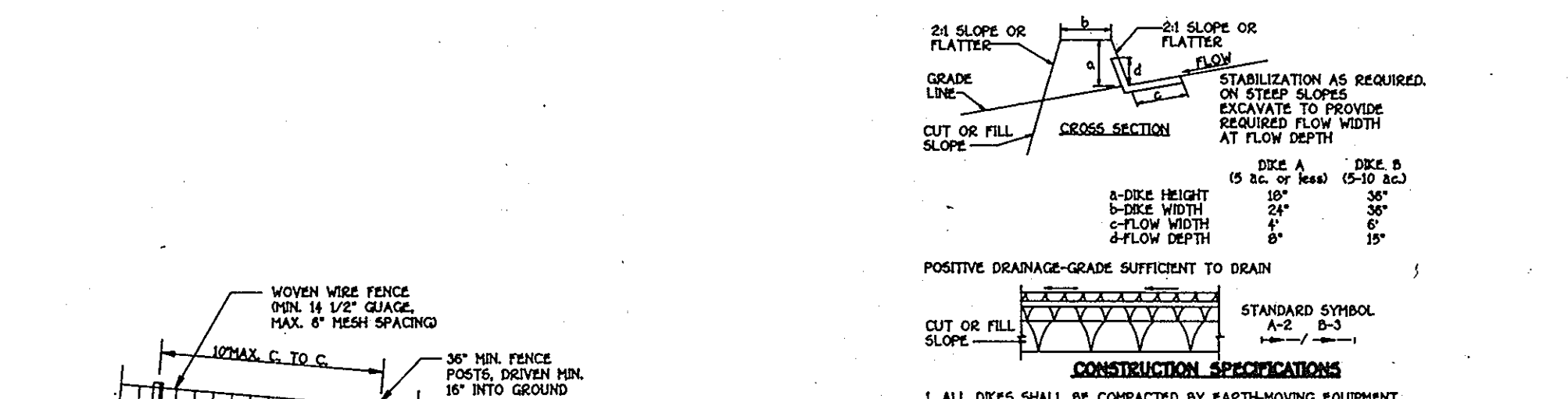
TYPICAL ROADWAY SECTION
NOT TO SCALE

STONE OUTLET SEDIMENT TRAP ST-VI

1. THE AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED OF ANY VEGETATION AND ROOT MAT. THE POOL AREA SHALL BE CLEARED.
2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS OR OTHER WOODY VEGETATION AS WELL AS OVER-SIZED STONES, ROCKS, ORGANIC MATERIAL OR OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHALL BE COMPACTED BY TRAVELING.
3. ALL CUT AND FILL SLOPES SHALL BE 2:1 OR FLATTER.
4. THE STONE USED IN THE OUTLET SHALL BE SMALL RIPRAP 4"-6" ALONG WITH A 1" THICKNESS OF 2" AGGREGATE PLACED ON THE UP-GRADE SIDE ON THE SMALL RIPRAP OR EMBEDDED FILTER CLOTH IN THE RIPRAP.
5. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP.
6. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRED AS NEEDED.
7. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION IS MINIMIZED.
8. THE STRUCTURE SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.



TREE PLANTING
NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

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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: [Signature] DATE: 5/21/95

DEVELOPER'S CERTIFICATE

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN FOR EROSION AND SEDIMENT CONTROL AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF NATURAL RESOURCES APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY.

SIGNATURE OF DEVELOPER: [Signature] DATE: 11-21-95

REVIEWED FOR HOWARD COUNTY SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS. [Signature] DATE: 2/1/96

APPROVED: [Signature] DATE: 2/1/96

DISTRICT HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF DIVISION OF LAND DEVELOPMENT AND RESEARCH [Signature] DATE: 3/20/96

CHIEF DEVELOPMENT ENGINEERING DIVISION [Signature] DATE: 2/8/96

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS [Signature] DATE: 2-6-96

CHIEF, BUREAU OF HIGHWAYS [Signature] DATE: 2-6-96

ROAD NAME	CLASSIFICATION	STRA 6 & 2 STRA	A	B	C	D	PAVING SECT.	DESIGN SPEED
DORCHESTER WAY	MINOR COLLECTION	50-48-28-28	20'	12'	7'	7'	P-3	35 MPH
CHARLESTON WAY	COLLECTOR	0-00-0-4-5-6	28'	15'	9'	4'	P-2	25 MPH

ROADWAY SECTION

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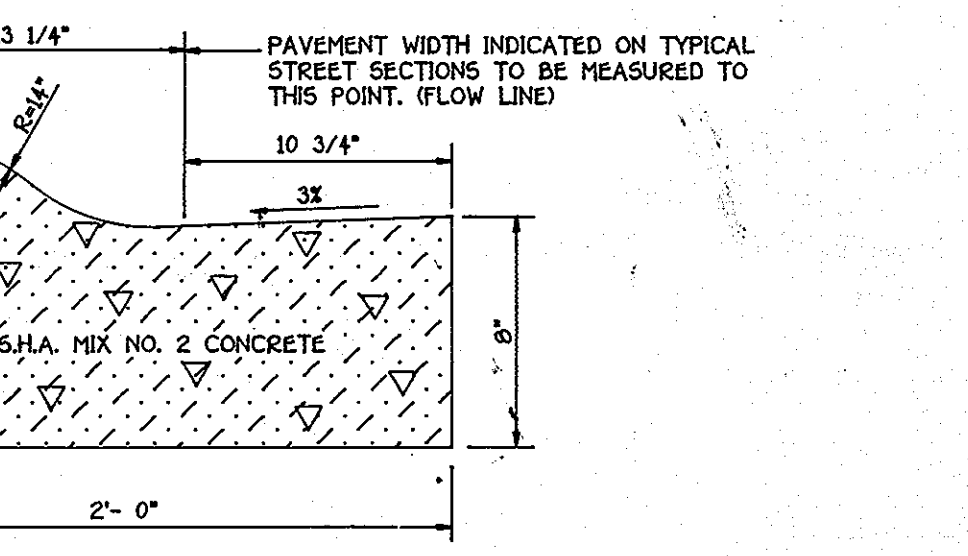
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MODIFIED COMBINATION CURB AND GUTTER

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TYPICAL ROADWAY SECTIONS

SEDIMENT CONTROL NOTES AND DATA

GTW'S WAVERLY WOODS

SECTION 4, AREA 2

LOTS 20 thru 45

(A RESUBDIVISION OF PARCEL 1)

GTW'S WAVERLY WOODS, SECTION 4 AREA 1

PART OF TAX PARCEL 21, TAX MAP 161

ZONING: R-20 AND R5-A-B

TAX MAP No: 16 PARCEL No: 21

THIRD ELECTION DISTRICT

HOWARD COUNTY, MARYLAND

DATE: MAY 8, 1995

SHEET 12 OF 21

DATE: 4/20/01

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20.0 STANDARDS AND SPECIFICATIONS

VEGETATIVE STABILIZATION

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 runoff to downstream areas, and improving wildlife habitat and visual resources.

CONDITIONS WHERE PRACTICE APPLIES
This practice shall be used on degraded areas as specified on the plans or on highly erodible or critically eroding areas. This specification is divided into Temporary Seeding, to quickly establish vegetative cover for short duration (up 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 between construction phases, earth dikes, etc. and for Permanent Seeding are lawns, dunes, cut and fill slopes and other areas at final grade, former stockpile and staging areas, etc.

Planting vegetation in disturbed areas will have an effect on the water budget, especially on volume 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. Subsequent plant growth will reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Planting vegetation will also help protect groundwater supplies by assimilating those substances present within the root zone. Sediment control devices must remain in place during grading, 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

- Site Preparation**
 - Install erosion and sediment control structures (either temporary or permanent) such as diversions, grade stabilization structures, berms, waterways, or sediment control basins.
 - Perform all grading operations at right angles to the slope. Final grading and shaping is not usually necessary for temporary seeding.
 - Schedule required soil tests to determine soil amendment composition and application rates for sites having disturbed areas over 5 acres.
- Soil Amendments (Fertilizer and Lime Specifications)**
 - 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.
 - Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment. Fertilizer may be substituted for fertilizer with prior approval from the appropriate 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 warranty of the producer.
 - Lime materials shall be ground limestone (hydrated or burnt lime may be substituted) which contains at least 50% total oxide calcium oxide plus magnesium oxide. Limestone shall be ground to such fineness that at least 50% will pass through a #100 mesh sieve and 90-100% will pass through a #20 mesh sieve.
 - Incorporate lime and fertilizer into the top 3-5" of soil by diking or other suitable means.
- Seeded Preparation**
 - Seeded 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.
 - Apply fertilizer, as prescribed on the plans.
 - Incorporate lime and fertilizer into the top 3-5" of soil by diking or other suitable means.
- Permanent Seeding**
 - Minimum soil conditions required for permanent vegetative establishment:
 - Soluble salts shall be less than 500 parts per million (ppm).
 - The soil shall contain less than 40% clay, but enough fine grained material (200 sieve) to provide the capacity to hold a moderate amount of moisture. An exception is if lowgrass or serech grasses are to be planted, then a sandy soil (50% silt plus clay) would be acceptable.
 - Soil shall contain 1.5% minimum organic matter by weight.
 - Soil must contain sufficient pore space to permit adequate root penetration.
 - If these conditions cannot be met by soils on site, adding topsoil is required.
 - In accordance with Section 21 Standard and Specification for Topsoil, topsoil shall be applied in accordance 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 from sliding down a slope.
 - Apply soil amendments as per soil test or as indicated on the plans.
 - Mix soil amendments into the top 3-5" of topsoil by diking or other suitable means. Lawn areas should be rolled to smooth the surface. Remove large objects like stones and debris, and ready the area for seed and application, where site conditions will not permit normal seeded preparation, loosen surface soil by digging with a heavy chain or other equipment to roughen the surface. Steep slopes greater 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 3-5" of soil should be loose and friable. Seeded loosening may not be necessary on newly disturbed areas.

- Seed Specifications**
 - 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.
 - Seed tags shall be made available to the inspector to verify type and rate of seed used.
 - Inoculant - The inoculant for treating legumes used in the seed mixture 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 as directed on the package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperature above 70 degrees Fahrenheit will make the inoculant less effective.
- Methods of Seeding**
 - Hydroseeding - Apply seed uniformly with hydroseeder (skirt includes seed and fertilizer), broadcast or drop seeded, or a cultipacker seeder.
 - 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/acre; K2O (potassium) 200 lbs/acre.
 - Lime - use only ground agricultural limestone, 10 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.
 - Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.
 - Dry Seeding - This includes use of conventional drop or broadcast spreaders.
 - Seed spread shall be incorporated into the subsoil at the rates prescribed on the Temporary or Permanent Seeding Summaries or Tables 229 or 230. The seed shall be spread and then be rolled with a weighted roller to provide good seed to soil contact.
 - Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.
 - Cultipacker Seeding - Mechanized seeders that apply and cover seed with soil.
 - Cultipacker seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil coverage. Seeders must be firm after finishing.
 - Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.
- Mulch Specifications** (in order of preference)
 - Straw shall consist of thoroughly threshed wheat, rye or oat straw, reasonable bright in color, and shall not be musty, rotten, chaffed, or excessively dusty and shall be free of noxious weed seeds as specified in the Maryland Seed Law.
 - Wood Cellulose Fiber Mulch (WCFM) shall consist of specially prepared wood cellulose processed into a uniform fibrous physical state.
 - 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 uniformly spread slurry.
 - WCFM, including dye, shall contain no germination or growth inhibiting factors.
 - WCFM materials shall be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material shall form a batter-like ground cover, on application, having moisture absorption and retention properties and shall cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
 - WCFM material shall contain no elements or compounds at concentrations levels that will be phytotoxic.
 - 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 1.5% 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.
- Mulching Seeded Areas** - Mulch shall be applied to all seeded areas immediately after seeding. 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.
 - 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.
 - 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.
 - 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:
 - A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface to 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. It is used on sloping land, this practice should be used on the contour if possible.
 - Wood cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 500 pounds/acre. The wood cellulose fiber binder shall be mixed with water and the mixture shall contain a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
 - Application of liquid binders should be heavier at the edges where wind catches mulch, such as in valleys and crest of berms. The remainder of area should be sprayed uniformly after binder application. Synthetic binders - such as ACRYLIC DLR (Ago-Tack), DCA-70 Perseol, Terra Tex II, Terra Tex 45 or other approved equal may be used at rates recommended by the manufacturer to anchor mulch.
 - Lightweight plastic netting may be established over the mulch according to manufacturer's recommendations. Netting is usually available in rolls 4' to 15' wide and 300 to 3,000 feet long.

- Incremental Stabilization - Cut Slopes**
 - 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'.
 - Construction sequence (refer to Figure 3 below):
 - Excavate and stabilize all temporary swales, side ditches, or berms that will be used to convey runoff from the excavation.
 - Perform Phase 1 excavation, dress, and stabilize.
 - Perform Phase 2 excavation, dress and stabilize. Overseed Phase 1 areas as areas are necessary.
 - Perform final phase excavation, dress and stabilize. Overseed previously seeded areas as necessary.
 - Incremental Stabilization of Embankments - Fill Slopes**
 - Embankments shall be constructed in lifts as prescribed on the plans.
 - 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.
 - At the end of each dry temporary berm 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.
 - Construction Sequence** (Refer to Figure 4 below)
 - Excavate and stabilize all temporary swales, side ditches, or berms that will be used to convey runoff from the excavation.
 - Place Phase 1 embankment, dress and stabilize.
 - Place Phase 2 embankment, dress and stabilize.
 - Place final phase embankment, 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 in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

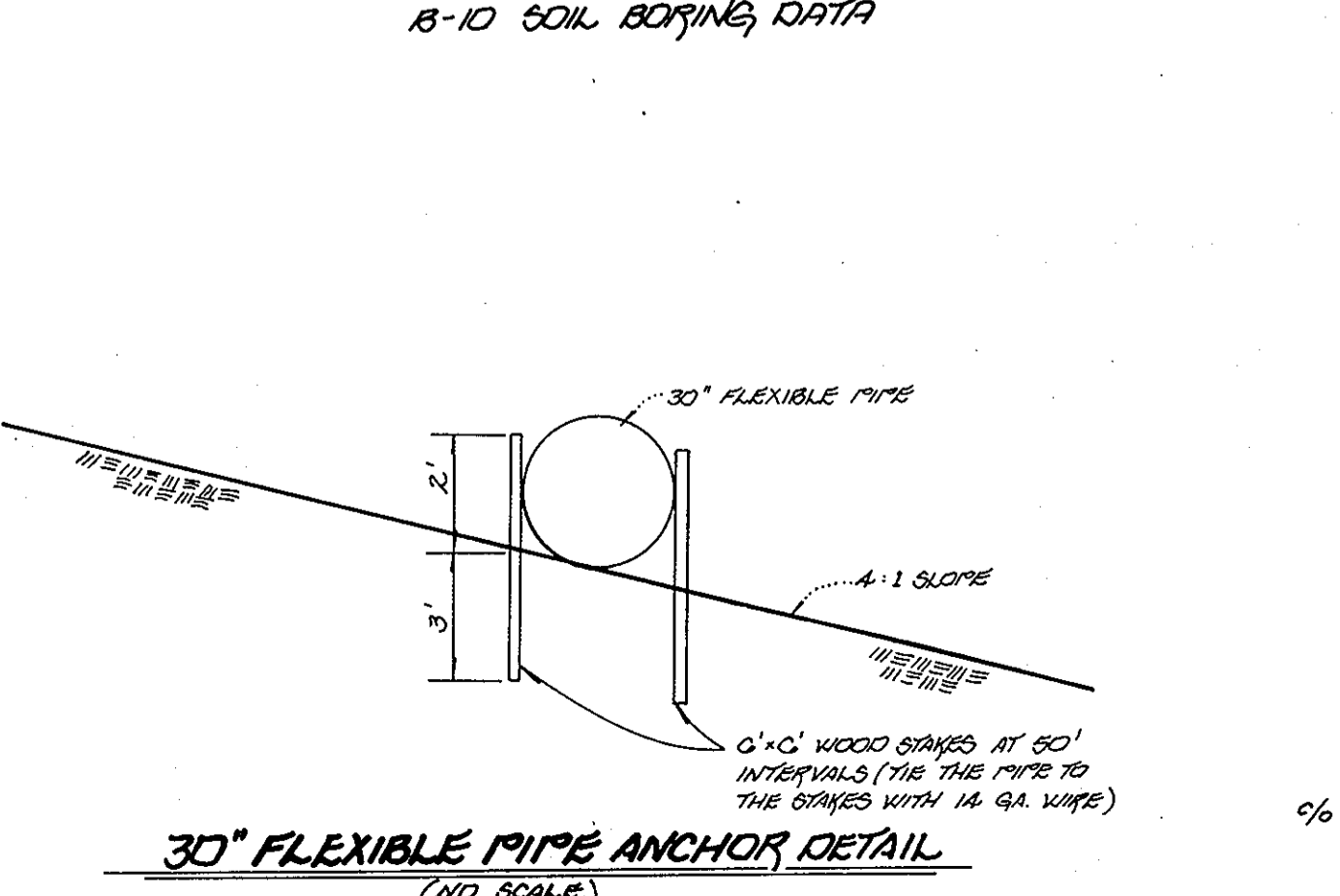
HOWARD SOIL CONSERVATION DISTRICT
STANDARD SEDIMENT CONTROL NOTES

- A minimum of 48 hours notice must be given to Howard County Department of Inspections, Licenses and Permits, Sediment Control Division prior to the start of any construction (313-1855).
- 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.
- 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 greater than 3:1, b) 14 days to all other disturbed or graded areas on the project site.
- 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.
- 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), and (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.
- 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.
- Site Analysis:

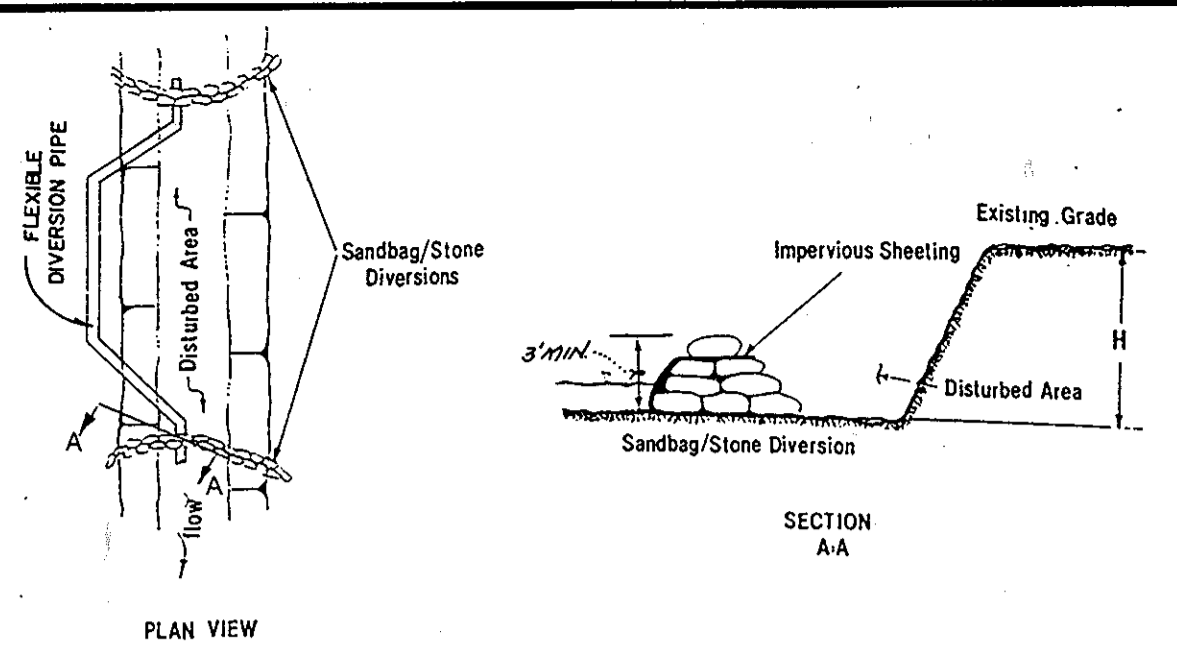
Total area of site	15.14 Acres
Area disturbed	12.60 Acres
Area to be roofed or paved	1.00 Acres
Area to be vegetatively stabilized	11.60 Acres
Total cut	25,000 Cu.Yds.
Total fill	25,000 Cu.Yds.
Off-site water/borrow area location	N/A
- Any sediment control practice which disturbs by grading activity for placement of utilities must be repaired on the same day of disturbance.
- Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
- 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.
- 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.

