

SHEET INDEX

NO.	DESCRIPTION
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5	GRADING SEDIMENT CONTROL & SWM PLAN
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7	STORM DRAIN PROFILES
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10	BORING LOGS AND W.Q. DETAILS

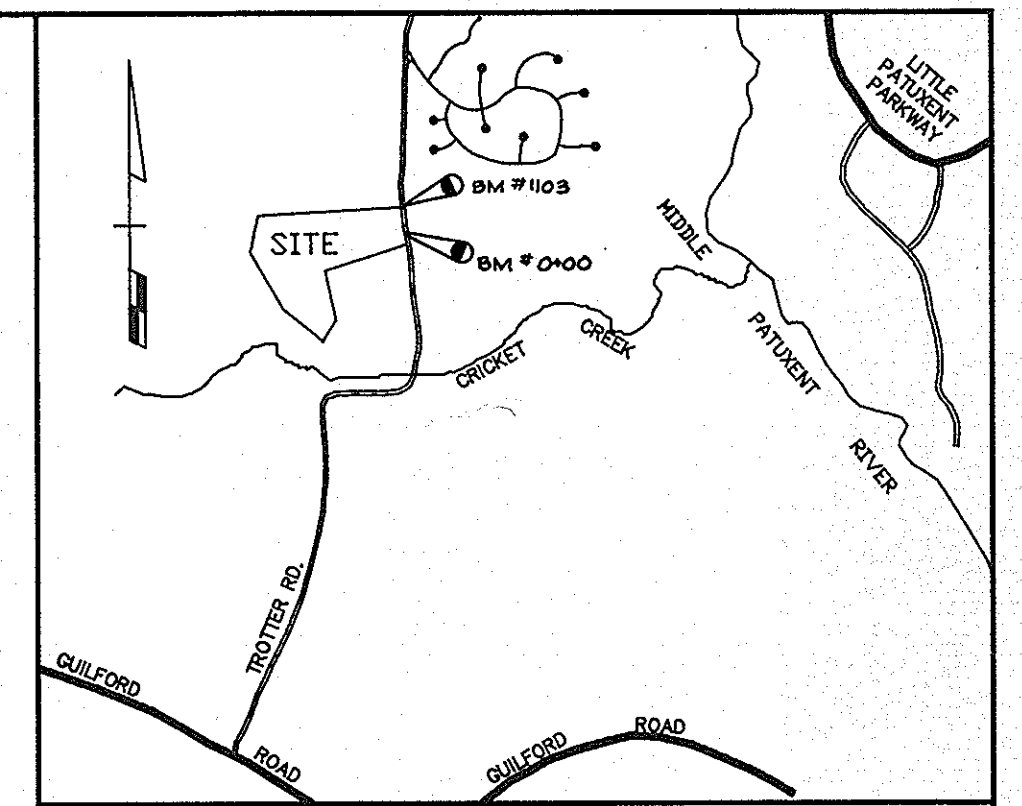
ROADWAY, STORM DRAINS & STORMWATER MANAGEMENT

VILLAGE OF RIVER HILL

SECTION 1, AREA 4

5TH ELECTION DISTRICT

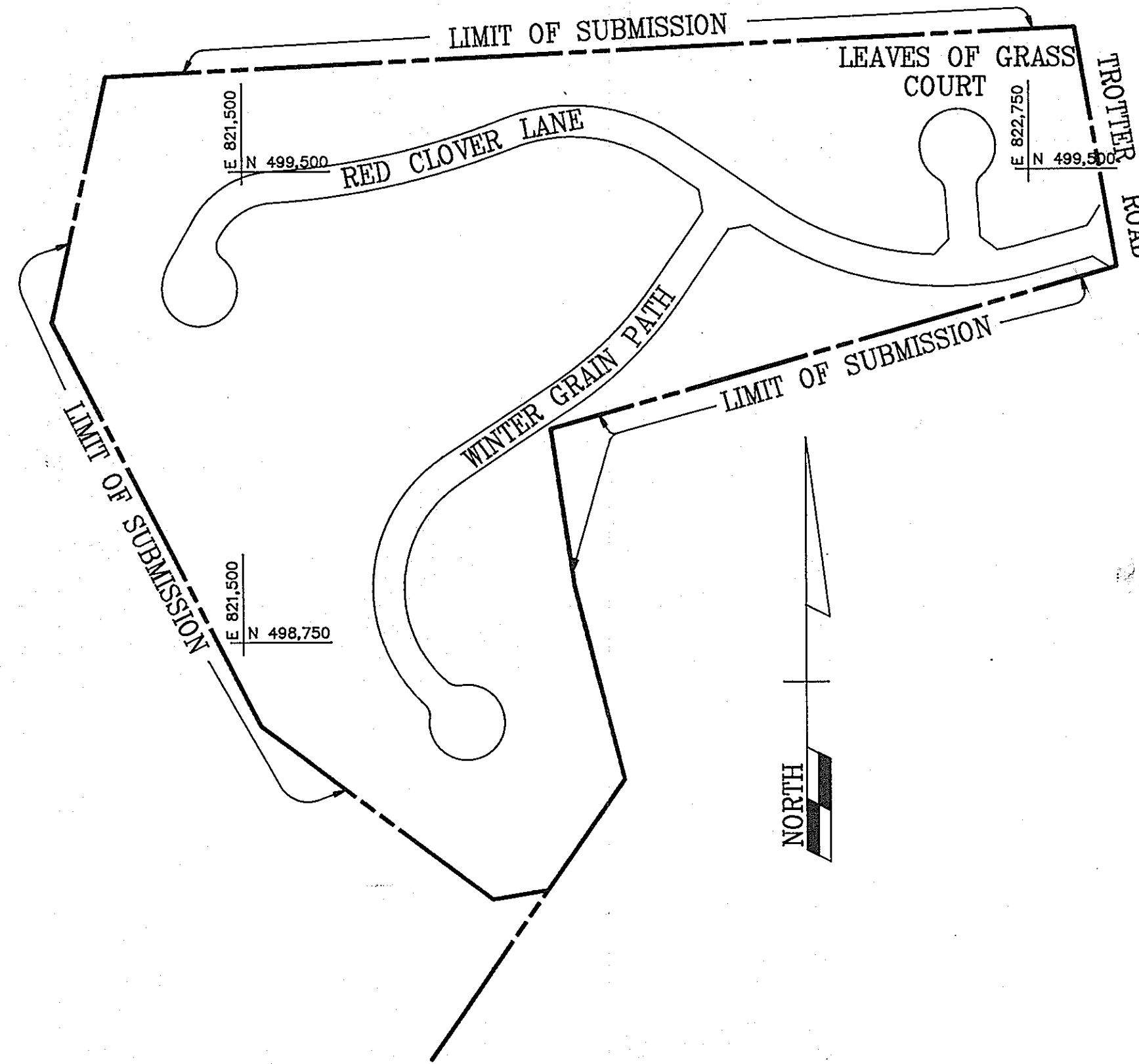
HOWARD COUNTY, MARYLAND



VICINITY MAP
1" = 2,000'

GENERAL NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF CONSTRUCTION INSPECTION AT (301) 792-7272 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
- PROJECT BACKGROUND:
LOCATION: VILLAGE OF RIVER HILL, TAX MAP 35, PARCEL P/O 22
ZONING: NEW TOWN
SECTION/AREA: 1/4
TOTAL TRACT AREA: 28.733 Ac.
SECTION AREA: 28.733 Ac.
NUMBER OF PROPOSED LOTS: 49 RESIDENTIAL, 5 OPEN SPACE
DATE PRELIMINARY PLAN: (WAIVED AS PART OF WP 92-22)
APPROVED AND DPZ REFERENCE #: S-92-02 FEBRUARY 14, 1992
P.B. CASE 274 WAS APPROVED ON NOVEMBER 12, 1991
WP 92-22 WAS APPROVED ON 9-24-91
FINAL PLAN NO. F-92-87.
- TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
- TOPOGRAPHY IS SHOWN AT 1' CONTOUR INTERVALS AND WAS TAKEN FROM AERIAL SURVEY PREPARED BY MAPS INCORPORATED FOR HOWARD RESEARCH AND DEVELOPMENT CORPORATION IN 1985 AND WAS FIELD CHECKED IN DECEMBER 1991 BY C.B. MILLER, P.L.S. # 135.
- ALL HORIZONTAL AND VERTICAL CONTROLS SHOWN HEREON ARE BASED UPON NAD 27 MARYLAND COORDINATE SYSTEM AS PROJECTED BY HOWARD COUNTY GEODETIC STATIONS 2337001, 2337002 AND 2337003.
- LIGHT POLES AND FIXTURES FOR STREET LIGHTS SHALL BE IN ACCORDANCE WITH THE LATEST HOWARD COUNTY DESIGN MANUAL, VOLUME III, ROADS AND BRIDGES, EXCEPT AS NOTED.
- THIS SITE IS LOCATED WITHIN THE LITTLE PATUXENT DRAINAGE AREA. ALL WATER AND SEWER LINES ARE PUBLIC AND ARE TO BE BUILT UNDER CONTRACT NO. 34-3178 D.
- PEAK STORMWATER MANAGEMENT IS PROVIDED FOR 2 AND 10 YEAR STORMS FOR THE ENTIRE PROJECT (EXTENDED DETENTION).
- THERE ARE NO 100 YEAR FLOOD PLAINS ON SITE.
- WETLAND DELINEATION STUDY WAS DONE BY EXPLORATION RESEARCH, INC. ON SEPTEMBER 20, 1991 AND WAS SUBMITTED TO HOWARD COUNTY FOR APPROVAL.
- A TRAFFIC STUDY WAS PERFORMED BY GOROVE/SLADE ON JULY 26, 1991 AND WAS SUBMITTED TO HOWARD COUNTY FOR APPROVAL.
- A NOISE STUDY WAS NOT REQUIRED FOR THIS SITE.
- A GEOTECHNICAL INVESTIGATION WAS PERFORMED BY ROBERT B. BALTER COMPANY AND WAS COMPILED JANUARY 1992 AND WAS SUBMITTED TO HOWARD COUNTY FOR APPROVAL.
- ALL EXISTING UTILITIES WERE LOCATED BY FIELD RUN SURVEY.



LOCATION PLAN

SCALE: 1" = 200'

BENCH MARK DESCRIPTION

B.M.# 0+00 ELEV. 397.110
PK NAIL IN MACADAM IN TROTTER ROAD 5.9'
FROM EDGE OF ROAD 53.1' SOUTH OF BG&E
POLE #237549

B.M.# 1103 ELEV. 408.218
IRON PIPE 4.2' FROM EDGE OF TROTTER ROAD
NEAR NORTHEAST CORNER OF PROPERTY 34.8'
WEST OF BG&E POLE #170217

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS	
<i>[Signature]</i> CHIEF, LAND DEVELOPMENT DIVISION	4/20/92 DATE
<i>[Signature]</i> CHIEF, BUREAU OF HIGHWAYS	4/20/92 DATE
<i>[Signature]</i> CHIEF, BUREAU OF ENGINEERING	4-29-92 DATE
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING	
<i>[Signature]</i> CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT	4/30/92 DATE

Date	No	Revision Description

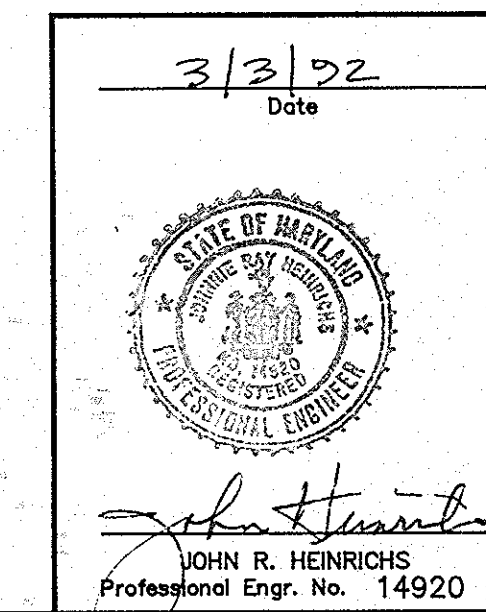
OWNER/DEVELOPER

THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
DEED REF: LIBER 410 FOLIO 348

JOHN R. HEINRICHS, P.E.
CONSULTING ENGINEER
5124 S. ROLLING ROAD
BALTIMORE, MARYLAND 21227
(301) 247-4036 FAX 247-9397

AREA VILLAGE OF RIVER HILL SECTION 1 AREA 4
TAX MAP 35 PART OF PARCEL 22
5th ELECTION DISTRICT OF HOWARD COUNTY, MARYLAND

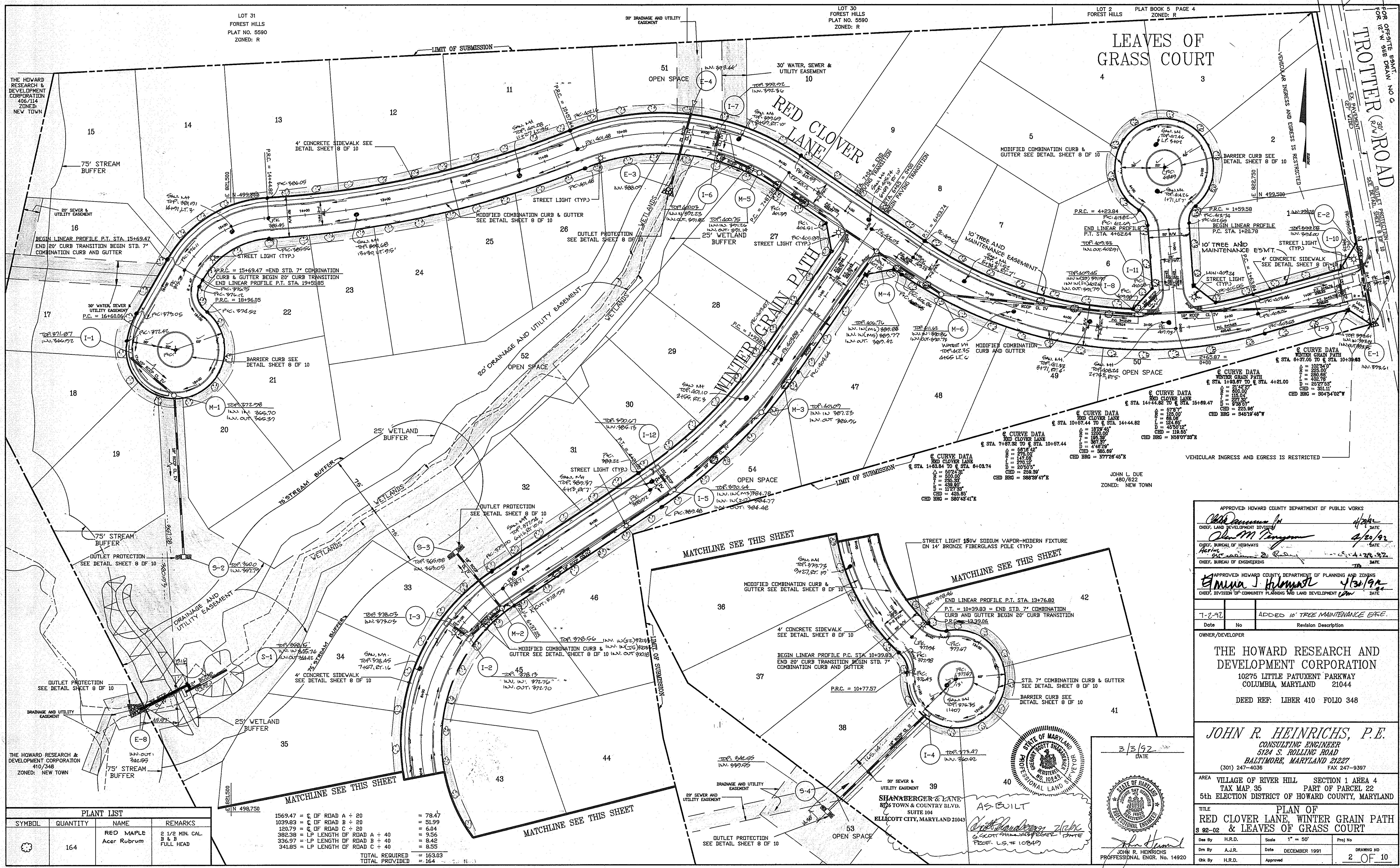
TITLE SHEET			
S 92-02			
Des By	J.R.H.	Scale	AS SHOWN
Drn By	A.J.R.	Date	DECEMBER 1991
Chk By	H.R.D.	Approved	
			Proj No
			DRAWING NO
			1 OF 10



F-92-87

1987

1487



SYMBOL	QUANTITY	NAME	REMARKS
(Tree Symbol)	164	RED MAPLE Acer Rubrum	2 1/2 MIN. CAL. 8 & B FULL HEAD

1569.47 = C OF ROAD A + 20	= 78.47
1039.93 = C OF ROAD B + 20	= 51.99
120.79 = C OF ROAD C + 20	= 6.04
382.38 = LP LENGTH OF ROAD A + 40	= 9.56
336.97 = LP LENGTH OF ROAD B + 40	= 8.42
341.85 = LP LENGTH OF ROAD C + 40	= 8.55
TOTAL REQUIRED	= 163.03
TOTAL PROVIDED	= 164

APPROVED HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

John M. Pinyan 4/20/92
 CHIEF, LAND DEVELOPMENT DIVISION DATE

John M. Pinyan 4/20/92
 CHIEF, BUREAU OF HIGHWAYS DATE

John M. Pinyan 4/20/92
 CHIEF, BUREAU OF ENGINEERING DATE

APPROVED HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Emma J. Holman 4/30/92
 CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT DATE

7-2-92	ADDED 10' TREE MAINTENANCE EASE.
Date	Revision Description

OWNER/DEVELOPER

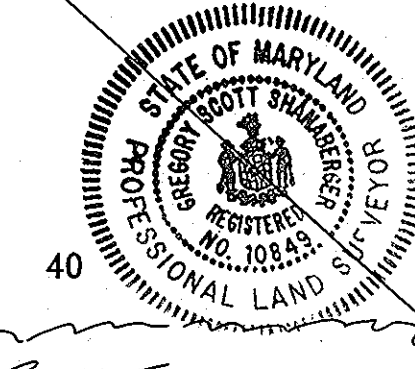
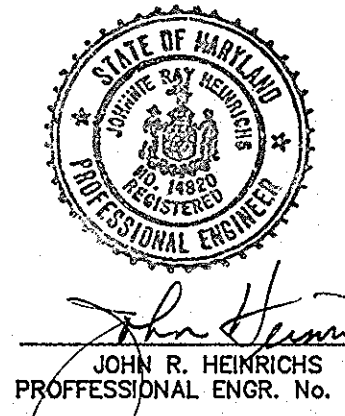
THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MARYLAND 21044
 DEED REF: LIBER 410 FOLIO 348

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 BALTIMORE, MARYLAND 21227
 (301) 247-4036 FAX 247-9397

AREA VILLAGE OF RIVER HILL SECTION 1 AREA 4
 TAX MAP 35 PART OF PARCEL 22
 5th ELECTION DISTRICT OF HOWARD COUNTY, MARYLAND

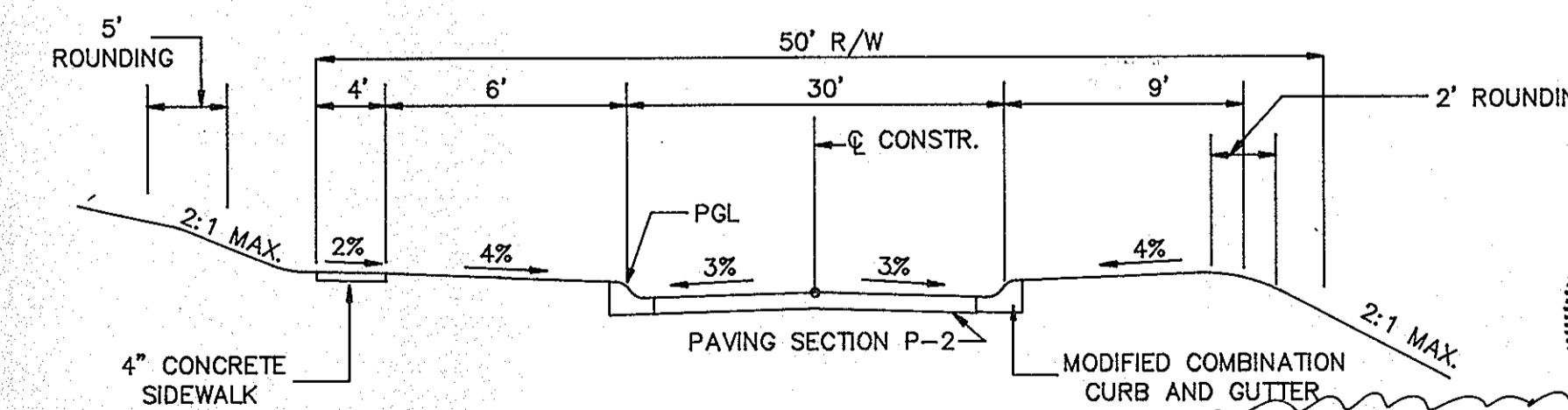
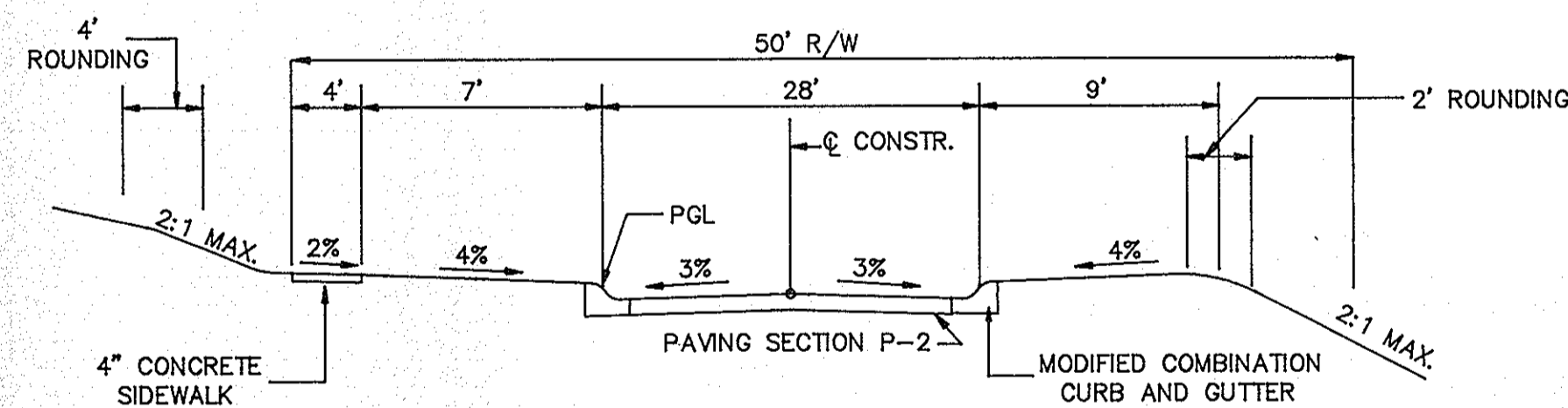
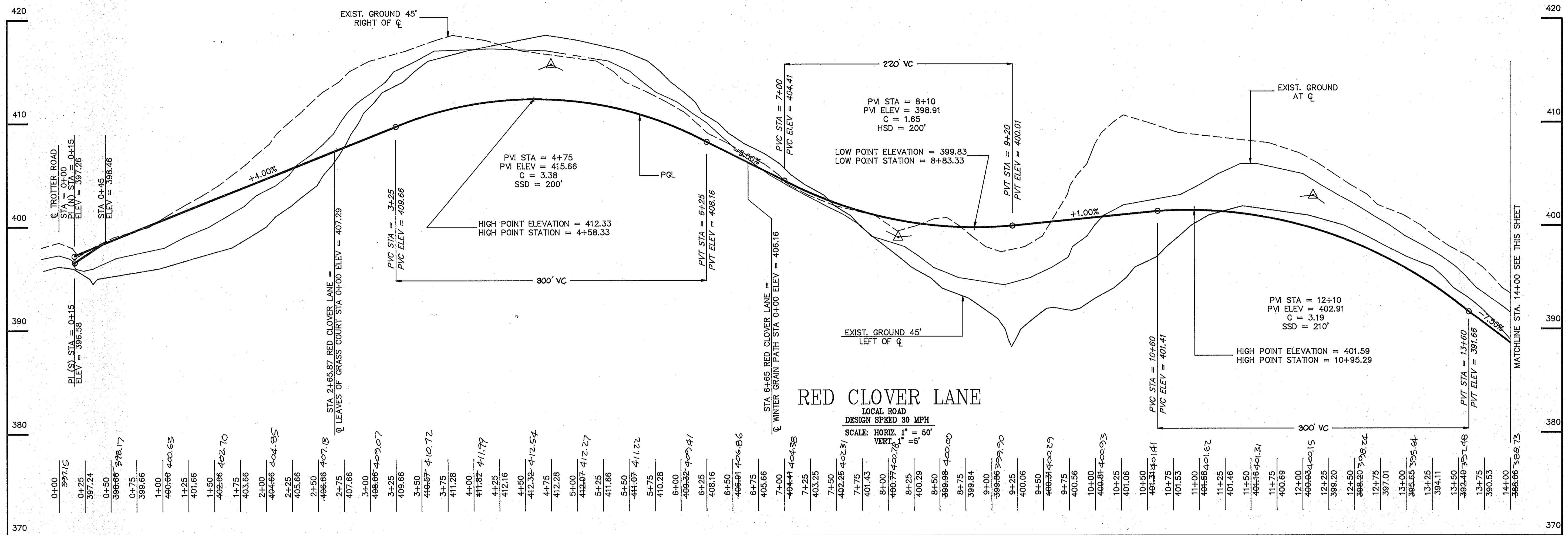
TITLE **PLAN OF RED CLOVER LANE, WINTER GRAIN PATH S 92-02 & LEAVES OF GRASS COURT**

Des By H.R.D.	Scale 1" = 50'	Proj No.
Drn By A.J.R.	Date DECEMBER 1991	DRAWING NO
Chk By H.R.D.	Approved	2 OF 10

