

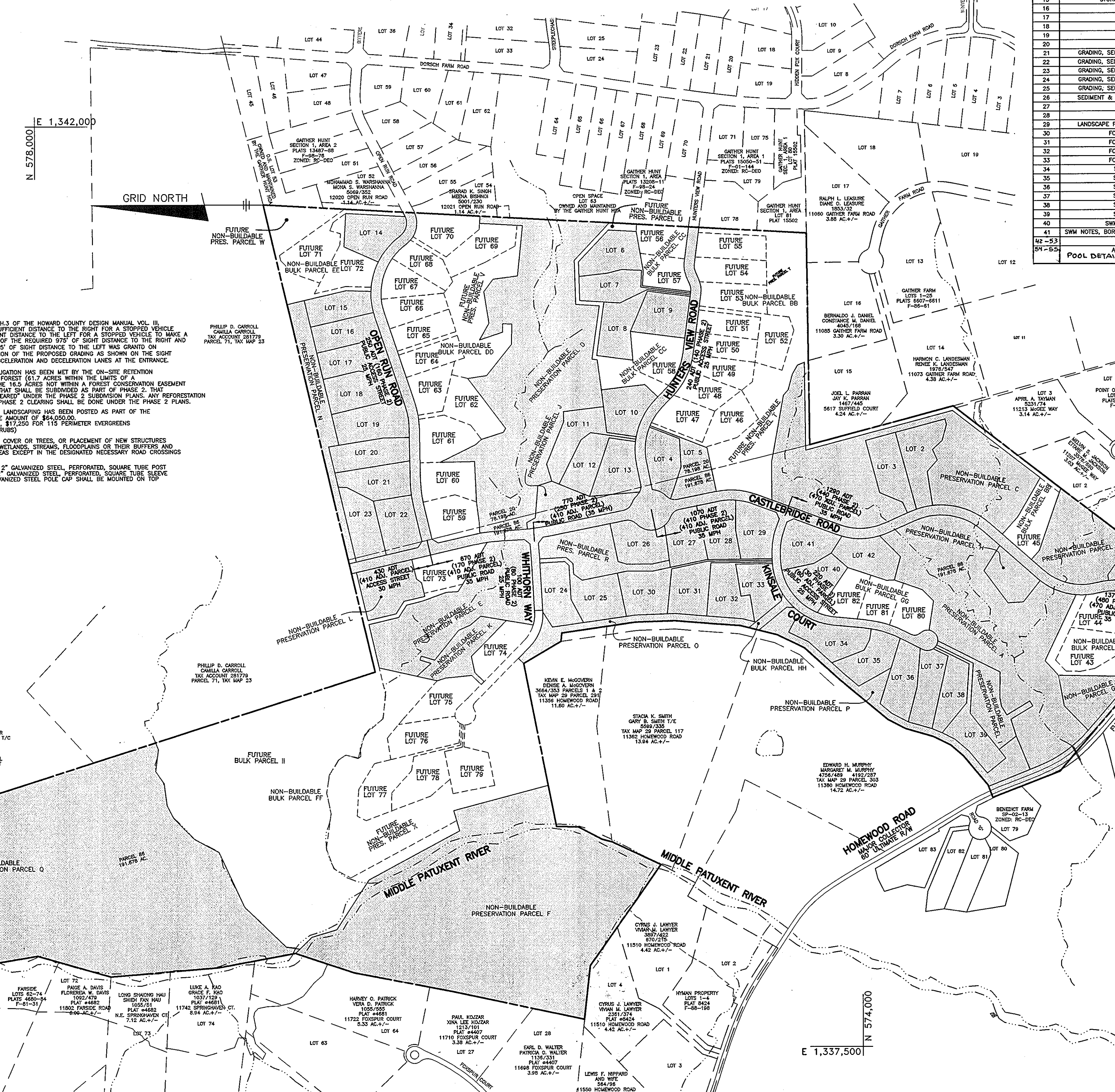
GENERAL NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY, PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE, UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 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.
- WETLAND DELINEATION PROVIDED BY ECO-SCIENCE PROFESSIONALS, INC. DATED SEPTEMBER, 2001.
- TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE MOST CURRENT 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.
- STREET LIGHTS PLACEMENT AND TYPE OF FIXTURE & SIGNING SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOL. II (1993) AND AS MODIFIED BY "GUIDELINES FOR STREET LIGHTS IN RESIDENTIAL DEVELOPMENTS (JUNE, 1993)".
- TOPOGRAPHY SHOWN ON-SITE WAS FIELD RUN BY J.A. RICE, INC. ON OR ABOUT SEPTEMBER, 2002. FIELD RUN TOPOGRAPHY WAS SUPPLEMENTED WITH INFORMATION PURCHASED FROM HOWARD COUNTY GEOGRAPHICAL INFORMATION SYSTEMS.
- HORIZONTAL DATUM FOR THIS PLAN IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM NAD '83 AS PROJECTED FROM HOWARD COUNTY CONTROL POINTS 25CA AND 29IC.
- THIS PROPERTY IS NOT WITHIN THE METROPOLITAN DISTRICT PRIVATE WATER AND SEWER SYSTEMS SHALL BE PROVIDED FOR THIS DEVELOPMENT. PRIVATE SHALL BE GRILLED PRIOR TO REVISION OF FINAL PLAN.
- THIS AREA DESIGNATES A PRIVATE SEWAGE EASEMENT AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL SEWAGE DISPOSAL IMPROVEMENTS IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWER IS AVAILABLE. THIS EASEMENT SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC SEWER SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE THE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWAGE EASEMENT. RECONSTRUCTION OF A MODIFIED SEWAGE EASEMENT SHALL NOT BE REQUIRED.
- STORMWATER MANAGEMENT SHALL BE PROVIDED FOR THIS PROJECT BASED ON GUIDELINES ESTABLISHED BY THE 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUMES 1 & 2. STORMWATER MANAGEMENT SHALL BE PROVIDED BY USE OF NON-STRUCTURAL METHODS FOR GROSS SWALES, KEEPING GROUND WATER RECHARGE VOLUMES, 2 POCKET PONDS AND 5 MICROPOOL EXTENDED DETENTION FACILITIES SHALL BE CONSTRUCTED TO MEET THE WATER QUALITY AND FLOOD CONTROL REQUIREMENT. ALL FACILITIES TO BE CLASS "A" STRUCTURES. THESE FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION.
- EXISTING UTILITIES ARE SHOWN BY APPROVED CONTRACT DRAWINGS AND FIELD LOCATIONS. EXISTING WELLS AND/OR SEWERAGE EASEMENTS WITHIN 100' OF THE PROPERTY HAVE BEEN SHOWN FROM THE BEST AVAILABLE INFORMATION.
- THE TRAFFIC STUDY WAS PREPARED BY MARS TRAFFIC GROUP, INC. IN OCTOBER, 2001 AND REVISED IN JANUARY, 2002.
- THE STREAM CROSSINGS SHOWN ALONG CASTLEBRIDGE ROAD (FORMERLY ROAD "A") ARE STRATEGICALLY LOCATED WHERE THE STREAM CHANNEL IS NARROWEST AND HAS THE LEAST IMPACT TO WETLANDS. THERE ARE NO CHANGES TO THE STREAM CHANNELS WILL OCCUR. THE DEPARTMENT OF PLANNING AND ZONING HAS MADE THE DETERMINATION THAT THE 3 SOUTHERN STREAM CROSSINGS FOR PROPOSED CASTLEBRIDGE ROAD ARE TO BE CONSIDERED "ESSENTIAL DISTURBANCES" IN ACCORDANCE WITH SECTION 16.111(C) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS BASED ON THE JUSTIFICATION SUBMITTED BY THE DEVELOPER WITH THE REVISED PLAN DATED JANUARY 17, 2002.
- A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.
- THIS PLAN IS SUBJECT TO COMPLIANCE WITH THE FOURTH EDITION OF THE SUBDIVISION REGULATIONS AS A CONSEQUENCE FOR ITS SUBMISSION PRIOR TO 11-15-2001. THIS PROJECT IS SUBJECT TO COMPLIANCE WITH THE FIFTH EDITION OF THE SUBDIVISION REGULATIONS AS A CONSEQUENCE FOR NOT HAVING PRELIMINARY PLAN APPROVAL PRIOR TO 11-1-2001.
- WP-02-64 WAS APPROVED ON 2-28-02 BY THE PLANNING DIRECTOR. WP-02-64 WAS A REQUEST TO MAKE THE FOLLOWING:

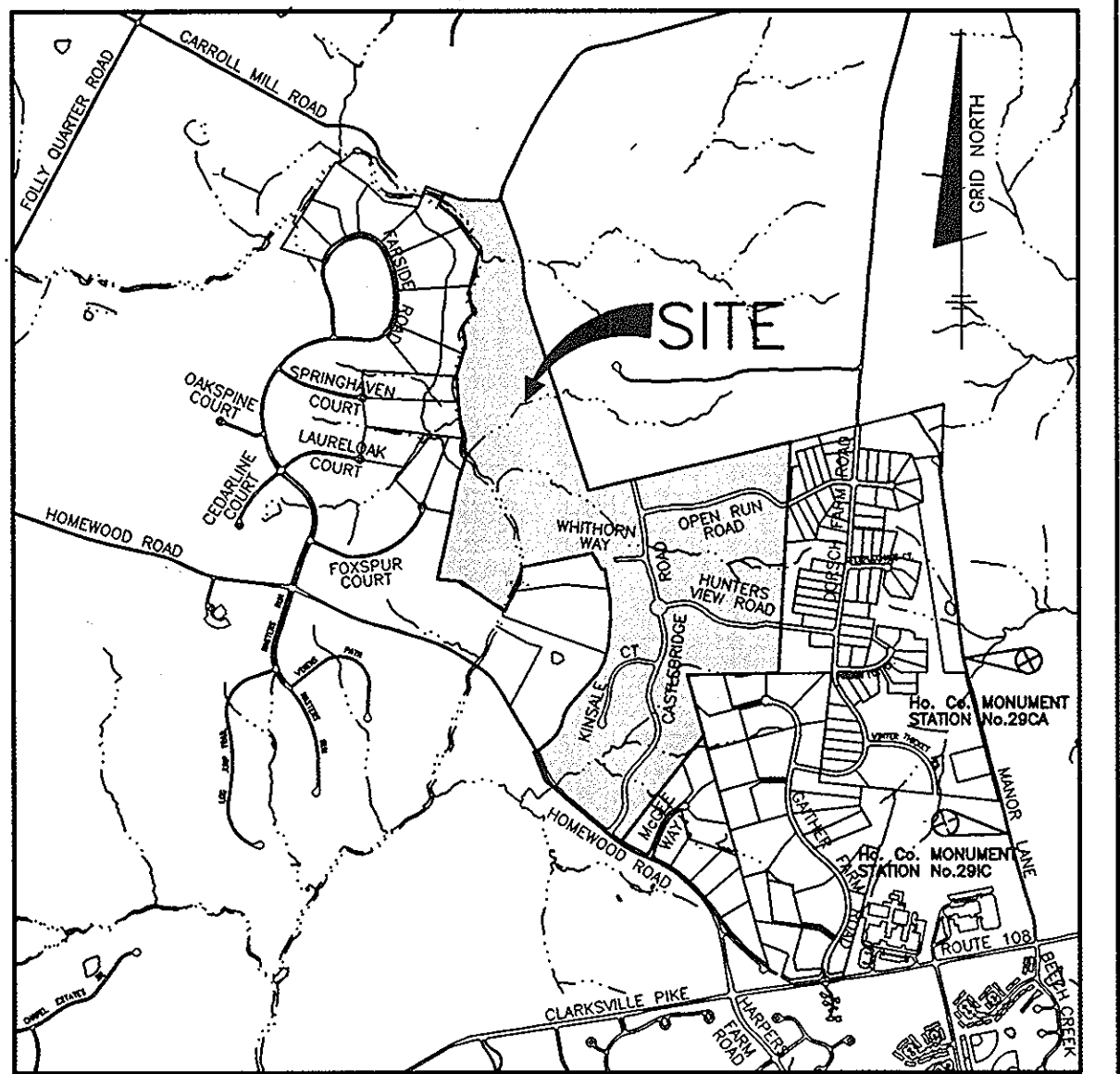
- SECTION 16.111(C) - WHICH REQUIRES THAT GRADING, REMOVAL OF VEGETATIVE COVER AND TREES, PAVING AND NEW STRUCTURES SHALL NOT BE PERMITTED WITHIN 25 FEET OF A WETLAND, 50 FEET OF AN PERENNIAL STREAM BANK OR 75 FEET OF A PERENNIAL STREAM BANK TO ALLOW A CROSSING FOR PROPOSED CASTLEBRIDGE ROAD (FORMERLY ROAD "A") IN THE VICINITY OF WHITNEY WAY (FORMERLY ROAD "B").
- SECTION 16.132(C)(1)(I) - WHICH REQUIRES THE DEVELOPER TO CONSTRUCT OR PROVIDE FOR CONSTRUCTION OF ROADS FOR REQUIRED CONNECTIONS TO ADJACENT PROPERTIES (THIS APPLIES TO THE CONNECTIONS FOR ADJACENT PARCELS 117 AND 291).
- SECTION 16.120(C)(2)(C) - WHICH REQUIRES THAT NON-PIPESTEEL LOTS (FUTURE PHASE 2 BULK PARCEL FF) (BULK PARCEL I UNDER S-02-09) WHICH HAVE SUBSTANTIAL POTENTIAL UNDER CURRENT ZONING TO HAVE SUFFICIENT PUBLIC ROAD FRONTAGE TO MEET THE PUBLIC ROAD RIGHT-OF-WAY REQUIREMENTS IN THE DESIGN MANUAL.
- SECTION 16.120(C)(2)(D) - WHICH REQUIRES THAT 20 FEET OF PUBLIC ROAD FRONTAGE BE PROVIDED FOR PRESERVATION PARCELS (BULK PARCEL G UNDER S-02-09).
- THE FLOODPLAIN LIMIT SHOWN ON THIS PLAN WAS DETERMINED FROM A FLOODPLAIN STUDY PREPARED BY BENCHMARK ENGINEERING, INC. IN OCTOBER 2002 AND REVISED IN NOVEMBER 2003. THE FLOODPLAIN LIMIT FOR THE MIDDLE PATUXENT RIVER IS BASED ON THE HOWARD COUNTY MODEL PATUXENT FLOODPLAIN STUDY, MAP #29-38.
- THE PURPOSE OF THE PRESERVATION PARCELS AND THE JUSTIFICATION FOR THE DESIGN OF THE CLUSTER SUBDIVISION IS AS FOLLOWS:
PRESERVATION PARCELS "A" THRU "I" ARE PROPOSED AS NON-BUILDABLE PARCELS TO PROTECT STEEP SLOPES AND STREAM BUFFER AREAS WHICH ARE CONSIDERED PRIORITY AREAS. THEY WILL BE DEDICATED TO THE HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS. THEY ARE ENCLOSED BY AN EASEMENT AGREEMENT WITH THE HOMEOWNERS ASSOCIATION. THIS AGREEMENT PROHIBITS FURTHER SUBDIVISION OF THE PARCELS, OUTLINES THE MAINTENANCE RESPONSIBILITIES OF ITS OWNER AND ENUMERATES THE USES PERMITTED ON THE PROPERTY.
PRESERVATION PARCEL "J" IS PROPOSED AS A PRIVATELY OWNED NON-BUILDABLE PARCEL TO PROTECT STEEP SLOPES AND STREAM BUFFER AREAS WHICH ARE CONSIDERED PRIORITY AREAS. IT IS ENCLOSED BY AN EASEMENT AGREEMENT WITH THE HOMEOWNERS ASSOCIATION AND HOWARD COUNTY. THIS AGREEMENT PROHIBITS FURTHER SUBDIVISION OF THE PARCEL, OUTLINES THE MAINTENANCE RESPONSIBILITIES OF ITS OWNER AND ENUMERATES THE USES PERMITTED ON THE PROPERTY.
PRESERVATION PARCELS "K" THRU "P" ARE PROPOSED AS NON-BUILDABLE PARCELS SOLELY FOR STORMWATER MANAGEMENT FACILITIES AS A REQUIREMENT TO CONTROL STORMWATER RUNOFF AND PROVIDE WATER QUALITY AND GROUND WATER RECHARGE. THEY WILL BE OWNED BY THE HOA. THEY ARE ENCLOSED BY AN EASEMENT AGREEMENT WITH HOWARD COUNTY. THIS AGREEMENT PROHIBITS FURTHER SUBDIVISION OF THE PARCEL, OUTLINES THE MAINTENANCE RESPONSIBILITIES OF ITS OWNER AND ENUMERATES THE USES PERMITTED ON THE PROPERTY.
PRESERVATION PARCELS "Q" THRU "R" ARE PROPOSED AS NON-BUILDABLE PARCELS TO BUFFER FROM ADJACENT PROPERTIES VIA EXISTING VEGETATION AND OTHER FEATURES. THESE PARCELS WILL BE DEDICATED TO THE HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS. THEY ARE ENCLOSED BY AN EASEMENT AGREEMENT WITH THE HOMEOWNERS ASSOCIATION. THIS AGREEMENT PROHIBITS FURTHER SUBDIVISION OF THE PARCEL, OUTLINES THE MAINTENANCE RESPONSIBILITIES OF ITS OWNER AND ENUMERATES THE USES PERMITTED ON THE PROPERTY.
PRESERVATION PARCEL "S" IS PROPOSED AS A PRIVATELY OWNED BULK PARCEL INTENDED TO BE PLACED IN THE AGRICULTURAL LAND PRESERVATION PROGRAM. THIS PARCEL WILL BE AN EXTENSION OF THE ADJACENT AGRICULTURAL PRESERVATION EASEMENT AREA. PROTECTS THE PATUXENT RIVER AND ITS STEEP SLOPES. ONE (1) BULK PARCEL UNIT IS TO BE BUILT ON THIS PARCEL. THIS AGREEMENT PROHIBITS FURTHER SUBDIVISION OF THE PARCEL, OUTLINES THE MAINTENANCE RESPONSIBILITIES OF ITS OWNER AND ENUMERATES THE USES PERMITTED ON THE PROPERTY.
BULK PARCELS "AA" THRU "AA" ARE PROPOSED AS BULK PARCELS FOR A FUTURE SUBDIVISION AS PHASE 2. THERE IS POTENTIAL FOR 43 ADDITIONAL CLUSTER LOTS (AS PHASE 2). THE REMAINDER AFTER CLUSTER LOTS ARE ESTABLISHED WILL BE NON-BUILDABLE PRESERVATION PARCELS SOME OF WHICH WILL BE IN THE AGRICULTURAL LAND PRESERVATION PROGRAM.
BULK PARCEL "AB" IS PROPOSED AS A NON-BUILDABLE BULK PARCEL FOR A POSSIBLE RIGHT-OF-WAY FOR ACCESS TO PARCEL 117. IT SHALL BE TRANSFERRED TO PARCEL 117 UPON RECOGNITION OF THE HOA.

RIVERWOOD

ROAD, GRADING, STORM DRAIN, LANDSCAPE AND STORMWATER MANAGEMENT CONSTRUCTION PLANS



SHEET INDEX	
NO.	TITLE
1	TITLE SHEET
2	ROAD PLAN
3	ROAD PLAN
4	ROAD PLAN
5	ROADPLAN DETAILS
6	SPEED CONTROL DETAILS
7	ROAD PROFILES
8	ROAD PROFILES
9	ROAD PROFILES
10	ROAD PROFILES
11	ROAD PROFILES
12	ROAD PROFILES
13	STORM DRAIN WIDENING PLAN
14	STORM DRAIN DRAINAGE AREA MAP
15	STORM DRAIN DRAINAGE AREA MAP
16	STORM DRAIN PROFILES
17	STORM DRAIN PROFILES
18	STORM DRAIN PROFILES
19	STORM DRAIN PROFILES
20	STORM DRAIN PROFILES
21	GRADING, SEDIMENT AND EROSION CONTROL PLAN
22	GRADING, SEDIMENT AND EROSION CONTROL PLAN
23	GRADING, SEDIMENT AND EROSION CONTROL PLAN
24	GRADING, SEDIMENT AND EROSION CONTROL PLAN
25	GRADING, SEDIMENT AND EROSION CONTROL PLAN
26	SEDIMENT & EROSION CONTROL NOTES & DETAILS
27	LANDSCAPE PLAN
28	LANDSCAPE PLAN
29	LANDSCAPE PLAN AND STREAM DIMENSION DETAILS
30	FOREST CONSERVATION PLAN
31	FOREST CONSERVATION PLAN
32	FOREST CONSERVATION PLAN
33	FOREST CONSERVATION PLAN
34	SWM DETAILS FACILITY #1
35	SWM DETAILS FACILITY #2
36	SWM DETAILS FACILITY #3
37	SWM DETAILS FACILITY #4
38	SWM DETAILS FACILITY #5
39	SWM DETAILS FACILITY #6
40	SWM NOTES AND BORING LOGS
41	ARCHDRAIN DETAILS
42-53	ARCHDRAIN SPECIFICATIONS
54-55	POOL DETAILS & STABILIZATION DETAILS



VICINITY MAP
SCALE: 1" = 2000'

BENCHMARKS NAD'83 HORIZONTAL	
HO. CO. #29CA	E 1343533.820'
3/4" REBAR W/ CAP	ELEV.=423.53'
HO. CO. #29IC	E 1344112.295'
STAMPED ALUMINUM DISK SET ON IRON ROD	ELEV.=468.79'

SITE ANALYSIS DATA CHART

GENERAL SITE DATA	
1) PRESENT ZONING:	RC-D60
2) APPLICABLE DPZ FILE REFERENCES:	WP-02-64, S-02-009
3) PROPOSED USE OF SITE:	P-03-010 RESIDENTIAL (SFD - HOMES)
4) PROPOSED WATER AND SEWER SYSTEMS:	PRIVATE

AREA TABULATION	
1) GROSS TRACT AREA	269.85 AC.±
2) AREA WITHIN 100-YEAR FLOODPLAIN	44.83 AC.±
3) TOTAL AREA OF 25% OR GREATER STEEP SLOPES	6.00 AC.±
4) NET TRACT AREA	220.19 AC.±
5) TOTAL NUMBER OF LOTS ALLOWED PER ZONING	63
1 UNIT PER 4.25 GROSS ACRES	110
1 UNIT PER 2 NET ACRES (MAX)	110
6) TOTAL NUMBER OF RESIDENTIAL UNITS/LOTS PROPOSED ON THIS SUBMISSION (POTENTIAL 43 ADDITIONAL LOTS IN PHASE 2)	43
7) AREA OF CLUSTER LOTS	46.34 AC.±
8) AREA OF NON-BUILDABLE PRESERVATION PARCELS (PARCELS A - P)	84.10 AC.±
9) AREA OF BUILDABLE PRESERVATION PARCELS (PARCEL Q)	43.94 AC.±
10) AREA OF NON-BUILDABLE BULK PARCELS**	83.69 AC.±
11) AREA OF BUILDABLE BULK PARCELS	N/A
12) AREA OF ROAD RIGHT-OF-WAY	11.78 AC.±
13) OPEN SPACE ON-TOTAL SITE* (PERCENTAGE OF GROSS AREA)	0.00%
14) AREA OF RECREATIONAL OPEN SPACE REQUIRED	N/A

PHASING TABULATION		
ALLOCATION YEAR	NO. OF RESIDENTIAL LOTS	PHASE
2005	43	1
2006	40	2

NO.	DATE	REVISION
1	5-4-06	CHANGE NUMBER OF PLANS IN SET

BENCHMARK ENGINEERING, INC.
ENGINEERS • LAND SURVEYORS • PLANNERS

Donald M. Moore
el2105

8480 BALTIMORE NATIONAL PIKE • SUITE 418
ELLCOTT CITY, MARYLAND 21043
PHONE: 410-465-8105 • FAX: 410-465-8644
WWW.BEI-ENGINEERING.COM

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
William J. White 7-18-05
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Cindy Hamilton 7/26/05
CHIEF, DIVISION OF LAND DEVELOPMENT

John Lee Carroll 7/26/05
CHIEF, DEVELOPMENT ENGINEERING DIVISION

NOTE: FOR R/W CHART AND MONUMENT REFERENCES SEE SHEET 15

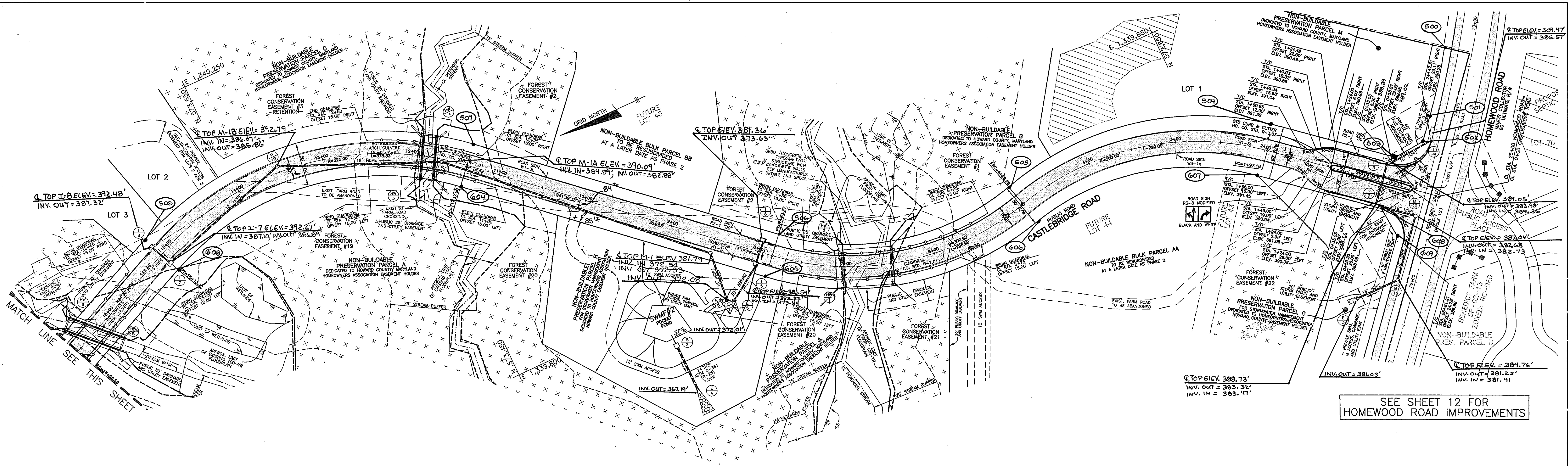
PLAN VIEW
SCALE: 1" = 300'

Donald M. Moore
AS-BUILT 1-7-09

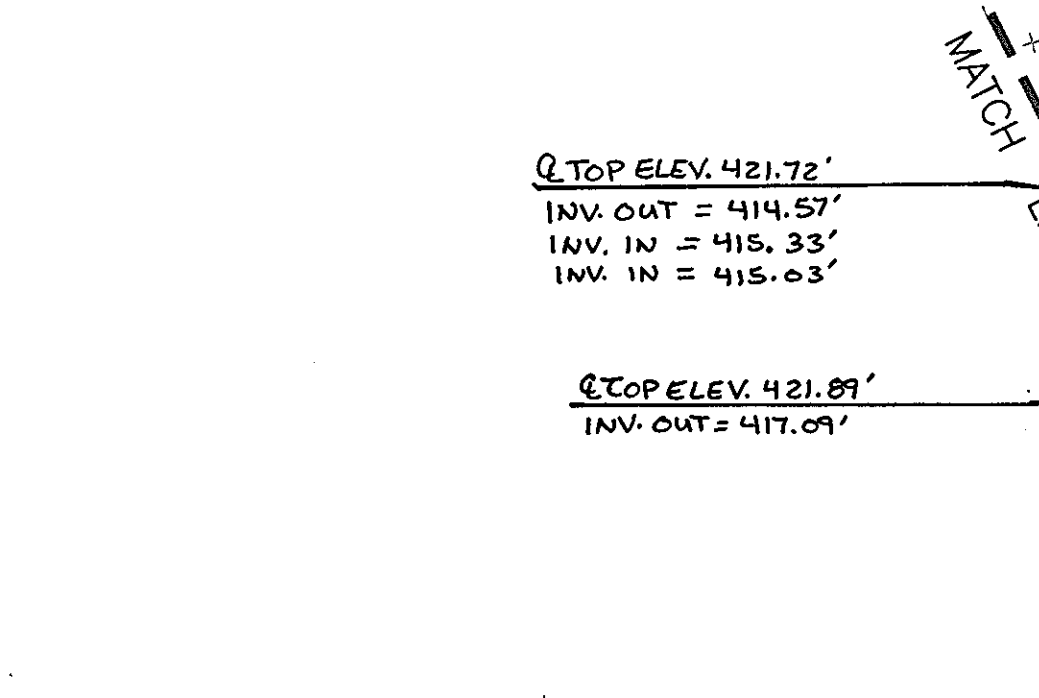
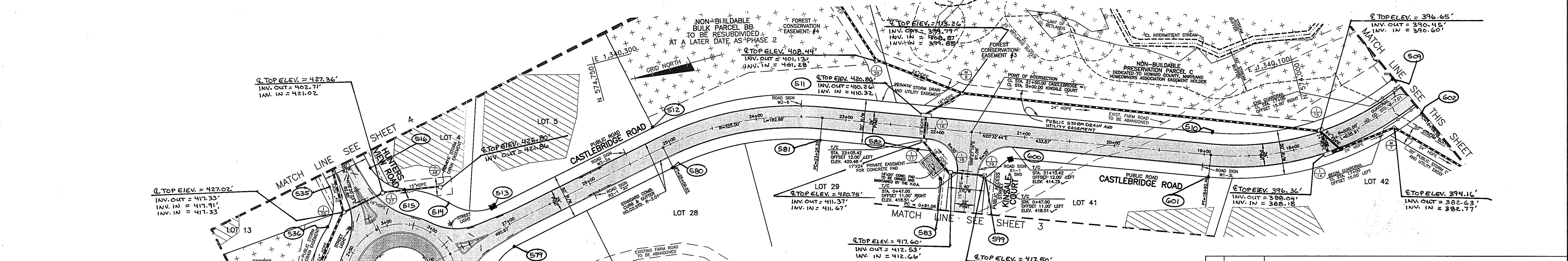
DENSITY EXCHANGE CHART	
GROSS AREA	269.85 AC.±
NET TRACT AREA	220.19 AC.±
DWELLING UNITS ALLOWED (as matter of right)	269.85 AC.± @ 1 DU per 4.25 GROSS ACRES = 63
MAXIMUM DWELLING UNITS ALLOWED W/ CEO'S	220.19 AC.± @ 1 DU per 2.00 NET ACRES = 110
PROPOSED DWELLING UNITS	90*
NUMBER OF CEO UNITS TO BE RECEIVED	90 - 63 (base density) = 27
SENDING PARCEL INFORMATION	(SHALL BE PROVIDED UNDER PHASE 2, AS PHASE 1 WILL NOT RECEIVE DENSITY)

*43 PHASE 1, 40 PHASE 2 AND 7 POTENTIAL FUTURE LOTS ON THE FUTURE BULK PARCEL JJ

DEVELOPER:	ELIQUA, L.L.C. P.O. BOX 417 ELLCOTT CITY, MARYLAND 21041 410-465-4244	PROJECT:	RIVERWOOD - PHASE 1 LOTS 1 - 42; BUILDABLE PRESERVATION PARCEL AND NON-BUILDABLE BULK PARCELS "A" THRU "R";
OWNER:	HOMWOOD, L.L.C. P.O. BOX 417 ELLCOTT CITY, MARYLAND 21041 410-465-4244	LOCATION:	TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,8&10 PARCELS: 86 PARCELS: 20 & 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
OWNER:	JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND CENEVIVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32nd FLOOR NEW YORK, NEW YORK 10022	TITLE:	TITLE SHEET
DES: JMC/DBT	DRAFT: JMC/DBT	CHECK: CAM	DATE: JUNE, 2005 PROJECT NO. 1132
SCALE: AS SHOWN		SHEET 1 OF 55	



SEE SHEET 12 FOR
HOMWOOD ROAD IMPROVEMENTS



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
William J. White
 CHIEF, BUREAU OF HIGHWAYS
 DATE: 7-12-05

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Cindy Hanover
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 7/16/05

Chris Perkinson
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 7/19/05

CENTERLINE CONTROL DATA

STREET NAME	STATION	NORTH	EAST
CASTLEBRIDGE ROAD	BEGIN=0+00.00	572438.5323	1339548.9098
	PC=1+97.18	572589.2497	1339676.0554
	PRC=4+86.28	572860.6502	1339736.4449
	PT=7+83.27	573138.0181	1339802.0046
	PC=11+37.80	573402.8902	1340037.6576
	PT=15+13.12	573753.7399	1340090.5813
	PC=18+56.58	573884.2705	1340031.0494
	PT=18+92.49	574114.0083	1340023.0995
	PC=23+26.35	574520.2768	1340175.3653
	PT=25+09.03	574700.0208	1340189.3305

STREET LIGHT SCHEDULE

SYMBOL	LOCATION	DESCRIPTION
(Symbol)	CASTLEBRIDGE ROAD	CL STA. 27+59 OFFS. 30' RIGHT
(Symbol)	HUNTERWOOD ROAD	CL STA. 29+11 OFFS. 30' LEFT
(Symbol)	CASTLEBRIDGE ROAD	CL STA. 20+19 OFFS. 26' RIGHT
(Symbol)	CASTLEBRIDGE ROAD	CL STA. 0+36 OFFS. 34' RIGHT

CENTER LINE CURVE DATA

STREET NAME	STATION	RADIUS	ARC	TANGENT	CHORD
CASTLEBRIDGE ROAD	STA. 1+97.18 TO 4+86.28	300.00'	289.09'	55°12'47"	156.89'
	STA. 4+86.28 TO 7+83.27	300.00'	296.99'	56°43'16"	161.94'
	STA. 11+37.80 TO 15+13.12	325.00'	375.33'	66°10'16"	211.74'
	STA. 18+56.58 TO 18+92.49	300.00'	235.91'	45°03'17"	124.43'
	STA. 23+26.35 TO 25+09.03	325.00'	182.68'	32°12'20"	93.82'

NO.	DATE	REVISION
2	1-5-07	REVISE FOR #20; I-5/I-6; HW1-HW2
1	5-4-06	REMOVE STREET LIGHTS ASSOCIATED WITH SPEED CONTROL DEVICES.

BENCHMARK ENGINEERING, INC.
 ENGINEERS & LAND SURVEYORS & PLANNERS
 8480 BALTIMORE NATIONAL PIKE & SUITE 418
 ELLICOTT CITY, MARYLAND 21043
 PHONE: 410-465-6105 FAX: 410-465-6644
 www.benchmark-engineering.com

Donall Maer
 aldos

DEVELOPER: ELIOAK, L.L.C.
 P.O. BOX 417
 ELLICOTT CITY, MARYLAND 21041
 410-465-4244

OWNER: HOMWOOD, L.L.C.
 P.O. BOX 417
 ELLICOTT CITY, MARYLAND 21041
 410-465-4244

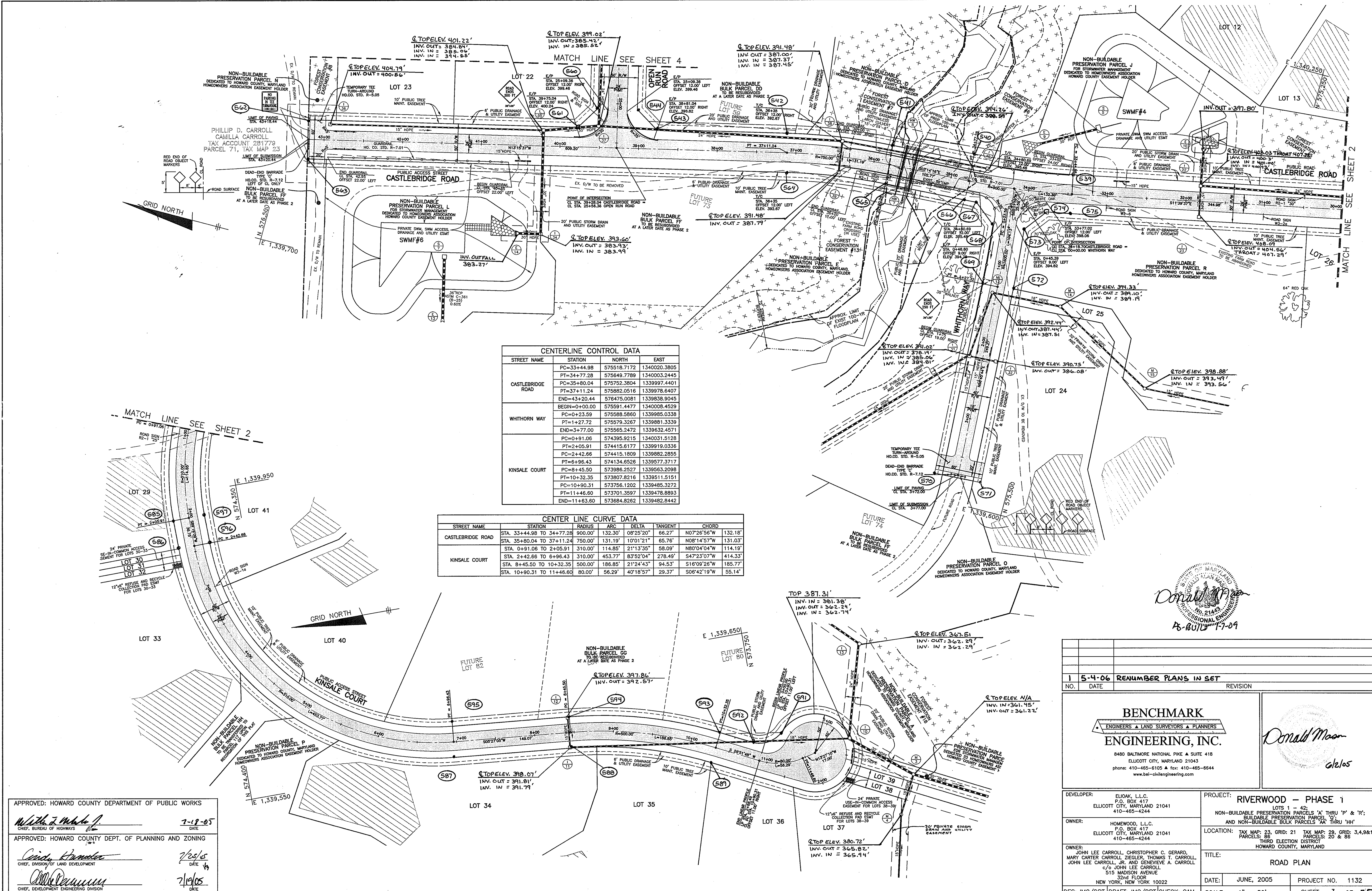
PROJECT: RIVERWOOD - PHASE 1
 LOTS 1 - 42
 NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R';
 BUILDABLE PRESERVATION PARCEL 'Q';
 AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'

LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 25, GRID: 3, 4, 9 & 10
 PARCELS: 86 PARCELS: 20 & 86
 THIRD ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

TITLE: ROAD PLAN

DATE: JUNE, 2005 PROJECT NO. 1132

DES: JMC/DBT DRAFT: JMC/DBT CHECK: CAM SCALE: 1" = 50' SHEET 2 OF 58



CENTERLINE CONTROL DATA

STREET NAME	STATION	NORTH	EAST
CASTLEBRIDGE ROAD	PC=33+44.98	575518.7172	1340020.3805
	PT=34+77.28	575649.7789	1340003.2445
	PC=35+80.04	575752.3804	1339997.4401
	PT=37+11.24	575882.0516	1339978.6407
WHITHORN WAY	END=43+20.44	576475.0081	1339838.9045
	BEGIN=0+00.00	575591.4477	1340008.4529
	PC=0+23.59	575588.5860	1339985.0338
	PT=1+27.72	575579.3267	1339881.3339
KINSALE COURT	END=3+77.00	575565.2472	1339632.4571
	PC=0+91.06	574395.9215	1340031.5128
	PT=2+05.91	574415.6177	1339919.0336
	PC=2+42.66	574415.1809	1339882.2855
KINSALE COURT	PT=6+96.43	574134.8526	1339577.3717
	PC=8+45.50	573986.2527	1339563.2098
	PT=10+32.35	573807.8216	1339511.5151
	PC=10+90.31	573756.1202	1339485.3272
KINSALE COURT	PT=11+46.60	573701.3597	1339478.8893
	END=11+63.60	573684.8262	1339482.8442

CENTER LINE CURVE DATA

STREET NAME	STATION	RADIUS	ARC	DELTA	TANGENT	CHORD
CASTLEBRIDGE ROAD	STA. 33+44.98 TO 34+77.28	900.00'	132.30'	08°25'20"	66.27'	N07°26'56"W 132.18'
	STA. 35+80.04 TO 37+11.24	750.00'	131.19'	10°01'21"	65.76'	N08°14'57"W 131.03'
KINSALE COURT	STA. 0+91.06 TO 2+05.91	310.00'	114.85'	21°13'35"	58.09'	N80°04'04"W 114.19'
	STA. 2+42.66 TO 6+96.43	310.00'	453.77'	83°52'04"	278.49'	S47°23'07"W 414.33'
	STA. 8+45.50 TO 10+32.35	500.00'	186.85'	21°24'43"	94.53'	S16°09'26"W 185.77'
KINSALE COURT	STA. 10+90.31 TO 11+46.60	80.00'	56.29'	40°18'57"	29.37'	S06°42'19"W 55.14'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
William J. White, Jr. 7-12-05
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Chris Kromer 7/23/05
 CHIEF, DIVISION OF LAND DEVELOPMENT

Alan Pannunzio 7/19/05
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

REVISIONS

NO.	DATE	REVISION
1	5-4-06	RENUMBER PLANS IN SET

BENCHMARK ENGINEERING, INC.
 ENGINEERS • LAND SURVEYORS • PLANNERS
 8480 BALTIMORE NATIONAL PIKE • SUITE 418
 ELLICOTT CITY, MARYLAND 21043
 PHONE: 410-465-6105 • FAX: 410-465-6644
 WWW.BEI-CIVILENGINEERING.COM

PROJECT: RIVERWOOD - PHASE 1
 LOTS 1 - 42;
 NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R';
 BUILDABLE PRESERVATION PARCEL 'Q';
 AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'

LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 25, GRID: 3, 4, 9 & 10
 PARCELS: 88 PARCELS: 20 & 85
 THIRD ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

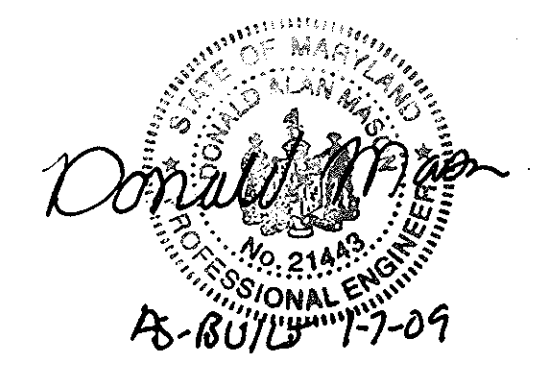
TITLE: ROAD PLAN

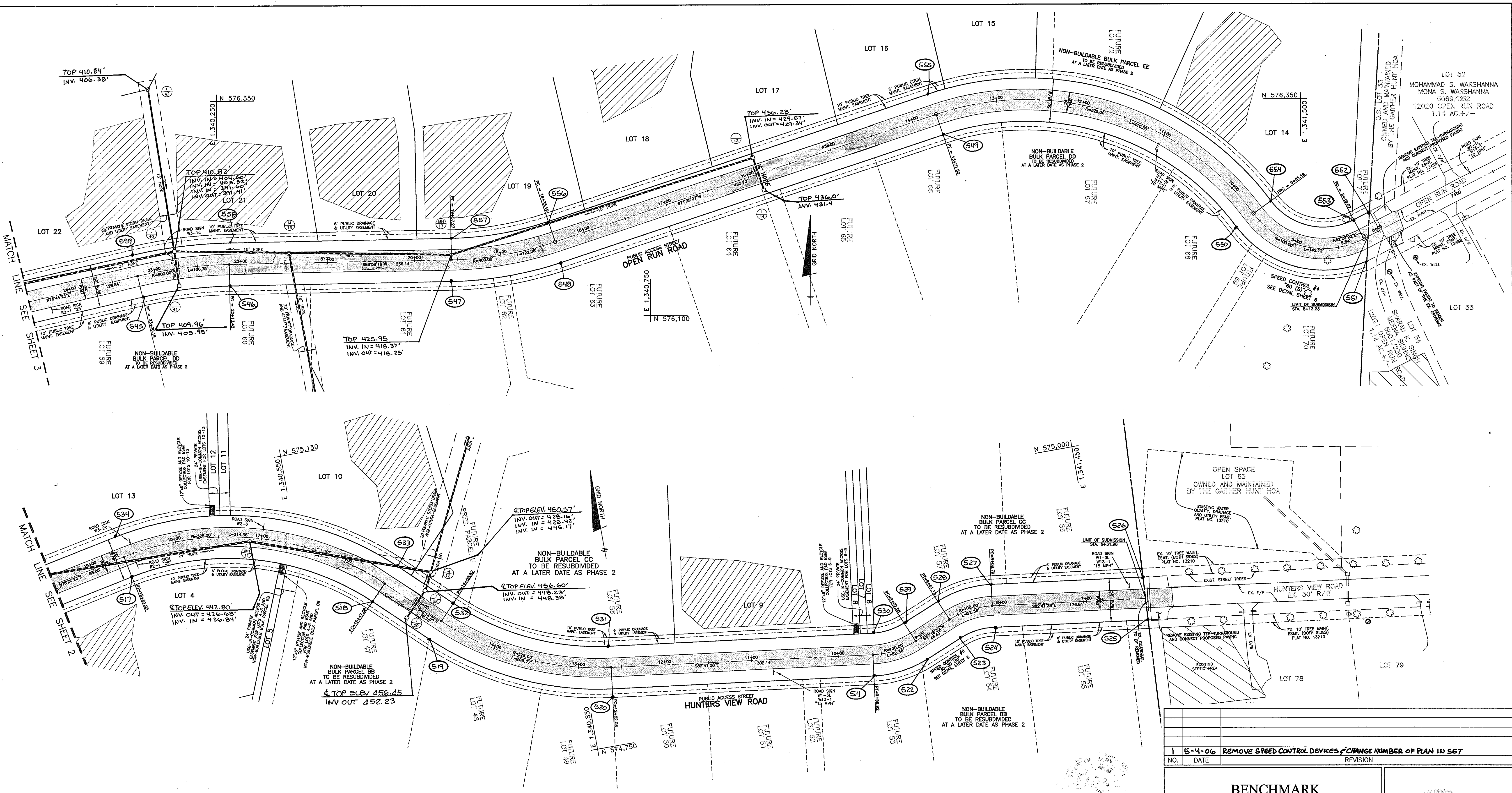
DEVELOPER: ELIOAK, L.L.C.
 P.O. BOX 417
 ELLICOTT CITY, MARYLAND 21041
 410-465-4244

OWNER: HOMEWOOD, L.L.C.
 P.O. BOX 417
 ELLICOTT CITY, MARYLAND 21041
 410-465-4244

OWNER: JOHN LEE CARROLL, CHRISTOPHER C. GERARD,
 MARY CARTER CARROLL ZIEGLER, THOMAS T. CARROLL,
 JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL
 C/O JOHN LEE CARROLL
 515 MADISON AVENUE
 32nd FLOOR
 NEW YORK, NEW YORK 10022

DATE: JUNE, 2005 **PROJECT NO.:** 1132
SCALE: 1" = 50' **SHEET:** 3 OF 55





APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Walter J. White 7-18-05
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Cindy Hamble 7/25/05
 CHIEF, DIVISION OF LAND DEVELOPMENT

David Dammann 7/14/05
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

CENTERLINE CONTROL DATA			
STREET NAME	STATION	NORTH	EAST
HUNTERS VIEW ROAD	LOS=6+31.98	574811.4451	1341502.8137
	PC=8+08.79	574833.9383	1341327.4422
	PT=8+61.15	574827.0106	1341276.1441
	PC=9+07.56	574809.1073	1341233.3262
	PT=9+59.92	574802.1796	1341182.0280
	PC=12+62.06	574840.6176	1340882.3415
	PT=14+68.82	574928.2496	1340698.9029
	PC=15+47.58	574982.7238	1340642.0192
	PT=18+61.95	575066.2897	1340351.5501
	END=20+32.85	575031.7504	1340184.1797
OPEN RUN ROAD	LOS=8+13.23	576189.7923	1341577.9314
	PC=8+19.07	576187.0866	1341572.7583
	PRC=9+61.19	576216.6654	1341445.6962
	PT=13+71.50	576332.9868	1341080.1658
	PC=18+35.19	576185.7408	1340640.4681
	PT=19+57.27	576165.1021	1340520.6269
	PC=22+13.42	576180.5058	1340264.5237
	PT=23+20.16	576147.2551	1340158.8074
	END=25+56.36	576093.0775	1339928.9105

CENTER LINE CURVE DATA						
STREET NAME	STATION	RADIUS	ARC	DELTA	TANGENT	CHORD
HUNTERS VIEW ROAD	STA. 8+08.79 TO 8+61.15	100.00'	52.36'	30°00'00"	26.79'	S82°18'32"W 51.76'
	STA. 9+07.56 TO 9+59.92	100.00'	52.36'	30°00'00"	26.79'	S82°18'32"W 51.76'
	STA. 12+62.06 TO 14+68.82	325.00'	206.77'	36°27'06"	107.02'	N64°27'55"W 203.30'
OPEN RUN ROAD	STA. 15+47.58 TO 18+61.95	325.00'	314.36'	55°25'14"	170.70'	N73°56'59"W 302.25'
	STA. 8+19.07 TO 9+61.19	100.00'	142.12'	81°25'48"	86.08'	N76°53'44"W 130.46'
	STA. 9+61.19 TO 13+71.50	325.00'	410.30'	72°20'03"	237.58'	N72°20'51"W 383.59'

Donald Moon
 PROFESSIONAL ENGINEER
 AS-BUILT 1-7-09

NO.	DATE	REVISION
1	5-4-06	REMOVE SPEED CONTROL DEVICES & CHANGE NUMBER OF PLAN IN SET

BENCHMARK ENGINEERING, INC.
 ENGINEERS • LAND SURVEYORS • PLANNERS
 8480 BALTIMORE NATIONAL PIKE • SUITE 418
 ELLICOTT CITY, MARYLAND 21043
 phone: 410-465-6105 • fax: 410-465-6644
 www.bei-civilengineering.com

Donald Moon
 P.E.

DEVELOPER: ELUOK, L.L.C., P.O. BOX 417, ELLICOTT CITY, MARYLAND 21041, 410-465-4244

OWNER: HOMWOOD, L.L.C., P.O. BOX 417, ELLICOTT CITY, MARYLAND 21041, 410-465-4244

OWNER: JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL, ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENEVIVE A. CARROLL, c/o JOHN LEE CARROLL, 515 MADISON AVENUE, 32nd FLOOR, NEW YORK, NEW YORK 10022

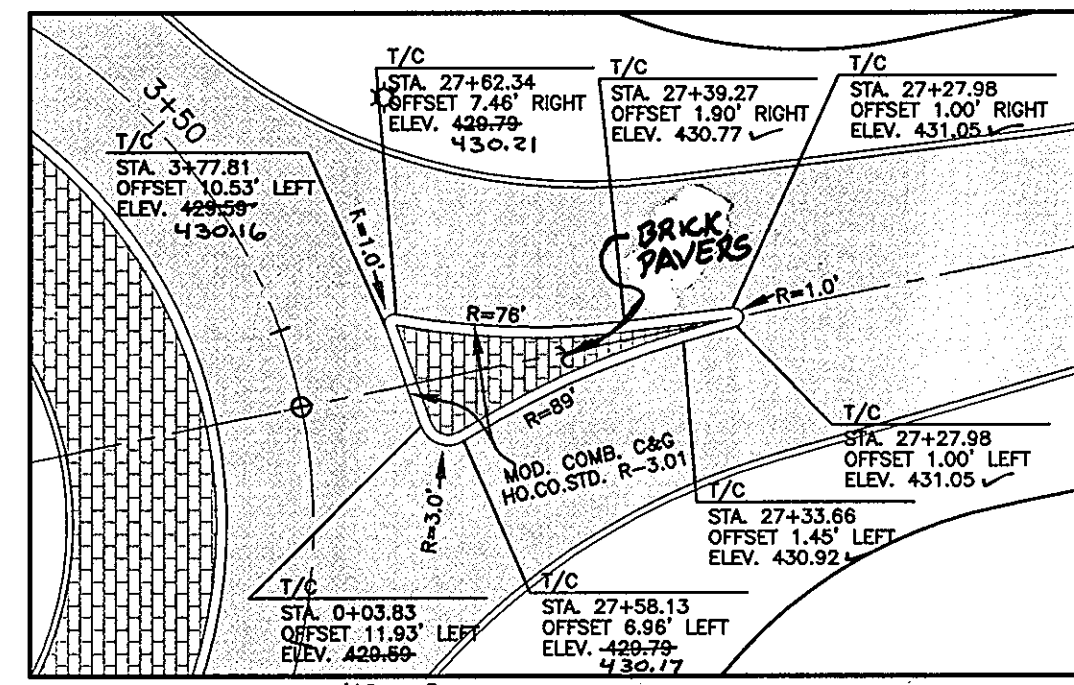
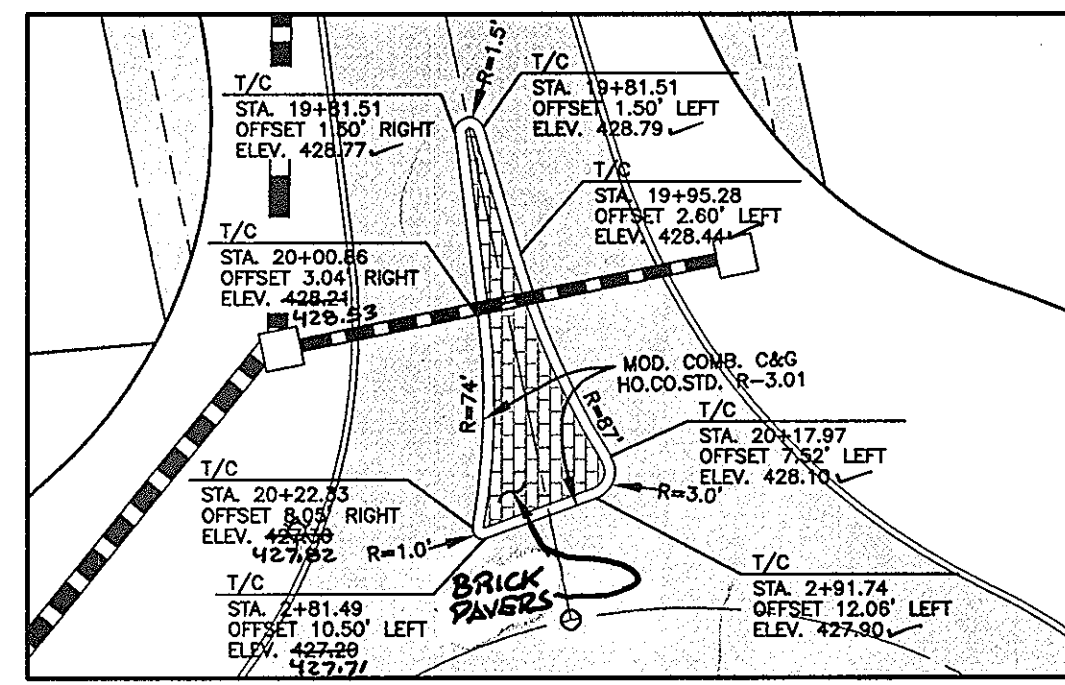
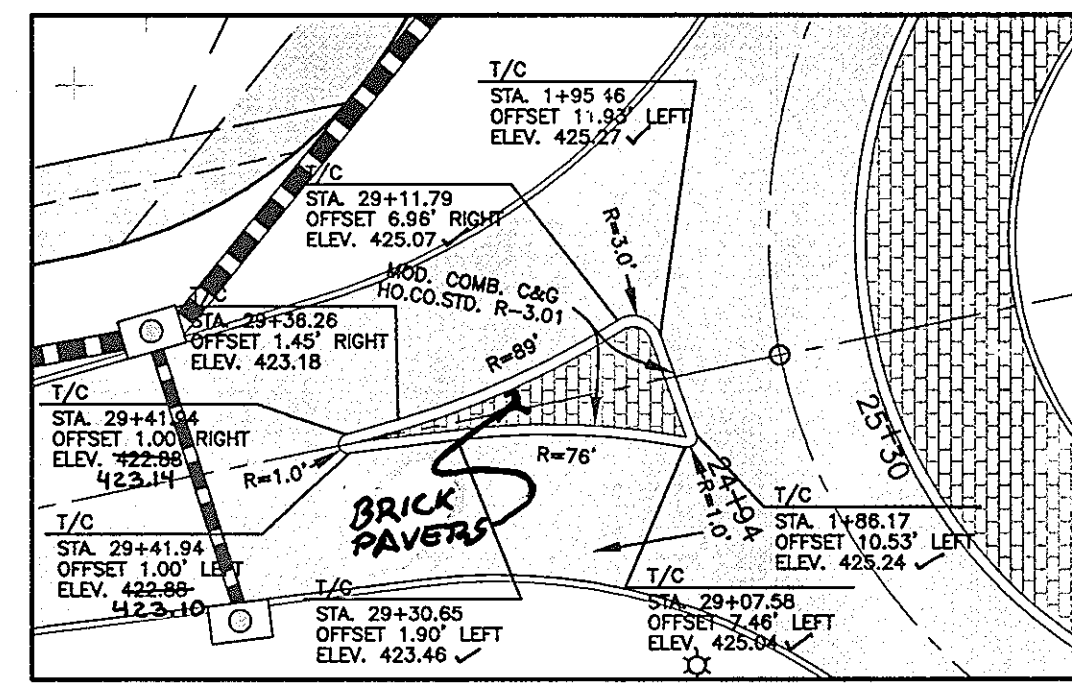
PROJECT: RIVERWOOD - PHASE 1
 LOTS 1 - 42;
 NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R';
 BUILDABLE PRESERVATION PARCEL 'Q';
 AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'

LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,8&10
 PARCELS: 88 PARCELS: 20 & 86
 HOWARD COUNTY, MARYLAND

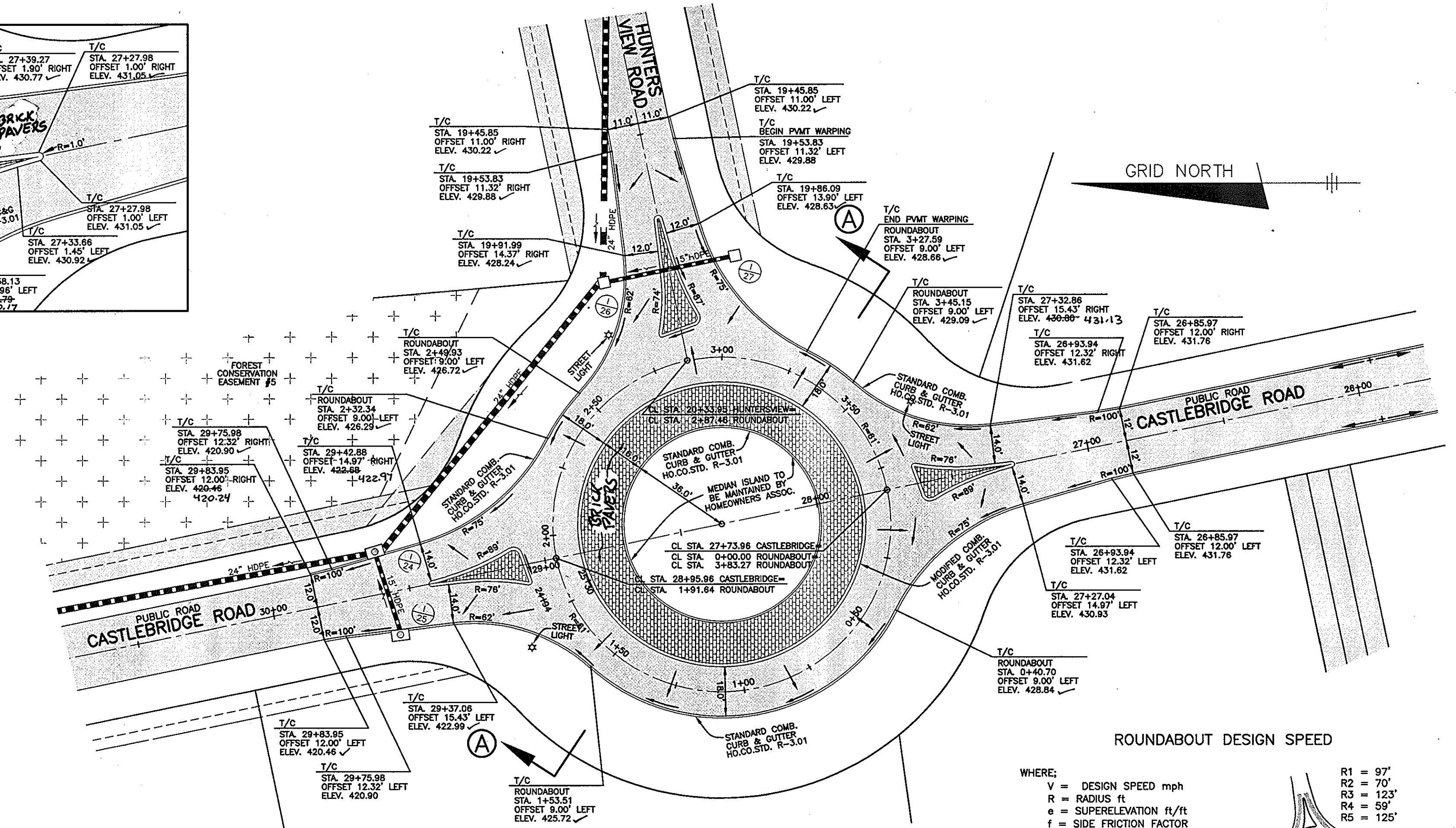
TITLE: ROAD PLAN

DATE: JUNE, 2005 PROJECT NO. 1132

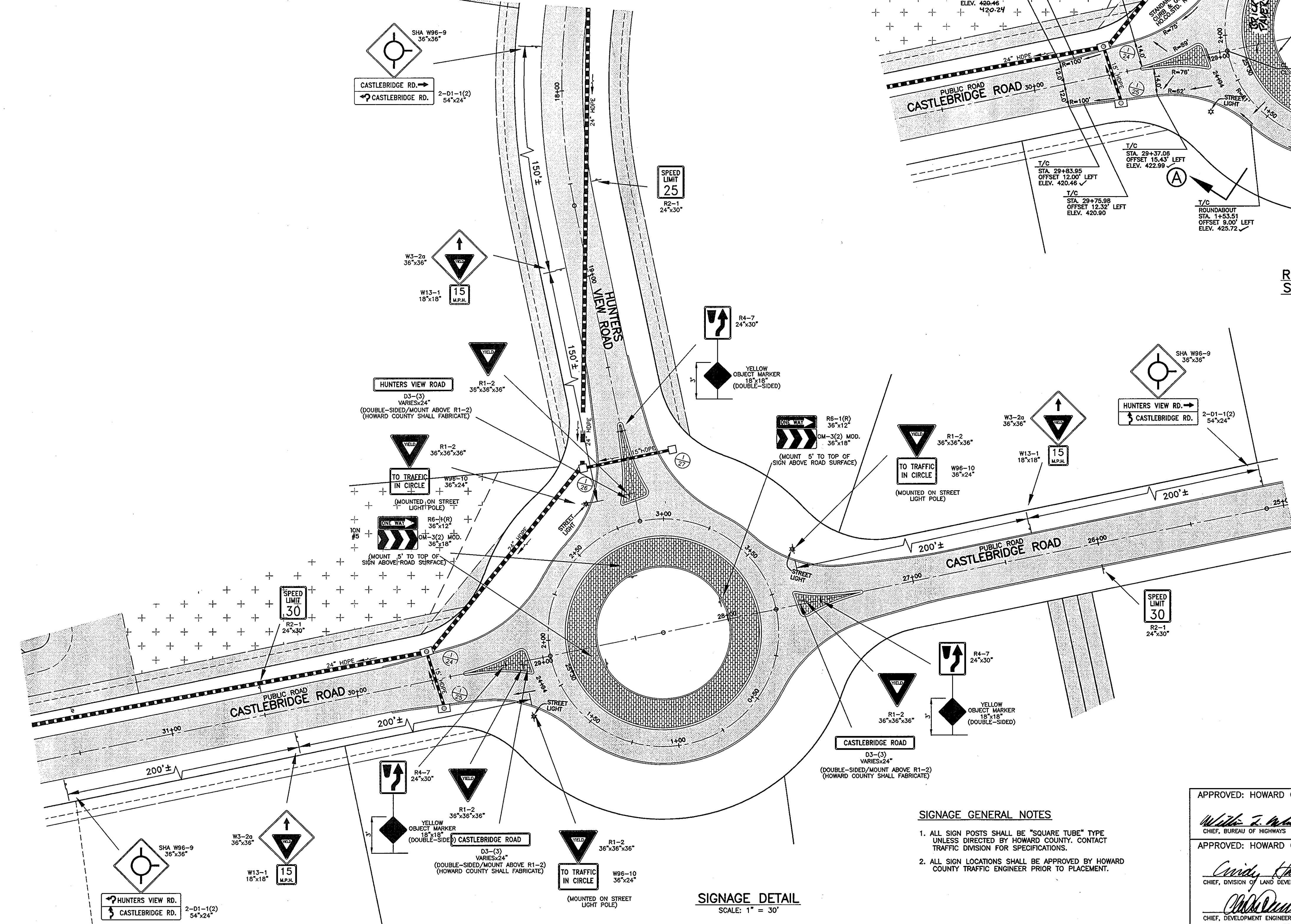
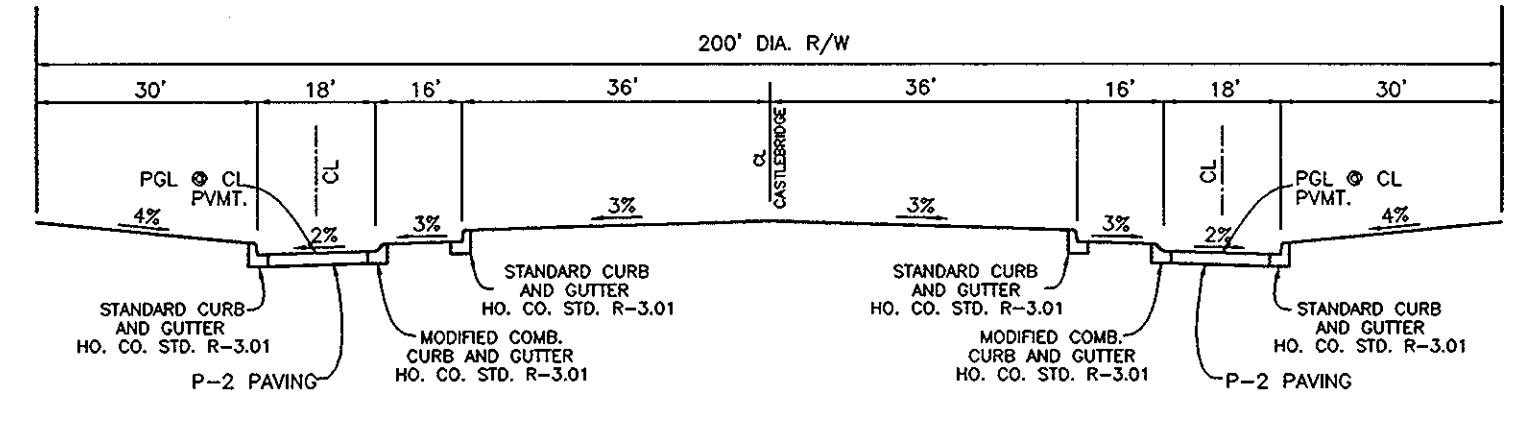
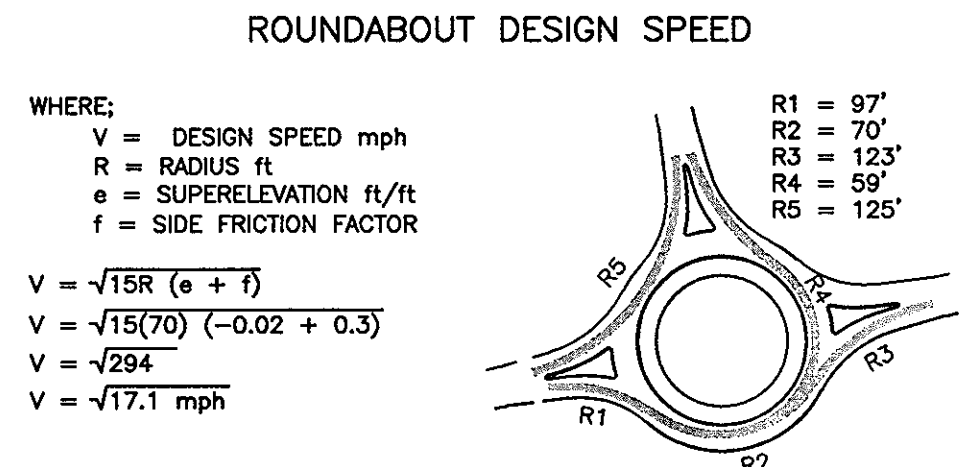
DES: JMC/DBT DRAFT: JMC/DBT CHECK: CAM SCALE: 1" = 50' SHEET 4 OF 65



SPLITTER ISLAND DETAILS
SCALE: 1" = 20'



ROUNDABOUT DETAIL
SPEED CONTROL #5
SCALE: 1" = 30'



SIGNAGE GENERAL NOTES

1. ALL SIGN POSTS SHALL BE "SQUARE TUBE" TYPE UNLESS DIRECTED BY HOWARD COUNTY. CONTACT TRAFFIC DIVISION FOR SPECIFICATIONS.
2. ALL SIGN LOCATIONS SHALL BE APPROVED BY HOWARD COUNTY TRAFFIC ENGINEER PRIOR TO PLACEMENT.

SIGNAGE DETAIL
SCALE: 1" = 30'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Walter E. ... 7-18-05
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Cindy ... 7/15/05
 CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: *...* 7/15/05
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

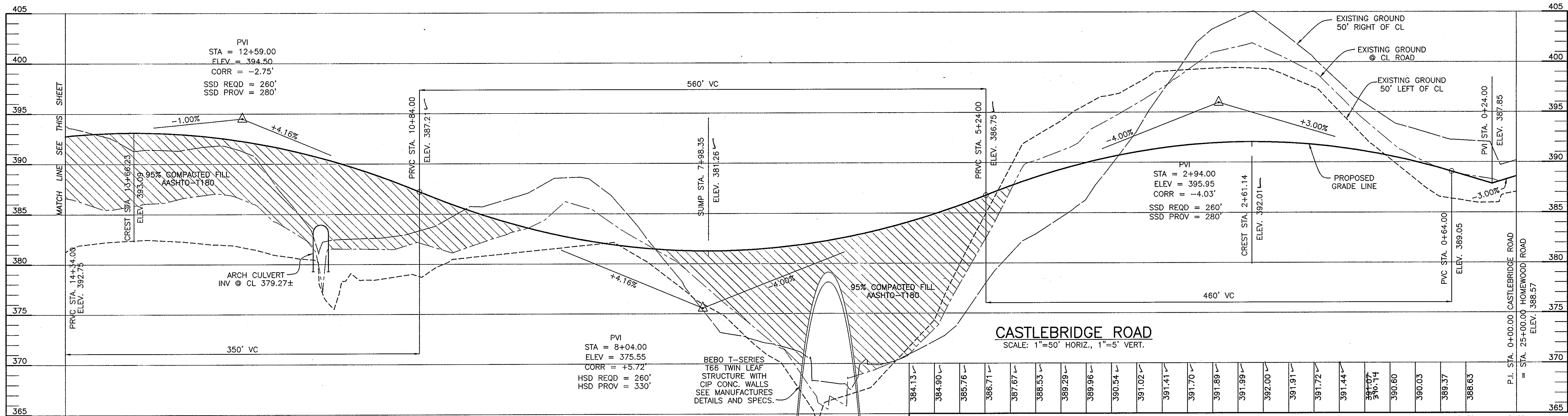
NO.	DATE	REVISION
1	5-4-06	REMEMBER PLANS IN SET

BENCHMARK ENGINEERS, INC.
 ENGINEERS • LAND SURVEYORS • PLANNERS

8480 BALTIMORE NATIONAL PIKE SUITE 418
 ELLICOTT CITY, MARYLAND 21043
 phone: 410-465-6105 • fax: 410-465-6644
 www.bei-civilengineering.com

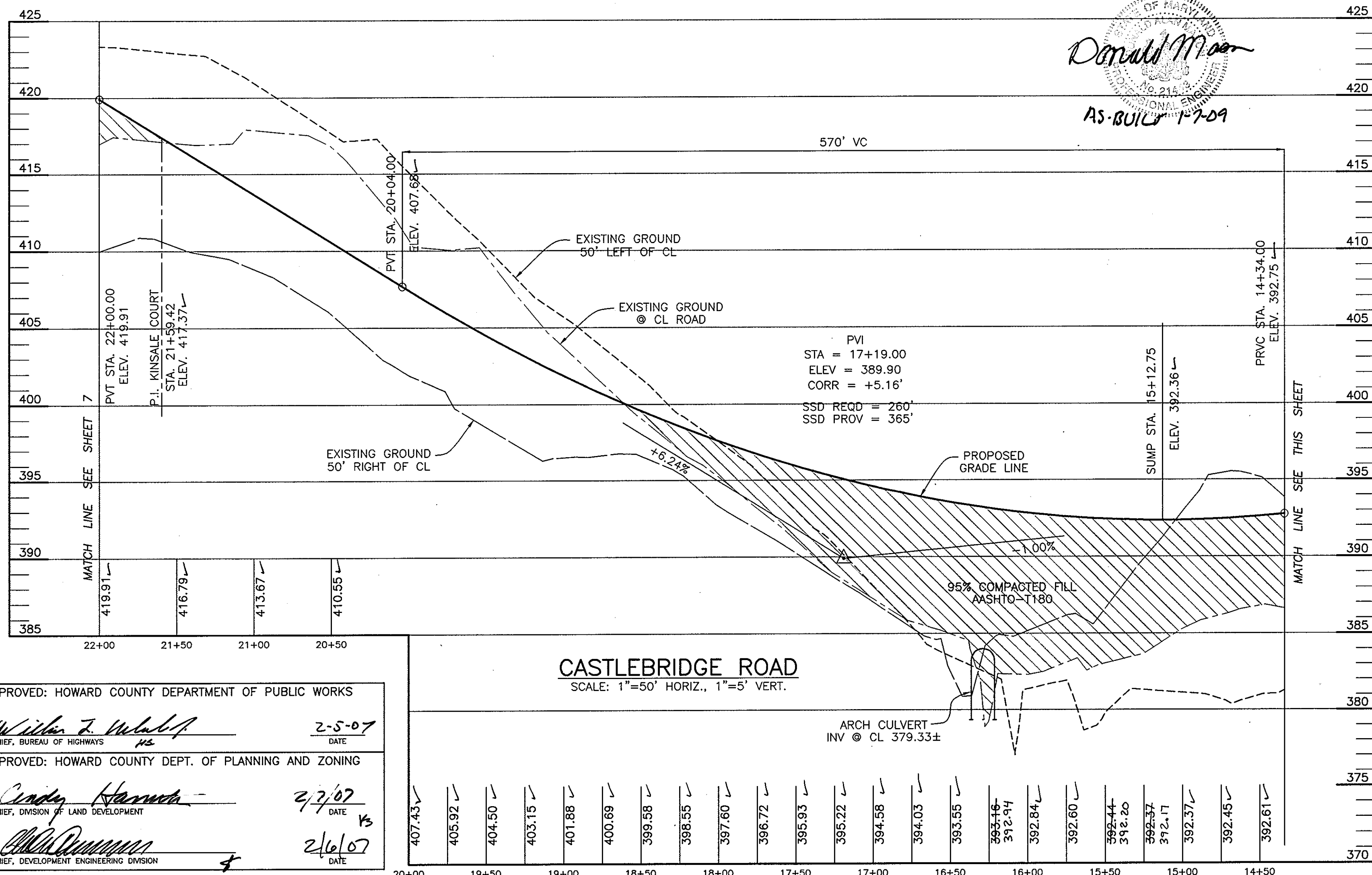
Donald Maan
 al/als

DEVELOPER: ELIOAK, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	PROJECT: RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R' BUILDABLE PRESERVATION PARCEL 'Q' AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'
OWNER: HOMEWOOD, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,9&10 PARCELS: 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
OWNER: JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL, ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32nd FLOOR NEW YORK, NEW YORK 10022	TITLE: ROUNDABOUT DETAILS
DES: JMC/DBT DRAFT: JMC/DBT CHECK: CAM	DATE: JUNE, 2005 PROJECT NO. 1132 SCALE: 1" = 50' SHEET 5 OF 55



CASTLEBRIDGE ROAD
SCALE: 1"=50' HORIZ., 1"=5' VERT.

14+00	392.83
13+50	393.00
13+00	393.08
12+50	393.07
12+00	392.96
11+50	392.77
11+00	392.47
10+50	392.09
10+00	391.62
9+50	391.37
9+00	391.05
8+50	390.76
8+00	390.39
7+50	389.84
7+00	389.60
6+50	389.88
6+00	389.01
5+50	388.23
5+00	387.54
4+50	386.94
4+00	386.43
3+50	386.02
3+00	385.69
2+50	385.46
2+00	385.30
1+50	385.43
1+00	385.74
0+50	386.16
0+00	386.71



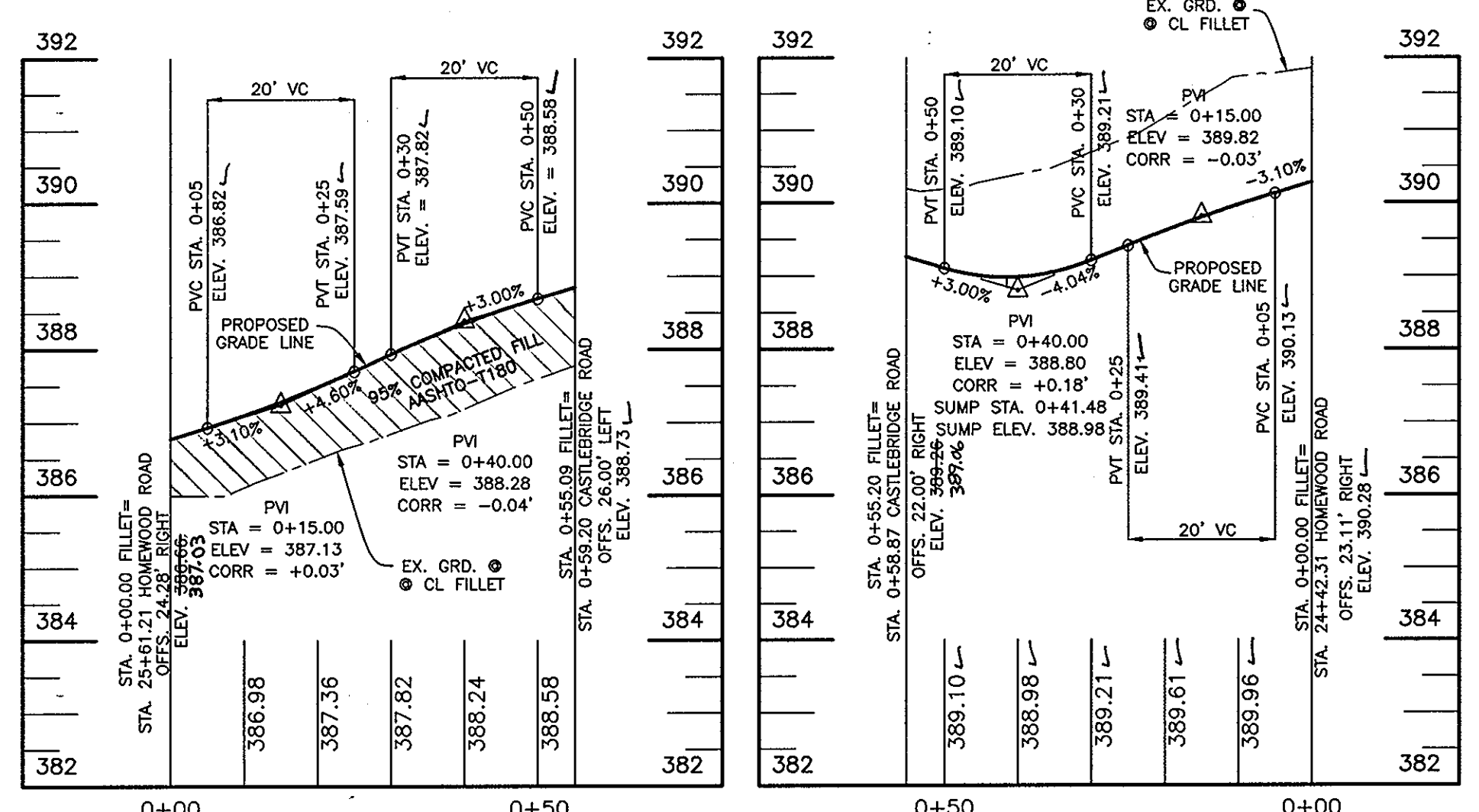
CASTLEBRIDGE ROAD
SCALE: 1"=50' HORIZ., 1"=5' VERT.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
William J. ... 2-5-07
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Carolee ... 2/2/07
CHIEF, DIVISION OF LAND DEVELOPMENT

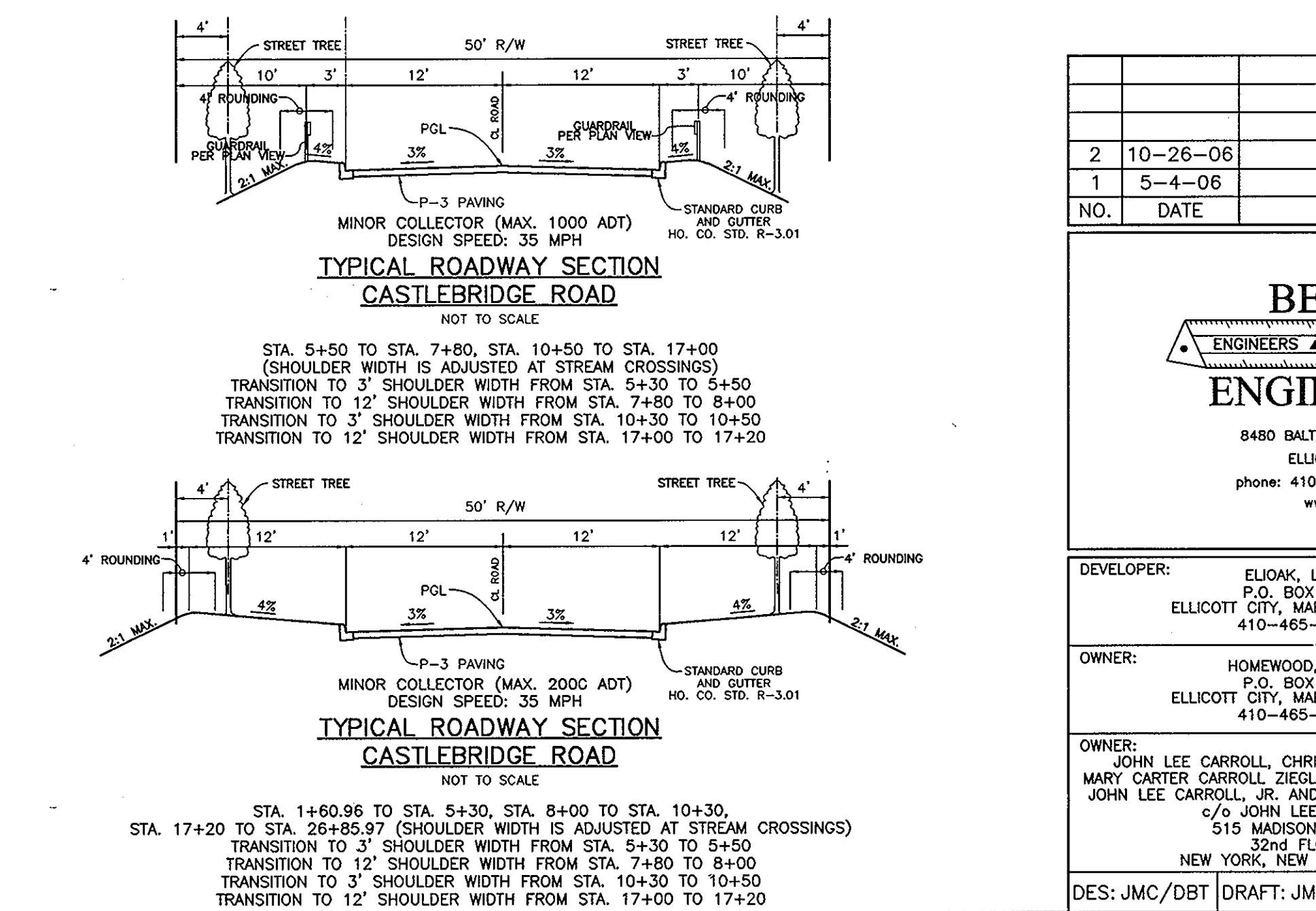
... 2/6/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION

P:\1132_Howard\dwg\101707-11.dwg, Sheet 7, 1/4/2007 9:01:13 AM, Inc. Oce TD5600 HBI for anyler.pcl



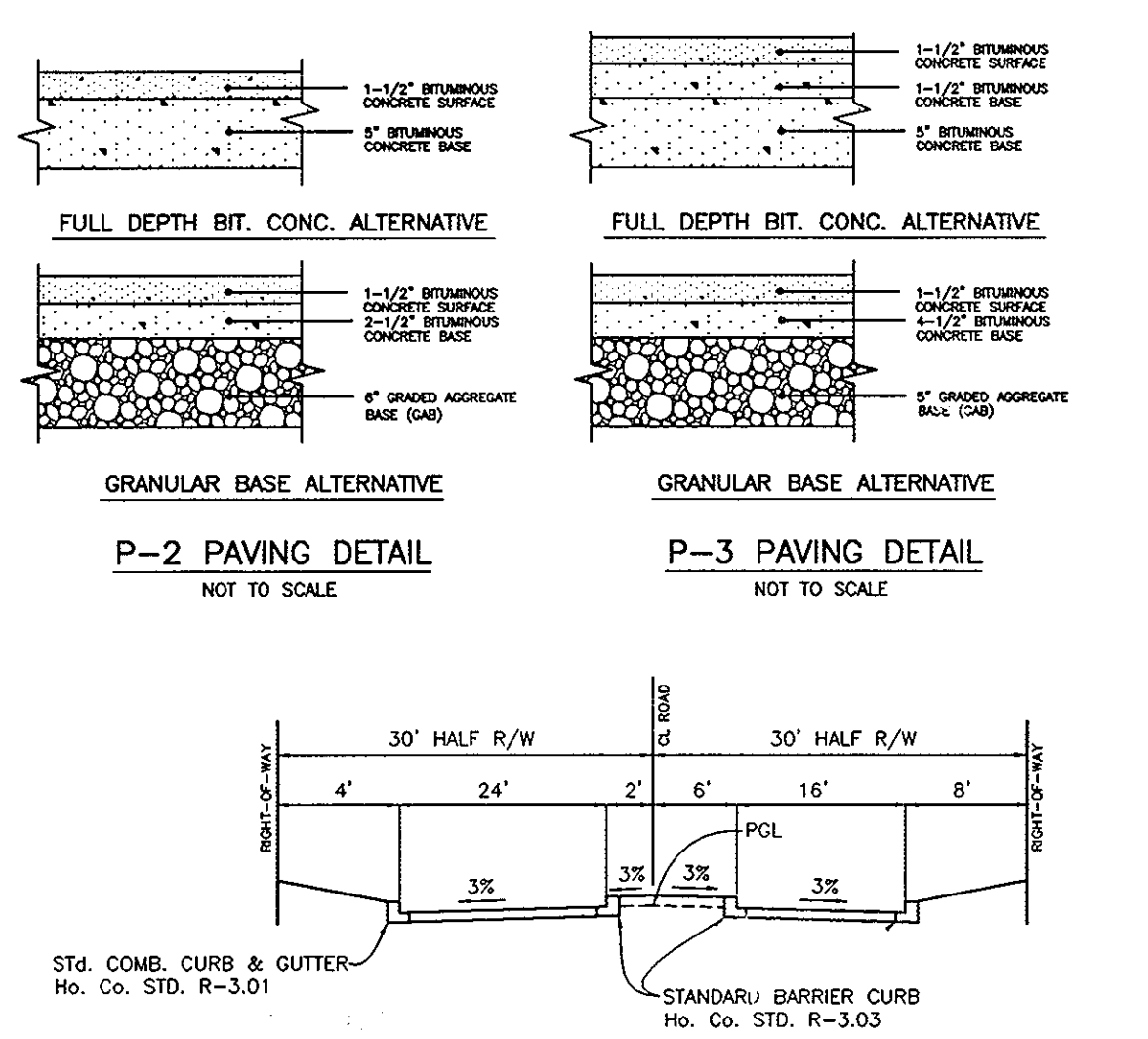
FILLET PROFILE WEST CORNER CASTLEBRIDGE ROAD/HOMEWOOD ROAD
SCALE: 1"=20' HORIZ., 1"=2' VERT.

FILLET PROFILE EAST CORNER CASTLEBRIDGE ROAD/HOMEWOOD ROAD
SCALE: 1"=20' HORIZ., 1"=2' VERT.



TYPICAL ROADWAY SECTION CASTLEBRIDGE ROAD
NOT TO SCALE

TYPICAL ROADWAY SECTION CASTLEBRIDGE ROAD
NOT TO SCALE



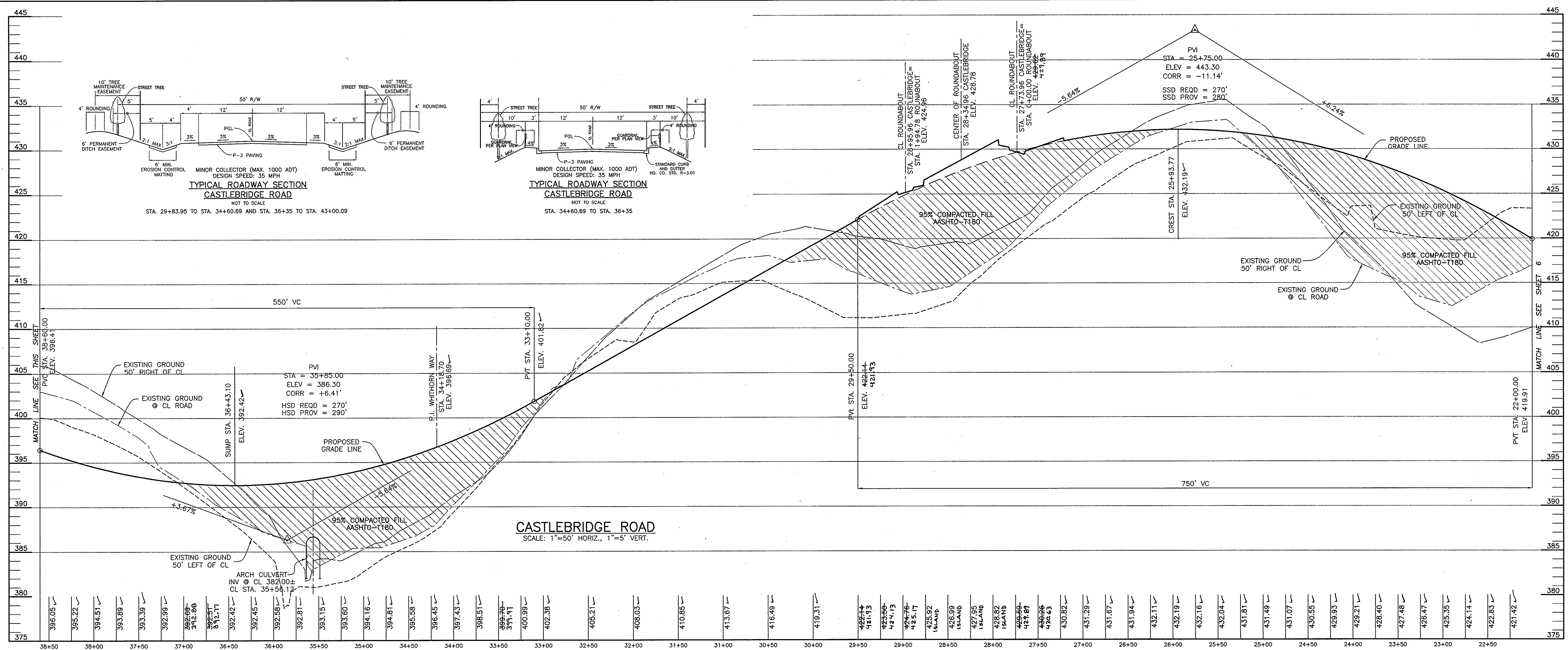
FULL DEPTH BIT. CONC. ALTERNATIVE
GRANULAR BASE ALTERNATIVE
P-2 PAVING DETAIL
P-3 PAVING DETAIL
TYPICAL 1/2 ROADWAY SECTION CASTLEBRIDGE ROAD
NOT TO SCALE

NO.	DATE	REVISION
2	10-26-06	REVISE ROAD PROFILE AND ARCH TYPE FOR CROSSING NUMBER 1
1	5-4-06	RENUMBER PLANS IN SET

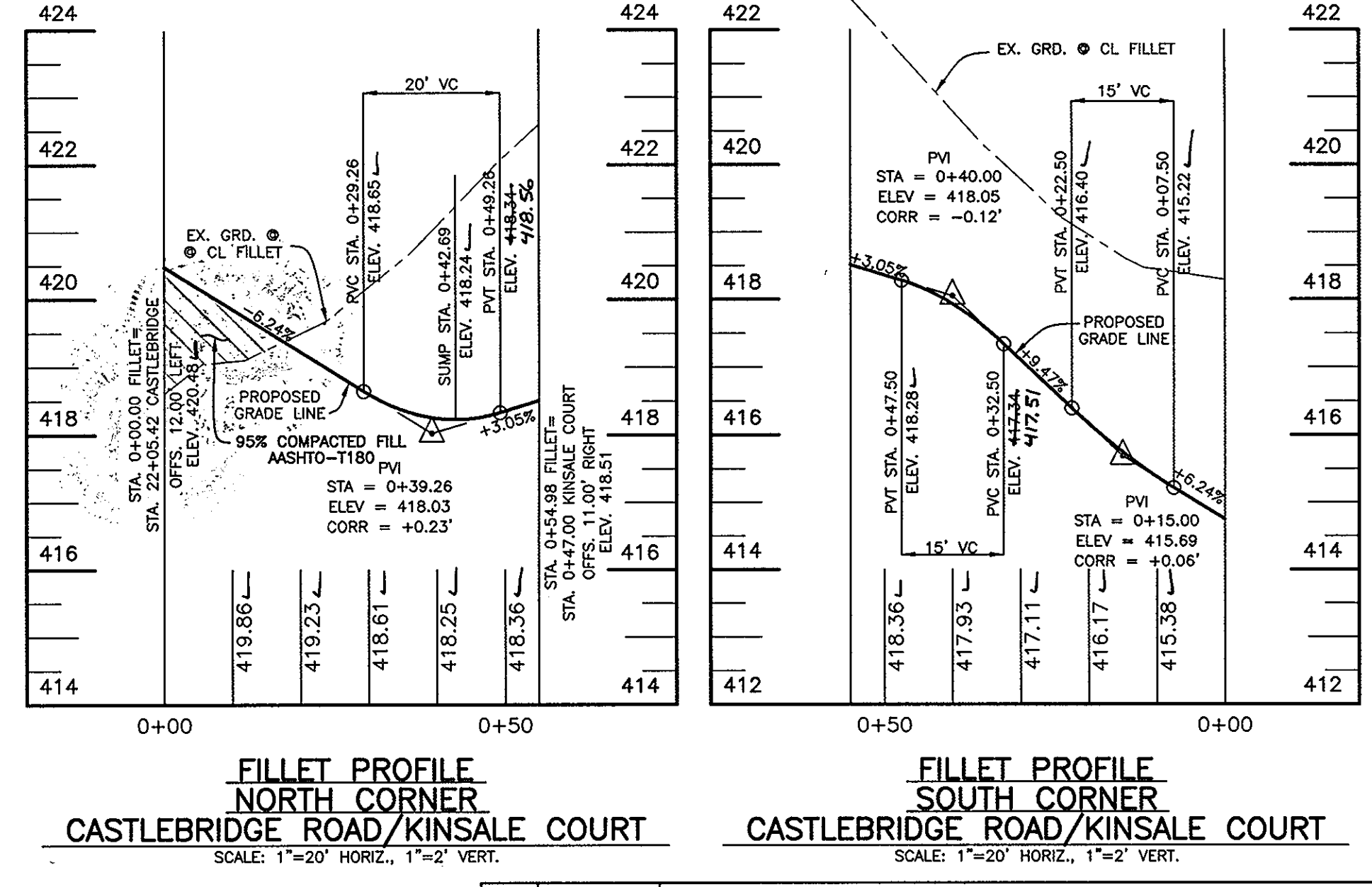
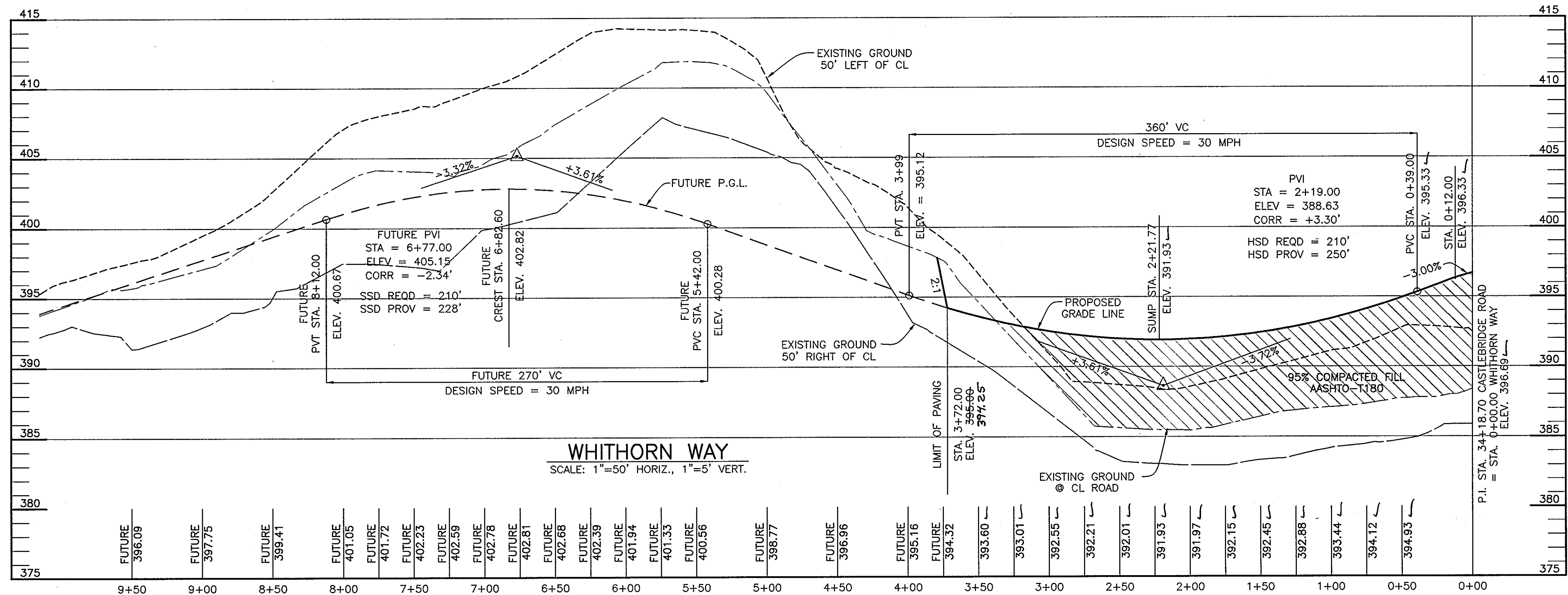
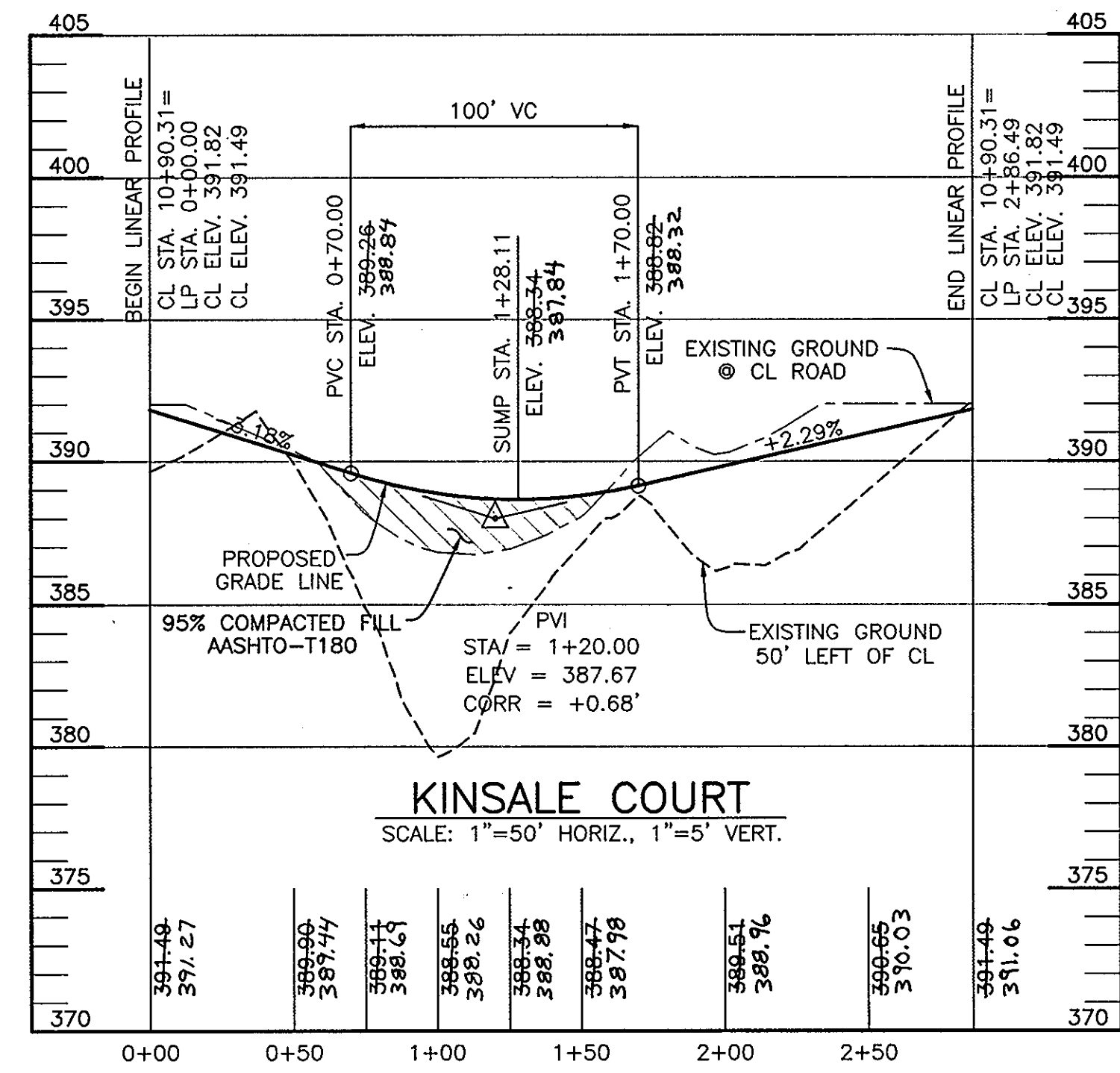
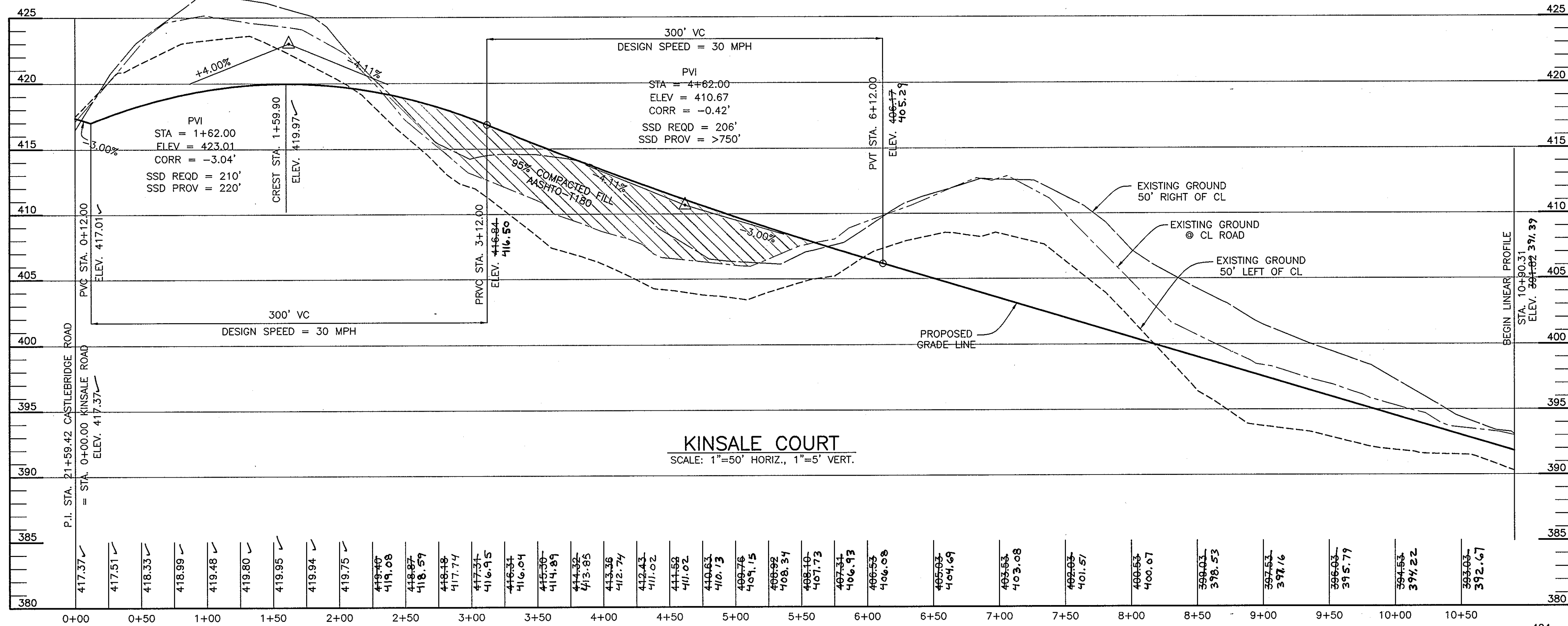
BENCHMARK ENGINEERING, INC.
ENGINEERS • LAND SURVEYORS • PLANNERS
8480 BALTIMORE NATIONAL PIKE • SUITE 418
ELLICOTT CITY, MARYLAND 21043
phone: 410-465-6105 • fax: 410-465-6644
www.bel-civilengineering.com

Donald Mason 1-4-07

DEVELOPER:	ELIOAK, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	PROJECT:	RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'Q'; AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'						
OWNER:	HOMWOOD, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	LOCATION:	TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3, 4, 9 & 10 PARCELS: 88 PARCELS: 20 & 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND						
OWNER:	JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL, ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE NEW YORK, NEW YORK 10022	TITLE:	<i>Revised Final Road Construction Plan</i> ROAD PROFILES						
DESIGNER:	JMC/DBT	DRAFT:	JMC/DBT	CHECK:	CAM	DATE:	JUNE, 2005	PROJECT NO.:	1132
SCALE:		AS SHOWN		SHEET		7		OF 55	



38+50	396.05	38+40	395.22	38+30	394.51	38+20	393.89	38+10	393.39	38+00	392.99	37+50	392.69	37+40	392.98	37+30	392.51	37+20	392.11	37+10	392.42	37+00	392.45	36+50	392.58	36+40	392.81	36+30	393.15	36+20	393.60	36+10	394.16	36+00	394.81	35+50	395.58	35+40	396.45	35+30	397.43	35+20	398.51	35+10	399.79	35+00	399.91	34+50	400.99	34+40	402.38	34+30	405.21	34+20	408.03	34+10	410.85	34+00	413.67	33+50	416.49	33+40	419.31	33+30	422.14	33+20	423.50	33+10	424.13	33+00	424.76	32+50	425.17	32+40	425.92	32+30	426.99	32+20	427.95	32+10	428.82	32+00	429.89	31+50	430.82	31+40	431.29	31+30	431.67	31+20	431.94	31+10	432.11	31+00	432.19	30+50	432.16	30+40	432.04	30+30	431.81	30+20	431.49	30+10	431.07	30+00	430.55	29+50	429.93	29+40	429.21	29+30	428.40	29+20	427.48	29+10	426.47	29+00	425.35	28+50	424.14	28+40	422.83	28+30	421.42	28+20	419.91	28+10	418.42	28+00	416.91	27+50	415.40	27+40	413.89	27+30	412.38	27+20	410.87	27+10	409.36	27+00	407.85	26+50	406.34	26+40	404.83	26+30	403.32	26+20	401.81	26+10	400.30	26+00	398.79	25+50	397.28	25+40	395.77	25+30	394.26	25+20	392.75	25+10	391.24	25+00	389.73	24+50	388.22	24+40	386.71	24+30	385.20	24+20	383.69	24+10	382.18	24+00	380.67	23+50	379.16	23+40	377.65	23+30	376.14	23+20	374.63	23+10	373.12	23+00	371.61	22+50	370.10	22+40	368.59	22+30	367.08	22+20	365.57	22+10	364.06	22+00	362.55	21+50	361.04	21+40	359.53	21+30	358.02	21+20	356.51	21+10	355.00	21+00	353.49	20+50	351.98	20+40	350.47	20+30	348.96	20+20	347.45	20+10	345.94	20+00	344.43	19+50	342.92	19+40	341.41	19+30	339.90	19+20	338.39	19+10	336.88	19+00	335.37	18+50	333.86	18+40	332.35	18+30	330.84	18+20	329.33	18+10	327.82	18+00	326.31	17+50	324.80	17+40	323.29	17+30	321.78	17+20	320.27	17+10	318.76	17+00	317.25	16+50	315.74	16+40	314.23	16+30	312.72	16+20	311.21	16+10	309.70	16+00	308.19	15+50	306.68	15+40	305.17	15+30	303.66	15+20	302.15	15+10	300.64	15+00	299.13	14+50	297.62	14+40	296.11	14+30	294.60	14+20	293.09	14+10	291.58	14+00	290.07	13+50	288.56	13+40	287.05	13+30	285.54	13+20	284.03	13+10	282.52	13+00	281.01	12+50	279.50	12+40	277.99	12+30	276.48	12+20	274.97	12+10	273.46	12+00	271.95	11+50	270.44	11+40	268.93	11+30	267.42	11+20	265.91	11+10	264.40	11+00	262.89	10+50	261.38	10+40	259.87	10+30	258.36	10+20	256.85	10+10	255.34	10+00	253.83	9+50	252.32	9+40	250.81	9+30	249.30	9+20	247.79	9+10	246.28	9+00	244.77	8+50	243.26	8+40	241.75	8+30	240.24	8+20	238.73	8+10	237.22	8+00	235.71	7+50	234.20	7+40	232.69	7+30	231.18	7+20	229.67	7+10	228.16	7+00	226.65	6+50	225.14	6+40	223.63	6+30	222.12	6+20	220.61	6+10	219.10	6+00	217.59	5+50	216.08	5+40	214.57	5+30	213.06	5+20	211.55	5+10	210.04	5+00	208.53	4+50	207.02	4+40	205.51	4+30	204.00	4+20	202.49	4+10	200.98	4+00	199.47	3+50	197.96	3+40	196.45	3+30	194.94	3+20	193.43	3+10	191.92	3+00	190.41	2+50	188.90	2+40	187.39	2+30	185.88	2+20	184.37	2+10	182.86	2+00	181.35	1+50	179.84	1+40	178.33	1+30	176.82	1+20	175.31	1+10	173.80	1+00	172.29	0+50	170.78	0+40	169.27	0+30	167.76	0+20	166.25	0+10	164.74	0+00	163.23	-1+50	161.72	-1+40	160.21	-1+30	158.70	-1+20	157.19	-1+10	155.68	-1+00	154.17	-2+50	152.66	-2+40	151.15	-2+30	149.64	-2+20	148.13	-2+10	146.62	-2+00	145.11	-3+50	143.60	-3+40	142.09	-3+30	140.58	-3+20	139.07	-3+10	137.56	-3+00	136.05	-4+50	134.54	-4+40	133.03	-4+30	131.52	-4+20	130.01	-4+10	128.50	-4+00	126.99	-5+50	125.48	-5+40	123.97	-5+30	122.46	-5+20	120.95	-5+10	119.44	-5+00	117.93	-6+50	116.42	-6+40	114.91	-6+30	113.40	-6+20	111.89	-6+10	110.38	-6+00	108.87	-7+50	107.36	-7+40	105.85	-7+30	104.34	-7+20	102.83	-7+10	101.32	-7+00	99.81	-8+50	98.30	-8+40	96.79	-8+30	95.28	-8+20	93.77	-8+10	92.26	-8+00	90.75	-9+50	89.24	-9+40	87.73	-9+30	86.22	-9+20	84.71	-9+10	83.20	-9+00	81.69	-10+50	80.18	-10+40	78.67	-10+30	77.16	-10+20	75.65	-10+10	74.14	-10+00	72.63	-11+50	71.12	-11+40	69.61	-11+30	68.10	-11+20	66.59	-11+10	65.08	-11+00	63.57	-12+50	62.06	-12+40	60.55	-12+30	59.04	-12+20	57.53	-12+10	56.02	-12+00	54.51	-13+50	53.00	-13+40	51.49	-13+30	49.98	-13+20	48.47	-13+10	46.96	-13+00	45.45	-14+50	43.94	-14+40	42.43	-14+30	40.92	-14+20	39.41	-14+10	37.90	-14+00	36.39	-15+50	34.88	-15+40	33.37	-15+30	31.86	-15+20	30.35	-15+10	28.84	-15+00	27.33	-16+50	25.82	-16+40	24.31	-16+30	22.80	-16+20	21.29	-16+10	19.78	-16+00	18.27	-17+50	16.76	-17+40	15.25	-17+30	13.74	-17+20	12.23	-17+10	10.72	-17+00	9.21	-18+50	7.70	-18+40	6.19	-18+30	4.68	-18+20	3.17	-18+10	1.66	-18+00	0.15	-19+50	-1.36	-19+40	-2.87	-19+30	-4.38	-19+20	-5.89	-19+10	-7.40	-19+00	-8.91	-20+50	-10.42	-20+40	-11.93	-20+30	-13.44	-20+20	-14.95	-20+10	-16.46	-20+00	-17.97	-21+50	-19.48	-21+40	-20.99	-21+30	-22.50	-21+20	-24.01	-21+10	-25.52	-21+00	-27.03	-22+50	-28.54	-22+40	-30.05	-22+30	-31.56	-22+20	-33.07	-22+10	-34.58	-22+00	-36.09	-23+50	-37.60	-23+40	-39.11	-23+30	-40.62	-23+20	-42.13	-23+10	-43.64	-23+00	-45.15	-24+50	-46.66	-24+40	-48.17	-24+30	-49.68	-24+20	-51.19	-24+10	-52.70	-24+00	-54.21	-25+50	-55.72	-25+40	-57.23	-25+30	-58.74	-25+20	-60.25	-25+10	-61.76	-25+00	-63.27	-26+50	-64.78	-26+40	-66.29	-26+30	-67.80	-26+20	-69.31	-26+10	-70.82	-26+00	-72.33	-27+50	-73.84	-27+40	-75.35	-27+30	-76.86	-27+20	-78.37	-27+10	-79.88	-27+00	-81.39	-28+50	-82.90	-28+40	-84.41	-28+30	-85.92	-28+20	-87.43	-28+10	-88.94	-28+00	-90.45	-29+50	-91.96	-29+40	-93.47	-29+30	-94.98	-29+20	-96.49	-29+10	-98.00	-29+00	-99.51	-30+50	-101.02	-30+40	-102.53	-30+30	-104.04	-30+20	-105.55	-30+10	-107.06	-30+00	-108.57	-31+50	-110.08	-31+40	-111.59	-31+30	-113.10	-31+20	-114.61	-31+10	-116.12	-31+00	-117.63	-32+50	-119.14	-32+40	-120.65	-32+30	-122.16	-32+20	-123.67	-32+10	-125.18	-32+00	-126.69	-33+50	-128.20	-33+40	-129.71	-33+30	-131.22	-33+20	-132.73	-33+10	-134.24	-33+00	-135.75	-34+50	-137.26	-34+40	-138.77	-34+30	-140.28	-34+20	-141.79	-34+10	-143.30	-34+00	-144.81	-35+50	-146.32	-35+40	-147.83	-35+30	-149.34	-35+20	-150.85	-35+10	-152.36	-35+00	-153.87	-36+50	-155.38	-36+40	-156.89	-36+30	-158.40	-36+20	-159.91	-36+10	-161.42	-36+00	-162.93	-37+50	-164.44	-37+40	-165.95	-37+30	-167.46	-37+20	-168.97	-37+10	-170.48	-37+00	-171.99	-38+50	-173.50	-38+40	-175.01	-38+30	-176.52	-38+20	-178.03	-38+10	-179.54	-38+00	-181.05	-39+50	-182.56	-39+40	-184.07	-39+30	-185.58	-39+20	-187.09	-39+10	-188.60	-39+00	-190.11	-40+50	-191.62	-40+40	-193.13	-40+30	-194.64	-40+20	-196.15	-40+10	-197.66	-40+00	-199.17	-41+50	-200.68	-41+40	-202.19	-41+30	-203.70	-41+20	-205.21	-41+10	-206.72	-41+00	-208.23	-42+50	-209.74	-42+40	-211.25	-42+30	-212.76	-42+20	-214.27	-42+10	-215.78	-42+00	-217.29	-43+50	-218.80	-43+40	-220.31	-43+30	-221.82	-43+20	-223.33	-43+10	-224.84	-43+00	-226.35	-44+50	-227.86	-44+40	-229.37	-44+30	-230.88	-44+20	-232.39	-44+10	-233.90	-44+00	-235.41	-45+50	-236.92	-45+40	-238.43	-45+30	-239.94	-45+20	-241.45	-45+10	-242.96	-45+00	-244.47	-46+50	-245.98	-46+40	-247.49	-46+30	-249.00	-46+20	-250.51	-46+10	-252.02	-46+00	-253.53	-47+50	-255.04	-47+40	-256.55	-47+30	-258.06	-47+20	-259.57	-47+10	-261.08	-47+00	-262.59	-48+50	-264.10	-48+40	-265.61	-48+30	-267.12	-48+20	-268.63	-48+10	-270.14	-48+00	-271.65	-49+50	-273.16	-49+40	-274.67	-49+30	-276.18	-49+20	-277.69	-49+10	-279.20	-49+00	-280.71	-50+50	-282.22	-50+40	-283.73	-50+30	-285.24	-50+20	-286.75	-50+10	-288.26	-50+00	-289.77	-51+50	-291.28	-51+40	-292.79	-51+30	-294.30	-51+20	-295.81	-51+10	-297.32	-51+00	-298.83	-52+50	-300.34	-52+40	-301.85	-52+30	-303.36	-52+20	-304.87	-52+10	-306.38	-52+00	-307.89	-53+50	-309.40	-53+40	-310.91	-53+30	-312.42	-53+20	-313.93	-53+10	-315.44	-53+00	-316.95	-54+50	-318.46	-54+40	-319.47	-54+30	-320.98	-54+20	-322.49	-54+10	-324.00	-54+00	-325.51	-55+50	-327.02	-55+40	-328.03	-55+30	-329.54	-55+20	-331.05	-55+10	-332.56	-55+00	-334.07	-56+50	-335.58	-56+40	-337.09	-56+30	-338.60	-56+20	-340.11	-56+10	-341.62	-56+00	-343.13	-57+50	-344.64	-57+40	-346.15	-57+30	-347.66	-57+20	-349.17	-57+10	-350.68	-57+00	-3
-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	-------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	---------	--------	----