8-10 SOIL BORING DATA

ELEV.	SOIL DESCRIPTION Color, Moisture, Consist., Plasticity, Size Proportions	STATAL DEPTH	DEPTH SCALE	SAMPLE			BORING & SAMPLING NOTES
				Blow/6"	No.	Type Rec.	
387.3	Brown slightly moist medium dense fine SAND	3.0	0	21-9-13	1	DS 2"	Topsoil: 3"
	USDA: SM USDA: LOAM	5	1	2-8-9	2	DS 8"	Groundwater encountered at 4.5 feet
	Yellowish brown slightly moist micaceous fine SAND	10.0	0	9-11-12	3	DS 11"	
	USC: SM USDA: SANDY LOAM	15	0	10-13-15	4	DS 16"	Cave-in depth: 13.0 feet
372.3	Rock fragments below 15.0 ft	18.0	0	13-11-15	5	DS 8"	Boring terminated at 18.0 feet depth



OWNER / DEVELOPER
GTW JOINT VENTURE
% LAND DESIGN AND DEVELOPMENT
10005 HICKORY RIDGE ROAD
COLUMBIA, MARYLAND 21044



DESCRIPTION
The work shall consist of installing a flow diversion structure when construction activities take place within the stream channel such as culvert construction or culvert replacement.

- Material Specifications**
 - Sandbags: Sandbags shall consist of materials which are resistant to ultraviolet radiation, tearing and puncture and woven tightly enough to prevent leakage of fill material (i.e., sand, fine gravel, etc.).
 - Stone: Stone shall be washed and have a minimum diameter of 6 inches.
 - Sheeting: Sheeting shall consist of polyethylene or other material which is impervious and resistant to puncture and tearing.
- Construction Requirements**
 - All erosion and sediment control devices shall be installed as the first order of work.
 - The height of the sandbag/stone diversion structure shall be one half the distance from the stream bed to the bank plus one foot, as indicated in section AA. The sandbags shall be placed on a smooth, prepared surface.
 - All excavated materials shall be disposed of in a SCD approved disposal area outside the 100-year floodplain unless otherwise approved on the plans by the MDA.
 - All dewatering of the construction area shall be pumped to a filter bag or otherwise approved on the plans by the MDA.
 - Sheeting shall be overlapped a minimum of 18 inches.
 - The diversion pipe shall have a minimum diameter of sufficient size to convey the normal stream flow.
 - If necessary, silt fence or silt curtains shall be installed around the perimeter of the work area.
 - Sediment control devices are to remain in place until all disturbed areas are stabilized and the inspecting authority approves their removal.

DIVERSION PIPE
NO SCALE

8-11 SOIL BORING DATA

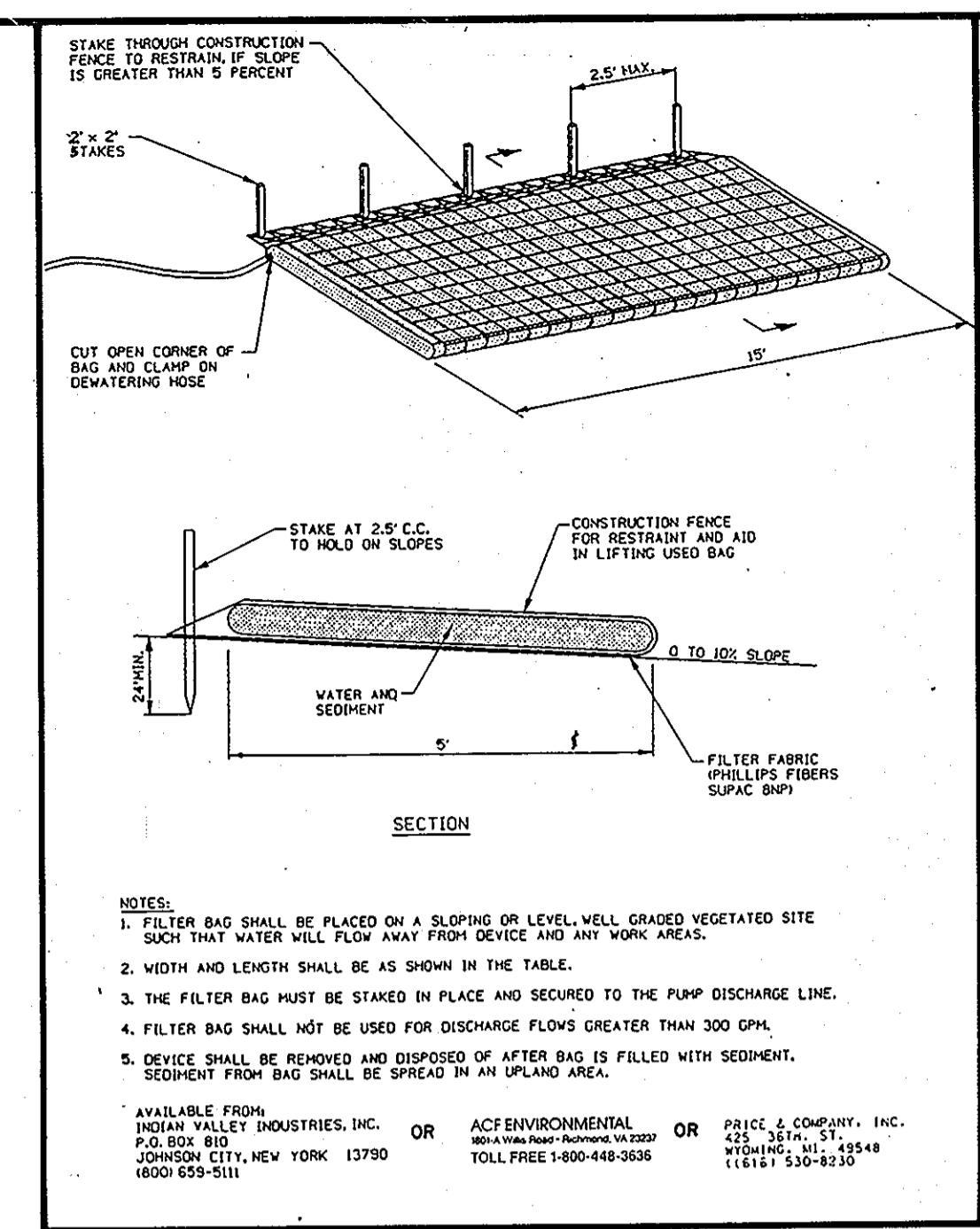
ELEV.	SOIL DESCRIPTION Color, Moisture, Consist., Plasticity, Size Proportions	STATAL DEPTH	DEPTH SCALE	SAMPLE			BORING & SAMPLING NOTES
				Blow/6"	No.	Type Rec.	
387.00	Brown slightly moist medium dense fine SAND.	4.0	0	5-7-8	1	DS 3"	Top Soil: 2.0"
	USDA: SM USDA: LOAM	5	1	5-4-4	2	DS 7"	Groundwater encountered at 12.0 feet
	Olive green to brown moist micaceous loose to very dense SAND with weathered rock fragments.	10.0	0	29-47-81	3	DS 12"	
377.25	USC: SM USDA: SANDY LOAM	13.75	0	50/2"	4	DS 2"	Core-in depth - 10.5'
		15	0				Hard drilling below 13'
		20					Auger refusal at 13.75' depth.
		25					

8-12 SOIL BORING DATA

ELEV.	SOIL DESCRIPTION Color, Moisture, Consist., Plasticity, Size Proportions	STATAL DEPTH	DEPTH SCALE	SAMPLE			BORING & SAMPLING NOTES
				Blow/6"	No.	Type Rec.	
383.50	Yellowish brown moist loose Silty SAND, trace clay and mica.	4.0	0	3-3-3	1	DS 10"	Top Soil: 3"
	USC: SM USDA: LOAM	5	1	5-4-5	2	DS 11"	Groundwater encountered at 4.75 feet
	Olive green and yellow moist loose to very dense fine SAND.	10	0	9-8-7	3	DS 14"	Cave-in depth: 12.5 feet
	USDA: SANDY LOAM USC: SM	15	0	17-17-24	4	DS 13"	
369.50	Trace mica below 8.0', rock fragments below 13.0'.	18.0	0	24-32-40	5	DS 18"	
		20					Boring terminated at 18.0 feet depth.
		25					

8-13 SOIL BORING DATA

ELEV.	SOIL DESCRIPTION Color, Moisture, Consist., Plasticity, Size Proportions	STATAL DEPTH	DEPTH SCALE	SAMPLE			BORING & SAMPLING NOTES
				Blow/6"	No.	Type Rec.	
385+00	Brown moist medium dense Silty fine SAND, trace clay	4.0	0	3-5-6	1	DS 6"	Top Soil: 2"
	USC: SM USDA: LOAM	5	1	6-12-8	2	DS 3"	Groundwater encountered at 7' 10"
	Olive brown to green moist medium dense to very dense fine SAND with rock fragments.	10	0	7-8-9	3	DS 12"	Cave-in depth -10.5'
375.25	USC: SM USDA: SANDY LOAM	13.75	0	50/3"	4	DS 3"	Auger refusal at 13.75' depth.
		15					
		20					
		25					



- FILTER BAG SHALL BE PLACED ON A SLOPING OR LEVEL WELL GRADED VEGETATED SITE SUCH THAT WATER WILL FLOW AWAY FROM DEVICE AND ANY WORK AREAS.
- WIDTH AND LENGTH SHALL BE AS SHOWN IN THE TABLE.
- FILTER BAG MUST BE STAKED IN PLACE AND SECURED TO THE PUMP DISCHARGE LINE.
- FILTER BAG SHALL NOT BE USED FOR DISCHARGE FLOWS GREATER THAN 300 GPM.
- DEVICE SHALL BE REMOVED AND DISPOSED OF AFTER BAG IS FILLED WITH SEDIMENT. SEDIMENT FROM BAG SHALL BE SPREAD IN AN UPLAND AREA.

FILTER BAG
NO SCALE

DEVELOPER'S CERTIFICATE
I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL 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 ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

Signature of Developer: [Signature] DATE: 11-21-95

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

Signature of Engineer: [Signature] DATE: 11/16/95

REVIEW FOR HOWARD SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS

Signature of Reviewer: [Signature] DATE: 2/11/96
U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE

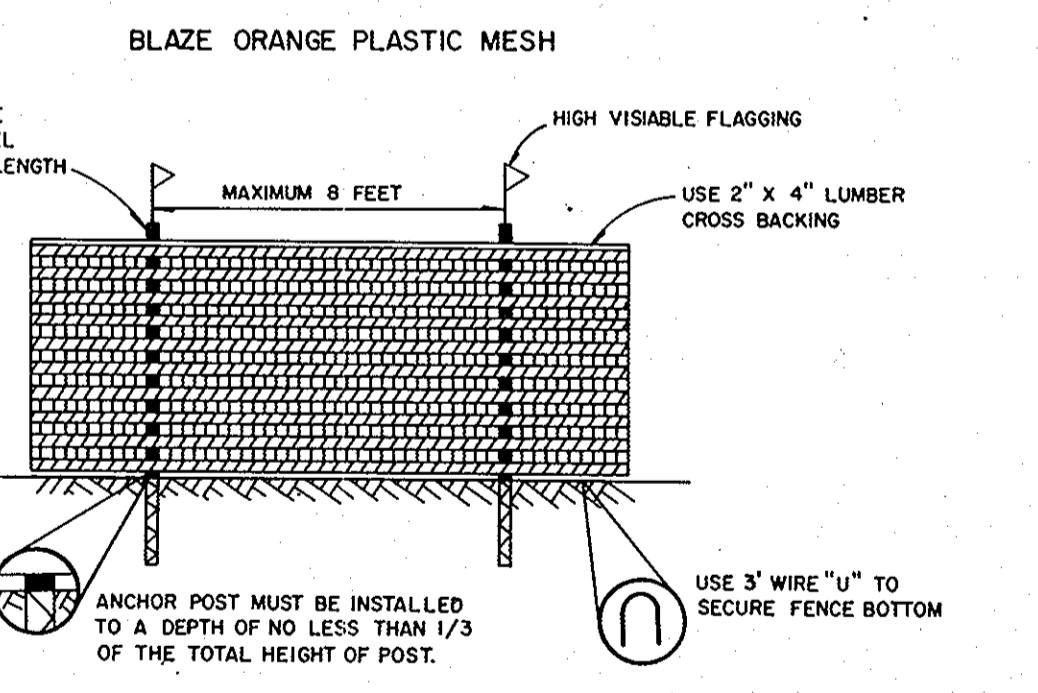
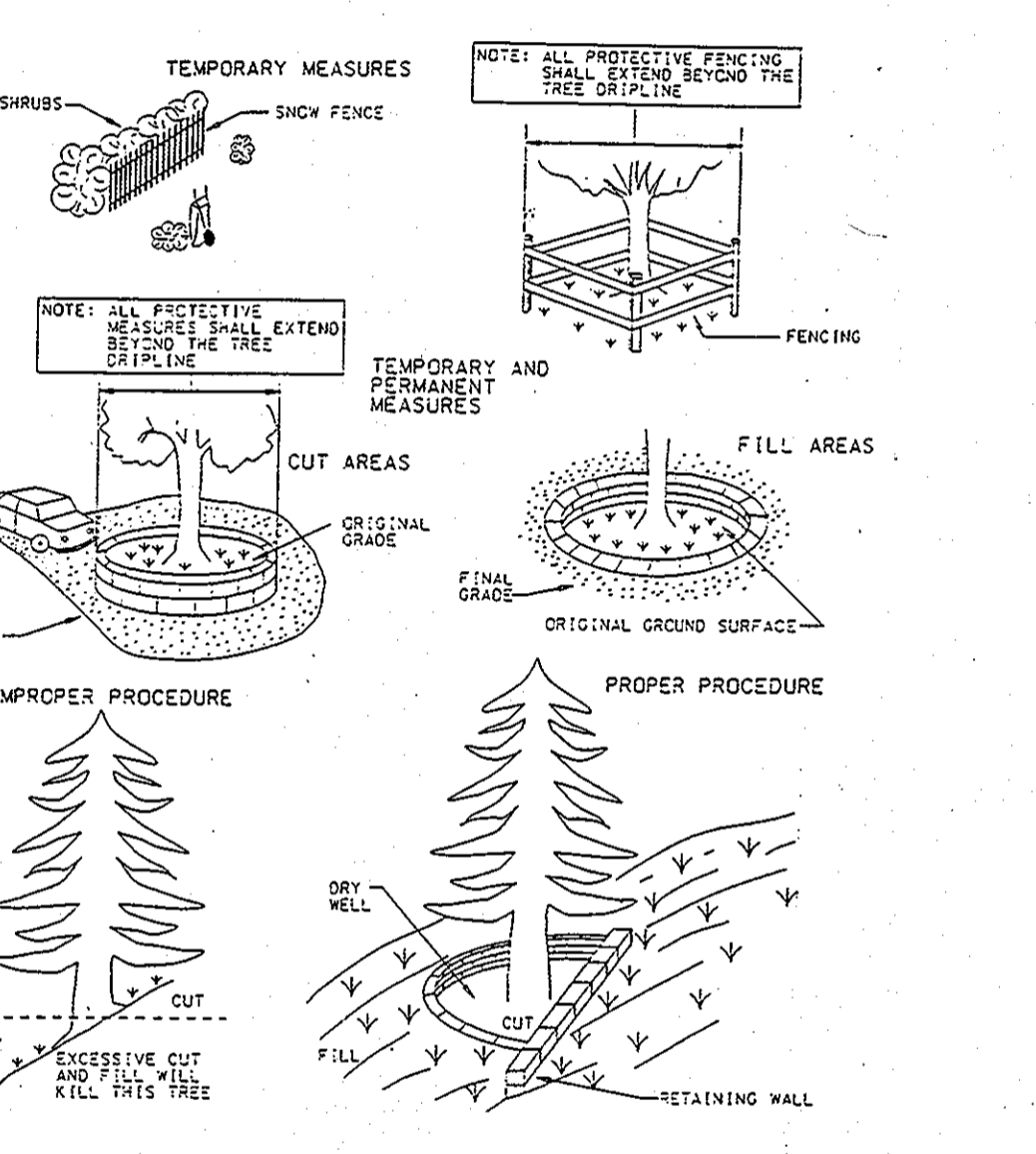
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

Signature of District Director: [Signature] DATE: 2/1/96
HOWARD SOIL CONSERVATION DISTRICT

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Signature: [Signature] DATE: 2-6-96

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Signature: [Signature] DATE: 3/21/96

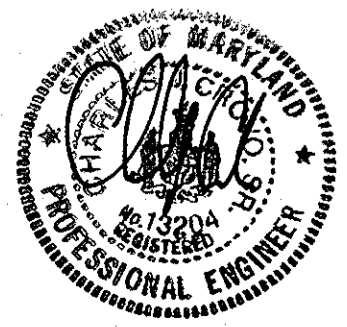
Signature: [Signature] DATE: [Signature]



- FOREST PROTECTION DEVICE ONLY.
- PETITION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
- SOIL RETENTION DEVICES SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
- TRUCK DAMAGE SHOULD BE AVOIDED.
- PROTECTIVE SIGNAGE SHOULD BE USED.
- DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.

TREE PROTECTION DETAIL
NO SCALE

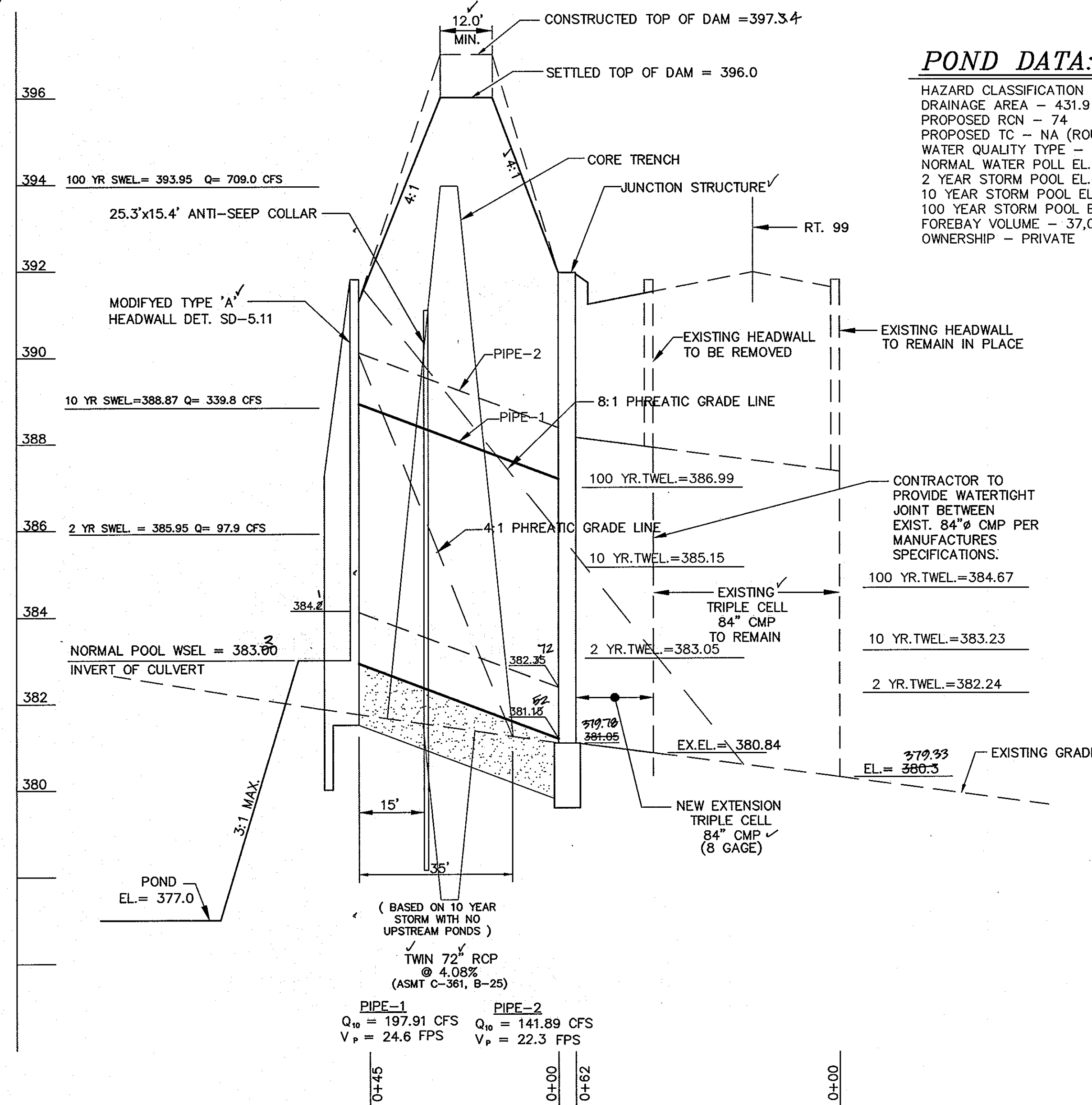
SEDIMENT CONTROL NOTES AND DETAILS
GTW'S WAVERLY WOODS
SECTION 4, AREA 2
LOTS 20 thru 46
(A RESUBDIVISION OF PARCEL 'A',
GTW'S WAVERLY WOODS SECTION 4, AREA 1)
PART OF TAX PARCEL 22, TAX MAP 101
ZONING R-20 AND RS-A-8
TAX MAP NO. 16, PART OF PARCEL NO. 21
THIRD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
DATE: MAY 6, 1995
SHEET 18 OF 21