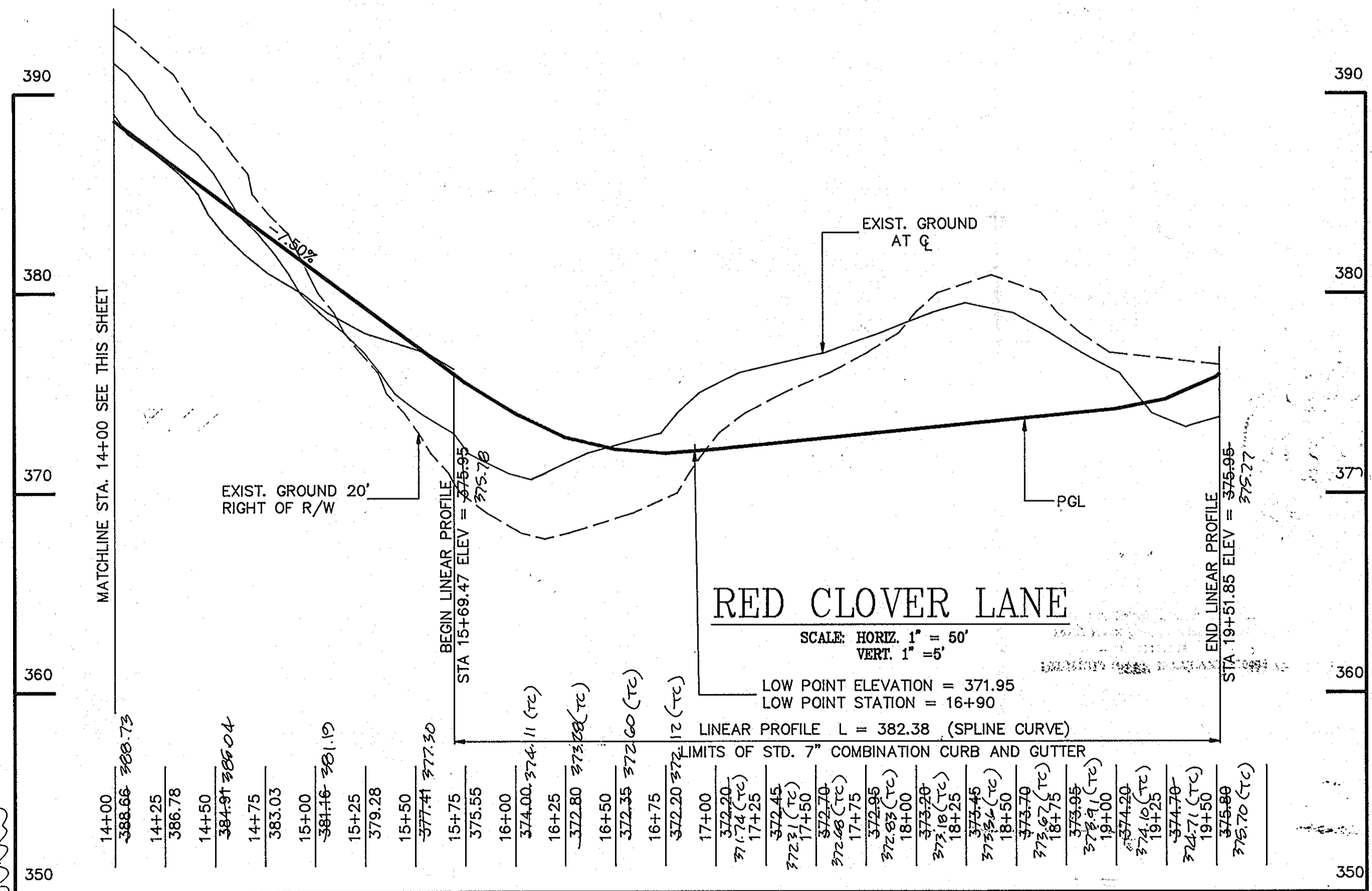


AS-BUILT
John R. Heinrichs
 JOHN R. HEINRICHS
 PROFESSIONAL ENGR. No. 14920

AS-BUILT F.12.87



AS-BUILT
Shanaberger & Lane
8726 TOWN & COUNTRY BLVD.
SUITE 104
ELLICOTT CITY, MARYLAND 21043



APPROVED HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
4/20/92
DATE

APPROVED HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
4/20/92
DATE

THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
DEED REF: LIBER 410 FOLIO 348

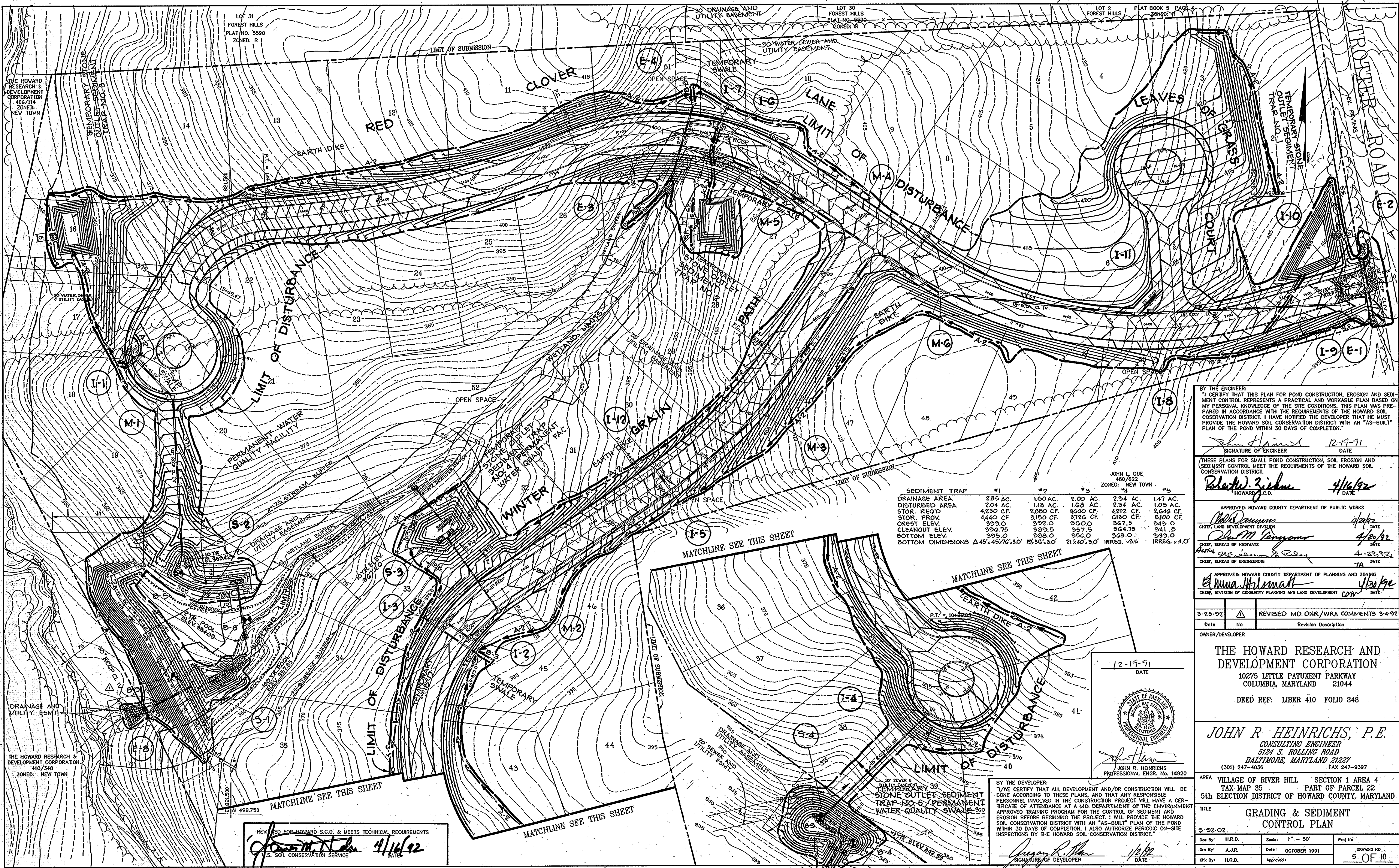
JOHN R. HEINRICHS, P.E.
CONSULTING ENGINEER
5124 S. ROLLING ROAD
BALTIMORE, MARYLAND 21227
(301) 241-4036 FAX 247-9397

AREA	VILLAGE OF RIVER HILL	SECTION 1 AREA 4
TAX MAP	35	PART OF PARCEL 22
5th ELECTION DISTRICT	OF HOWARD COUNTY, MARYLAND	
TITLE	PROFILES OF RED CLOVER LANE	
S 92-02	Due By	R.J.W.
	Scale	AS SHOWN
	Proj No	
	Des By	A.J.R.
	Date	DECEMBER 1991
	Drawn	H.R.D.
	Approved	
	Professional Engr. No.	14920
	DATE	3/3/92
	DRAWING NO	3 OF 10

JOHN R. HEINRICHS
Professional Engr. No. 14920

1487

FOR OFFSITE ESWT FOR 12" SEE DR. N. NO.



SEDIMENT TRAP	#1	#2	#3	#4	#5
DRAINAGE AREA	2.35 AC.	1.60 AC.	2.00 AC.	2.34 AC.	1.47 AC.
DISTURBED AREA	2.04 AC.	1.18 AC.	1.68 AC.	2.94 AC.	1.05 AC.
STOR. REQ'D	4230 CF.	2,880 CF.	3000 CF.	4212 CF.	2,646 CF.
STOR. PROV.	4440 CF.	3,150 CF.	3720 CF.	6190 CF.	5,100 CF.
CREST ELEV.	399.0	392.0	390.0	367.5	345.0
CLEANOUT ELEV.	396.75	389.5	387.5	364.75	341.5
BOTTOM ELEV.	395.0	388.0	386.0	363.0	339.0
BOTTOM DIMENSIONS	Δ 45' x 76', 3.0'	15, 30' x 3.0'	21, 40' x 3.0'	IRREG. x 3.5'	IRREG. x 4.0'

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 MUST PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

John L. Due 12-19-91
 SIGNATURE OF ENGINEER DATE

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

Blair J. Ziehm 4/16/92
 HOWARD S.C.D. DATE

APPROVED HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

John L. Due 4/16/92
 CHIEF, LAND DEVELOPMENT DIVISION DATE

John M. Langston 4/16/92
 CHIEF, BUREAU OF HIGHWAYS DATE

John M. Langston 4-22-92
 CHIEF, BUREAU OF ENGINEERING DATE

APPROVED HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Anna Heilmann 4/16/92
 CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT DATE

Date	No.	Revised MD. DNR/WRA COMMENTS	Revision Description
3-25-92	1	REVISED MD. DNR/WRA COMMENTS 3-4-92	

OWNER/DEVELOPER

THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MARYLAND 21044

DEED REF: LIBER 410 FOLIO 348

JOHN R. HEINRICH, P.E.
 CONSULTING ENGINEER
 5124 S. ROLLING ROAD
 BALTIMORE, MARYLAND 21227
 (301) 247-4036 FAX 247-9397

AREA VILLAGE OF RIVER HILL SECTION 1 AREA 4
 TAX MAP 35 PART OF PARCEL 22
 5th ELECTION DISTRICT OF HOWARD COUNTY, MARYLAND

TITLE **GRADING & SEDIMENT CONTROL PLAN**

5-92-02

Des By: H.R.D.	Scale: 1" = 50'	Proj No:
Drn By: A.J.R.	Date: OCTOBER 1991	DRAWING NO.
Chk By: H.R.D.	Approved:	5 OF 10

REVISED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS

Blair J. Ziehm 4/16/92
 U.S. SOIL CONSERVATION SERVICE DATE

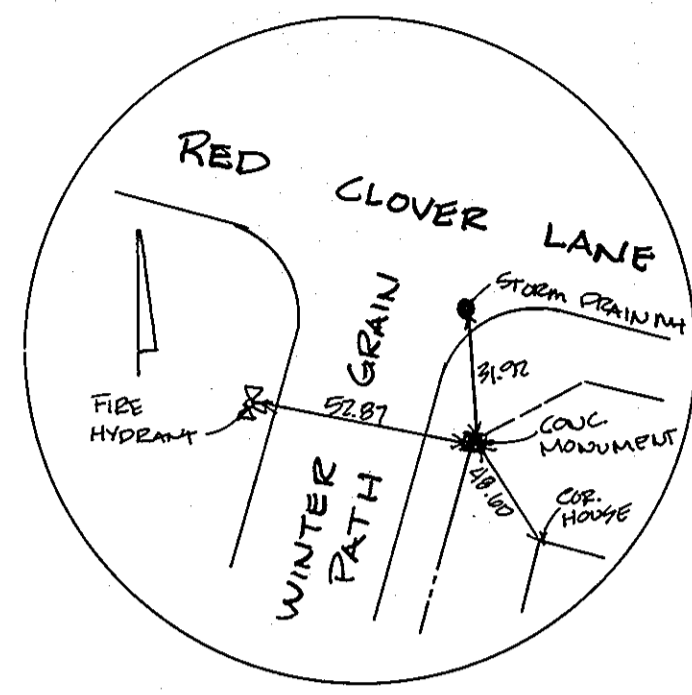
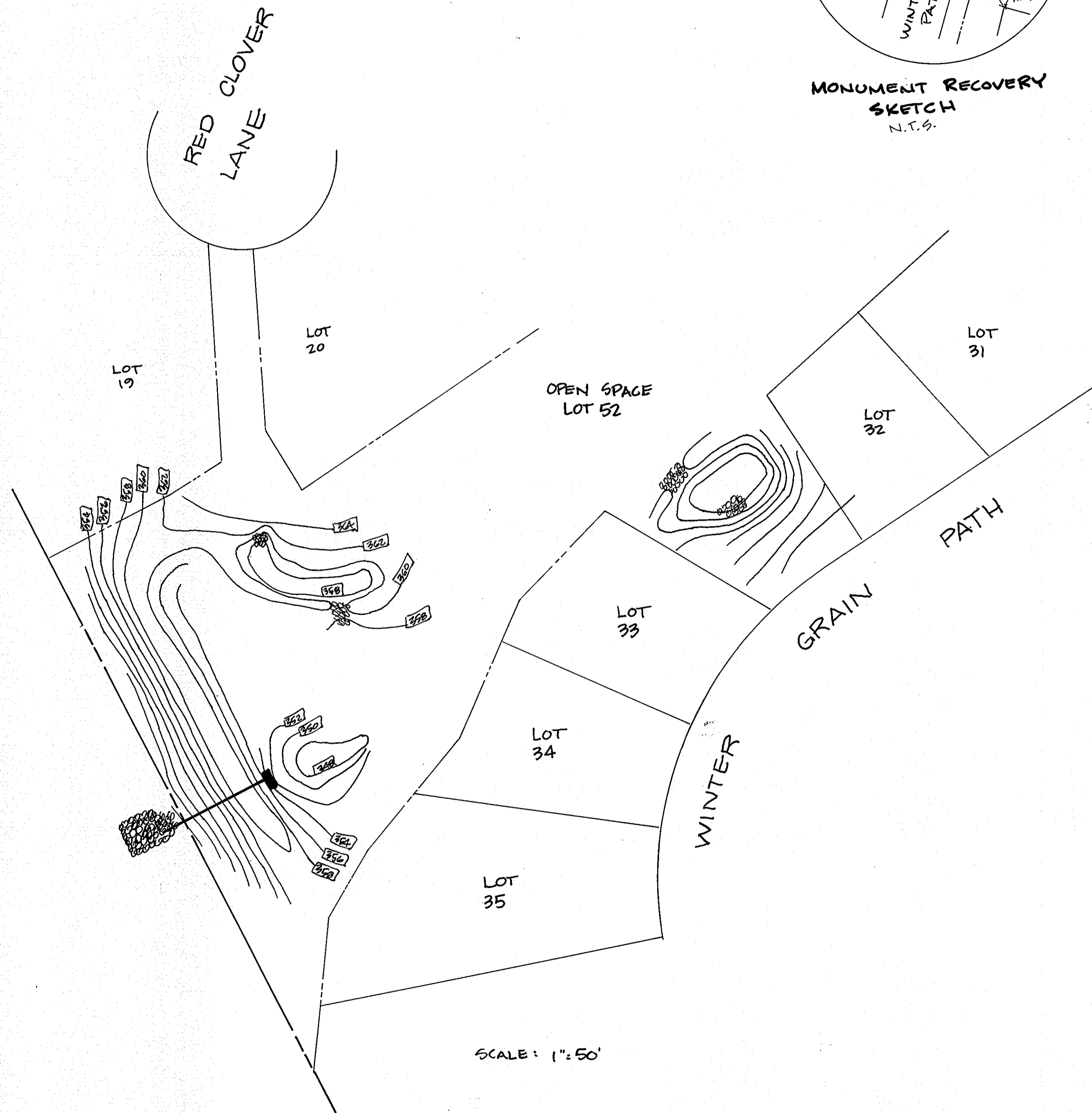
12-19-91
 DATE

John R. Heinrich
 JOHN R. HEINRICH, P.E.
 PROFESSIONAL ENGR. No. 14920

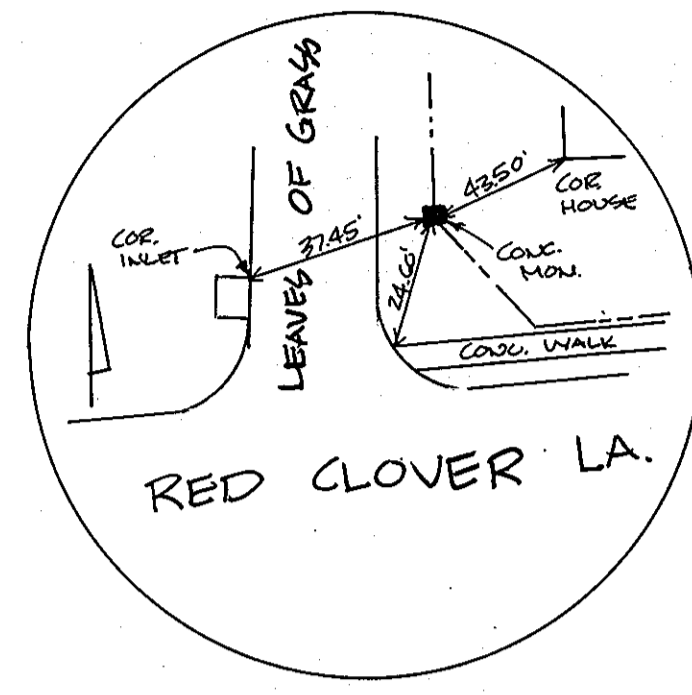
BY THE DEVELOPER:
 I HAVE CERTIFIED THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A M.D. DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I WILL 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.

John R. Heinrich 4/16/92
 SIGNATURE OF DEVELOPER DATE

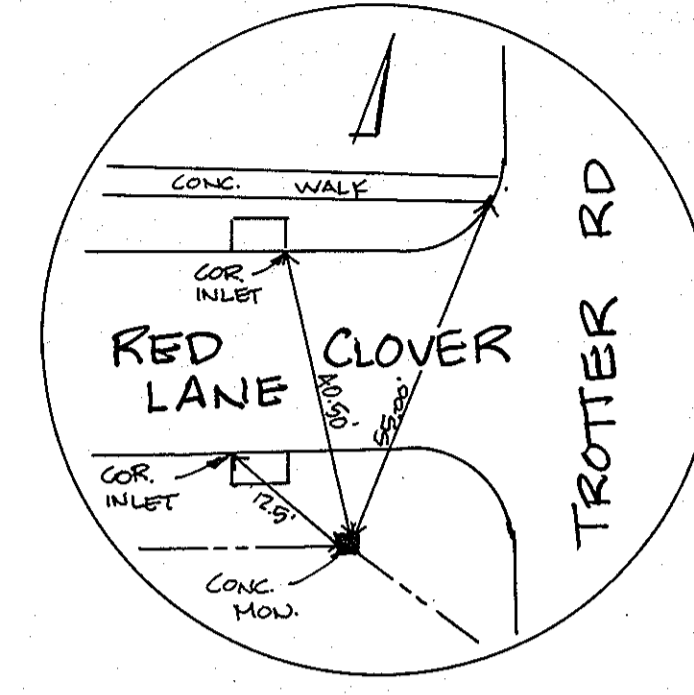
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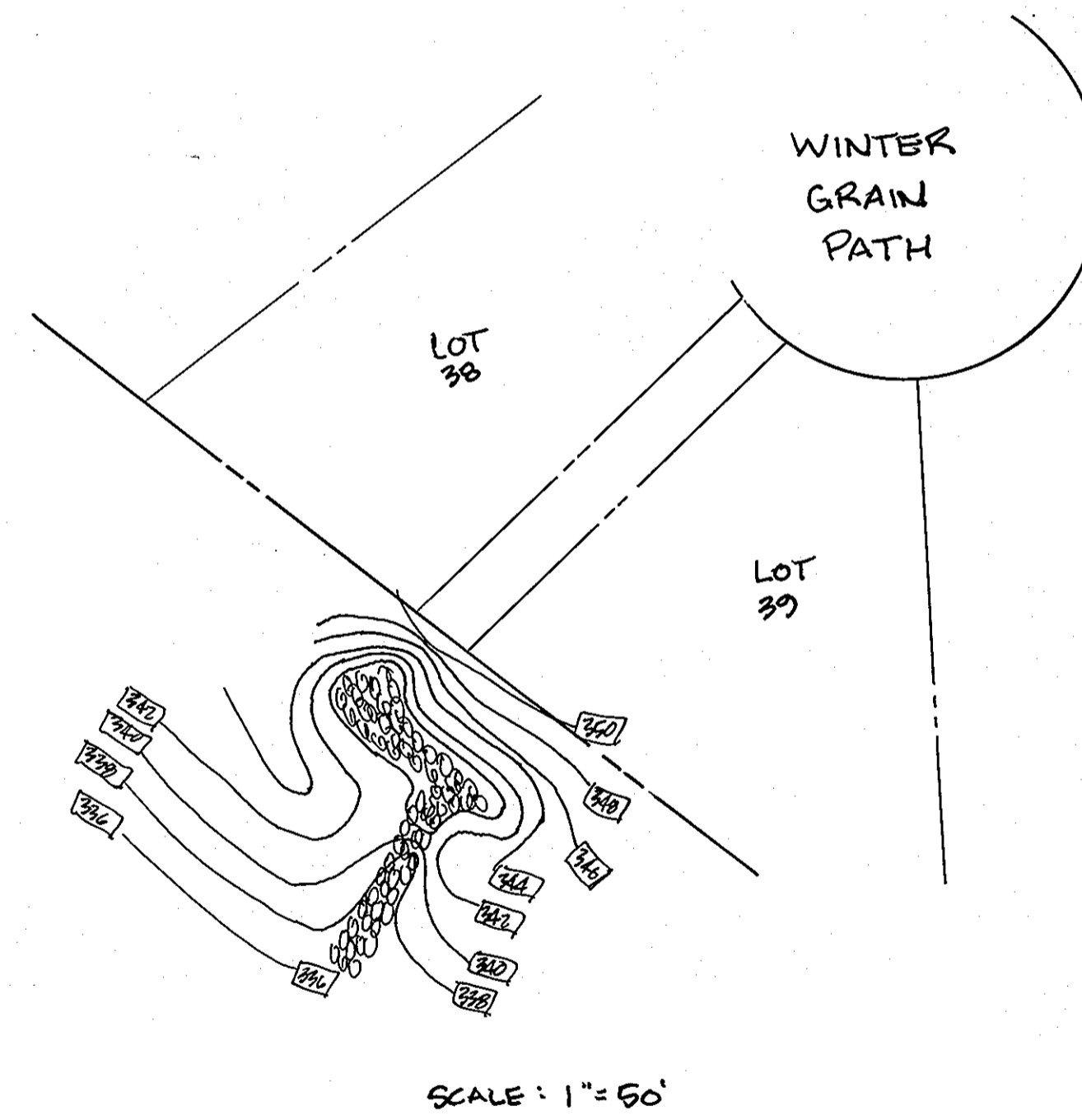
MONUMENT RECOVERY SKETCH
N.T.S.



MONUMENT RECOVERY SKETCH
N.T.S.



MONUMENT RECOVERY SKETCH
N.T.S.



AS-BUILT
G. Scott Shanabarger
G. SCOTT SHANABARGER DATE
PROF. L.S. # 10849
SHANABARGER & LANE
8726 TOWN & COUNTRY BLVD.
SUITE 104
ELLICOTT CITY, MARYLAND 21043

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
DIRECTOR OF PUBLIC WORKS _____ DATE _____
CHIEF, BUREAU OF ENGINEERING _____ DATE _____

DES:					
DRN:					
CHK:					
DATE:	BY	NO.	REVISION	DATE	600' SCALE MAP NO. _____ BLOCK NO. _____

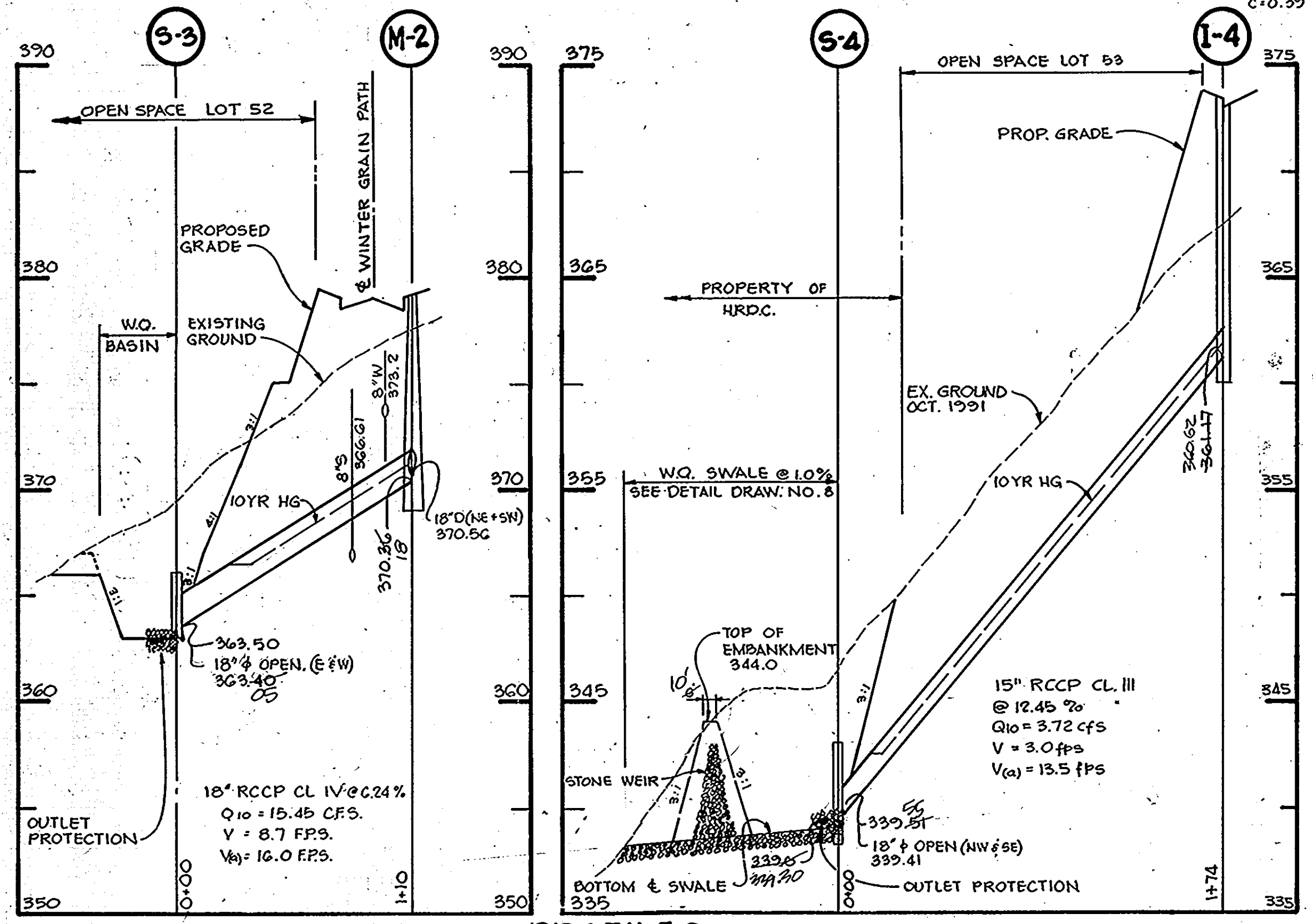
ADDITIONAL AS-BUILT INFORMATION
VILLAGE OF RIVER HILL SECTION 1, AREA 4
TAX MAP 35 P.O. PARCEL 22
5TH ELECTION DISTRICT HOWARD COUNTY, MD.
SCALE: AS SHOWN
SHEET 3A OF 10

