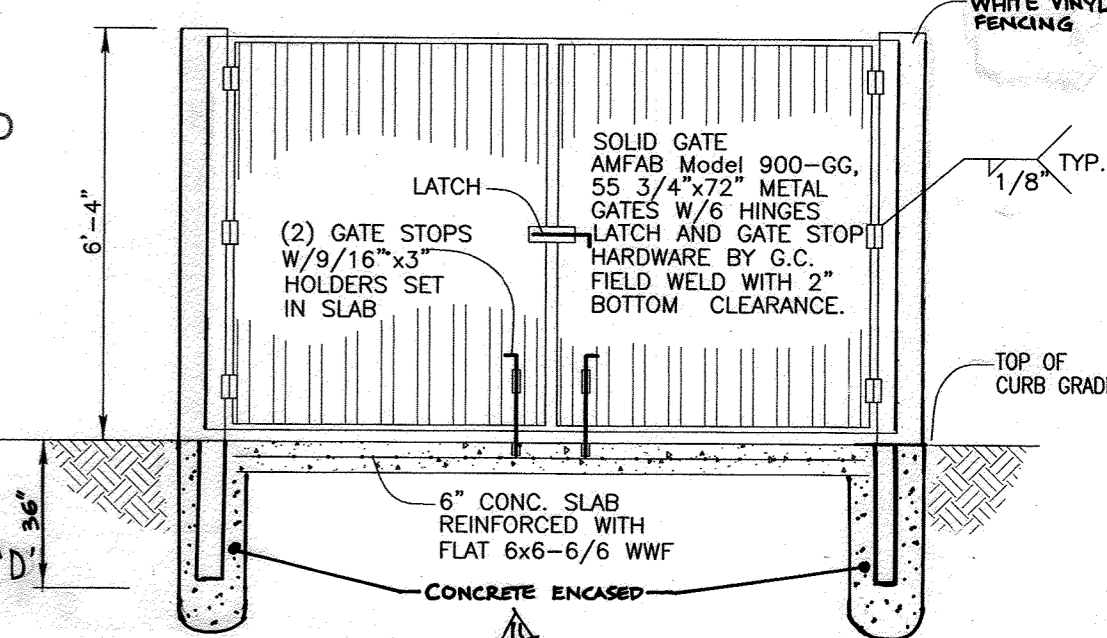
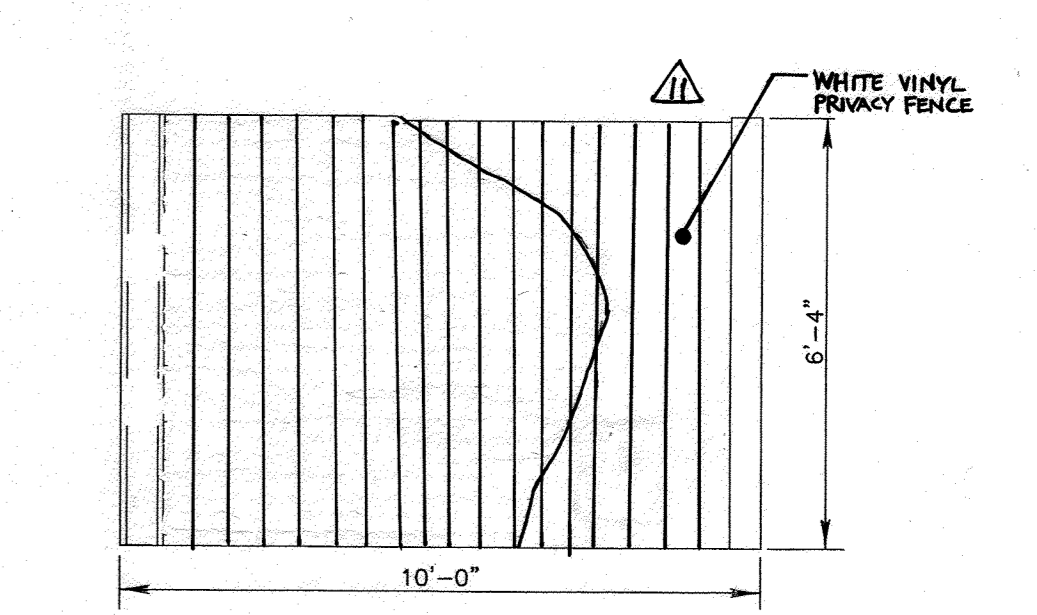


NOTES:
 1. DEPRESSED CURB IN HANDICAP ACCESSIBLE AREAS SHALL HAVE A 0.0417'(1/2") RISE FROM PAVING TO TOP OF CURB.
 2. GUTTER PAN AT THE MEDIAN EDGE OF INTERMEDIATE ARTERIALS OR THE HIGH SIDE OF SUPERELEVATED SECTIONS SHALL BE SLOPED AT THE SAME RATE AND IN THE SAME DIRECTION AS THE PAVEMENT. MATCH PAVEMENT CROSS SLOPE WHEN CURB IS LOCATED ON THE LOW SIDE OF SUPERELEVATED SECTION AND THE RATE OF SUPERELEVATION IS GREATER THAN 3% FOR MODIFIED CURB AND GUTTER.

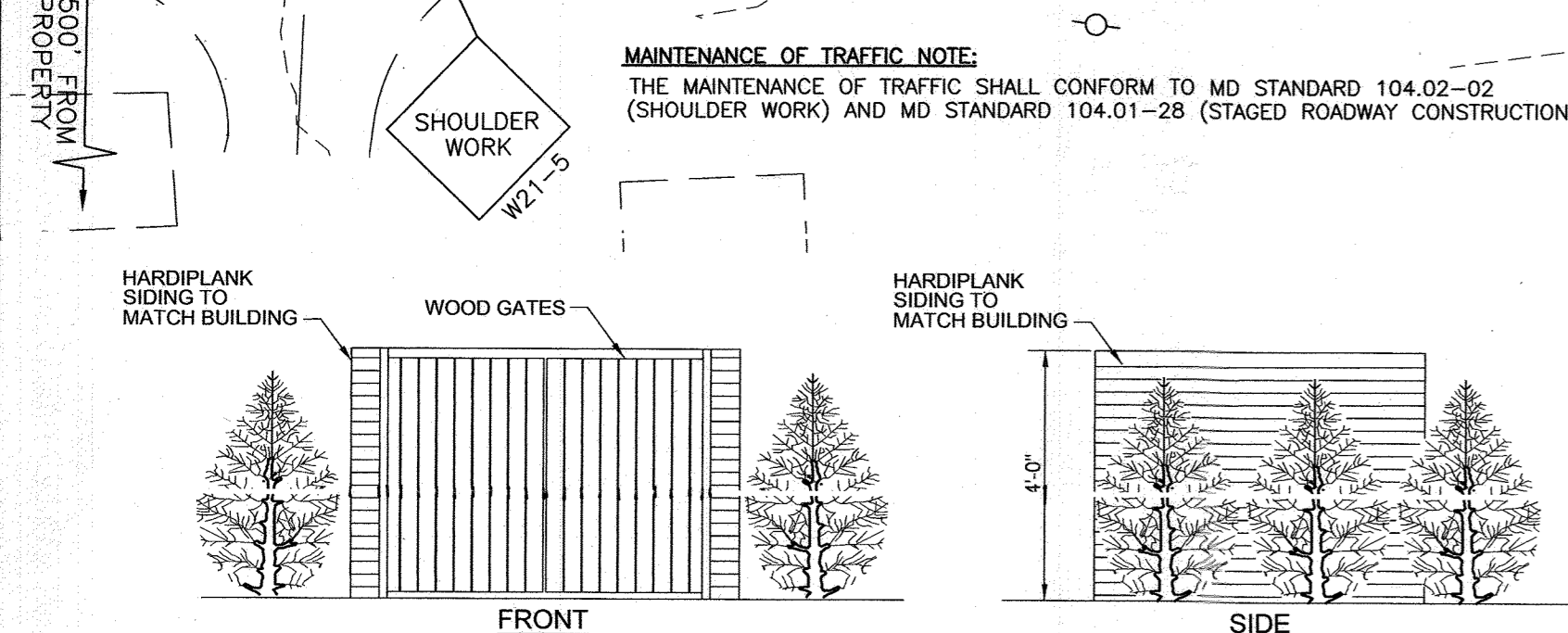
STANDARD COMBINATION CURB AND GUTTER
 HOWARD COUNTY STANDARD R-3.01
 NOT TO SCALE



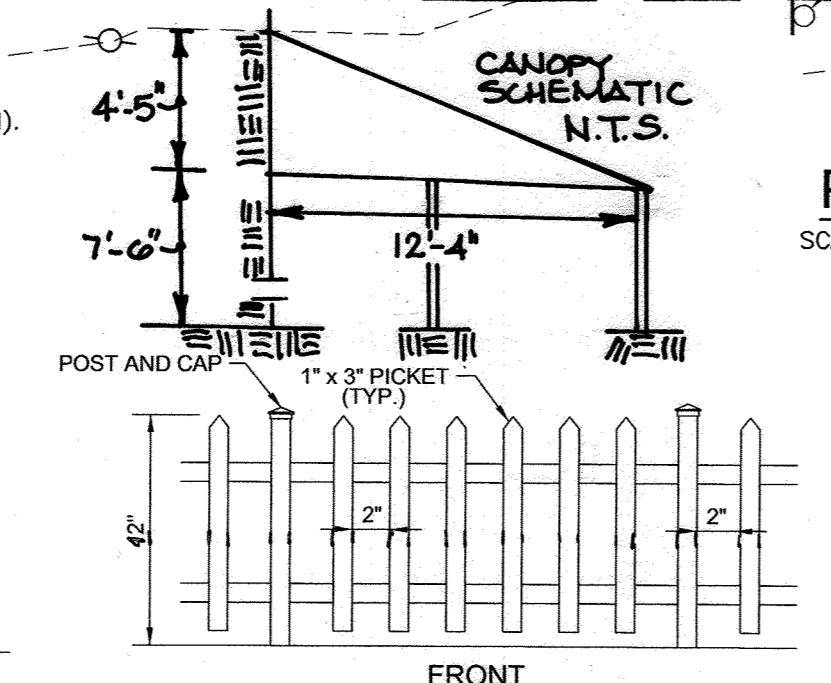
TRASH ENCLOSURE GATE DETAIL
 NOT TO SCALE



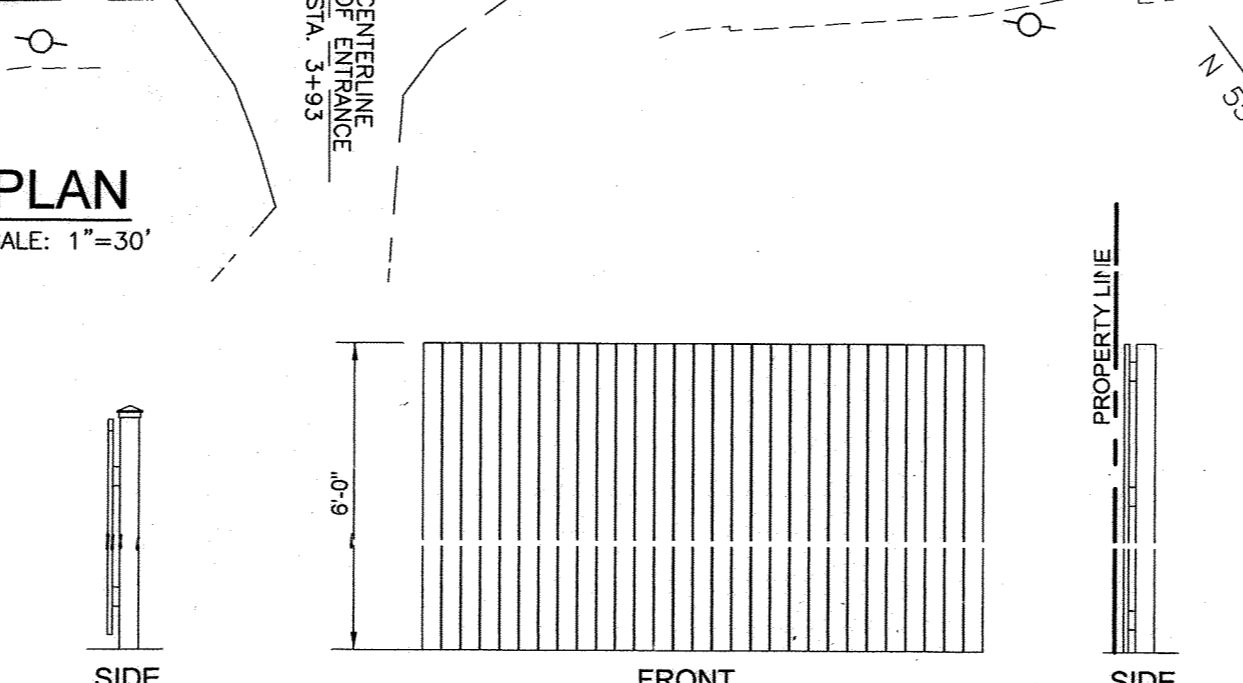
TRASH ENCLOSURE ELEVATION
 NOT TO SCALE



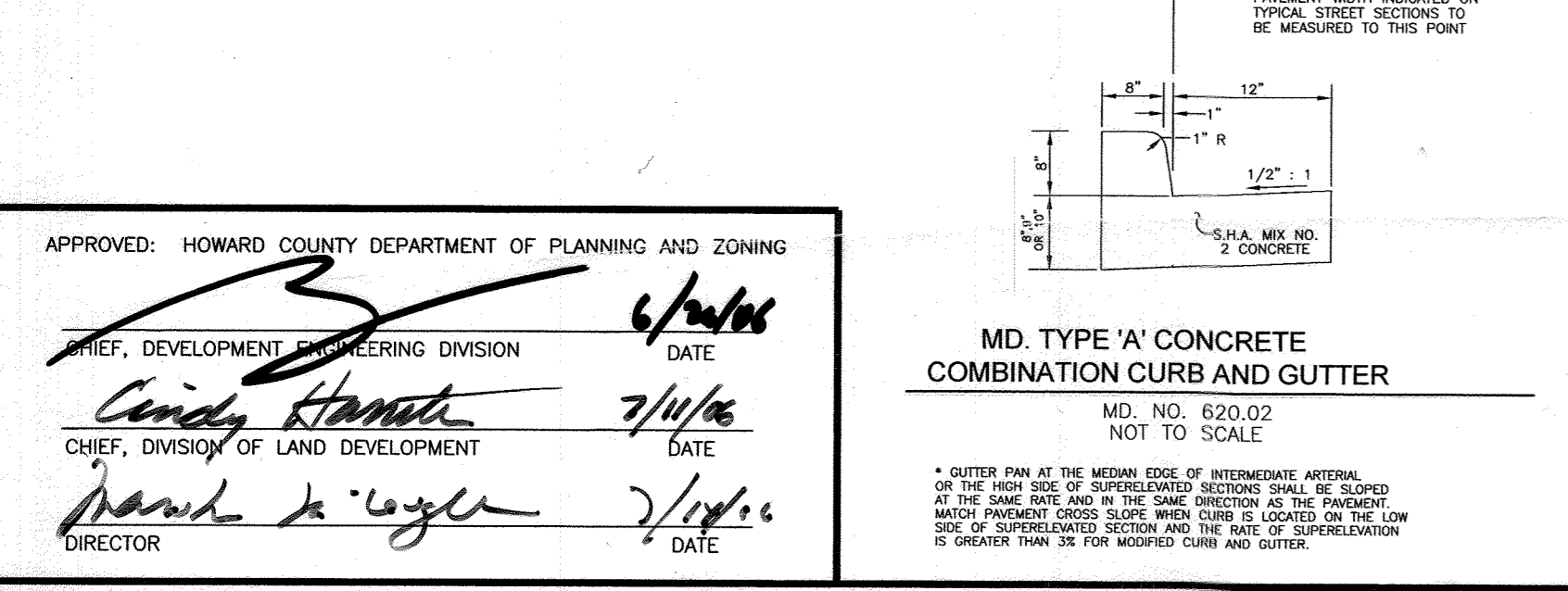
TRASH SCREENING DETAIL
 NOT TO SCALE



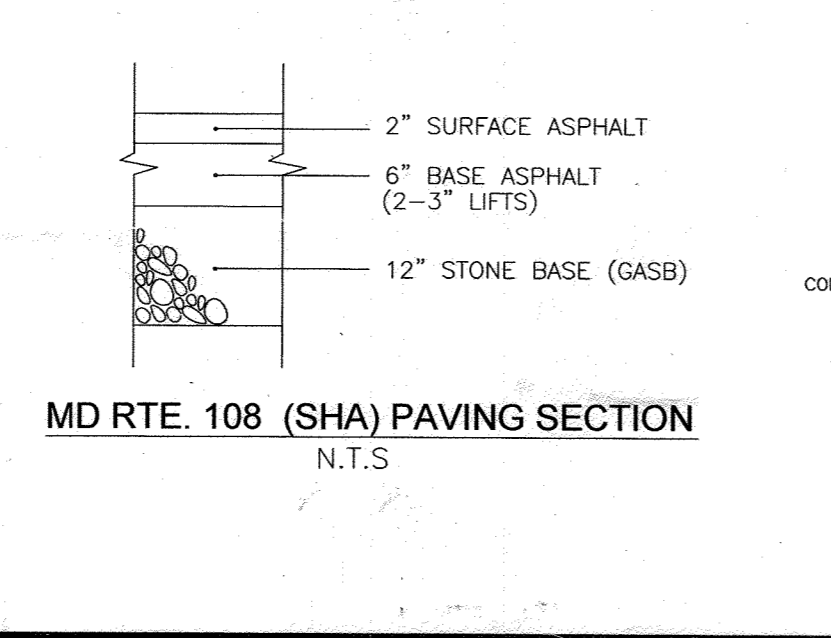
PICKET FENCE DETAIL
 NOT TO SCALE



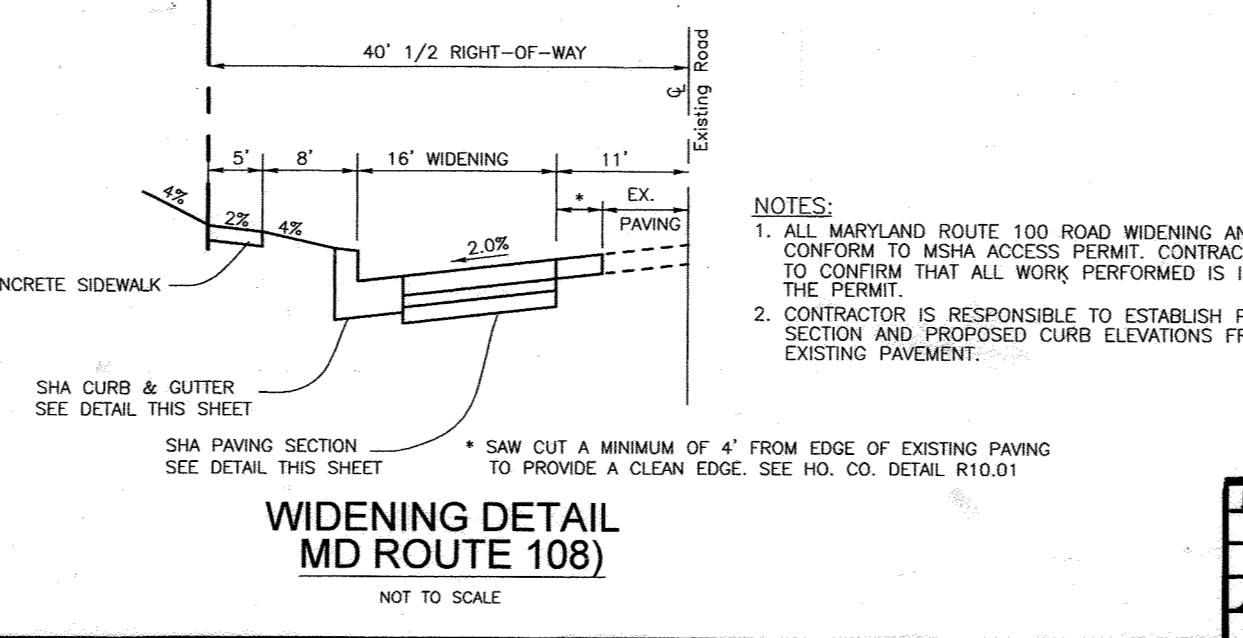
BOARD ON BOARD FENCE DETAIL
 NOT TO SCALE