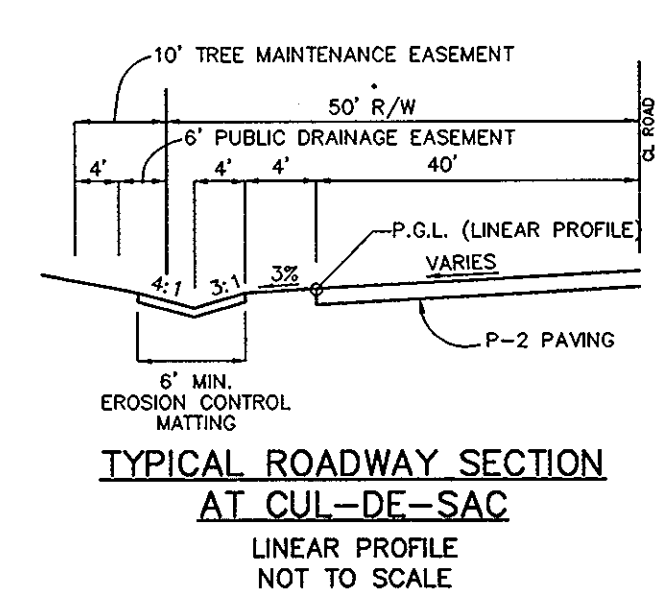
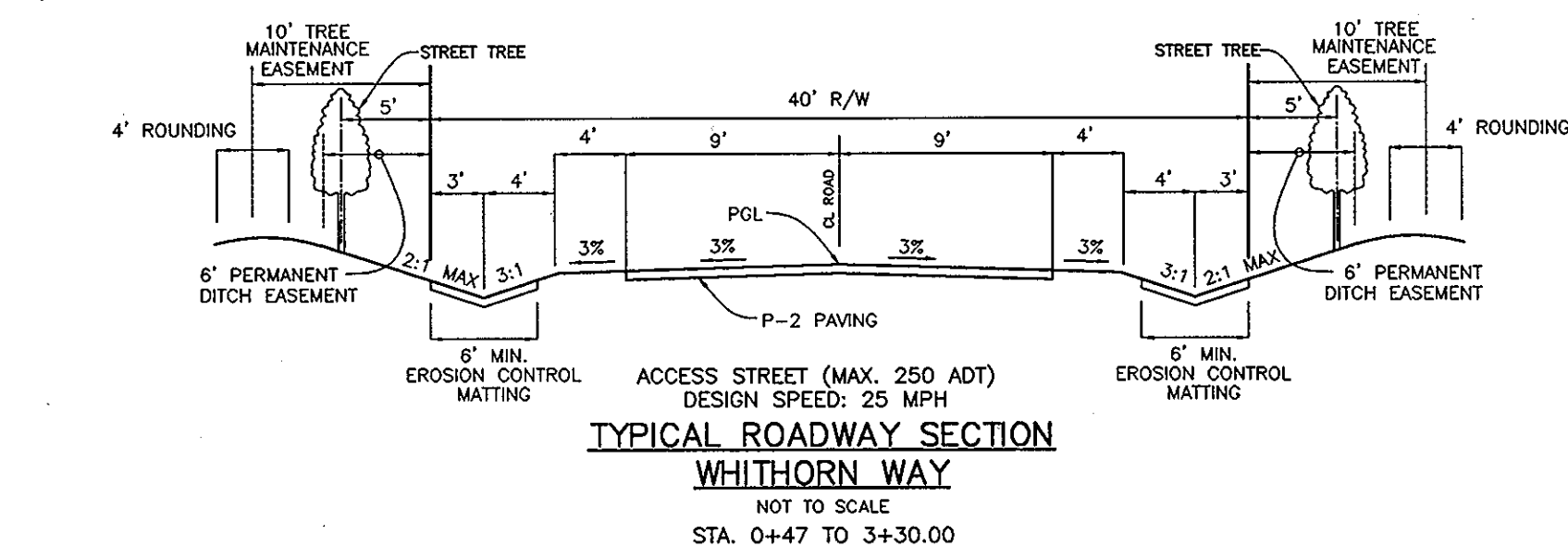
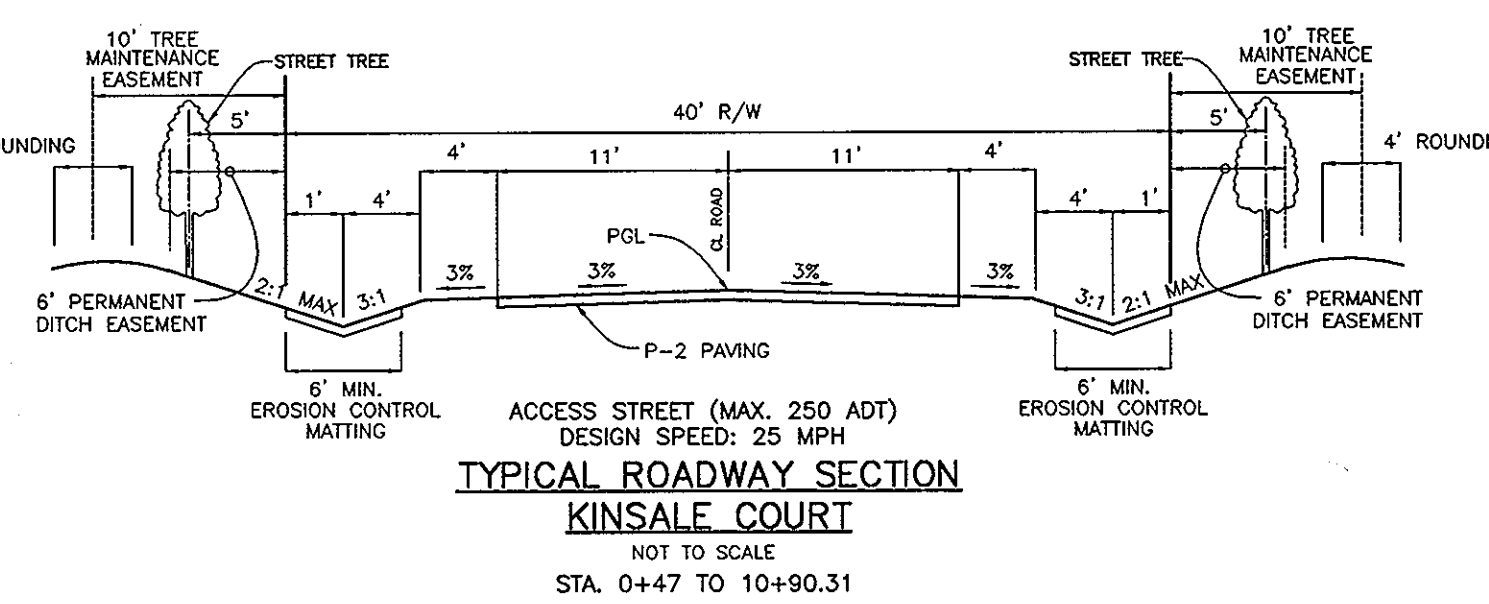


APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

William J. [Signature] 7-18-05
 CHIEF, BUREAU OF HIGHWAYS

Cathy [Signature] 7/25/05
 CHIEF, DIVISION OF LAND DEVELOPMENT

[Signature] 7/19/05
 CHIEF, DEVELOPMENT ENGINEERING DIVISION



1 5-4-06 RENUMBER PLANS IN SET

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
 ENGINEERS & LAND SURVEYORS & PLANNERS
 8480 BALTIMORE NATIONAL PIKE & SUITE 418
 ELLICOTT CITY, MARYLAND 21043
 phone: 410-465-6105 & fax: 410-465-6844
 www.bei-civilengineering.com

Donald Mason
 cles

DEVELOPER: ELOAK, L.L.C.
 P.O. BOX 417
 ELLICOTT CITY, MARYLAND 21041
 410-465-4244

OWNER: HOMEWOOD, L.L.C.
 P.O. BOX 417
 ELLICOTT CITY, MARYLAND 21041
 410-465-4244

OWNER: JOHN LEE CARROLL, CHRISTOPHER G. GERARD,
 MARY CARTER CARROLL ZIEGLER, THOMAS T. CARROLL,
 JOHN LEE CARROLL, JR. AND GENIEVE A. CARROLL
 c/o JOHN LEE CARROLL
 515 MADISON AVENUE
 32nd FLOOR
 NEW YORK, NEW YORK 10022

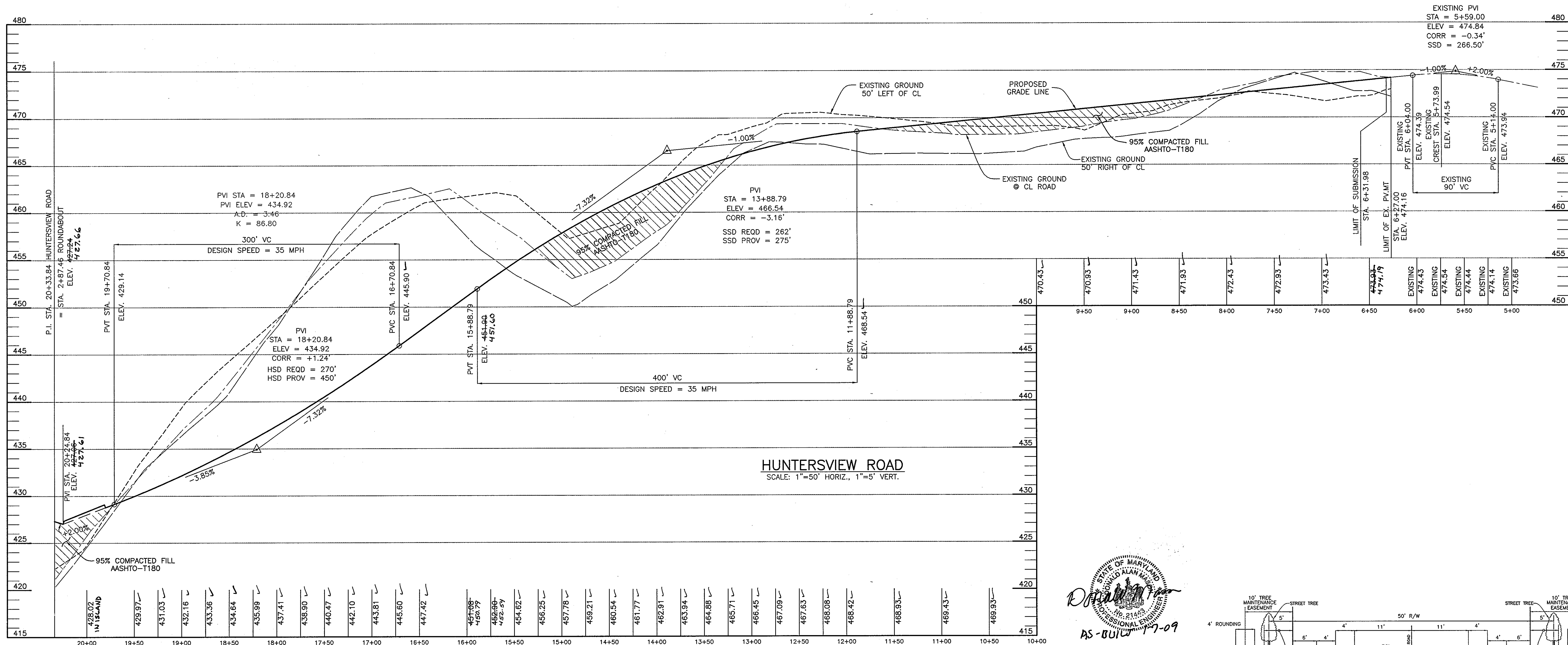
PROJECT: RIVERWOOD - PHASE 1
 LOTS 1 - 42:
 NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R';
 BUILDABLE PRESERVATION PARCELS 'S'
 AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'

LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,9&10
 PARCELS: 86 PARCELS: 20 & 86
 THIRD ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

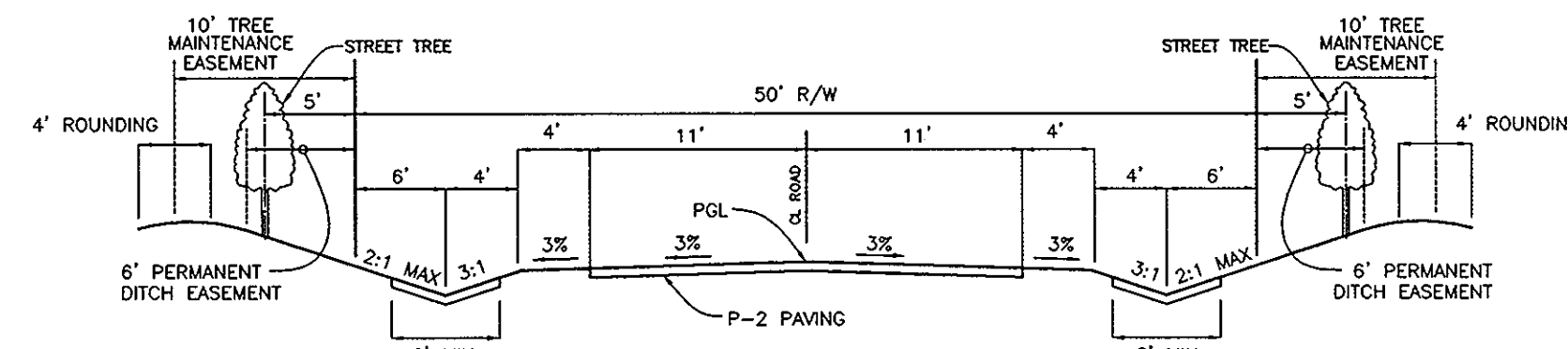
TITLE: ROAD PROFILES

DATE: JUNE, 2005 PROJECT NO. 1132

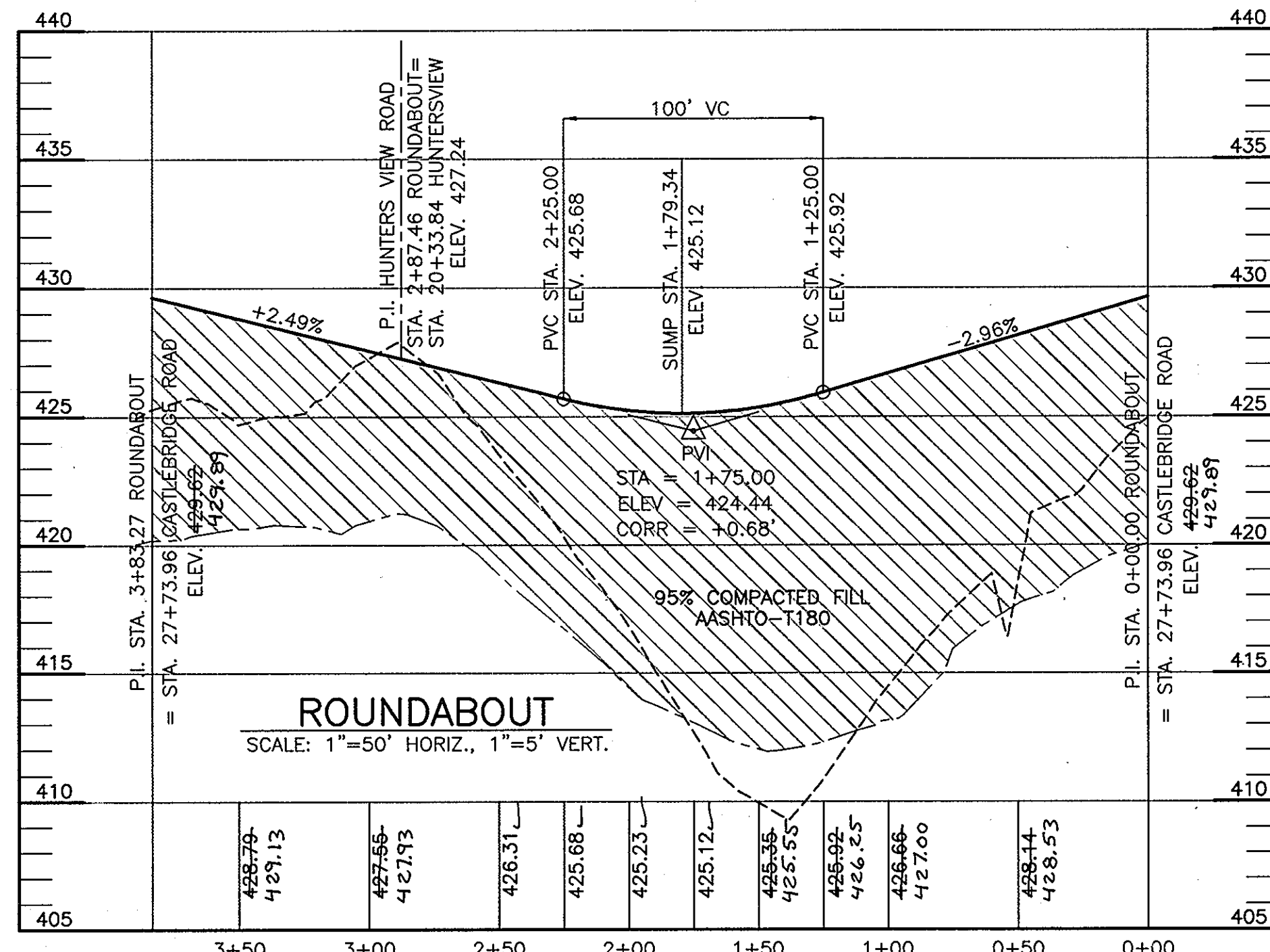
DES: JMC/DBT DRAFT: JMC/DBT CHECK: CAM SCALE: AS SHOWN SHEET 9 OF 55



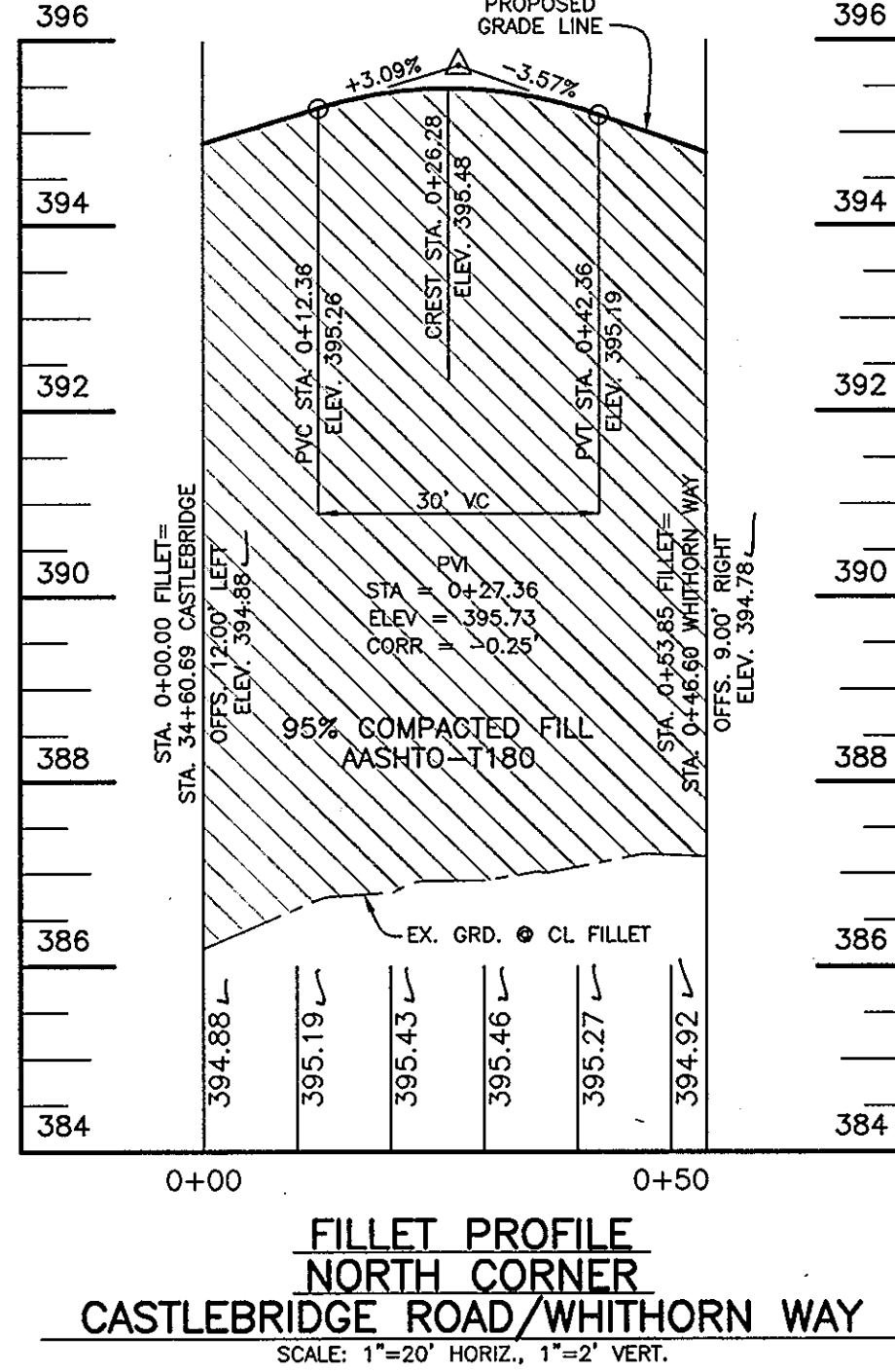
HUNTERSVIEW ROAD
SCALE: 1"=50' HORIZ., 1"=5' VERT.



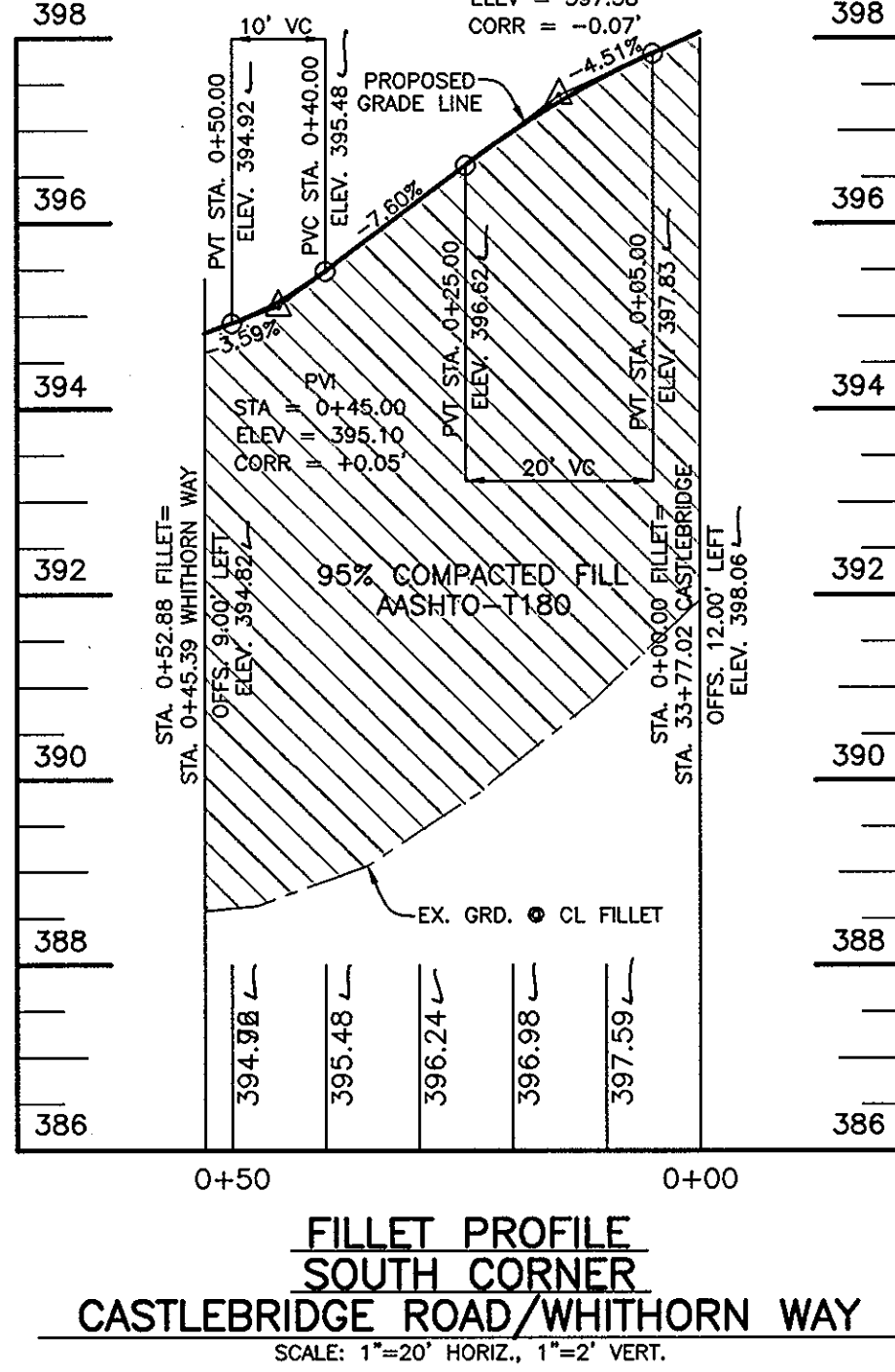
TYPICAL ROADWAY SECTION
HUNTERSVIEW ROAD
NOT TO SCALE
STA. 6+31.98 TO STA. 19+98.51



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



FILLET PROFILE
NORTH CORNER
CASTLEBRIDGE ROAD/WHITHORN WAY
SCALE: 1"=20' HORIZ., 1"=2' VERT.



FILLET PROFILE
SOUTH CORNER
CASTLEBRIDGE ROAD/WHITHORN WAY
SCALE: 1"=20' HORIZ., 1"=2' VERT.

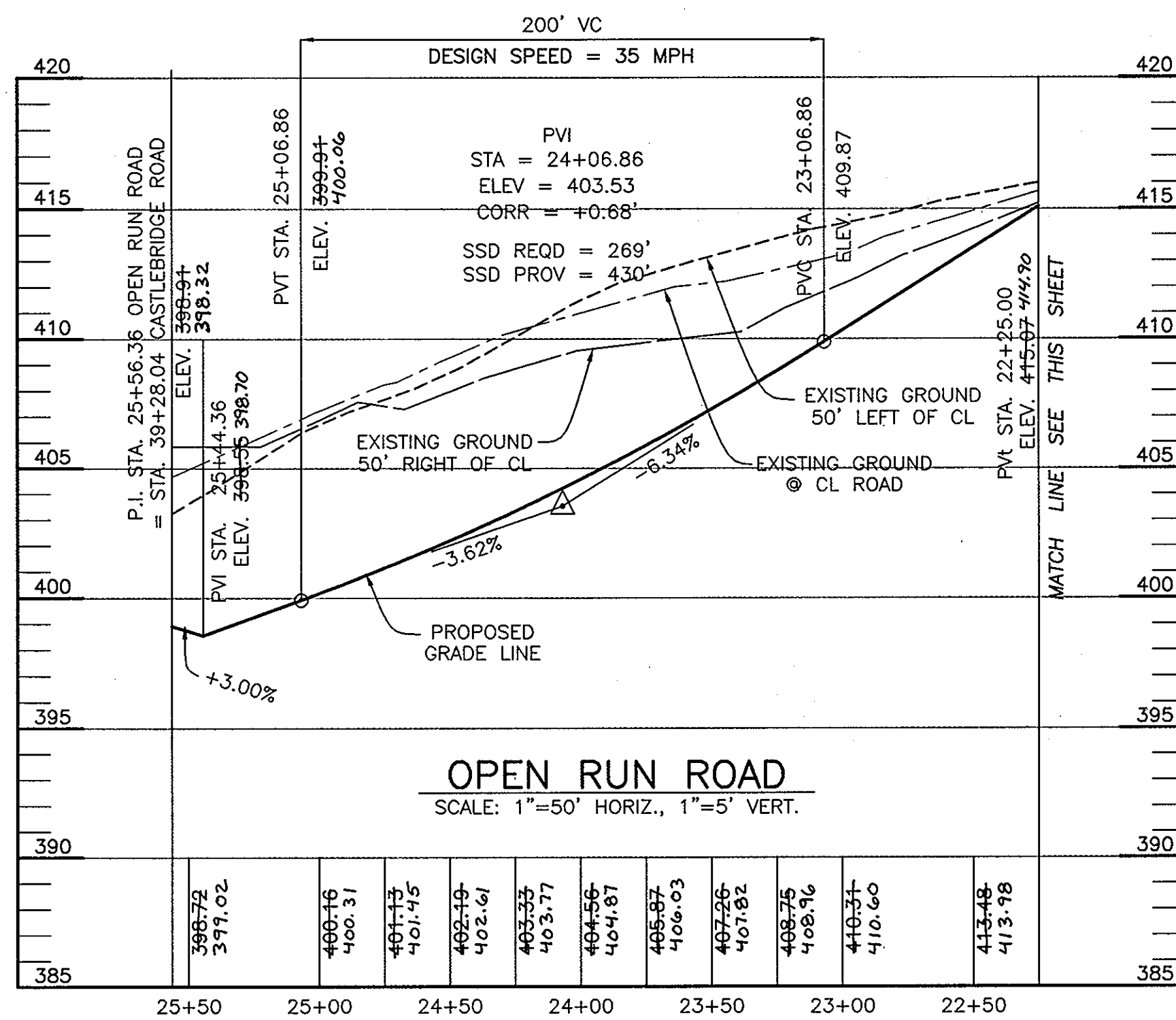
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
W. J. ... 7-18-05
DATE
APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Andy Hamilton 7/25/05
DATE
Donald Igleb
DATE

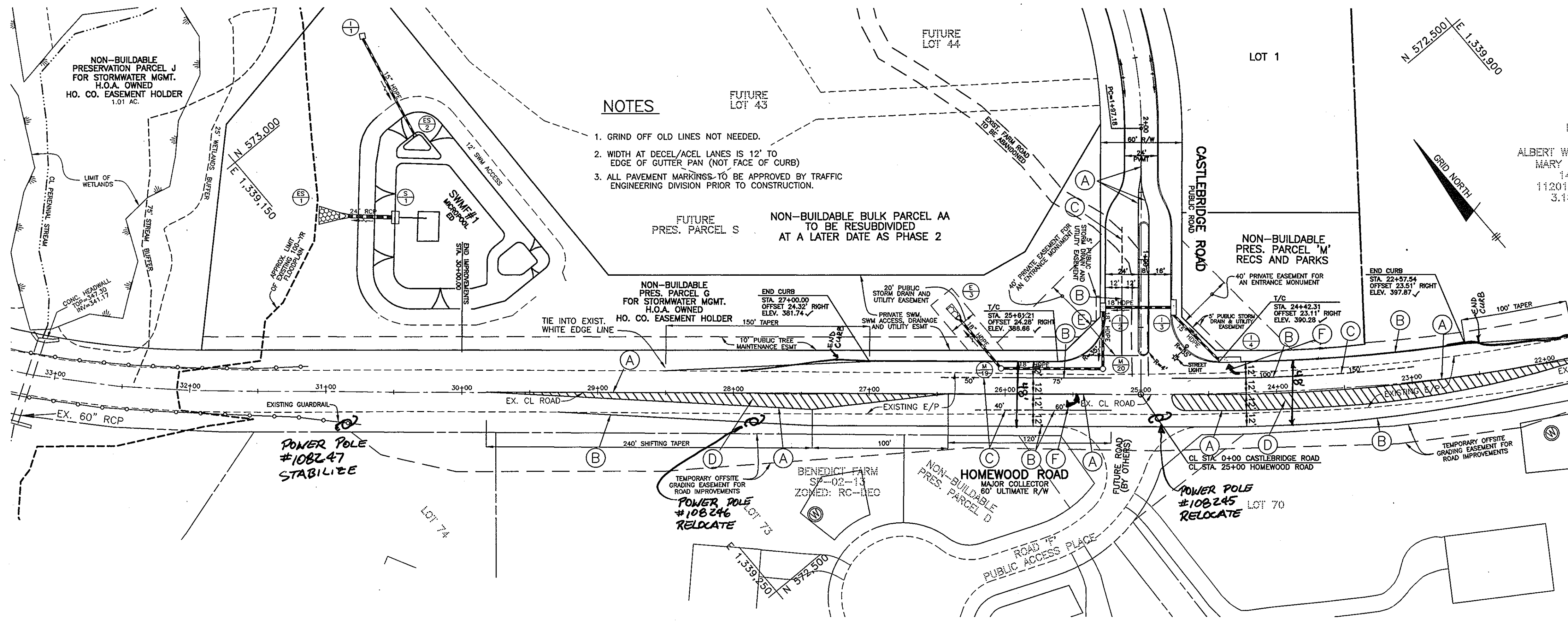
NO.	DATE	REVISION
1	5-4-06	RENUMBER PLANS INSET & REMOVE SPEED CONTROL DEVICES

BENCHMARK
ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE SUITE 418
ELLCOTT CITY, MARYLAND 21043
phone: 410-465-6105 A fax: 410-465-6644
www.bei-civilengineering.com

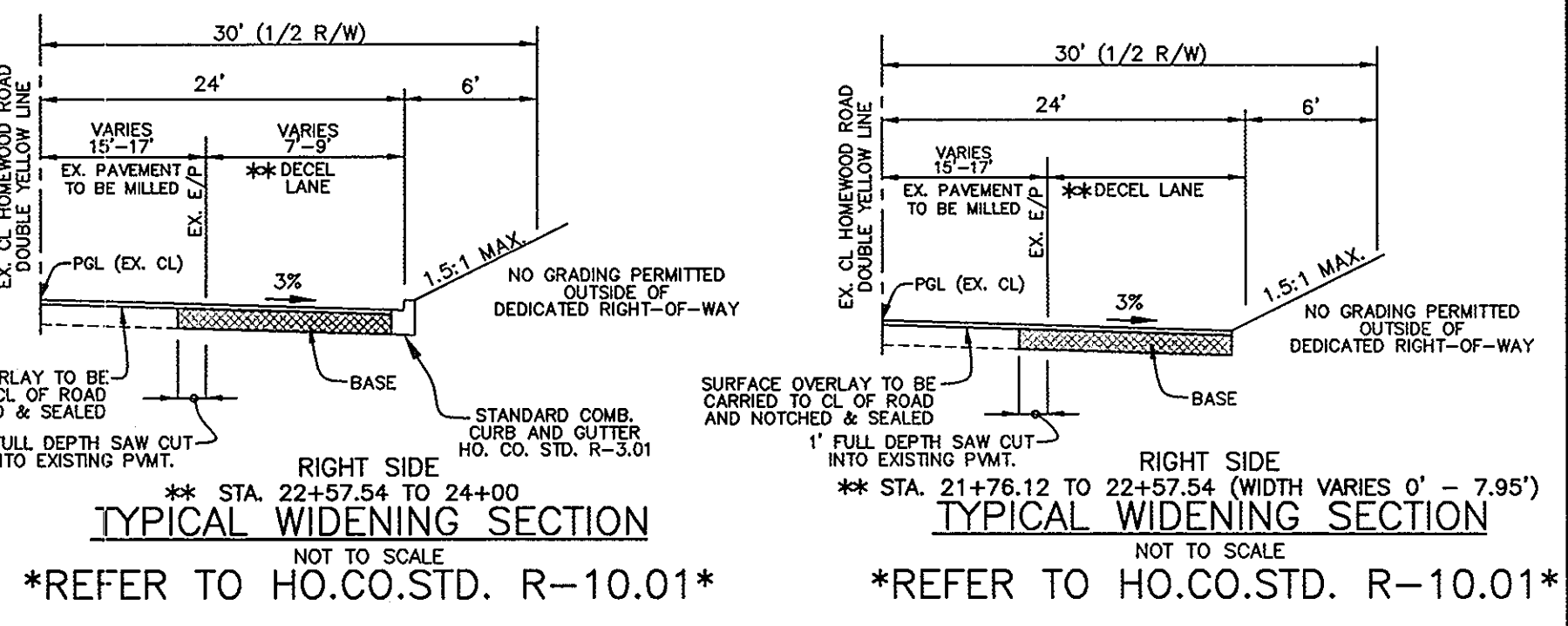
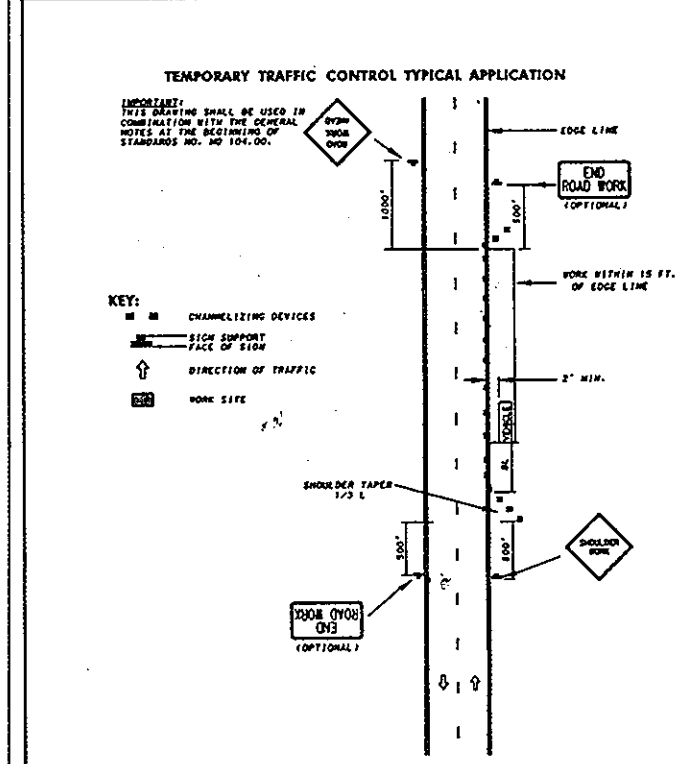
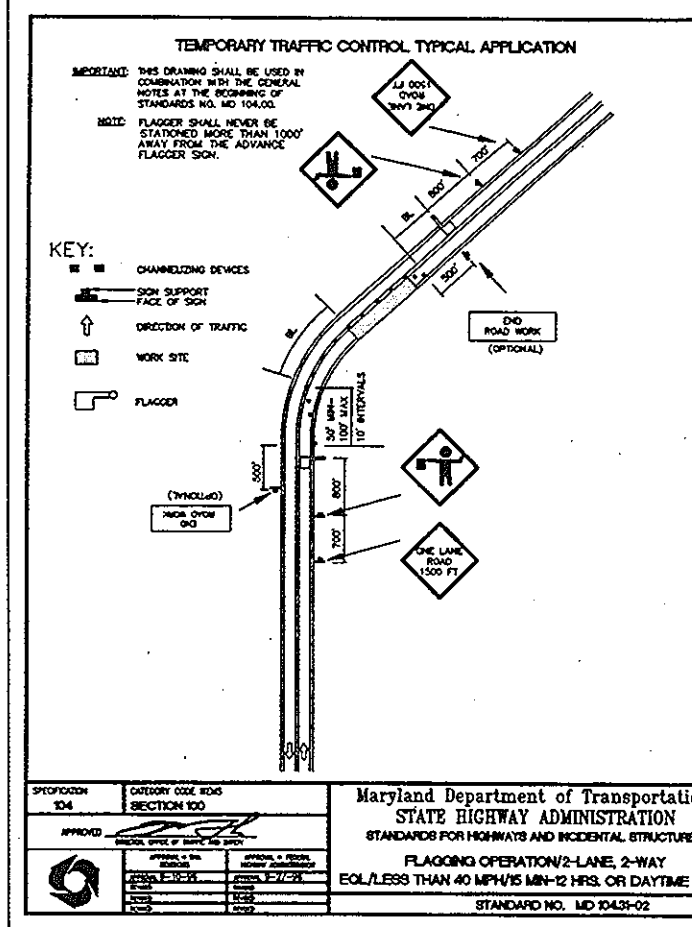
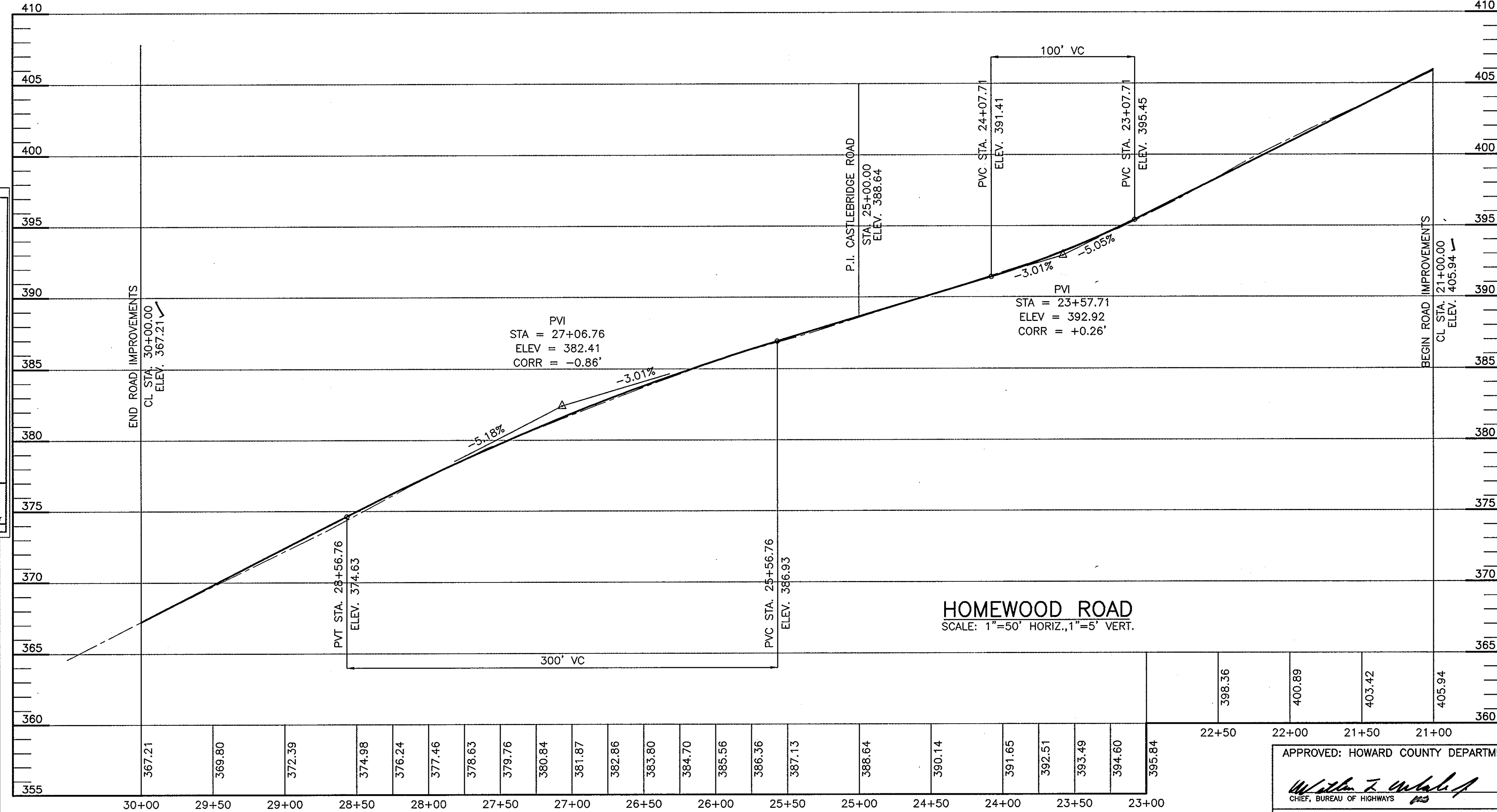
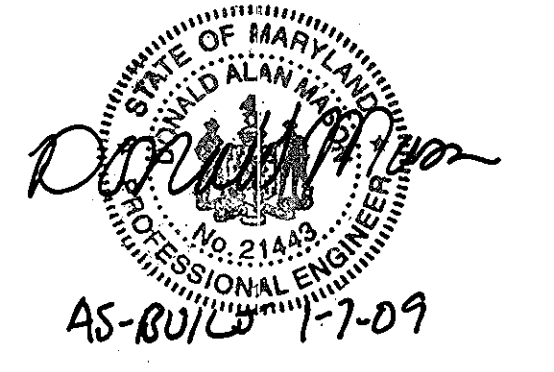
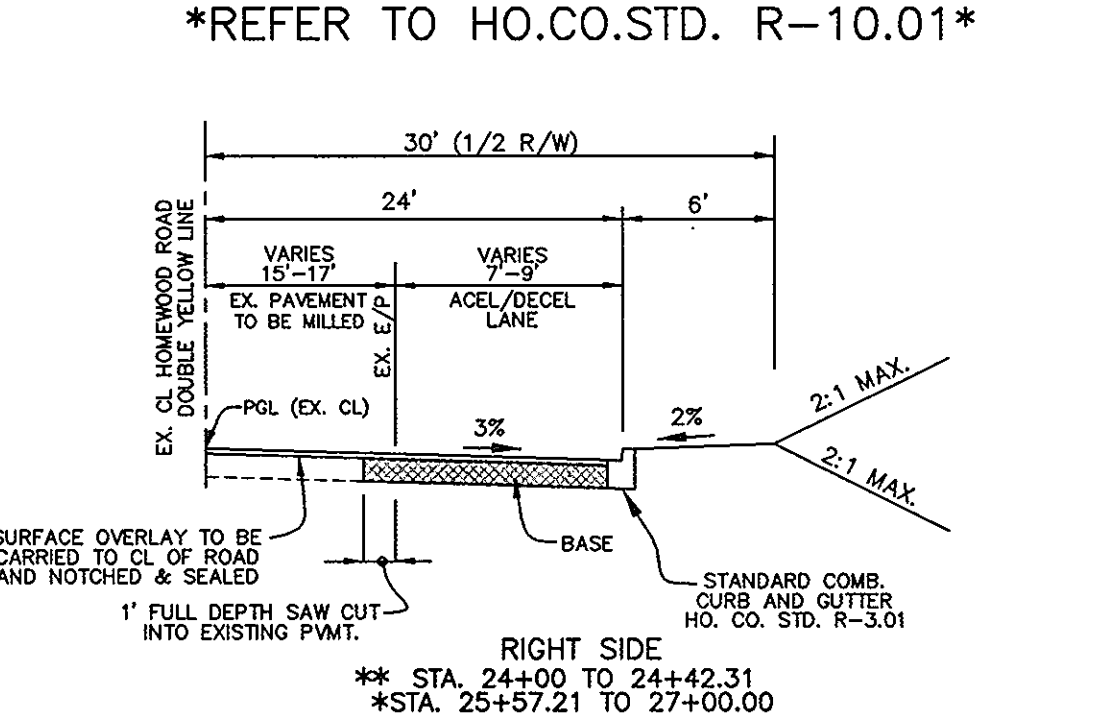
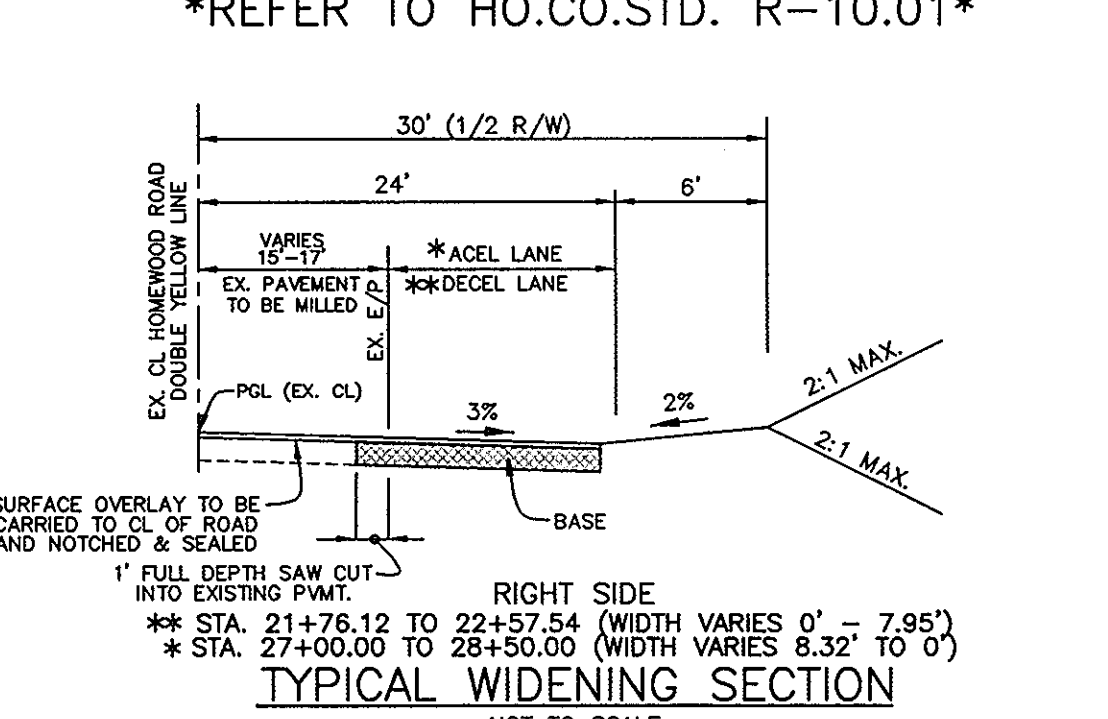
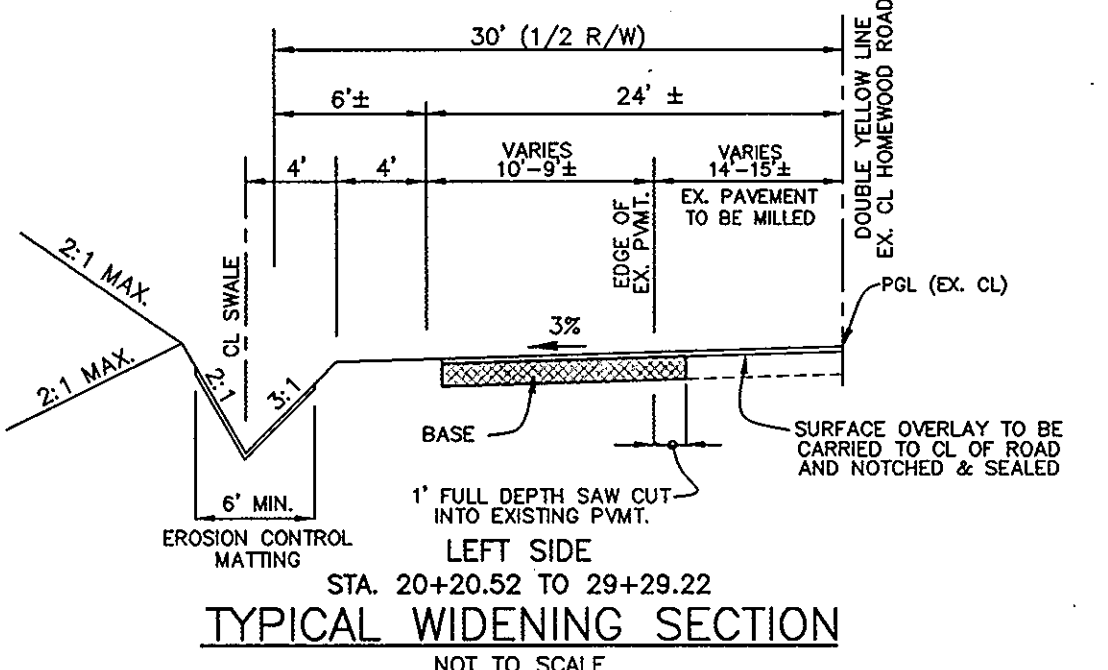
Donald Alan Igleb
Professional Engineer
No. 21445

DEVELOPER: ELIOAK, L.L.C. P.O. BOX 417 ELLCOTT CITY, MARYLAND 21041 410-465-4244	OWNER: HOMWOOD, L.L.C. P.O. BOX 417 ELLCOTT CITY, MARYLAND 21041 410-465-4244	OWNER: JOHN LEE CARROLL, CHRISTOPHER G. GERARD, MARY CARTER CARROLL, ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENIEVEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32nd FLOOR NEW YORK, NEW YORK 10022	PROJECT: RIVERWOOD - PHASE 1 LOTS 1 - 42 - NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'Q'; AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'	LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 28, GRID: 3,4,8&10 PARCELS: 86 PARCELS: 20 & 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND	TITLE: ROAD PROFILES	DATE: JUNE, 2005	PROJECT NO. 1132
DES: JMC/DBT DRAFT: JMC/DBT CHECK: CAM			SCALE: AS SHOWN	SHEET 10 OF 55			





- LINE LEGEND**
- (A) DOUBLE YELLOW CENTERLINE 5" WIDE (EACH LINE)
 - (B) SOLID WHITE (5" WIDE)
 - (C) PUPPY TRACKS 15" WIDE - WHITE 12" LONG / 6" GAP
 - (D) HATCH LINES 12" WIDE ON 45° ANGLE EVERY 40' (YELLOW)
 - (E) STOP BAR (24" WIDE - WHITE) (THERMOPLASTIC)
 - (F) TURN ARROW (WHITE) (THERMOPLASTIC)



NO.	DATE	REVISION
1	5-4-06	RENUMBER PLANS IN SET & CLARIFY LINES & ARROWS

BENCHMARK ENGINEERING, INC.

ENGINEERS • LAND SURVEYORS • PLANNERS

8480 BALTIMORE NATIONAL PIKE • SUITE 418
ELICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 • FAX: 410-465-6644
www.bei-civilengineering.com

Donald M. Moore
c/d/m

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Walter Z. ... 7-18-05
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

... 7/26/05
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

DEVELOPER: ELOAK, L.L.C. P.O. BOX 417, ELICOTT CITY, MARYLAND 21041, 410-465-4244

OWNER: HOMEWOOD, L.L.C. P.O. BOX 417, ELICOTT CITY, MARYLAND 21041, 410-465-4244

OWNER: JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL, ZIEGLER, THOMAS J. CARROLL, JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL, c/o JOHN LEE CARROLL, 515 MADISON AVENUE, 32ND FLOOR, NEW YORK, NEW YORK 10022

PROJECT: RIVERWOOD - PHASE 1

LOTS 1 - 42;

NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'

BUILDABLE PRESERVATION PARCEL 'Q'

NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'

LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3, 4, 9 & 10

PARCELS: 86 PARCELS: 20 & 86

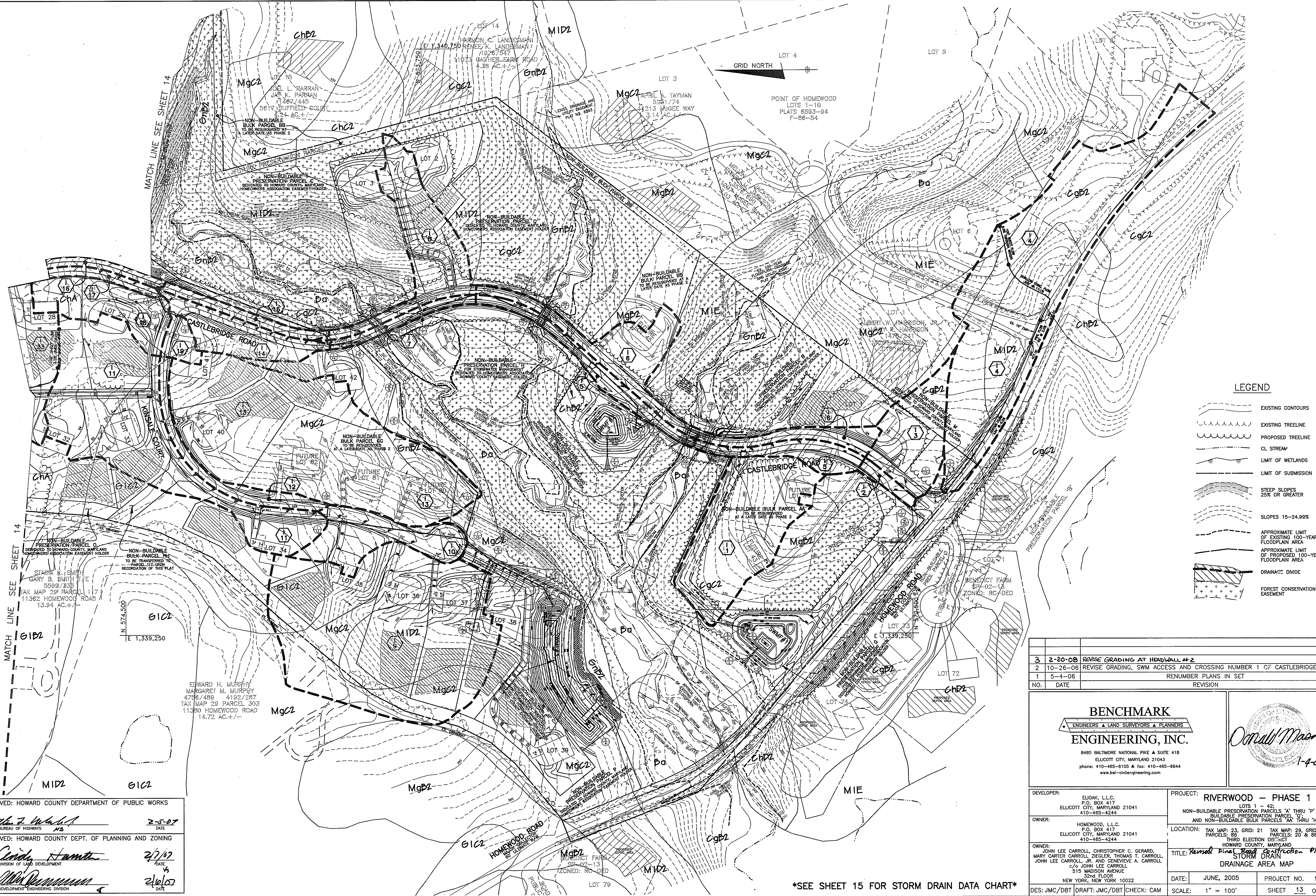
THIRD ELECTION DISTRICT

HOWARD COUNTY, MARYLAND

TITLE: HOMEWOOD ROAD IMPROVEMENT PLAN

DATE: JUNE, 2005 PROJECT NO. 1132

SCALE: AS SHOWN SHEET 12 OF 55



LEGEND

- EXISTING CONTOURS
- EXISTING TREELINE
- PROPOSED TREELINE
- CL STREAM
- LIMIT OF WETLANDS
- LIMIT OF SUBMISSION
- STEEP SLOPES 25% OR GREATER
- SLOPES 15-24.99%
- APPROXIMATE LIMIT OF EXISTING 100-YEAR FLOODPLAIN AREA
- APPROXIMATE LIMIT OF PROPOSED 100-YEAR FLOODPLAIN AREA
- DRAINAGE DIVIDE
- FOREST CONSERVATION EASEMENT

NO.	DATE	REVISION
3	2-20-08	REVISE GRADING AT HEADWALL #2
2	10-26-06	REVISE GRADING, SWM ACCESS AND CROSSING NUMBER 1 OF CASTLEBRIDGE ROAD
1	5-4-06	RENUMBER PLANS IN SET

BENCHMARK
ENGINEERS • LAND SURVEYORS • PLANNERS

ENGINEERING, INC.

8480 BALTIMORE NATIONAL PIKE & SUITE 418
ELLICOTT CITY, MARYLAND 21043
phone: 410-465-6105 • fax: 410-465-6844
www.bel-civilengineering.com

DEVELOPER:	ELIOAK, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	PROJECT:	RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R' BUILDABLE PRESERVATION PARCEL 'S' AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'
OWNER:	HOMEWOOD, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	LOCATION:	TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3, 4, 8 & 10 PARCELS: 86 PARCELS: 20 & 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
OWNER:	JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL, ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENIEVEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32nd FLOOR NEW YORK, NEW YORK 10022	TITLE:	<i>Revised Final Road Construction Plan</i> STORM DRAIN DRAINAGE AREA MAP
DES: JMC/DBT	DRAFT: JMC/DBT	CHECK: CAM	
DATE:	JUNE, 2005	PROJECT NO.:	1132
SCALE:	1" = 100'	SHEET NO.:	13 OF 55

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
William J. Whelan 2-5-07
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Carole Hamlin 2/7/07
CHIEF, DIVISION OF LAND DEVELOPMENT

John P. ... 2/6/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION

SEE SHEET 15 FOR STORM DRAIN DATA CHART



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Walter F. White 7-18-05
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Cindy Hamilton 7/25/05
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Chris Perkinson 7/19/05
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

1 5-4-06 RENUMBER PLANS IN SET	
NO.	REVISION

BENCHMARK
 ENGINEERS • LAND SURVEYORS • PLANNERS
ENGINEERING, INC.
 8480 BALTIMORE NATIONAL PIKE • SUITE 418
 ELLICOTT CITY, MARYLAND 21043
 phone: 410-465-6105 • fax: 410-465-6644
 www.bei-civilengineering.com

DEVELOPER: ELJOAK, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	PROJECT: RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R' BUILDABLE PRESERVATION PARCEL 'Q' AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'
OWNER: HOMWOOD, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 23, GRID: 3,4,9&10 PARCELS: 86 PARCELS: 20 & 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
OWNER: JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL, ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32nd FLOOR NEW YORK, NEW YORK 10022	TITLE: STORM DRAIN DRAINAGE AREA MAP
DES: JMC/DBT DRAFT: JMC/DBT CHECK: CAM	DATE: JUNE, 2005 PROJECT NO. 1132
SCALE: 1" = 100'	SHEET 14 OF 55

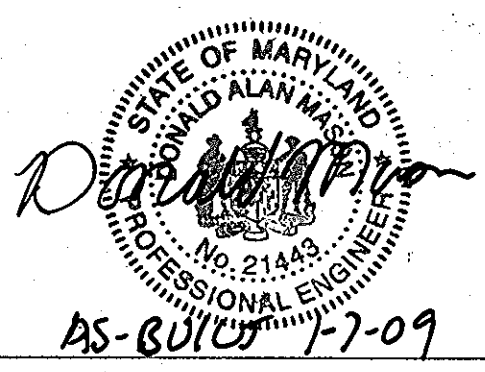
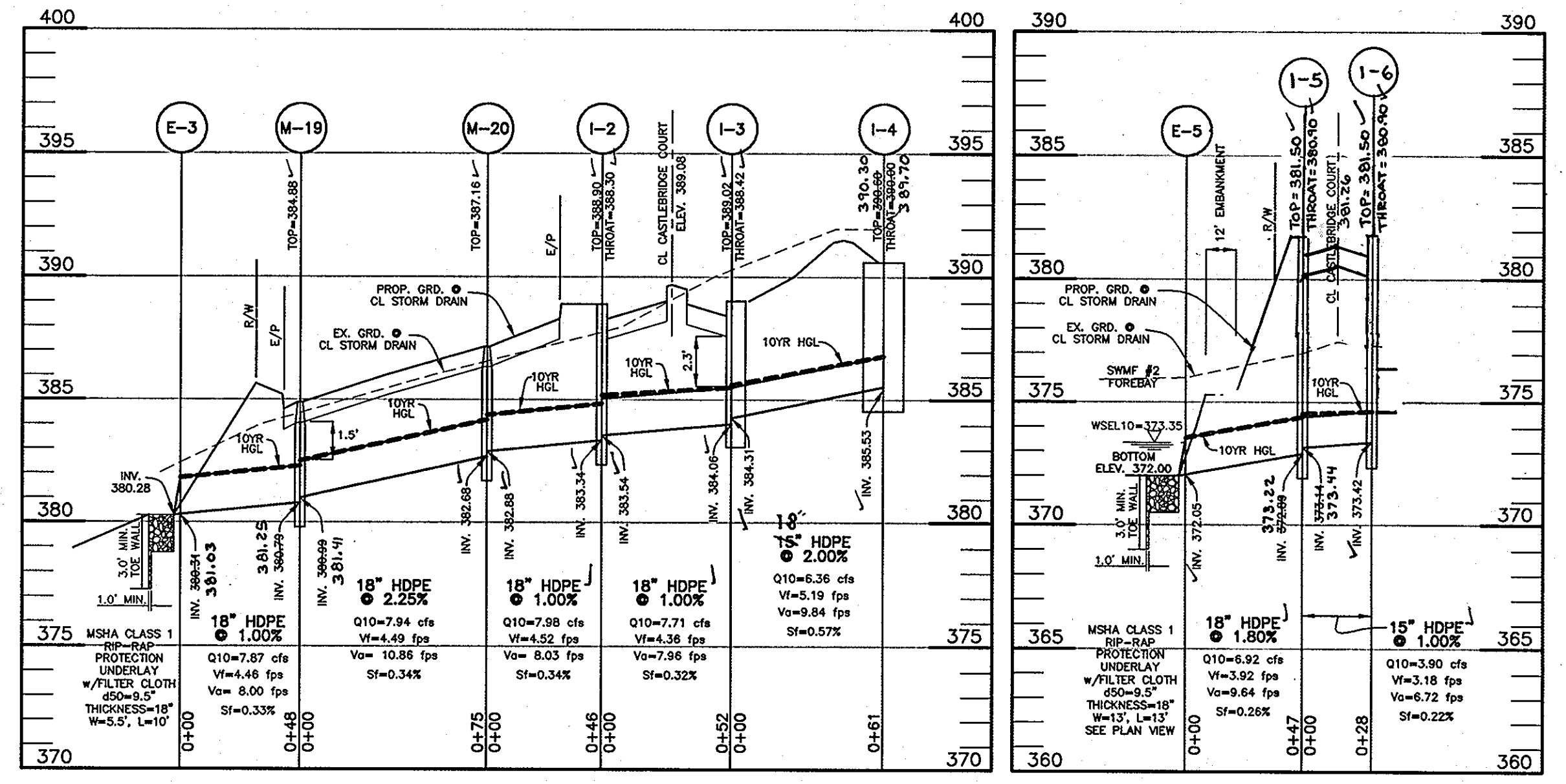
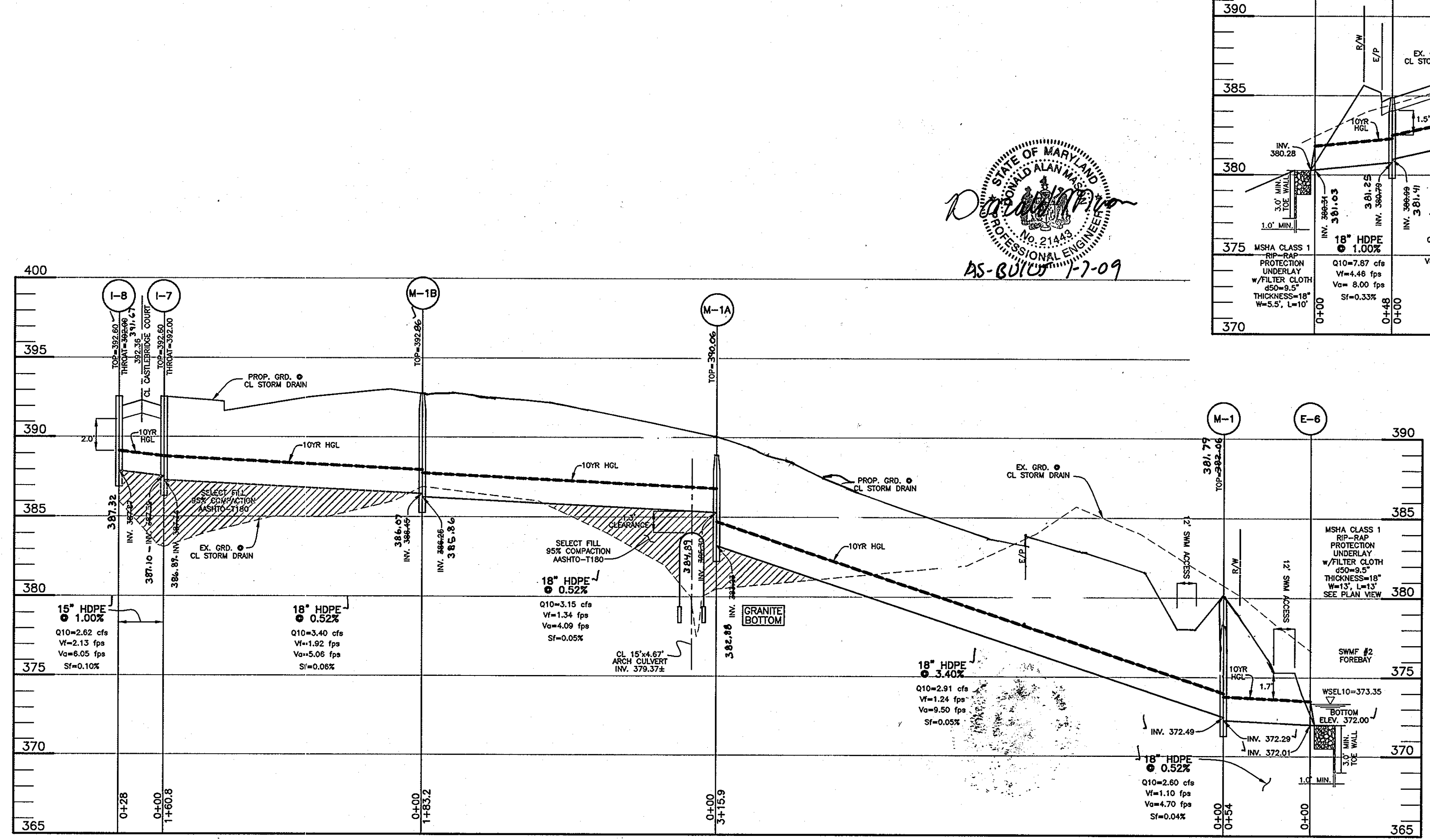
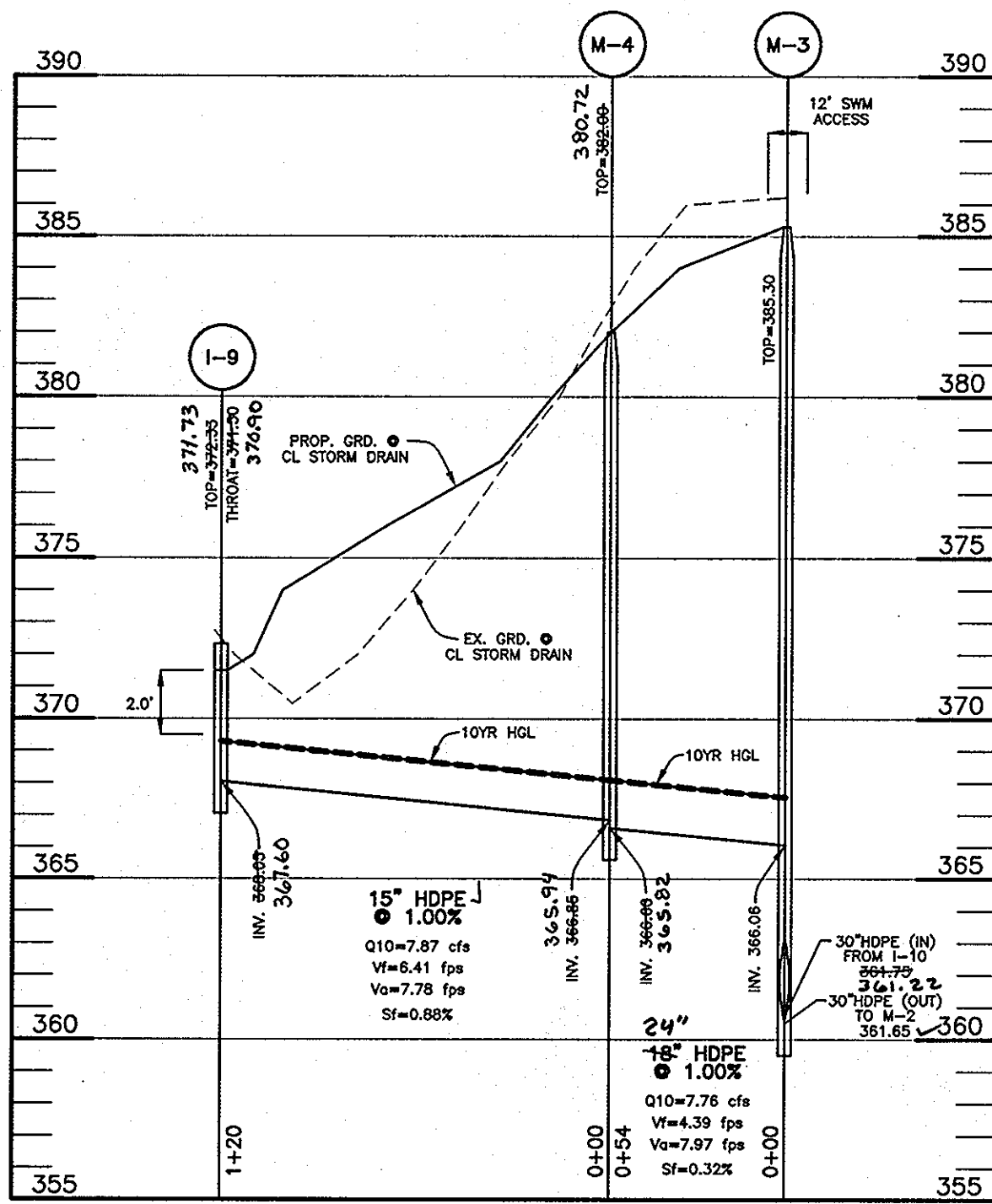
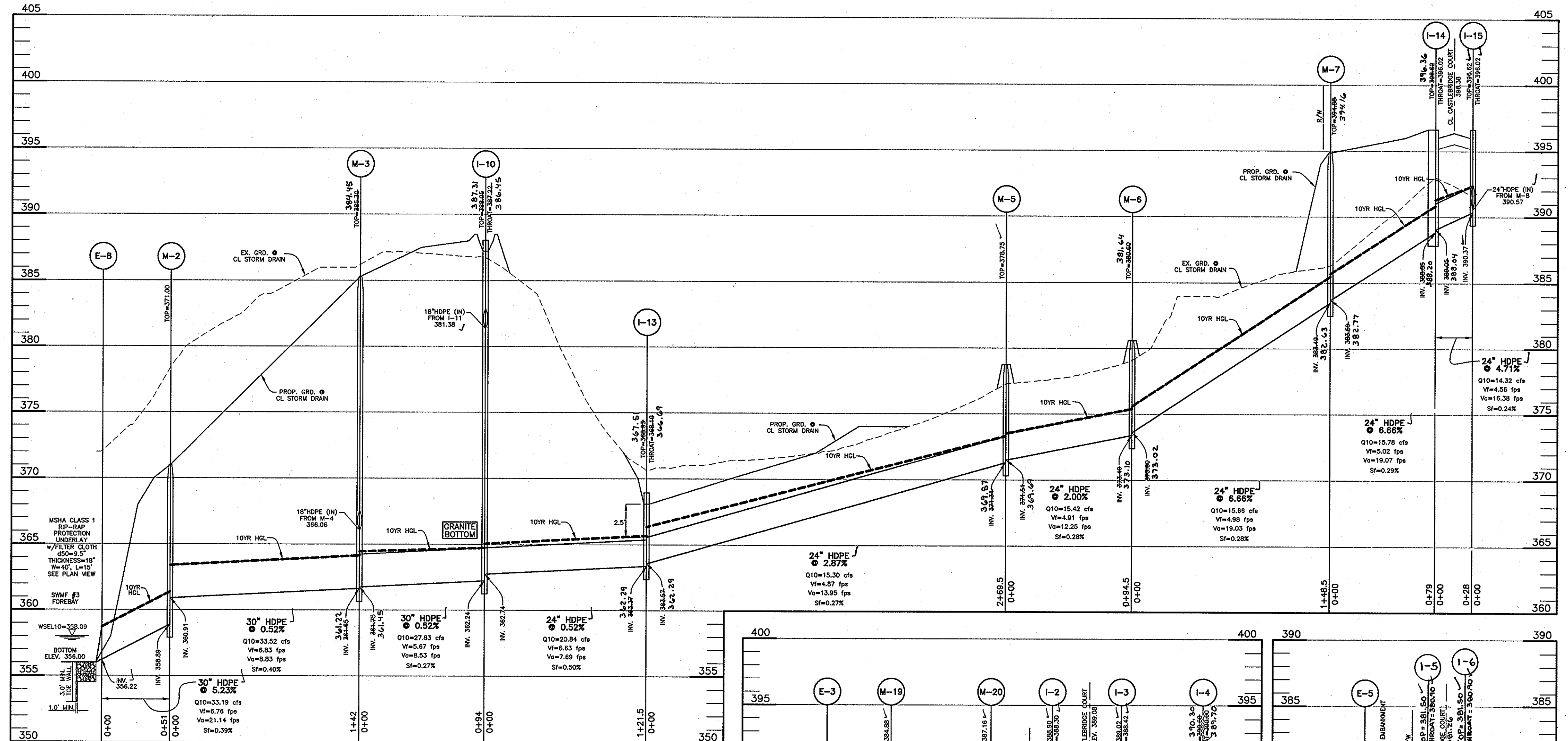
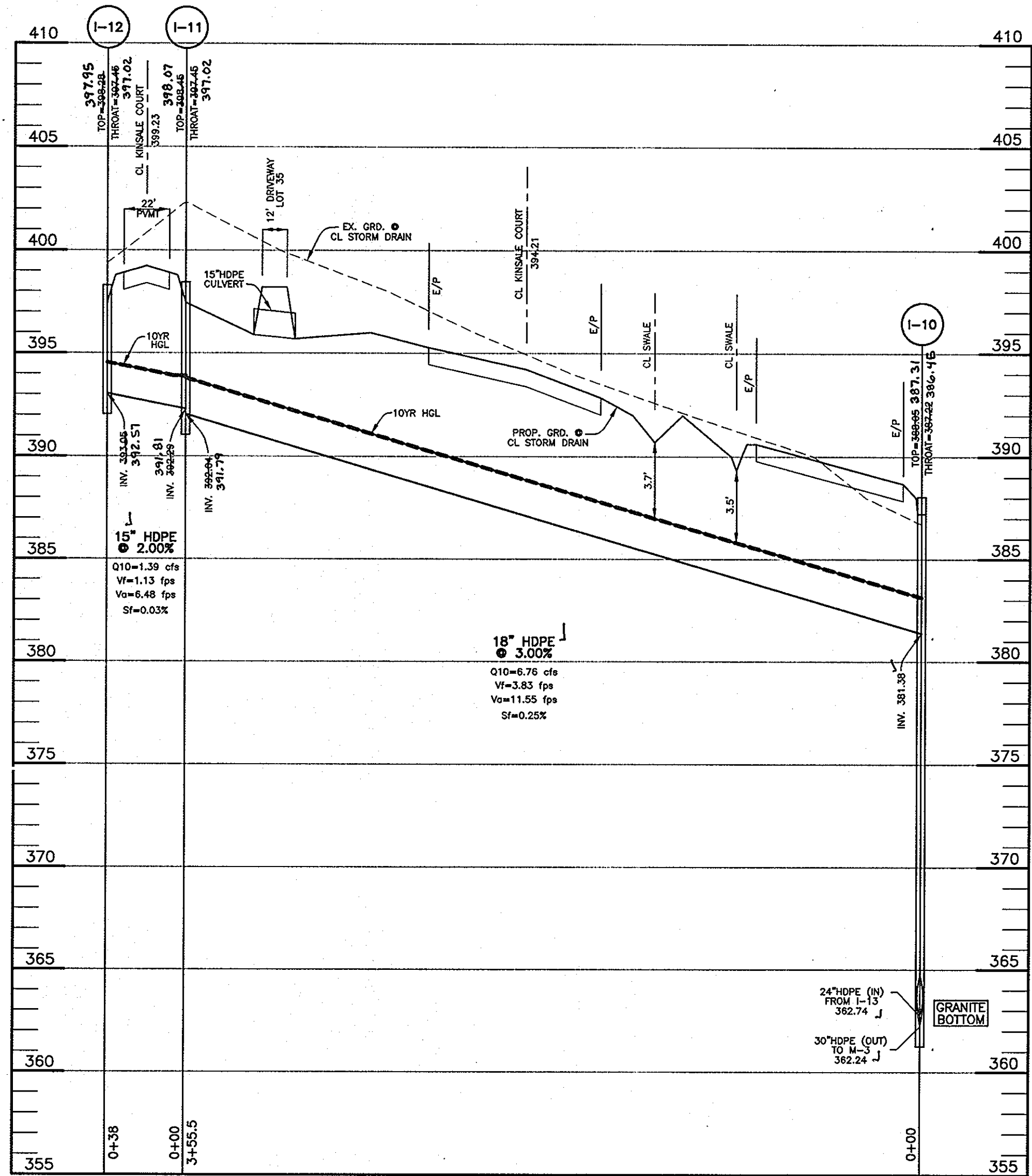
SEE SHEET 15 FOR STORM DRAIN DATA CHART

STRUCTURE SCHEDULE						
NO.	TYPE	LOCATION	INV. IN	INV. OUT	TOP ELEV.	HO. CO. STD.
E-1	30" CONC. END SECT.	N 572915.94 E 1339188.01	356.99	356.99	---	SD - 5.52
E-2	18" METAL END SECT.	N 572915.94 E 1339224.10	357.07	357.07	---	SD - 5.61
E-3	18" METAL END SECT.	CL STA. 28+33.30 OFFS. 56.62' RIGHT (HOMWOOD)	366.99	366.99	---	SD - 5.61
E-4	24" CONC. END SECT.	N 572276.67 E 1339702.22	367.00	367.00	---	SD - 5.52
E-5	18" METAL END SECT.	CL STA. 8+09.55 OFFS. 59.05' LEFT (CASTLEBRIDGE)	372.00	372.00	---	SD - 5.61
E-6	18" METAL END SECT.	CL STA. 8+17.91 OFFS. 61.44' LEFT (CASTLEBRIDGE)	372.00	372.00	---	SD - 5.61
E-7	30" METAL END SECT.	N 573415.83 E 1339324.74	358.22	358.00	---	SD - 5.61
E-8	30" CONC. END SECT.	N 575072.30 E 1340073.44	390.00	390.00	---	SD - 5.52
E-9	24" METAL END SECT.	CL STA. 3+82.37 OFFS. 68.50' RIGHT (CASTLEBRIDGE)	362.00	362.00	---	SD - 5.61
E-10	24" METAL END SECT.	N 576070.17 E 1339353.68	371.21	370.90	---	SD - 5.52
E-11	24" METAL END SECT.	N 575988.65 E 1339572.83	372.07	372.07	---	SD - 5.61
E-12	30" CONC. END SECT.	N 576252.50 E 1339692.97	392.00	392.00	---	SD - 5.52
E-13	30" METAL END SECT.	CL STA. 40+49.03 OFFS. 113.00' LEFT (CASTLEBRIDGE)	383.00	383.00	---	SD - 5.61
E-14	30" METAL END SECT.	CL STA. 40+49.03 OFFS. 113.00' LEFT (CASTLEBRIDGE)	383.00	383.00	---	SD - 5.61
HW-1	6" G.P. T/D	CL STA. 6+70.43 OFFS. 23.46' LEFT (CASTLEBRIDGE)	384.5	282.29	---	SEE MANUFACT. SPECS.
HW-2	6" G.P. T/D	CL STA. 6+80.05 OFFS. 20.97' RIGHT (CASTLEBRIDGE)	386.1	302.29	---	SEE MANUFACT. SPECS.
HW-3	CONTECH #118F	CL STA. 11+79.37 OFFS. 26.32' LEFT (CASTLEBRIDGE)	379.28	387.09	---	SEE MANUFACT. SPECS.
HW-4	CONTECH #118F	CL STA. 11+83.31 OFFS. 23.48' RIGHT (CASTLEBRIDGE)	379.46	388.83	---	SEE MANUFACT. SPECS.
HW-5	CONTECH #118F	CL STA. 16+17.01 OFFS. 32.94' LEFT (CASTLEBRIDGE)	380.00	386.00	---	SEE MANUFACT. SPECS.
HW-6	CONTECH #118F	CL STA. 16+39.88 OFFS. 30.12' RIGHT (CASTLEBRIDGE)	380.29	385.10	---	SEE MANUFACT. SPECS.
HW-7	CONTECH #118F	CL STA. 35+57.27 OFFS. 27.92' LEFT (CASTLEBRIDGE)	381.85	389.02	---	SEE MANUFACT. SPECS.
HW-8	CONTECH #118F	CL STA. 35+54.98 OFFS. 28.02' RIGHT (CASTLEBRIDGE)	382.15	389.32	---	SEE MANUFACT. SPECS.
I-1	1" INLET - 6"	N 572011.10 E 1339281.70	357.54	361.33	SD - 4.11 OR 4.39 OPEN 2 SIDES	
I-2	A-5 INLET	CL STA. 0+64.85 OFFS. 22.00' LEFT (CASTLEBRIDGE)	383.54	388.90	SD - 4.01 OR 4.40	
I-3	A-10 INLET	CL STA. 0+64.85 OFFS. 22.00' RIGHT (CASTLEBRIDGE)	384.06	390.90	SD - 4.02 OR 4.41	
I-4	DOE 15'	CL STA. 24+34.14 OFFS. 23.06' RIGHT (HOMWOOD)	385.53	390.00	MD-374.62	
I-5	A-5 INLET	CL STA. 7+99.25 OFFS. 12.00' LEFT (CASTLEBRIDGE)	385.53	391.50	SD - 4.01 OR 4.40	
I-6	A-5 INLET	CL STA. 7+99.25 OFFS. 12.00' RIGHT (CASTLEBRIDGE)	385.53	391.50	SD - 4.01 OR 4.40	
I-7	A-5 INLET	CL STA. 15+13.13 OFFS. 12.00' LEFT (CASTLEBRIDGE)	387.59	392.60	SD - 4.01 OR 4.40	
I-8	A-5 INLET	CL STA. 15+13.13 OFFS. 12.00' RIGHT (CASTLEBRIDGE)	387.59	392.60	SD - 4.01 OR 4.40	
I-9	1" INLET - 6"	N 573618.43 E 1339288.88	367.36	372.35	SD - 4.11 OR 4.39 OPEN 4 SIDES	
I-10	1" INLET - 6"	CL STA. 17+64.48 OFFS. 8.00' LEFT (KINSALE)	381.81	382.42	SD - 4.11 OR 4.39 OPEN 1 SIDE	
I-11	1" INLET - 6"	CL STA. 17+64.48 OFFS. 8.00' RIGHT (KINSALE)	381.81	382.42	SD - 4.11 OR 4.39 OPEN 1 SIDE	
I-12	1" INLET - 6"	CL STA. 8+43.42 OFFS. 19.00' RIGHT (KINSALE)	381.81	382.42	SD - 4.11 OR 4.39 OPEN 1 SIDE	
I-13	1" INLET - 6"	N 573665.01 E 1339810.56	362.29	366.99	SD - 4.11 OR 4.39 OPEN 4 SIDES	
I-14	A-10 INLET	CL STA. 17+64.48 OFFS. 11.95' LEFT (CASTLEBRIDGE)	383.54	388.86	SD - 4.02 OR 4.41	
I-15	A-5 INLET	CL STA. 17+64.48 OFFS. 12.00' RIGHT (CASTLEBRIDGE)	383.57	388.86	SD - 4.01 OR 4.40	
I-16	A-5 INLET	CL STA. 22+11.85 OFFS. 12.00' RIGHT (CASTLEBRIDGE)	410.26	420.86	SD - 4.01 OR 4.40	
I-17	A-5 INLET	CL STA. 22+11.85 OFFS. 12.00' LEFT (CASTLEBRIDGE)	411.24	415.93	SD - 4.01 OR 4.40	
I-18	1" INLET - 6"	CL STA. 0+47.15 OFFS. 19.00' RIGHT (KINSALE)	412.24	417.30	SD - 4.11 OR 4.39 OPEN 2 SIDES	
I-19	1" INLET - 6"	CL STA. 0+47.15 OFFS. 19.00' LEFT (KINSALE)	412.24	417.30	SD - 4.11 OR 4.39 OPEN 2 SIDES	
I-20	1" INLET - 6"	CL STA. 22+73.25 OFFS. 9.00' RIGHT (CASTLEBRIDGE)	401.27	405.96	SD - 4.11 OR 4.39 OPEN 2 SIDES	
I-21	1" INLET - 6"	N 574562.78 E 1340483.71	413.43	413.43	SD - 4.11 OR 4.39 OPEN 4 SIDES	
I-22	1" INLET - 6"	CL STA. 31+82.37 OFFS. 20.00' RIGHT (CASTLEBRIDGE)	400.02	408.04	SD - 4.11 OR 4.39 OPEN 1 SIDE	
I-23	1" INLET - 6"	CL STA. 31+82.37 OFFS. 20.00' LEFT (CASTLEBRIDGE)	400.02	408.04	SD - 4.11 OR 4.39 OPEN 1 SIDE	
I-24	A-5 INLET	CL STA. 29+59.43 OFFS. 13.64' RIGHT (CASTLEBRIDGE)	411.70	421.70	SD - 4.01 OR 4.40	
I-25	A-5 INLET	CL STA. 29+59.43 OFFS. 13.64' LEFT (CASTLEBRIDGE)	411.70	421.70	SD - 4.01 OR 4.40	
I-26	1" INLET - 6"	CL STA. 20+00.00 OFFS. 23.72' RIGHT (HUNTERS VIEW)	417.62	427.62	SD - 4.11 OR 4.39 OPEN 2 SIDES	
I-27	1" INLET - 6"	CL STA. 20+00.00 OFFS. 24.42' LEFT (HUNTERS VIEW)	421.10	420.85	SD - 4.11 OR 4.39 OPEN 2 SIDES	
I-28	1" INLET - 6"	CL STA. 15+04.31 OFFS. 19.00' RIGHT (HUNTERS VIEW)	448.24	456.57	SD - 4.11 OR 4.39 OPEN 1 SIDE	
I-29	1" INLET - 6"	CL STA. 15+04.31 OFFS. 19.00' LEFT (HUNTERS VIEW)	448.24	456.57	SD - 4.11 OR 4.39 OPEN 1 SIDE	
I-30	1" INLET - 6"	N 572985.82 E 1340841.33	446.79	456.57	SD - 4.11 OR 4.39 OPEN 3 SIDES	
I-31	1" INLET - 6"	CL STA. 2+21.53 OFFS. 17.00' RIGHT (WHITHORN)	382.81	391.04	SD - 4.11 OR 4.39 OPEN 2 SIDES	
I-32	1" INLET - 6"	CL STA. 2+21.53 OFFS. 17.00' LEFT (WHITHORN)	382.81	391.04	SD - 4.11 OR 4.39 OPEN 2 SIDES	
I-33	1" INLET - 6"	N 575248.47 E 1339810.43	396.25	400.33	SD - 4.11 OR 4.39 OPEN 4 SIDES	
I-34	1" INLET - 6"	CL STA. 40+21.44 OFFS. 113.00' LEFT (CASTLEBRIDGE)	383.28	383.28	SD - 4.11 OR 4.39 OPEN 2 SIDES	
I-35	1" INLET - 6"	CL STA. 40+21.44 OFFS. 20.00' RIGHT (CASTLEBRIDGE)	383.28	394.79	SD - 4.11 OR 4.39 OPEN 3 SIDES	
I-36	1" INLET - 6"	CL STA. 42+92.86 OFFS. 20.00' RIGHT (CASTLEBRIDGE)	400.47	404.64	SD - 4.11 OR 4.39 OPEN 1 SIDE	
I-37	1" INLET - 6"	CL STA. 42+92.86 OFFS. 27.30' LEFT (CASTLEBRIDGE)	387.29	387.29	SD - 4.11 OR 4.39 OPEN 1 SIDE	
I-38	1" INLET - 6"	CL STA. 36+43.10 OFFS. 20.00' RIGHT (CASTLEBRIDGE)	391.38	391.38	SD - 4.11 OR 4.39 OPEN 4 SIDES	
I-39	1" INLET - 6"	CL STA. 36+43.10 OFFS. 20.00' LEFT (CASTLEBRIDGE)	391.38	391.38	SD - 4.11 OR 4.39 OPEN 4 SIDES	
I-40	1" INLET - 6"	CL STA. 22+74.30 OFFS. 20.00' RIGHT (OPEN RUN)	411.13	411.13	SD - 4.11 OR 4.39 OPEN 1 SIDE	
I-41	1" INLET - 6"	CL STA. 22+74.30 OFFS. 20.00' LEFT (OPEN RUN)	411.13	411.13	SD - 4.11 OR 4.39 OPEN 1 SIDE	
I-42	1" INLET - 6"	CL STA. 22+74.30 OFFS. 20.00' LEFT (OPEN RUN)	411.13	411.13	SD - 4.11 OR 4.39 OPEN 1 SIDE	
I-43	1" INLET - 6"	CL STA. 15+87.88 OFFS. 20.00' RIGHT (OPEN RUN)	438.60	438.60	SD - 4.11 OR 4.39 OPEN 1 SIDE	
I-44	1" INLET - 6"	CL STA. 15+87.88 OFFS. 20.00' LEFT (OPEN RUN)	438.60	438.60	SD - 4.11 OR 4.39 OPEN 2 SIDES	
I-45	1" INLET - 6"	N 575888.30 E 1340385.65	388.98	404.66	SD - 4.11 OR 4.39 OPEN 3 SIDES	
I-46	1" INLET - 6"	N 575888.30 E 1340385.65	388.98	404.66	SD - 4.11 OR 4.39 OPEN 2 SIDES	
I-47	1" INLET - 6"	N 575888.30 E 1340385.65	388.98	404.66	SD - 4.11 OR 4.39 OPEN 2 SIDES	
I-48	1" INLET - 6"	CL STA. 27+50.23 OFFS. 71.89' RIGHT (CASTLEBRIDGE)	421.75	425.83	SD - 4.11 OR 4.39 OPEN 2 SIDES	
I-49	1" INLET - 6"	CL STA. 34+56.60 OFFS. 20.00' RIGHT (CASTLEBRIDGE)	388.47	394.79	SD - 4.11 OR 4.39 OPEN 2 SIDES	
M-1	4" MANHOLE	CL STA. 8+50.00 OFFS. 17.00' LEFT (CASTLEBRIDGE)	379.28	382.81	0 - 5.12	
M-2	4" MANHOLE	CL STA. 12+11.08 OFFS. 9.00' LEFT (CASTLEBRIDGE)	382.81	391.04	0 - 5.12	
M-3	4" MANHOLE	CL STA. 13+50.25 OFFS. 7.00' RIGHT (CASTLEBRIDGE)	386.67	386.67	0 - 5.12	
M-4	4" MANHOLE	N 573439.62 E 1339369.85	380.91	371.00	0 - 5.12	
M-5	4" MANHOLE	N 573566.51 E 1339434.13	369.99	380.91	0 - 5.12	
M-6	4" MANHOLE	N 573590.84 E 1339386.10	366.86	386.80	0 - 5.12	
M-7	4" MANHOLE	N 573796.51 E 1339800.05	381.49	380.91	0 - 5.12	
M-8	4" MANHOLE	N 573806.77 E 1339806.60	373.67	380.91	0 - 5.12	
M-9	4" MANHOLE	CL STA. 16+89.80 OFFS. 20.00' LEFT (CASTLEBRIDGE)	387.77	394.84	0 - 5.12	
M-10	4" MANHOLE	CL STA. 21+74.16 OFFS. 42.40' RIGHT (CASTLEBRIDGE)	403.33	413.50	0 - 5.12	
M-11	4" MANHOLE	N 574497.02 E 1340383.63	425.73	438.00	0 - 5.12	
M-12	4" MANHOLE	N 574562.78 E 1340720.66	435.88	442.10	0 - 5.12	
M-13	4" MANHOLE	CL STA. 15+10.62 OFFS. 40.68' RIGHT (HUNTERS VIEW)	427.94	450.50	0 - 5.12	
M-14	4" MANHOLE	CL STA. 14+36.23 OFFS. 5.00' RIGHT (WHITHORN)	387.62	392.52	0 - 5.12	
M-15	4" MANHOLE	CL STA. 14+36.23 OFFS. 83.00' RIGHT (WHITHORN)	380.46	390.00	0 - 5.12	
M-16	4" MANHOLE	N 575055.34 E 1339903.82	393.83	399.20	0 - 5.12	
M-17	4" MANHOLE	CL STA. 19+57.27 OFFS. 6.00' RIGHT (OPEN RUN) W/6.37' 440.66	418.80	425.96	0 - 5.12	
M-18	4" MANHOLE	N 575889.50 E 1340734.47	408.66	425.24	0 - 5.12	
M-19	4" MANHOLE	CL STA. 26+02.97 OFFS. 19.31' RIGHT (HOMWOOD)	380.70	384.88	0 - 5.12	
M-20	4" MANHOLE	CL STA. 30+19.09 OFFS. 28.00' LEFT (CASTLEBRIDGE)	382.88	387.16	0 - 5.12	
S-1	SEE DETAIL	N 575292.54 E 1339113.92	---	---	---	SEE DETAIL
S-2	SEE DETAIL	N 573277.23 E 1339755.30	---	---	---	SEE DETAIL
S-3	SEE DETAIL	N 573313.88 E 1339055.61	---	---	---	SEE DETAIL
S-4	SEE DETAIL	N 575057.58 E 1340110.04	---	---	---	SEE DETAIL
S-5	SEE DETAIL	N 578012.87 E 1339582.74	---	---	---	SEE DETAIL
S-6	SEE DETAIL	N 578268.68 E 1339737.87	---	---	---	SEE DETAIL

SOILS LEGEND	
MAP SYMBOL/SOIL GROUP	SOIL TYPE
Ba	D* BAILE SILT LOAM
CgB2	B CHESTER GRAVELLY SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
CgC2	B CHESTER GRAVELLY SILT LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED
ChA	B CHESTER SILT LOAM, 0 TO 3 PERCENT SLOPES
ChB2	B CHESTER SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
ChC2	B CHESTER SILT LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED
ChC3	B CHESTER SILT LOAM, 8 TO 15 PERCENT SLOPES, SEVERELY ERODED
ChD2	B CHESTER SILT LOAM, 0 TO 3 PERCENT SLOPES
Cs	B COMUS SILT LOAM
EkB2	B ELLOAK SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
ElC3	B ELLOAK SILTY CLAY LOAM, 8 TO 15 PERCENT SLOPES, SEVERELY ERODED
GIB2	B GLENELG LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
GIC2	B GLENELG LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED
GID2	B GLENELG LOAM, 15 TO 25 PERCENT SLOPES, MODERATELY ERODED
GnB2	C* GLENELG SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
Hd	D* HATBORO SILT LOAM
MgB2	B MANOR GRAVELLY LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
MgC2	B MANOR GRAVELLY LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED
MgC3	B MANOR GRAVELLY LOAM, 8 TO 15 PERCENT SLOPES, SEVERELY ERODED
MID2	B MANOR LOAM, 15 TO 25 PERCENT SLOPES, MODERATELY ERODED
MID3	B MANOR LOAM, 15 TO 25 PERCENT SLOPES, SEVERELY ERODED
MIE	B MANOR LOAM, 25 TO 45 PERCENT SLOPES
MnD	B MANOR VERY STONY LOAM, 3 TO 25 PERCENT SLOPES
MnF	B MANOR VERY STONY LOAM, 25 TO 60 PERCENT SLOPES
Mo	B* MIXED ALLUVIAL LAND

* INDICATES HYDRIC SOILS
TAKEN FROM SOIL SURVEY, HOWARD COUNTY, MARYLAND (ISSUED JULY 1968) MAP NO. 31

RIGHT OF WAY ELEVATION CHART NO. 03									
INLET NO.	INLET TYPE	INLET ELEVATION	INLET WIDTH	INLET LENGTH	INLET AREA	INLET PERIMETER	INLET VOLUME	INLET Q2	INLET Q10
I-1	RC-DEO	1.93	0.26	20	2.26	3.31			
I-2	RC-DEO	1.02	0.49	43	0.58	0.39			
I-3	RC-DEO	0.96	0.28	20	1.31	0.77			
I-4	RC-DEO	4.55	0.27	14	4.41	8.36			
I-5	RC-DEO	0.83	0.44	37	1.54	2.70			
I-6	RC-DEO	1.30	0.40	35	2.34	3.43			
I-7	RC-DEO	0.22	0.56	50	0.5				



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Walter F. White
 CHIEF, BUREAU OF HIGHWAYS
 DATE: 7-18-05

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Cindy Hamilton
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 7/25/05

Donald Maan
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 7/19/05

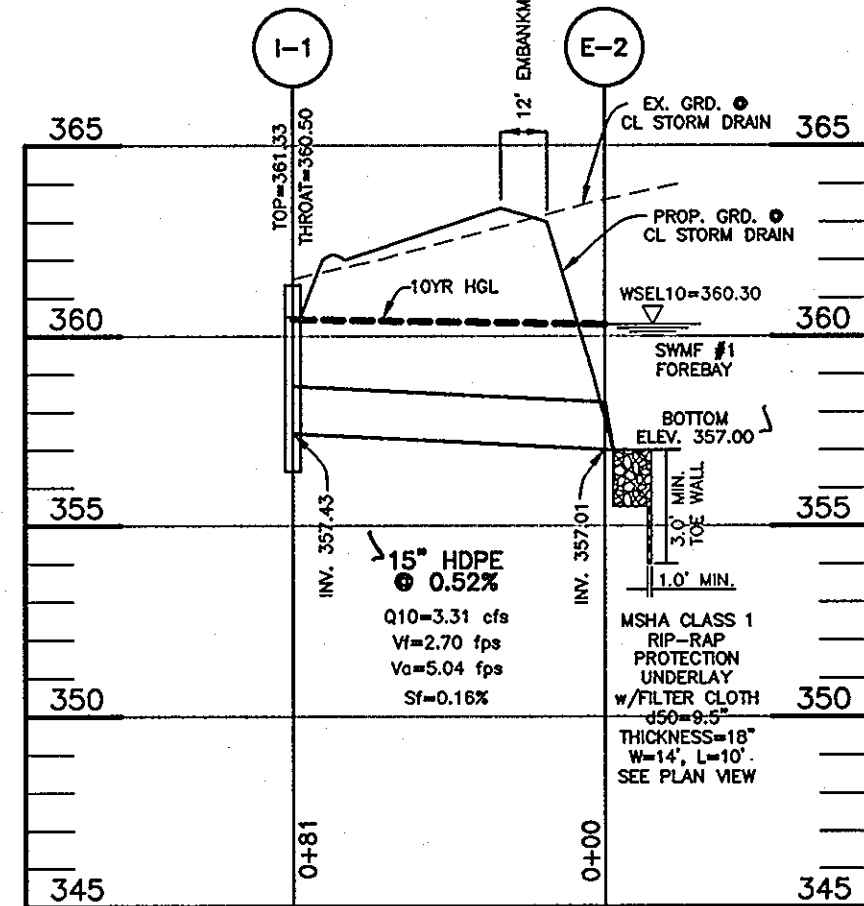
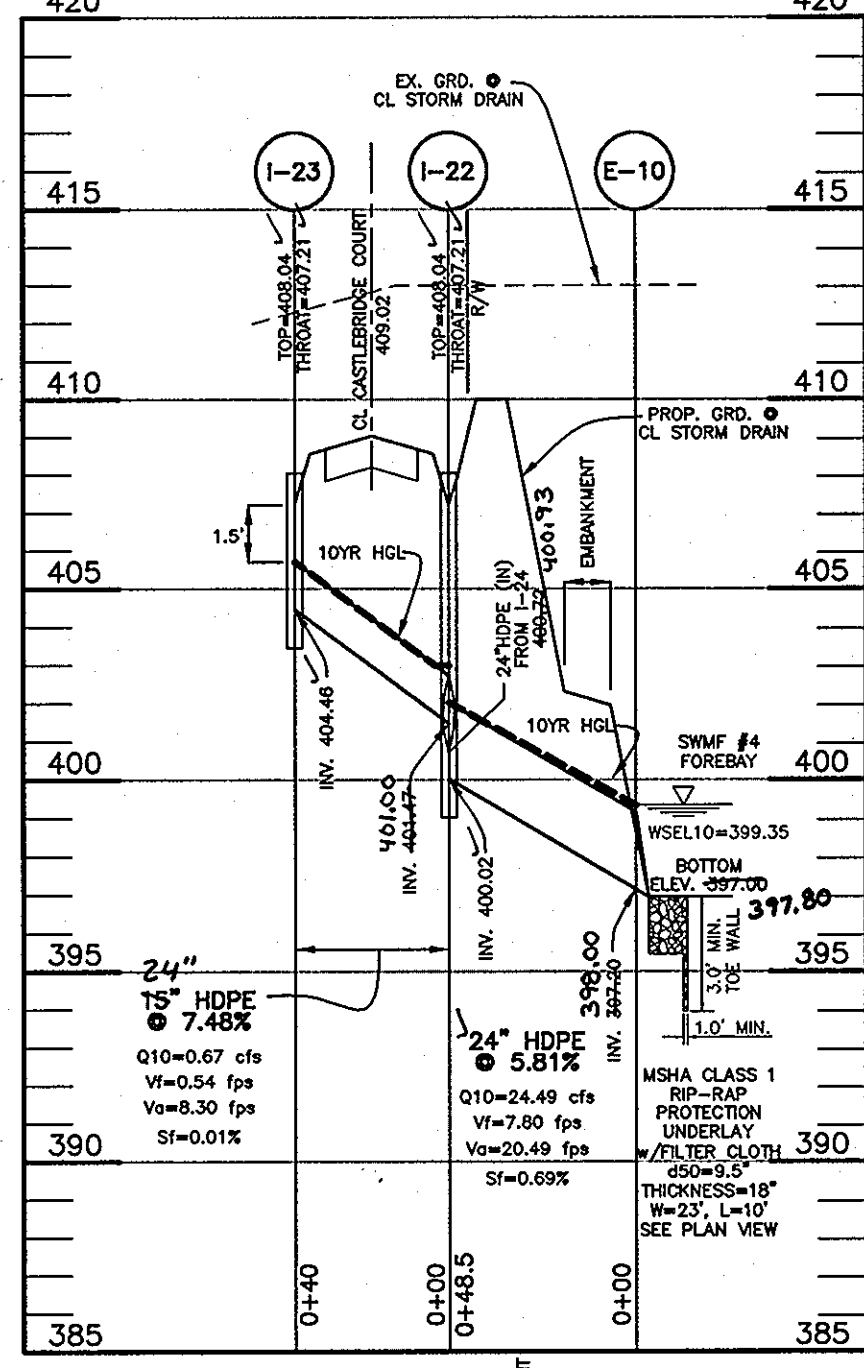
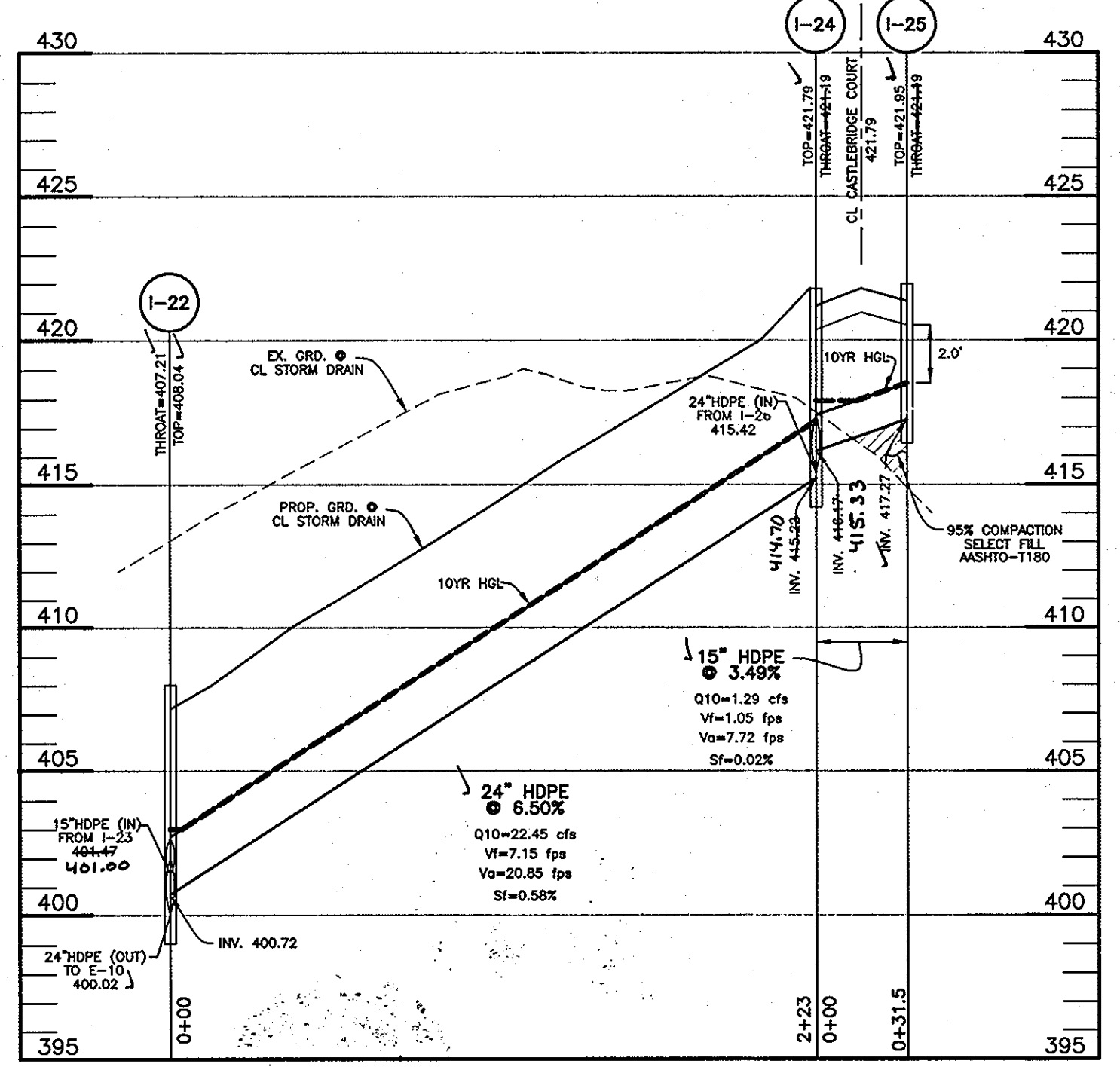
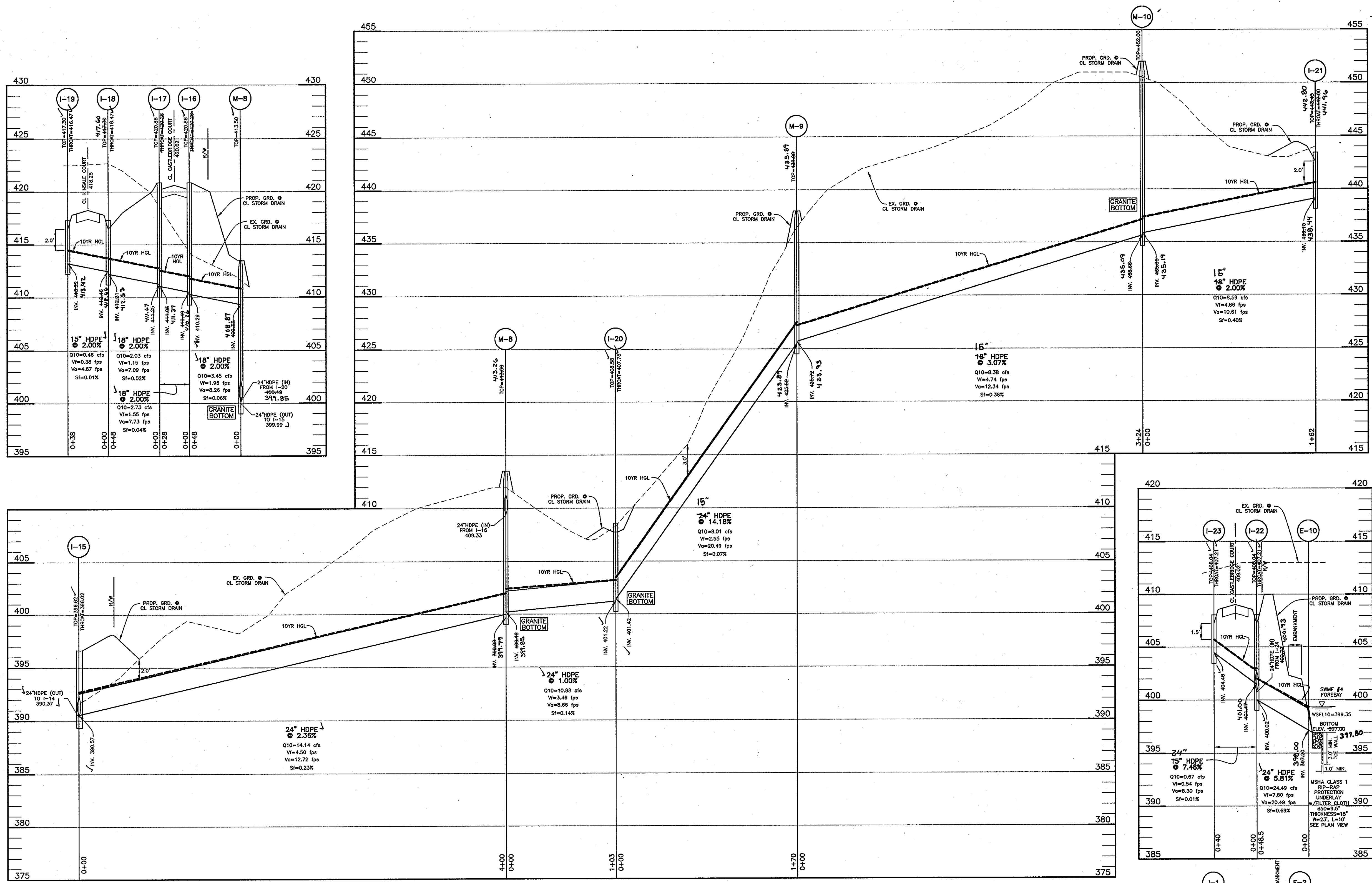
NO.	DATE	REVISION
1	5-07	REVISE STORM DRAIN FOR NEW VERTICAL ALIGNMENT
2	5-06	RENUMBER PLANS IN SET

BENCHMARK
 ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.