STRUCTURE SCHEDULE

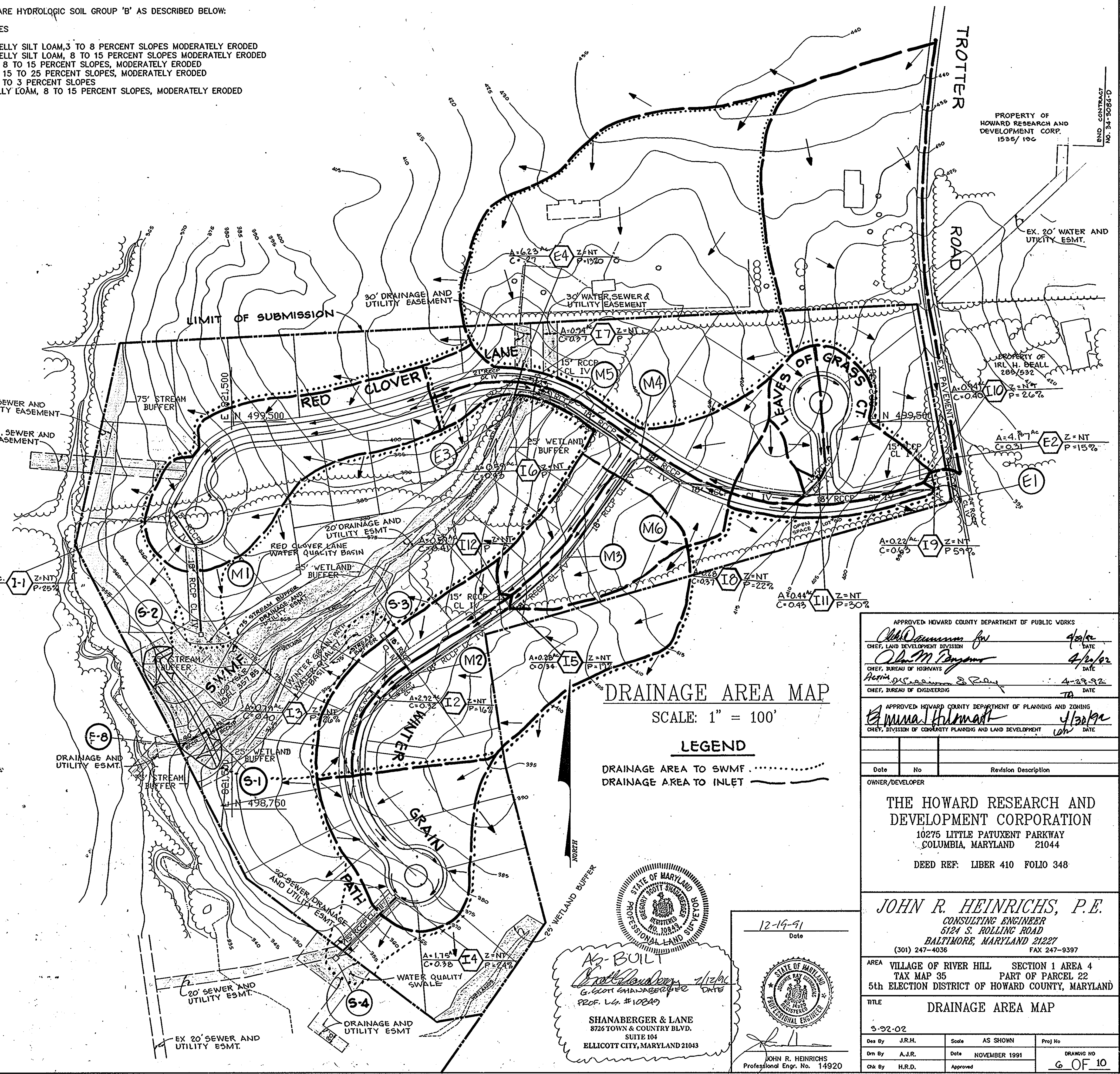
NO.	TYPE	LOCATION	INV. IN	INV. OUT	RM ON T.C. ELEV	REMARKS
I-1	A-5	1.92' RT OF LP STA 16+90 RED CLOVER LANE	---	362.00	371.95	H.C. STD. SD4.01
I-2	A-5	15.92' LT OF Q STA 7+11.11 WINTER GRAIN PATH	372.69	372.24	377.98	H.C. STD. SD4.01
I-3	A-5	15.92' RT OF Q STA 7+11.11 WINTER GRAIN PATH	---	373.99	377.98	H.C. STD. SD4.01
I-4	A-5	1.92' RT OF LP STA 11+30 WINTER GRAIN PATH	---	367.77	373.47	H.C. STD. SD4.01
I-5	A-5	15.92' LT OF Q STA 4+00 WINTER GRAIN PATH	384.94	384.34	390.42	H.C. STD. SD4.01
I-6	A-5	15.92' LT OF Q STA 8+83.33 RED CLOVER LANE	392.23	391.78	399.83	H.C. STD. SD4.01
I-7	A-5	15.92' RT OF Q STA 8+83.33 RED CLOVER LANE	---	392.37	399.83	H.C. STD. SD4.01
I-8	A-5	16.92' RT OF Q STA 3+11.11 RED CLOVER LANE	402.86	391.84	409.11	H.C. STD. SD4.01
I-9	A-5	16.92' LT OF Q STA 0+67 RED CLOVER LANE	393.39	393.84	398.94	H.C. STD. SD4.01
I-10	A-5	16.92' RT OF Q STA 0+67 RED CLOVER LANE	---	394.00	398.94	H.C. STD. SD4.01
I-11	A-5	13.92' LT OF Q STA 0+67 LEAVES OF GRASS COURT	---	403.30	409.85	H.C. STD. SD4.01
I-12	A-5	15.92' RT OF Q STA 4+00 WINTER GRAIN PATH	---	385.24	390.42	H.C. STD. SD4.01
M-1	4'-0" STD MH	1'-4" RT OF LP STA 17+68 RED CLOVER LANE	365.66	365.45	375.02	H.C. STD. G5.01
M-2	4'-0" STD MH	5'-5" RT OF Q STA 6+57 WINTER GRAIN PATH	370.58	370.35	378.57	H.C. STD. G5.01
M-3	4'-0" STD MH	13'-3" LT OF Q STA 2+58.54 WINTER GRAIN PATH	387.27	387.46	401.99	H.C. STD. G5.01
M-4	4'-0" STD MH	16.98' LT OF Q STA 6+44.51 RED CLOVER LANE	390.05	389.85	406.21	H.C. STD. G5.01
M-5	4'-0" STD MH	19.5' LT OF Q STA 8+10 RED CLOVER LANE	391.45	391.25	400.81	H.C. STD. G5.01
M-6	5'-0" MH	20.5' LT OF Q STA 5+51.96 RED CLOVER LANE	390.26	390.57	411.21	H.C. STD. G5.11
E-1	24" CONC. END SECT.	18' LT OF Q STA 0+32 RED CLOVER LANE	393.50	393.37	---	H.C. STD. SD5.51
E-2	24" CONC. END SECT.	33' RT OF Q STA 0+26 RED CLOVER LANE	395.13	395.00	---	H.C. STD. SD5.51
E-3	24" CONC. END SECT.	22' LT OF Q STA 9+37 RED CLOVER LANE	388.15	387.81	---	H.C. STD. SD5.51
E-4	24" CONC. END SECT.	39' RT OF Q STA 9+16 WINTER GRAIN PATH	393.50	393.84	---	H.C. STD. SD5.51
S-2	30" CONC. INLET	20' RT OF Q STA 17+85 RED CLOVER LANE	357.73	357.63	960.0	H.C. STD. SD4.11
S-3	30" CONC. INLET	20' RT OF Q STA 6+57 WINTER GRAIN PATH	363.50	363.40	960.0	H.C. STD. SD4.11
S-4	30" CONC. INLET	SEE PLAN	339.51	339.41	943.37	H.C. STD. SD4.11
E-8	30" CONC. END SECT.	SEE PLAN	343.23	343.00	---	H.C. STD. SD5.51
S-1	MODIFIED A-10	SEE PLAN	346.00	344.85	357.40	---

ALL ON-SITE SOILS ARE HYDROLOGIC SOIL GROUP 'B' AS DESCRIBED BELOW:
 LEGEND OF SOIL TYPES
 CgB2 CHESTER GRAVELLY SILT LOAM, 3 TO 8 PERCENT SLOPES MODERATELY ERODED
 CgC2 CHESTER GRAVELLY SILT LOAM, 8 TO 15 PERCENT SLOPES MODERATELY ERODED
 GIC2 GLENELG LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED
 GID2 GLENELG LOAM, 15 TO 25 PERCENT SLOPES, MODERATELY ERODED
 MIA MANOR LOAM, 0 TO 3 PERCENT SLOPES
 MgC2 MANOR GRAVELLY LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED

ALL STORM DRAIN BEDDING SHALL BE CLASS 'C' UNLESS OTHERWISE NOTED
 ALL STORM DRAIN PIPE SHALL MEET ASTM C361 SPECIFICATIONS



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



DRAINAGE AREA MAP

SCALE: 1" = 100'

LEGEND

DRAINAGE AREA TO SWMF
 DRAINAGE AREA TO INLET

AS-BUILT
 SHANABERGER & LANE
 8726 TOWN & COUNTRY BLVD.
 SUITE 104
 ELLICOTT CITY, MARYLAND 21043

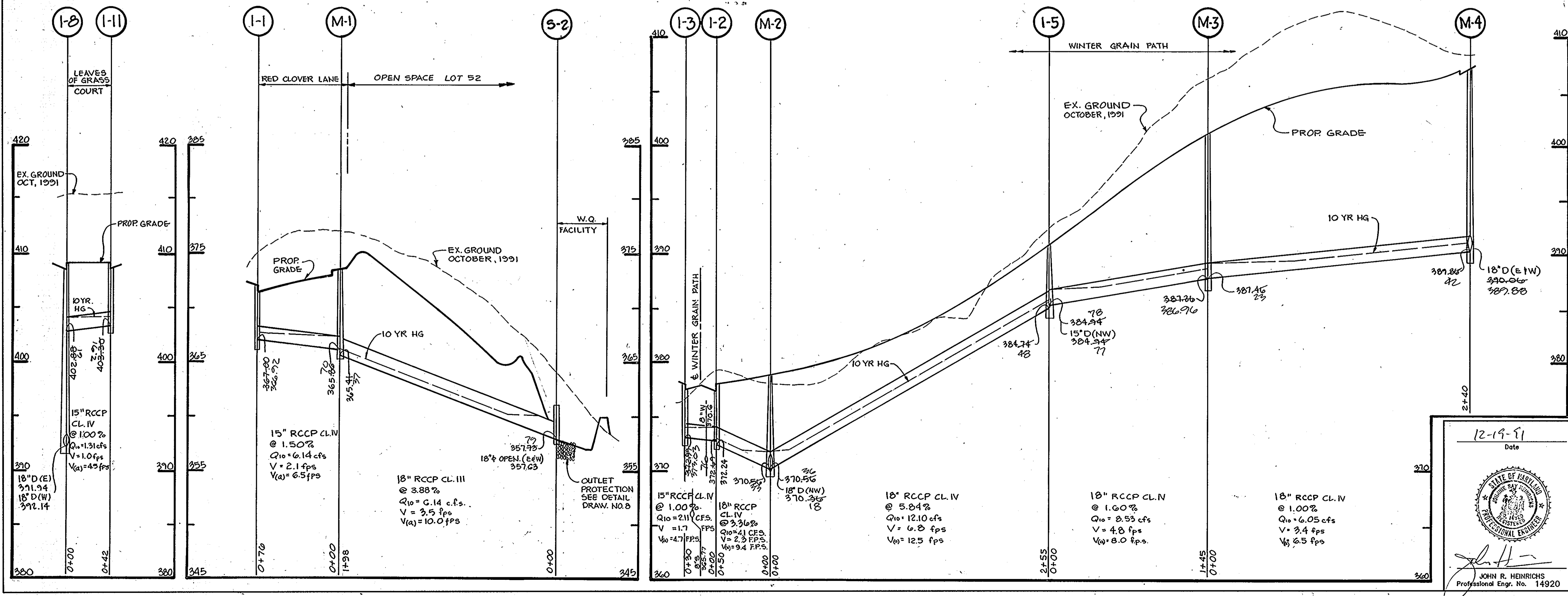
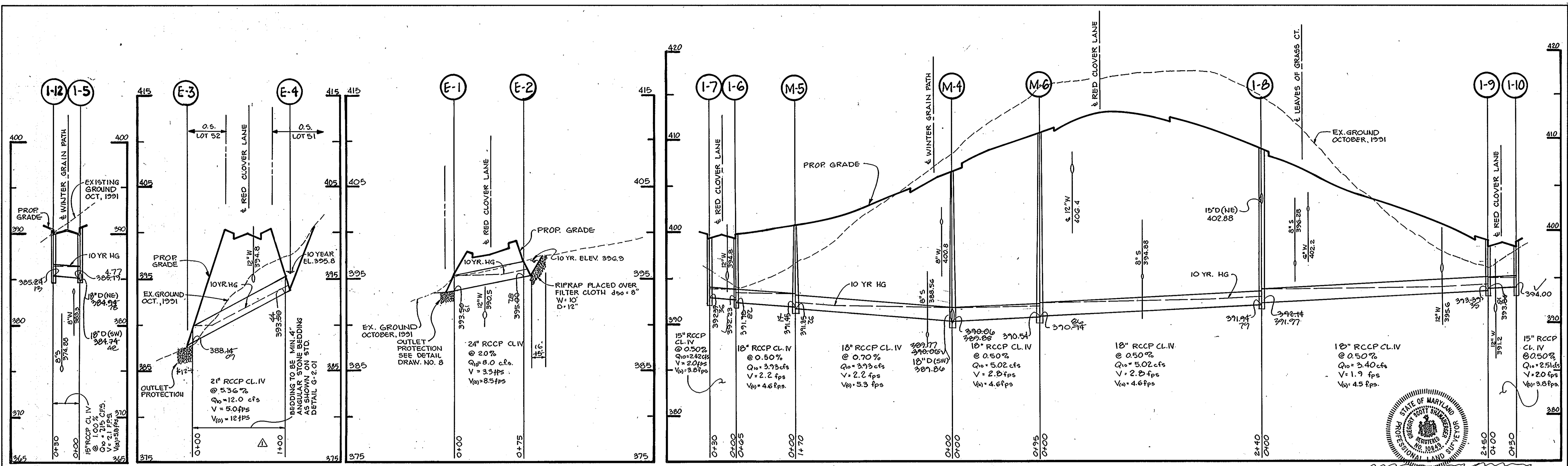
12-19-91
 JOHN R. HEINRICHS
 Professional Engr. No. 14920

APPROVED HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 [Signature] 4/1/92
 CHIEF, LAND DEVELOPMENT DIVISION
 [Signature] 4/1/92
 CHIEF, BUREAU OF HIGHWAYS
 [Signature] 4-29-92
 CHIEF, BUREAU OF ENGINEERING
 APPROVED HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 4/30/92
 CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT

Date No Revision Description
 OWNER/DEVELOPER
THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MARYLAND 21044
 DEED REF: LIBER 410 FOLIO 348
JOHN R. HEINRICHS, P.E.
 CONSULTING ENGINEER
 5124 S. ROLLING ROAD
 BALTIMORE, MARYLAND 21227
 (301) 247-4036 FAX 247-9397
 AREA VILLAGE OF RIVER HILL SECTION 1 AREA 4
 TAX MAP 35 PART OF PARCEL 22
 5th ELECTION DISTRICT OF HOWARD COUNTY, MARYLAND
 TITLE DRAINAGE AREA MAP
 3-92-02
 Des By J.R.H. Scale AS SHOWN Proj No
 Dm By A.J.R. Date NOVEMBER 1991 DRAWING NO
 Ck By H.R.D. Approved G OF 10

1487

AS-BUILT F.92.87



AS-BUILT
 G. LOT SHANABARGER
 PROF. L.C. # 100249
 SHANABARGER & LANE
 8725 TOWN & COUNTRY BLVD.
 SUITE 104
 ELLICOTT CITY, MARYLAND 21043

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS	
<i>Chad Lamm</i>	4/28/92
CHIEF, LAND DEVELOPMENT DIVISION	DATE
<i>John M. Pongora</i>	4/28/92
CHIEF, BUREAU OF HIGHWAYS	DATE
<i>John R. Heinrichs</i>	4-29-92
CHIEF, BUREAU OF ENGINEERING	DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING	
<i>Anna H. Hermal</i>	4/30/92
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT	DATE

3-25-92	REVIS	MD ENR/WRA COMMENTS 3-4-92
Date	No	Revision Description

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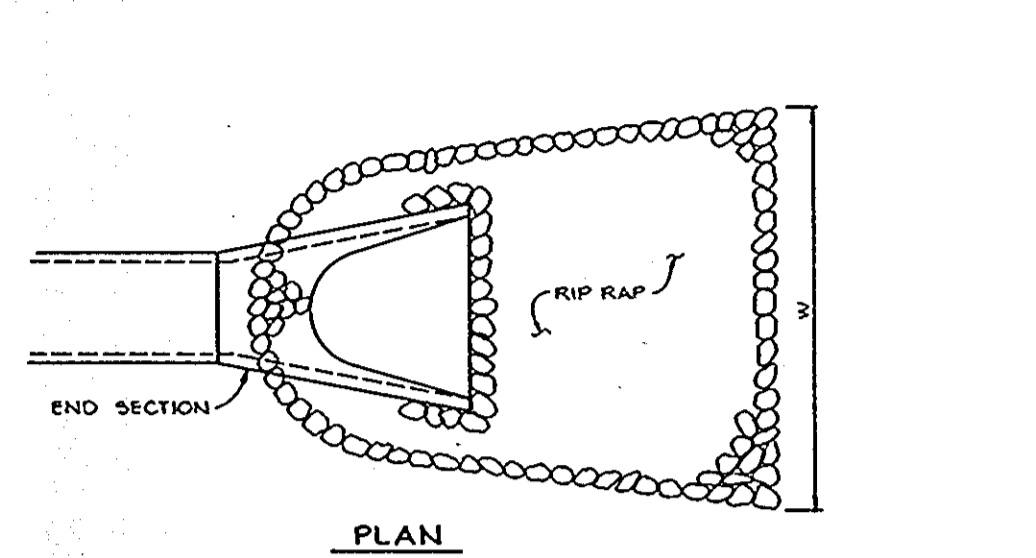
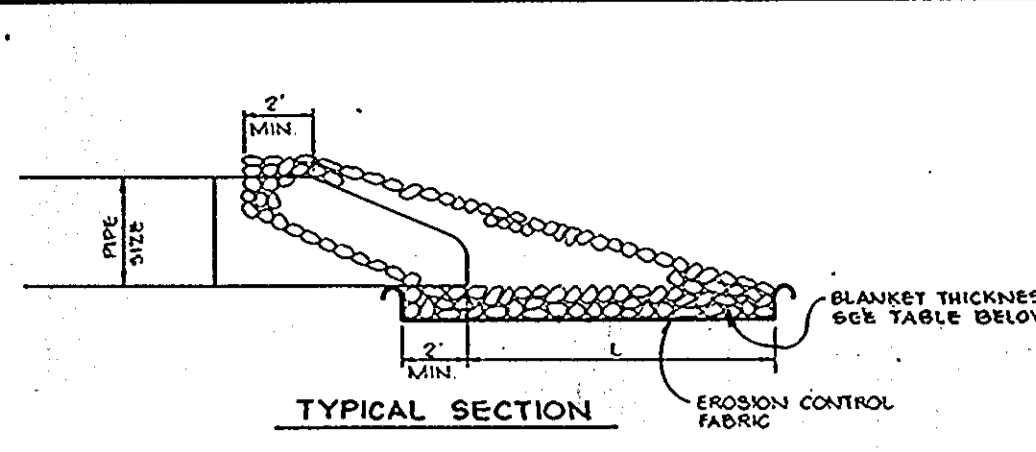
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 (301) 247-4036 FAX 247-9397

