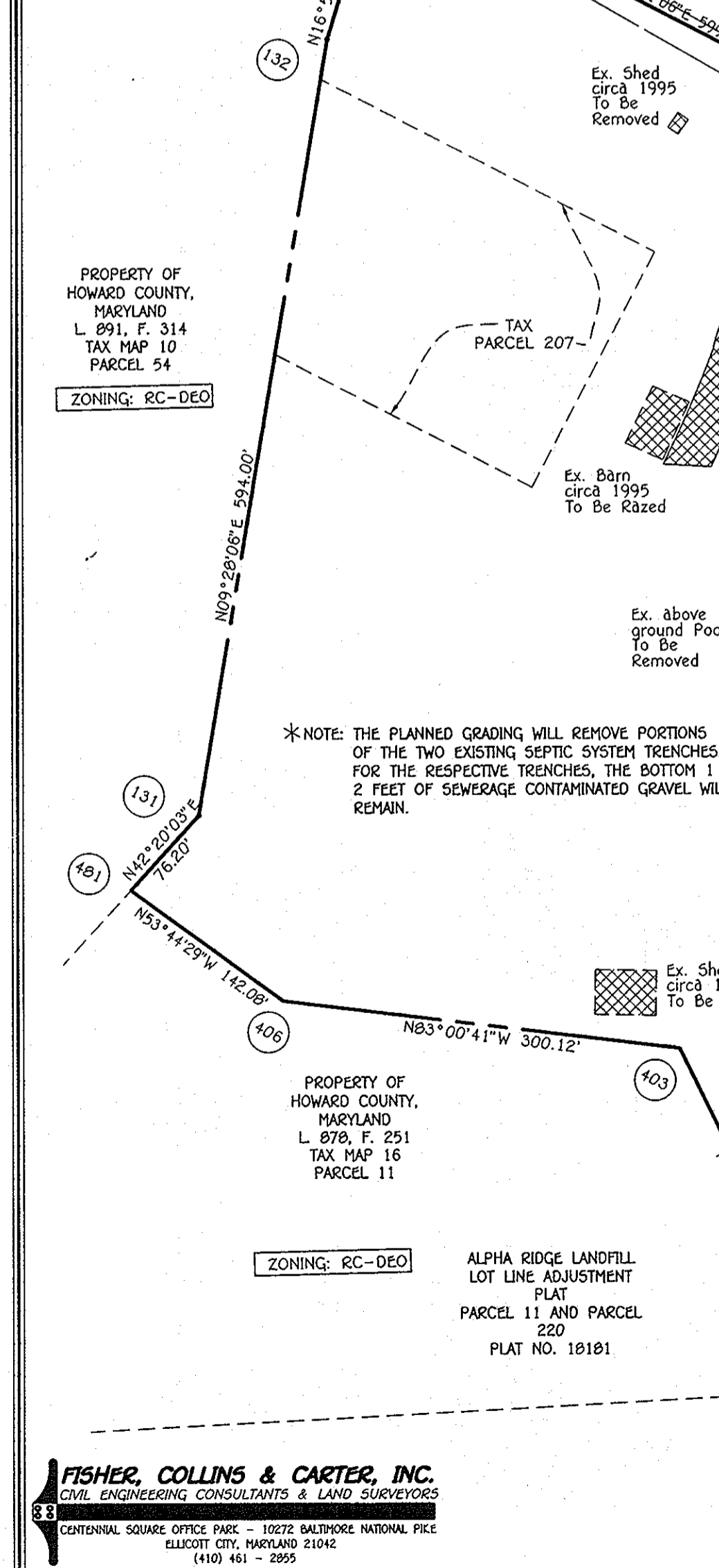


SHEET INDEX	
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	OLD FREDERICK ROAD PLAN AND PROFILE
3	OLD FREDERICK ROAD STRIPING PLAN & TRAFFIC CONTROL
4	WAVELY OVERLOOK COURT STRIPING PLAN AND PROFILE
5	MEGAN LYNN WAY PLAN AND PROFILE
6	STREET TREE, GRADING AND SEEDING CONTROL PLAN
7	OLD FREDERICK ROAD CROSS SECTIONS
8	OLD FREDERICK ROAD CROSS SECTIONS
9	STORM DRAIN DRAINAGE AREA MAP
10	STORM DRAIN PROFILES
11	STORM DRAIN PROFILES
12	LANDSCAPE PLAN
13	LANDSCAPING NOTES AND DETAILS
14	SOIL BORINGS
15	SOIL BORINGS
16	SEEDING AND EROSION CONTROL NOTES
17	SEEDING AND EROSION CONTROL NOTES AND DETAILS
18	STORMWATER MANAGEMENT NOTES AND DETAILS
19	STORMWATER MANAGEMENT PROFILES AND DETAILS - BMP No. 1
20	FOREST CONSERVATION PLAN
21	FOREST CONSERVATION NOTES AND DETAILS
22	POCKET SAND FILTER PLAN, SPECIFICATIONS AND DETAILS - BMP No. 2

ROADWAY INFORMATION CHART			
ROAD NAME	CLASSIFICATION	DESIGN SPEED	R/W WIDTH
WAVELY OVERLOOK COURT	PUBLIC ACCESS STREET	30 M.P.H.	50'
MEGAN LYNN WAY	PUBLIC ACCESS PLACE	25 M.P.H.	50'

STREET LIGHT CHART			
STREET NAME	STATION	OFFSET	FIXTURE/POLE TYPE
WAVELY OVERLOOK COURT	0+89	5' BEHIND CURB	150-WATT "COLONIAL" SODIUM VAPOR FIXTURE, POST TOP FIXTURE MOUNTED ON A 14-FOOT BLACK FIBERGLASS POLE.
WAVELY OVERLOOK COURT	L.P. 1+82	2' BEHIND CURB	
MEGAN LYNN WAY	0+29	22' R	100-WATT "COLONIAL" SODIUM VAPOR FIXTURE, POST TOP FIXTURE MOUNTED ON A 14-FOOT BLACK FIBERGLASS POLE.
MEGAN LYNN WAY	L.P. 1+25	2' BEHIND CURB	

TRAFFIC CONTROL SIGNS				
ROAD NAME	CENTERLINE STA.	OFFSET	POSTED SIGN	SIGN CODE
WAVELY OVERLOOK CT.	0+55	22'L	STOP	R1-1
WAVELY OVERLOOK CT.	1+00	15'R	SPEED LIMIT 25	R2-1
MEGAN LYNN WAY	0+28	22'L	STOP	R1-1



FINAL ROAD CONSTRUCTION, GRADING AND STORMWATER MANAGEMENT PLANS

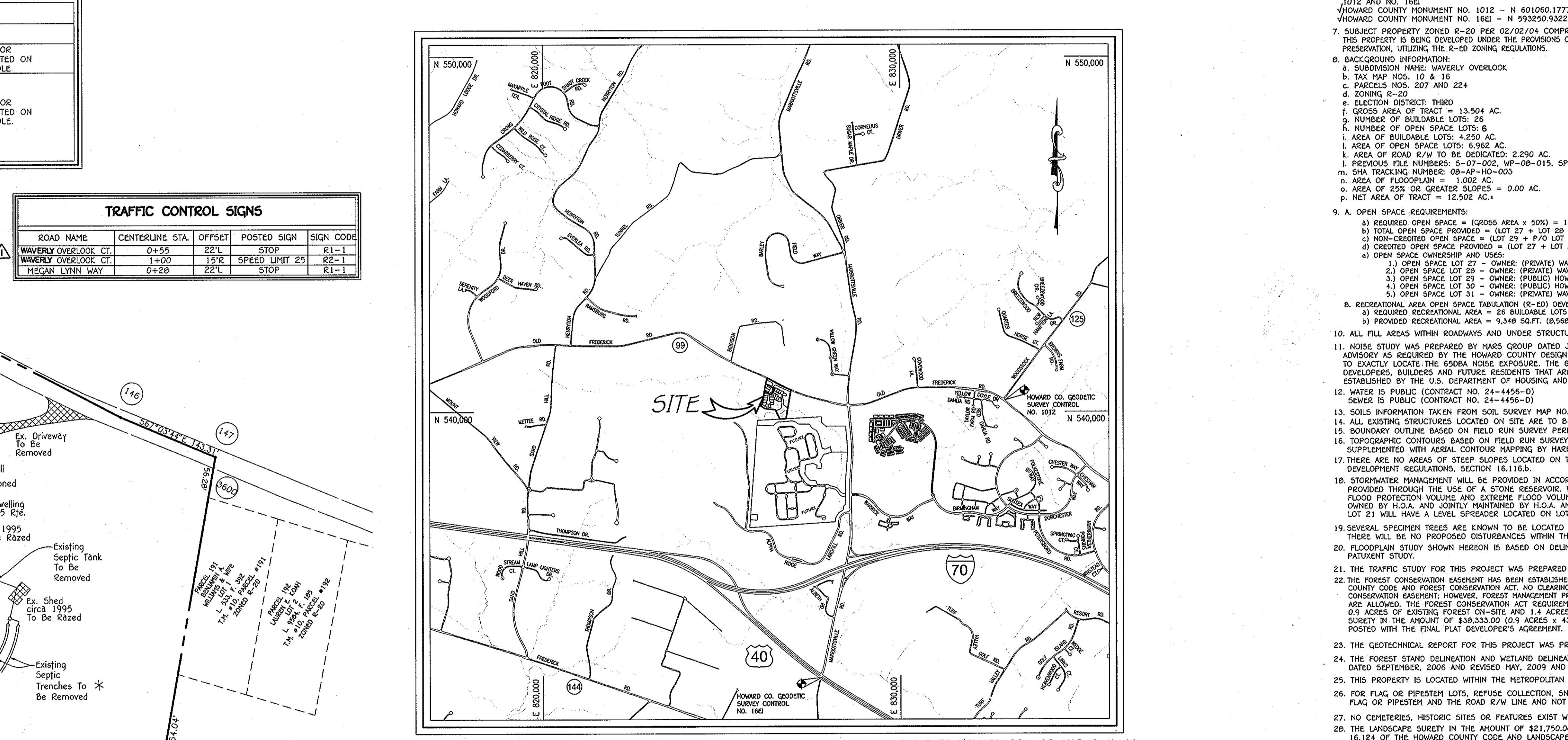
WAVELY OVERLOOK

LOTS 1 - 26 AND OPEN SPACE LOTS 27 - 32

ZONING: R-20

TAX MAP No. 10, GRID No. 21 & TAX MAP No. 16, GRID No. 3

PARCEL Nos. 207 & 224



THIRD ELECTION DISTRICT

HOWARD COUNTY, MARYLAND

Density Exchange Chart	
Receiving Parcel Information	Property of Morsberger, LLC, Tax Map 16, Grid 3, Parcel 224 And Tax Map 10, Grid 21, Parcel 207
Total Area of Subdivision	13.504 Acres
Net Acreage of Subdivision	13.504 Acres (Gross) - 1.002 Acres (Floodplain) = 12.502 Acres
Allowed Base Density Units	25 Units (12.502 Acres x 2 Units/Acre)
Bonus Density Units	1 Unit (Up To 10% More Units)
Proposed Density Units	26 Units
Number of Neighborhood Preservation Density Exchange Rights Required Per Unit/Bonus Dwelling Unit	1 Neighborhood Preservation Density Exchange Unit (1 Neighborhood Preservation Density Exchange Unit/Bonus Dwelling Unit)
Sending Parcel Information	1 Neighborhood Preservation Density Exchange Unit from Belknap Brook II Subdivision - Non-Buildable Bulk Parcel 'A' Recorded on Plat No. 19012, Property of Michael and Mary '76a, Tax Map 17, Grid 20, Parcel 746, Liber 4864 At Folio 462.

APPROVED: DEPARTMENT OF PUBLIC WORKS
William J. Marshall 4-7-10
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Kurt Steinhilber 4/26/10
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

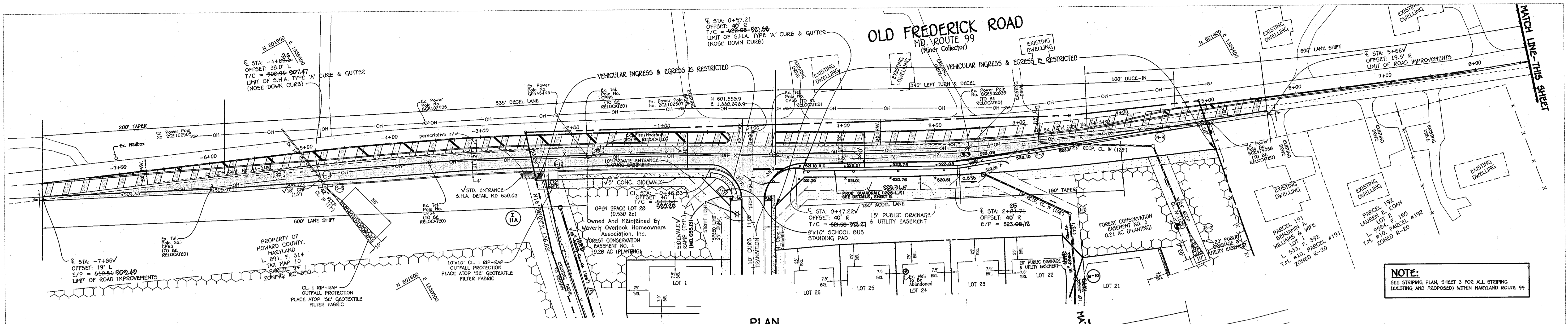
Michael J. ... 4/20/10
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

REVISIONS		
NO.	DESCRIPTION	DATE
1	REVISED FOREST CONSERVATION EASEMENT, S.H.A. WIDENING, SIDEWALKS, RAMPS & STORM DRAIN, ROAD NAME, OPEN SPACE LOTS AND PROPOSED ROAD NAME.	10/29/10

GENERAL NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS / BUREAU OF ENGINEERING / CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST (5) WORKING DAYS PRIOR TO THE START OF WORK.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MARYLAND MANUAL ON TRAFFIC CONTROL DEVICES" (MHT/OTD).
- THIS SUBMISSION PLAN IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE 2004 ZONING REGULATIONS PER COUNCIL BILL NO. 45-2003 AND THE ZONING REGULATIONS AS AMENDED BY COUNCIL BILL NO. 75-2003 AND THE COMP LITE ZONING REGULATION AMENDMENTS EFFECTIVE 7/28/06. DEVELOPMENT OR CONSTRUCTION ON THESE LOTS OR PARCELS MUST COMPLY WITH SETBACKS AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF A BUILDING OR GRADING PERMIT APPLICATION.
- COORDINATES BASED ON NAD'83 MARYLAND COORDINATE SYSTEM AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS NO. 1012 AND NO. 1861
HOWARD COUNTY MONUMENT NO. 1012 - N 601050.1777, E 1345336.7580
HOWARD COUNTY MONUMENT NO. 1861 - N 93250.9322, E 1340192.7110
- SUBJECT PROPERTY ZONED R-20 PER 02/02/04 COMPREHENSIVE ZONING PLAN AND THE "COMP LITE" ZONING AMENDMENTS EFFECTIVE 07/28/06. THIS PROPERTY IS BEING DEVELOPED UNDER THE PROVISIONS OF COUNTY COUNCIL BILL NO. 50-2006 (20A #95), SECTION 100F.2 RECEIVING PARCEL FOR NEIGHBORHOOD PRESERVATION, UTILIZING THE R-ED ZONING REGULATIONS.
- BACKGROUND INFORMATION:
a. SUBDIVISION NAME: WAVELY OVERLOOK
b. TAX MAP NOS. 10 & 16
c. PARCELS NOS. 207 AND 224
d. ZONING: R-20
e. ELECTION DISTRICT: THIRD
f. GROSS AREA OF TRACT = 13,504 AC.
g. NUMBER OF BUILDABLE LOTS: 26
h. NUMBER OF OPEN SPACE LOTS: 6
i. AREA OF BUILDABLE LOTS: 4,250 AC.
j. AREA OF OPEN SPACE LOTS: 6,962 AC.
k. AREA OF ROAD R/W TO BE DEDICATED: 2,290 AC.
l. PREVIOUS FILE NUMBERS: S-07-002, WP-08-015, SP-09-009, F-08-134, S0P-08-115 & PB CASE NO. 386
m. S.H.A. TRACKING NUMBERS: 08-45-HO-003
n. AREA OF FLOODPLAIN = 1,002 AC.
o. AREA OF 25% OR GREATER SLOPES = 0.00 AC.
p. NET AREA OF TRACT = 12,502 AC.
- A. OPEN SPACE REQUIREMENTS:
a) REQUIRED OPEN SPACE = (GROSS AREA x 50%) = 13,504 AC x 50% = 6,752 AC
b) TOTAL OPEN SPACE PROVIDED = (LOT 27 + LOT 28 + LOT 29 + LOT 30 + LOT 31 + LOT 32) = 6,962 AC
c) EXCESS OPEN SPACE PROVIDED = (LOT 27 + LOT 28 + LOT 30 + LOT 31 + LOT 32) = 6,754 AC
d) OPEN SPACE OWNERSHIP AND USES:
1) OPEN SPACE LOT 27 - OWNER: (PRIVATE) WAVELY OVERLOOK H.O.A. USE: FOREST CONSERVATION & RECREATIONAL OPEN SPACE
2) OPEN SPACE LOT 28 - OWNER: (PRIVATE) WAVELY OVERLOOK H.O.A. USE: FOREST CONSERVATION
3) OPEN SPACE LOT 29 - OWNER: (PUBLIC) HOWARD COUNTY, MARYLAND USE: ACCESS & EXISTING DRIVEWAY
4) OPEN SPACE LOT 30 - OWNER: (PUBLIC) HOWARD COUNTY, MARYLAND USE: FOREST CONSERVATION & ENVIRONMENTAL FEATURES
5) OPEN SPACE LOT 31 - OWNER: (PRIVATE) WAVELY OVERLOOK H.O.A. USE: STORMWATER MANAGEMENT
B. RECREATIONAL AREA OPEN SPACE TABULATION (R-ED) DEVELOPMENT
a) REQUIRED RECREATIONAL AREA = 26 BUILDABLE LOTS @ 300 SQ.FT./LOT = 7,800 SQ.FT.
b) PROVIDED RECREATIONAL AREA = 9,348 SQ.FT. (0.266 AC. CREDITED)
- ALL FILL AREAS WITHIN ROADWAYS AND UNDER STRUCTURES SHALL BE COMPACTED TO A MINIMUM OF 95% COMPACTION OF ASPHALT T-180.
- NOISE STUDY WAS PREPARED BY MARS GROUP DATED JANUARY, 2009. THE 65DBA NOISE CONTOUR LINE DRAWN ON THIS PLAN IS ADVISORY AS REQUIRED BY THE HOWARD COUNTY DESIGN MANUAL, CHAPTER 5, REVISED FEBRUARY, 1992, AND CANNOT BE CONSIDERED TO EXACTLY LOCATE THE 65DBA NOISE EXPOSURE. THE 65DBA NOISE LINE WAS ESTABLISHED BY HOWARD COUNTY TO ASSIST DEVELOPERS, BUILDERS AND FUTURE RESIDENTS THAT AREAS BEYOND THIS THRESHOLD MAY EXCEED GENERALLY ACCEPTED NOISE LEVELS ESTABLISHED BY THE U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT.
- WATER IS PUBLIC (CONTRACT NO. 24-4456-0)
SEWER IS PUBLIC (CONTRACT NO. 24-4456-0)
- SOILS INFORMATION TAKEN FROM SOIL SURVEY MAP NO. 8 AND 9, HOWARD COUNTY, MARYLAND.
- ALL EXISTING STRUCTURES LOCATED ON SITE ARE TO BE RAZED, EXISTING DWELLING CIRCA 1995.
- BOUNDARY OUTLINE BASED ON FIELD RUN SURVEY PERFORMED BY FISHER, COLLINS AND CARTER, INC. DATED JUNE, 2005
- TOPOGRAPHIC CONTOURS BASED ON FIELD RUN SURVEY PERFORMED BY FISHER, COLLINS AND CARTER, INC. DATED JANUARY, 2006 AND SUPPLEMENTED WITH AERIAL CONTOUR MAPPING BY HARFORD AERIAL ON JANUARY 21, 2006.
- THERE ARE NO AREAS OF STEEP SLOPES LOCATED ON THIS PROPERTY AS DEFINED BY THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, SECTION 16.11B.3.
- STORMWATER MANAGEMENT WILL BE PROVIDED IN ACCORDANCE WITH HOWARD COUNTY AND MARYLAND 37B SPECIFICATIONS. RECHARGE VOLUME WILL BE PROVIDED THROUGH THE USE OF A STONE RESERVOIR. WATER QUALITY AND CHANNEL PROTECTION VOLUME WILL BE PROVIDED BY A POCKET POND. OVERBANK FLOOD PROTECTION VOLUME AND EXTREME FLOOD VOLUMES ARE NOT REQUIRED FOR THIS SITE. THE STORMWATER MANAGEMENT FACILITY WILL BE PRIVATELY OWNED BY H.O.A. AND JOINTLY MAINTAINED BY H.O.A. AND HOWARD COUNTY. LOTS 1 THRU 11 WILL HAVE A PRIVATE POCKET SAND FILTER ON LOT 31 AND LOT 21 WILL HAVE A LEVEL SPREADER LOCATED ON LOT.
- SEVERAL SPECIMEN TREES ARE KNOWN TO BE LOCATED WITHIN THE EXISTING FOREST; HOWEVER THEY WERE NOT SURVEYED BECAUSE THERE WILL BE NO PROPOSED DISTURBANCES WITHIN THE EXISTING FOREST.
- FLOODPLAIN STUDY SHOWN HEREON IS BASED ON DELINEATION FROM A FLOODPLAIN STUDY PREPARED UNDER CAPITAL PROJECT D-4-1007, LITTLE PATUXENT STUDY.
- THE TRAFFIC STUDY FOR THIS PROJECT WAS PREPARED BY MARS GROUP DATED JANUARY, 2009.
- THE FOREST CONSERVATION EASEMENT HAS BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION ACT. FOREST CONSERVATION IS REQUIRED WITHIN THE FOREST CONSERVATION EASEMENT; HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED. THE FOREST CONSERVATION ACT REQUIREMENTS FOR THIS PROJECT WILL BE MET THROUGH THE RESTORATION OF 0.9 ACRES OF EXISTING FOREST ON-SITE AND 1.4 ACRES OF ON-SITE REFORESTATION. THE FOREST CONSERVATION SURETY IN THE AMOUNT OF \$30,333.00 (0.9 ACRES x 43,560 SQ.FT./ACRE x \$0.20 + 1.40 ACRES x 43,560 SQ.FT./ACRE x \$0.50) SHALL BE POSTED WITH THE FINAL PLAT DEVELOPER'S AGREEMENT.
- THE GEOTECHNICAL REPORT FOR THIS PROJECT WAS PREPARED BY HILLIS-CARNEY ENGINEERING ASSOCIATES, INC. DATED JAN. 2007.
- THE FOREST STAND DELINEATION AND WETLAND DELINEATION FOR THIS PROJECT WAS PREPARED BY ECO-SCIENCE PROFESSIONALS, INC., DATED SEPTEMBER, 2006 AND REVISED MAY, 2009 AND WAS APPROVED UNDER SP-09-009.
- THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
- FOR FLAG OR PIPESTEM LOTS, REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE ARE PROVIDED TO THE JUNCTION OF THE FLAG OR PIPESTEM AND THE ROAD R/W LINE AND NOT THE PIPESTEM LOT DRIVEWAY.
- NO CEMETERIES, HISTORIC SITES OR FEATURES EXIST WITHIN THIS SUBDIVISION.
- THE LANDSCAPE SURETY IN THE AMOUNT OF \$21,750.00 FOR PERIMETER LANDSCAPE REQUIREMENTS (53 SHADE TREES & 39 EVERGREEN TREES) OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL WILL BE POSTED WITH THE DEVELOPER'S AGREEMENT FOR THIS SUBDIVISION. FINANCIAL SURETY FOR THE REQUIRED STREET TREES WILL BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$19,200.00.
- STREET LIGHTS WILL BE REQUIRED IN THIS DEVELOPMENT IN ACCORDANCE WITH THE DESIGN MANUAL STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURE AND POLE SELECTED SHALL BE IN ACCORDANCE WITH THE LATEST HOWARD COUNTY DESIGN MANUAL, VOLUME III (1995) AND AS MODIFIED BY "GUIDELINES FOR STREET LIGHTS IN RESIDENTIAL DEVELOPMENTS (JUNE 1993)" THE JUNE 1993 POLICY INCLUDES GUIDELINES FOR LATERAL AND LONGITUDINAL PLACEMENT. A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
- SIGN POSTS: WITHIN COUNTY R/W - ALL SIGN POST FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT OF WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED SQUARE TUBE POST (1 1/2" GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED SQUARE TUBE SLEEVE (12 GAUGE) - 3" LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
SIGN POSTS WITHIN S.H.A. R/W - ALL SIGNS SHALL BE MOUNTED ON TREATED WOOD POSTS CONFORMING TO THE LATEST EDITIONS OF THE S.H.A. STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS AND THE S.H.A. BOOK OF STANDARDS FOR HIGHWAY AND INCIDENTAL STRUCTURES.
- DRIVEWAYS SHALL BE PROVIDED PRIOR TO RESIDENTIAL OCCUPANCY TO ENSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING (MINIMUM) REQUIREMENTS:
a. WIDTH - 12 FEET (16 FEET SERVING MORE THAN ONE RESIDENCE)
b. SURFACE - SIX (6") INCHES OF COMPACTED CRUSHER RUN BASE WITH TAR AND CHIP COATING.
c. GEOMETRY - MAXIMUM 14% GRADE, MAXIMUM 10% GRADE CHANGE AND MINIMUM OF 45 TURNING RADIUS.
d. STRUCTURES (CULVERTS/BARRIERS) SHALL BE SUPPORTING 25 GROSS TONS (H 25 LOADS)
e. DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOOD WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY SURFACE.
f. STRUCTURE CLEARANCES - MINIMUM 12 FEET.
g. MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE.
- THE EXISTING WELL WILL BE ABANDONED BY A LICENSED WELL DRILLER AND STATE WELL ABANDONMENT FORM SUBMITTED PRIOR TO RECORD PLAT SUBMITTAL.
- THE EXISTING SEPTIC TANK WILL BE PUMPED AND PROPERLY ABANDONED AND DOCUMENTATION PROVIDED TO THE HEALTH DEPARTMENT PRIOR TO RECORD PLAT SUBMITTAL.
- USING THE NEIGHBORHOOD PRESERVATION DENSITY EXCHANGE OPTION DESCRIBED IN SECTION 12B.L OF THE ZONING REGULATIONS, THE DEVELOPMENT RIGHT FOR ONE (1) OF THE RESIDENTIAL UNITS SHOWN ON THIS PLAN HAVE BEEN TRANSFERRED FROM TAX MAP 17, GRID 20, PARCEL 746 - PROPERTY OF MICHAEL PFAU AND MARY PFAU, DEED RECORDED IN LIBER 4864 AT FOLIO 462.
- PER SECTION 100F.3, STRUCTURES ARE REQUIRED TO BE SET BACK 75 FEET FROM PROJECT BOUNDARIES ADJOINING SINGLE FAMILY DETACHED DEVELOPMENTS. THIS PROPOSED DEVELOPMENT MEETS THESE REQUIREMENTS.

TITLE SHEET
WAVELY OVERLOOK
LOTS 1-26 AND OPEN SPACE LOTS 27-32
ZONING: R-20
TAX MAP No. 10, GRID No. 21 & TAX MAP No. 16, GRID No. 3
PARCEL Nos. 207 AND 224
THIRD ELECTION DISTRICT - HOWARD COUNTY, MARYLAND
DATE: MARCH 4, 2010
SHEET 1 OF 22



PLAN
SCALE: 1" = 50'

- LEGEND**
- DENOTES S.H.A. TYPE 'D' PAVING
 - DENOTES PAVING OVERLAY
 - 10' TREE MAINTENANCE EASEMENT

NO.	DESCRIPTION	DATE
1	Revised F.C.E., S.H.A. Widening, Sidewalk Ramps, Storm Drain And Open Space Lots	10/21/10

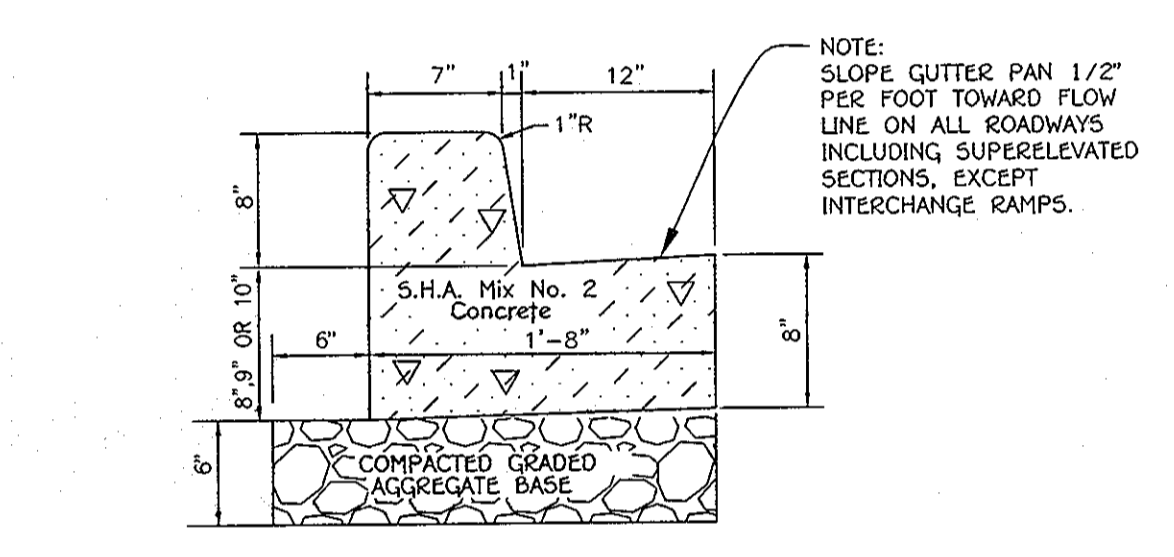
APPROVED: DEPARTMENT OF PLANNING AND ZONING

Vest Sherwood
CHIEF, DIVISION OF LAND DEVELOPMENT

W. J. ...
CHIEF, DEVELOPMENT ENGINEERING DIVISION

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

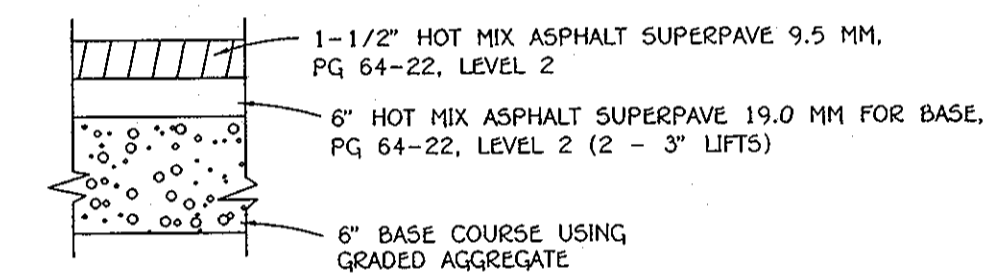
W. J. ...
CHIEF, BUREAU OF HIGHWAYS



S.H.A. TYPE 'A' COMB. CONC. CURB AND GUTTER
NO SCALE

NOTE:
ALL HANDICAP RAMPS SHALL HAVE DETECTABLE WARNING TRUNCATED DOMES (SEE DETAIL SHEET 5)

NOTE:
SEE SHEET 5 FOR RAMP CONSTRUCTION DETAIL.



S.H.A. PAVING SECTION
NO SCALE

NOTE:
SEE STRIPING PLAN, SHEET 3 FOR ALL STRIPING (EXISTING AND PROPOSED) WITHIN MARYLAND ROUTE 99

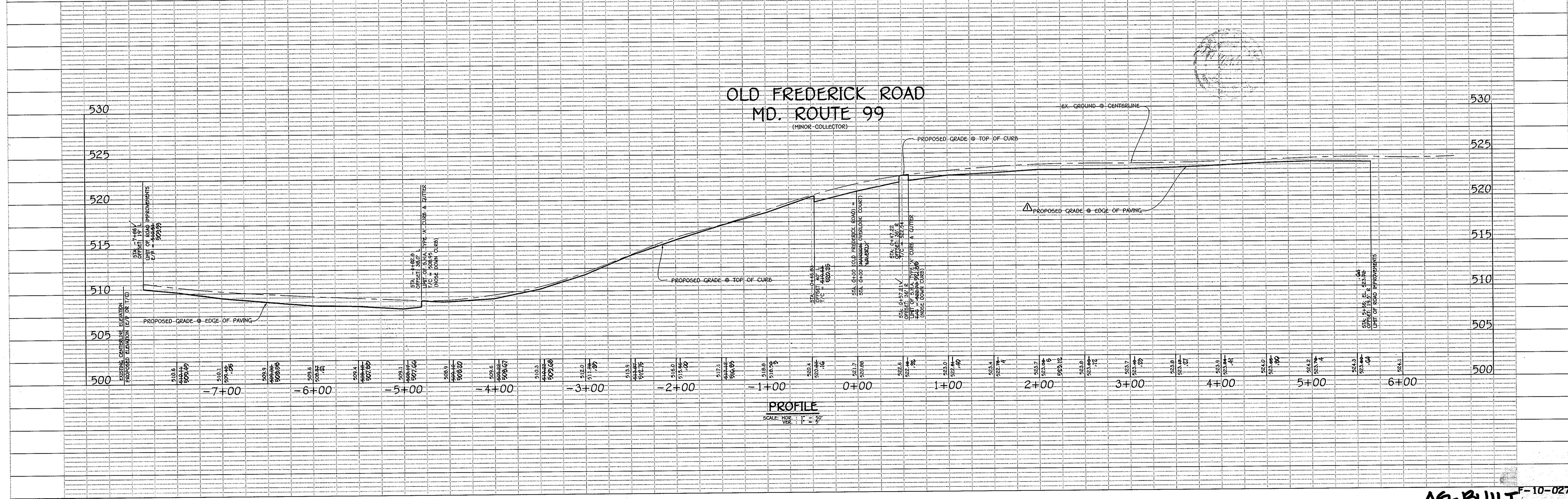
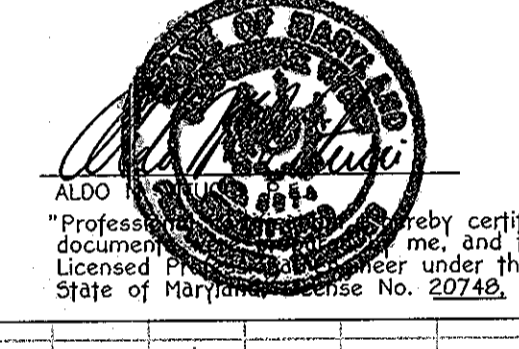
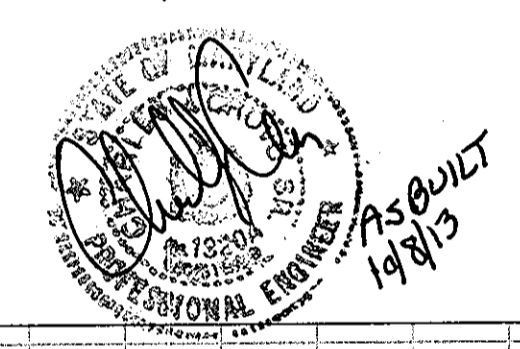
WAVERLY OVERLOOK
LOTS 1-26 AND OPEN SPACE LOTS 27-32
ZONING: R-20
TAX MAP No. 10, GRID No. 21 & TAX MAP No. 16, GRID No. 3
PARCEL Nos. 207 AND 224
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND

OLD FREDERICK ROAD
PLAN AND PROFILE

OWNER AND DEVELOPER
MORSBERGER, LLC
c/o LAND DESIGN & DEVELOPMENT, INC.
5300 DORSEY HALL DRIVE, SUITE 102
ELLICOTT CITY, MARYLAND 21042
410-387-0422

SCALE: AS SHOWN DATE: MARCH 4, 2010 DWG. NO. 2 OF 22
DES. A.M.V. DRN. J.C.L. CHK. A.M.V.

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTRAL SOURCE OFFICE PARK - 10722 BALTHORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
410-387-2222



PROFILE
SCALE: VERT. 1" = 10'

AS-BUILT

APPROVED: DEPARTMENT OF PUBLIC WORKS		
<i>Walter J. Wall</i>	4-7-10	DATE
CHIEF, BUREAU OF HIGHWAYS		
APPROVED: DEPARTMENT OF PLANNING AND ZONING		
<i>Neil S. ...</i>	4/26/10	DATE
CHIEF, DIVISION OF LAND DEVELOPMENT		
<i>...</i>	4/20/10	DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION		
NO.	REVISION	DATE
1	Revised SHA Widening, Sidewalk Ramps & Added Crosswalk	10/29/10

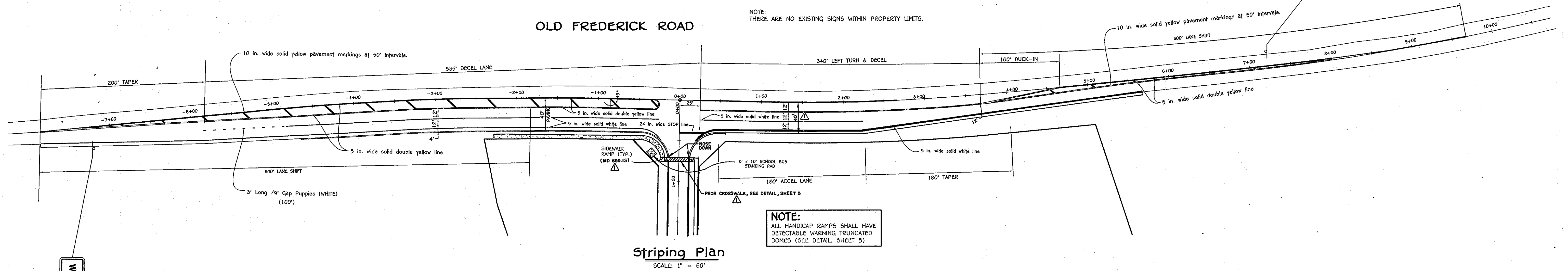
NOTES:

- Existing pavement marking to be removed by milling and overlaying.
- All sign posts used for traffic control signs installed along the SHA right-of-way shall be mounted on break-away wood posts.

PAVEMENT MARKING NOTES

- ALL PAVEMENT MARKING LINES SHALL BE REFLECTIVE THERMOPLASTIC AS SPECIFIED IN THE SHA "STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS".
- THE STOP LINE SHALL BE HEAT APPLIED PERMANENT PREFORMED THERMOPLASTIC PAVEMENT MARKINGS.
- ALL PROPOSED PAVEMENT MARKINGS ARE TO MATCH THE EXISTING PAVEMENT MARKING MATERIAL.

NOTE:
THERE ARE NO EXISTING SIGNS WITHIN PROPERTY LIMITS.