1253

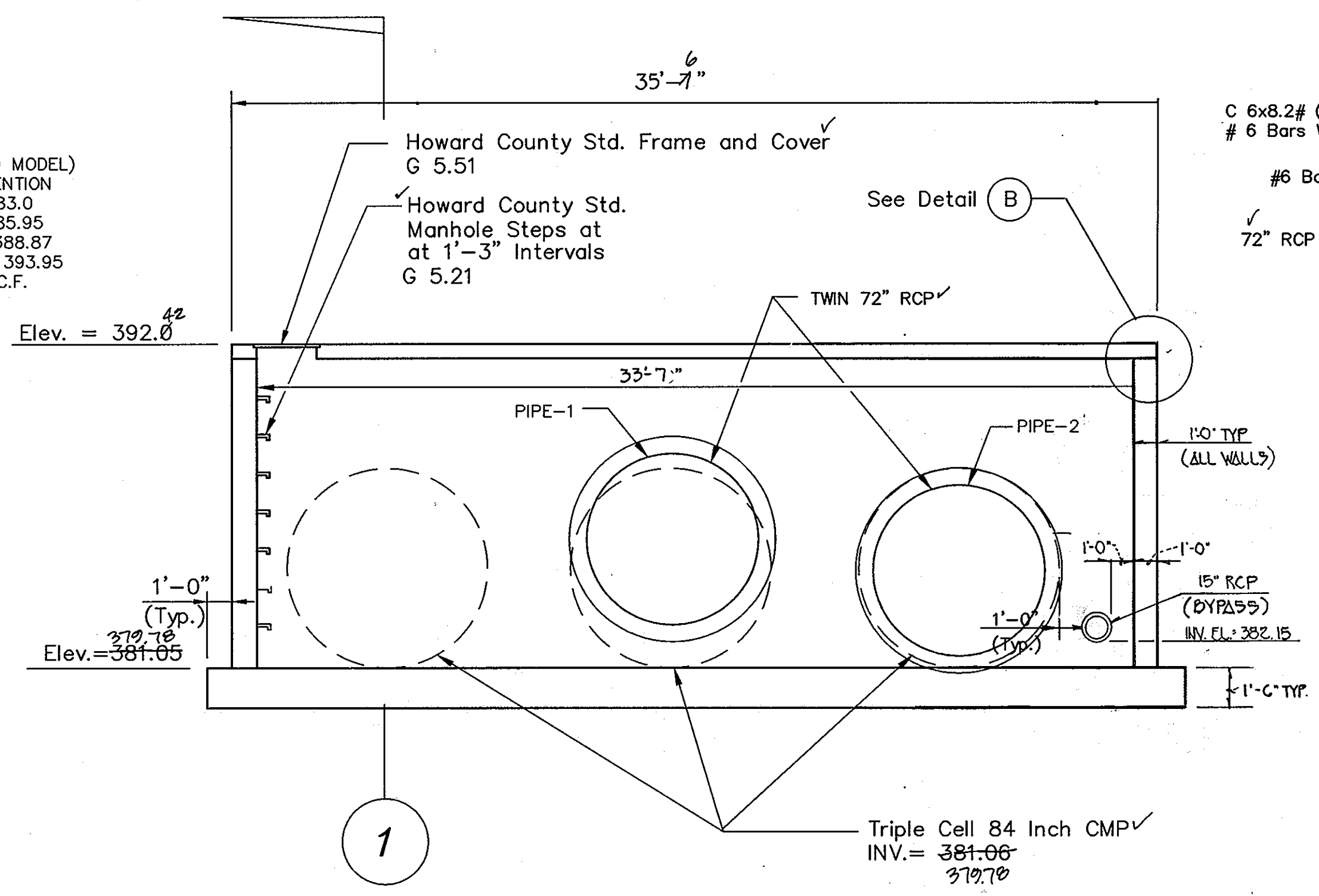
FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
971 MULTISTOKE NATIONAL TRL. SUITE 100
ELICOTT CITY, MARYLAND 21042
301 461-2855

POND DATA:
 HAZARD CLASSIFICATION - a
 DRAINAGE AREA - 431.9 Ac.
 PROPOSED RCN - 74
 PROPOSED TC - NA (ROUTED MODEL)
 WATER QUALITY TYPE - RETENTION
 NORMAL WATER POLL EL. - 383.0
 2 YEAR STORM POOL EL. - 385.95
 10 YEAR STORM POOL EL. - 388.87
 100 YEAR STORM POOL EL. - 393.95
 FOREBAY VOLUME - 37,000 C.F.
 OWNERSHIP - PRIVATE

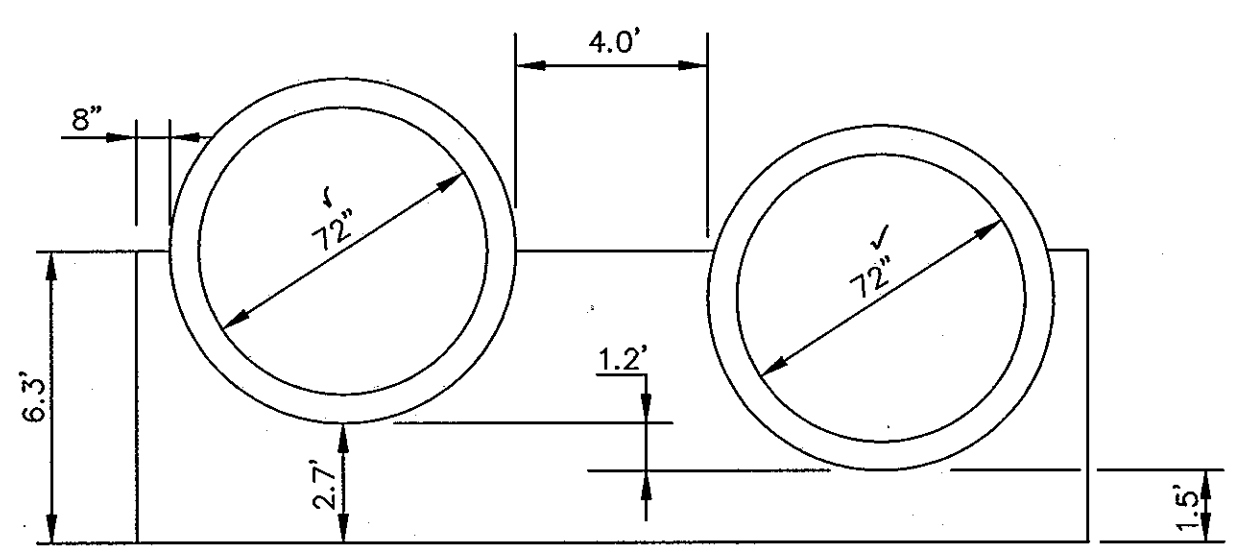


PROFILE - PRINCIPAL SPILLWAY
 SCALE: HOR: 1"=20'
 VER: 1"=2'

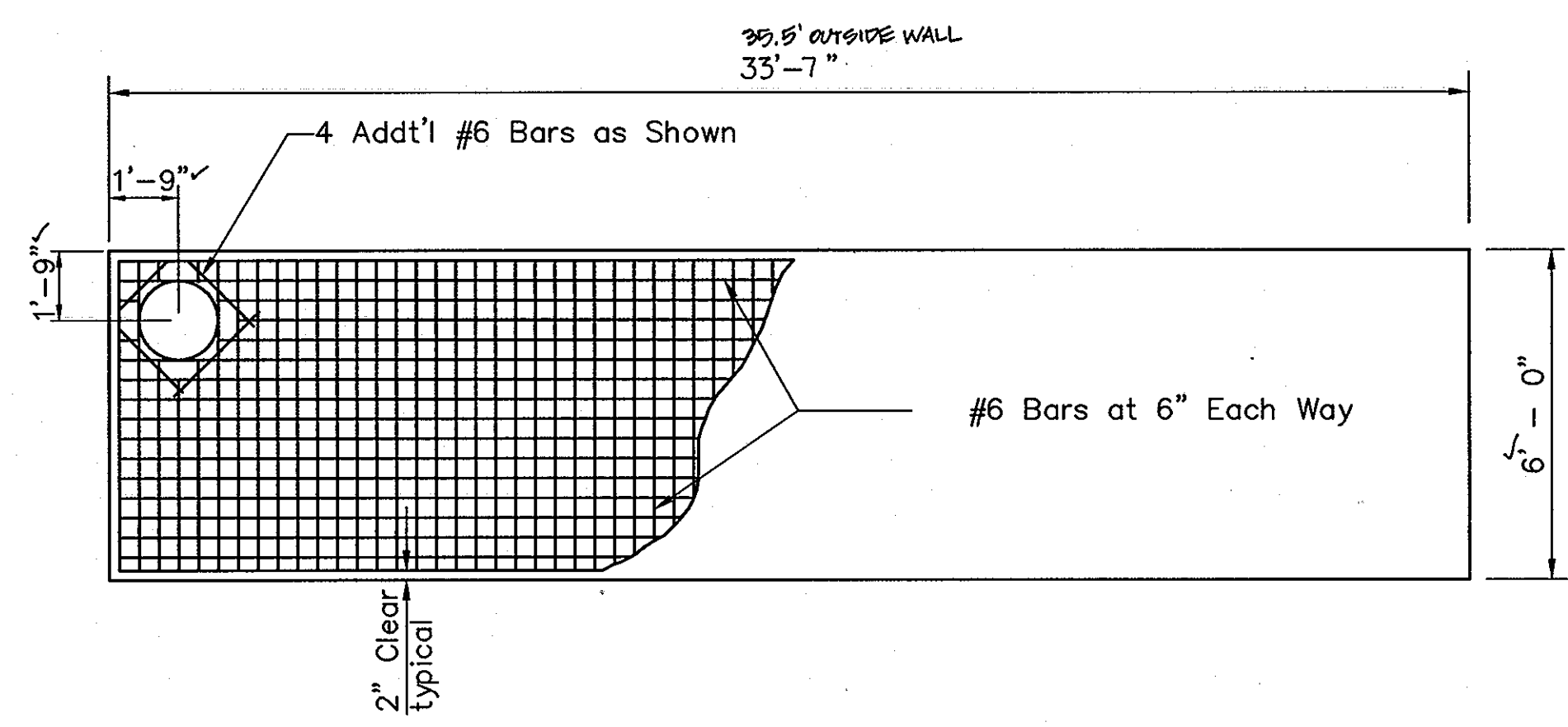
- NOTES:**
- EXTENSION OF EACH 84" CMP CULVERT IS TO CONFORM TO EXISTING SLOPE.
 - PIPE SHALL BE A12, ALUMINUM OR BITUMINOUS COATED AND SHALL CONFORM TO MD-378 SPECIFICATIONS.



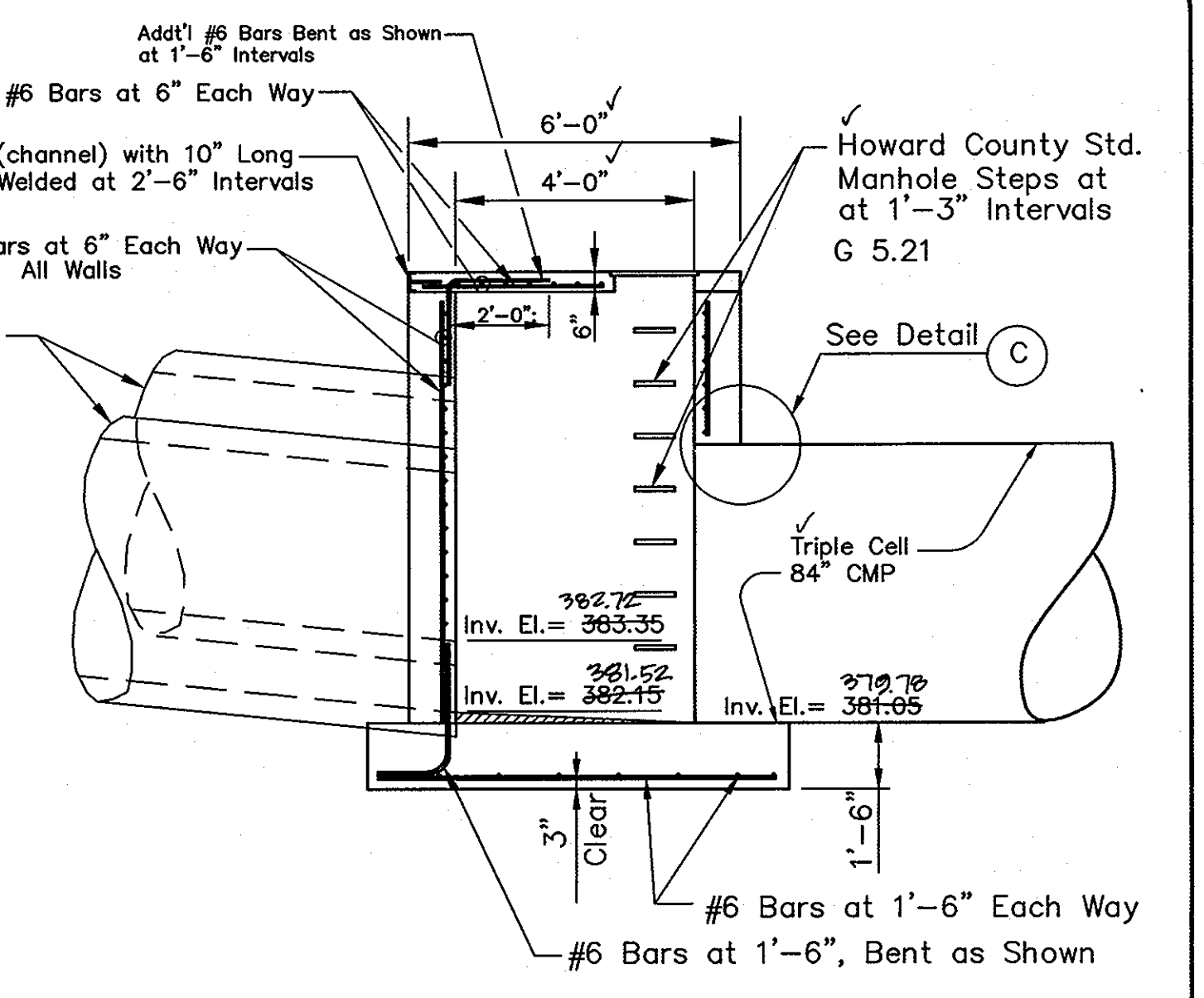
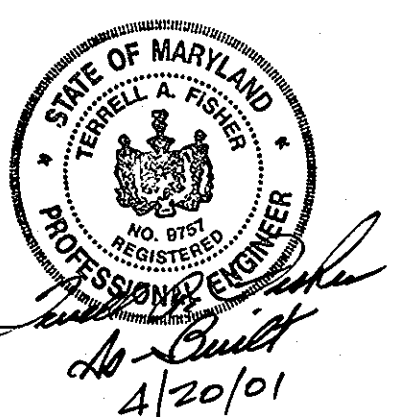
JUNCTION STRUCTURE - ELEVATION
 N.T.S.



CRADLE DETAIL
 N.T.S.



TOP SLAB DETAIL
 N.T.S.



SECTION 1
 N.T.S.

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

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
 DONALD R. BEWLER JR.
 PRINTED NAME OF DEVELOPER
 DATE: 11-21-95

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 OF ENGINEER
 ROBERT W. ZICHOW
 PRINTED NAME OF ENGINEER
 DATE: 12-27-95

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 OF ENGINEER
 ROBERT W. ZICHOW
 PRINTED NAME OF ENGINEER
 DATE: 2/1/96

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

 SIGNATURE OF ENGINEER
 ROBERT W. ZICHOW
 PRINTED NAME OF ENGINEER
 DATE: 2/1/96

APPROVED: DEPARTMENT OF PUBLIC WORKS

 CHIEF BUREAU OF HIGHWAYS
 DATE: 2-6-96

APPROVED: DEPARTMENT OF PLANNING AND ZONING

 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 2/8/96

project 94005 illustration M.P. scale AS SHOWN J.M. date AUG.1995 engineering J.H. approval AS SHOWN J.M.

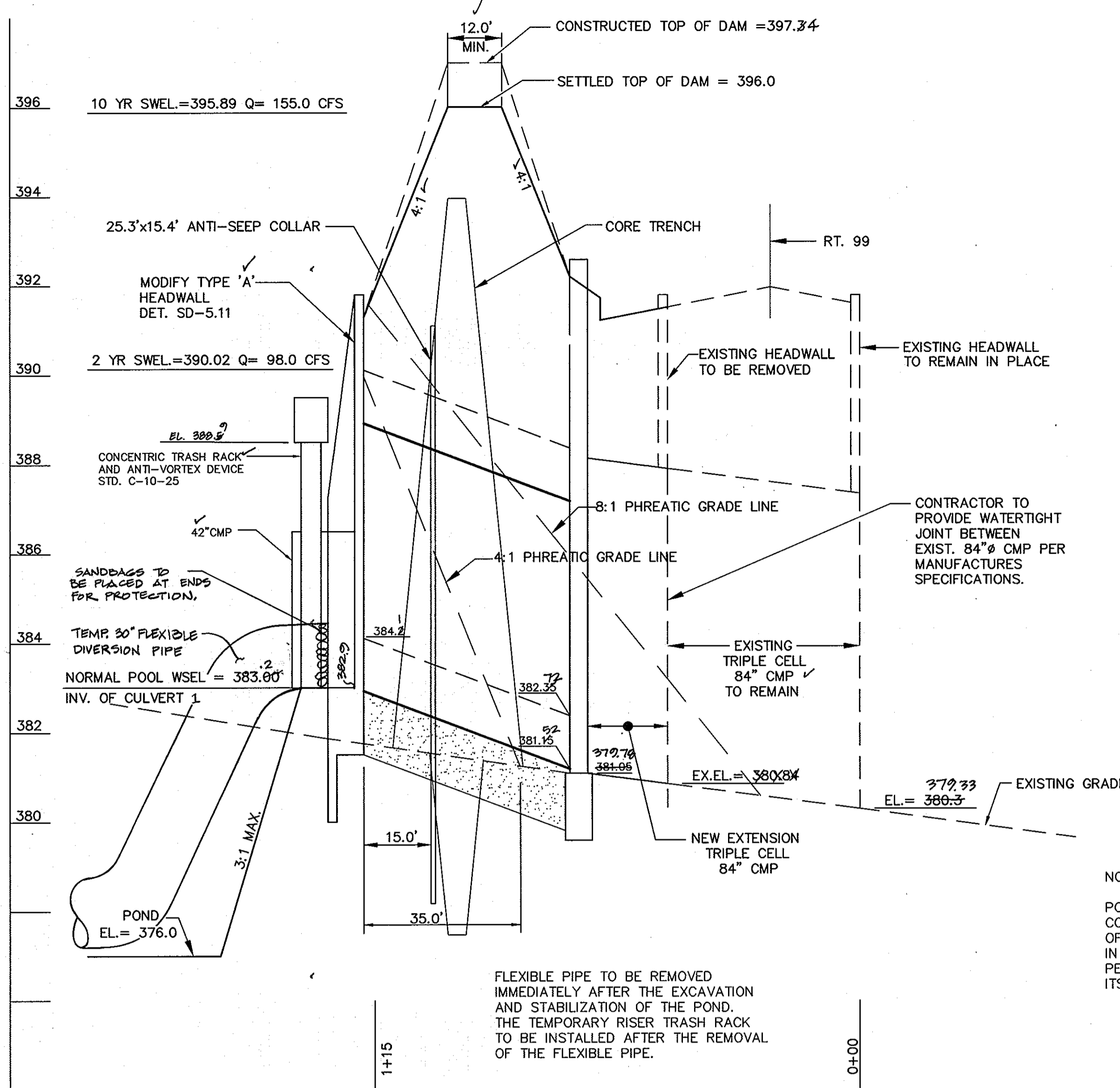
NOV. JUNCTION STRUCTURE description 12-28-96 date revisions

GTW'S WAVERLY WOODS SECTION 4, AREA 2 SECTION A AREA 1 HOWARD COUNTY THIRD ELECTION DISTRICT SWM POND - 1

MILDENBERG, BOENDER & ASSOC., INC. Surveyors Planners Engineers 5072 Dorsey Hall Drive, State 202, Ellicott City, Maryland, 21042 (410) 997-0296 Fax. (301) 621-5521 Wash. (410) 997-0296 Fax.