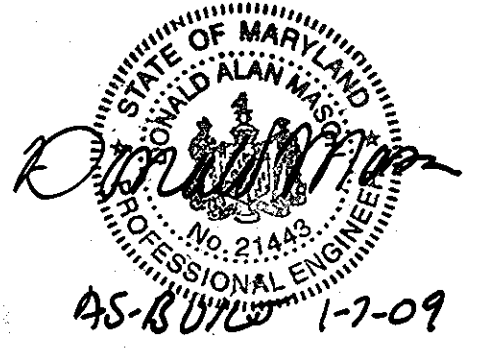
8480 BALTIMORE NATIONAL PIKE & SUITE 418
 ELLICOTT CITY, MARYLAND 21043
 phone: 410-465-0105 • fax: 410-465-6644
 www.bei-civilengineering.com

Donald Maan
 6/2/05

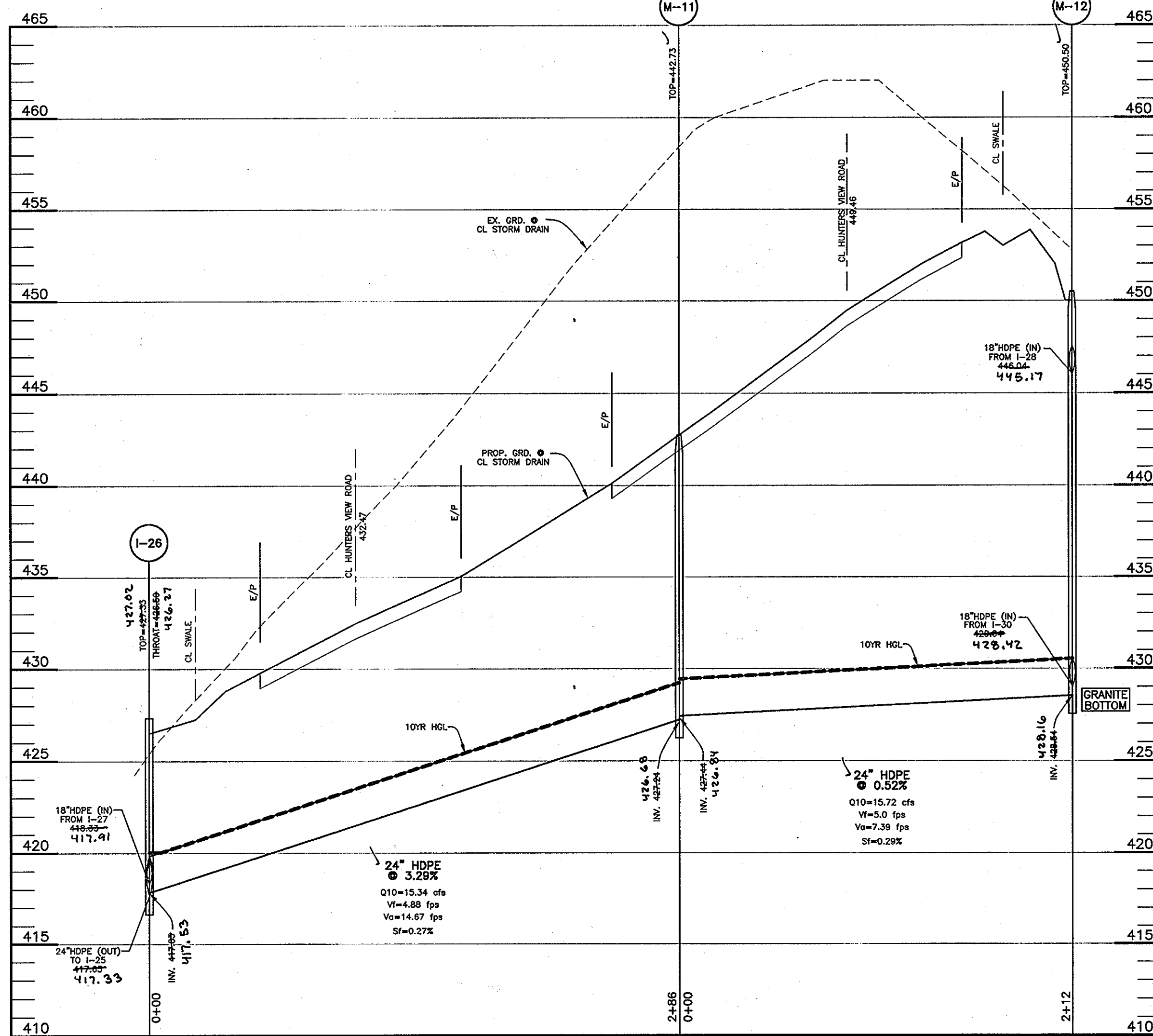
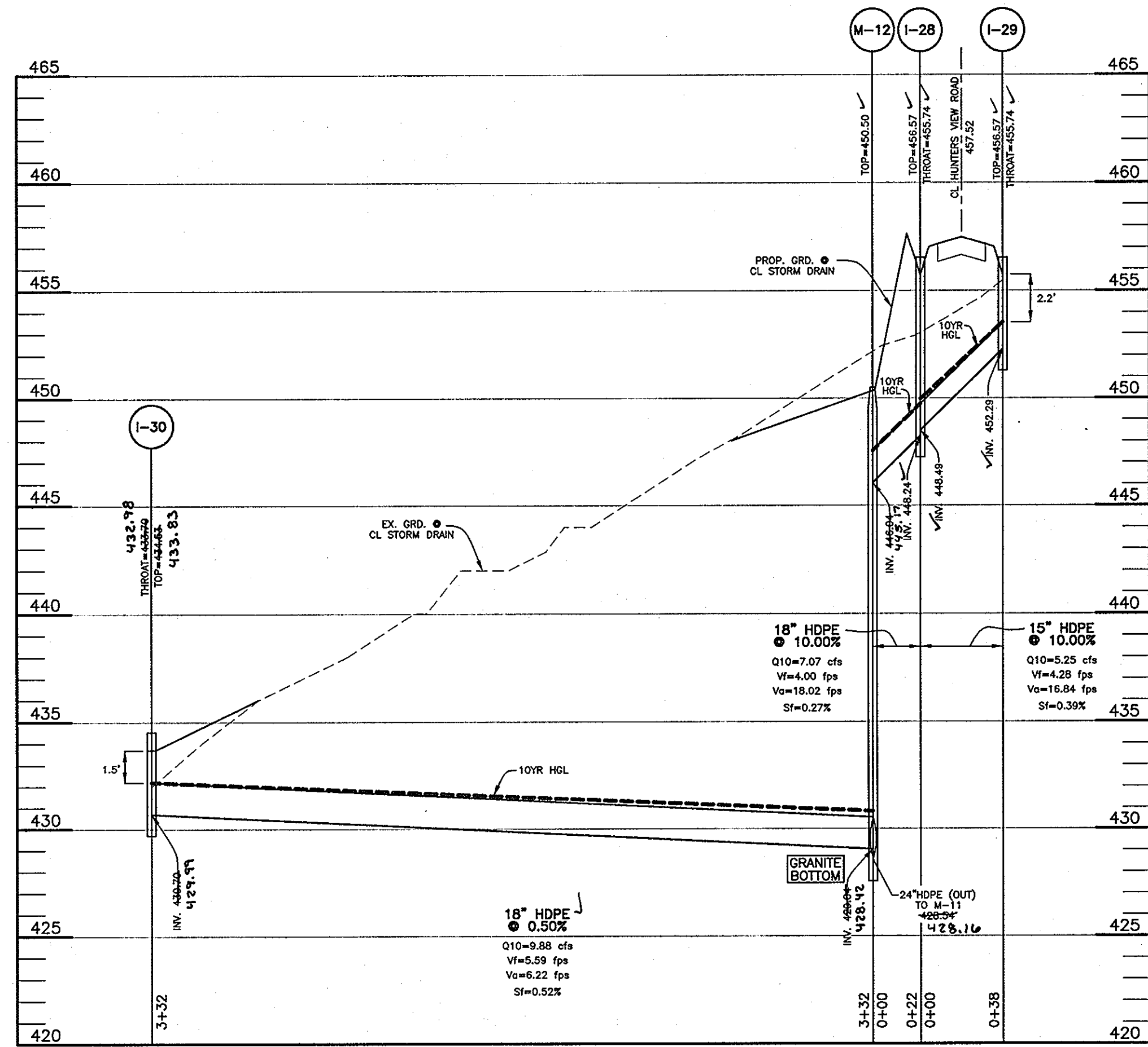
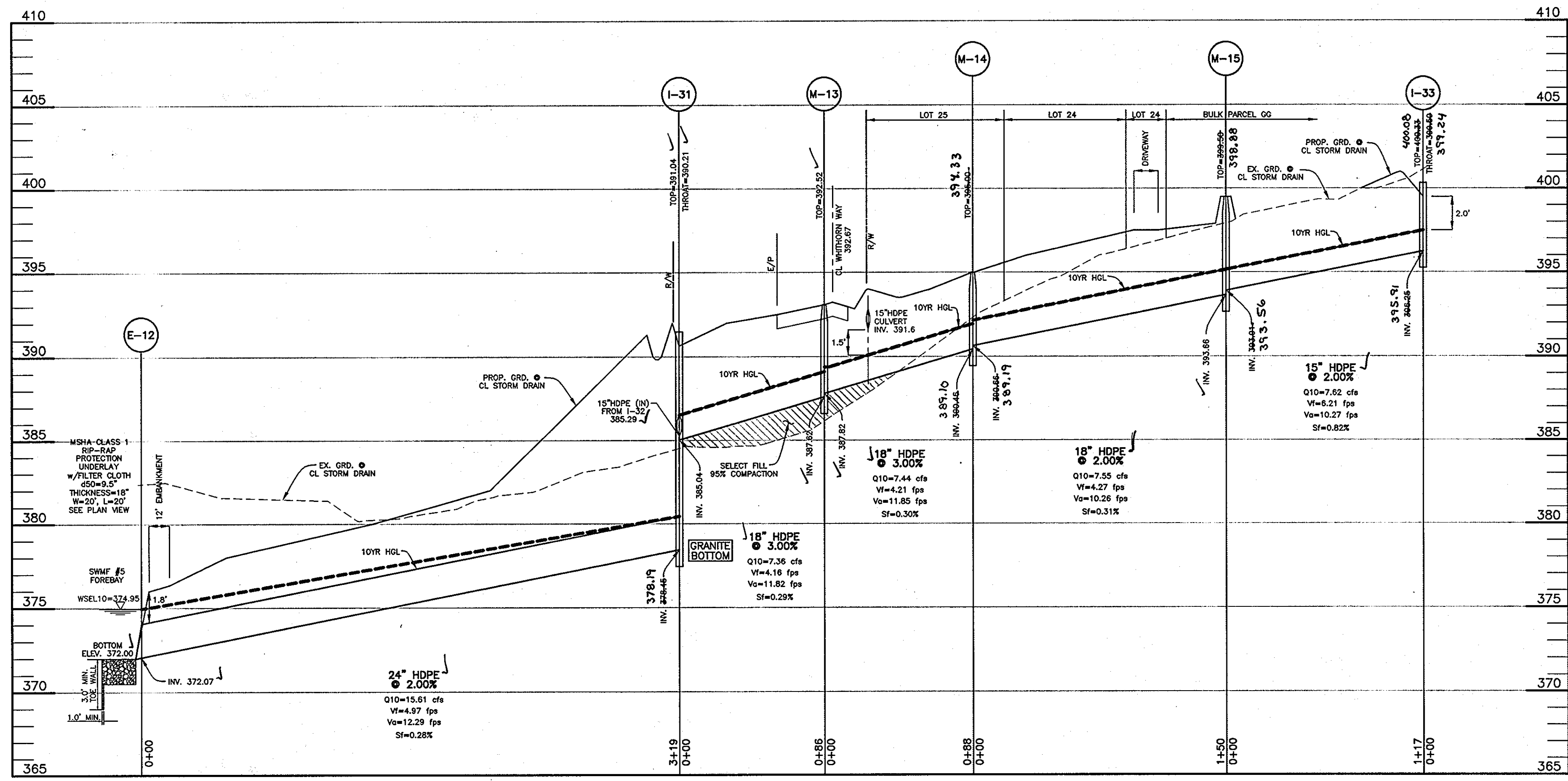
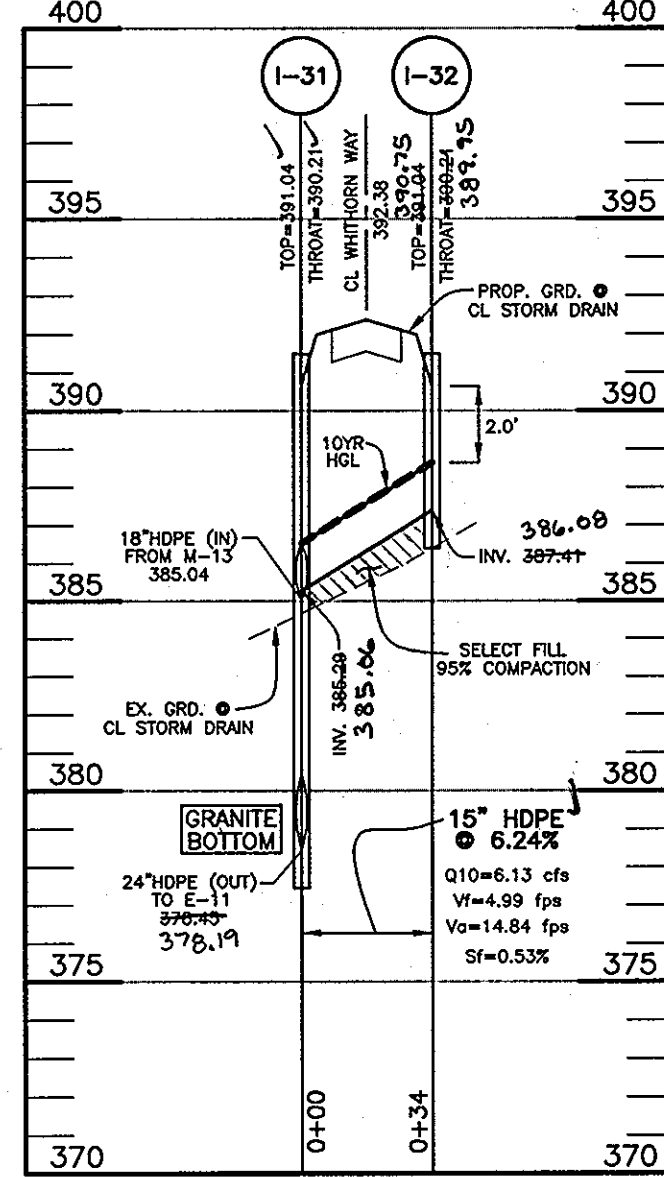
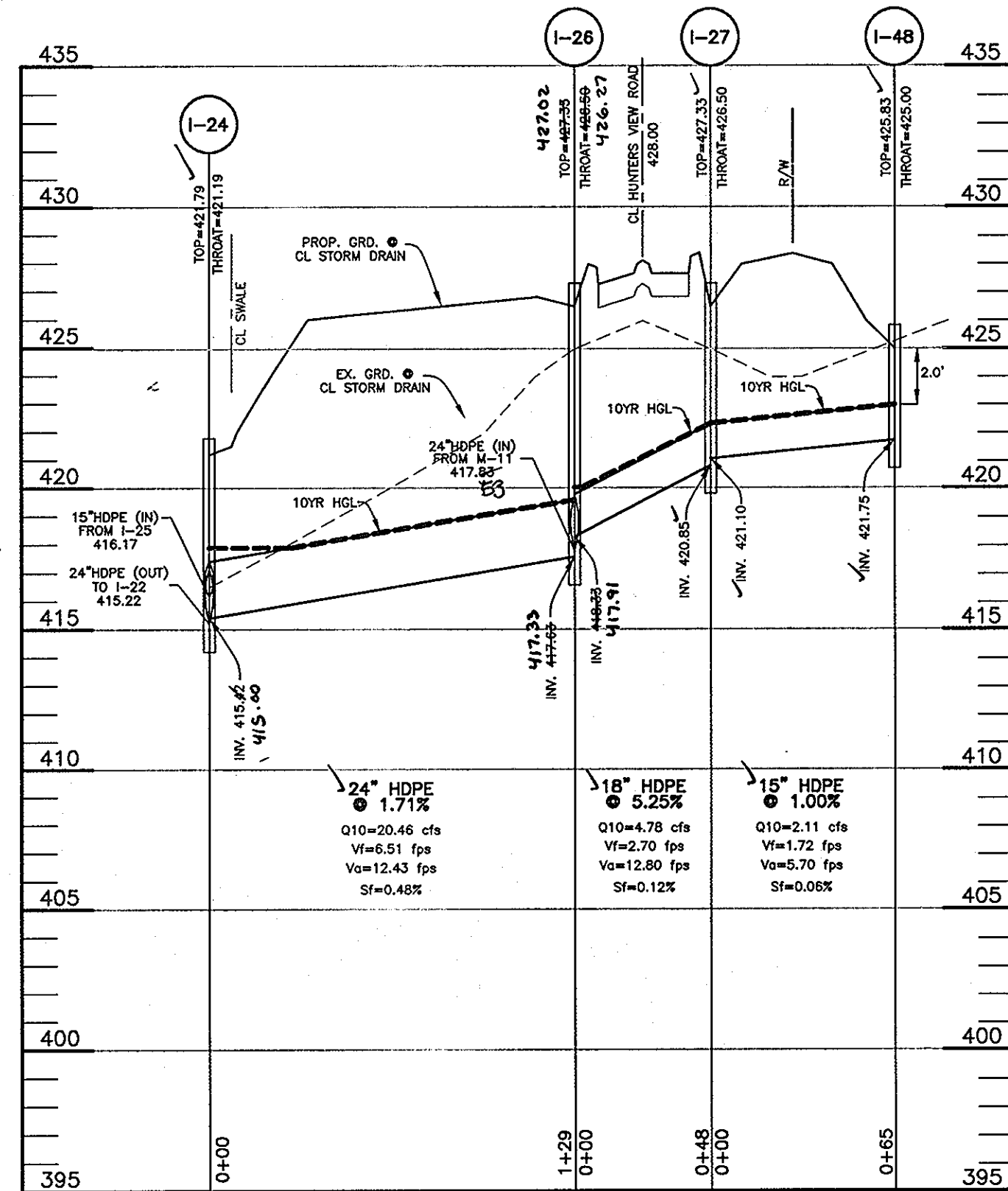
DEVELOPER:	ELIOAK, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	PROJECT:	RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'Q'; AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'
OWNER:	HOMWOOD, L.L.C. P.O. BOX 411 ELLICOTT CITY, MARYLAND 21041 410-465-4244	LOCATION:	TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,8,10 PARCELS: 86 PARCELS: 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
OWNER:	JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL, ZIEGLER, THOMAS I. CARROLL, JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32nd FLOOR NEW YORK, NEW YORK 10022	TITLE:	STORM DRAIN PROFILES
DES: JMC/DBT	DRAFT: JMC/DBT	CHECK: CAM	DATE: JUNE, 2005 PROJECT NO. 1132 SCALE: 1" = 50' HORIZ. 1" = 5' VERT. SHEET 16 OF 55



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
With Z... 7-12-05
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
C... 7/26/05
 CHIEF, DIVISION OF LAND DEVELOPMENT
M... 7/19/05
 CHIEF, DEVELOPMENT ENGINEERING DIVISION



15-4-06 RENUMBER PLANS IN SET		REVISION	
<p align="center">BENCHMARK ENGINEERS • LAND SURVEYORS • PLANNERS ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE • SUITE 418 ELLICOTT CITY, MARYLAND 21043 phone: 410-465-8105 • fax: 410-465-6644 www.bel-civilengineering.com</p>			
DEVELOPER: ELJOAK, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244		PROJECT: RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'Q'; AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'	
OWNER: HOMEWOOD, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244		LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 28, GRID: 3,4,8&10 PARCELS: 86 PARCELS: 25 & 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND	
OWNER: JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32nd FLOOR NEW YORK, NEW YORK 10022		TITLE: STORM DRAIN PROFILES DATE: JUNE, 2005 PROJECT NO. 1132 DES: JMC/DBT DRAFT: JMC/DBT CHECK: CAM SCALE: 1" = 50' HORIZ. SHEET 17 OF 55 1" = 5' VERT.	



NO.	DATE	REVISION
1	6-4-06	RENUMBER PLANS IN SET

BENCHMARK
ENGINEERS • LAND SURVEYORS • PLANNERS
ENGINEERING, INC.

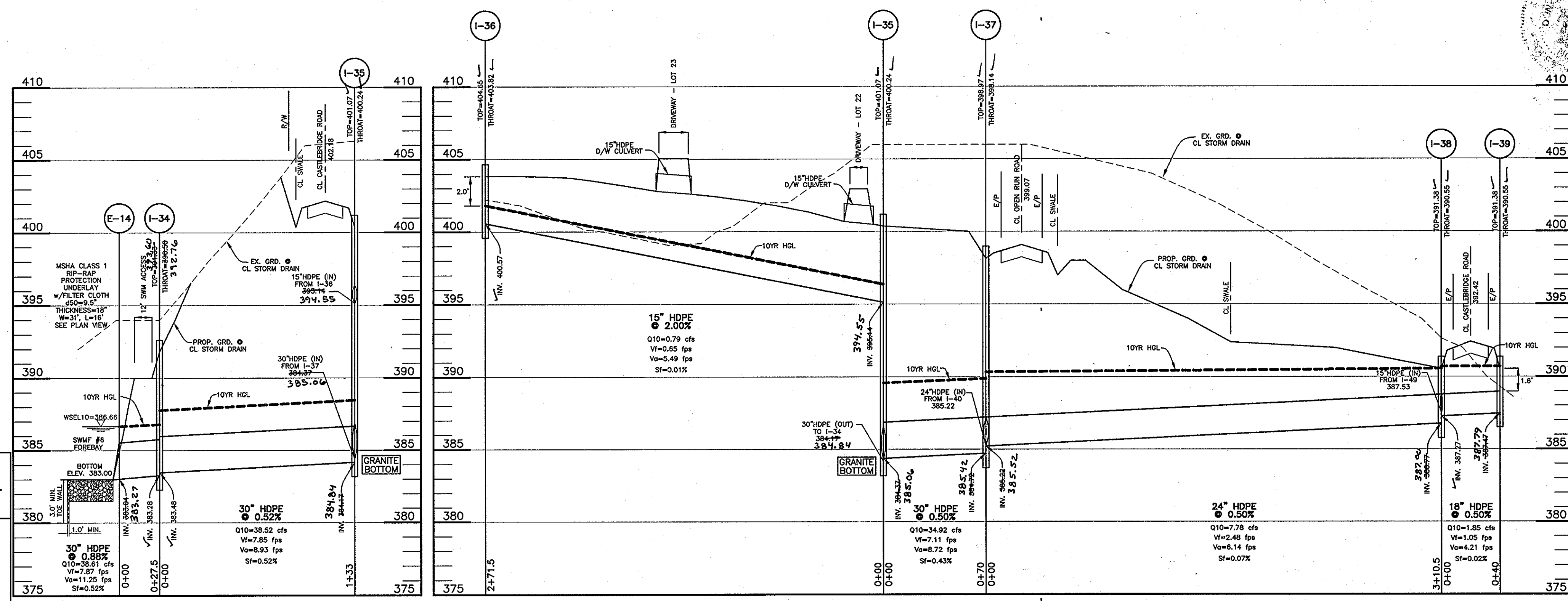
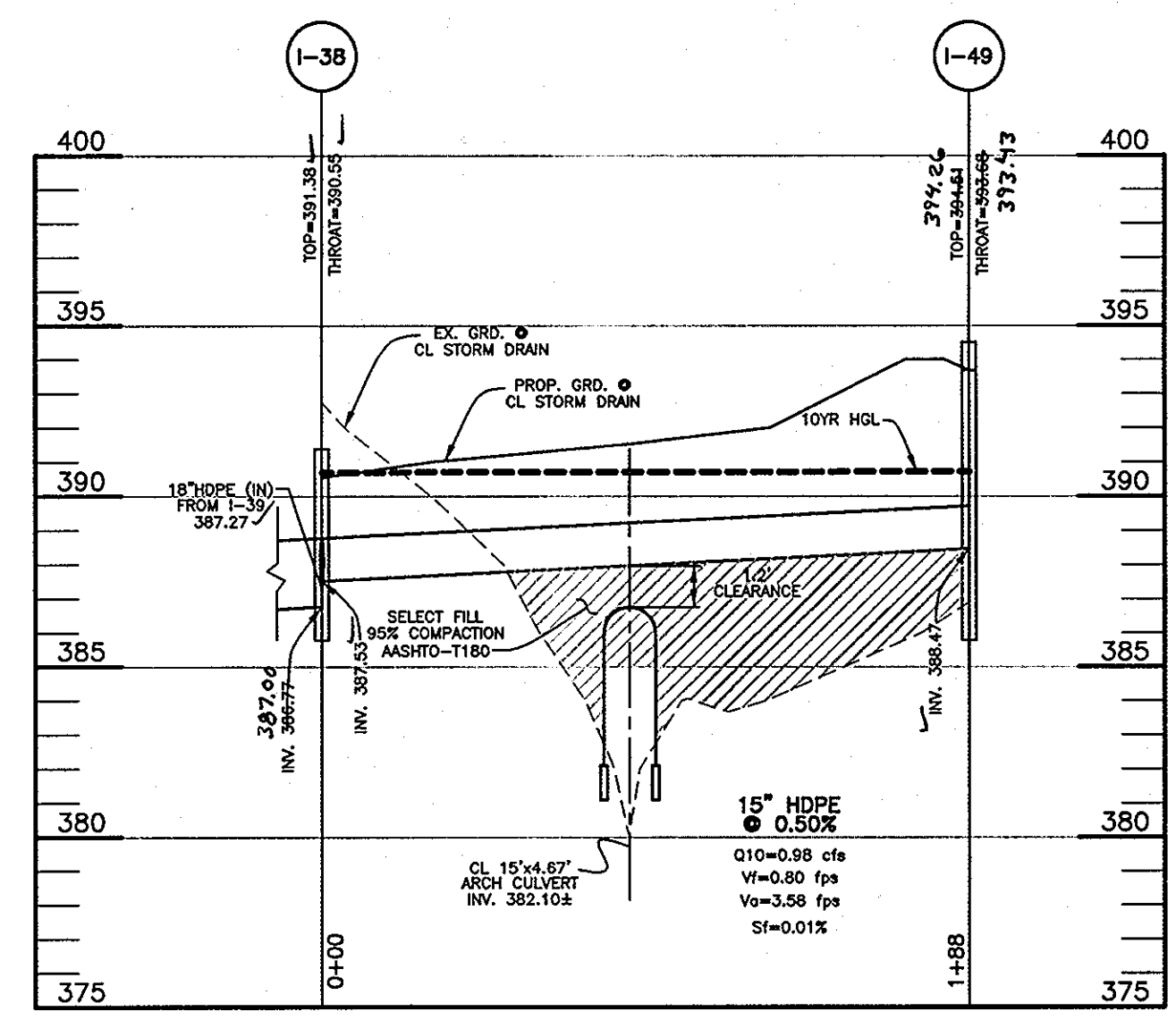
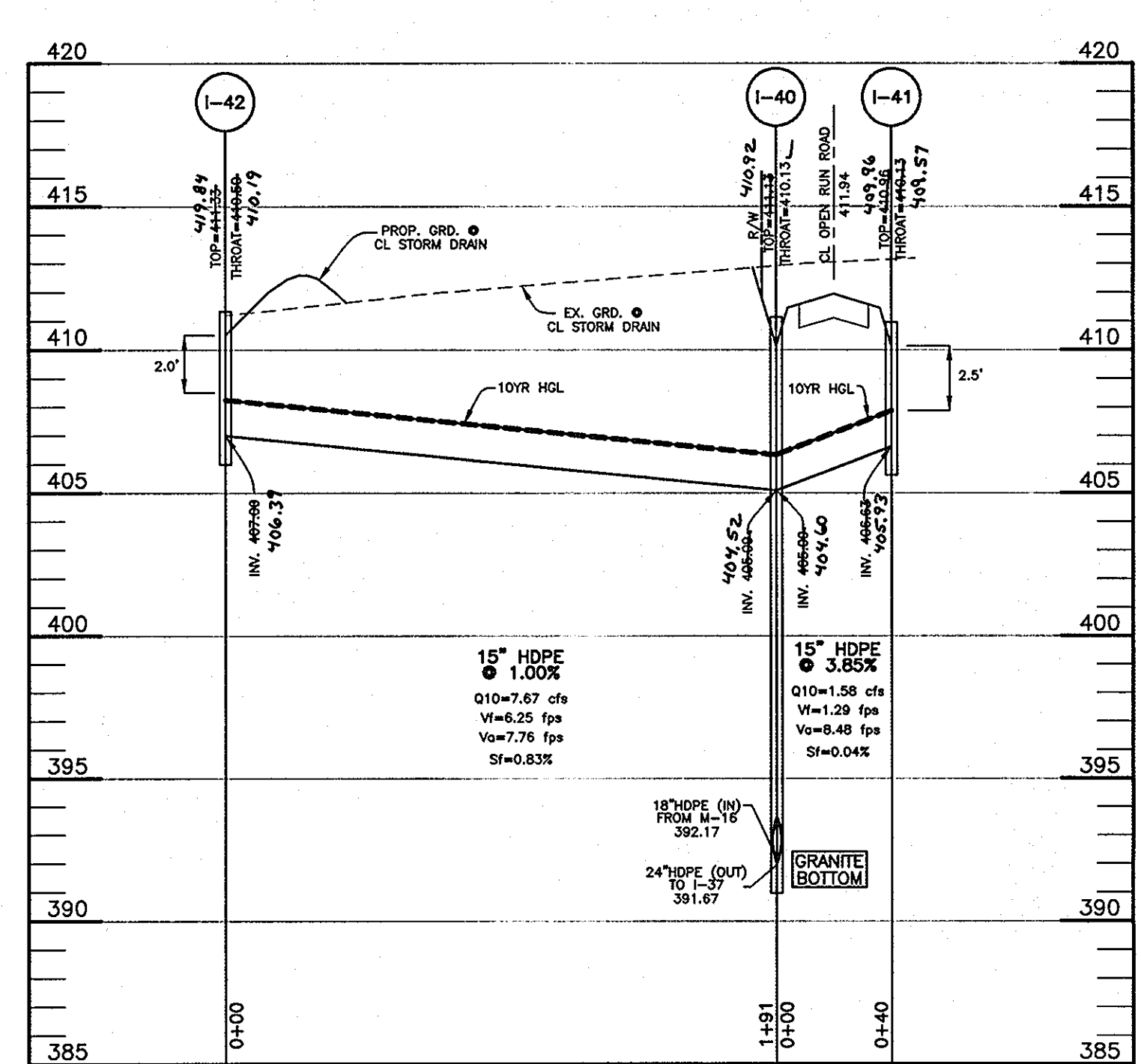
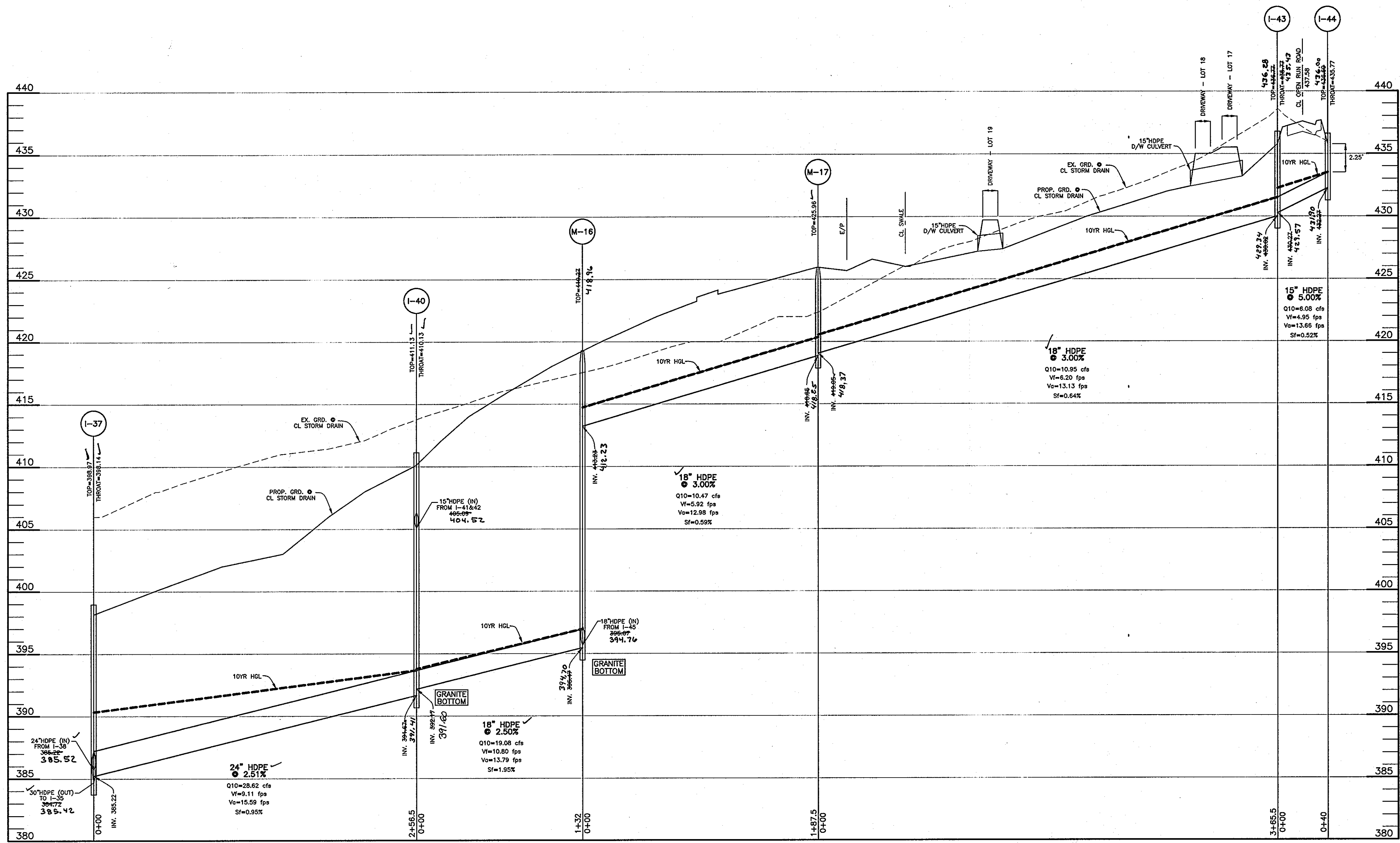
8480 BALTIMORE NATIONAL PIKE • SUITE 418
ELLCOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 • FAX: 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

DEVELOPER:	ELBAK, L.L.C. P.O. BOX 417 ELLCOTT CITY, MARYLAND 21041 410-465-4244	PROJECT:	RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'Q'; AND NON-BUILDABLE BULK PARCELS 'AR' THRU 'HH'
OWNER:	HOMWOOD, L.L.C. P.O. BOX 417 ELLCOTT CITY, MARYLAND 21041 410-465-4244	LOCATION:	TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,8&10 PARCELS: 86 PARCELS: 20 & 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
OWNER:	JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND CECILIEVENE A. CARROLL 670 JOHN LEE CARROLL 515 MADISON AVENUE 32ND FLOOR NEW YORK, NEW YORK 10022	TITLE:	STORM DRAIN PROFILES
DES: JMC/DBT	DRAFT: JMC/DBT	CHECK: CAM	DATE: JUNE, 2005 PROJECT NO. 1132 SCALE: 1" = 50' HORIZ. 1" = 5' VERT. SHEET 18 OF 55

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
William J. White 7-18-05
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Cinda Hamilton 7/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Mark Dammann 7/19/05
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



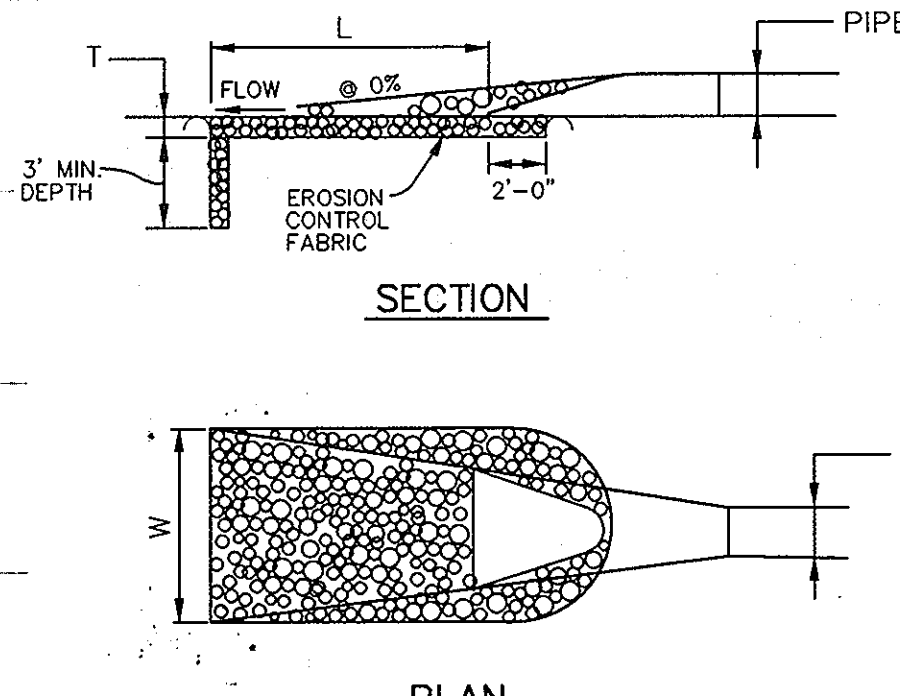
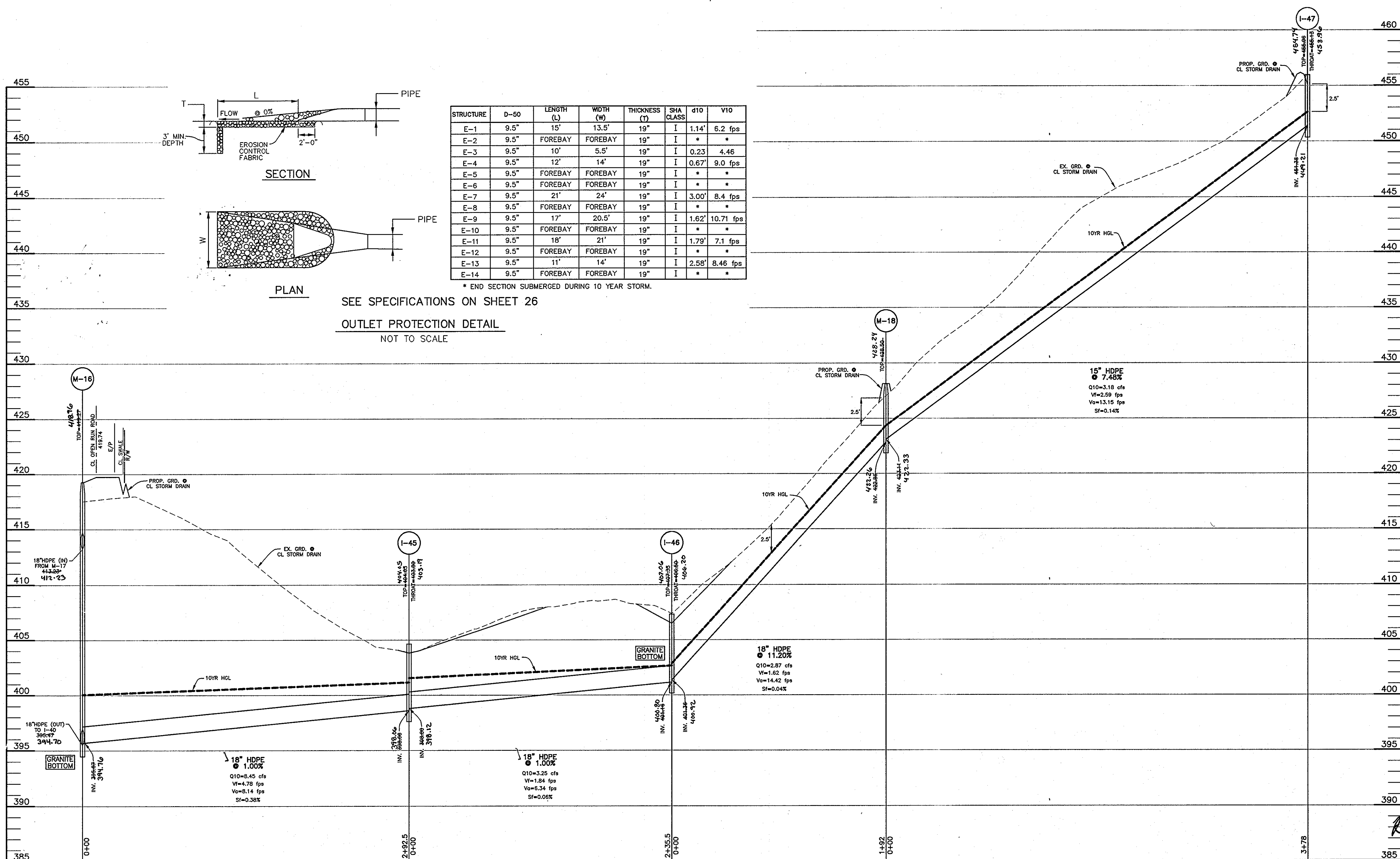
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Walter F. White 7-18-05
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Wanda Hammett 7/28/05
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

W. Drayton 7/19/05
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

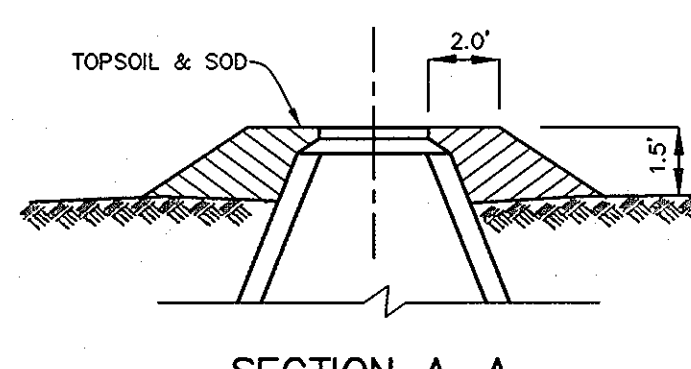
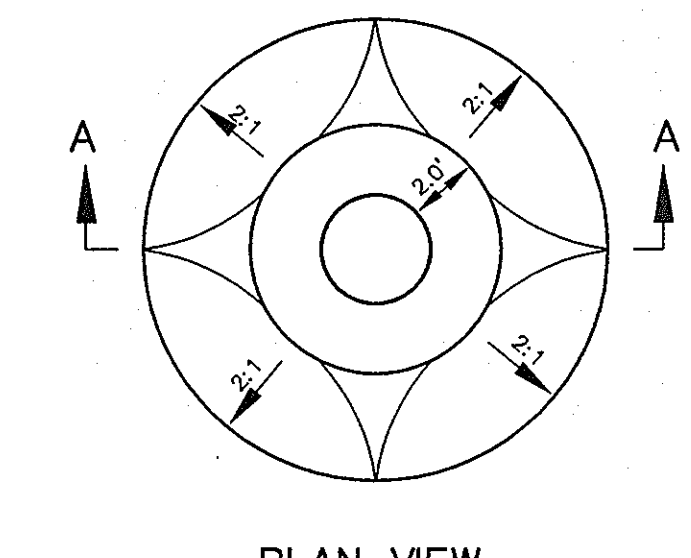
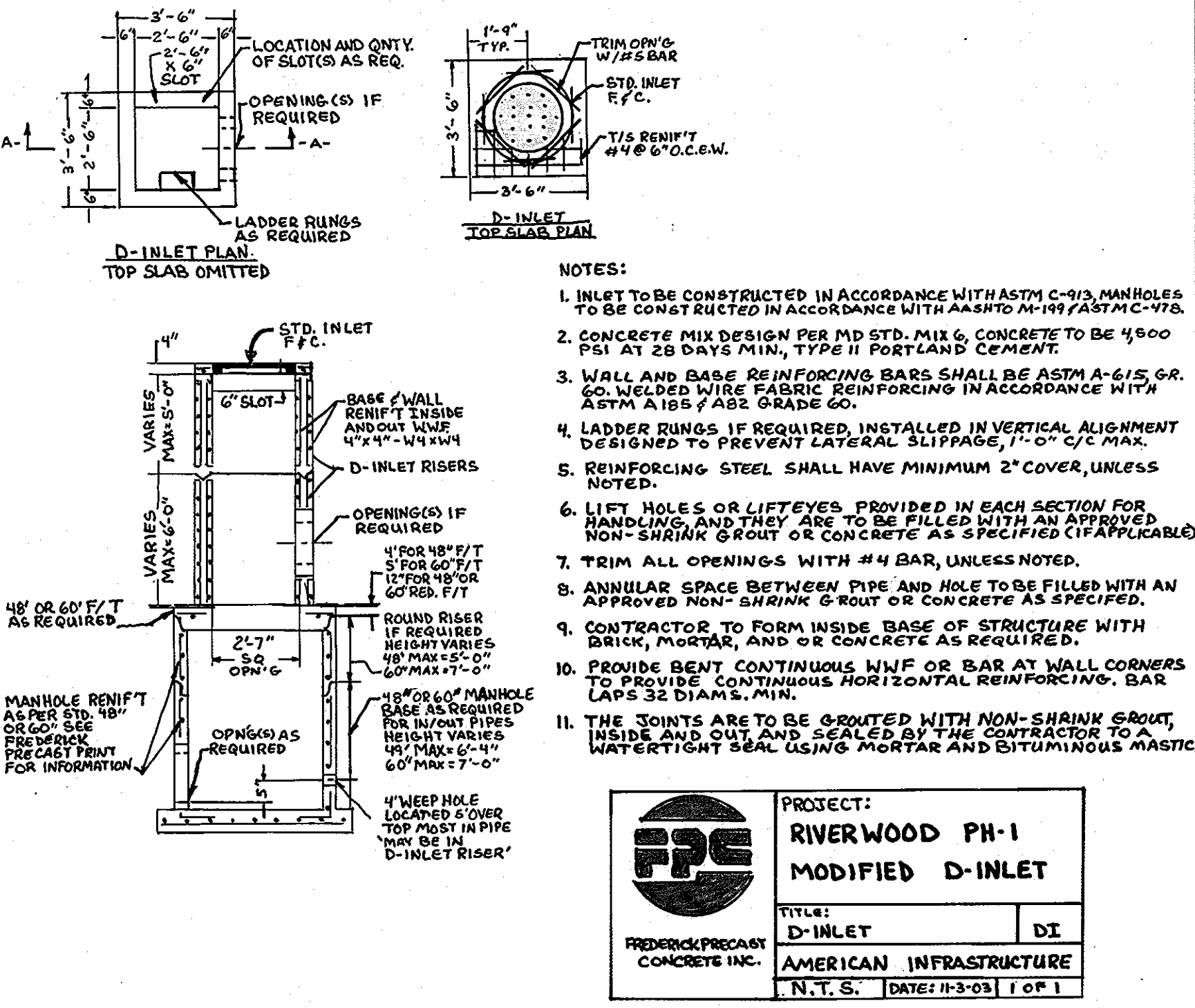
AS-80106 7-7-09

15-4-06 RENUMBER PLANS IN SET	
NO. DATE REVISION	
BENCHMARK ENGINEERING, INC. ENGINEERS • LAND SURVEYORS • PLANNERS 8480 BALTIMORE NATIONAL PIKE • SUITE 418 ELLICOTT CITY, MARYLAND 21043 phone: 410-465-6105 • fax: 410-465-6644 www.bel-civilengineering.com	
DEVELOPER: ELIOAK, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	PROJECT: RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'Q'; AND NON-BUILDABLE BULK PARCELS 'AR THRU 'HH'
OWNER: HOMEWOOD, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 28, GRID: 3,4,9&10 PARCELS: 88 PARCELS: 20 & 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
OWNER: JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL, ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENIEVEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32nd FLOOR NEW YORK, NEW YORK 10022	
TITLE: STORM DRAIN PROFILES	
DATE: JUNE, 2005	PROJECT NO. 1132
DES: JMC/DBT DRAFT: JMC/DBT CHECK: CAM	
SCALE: 1" = 50' HORIZ. 1" = 5' VERT.	SHEET 19 OF 55

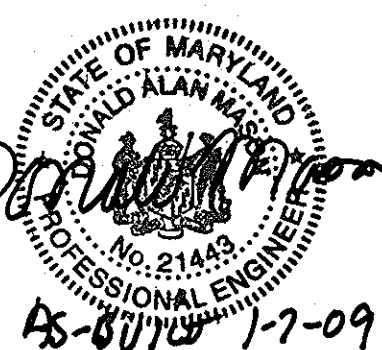


STRUCTURE	D-50	LENGTH (L)	WIDTH (W)	THICKNESS (T)	SHA CLASS	d10	V10
E-1	9.5"	15'	13.5'	19"	I	1.14'	6.2 fps
E-2	9.5"	FOREBAY	FOREBAY	19"	I	*	*
E-3	9.5"	10'	5.5'	19"	I	0.23	4.46
E-4	9.5"	12'	14'	19"	I	0.67'	9.0 fps
E-5	9.5"	FOREBAY	FOREBAY	19"	I	*	*
E-6	9.5"	FOREBAY	FOREBAY	19"	I	*	*
E-7	9.5"	21'	24'	19"	I	3.00'	8.4 fps
E-8	9.5"	FOREBAY	FOREBAY	19"	I	*	*
E-9	9.5"	17'	20.5'	19"	I	1.62'	10.71 fps
E-10	9.5"	FOREBAY	FOREBAY	19"	I	*	*
E-11	9.5"	18'	21'	19"	I	1.79'	7.1 fps
E-12	9.5"	FOREBAY	FOREBAY	19"	I	*	*
E-13	9.5"	11'	14'	19"	I	2.58'	8.46 fps
E-14	9.5"	FOREBAY	FOREBAY	19"	I	*	*

SEE SPECIFICATIONS ON SHEET 26
OUTLET PROTECTION DETAIL
NOT TO SCALE



- NOTES:**
- ALL MANHOLE FRAME AND COVERS SHALL BE FLUSH WITH GRADE EXCEPT WHEN SHOWN ON PROFILE TO BE SET HIGHER THAN GRADE.
 - MANHOLE FRAME AND COVERS TO BE SET HIGHER THAN GRADE SHALL BE SET IN ACCORDANCE WITH THIS DETAIL.

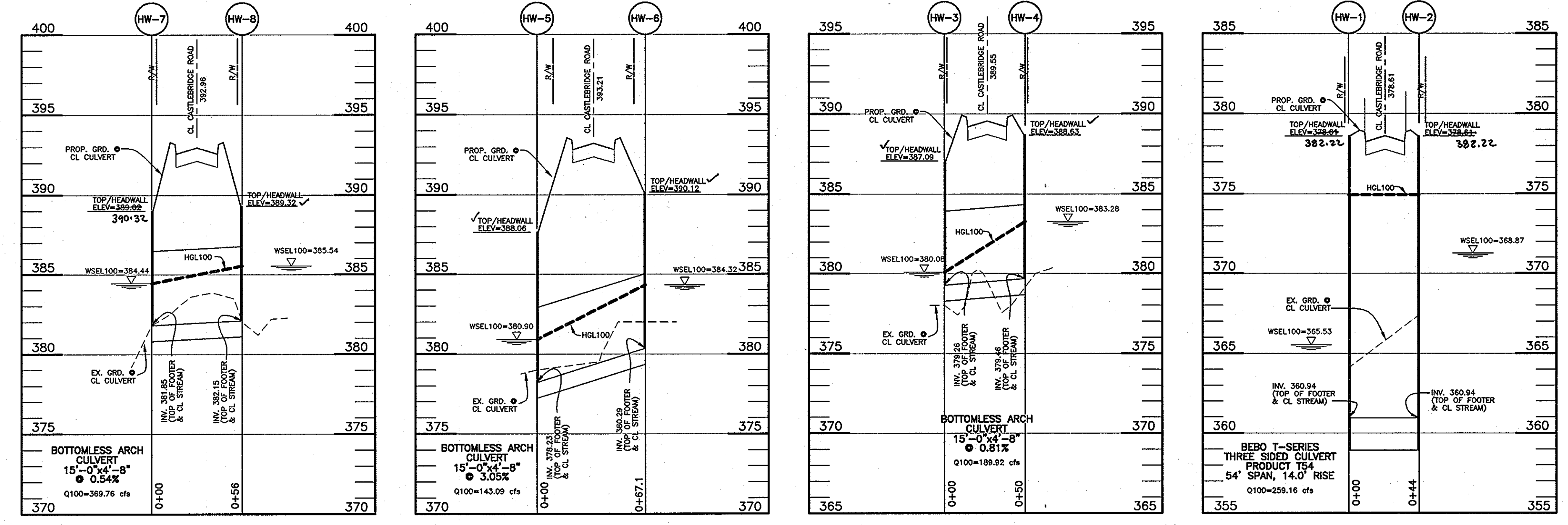


FILL AROUND MANHOLE
NOT TO SCALE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
William J. White 7-18-05
CHIEF, BUREAU OF HIGHWAYS

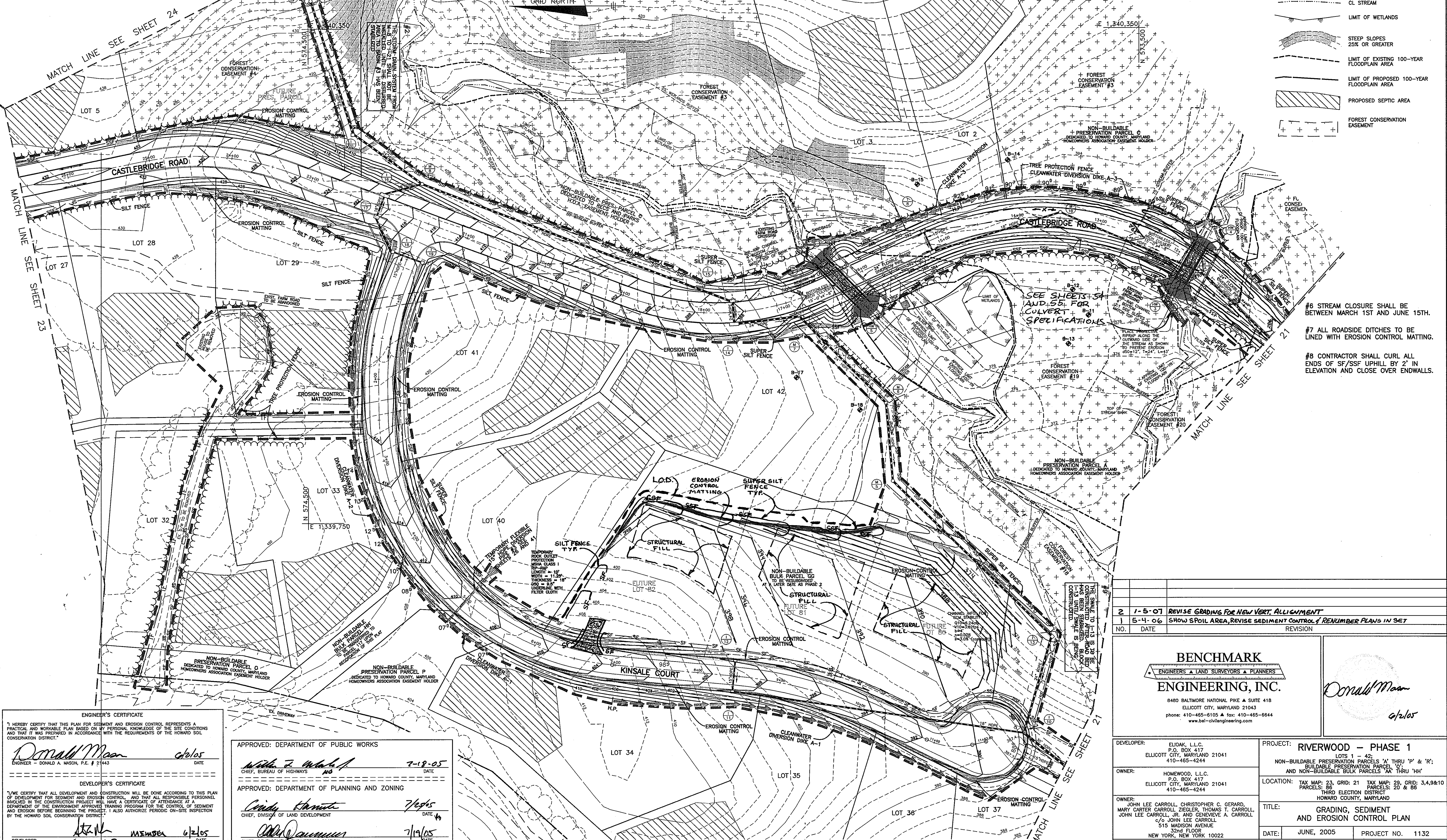
APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Cindy Hamilton 7/18/05
CHIEF, DIVISION OF LAND DEVELOPMENT

Donald M. Moore 7/19/05
CHIEF, DEVELOPMENT ENGINEERING DIVISION



<p>1 5-4-06 ADD MODIFIED D-INLET & RENAME PLANS IN SET</p>	
NO.	REVISION
<p>BENCHMARK ENGINEERING, INC. ENGINEERS • LAND SURVEYORS • PLANNERS 8480 BALTIMORE NATIONAL PIKE • SUITE 418 ELLCOTT CITY, MARYLAND 21043 PHONE: 410-465-6105 • FAX: 410-465-6644 WWW.BEI-CIVILENGINEERING.COM</p>	
DEVELOPER:	ELJOAK, L.L.C. P.O. BOX 417 ELLCOTT CITY, MARYLAND 21041 410-465-4244
OWNER:	HOMWOOD, L.L.C. P.O. BOX 417 ELLCOTT CITY, MARYLAND 21041 410-465-4244
OWNER:	JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL, ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENIEVIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32nd FLOOR NEW YORK, NEW YORK 10022
PROJECT:	RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'Q'; AND NON-BUILDABLE BULK PARCELS 'M' THRU 'HH'
LOCATION:	TAX MAP: 23, GRID: 21 TAX MAP: 23, GRID: 3,4,9&10 PARCELS: 88 PARCELS: 29 & 86
TITLE:	STORM DRAIN PROFILES
DATE:	JUNE, 2005
PROJECT NO.:	1132
DES: JMC/DBT	DRAFT: JMC/DBT
CHECK: CAM	SCALE: 1" = 50' HORIZ. 1" = 5' VERT.
SHEET 20 OF 55	

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS
 DATE: 6/14/05
 DATE: 6/14/05
 DATE: 6/14/05
 DATE: 6/14/05



LEGEND	
	LIMIT OF DISTURBANCE
	EARTH DIKE
	SUPER SILT FENCE
	EROSION CONTROL MATTING
	TREE PROTECTION FENCE
	TEMPORARY SWALE
	EXISTING CONTOURS
	EXISTING TREELINE
	PROPOSED TREELINE
	CL STREAM
	LIMIT OF WETLANDS
	STEEP SLOPES 25% OR GREATER
	LIMIT OF EXISTING 100-YEAR FLOODPLAIN AREA
	LIMIT OF PROPOSED 100-YEAR FLOODPLAIN AREA
	PROPOSED SEPTIC AREA
	FOREST CONSERVATION EASEMENT

#6 STREAM CLOSURE SHALL BE BETWEEN MARCH 1ST AND JUNE 15TH.
 #7 ALL ROADSIDE DITCHES TO BE LINED WITH EROSION CONTROL MATTING.
 #8 CONTRACTOR SHALL CURL ALL ENDS OF SF/SSF UPHILL BY 2' IN ELEVATION AND CLOSE OVER ENDWALLS.

NO.	DATE	REVISION
2	1-5-07	REVISE GRADING FOR NEW VERT. ALIGNMENT
1	5-4-06	SHOW SPOIL AREA, REVISE SEDIMENT CONTROL & REMEMBER PLANS IN SET

BENCHMARK ENGINEERING, INC.
 ENGINEERS • LAND SURVEYORS • PLANNERS
 8480 BALTIMORE NATIONAL PIKE SUITE 418
 ELLICOTT CITY, MARYLAND 21043
 PHONE: 410-465-6105 FAX: 410-465-6644
 WWW.BEI-ENGINEERING.COM

Donald M. Mason
 6/14/05

ENGINEER'S CERTIFICATE
 I HEREBY CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
Donald M. Mason
 ENGINEER - DONALD A. MASON, P.E. # 21443
 DATE: 6/14/05

DEVELOPER'S CERTIFICATE
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL 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 ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.
 DEVELOPER: STEVEN K. BREENAN
 MEMBER: 6/14/05
 DATE: 6/14/05

APPROVED: DEPARTMENT OF PUBLIC WORKS
William Z. White
 CHIEF, BUREAU OF HIGHWAYS
 DATE: 7-19-05

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Cindy Harvath
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 7/29/05

Colin J. Quinlan
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 7/14/05

DEVELOPER: ELIOAK, L.L.C.
 P.O. BOX 417
 ELLICOTT CITY, MARYLAND 21041
 410-465-4244

OWNER: HOMEWOOD, L.L.C.
 P.O. BOX 417
 ELLICOTT CITY, MARYLAND 21041
 410-465-4244

OWNER: JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL, ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL
 c/o JOHN LEE CARROLL
 515 MADISON AVENUE
 32ND FLOOR
 NEW YORK, NEW YORK 10022

PROJECT: RIVERWOOD - PHASE 1
 LOTS 1 - 42;
 NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R';
 BUILDABLE PRESERVATION PARCEL 'Q';
 AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'

LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 28, GRID: 3,4,9&10
 PARCELS: 88 PARCELS: 29 & 86
 THIRD ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

TITLE: GRADING, SEDIMENT AND EROSION CONTROL PLAN

DATE: JUNE, 2005 PROJECT NO. 1132

DES: JMC/DBT DRAFT: JMC/DBT CHECK: CAM SCALE: 1" = 50' SHEET 22 OF 55

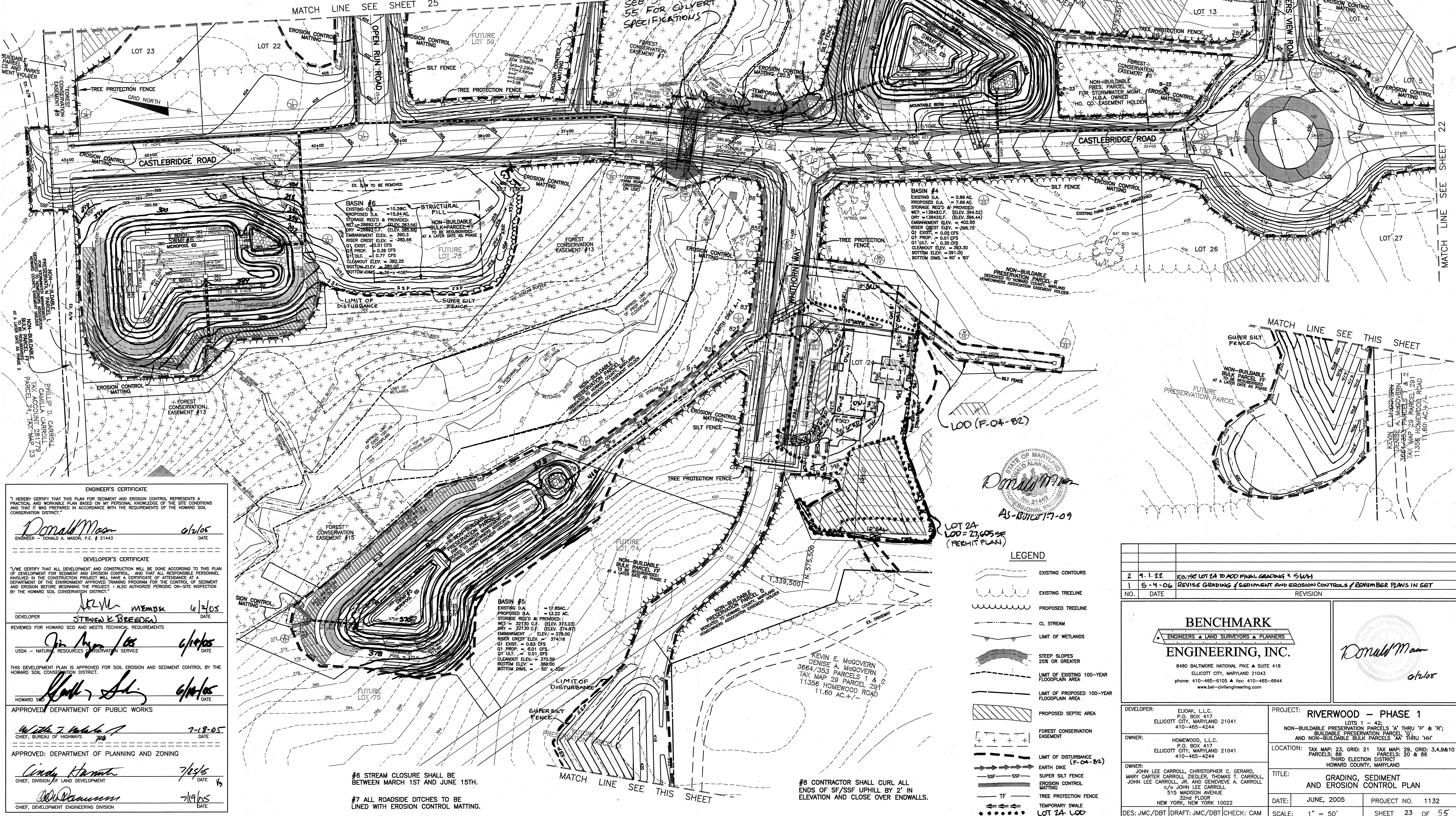
LOT 24 NOTES:
 1. THIS LOT WILL UTILIZE A STANDARD EROSION CONTROL PLAN WITH A LIMIT OF DISTURBANCE NO GREATER THAN 30% OF THE LOT AREA.
 2. FLOOD PROTECTION SHALL BE PROVIDED FOR THIS LOT UNDER F.D. 002.
 3. OWNERS SHALL BE IN ACCORDANCE WITH HOWARD COUNTY STANDARDS FOR EROSION CONTROL AND SEDIMENT CONTROL.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DISCONNECTION OF NON-ROOFTOP RUNOFF (N-D) DISCONNECTION OF NON-ROOFTOP RUNOFF (N-D)
 A. MAINTENANCE OF AREAS RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE OWNER SHALL ENSURE THE AREAS RECEIVING RUNOFF ARE PROTECTED FROM FLOODING OR DEVELOPMENT OF IMPERVIOUS AREAS IN CONCRETE AREAS. FOOT TRAFFIC SHOULD BE DISCOURAGED AS WELL.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED (M-S) DRY WELLS
 1. THE MONITORING WELLS AND STRUCTURES SHALL BE INSPECTED ON A QUARTERLY BASIS AND AT THE VERY LARGEST SIX MONTHS.
 2. WATER LEVELS AND STRUCTURE BUILD UP IN THE MONITORING WELLS SHALL BE RECORDED OVER A PERIOD OF SEVERAL DAYS TO INSURE TYPICAL DRAINAGE.
 3. A LOG BOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
 4. WHEN THE FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN WITHIN THE 72 HOUR TIME PERIOD, CORRECTIVE ACTION SHALL BE TAKEN.
 5. THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE SCHEDULE.
 6. OVER THE PERFORMANCE CHARACTERISTICS OF THE MONITORING FACILITY SHALL BE DETERMINED BY THE MAINTENANCE LOG BOOK. THE PERFORMANCE DATA INDICATES THAT A MORE PERCUSSIVE SCHEDULE IS REQUIRED.

DWM PRACTICES			
LOT NO.	ADDRESS	DRY WELL (M-S)	NON-ROOFTOP DRAINAGE (N-D)
24	11307 LEATHERBURY	3	3

OVERALL FACILITIES (M-S)										
FACILITY NO.	DRY WELL AREA	1 (%)	R _v	SOIL LOSS (T/AC)	D	W	L	VEL. (FT/SEC)	SOIL LOSS (T/AC)	PER. (INCHES)
DW-1	977	100	0.45	100.0	5'	5'	12'	120	398.5	324.5
DW-2	668	100	0.45	71.5	5'	5'	12'	120	394.8	313.8
DW-3	882	100	0.45	42.4	5'	5'	12'	120	395.1	317.1



ENGINEER'S CERTIFICATE
 I HEREBY CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
 Donald Mear
 ENGINEER - DONALD A. MASON, P.E. # 21443
 DATE: 6/2/05

DEVELOPER'S CERTIFICATE
 I HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT FOR SEDIMENT AND EROSION CONTROL AND THAT ALL 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 ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.
 STEVEN K. BREEOKA
 DEVELOPER
 DATE: 6/2/05

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS
 JIMMY LEE
 DATE: 6/14/05

USDA - NATURAL RESOURCES CONSERVATION SERVICE
 DATE: 6/14/05

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
 DATE: 6/14/05

APPROVED: DEPARTMENT OF PUBLIC WORKS
 DATE: 7-18-05

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 DATE: 7/6/05

DATE: 7/19/05

#6 STREAM CLOSURE SHALL BE BETWEEN MARCH 1ST AND JUNE 15TH.
 #7 ALL ROADSIDE DITCHES TO BE LINED WITH EROSION CONTROL MATTING.

#8 CONTRACTOR SHALL CURL ALL ENDS OF SF/SSF UPHILL BY 2' IN ELEVATION AND CLOSE OVER ENDWALLS.

Professional Engineer Seal
 Donald Mear
 No. 21443
 PS-BUILD 17-09

LEGEND

	EXISTING CONTOURS
	EXISTING TREELINE
	PROPOSED TREELINE
	CL STREAM
	LIMIT OF WETLANDS
	STEEP SLOPES 25% OR GREATER
	LIMIT OF EXISTING 100-YEAR FLOODPLAIN AREA
	LIMIT OF PROPOSED 100-YEAR FLOODPLAIN AREA
	PROPOSED SEPTIC AREA
	FOREST CONSERVATION EASEMENT
	LIMIT OF DISTURBANCE (P-04-82)
	EARTH DIKE
	SUPER SILT FENCE
	EROSION CONTROL MATTING
	TREE PROTECTION FENCE
	TEMPORARY SWALE
	LOT 24 LOD

BENCHMARK ENGINEERING, INC.
 ENGINEERS • LAND SURVEYORS • PLANNERS
 8480 BALTIMORE NATIONAL PIKE • SUITE 418
 ELLICOTT CITY, MARYLAND 21043
 phone: 410-465-6105 • fax: 410-465-6644
 www.bei-civilengineering.com

DEVELOPER: ELIOAK, L.L.C.
 P.O. BOX 417
 ELLICOTT CITY, MARYLAND 21041
 410-465-4244

OWNER: HOMEWOOD, L.L.C.
 P.O. BOX 417
 ELLICOTT CITY, MARYLAND 21041
 410-465-4244

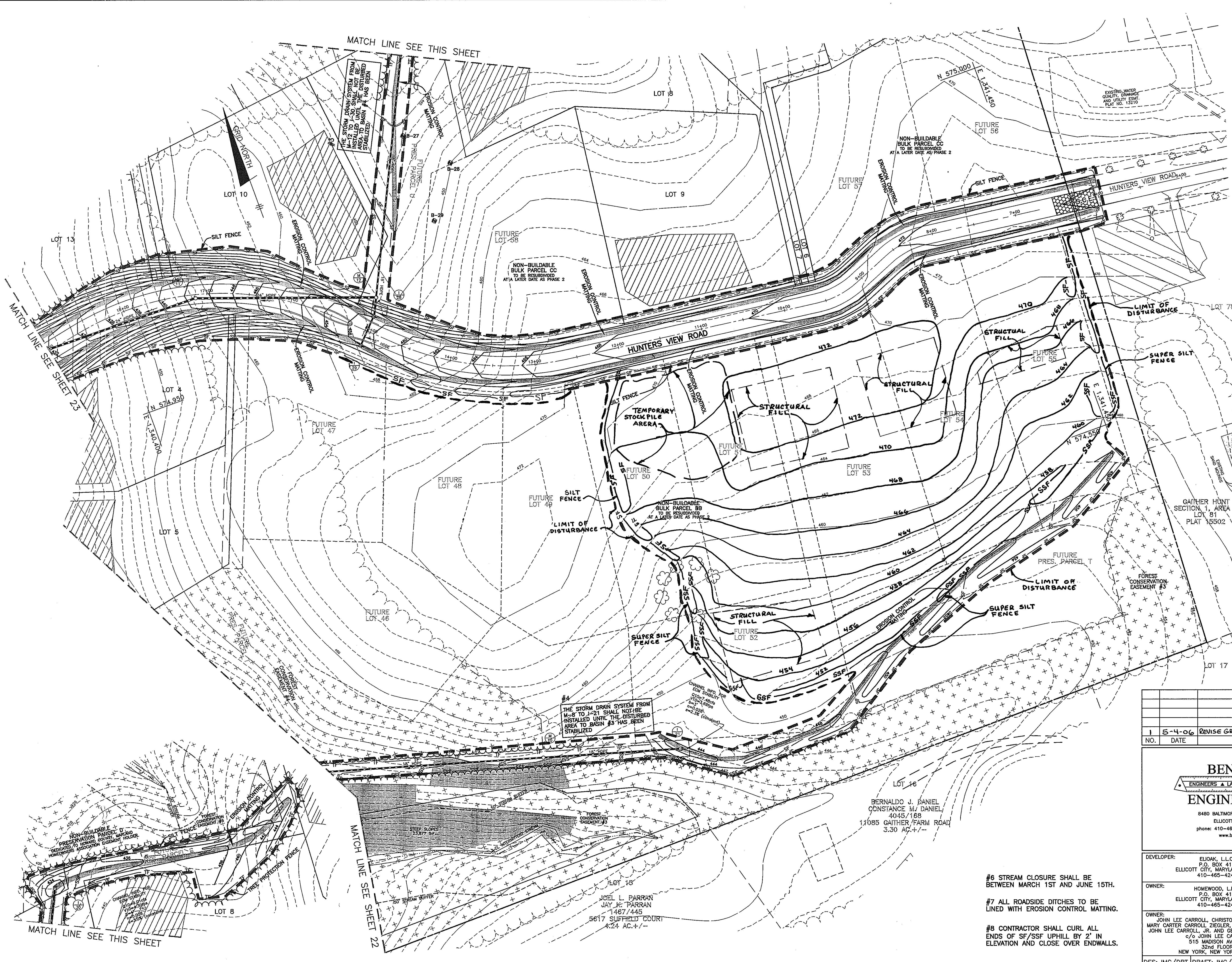
OWNER: JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL, ZIEGLER, THOMAS F. CARROLL, JOHN LEE CARROLL, JR. AND GENIEVE A. CARROLL
 6/5 JOHN LEE CARROLL
 515 MADISON AVENUE
 32ND FLOOR
 NEW YORK, NEW YORK 10022

PROJECT: RIVERWOOD - PHASE 1
 LOTS 1 - 42;
 NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R';
 BUILDABLE PRESERVATION PARCEL 'Q';
 AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'

LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,9&10
 PARCELS: 86 PARCELS: 20 & 86
 THIRD ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

TITLE: GRADING, SEDIMENT AND EROSION CONTROL PLAN

DATE: JUNE, 2005
PROJECT NO.: 1132
SCALE: 1" = 50'
SHEET: 23 OF 55



ENGINEER'S CERTIFICATE	
I HEREBY CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION 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.	
<i>Donald Mason</i> ENGINEER - DONALD A. MASON, P.E. # 21443	6/1/05 DATE
DEVELOPER'S CERTIFICATE	
I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL 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 ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.	
DEVELOPER <i>Stevenson</i> STEVENSON	6/2/05 DATE
REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS <i>Jim Ingham</i> USDA - NATURAL RESOURCES CONSERVATION SERVICE	6/19/05 DATE
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.	
HOWARD SCD <i>John S. ...</i>	6/19/05 DATE
APPROVED: DEPARTMENT OF PUBLIC WORKS	
<i>William J. ...</i> CHIEF, BUREAU OF HIGHWAYS	7-18-05 DATE
APPROVED: DEPARTMENT OF PLANNING AND ZONING	
<i>Andy ...</i> CHIEF, DIVISION OF LAND DEVELOPMENT	7/25/05 DATE
<i>Mark ...</i> CHIEF, DEVELOPMENT ENGINEERING DIVISION	7/17/05 DATE

LEGEND	
	EXISTING CONTOURS
	EXISTING TREELINE
	PROPOSED TREELINE
	CL STREAM
	LIMIT OF WETLANDS
	STEEP SLOPES 25% OR GREATER
	LIMIT OF EXISTING 100-YEAR FLOODPLAIN AREA
	LIMIT OF PROPOSED 100-YEAR FLOODPLAIN AREA
	PROPOSED SEPTIC AREA
	FOREST CONSERVATION EASEMENT
	LIMIT OF DISTURBANCE
	EARTH DIKE
	SUPER SILT FENCE
	EROSION CONTROL MATTING
	TREE PROTECTION FENCE
	TEMPORARY SWALE

NO.	DATE	REVISION
1	5-4-06	REVISE GRADING, SEDIMENT EROSION CONTROLS AND RENUMBER PLANS IN SET

BENCHMARK
ENGINEERS • LAND SURVEYORS • PLANNERS
ENGINEERING, INC.

8480 BALTIMORE NATIONAL PIKE • SUITE 418
ELLCOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 • FAX: 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

DEVELOPER: ELJOAK, L.L.C. P.O. BOX 417 ELLCOTT CITY, MARYLAND 21041 410-465-4244	PROJECT: RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCELS 'Q' & 'S'; AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'
OWNER: HOMWOOD, L.L.C. P.O. BOX 417 ELLCOTT CITY, MARYLAND 21041 410-465-4244	LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 23, GRID: 3, 4, 9 & 10 PARCELS: 88 PARCELS: 20 & 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
OWNER: JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL C/O JOHN LEE CARROLL 515 MADISON AVENUE 32nd FLOOR NEW YORK, NEW YORK 10022	TITLE: GRADING, SEDIMENT AND EROSION CONTROL PLAN
DES: JMC/DBT DRAFT: JMC/DBT CHECK: CAM	DATE: JUNE, 2005 PROJECT NO. 1132
SCALE: 1" = 50'	SHEET 24 OF 55

#6 STREAM CLOSURE SHALL BE BETWEEN MARCH 1ST AND JUNE 15TH.

#7 ALL ROADSIDE DITCHES TO BE LINED WITH EROSION CONTROL MATTING.

#8 CONTRACTOR SHALL CURL ALL ENDS OF SF/SSF UPHILL BY 2' IN ELEVATION AND CLOSE OVER ENDWALLS.

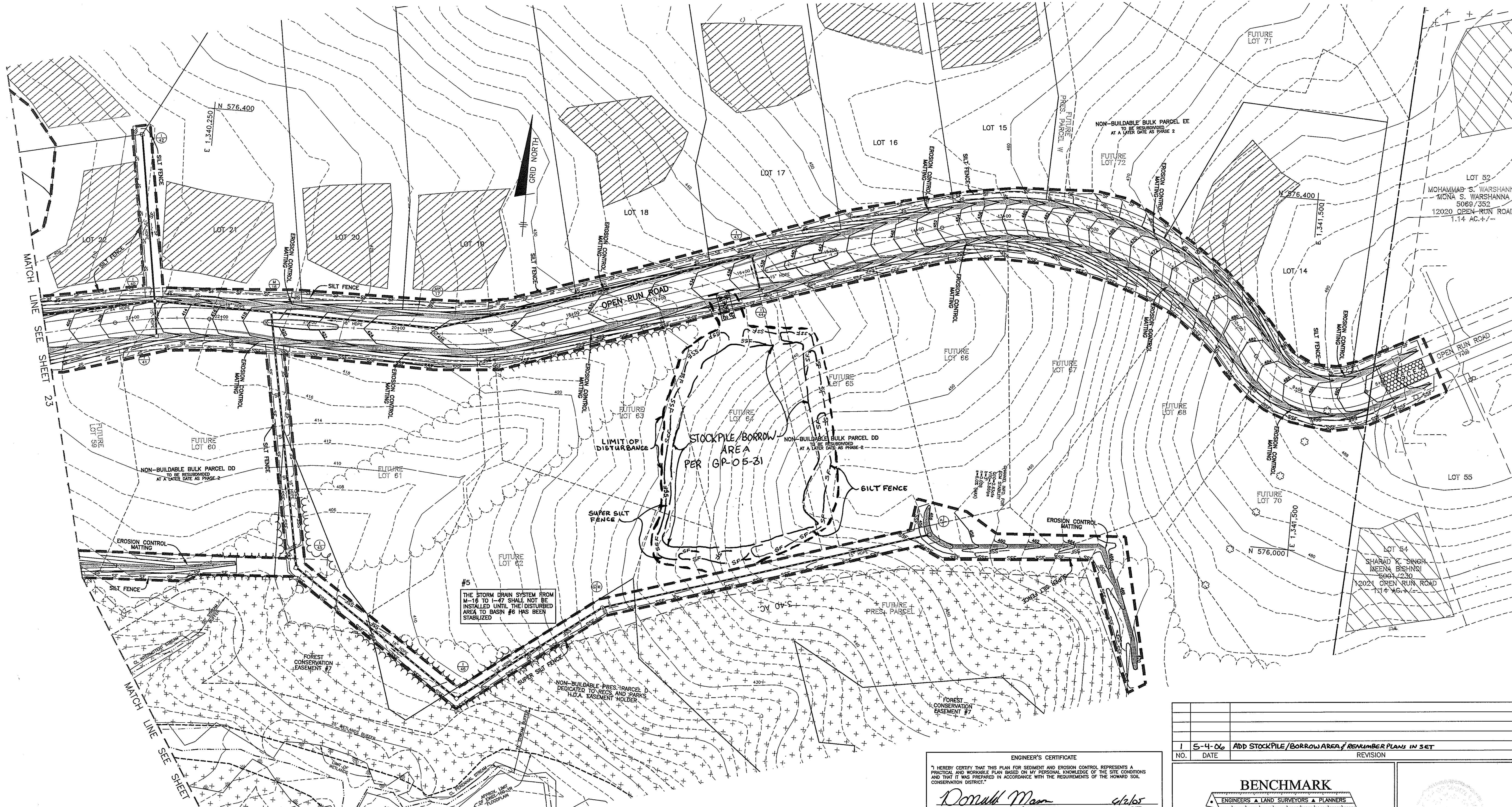
BERNALDO J. DANIEL
CONSTANCE M.J. DANIEL
4045/168
11085 GAITHER/FARM ROAD
3.30 AC +/-

JOEL L. PARRAN
JAY K. PARRAN
1467/445
5617 SUFFIELD COURT
6.24 AC +/-

MATCH LINE SEE THIS SHEET

MATCH LINE SEE SHEET 23

MATCH LINE SEE SHEET 22



#5
 THE STORM DRAIN SYSTEM FROM M-16 TO I-47 SHALL NOT BE INSTALLED UNTIL THE DISTURBED AREA TO BASIN #6 HAS BEEN STABILIZED

APPROVED: DEPARTMENT OF PUBLIC WORKS
W. J. White 7-18-05
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
Cindy Strach 7/25/05
 CHIEF, DIVISION OF LAND DEVELOPMENT
Donald M. Mason 7/19/05
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

#6 STREAM CLOSURE SHALL BE BETWEEN MARCH 1ST AND JUNE 15TH.
 #7 ALL ROADSIDE DITCHES TO BE LINED WITH EROSION CONTROL MATTING.
 #8 CONTRACTOR SHALL CURL ALL ENDS OF SF/SSF UPHILL BY 2' IN ELEVATION AND CLOSE OVER ENDWALLS.

- LEGEND**
- EXISTING CONTOURS
 - EXISTING TREELINE
 - PROPOSED TREELINE
 - CL STREAM
 - LIMIT OF WETLANDS
 - STEEP SLOPES 25% OR GREATER
 - LIMIT OF EXISTING 100-YEAR FLOODPLAIN AREA
 - LIMIT OF PROPOSED 100-YE FLOODPLAIN AREA
 - PROPOSED SEPTIC AREA
 - FOREST CONSERVATION EASEMENT
 - LIMIT OF DISTURBANCE
 - EARTH DIKE
 - SUPER SILT FENCE
 - EROSION CONTROL MATTING
 - TREE PROTECTION FENCE
 - TEMPORARY SWALE

ENGINEER'S CERTIFICATE
 I HEREBY CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
Donald M. Mason 6/16/05
 ENGINEER - DONALD A. MASON, P.E. # 21443

DEVELOPER'S CERTIFICATE
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL 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 ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.
Stevan K. Breebea 6/10/05
 DEVELOPER
Jim Myers 6/16/05
 USDA - NATURAL RESOURCES CONSERVATION SERVICE
 THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
Shirley A. [Signature] 6/16/05
 DATE

1 5-4-06 ADD STOCKPILE/BORROW AREA & REMEMBER PLANS IN SET	
NO.	REVISION
BENCHMARK ENGINEERS • LAND SURVEYORS • PLANNERS ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE • SUITE 418 ELLICOTT CITY, MARYLAND 21043 phone: 410-485-6105 • fax: 410-485-6844 www.bml-civilengineering.com	
DEVELOPER: ELIOAK, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-485-4244	PROJECT: RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'Q'; AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'
OWNER: HOMEWOOD, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-485-4244	LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,9&10 PARCELS: 85 PARCELS: 20 & 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
OWNER: JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND CECILIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32nd FLOOR NEW YORK, NEW YORK 10022	TITLE: GRADING, SEDIMENT AND EROSION CONTROL PLAN
DATE: JUNE, 2005 PROJECT NO. 1132	SHEET 25 OF 55
DES: JMC/DBT DRAFT: JMC/DBT CHECK: CAM	SCALE: 1" = 50'

SEDIMENT CONTROL NOTES

- A MINIMUM OF 24 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTION LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION, (313-1850).
- 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 SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL, REVISIONS THEREOF.
- FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN A 7 CALENDAR DAYS FOR ALL PERMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, 14 DAYS AS 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 PERMETER 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 SEEDINGS (SEC. 51) SO (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 PERMITS FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

SITE ANALYSIS:

TOTAL AREA OF SITE	269.88	ACRES
AREA DISTURBED	41.0	ACRES
AREA TO BE ROOFED OR PAVED	5.58	ACRES
AREA TO BE VEGETATIVELY STABILIZED	35.4	ACRES
TOTAL CUT	23,500	CY
TOTAL FILL	32,000	CY
OFFSITE WASTE/BORROW AREA LOCATION	SEE NOTE #12	

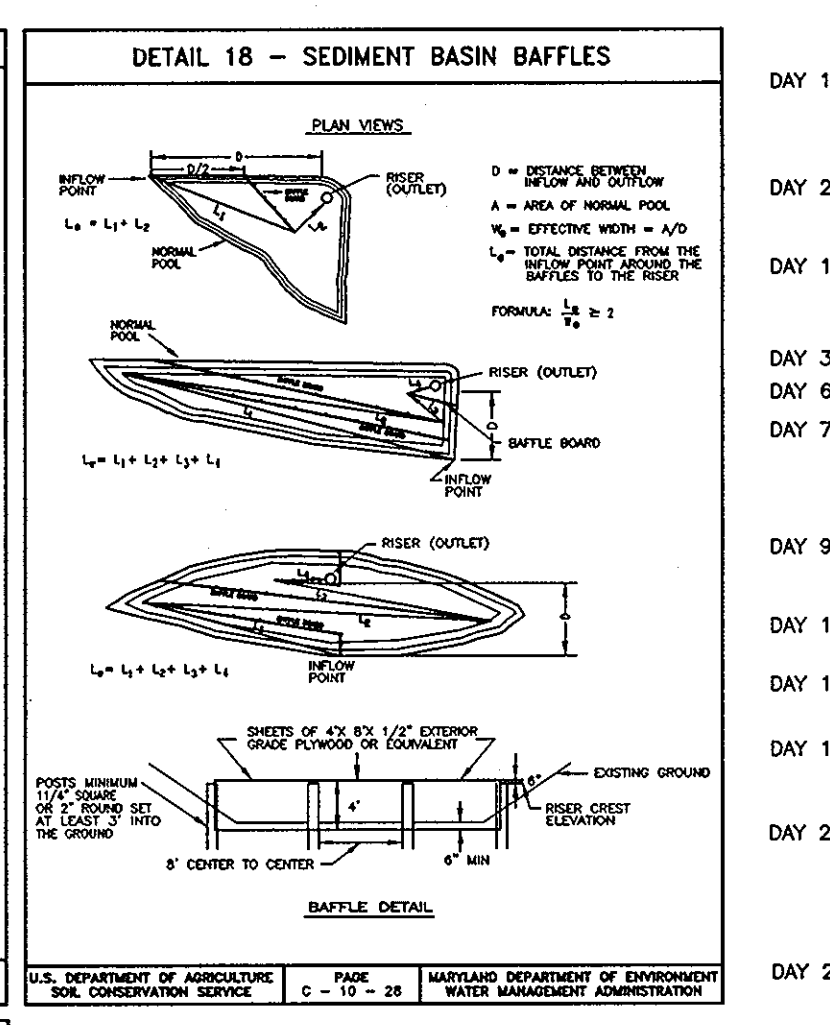
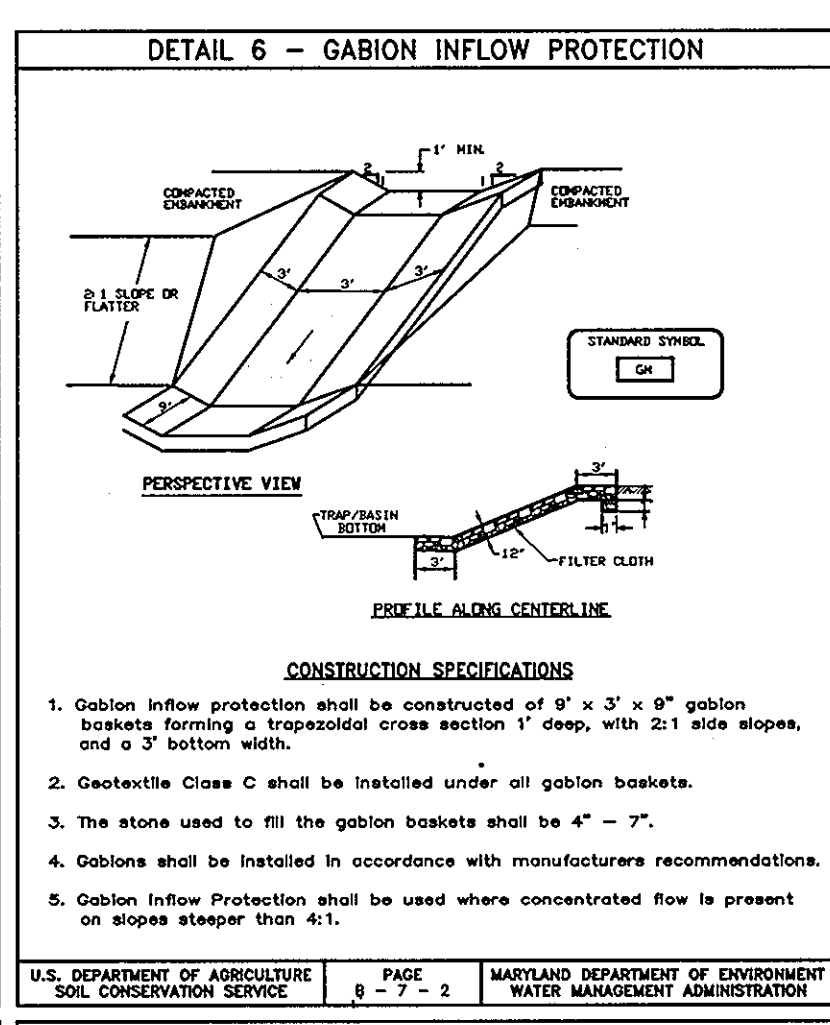
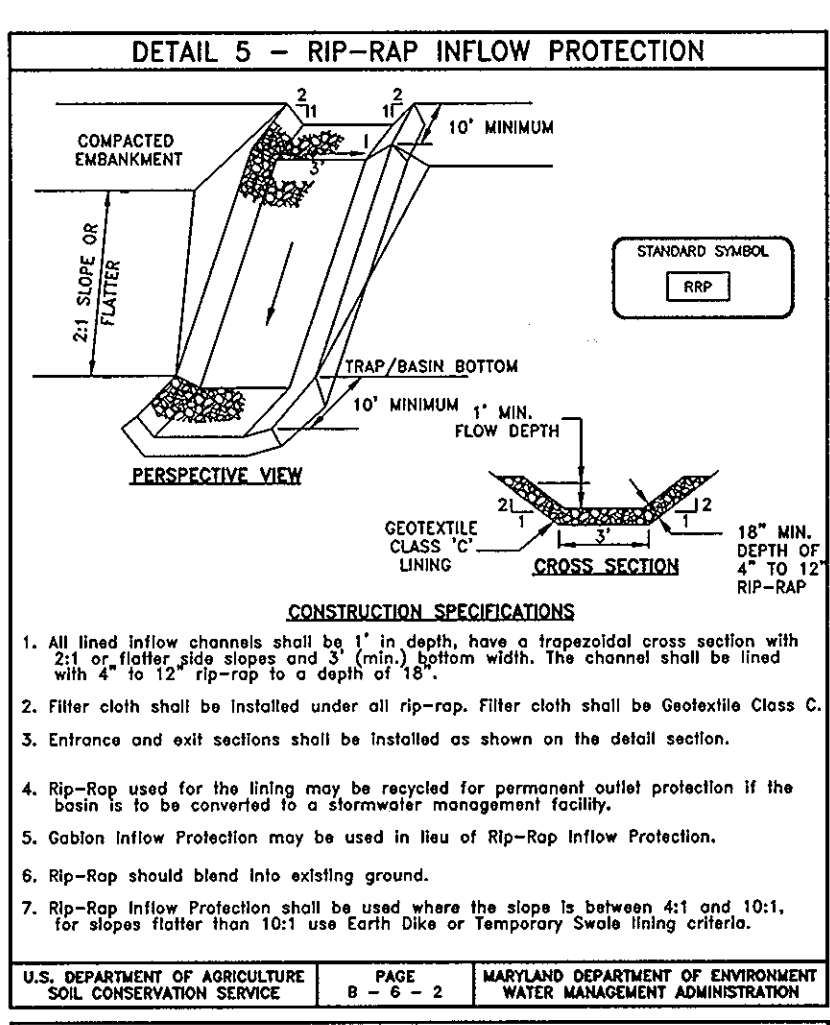
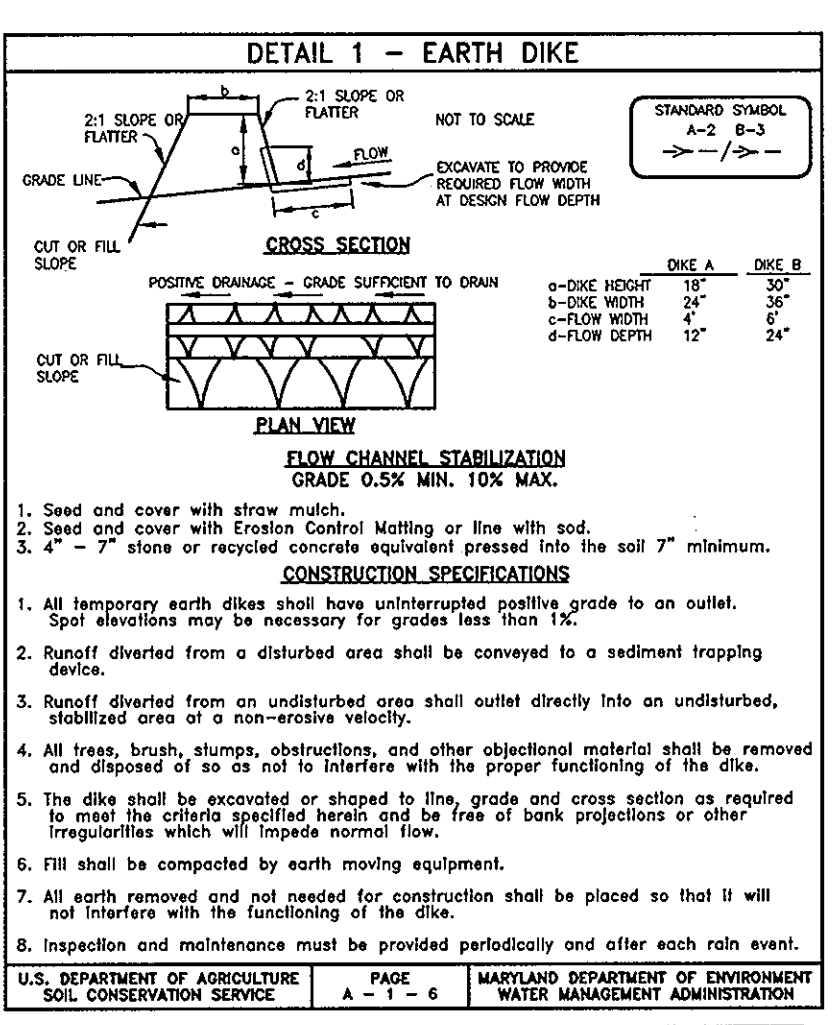
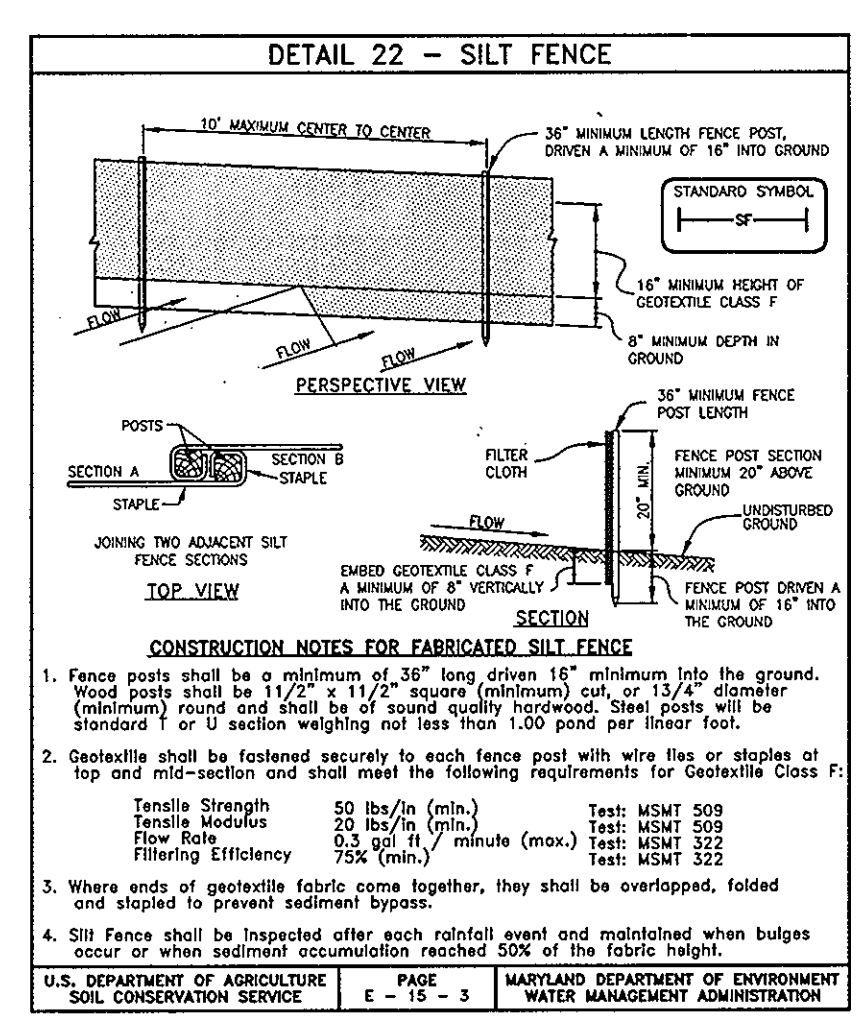
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERMETER 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 CAN BE BACK FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.
- WASTE WILL BE HAULED TO AN APPROVED WASTE DISPOSAL SITE, WITH A ACTIVE GRADING PERMIT.

TOPSOIL SPECIFICATIONS

- Topsoil salvaged from the existing site may be used provided that it meets standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged is given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.
- Topsoil Specifications - Soil to be used as topsoil must meet the following:
 - Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand, or silty loam. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be a mixture of contrasting texture substrates and shall contain less than 1% by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1 1/2" in diameter.
 - Topsoil must be free of plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nutgrass, poison ivy, thistle, or others as specified.
- Where the subsoil is either highly acidic or composed of heavy clay, ground limestone shall be spread at the rate of 100 lbs per 1,000 square feet (100 square feet) prior to the placement of topsoil. Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures:
 - For sites having disturbed areas under 5 acres:
 - Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section 1 - Vegetative Stabilization Methods and Materials.
 - For sites having disturbed areas over 5 acres:
 - On soil meeting Topsoil specifications, obtain test results indicating fertilizer and lime amendments required to bring the soil into compliance with the following:
 - pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.
 - Organic content or topsoil shall be not less than 1.5 percent by weight.
 - Topsoil having soluble salt content greater than 500 parts per million shall not be used.
 - No seed or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phytotoxic materials.
- Note: Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of topsoil.
- Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section 1 - Vegetative Stabilization Methods and Materials.
- Topsoil Application
 - When topsoiling, maintain needed erosion and sediment control practices such as dimensions, grade stabilization structures, earth dikes, silt fence and sediment traps and basins.
 - Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4" - 8" higher in elevation.
 - Topsoil shall be uniformly distributed in a 4" - 8" layer and tightly compacted to a minimum thickness of 4". Spreading shall be performed such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and lime. Any irregularities in the surface resulting in the topsoil application operations shall be corrected in order to prevent the formation of depressions or water pockets.
 - Topsoil shall not be placed where the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seeded preparation.
- Alternative for Permanent Seeding - Instead of applying the full amounts of lime and commercial fertilizer, composted sludge and amendments may be applied as specified below:
 - Composted Sludge Material for use as a soil conditioner for sites having disturbed areas over 5 acres shall conform to the following requirements:
 - Composted sludge shall be supplied by, or originate from, a person or persons that are permitted (at the time of application of the compost) by the Maryland Department of the Environment under COMAR 26.04.03.
 - Composted sludge shall contain at least 1 percent nitrogen, 1.5 percent phosphorus, and 0.2 percent potassium and have a pH of 7.0 to 8.0. If compost does not meet these requirements, the person applying the compost must be added to meet the requirements for use.
 - Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.
 - Composted sludge shall be amended with a potassium fertilizer applied at the rate of 4 lb/1,000 square feet, and 1/3 the normal lime application rate.

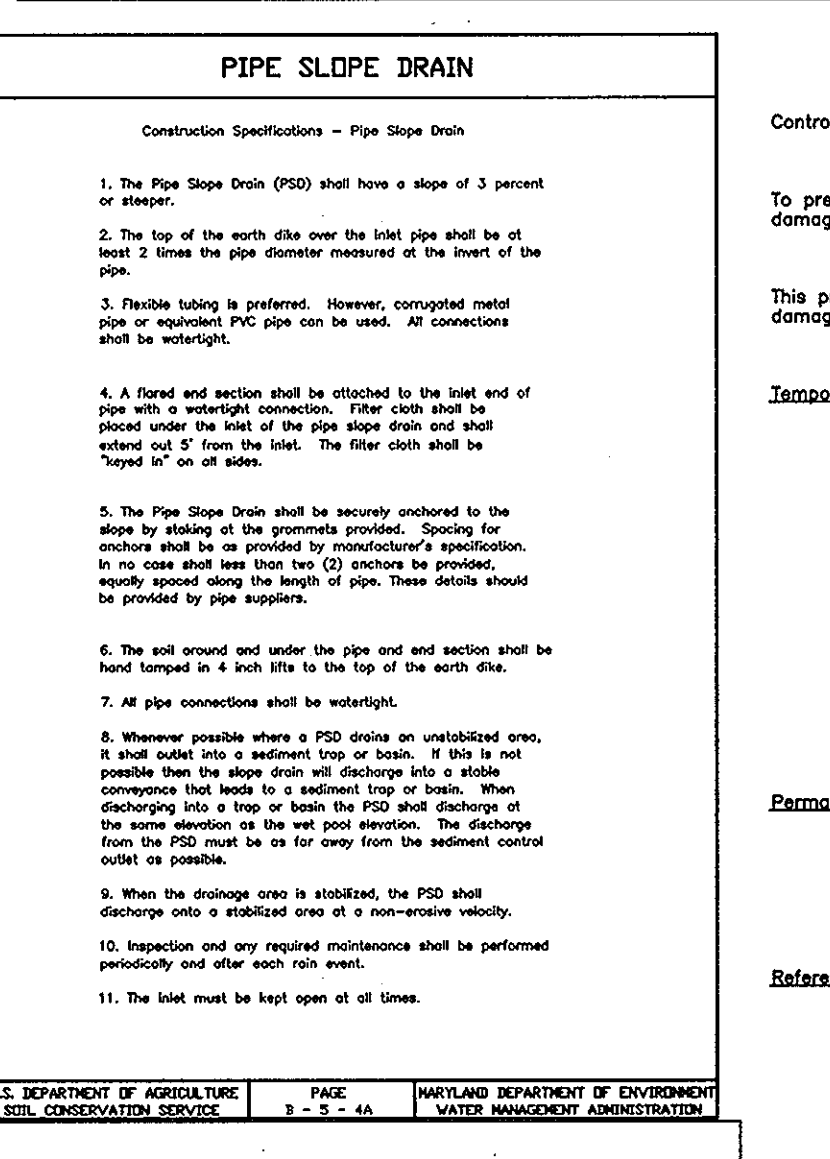
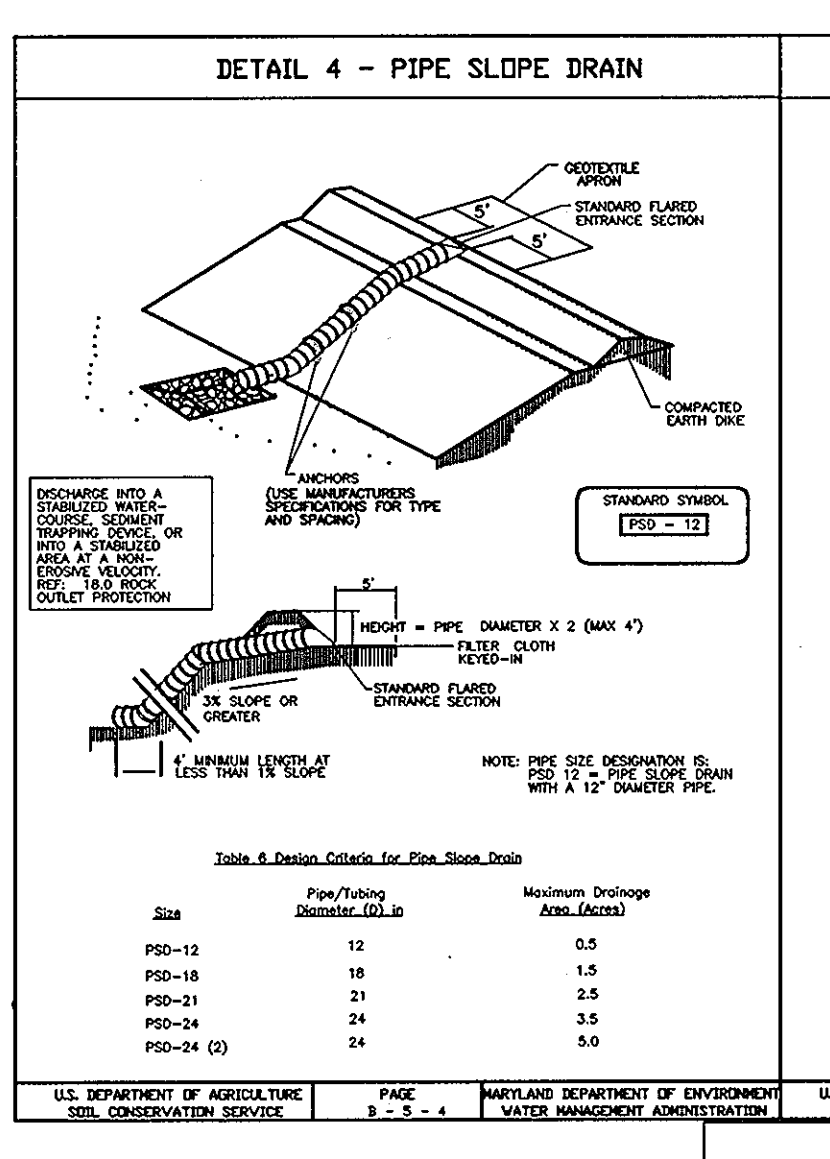
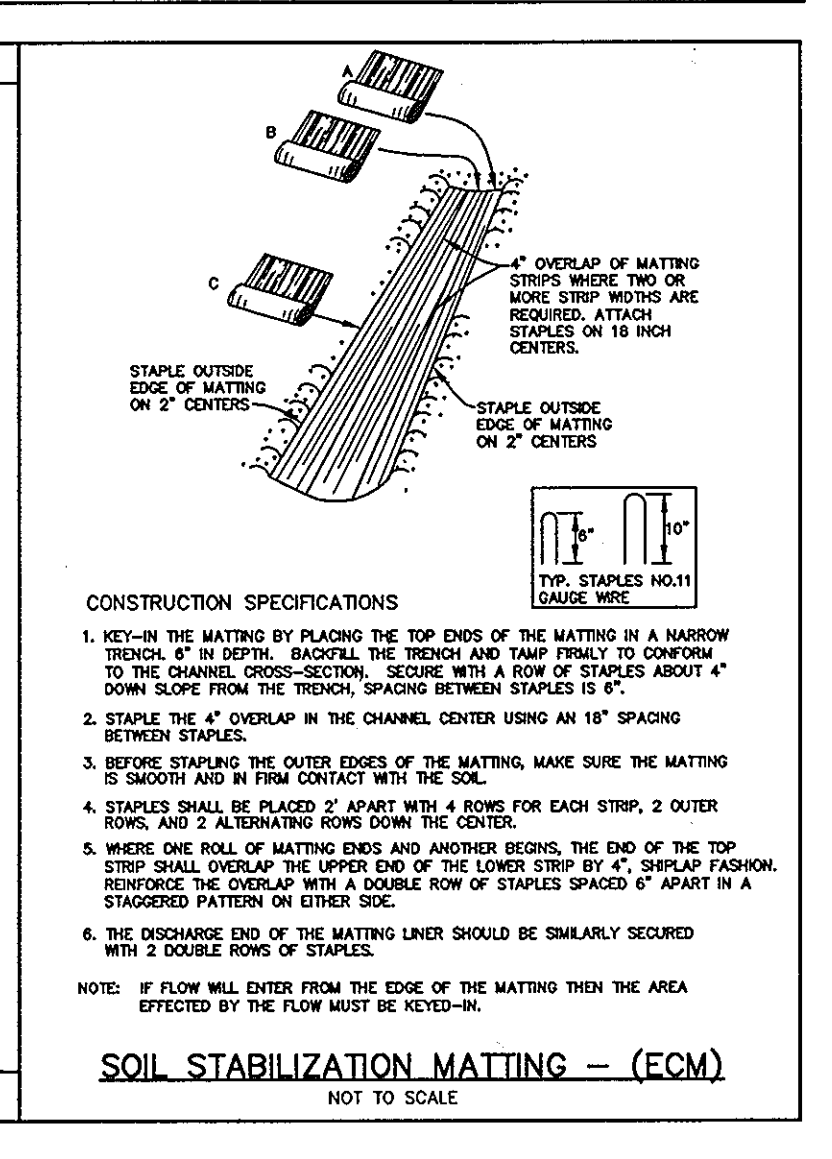
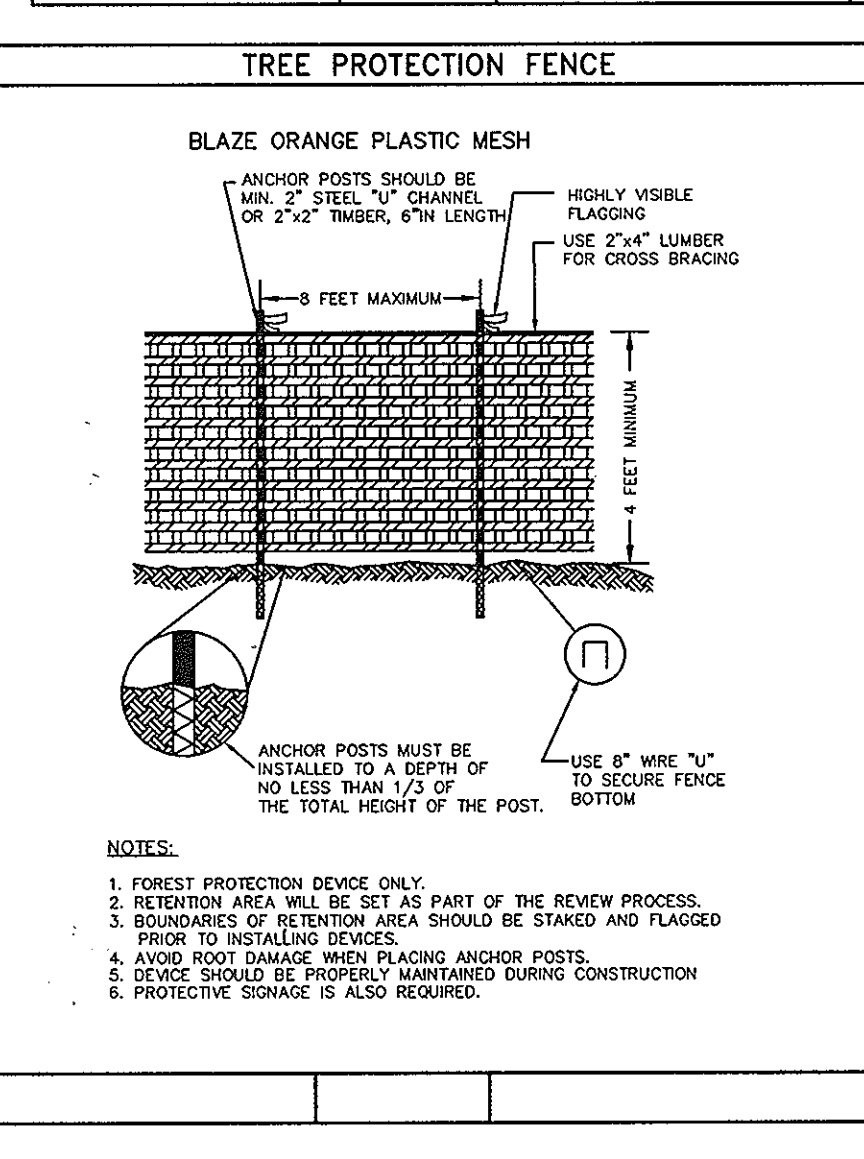
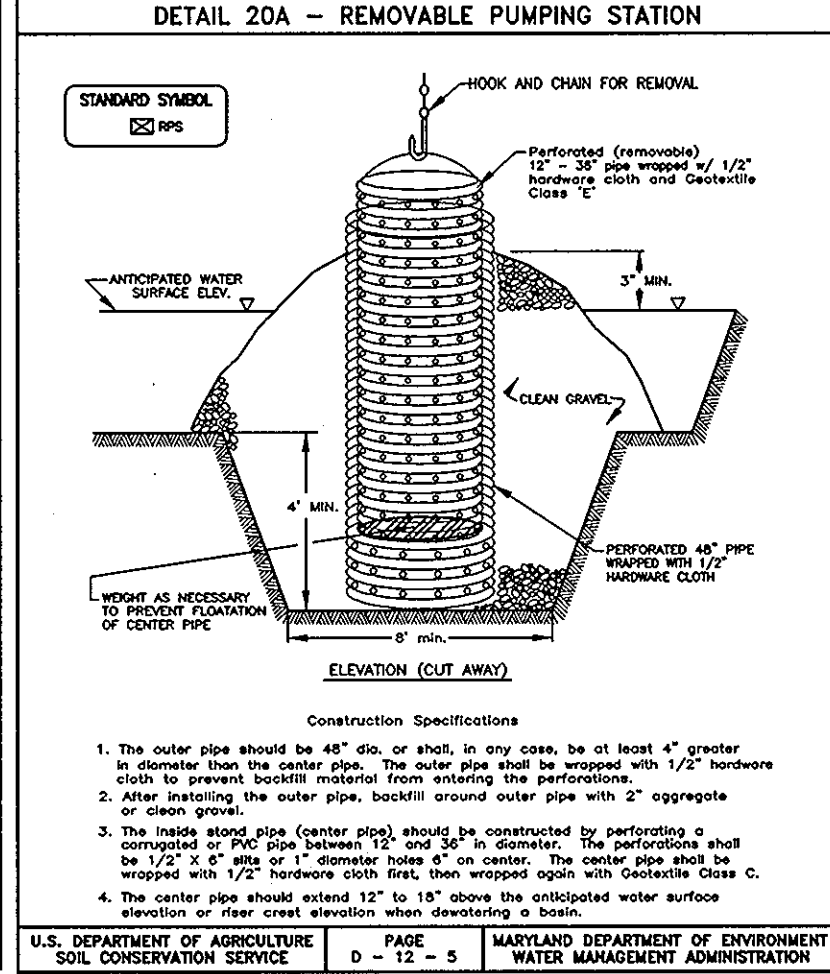
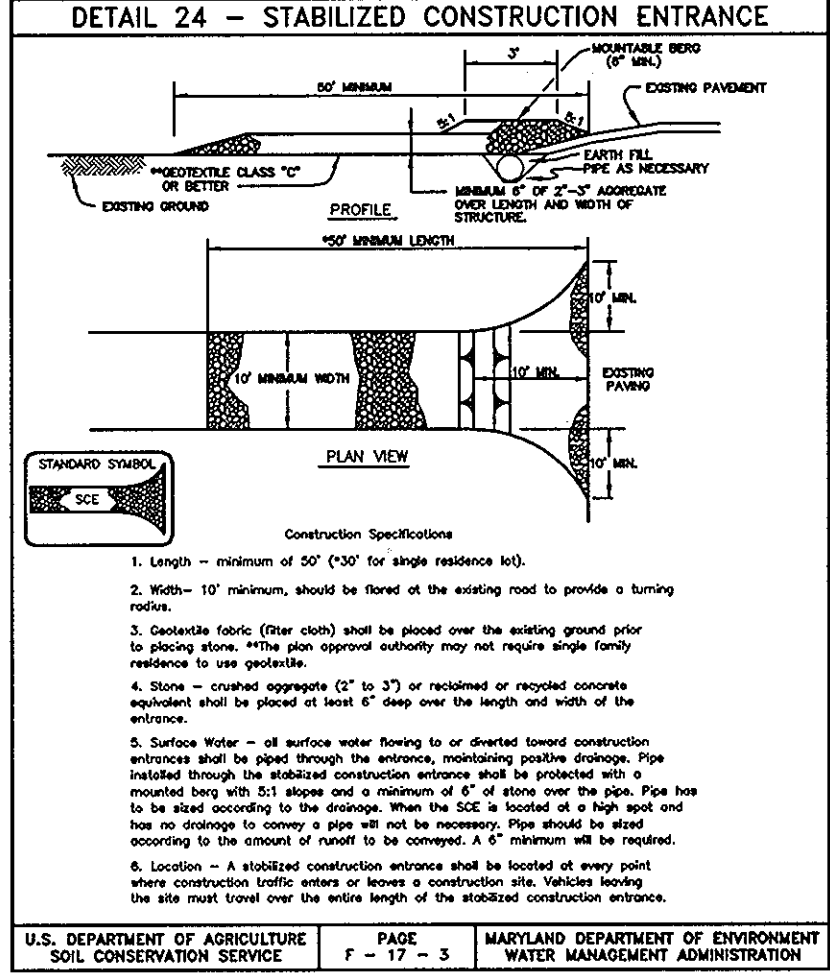
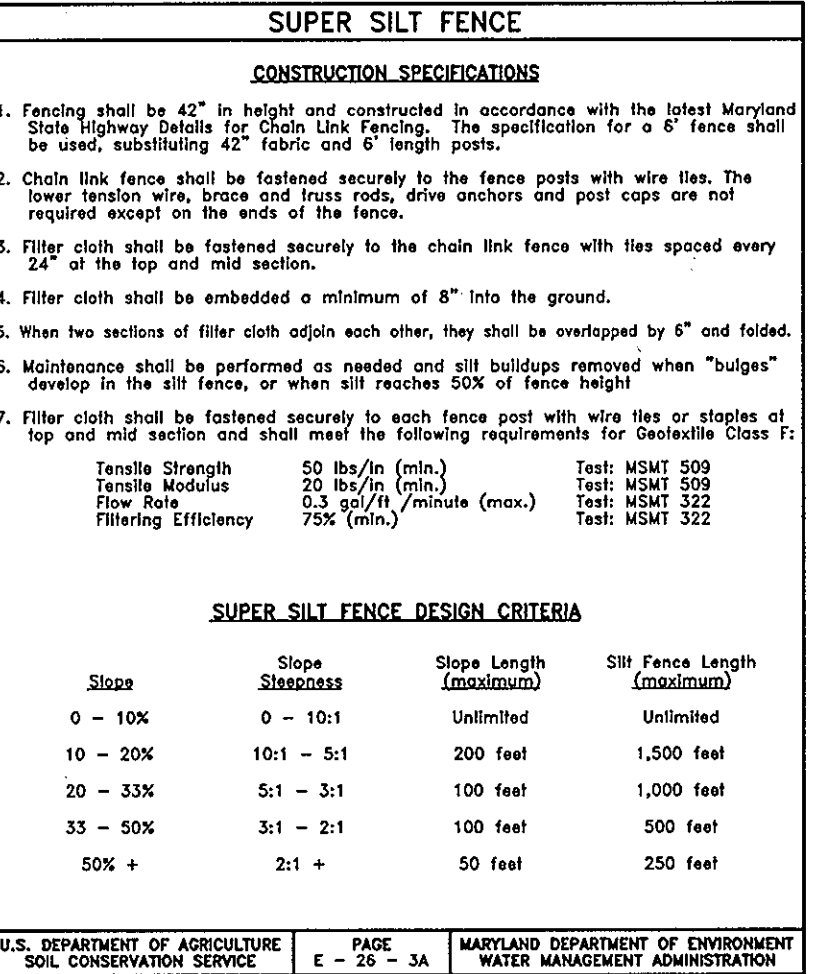
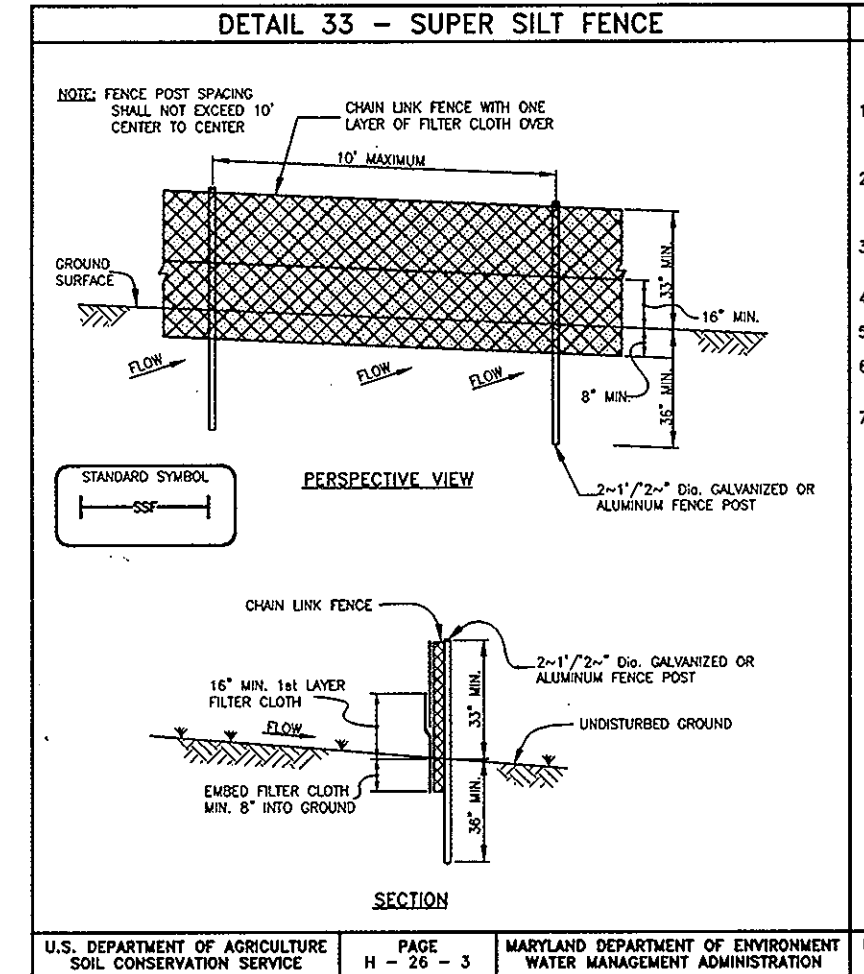
TEMPORARY SEEDBED PREPARATIONS

- APPLY TO GRADED OR CLEARED AREAS LIKELY TO BE REDISTURBED WHERE A SHORT-TERM VEGETATIVE COVER IS NEEDED.
 - SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.
 - SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ON OF THE FOLLOWING SCHEDULES:
 - PREFERRED - APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQ FT) AND 600 LBS PER ACRE 10-10-10 FERTILIZER (14 LBS/1000 SQ FT) BEFORE SEEDING. HARBOR OR DISC INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 LBS PER ACRE 30-0-0-UREAFORM FERTILIZER (9 LBS/1000 SQ FT).
 - ACCEPTABLE - APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQ FT) AND 1000 LBS PER ACRE 10-10-10 FERTILIZER (23 LBS/1000 SQ FT) BEFORE SEEDING. HARBOR OR DISC INTO UPPER THREE INCHES OF SOIL.
 - SEEDING: FOR THE PERIODS MARCH 1 THROUGH APRIL 30 AND AUGUST 1 THROUGH OCTOBER 15, SEED WITH 60 LBS PER ACRE (1.4 LBS/1000 SQ FT) OF KENTUCKY 31 TALL FESCUE PER ACRE AND 2 LBS PER ACRE (0.5 LBS/1000 SQ FT) OF WEEPING LOVEGRASS. DURING THE PERIOD OF OCTOBER 16 THROUGH FEBRUARY 29, 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 SOO. OPTION (3) SEED WITH 60 LBS PER ACRE OF KENTUCKY 31 TALL FESCUE AND MULCH WITH 2 TONS PER ACRE OF WELL-ANCHORED STRAW.
 - MULCHING: APPLY 1-1/2 TO 2 TONS PER ACRE (70 TO 90 LBS/1000 SQ FT) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ FT) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES, 8 FT. OR HIGHER, USE 348 GALLONS PER ACRE (9 GAL/1000 SQ FT) FOR ANCHORING.
 - MULCHING: APPLY 1-1/2 TO 2 TONS PER ACRE (70 TO 90 LBS/1000 SQ FT) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ FT) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES, 8 FT. OR HIGHER, USE 348 GALLONS PER ACRE (9 GAL/1000 SQ FT) FOR ANCHORING.
- REFER TO THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR RATE AND METHODS NOT COVERED.