12-19-91
 Date

 JOHN R. HEINRICHS
 Professional Engr. No. 14920

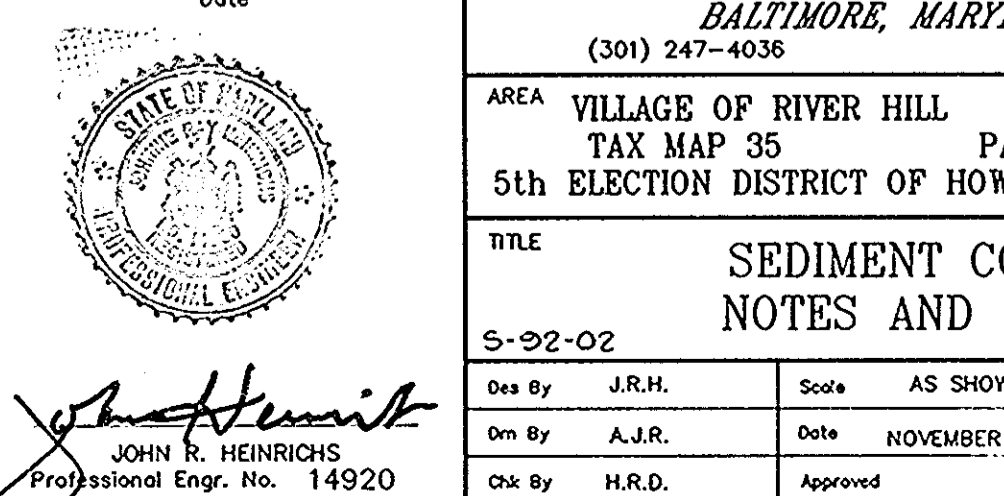
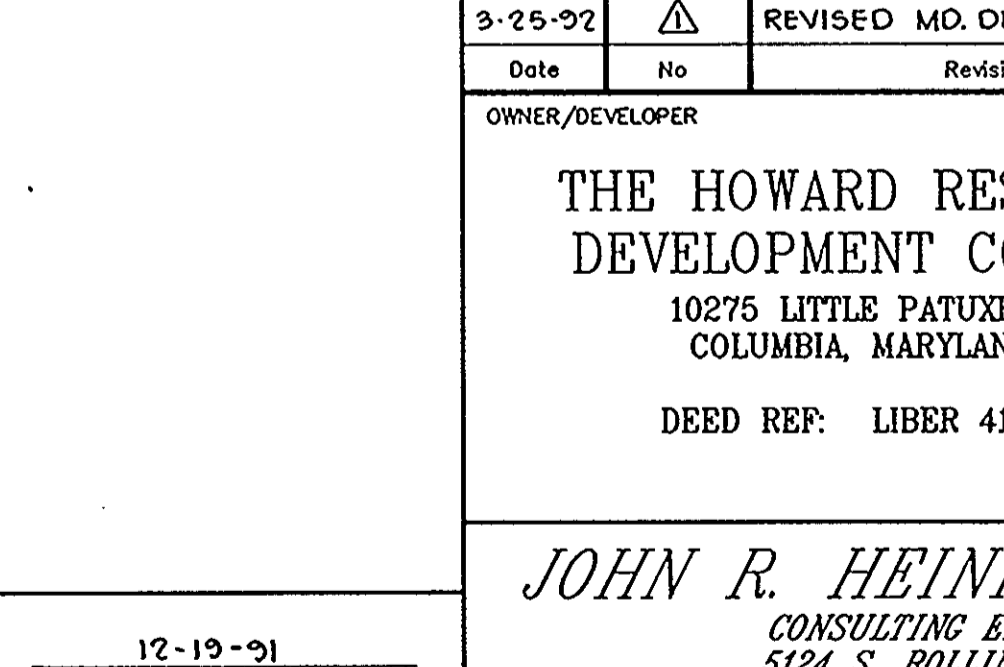
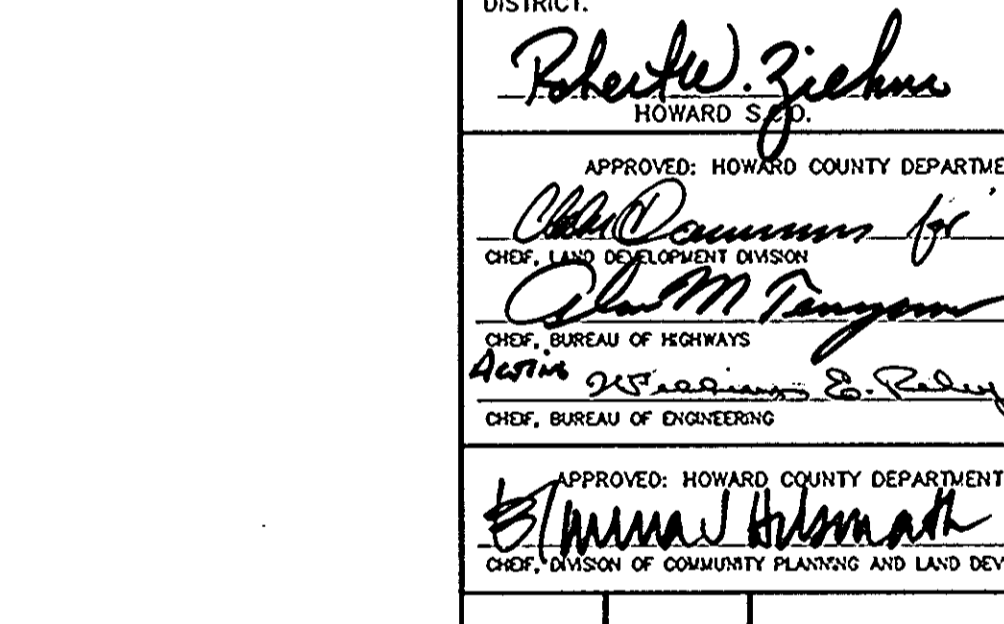
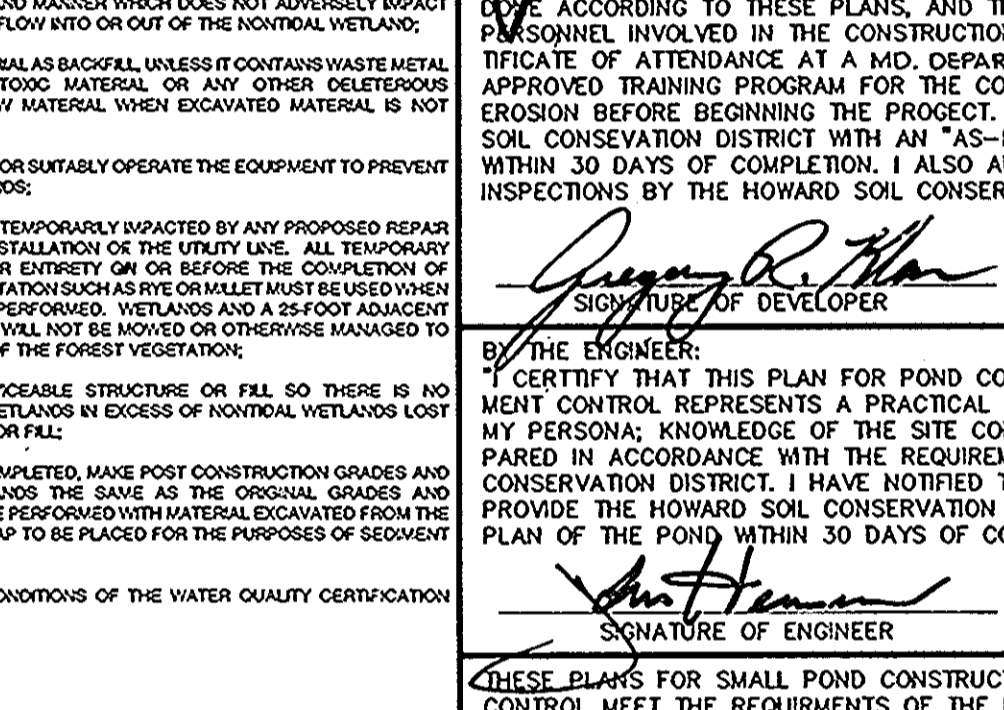
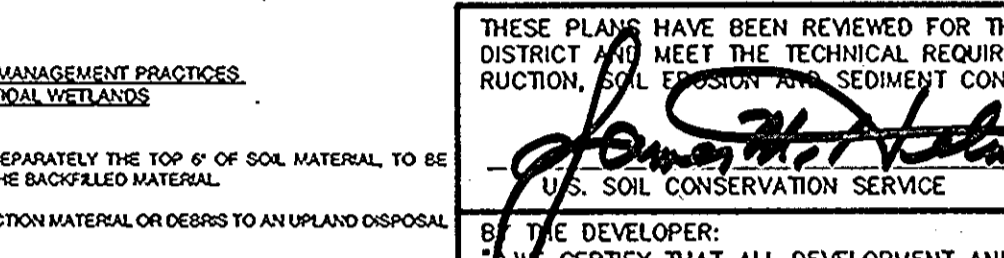
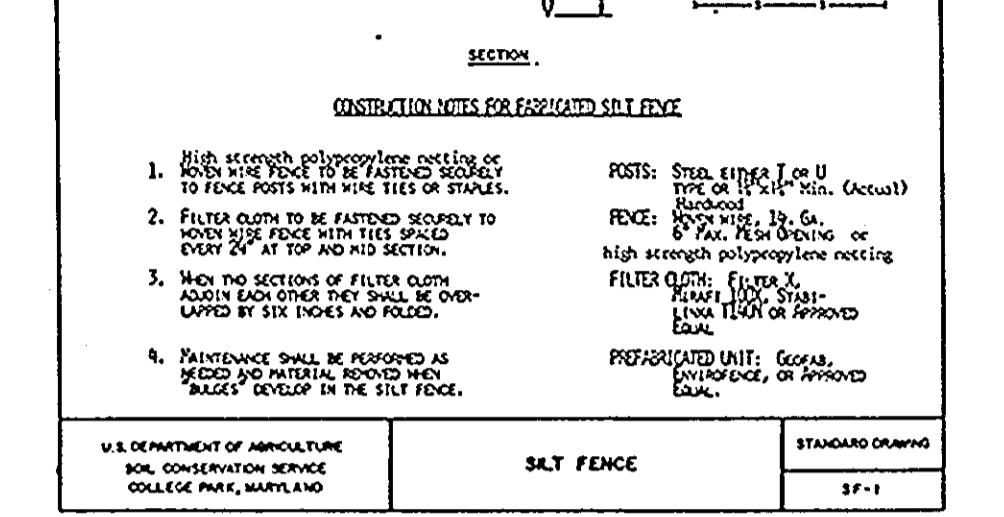
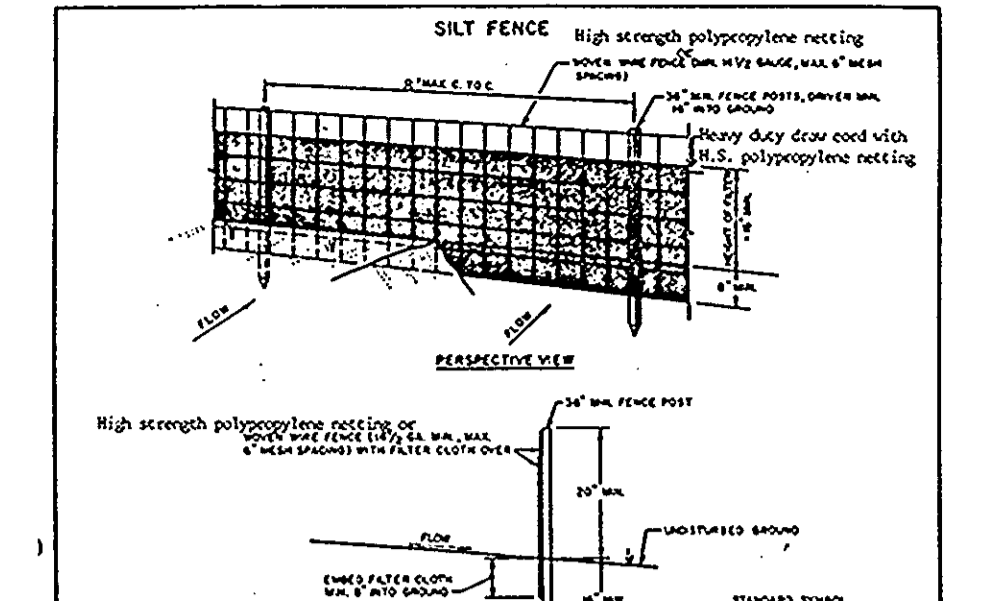
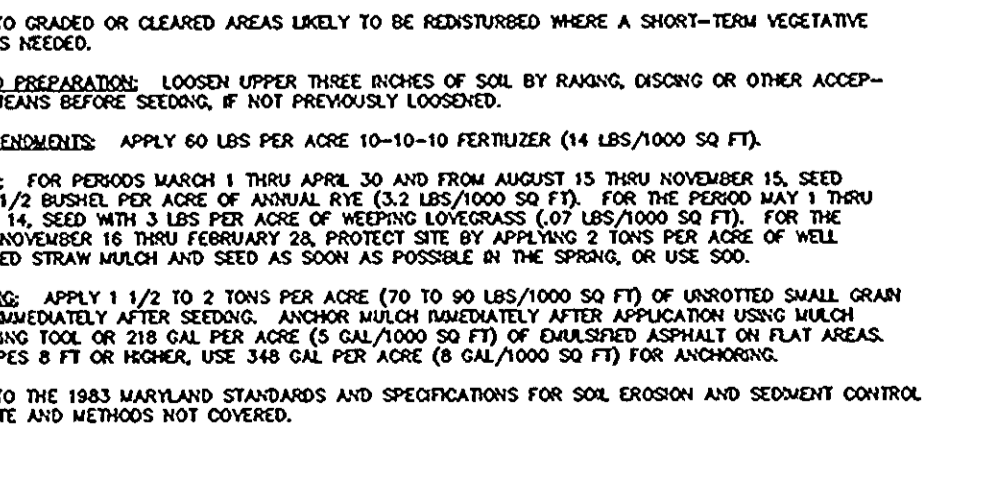
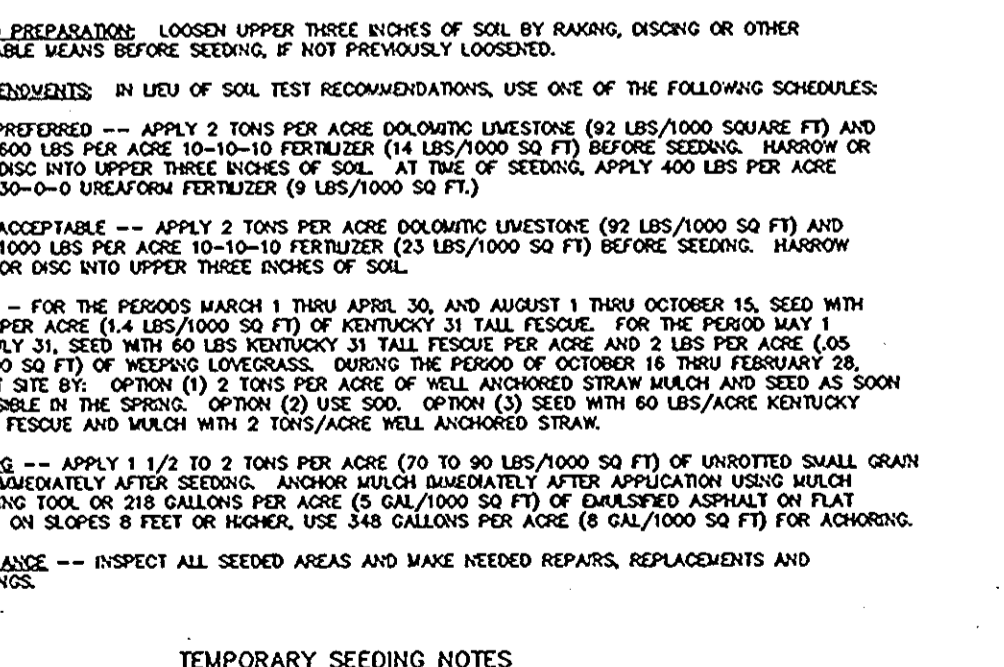
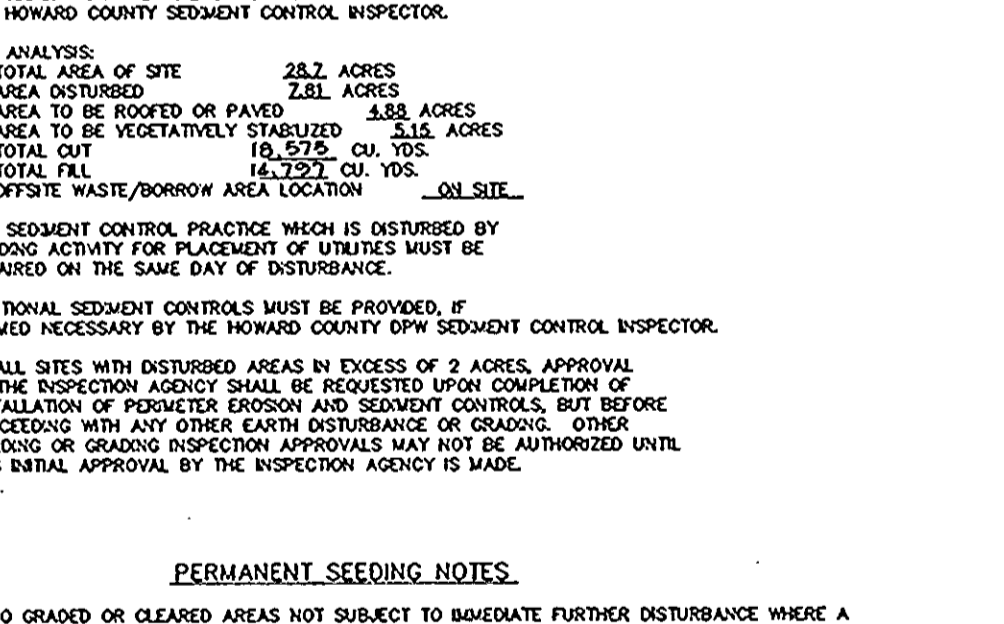
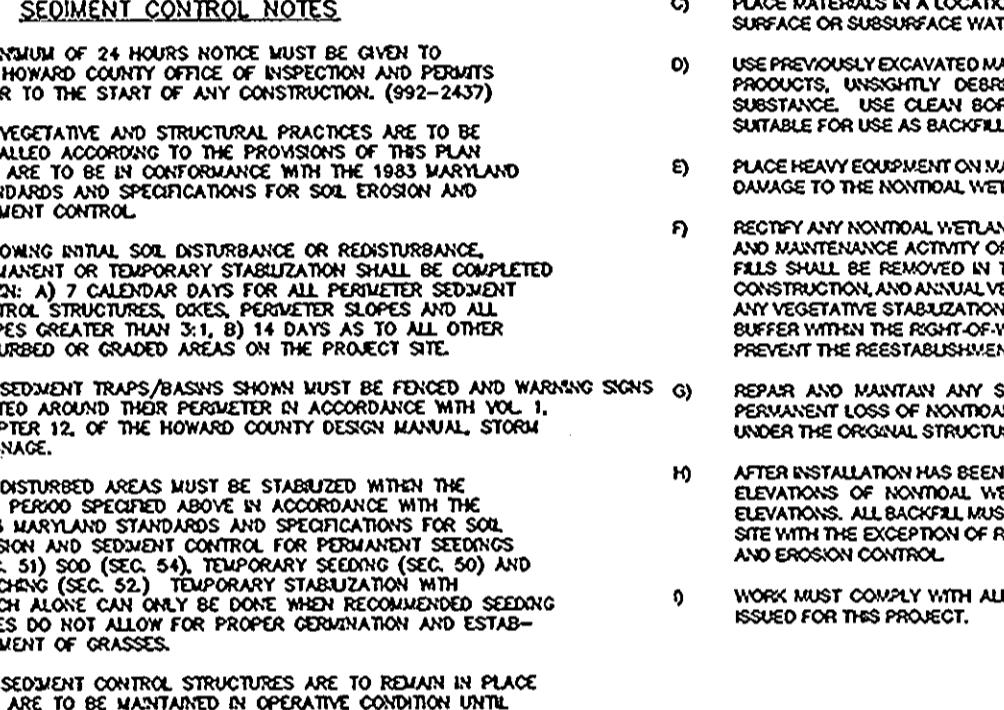
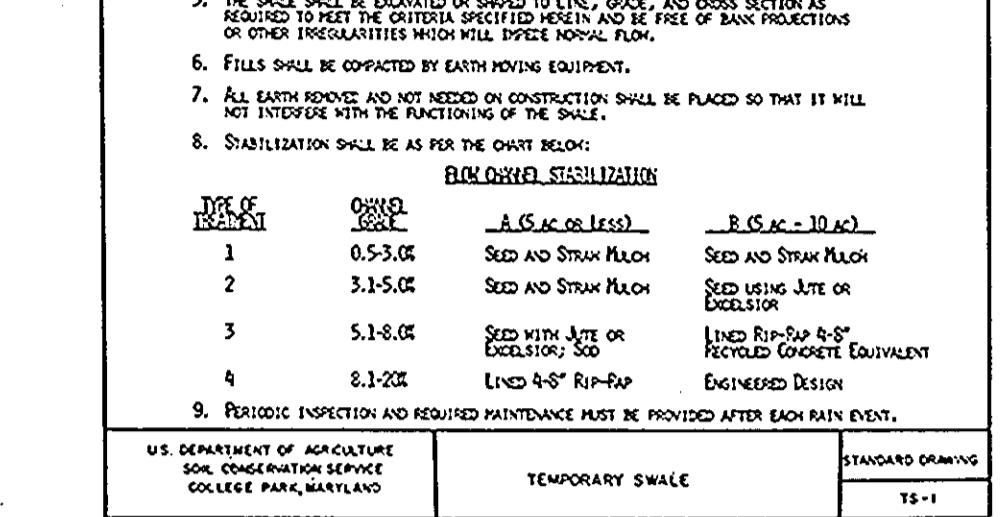
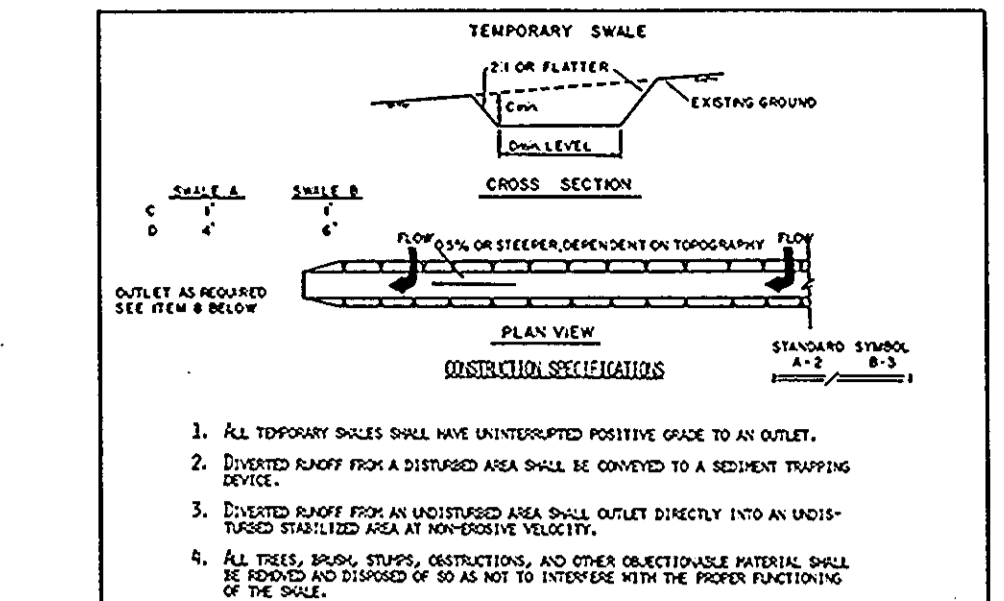
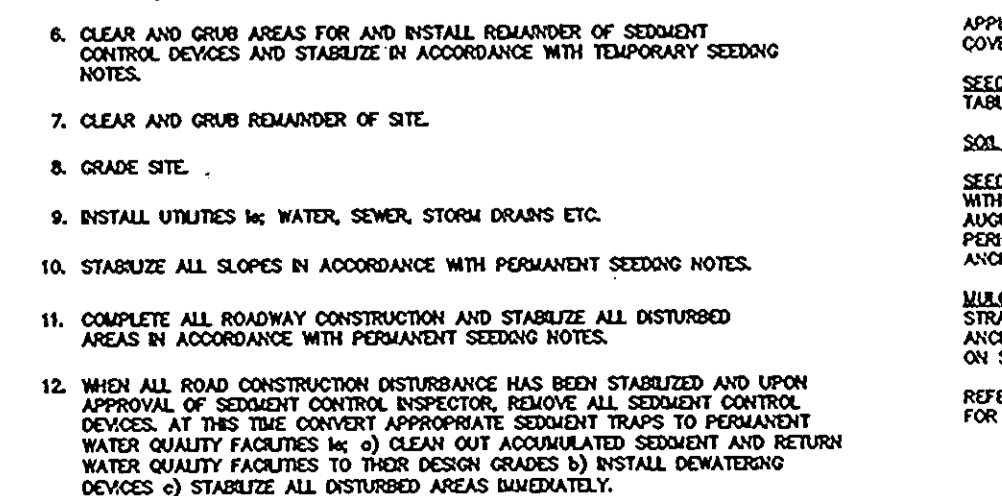
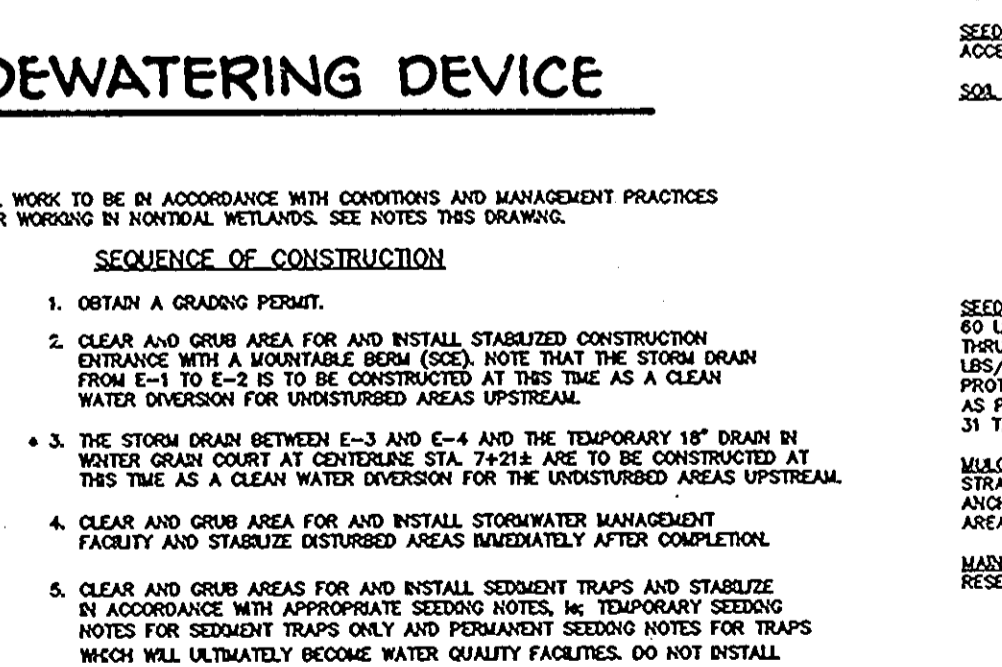
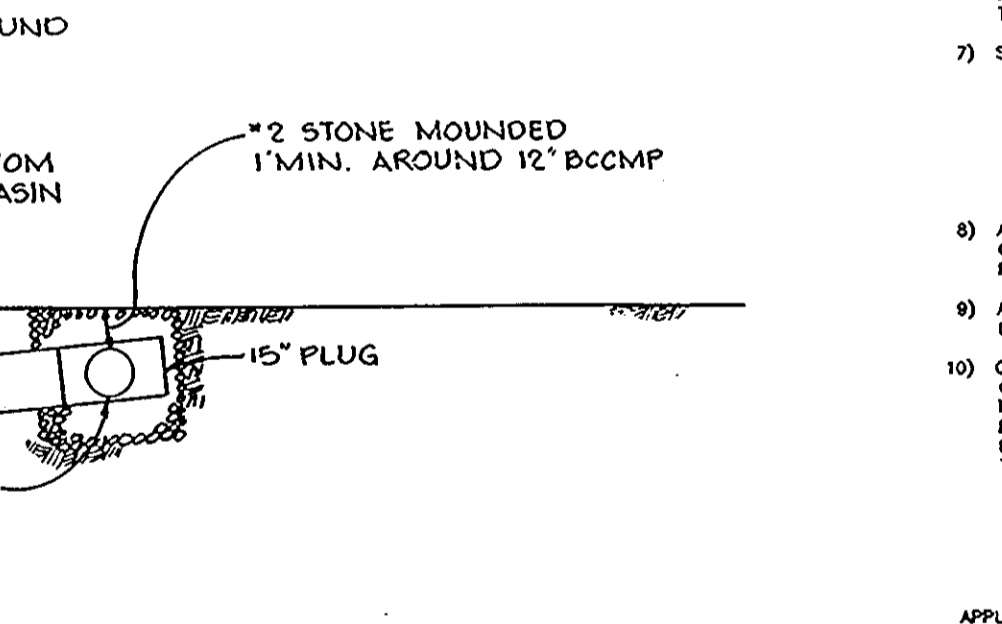
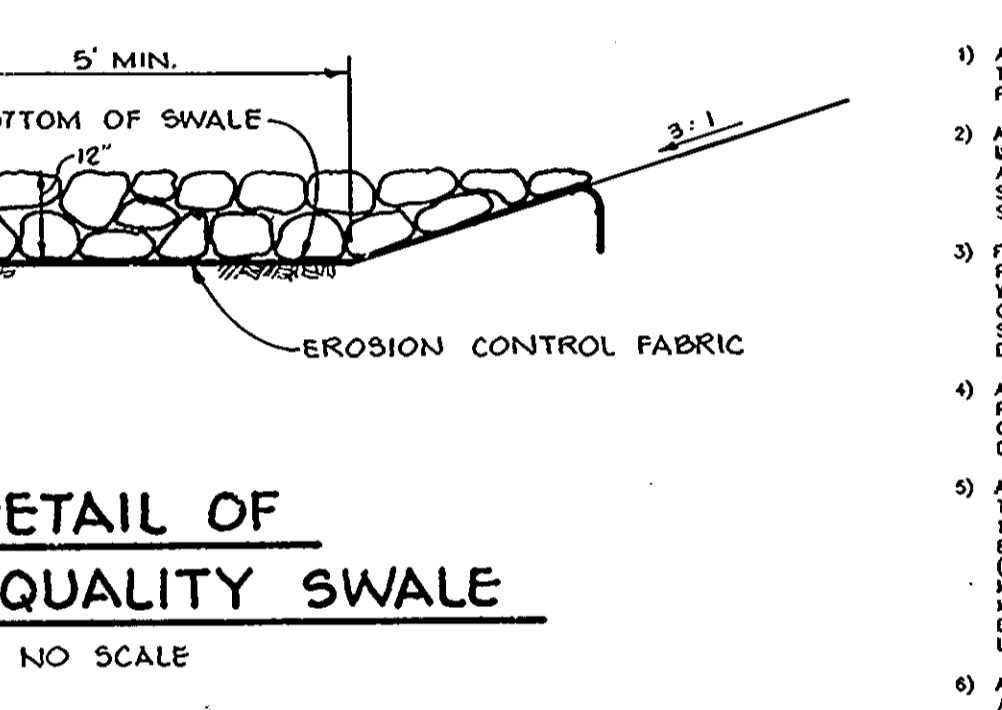
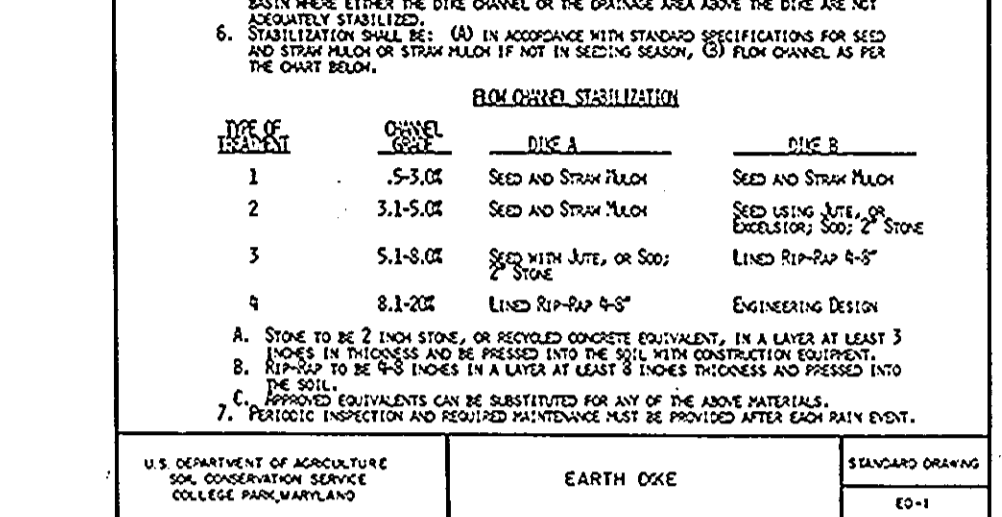
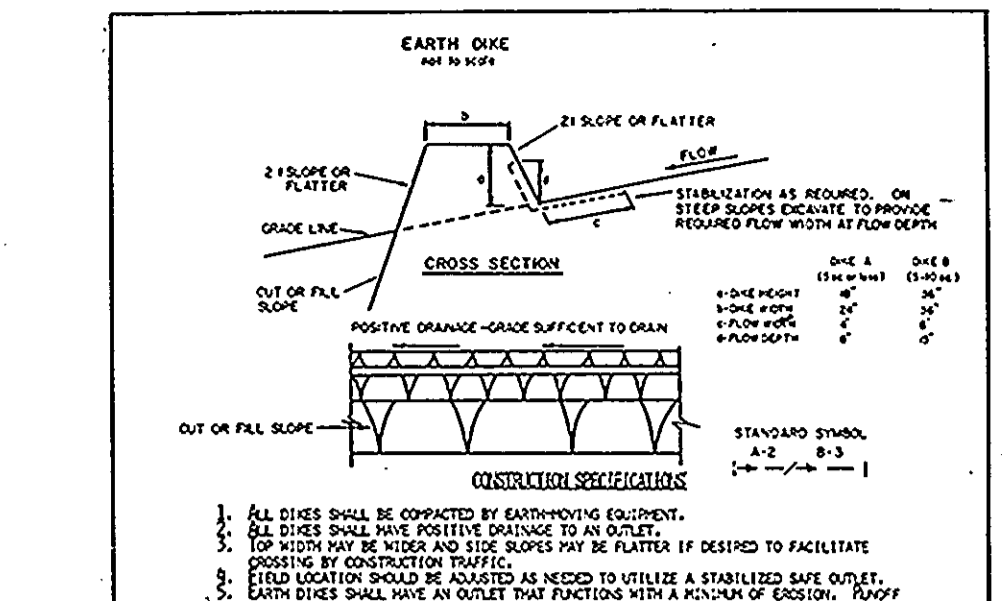
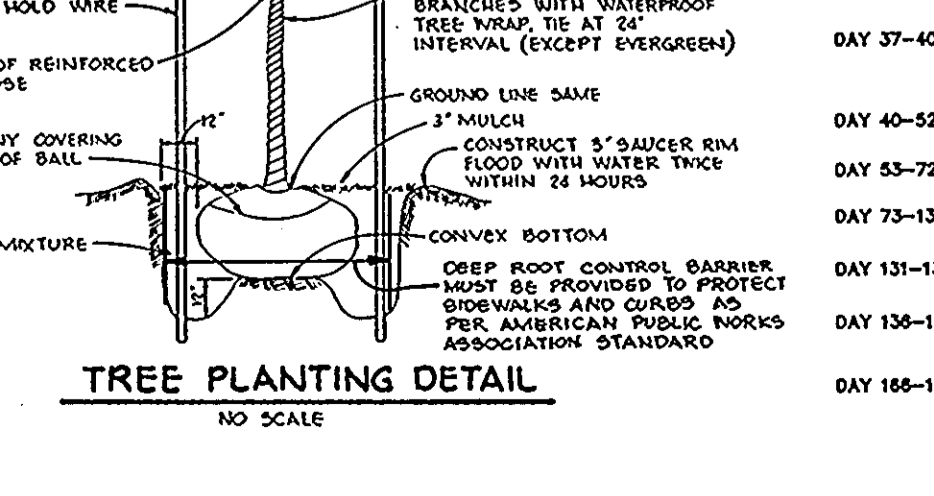