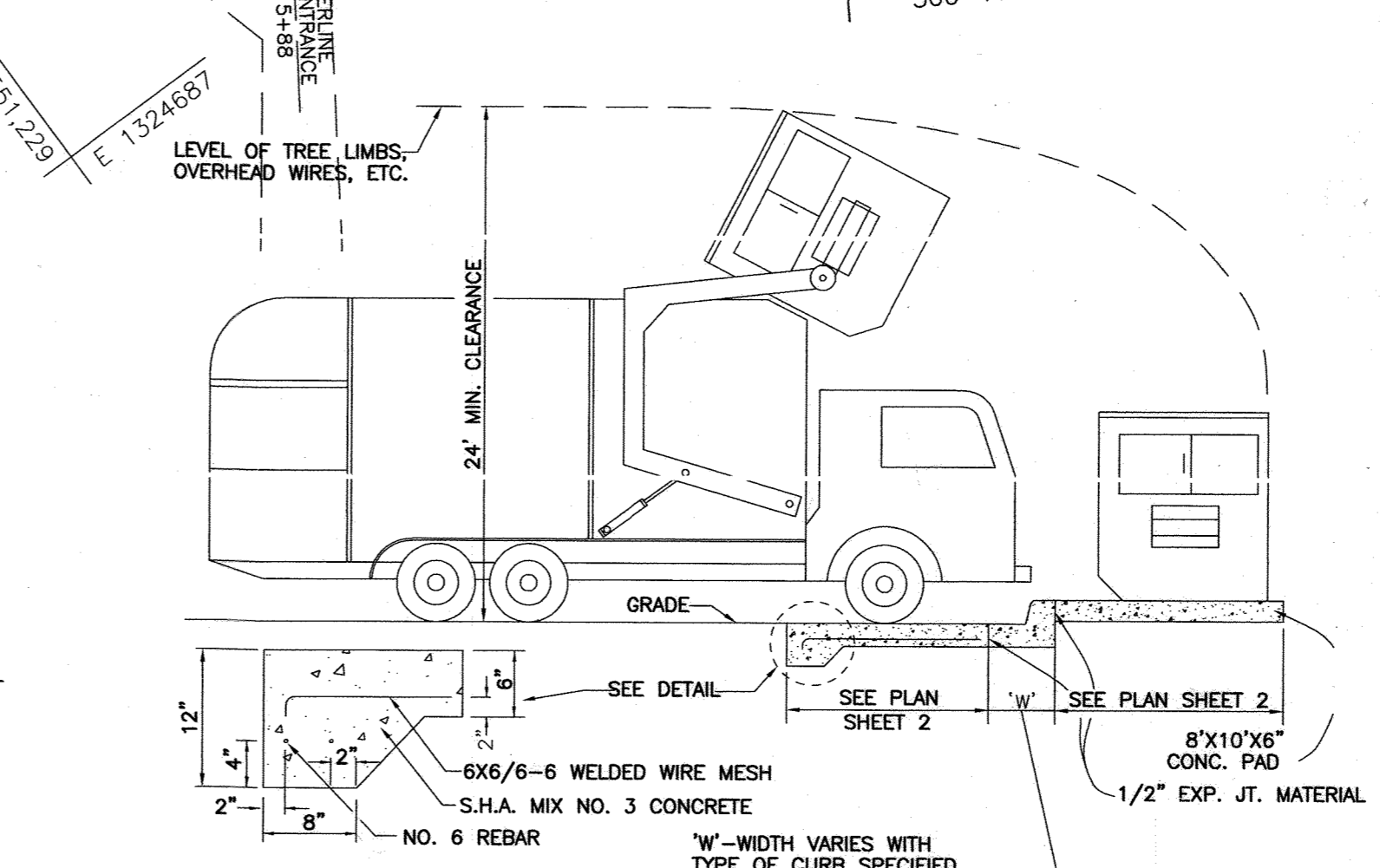
MD. TYPE 'A' CONCRETE COMBINATION CURB AND GUTTER
 MD. NO. 620.02
 NOT TO SCALE



MD RTE. 108 (SHA) PAVING SECTION
 N.T.S.



WIDENING DETAIL MD ROUTE 108
 NOT TO SCALE



SOLID WASTE SERVICE PAD
 HOWARD COUNTY STD. R. 11.01
 NOT TO SCALE

NO.	REVISION	DATE
7	REVISE THE PLAN TO DELETE THE ORIGINAL PAVEMENT LOCATION TO BLDG. & RE-LOCATE IT ADJACENT TO PAVEMENT AND RE-LOCATE THE DUMPSTER.	1/28/09
5	ADD DAYCARE AND PLAYGROUND	10-8-07
3	REVISE BLDG. USE TO OFFICE/RETAIL; ADD KARATE STUDIO TO BLDG. USE (10-8-07)	3-22-07
2	ADD EXTERNAL STEPS TO BUILDING 'D'	
1	REVISE DIMENSIONS OF PUMP HOUSE #1 AND #2	

NO.	REVISION	DATE
7	REVISE THE PLAN TO DELETE THE ORIGINAL PAVEMENT LOCATION TO BLDG. & RE-LOCATE IT ADJACENT TO PAVEMENT AND RE-LOCATE THE DUMPSTER.	1/28/09
5	ADD DAYCARE AND PLAYGROUND	10-8-07
3	REVISE BLDG. USE TO OFFICE/RETAIL; ADD KARATE STUDIO TO BLDG. USE (10-8-07)	3-22-07
2	ADD EXTERNAL STEPS TO BUILDING 'D'	
1	REVISE DIMENSIONS OF PUMP HOUSE #1 AND #2	

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 7/1/06
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 7/1/06
 DIRECTOR

SITE LAYOUT PLAN
HIGHLAND CROSSING
 (AMENDED)

TAX MAP 40 BLOCK 5 PARCEL A
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

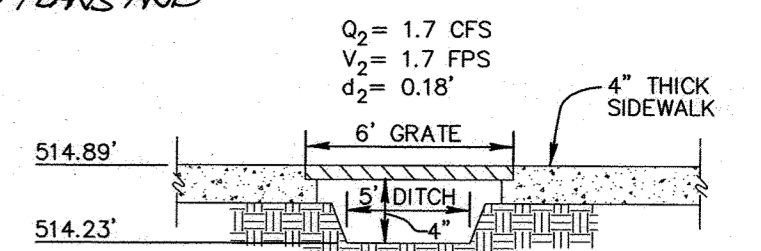
ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 8407 MAIN STREET TEL: 410.461.7666
 ELLICOTT CITY, MD 21043 FAX: 410.461.8961

DESIGN BY: RHW/LIT
 DRAWN BY: LJT
 CHECKED BY: RHW
 DATE: JUNE 1, 2006
 SCALE: 1"=30'
 W.O. NO.: 04-12-00

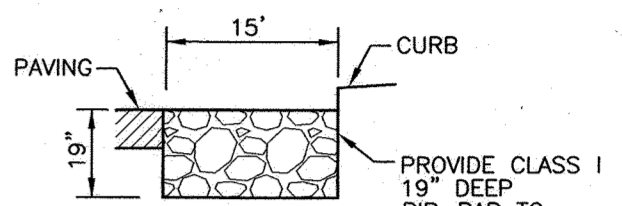
OWNER / DEVELOPER
 HIGHLAND CROSSING, L.L.C.
 14190 TWISTING LANE
 DAYTON, MD 21036

2 SHEET OF 11

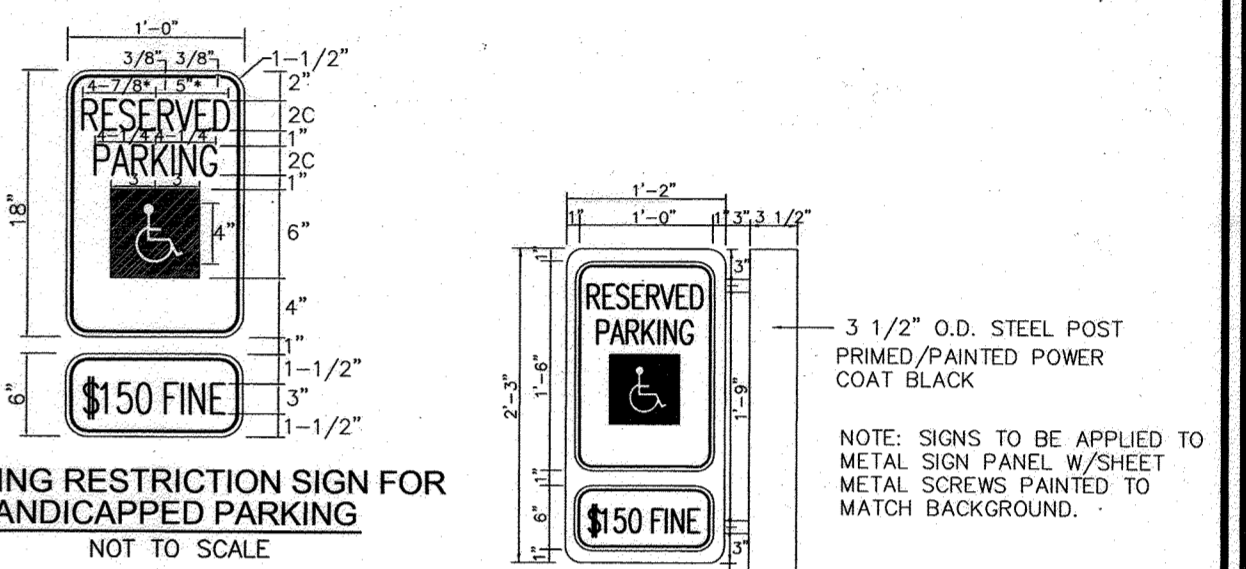
STATE OF MARYLAND WATER MANAGEMENT AS-BUILT CERTIFICATION
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS.
 5/19/06
 ROBERT H. VOGEL, P.E. NO. 16193



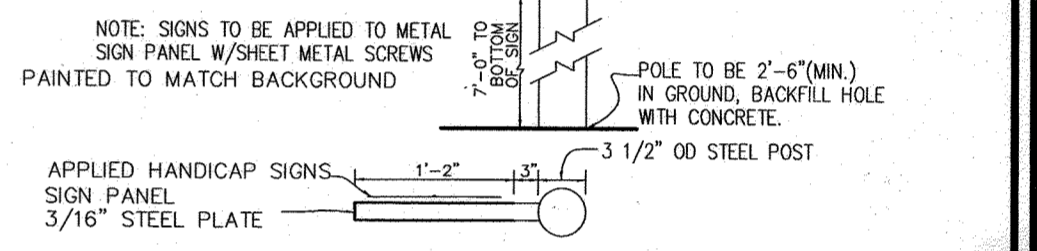
SIDEWALK SWALE CROSSING DETAIL
 NOT TO SCALE



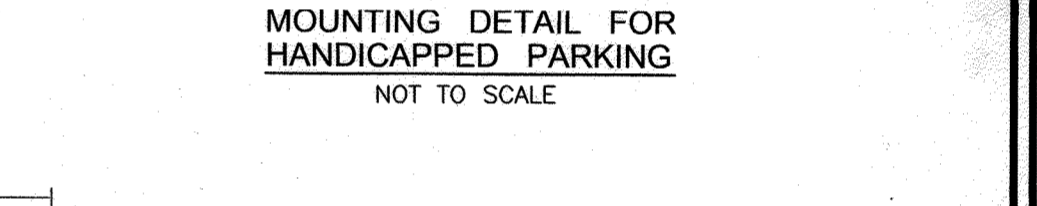
RIP-RAP CHANNEL SECTION
 NOT TO SCALE



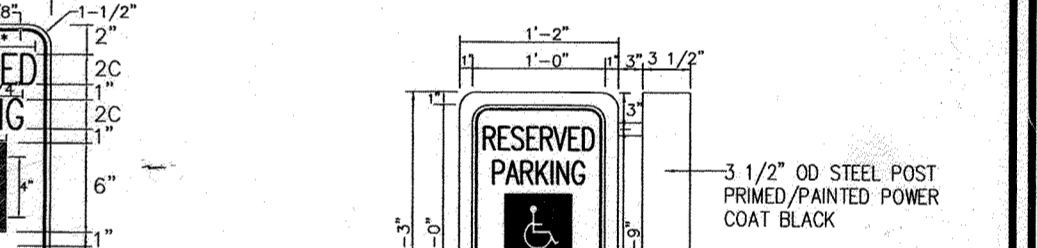
PARKING RESTRICTION SIGN FOR HANDICAPPED PARKING
 NOT TO SCALE



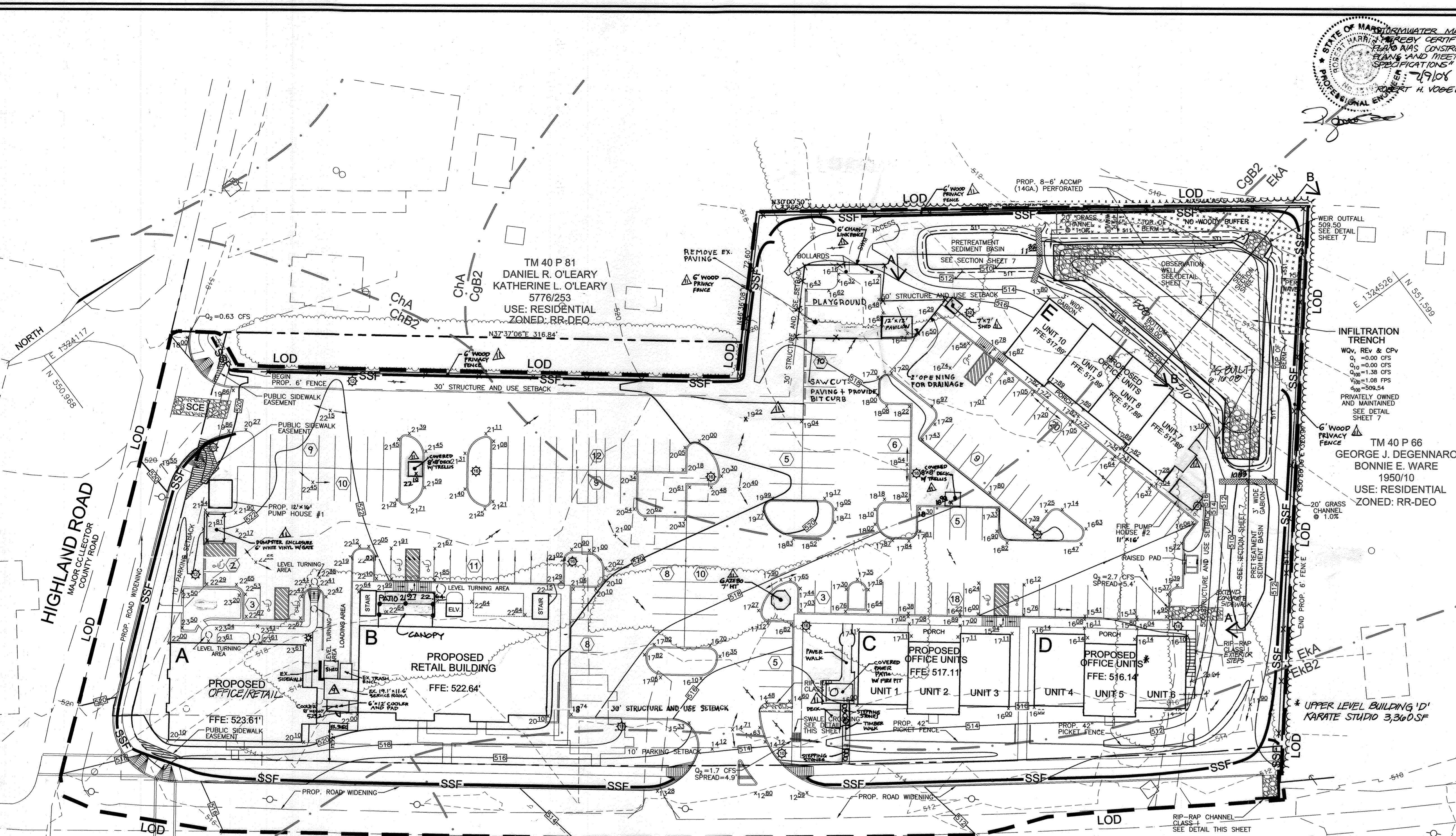
PARKING RESTRICTION SIGN FOR VAN HANDICAPPED PARKING
 NOT TO SCALE



MOUNTING DETAIL FOR HANDICAPPED PARKING
 NOT TO SCALE

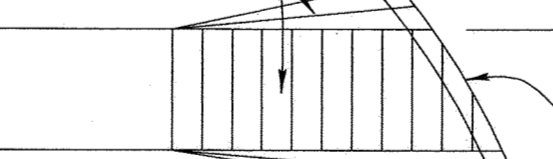


MOUNTING DETAIL FOR PARKING RESTRICTION SIGN
 NOT TO SCALE

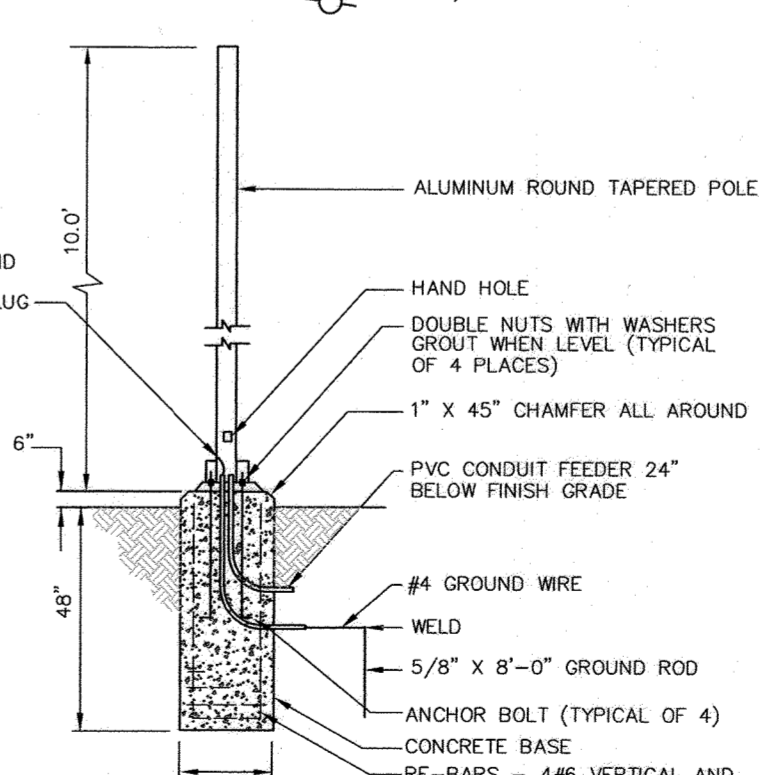


PLAN
 SCALE: 1"=30'

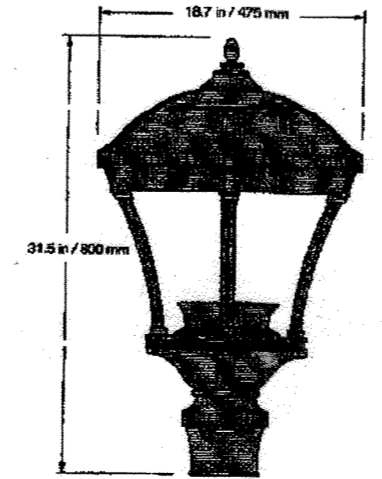
CURB RAMP SHALL HAVE A TEXTILE WARNING TEXTURE EXTENDING THE FULL WIDTH AND DEPTH OF THE CURB RAMP, INCLUDING ANY FLARES



HANDICAP RAMP
 NOT TO SCALE



POLE BASE DETAIL
 NOT TO SCALE



LAMP DETAIL
 NOT TO SCALE

NOTES:
 1. LIGHTING DETAIL FOR INFORMATIONAL PURPOSES ONLY. SEE ELECTRICAL AND ARCHITECTURAL PLANS FOR ACTUAL LIGHTING DETAILS AND SPECIFICATIONS.
 2. LAMPS TO BE 7,125 MEAN LUMENS, INDIRECT REFLECTIVE OPTIC, FULL CUT-OFF ON A 10' POLE.
 3. LIGHTING SHALL BE DIRECTED DOWN AND AWAY FROM ADJOINING PROPERTIES AND STREETS.