SEQUENCE OF CONSTRUCTION

DAY 1	NOTIFY SEDIMENT CONTROL DIVISION 48 HOURS PRIOR TO START OF CONSTRUCTION OBTAIN GRADING PERMIT. A LETTER OF AUTHORIZATION FROM MDE MUST BE OBTAINED PRIOR TO DISTURBANCE OF THE STREAM OR WETLANDS FOR THE ROAD AND/OR UTILITY CROSSING. STREAM CLOSURE SHALL BE BETWEEN MARCH 1st AND JUNE 15th. CONTRACTOR TO ADHERE TO THE DUST CONTROL SPECIFICATIONS AS SHOWN ON THIS SHEET.
DAY 2-12	INSTALL STABILIZED CONSTRUCTION ENTRANCES, TREE PROTECTION FENCES, SUPER SILT FENCE, TEMPORARY SMALL-TEMPORARY DIVERSION PIPES, TEMPORARY ACCESS BRIDGES AND TEMPORARY CLEANNATER DIVERSION DIKES.
DAY 13-30	CONSTRUCT BOTTOMLESS ARC CURVES PER CBC ENGINEERS AND ASSOCIATES CONTRACT DRAWINGS. COVER ARCHES WITH ADEQUATE FILL TO PREVENT DRAINAGE TO CURBETS BEFORE MASS GRADING OF SITE. 100 PERCENT COVER ARCHES SHALL BE INSTALLED TO EACH SIDE OF STREAM AND 45' EACH SIDE OF THE ROAD CENTERLINE.
DAY 31-65	INSTALL ALL REMAINING SEDIMENT CONTROL DEVICES.
DAY 66-70	APPROVAL OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR. INSTALL STORM DRAIN RUNS E-2 TO I-1, E-3 TO I-4, E-5 TO I-6, E-6 TO I-8, E-8 TO I-9 (SEE NOTE #9 REGARDING I-13), E-10 TO I-3, I-10 TO I-12, E-10 TO I-23, I-22 TO I-25, I-26 TO I-48, E-12 TO I-31, I-31 TO I-14 TO I-10, I-10 TO I-30, I-30 TO I-36, E-37 TO I-44, I-40 TO I-41 and I-40 TO I-42. THESE STORM DRAIN RUNS ARE INTENDED TO DIRECT RUNOFF TO THE BASINS.
DAY 71-99	APPROVAL OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR. BRING ROAD BEDS TO SUBGRADE AND STABILIZE SLOPES IN ACCORDANCE WITH TEMPORARY SEEDING NOTES. STORM DRAIN DRAINING SLOPES ARE TO BE INSTALLED TO THE BASINS PRIOR TO STARTING ROAD GRADING.
DAY 124-145	INSTALL THE CURB AND GUTTER AND PAVING, TEMPORARILY PAVE OVER TEMPORARY DIVERSION PIPE #1 (STA. 0+80 CASTERLITE RD).
DAY 146-153	COMPLETE GRADING OF SITE AND STABILIZE DISTURBED AREAS IN ACCORDANCE WITH THE PERMANENT SEEDING NOTES.
DAY 153-200	UPON APPROVAL OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, INSTALL THE REMAINING STORM DRAIN SYSTEMS M-8 THROUGH I-21, M-12 TO I-30 AND M-16 THROUGH I-47. THESE RUNS SHALL BE INSTALLED STARTING UPSTREAM AND WORKING DOWNSTREAM. THE INLETS NEED TO BE BLOCKED DURING INSTALLATION.
DAY 201-211	UPON APPROVAL OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, CONDUCT SEDIMENT BASIN TO STORM DRAIN FACILITY SHARP FACILITIES PER FINAL GRADING SHOWN ON THE PLANS AND STABILIZE DISTURBED AREAS IN ACCORDANCE WITH THE PERMANENT SEEDING NOTES. CONTRACTOR SHALL REMOVE ALL OLD AND NEW TRASH, JUNK AND DEBRIS FROM ALL BUFFER AND FLOODING AREAS.
DAY 212-214	UPON APPROVAL OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, REMOVE TEMPORARY DIVERSION PIPES AND STABILIZE DISTURBANCES. PATCH PAVEMENT AS NECESSARY.
DAY 215-226	UPON APPROVAL OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, REMOVE REMAINING SEDIMENT CONTROL DEVICES AND STABILIZE DISTURBED AREAS IN ACCORDANCE WITH THE PERMANENT SEEDING NOTES.



BAFFLE DESIGN

Basin D	A	W	Lb	Wt/Lb
1	0.5	0.5	11.0	22.0
2	1.0	1.0	22.0	44.0
3	1.5	1.5	33.0	66.0
4	2.0	2.0	44.0	88.0
5	2.5	2.5	55.0	110.0
6	3.0	3.0	66.0	132.0

30.0 Dust Control

Definition

Controlling dust blowing and movement on construction sites and roads.

Purpose

To prevent blowing and movement of dust from exposed soil surfaces, reduce on and off-site damage, health hazards, and improve traffic safety.

Conditions Where Practice Applies

This practice is applicable to areas subject to dust blowing and movement where on and off-site damage is likely without treatment.

Specifications

- Mulches - See standards for vegetative stabilization with mulches only. Mulch should be crimped or tracked to prevent blowing.
- Vegetative Cover - See standards for temporary vegetative cover.
- Tillage - To roughen surface and bring clods to the surface. This is an emergency measure which should be used before soil blowing starts. Begin plowing on windward side of site. Chisel-type plows spaced about 12' apart, spring-toothed harrows, and similar plows are examples of equipment which may produce the desired effect.
- Irrigation - This is generally done as an emergency treatment. Site is sprinkled with water until the surface is moist. Repeat as needed, at no time should the site be irrigated to the point that runoff begins to flow.
- Barriers - Solid board fences, silt fences, snow fences, burlap fences, straw bales, and similar material can be used to control air currents and soil blowing. Barriers placed at right angles to prevailing currents at intervals of about 10 times their height are effective in controlling soil blowing.
- Calcium Chloride - Apply at rates that will keep surface moist. May need retreatment.
- Permanent Vegetation - See standards for permanent vegetative cover, and permanent stabilization with sod. Existing trees or large shrubs may afford valuable protection if in place.
- Topsoiling - Covering with less erodible soil materials. See standards for topsoiling.
- Stone - Cover surface with crushed stone or coarse gravel.

References

- Agriculture Handbook 344. Wind Erosion Forces in the United States and Their Use in Predicting Soil Loss.
- Agriculture Information Bulletin 354. How to Control Wind Erosion, USDA-ARS.

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.

PE NO. 21443

DEVELOPER: *Stewart & Brown* DATE: 4/2/05

BY THE ENGINEER: *Donald M. Mason* DATE: 4/2/05

I HEREBY CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WAS DONE ACCORDING TO THE PLANS AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION OF THIS PROJECT HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING COURSE. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE THE HOWARD COUNTY SOIL CONSERVATION DISTRICT WITHIN 30 DAYS OF COMPLETION. ALSO AUTHORIZING PERIODIC ON-SITE INSPECTIONS BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 ENGINEER - DONALD A. MASON, P.E. # 21443

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 ENGINEER - DONALD A. MASON, P.E. # 21443

REVISIONS

NO.	DATE	REVISION
1	5-4-06	REVISE SITE ANALYSIS & RENUMBER PLAN IN SET

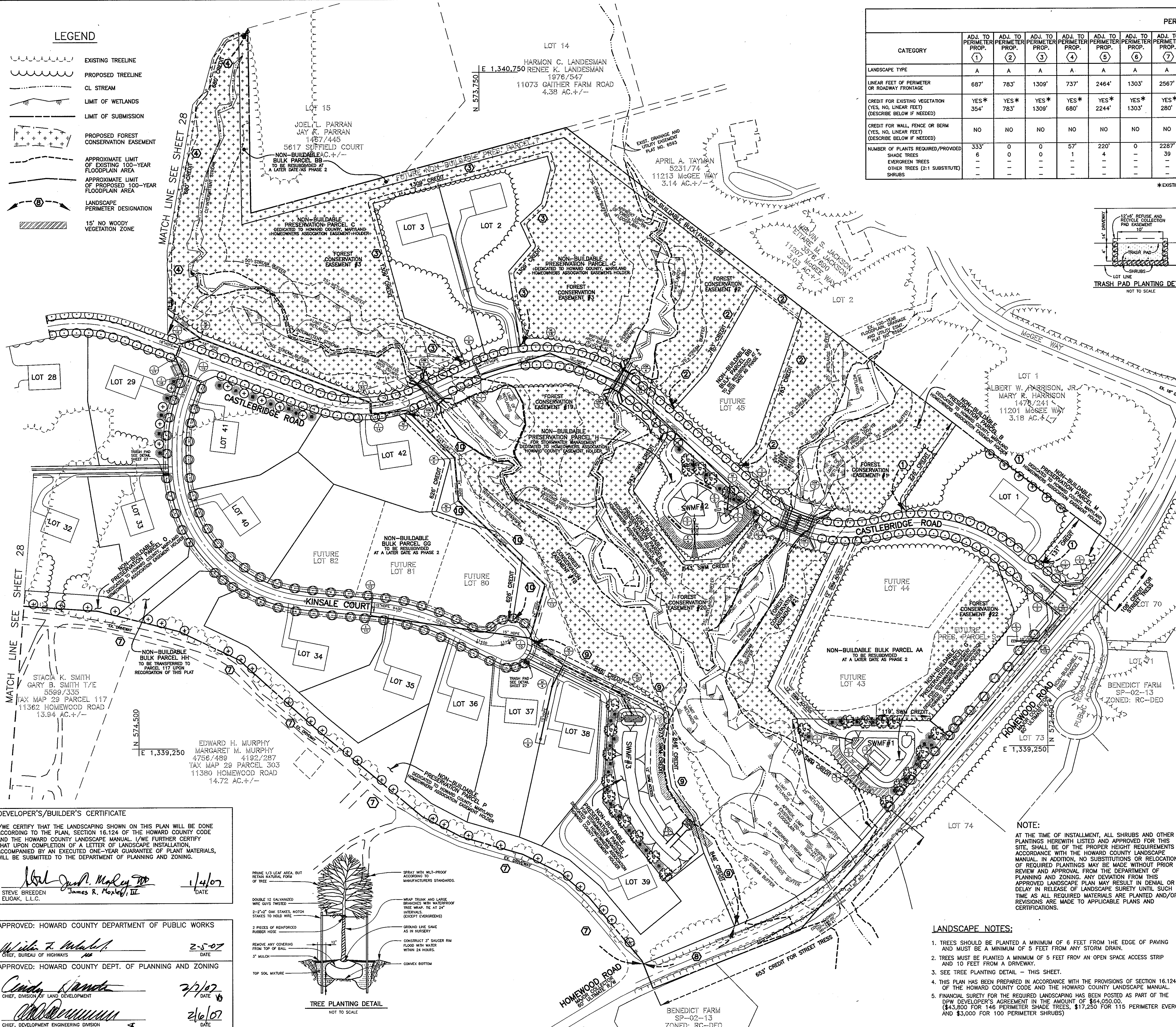
BENCHMARK ENGINEERING, INC.

8480 BALTIMORE NATIONAL PIKE & SUITE 418
 ELLICOTT CITY, MARYLAND 21043
 PHONE: 410-465-6105 • FAX: 410-465-6644
 WWW: www.benchmarkengineering.com

DEVELOPER: ELOAK, L.L.C.
 P.O. BOX 411,
 ELLICOTT CITY, MARYLAND 21041
 410-465-4244

OWNER: HOMEWOOD, L.L.C.
 P.O. BOX 417
 ELLICOTT CITY, MARYLAND 21041
 410-465-4244

OWNER: JOHN LEE CARROLL



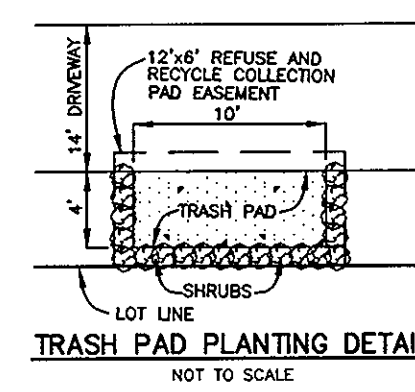
LEGEND

- EXISTING TREELINE
- PROPOSED TREELINE
- CL. STREAM
- LIMIT OF WETLANDS
- LIMIT OF SUBMISSION
- PROPOSED FOREST CONSERVATION EASEMENT
- APPROXIMATE LIMIT OF EXISTING 100-YEAR FLOODPLAIN AREA
- APPROXIMATE LIMIT OF PROPOSED 100-YEAR FLOODPLAIN AREA
- LANDSCAPE PERIMETER DESIGNATION
- 15' NO WOODY VEGETATION ZONE

SCHEDULE A PERIMETER LANDSCAPE EDGE

CATEGORY	ADJ. TO PERIMETER PROP.	ADJ. TO PERIMETER PROP.	ADJ. TO PERIMETER PROP.	ADJ. TO PERIMETER PROP.	ADJ. TO PERIMETER PROP.	ADJ. TO PERIMETER PROP.	ADJ. TO PERIMETER PROP.	ADJ. TO ROAD	ADJ. TO ROADWAY	ADJ. TO ROADWAY	ADJ. TO ROADWAY	ADJ. TO ROADWAY	ADJ. TO ROADWAY	ADJ. TO ROADWAY	ADJ. TO ROADWAY	ADJ. TO ROADWAY	ADJ. TO TRASH PADS			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	LOT 4	LOT 5	LOT 10	LOT 13	LOT 22	LOT 29	LOT 41		
LANDSCAPE TYPE	A	A	A	A	A	A	A	B	A	A	A	B	B	B	B	B	B	B		
LINEAR FEET OF PERIMETER OR ROADWAY FRONTAGE	687'	783'	1309'	737'	2464'	1303'	2567'	218'	846'	626'	275'	404'	226'	224'	248'	225'	200'	248'	5 PADS 36' EACH	
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	YES* 354'	YES* 783'	YES* 1309'	YES* 680'	YES* 2244'	YES* 1303'	YES* 280'	YES* 218'	YES* 846'	YES* 626'	NO	YES* 127'	YES* 226'	NO	NO	NO	NO	NO	NO	NO
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
NUMBER OF PLANTS REQUIRED/PROVIDED	333/6	0/0	0/0	57/1	220/4	0/0	2287/39	0/0	0/0	0/0	275/5	277/6	0/0	224/5	248/7	225/5	200/4	248/5	36/5	100**
SHADE TREES	6	0	0	1	4	0	39	0	0	0	5	6	0	5	5	5	4	5	5	0
EVERGREEN TREES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER TREES (2:1 SUBSTITUTE)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SHRUBS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*EXISTING WOODS 20' OR GREATER IN WIDTH. **30 SHRUBS SUBSTITUTED FOR THE REQUIRED 1 SHADE TREE AND 1 EVERGREEN. 20 SHRUBS x 5 PADS = 100 SHRUBS TOTAL.



SCHEDULE D SWM AREA LANDSCAPING

	FACILITY 1	FACILITY 2	FACILITY 3	FACILITY 4	FACILITY 5	FACILITY 6
LINEAR FEET OF PERIMETER	914	803	1063	946	1290	1028
LINEAR FEET OF EXISTING WOODS LINE	435	543	573	613	550	330
LINEAR FEET OF REQUIRED PLANTING	479	260	490	333	740	698
BUFFER TYPE	'b'	'b'	'b'	'b'	'b'	'b'
NUMBER OF TREES REQUIRED/PROVIDED	10/10	5/5	10/10	7/7	15/15	14/14
SHADE TREES	10	5	10	7	15	14
EVERGREEN TREES	0	0	0	0	0	0
CREDIT FOR EXISTING VEGETATION (NO, YES AND %)	YES, 48%	YES, 68%	YES, 54%	YES, 65%	YES, 43%	YES, 32%
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	NO	NO	NO	NO	NO	NO
TOTAL	450	450	450	450	450	450

STREET TREE SCHEDULE

ROAD NAME	PERIMETER	TREES REQ.	TREES PROV.
HOMWOOD ROAD	544'	14	14
CASTLEBRIDGE ROAD**	8145'	272**	272**
KINSALE COURT	2395'	60	60
HUNTERS VIEW ROAD	2771'	70	70
WHITHORN WAY	654'	17	17
OPEN RUN ROAD	3388'	85	85
TOTAL		450	450

** CASTLEBRIDGE ROAD WILL BE PROVIDED "SMALL TREES" AT 1 PER 30 LF OF RIGHT-OF-WAY

PUBLIC STREET TREE PLANTING LIST

SYMBOL	QUANTITY	NAME	REMARKS
	246	PLATANUS X ACERIFOLIA (Bloodgood London Plane)	2 1/2" MIN. CAL. FULL HEAD. STREET TREES TO BE PROVIDED BY THE DEVELOPER
	272	PRUNUS SERRULATA 'KWANZAN' (Kwanzan Cherry)	1 1/2" MIN. CAL. FULL HEAD. STREET TREES TO BE PROVIDED BY THE DEVELOPER

LANDSCAPE PLANTING LIST

SYMBOL	QUANTITY	NAME	REMARKS	DESCRIPTION
	85	QUERCUS RUBRA (Red Oak)	2-1/2" - 3" col.	SHADE TREES ALONG PERMETER TO BE PROVIDED BY THE DEVELOPER
	115	PINUS STROBUS (Eastern White Pine)	6' - 8' ht.	EVERGREEN TREES ALONG SWM FACILITIES TO BE PROVIDED BY THE DEVELOPER
	61	THUJA OCCIDENTALIS (GreenSpire Littleleaf Linden)	2-1/2" - 3" col.	SHADE TREES ALONG SWM FACILITIES TO BE PROVIDED BY THE DEVELOPER
	100	ABELIA X GRANDIFLORA (Luscious Abelia)	2.5" - 3" HEIGHT	SHRUBS ALONG TRASH PADS TO BE PROVIDED BY THE DEVELOPER

NOTE:
LANDSCAPING FOR THIS SUBDIVISION IS PROVIDED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL.

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION OF A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE-YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

Steve Breeden
STEVE BREEDEN
ELIQUA, L.L.C.

James R. Moxley, III
James R. Moxley, III

1/4/07
DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

William F. Moxley
WILLIAM F. MOXLEY
CHIEF, BUREAU OF HIGHWAYS

2-5-07
DATE

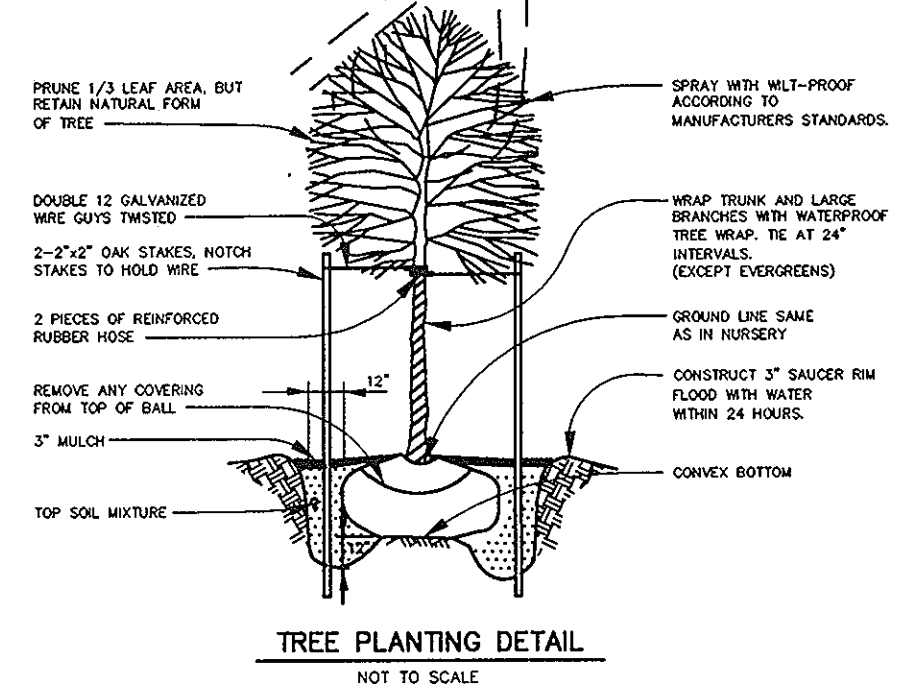
APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

Cinda Kanda
CINDA KANDA
CHIEF, DIVISION OF LAND DEVELOPMENT

2/7/07
DATE

Chad Williams
CHAD WILLIAMS
CHIEF, DEVELOPMENT ENGINEERING DIVISION

2/6/07
DATE



- LANDSCAPE NOTES:**
- TREES SHOULD BE PLANTED A MINIMUM OF 6 FEET FROM THE EDGE OF PAVING AND MUST BE A MINIMUM OF 5 FEET FROM ANY STORM DRAIN.
 - TREES MUST BE PLANTED A MINIMUM OF 5 FEET FROM AN OPEN SPACE ACCESS STRIP AND 10 FEET FROM A DRIVEWAY.
 - SEE TREE PLANTING DETAIL - THIS SHEET.
 - THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL.
 - FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DPW DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$84,050.00 (\$43,800 FOR 146 PERIMETER SHADE TREES, \$17,250 FOR 115 PERIMETER EVERGREENS AND \$3,000 FOR 100 PERIMETER SHRUBS)

BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS

ENGINEERING, INC.

8480 BALTIMORE NATIONAL PIKE & SUITE 418
ELICOTT CITY, MARYLAND 21043
phone: 410-465-6105 fax: 410-465-6644
www.bal-civilengineering.com

1-4-07

DEVELOPER: ELIQUA, L.L.C.
P.O. BOX 417
ELICOTT CITY, MARYLAND 21041
410-465-4244

OWNER: HOMEWOOD, L.L.C.
P.O. BOX 417
ELICOTT CITY, MARYLAND 21041
410-465-4244

OWNER: JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL
c/o JOHN LEE CARROLL
515 MADISON AVENUE
32nd FLOOR
NEW YORK, NEW YORK 10022

DES: JMC/DBT DRAFT: JMC/DBT CHECK: CAM

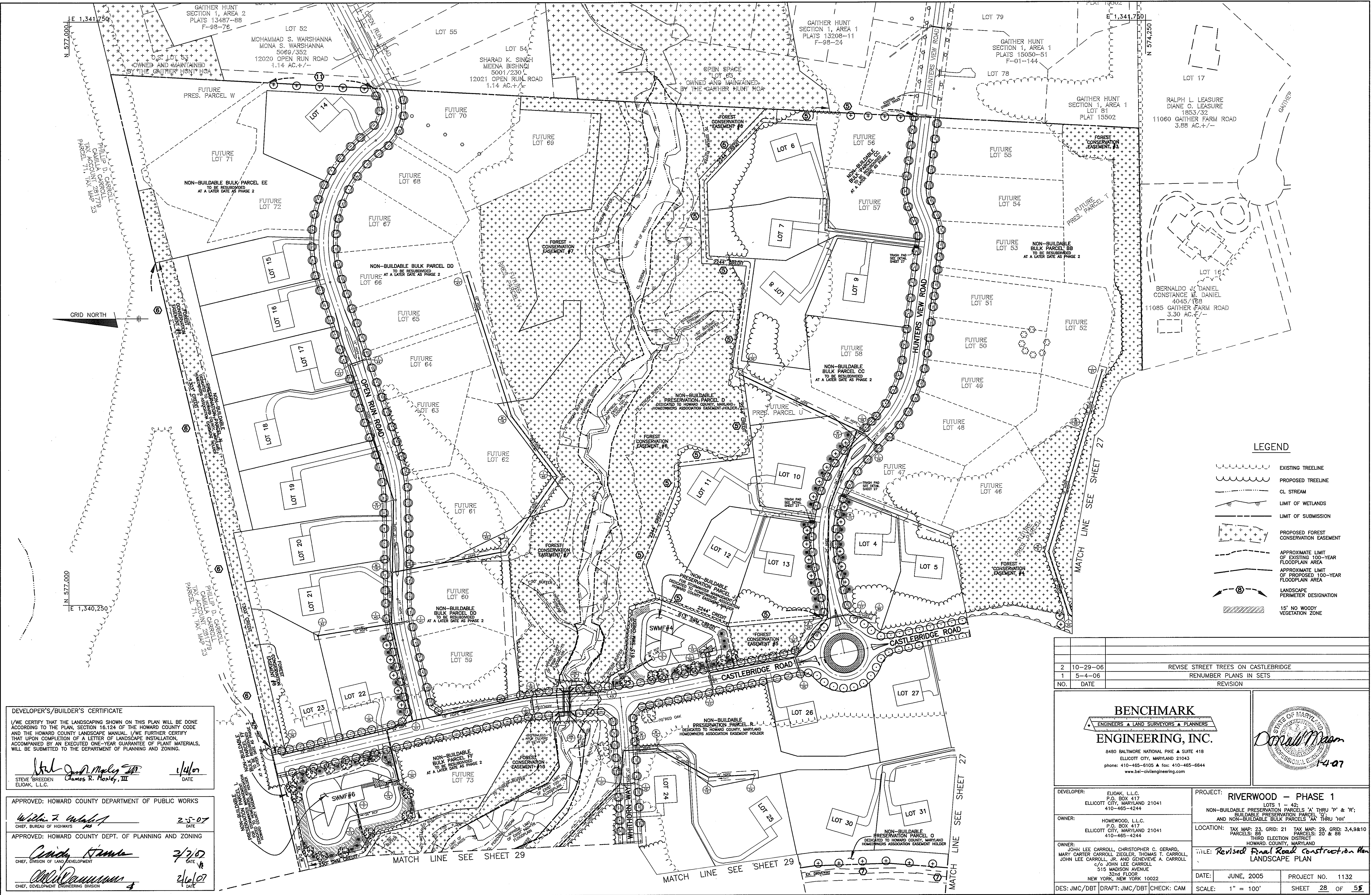
PROJECT: RIVERWOOD - PHASE 1
LOTS 1-42
NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'Q'; AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'

LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,9&10 PARCELS: 20 & 86
THIRD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: *Revised Final Road Construction Plan*
LANDSCAPE PLAN

DATE: OCTOBER, 2006 PROJECT NO. 1132

SCALE: 1" = 100' SHEET 27 OF 55



LEGEND

- EXISTING TREELINE
- PROPOSED TREELINE
- CL. STREAM
- LIMIT OF WETLANDS
- LIMIT OF SUBMISSION
- PROPOSED FOREST CONSERVATION EASEMENT
- APPROXIMATE LIMIT OF EXISTING 100-YEAR FLOODPLAIN AREA
- APPROXIMATE LIMIT OF PROPOSED 100-YEAR FLOODPLAIN AREA
- LANDSCAPE PERIMETER DESIGNATION
- 15' NO WOODY VEGETATION ZONE

NO.	DATE	REVISION
2	10-29-06	REVISE STREET TREES ON CASTLEBRIDGE
1	5-4-06	RENUMBER PLANS IN SETS

BENCHMARK
ENGINEERS & LAND SURVEYORS & PLANNERS

ENGINEERING, INC.

8480 BALTIMORE NATIONAL PIKE & SUITE 418
ELLICOTT CITY, MARYLAND 21043
phones: 410-465-6105 & fax: 410-465-6644
www.bel-civilengineering.com

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION OF A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE-YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

DATE: 1/1/07
 STEVE BREEDEN
ELIOAK, L.L.C.

DATE: 2/5/07
 WILIAM Z. WINKLER
CHIEF, BUREAU OF HIGHWAYS

DATE: 2/7/07
 CANDY HANNA
CHIEF, DIVISION OF LAND DEVELOPMENT

DATE: 2/6/07
 CHAD R. ...
CHIEF, DEVELOPMENT ENGINEERING DIVISION

DEVELOPER:	ELIOAK, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	PROJECT:	RIVERWOOD - PHASE 1 LOTS 1 & 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'Q'; AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'
OWNER:	HOMWOOD, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	LOCATION:	TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,9&10 PARCELS: 88 PARCELS: 20 & 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
OWNER:	JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32nd FLOOR NEW YORK, NEW YORK 10022	FILE:	Revised Final Road Construction Plan LANDSCAPE PLAN
DES: JMC/DBT	DRAFT: JMC/DBT	CHECK: CAM	DATE: JUNE, 2005 PROJECT NO. 1132 SCALE: 1" = 100' SHEET 28 OF 55

*11132 Riverwood.dwg/702247-29 refine.dwg, Sheet 28, 1/4/2007 8:59:31 AM, inc. Doc TDS600 H91 for mslarpc3

MGWC 1.4: Diversion Pipe

Temporary measure for dewatering in-channel construction sites

Description

The work should consist of installing flow diversion pipes in combination with sandbag or stone diversions when construction activities occur within the stream channel.

Effective Uses & Limitations

Diversion pipes with an insufficient flow capacity can cause the channel diversion to fail thereby resulting in severe erosion of the disturbed channel section under construction. Therefore, in-channel construction activities should occur only during periods of low flow.

Material Specifications

Materials for stream diversions should meet the following requirements:

- Riprap: Stone should be washed and have a minimum diameter of 6 inches (15 centimeters).
- Sandbags: Sandbags should consist of materials which are resistant to ultra-violet radiation, tearing, and puncture and should be woven tightly enough to prevent leakage of fill material (i.e., sand, fine gravel, etc.).
- Sheeting: Sheeting should consist of polyethylene or other material which is impervious and resistant to puncture and tearing.

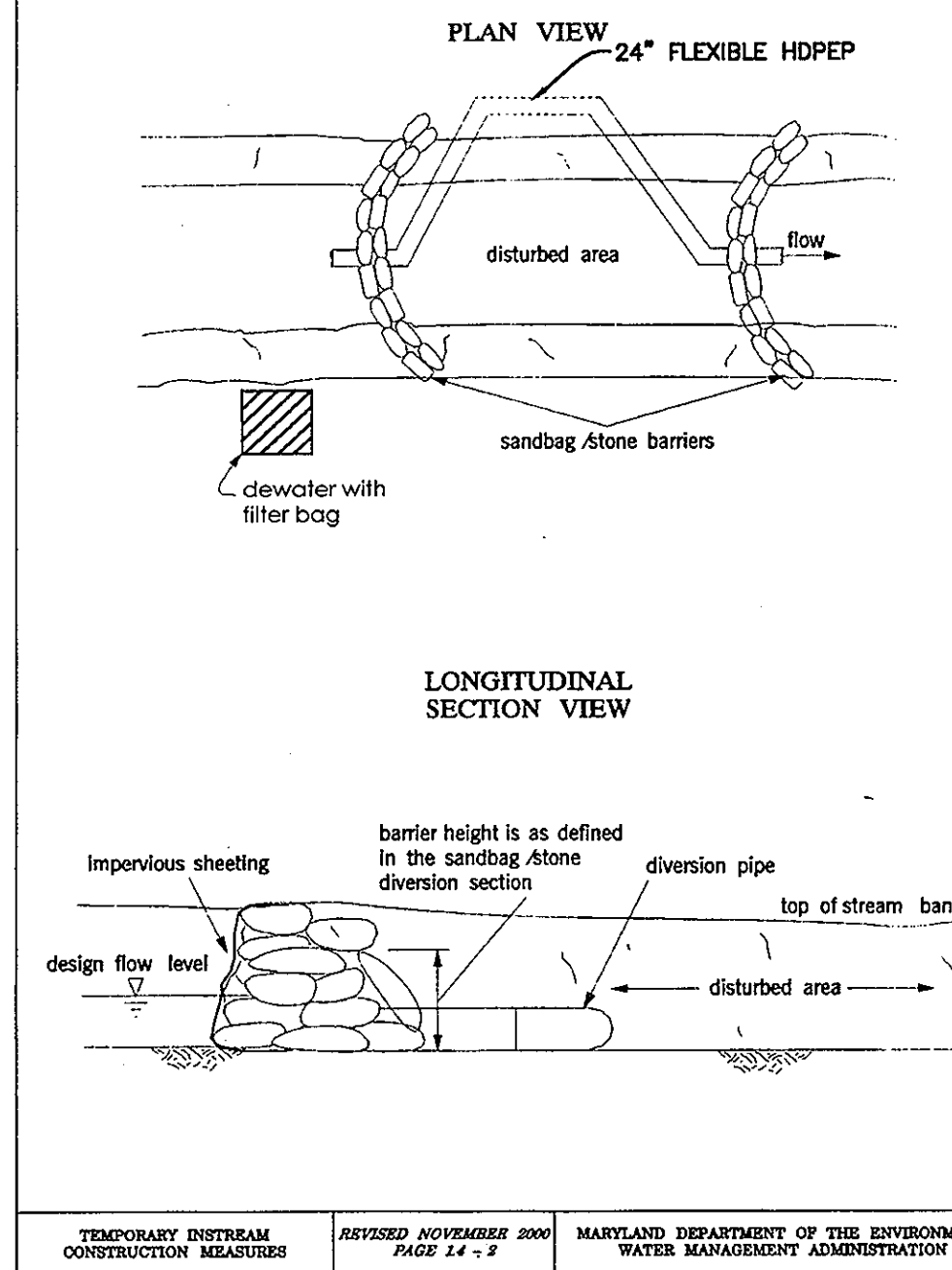
Installation Guidelines

All erosion and sediment control devices including mandatory filter bags should be installed as the first order of business according to a plan approved by the WMA or local authority. Installation should proceed from upstream to downstream during low flow conditions. If necessary, silt fence or straw bales should be installed around the perimeter of the work area.

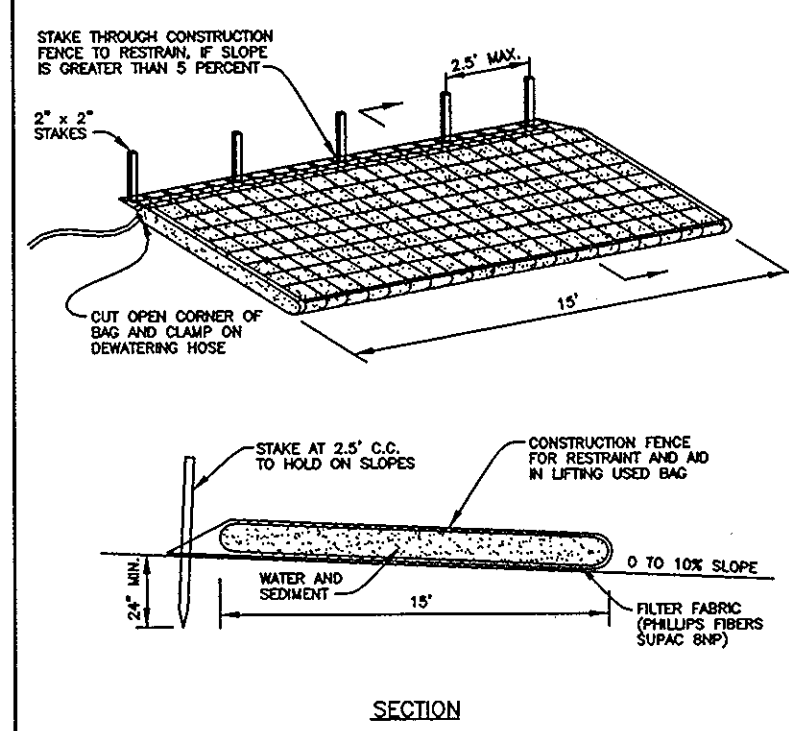
Diversion pipes with sandbag or stone barriers should be completed as follows (refer to detail 1.4):

- Sandbag/stone barriers should be sized and installed as detailed in MGWC 1.5: Sandbag/Stone Diversion. The materials should be sized to withstand baseflow velocities.
- All excavated material should be deposited and stabilized in an approved area outside the 100-year floodplain unless otherwise authorized by the WMA.
- Sediment-laden water from the construction area should be pumped to a filter bag.
- The diversion pipe should have a minimum capacity sufficient to convey the 2-year flow for projects with a duration of two weeks or greater. For projects of shorter duration, the capacity of the pipe can be reduced accordingly.
- If necessary, silt fence or straw bales should 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.

Maryland's Guidelines To Waterway Construction DETAIL 1.4: DIVERSION PIPE



FILTER BAG DETAIL



NOTES:

- 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.
- THE 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 UPWARD AREA.

MGWC 4.8: TEMPORARY ACCESS BRIDGE

Temporary stream crossing intended for minimum corridor disturbance

DESCRIPTION

A temporary access bridge is a stream crossing made of wood, metal, or other materials designed to limit the amount of disturbance to the stream banks and bed.

EFFECTIVE USES & LIMITATIONS

Temporary access bridges are the preferred method of waterway crossing since they typically cause the least disturbance to the waterway bed and banks, pose the least chance for interference with fish migration, and can be quickly removed and reused.

MATERIAL SPECIFICATIONS

- Stringers: Stringers should be logs, sawn timber, prestressed concrete beams, metal beams, or other approved materials.
- Deck Materials: Deck materials should be of sufficient strength to support the anticipated load.

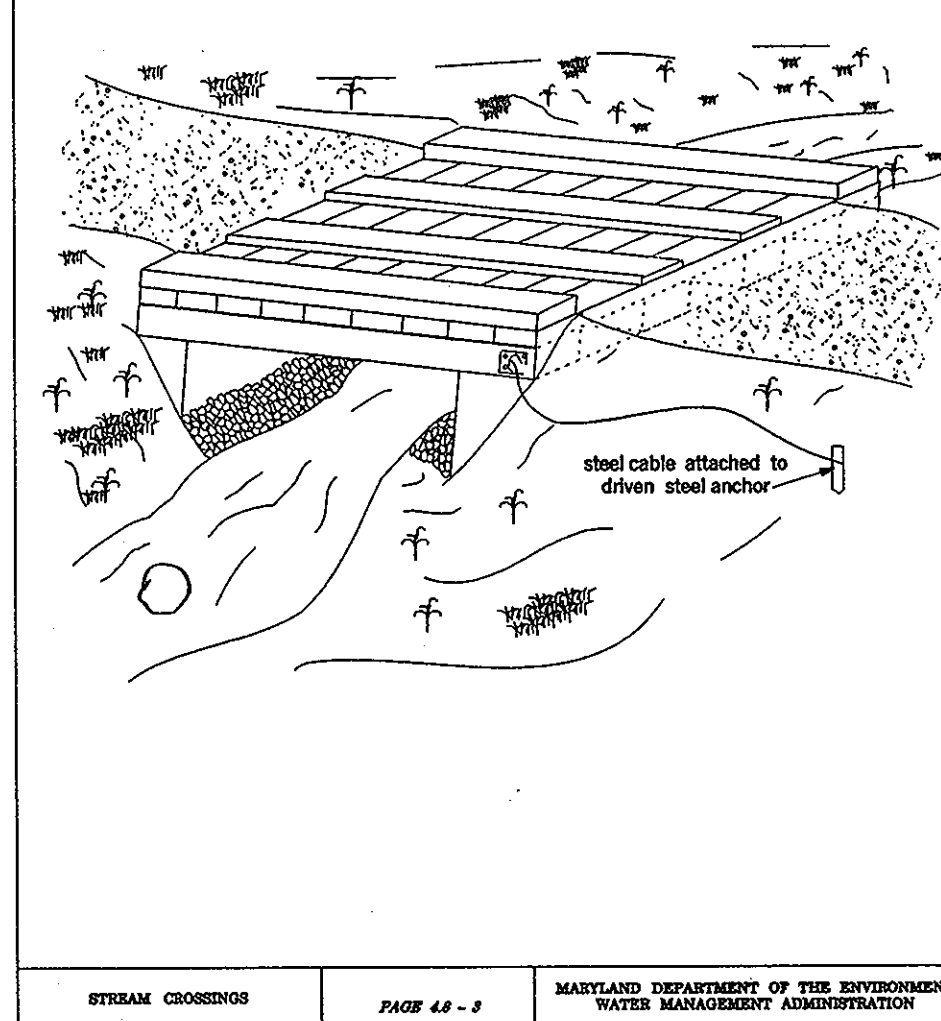
CONSTRUCTION SEQUENCE

All erosion and sediment control devices, including stream diversions, should be implemented as the first order of business according to a plan approved by the WMA or local authority. Dewatering basins should be built as needed and swales or ditches should be used to prevent surface drainage from entering the stream via the bridge crossing. (See the 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control.) The proposed construction, maintenance, and removal sequence is as follows:

- Abutments should be placed parallel to, and on, stable banks such that the structure is at or above bankfull depth to prevent the entrainment of floating materials and debris.
- Temporary access bridges should be constructed to span the entire channel. If the bankfull channel width exceeds 8 feet (2.5 meters), then a footing, pier, or other bridge support may be constructed within the waterway. No support will be permitted within the channel for waterways less than 8 feet wide. One additional bridge support will be permitted for each additional 8-foot width of the channel.
- All decking members should be placed perpendicular to the stringers, butted tightly, and securely fastened to the stringers. Decking materials must be butted tightly to prevent any soil material tracked onto the bridge from falling into the waterway.
- Although run planks are optional, they may be necessary to properly distribute loads. One run plank should be provided for each track of the equipment wheels and should be securely fastened to the length of the span.
- Curbs or fenders may be installed along the outer sides of the deck to provide additional safety.
- Bridges should be securely anchored at one end using steel cable or chain to prevent the bridge from floating downstream and possibly causing an obstruction to the flow. Anchoring at only one end will prevent channel obstruction in the event that flood waters float the bridge. Acceptable anchors are large trees, boulders, or driven steel anchors.
- All areas disturbed during installation should be stabilized within 14 calendar days in accordance with a revegetation plan approved by the WMA.
- Periodic inspection should be performed by the user to ensure that the bridge, streambed, and stream banks are maintained and not damaged.
- Maintenance should be performed as needed to ensure that the structure complies with all standards and specifications. This should include the removal of trapped sediment and debris which should then be disposed of and stabilized outside the floodplain.
- When the temporary bridge is no longer needed, all structures including abutments and other bridging materials should be removed within 14 calendar days. In all cases, the bridge materials should be removed within 1 year of installation. Removal of the bridge and clean-up of the area, including protection and stabilization of disturbed stream banks, should be accomplished without the use of construction equipment in the waterway.

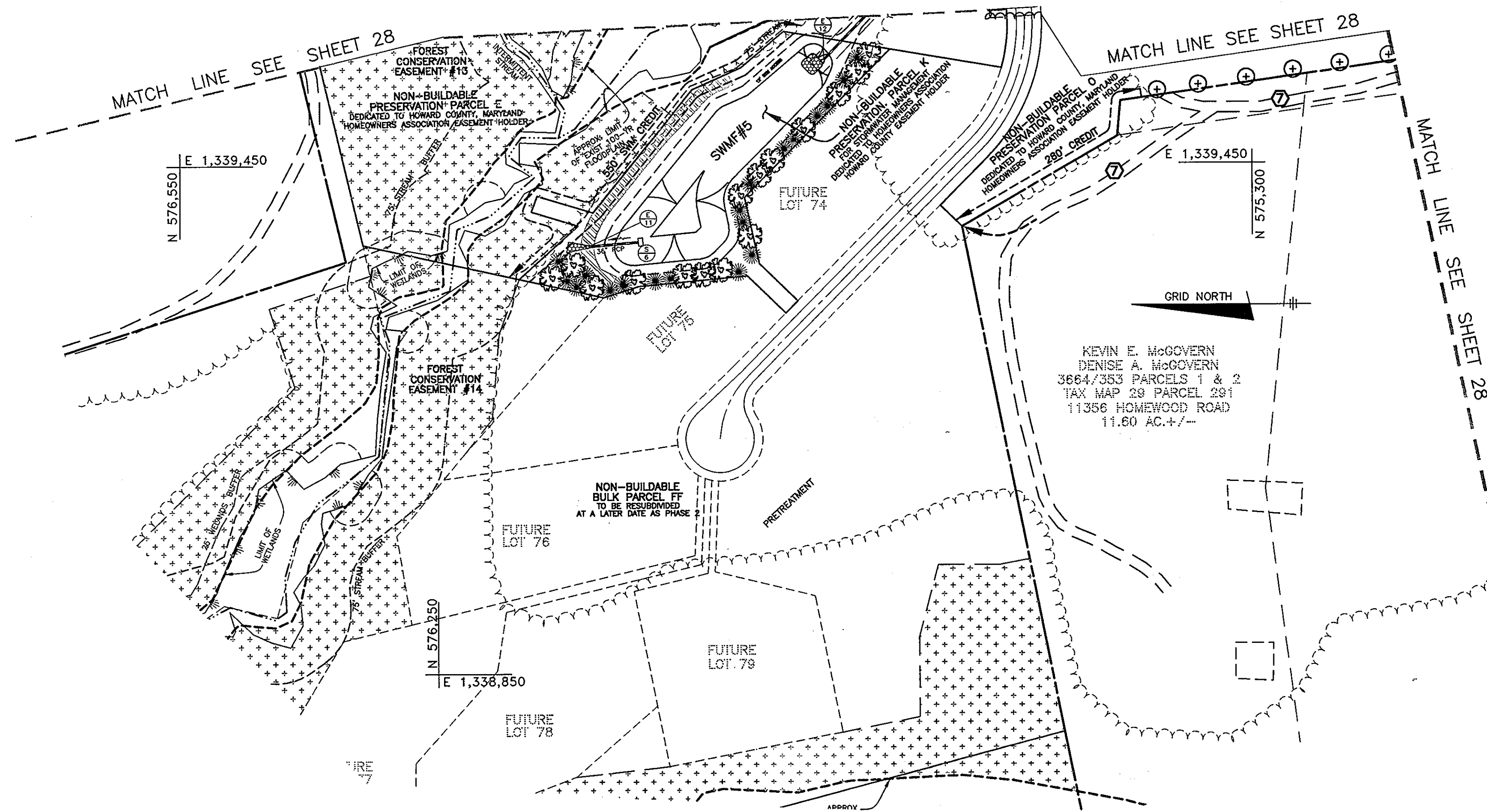
Maryland's Guidelines To Waterway Construction DETAIL 4.8: TEMPORARY ACCESS BRIDGE

SKETCH



LEGEND

- EXISTING TREELINE
- PROPOSED TREELINE
- CL. STREAM
- LIMIT OF WETLANDS
- LIMIT OF SUBMISSION
- PROPOSED FOREST CONSERVATION EASEMENT
- APPROXIMATE LIMIT OF EXISTING 100-YEAR FLOODPLAIN AREA
- APPROXIMATE LIMIT OF PROPOSED 100-YEAR FLOODPLAIN AREA
- LANDSCAPE PERIMETER DESIGNATION
- 15' NO WOODY VEGETATION ZONE



DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION OF A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE-YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

STEVE BREEDEN
ELIOAK, L.L.C.
DATE: 6/2/05

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

WILLIAM J. WILSON
CHIEF, BUREAU OF HIGHWAYS
DATE: 7-18-05

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CINDY HENRICH
CHIEF, DIVISION OF LAND DEVELOPMENT
DATE: 7/28/05

DAVID DAMASCO
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 7/28/05

NO.	DATE	REVISION
1	5-4-06	RENUMBER PLANS IN SET

BENCHMARK ENGINEERING, INC.
ENGINEERS • LAND SURVEYORS • PLANNERS
8480 BALTIMORE NATIONAL PIKE & SUITE 418
ELLCOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 • FAX: 410-465-6844
WWW.BEI-ENGINEERING.COM

Donald Moon
REGISTERED PROFESSIONAL ENGINEER

DEVELOPER:	ELIOAK, L.L.C. P.O. BOX 417 ELLCOTT CITY, MARYLAND 21041 410-465-4244	PROJECT:	RIVERWOOD -- PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'Q'; AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'
OWNER:	HOMWOOD, L.L.C. P.O. BOX 417 ELLCOTT CITY, MARYLAND 21041 410-465-4244	LOCATION:	TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,9&10 PARCELS: 86 PARCELS: 20 & 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
OWNER:	JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL, ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL C/O JOHN LEE CARROLL 515 MADISON AVENUE 32ND FLOOR NEW YORK, NEW YORK 10022	TITLE:	LANDSCAPE PLAN AND STREAM DIVERSION DETAILS
DES: JMC/DBT	DRAFT: JMC/DBT	CHECK: CAM	DATE: JUNE, 2005 PROJECT NO. 1132 SCALE: 1" = 100' SHEET 29 OF 55

LEGEND

- EXISTING CONTOURS
- EXISTING TREELINE
- PROPOSED TREELINE
- CL. STREAM
- LIMIT OF WETLANDS
- LIMIT OF SUBMISSION
- STEEP SLOPES 25% OR GREATER
- APPROXIMATE LIMIT OF EXISTING 100-YEAR FLOODPLAIN AREA
- APPROXIMATE LIMIT OF PROPOSED 100-YEAR FLOODPLAIN AREA
- FOREST CONSERVATION RETENTION
- FOREST CONSERVATION SIGNAGE

SOILS LEGEND

MAP SYMBOL	SOIL GROUP	SOIL TYPE
Ba	D*	BAILE SILT LOAM
CgB2	B	CHESTER GRAVELLY SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
CgC2	B	CHESTER GRAVELLY SILT LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED
ChA	B	CHESTER SILT LOAM, 0 TO 3 PERCENT SLOPES
ChB2	B	CHESTER SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
ChC2	B	CHESTER SILT LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED
ChD2	B	CHESTER SILT LOAM, 8 TO 15 PERCENT SLOPES, SEVERELY ERODED
ChE2	B	CHESTER SILT LOAM, 0 TO 3 PERCENT SLOPES
Ca	B	COMUS SILT LOAM
EB2	B	ELDOAK SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
EC3	B	ELDOAK SILTY CLAY LOAM, 8 TO 15 PERCENT SLOPES, SEVERELY ERODED
GB2	B	GLENELG LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
GC2	B	GLENELG LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED
GD2	B	GLENELG LOAM, 15 TO 25 PERCENT SLOPES, MODERATELY ERODED
GhB2	C*	GLENNVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
Hs	D*	HATBORO SILT LOAM
MgB2	B	MANOR GRAVELLY LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
MgC2	B	MANOR GRAVELLY LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED
MgC3	B	MANOR GRAVELLY LOAM, 8 TO 15 PERCENT SLOPES, SEVERELY ERODED
MID2	B	MANOR LOAM, 15 TO 25 PERCENT SLOPES, MODERATELY ERODED
MID3	B	MANOR LOAM, 15 TO 25 PERCENT SLOPES, SEVERELY ERODED
MIE	B	MANOR LOAM, 25 TO 45 PERCENT SLOPES
MnD	B	MANOR VERY STONY LOAM, 3 TO 25 PERCENT SLOPES
MnF	B	MANOR VERY STONY LOAM, 25 TO 60 PERCENT SLOPES
Mo	B*	MIXED ALLOWAY LAND

* INDICATES HYDRIC SOILS
 TAKEN FROM SOIL SURVEY, HOWARD COUNTY, MARYLAND (ISSUED JULY 1968) MAP NO. 31

SITE ANALYSIS DATA CHART

- GENERAL SITE DATA
- PRESENT ZONING: _____ RC-DEO
 - APPLICABLE DPZ FILE REFERENCES: _____ WP-02-64 S-02-009, P-03-010
 - PROPOSED USE OF SITE: _____ SFD
 - PROPOSED WATER AND SEWER SYSTEMS: _____ PRIVATE
- AREA TABULATION
- GROSS TRACT AREA: _____ 269.88 AC.±
 - AREA WITHIN 100-YEAR FLOODPLAIN: _____ 44.83 AC.±
 - NET TRACT AREA: _____ 225.05 AC.±

FCE ACREAGE CHART

EASEMENT #	ACREAGE (RETENTION)
FCE#1	1.09 AC.
FCE#2	1.11 AC.
FCE#3	9.81 AC.
FCE#4	1.70 AC.
FCE#5	0.33 AC.
FCE#6	5.77 AC.
FCE#7	7.56 AC.
FCE#8	1.52 AC.
FCE#9	0.55 AC.
FCE#10	1.56 AC.
FCE#11	5.55 AC.
FCE#12	1.28 AC.
FCE#13	4.22 AC.
FCE#14	2.89 AC.
FCE#15	2.88 AC.
FCE#16	0.87 AC.
FCE#17A	4.07 AC.
FCE#18	1.46 AC.
FCE#19	1.22 AC.
FCE#20	1.45 AC.
FCE#21	0.83 AC.
FCE#22	0.89 AC.
FCE#2A	1.24 AC.
TOTALS	61.56 AC.
FCE#ITB	1.61 AC.

SEE THE FINAL RECORD PLAT FOR FOREST
 CONSERVATION EASEMENT BEARINGS AND DISTANCES.
 SEE SHEET 32 FOR FOREST CONSERVATION CALCULATIONS
 SEE SHEET 33 FOR FOREST CONSERVATION NOTES AND SIGNAGE DETAIL

NO.	DATE	REVISION
4	2-20-08	REVISE GRADING AT HEADWALL # 2
3	1-5-07	ADD 160SF OF FOREST & REMOVE 237 SF OF FOREST FROM FCE#20
2	10-9-06	SHOW THE PORTION OF FCE#22 THAT IS TO BE ABANDONED & REVISE FCE ACREAGE CHART
1	5-4-06	RENUMBER PLANS IN SET

BENCHMARK
 ENGINEERS • LAND SURVEYORS • PLANNERS
ENGINEERING, INC.

8480 BALTIMORE NATIONAL PIKE • SUITE 418
 ELLICOTT CITY, MARYLAND 21043
 phone: 410-465-6105 • fax: 410-465-6644
 www.bei-civilengineering.com

Donald M. Moore
dlm

DEVELOPER:	ELDOAK, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	PROJECT:	RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R' BUILDABLE PRESERVATION PARCEL 'O' AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'
OWNER:	HOMEWOOD, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	LOCATION:	TAX MAP: 23, GRID: 21 TAX MAP: 23, GRID: 3, 4, 9 & 10 PARCELS: 88 PARCELS: 26 & 86
OWNER:	JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32nd FLOOR NEW YORK, NEW YORK 10022	TITLE:	FOREST CONSERVATION PLAN
DES: JMC/DBT	DRAFT: JMC/DBT	CHECK: CAM	DATE: JUNE, 2005 PROJECT NO. 132 SCALE: 1" = 100' SHEET 30 OF 55

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Walter E. Walsh 7-18-05
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

Christy Hester 7/26/05
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

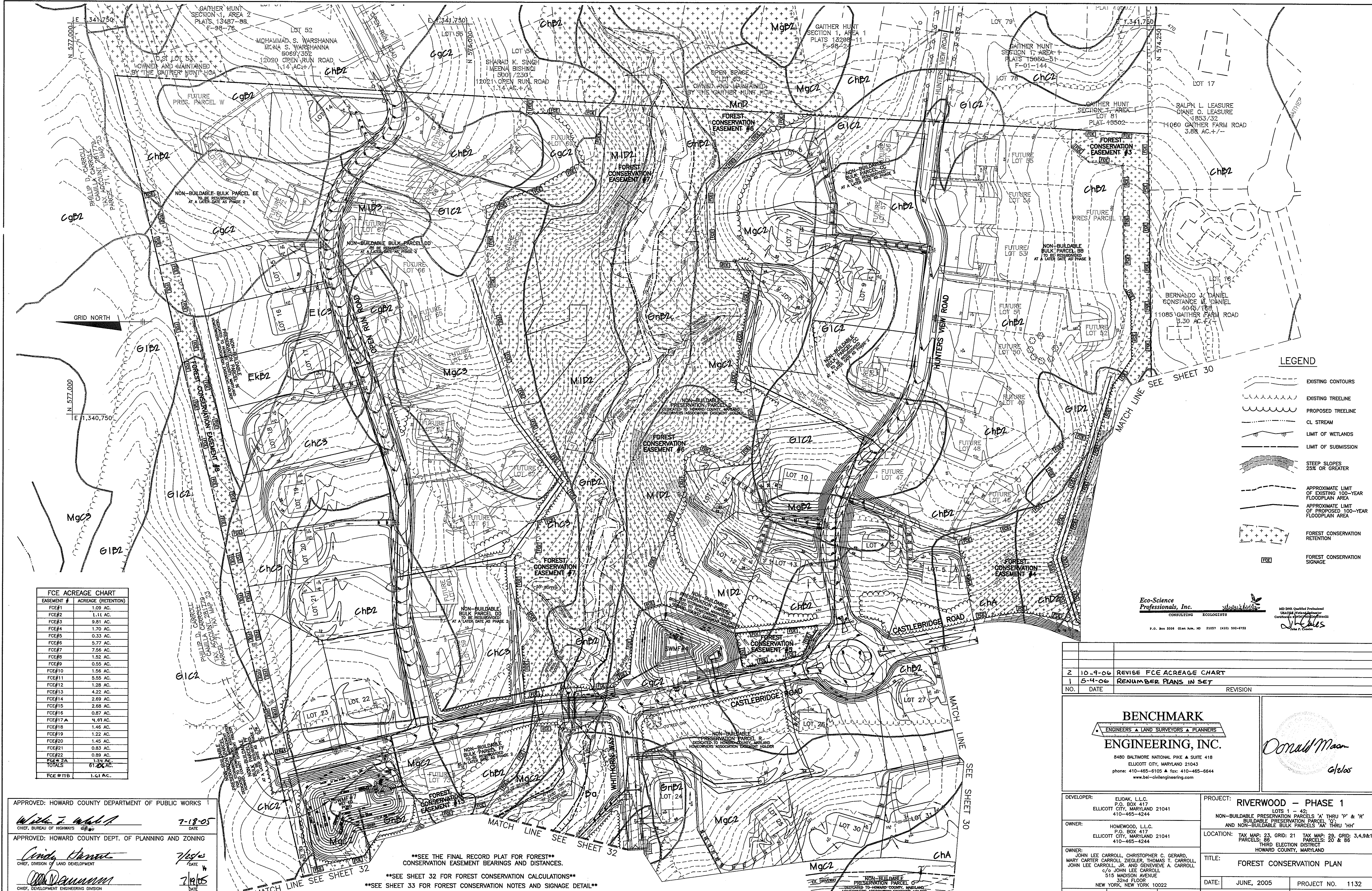
Chad Dammann 7/16/05
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Eco-Science Professionals, Inc.
 CONSULTING ECOLOGISTS

200 DDBE Qualified Professional
 USACE Wetland Designer
 Contracted to 19027070000000000000

Chad Dammann

P.O. Box 5056 Glen Burnie, MD 21051 (410) 992-6752



LEGEND

- EXISTING CONTOURS
- EXISTING TREELINE
- PROPOSED TREELINE
- CL. STREAM
- LIMIT OF WETLANDS
- LIMIT OF SUBMISSION
- STEEP SLOPES 25% OR GREATER
- APPROXIMATE LIMIT OF EXISTING 100-YEAR FLOODPLAIN AREA
- APPROXIMATE LIMIT OF PROPOSED 100-YEAR FLOODPLAIN AREA
- FOREST CONSERVATION RETENTION
- FOREST CONSERVATION SIGNAGE

FCE ACREAGE CHART

EASEMENT #	ACREAGE (RETENTION)
FCE#1	1.09 AC.
FCE#2	1.11 AC.
FCE#3	9.81 AC.
FCE#4	1.70 AC.
FCE#5	0.33 AC.
FCE#6	5.77 AC.
FCE#7	7.56 AC.
FCE#8	1.52 AC.
FCE#9	0.55 AC.
FCE#10	1.56 AC.
FCE#11	5.55 AC.
FCE#12	1.28 AC.
FCE#13	4.22 AC.
FCE#14	2.69 AC.
FCE#15	2.88 AC.
FCE#16	0.87 AC.
FCE#17	4.07 AC.
FCE#18	1.46 AC.
FCE#19	1.22 AC.
FCE#20	1.45 AC.
FCE#21	0.83 AC.
FCE#22	0.89 AC.
FCE# 2A	1.24 AC.
TOTALS	61.04 AC.
FCE #1TB	1.61 AC.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Walter J. White 7-18-05
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Cindy Harriet 7/26/05
 CHIEF, DIVISION OF LAND DEVELOPMENT

Donna Dammann 7/19/05
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

SEE THE FINAL RECORD PLAT FOR FOREST
 CONSERVATION EASEMENT BEARINGS AND DISTANCES.

SEE SHEET 32 FOR FOREST CONSERVATION CALCULATIONS

SEE SHEET 33 FOR FOREST CONSERVATION NOTES AND SIGNAGE DETAIL

NO.	DATE	REVISION
2	10-9-06	REVISE FCE ACREAGE CHART
1	5-4-06	RENUMBER PLANS IN SET

BENCHMARK
 ENGINEERS • LAND SURVEYORS • PLANNERS

ENGINEERING, INC.

8480 BALTIMORE NATIONAL PIKE • SUITE 418
 ELLICOTT CITY, MARYLAND 21043
 phone: 410-485-6105 • fax: 410-485-6644
 www.bei-civilengineering.com

Donald Mason
glos

DEVELOPER:	ELIOAK, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-485-4244	PROJECT:	RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R' BUILDABLE PRESERVATION PARCEL 'Q' AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'
OWNER:	HOMWOOD, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-485-4244	LOCATION:	TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,9&10 PARCELS: 88 ELECTION DISTRICT: PARCELS: 20 & 86 THIRD HOWARD COUNTY, MARYLAND
OWNER:	JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32nd FLOOR NEW YORK, NEW YORK 10022	TITLE:	FOREST CONSERVATION PLAN
DES: JMC/DBT	DRAFT: JMC/DBT	CHECK: CAM	DATE: JUNE, 2005 PROJECT NO. 1132 SCALE: 1" = 100' SHEET 31 OF 55

Eco-Science Professionals, Inc.
 CONSULTING ECOSYSTEMS
 P.O. Box 5006 Glen Arden, MD 21057 (410) 592-6752

MD DNR Certified Professional
 USACE Wetland Professional
 Certified Professional
John P. Galloway



LEGEND

- EXISTING CONTOURS
- EXISTING TREELINE
- PROPOSED TREELINE
- CL. STREAM
- LIMIT OF WETLANDS
- LIMIT OF SUBMISSION
- STEEP SLOPES 25% OR GREATER
- APPROXIMATE LIMIT OF EXISTING 100-YEAR FLOODPLAIN AREA
- APPROXIMATE LIMIT OF PROPOSED 100-YEAR FLOODPLAIN AREA
- FOREST CONSERVATION RETENTION
- FOREST CONSERVATION SIGNAGE

NOTE:
THIS SUBDIVISION COMPLIES WITH THE RURAL CLUSTER OPTION B OF APPENDIX L OF THE FOREST CONSERVATION MANUAL TO SATISFY FOREST CONSERVATION REQUIREMENTS.

APPENDIX G
FOREST CONSERVATION WORKSHEET

I. BASIC SITE DATA		ACRES (1/10 acre)
GROSS SITE AREA		269.9
AREA WITHIN 100 YEAR FLOODPLAIN		44.8
AREA WITHIN AGRICULTURAL USE OR PRESERVATION PARCEL (IF APPLICABLE)		N/A
NET TRACT AREA		225.1
LAND USE CATEGORY (R-RLD, R-RMD, R-S, C/1/0, I)		RC-DEO

II. INFORMATION FOR CALCULATIONS		ACRES (1/10 acre)
A. NET TRACT AREA		225.1
B. REFORESTATION THRESHOLD (25% x A)		56.3
C. AFFORESTATION MINIMUM (20% x A)		45.0
D. EXISTING FOREST ON NET TRACT AREA		117.3
E. FOREST AREAS TO BE CLEARED		39.1**
F. FOREST AREAS TO BE RETAINED		78.2**

- III. DETERMINING REQUIREMENTS: AFFORESTATION OR REFORESTATION
- 1. Reforestation**
If existing forest areas equal or exceed the afforestation minimum (if D equals or is more than C), and clearing of forest areas is proposed, reforestation requirements may apply.
GO TO SECTION IV
 - 2. Afforestation**
If existing forest areas are less than the afforestation minimum (if D is less than C), afforestation requirements apply.
GO TO SECTION V

IV. REFORESTATION CALCULATIONS

ACRES (1/10 acre)	
A. NET TRACT AREA	225.1
B. REFORESTATION THRESHOLD (25% x A)	56.3
C. AFFORESTATION MINIMUM (20% x A)	45.0
D. EXISTING FOREST ON NET TRACT AREA	117.3
E. FOREST AREAS TO BE CLEARED	39.1
F. FOREST AREAS TO BE RETAINED	78.2
G. FOREST AREAS CLEARED ABOVE REFORESTATION THRESHOLD (D-F, if F equals or is greater than B, Alternate 1) (D-B, if F is less than B, Alternate 2)	0.0
H. FOREST AREAS CLEARED BELOW REFORESTATION THRESHOLD (B-F, if applicable)	N/A
I. FOREST AREAS RETAINED ABOVE REFORESTATION THRESHOLD (F-B, Retention Credit, if applicable)	21.9

- SELECT THE ALTERNATE THAT APPLIES:
- 1. Clearing above the threshold only**
If forest areas to be retained equal or are greater than the reforestation threshold (if F equals or is greater than B), the following calculations apply:
 REFORESTATION FOR CLEARING ABOVE THRESHOLD $G \times 1/4 = 0.0$
 CREDIT FOR FOREST AREAS RETAINED ABOVE THRESHOLD = Retention Credit = 21.9
 TOTAL REFORESTATION REQUIRED $(G \times 1/4) - I = 0.0$
 If the total reforestation requirement is equal to or less than 0, no reforestation is required.
 - 2. Clearing below the threshold**
If forest areas to be retained are less than the reforestation threshold (if F is less than B), the following calculations apply:
 REFORESTATION FOR CLEARING ABOVE THRESHOLD $G \times 1/4 = 0.0$
 REFORESTATION FOR CLEARING BELOW THRESHOLD $H \times 2 = 0.0$
 TOTAL REFORESTATION REQUIRED $(G \times 1/4) + (H \times 2) = 0.0$
 Since clearing occurs below the threshold, no forest retention credit is possible.
- FOREST AREA CLEARING ADJUSTED FOR FIRST PHASE OF DEVELOPMENT TO BE REVISED IN FUTURE PHASE(S) TO ACCOUNT FOR THE FUTURE CLEARING.

Eco-Science Professionals, Inc. CONSULTING ECOLOGISTS
 P.O. Box 2006 Glen Allen, VA 21027 (410) 392-4752
 MD 2009 Certified Professional U.S. Green Building Council (USGBC) LEED Accredited
 J. Lee Carroll, P.E.

FCE ACREAGE CHART

EASEMENT #	ACREAGE (RETENTION)
FCE#1	1.09 AC.
FCE#2	1.11 AC.
FCE#3	9.81 AC.
FCE#4	1.70 AC.
FCE#5	0.33 AC.
FCE#6	5.77 AC.
FCE#7	7.56 AC.
FCE#8	1.52 AC.
FCE#9	0.55 AC.
FCE#10	1.58 AC.
FCE#11	5.55 AC.
FCE#12	1.28 AC.
FCE#13	4.22 AC.
FCE#14	2.69 AC.
FCE#15	2.68 AC.
FCE#16	0.87 AC.
FCE#17	4.01 AC.
FCE#18	1.46 AC.
FCE#19	1.22 AC.
FCE#20	1.45 AC.
FCE#21	0.83 AC.
FCE#22	0.89 AC.
FCE#23	1.34 AC.
TOTALS	61.06 AC.
FCE #17B	1.61 AC.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 W. J. ... 7-18-05
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
 Cindy Hanover 7/25/05
 CHIEF, DIVISION OF LAND DEVELOPMENT

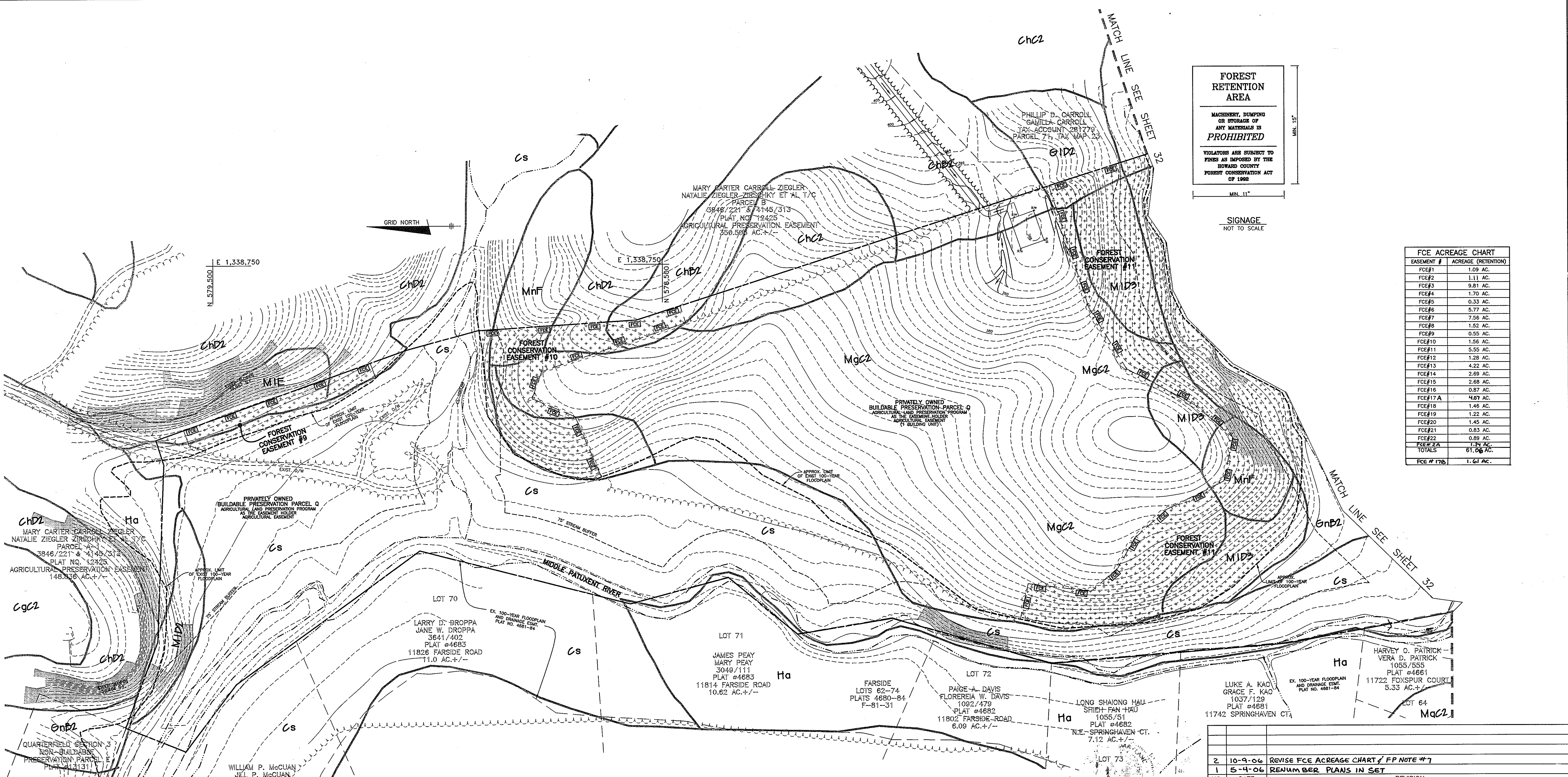
APPROVED: ... 7/19/05
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

SEE SHEET 33 FOR FOREST CONSERVATION NOTES AND SIGNAGE DETAIL
 SEE THE FINAL RECORD PLAT FOR FOREST
 CONSERVATION EASEMENT BEARINGS AND DISTANCES.

NO.	DATE	REVISION
2	10-9-06	REVISE F.C. WORKSHEET & ACREAGE CHART
1	5-4-06	RENUMBER PLANS IN SET

DEVELOPER:	ELIOLAK, L.L.C. P.O. BOX 417 ELLIOTT CITY, MARYLAND 21041 410-465-4244	PROJECT:	RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R' AND BUILDABLE PRESERVATION PARCEL 'Q' AND NON-BUILDABLE BULK PARCELS 'M' THRU 'NH'
OWNER:	HOMWOOD, L.L.C. P.O. BOX 417 ELLIOTT CITY, MARYLAND 21041 410-465-4244	LOCATION:	TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,8&10 PARCELS: 20 & 26 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
OWNER:	JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENIEVIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32nd FLOOR NEW YORK, NEW YORK 10022	TITLE:	FOREST CONSERVATION PLAN
DES: JMC/DBT	DRAFT: JMC/DBT	CHECK: CAM	DATE: JUNE, 2005 PROJECT NO. 1132
SCALE: 1" = 100'		SHEET 32 OF 55	

Donall Moon
 6/10/05



FOREST RETENTION AREA

MACHINERY, DUMPING OR STORAGE OF ANY MATERIALS IS **PROHIBITED**

VIOLATORS ARE SUBJECT TO FINES AS IMPOSED BY THE HOWARD COUNTY FOREST CONSERVATION ACT OF 1998

SIGNAGE
NOT TO SCALE

EASEMENT #	ACREAGE (RETENTION)
FCE#1	1.09 AC.
FCE#2	1.11 AC.
FCE#3	9.81 AC.
FCE#4	1.70 AC.
FCE#5	0.33 AC.
FCE#6	5.77 AC.
FCE#7	7.56 AC.
FCE#8	1.52 AC.
FCE#9	0.55 AC.
FCE#10	1.56 AC.
FCE#11	5.55 AC.
FCE#12	1.28 AC.
FCE#13	4.22 AC.
FCE#14	2.69 AC.
FCE#15	2.68 AC.
FCE#16	0.87 AC.
FCE#17A	4.07 AC.
FCE#18	1.46 AC.
FCE#19	1.22 AC.
FCE#20	1.45 AC.
FCE#21	0.83 AC.
FCE#22	0.89 AC.
FCE#23	1.25 AC.
TOTALS	61.06 AC.
FCE # 17B	1.61 AC.

GRID NORTH

E 1,338,750
N 579,500

E 1,338,750
N 579,500

MATCH LINE SEE SHEET 32

MARY CARTER CARROLL ZIEGLER
NATALIE ZIEGLER ZIBOSHKY ET AL T/C
PARCEL A
3846/221 & 4145/313
PLAT NO. 12428
AGRICULTURAL PRESERVATION EASEMENT
148.836 AC. +/-

MARY CARTER CARROLL ZIEGLER
NATALIE ZIEGLER ZIBOSHKY ET AL T/C
PARCEL B
3846/221 & 4145/313
PLAT NO. 12428
AGRICULTURAL PRESERVATION EASEMENT
350.508 AC. +/-

PRIVATELY OWNED
BUILDABLE PRESERVATION PARCEL Q
AGRICULTURAL LAND PRESERVATION PROGRAM
AS THE EASEMENT HOLDER
AGRICULTURAL EASEMENT

PRIVATELY OWNED
BUILDABLE PRESERVATION PARCEL Q
AGRICULTURAL LAND PRESERVATION PROGRAM
AS THE EASEMENT HOLDER
AGRICULTURAL EASEMENT

LARRY D. BROPPA
JANE W. BROPPA
3641/402
PLAT #4683
11826 FARMSIDE ROAD
11.0 AC. +/-

JAMES PEAY
MARY PEAY
3049/111
PLAT #4683
11814 FARMSIDE ROAD
10.82 AC. +/-

PAIGE A. DAVIS
FLOREREA W. DAVIS
1092/479
PLAT #4682
11802 FARMSIDE ROAD
6.09 AC. +/-

LONG SHAIQING HAU
SHIEN-FAN HAU
1055/51
PLAT #4682
N.E. SPRINGHAVEN CT.
7.12 AC. +/-

LUKE A. KAC
GRACE F. KAC
1037/129
PLAT #4681
11742 SPRINGHAVEN CT.

HARVEY O. PATRICK
VERA D. PATRICK
1055/555
PLAT #4681
11722 FOXSPUR COURT
5.33 AC. +/-

WILLIAM P. McCUAN
JILL P. McCUAN
1167/574
PLAT #4683
11838 FARMSIDE ROAD
6.88 AC. +/-

FP NOTES:

1. ANY FOREST CONSERVATION EASEMENT (FCE) AREA SHOWN HEREON IS SUBJECT TO PROTECTIVE COVENANTS WHICH MAY BE FOUND IN THE LAND RECORDS OF HOWARD COUNTY WHICH RESTRICT THE DISTURBANCE AND USE OF THESE AREAS.
2. FORESTED AREAS OCCURRING OUTSIDE OF THE FCE SHALL NOT BE CONSIDERED PART OF THE FCE AND SHALL NOT BE SUBJECT TO PROTECTIVE LAND COVENANTS.
3. LIMITS OF DISTURBANCE SHALL BE RESTRICTED TO AREAS OUTSIDE THE LIMIT OF TEMPORARY FENCING OR THE FCE BOUNDARY, WHICHEVER IS GREATER.
4. THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST CONSERVATION EASEMENT, EXCEPT AS PERMITTED BY HOWARD COUNTY DPZ.
5. NO STOCKPILES, PARKING AREAS, EQUIPMENT CLEANING AREAS, ETC. SHALL OCCUR WITHIN AREAS DESIGNATED AS FOREST CONSERVATION EASEMENTS.
6. TEMPORARY FENCING SHALL BE USED TO PROTECT FOREST RESOURCES DURING CONSTRUCTION. FENCING SHALL BE INSTALLED ALONG LIMITS OF DISTURBANCE OCCURRING WITHIN 50 FEET OF THE PROPOSED FCE LIMITS. PERMANENT SIGNAGE WILL BE POSTED AT 50-100 FOOT INTERVALS ALONG ALL FCE LIMITS.
7. THE TOTAL FOREST CONSERVATION OBLIGATION HAS BEEN MET BY THE ON-SITE RETENTION OF 78.2 ACRES OF NET TRACT AREA FOREST (61.06 ACRES WITHIN THE LIMITS OF A FOREST CONSERVATION EASEMENT). THE 16.5 ACRES NOT WITHIN A FOREST CONSERVATION EASEMENT IS LOCATED ON THE BULK PARCELS THAT SHALL BE SUBDIVIDED AS PART OF PHASE 2. THAT 16.5 ACRES SHALL BE TAKEN AS "CLEARED" UNDER THE PHASE 2 SUBDIVISION PLANS. ANY REFORESTATION REQUIREMENT AS A RESULT OF THE PHASE 2 CLEARING SHALL BE DONE UNDER THE PHASE 2 PLANS. FINANCIAL SURETY FOR THE REQUIRED FOREST CONSERVATION IN THE AMOUNT OF \$537,531.00 SHALL BE PAID AS PART OF THE DEVELOPER'S AGREEMENT.

FLOODPLAIN NOTE:

PORTIONS OF THE SITE OCCURRING WITHIN THE 100-YEAR FLOODPLAIN ARE NOT INCLUDED AS PART OF THE NET TRACT AREA OF THE SITE. AREAS OF FLOODPLAIN FOREST OCCURRING WITHIN THE LIMITS OF A FOREST CONSERVATION EASEMENT WILL BE PROTECTED BY THE EASEMENT RESTRICTIONS BUT HAVE NOT BEEN CREDITED TOWARD THE PROJECTS FCA OBLIGATIONS.

NO.	DATE	REVISION
2	10-9-06	REVISE FCE ACREAGE CHART / FP NOTE #7
1	5-4-06	RENUMBER PLANS IN SET

BENCHMARK ENGINEERING, INC.
ENGINEERS • LAND SURVEYORS • PLANNERS

8480 BALTIMORE NATIONAL PIKE # SUITE 418
ELLICOTT CITY, MARYLAND 21043
phone: 410-465-8105 • fax: 410-465-8644
www.bel-civilengineering.com

Donald Maon

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Wade Z. ... 7-18-05
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Cindy ... 7/25/05
CHIEF, DIVISION OF LAND DEVELOPMENT

... 7/19/05
CHIEF, DEVELOPMENT ENGINEERING DIVISION

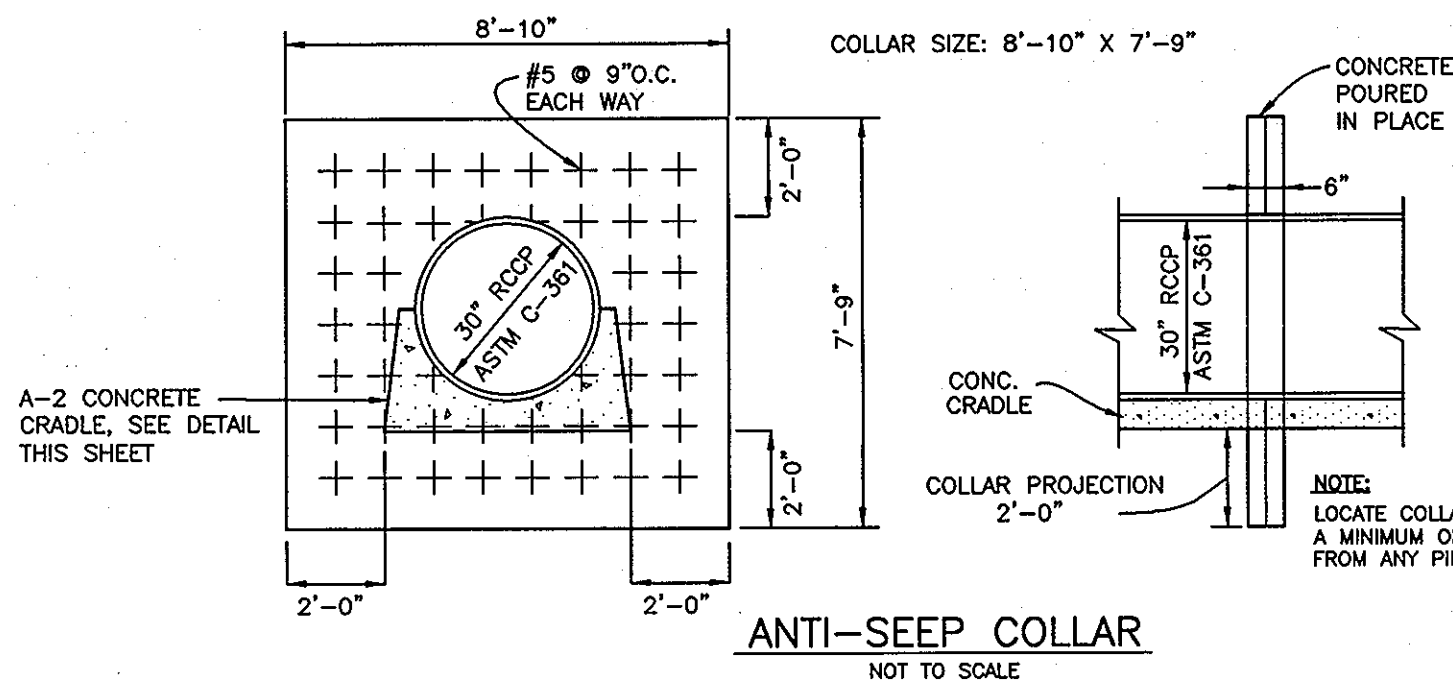
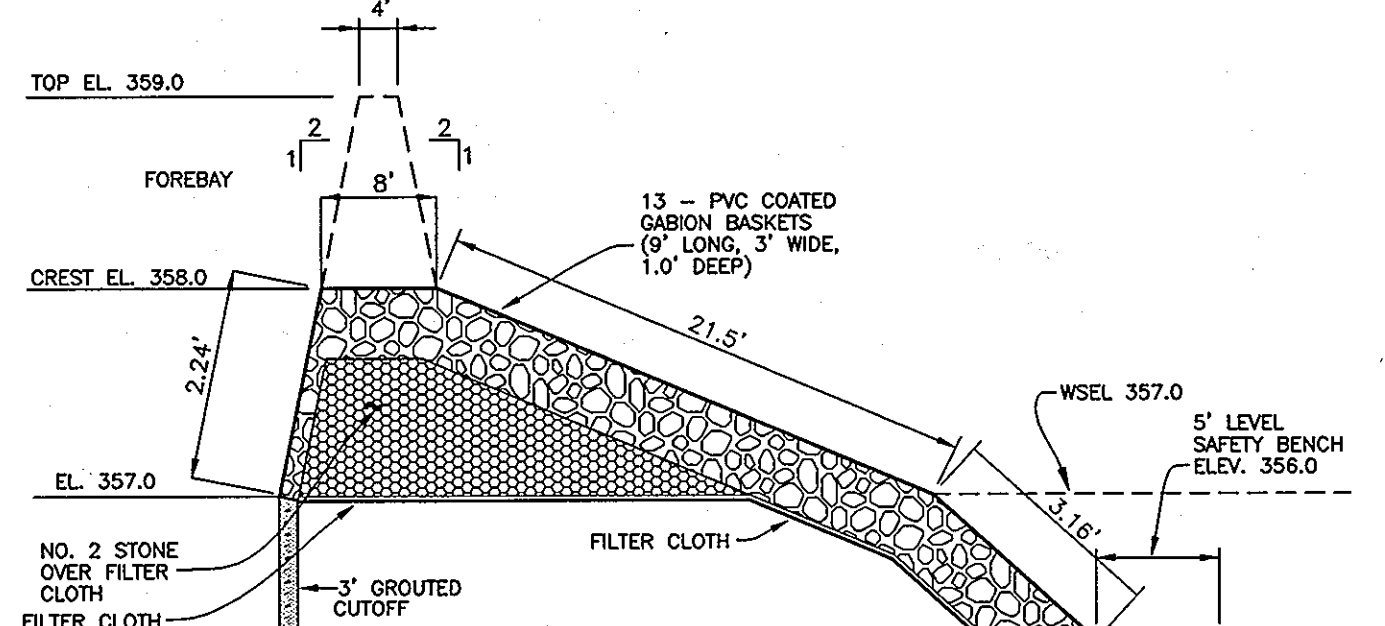
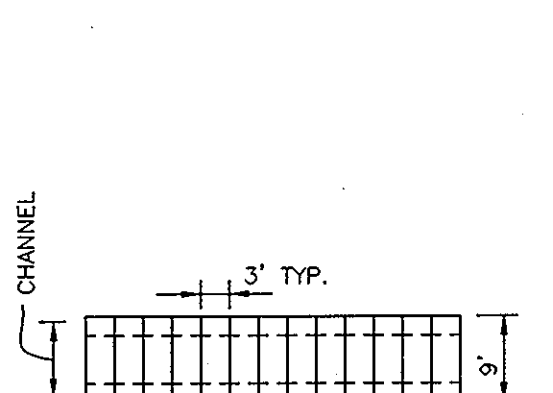
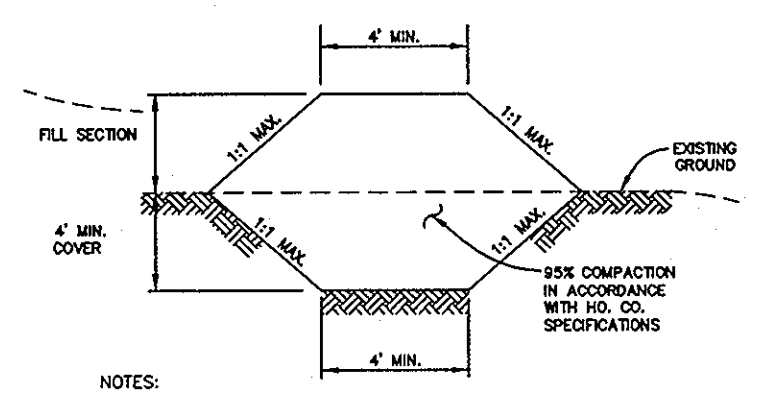
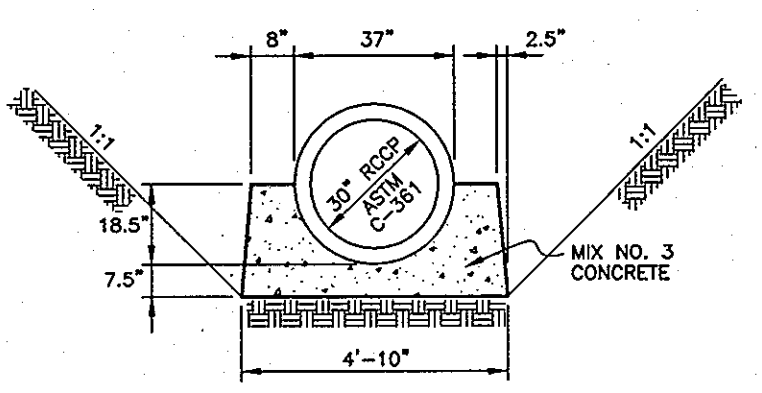
Eco-Science Professionals, Inc.
CONSULTING ECOLOGISTS

P.O. Box 5056 Ocean View, MD 21057 (410) 592-4752

MD DNR Qualified Professional
USACE Wetland Delimited
Conservation & Photography #148483

****SEE THE FINAL RECORD PLAT FOR FOREST**
CONSERVATION EASEMENT BEARINGS AND DISTANCES.
SEE SHEET 32 FOR FOREST CONSERVATION CALCULATIONS**

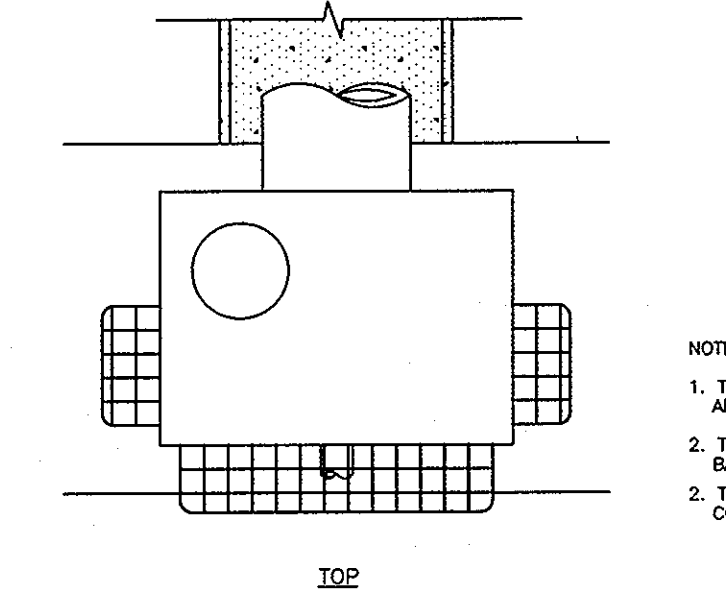
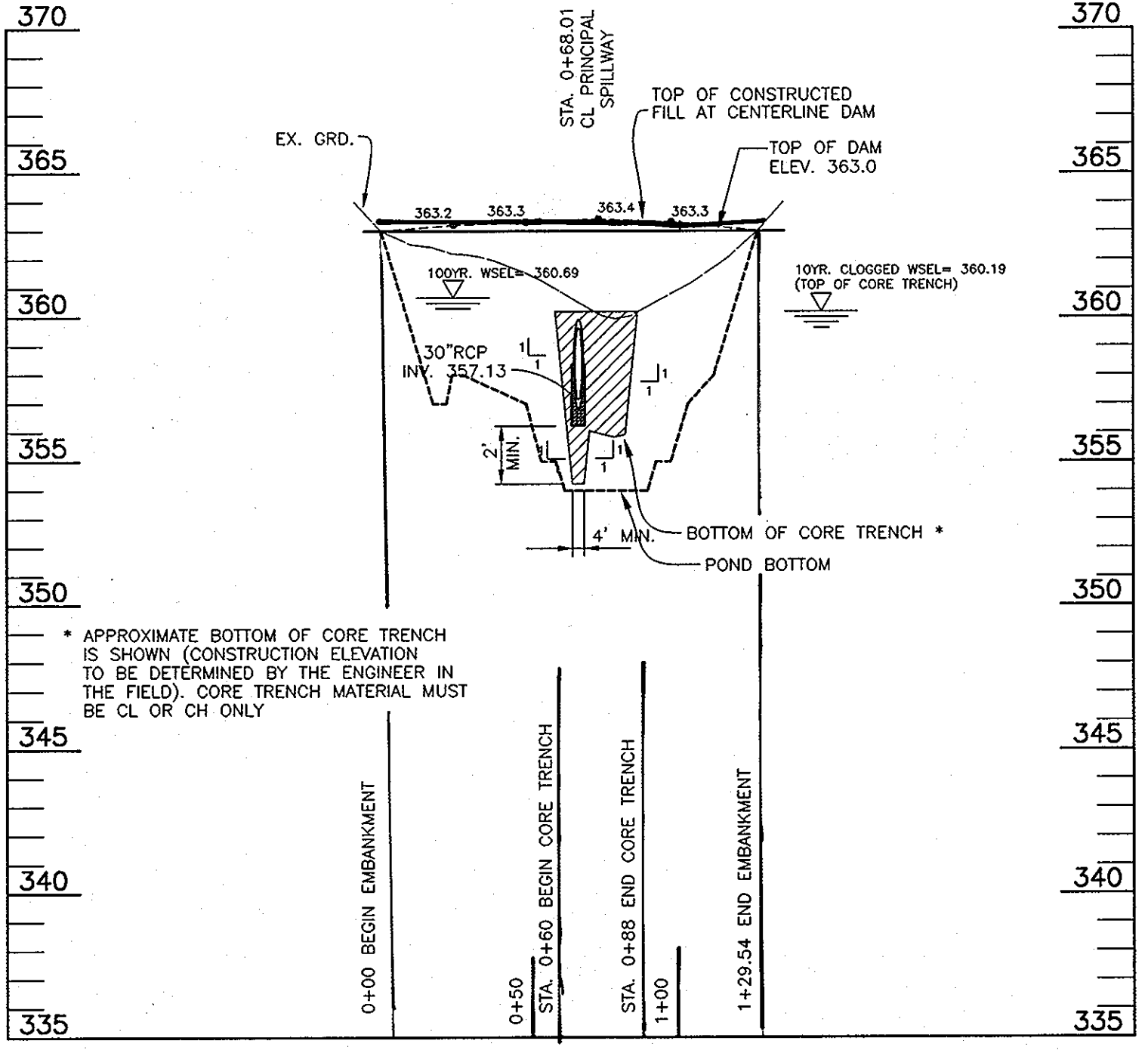
DEVELOPER: ELIOAK, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	PROJECT: RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R' AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'
OWNER: HOMWOOD, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,9&10 PARCELS: 86 PARCELS: 20 & 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
OWNER: JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL c/o JOHN LEE CARROLL 32nd FLOOR 515 MADISON AVENUE NEW YORK, NEW YORK 10022	TITLE: FOREST CONSERVATION PLAN
DES: JMC/DBT (DRAFT: JMC/DBT) CHECK: CAM	DATE: JUNE, 2005 PROJECT NO. 1132
SCALE: 1" = 100'	SHEET 33 OF 55



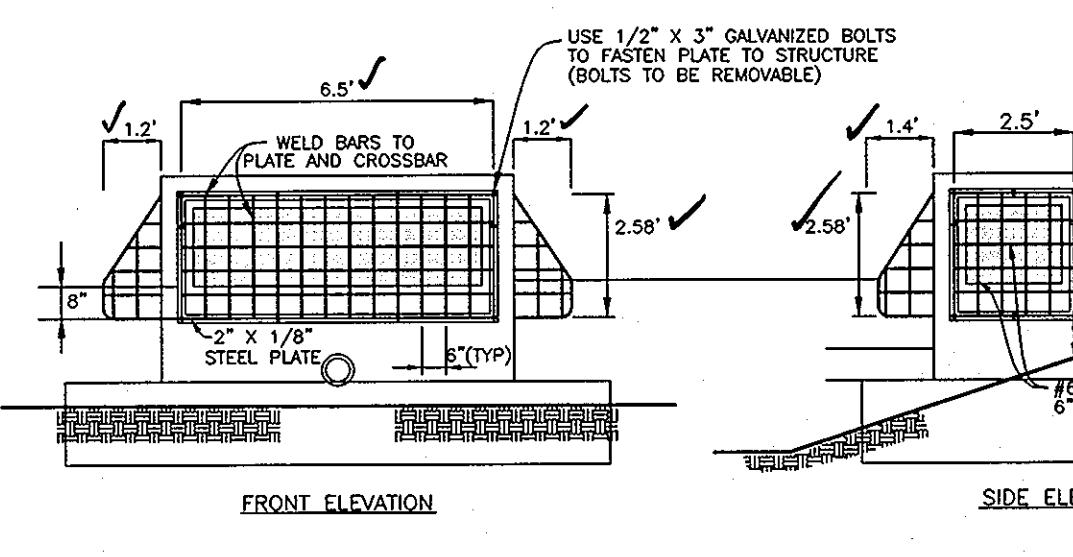
OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED EXTENDED DETENTION POND

- ROUTINE MAINTENANCE:**
1. FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHALL BE PERFORMED DURING WEATHER TO DETERMINE IF THE POND IS FUNCTIONING PROPERLY.
 2. TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES PER YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHALL BE MOWED AS NEEDED.
 3. DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
 4. VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS THE RIP-RAP OR GABION OUTLET AREA SHALL BE REPAIRED AS SOON AS IT IS NOTICED.

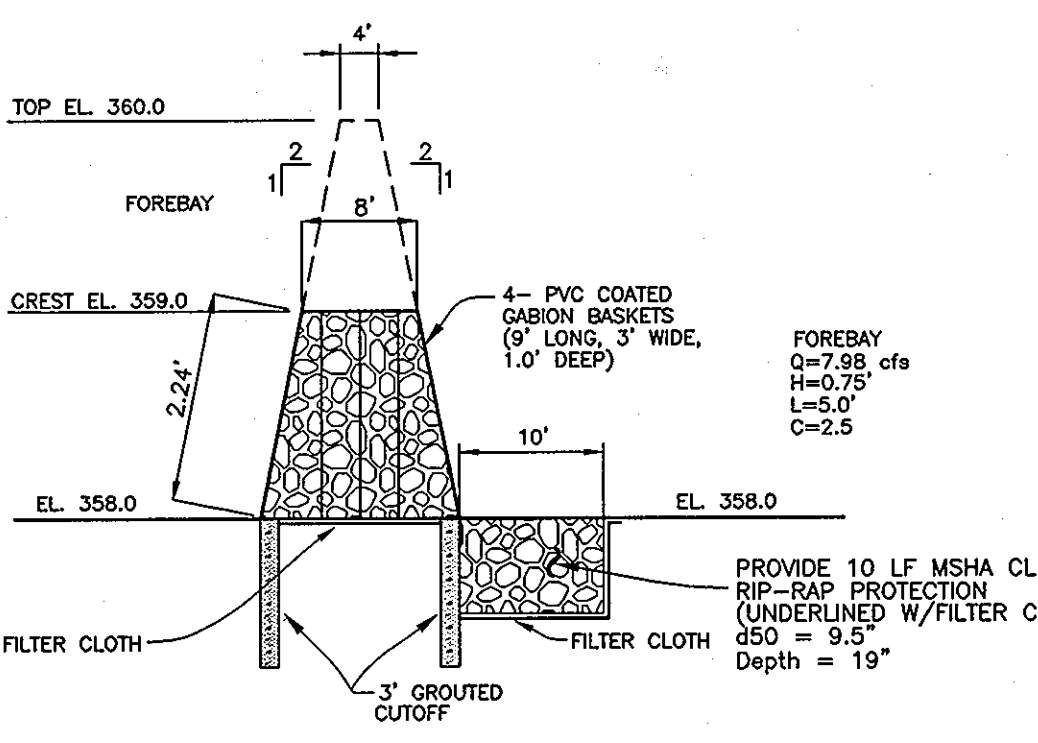
- NON-ROUTINE MAINTENANCE:**
1. STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE RISER, AND THE PIPES SHALL BE REPAIRED UPON THE DETECTION OF ANY DAMAGE. THE COMPONENTS SHALL BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
 2. SEDIMENTS SHALL BE REMOVED FROM THE POND, AND FOREBAY, NO LATER THAN THE CAPACITY OF THE POND, OR FOREBAY, IS HALF FULL OF SEDIMENT, OR WHEN DEEMED NECESSARY FOR AESTHETIC REASONS, UPON APPROVAL FROM THE DEPARTMENT OF PUBLIC WORKS.



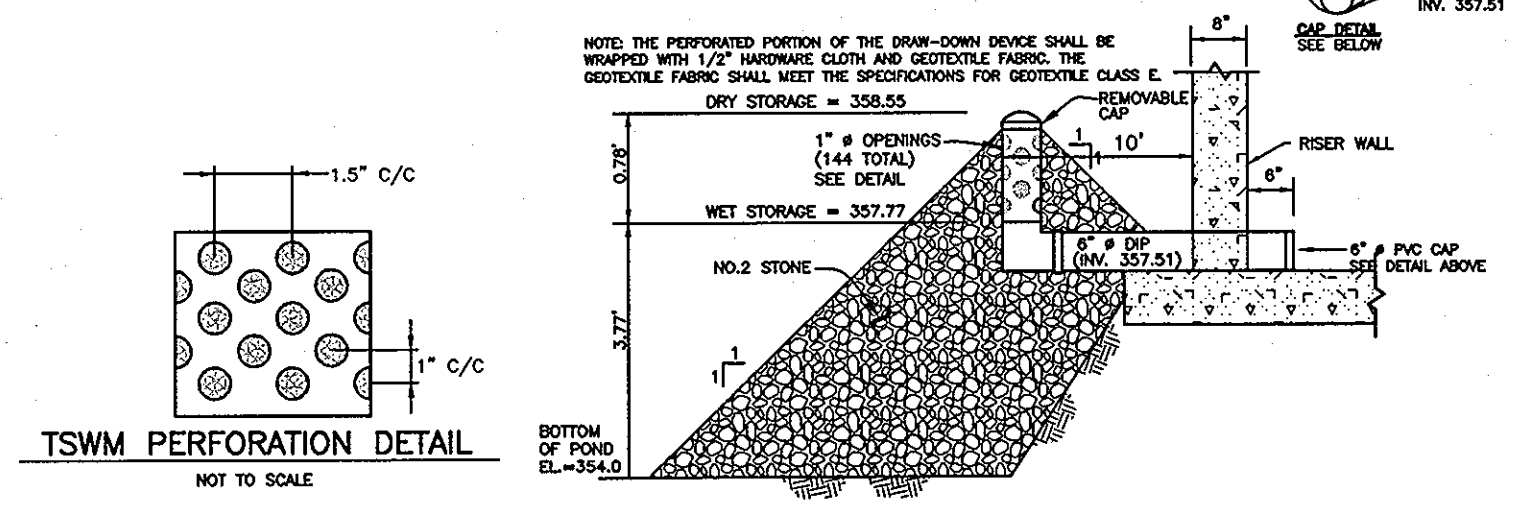
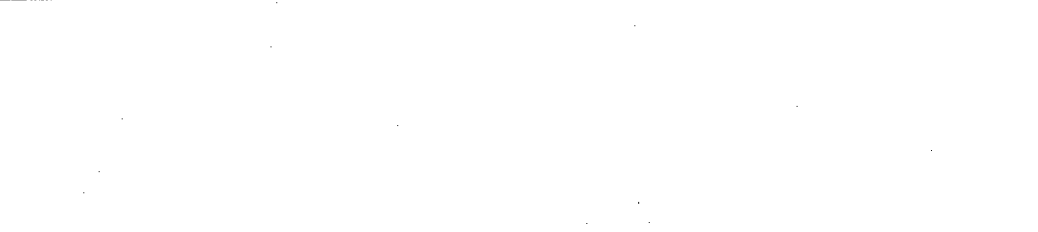
- NOTES:**
1. TRASH RACK SHALL BE GALVANIZED AFTER FABRICATION
 2. TRASH RACK SHALL BE PAINTED BATTLESHIP GRAY.
 3. TRASH RACK TO BE INSTALLED UPON CONVERSION TO SWM POND.



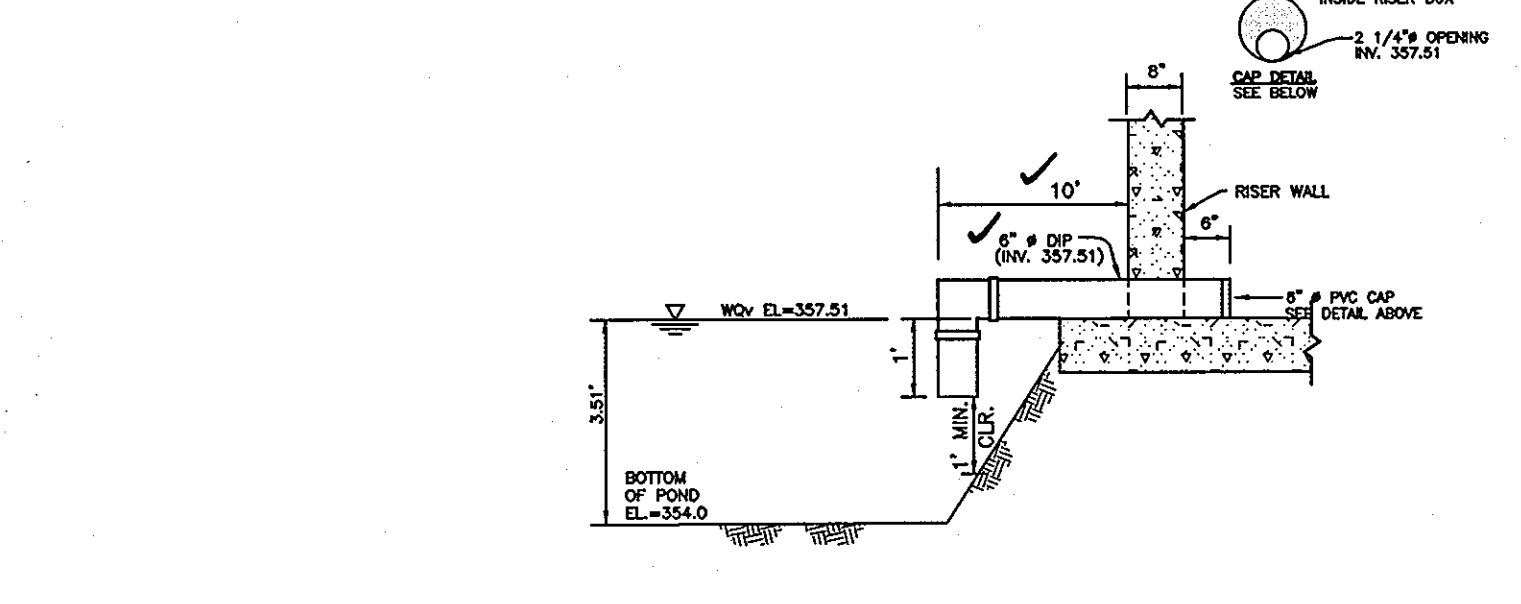
TYPICAL SECTION OF GABION WEIR AT FOREBAY FOR ES-2 N.T.S.



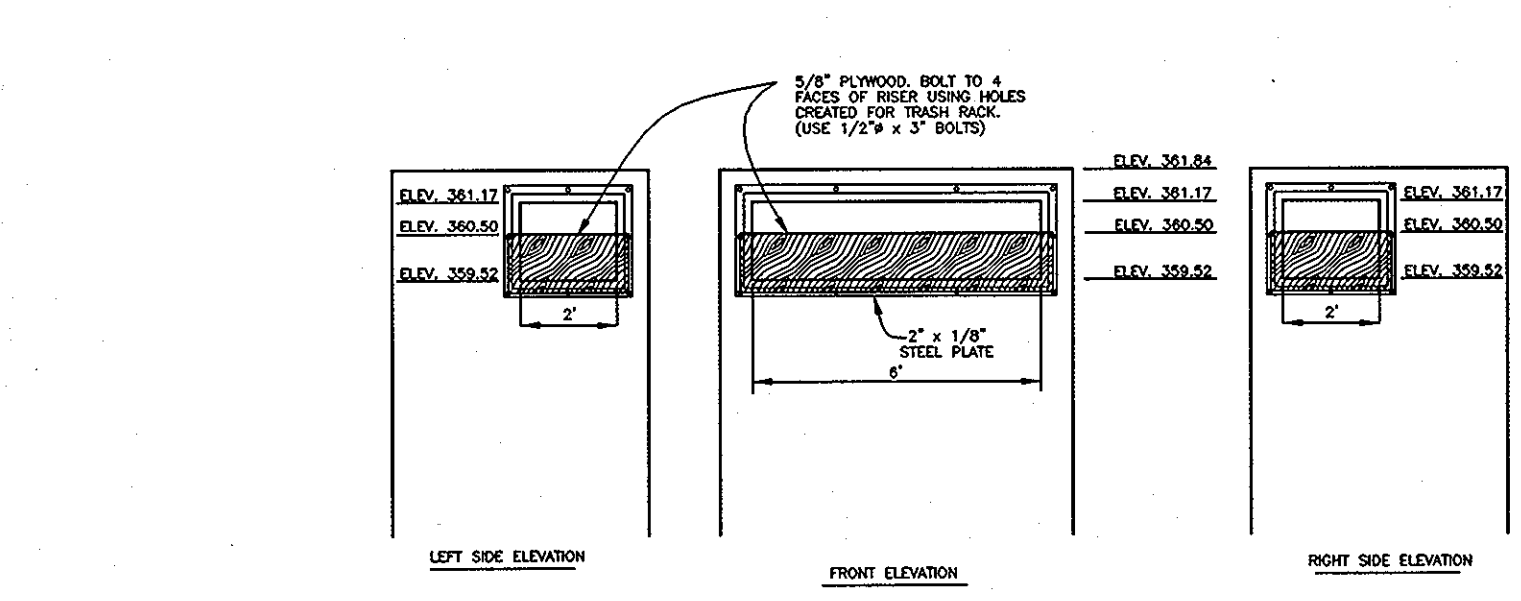
TYPICAL SECTION OF GABION WEIR AT FOREBAY N.T.S.



6" TEMPORARY SWM VERTICAL DRAW-DOWN DEVICE NOT TO SCALE



6" PIPE DETAIL AND LOW FLOW CONTROL ORIFICE 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.

Donald Maon PE NO. 21443 DATE 1-7-09

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 BY 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:

I HAVE CERTIFIED THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESIDENTIAL 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.

Stevan K. Beebe MEMBER 4/2/05 DATE

BY THE ENGINEER:

I HAVE CERTIFIED 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.

Donald Maon ENGINEER - DONALD A. MASON, P.E. # 21443 DATE 6/2/05

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.