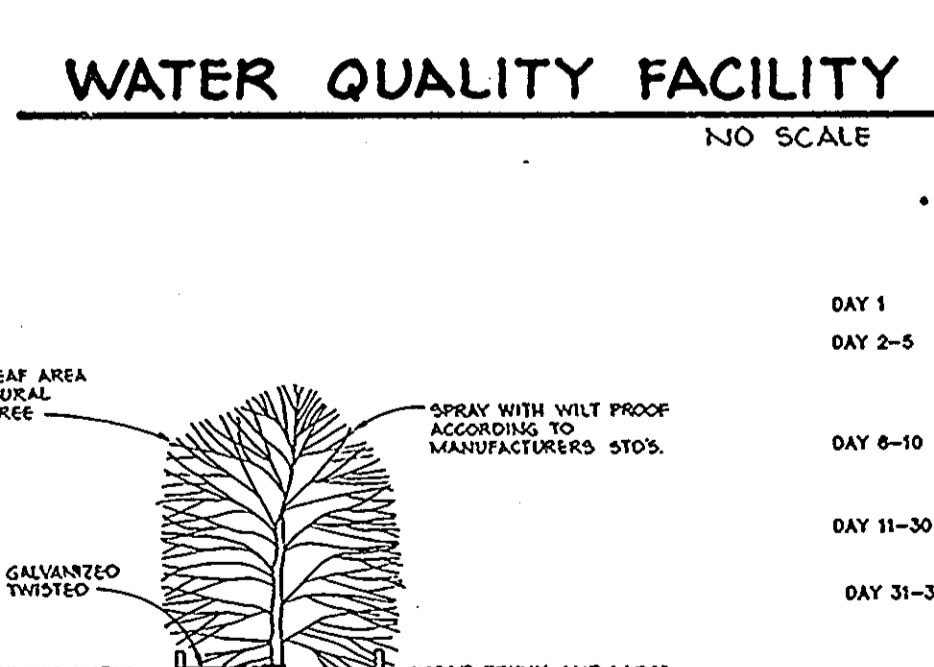
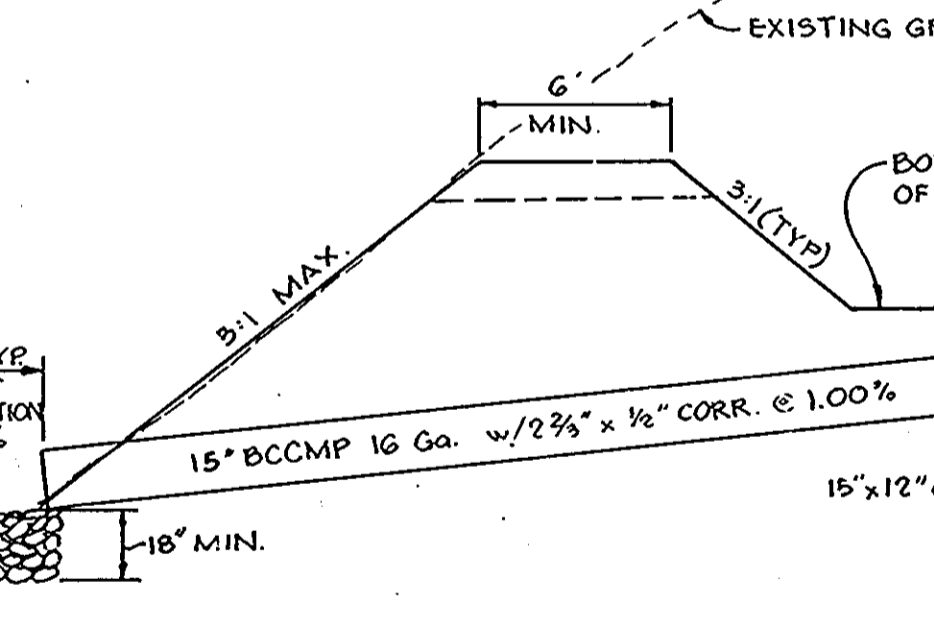
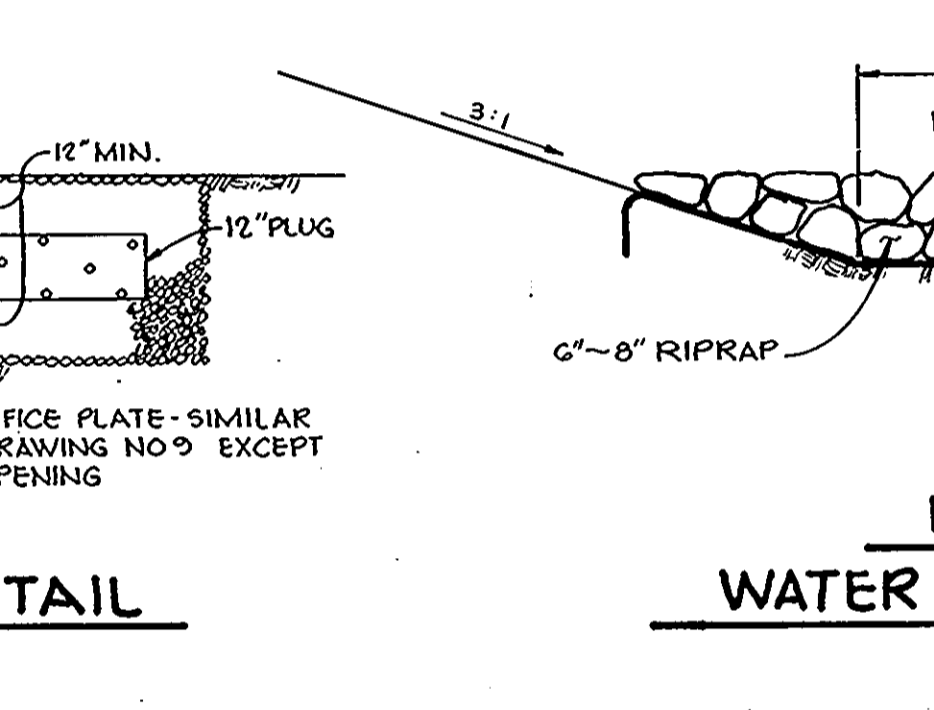
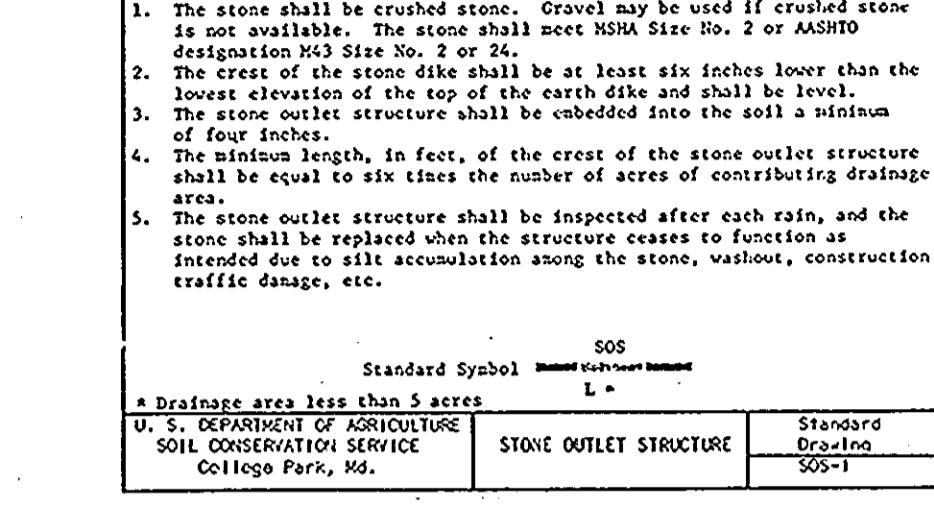
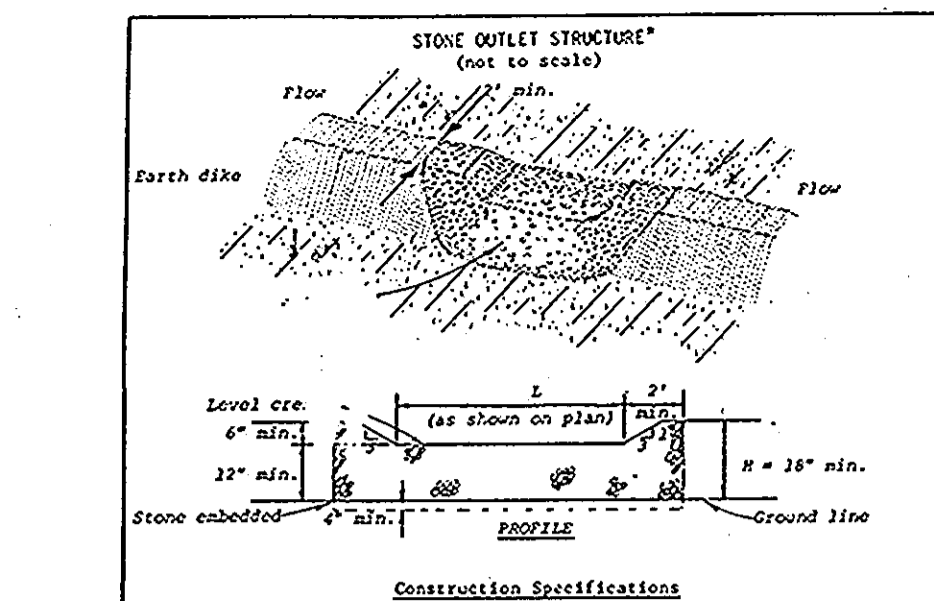
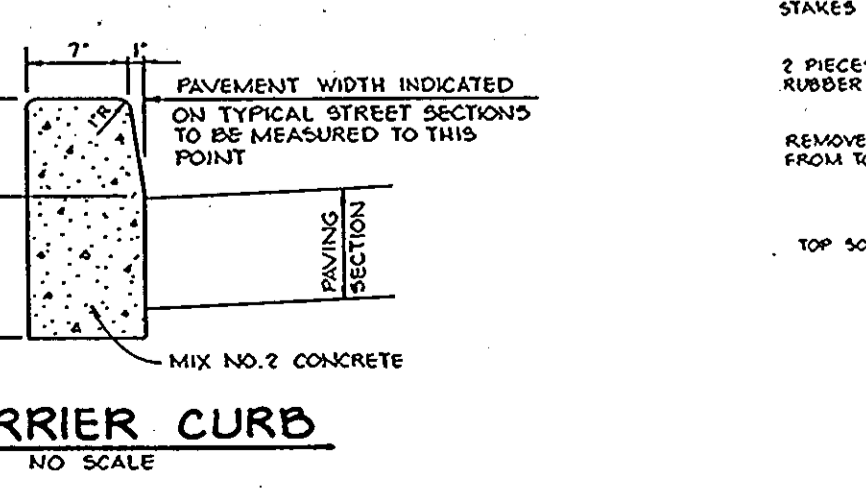
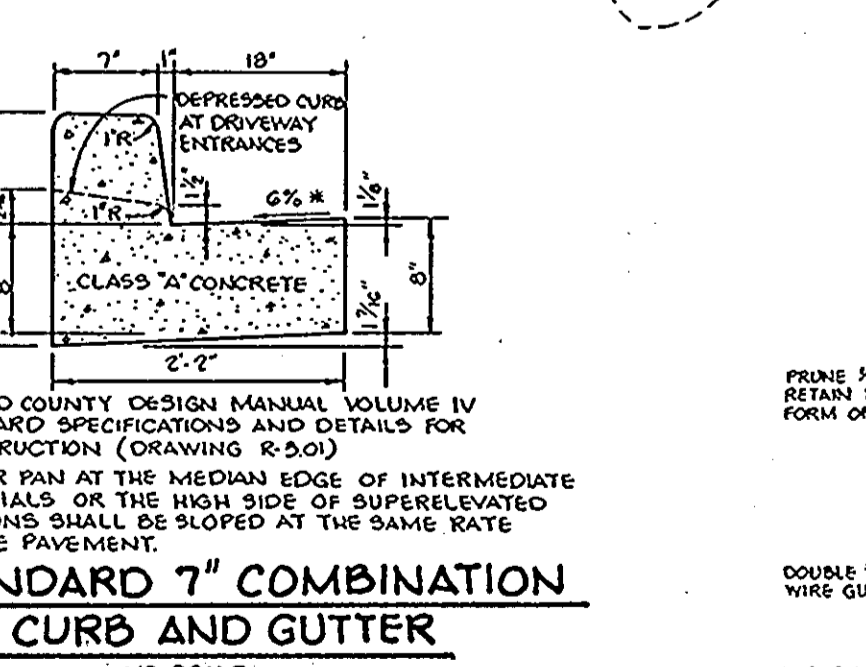
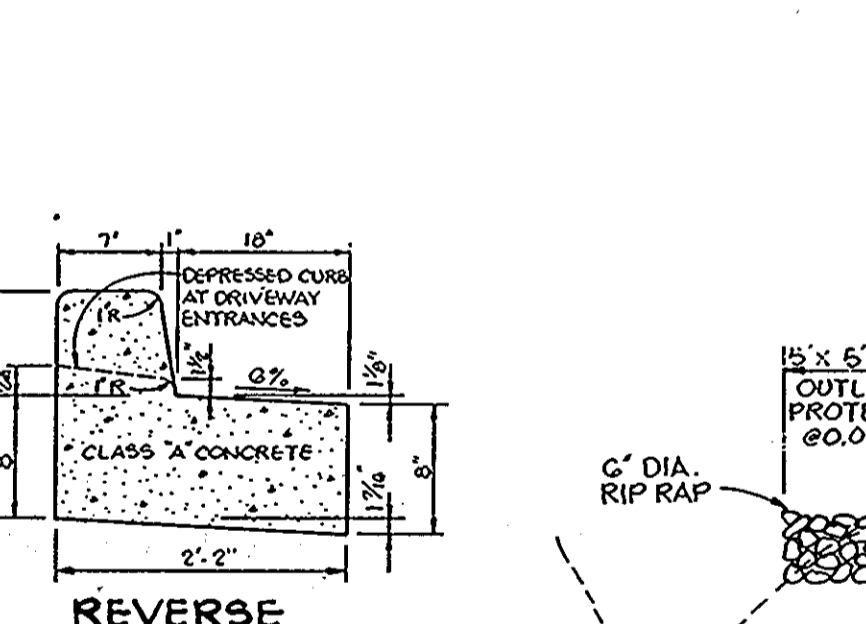
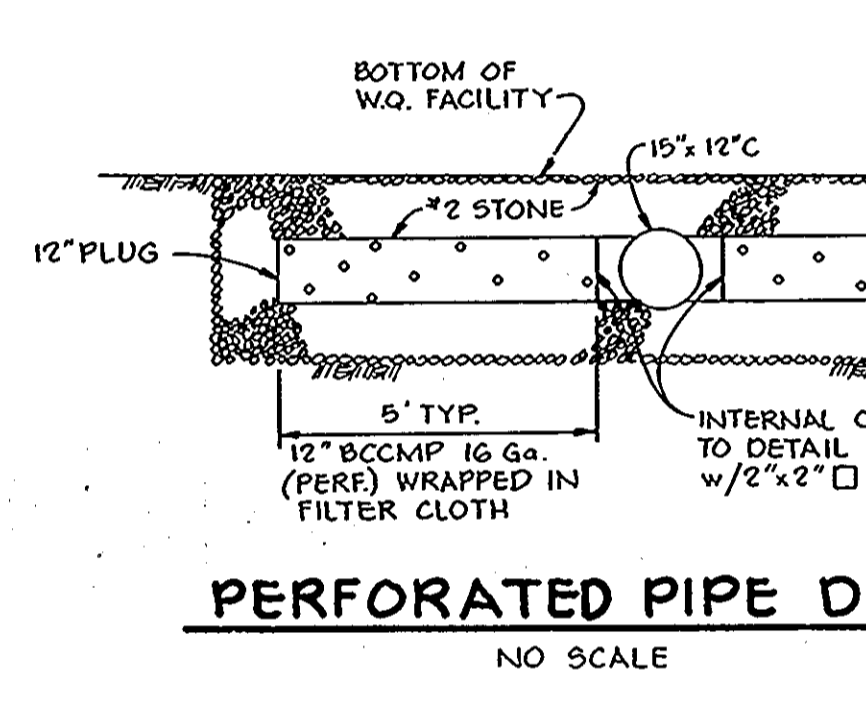
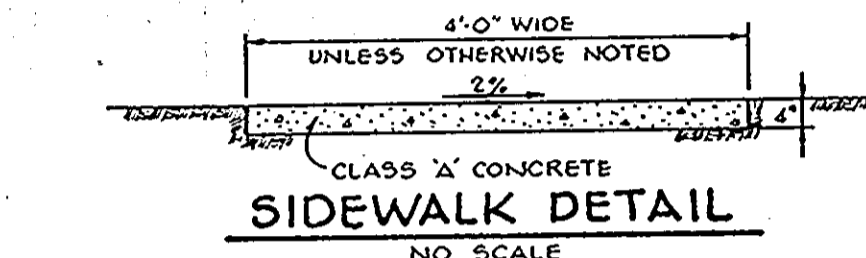
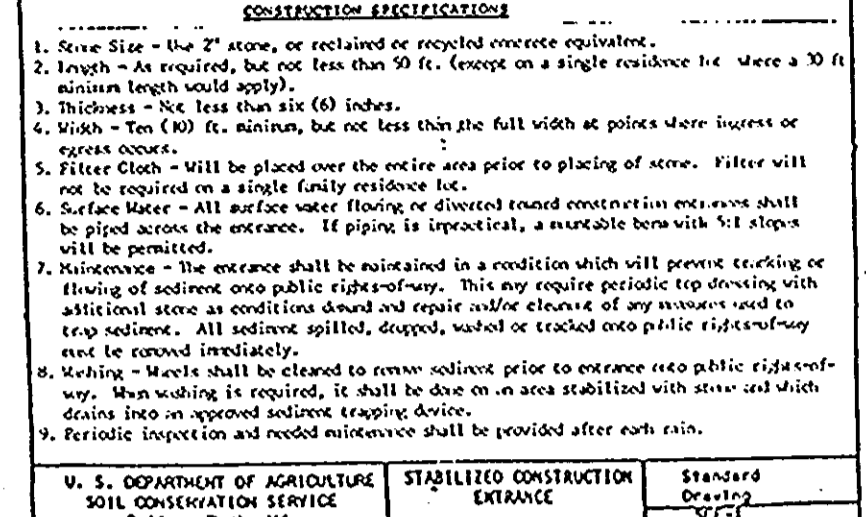
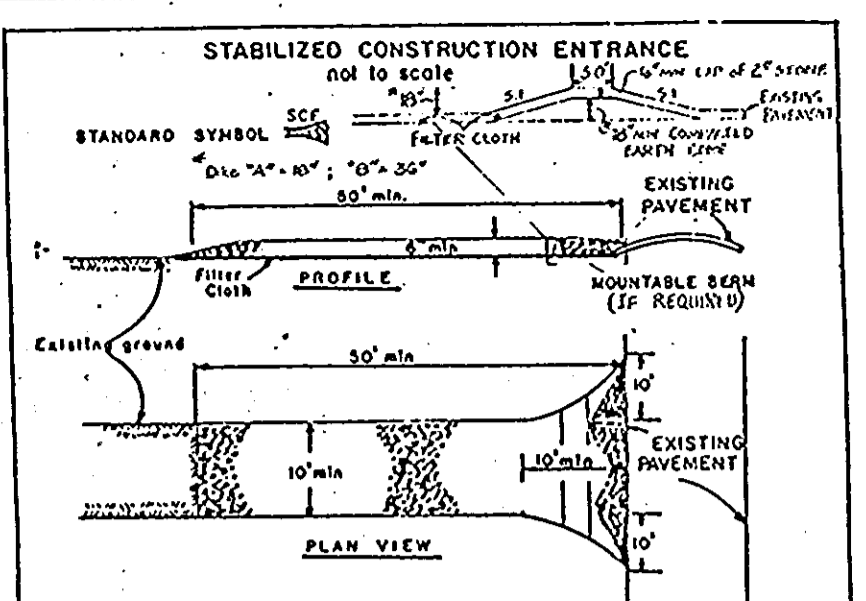
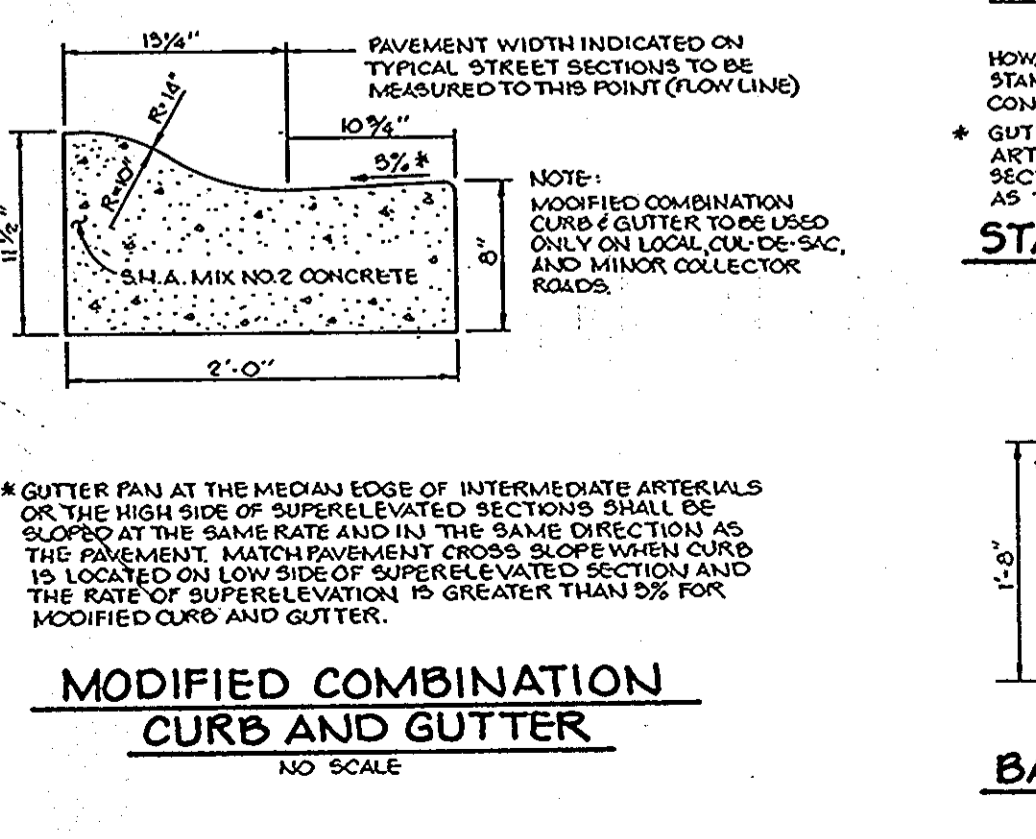
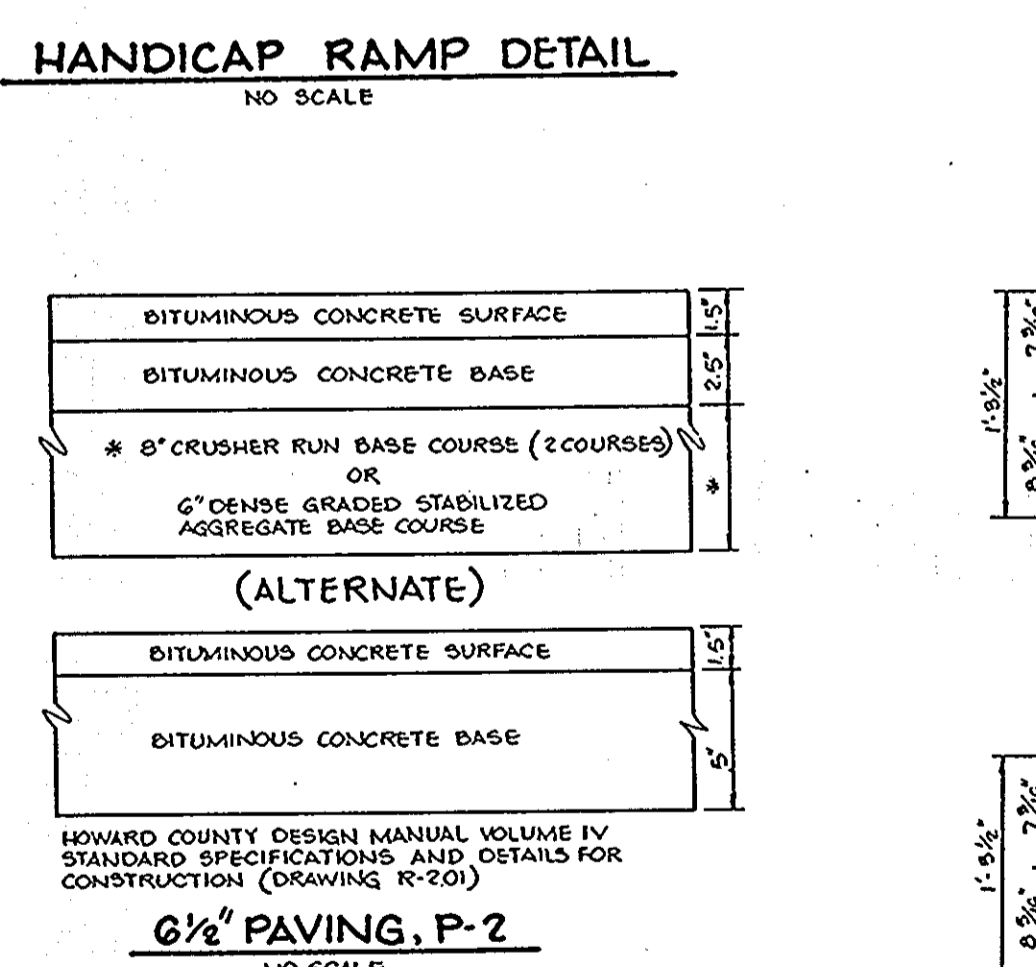
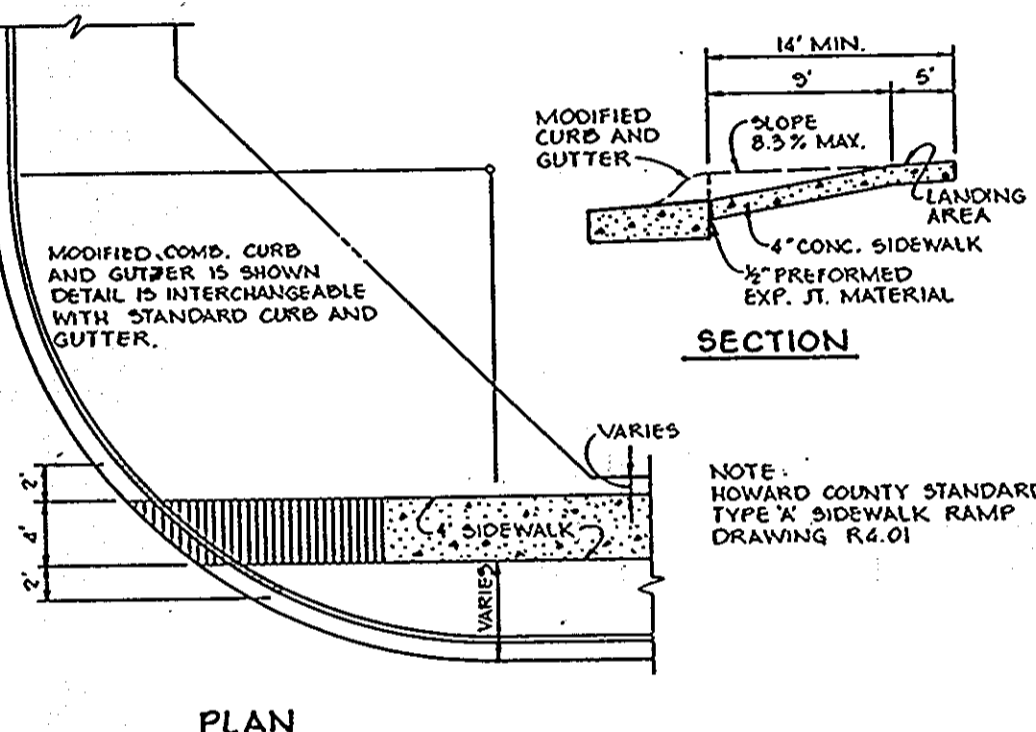
AREA VILLAGE OF RIVER HILL SECTION 1 AREA 4		
TAX MAP 35 PART OF PARCEL 22		
5th ELECTION DISTRICT OF HOWARD COUNTY, MARYLAND		
TITLE STORM DRAIN PROFILES		
S-92-02	Scale AS SHOWN	Proj No
Des By J.R.H.	Date NOVEMBER 1991	DRAWING NO
Chk By H.R.D.	Approved	7 OF 10

