

**GENERAL NOTES AND SITE DATA**

- ALL ASPECTS OF THE PROJECT ARE IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARD DETAILS UNLESS WAIVERS HAVE BEEN APPROVED.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
- THE CONTRACTOR IS TO NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE DAYS BEFORE STARTING WORK ON THESE DRAWINGS.
  - MISS UTILITY 1-800-257-7777
  - BELL ATLANTIC TELEPHONE CO. 725-9976
  - HOWARD COUNTY BUREAU OF UTILITIES 313-2366
  - AT&T CABLE LOCATION DIVISION 393-3553
  - B.G.&E. CO. CONTRACTOR SERVICES 850-4620
  - B.G.&E. CO UNDERGROUND DAMAGE CONTROL 787-4620
  - STATE HIGHWAY ADMINISTRATION 531-5533
- SITE ANALYSIS
  - PHASE I AND PHASE II - 267 UNITS TOTAL
  - PHASE I - 192 UNITS SUBJECT TO FOURTH EDITION; SUBDIVISION AND LAND DEVELOPMENT REGULATIONS
  - PHASE II - 75 UNITS SUBJECT TO FIFTH EDITION; SUBDIVISION AND LAND DEVELOPMENT REGULATIONS
  - GROSS AREA OF PROPERTY: 33.97 ac.
  - ZONING: R-MH (RESIDENTIAL: MOBILE HOME) DISTRICT
  - PROPOSED USE: SINGLE FAMILY ATTACHED DEVELOPMENT. (UTILIZE R-A-15 DISTRICT BULK REGULATIONS, SECTION 112.D) 4.86 ac.
  - AREA OF 100 YEAR FLOODPLAIN: AREA OF 23% OR GREATER SLOPES OUTSIDE OF FLOODPLAIN: 1.64 ac.
  - AREA OF DISTURBANCE: 21.49 ac.
  - NET AREA OF PROPERTY: 27.47 ac.
  - DENSITY (R-A-15): 15 DWELLING UNITS PER NET ACRE
  - NUMBER OF UNITS ALLOWED: 15 DWELLING UNITS PER NET ACRE x 27.47 AC. 412 UNITS ALLOWED.
  - NUMBER OF UNITS PROPOSED: PHASE I: 192 UNITS FUTURE PHASE II: 75 UNITS
  - TOTAL OPEN SPACE REQUIRED (PHASE I AND II): 25% GROSS AREA=8.49 ac.
  - TOTAL OPEN SPACE PROVIDED (PHASE I AND II): 37% GROSS AREA=12.49 ac.\*
  - TOTAL NON-CREDIT OPEN SPACE (PHASE I AND II): 13.21 ac.\*
  - \*CREDITED OPEN SPACE IS COMPRISED OF AREAS OF 100 YEAR FLOODPLAIN (4.86 AC), FOREST CONSERVATION EASEMENT (6.63 AC), AND RECREATION OPEN SPACE (1.00 AC).
  - RECREATION OPEN SPACE PHASE I REQUIRED: 10 SF/UNIT x 192 UNITS = 1,920 SF OR 0.04 AC (CONSTRUCTED RECREATION) 39,150 SF OR 0.90 AC
  - RECREATION OPEN SPACE PHASE II PROVIDED: 0.93 AC (0.34 AC POOL RECREATION OPEN SPACE) 0.07 AC (POOL RECREATION OPEN SPACE)
  - RECREATION OPEN SPACE PHASE II PROVIDED: 1.00 AC
  - RESIDENTIAL PARKING SPACES REQUIRED: PHASE I: 2 SPACES/UNIT = 384 PHASE II: 2 SPACES/UNIT = 150 TOTAL: 534 PROVIDED
  - RESIDENTIAL PARKING SPACES PROVIDED: PHASE I: 2 SPACES/UNIT (1 GARAGE + 1 DRIVEWAY OR 2 GARAGE) = 384 PHASE II: 2 SPACES/UNIT (1 GARAGE + 1 DRIVEWAY OR 2 GARAGE) = 150 ADDITIONAL OFF-STREET PARKING = 15 (11 ADDITIONAL SPACES IN POOL AREA) TOTAL: 549 PROVIDED
  - POOL CAPACITY: 1 PERSON/12 SF POOL AREA = (3600SF)/(12) = 300 PERSONS
  - PRIVATE POOL PARKING SPACES REQUIRED: 1 SPACE/10 PERSONS PERMITTED IN THE POOL AT ONE TIME BY THE HEALTH DEPARTMENT = (300 PERSONS)/(10) = 30 SPACES(INCLUDING 2 HANDICAP SPACES)
  - PRIVATE POOL PARKING SPACES PROVIDED: 30 PARKING SPACES PROVIDED
- DEED REFERENCE: L-4389 / F-1156, L-4389 / F-1144
- THE PROJECT BOUNDARY IS BASED ON A BOUNDARY SURVEY PERFORMED BY VOGEL & ASSOCIATES, INC. DATED JANUARY, 1998.
- THE TOPOGRAPHY SHOWN HEREON IS BASED ON AERIAL PHOTOGRAMMETRIC MAP PERFORMED BY POTOMAC AERIAL SURVEY, DATED MARCH, 1998.
- COORDINATE DATUM IS BASED ON THE MARYLAND COORDINATE SYSTEM (NAD 83) AS PROJECTED BY THE FOLLOWING HOCO GEODETIC CONTROL STATIONS: 43B2 & 43B6.
- WATER AND SEWER FOR THIS PROJECT TO TIE TO A PUBLIC SYSTEM. EXISTING WATER CONTRACT NUMBER 14-3564-D. EXISTING SEWER CONTRACT NUMBER 5445. THE ONSITE WATER TO BE PUBLIC, THE ONSITE SEWER TO BE PRIVATE.
- WETLANDS AND STREAMS SHOWN ONSITE ARE BASED ON A FIELD INVESTIGATION PERFORMED BY CAMPBELL-NOLAN ASSOCIATES DATED MARCH, 2000.
- FLOODPLAIN SHOWN ONSITE IS BASED ON HOWARD COUNTY FLOODPLAIN STUDY D-1084, DEEP RUN FLOODPLAIN STUDY, DATED JANUARY, 1997, AND STUDY DATED JANUARY 08, 2001 BY VOGEL & ASSOCIATES, INC.
- FOREST STAND DELINEATION PLAN PREPARED BY DENNIS J. LABARE DATED NOVEMBER, 1996.
- FOREST CONSERVATION PLAN PREPARED BY CAMPBELL-NOLAN ASSOCIATES DATED MARCH, 2000.
- APFO TRAFFIC STUDY AND CHAPTER 5 STUDY PREPARED BY LEE CUNNINGHAM AND ASSOCIATES DATED DECEMBER, 1998 AND APPROVED UNDER S-99-13. ORIGINAL STUDY SUPPLEMENTED BY THE TRAFFIC GROUP DATED JUNE 7, 2000. AN ADDITIONAL APFO STUDY WILL BE REQUIRED FOR PHASE II.
- A NOISE STUDY WAS PERFORMED BY VOGEL & ASSOCIATES INC. DATED MARCH, 2000, AND REVISED SEPTEMBER 2000.
- THIS PROPERTY IS WITHIN THE METROPOLITAN DISTRICT.
- TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL LOCATIONS ON SITE.
- STORMWATER MANAGEMENT SOIL BORINGS FOR THIS SITE ARE BASED ON A GEOTECHNICAL ANALYSIS PROVIDED BY ENGINEERING CONSULTING SERVICES DATED MARCH, 2000.
- THE DESIGN FOR SWMF #1 IS GRANDFATHERED FROM THE REQUIREMENTS OF THE MDE 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUMES 1 & II UNDER P-09-19. SWMF #2 IS DESIGNED UTILIZING MDE 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUMES 1 & II. SWMF #1 PROVIDES WATER QUALITY BY EXTENDED DETENTION AND MANAGEMENT OF THE 2 YEAR AND 10 YEAR STORM EVENT. SWMF #2 PROVIDED THE REQUIRED WQV AND CPV BY WET EXTENDED DETENTION. THE REQUIRED WQV AND CPV PROVIDED BY GRASS SWALES AND OTHER METHODS. BOTH FACILITIES ARE HAZARD CLASS A.
- THIS PLAN IS SUBJECT TO WP 97-89 ON APRIL 3, 1997 THE PLANNING DIRECTOR APPROVED THE REQUEST TO WAIVE SECTION 16.119 (a) TO NOT REQUIRE A SECOND VEHICULAR ACCESS POINT FOR A PROJECT GENERATING OVER 1,000 ADT VOLUMES AND SECTION 16.116 (a) (1) AND (2) (i) TO PERMIT GRADING OR THE REMOVAL OF VEGETATIVE COVER WITHIN 25 FEET OF A WETLAND AND WITHIN 75 FEET OF A PERENNIAL STREAM FOR THE CONSTRUCTION OF TWO 16' WIDE EMERGENCY BYPASS ROADS AND A NOISE BARRIER, SUBJECT TO CONDITIONS.
- TWO OFF STREET PARKING SPACES HAVE BEEN PROVIDED FOR ALL UNITS (EITHER 1 CAR IN DRIVEWAY OR 2 CAR GARAGE) IN ACCORDANCE WITH SECTION 133 (B) (c) OF THE HOWARD COUNTY ZONING REGULATIONS. THE TWO REQUIRED AND PROVIDED PARKING SPACES FOR EACH SFA UNIT, AS DESCRIBED IN THE GENERAL NOTE 4, MUST BE USED ONLY FOR THE PARKING OF MOTOR VEHICLES IN ACCORDANCE WITH ZONING SECTIONS 133.C.1.9 AND 133.D.2.4. ALSO, THE DRIVEWAYS LESS THAN 18 FEET SHALL NOT BE USED FOR PARKING IF ANY PART OF ANY PARKED MOTOR VEHICLE ON THESE DRIVEWAYS WILL EXTEND INTO ANY PRIVATE ROAD.
- THE PROPOSED DEVELOPMENT IS A CONDOMINIUM REGIME. GENERAL COMMON ELEMENTS SHALL BE MAINTAINED BY THE CONDOMINIUM ASSOCIATION. LIMITED COMMON ELEMENTS WILL BE MAINTAINED BY INDIVIDUAL UNIT OWNERS.
- ALL 25 PERCENT STEEP SLOPES ON SITE CONTAIN LESS THAN 20,000 SF OF CONTIGUOUS AREA.
- REAR ROOF DRAINS ON DOWN SLOPE CONDITION UNITS WILL BE DIRECTED TO THE FRONT OF THE UNIT TO INSURE THAT ROOF AREAS WILL BE MANAGED BY THE STORM WATER MANAGEMENT FACILITY.
- ALL CURB AND GUTTER TO BE HOWARD COUNTY STANDARD DETAIL R3.01.
- ALL PAVING TO BE P-2 PAVING, HOWARD COUNTY STANDARD DETAIL R-2.01. THE PAVING SECTION WILL BE CONFIRMED OR MODIFIED BY THE PROJECT GEOTECHNICAL ENGINEER PRIOR TO CONSTRUCTION BASED ON ACTUAL TESTING.
- PERIMETER, INTERIOR, STREET TREE, AND POND LANDSCAPING IS PROVIDED FOR THIS SITE. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT FOR PHASE I IN THE AMOUNT OF \$211,800.00.
- REFER TO SHEET 2 FOR ADDRESS CHART.
- TOTAL MODERATE INCOME HOUSING UNITS REQUIREMENT: SINGLE FAMILY ATTACHED: 15% OF 267 UNITS = 41 UNITS REQUIRED PHASE I = 29 UNITS PROVIDED PHASE II = 12 UNITS PROVIDED TOTAL = 41 UNITS PROVIDED
- REFERENCE WETLANDS PERMIT NO. 02-NI-0537/200361438 FOR PROPOSED ROAD CROSSINGS AND DISTURBANCE TO EXISTING POND.

# SITE DEVELOPMENT PLAN

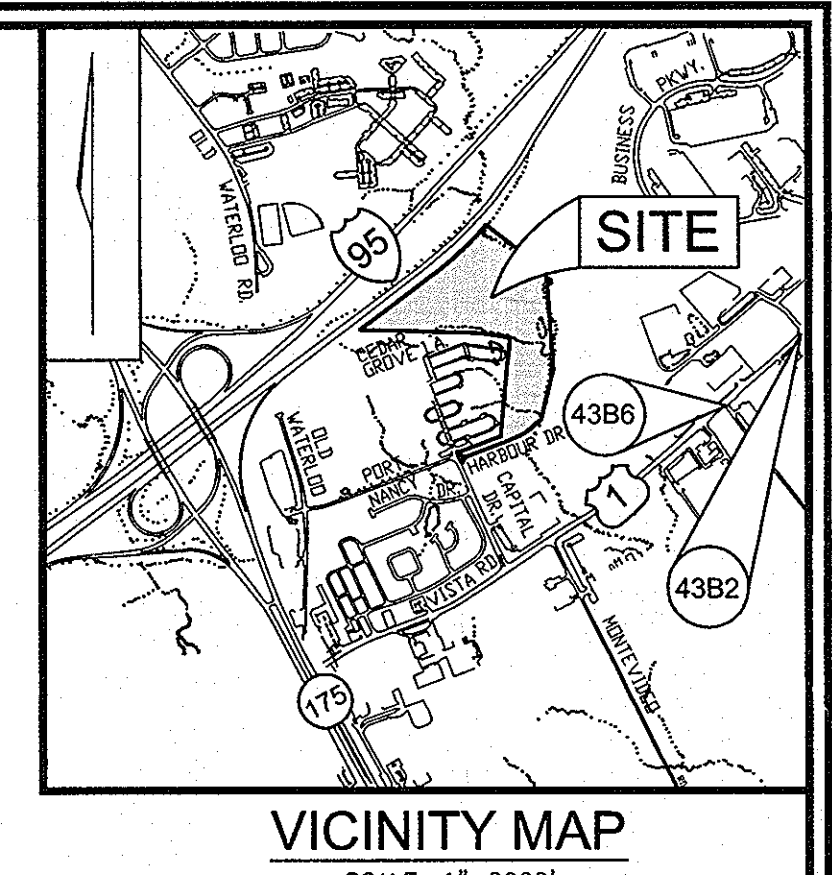
# THE OAKS AT WATERS EDGE

## TOWNHOUSE COMMUNITY

## HOWARD COUNTY, MARYLAND

# PHASE I

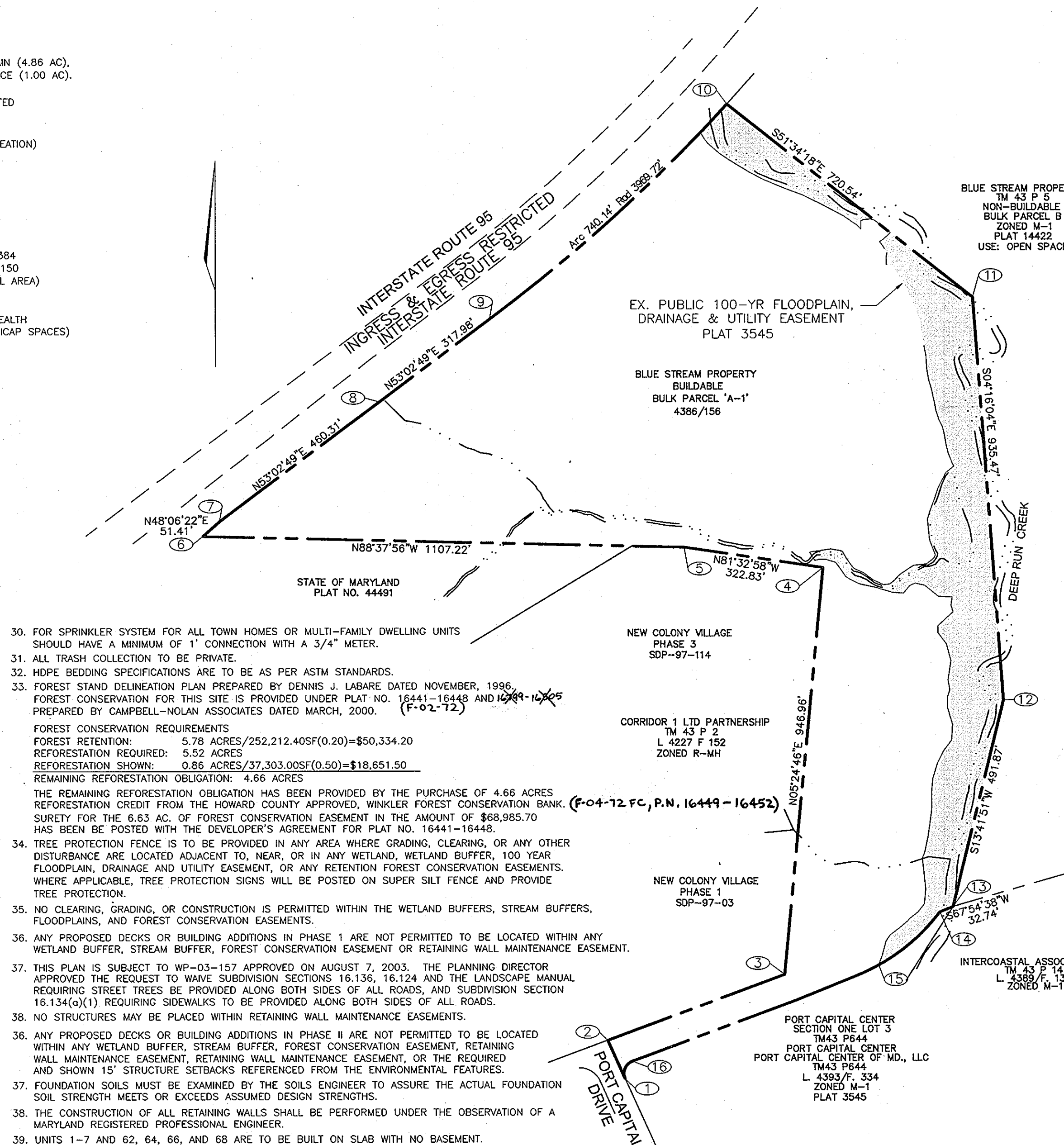
COORDINATE CHART		
NO.	NORTHING	EASTING
1	550235.4789	1374660.2617
2	550324.1320	1374620.5281
3	550475.8334	1375027.8452
4	551418.5752	1375117.1747
5	551466.0167	1374797.8469
6	551492.4433	1373690.9447
7	551526.7724	1373729.2134
8	551803.4926	1374097.0601
9	551994.6488	1374351.1652
10	552491.6809	1374898.1436
11	552043.8407	1375462.6038
12	551110.9646	1375532.2195
13	550633.0836	1375415.7468
14	550620.7732	1375385.4138
15	550472.9797	1375193.8486
16	550275.8554	1374677.1599



BENCHMARKS			
NO.	NORTHING	EASTING	ELEVATION
43B2	551,655.009	1,378,176.941	209.605
43B6	550,601.593	1,376,866.047	210.560

PERMIT INFORMATION CHART					
PROJECT NAME	SECTION/AREA	PARCEL NUMBER	BUILDABLE PARCEL A	PLAT REF.	WATER CODE:
THE OAKS AT WATERS EDGE	PHASE I			16441-16448, 16449-16452	801
BLOCK NO. 3	ZONE R-MH	TAX MAP 43	ELECT. DIST. 1ST	CENSUS TR. 6012.02	SEWER CODE: 2420000

SHEET INDEX	
DESCRIPTION	SHEET NO.
COVER SHEET	1 OF 33
SITE PLAN	2 OF 33
SITE LAYOUT PLAN	3 OF 33
SITE LAYOUT PLAN	4 OF 33
SITE LAYOUT PLAN	5 OF 33
SITE LAYOUT PLAN	6 OF 33
SITE LAYOUT PLAN	7 OF 33
SITE LAYOUT PLAN	8 OF 33
GRADING AND SEDIMENT EROSION CONTROL PLAN	9 OF 33
GRADING AND SEDIMENT EROSION CONTROL PLAN	10 OF 33
GRADING AND SEDIMENT EROSION CONTROL PLAN	11 OF 33
GRADING AND SEDIMENT EROSION CONTROL PLAN	12 OF 33
GRADING AND SEDIMENT EROSION CONTROL PLAN	13 OF 33
GRADING AND SEDIMENT EROSION CONTROL PLAN	14 OF 33
LANDSCAPE PLAN	15 OF 33
LANDSCAPE PLAN	16 OF 33
LANDSCAPE PLAN	17 OF 33
STORM DRAIN PROFILES	18 OF 33
STORM DRAIN PROFILES	19 OF 33
SEWER PROFILES	20 OF 33
SEWER PROFILES	21 OF 33
SEWER PROFILES	22 OF 33
SCHEDULES	23 OF 33
SCHEDULES	24 OF 33
STORM WATER MANAGEMENT DETAILS, POND 1	25 OF 33
STORM WATER MANAGEMENT DETAILS, POND 2	26 OF 33
SEDIMENT AND EROSION CONTROL DETAILS	27 OF 33
DETAILS	28 OF 33
RETAINING WALL LOCATION PLAN	29 OF 33
RETAINING WALL ELEVATIONS	30 OF 33
RETAINING WALL ELEVATIONS	31 OF 33
RETAINING WALL SECTIONS AND DETAILS	32 OF 33
RETAINING WALL SECTIONS	33 OF 33
RETAINING WALL SECTIONS	34 OF 33
RETAINING WALL SECTIONS	35 OF 33



- BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAIN**
- NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN THE WETLANDS OR BUFFER.
  - PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF THE NONTIDAL WETLAND.
  - DO NOT USE THE 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.
  - PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO THE NONTIDAL WETLANDS OR BUFFER.
  - REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NONTIDAL WETLANDS IN EXCESS OF NONTIDAL WETLANDS LOST UNDER THE ORIGINAL STRUCTURE OR FILL.
  - RECTIFY ANY NONTIDAL WETLANDS TEMPORARILY IMPACTED BY ANY CONSTRUCTION.
  - ALL STABILIZATION IN THE WETLAND AND BUFFER SHALL BE OF THE FOLLOWING RECOMMENDED SPECIES: ANNUAL RYEGRASS (LOLIUM MULTIFLORUM), MILLET (SETARIA ITALICA), BARLEY (HORDEUM SP.), OATS (UNIOLA SP.), AND/OR RYE (SECALE CEREALE). THESE SPECIES WILL ALLOW FOR THE STABILIZATION OF THE SITE WHILE ALSO ALLOWING FOR THE VOLUNTARY REVEGETATION OF NATURAL WETLAND SPECIES. OTHER NON-PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE DIVISION. KENTUCKY 33 FESCUE SHALL NOT BE UTILIZED IN THE WETLAND OR BUFFER AREAS. THE AREA SHOULD BE SEEDED AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
  - AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST CONSTRUCTION GRADES AND ELEVATIONS OF NONTIDAL WETLANDS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.
  - TO PROTECT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM. USE 1 WATERWAYS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.
  - STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.
  - CULVERTS SHALL BE CONSTRUCTED AND ANY RIPRAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.

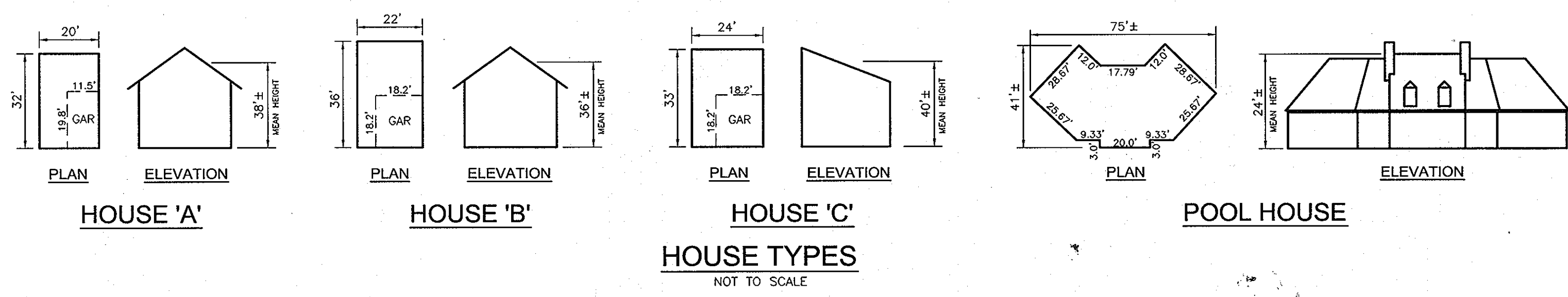
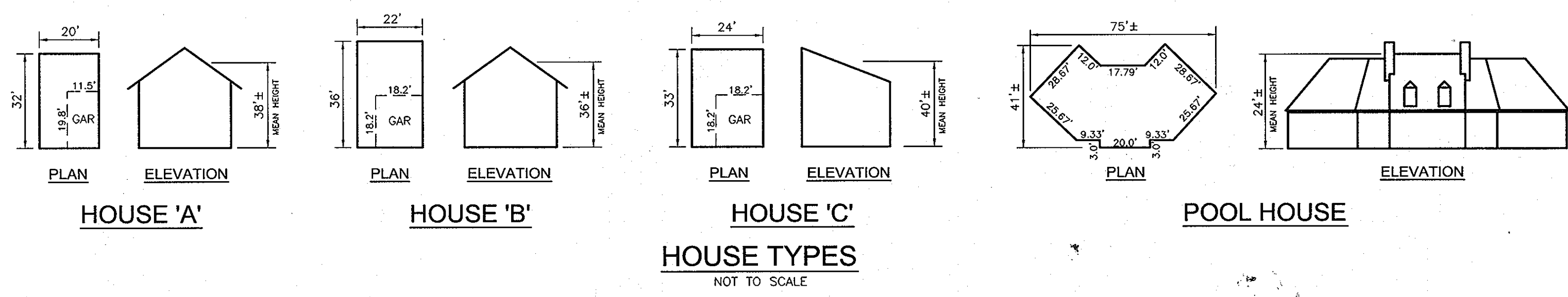
APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS  
HOWARD COUNTY HEALTH DEPARTMENT

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 7/22/04

CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 8/22/04

DIRECTOR  
 DATE: 8/13/04



NO.	REVISION	DATE
0	REVISE GRADING AND EXTENT OF NOISE WALL	2/7/00
1	REVISE STREAM CROSSINGS SHEETS 3, 5, 9, 11, 15, 16, 18, 24	11/29/04

**COVER SHEET**

**THE OAKS AT WATERS EDGE - PHASE I**

PARCEL A-1

REF: S-97-01, ZB-86-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157  
SDP-03-154, F-04-174

TAX MAP 43, BLOCK 3 PARCELS 279, 647, AND PART OF 5  
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS

8407 MAIN STREET  
ELLCOTT CITY, MARYLAND 21043  
TEL: 410.461.7666 FAX: 410.461.8961

DESIGN BY: JT  
DRAWN BY: JT  
CHECKED BY: RHV  
DATE: JUNE 8, 2004  
SCALE: AS NOTED  
W.O. NO.: 03-82

1 SHEET OF 37



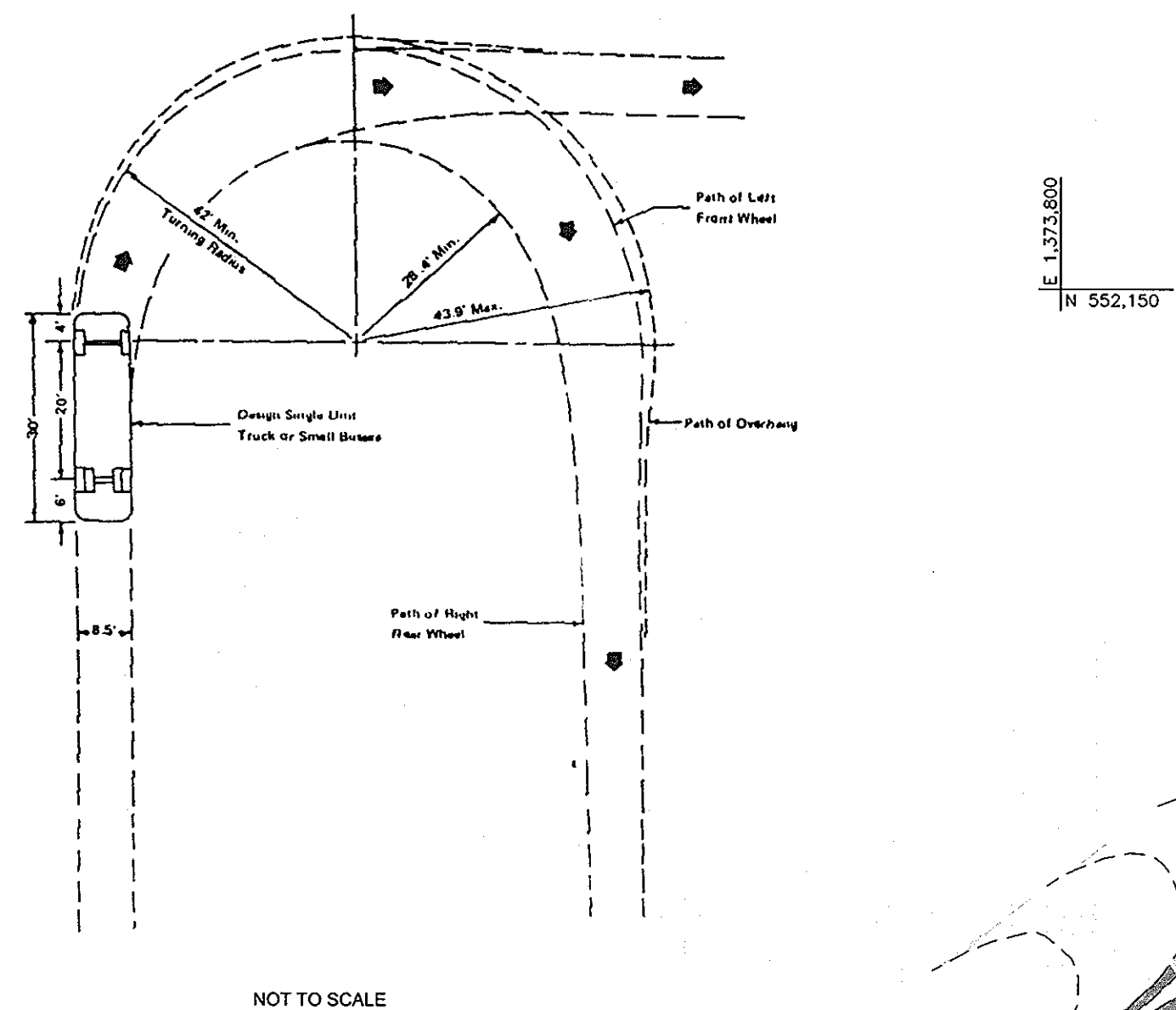
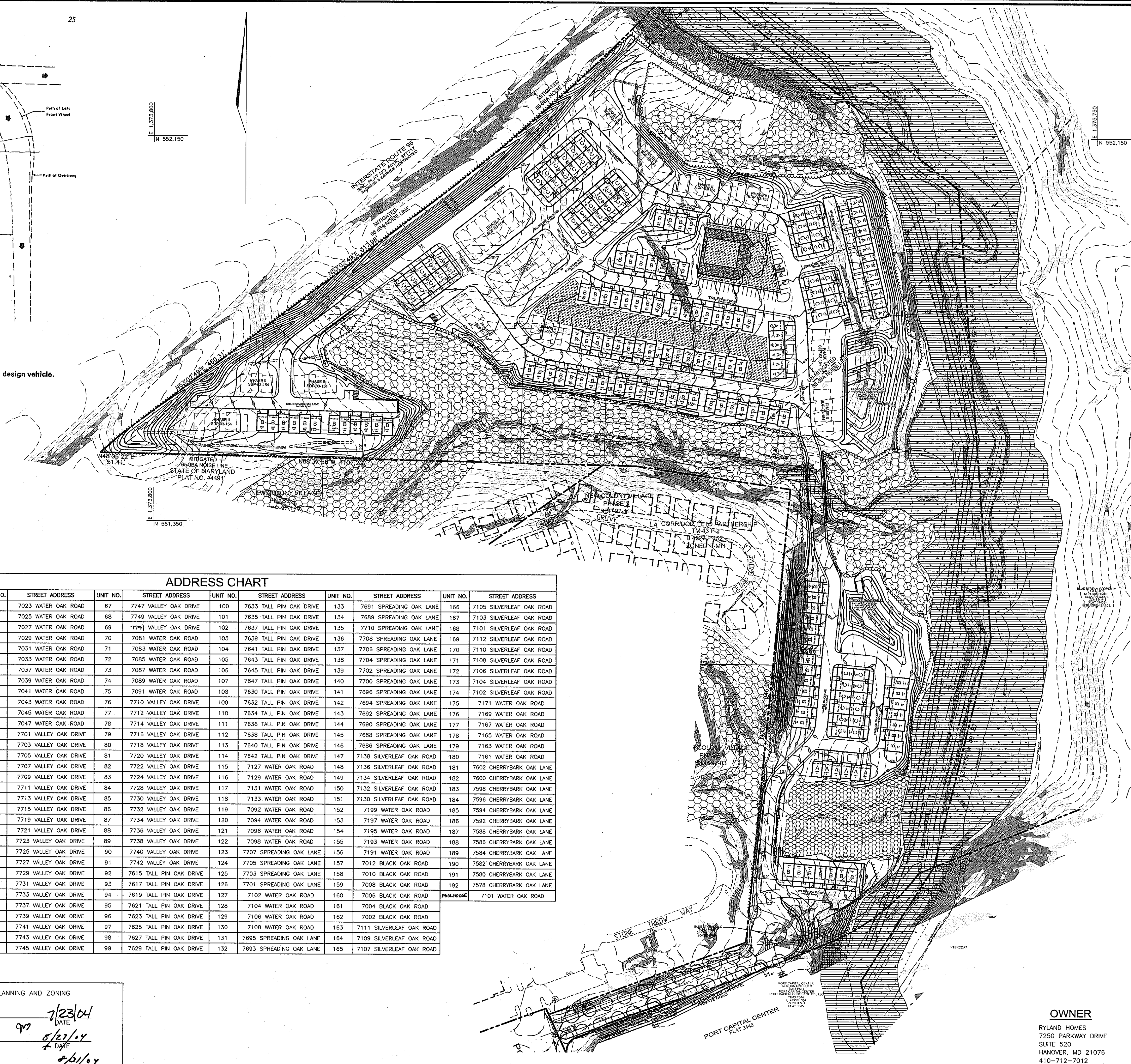


Figure II-2. Minimum turning path for SU design vehicle.



LEGEND	
---202---	EXISTING 2 FT CONTOURS
---210---	EXISTING 10 FT CONTOURS
---220---	PROPOSED 2 FT CONTOURS
---230---	PROPOSED 10 FT CONTOURS
---	25 FT WETLAND BUFFER
---	EXISTING STREAM BUFFER
---	LIMITS OF EXISTING WETLANDS
---	LIMIT OF DISTURBANCE
---	SUPER SILT FENCE
---	TREE PROTECTION FENCE
---	MODIFIED CURB (R-3.01)
[Pattern]	EXISTING WETLANDS
[Pattern]	EXISTING 100 YEAR FLOODPLAIN
[Pattern]	FOREST CONSERVATION EASEMENT (REFORESTATION)
[Pattern]	FOREST CONSERVATION EASEMENT (RETENTION)
[Pattern]	EXISTING SEWER EASEMENT
[Pattern]	CONCRETE
[Pattern]	RECREATIONAL OPEN SPACE
[Pattern]	RETAINING WALL MAINTENANCE EASEMENT
[Pattern]	NO WOODY VEGETATION BUFFER
[Pattern]	POND ACCESS ROAD
[Pattern]	RIP RAP
[Pattern]	GABIONS

ADDRESS CHART											
UNIT NO.	STREET ADDRESS	UNIT NO.	STREET ADDRESS	UNIT NO.	STREET ADDRESS	UNIT NO.	STREET ADDRESS	UNIT NO.	STREET ADDRESS	UNIT NO.	STREET ADDRESS
1	7012 WATER OAK ROAD	34	7023 WATER OAK ROAD	67	7747 VALLEY OAK DRIVE	100	7633 TALL PIN OAK DRIVE	133	7691 SPREADING OAK LANE	166	7105 SILVERLEAF OAK ROAD
2	7010 WATER OAK ROAD	35	7025 WATER OAK ROAD	68	7749 VALLEY OAK DRIVE	101	7635 TALL PIN OAK DRIVE	134	7689 SPREADING OAK LANE	167	7103 SILVERLEAF OAK ROAD
3	7008 WATER OAK ROAD	36	7027 WATER OAK ROAD	69	7751 VALLEY OAK DRIVE	102	7637 TALL PIN OAK DRIVE	135	7710 SPREADING OAK LANE	168	7101 SILVERLEAF OAK ROAD
4	7006 WATER OAK ROAD	37	7029 WATER OAK ROAD	70	7081 WATER OAK ROAD	103	7639 TALL PIN OAK DRIVE	136	7708 SPREADING OAK LANE	169	7112 SILVERLEAF OAK ROAD
5	7004 WATER OAK ROAD	38	7031 WATER OAK ROAD	71	7083 WATER OAK ROAD	104	7641 TALL PIN OAK DRIVE	137	7706 SPREADING OAK LANE	170	7110 SILVERLEAF OAK ROAD
6	7002 WATER OAK ROAD	39	7033 WATER OAK ROAD	72	7085 WATER OAK ROAD	105	7643 TALL PIN OAK DRIVE	138	7704 SPREADING OAK LANE	171	7108 SILVERLEAF OAK ROAD
7	7000 WATER OAK ROAD	40	7037 WATER OAK ROAD	73	7087 WATER OAK ROAD	106	7645 TALL PIN OAK DRIVE	139	7702 SPREADING OAK LANE	172	7106 SILVERLEAF OAK ROAD
8	7700 ENGLISH OAK CIRCLE	41	7039 WATER OAK ROAD	74	7089 WATER OAK ROAD	107	7647 TALL PIN OAK DRIVE	140	7700 SPREADING OAK LANE	173	7104 SILVERLEAF OAK ROAD
9	7702 ENGLISH OAK CIRCLE	42	7041 WATER OAK ROAD	75	7091 WATER OAK ROAD	108	7630 TALL PIN OAK DRIVE	141	7696 SPREADING OAK LANE	174	7102 SILVERLEAF OAK ROAD
10	7704 ENGLISH OAK CIRCLE	43	7043 WATER OAK ROAD	76	7710 VALLEY OAK DRIVE	109	7632 TALL PIN OAK DRIVE	142	7694 SPREADING OAK LANE	175	7171 WATER OAK ROAD
11	7706 ENGLISH OAK CIRCLE	44	7045 WATER OAK ROAD	77	7712 VALLEY OAK DRIVE	110	7634 TALL PIN OAK DRIVE	143	7692 SPREADING OAK LANE	176	7169 WATER OAK ROAD
12	7708 ENGLISH OAK CIRCLE	45	7047 WATER OAK ROAD	78	7714 VALLEY OAK DRIVE	111	7636 TALL PIN OAK DRIVE	144	7690 SPREADING OAK LANE	177	7167 WATER OAK ROAD
13	7710 ENGLISH OAK CIRCLE	46	7701 VALLEY OAK DRIVE	79	7716 VALLEY OAK DRIVE	112	7638 TALL PIN OAK DRIVE	145	7688 SPREADING OAK LANE	178	7165 WATER OAK ROAD
14	7714 ENGLISH OAK CIRCLE	47	7703 VALLEY OAK DRIVE	80	7718 VALLEY OAK DRIVE	113	7640 TALL PIN OAK DRIVE	146	7686 SPREADING OAK LANE	179	7163 WATER OAK ROAD
15	7718 ENGLISH OAK CIRCLE	48	7705 VALLEY OAK DRIVE	81	7720 VALLEY OAK DRIVE	114	7642 TALL PIN OAK DRIVE	147	7138 SILVERLEAF OAK ROAD	180	7161 WATER OAK ROAD
16	7718 ENGLISH OAK CIRCLE	49	7707 VALLEY OAK DRIVE	82	7722 VALLEY OAK DRIVE	115	7127 WATER OAK ROAD	148	7136 SILVERLEAF OAK ROAD	181	7602 CHERRYBARK OAK LANE
17	7720 ENGLISH OAK CIRCLE	50	7709 VALLEY OAK DRIVE	83	7724 VALLEY OAK DRIVE	116	7129 WATER OAK ROAD	149	7134 SILVERLEAF OAK ROAD	182	7600 CHERRYBARK OAK LANE
18	7722 ENGLISH OAK CIRCLE	51	7711 VALLEY OAK DRIVE	84	7726 VALLEY OAK DRIVE	117	7131 WATER OAK ROAD	150	7132 SILVERLEAF OAK ROAD	183	7598 CHERRYBARK OAK LANE
19	7724 ENGLISH OAK CIRCLE	52	7713 VALLEY OAK DRIVE	85	7730 VALLEY OAK DRIVE	118	7133 WATER OAK ROAD	151	7130 SILVERLEAF OAK ROAD	184	7596 CHERRYBARK OAK LANE
20	7726 ENGLISH OAK CIRCLE	53	7715 VALLEY OAK DRIVE	86	7732 VALLEY OAK DRIVE	119	7092 WATER OAK ROAD	152	7199 WATER OAK ROAD	185	7594 CHERRYBARK OAK LANE
21	7715 ENGLISH OAK CIRCLE	54	7719 VALLEY OAK DRIVE	87	7734 VALLEY OAK DRIVE	120	7094 WATER OAK ROAD	153	7197 WATER OAK ROAD	186	7592 CHERRYBARK OAK LANE
22	7717 ENGLISH OAK CIRCLE	55	7721 VALLEY OAK DRIVE	88	7736 VALLEY OAK DRIVE	121	7096 WATER OAK ROAD	154	7195 WATER OAK ROAD	187	7588 CHERRYBARK OAK LANE
23	7719 ENGLISH OAK CIRCLE	56	7723 VALLEY OAK DRIVE	89	7738 VALLEY OAK DRIVE	122	7098 WATER OAK ROAD	155	7193 WATER OAK ROAD	188	7586 CHERRYBARK OAK LANE
24	7721 ENGLISH OAK CIRCLE	57	7725 VALLEY OAK DRIVE	90	7740 VALLEY OAK DRIVE	123	7707 SPREADING OAK LANE	156	7191 WATER OAK ROAD	189	7584 CHERRYBARK OAK LANE
25	7723 ENGLISH OAK CIRCLE	58	7727 VALLEY OAK DRIVE	91	7742 VALLEY OAK DRIVE	124	7705 SPREADING OAK LANE	157	7012 BLACK OAK ROAD	190	7582 CHERRYBARK OAK LANE
26	7725 ENGLISH OAK CIRCLE	59	7729 VALLEY OAK DRIVE	92	7615 TALL PIN OAK DRIVE	125	7703 SPREADING OAK LANE	158	7010 BLACK OAK ROAD	191	7580 CHERRYBARK OAK LANE
27	7020 WATER OAK ROAD	60	7731 VALLEY OAK DRIVE	93	7617 TALL PIN OAK DRIVE	126	7701 SPREADING OAK LANE	159	7008 BLACK OAK ROAD	192	7578 CHERRYBARK OAK LANE
28	7022 WATER OAK ROAD	61	7733 VALLEY OAK DRIVE	94	7619 TALL PIN OAK DRIVE	127	7102 WATER OAK ROAD	160	7006 BLACK OAK ROAD	PROPOSED	7101 WATER OAK ROAD
29	7024 WATER OAK ROAD	62	7737 VALLEY OAK DRIVE	95	7621 TALL PIN OAK DRIVE	128	7104 WATER OAK ROAD	161	7004 BLACK OAK ROAD		
30	7026 WATER OAK ROAD	63	7739 VALLEY OAK DRIVE	96	7623 TALL PIN OAK DRIVE	129	7106 WATER OAK ROAD	162	7002 BLACK OAK ROAD		
31	7028 WATER OAK ROAD	64	7741 VALLEY OAK DRIVE	97	7625 TALL PIN OAK DRIVE	130	7108 WATER OAK ROAD	163	7111 SILVERLEAF OAK ROAD		
32	7030 WATER OAK ROAD	65	7743 VALLEY OAK DRIVE	98	7627 TALL PIN OAK DRIVE	131	7695 SPREADING OAK LANE	164	7109 SILVERLEAF OAK ROAD		
33	7021 WATER OAK ROAD	66	7745 VALLEY OAK DRIVE	99	7629 TALL PIN OAK DRIVE	132	7693 SPREADING OAK LANE	165	7107 SILVERLEAF OAK ROAD		

HOUSE SCHEDULE					
PHASE I					
MODEL	TYPE	SIZE	GARAGE	QUANTITY	
A	TOWNHOUSE	20' X 32'	1 CAR	24	
B	TOWNHOUSE	22' X 36'	2 CAR	106	
C	TOWNHOUSE	24' X 33'	2 CAR	62	
			TOTAL	192	
FUTURE PHASE II					
MODEL	TYPE	SIZE	GARAGE	QUANTITY	
A	TOWNHOUSE	20' X 32'	1 CAR	18	
B	TOWNHOUSE	22' X 36'	2 CAR	33	
C	TOWNHOUSE	24' X 33'	2 CAR	24	
			TOTAL	75	

1	REVISE STREAM CROSSINGS SHEETS 3, 5, 9, 11, 15, 16, 18, 24	11/20/04
NO.	REVISION	DATE

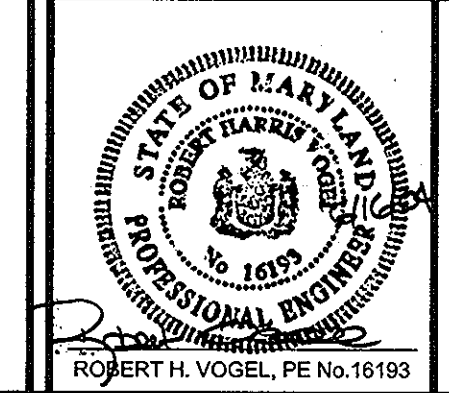
**SITE PLAN**  
**THE OAKS AT WATERS EDGE - PHASE I**  
 PARCEL A-1

REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157  
 SDP-03-041, SDP-03-159, E-04-174

TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS

8407 MAIN STREET  
 ELLICOTT CITY, MARYLAND 21043  
 TEL: 410.461.7666 FAX: 410.461.8961



DESIGN BY: JT  
 DRAWN BY: JT  
 CHECKED BY: RHY  
 DATE: JUNE 8, 2004  
 SCALE: 1"=100'  
 W.O. NO.: 03-82

2 SHEET OF 37

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

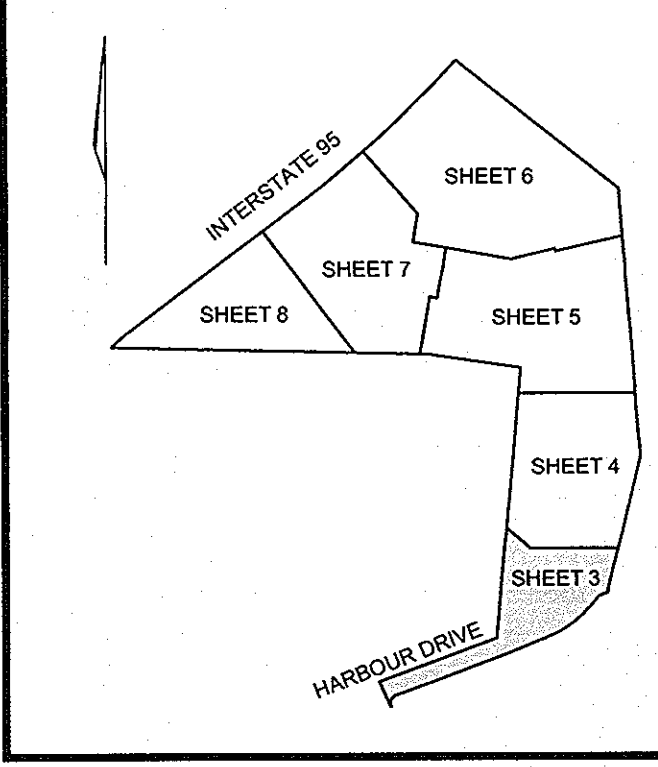
*[Signature]* 7/23/04  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 8/23/04  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

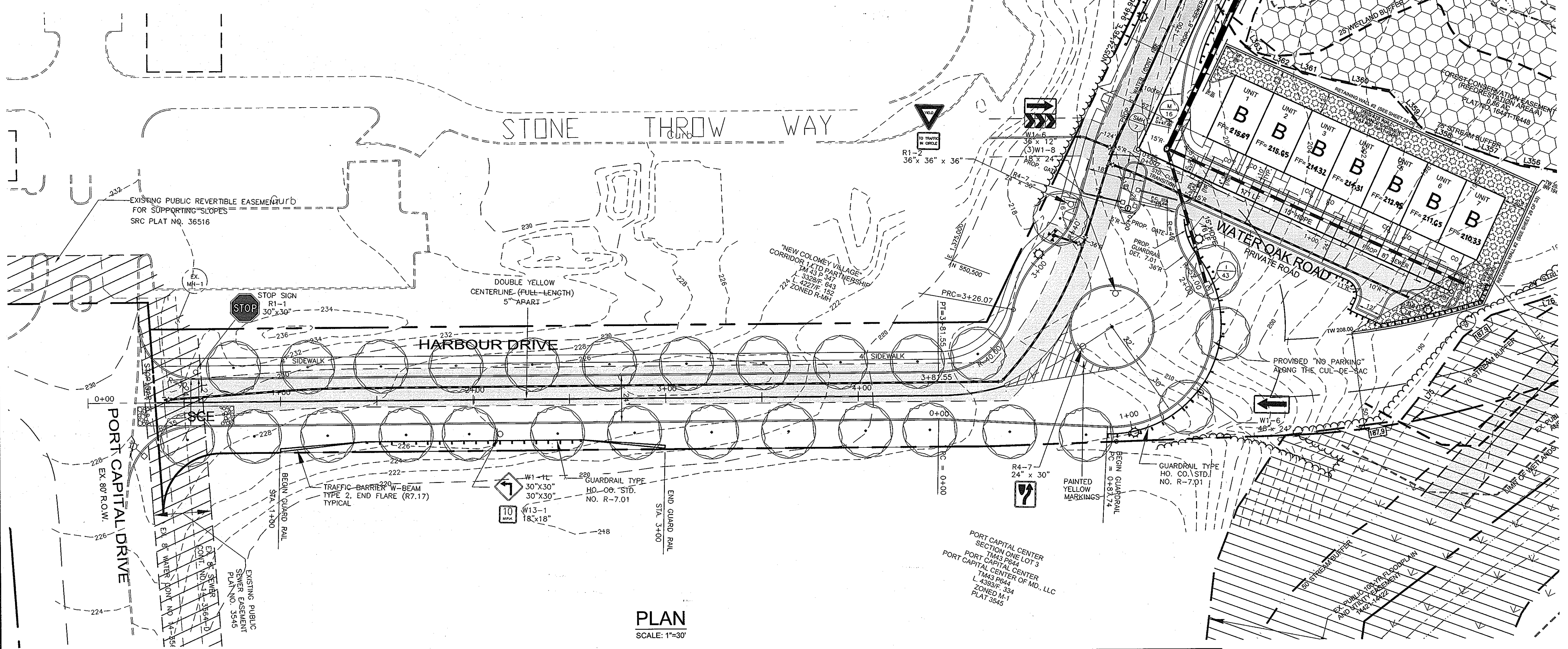
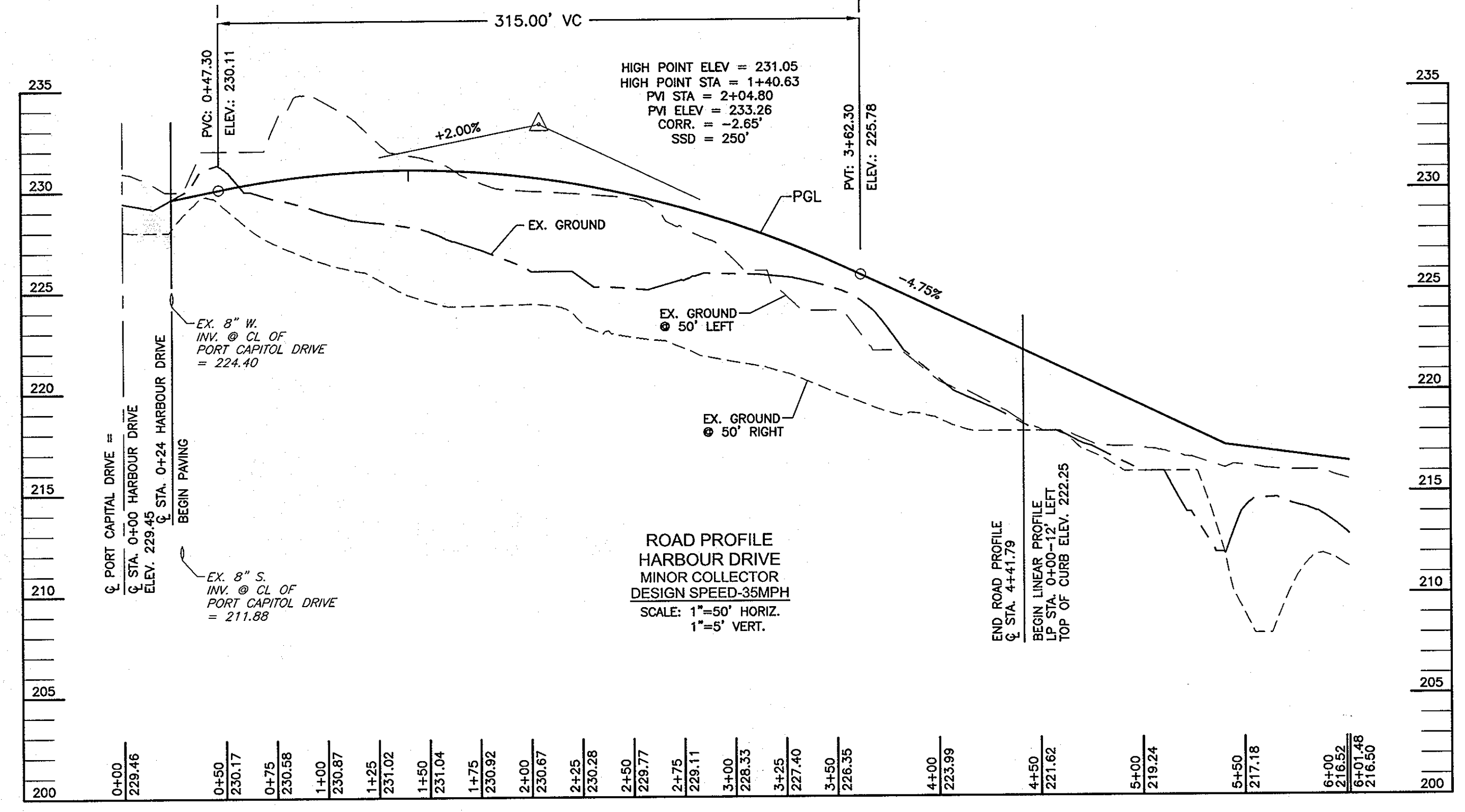
*[Signature]* 8/31/04  
 DIRECTOR DATE

**OWNER**  
 RYLAND HOMES  
 7250 PARKWAY DRIVE  
 SUITE 520  
 HANOVER, MD 21076  
 410-712-7012





**KEY MAP**  
NOT TO SCALE



**LEGEND**

- 2 FT CONTOURS
- 10 FT CONTOURS
- 2 FT CONTOURS
- 10 FT CONTOURS
- 25 FT WETLAND BUFFER
- EXISTING STREAM BUFFER
- LIMITS OF EXISTING WETLANDS
- LIMIT OF DISTURBANCE
- SUPER SILT FENCE
- TREE PROTECTION FENCE
- MODIFIED CURB (R-3.01)
- EXISTING WETLANDS
- EXISTING 100 YEAR FLOODPLAIN
- FOREST CONSERVATION EASEMENT (REFORESTATION)
- FOREST CONSERVATION EASEMENT (RETENTION)
- EXISTING SEWER EASEMENT
- CONCRETE
- RECREATIONAL OPEN SPACE
- RETAINING WALL MAINTENANCE EASEMENT
- NO WOODY VEGETATION BUFFER
- POND ACCESS ROAD
- RIP RAP
- GABIONS

2	CHANGE 1ST FLR. ELEVATIONS UNITS 1 - 7	9.27.05
1	REVISE STREAM CROSSINGS SHEETS 3, 5, 9, 11, 15, 16, 17	11/29/04
NO.	REVISION	DATE

**SITE LAYOUT PLAN**  
**THE OAKS AT WATERS EDGE - PHASE I**  
PARCEL A-1

REF: S-97-01, ZB-96-M, P-00-19; WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157, SDP-03-041, SDP-03-154, F-04-174

TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5 HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS

8407 MAIN STREET  
ELLCOTT CITY, MARYLAND 21043  
TEL: 410.461.7666 FAX: 410.461.8961

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 7/23/04  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 8/27/04  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*[Signature]* 8/11/04  
DIRECTOR DATE

**ENGINEER'S CERTIFICATE**

I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

*[Signature]* 8/16/04  
SIGNATURE OF ENGINEER DATE  
ROBERT H. VOGEL

**DEVELOPER'S CERTIFICATE**

WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE 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.

*[Signature]* 8/17/04  
SIGNATURE OF DEVELOPER DATE  
DRIAN KWALIFF

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

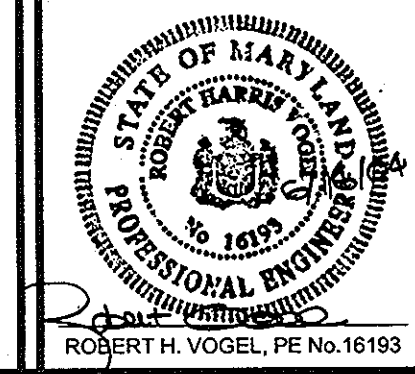
USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE

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

HOWARD SOIL CONSERVATION DISTRICT DATE

**OWNER**

RYLAND HOMES  
7250 PARKWAY DRIVE  
SUITE 520  
HANOVER, MD 21076  
410-712-7012

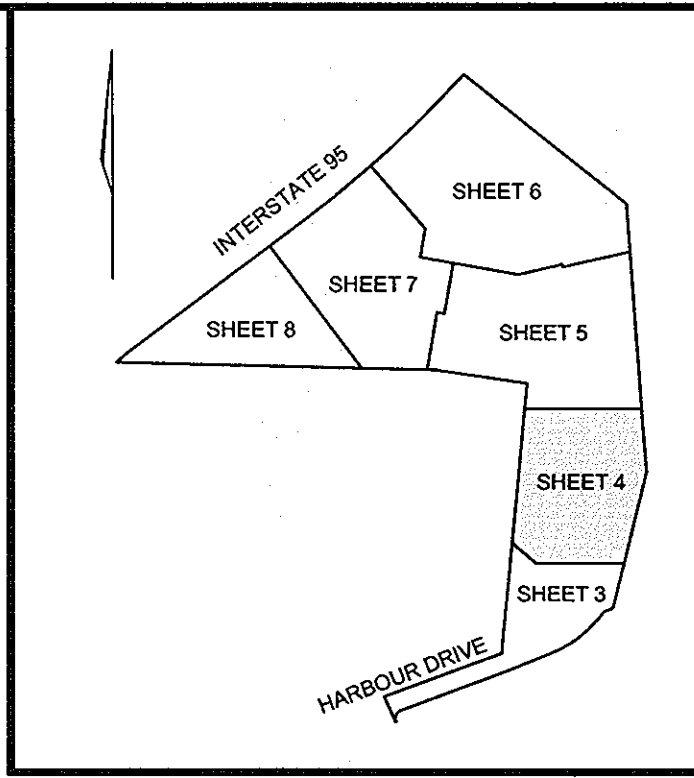


DESIGN BY: JT  
DRAWN BY: JT  
CHECKED BY: RHV  
DATE: JUNE 8, 2004  
SCALE: 1"=30'  
W.O. NO.: 03-82

3 SHEET OF 37



MATCHLINE SEE SHEET 5 OF 33



KEY MAP  
NOT TO SCALE



BLUE STREAM PROPERTY  
TM 43 P 5  
NON-BUILDABLE  
BULK PARCEL B  
ZONED M-1  
PLAT 14422  
USE: OPEN SPACE

LEGEND

- 202--- EXISTING 2 FT CONTOURS
- 310--- EXISTING 10 FT CONTOURS
- 202--- PROPOSED 2 FT CONTOURS
- 310--- PROPOSED 10 FT CONTOURS
- 25--- 25 FT WETLAND BUFFER
- 25--- EXISTING STREAM BUFFER
- 25--- LIMITS OF EXISTING WETLANDS
- 100--- LIMIT OF DISTURBANCE
- 50--- SUPER SILT FENCE
- 100--- TREE PROTECTION FENCE
- R-3.01--- MODIFIED CURB (R-3.01)
- [Pattern] EXISTING WETLANDS
- [Pattern] EXISTING 100-YEAR FLOODPLAIN
- [Pattern] FOREST CONSERVATION EASEMENT (REFORESTATION)
- [Pattern] FOREST CONSERVATION EASEMENT (RETENTION)
- [Pattern] EXISTING SEWER EASEMENT
- [Pattern] CONCRETE
- [Pattern] RECREATIONAL OPEN SPACE
- [Pattern] RETAINING WALL MAINTENANCE EASEMENT
- [Pattern] NO WOODY VEGETATION BUFFER
- [Pattern] POND ACCESS ROAD
- [Pattern] RIP RAP
- [Pattern] GABIONS

2	CHANGE 1ST FLOOR ELEVATIONS UNITS B-20 & ADD RETAINING WALLS	9.27.05
1	REVISE STREAM CROSSING SHEETS 3, 5, 9, 11, 15, 16, 18, 24	11/28/04
NO.	REVISION	DATE

**SITE LAYOUT PLAN**  
**THE OAKS AT WATERS EDGE - PHASE I**  
PARCEL A-1

REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157  
SDP-03-041, SDP-03-154, F-04-174

TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS

8407 MAIN STREET  
ELLCOTT CITY, MARYLAND 21043  
TEL: 410.461.7666 FAX: 410.461.8961

MATCHLINE SEE SHEET 3 OF 33

PLAN

SCALE: 1"=30'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 7/23/04  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE

*[Signature]* 8/27/04  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DATE

*[Signature]* 9/10/04  
DIRECTOR  
DATE

ENGINEER'S CERTIFICATE

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

*[Signature]* 6/16/04  
SIGNATURE OF ENGINEER  
ROBERT H. VOGEL  
DATE

DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE 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 AT A DEPARTMENT OF THE ENVIRONMENT PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

*[Signature]* 7/7/04  
SIGNATURE OF DEVELOPER  
BRIAN KNAUFF  
DATE

THESE PLANS HAVE BEEN REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND WERE REVIEWED FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

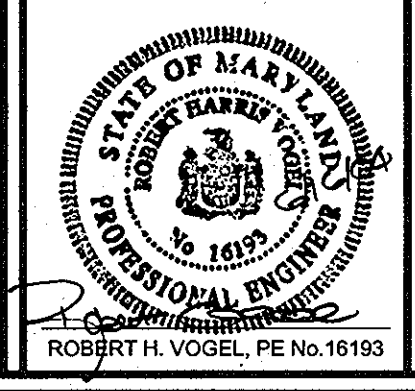
USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE

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

HOWARD SOIL CONSERVATION DISTRICT DATE

OWNER

RYLAND HOMES  
7250 PARKWAY DRIVE  
SUITE 520  
HANOVER, MD 21076  
410-712-7012



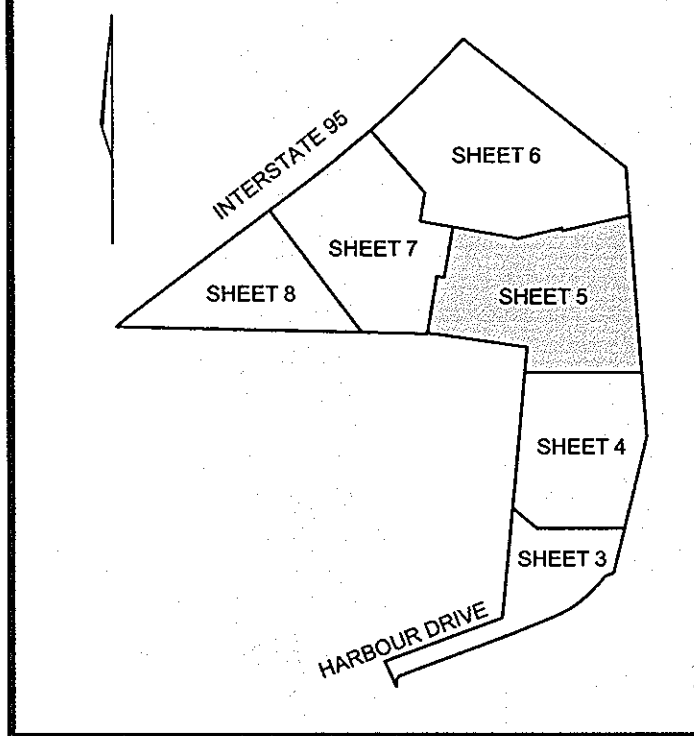
DESIGN BY: JT  
DRAWN BY: JT  
CHECKED BY: RHV  
DATE: JUNE 8, 2004  
SCALE: 1"=30'  
W.O. NO.: 03-82

4 SHEET OF 37



PROPOSED WET EXTENDED  
DETENTION FACILITY #2 (P-3)

HAZARD CLASS A  
PRIVATELY OWNED AND MAINTAINED  
2YR. WSEL= 205.28  
10YR. WSEL= 206.45  
100YR. WSEL= 207.19  
WQV WSEL= 202.00  
Cpv WSEL= 205.08  
PERM. POOL EL. 200.85'



KEY MAP  
NOT TO SCALE

**LEGEND**

- 202 --- EXISTING 2 FT CONTOURS
- 210 --- EXISTING 10 FT CONTOURS
- 220 --- PROPOSED 2 FT CONTOURS
- 230 --- PROPOSED 10 FT CONTOURS
- 25 --- 25 FT WETLAND BUFFER
- 100 --- EXISTING STREAM BUFFER
- 100 --- LIMITS OF EXISTING WETLANDS
- 100 --- LIMIT OF DISTURBANCE
- 55F --- SUPER SILT FENCE
- TW --- TREE PROTECTION FENCE
- R-3.01 --- MODIFIED CURB (R-3.01)
- --- EXISTING WETLANDS
- --- EXISTING 100 YEAR FLOODPLAIN
- --- FOREST CONSERVATION EASEMENT (REFORESTATION)
- --- FOREST CONSERVATION EASEMENT (RETENTION)
- --- EXISTING SEWER EASEMENT
- --- CONCRETE
- --- RECREATIONAL OPEN SPACE
- --- RETAINING WALL MAINTENANCE EASEMENT
- --- NO WOODY VEGETATION BUFFER
- --- POND ACCESS ROAD
- --- RIP RAP
- --- GABIONS



PLAN MATCHLINE SEE SHEET 4 OF 33  
SCALE: 1"=30'

5	REVISE FIRST FLOOR ELEVATIONS UNITS 92-99	4.3.04
4	REVISE FIRST FLOOR & GRADING UNITS 76-83	3.7.04
3	REVISE FIRST FLOOR ELEVATION UNITS 54-(p)	2.17.04
2	REVISE UNITS 135-140 AND ADD RETAINING WALLS	12.12.05
1	REVISE STREAM CROSSINGS SHEETS 3,5,9,11,15,16,18, 11/29/04	
NO.	REVISION	DATE

**SITE LAYOUT PLAN**  
**THE OAKS AT WATERS EDGE - PHASE I**  
PARCEL A-1

REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157  
SDP-03-041, SDP-03-154, F-04-174

TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS · SURVEYORS · PLANNERS

8407 MAIN STREET  
ELLCOTT CITY, MARYLAND 21043  
TEL: 410.461.7666 FAX: 410.461.8961

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 7/21/04  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 8/27/04  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*[Signature]* 8/6/04  
DIRECTOR DATE

**ENGINEER'S CERTIFICATE**

I, HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

*[Signature]* 8/6/04  
SIGNATURE OF ENGINEER DATE  
ROBERT H. VOGEL

**DEVELOPER'S CERTIFICATE**

I, WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING AT A DESIGNATED SITE. I, WE, AS REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

*[Signature]* 7/1/04  
SIGNATURE OF DEVELOPER DATE  
BRIAN MNAUFF

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

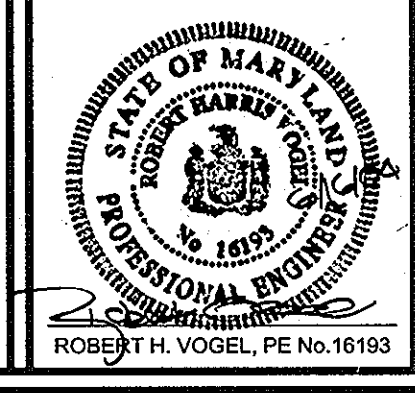
USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE

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

HOWARD SOIL CONSERVATION DISTRICT DATE

**OWNER**

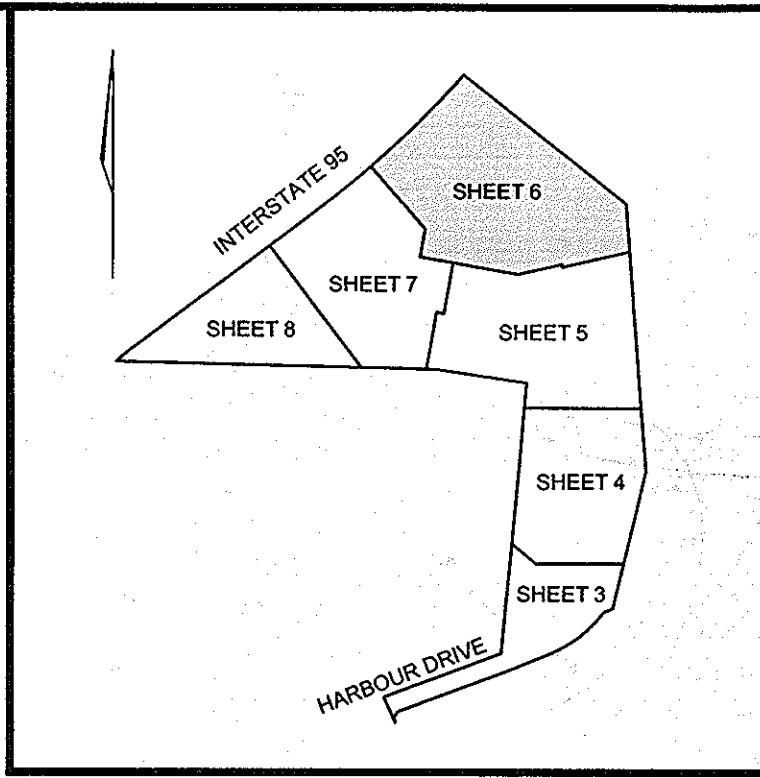
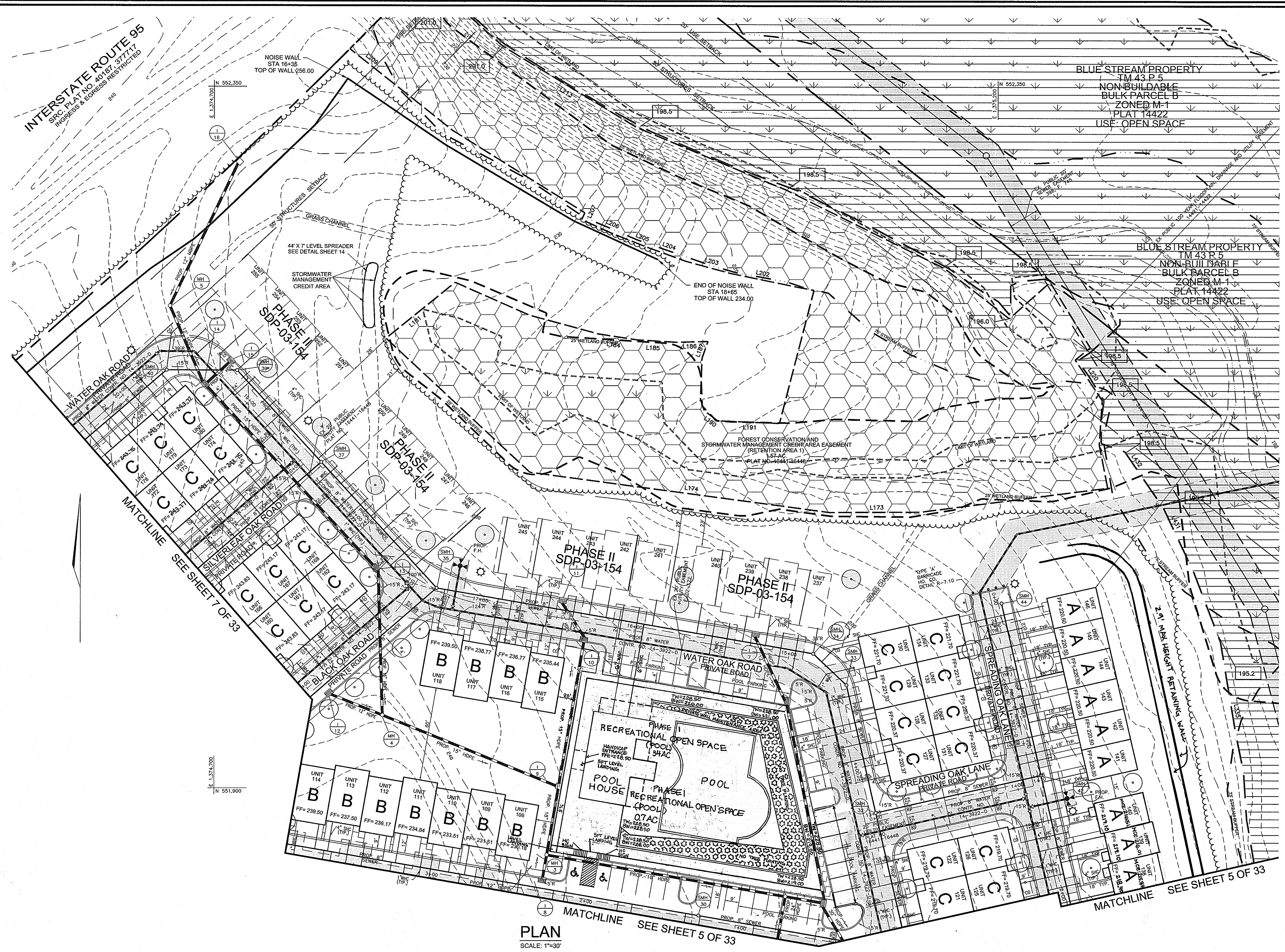
RYLAND HOMES  
7250 PARKWAY DRIVE  
SUITE 520  
HANOVER, MD 21076  
410-712-7012



DESIGN BY: JT  
DRAWN BY: JT  
CHECKED BY: RHV  
DATE: JUNE 8, 2004  
SCALE: 1"=30'  
W.O. NO.: 03-82

5 SHEET OF 37





**KEY MAP**  
NOT TO SCALE

**LEGEND**

- 202--- EXISTING 2 FT CONTOURS
- 210--- EXISTING 10 FT CONTOURS
- 220--- PROPOSED 2 FT CONTOURS
- 230--- PROPOSED 10 FT CONTOURS
- 240--- 25 FT WETLAND BUFFER
- 250--- EXISTING STREAM BUFFER
- 260--- LIMITS OF EXISTING WETLANDS
- 270--- LIMIT OF DISTURBANCE
- 280--- SUPER SILT FENCE
- 290--- TREE PROTECTION FENCE
- 300--- MODIFIED CURB (R=3.01)
- 310--- EXISTING WETLANDS
- 320--- EXISTING 100 YEAR FLOODPLAIN
- 330--- FOREST CONSERVATION EASEMENT (REFORESTATION)
- 340--- FOREST CONSERVATION EASEMENT (RETENTION)
- 350--- EXISTING SEWER EASEMENT
- 360--- CONCRETE
- 370--- RECREATIONAL OPEN SPACE
- 380--- RETAINING WALL MAINTENANCE EASEMENT
- 390--- NO WOODY VEGETATION BUFFER
- 400--- POND ACCESS ROAD
- 410--- RIP RAP
- 420--- GABIONS

5	REVISE FIRST FLOOR ELEVATION UNITS 169-180	8.1.06
4	REVISE POOL HOUSE UIC TO G"	11/10/06
3	REVISE POOL HOUSE LAYOUT AND GRADING	4/20/06
2	REVISE UNITS 135-140 AND ADD RETAINING WALLS	12-12-05
1	REVISE STREAM CROSSINGS SHEETS 3, 5, 9, 11, 15, 16, 18, 24	11/23/04
NO.	REVISION	DATE

**SITE LAYOUT PLAN**  
**THE OAKS AT WATERS EDGE - PHASE I**  
PARCEL A-1

REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157  
SDP-03-041, SDP-03-154, E-04-174

TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS

8407 MAIN STREET  
ELLICOTT CITY, MARYLAND 21043  
TEL: 410.461.7666 FAX: 410.461.8961

**OWNER**  
RYLAND HOMES  
7250 PARKWAY DRIVE  
SUITE 520  
HANOVER, MD 21076  
410-712-7012

DESIGN BY: JT  
DRAWN BY: JT  
CHECKED BY: RHY  
DATE: JUNE 8, 2004  
SCALE: 1"=30'  
W.O. NO.: 03-82

6 SHEET OF 37

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 7/23/04  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 8/27/04  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*[Signature]* 8/31/04  
DIRECTOR DATE

**ENGINEERS CERTIFICATE**

I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT SHE MUST EMPLOY A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

*[Signature]* 8/31/04  
SIGNATURE OF ENGINEER DATE  
ROBERT H. VOGEL

**DEVELOPER'S CERTIFICATE**

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE 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 EROSION AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE FOND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

*[Signature]* 7/2/04  
SIGNATURE OF DEVELOPER DATE  
CHRIS HANAUER

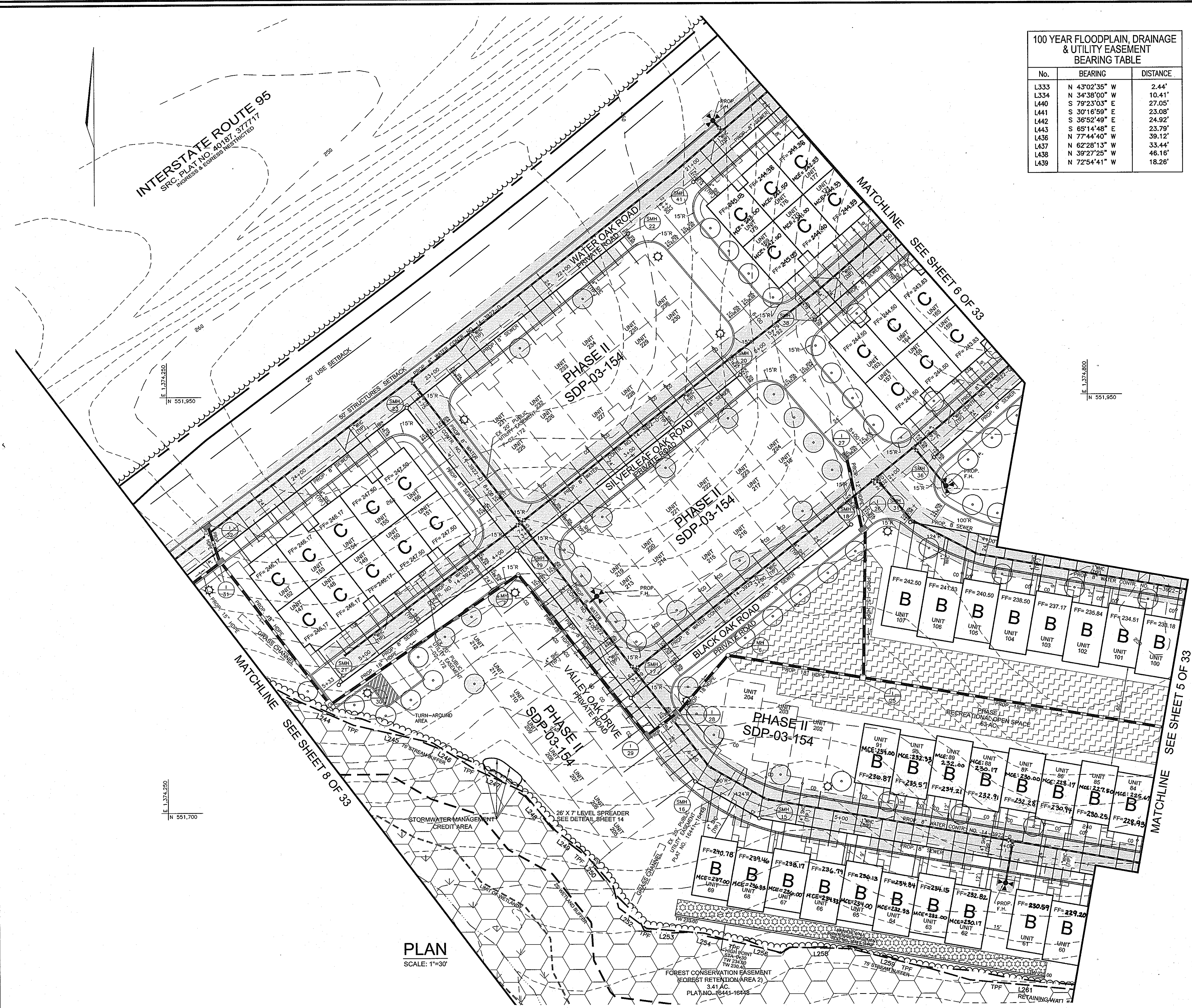
THESE PLANS HAVE BEEN REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEET THE REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE