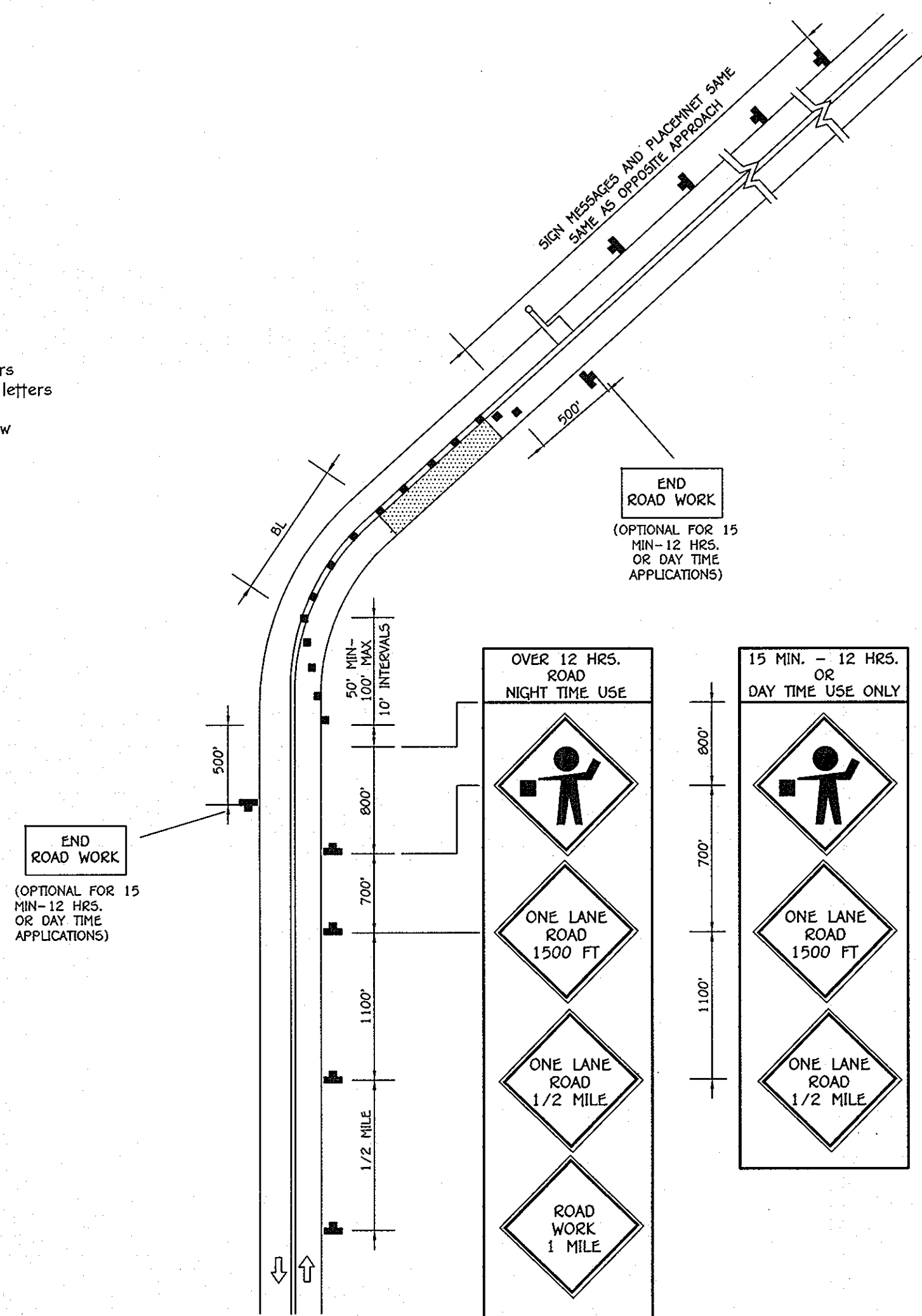


NOTE:
ALL HANDICAP RAMP SHALL HAVE DETECTABLE WARNING TRUNCATED DORNES (SEE DETAIL, SHEET 5)

Waverly Overlook Court
D-3(2)

- 6" white capital letters
- 4" white lower case letters
- green background
- white directional arrow

- 6" white capital letters
- 4" white lower case letters
- green background
- white directional arrow



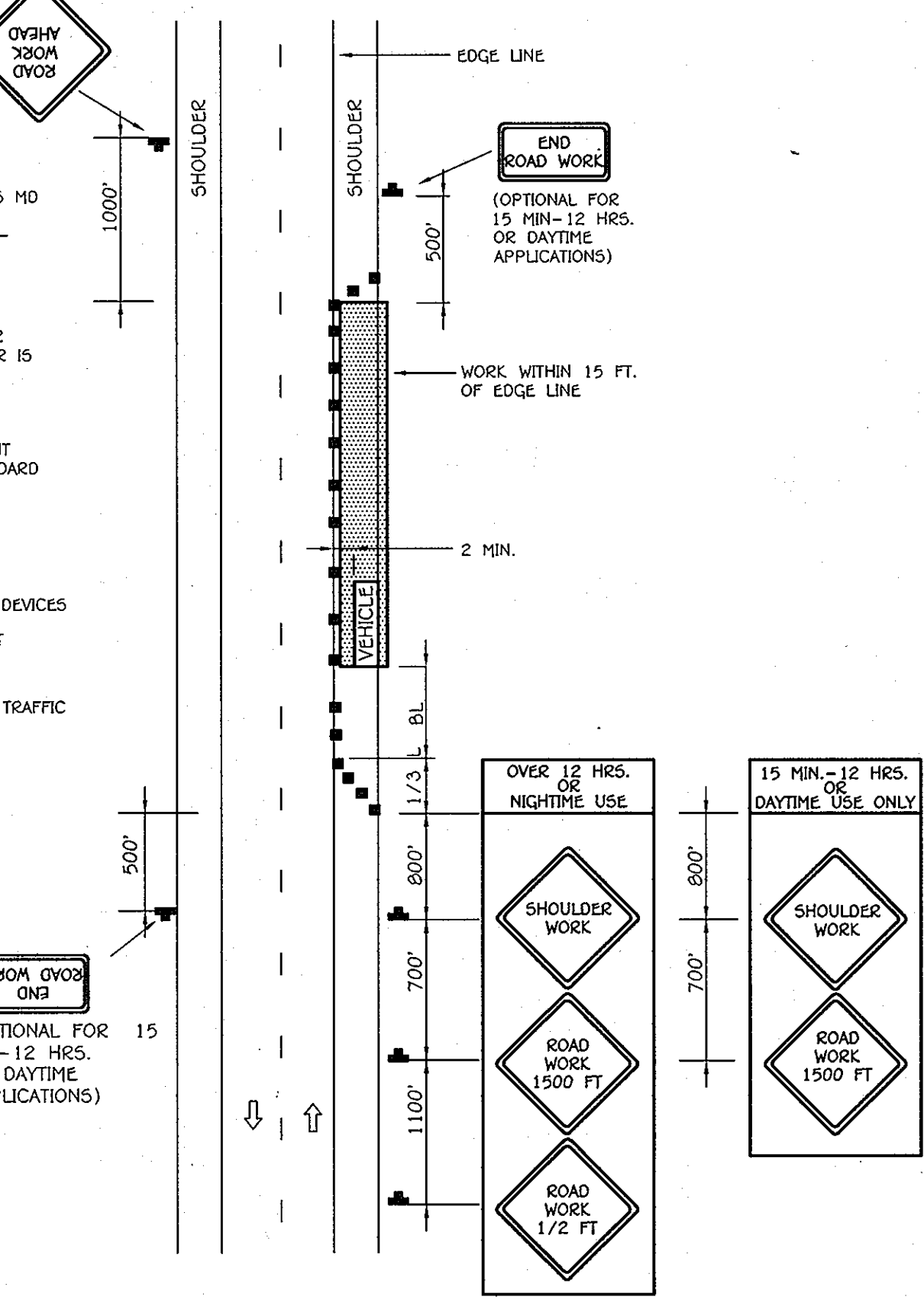
IMPORTANT:
THIS DRAWING SHALL BE USE IN COMBINATION WITH GENERAL NOTES MD 104.00-01 - MD 104.00-18 AND STANDARD DETAILS MD 104.01-01 - MD 104.01-62

NOTE:
SHOULDER CLOSED SIGNS ARE REQUIRED IN PLACE OF SHOULDER WORK SIGNS WHEN THE SHOULDER IS CLOSED BY A PHYSICAL BARRIER REFER TO STANDARD NO. MD 104.06-14

WHEN WORK INVOLVES A PAVEMENT EDGE DROP-OFF, REFER TO STANDARD NOS. MD 104.06-11 TO MD 104.06-15.

KEY:

- CHANNELIZING DEVICES
- SIGN SUPPORT FACE OF SIGN
- DIRECTION OF TRAFFIC
- WORK SITE



IMPORTANT:
THIS DRAWING SHALL BE USE IN COMBINATION WITH GENERAL NOTES MD 104.00-01 - MD 104.00-18 AND STANDARD DETAILS MD 104.01-01 - MD 104.01-62

NOTE:
FLAGGERS SHALL NEVER BE STATIONED MORE THAN 1000' AWAY FROM THE ADVANCE FLAGGER SIGN.

KEY:

- CHANNELIZING DEVICES
- SIGN SUPPORT FACE OF SIGN
- DIRECTION OF TRAFFIC
- WORK SITE
- FLAGGER

OWNER AND DEVELOPER
HORSBERGER, LLC
c/o LAND DESIGN & DEVELOPMENT, INC.
5300 DORSEY HALL DRIVE, SUITE 102
ELLICOTT CITY, MARYLAND 21042
(410) 367-0422

STATE OF MARYLAND
Professional Engineer
DATE: MARCH 4, 2010
Expiration Date 2-22-11

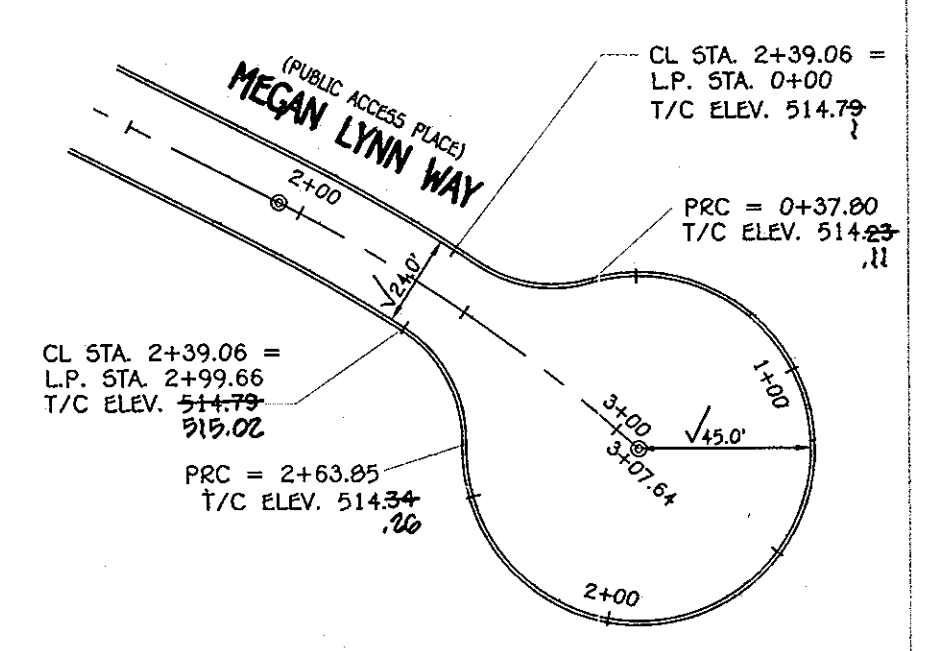
OLD FREDERICK ROAD STRIPING PLAN & TRAFFIC CONTROL WAVERLY OVERLOOK
LOTS 1-26 AND OPEN SPACE LOTS 27-32
ZONING: R-20
TAX MAP No. 10, GRID No. 21 & TAX MAP No. 16, GRID No. 3
PARCEL Nos. 207 AND 224
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE: MARCH 4, 2010
SHEET 3 OF 22

AS-BUILT E-10-027

NOTE:
 ANY DAMAGE TO THE EXISTING ROAD FOR THE PURPOSE OF THE FIRE HYDRANT EXTENSIONS SHALL BE SAW CUT AND REPLACED WITH FULL DEPTH PAVING SECTIONS.

NOTE:
 SEE SHEET 2 FOR CONTINUATION OF OLD FREDERICK ROAD IMPROVEMENTS.

NOTE:
 ALL HANDICAP RAMP SHALL HAVE DETECTABLE WARNING TRUNCATED DOMES (SEE DETAIL SHEET 5)



DETAIL
 SCALE: 1" = 50'

- LEGEND**
- 10' WIDE PRIVATE ENTRANCE FEATURE EASEMENT
 - DENOTES S.H.A. TYPE 'D' PAVING
 - DENOTES PAVING OVERLAY
 - RECREATIONAL AREA
 - 10' TREE MAINTENANCE EASEMENT
 - DENOTES 10' CURB TRANSITION SEE DETAIL SHEET 5



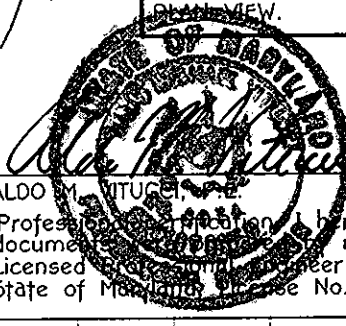
MEGAN LYNN WAY
 STA. 1+93.75 TO STA. 3+07.64
 RADIUS = 439.00' R
 ARC LENGTH = 113.89'
 TAN. = 57.26°
 DELTA = 114°51'50"
 CHORD = 55°17'22" E, 113.57'

OPEN SPACE LOT 32 (0.202 Ac)
 To Be Temporarily Owned & Maintained by Waverly Overlook H.O.A. Until Its Conveyance To Adjacent Parcel 60

B.M.P. No. 1
 POCKET POND
 EXTENDED DETENTION POND/TEMP. SEDIMENT BASIN
 FOR WQ & CPV
 HAZARDOUS CLASS 'A'
 (OWNED BY H.O.A. AND JOINTLY MAINTAINED BY H.O.A. & HO. CO.)
 S.H.A. IMP. AREA = 0.35 AC.
 MCV = 487.00
 CPV = 489.01
 10 YR = 490.06
 100 YR = 490.72

PLAN
 SCALE: 1" = 50'

NOTE:
 SEE SHEET 13 FOR NOISE MITIGATION



4-8-10
 DATE

NO.	DESCRIPTION	DATE
2	Revised FCE, SHA Widening, Sidewalk Ramps, & C.G. of O.S. Lots	10/29/10
1	Release New Storage To H.O.A. Owned Open Space Lot 27	4/30/10

NO.	DESCRIPTION	DATE
1	Revised FCE, SHA Widening, Sidewalk Ramps, & C.G. of O.S. Lots	10/29/10
1	Release New Storage To H.O.A. Owned Open Space Lot 27	4/30/10

APPROVED: DEPARTMENT OF PLANNING AND ZONING

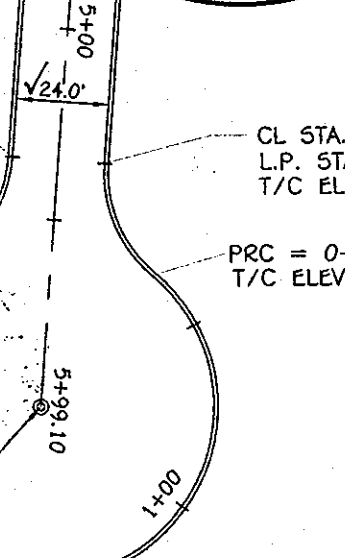
Hert Shadlock
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 4/20/10

Walter J. McMillan
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 4/20/10

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Walter J. McMillan
 CHIEF, BUREAU OF HIGHWAYS
 DATE: 4-7-10

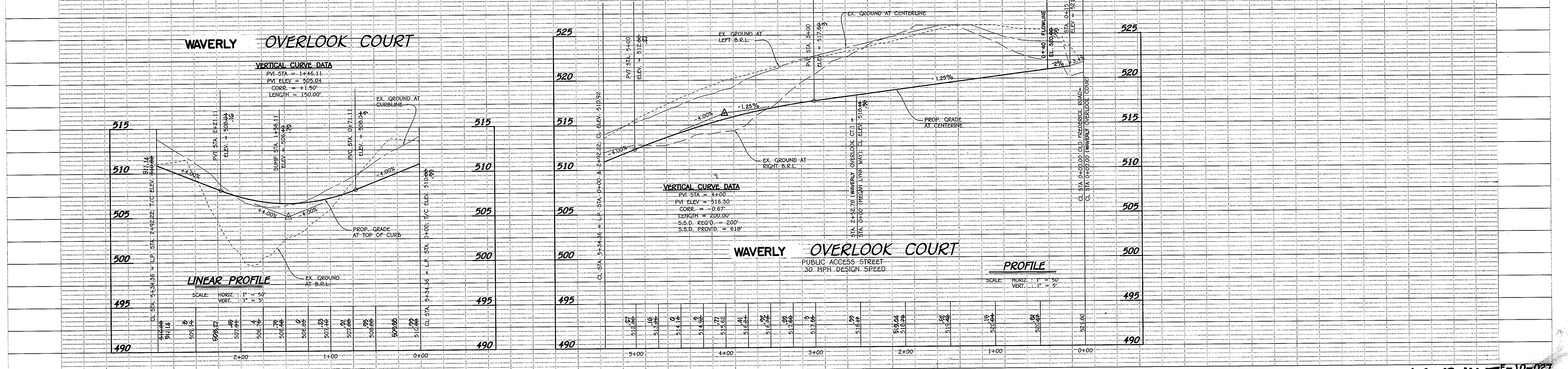
CL STA. 5+34.36 = L.P. STA. 2+92.22
 T/C ELEV. 510.99
 PRC = 2+59.23
 T/C ELEV. 509.56



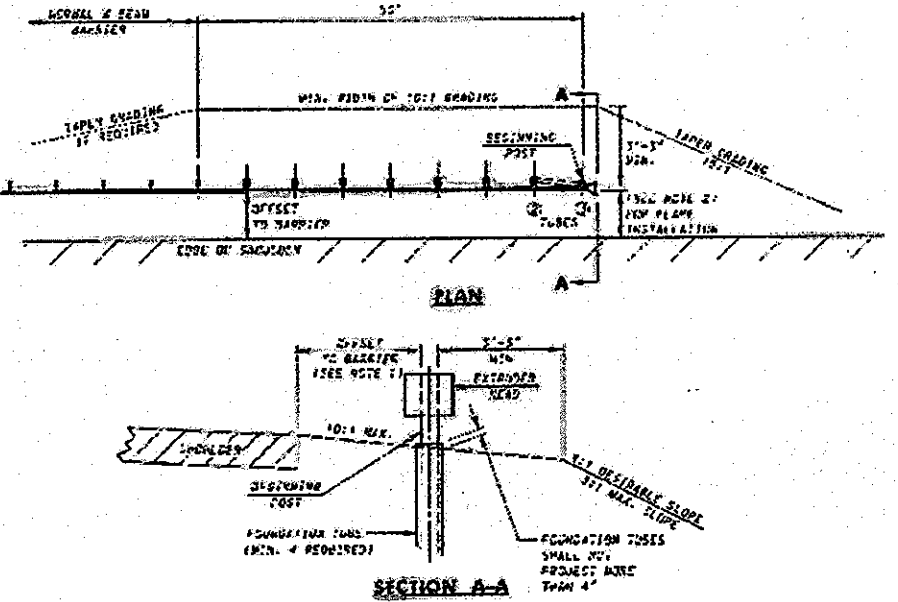
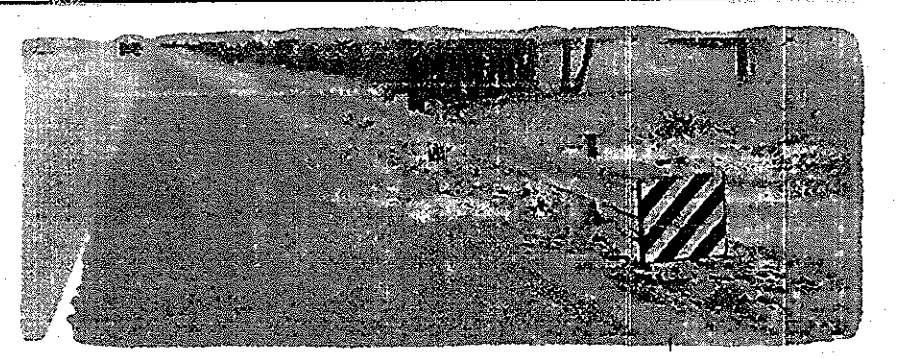
WAVERLY OVERLOOK COURT
 (PUBLIC ACCESS STREET)

DETAIL
 SCALE: 1" = 50'

WAVERLY OVERLOOK COURT
 STA. 2+61.40 TO STA. 4+23.54
 RADIUS = 375.00' R
 ARC LENGTH = 162.14'
 TAN. = 82.35°
 DELTA = 214°42'11"
 CHORD = 516°52'16" W, 160.80'



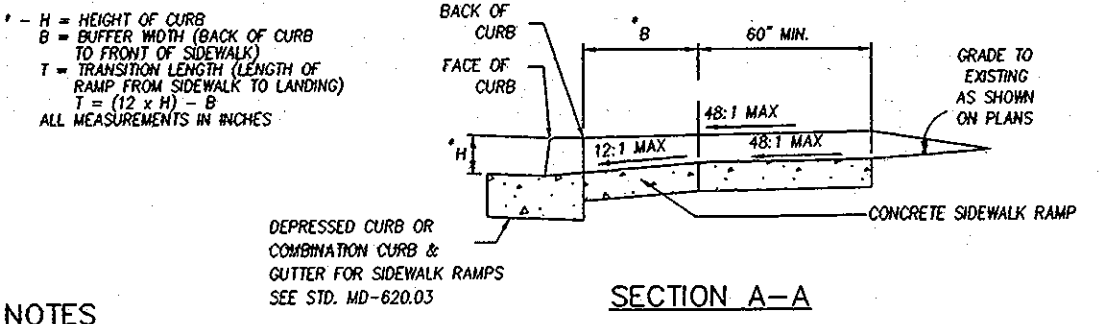
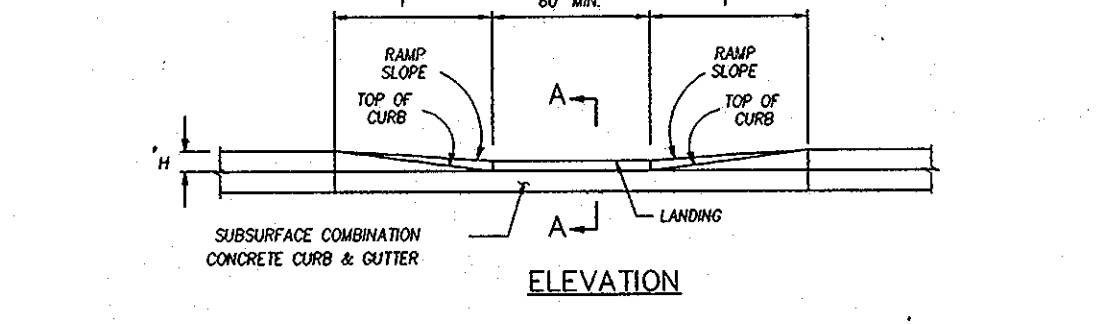
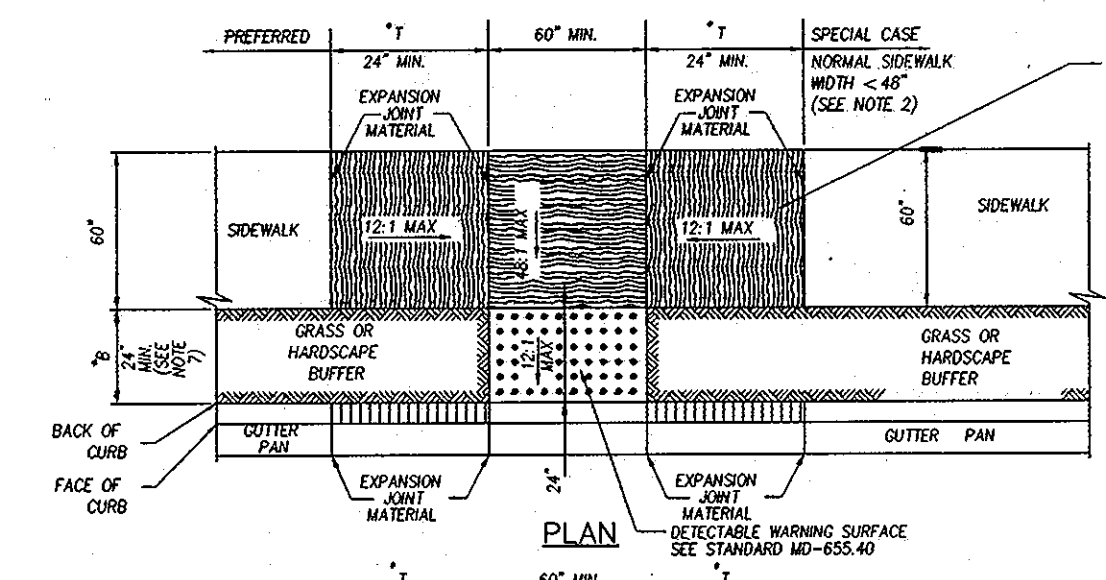
AS-BUILT-10-027



NOTES:
 1. ALL DIMENSIONS TO BE MEASURED FROM THE FACE OF CURB UNLESS OTHERWISE NOTED.
 2. ALL DIMENSIONS TO BE MEASURED FROM THE FACE OF CURB UNLESS OTHERWISE NOTED.
 3. ALL DIMENSIONS TO BE MEASURED FROM THE FACE OF CURB UNLESS OTHERWISE NOTED.

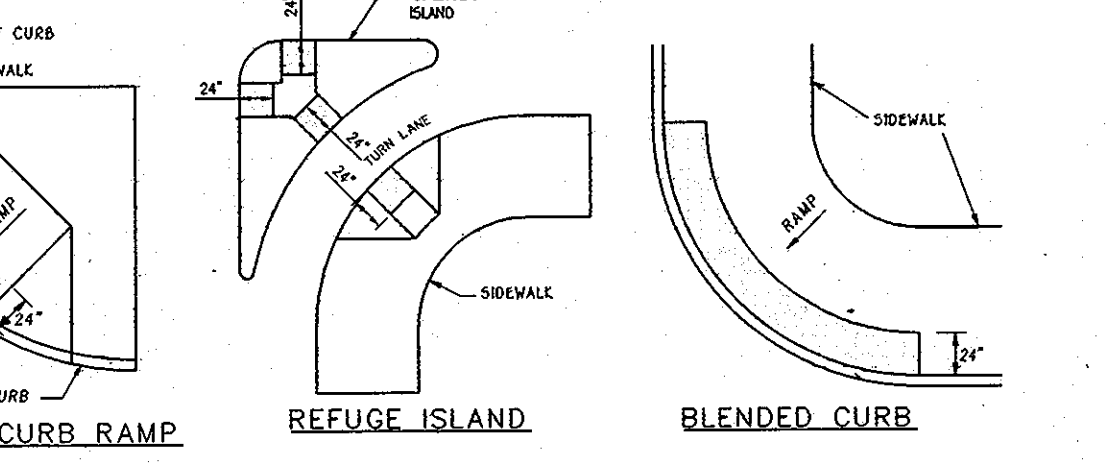
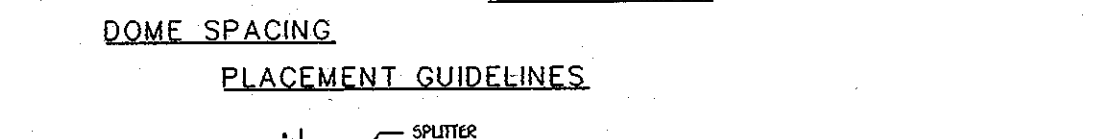
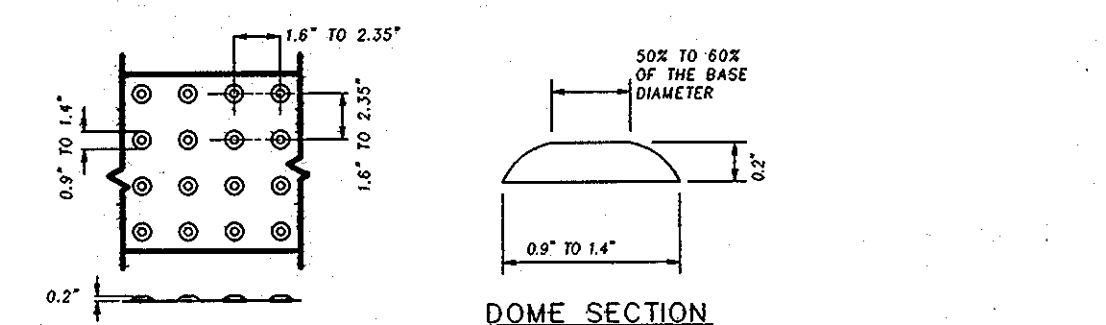
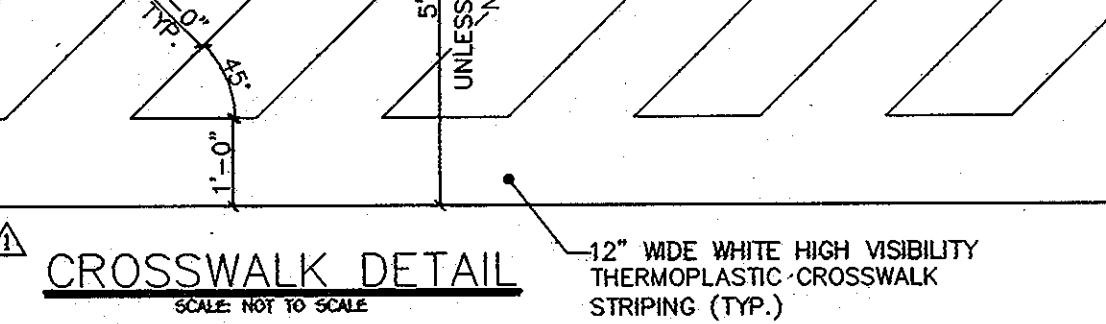
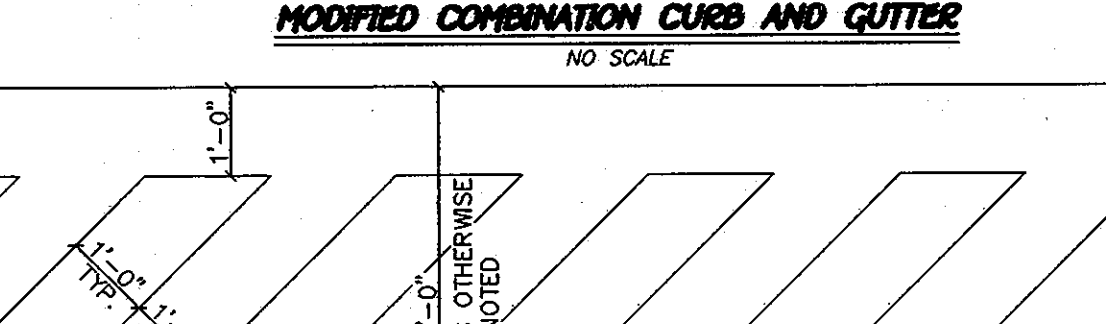
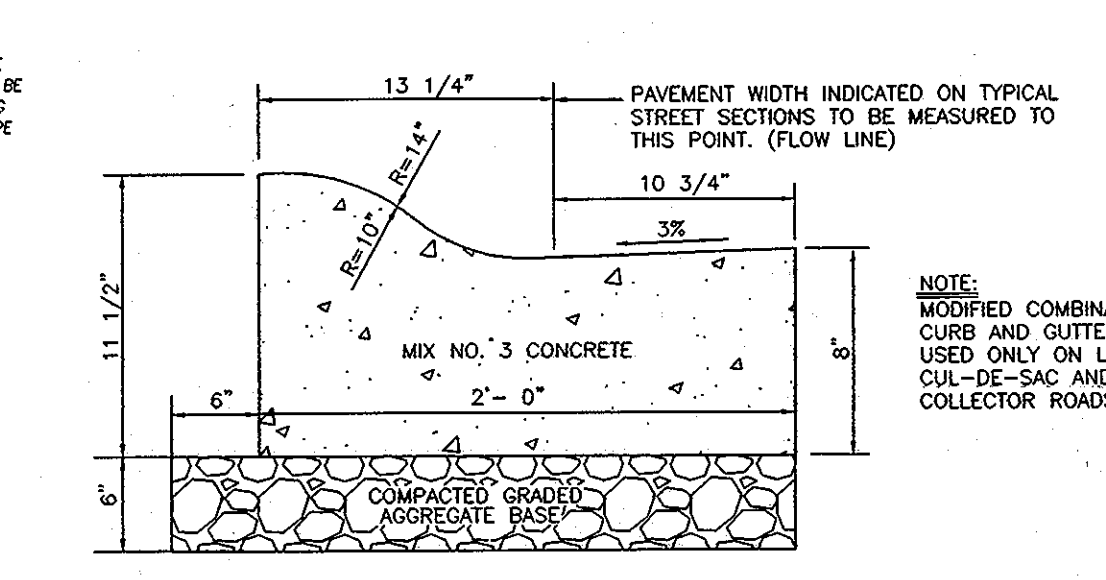
APPROVED:	DATE:
<i>Robt. Miller</i>	10/20/10
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE
<i>W. J. ...</i>	4/2/10
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE
<i>W. J. ...</i>	4-7-10
CHIEF, BUREAU OF HIGHWAYS	DATE

Maryland Department of Transportation
 STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
 TYPE C TRAFFIC BARRIER END TREATMENT
 STANDARD NO. MD 505.03



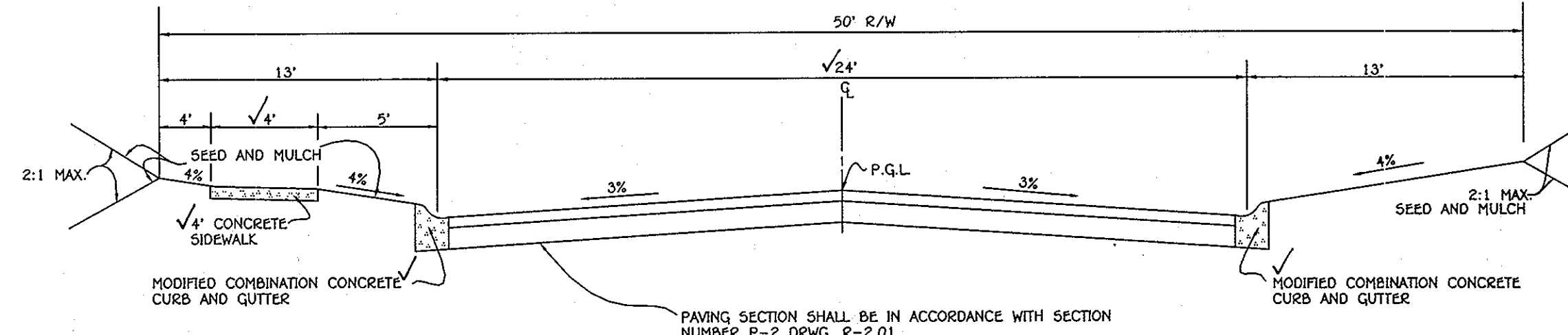
- NOTES:
- TO BE USED WHERE AT LEAST 7'-0" EXISTS BETWEEN THE BACK OF CURB AND THE BACK OF SIDEWALK. THIS STANDARD MAY BE MODIFIED TO SUIT A PARTICULAR LOCATION.
 - WHERE 6" SIDEWALK CAN NOT BE PROVIDED, A DESIGN NUMBER MUST BE REQUESTED.
 - NO TRAVELABLE SLOPE ON THE RAMP OR SIDEWALK SHALL EXCEED 12% IN THE DIRECTION OF PEDESTRIAN TRAVEL OR 4% PERPENDICULAR TO THE DIRECTION OF PEDESTRIAN TRAVEL.
 - EXPANSION JOINT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH STD. MD-655.01.
 - SIDEWALK RAMP SHALL BE INCLUDED IN PRICE BID FOR CONCRETE SIDEWALK. EXPANDED CURB AND CURB TRANSITION SHALL BE INCLUDED IN PRICE BID FOR CURB & GUTTER ADJACENT TO SIDEWALK RAMP. DETECTABLE WARNING SURFACE SHALL BE PAID FOR IN ACCORDANCE WITH SECTION 611 OF THE SPECIFICATIONS.
 - SIDEWALK RAMP TO BE SHOWN BY PLANS EXPLICITLY AND REFERENCED WITH THE CENTER OF THE RAMP ALIGNED TO A STATION ON THE CONSTRUCTION CENTERLINE. SEPARATE DETAILS SHALL BE SHOWN WHERE PROPOSED RAMP VARIES FROM STANDARD CASES.
 - FOR BUFFER WIDTHS LESS THAN 24", WIDER SIDEWALK TO BACK OF CURB AS SHOWN FOR THE SPECIAL CASE, THEN BUILD PARALLEL RAMP USING STANDARD MD-655.12.

SIDEWALK RAMP COMBINATION
 NO SCALE MD-655.13



- NOTES:
- THE DETECTABLE WARNING SURFACE SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6 TO 8 INCHES FROM THE FACE OF CURB.
 - FOR SKEWED APPLICATIONS DETECTABLE WARNING SHALL BE PLACED SUCH THAT THE DOMES CLOSEST TO THE BACK OF CURB ARE NO LESS THAN 0.5' AND NO MORE THAN 3.0' FROM THE BACK OF CURB. TRUNCATED DOME SURFACES SHALL BE FABRICATED TO PROVIDE FULL DOMES ONLY.
 - DETECTABLE WARNING SURFACE SHALL BE PAID FOR IN ACCORDANCE WITH SECTION 611 OF THE SPECIFICATIONS.
 - DETECTABLE WARNING SURFACES ARE REQUIRED AT STREET CROSSING & SIGNALIZED INTERSECTIONS.

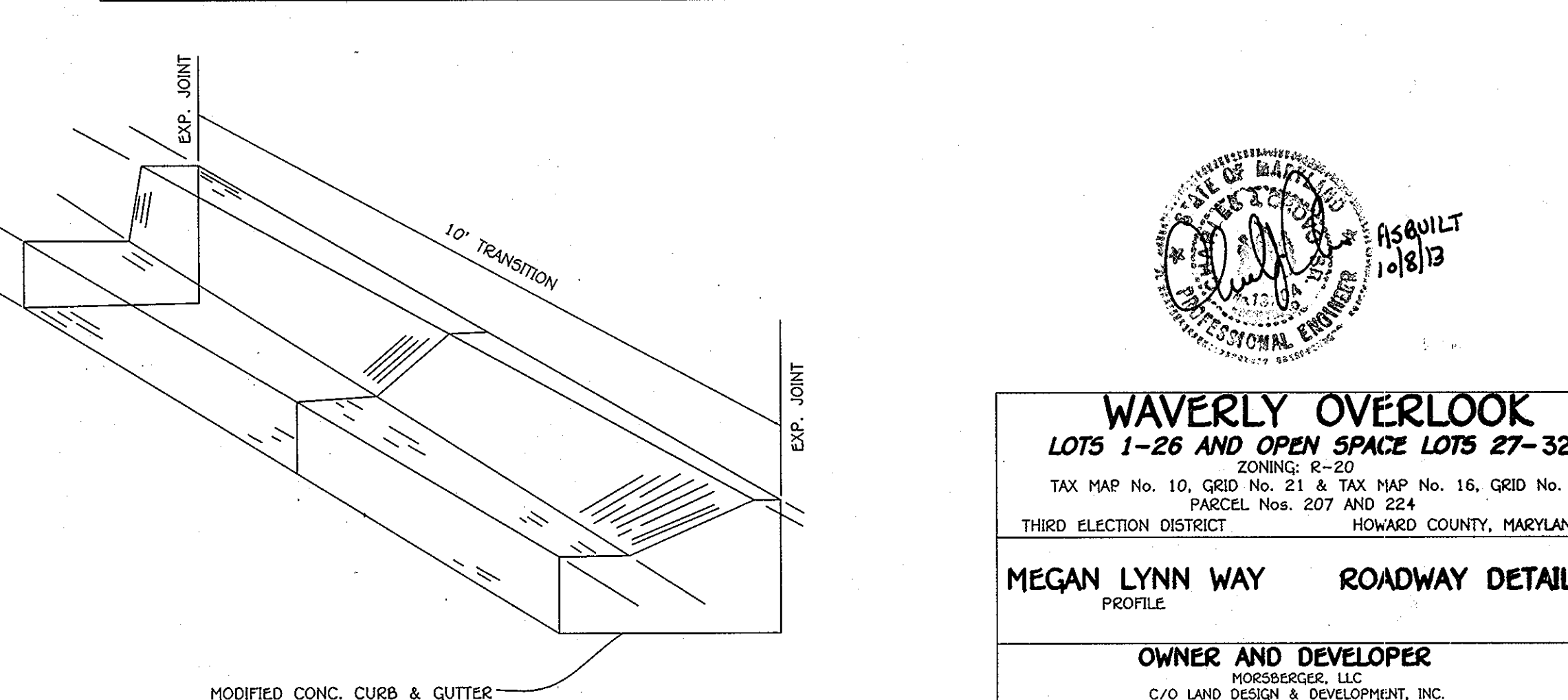
DETECTABLE WARNING SURFACE
 STD. DETAIL NO. 555-10



ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH HOWARD COUNTY DESIGN MANUAL VOLUME IV, STANDARD SPECIFICATION AND DETAILS FOR CONSTRUCTION.