1487



OUTLET PROTECTION
NO SCALE

NO	PIPE SIZE	L'	W'	D	DEPTH
E-1	24"	13'	15'	6"	14"
E-2	21"	16'	18'	8"	20"
E-3	18"	6'	8'	6"	14"
E-4	15"	8'	10'	6"	14"
E-5	30"	9'	33.5'	15'	32"



CONDITIONS AND MANAGEMENT PRACTICES IN NONWETLANDS

- STRIP, STOCKPILE AND MAINTAIN SEPARATELY THE TOP 6" OF SOIL MATERIAL TO BE REPLACED AS THE TOP LAYER OF THE BACKFILLED MATERIAL.
- REMOVE EXCESS FILL OR CONSTRUCTION MATERIAL OR DEBRIS TO AN UPLAND DISPOSAL AREA.
- PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF THE NONWETLAND WETLAND.
- USE PREVIOUSLY EXCAVATED MATERIALS AS BACKFILL, UNLESS IT CONTAINS WASTES, METALS, TOXIC MATERIALS, OR OTHER DELETTEROUS MATERIALS. USE CLEAN BORROW MATERIAL WHEN EXCAVATED MATERIAL IS NOT SUITABLE FOR USE AS BACKFILL.
- PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO THE NONWETLAND WETLANDS.
- RECTIFY ANY NONWETLAND WETLANDS TEMPORARILY IMPACTED BY ANY PROPOSED REPAIR AND MAINTENANCE ACTIVITY OR INSTALLATION OF THE UTILITY LINE. ALL TEMPORARY FILLS SHALL BE REMOVED IN THEIR ENTIRETY ON OR BEFORE THE COMPLETION OF CONSTRUCTION AND ORIGINAL VEGETATION SHALL BE REINSTALLED OR REPLACED WITH ANY VEGETATIVE STABILIZATION IS REQUIRED. WETLANDS AND A 5-FOOT ADJACENT BUFFER WITHIN THE RIGHT-OF-WAY SHALL NOT BE MOVED OR OTHERWISE MANAGED TO PREVENT THE REESTABLISHMENT OF THE FOREST VEGETATION.
- REPAIR AND MAINTAIN ANY SERVICABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NONWETLAND WETLANDS IN EXCESS OF NONWETLANDS LOST UNDER THE ORIGINAL STRUCTURE OR FILL.
- AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST CONSTRUCTION GRADES AND ELEVATIONS. ALL BACKFILL MUST BE PERFORMED WITH MATERIAL EXCAVATED FROM THE SITE WITH THE EXCEPTION OF RRPAZ TO BE PLACED FOR THE PURPOSES OF SEDIMENT AND EROSION CONTROL.
- WORK MUST COMPLY WITH ALL CONDITIONS OF THE WATER QUALITY CERTIFICATION ISSUED FOR THIS PROJECT.

SEEDING CONTROL NOTES

- A MINIMUM OF 24 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY OFFICE OF INSPECTION AND PERMITS PRIOR TO THE START OF ANY CONSTRUCTION. (992-2437)
- ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
- FOLLOWING INITIAL SOIL DISTURBANCE OR RESTORATION, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN 7 CALENDAR DAYS FOR ALL PERMITS. SEDIMENT CONTROL STRUCTURES, CURBS, PROTECTED SLOPES AND SLOPES GREATER THAN 3:1, 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS THROUGHOUT THE SITE.
- ALL SEDIMENT TRAPS/BASINS SHALL 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 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN 7 CALENDAR DAYS FOR ALL PERMITS. SEDIMENT CONTROL STRUCTURES, CURBS, PROTECTED SLOPES AND SLOPES GREATER THAN 3:1, 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS THROUGHOUT THE SITE.
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PROVISION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- SOIL ANALYSES:
TOTAL AREA OF SITE: 28.7 ACRES
AREA TO BE GRADED OR PAVED: 3.88 ACRES
AREA TO BE VEGETATIVELY STABILIZED: 3.14 ACRES
TOTAL CUT: 18,572 CU. YDS.
TOTAL FILL: 14,197 CU. YDS.
OFFSITE WASTE/BORROW AREA LOCATION: ON SITE
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY OPEN SEDIMENT CONTROL INSPECTOR.
- ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE SEDIMENT CONTROL PLAN SHALL BE OBTAINED PRIOR TO INSTALLATION OF PERMITS. EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING, OTHER MEASURES OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.

PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO BAREMATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LIVED VEGETATIVE COVER IS NEEDED.

SEEDING PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAVING, DISING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSED.

SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES:

- 1) PREFERRED --- APPLY 2 TONS PER ACRE DOLOMITE LIMESTONE (90 LBS/1000 SQ FT) AND 600 LBS PER ACRE 10-10-10 FERTILIZER (14 LBS/1000 SQ FT) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 LBS PER ACRE 30-0-0 UREA-FORM FERTILIZER (9 LBS/1000 SQ FT).
- 2) ACCEPTABLE --- APPLY 2 TONS PER ACRE DOLOMITE LIMESTONE (90 LBS/1000 SQ FT) AND 1000 LBS PER ACRE 10-10-10 FERTILIZER (23 LBS/1000 SQ FT) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL.

SEEDING: FOR THE PERIODS MARCH 1 THRU APRIL 30, AND AUGUST 1 THRU OCTOBER 15, SEED WITH 2 1/2 BUSHELS PER ACRE OF BENTONIC 31 TALL FESCUE. FOR THE PERIOD MAY THRU JULY 31, SEED WITH 60 LBS KENTUCKY 31 TALL FESCUE PER ACRE AND 2 LBS PER ACRE (0.5 LBS/1000 SQ FT) OF REDTOP PER ACRE (0.2 LBS/1000 SQ FT). FOR THE PERIOD FROM FEBRUARY 28 TO PROTECT SITE BY OPTION (1) 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING. OPTION (2) USE SOIL. OPTION (3) SEED WITH 60 LBS KENTUCKY 31 TALL FESCUE AND MULCH WITH 2 TONS PER ACRE OF STRAW OR USE SOIL.

MULCHING: APPLY 1 1/2 TO 2 TONS PER ACRE (70 TO 90 LBS/1000 SQ FT) OF UNROTTED SMALL GRASS STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 210 GAL PER ACRE (6 GAL/1000 SQ FT) OF CHALKED ASPHALT ON FLAT AREAS. ON SLOPES 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (6 GAL/1000 SQ FT) FOR ANCHORING.

MAINTENANCE: INSPECT ALL SEEDING AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.

TEMPORARY SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS LIKELY TO BE REDISTURBED WHERE A SHORT-TERM VEGETATIVE COVER IS NEEDED.

SEEDING PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAVING, DISING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSED.

SOIL AMENDMENTS: APPLY 60 LBS PER ACRE 10-10-10 FERTILIZER (14 LBS/1000 SQ FT).

SEEDING: FOR PERIODS MARCH 1 THRU APRIL 30, AND FROM AUGUST 15 THRU NOVEMBER 15, SEED WITH 2 1/2 BUSHELS PER ACRE OF BENTONIC 31 TALL FESCUE. FOR THE PERIOD MAY THRU AUGUST 14, SEED WITH 3 LBS PER ACRE OF WEEDING LOVEGRASS (0.7 LBS/1000 SQ FT). FOR THE PERIOD NOVEMBER 16 THRU FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOIL.

MULCHING: APPLY 1 1/2 TO 2 TONS PER ACRE (70 TO 90 LBS/1000 SQ FT) OF UNROTTED SMALL GRASS STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 210 GAL PER ACRE (6 GAL/1000 SQ FT) OF CHALKED ASPHALT ON FLAT AREAS. ON SLOPES 8 FT OR HIGHER, USE 348 GAL PER ACRE (6 GAL/1000 SQ FT) FOR ANCHORING.

REFER TO THE 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR RATE AND METHODS NOT COVERED.

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

Robert W. Zichner 4/16/92
U.S. SOIL CONSERVATION SERVICE DATE

BY THE DEVELOPER:
I HEREBY CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE IN ACCORDANCE WITH THESE PLANS, AND THAT ANY RESPONSES TO COMMENTS FROM PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MD. DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I WILL 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.

Robert W. Zichner 4/16/92
SIGNATURE OF DEVELOPER DATE

BY THE ENGINEER:
I HEREBY 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 MUST PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

Robert W. Zichner 4-16-92
SIGNATURE OF ENGINEER DATE

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

Robert W. Zichner 4-16-92
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS DATE

Robert W. Zichner 4/16/92
CHIEF, LAND DEVELOPMENT DIVISION DATE

Robert W. Zichner 4/16/92
CHIEF, BUREAU OF HIGHWAYS DATE

Robert W. Zichner 4-16-92
CHIEF, BUREAU OF ENGINEERING DATE

Robert W. Zichner 4/30/92
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING DATE

3-25-92 REVISED MD. DNR/WRA COMMENTS 3-4-92
Date No Revision Description

OWNER/DEVELOPER

THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION

10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044

DEED REF: LIBER 410 FOLIO 348

JOHN R. HEINRICHS, P.E.
CONSULTING ENGINEER
5124 S. ROLLING ROAD
BALTIMORE, MARYLAND 21227
(301) 247-4036 FAX 247-9397

AREA VILLAGE OF RIVER HILL SECTION 1 AREA 4
TAX MAP 35 PART OF PARCEL 22
5th ELECTION DISTRICT OF HOWARD COUNTY, MARYLAND

TITLE SEDIMENT CONTROL NOTES AND DETAILS

5-92-02

Des By J.R.H. Scale AS SHOWN Proj No
Dns By A.R.D. Date NOVEMBER 1991 DRAWING NO
Chg By H.R.D. Approved 8 OF 10



SPECIFICATIONS

SITE PREPARATION

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

AREAS TO BE COVERED BY THE RESERVOIR WILL BE CLEARED OF ALL TREES, BRUSH, LOGS, LIMBS AND OTHER OBSTRUCTIONAL MATERIALS UNLESS OTHERWISE DESIGNATED ON THE PLANS. TREES, BRUSH AND STUMPS SHALL BE CUT APPROXIMATELY LEVEL WITH THE GROUND SURFACE. FOR DRY STORMWATER MANAGEMENT POND, 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, WOOD, RUBBISH, STONES GREATER THAN 4", FROZEN OR OTHER MATERIALS. FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT AND CUT OFF TRENCH SHALL CONFORM TO UNITED SOIL CLASSIFICATION GC, SC, CH OR CL. CONSIDERATION MAY BE GIVEN TO THE USE OF OTHER MATERIALS IN THE EMBANKMENT IF DESIGN AND CONSTRUCTION ARE SUPERVISED BY A GEOTECHNICAL ENGINEER.

PLACEMENT - AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED PRIOR TO PLACEMENT OF FILL. FILL MATERIALS SHALL BE PLACED IN MAXIMUM 8 INCH THICK (BEFORE COMPACTION) LAYERS WHICH ARE TO BE CONTINUOUS OVER THE 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 THE FILL PLACEMENT AND NOT EXCAVATED INTO THE EMBANKMENT.

COMPACTION - THE MOVEMENT OF THE HAULING AND SPREADING EQUIPMENT OVER THE FILL SHALL BE CONTROLLED SO THAT THE ENTIRE SURFACE OF EACH LIFT SHALL BE TRAVERSED BY NOT LESS THAN ONE TREAD TRACK OF THE EQUIPMENT OR COMPACTION SHALL BE ACHIEVED BY A MINIMUM OF FOUR COMPLETE PASSES OF A SHEEPSFOOT, RUBBER TRED OR VIBRATORY ROLLER. FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SUCH THAT THE REQUIRED DEGREE OF COMPACTION WILL BE OBTAINED WITH THE EQUIPMENT USED. THE FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SO THAT IF FORMED INTO A BALL IT WILL NOT CRUMBLE YET NOT BE SO WET THAT WATER CAN BE SQUEEZED OUT.

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

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

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

PIPE CONDUITS - ALL PIPES SHALL BE CIRCULAR IN CROSS SECTION. CORRUGATED METAL PIPE - ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR CORRUGATED METAL PIPE:

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. AN BITUMINOUS COATING DAMAGED OR OTHERWISE REMOVED SHALL BE REPLACED WITH COLD APPLIED BITUMINOUS COATING COMPOUND. STEEL PIPES WITH POLYMERIC COATINGS SHALL HAVE A MINIMUM COATING THICKNESS OF 0.01 INCH (10 MIL) ON BOTH SIDES OF THE PIPE. THE FOLLOWING COATINGS OR AN APPROVED EQUAL MAY BE USED: NEXON, PLASTIC-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-190 TYPE A 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-108 OR M-211 WITH WATER TIGHT COUPLING BANDS OR FLANGES. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER. HOT DIP GALVANIZED PIPE 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 MADE OF THE SAME MATERIAL AS THE PIPE. METALS MUST BE INSULATED FROM DISSIMILAR MATERIALS WITH THE USE OF 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 MADE AT LEAST 10 FEET FROM 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 OR NEOPRENE GASKET WHEN JOINING PIPE SECTIONS. THE END OF EACH PIPE SHALL BE ROLLED AN ADEQUATE NUMBER OF CONNECTIONS TO ACCOMMODATE THE BAND WIDTH. THE FOLLOWING TYPE CONNECTIONS ARE ACCEPTABLE FOR PIPES LESS THAN 48" 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 A MINIMUM DIAMETER OF 1/2" GREATER THAN THE CORRUGATION DEPTH. PIPES 48" IN DIAMETER AND LARGER SHALL BE CONNECTED

- BY A 24" LONG ANNUAL CORRUGATED BAND USING RODS AND LUGS. A 12" WIDE BY 3/8" THICK CLOSED CELL CIRCULAR NEOPRENE GASKET WILL BE INSTALLED ON THE END OF EACH PIPE FOR A TOTAL OF 24". HELICALLY CORRUGATED PIPE SHALL HAVE EITHER CONTINUOUSLY WELDED SEAMS OR HAVE LOCK SEAMS.
- 4. BEDDING - THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR 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 "STRUCTURAL BACKFILL"
- 6. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE SHOWN ON THE DRAWINGS.

CONCRETE

CONCRETE SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 608, MIX NO. 3.

CARE OF WATER DURING CONSTRUCTION

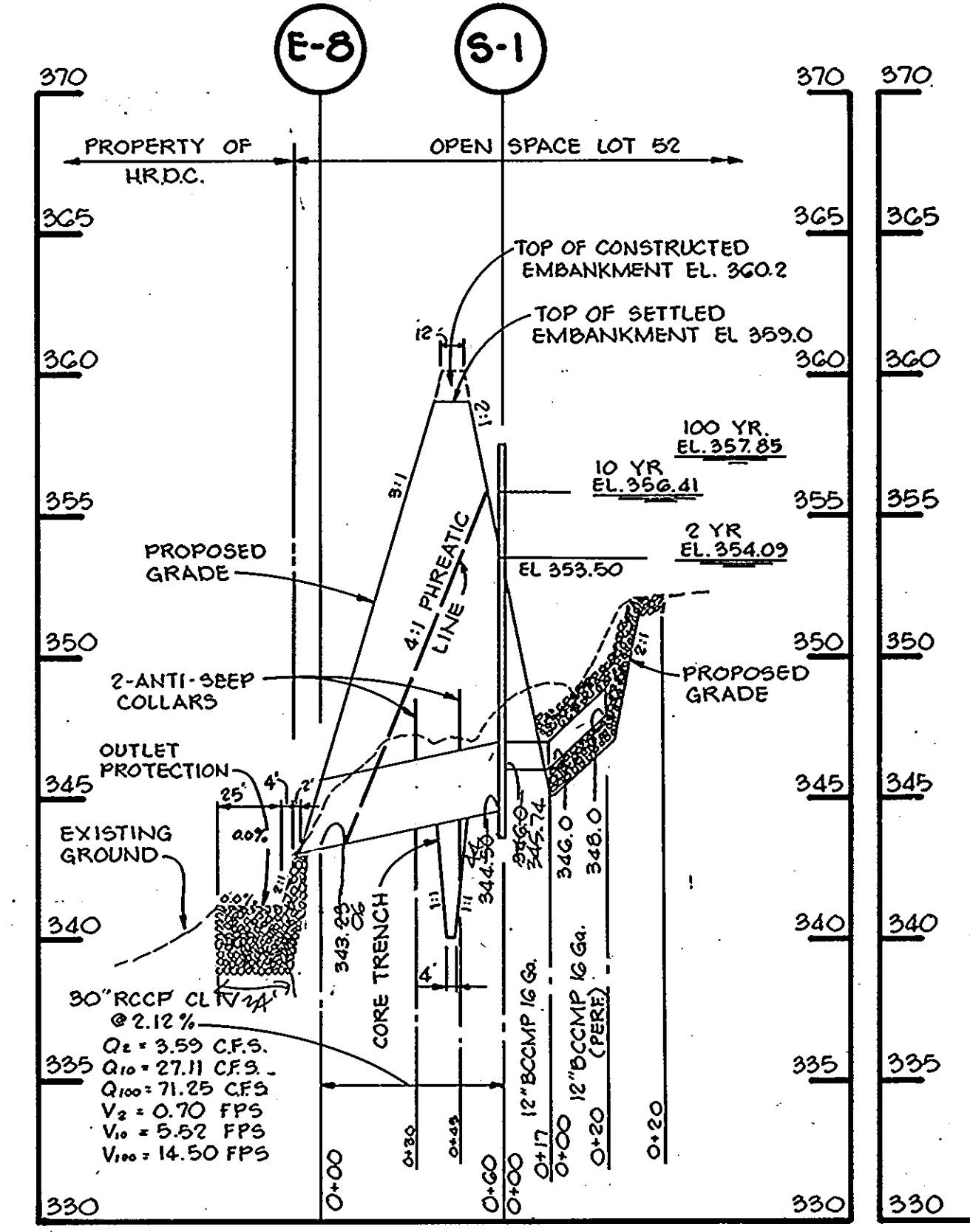
ALL WORK ON PERMANENT STRUCTURES SHALL BE CARRIED OUT IN AREAS FREE FROM WATER. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ALL TEMPORARY DIKES, LEVEES, COFFERDAMS, DRAINAGE CHANNELS AND STREAM DIVERSIONS NECESSARY TO PROTECT THE AREAS TO BE OCCUPIED BY THE PERMANENT WORKS. THE CONTRACTOR SHALL ALSO FURNISH, INSTALL, OPERATE AND MAINTAIN ALL NECESSARY PUMPING AND OTHER EQUIPMENT REQUIRED FOR REMOVAL OF WATER FROM THE VARIOUS PARTS OF THE WORK AND FOR MAINTAINING THE EXCAVATIONS, FOUNDATION AND OTHER PARTS OF THE WORK FREE FROM WATER AS REQUIRED OR DIRECTED BY THE ENGINEER. FOR CONSTRUCTING EACH PART OF THE WORK, AFTER HAVING SERVED THEIR PURPOSE, ALL TEMPORARY PROTECTIVE WORKS SHALL BE REMOVED OR LEVELED AND GRADED TO THE EXTENT REQUIRED TO PREVENT OBSTRUCTION IN ANY DEGREE WHATSOEVER OF THE FLOW OF WATER TO THE SPILLWAY OR OUTLET WORKS AND SO AS NOT TO INTERFERE IN ANY WAY WITH THE OPERATION OR MAINTENANCE OF THE STRUCTURE. STREAM DIVERSIONS SHALL BE MAINTAINED UNTIL THE FULL FLOW CAN BE PASSED THROUGH THE PERMANENT WORKS. THE REMOVAL OF WATER FROM THE REQUIRED EXCAVATION AND THE FOUNDATION SHALL BE ACCOMPLISHED IN A MANNER AND TO THE EXTENT THAT WILL MAINTAIN STABILITY OF THE EXCAVATED SLOPES AND BOTTOM OF REQUIRED EXCAVATION AND WILL ALLOW SATISFACTORY PERFORMANCE OF ALL CONSTRUCTION OPERATIONS. DURING THE PLACING AND COMPACTING OF MATERIAL IN REQUIRED EXCAVATIONS, THE WATER LEVEL AT THE LOCATIONS BEING REFILLED SHALL BE MAINTAINED BELOW THE BOTTOM OF THE EXCAVATION AT SUCH LOCATIONS WHICH MAY REQUIRE DRAINING THE WATER TO SUMPS FROM WHICH THE WATER SHALL BE PUMPED.

STABILIZATION

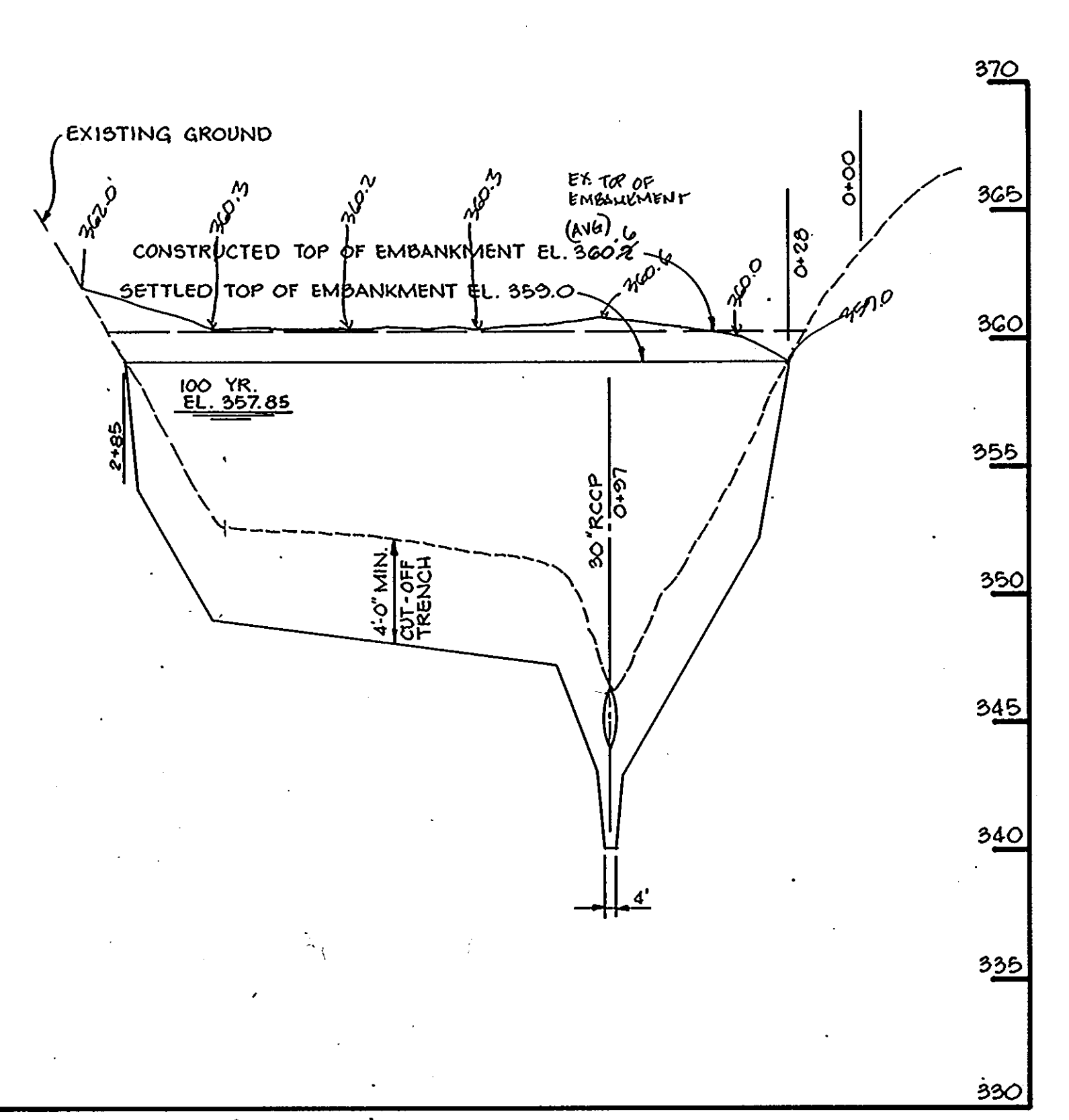
ALL BORROW AREAS SHALL BE GRADED TO PROVIDE PROPER DRAINAGE AND LEFT IN A SLIGHTLY CONDITION. ALL EXPOSED SURFACES OF THE EMBANKMENT, SPILLWAY, SPOIL AND BORROW AREAS AND BEAMS SHALL BE STABILIZED BY SEEDING, LIMING, FERTILIZING AND MULCHING IN ACCORDANCE WITH THE MARYLAND SOIL CONSERVATION SERVICE STANDARDS AND SPECIFICATIONS FOR CRITICAL AREA PLANTING (MD-342) OR AS SHOWN ON THE ACCOMPANYING DRAWINGS.