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

HOWARD SOIL CONSERVATION DISTRICT DATE



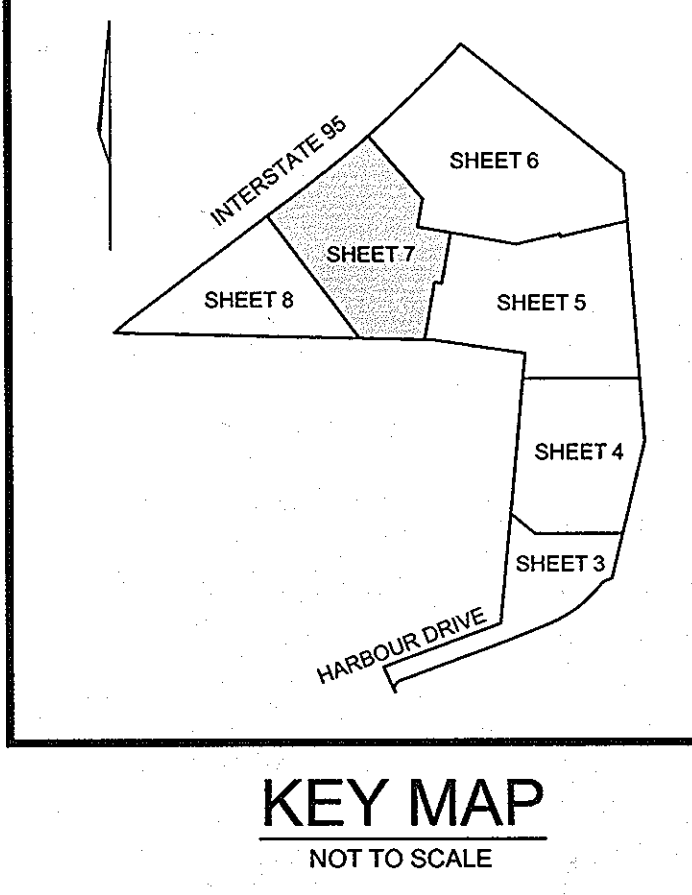


100 YEAR FLOODPLAIN, DRAINAGE & UTILITY EASEMENT BEARING TABLE

No.	BEARING	DISTANCE
L333	N 43°02'35" W	2.44'
L334	N 34°38'00" W	10.41'
L440	S 79°23'03" E	27.05'
L441	S 30°16'59" E	23.08'
L442	S 36°52'49" E	24.92'
L443	S 65°14'48" E	23.79'
L436	N 77°44'40" W	39.12'
L437	N 62°28'13" W	33.44'
L438	N 39°27'25" W	46.16'
L439	N 72°54'41" W	18.26'

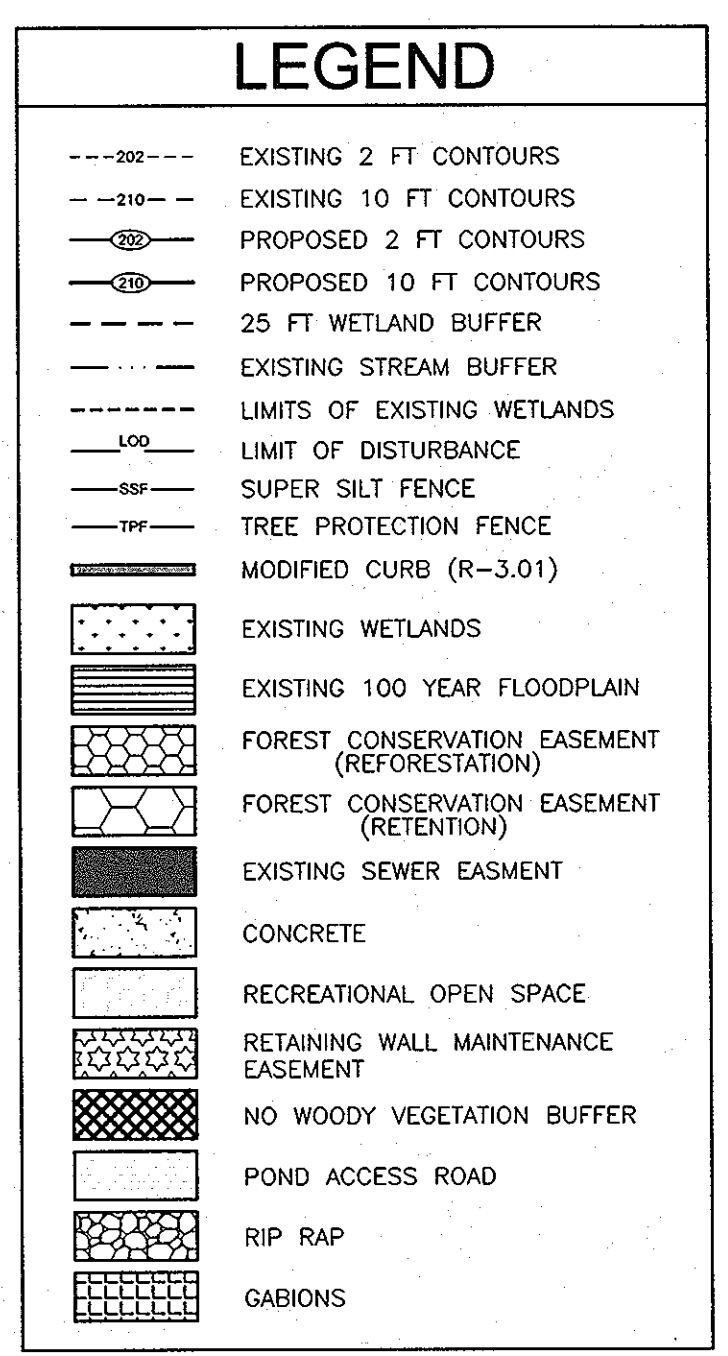
FOREST CONSERVATION EASEMENT RETENTION AREA 4 BEARING TABLE

No.	BEARING	DISTANCE
L323	S 05°54'25" E	19.93'
L324	S 20°52'06" E	37.32'
L325	S 28°33'06" W	7.43'
L326	S 51°21'47" W	21.28'
L327	S 83°39'44" W	30.10'
L328	S 56°19'51" W	35.94'
L329	S 45°00'52" W	25.84'
L330	S 53°09'47" W	8.31'
L331	S 83°39'44" W	15.05'
L332	N 64°59'44" W	26.90'
L333	N 43°02'35" W	2.44'
L334	N 34°38'00" W	10.41'
L335	N 43°35'15" W	5.16'
L336	N 16°19'32" W	23.09'
L337	N 33°42'37" W	7.80'
L338	N 40°59'55" W	15.11'
L339	N 14°59'34" W	45.44'
L340	N 74°15'00" E	40.77'
L341	S 63°14'37" E	52.24'
L342	N 58°46'15" E	54.78'
L343	S 86°18'47" E	39.67'



100 YEAR FLOODPLAIN, DRAINAGE & UTILITY EASEMENT BEARING TABLE

No.	BEARING	DISTANCE
L273	S 81°15'23" W	43.71'
L274	S 71°36'12" W	5.26'
L275	S 32°29'13" E	21.66'
L276	N 78°41'51" E	8.48'
L277	N 90°00'00" E	18.28'
L307	S 72°21'33" E	38.36'
L308	S 86°25'50" E	26.64'
L309	N 39°18'45" E	23.61'
L310	N 66°48'29" E	12.65'
L311	S 77°00'33" E	22.17'
L312	N 50°37'42" E	41.00'
L313	S 88°11'56" E	31.68'
L317	S 50°15'52" W	19.85'
L318	S 28°12'42" W	16.12'
L319	S 27°16'38" W	23.25'
L320	S 18°27'07" W	26.26'
L321	S 20°33'59" W	28.38'
L322	S 17°06'33" W	22.59'
L323	S 05°54'25" E	48.42'
L324	S 20°52'06" E	37.32'
L325	S 28°33'06" W	7.43'
L326	S 51°21'47" W	21.28'
L327	S 83°39'44" W	30.10'
L328	S 56°19'51" W	35.95'
L329	S 45°00'52" W	25.84'
L330	S 53°09'47" W	8.31'
L331	S 83°39'44" W	15.05'
L332	N 64°59'44" W	26.90'



FOREST CONSERVATION EASEMENT REFORESTATION AREA A BEARING TABLE

No.	BEARING	DISTANCE
L352	S 20°58'41" W	11.32'
L353	S 83°52'36" W	38.03'
L354	N 89°35'25" W	14.80'
L355	S 82°53'03" W	13.40'
L356	S 80°19'25" W	23.04'
L357	S 88°36'17" W	22.72'
L358	N 88°43'43" W	24.94'
L359	N 61°25'16" W	27.76'
L360	S 81°35'02" W	30.24'
L361	S 80°21'06" W	27.87'
L362	N 87°31'20" W	15.42'
L363	N 68°13'28" W	5.97'
L364	N 03°41'46" W	17.19'
L365	N 05°53'37" E	53.96'
L366	N 07°23'00" E	47.43'
L367	N 10°38'00" E	18.02'
L368	S 36°17'23" E	30.89'
L369	N 84°48'45" E	6.120'
L370	S 35°15'11" E	11.52'
L371	N 80°33'00" E	6.740'
L372	N 87°27'31" E	24.96'
L373	N 84°55'37" E	25.03'
L374	S 76°20'45" E	21.10'
L375	S 71°15'51" E	31.01'
L376	N 79°47'27" E	34.34'
L377	N 69°56'38" E	80.04'
L378	S 13°18'40" W	87.65'
L379	S 01°37'38" E	84.33'
L38	S 49°13'37" E	2.05'
L31	N 06°35'01" E	45.49'

PLAN  
SCALE: 1"=30'

NO.	REVISION	DATE
5	REVISE FIRST FLOOR ELEVATIONS UNITS 169-180	8.1.06
4	REVISE FIRST FLOOR ELEVATIONS UNITS 02-09	6/20/06
3	REVISE FIRST FLOOR ELEVATIONS UNITS 84-91	3/24/06
2	REVISE FIRST FLOOR ELEVATIONS UNITS 54-61	2/17/06
1	REVISE STREAM CROSSINGS SHEETS 3,5,9,11,15,16,18,24	11/29/04

**SITE LAYOUT PLAN**  
**THE OAKS AT WATERS EDGE - PHASE I**  
PARCEL A-1

REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157, SDP-03-041, SDP-03-154, F-04-174

TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS

8407 MAIN STREET  
ELLCOTT CITY, MARYLAND 21043  
TEL: 410.461.7666 FAX: 410.461.8961

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 7/22/04  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 8/27/04  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*[Signature]* 8/23/04  
DIRECTOR DATE

ENGINEERS CERTIFICATE

I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

*[Signature]* 8/16/04  
SIGNATURE OF ENGINEER  
ROBERT H. VOGEL DATE

DEVELOPER'S CERTIFICATE

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE 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/WE ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

*[Signature]* 7/7/04  
SIGNATURE OF DEVELOPER  
BRIAN KNUFF DATE

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

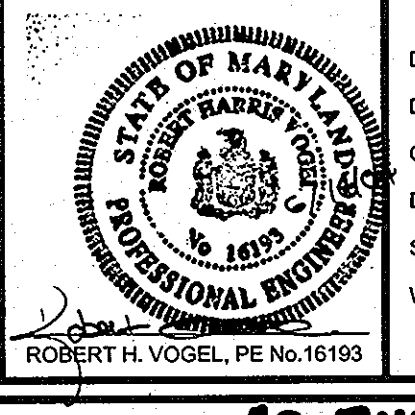
USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE

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

HOWARD SOIL CONSERVATION DISTRICT DATE

**OWNER**

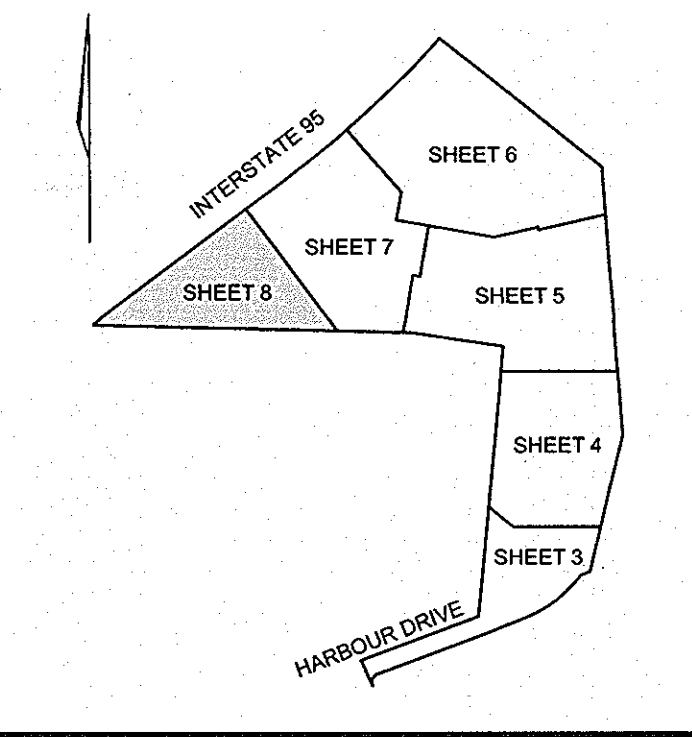
RYLAND HOMES  
7250 PARKWAY DRIVE  
SUITE 520  
HANOVER, MD 21076  
410-712-7012



DESIGN BY: JT  
DRAWN BY: JT  
CHECKED BY: RHW  
DATE: JUNE 8, 2004  
SCALE: 1"=30'  
W.O. NO.: 03-82

7 SHEET OF 37

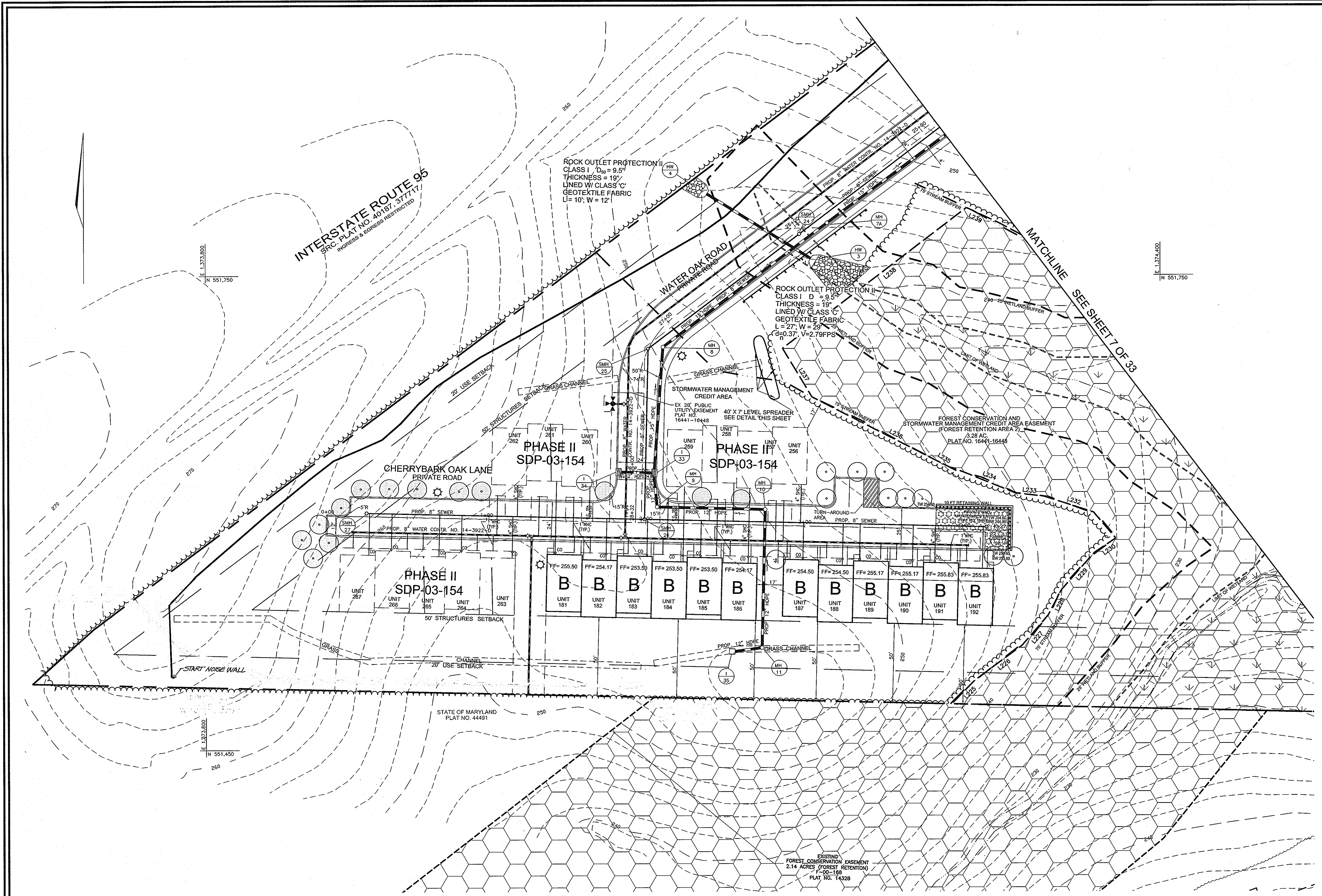




**KEY MAP**  
NOT TO SCALE

**LEGEND**

- 2 FT CONTOURS
- 10 FT CONTOURS
- 2 FT CONTOURS
- 10 FT CONTOURS
- 25 FT WETLAND BUFFER
- 10 FT WETLAND BUFFER
- EXISTING STREAM BUFFER
- LIMITS OF EXISTING WETLANDS
- LIMIT OF DISTURBANCE
- SUPER SILT FENCE
- TREE PROTECTION FENCE
- MODIFIED CURB (R-3.01)
- EXISTING WETLANDS
- EXISTING 100 YEAR FLOODPLAIN
- FOREST CONSERVATION EASEMENT (REFORESTATION)
- FOREST CONSERVATION EASEMENT (RETENTION)
- EXISTING SEWER EASEMENT
- CONCRETE
- RECREATIONAL OPEN SPACE
- RETAINING WALL MAINTENANCE EASEMENT
- NO WOODY VEGETATION BUFFER
- POND ACCESS ROAD
- RIP RAP
- GABIONS



**PLAN**  
SCALE: 1"=30'

NO.	REVISION	DATE
0	REVISE GRADING AND EXTENT OF NOISE WALL	2-8-08
1	REVISE STREAM CROSSINGS SHEETS 3, 5, 9, 11, 15, 18, 19, 24	11/28/04

**SITE LAYOUT PLAN**  
**THE OAKS AT WATERS EDGE - PHASE I**  
PARCEL A-1

REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157, SDP-03-041, SDP-03-154, F-04-114

TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS

8407 MAIN STREET  
ELLCOTT CITY, MARYLAND 21043  
TEL: 410.461.7666 FAX: 410.461.8961

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 7/23/04  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 7/27/04  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*[Signature]* 8/10/04  
DIRECTOR DATE

**ENGINEERS CERTIFICATE**

I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

*[Signature]* 8/10/04  
SIGNATURE OF ENGINEER DATE  
ROBERT H. VOGEL

**DEVELOPER'S CERTIFICATE**

I HAVE CERTIFIED THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE 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.

*[Signature]* 7/7/04  
SIGNATURE OF DEVELOPER DATE  
PRIMA KNAUFF

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

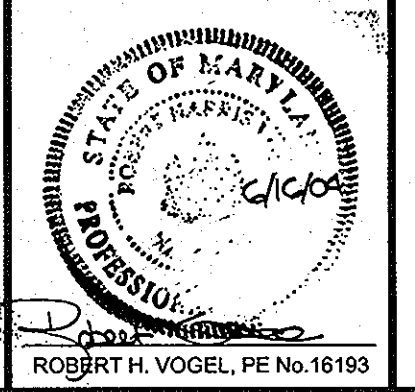
USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE

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

HOWARD SOIL CONSERVATION DISTRICT DATE

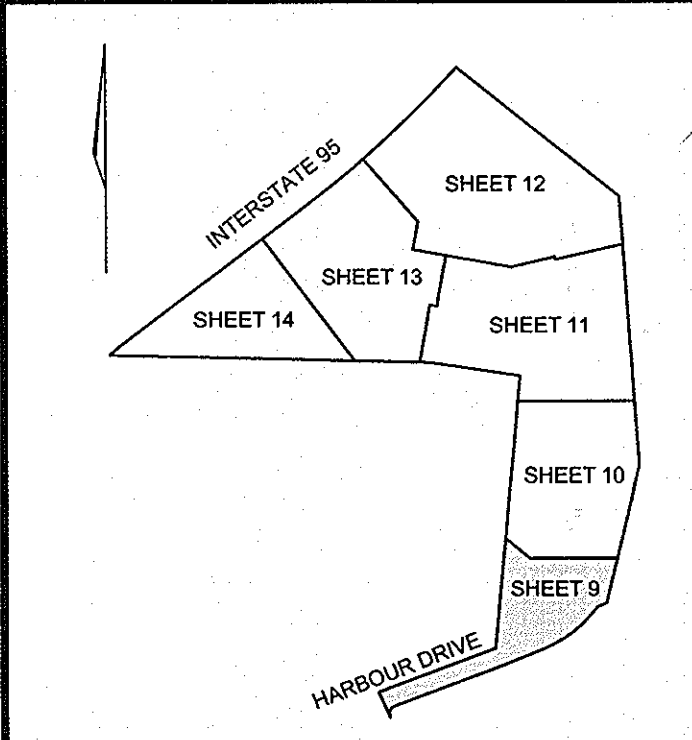
**OWNER**

RYLAND HOMES  
7250 PARKWAY DRIVE  
SUITE 520  
HANOVER, MD 21076  
410-712-7012



DESIGN BY: JT  
DRAWN BY: JT  
CHECKED BY: RHV  
DATE: JUNE 8, 2004  
SCALE: 1"=30'  
W.O. NO.: 03-82

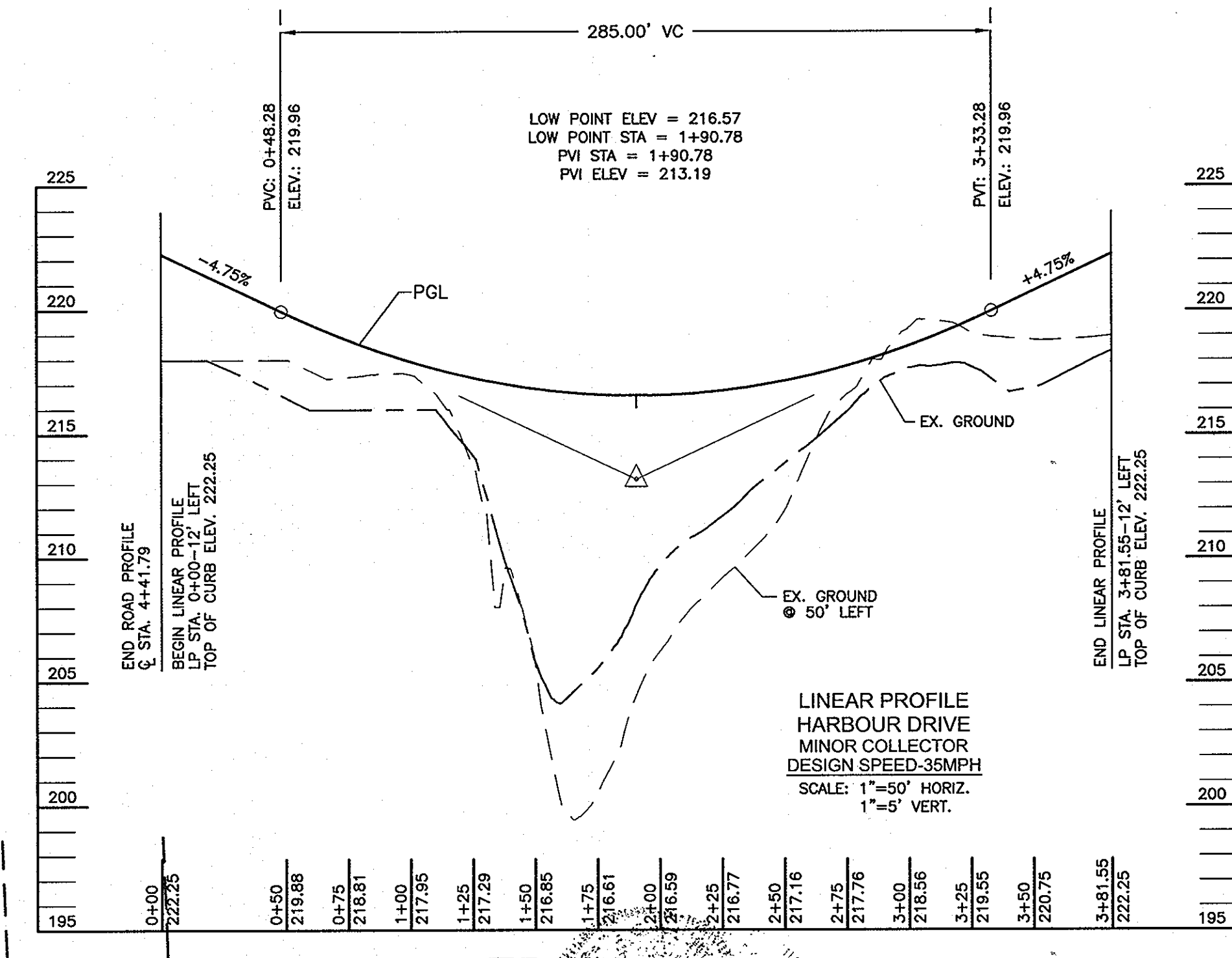




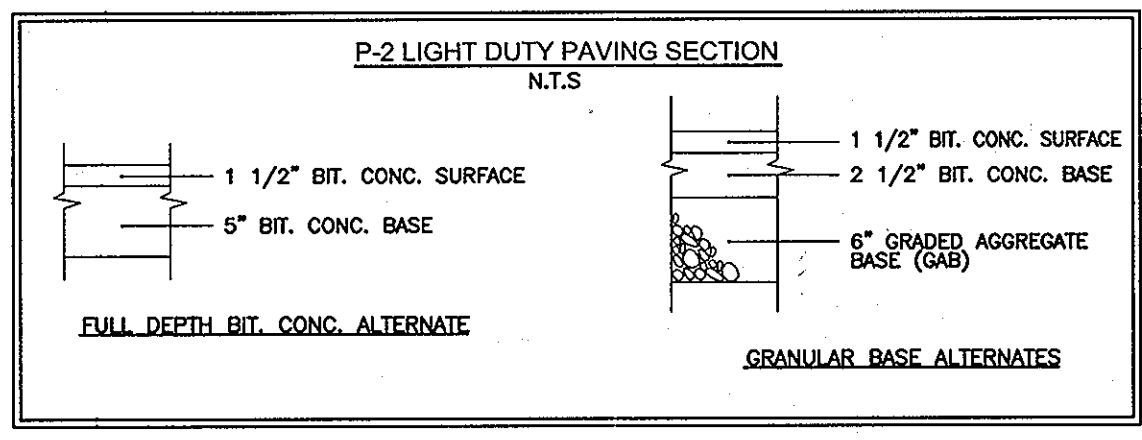
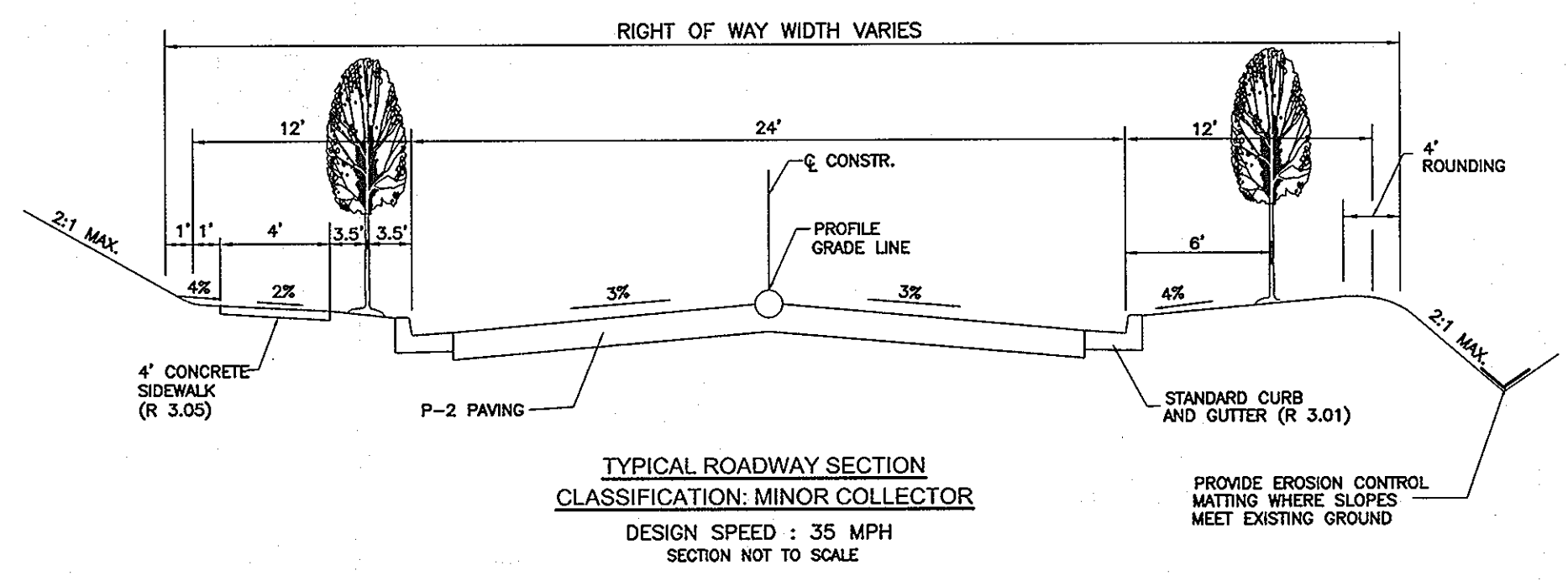
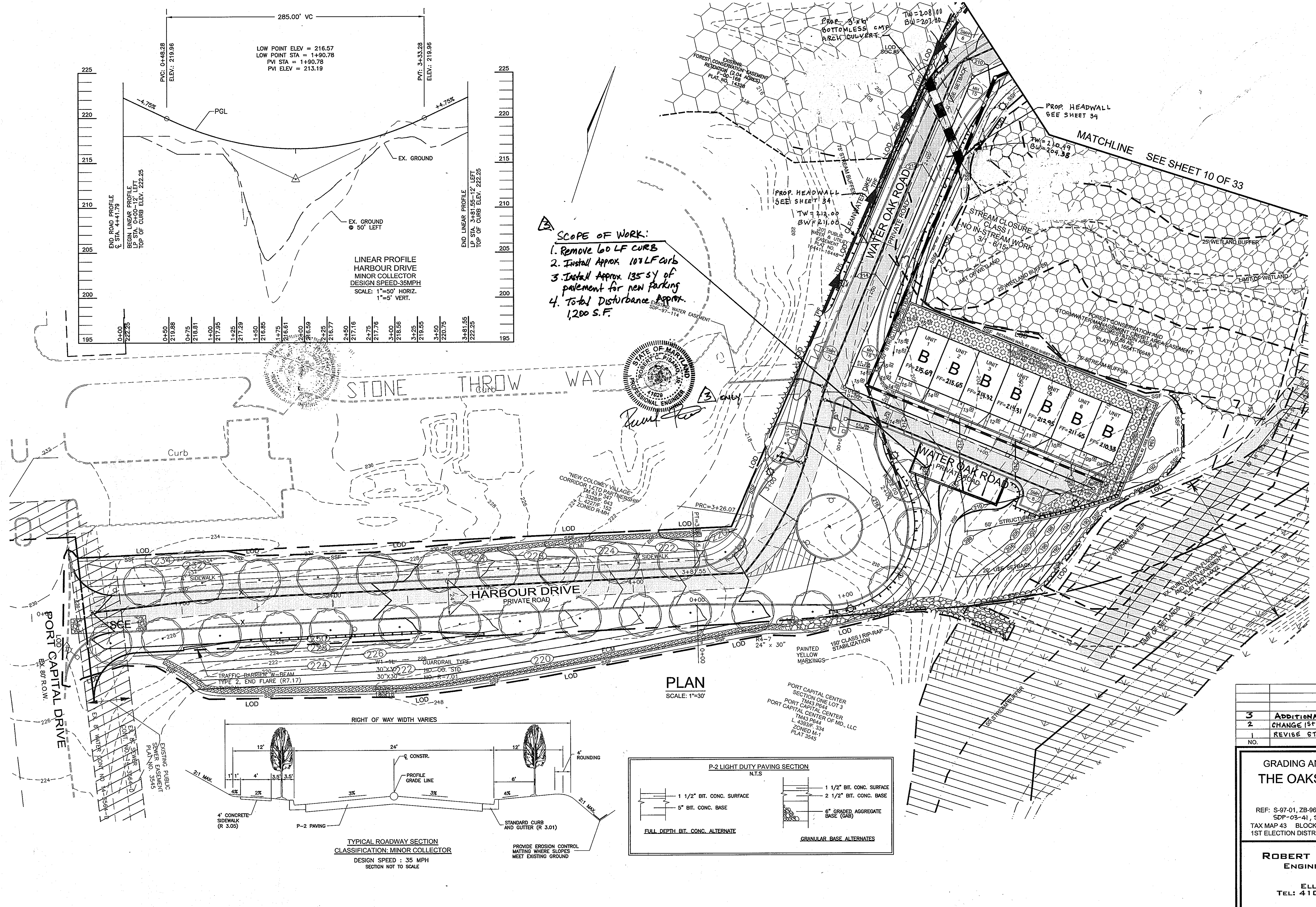
**KEY MAP**  
NOT TO SCALE

**LEGEND**

- 202--- EXISTING 2 FT CONTOURS
- 210--- EXISTING 10 FT CONTOURS
- 202--- PROPOSED 2 FT CONTOURS
- 210--- PROPOSED 10 FT CONTOURS
- 25 FT WETLAND BUFFER
- EXISTING STREAM BUFFER
- LIMITS OF EXISTING WETLANDS
- LIMIT OF DISTURBANCE
- SUPER SILT FENCE
- TREE PROTECTION FENCE
- MODIFIED CURB (R-3.01)
- EXISTING WETLANDS
- EXISTING 100 YEAR FLOODPLAIN
- FOREST CONSERVATION EASEMENT (REFORESTATION)
- FOREST CONSERVATION EASEMENT (RETENTION)
- EXISTING SEWER EASMENT
- CONCRETE
- RECREATIONAL OPEN SPACE
- RETAINING WALL MAINTENANCE EASEMENT
- NO WOODY VEGETATION BUFFER
- POND ACCESS ROAD
- RIP RAP
- GABIONS
- LOD SEQUENCE OF CONSTRUCTION #5



- SCOPE OF WORK:**
1. Remove 60 LF CURB
  2. Install Approx. 107 LF CURB
  3. Install Approx. 135 SY of pavement for new parking
  4. Total Disturbance Approx. 1,200 S.F.



3	ADDITIONAL PARKING AT UNITS 1-7	11/13/12
2	CHANGE 1ST FLR ELEVATIONS UNITS 1-7	9/27/05
1	REVISE STREAM CROSSINGS SHEETS 3, 5, 9, 11, 15, 16, 18, 21, 11/13/04	DATE
NO.	REVISION	DATE

**GRADING AND SEDIMENT EROSION CONTROL PLAN**  
**THE OAKS AT WATERS EDGE - PHASE I**  
PARCEL A-1

REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157, SDP-03-41, SDP-03-154, F-04-174

TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS

8407 MAIN STREET  
ELLCOTT CITY, MARYLAND 21043  
TEL: 410.461.7666 FAX: 410.461.8961

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 7/23/04  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 5/27/14  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*[Signature]* 5/4/14  
DIRECTOR DATE

**ENGINEER'S CERTIFICATE**

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

*[Signature]* 6/12/04  
SIGNATURE OF ENGINEER DATE  
ROBERT H. VOGEL

**DEVELOPER'S CERTIFICATE**

"I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE 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."

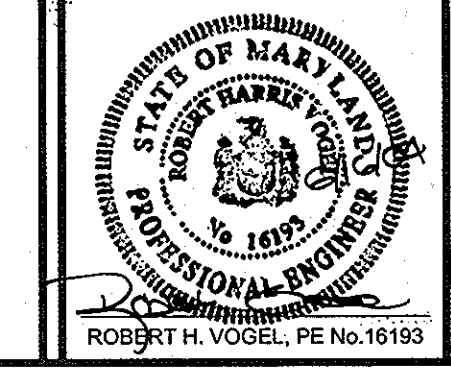
*[Signature]* 7/1/04  
SIGNATURE OF DEVELOPER DATE  
BRIAN KINIFF

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

*[Signature]* 7/15/04  
USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE  
HOWARD SOIL CONSERVATION DISTRICT

**OWNER**

RYLAND HOMES  
7250 PARKWAY DRIVE  
SUITE 520  
HANOVER, MD 21076  
410-712-7012

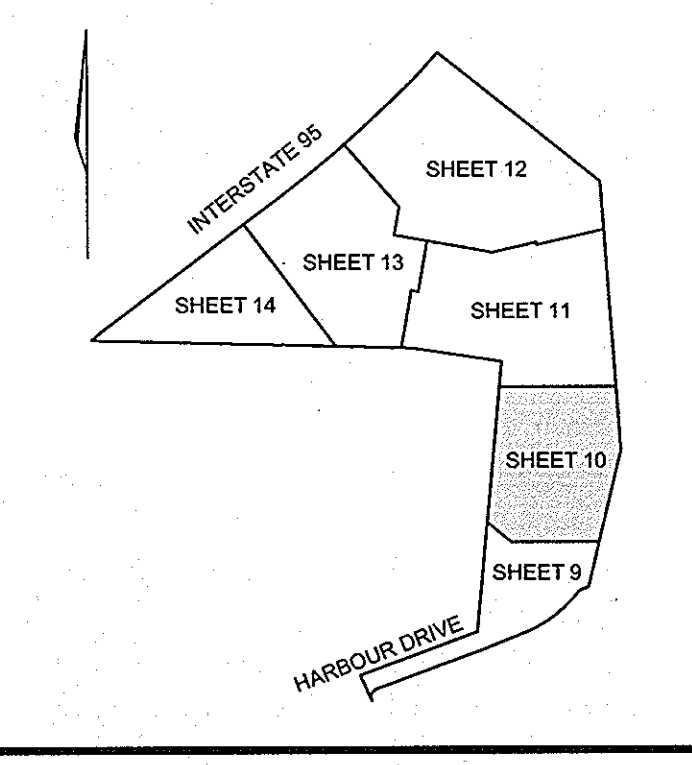


DESIGN BY: JT  
DRAWN BY: JT  
CHECKED BY: RHY  
DATE: JUNE 8, 2004  
SCALE: 1"=30'  
W.O. NO.: 03-82

9. SHEET OF 37



MATCHLINE SEE SHEET 11 OF 33



KEY MAP  
NOT TO SCALE

52  
MH

**SEDIMENT BASIN #1**  
 EX. DRAINAGE AREA: 2.82 AC.  
 PROP. DRAINAGE AREA: 2.82 AC.  
 TOTAL STORAGE REQUIRED: 10152 CF  
 TOTAL STORAGE PROVIDED: 39163 CF  
 BOTTOM DIMENSIONS:  
 BOTTOM ELEVATION: 194.09  
 CREST ELEVATION: 197.0  
 WET STORAGE ELEVATION: 194.0-195.9 (1.91')  
 DRY STORAGE ELEVATION: 195.9-197.2 (1.3')  
 WET STORAGE VOLUME: 5,076 CF  
 DRY STORAGE VOLUME: 5,076 CF  
 TOTAL STORAGE DEPTH: 3.2'  
 TOP OF EMBANKMENT: 202.0  
 CLEANOUT ELEVATION: 195.8  
 SIDE SLOPES:  
 EX 0.2 EX 0.63 CFS  
 TSWM 0.2 TSWM 0.70 CFS

**PROPOSED SWM POND #1**  
 EXTENDED DETENTION  
 HAZARD CLASS 'A'  
 PRIVATELY OWNED  
 AND MAINTAINED  
 2YR WSEL:197.28  
 100YR WSEL:198.69  
 100YR WSEL:199.03



BLUE STREAM PROPERTY  
 TM 43 P 5  
 NON-BUILDABLE  
 BULK PARCEL B  
 ZONED M-1  
 PLAT 14422  
 USE: OPEN SPACE

**LEGEND**

- 202--- EXISTING 2 FT CONTOURS
- 210--- EXISTING 10 FT CONTOURS
- 210--- PROPOSED 2 FT CONTOURS
- 210--- PROPOSED 10 FT CONTOURS
- 210--- 25 FT WETLAND BUFFER
- 210--- EXISTING STREAM BUFFER
- 210--- LIMITS OF EXISTING WETLANDS
- 210--- LIMIT OF DISTURBANCE
- 210--- SUPER SILT FENCE
- 210--- TREE PROTECTION FENCE
- 210--- MODIFIED CURB (R-3.01)
- 210--- EXISTING WETLANDS
- 210--- EXISTING 100 YEAR FLOODPLAIN
- 210--- FOREST CONSERVATION EASEMENT (REFORESTATION)
- 210--- FOREST CONSERVATION EASEMENT (RETENTION)
- 210--- EXISTING SEWER EASEMENT
- 210--- CONCRETE
- 210--- RECREATIONAL OPEN SPACE
- 210--- RETAINING WALL MAINTENANCE EASEMENT
- 210--- NO WOODY VEGETATION BUFFER
- 210--- POND ACCESS ROAD
- 210--- RIP RAP
- 210--- GABIONS

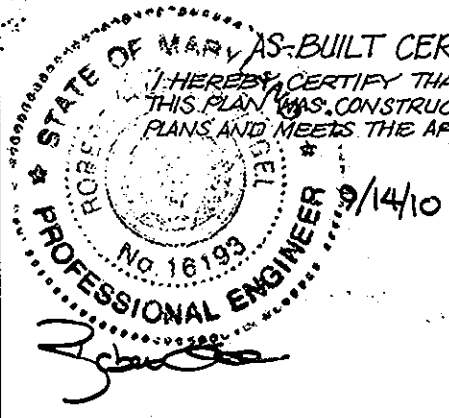
PLAN  
 SCALE: 1"=30'  
 MATCHLINE SEE SHEET 9 OF 33

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 7/23/04  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 [Signature] 8/27/04  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DIRECTOR DATE

ENGINEER'S CERTIFICATE  
 I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN AS-BUILT PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.  
 [Signature] 8/15/04  
 SIGNATURE OF ENGINEER  
 ROBERT H. VOGEL DATE

DEVELOPER'S CERTIFICATE  
 I HAVE CERTIFIED THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE 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.  
 [Signature] 7/17/04  
 SIGNATURE OF DEVELOPER  
 BRIAN VANPUPP DATE

THESE PLANS HAVE BEEN REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEET THE REVIEWED FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.  
 [Signature] 7/15/04  
 USDA-NATURAL RESOURCES CONSERVATION SERVICE DATE  
 THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.  
 [Signature] 7/15/04  
 HOWARD SOIL CONSERVATION DISTRICT DATE



**OWNER**  
 RYLAND HOMES  
 7250 PARKWAY DRIVE  
 SUITE 520  
 HANOVER, MD 21076  
 410-712-7012

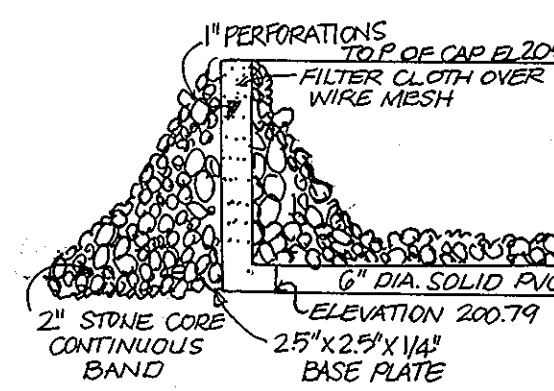
3	CHANGE 1 <sup>ST</sup> FLR. ELEVATIONS UNITS 21-45	10.21.05
2	CHANGE 1 <sup>ST</sup> FLR. ELEVATIONS UNITS 9-20 RAPP RETAINING WALLS	9.27.05
1	REVISE STREAM CROSSINGS SHEETS 3, 5, 9, 11, 15, 16, 18, 24	11/29/04
NO.	REVISION	DATE

**GRADING AND SEDIMENT EROSION CONTROL PLAN**  
**THE OAKS AT WATERS EDGE - PHASE I**  
 PARCEL A-1  
 REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157  
 SDP-03-041, SDP-03-134, F-04-174  
 TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS  
 8407 MAIN STREET  
 ELLICOTT CITY, MARYLAND 21043  
 TEL: 410.461.7666 FAX: 410.461.8961

DESIGN BY: JT	10 SHEET OF 37
DRAWN BY: JT	
CHECKED BY: RHW	
DATE: JUNE 8, 2004	
SCALE: 1"=30'	
W.O. NO.: 03-92	



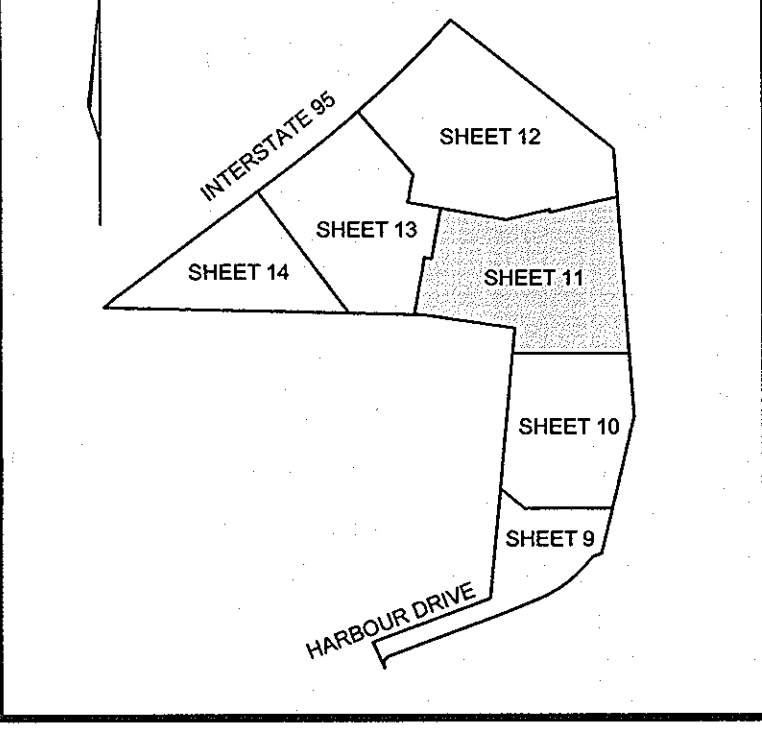


**SEDIMENT BASIN #2**

EX DRAINAGE AREA: 15.80 AC.  
 PROP DRAINAGE AREA: 12.58 AC.  
 TOTAL STORAGE REQUIRED: 45288 CF  
 TOTAL STORAGE PROVIDED: 58022 CF  
 BOTTOM DIMENSIONS: MAX. 154' X 68'  
 BOTTOM ELEVATION: 200.00  
 CREST ELEVATION: 208.10  
 WET STORAGE ELEVATION: 200.00-202.23 (2.23')  
 DRY STORAGE ELEVATION: 202.23-204.18 (1.95')  
 WET STORAGE VOLUME: 22,644 CF  
 DRY STORAGE VOLUME: 22,644 CF  
 TOTAL STORAGE DEPTH: 4.18'  
 TOP OF EMBANKMENT: 208.40  
 CLEANOUT ELEVATION: 201.00  
 SIDE SLOPES: 3:1  
 0<sub>1</sub> EX. 1.37 CFS  
 0<sub>1</sub> TSSM 1.09 CFS

HAZARD CLASS A  
 PRIVATELY OWNED AND MAINTAINED  
 2YR. WSEL= 205.28  
 10YR. WSEL= 206.45  
 100YR. WSEL= 207.19  
 WQV WSEL= 202.00  
 Cpv WSEL= 205.08  
 PERM. POOL EL. 200.85'

**PROPOSED WET EXTENDED DETENTION FACILITY #2 (P-3)**



**KEY MAP**  
NOT TO SCALE

**LEGEND**

- 202--- EXISTING 2 FT CONTOURS
- 210--- EXISTING 10 FT CONTOURS
- 215--- PROPOSED 2 FT CONTOURS
- 215--- PROPOSED 10 FT CONTOURS
- 215--- 25 FT WETLAND BUFFER
- 215--- EXISTING STREAM BUFFER
- 215--- LIMITS OF EXISTING WETLANDS
- 215--- LIMIT OF DISTURBANCE
- 215--- SUPER SILT FENCE
- 215--- TREE PROTECTION FENCE
- 215--- MODIFIED CURB (R-3.01)
- 215--- EXISTING WETLANDS
- 215--- EXISTING 100 YEAR FLOODPLAIN
- 215--- FOREST CONSERVATION EASEMENT (REFORESTATION)
- 215--- FOREST CONSERVATION EASEMENT (RETENTION)
- 215--- EXISTING SEWER EASEMENT
- 215--- CONCRETE
- 215--- RECREATIONAL OPEN SPACE
- 215--- RETAINING WALL MAINTENANCE EASEMENT
- 215--- NO WOODY VEGETATION BUFFER
- 215--- POND ACCESS ROAD
- 215--- RIP RAP
- 215--- GABIONS
- 215--- LOD SEQUENCE OF CONSTRUCTION #5



**PLAN** MATCHLINE SEE SHEET 10 OF 33  
SCALE: 1"=30'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 7/23/04  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE

*[Signature]* 8/22/04  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE

*[Signature]* 8/23/04  
 DIRECTOR  
 DATE

**ENGINEERS CERTIFICATE**

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

*[Signature]* 8/1/04  
 SIGNATURE OF ENGINEER  
 ROBERT H. VOGEL

**DEVELOPER'S CERTIFICATE**

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE 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.

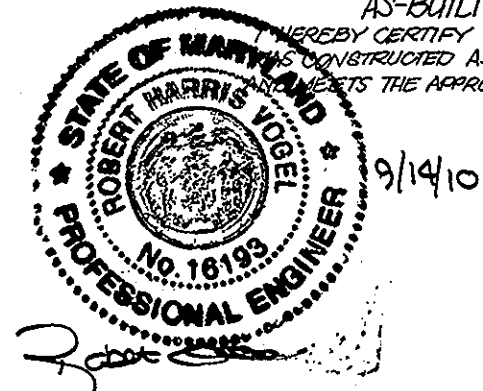
*[Signature]* 8/1/04  
 SIGNATURE OF DEVELOPER  
 BRIAN KNAUFF

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

*[Signature]* 7/15/04  
 USDA-NATURAL RESOURCES CONSERVATION SERVICE  
 DATE

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

*[Signature]* 7/15/04  
 HOWARD SOIL CONSERVATION DISTRICT  
 DATE



**AS-BUILT CERTIFICATION**

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE AS-BUILT PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS.

9/14/04

**OWNER**

RYLAND HOMES  
 7250 PARKWAY DRIVE  
 SUITE 520  
 HANOVER, MD 21076  
 410-712-7012

6	REVISE SITE LAYOUT AND GRADING	4/20/06
5	REVISE FIRST FLOOR ELEVATIONS UNITS 92-99	4.3.06
4	REVISE FIRST FLOOR ELEVATIONS & GRADING UNITS 76-83	3.7.06
3	REVISE FIRST FLOOR AND GRADING UNITS 54-61	2.17.06
2	REVISE UNITS 135-140 AND ADD RETAINING WALLS	12.12.05
1	REVISE STREAM CROSSINGS SHEETS 3,5,9,11,15,17,24	11/19/04
NO.	REVISION	DATE

**GRADING AND SEDIMENT EROSION CONTROL PLAN**  
**THE OAKS AT WATERS EDGE - PHASE I**  
 PARCEL A-1

REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157  
 SDP-03-041, SDP-03-154, F-04-174

TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS

8407 MAIN STREET  
 ELLICOTT CITY, MARYLAND 21043  
 TEL: 410.461.7666 FAX: 410.461.8961

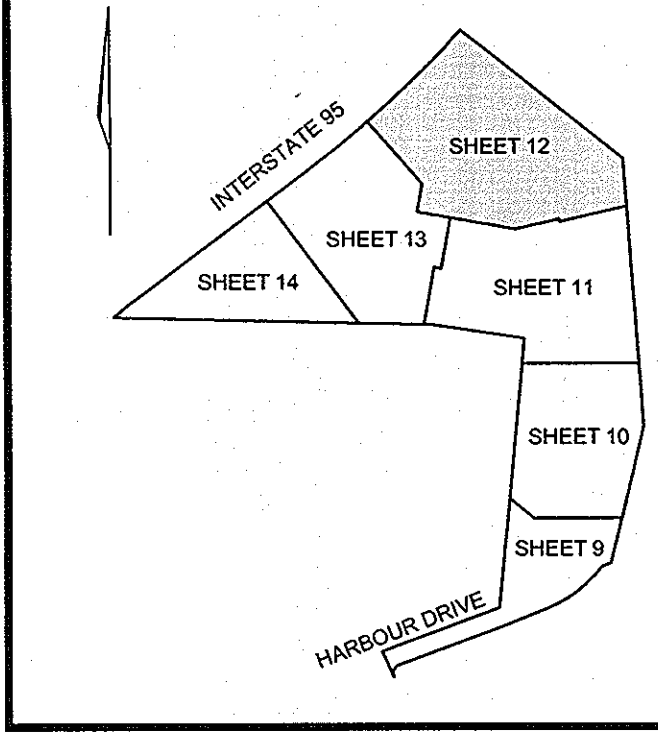
DESIGN BY: JT  
 DRAWN BY: JT  
 CHECKED BY: RHV  
 DATE: JUNE 8, 2004  
 SCALE: 1"=30'  
 W.O. NO.: 03-82

11 SHEET OF 37

ROBERT H. VOGEL, PE No. 16183



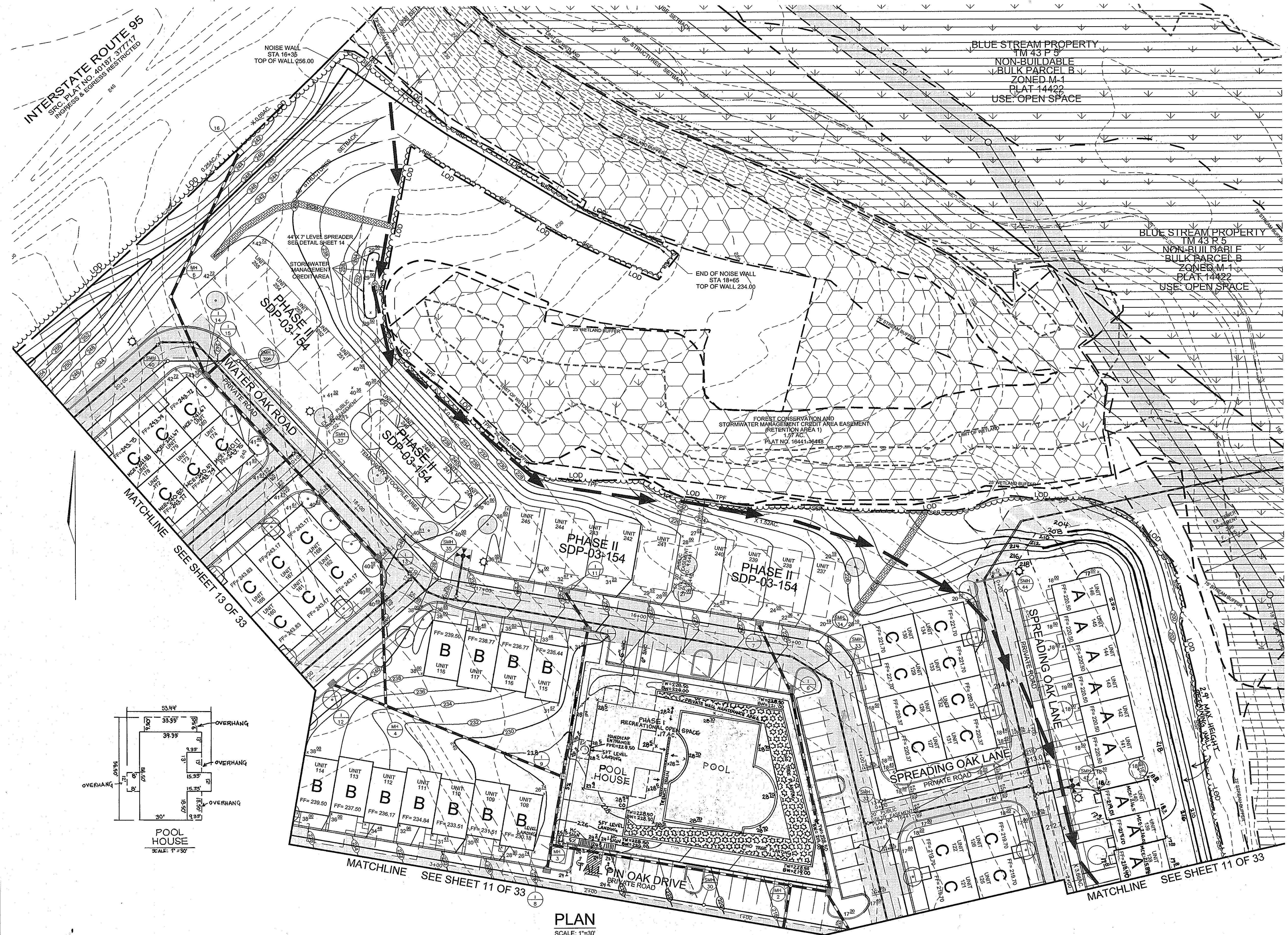
INTERSTATE ROUTE 95  
 SDC PLAT NO 40181-37717  
 INGRESS & EGRESS RESTRICTED



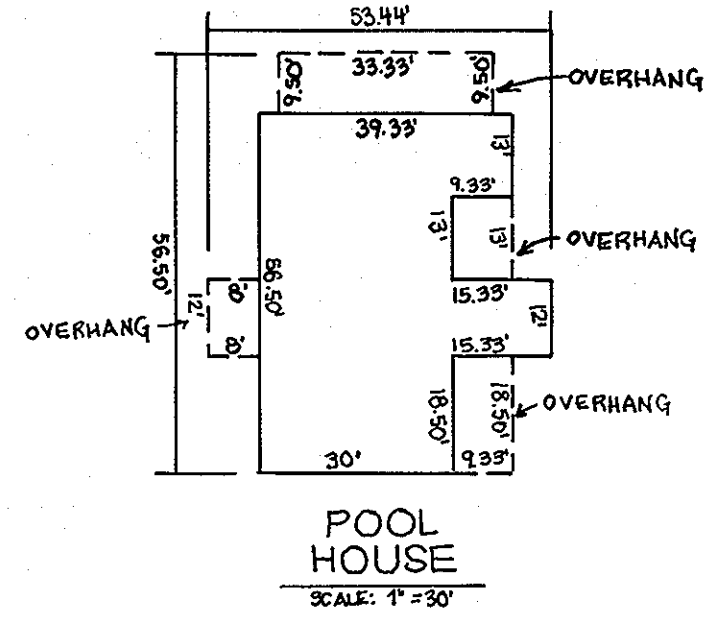
KEY MAP  
 NOT TO SCALE

**LEGEND**

---	EXISTING 2 FT CONTOURS
- - -	EXISTING 10 FT CONTOURS
---	PROPOSED 2 FT CONTOURS
- - -	PROPOSED 10 FT CONTOURS
---	25 FT WETLAND BUFFER
---	EXISTING STREAM BUFFER
---	LIMITS OF EXISTING WETLANDS
---	LIMIT OF DISTURBANCE
---	SUPER SILT FENCE
---	TREE PROTECTION FENCE
---	MODIFIED CURB (R-3.01)
[Pattern]	EXISTING WETLANDS
[Pattern]	EXISTING 100 YEAR FLOODPLAIN
[Pattern]	FOREST CONSERVATION EASEMENT (REFORESTATION)
[Pattern]	FOREST CONSERVATION EASEMENT (RETENTION)
[Pattern]	EXISTING SEWER EASEMENT
[Pattern]	CONCRETE
[Pattern]	RECREATIONAL OPEN SPACE
[Pattern]	RETAINING WALL MAINTENANCE EASEMENT
[Pattern]	NO WOODY VEGETATION BUFFER
[Pattern]	POND ACCESS ROAD
[Pattern]	RIP RAP
[Pattern]	GABIONS



PLAN  
 SCALE: 1"=30'



5	REVISE FIRST FLOOR ELEVATIONS UNITS 169-180	8.1.06
4	REVISE POOL HOUSE WHO TO 6"	6/16/06
3	REVISE POOL HOUSE LAYOUT AND GRADING	4/21/06
2	REVISE UNITS 135-140 AND ADD RETAINING WALLS	12.12.05
1	REVISE STREAM CROSSING G.S. SHEETS 3, 3, 9, 11, 13, 16, 18, 24	11/29/04
NO.	REVISION	DATE

GRADING AND SEDIMENT EROSION CONTROL PLAN  
**THE OAKS AT WATERS EDGE - PHASE I**  
 PARCEL A-1

REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157  
 SDP-03-041, SDP-03-154, F-04-174

TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
 ENGINEERS - SURVEYORS - PLANNERS

8407 MAIN STREET  
 ELLICOTT CITY, MARYLAND 21043  
 TEL: 410.461.7666 FAX: 410.461.8961

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 7/23/04  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 5/23/04  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*[Signature]* 6/13/04  
 DIRECTOR DATE

ENGINEERS CERTIFICATE

I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

*[Signature]* 7/15/04  
 SIGNATURE OF ENGINEER DATE  
 ROBERT H. VOGEL

DEVELOPER'S CERTIFICATE

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE 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.

*[Signature]* 7/15/04  
 SIGNATURE OF DEVELOPER DATE  
 BRIAN KNAPP

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

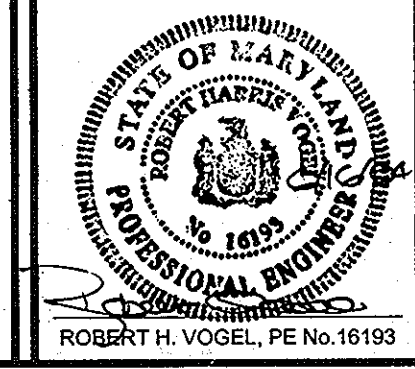
*[Signature]* 7/15/04  
 USDA-NATURAL RESOURCE CONSERVATION SERVICE DATE

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

*[Signature]* 7/15/04  
 HOWARD SOIL CONSERVATION DISTRICT DATE

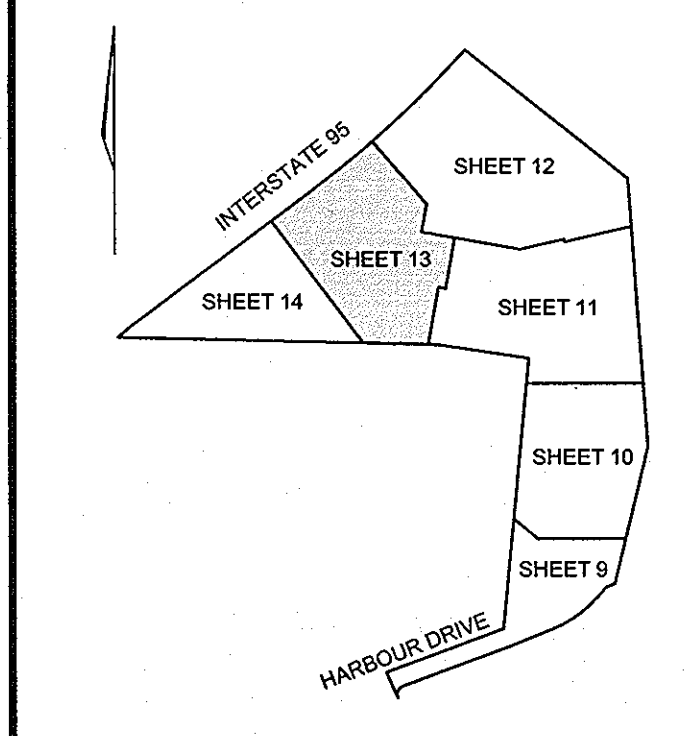
OWNER

RYLAND HOMES  
 7250 PARKWAY DRIVE  
 SUITE 520  
 HANOVER, MD 21076  
 410-712-7012



DESIGN BY: JT  
 DRAWN BY: JT  
 CHECKED BY: RHW  
 DATE: JUNE 8, 2004  
 SCALE: 1"=30'  
 W.O. NO.: 03-82





**KEY MAP**  
NOT TO SCALE

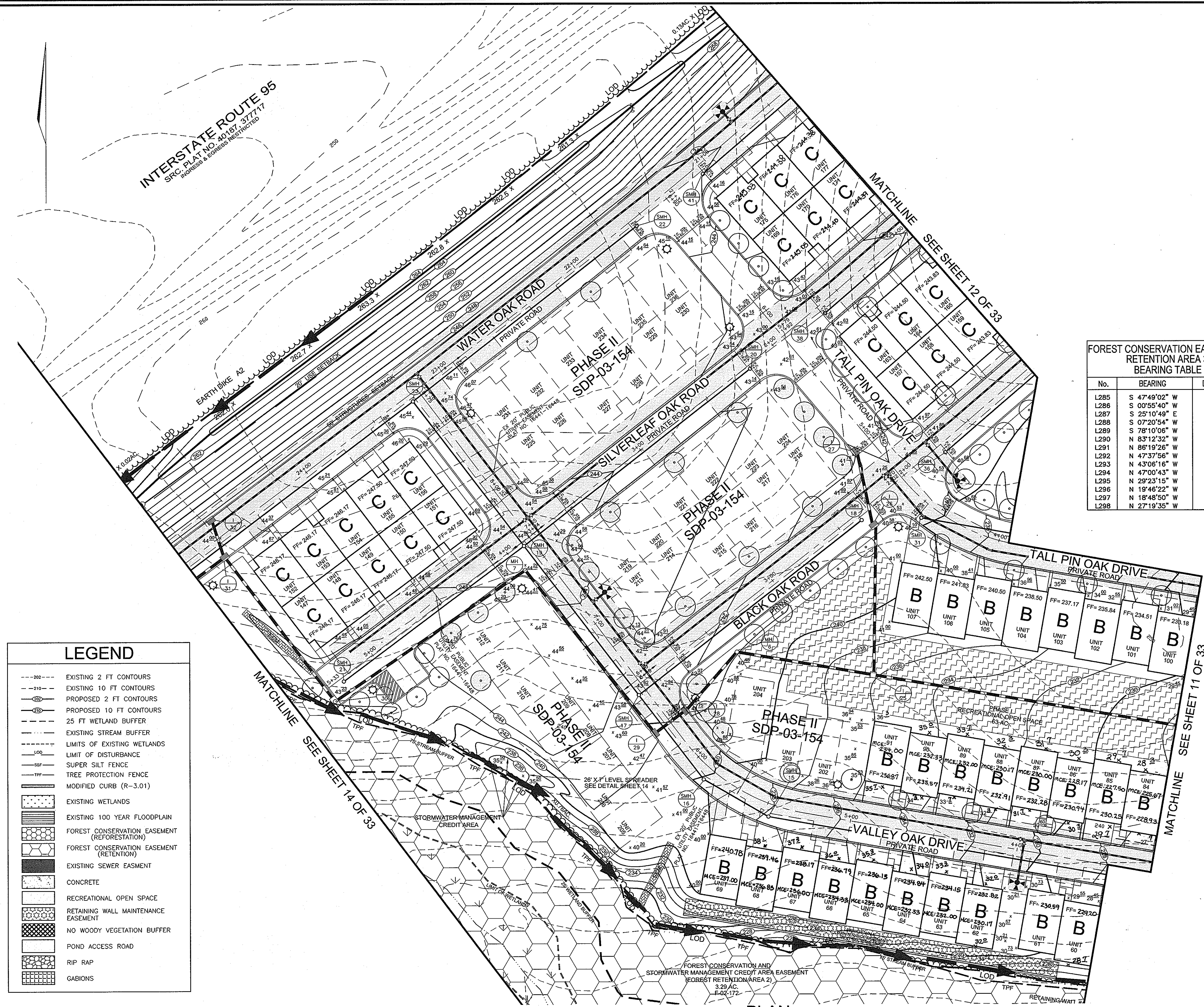
**FOREST CONSERVATION EASEMENT RETENTION AREA 2 BEARING TABLE**

No.	BEARING	DISTANCE
L225	N 44°09'27" E	20.66'
L226	N 53°26'32" E	37.13'
L227	N 40°37'22" E	25.32'
L228	N 27°32'32" E	17.91'
L229	N 41°18'12" E	31.44'
L230	N 56°04'25" E	16.17'
L231	N 40°10'27" W	21.60'
L232	N 72°08'45" W	32.80'
L233	N 83°23'27" W	17.92'
L234	N 67°49'21" W	42.35'
L235	N 81°59'06" W	1.94'
L236	N 62°42'36" W	97.40'
L237	N 30°47'52" W	35.98'
L238	N 52°31'56" E	145.92'
L239	S 64°45'15" E	22.55'
L243	S 61°39'32" E	34.67'
L244	S 69°03'51" E	34.37'
L245	S 77°07'24" E	48.49'
L309	N 39°18'45" E	26.64'
L310	N 66°48'29" E	12.66'
L311	S 77°00'33" E	22.17'
L312	S 50°37'42" E	41.00'
L313	S 88°11'56" E	31.68'
L314	S 10°22'34" W	39.23'

**FOREST CONSERVATION EASEMENT RETENTION AREA 3 BEARING TABLE**

No.	BEARING	DISTANCE
L295	S 47°49'02" W	33.65'
L286	S 00°55'40" W	20.61'
L287	S 25°10'49" E	68.83'
L288	S 07°20'54" W	44.81'
L289	S 78°10'06" W	9.78'
L290	N 83°12'32" W	10.18'
L291	N 86°19'26" W	13.95'
L292	N 47°37'56" W	16.91'
L293	N 43°06'16" W	44.73'
L294	N 47°00'43" W	11.00'
L295	N 29°23'15" W	11.56'
L296	N 19°46'22" W	14.34'
L297	N 18°48'50" W	11.02'
L298	N 27°19'35" W	7.32'

L299	N 64°05'05" W	8.65'
L300	S 85°08'23" W	25.86'
L301	S 57°07'30" W	8.51'
L302	S 48°19'27" W	12.94'
L303	S 79°55'49" W	14.52'
L304	N 74°32'44" W	4.95'
L305	N 03°58'10" W	133.46'
L306	S 77°44'40" W	15.32'
L307	S 72°21'33" E	26.64'
L308	S 86°25'50" E	38.37'
L309	N 39°18'45" E	23.61'
L310	N 66°48'29" E	12.66'
L311	S 77°00'33" E	22.17'
L312	S 50°37'42" E	41.00'
L313	S 88°11'56" E	31.68'
L314	S 10°22'34" W	39.23'



**LEGEND**

- 202--- EXISTING 2 FT CONTOURS
- 101--- EXISTING 10 FT CONTOURS
- 020--- PROPOSED 2 FT CONTOURS
- 101--- PROPOSED 10 FT CONTOURS
- 25--- 25 FT WETLAND BUFFER
- 100--- EXISTING STREAM BUFFER
- 100--- LIMITS OF EXISTING WETLANDS
- 100--- LIMIT OF DISTURBANCE
- 100--- SUPER SILT FENCE
- 100--- TREE PROTECTION FENCE
- 100--- MODIFIED CURB (R-3.01)
- 100--- EXISTING WETLANDS
- 100--- EXISTING 100 YEAR FLOODPLAIN
- 100--- FOREST CONSERVATION EASEMENT (REFORESTATION)
- 100--- FOREST CONSERVATION EASEMENT (RETENTION)
- 100--- EXISTING SEWER EASEMENT
- 100--- CONCRETE
- 100--- RECREATIONAL OPEN SPACE
- 100--- RETAINING WALL MAINTENANCE EASEMENT
- 100--- NO WOODY VEGETATION BUFFER
- 100--- POND ACCESS ROAD
- 100--- RIP RAP
- 100--- GABIENS

**PLAN**  
SCALE: 1"=30'

NO.	REVISION	DATE
5	REVISE FIRST FLOOR ELEVATIONS UNITS 169-180	8.1.06
4	REVISE FIRST FLOOR ELEVATIONS UNITS 62-69	6/20/06
3	REVISE FIRST FLOOR ELEVATIONS UNITS 84-91	3/24/06
2	REVISE FIRST FLOOR AND GRADING UNITS 54-61	2/17/06
1	REVISE STREAM CROSSINGS SHEETS 3,5,9,11,15,16,18,24	11/28/04

**GRADING AND SEDIMENT EROSION CONTROL PLAN**  
**THE OAKS AT WATERS EDGE - PHASE I**  
PARCEL A-1

REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157  
SDP-03-041, SDP-03-154, F-04-174

TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS - SURVEYORS - PLANNERS

8407 MAIN STREET  
ELLCOTT CITY, MARYLAND 21043  
TEL: 410.461.7666 FAX: 410.461.8961

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 7/23/04  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

*[Signature]* 8/12/04  
CHIEF, DIVISION OF LAND DEVELOPMENT

*[Signature]* 8/14/04  
DIRECTOR

**ENGINEERS CERTIFICATE**

I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

*[Signature]* 8/16/04  
SIGNATURE OF ENGINEER  
ROBERT H. VOGEL

**DEVELOPER'S CERTIFICATE**

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE 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, SMALL ENGINEER, A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

*[Signature]* 7/9/04  
SIGNATURE OF DEVELOPER  
KRIAN KWALIFE

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

*[Signature]* 7/15/04  
USDA-NATURAL RESOURCES CONSERVATION SERVICE

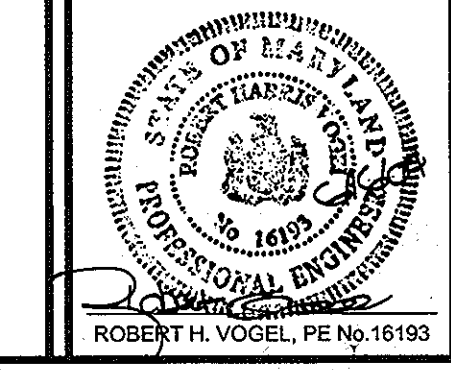
DATE: 7/15/04

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

*[Signature]* 7/15/04  
HOWARD SOIL CONSERVATION DISTRICT

**OWNER**

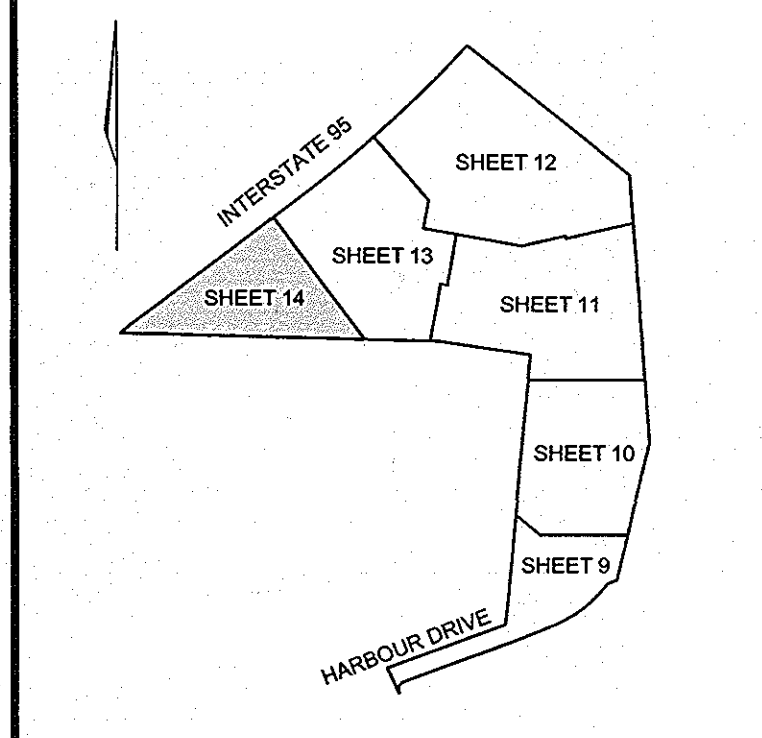
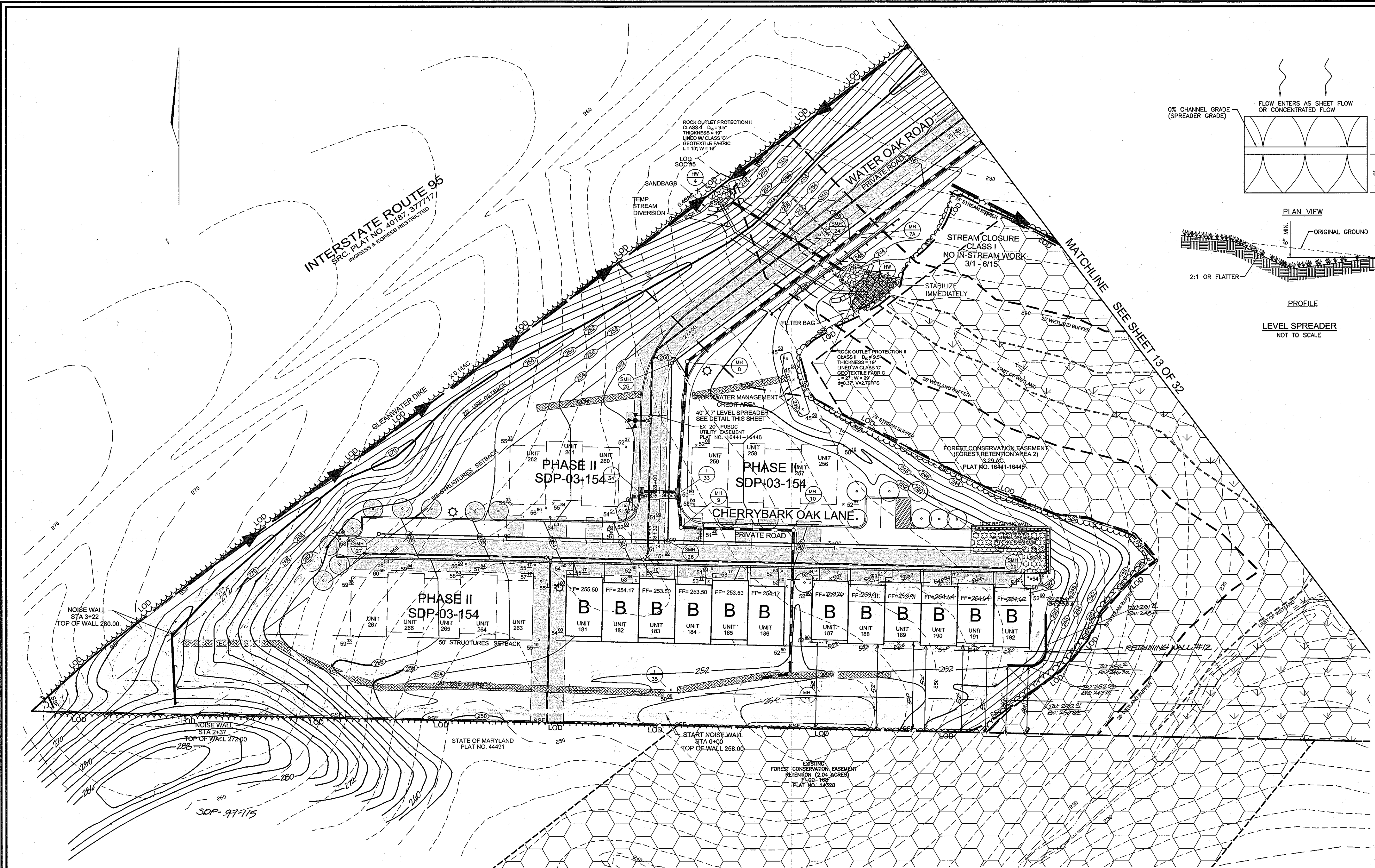
RYLAND HOMES  
7250 PARKWAY DRIVE  
SUITE 520  
HANOVER, MD 21076  
410-712-7012



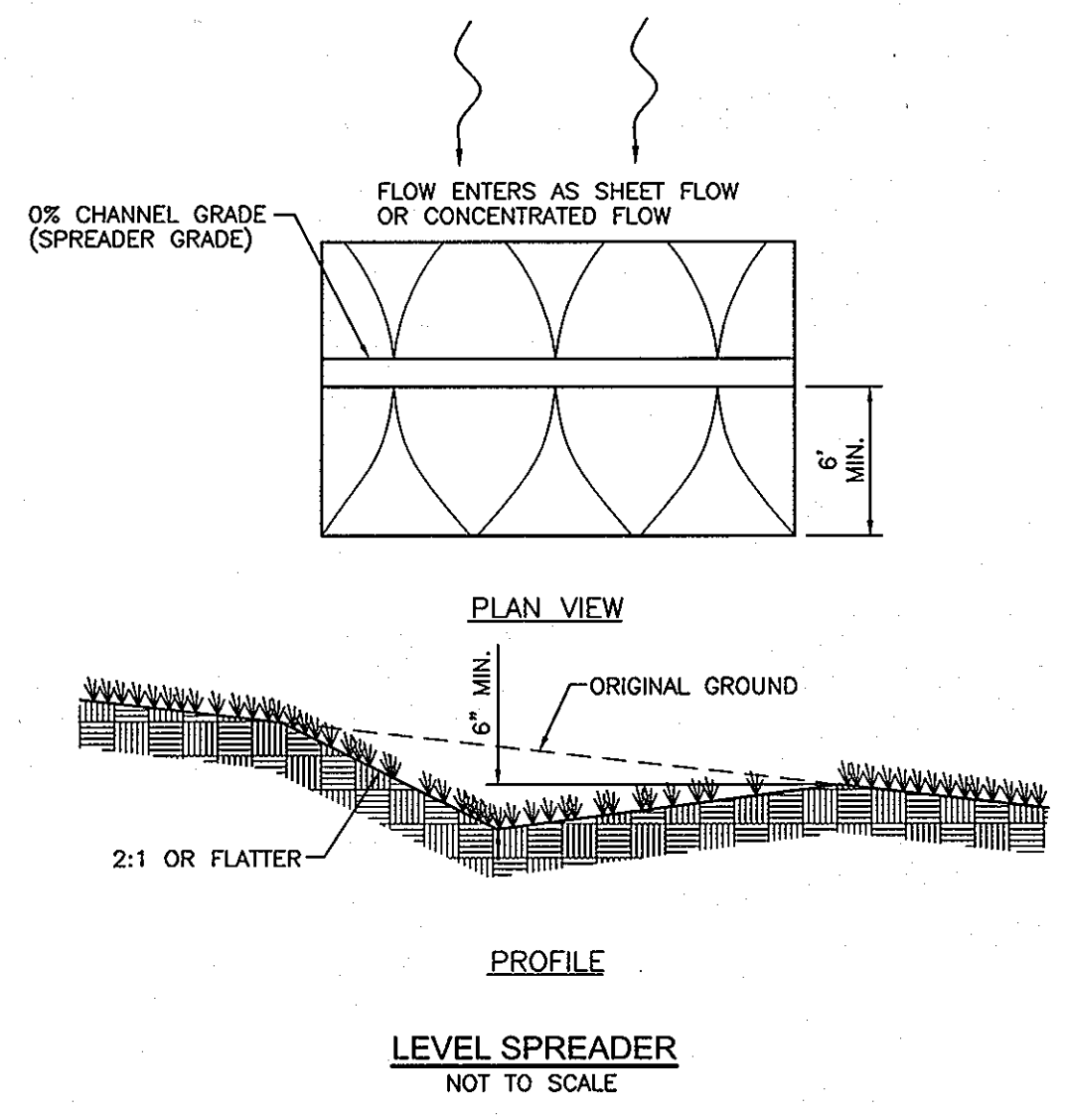
DESIGN BY: JT  
DRAWN BY: JT  
CHECKED BY: RHW  
DATE: JUNE 8, 2004  
SCALE: 1"=30'  
W.O. NO.: 03-82

13 SHEET OF 37





KEY MAP  
NOT TO SCALE



LEGEND

- 202--- EXISTING 2 FT CONTOURS
- 210--- EXISTING 10 FT CONTOURS
- 220--- PROPOSED 10 FT CONTOURS
- 25--- 25 FT WETLAND BUFFER
- EXISTING STREAM BUFFER
- LIMITS OF EXISTING WETLANDS
- LIMIT OF DISTURBANCE
- SUPER SILT FENCE
- TREE PROTECTION FENCE
- MODIFIED CURB (R=3.01)
- EXISTING WETLANDS
- EXISTING 100 YEAR FLOODPLAIN
- FOREST CONSERVATION EASEMENT (REFORESTATION)
- FOREST CONSERVATION EASEMENT (RETENTION)
- EXISTING SEWER EASEMENT
- CONCRETE
- RECREATIONAL OPEN SPACE
- RETAINING WALL MAINTENANCE EASEMENT
- NO WOODY VEGETATION BUFFER
- POND ACCESS ROAD
- RIP RAP
- GABIONS
- LOD SEQUENCE OF CONSTRUCTION #5

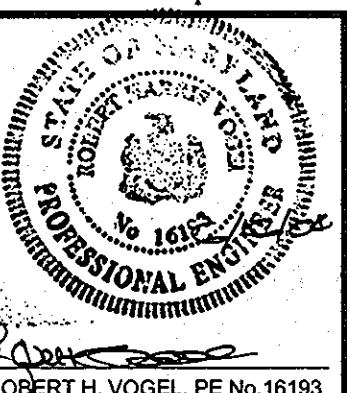
PLAN  
SCALE: 1"=30'

NO.	REVISION	DATE
7	REVISE TO SHOW RETAINING WALL #12	6/27/09
7	REVISE FIRST FLOOR ELEVATIONS UNITS 187-192 AND GRADING	6/27/09
6	REVISE GRADING AND EXTENT OF NOISE WALL	2/9/09
1	REVISE STREAM CROSSINGS SHEETS 3, 5, 9, 11, 15, 16, 18, 24	11/29/04

GRADING AND SEDIMENT EROSION CONTROL PLAN  
THE OAKS AT WATERS EDGE - PHASE I  
PARCEL A-1

REF: S-97-01, ZB-986-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157  
SDP-03-041, SDP-03-154, F-04-174  
TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS  
8407 MAIN STREET  
ELLCOTT CITY, MARYLAND 21043  
TEL: 410.461.7666 FAX: 410.461.8961



DESIGN BY: JT  
DRAWN BY: JT  
CHECKED BY: RHV  
DATE: JUNE 8, 2004  
SCALE: 1"=30'  
W.O. NO.: 03-82

14 SHEET OF 37

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

ENGINEER'S CERTIFICATE  
I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/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.