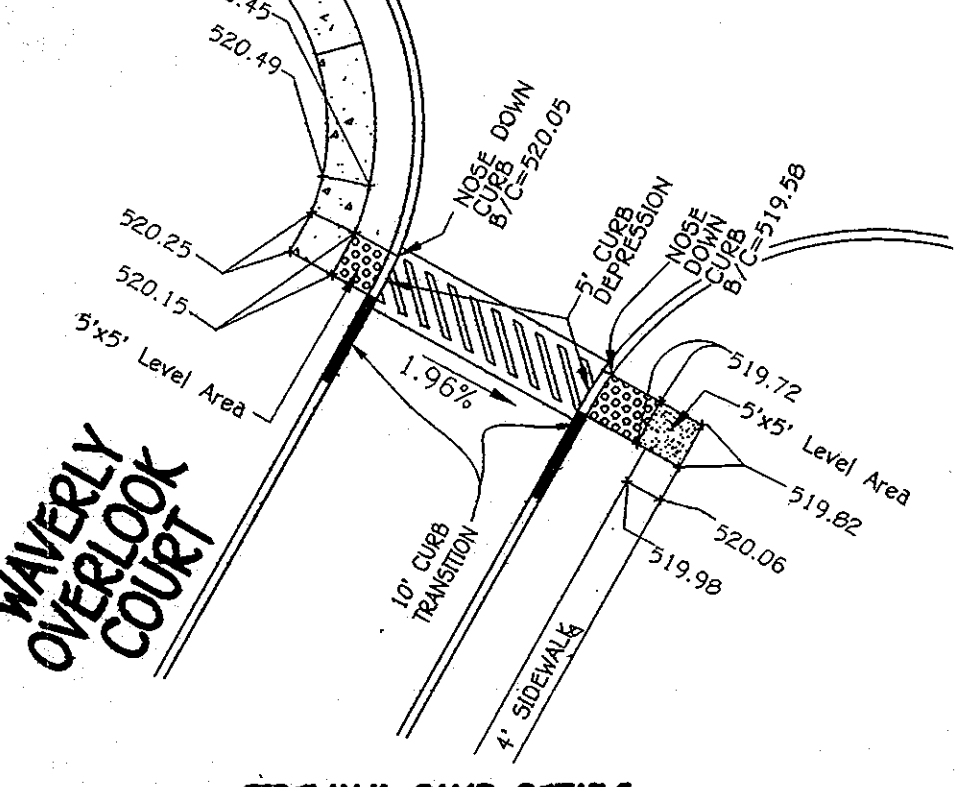
ROADWAY INFORMATION CHART					
ROAD NAME	CLASSIFICATION	DESIGN SPEED	ZONING	STATION LIMITS	PAVING SECTION
MANSION OVERLOOK COURT	PUBLIC ACCESS STREET	30 M.P.H.	R-ED	0+00 TO 5+99.10V	P-2
MEGAN LYNN WAY	PUBLIC ACCESS PLACE	25 M.P.H.	R-ED	0+00 TO 2+99.66V	P-2

SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR) (INCHES)		
		3 TO <5	3 TO <5	
P-2	PARKING DRIVE ASBESTOS: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY LOCAL ROADS: ACCESS PLACE, ACCESS STREET CUL-DE-SACS: RESIDENTIAL	PAVEMENT MATERIAL	MIN HMA WITH GAB	HMA WITH CONSTANT GAB
		HMA SUPERPAVE FINAL SURFACE 9.5 MM PG 64-22, LEVEL 1 (ESAL)	1.5	1.5
		HMA SUPERPAVE INTERMEDIATE SURFACE 9.5 MM PG 24-22, LEVEL 1 (ESAL)	1.0	1.0
		HMA SUPERPAVE BASE 19.0 MM PG 64-22, LEVEL 1 (ESAL)	2.0	3.5
		GRADED AGGREGATE BASE (GAB)	8.0	4.0

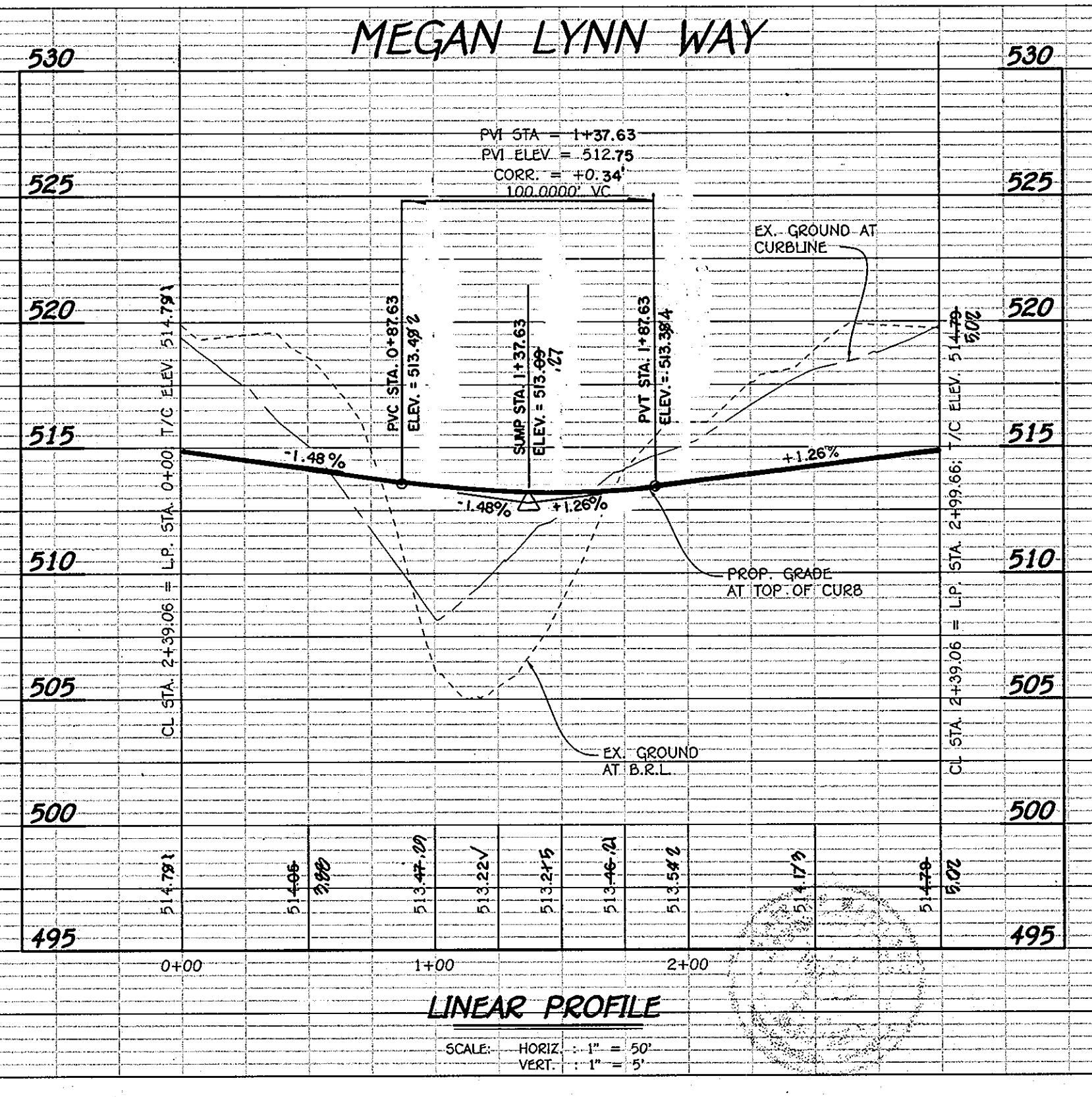
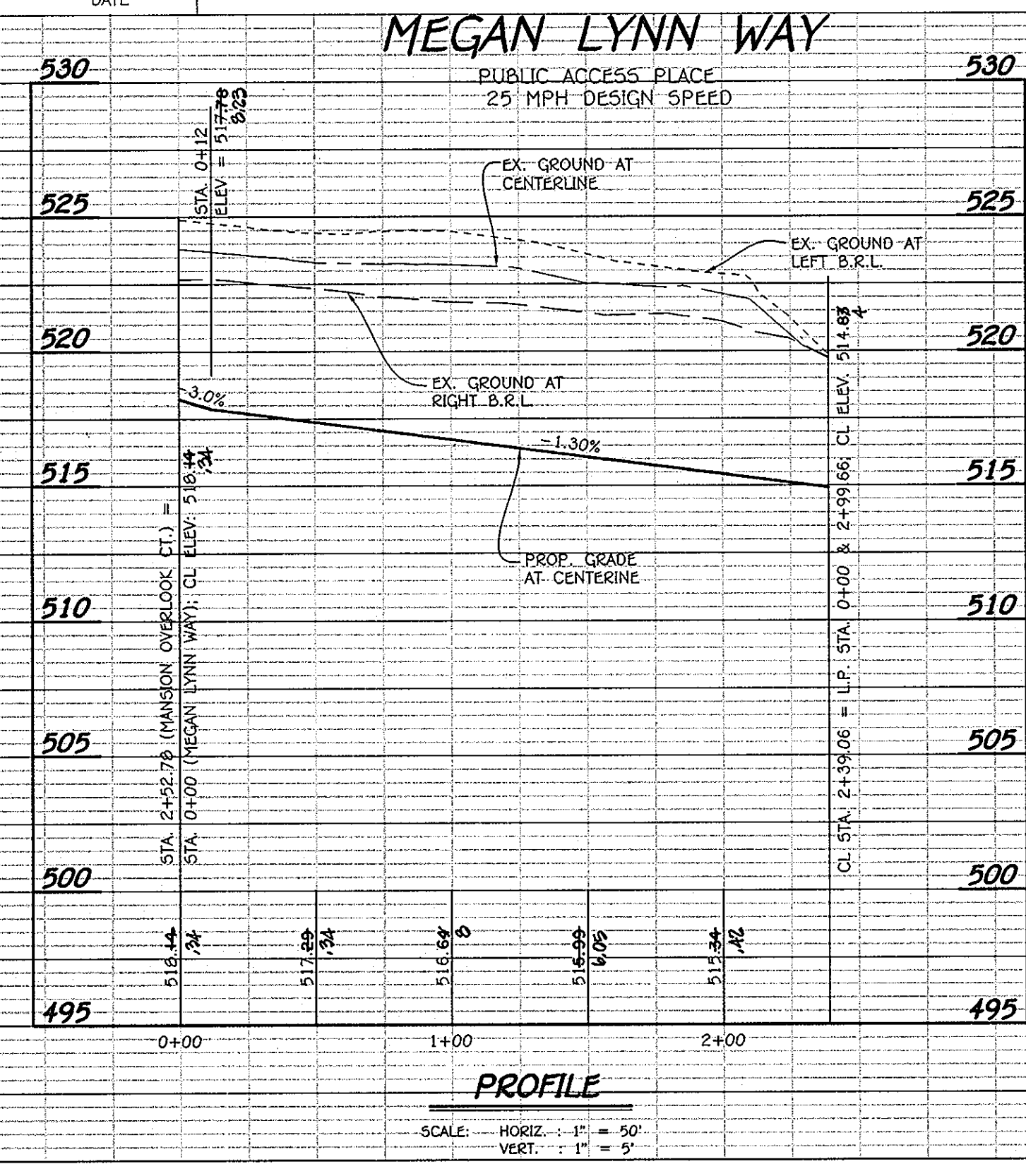


CONCRETE CURB & GUTTER TRANSITION
 NO SCALE

1	Revised Roadway Details & Road Profiles	10/20/10
NO.	DESCRIPTION	DATE
REVISIONS		
APPROVED: DEPARTMENT OF PLANNING AND ZONING		
<i>W. J. ...</i>		4/26/10
CHIEF, DIVISION OF LAND DEVELOPMENT		DATE
<i>W. J. ...</i>		4/2/10
CHIEF, DEVELOPMENT ENGINEERING DIVISION		DATE
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS		
<i>W. J. ...</i>		4-7-10
CHIEF, BUREAU OF HIGHWAYS		DATE



SIDEWALK RAMP DETAILS
 SCALE: 1" = 20'



WAVERLY OVERLOOK
 LOTS 1-26 AND OPEN SPACE LOTS 27-32
 TAX MAP No. 10, GRID No. 21 & TAX MAP No. 16, GRID No. 4
 PARCEL Nos. 207 AND 224
 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND

MEGAN LYNN WAY ROADWAY DETAILS
 PROFILE

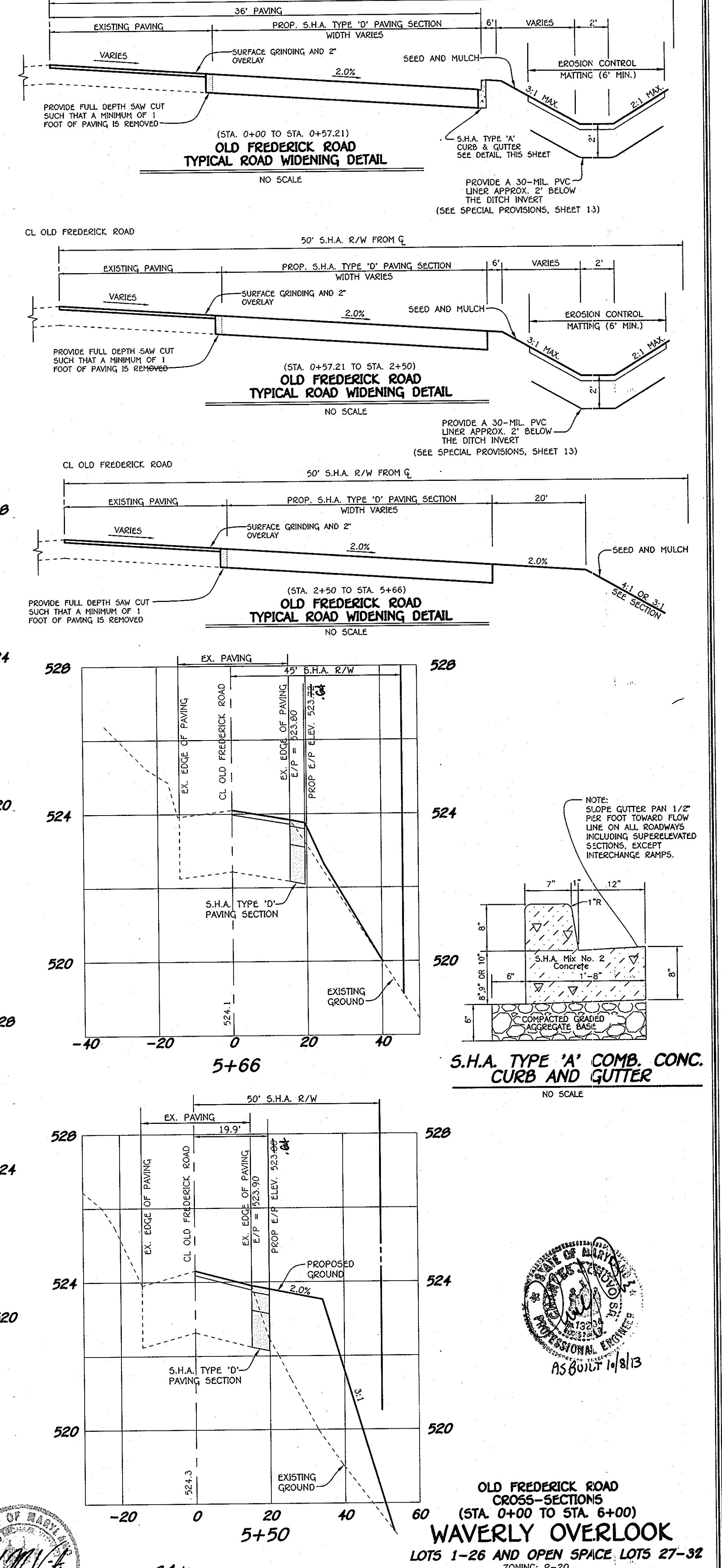
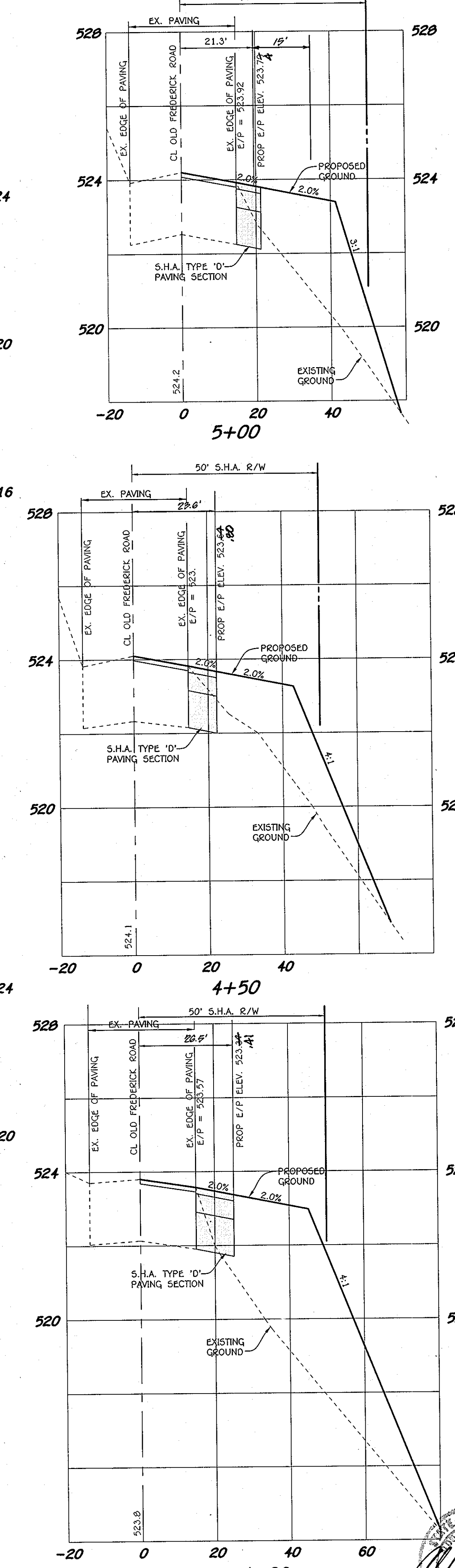
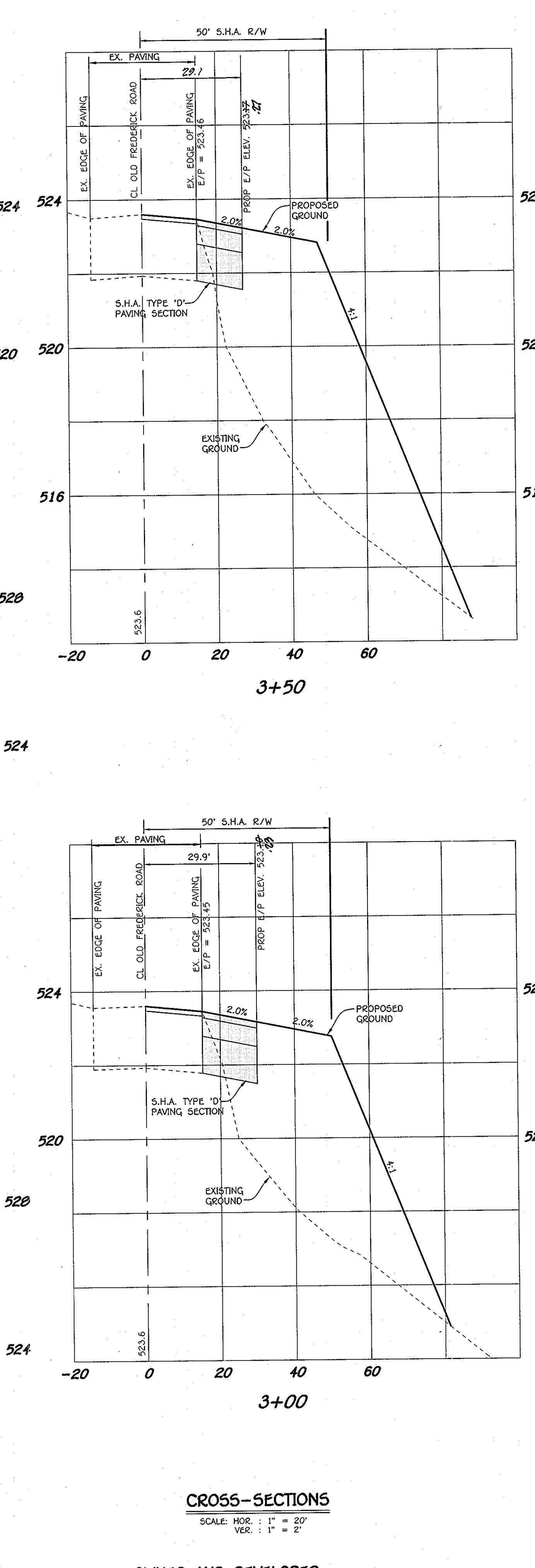
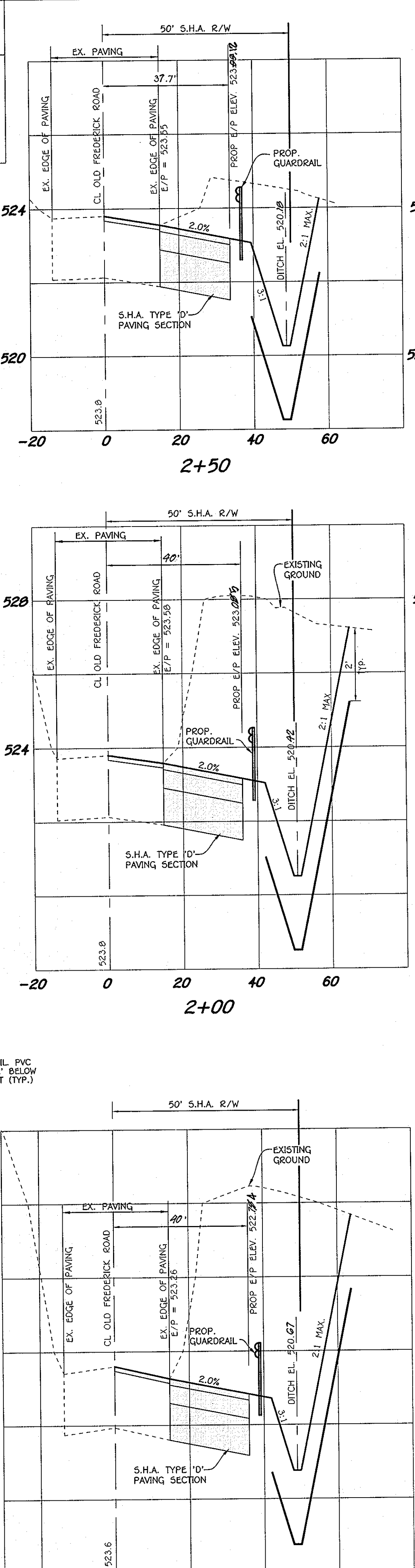
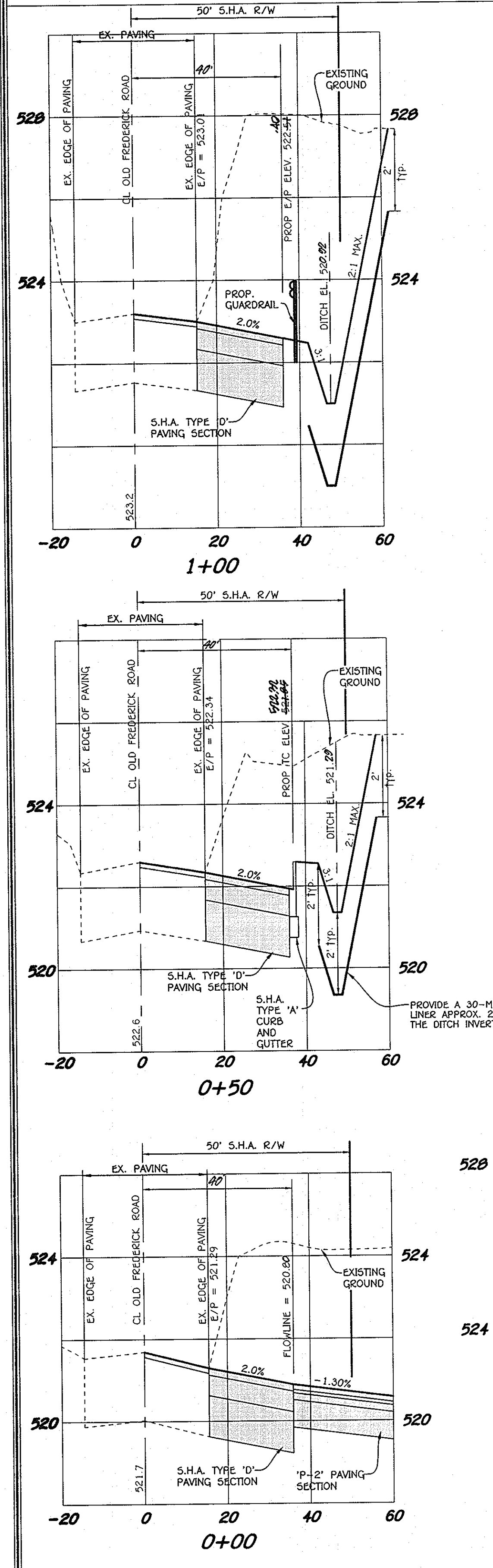
OWNER AND DEVELOPER
 MORSEBERGER, LLC
 C/O LAND DESIGN & DEVELOPMENT, INC.
 5300 HORSLEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 443-367-0415

SCALE: AS SHOWN DATE: MARCH 4, 2010 DWG. NO. 5 OF 22
 DES. A.M.V. DRN. J.C.L. CHK. A.M.V.

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 10272 BALDWIN NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-2895

AS-BUILT-10-027

APPROVED: DEPARTMENT OF PUBLIC WORKS
 4-7-10 DATE
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
 4/24/10 DATE
 CHIEF, DIVISION OF LAND DEVELOPMENT
 APPROVED: DEPARTMENT OF ENGINEERING
 4/28/10 DATE
 CHIEF, DEVELOPMENT ENGINEERING DIVISION



CROSS-SECTIONS
 SCALE: HOR. : 1" = 20'
 VER. : 1" = 2'

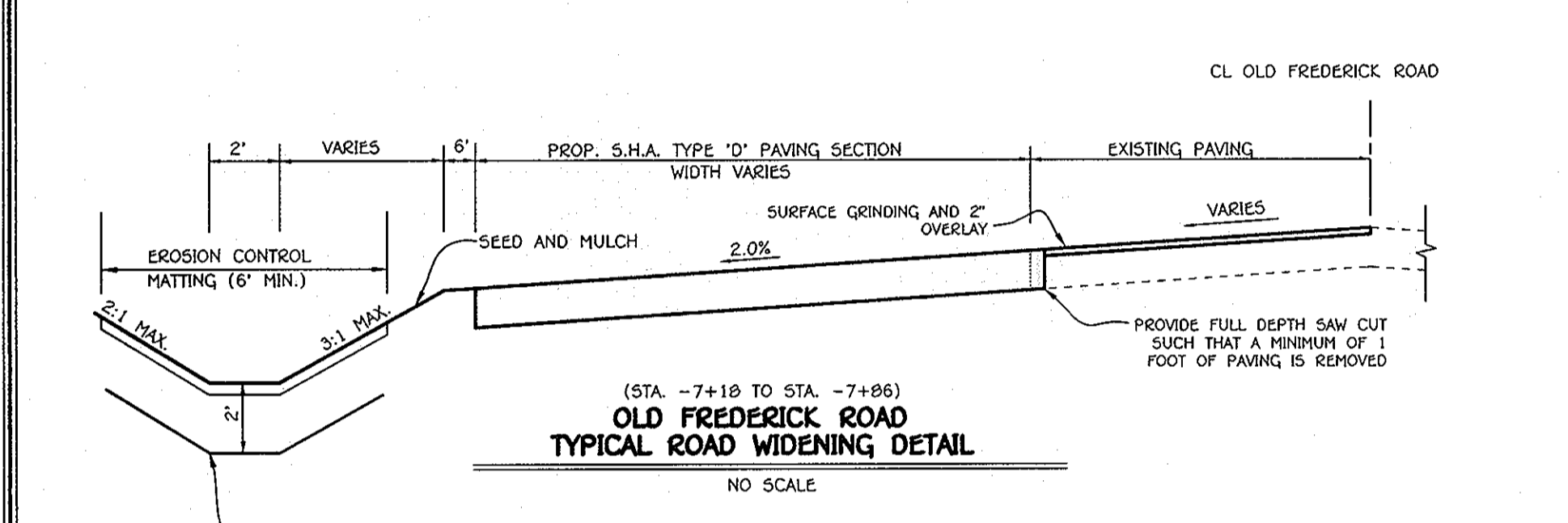
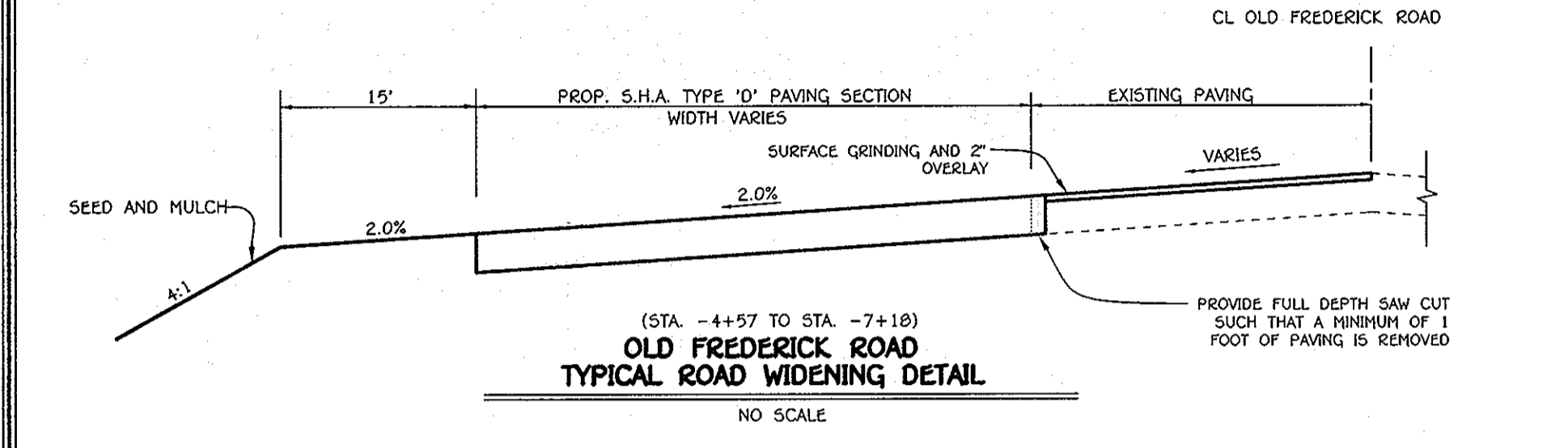
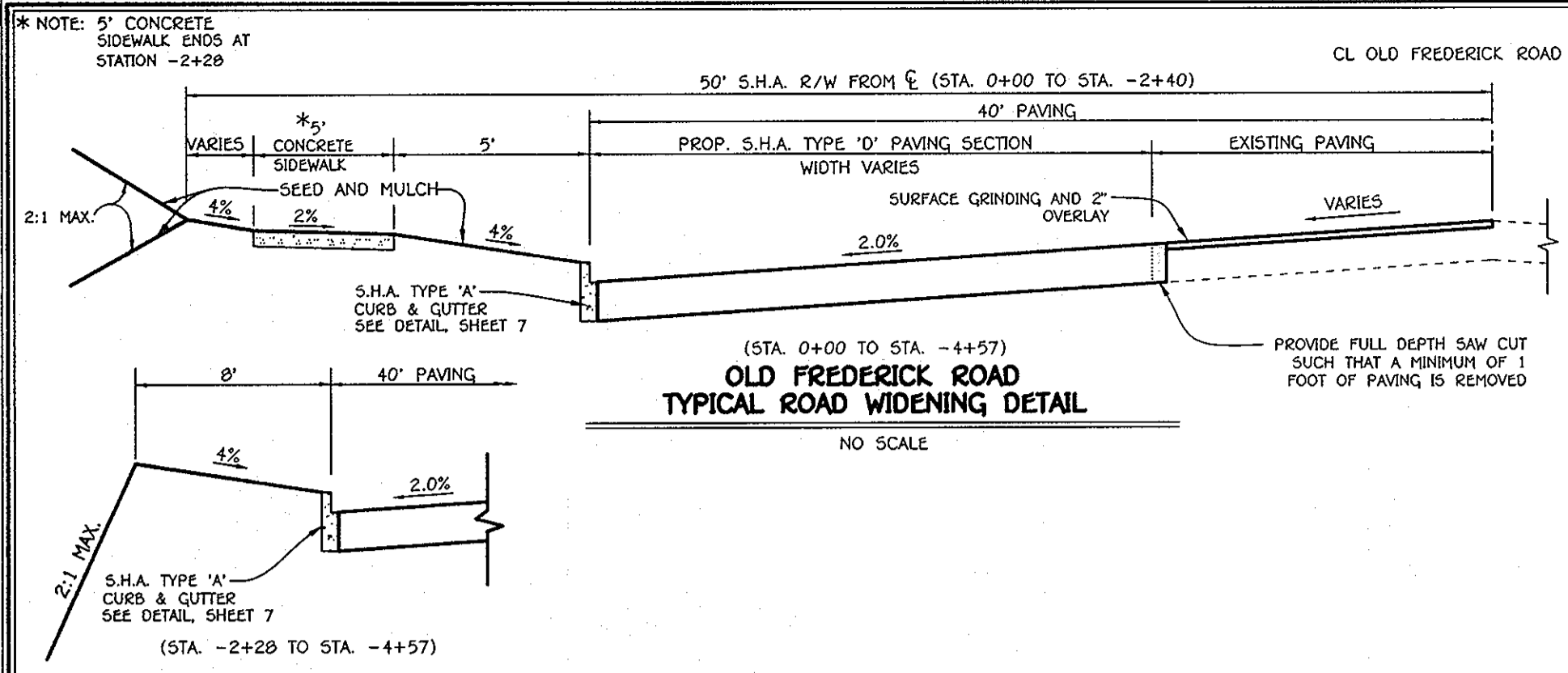
OWNER AND DEVELOPER
 MORSBERGER, LLC
 C/O LAND DESIGN & DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 410-367-0422