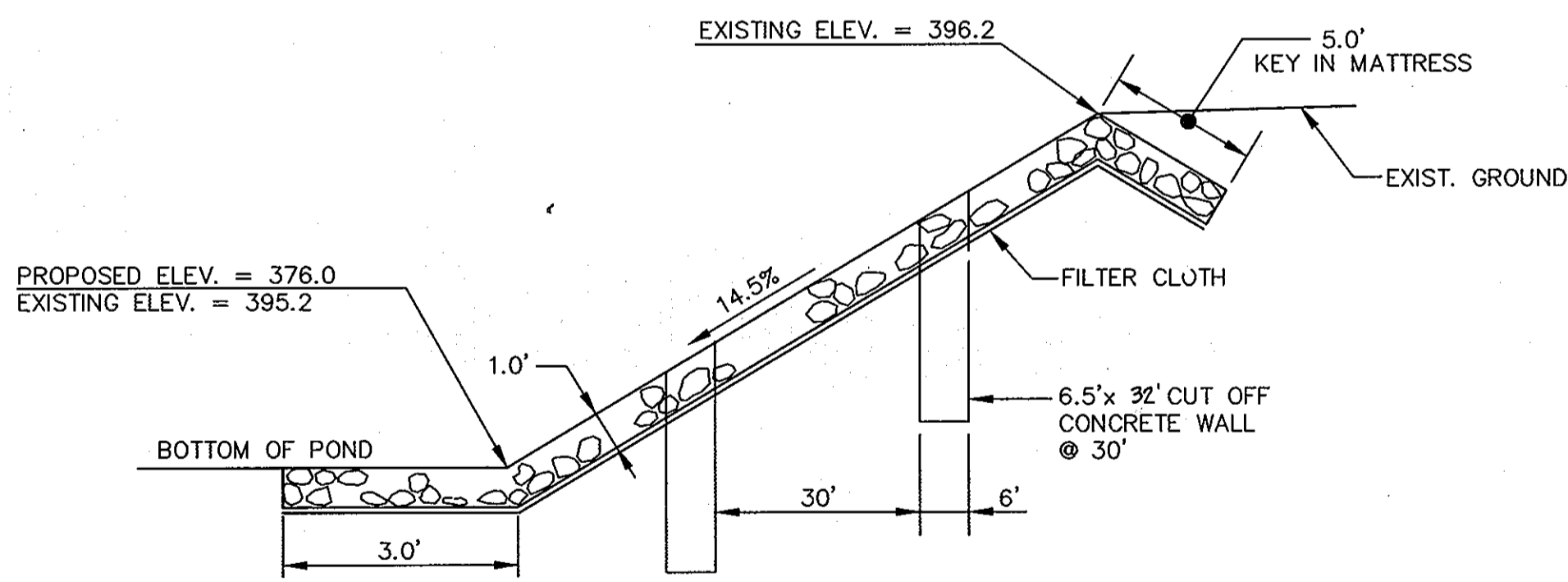
14 OF 21

1253

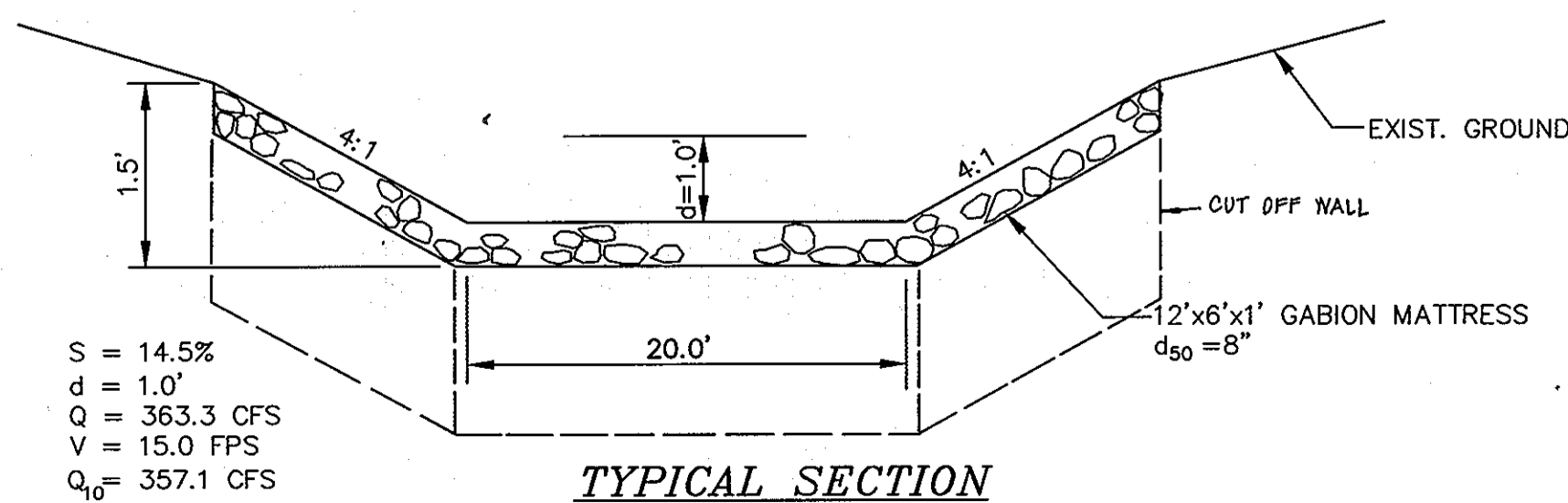


TEMPORARY SWM PRINCIPAL SPILLWAY PROFILE

SCALE: HOR: 1"=20'
VER: 1"=2'



PROFILE THROUGH CENTERLINE



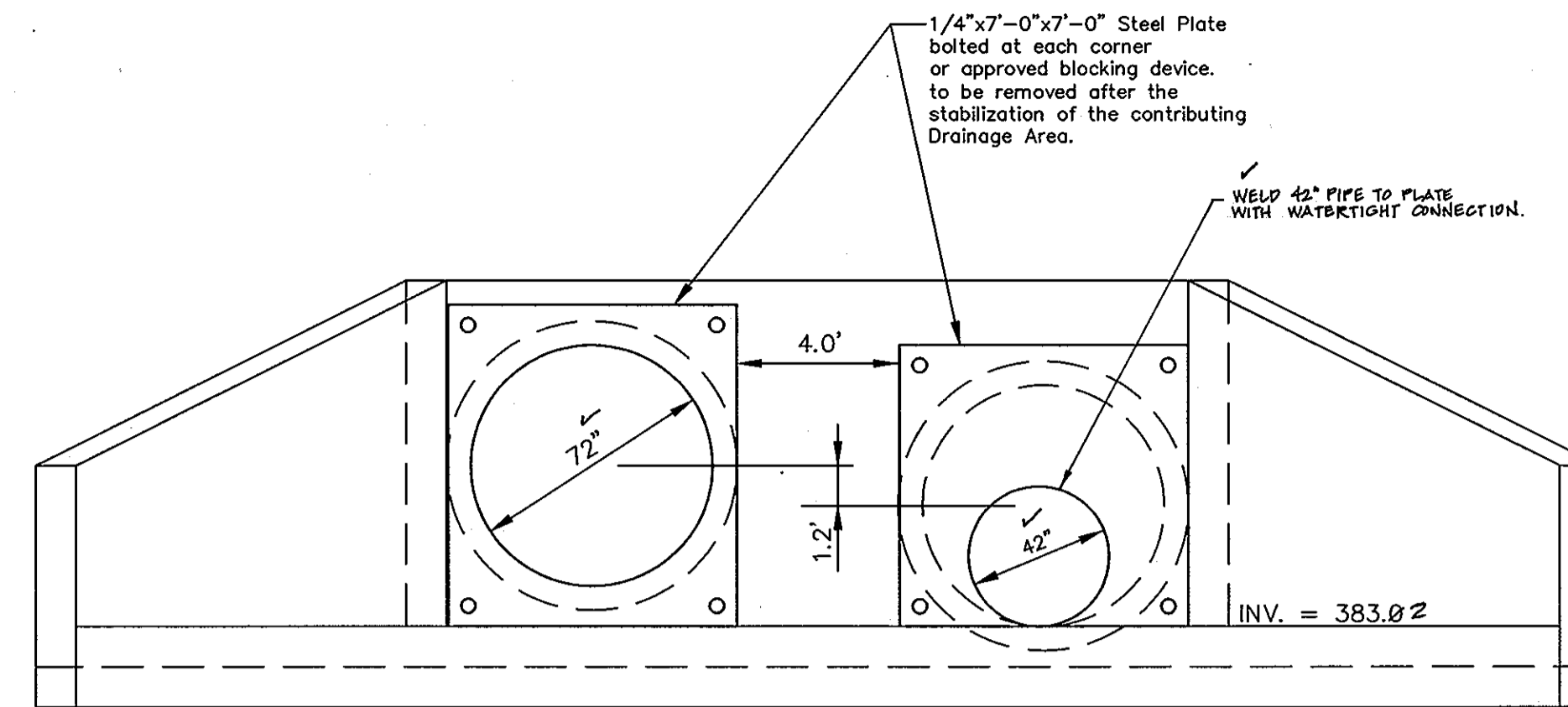
GABION SWALE DETAIL

N.T.S.

S = 14.5%
d = 1.0'
Q = 363.3 CFS
V = 15.0 FPS
Q₀ = 357.1 CFS

NOTE:

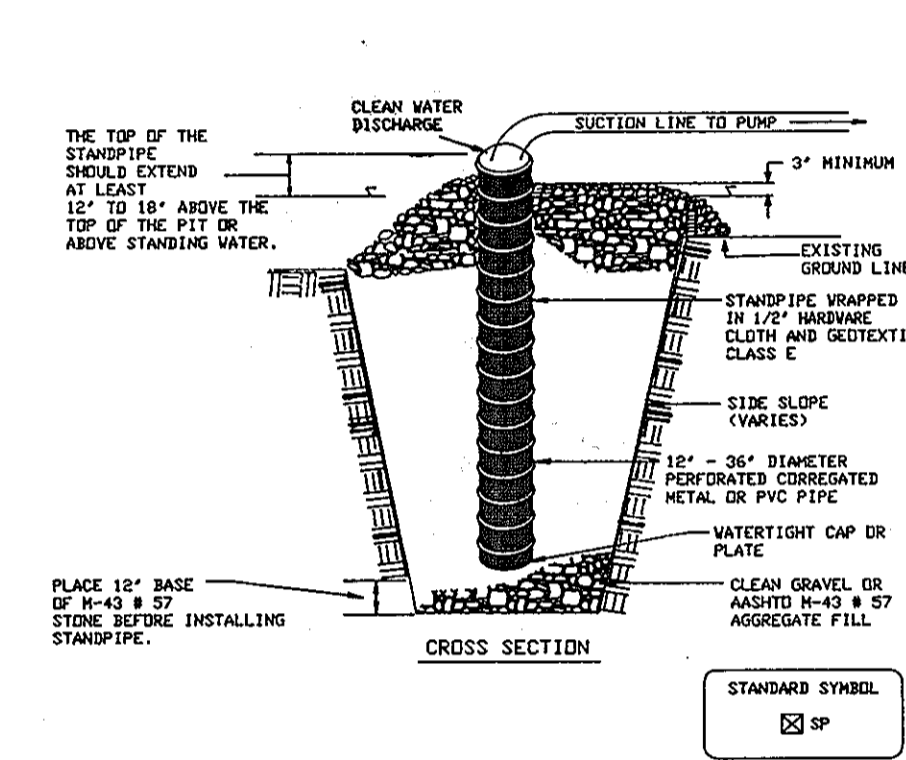
POND 1 TO PROVIDE TSMW FOR THE ENTIRE CONTRIBUTING DRAINAGE AREA WITH THE EXCEPTION OF THOSE AREAS CONTROLLED BY PONDS 3 AND 4. IN THE EVENT THAT THE POND IS CONVERTED TO A PERMANENT POND, ANY DISTURBED AREA MUST HAVE ITS OWN REQUIRED TSMW.



FRONT ELEVATION - TSMW

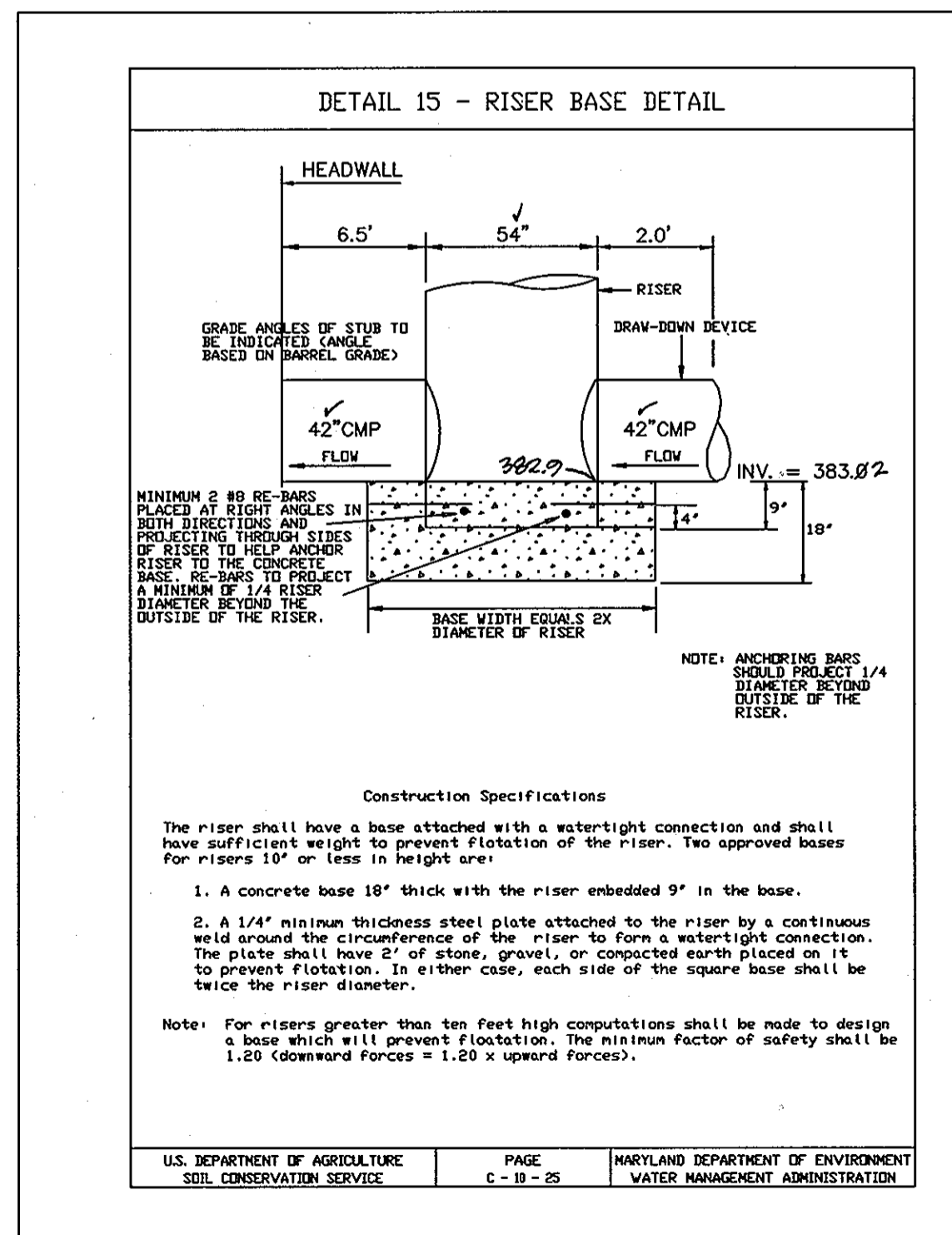
N.T.S.

DETAIL 20B - SUMP PIT



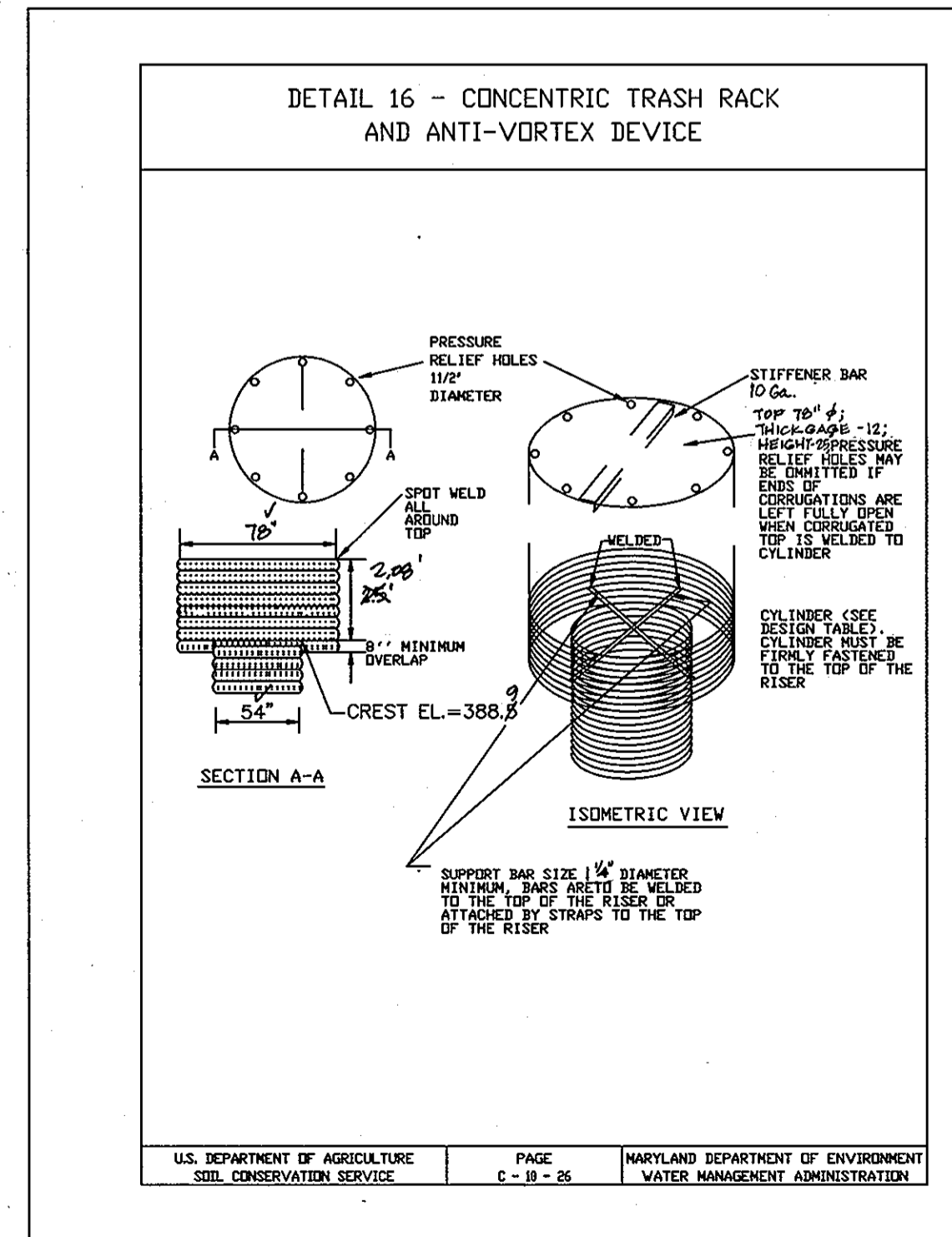
Construction Specifications

- Pit dimensions are variable, with the minimum diameter being 2 times the standpipe diameter.
- The standpipe should be constructed by perforating a 12" to 24" diameter corrugated or PVC pipe. Then wrapping with 1/2" hardware cloth and Geotextile Class E. The perforations shall be 1/2" x 6" size or 1" diameter holes.
- A base of filter material consisting of clean gravel or #57 stone should be placed in the pit to a depth of 18". After installing the standpipe, the pit surrounding the standpipe should then be backfilled with the same filter material.
- The standpipe should extend 12" to 18" above the lip of the pit or the riser crest elevation (whichever is higher) and the filter material should extend 3" minimum above the anticipated standing water elevation.