DEVELOPER'S CERTIFICATE  
I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE 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.

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

OWNER  
RYLAND HOMES  
7250 PARKWAY DRIVE  
SUITE 520  
HANOVER, MD 21076  
410-712-7012

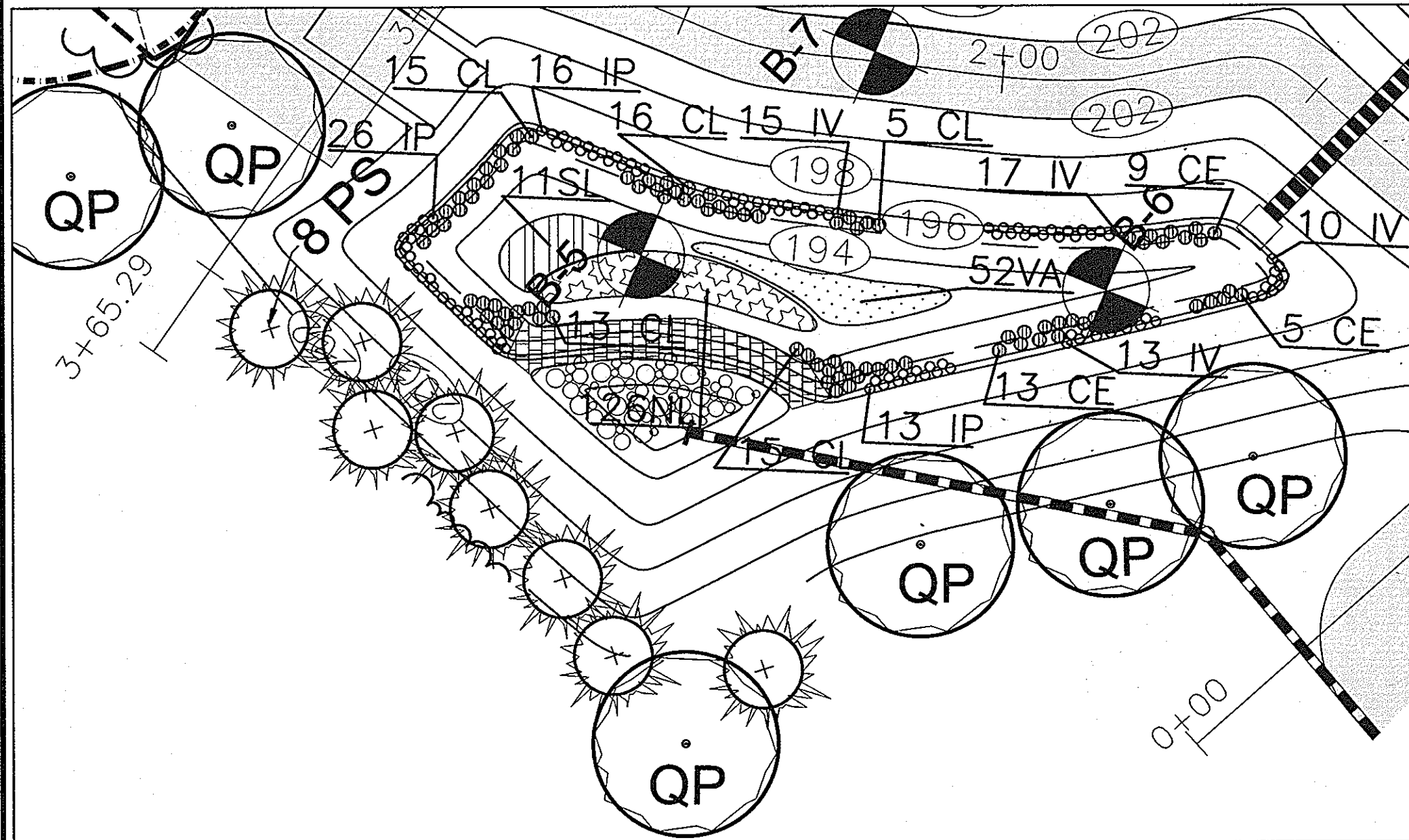


POND 1

SCHEDULE D STORMWATER MANAGEMENT AREA LANDSCAPING	
LINEAR FEET OF PERIMETER	639LF
CREDIT FOR EX VEGETATION (NO, YES AND LINEAR FEET)	YES, 325 LF
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	NO
NUMBER OF TREES REQUIRED (314) SHADE TREES EVERGREEN TREES	6 SHADE TREES 8 EVERGREEN TREES
NUMBER OF TREES PROVIDED SHADE TREES EVERGREEN TREES OTHER TREES (2:1 SUBSTITUTION)	6 SHADE TREES 8 EVERGREEN TREES 0 TREES (0 SUBSTITUTION TREES)

KEY	QUAN.	BOTANICAL NAME	SIZE	REMARKS
VA	52	Vallisneria americana Wild Celery	plug	2' oc
IP	55	Iris pseudocaris Yellow Water Iris	plug	1.5' oc
IV	55	Iris versicolor Blue Flag (wear gloves)	plug	1.5' oc
SL	11	Sagittaria latifolia Duck Potato (do not plant tubers)	plug	4' oc
CE	27	Cyperus esculentus Yellow Nut Sedge	plug	2' oc
NL	126	Nuphar luteum Spatterdock	plug	1.5' oc
CL	64	Carex lacustris Lake Sedge	plug	2' oc

ADD THREE INCHES OF TOPSOIL TO PLANTING AREA. STABILIZE WITH 40 POUNDS PER ACRE OF A HYDROSEED MIX (WET MIX AND MEADOW MIX) FROM SYLVA NATIVE NURSERY OR EQUAL. ALL PLANT MATERIALS TO CONFORM TO THE MOST CURRENT AAN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH LCAMM SPECIFICATIONS.



POND 1  
EMERGENT PLANTING DETAIL  
SCALE: 1"=20'

LANDSCAPE 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, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE(1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

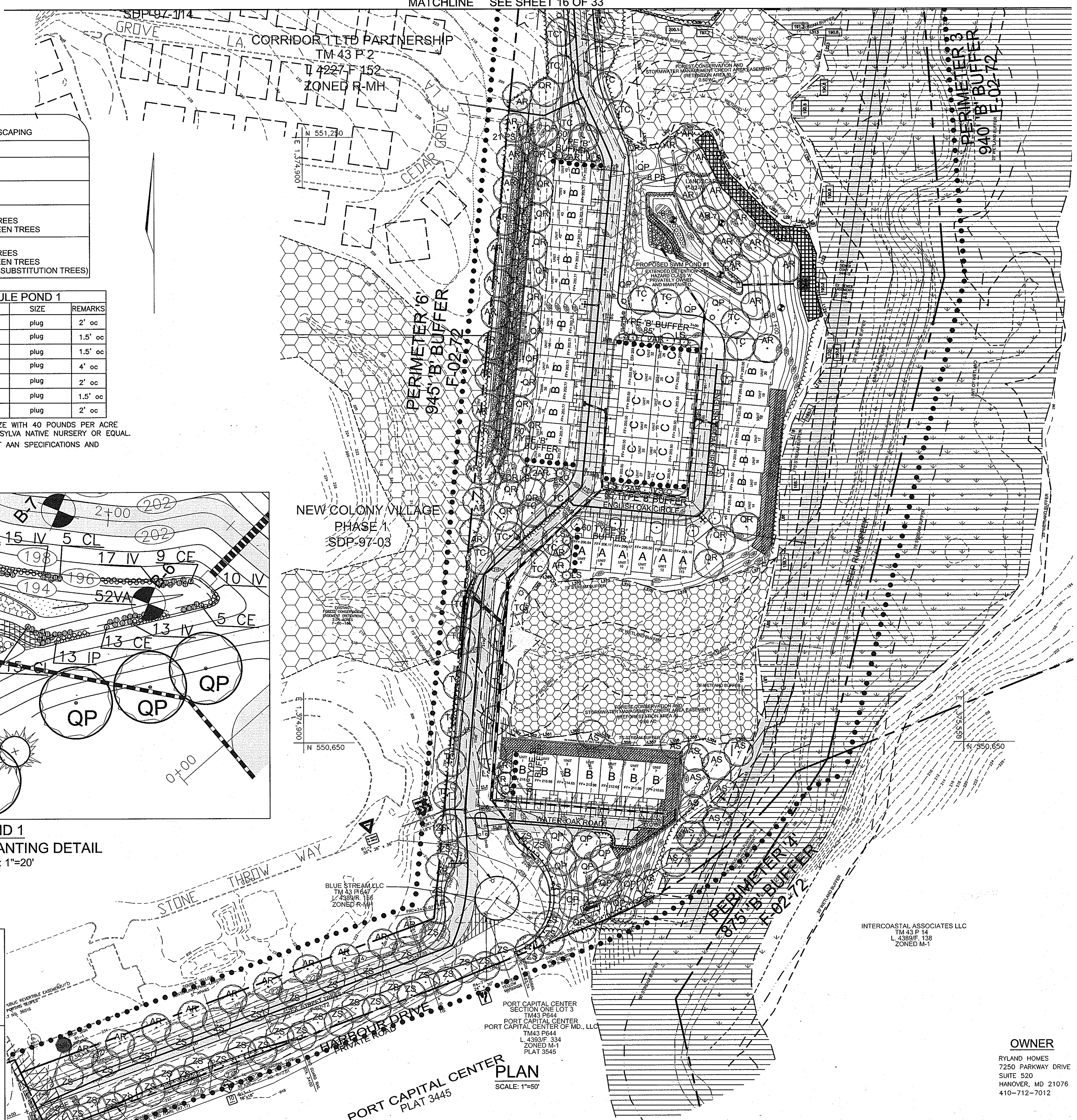
DEVELOPER'S NAME: DEJANU KWAME DATE: 7/7/04

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION: [Signature] DATE: 7/23/04

CHIEF, DIVISION OF LAND DEVELOPMENT: [Signature] DATE: 5/22/04

DIRECTOR: [Signature] DATE: 5/13/04



PORT CAPITAL CENTER  
PLAN  
SCALE: 1"=50'

LEGEND

- SHADE TREE/ STREET TREE (TYPE-TC & ZS)
- STREET TREE (TYPE-AR)
- EVERGREEN TREE
- ORNAMENTAL TREE
- SHRUB
- GEOGRID / NO WOODY PLANT AREA
- PHASE 2 TREE

KEY	QUAN.	BOTANICAL NAME	SIZE	REM.
AR	41	Acer rubrum 'Armstrong' Columnar Red Maple	2 1/2"-3" Cal.	B & B
AS	12	Acer saccharum 'Goldspire' Columnar Sugar Maple	2 1/2"-3" Cal.	B & B
PS	29	Pinus strobus Eastern White Pine	6 - 8' Ht	B & B
QP	18	Quercus palustris 'Green Pillar' Columnar Pin Oak	2 1/2"-3" Cal.	B & B
QR	19	Quercus robur fastigiata Columnar English Oak	2 1/2"-3" Cal.	B & B
TC	29	Tilia cordata Littleleaf Linden	2 1/2"-3" Cal.	B & B
ZS	45	Zelkova serrata 'Village Green' Village Green Japanese Zelkova	2 1/2"-3" Cal.	B & B

- ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AAN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH LCAMM PLANTING SPECIFICATIONS.
- CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
- FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
- CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.

NO.	REVISION	DATE
1	REVISE STREAM CROSSINGS SHEETS 8, 9, 11, 15, 16, 18, 24	11/29/04

LANDSCAPE PLAN  
THE OAKS AT WATERS EDGE - PHASE I  
PARCEL A-1

REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157  
SDP-03-041, SDP-03-154, F-04-174

TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS

8407 MAIN STREET  
ELLICOTT CITY, MARYLAND 21043  
TEL: 410.461.7666 FAX: 410.461.8961



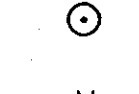




OWNER  
RYLAND HOMES  
7250 PARKWAY DRIVE  
SUITE 520  
HANOVER, MD 21076  
410-712-7012

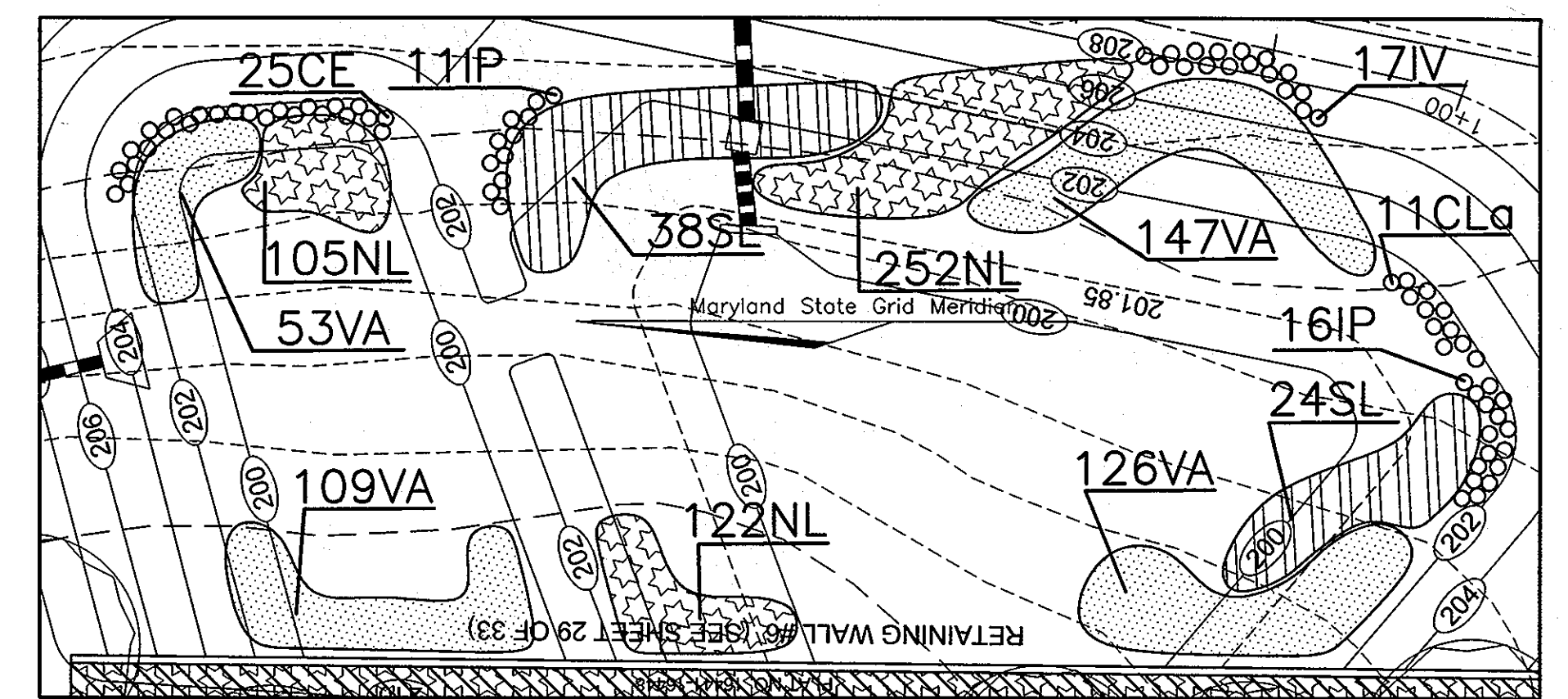
DESIGN BY: JT  
DRAWN BY: JT  
CHECKED BY: RHV  
DATE: JUNE 8, 2004  
SCALE: 1"=50'  
W.O. NO.: 03-82

15 SHEET OF 37



**LEGEND**

-  SHADE TREE/ STREET TREE (TYPE- TC & ZS)
-  PHASE 2 TREE
-  STREET TREE (TYPE- AR)
-  EVERGREEN TREE
-  ORNAMENTAL TREE
-  SHRUB
-  GEOGRID / NO WOODY PLANT AREA



**POND 2  
EMERGENT PLANTING DETAIL  
SCALE: 1"=20'**

**EMERGENT PLANTING SCHEDULE POND 2**

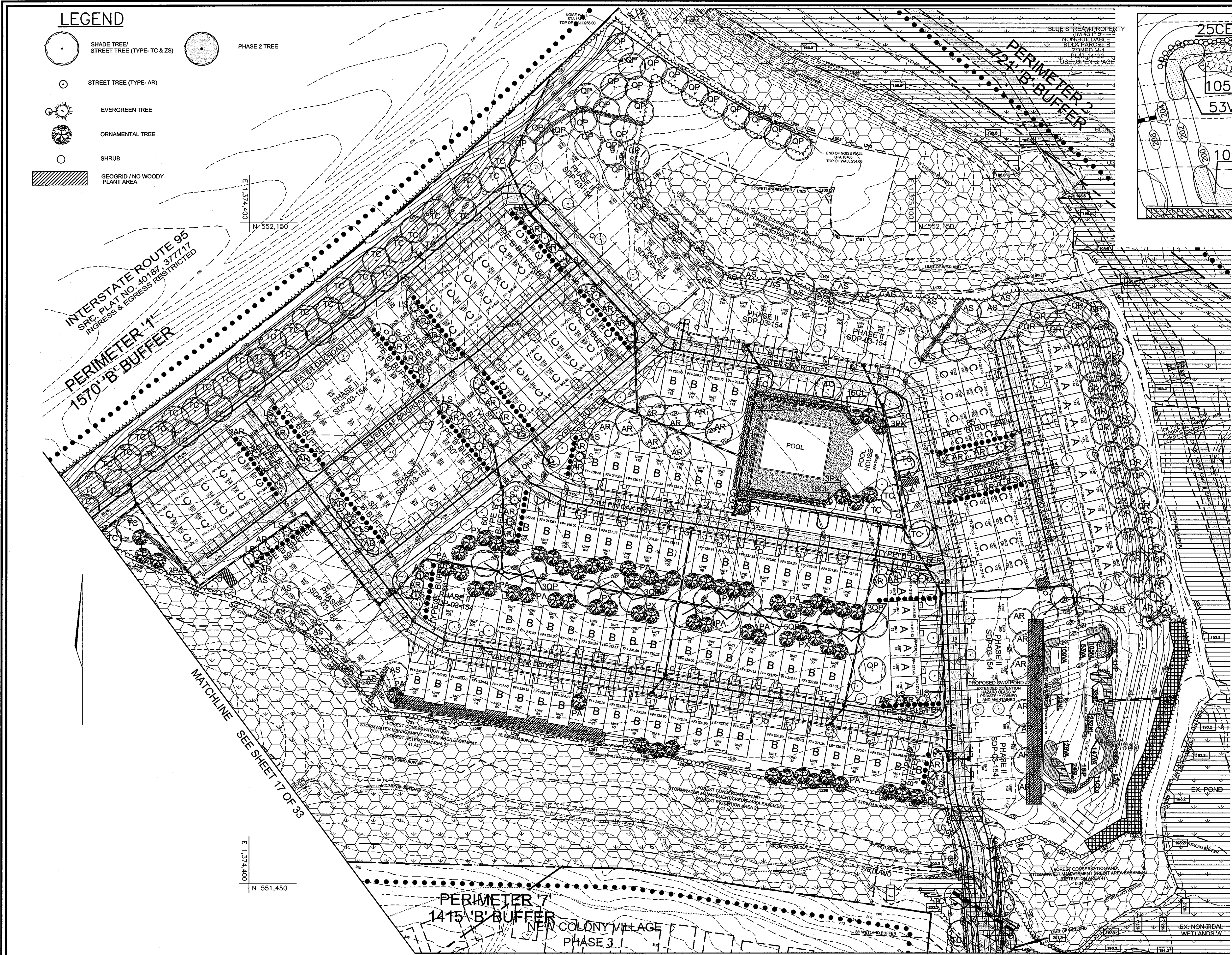
KEY	QUAN.	BOTANICAL NAME	SIZE	REMARKS
VA	435	Vallisneria americana Wild Celery	plug	2' oc
IP	27	Iris pseudacoris Yellow Water Iris	plug	1.5' oc
IV	17	Iris versicolor Blue Flag (wear gloves)	plug	1.5' oc
SL	62	Sagittaria latifolia Duck Potato (do not plant tubers)	plug	4' oc
CE	25	Cyperus esculentus Yellow Nut Sedge	plug	2' oc
NL	479	Nuphar luteum Spatterdock	plug	1.5' oc
CLa	11	Carex lasiocarpa Lake Sedge	plug	2' oc

ADD THREE INCHES OF TOPSOIL TO PLANTING AREA. STABILIZE WITH 40 POUNDS PER ACRE OF A HYDROSEED MIX (WET MIX AND MEADOW MIX) FROM SYLVIA NATIVE NURSERY OR EQUAL. ALL PLANT MATERIALS TO CONFORM TO THE MOST CURRENT AAN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH LCAWV SPECIFICATIONS.

**LANDSCAPE SCHEDULE THIS SHEET**

KEY	QUAN.	BOTANICAL NAME	SIZE	REM.
AR	13	Acer rubrum 'Armstrong' Columnar Red Maple	2 1/2"-3" Cal.	B & B
CL	33	Cupressocyparis leylandii Leyland Cypress Single Leader Form	5' - 6' Ht.	B & B or Cont.
EA	29	Euonymus alata 'Compacta' Compact Winged Euonymus	30" - 36" Ht.	B & B or Cont.
PA	35	Prunus serrulata 'Amanogawa' Amanogawa Cherry	1 1/2"-2" Cal.	B & B
PS	3	Pinus strobus Eastern White Pine	6' - 8' Ht.	B & B
PX	38	Prunus x yedoensis Yoshino Cherry	1 1/2"-2" Cal.	B & B
QP	31	Quercus palustris 'Green Pillar' Columnar Pin Oak	2 1/2"-3" Cal.	B & B
QR	29	Quercus robur fastigiata Columnar English Oak	2 1/2"-3" Cal.	B & B
TC	50	Tilia cordata Littleleaf Linden	2 1/2"-3" Cal.	B & B

- ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AAN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH LCAWV PLANTING SPECIFICATIONS.
- CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
- FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
- CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.



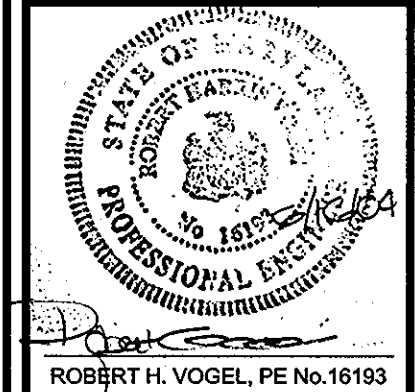
MATCHLINE SEE SHEET 15 OF 33

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 7/23/04  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 [Signature] 5/27/04  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 [Signature] 5/27/04  
 DIRECTOR

**LANDSCAPE 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 A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE(1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.  
 [Signature] 7/1/04  
 DEVELOPER'S NAME: BRIAN KNUFF  
 DATE

**PLAN**  
SCALE: 1"=50'

**OWNER**  
 RYLAND HOMES  
 7250 PARKWAY DRIVE  
 SUITE 520  
 HANOVER, MD 21076  
 410-712-7012



DESIGN BY: JT  
 DRAWN BY: JT  
 CHECKED BY: RHV  
 DATE: JUNE 8, 2004  
 SCALE: 1"=50'  
 W.O. NO.: 03-82

16 SHEET OF 37

NO.	REVISION	DATE
1	REVISE STREAM CROSSINGS 3, 5, 9, 11, 15, 16, 18, 24	11/29/04

**LANDSCAPE PLAN**  
**THE OAKS AT WATERS EDGE - PHASE I**  
 PARCEL A-1  
 REF: S-97-01, ZB-986-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157, SDP-05-041, SDP-03-154, F-04-174  
 TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
**ROBERT H. VOGEL ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS  
 8407 MAIN STREET  
 ELLICOTT CITY, MARYLAND 21043  
 TEL: 410.461.7666 FAX: 410.461.8961



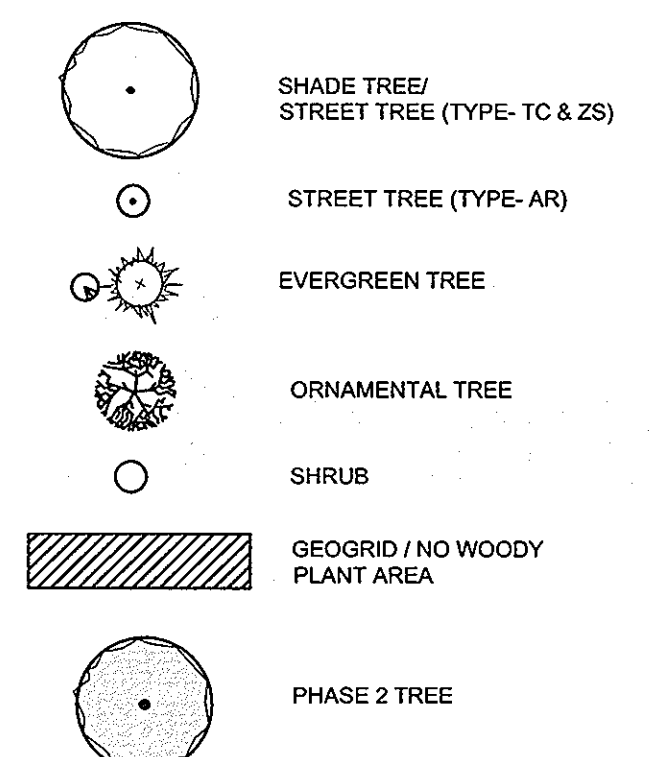
LANDSCAPE SCHEDULE THIS SHEET				
KEY	QUAN.	BOTANICAL NAME	SIZE	REM.
AR	15	Acer rubrum 'Armstrong' Columnar Red Maple	2 1/2"-3" Cal.	B & B
AS	9	Acer saccharum 'Goldspire' Columnar Sugar Maple	2 1/2"-3" Cal.	B & B
PS	5	Pinus strobus Eastern White Pine	6 - 8' Ht	B & B
QP	7	Quercus palustris 'Green Pillar' Columnar Pin Oak	2 1/2"-3" Cal.	B & B
QR	4	Quercus robur fastigiata Columnar English Oak	2 1/2"-3" Cal.	B & B
TC	28	Tilia cordata Littleleaf Linden	2 1/2"-3" Cal.	B & B

- ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH LCAMW PLANTING SPECIFICATIONS.
- CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
- FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
- CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.

**GENERAL NOTES**

- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS A PART OF THE DPW DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$211,800.00.
- NO TREES SHALL BE PLANTED WITHIN 15 FEET OF THE TOP OF THE GEOGRID REINFORCED RETAINING WALLS.

**LEGEND**



SCHEDULE B POOL HOUSE PARKING LOT INTERNAL LANDSCAPING	
Number of parking spaces	41
Number of trees and islands required	2
Number of trees and islands provided	
Shade Trees	2
Other Trees (2:1 Substitution)	-

SCHEDULE C RESIDENTIAL DEVELOPMENT INTERNAL LANDSCAPING			
Phase	1	2	TOTAL
Number of Dwelling Units	192	75	267
Number of trees required (1:DU SFA; 1:3 DU APTS)	192	75	267
Number of trees provided	192	75	267
Shade Trees	156	75	231
**Other Trees (2:1 Substitution)	72(36)	-	-
Shrubs (10:1 Substitution)	-	-	-

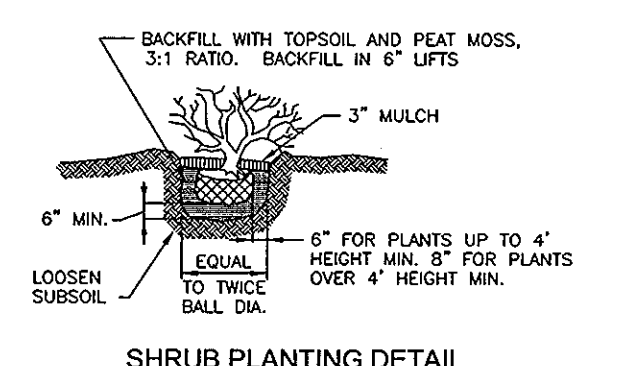
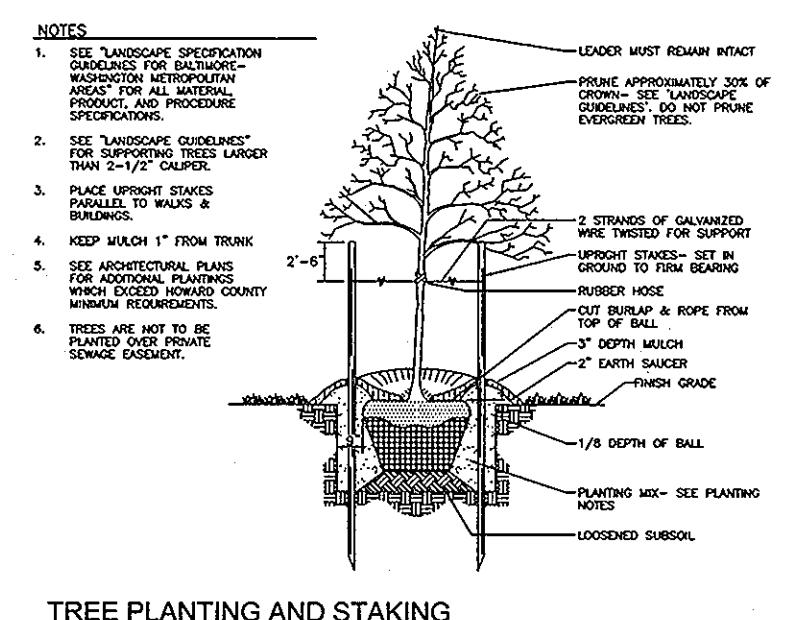
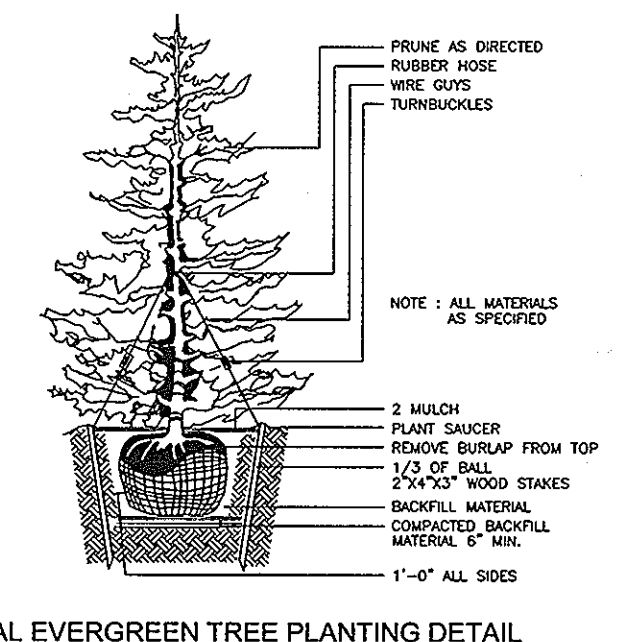
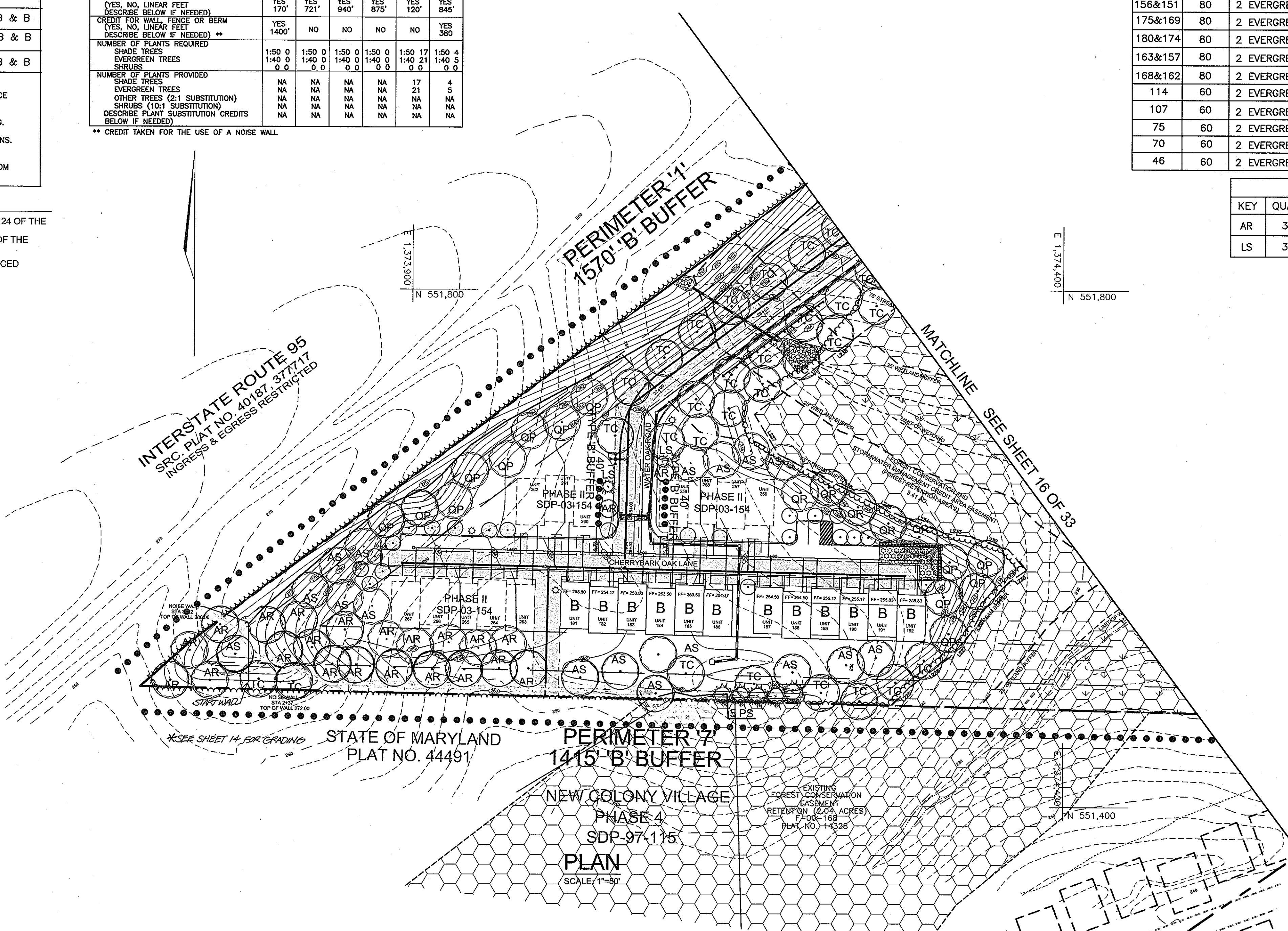
STREET TREES	
Number of street trees required	332
Number of street trees provided**	332

SCHEDULE D : STORMWATER MANAGEMENT AREA LANDSCAPING	
LINEAR FEET OF PERIMETER	540 LF
CREDIT FOR EXISTING VEGETATION (NO, YES AND LINEAR FEET)	YES, 320 LF
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	N/A
NUMBER OF TREES REQUIRED SHADE TREES @ 1:50 EVERGREEN TREES @ 1:40	(220) 4 SHADE TREES 6 EVERGREEN TREES
NUMBER OF TREES PROVIDED SHADE TREES EVERGREEN TREES OTHER TREES (2:1 SUBSTITUTION)	4 SHADE TREES 3 IN PHASE 1 & 3 IN PHASE 2* 0 TREES (0 SUBSTITUTION)

\*3 OF THE EVERGREEN TREES WILL BE INSTALLED AFTER THE ADJACENT PHASE 2 BUILDING IS CONSTRUCTED.

SCHEDULE A PERIMETER LANDSCAPE EDGE						
CATEGORY	ADJ. ROAD			ADJACENT TO PERIMETER PROPERTIES		
	1	2	3	4	5	7
PERIMETER/FRONTAGE DESIGNATION	B	B	B	B	B	B
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	1570'	721'	940'	875'	945'	1415'
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	YES 170'	YES 721'	YES 940'	YES 875'	YES 120'	YES 845'
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)**	YES 1400'	NO	NO	NO	NO	YES 380'
NUMBER OF PLANTS REQUIRED	1:50 0	1:50 0	1:50 0	1:50 17	1:50 4	1:50 5
SHADE TREES	1:40 0	1:40 0	1:40 0	1:40 0	1:40 21	1:40 5
SHRUBS	0 0	0 0	0 0	0 0	0 0	0 0
NUMBER OF PLANTS PROVIDED	NA	NA	NA	NA	17	4
SHADE TREES	NA	NA	NA	NA	21	5
OTHER TREES (2:1 SUBSTITUTION)	NA	NA	NA	NA	NA	NA
SHRUBS (10:1 SUBSTITUTION)	NA	NA	NA	NA	NA	NA
DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)	NA	NA	NA	NA	NA	NA

\*\* CREDIT TAKEN FOR THE USE OF A NOISE WALL



TYPE 'B' BUFFER-PHASE I BETWEEN SIDE OF UNITS AND ADJACENT PRIVATE ROADS					
UNIT #	LINEAR FEET	REQUIRED/PROVIDED PER ROAD	UNIT #	LINEAR FEET	REQUIRED/PROVIDED PER ROAD
156&151	80	2 EVERGREEN (LS), 2 SHADE (ARR)	131&127	85	2 EVERGREEN (LS), 2 SHADE (ARR)
175&169	80	2 EVERGREEN (LS), 2 SHADE (ARR)	126&122	85	2 EVERGREEN (LS), 2 SHADE (ARR)
180&174	80	2 EVERGREEN (LS), 2 SHADE (ARR)	1	60	2 EVERGREEN (LS), 2 SHADE (ARR)
163&157	80	2 EVERGREEN (LS), 2 SHADE (ARR)	8	60	2 EVERGREEN (LS), 2 SHADE (ARR)
168&162	80	2 EVERGREEN (LS), 2 SHADE (ARR)	27&21	85	2 EVERGREEN (LS), 2 SHADE (ARR)
114	60	2 EVERGREEN (LS), 2 SHADE (ARR)	33	60	2 EVERGREEN (LS), 2 SHADE (ARR)
107	60	2 EVERGREEN (LS), 2 SHADE (ARR)	32&26	85	2 EVERGREEN (LS), 2 SHADE (ARR)
75	60	2 EVERGREEN (LS), 2 SHADE (ARR)	45	60	2 EVERGREEN (LS), 2 SHADE (ARR)
70	60	2 EVERGREEN (LS), 2 SHADE (ARR)			
46	60	2 EVERGREEN (LS), 2 SHADE (ARR)			
		TOTAL: 36 EVERGREENS, 36 SHADE TREES			

TYPE 'B' BUFFER PLANT LIST				
KEY	QUAN.	BOTANICAL NAME	SIZE	REM.
AR	36	Acer rubrum 'Armstrong' Columnar Red Maple	2 1/2"-3" Cal.	B & B
LS	36	Cupressocyparis leylandi Leyland Cypress	2 1/2"-3" Cal.	B & B

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 1/22/04  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 [Signature] 8/22/04  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 [Signature] 8/22/04  
 DIRECTOR

LANDSCAPE 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, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE(1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.  
 [Signature] 7/7/04  
 DEVELOPER'S NAME: BRIAN KNAUFF

OWNER  
 RYLAND HOMES  
 7250 PARKWAY DRIVE  
 SUITE 520  
 HANOVER, MD 21076  
 410-712-7012

LANDSCAPE PLAN  
 THE OAKS AT WATERS EDGE - PHASE I  
 PARCEL A-1  
 REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157  
 SDP-03-041, SDP-03-154, P-04-174  
 TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.  
 ENGINEERS • SURVEYORS • PLANNERS  
 8407 MAIN STREET  
 ELLICOTT CITY, MARYLAND 21043  
 TEL: 410.461.7666 FAX: 410.461.8961

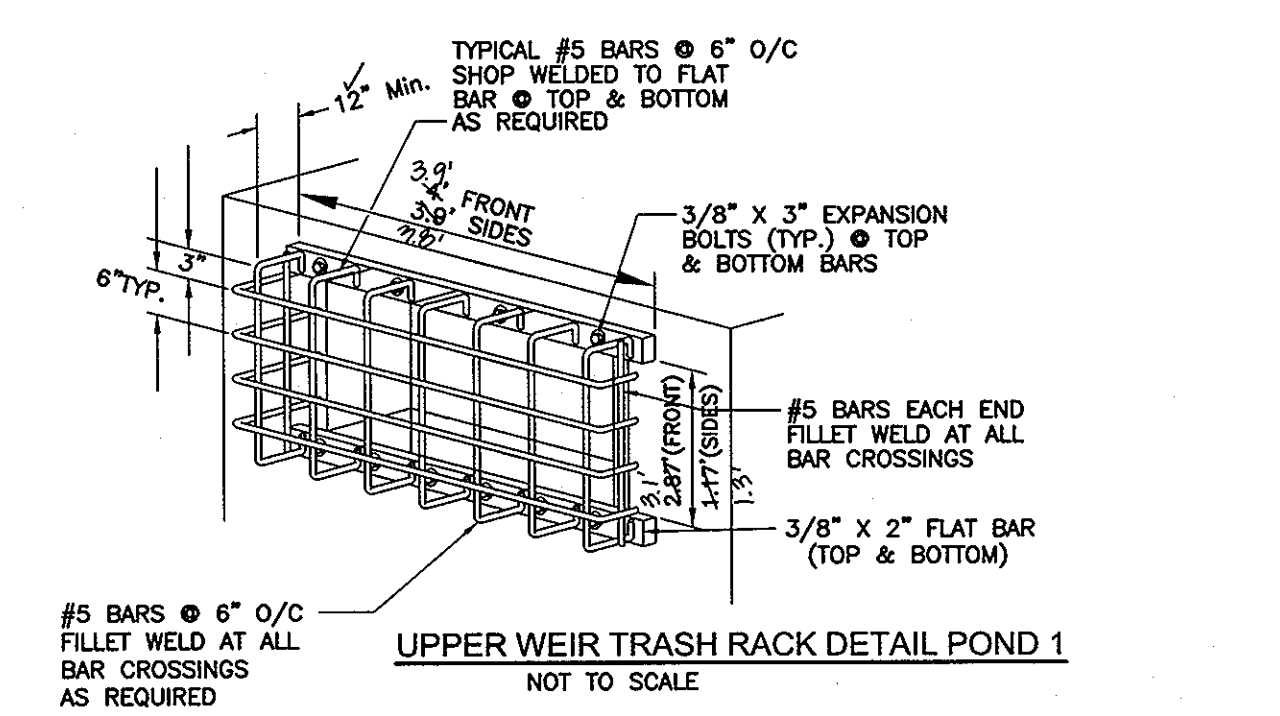
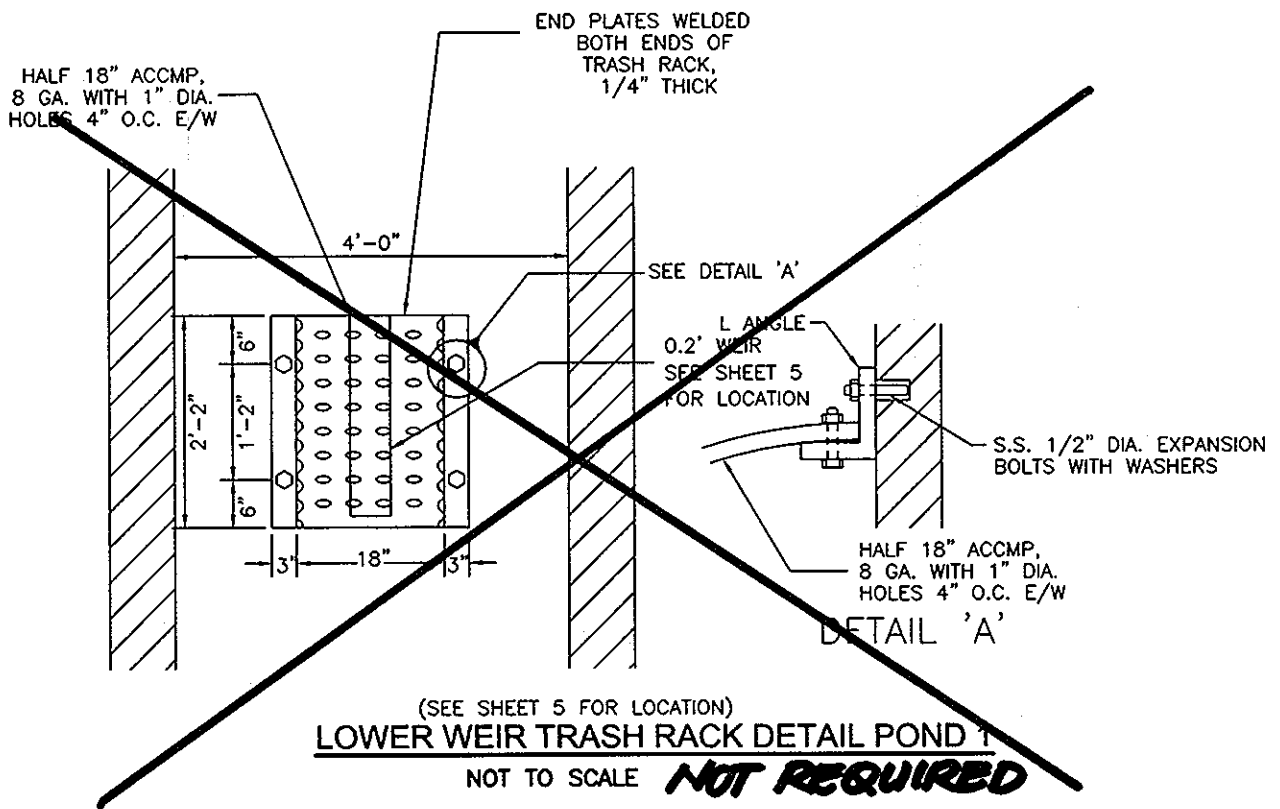
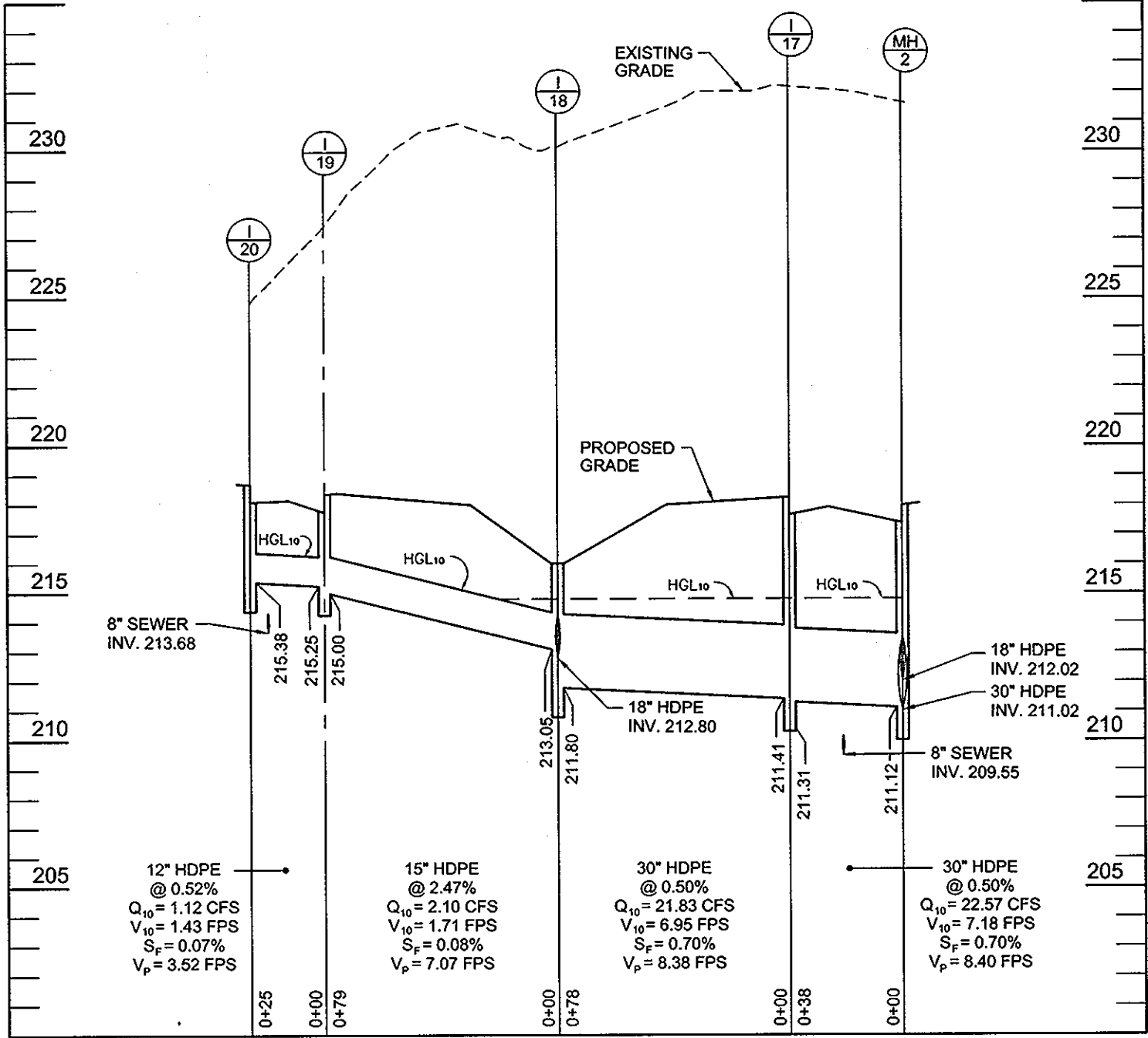
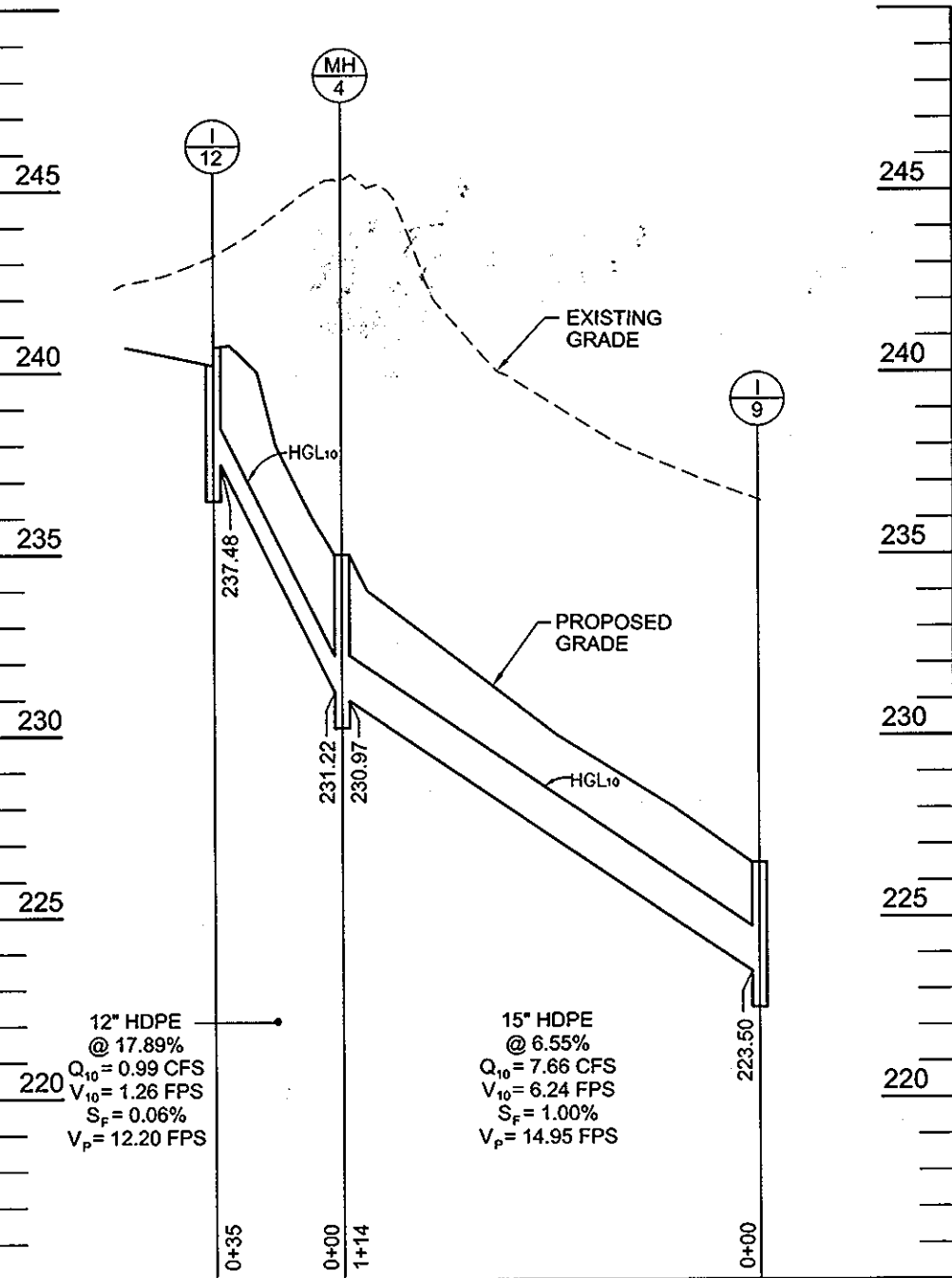
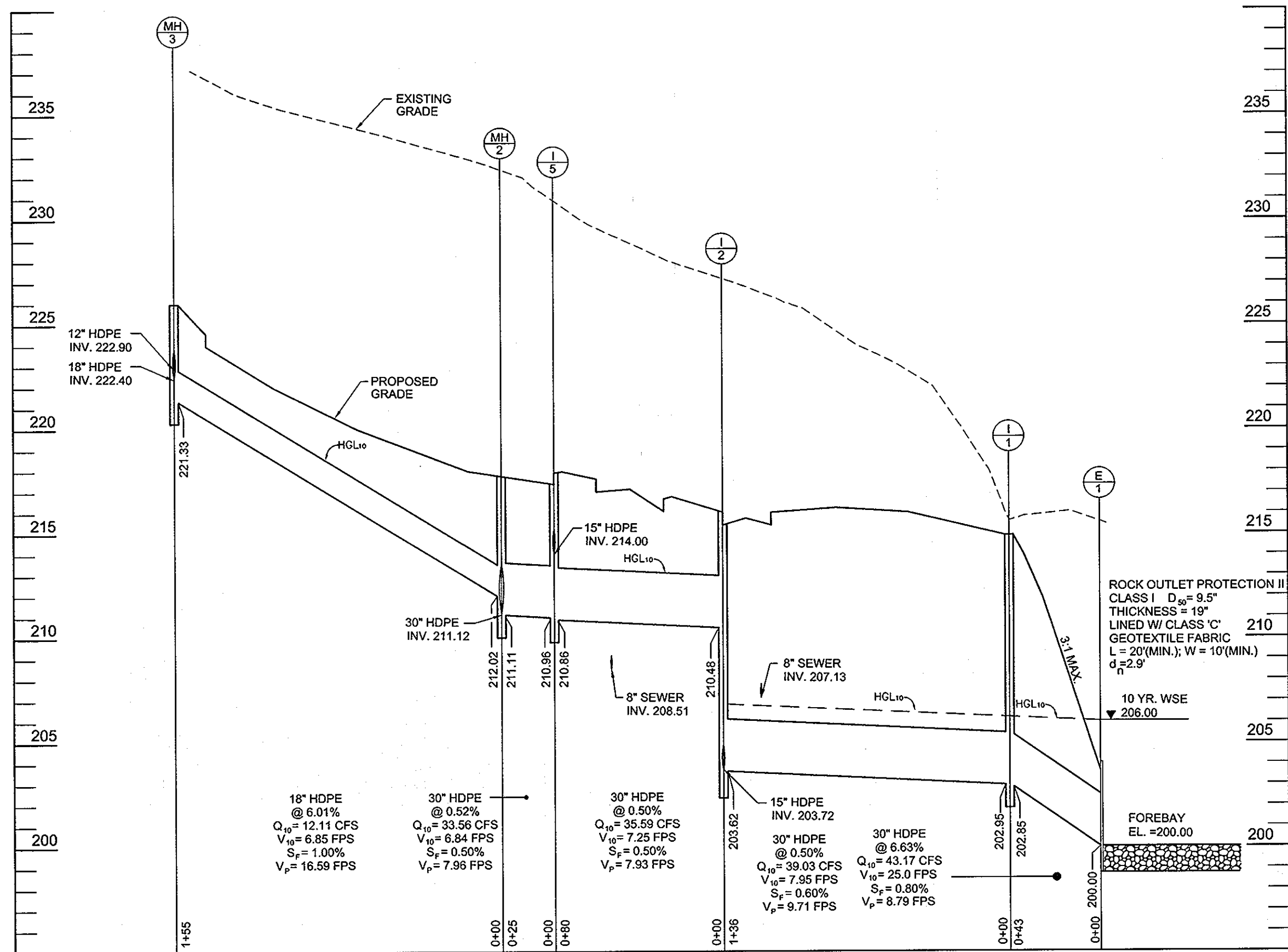
DESIGN BY: JT  
 DRAWN BY: JT  
 CHECKED BY: RHV  
 DATE: JUNE 8, 2004  
 SCALE: 1"=50'  
 W.O. NO.: 03-82

17 SHEET OF 37

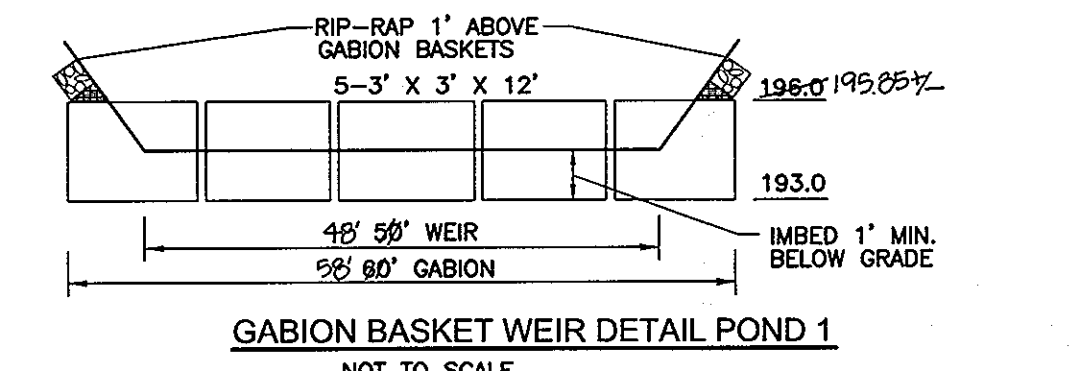




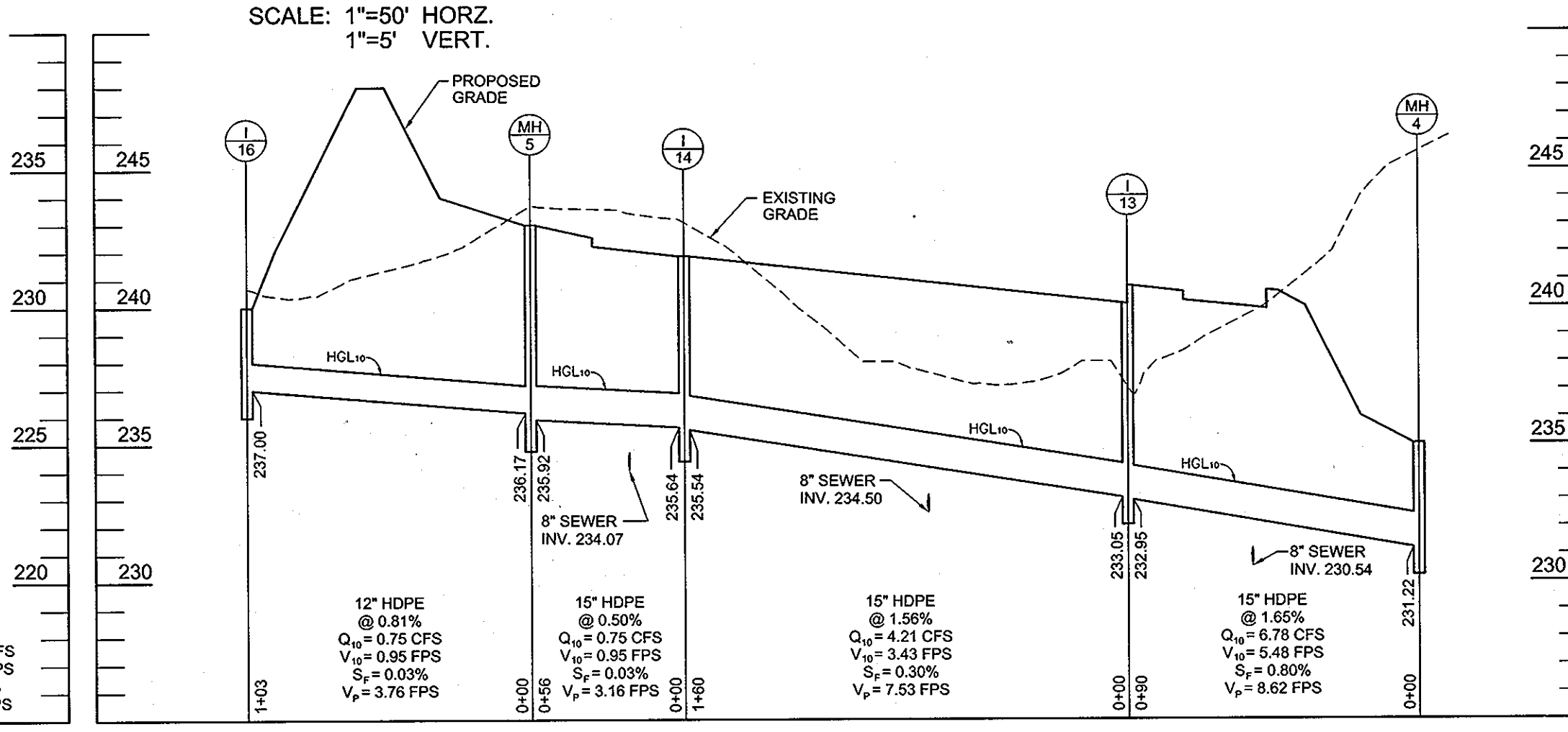
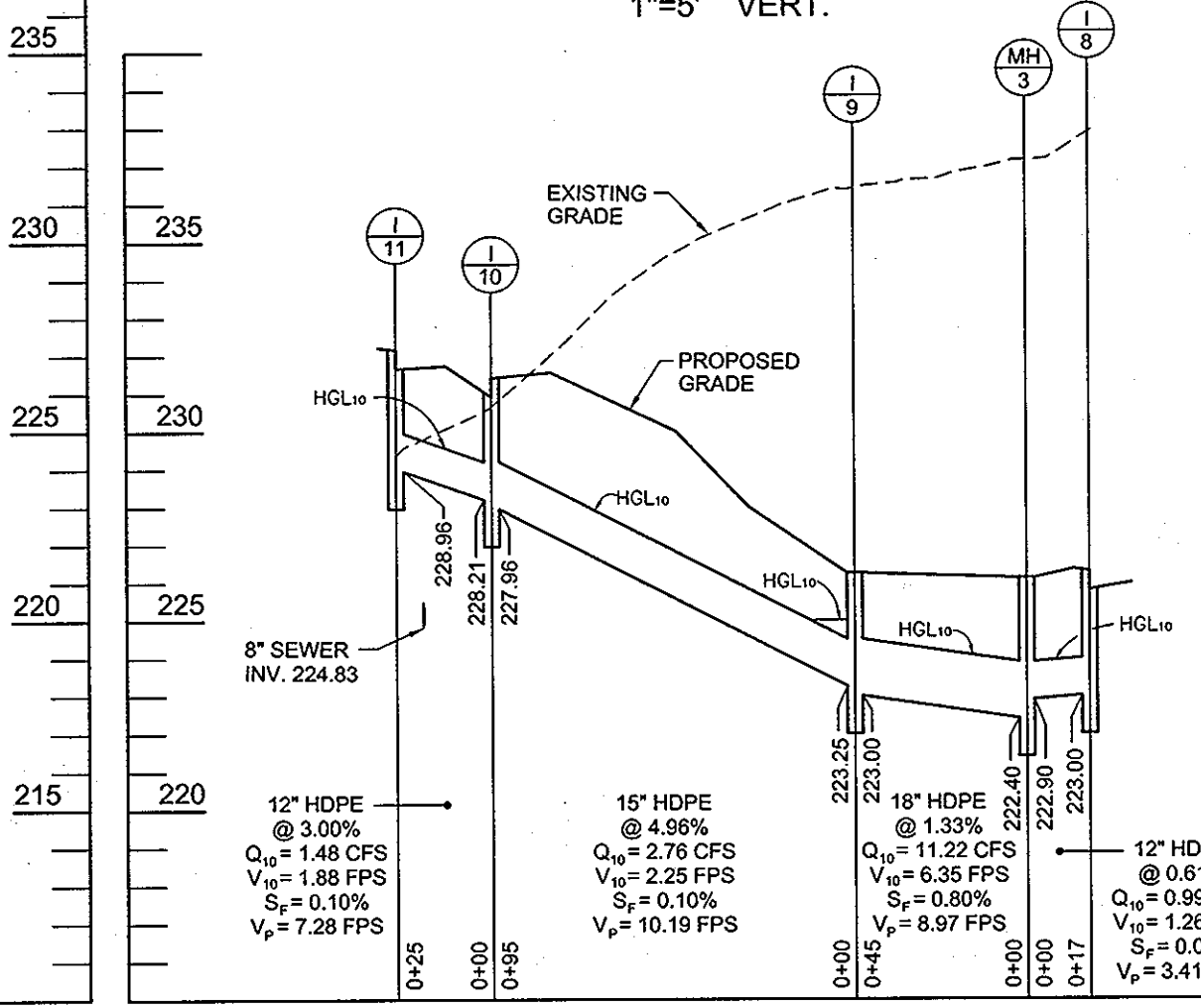
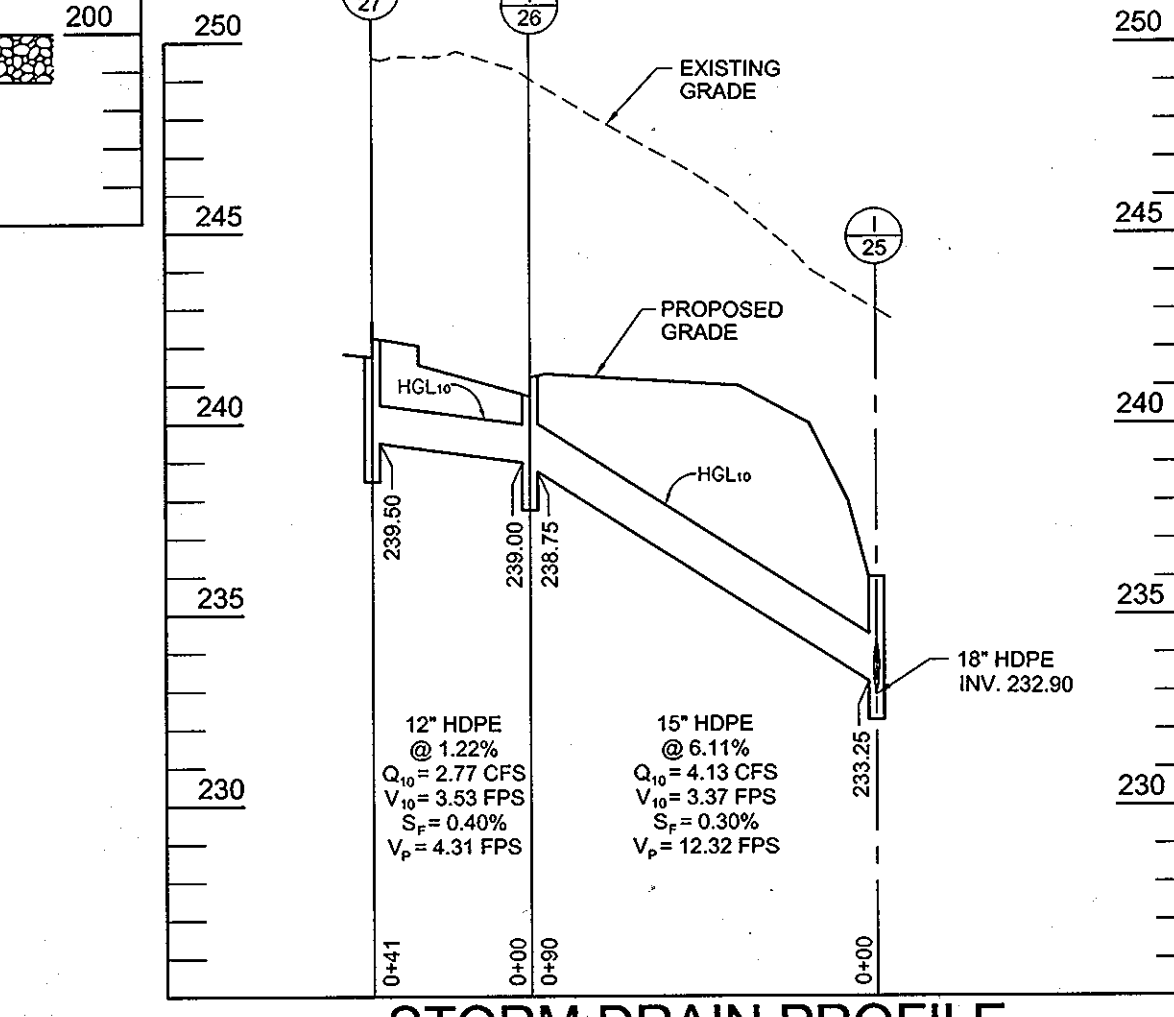
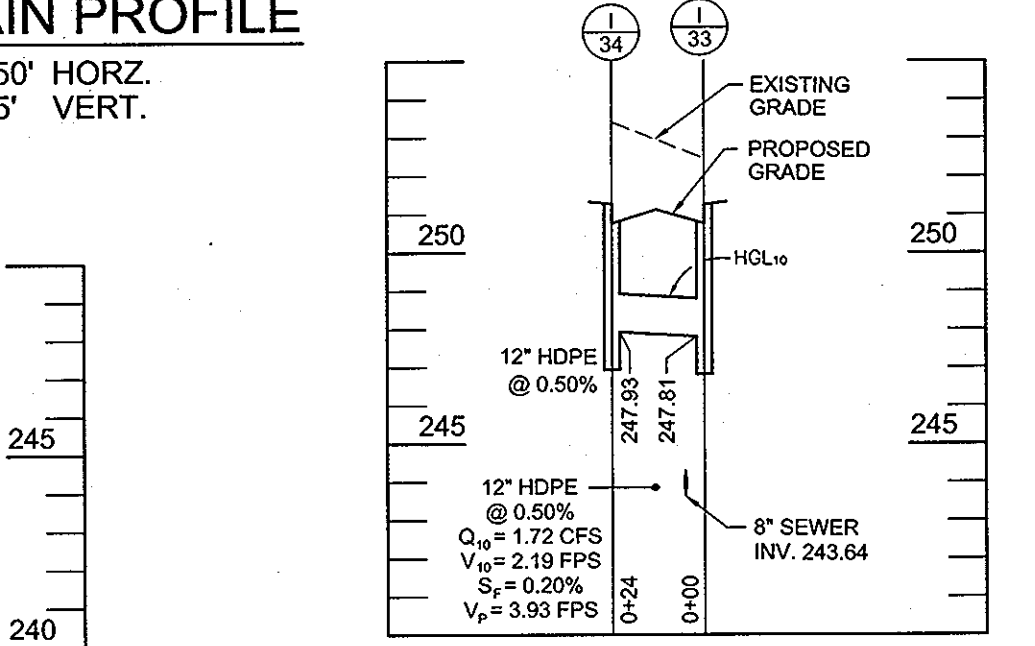
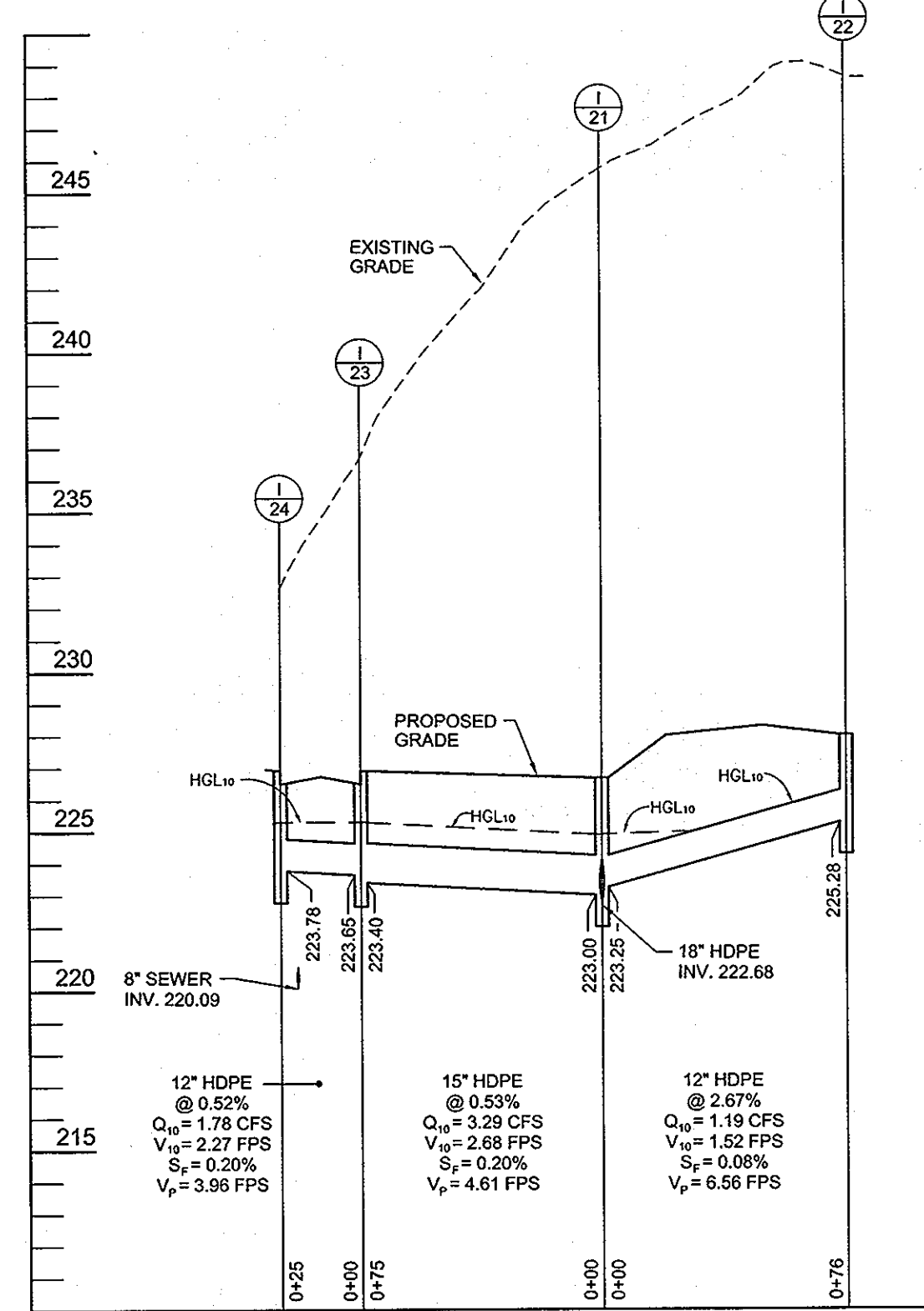




NOTE: ALL MATERIALS TO BE GALVANIZED AND PAINTED BATTLESHIP GRAY AFTER FABRICATION



- NOTES:
- ALL WIRE USED IN GABION CONSTRUCTION SHALL BE GALVANIZED AND PLASTIC COATED.
  - FILTER CLOTH SHALL BE PLACED WHEREVER GABIONS COME INTO CONTACT WITH SOIL.
  - STONE FILL SHALL CONSIST OF HARD, DURABLE, CLEAN STONE 4"-8" IN DIAMETER.
  - CONSTRUCTION MATERIALS AND METHODS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.