EROSION AND SEDIMENT CONTROL

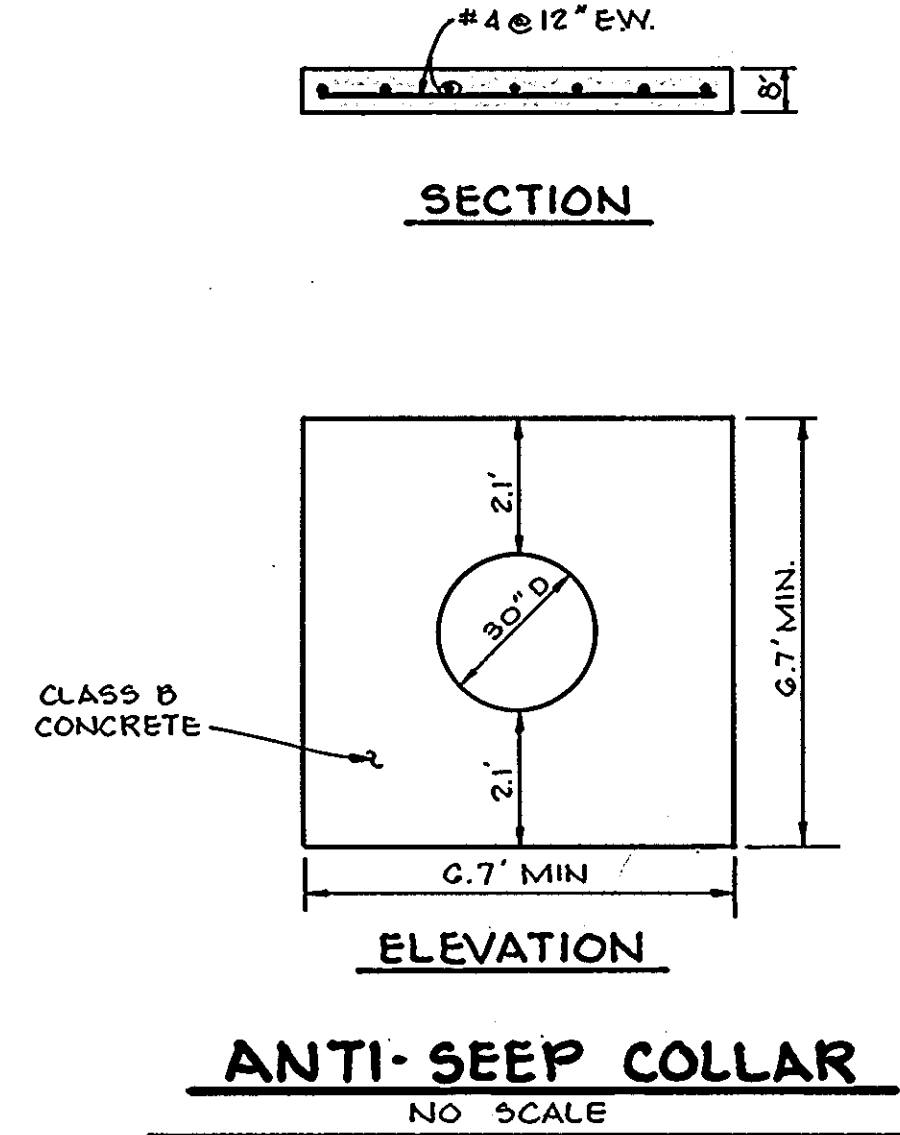
CONSTRUCTION OPERATIONS WILL BE CARRIED OUT IN SUCH A MANNER THAT EROSION WILL BE CONTROLLED AND WATER AND AIR POLLUTION MINIMIZED. STATE AND LOCAL LAWS CONCERNING POLLUTION ABATEMENT WILL BE FOLLOWED. CONSTRUCTION PLANS SHALL DETAIL EROSION AND SEDIMENT CONTROL MEASURES TO BE EMPLOYED DURING THE CONSTRUCTION PROCESS.



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



PROFILE ALONG E OF EMBANKMENT
SCALE: HORIZ. 1"=50'
VERT. 1"=5'



ANTI-SEEP COLLAR
NO SCALE

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.

BY THE DEVELOPER:
I HEREBY 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 MD DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I WILL 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.

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 MUST PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, LAND DEVELOPMENT DIVISION
CHIEF, BUREAU OF HIGHWAYS
CHIEF, BUREAU OF ENGINEERING

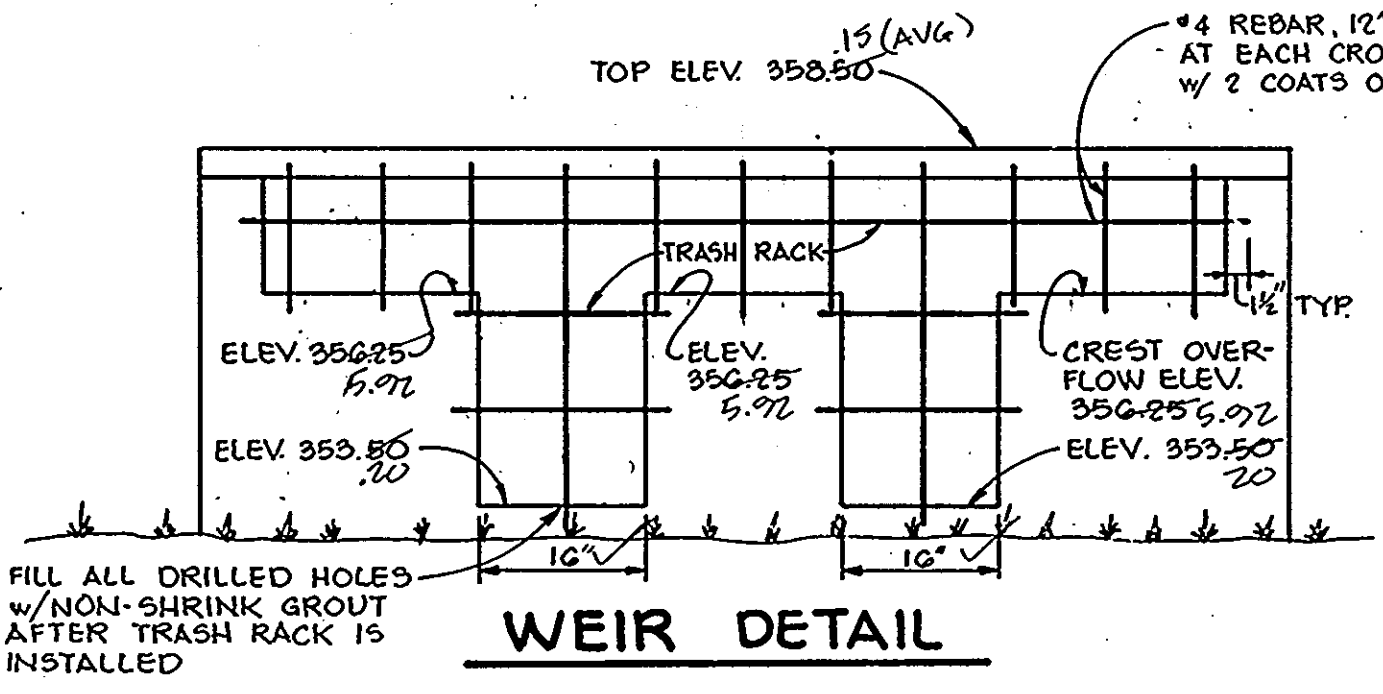
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT

Date	No	Revision Description

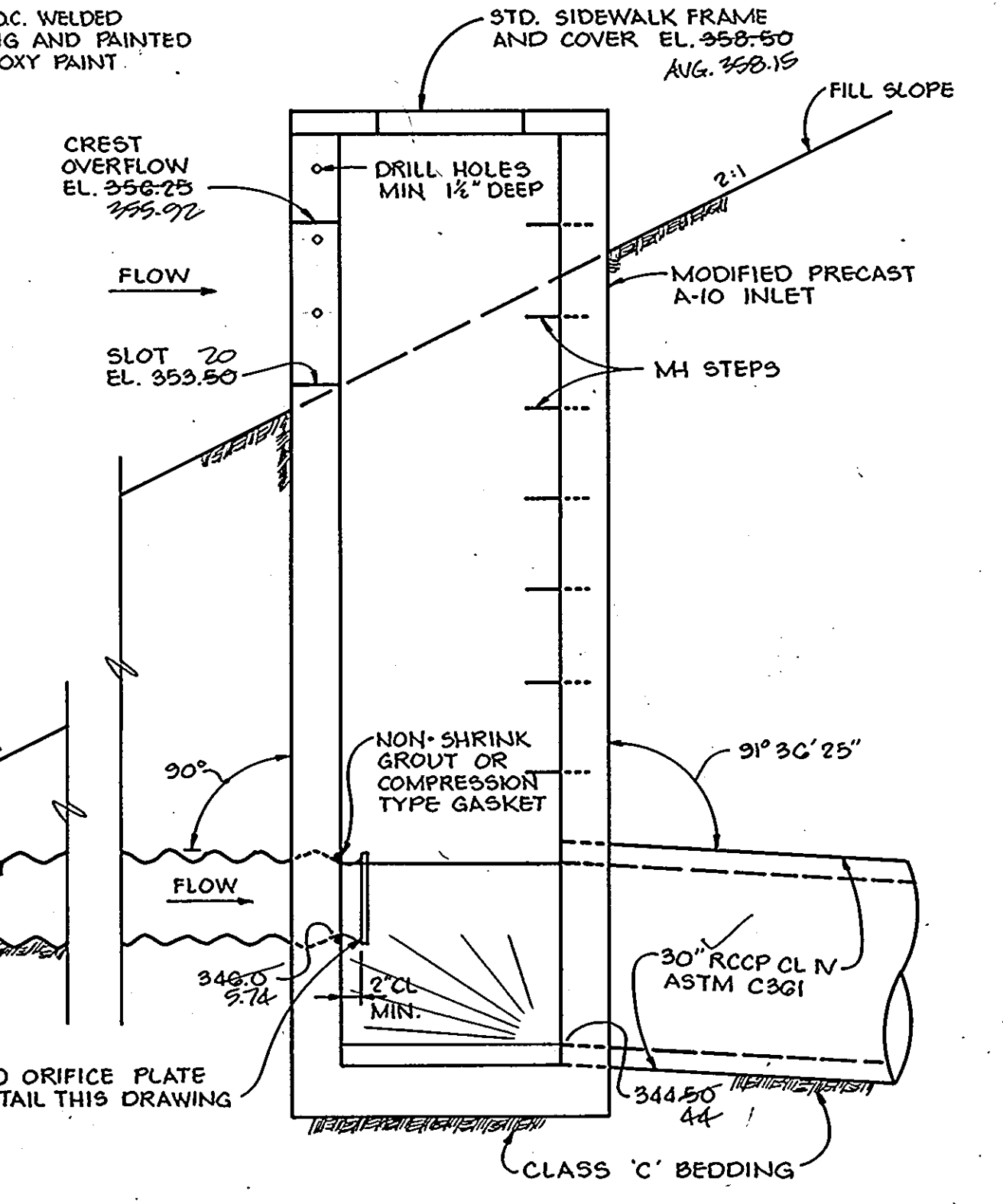
OWNER/DEVELOPER
THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
DEED REF: LIBER 410 FOLIO 348

JOHN R. HEINRICH, P.E.
CONSULTING ENGINEER
5124 S. ROLLING ROAD
BALTIMORE, MARYLAND 21227
(301) 247-4036 FAX 247-9397

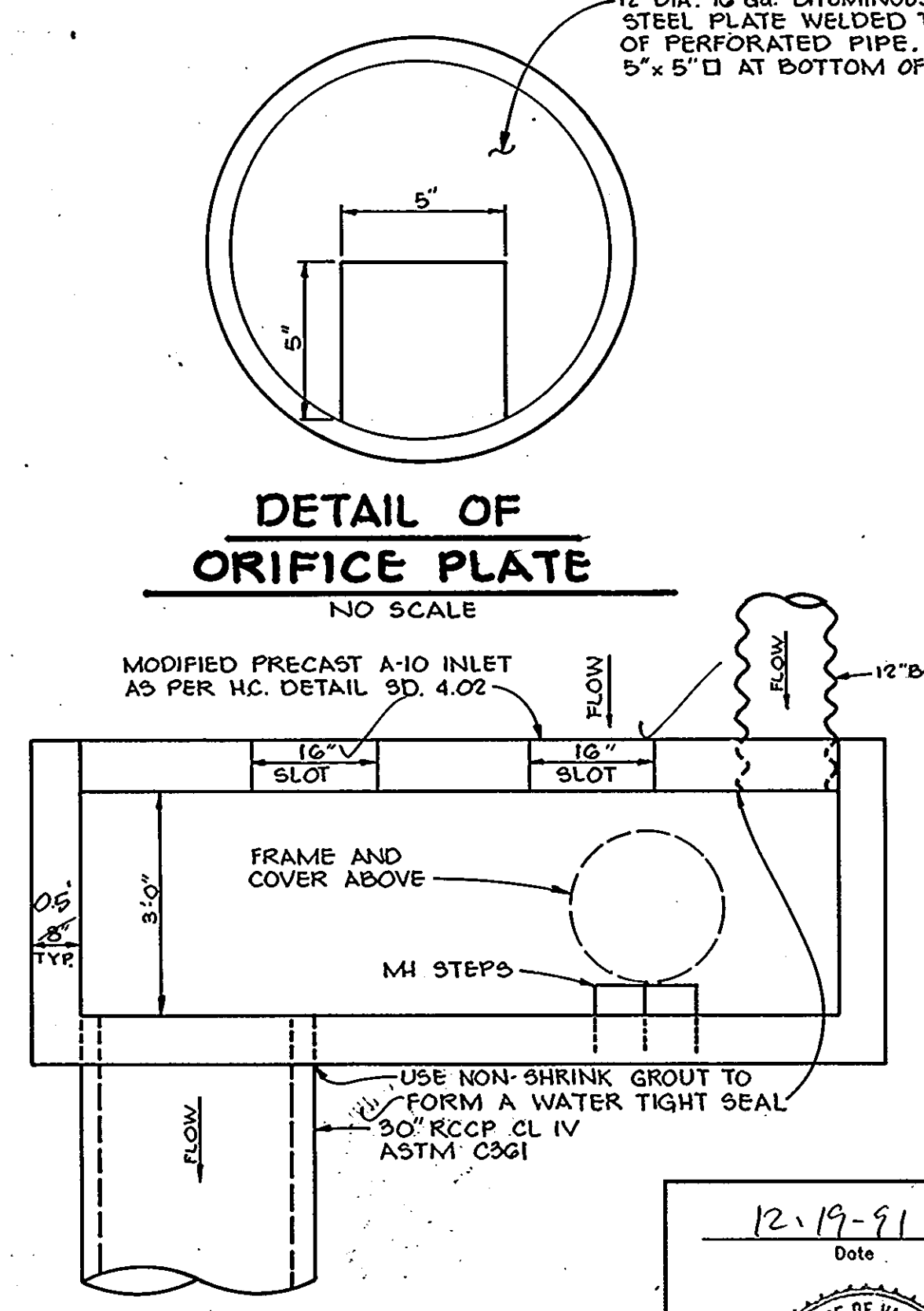
DATE	BY	SCALE	AS SHOWN	PROJ NO
9-22-02	R.J.W.	AS SHOWN		
	A.J.R.	DATE	DECEMBER 1991	DRAWING NO
	J.R.H.	APPROVED		9 OF 10