Construction Specifications

- The riser shall have a base attached with a watertight connection and shall have sufficient weight to prevent flotation of the riser. Two approved bases for risers 18" or less in height are:
- A concrete base 18" thick with the riser embedded 9" in the base.
 - A 1/4" minimum thickness steel plate attached to the riser by a continuous weld around the circumference of the riser to form a watertight connection. The plate shall have 2" of stone, gravel, or compacted earth placed on it to prevent flotation. In either case, each side of the square base shall be twice the riser diameter.
- Note: For risers greater than ten feet high computations shall be made to design a base which will prevent flotation. The minimum factor of safety shall be 1.50 (downward forces = 1.50 x upward forces).



U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE C-19-26 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

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:	DATE:
<p>CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ON-SITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ON-SITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE COMMONLY ACCEPTED ENGINEERING STANDARDS. CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.</p>	
BY THE DEVELOPER:	
I, JAMES A. BANDY, 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.	
<i>James A. Bandy</i>	11-21-95
SIGNATURE OF DEVELOPER	DATE
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.	
<i>Patricia Engle</i>	12-27-95
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.	
<i>Patricia Engle</i>	2/1/96
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.	
<i>Robert Zielke</i>	2/1/96
HOWARD SOIL CONSERVATION DISTRICT	DATE
APPROVED: DEPARTMENT OF PUBLIC WORKS	
<i>Richard M. Daniels</i>	2-6-96
CHIEF BUREAU OF HIGHWAYS	DATE
APPROVED: DEPARTMENT OF PLANNING AND ZONING	
<i>Gina Sammarco</i>	3/20/96
CHIEF, DIVISION OF LAND DEVELOPMENT AND RESEARCH	DATE
<i>William J. ...</i>	2/6/96
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE

project	date	approval
94005	AUG-1995	J.H.
illustration	scale	AS SHOWN
M.P.	scale	J.M.

no.	description	revisions

GTW'S WAVERLY WOODS
SECTION 4, AREA 2
(A RESUBDIVISION OF PERCEL A, GTW'S WAVERLY WOODS, SECTION A AREA 1)
HOWARD COUNTY
THIRD ELECTION DISTRICT
SWM POND - 1

MILDENBERG,
BOENDER & ASSOC., INC.
Engineers Planners Surveyors
5072 Dorsey Hall Drive, State 202, Ellicott City, Maryland 21042
(410) 997-0296 Balt. (301) 821-5521 Wash. (410) 997-0296 Fax

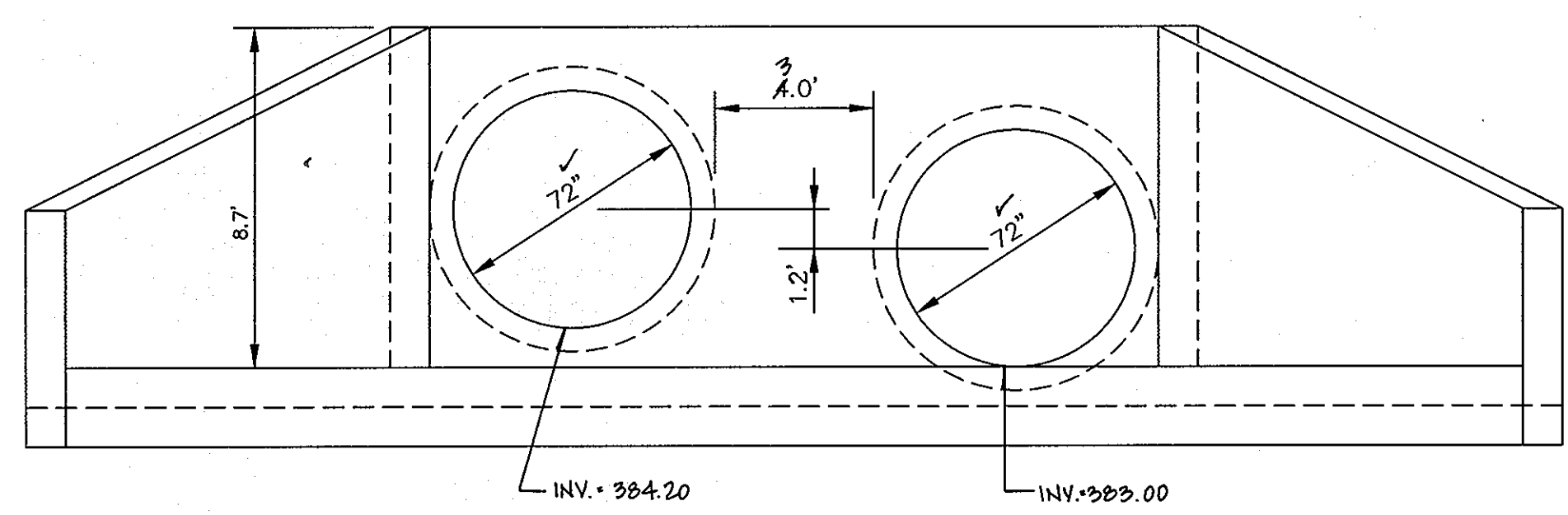
1253

Project	94005	Date	AUG 1995
Illustration	J.M.	Engineering	J.H.
Scale	J.M.	Approval	J.H.
AS SHOWN	J.M.	Approval	J.H.

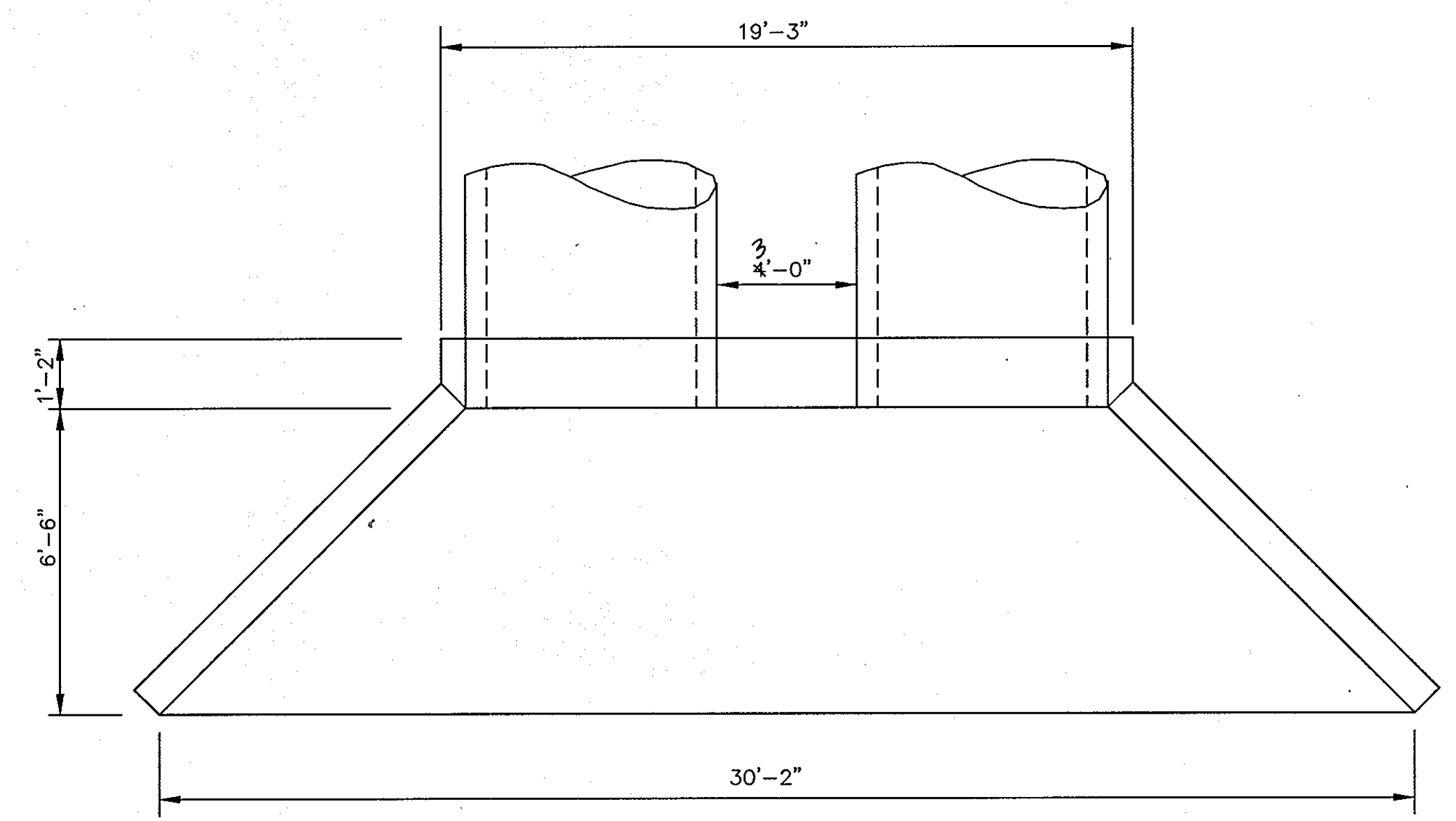
no.	description	revisions	date

GTW'S WAVERLY WOODS
SECTION 4, AREA 2
(A RESUBDIVISION OF PARCEL A, GTW'S WAVERLY WOODS, SECTION A AREA 1)
HOWARD COUNTY
THIRD ELECTION DISTRICT
SWM POND - 1

MILDENBERG,
BOENDER & ASSOC., INC.
Engineers Planners Surveyors
5072 Dorsey Hall Drive, Suite 202, Ellicott City, Maryland 21042
(410) 997-0296 Fax (301) 821-5521 Wash. (410) 997-0296 Fax

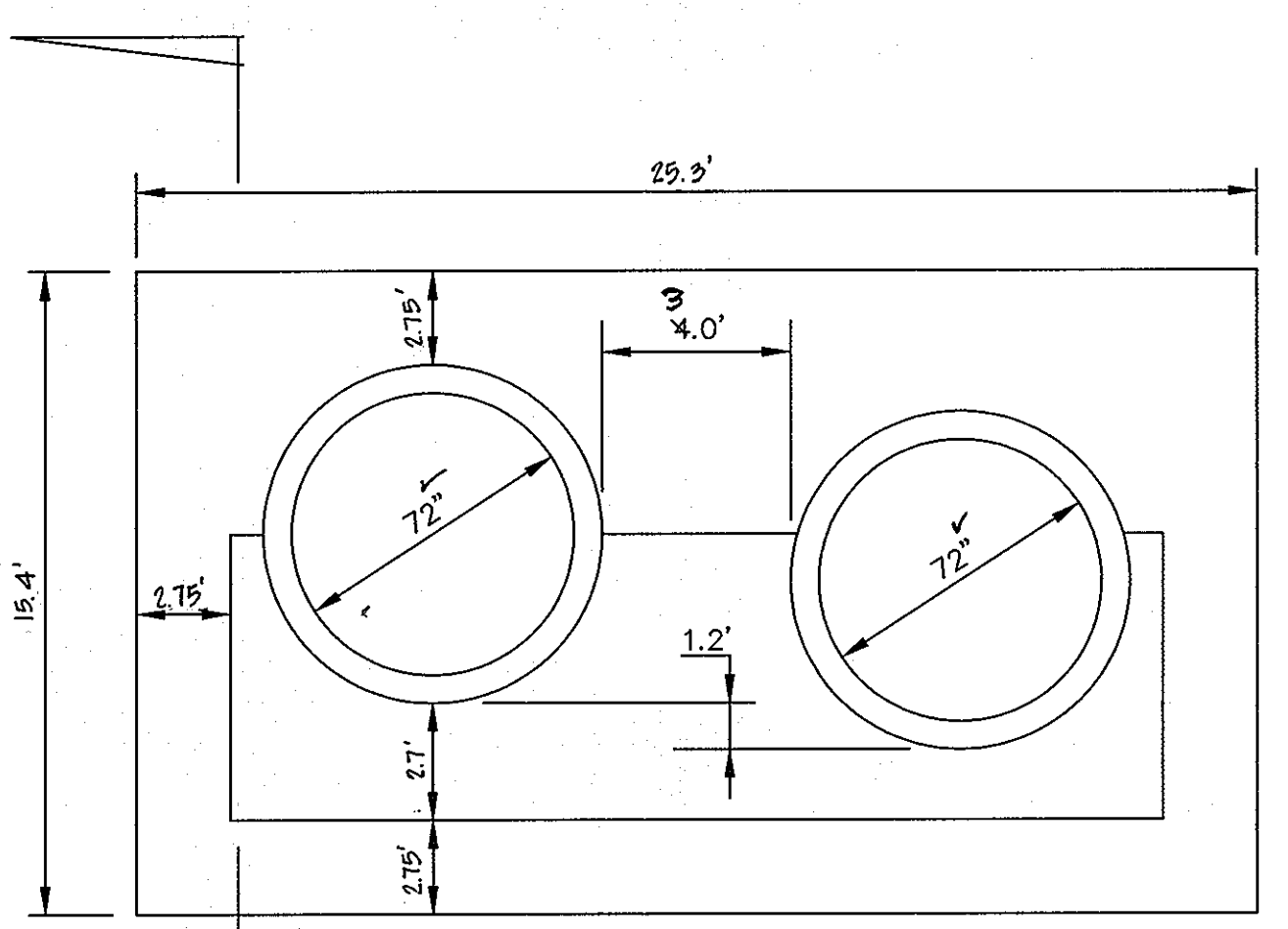


FRONT ELEVATION
N.T.S.

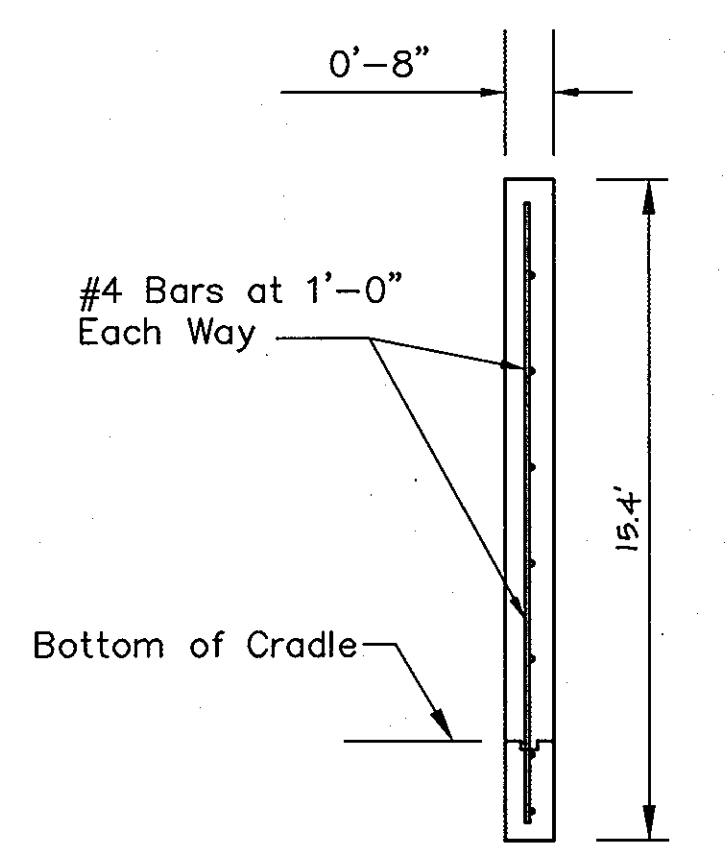


PLAN
N.T.S.
MODIFY TYPE "A" HEADWALL

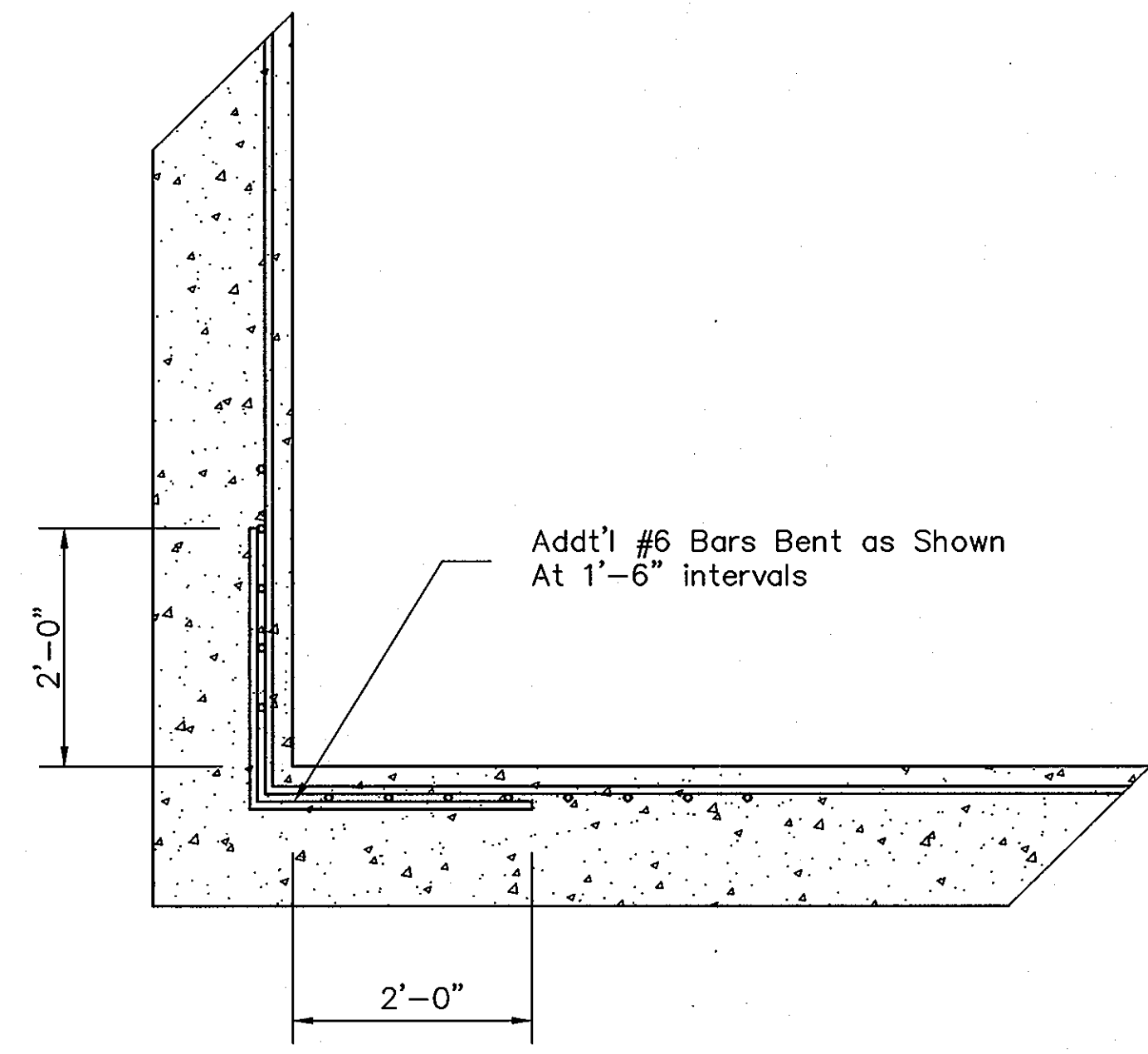
NOTE: FOR REINFORCEMENT AND DIMENSIONS SEE SD-5.11