**STORM DRAIN PROFILE**  
SCALE: 1"=50' HORZ.  
1"=5' VERT.

**STORM DRAIN PROFILE**  
SCALE: 1"=50' HORZ.  
1"=5' VERT.

**STORM DRAIN PROFILE**  
SCALE: 1"=50' HORZ.  
1"=5' VERT.

NO.	1	REVISE STREAM CROSSINGS SHEETS 3, 5, 9, 11, 15, 16, 18, 24	11/20/04
NO.		REVISION	DATE

**STORM DRAIN PROFILES AND POND NO. 1 DETAILS**  
**THE OAKS AT WATERS EDGE - PHASE I**  
PARCEL A-1

REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157, SDP-03-041, SDP-03-154, F-04-174

TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS

8407 MAIN STREET  
ELLCOTT CITY, MARYLAND 21043  
TEL: 410.461.7666 FAX: 410.461.8961

DESIGN BY: JT  
DRAWN BY: JT  
CHECKED BY: RHV  
DATE: JUNE 8, 2004  
SCALE: AS NOTED  
W.O. NO.: 03-82

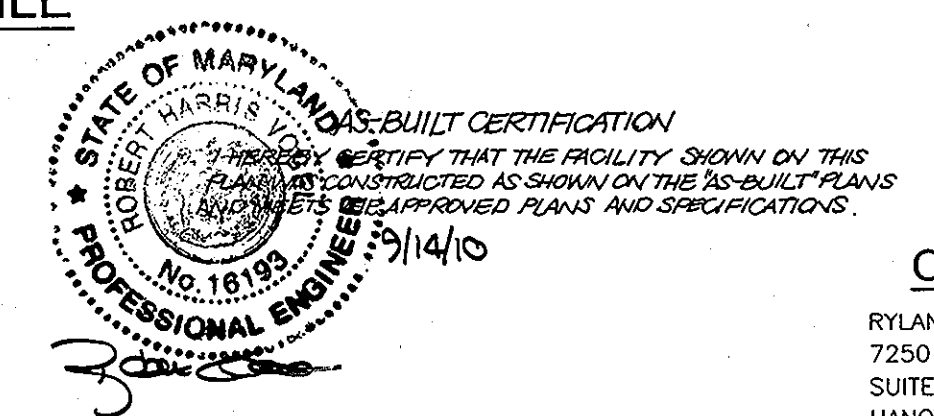
19 SHEET OF 37

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Allen Cummings* 7/28/04  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

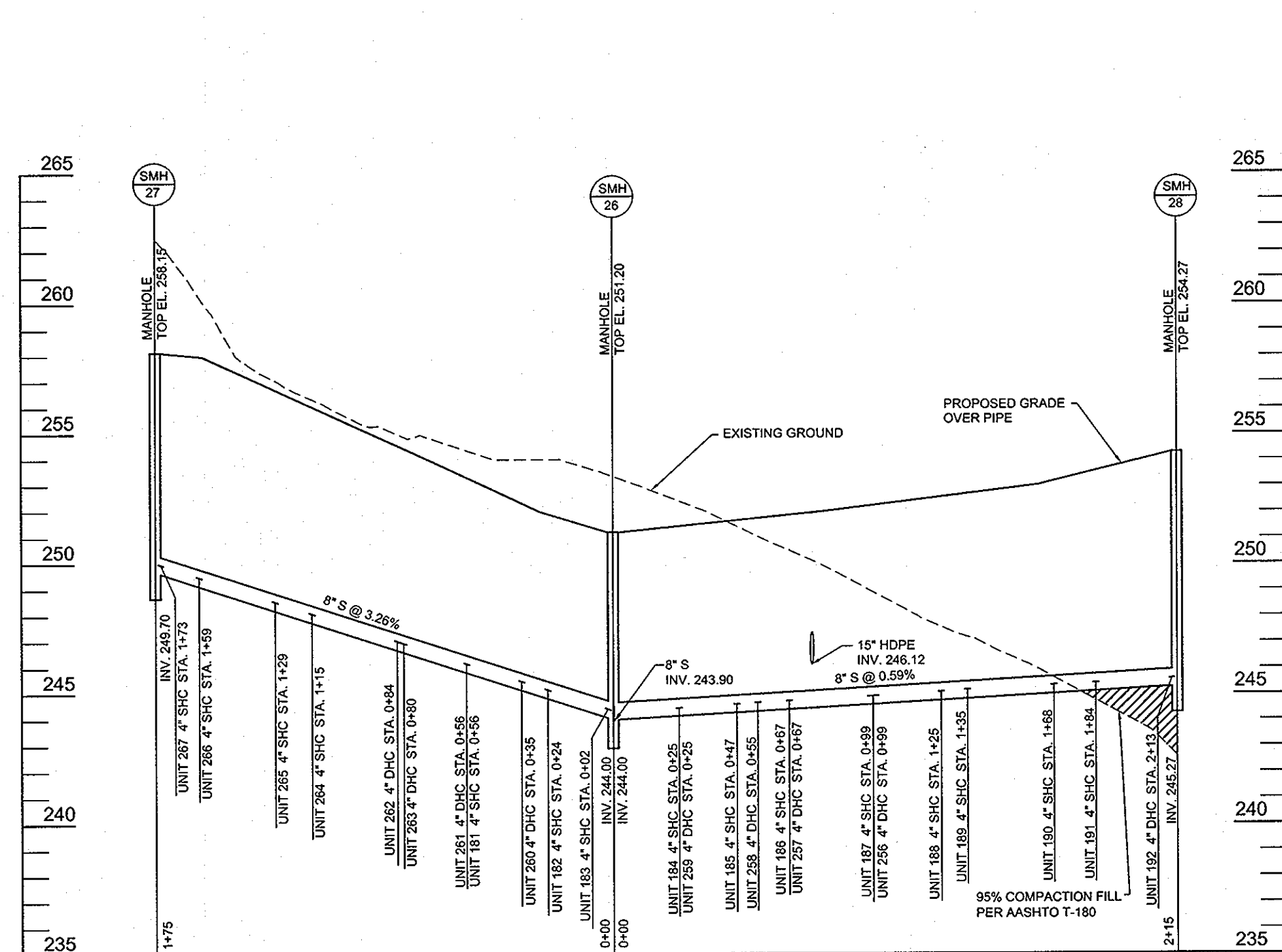
*Catherine* 8/27/04  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Mark J. Leight* 8/31/04  
DIRECTOR DATE

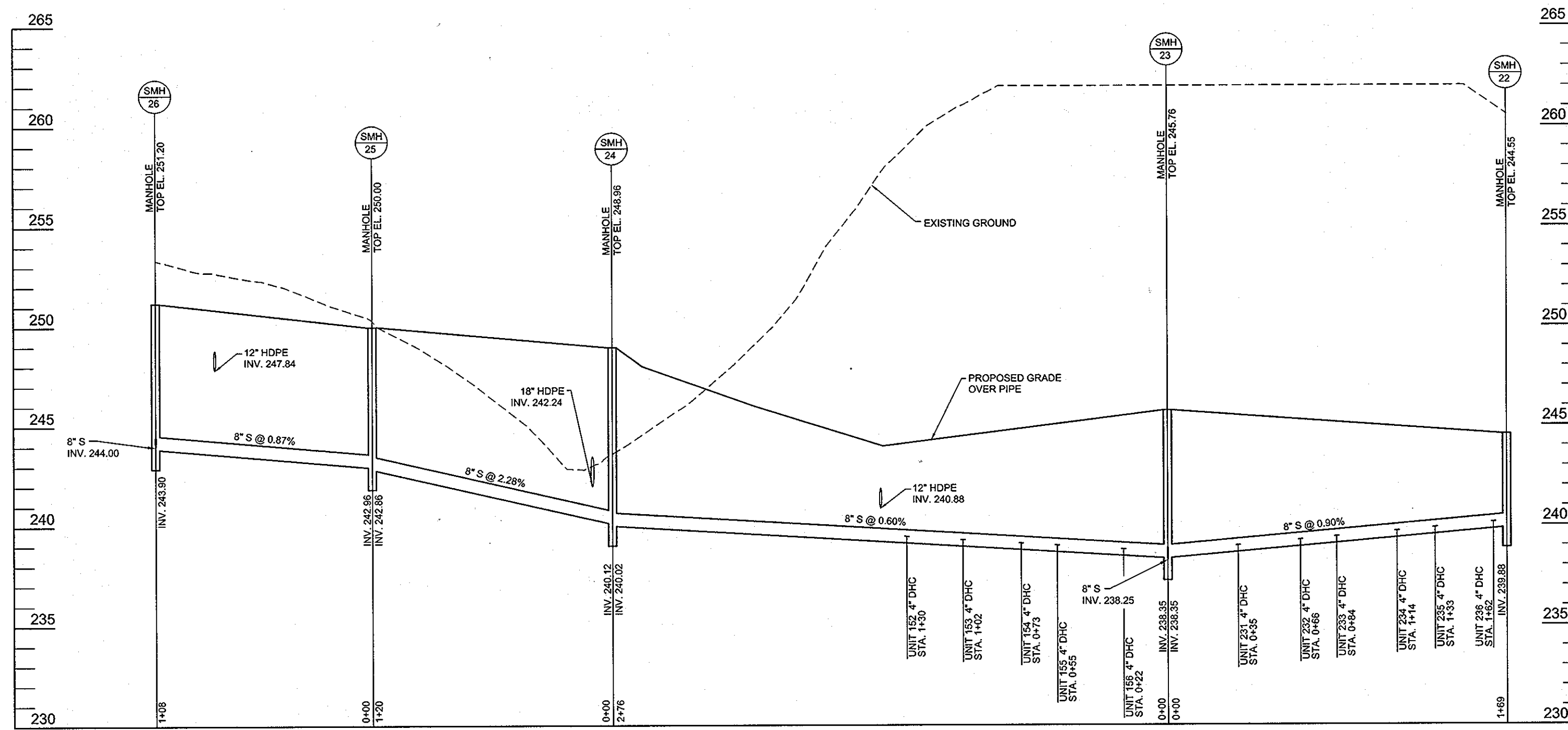


**OWNER**  
RYLAND HOMES  
7250 PARKWAY DRIVE  
SUITE 520  
HANOVER, MD 21076  
410-712-7012

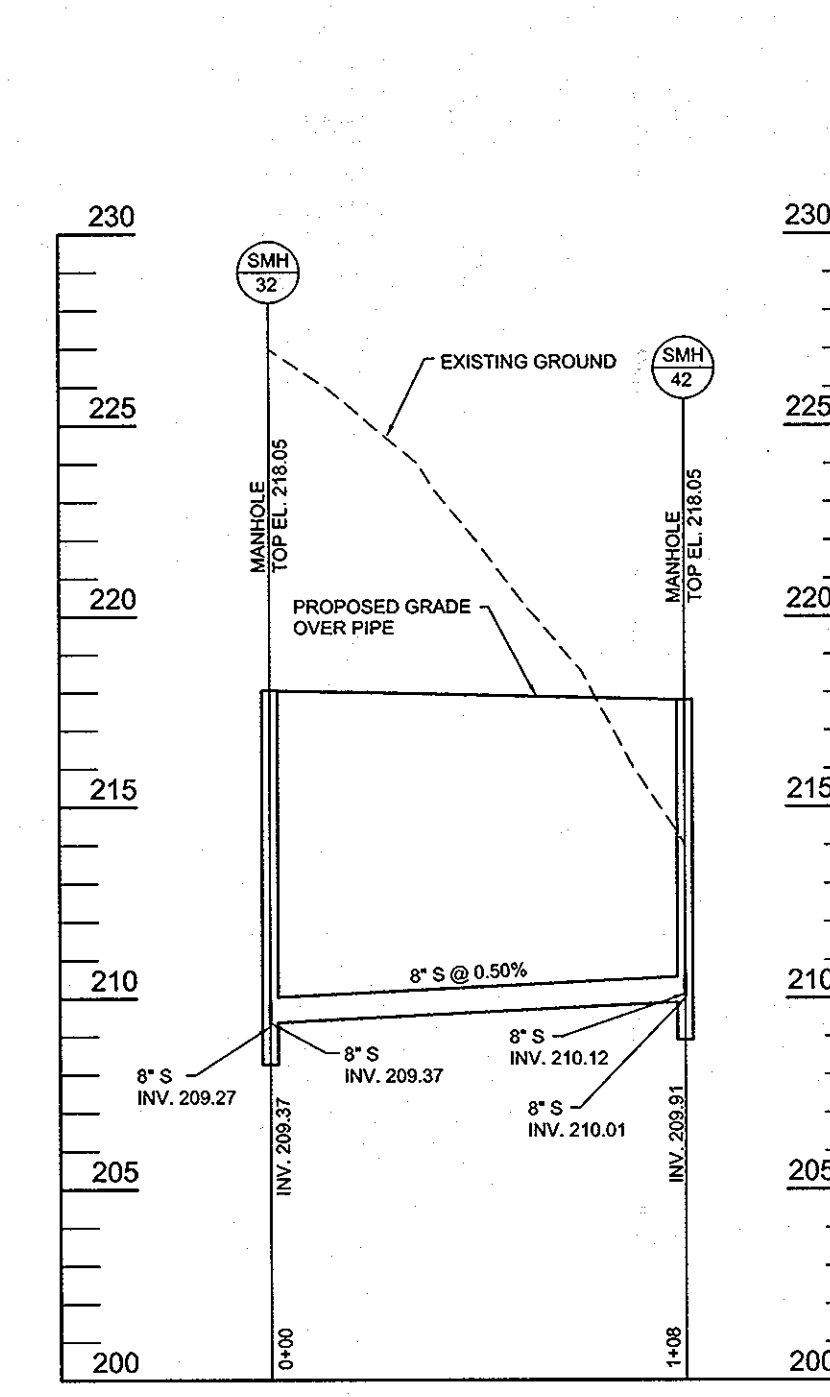




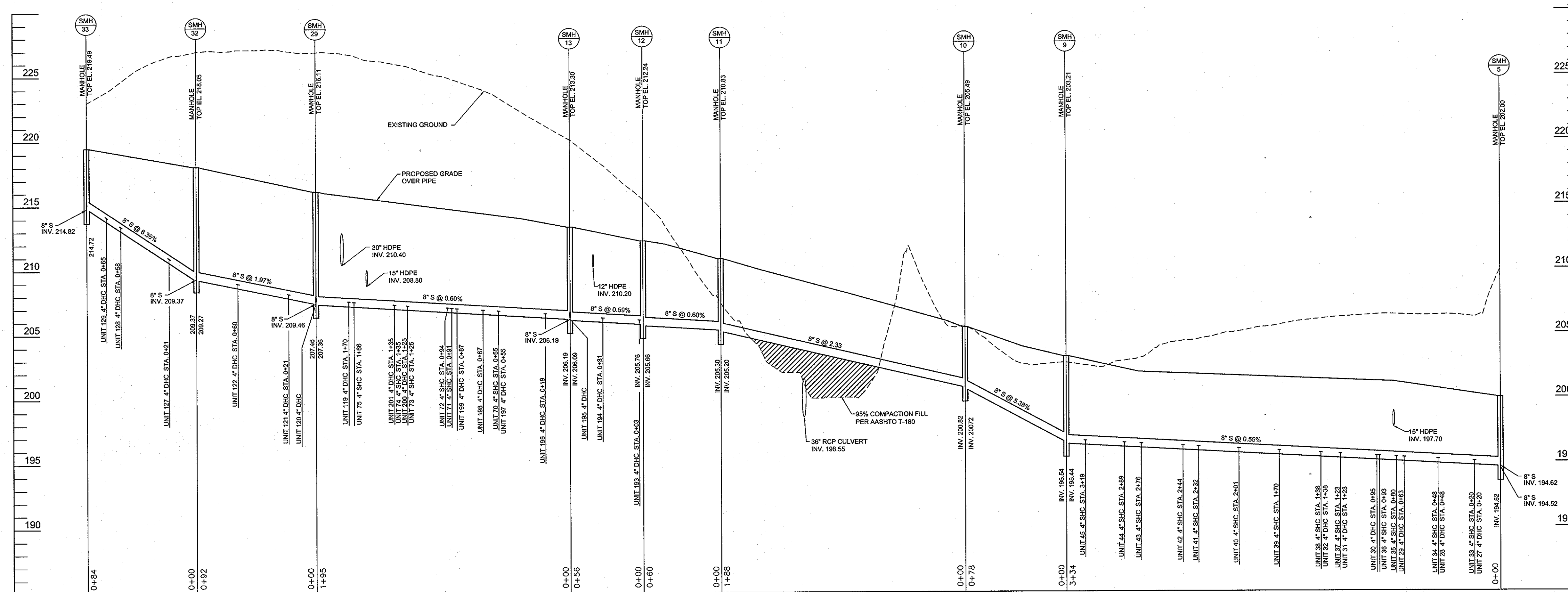
**SEWER PROFILE**  
SCALE: 1"=50' HORZ.  
1"=5' VERT.



**SEWER PROFILE**  
SCALE: 1"=50' HORZ.  
1"=5' VERT.



**SEWER PROFILE**  
SCALE: 1"=50' HORZ.  
1"=5' VERT.



**SEWER PROFILE**  
SCALE: 1"=50' HORZ.  
1"=5' VERT.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 7/2/04  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 [Signature] 5/22/04  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 [Signature] 2/10/04  
 DIRECTOR

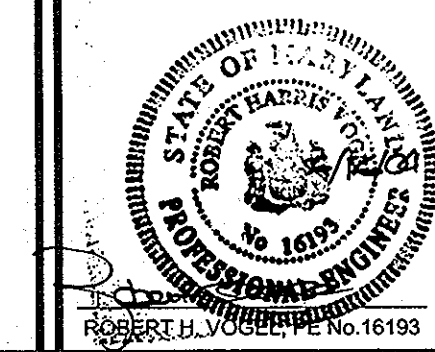
**OWNER**  
 RYLAND HOMES  
 7250 PARKWAY DRIVE  
 SUITE 520  
 HANOVER, MD 21076  
 410-712-7012

NO.	REVISION	DATE
1	REVISE STREAM CROSSINGS SHEETS 3, 5, 9, 11, 15, 16, 18, 24	11/29/04

**SEWER PROFILES**  
**THE OAKS AT WATERS EDGE - PHASE I**  
 PARCEL A-1  
 REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157  
 SDP-03-041, SDP-03-154, F-04-174  
 TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS  
 8407 MAIN STREET  
 ELLICOTT CITY, MARYLAND 21043  
 TEL: 410.461.7666 FAX: 410.461.8961

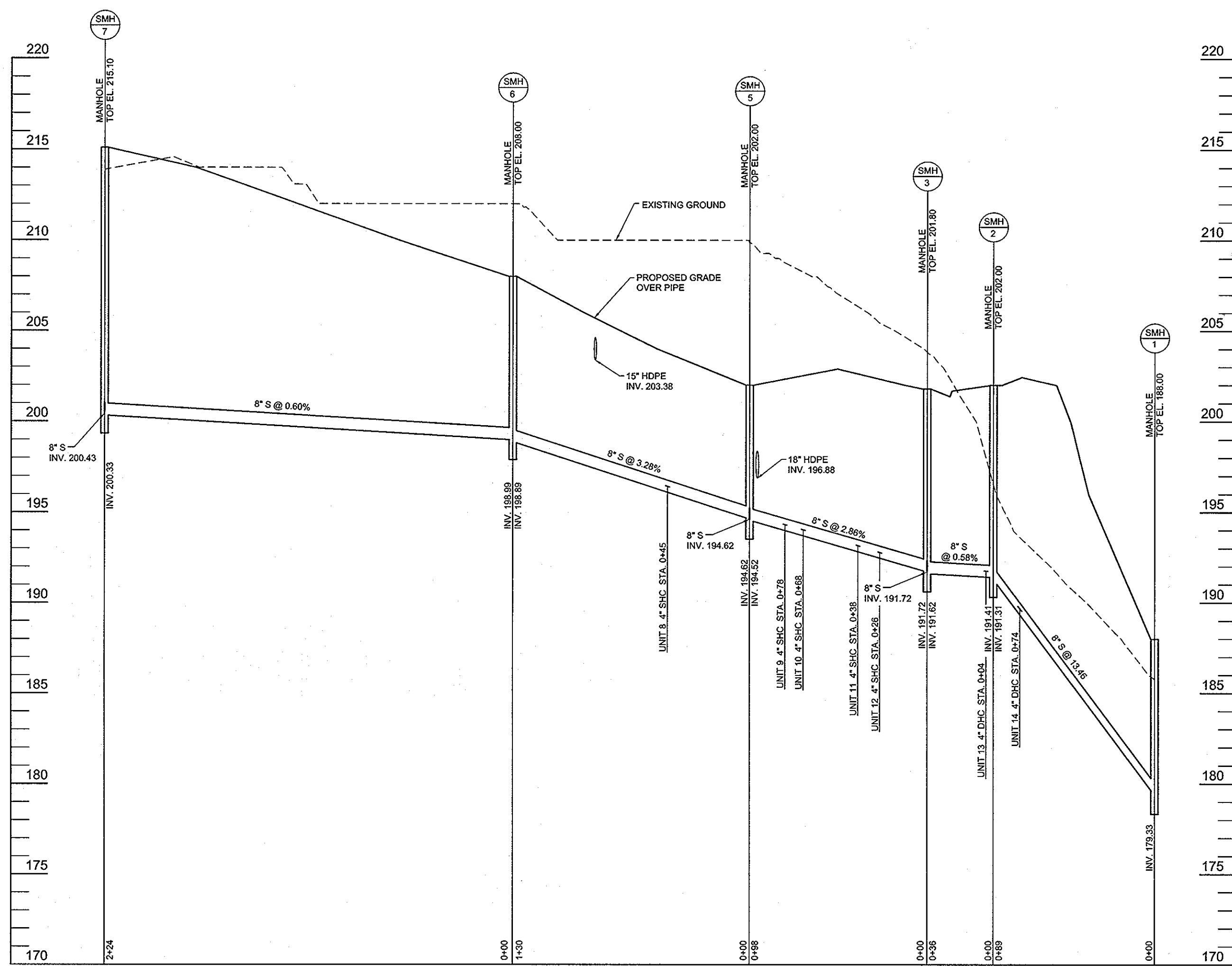
DESIGN BY: JT  
 DRAWN BY: JT  
 CHECKED BY: RHW  
 DATE: JUNE 8, 2004  
 SCALE: AS NOTED  
 W.O. NO.: 03-82



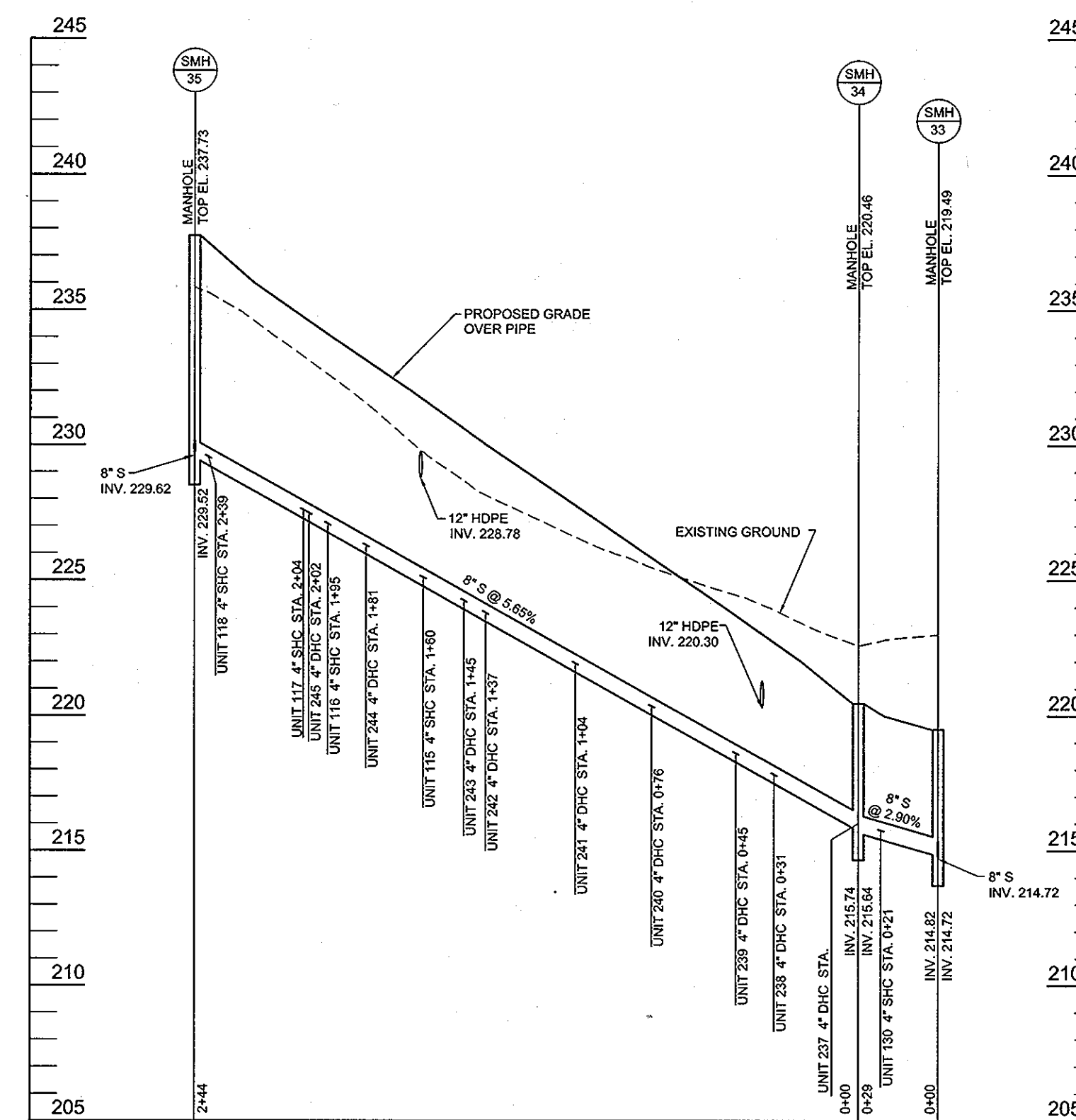




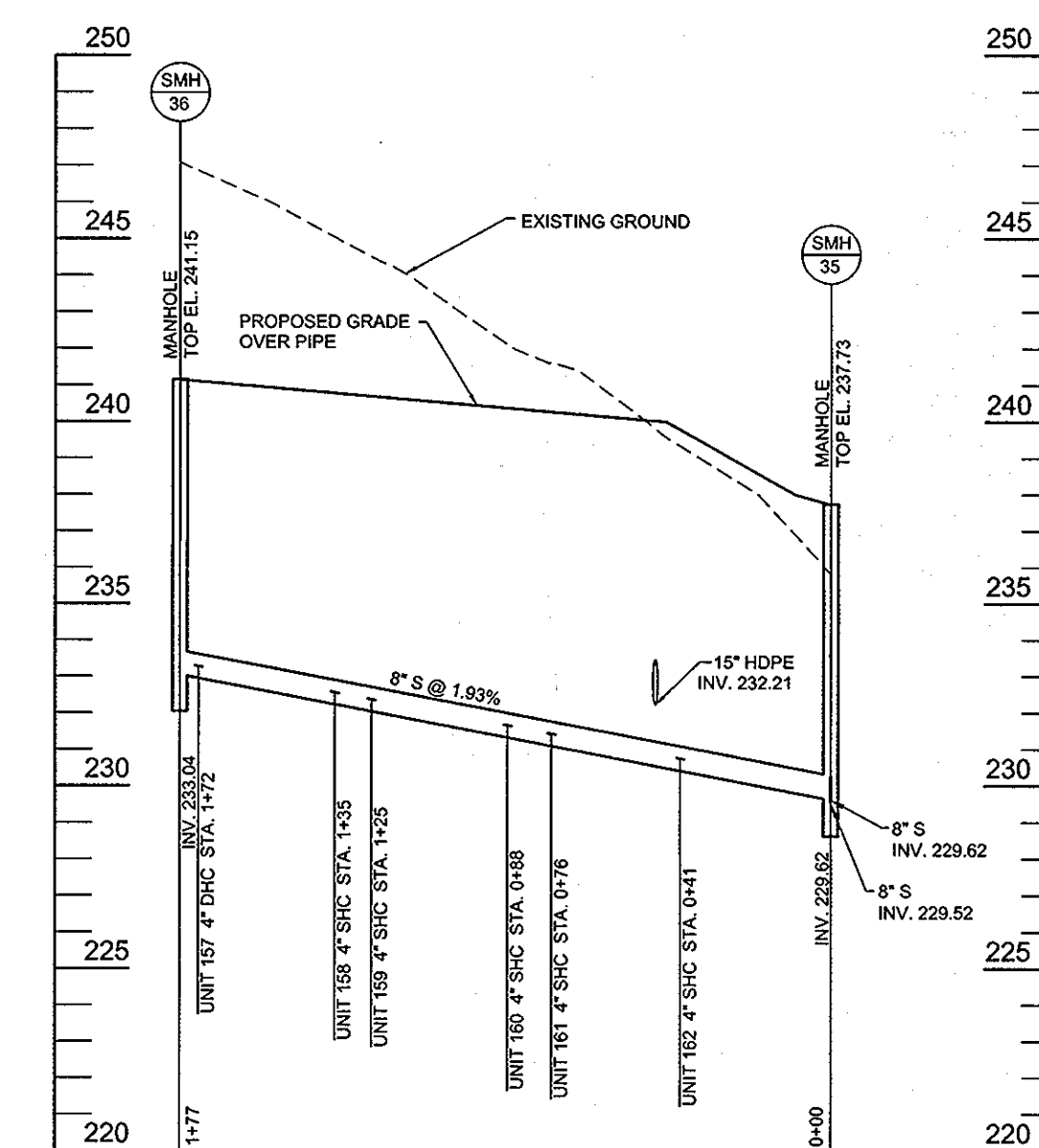




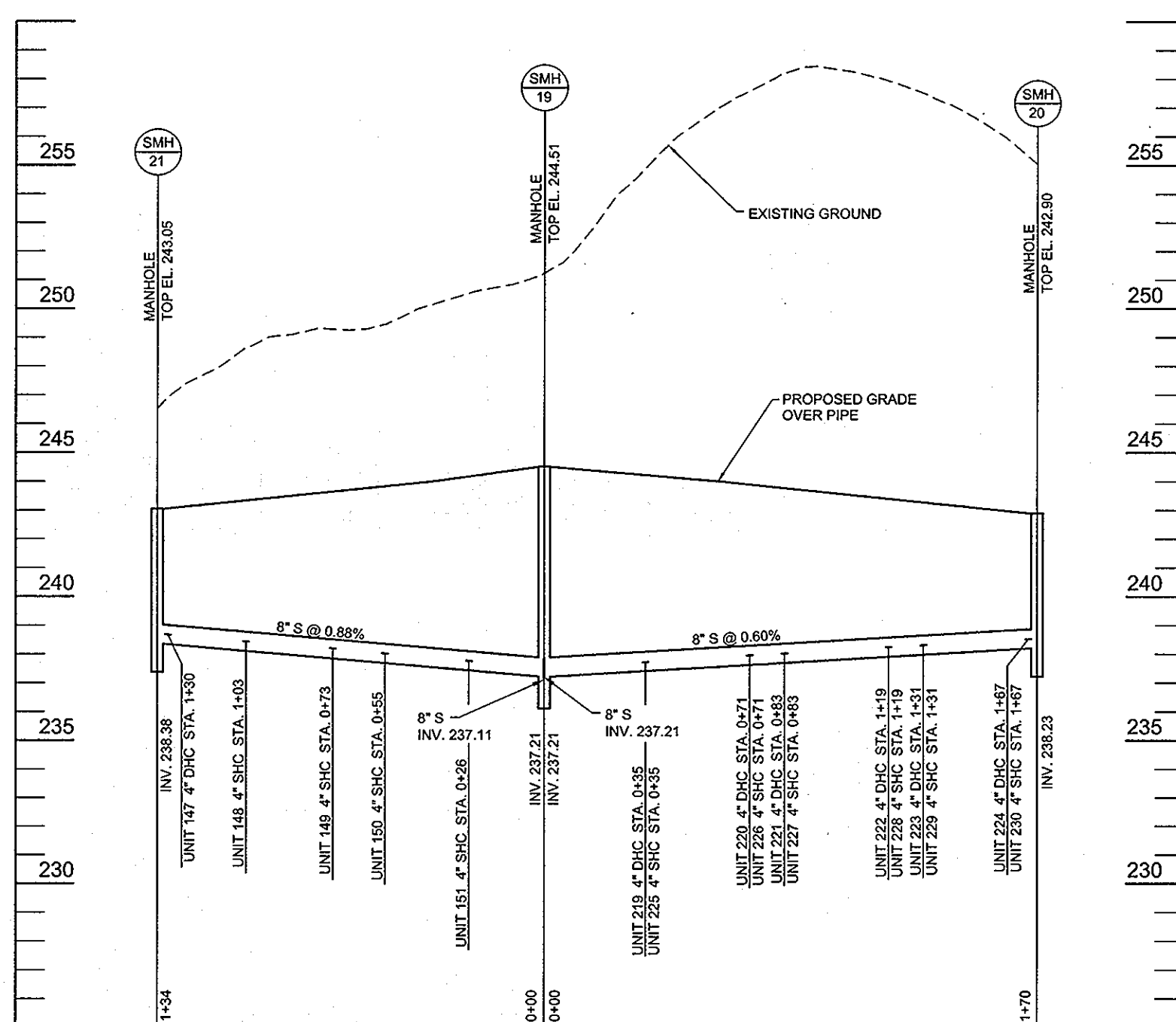
**SEWER PROFILE**  
SCALE: 1"=50' HORZ.  
1"=5' VERT.



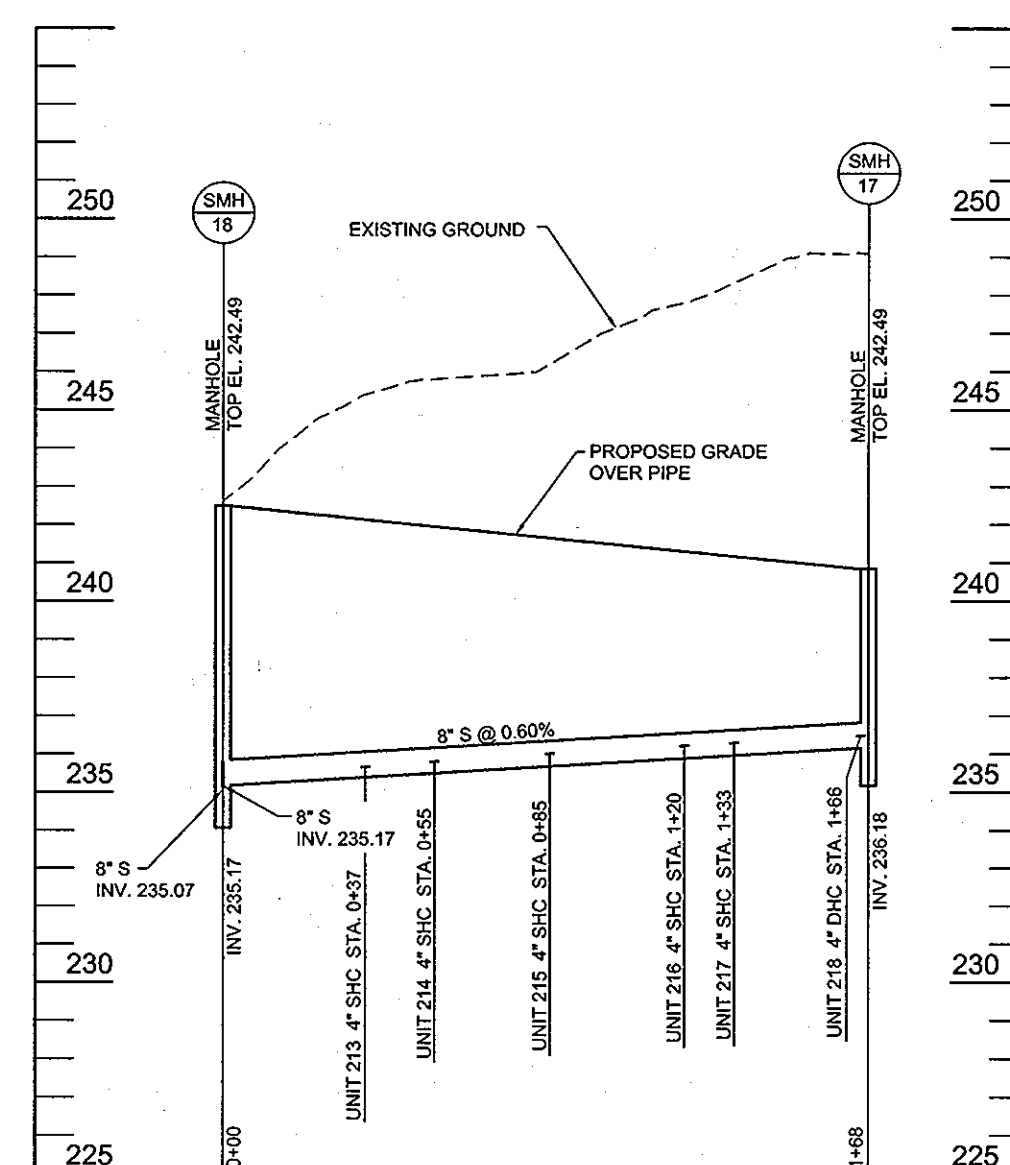
**SEWER PROFILE**  
SCALE: 1"=50' HORZ.  
1"=5' VERT.



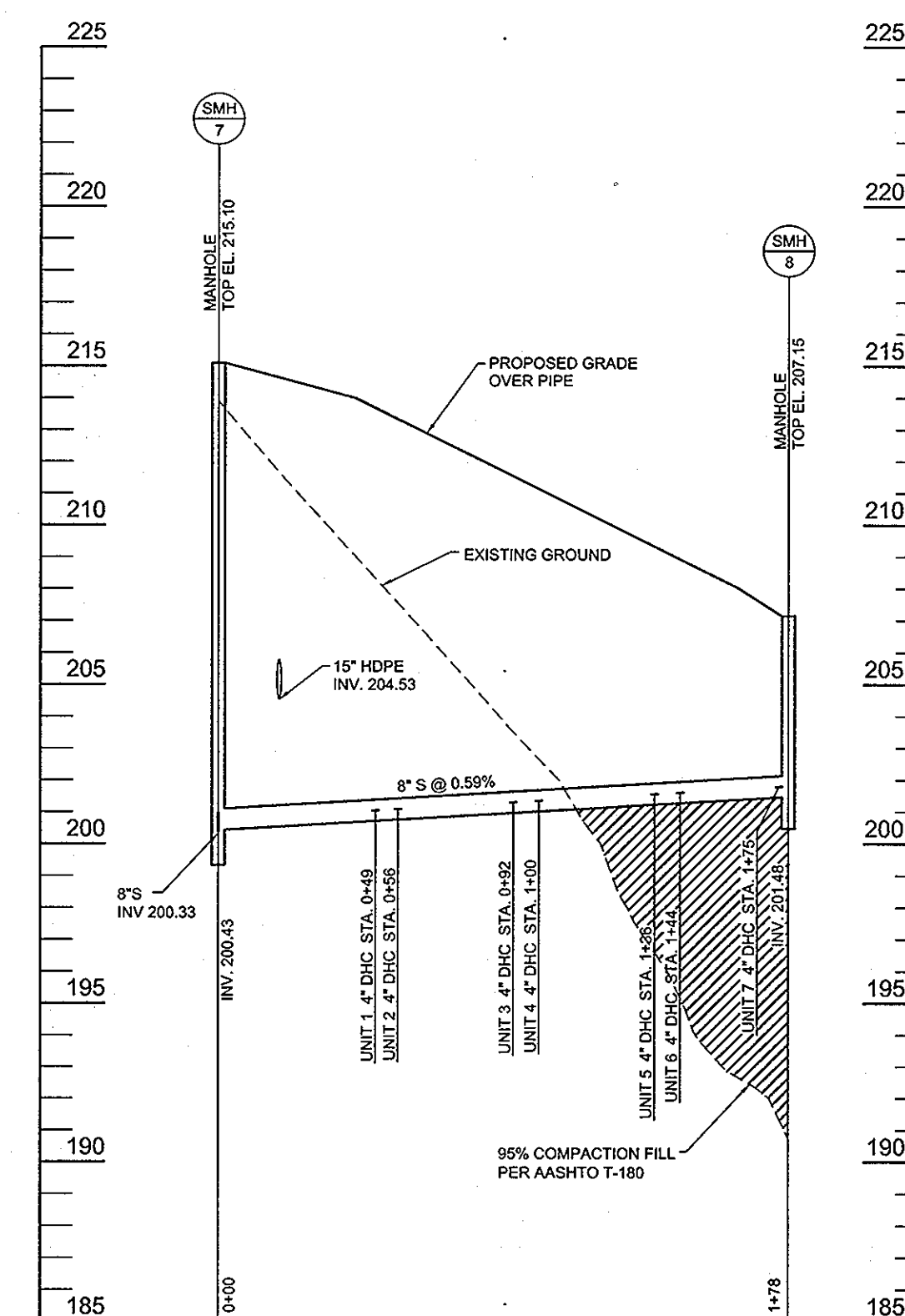
**SEWER PROFILE**  
SCALE: 1"=50' HORZ.  
1"=5' VERT.



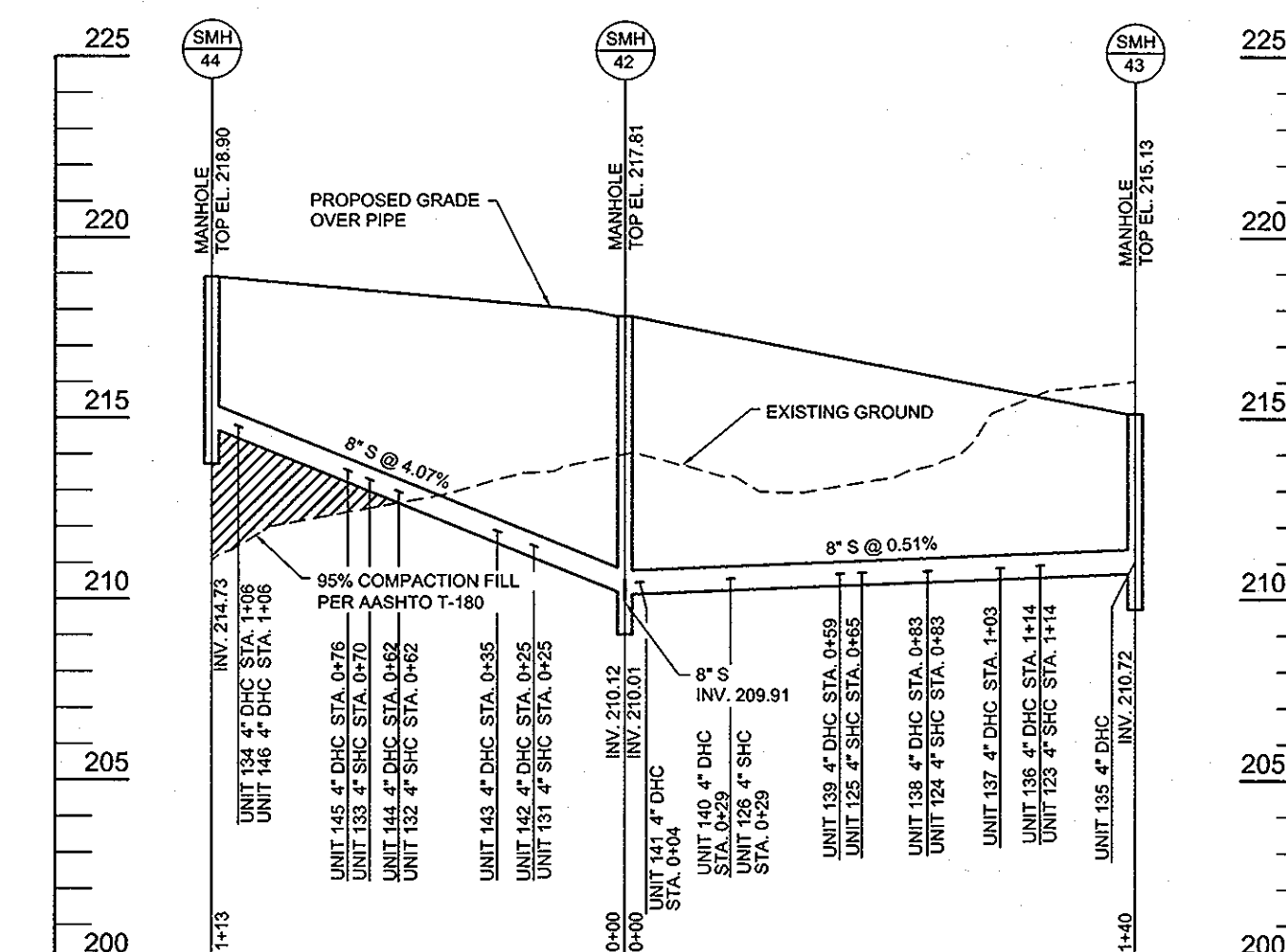
**SEWER PROFILE**  
SCALE: 1"=50' HORZ.  
1"=5' VERT.



**SEWER PROFILE**  
SCALE: 1"=50' HORZ.  
1"=5' VERT.



**SEWER PROFILE**  
SCALE: 1"=50' HORZ.  
1"=5' VERT.



**SEWER PROFILE**  
SCALE: 1"=50' HORZ.  
1"=5' VERT.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*John D. ...*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE: 7/22/04

*Colt ...*  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DATE: 8/02/04

*David ...*  
DIRECTOR  
DATE: 07/21/04

NO.	REVISION	DATE
1	REVISE STREAM CROSSINGS SHEETS 3, 5, 9, 11, 15, 16, 19, 24	11/23/04

**SEWER PROFILES**  
**THE OAKS AT WATERS EDGE - PHASE I**  
PARCEL A-1

REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157  
SDP-09-04-04 SDP-03-154, F-04-174

TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS

8407 MAIN STREET  
ELLICOTT CITY, MARYLAND 21043  
TEL: 410.461.7666 FAX: 410.461.8961

	DESIGN BY: JT
	DRAWN BY: JT
	CHECKED BY: RHV
	DATE: JUNE 8, 2004
	SCALE: AS NOTED
W.O. NO.: 03-82	22 SHEET OF 37



SEWER HOUSE CONNECTION SCHEDULE

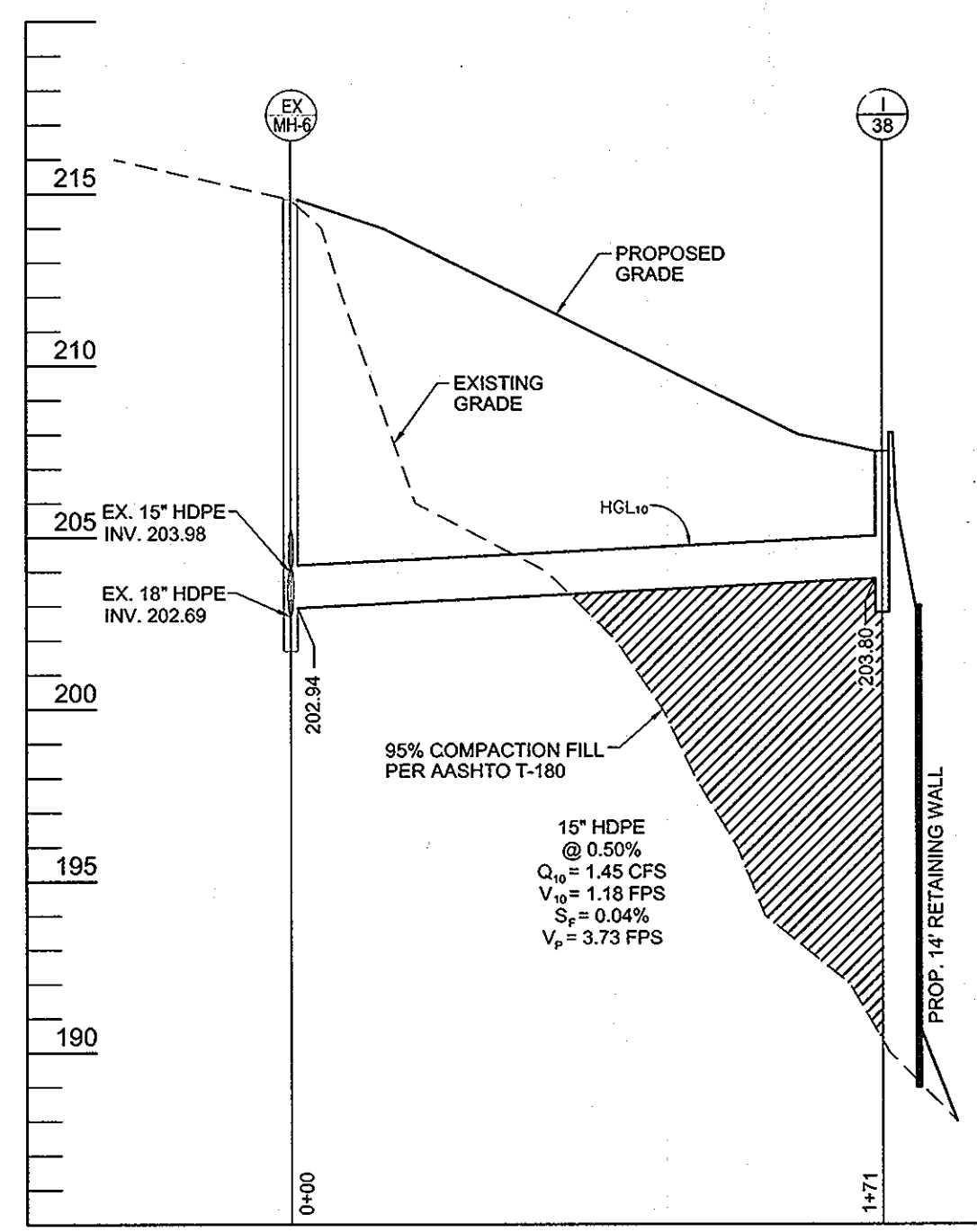
UNIT NO.	TYPE	ELEV. @ MAN	CO INV. IN	CO INV. OUT	MCE	UNIT NO.	TYPE	ELEV. @ MAN	CO INV. IN	CO INV. OUT	MCE	UNIT NO.	TYPE	ELEV. @ MAN	CO INV. IN	CO INV. OUT	MCE	UNIT NO.	TYPE	ELEV. @ MAN	CO INV. IN	CO INV. OUT	MCE
1	SHC	200.72	210.45	201.02	212.15	68	DHC	228.85	-	-	236.83	135	DHC	210.72	-	-	214.50	202	SHC	228.25	233.93	228.63	235.88
2	SHC	200.76	210.43	201.06	211.98	69	DHC	234.26	-	-	237.00	136	DHC	210.59	-	-	214.67	203	SHC	231.74	235.46	232.24	237.71
3	SHC	200.97	208.45	201.27	210.15	70	SHC	206.52	211.56	207.20	213.96	137	DHC	210.54	-	-	217.87	204	SHC	234.57	236.78	235.01	238.88
4	SHC	201.02	207.93	201.32	209.48	71	SHC	206.74	211.71	207.24	213.96	138	DHC	210.31	-	-	215.84	205	DHC	234.59	-	-	239.36
5	SHC	202.23	206.28	201.53	207.98	72	SHC	206.75	211.73	207.28	214.13	139	DHC	210.31	-	-	216.01	206	DHC	234.78	-	-	241.03
6	SHC	201.28	205.93	201.58	207.48	73	SHC	206.94	212.38	207.43	214.63	140	DHC	210.16	-	-	216.51	207	SHC	234.92	239.16	235.22	241.36
7	SHC	201.46	204.45	201.76	206.15	74	SHC	207.00	212.40	207.50	214.80	141	DHC	210.03	-	-	217.00	208	SHC	235.20	240.63	235.56	243.03
8	SHC	196.10	200.69	196.20	202.34	75	SHC	207.19	213.05	207.70	215.30	142	DHC	211.16	-	-	217.50	209	SHC	235.50	240.33	235.77	242.53
9	SHC	193.95	198.82	194.45	201.17	76	SHC	212.27	214.88	212.77	216.83	143	DHC	211.54	-	-	217.50	210	SHC	235.98	240.85	236.23	243.20
10	SHC	193.66	198.72	194.16	201.17	77	SHC	213.23	216.40	214.20	218.50	144	DHC	212.64	-	-	218.00	211	SHC	236.16	241.05	236.46	243.20
11	SHC	192.81	198.70	193.31	201.00	78	SHC	214.16	216.72	214.92	218.67	145	DHC	213.19	-	-	218.00	212	SHC	236.68	240.90	236.98	243.20
12	SHC	192.46	198.88	193.03	201.33	79	SHC	215.73	218.40	216.55	220.50	146	DHC	214.43	-	-	218.00	213	SHC	235.39	240.25	235.89	242.00
13	DHC	191.43	-	-	201.16	80	SHC	216.09	218.88	217.04	220.83	147	DHC	238.36	-	-	242.17	214	SHC	235.50	239.75	236.11	241.50
14	DHC	189.29	-	-	201.00	81	SHC	217.29	220.40	218.91	222.50	148	SHC	237.85	240.77	238.68	243.67	215	SHC	235.68	239.58	236.18	241.33
15	SHC	191.81	197.25	192.36	200.50	82	SHC	217.81	220.85	219.39	222.83	148	SHC	237.87	240.77	238.33	243.67	216	SHC	235.89	239.08	236.39	240.83
16	SHC	191.98	196.18	192.43	198.33	83	SHC	219.21	220.90	221.21	225.00	150	SHC	237.69	241.60	238.15	244.50	217	SHC	235.97	238.42	236.47	240.17
17	SHC	192.01	196.66	192.56	198.66	84	SHC	220.17	223.75	223.33	225.67	151	SHC	237.34	241.60	237.80	244.50	218	DHC	236.17	-	-	241.67
18	SHC	192.21	196.68	192.65	198.33	85	SHC	221.41	225.40	224.37	227.50	152	DHC	239.13	-	-	243.17	219	DHC	237.42	-	-	243.50
19	SHC	192.26	197.00	192.80	199.00	86	SHC	222.41	226.22	225.19	228.17	153	DHC	238.96	-	-	243.67	220	DHC	237.64	-	-	243.00
20	DHC	192.43	-	-	201.00	87	SHC	223.33	227.90	226.72	230.00	154	DHC	238.79	-	-	243.67	221	DHC	237.71	-	-	241.83
21	SHC	191.82	198.05	191.97	200.00	88	SHC	223.65	228.22	227.28	230.17	155	DHC	238.68	-	-	244.00	222	DHC	237.92	-	-	241.33
22	SHC	191.98	197.05	192.19	199.50	89	SHC	225.13	229.90	229.13	232.00	156	DHC	238.48	-	-	244.50	223	DHC	238.00	-	-	241.17
23	SHC	192.03	196.71	192.23	198.66	90	SHC	225.49	230.38	229.63	232.33	157	DHC	232.94	-	-	240.50	224	DHC	238.21	-	-	241.17
24	SHC	192.22	196.71	192.44	198.66	91	SHC	226.89	231.90	231.48	234.30	158	SHC	232.23	238.75	232.73	240.50	225	SHC	237.42	241.77	237.87	243.50
25	SHC	192.27	197.05	192.47	199.50	92	SHC	209.96	215.16	210.46	217.26	159	SHC	232.03	238.58	232.50	240.33	226	SHC	237.64	241.27	238.09	243.00
26	SHC	192.46	197.55	192.66	200.00	93	SHC	210.84	216.48	211.34	218.43	160	SHC	231.32	239.08	231.82	240.83	227	SHC	237.71	241.27	238.16	243.00
27	SHC	194.73	194.91	198.55	200.50	94	SHC	214.84	217.16	215.34	219.26	161	SHC	231.09	238.92	231.59	240.67	228	SHC	237.92	241.10	238.43	242.83
28	SHC	194.88	195.11	197.55	199.50	95	SHC	216.05	218.64	216.55	220.59	162	SHC	230.41	238.92	230.91	240.67	229	SHC	238.00	240.60	238.44	242.33
29	SHC	194.97	195.16	197.21	199.16	96	SHC	216.59	219.32	217.09	221.42	163	DHC	233.24	-	-	241.50	230	SHC	238.21	240.60	238.65	242.33
30	DHC	195.14	-	-	199.16	97	SHC	218.46	221.30	218.96	223.25	164	DHC	233.08	-	-	244.00	231	DHC	236.67	-	-	244.00
31	DHC	195.30	-	-	200.00	98	SHC	219.28	221.98	219.97	224.08	165	DHC	233.00	-	-	240.83	232	DHC	238.96	-	-	244.00
32	DHC	195.38	-	-	200.50	99	SHC	221.31	223.96	221.81	225.91	166	DHC	232.84	-	-	240.86	233	DHC	239.12	-	-	244.00
33	SHC	194.73	198.12	195.27	200.27	100	SHC	223.11	226.08	223.61	228.18	167	DHC	232.77	-	-	240.67	234	DHC	239.40	-	-	243.83
34	SHC	194.88	197.77	195.39	199.77	101	SHC	225.42	229.06	225.86	231.01	168	DHC	232.60	-	-	240.17	235	DHC	239.56	-	-	243.83
35	SHC	195.06	197.62	195.56	199.77	102	SHC	225.90	229.74	226.40	231.84	169	DHC	233.26	-	-	242.00	236	DHC	239.82	-	-	243.33
36	SHC	195.13	197.27	195.63	199.27	103	SHC	228.40	231.72	228.67	233.67	170	SHC	233.08	239.20	233.58	241.00	237	DHC	215.74	-	-	219.87
37	SHC	195.30	197.62	195.80	199.77	104	SHC	228.71	232.40	229.18	234.50	171	SHC	233.00	239.03	233.50	241.33	238	DHC	217.49	-	-	221.87
38	SHC	195.37	197.77	195.87	199.77	105	SHC	230.93	235.05	231.43	237.00	172	SHC	232.81	239.03	233.34	240.83	239	DHC	218.28	-	-	222.70
39	SHC	195.55	198.12	196.05	200.27	106	SHC	231.40	235.23	231.90	233.63	173	SHC	232.77	238.87	233.27	240.67	240	DHC	220.03	-	-	225.03
40	SHC	195.72	198.27	196.22	200.27	107	DHC	233.39	-	-	235.50	174	SHC	232.60	238.37	233.10	240.17	241	DHC	221.62	-	-	226.51
41	SHC	195.89	198.62	196.39	200.77	108	DHC	221.38	-	-	226.18	175	DHC	239.30	-	-	243.00	242	DHC	223.48	-	-	229.34
42	SHC	195.96	198.27	196.46	200.77	109	DHC	224.92	-	-	228.01	176	DHC	239.06	-	-	242.50	243	DHC	223.93	-	-	229.67
43	SHC	196.01	199.12	196.51	201.27	110	DHC	225.58	-	-	228.51	177	DHC	238.98	-	-	242.33	244	DHC	225.97	-	-	232.50
44	SHC	196.21	199.27	196.71	201.27	111	DHC	227.74	-	-	231.34	178	DHC	238.73	-	-	241.83	245	DHC	227.15	-	-	234.50
45	SHC	196.38	199.12	196.88	201.27	112	DHC	228.27	-	-	231.67	179	DHC	238.64	-	-	241.67	246	DHC	230.09	-	-	238.54
46	DHC	207.70	-	-	213.84	113	DHC	230.52	-	-	233.50	180	DHC	238.39	-	-	241.67	247	DHC	230.83	-	-	239.04
47	DHC	209.16	-	-	215.17	114	DHC	231.06	-	-	234.50	181	SHC	245.83	251.13	246.28	253.00	248	DHC	231.10	-	-	239.71
48	DHC	209.64	-	-	215.34	115	SHC	224.78	228.39	225.28	230.44	182	SHC	244.78	249.15	245.23	251.17	249	DHC	231.83	-	-	239.71
49	DHC	210.97	-	-	216.51	116	SHC	226.76	230.87	227.26	232.77	183	SHC	244.06	249.13	244.51	251.00	250	DHC	232.45	-	-	240.38
50	DHC	211.32	-	-	216.68	117	SHC	227.27	231.72	227.77	233.77	184	SHC	244.15	248.48	244.57	250.50	251	DHC	232.90	-	-	240.38
51	DHC	213.09	-	-	217.85	118	SHC	229.27	234.10	229.74	236.00	185	SHC	244.28	248.62	244.64	250.50	252	DHC	233.34	-	-	240.55
52	DHC	213.41	-	-	218.02	119	DHC	207.25	-	-	214.87	186	SHC	244.40	249.65	244.83	251.67	253	DHC	233.80	-	-	241.05
53	DHC	214.43	-	-	219.19	120	DHC	207.46	-	-	215.37	187	SHC	244.58	250.12	244.93	250.50	254	SHC	233.92	238.47	234.13	241.22
54	DHC	215.89	-	-	220.40	121	DHC	207.88	-	-	215.20	188	SHC	244.74	249.98	245.19	252.00	255	SHC	236.56	238.07	237.04	241.72
55	DHC	217.33	-	-	222.07	122	DHC	208.64	-	-	215.70	189	SHC	244.80	250.30	245.27	252.17	256	DHC	244.58	-	-	251.17
56	DHC	217.69	-	-	222.90	123	SHC	210.59	213.57	211.09	215.37	190	SHC	245.00	250.65	245.45	2						



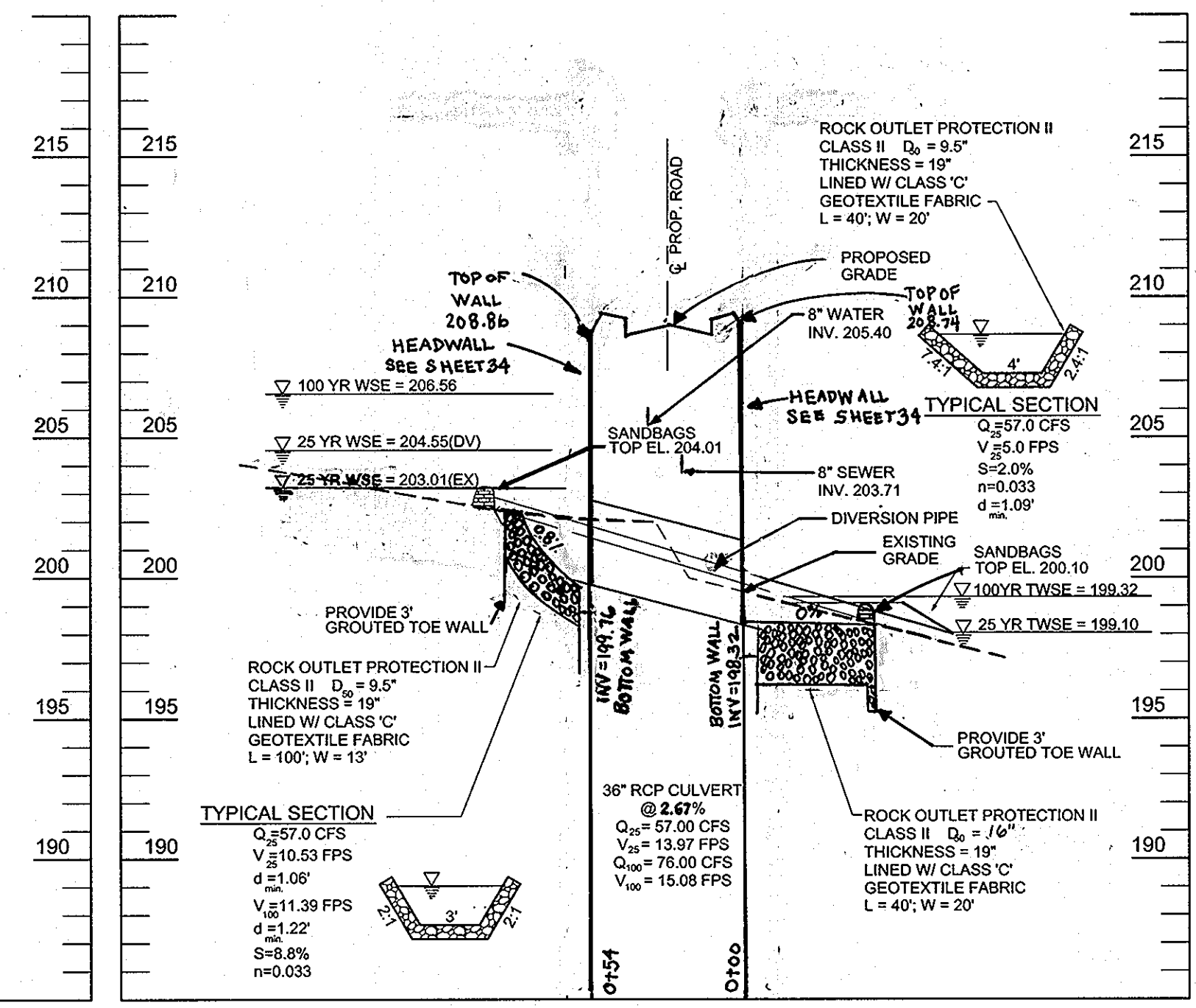
INLET SCHEDULE							
NO.	TYPE	LOCATION		TOP ELEV.	INV. IN	INV. OUT	REMARKS
		NORTHING	EASTING				
I-1	DOUBLE TYPE 'S' COMBINATION	551,766	1,375,263	214.90	202.95	202.85	SD 4.34
I-2	DOUBLE TYPE 'S' COMBINATION	551,757	1,375,127	215.83	203.82	203.62	SD 4.34
I-3	DOUBLE TYPE 'S' COMBINATION	551,581	1,375,134	211.64	207.43	207.35	SD 4.34
I-4	DOUBLE TYPE 'S' COMBINATION	551,582	1,375,158	211.64	207.44	207.35	SD 4.34
I-5	DOUBLE TYPE 'S' COMBINATION	551,822	1,375,089	217.37	210.96	210.86	SD 4.34
I-6	DOUBLE TYPE 'S' COMBINATION	551,956	1,378,066	220.33	217.61	217.36	SD 4.34
I-7	DOUBLE TYPE 'S' COMBINATION	551,999	1,375,046	223.40	217.61	217.36	SD 4.34
I-8	DOUBLE TYPE 'S' COMBINATION	551,842	1,374,902	225.80	217.61	217.36	SD 4.34
I-9	PRECAST STANDARD TYPE 'D'	551,902	1,374,913	226.50	223.25	223.00	SD 4.39
I-10	DOUBLE TYPE 'S' COMBINATION	551,996	1,374,929	230.93	228.91	227.96	SD 4.34
I-11	DOUBLE TYPE 'S' COMBINATION	552,020	1,374,922	231.67	228.96	228.96	SD 4.34
I-12	DOUBLE TYPE 'S' COMBINATION	551,766	1,374,773	240.20	237.05	237.48	SD 4.34
I-13	DOUBLE TYPE 'S' COMBINATION	552,041	1,374,803	240.10	233.05	232.95	SD 4.34
I-14	DOUBLE TYPE 'S' COMBINATION	552,159	1,374,694	241.85	235.64	235.54	SD 4.34
I-15	DOUBLE TYPE 'S' COMBINATION	552,174	1,374,711	241.85	235.91	235.91	SD 4.34
I-16	PRECAST STANDARD TYPE 'D'	552,302	1,374,716	240.00	237.00	237.00	SD 4.39
I-17	DOUBLE TYPE 'S' COMBINATION	552,792	1,375,058	217.66	211.41	211.31	SD 4.34
I-18	PRECAST STANDARD TYPE 'D'	551,716	1,375,042	216.00	213.05	211.80	SD 4.39
I-19	DOUBLE TYPE 'S' COMBINATION	551,639	1,374,026	217.75	215.25	215.00	SD 4.34
I-20	DOUBLE TYPE 'S' COMBINATION	551,619	1,375,012	218.10	215.38	215.38	SD 4.34
I-21	PRECAST STANDARD TYPE 'D'	551,748	1,374,851	226.67	222.67	222.68	SD 4.39
I-22	DOUBLE TYPE 'S' COMBINATION	551,826	1,374,865	28.00	225.28	225.28	SD 4.34
I-23	DOUBLE TYPE 'S' COMBINATION	551,672	1,374,838	226.50	223.65	223.40	SD 4.34
I-24	DOUBLE TYPE 'S' COMBINATION	551,651	1,374,823	226.50	223.78	223.78	SD 4.34
I-25	PRECAST STANDARD TYPE 'D'	551,780	1,374,865	236.00	233.00	232.90	SD 4.39
I-26	DOUBLE TYPE 'S' COMBINATION	551,869	1,374,666	240.72	239.00	238.75	SD 4.34
I-27	DOUBLE TYPE 'S' COMBINATION	551,913	1,374,655	241.76	239.50	239.50	SD 4.34
I-28	DOUBLE TYPE 'S' COMBINATION	551,759	1,374,554	241.75	237.38	237.28	SD 4.34
I-29	DOUBLE TYPE 'S' COMBINATION	551,745	1,374,536	241.75	237.66	237.56	SD 4.34
I-30	DOUBLE TYPE 'S' COMBINATION	551,765	1,374,347	243.13	239.81	239.71	SD 4.34
I-31	DOUBLE TYPE 'S' COMBINATION	551,851	1,374,282	243.76	240.85	240.35	SD 4.34
I-32	DOUBLE TYPE 'S' COMBINATION	551,873	1,374,274	243.76	240.85	240.97	SD 4.34
I-33	DOUBLE TYPE 'S' COMBINATION	551,825	1,374,082	250.77	243.35	245.10	SD 4.34
I-34	DOUBLE TYPE 'S' COMBINATION	551,626	1,374,059	250.77	247.93	247.93	SD 4.34
I-35	DOUBLE TYPE 'S' COMBINATION	551,505	1,374,077	250.00	247.00	247.00	SD 4.39
I-36	DOUBLE TYPE 'S' COMBINATION	550,976	1,375,196	201.04	197.67	197.42	SD 4.39
I-37	DOUBLE TYPE 'S' COMBINATION	550,983	1,375,175	201.04	197.79	197.79	SD 4.39
I-38	DOUBLE TYPE 'S' COMBINATION	550,579	1,375,256	207.50	203.80	203.80	SD 4.41
I-39	TYPE A-10 INLET	550964	1375307	200.50	157	197.12	SD 4.41
I-40	TYPE A-10 INLET	550970	1375286	200.50	157	195.22	SD 4.41
I-41	TYPE A-5 INLET	550852	1375111	206.00	157	206.28	SD 4.40
I-42	TYPE A-5 INLET	550837	1375126	206.00	157	198.72	SD 4.40
I-43	TYPE A-10 INLET	550531	1375129	216.89	157	208.68	SD 4.41

STORM DRAIN MANHOLE SCHEDULE							
NO.	TYPE	LOCATION		TOP ELEV.	INV. IN	INV. OUT	REMARKS
		NORTHING	EASTING				
MH-1	SHALLOW PRECAST MANHOLE	551,760	1,375,158	216.00	208.70	207.45	G 5.13
MH-2	SHALLOW PRECAST MANHOLE	551,830	1,375,065	217.38	212.02	211.02	G 5.13
MH-3	SHALLOW PRECAST MANHOLE	551,858	1,374,905	226.12	222.30	222.30	G 5.13
MH-4	SHALLOW PRECAST MANHOLE	551,947	1,374,807	235.00	231.22	230.97	G 5.13
MH-5	SHALLOW PRECAST MANHOLE	552,210	1,374,872	243.00	236.17	235.92	G 5.13
MH-6	SHALLOW PRECAST MANHOLE	551,794	1,374,585	242.00	236.93	236.83	G 5.13
MH-7	SHALLOW PRECAST MANHOLE	551,843	1,374,460	244.46	238.68	238.58	G 5.13
MH-7A	SHALLOW PRECAST MANHOLE	551,782	1,374,191	248.50	243.97	243.87	G 5.13
MH-8	SHALLOW PRECAST MANHOLE	551,703	1,374,087	249.86	244.72	244.62	G 5.13
MH-9	SHALLOW PRECAST MANHOLE	551,604	1,374,084	251.15	245.55	245.45	G 5.13
MH-10	SHALLOW PRECAST MANHOLE	551,602	1,374,151	251.91	246.09	245.99	G 5.13
MH-11	SHALLOW PRECAST MANHOLE	551,514	1,374,149	251.44	246.63	246.53	G 5.13
MH-12	STANDARD 4' MANHOLE	551,075	1,375,295	202.39	24	194.60	G-5.12
MH-13	STANDARD 4' MANHOLE	550,892	1,375,278	201.93	24	195.63	G-5.12
MH-14	STANDARD 4' MANHOLE	550,900	1,375,194	201.98	18	196.77	G-5.12
MH-15	STANDARD 4' MANHOLE	550,793	1,375,105	208.22	18	199.52	G-5.12
MH-16	STANDARD 4' MANHOLE	550,592	1,375,085	214.83	15	203.98	G-5.12

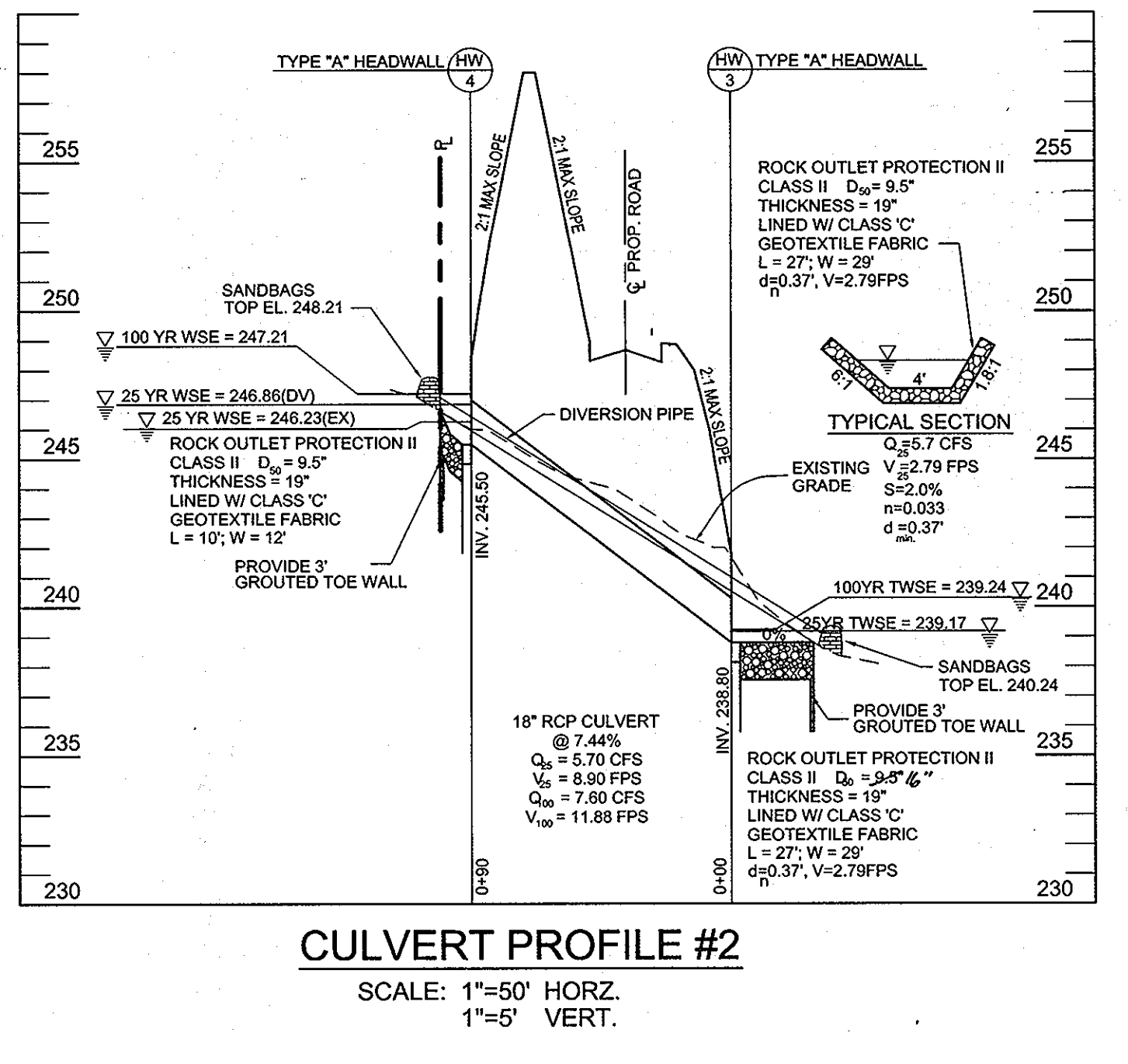
STRUCTURE SCHEDULE							
NO.	TYPE	LOCATION		TOP ELEV.	INV. IN	INV. OUT	REMARKS
		NORTHING	EASTING				
E-1	30" ROUND TYPE 'C' ENDWALL	551,721	1,375,274	204.00	200.00	200.00	SD 5.21
E-2	24" ROUND TYPE 'A' HEADWALL	551,600	1,375,381	198.50	198.00	198.00	SD 5.11
E-3	24" ROUND CMP END SECTION	551143	1,375,251	196.00	194.00	194.00	SD 5.61 & SD 5.62
E-4	36" ROUND TYPE 'A' HEADWALL	551104	1,375,364	195.40	190.88	190.88	SD 5.11
HW-1	36" ROUND TYPE 'A' HEADWALL	551,400	1,375,203	202.50	198.00	198.00	SD 5.11
HW-2	36" ROUND TYPE 'A' HEADWALL	551,441	1,375,141	204.50	200.00	200.00	SD 5.11
HW-3	18" ROUND TYPE 'A' HEADWALL	551,759	1,374,183	240.30	238.80	238.80	SD 5.11
HW-4	18" ROUND TYPE 'A' HEADWALL	551,805	1,374,109	247.00	245.50	245.50	SD 5.11
HW-5	60" TYPE 'A' HEADWALL ELIP.	550780	1375104	209.00	203.50	203.50	SD 5.11
HW-6	60" TYPE 'A' HEADWALL ELIP.	550794	1375066	210.50	205.00	205.00	SD 5.11



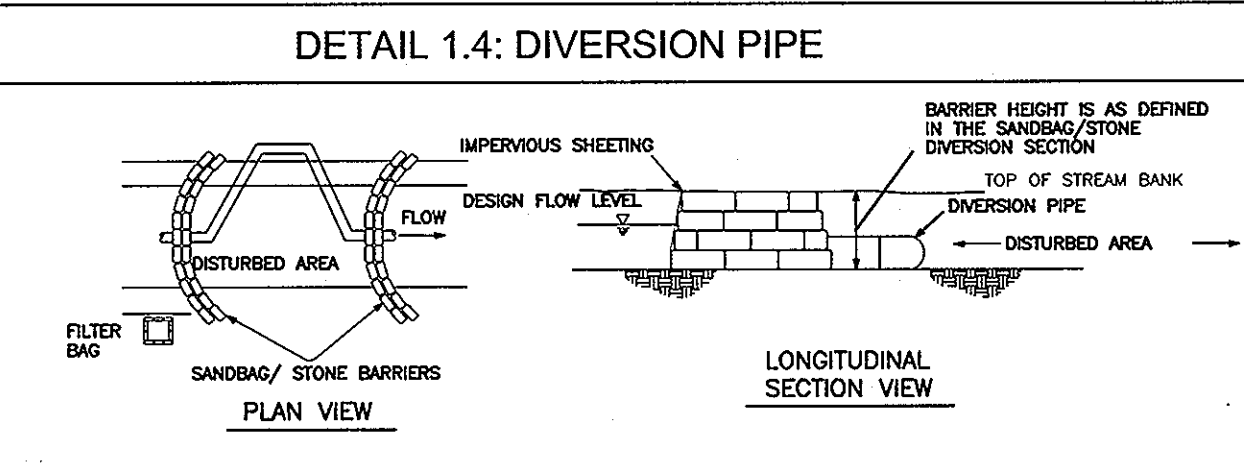
**STORM DRAIN PROFILE**  
SCALE: 1"=50' HORZ.  
1"=5' VERT.



**CULVERT PROFILE #1**  
SCALE: 1"=50' HORZ.  
1"=5' VERT.



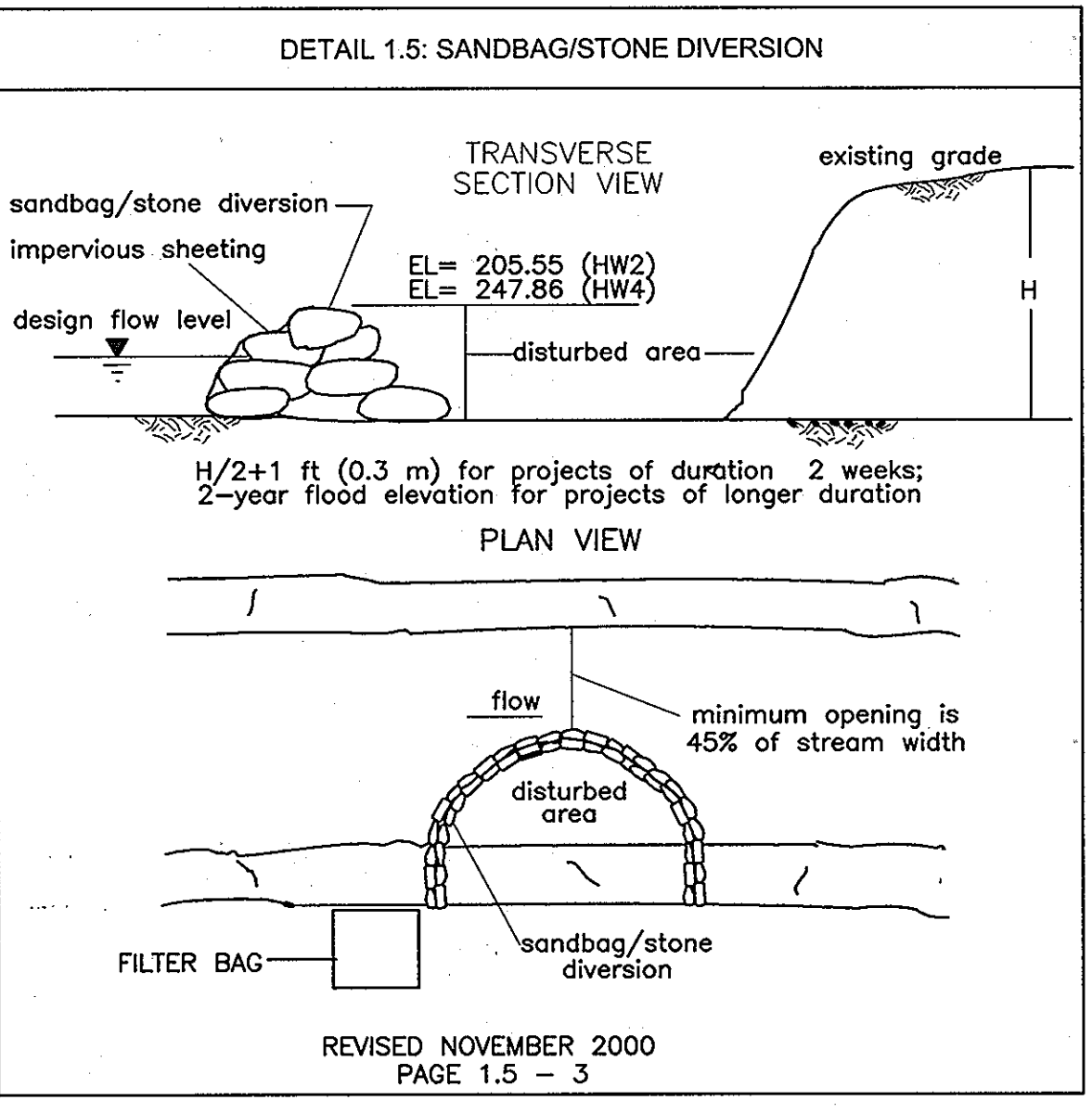
**CULVERT PROFILE #2**  
SCALE: 1"=50' HORZ.  
1"=5' VERT.



**DETAIL 1.4: DIVERSION PIPE**

NOTES:  
I 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.  
II 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.  
III MATERIAL SPECIFICATIONS  
MATERIALS FOR STREAM DIVERSIONS SHOULD MEET THE FOLLOWING REQUIREMENTS:  
- RIPRAP: STONE SHOULD BE WASHED AND HAVE A MINIMUM DIAMETER OF 8 INCHES (15 CENTIMETERS)  
- SANDBAGS: SANDBAGS SHOULD CONSIST OF MATERIALS WHICH ARE RESISTANT TO ULTRAVIOLET 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.  
IV INSTALLATION GUIDELINES  
ALL EROSION AND SEDIMENT CONTROL DEVICES INCLUDING MANDATORY DOWNSLOPE BASINS SHOULD BE INSTALLED AS THE FIRST ORDER OF BUSINESS ACCORDING TO A PLAN APPROVED BY THE 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):  
1. SANDBAG/STONE BARRIERS SHOULD BE SIZED AND INSTALLED AS DETAIL IN MISC 1.5  
2. ALL EXCAVATED MATERIAL SHOULD BE DEPOSITED AND STABILIZED IN AN APPROVED AREA OUTSIDE THE 100-YEAR FLOODPLAIN UNLESS OTHERWISE AUTHORIZED BY THE WMA.  
3. SEDIMENT-LADEN WATER FROM THE CONSTRUCTION AREA SHOULD BE PUMPED TO A DOWNSLOPE BASIN. 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.  
5. IF NECESSARY, SILT FENCE OR STRAW BALES SHOULD BE INSTALLED AROUND THE PERIMETER OF THE WORK AREA.  
6. SEDIMENT CONTROL DEVICES ARE TO REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED AND THE INSPECTING AUTHORITY APPROVES THEIR REMOVAL.