Jan Mays USDA - NATURAL RESOURCES CONSERVATION SERVICE DATE 6/2/05

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

Mark S. Lee HOWARD SOIL CONSERVATION DISTRICT DATE 6/16/05

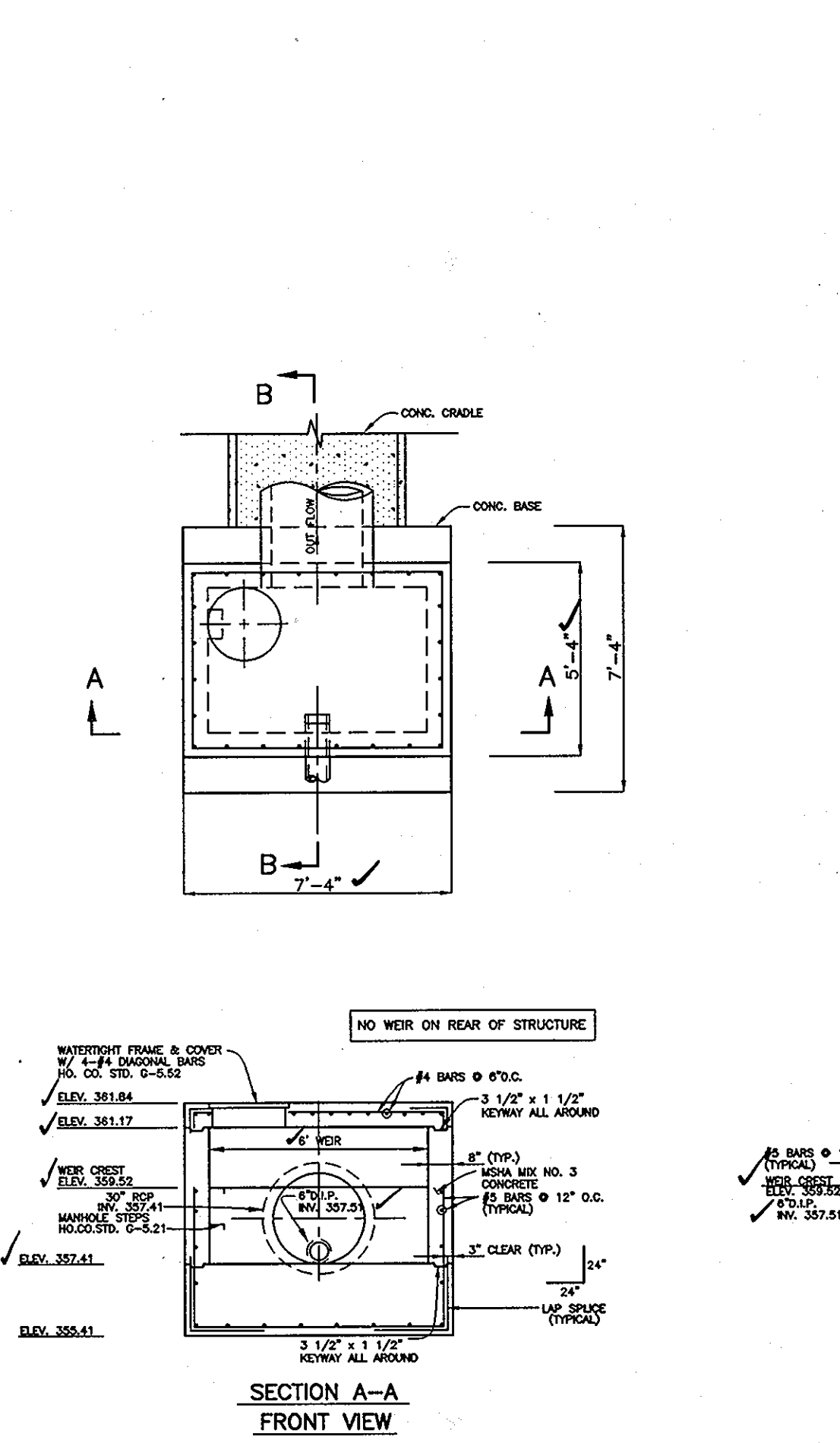
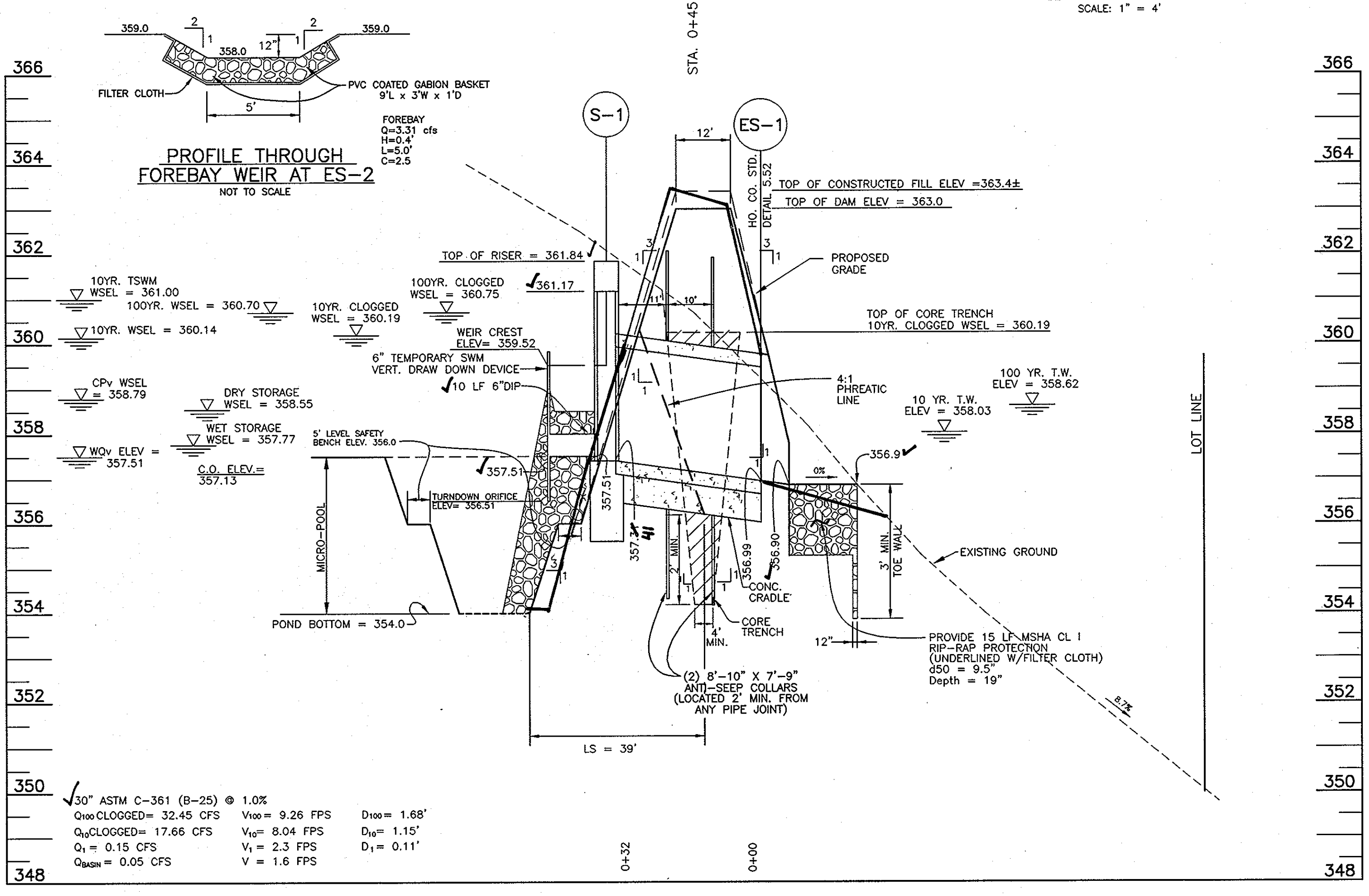
APPROVED: DEPARTMENT OF PUBLIC WORKS

William J. ... CHIEF, BUREAU OF HIGHWAYS DATE 7-18-05

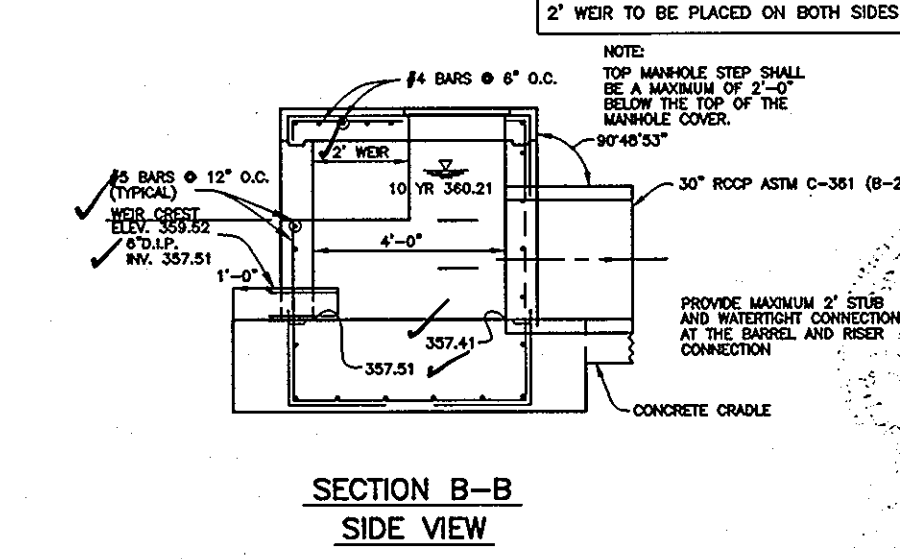
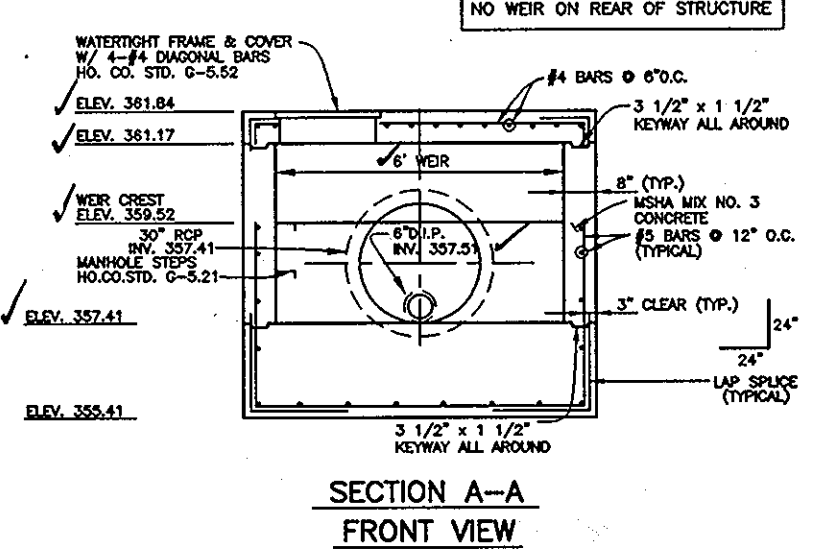
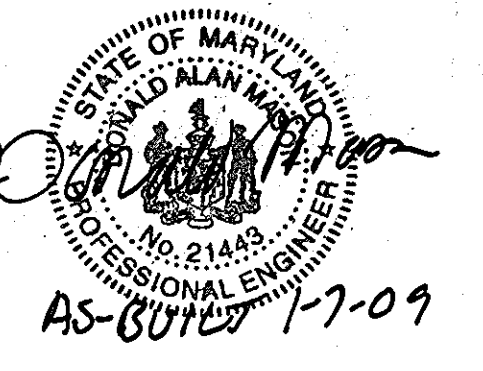
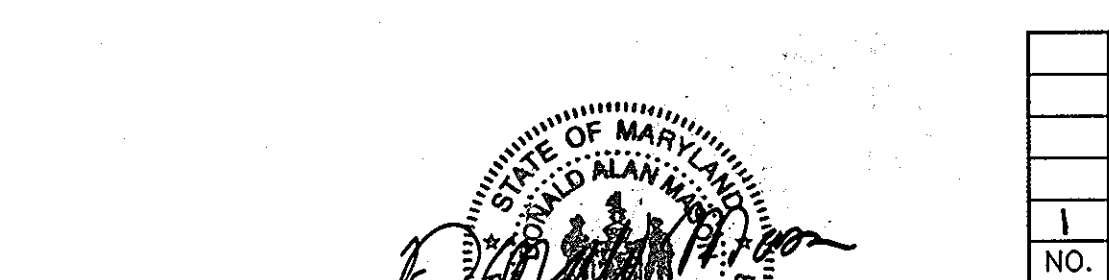
APPROVED: DEPARTMENT OF PLANNING AND ZONING

Carole Hamilton CHIEF, DIVISION OF LAND DEVELOPMENT DATE 7/25/05

Donald Maon CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 7/19/05



BLOCKING DETAIL FOR POND #1 TEMPORARY SWM DURING CONSTRUCTION SCALE: 1"=4"

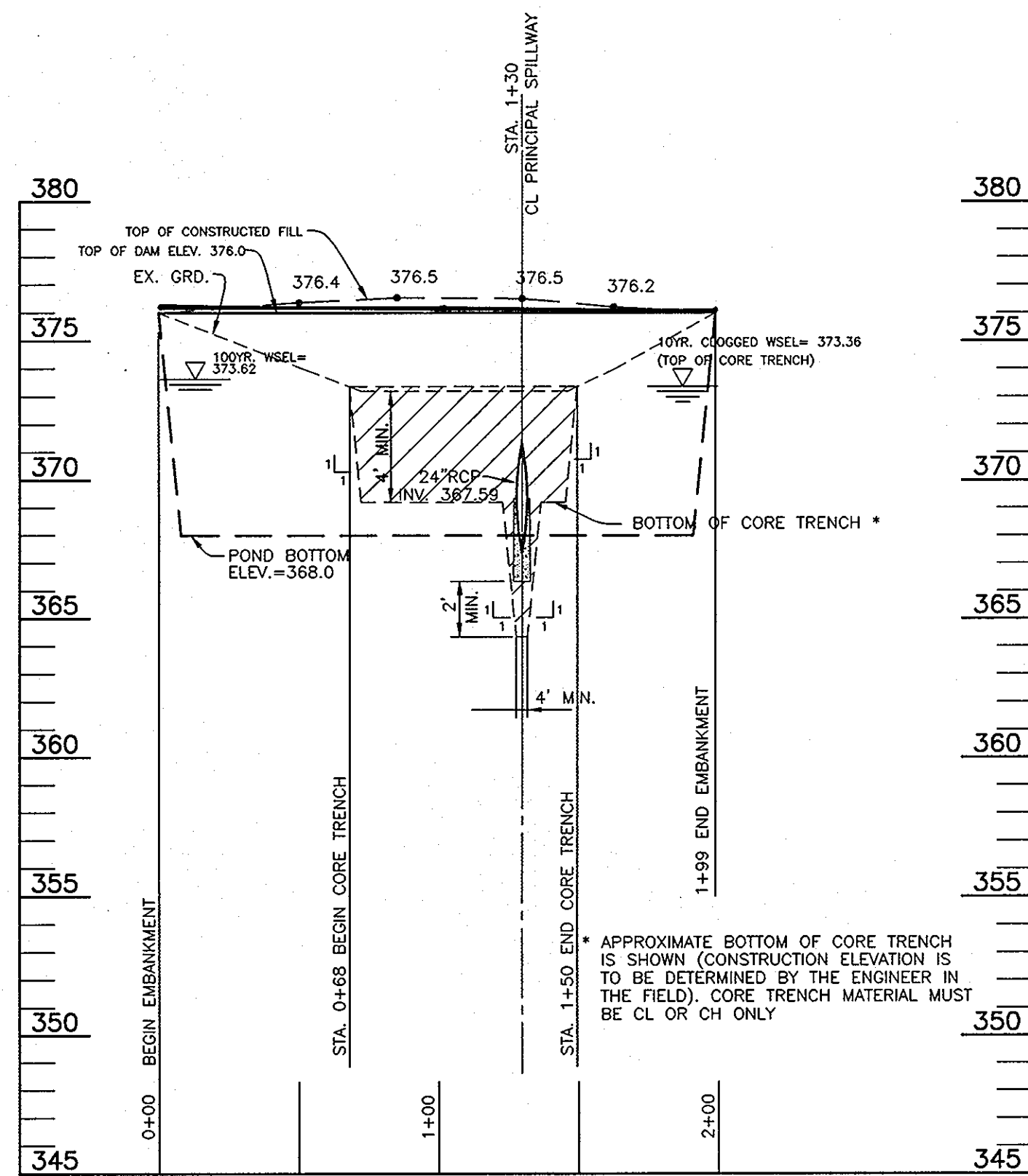


CONTROL STRUCTURE - POND #1 SCALE: 1"=4"

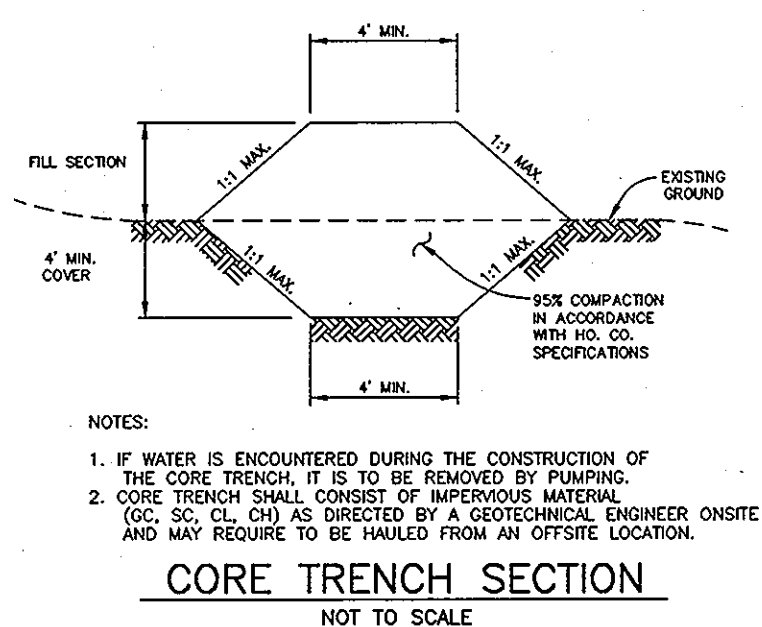
NO.	DATE	REVISION
1	5-4-06	RENUMBER PLANS IN SET

BENCHMARK ENGINEERING, INC.
 ENGINEERS • LAND SURVEYORS • PLANNERS
 8480 BALTIMORE NATIONAL PIKE & SUITE 418
 ELLICOTT CITY, MARYLAND 21043
 phone: 410-465-6105 & fax: 410-465-6644
 www.bei-cvllengineering.com

DEVELOPER: ELIJAH, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	PROJECT: RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCELS 'Q', AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'
OWNER: HOMEWOOD, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,8&10 PARCELS: 86 PARCELS: 20 & 86
OWNER: JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL, ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32ND FLOOR NEW YORK, NEW YORK 10022	TITLE: STORMWATER MANAGEMENT DETAILS POND #1
DATE: JUNE, 2005	PROJECT NO. 1132
DES: JMC/DBT DRAFT: JMC/RPS CHECK: DAM	SCALE: AS SHOWN SHEET 34 OF 55

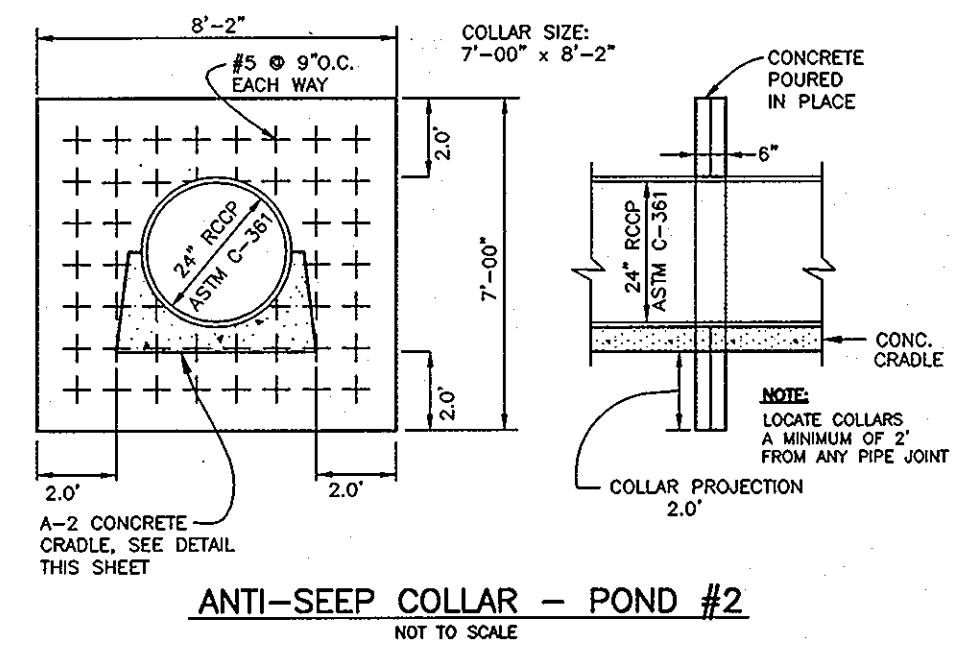


PROFILE ALONG CL OF EMBANKMENT
POND #2
SCALE: 1"=50' HORIZ., 1"=5' VERT.

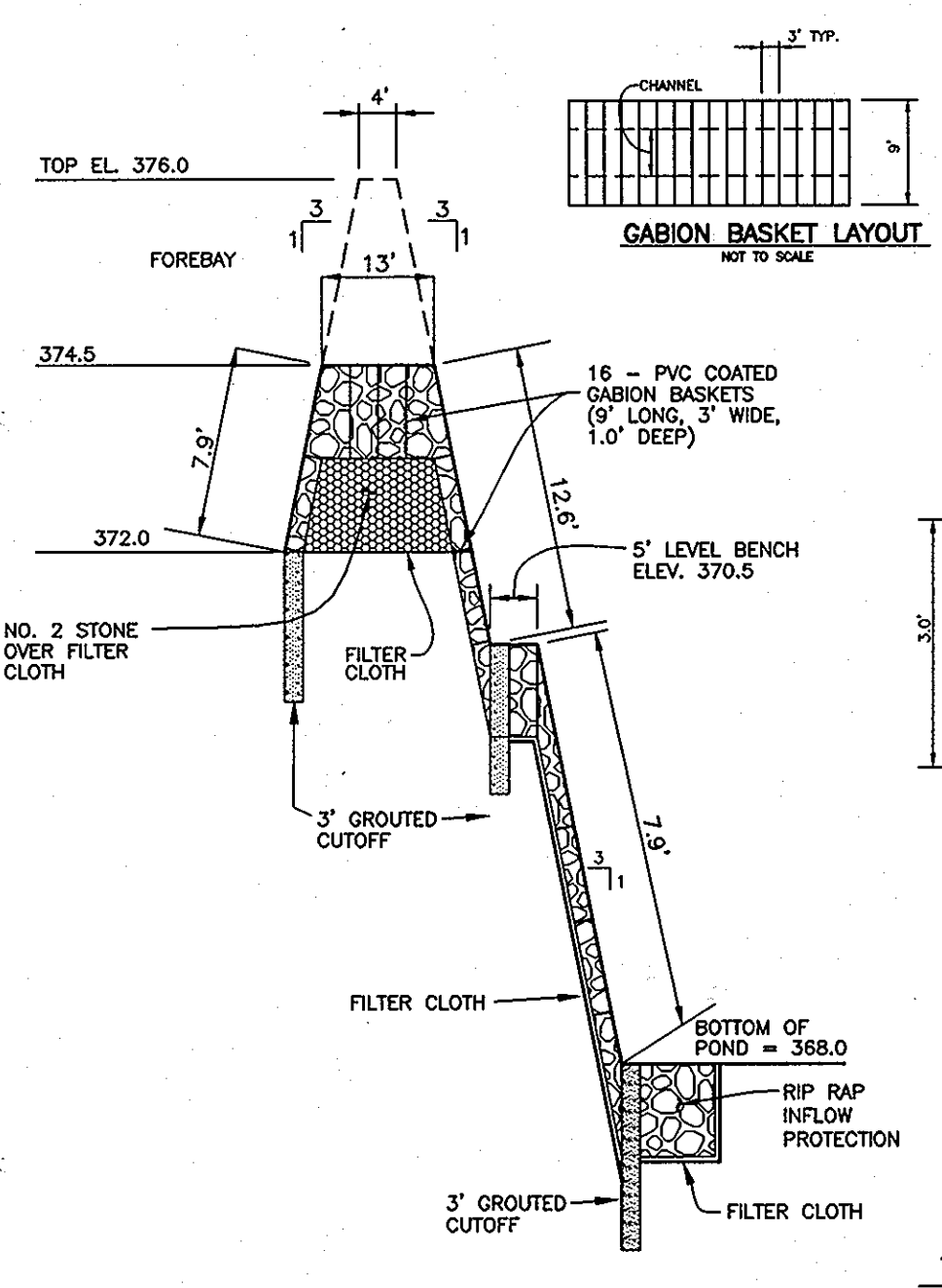


CORE TRENCH SECTION
NOT TO SCALE

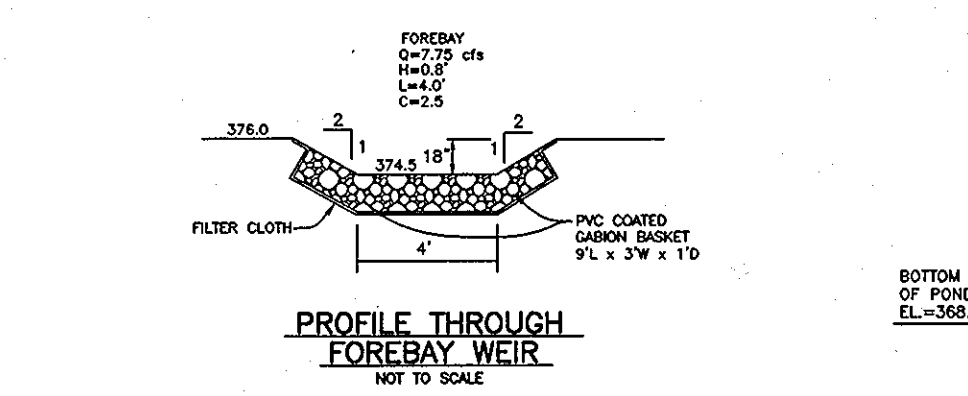
NOTES:
1. IF WATER IS ENCOUNTERED DURING THE CONSTRUCTION OF THE CORE TRENCH, IT IS TO BE REMOVED BY PUMPING.
2. CORE TRENCH SHALL CONSIST OF IMPERVIOUS MATERIAL (TO SC. CL. CH) AS DIRECTED BY A GEOTECHNICAL ENGINEER ON-SITE AND MAY REQUIRE TO BE HAULED FROM AN OFFSITE LOCATION.



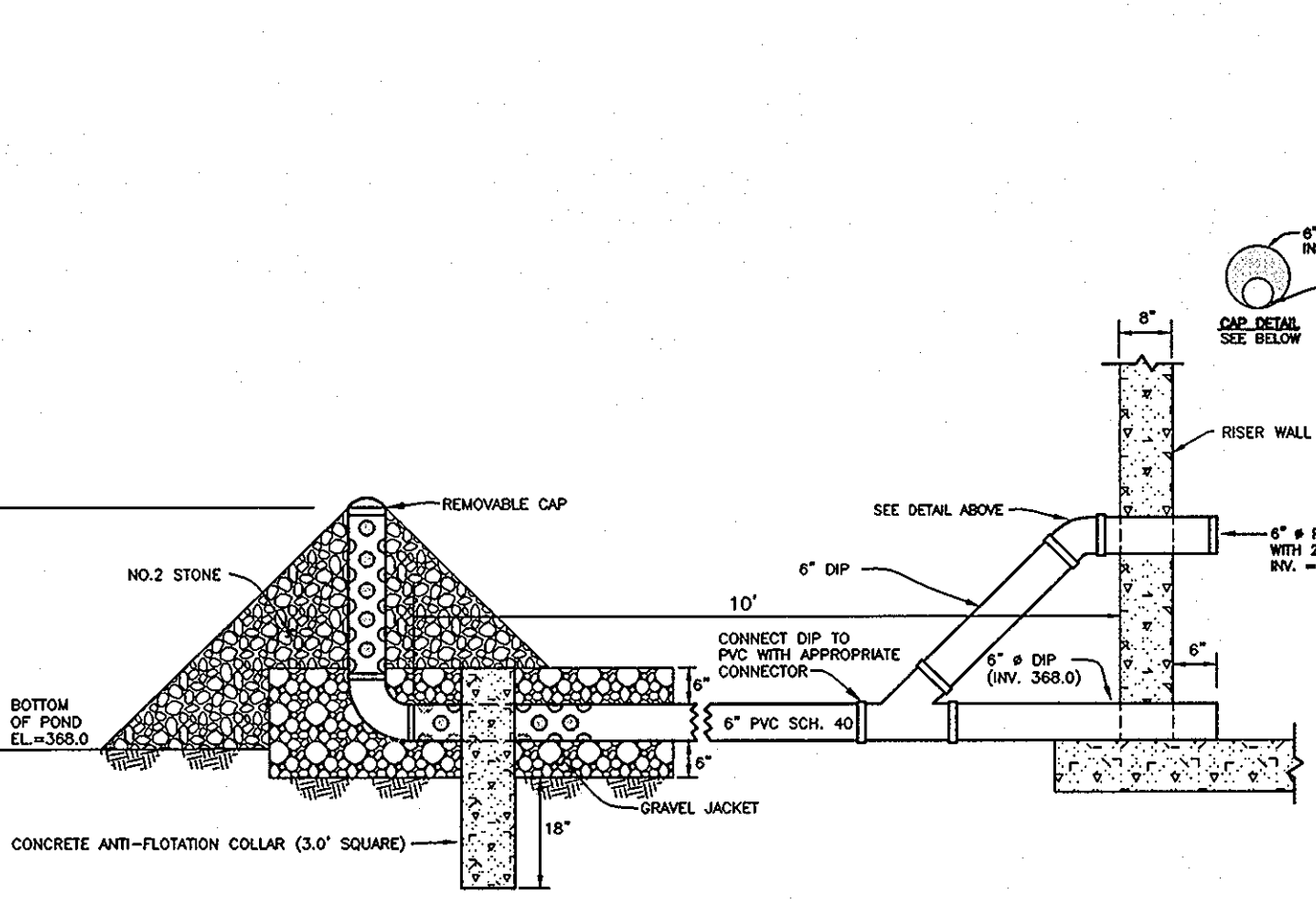
ANTI-SEEP COLLAR - POND #2
NOT TO SCALE



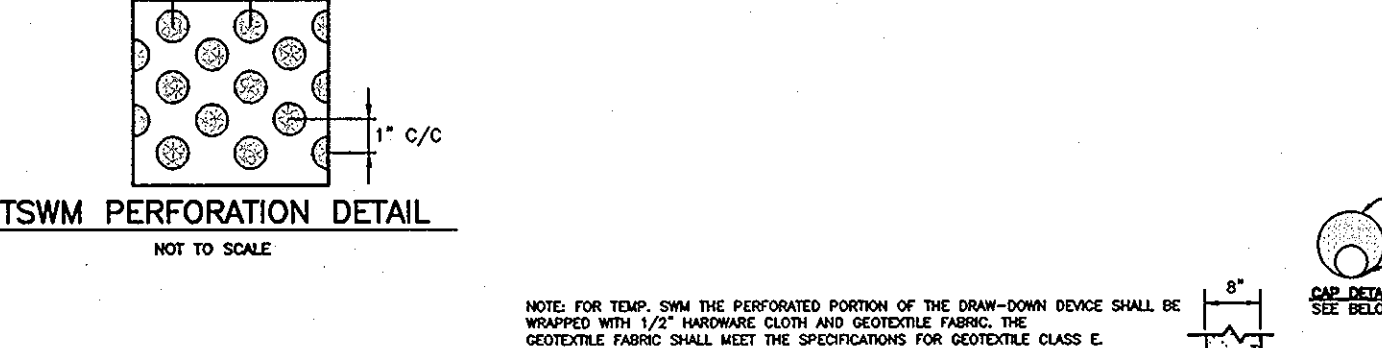
TYPICAL SECTION OF
GABION WEIR AT FOREBAY
NOT TO SCALE



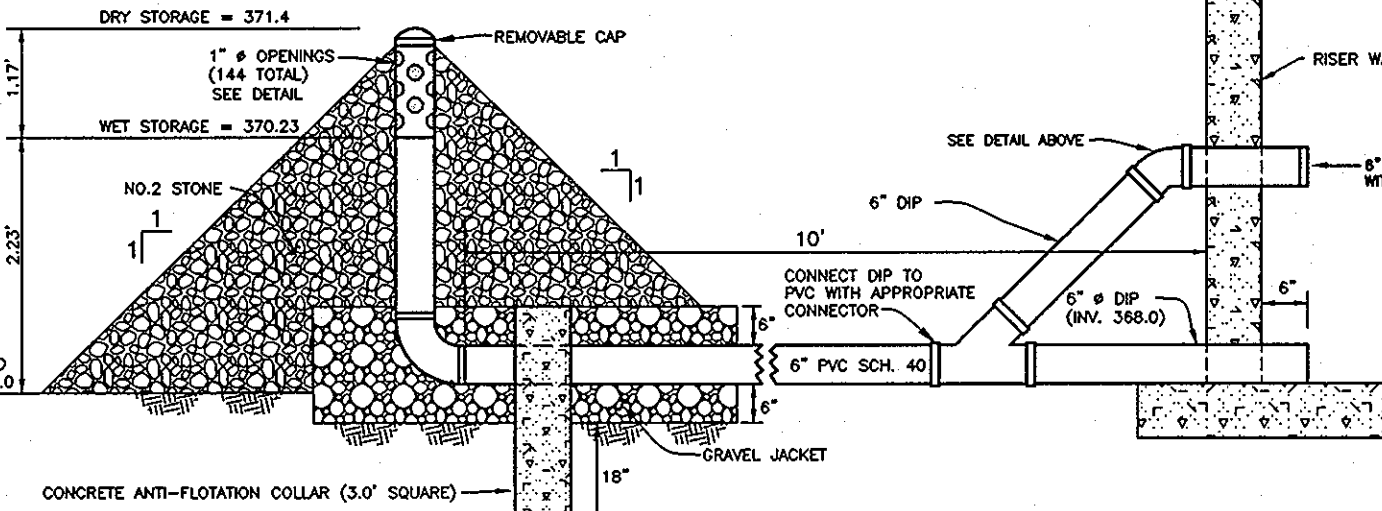
PROFILE THROUGH
FOREBAY WEIR
NOT TO SCALE



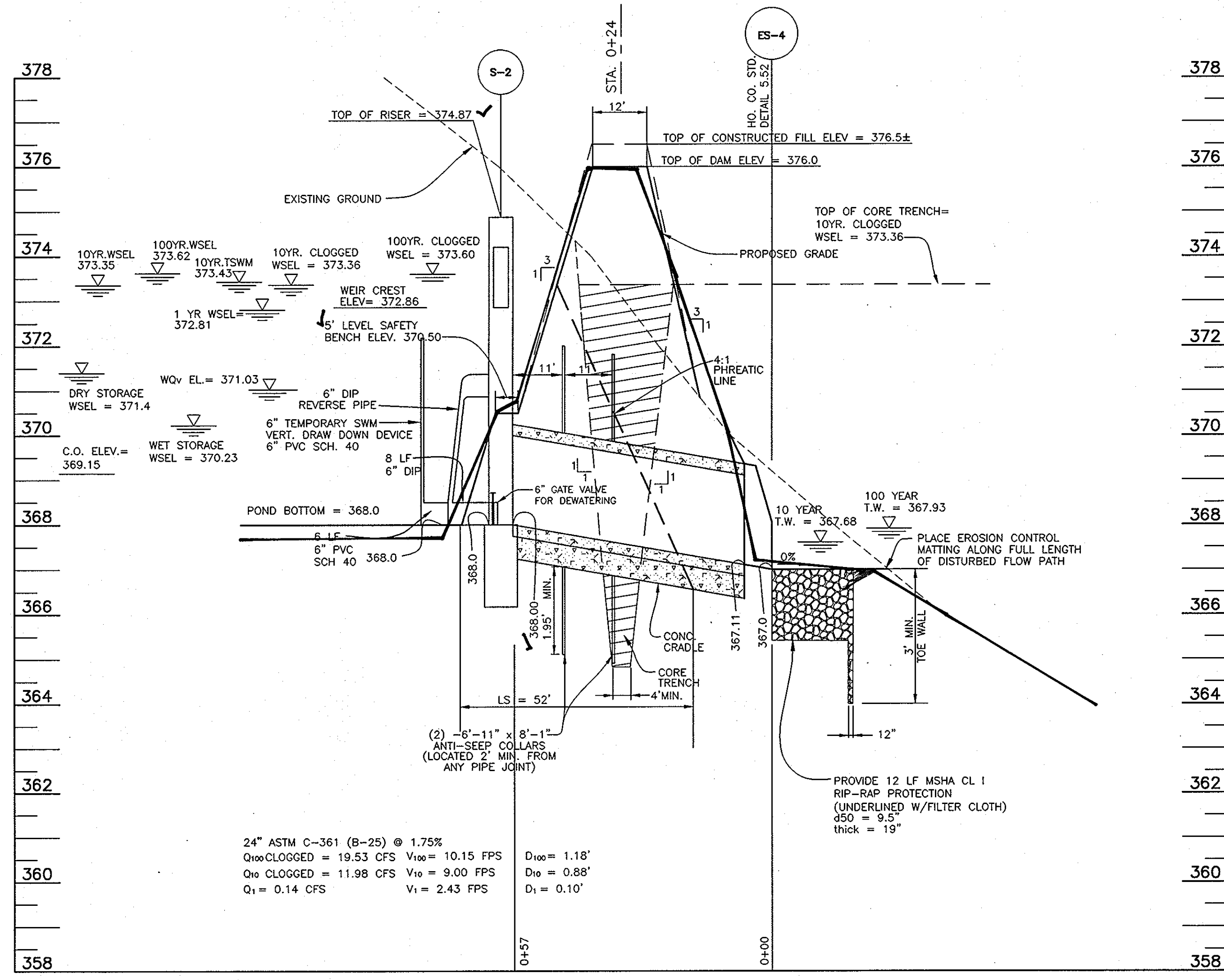
6" PIPE DETAIL AND
LOW FLOW CONTROL ORIFICE
NOT TO SCALE



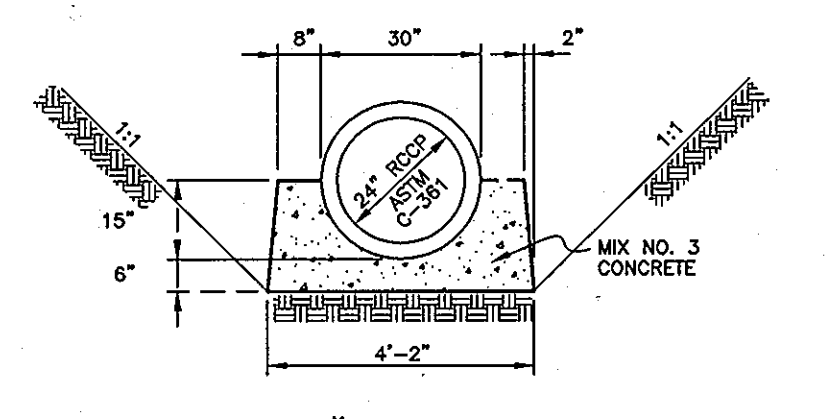
TSSM PERFORATION DETAIL
NOT TO SCALE



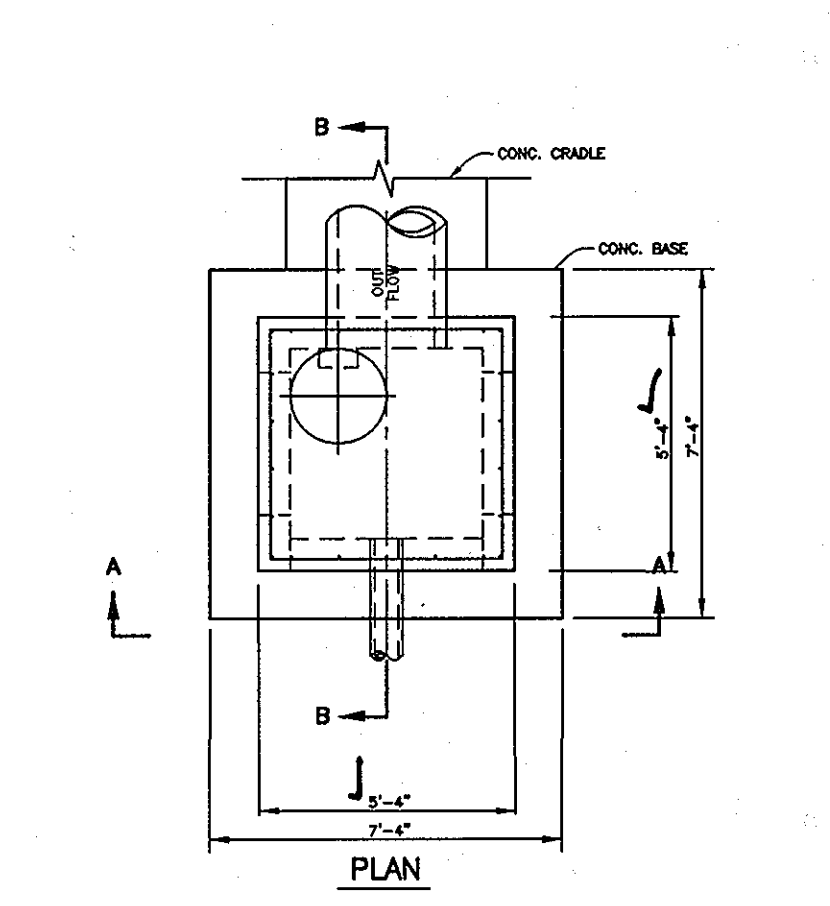
POND #2 6" TEMPORARY SWM
VERTICAL DRAW-DOWN DEVICE
NOT TO SCALE



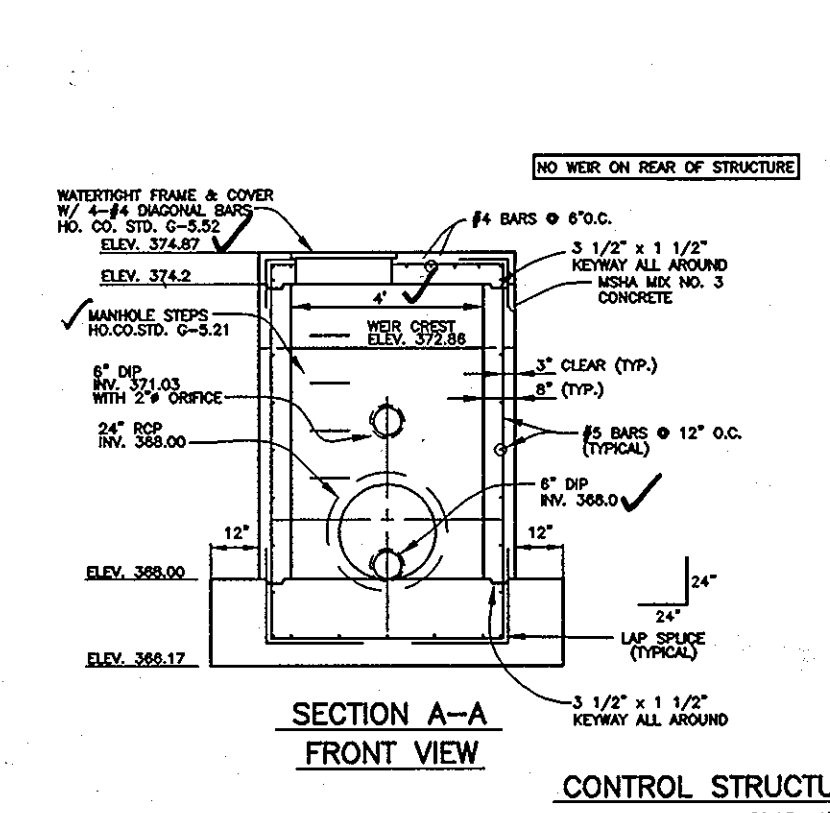
SECTION THRU PRINCIPAL SPILLWAY
POND #2
SCALE: 1"=20' HORIZ., 1"=2' VERT.



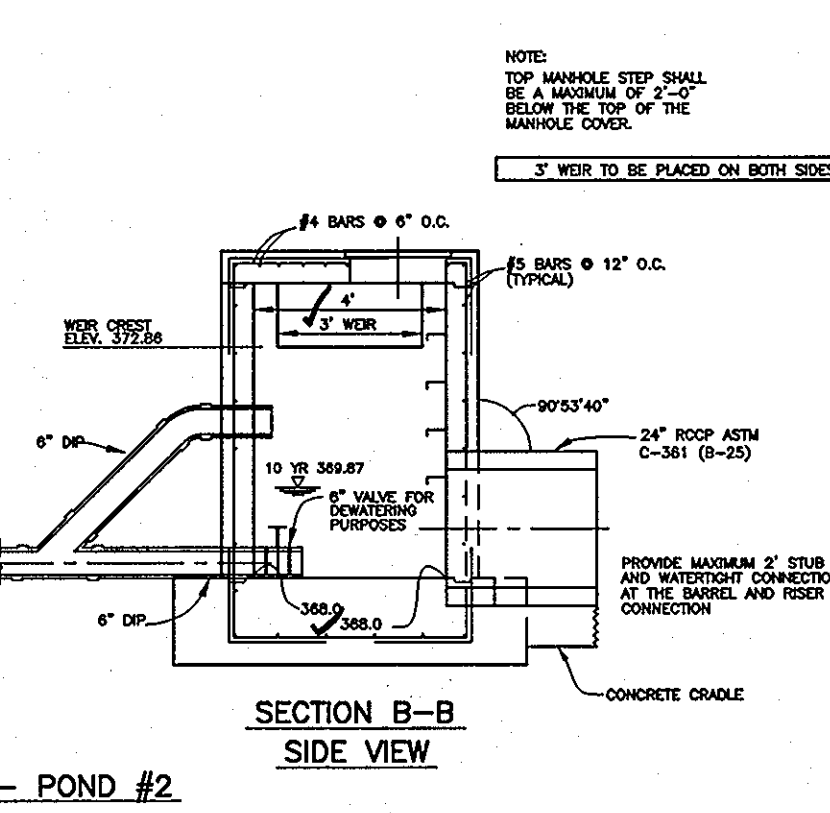
POND #2 TYPE A-2
CONCRETE CRADLE
NOT TO SCALE



TRASH RACK DETAIL - POND #2
SCALE: 1"=4'



SECTION A-A
FRONT VIEW



SECTION B-B
SIDE VIEW

CONTROL STRUCTURE - POND #2
SCALE: 1"=4'

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED EXTENDED DETENTION POND

- ROUTINE MAINTENANCE:**
- FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHALL 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 PER YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHALL BE MOWED AS NEEDED.
 - DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
 - VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS THE RIP-RAP OR GABION 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 SHALL BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
 - SEDIMENTS SHALL BE REMOVED FROM THE POND AND FOREBAY, NO LATER THAN THE CAPACITY OF THE POND, OR FOREBAY, IS HALF FULL OF SEDIMENT, OR WHEN DEEMED NECESSARY FOR AESTHETIC REASONS, UPON APPROVAL FROM THE DEPARTMENT OF PUBLIC WORKS.

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.

Donald M. Mason
DONALD A. MASON
PE NO. 21443
DATE 1-7-09

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 BY 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:
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.

Steve K. Beeson
STEVE K. BEESON
DATE 4/2/05

BY THE ENGINEER:
I/WE 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 NOTICED 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.

Donald M. Mason
DONALD A. MASON, P.E. # 21443
DATE 4/2/05

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.

Jim Meyer
JIM MEYER
DATE 4/2/05

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

Shelly A. Lee
SHELLY A. LEE
DATE 4/2/05

APPROVED: DEPARTMENT OF PUBLIC WORKS

William Z. Wolfe
WILLIAM Z. WOLFE
DATE 7-18-05

APPROVED: DEPARTMENT OF PLANNING AND ZONING

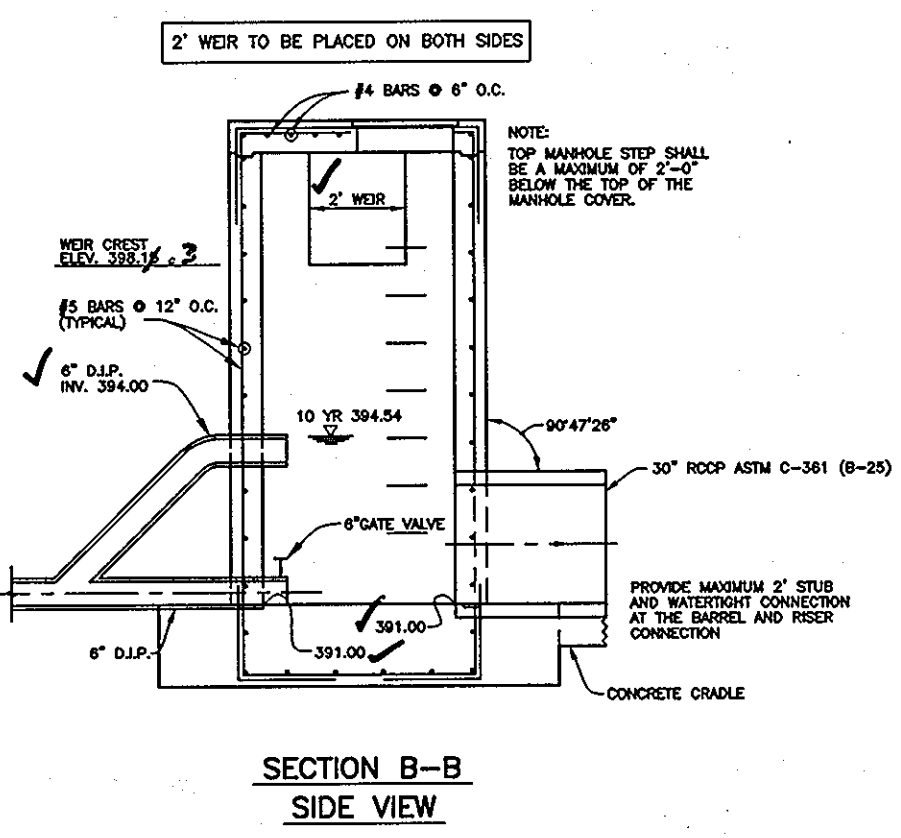
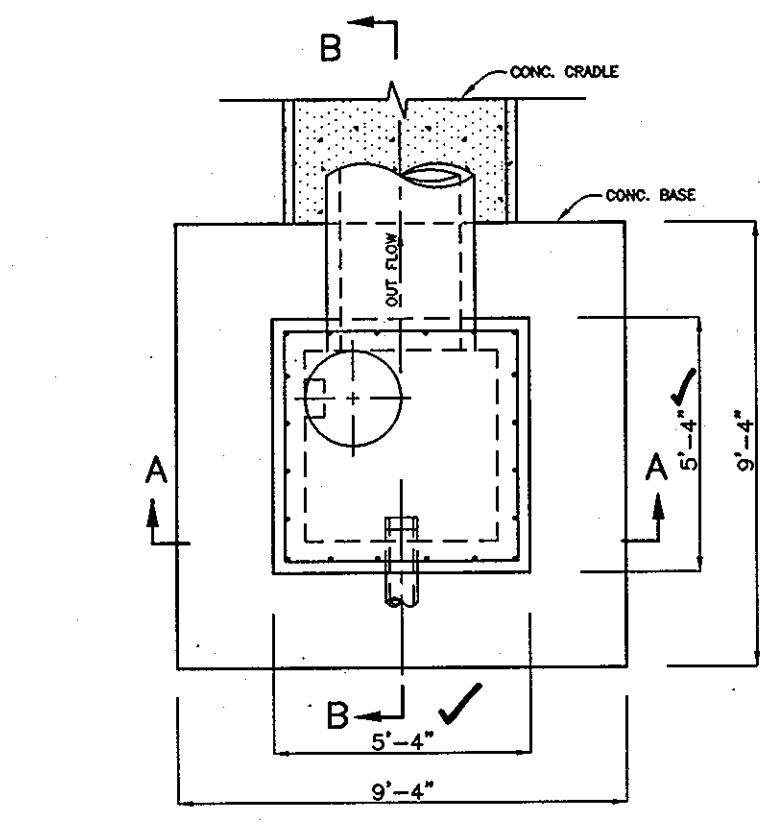
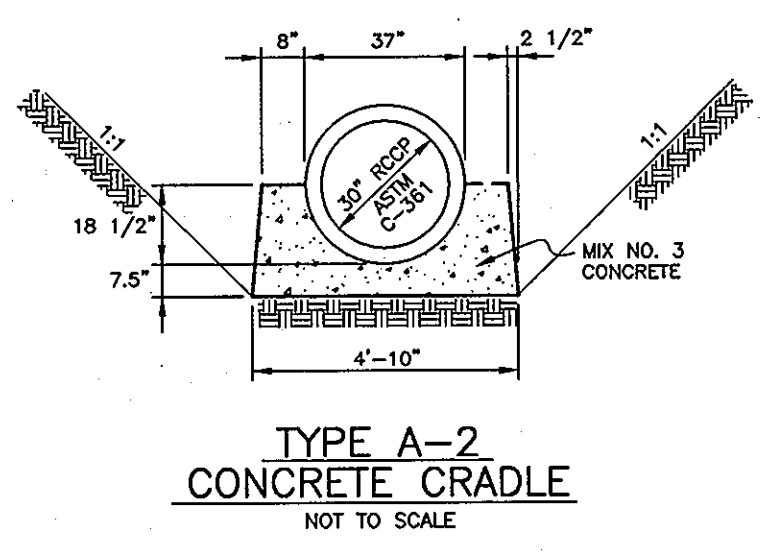
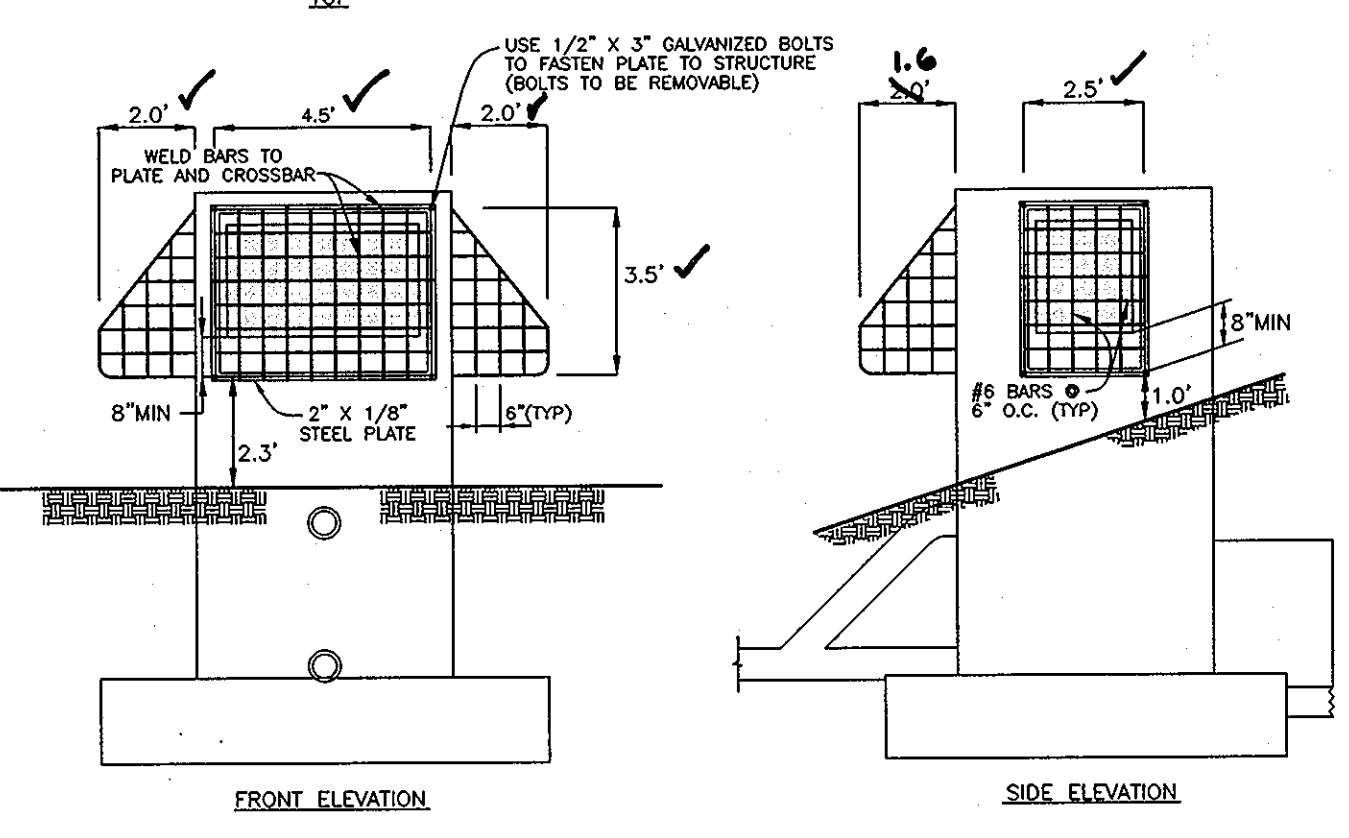
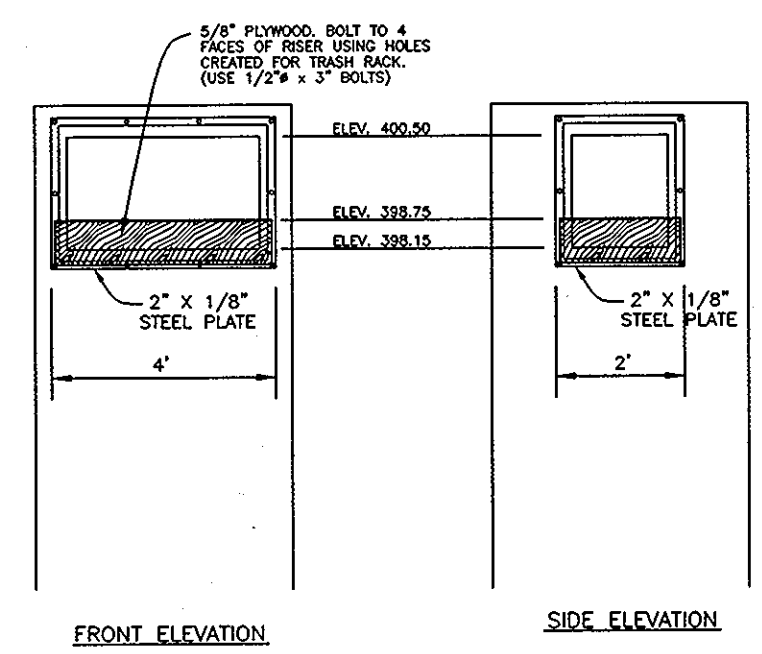
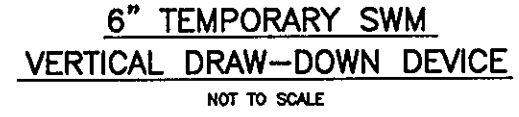
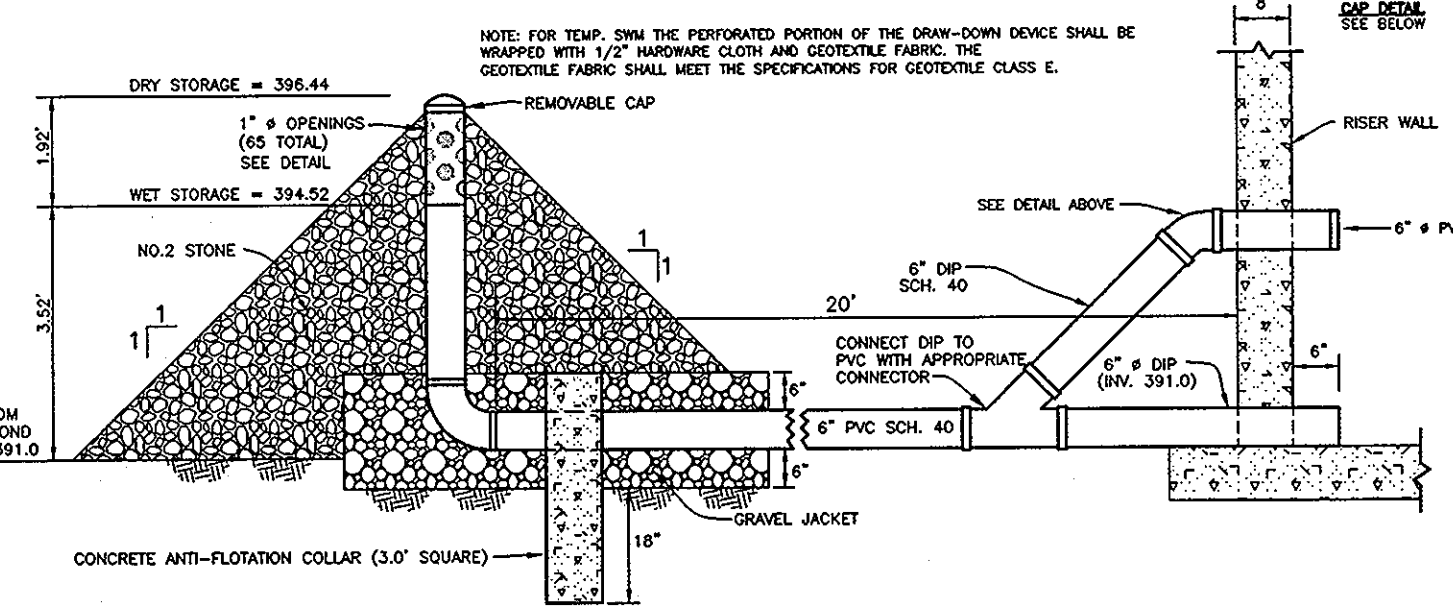
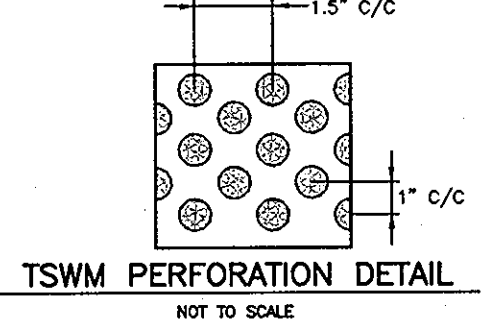
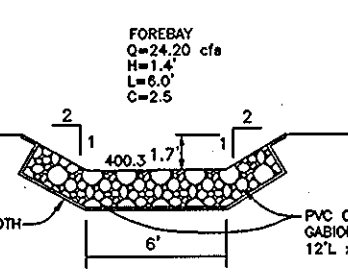
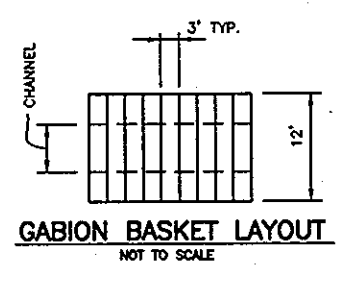
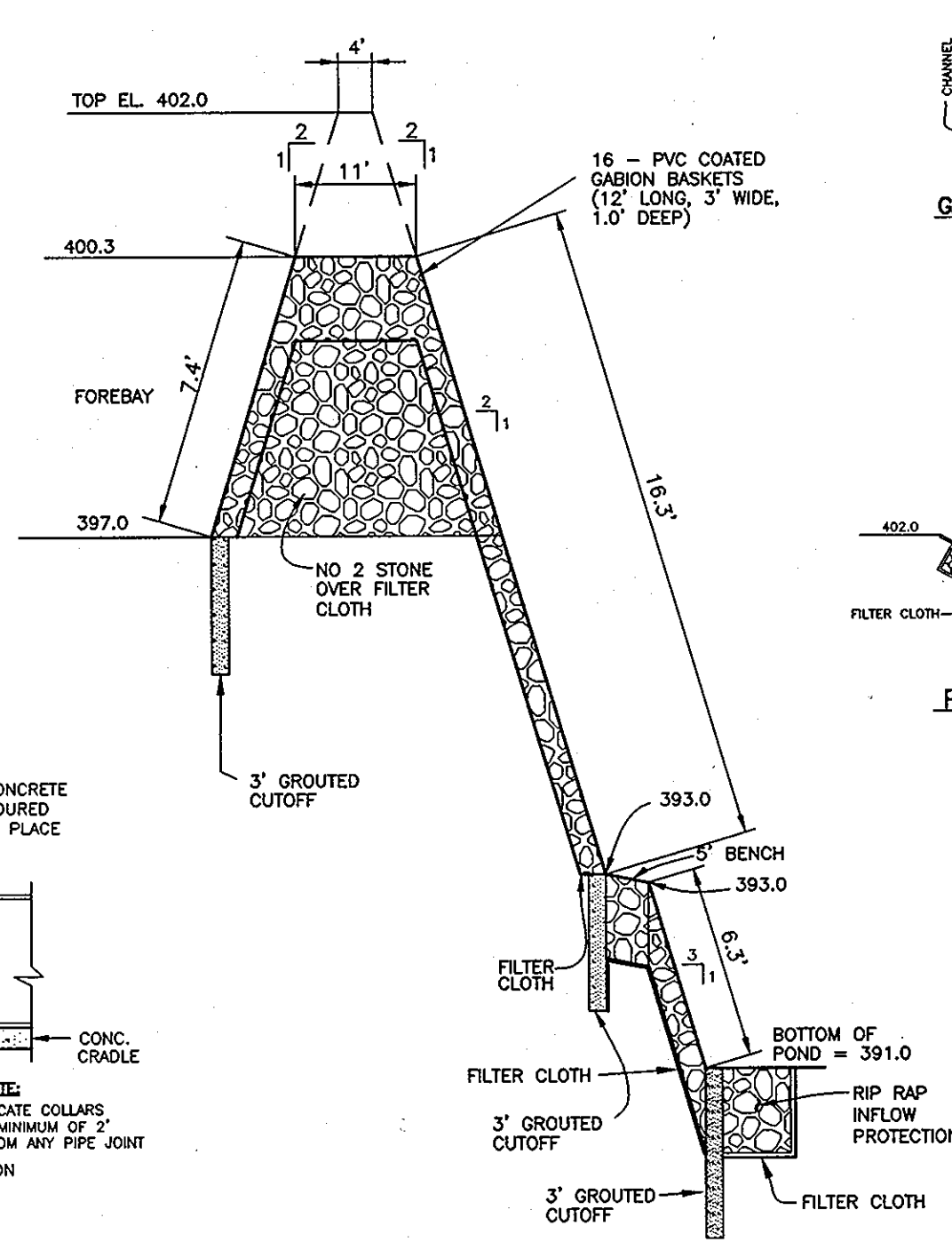
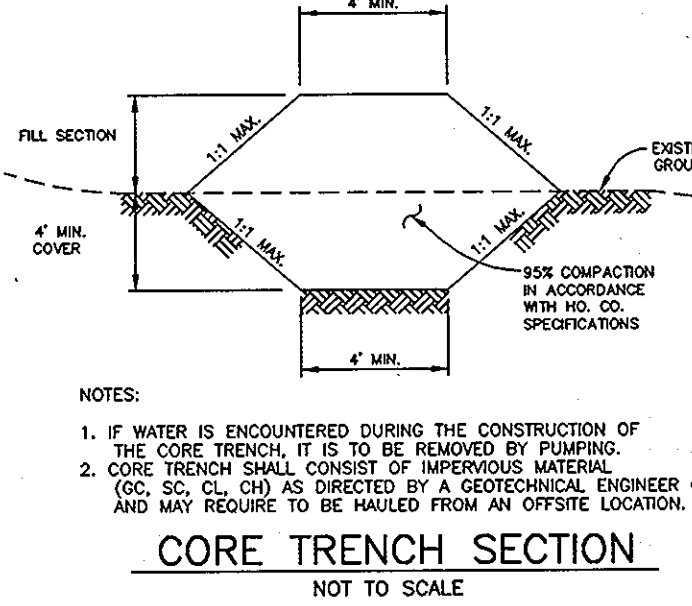
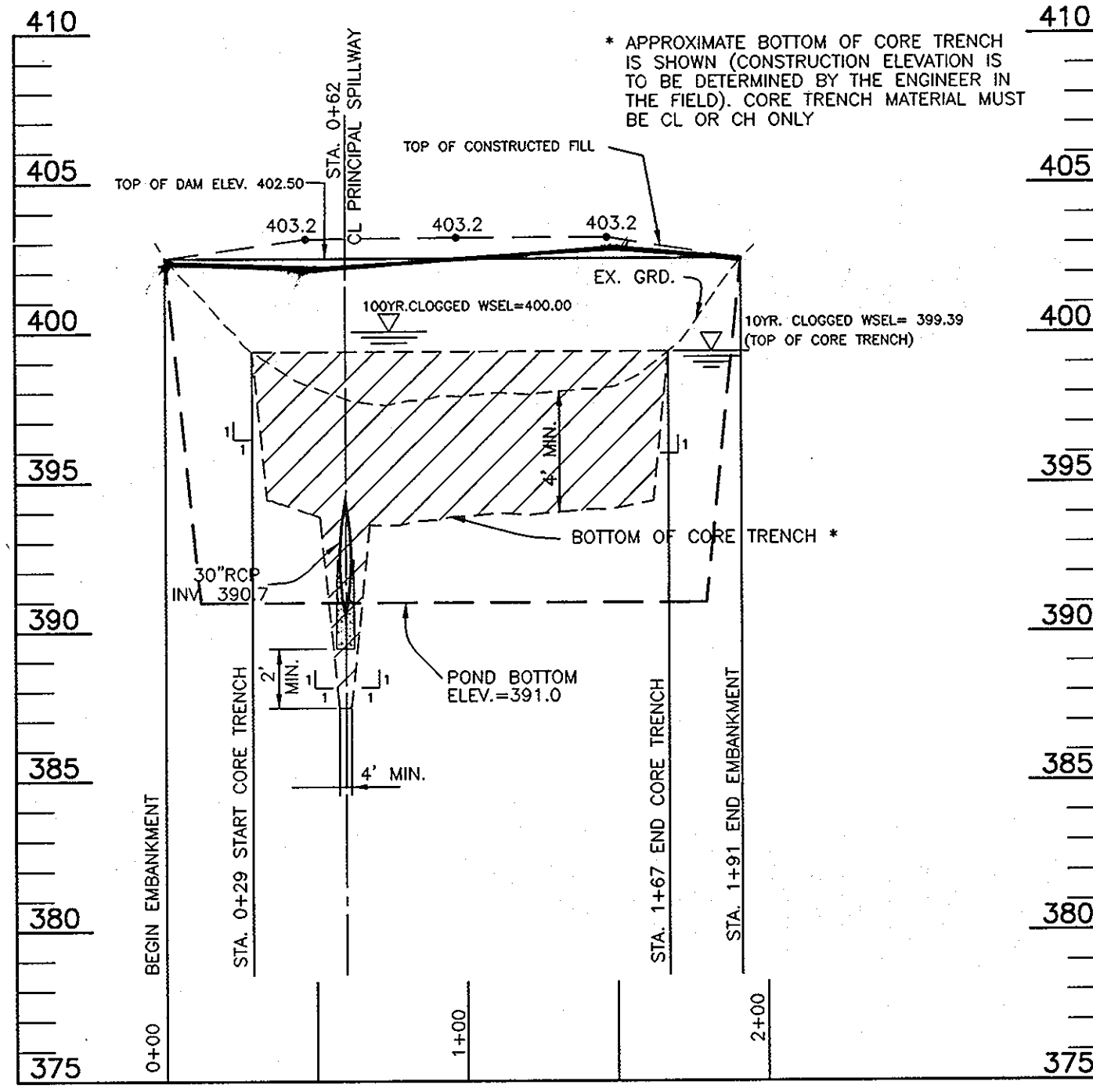
Leslie Hamilton
LESLIE HAMILTON
DATE 7/25/05

Chris Dammann
CHRIS DAMMANN
DATE 7/19/05

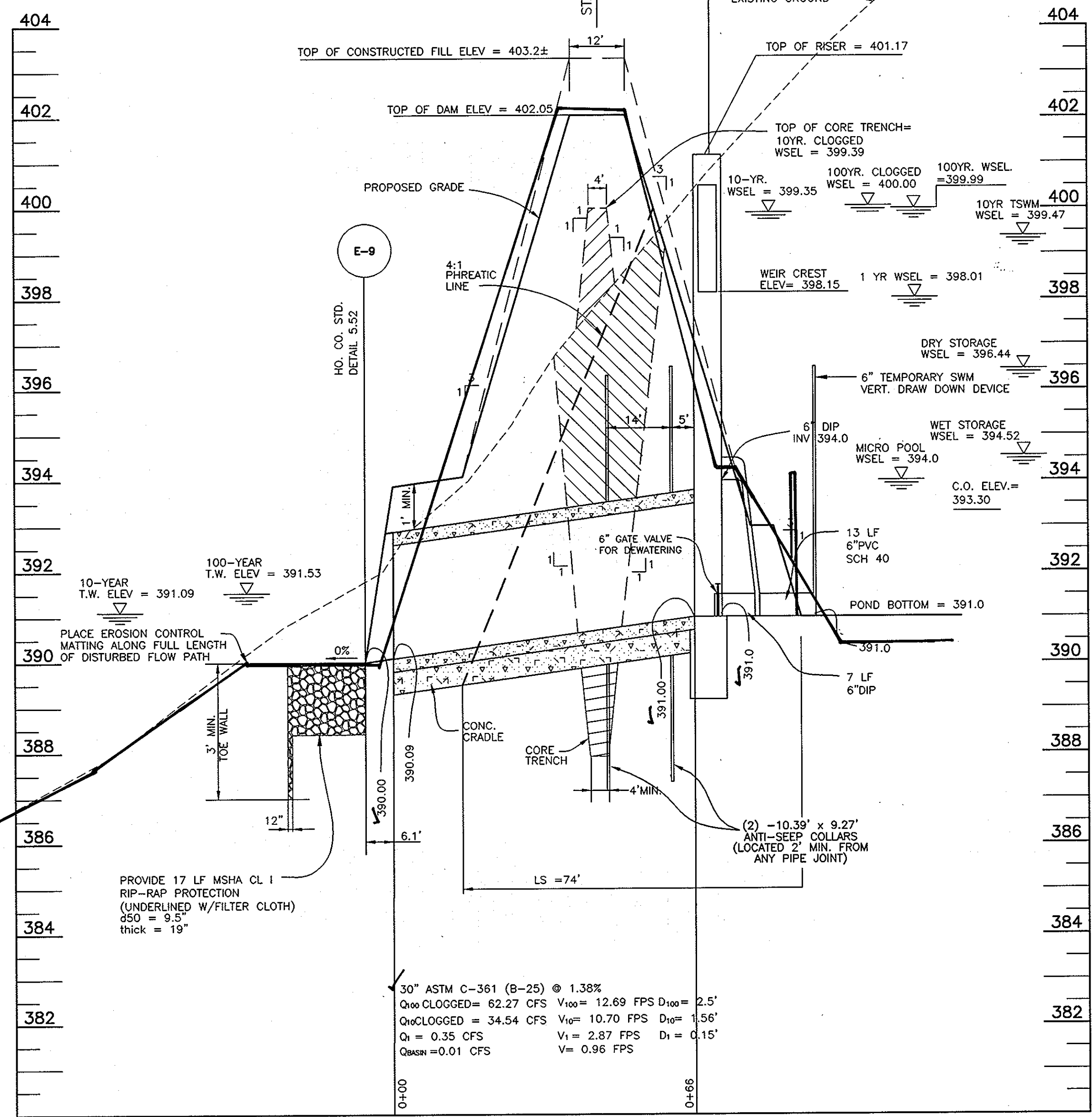
NO.	DATE	REVISION
1	6-4-06	RENUMBER PLANS IN SET

BENCHMARK
ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE & SUITE 418
ELICOTT CITY, MARYLAND 21043
PHONE: 410-465-8105 & FAX: 410-465-8644
WWW.BEI-CIVILENGINEERING.COM

DEVELOPER:	ELIOTT, L.L.C. P.O. BOX 417 ELICOTT CITY, MARYLAND 21041 410-465-4244	PROJECT:	RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCELS 'Q'; AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'
OWNER:	HOMWOOD, L.L.C. P.O. BOX 417 ELICOTT CITY, MARYLAND 21041 410-465-4244	LOCATION:	TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,9&10 PARCELS: 88
OWNER:	JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32nd FLOOR NEW YORK, NEW YORK 10022	TITLE:	STORMWATER MANAGEMENT DETAILS POND #2
DES: JMC/DBT	DRAFT: JMC/RPS	CHECK: DAM	DATE: JUNE, 2005 PROJECT NO. 1132 SCALE: AS SHOWN SHEET 35 OF 55



CONTROL STRUCTURE - POND #4
SCALE: 1" = 4"



SECTION THRU PRINCIPAL SPILLWAY
SCALE: 1"=20' HORIZ., 1"=2' VERT.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED EXTENDED DETENTION POND

ROUTINE MAINTENANCE:

- FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHALL 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 PER YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHALL BE MOWED AS NEEDED.
- DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
- VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS THE RIP-RAP OR GABION 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 SHALL BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
- SEDIMENTS SHALL BE REMOVED FROM THE POND, AND FOREBAY, NO LATER THAN WHEN THE CAPACITY OF THE POND, OR FOREBAY, IS HALF FULL OF SEDIMENT, OR, WHEN DETERMINED NECESSARY FOR AESTHETIC REASONS, UPON APPROVAL FROM THE DEPARTMENT OF PUBLIC WORKS.

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.

Donald Mason PE NO. 21443 DATE 1-7-09

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 BY 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:

Stewart Breiden MEMBR 4/1/05 DATE

BY THE ENGINEER:

Donald Mason 4/1/05 DATE

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.

Jim Myer 4/1/05 DATE

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

Keith Selby 4/1/05 DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

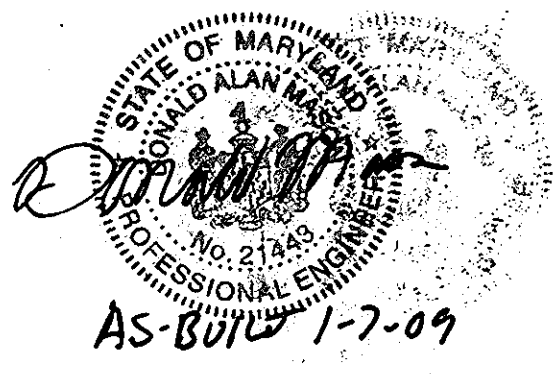
Walter Z. White 7-18-05 DATE

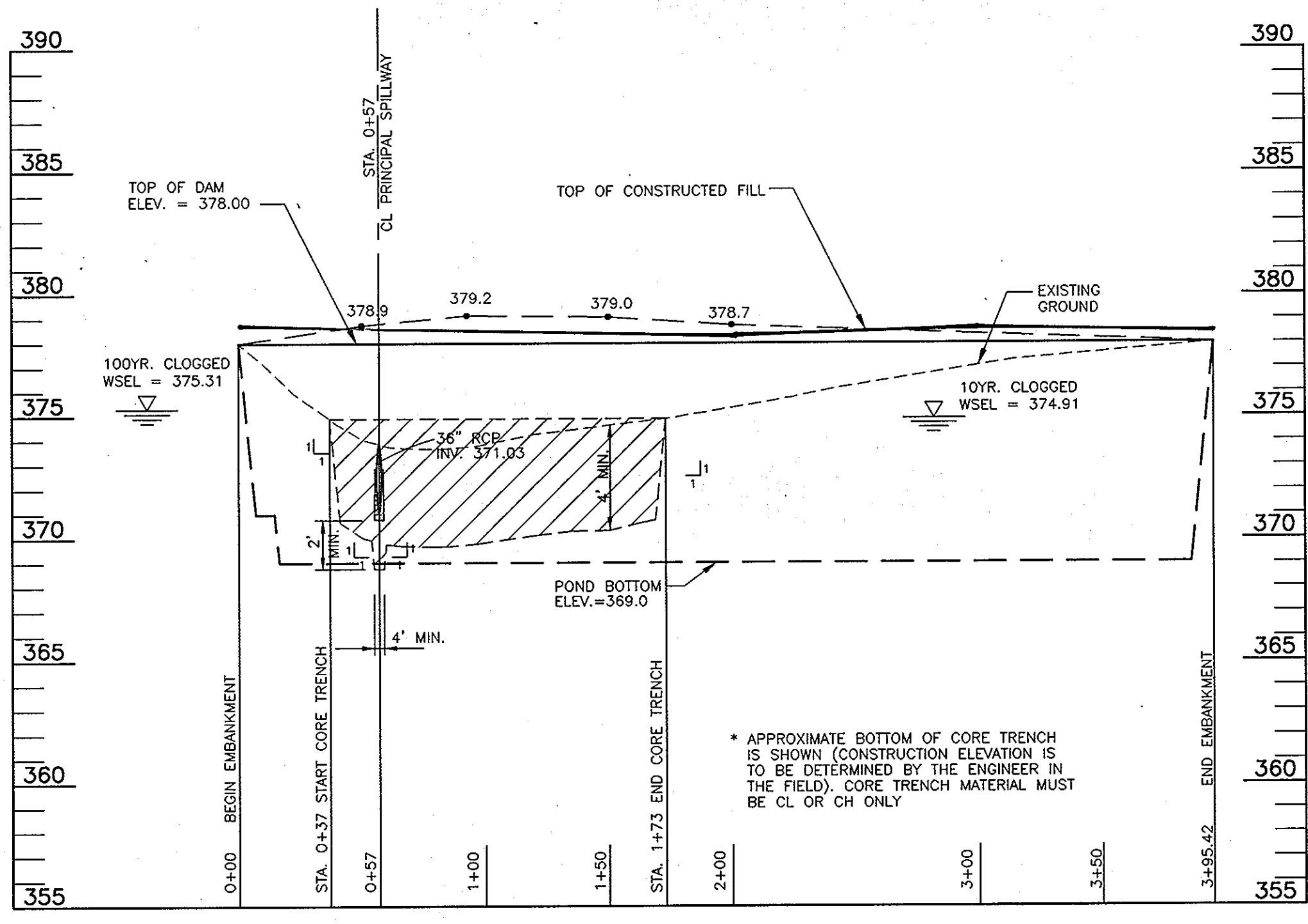
APPROVED: DEPARTMENT OF PLANNING AND ZONING

Christy Hamilton 7/25/05 DATE

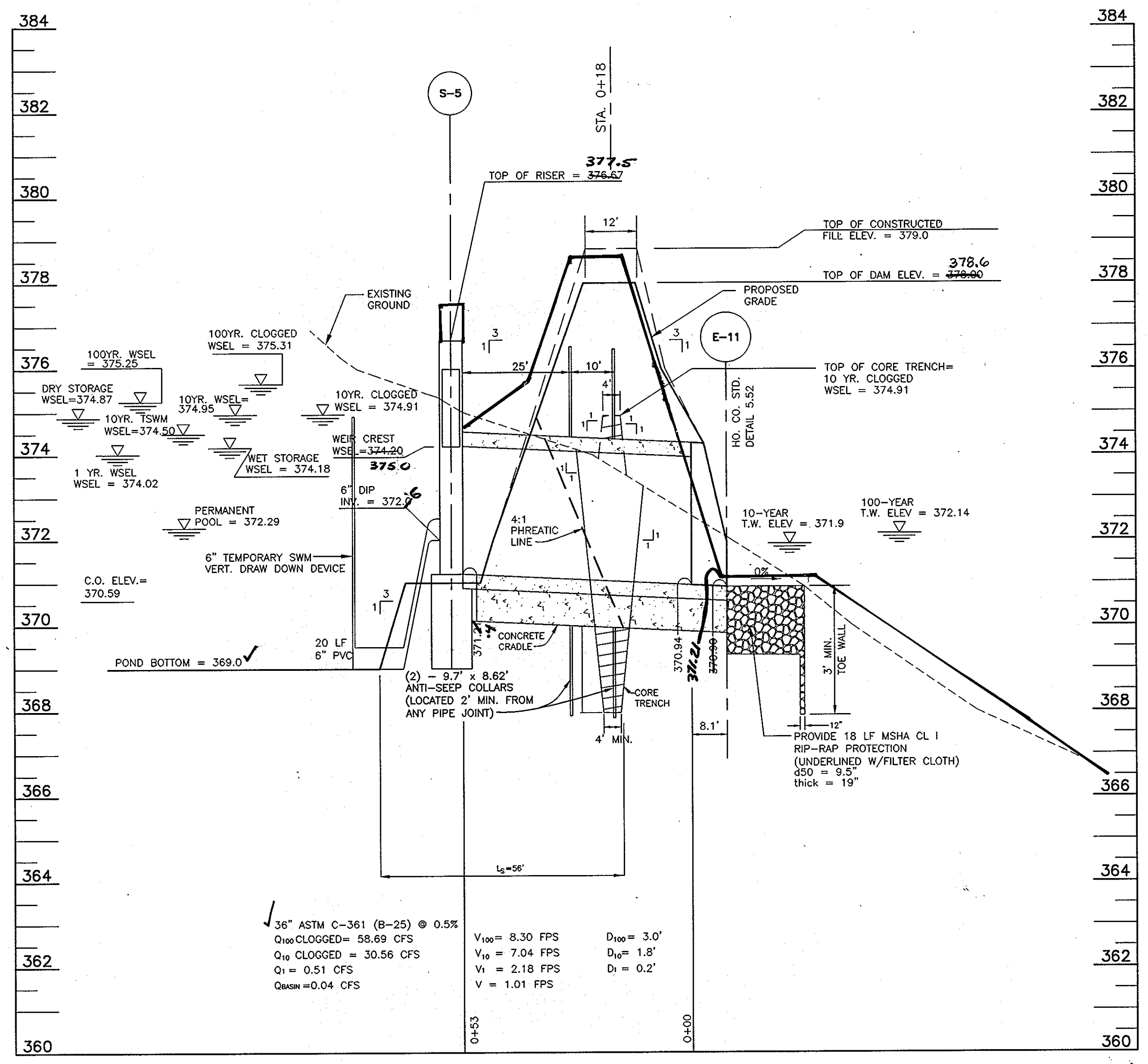
Chris Pannunzio 7/19/05 DATE

1 5-4-06 RENUMBER PLANS IN SET		
NO.	DATE	REVISION
<p align="center">BENCHMARK ENGINEERING, INC.</p> <p align="center">8480 BALTIMORE NATIONAL PIKE A SUITE 418 ELLICOTT CITY, MARYLAND 21043 PHONE: 410-465-8105 FAX: 410-465-8644 WWW.BEI-CIVILENGINEERING.COM</p>		
DEVELOPER:	ELIOAK, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	PROJECT: RIVERWOOD - PHASE 1 LOTS 1 & 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'Q'; AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'
OWNER:	HOMWOOD, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,9&10 PARCELS: 88 PARCELS: 20 & 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
OWNER:	JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL, ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32ND FLOOR NEW YORK, NEW YORK 10022	TITLE: STORMWATER MANAGEMENT DETAILS POND #4
DES: JMC/DBT	DRAFT: JMC/RPS	CHECK: DAM
DATE: JUNE, 2005	PROJECT NO. 1132	SCALE: AS SHOWN SHEET 37 OF 55

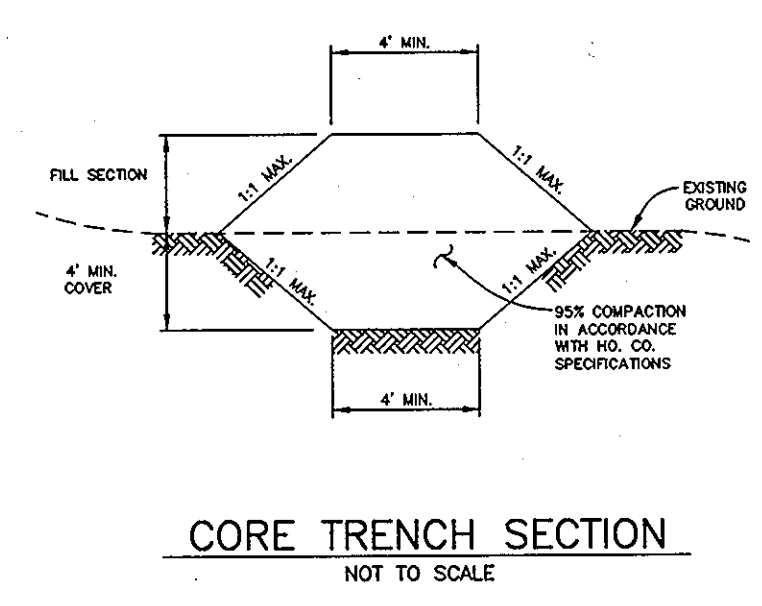




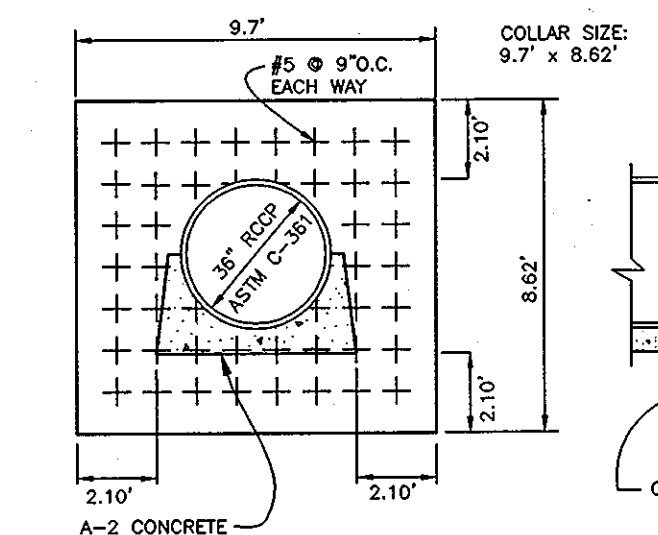
PROFILE ALONG CL OF EMBANKMENT
SCALE: 1"=50' HORIZ. 1"=5' VERT.



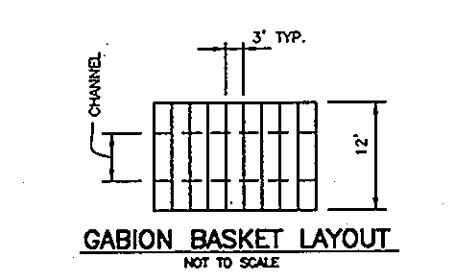
SECTION THRU PRINCIPAL SPILLWAY
SCALE: 1"=20' HORIZ., 1"=2' VERT.



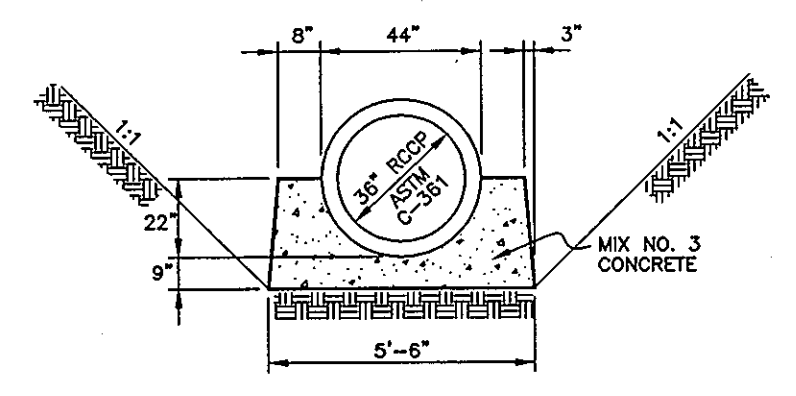
CORE TRENCH SECTION
NOT TO SCALE



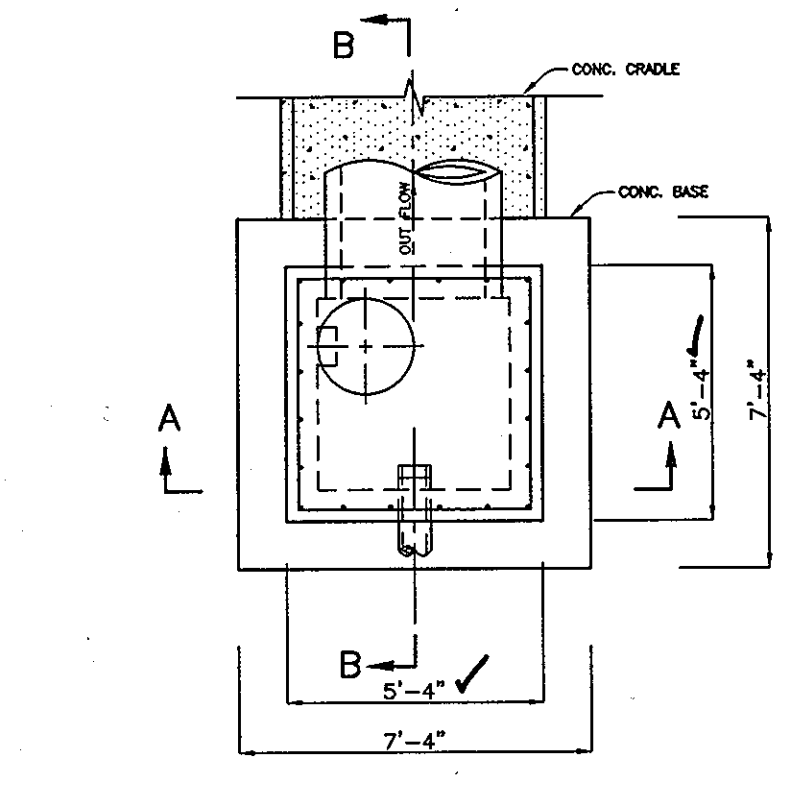
ANTI-SLEEP COLLAR
NOT TO SCALE



GABION BASKET LAYOUT
NOT TO SCALE

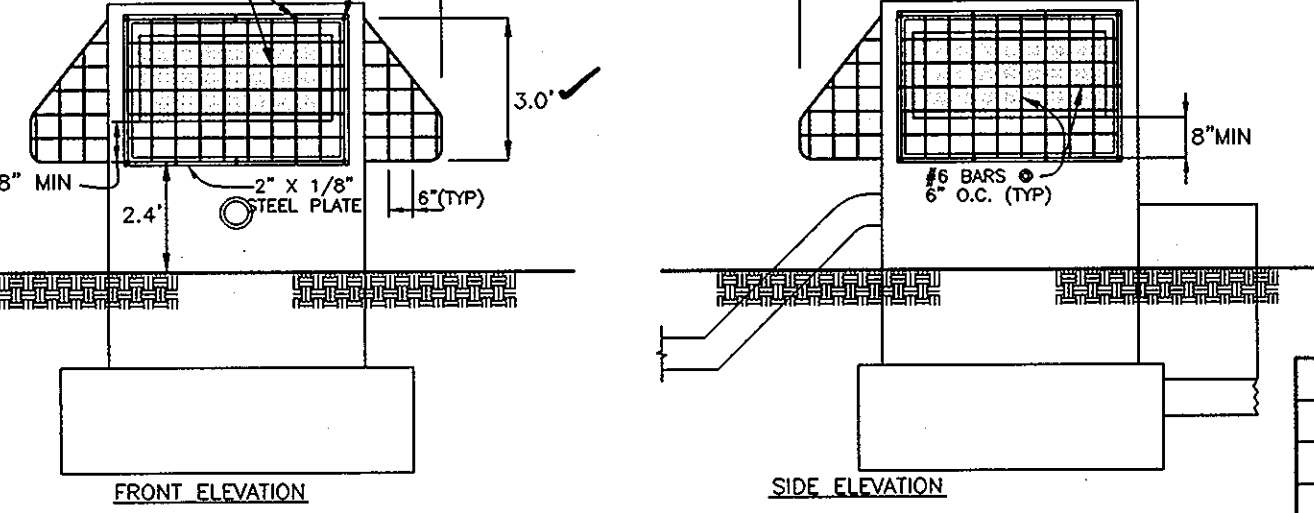


TYPE A-2 CONCRETE CRADLE
NOT TO SCALE

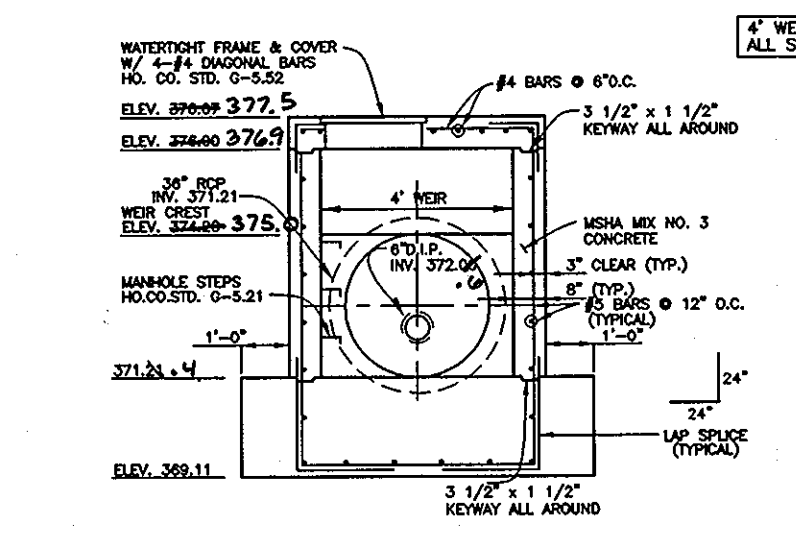


SECTION A-A
FRONT VIEW

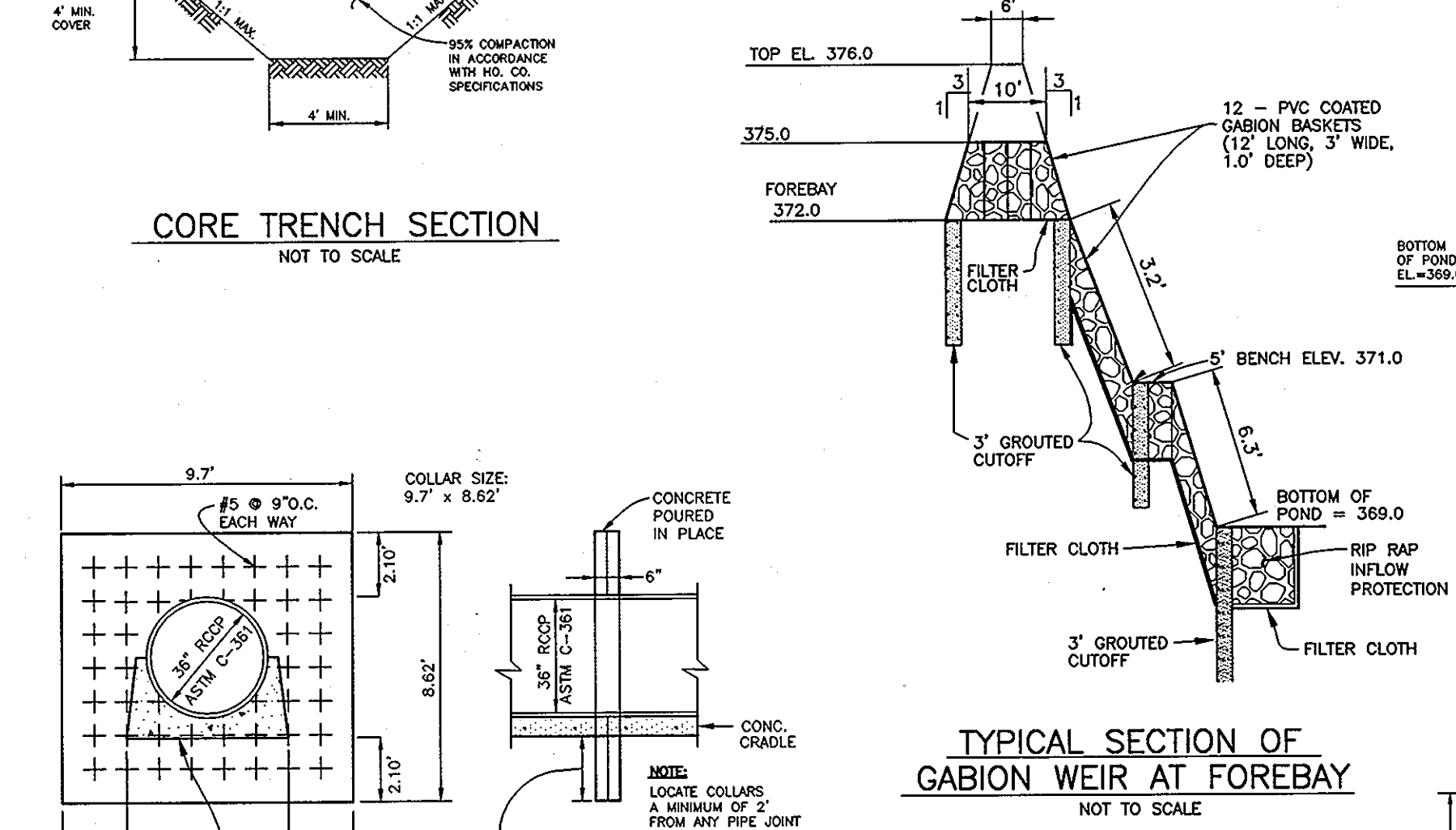
CONTROL STRUCTURE - POND #5
SCALE: 1" = 4"



TRASH RACK DETAIL
SCALE: 1" = 4"



SECTION B-B
SIDE VIEW



TYPICAL SECTION OF GABION WEIR AT FOREBAY
NOT TO SCALE

6" TEMPORARY SWM VERTICAL DRAW-DOWN DEVICE
NOT TO SCALE

TSWM PERFORATION DETAIL
NOT TO SCALE

6" PIPE DETAIL AND LOW FLOW CONTROL ORIFICE
NOT TO SCALE

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED EXTENDED DETENTION POND

ROUTINE MAINTENANCE:

- FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHALL BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE POND IS FUNCTIONING PROPERLY.
- TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOVED A MINIMUM OF TWO (2) TIMES PER YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHALL BE MOVED AS NEEDED.
- DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MAINTENANCE OPERATIONS AND AS NEEDED.
- VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS THE RIP-RAP OR GABION 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 SHALL BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
- SEDIMENTS SHALL BE REMOVED FROM THE POND, AND FOREBAY, NO LATER THAN WHEN THE CAPACITY OF THE POND, OR FOREBAY, IS HALF FULL OF SEDIMENT, OR, WHEN DEEMED NECESSARY FOR AESTHETIC REASONS, UPON APPROVAL FROM THE DEPARTMENT OF PUBLIC WORKS.

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.

Donald Moon PE NO. 21443 DATE 1-7-09
DONALD A. MASON

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 BY 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:

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.

Stevan K. Baber MEMBER 4/1/05 DATE
STEVEN K. BABER

DEVELOPER

BY THE ENGINEER:

I/WE 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 NOTICED 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.

Donald Moon 4/6/05 DATE
ENGINEER - DONALD A. MASON, P.E. # 21443

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.

Jim Myer 4/6/05 DATE
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.

Shelly S. Kelly 4/6/05 DATE
HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PUBLIC WORKS

William J. Wadler 7-18-05 DATE
CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Wanda H. Hester 7/25/05 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT

Bill Dammann 7/26/05 DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION

1 5-4-06 RENUMBER PLANS IN SET

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE & SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-8100 FAX: 410-465-8644
WWW.BEL-ENGINEERING.COM

Donald Moon 4/6/05

DEVELOPER: ELIQU, L.L.C.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

OWNER: HOMEWOOD, L.L.C.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

OWNER: JOHN LEE CARROLL, CHRISTOPHER C. GERARD,
MARY CARTER CARROLL, ZIEGLER, THOMAS T. CARROLL,
JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL
c/o JOHN LEE CARROLL
515 MADISON AVENUE
32ND FLOOR
NEW YORK, NEW YORK 10022

PROJECT: RIVERWOOD - PHASE 1
LOTS 1 - 42;
NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R';
BUILDABLE PRESERVATION PARCEL 'Q';
AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'

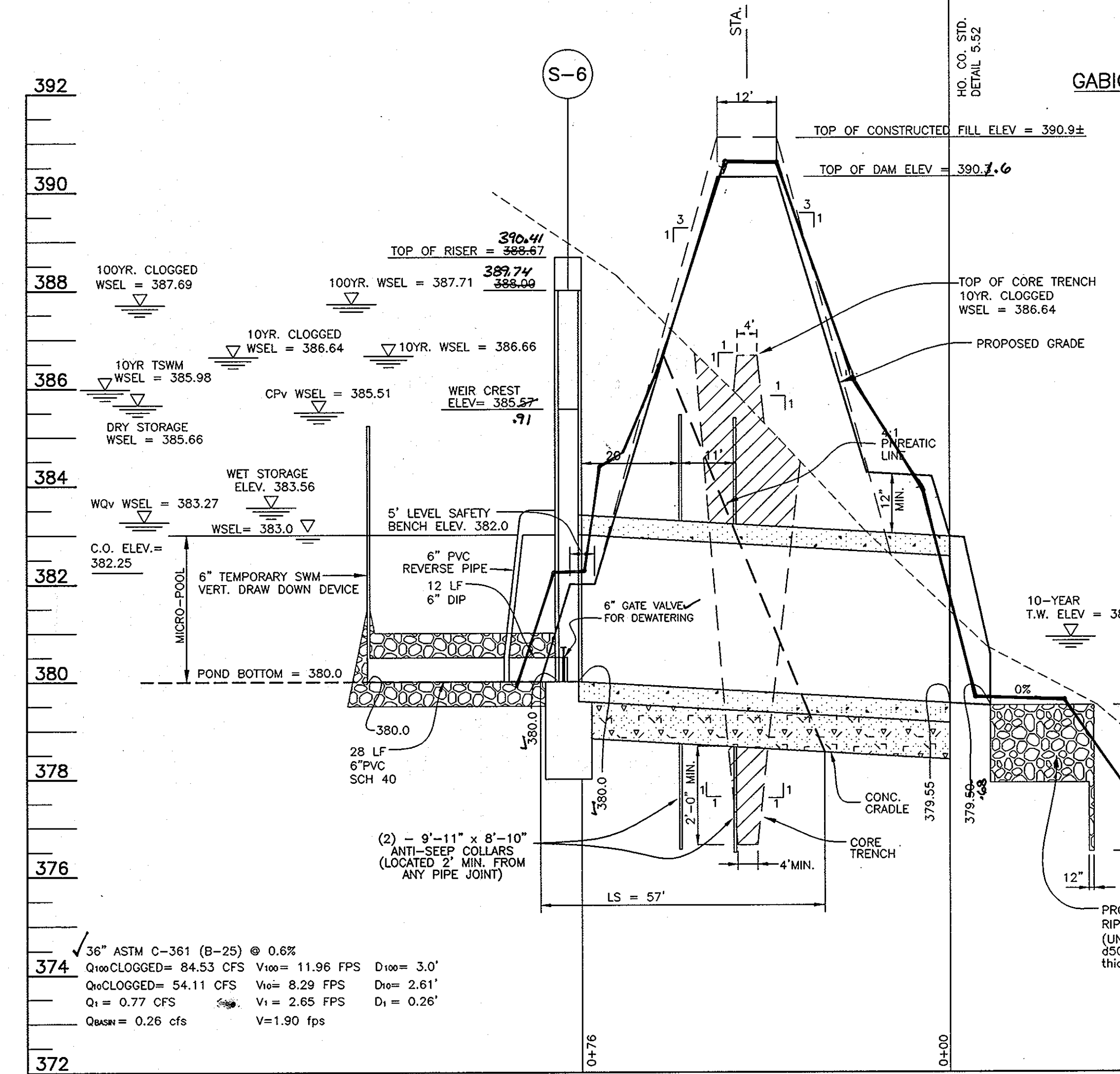
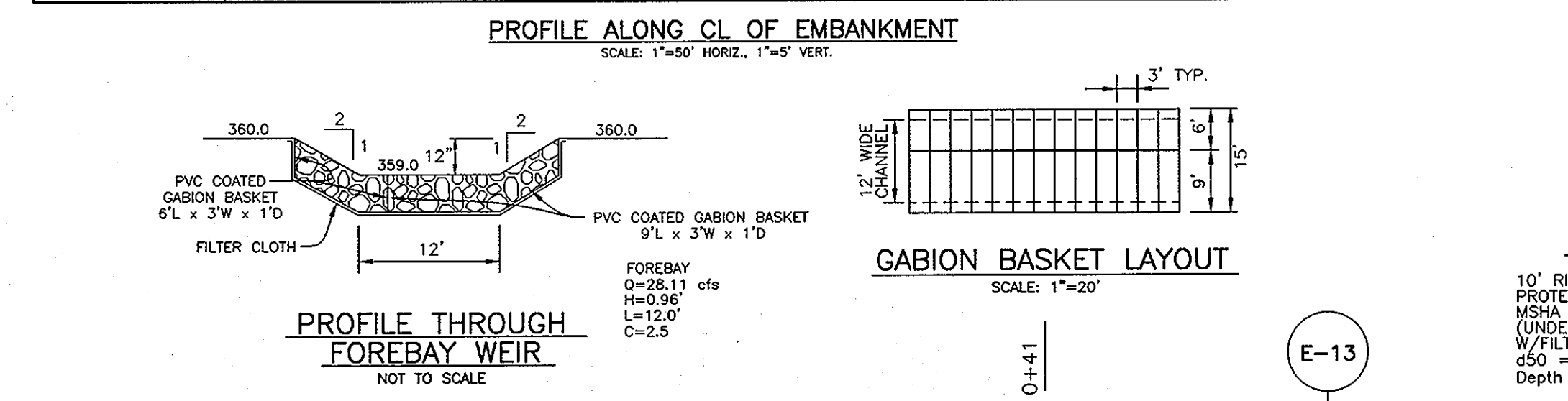
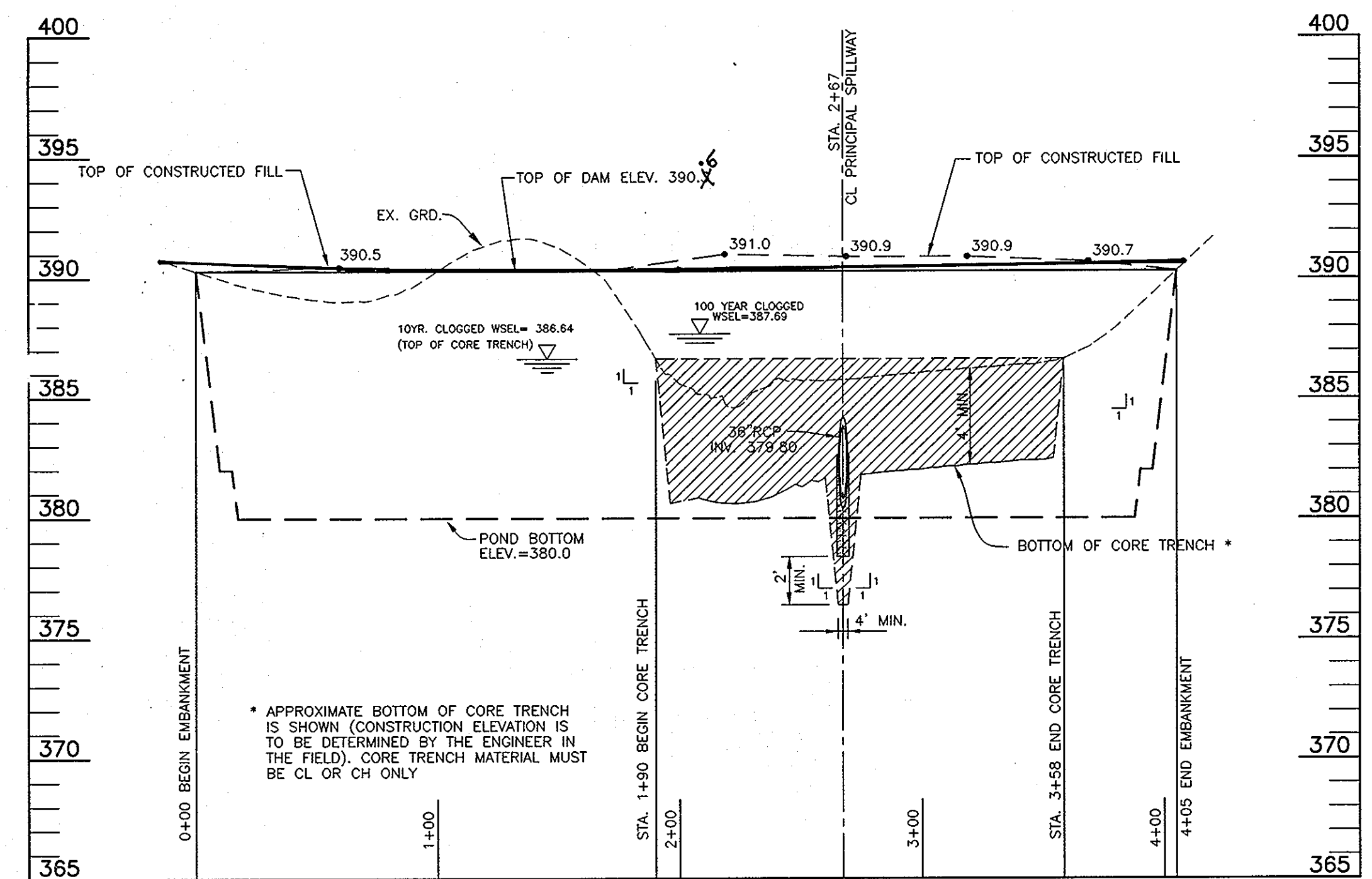
LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,9&10
PARCELS: 86 PARCELS: 20 & 86
THIRD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: STORMWATER MANAGEMENT DETAILS POND #5

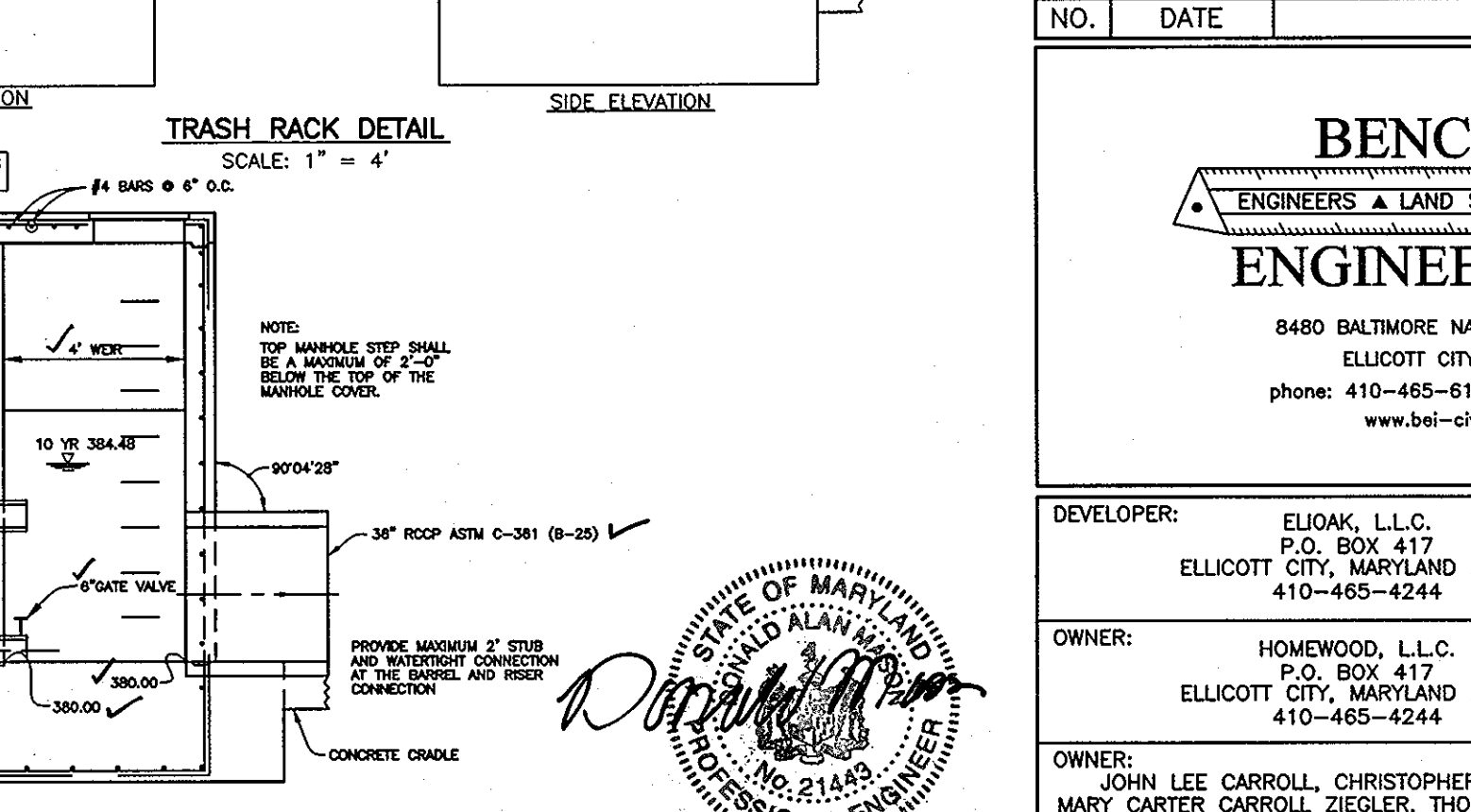
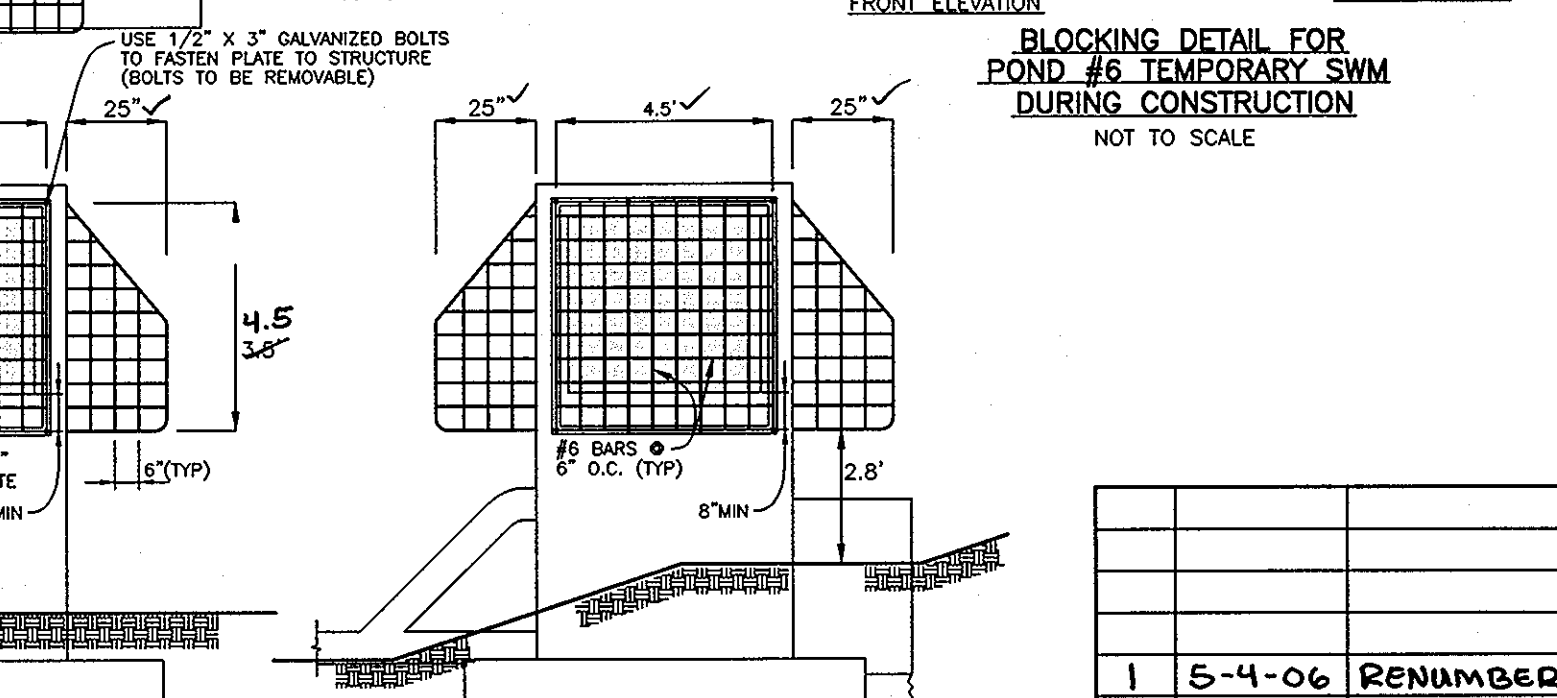
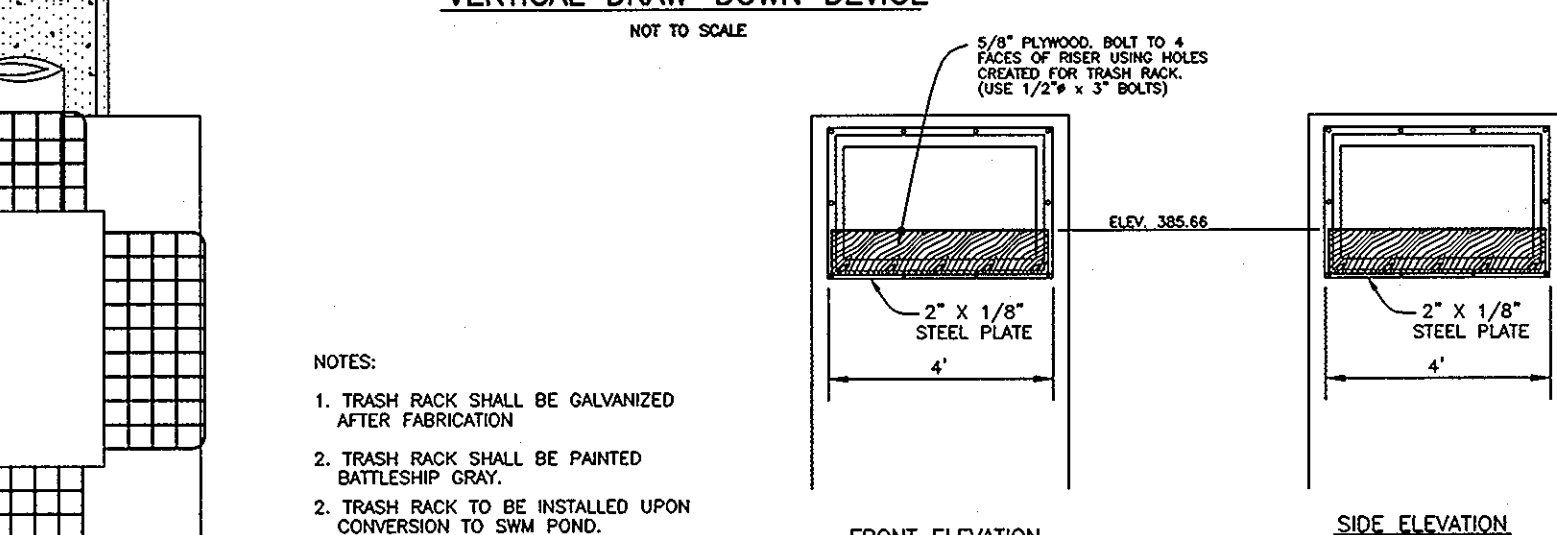
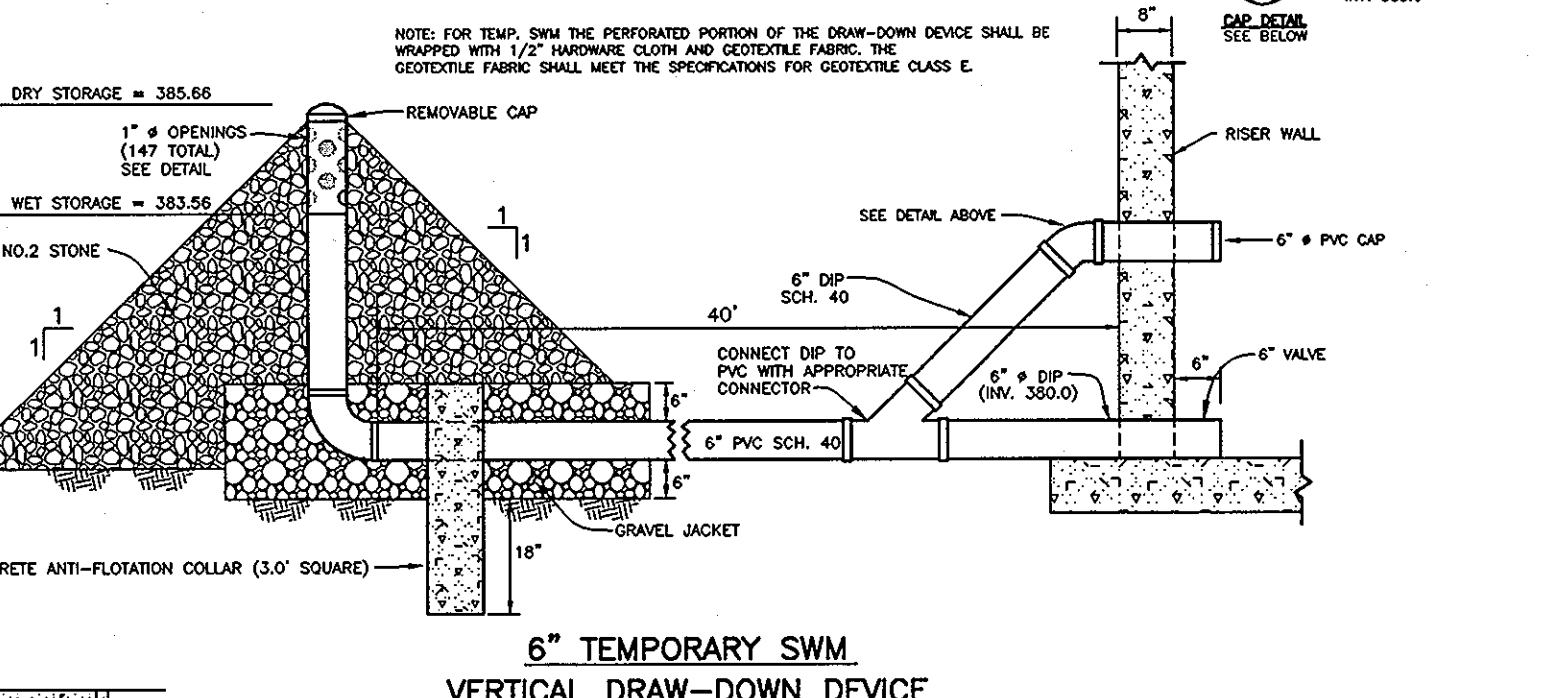
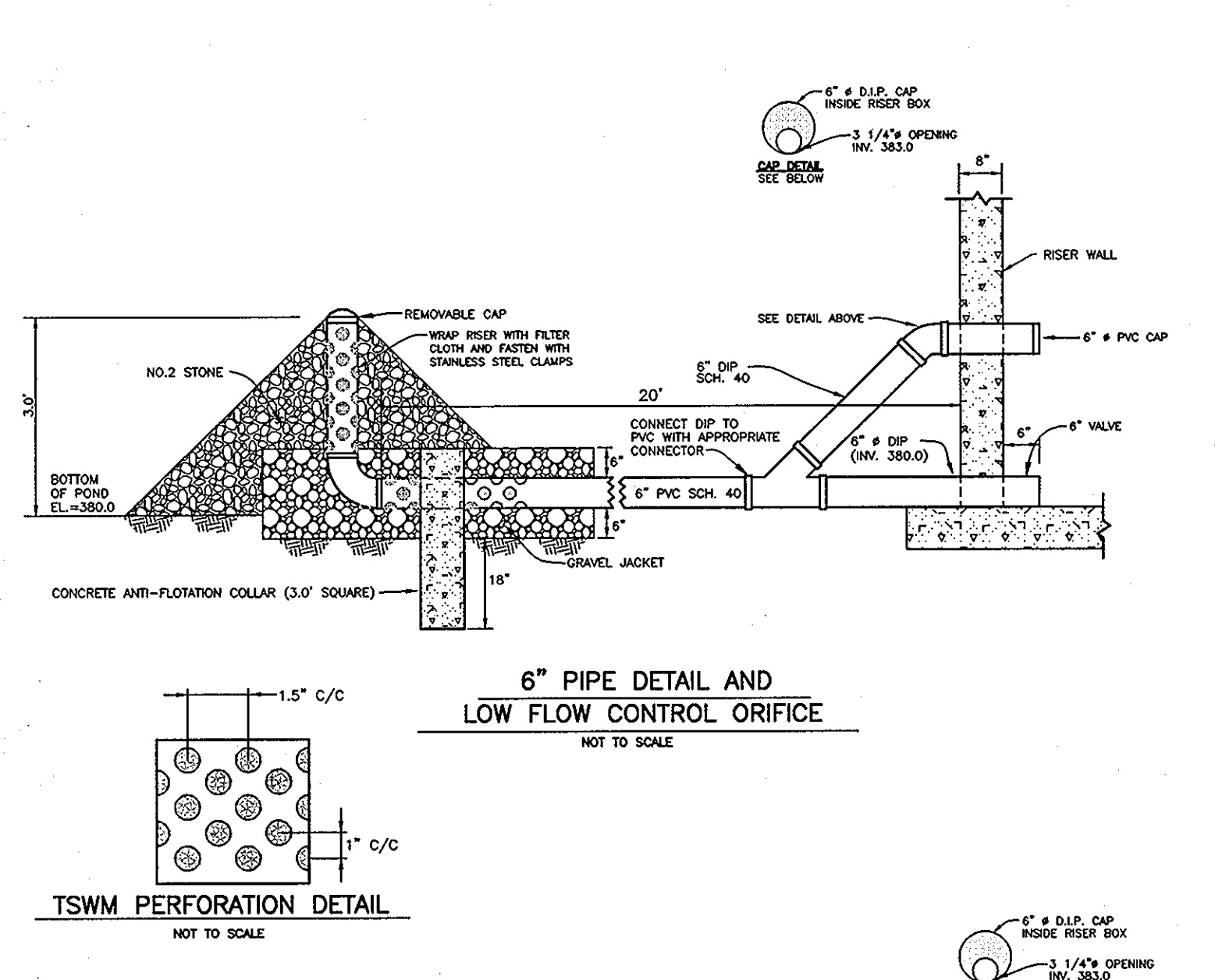
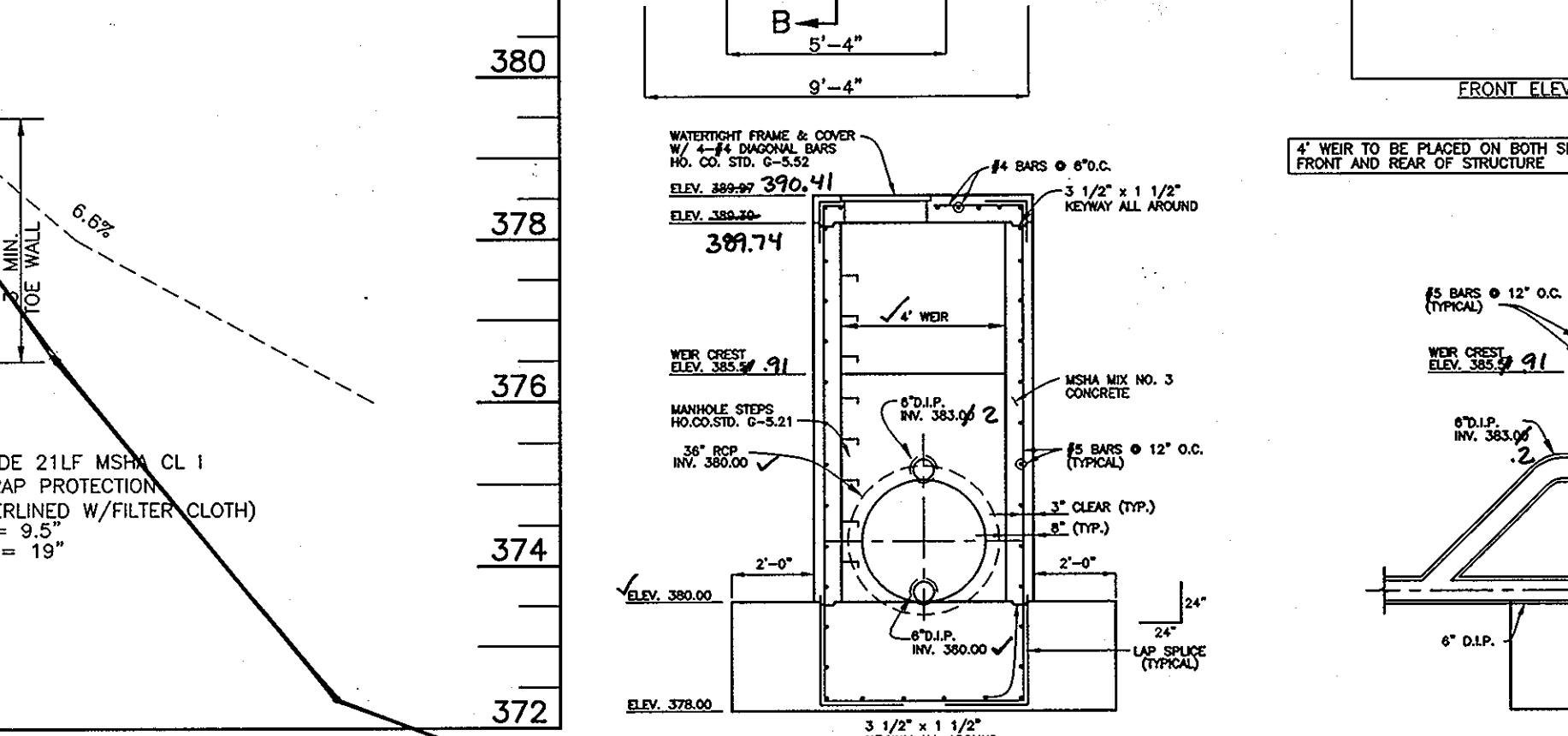
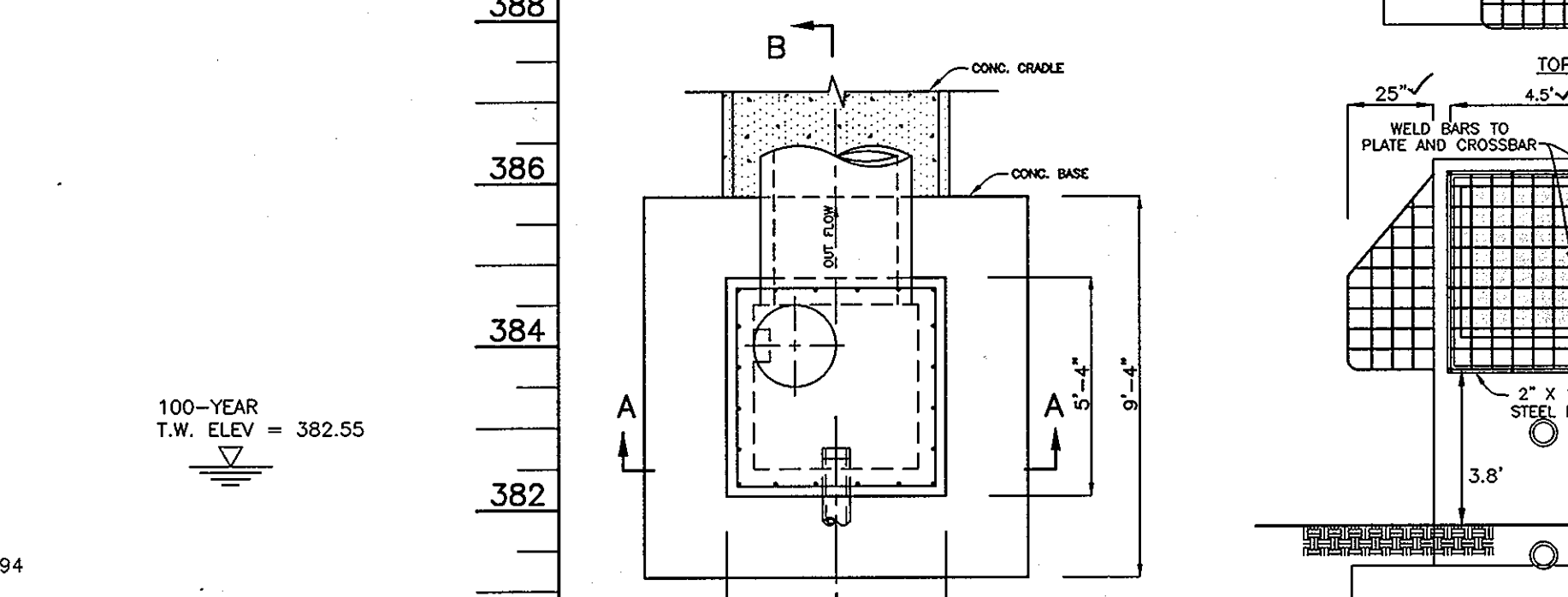
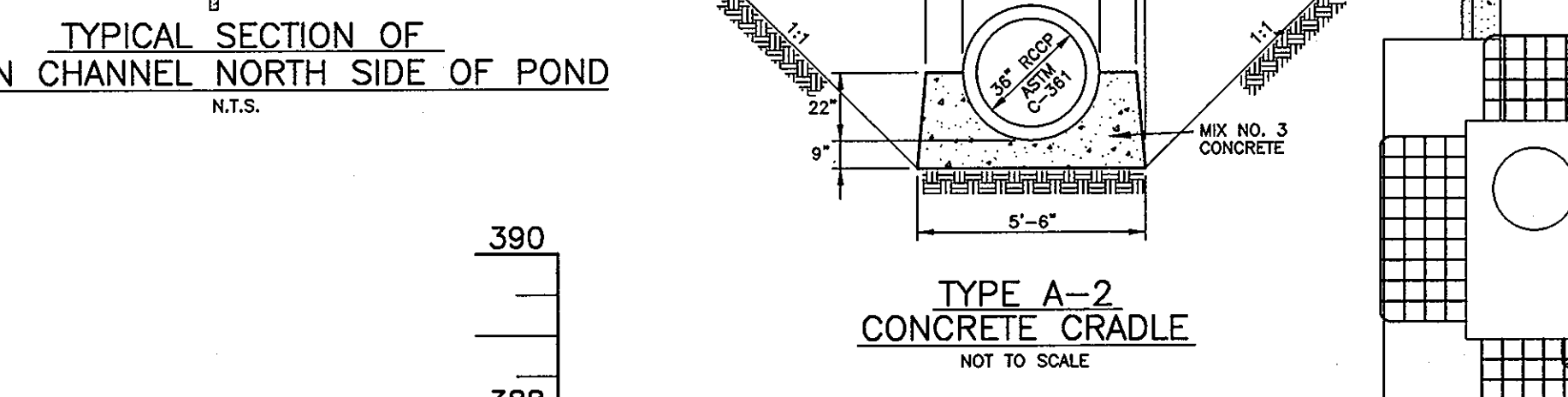
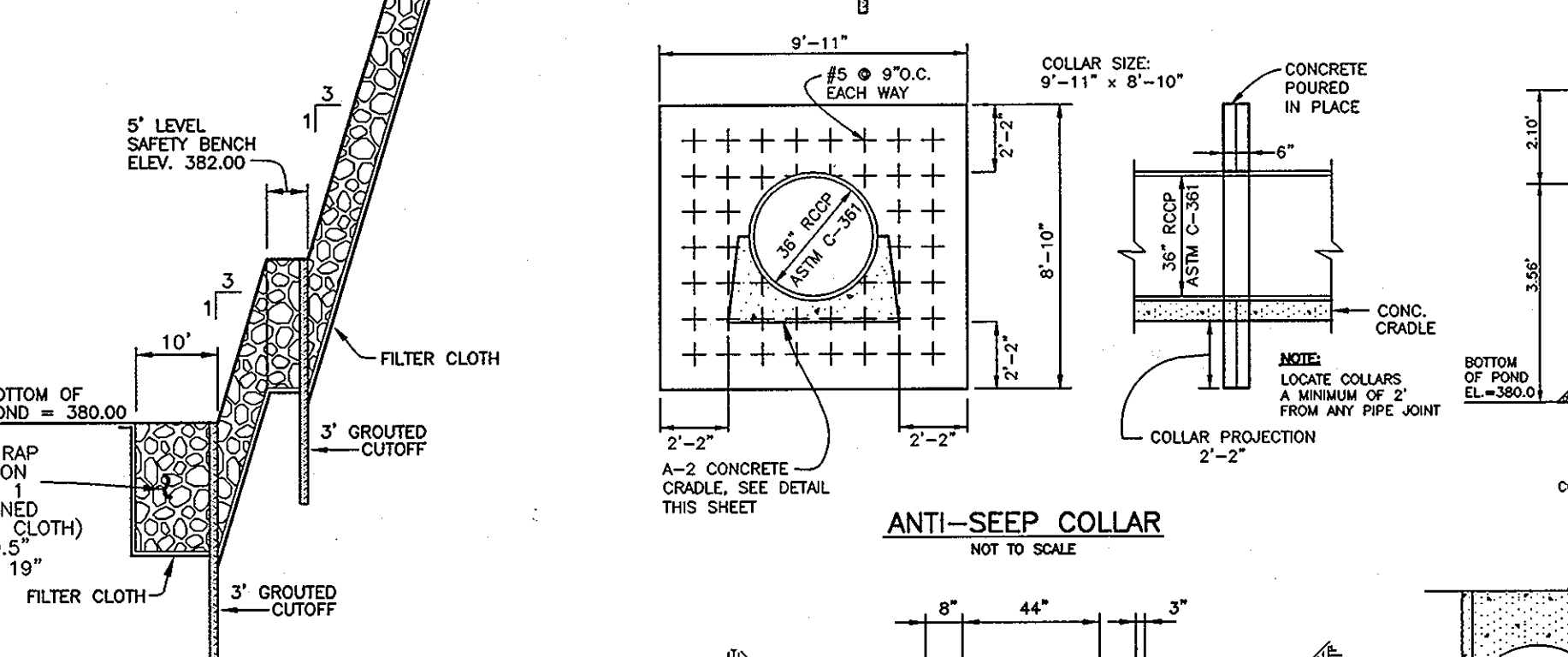
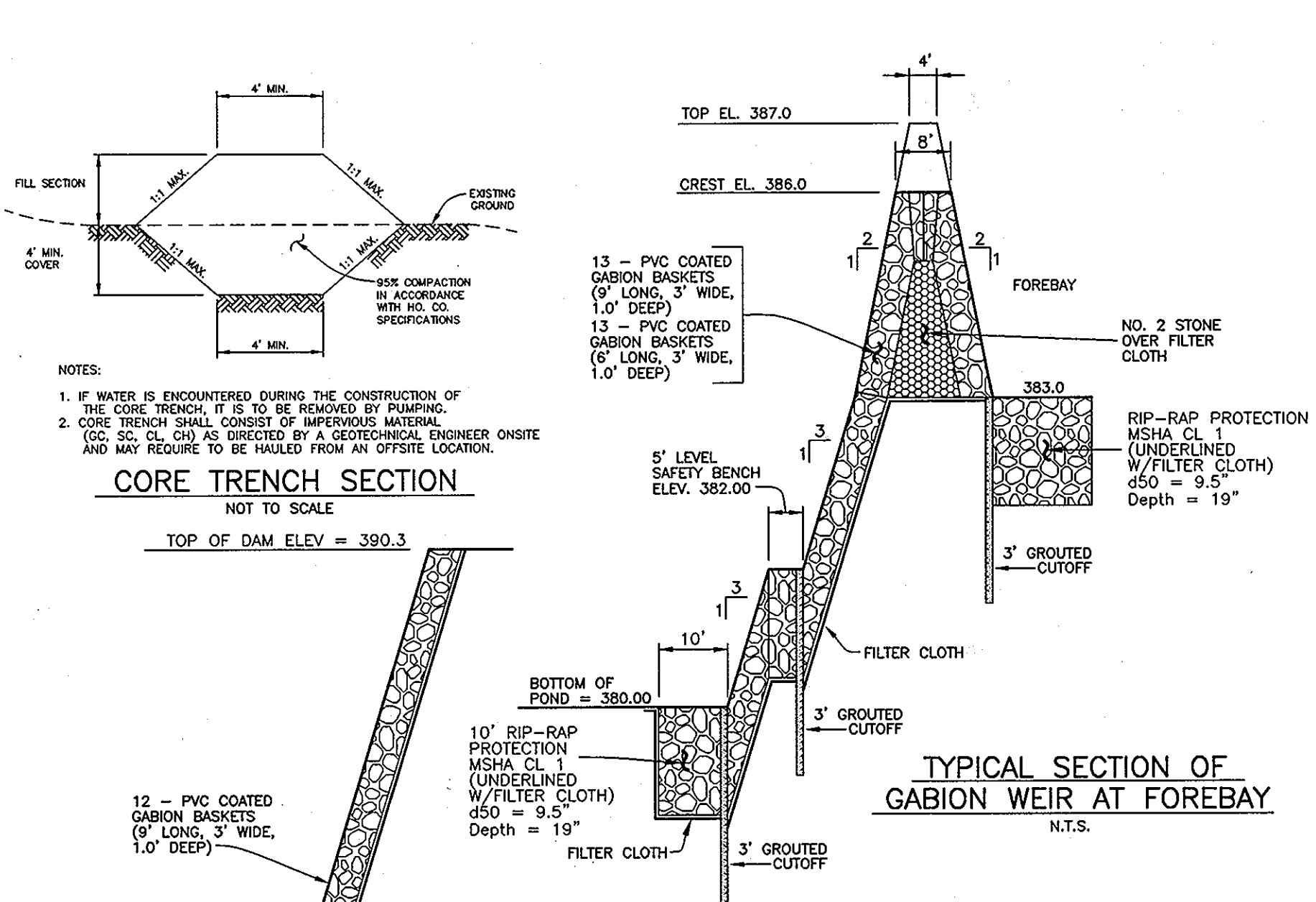
DATE: JUNE, 2005 PROJECT NO. 1132

DES: LDD DRAFT: LDD CHECK: DAM SCALE: AS SHOWN SHEET 38 OF 55





36" ASTM C-361 (B-25) @ 0.6%
 Q_{max}CLOGGED= 84.53 CFS V_{max}= 11.96 FPS D_{max}= 3.0'
 Q_{avg}CLOGGED= 54.11 CFS V_{avg}= 8.29 FPS D_{avg}= 2.61'
 Q_{min}= 0.77 CFS V_{min}= 2.65 FPS D_{min}= 0.26'
 Q_{bank}= 0.26 cfs V=1.90 fps



OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED EXTENDED DETENTION POND

ROUTINE MAINTENANCE:

- FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHALL 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 PER YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHALL BE MOWED AS NEEDED.
- DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
- VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS THE RIP-RAP OR GABION 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 SHALL BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
- SEDIMENTS SHALL BE REMOVED FROM THE POND AND FOREBAY, NO LATER THAN WHEN THE CAPACITY OF THE POND, OR FOREBAY, IS HALF FULL OF SEDIMENT, OR WHEN DEEMED NECESSARY FOR AESTHETIC REASONS, UPON APPROVAL FROM THE DEPARTMENT OF PUBLIC WORKS.