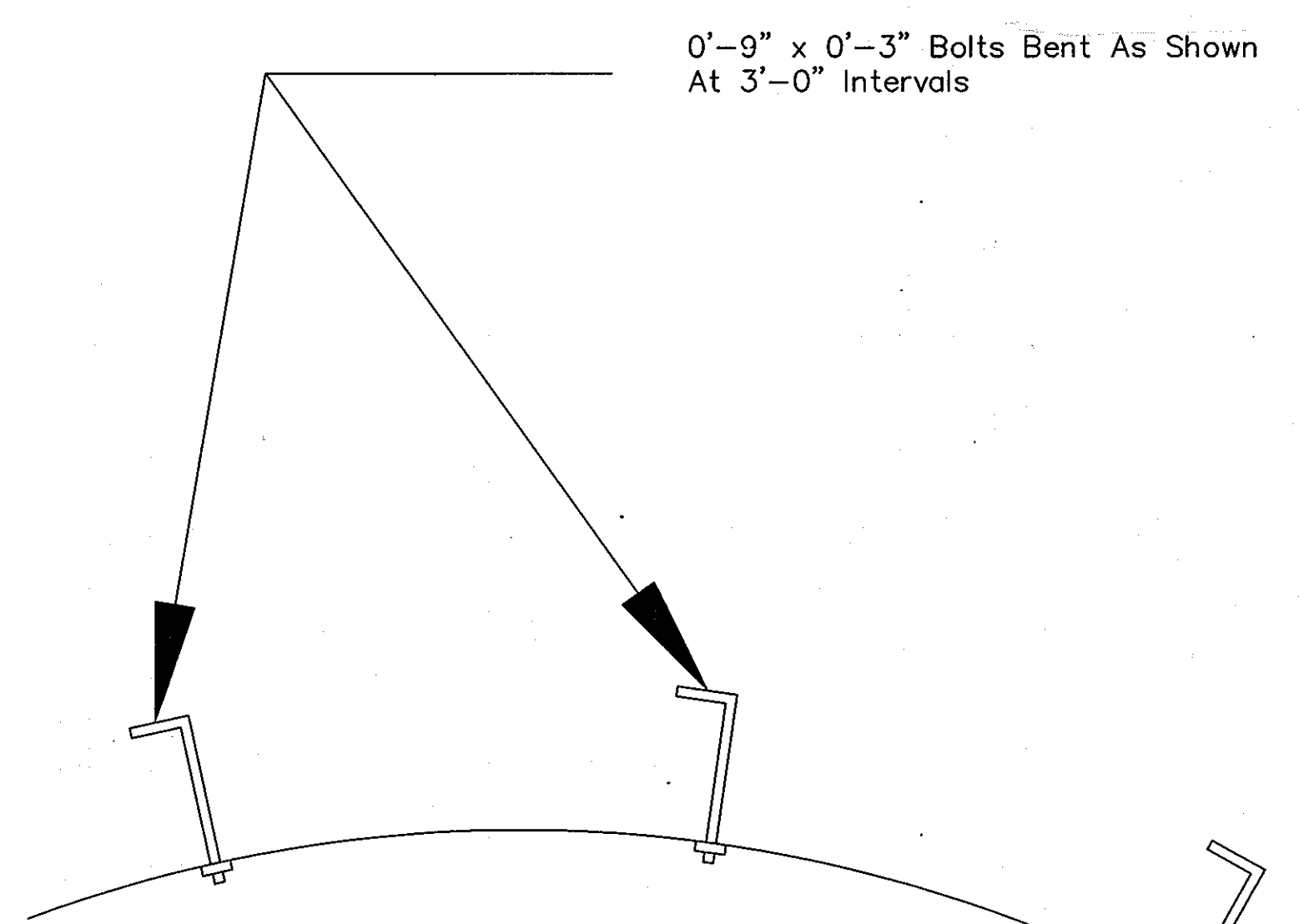
ANTI-SEEP COLLAR DETAIL
N.T.S.



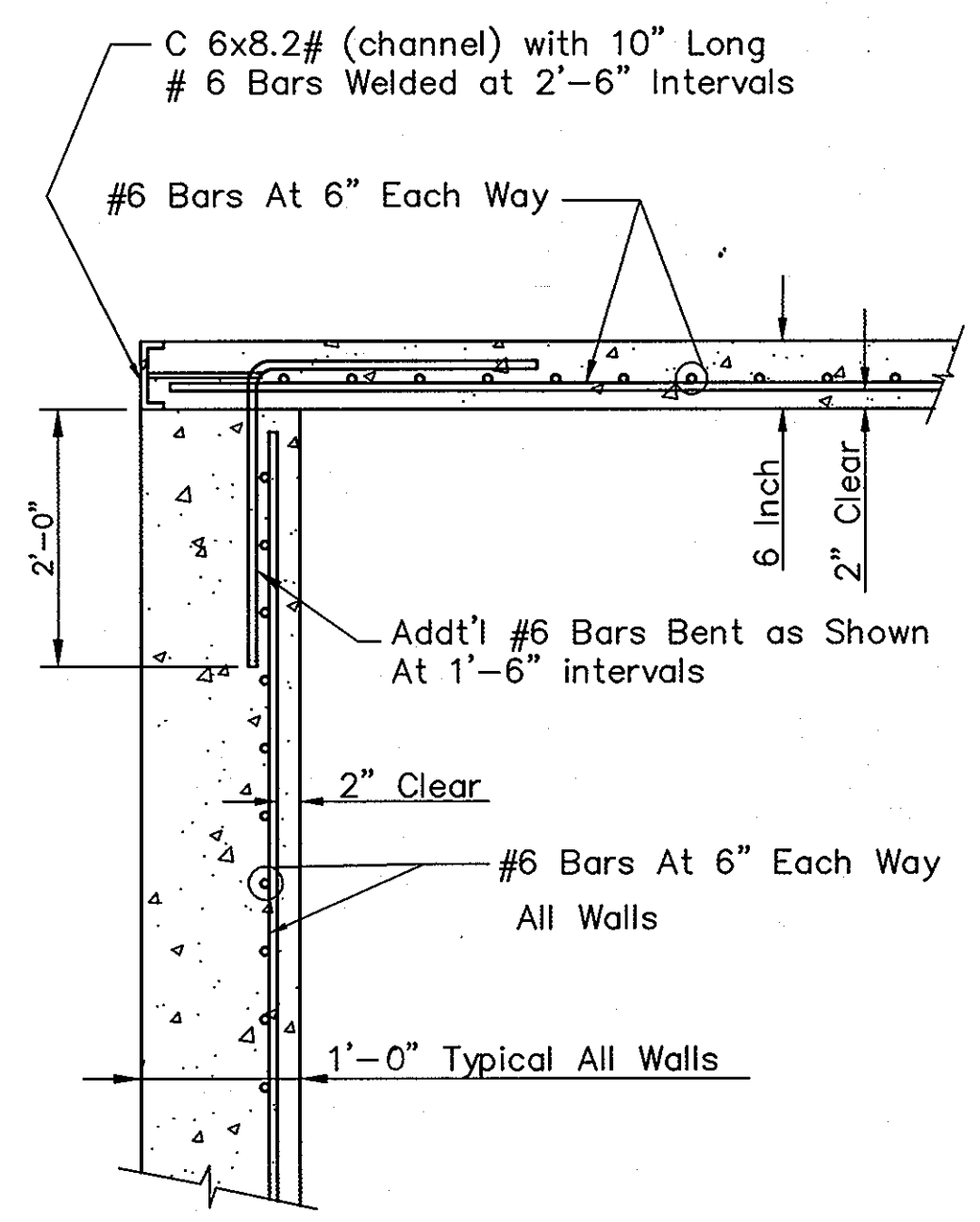
SECTION 3
N.T.S.



CORNER TREATMENT DETAIL
N.T.S.



DETAIL C
N.T.S.



DETAIL B
N.T.S.

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

BY THE DEVELOPER:

SIGNATURE OF DEVELOPER
DATE: 11-21-95
PRINTED NAME OF DEVELOPER: *Do Build*

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. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT."

SIGNATURE OF ENGINEER
DATE: 9-29-95
PRINTED NAME OF ENGINEER: **R. JACOB HIKMAT**

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 OF REVIEWER
DATE: 2/1/96
USDA - NATURAL RESOURCES CONSERVATION SERVICE

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

SIGNATURE OF REVIEWER
DATE: 2/1/96
HOWARD SOIL CONSERVATION DISTRICT

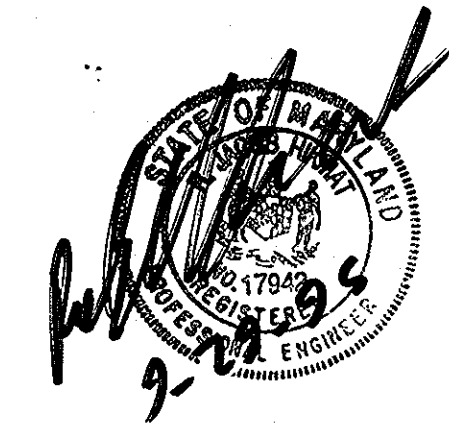
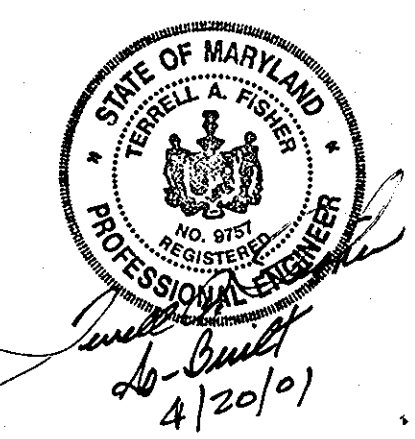
APPROVED: DEPARTMENT OF PUBLIC WORKS

SIGNATURE
DATE: 2-6-96
CHIEF BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

SIGNATURE
DATE: 3/24/96
CHIEF, DIVISION OF LAND DEVELOPMENT AND RESEARCH

SIGNATURE
DATE: 2/8/96
CHIEF, DEVELOPMENT ENGINEERING DIVISION



1253

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 EDITION.

SITE PREPARATION

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

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

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

EARTH FILL

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

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

COMPACTION- THE MOVEMENT OF AND SPREADING EQUIPMENT OVER THE FILL SHALL BE CONTROLLED SO THAT THE ENTIRE SURFACE OF EACH LIFT SHALL BE TRAVERSED BY ONE TREAD TRACK OF THE EQUIPMENT OR COMPACTION SHALL BE ACHIEVED BY A MINIMUM OF FOUR COMPLETE PASSES OF A SHEEPSFOOT, RUBBER TYRED 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.

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

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

STRUCTURE BACKFILL

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

PIPE CONDUITS

ALL PIPES SHALL BE CIRCULAR IN CROSS SECTION.

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

MATERIALS- (ALUMINUM PIPE)- THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-196 OR M-211 WITH WATER TIGHT COUPLINGS 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.

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

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

ALL CONNECTIONS SHALL USE A RUBBER OF NEOPRENE GASKET WHEN JOINING PIPE SECTIONS. THE END OF EACH PIPE SHALL BE ROLLED AND ADEQUATE NUMBER OF CORRUGATIONS TO ACCOMMODATE THE BAND WIDTH. THE FOLLOWING TYPE CONNECTIONS ARE ACCEPTABLE FOR PIPE LESS THAN 24" IN DIAMETER: FLANGES ON BOTH ENDS OF THE PIPE, A 12" WIDE STANDARD LAP TYPE BAND WITH 12" WIDE BY 3/8" THICK CLOSED CELL CIRCULAR NEOPRENE GASKET; AND A 12" WIDE HUGGER TYPE BAND WITH O-RING GASKETS HAVING 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 NUTS. A 12" WIDE BY 3/8" THICK CLOSED CELL CIRCULAR NEOPRENE GASKET WILL BE INSTALLED ON THE END OF EACH PIPE FOR A TOTAL OF 24".

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

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

5. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL."

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

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

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

- 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 WATER TIGHT.
- 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 STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 905.

THE RIPRAP SHALL BE PLACED TO THE REQUIRED THICKNESS IN ONE OPERATION. THE ROCK SHALL BE DELIVERED AND PLACED IN A MANNER THAT WILL INSURE THE RIPRAP IN PLACE SHALL BE REASONABLY HOMOGENEOUS WITH THE LARGER ROCKS UNIFORMLY DISTRIBUTED AND FIRMLY IN CONTACT ONE TO ANOTHER WITH THE SMALLER ROCKS FILLING THE VOIDS BETWEEN THE LARGER ROCKS. FILTER CLOTH SHALL BE REPLACED UNDER ALL RIPRAP AND SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 919.12.7.

CARE OF WATER DURING CONSTRUCTION

ALL WORK ON THE PERMANENT STRUCTURES SHALL BE CARRIED OUT IN AREAS FREE FROM WATER. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ALL TEMPORARY DIKES, LEVEES, COFFERDAMS, DRAINAGE CHANNELS, AND STREAM DIVERSIONS NECESSARY TO PROTECT THE AREAS TO BE OCCUPIED BY THE PERMANENT WORKS. THE CONTRACTOR SHALL ALSO FURNISH, INSTALL, OPERATE AND MAINTAIN ALL NECESSARY PUMPING AND OTHER EQUIPMENT REQUIRED FOR REMOVAL OF WATER FROM THE VARIOUS PARTS OF THE WORK AND FOR MAINTAINING THE EXCAVATIONS, FOUNDATION AND OTHER PARTS OF THE WORK FREE FROM WATER AS REQUIRED OR DIRECTED BY THE ENGINEER FOR CONSTRUCTING EACH PART OF THE WORK. AFTER HAVING SERVED THEIR PURPOSE, ALL TEMPORARY PROTECTIVE WORKS SHALL BE REMOVED OR LEVELED AND GRADED TO THE EXTENT REQUIRED TO PREVENT OBSTRUCTION IN ANY DEGREE WHATSOEVER OF THE FLOW OF WATER TO THE SPILLWAY OR OUTLET WORKS AND SO AS NOT TO INTERFERE IN ANY WAY WITH THE OPERATION OR MAINTENANCE OF THE STRUCTURE. STREAM DIVERSIONS SHALL BE MAINTAINED UNTIL THE FILL 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 THE REQUIRED EXCAVATIONS AND WILL ALLOW SATISFACTORY PERFORMANCE OF ALL AND 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 PUMPS FROM WHICH THE WATER SHALL BE PUMPED.

STABILIZATION

ALL BORROW AREAS SHALL BE GRADED TO PROVIDE PROPER DRAINAGE AND LEFT IN A SLIGHTLY CONDITION. ALL EXPOSED SURFACES OF THE EMBANKMENT, SPILLWAY, SPOIL AND BORROW AREAS, AND BERMS SHALL BE STABILIZED BY SEEDING, LIMING, FERTILIZING AND MULCHING IN ACCORDANCE WITH THE 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.

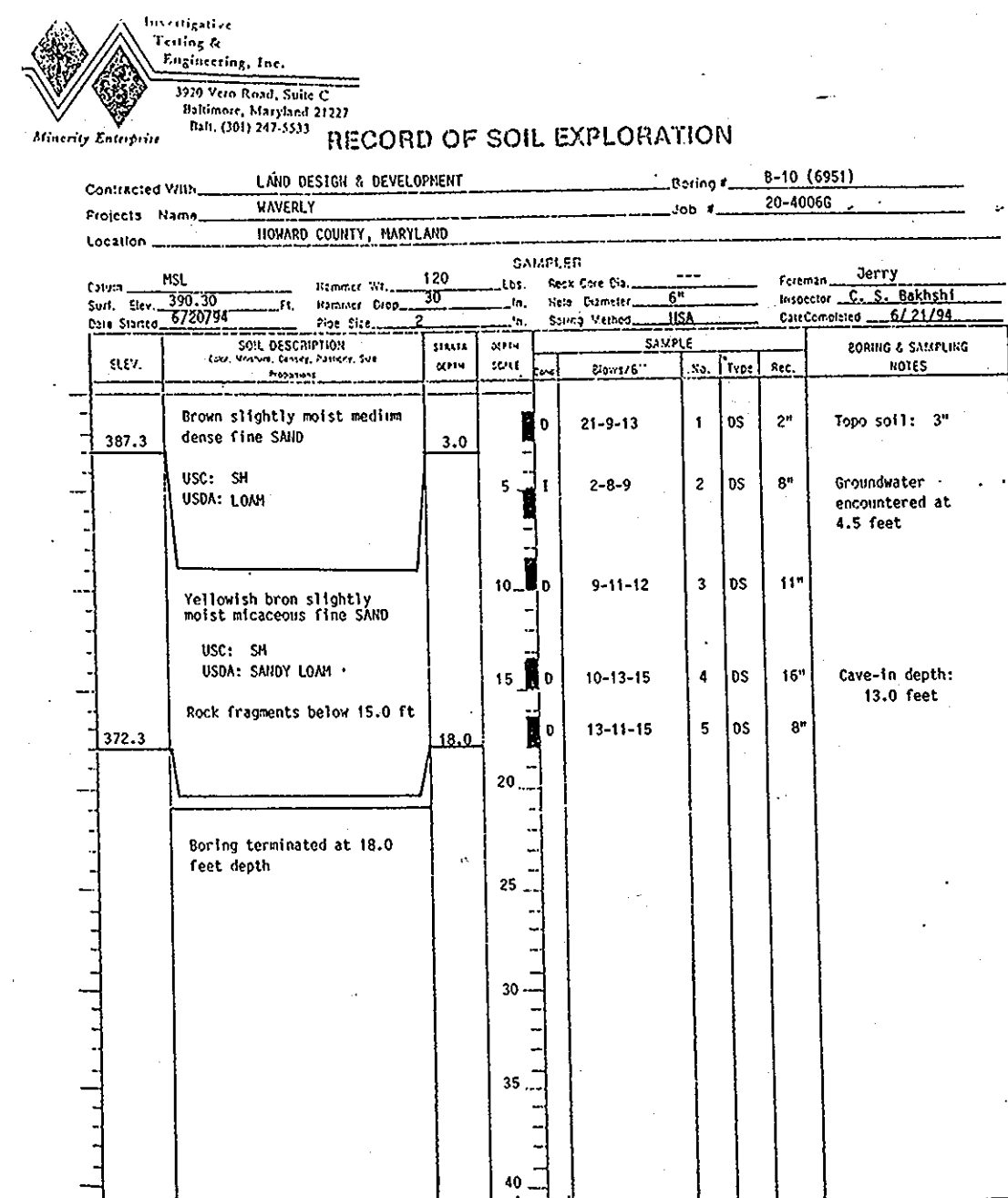
OPERATION, MAINTENANCE AND INSPECTION

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 HIS SUCCESSORS OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION, AND MAINTENANCE THEREOF. THE POND OWNER(S) SHALL PROMPTLY NOTIFY THE SOIL CONSERVATION DISTRICT OF ANY UNUSUAL OBSERVATIONS THAT MAY BE INDICATORS OF DISTRESS SUCH AS EXCESSIVE SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.