TEMPORARY INSTREAM CONSTRUCTION MEASURES - REVISED NOVEMBER 2000 PAGE 1.4-2  
MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

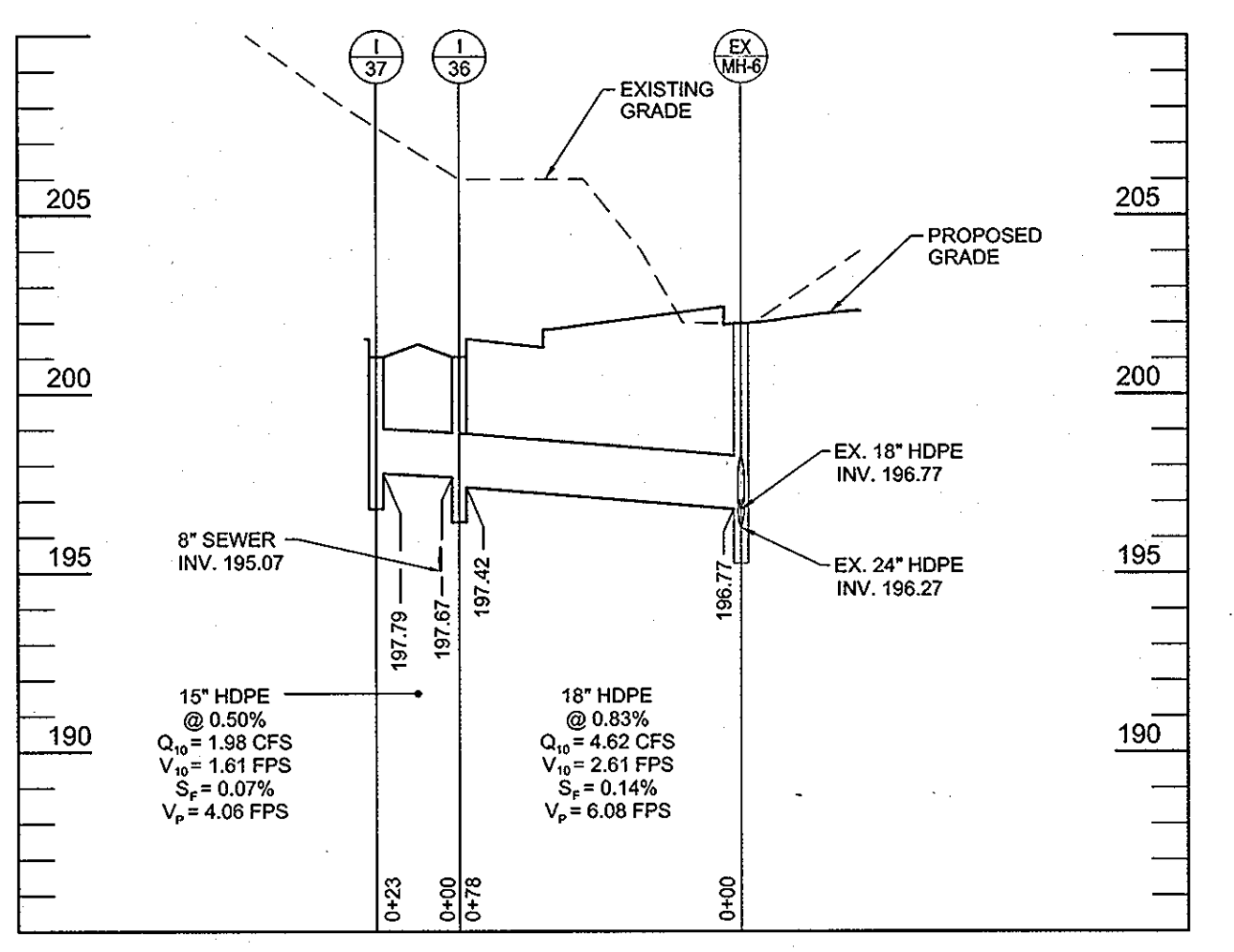


**DETAIL 1.5: SANDBAG/STONE DIVERSION**

TRANSVERSE SECTION VIEW  
existing grade  
sandbag/stone diversion  
impervious sheeting  
design flow level  
disturbed area  
EL = 205.55 (HW2)  
EL = 247.86 (HW4)

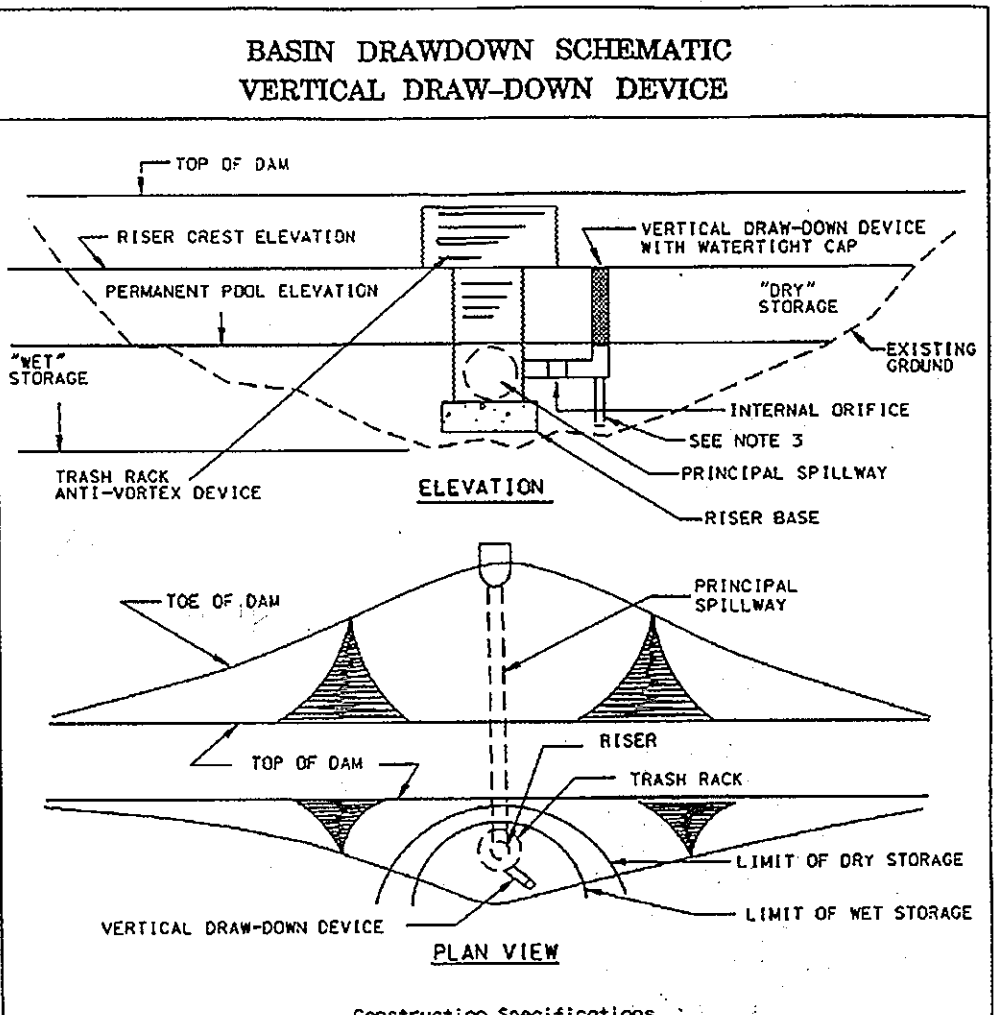
PLAN VIEW  
flow  
minimum opening is 45% of stream width  
disturbed area  
sandbag/stone diversion  
FILTER BAG

REVISED NOVEMBER 2000  
PAGE 1.5 - 3



**STORM DRAIN PROFILE**  
SCALE: 1"=50' HORZ.  
1"=5' VERT.

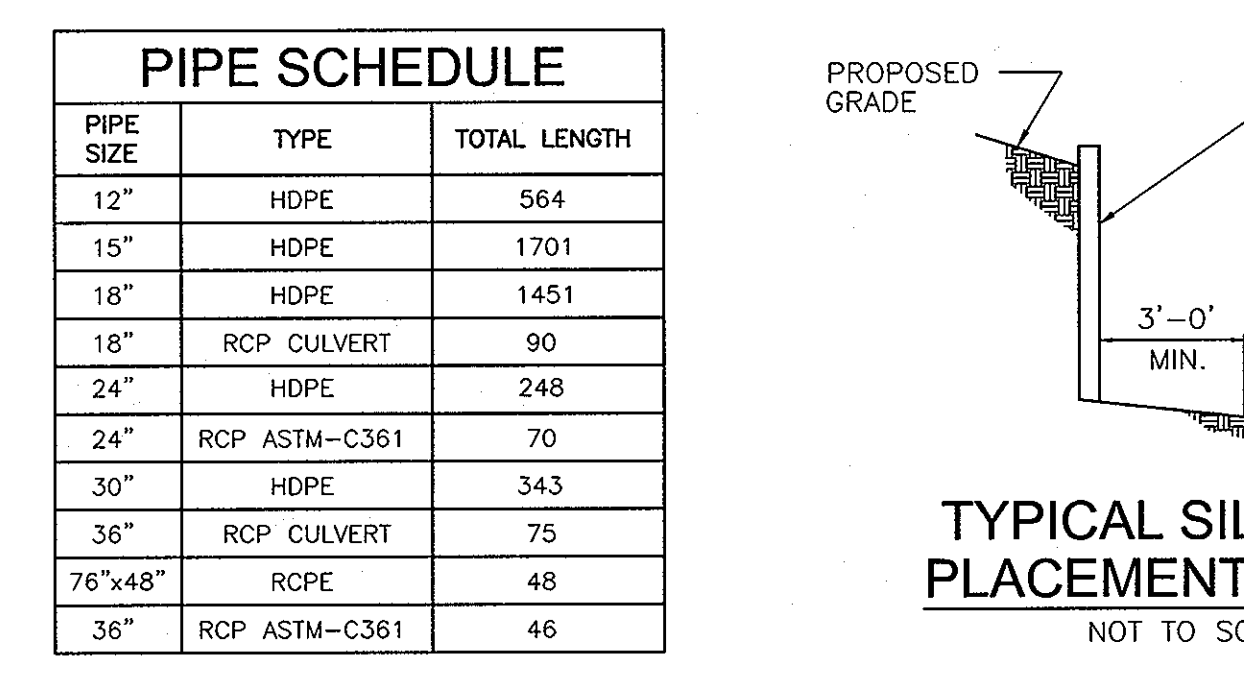
**OWNER**  
RYLAND HOMES  
7250 PARKWAY DRIVE  
SUITE 520  
HANOVER, MD 21076  
410-712-7012



**BASIN DRAWDOWN SCHEMATIC VERTICAL DRAW-DOWN DEVICE**

CONSTRUCTION SPECIFICATIONS  
1. Perforations in the draw-down device may not extend into the wet storage.  
2. The total area of the perforations must be greater than 2 times the area of the internal orifice.  
3. The perforated portion of the draw-down device shall be wrapped with 1/2" hardware cloth and geotextile fabric. The geotextile fabric shall meet the specifications for Geotextile Class C.  
4. Provide support of draw-down device to prevent sagging and flotation. An acceptable preventative measure is to stake both sides of draw-down device with 1" steel angle or 1" by 4" square or 2" round wooden posts set 3' minimum into the ground then joining them to the device by wrapping with 12 gauge minimum wire.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE  
PAGE 6 - 19 - 90  
MARYLAND DEPARTMENT OF ENVIRONMENTAL & WATER MANAGEMENT ADMINISTRATION



**TYPICAL SILT FENCE PLACEMENT SECTION**  
NOT TO SCALE

PIPE SCHEDULE			
PIPE SIZE	TYPE	TOTAL LENGTH	
12"	HDPE	564	
15"	HDPE	1701	
18"	HDPE	1451	
18"	RCP CULVERT	90	
24"	HDPE	248	
24"	RCP ASTM-C361	70	
30"	HDPE	343	
36"	RCP CULVERT	75	
76"x48"	RCPE	48	
36"	RCP ASTM-C361	46	

**ENGINEER'S CERTIFICATE**  
I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE MUST 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.

**DEVELOPER'S CERTIFICATE**  
I HEREBY CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE WITH THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A MINIMUM CAPACITY SUFFICIENT TO CONVEY THE 2-YEAR FLOW FOR 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.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
DATE: 7/2/04  
DATE: 7/15/04  
DATE: 7/15/04

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

DATE: 7/15/04  
DATE: 7/15/04  
DATE: 7/15/04

**STORM DRAIN PROFILES & SCHEDULES**  
**THE OAKS AT WATERS EDGE - PHASE I**  
PARCEL A-1

REF: S-97-01, ZB-96-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157  
SDP-03-041, SDP-03-154, F-04-174  
TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

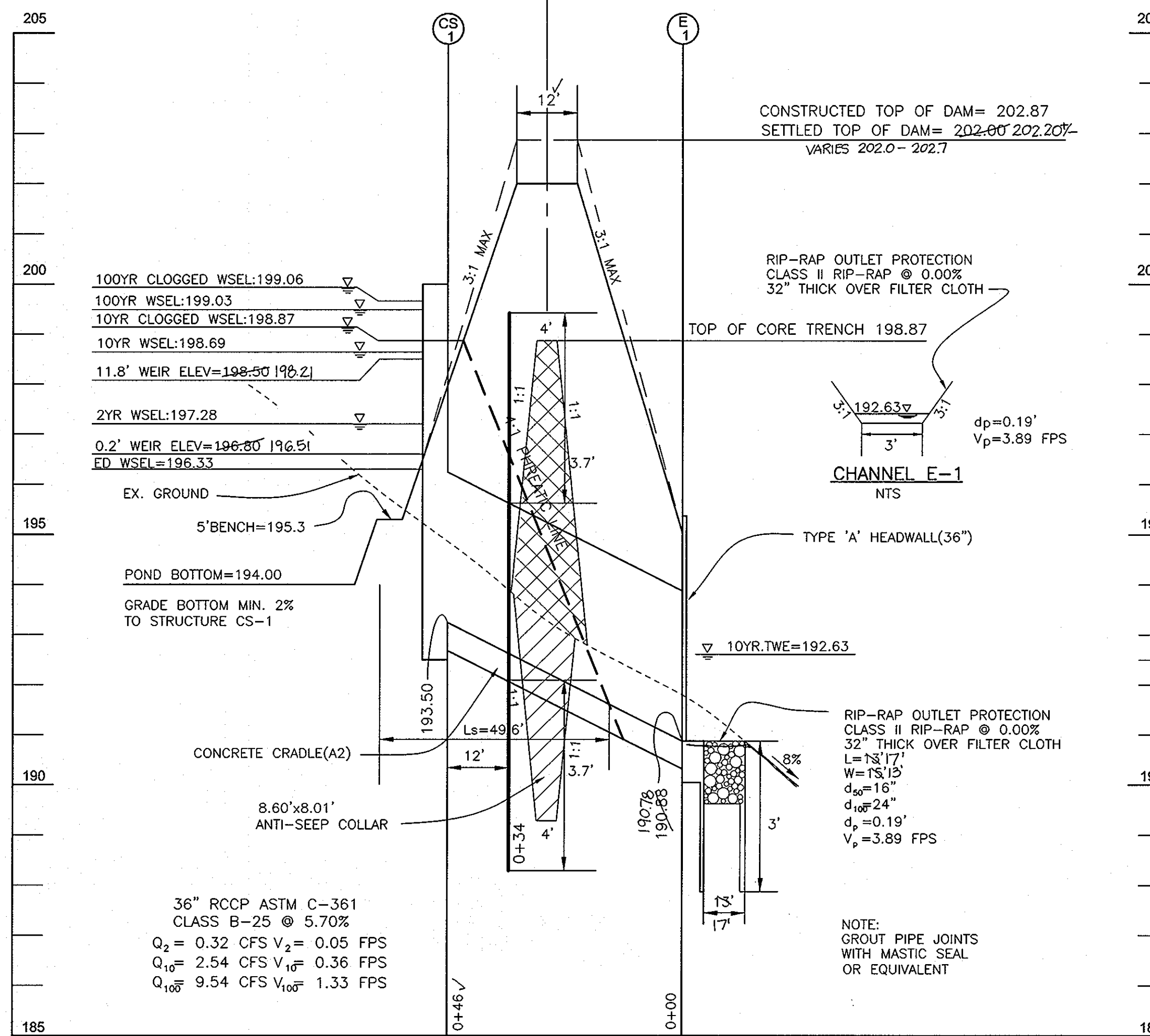
**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS  
8407 MAIN STREET  
ELLCOTT CITY, MARYLAND 21043  
TEL: 410.461.7666 FAX: 410.461.8961

DESIGN BY: JT  
DRAWN BY: JT  
CHECKED BY: RHW  
DATE: JUNE 8, 2004  
SCALE: AS NOTED  
W.O. NO.: 03-82

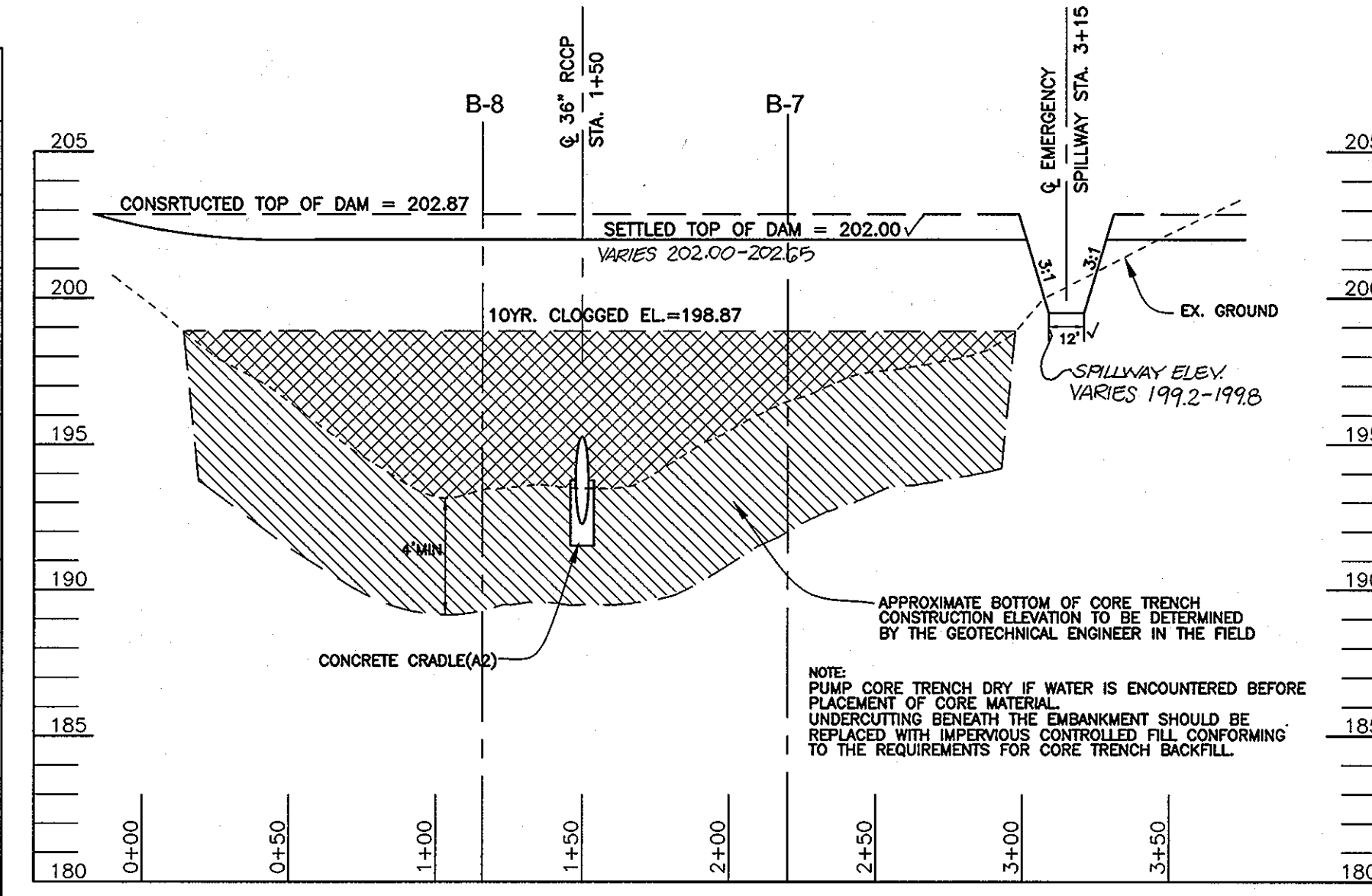
24 SHEET OF 37

AS-BUILT 7-1-2010 SDP-03-41

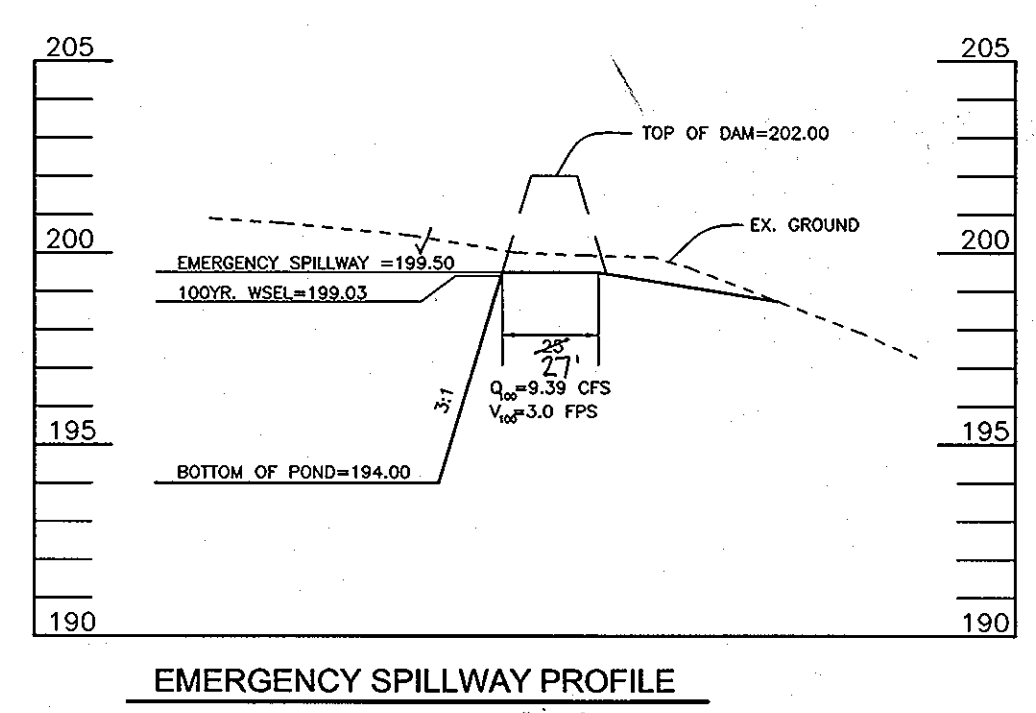




SECTION THROUGH PRINCIPAL SPILLWAY  
SCALE: HORIZONTAL - 1"=20'  
VERTICAL - 1"=2'



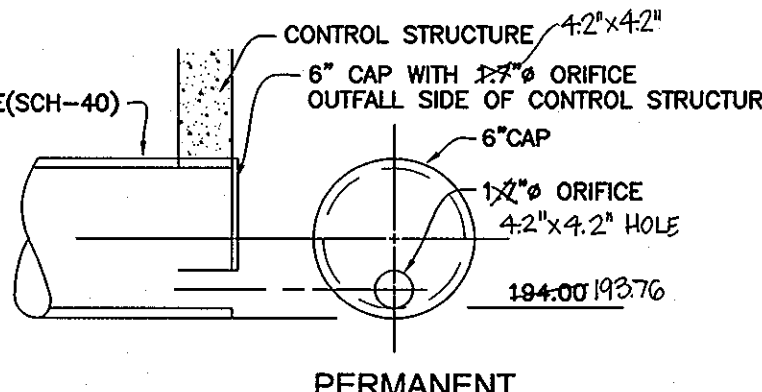
PROFILE ALONG CENTERLINE OF DAM  
SCALE: HORIZONTAL - 1"=50'  
VERTICAL - 1"=5'



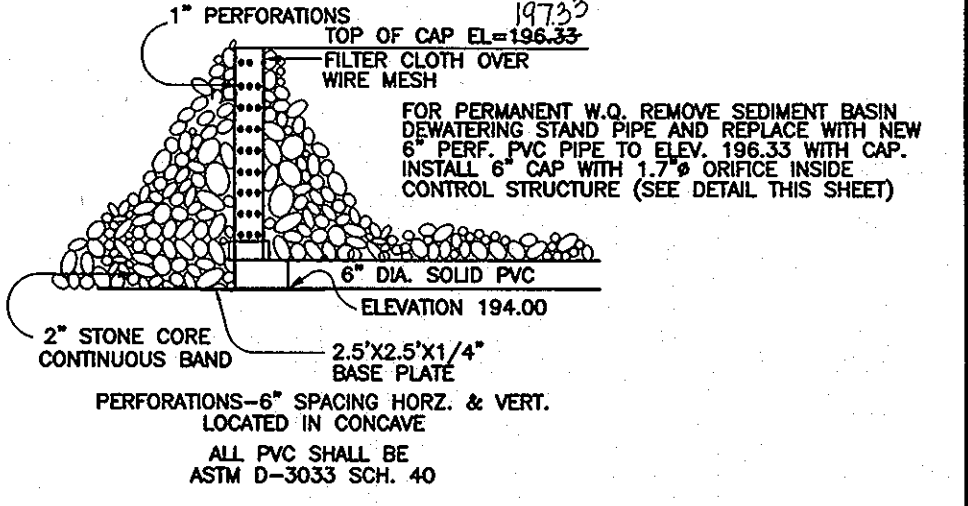
EMERGENCY SPILLWAY PROFILE  
SCALE: HORIZONTAL - 1"=50'  
VERTICAL - 1"=5'

POND #1 SUMMARY

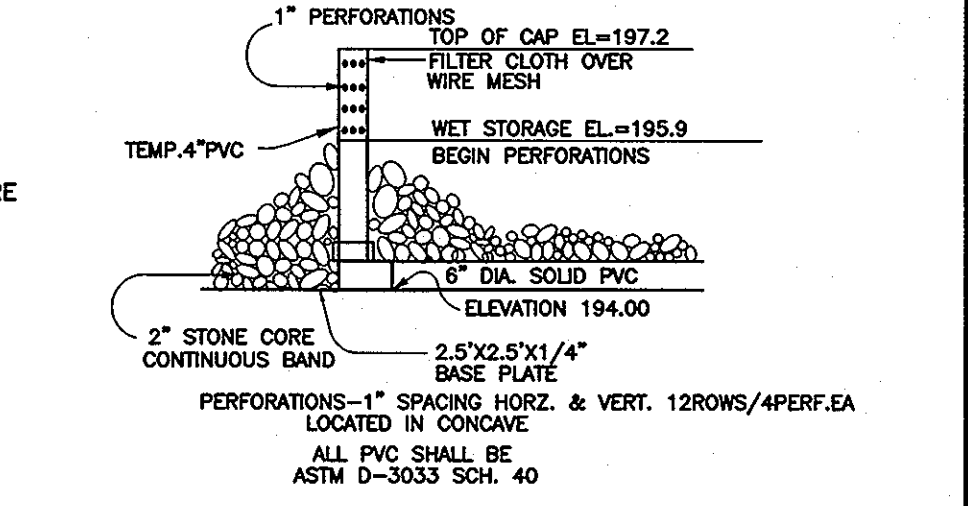
FLOW INTO POND	5.18 c.f.s.	10.36 c.f.s.	16.22 c.f.s.
FLOW OUT OF POND	0.32 c.f.s.	2.54 c.f.s.	9.54 c.f.s.
W.S. ELEVATION	197.28	198.69	199.03
STORAGE VOLUME	0.22 AC FT	0.38 AC FT	0.49 AC FT



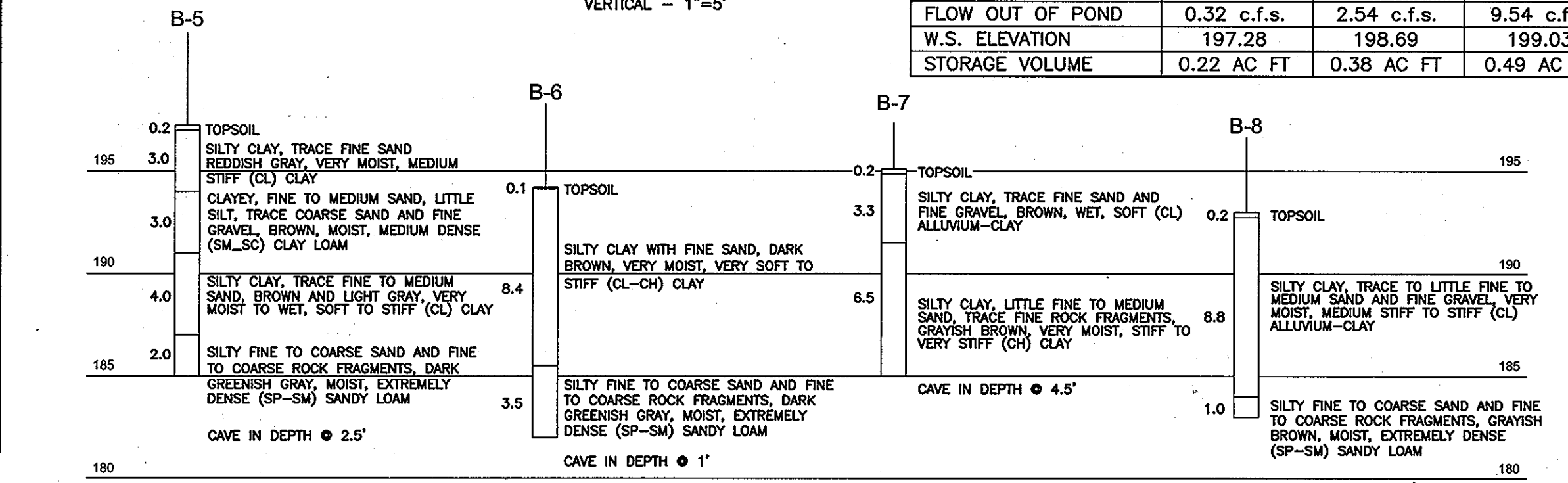
PERMANENT ORIFICE DETAIL IN CONTROL STRUCTURE  
NOT TO SCALE



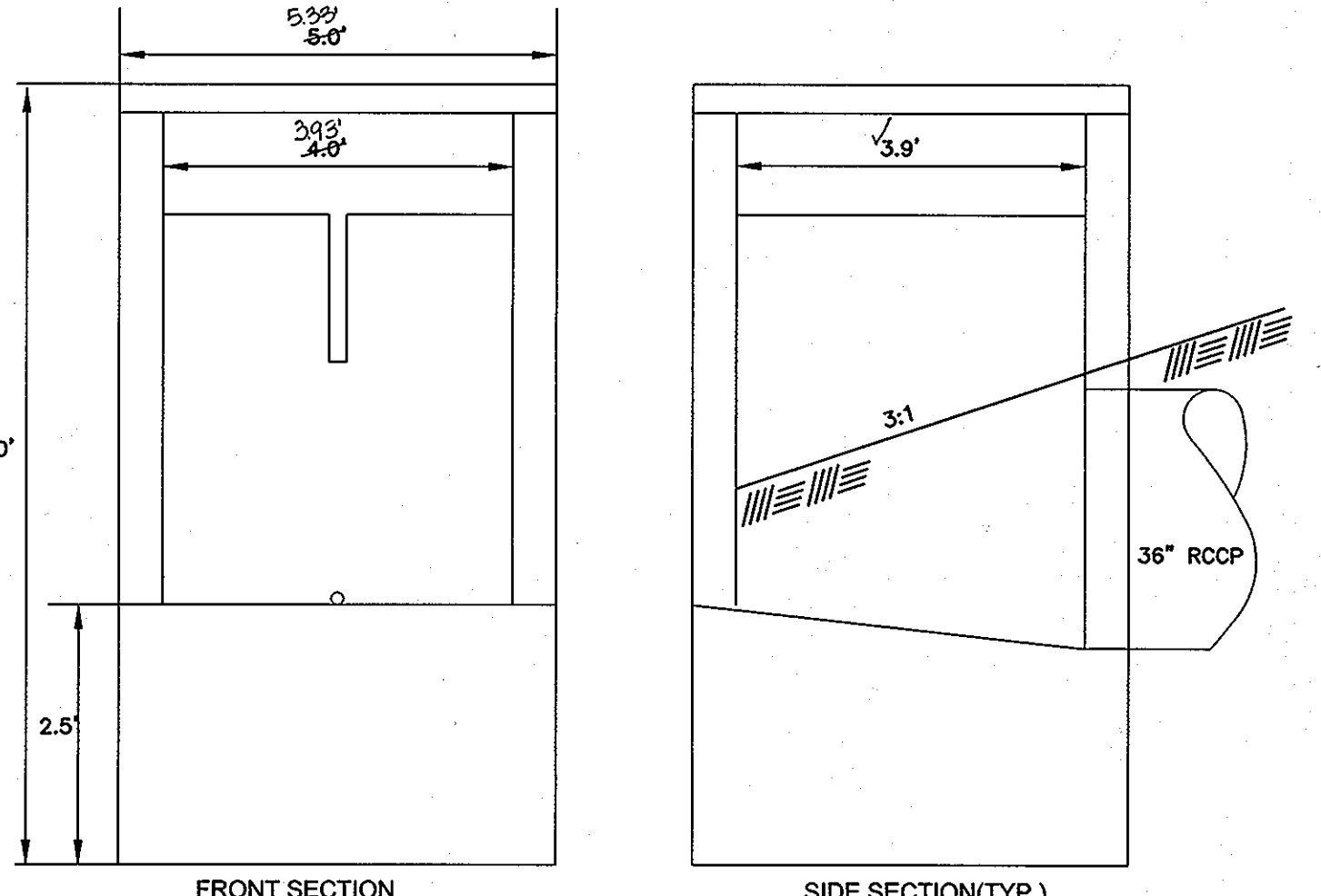
PERMANENT W.Q. EXTENDED DETENTION PIPE DETAIL  
NOT TO SCALE



TEMPORARY DEWATERING DEVICE  
NOT TO SCALE



S.W.M. BORING PROFILES  
NOT TO SCALE



STRUCTURE DETAIL  
SCALE: 1"=20'

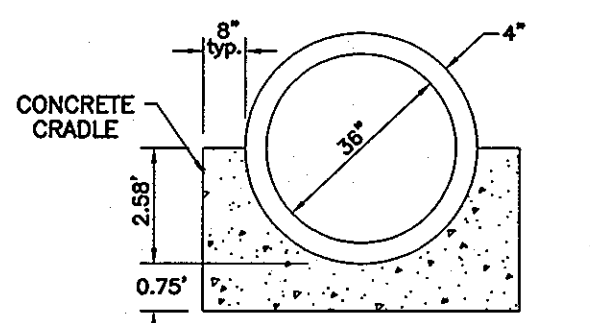
OPERATION AND MAINTENANCE SCHEDULE FOR STORMWATER MANAGEMENT DETENTION FACILITY

- STORMWATER MANAGEMENT FACILITY  
ROUTINE MAINTENANCE
- FACILITY WILL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHOULD BE PERFORMED DURING WET WEATHER TO DETERMINE IS FUNCTIONING PROPERLY. VEGETATION GROWING ON EMBANKMENT AND TOP AND FACES NOT ALLOWED TO EXCEED 18" IN HEIGHT.
  - TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES A YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHOULD BE MOWED AS NEEDED.
  - DEBRIS AND LITTER NEXT TO THE OUTLET STRUCTURE SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
  - VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS RIP-RAP OUTLET AREAS 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 DETECTION OF ANY DAMAGE. THE COMPONENTS SHOULD BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.

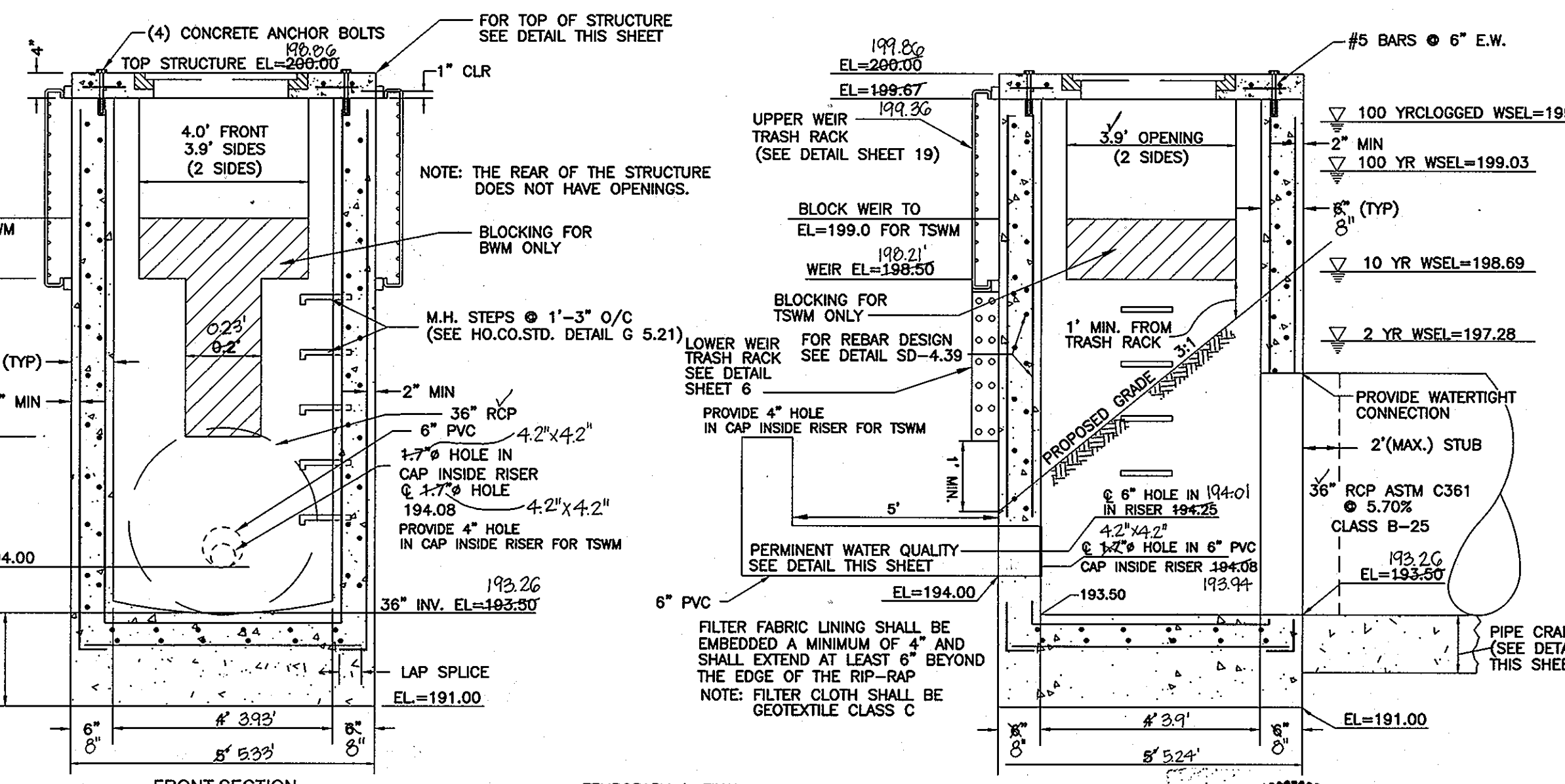
- SEDIMENT SHALL BE REMOVED FROM THE FOREBAY WHEN ACCUMULATION EXCEEDS 4 INCHES. SEDIMENT SHOULD BE REMOVED WHEN ITS ACCUMULATION SIGNIFICANTLY REDUCES THE DESIGN STORAGE, INTERFERE WITH THE FUNCTION OF THE RISER, WHEN DEEMED NECESSARY FOR AESTHETIC REASONS, OR WHEN DEEMED NECESSARY BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
- CORRECTIVE MAINTENANCE IS REQUIRED ANY TIME A EXTENDED DETENTION BASIN DOES NOT DRAIN WITHIN 60 HOURS (I.E., NO STANDING WATER IS ALLOWED).
- CORRECTIVE MAINTENANCE IS REQUIRED ANY TIME THE FOREBAY DOES NOT DRAIN DOWN COMPLETELY WITHIN 60 HOURS (I.E., NO STANDING WATER IS ALLOWED).

**OPERATION, MAINTENANCE AND INSPECTION**

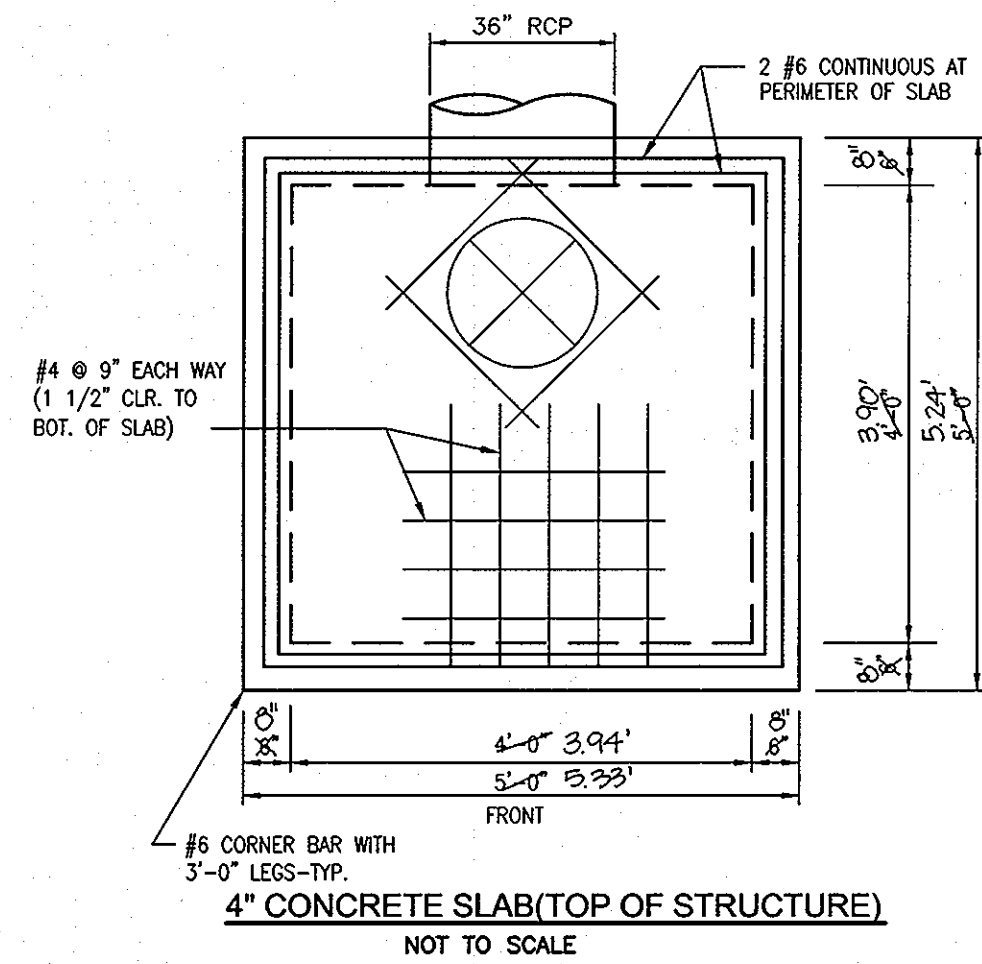
INSPECTION OF THE POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USA, SGS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MID-378). THE POND OWNER(S) AND ANY HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION, AND MAINTENANCE THEREOF. THE POND OWNER(S) SHALL PROMPTLY NOTIFY THE SOIL CONSERVATION DISTRICT OF ANY UNUSUAL OBSERVATIONS THAT MAY BE INDICATIONS OF DISTRESS SUCH AS EXCESSIVE SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.



CONCRETE CRADLE  
REINFORCING STEEL: INTERMEDIATE GRADE  
CONCRETE: CLASS B  
f<sub>c</sub> = 4,000 P.S.I.  
f<sub>c</sub> = 1,600 P.S.I.  
(REF. TR-46)



PIPE CRADLE DETAIL  
NOT TO SCALE



- ANTI-SEEP COLLARS SHOULD BE PLACED WITHIN THE SATURATION ZONE.
- ALL ANTI-SEEP COLLARS AND THEIR CONNECTIONS TO THE CONDUIT SHALL BE WATERTIGHT AND MADE OF COMPATIBLE WITH THE CONDUIT.
- COLLARS DIMENSIONS SHALL EXTEND A MIN. OF 2' IN ALL DIRECTIONS AROUND THE PIPE.
- ANTI-SEEP COLLAR SHALL BE PLACED A MIN. OF 2' FROM PIPE JOINTS EXCEPT WHERE FLANGED JOINTS ARE USED.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

7/23/04  
DATE

7/23/04  
DATE

7/23/04  
DATE

ENGINEER'S CERTIFICATE

I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL, REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING. I HAVE NOTICED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

7/15/04  
DATE

DEVELOPER'S CERTIFICATE

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE 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 COUNTY DEPARTMENT OF PLANNING AND ZONING WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

7/15/04  
DATE

THESE PLANS HAVE BEEN REVIEWED FOR HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING AND MEET THE REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

7/15/04  
DATE

7/15/04  
DATE

USDA-NATURAL RESOURCES CONSERVATION SERVICE

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

7/15/04  
DATE

NO.	REVISION	DATE
1	REVISE STREAM CROSSINGS SHEETS 3.5, 9, 11, 13, 14, 24	11/29/04

STORMWATER MANAGEMENT DETAILS, POND NO. 1  
THE OAKS AT WATERS EDGE - PHASE I  
PARCEL A-1

REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157, SDP-03-041, SDP-03-154, F-04-174  
TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

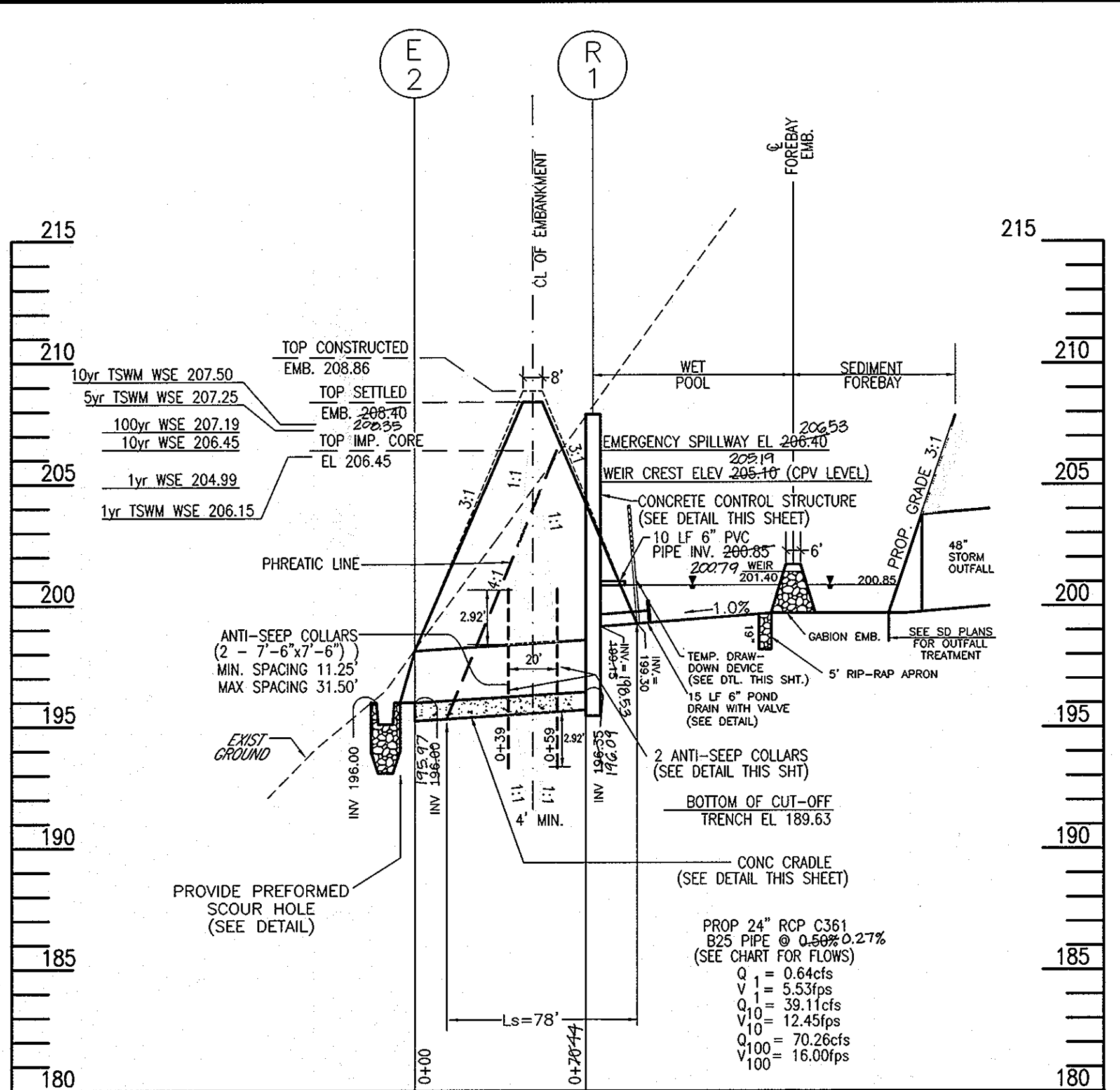
ROBERT H. VOGEL ENGINEERING, INC.  
ENGINEERS - SURVEYORS - PLANNERS

8407 MAIN STREET  
ELICOTT CITY, MARYLAND 21043  
TEL: 410.461.7666 FAX: 410.461.8961

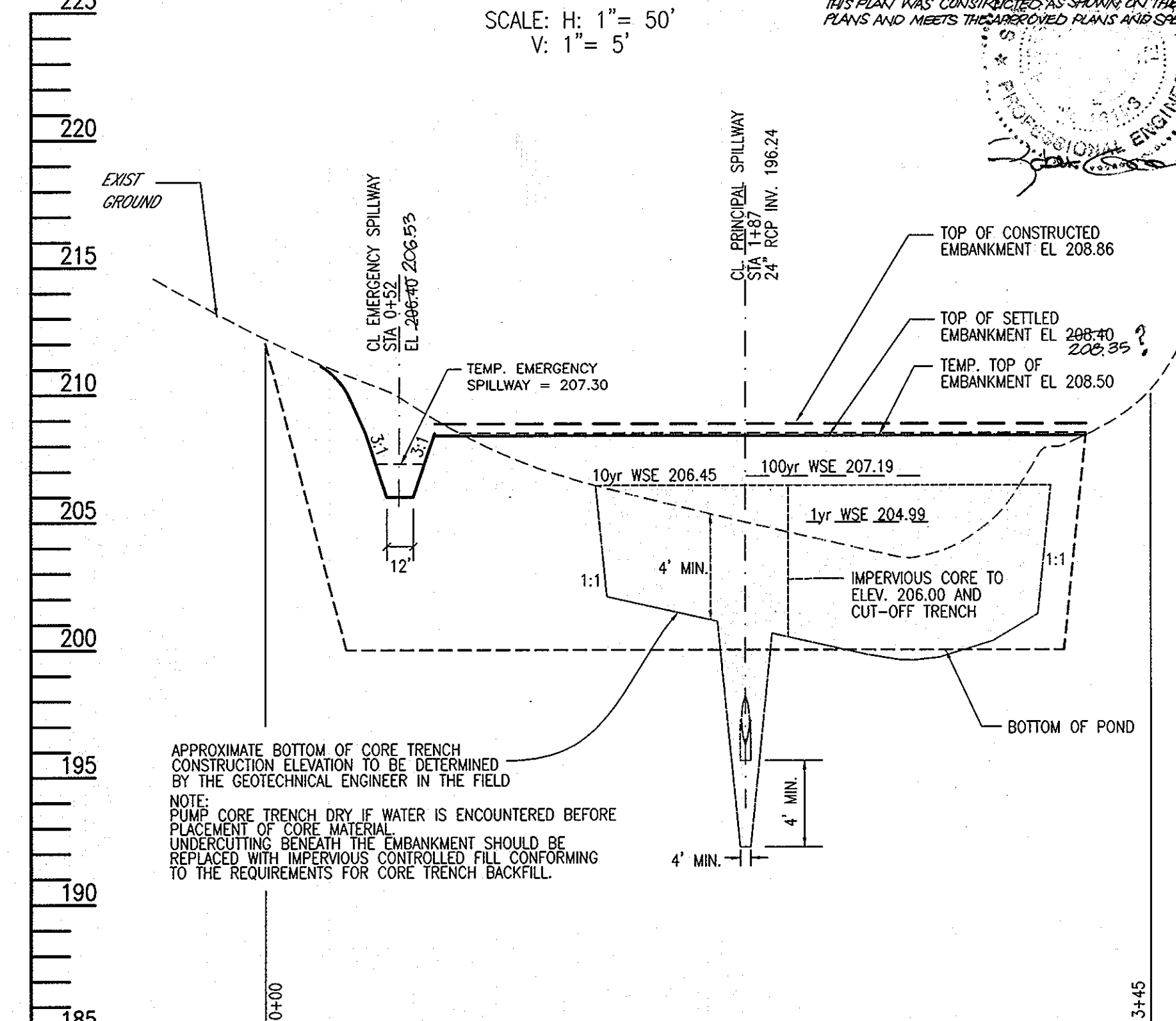
DESIGN BY: JT  
DRAWN BY: JT  
CHECKED BY: RRV  
DATE: JUNE 8, 2004  
SCALE: AS NOTED  
W.O. NO.: 03-82

25 SHEET OF 37

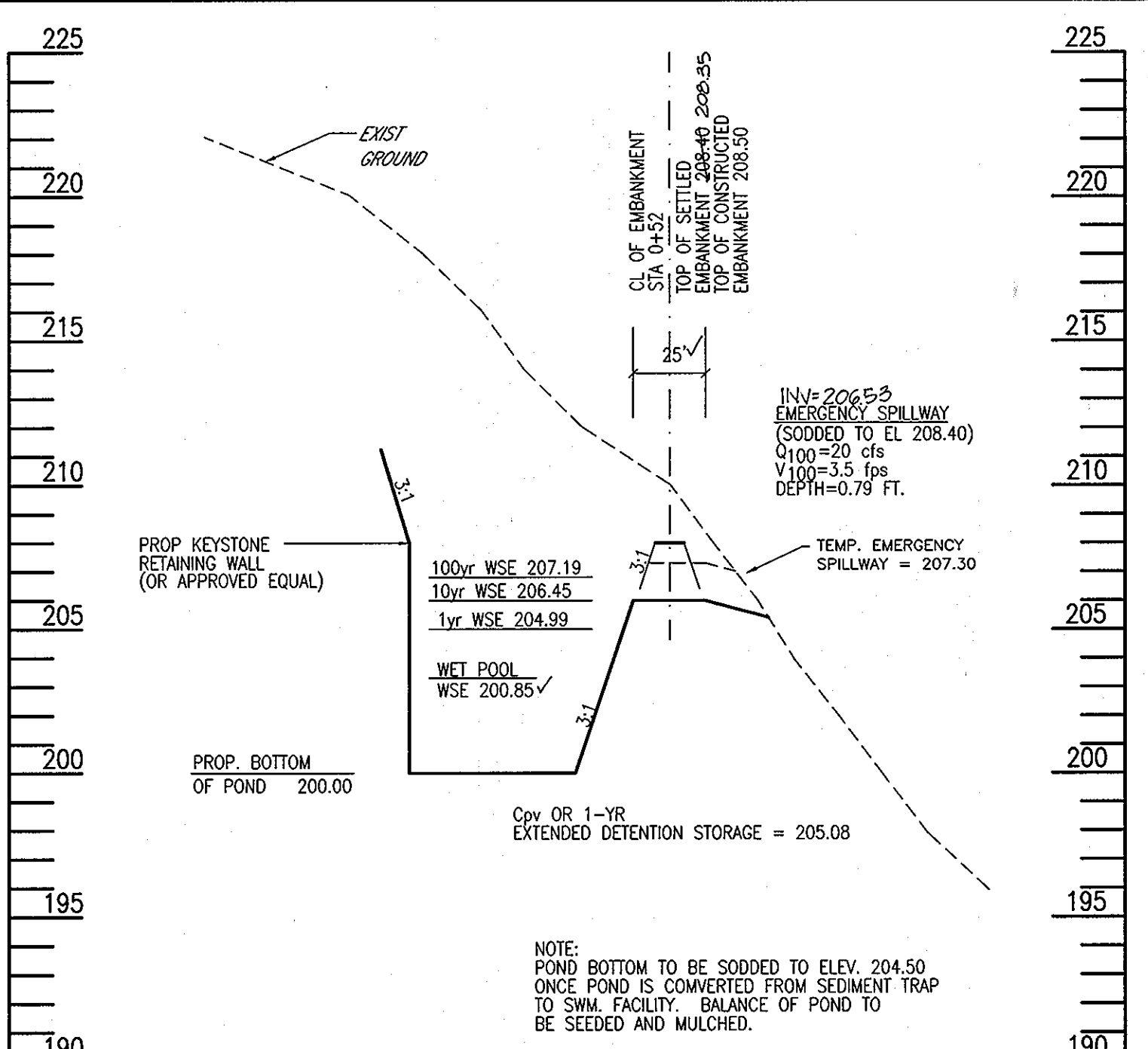




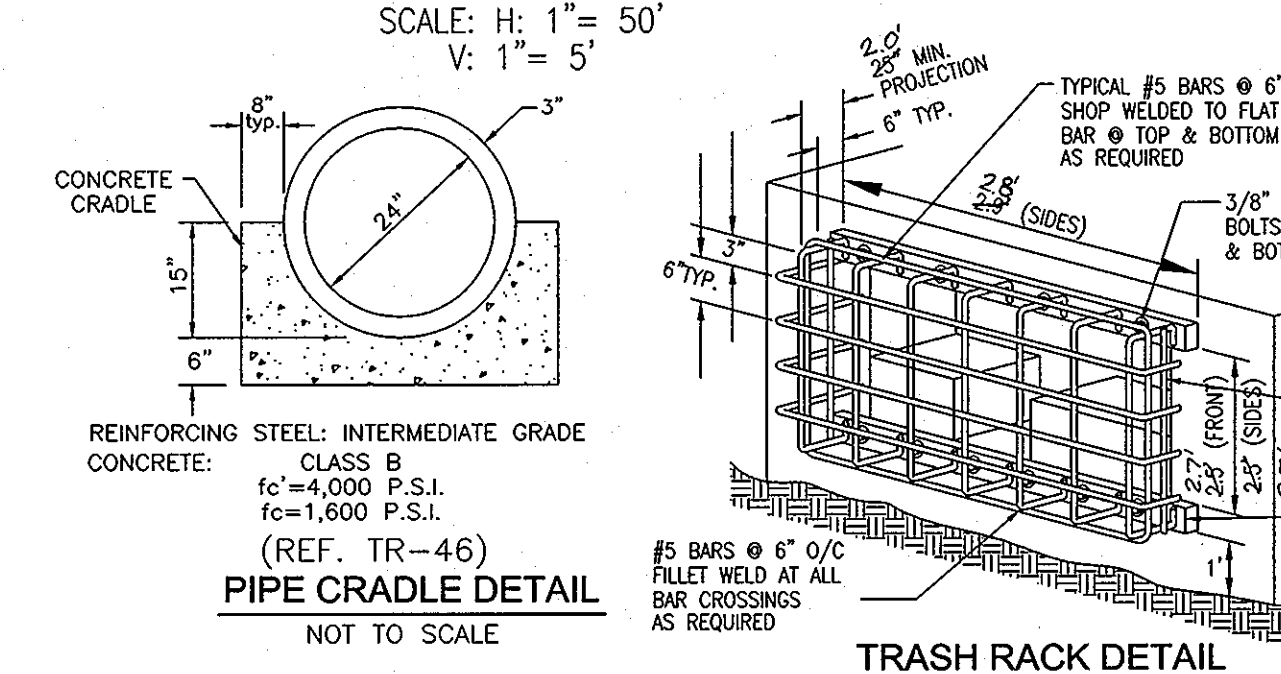
**PRINCIPAL SPILLWAY PROFILE**  
SCALE: H: 1" = 50'  
V: 1" = 5'



**CENTERLINE EMBANKMENT PROFILE**  
SCALE: H: 1" = 50'  
V: 1" = 5'



**EMERGENCY SPILLWAY PROFILE**  
SCALE: H: 1" = 50'  
V: 1" = 5'



**PIPE CRADLE DETAIL**  
NOT TO SCALE

Storm Water Management Construction Design Considerations  
ECS Project No. 1988-A, March 31, 2000

Maryland Soil Conservation Service (SCS) Code 378 for SWM ponds requires that a cutoff trench be constructed under the pond embankment along with an embankment core of relatively impervious material. The cutoff trench should generally extend into impervious material and a minimum of 4 feet below the original grade, and should have a width of at least 4 feet, with side slopes no steeper than 2 horizontal (H): 1 vertical (V), per the SCS. The embankment core, a vertical continuation of the cutoff trench, should extend up to the elevation of the 10-year water surface. In addition, seepage control is required by Code 378 if pervious layers are not intercepted by the cutoff trench. Based on the boring results, seepage control is not expected to be required in the proposed SWM areas. In the area of the spillway pipe, the cutoff trench should extend to a minimum of 4 feet below the planned invert level as per the SCS Code 378.

According to the test borings, suitable on-site source of silty clays and clayey sands are available for construction of the embankment as a homogenous type dam. Alternatively, the dam can be designed and constructed as a zoned type with an internal embankment core of silty clay or clayey sand and an outer shell of silty sand or poorly graded sand materials. Suitable materials such as CL, CL-CH, CH for the internal core were encountered in the borings at depths that will be excavated. The remainder of the embankment (outer shell) may be constructed of the same materials such as material as the core, or any other materials, which meet the requirements for compacted fill as required by SCS Code 378 and are capable of supporting vegetation.

Code 378 requires that all fill placed in the SWM ponds (i.e. cutoff trench, embankment shell) be placed in loose lifts, which do not exceed 8 inches (i.e. before compaction) in thickness and are compacted to at least 95 percent of the maximum dry density as determined by AASHTO Method T-99 (Standard Proctor). The moisture content of the fill materials should be maintained within 2 percent of the optimum moisture content as determined by AASHTO Method T-99.

As determined during the recent subsurface exploration, potentially suitable core trench materials (i.e. silty clays, CL, CL-CH, CH) were encountered during the subsurface exploration and should be readily available during the earthwork operations. Careful visual examination of the on-site soils used for the core trench construction should be performed by the Geotechnical Engineer, or his authorized representative during construction. In the event that an off-site source is required, it is recommended that the materials be tested (i.e. Atterberg Limits and moisture density relationship test) and approved by the Geotechnical Engineer prior to their use on-site.

When placing the fill for the core trench, it is important that the fill be properly moisture conditioned. To avoid adverse settlement cracks in the core trench, the fill for the core trench should be placed with moisture contents within 3 percentage points above optimum moisture (i.e. on the wet side optimum). The embankment materials may be moisture conditioned within ±2 percentage points of optimum moisture for compaction. We recommend that a sheepsfoot type roller be used in the core trench areas. Although a smooth drum roller is recommended for sealing the on-site soils, it should not be used as the primary compaction method for the construction of core trench areas to prevent the formation of seepage paths between fill lifts.

To facilitate complete compaction of new fill materials within the planned sloped areas for the proposed SWM ponds, and prevent the formation of potential slip surfaces, and new fill materials must be adequately benched into the competent natural soils and the filling operations should be extended laterally (i.e. overlies) beyond the planned final grades. Subsequent to compacting the embankment or slope materials beyond the planned final grades, the overfill materials should be carefully removed to create the proposed slope configuration and maintain the compacted surface. The compacted slope surface must be scarified before the placement of topsoil in order to provide for adherence of the topsoil to the slope configuration and stabilized with vegetation as expeditiously as possible after grading.

Slopes for the proposed embankment can be constructed at 3 horizontal to 1 vertical, but shall be no steeper than 2 horizontal to 1 vertical, per Soil Conservation Service (SCS), Maryland Standards and Specifications (378). It is imperative that the exposed faces of the slopes be covered with topsoil and stabilized with appropriate vegetation as soon as possible after grading to reduce the potential for erosion and surficial instability. We recommend the following to minimize erosion of the slopes during and after construction.

- The earthwork operations should be accomplished during the growing seasons, preferably during the summer months, when rainfall is less.
- Where possible, construct earth berms or other appropriate features along the top of any newly created or existing slopes, to control surface run-off and minimize the formation of gullies down the face of the slope until slope stabilization is achieved.
- Immediately after final grading, the slopes should be covered with an appropriate mulch and binder.
- Periodic examination of the slope areas during and after construction to locate and regrade any slope areas subjected to scouring from excessive surface run-off.

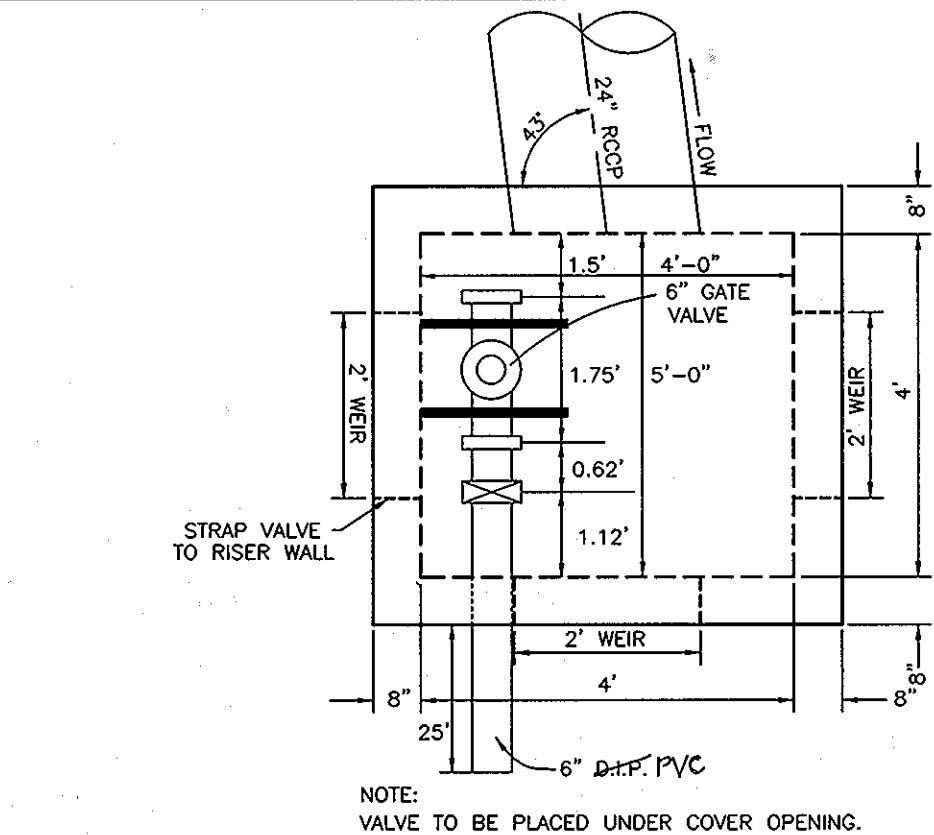
Groundwater was encountered at a depth of 7 feet below the existing ground surface at boring B-7. Ground water was not encountered in any of the remaining borings. Perched or groundwater may be encountered during the excavation of the basin area, cut-off trench and/or the riser foundation. Should free water be encountered, temporary dewatering may be accomplished by positive drainage, interceptor ditches and the use of sumps and pumps, where required.

As previously mentioned, the on-site soils include fine-grained and cohesive soils. Should maintenance of a static water level be required, consideration should be given to the placement of on-site cohesive soils (i.e. CL, CL-CH or CH) or a man-made liner up to the permanent pool level of the pond basins.

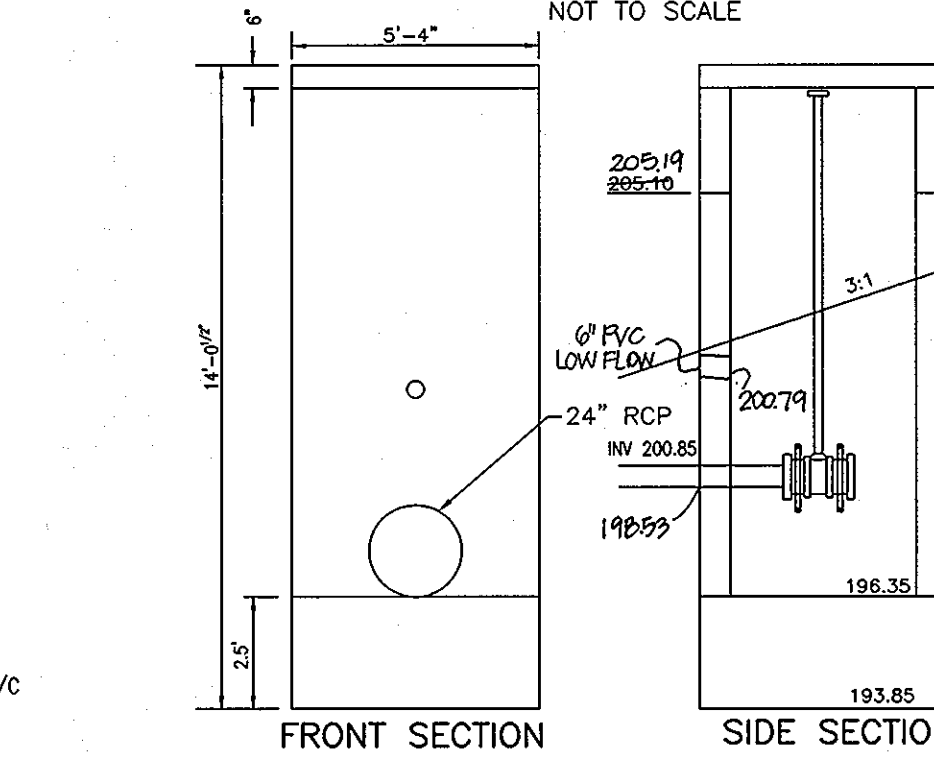
The proposed storm water management facility must be designed and constructed in accordance with the criteria established in the current version of SCS Code 378, which governs construction of storm water management facilities in the State of Maryland.

**ENGINEERS CERTIFICATE**  
I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/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.

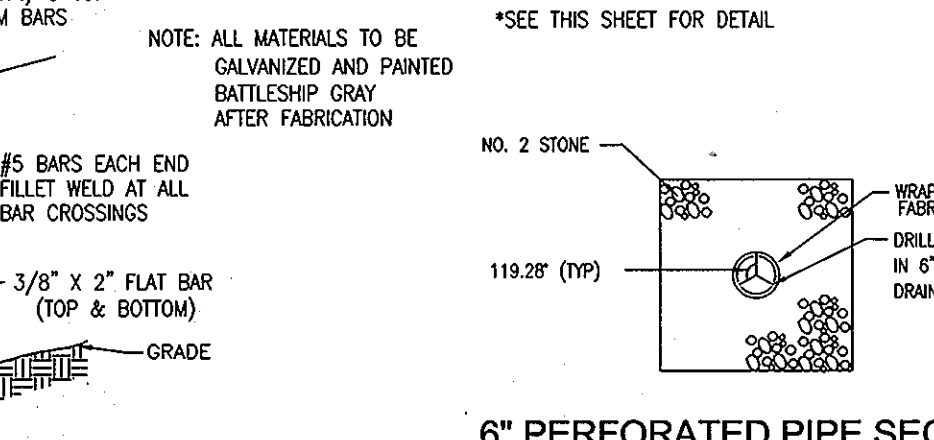
**DEVELOPER'S CERTIFICATE**  
I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I/WE 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.



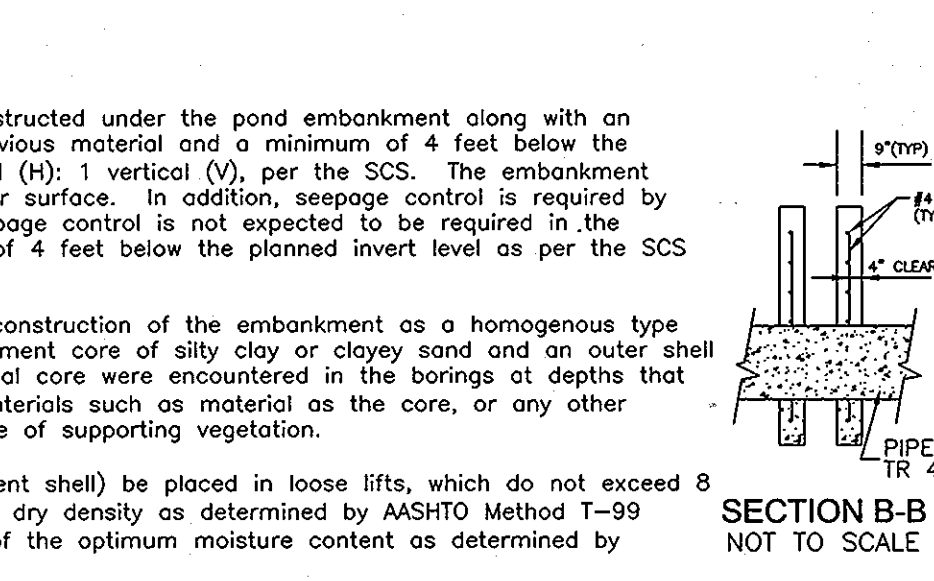
**POND DRAIN DETAIL**  
NOT TO SCALE



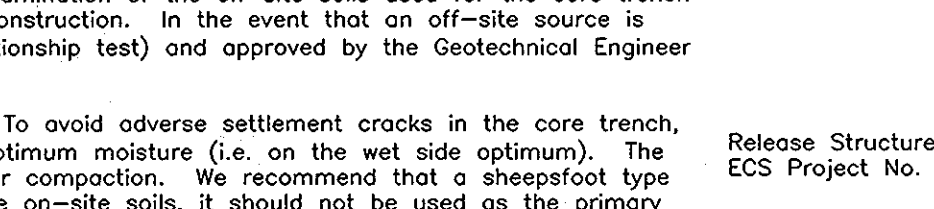
**POND 2 PRECAST STRUCTURE R-1**  
SCALE: 1" = 4'  
NOT TO SCALE



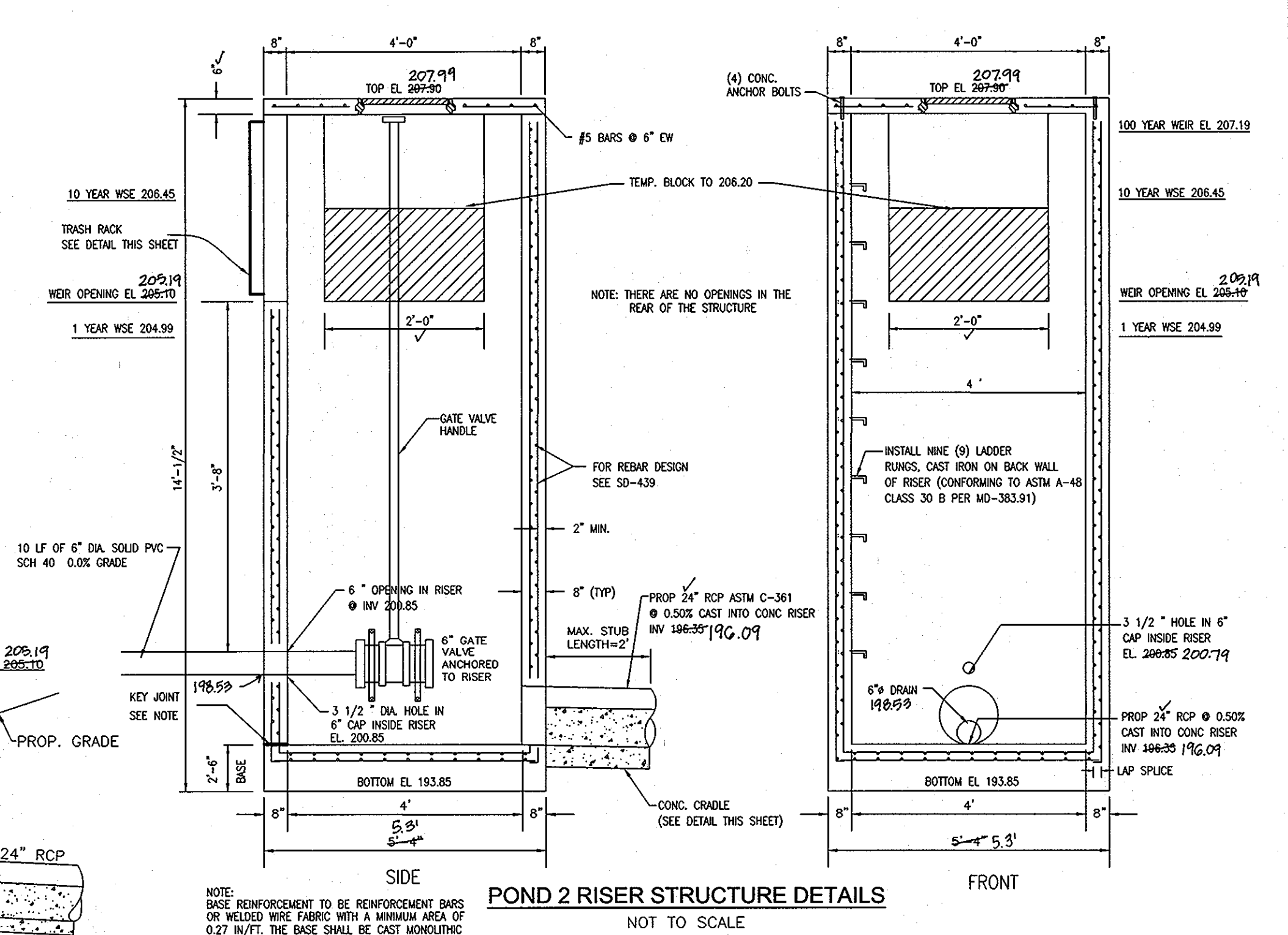
**6\"/>**



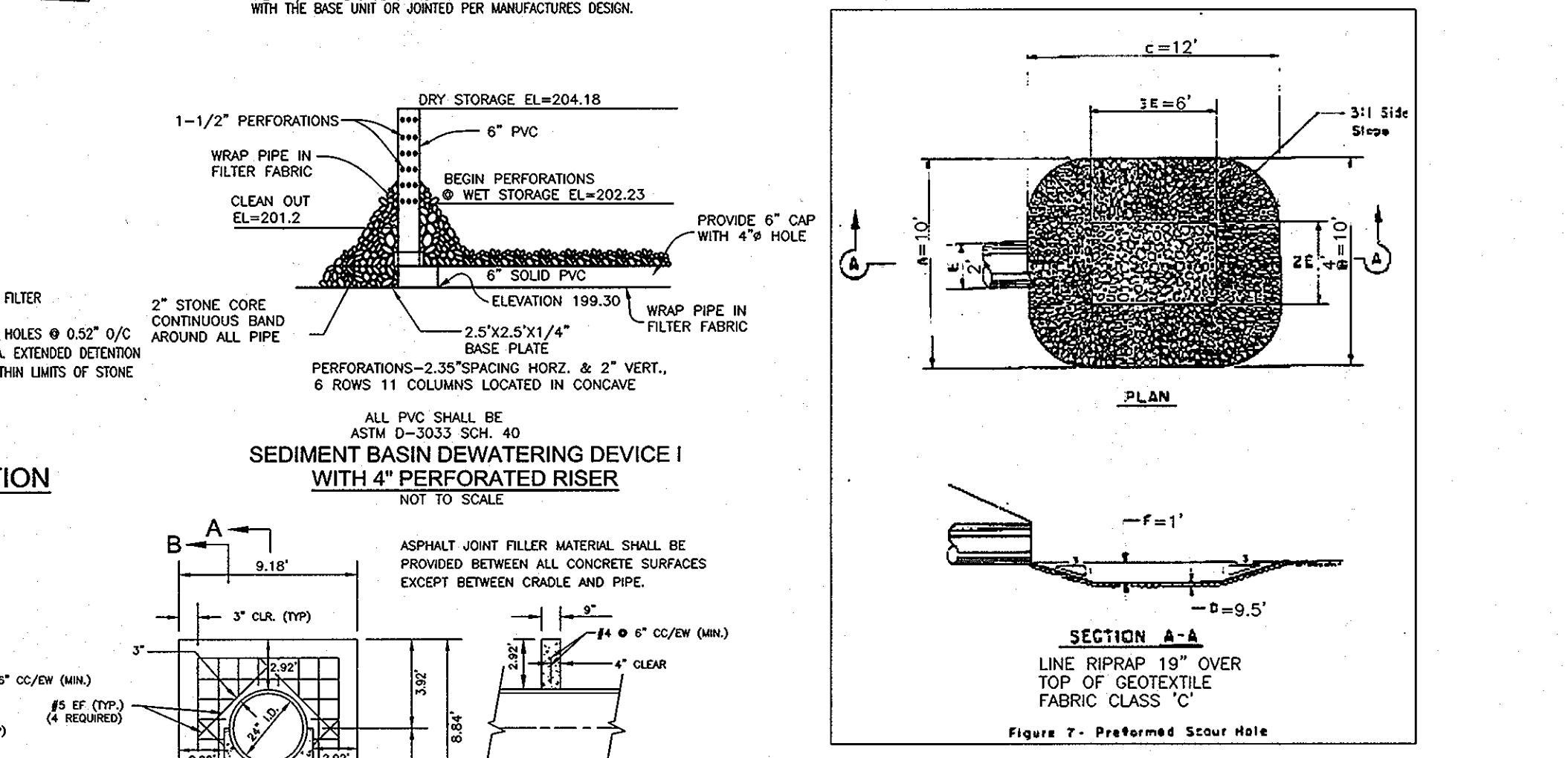
**SEDIMENT BASIN DEWATERING DEVICE I**  
WITH 4\"/>



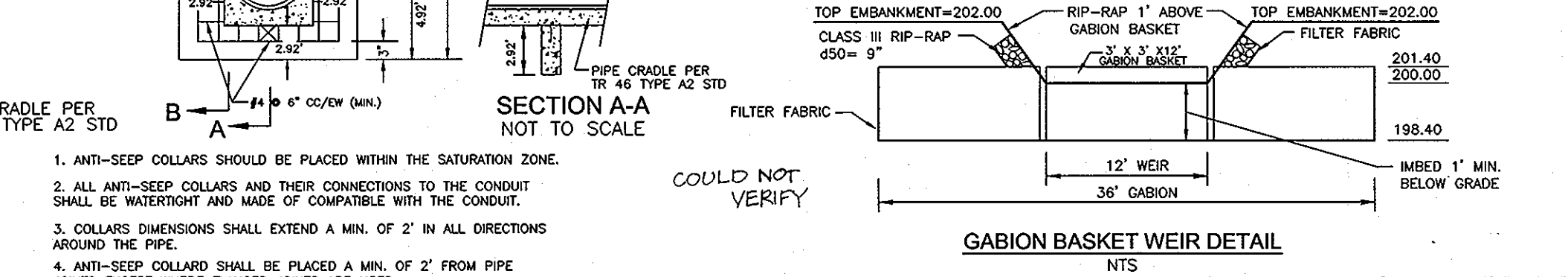
**2-CONCRETE ANTI-SEEP COLLAR DETAIL**  
NOT TO SCALE



**POND 2 RISER STRUCTURE DETAILS**  
NOT TO SCALE



**GABION BASKET WEIR DETAIL**  
NOT TO SCALE



**SECTION A-A**  
NOT TO SCALE

1. ANTI-SEEP COLLARS SHOULD BE PLACED WITHIN THE SATURATION ZONE.  
2. ALL ANTI-SEEP COLLARS AND THEIR CONNECTIONS TO THE CONDUIT SHALL BE WATERPROOF AND MADE OF COMPATIBLE WITH THE CONDUIT.  
3. COLLARS DIMENSIONS SHALL EXTEND A MIN. OF 2' IN ALL DIRECTIONS AROUND THE PIPE.  
4. ANTI-SEEP COLLAR SHALL BE PLACED A MIN. OF 2' FROM PIPE JOINTS EXCEPT WHERE FLANGED JOINTS ARE USED.