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.

Donald Maon PE NO. 21443 DATE 1-7-09

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 BY 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:

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 PREVENTION OF 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.

Steven K. Beebe MEMBER 6/2/05 DATE

BY THE ENGINEER:

I/WE 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.

Donald Maon 6/2/05 DATE

ENGINEER - DONALD A. MAON, P.E. # 21443

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.

Jim Myer 6/2/05 DATE

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.

Shelly S. S. 6/2/05 DATE

HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PUBLIC WORKS

William J. White 7-19-05 DATE

CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Carla Benita 7/2/05 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT

Chris Dammann 7/2/05 DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION

1 5-4-06 RENUMBER PLANS IN SET	
NO.	REVISION
BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE & SUITE 418 ELLICOTT CITY, MARYLAND 21043 phone: 410-465-6105 A fax: 410-465-6444 www.bei-civilengineering.com	
DEVELOPER:	ELIQUA, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244
OWNER:	HOMEWOOD, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244
OWNER:	JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32ND FLOOR NEW YORK, NEW YORK 10022
PROJECT:	RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'Q'; AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'
LOCATION:	TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,9&10 PARCELS: 88 PARCELS: 20 & 86
TITLE:	STORMWATER MANAGEMENT DETAILS POND #6
DATE:	JUNE, 2005 PROJECT NO. 1132
DES: JMC/DBT DRAFT: JMC/RPS CHECK: DAM	SCALE: AS SHOWN SHEET 39 OF 55

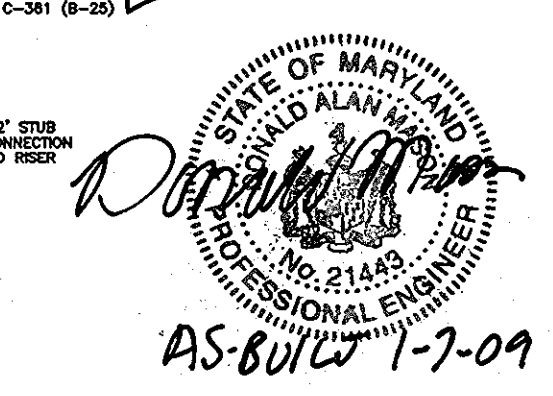


Table with columns: ELEV., SOIL DESCRIPTION, STRA. DEPTH, DEPTH, SAMPLE NO., BLOWING & SAMPLING NOTES. Includes soil data for RIVERWOOD SWM.

SAMPLER TYPE, SAMPLE CONDITIONS, GROUND WATER DEPTH, BORING METHOD. Includes details on equipment and methods used.

Table with columns: ELEV., SOIL DESCRIPTION, STRA. DEPTH, DEPTH, SAMPLE NO., BLOWING & SAMPLING NOTES. Includes soil data for RIVERWOOD SWM.

SAMPLER TYPE, SAMPLE CONDITIONS, GROUND WATER DEPTH, BORING METHOD. Includes details on equipment and methods used.

Table with columns: ELEV., SOIL DESCRIPTION, STRA. DEPTH, DEPTH, SAMPLE NO., BLOWING & SAMPLING NOTES. Includes soil data for RIVERWOOD SWM.

SAMPLER TYPE, SAMPLE CONDITIONS, GROUND WATER DEPTH, BORING METHOD. Includes details on equipment and methods used.

CONSTRUCTION SPECIFICATIONS

Site Preparation

Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped to topsoil. All trees, vegetation, roots and other objectionable material shall be removed.

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 required by the reviewing agency the minimum required density shall be not less than 95% of maximum dry density with moisture content within ± 2% of the optimum.

When required by the reviewing agency the minimum required density shall be not less than 95% of maximum dry density with moisture content within ± 2% of the optimum.

When required by the reviewing agency the minimum required density shall be not less than 95% of maximum dry density with moisture content within ± 2% of the optimum.

When required by the reviewing agency the minimum required density shall be not less than 95% of maximum dry density with moisture content within ± 2% of the optimum.

When required by the reviewing agency the minimum required density shall be not less than 95% of maximum dry density with moisture content within ± 2% of the optimum.

When required by the reviewing agency the minimum required density shall be not less than 95% of maximum dry density with moisture content within ± 2% of the optimum.

When required by the reviewing agency the minimum required density shall be not less than 95% of maximum dry density with moisture content within ± 2% of the optimum.

Table with columns: ELEV., SOIL DESCRIPTION, STRA. DEPTH, DEPTH, SAMPLE NO., BLOWING & SAMPLING NOTES. Includes soil data for RIVERWOOD SWM.

SAMPLER TYPE, SAMPLE CONDITIONS, GROUND WATER DEPTH, BORING METHOD. Includes details on equipment and methods used.

Table with columns: ELEV., SOIL DESCRIPTION, STRA. DEPTH, DEPTH, SAMPLE NO., BLOWING & SAMPLING NOTES. Includes soil data for RIVERWOOD SWM.

SAMPLER TYPE, SAMPLE CONDITIONS, GROUND WATER DEPTH, BORING METHOD. Includes details on equipment and methods used.

Table with columns: ELEV., SOIL DESCRIPTION, STRA. DEPTH, DEPTH, SAMPLE NO., BLOWING & SAMPLING NOTES. Includes soil data for RIVERWOOD SWM.

SAMPLER TYPE, SAMPLE CONDITIONS, GROUND WATER DEPTH, BORING METHOD. Includes details on equipment and methods used.

Table with columns: ELEV., SOIL DESCRIPTION, STRA. DEPTH, DEPTH, SAMPLE NO., BLOWING & SAMPLING NOTES. Includes soil data for RIVERWOOD SWM.

SAMPLER TYPE, SAMPLE CONDITIONS, GROUND WATER DEPTH, BORING METHOD. Includes details on equipment and methods used.

Table with columns: ELEV., SOIL DESCRIPTION, STRA. DEPTH, DEPTH, SAMPLE NO., BLOWING & SAMPLING NOTES. Includes soil data for RIVERWOOD SWM.

SAMPLER TYPE, SAMPLE CONDITIONS, GROUND WATER DEPTH, BORING METHOD. Includes details on equipment and methods used.

Table with columns: ELEV., SOIL DESCRIPTION, STRA. DEPTH, DEPTH, SAMPLE NO., BLOWING & SAMPLING NOTES. Includes soil data for RIVERWOOD SWM.

SAMPLER TYPE, SAMPLE CONDITIONS, GROUND WATER DEPTH, BORING METHOD. Includes details on equipment and methods used.

Table with columns: ELEV., SOIL DESCRIPTION, STRA. DEPTH, DEPTH, SAMPLE NO., BLOWING & SAMPLING NOTES. Includes soil data for RIVERWOOD SWM.

SAMPLER TYPE, SAMPLE CONDITIONS, GROUND WATER DEPTH, BORING METHOD. Includes details on equipment and methods used.

Table with columns: ELEV., SOIL DESCRIPTION, STRA. DEPTH, DEPTH, SAMPLE NO., BLOWING & SAMPLING NOTES. Includes soil data for RIVERWOOD SWM.

SAMPLER TYPE, SAMPLE CONDITIONS, GROUND WATER DEPTH, BORING METHOD. Includes details on equipment and methods used.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS. Includes signatures and dates for approval.

BENCHMARK ENGINEERING, INC. logo and contact information. Includes project details for RIVERWOOD - PHASE 1.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION Page 1 of 1

Project Name: Riverwood SWM Location: Howard County, Maryland Boring Number: B-19 Job #: 02545-A

ELEV.	SOIL DESCRIPTION	STR. DEPTH	DEPTH SCALE	CON	SAMPLE BLOWS	NO.	REC.	BORING & SAMPLING NOTES
0.0	SURFACE							
0.0	Brown, moist, soft silt, trace to little clay, trace fine sand trace mica (ML)	D	2-2.2	1	9"	1	1"	1" Topsoil
2.0		D	2-3.3	2	11"			No groundwater encountered while drilling
5.0		D	3-3.5	3	12"			Caved in at 10.0' at completion
8.0		D	2-3.5	4	9"			Caved in at 10.0' after 24 hours
10.0		D	2-3.5	4	9"			Backfilled after 24 hours
12.0		D	12-21.1	5	13"			
15.0		D						
20.0		D						

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE NOTED. HINTACT UNLUBRICATED. CA-CONTINUOUS FLIGHT AUGER. RC-ROCK CORE.

SAMPLE CONDITIONS: D-DISINTEGRATED. HINTACT UNLUBRICATED. L-LOST.

GROUND WATER DEPTH: AT COMPLETION: 0.0 FT. AFTER 24 HRS: 0.0 FT.

BORING METHOD: HSA-HOLLOW STEM AUGERS. CFA-CONT. FLIGHT AUGERS. DC-DRIVING CASING. MC-MUD DRILLING.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION Page 1 of 1

Project Name: Riverwood SWM Location: Howard County, Maryland Boring Number: B-25 Job #: 02545-A

ELEV.	SOIL DESCRIPTION	STR. DEPTH	DEPTH SCALE	CON	SAMPLE BLOWS	NO.	REC.	BORING & SAMPLING NOTES
0.0	SURFACE							
0.0	Brown, moist, soft clayey silt trace fine sand trace roots (ML)	D	2-2.3	1	5"	1	5"	1" Topsoil
2.0		D	6-12.13	2	10"			No groundwater encountered while drilling
5.0		D	7-12.8	3	6"			Caved in at 5.5' at completion
10.0		D	3-6.7	4	10"			
15.0		D	4-7.8	5	14"			
20.0		D						

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE NOTED. HINTACT UNLUBRICATED. CA-CONTINUOUS FLIGHT AUGER. RC-ROCK CORE.

SAMPLE CONDITIONS: D-DISINTEGRATED. HINTACT UNLUBRICATED. L-LOST.

GROUND WATER DEPTH: AT COMPLETION: 0.0 FT. AFTER 24 HRS: 0.0 FT.

BORING METHOD: HSA-HOLLOW STEM AUGERS. CFA-CONT. FLIGHT AUGERS. DC-DRIVING CASING. MC-MUD DRILLING.

HILLIS-CARNES GEOTECHNICAL ENGINEERING RECOMMENDATIONS:

EMBANKMENT AND CUT-OFF TRENCH CONSTRUCTION

THE AREAS OF THE PROPOSED SWM FACILITY SHOULD BE STRIPPED OF TOP SOIL AND ANY OTHER UNSUITABLE MATERIALS FROM THE EMBANKMENT OR STRUCTURE AREAS IN ACCORDANCE WITH SOIL CONSERVATION GUIDELINES. AFTER STRIPPING OPERATIONS HAVE BEEN COMPLETED, THE EXPOSED SUBGRADE MATERIALS SHOULD BE PROPPROLLED WITH A LOADED DUMP TRUCK OR SIMILAR EQUIPMENT TO PREVENT THE PRESENCE OF A GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE UTILIZING A DYNAMIC CONE PENETROMETER, ANY EXCESSIVELY SOFT OR LOOSE MATERIALS IDENTIFIED BY PROPPROLLING OR PENETROMETER TESTING SHOULD BE EXCAVATED TO SUITABLE FIRM SOIL, AND THEN GRADES RE-ESTABLISHED BY BACKFILLING WITH SUITABLE FIRM SOIL.

A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER SHOULD BE PRESENT TO MONITOR PLACEMENT AND COMPACTION OF FILL FOR THE EMBANKMENT AND CUT-OFF TRENCH. IN ACCORDANCE WITH MARYLAND SOIL CONSERVATION SPECIFICATION 379 SOILS CONSIDERED SUITABLE FOR THE CENTER OF EMBANKMENT AND CUT-OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION CC, SC, CH, OR CR OR CL.

IT IS OUR PROFESSIONAL OPINION THAT IN ADDITION TO THE SOIL MATERIALS DESCRIBED ABOVE A FINE-GRAINED SOIL, INCLUDING SILT (ML) WITH A PLASTICITY INDEX OF 10 OR MORE CAN BE UTILIZED FOR THE CENTER OF THE EMBANKMENT AND CORE TRENCH. ALL FILL MATERIALS MUST BE PLACED AND COMPACTED IN ACCORDANCE WITH MD SCS 378 SPECIFICATIONS.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

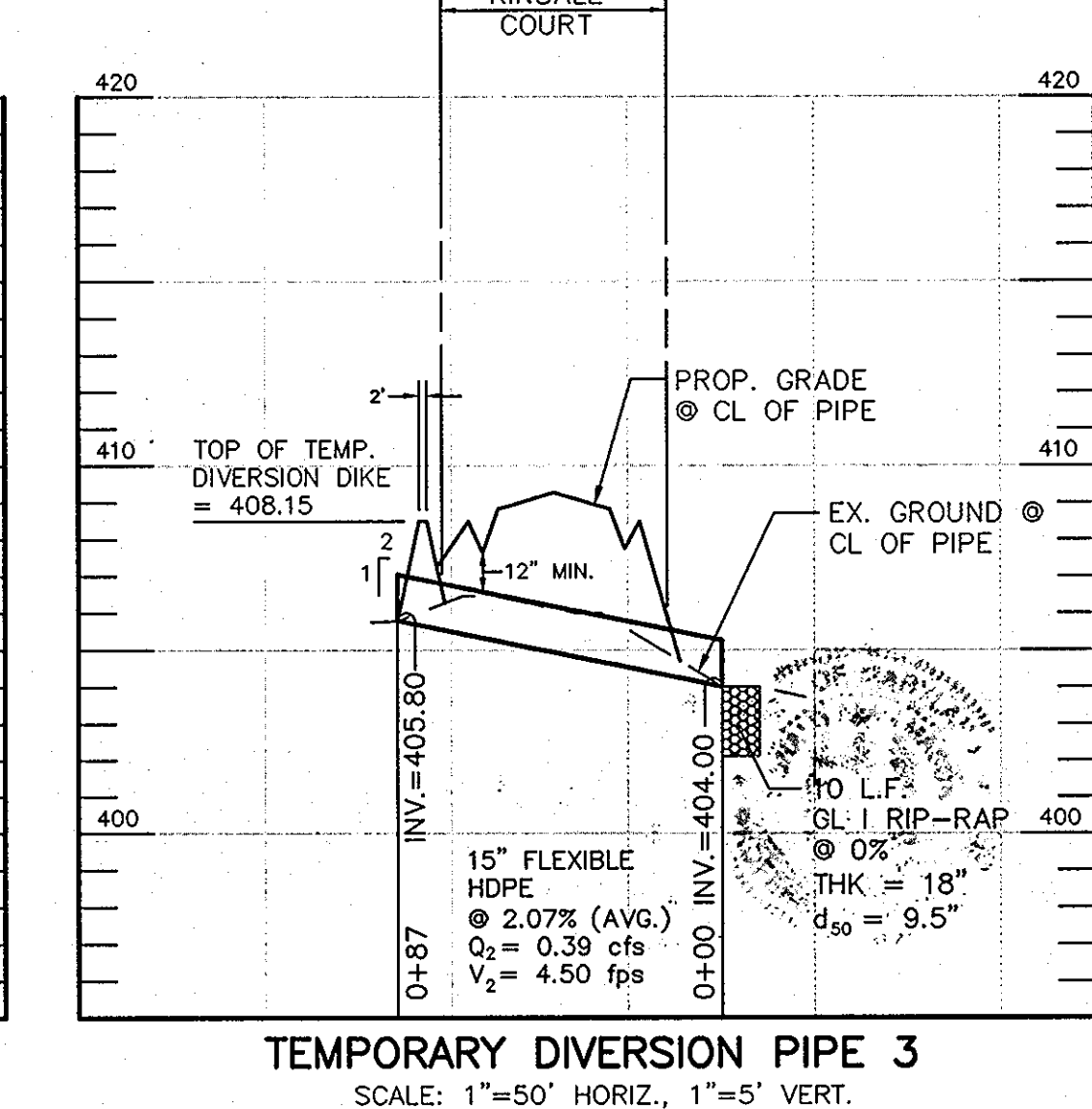
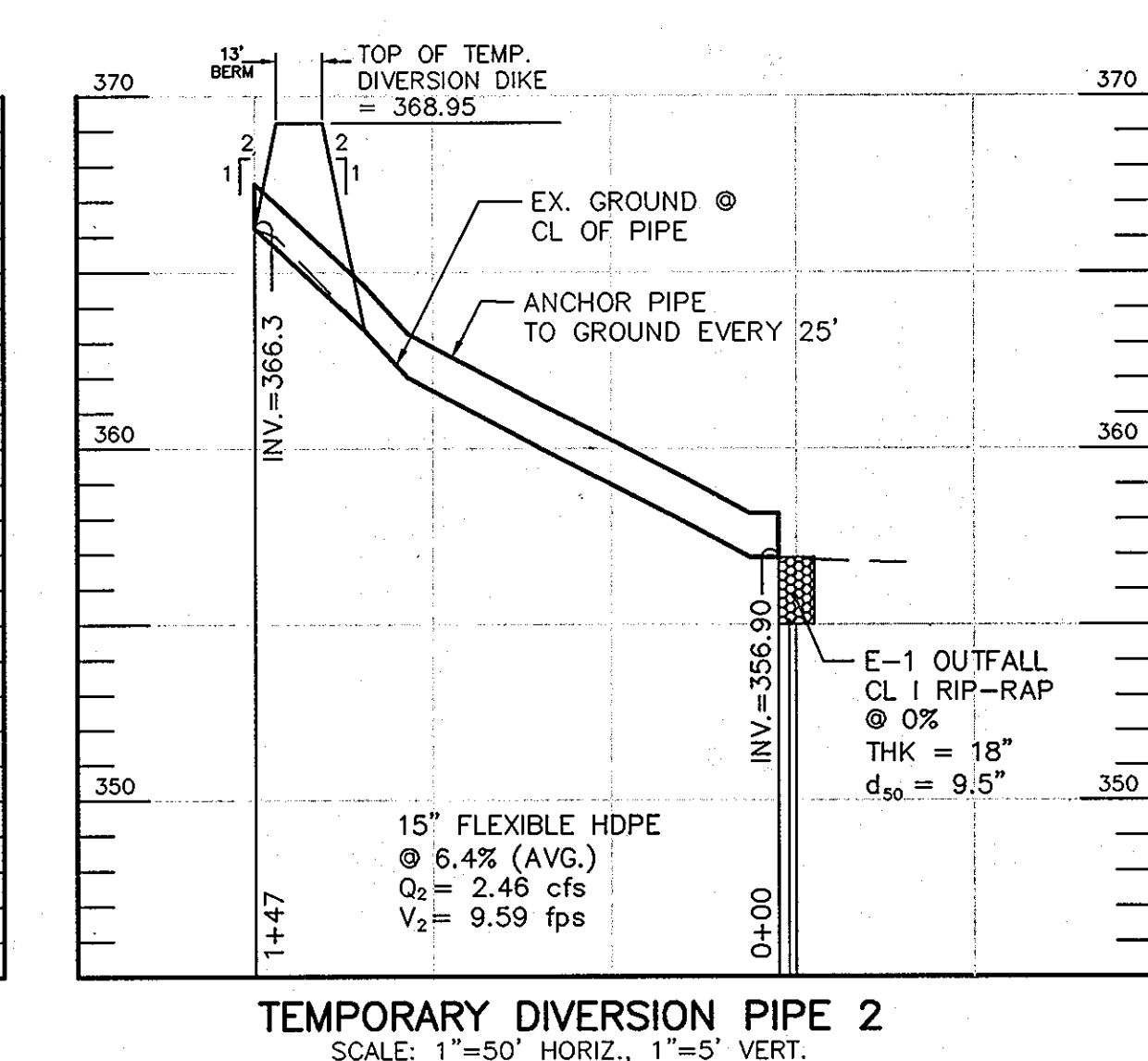
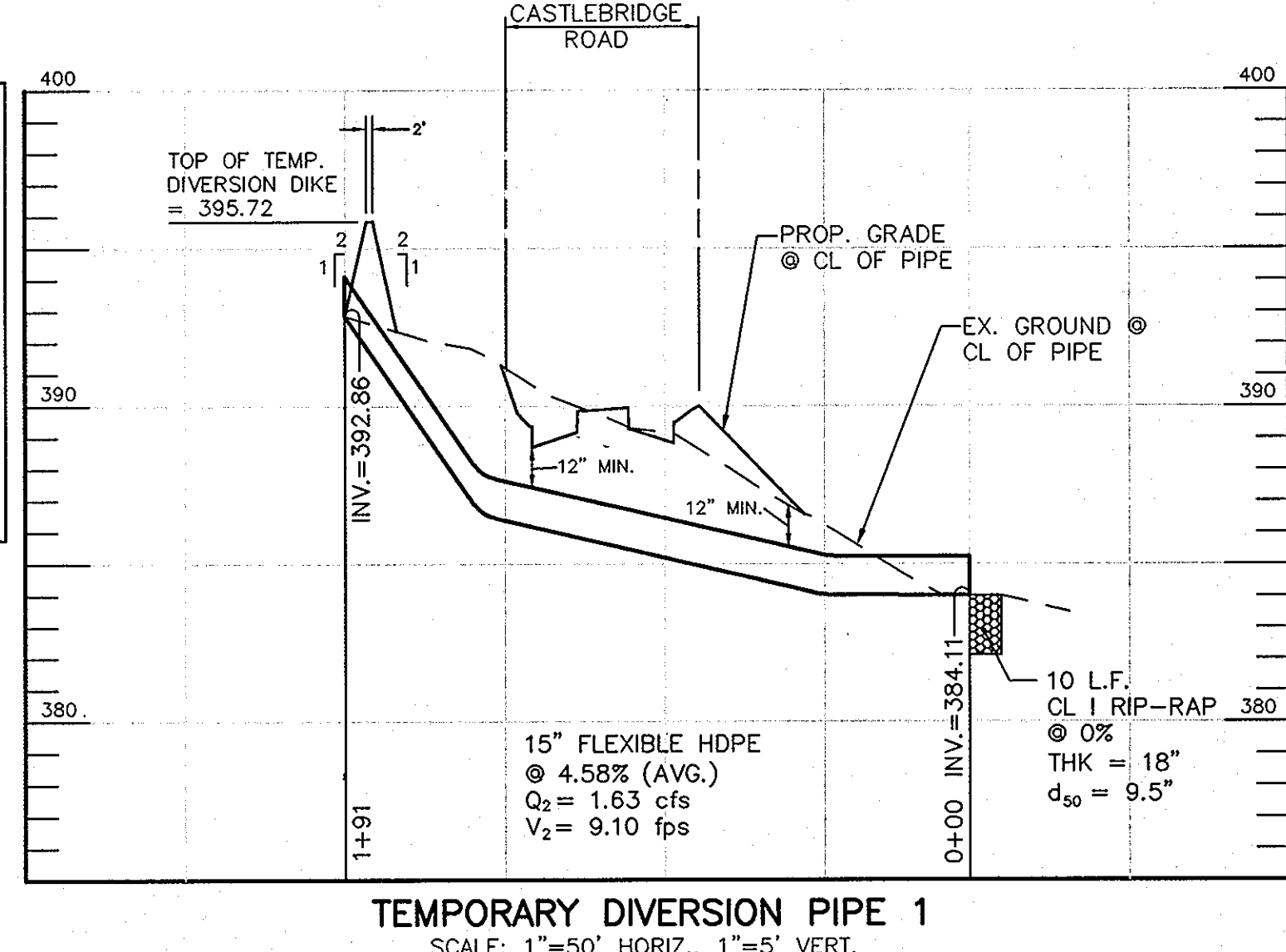
Walter E. White, Jr. 7/18/05

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

Cindy Hanate 7/26/05

APPROVED: DEVELOPMENT ENGINEERING DIVISION

7/19/05



HILLIS - CARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION Page 1 of 1

Project Name: Riverwood SWM Location: Howard County, Maryland Boring Number: B-20 Job #: 02545-A

ELEV.	SOIL DESCRIPTION	STR. DEPTH	DEPTH SCALE	CON	SAMPLE BLOWS	NO.	REC.	BORING & SAMPLING NOTES
0.0	SURFACE							
0.0	Brown, moist, very soft clayey silt, trace fine sand trace roots (ML)	I	2-2.1	1	9"	1	9"	1" Topsoil
2.0		I	3-4.5	2	10"			No groundwater encountered while drilling
5.0		I	5-7.8	3	2"			Caved in at 7.0' at completion
8.0		I	6-7.8	4	10"			Caved in at 7.7' after 24 hours
10.0		I						
15.0		I						
20.0		I						

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE NOTED. HINTACT UNLUBRICATED. L-LOST.

SAMPLE CONDITIONS: D-DISINTEGRATED. HINTACT UNLUBRICATED. L-LOST.

GROUND WATER DEPTH: AT COMPLETION: 0.0 FT. AFTER 24 HRS: 0.0 FT.

BORING METHOD: HSA-HOLLOW STEM AUGERS. CFA-CONT. FLIGHT AUGERS. DC-DRIVING CASING. MC-MUD DRILLING.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION Page 1 of 1

Project Name: Riverwood SWM Location: Howard County, Maryland Boring Number: B-28 Job #: 02545-A

ELEV.	SOIL DESCRIPTION	STR. DEPTH	DEPTH SCALE	CON	SAMPLE BLOWS	NO.	REC.	BORING & SAMPLING NOTES
0.0	SURFACE							
0.0	Brown, moist, loose, silty fine sand trace mica trace roots (SM)	D	4-4.5	1	10"			1" Topsoil
2.5		D	3-6.6	2	7"			No groundwater encountered while drilling
5.0		D	5-7.8	2	10"			Caved in at 8.5' at completion
10.0		D	6-7.0	3	10"			Caved in at 8.2' at completion
15.0		D	5-7.8	4	13"			Caved in at 7.5' after 24 hours
20.0		D	6-8.6	5	14"			Backfilled after 24 hours
25.0		D						

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE NOTED. HINTACT UNLUBRICATED. L-LOST.

SAMPLE CONDITIONS: D-DISINTEGRATED. HINTACT UNLUBRICATED. L-LOST.

GROUND WATER DEPTH: AT COMPLETION: 0.0 FT. AFTER 24 HRS: 0.0 FT.

BORING METHOD: HSA-HOLLOW STEM AUGERS. CFA-CONT. FLIGHT AUGERS. DC-DRIVING CASING. MC-MUD DRILLING.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION Page 1 of 1

Project Name: Riverwood SWM Location: Howard County, Maryland Boring Number: B-21 Job #: 02545-A

ELEV.	SOIL DESCRIPTION	STR. DEPTH	DEPTH SCALE	CON	SAMPLE BLOWS	NO.	REC.	BORING & SAMPLING NOTES
0.0	SURFACE							
0.0	Brown, moist, soft clayey silt, trace fine sand trace roots (ML)	I	2-3.3	1	6"			1" Topsoil
2.0		I	2-4.6	2	10"			No groundwater encountered while drilling
4.5		I	7-21.13	3	11"			Caved in at 9.5' at completion
10.0		I	7-9.9	4	6"			
15.0		I	11-15.15	5	10"			
20.0		I						

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE NOTED. HINTACT UNLUBRICATED. L-LOST.

SAMPLE CONDITIONS: D-DISINTEGRATED. HINTACT UNLUBRICATED. L-LOST.

GROUND WATER DEPTH: AT COMPLETION: 0.0 FT. AFTER 24 HRS: 0.0 FT.

BORING METHOD: HSA-HOLLOW STEM AUGERS. CFA-CONT. FLIGHT AUGERS. DC-DRIVING CASING. MC-MUD DRILLING.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION Page 1 of 1

Project Name: Riverwood SWM Location: Howard County, Maryland Boring Number: B-32 Job #: 02545-A

ELEV.	SOIL DESCRIPTION	STR. DEPTH	DEPTH SCALE	CON	SAMPLE BLOWS	NO.	REC.	BORING & SAMPLING NOTES
0.0	SURFACE							
0.0	Brown, moist, loose, silty fine sand trace mica trace roots (SM)	I	2-2.3	1	6"			1" Topsoil
2.5		I	3-6.6	2	7"			No groundwater encountered while drilling
5.0		I	4-3.5	3	9"			Caved in at 8.5' after 24 hours
10.0		I	4-5.5	4	11"			
15.0		I	50"	5	3"			Backfilled after 24 hours
20.0		I						

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE NOTED. HINTACT UNLUBRICATED. L-LOST.

SAMPLE CONDITIONS: D-DISINTEGRATED. HINTACT UNLUBRICATED. L-LOST.

GROUND WATER DEPTH: AT COMPLETION: 0.0 FT. AFTER 24 HRS: 0.0 FT.

BORING METHOD: HSA-HOLLOW STEM AUGERS. CFA-CONT. FLIGHT AUGERS. DC-DRIVING CASING. MC-MUD DRILLING.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION Page 1 of 1

Project Name: Riverwood SWM Location: Howard County, Maryland Boring Number: B-23 Job #: 02545-A

ELEV.	SOIL DESCRIPTION	STR. DEPTH	DEPTH SCALE	CON	SAMPLE BLOWS	NO.	REC.	BORING & SAMPLING NOTES
0.0	SURFACE							
0.0	Brown, moist, very soft clayey silt, trace fine sand trace roots (ML)	D	2-4.1	1	7"	2"	2"	1" Topsoil
2.5		D	3-6.10	2	8"			No groundwater encountered while drilling
5.0		D	4-5.6	3	12"			Caved in at 6' at completion
10.0		D	3-4.6	4	10"			
15.0		D	3-4.6	5	10"			
20.0		D						

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE NOTED. HINTACT UNLUBRICATED. L-LOST.

SAMPLE CONDITIONS: D-DISINTEGRATED. HINTACT UNLUBRICATED. L-LOST.

GROUND WATER DEPTH: AT COMPLETION: 0.0 FT. AFTER 24 HRS: 0.0 FT.

BORING METHOD: HSA-HOLLOW STEM AUGERS. CFA-CONT. FLIGHT AUGERS. DC-DRIVING CASING. MC-MUD DRILLING.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION Page 1 of 1

Project Name: Riverwood SWM Location: Howard County, Maryland Boring Number: B-33 Job #: 02545-A

ELEV.	SOIL DESCRIPTION	STR. DEPTH	DEPTH SCALE	CON	SAMPLE BLOWS	NO.	REC.	BORING & SAMPLING NOTES
0.0	SURFACE							
0.0	Brown, moist, soft to medium stiff micaceous silt (ML)	I	2-2.3	1	6"			1" Topsoil
2.5		I	2-2.5	2	8"			No groundwater encountered while drilling
5.0		I	11-19.10	3	10"			Caved in at 5.5' at completion
10.0		I	8-20.40	4	11"			
15.0		I	50"	5	3"			Backfilled after 24 hours
20.0		I						

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE NOTED. HINTACT UNLUBRICATED. L-LOST.

SAMPLE CONDITIONS: D-DISINTEGRATED. HINTACT UNLUBRICATED. L-LOST.

GROUND WATER DEPTH: AT COMPLETION: 0.0 FT. AFTER 24 HRS: 0.0 FT.

BORING METHOD: HSA-HOLLOW STEM AUGERS. CFA-CONT. FLIGHT AUGERS. DC-DRIVING CASING. MC-MUD DRILLING.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION Page 1 of 1

Project Name: Riverwood SWM Location: Howard County, Maryland Boring Number: B-24 Job #: 02545-A

ELEV.	SOIL DESCRIPTION	STR. DEPTH	DEPTH SCALE	CON	SAMPLE BLOWS	NO.	REC.	BORING & SAMPLING NOTES
0.0	SURFACE							
0.0	Brown, moist, soft to medium stiff micaceous silt, trace fine sand trace roots (ML)	D	3-2.2	1	3"			1" Topsoil
2.5		D	4-4.4	2	12"			No groundwater encountered while drilling
5.0		D	5-6.6	3	15"			
10.0		D	3-6.7	4	13"			Caved in at 9.0' at completion
15.0		D	5-6.8	5	12"			Backfilled after 24 hours
20.0		D						

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE NOTED. HINTACT UNLUBRICATED. L-LOST.

SAMPLE CONDITIONS: D-DISINTEGRATED. HINTACT UNLUBRICATED. L-LOST.

GROUND WATER DEPTH: AT COMPLETION: 0.0 FT. AFTER 24 HRS: 0.0 FT.

BORING METHOD: HSA-HOLLOW STEM AUGERS. CFA-CONT. FLIGHT AUGERS. DC-DRIVING CASING. MC-MUD DRILLING.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION Page 1 of 1

Project Name: Riverwood SWM Location: Howard County, Maryland Boring Number: B-34 Job #: 02545-A

ELEV.	SOIL DESCRIPTION	STR. DEPTH	DEPTH SCALE	CON	SAMPLE BLOWS	NO.	REC.	BORING & SAMPLING NOTES
0.0	SURFACE							
0.0	Brown, moist, soft to medium stiff micaceous silt, trace fine sand trace roots (ML)	I	3-3.2	1	5"			1" Topsoil
2.5		I	2-2.2	2	10"			No groundwater encountered while drilling
5.0		I	2-3.3	3	10"			Caved in at 7.5' at completion
10.0		I	4-4.3	4	6"			Caved in at 7.5' after 24 hours
15.0		I	2-5.5	5	10"			
20.0		I						

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE NOTED. HINTACT UNLUBRICATED. L-LOST.

SAMPLE CONDITIONS: D-DISINTEGRATED. HINTACT UNLUBRICATED. L-LOST.

GROUND WATER DEPTH: AT COMPLETION: 0.0 FT. AFTER 24 HRS: 0.0 FT.

BORING METHOD: HSA-HOLLOW STEM AUGERS. CFA-CONT. FLIGHT AUGERS. DC-DRIVING CASING. MC-MUD DRILLING.

5-4-06 RENUMBER PLANS IN SET

REVISION

BENCHMARK ENGINEERING, INC.

ENGINEERS • LAND SURVEYORS • PLANNERS

8480 BALTIMORE NATIONAL PIKE & SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 • FAX: 410-465-6644
WWW.BEI-ENGINEERING.COM

DEVELOPER: ELIQU, L.L.C.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

OWNER: HOMEWOOD, L.L.C.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: RIVERWOOD - PHASE 1

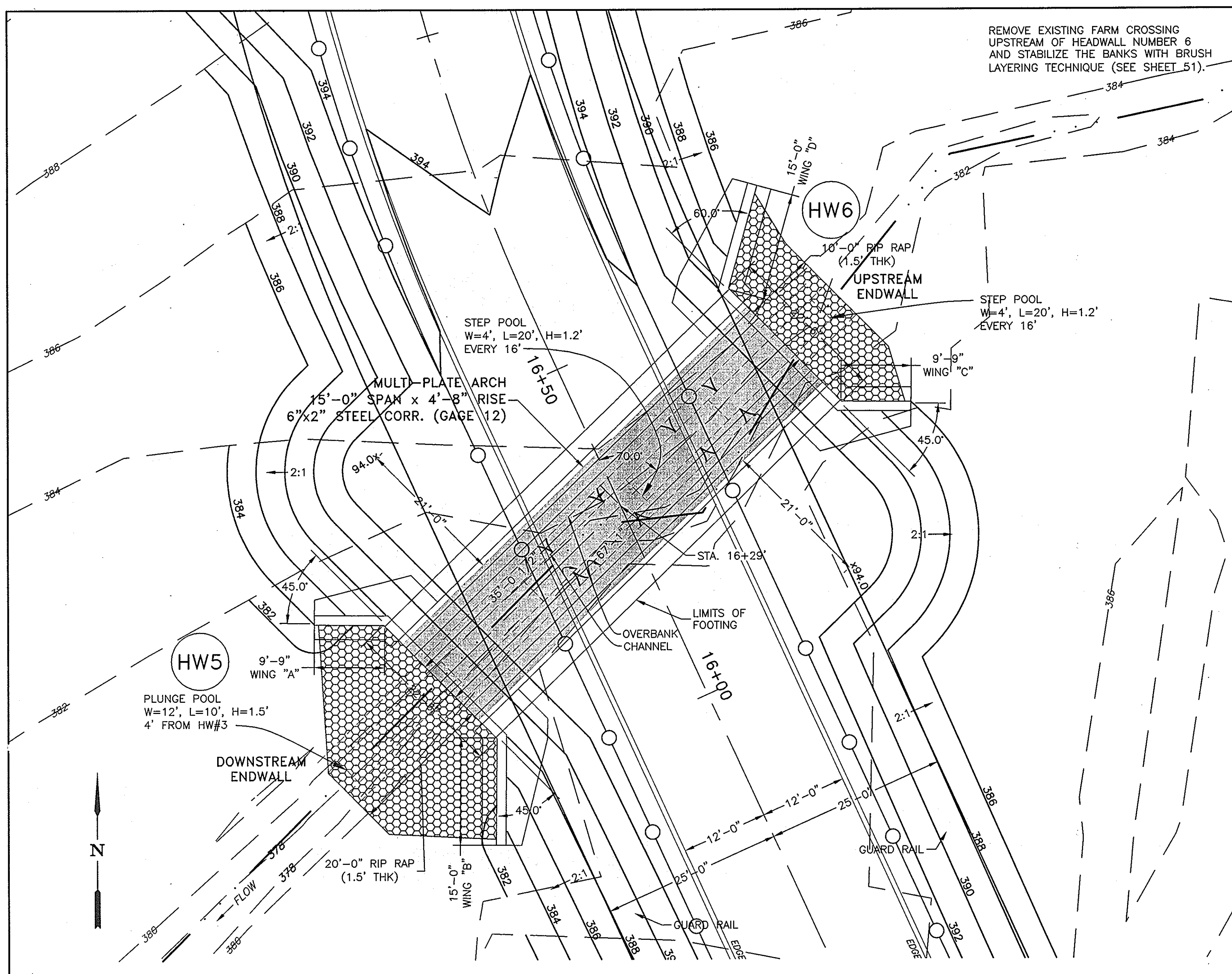
LOTS 1 - 42;
NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R';
BUILDABLE PRESERVATION PARCELS 'Q';
AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'

LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,9&10
PARCELS: 86 PARCELS: 20 & 86
32nd FLOOR
C/O JOHN LEE CARROLL
MARYLAND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

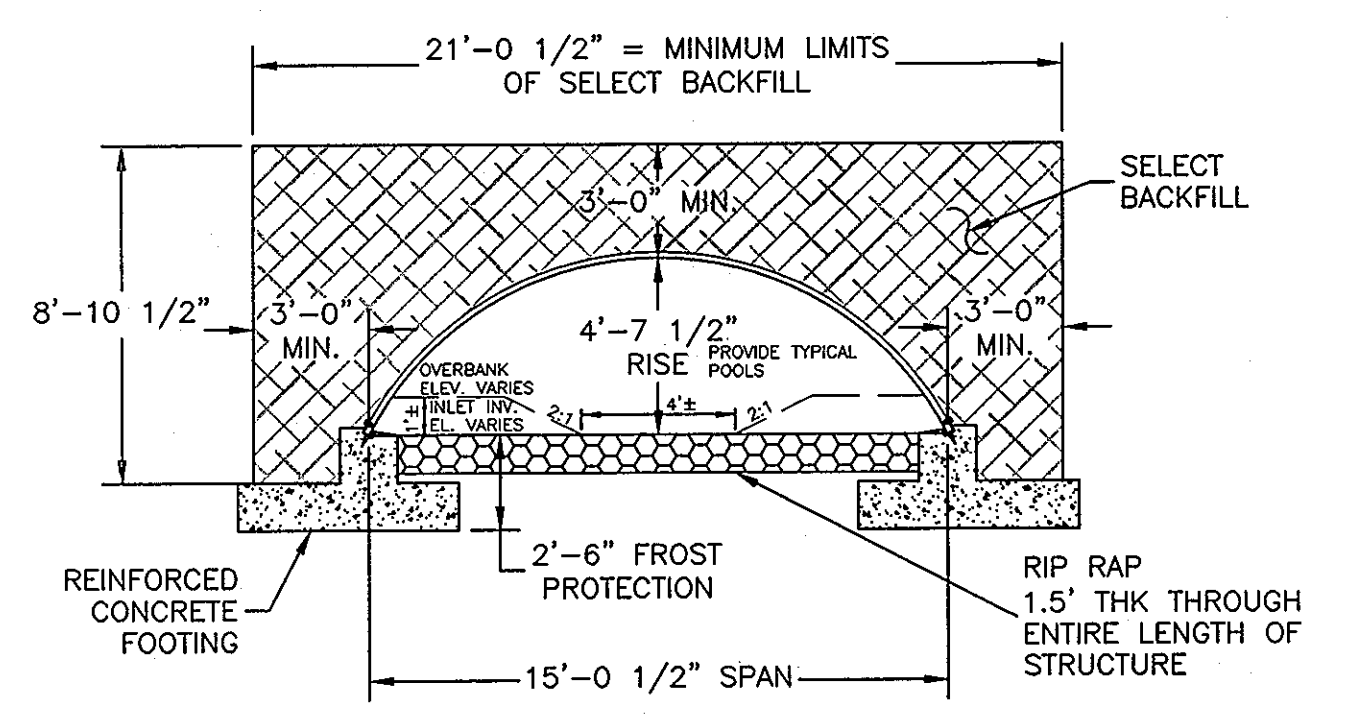
TITLE: STORMWATER MANAGEMENT NOTES,
BORING LOGS AND
TEMPORARY DIVERSION PIPE PROFILES

DATE: JUNE, 2005 PROJECT NO. 1132

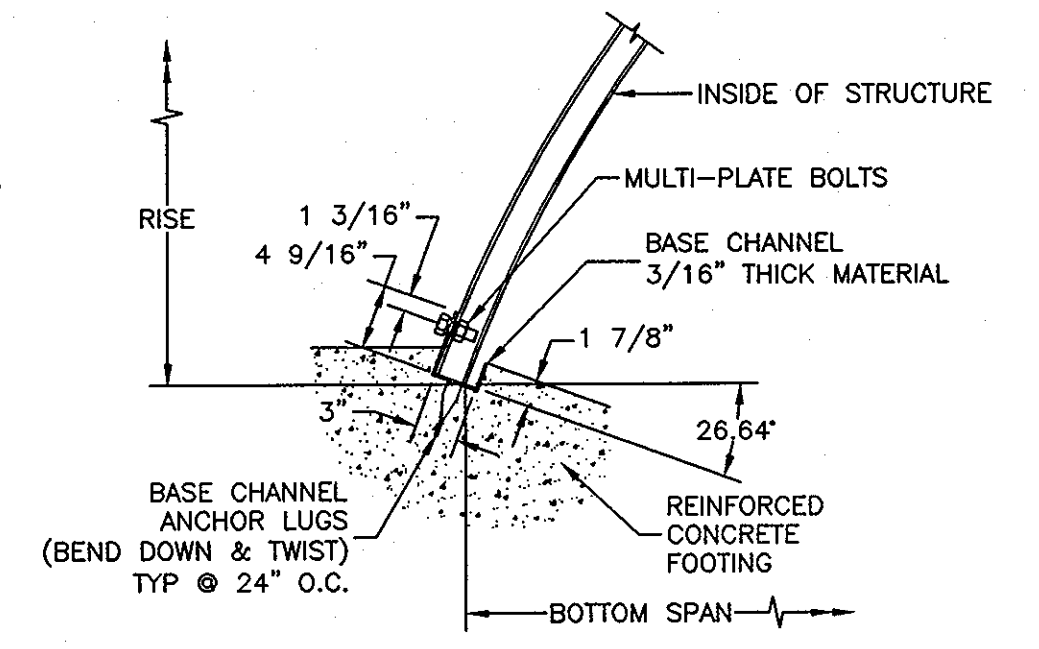
DES: JMC/DBT DRAFT: LDD CHECK: DAM SCALE: AS SHOWN SHEET 41 OF 55



PLAN VIEW
GRAPHIC SCALE
10' 5' 0' 10' 20'

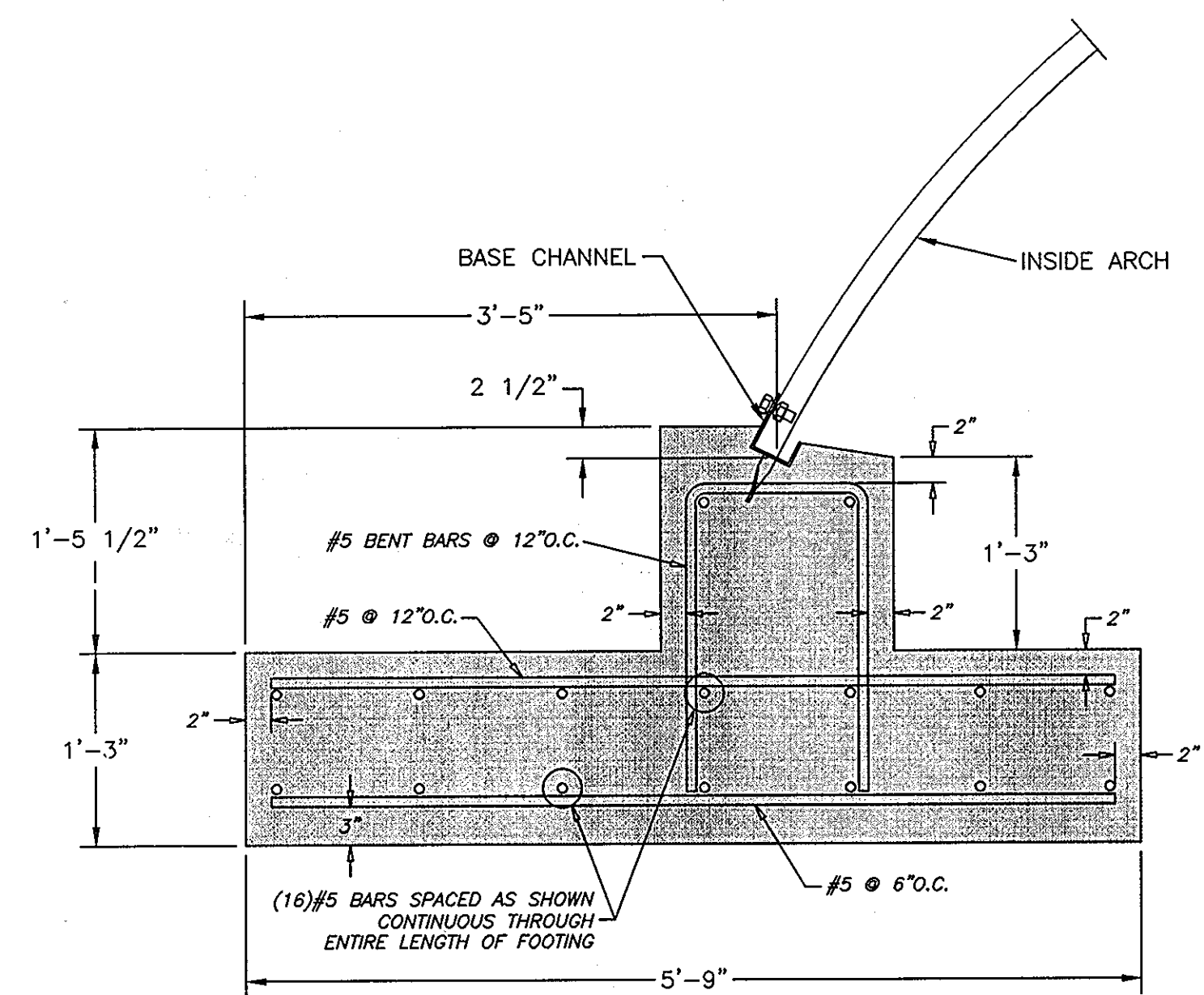


TYPICAL BACKFILL SECTION
GRAPHIC SCALE
5' 2.5' 0' 5' 10'



BASE CHANNEL DETAIL
NOT TO SCALE

NOTES:
1. USE SALVAGED MATERIALS FROM THE EXISTING STREAM AS THE INVERT MATERIAL OF THE CHANNEL TO THE EXTENT POSSIBLE.
2. SMALL SALVAGED MATERIAL SHALL BE PLACED IN THE RIP-RAP WATER IS INTENDED TO FLOW ON THE SURFACE OF THE RIP-RAP CLOG WITH NATIVE MATERIALS OR WITH SIMILARLY SIZED NEW MATERIALS.



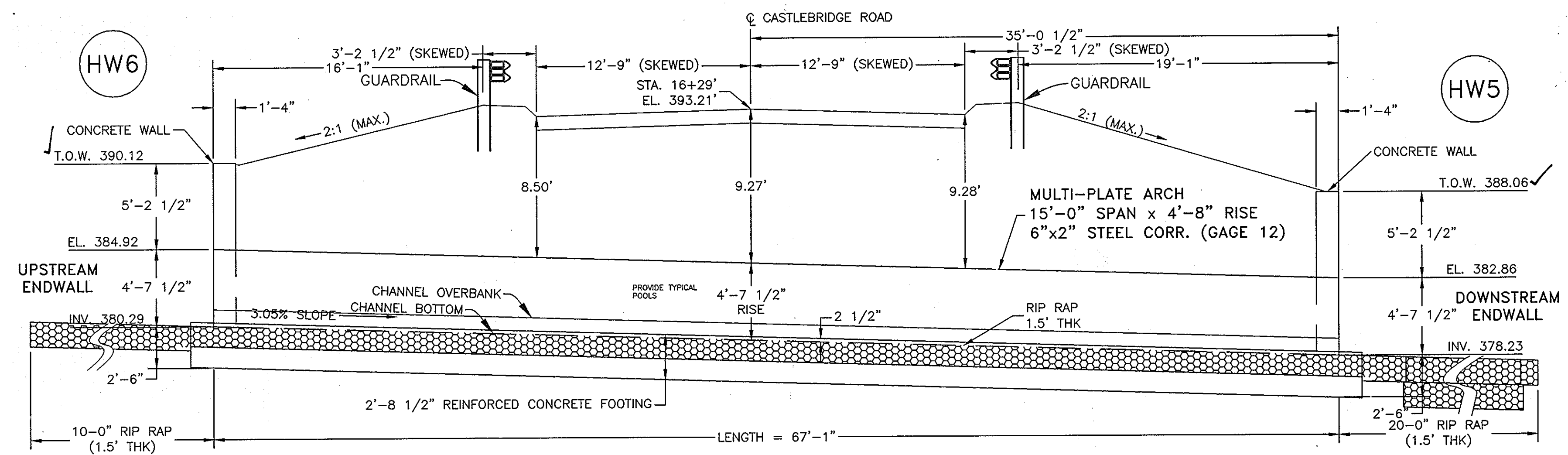
FOOTING DESIGN
GRAPHIC SCALE
1' 0.5' 0' 1' 2'

CROSSING STATION	BANKFULL WIDTH	POOL SPACING	POOL DESIGN	POOL RADIUS	POOL DIMENSIONS	CHANNEL DIMENSIONS
11+82 (RIFFLE)	8' (SECTION 103)	40'	24'	NA	W=6', L=10', D=1', S=0.0025	4' AT 0.8%
16+29 (STEP)	8' (SECTION 14)	16'	NA	NA	W=4', L=20', H=1.2', S=0.0305	4' AT 3.05%
35+16 (RIFFLE)	9' (SECTION 214 US)	42'	27'	NA	W=6', L=10', D=1', S=0.0025	4' AT 0.5%

START POOLS AT UPPER END OF CULVERT AND CONTINUE POOL SPACING TO END OF DOWNSTREAM RIPRAP, MINIMUM OF TWO POOLS.

SEE CONTRACT DRAWING AND REPORT BY CBC ENGINEERS & ASSOCIATES 937-428-6150 CBC REPORT No. 5992-1-0905-05.

NOTES:
1.) CONCRETE SHALL BE f'c = 3,500 psi.
2.) ALL REINFORCEMENT SHALL BE ASTM A-615, GRADE 60
3.) FOOTING IS DESIGNED FOR A 2,000 psf ALLOWABLE BEARING CAPACITY



PROFILE ALONG C OF STRUCTURE
GRAPHIC SCALE
5' 2.5' 0' 5' 10'



PLUNGE POOL W=12', L=10', H=1.5' 4' FROM HW#3



APPROVED: DEPARTMENT OF PUBLIC WORKS
Walter F. Mohr 5-15-06
CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Conrad Hanna 5/25/06
CHIEF, DIVISION OF LAND DEVELOPMENT

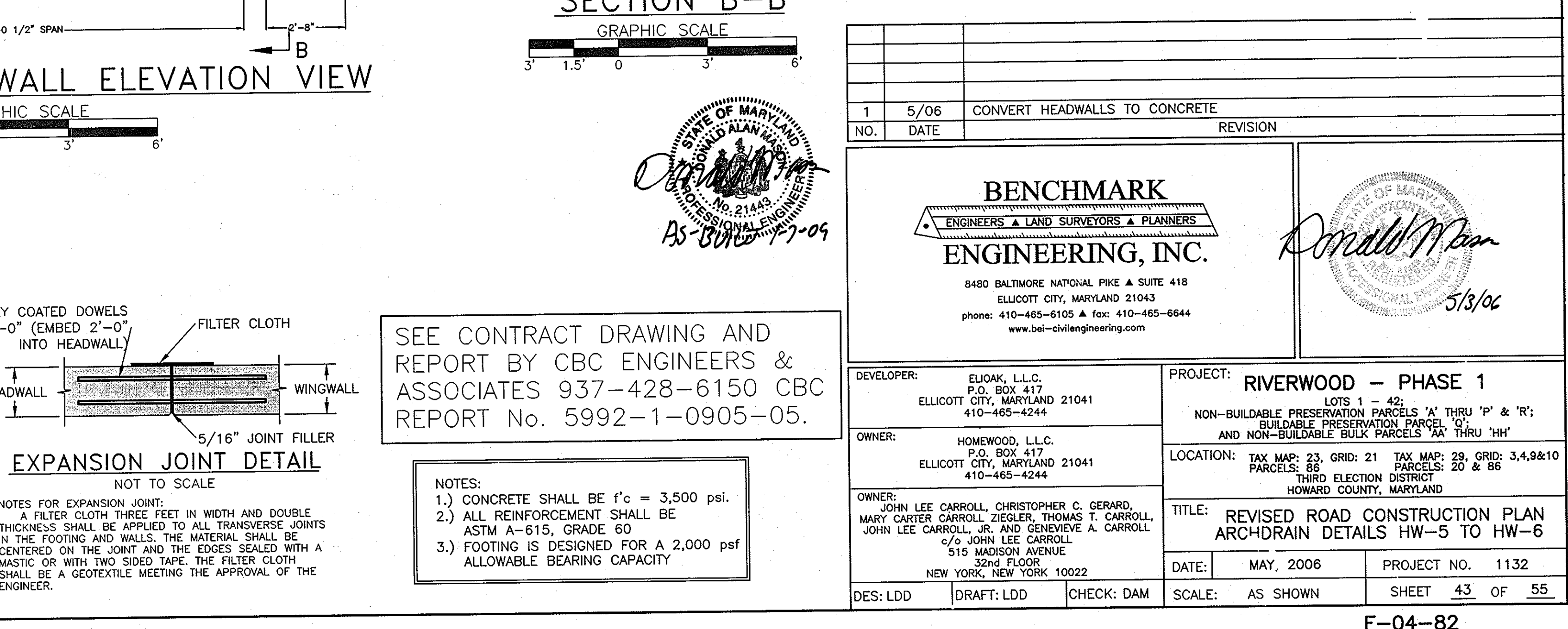
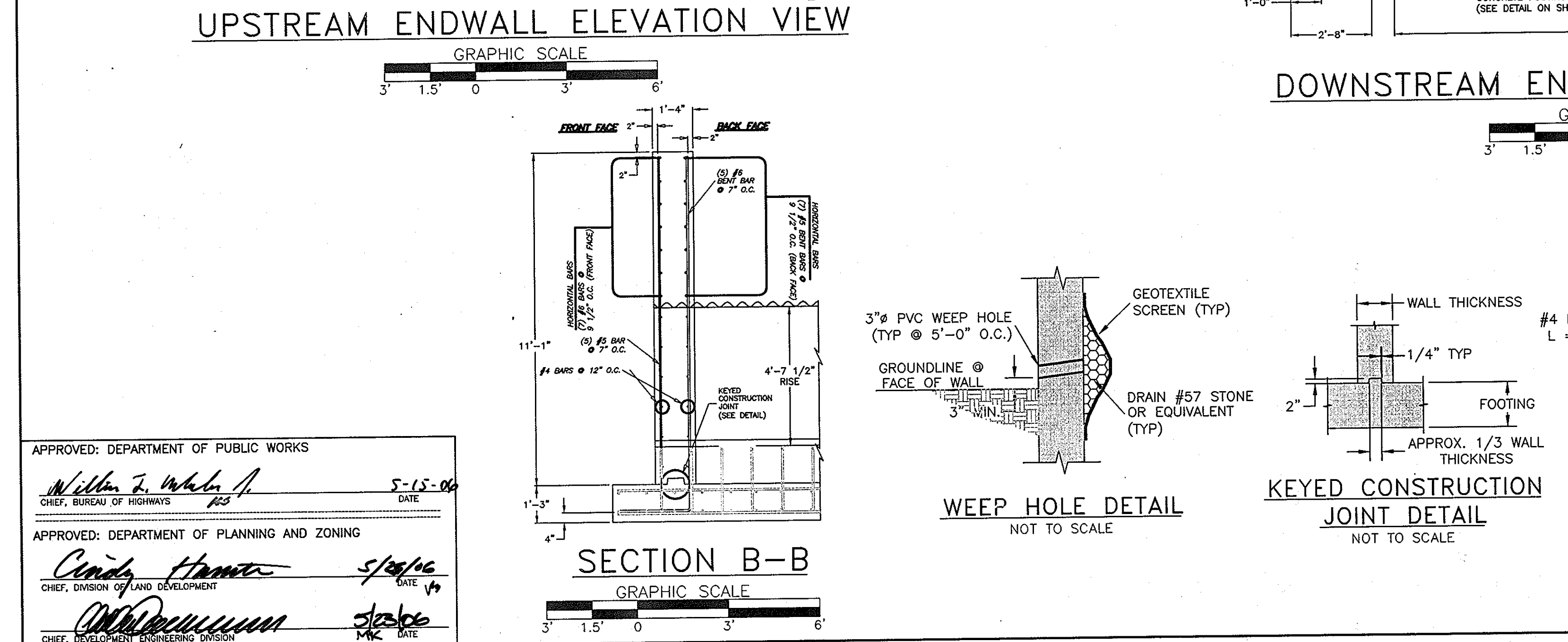
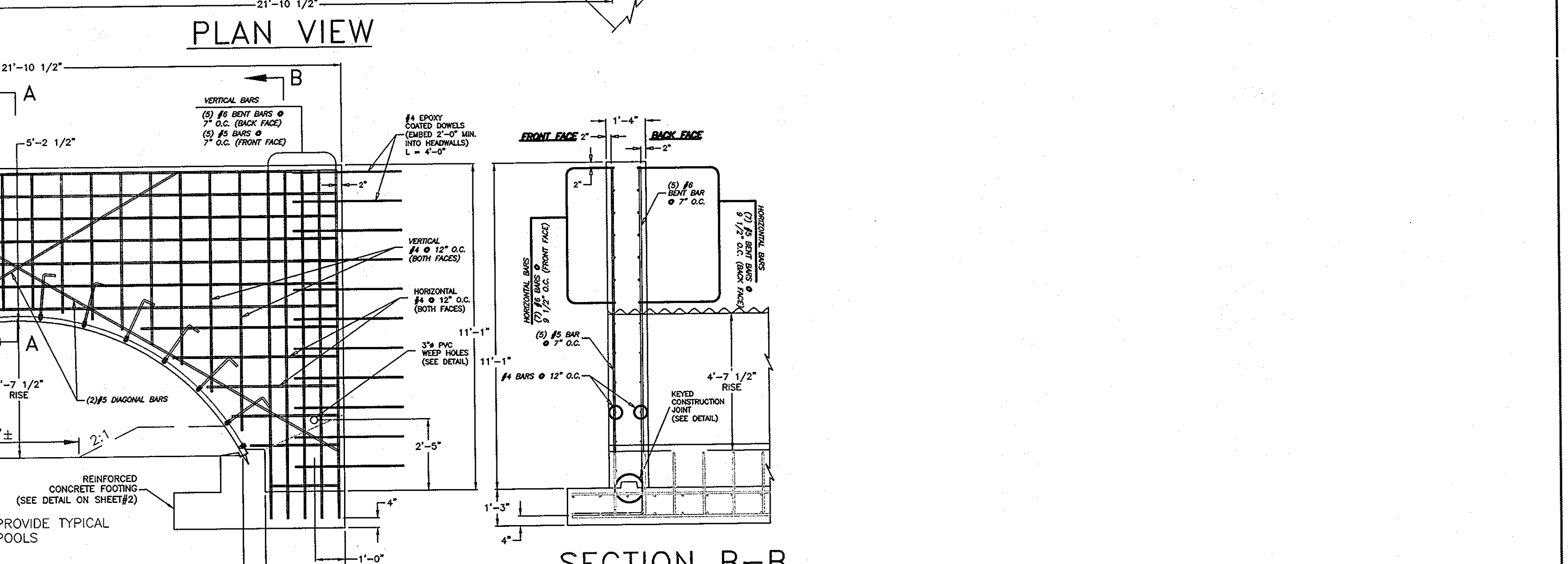
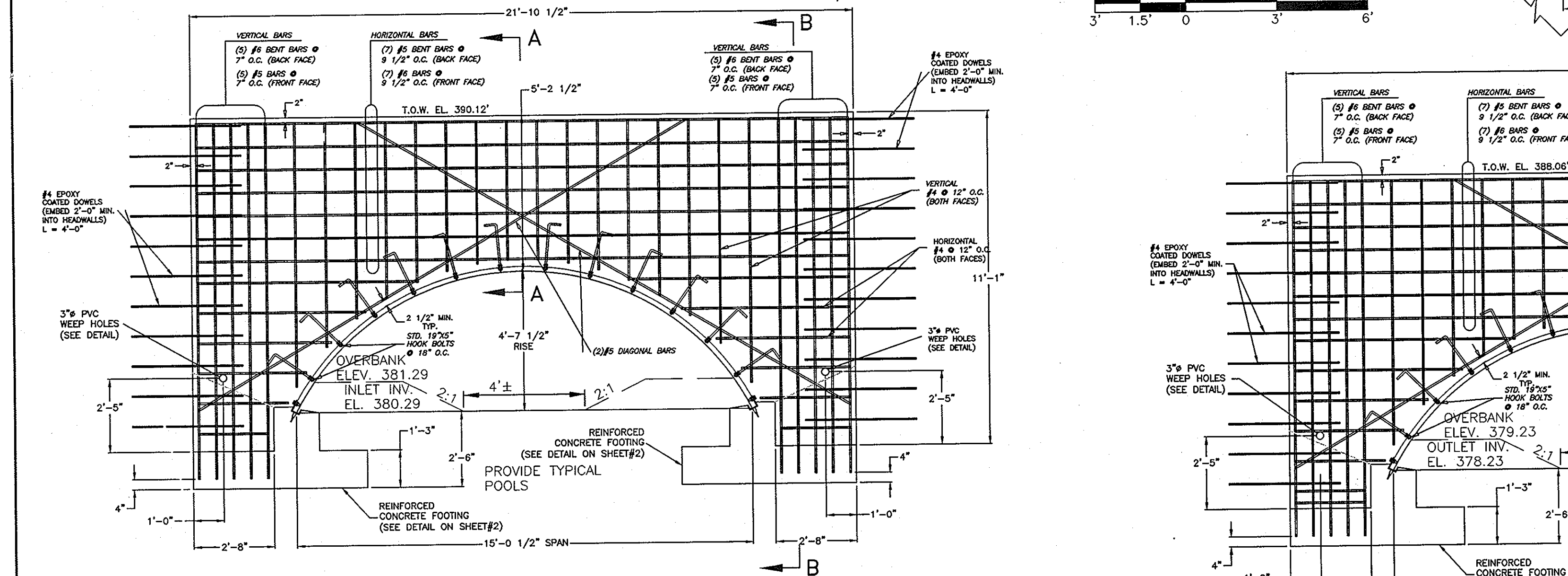
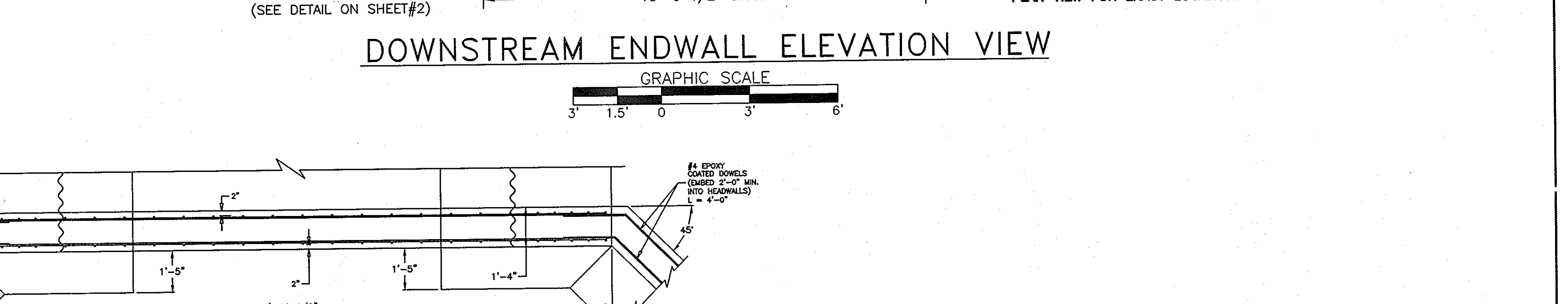
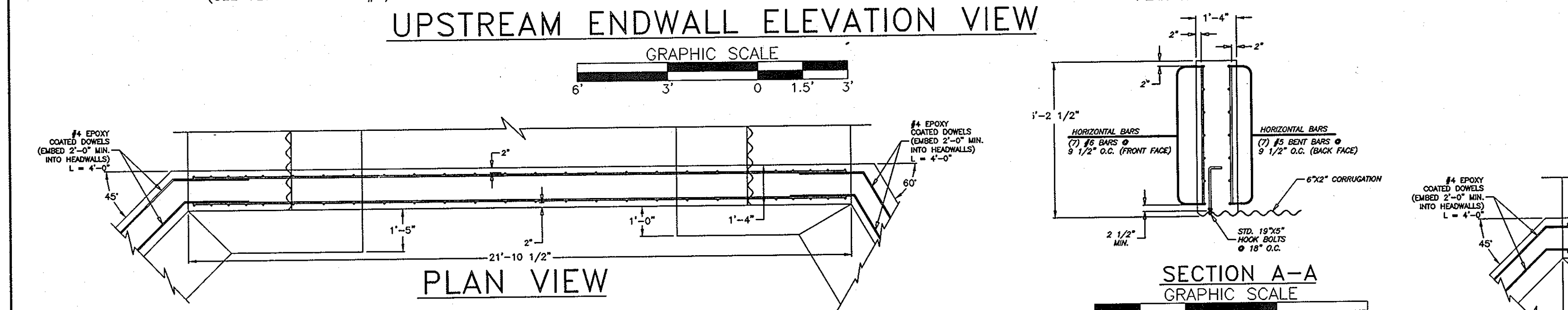
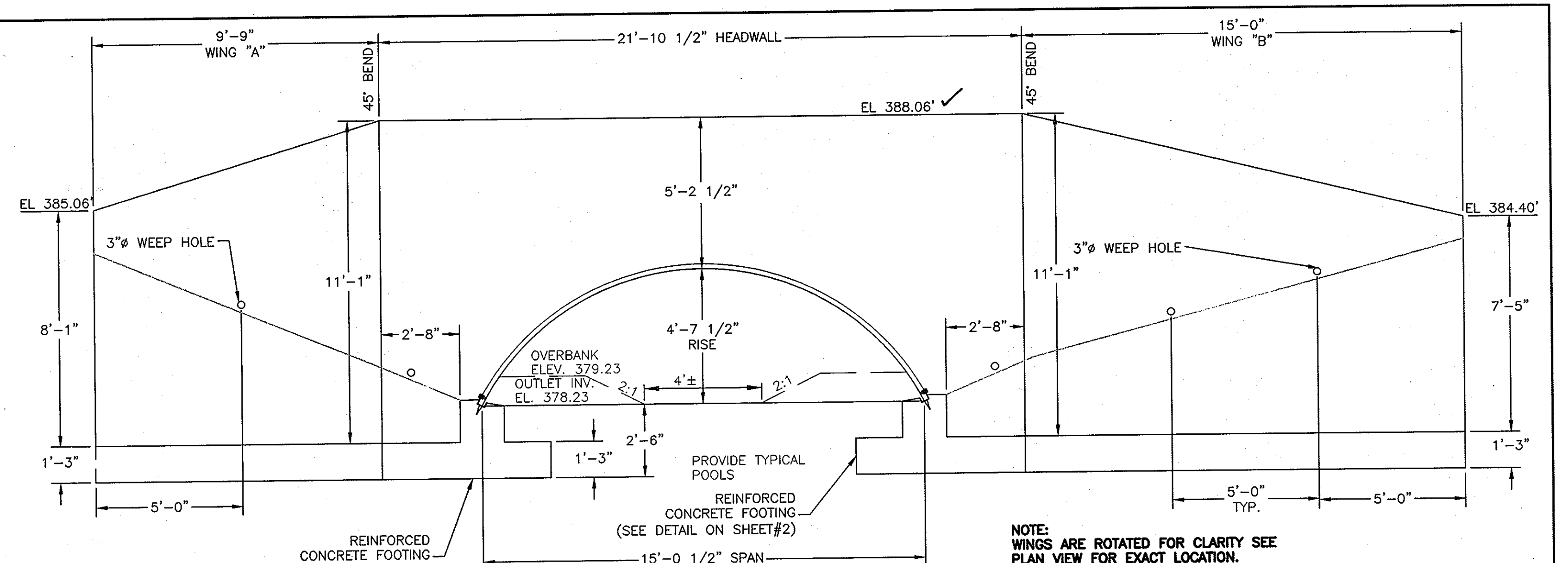
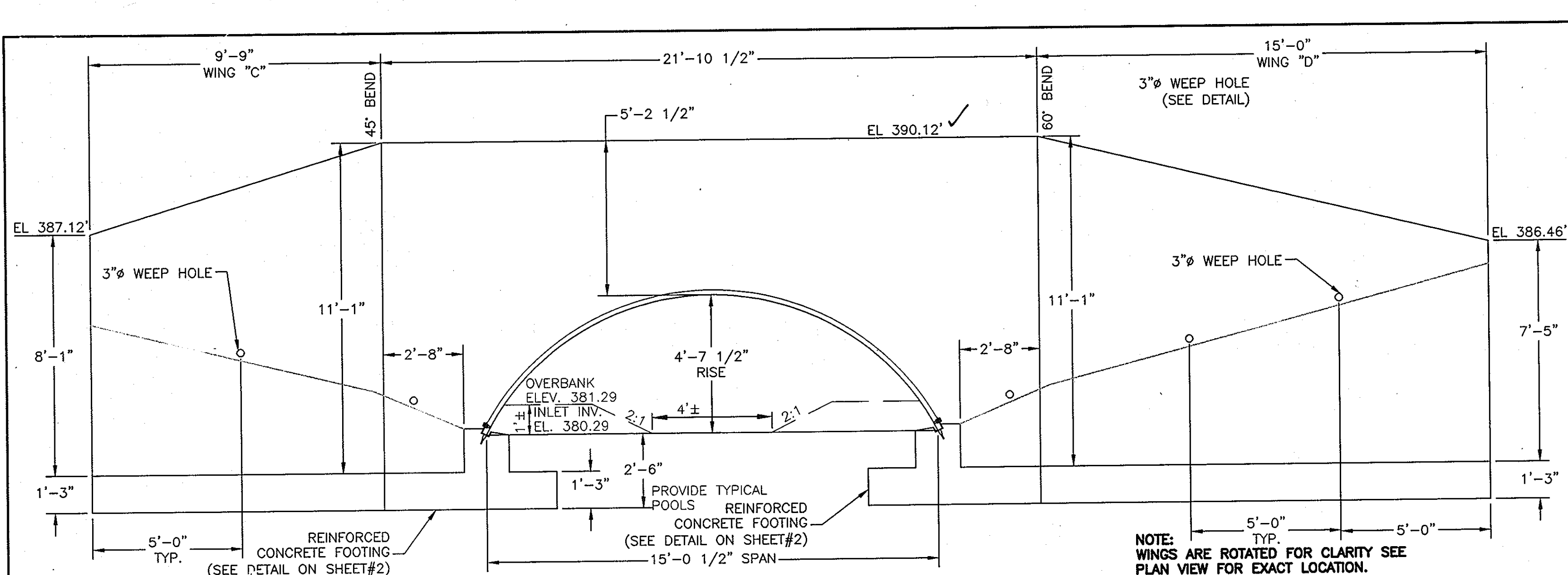
APPROVED: DEPARTMENT OF ENGINEERING
5/23/06
CHIEF, DEVELOPMENT ENGINEERING DIVISION

NO.	DATE	REVISION
1	5/06	CONVERT HEADWALLS TO CONCRETE

BENCHMARK ENGINEERS, INC.
ENGINEERS & LAND SURVEYORS & PLANNERS
8480 BALTIMORE NATIONAL PIKE & SUITE 418
ELLCOTT CITY, MARYLAND 21043
PHONE: 410-165-6105 & FAX: 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

Donal Moran
5/3/06

DEVELOPER: ELIOAK, L.L.C. P.O. BOX 417 ELLCOTT CITY, MARYLAND 21041 410-465-4244	OWNER: HOMWOOD, L.L.C. P.O. BOX 417 ELLCOTT CITY, MARYLAND 21041 410-465-4244	OWNER: JOHN LEE CARROLL CHRISTOPHER C. GERARD, MARY CARTER CARROLL ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32nd FLOOR NEW YORK, NEW YORK 10022	PROJECT: RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'Q'; AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'	LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,9&10 PARCELS: 86 PARCELS: 20 & 88 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND	TITLE: REVISED ROAD CONSTRUCTION PLAN ARCHDRAIN DETAILS HW-5 TO HW-6	DATE: MAY, 2006	PROJECT NO. 1132
DES: LDD	DRAFT: LDD	CHECK: DAM	SCALE: AS SHOWN	SHEET 42 OF 55			



APPROVED: DEPARTMENT OF PUBLIC WORKS
 Willam J. Mahan, Jr. 5-15-06
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 Cindy Hamer 5/15/06
 CHIEF, DIVISION OF LAND DEVELOPMENT

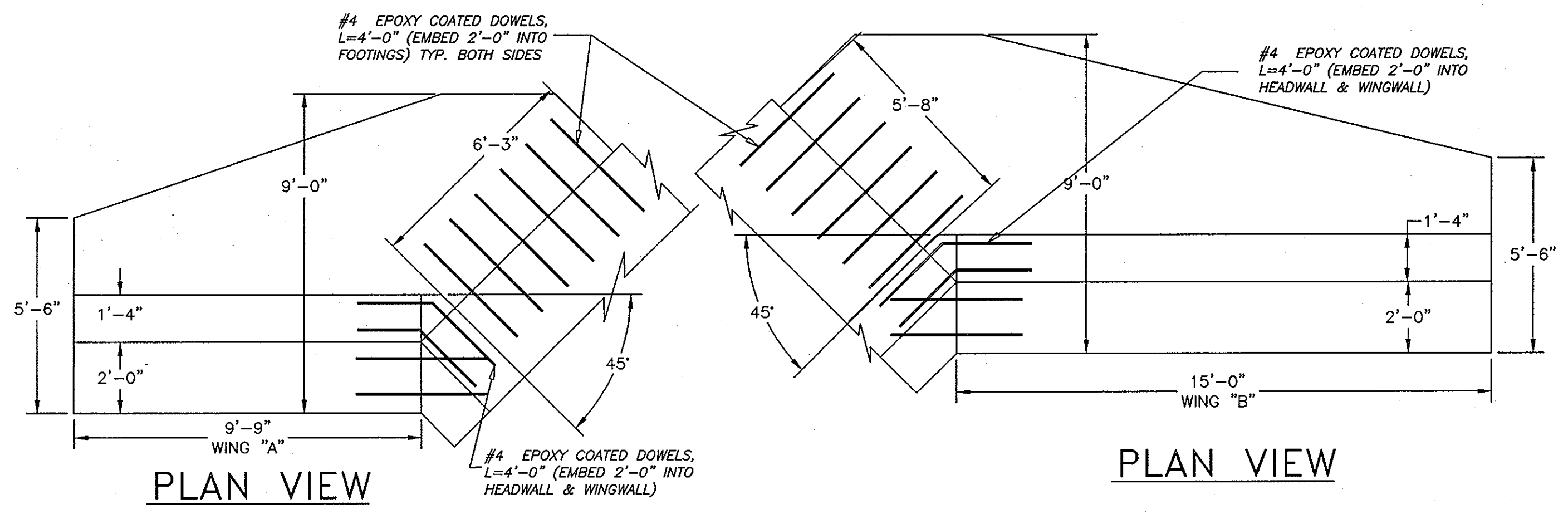
APPROVED: DEVELOPMENT ENGINEERING DIVISION
 MK 5/20/06



SEE CONTRACT DRAWING AND REPORT BY CBC ENGINEERS & ASSOCIATES 937-428-6150 CBC REPORT No. 5992-1-0905-05.

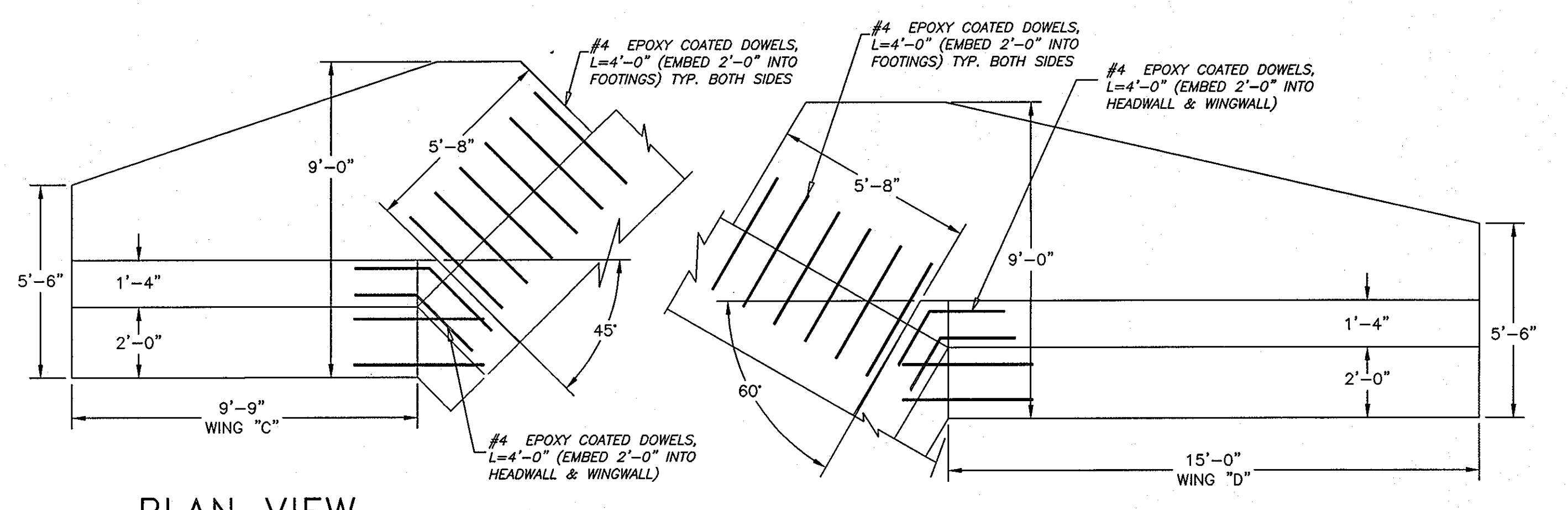
NO.	DATE	REVISION
1	5/06	CONVERT HEADWALLS TO CONCRETE

BENCHMARK ENGINEERING, INC. ENGINEERS • LAND SURVEYORS • PLANNERS 8480 BALTIMORE NATIONAL PIKE • SUITE 418 ELLICOTT CITY, MARYLAND 21043 phone: 410-465-6105 • fax: 410-465-6644 www.bel-civilengineering.com		
DEVELOPER:	ELIOAK, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	PROJECT: RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'Q'; AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'
OWNER:	HOMWOOD, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,9&10 PARCELS: 88 PARCELS: 20' & 88 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
OWNER:	JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL, ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32ND FLOOR NEW YORK, NEW YORK 10022	TITLE: REVISED ROAD CONSTRUCTION PLAN ARCHDRAIN DETAILS HW-5 TO HW-6
DES: LDD	DRAFT: LDD	CHECK: DAM
DATE: MAY, 2006	PROJECT NO. 1132	SCALE: AS SHOWN SHEET 43 OF 55



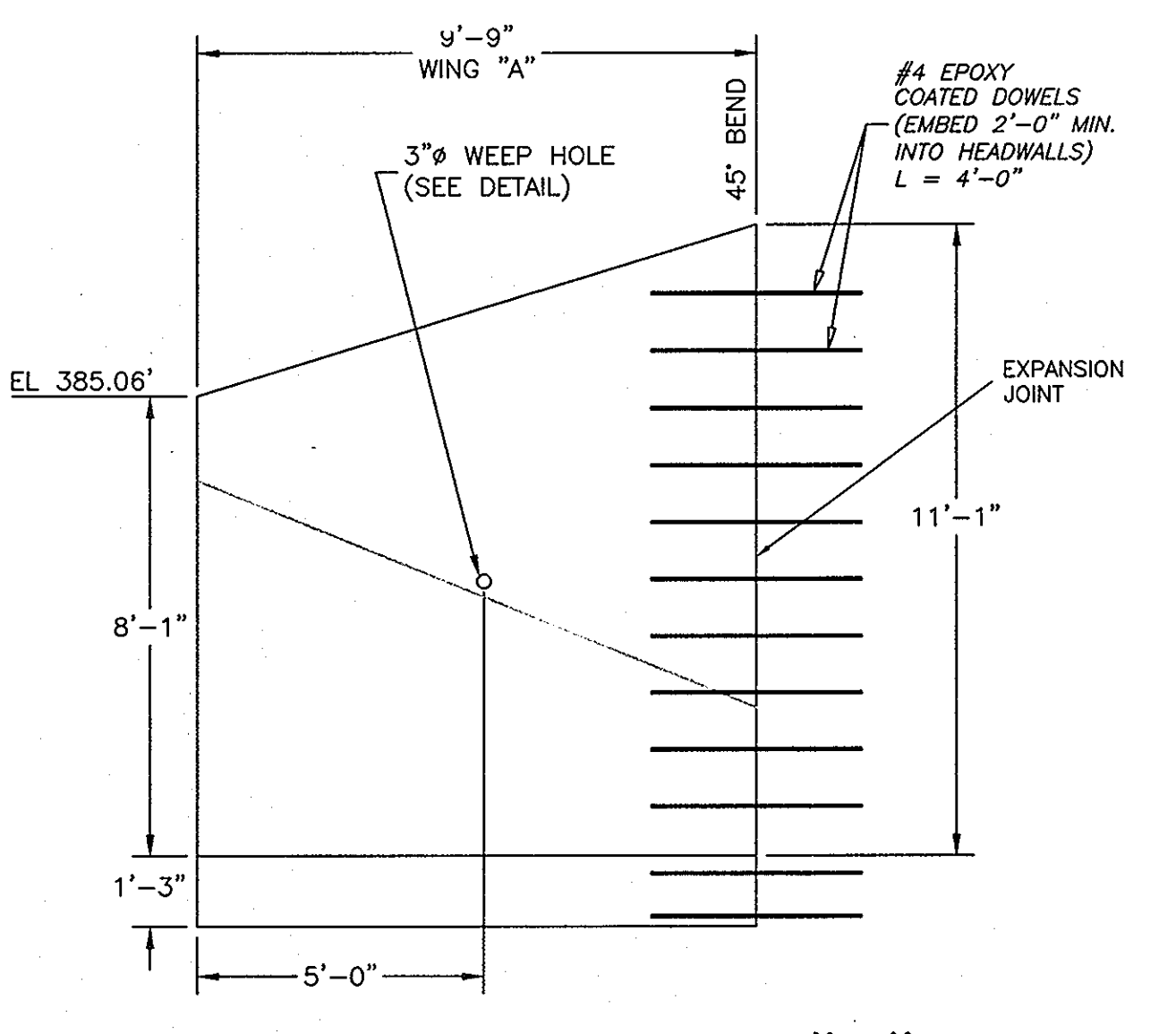
PLAN VIEW

PLAN VIEW

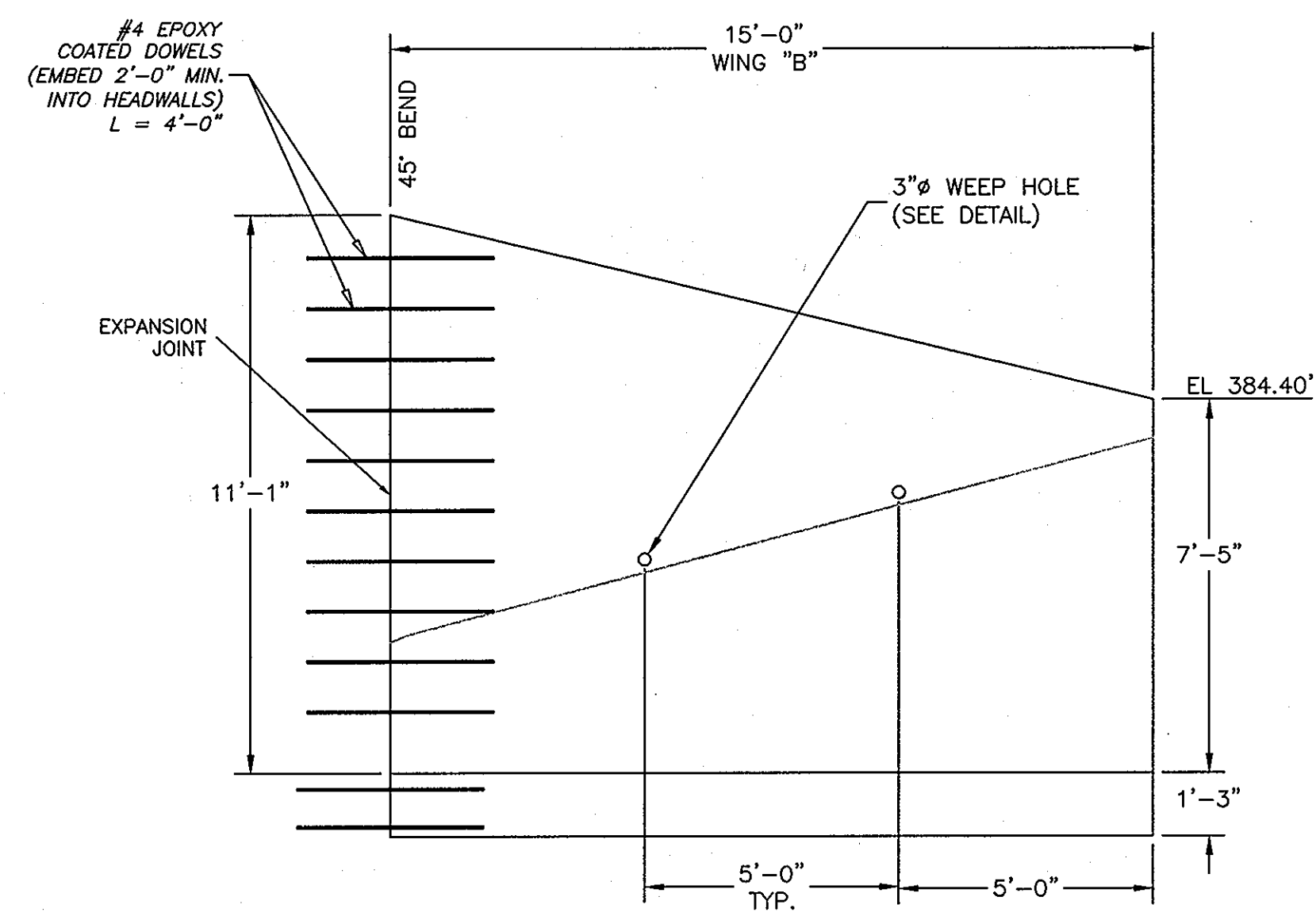


PLAN VIEW

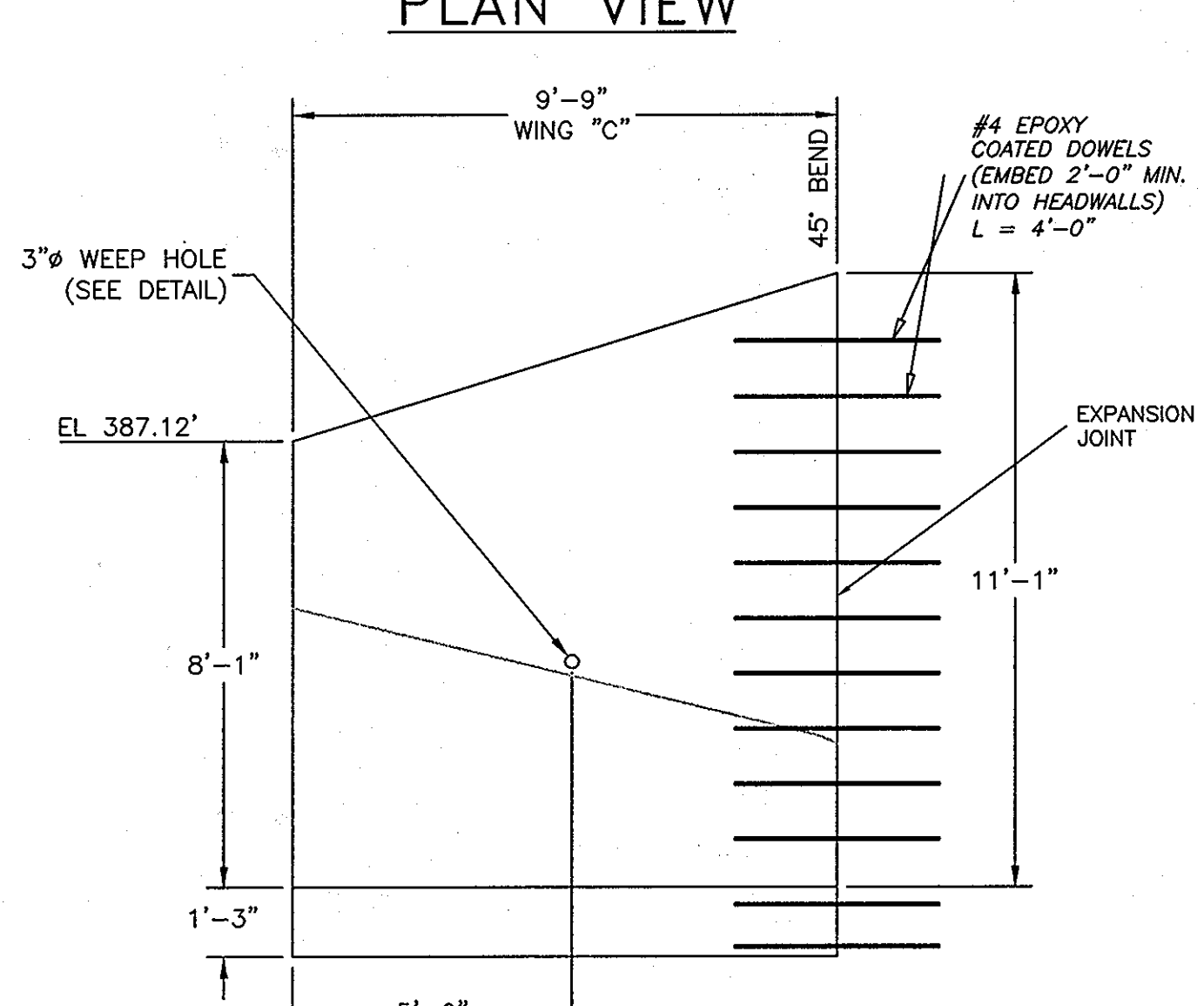
PLAN VIEW



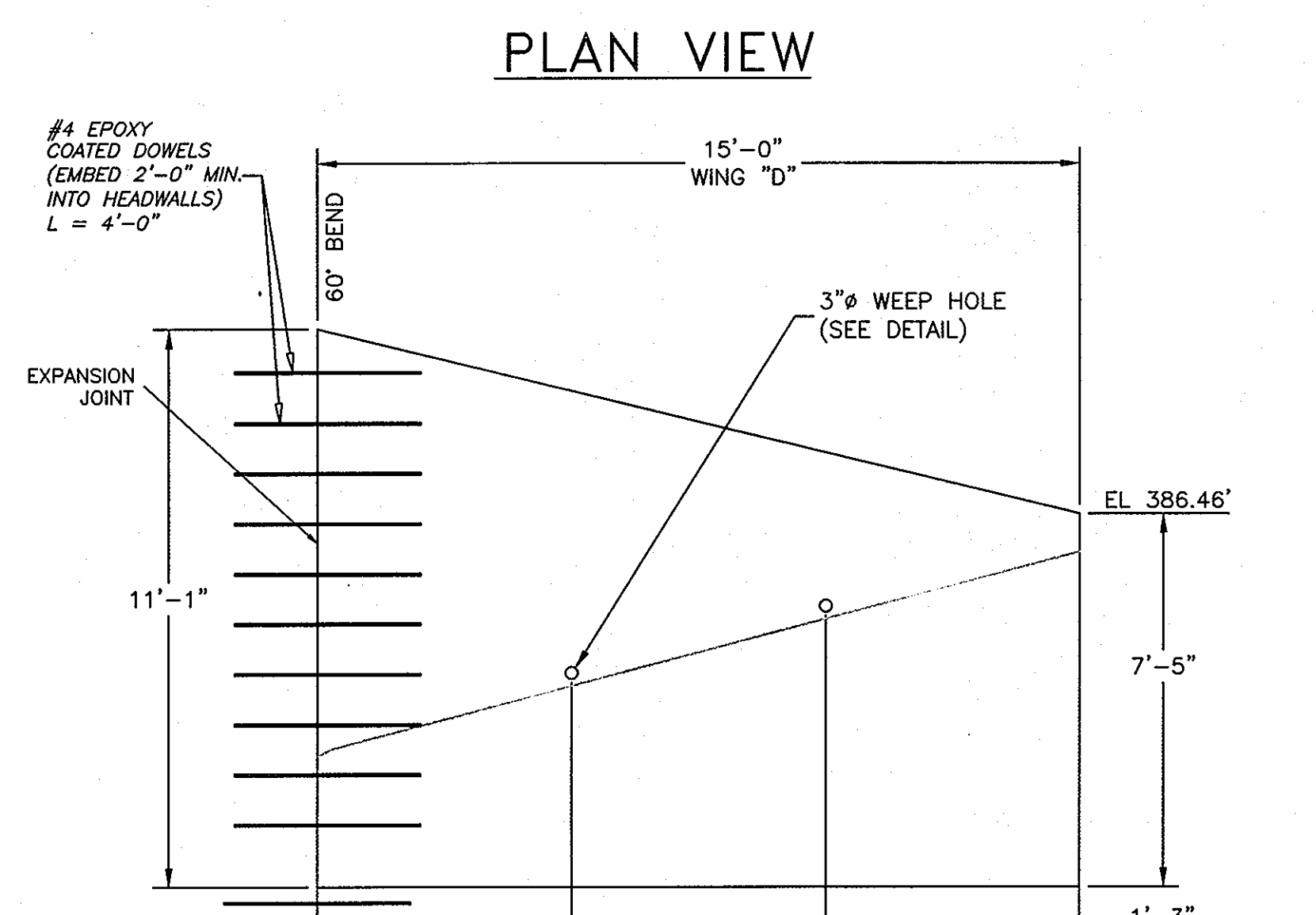
ELEVATION VIEW WING "A"



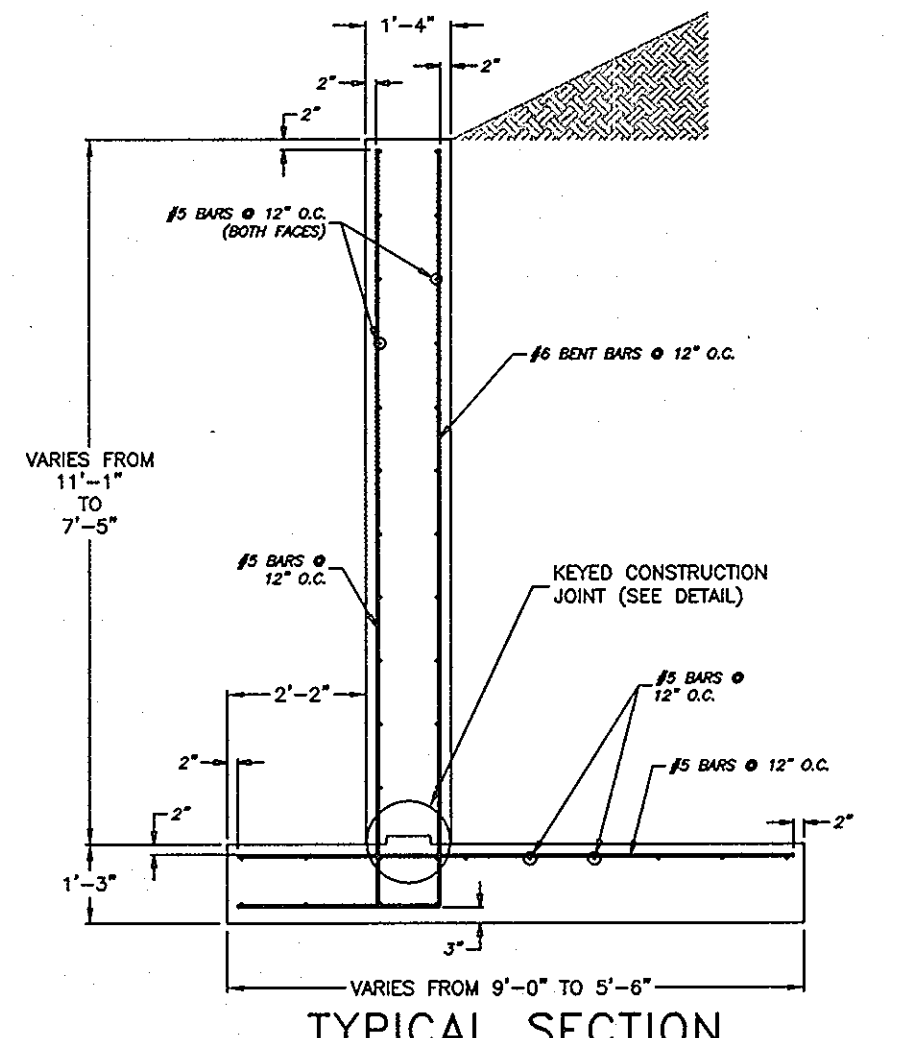
ELEVATION VIEW WING "B"



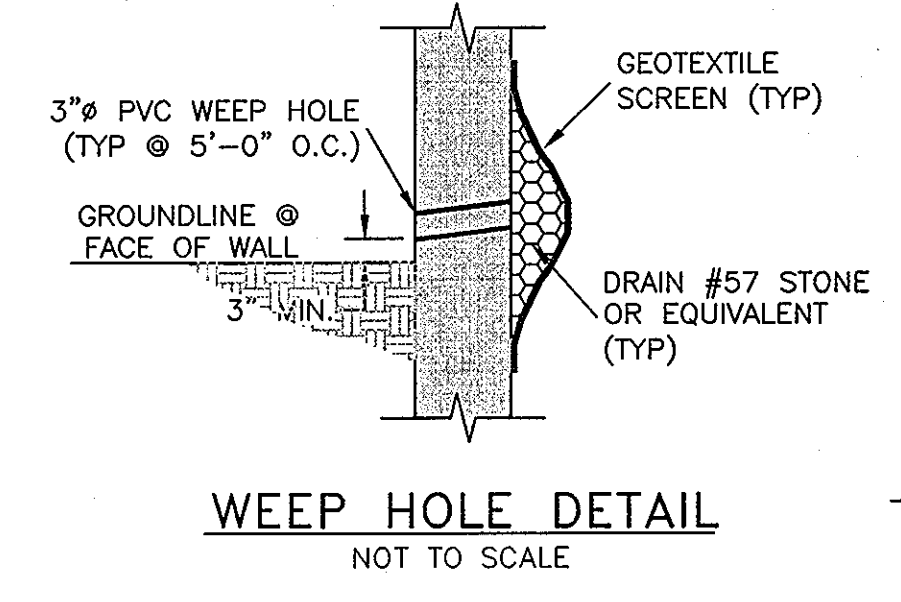
ELEVATION VIEW WING "C"



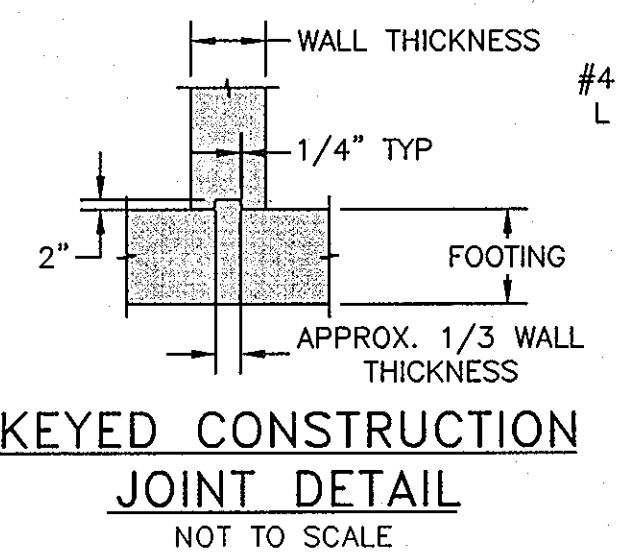
ELEVATION VIEW WING "D"



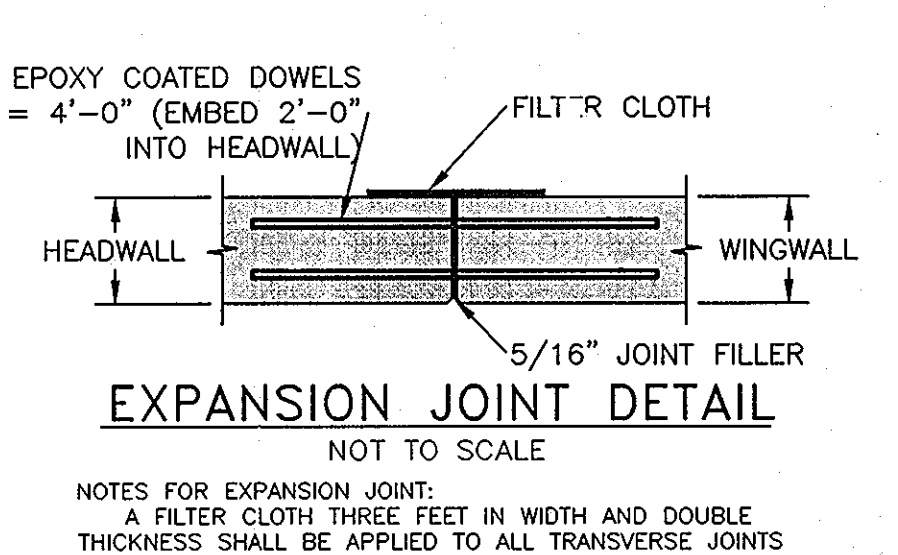
TYPICAL SECTION



WEEP HOLE DETAIL
NOT TO SCALE



KEYED CONSTRUCTION
JOINT DETAIL
NOT TO SCALE



EXPANSION JOINT DETAIL
NOT TO SCALE

SEE CONTRACT DRAWING AND REPORT BY CBC ENGINEERS & ASSOCIATES 937-428-6150 CBC REPORT No. 5992-1-0905-05.