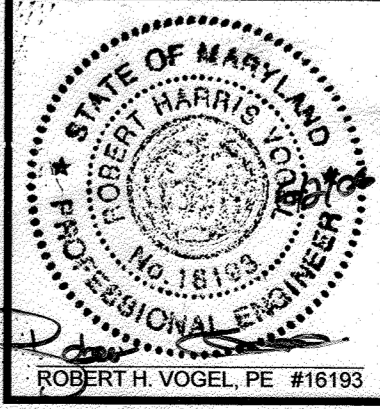
OWNER / DEVELOPER
 HIGHLAND CROSSING, L.L.C.
 14190 TWISTING LANE
 DARTON, MD 21036

NO.	REVISION	DATE
5	ADD DAY CARE + PLAYGROUND	7/22/09
4	SWIM AS-BUILTS	6-10-08
3	REVISE BUILDING 'A' USE TO OFFICE/RETAIL, ADD KARATE STUDIO TO BLDG 'D' USE 10/28/07	
2	ADD EXTERNAL STAIRS TO BUILDING 'D'	10-8-07
1	REVISE DIMENSIONS OF PUMP HOUSE #1 AND #2	3-22-07
NO.	REVISION	DATE

GRADING AND SEDIMENT EROSION CONTROL PLAN
HIGHLAND CROSSING
 (AMENDED)

TAX MAP 40 BLOCK 5 PARCEL A
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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



DESIGN BY: RHV/LJT
 DRAWN BY: LJT
 CHECKED BY: RHV
 DATE: JUNE 1, 2006
 SCALE: 1"=30'
 WO: NO: 04-1200

LEGEND

---	EXISTING 2 FT CONTOUR
---	EXISTING 10 FT CONTOUR
---	PROPOSED 2 FT CONTOUR
---	PROPOSED 10 FT CONTOUR
---	EXISTING TREELINE
---	PROPOSED TREELINE
---	PROPOSED LIGHT (HEIGHT)

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	GROUP
CgB2	CHESTER GRAVELLY SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	B
ChB2	CHESTER SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	C
EKA	ELIOAK SILT LOAM, 0 TO 3 PERCENT SLOPES	C
EKB2	ELIOAK SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	C

REVISION

NO.	REVISION	DATE
A	REVISE THE PLAN TO ADD A PROPOSED WALK IN COOLER AND CONCRETE PAD	4-16-19
B	ADD CANOPY TO RETAIL BUILDING	4/21/05
7	REVISE THE PLAN TO BULK THE ORIGINAL PROP. LEANED TO BLACK AND PRESENT IT AGAIN TO BLDG 'D' DESCRIBE THE DUMPSTER	12/4/05

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

6/24/06
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 7/4/06
 CHIEF, DIVISION OF LAND DEVELOPMENT
 7/10/06
 DIRECTOR

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

6/15/06
 JIM MORGAN
 OS&A - NATURAL RESOURCES CONSERVATION SERVICE

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

6/15/06
 JOHN R. ROBERTS
 HOWARD SCD

ENGINEERS CERTIFICATE

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

6/15/06
 ROBERT H. VOGEL, PE #16193

DEVELOPER'S CERTIFICATE

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

6/15/06
 DANIEL BLADNER MORGAN
 HIGHLAND CROSSING, L.L.C.

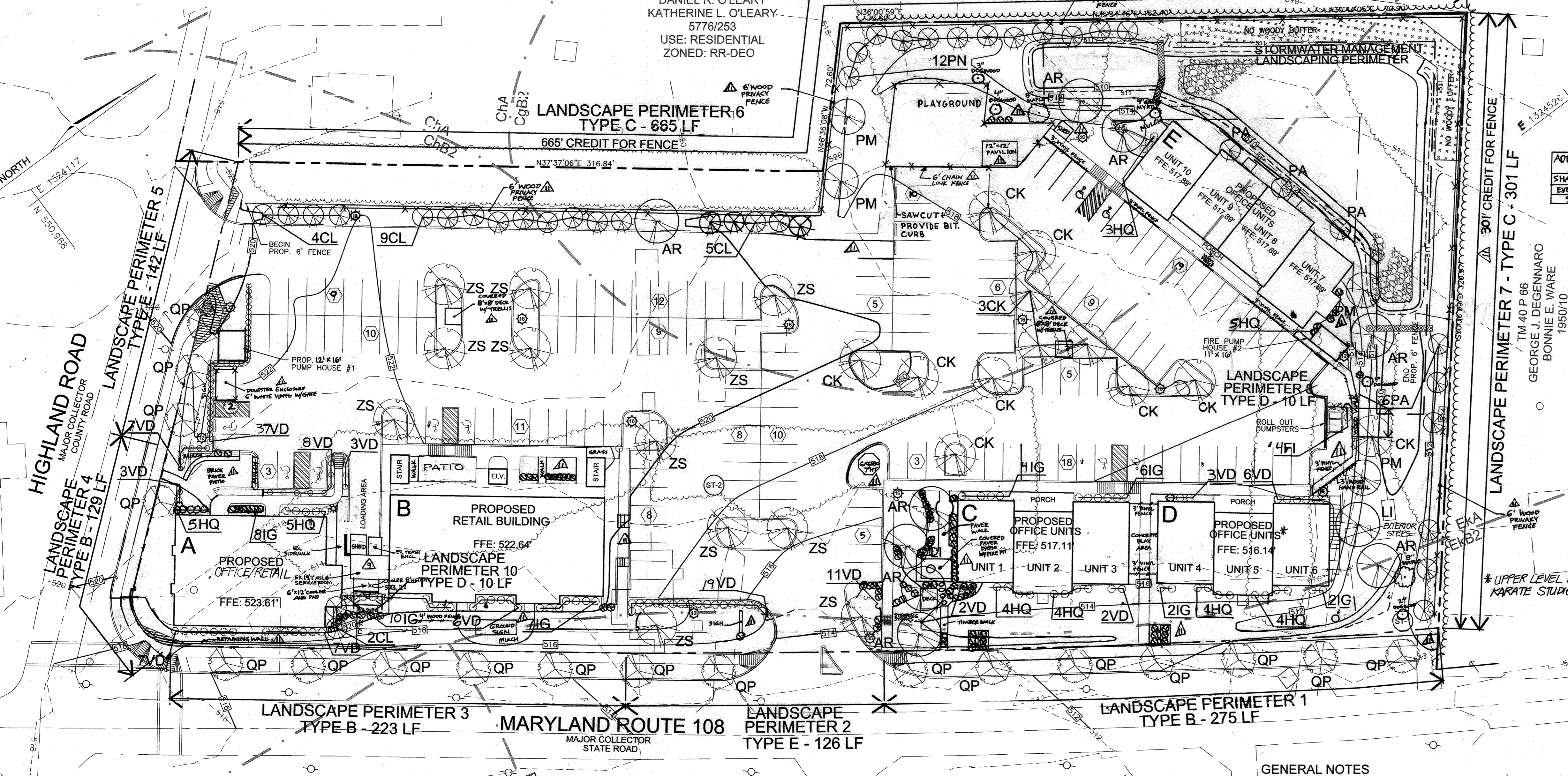
SOILS LEGEND		
SYMBOL	NAME / DESCRIPTION	GROUP
CgB2	CHESTER GRAVELLY SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	B
ChB2	CHESTER SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	C
EaK	ELIOLAK SILT LOAM, 0 TO 3 PERCENT SLOPES	C
EKB2	ELIOLAK SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	C

CATEGORY	SCHEDULE A PERIMETER LANDSCAPE EDGE									
	ADJACENT TO ROADWAYS					ADJACENT TO PERIMETER PROPERTIES				
Perimeter/Frontage Designation	1	2	3	4	5	10	6	7	8	9
Linear Feet of Roadway	275'	126'	223'	129'	142'	10'	665'	301'	10'	
Credit for Existing Vegetation (Yes, No, Linear Feet Describe below if needed)	No	No	No	No	No	No	No	No	No	No
Credit for Wall, Fence or Berm (Yes, No, Linear Feet Describe below if needed)	No	No	No	No	No	Yes**	Yes*	Yes*	Yes*	Yes**
Number of Plants Required	150	140	150	150	140	160	140	140	160	160
Shade Trees	2	4	5	3	4	0	0	0	0	0
Evergreen Trees	2	4	5	3	4	0	0	0	0	0
Shrubs	140	140	140	140	140	120	120	120	120	120
Number of Plants Provided	11	3	5	1	3	0	0	2	6	0
Shade Trees	0	3	5	1	3	0	0	2	6	0
Evergreen Trees	0	3	5	1	3	0	0	2	6	0
Other Trees (2:1 Substitution)	60	19	48	0	97	6	6	4	4	4
Shrubs (10:1 Substitution)										
Describe Plant Substitution Credits (Below if needed)										

SCHEDULE B PARKING LOT INTERNAL LANDSCAPING	
NUMBER OF PARKING SPACES	162
NUMBER OF TREES AND ISLANDS REQUIRED	18
NUMBER OF TREES AND ISLANDS PROVIDED	21
SHADE TREES (2:1 SUBSTITUTION)	
OTHER TREES	

LANDSCAPE SCHEDULE				
KEY	QUAN.	BOTANICAL NAME	SIZE	REM.
QP	18	QUERCUS PALUSTRIS 'PIN OAK'	2 1/2"-3" Col.	B & B
ALTERNATE				
		QUERCUS FALCATA 'SOUTHERN RED OAK'	2 1/2"-3" Col.	B & B
ZS	12	ZELKOVA SERRATA 'ZELKOVA'	2 1/2"-3" Col.	B & B
CK	12	CORNUS KOUSA 'KOUSA DOGWOOD'	8'-10' Ht.	B & B
ALTERNATE				
		AMELANCHIER ARBOREA 'DOWNY SERVICEBERRY'	8'-10' Ht.	B & B
HQ	36	HYDRANGEA QUERCIFOLIA 'OAKLEAF HYDRANGEA'	2 1/2"-3" Ht.	B & B
IG	39	ILEX GLABRA 'INKBERRY'	2 1/2"-3" Ht.	B & B
VD	12	VIBURNUM DENTATUM 'SOUTHERN ARROWWOOD'	2 1/2"-3" Ht.	B & B
ALTERNATE				
		EUONYMUS KUNTSCHOWICUS 'MANHATTAN MANHATTAN EUONYMUS'	2 1/2"-3" Ht.	B & B
LI	2	LAGERSTROEMIA INDICA 'MUSKOGEE' 'MUSKOGEE CRAPE MYRTLE'	2 1/2"-3" Col.	B & B
AR	8	ACER RUBRUM 'OCTOBER GLORY' 'OCTOBER GLORY RED MAPLE'	2 1/2"-3" Col.	B & B
CL	20	CYPRESSUS OCYPARIS LEYLANDI 'LEYLAND CYPRESS'	5'-6" Ht.	B & B
PN	12	PINUS NIGRA 'NORWAY SPRUCE'	6'-8" Ht.	B & B
PA	9	PICEA ABIES 'NORWAY SPRUCE'	6'-8" Ht.	B & B
PM	4	PSUDOTSUGA MENZIESII 'DOUGLAS FIR'	6'-8" Ht.	B & B
ALTERNATE				
		ACER RUBRUM 'RED SUNSET' 'RED SUNSET RED MAPLE'	2 1/2"-3" Col.	B & B
		CYPTOMERIA JAPONICA 'JAPANESE CRYPTOMERIA'	2 1/2"-3" Col.	B & B
FI	4	FORSYTHIA X INTERMEDIA 'NANA' 'NANA FORSYTHIA'	2 1/2"-3" Ht.	B & B

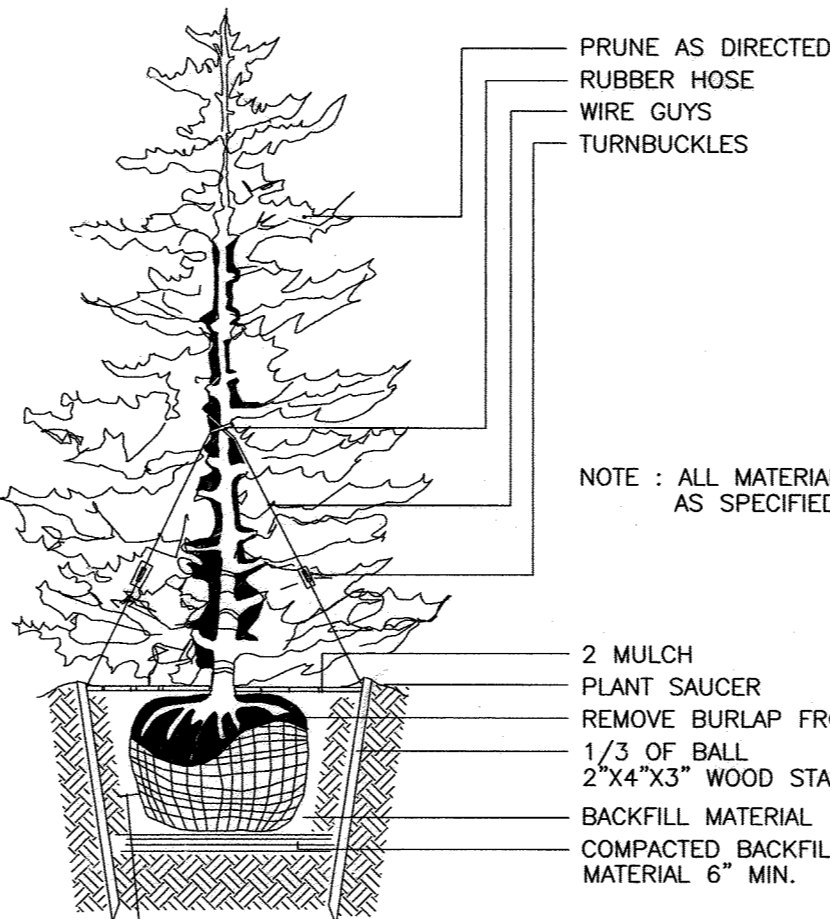
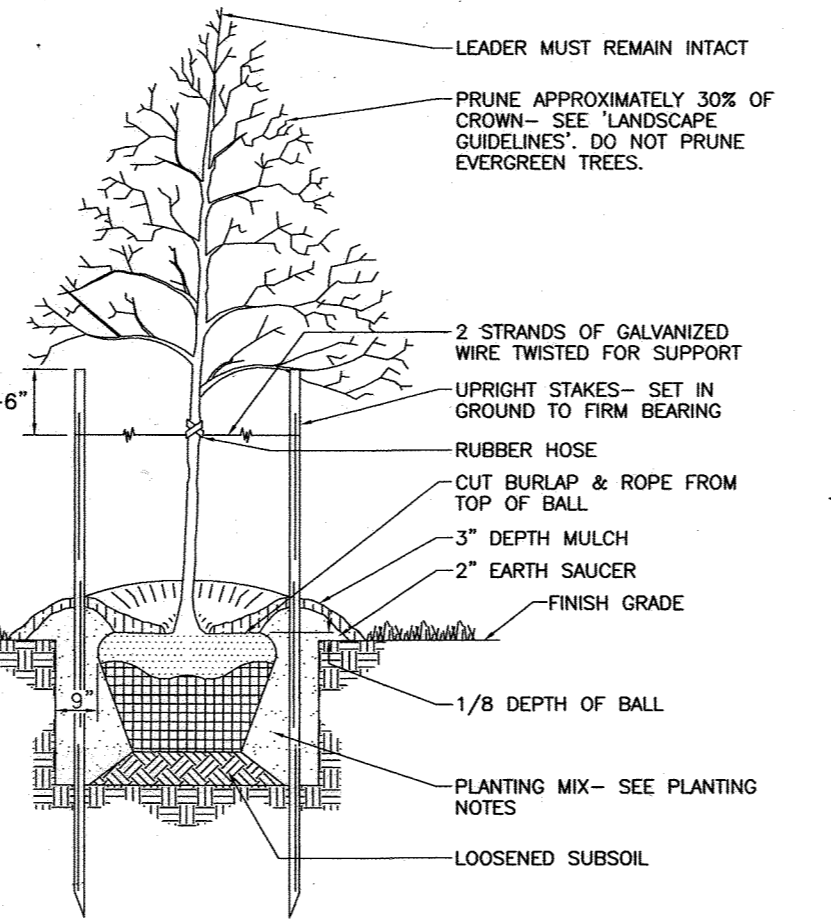
1. ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT ANN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH LANDM PLANTING SPECIFICATIONS.
 2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
 3. FINAL LOCATION OF PLANT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



SCHEDULE D: STORMWATER MANAGEMENT AREA LANDSCAPING	
LINEAR FEET OF PERIMETER	690 LF
CREDIT FOR EXISTING VEGETATION (NO, YES AND LINEAR FEET)	NO
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	YES, 585 LF (6' FENCE AND INTERIOR LANDSCAPING)
NUMBER OF TREES REQUIRED	105 LF
SHADE TREES	3
EVERGREEN TREES	3
NUMBER OF TREES PROVIDED	9
SHADE TREES	9
EVERGREEN TREES	0
OTHER TREES (2:1 SUBSTITUTION)	0

LEGEND	
---	EXISTING 2 FT CONTOUR
- - - -	EXISTING 10 FT CONTOUR
---	PROPOSED 2 FT CONTOUR
---	PROPOSED 10 FT CONTOUR
---	EXISTING TREELINE
---	PROPOSED TREELINE
---	PROPOSED LIGHT (HEIGHT)
---	SPECIMEN TREE

- NOTES
- SEE "LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREAS" FOR ALL MATERIAL, PRODUCT, AND PROCEDURE SPECIFICATIONS.
 - SEE "LANDSCAPE GUIDELINES" FOR SUPPORTING TREES LARGER THAN 2-1/2" CALIPER.
 - PLACE UPRIGHT STAKES PARALLEL TO WALKS & BUILDINGS.
 - KEEP MULCH 1" FROM TRUNK
 - SEE ARCHITECTURAL PLANS FOR ADDITIONAL PLANTINGS WHICH EXCEED HOWARD COUNTY MINIMUM REQUIREMENTS.
 - TREES ARE NOT TO BE PLANTED OVER PRIVATE SEWAGE EASEMENT.



GENERAL NOTES

- PERIMETER LANDSCAPING SHALL BE IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$21,690.00 FOR 47 SHADE TREES, 23 EVERGREEN TREES AND 138 SHRUBS.
- THE FOREST CONSERVATION OBLIGATION OF 0.69 ACRES OF AFFORESTATION FOR THIS PLAN HAS BEEN MET BY A FEE-IN-LIEU PAYMENT OF \$14,157.00 MADE TO THE HOWARD COUNTY FOREST CONSERVATION FUND.