Based upon review of the available concept plans, it our understanding that a riser type feature will be utilized to release the storm water from the proposed basins at both pond locations. The riser structure location at SWMF #1 will most likely be located in the vicinity of boring B-2, while the release structure will be situated near boring B-6 at SWMF #2. In light of the relatively light loads anticipated to be imposed by the proposed riser, the structure may be supported on a shallow foundation system founded in competent undisturbed original soils or newly place fill materials. The shallow foundation system may be designed for a 2.0 KSF net allowable bearing capacity. Immediately prior to pouring foundation concrete, the founding materials should be visually examined and tested to confirm the availability of the design bearing capacity.

As previously mentioned, high plasticity silty clays (CH) were encountered in boring B-7 at a depth of 3 to 10 feet below the ground surface. The high-plasticity clays encountered at boring B-7 are of depths which will most likely not be encountered during the construction of SWMF #2. However, soils visually classified as CL-CH were encountered during the ground surface of borings B-2 and B-6, and will be encountered during the site earthwork operations. Due to their potential for exhibiting high shrink/low characteristics with changes in moisture content, any high plasticity CL-CH or CH type soils, exhibiting a liquid limit of 50 or greater encountered at planned subgrade levels are considered unsuitable for the direct support of the proposed riser and outfall pipe foundations. Consequently, if these materials are encountered at planned subgrade levels, the materials should be undercut at least 18 inches and replaced with an approved, controlled and compacted low or non-plasticity fill. The presence of high-plasticity CL-CH soils should be verified by the Geotechnical Engineer, or his authorized representative and the performance of laboratory testing (i.e. Atterberg Limits).

Because of the fine-grained and moisture sensitive cohesive subsils and their susceptibility to loss of strength upon exposure to increases during construction activity, the riser foundation excavation must be protected to prevent the disturbance of the founding materials and minimize any potential loss of supportive capacity. Proper construction techniques, such as excavating and pouring the foundation the same day, are important to retain the bearing qualities of the founding materials. Should excavating and pouring the riser foundation the same day not be practical, we recommend that a concrete mud mat, 2 to 3 inches thick, be poured to protect the founding soils from moisture changes (i.e. wet/dry), and disturbance during construction activity. If protection of the founding soils is not provided, then some undercutting of saturated soils may be necessary prior to the placement of reinforcing steel and foundation concrete.

As a result of the cohesive and fine-grained nature of the on-site soils, care must be taken during excavation and the subsequent bedding of the discharge pipe in concrete beneath the embankment, in order to minimize settlements. In addition to properly bedding the discharge pipe in concrete, care must be exercised to ensure proper compaction around all portions of the pipe above the concrete bedding.

STORM FREQ YEAR	HYDROLOGICAL DATA		WATER SURFACE ELEV	STORAGE VOLUME AC/FT
	EX CONDITIONS PEAK DISCH, CFS	PEAK INFLOW CFS		
2	1.37	21.31	204.99	0.84
10	20.74	56.97	206.45	1.33
100	44.59	87.48	207.19	1.61

**OWNER**  
RYLAND HOMES  
7250 PARKWAY DRIVE  
SUITE 520  
HANOVER, MD 21076  
410-712-2012

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
7/22/04  
DATE  
7/27/04  
DATE  
8/31/04  
DATE

ROBERT H. VOGEL  
SIGNATURE OF ENGINEER  
DATE 8/16/04

DEVELOPER  
DATE 7/7/04

HOWARD SOIL CONSERVATION DISTRICT  
DATE 7/15/04

NO.	REVISION	DATE
1	REVISE STREAM CROSSINGS SHEETS 3,5,9,11,15,16,18,24	11/29/04

**STORM WATER MANAGEMENT DETAILS, POND 2**  
**THE OAKS AT WATERS EDGE - PHASE I**  
PARCEL A-1

REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157  
SDP-03-041, SDP-03-154, F-04-174

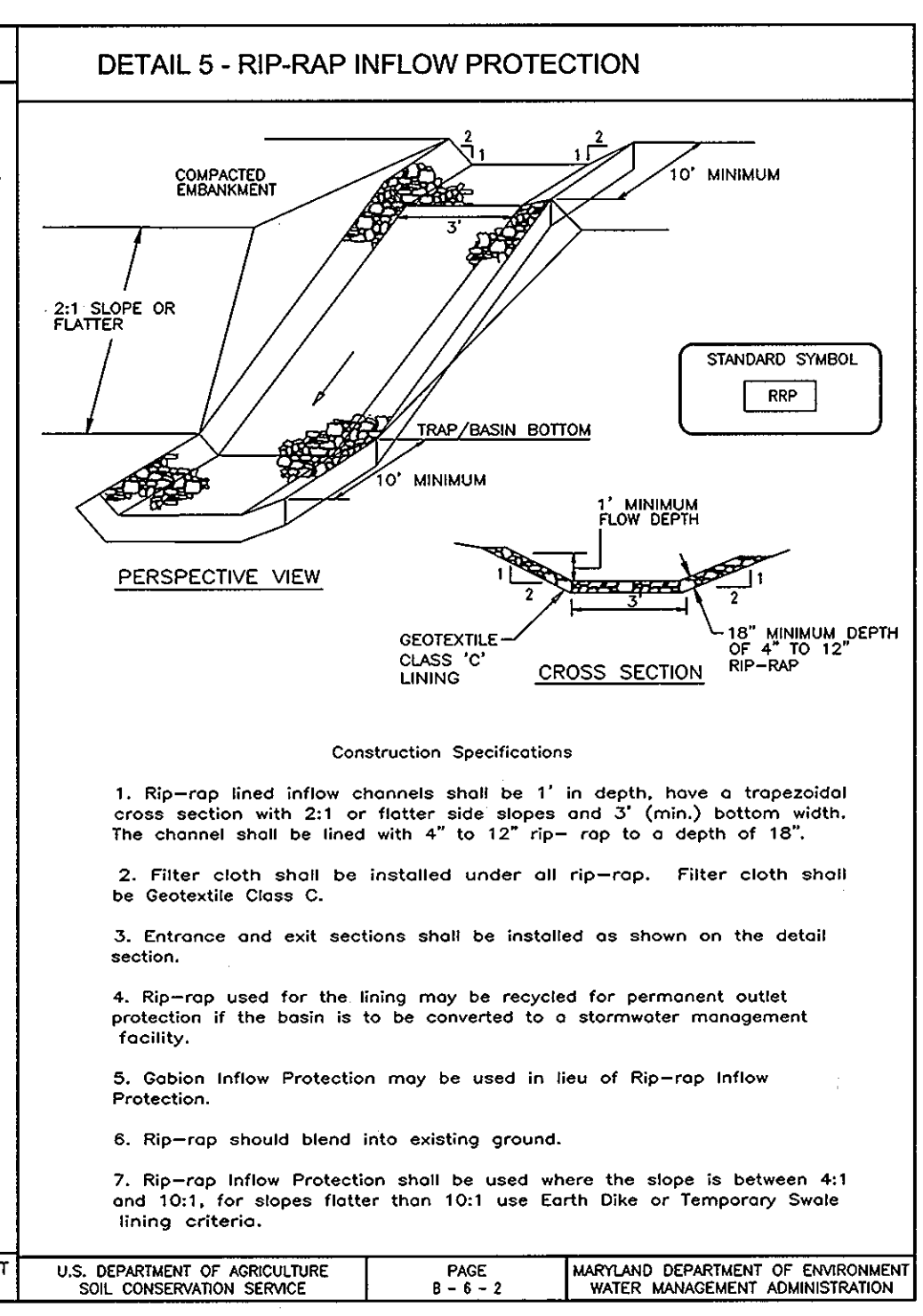
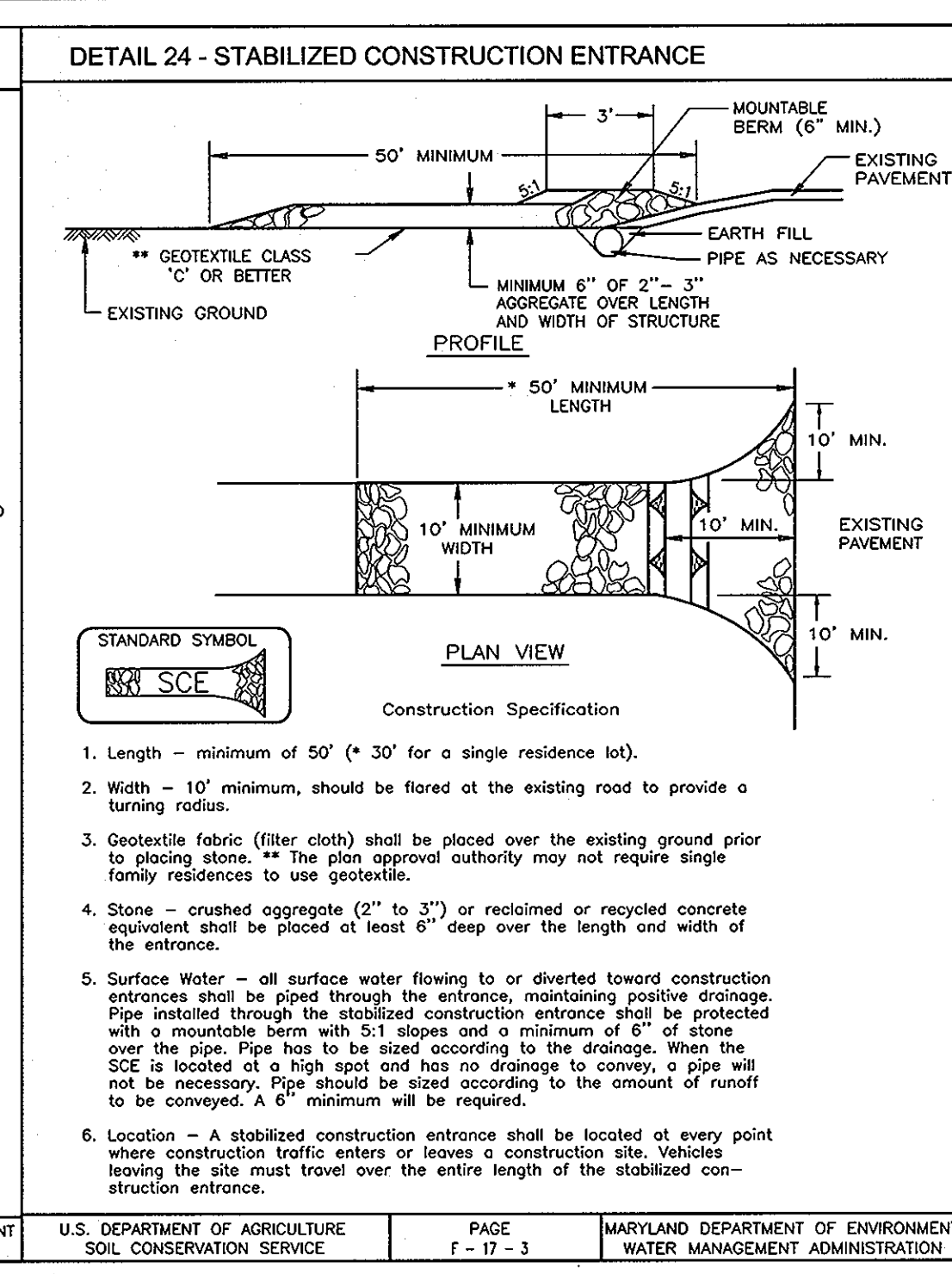
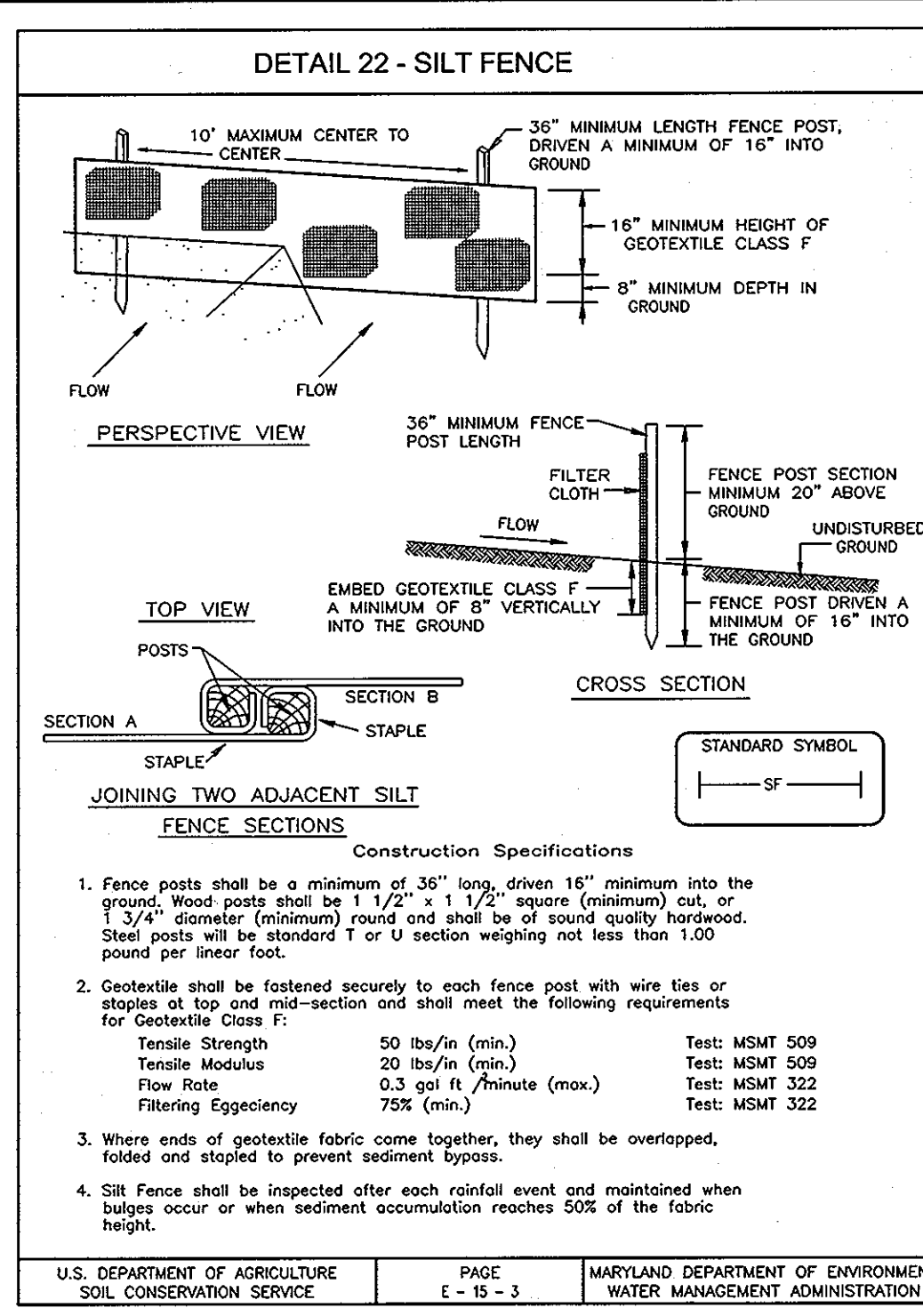
TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS  
8407 MAIN STREET  
ELLCOTT CITY, MARYLAND 21043  
TEL: 410.461.7666 FAX: 410.461.8961

DESIGN BY: JT  
DRAWN BY: JT  
CHECKED BY: RHV  
DATE: JUNE 8, 2004  
SCALE: AS NOTED  
W.O. NO.: 03-82

26 SHEET OF 37





### PERMANENT SEEDING NOTES

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

**SEEDS:** PREPARATION: Loosen upper three inches of soil by raking, disking or other acceptable means before seeding. If not previously located.

**SOIL AMENDMENTS:** In lieu of soil test recommendations, use one of the following schedules:

- Preferred - Apply 2 tons per acre dolomitic limestone (92 lbs./100 sq.ft.) and 800 lbs. per acre 10-10-10 fertilizer (14 lbs./100 sq.ft.) before seeding. Harrow or disc into upper three inches of soil.
- Acceptable - Apply 2 tons per acre dolomitic limestone (92 lbs./100 sq.ft.) and apply 1000 lbs. per acre 10-10-10 fertilizer (22 lbs./100 sq.ft.) before seeding. Harrow or disc into upper three inches of soil.

**SEEDING:** For the periods March 1 thru April 30, and August 1 thru October 15, seed with 50 lbs. per acre (14 lbs./100 sq.ft.) of Kentucky 31 Tall Fescue. For the period May 1 thru July 31, seed with 60 lbs. per acre (16 lbs./100 sq.ft.) of Kentucky 31 Tall Fescue and 2 lbs. per acre (0.5 lbs./100 sq.ft.) of waning fescue. During the period of October 1 thru February 28, protect site by applying 2 tons per acre well anchored straw mulch and seed as soon as possible in the spring. (2) Use seed Option (3) Seed with 60 lbs./acre Kentucky 31 Tall Fescue and mulch with 2 tons/acre wet anchored straw.

**MULCHING:** Apply 1 1/2 to 2 tons per acre (70 to 90 lbs./100 sq.ft.) of unrotted straw mulch 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 slopes 8 feet or higher, use 348 gallons per acre (6 gal/1000 sq.ft.) for anchoring.

**MAINTENANCE:** Inspect all seeded areas and make needed repairs, replacements and seedings.

### TEMPORARY SEEDING NOTES

**SEEDS:** PREPARATION: Loosen upper three inches of soil by raking, disking or other acceptable means before seeding. If not previously located.

**SOIL AMENDMENTS:** Apply 500 lbs. per acre 10-10-10 fertilizer (14 lbs./1000 sq.ft.).

**SEEDING:** For the periods March 1 thru April 30, and August 1 thru October 15, seed with 2 1/2 tons per acre (62 lbs./1000 sq.ft.) of Kentucky 31 Tall Fescue. For the period May 1 thru August 14, seed with 3 lbs. per acre of waning fescue. For the period of October 1 thru February 28, protect site by applying 2 tons per acre well anchored straw mulch and seed as soon as possible in the spring, or use sod.

**MULCHING:** Apply 1 1/2 to 2 tons per acre (70 to 90 lbs./1000 sq.ft.) of unrotted straw mulch 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 slopes 8 feet or higher, use 348 gallons per acre (6 gal/1000 sq.ft.) for anchoring.

REFER TO THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. FOR RATE AND METHOD NOT COVERED.

### 21.0 STANDARDS AND SPECIFICATIONS

#### FOR TOPSOIL

**Definition:** Placement of topsoil over a prepared subsoil prior to establishment of permanent vegetation.

**Purpose:** To provide a suitable soil medium for vegetable growth. Soils of concern have low moisture content, low nutrient levels, low pH, moderate toxic to plants, and/or unacceptable soil gradation.

**Conditions Where Practice Applies:**

- The practice is limited to areas having 2:1 or flatter slopes where:
  - The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
  - The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
  - The original soil to be vegetated contains material toxic to plant growth.
- Topsoil shall be applied to areas having 2:1 or flatter slopes where:
  - After seeding, the exposed subsoil/parent material is not adequate to produce vegetative growth.
  - The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
  - The original soil to be vegetated contains material toxic to plant growth.

**SEEDING:** For the periods March 1 thru April 30, and August 1 thru October 15, seed with 50 lbs. per acre (14 lbs./100 sq.ft.) of Kentucky 31 Tall Fescue. For the period May 1 thru July 31, seed with 60 lbs. per acre (16 lbs./100 sq.ft.) of Kentucky 31 Tall Fescue and 2 lbs. per acre (0.5 lbs./100 sq.ft.) of waning fescue. During the period of October 1 thru February 28, protect site by applying 2 tons per acre well anchored straw mulch and seed as soon as possible in the spring. (2) Use seed Option (3) Seed with 60 lbs./acre Kentucky 31 Tall Fescue and mulch with 2 tons/acre wet anchored straw.

**MULCHING:** Apply 1 1/2 to 2 tons per acre (70 to 90 lbs./1000 sq.ft.) of unrotted straw mulch 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 slopes 8 feet or higher, use 348 gallons per acre (6 gal/1000 sq.ft.) for anchoring.

**MAINTENANCE:** Inspect all seeded areas and make needed repairs, replacements and seedings.

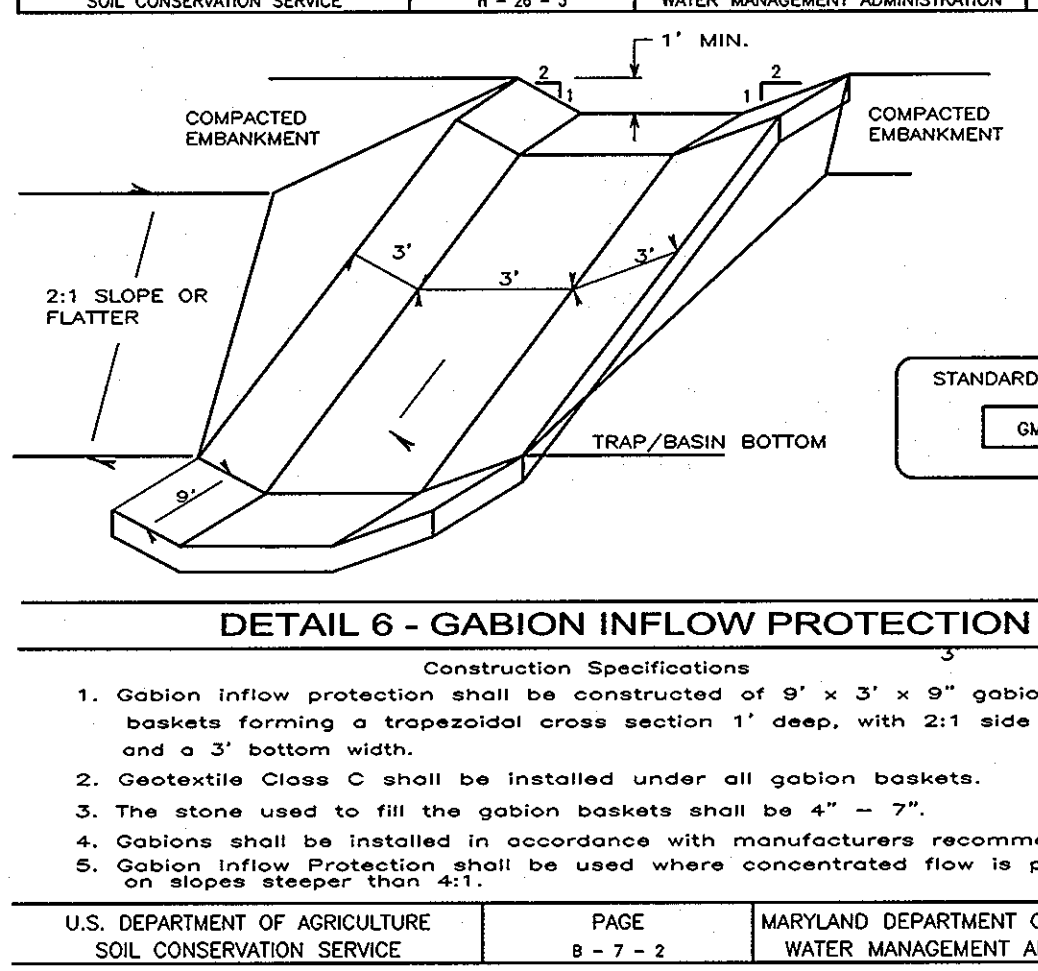
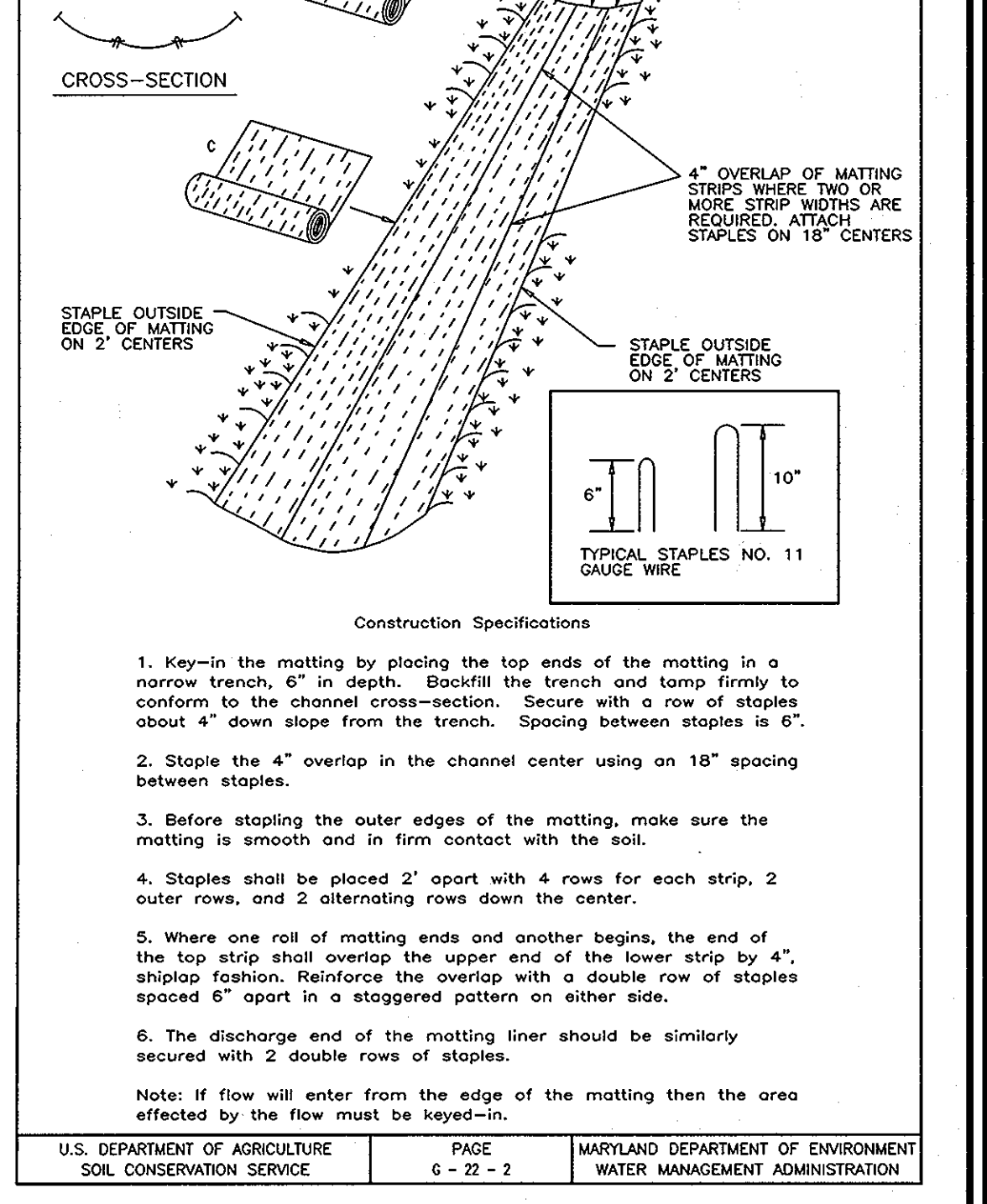
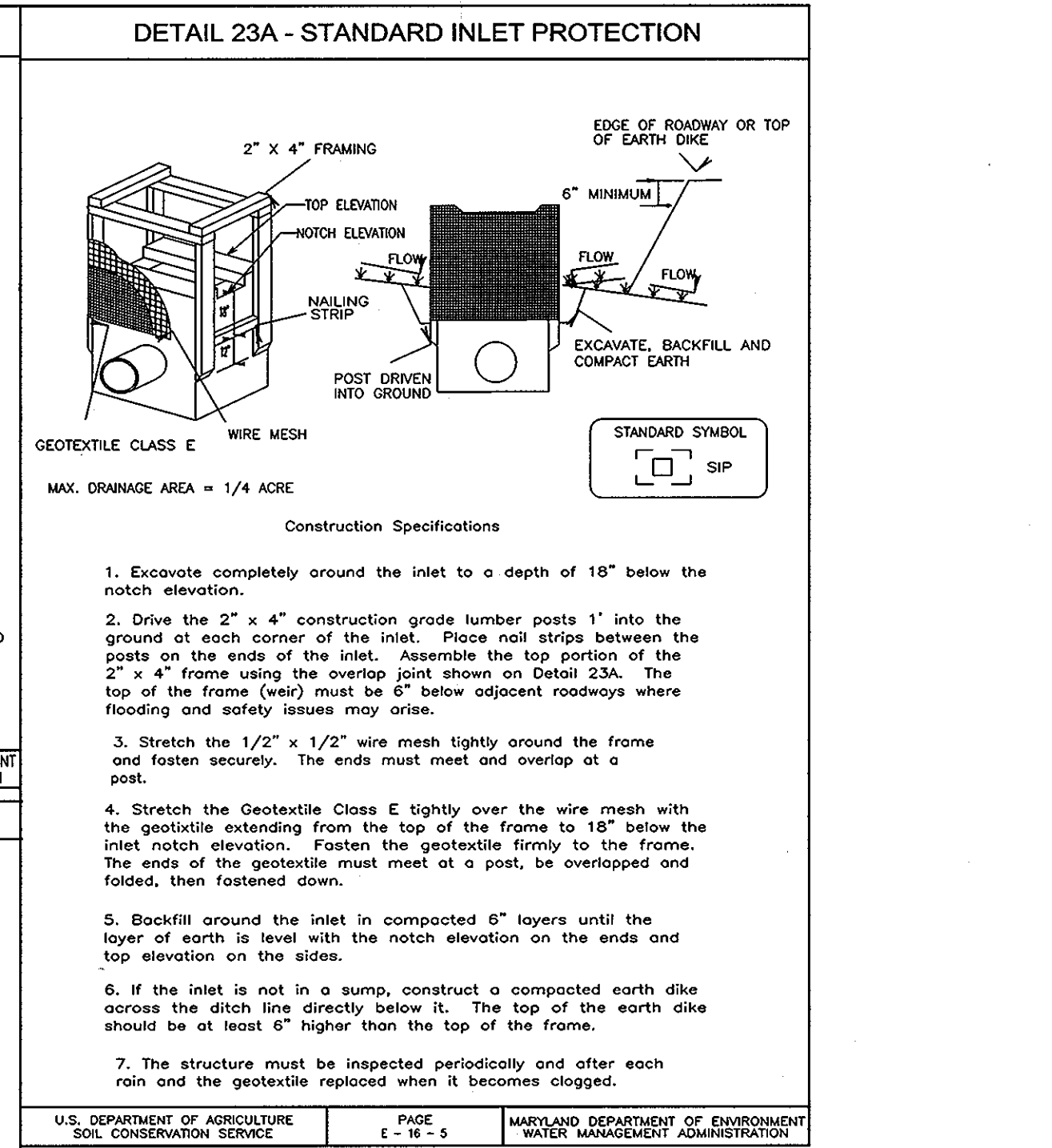
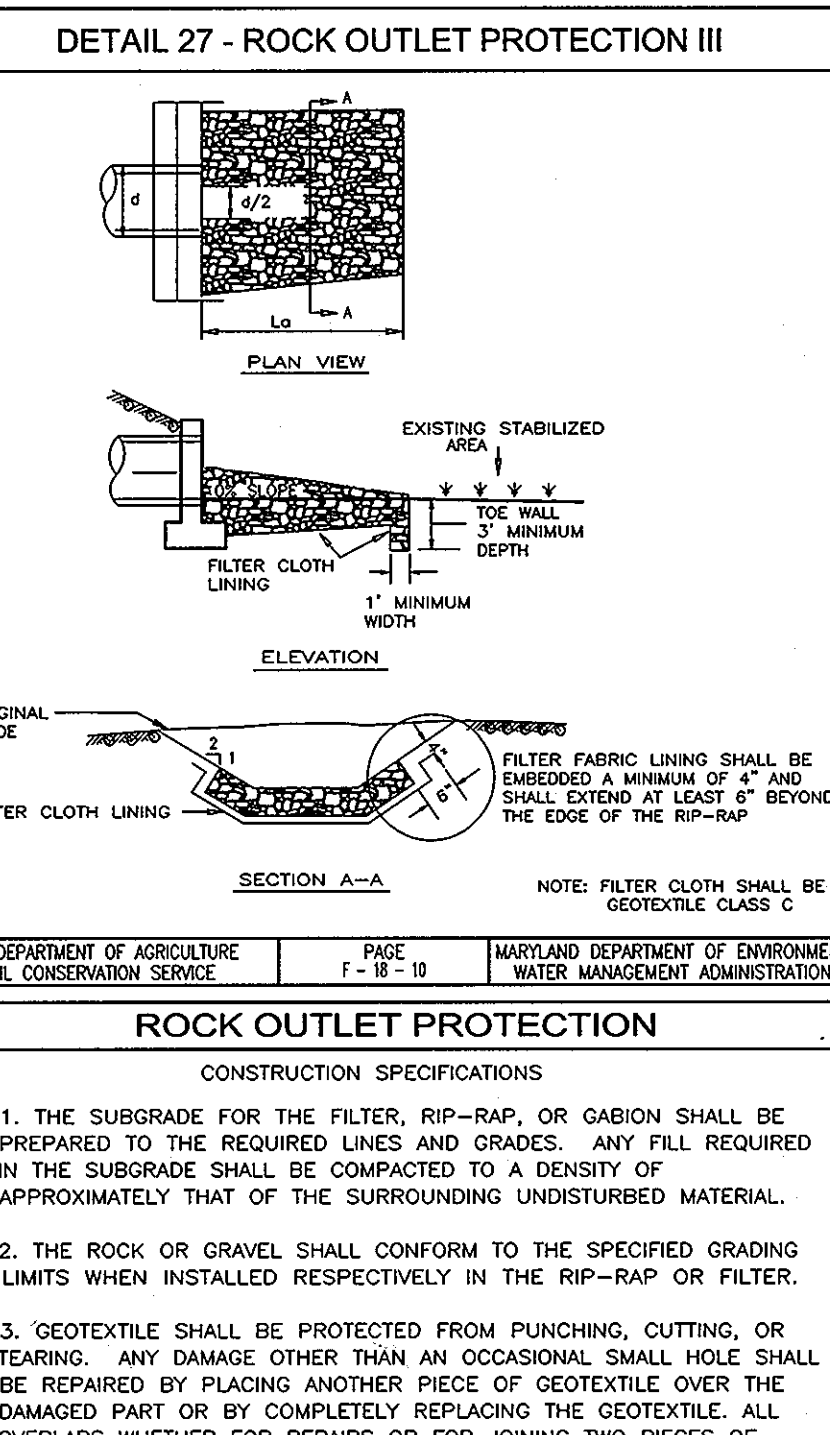
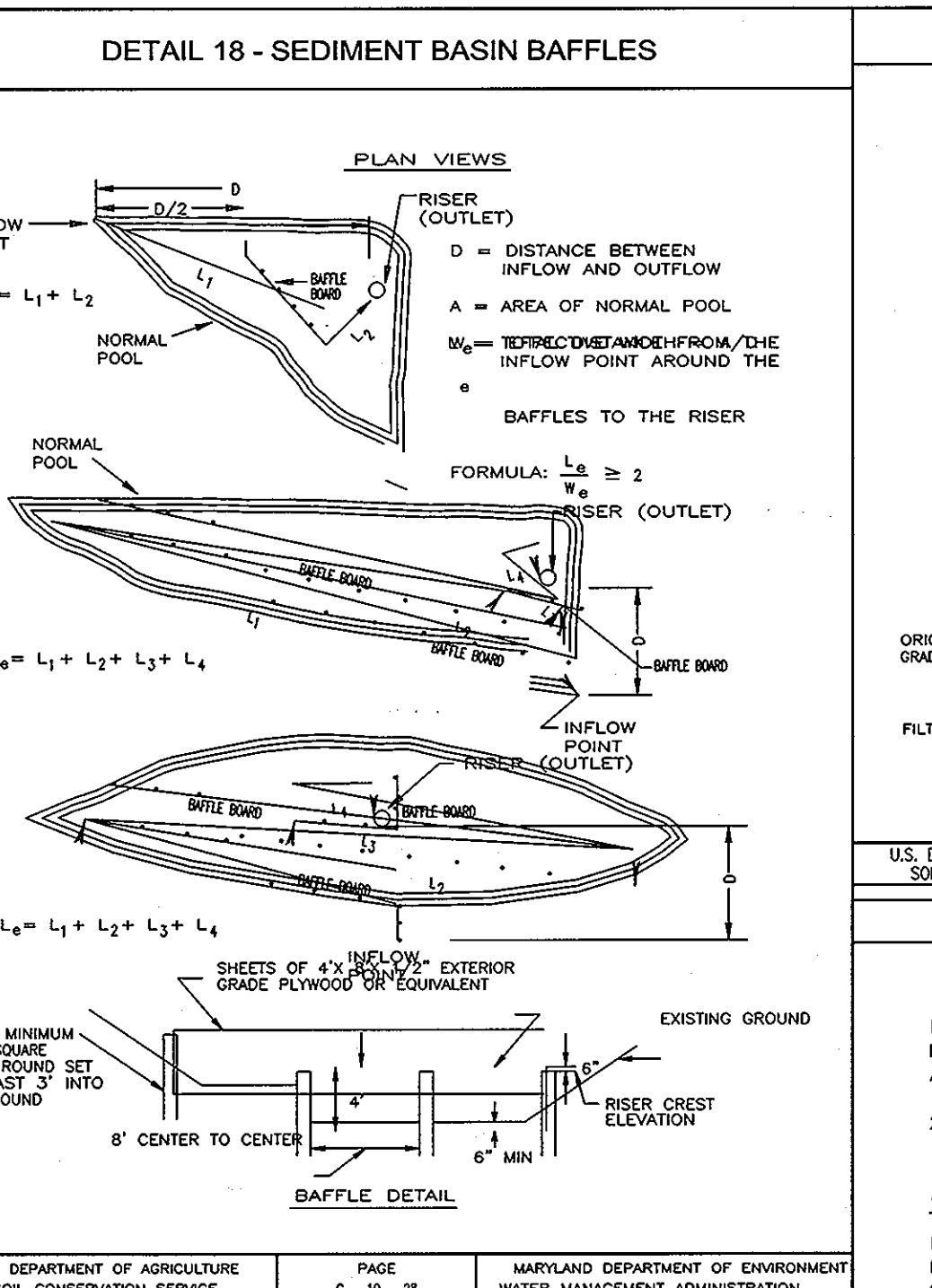
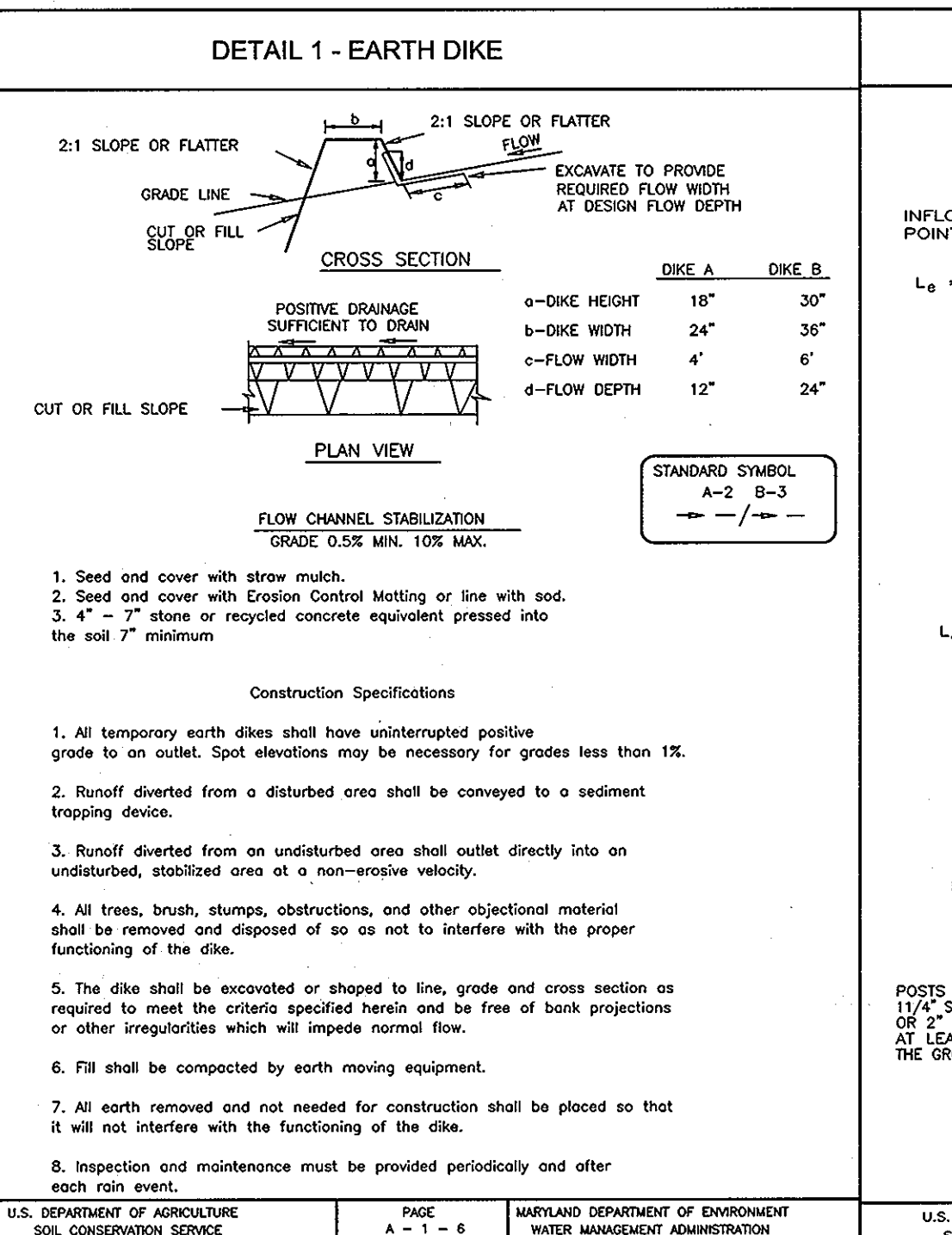
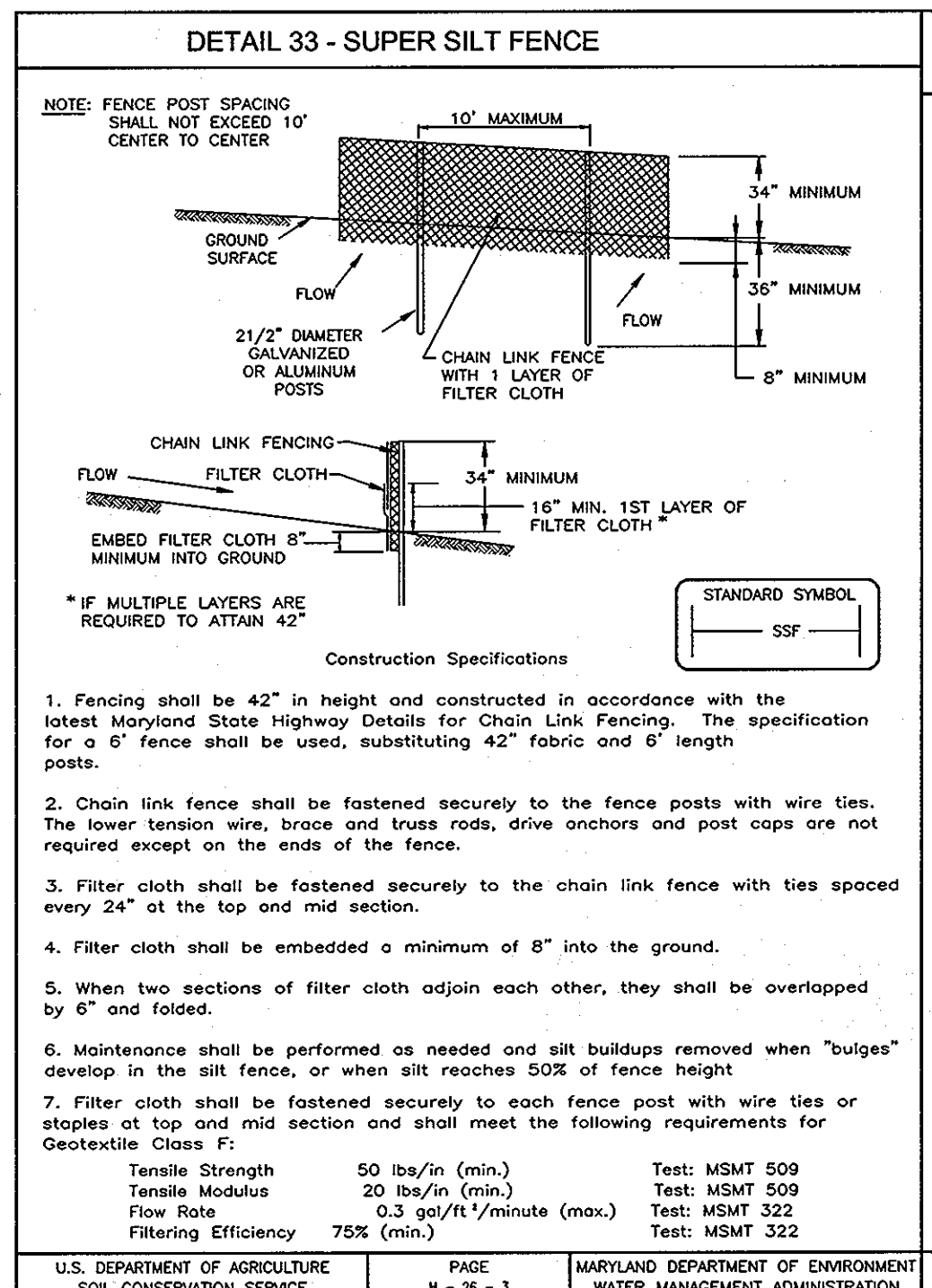
#### CONSTRUCTION AND MATERIAL SPECIFICATIONS

- Topsoil salvaged from the existing site may be used provided that it meets the standards set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS in cooperation with Maryland Agricultural Experiment Station.
- Topsoil Specifications - Soil to be used as topsoil must meet the following:
  - Topsoil shall be a loam, sandy loam, loam, clay loam, silty loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or a soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be a mixture of contrasting textured subsoils and shall contain less than 5% by volume of cinders, stones, slag, coarse fragments, gravel, silt, siltstone, trash, or other materials larger than 1 and 1/2" in diameter.
  - Topsoil must be free of plants or plant parts such as Bermuda grass, quailgrass, nutgrass, wildflower, ivy, thistle, or others as specified.
  - Where the subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 4 lbs./acre (100-500 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with those operations as detailed 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.

### SEDIMENT CONTROL NOTES

- A minimum of 48 hours notice must be given to the Howard County Department of Planning, License and Permits Sediment Control Division prior to the start of any construction (313-1855).
- All vegetation and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and revisions thereto.
- Following initial soil disturbances or redisturbances, permanent or temporary stabilization shall be completed within: (a) 7 calendar days for all perimeter sediment control structures, dikes, perimeter slopes, and all slopes greater than 3:1, (b) 14 days as to all other disturbed or graded areas on the project site.
- All sediment traps/basins shall be fenced and warning signs posted around their perimeter in accordance with Vol. 1, Chapter 7, HOWARD COUNTY DESIGN MANUAL, Storm Drainage.
- All disturbed areas must be stabilized within the time period specified above in accordance with the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seeding, sod, temporary seeding, and mulching (Sec. C). Temporary stabilization with mulch alone shall be done when recommended seeding does not allow for proper germination and establishment of permanent vegetation.
- All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.
- Site Area:
 

Total Area	33.97 ac.
Area Disturbed	21.49 ac.
Area to be roofed or paved	8.40 ac.
Area to be vegetatively stabilized	13.09 ac.
Total Cut	20,000 cu yd
Total Fill	20,000 cu yd
- Off-site waste/borrow area location
- Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
- Additional sediment controls must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
- On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.
- Trenches for the construction of utilities is limited to three pipe lengths or that which shall be back-filled and stabilized within one working day, whichever is shorter.
- To be determined by contractor, with pre-approval of the Sediment Control Inspector with an approved and active grading permit.



**OWNER**

RYLAND HOMES  
7250 PARKWAY DRIVE  
SUITE 520  
HANOVER, MD 21076  
410-712-7012

**SEQUENCE OF CONSTRUCTION**

- Obtain grading and MOE permit.
- Notify Howard County Bureau of Inspections and Permits at (410)313-1880 at least 24 hours before starting any work.
- Install Stabilized Construction Entrances, Perimeter Silt Fence, Super Silt Fence and Cleaner Dikes.
- Install stream diversion measures and silt fence. Install and fully stabilize all culverts. (4 weeks)
- MOE PERMIT NO. 02-NT-053/200361438. STREAM CLOSURE CLASS 1. NO IN-STREAM WORK BETWEEN 3/1 AND 6/15.
- Install Landsteering (1 week)
- With sediment control inspector approval construct sediment basins and control structures. Block weirs as shown on details on sheets 25 and 26. (6 weeks)
- With permission of sediment control inspector, rough grade site. Use dust control methods as required. (2 months)
- Construct Water, Sewer and storm drain system. (1.5 months)
- Begin construction of buildings. (5 mo. 1 year)
- As building construction continues fine grade site. (1 week)
- With permission of sediment control inspector, install curb and gutter and paving. (1 month)
- Complete building, paving, curb and gutter and sidewalk construction.
- Install Landsteering (1 week)
- With permission of the inspector, stabilize all disturbed areas and flush storm drain system. (1 week)
- With permission of sediment control inspector, Convert Sediment Basins to Final Stormwater Management Facility by Removing Temp. Blocking (3 Days)

**NOTES:**

During grading and after each rainfall, contractor will inspect and provide necessary maintenance to the Sediment Control measures on this plan.

Following initial soil disturbances or redisturbances permanent or temporary stabilization shall be completed within:

- 7 calendar days for all perimeter Sediment Control Structures, Dikes,
- 14 calendar days for all other disturbed areas.

Sandbags to be removed prior to completion of embankment fill.

**ENGINEER'S CERTIFICATE**

I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING. I AM A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

ROBERT H. VOGEL  
SIGNATURE OF ENGINEER  
DATE

**DEVELOPER'S CERTIFICATE**

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE ADEQUATE ATTENTION OF THE DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

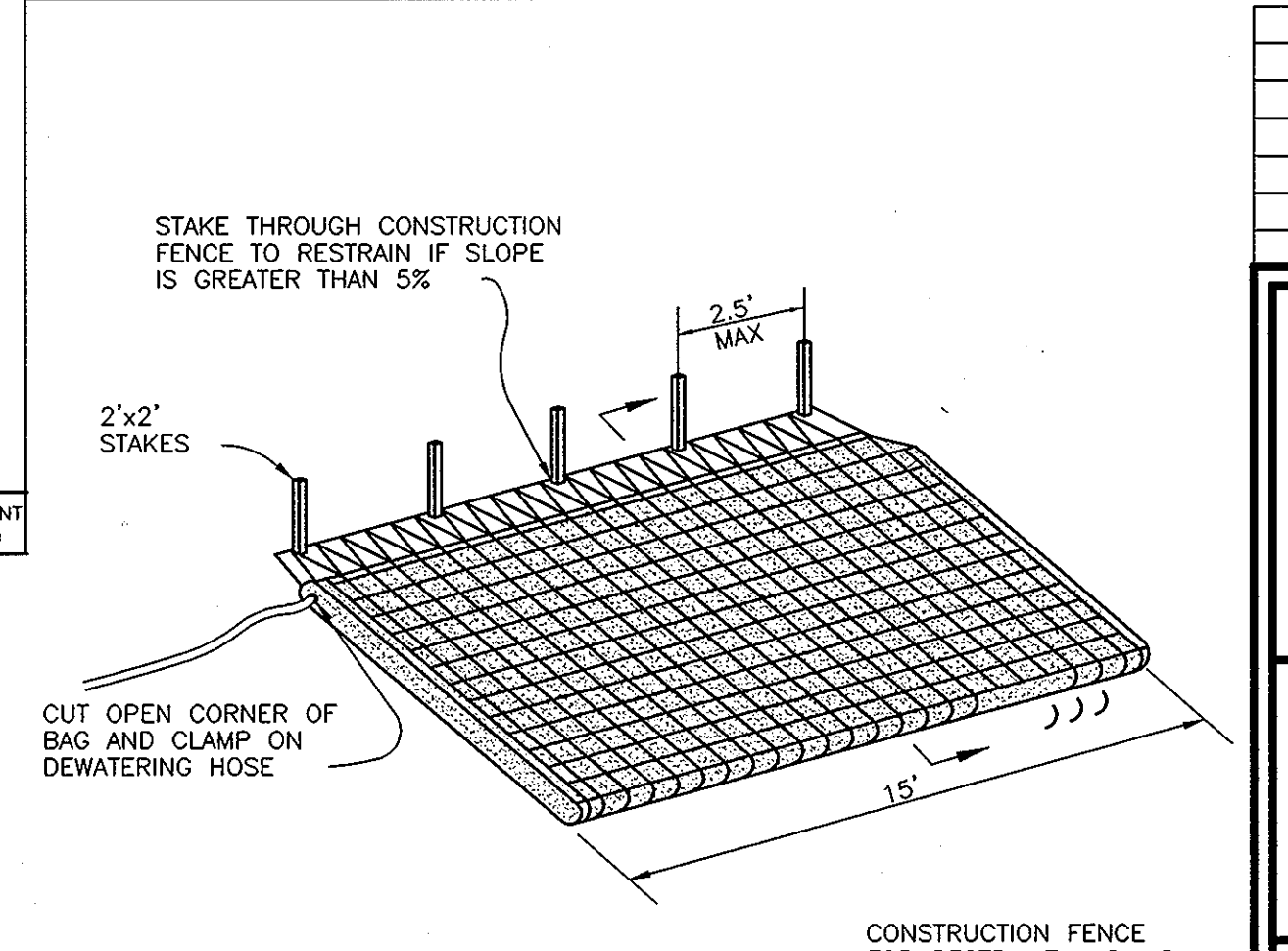
BRINN KNUFF  
SIGNATURE OF DEVELOPER  
DATE

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

USDA-NATURAL RESOURCES CONSERVATION SERVICE  
DATE 7/15/04

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

HOWARD COUNTY SOIL CONSERVATION DISTRICT  
DATE 7/15/04



**SEDIMENT AND EROSION CONTROL DETAILS**

**THE OAKS AT WATERS EDGE - PHASE I**

PARCEL A-1

REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157, SDP-03-041, SDP-03-154, P-04-174

TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS

8407 MAIN STREET  
ELLIOTT CITY, MARYLAND 21043  
TEL: 410.461.7666 FAX: 410.461.8961

DESIGN BY: JT  
DRAWN BY: JT  
CHECKED BY: RHV  
DATE: JUNE 8, 2004  
SCALE: AS NOTED  
W.O. NO.: 03-82

27 SHEET OF 37

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE 7/20/04

CHIEF, DIVISION OF LAND DEVELOPMENT  
DATE 8/20/04

DIRECTOR  
DATE 8/20/04

**ENGINEERS CERTIFICATE**

I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING. I AM A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

ROBERT H. VOGEL  
SIGNATURE OF ENGINEER  
DATE

**DEVELOPER'S CERTIFICATE**

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE ADEQUATE ATTENTION OF THE DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

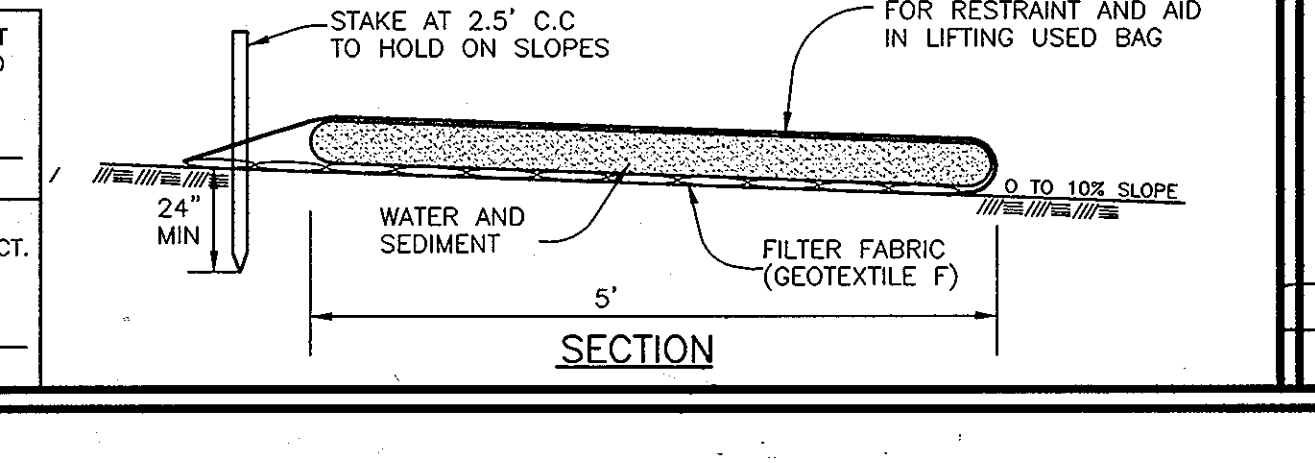
BRINN KNUFF  
SIGNATURE OF DEVELOPER  
DATE 7/15/04

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

USDA-NATURAL RESOURCES CONSERVATION SERVICE  
DATE 7/15/04

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

HOWARD COUNTY SOIL CONSERVATION DISTRICT  
DATE 7/15/04



**SEDIMENT AND EROSION CONTROL DETAILS**

**THE OAKS AT WATERS EDGE - PHASE I**

PARCEL A-1

REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157, SDP-03-041, SDP-03-154, P-04-174

TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS

8407 MAIN STREET  
ELLIOTT CITY, MARYLAND 21043  
TEL: 410.461.7666 FAX: 410.461.8961

DESIGN BY: JT  
DRAWN BY: JT  
CHECKED BY: RHV  
DATE: JUNE 8, 2004  
SCALE: AS NOTED  
W.O. NO.: 03-82

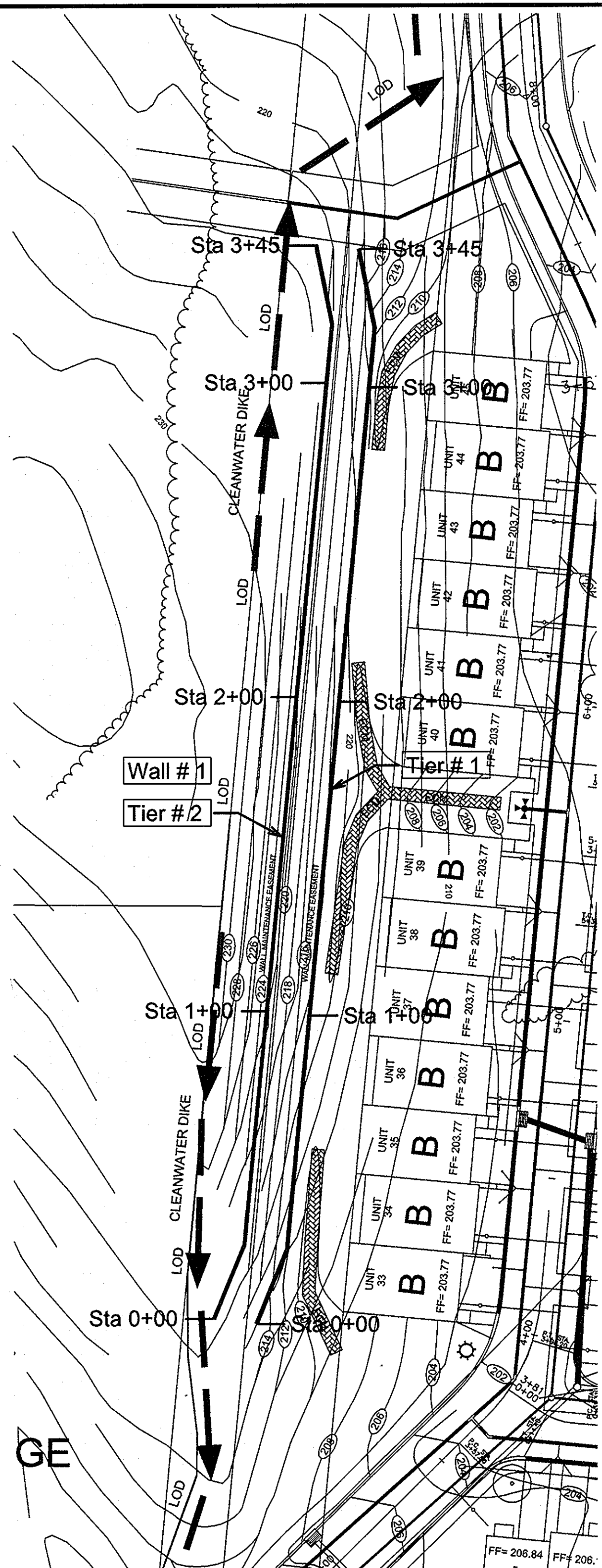
27 SHEET OF 37

AS-BUILT 7-1-2010 SDP-03-41

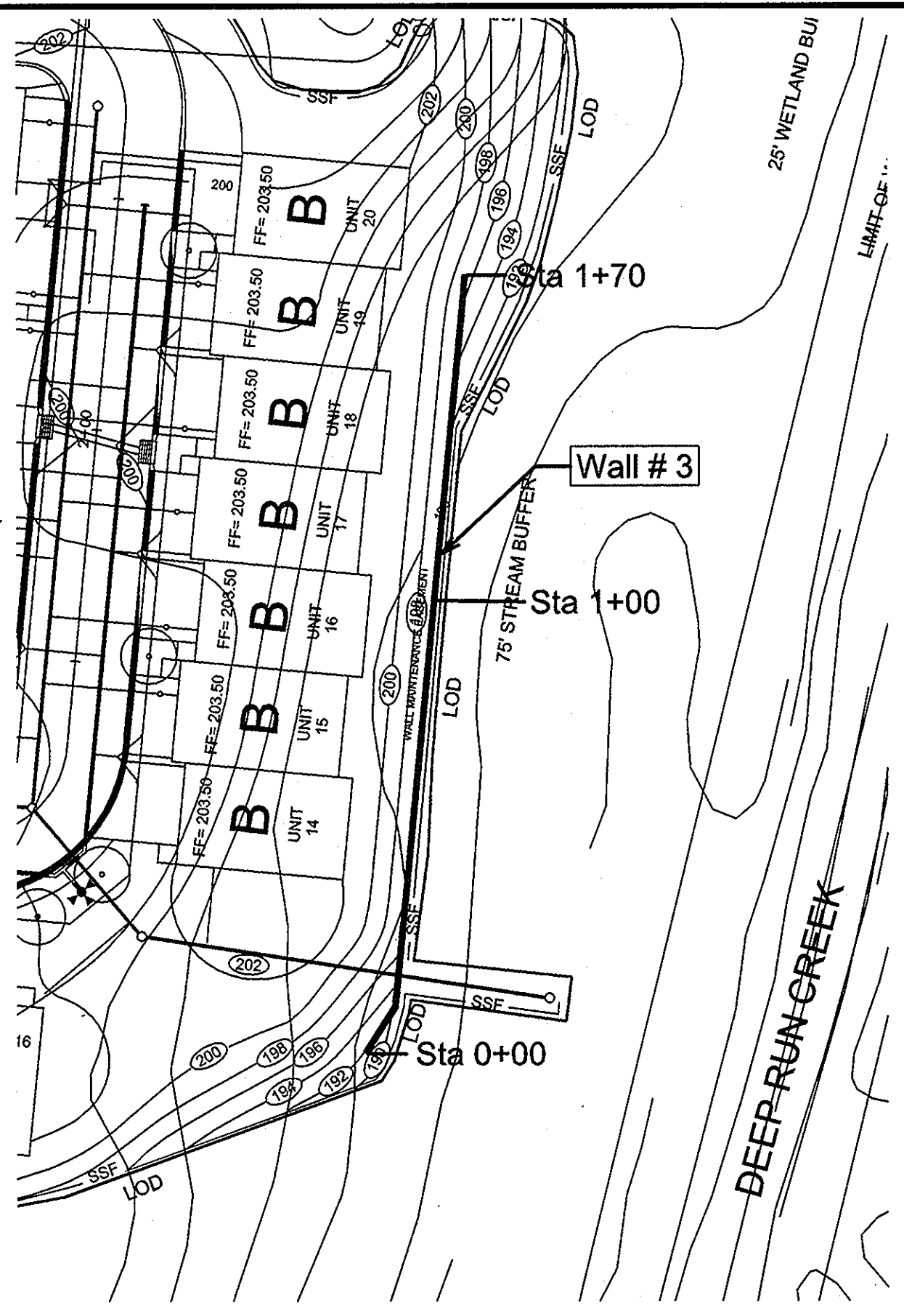




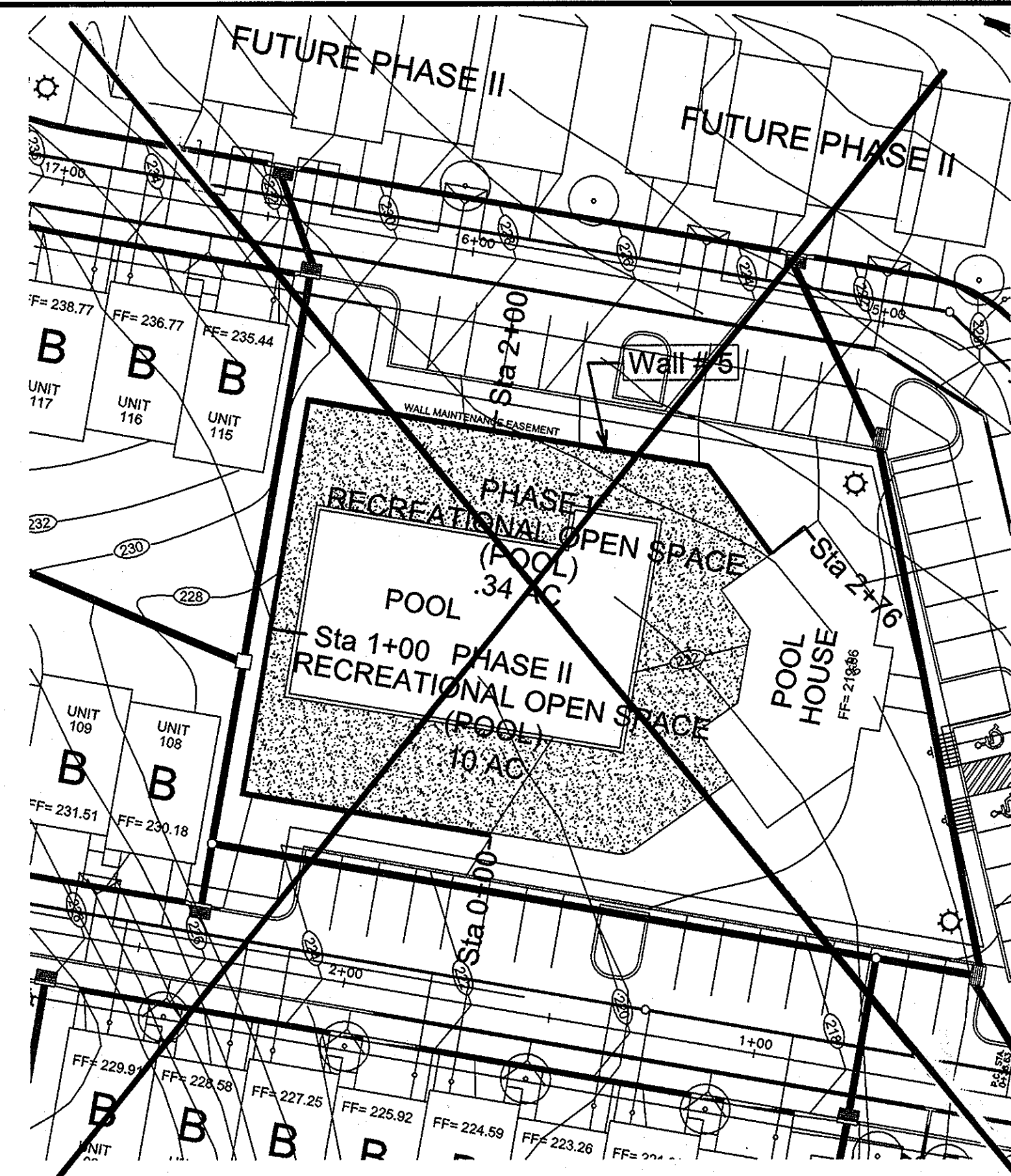




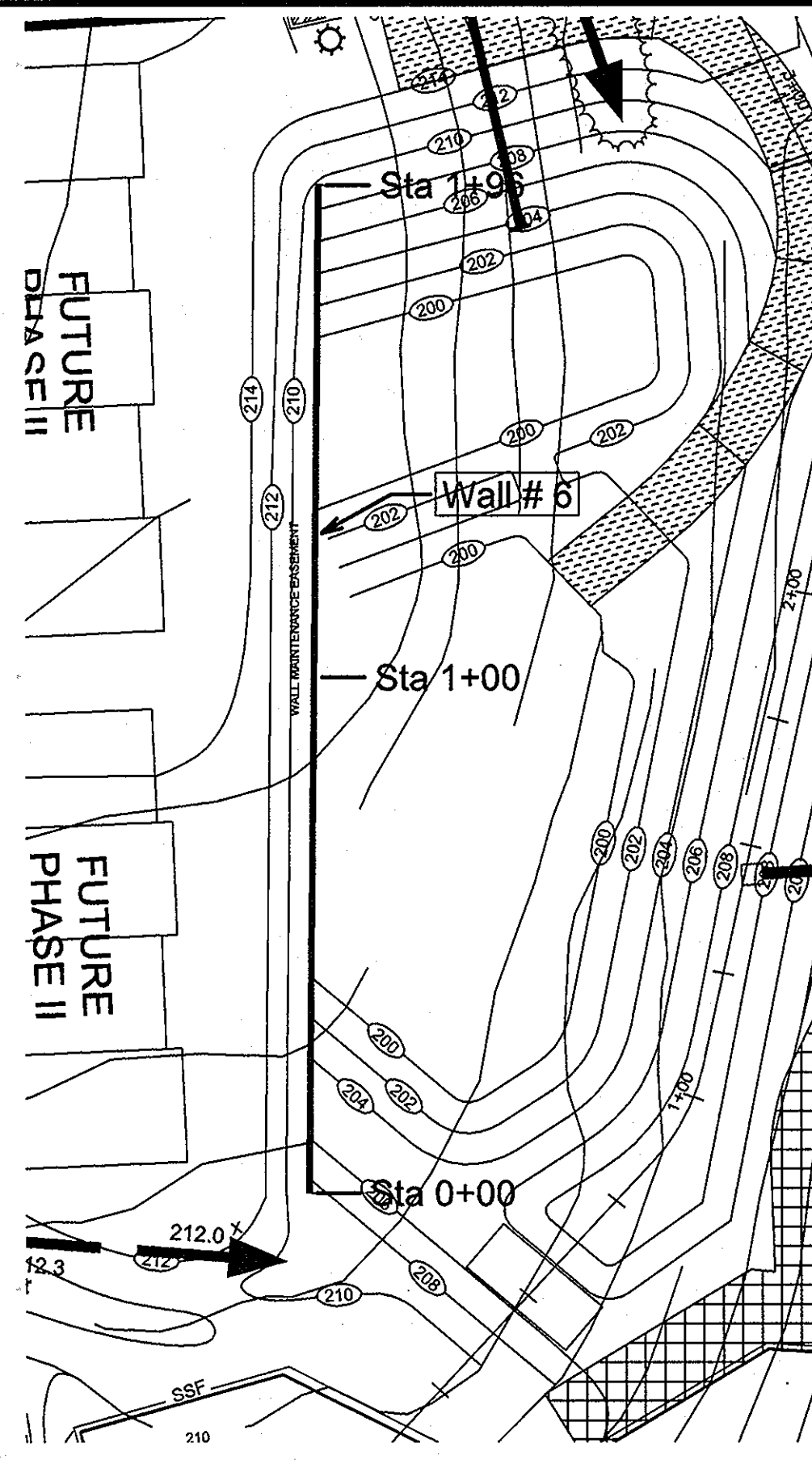
WALL #1 LOCATION PLAN  
1" = 30'



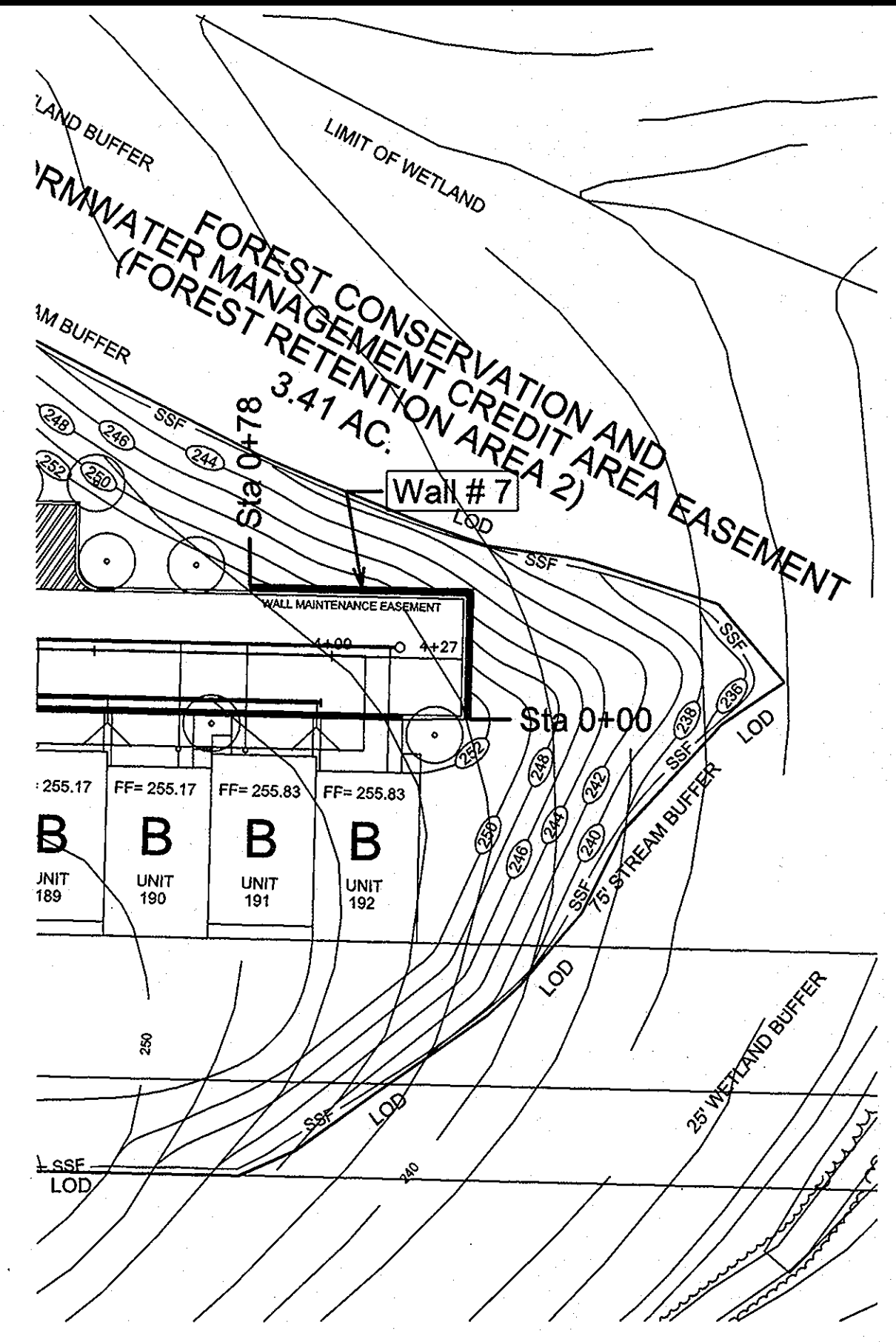
WALL #3 LOCATION PLAN  
1" = 30'



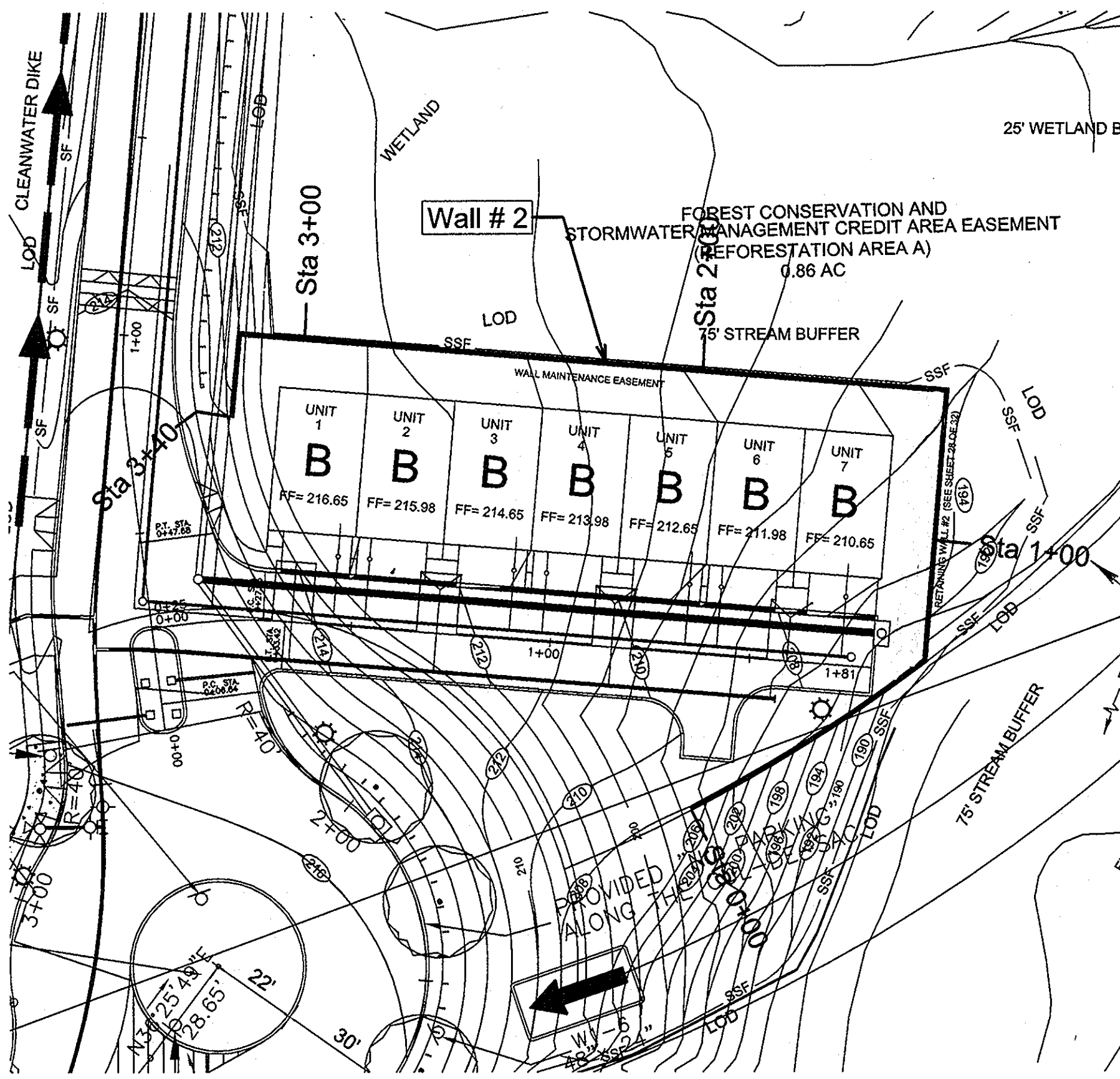
WALL #5 LOCATION PLAN  
1" = 30'  
SEE SHEET 30A



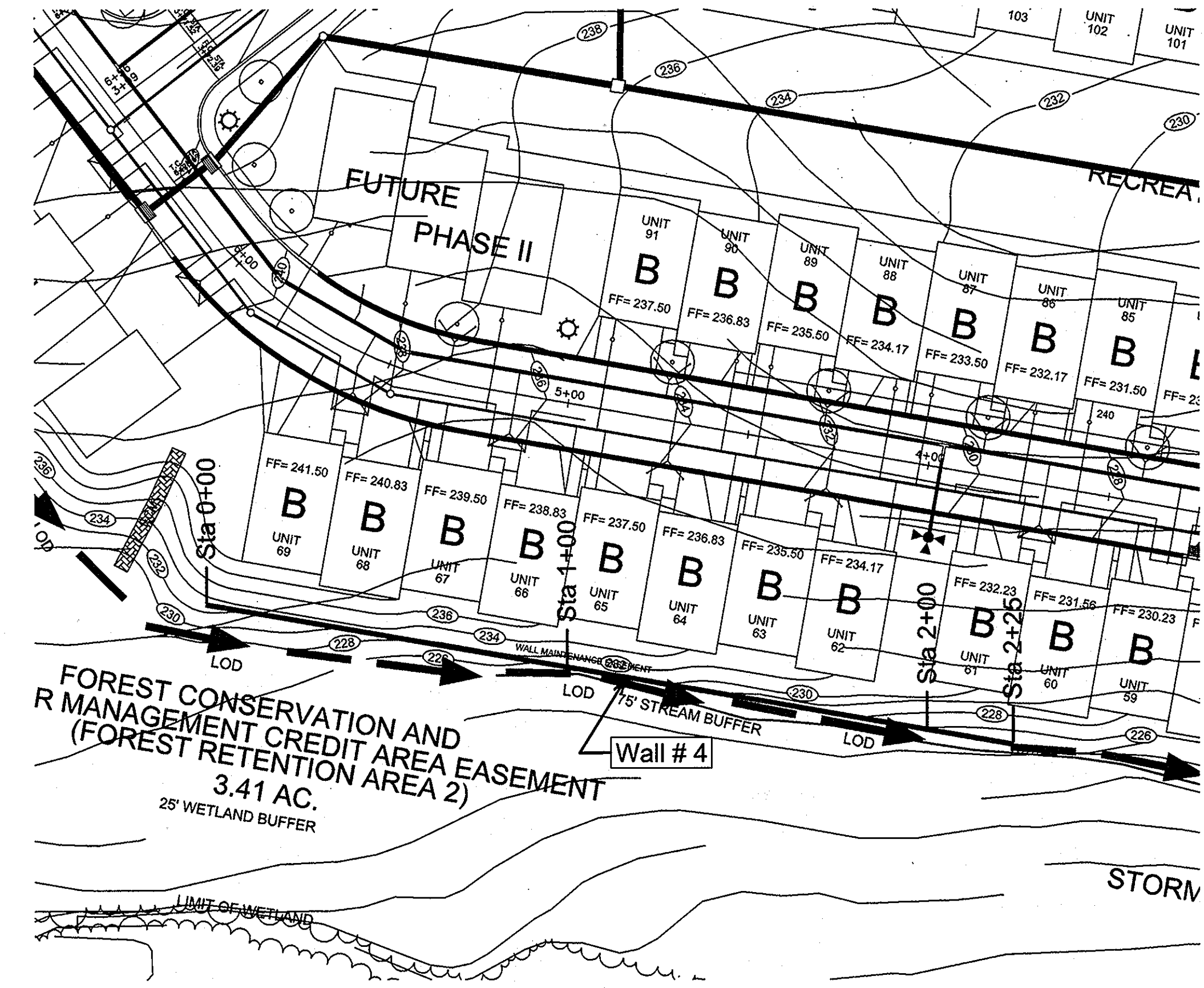
WALL #6 LOCATION PLAN  
1" = 30'