- NOTES:
- 1.) CONCRETE SHALL BE $f'_c = 3,500$ psi.
 - 2.) ALL REINFORCEMENT SHALL BE ASTM A-615, GRADE 60
 - 3.) FOOTING IS DESIGNED FOR A 2,000 psf ALLOWABLE BEARING CAPACITY

APPROVED: DEPARTMENT OF PUBLIC WORKS
Walter F. White Jr. 5-13-06
 CHIEF, BUREAU OF HIGHWAYS
 DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Cindy Hammet sjs/joc
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE

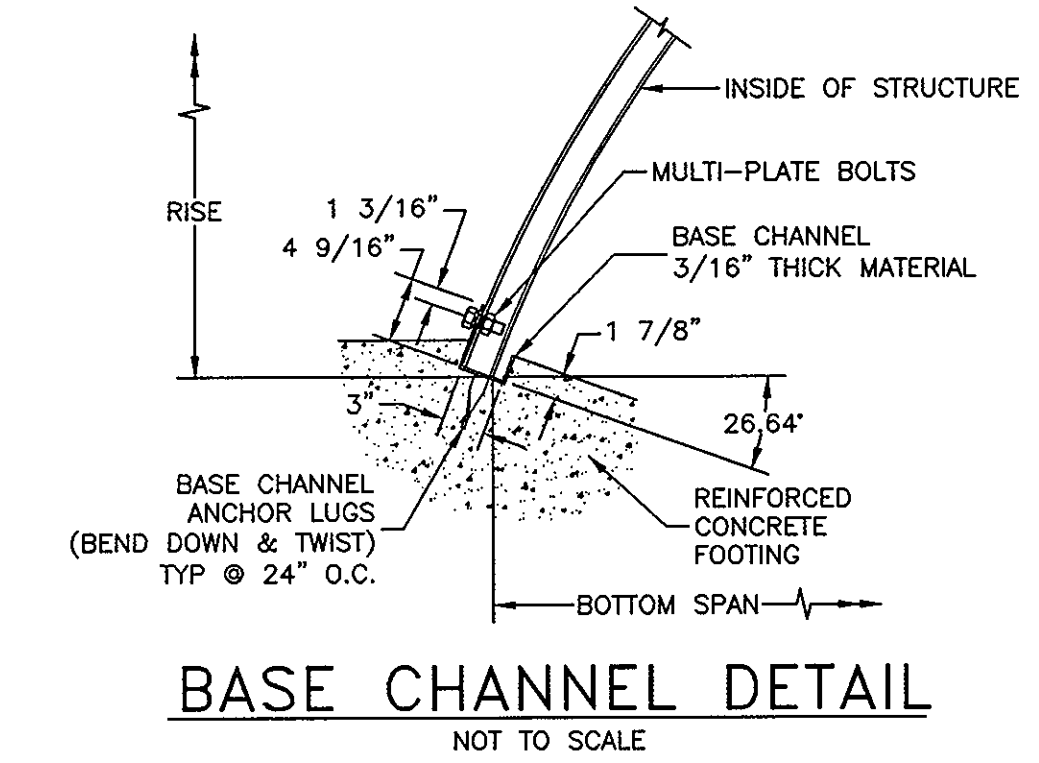
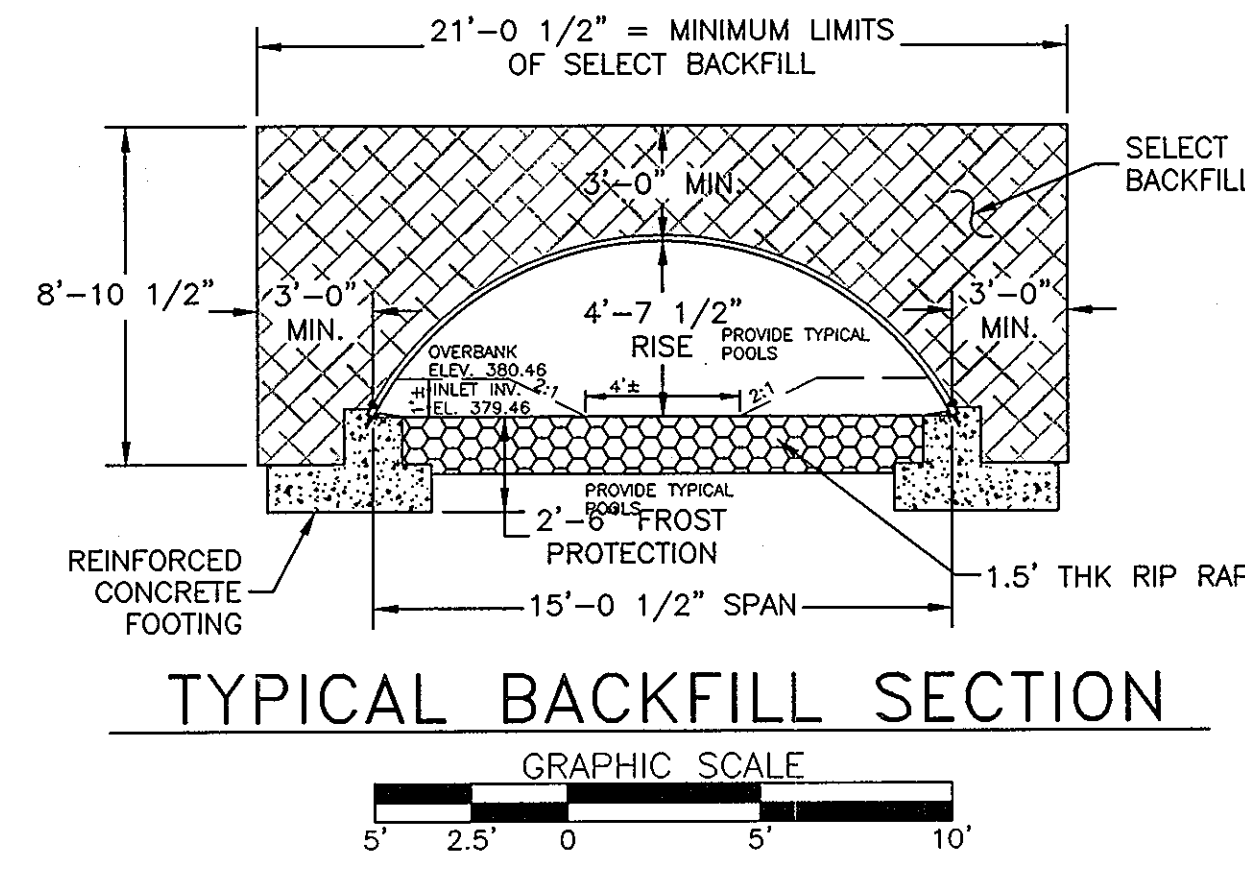
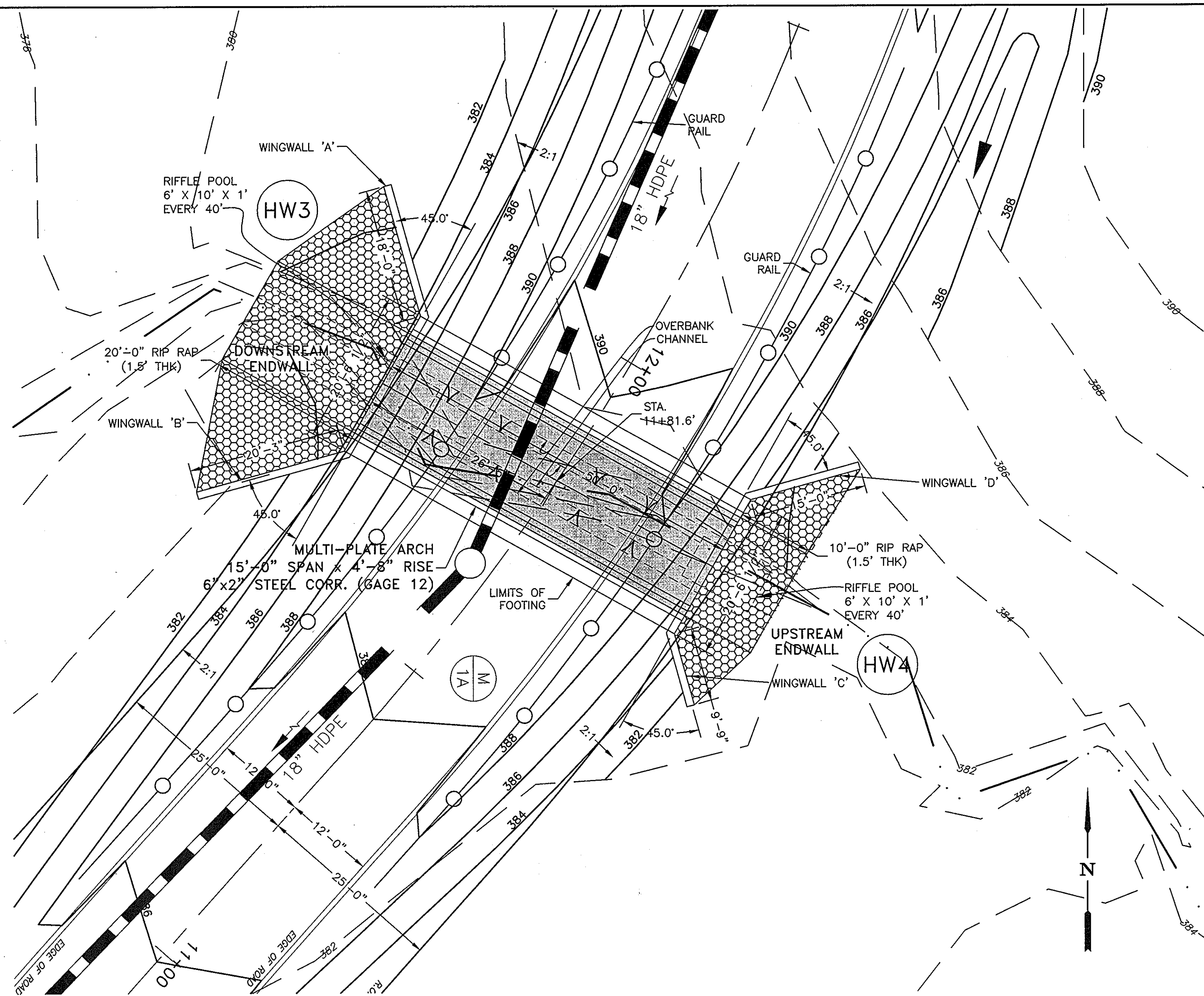
William J. ... sjs/ks
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE

NO.	DATE	REVISION
1	5/06	CONVERT HEADWALLS TO CONCRETE

BENCHMARK ENGINEERING, INC.
 ENGINEERS • LAND SURVEYORS • PLANNERS
 8480 BALTIMORE NATIONAL PIKE • SUITE 418
 ELLICOTT CITY, MARYLAND 21043
 phone: 410-465-6105 • fax: 410-465-6644
 www.bel-civilengineering.com

Donald Mean
 6/1/06

DEVELOPER: ELIOAK, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	PROJECT: RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'Q'; AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'
OWNER: HOMEWOOD, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3, 4, 9&10 PARCELS: 86 PARCELS: 20 & 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
OWNER: JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL, ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32nd FLOOR NEW YORK, NEW YORK 10022	TITLE: REVISED ROAD CONSTRUCTION PLAN ARCHDRAIN DETAILS HW-5 TO HW-6
DES: LDD DRAFT: LDD CHECK: DAM	DATE: MAY, 2006 PROJECT NO. 1132 SCALE: AS SHOWN SHEET 44 OF 55

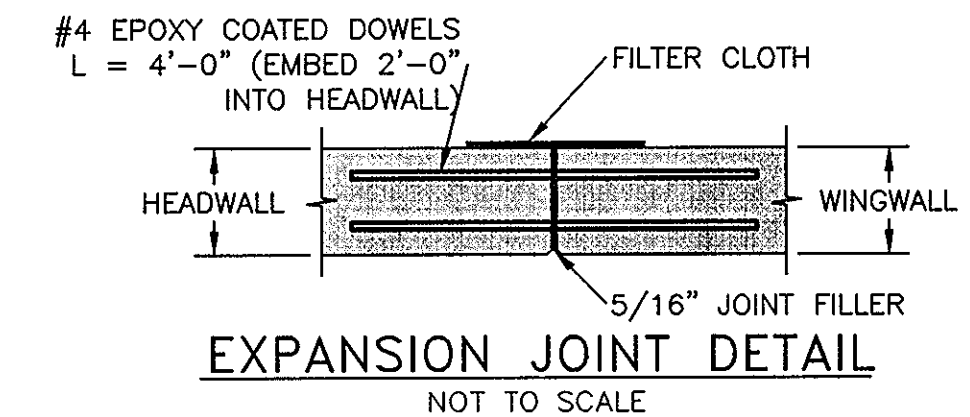
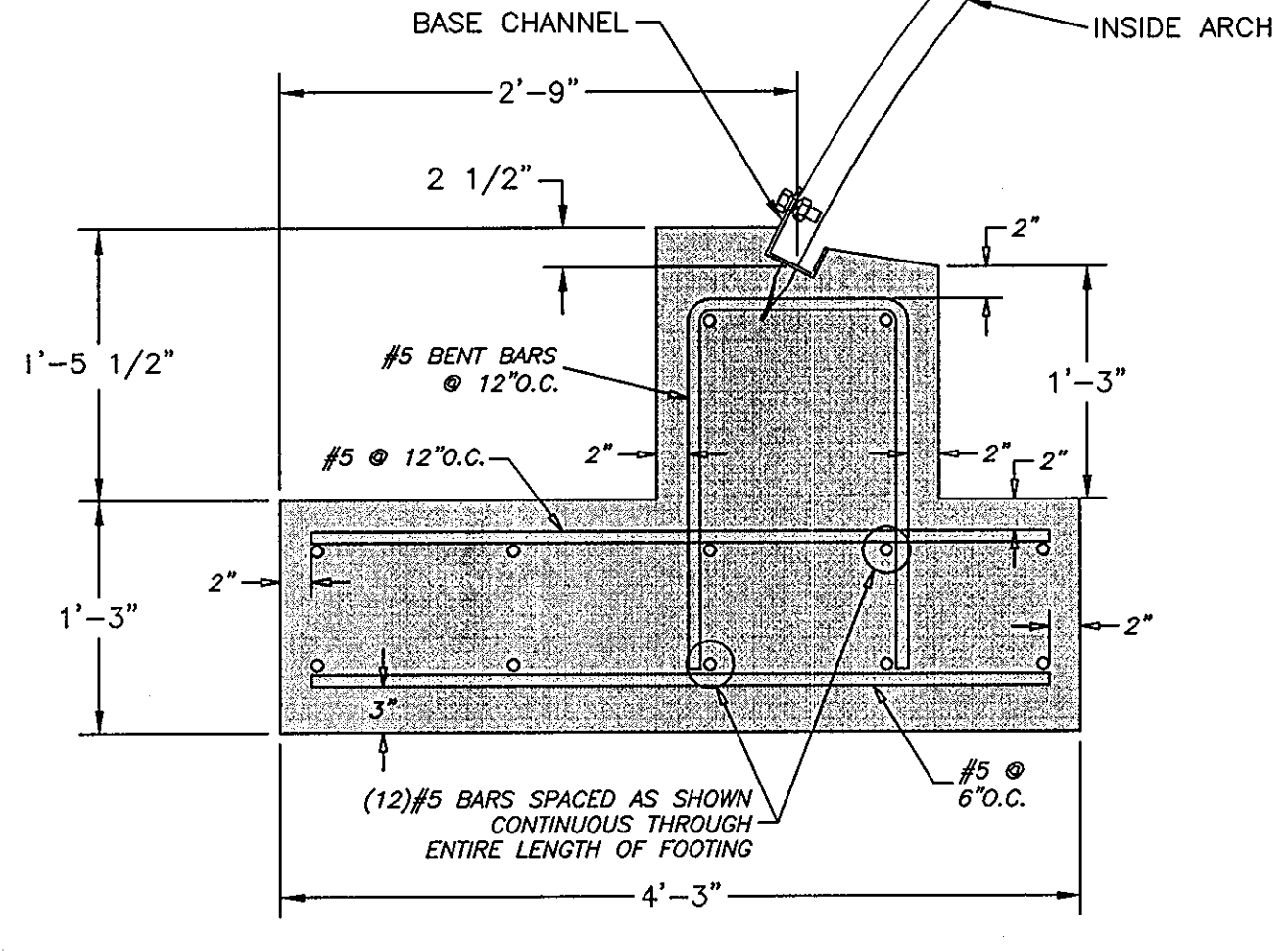


NOTES:
1. USE SALVAGED MATERIALS FROM THE EXISTING STREAM AS THE INVERT MATERIAL OF THE CHANNEL TO THE EXTENT POSSIBLE.
2. SMALL SALVAGED MATERIAL SHALL BE PLACED IN THE RIP-RAP WATER IS INTENDED TO FLOW ON THE SURFACE OF THE RIP-RAP CLOG WITH NATIVE MATERIALS OR WITH SIMILARLY SIZED NEW MATERIALS.

SEE CONTRACT DRAWING AND REPORT BY CBC ENGINEERS & ASSOCIATES 937-428-6150 CBC REPORT No. 5992-2-0905-05.

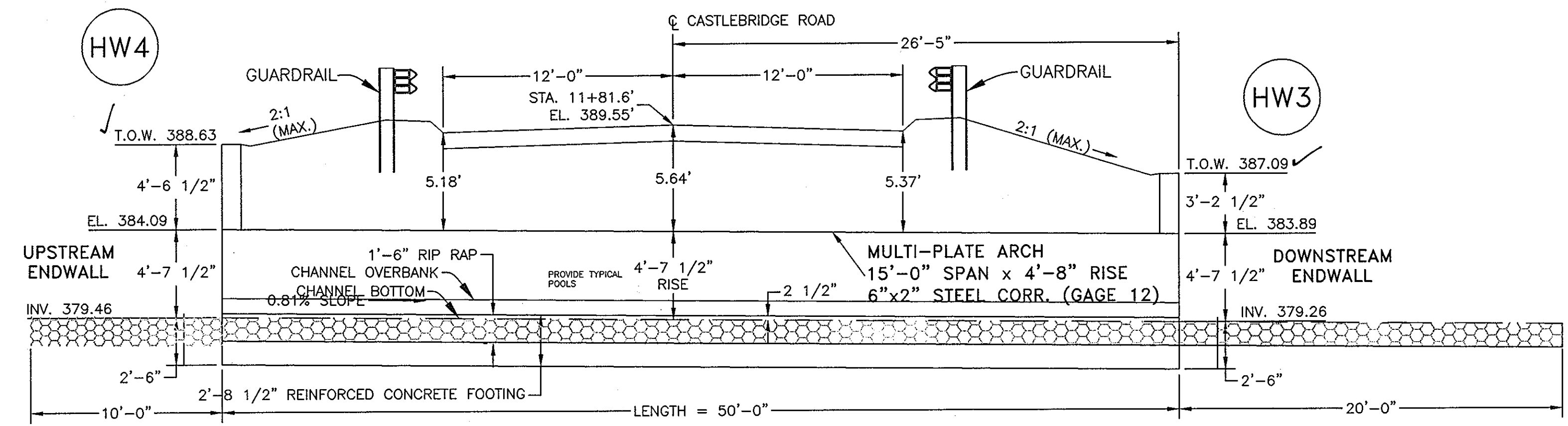
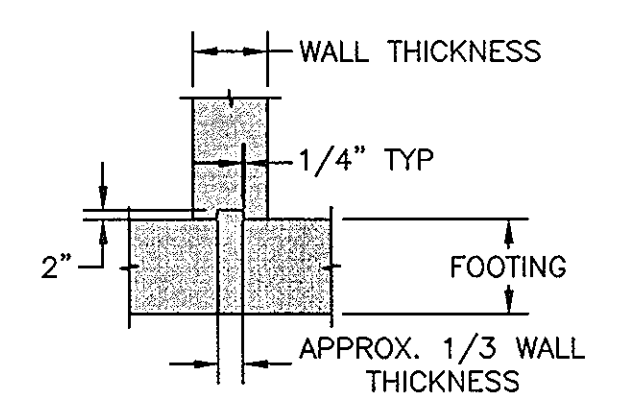
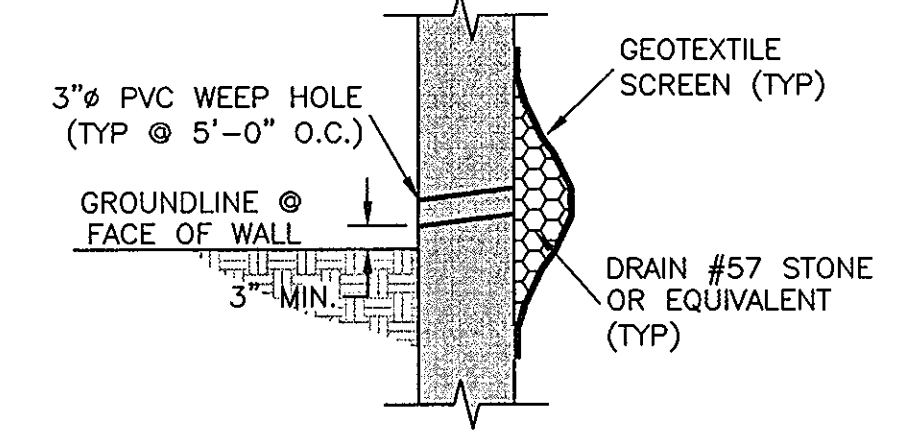
CROSSING STATION	CHANNEL WIDTH	POOL SPACING	POOL DESIGN	POOL DIMENSIONS	CHANNEL DIMENSIONS
11+82 (RIFFLE)	8' (SECTION 103)	40'	24'	W=6', L=10', D=1', S=0.0025	4' AT 0.8%
16+29 (STEP)	8' (SECTION 14)	16'	NA	W=4', L=20', H=1.2', S=0.0305	4' AT 3.05%
35+56 (RIFFLE)	3' (SECTION 214 US)	45'	27'	W=6', L=10', D=1', S=0.0025	4' AT 0.3%

START POOLS AT UPPER END OF CULVERT AND CONTINUE POOL SPACING TO END OF DOWNSTREAM RIPRAP, MINIMUM OF TWO POOLS.



NOTES FOR EXPANSION JOINT:
A FILTER CLOTH THREE FEET IN WIDTH AND DOUBLE THICKNESS SHALL BE APPLIED TO ALL TRANSVERSE JOINTS IN THE FOOTING AND WALLS. THE MATERIAL SHALL BE CENTERED ON THE JOINT AND THE EDGES SEALED WITH A MASTIC OR WITH TWO SIDED TAPE. THE FILTER CLOTH SHALL BE A GEOTEXTILE MEETING THE APPROVAL OF THE ENGINEER.

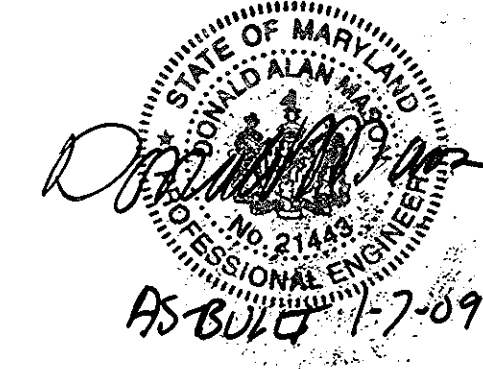
NOTES:
1.) CONCRETE SHALL BE f'c = 3,500 psi.
2.) ALL REINFORCEMENT SHALL BE ASTM A-615, GRADE 60
3.) FOOTING IS DESIGNED FOR A 2,000 psf ALLOWABLE BEARING CAPACITY



APPROVED: DEPARTMENT OF PUBLIC WORKS
William F. White 5-13-06
CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Conrad Klumpp 5/13/06
CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: DEVELOPMENT ENGINEERING DIVISION
Michael M. Kelly 5/13/06
CHIEF, DEVELOPMENT ENGINEERING DIVISION

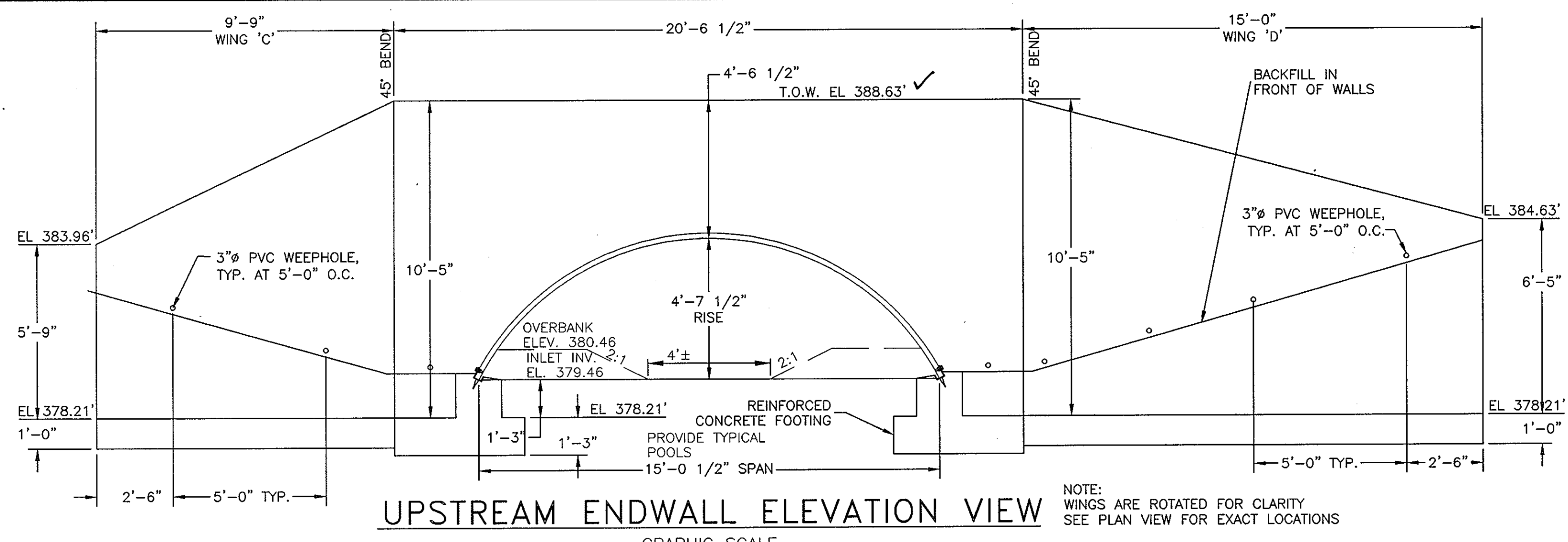


NO.	DATE	REVISION
1	5/06	CONVERT HEADWALLS TO CONCRETE

BENCHMARK ENGINEERING, INC.
ENGINEERS & LAND SURVEYORS & PLANNERS
8480 BALTIMORE NATIONAL PIKE SUITE 418
ELLCOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

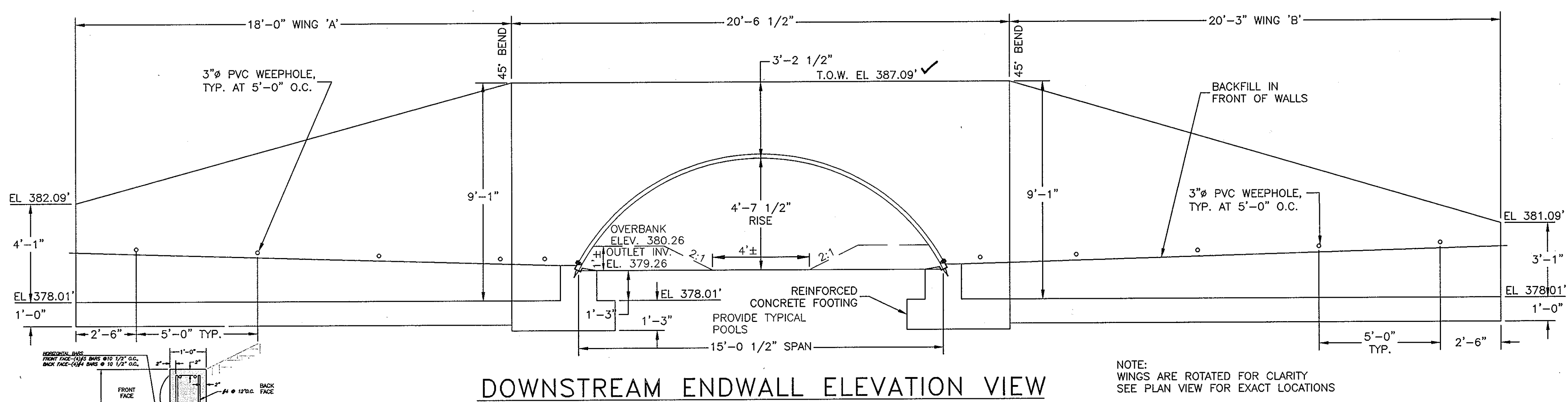
Donald M. Moore
5/13/06

DEVELOPER:	ELIOAK, L.L.C. P.O. BOX 417 ELLCOTT CITY, MARYLAND 21041 410-465-4244	PROJECT:	RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'Q'; AND NON-BUILDABLE BULK PARCELS 'AR' THRU 'HH'
OWNER:	HOMWOOD, L.L.C. P.O. BOX 417 ELLCOTT CITY, MARYLAND 21041 410-465-4244	LOCATION:	TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,9&10 PARCELS: 86 PARCELS: 20 & 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
OWNER:	JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL, ZIEGLER, THOMAS CARROLL, JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32ND FLOOR NEW YORK, NEW YORK 10022	TITLE:	REVISED ROAD CONSTRUCTION PLAN ARCHDRAIN DETAILS HW-3 TO HW-4
DES: LDD	DRAFT: LDD	CHECK: DAM	SCALE: AS SHOWN
DATE: MAY, 2006		PROJECT NO. 1132	
SHEET 45 OF 55		SCALE: AS SHOWN	



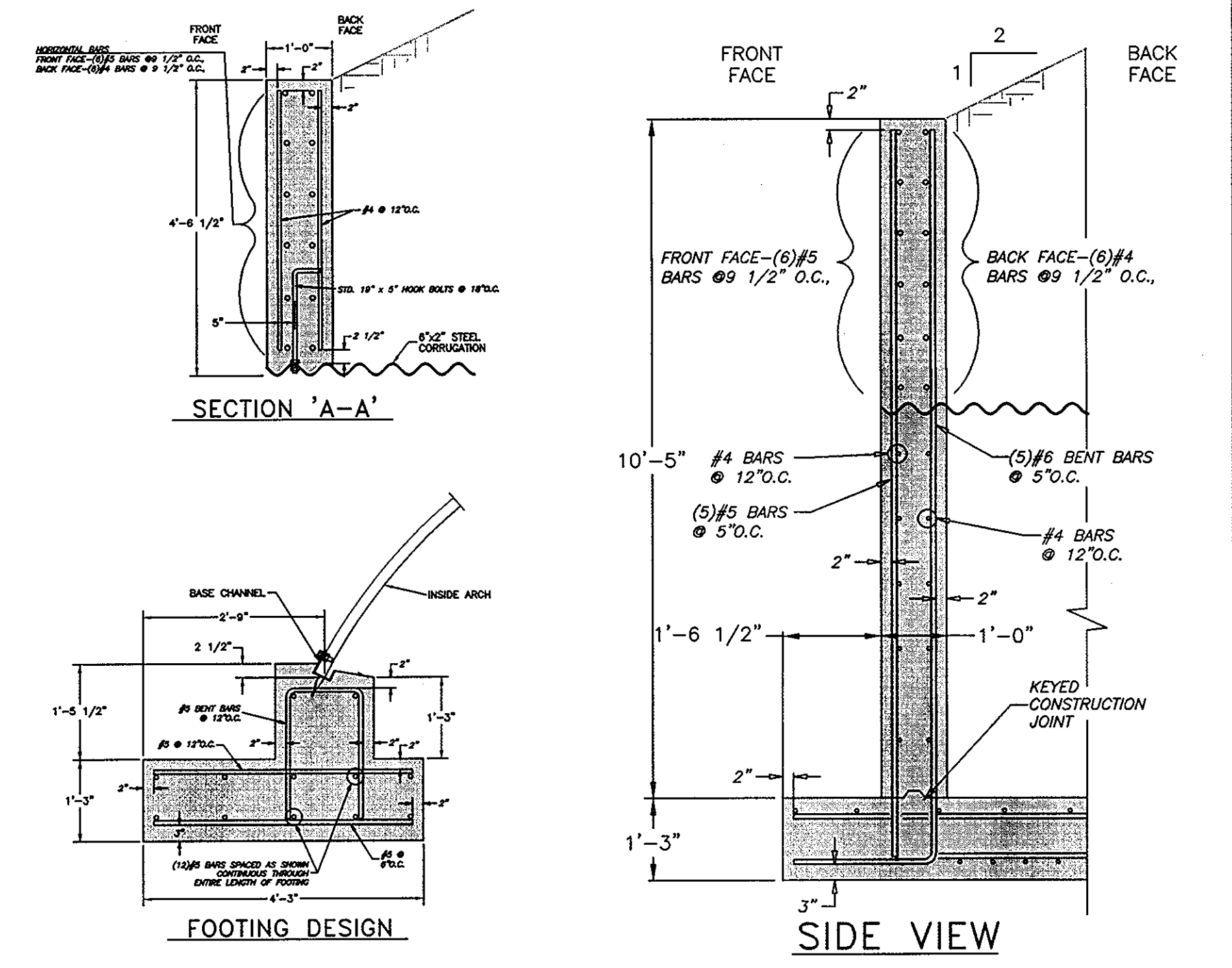
UPSTREAM ENDWALL ELEVATION VIEW

NOTE: WINGS ARE ROTATED FOR CLARITY. SEE PLAN VIEW FOR EXACT LOCATIONS.

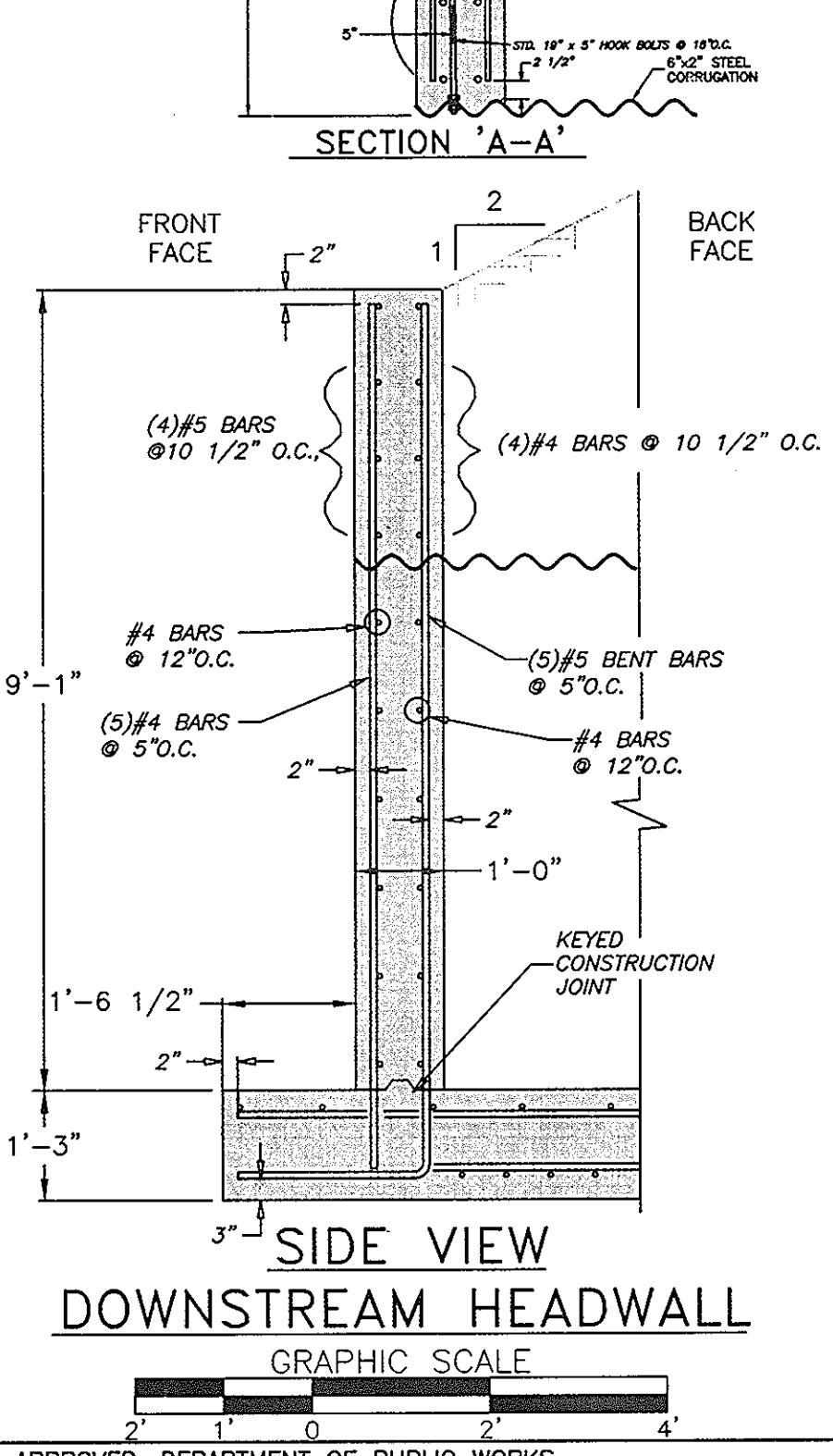


DOWNSTREAM ENDWALL ELEVATION VIEW

NOTE: WINGS ARE ROTATED FOR CLARITY. SEE PLAN VIEW FOR EXACT LOCATIONS.



UPSTREAM HEADWALL

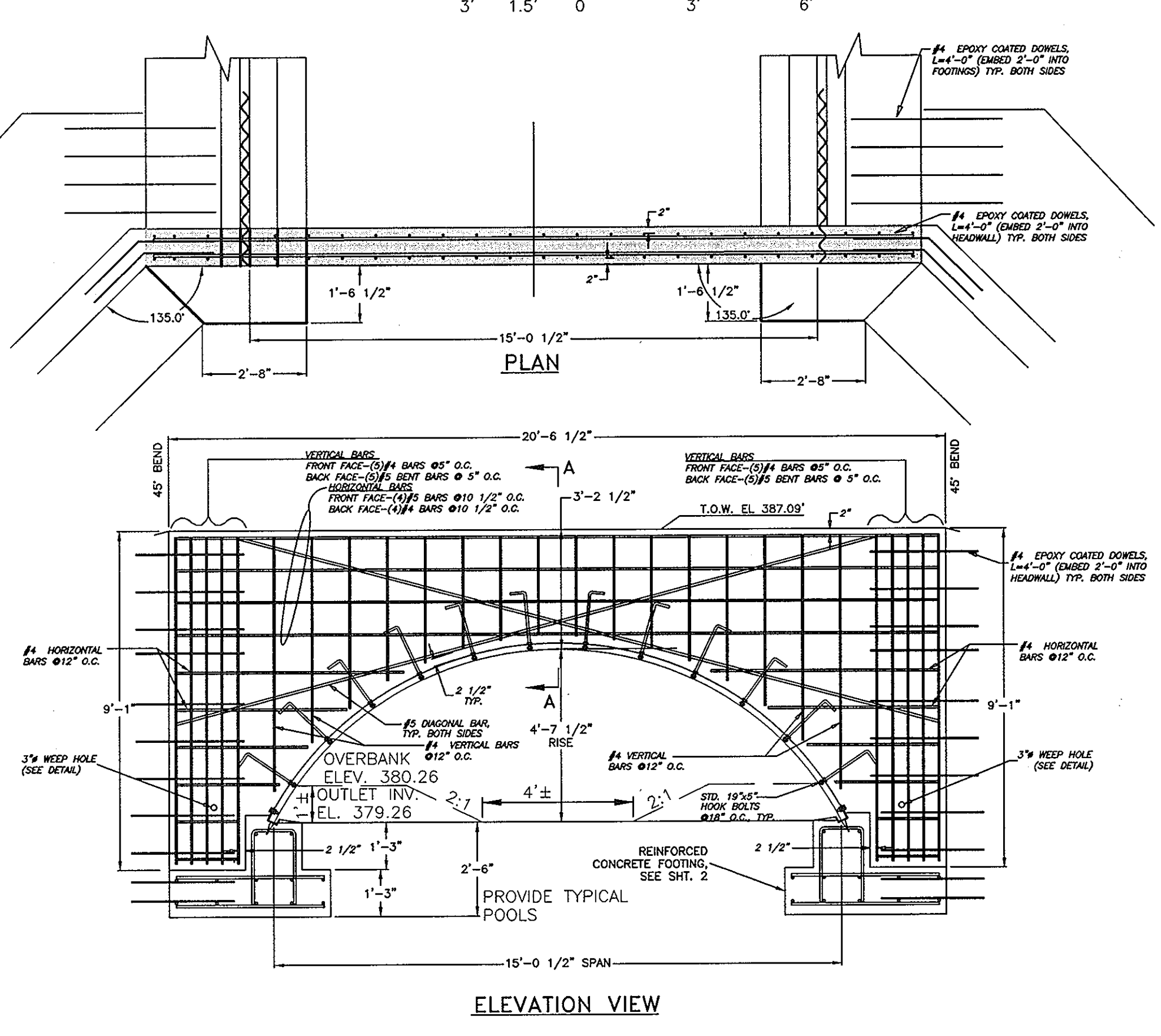


DOWNSTREAM HEADWALL

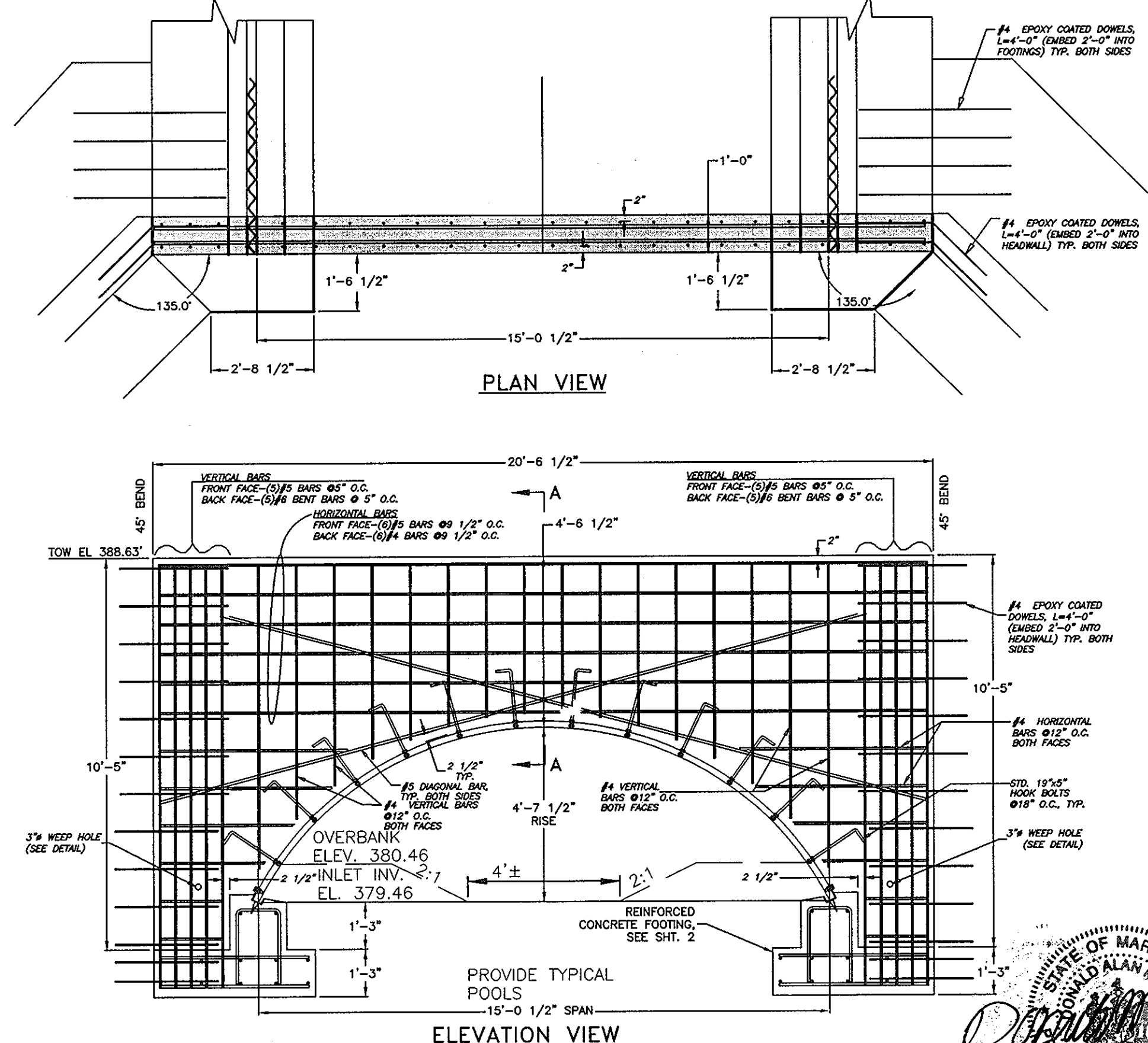
APPROVED: DEPARTMENT OF PUBLIC WORKS
William J. ... 5-13-06
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Cynthia ... 5/25/06
 CHIEF, DIVISION OF LAND DEVELOPMENT

Michael ... 5/26/06
 CHIEF, DEVELOPMENT ENGINEERING DIVISION



DOWNSTREAM HEADWALL DESIGN

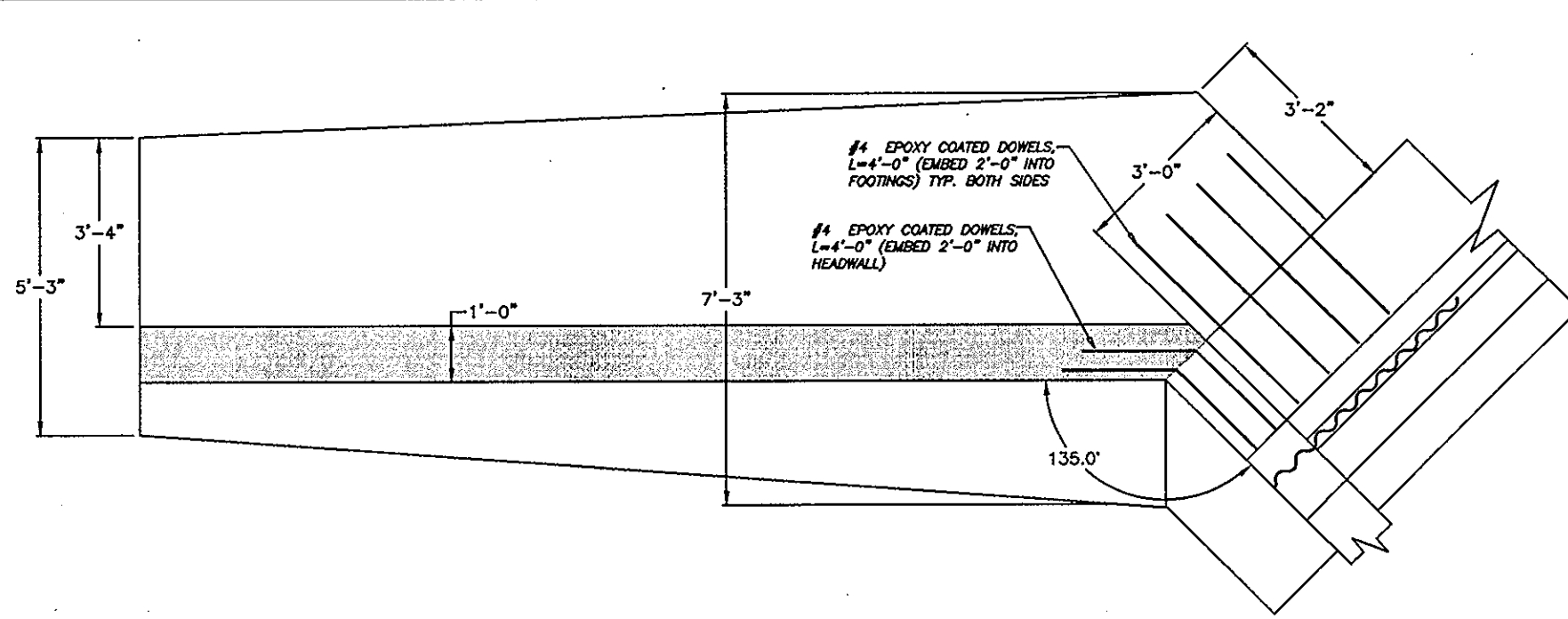


UPSTREAM HEADWALL DESIGN

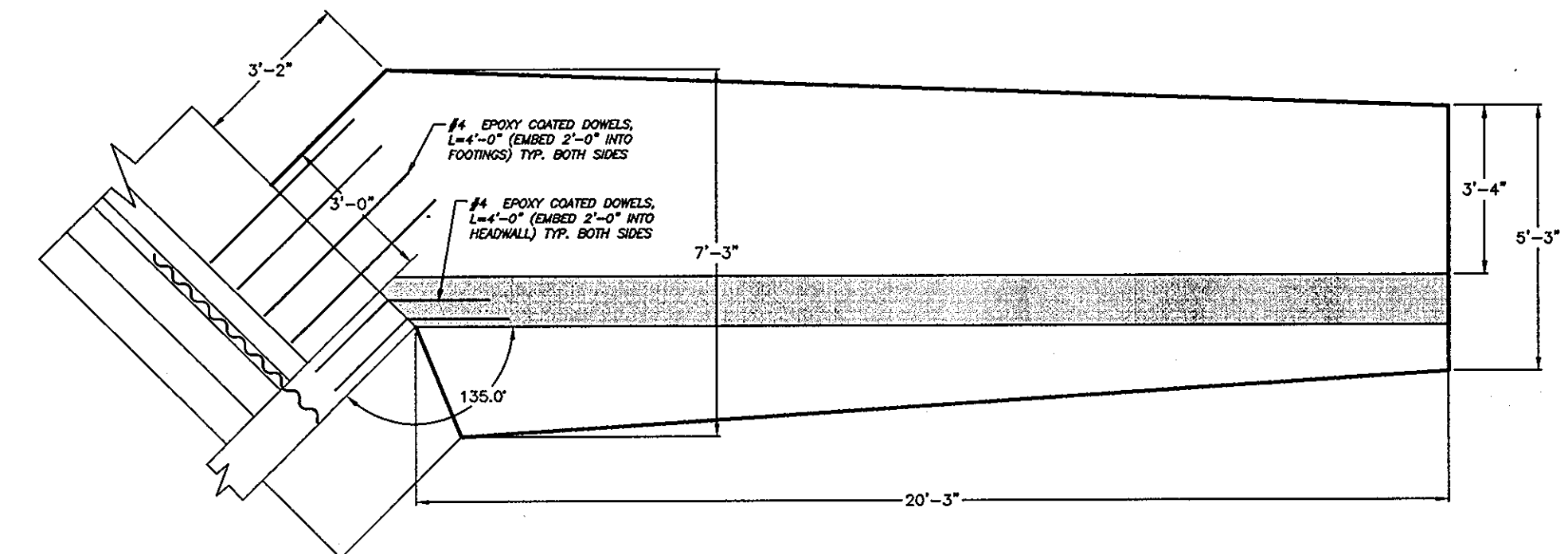
SEE CONTRACT DRAWING AND REPORT BY CBC ENGINEERS & ASSOCIATES 937-428-6150 CBC REPORT No. 5992-2-0905-05.

NO.	DATE	REVISION
1	5/06	CONVERT HEADWALLS TO CONCRETE

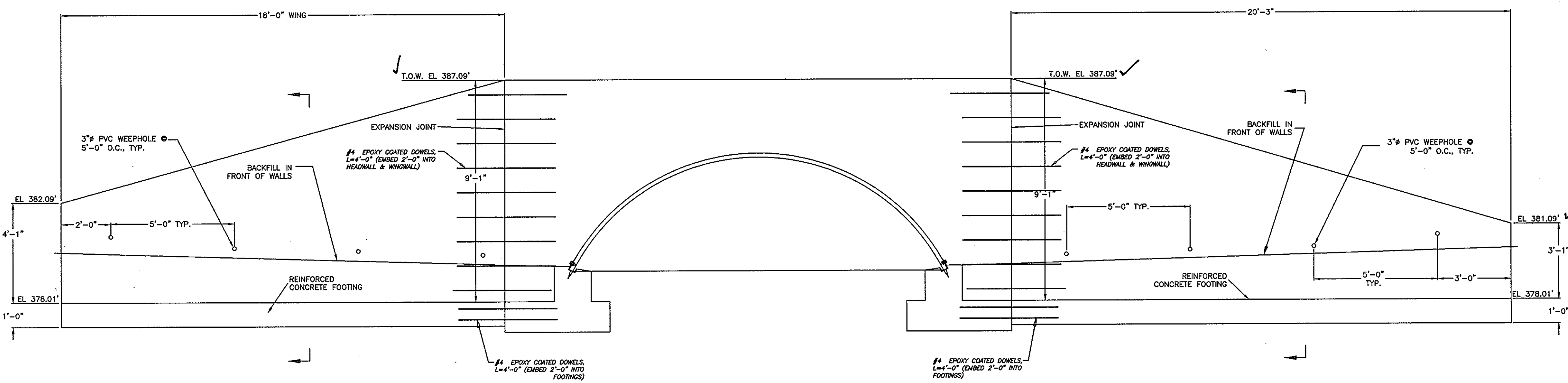
BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE SUITE 418 ELLICOTT CITY, MARYLAND 21043 phone: 410-465-6105 fax: 410-465-6644 www.bel-civilengineering.com				
DEVELOPER: ELIOAK, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244				
OWNER: HOMWOOD, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244		PROJECT: RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'Q'; AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'		
OWNER: JOHN LEE CARROLL, CHRISTOPHER G. GERARD, MARY CARTER CARROLL ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32ND FLOOR NEW YORK, NEW YORK 10022				
TITLE: REVISED ROAD CONSTRUCTION PLAN ARCHDRAIN DETAILS HW-3 TO HW-4		LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 28, GRID: 3,4,9&10 PARCELS: 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND		
DATE: MAY, 2006 PROJECT NO. 1132				
DES: LDD	DRAFT: LDD	CHECK: DAM	SCALE: AS SHOWN	SHEET 46 OF 55



PLAN VIEW

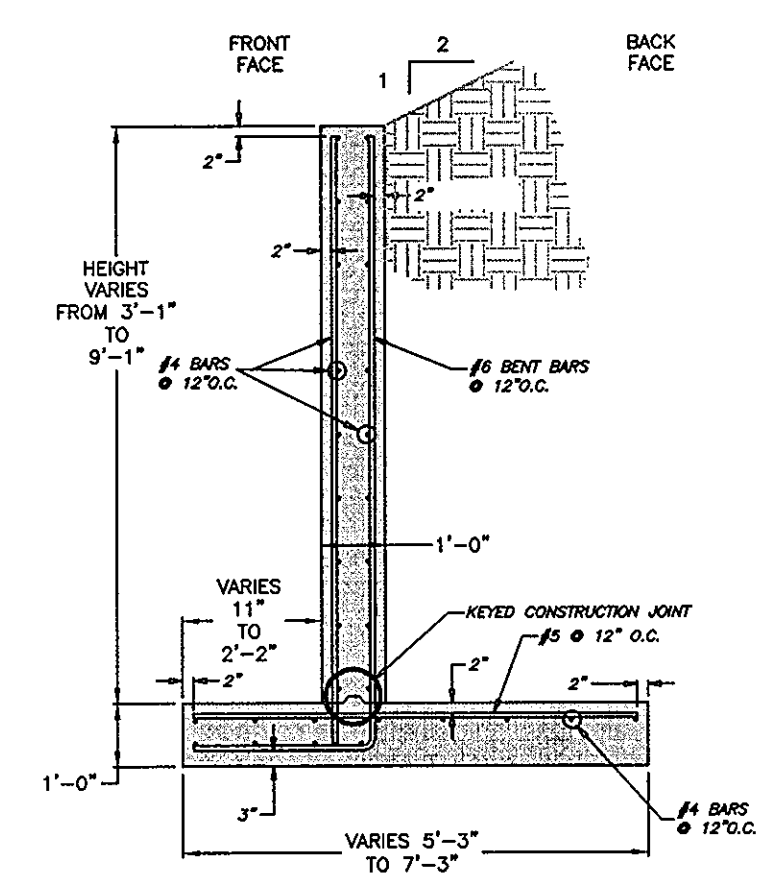


PLAN VIEW



ELEVATION VIEW

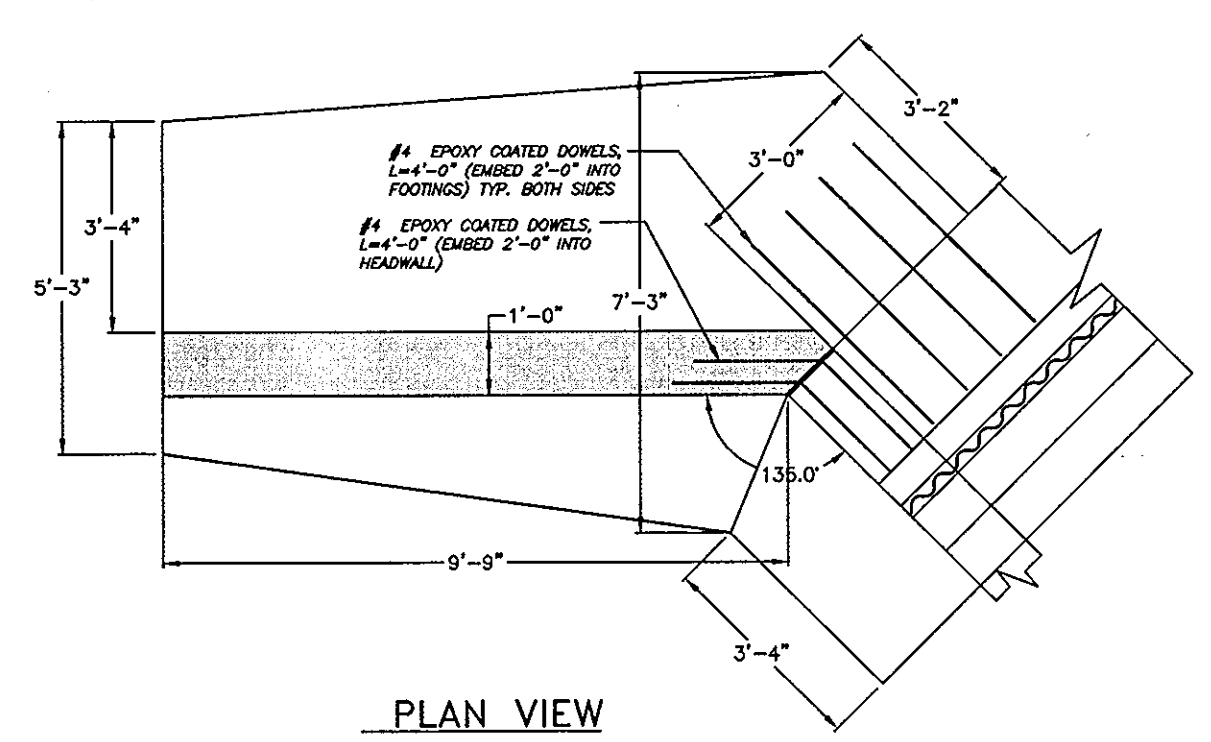
ELEVATION VIEW



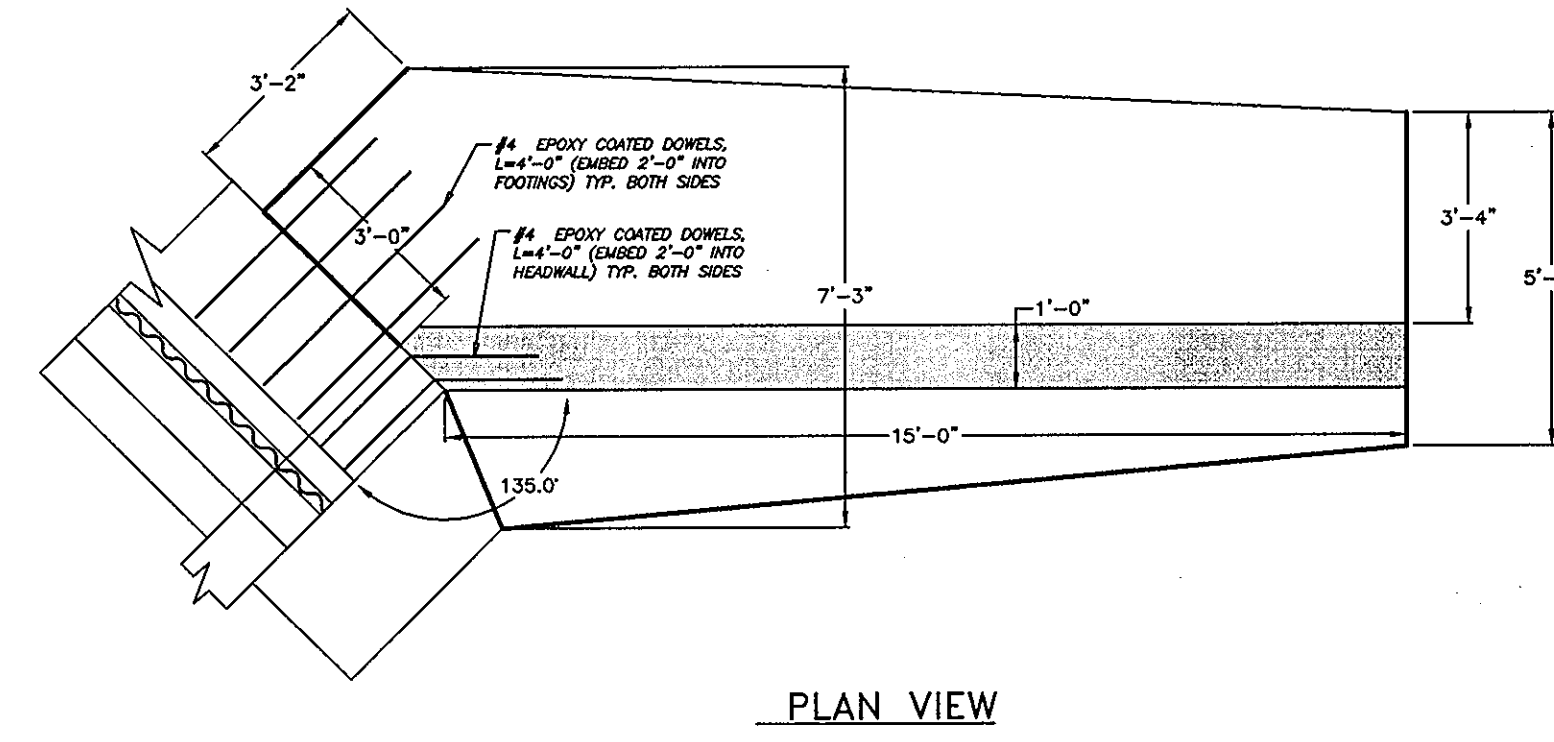
TYPICAL SECTION

DOWNSTREAM WINGWALL 'A' DESIGN

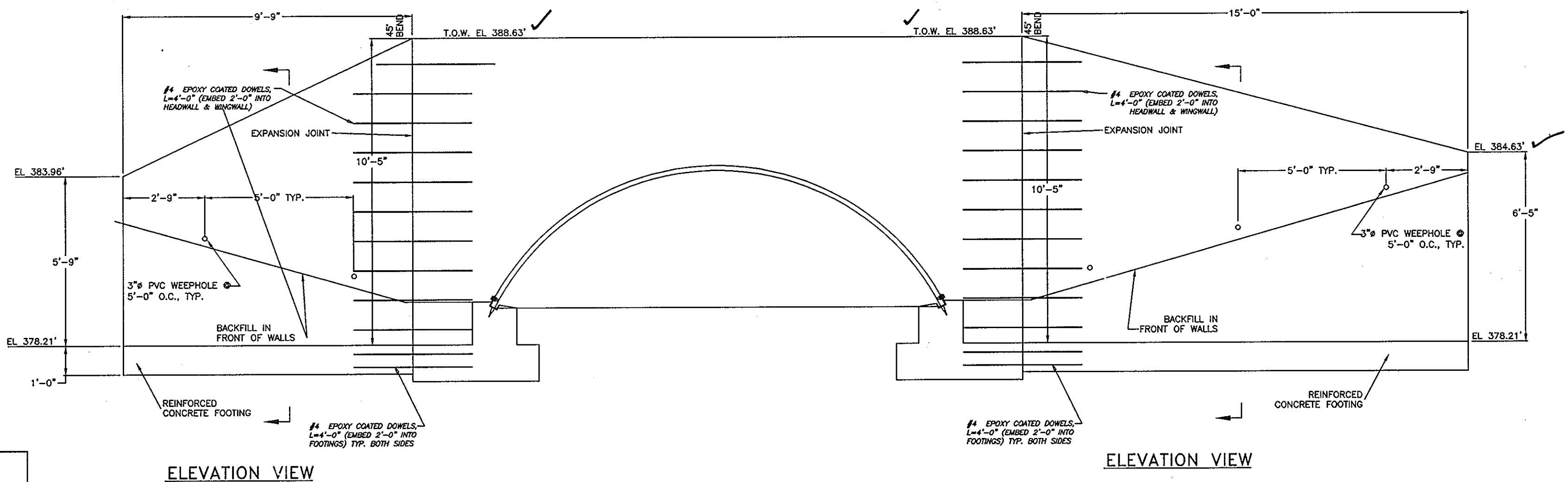
DOWNSTREAM WINGWALL 'B' DESIGN



PLAN VIEW

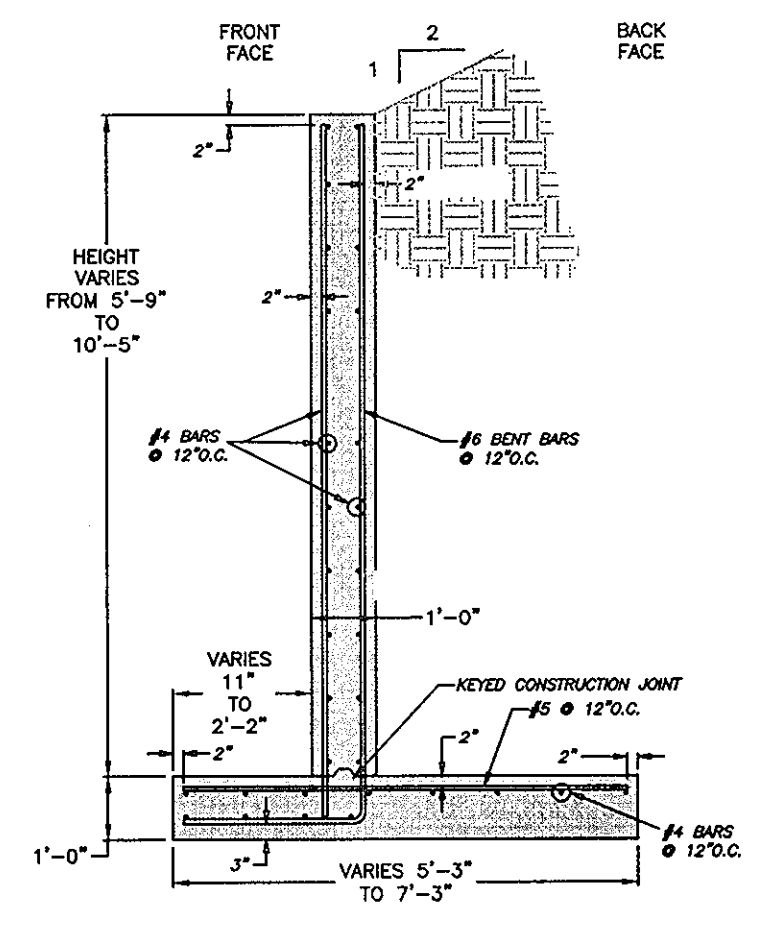


PLAN VIEW



ELEVATION VIEW

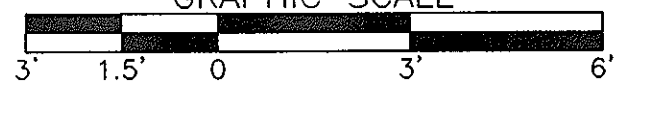
ELEVATION VIEW



TYPICAL SECTION

UPSTREAM WINGWALL 'C' DESIGN

UPSTREAM WINGWALL 'D' DESIGN



SEE CONTRACT DRAWING AND REPORT BY CBC ENGINEERS & ASSOCIATES 937-428-6150 CBC REPORT No. 5992-2-0905-05.

NO.	DATE	REVISION
1	5/06	CONVERT HEADWALLS TO CONCRETE

BENCHMARK
ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE & SUITE 418
ELLCOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 A. FAX: 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

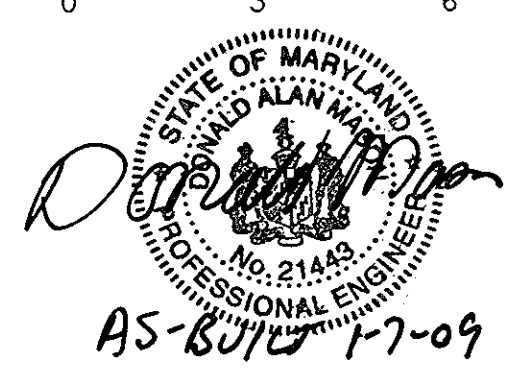
Donald Moran
5/13/06

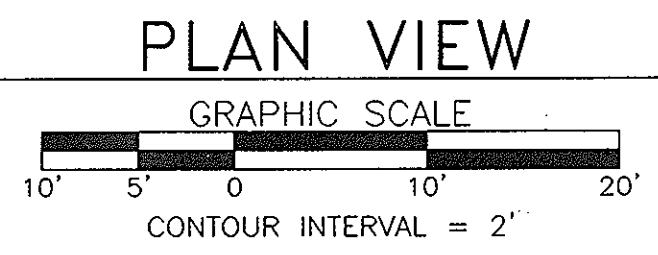
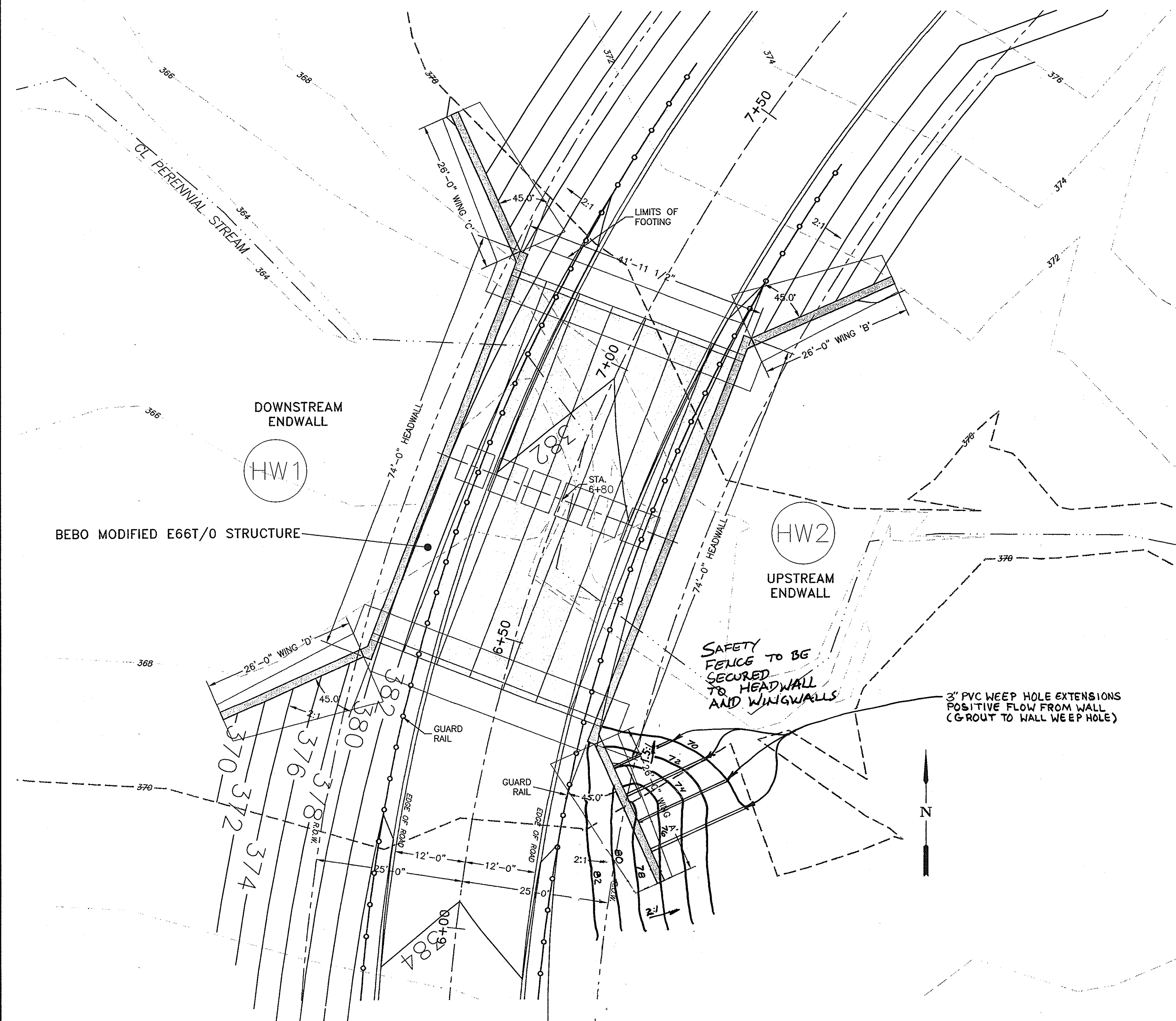
DEVELOPER: ELIOAK, L.L.C. P.O. BOX 417 ELLCOTT CITY, MARYLAND 21041 410-465-4244	PROJECT: RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'Q'; AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'			
OWNER: HOMEWOOD, L.L.C. P.O. BOX 417 ELLCOTT CITY, MARYLAND 21041 410-465-4244	LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,9&10 PARCELS: 85 PARCELS: 20 & 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND			
OWNER: JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32nd FLOOR NEW YORK, NEW YORK 10022	TITLE: REVISED ROAD CONSTRUCTION PLAN ARCHDRAIN DETAILS HW-3 TO HW-4			
DES: LDD	DRAFT: LDD	CHECK: DAM	DATE: MAY, 2006	PROJECT NO. 1132
SCALE: AS SHOWN			SHEET 47 OF 55	

APPROVED: DEPARTMENT OF PUBLIC WORKS
William Z. ... 5-13-06
CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Cinda ... 5/15/06
CHIEF, DIVISION OF LAND DEVELOPMENT

... 5/22/06
CHIEF, DEVELOPMENT ENGINEERING DIVISION





GENERAL NOTES

1. FOLLOW APPLICABLE PROVISIONS OF THE BEBO INSTALLATION INSTRUCTIONS AND WRITTEN SPECIFICATIONS.
2. IF CONDITIONS ARE DIFFERENT THAN THOSE STATED IN THESE DRAWINGS AND SPECIFICATIONS, THE CONTRACTOR MUST CONTACT THE ENGINEER PRIOR TO PROCEEDING WITH THE CONSTRUCTION OF THE BEBO ARCH.
 - ALLOWABLE BEARING PRESSURES GIVEN ARE SUCH THAT THE NECESSARY SAFETY FACTORS AGAINST EXCEEDING THE BEARING CAPACITY ARE PRESERVED
 - SETTLEMENTS ARE LIMITED TO THOSE AMOUNTS THAT ARE WITHIN THE BEBO STRUCTURAL TOLERANCES AND WITHIN THE VALUES NECESSARY TO SAFEGUARD THE VARIOUS FUNCTIONS OF THE BRIDGE
 - OTHER NEGATIVE EFFECTS (LIQUEFACTION, ETC.) CAN BE EXCLUDED.
3. THE SITE SOILS ENGINEER SHALL VERIFY THAT ALL FOUNDATION AND BACKFILL SOILS ARE COMPETENT PER THE DESIGN STANDARDS AND PARAMETERS GIVEN, IN PARTICULAR THAT:
 - ALLOWABLE BEARING PRESSURES GIVEN ARE SUCH THAT THE NECESSARY SAFETY FACTORS AGAINST EXCEEDING THE BEARING CAPACITY ARE PRESERVED
 - SETTLEMENTS ARE LIMITED TO THOSE AMOUNTS THAT ARE WITHIN THE BEBO STRUCTURAL TOLERANCES AND WITHIN THE VALUES NECESSARY TO SAFEGUARD THE VARIOUS FUNCTIONS OF THE BRIDGE
 - OTHER NEGATIVE EFFECTS (LIQUEFACTION, ETC.) CAN BE EXCLUDED.
4. THE SITE SOILS ENGINEER SHALL VERIFY THAT SCOUR DEPTHS AND VELOCITIES MEET THE REQUIREMENTS OF THE FEDERAL HIGHWAY ADMINISTRATION, HEC 18, "EVALUATING SCOUR OF BRIDGES" OR ANY OTHER LOCAL STANDARD DESIGN CODES.
5. OVER EXCAVATE FOUNDATIONS TO REMOVE UNSUITABLE SOILS ONLY AS DIRECTED BY THE SITE SOILS ENGINEER.
6. BACKFILL MATERIAL MUST MEET THE REQUIREMENTS OF THE BEBO SYSTEM SPECIFICATIONS FOR BACKFILL.
7. COMPACTION OF BACKFILL SHALL NOT BE LESS THAN 95% STANDARD PROCTOR DENSITY, PER AASHTO-T-99.
8. COMPACTION TESTS SHALL BE TAKEN DURING THE BACKFILL STAGE. THE SITE SOILS ENGINEER SHALL DETERMINE THE MINIMUM NUMBER OF TESTS AND LOCATION.

DESIGN ASSUMPTIONS

1. ALLOWABLE BEARING PRESSURE FOR FOOTINGS IS 4000 psf. THE ENGINEER OF RECORD AND THE CONTRACTOR SHALL VERIFY THAT THE SOILS MEET THIS ALLOWABLE BEARING CAPACITY. WRITTEN VERIFICATION OF THE ALLOWABLE BEARING CAPACITY SHALL BE SUBMITTED TO BEBOTech CORPORATION PRIOR TO COMMENCING WITH CONSTRUCTION.
2. PROCEEDING WITH THE CONSTRUCTION WITHOUT FIRST PROVIDING BEBOTech CORPORATION A WRITTEN REPORT VERIFYING CONDITIONS DISCUSSED IN NOTE 1 ABOVE SHALL ABSOLVE BEBOTech CORPORATION FROM ALL LIABILITY FOR THE DESIGN AND CONSTRUCTION OF THE FOUNDATIONS AND CONTRACTOR SHALL HOLD HARMLESS AND INDEMNIFY BEBOTech CORPORATION FROM ALL RESULTING CLAIMS, DAMAGES, LOSSES AND EXPENSES.
3. LIVE LOADS ARE BASED ON AASHTO HS-25, MODIFIED (125%) ALTERNATE MILITARY LOADING, P-82.
4. MINIMUM DEPTH OF COVER IS 1'-6" (INCLUDING PAVEMENT), MAXIMUM DEPTH OF COVER IS 3'-0".
5. THE MINIMUM CONCRETE STRENGTH OF 4000 psi FOR ALL BEBO FOOTINGS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO INSTALLATION OF THE ARCH ELEMENTS.

BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS AND WATERS OF THE STATE

- 1) NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILES OR STORED IN NONTIDAL WETLANDS, THE NONTIDAL WETLAND BUFFER, OR WATERS OF THE STATE.
- 2) PLACE MATERIALS IN A LOCATION AND MANNER THAT DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUR OF NONTIDAL WETLANDS OR WATERS OF THE STATE.
- 3) DO NOT USE EXCAVATED MATERIAL AS BACKFILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACKFILL IS REQUIRED, USE CLEAN MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE.
- 4) PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE TEH EQUIPMENT TO PREVENT DAMAGE TO NONTIDAL WETLANDS, THE NONTIDAL WETLAND BUFFER, AND WATERS OF THE STATE.
- 5) REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NONTIDAL WETLANDS OR PERMANENT MODIFICATION OF WATERS OF THE STATE IN EXCESS OF THAT LOST UNDER THE ORIGINALLY AUTHORIZED STRUCTURE OR FILL.
- 6) RECTIFY ANY NONTIDAL WETLANDS, NONTIDAL WETLANDS BUFFER, OR WATERS OF THE STATE TEMPORARILY IMPACTED BY ANY CONSTRUCTION RELATED ACTIVITIES.
- 7) SEED MIX USED FOR STABILIZATION IN NONTIDAL WETLANDS AND THE NONTIDAL WETLAND BUFFER SHALL CONSIST OF ONE OR MORE OF THE FOLLOWING SPECIES: ANNUAL RYEGRASS (*Lolium multiflorum*), MILLET (*Setaria italica*), BARLEY (*Hordeum sp.*), OATS (*Avena sp.*), AND/OR RYE (*Secale cereale*). THESE SPECIES WILL ALLOW FOR STABILIZATION OF THE SITE WHILE ALSO ALLOWING OF THE VOLUNTARY REVEGETATION OF NATIVE WETLAND SPECIES. OTHER NONPERSISTENT VEGETATION MAY BE ACCEPTABLE BUT MUST BE APPROVED BY THE NONTIDAL WETLANDS AND WATERWAYS DIVISION. KENTUCKY 31 FESCUE SHALL NOT BE USED IN NONTIDAL WETLAND OR NONTIDAL WETLAND BUFFER AREAS. THE AREA SHOULD BE SEEDED AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
- 8) AFTER INSTALLATION OF UNDERGROUND UTILITY LINES IN NONTIDAL WETLANDS AND WATERS OF THE STATE HAS BEEN COMPLETED, GRADES AND ELEVATIONS SHALL BE RETURNED TO PRE-CONSTRUCTION CONDITIONS.
- 9) TO PROTECT AQUATIC SPECIES, IN STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF STREAM:
 - USE 1) WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.
- 10) STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE DISCHARGE OF POLLUTANTS INTO NONTIDAL WETLANDS AND WATERWAYS.
- 11) CULVERTS AND ASSOCIATED RIPRAP EROSION PROTECTION SHALL BE CONSTRUCTED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.

APPROVED: DEPARTMENT OF PUBLIC WORKS
William F. ... 2-5-07
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Chris ... 2/2/07
 CHIEF, DIVISION OF LAND DEVELOPMENT

... 2/26/07
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

SEE CONTRACT DRAWING AND REPORT BY CBC ENGINEERS & ASSOCIATES 937-428-6150 CBC REPORT No. 6601-4-1006-05.

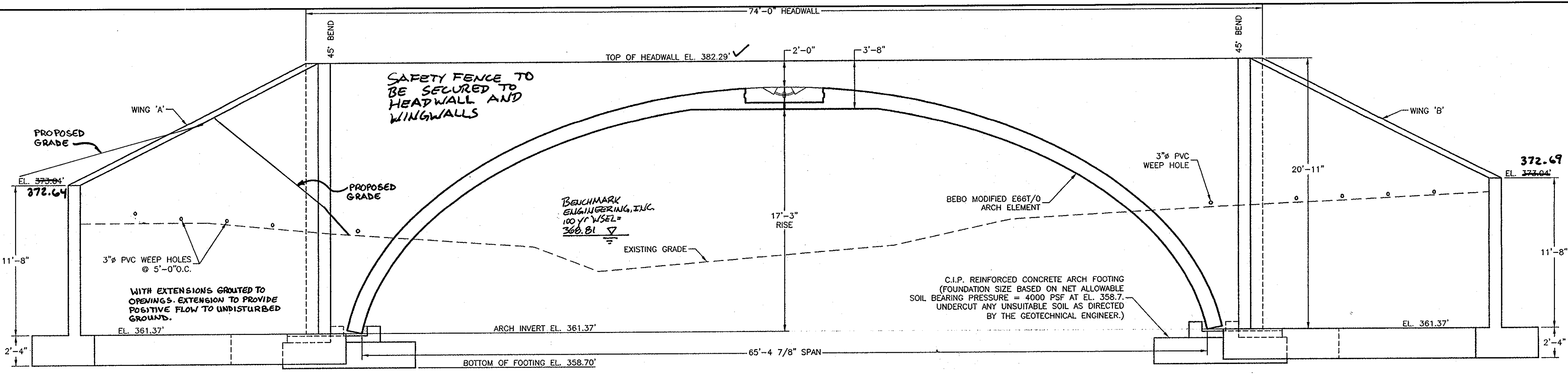
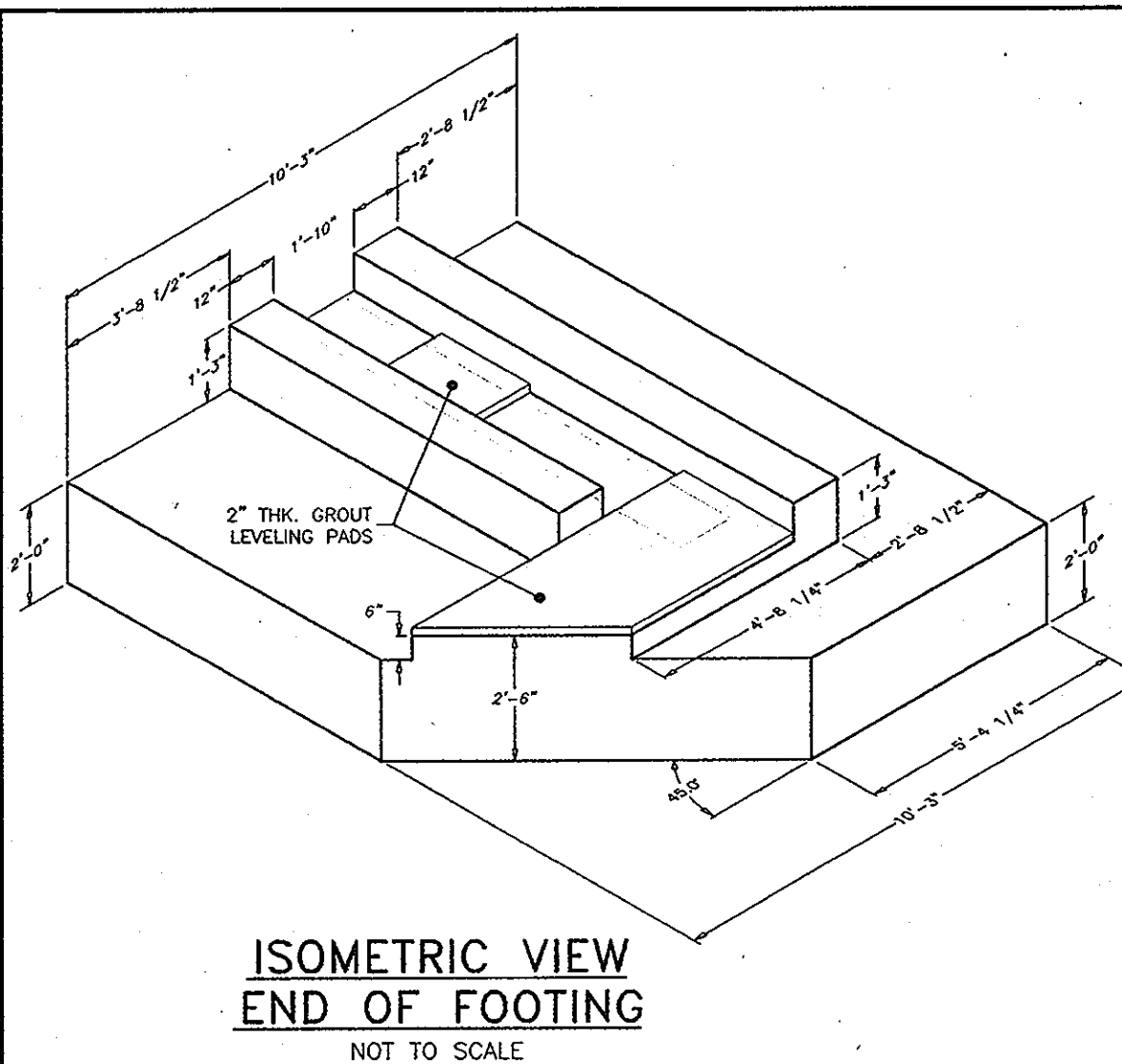
NO.	DATE	REVISION
3	2-20-08	REVISE GRADING AT HEADWALL #2
2	10-30-06	REVISE CULVERT TO BEBO E66 T/O
1	5/06	CONVERT HEADWALLS TO CONCRETE

BENCHMARK ENGINEERING, INC.
 ENGINEERS • LAND SURVEYORS • PLANNERS

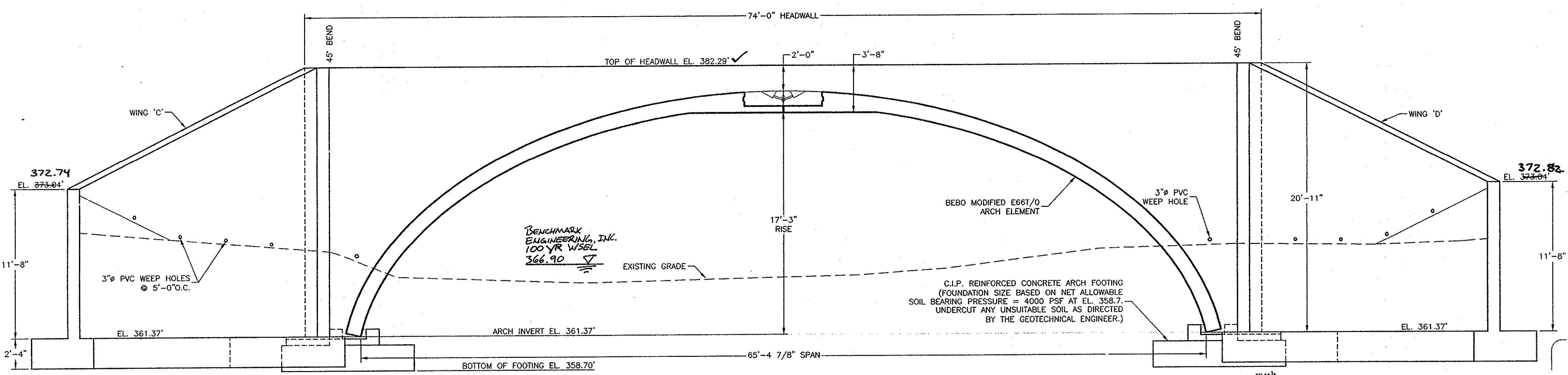
8480 BALTIMORE NATIONAL PIKE & SUITE 418
 ELLICOTT CITY, MARYLAND 21043
 phone: 410-465-6105 • fax: 410-465-6644
 www.bei-civilengineering.com

STATE OF MARYLAND
 PROFESSIONAL ENGINEERING
 1-4-07

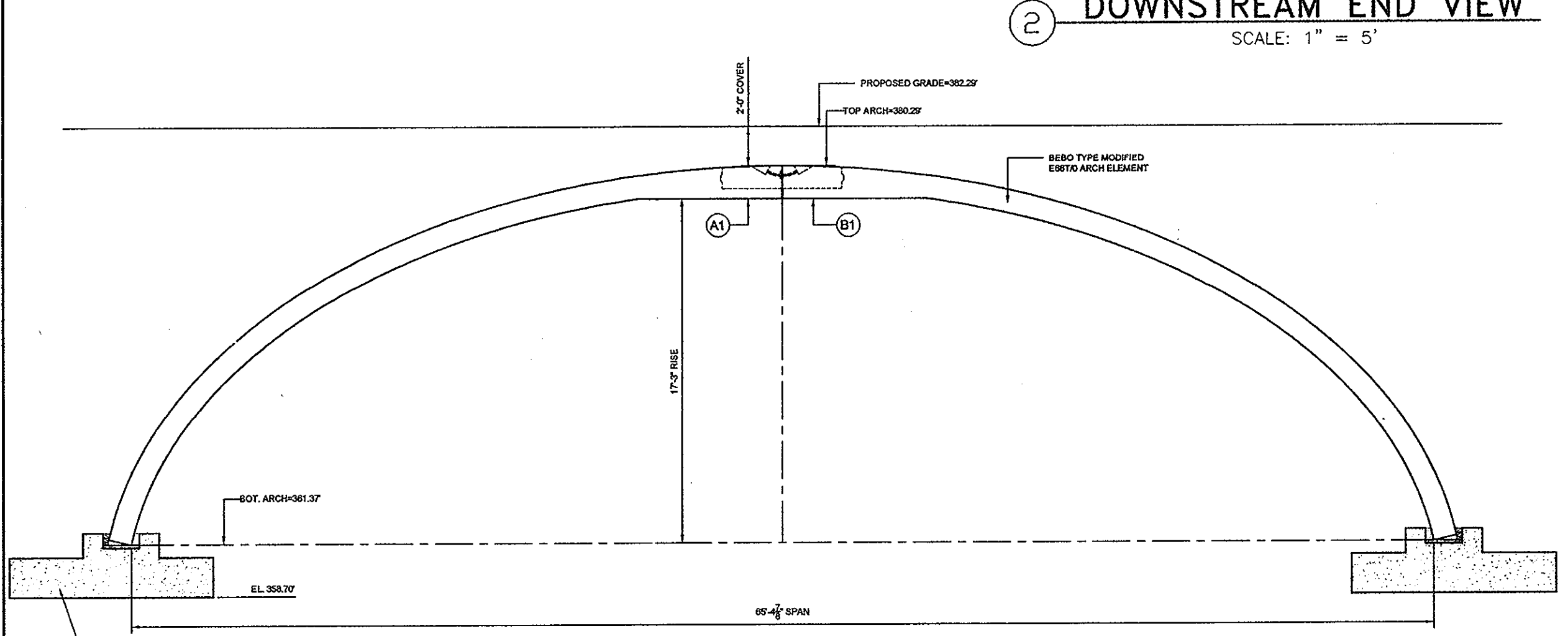
DEVELOPER:	ELIOAK, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	PROJECT:	RIVERWOOD - PHASE 1 LOTS 1 & 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'Q'; AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'
OWNER:	HOMWOOD, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	LOCATION:	TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,9&10 PARCELS: 86 PARCELS: 20 & 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
OWNER:	JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL, c/o JOHN LEE CARROLL 5 S MADISON AVENUE 3RD FLOOR NEW YORK, NEW YORK 10022	TITLE:	Revised Final Road Construction Plan REVISED ROAD CONSTRUCTION PLAN ARCHDRAIN DETAILS HW-1 TO HW-2
DES: LDD	DRAFT: LDD	CHECK: DAM	DATE: MAY, 2006 PROJECT NO. 1132 SCALE: AS SHOWN SHEET 48 OF 55



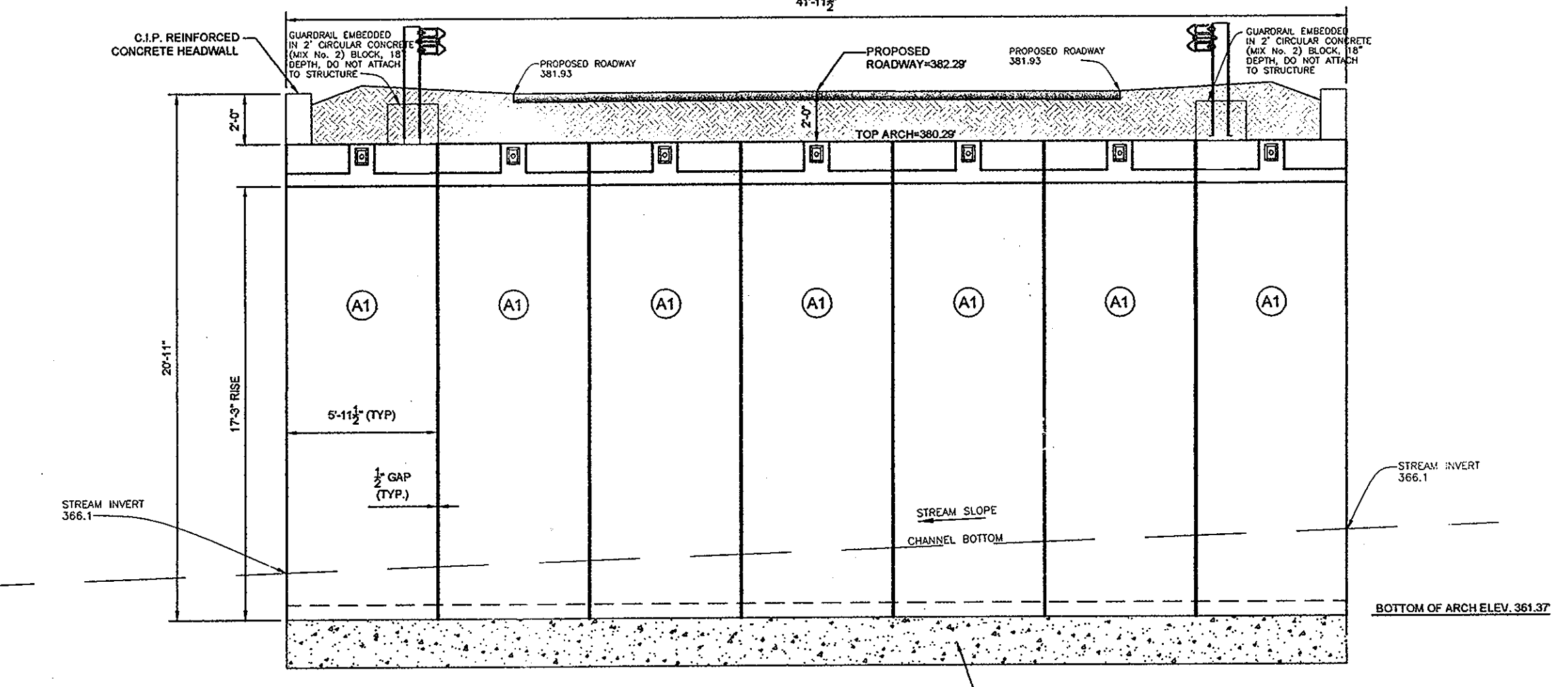
1 UPSTREAM END VIEW
SCALE: 1" = 5'



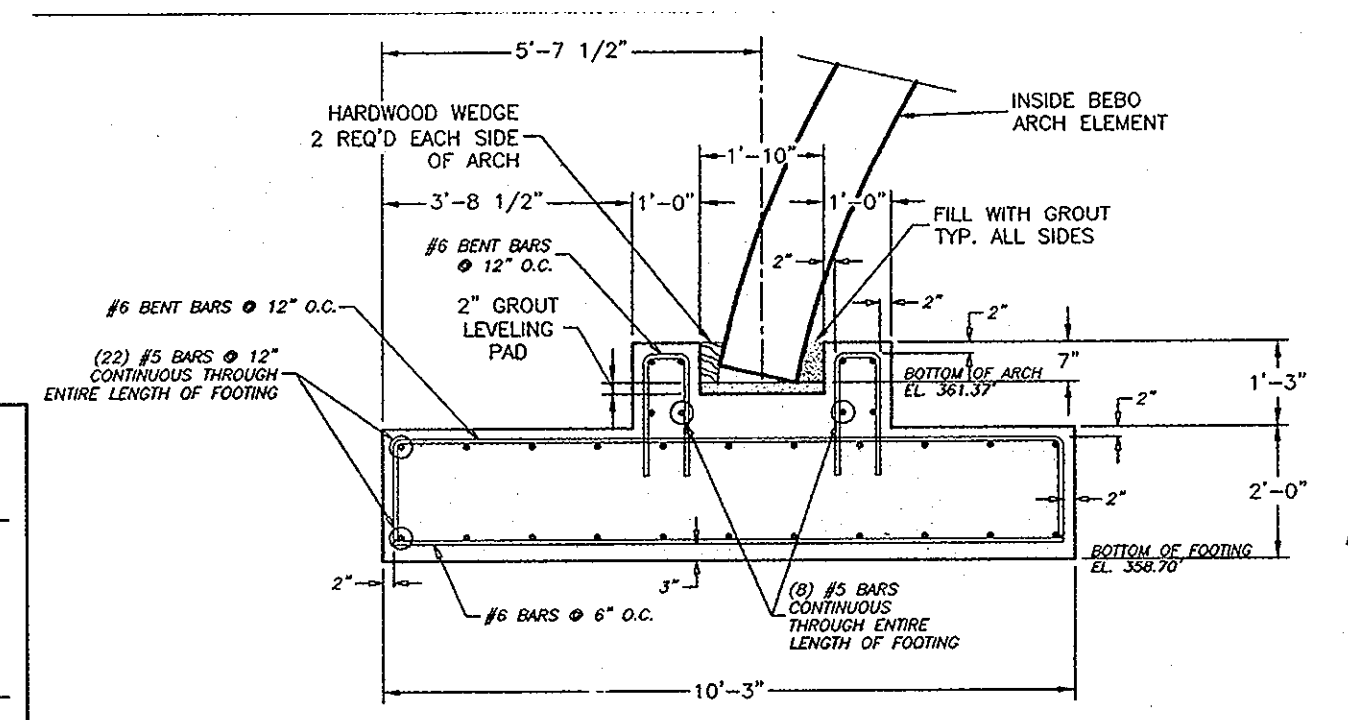
2 DOWNSTREAM END VIEW
SCALE: 1" = 5'



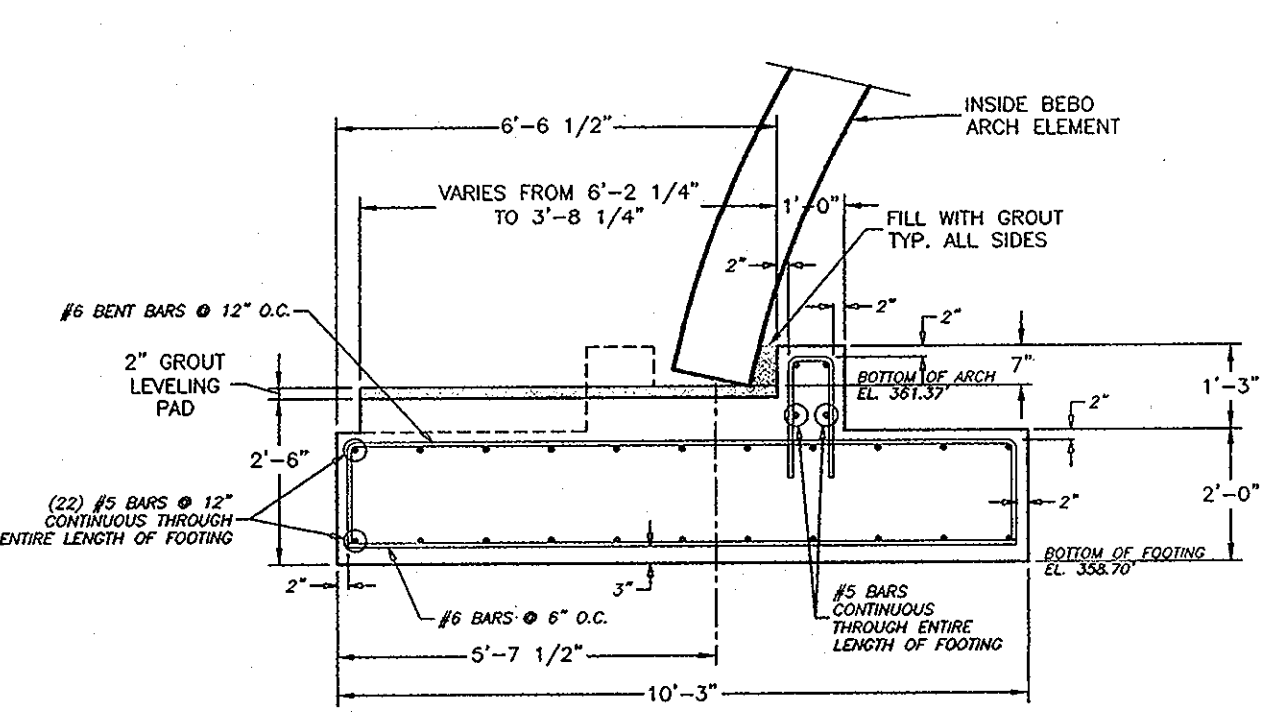
1 TYPICAL SECTION
SCALE: 1" = 0'



2 SECTION THRU CENTER
SCALE: 1" = 5'



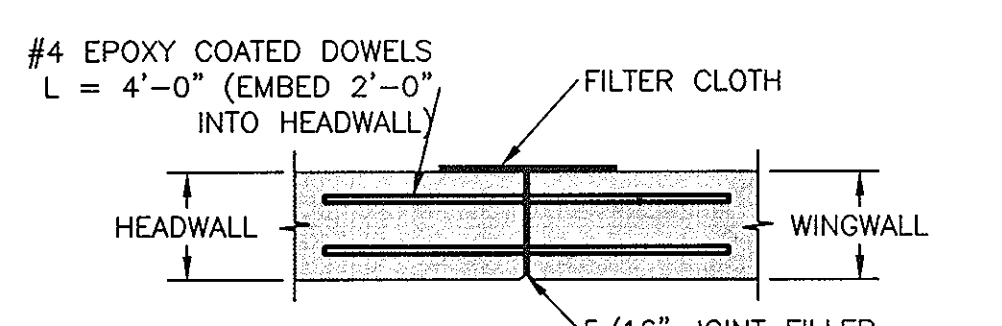
SECTION 'A-A'



SECTION 'B-B'

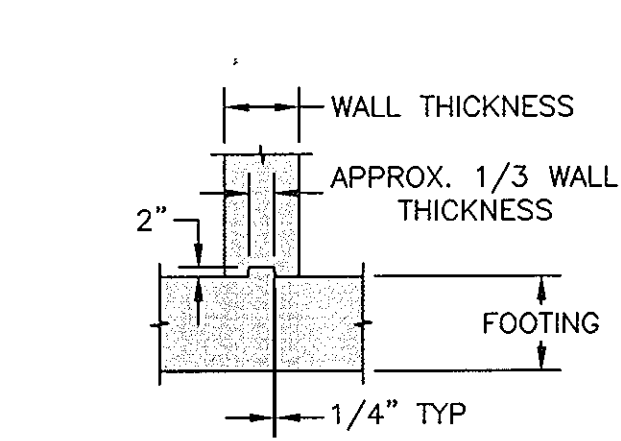
- NOTES:
- 1.) CONCRETE SHALL BE $f'_c=4,000$ PSI
 - 2.) ALL REINFORCEMENT SHALL BE ASTM A-615, GRADE 60.
 - 3.) ARCH FOOTING KEY AND LEVELING PADS TYPE S GROUT=5,000 PSI, 1/4" AGGREGATE MAXIMUM.
 - 4.) FOOTING IS DESIGNED FOR A 4,000 psf ALLOWABLE BEARING PRESSURE.

SEE CONTRACT DRAWING AND REPORT BY CBC ENGINEERS & ASSOCIATES 937-428-6150 CBC REPORT No. 6601-4-1006-05.

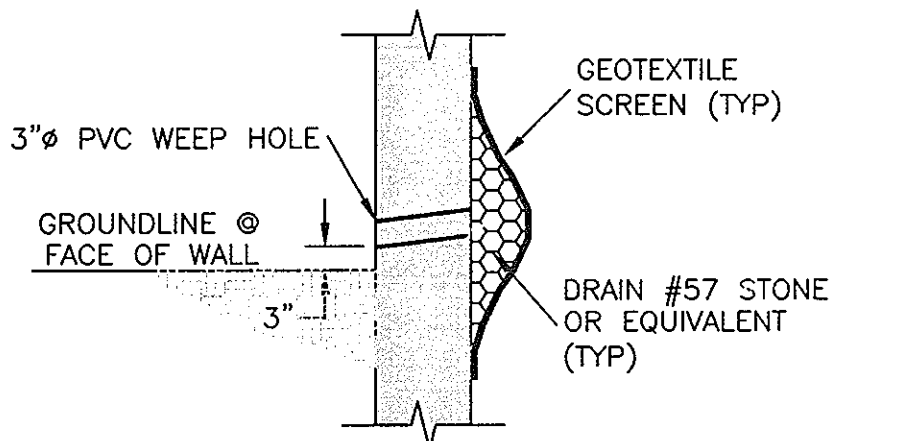


EXPANSION JOINT DETAIL
NOT TO SCALE

NOTES FOR EXPANSION JOINT:
A FILTER CLOTH THREE FOOT IN WIDTH AND DOUBLE THICKNESS SHALL BE APPLIED TO ALL TRANSVERSE JOINTS IN THE FOOTING AND WALLS. THE MATERIAL SHALL BE CENTERED ON THE JOINT AND THE EDGES SEALED WITH A MASTIC OR WITH TWO SIDED TAPE. THE FILTER CLOTH SHALL BE A GEOTEXTILE MEETING THE APPROVAL OF THE ENGINEER.



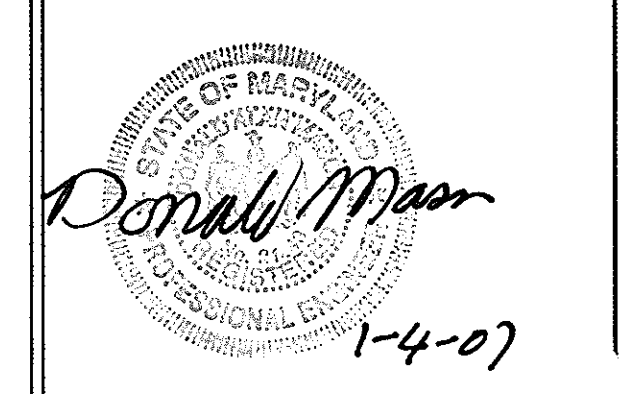
KEYED CONSTRUCTION JOINT DETAIL
NOT TO SCALE



WEEP HOLE DETAIL
NOT TO SCALE

NO.	DATE	REVISION
3	2-20-08	REVISE GRADING AT HEADWALL # 2
2	10-30-06	REVISE ARCH TYPE
1	5/06	CONVERT HEADWALLS TO CONCRETE

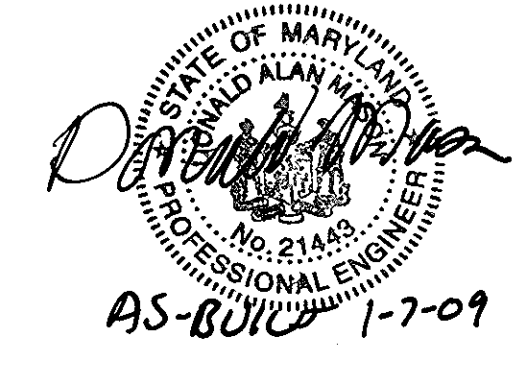
BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE & SUITE 418
ELLICOTT CITY, MARYLAND 21043
phone: 410-465-6105 • fax: 410-465-6644
www.bel-civilengineering.com



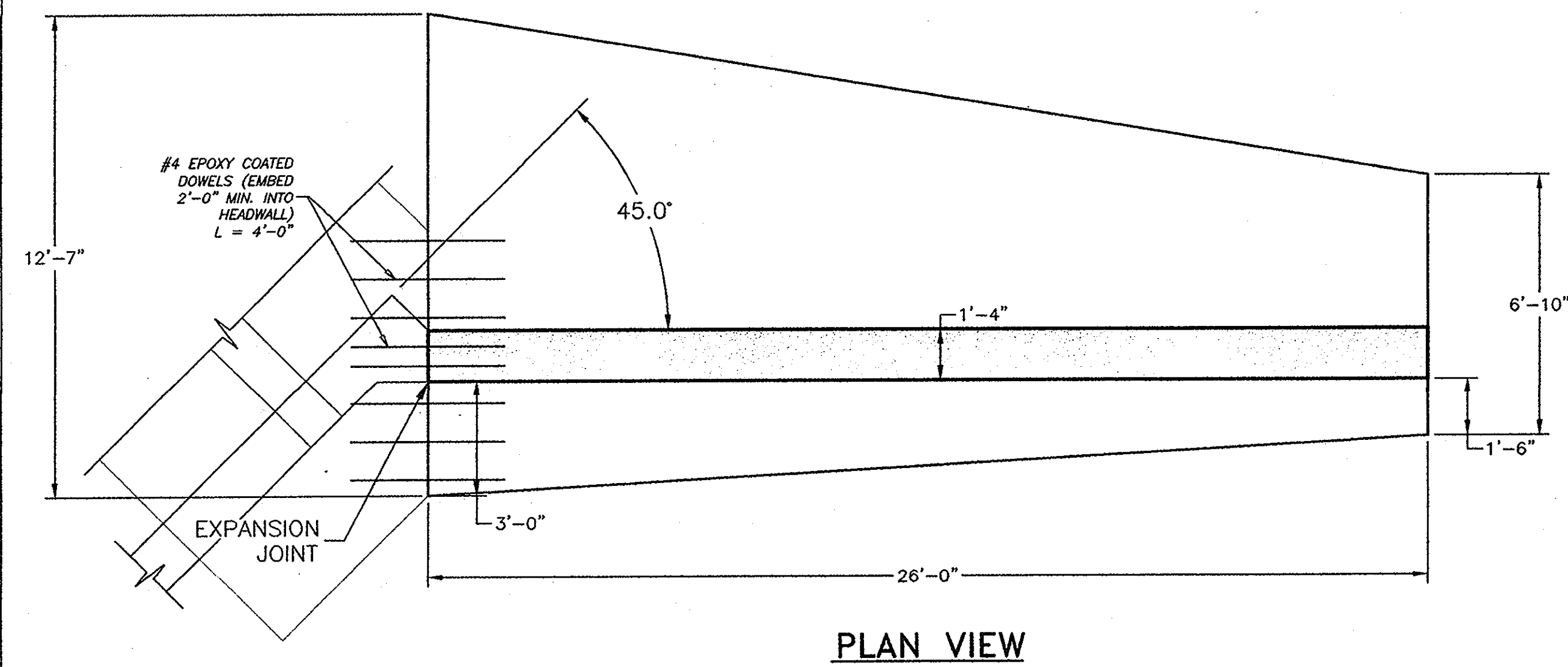
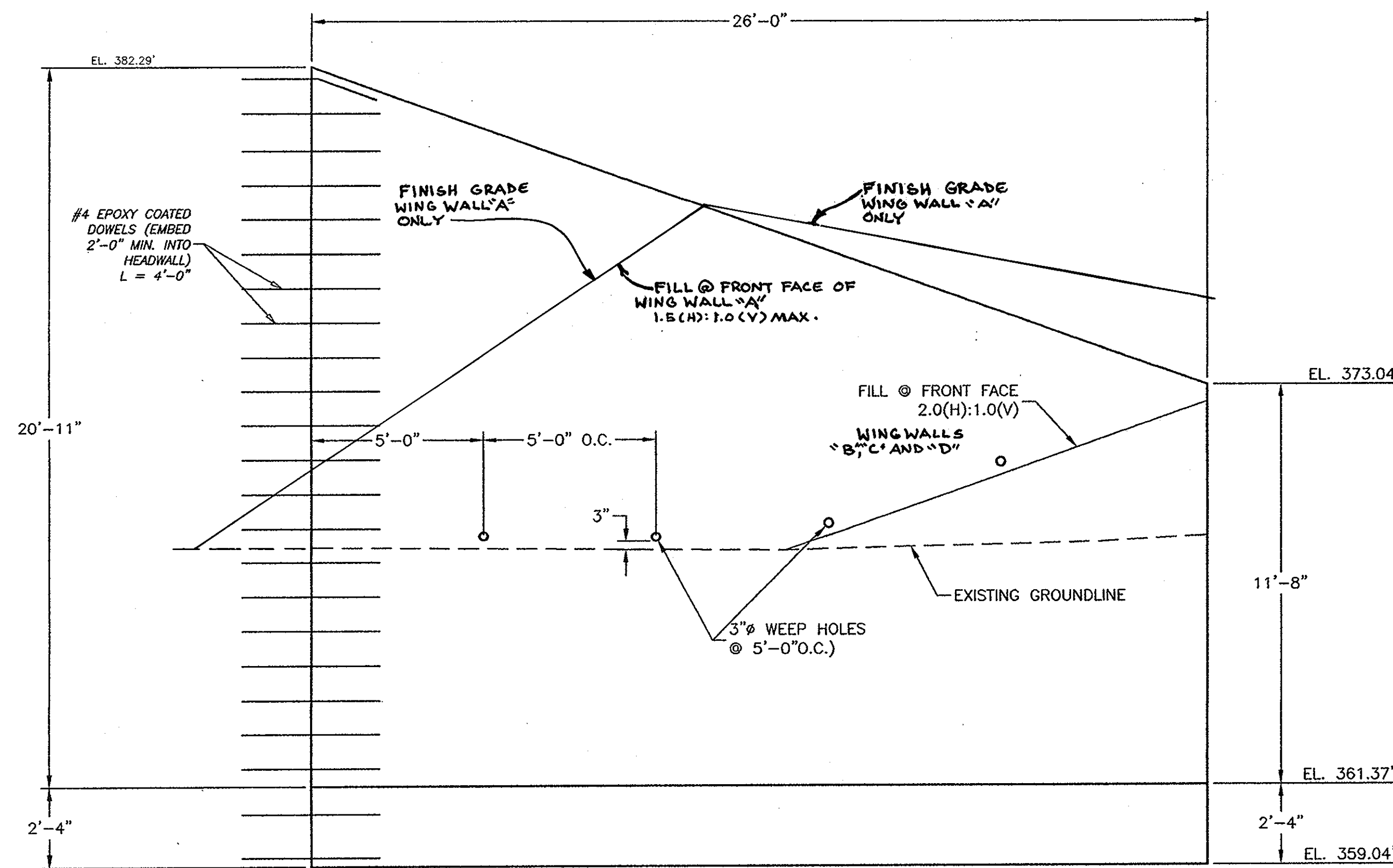
APPROVED: DEPARTMENT OF PUBLIC WORKS
William F. ... 2-3-07
CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Carole ... 2/1/07
CHIEF, DIVISION OF LAND DEVELOPMENT

Chris ... 2/6/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION

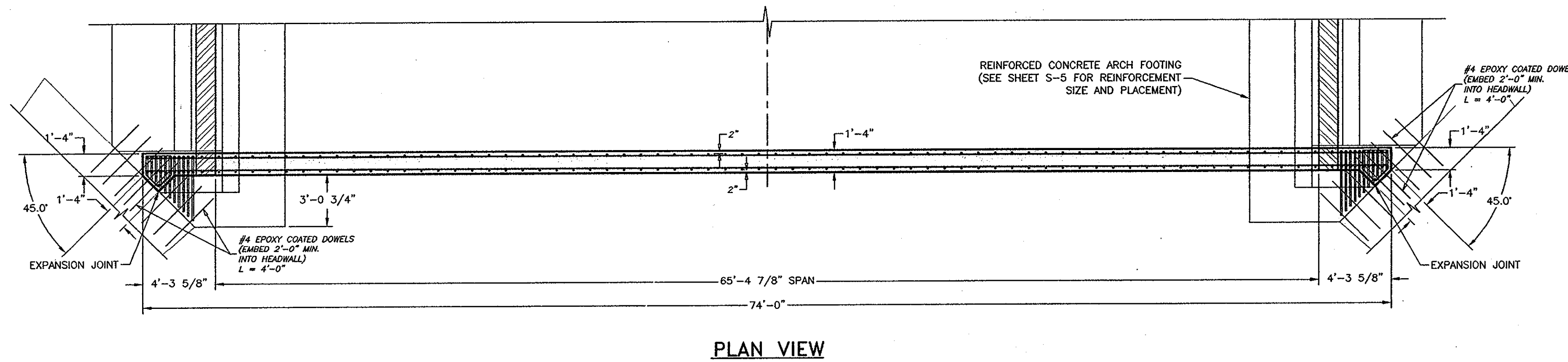
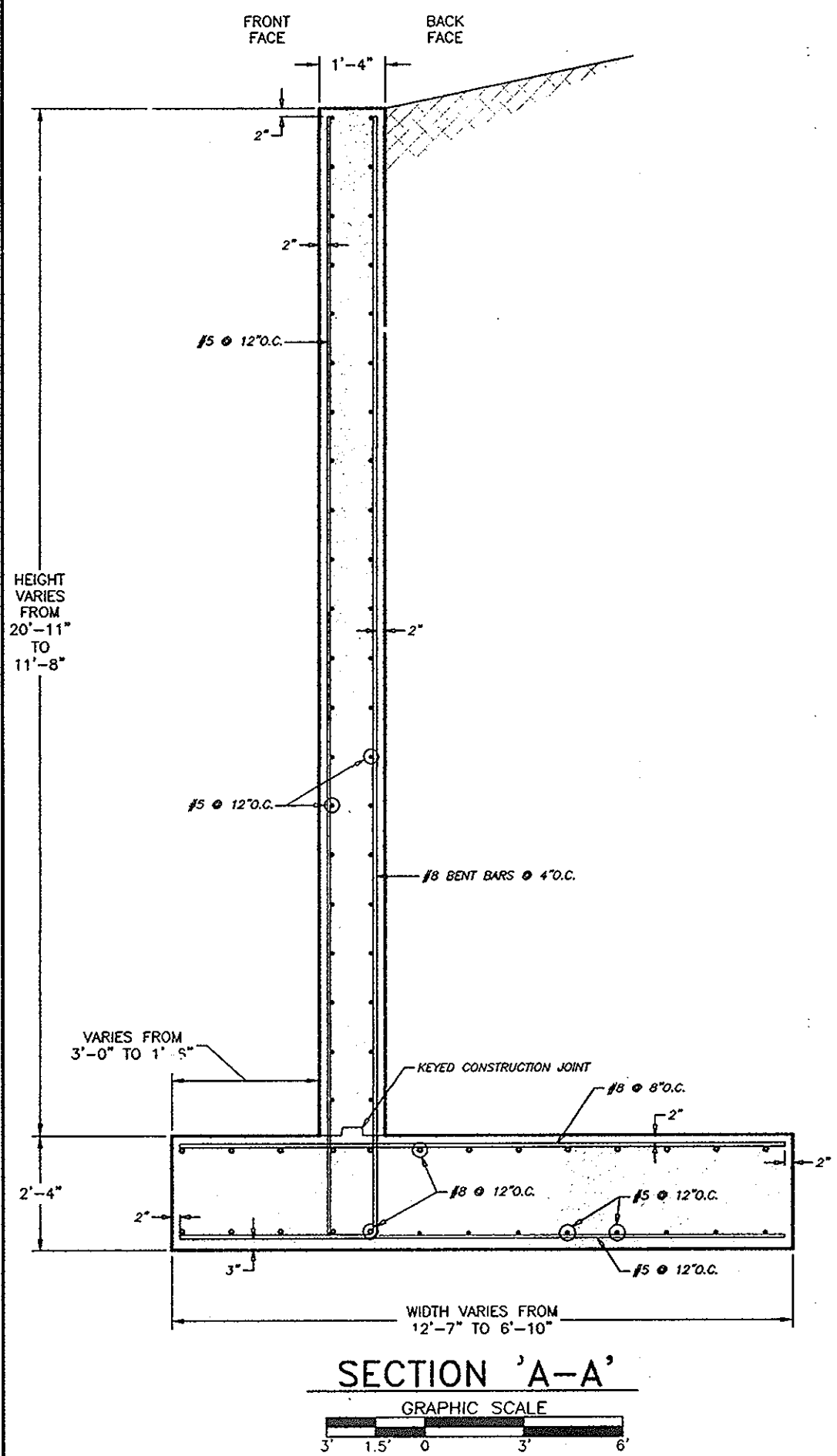


DEVELOPER:	ELIOAK, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	PROJECT:	RIVERWOOD - PHASE 1 LOTS 1 - 42 NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'Q'; AND NON-BUILDABLE 'BULK' PARCELS 'AA' THRU 'HH'
OWNER:	HOMWOOD, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	LOCATION:	TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3, 4, 9 & 10 PARCELS: 85 PARCELS: 20 & 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
OWNER:	JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL ZIEGLER, THOMAS F. CARROLL, JOHN LEE CARROLL, JR. AND GENIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32nd FLOOR NEW YORK, NEW YORK 10022	TITLE:	Revised Road Arch Construction Plan REVISED ROAD CONSTRUCTION PLAN ARCHDRAIN DETAILS HW-1 TO HW-2
DES: LDD	DRAFT: LDD	CHECK: DAM	DATE: MAY, 2006 PROJECT NO. 1132 SCALE: AS SHOWN SHEET 49 OF 55



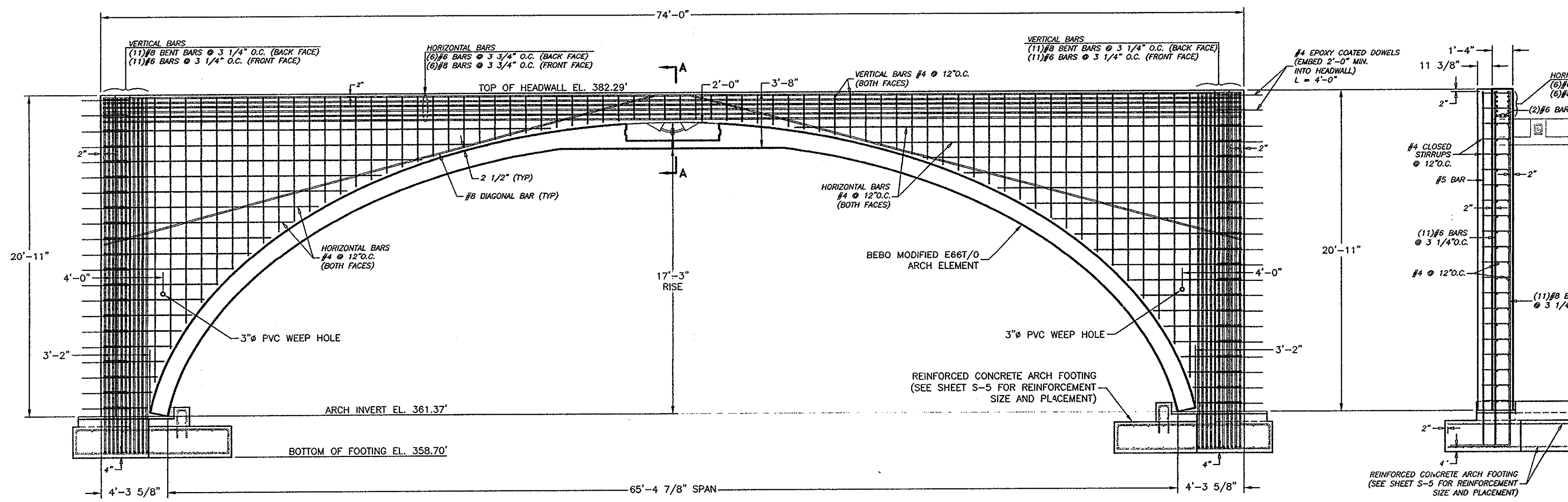
NOTE:
WINGWALLS 'B' & 'D' ARE DEPICTED IN THIS DETAIL.
WINGWALLS 'A' & 'C' ARE SYMMETRICAL TO THIS DESIGN.