FOREST CONSERVATION WORKSHEET	
NET TRACT AREA:	
A. TOTAL TRACT AREA	4.33 AC
B. AREA WITHIN 100 YEAR FLOODPLAIN	0.00 AC
C. NET TRACT AREA	4.33 AC
LAND USE CATEGORY (FROM TABLE 3.2.1, PAGE 40, MANUAL)	
INPUT THE NUMBER "1" UNDER THE APPROPRIATE LAND USE ZONING, AND LIMIT TO ONLY ONE ENTRY.	
ARA	0
MDR	0
IDA	0
HDR	0
MPD	1
CIA	0
D. AFFORESTATION THRESHOLD	15% X D = 0.65 AC
E. CONSERVATION THRESHOLD	15% X D = 0.65 AC
EXISTING FOREST COVER:	
F. EXISTING FOREST COVER	0.00 AC
G. AREA OF FOREST ABOVE CONSERVATION THRESHOLD	0.00 AC
BREAK EVEN POINT:	
H. BREAK EVEN POINT	0.00 AC
I. FOREST CLEARING PERMITTED WITHOUT MITIGATION	0.00 AC
PROPOSED FOREST CLEARING:	
J. TOTAL AREA OF FOREST TO BE CLEARED	0.00 AC
K. TOTAL AREA OF FOREST TO BE RETAINED	0.00 AC
PLANTING REQUIREMENTS:	
L. REFORESTATION FOR CLEARING ABOVE THE CONSERVATION THRESHOLD	0.00 AC
M. REFORESTATION FOR CLEARING BELOW THE CONSERVATION THRESHOLD	0.00 AC
N. CREDIT FOR RETENTION ABOVE CONSERVATION THRESHOLD	0.00 AC
P. TOTAL REFORESTATION REQUIRED	0.00 AC
Q. TOTAL AFFORESTATION REQUIRED	0.65 AC
R. TOTAL PLANTING REQUIRED	0.65 AC

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 4/10/06

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.
 DATE: 7/4/06
 DATE: 7/4/06
 DATE: 7/4/06

TREE PLANTING AND STAKING
 DECIDUOUS TREES UP TO 2-1/2" CALIPER
 NOT TO SCALE

TYPICAL EVERGREEN TREE PLANTING DETAIL
 NOT TO SCALE

OWNER / DEVELOPER
 HIGHLAND CROSSING, L.L.C.
 14190 TWISTING LANE
 DAYTON, MD 21036

LANDSCAPING AND FOREST CONSERVATION PLAN
 HIGHLAND CROSSING
 (AMENDED)

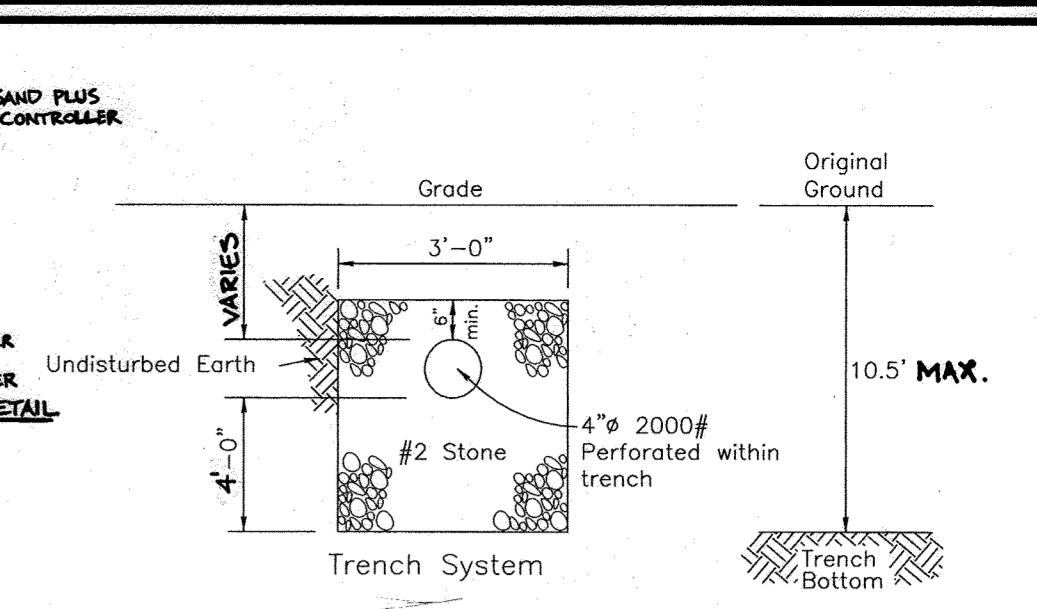
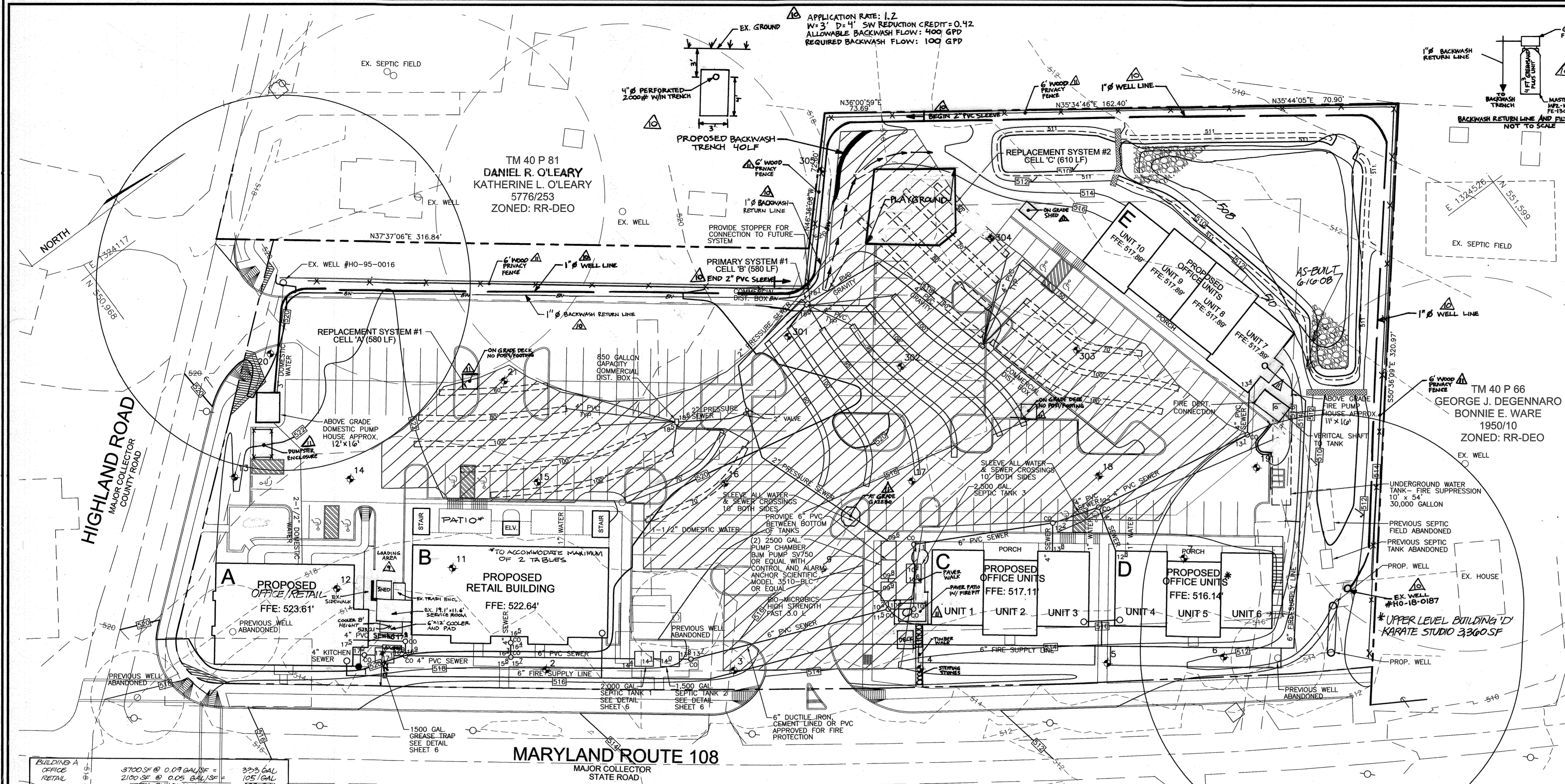
TAX MAP 40 BLOCK 5
 5TH ELECTION DISTRICT

PARCEL A
 HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 8407 MAIN STREET
 ELLICOTT CITY, MD 21043
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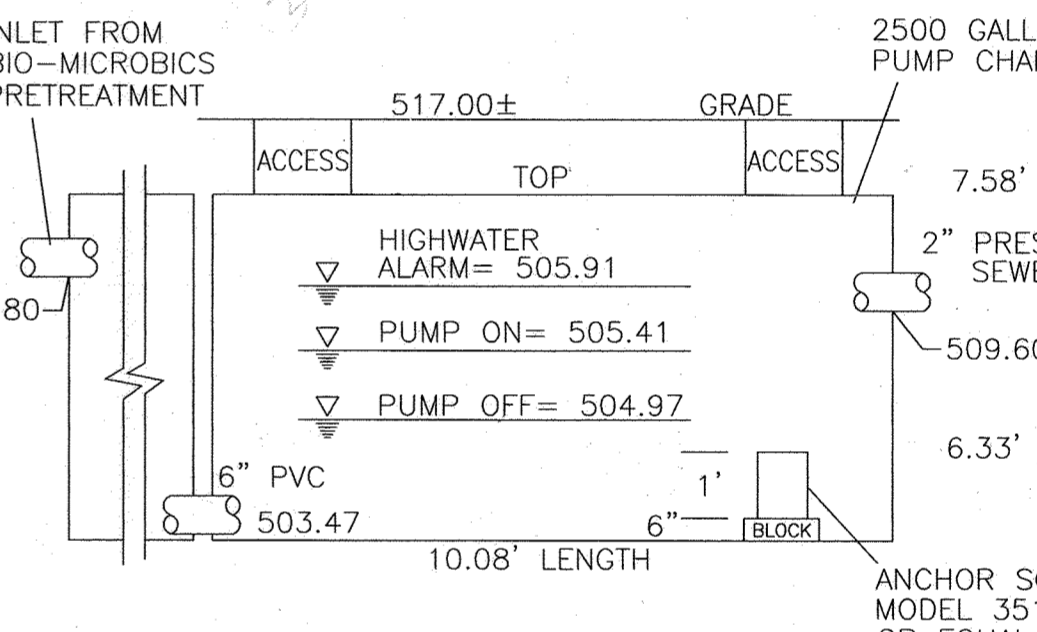
DESIGN BY: RHV/LJT
 DRAWN BY: LJT
 CHECKED BY: RHV
 DATE: JUNE 1, 2006
 SCALE: 1"=30'
 W.O. NO.: 04-12.00

4 SHEET OF 11



STRUCTURE SCHEDULE		
TYPE	INV. IN	INV. OUT
2500 GAL SEPTIC TANK	510.90	510.60
2000 GAL SEPTIC TANK	514.40	514.10
1500 GAL SEPTIC TANK	514.00	513.80
1500 GAL GREASE TRAP	517.30	517.10
BIO-MICROBICS CHAMBER	510.20	509.90
5000 GAL PUMP CHAMBER (2 X 2500)	509.80	509.60
PRIMARY DISTRIBUTION BOX	516.10	516.00
REPLACEMENT SYSTEM 1 DISTRIBUTION BOX	518.60	518.50
REPLACEMENT SYSTEM 2 DISTRIBUTION BOX	513.76	513.66

SEPTIC TANK DESIGN
 TANKS 1 AND 2 = 1,125 GALLONS + (.75)(2970) = 3353 GALLONS
 TANK 3 = 1,125 GALLONS + (.75)(2016) = 2657 GALLONS



Building	Area	Flow	Total
BUILDING A	OFFICE	3700 SF @ 0.09 GAL/SF = 327.3 GAL	327.3 GAL
BUILDING B	RETAIL	2100 SF @ 0.05 GAL/SF = 105.0 GAL	105.0 GAL
BUILDING C	RETAIL	492.3 SF @ 0.05 GAL/SF = 24.6 GAL	24.6 GAL
BUILDING D	DAYCARE	360 SF @ 0.10 GAL/SF = 36.0 GAL	36.0 GAL
BUILDING E	OFFICE	7545 SF @ 0.09 GAL/SF = 679.1 GAL	679.1 GAL

STATE GROUNDWATER APPROPRIATION PERMIT NO. HO2005G005 (01)

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS
 Robert H. Vogel, 6/26/06
 COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 Cindy Hamer, 7/14/06
 CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: DIRECTOR
 Paul H. Kaylor, 7/14/06

PLAN
 SCALE: 1"=30'

HIGHLAND CROSSING SEPTIC SYSTEM DESIGN

TOTAL MAXIMUM DESIGN FLOW: 4906 GALLONS

AERATION AND NITROGEN REDUCTION, LOADING 1.2 GAL/SF=4155 SF
 STANDARD TRENCH, 3 FT WIDE(155 SF)/3 FT WIDTH=1385 LF
 UTILITY DEEP TRENCH REDUCTION, 3 FT X 4 FT TRENCH=588 LF

PRIMARY SYSTEM, CELL A = 590 LF TRENCH
 REPLACEMENT SYSTEM #1, CELL B = 590 LF TRENCH
 REPLACEMENT SYSTEM #2, CELL C = 610 LF TRENCH

SEPTIC SYSTEM NOTES

- CONTRACTOR TO INSTALL LOCATION TAPE WITH 4-INCH AND 6- INCH PVC GRAVITY SEWER, 2-INCH PRESSURE SEWER AND DISTRIBUTION BOXES.
- 2-INCH PVC TO BE FLEXIBLE PRESSURE PIPE
- CLEANOUTS LOCATED IN PAVING TO BE TRAFFIC BEARING
- CONTRACTOR TO PROVIDE 4-INCH PVC STUB WITH VALVE TO EXTEND FROM CELL B DISTRIBUTION BOX TO CELL C DISTRIBUTION BOX
- CONTRACTOR TO INSTALL CELL A AND B WITH THIS PHASE. CELL C TO BE CONSTRUCTED IN THE FUTURE AS NEEDED.
- OWNER IS RESPONSIBLE TO PROVIDE ON-GOING MAINTENANCE OF THE SEPTIC SYSTEM AND THE PRETREATMENT UNIT.
- CONTRACTOR TO INSTALL WATER METER FOR EACH TENANT TO MONITOR ACTUAL USAGE
- THE PRE-TREATMENT MAINTENANCE AGREEMENT MUST RUN IN PERPETUITY WHILE THE PROPERTY IS UNDER ITS CURRENT PROPOSED USE.

SEPTIC & WELL GENERAL NOTES:

- THE PURPOSE OF THIS PERCOLATION CERTIFICATION PLAN IS TO IDENTIFY ACCEPTABLE SEWAGE DISPOSAL AREAS BASED ON TESTING DATED 6/4/2004.
- PARCELS 150, 247, 83, AND 85 TO BE CONSOLIDATED BY RECORD PLAT.
- TOPOGRAPHY SHOWN HEREON IS BASED ON HOWARD COUNTY AERIAL TOPOGRAPHY AND FIELD RUN LOCATION.
- PROPERTY LINES ARE BASED ON BOUNDARY SURVEY PREPARED BY FREDERICK WARD ASSOCIATES, INC..
- EXISTING ABOVE GROUND SEPTIC FEATURES SHOWN HAVE BEEN FIELD LOCATED, SUBSURFACE UTILITIES ARE BASED ON BEST AVAILABLE RECORDS WHICH ARE SUBJECT TO VERIFICATION.
- ALL EXISTING WELLS AND SEPTIC AREAS WITHIN 100' OF THE SITE HAVE BEEN SHOWN TO THE BEST OF OUR KNOWLEDGE.
- THIS AREA DESIGNATES A PRIVATE SEWAGE RESERVE AREA REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL SEWAGE DISPOSAL IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWAGE IS AVAILABLE. THIS RESERVE AREA SHALL BE NULL AND VOID UPON CONNECTION TO A PUBLIC SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE RESERVE AREA. RECORDATION OF A MODIFIED SEWAGE EASEMENT SHALL NOT BE NECESSARY.
- PARCELS 247, 83, AND 85- EXISTING STRUCTURES AND DRIVEWAYS TO BE DEMOLISHED EXISTING SEPTIC SYSTEMS TO BE ABANDONED. EXISTING WELLS TO BE ABANDONED AND SEALED BY LICENSED WELL DRILLER PRIOR TO SITE DEVELOPMENT PLAN SIGNATURE.
- THE SEPTIC AREA SHOWN HEREON IS PER THE APPROVED PERCOLATION CERTIFICATION PLAN, DATED JUNE 28, 2004.
- FIRE DEPARTMENT SIAMSESE CONNECTIONS TO BE PLACED ON THE FRONT OF THE BUILDINGS.
- THERE SHALL BE NO LANDSCAPING PLACED WITHIN 7.5' OF EACH SIDE OF THE FIRE DEPARTMENT CONNECTIONS.
- RURAL STATIC WATER SUPPLY TANK TO BE LOCATED WITHIN 100' OF THE FIRE DEPARTMENT CONNECTIONS.

NOTE: FOR UPDATED DISTRIBUTION OF TOTAL MAXIMUM DESIGN FLOW SEE HEALTH DEPARTMENT RECORDS

10. COMMERCIAL DISTRIBUTION BOX TO HAVE MINIMUM CAPACITY OF 800 GALLONS. PUMP LEVELS TO BE SET TO DELIVER NO MORE THAN 500 GALLONS PER DOSE.

STATE OF MARYLAND
 PROFESSIONAL ENGINEER
 ROBERT H. VOGEL, PE No. 16193

WATER AND SEPTIC SYSTEMS PLAN
HIGHLAND CROSSING
 (AMENDED)

TAX MAP 40 BLOCK 5 5TH ELECTION DISTRICT PARCEL A HOWARD COUNTY, MARYLAND

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

DESIGN BY: RHW/LJT
 DRAWN BY: LJT
 CHECKED BY: RHW
 DATE: JUNE 1, 2006
 SCALE: 1"=30'
 W.O. NO.: 04-12.00

5 SHEET OF 11

CONSTRUCTION SPECIFICATIONS
THESE SPECIFICATIONS ARE APPROPRIATE TO ALL PONDS WITHIN THE SCOPE OF THE STANDARD FOR PRACTICE MD-378. ALL REFERENCES TO ASTM AND AASHTO SPECIFICATIONS APPLY TO THE MOST RECENT VERSION.

SITE PREPARATION
AREAS DESIGNATED FOR BORROW AREAS, EMBANKMENT, AND STRUCTURAL WORKS SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL. ALL TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED. CHANNEL BANKS AND SHARP BROWNS SHALL BE SLOPED TO NO STEEPER THAN 1:1. ALL TREES SHALL BE CLEARED AND GRUBBED WITHIN 15 FEET OF THE TOW OF THE EMBANKMENT.
AREAS TO BE COVERED BY THE RESERVOIR WILL BE CLEARED OF ALL TREES, BRUSH, LOGS, FENCES, RUBBISH AND OTHER OBJECTIONABLE MATERIAL UNLESS OTHERWISE DESIGNATED ON THE PLANS. BRUSH AND STUMPS SHALL BE CUT APPROXIMATELY LEVEL WITH THE GROUND SURFACE. FOR DRY STORMWATER MANAGEMENT PONDS, A MINIMUM OF A 25-FOOT RADIUS AROUND THE INLET STRUCTURE SHALL BE CLEARED.

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

EARTH FILL
MATERIAL - THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREAS. IT SHALL BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN 4" FROZEN OR OTHER OBJECTIONABLE MATERIALS. FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT AND CUT OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION CC, SC, CH OR CL AND MUST HAVE AT LEAST 30% PASSING THE #200 SIEVE. CONSIDERATION MAY BE GIVEN TO THE USE OF OTHER MATERIALS IN THE EMBANKMENT IF DESIGNED BY A GEOTECHNICAL ENGINEER WHOSE DESIGN MUST HAVE BEEN CONSTRUCTION SUPERVISED BY A GEOTECHNICAL ENGINEER. MATERIALS USED IN THE OUTER SHELL OF THE EMBANKMENT MUST HAVE THE CAPABILITY TO SUPPORT VEGETATION OF THE QUALITY REQUIRED TO PREVENT EROSION OF THE EMBANKMENT.
PLACEMENT - AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED PRIOR TO PLACEMENT OF FILL. FILL MATERIALS SHALL BE PLACED IN MAXIMUM 8 INCH THICK (BEFORE COMPACTION) LAYERS WHICH ARE TO BE CONTINUOUS OVER THE ENTIRE LENGTH OF THE FILL. THE MOST PERMEABLE BORROW MATERIAL SHALL BE PLACED IN THE DOWNSTREAM PORTIONS OF THE EMBANKMENT. THE PRINCIPAL SPILLWAY MUST BE INSTALLED CONCURRENTLY WITH FILL PLACEMENT AND NOT EXCAVATED INTO THE EMBANKMENT.