No.	Description	Date
1	Revised S.H.A. Widening	10/20/10



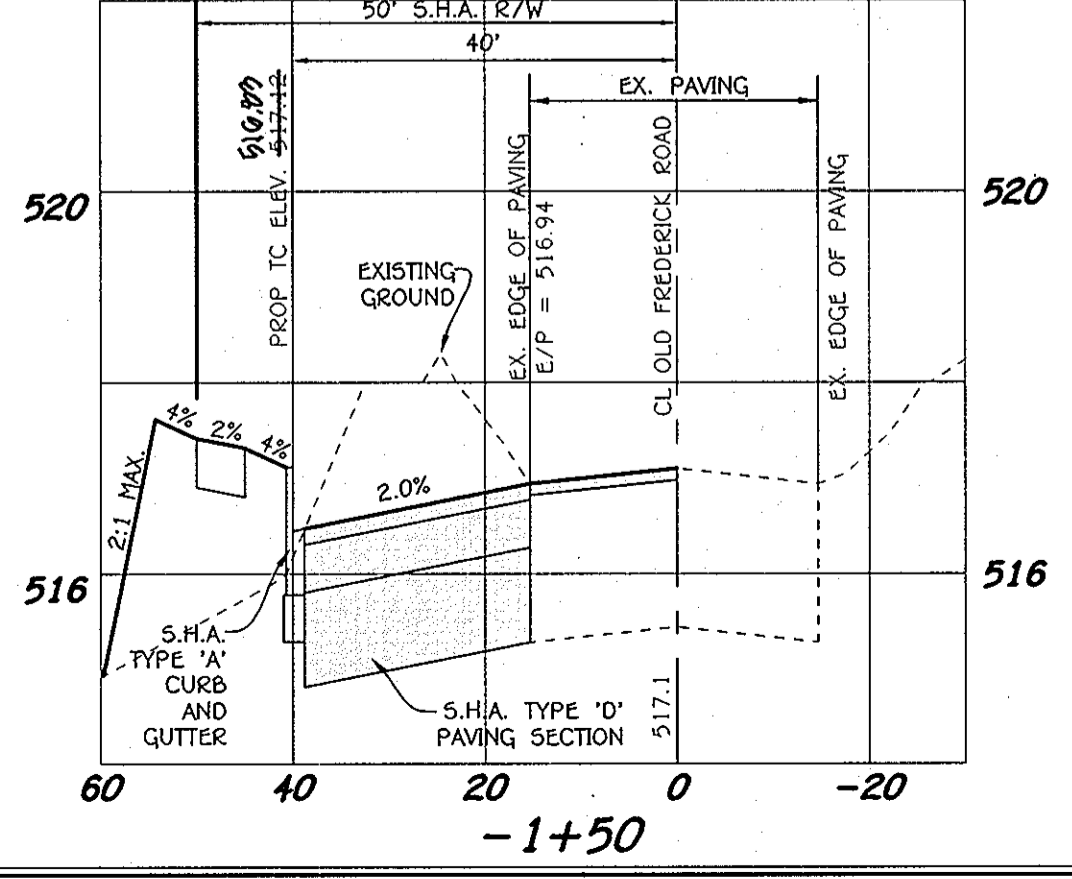
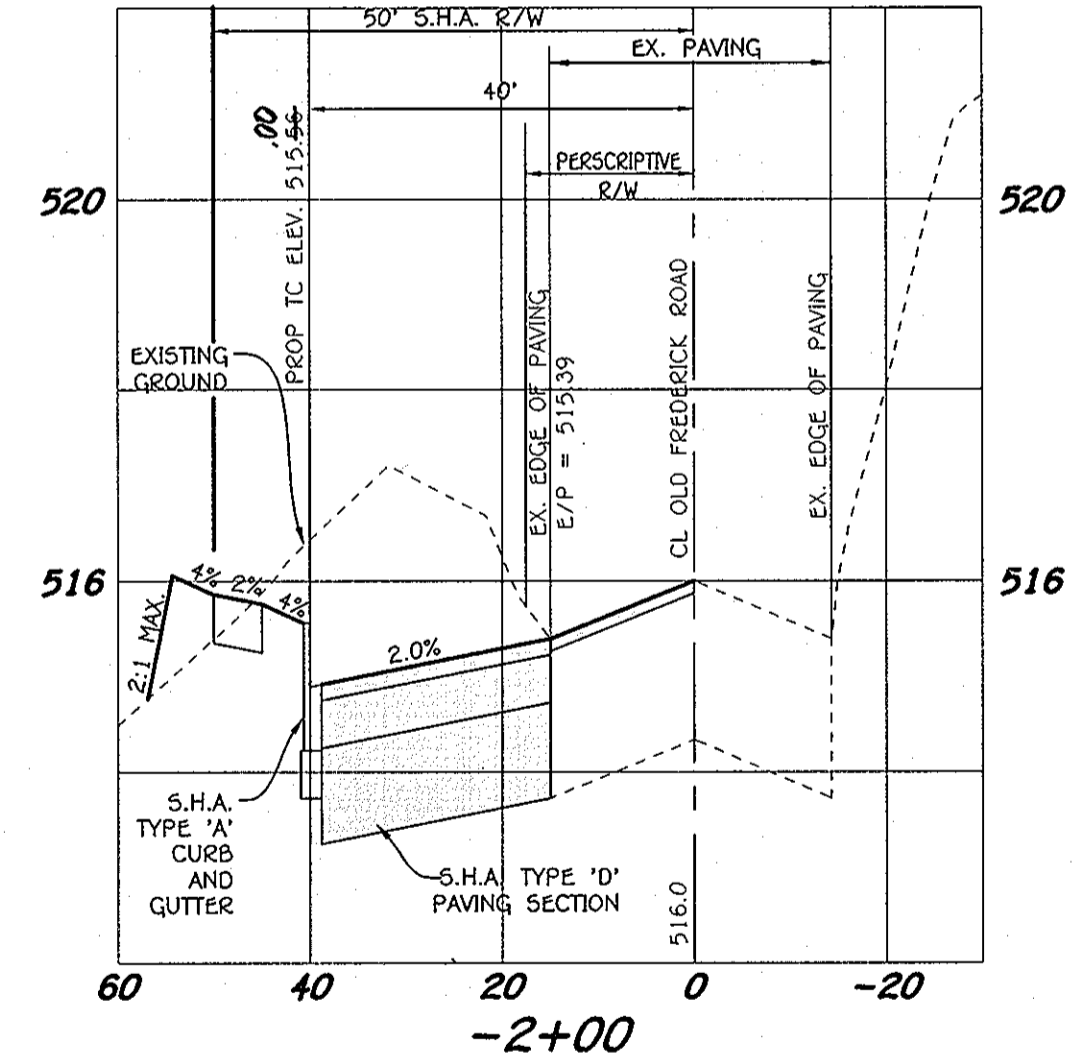
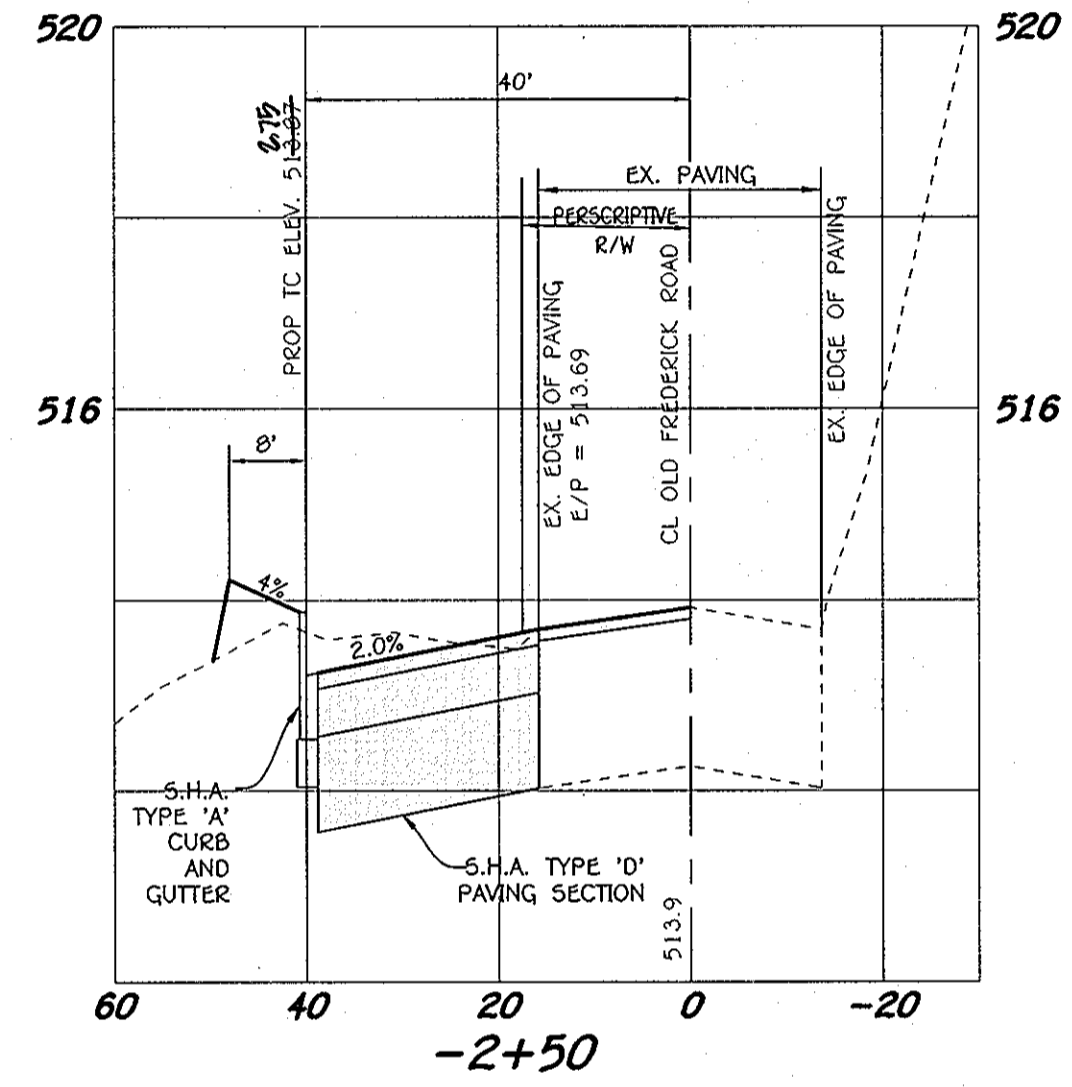
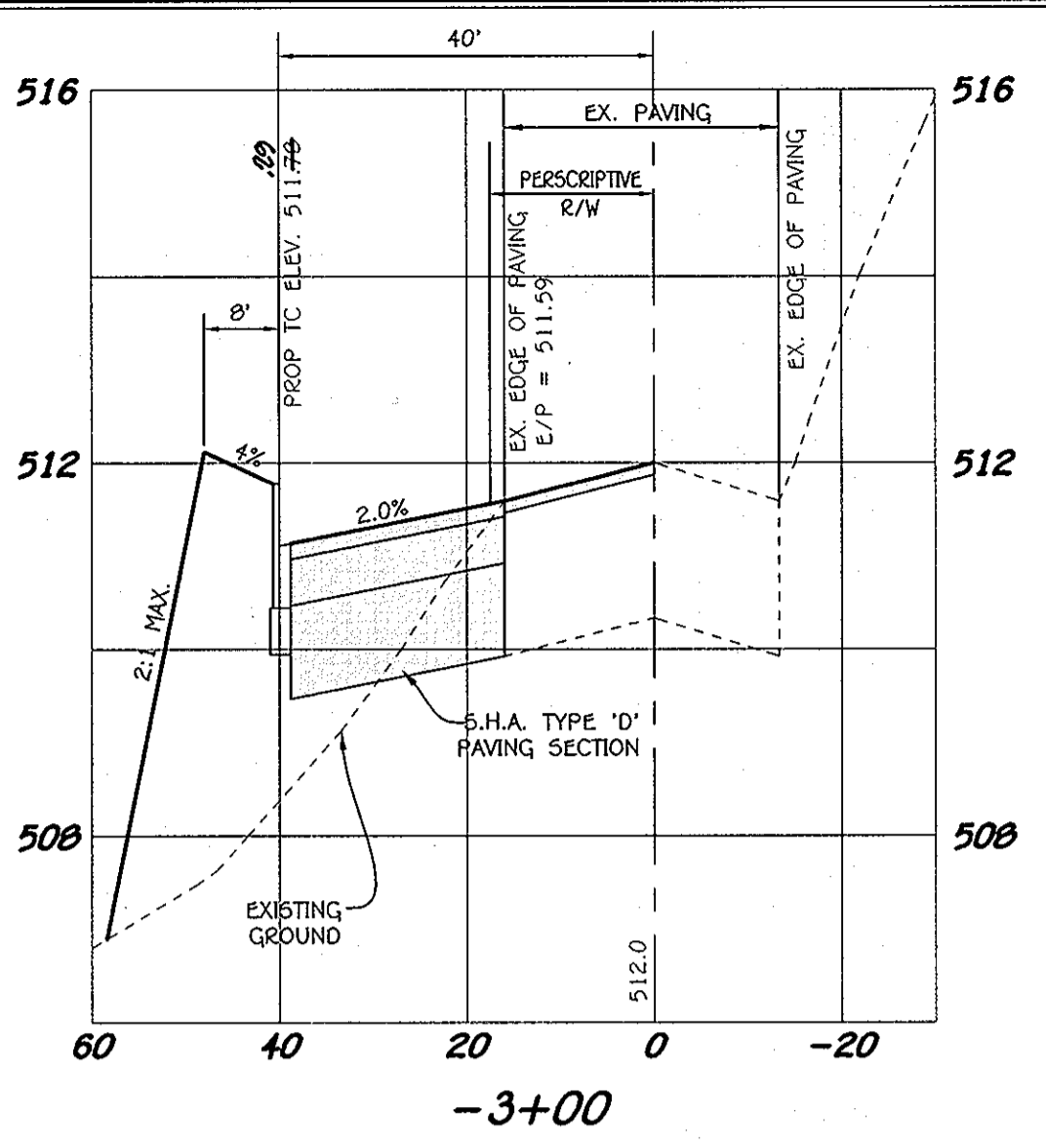
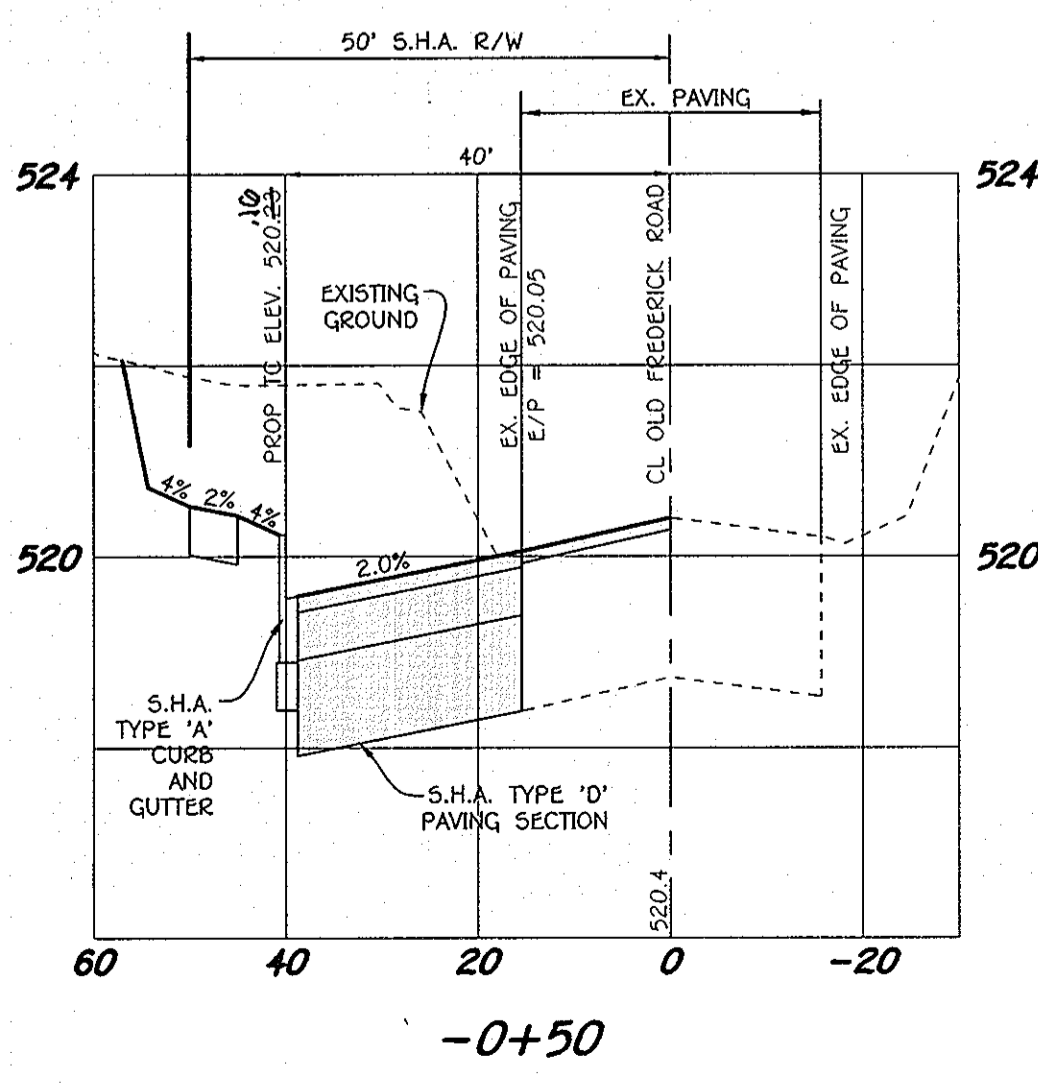
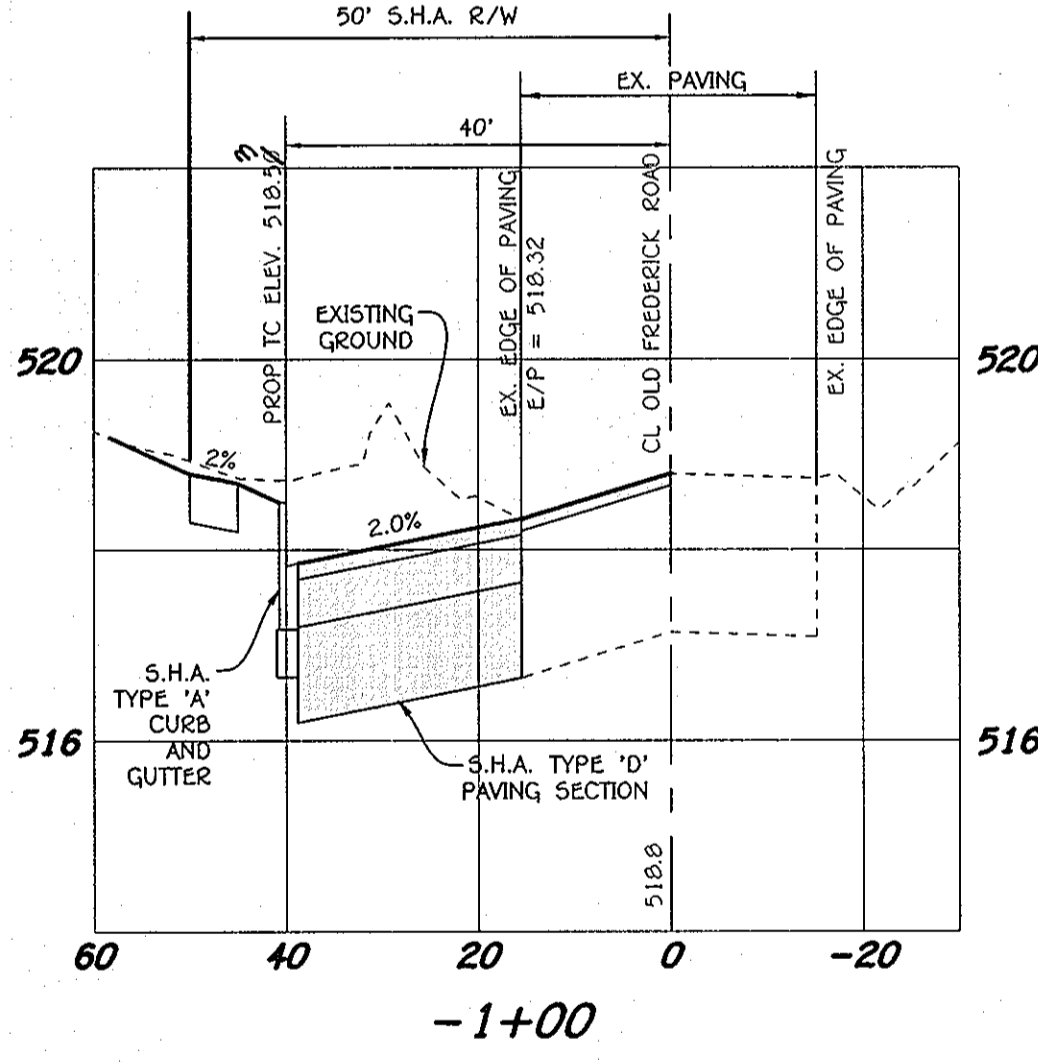
OLD FREDERICK ROAD CROSS-SECTIONS (STA. 0+00 TO STA. 6+00) WAVERLY OVERLOOK LOTS 1-26 AND OPEN SPACE LOTS 27-32
 ZONING: R-20
 TAX MAP No. 10, GRID No. 21 & TAX MAP No. 16, GRID No. 4
 PARCEL Nos. 207 AND 224
 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 DATE: MARCH 4, 2010
 SHEET 7 OF 22

AS-BUILT F-10-027

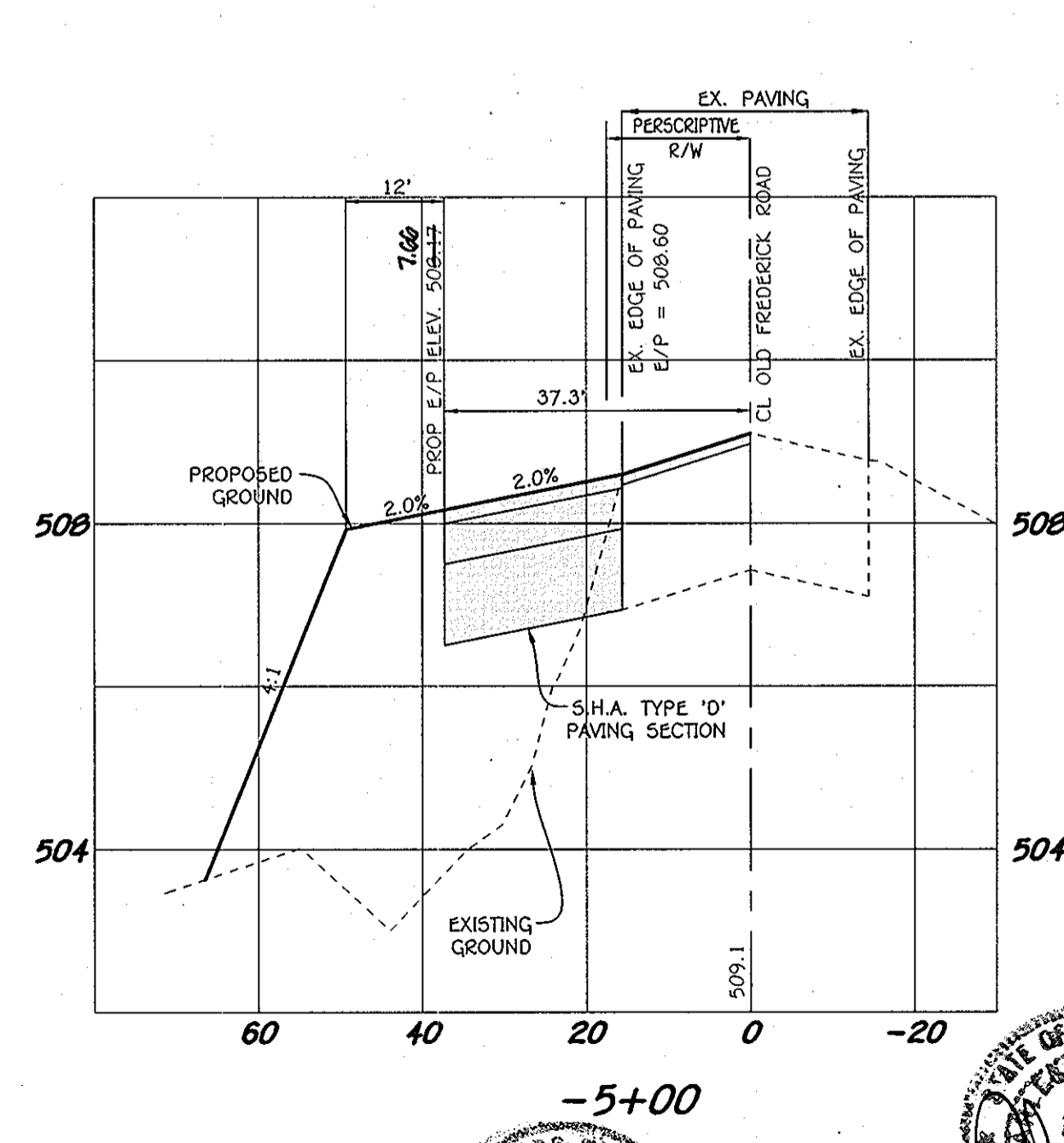
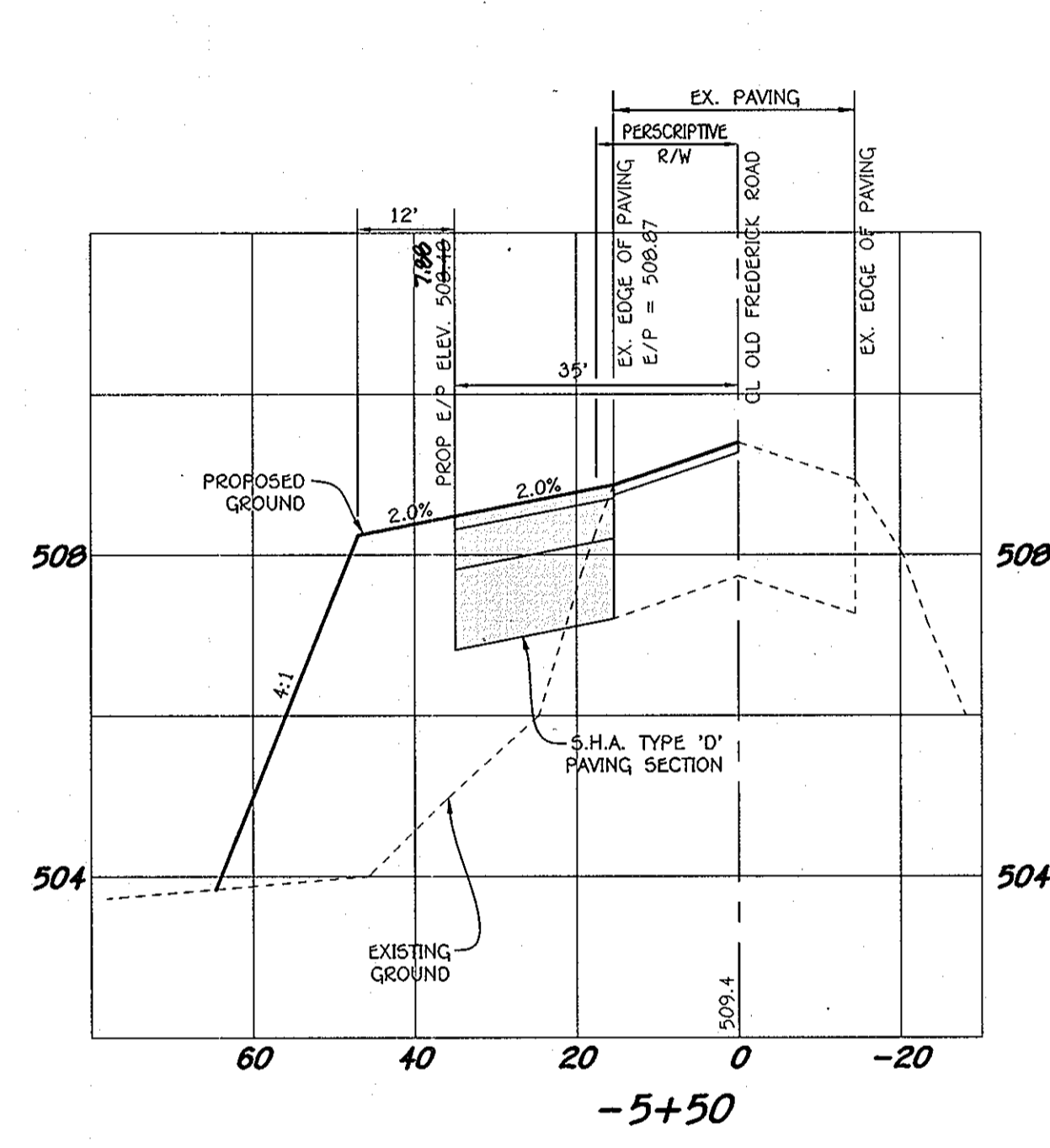
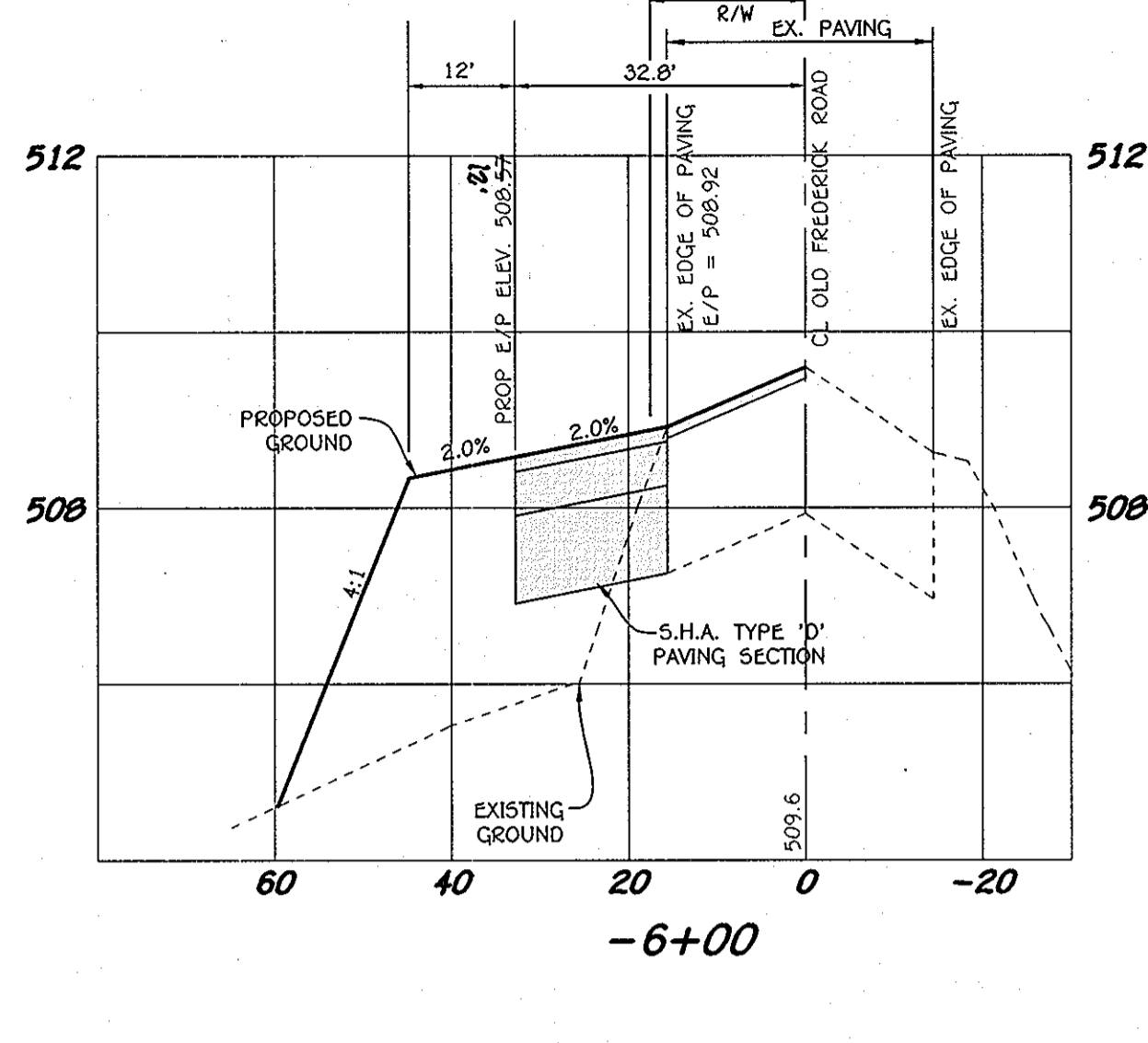
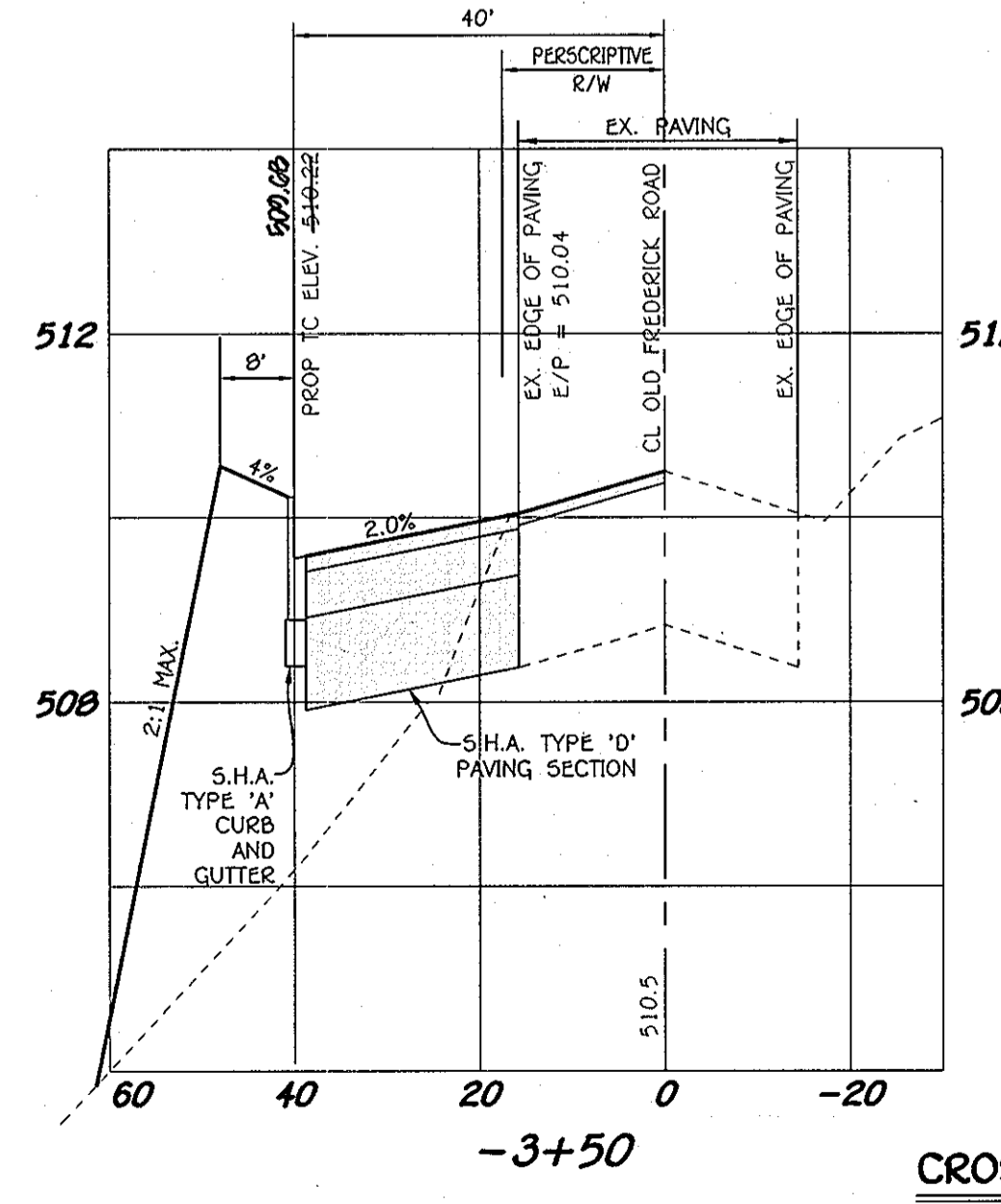
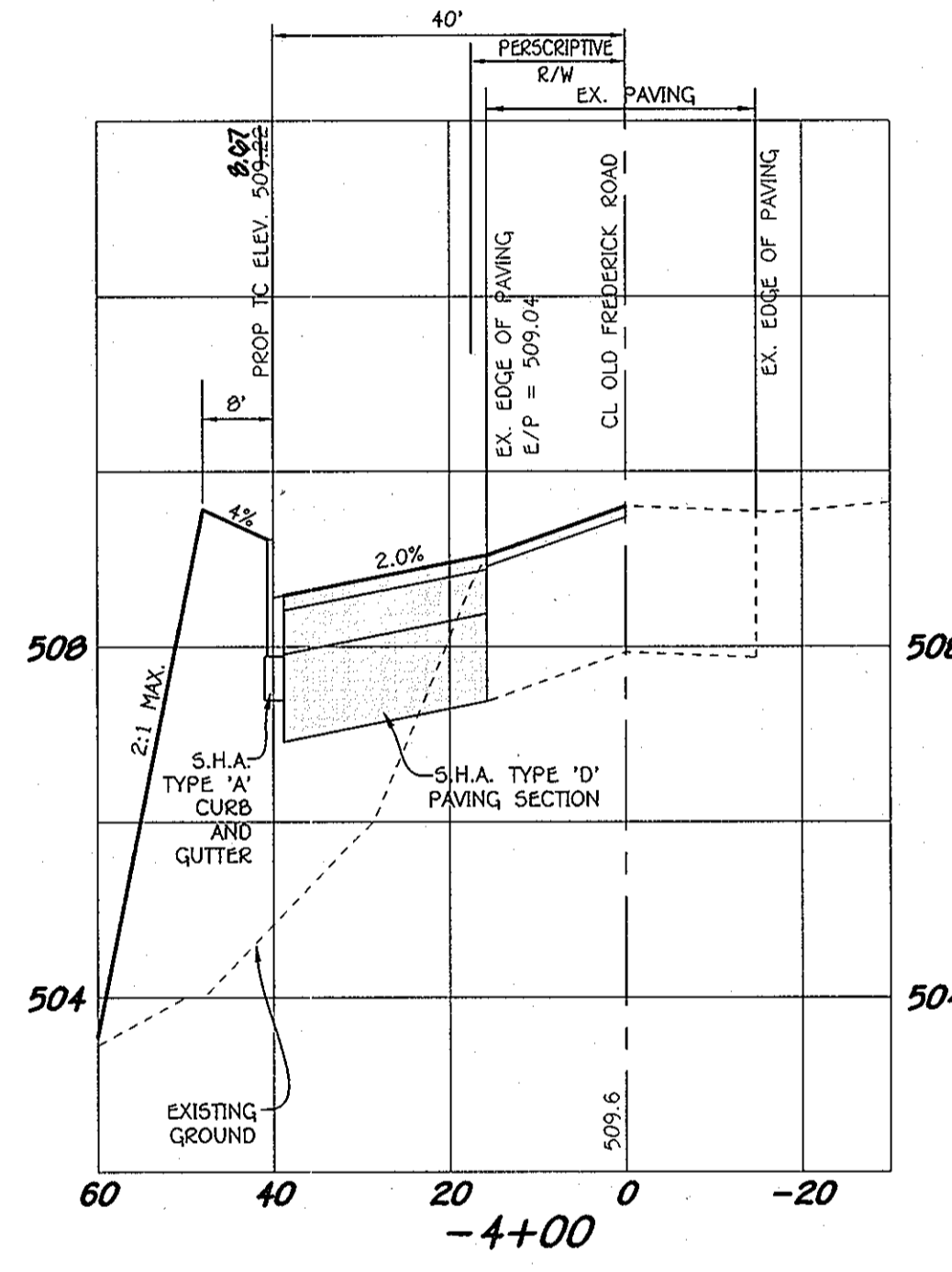
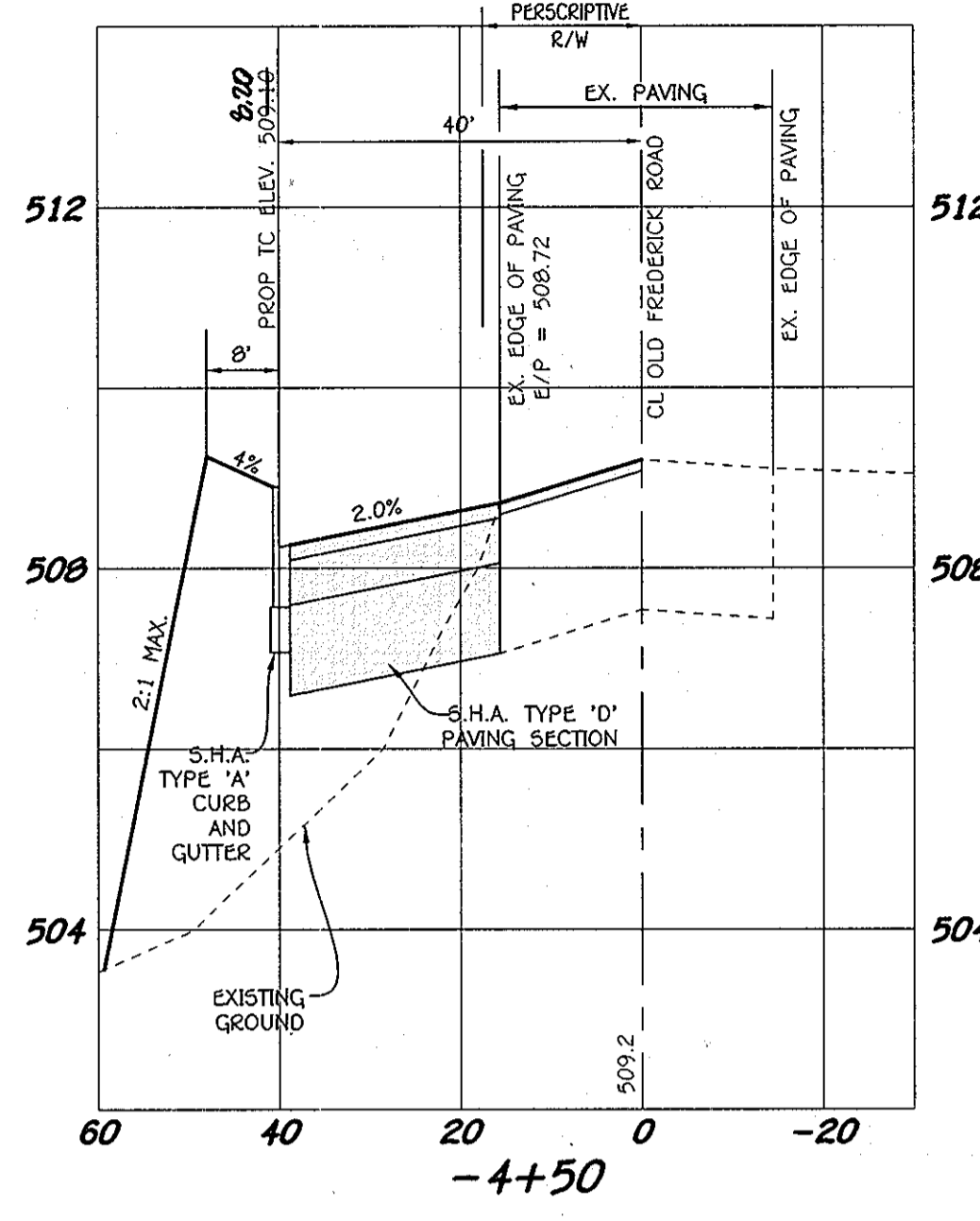