ELEVATION VIEW
WINGWALLS DESIGN
SCALE: 1" = 3'



SEE CONTRACT DRAWING AND REPORT BY CBC ENGINEERS & ASSOCIATES 937-428-6150 CBC REPORT No. 6601-4-1006-05.

- NOTES:
- 1.) CONCRETE SHALL BE $f'_c=4,000$ PSI
 - 2.) ALL REINFORCEMENT SHALL BE ASTM A-615, GRADE 60.
 - 3.) ARCH FOOTING KEY AND LEVELING PADS TYPE S GROUT=5,000 PSI, 1/4" AGGREGATE MAXIMUM.
 - 4.) FOOTING IS DESIGNED FOR A 4,000 psf ALLOWABLE BEARING PRESSURE.



ELEVATION VIEW
HEADWALL DESIGN
GRAPHIC SCALE

NO.	DATE	REVISION
3	2-20-08	REVISE GRADING AT WING WALL 'A' HEADWALL #2
2	10-30-06	REVISE ARCH TYPE
1	5/06	CONVERT HEADWALLS TO CONCRETE

BENCHMARK ENGINEERS, INC.
ENGINEERS • LAND SURVEYORS • PLANNERS

Donna Moran

8480 BALTIMORE NATIONAL PIKE & SUITE 418
ELLCOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 • FAX: 410-465-6644
WWW.BEL-ENGINEERING.COM

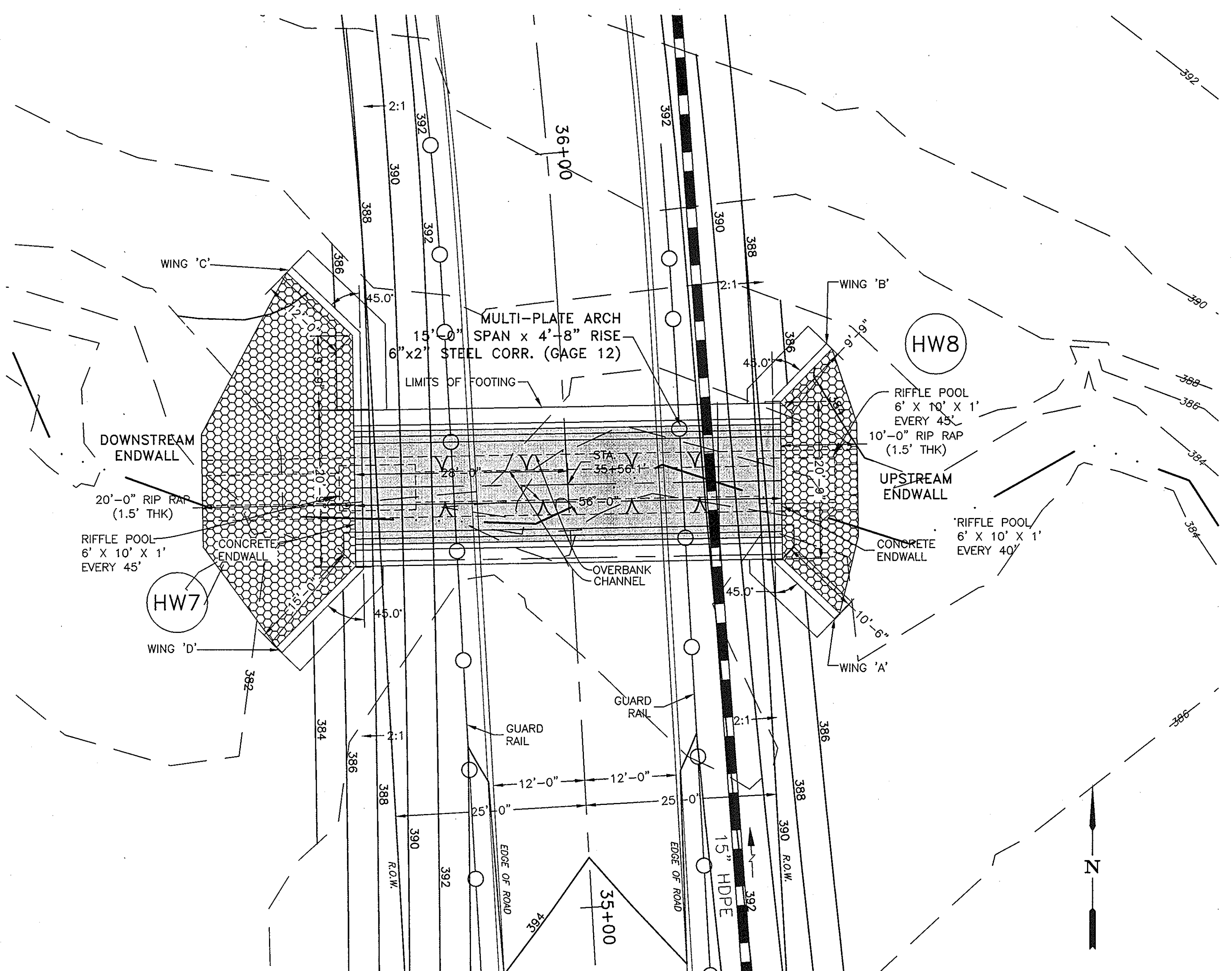
1-4-07

APPROVED: DEPARTMENT OF PUBLIC WORKS
William F. Hubert 2-5-07
CHIEF, BUREAU OF HIGHWAYS

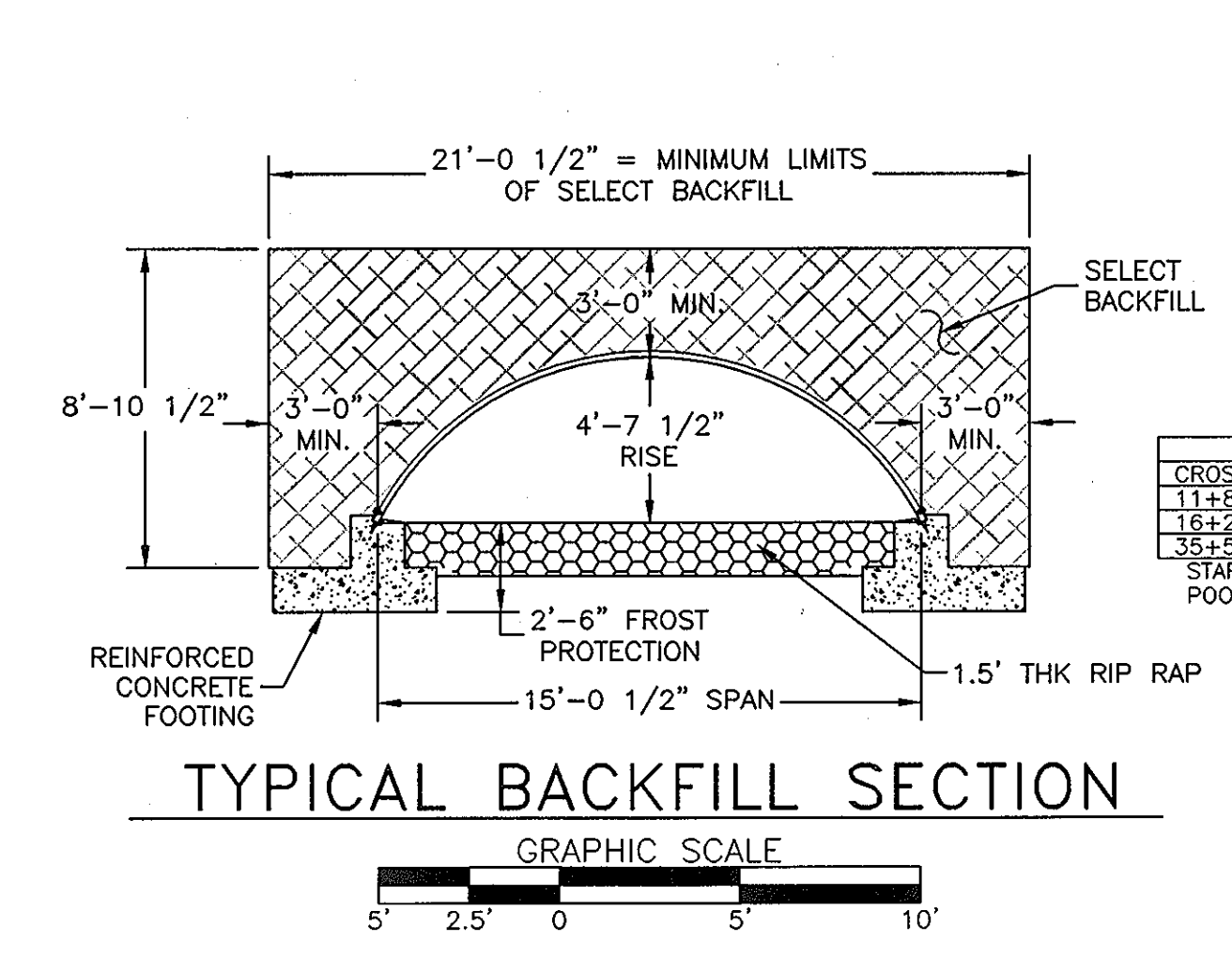
APPROVED: DEPARTMENT OF PLANNING AND ZONING
Candy Harvath 2/2/07
CHIEF, DIVISION OF LAND DEVELOPMENT

Chris P. ... 2/6/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION

DEVELOPER: ELIOAK, L.L.C. P.O. BOX 417 ELLCOTT CITY, MARYLAND 21041 410-465-4244	PROJECT: FIVERWOOD - PHASE 1 LOTS 1 & 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'Q'; AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'
OWNER: HOMEWOOD, L.L.C. P.O. BOX 417 ELLCOTT CITY, MARYLAND 21041 410-465-4244	LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3, 4, 8 & 10 PARCELS: 88 PARCELS: 20 & 88 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
OWNER: JOHN LEE CARROLL, CHRISTOPHER C. GEARD, MARY CARTER CARROLL, ZIEGLER, THOMAS T. LARROLL, JOHN LEE CARROLL, JR. AND GENIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32ND FLOOR NEW YORK, NEW YORK 10022	TITLE: <i>Revised Plan</i> Revised Road Construction Plan ARCHDRAIN DETAILS HW-1 TO HW-2
DES: LDD	DATE: MAY, 2006
DRAFT: LDD	PROJECT NO. 1132
CHECK: DAM	SCALE: AS SHOWN
	SHEET 50 OF 55



PLAN VIEW
GRAPHIC SCALE
CONTOUR INTERVAL = 2'



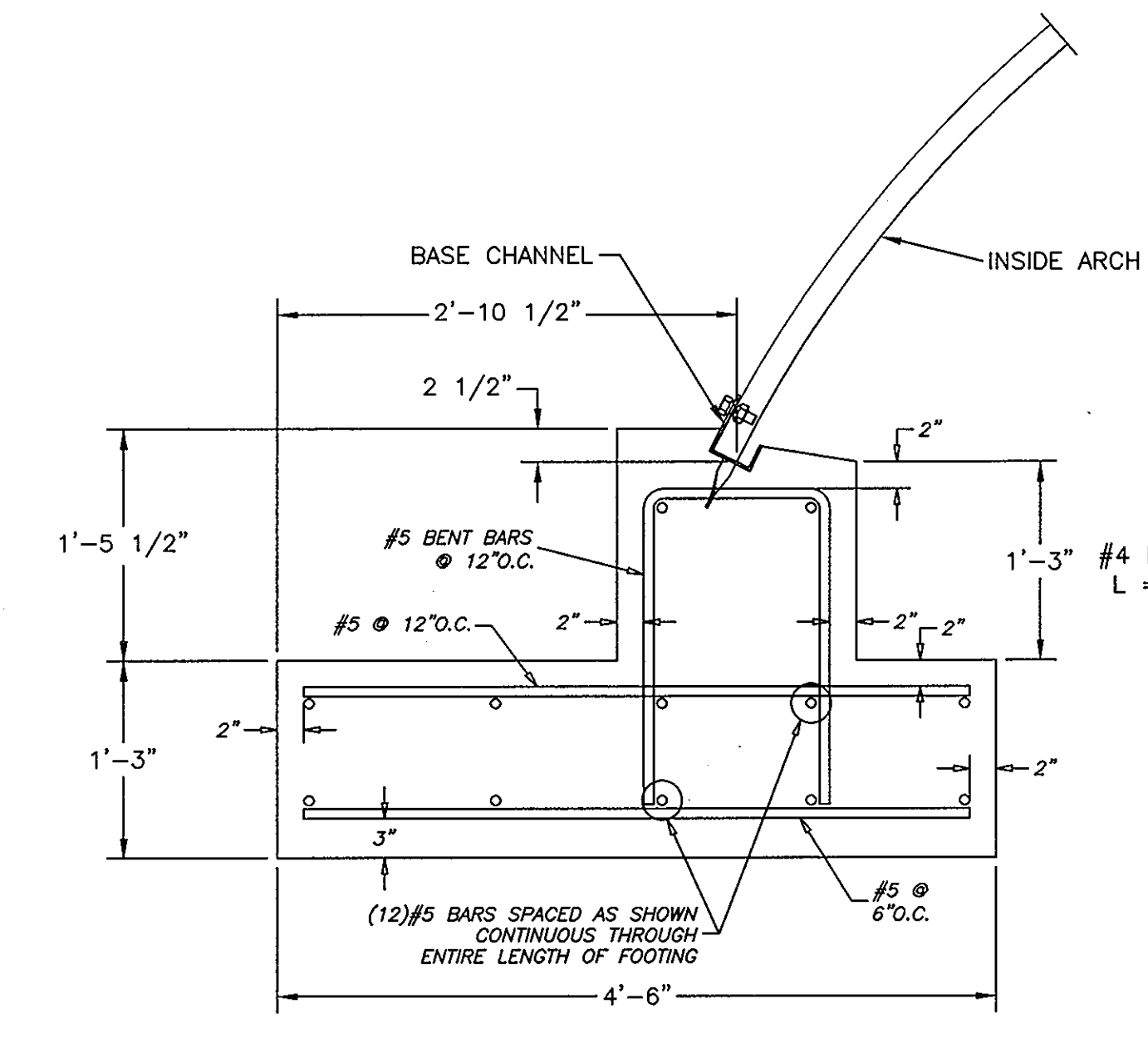
TYPICAL BACKFILL SECTION
GRAPHIC SCALE

NOTES:
1. USE SALVAGED MATERIALS FROM THE EXISTING STREAM AS THE INVERT MATERIAL OF THE CHANNEL TO THE EXTENT POSSIBLE.
2. SMALL SALVAGED MATERIAL SHALL BE PLACED IN THE RIP-RAP WATER IS INTENDED TO FLOW ON THE SURFACE OF THE RIP-RAP CLOG WITH NATIVE MATERIALS OR WITH SIMILARLY SIZED NEW MATERIALS.

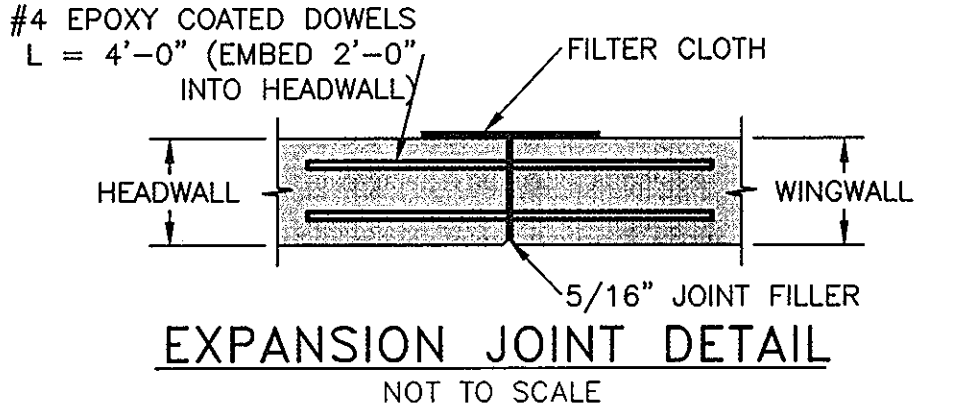
CROSSING STATION	BANKFULL WIDTH	POOL SPACING	POOL DESIGN	POOL DIMENSIONS	CHANNEL DIMENSIONS
11+82 (RIFFLE)	8' (SECTION 103)	40'	24'	W=6', L=10', D=1', S=0.0025	4' AT 0.8%
16+29 (STEP)	8' (SECTION 14)	16'	NA	W=4', L=20', H=1.2', S=0.0305	4' AT 3.05%
35+55 (RIFFLE)	9' (SECTION 214 US)	45'	27'	W=6', L=10', D=1', S=0.0025	4' AT 0.5%

START POOLS AT UPPER END OF CULVERT AND CONTINUE POOL SPACING TO END OF DOWNSTREAM RIPRAP, MINIMUM OF TWO POOLS.

SEE CONTRACT DRAWING AND REPORT BY CBC ENGINEERS & ASSOCIATES 937-428-6150 CBC REPORT No. 5992-4-0905-05.



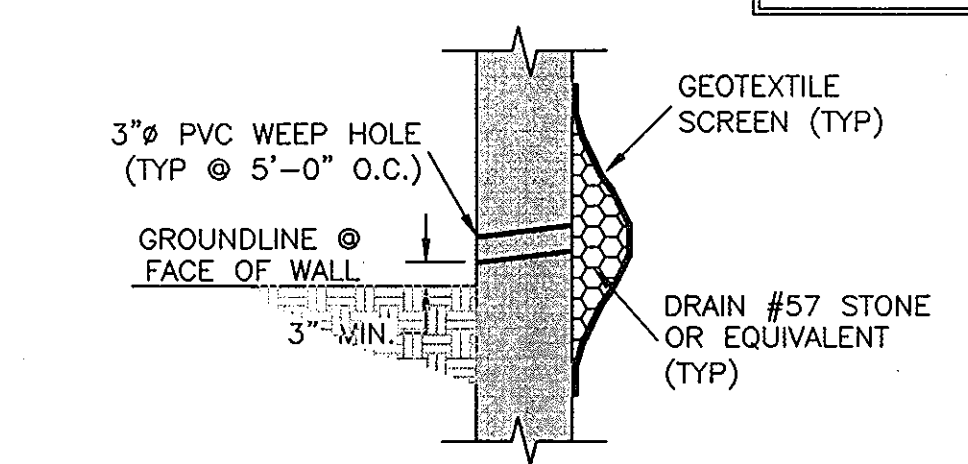
FOOTING DESIGN
GRAPHIC SCALE



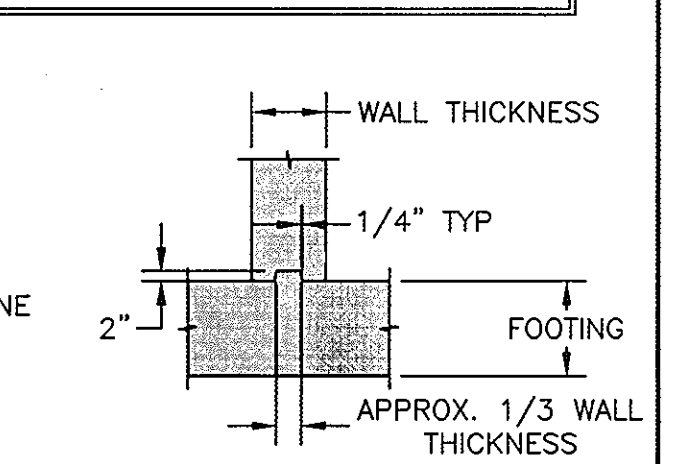
EXPANSION JOINT DETAIL
NOT TO SCALE

NOTES FOR EXPANSION JOINT:
A FILTER CLOTH THREE FEET IN WIDTH AND DOUBLE THICKNESS SHALL BE APPLIED TO ALL TRANSVERSE JOINTS IN THE FOOTING AND WALLS. THE MATERIAL SHALL BE CENTERED ON THE JOINT AND THE EDGES SEALED WITH A MASTIC OR WITH TWO SIDED TAPE. THE FILTER CLOTH SHALL BE A GEOTEXTILE MEETING THE APPROVAL OF THE ENGINEER.

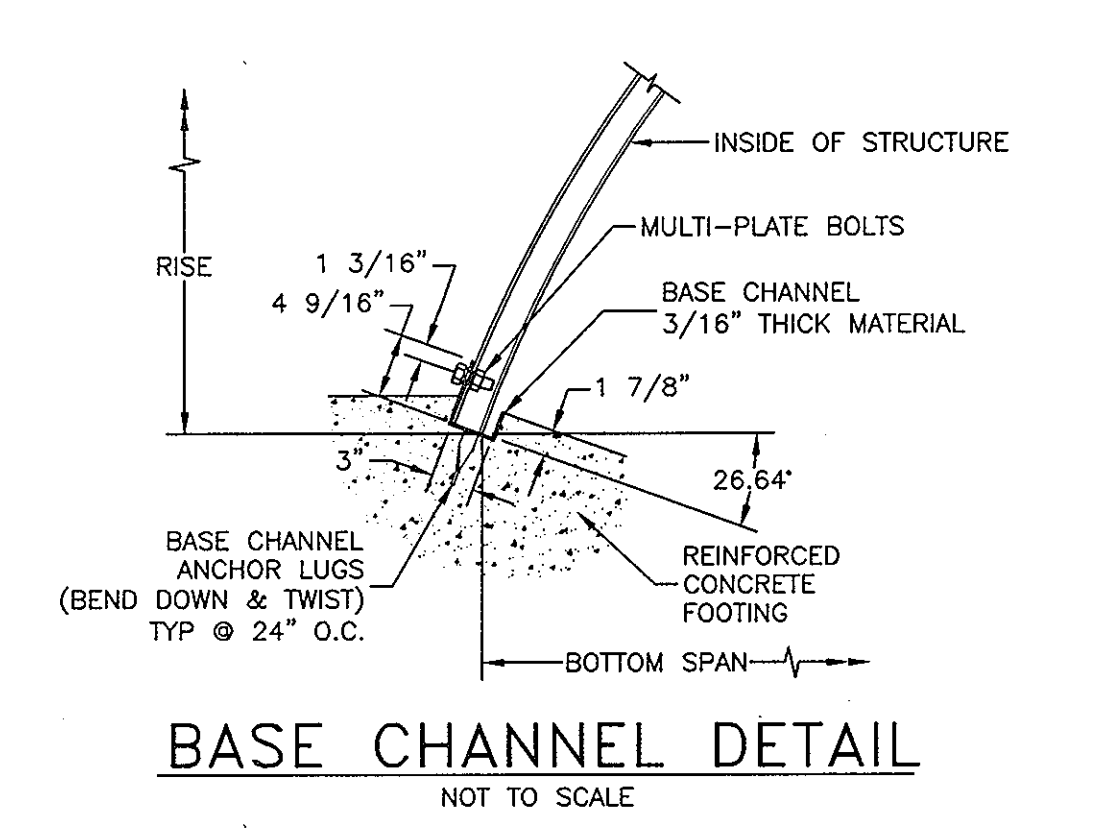
NOTES:
1.) CONCRETE SHALL BE f'c = 3,500 psi.
2.) ALL REINFORCEMENT SHALL BE ASTM A-615, GRADE 60
3.) FOOTING IS DESIGNED FOR A 2,000 psf ALLOWABLE BEARING CAPACITY



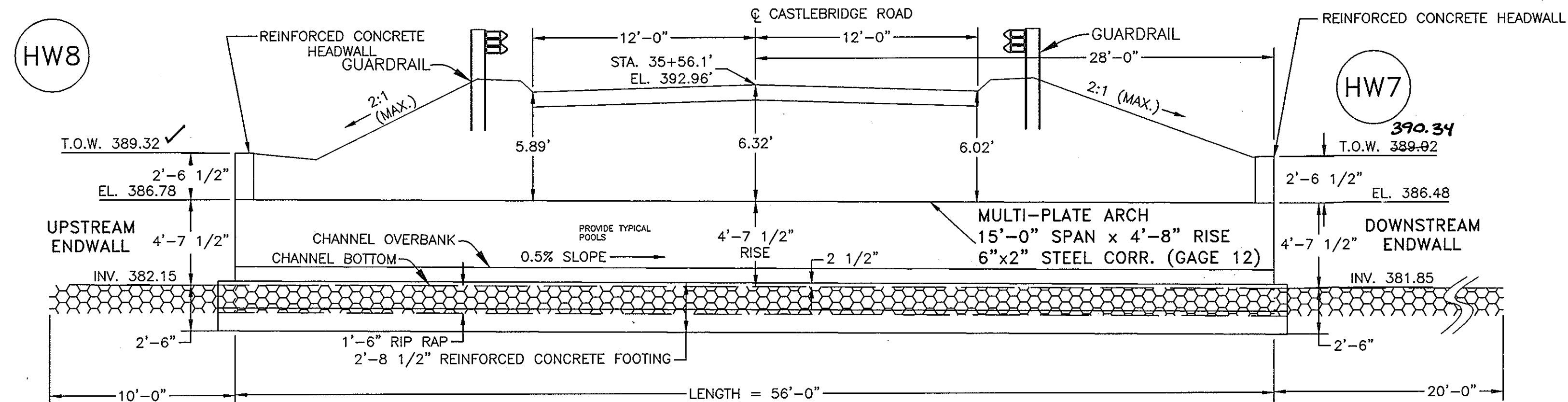
WEEP HOLE DETAIL
NOT TO SCALE



KEYED CONSTRUCTION JOINT DETAIL
NOT TO SCALE



BASE CHANNEL DETAIL
NOT TO SCALE



PROFILE ALONG C OF STRUCTURE
GRAPHIC SCALE

NO.	DATE	REVISION
1	5/06	CONVERT HEADWALLS TO CONCRETE

BENCHMARK ENGINEERING, INC.
ENGINEERS • LAND SURVEYORS • PLANNERS
8480 BALTIMORE NATIONAL PIKE • SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 • FAX: 410-465-6644
WWW.BEL-CIVILENGINEERING.COM

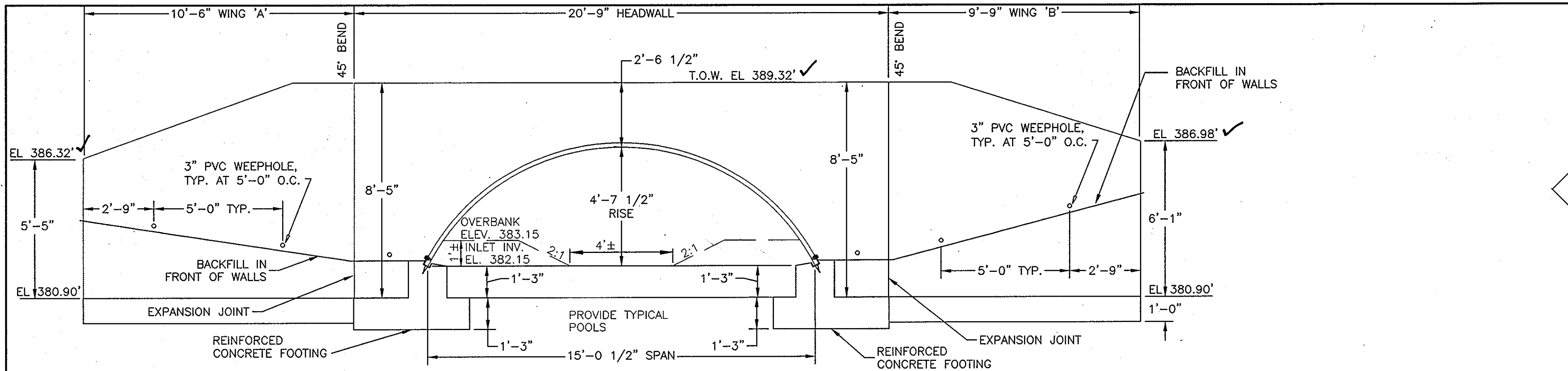
Donald M...
5/3/06

APPROVED: DEPARTMENT OF PUBLIC WORKS
William F. White 5-15-06
CHIEF, BUREAU OF HIGHWAYS

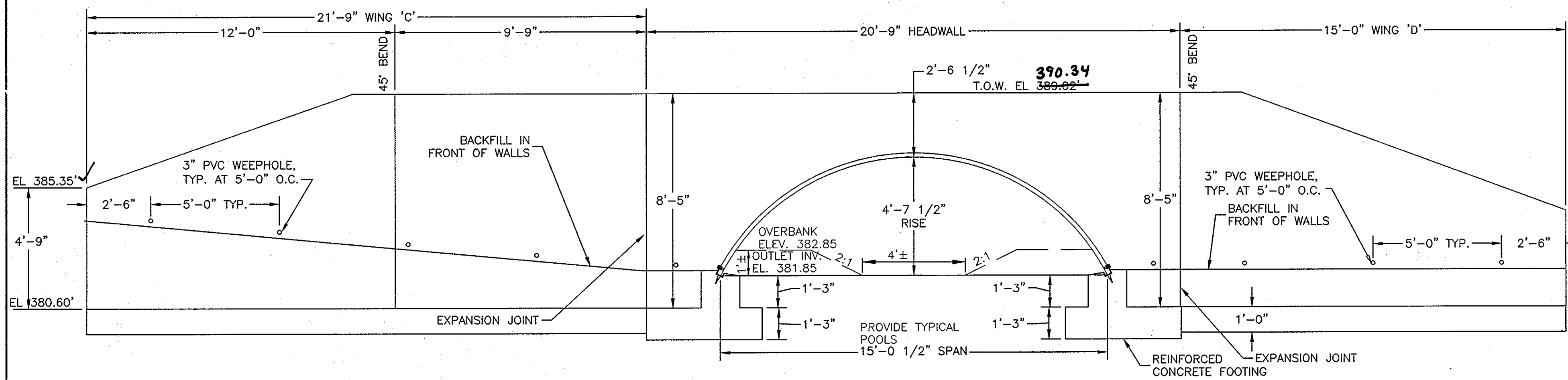
APPROVED: DEPARTMENT OF PLANNING AND ZONING
Christy Hammet 5/23/06
CHIEF, DIVISION OF LAND DEVELOPMENT

William F. White 5/23/06
CHIEF, DEVELOPMENT ENGINEERING DIVISION

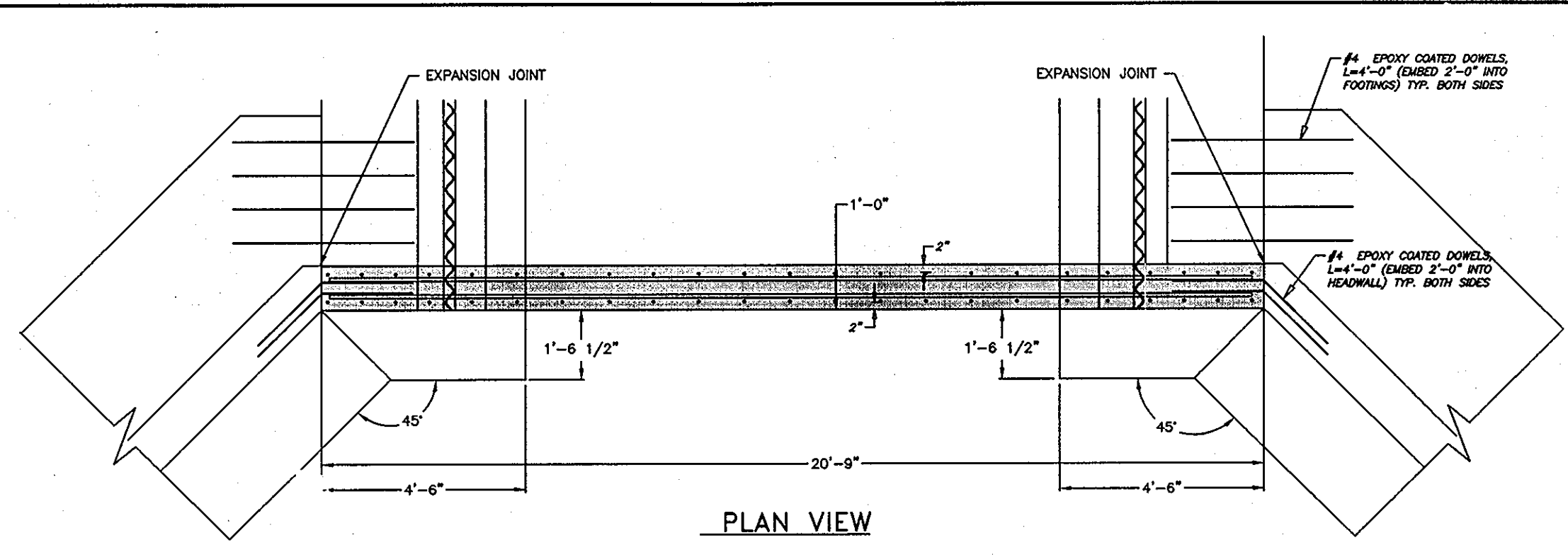
DEVELOPER: ELIOAK, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	PROJECT: RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'O'; AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'
OWNER: HOMEWOOD, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 1, 4, 9 & 10 PARCELS: 88 PARCELS: 20 & 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
OWNER: JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL, ZIGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32nd FLOOR NEW YORK, NEW YORK 10022	TITLE: REVISED ROAD CONSTRUCTION PLAN ARCHDRAIN DETAILS HW-7 TO HW-8
DES: LDD	DATE: MAY, 2006
DRAFT: LDC	PROJECT NO. 1132
CHECK: DAM	SCALE: AS SHOWN
	SHEET 51 OF 55



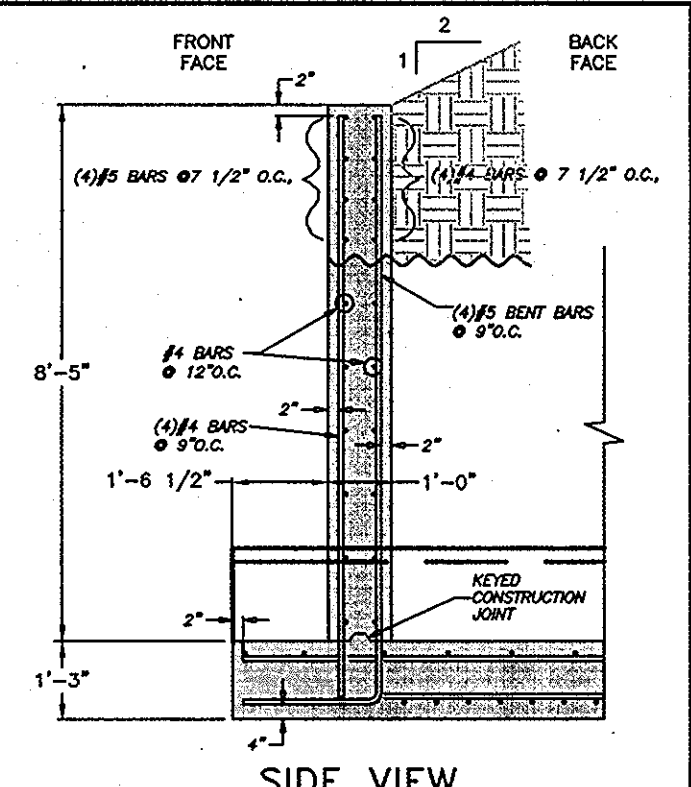
UPSTREAM ENDWALL ELEVATION VIEW



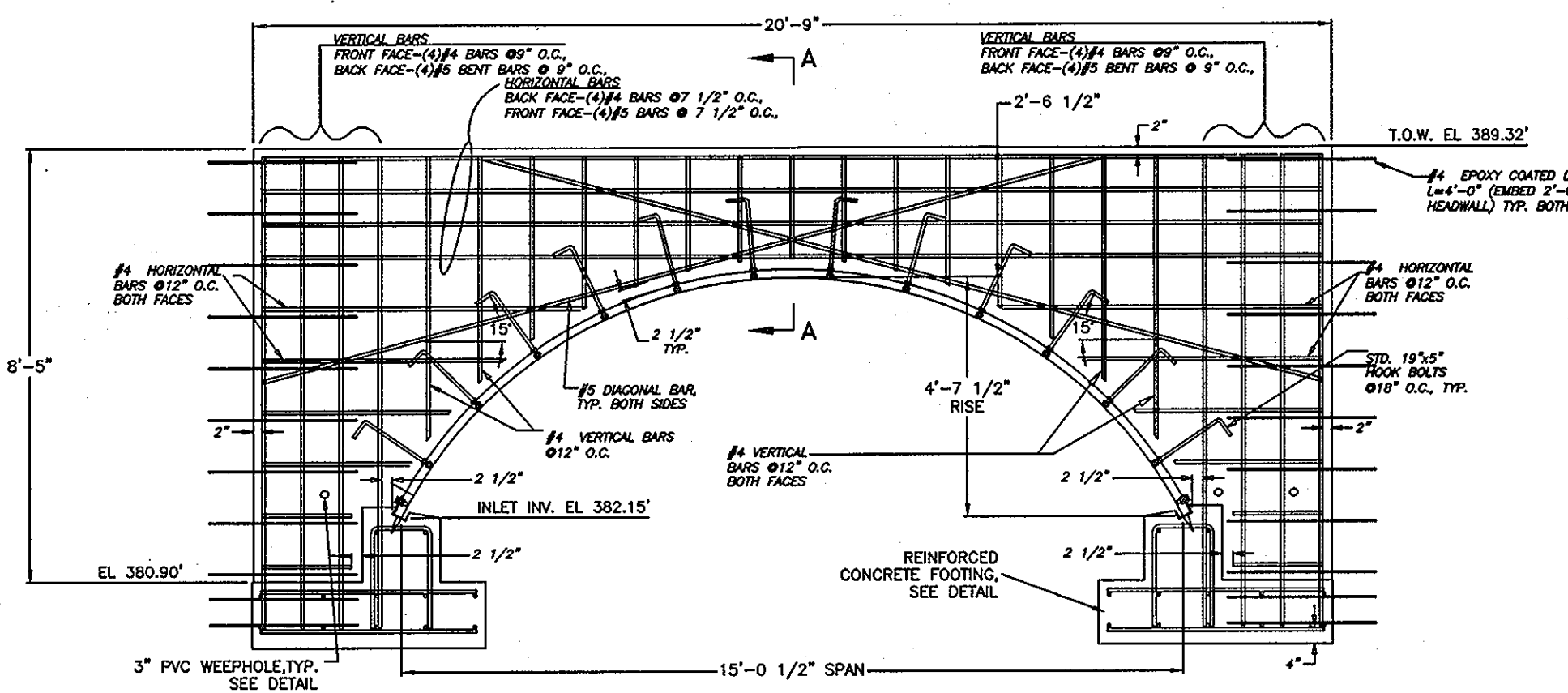
DOWNSTREAM ENDWALL ELEVATION VIEW



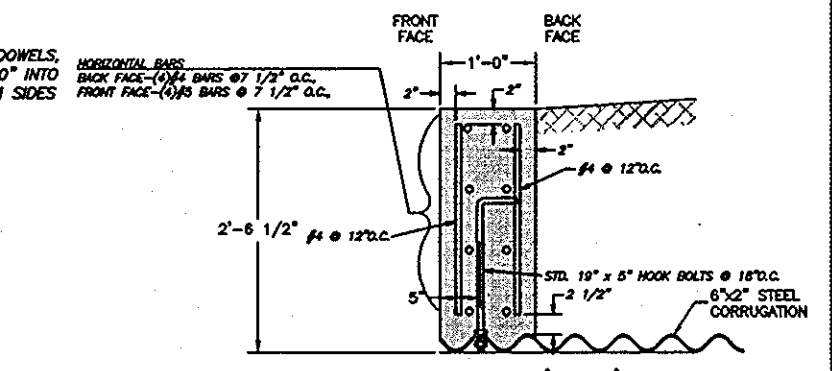
PLAN VIEW



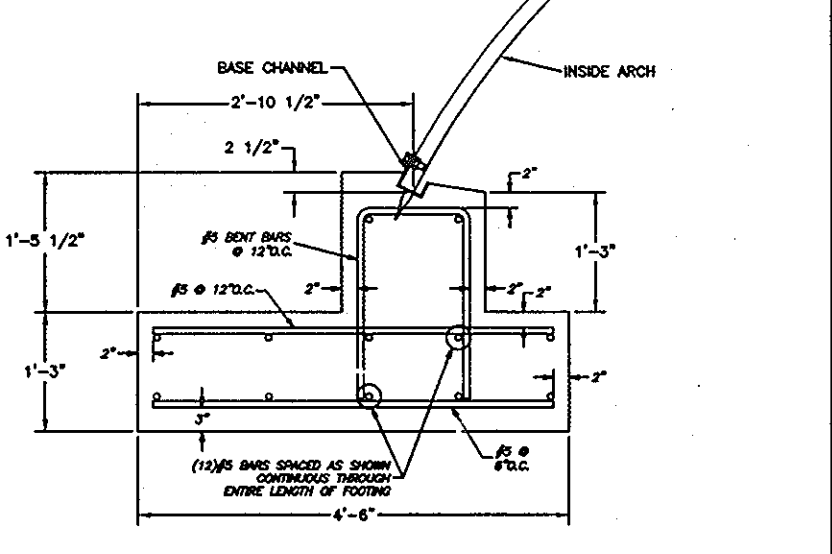
SIDE VIEW



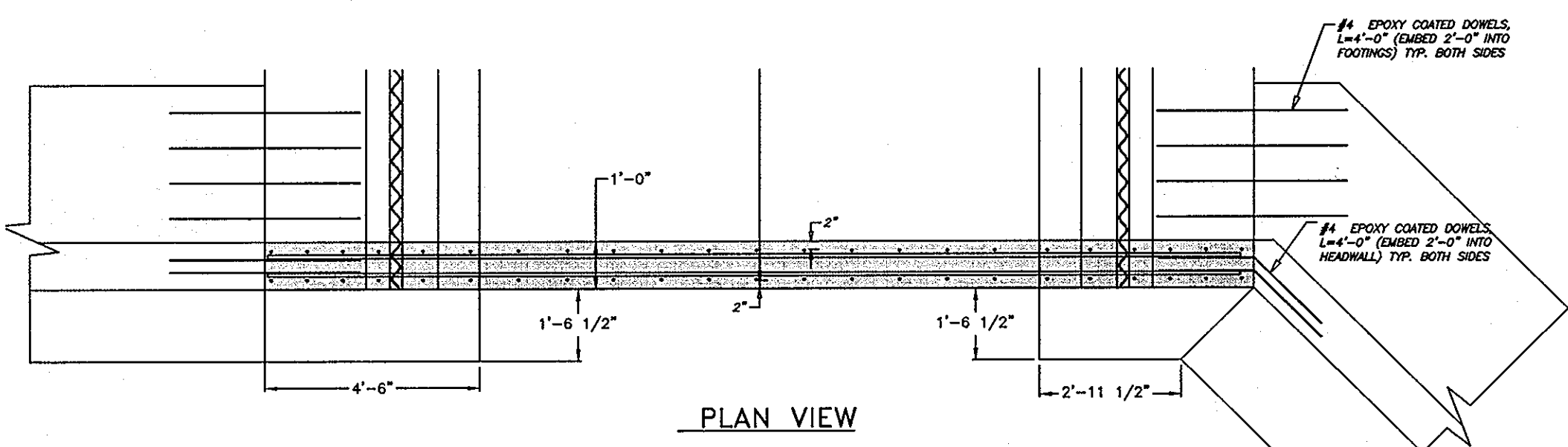
ELEVATION VIEW
UPSTREAM HEADWALL DESIGN



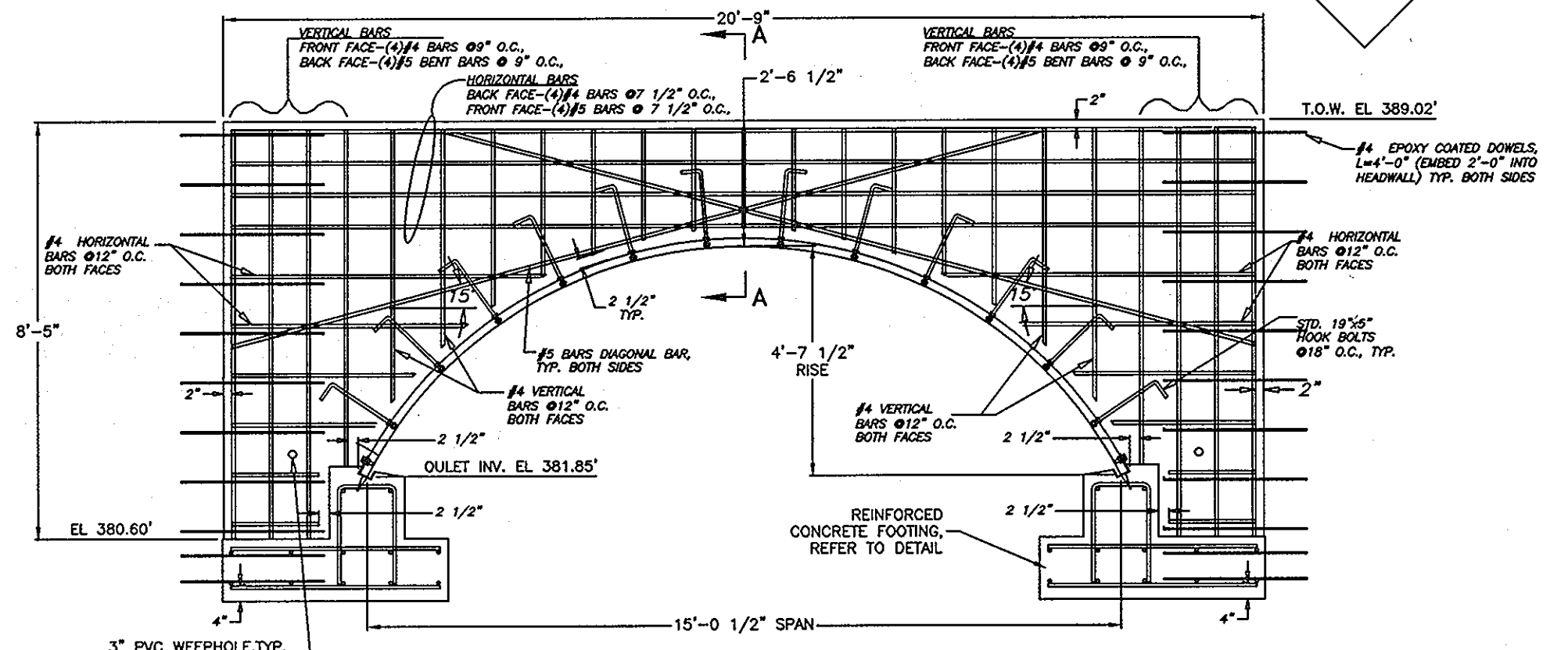
SECTION 'A-A'



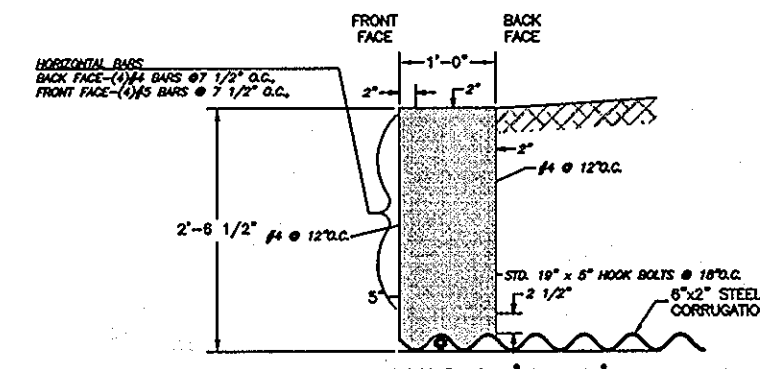
FOOTING DESIGN



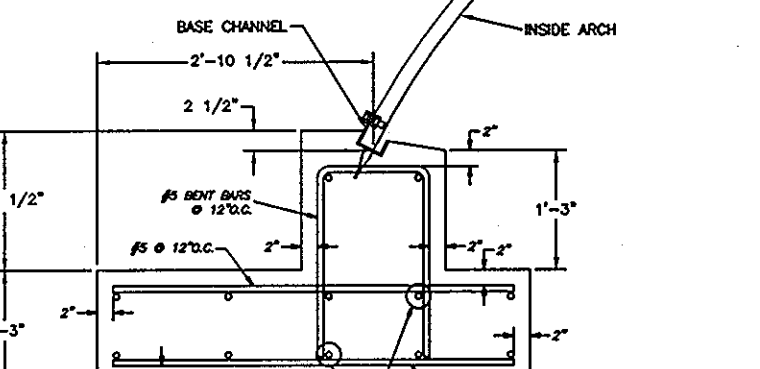
PLAN VIEW



ELEVATION VIEW
DOWNSTREAM HEADWALL DESIGN



SECTION 'A-A'



FOOTING DESIGN



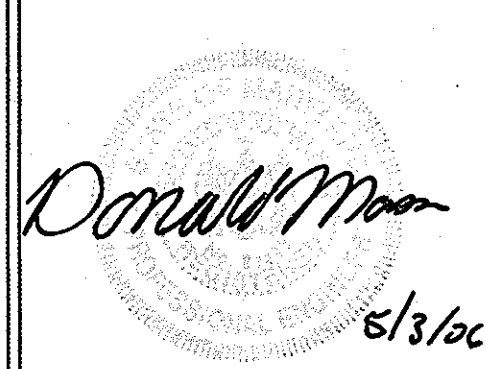
SEE CONTRACT DRAWING AND REPORT BY CBC ENGINEERS & ASSOCIATES 937-428-6150 CBC REPORT No. 5992-4-0905-05.

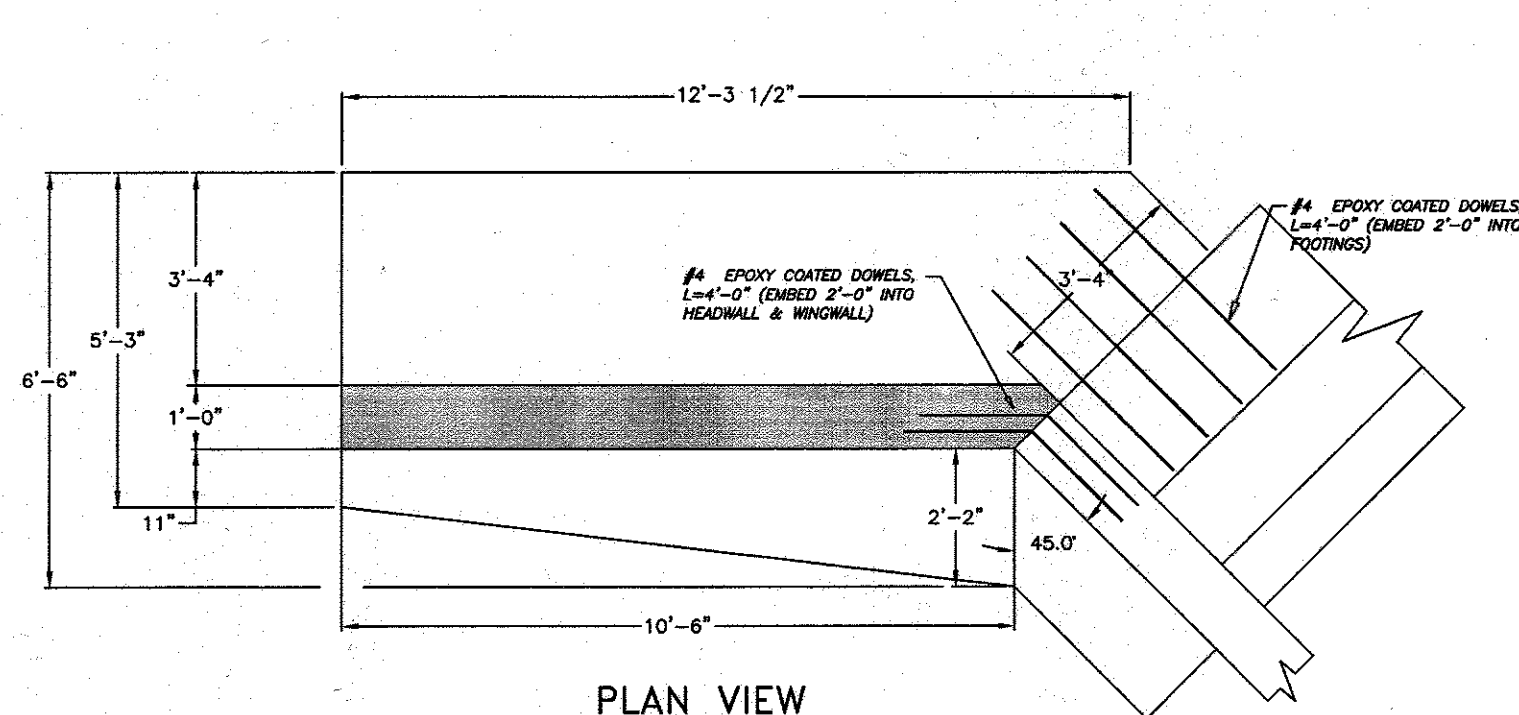
APPROVED: DEPARTMENT OF PUBLIC WORKS
William Z. White 5-15-06
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Condy Hunter 5/25/06
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

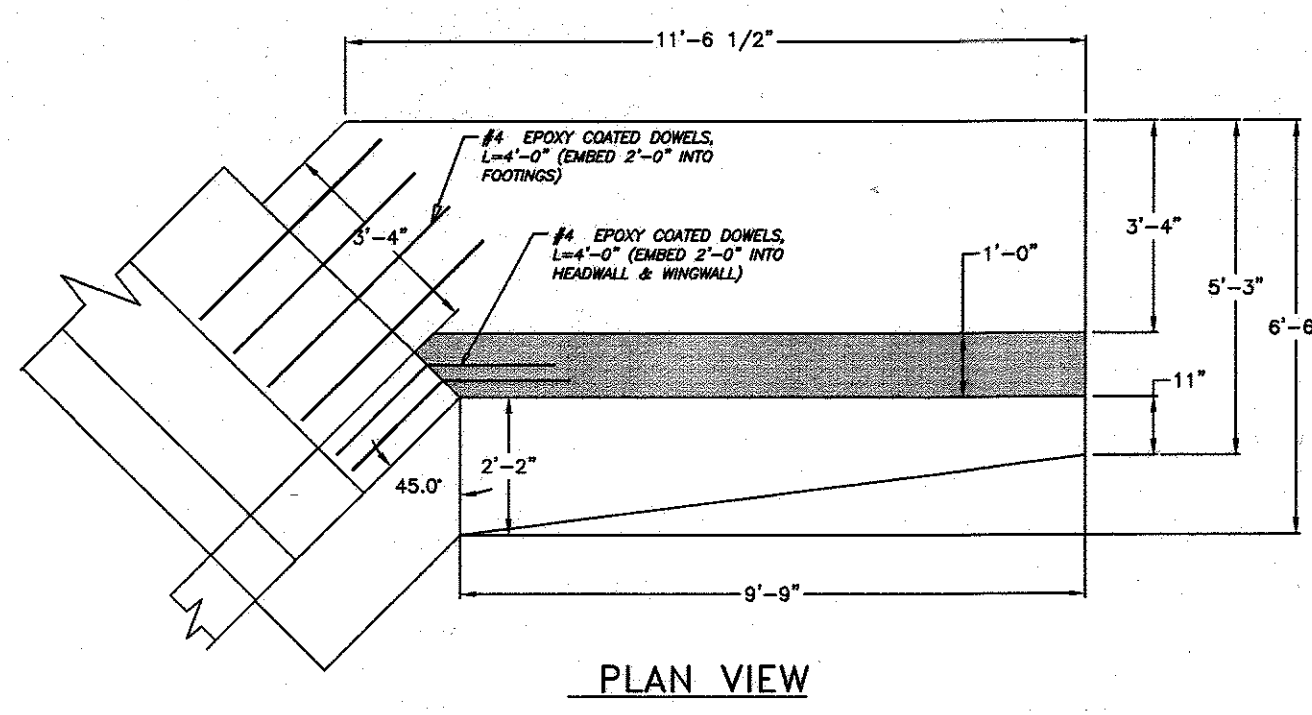
Steve MK
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

NO.	DATE	REVISION
1	5/06	CONVERT HEADWALLS TO CONCRETE

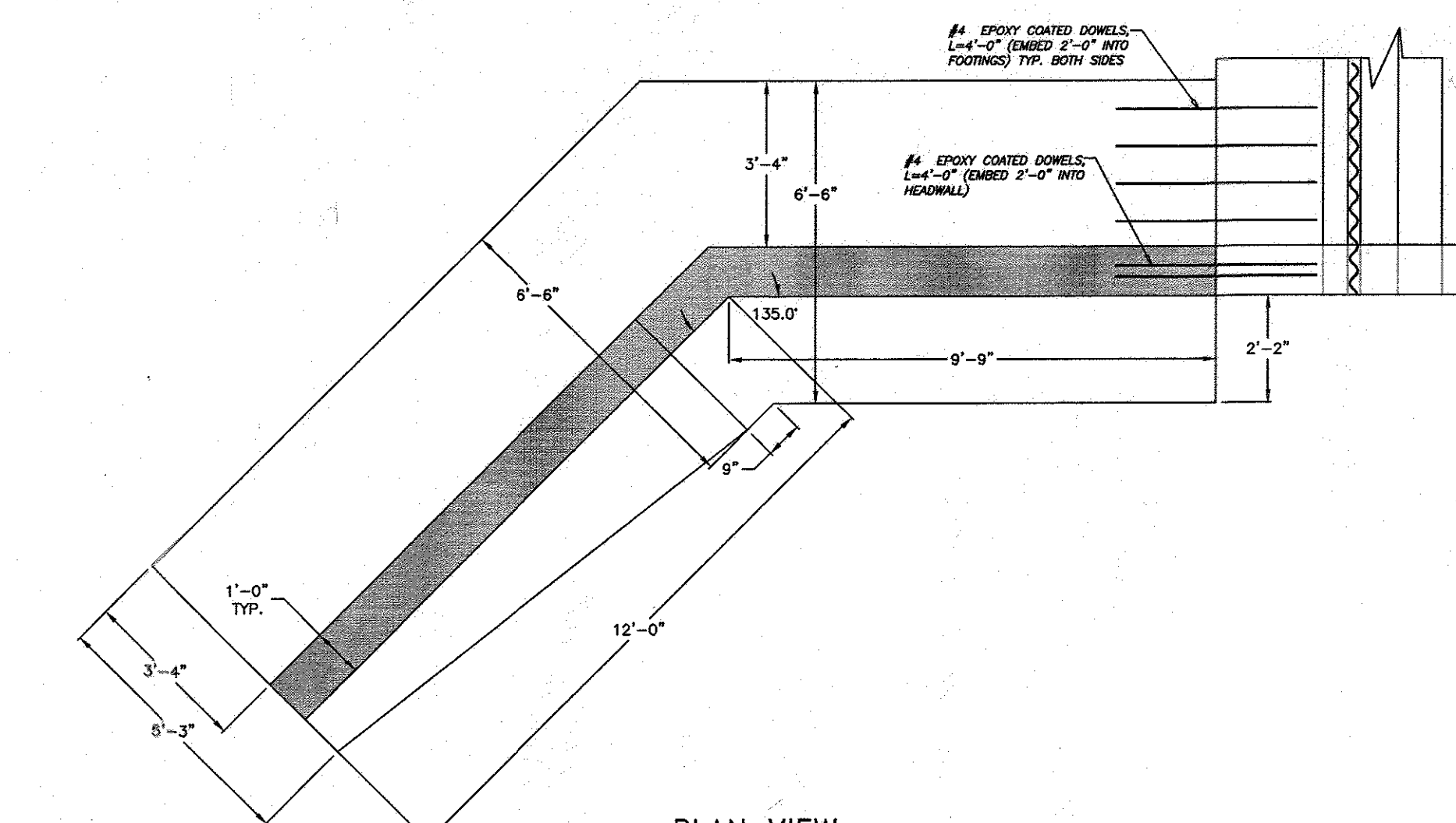
BENCHMARK ENGINEERS • LAND SURVEYORS • PLANNERS ENGINEERING, INC. 8400 BALTIMORE NATIONAL PIKE • SUITE 418 ELLICOTT CITY, MARYLAND 21043 phone: 410-465-6105 • fax: 410-465-6644 www.bel-civilengineering.com		 5/3/06
DEVELOPER:	ELIOAK, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	
OWNER:	HOMEWOOD, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	PROJECT: RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'Q'; AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'
OWNER:	JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL, ZIEGLER, THOMAS F. CARROLL, JOHN LEE CARROLL, JR. AND GENIEVEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32nd FLOOR NEW YORK, NEW YORK 10022	LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,9&10 PARCELS: 88 PARCELS: 29 & 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DES: LDD	DRAFT: LDD	CHECK: DAM
DATE: MAY, 2006	PROJECT NO. 1132	SHEET 52 OF 55
SCALE: AS SHOWN		



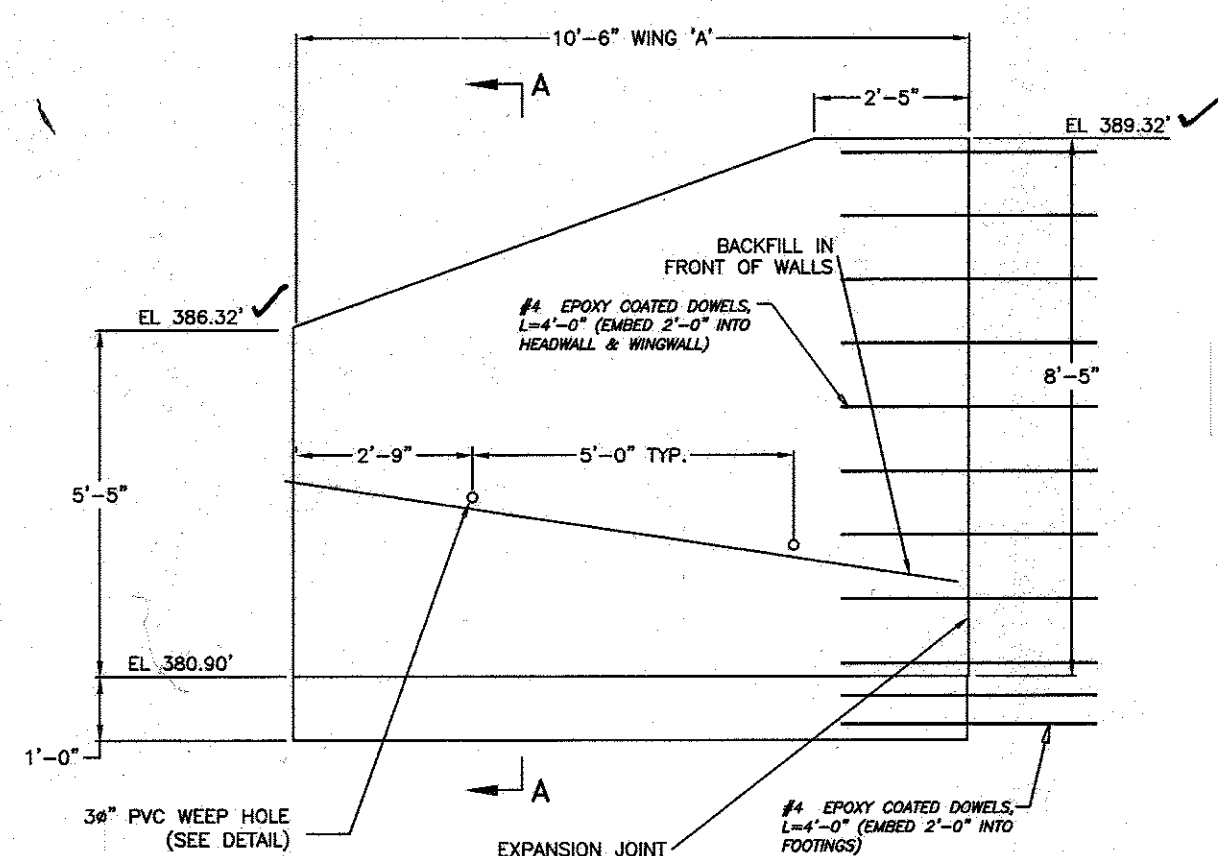
PLAN VIEW



PLAN VIEW

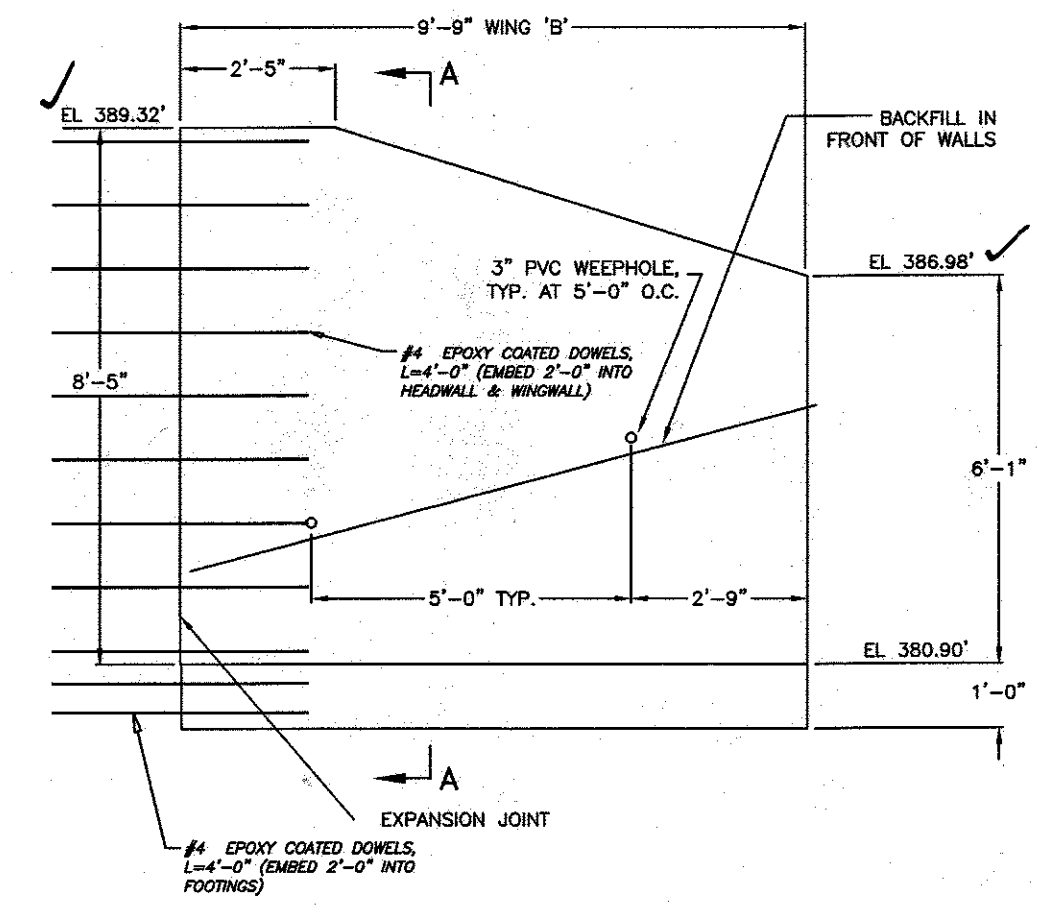


PLAN VIEW



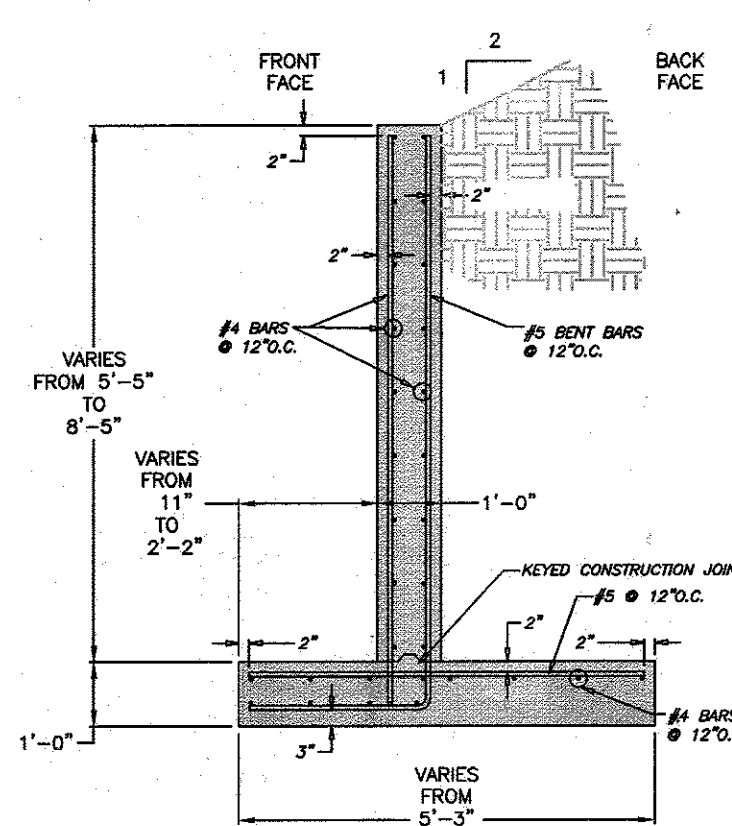
ELEVATION VIEW

UPSTREAM WINGWALL 'A' DESIGN



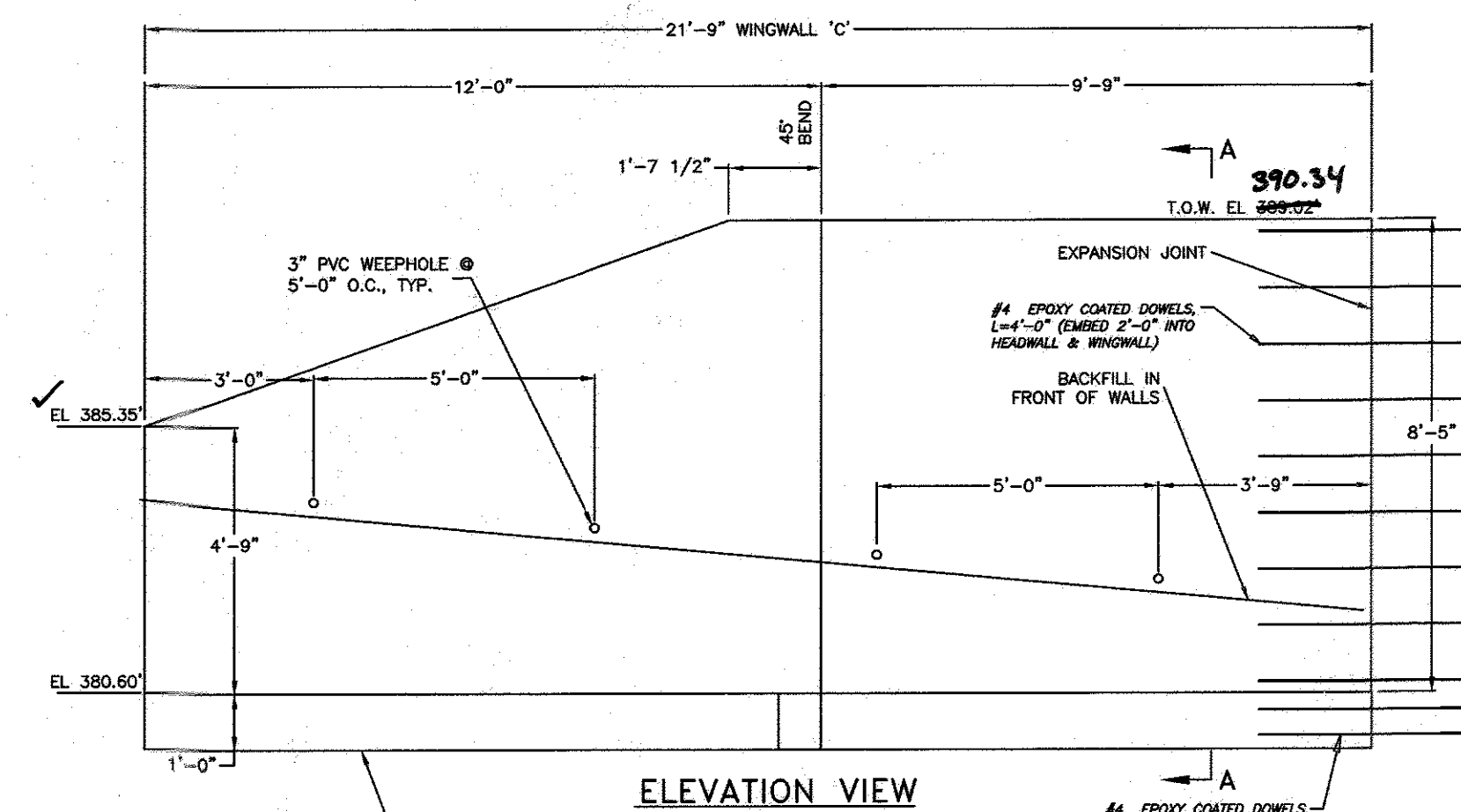
ELEVATION VIEW

UPSTREAM WINGWALL 'B' DESIGN



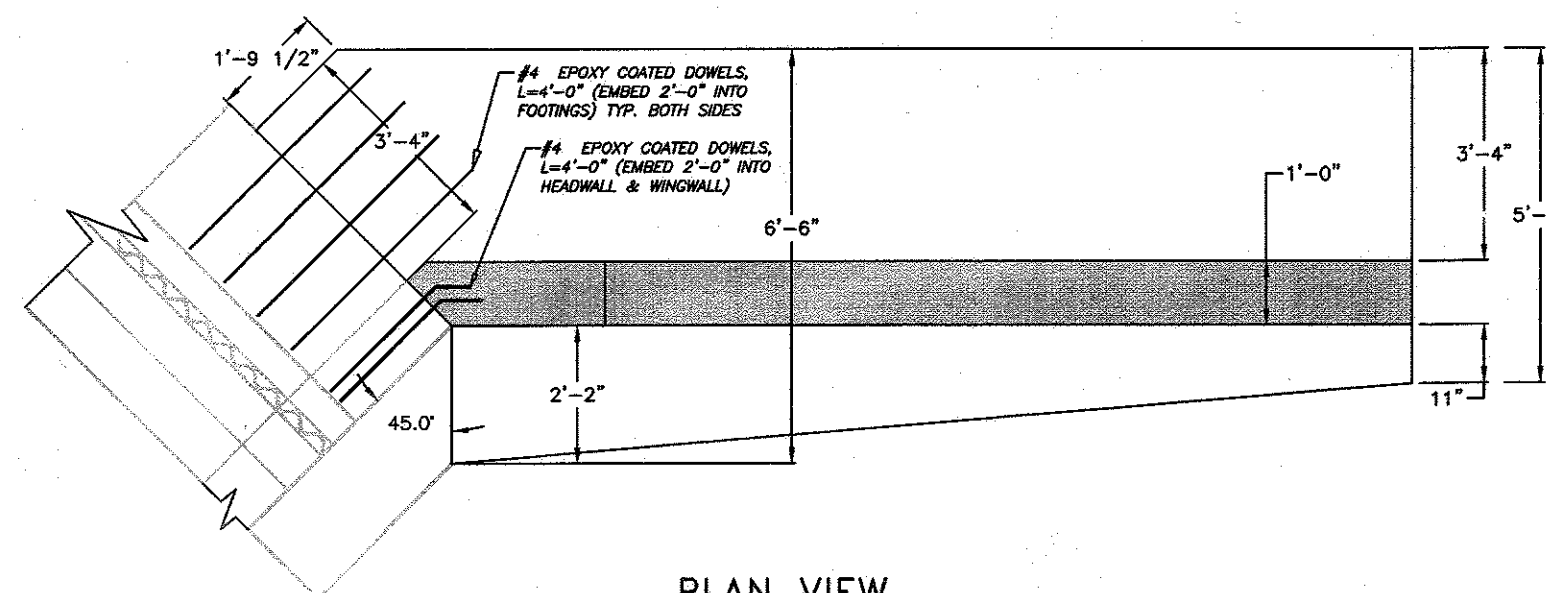
SECTION 'A-A'

GRAPHIC SCALE

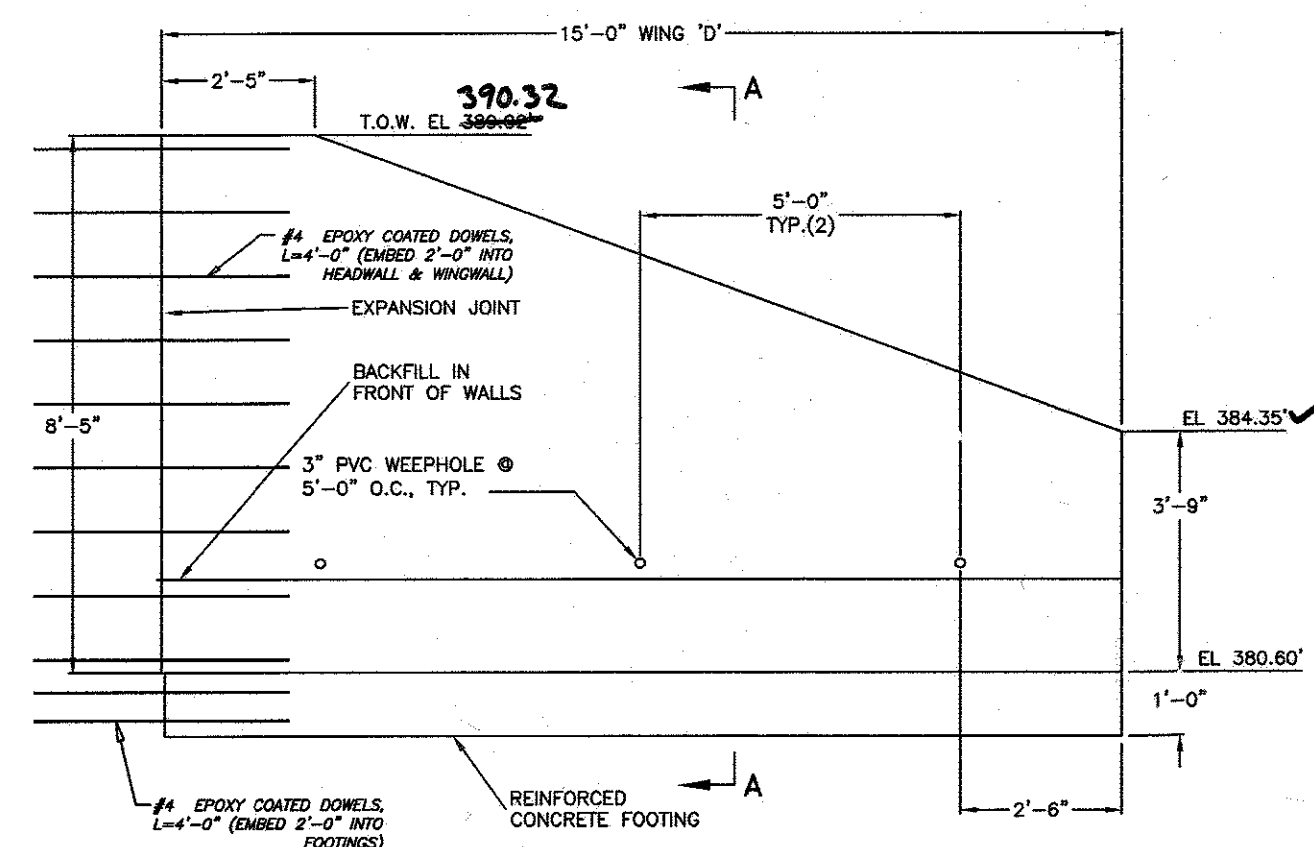


ELEVATION VIEW

DOWNSTREAM WINGWALL 'C' DESIGN

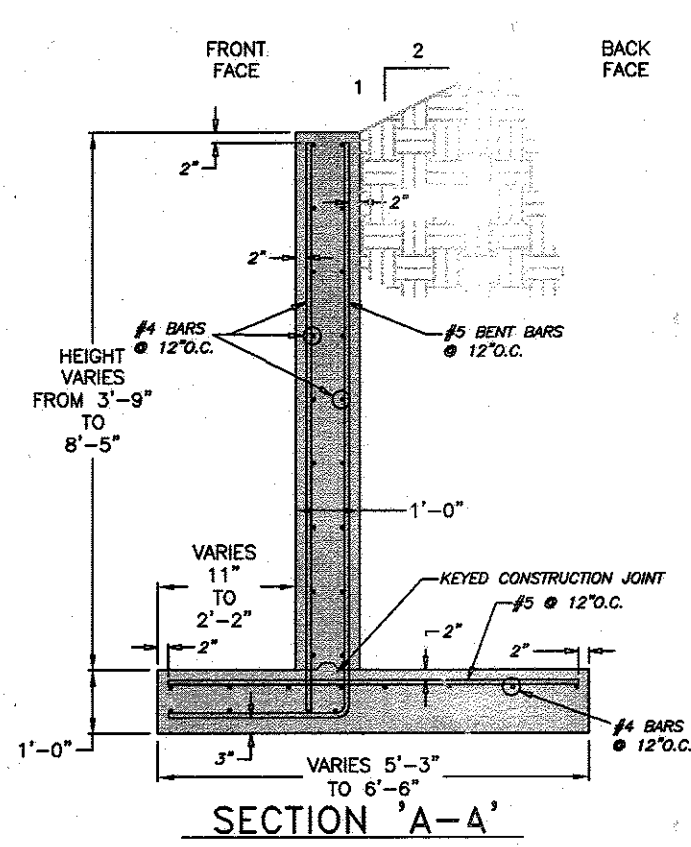


PLAN VIEW



ELEVATION VIEW

DOWNSTREAM WINGWALL 'D' DESIGN



SECTION 'A-A'

SEE CONTRACT DRAWING AND REPORT BY CBC ENGINEERS & ASSOCIATES 937-428-6150 CBC REPORT No. 5992-4-0905-05.

APPROVED: DEPARTMENT OF PUBLIC WORKS
 W. J. ... 5-15-06
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 ... 5/16/06
 CHIEF, DIVISION OF LAND DEVELOPMENT

... 5/16/06
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

1		5/06	CONVERT HEADWALLS TO CONCRETE	REVISION
BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE & SUITE 418 ELLICOTT CITY, MARYLAND 21043 phone: 410-465-6105 & fax: 410-465-6644 www.bei-civilengineering.com				
DEVELOPER:		ELIQA, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244		PROJECT:
OWNER:		HOMEWOOD, L.L.C. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244		RIVERWOOD - PHASE 1 LOTS 1 - 42; NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R'; BUILDABLE PRESERVATION PARCEL 'Q'; AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'
OWNER:		JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARTER CARROLL ZIEGLER, THOMAS T. CARROLL, JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL c/o JOHN LEE CARROLL 515 MADISON AVENUE 32nd FLOOR NEW YORK, NEW YORK 10022		LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 28, GRID: 3,4,9&10 PARCELS: 88 PARCELS: 20 & 86 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DES: LDD		DRAFT: LDD		CHECK: DAM
DATE: MAY, 2006		PROJECT NO. 1132		TITLE: REVISED ROAD CONSTRUCTION PLAN ARCHDRAIN DETAILS HW-7 TO HW-8
SCALE: AS SHOWN		SHEET 53 OF 55		

AS-BUILT 1-7-09

I - GENERAL

1.0 STANDARDS AND DEFINITIONS

1.1 STANDARDS - All standards refer to latest edition unless otherwise noted.

1.1.1 ASTM D-698-70 (Method C) "Standard Test Methods for Moisture Density Relations of 50 Soils and Soil Aggregate Mixtures Using 5.5-lb (2.5 kg) Rammer and 12-inch (305-mm) Drop".

1.1.2 ASTM D-2922 "Standard Test Method for Density of Soil and Soil Aggregate in Place by Nuclear Methods (Shallow Depth)".

1.1.3 ASTM D-1556 "Standard Test Method for Density of Soil in place by the Sand-Cone Method".

1.2 DEFINITIONS

1.2.1 Owner - In these specifications the word "Owner" shall mean Homewood, LLC., Ellicott City, Maryland.

1.2.2 Engineer - In these specifications the word "Engineer" shall mean the Owner designated engineer.

1.2.3 Design Engineer - In these specifications the words "Design Engineer" shall mean CBC Engineers and Associates, Ltd.

1.2.4 Contractor - In these specifications the word "Contractor" shall mean the firm or corporation undertaking the execution of any work under the terms of these specifications.

1.2.5 Approved - In these specifications the word "approved" shall refer to the approval of the Engineer or his designated representative.

1.2.6 As Directed - In these specifications the words "as directed" shall refer to the directions to the Contractor from the Owner or his designated representative.

2.0 GENERAL CONDITIONS

2.1 The Contractor shall furnish all labor, material and equipment and perform all work and services except those set out and furnished by the Owner, necessary to complete in a satisfactory manner the site preparation, excavation, filling, compaction, grading as shown on the plans and as described therein.

This work shall consist of all mobilization clearing and grading, grubbing, stripping, removal of existing material unless otherwise stated, preparation of the land to be filled, filling of the land, spreading and compaction of the fill, and all subsidiary work necessary to complete the grading of the cut and fill areas to conform with the lines, grades, slopes, and specifications.

This work is to be accomplished under the observation of the Owner or his designated representative.

2.2 Prior to bidding the work, the Contractor shall examine, investigate and inspect the construction site as to the nature and location of the work, and the general and local conditions at the construction site, including, without limitation, the character of surface or subsurface conditions and obstacles to be encountered on and around the construction site, and shall make such additional investigation as may be deemed necessary for the planning and proper execution of the work.

If conditions other than those indicated are discovered by the Contractor, the Owner should be notified immediately. The material which the Contractor believes to be a changed condition should not be disturbed so that the owner can investigate the condition.

2.3 The construction shall be performed under the direction of an experienced engineer who is familiar with the design plan.

II - MULTI-PLATE

1.0 GENERAL

1.1 This work shall consist of furnishing, fabricating, and installation of a Multi-Plate arch culvert in conformance with these specifications, the manufacturer provisions, and the details shown on the plans.

1.2 The contractor shall verify the actual location of all utilities in the field before beginning any work that could be impacted by these utilities.

1.3 Contractor must notify/contact all utility companies to determine exact locations of existing utilities prior to commencing any work on this contract.

1.4 Contractor shall coordinate construction with work done by others adjacent to or within the contract limits.

2.0 DIMENSIONS

2.1 The proposed structure shall be a MULTI-PLATE arch with the following dimensions:

Span: 15'-0"
 Rise: 4'-8"
 Gage: 12"

2.2 All plan dimensions on the contract drawings are measured in a true horizontal plan unless otherwise noted.

2.3 All dimensions, locations, and elevations of existing structures shown on the contract drawings shall be verified by the contractor in the field.

3.0 DESIGN CRITERIA

All design, except where noted, conforms to the applicable sections of the 1996 AASHTO standard specifications for highway bridges.

SEE CONTRACT DRAWINGS AND REPORTS BY CBC ENGINEERS & ASSOCIATES 937-428-6150

APPROVED: DEPARTMENT OF PUBLIC WORKS
 W. J. ... 5-13-06
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 ... 5/13/06
 CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: DEPARTMENT OF ENGINEERING DIVISION
 ... 5/13/06
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

4.0 WORKMANSHIP AND INSPECTIONS

All metal piping materials shall conform to the workmanship and inspection requirements of AASHTO M36 and M167.

MATERIALS AND DIMENSIONS

5.1 Steel structural plate arches shall conform to the requirements of AASHTO M167.

5.2 Bolts and nuts shall meet the provisions of ASTM A-449 and ASTM A-563, Grade C, respectively, and shall be galvanized in accordance with the requirements of ASTM A-153, Class C.

INSTALLATION

ASSEMBLY. The Structure shall be assembled in accordance with the Manufacturer's instructions. All plates shall be unloading and handled with reasonable care. Plates shall not be rolled or dragged over gravel rock and shall be prevented from striking rock or other hard objects during placement in trench or on bedding.

The Structure shall be placed in the footing starting at the downstream end. Structures with circumferential seams shall be installed with their inside circumferential sheet laps pointing downstream.

III - FOOTINGS

1.0 EXCAVATION FOR FOOTINGS

1.1 Footing excavation shall consist of the removal of all material, of whatever nature, necessary for the construction of foundations.

1.2 It shall be the responsibility of the Contractor to identify and relocate all existing utilities which conflict with the proposed footing locations shown on the plan. The Contractor must call the appropriate utility company at least 48 hours before any excavation to request exact field location of utilities, and coordinate removal and installation of all utilities with the respective utility company.

1.3 The side of all excavations shall be cut to prevent sliding or caving of the material above the footings.

1.4 Excavated material shall be disposed in accordance with the plan established by the Engineer.

1.5 The footings are designed for a bearing capacity of 2,000 psf, and this shall be verified in the field before construction.

CONCRETE FOOTING DIMENSIONS

The footings shall be reinforced in accordance with the construction drawings.

IV - HEADWALLS/WINGWALLS

The headwalls/wingwalls shall consist of reinforced concrete conforming to Chapter III of these specifications and to Division II, Section 8, of the AASHTO Standard Specifications for highway bridges having a minimum compression strength of 3,500 psi.

Reinforcing steel shall conform to ASTM A-615, Grade 60, having a minimum yield strength of 60,000 psi.

The headwalls shall be anchored to the aluminum arch in the manner shown on the plans and shall be formed and poured in accordance with the plan dimensions.

Round weep holes spaced not over 5 feet on center shall be placed in the walls as shown on the construction drawings. A granular envelope, consisting of #57 stone or equivalent, shall be placed behind each weep hole for a distance of approximately 1 foot from all edges of the weep hole. A free-draining geotextile screen shall be placed between the weep hole and the stone to prevent erosion of the stone.

V - SELECT BACKFILL SPECIFICATIONS

1.0 GENERAL CONDITIONS

1.1 The contractor shall furnish all labor, materials, and equipment, and perform all work and services necessary to complete in a satisfactory manner the site preparation, excavation, filling, compaction and grading as shown on the plans and as described therein.

1.2 This work shall consist of all clearing and grading, removal of existing structures unless otherwise stated, preparation of the land to be filled, spreading and compaction of the fill, and all subsidiary work necessary to complete the grading of the cut and fill areas to conform with the lines, grades, slopes, and specifications.

1.3 This work is to be accomplished under the constant and continuous supervision of the Owner or his designated representative.

2.0 SUBSURFACE CONDITIONS

2.1 The Contractor shall examine, investigate and inspect the construction site as to the nature and location of the work, and the general and local conditions at the construction site, including, without limitation, the character of surface or subsurface conditions and obstacles to be encountered on and around the construction site, and shall make such additional investigation as may be deemed necessary for the planning and proper execution of the work.

2.2 If conditions other than those indicated are discovered by the Contractor, the Owner should be notified immediately. The material which the Contractor believes to be a changed condition should not be disturbed so that the Owner can investigate the condition.

3.0 GRADING

The Contractor shall furnish, operate, and maintain such equipment as is necessary to construct uniform layers, and control smoothness of grade for maximum compaction and drainage.

3.0 SITE PREPARATION

3.1 Within the specified areas, all debris, existing stockpile material, and structures scheduled for demolition shall be removed and disposed of.

3.2 Any rubbish, organic and other objectionable soils, and other deleterious material, shall be disposed of off site, or as directed by the Owner or his designated representative if site disposal is provided. In no case shall such objectionable material be allowed in, or under the fill.

3.3 Prior to the addition of fill, the undercuts specified in Section II shall be made and the original ground shall be compacted to the project specifications as outlined below. Special attention shall be given to the proposed fill area at this time. If wet spots, spongy conditions, or ground water seepage is found, corrective measures must be taken before the placement of fill.

4.0 FORMATION OF FILL AREAS

4.1 SELECT BACKFILL

Select backfill shall be placed to a minimum distance of 3 feet horizontally, as measured from the springline of the structure, and to a distance of 3 feet above the crown of the structure as shown on the construction drawings.

5.0 MINIMUM BACKFILL REQUIREMENTS

5.1 MATERIAL

A granular type of material shall be used around and over the structure. This select structural backfill material shall conform to AASHTO Specification M-145: A-1, A-2-4, A-2-5, or A3 meeting the following criteria:

TABLE VI-1
 BACKFILL REQUIREMENTS

GROUP CLASSIFICATION	AASHTO M-145	TABLE 3 MODIFIED	A-1	A-2-4	A-2-5	A-3
Sieve Analysis, Percent Passing						
No. 10 (2.00 mm)	50 max.	--	--	--	--	--
No. 40 (0.425 mm)	30 max.	50 max.	--	--	51 min.	--
No. 100 (0.150 mm)	--	--	50 max.	50 max.	--	--
No. 200 (0.075 mm)	15 max.	25 max.	20 max.	20 max.	10 max.	--
CHARACTERISTICS OF FRACTION PASSING NO. 40 (0.425 mm)						
Liquid Limit	--	--	40 max.	41 min.	--	--
Plasticity Index	6 max.	--	10 max.	10 max.	NP	--
USUAL TYPES OF SIGNIFICANT CONSTITUENT MATERIALS	Stone Fragments, Gravel and Sand	Silty or Clayey Gravel and Sand	Fine Sand			

*Modified to be more select than M-145.

Additional Backfill Material Requirements:

- Backfill must be well-graded material. Open-graded or gap-graded materials are not allowed.
- On-site mixing or blending to achieve specified gradation is not allowed.
- The maximum particle size shall not exceed 3 inches.
- The stone particles shall be angular and not rounded.
- The backfill should have a Los Angeles Abrasion Test loss no greater than 40%. Other backfill materials which provide equivalent long term structural properties in the environmental conditions expected (saturation, freeze-thaw, etc) may be used. Such materials shall be approved only after thorough investigation and testing by a soils engineer.

5.2 BACKFILL LIMITS

The required width of the structural backfill shall be 3 feet minimum outside the springline and to 3 feet over the top of the structure.

5.3 BACKFILL PLACEMENT

Before backfilling, the erected structure shall meet the tolerance and symmetry requirements of AASHTO and Contech.

Approved backfill material shall be placed in horizontal, uniform layers not exceeding 8" in thickness, before compaction, and shall be brought up uniformly on both sides of the structure. Each layer of backfill shall be compacted to a relative density of not less than 90% modified Proctor per AASHTO Test Method No. T-180. Field density tests of compacted backfill shall be made at regular intervals during backfill.

Aluminum arch structures, due to their size and shape, are sensitive to the types and weights of equipment used to place and compact the select backfill material. This is especially critical in the area immediately adjacent to and above the structure. Therefore, equipment types will be restricted to those critical zones. Compaction equipment or methods that produce horizontal or vertical earth pressures which cause excessive distortion or damage to these structures shall not be used.

Contractors should plan to have a D4 (approximately 20,000 lbs.) or similar weight tracked dozer to place and grade backfill immediately alongside and above the structure until minimum cover level is reached. Lightweight vibratory plate or roller type compaction equipment must be used to compact the backfill in these zones. Use of heavier equipment and/or rubber tired equipment such as scrapers, graders and front end loaders are prohibited inside the select fill envelope zone until appropriate minimum cover height has been obtained.

SLOPE RATIO AND STORM WATER RUN-OFF

Protected slopes shall not be greater than 1.5 (horizontal) to one (1) (vertical) in both cut and fill, and storm water shall not be drained over the slopes.

3.0 GRADING

The Contractor shall furnish, operate, and maintain such equipment as is necessary to construct uniform layers, and control smoothness of grade for maximum compaction and drainage.

3.0 GRADING

The Contractor shall furnish, operate, and maintain such equipment as is necessary to construct uniform layers, and control smoothness of grade for maximum compaction and drainage.

8.0 COMPACTING

8.1 The compaction equipment shall be approved equipment of such design, weight, and quantity to obtain the required density in accordance with these specifications, without disturbing the structure.

8.2 During backfill, only small tracked vehicles (D-4 or smaller) shall be near the structure as fill progresses above the crown and to finished grade. The contractor is cautioned that the minimum cover may need to be increased to handle temporary construction vehicle loads (larger than a D-4).

VI - SCOUR PROTECTION

1.0 All riprap placed in conjunction with this project shall be MD-SHA Class I armor and shall possess the minimum gradation specified in each CBC Engineers report.

1.1 Riprap shall be placed in the locations shown on the construction drawings.

1.2 The total thickness of riprap shall be not less than specified in each CBC Engineers report.

1.3 All riprap shall be underlain by a layer of Mifrafi 140 or equivalent filter fabric as shown on the construction drawings.

VI - CONCRETE

1.0 CODES AND STANDARDS

1.1 Reinforced concrete shall conform to the requirements of AASHTO Standard Specifications for Highway Bridges, Division II - Construction, Section 8, "Concrete Structures", for Class A concrete, having a minimum compressive strength of 3,500 psi.

2.0 STANDARDS FOR MATERIALS

2.1 Portland Cement - Conforming to ASTM Specification C-150, Type I or II.

2.2 Water - The water shall be drinkable, clean free from injurious amounts of oils, acids, alkalis, organic materials, or deleterious substances.

2.3 Aggregates - Fine and coarse aggregates shall conform to current ASTM Specification C-33 "Specification for Concrete Aggregates" except that local aggregates which have been shown by tests and by actual service to produce satisfactory qualities may be used when approved by the Engineer.

2.4 Submittals - Test data and/or certifications to the Owner shall be furnished upon request.

3.0 PROPORTIONING OF CONCRETE

3.1 COMPOSITION

3.1.1 The concrete shall be composed of cement, fine aggregate, coarse aggregate and water.

3.1.2 The concrete shall be homogeneous, readily placeable and uniformly workable and shall be proportioned in accordance with ACI-211.1.

3.1.3 Proportions shall be established on the basis of field experience with the materials to be employed. The amount of water used shall not exceed the maximum 0.49 water/cement ratio, and shall be reduced as necessary to produce concrete of the specified consistency at the time of placement.

3.1.4 An air-entraining admixture, conforming to the requirements of ASTM C260, shall be used in all concrete furnished under this contract. The quantity of admixture shall be such as to produce an air content in the freshly mixed concrete of 6 percent plus or minus 1 percent as determined in accordance with ASTM C231 or C173.

3.2 Qualities Required - As indicated in the table below:

TABLE VI-1
 QUALITIES REQUIRED

ITEM	QUALITY REQUIRED
Class	A
Type of Cement	I or II
Compressive Strength (fc @ 28 days)	3,500 psi
Slump, inches	2 - 4 in.

3.3 Maximum Size of Coarse Aggregates - Maximum size of coarse aggregates shall not be larger than 3/8 inch (1 1/2 inches).

3.4 Rate of Hardening of Concrete - Concrete mix shall be adjusted to produce the required rate of hardening for varied climatic conditions:

Under 40°F Ambient Temperature - Accelerate calcium chloride at 2% is acceptable when used within the recommendations of ACI-308R "Cold Weather Concreting." Admixtures containing chloride ion in excess of 1% by weight of admixture shall not be used in reinforced concrete.

VII - FILTER FABRIC (GEOTEXTILE SCREEN)

1.0 Geotextile (filter fabric) shall be placed over the #57 drainage stone at all weepholes. The filter fabric shall be placed between weepholes, #57 drainage stone and the granular backfill material. Filter fabric shall be placed at all locations shown on the construction drawings.

2.0 Filter fabric cloth shall conform to Contech specification for C60-NW or equivalent and shall meet the following ASTM tests:

- ASTM D4751 - Apparent opening size equal to #70 U.S. Standard Sieve Size.
- ASTM D4632 (Grab Tensile Test) - Minimum Strength = 160 pounds.
- ASTM D4632 (Grab Elongation) - 30-70%.
- ASTM D4533 (Trapezoidal Tear) - Minimum Strength = 60 pounds.
- ASTM D4355 (Stabilized for Heat and Ultra-Violet Degradation) - 70% strength retained.

3.0 The minimum fabric coefficient of permeability (ASTM D4491) shall be 0.24 cm/sec.

4.0 The fabric shall be non-woven with a minimum thickness (ASTM D5199) of 60 mils.

5.0 Fabric shall not be placed over sharp or angular rocks that could tear or puncture it.

6.0 Care should be exercised to prevent any puncturing or rupture of the filter fabric. Should such rupture occur the damaged area should be covered with a patch of filter fabric using an overlap minimum of one (1) foot.

4.0 MIXING AND PLACING

4.1 Equipment - Ready Mix Concrete shall be used and shall conform to the "Specifications for Ready-Mix Concrete," ASTM C-94. Approval is required prior to using job mixed concrete.

4.2 Preparation - All work shall be in accordance with ACI-304, "Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete." All construction debris and extraneous matter shall be removed from within the forms. Concrete shall be placed on clean surfaces, free from water. Concrete that has to be dropped four (4) feet or more shall be placed through a tremie.

4.3 All concrete shall be consolidated by internal mechanical vibration immediately after placement. Vibrators shall be of a size appropriate for the work, capable of transmitting vibration to concrete at frequencies of not less than 4,500 impulses per minute.

5.0 FORM WORK

5.1 Forms shall be of wood, steel or other approved material and shall be set and held true to the dimensions, lines and grades of the structure (footings) prior to and during the placement of concrete.

5.2 Forms shall not be removed until the concrete has sufficient strength to prevent concrete drainage.

6.0 CURING

6.1 Fresh concrete shall be protected from rains, flowing water and mechanical injury for a period of four (4) days.

7.0 REINFORCING STEEL

7.1 MATERIAL

7.1.1 All reinforcing bars shall be deformed bars (ASTM-A615) Grade 60.

7.2 BENDING AND SPLICING

7.2.1 Bar reinforcement shall be cut and bent to the shapes shown on the plans. Fabrication tolerances shall be in accordance with ACI 315. All bars shall be bent cold, unless otherwise permitted.

7.2.2 All reinforcement shall be furnished in the full lengths indicated on the plans unless otherwise permitted. Except for splices shown on the plans and splices for No. 5 or smaller bars, splicing of bars will not be permitted without written approval. Splices shall be staggered as far as possible.

7.2.3 In lapped splices, the bars shall be placed and wired in such a manner as to maintain the minimum distance to the surface of the concrete shown on the plans.

7.2.4 Substitution of different size bars will be permitted only when authorized by the engineer. The substituted bars shall have an area equivalent to the design area, or larger.

7.3 PLACING AND FASTENING

7.3.1 Steel reinforcement shall be accurately placed as shown on the plans and firmly held in position during the placing and setting of concrete. Bars shall be tied at all intersections around the perimeter of each mat and at not less than 2 foot centers or at every intersection, whichever is greater, elsewhere. Welding of cross bars (tack welding) will not be permitted for assembly of reinforcement.

7.3.2 Reinforcing steel shall be supported in its proper position by use of mortar blocks, wire bar supports, supplementary bars or other approved devices. Such devices shall be of such height and placed at sufficiently frequent intervals so as to maintain the distance between the reinforcing and the formed surface or the top surface within 1/4 inch of that indicated on the plans.

7.3 PLACING AND FASTENING

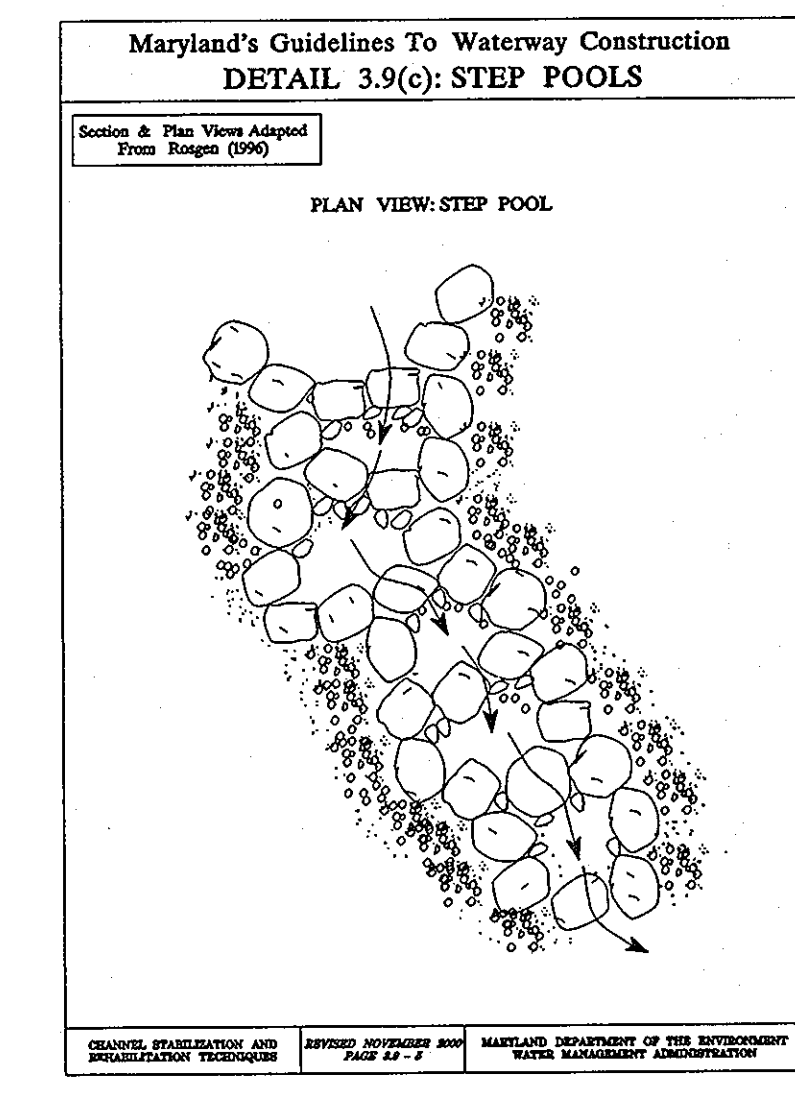
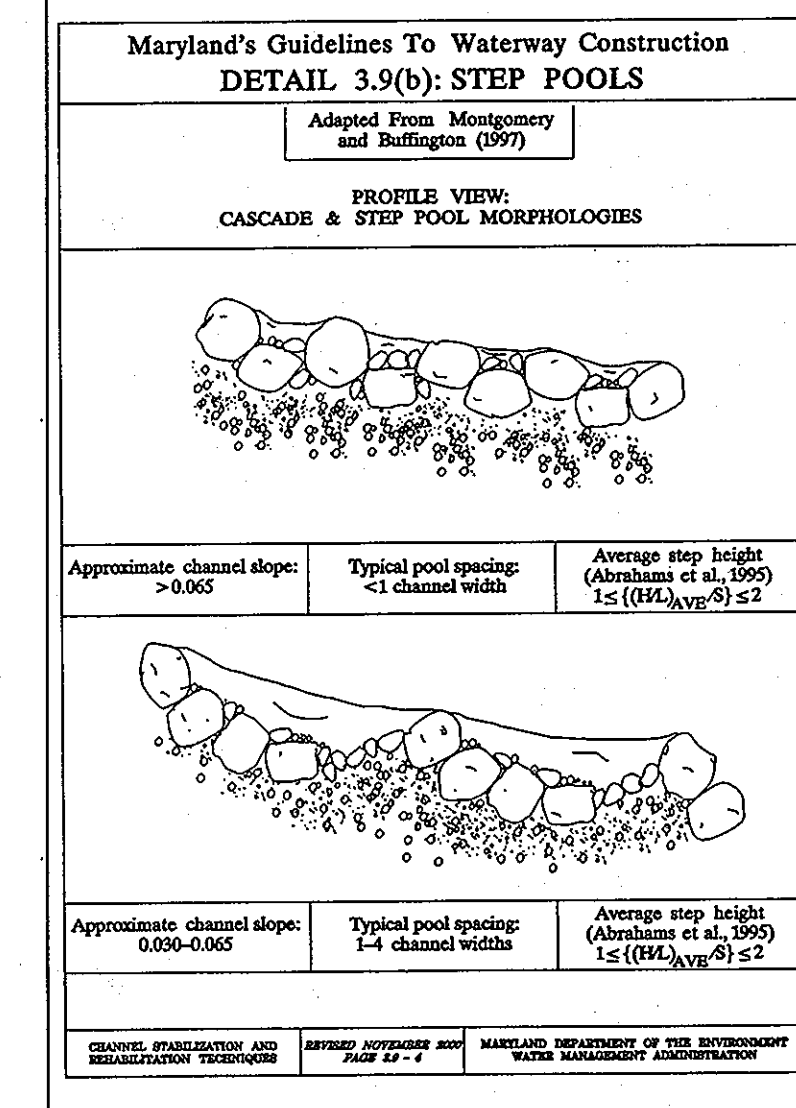
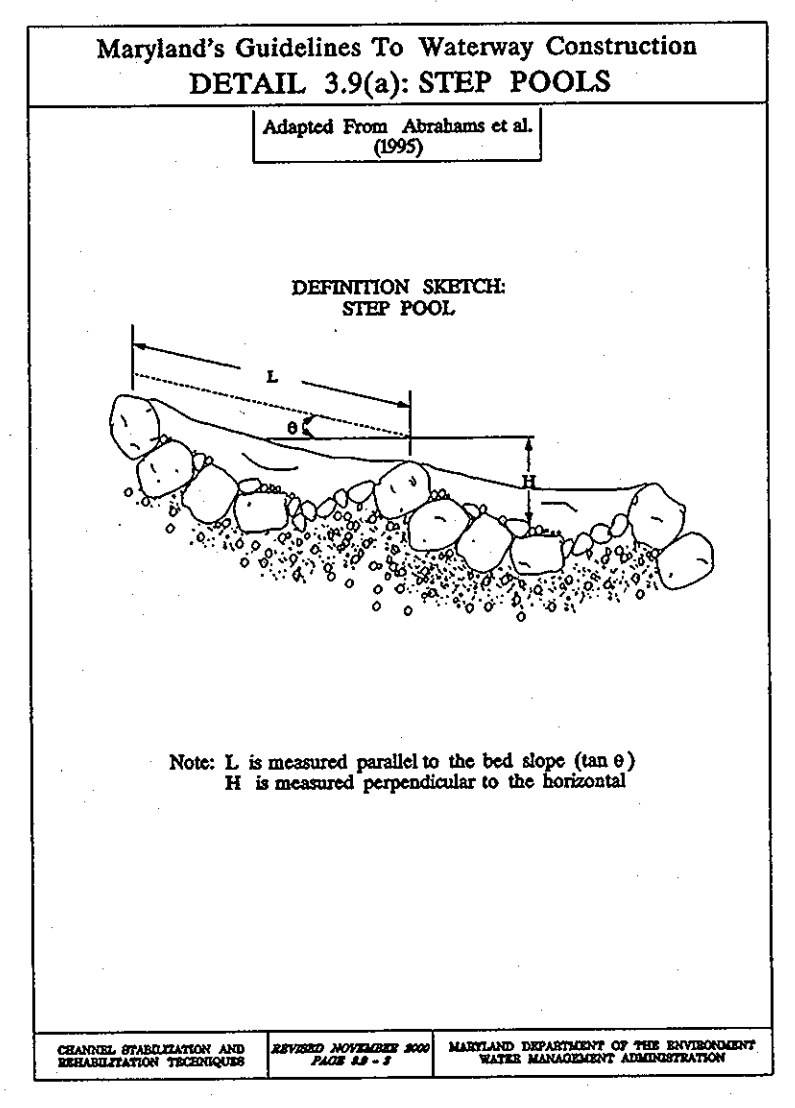
7.3.1 Steel reinforcement shall be accurately placed as shown on the plans and firmly held in position during the placing and setting of concrete. Bars shall be tied at all intersections around the perimeter of each mat and at not less than 2 foot centers or at every intersection, whichever is greater, elsewhere. Welding of cross bars (tack welding) will not be permitted for assembly of reinforcement.

7.3.2 Reinforcing steel shall be supported in its proper position by use of mortar blocks, wire bar supports, supplementary bars or other approved devices. Such devices shall be of such height and placed at sufficiently frequent intervals so as to maintain the distance between the reinforcing and the formed surface or the top surface within 1/4 inch of that indicated on the plans.

7.3 PLACING AND FASTENING

7.3.1 Steel reinforcement shall be accurately placed as shown on the plans and firmly held in position during the placing and setting of concrete. Bars shall be tied at all intersections around the perimeter of each mat and at not less than 2 foot centers or at every intersection, whichever is greater, elsewhere. Welding of cross bars (tack welding) will not be permitted for assembly of reinforcement.

7.3.2 Reinforcing steel shall be supported in its proper position by use of mortar blocks, wire bar supports, supplementary bars or other approved devices. Such devices shall be of such height and placed at sufficiently frequent intervals so as to maintain the distance between the reinforcing and the formed surface or the top surface within 1/4 inch of that indicated on the plans.



NO.	DATE	REVISION
1	5/06	CONVERT HEADWALLS TO CONCRETE AND TO ADD MGWC NOTES AND DETAILS

BENCHMARK ENGINEERING, INC.
 ENGINEERS & LAND SURVEYORS & PLANNERS
 8480 BALTIMORE NATIONAL PIKE SUITE 418
 ELLICOTT CITY, MARYLAND 21043
 phone: 410-465-6105 ▲ fax: 410-465-6644
 www.bei-civilengineering.com

5/13/06

DEVELOPER: ELIOAK, L.L.C.
 P.O. BOX 417
 ELLICOTT CITY, MARYLAND 21041
 410-465-4244

OWNER: HOMEWOOD, L.L.C.
 P.O. BOX 417
 ELLICOTT CITY, MARYLAND 21041
 410-465-4244

OWNER: JOHN LEE CARROLL, CHRISTOPHER C. GERARD, MARY CARROLL, ZIEGLER, THOMAS J. CARROLL, JOHN LEE CARROLL, JR. AND GENEVIEVE A. CARROLL
 c/o JOHN LEE CARROLL
 515 MADISON AVENUE
 32nd FLOOR
 NEW YORK, NEW YORK 10022

PROJECT: RIVERWOOD - PHASE 1
 LOTS 1 - 42;
 NON-BUILDABLE PRESERVATION PARCELS 'A' THRU 'P' & 'R';
 BUILDABLE PRESERVATION PARCEL 'Q';
 AND NON-BUILDABLE BULK PARCELS 'AA' THRU 'HH'

LOCATION: TAX MAP: 23, GRID: 21 TAX MAP: 29, GRID: 3,4,9&10
 PARCELS: 66 PARCELS: 20 & 86
 THIRD ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

TITLE: REVISED ROAD CONSTRUCTION PLAN SPECIFICATIONS AND POOL DETAILS

DATE: MAY 2006 PROJECT NO. 1132

DES: LDD DRAFT: LDD CHECK: DAM SCALE: AS SHOWN SHEET 54 OF 55