WALL #7 LOCATION PLAN  
1" = 30'



WALL #2 LOCATION PLAN  
1" = 30'



WALL #4 LOCATION PLAN  
1" = 30'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 7/23/04  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 [Signature] 8/12/04  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 [Signature] 8/12/04  
 DIRECTOR

NO.	REVISION	DATE
3	REVISE POOL HOUSE LAYOUT AND GRADING	4/20/06
2	WALL HEIGHT RAISED	9/27/05
1	REVISE STREAM CROSSINGS SHEETS 3.5, 9.1, 11.5, 12.1, 18.24	11/23/04

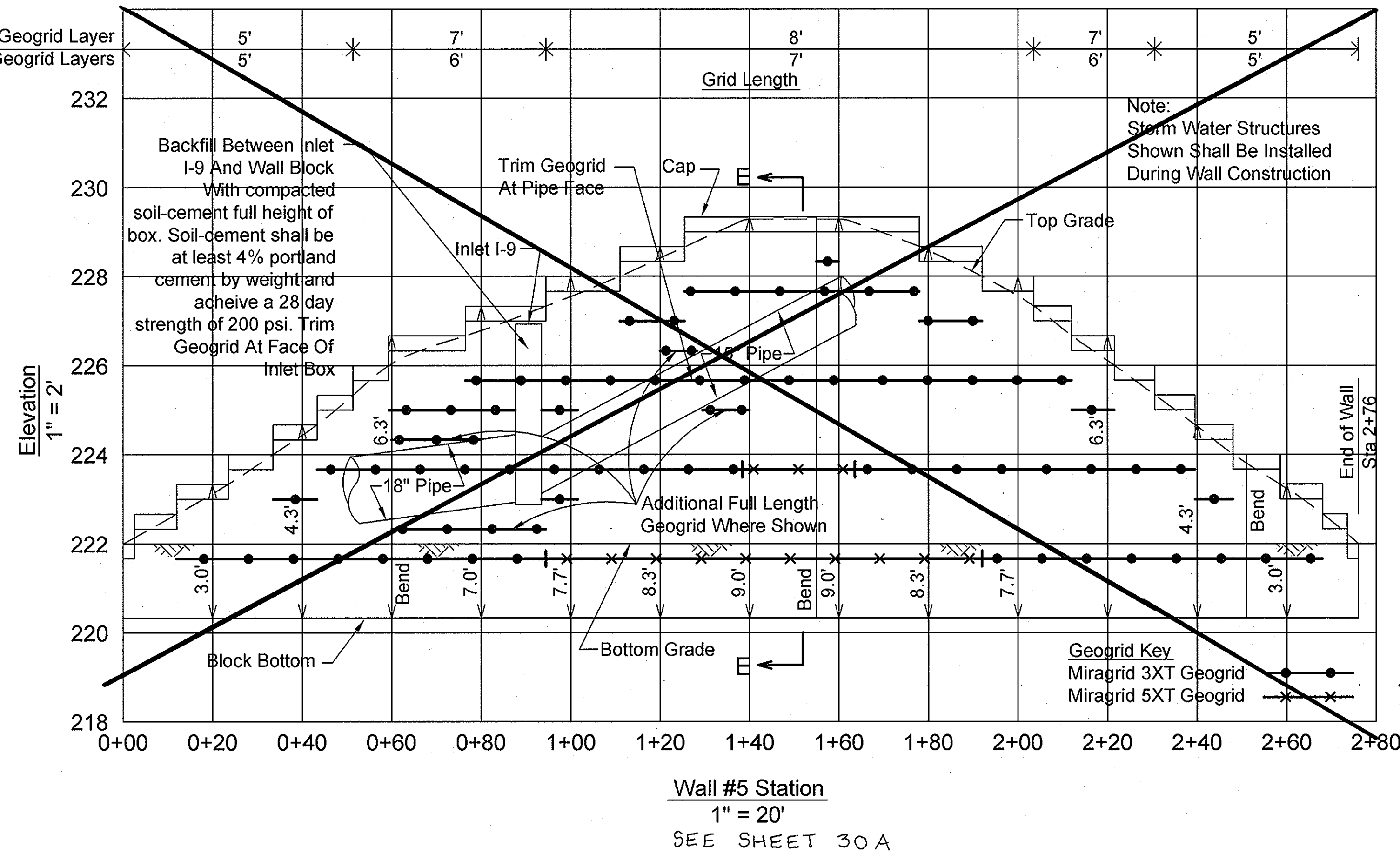
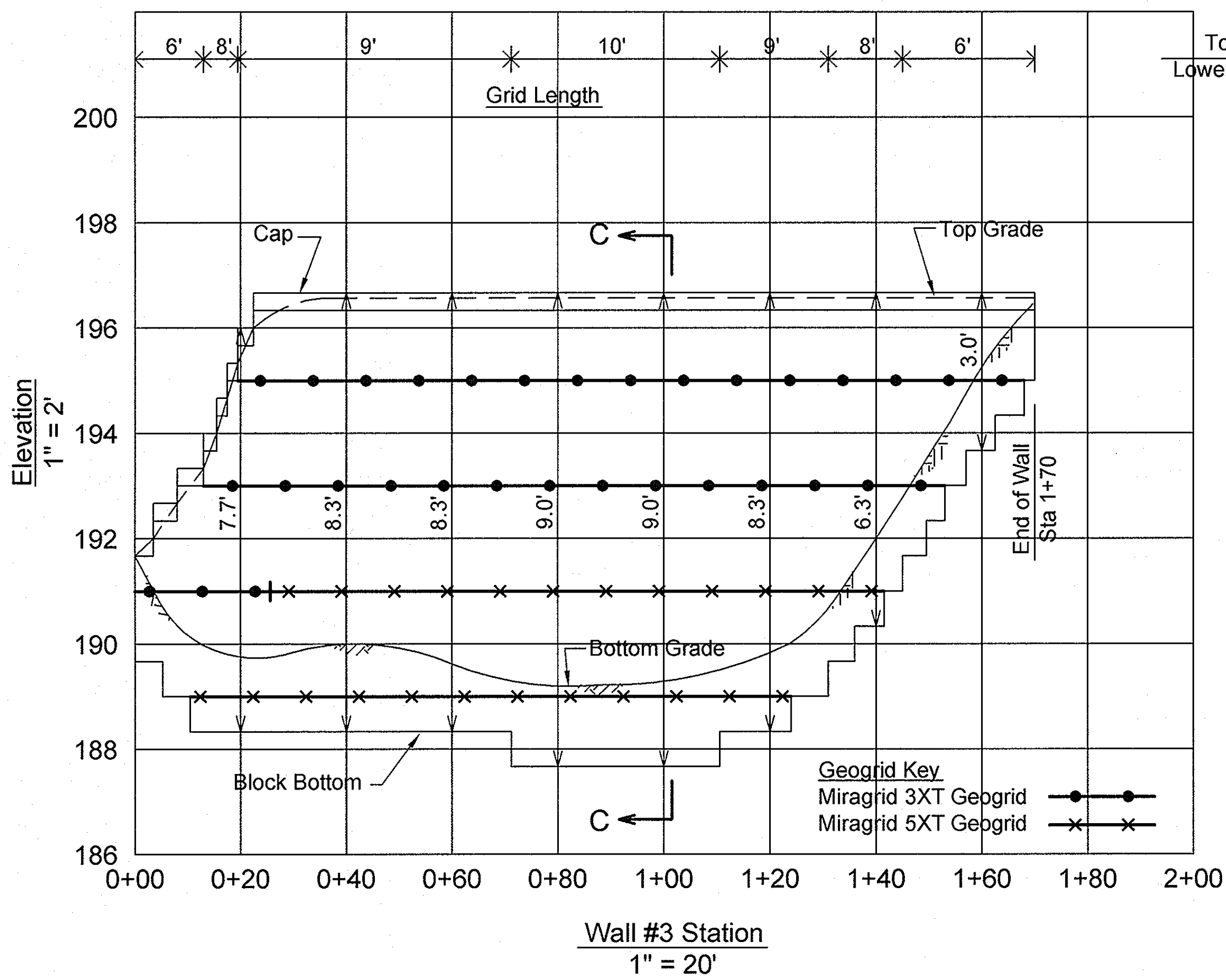
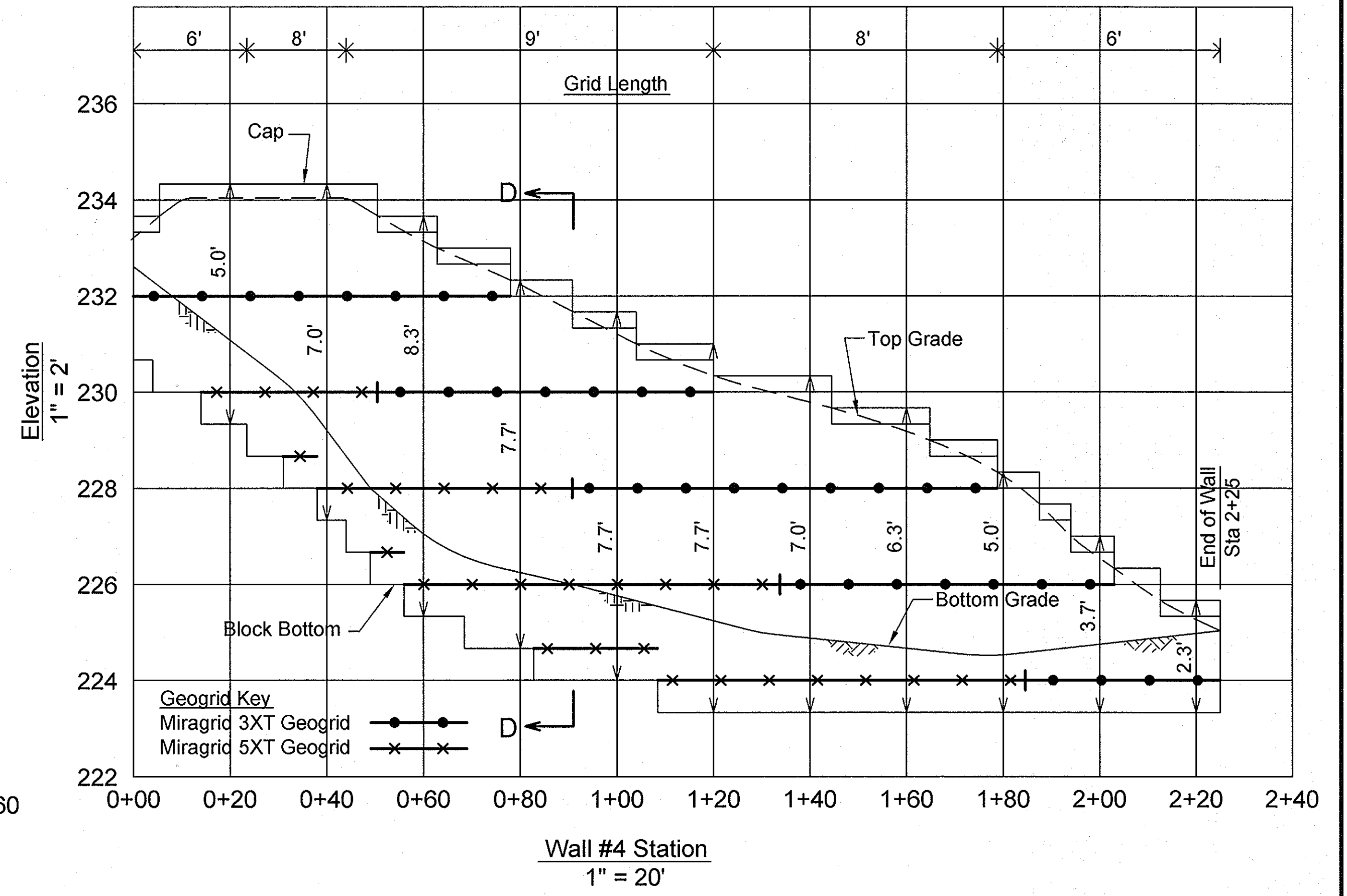
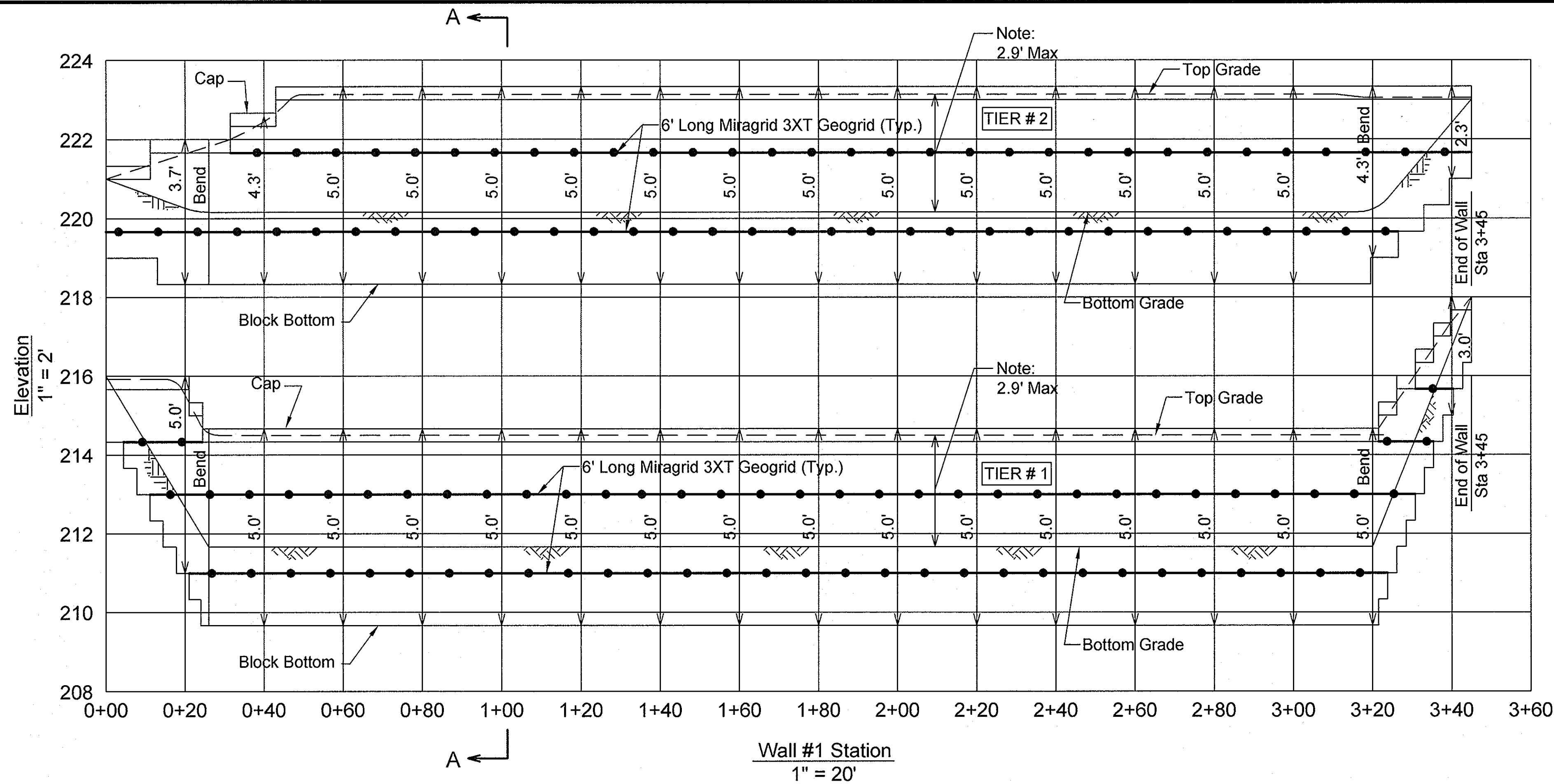
**RETAINING WALL LOCATION PLAN**  
**THE OAKS AT WATERS EDGE**  
 A RESUBDIVISION OF BLUE STREAM PROPERTY  
 PARCEL A-1 AND ELK LLC PARCEL 279  
 REF: S-97-01, ZB-986-A, P-00-19, WP-97-89, F-75-05, F-00-126  
 SDP-03-041, SDP-03-154, F-04-174  
 TAX MAP 43 BLOCK 4 PARCELS 279, 647, AND PART OF 5  
 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

HILLIS-CARNES ENGINEERING ASSOCIATES, INC.  
 12011 Guilford Road Suite 106  
 Balto. (410) 880-4788 D.C. (301) 470-4239 Fax (410) 880-4068  
**FREDERICK WARD ASSOCIATES, INC.**  
 7125 Riverwood Drive Columbia, Maryland 21046-2354  
 Phone: 410-290-9550 Fax: 410-720-6226  
 Bel Air, Maryland Columbia, Maryland Warrenton, Virginia

DESIGN BY: RWS  
 DRAWN BY: AM  
 CHECKED BY: RMH  
 DATE: MARCH 12, 2003  
 SCALE: AS SHOWN  
 PROJECT NO.: 02390-A







APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 7/23/04  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 5/29/04  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*[Signature]* 8/2/04  
 DIRECTOR DATE

2	REVISE POOL HOUSE LAYOUT AND GRADING	4/12/06
1	REVISE STREAM CROSSINGS SHEETS 3, 5, 9, 11, 16, 19, 18	11/29/04
NO.	REVISION	DATE

**RETAINING WALL ELEVATIONS**  
**THE OAKS AT WATERS EDGE**  
 A RESUBDIVISION OF BLUE STREAM PROPERTY  
 PARCELS 1 AND ELK LLC PARCEL 279

REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-126  
 TAX MAP 43 BLOCK 4 SDP-03-04, SDP-03-154, F-04-174 PARCELS 279, 647, AND PART OF 5  
 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

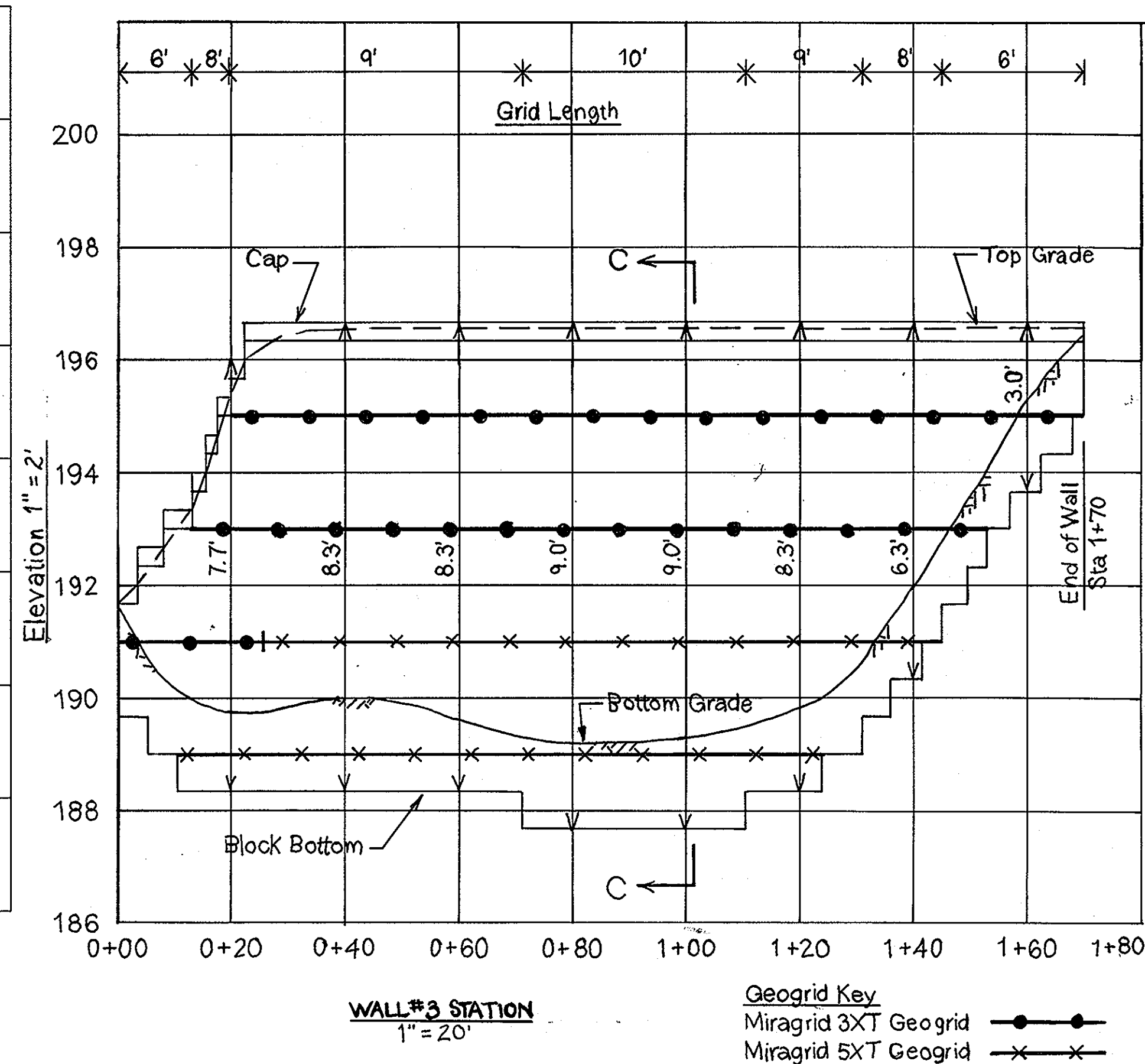
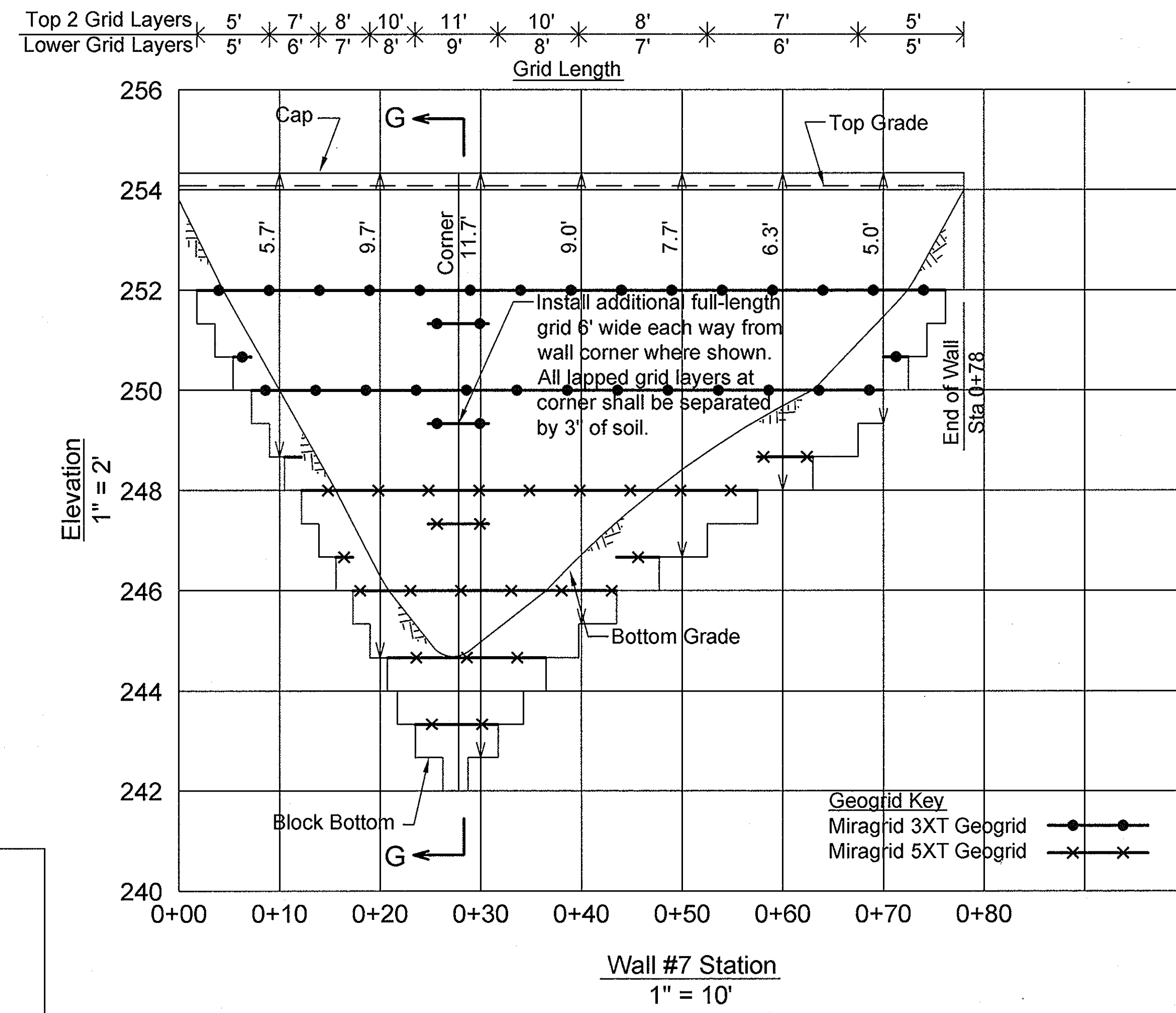
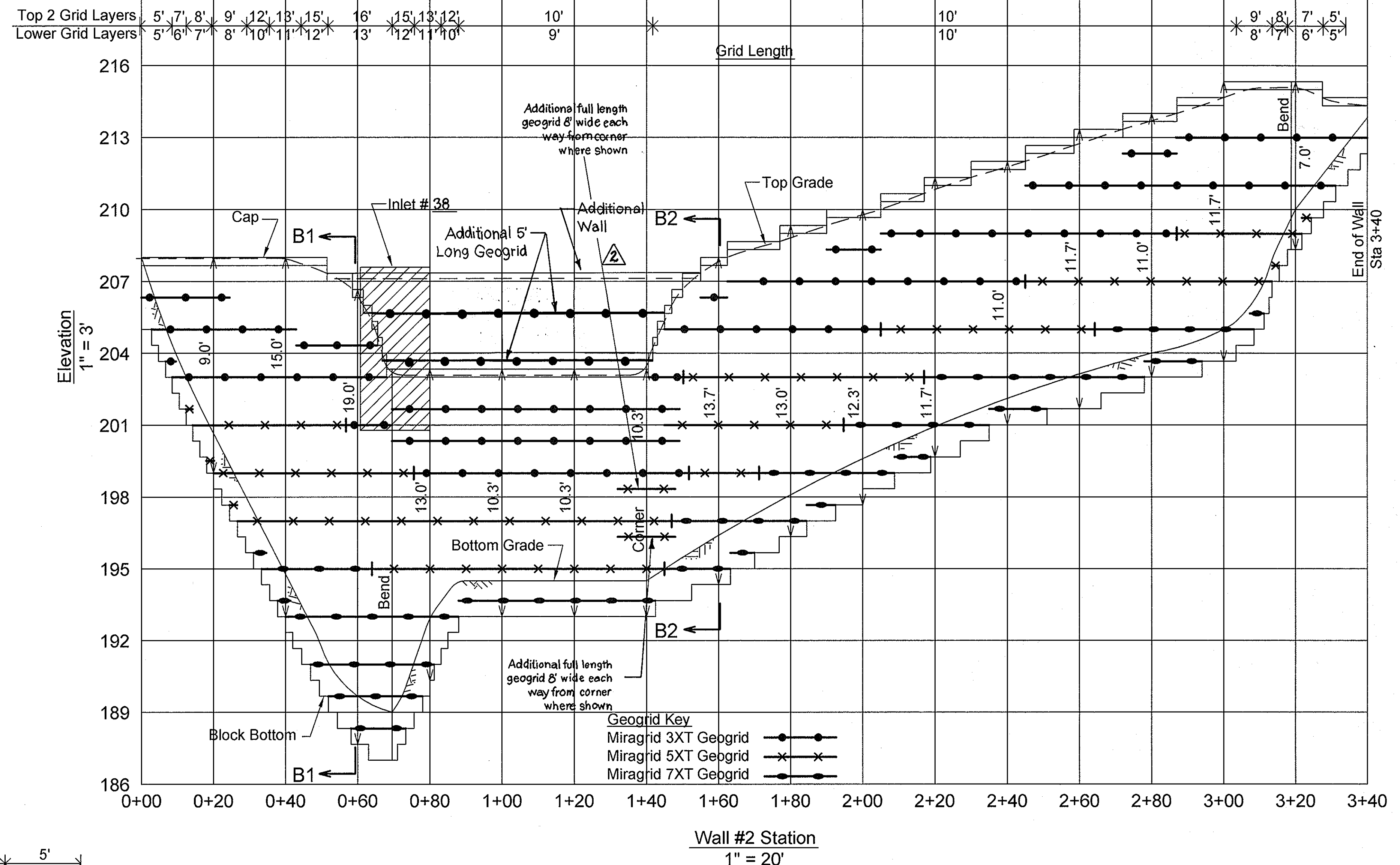
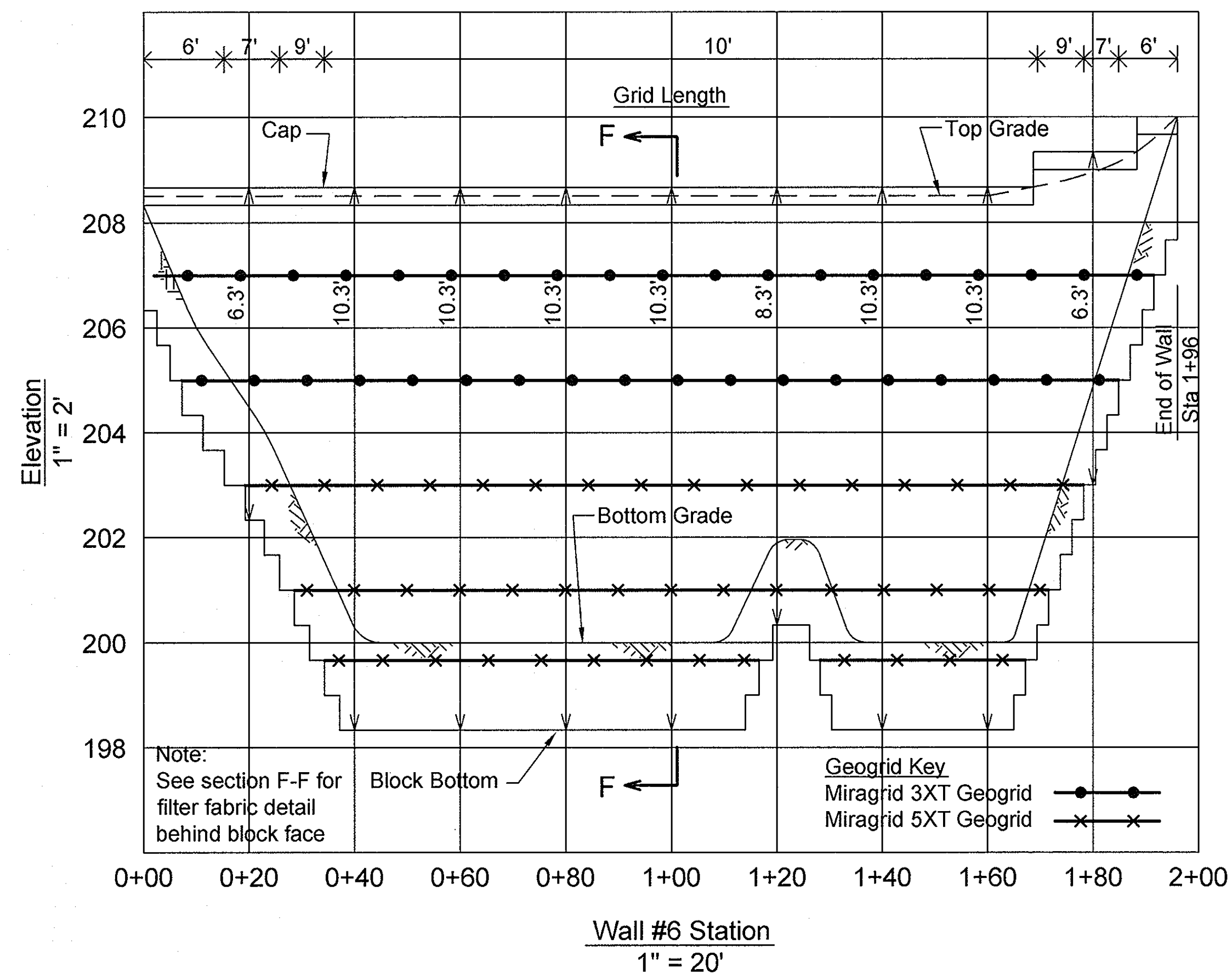
HILLIS-CARNES ENGINEERING ASSOCIATES, INC.  
 12011 Guilford Road, Suite 108  
 Bel Air, (410) 880-4788 D.C. (301) 470-4239 Fax (410) 880-4098

FREDERICK WARD ASSOCIATES, INC.  
 ENGINEERS 7125 Riverwood Drive Columbia, Maryland 21046-2354  
 ARCHITECTS Phone: 410-290-9550 Fax: 410-720-6226  
 SURVEYORS Bel Air, Maryland Columbia, Maryland Warrenton, Virginia

DESIGN BY: RWS  
 DRAWN BY: AM  
 CHECKED BY: RMH  
 DATE: MARCH 12, 2003  
 SCALE: AS SHOWN  
 PROJECT NO.: 02390-A

30 SHEET OF 37





APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 7/23/04  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 8/27/04  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*[Signature]* 8/31/04  
 DIRECTOR DATE

WALL HEIGHT RAISED		9.27.05
NO.	REVISE STREAM CROSSINGS SHEETS 3, 5, 9, 11, 15, 11a, 12, 11a2, 10, 4	DATE
REVISION 24		

**RETAINING WALL ELEVATIONS**  
**THE OAKS AT WATERS EDGE**  
 A RESUBDIVISION OF BLUE STREAM PROPERTY  
 PARCELS A-1 AND ELK LLC PARCEL 279

REF: S-97-01, ZB-986-A, P-00-19, WP-97-89, F-75-05, F-00-126  
 SDP-03-041, SDP-03-154, F-04-174

TAX MAP 43 BLOCK 4 PARCELS 279, 647, AND PART OF 5  
 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

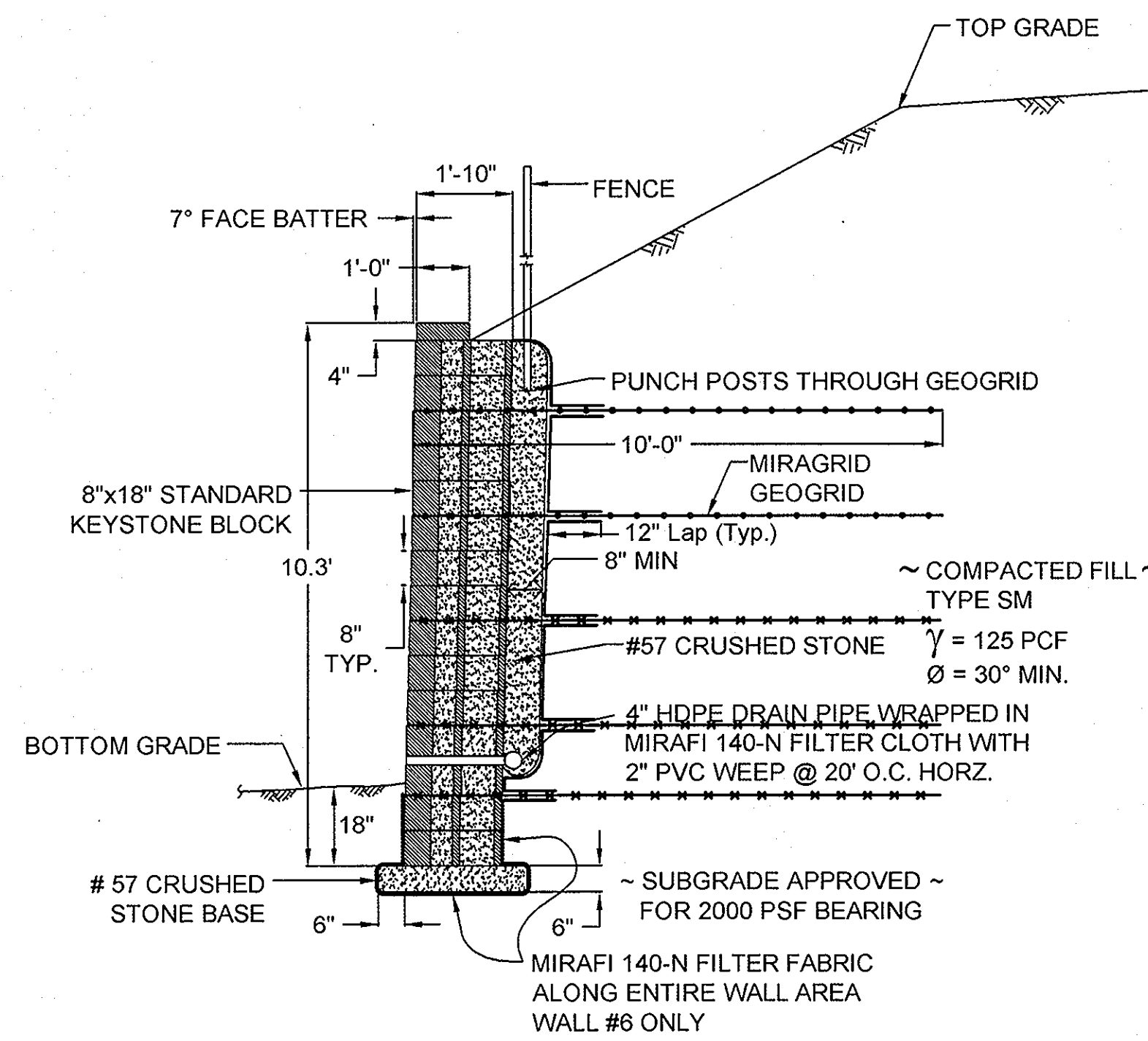
**HILLIS-CARNES ENGINEERING ASSOCIATES, INC.**  
 12011 Guilford Road Suite 105  
 Balto. (410) 880-4788 D.C. (301) 470-4239 Fax: (410) 880-4098

**FREDERICK WARD ASSOCIATES, INC.**  
 7125 Riverwood Drive Columbia, Maryland 21046-2354  
 Phone: 410-290-9550 Fax: 410-720-6226  
 Bel Air, Maryland Columbia, Maryland Warrenton, Virginia

DESIGN BY: RWS  
 DRAWN BY: AM  
 CHECKED BY: RMH  
 DATE: MARCH 12, 2003  
 SCALE: AS SHOWN  
 PROJECT NO.: 02390-A

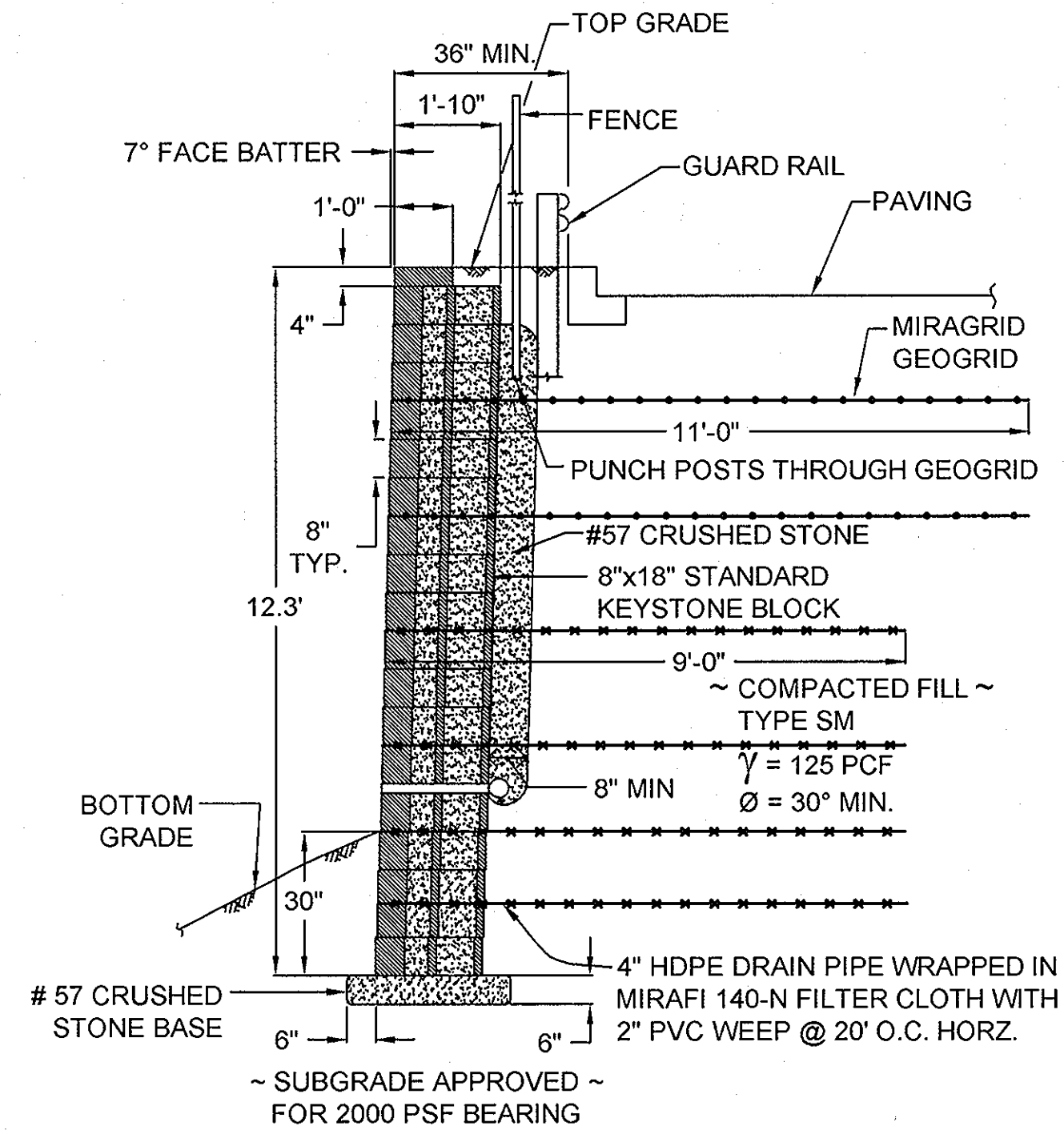
31 SHEET OF 37





WALL #6 @ STA. 1+00 - SECTION F-F

3/8" = 1'



WALL #7 @ Sta. 0+28 - SECTION G-G

3/8" = 1'

**SPECIFICATIONS**

**KEYSTONE MODULAR CONCRETE BLOCK RETAINING WALL**

**PART 1: GENERAL**

- 1.01 Description**  
 A. Work shall consist of furnishing and construction of a KEYSTONE Retaining Wall System in accordance with these specifications and in reasonably close conformity with the lines, grades, design, and dimensions shown on the plans.  
 B. Work includes preparing foundation soil, furnishing and installing leveling pad, unit drainage fill and backfill to the lines and grades shown on the construction drawings.  
 C. Work includes furnishing and installing geogrid soil reinforcement of the type, size, location, and lengths designated on the construction drawings.

- 1.02 Delivery, Storage and Handling**  
 A. Contractor shall check fill materials upon delivery to assure that the proper type, grade, color, and certification has been received.  
 B. Contractor shall protect all materials from damage due to job site conditions and in accordance with manufacturer's recommendations. Damaged materials shall not be incorporated into the work.

**PART 2: PRODUCTS**

- 2.01 Modular Concrete Retaining Wall Units**  
 A. Modular concrete units shall conform to the following architectural requirements:  
 face color - concrete gray - standard manufacturer's color may be specified by the Owner.  
 face finish - sculptured rock face in angular tri-planer configuration. Other face finishes will not be allowed without written approval of Owner.  
 bond configuration - running with bonds nominally located at midpoint vertically adjacent units, in both straight and curved alignments.  
 exposed surfaces of units shall be free of chips, cracks or other imperfections when viewed from a distance of 10 feet under diffused lighting.  
 B. Modular concrete materials shall conform to the requirements of ASTM C1372 - Standard Specifications for Segmental Retaining Wall Units.  
 C. Modular concrete units shall conform to the following structural and geometric requirements measured in accordance with appropriate references:  
 compressive strength = 3000 psi minimum;  
 absorption = 8% maximum (6% in northern states) for standard weight aggregates;  
 dimensional tolerances = ± 1/8" from nominal unit dimensions - not including rough split face, ± 1/16" unit height - top and bottom planes;  
 unit size - 8" (H) x 18" (W) x 12" (D) minimum;  
 unit weight - 75 lb/cu ft minimum for standard weight

- aggregates;  
 inter-unit shear strength - 1000 pcf minimum at 2 psi normal pressure;  
 geogrid/soil peak connection strength - 1000 pcf minimum at 2 psi normal force.  
 D. Modular concrete units shall conform to the following constructability requirements:  
 geogrid/soil peak connection strength - 1000 pcf minimum at 2 psi normal force.  
 alignment and grid positioning mechanism - fiberglass pins, two per unit minimum;  
 maximum horizontal gap between erected units shall be 1/2 inch.

- 2.02 Shear Connectors**  
 A. Shear connectors shall be 1/2 inch diameter thermoset isophthalic polyester resin-protuded fiberglass reinforcement rods or equivalent to provide connection between vertically and horizontally adjacent units.  
 Strength of shear connectors between vertical adjacent units shall be applicable over a design temperature of 10 degrees F to + 100 degrees F.  
 B. Shear connectors shall be capable of holding the geogrid in the proper design position during grid pre-tensioning and backfilling.

- 2.03 Base Leveling Pad Material**  
 A. Material shall consist of a compacted #57 crushed stone base as shown on the construction drawings.

- 2.04 Unit Drainage Fill**  
 A. Unit drainage fill shall consist of #57 crushed stone.  
 B. One cubic foot, minimum, of drainage fill shall be used for each square foot of wall face. Drainage fill shall be placed within cores of, between, and behind units to meet this requirement.

- 2.05 Reinforced Backfill**  
 A. Reinforced backfill shall type SM, be free of debris and meet the following gradation tested in accordance with ASTM D-422 and meet other properties shown on the plan:

Sieve Size	Percent Passing
2 inch	100-75
3/4 inch	100-75
No. 40	0-40
No. 200	0-35

Plasticity Index (PI) <15 and Liquid Limit <40 per ASTM D-4318.  
 B. Material can be site excavated soils where the above requirements can be met. Unsuitable soils for backfill (high plastic clays or organic soils) shall not be used in the reinforced soil mass.

- 2.06 Geogrid Soil Reinforcement**

- A. Geosynthetic reinforcement shall consist of geogrids manufactured specifically for soil reinforcement applications and shall be manufactured from high tenacity polyester yarn.**

- 2.07 Drainage Pipe**  
 A. The drainage pipe shall be perforated corrugated HDPE pipe manufactured in accordance with ASTM D-1248.

**PART 3: EXECUTION**

- 3.01 Excavation**  
 A. Contractor shall excavate to the lines and grades shown on the construction drawings. Owner's representative shall be responsible for inspecting and approving the excavation prior to placement of leveling material or fill soils.

- 3.02 Base Leveling Pad**  
 A. Leveling pad material shall be placed to the lines and grades shown on the construction drawings, to a minimum thickness of 6 inches and extend laterally a minimum of 6' in front and behind the modular wall unit.  
 B. Leveling pad shall be prepared to insure full contact to the base surface of the concrete units.

- 3.03 Modular Unit Installation**  
 A. First course of units shall be placed on the leveling pad at the appropriate line and grade. Alignment and level shall be checked in all directions and insure that all units are in full contact with the base and properly seated.  
 B. Place the front of units side-by-side. Do not leave gaps between adjacent units. Layout of corners and curves shall be in accordance with manufacturer's recommendations.  
 C. Install shear/reinforcing devices per manufacturer's recommendations.  
 D. Place and compact drainage fill within and behind wall units. Place and compact backfill soil behind drainage fill. Follow wall erection and drainage fill closely with structure backfill.

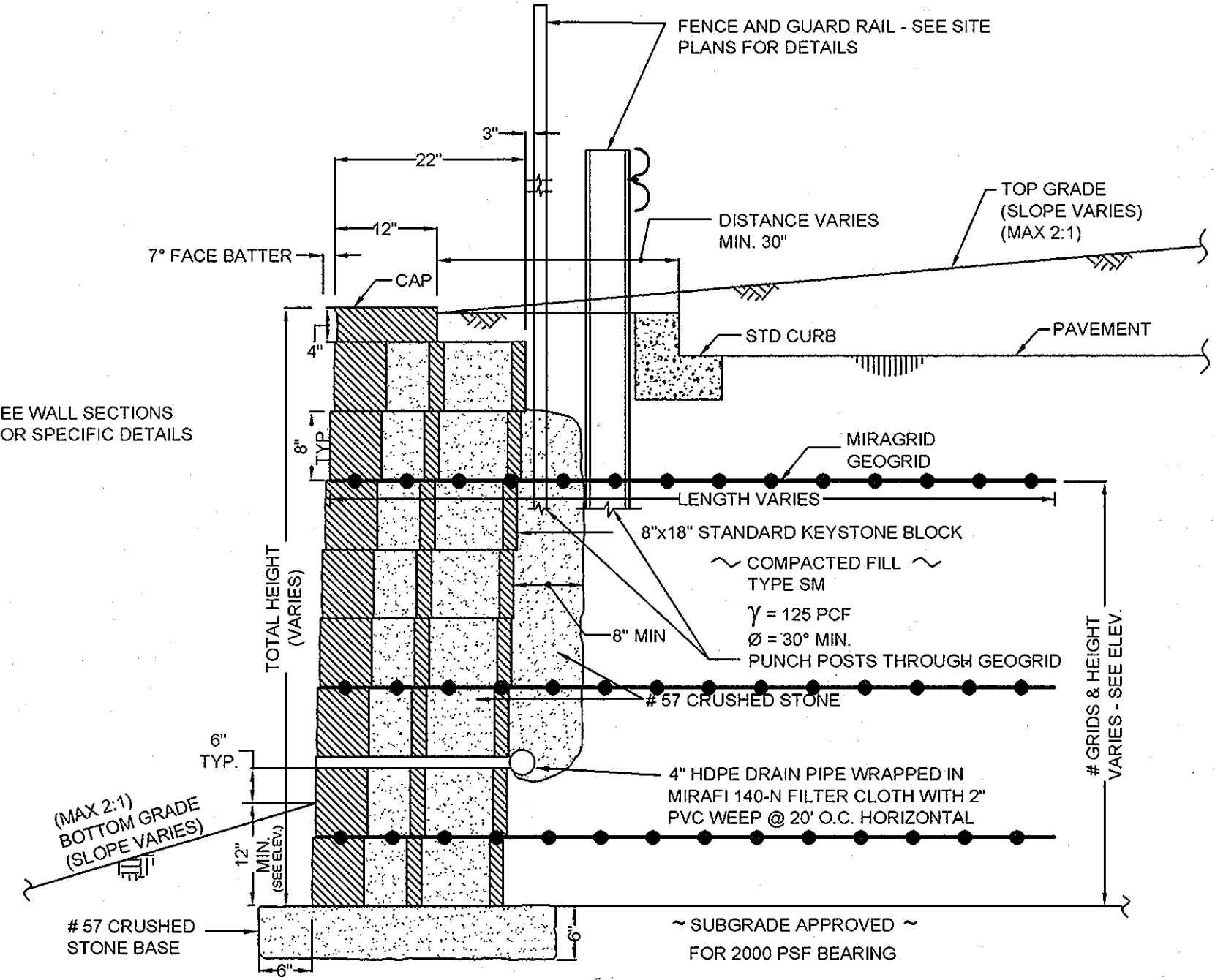
- 3.04 Reinforced Backfill**  
 A. Maximum stacked vertical height of wall units, prior to unit drainage fill and backfill placement and compaction, shall not exceed three courses.  
 B. Tracked construction equipment shall not be operated directly upon the geogrid reinforcement. A minimum fill thickness of 6 inches is required prior to operation of tracked vehicles over the geogrid. Tracked vehicle turning should be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid.  
 C. Rubber tired equipment may pass over geogrid reinforcement at slow speeds, less than 10 MPH. Sudden braking and sharp turning shall be avoided.  
 D. At the end of each day's operation, the Contractor shall slope the last lift of reinforced backfill away from the wall units to direct runoff away from wall face. The Contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.

- 3.05 Cap Installation**  
 A. Cap units shall be glued to underlying units with an all-weather adhesive recommended by the manufacturer.

- 3.07 Field Quality Control**  
 A. The Owner shall engage inspection and testing services, including independent laboratories, to provide quality assurance and testing services during construction.  
 B. As a minimum, quality assurance testing should include foundation soil inspection, soil and backfill testing, verification of design parameters, and observation of construction for general compliance with design drawings and specifications.

- backfill placement on the geogrid.  
 D. Geogrid reinforcements shall be continuous throughout their embedment lengths and placed side-by-side to provide 100% coverage at each level. Spliced connections between shorter pieces of geogrid or gaps between adjacent pieces of geogrid are not permitted.

- 3.05 Reinforced Backfill Placement**  
 A. Reinforced backfill shall be placed, spread, and compacted in such a manner that minimizes the development of slack in the geogrid and installation damage.  
 B. Reinforced backfill shall be placed and compacted in lifts not to exceed 6 inches where hand compaction is used, or 8 - 10 inches where heavy compaction equipment is used. Lift thickness shall be decreased to achieve the required density as required.  
 C. Reinforced backfill shall be compacted to 95% of the maximum density as determined by ASTM D698. The moisture content of the backfill material prior to and during compaction shall be uniformly distributed throughout each layer and shall be + 3% to - 3% of optimum.  
 D. Only lightweight hand-operated equipment shall be allowed within 3 feet from the tail of the modular concrete unit.  
 E. Tracked construction equipment shall not be operated directly upon the geogrid reinforcement. A minimum fill thickness of 6 inches is required prior to operation of tracked vehicles over the geogrid. Tracked vehicle turning should be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid.  
 F. Rubber tired equipment may pass over geogrid reinforcement at slow speeds, less than 10 MPH. Sudden braking and sharp turning shall be avoided.  
 G. At the end of each day's operation, the Contractor shall slope the last lift of reinforced backfill away from the wall units to direct runoff away from wall face. The Contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.



TYPICAL WALL SECTION  
N.T.S.

- NOTES:**  
 1.) No trees shall be planted within 10 feet of the top of the retaining wall.  
 2.) Retaining walls shall only be constructed under the observation of a registered professional engineer and a (NICET, WACEL, or equiv.) certified soils technician.  
 3.) The required bearing pressure beneath the wall system shall be verified in the field by a certified soils technician. Testing documentation must be provided to the Howard County Inspector prior to start of construction. The required bearing test shall be the Dynamic Cone Penetrometer test ASTM STP-399.  
 4.) The suitability of fill material shall be confirmed by the on-site soils technician. Each 8" lift must be compacted to a minimum 95% standard proctor density and the testing report shall be made available to the Howard County Inspector upon completion of construction.  
 5.) One soil boring is required every one hundred feet along the length of the wall. Copies of the boring reports shall be provided to the Howard County Inspector prior to the start of the construction.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 7/22/04  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 [Signature] 5/2/04  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 [Signature] 6/10/04  
 DIRECTOR

NO.	REVISION	DATE
1	REVISE STREAM CROSSINGS SHEETS 2, 5, 7, 11, 15, 16, 18	11/29/04
24		

**RETAINING WALL SECTIONS AND DETAILS**  
**THE OAKS AT WATERS EDGE**  
 A RESUBDIVISION OF BLUE STREAM PROPERTY  
 PARCEL A-1 AND ELK LLC PARCEL 279  
 REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-128  
 SDP-03-041, SDP-03-154, F-04-174  
 TAX MAP 43 BLOCK 4  
 PARCELS 279, 647, AND PART OF 5  
 1ST ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

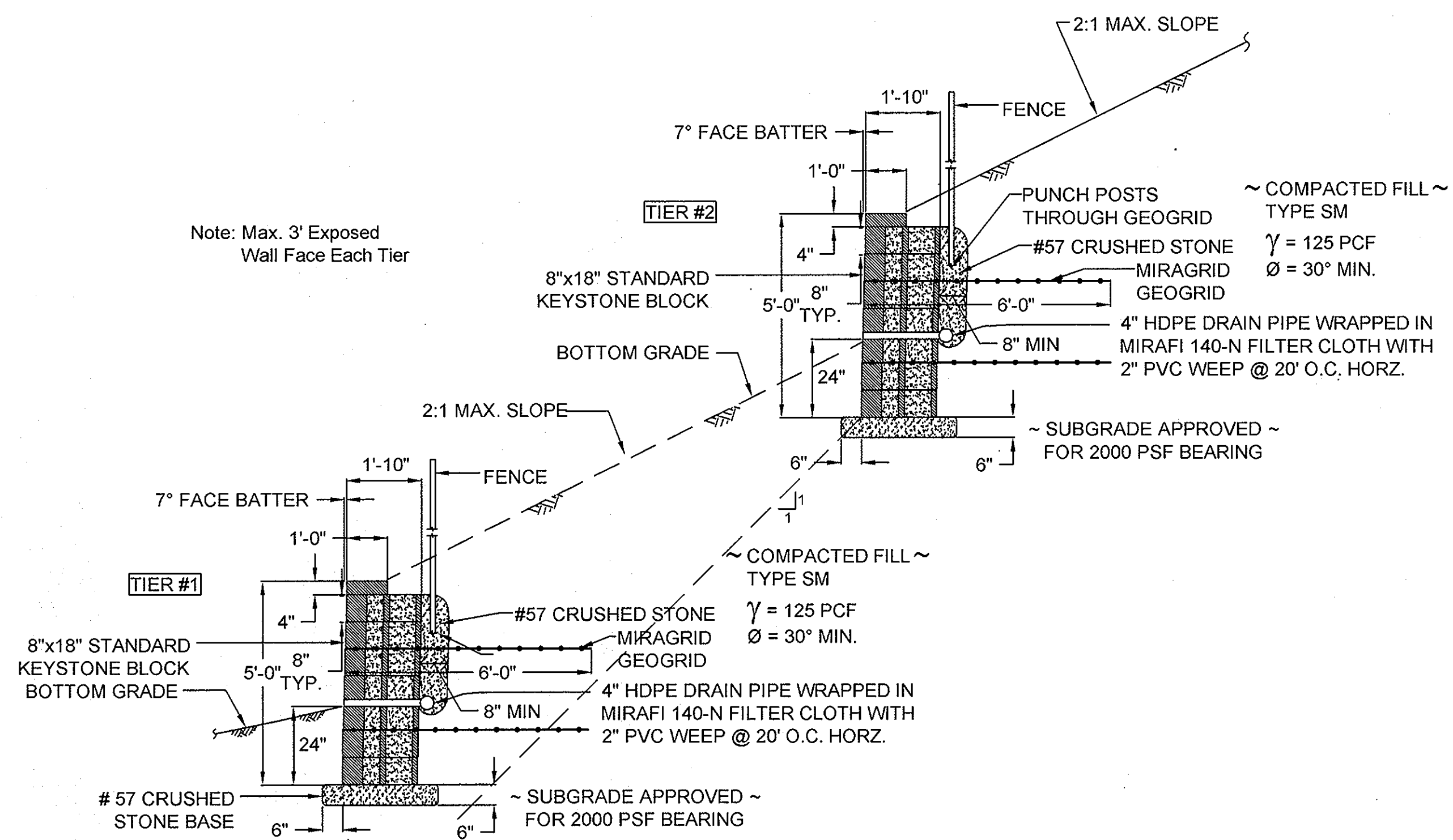
**HILLIS-CARNES ENGINEERING ASSOCIATES, INC.**  
 12011 Guilford Road Suite 106  
 Bel Air, MD 21034  
 (410) 880-4788 D.C. (301) 470-4239 Fax (410) 880-4098

**FREDERICK WARD ASSOCIATES, INC.**  
 7125 Riverwood Drive Columbia, Maryland 21046-2354  
 Phone: 410-290-9550 Fax: 410-720-6226  
 Bel Air, Maryland Columbia, Maryland Warrenton, Virginia

DESIGN BY: RWS  
 DRAWN BY: AM  
 CHECKED BY: RMH  
 DATE: MARCH 12, 2003  
 SCALE: AS SHOWN  
 PROJECT NO.: 02390-A

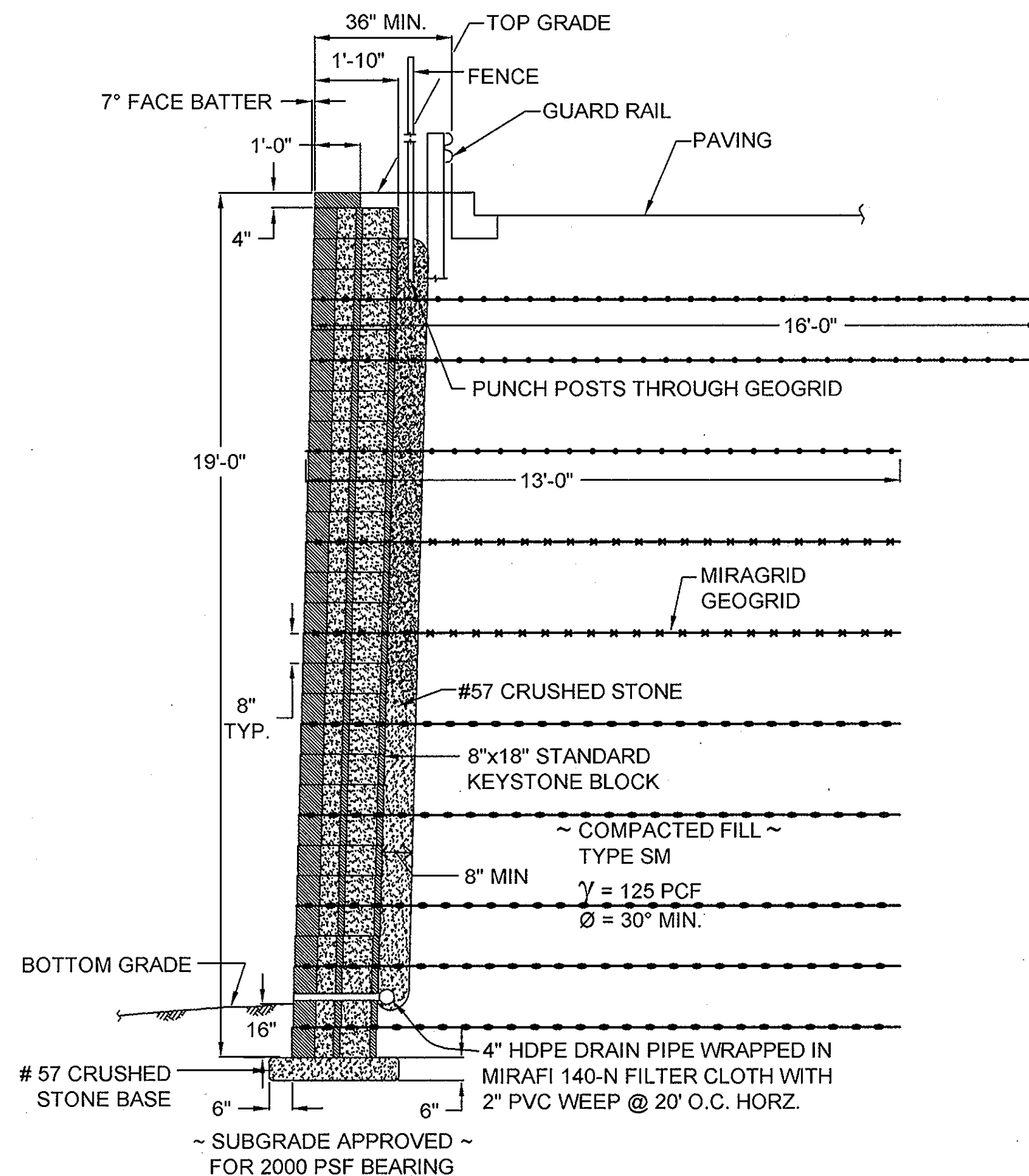
32 SHEET OF 37





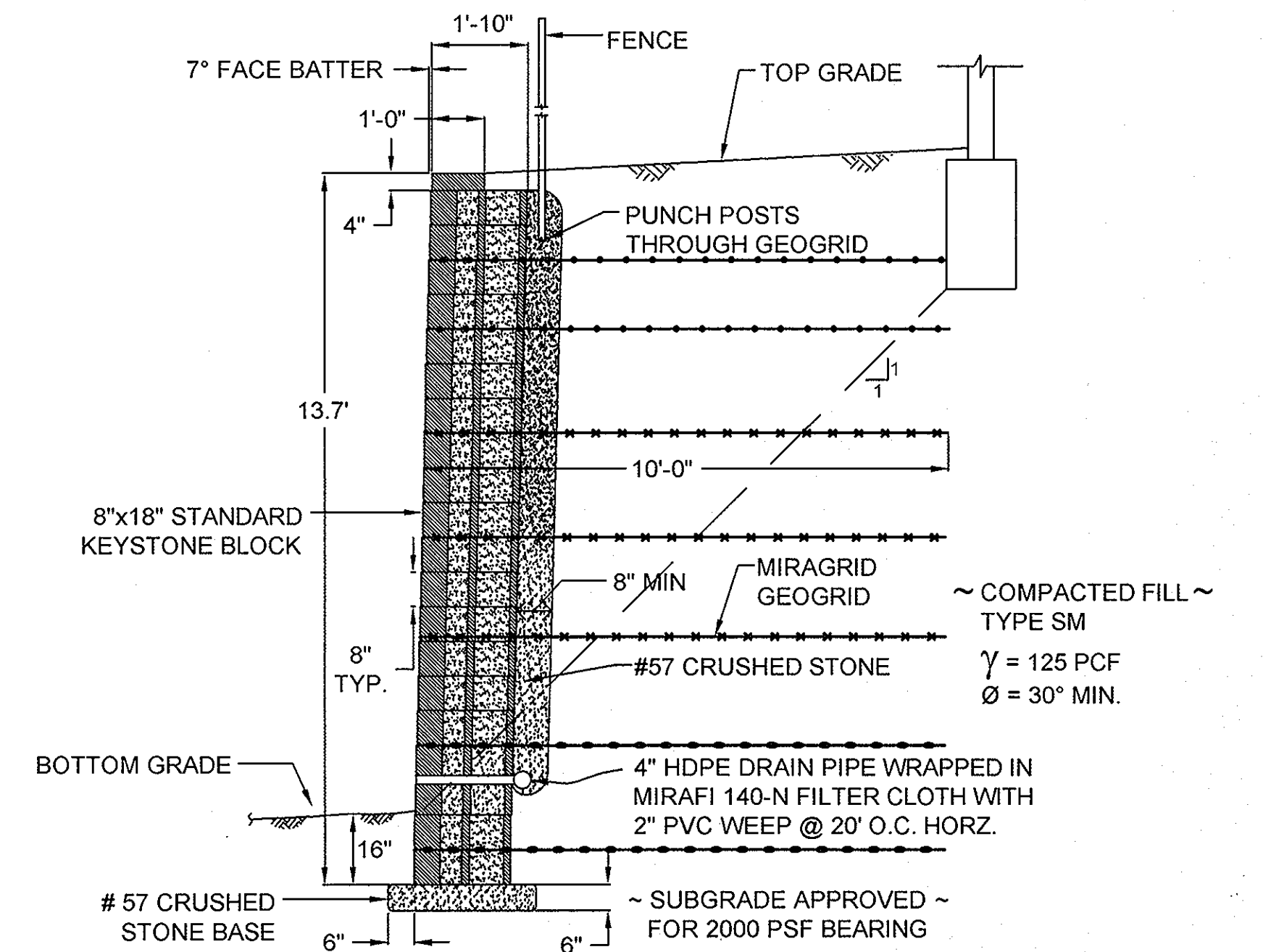
WALL #1 @ STA. 1+00 - SECTION A-A

3/8" = 1'



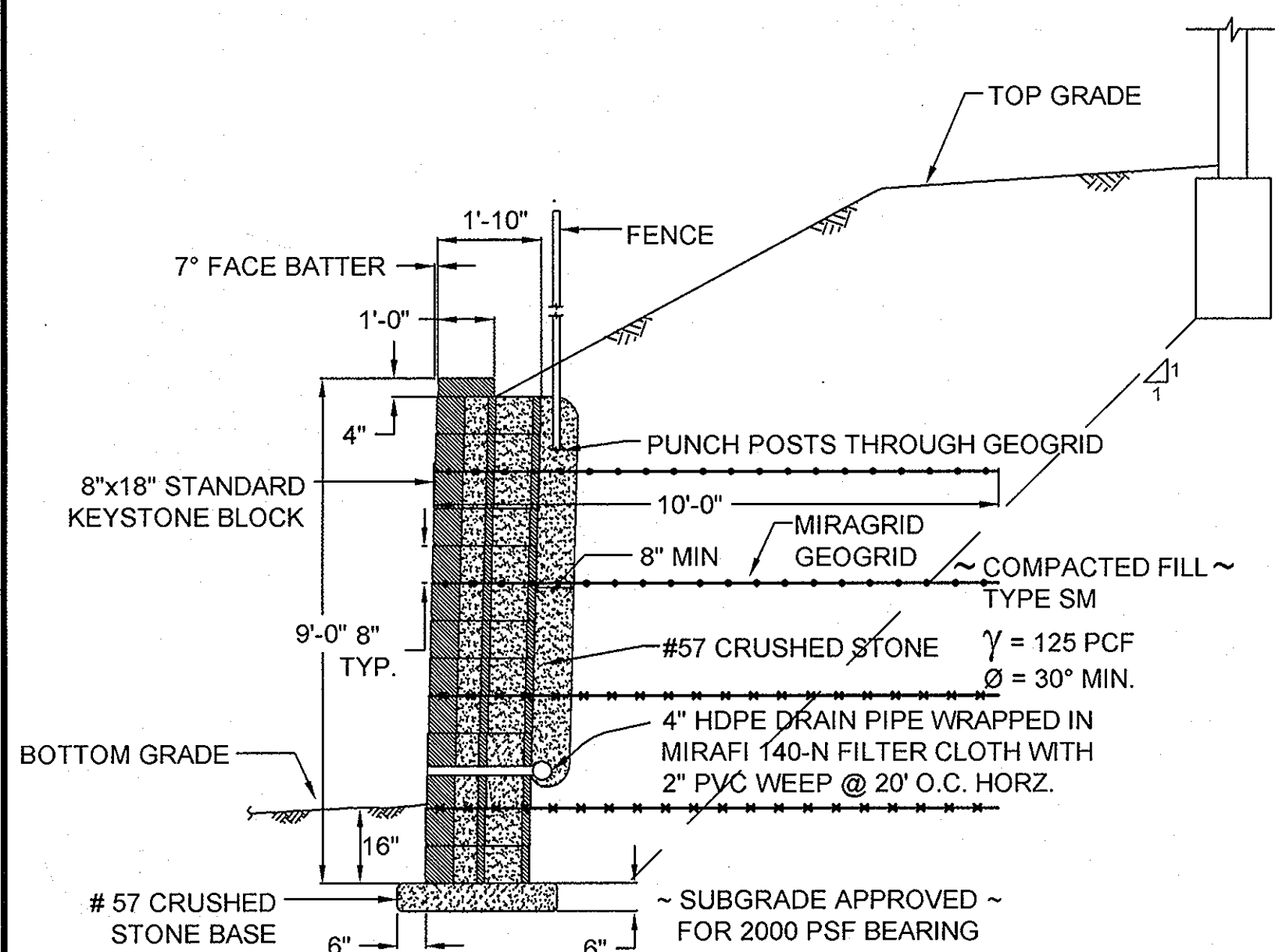
WALL #2 @ Sta. 0+60 - SECTION B1-B1

3/8" = 1'



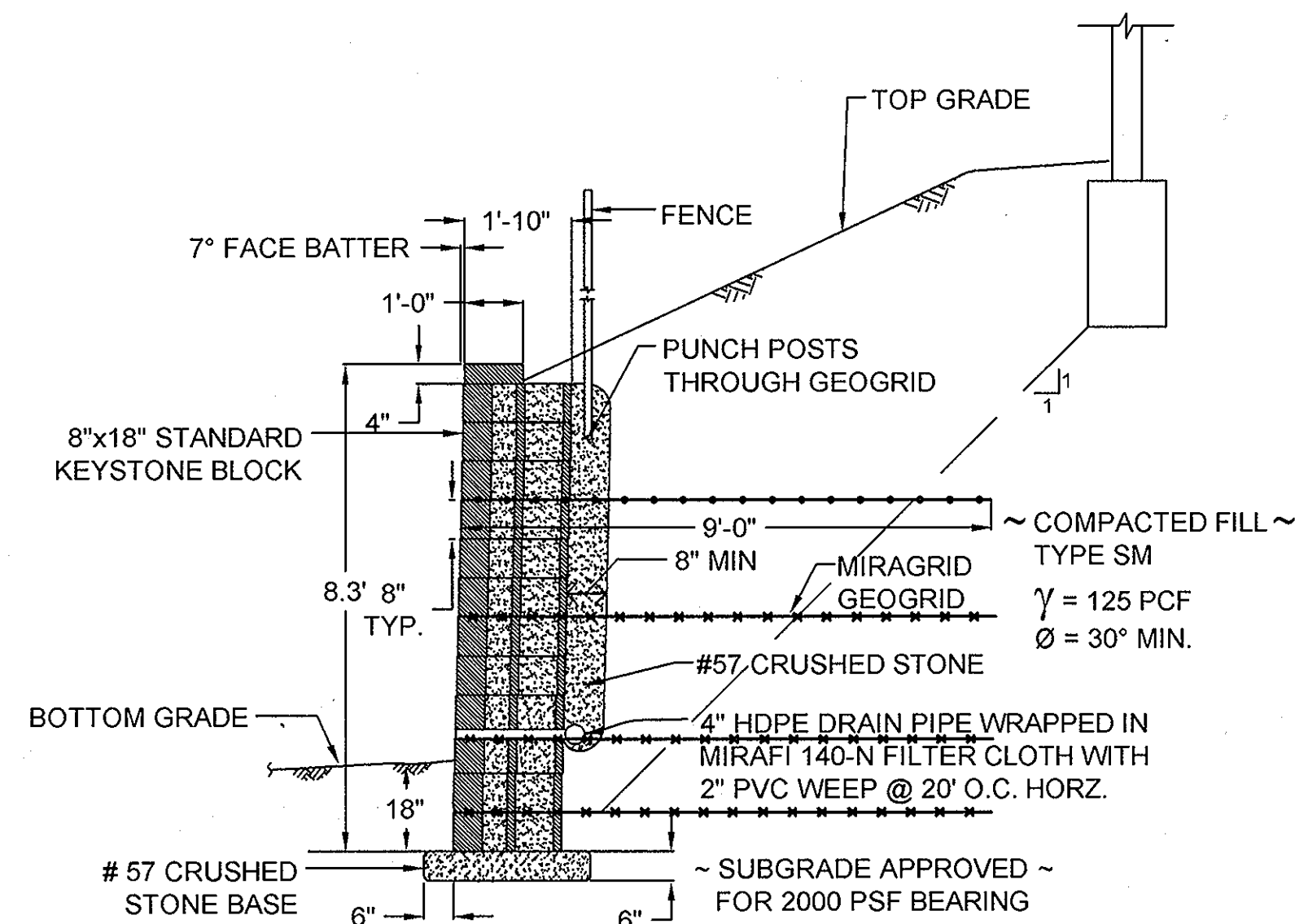
WALL #2 @ STA. 1+60 - SECTION B2-B2

3/8" = 1'



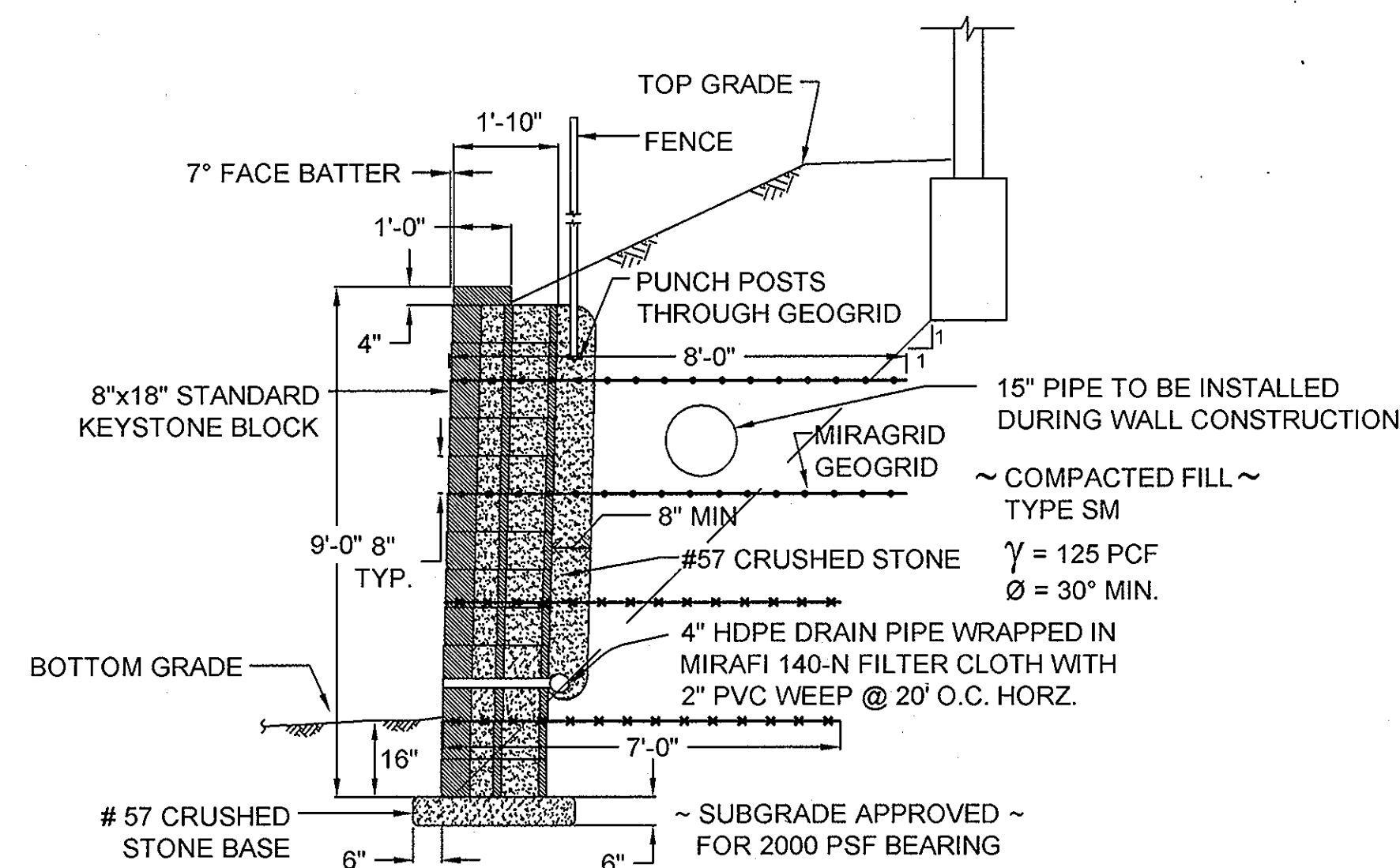
WALL #3 @ STA. 1+00 - SECTION C-C

3/8" = 1'



WALL #4 @ STA. 0+90 - SECTION D-D

3/8" = 1'



WALL #5 @ STA. 1+50 - SECTION E-E

3/8" = 1'

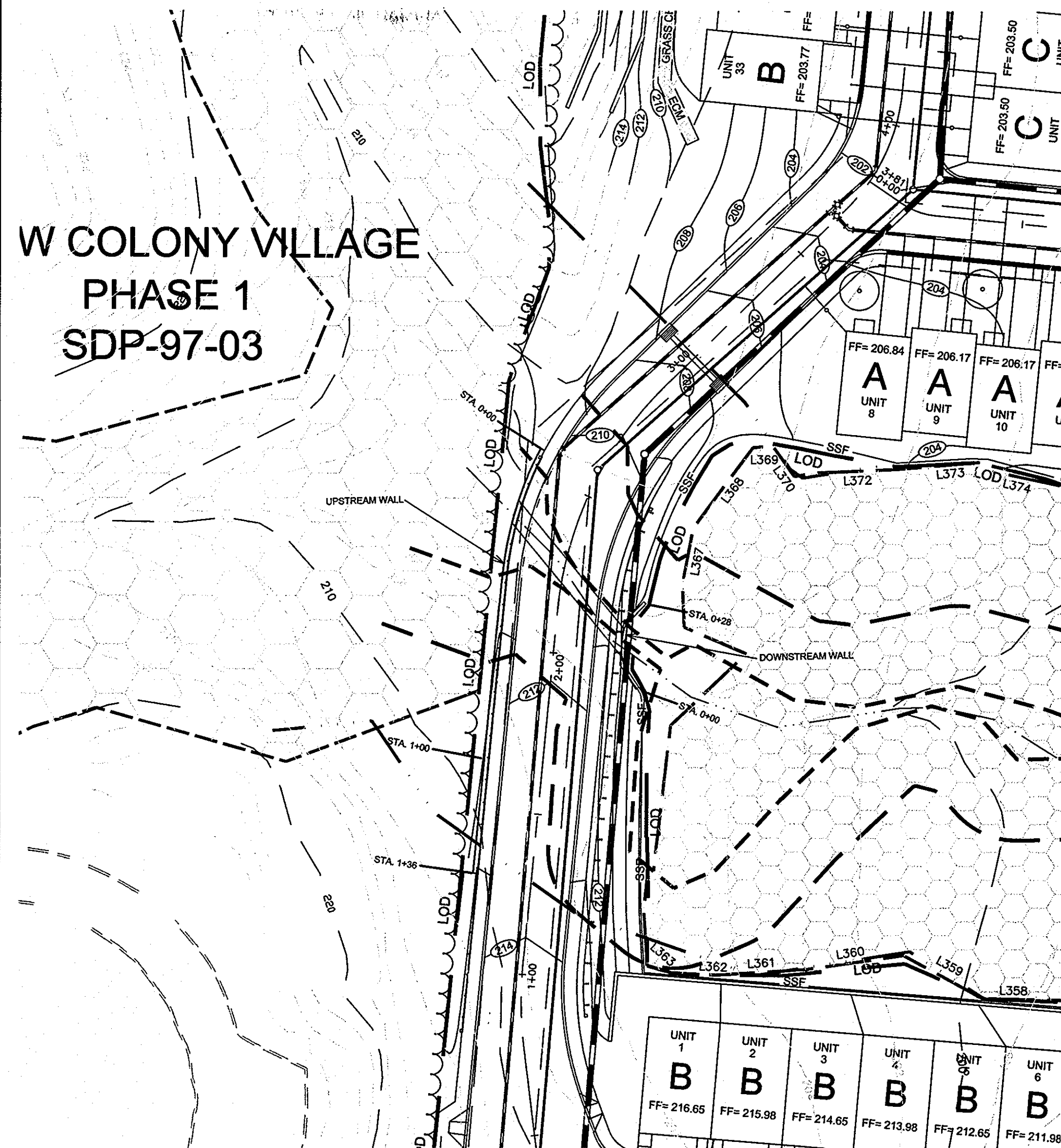
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 7/23/04  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 [Signature] 8/27/04  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 [Signature] 8/27/04  
 DIRECTOR

REVISE STREAM CROSSINGS SHEETS 3, 5, 9, 11, 15, 16, 18, 24, 11/29/04	
NO.	DATE
<b>RETAINING WALL SECTIONS</b>	
<b>THE OAKS AT WATERS EDGE</b>	
A RESUBDIVISION OF BLUE STREAM PROPERTY PARCEL A-1 AND ELK LLC PARCEL 279	
REF: S-97-01, ZB-986-A, P-00-19, WP-97-89, F-75-05, F-00-126 SDP-03-041, SDP-03-154, F-04-174	
TAX MAP 43 BLOCK 4 PARCELS 279, 647, AND PART OF 5 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND	
HILLIS-CARNES ENGINEERING ASSOCIATES, INC. 12011 Gullford Road Suite 108 Balto. (410) 880-4788 D.C. (301) 470-4239 Fax (410) 880-4068	
FREDERICK WARD ASSOCIATES, INC. 7125 Riverwood Drive Columbia, Maryland 21046-2354 Phone: 410-290-9550 Fax: 410-720-6226 Bel Air, Maryland Columbia, Maryland Warrenton, Virginia	
DESIGN BY: RWS DRAWN BY: AM CHECKED BY: RMH DATE: MARCH 12, 2003 SCALE: AS SHOWN PROJECT NO.: 02390-A	33 SHEET OF 37

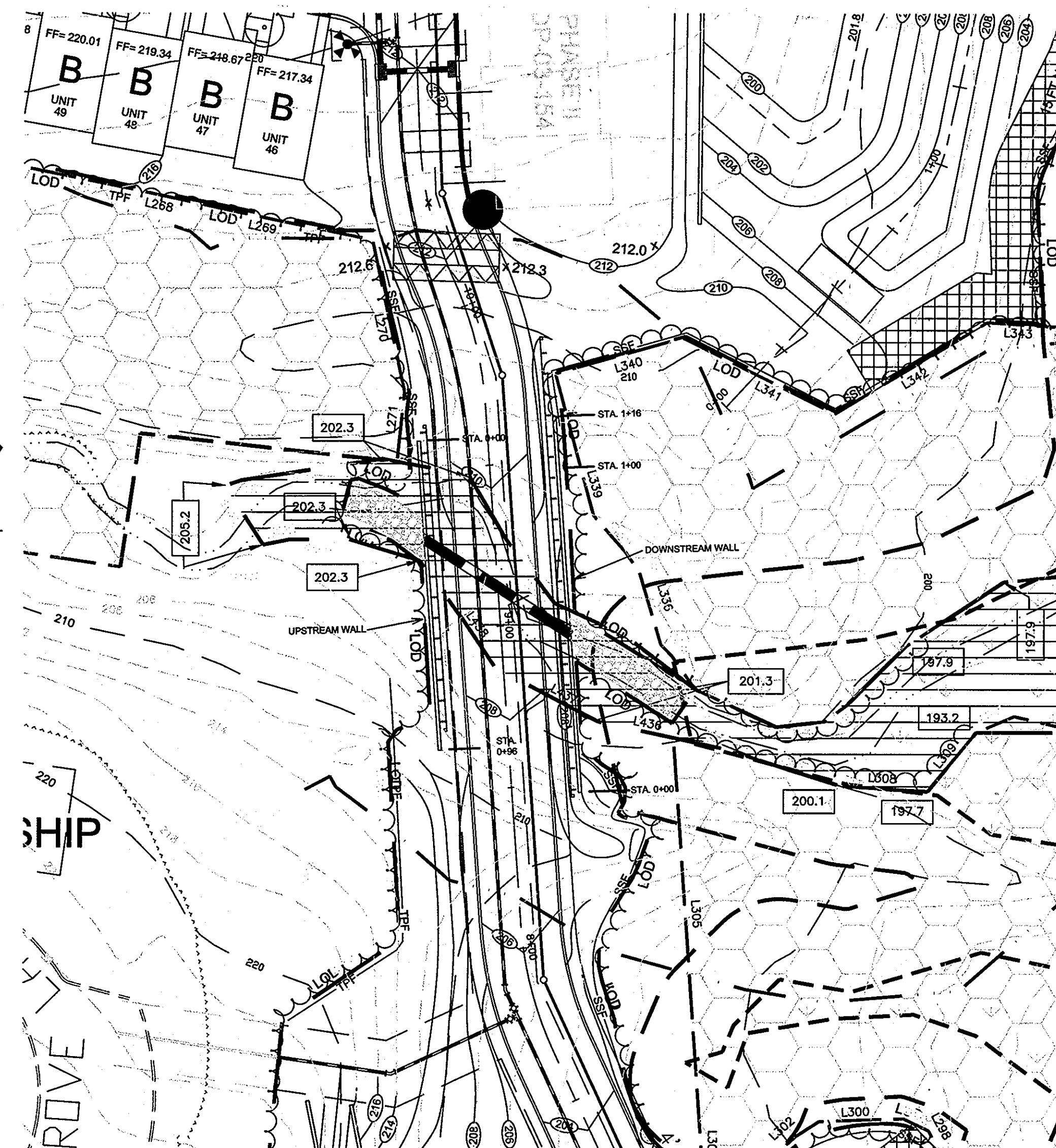


W COLONY VILLAGE  
PHASE 1  
SDP-97-03



STREAM CROSSING #1  
WALL LOCATION PLAN

1" = 30'



STREAM CROSSING #2  
WALL LOCATION PLAN

1" = 30'

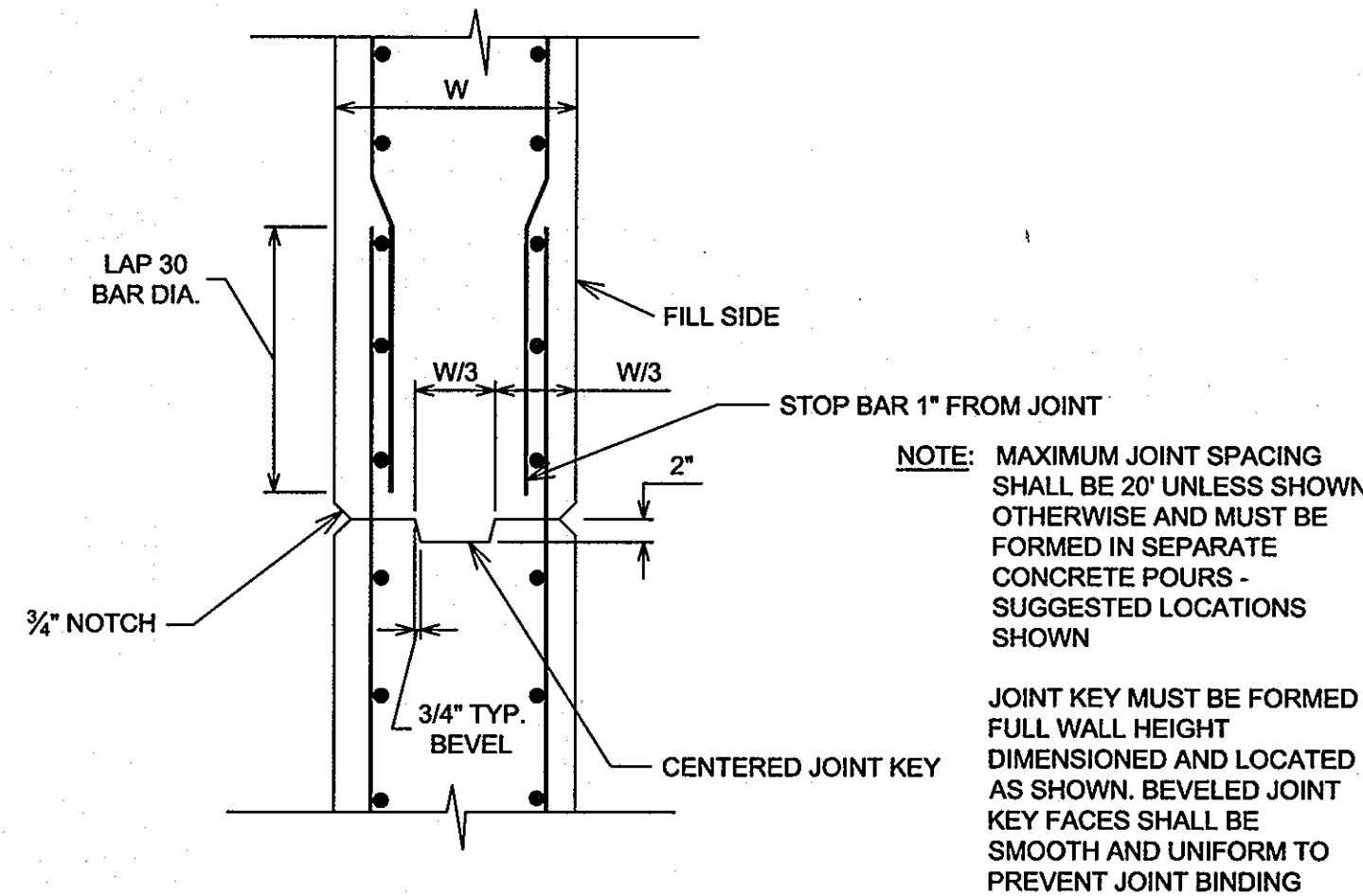
- GENERAL NOTES:
- NO TREES SHALL BE PLANTED WITHIN 10 FEET OF THE TOP OF THE RETAINING WALL.
  - RETAINING WALLS SHALL ONLY BE CONSTRUCTED UNDER THE OBSERVATION OF A REGISTERED PROFESSIONAL ENGINEER AND A (NICET, WACEL, OR EQUIV.) CERTIFIED SOILS TECHNICIAN.
  - THE REQUIRED BEARING PRESSURE BENEATH THE WALL SYSTEM SHALL BE VERIFIED IN THE FIELD BY A CERTIFIED SOILS TECHNICIAN. TESTING DOCUMENTATION MUST BE PROVIDED TO THE HOWARD COUNTY INSPECTOR PRIOR TO START OF CONSTRUCTION. THE REQUIRED BEARING TEST SHALL BE THE DYNAMIC CONE PENETROMETER TEST ASTM STP-399.
  - THE SUITABILITY OF FILL MATERIAL SHALL BE CONFIRMED BY THE ON-SITE SOILS TECHNICIAN. EACH 8" LIFT MUST BE COMPACTED TO A MINIMUM 95% STANDARD PROCTOR DENSITY AND THE TESTING REPORT SHALL BE MADE AVAILABLE TO THE HOWARD COUNTY INSPECTOR UPON COMPLETION OF CONSTRUCTION.
  - ONE SOIL BORING IS REQUIRED EVERY ONE HUNDRED FEET ALONG THE LENGTH OF THE WALL. COPIES OF THE BORING REPORTS SHALL BE PROVIDED TO THE HOWARD COUNTY INSPECTOR PRIOR TO THE START OF THE CONSTRUCTION.