PROVIDE A 30-MIL. PVC LINER APPROX. 2\"/>

(SEE SPECIAL PROVISIONS, SHEET 13)



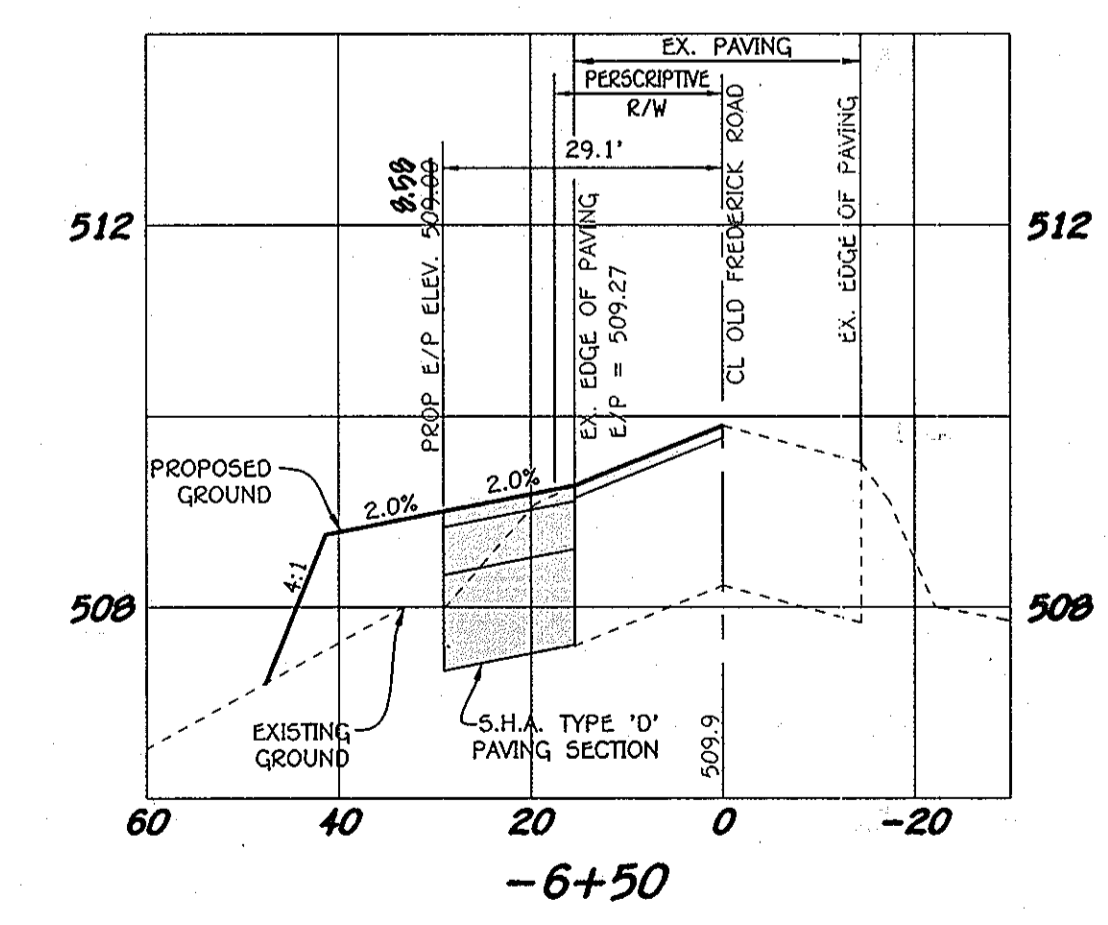
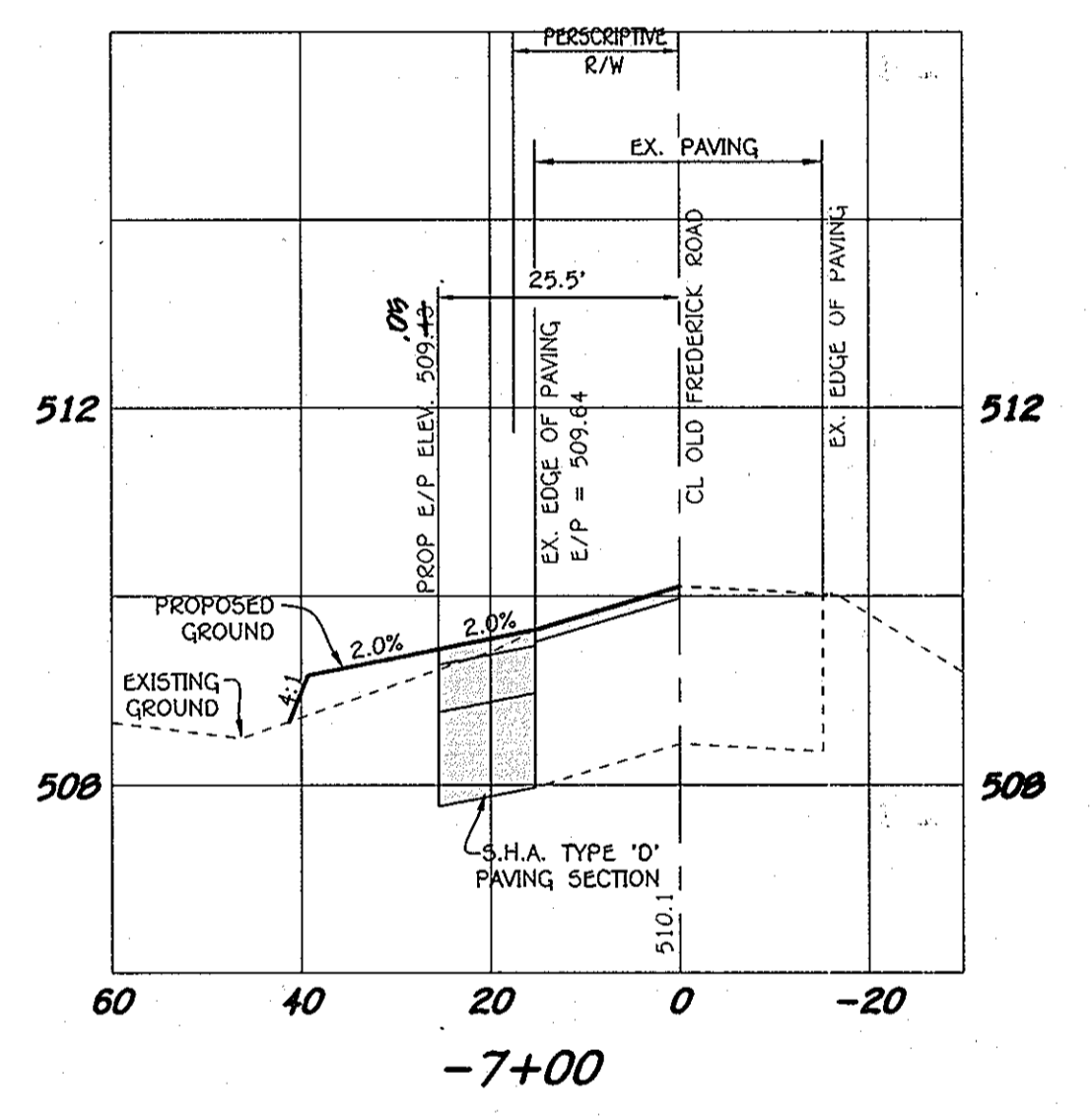
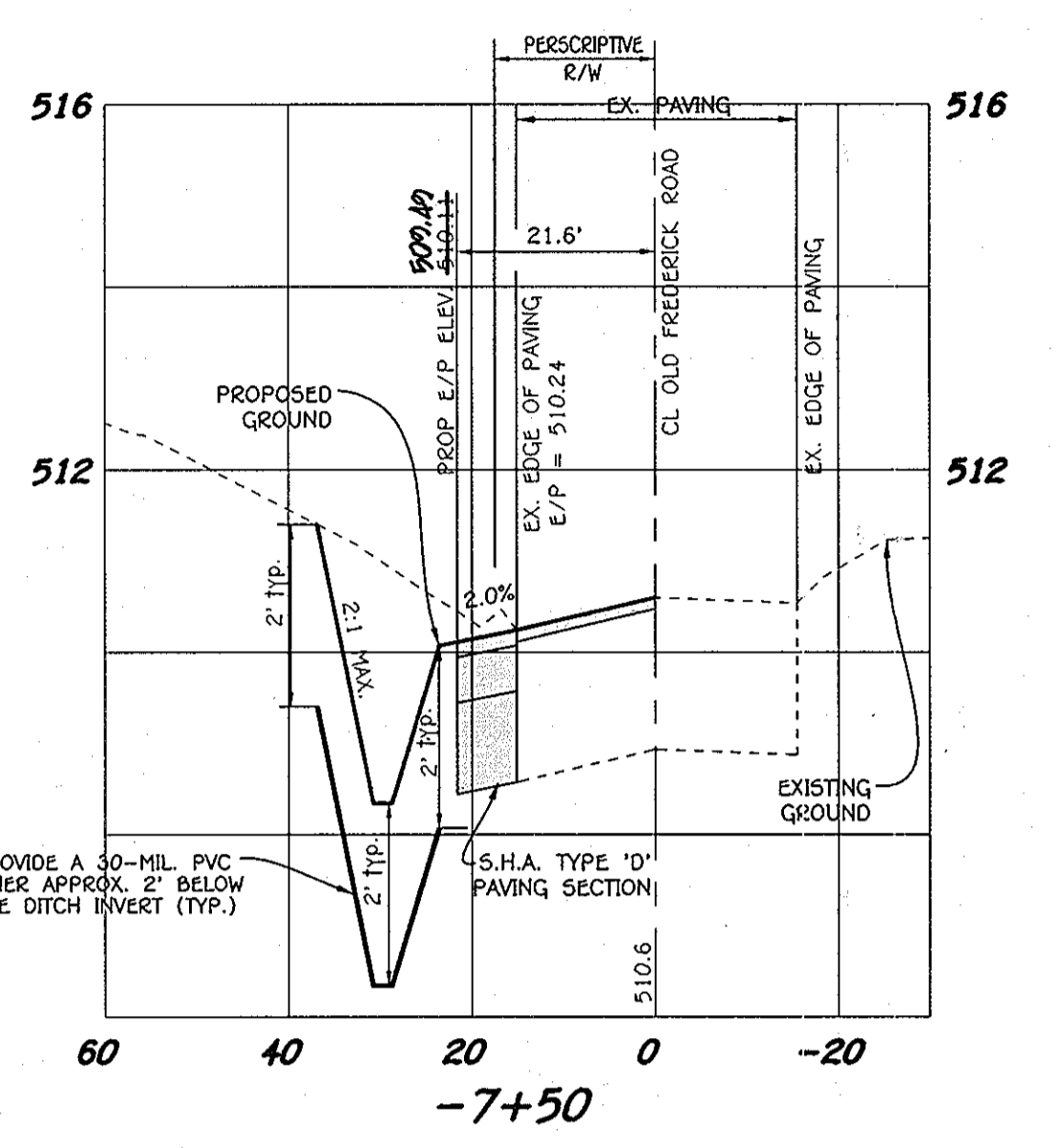
SECTION -2+50 THRU -7+50 ARE ON HOWARD COUNTY PROPERTY, NO S.H.A. RIGHT-OF-WAY IS PROPOSED (PERSPECTIVE RIGHT-OF-WAY IS SHOWN)



APPROVED: DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS
 DATE: 4-7-10

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 4/20/10

CHIEF, DEVELOPMENT ENGINEERING DIVISION



OWNER AND DEVELOPER
 MORSEBERGER, LLC
 C/O LAND DESIGN & DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 410-367-0422

CROSS-SECTIONS
 SCALE: HOR. : 1" = 20'
 VER. : 1" = 2'

APPROVED: DATE: 3-4-10
 I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 207489, Expiration Date 2-22-11.



OLD FREDERICK ROAD
 CROSS-SECTIONS
 (STA. 0+00 TO STA. -7+50)
 WAVERLY OVERLOOK
 LOTS 1-26 AND OPEN SPACE LOTS 27-32
 ZONING: R-20
 TAX MAP No. 10, GRID No. 21 & TAX MAP No. 16, GRID No. 4
 PARCEL Nos. 207 AND 224
 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 DATE: MARCH 4, 2010
 SHEET 8 OF 22

AS-BUILT F-10-027

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTRAL SQUARE OFFICE PARK - 10775 BALTIMORE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-1295

L:\2004\04135\dwg\CURRENT FINAL R-20\04135 SHEET 7-8 CROSS-SECTIONS.dwg, 3/27/2010 1:54:25 PM, James

APPROVED: DEPARTMENT OF PUBLIC WORKS
Willie Z. Marshall 4-7-10
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
W. J. DeLoach 4/22/10
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

W. J. DeLoach 4/22/10
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

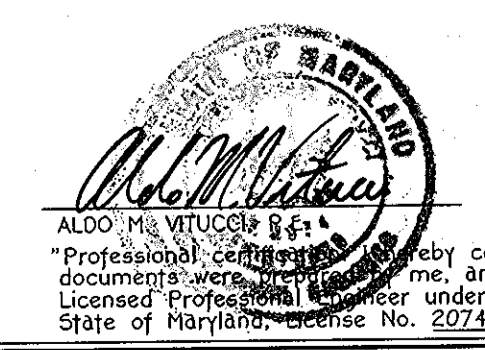
DRAINAGE AREA DATA						
STRUCTURE NO.	DRAINAGE AREA	AREA	"C"	ZONED	IMPERVIOUS AREA	%
I-1	A	0.78 AC.	0.63	R-20	0.42	54%
I-2	B	0.33 AC.	0.59	R-20	0.16	48%
I-3	C	0.51 AC.	0.54	R-20	0.21	41%
I-4	D	0.34 AC.	0.52	R-20	0.13	38%
I-5	E	1.15 AC.	0.64	R-20	0.64	56%
I-6	F	0.77 AC.	0.55	R-20	0.33	43%
I-7	G	0.27 AC.	0.41	R-20	0.06	22%
I-8	H	0.31 AC.	0.59	R-20	0.15	48%
I-9	I	0.36 AC.	0.37	R-20	0.06	17%
I-10	J	0.40 AC.	0.37	R-20	0.08	18%
I-11	K	0.60 AC.	0.29	R-20	0.03	5%
I-12	L	0.27 AC.	0.77	R-20	0.20	74%
I-13	M	0.24 AC.	0.83	R-20	0.20	83%
EX. INLET	N	3.98 AC.	0.27	R-20	0.13	3%
EX. 18" CMP	O	33.30 AC.	0.27	R-20	1.66	5%



FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTENNIAL SQUARE OFFICE PARK - 10772 BALTIMORE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-2899

OWNER AND DEVELOPER
 MORSBERGER, LLC
 c/o LAND DESIGN & DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (410) 367-0422

No.	Description	Date
2	Revised Storm Drain & Open Space Lots	10/27/10
1	Relocate Rev Storage To H.O.A. Owned Open Space Lot 27	4/30/10
Revisions		



4/9/10
 DATE

STORM DRAIN DRAINAGE AREA MAP
WAVERLY OVERLOOK
LOTS 1-26 AND OPEN SPACE LOTS 27-32
 ZONING: R-20
 TAX MAP No. 10, GRID No. 21 & TAX MAP No. 16, GRID No. 3
 PARCEL Nos. 207 AND 224
 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 DATE: MARCH 4, 2010
 SHEET 9 OF 22

AS-BUILT E-10-027

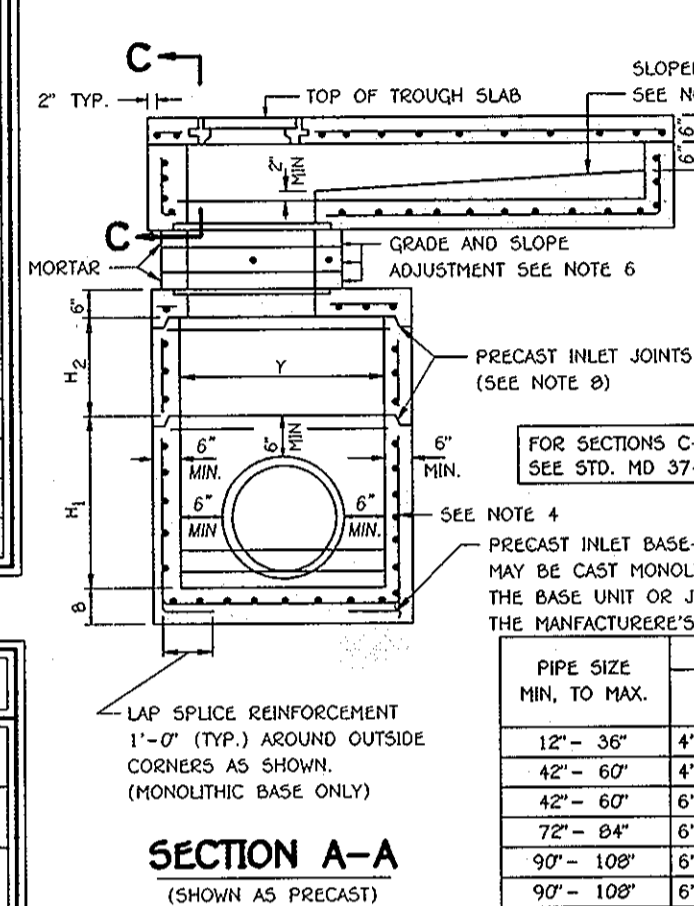
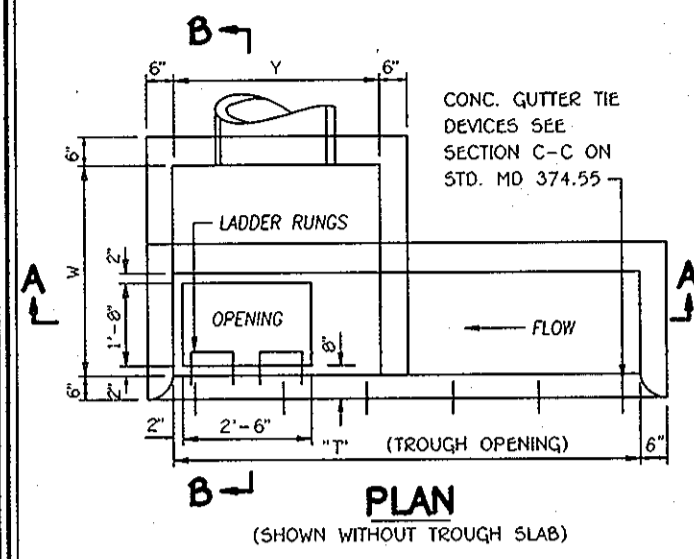
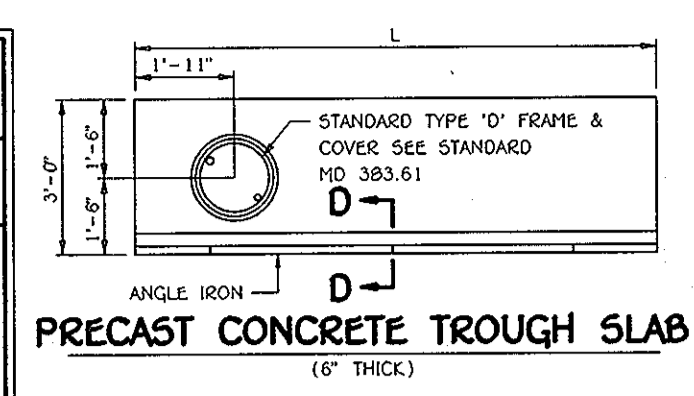
STRUCTURE SCHEDULE

STRUCTURE NO.	TOP ELEVATION	INV. IN	INV. OUT	ROAD NAME	ROAD STA.	OFFSET	TYPE	REMARKS
I-1	513.00-27	504.40-07	504.30-33	MEGAN LYNN WAY	LP. 1+37.63	---	A-10	D-4.03
I-2	514.00-07	510.00-02	510.00-92	MEGAN LYNN WAY	2+36	12.43V	A-5	D-4.01
I-3	515.40-34	511.40-07	511.24	MEGAN LYNN WAY	2+14	12.43V	A-5	D-4.01
I-4	518.00-19	---	518.00-19	WAVERLY OVERLOOK COURT	2+01+1197.83	12.43V	A-5	D-4.01
I-5	505.40-19	501.90-00	501.70-00	WAVERLY OVERLOOK COURT	LP. 1+56.11	---	A-10	D-4.03
I-6	511.00-20	---	502.00-00	WAVERLY OVERLOOK COURT	5+31.00-20	12.43V	A-5	D-4.01
I-7	514.00-53	507.00-22	507.00-22	N 601.300+7.95 E 1.330.150+10.10	---	---	YARD INLET	D-4.14
I-8	500.00-01	---	510.00-01	OLD FREDERICK ROAD	2+51	91' 49" R	"D" INLET	MD-378.03
I-9	492.00-10	480.00-79	480.70	N 600.907+7.44 E 1.330.007+0.00	---	---	"D" INLET	D-4.10
I-10	500.00-00	490.00-40	492.00-90	N 601.100+7.07 E 1.330.000+0.00	---	---	"D" INLET	D-4.10
I-11	507.00-00	502.00-10	502.00-10	N 601.100+7.07 E 1.330.000+0.00	---	---	"D" INLET	D-4.10
I-12	514.00-37	---	513.00-27	OLD FREDERICK ROAD	-2+20+070	40.00V	COG/COS OPENING FOR 8" CURB	MD-374.60
I-13	500.00-00	500.00-00	500.00-00	OLD FREDERICK ROAD	-4+00-70	38.00V	COG-10"	MD-374.51
I-IIA	511.00-10	---	507.00-00	N 601.800+4.70 E 1.330.000+4.50	---	---	"D" INLET	D-4.10
M-1	500.00-00	490.00-00	493.40	N 600.975+0.70 E 1.330.101+0.10	---	---	STD. MANHOLE	G-5.12
M-2	510.00-00	500.00-00	502.00	N 601.100+7.07 E 1.330.000+0.00	---	---	STD. MANHOLE	G-5.12
M-3	517.00-00	513.00-00	518.00-00	MEGAN LYNN WAY	0+35	---	STD. MANHOLE	G-5.12
M-4	505.00-00	500.00-00	490.00-00	N 600.907+0.70 E 1.330.000+0.00	---	---	STD. MANHOLE	G-5.12
M-5	507.00-00	502.00-10	502.10	WAVERLY OVERLOOK COURT	LP. 2+00	---	STD. MANHOLE	G-5.12
M-6	489.00-07	483.00	483.00	N 600.834+0.04 E 1.330.000+0.00	---	---	STD. MANHOLE	G-5.12
M-7	523.00-20	510.00 (EX. 15')	516.00	OLD FREDERICK ROAD	3+145	---	STD. MANHOLE	MD-383.01
M-8	492.00-00	487.00-79	480.24	N 600.975+0.70 E 1.330.000+0.00	---	---	STD. MANHOLE	G-5.12
M-9	520.00-00	513.00-00	511.00	OLD FREDERICK ROAD	4+32-40	---	STD. MANHOLE	MD-383.01
M-10	510.00-00	506.00-10	506.00-10	N 601.242+0.00 E 1.330.100+0.00	---	---	STD. MANHOLE	G-5.12
S-1	480.00-00	480.00-00	---	N 600.900+10.00 E 1.330.000+0.00	---	---	HOPE END SECTION	D-5.51
S-2	480.00-00	480.00-00	---	N 600.900+10.00 E 1.330.000+0.00	---	---	HOPE END SECTION	D-5.51
S-3	504.00-00	502.00-00	---	N 600.900+10.00 E 1.330.000+0.00	---	---	CONC. END SECTION	MD-368.01
S-4	480.00-00	487.00-25	---	N 600.900+10.00 E 1.330.000+0.00	---	---	MITERED 8" PVC	---
S-5	505.13	500.00-00	---	OLD FREDERICK ROAD	4+30-00	---	CONC. END SECTION	MD-368.01
M-1	480.00-00	485.00	485.00	N 600.900+10.00 E 1.330.000+0.00	---	---	TYPE 'A' HEADWALL	D-5.11

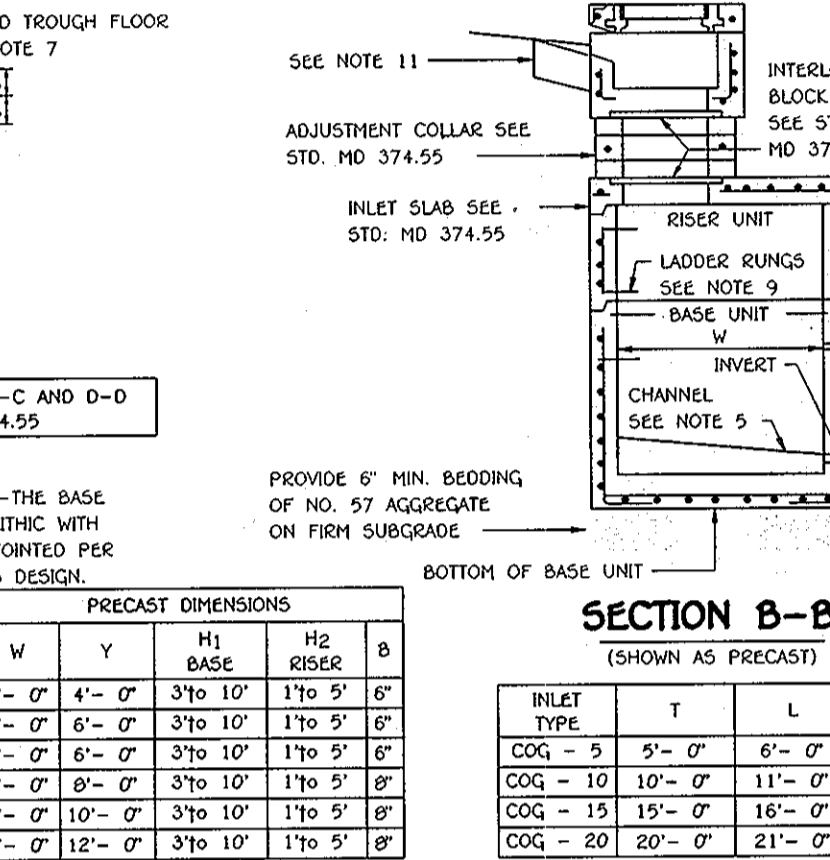
* - DENOTES THROAT ELEVATION
NOTE: 'D' INLETS SHALL HAVE OPENINGS ON ALL FOUR (4) SIDES

STORM DRAIN PIPE SCHEDULE

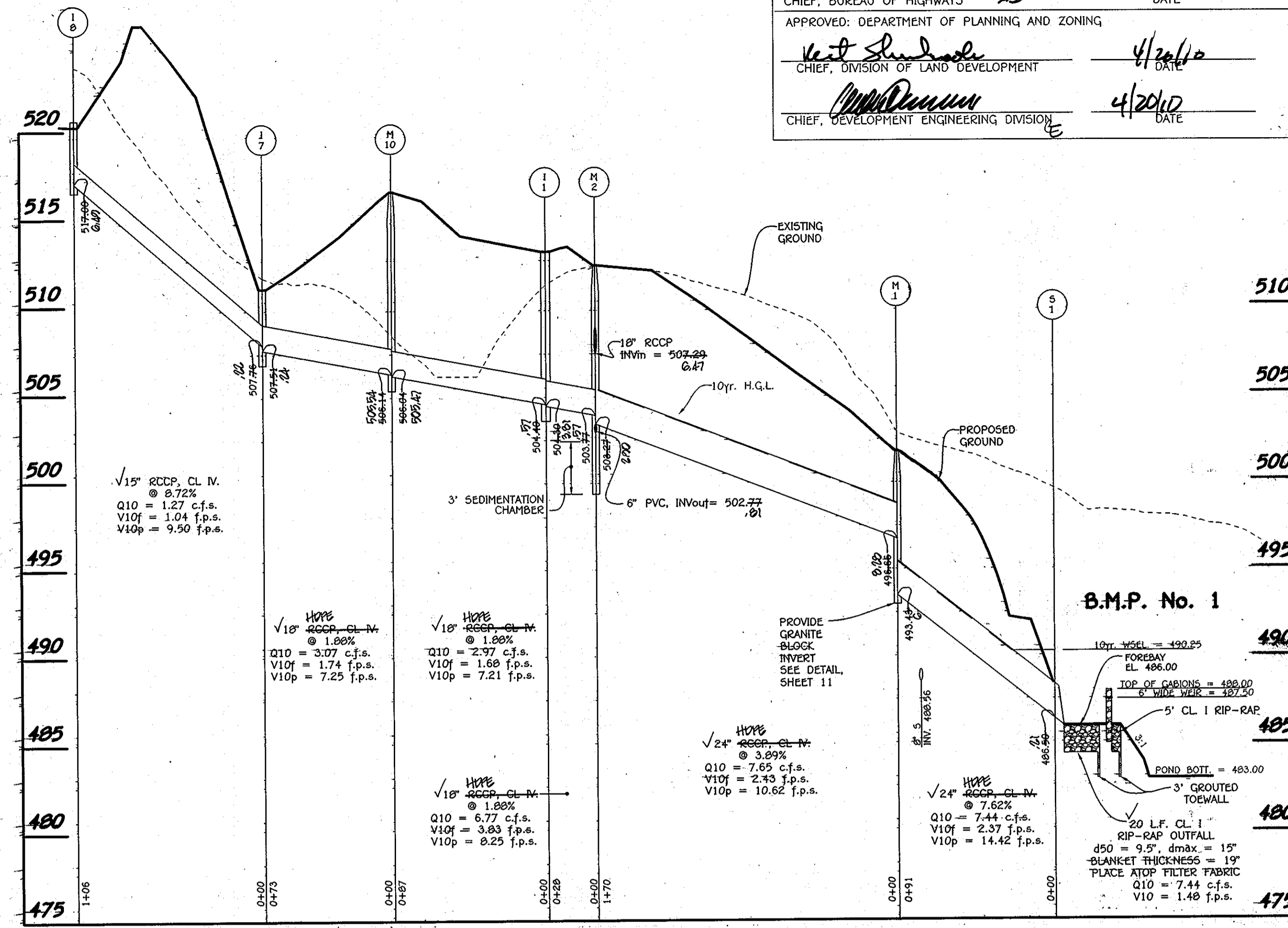
SIZE	CLASS	LENGTH
6"	PVC, SCH. 40 (PERFORATED)	54 L.F.
6"	PVC, SCH. 40 (SOLID)	43 L.F.
8"	PVC, SCH. 40	22 L.F.
15"	RCCP, CL IV	226 L.F.
18"	RCCP, CL IV	1,296 L.F.
24"	RCCP, CL IV	491 L.F.
36"	RCCP, CL IV	21 L.F.



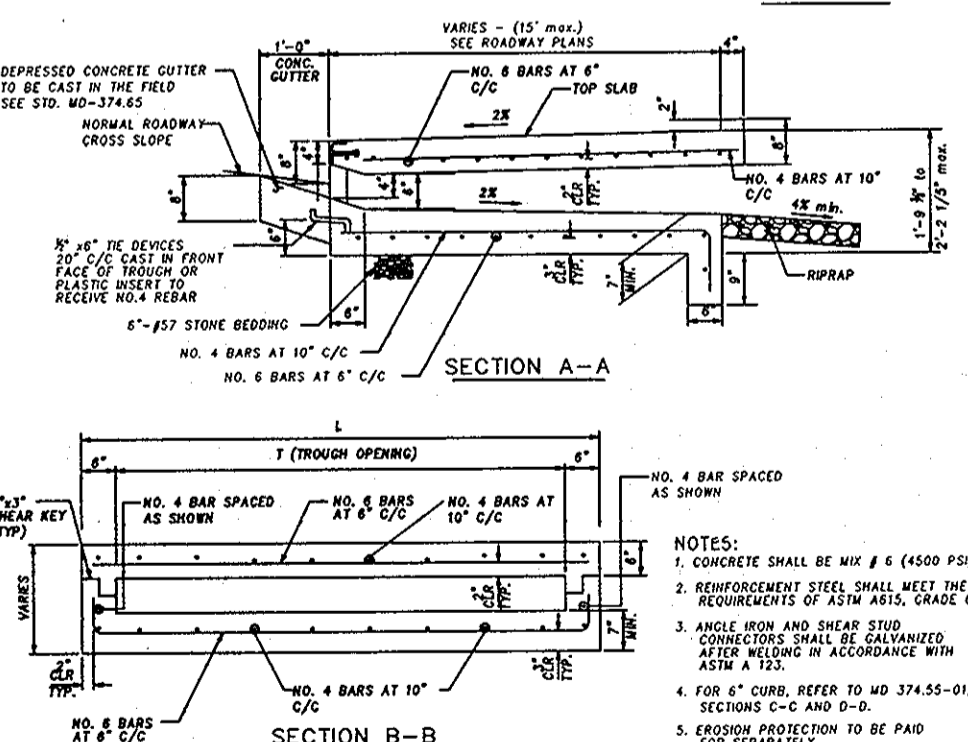
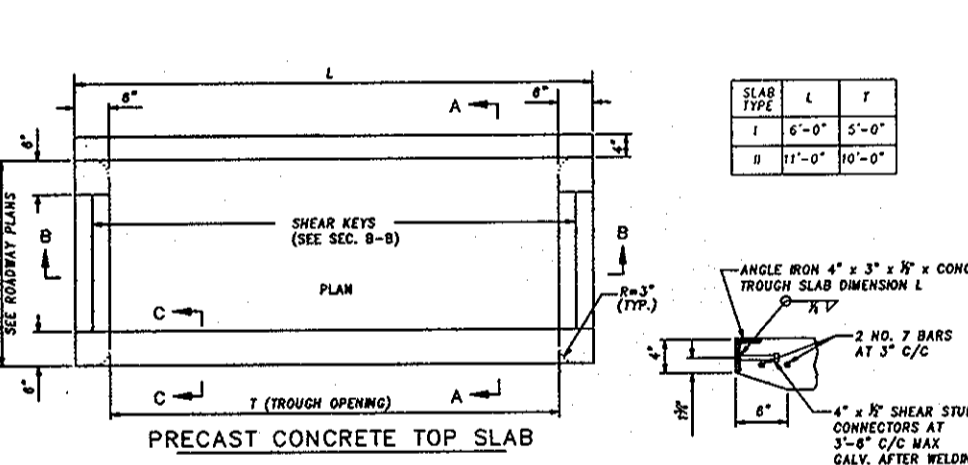
- NOTES**
- THIS STANDARD TO BE USED WITH TYPE A COMBINATION CURB AND GUTTER ONLY.
 - CURB OPENINGS SHALL NOT ENCRUSH ON CROSSWALK AREAS.
 - CONCRETE SHALL BE MIX NO. 8 (4500 PSI) FOR PRECAST UNITS AND MIX NO. 3 (3500 PSI) FOR STRUCTURES CAST IN PLACE.
 - INLET MAY BE PRECAST OR CAST IN PLACE. REINFORCEMENT SHALL BE NO. 4 BARS PLACED IN THE CENTER OF INLET WALLS AT 6" C/C 2 WAYS OR 2 LAYERS OF #4-W/0.0040 WELDED WIRE FABRIC WITH 1 1/2" COVER.
 - A CONCRETE OR BRICK CHANNEL WHICH SLOPES AT LEAST 2 IN/FT TOWARD THE OUTLET SHALL BE PROVIDED IN THE FIELD.
 - GRADE AND SLOPE ADJUSTMENTS SHALL BE COMPLETED IN THE FIELD USING PRECAST ADJUSTMENT COLLAR AND PORTER.
 - SLOPED TROUGH FLOOR TO BE CAST IN THE FIELD AND USED ONLY WHEN ROAD GRADE IS 1:25 OR LESS, WHEN SLOPED TROUGH FLOOR IS USED, ROUGHEN PRECAST TROUGH FLOOR.
 - PRECAST INLET JOINTS - THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR AND MADE WATER TIGHT USING THE MANUFACTURER'S RECOMMENDED ASITM OR AASHTO APPROVED SEALANT.
 - LADDER RUNGS SHALL BE PLACED IN ACCORDANCE WITH STANDARDS MD 383.91 OR MD 383.92. RUNGS ARE INCIDENTAL TO THE COST OF THE INLET.
 - ANGLE IRON AND SHEAR STUD CONNECTORS SHALL BE GALVANIZED AFTER WELDING IN ACCORDANCE WITH ASTM A 123. SEE STD. MD 374.55 & MD 374.64.
 - SEE STANDARD MD 374.65 FOR DEPRESSURED TROUGH PAN.
 - SEE STANDARD MD 374.64 FOR ALTERNATE PRECAST COG TROUGHS.
 - PAY MEASUREMENTS FOR CAST IN PLACE UNIT SHALL BE THE SAME AS THE PRECAST UNIT. REFER TO NOTE 14. ALL OTHER DIMENSIONS SHOWN FOR PRECAST SHALL APPLY TO CAST IN PLACE.
 - MINIMUM DEPTH PAYMENT PER FOOT SHALL BE 5'-2" MEASURED FROM THE PIPE INLET TO THE TOP OF THE TROUGH SLAB. VERTICAL DEPTH PAYMENT PER LINEAR FOOT SHALL INCLUDE ALL DEPTHS IN EXCESS OF 6'-2" INCLUDING ALL APPURTENANCES.
 - PRECAST BASE UNIT WALLS MAY TAPER PER MANUFACTURER'S DESIGN.