WEIR DETAIL



ELEVATION



DETAIL OF ORIFICE PLATE
NO SCALE

PLAN

DETAILS OF STRUCTURE S-1
NO SCALE

AS-BUILT
SHANBERGER & LANE
8736 TOWN & COUNTRY BLVD.
SUITE 101
ELLICOTT CITY, MARYLAND 21043

12-19-91
Date

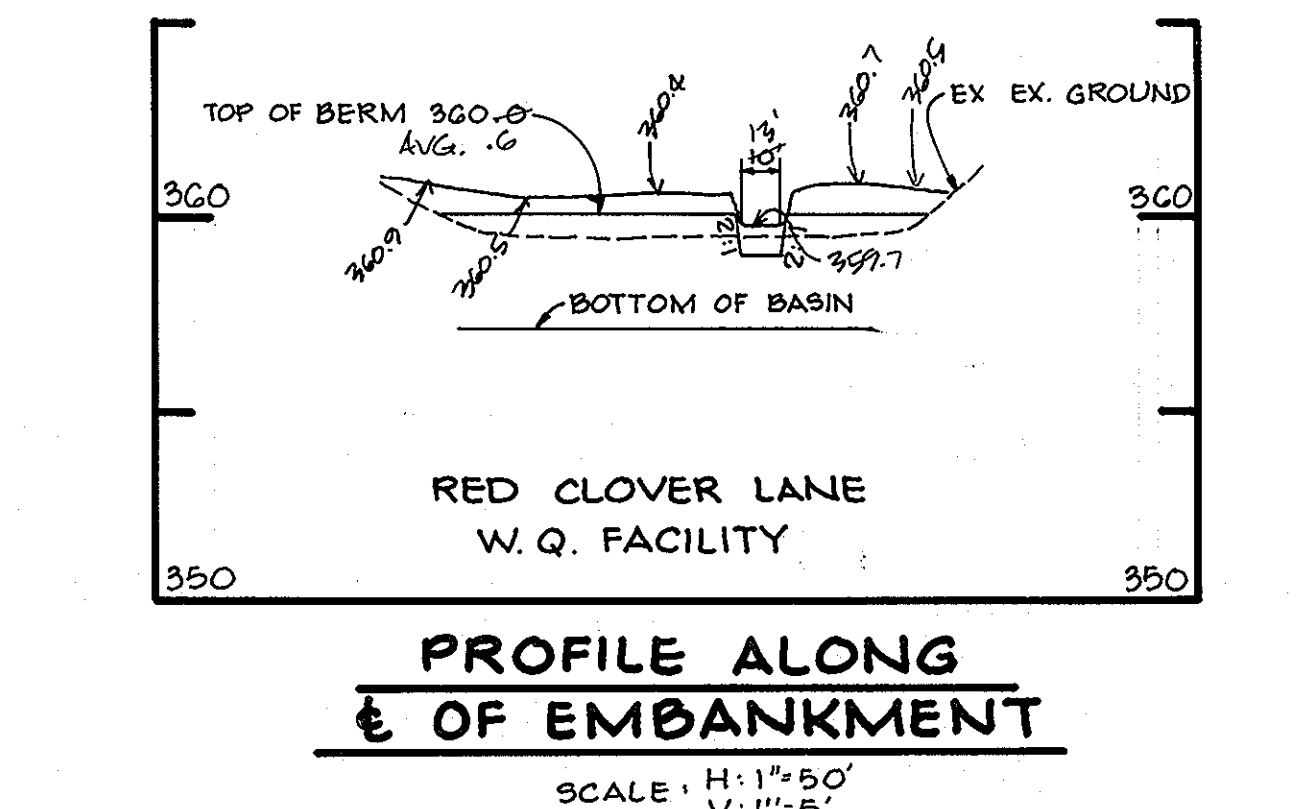
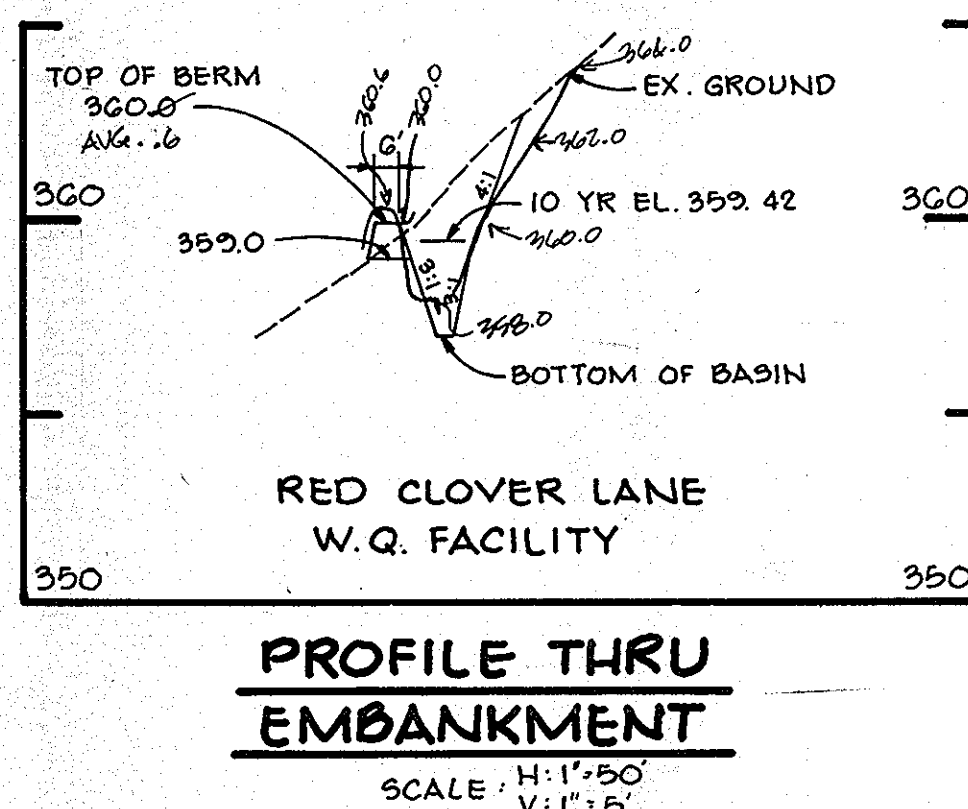
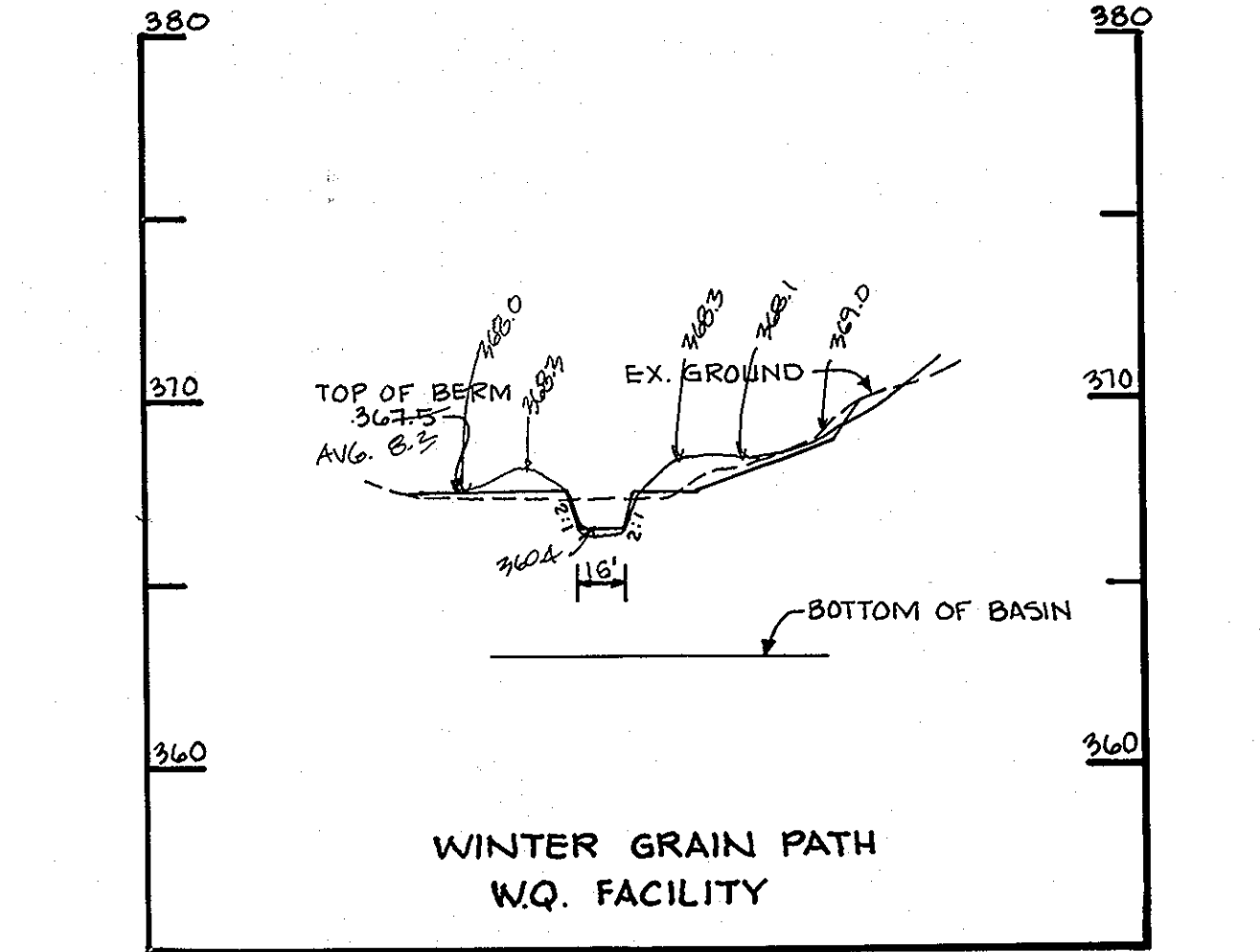
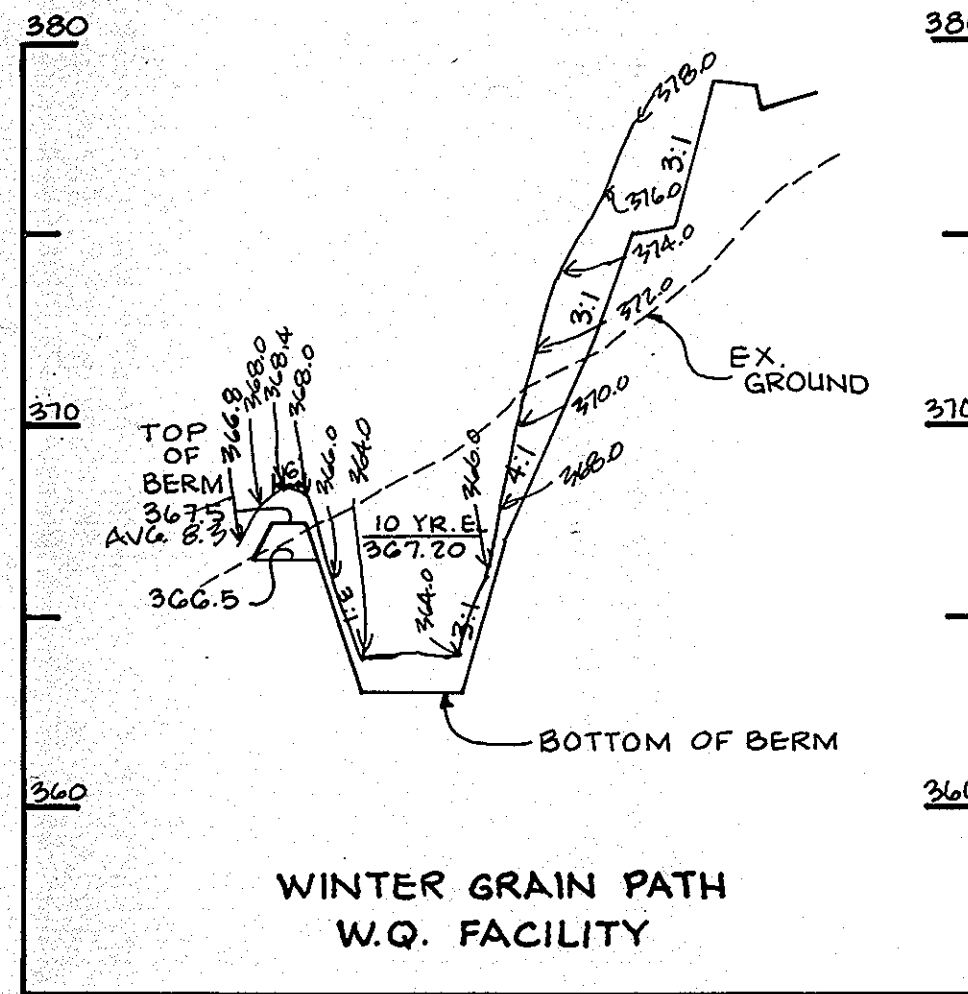
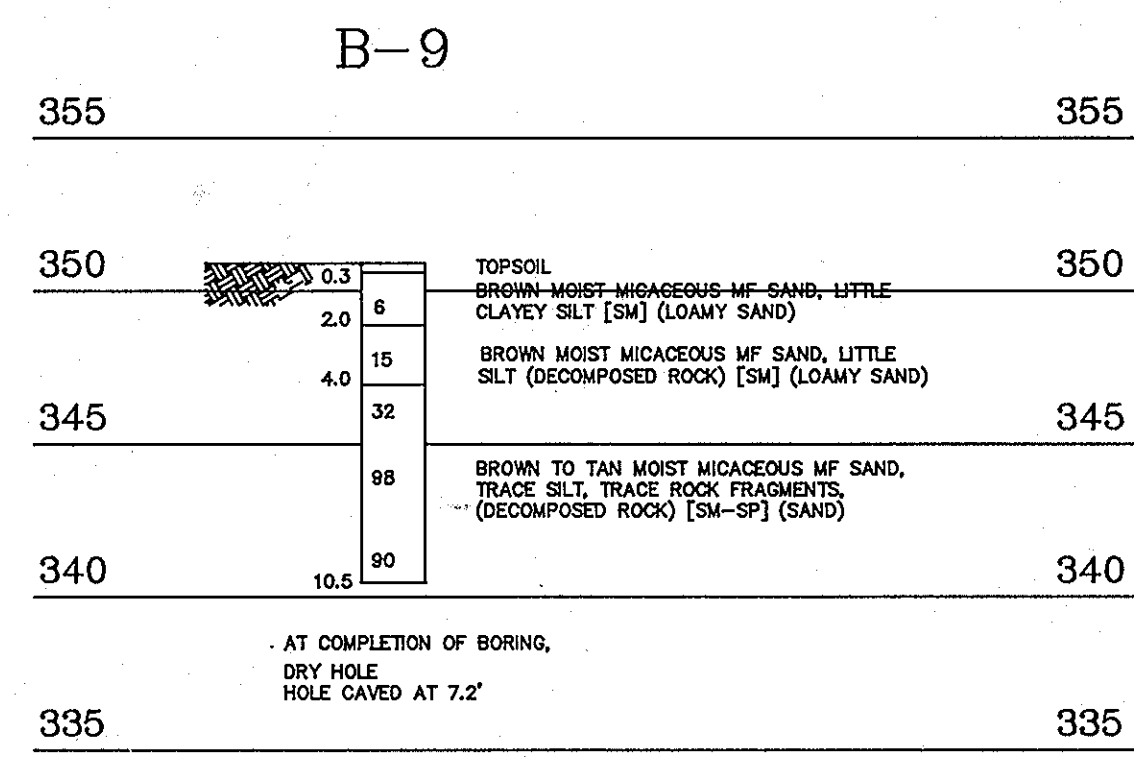
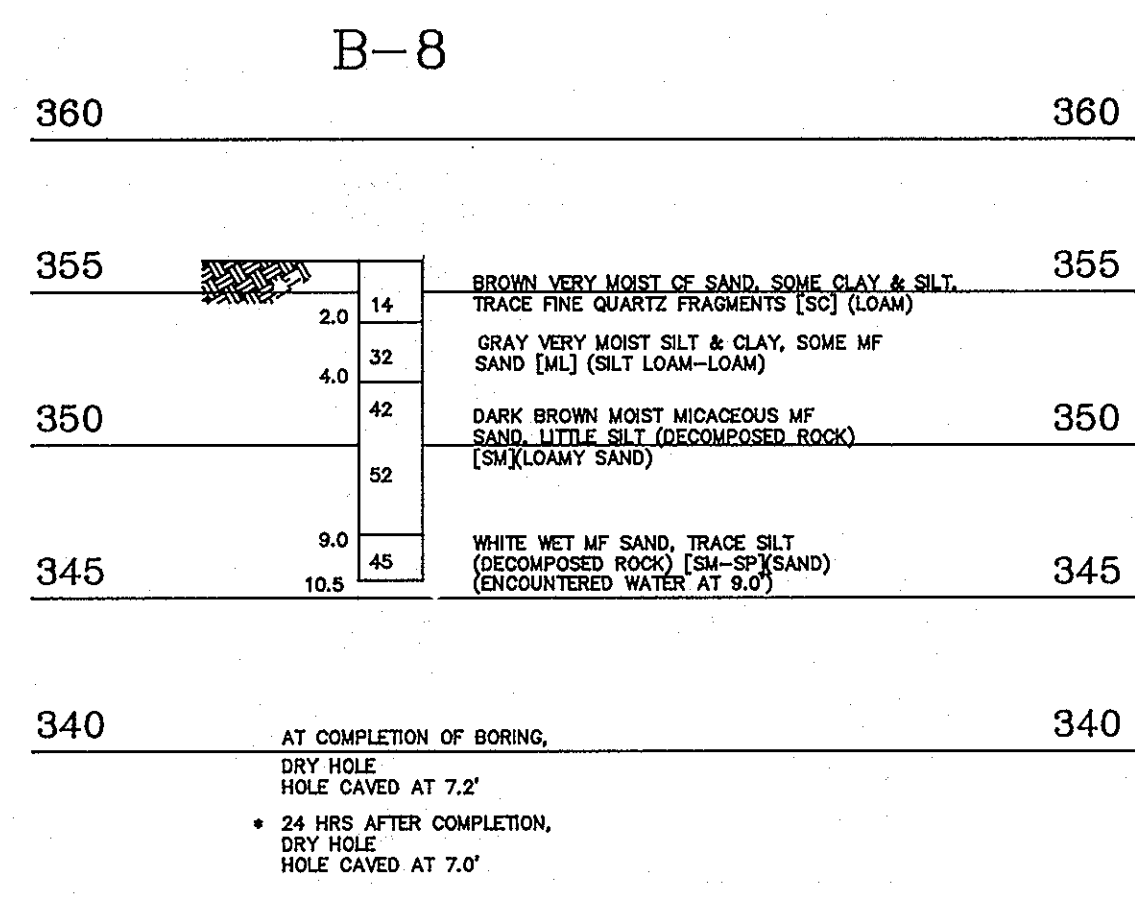
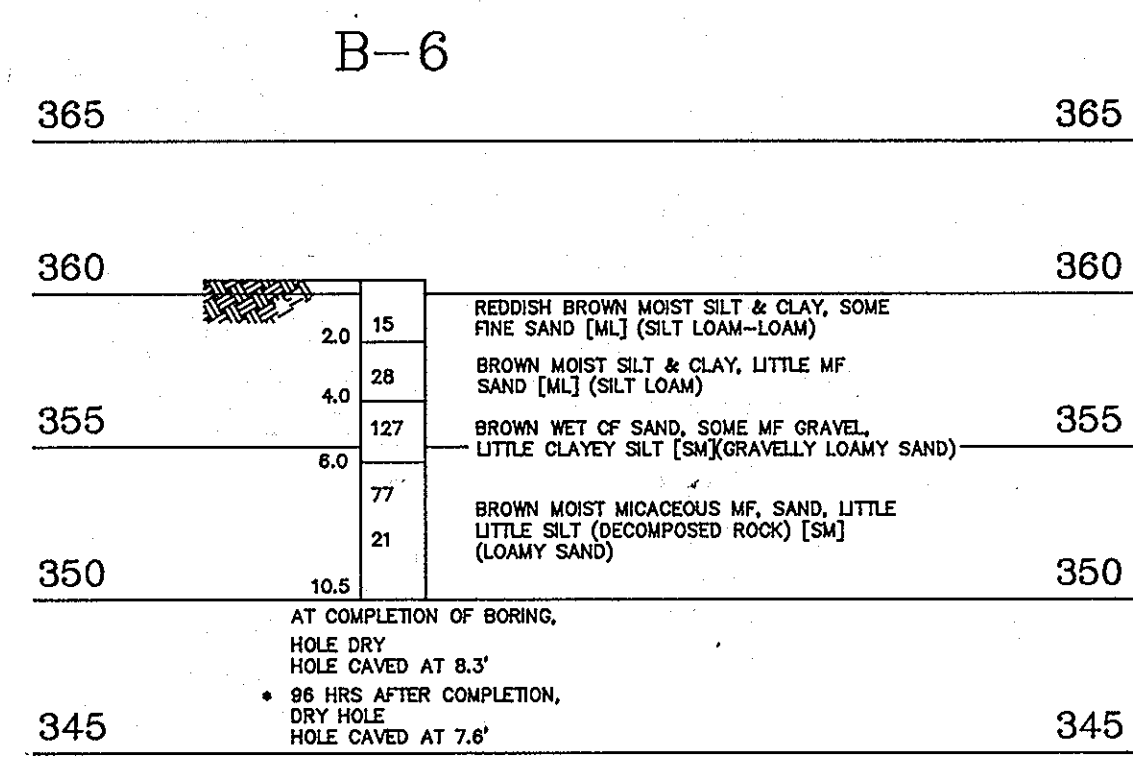
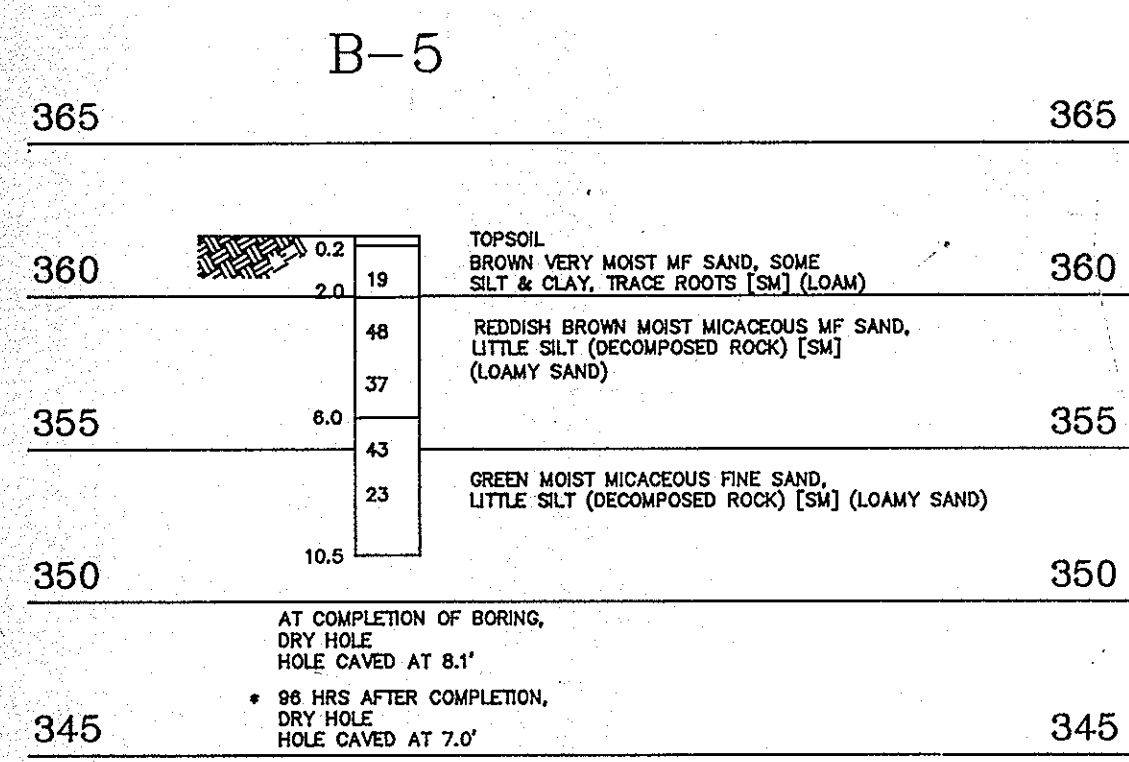
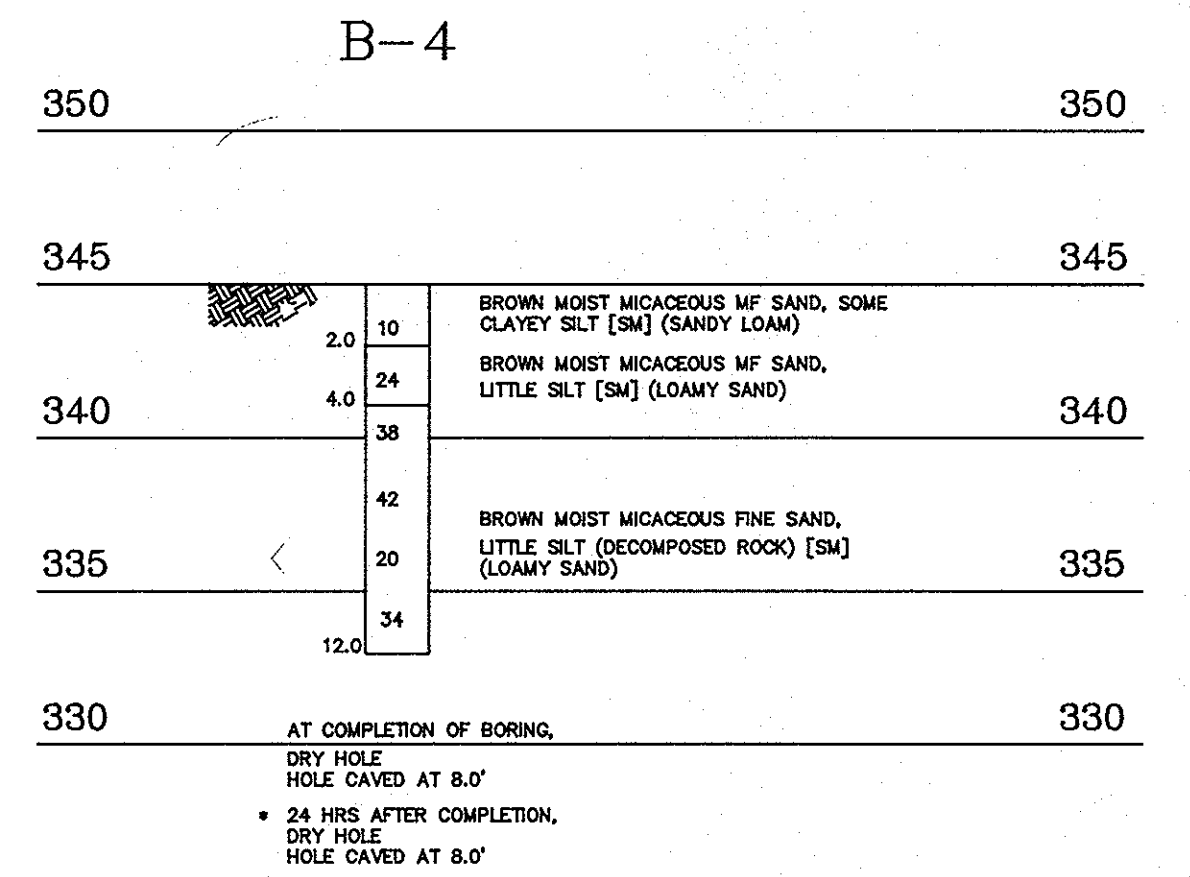
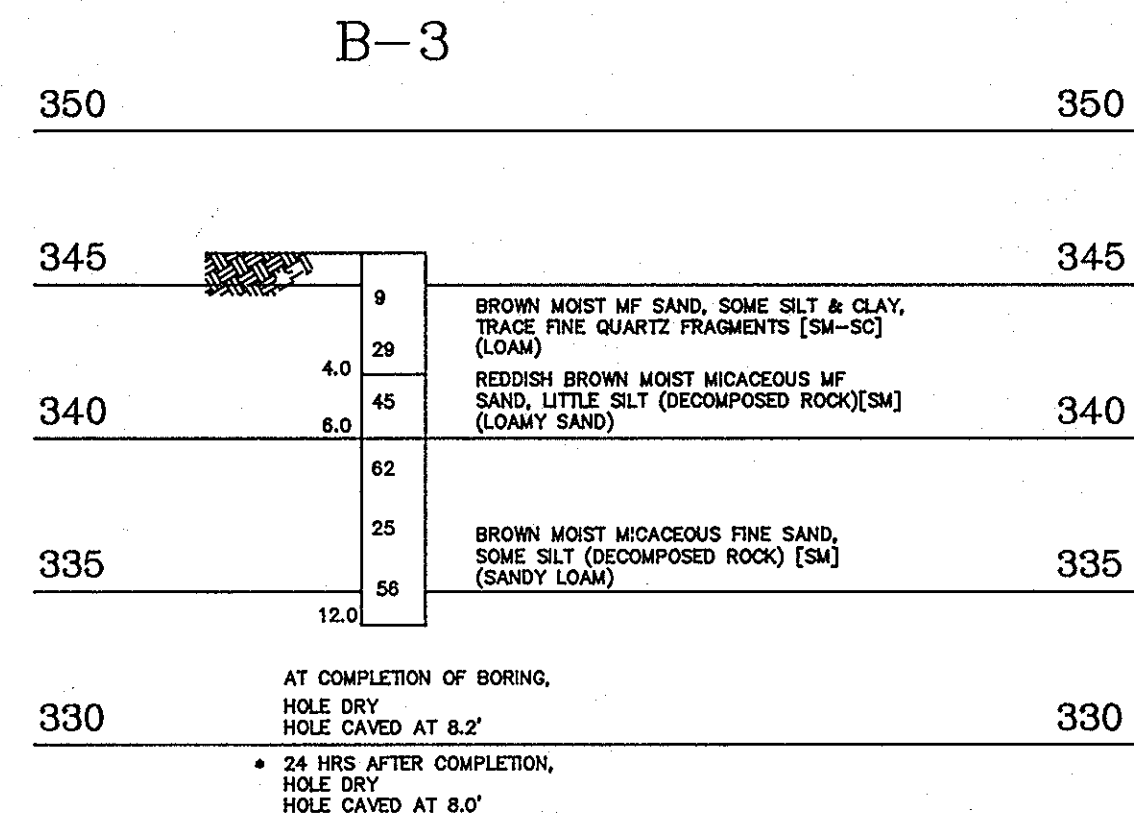
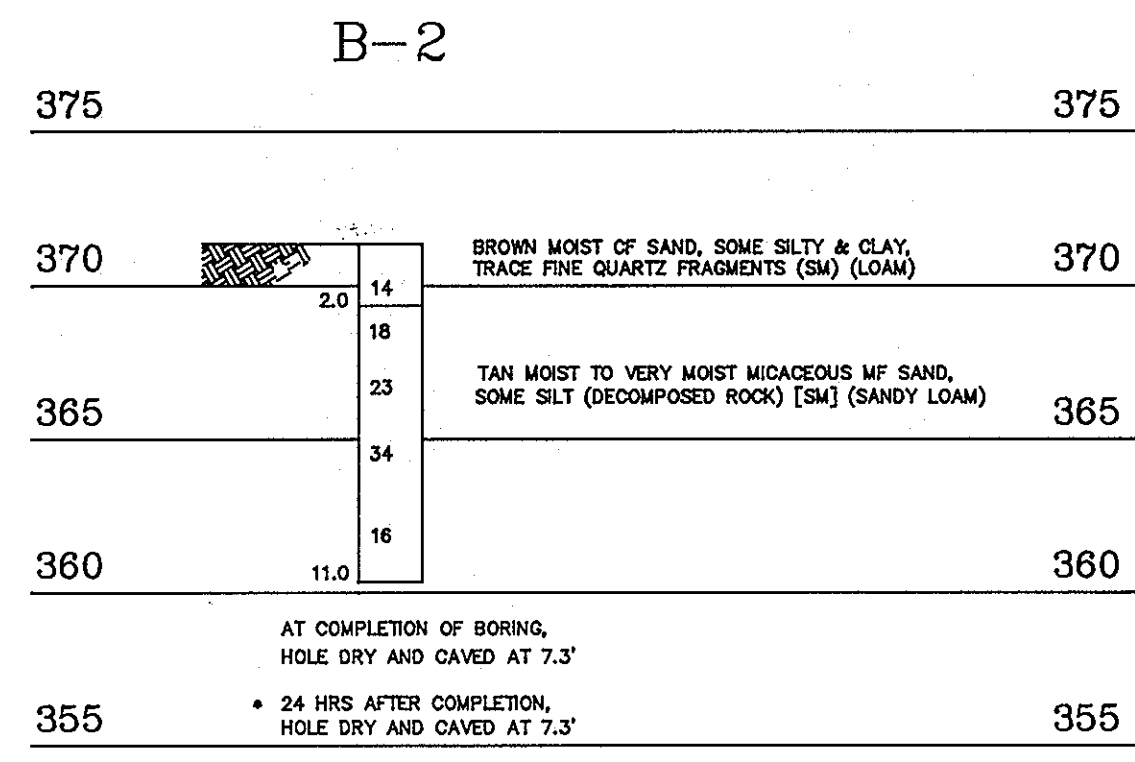
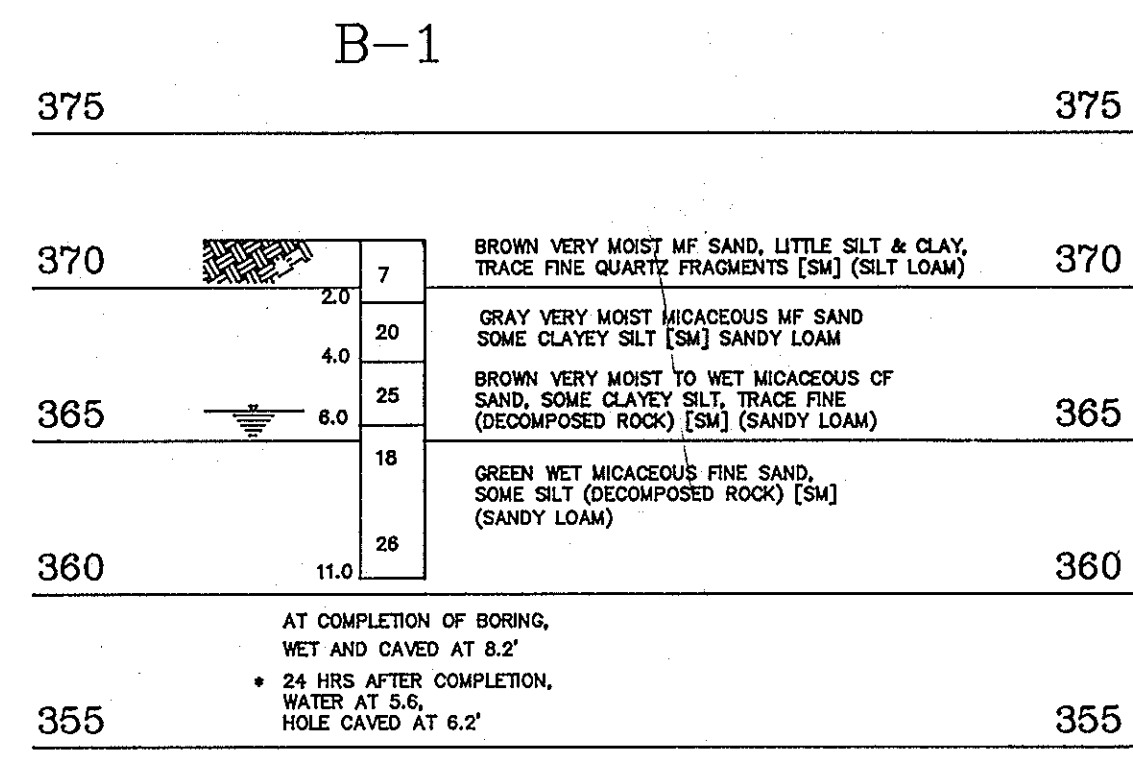
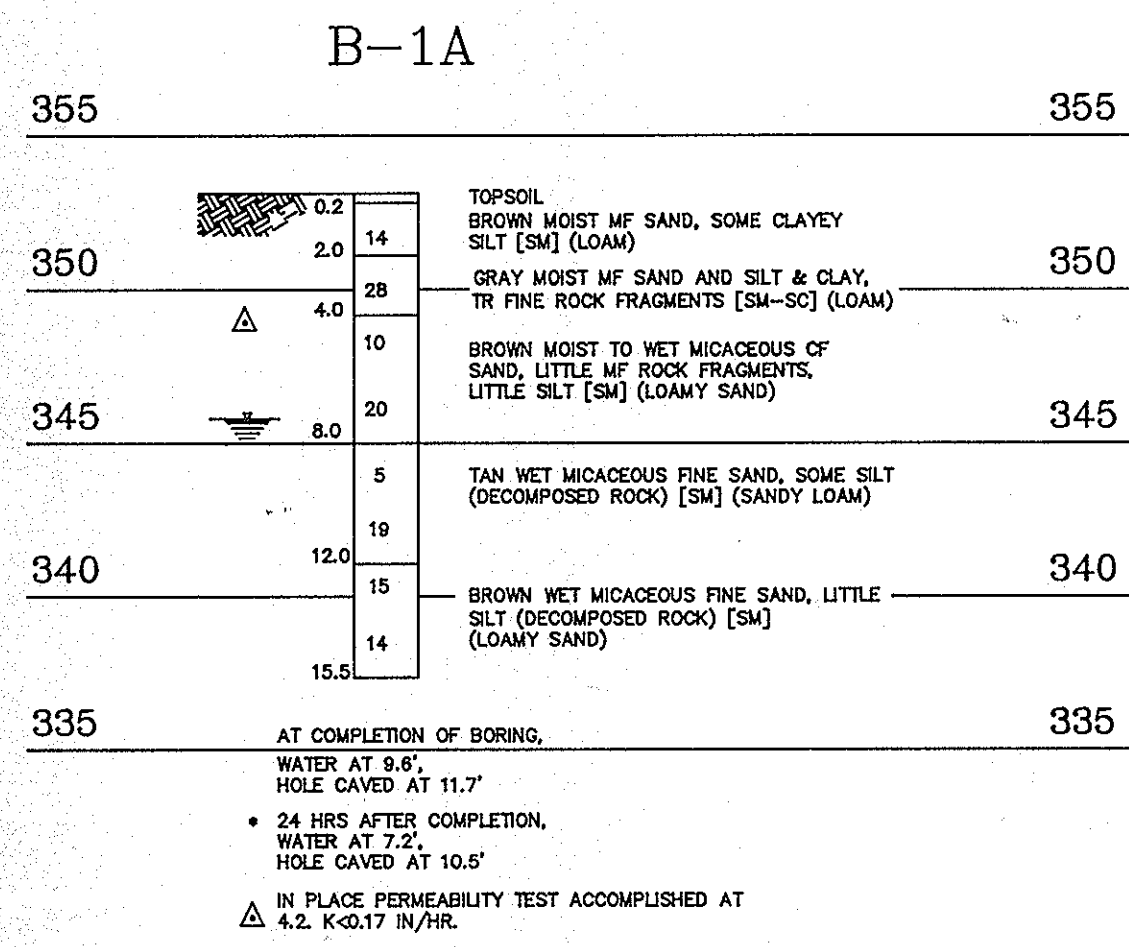


JOHN R. HEINRICH
Professional Eng. No. 14920

AS-BUILT

F92-87

1487



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

James M. Stela 1/16/92
U.S. SOIL CONSERVATION SERVICE DATE

BY THE DEVELOPER:
I 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 M.D. DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I WILL 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.

Jerry K. Hill 1/2/92
SIGNATURE OF DEVELOPER DATE

BY THE ENGINEER:
I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, SOIL 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 MUST PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

John R. Heinrichs 3/3/92
SIGNATURE OF ENGINEER DATE

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

Rheider Ziehm 4-16-92
HOWARD S.O.D. DATE

APPROVED HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, LAND DEVELOPMENT DIVISION
John M. Dargatzis 4/20/92
DATE

CHIEF, BUREAU OF HIGHWAYS
Acorn 4-29-92
DATE

CHIEF, BUREAU OF ENGINEERING
... DATE

APPROVED HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT
... DATE

Date	No	Revision Description

OWNER/DEVELOPER

THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044

DEED REF: LIBER 410 FOLIO 348

JOHN R. HEINRICHS, P.E.
CONSULTING ENGINEER
5124 S. ROLLING ROAD
BALTIMORE, MARYLAND 21227
(301) 247-4036 FAX 247-9397

AREA VILLAGE OF RIVER HILL SECTION 1 AREA 4
TAX MAP 35 PART OF PARCEL 22
5th ELECTION DISTRICT OF HOWARD COUNTY, MARYLAND

TITLE BORING LOG AND WATER QUALITY DETAILS

Des By	H.R.D.	Scale	1" = 50'	Proj No
Dwn By	A.J.R.	Date	DECEMBER 1991	DRAWING NO
Chk By	H.R.D.	Approved		10 OF 10

AS-BUILT

... 2/12/92
G. SCOTT STANABERGER DATE

Rec. L.S. # 10849
SHANABERGER & LANE
8726 TOWN & COUNTRY BLVD.
SUITE 104
ELLCOTT CITY, MARYLAND 21043

3/3/92
DATE

John R. Heinrichs
JOHN R. HEINRICHS
PROFESSIONAL ENGR. No. 14920

1487