- CONSTRUCTION NOTES:
- CONCRETE 28-DAY STRENGTH - 4000 PSI WITH AIR-ENTRAINMENT
  - REINFORCING STEEL - GRADE 60
  - CONCRETE WORK SHALL COMPLY WITH THE LATEST ACI 318 BUILDING CODE FOR CONCRETE STRUCTURES
  - ALL REBAR SPLICES NOT SHOWN SHALL BE A MINIMUM 30 BAR DIA.
  - ALL PERMANENTLY EXPOSED CONCRETE SHALL HAVE SURFACE DEFECTS PATCHED WITH COLOR MATCHING MORTAR

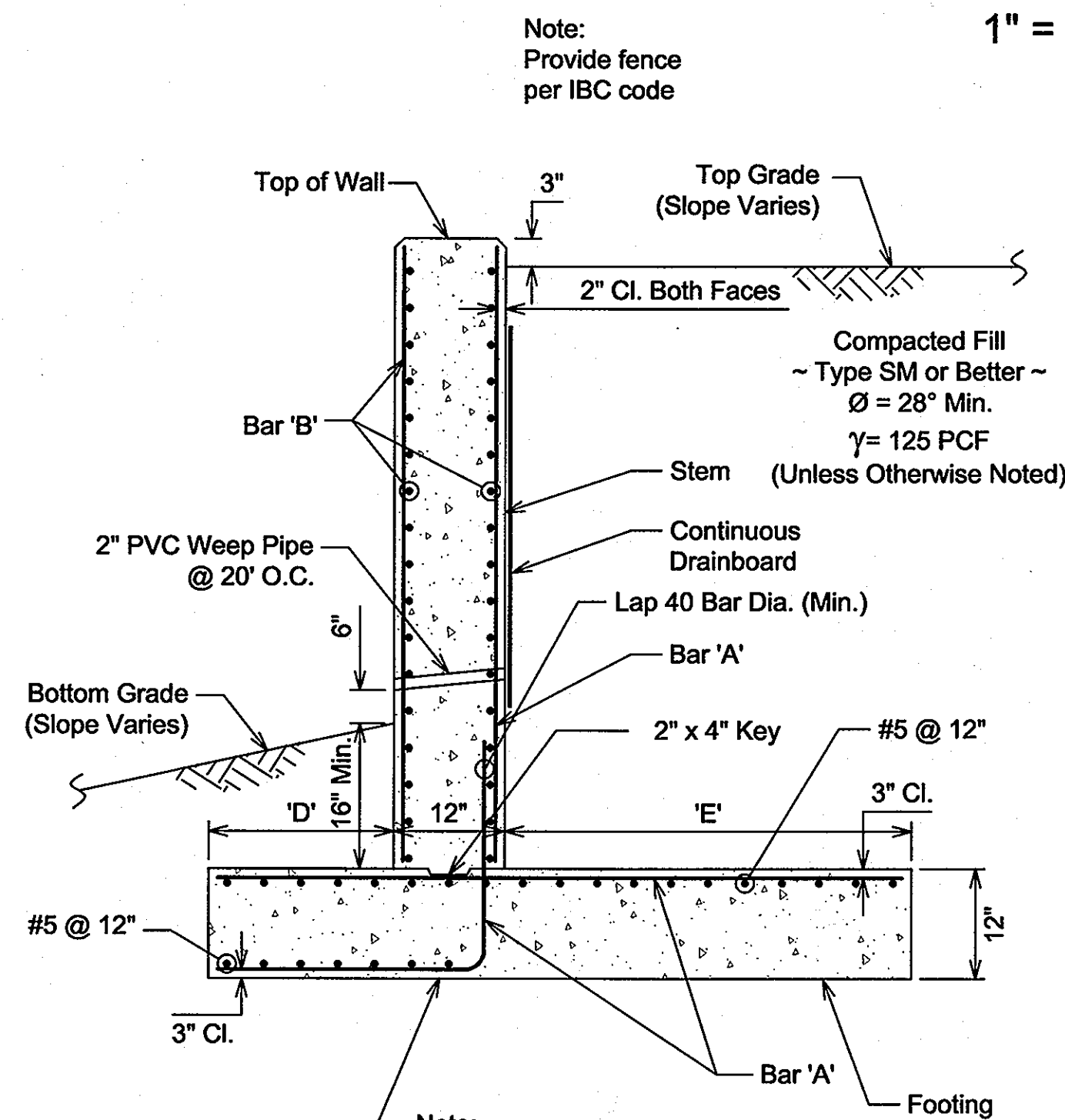
WALL TYPE	'D'	'E'	BAR 'A'	BAR 'B'	REQ'D SOIL BEARING CAP.
1	1'-6"	3'-0"	#5 @ 12" O.C.	#5 @ 12" O.C.	2000 PSF
2	2'-0"	4'-0"	#6 @ 12" O.C.	#5 @ 12" O.C.	2000 PSF
3	2'-6"	4'-6"	#7 @ 9" O.C.	#5 @ 12" O.C.	2000 PSF
4	2'-6"	4'-6"	#7 @ 9" O.C.	#6 @ 12" O.C.	2300 PSF

WALL DIMENSION CHART

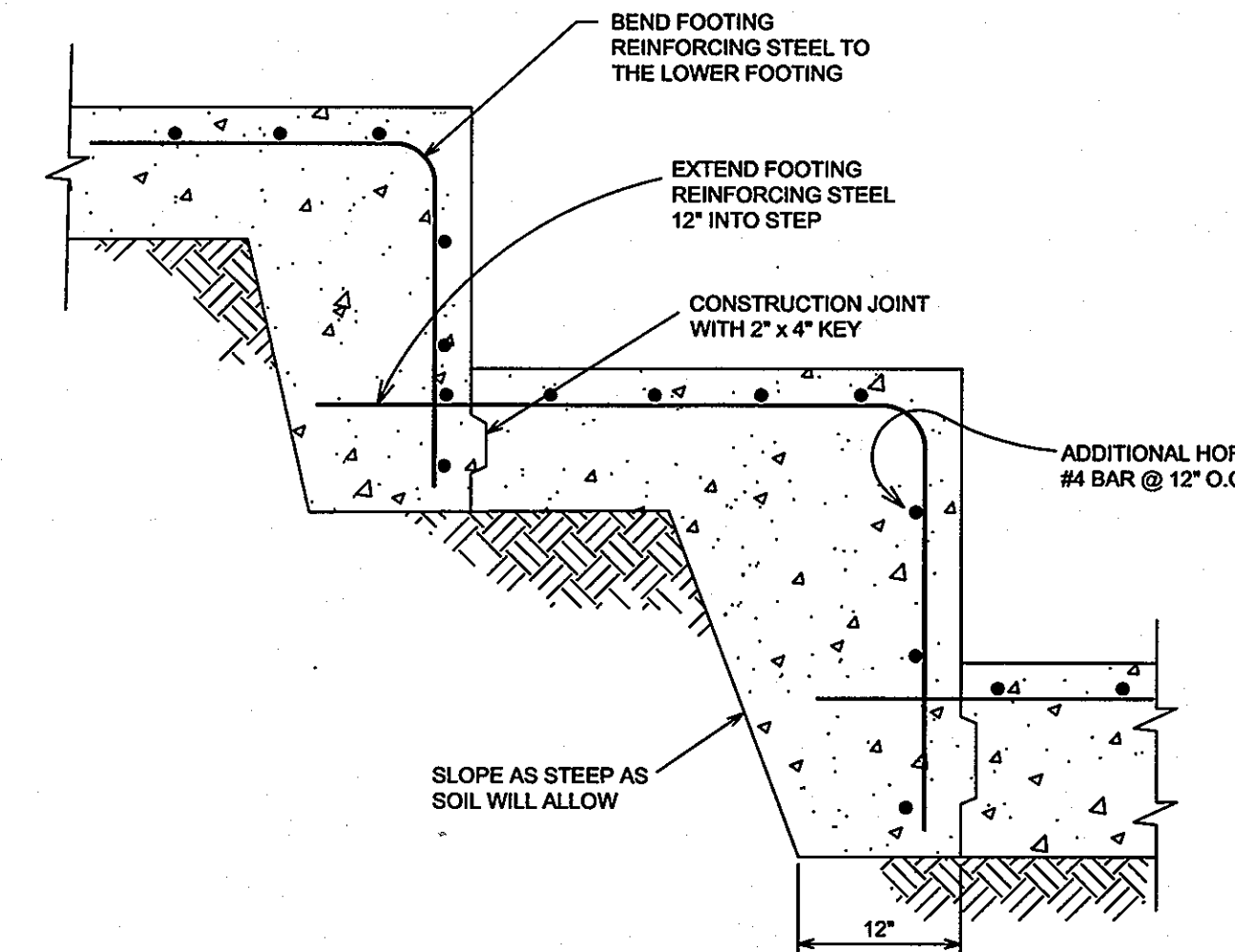
NOTE: THE PURPOSE OF REVISED SITE DEVELOPMENT PLAN SHEETS 34-1-35 IS FOR PLAN AND DETAILS FOR ADDITIONAL RETAINING WALLS. 01/05



WALL CONSTRUCTION  
JOINT DETAIL (C.J.)  
N.T.S.



WALL SECTION  
N.T.S.



FOOTING STEP DETAIL  
N.T.S.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 2/4/05

CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 2/7/05

DIRECTOR  
 DATE: 2/11/05

NO.	REVISION	DATE

STREAM CROSSING #1 AND #2  
WALL CONSTRUCTION DETAILS  
THE OAKS AT WATERS EDGE - PHASE I  
PARCEL A-1

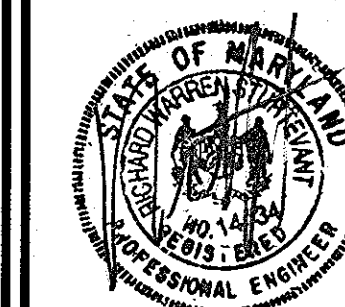
REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157  
SDP-03-41, SDP-03-154, F-04-174  
TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**HILLIS-CARNES**  
ENGINEERING ASSOCIATES, INC.

12011 Guilford Road Suite 106 Annapolis Junction, Maryland 20701  
Balto. (410) 880-4788 D.C. (301) 470-4239 Fax (410) 880-4098

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS

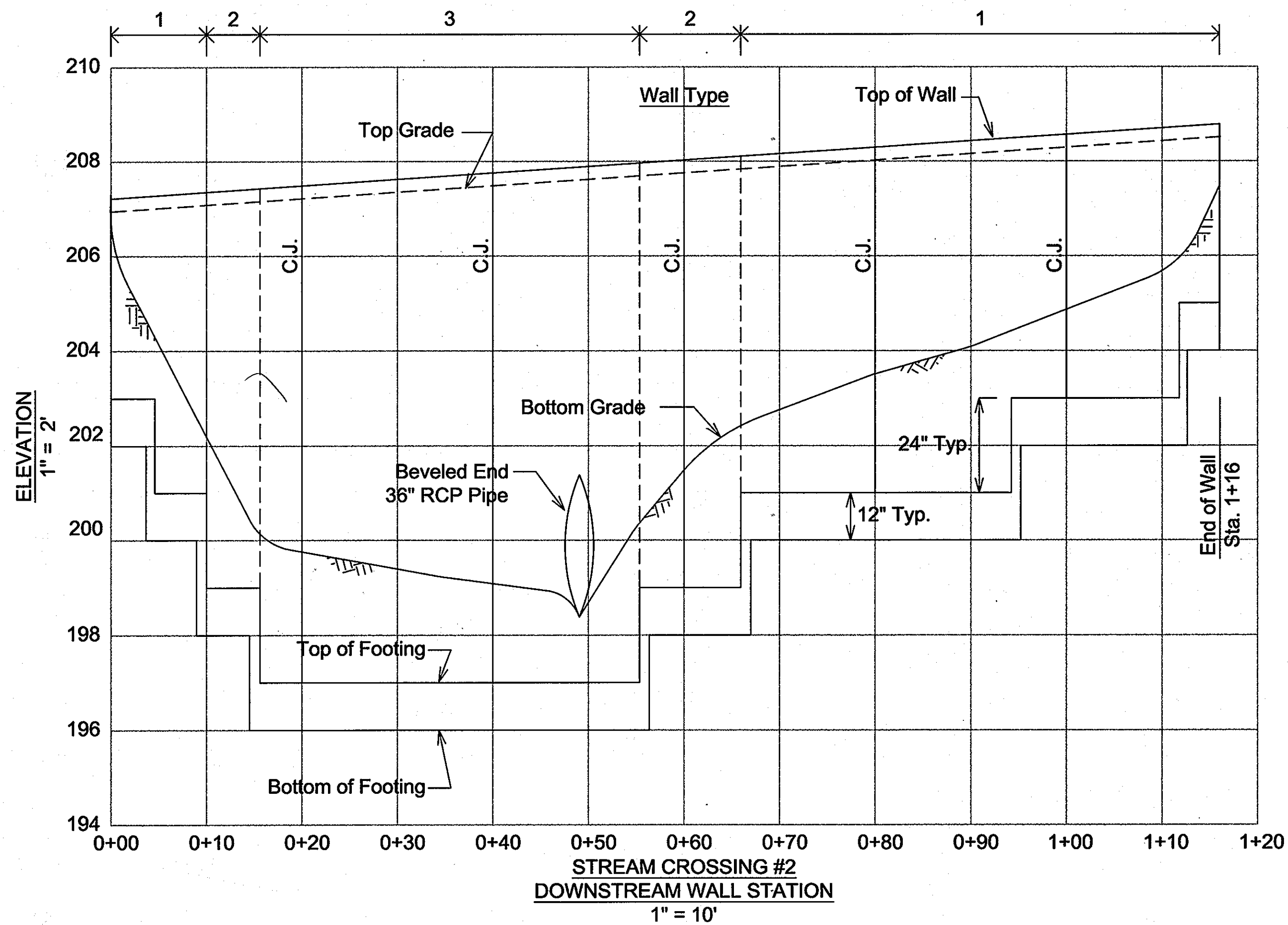
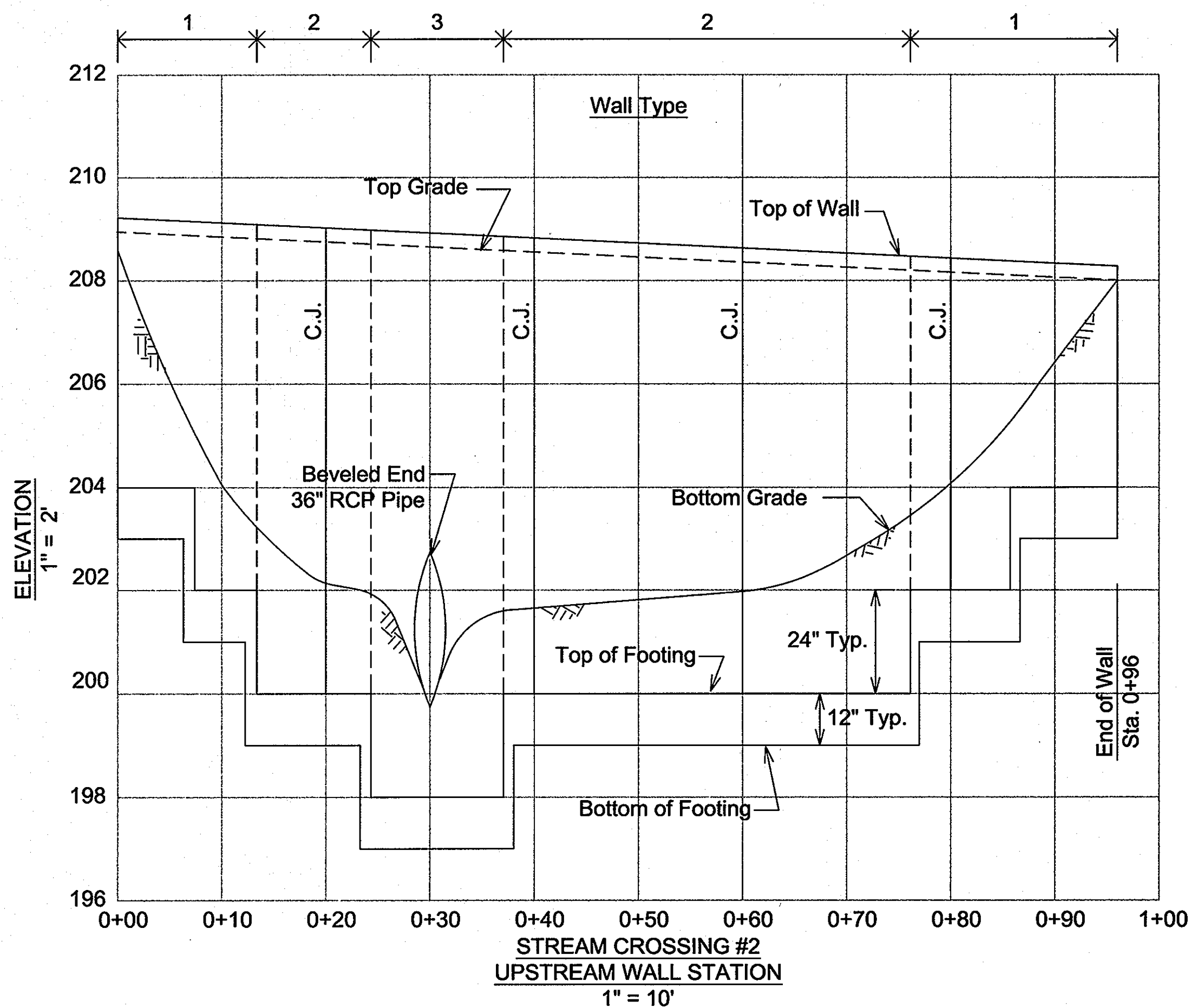
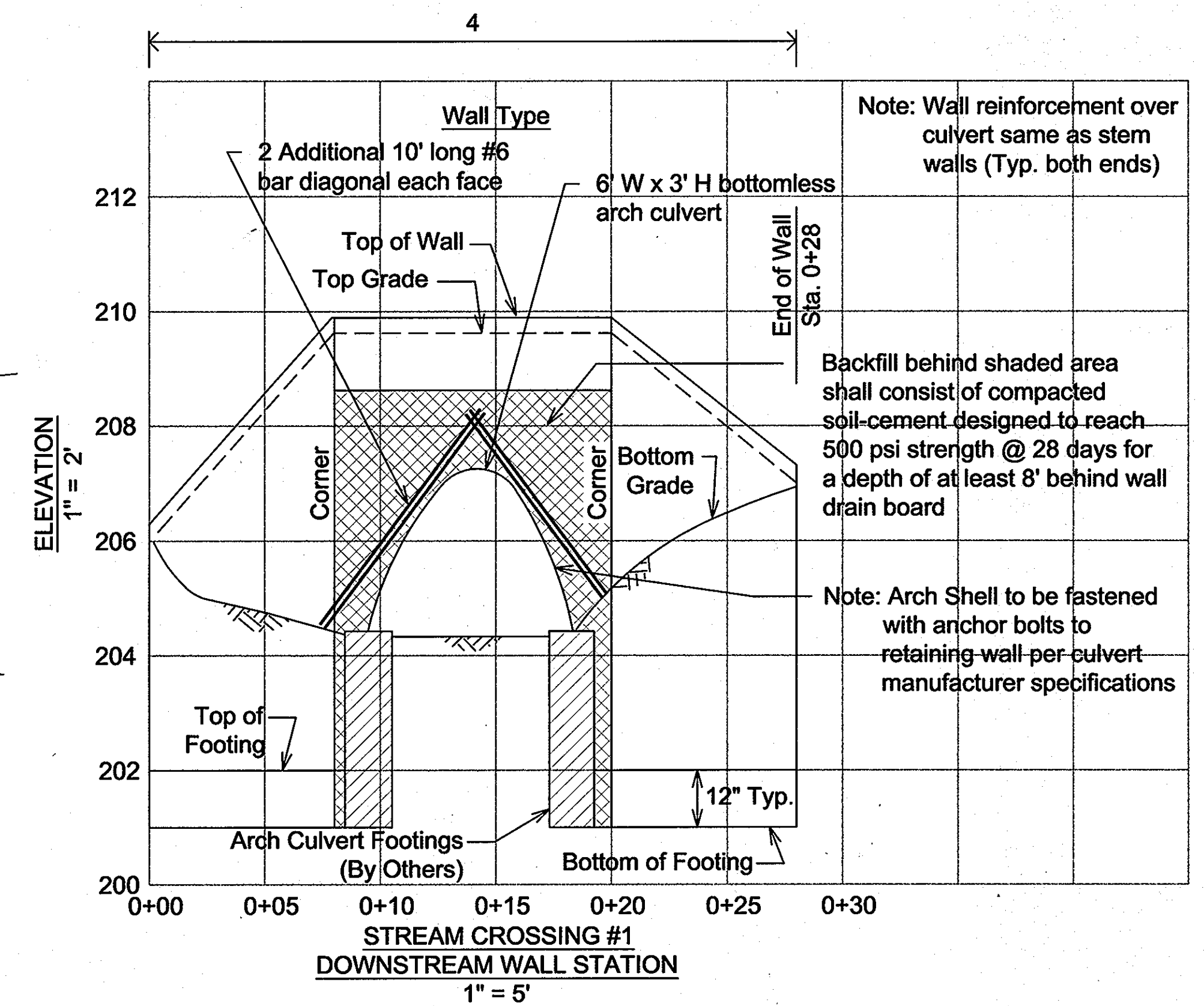
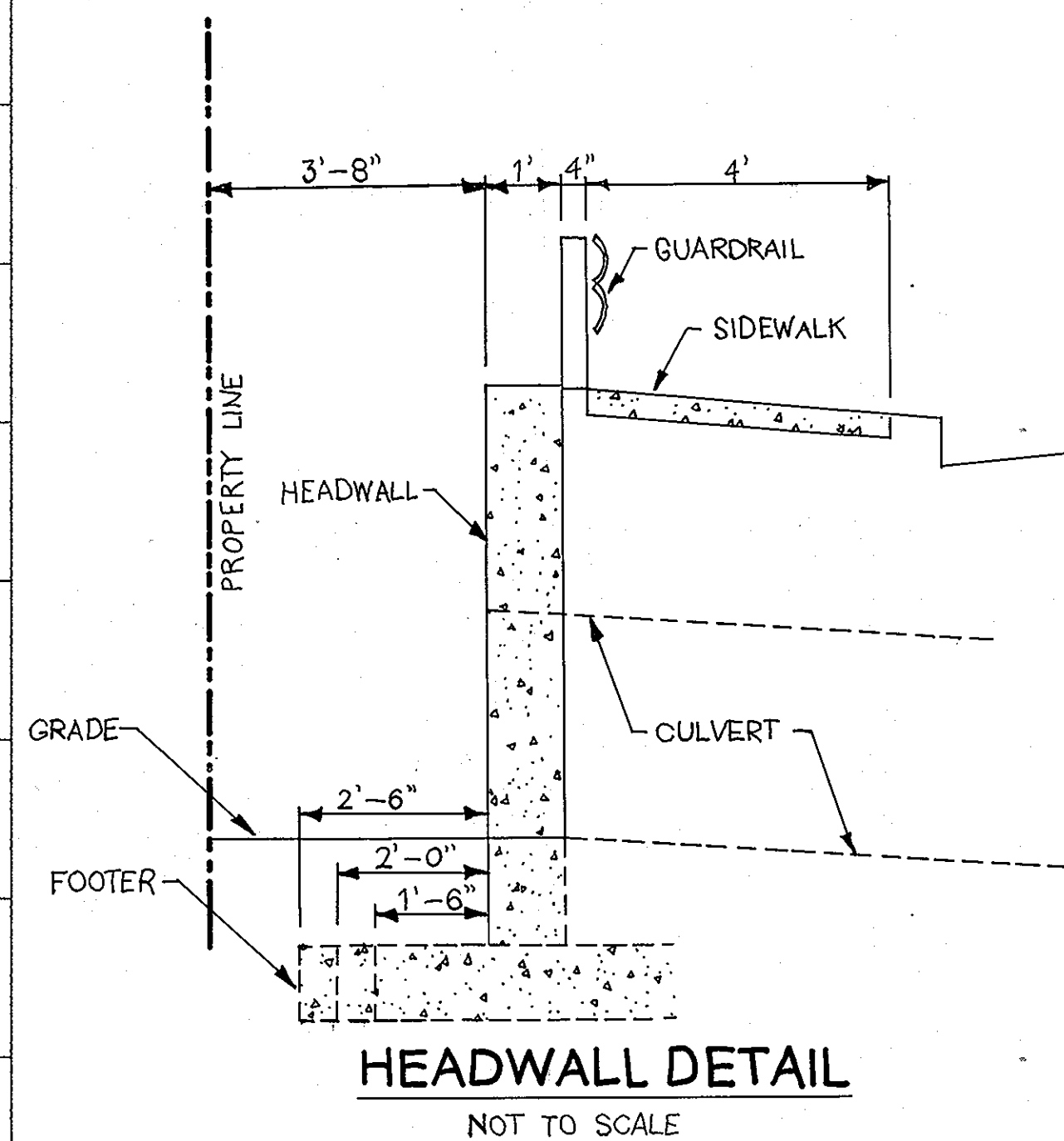
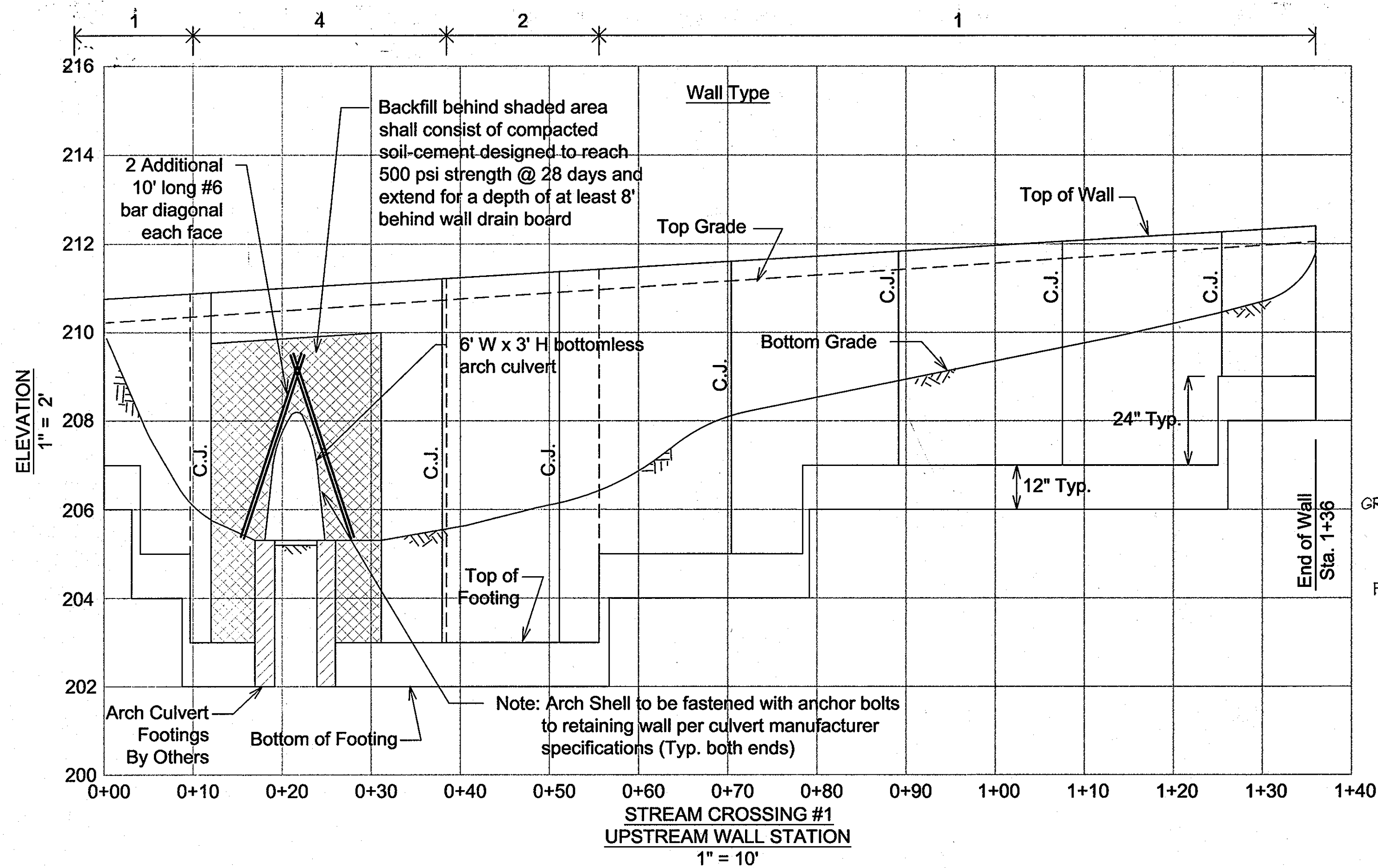
8407 MAIN STREET  
ELLCOTT CITY, MARYLAND 21043  
TEL: 410.461.7666 FAX: 410.461.8961



DESIGN BY: RWS  
DRAWN BY: AM  
CHECKED BY: RMH  
DATE: NOVEMBER 29, 2004  
SCALE: AS SHOWN  
JOB NO.: 02390-B

SUPPLEMENTAL SHEET  
34 SHEET OF 37





NOTE: THE PURPOSE OF REVISED SITE DEVELOPMENT PLAN SHEETS 34105 IS FOR PLAN AND DETAIL FOR ADDITIONAL RETAINING WALLS. 01/05

NO.	REVISION	DATE

**STREAM CROSSING #1 AND #2  
WALL ELEVATIONS  
THE OAKS AT WATERS EDGE - PHASE I  
PARCEL A-1**

REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157  
SDP-03-41, SDP-03-154, F-04-174

TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5  
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**HILLIS-CARNES  
ENGINEERING ASSOCIATES, INC.**

12011 Guilford Road Suite 106 Annapolis Junction, Maryland 20701  
Balto. (410) 880-4788 D.C. (301) 470-4239 Fax (410) 880-4098

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS

8407 MAIN STREET  
ELLCOTT CITY, MARYLAND 21043  
TEL: 410.461.7666 FAX: 410.461.8961

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 2/4/05  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

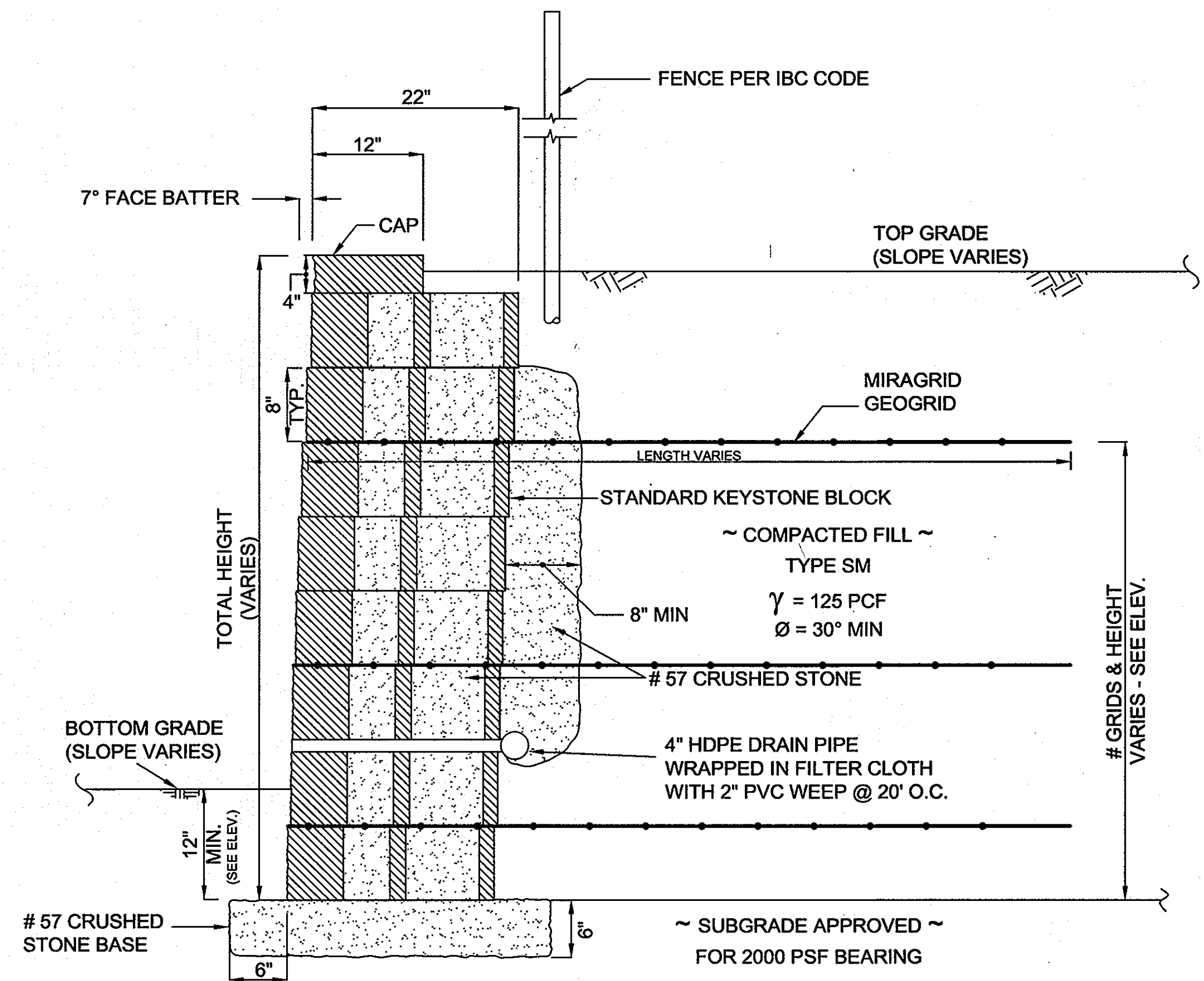
*[Signature]* 2/7/05  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*[Signature]* 2/4/05  
DIRECTOR DATE

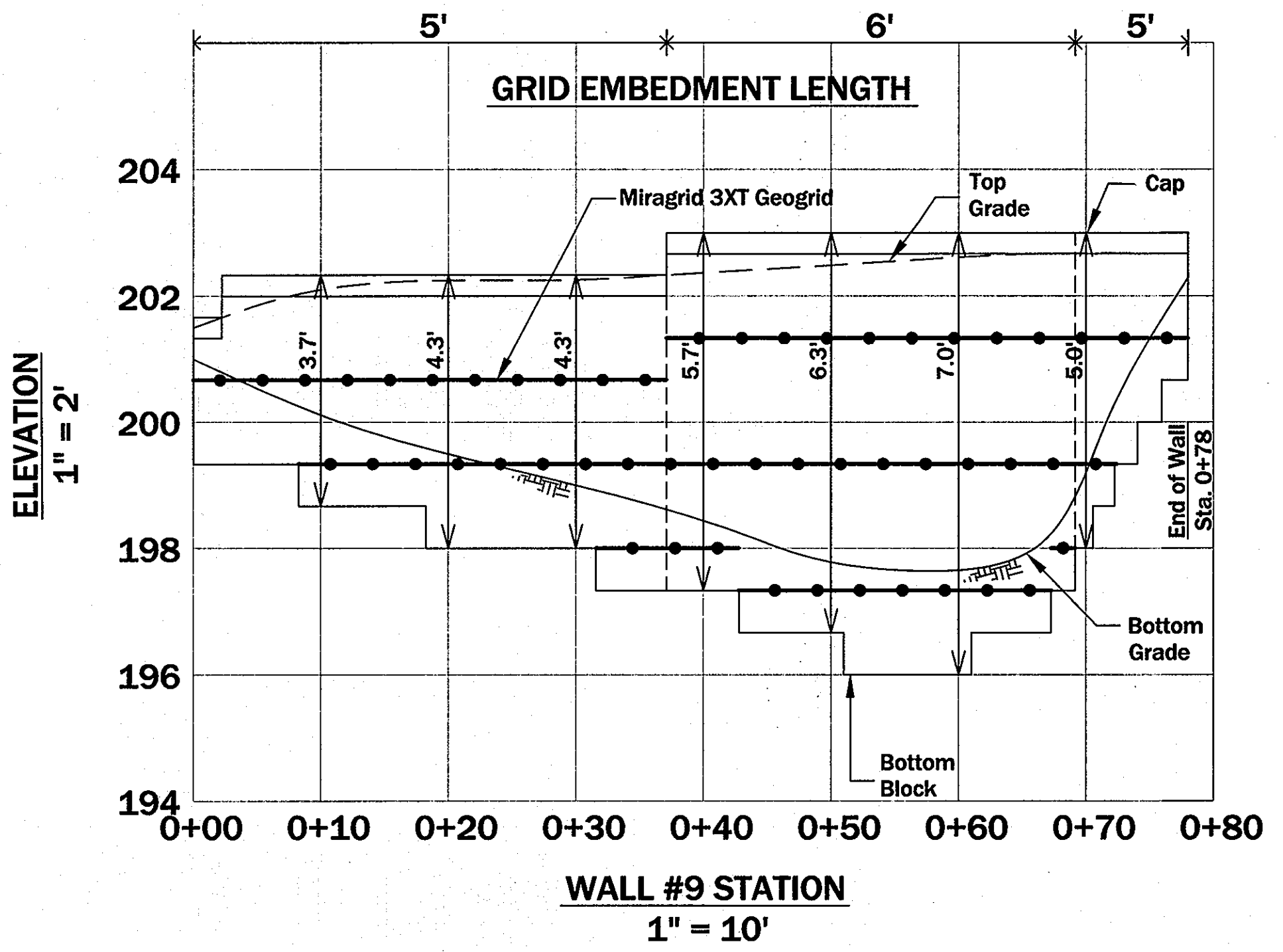
DESIGN BY: RWS  
DRAWN BY: AM  
CHECKED BY: RMH  
DATE: NOVEMBER 29, 2004  
SCALE: AS SHOWN  
JOB NO.: 02390-B

SUPPLEMENTAL SHEET  
**35** SHEET OF **37**





TYPICAL WALL SECTION  
N.T.S.



**SPECIFICATIONS**  
**KEYSTONE MODULAR CONCRETE BLOCK RETAINING WALL**

**PART 1: GENERAL**

**1.01 Description**  
A. Work shall consist of furnishing and construction of a KEYSTONE Retaining Wall System in accordance with these specifications and in reasonably close conformity with the lines, grades, design, and dimensions shown on the plans.  
B. Work includes preparing foundation soil, furnishing and installing leveling pad, unit drainage fill and backfill to the lines and grades shown on the construction drawings.  
C. Work includes furnishing and installing geogrid soil reinforcement of the type, size, location, and lengths designated on the construction drawings.

**1.02 Delivery, Storage and Handling**  
A. Contractor shall check all materials upon delivery to assure that the proper type, grade, color, and certification has been received.  
B. Contractor shall protect all materials from damage due to job site conditions and in accordance with manufacturer's recommendations. Damaged materials shall not be incorporated into the work.

**PART 2: PRODUCTS**

**2.01 Modular Concrete Retaining Wall Units**  
A. Modular concrete units shall conform to the following architectural requirements:  
face color - concrete gray - standard manufacturer's color may be specified by the Owner.  
face finish - sculptured rock face in angular tri-planer configuration. Other face finishes will not be allowed without written approval of Owner.  
bond configuration - running with bonds nominally located at midpoint vertically adjacent units, in both straight and curved alignments.  
exposed surfaces of units shall be free of chips, cracks or other imperfections when viewed from a distance of 10 feet under diffused lighting.  
B. Modular concrete materials shall conform to the requirements of ASTM C1372 - Standard Specifications for Segmental Retaining Wall Units.  
C. Modular concrete units shall conform to the following structural and geometric requirements measured in accordance with appropriate references:  
compressive strength = 3000 psi minimum;  
absorption = 8% maximum (6% in northern states) for standard weight aggregates;  
dimensional tolerances = ± 1/8" from nominal unit dimensions not including rough split unit dimensions not including rough split face, ± 1/16" unit height - top and bottom planes;  
unit size - 8" (H) x 18" (W) x 22" (D) minimum;  
unit weight - 100 lbs/unit minimum for standard weight

**2.02 Shear Connectors**  
A. Shear connectors shall be 1/2 inch diameter thermostat isophthalic polyester resin-protuded fiberglass reinforcement rods or equivalent to provide connection between vertically and horizontally adjacent units.  
Strength of shear connectors between vertical adjacent units shall be applicable over a design temperature of 10 degrees F to + 100 degrees F.  
B. Shear connectors shall be capable of holding the geogrid in the proper design position during grid pre-tensioning and backfilling.

**2.03 Base Leveling Pad Material**  
A. Material shall consist of a compacted #57 crushed stone base as shown on the construction drawings.

**2.04 Unit Drainage Fill**  
A. Unit drainage fill shall consist of #57 crushed stone

**2.05 Reinforced Backfill**  
A. Reinforced backfill shall type SM, be free of debris and meet the following gradation tested in accordance with ASTM D-422 and meet other properties shown on the plan:

Sieve Size	Percent Passing
2 inch	100-75
3/4 inch	100-75
No. 40	0-80
No. 200	0-40

Plasticity Index (PI) <15 and Liquid Limit <40 per ASTM D-4318.  
B. Material can be site excavated soils where the above requirements can be met. Unsuitable soils for backfill (high plasticity clays or organic soils) shall not be used in the reinforced soil mass.

**2.06 Geogrid Soil Reinforcement**

aggregates;  
inter-unit shear strength - 600 plf minimum at 2 psi normal pressure;  
geogrid/unit peak connection strength - 600 plf minimum at 2 psi normal force.  
D. Modular concrete units shall conform to the following constructability requirements:  
vertical setback = 1/8" per course (near vertical) or 1" per course per the design;  
alignment and grid positioning mechanism - fiberglass pins, two per unit minimum;  
maximum horizontal gap between erected units shall be 1/2 inch.

**PART 3 EXECUTION**

**3.01 Excavation**  
A. Contractor shall excavate to the lines and grades shown on the construction drawings. Owner's representative shall be responsible for inspecting and approving the excavation prior to placement of leveling material or fill soils.

**3.02 Base Leveling Pad**  
A. Leveling pad material shall be placed to the lines and grades shown on the construction drawings, to a minimum thickness of 6 inches and extend laterally a minimum of 6" in front and behind the modular wall unit.  
B. Leveling pad shall be prepared to insure full contact to the base surface of the concrete units.

**3.03 Modular Unit Installation**  
A. First course of units shall be placed on the leveling pad at the appropriate line and grade. Alignment and level shall be checked in all directions and insure that all units are in full contact with the base and properly seated.  
B. Place the front of units side-by-side. Do not leave gaps between adjacent units. Layout of corners and curves shall be in accordance with manufacturer's recommendations.  
C. Install shear/connecting devices per manufacturer's recommendations.  
D. Place and compact drainage fill within and behind wall units. Place and compact backfill soil behind drainage fill. Follow wall erection and drainage fill closely with structure backfill.  
E. Maximum stacked vertical height of wall units, prior to unit drainage fill and backfill placement and compaction, shall not exceed three courses.

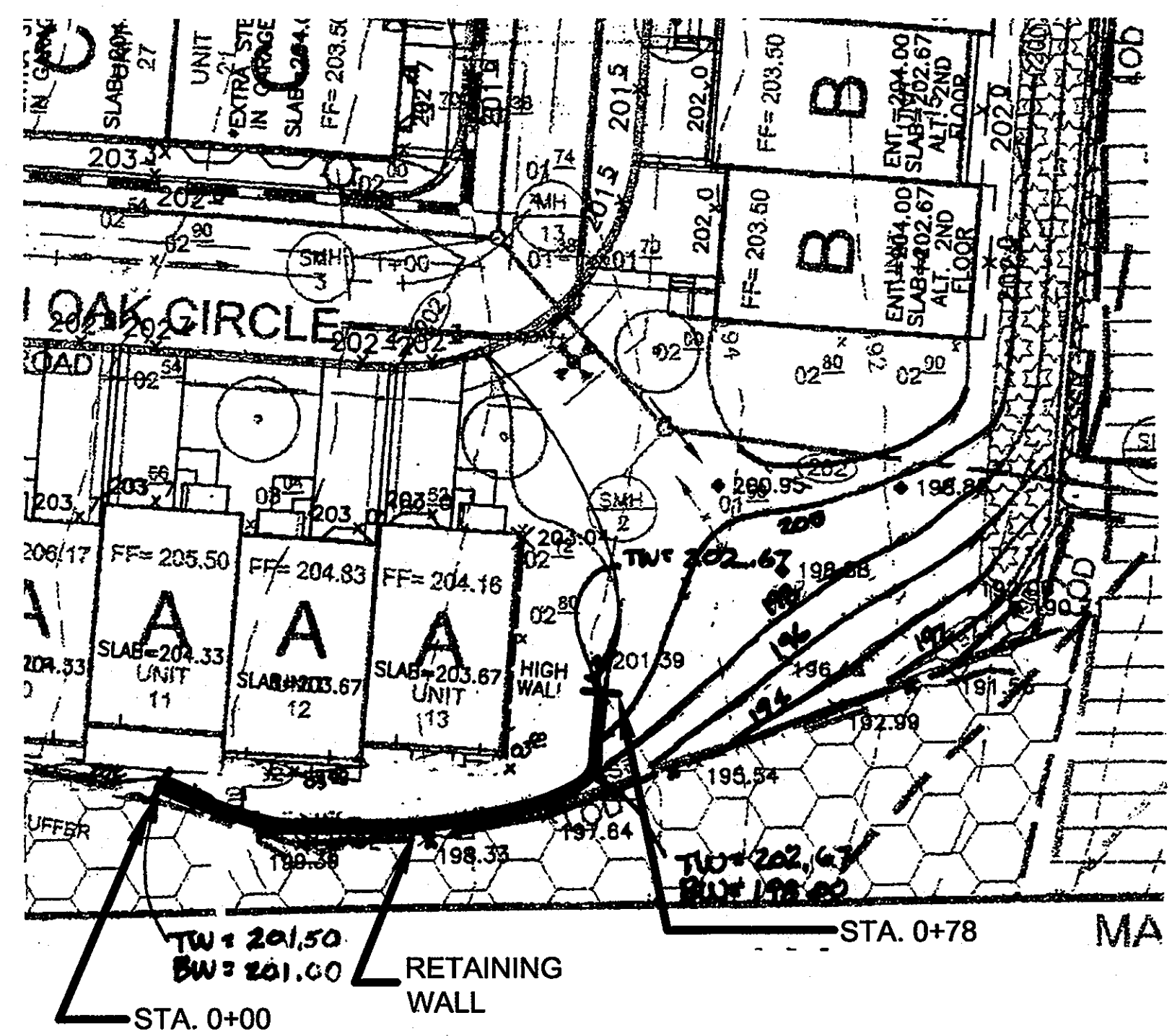
**3.04 Structural Geogrid Installation**  
A. Geogrid shall be oriented with the highest strength axis perpendicular to the wall alignment.  
B. Geogrid reinforcement shall be placed at the strengths, lengths, and elevations shown on the construction design drawings or as directed by the Engineer.  
C. The geogrid shall be laid horizontally on compacted backfill and attached to the modular wall units. Place the next course of modular concrete units over the geogrid. The geogrid shall be pulled taut, and anchored prior to

backfill placement on the geogrid.  
D. Geogrid reinforcements shall be continuous throughout their embedment lengths and placed side-by-side to provide 100% coverage at each level. Spliced connections between shorter pieces of geogrid or gaps between adjacent pieces of geogrid are not permitted.

**3.05 Reinforced Backfill Placement**  
A. Reinforced backfill shall be placed, spread, and compacted in such a manner that minimizes the development of slack in the geogrid and installation damage.  
B. Reinforced backfill shall be placed and compacted in lifts not to exceed 6 inches where hand compaction is used, or 8 - 10 inches where heavy compaction equipment is used. Lift thickness shall be decreased to achieve the required density as required.  
C. Reinforced backfill shall be compacted to 95% of the maximum density as determined by ASTM D698. The moisture content of the backfill material prior to and during compaction shall be uniformly distributed throughout each layer and shall be + 3% to - 3% of optimum.  
D. Only lightweight hand-operated equipment shall be allowed within 3 feet from the tail of the modular concrete unit.  
E. Tracked construction equipment shall not be operated directly upon the geogrid reinforcement. A minimum fill thickness of 6 inches is required prior to operation of tracked vehicles over the geogrid. Tracked vehicle turning should be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid.  
F. Rubber tired equipment may pass over geogrid reinforcement at slow speeds, less than 10 MPH. Sudden braking and sharp turning shall be avoided.  
G. At the end of each day's operation, the Contractor shall slope the last lift of reinforced backfill away from the wall units to direct runoff away from wall face. The Contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.

**3.06 Cap Installation**  
A. Cap units shall be glued to underlying units with an all-weather adhesive recommended by the manufacturer.

**3.07 Field Quality Control**  
A. The Owner shall engage inspection and testing services, including independent laboratories, to provide quality assurance and testing services during construction.  
B. As a minimum, quality assurance testing should include foundation soil inspection, soil and backfill testing, verification of design parameters, and observation of construction for general compliance with design drawings and specifications.



WALL #9 LOCATION PLAN  
1" = 20'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 11/10/05  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE

*[Signature]* 11/14/05  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DATE

*[Signature]* 11/15/05  
DIRECTOR  
DATE

REDUCE WETLAND AND BUFFER IMPACTS BY ADDING HEADWALLS TO MINIMIZE GRADING		10.24.05
NO.	REVISION	DATE
<b>RETAINING WALL # 9 CONSTRUCTION DETAILS</b> <b>THE OAKS AT WATERS EDGE - PHASE I</b> PARCEL A-1 REF: S-97-01, ZB-988-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157, SDR-03-41, SDR-03-154, F-04-174 TAX MAP 43 BLOCK 3 PARCELS 279, 847, AND PART OF 5 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND		
HILLIS-CARNES ENGINEERING ASSOCIATES, INC. 12011 Guilford Road Suite 106 Beltsville, MD 20814-4788 D.C. (301) 470-4239 Fax: (410) 980-4098		
<b>ROBERT H. VOGEL ENGINEERING, INC.</b> ENGINEERS · SURVEYORS · PLANNERS 8407 MAIN STREET ELLICOTT CITY, MARYLAND 21043 TEL: 410.461.7666 FAX: 410.461.8961		
	DESIGN BY: HM DRAWN BY: HM CHECKED BY: RWS DATE: 8/31/05 SCALE: JOB NO.: 02390-A	(SUPPLEMENTAL SHEET) <b>36</b> SHEET OF <b>37</b>



# SPECIFICATIONS

## KEYSTONE MODULAR CONCRETE BLOCK RETAINING WALL

### PART 1: GENERAL

- 1.01 Description**  
 A. Work shall consist of furnishing and construction of a KEYSTONE Retaining Wall System in accordance with these specifications and in reasonably close conformity with the lines, grades, design, and dimensions shown on the plans.  
 B. Work includes preparing foundation soil, furnishing and installing leveling pad, unit drainage fill and backfill to the lines and grades shown on the construction drawings.  
 C. Work includes furnishing and installing geogrid soil reinforcement of the type, size, location, and lengths designated on the construction drawings.

- 1.02 Delivery, Storage and Handling**  
 A. Contractor shall check all materials upon delivery to assure that the proper type, grade, color, and certification has been received.  
 B. Contractor shall protect all materials from damage due to job site conditions and in accordance with manufacturer's recommendations. Damaged materials shall not be incorporated into the work.

### PART 2: PRODUCTS

- 2.01 Modular Concrete Retaining Wall Units**  
 A. Modular concrete units shall conform to the following architectural requirements:  
 face color - concrete gray - standard manufacturers' color may be specified by the Owner.  
 face finish - sculptured rock face in angular tri-planer configuration. Other face finishes will not be allowed without written approval of Owner.  
 bond configuration - running with bonds nominally located at midpoint vertically adjacent units, in both straight and curved alignments.  
 exposed surfaces of units shall be free of chips, cracks or other imperfections when viewed from a distance of 10 feet under diffused lighting.  
 B. Modular concrete materials shall conform to the requirements of ASTM C1372 - Standard Specifications for Segmental Retaining Wall Units.  
 C. Modular concrete units shall conform to the following structural and geometric requirements measured in accordance with appropriate references:  
 compressive strength = 3000 psi minimum;  
 absorption = 8 % maximum (6% in northern states) for standard weight aggregates;  
 dimensional tolerances = ± 1/8" from nominal unit dimensions not including rough split unit dimensions not including rough split face, ±1/16" unit height - top and bottom planes;  
 unit size - 8" (H) x 18" (W) x 22" (D) minimum;  
 unit weight - 100 lbs/unit minimum for standard weight

- aggregates;  
 inter-unit shear strength - 600 plf minimum at 2 psi normal pressure;  
 geogrid/unit peak connection strength - 600 plf minimum at 2 psi normal force.  
 D. Modular concrete units shall conform to the following constructability requirements:  
 vertical setback = 1/8"± per course (near vertical) or 1"± per course per the design;  
 alignment and grid positioning mechanism - fiberglass pins, two per unit minimum;  
 maximum horizontal gap between erected units shall be 1/2 inch.

- 2.02 Shear Connectors**  
 A. Shear connectors shall be 1/2 inch diameter thermoset isophthalic polyester resin-protuded fiberglass reinforcement rods or equivalent to provide connection between vertically and horizontally adjacent units.  
 Strength of shear connectors between vertical adjacent units shall be applicable over a design temperature of 10 degrees F to + 100 degrees F.  
 B. Shear connectors shall be capable of holding the geogrid in the proper design position during grid pre-tensioning and backfilling.

- 2.03 Base Leveling Pad Material**  
 A. Material shall consist of a compacted #57 crushed stone base as shown on the construction drawings.

- 2.04 Unit Drainage Fill**  
 A. Unit drainage fill shall consist of #57 crushed stone

- 2.05 Reinforced Backfill**  
 A. Reinforced backfill shall type SM, be free of debris and meet the following gradation tested in accordance with ASTM D-422 and meet other properties shown on the plan:

Sieve Size	Percent Passing
2 inch	100-75
3/4 inch	100-75
No. 40	0-80
No. 200	0-40

- Plasticity Index (PI) <15 and Liquid Limit <40 per ASTM D-4316.  
 B. Material can be site excavated soils where the above requirements can be met. Unsuitable soils for backfill (high plastic clays or organic soils) shall not be used in the reinforced soil mass.

- 2.06 Geogrid Soil Reinforcement**

- A. Geosynthetic reinforcement shall consist of geogrids manufactured specifically for soil reinforcement applications and shall be manufactured from high tenacity polyester yarn.

- 2.07 Drainage Pipe**  
 A. The drainage pipe shall be perforated corrugated HDPE pipe manufactured in accordance with ASTM D-1248.

### PART 3 EXECUTION

- 3.01 Excavation**  
 A. Contractor shall excavate to the lines and grades shown on the construction drawings. Owner's representative shall be responsible for inspecting and approving the excavation prior to placement of leveling material or fill soils.

- 3.02 Base Leveling Pad**  
 A. Leveling pad material shall be placed to the lines and grades shown on the construction drawings, to a minimum thickness of 6 inches and extend laterally a minimum of 6" in front and behind the modular wall unit.  
 B. Leveling pad shall be prepared to insure full contact to the base surface of the concrete units.

- 3.03 Modular Unit Installation**  
 A. First course of units shall be placed on the leveling pad at the appropriate line and grade. Alignment and level shall be checked in all directions and insure that all units are in full contact with the base and properly seated.  
 B. Place the front of units side-by-side. Do not leave gaps between adjacent units. Layout of corners and curves shall be in accordance with manufacturer's recommendations.  
 C. Install shear/connecting devices per manufacturer's recommendations.

- D. Place and compact drainage fill within and behind wall units. Place and compact backfill soil behind drainage fill. Follow wall erection and drainage fill closely with structure backfill.  
 E. Maximum stacked vertical height of wall units, prior to unit drainage fill and backfill placement and compaction, shall not exceed three courses.

- 3.04 Structural Geogrid Installation**  
 A. Geogrid shall be oriented with the highest strength axis perpendicular to the wall alignment.  
 B. Geogrid reinforcement shall be placed at the strengths, lengths, and elevations shown on the construction design drawings or as directed by the Engineer.  
 C. The geogrid shall be laid horizontally on compacted backfill and attached to the modular wall units. Place the next course of modular concrete units over the geogrid. The geogrid shall be pulled taut, and anchored prior to

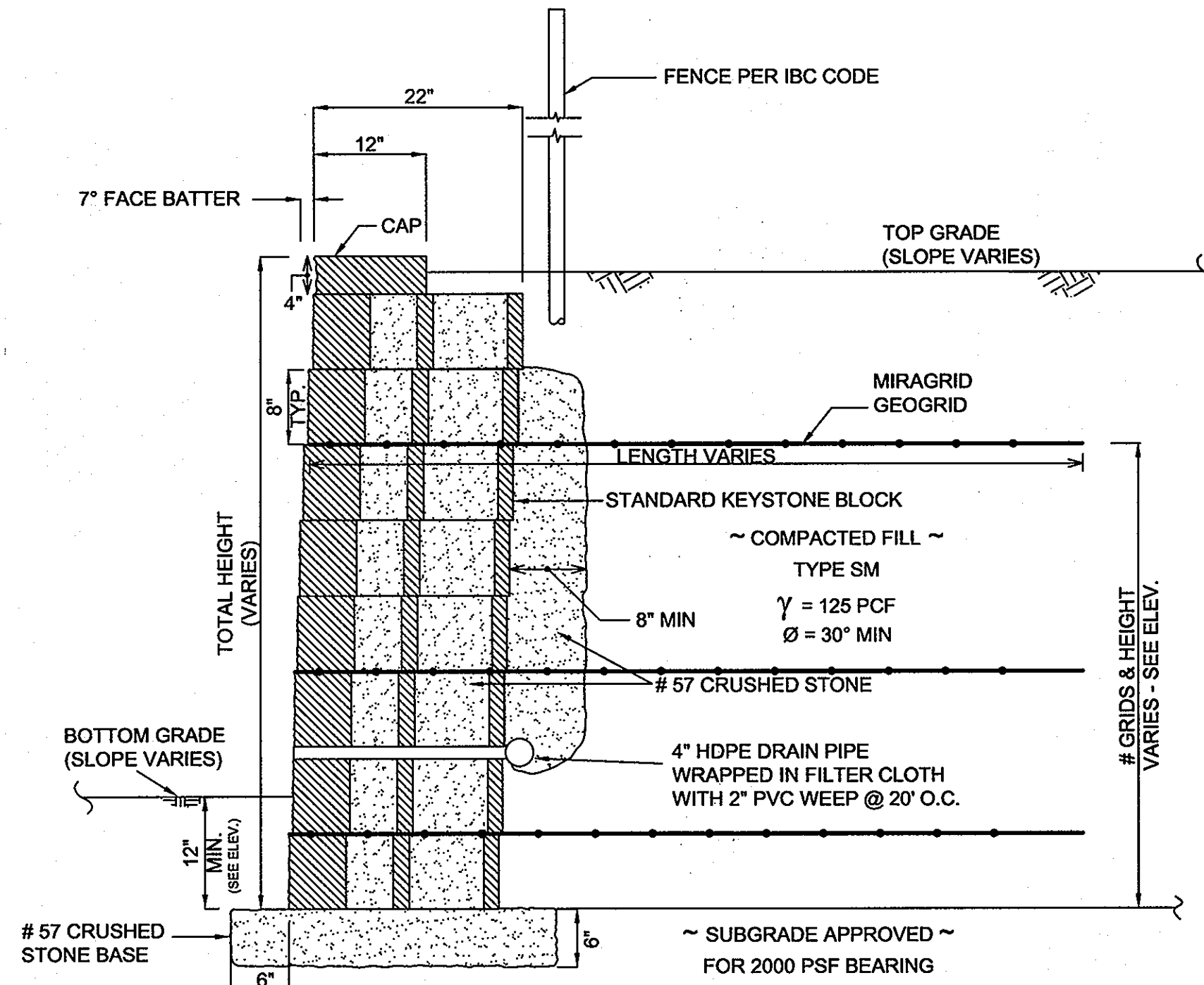
- backfill placement on the geogrid.  
 D. Geogrid reinforcements shall be continuous throughout their embedment lengths and placed side-by-side to provide 100% coverage at each level. Spliced connections between shorter pieces of geogrid or gaps between adjacent pieces of geogrid are not permitted.

- 3.05 Reinforced Backfill Placement**  
 A. Reinforced backfill shall be placed, spread, and compacted in such a manner that minimizes the development of slack in the geogrid and installation damage.  
 B. Reinforced backfill shall be placed and compacted in lifts not to exceed 6 inches where hand compaction is used, or 8 - 10 inches where heavy compaction equipment is used. Lift thickness shall be decreased to achieve the required density as required.  
 C. Reinforced backfill shall be compacted to 95 % of the maximum density as determined by ASTM D698. The moisture content of the backfill material prior to and during compaction shall be uniformly distributed throughout each layer and shall be + 3% to - 3% of optimum.  
 D. Only lightweight hand-operated equipment shall be allowed within 3 feet from the tail of the modular concrete unit.

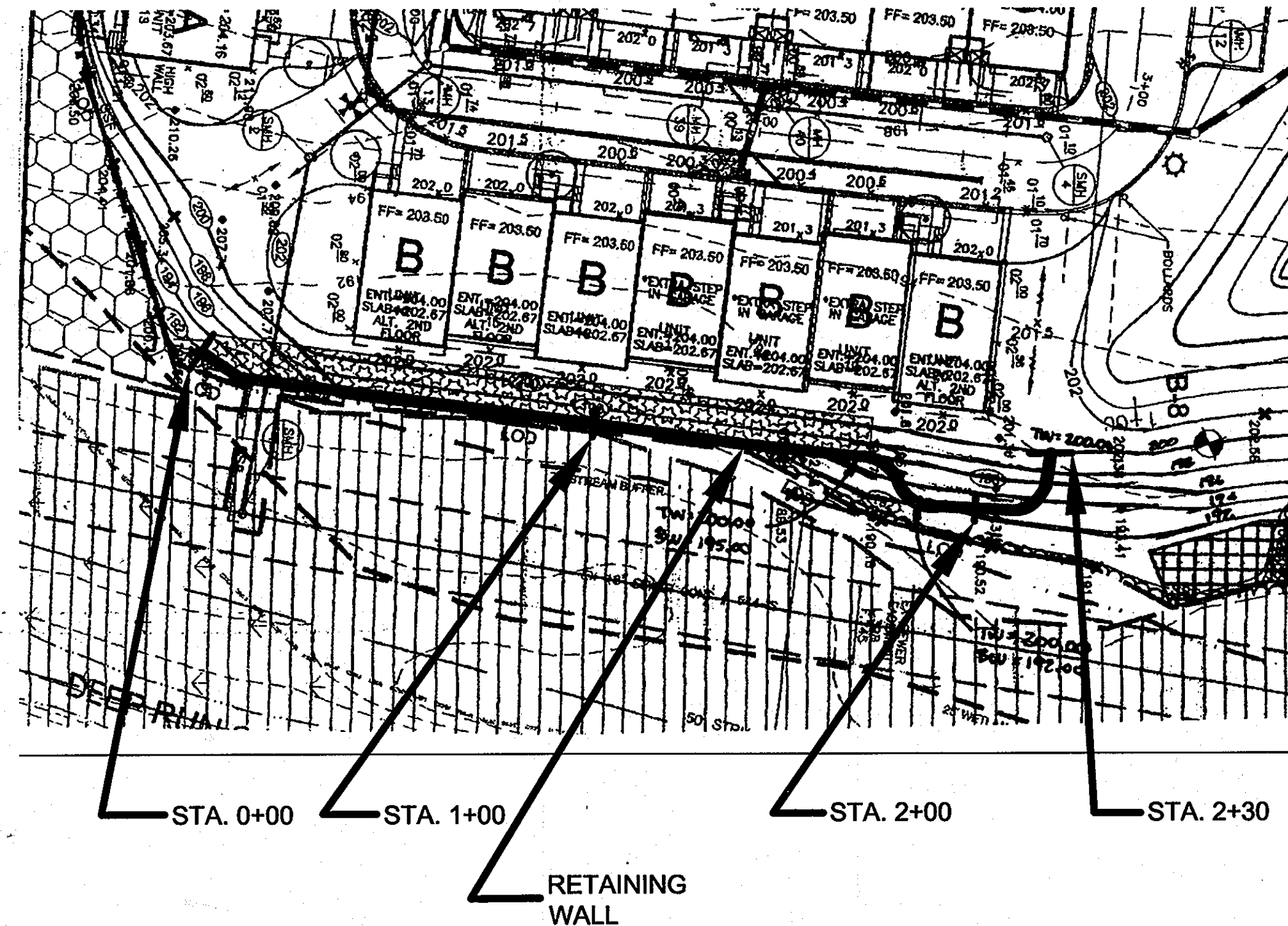
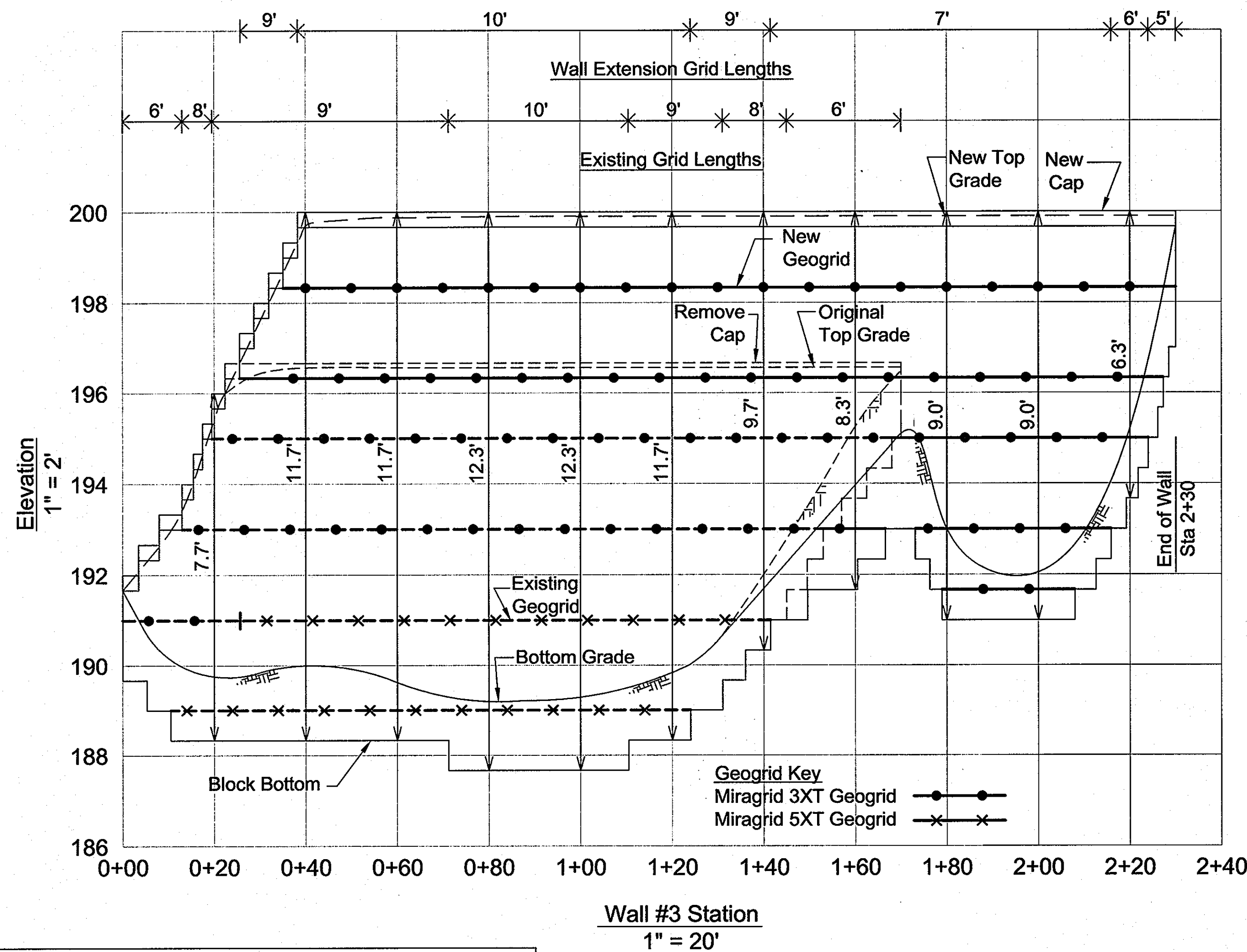
- E. Tracked construction equipment shall not be operated directly upon the geogrid reinforcement. A minimum fill thickness of 6 inches is required prior to operation of tracked vehicles over the geogrid. Tracked vehicle turning should be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid.  
 F. Rubber tired equipment may pass over geogrid reinforcement at slow speeds, less than 10 MPH. Sudden braking and sharp turning shall be avoided.  
 G. At the end of each day's operation, the Contractor shall slope the last lift of reinforced backfill away from the wall units to direct runoff away from wall face. The Contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.

- 3.06 Cap Installation**  
 A. Cap units shall be glued to underlying units with an all-weather adhesive recommended by the manufacturer.

- 3.07 Field Quality Control**  
 A. The Owner shall engage inspection and testing services, including independent laboratories, to provide quality assurance and testing services during construction.  
 B. As a minimum, quality assurance testing should include foundation soil inspection, soil and backfill testing, verification of design parameters, and observation of construction for general compliance with design drawings and specifications.



TYPICAL WALL SECTION  
N.T.S.



WALL #3 LOCATION PLAN  
1" = 30'

NO.	REVISION	DATE
1	REDUCE WETLAND AND BUFFER IMPACTS BY ADDING HEADWALLS TO MINIMIZE GRADING	10.24.05

**RETAINING WALL # 3 CONSTRUCTION DETAILS**  
**THE OAKS AT WATERS EDGE - PHASE I**  
 PARCEL A-1  
 REF: S-97-01, ZB-966-M, P-00-19, WP-97-89, F-75-05, F-00-126, F-02-72, WP-03-157, SDP-03-41, SDP-03-154, F-04-174  
 TAX MAP 43 BLOCK 3 PARCELS 279, 647, AND PART OF 5 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
**HILLIS-CARNES ENGINEERING ASSOCIATES, INC.**  
 12011 Guilford Road Suite 106  
 Beltsville, MD (410) 984-4788 D.C. (202) 470-4239 Fax: (410) 980-4098  
**ROBERT H. VOGEL ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS  
 8407 MAIN STREET  
 ELLICOTT CITY, MARYLAND 21043  
 TEL: 410.461.7666 FAX: 410.461.8961

DESIGN BY: \_\_\_\_\_ HM (SUPPLEMENTAL SHEET)  
 DRAWN BY: \_\_\_\_\_ HM  
 CHECKED BY: \_\_\_\_\_ RWS  
 DATE: 8/21/05  
 SCALE: \_\_\_\_\_  
 JOB NO.: 02390-A  
**57** SHEET OF **57**

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 11/15/05  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 [Signature] 11/15/05  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 [Signature] 11/15/05  
 DIRECTOR