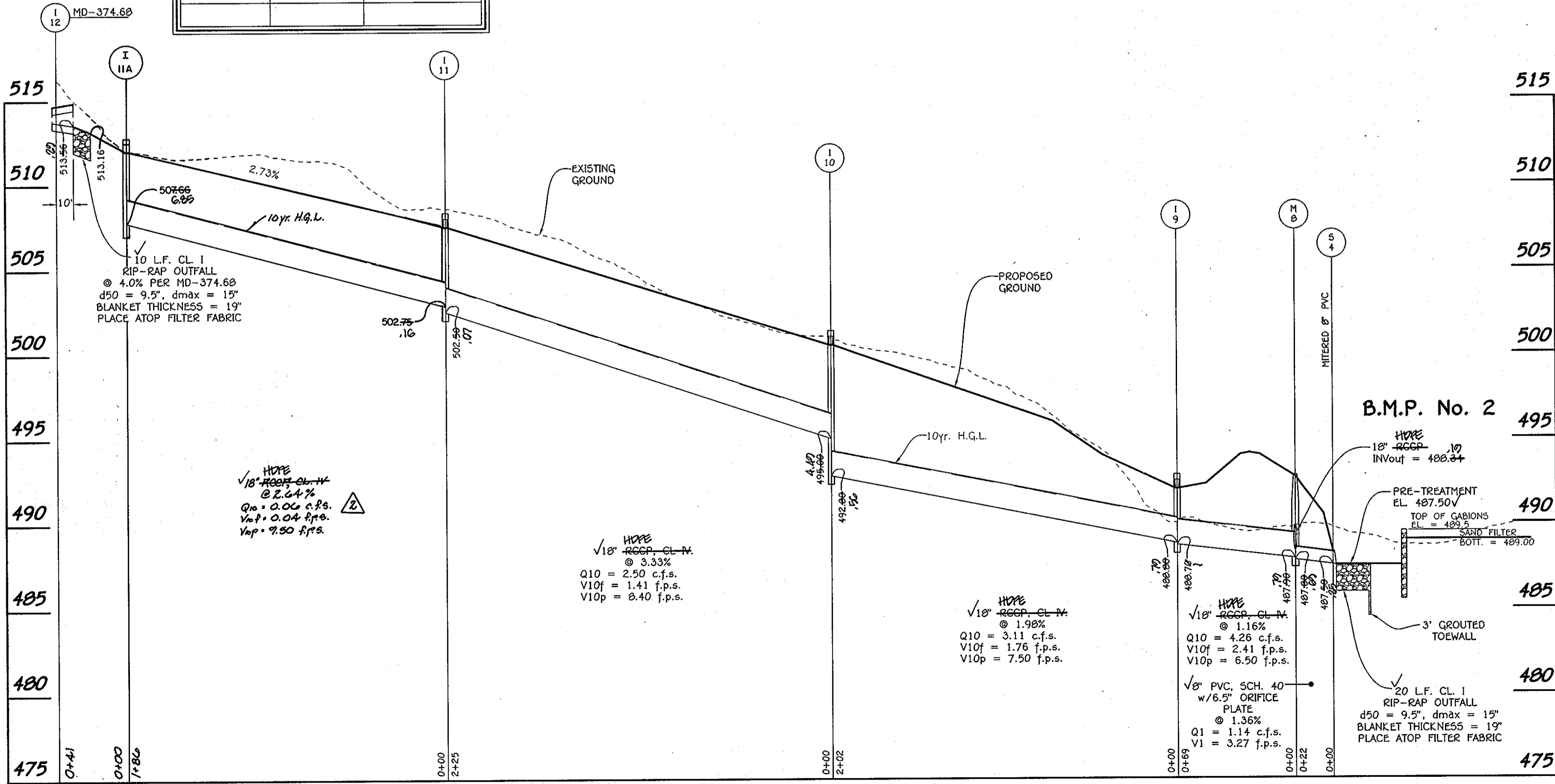
PRECAST OR CAST IN PLACE SQUARE AND RECTANGULAR COG INLETS 5', 10', 15' & 20' STANDARD NO. MD 374.51



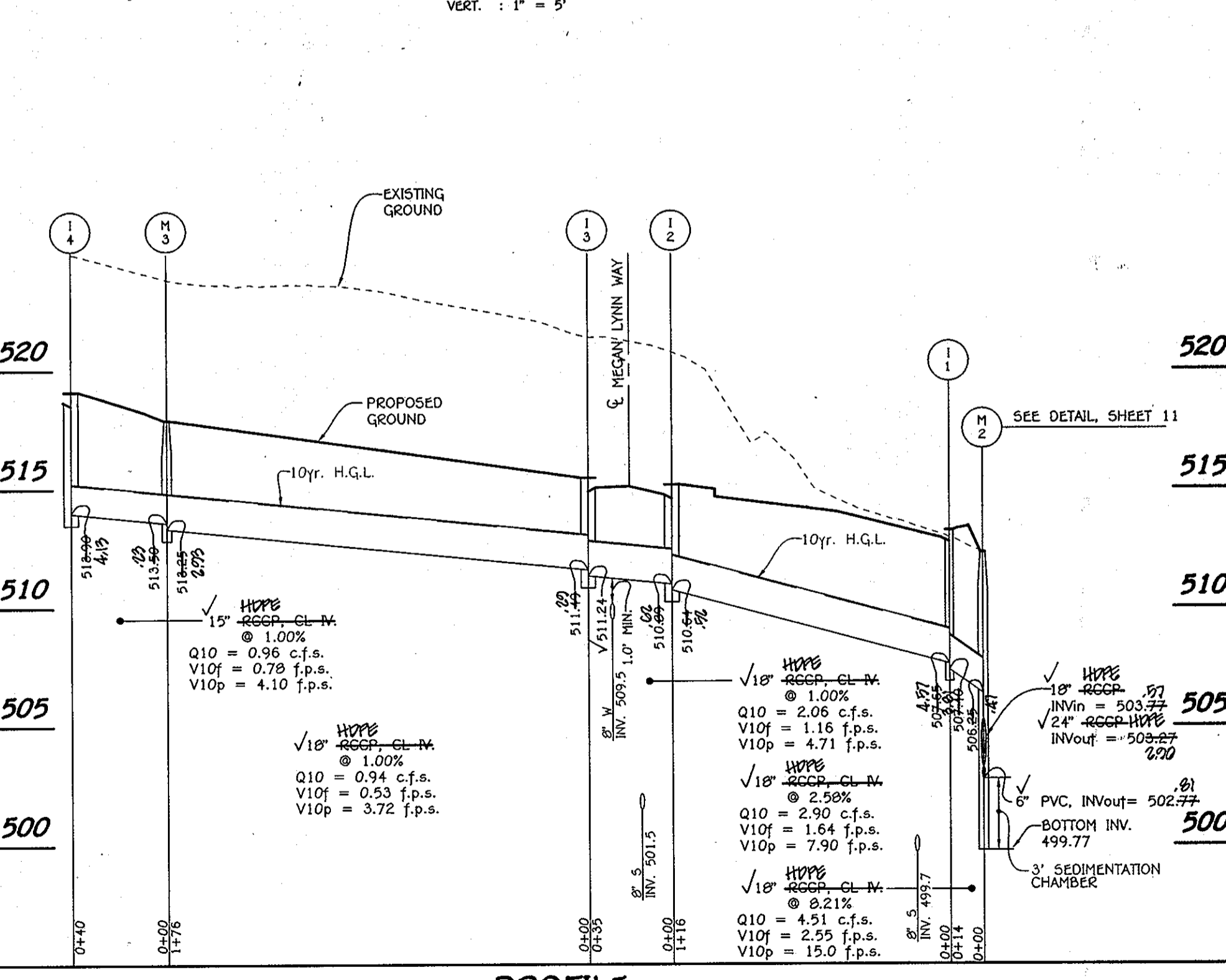
PROFILE
SCALE: HORIZ. : 1" = 50'
VERT. : 1" = 5'



PRECAST OR CAST IN PLACE COG/COS OPENING FOR 8" CURB 5' OR 10' ONLY STANDARD NO. MD 374.60



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

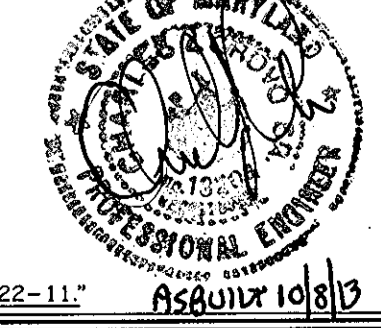
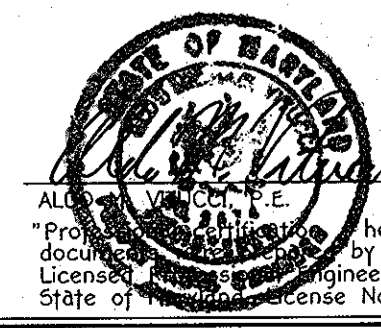


PROFILE
SCALE: HORIZ. : 1" = 50'
VERT. : 1" = 5'

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CORPORAL SQUARE OFFICE PARK - 10272 WATKINS NATIONAL PIKE
ELICOTT CITY, MARYLAND 21042
(410) 461-2055

No.	Description	Date
2	Revised 02 Profiles & Structure Schedule	10/20/10
3	Revise Pipe Schedule	4/30/10
No.	Description	Date
Revisions		

OWNER AND DEVELOPER
MORSBERGER, LLC
c/o LAND DESIGN & DEVELOPMENT, INC.
5300 DORSEY HALL DRIVE, SUITE 102
ELICOTT CITY, MARYLAND 21042
(410) 367-0422



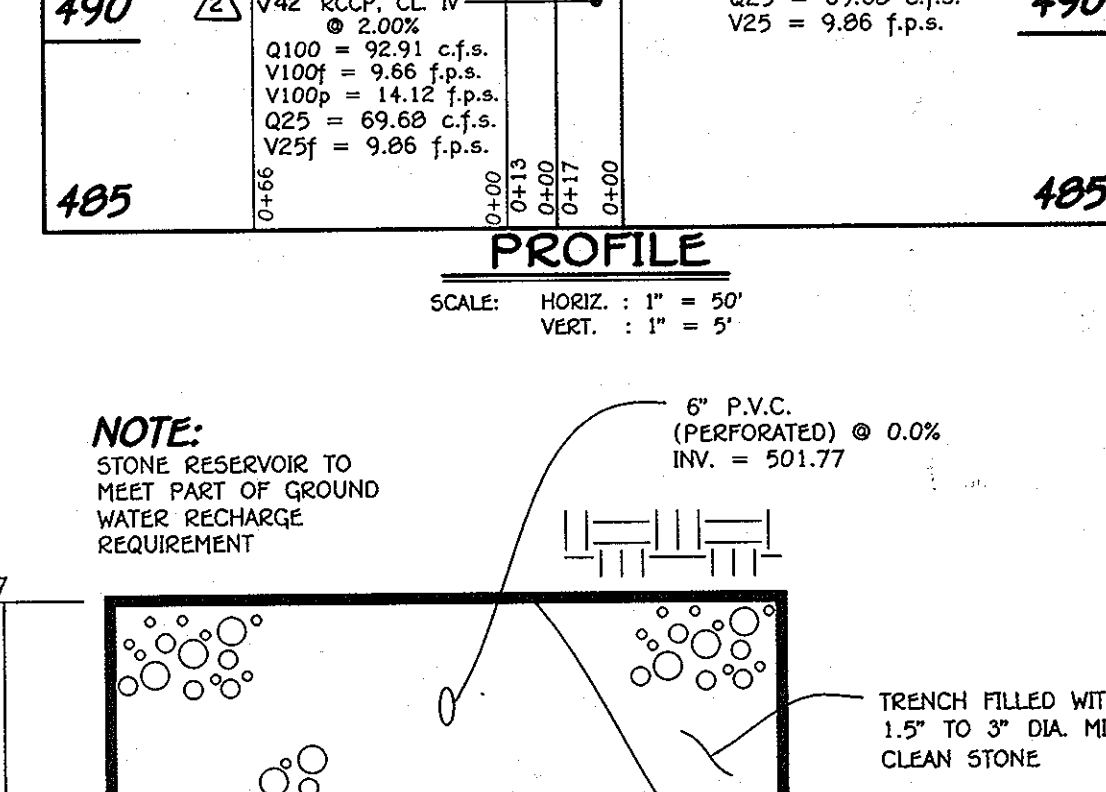
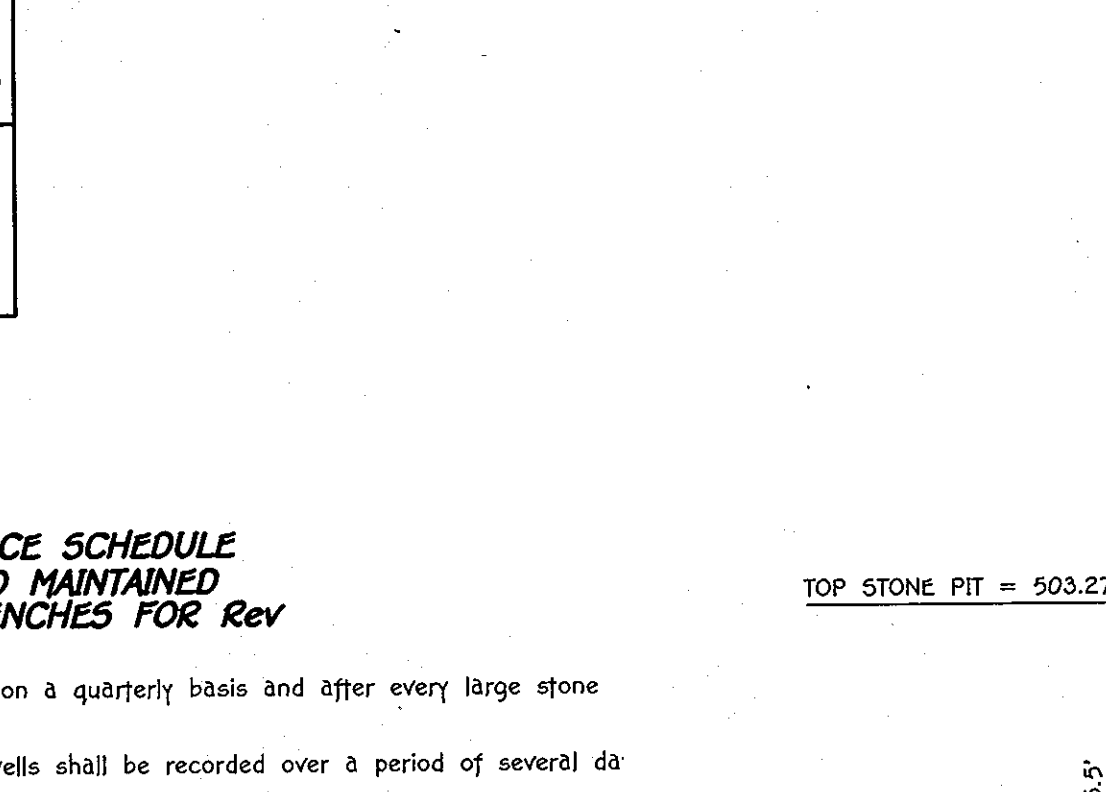
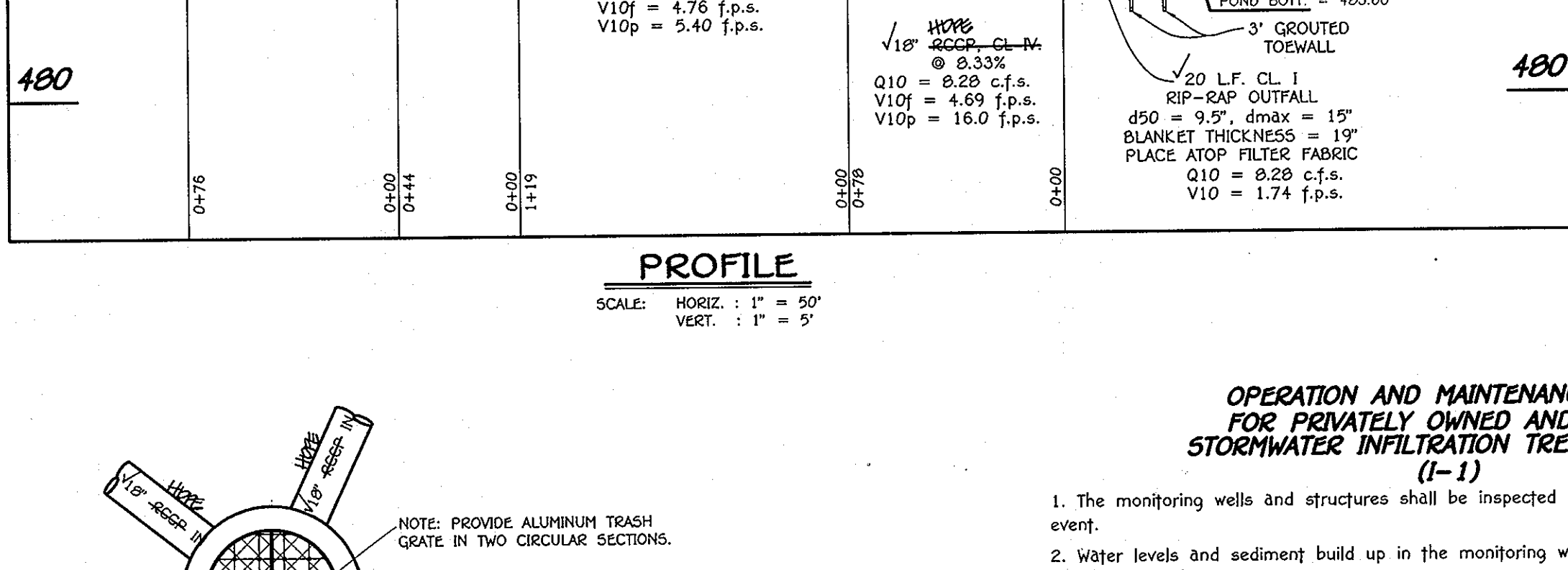
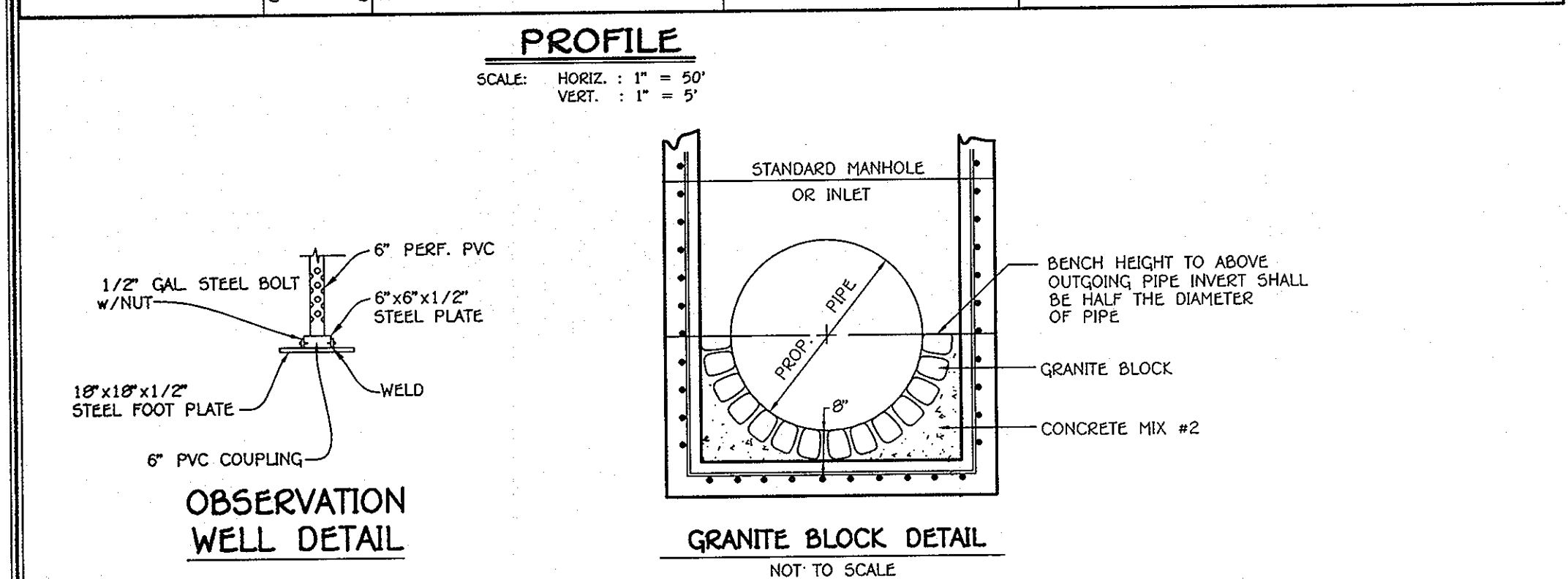
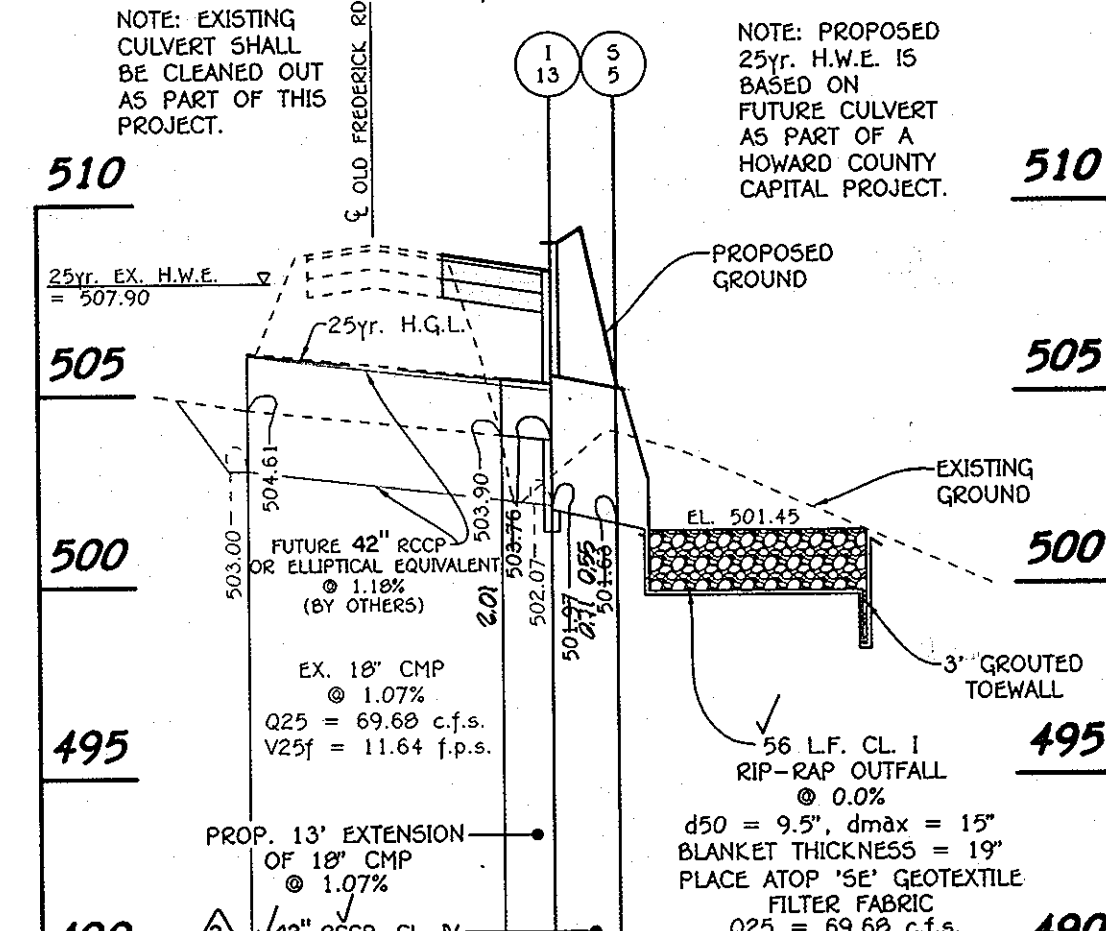
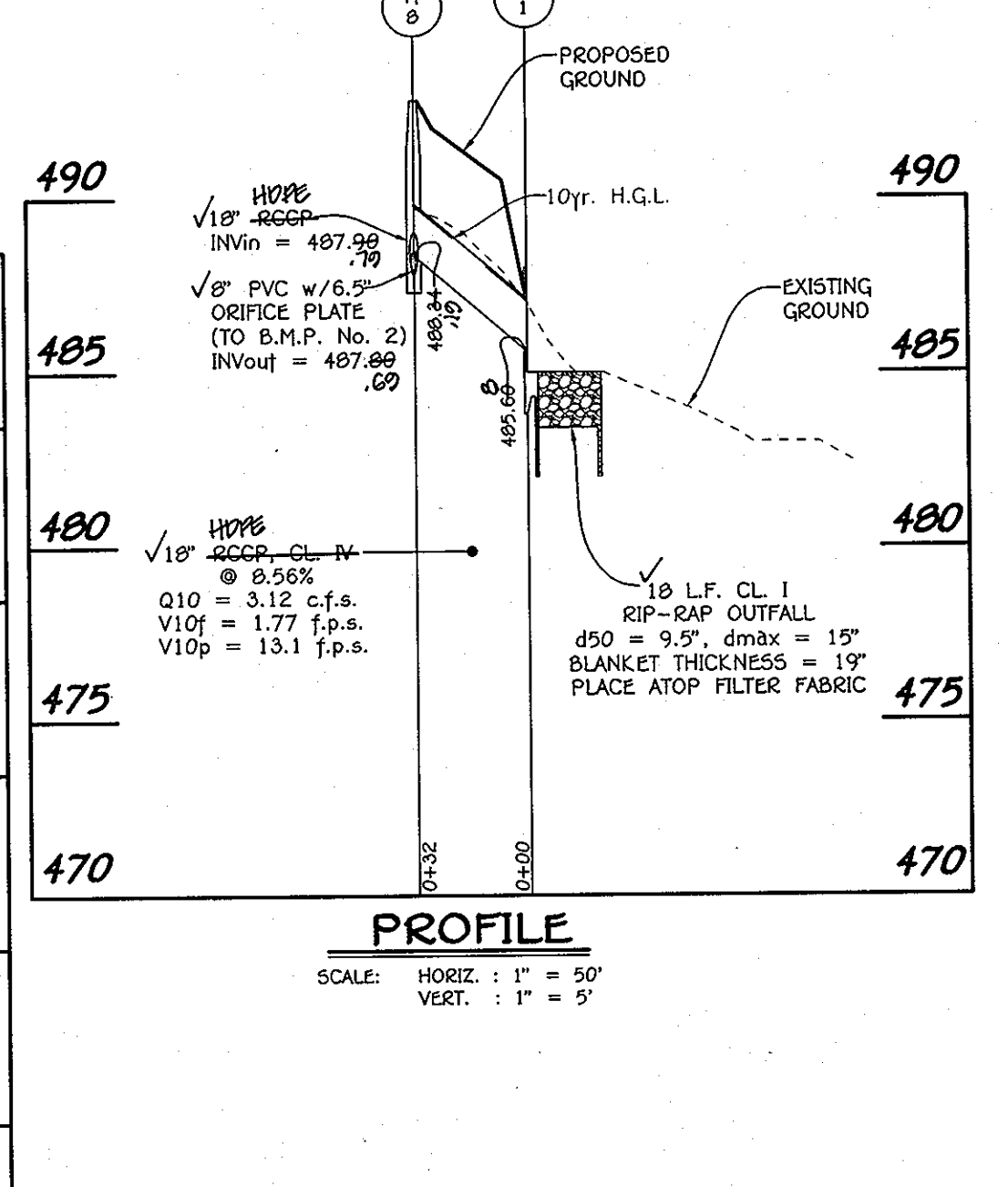
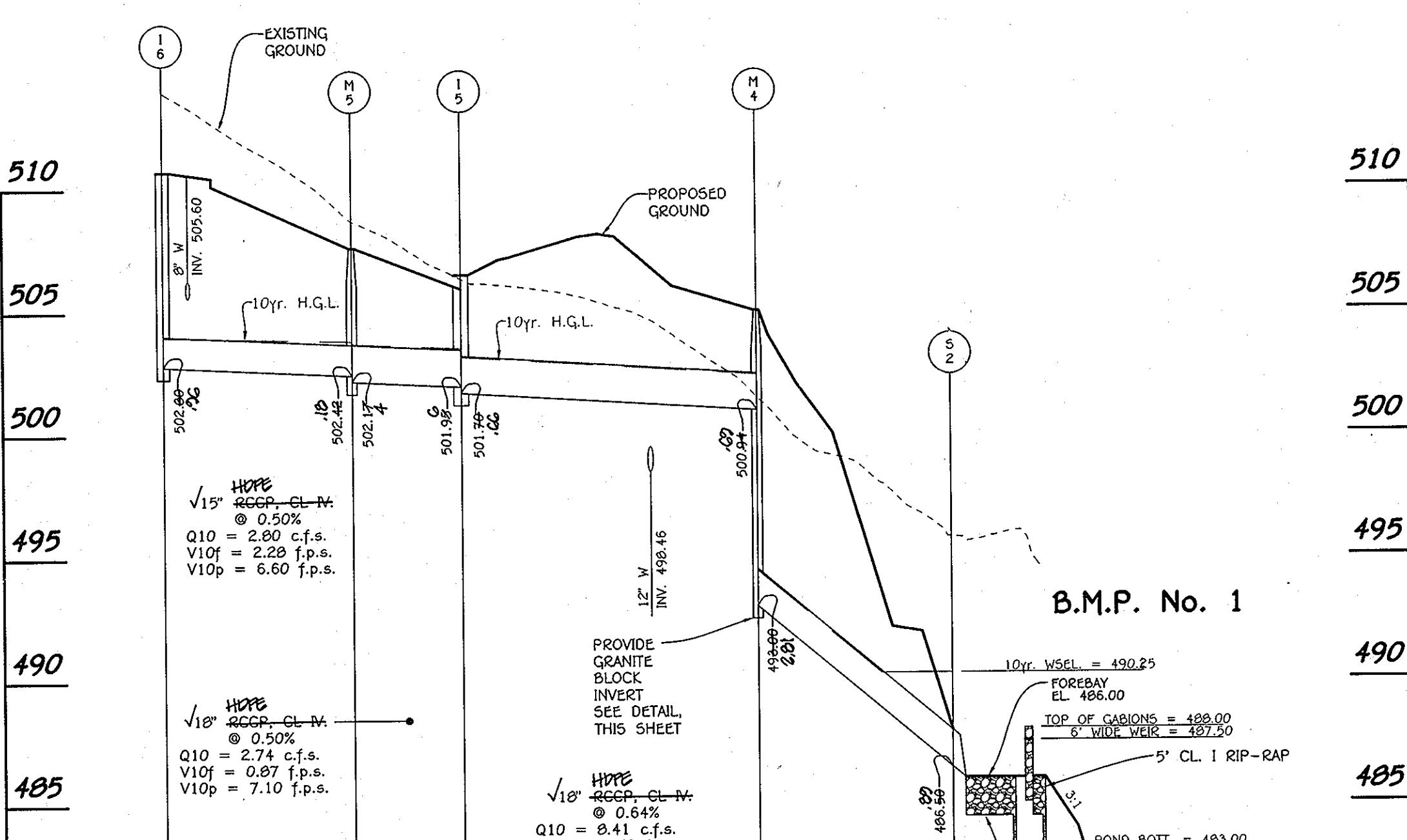
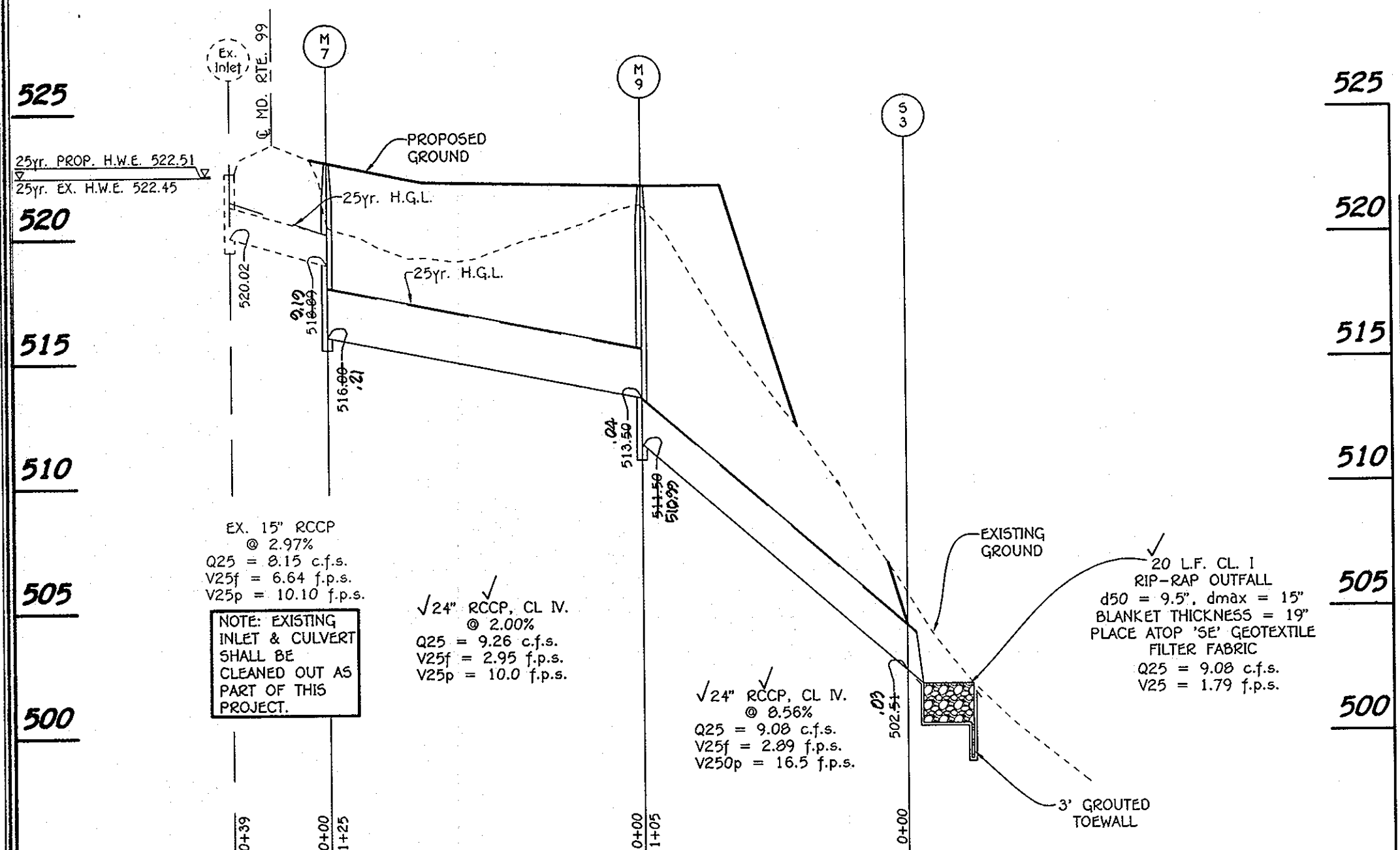
STORM DRAIN PROFILES
WAVERLY OVERLOOK
LOTS 1-26 AND OPEN SPACE LOTS 27-32
ZONING: R-20
TAX MAP No. 10, GRID No. 21 & TAX MAP No. 16, GRID No. 3
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THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
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SHEET 10 OF 22