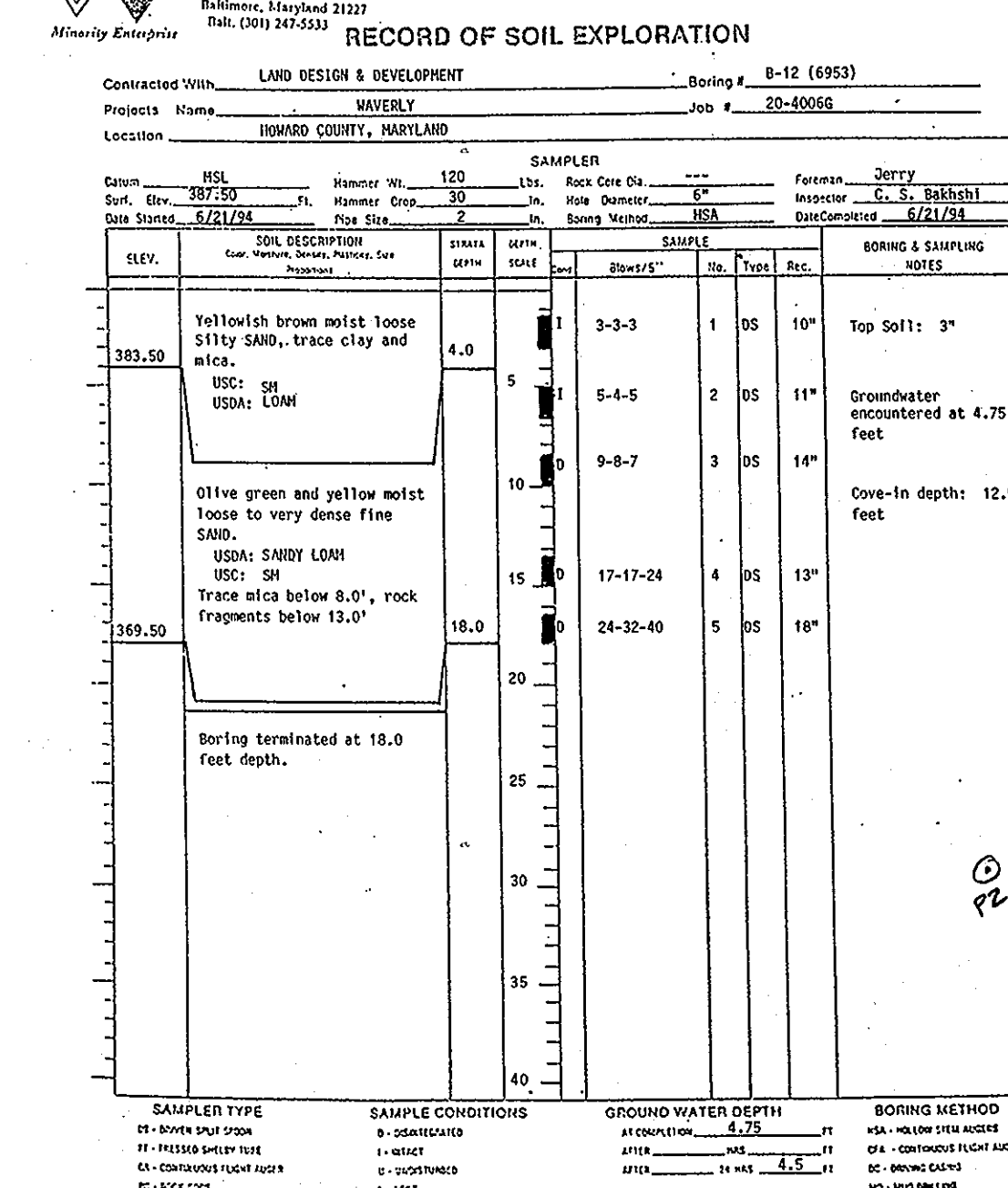
SUPPLEMENTAL SPECIFICATIONS

TO BE USED IF IN EXCESS OF MD-378

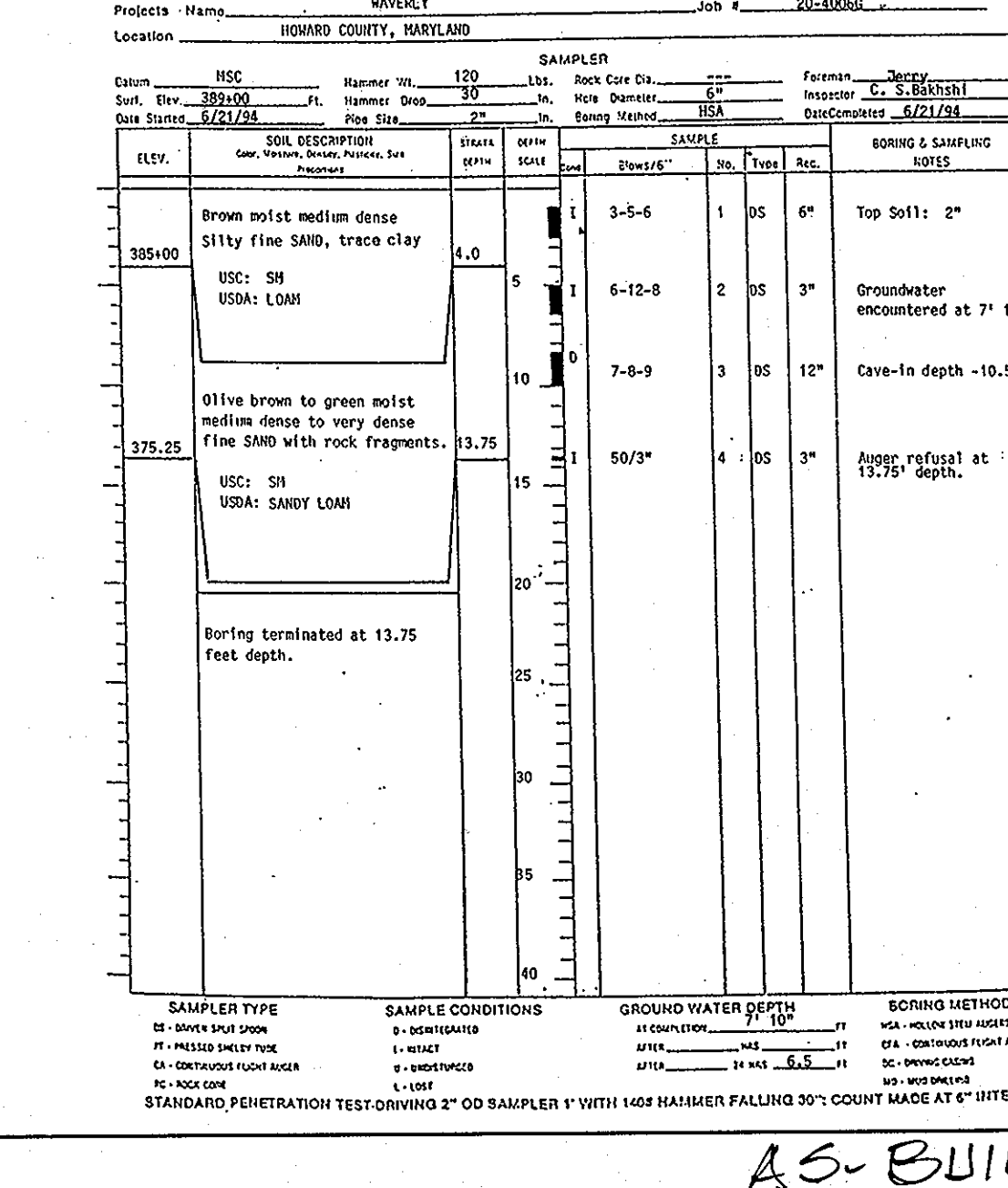
- AT LOCATIONS WHERE REMOVAL OF VEGETATION AND OBJECTIONABLE MATERIAL RESULTS IN AN OPENING GREATER THAN 12.0 INCHES IN DEPTH, THEY SHOULD BE BACKFILLED WITH SOIL COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD MOISTURE-DENSITY RELATIONSHIP TEST (ASTM D-698).
- A MINIMUM 4.0 FEET THICK COMPACTED LAYER OF RELATIVELY IMPERMEABLE SOIL MATERIAL SHOULD BE USED BELOW THE FOUNDATION OF THE PRINCIPAL SPILLWAY STRUCTURE AND BELOW THE PRINCIPAL SPILLWAY PIPELINE AT THE LOCATION OF THE CUT-OFF TRENCH.
- CORE AND DIKE EMBANKMENT FILL AND BACKFILL SOIL SHOULD BE COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY (ASTM D-698).
- THE PRINCIPAL SPILLWAY STRUCTURE SHOULD BE FOUNDED ON SUBGRADE SOIL WITH AN ALLOWABLE SOIL PRESSURE OF NO LESS THAN 2000 POUNDS PER SQUARE FOOT AND SHOULD BE VERIFIED DURING FOUNDATION CONSTRUCTION.
- THE CONTRACTOR SHOULD PROVIDE THE GEOTECHNICAL ENGINEER AND THE DESIGN ENGINEER WITH A PLAN FOR DEWATERING PRIOR TO BEGINNING EXCAVATION AT THE SITE. THE PLAN SHOULD INCLUDE A WRITTEN DESCRIPTION OF THE DEWATERING SYSTEM, A SCHEDULE AND SKETCHES. THE DEWATERING SYSTEM SHOULD BE APPROVED BY THE DESIGN ENGINEER, INSTALLED AND FUNCTIONING EFFECTIVELY PRIOR TO EXCAVATION BELOW THE WATER LEVEL.



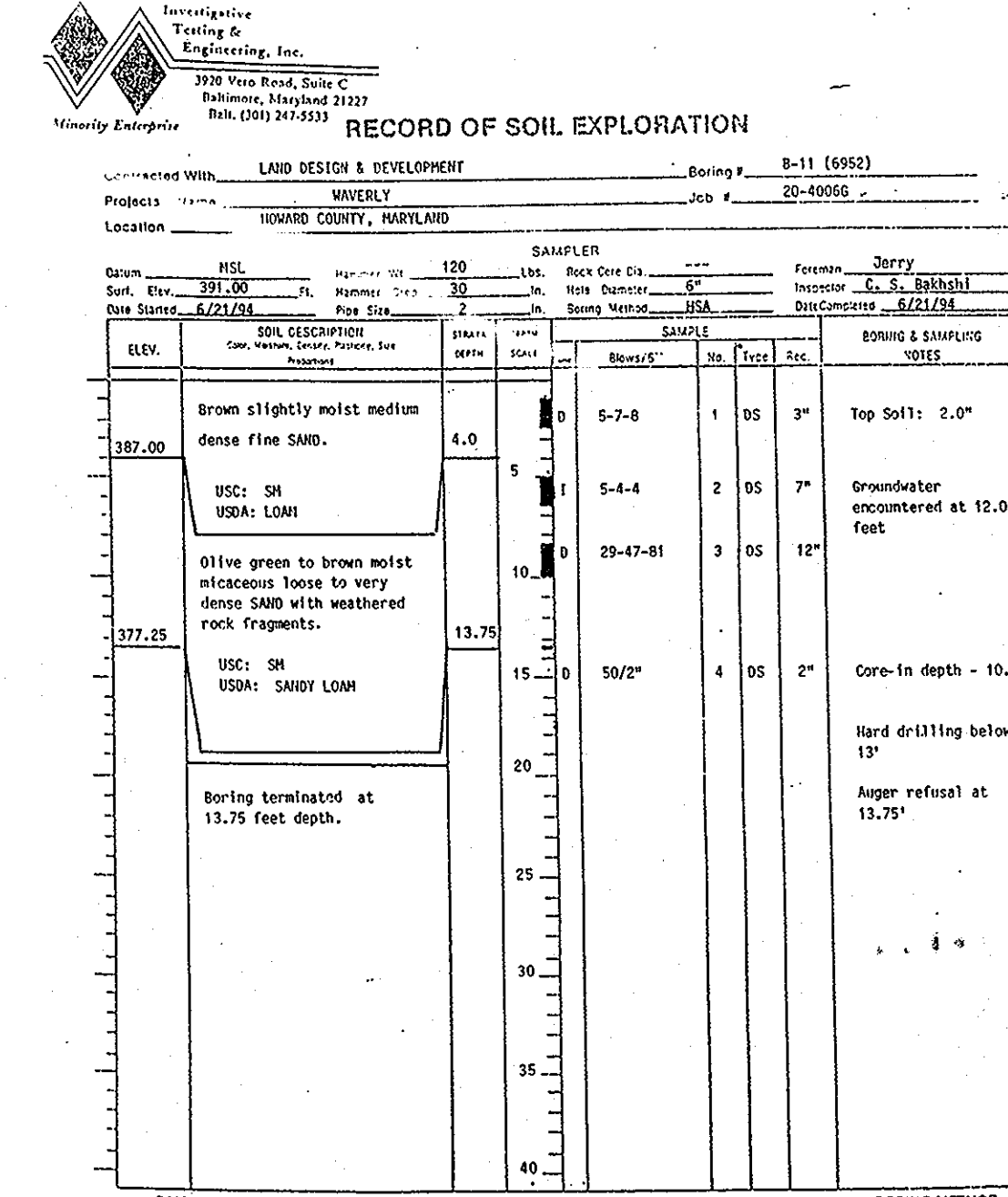
SAMPLER TYPE	SAMPLE CONDITIONS	GROUND WATER DEPTH	BORING METHOD
120	120	4.0	120
120	120	4.75	120
120	120	12.5	120
120	120	13.75	120



SAMPLER TYPE	SAMPLE CONDITIONS	GROUND WATER DEPTH	BORING METHOD
120	120	4.0	120
120	120	4.75	120
120	120	12.5	120
120	120	13.75	120



SAMPLER TYPE	SAMPLE CONDITIONS	GROUND WATER DEPTH	BORING METHOD
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SAMPLER TYPE	SAMPLE CONDITIONS	GROUND WATER DEPTH	BORING METHOD
120	120	4.0	120
120	120	4.75	120
120	120	12.5	120
120	120	13.75	120

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: _____ DATE: _____

CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ON-SITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ON-SITE 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.

BY THE DEVELOPER:

DATE: 11-21-94

SIGNATURE OF DEVELOPER: _____

PRINTED NAME OF DEVELOPER: DOUGLAS A. BOENNER JR.

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. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

DATE: 11/17/95

SIGNATURE OF ENGINEER: _____

PRINTED NAME OF ENGINEER: HILMAT

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.

USDA - NATURAL RESOURCES CONSERVATION SERVICE

DATE: 2/1/96

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

HOWARD SOIL CONSERVATION DISTRICT

DATE: 2/1/96

APPROVED: DEPARTMENT OF PUBLIC WORKS

DATE: 2-6-96

APPROVED: DEPARTMENT OF PLANNING AND ZONING

DATE: 3/26/96

DATE: 2/8/96

94005
AUG 1995
J.H.
M.P.
AS SHOWN J.M.

SECTION A AREA 1
SECTION 4, AREA 2
HOWARD COUNTY

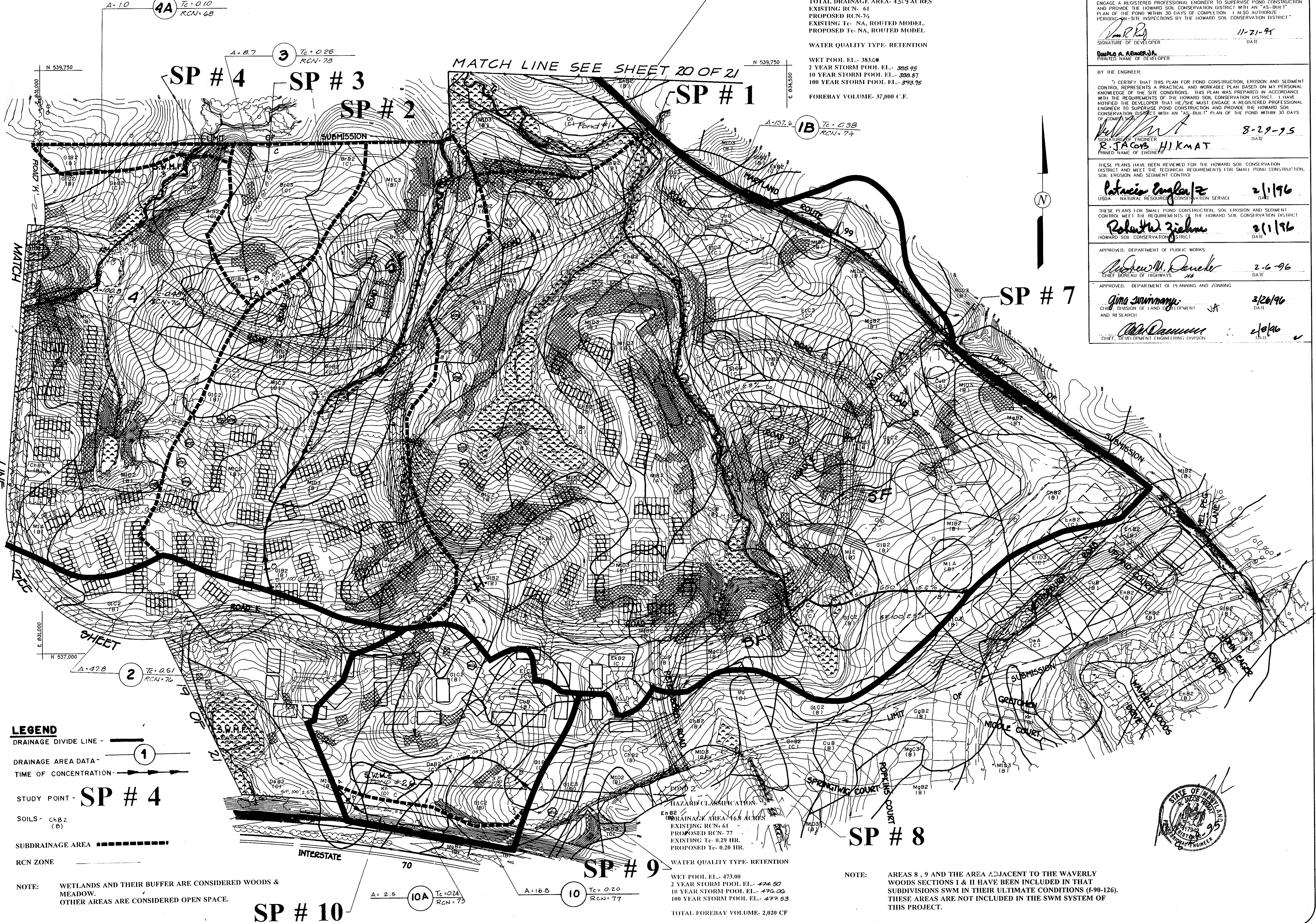
GTW'S WAVERLY WOODS
SECTION 4, AREA 2
A RESUBDIVISION OF PERCEL A, GTW'S WAVERLY WOODS,
THIRD ELECTION DISTRICT
SWM POND - 1

MILDENBERG,
BOENDER & ASSOC., INC.
Engineers Planners Surveyors
5092 Drexel Hill Drive, Suite 202, Ellicott City, Maryland, 21042
(410) 997-0296 (alt. (301) 621-5551) Wash. (410) 997-0298 Fax.

1253

AS-BUILT 4-20-01 F 95 174

1253



POND 1
 HAZARD CLASSIFICATION- "a"
 TOTAL DRAINAGE AREA- 43.9 ACRES
 EXISTING RCN- 61
 PROPOSED RCN- 7%
 EXISTING Tc- NA, ROUTED MODEL
 PROPOSED Tc- NA, ROUTED MODEL
 WATER QUALITY TYPE- RETENTION
 WET POOL EL.- 383.0#
 2 YEAR STORM POOL EL.- 386.95
 10 YEAR STORM POOL EL.- 388.87
 100 YEAR STORM POOL EL.- 393.75
 FOREBAY VOLUME- 37,000 C.F.

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.

DATE: 11-21-95
 SIGNATURE OF DEVELOPER: [Signature]
 PRINTED NAME OF DEVELOPER: DONALD A. ROEMER, JR.

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.

DATE: 8-29-95
 SIGNATURE OF ENGINEER: [Signature]
 PRINTED NAME OF ENGINEER: R. JAGGS HIKMAT

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.

DATE: 2/1/96
 SIGNATURE: [Signature]
 TITLE: USA - NATURAL RESOURCES CONSERVATION SERVICE

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

DATE: 2/1/96
 SIGNATURE: [Signature]
 TITLE: HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PUBLIC WORKS
 DATE: 2-6-96
 SIGNATURE: [Signature]
 TITLE: CHIEF BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 DATE: 3/26/96
 SIGNATURE: [Signature]
 TITLE: CHIEF, DIVISION OF LAND DEVELOPMENT AND RESEARCH

DATE: 2/1/96
 SIGNATURE: [Signature]
 TITLE: CHIEF, DEVELOPMENT ENGINEERING DIVISION

date	OCT. 1994	engineering	RJH	approval
project	94005	illustration	SAS	scale
				1" = 200'

date	
description	
revisions	

WAVERLY
 HOWARD COUNTY, MARYLAND
 3RD ELECTION DISTRICT, CENSUS TRACT 6030
 TAX MAP 16, PARCELS 20, 21, 234, AND 406

PROPOSED CONDITION DRAINAGE AREA MAP

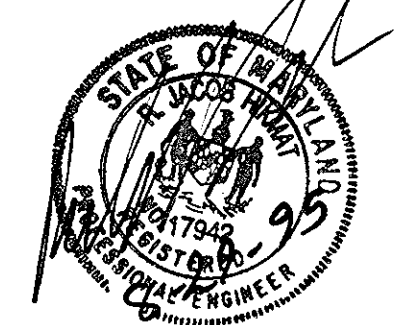
MILDENBERG ASSOCIATES, INC.
 Engineers Planners Surveyors
 5072 Dorsey Hall Drive, Suite 202, Ellicott City, Maryland 21042
 (410) 997-0296 Fax: (301) 821-5521 Wash. (410) 997-0288 Fax.