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

WHEN REQUIRED BY THE REVENUE AGENCY THE MINIMUM REQUIRED DENSITY SHALL NOT BE LESS THAN 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN +/- 2% OF THE OPTIMUM. EACH LAYER OF FILL SHALL BE COMPACTED AS NECESSARY TO OBTAIN THAT DENSITY, AND IS TO BE CERTIFIED BY THE ENGINEER AT THE TIME OF CONSTRUCTION. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T-99 (STANDARD PRACTICE).

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

EMBANKMENT CORE - THE CORE SHALL BE PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE TOP WIDTH OF THE CORE SHALL BE A MINIMUM OF FOUR FEET. THE HEIGHT SHALL EXTEND UP TO AT LEAST THE 10 YEAR WATER ELEVATION OR AS SHOWN ON THE PLANS. THE SIDE SLOPES SHALL BE 1 TO 1 OR FLATTER. THE CORE SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY. IN ADDITION THE CORE SHALL BE PLACED CONCURRENTLY WITH THE OUTER SHELL OF THE EMBANKMENT.

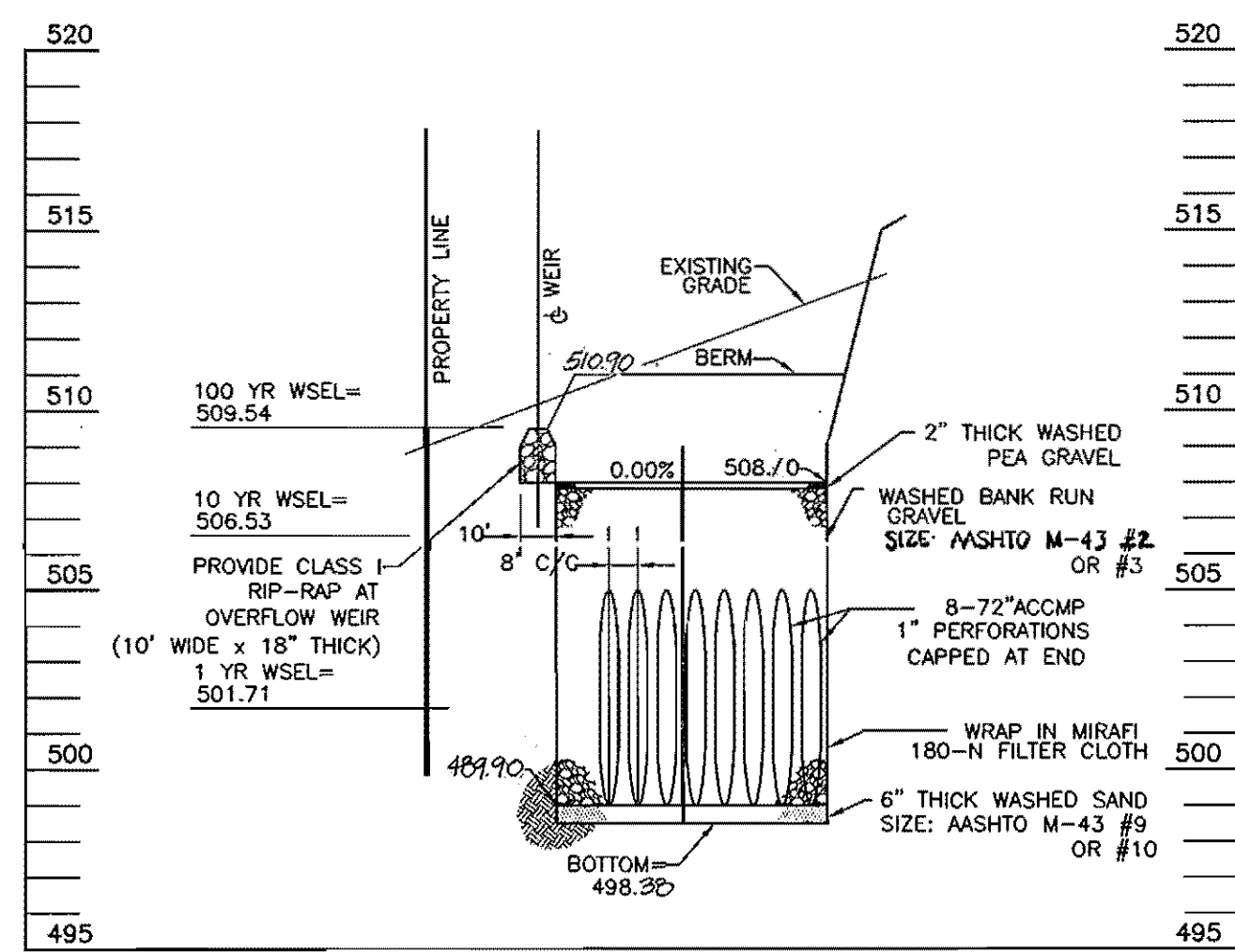
BACKFILL ADJACENT TO PIPES OR STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL. THE FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE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

STRUCTURE BACKFILL MAY BE FLOWABLE FILL MEETING THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS SECTION 313 AS MODIFIED. THE MIXTURE SHALL HAVE A 100-200 PSI, 28 DAY UNCOMPACTED COMPRESSIVE STRENGTH. THE FLOWABLE FILL SHALL HAVE A MINIMUM PH OF 4.0 AND A MINIMUM RESISTIVITY OF 2000 OHM-CM. MATERIAL SHALL BE PLACED SUCH THAT MINIMUM OF 6" (MEASURED PERPENDICULAR TO THE OUTSIDE OF THE PIPE) OF FLOWABLE FILL SHALL BE UNDER (BEHIND) OVER AND ON THE SIDES OF THE PIPE. IT ONLY NEEDS TO EXTEND UP TO THE SPRING LINE FOR RIGID CONDUITS. AVERAGE SLUMP OF THE FILL SHALL BE 7" TO ASSURE FLOWABILITY OF THE MATERIAL. ADEQUATE MEASURES SHALL BE TAKEN (SAND BAGS, ETC) TO PREVENT FLOATING THE PIPE. WHEN USING FLOWABLE FILL, ALL METAL PIPE SHALL BE GUMMAHOUS COATED. ANY ADJOINING SOIL FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL SHALL COMPLETELY FILL ALL VOIDS ADJACENT TO THE FLOWABLE FILL ZONE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRYEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF THE STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A STRUCTURE OR PIPE UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE. BACKFILL FLOWABLE FILL ZONE SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE CORE OF THE EMBANKMENT OR OTHER EMBANKMENT MATERIALS.

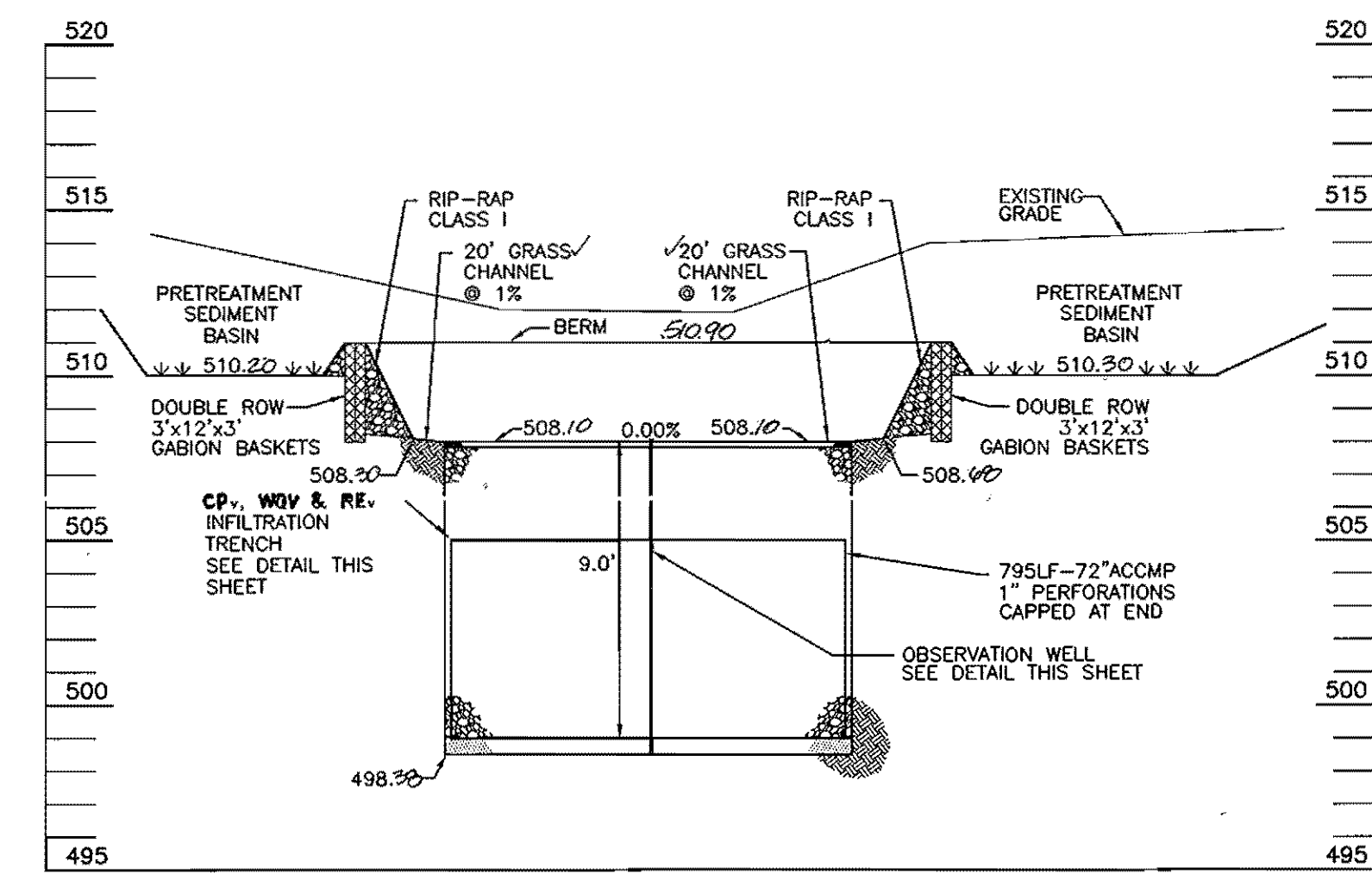
CARE OF WATER DURING CONSTRUCTION
ALL WORK ON PERMANENT STRUCTURES SHALL BE CARRIED OUT IN AREAS FREE FROM WATER. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ALL TEMPORARY DIKES, LEVEES, COffer DAMS, ORANGE CHANNELS, AND STREAM DIVERSIONS NECESSARY TO PROTECT TO BE OCCUPIED BY THE PERMANENT WORKS. THE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

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

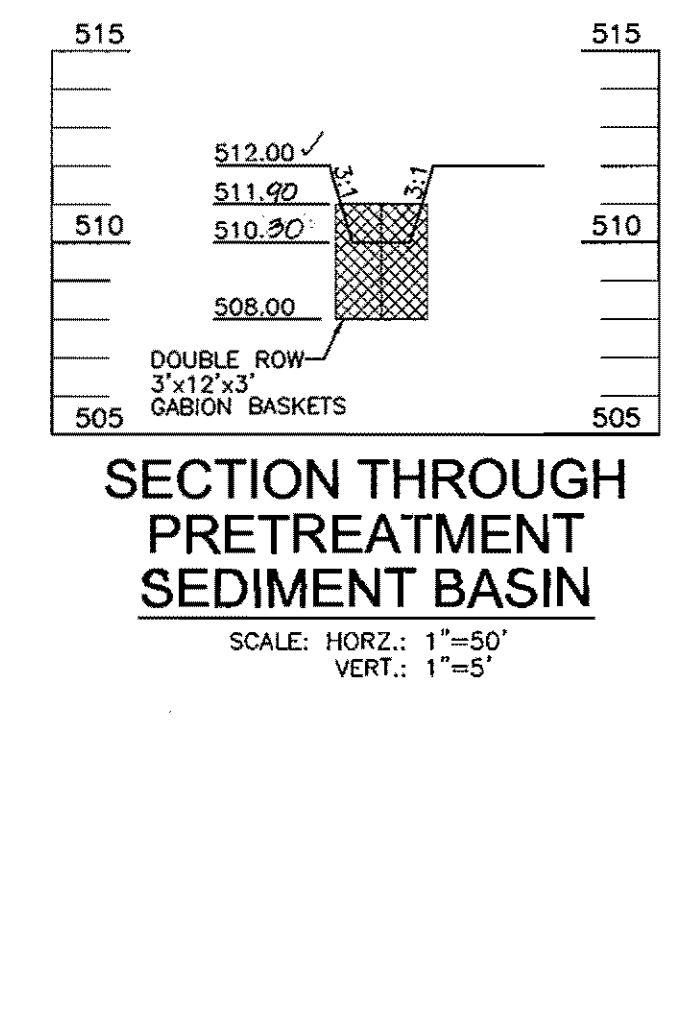
EROSION AND SEDIMENT CONTROL
CONSTRUCTION OPERATIONS WILL BE CARRIED OUT IN SUCH A MANNER THAT EROSION WILL BE CONTROLLED AND WATER AND AIR POLLUTION MINIMIZED. STATE AND LOCAL LAWS CONCERNING POLLUTION ABATEMENT WILL BE FOLLOWED. CONSTRUCTION PLANS SHALL DETAIL EROSION AND SEDIMENT CONTROL MEASURES.



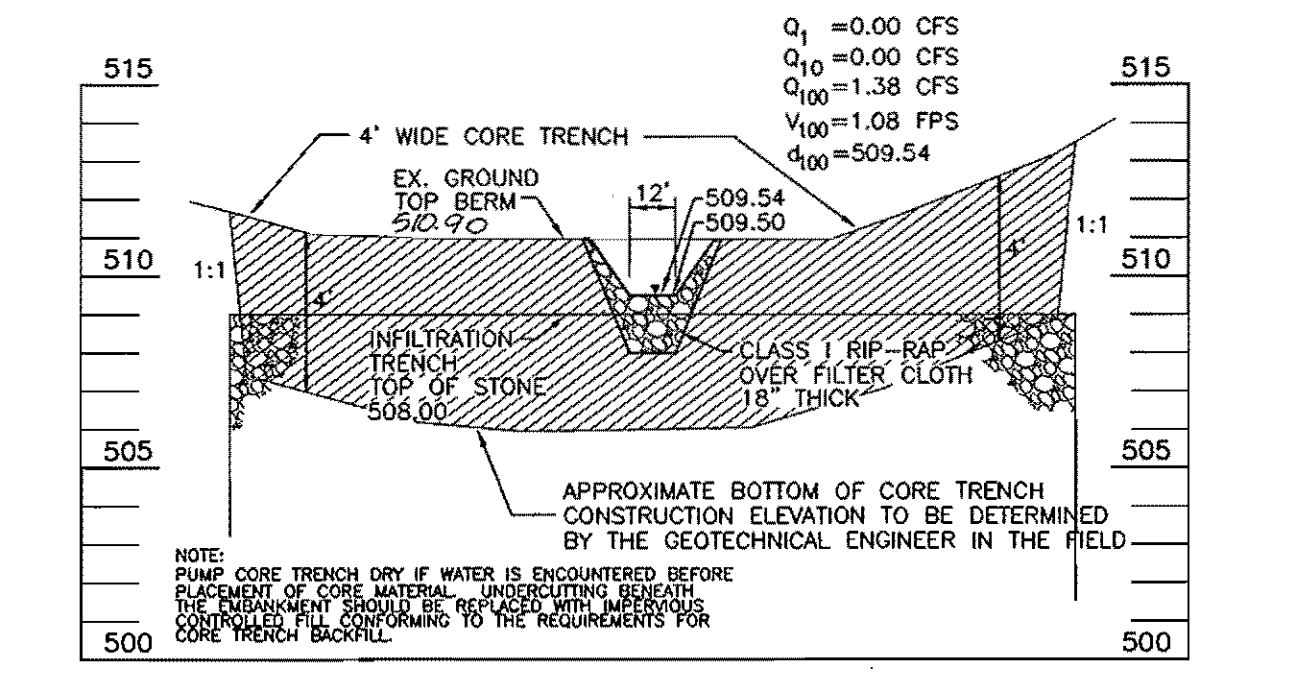
INFILTRATION TRENCH SECTION B-B
SCALE: HORIZ.: 1"=50'
VERT.: 1"=5'



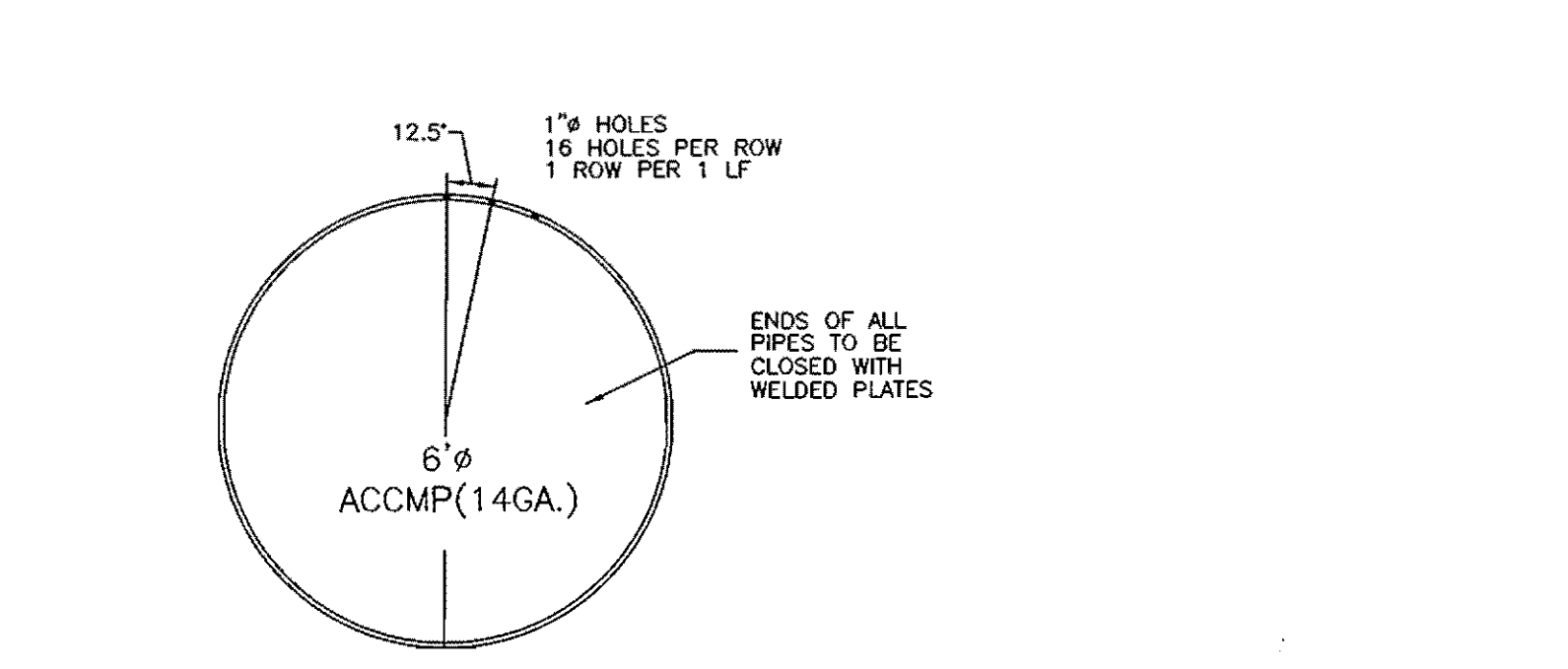
INFILTRATION TRENCH SECTION A-A
SCALE: HORIZ.: 1"=50'
VERT.: 1"=5'



SECTION THROUGH PRETREATMENT SEDIMENT BASIN
SCALE: HORIZ.: 1"=50'
VERT.: 1"=5'



SPILLWAY AND CORE TRENCH CROSS SECTION
SCALE: HORIZ.: 1"=50'
VERT.: 1"=5'



PERFORATION DETAIL INFILTRATION STORAGE PIPE
SCALE: HORIZ.: 1"=50'
VERT.: 1"=5'

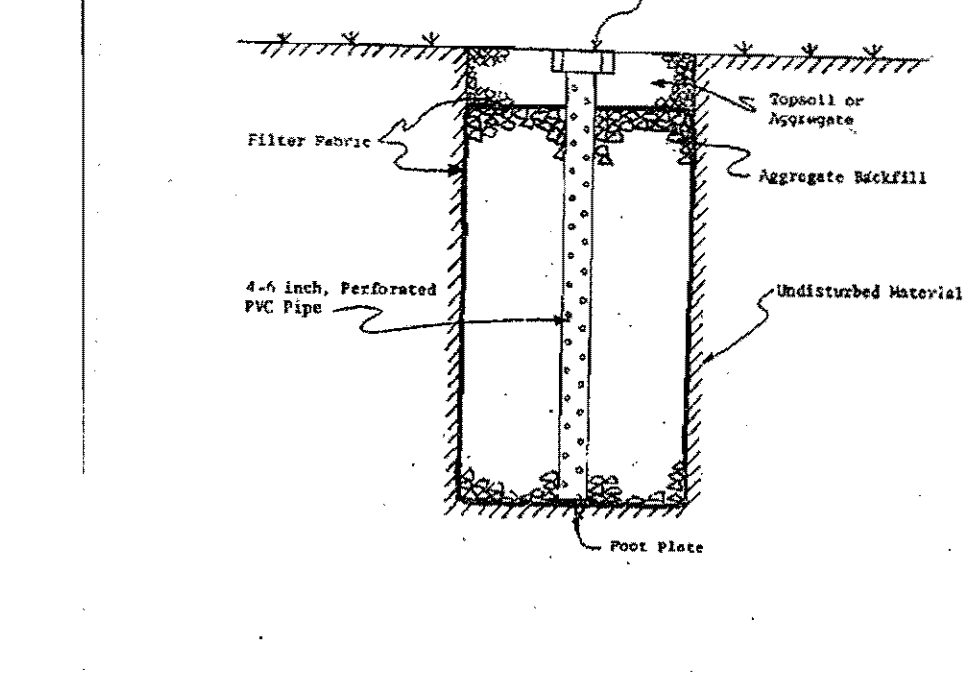


Figure 3-5. Observation Well Detail

Appendix B.2. Construction Specifications for Infiltration Practices

- If a distribution structure with a wet well is used, a 4-inch drain pipe shall be provided at opposite ends of the infiltration trench distribution structure. Two (2) cubic feet of porous backfill meeting AASHTO-M-43, Size No. 57 shall be provided at each drain.
- If a distribution structure is used, the available cover shall be below the trench.