AS-BUILT F-10-027

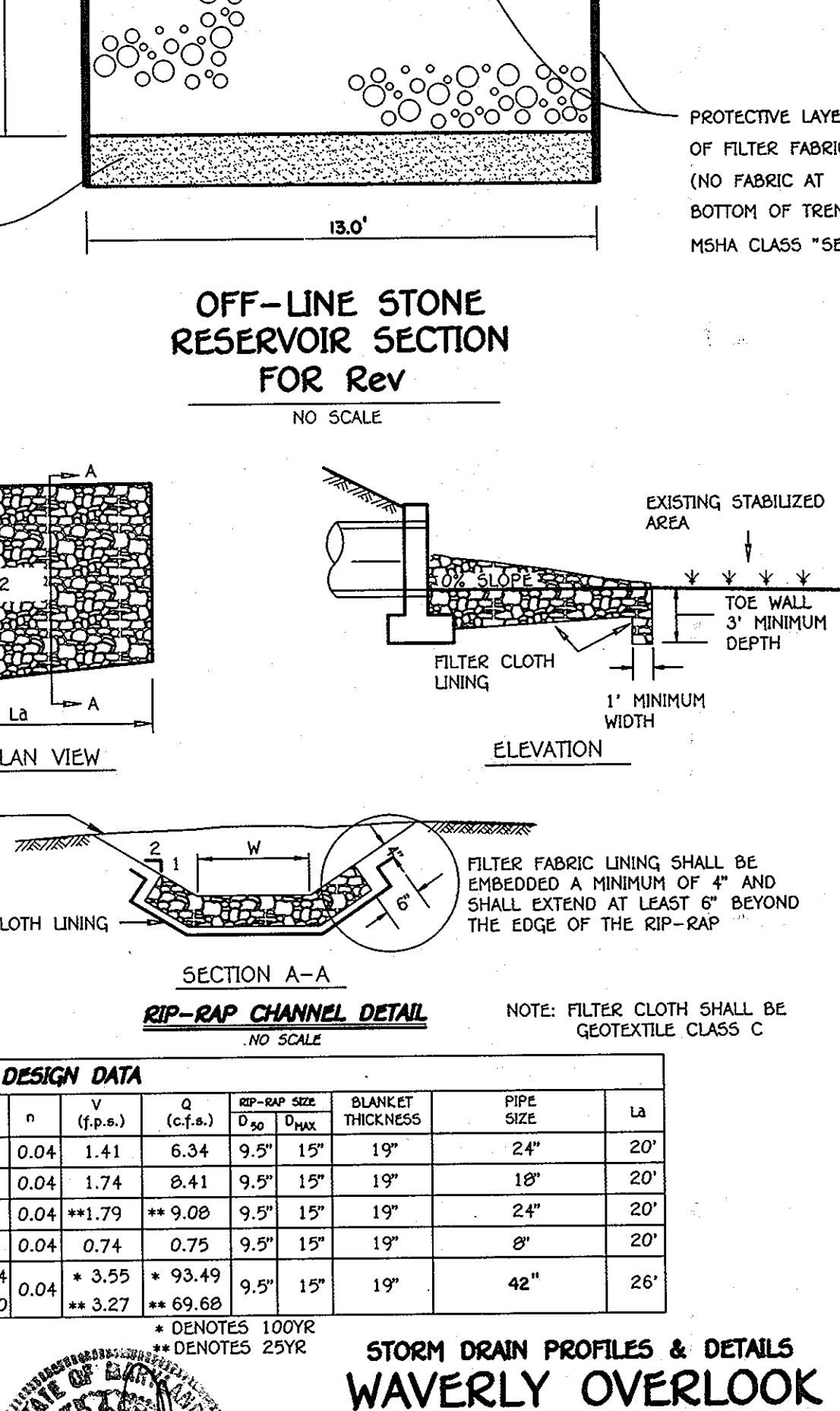
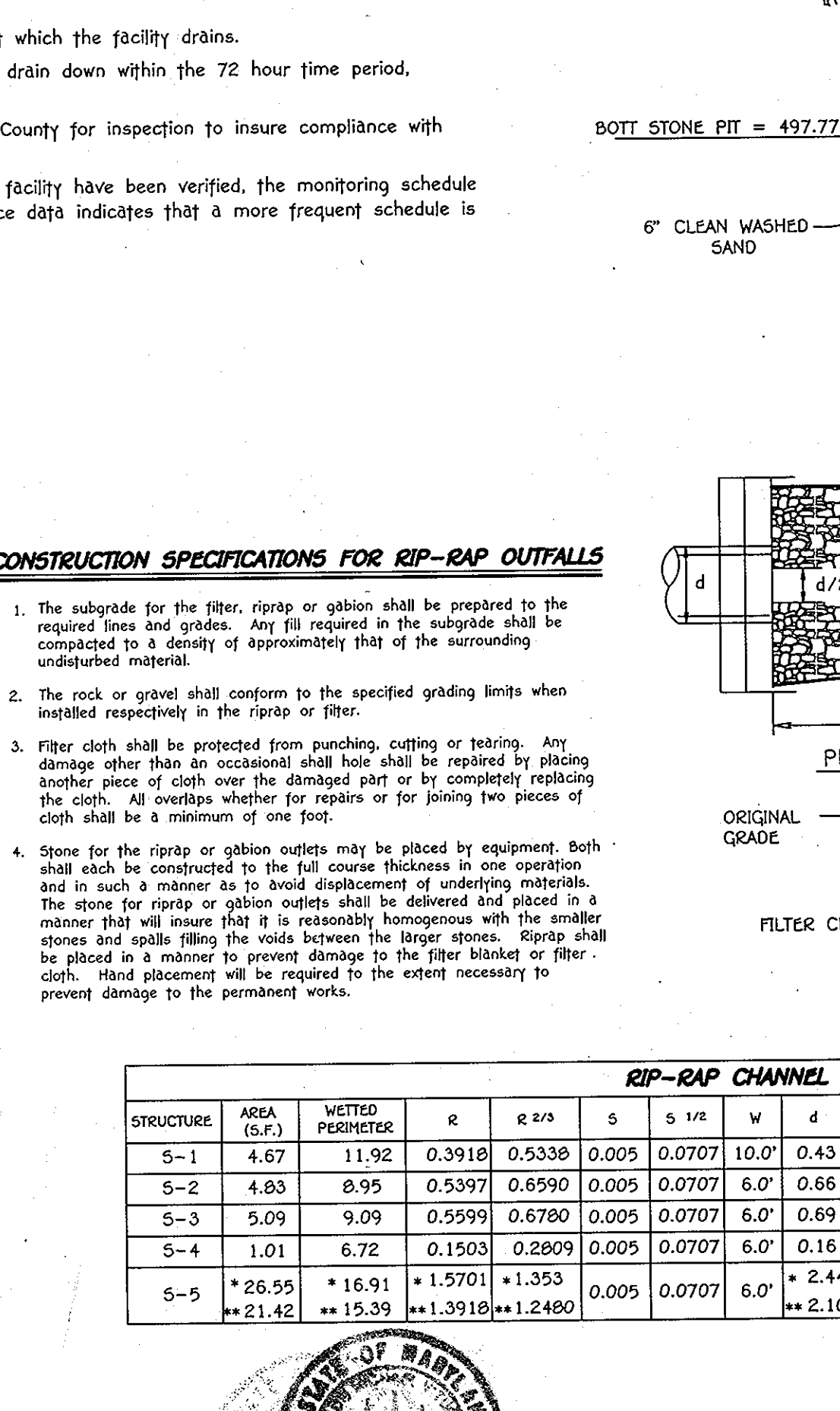
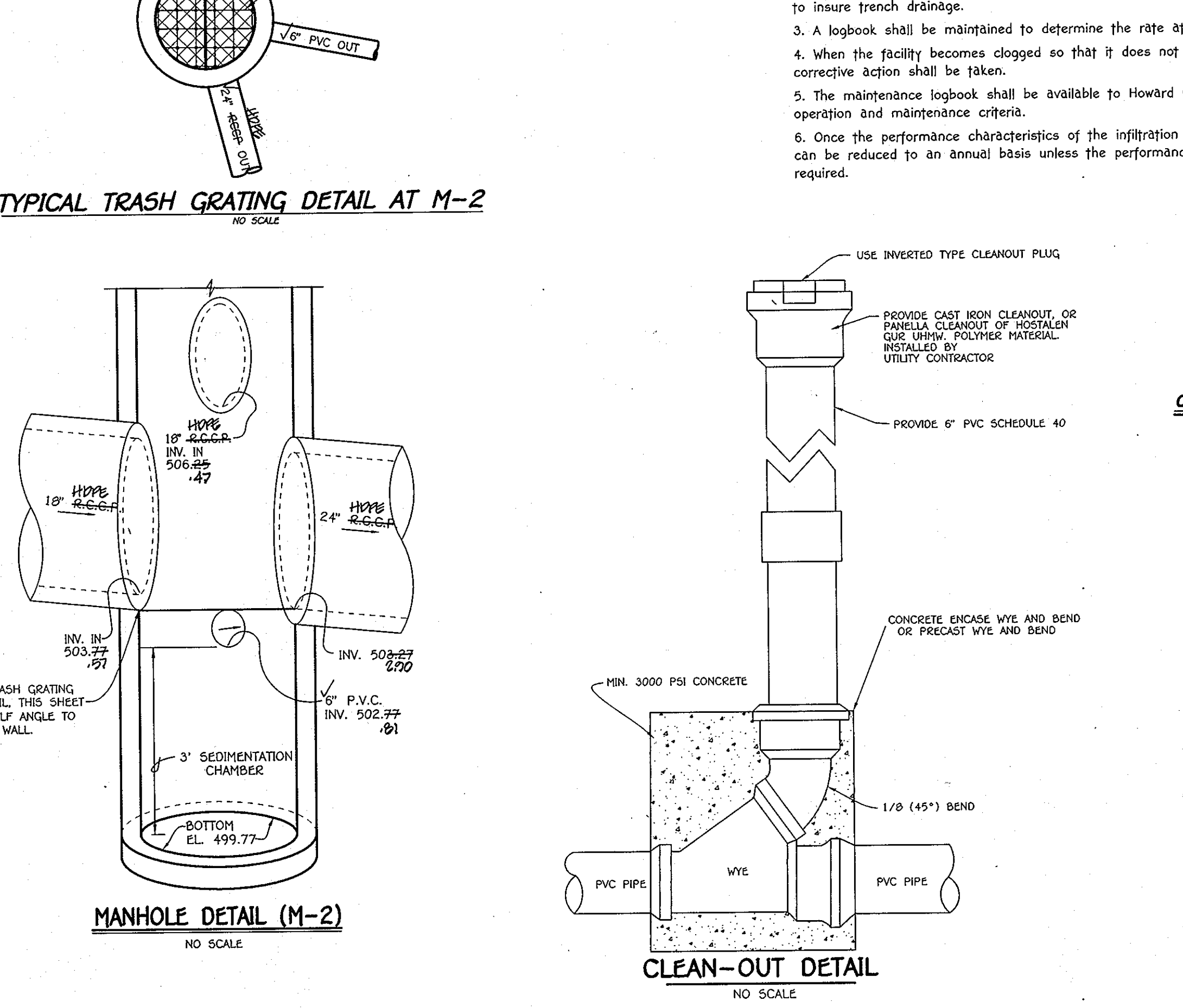
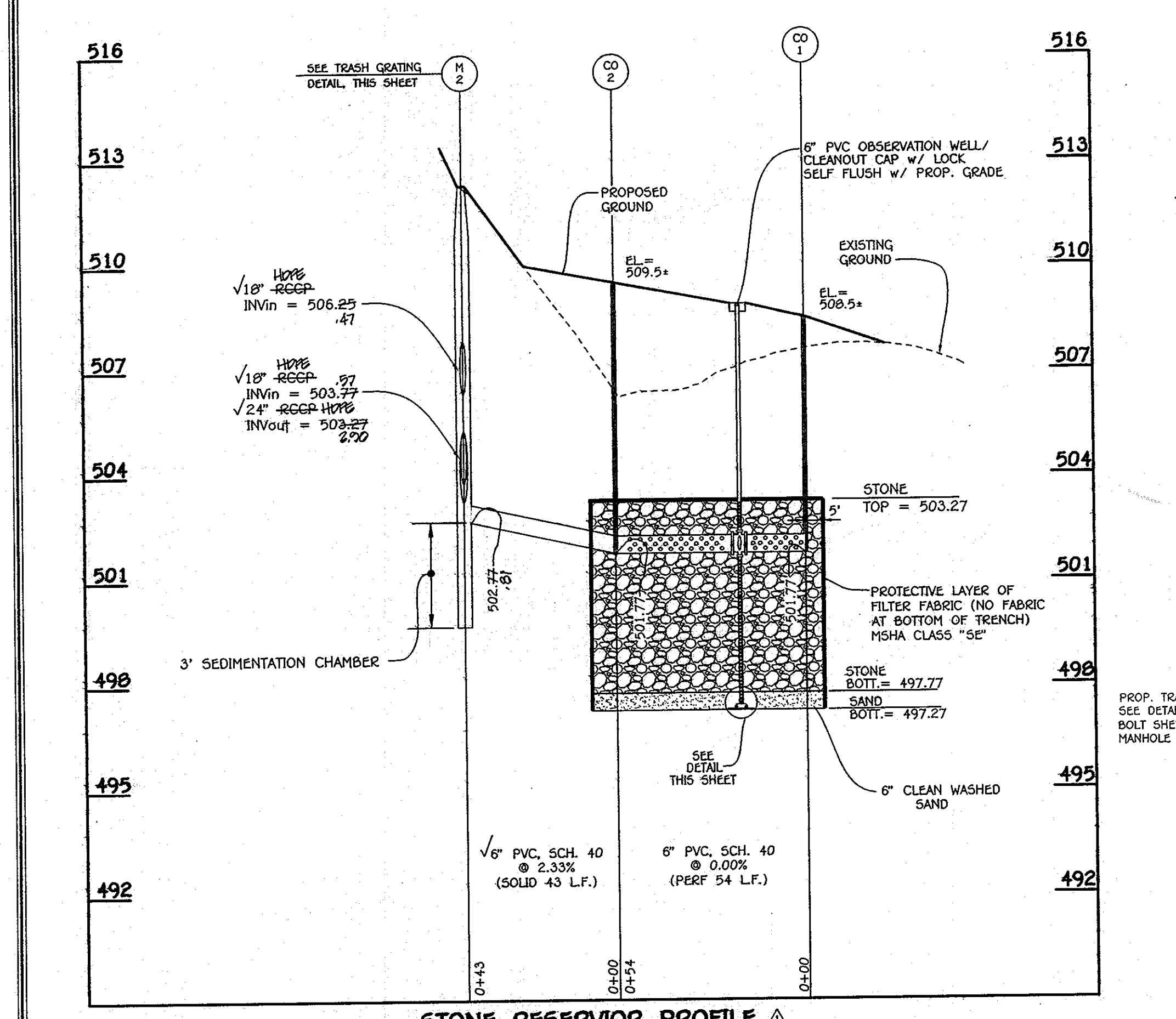
APPROVED: DEPARTMENT OF PUBLIC WORKS
Michael J. ... 4-7-10
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Kevin ... 4/16/10
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

APPROVED: DEPARTMENT OF ENGINEERING
Michael ... 4/20/10
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



- OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED STORMWATER INFILTRATION TRENCHES FOR Rev (1-1)**
- The monitoring wells and structures shall be inspected on a quarterly basis and after every large stone event.
 - Water levels and sediment build up in the monitoring wells shall be recorded over a period of several days to insure trench drainage.
 - A logbook shall be maintained to determine the rate at which the facility drains.
 - When the facility becomes clogged so that it does not drain down within the 72 hour time period, corrective action shall be taken.
 - 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 facility 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.



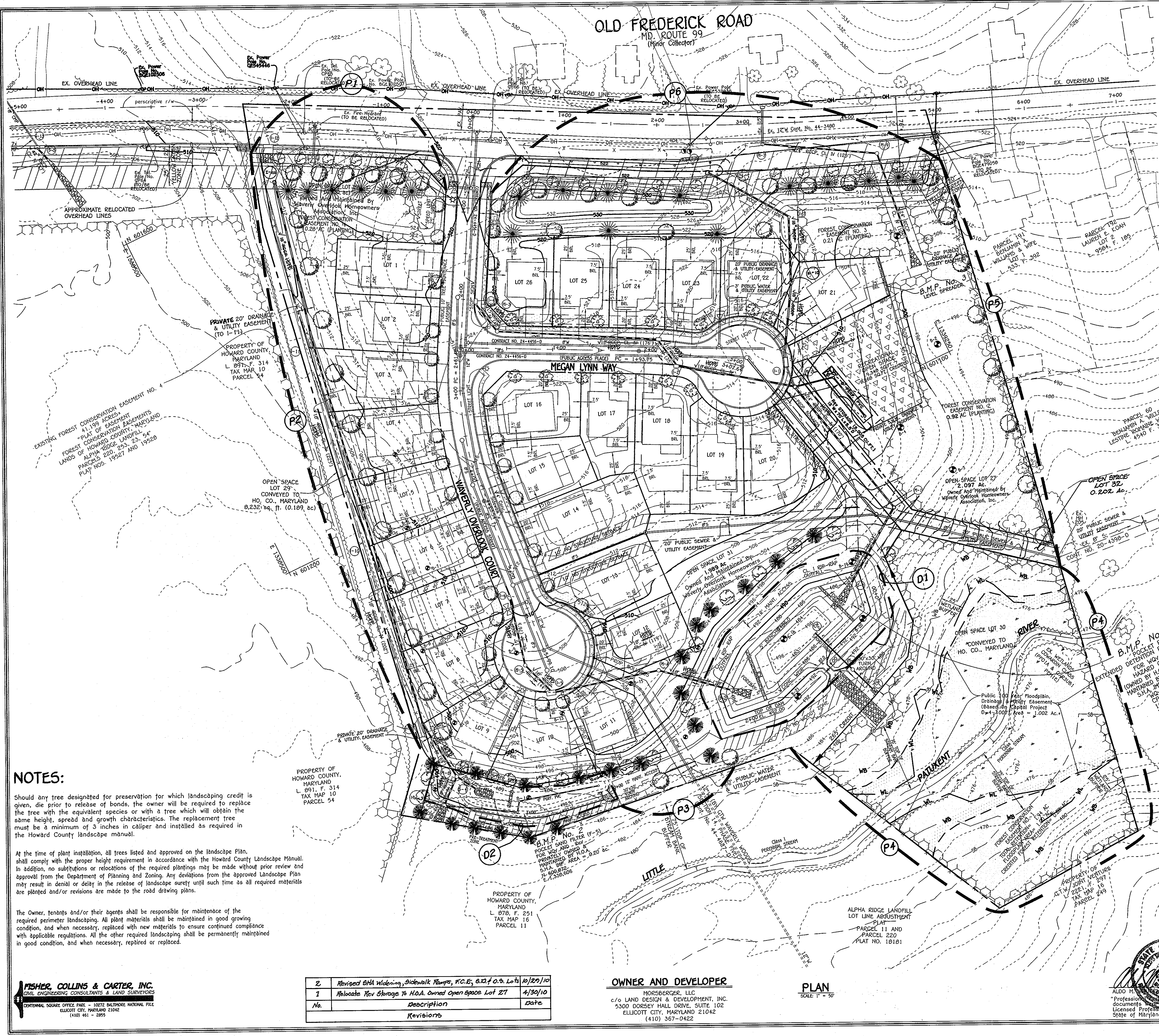
NO.	DESCRIPTION	DATE
2	Revised S.D. Profile I-13 to S-5	10/29/10
1	REVISED STONE RESERVOIR PROFILE AND SECTION	4/30/10

OWNER AND DEVELOPER
 MORSBERGER, LLC
 c/o LAND DESIGN & DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (410) 367-0422

CONSTRUCTION SPECIFICATIONS FOR RIP-RAP OUTFALLS

- The subgrade for the filter, rip-rap or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.
- The rock or gravel shall conform to the specified grading limits when installed respectively in the rip-rap or filter.
- Filter cloth shall be protected from punching, cutting or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of cloth over the damaged part or by completely replacing the cloth. All overlaps whether for repairs or for joining two pieces of cloth shall be a minimum of one foot.
- Stone for the rip-rap or gabion outlets may be placed by equipment. Both shall each be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The stone for rip-rap or gabion outlets shall be delivered and placed in a manner that will insure that it is reasonably homogenous with the smaller stones and spalls filling the voids between the larger stones. Rip-rap shall be placed in a manner to prevent damage to the filter blanket or filter cloth. Hand placement will be required to the extent necessary to prevent damage to the permanent works.

STORM DRAIN PROFILES & DETAILS WAVERLY OVERLOOK LOTS 1-26 AND OPEN SPACE LOTS 27-32
 ZONING: R-20
 TAX MAP No. 10, GRID No. 21 & TAX MAP No. 16, GRID No. 3
 PARCEL Nos. 207 AND 224
 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 DATE: MARCH 4, 2010
 SHEET 11 OF 22



APPROVED: DEPARTMENT OF PUBLIC WORKS
W. J. Smith 4-7-10
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Neil Sheehy 4/26/10
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

John Deussen 4/26/10
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

SCHEDULE A - PERIMETER LANDSCAPING

PERIMETER	CATEGORY (PROPERTIES/ROADWAYS)	LANDSCAPE BUFFER TYPE	LINEAR FEET OF FRONTAGE PERIMETER	CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	CREDIT FOR WALL, FENCE OR BESH (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NUMBER OF PLANTS REQUIRED		
						SHADE TREES	EVERGREEN TREES	SHRUBS
P-1	ADJACENT TO ROADWAY	B	227.1'	NO	NO	5	6	-
P-2	ADJACENT TO PERIMETER	A	677.6'	NO	NO	11	-	-
P-3	ADJACENT TO PERIMETER	A	128.2'	NO	NO	2	-	-
P-4	ADJACENT TO PERIMETER	A	758.6'	YES 100% (F.C.E. RETENTION)	NO	0	-	-
P-5	ADJACENT TO PERIMETER	A	463.5'	NO	NO	8	-	-
P-6	ADJACENT TO ROADWAY	B	499.2'	NO	NO	10	12	-

NOTES:
 1. INTERNAL LANDSCAPING SHALL BE PROVIDED AT THE SITE DEVELOPMENT PLAN STAGE AND IS THE RESPONSIBILITY OF THE BUILDER.

SCHEDULE D STORMWATER MANAGEMENT AREA LANDSCAPING

LINEAR FEET OF TYPE 'B' PERIMETER	D-1 : 625'	D-2 : 478'
CREDIT FOR EXISTING VEGETATION (NO, YES AND %)	YES 265' (F.C.E. RETENTION)	NO
NUMBER OF TREES REQUIRED:		
SHADE TREES	7	10
EVERGREEN TREES	9	12

PLANT LIST

SYMBOL	QTY.	BOTANICAL AND COMMON NAME	SIZE
	17	* ACER RUBRUM "OCTOBER GLORY" RED MAPLE	2 1/2" - 3" CAL.
	36	* QUERCUS ACUTISSIMA SAWTOOTH OAK	2 1/2" - 3" CAL.
	18	* ILEX OPACA AMERICAN HOLLY	5' - 6' HT.
	21	CHINESE JUNIPER ROBUSTA	5' - 6' HT.

"THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL". FINANCIAL SURETY FOR THE REQUIRED 53 SHADE & 39 EVERGREEN TREES HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$21,750.00.

* APPROVED TREE TYPE TO BE PLANTED WITHIN 20 - 45 FEET (YELLOW ZONE) OF POWER LINES PER B.G.&E. PLANTING GUIDE.

NOTES:

Should any tree designated for preservation for which landscaping credit is given, die prior to release of bonds, the owner will be required to replace the tree with the equivalent species or with a tree which will obtain the same height, spread and growth characteristics. The replacement tree must be a minimum of 3 inches in caliper and installed as required in the Howard County landscape manual.

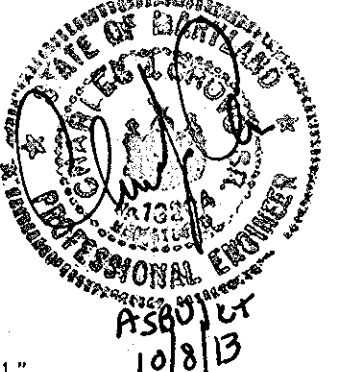
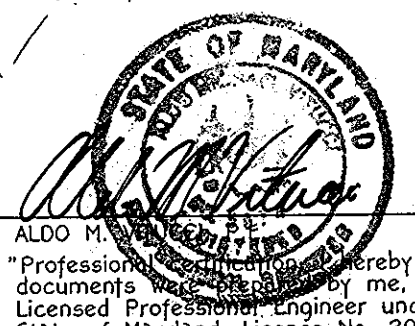
At the time of plant installation, all trees listed and approved on the landscape plan shall comply with the proper height requirement in accordance with the Howard County Landscape Manual. In addition, no substitutions or relocations of the required plantings may be made without prior review and approval from the Department of Planning and Zoning. Any deviations from the approved Landscape Plan may result in denial or delay in the release of landscape surety until such time as all required materials are planted and/or revisions are made to the road drawing plans.

The Owner, tenants and/or their agents shall be responsible for maintenance of the required perimeter landscaping. All plant materials shall be maintained in good growing condition, and when necessary, replaced with new materials to ensure continued compliance with applicable regulations. All the other required landscaping shall be permanently maintained in good condition, and when necessary, repaired or replaced.

No.	Description	Date
2	Revised BHA Widening, Sidewalk Ramps, F.O.E., S.D. & O.S. Lots 10/20/10	
1	Relocate Rev Storage to H.O.A. Owned Open Space Lot 27	4/30/10
No.		

OWNER AND DEVELOPER
 MORSBERGER, LLC
 c/o LAND DESIGN & DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 1102
 ELLICOTT CITY, MARYLAND 21042
 (410) 367-0422

PLAN
 SCALE 1" = 50'



LANDSCAPE DEVELOPER'S CERTIFICATE

I/We certify that the landscaping shown on this plan will be done according to the plan, Section 16.124 of the Howard County Code and the Howard County Landscape Manual. I/We further certify that upon completion a letter of landscape installation accompanied by an executed one year guarantee of plant materials will be submitted to the Department of Planning and Zoning.

Neil Sheehy
 Name
 4-8-10
 Date

LANDSCAPE PLAN
WAVERLY OVERLOOK
 LOTS 1-26 AND OPEN SPACE LOTS 27-32
 ZONING: R-20
 TAX MAP No. 10, GRID No. 21 & TAX MAP No. 16, GRID No. 3
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 DATE: MARCH 4, 2010
 SHEET 12 OF 22

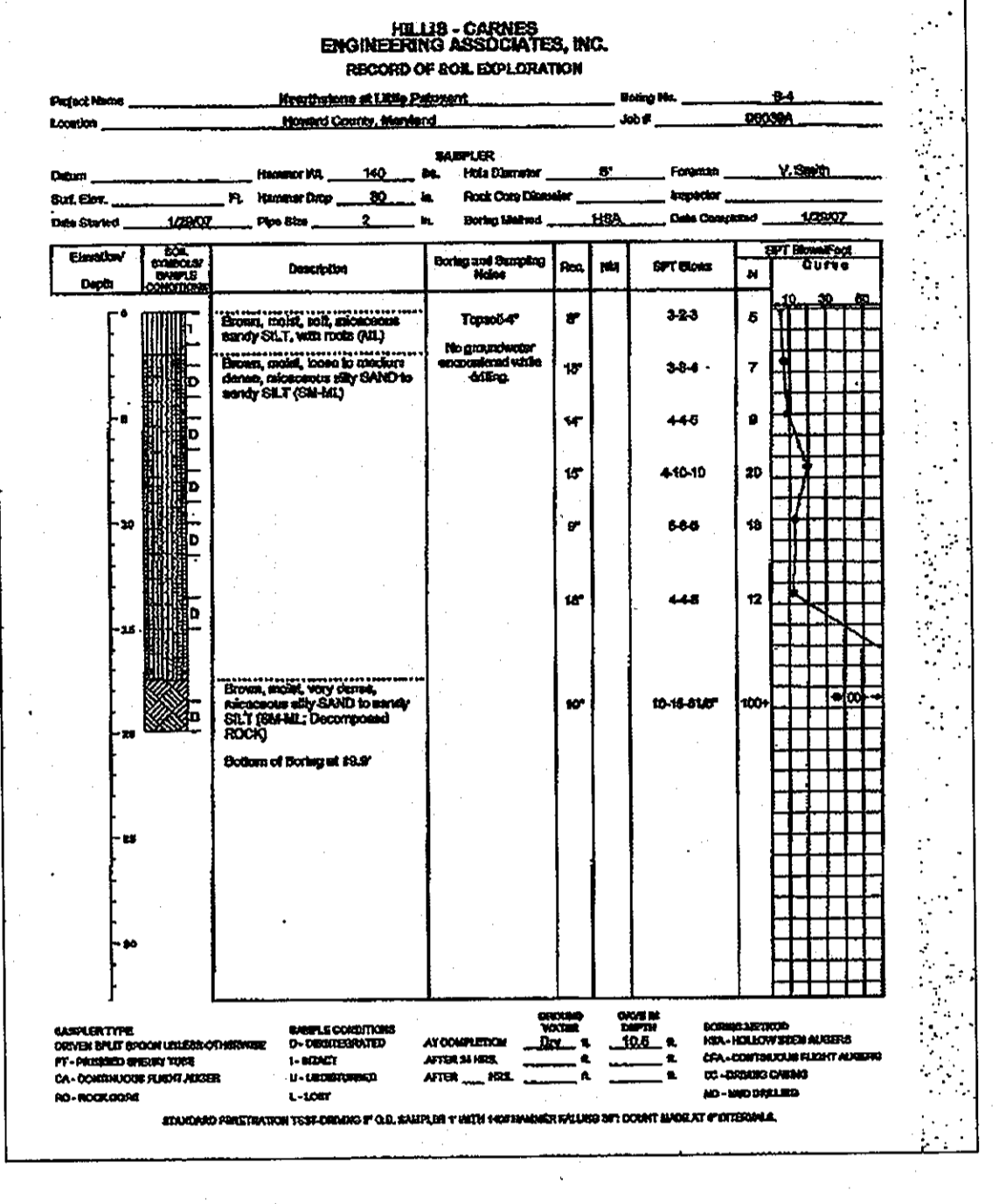
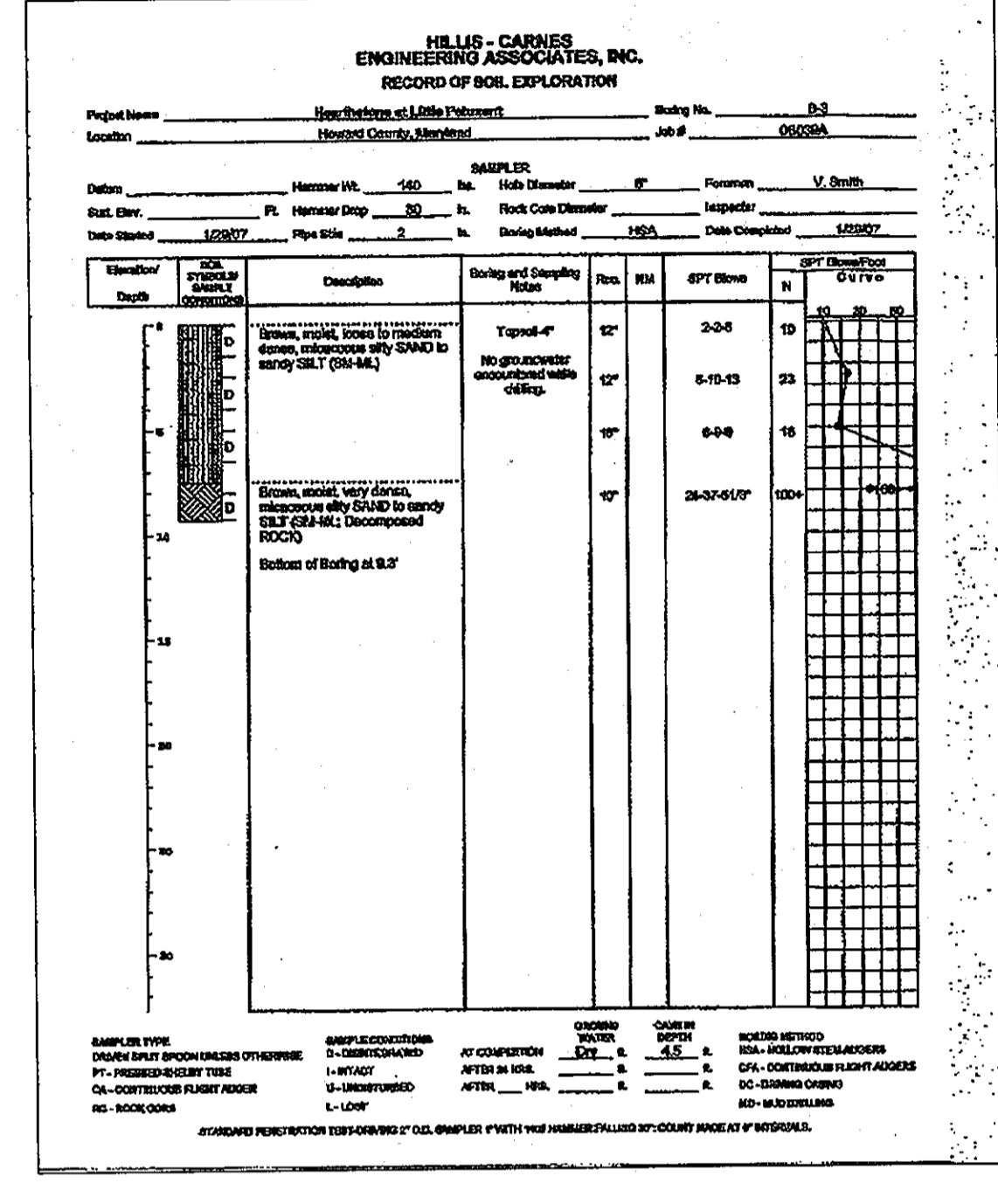
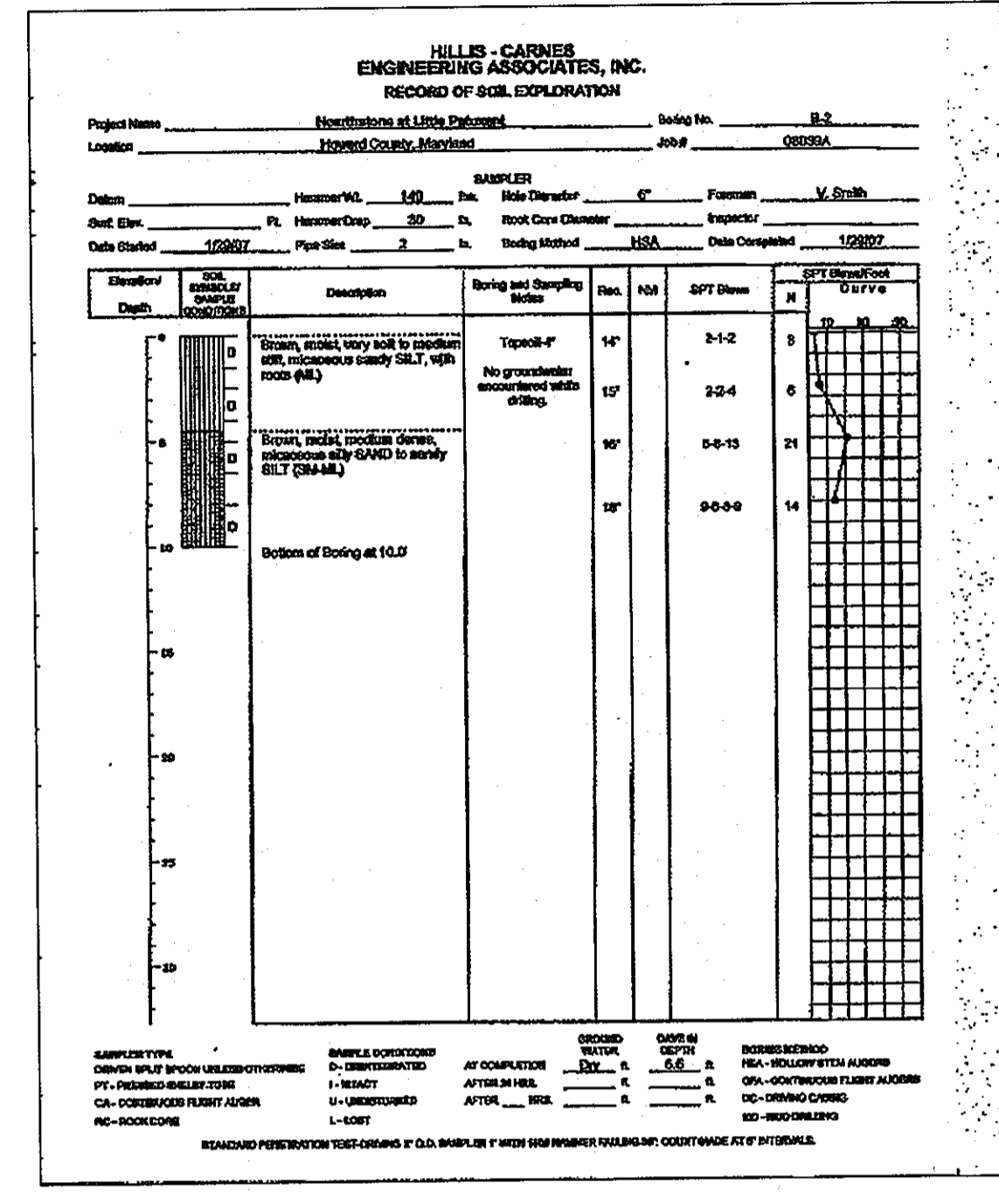
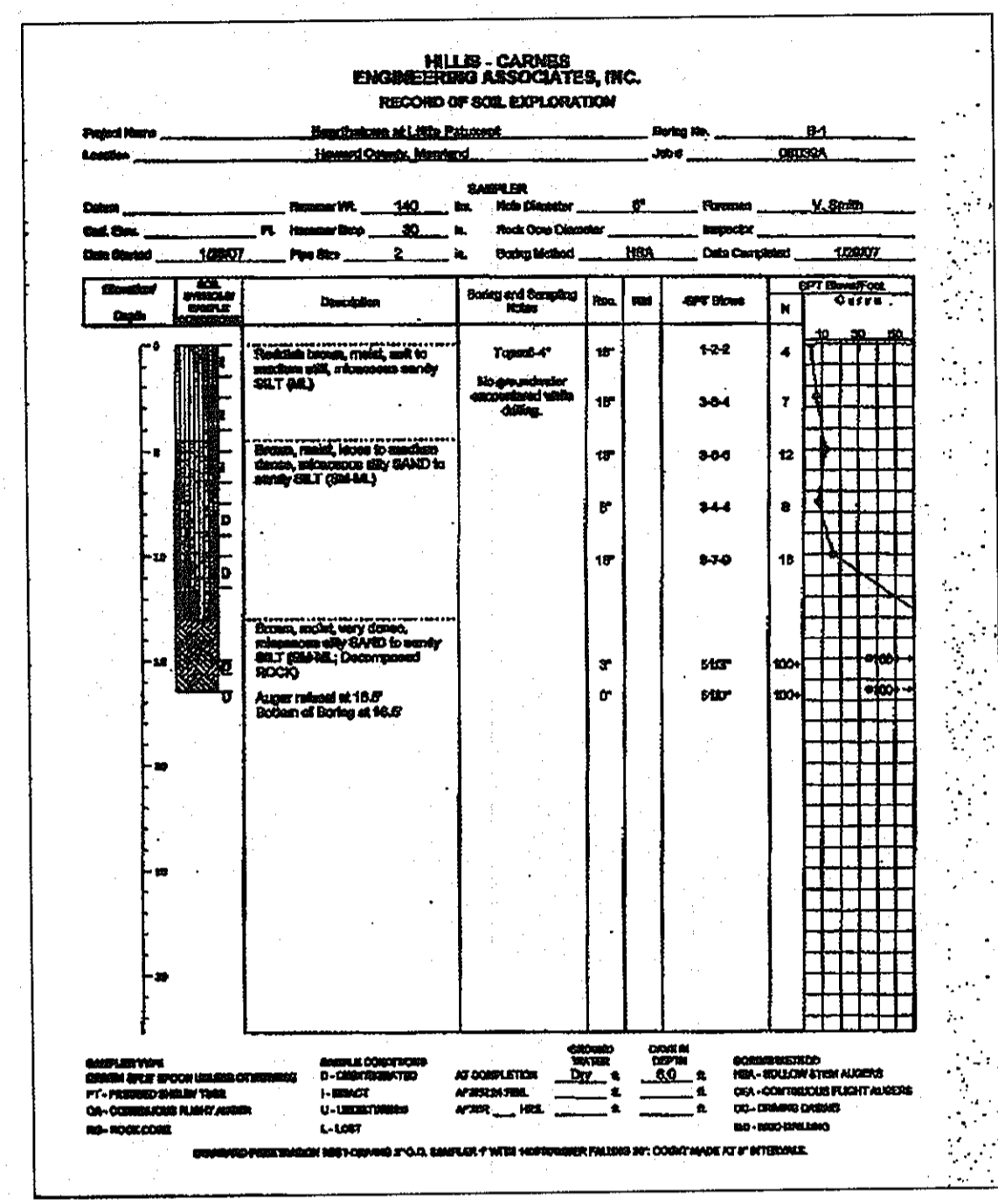
AS-BUILT F-10-027

1:2000\04\13\04\00\00\CURRENT\FINAL R-20\04\13\12-13 LANDSCAPE.dwg, 4/16/2010 11:47:55 AM, jsmil

APPROVED: DEPARTMENT OF PUBLIC WORKS
M. Z. ... 4-7-10
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
... 4/26/10
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

... 4/20/10
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



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 vegetative 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

1. 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 Experiment Station.

2. 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 agronomist or 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, sticks, roots, trash, or other materials larger than 1 1/2" in diameter.
- Topsoil must be free of plants or plant parts such as bermud grass, quackgrass, Johnson grass, wildflower, 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 (200-400 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.

3. For sites having disturbed areas under 5 acres:

- Incorporate lime and fertilizer into the top 3-5" of soil by disking or other suitable means.

4. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section 1 - Vegetative Stabilization Methods and Materials.

5. For sites having disturbed areas over 5 acres:

- On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:
 - pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.
 - Organic content of topsoil shall be not less than 1.5 percent by weight.
 - Topsoil having soluble salt content greater than 500 parts per million shall not be used.
 - No seed or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min) to permit dissipation of phytotoxic materials.

6. Note: Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.

7. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section 1 - Vegetative Stabilization Methods and Materials.

8. Topsoil Application

- When topsoiling, maintain needed erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slope Sill Fence and Sediment Traps and Basins.
- Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4" - 8" higher in elevation.
- Topsoil shall be uniformly distributed in a 4" - 8" layer and lightly compacted to a minimum thickness of 4". Spreading shall be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.
- Topsoil shall not be placed while the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seeded preparation.

9. Alternative for Permanent Seeding - Instead of applying the full amounts of lime and commercial fertilizer, composted sludge and amendments may be applied as specified below:

10. Composted Sludge Material to be used as a soil conditioner for sites having disturbed areas over 5 acres shall conform to the following requirements:

- Composted sludge shall be supplied by, or originate from, a person or persons that are permitted (at the time of application of the compost) by the Maryland Department of the Environment under COMAR 26.04.06.
- Composted sludge shall contain at least 1 percent nitrogen, 1.5 percent phosphorus, and 0.2 percent potassium and have a pH of 7.0 to 8.0. If compost does not meet these requirements, the appropriate constituents must be added to meet the requirements prior to use.
- Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.
- Composted sludge shall be amended with a potassium fertilizer applied at the rate of 4 lb/1,000 square feet, and 1/3 the normal lime application rate.

11. References: Guideline Specifications, Soil Preparation and Sodding, MD-VA, Pub. #1. Cooperative Extension Service, University of Maryland and Virginia Polytechnic Institute, Revised 1973.

20.0 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION DEFINITION

VEGETATIVE STABILIZATION DEFINITION

Using vegetation as cover for barren soil to protect it from forces that cause erosion.

PURPOSE

Vegetative stabilization specifications are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and run-off to downstream areas, and improving wildlife resources.

CONDITIONS WHERE PRACTICE APPLIES

This practice shall be used on denuded areas as specified on the plans and may be used on highly erodible or critically eroding areas. This specification is divided into Temporary Seeding, to quickly establish vegetative cover for short duration (Up to one year), and Permanent Seeding, for long term vegetative cover. Examples of applicable areas for Temporary Seeding are temporary soil stockpiles, disturbed areas being left bare during construction phases, earth dikes, etc. and for Permanent Seeding are ditches, drains, cut and fill slopes and other areas of final grade, former stockpile and staging areas, etc.

Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Vegetation, over time, will increase organic matter content and improve the water holding capacity of the soil and subsequent plant growth. Vegetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone. Sediment control devices must remain in place during grading, seeded preparation, seeding, mulching and vegetative establishment to prevent large quantities of sediment and associated chemicals and nutrients from washing into surface waters.

SECTION 1 - VEGETATIVE STABILIZATION METHODS AND MATERIALS

A. Site Preparation

- Install erosion and sediment control structures (either temporary or permanent) such as diversions, grade stabilization structures, berms, waterways, or sediment control basins.
- Perform all grading operations at right angles to the slope. Final grading and shaping is not usually necessary for temporary seeding.
- Schedule required soil tests to determine soil amendment composition and application rates for sites having disturbed areas over 5 acres.

B. Soil Amendments (Fertilizer and Lime Specifications)

- Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas over 5 acres. Soil analysis may be performed by the University of Maryland or a recognized commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
- Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment. Manual application of fertilizer with prior broadcast spreading is not permitted. Fertilizers shall all be delivered to the site fully labeled according to the applicable state fertilizer laws and shall bear the name, trade name or trademark and warranty of the producer.
- Lime materials shall be ground limestone (hydrated or burnt lime may be substituted) which contains at least 50% total oxides (calcium oxide plus magnesium oxide). Limestone shall be ground to such fineness that at least 50% will pass through a #100 mesh sieve and 98-100% will pass through a #20 mesh sieve.
- Incorporate lime and fertilizer into the top 3-5" of soil by disking or other suitable means.

C. Seeded Preparation

- Seeded preparation shall consist of loosening soil to a depth of 3" to 5" by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened it should not be rolled or dragged smooth, but left in the roughened condition. Sloped areas (greater than 3:1) should be tracked leaving the surface in an irregular condition with ridges running parallel to the contour of the slope.
- Apply fertilizer and lime as prescribed on the plans.
- Incorporating lime and fertilizer into the top 3-5" of soil by disking or other suitable means.