LEGEND
 DRAINAGE DIVIDE LINE - [Symbol]
 DRAINAGE AREA DATA - [Symbol]
 TIME OF CONCENTRATION - [Symbol]
 STUDY POINT - SP # 4
 SOILS - ChB2 (B)
 SUBDRAINAGE AREA - [Symbol]
 RCN ZONE - [Symbol]

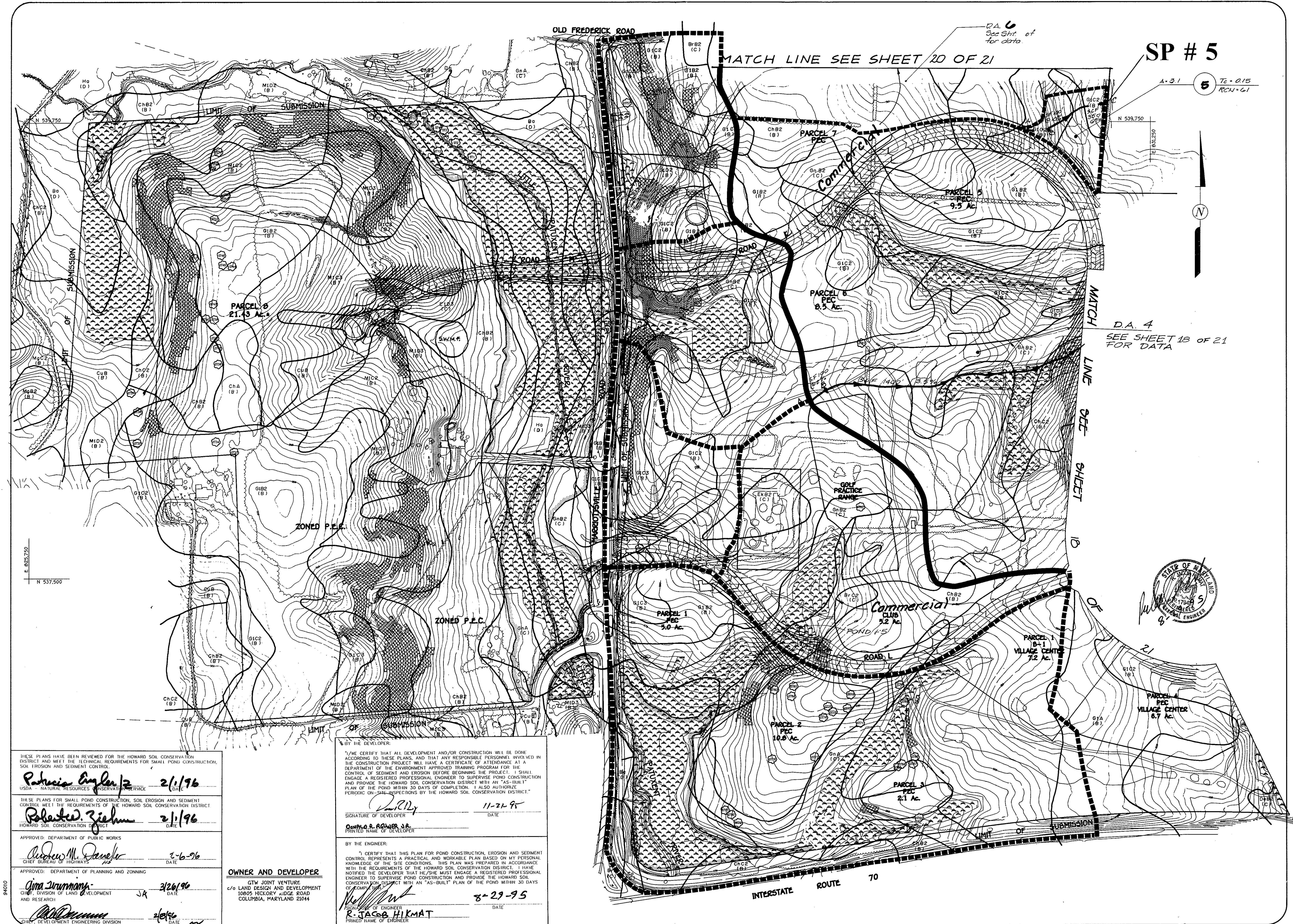
NOTE: WETLANDS AND THEIR BUFFER ARE CONSIDERED WOODS & MEADOW. OTHER AREAS ARE CONSIDERED OPEN SPACE.

POND 2
 HAZARD CLASSIFICATION- "a"
 DRAINAGE AREA- 16.8 ACRES
 EXISTING RCN- 61
 PROPOSED RCN- 77
 EXISTING Tc- 0.29 HR.
 PROPOSED Tc- 0.20 HR.
 WATER QUALITY TYPE- RETENTION
 WET POOL EL.- 473.00
 2 YEAR STORM POOL EL.- 474.50
 10 YEAR STORM POOL EL.- 476.00
 100 YEAR STORM POOL EL.- 477.53
 TOTAL FOREBAY VOLUME- 2,020 CF

NOTE: AREAS 8, 9 AND THE AREA ADJACENT TO THE WAVERLY WOODS SECTIONS I & II HAVE BEEN INCLUDED IN THAT SUBDIVISIONS SWM IN THEIR ULTIMATE CONDITIONS (F-90-126). THESE AREAS ARE NOT INCLUDED IN THE SWM SYSTEM OF THIS PROJECT.



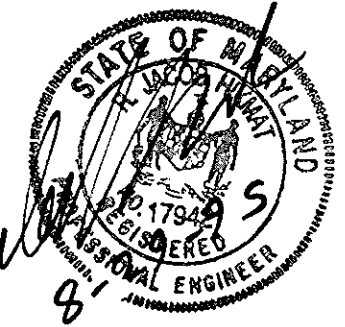
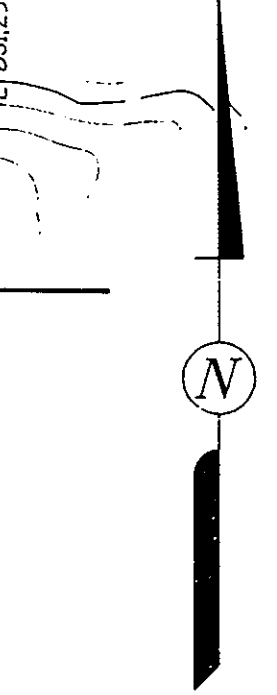
1253



SP # 5

A-31 5 T2-015 RCN-G1

D.A. 4 SEE SHEET 18 OF 21 FOR DATA



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.

Patricia Angler 2/1/96
USDA - NATURAL RESOURCES CONSERVATION SERVICE

Robert W. Ziesem 2/1/96
HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PUBLIC WORKS
Andrew M. Davelos 2-6-96
CHIEF BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Gina Stumm 3/26/96
CHIEF, DIVISION OF LAND DEVELOPMENT AND RESEARCH

John D. ... 2/8/96
CHIEF, DEVELOPMENT ENGINEERING DIVISION

OWNER AND DEVELOPER
GTY JOINT VENTURE
c/o LAND DESIGN AND DEVELOPMENT
10805 HICKORY RIDGE ROAD
COLUMBIA, MARYLAND 21044

BY THE DEVELOPER:
I, *Donato A. ...* 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.

Donato A. ... 11-21-95
SIGNATURE OF DEVELOPER DATE

Donato A. ...
PRINTED NAME OF DEVELOPER

BY THE ENGINEER:

I, *R. Jacob Hikmat* 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.

R. Jacob Hikmat 8-29-95
SIGNATURE OF ENGINEER DATE

R. JACOB HIKMAT
PRINTED NAME OF ENGINEER

date	OCT. 1994
project	94005
illustration	SAS
scale	1"=200'
approval	RJH

no.	0	no.	0
description	SUBMITTED	description	SUBMITTED
revisions		revisions	

WAVERLY
HOWARD COUNTY, MARYLAND
3RD ELECTION DISTRICT, CENSUS TRACT 6030
TAX MAP 16, PARCELS 20, 21, 234, AND 406

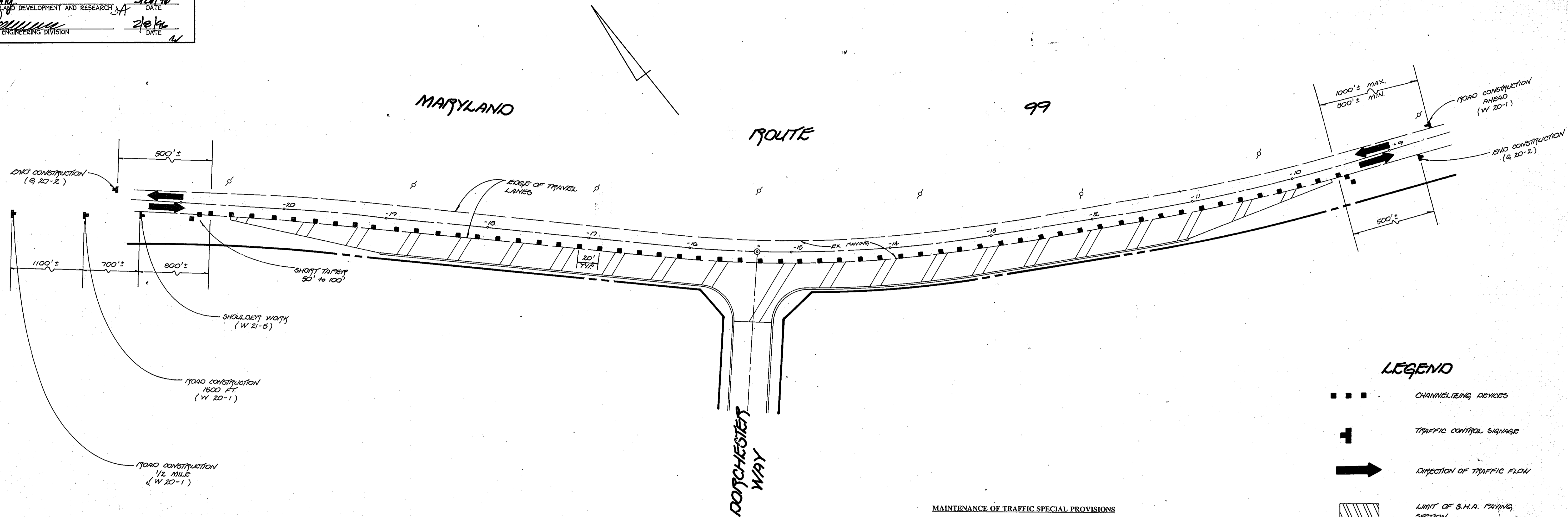
PROPOSED CONDITION DRAINAGE AREA MAP

MILDENBERG ASSOCIATES, INC.
Engineers Planners Surveyors
5072 Dorsey Hall Drive, Suite 202, Ellicott City, Maryland 21042
(410) 997-0296 Fax: (301) 621-5521 Wash. (410) 997-0298 Fax.

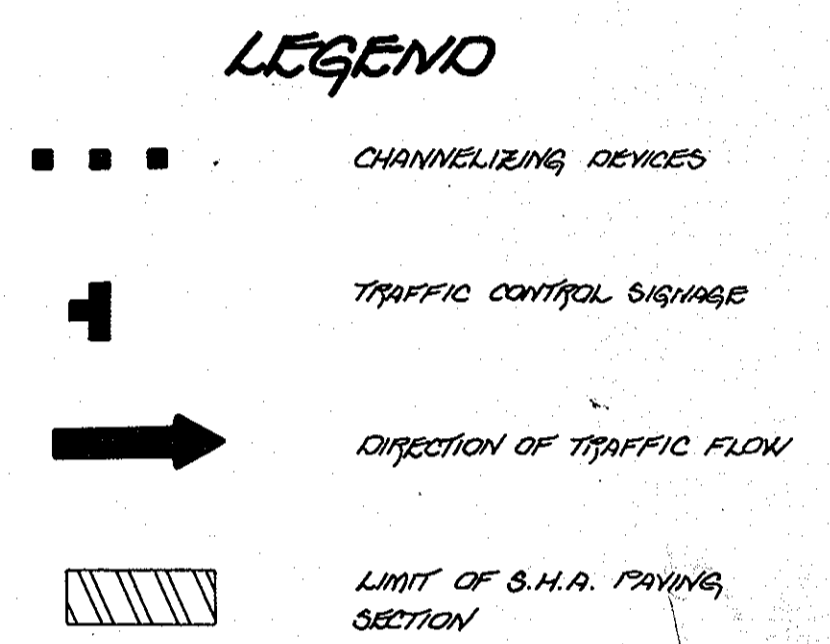
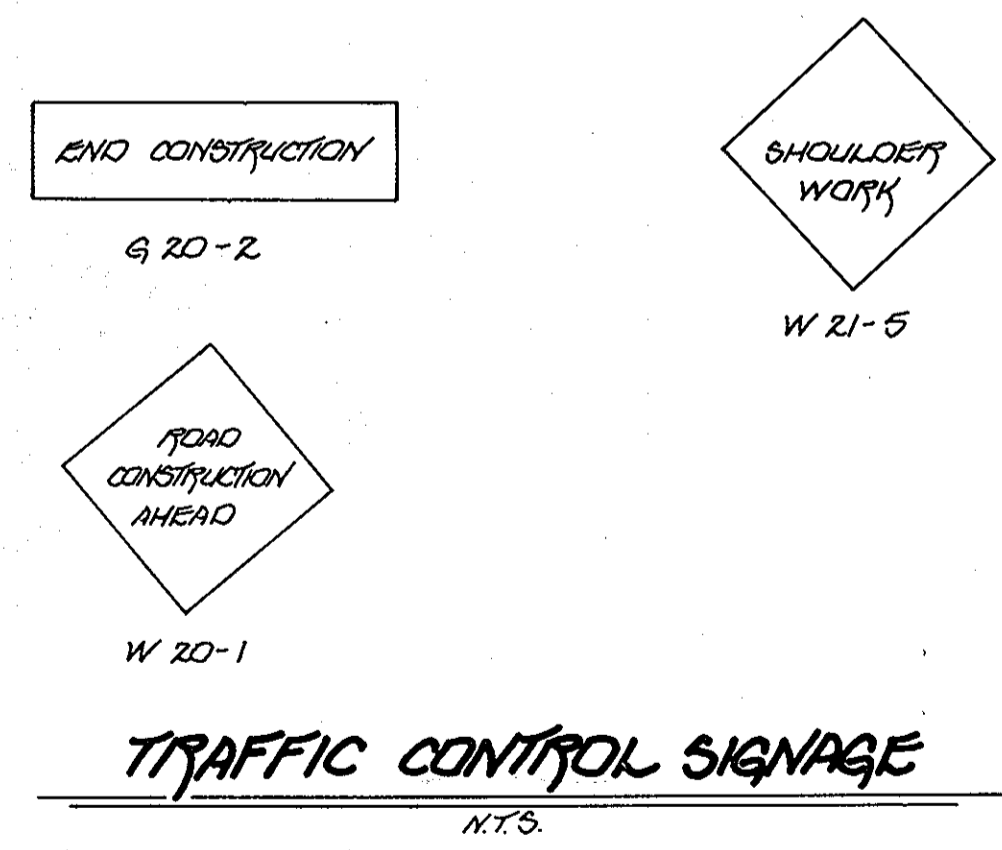
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 [Signature] 2-6-96
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 [Signature] 3/21/96
 CHIEF, DIVISION OF LAND DEVELOPMENT AND RESEARCH DATE

[Signature] 2/8/96
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



PLAN
 SCALE: 1" = 50'

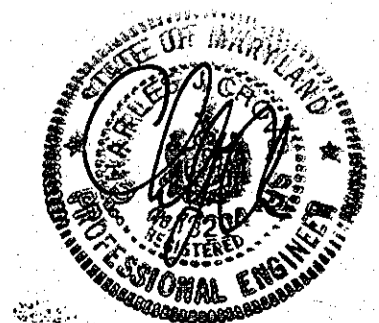


MAINTENANCE OF TRAFFIC SPECIAL PROVISIONS

GENERAL

1. The purpose of this portion of the Special Provisions is to set forth the traffic control requirements necessary for the safe and efficient maintenance to traffic within work areas, and to minimize any inconveniences to the traveling public and the Contractor and/or Permittee.
2. Property traffic control through work areas is essential for insuring the safety and that of highway workers has the highest priority of all tasks within this project. The proper application of the approved Traffic Control Plan (TCP) will provide the desired level of safety.
3. Throughout these Special Provisions, any mention of the TCP shall be implied to include any combination of Typical Traffic Control Standards which form the overall TCP for this project which has been approved by the appropriate SHA Traffic Engineer.
4. The Contractor and/or Permittee shall be required to adhere to the provisions of the Manual of Uniform Traffic Control Devices (MUTCD), 1988 Edition, especially Part VI, and to Section 814 of the Maryland DOT Standard Specifications for Construction and Materials (January, 1982); including all revisions and supplements to each.
5. The Contractor and/or Permittee shall be required to adhere to the requirements set forth in the TCP and these Special Provisions, unless otherwise directed by the Engineer. Any requests to make minor changes to the TCP or the Special Provisions with regard to the traffic control items shall be made in writing to the Engineer a minimum of three (3) working days prior to the proposed scheduling change. The Contractor and/or Permittee shall have written approval of the Engineer prior to the implementation of any change.
6. No work shall begin on any work activity or work phase until all required traffic control patterns and devices indicated on the TCP for that activity or phase are completely and correctly in place and have been checked for approved usage.
7. General and specific warning signs shall only be in place when specific work tasks and activities are actually underway or conditions exist that pose a potential hazard to the public, and any additional signing has been approved by the appropriate SHA Traffic Engineer. NOTE: The practice of placing signing and other traffic control devices in addition to those indicated on the approved TCP is not permitted.
8. The Contractor and/or Permittee shall provide, maintain in new condition, and move when necessary, or as directed by the Engineer, all traffic control devices used for the guidance and protection of motorists, pedestrians, and workers.
9. All traffic control devices required by the TCP shall be kept in good condition, fully performing as set forth in the TCP, the MUTCD, and/or Section 814 of the Specifications. For reflective devices, a particular device is assumed to have failed to meet minimum operational standards when the device no longer has retro-reflectance capability of at least 60% of the specified minimum value over at least 90% of the visible reflective surface.
10. All traffic control devices not required for the safe conduct of traffic shall be promptly removed, completely covered, turned away from traffic, or otherwise taken out of service. It is intended that no traffic control device is to be in service when there is no clear cut reason for the device.
11. Throughout the period(s) of work activities, traffic shall be maintained by implementing the approved TCP. In lieu of the TCP prepared for this project, and/or individual Typical Traffic Control Standards, the Contractor and/or Permittee has the option of preparing and submitting a TCP, wholly or in part, of his own design, following guidelines set forth in the MUTCD and prescribed by the Administration. A TCP developed by the Contractor and/or Permittee shall not be implemented until advance written approval is obtained from the Engineer. TCP's may be implemented within a single project or jointly between two or more projects. In situations where TCP's are jointly implemented, care shall be exercised to present correct and non-conflicting guidance to the traveling public.
12. Throughout these Special Provisions, where speed of traffic is noted, this means the posted speed or prevailing travel speed, whichever is higher, unless otherwise noted.
13. Traffic shall be maintained at all times throughout the entire length of the project, unless otherwise noted. No travel lane(s) other than those designated for possible closure in the TCP shall be closed without obtaining prior approval from the Engineer. All ingress and egress to the work area by the Contractor and/or Permittee shall be performed with the flow of traffic.

OWNER / DEVELOPER
 GTW JOINT VENTURE
 % LAND DESIGN AND DEVELOPMENT
 10805 HICKORY RIDGE ROAD
 COLUMBIA, MARYLAND 21044



TRAFFIC CONTROL PLAN
GTW'S WAVERLY WOODS
 SECTION 4, AREA 2
 LOTS 20 thru 45
 (A RESUBDIVISION OF PARCEL 'A'
 GTW'S WAVERLY WOODS SECTION 4, AREA 1)
 PART OF TAX PARCEL 22 TAX MAP 16
 ZONING R-27 AND R5-A-0
 TAX MAP No. 16, PART OF PARCEL No. 21
 THIRD ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND
 DATE: MAY 8, 1995
 SHEET 21 OF 21

1253

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 10077 BALTIMORE NATIONAL, PRZ
 ELICOTT CITY, MARYLAND 21042
 (410) 461-2855

AS-BUILT 4-20-01 F 95-174