Appendix B.2. Construction Specifications for Infiltration Practices

B.2.A. Infiltration Trench General Notes and Specifications

An infiltration trench may not receive run-off until the entire contributing drainage area to the infiltration trench has received final stabilization.

- Care shall be exercised to prevent runoff or fill soils from intermingling with the stone aggregate. All unconsolidated stone aggregate shall be removed and replaced with unconsolidated stone aggregate.
- VOIDS may occur between the fabric and the excavation sides shall be avoided. Removing boulders or other obstructions from the trench walls is one source of such voids. Therefore, boulders or other obstructions shall be placed in these voids at the most convenient time during construction to ensure fabric conformity to the excavation sides.
- Vertically excavated walls may be difficult to maintain in areas where soil moisture is high or where soft cohesive or consolidation soils are dominant. These conditions may require laying back of the side slopes to maintain stability.
- PVC distribution pipes shall be Schedule 40 and meet ASTM-D-1784. All fittings shall meet ASTM-D-2729. Perforations shall be 3/8 inch in diameter. A perforated pipe shall be provided every 10 feet within the infiltration trench and shall terminate 1 foot above the infiltration trench wall. The end of the PVC pipe shall be capped. Non-PVC pipe with a wall thickness classification of SDR-35 meeting ASTM-D-3034 is an acceptable substitute for the Schedule-40 pipe.
- The observation well will consist of 6-inch diameter perforated PVC Schedule 40 pipe (4 2/8 OR 7/8, Type PS 20) with a cap set 6 inches above ground level and is to be located near the longitudinal center of the infiltration trench. The pipe shall have a plastic collar near the top to prevent rotation when removing the cap. The screw top lid shall be a clewless with a locking mechanism or special lock to discourage vandalism. The depth to the lowest shall be marked on the lid. The pipe shall be placed vertically within the gravel portion of the infiltration trench and a top spill roll shall be placed at the bottom of the pipe. The bottom of the cap shall rest on the infiltration trench bottom.
- Corrugated metal distribution pipes shall conform to AASHTO-M-36 and shall be terminated in accordance with AASHTO-M-274. Aluminumized pipe in contact with concrete shall be coated with an inert compound capable of preventing the deleterious effect of the aluminum on the concrete. Perforated distribution pipes shall conform to AASHTO-M-36, Class 2 and shall be provided only within the infiltration trench and shall terminate 1 foot above the infiltration trench wall. An aluminumized metal plate shall be welded to the end of the pipe.

B.2.2

BORING NUMBER	DATE	DEPTH	DESCRIPTION
101	10/1/00	10.0	...
102	10/1/00	10.0	...
103	10/1/00	10.0	...
104	10/1/00	10.0	...
105	10/1/00	10.0	...
106	10/1/00	10.0	...
107	10/1/00	10.0	...
108	10/1/00	10.0	...
109	10/1/00	10.0	...
110	10/1/00	10.0	...

BORING NUMBER	DATE	DEPTH	DESCRIPTION
111	10/1/00	10.0	...
112	10/1/00	10.0	...
113	10/1/00	10.0	...
114	10/1/00	10.0	...
115	10/1/00	10.0	...
116	10/1/00	10.0	...
117	10/1/00	10.0	...
118	10/1/00	10.0	...
119	10/1/00	10.0	...
120	10/1/00	10.0	...

BORING NUMBER	DATE	DEPTH	DESCRIPTION
121	10/1/00	10.0	...
122	10/1/00	10.0	...
123	10/1/00	10.0	...
124	10/1/00	10.0	...
125	10/1/00	10.0	...
126	10/1/00	10.0	...
127	10/1/00	10.0	...
128	10/1/00	10.0	...
129	10/1/00	10.0	...
130	10/1/00	10.0	...

BORING NUMBER	DATE	DEPTH	DESCRIPTION
131	10/1/00	10.0	...
132	10/1/00	10.0	...
133	10/1/00	10.0	...
134	10/1/00	10.0	...
135	10/1/00	10.0	...
136	10/1/00	10.0	...
137	10/1/00	10.0	...
138	10/1/00	10.0	...
139	10/1/00	10.0	...
140	10/1/00	10.0	...

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 7/1/00

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS
USDA-NATURAL RESOURCES CONSERVATION SERVICE
DATE: 7/1/00
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT

ENGINEERS CERTIFICATE
I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
ROBERT H. VOGEL, PE #16193
DATE: 6/1/00

DEVELOPER'S CERTIFICATE
I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.
HIGHLAND CROSSING, LLC.
DATE: 6/1/00

STATE OF MARYLAND PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE #16193
OWNER / DEVELOPER
HIGHLAND CROSSING, LLC.
14190 TWISTING LANE
DAYTON, MD 21036

1 SWM AS-BUILTS		6/10/00
NO.	REVISION	DATE
STORMWATER MANAGEMENT DETAILS HIGHLAND CROSSING		
TAX MAP 40 BLOCK 5 5TH ELECTION DISTRICT		PARCEL A HOWARD COUNTY, MARYLAND
ROBERT H. VOGEL ENGINEERS • SURVEYORS • PLANNERS		
8407 MAIN STREET ELLOTT CITY, MD 21043 TEL: 410.461.7666 FAX: 410.461.8961		
DESIGN BY:	RHW/LJT	
DRAWN BY:	LJT	
CHECKED BY:	RHW	
DATE:	JUNE 1, 2006	
SCALE:		
W.O. NO.:	04-12.00	
		7 SHEET OF 11

SEDIMENT CONTROL NOTES

- A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTION, 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 THERE TO.
- FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, 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 SHOWN MUST 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. G). TEMPORARY STABILIZATION WITH MULCH ALONE SHALL BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- SITE ANALYSIS:

	TOTAL
TOTAL AREA	3.85 AC
AREA DISTURBED	4.45 AC
AREA TO BE ROOFED OR PAVED	2.75 AC
AREA TO BE VEGETATIVELY STABILIZED	1.70 AC
TOTAL CUT	10.471 CY
TOTAL FILL	9.316 CY
- 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.
- ESTIMATES OF EARTHWORK QUANTITIES ARE PROVIDED SOLELY FOR THE PURPOSE OF CALCULATING FEES.
 - * TO BE DETERMINED BY CONTRACTOR, WITH PRE-APPROVAL OF THE SEDIMENT CONTROL INSPECTOR WITH AN APPROVED AND ACTIVE GRADING PERMIT

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, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.
- CONDITIONS WHERE PRACTICE APPLIES**
- THIS 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.
 - THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.
 - FOR THE PURPOSE OF THESE STANDARDS AND SPECIFICATIONS, AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN FOR ADEQUATE STABILIZATION. AREAS HAVING SLOPES STEEPER THAN 2:1 SHALL HAVE THE APPROPRIATE STABILIZATION SHOWN ON THE PLANS.
- CONSTRUCTION AND MATERIAL SPECIFICATIONS**
- TOPSOIL SALVAGED FROM THE EXISTING SITE MAY BE USED PROVIDED THAT IT MEETS THE STANDARDS AS 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-SCS IN COOPERATION WITH MARYLAND AGRICULTURAL EXPERIMENTAL STATION.
 - TOPSOIL SPECIFICATIONS - SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING:
 - TOPSOIL SHALL BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, LOAMY SAND. 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 GINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, 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, QUACKGRASS, JOHNSONGRASS, NUTSEDGE, POISON 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 4-8 TONS/ACRE (20-400 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 TILLAGE OPERATIONS AS DESCRIBED IN THE FOLLOWING PROCEDURES.
 - FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES:
 - PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION - SECTION 1 - VEGETATIVE STABILIZATION METHODS AND MATERIALS.

PERMANENT SEEDING NOTES

- APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LIVED VEGETATIVE COVER IS NEEDED.
- SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.
- SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES:
- PREFERRED-APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS./100 SQ.FT.) AND 600 LBS PER ACRE 10-10-10 FERTILIZER (14 LBS./1000 SQ.FT.) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL AT THE TIME OF SEEDING, APPLY 400 LBS. PER ACRE 30-0-0 UREAFORM FERTILIZER (8 LBS./1000 SQ.FT.)
 - ACCEPTABLE-APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS./1000 SQ.FT.) AND APPLY 1000 LBS. PER ACRE 10-10-10 FERTILIZER (23 LBS./1000 SQ.FT.) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL.
- SEEDING: FOR PERIODS MARCH 1 THRU APRIL 30, AND AUGUST 1 THRU OCTOBER 15, SEED WITH 60 LBS. PER ACRE (1.4 LBS./1000 SQ.FT.) OF KENTUCKY 31 TALL FESCUE FOR THE PERIOD MAY 1 THRU JULY 31, SEED WITH 60 LBS. KENTUCKY 31 TALL FESCUE PER ACRE AND 2 LBS. PER ACRE (.05 LBS./1000 SQ.FT.) OF WEEPING LOVEGRASS. DURING THE PERIOD OF OCTOBER 16 THRU FEBRUARY 28, PROTECT SITE BY: OPTION (1) 2 TONS PER ACRE WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING. OPTION (2) USE SOD. OPTION (3) SEED WITH 60 LBS/ACRE KENTUCKY 31 TALL FESCUE AND MULCH WITH 2 TONS/ACRE WELL ANCHORED STRAW.
- MULCHING: APPLY 1 1/2 TO 2 TONS PER ACRE (70 TO 90 LBS./1000 SQ. FT.) OF UNROTTED SMALL GRAM STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ.FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL/1000 SQ.FT.) FOR ANCHORING.
- MAINTENANCE: INSPECT ALL SEEDED AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.
- SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.
- SOIL AMENDMENTS: APPLY 600 LBS. PER ACRE 10-10-10 FERTILIZER (14 LBS./1000 SQ.FT.)
- SEEDING: FOR PERIODS MARCH 1 THRU APRIL 30 AND FROM AUGUST 15 THRU NOVEMBER 15, SEED WITH 2 1/2 BUSHEL PER ACRE OF ANNUAL RYE (3.2 LBS./1000 SQ.FT.) FOR THE PERIOD MAY 1 THRU AUGUST 14, SEED WITH 3 LBS. PER ACRE OF WEEPING LOVEGRASS (.07 LBS./1000 SQ.FT.). FOR THE PERIOD NOVEMBER 1 THRU FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.
- MULCHING: APPLY 1 1/2 TO 2 TONS PER ACRE (70 TO 90 LBS./1000 SQ.FT.) OF UNROTTED SMALL GRAM STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ.FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL/1000 SQ.FT.) FOR ANCHORING.
- REFER TO THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR NAIL AND METHODS NOT COVERED.

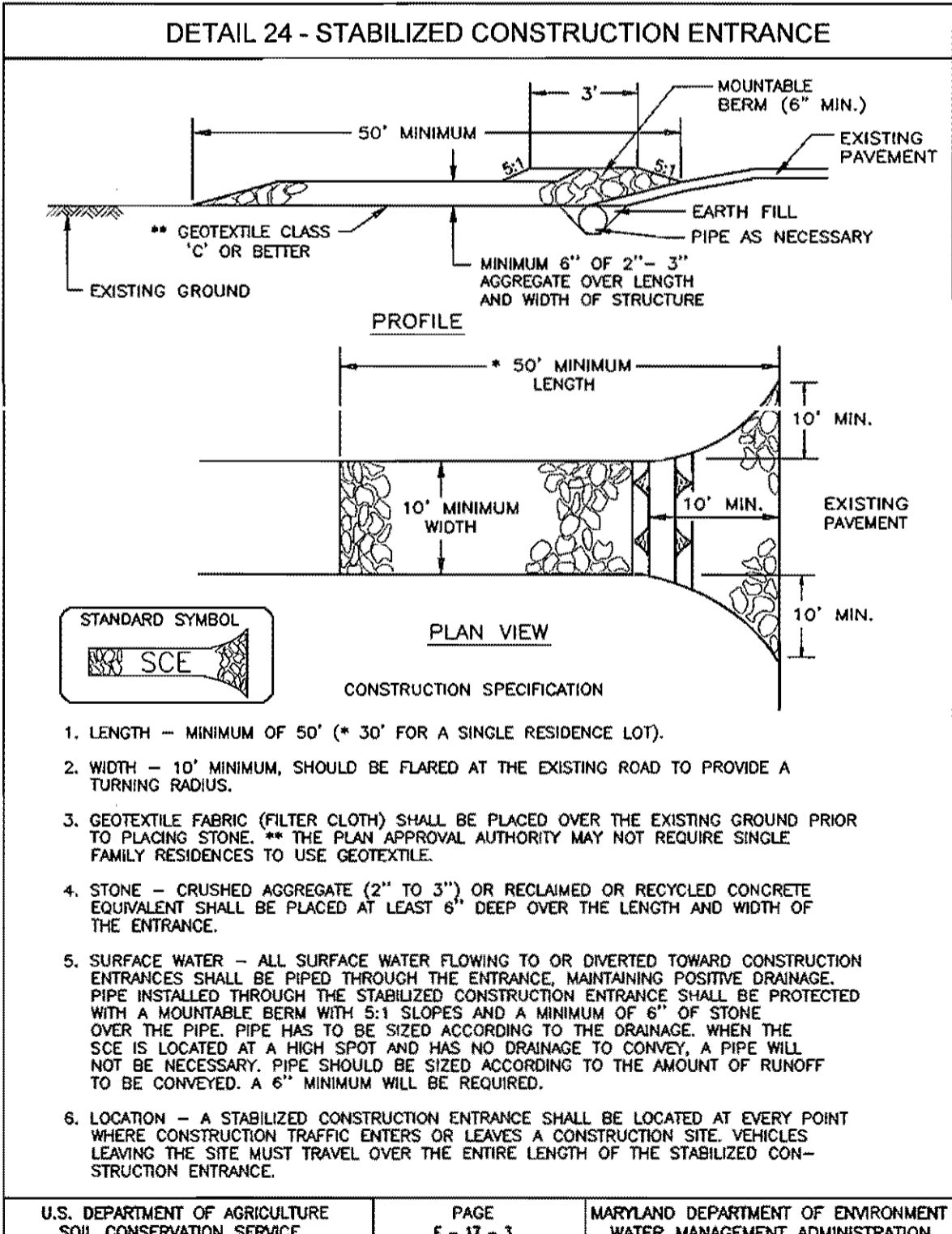
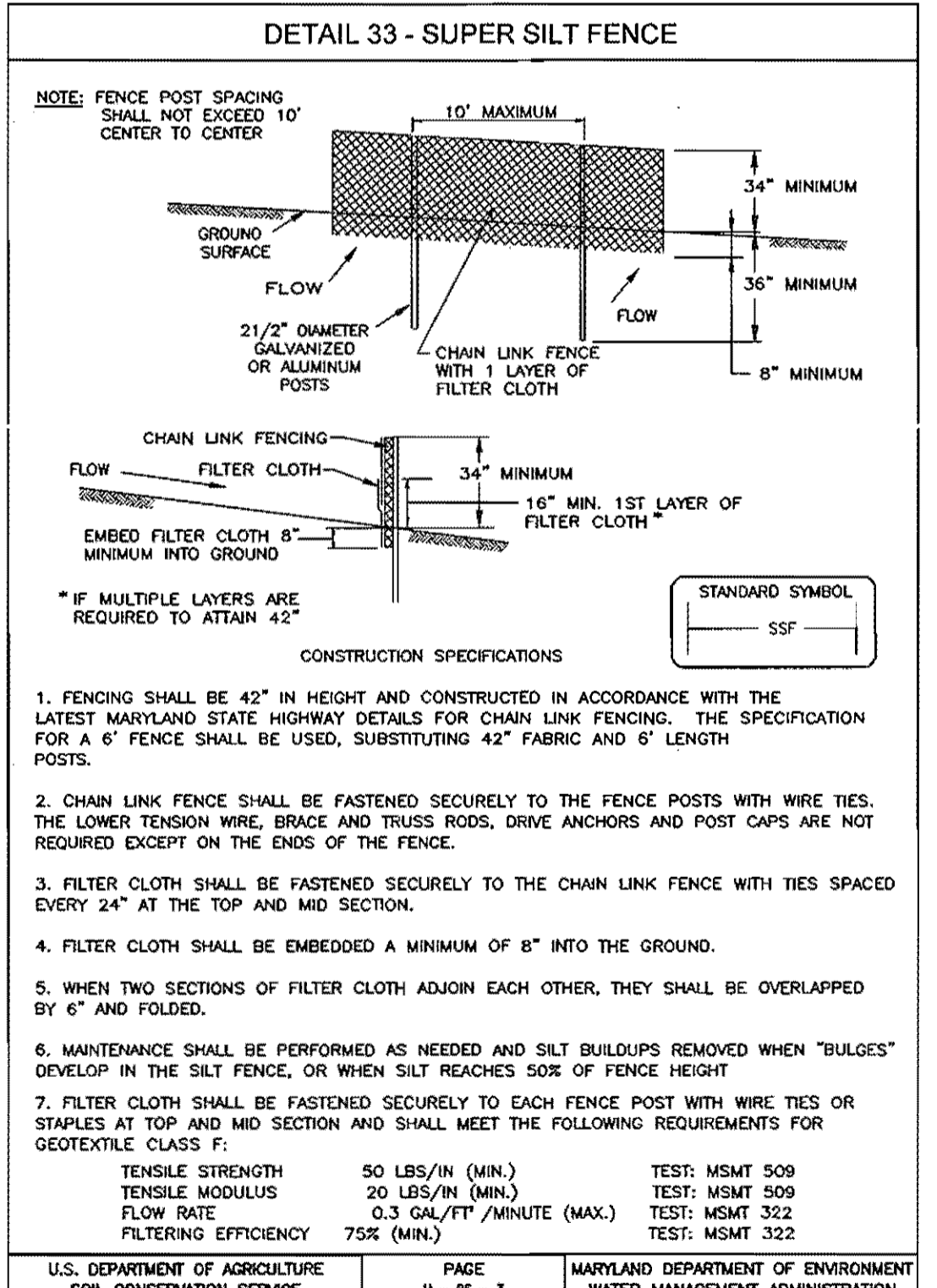
SEQUENCE OF CONSTRUCTION

- OBTAIN GRADING PERMIT.
- NOTIFY HOWARD COUNTY BUREAU OF INSPECTIONS AND PERMITS (410.313.1880) AT LEAST 24 HOURS BEFORE STARTING ANY WORK.
- CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE. (1 DAY)
- INSTALL SUPER SILT FENCE. (2 DAYS)
- AFTER OBTAINING PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR TO PROCEED, ROUGH GRADE SITE. (4 DAYS)
- BEGIN CONSTRUCTION OF BUILDINGS. (8 MONTHS)
- AS BUILDING CONSTRUCTION CONTINUES, INSTALL INITIAL SEPTIC TRENCHES AND WELL LINES TO BUILDINGS. (2 WEEKS)
- WITH SEPTIC TRENCHES IN PLACE AND WELL LINES COMPLETE INSTALL CURB AND GUTTER AND SIDEWALKS. (2 WEEKS)
- COMPLETE BUILDING CONSTRUCTION AND FINE GRADE SITE. (3 DAYS)
- WITH SEDIMENT CONTROL INSPECTORS APPROVAL, STABILIZE DISTURBED AREAS. (2 DAYS)
- WITH THE SITE STABILIZED INSTALL PRETREATMENT AND INFILTRATION BASIN. (2 WEEKS)
- WHEN PIPES AND STONE ARE IN PLACE BACKFILL AS NECESSARY AND STABILIZE AREA. (2 DAYS)
- INSTALL SITE LANDSCAPING. (4 DAYS)
- UPON STABILIZATION OF ALL DISTURBED AREAS AND WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, REMOVE ALL SEDIMENT CONTROL DEVICES. (3 DAYS)

- NOTES**
- DURING GRADING AND AFTER EACH RAINFALL, THE CONTRACTOR SHALL INSPECT AND PROVIDE THE NECESSARY MAINTENANCE ON THE SEDIMENT AND EROSION CONTROL MEASURES SHOWN HEREON.
 - FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLIED WITH.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED SURFACE STORMWATER FILTRATION SYSTEMS (F-1, F-4, AND F-5)

- THE STORMWATER WETLAND FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHALL BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE FACILITY IS FUNCTIONING PROPERLY.
- THE TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED TO A MINIMUM OF ONCE PER YEAR, WHEN VEGETATION REACHES 18" IN HEIGHT OR AS NEEDED.
- FILTERS THAT HAVE A GRASS COVER SHALL BE MOWED TO A MINIMUM OF THREE (3) TIMES PER GROWING SEASON TO MAINTAIN A MAXIMUM GRASS HEIGHT OF LESS THAN 12 INCHES.
- DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
- VISIBLE SIGNS OF EROSION IN THE FACILITY SHALL BE REPAIRED AS SOON AS IT IS NOTICED.
- REMOVE SILT WHEN IT EXCEEDS FOUR (4) INCHES DEEP IN THE FOREBAY.
- WHEN WATER PONDS ON THE SURFACE OF THE FILTER BED FOR MORE THAN 72 HOURS, THE TOP FEW INCHES OF DISCOLORED MATERIAL SHALL BE REPLACED WITH FRESH MATERIAL. PROPER CLEANING AND DISPOSAL OF THE REMOVED MATERIALS AND LIQUID MUST BE FOLLOWED BY THE OWNER.
- A LOGBOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
- THE MAINTENANCE LOGBOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.
- ONCE THE PERFORMANCE CHARACTERISTICS OF THE INFILTRATION SYSTEM HAVE BEEN VERIFIED, THE MONITORING SCHEDULE CAN BE REDUCED TO AN ANNUAL BASIS UNLESS THE PERFORMANCE DATA INDICATES THAT A MORE FREQUENT SCHEDULE IS REQUIRED.



NO.	REVISION	DATE

SEDIMENT AND EROSION CONTROL DETAILS
HIGHLAND CROSSING

TAX MAP 40 BLOCK 5
5TH ELECTION DISTRICT

PARCEL A.
HOWARD COUNTY, MARYLAND

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 6/15/06

CHIEF, DIVISION OF LAND DEVELOPMENT
DATE: 7/11/06

DIRECTOR
DATE: 7/11/06

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

USDA NATURAL RESOURCES CONSERVATION SERVICE
DATE: 6/15/06

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

DATE: 6/15/06

ENGINEERS CERTIFICATE

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

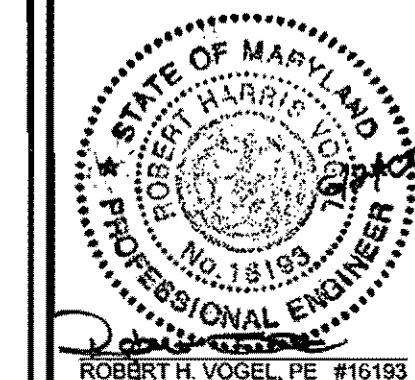
ROBERT H. VOGEL, PE #16193
DATE: 6/15/06

DEVELOPER'S CERTIFICATE

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

DATE: 6/15/06

OWNER / DEVELOPER
HIGHLAND CROSSING, L.L.C.
14111 TWISTED LANE
DAYTON, MD 21036



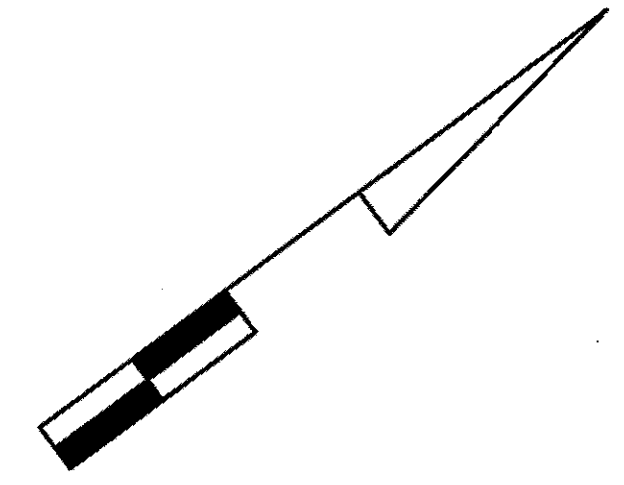
DESIGN BY: RHV/LJT
DRAWN BY: LJT
CHECKED BY: RHV
DATE: JUNE 1, 2006
SCALE:
W.O. NO.: 04-12.00

8 SHEET OF 11

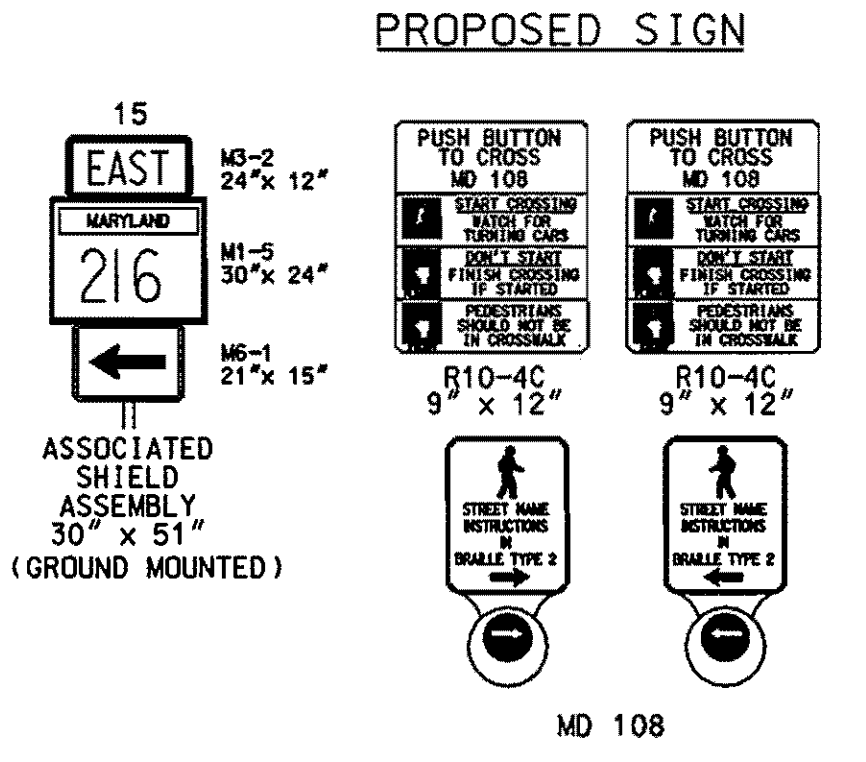
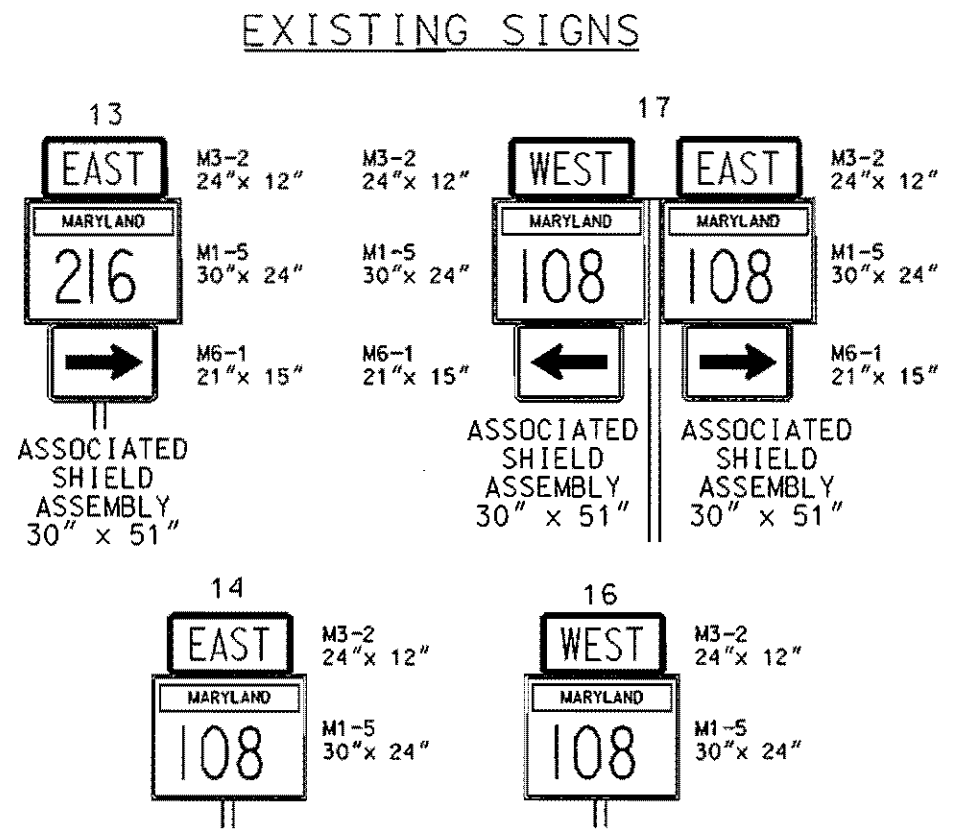
DRILL HOLES

DRILL HOLES

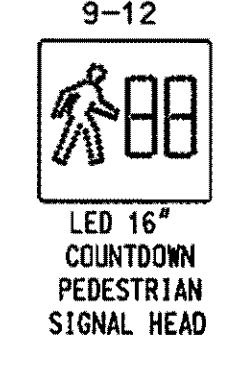
DRILL HOLES



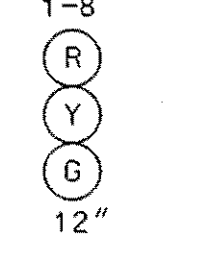
NOTE: MD 108 IS CONSIDERED TO RUN IN AN EAST-WEST DIRECTION.



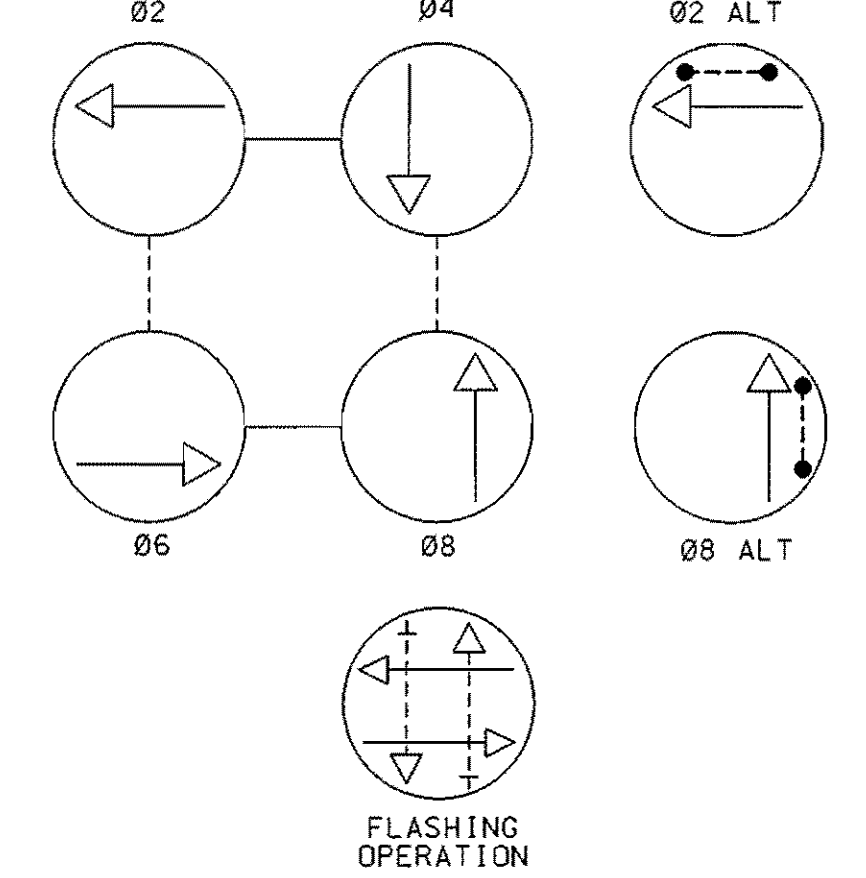
PROPOSED SIGNALS



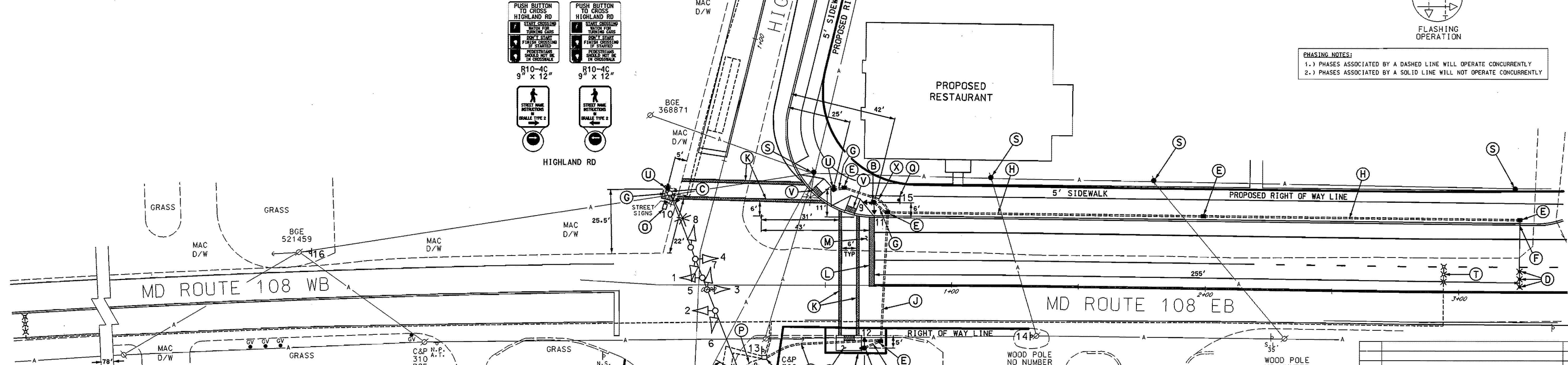
EXISTING SIGNALS



NEMA PHASING



PHASING NOTES: 1.) PHASES ASSOCIATED BY A DASHED LINE WILL OPERATE CONCURRENTLY. 2.) PHASES ASSOCIATED BY A SOLID LINE WILL NOT OPERATE CONCURRENTLY.



- CONSTRUCTION DETAILS**
- A. Install 10' breakaway pedestal pole, Countdown pedestrian signal head and pushbutton with pedestrian education sign as shown. (Note: 1-2", 90° polyvinyl chloride (Schedule 80) bend.)
 - B. Install 10' breakaway pedestal pole, Countdown pedestrian signal heads and audible pushbutton with pedestrian education signs as shown. (Note: 1-2", 90° polyvinyl chloride (Schedule 80) bend.)
 - C. Install Countdown pedestrian signal head and 10' lighting arm with a 250W-HPS luminaire onto existing strain pole.
 - D. Install micro-loop probes with 500' lead-in cable as shown.
 - E. Install handhole.
 - F. Install 1" liquid tight flexible non-metallic electrical conduit (detector wire sleeve).
 - G. Install 2" polyvinyl chloride electrical conduit (Schedule 80) (trenched).
 - H. Install 3" polyvinyl chloride electrical conduit (Schedule 80) (trenched).
 - J. Install 4" polyvinyl chloride electrical conduit (Schedule 80) (bored).
 - K. Install 12" white, heat applied permanent preformed thermoplastic pavement marking. (crosswalk)
 - L. Install 24" white, heat applied permanent preformed thermoplastic pavement marking. (stopline)
 - M. Remove existing pavement markings (stopline).
 - N. Install 10' x 6' concrete pedestrian pad with detectable warning surface as shown.
 - O. Use existing handhole.
 - P. Use existing conduit.
 - Q. Install ground mounted sign as shown.
 - R. Use existing pole mounted cabinet and controller.
 - S. Proposed BG&E pole location.
 - T. Abandon existing probes.
 - U. Install 4' pedestal pole with audible pushbutton and pedestrian education signs as shown.
 - V. Install detectable warning surfaces as shown.
 - W. Existing overhead electrical service to be maintained by BGE.
 - X. Install 4" polyvinyl chloride electrical conduit (Schedule 80) (trenched).

- GENERAL NOTES:**
1. All underground utilities shown on these plans are schematic only and may not be complete. The contractor shall be responsible for notifying "MISS UTILITY" prior to construction so that all utilities may be located in the field. If the contractor perceives that a conflict between the utilities and the traffic signal will occur, the contractor shall notify the project engineer immediately so that the conflict may be resolved.
 2. Any modification to this subject signal should be preceded by a thorough identification of all existing utilities.
 3. Contractor shall remove all unused wiring from this intersection.
 4. All traffic signal foundations shall be installed at the final sidewalk or curb grade for closed sections, highest roadway profile grade for open sections, to meet clearances as specified in MD 818.01, MD 818.02, MD 818.03 & MD 818.04. The contractor shall verify ultimate grades prior to the installation of all signal equipment.
 5. All Audible Pedestrian Control Equipment shall be delivered to the SHA Signal Shop for testing and programming prior to installation. Contact Mr. Edward Rodentzler to coordinate at (410) 787-7652.

NO.	REVISION	DATE

HIGHLAND CROSSING

TAX MAP 4B BLOCK 5 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

Robert H. Vogel Engineering, Inc.
 Engineers Surveyors Planners
 6407 Main Street Elliott City, MD 21813 Tel: 410-481-2800 Fax: 410-481-2861

OWNER / DEVELOPER
 HIGHLAND CROSSING, L.L.C.
 1498 THISTLE LANE DAYTON, MD 21036

SHA STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION

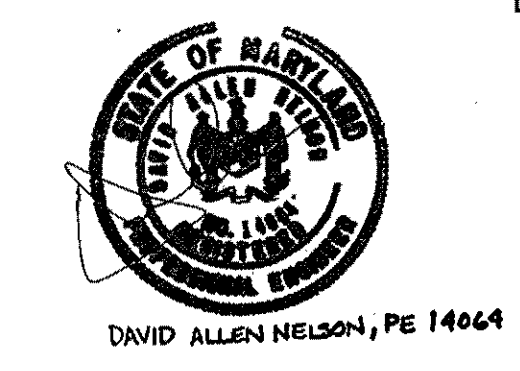
MD 108 AND MD 216/ HIGHLAND RD

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] DATE: *[Date]*

[Signature] DATE: *[Date]*

[Signature] DATE: *[Date]*



GEOMETRIC LEGEND

PROPOSED	---
EXISTING	---

LEGEND OF UNDERGROUND AND OVERHEAD UTILITIES

AERIAL CABLE	---
ELECTRIC	---
TELEPHONE	---
GAS	---
SEWER	---
WATER	---
CABLE TV	---

ST STREET TRAFFIC STUDIES, LTD.
 400 Crda Hwy, #100
 Glen Burnie, MD 21061
 PH (410) 590-5500 FAX (410) 590-6637
 4884.dgn

APPROVALS

TEAM LEADER	
ASST. DIV.	
DIVISION CHIEF	
OFFICE DIRECTOR	

REVISIONS

① 12-27-05	ADD PDS CROSSING EAST & NORTH LEGS
S.H.A. NO.: BWS96M82	
R.R.Z.	
D ASBUILT	5-10-96
S.H.A. NO.: AW-794-501-785	
FJH	

SCALE 1"= 20' DATE 1/2/76 CONTRACT NO. HOS58-501-785

DESIGNED BY J GORDON COUNTY HOWARD
 DRAWN BY J GORDON LOGMILE 13010801.53
 CHECKED BY A BUDNICHUCK TMS NO. H222
 F.A.P. NO. TOD NO. *[Blank]*

TS NO. 1436E DRAWING NO. 1 OF 3 SHEET NO. 9 OF 11

SDP-05-108

DRILL HOLES

DRILL HOLES

DRILL HOLES

BORER REV. DATE: JUNE 11, 2004

PROJECT DESCRIPTION

I. GENERAL

This project involves the modification of an existing Traffic Control Signal with street lighting at the intersection of MD 108 and MD 216 / Highland Rd in Howard County. Countdown pedestrian signal heads with audible pedestrian pushbuttons shall be installed across Highland Rd and the east leg of MD 108. MD 108 is assumed to run an east-west direction.

II. INTERSECTION OPERATION

1. The intersection shall continue to operate in a NEMA four-phase, fully-actuated mode, with the MD 216 approaches running concurrently. A new Countdown pedestrian phase with audible pushbutton actuation shall be provided across the east leg of MD 108. A new Countdown pedestrian phase with audible pushbutton actuation shall be provided across Highland Road. The Highland Road / MD 216 approaches shall also continue to run concurrently.

2. The existing full-traffic-actuated, eight-phase controller with three (3) two channel, loop detector amplifiers, and all necessary equipment housed in a NEMA size "5" pole-mounted cabinet shall be maintained at this intersection. An Audible Pedestrian Control Unit shall be installed into the cabinet by the SHA.

III. SPECIAL NOTES

- 1. The Contractor shall be responsible for terminating all signal cables, to the appropriate terminals and shall properly label each cable.
2. All controller cabinet wiring will be performed by the S.H.A. Signal Shop Contact Mr. Ed Rodenhizer at (410) 787-7650 seventy-two hours in advance of intended work.
3. All underground and overhead utilities shown on these plans are schematic only and may not be complete. The Contractor shall be responsible for notifying Miss Utility prior to construction so that all utilities may be located in the field. If the Contractor perceives that a conflict between the utilities and the traffic signal will occur, the Contractor shall notify the Project Engineer immediately so that the conflict may be resolved.
4. SHA signal shop shall install the APS control unit into the controller cabinet.

The contact persons for District #7 are as follows:

Mr. John Concannon Assistant District Engineer - Traffic Phone: (310) 624-8141
Mr. Richard L. Daff, Sr. Chief, Traffic Operations Division Phone: (410) 787-7630
Mr. Ray Johnson Assistant District Engineer - Maintenance Phone: (310) 624-8106
Mr. Ed Rodenhizer Signal Shop 410-787-7652
Ms Andrea Abend District Engineer - Utility Phone: (301) 624-8110
Mr. Sonny Bailey Sign Shop 410-787-7670

EQUIPMENT LIST

A. EQUIPMENT TO BE FURNISHED AND/OR INSTALLED BY THE CONTRACTOR

Table with columns: SPEC. NUMBER, DESCRIPTION, QUANTITY. Includes items like 1" liquid tight flexible non-metallic conduit, 2" schedule 80 rigid polyvinyl chloride conduit, electrical cable, ground rod, tray cable, etc.

PHASE CHART

Phase chart table with columns 1-12 and rows for PHASE 2 & 6, PHASE 2 & 6 ALT, PED CLEAR / COUNTDOWN, PHASE 4 & 8, PHASE 4 & 8 ALT, PED CLEAR / COUNTDOWN, 4 & 8 ALT CHANGE, FLASHING OPERATION.

EQUIPMENT LIST

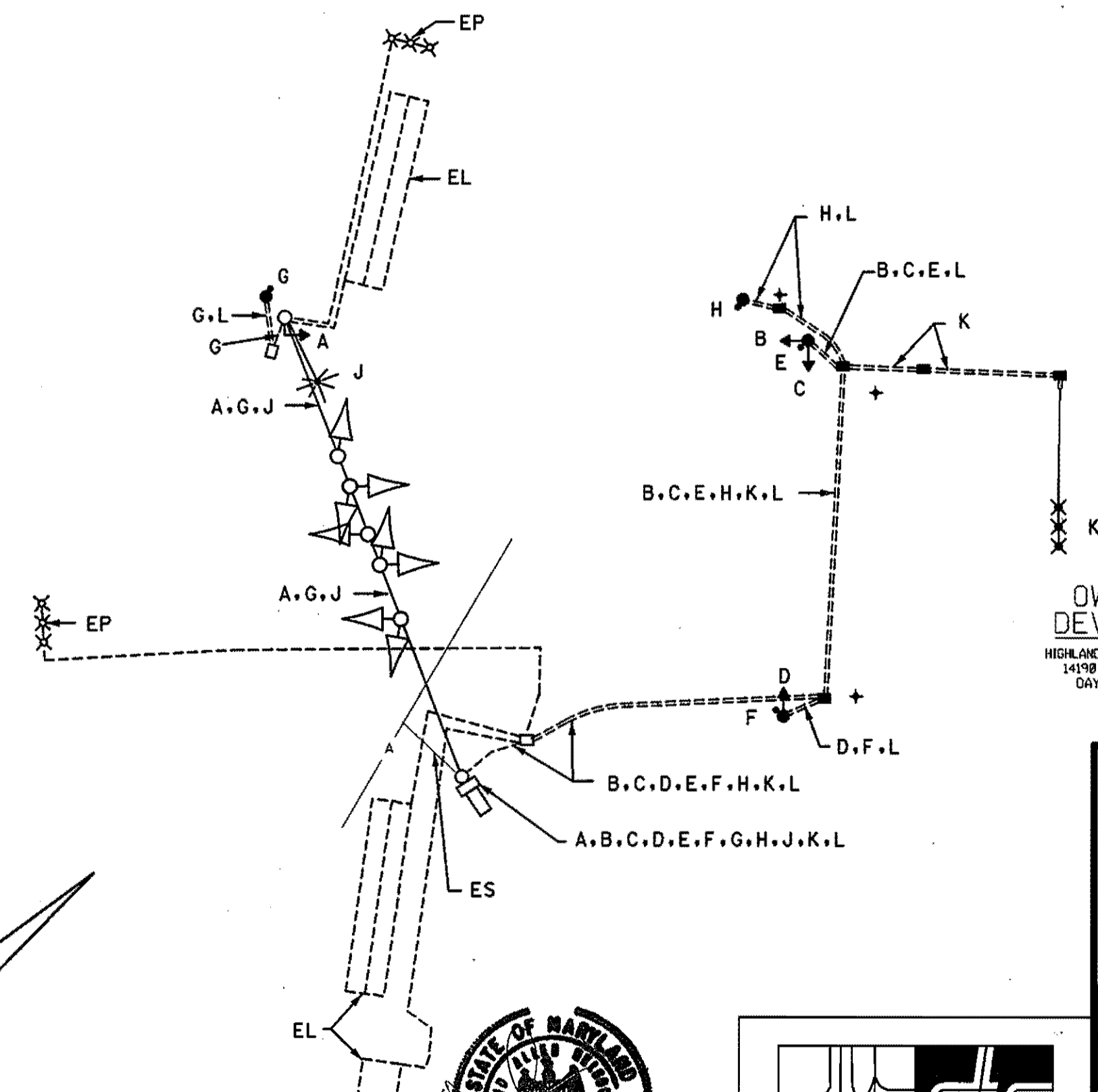
A. EQUIPMENT TO BE FURNISHED BY THE SHA

THERE IS NO EQUIPMENT TO BE SUPPLIED BY THE SHA.

B. EQUIPMENT TO BE FURNISHED AND/OR INSTALLED BY THE CONTRACTOR

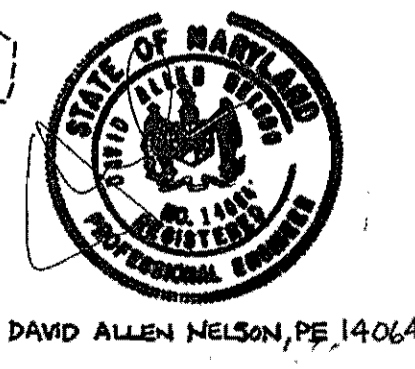
Table with columns: SPEC. NUMBER, DESCRIPTION, QUANTITY. Includes items like 16" one-way LED (DW, W) symbolic pedestrian signal head, test pit excavation, asphalt curb & gutter, concrete sidewalk, ground mounted sheet aluminum signs, pavement marking, loop detector.

WIRING DIAGRAM



WIRING KEY table defining symbols: A (5-CONDUCTOR ELECTRICAL CABLE), B (2-CONDUCTOR ELECTRICAL CABLE), C (2-CONDUCTOR TRAY CABLE), K (MICROLOOP LEAD-IN CABLE), L (STRANDED BARE COPPER GROUND WIRE), EP (EXISTING MICROPROBE), EL (EXISTING LOOP), ES (EXISTING OVERHEAD SERVICE), + (GROUND ROD).

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING. Chief, Division of Land Development. Date: 2/15/11.



STREET TRAFFIC STUDIES, LTD. 400 Chain Bridge Lane, Glen Burnie, MD 21061. Ph (440) 590-5500 Fax (440) 590-6637.

Table with columns: NO., REVISION, DATE.

HIGHLAND CROSSING. TAX MAP 48 BLOCK 5 5TH ELECTION DISTRICT. PARCEL A HOWARD COUNTY, MARYLAND.

Robert H. Vogel Engineering, Inc. Engineers, Surveyors, Planners. 8487 Main Street, Ellicott City, MD 21043. Tel: 410-481-7666 Fax: 410-481-9619.

OWNER / DEVELOPER: HIGHLAND CROSSING, L.L.C. 14198 TWISTING LANE DAYTON, MD 21835. DESIGN BY, DRAWN BY, CHECKED BY, DATE, SCALE, V.A.N.G. 10 SHEET OF 11.

SHA STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION.

MD 108 AT MD 216 / HIGHLAND RD

SCALE NONE DATE 12/27/05 CONTRACT NO.

DESIGNED BY R ZACHERL COUNTY HOWARD. DRAWN BY ROB CICCHINI LOGMILE 13010801.53. CHECKED BY. TIMS NO. H222. F.A.P. NO. TOD NO.

TS NO. 1436B DRAWING NO. 2 OF 3 SHEET NO. 10 OF 11

SDP-05-108

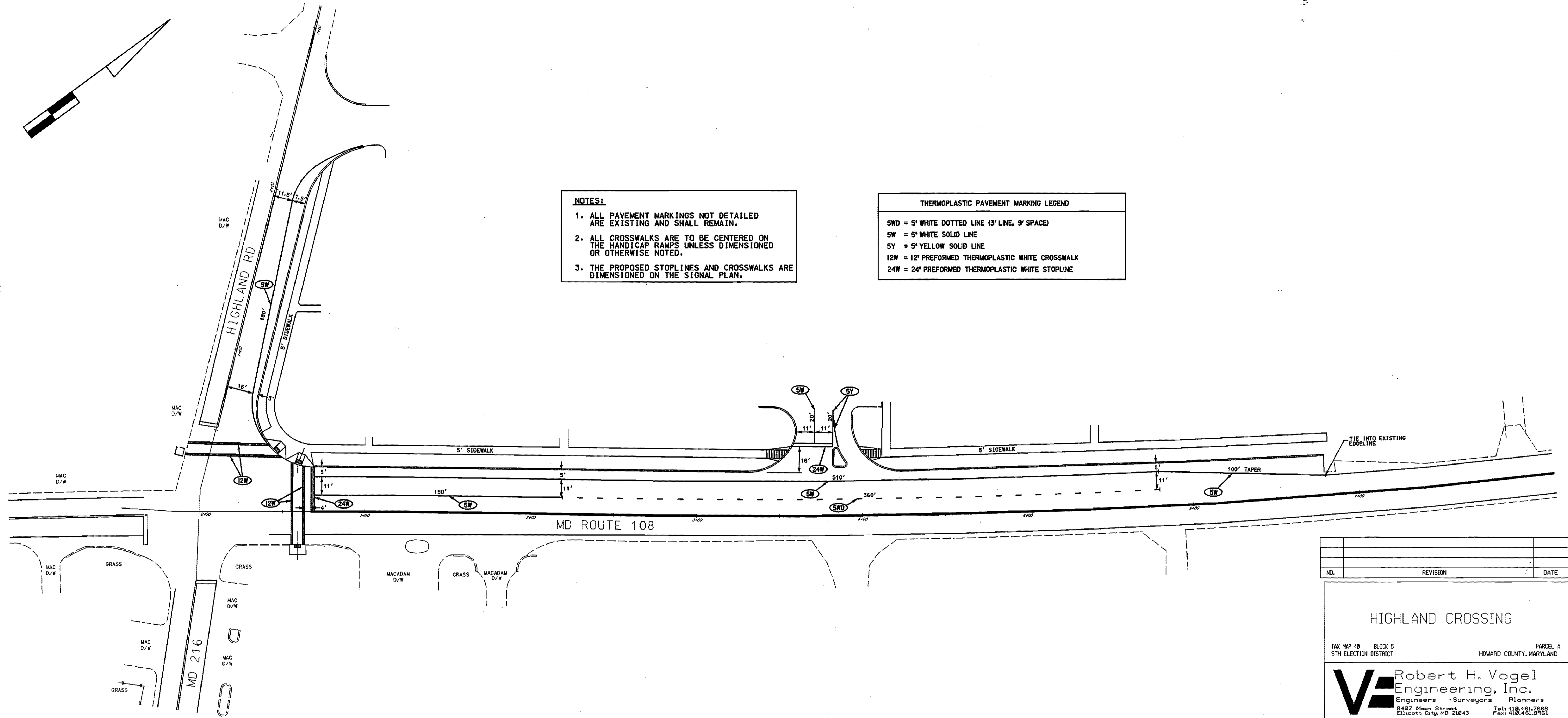
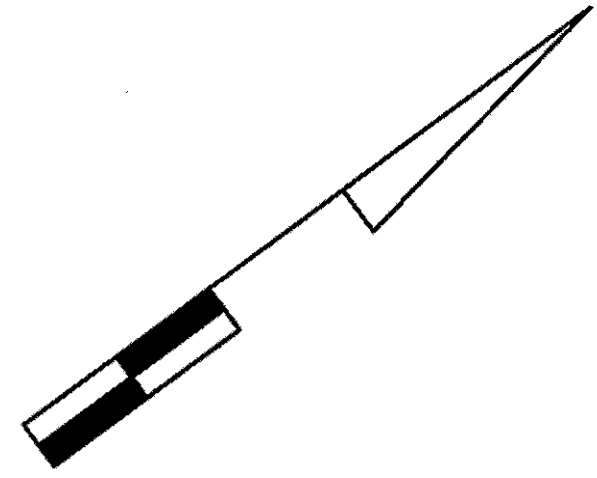
4884.dgn PLOTTED: #DATE# TIME# FILE# #FILE#

DRILL HOLES

DRILL HOLES

DRILL HOLES

BOBBER REV. DATE: JUN 11, 2004



NOTES:

1. ALL PAVEMENT MARKINGS NOT DETAILED ARE EXISTING AND SHALL REMAIN.
2. ALL CROSSWALKS ARE TO BE CENTERED ON THE HANDICAP RAMPS UNLESS DIMENSIONED OR OTHERWISE NOTED.
3. THE PROPOSED STOPLINES AND CROSSWALKS ARE DIMENSIONED ON THE SIGNAL PLAN.

THERMOPLASTIC PAVEMENT MARKING LEGEND

5WD = 5' WHITE DOTTED LINE (3' LINE, 9' SPACED)
 5W = 5' WHITE SOLID LINE
 5Y = 5' YELLOW SOLID LINE
 12W = 12" PREFORMED THERMOPLASTIC WHITE CROSSWALK
 24W = 24" PREFORMED THERMOPLASTIC WHITE STOPLINE

NO.	REVISION	DATE

HIGHLAND CROSSING

TAX MAP 48 BLOCK 5 PARCEL A
5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

Robert H. Vogel
 Engineering, Inc.
 Engineers Surveyors Planners
 8407 Main Street
 Ellicott City, MD 21043
 Tel: 410-461-7666
 Fax: 410-461-6961

OWNER / DEVELOPER
 HIGHLAND CROSSING, LLC
 14150 TWISTING LANE
 DAYTON, MD 21036

DESIGN BY:	
DRAWN BY:	
CHECKED BY:	
DATE:	
SCALE:	
V.D. NO.:	

ROBERT H. VOGEL, PE #16193

SHA STATE OF MARYLAND
 DEPARTMENT OF TRANSPORTATION
 STATE HIGHWAY ADMINISTRATION

MD 108 AT MD 216/ HIGHLAND RD

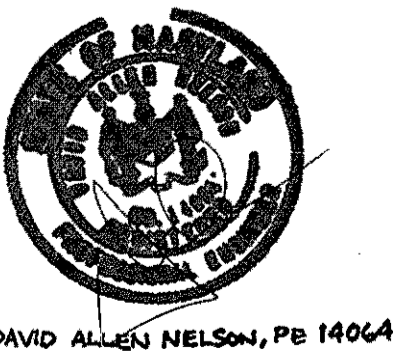
PAVEMENT MARKING PLAN

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature]
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 7/14/06

[Signature]
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 7/14/06

[Signature]
 DIRECTOR
 DATE: 7/14/06



DAVID ALLEN NELSON, PE 14064

GEOMETRIC LEGEND

PROPOSED _____
 EXISTING _____

LEGEND OF UNDERGROUND AND OVERHEAD UTILITIES

AERIAL CABLE — A — A
 ELECTRIC — E — E
 TELEPHONE — T — T
 GAS — G — G
 SEWER — S — S
 WATER — W — W
 CABLE TV — TV — TV

ST
 STREET TRAFFIC STUDIES, LTD.
 403 Grady Hwy, NW
 Glen Burnie, MD 21061
 Ph: (410) 590-5900
 Fax: (410) 590-6637
 4884pm.dgn

APPROVALS	REVISIONS
TEAM LEADER	
ASST. DIV. CHIEF	
DIVISION CHIEF	
OFFICE DIRECTOR	

SCALE 1" = 30' DATE 4-4-06 CONTRACT NO. H0558-501-785

DESIGNED BY R R ZACHERL COUNTY HOWARD
 DRAWN BY W J NIES LOGMILE 13010801.53
 CHECKED BY TMS NO. _____
 F.A.P. NO. TOD NO. _____

TS NO. 1436B DRAWING NO. 3 OF 3 SHEET NO. 11 OF 11

PLOTTED: #DATE# TIME#
FILE: #FILE#

SDP-05-108