D. Permanent Seeding

- Minimum conditions required for permanent vegetative establishment:
 - Soil pH shall be between 6.0 and 7.0.
 - Soluble salts shall be less than 500 parts per million (ppm).
 - The soil shall contain less than 40% clay, but enough fine grained material (>20% silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception is if loesslike or silty loesslike soils are to be planted, then a sandy soil (<30% silt plus clay) would be acceptable.
 - Soil shall contain minimum organic matter by weight.
 - Soil must contain sufficient pore space to permit adequate root penetration.
 - If these conditions cannot be met by soils on site, adding topsoil is required in accordance with Section 21. Standard and Specification for Topsoil.
- Areas previously graded in conformance with the drawings shall be maintained in a true and even grade, then scarified or otherwise loosened to a depth of 3-5" to permit bonding of the topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil from sliding down a slope.
- Apply soil amendments as per soil test or as included on the plans.
- Mix soil amendments into the top 3-5" of topsoil by disking or other suitable means. Lawn areas should be raked to remove large objects like stones and branches, and ready the area for seed and application. Where site conditions will not permit normal seeded preparation, loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface. Steep slopes (steeper than 3:1) should be tracked by a dozer leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. The top 1-2" of soil should be loose and friable. Seeding loosening may not be necessary on newly disturbed areas.

E. Seed Specifications

- All seed must meet the requirements of the Maryland State Seed Law. All seed shall be subject to re-testing. Seed samples for re-testing shall have been tested within the 6 months immediately preceding the date of sowing such material on the job.
- Note: Seed mixtures shall be available to the inspector to verify type and rate of seed used.
- Inoculant - The inoculant for treating legume seed in the seed mixtures shall be a pure culture of the nitrogen-fixing bacteria (rhizobium) for the species of legume. It shall not be used in excess of the rate indicated on the container. Add fresh inoculant as directed on package. Use four times the recommended rate when the soil is highly acid (pH below 6.0). It can weaken bacteria and make the inoculant less effective.

F. Methods of Seeding

- Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer), broadcast or drop seeded, or a Cultipacker seeder.
 - If fertilizer is being applied in the line of seeding, the application rates amounts will not exceed the following: nitrogen: maximum of 100 lbs. per acre total of soluble nitrogen; P205 (phosphorus): 200 lbs/acre; K2O (potassium): 200 lbs/acre.
 - Lime: use only ground agricultural limestone. Up to 3 tons per acre may be applied by hydroseeding. Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not apply lime and hydrated lime together. Lime and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.
- Dry Seeding: This includes use of conventional drop or broadcast spreaders.
 - Seed spread rate shall be incorporated into the subsoil at the rates prescribed on the Temporary or Permanent Seeding Summaries or Tables 255 or 256. The seed and fertilizer shall then be rolled with a weighted roller to provide good seed to soil contact.
 - Where spot-seed, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.
- Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
 - Cultipacker seeders are required to bury the seed in such a fashion as to provide at least 1 1/4" inch of soil covering. Seeded must be firm after planting.
 - Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

G. Mulch Specifications (In order of preference)

- Straw shall consist of thoroughly threshed wheat, rye or oat straw, reasonable bright in color, and shall not be musty, moldy, rotted, decayed, or excessively dusty and shall be free of noxious weed seeds as specified in the following:
 - WCFM shall consist of specially prepared wood cellulose processed into a uniform fibrous physical state.
 - WCFM shall be dried green or contain a green dye in the package that will provide to the inspector a color to facilitate visual inspection of the uniform spread slurry.
 - WCFM, including dye, shall contain no germination or growth inhibiting factors.
 - WCFM materials shall be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material shall form a blotter-like ground cover, on application, having moisture absorption and percolation properties and shall cover and hold grass seed to contact with the soil without inhibiting the growth of the grass seedlings.
 - WCFM material shall contain no elements or compounds at concentration levels that will be phytotoxic.
 - WCFM must conform to the following physical requirements: fiber length 1/8 to 8/16, ash approximately 10% (maximum approximately 11%), pH range of 6.0 to 8.5, ash approximately 6% maximum and water holding capacity of 90% minimum. Mulch should be applied to all seeded areas immediately after seeding.
- When sterile straw mulch should be used in areas where the species of grass is desired.

H. Mulching Seeded Areas - Mulch shall be applied to all seeded areas immediately after seeding.

- If grading is completed outside of the seeding season, mulch shall be applied as prescribed in this section and maintained until the seeding season returns and seeding can be performed in accordance with these specifications.
- When straw mulch is used, it shall be spread over all seeded areas at the rate of 2 tons/acre. Mulch shall be applied to a uniform loose depth of between 1" and 2". Mulch shall be applied in a uniform distribution and depth so that the soil surface is not exposed. If a mulch anchoring tool is to be used, the rate shall be increased to 2.5 tons/acre.
- Wood cellulose fiber used as a mulch shall be applied at a net dry weight of 1,500 lbs. per acre. The wood cellulose fiber shall be mixed with water, and the mixture shall contain a maximum of 50 lbs. of wood cellulose fiber per 100 gallons of water.
- Securing Straw Mulch (Mulch Anchoring): Mulch anchoring shall be performed immediately following mulch application to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon size of area and erosion hazard:
 - A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface to a minimum of two (2) inches. It is used on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should be used on the contour if possible.

1. Wood cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 pounds/acre. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.

2. Application of liquid binders should be heavier at the edges where wind catches mulch, such as in valleys and crest of banks. The remainder of area should be applied uniform after binder application. Synthetic binders such as Acrylic DLS (Aqua-Tack), DCA-70 Pretreated, Terra Tax II, Terra Tack AK or other approved equal may be used at rates recommended by the manufacturer to anchor mulch. Lightweight plastic netting may be stapled over the mulch according to manufacturer's recommendations. Netting is usually available in rolls 4' to 15' feet wide and 300 to 3,000 feet long.

3. Incremental Stabilization - Cut Slopes

- All cuts slopes shall be dressed, prepared, seeded and mulched as the work progresses. Slopes shall be excavated and stabilized in equal increments to not exceed 12'.
- Construction sequence (Refer to Figure 3 below):
 - Excavate and stabilize all temporary swales, side ditches, or berms that will be used to convey runoff from the excavation.
 - Perform Phase 1 excavation, dress and stabilize.
 - Perform Phase 2 excavation, dress and stabilize. Overseed Phase 1 areas as necessary.
 - Perform final phase excavation, dress and stabilize. Overseed previously seeded areas as necessary.

Note: Once excavation has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation of completing the operation out of the seeding season will necessitate the application of temporary stabilization.

4. Incremental Stabilization of Embankments - Fill Slopes

- Embankments shall be constructed in lifts as prescribed on the plans.
- Excavate and stabilize immediately when the vertical height of the multiple lifts reaches (5' or when the grading operation ceases as prescribed in the plans).
- At the end of each day, temporary berms and pipe slope drains should be constructed along the top edge of the embankment to intercept surface runoff and convey it down the slope in a non-erosive manner to sediment traps.
- Construction sequence: Refer to Figure 4 (below).
 - Excavate and stabilize all temporary swales, side ditches, or berms that will be used to divert runoff around the fill. Construct slope sill fence on low side of fill as shown in Figure 5, unless other methods shown on the plans address this area.
 - Place Phase 1 embankment, dress and stabilize.
 - Place Phase 2 embankment, dress and stabilize.
 - Place final phase embankment, dress and stabilize. Overseed previously seeded areas as necessary.

Note: Once the placement of fill has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

5. Vegetation - annual grass or grain used to provide cover on disturbed areas for up to 12 months. For longer duration of vegetative cover, Permanent Seeding is required.

A. Seed mixtures - Temporary Seeding

- Select one or more of the species or mixtures listed in Table 25 for the appropriate Plant Hardness Zone (from Figure 2) and enter them in the Permanent Seeding Summary below, along with application rates and seeding dates. Seeding depths can be estimated using Table 26. If this summary is not put on the construction plans and completed, then Table 25 must be put on the plans. Additional planting specifications for exceptional sites such as streambanks, ditches or for special purposes such as wildlife or aesthetic treatment may be found in USDA-SCS Technical Field Office Guide, Section 342 - Critical Area Planting. For special lawn maintenance areas, see Sections V Soil and V Turfgrass.

ii. For sites having soil tests performed, the rates shown on this table shall be deleted and the rates recommended by the testing agency shall be written in. Soil tests are not required for Temporary Seeding.

A. Seed mixtures - Permanent Seeding

- Select one or more of the species or mixtures listed in Table 25 for the appropriate Plant Hardness Zone (from Figure 2) and enter them in the Permanent Seeding Summary below, along with application rates and seeding dates. Seeding depths can be estimated using Table 26. If this summary is not put on the construction plans and completed, then Table 25 must be put on the plans. Additional planting specifications for exceptional sites such as streambanks, ditches or for special purposes such as wildlife or aesthetic treatment may be found in USDA-SCS Technical Field Office Guide, Section 342 - Critical Area Planting. For special lawn maintenance areas, see Sections V Soil and V Turfgrass.

ii. For sites having disturbed areas over 5 acres, the rates shown on this table shall be deleted and the rates recommended by the soil testing agency shall be written in.

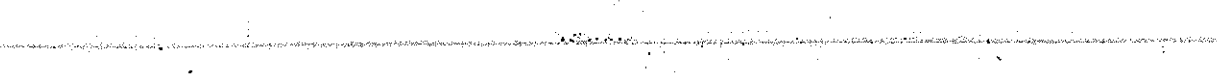
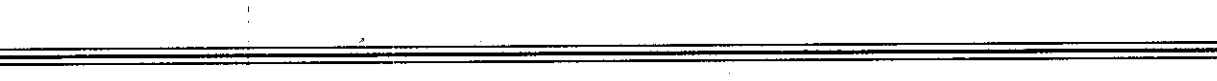
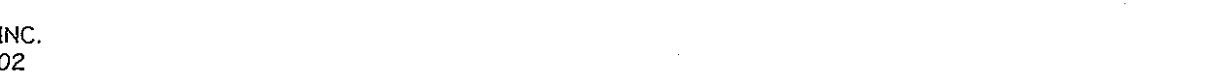
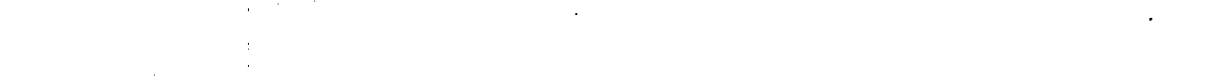
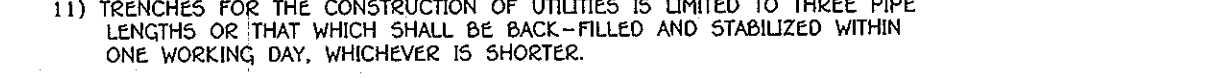
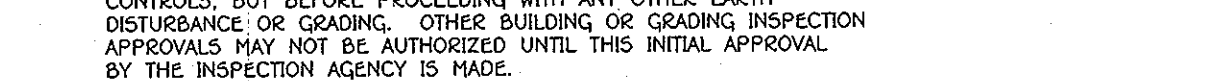
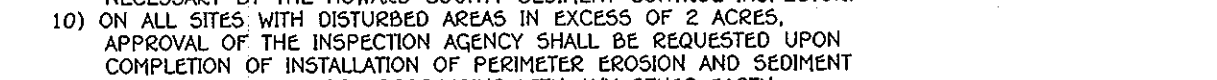
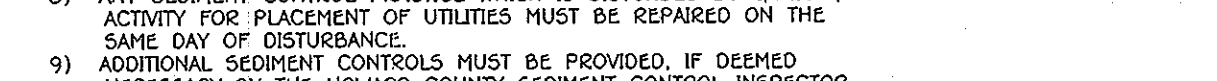
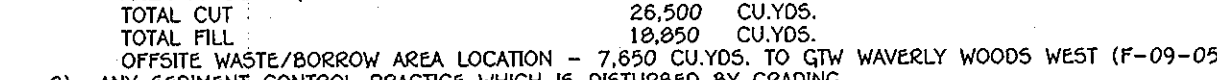
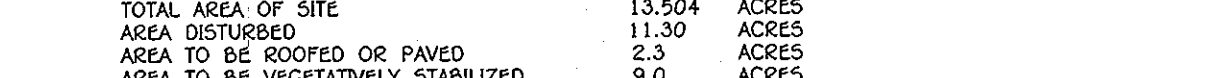
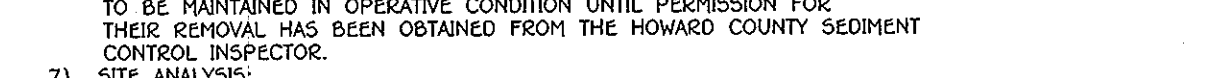
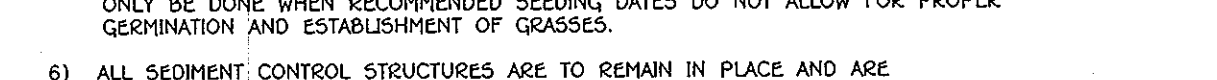
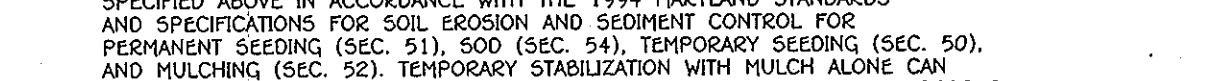
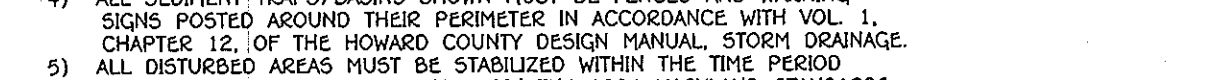
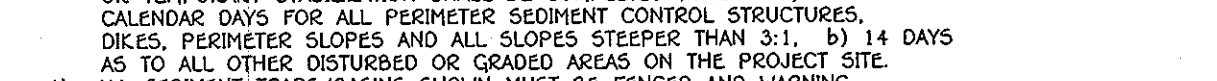
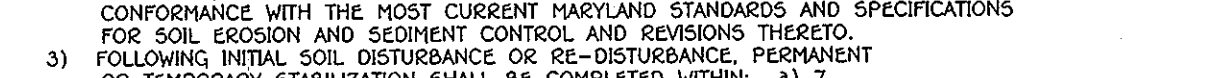
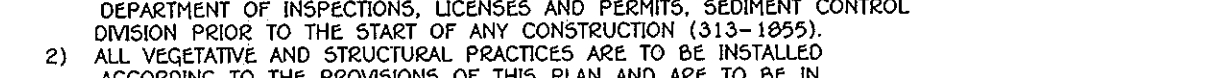
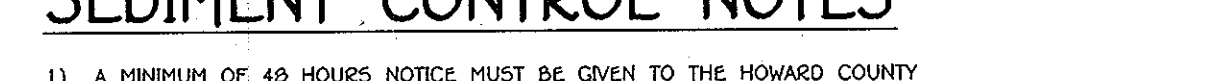
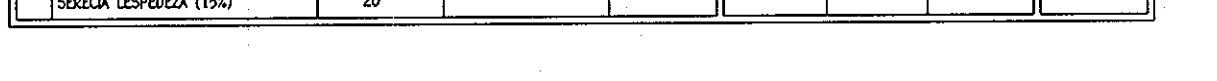
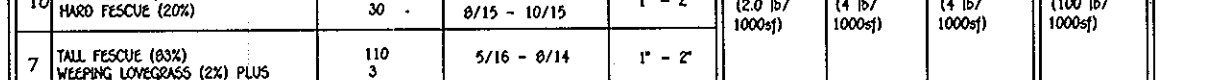
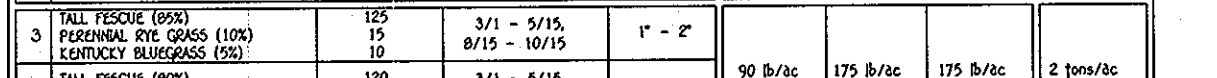
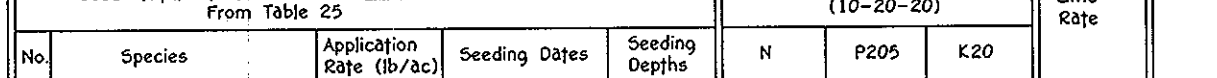
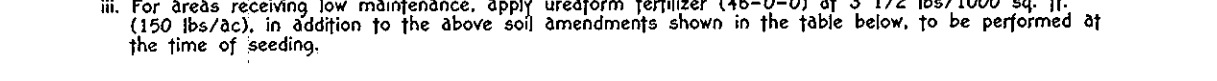
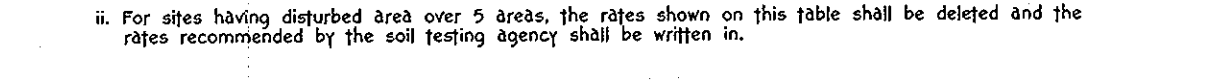
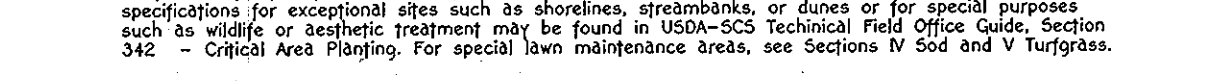
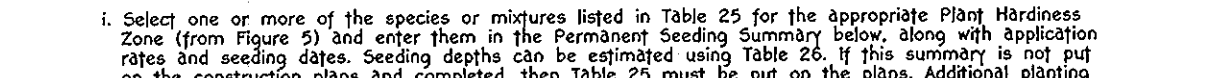
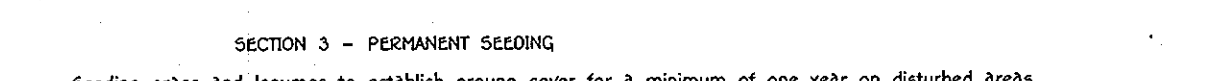
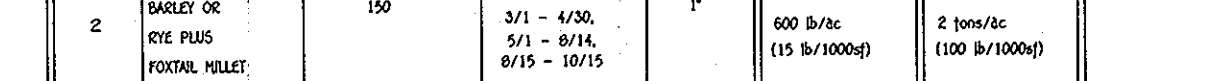
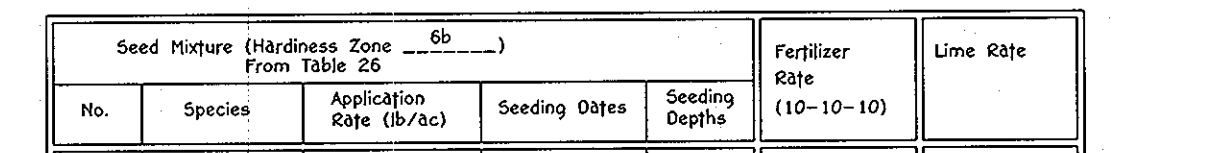
iii. For areas receiving low maintenance, above soil amendment fertilizer (46-0-0) at 3 1/2 lbs/1000 sq. ft. (150 lbs/acre), in addition to the above soil amendments shown in the table below, to be performed at the time of seeding.

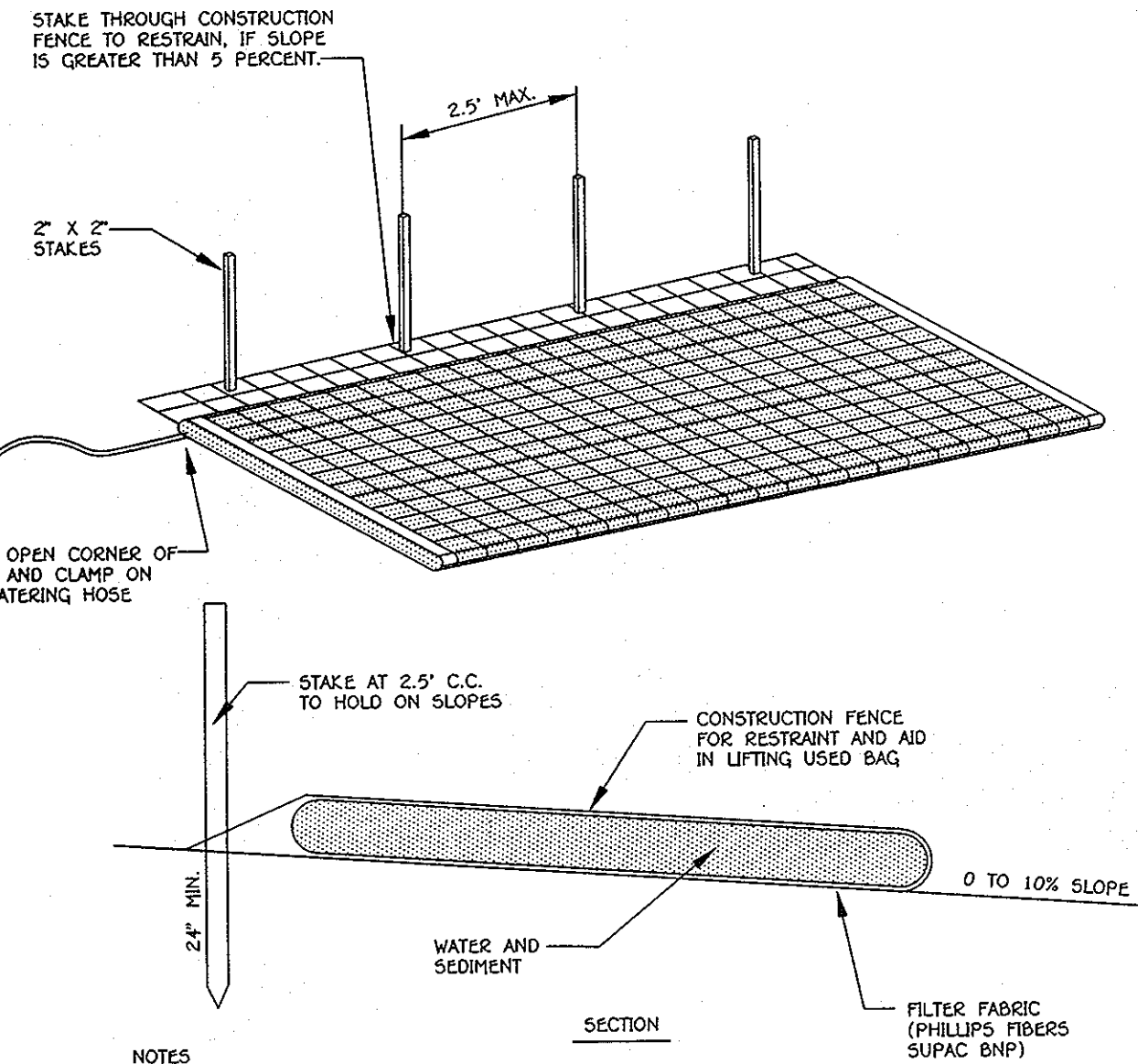
SEED MIXTURES - TEMPORARY SEEDING

Seed Mixture (Hardness Zone ...)	Application Rate (lb/acre)	Seeding Dates	Seeding Depth	Fertilizer Rate (10-20-20)	Lime Rate
1. BARELY OR RYE PLUS	150	3/1 - 4/30 5/1 - 6/14 8/15 - 10/15	1"	600 lb/acre (15 lb/1000sq ft)	2 tons/acre (100 lb/1000sq ft)

SEED MIXTURES - PERMANENT SEEDING

No.	Species	Application Rate (lb/acre)	Seeding Dates	Seeding Depth	N	P205	K2O	Lime Rate
1.	WILD RED GRASS (100%) INDIAN BLUEGRASS (100%)	125	3/1 - 5/15 8/15 - 10/15	1" - 2"	90 lb/acre (22.5 lb/1000sq ft)	175 lb/acre (43.75 lb/1000sq ft)	175 lb/acre (43.75 lb/1000sq ft)	2 tons/acre (100 lb/1000sq ft)
2.	WILD RED GRASS (100%) WILD RED GRASS (100%)	100	3/1 - 5/15 8/15 - 10/15	1" - 2"	90 lb/acre (22.5 lb/1000sq ft)	175 lb/acre (43.75 lb/1000sq ft)	175 lb/acre (43.75 lb/1000sq ft)	2 tons/acre (100 lb/1000sq ft)
3.	WILD RED GRASS (100%) WILD RED GRASS (100%) PLUS WILD RED GRASS (100%)	110	5/15 - 8/14	1" - 2"	90 lb/acre (22.5 lb/1000sq ft)	175 lb/acre (43.75 lb/1000sq ft)	175 lb/acre (43.75 lb/1000sq ft)	2 tons/acre (100 lb/1000sq ft)





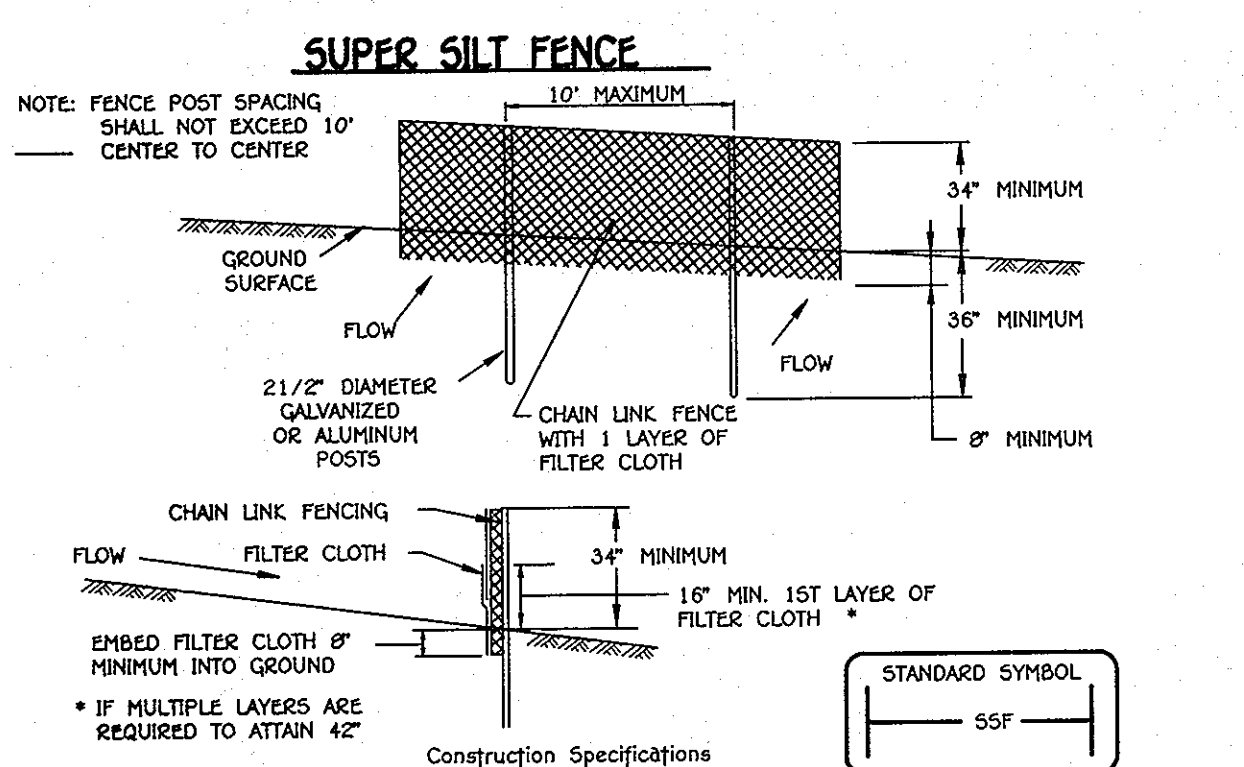
NOTES

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

AVAILABLE FROM:

INDIAN VALLEY INDUSTRIES, INC. P.O. BOX 810 JOHNSON CITY, NEW YORK 13790 (800) 659-5111	A.C.F. ENVIRONMENTAL 1601-A WILLIS ROAD RICHMOND, VIRGINIA 23237 TOLL FREE 1-800-448-3636	PRICE AND COMPANY, INC. 425 36TH STREET WYOMING, WY. 83948 (616) 530-8230
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FILTER BAG DETAIL
NOT TO SCALE

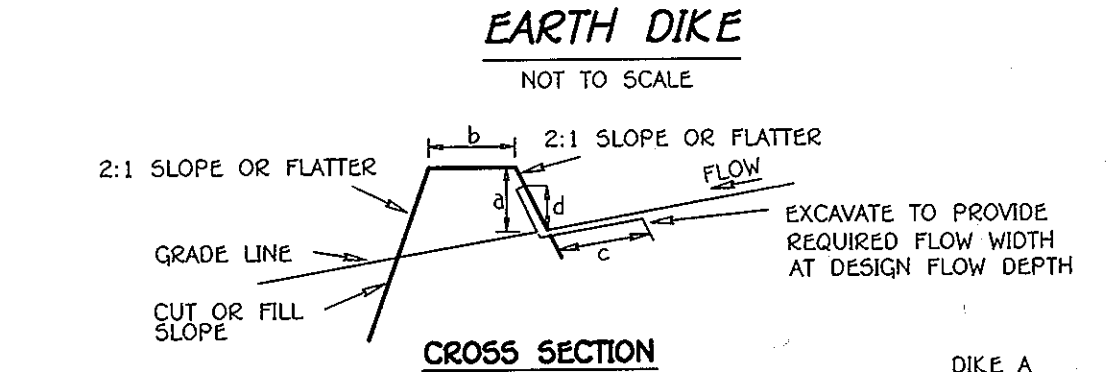


CONSTRUCTION SPECIFICATIONS

1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.
2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.
3. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.
4. Filter cloth shall be embedded a minimum of 6" into the ground.
5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.
6. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height.
7. Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in. (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in. (min.)	Test: MSMT 509
Flow Rate	0.3 gal/ft /minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTRAL SQUARE OFFICE PARK - 10222 BALDWIN NATIONAL PIKE
ELICOTT CITY, MARYLAND 21042
(410) 461-2955

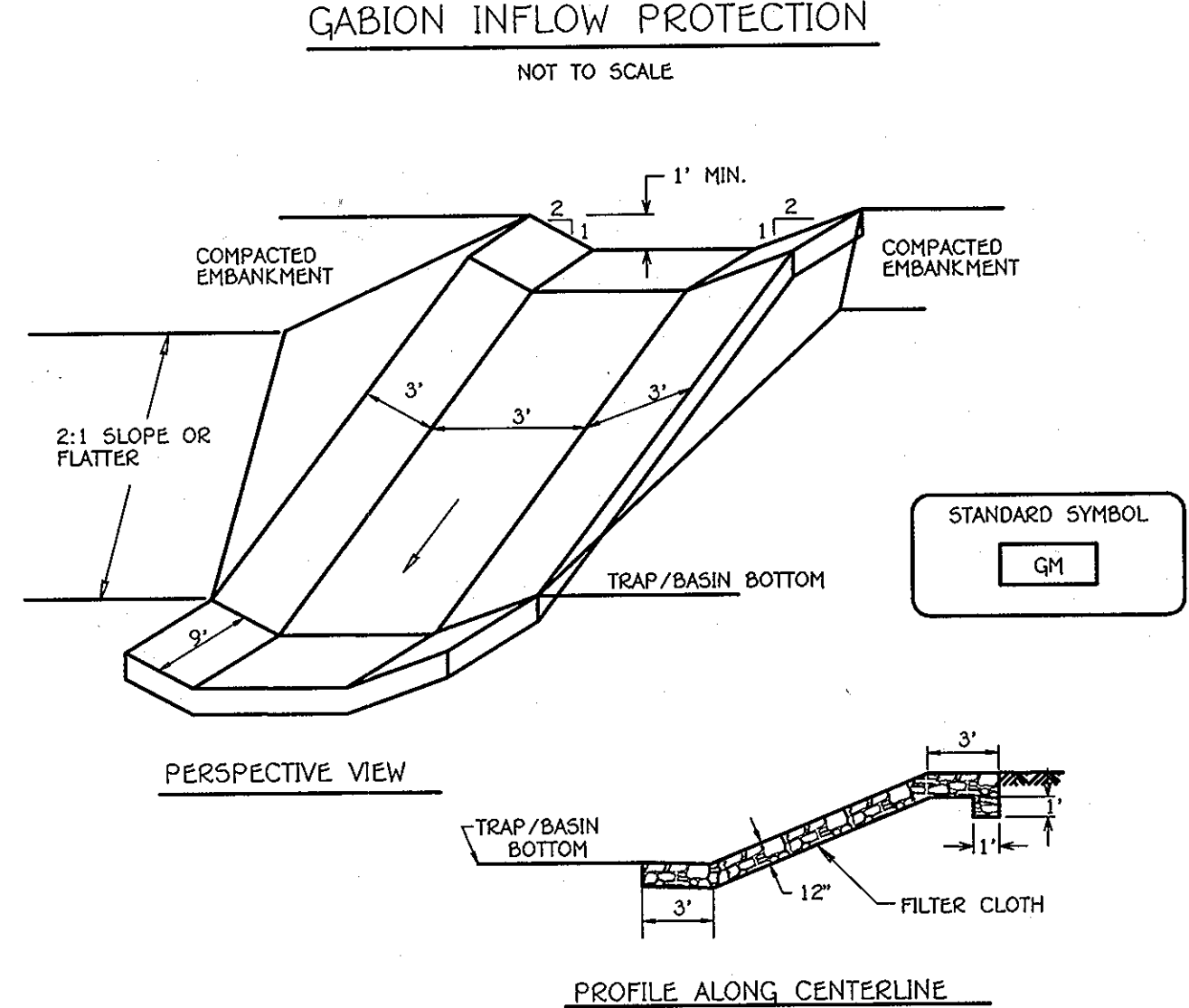


	DIKE A	DIKE B
a-DIKE HEIGHT	18"	30"
b-DIKE WIDTH	24"	36"
c-FLOW WIDTH	4'	6'
d-FLOW DEPTH	12"	24"

CONSTRUCTION SPECIFICATIONS

1. Seed and cover with straw mulch.
2. Seed and cover with Erosion Control Matting or line with sod.
3. 4" - 7" stone or recycled concrete equivalent pressed into the soil 7" minimum.

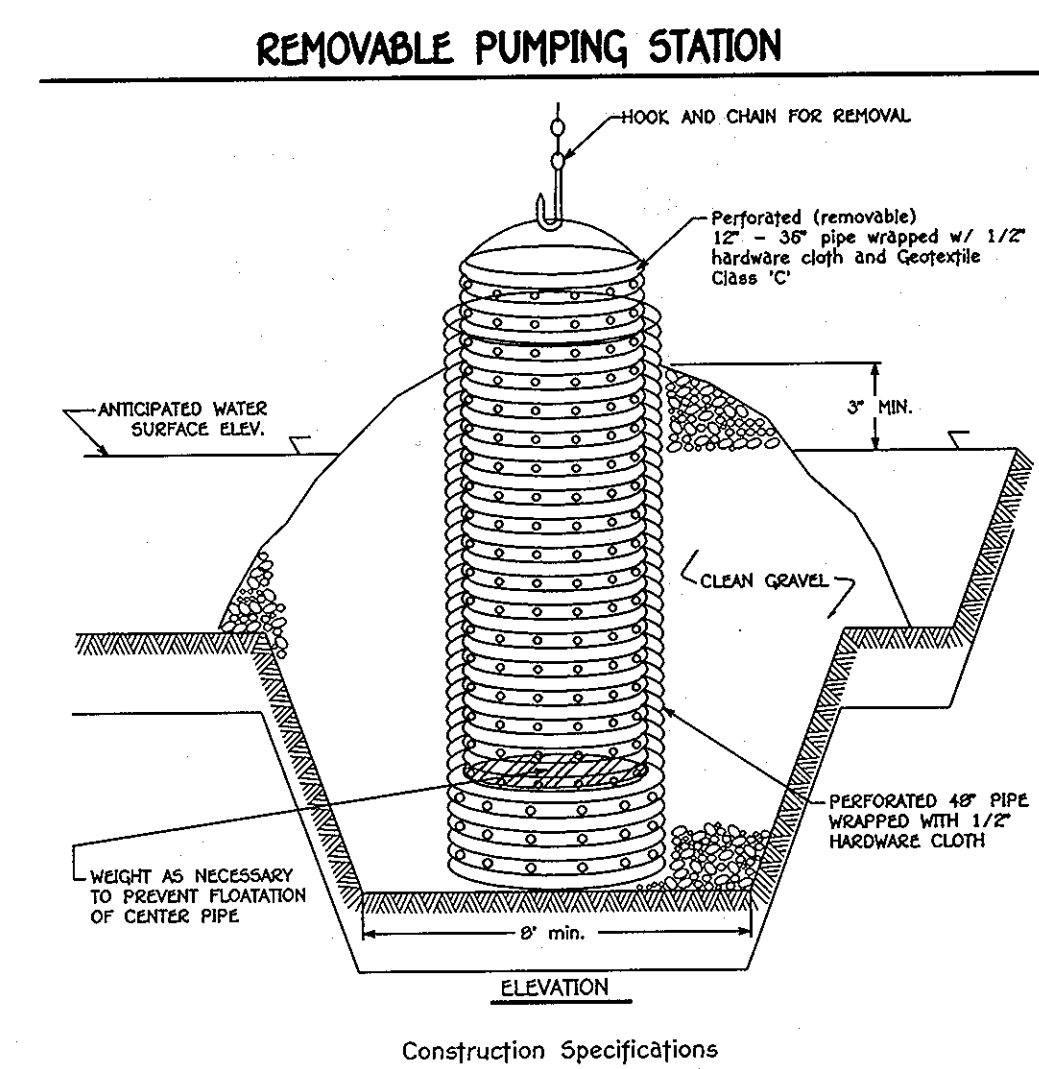
1. All temporary earth dikes shall have uninterrupted positive grade to an outlet. Spot elevations may be necessary for grades less than 1%.
2. Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.
3. Runoff diverted from an undisturbed area shall outlet directly into an undisturbed, stabilized area at a non-erosive velocity.
4. All trees, brush, stumps, obstructions, and other objectionable material shall be removed and disposed of so as not to interfere with the proper functioning of the dike.
5. The dike shall be excavated or shaped to line, grade and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.
6. Fill shall be compacted by earth moving equipment.
7. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the dike.
8. Inspection and maintenance must be provided periodically and after each rain event.



CONSTRUCTION SPECIFICATIONS

1. Gabion inflow protection shall be constructed of 9' x 3' x 9' gabion baskets forming a trapezoidal cross section 1' deep, with 2:1 side slopes, and a 3' bottom width.
2. Geotextile Class C shall be installed under all gabion baskets.
3. The stone used to fill the gabion baskets shall be 4" - 7".
4. Gabions shall be installed in accordance with manufacturers recommendations.
5. Gabion Inflow Protection shall be used where concentrated flow is present on slopes steeper than 4:1.

OWNER AND DEVELOPER
MORSEBERGER, LLC
c/o LAND DESIGN & DEVELOPMENT, INC.
5300 DORSEY HALL DRIVE, SUITE 102
ELICOTT CITY, MARYLAND 21042
(410) 367-0422



CONSTRUCTION SPECIFICATIONS

1. The outer pipe should be 48" dia. or shall, in any case, be at least 4" greater in diameter than the center pipe. The outer pipe shall be wrapped with 1/2" hardware cloth to prevent backfill material from entering the perforations.
2. After installing the outer pipe, backfill around outer pipe with 2" aggregate or clean gravel.
3. The inside steel pipe (center pipe) should be constructed by perforating a corrugated or PVC pipe between 12" and 36" in diameter. The perforations shall be 1/2" x 6" slits or 1" diameter holes 6" on center. The center pipe shall be wrapped with 1/2" hardware cloth first, then wrapped again with Geotextile Class C.
4. The center pipe should extend 12" to 18" above the anticipated water surface elevation of riser crest elevation when dewatering a basin.

STATE OF MARYLAND
I, *[Signature]*, hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-11.

ENGINEER'S CERTIFICATE
I hereby certify that this Plan For Erosion And Sediment Control Represents a Practical And Workable Plan Based On My Personal Knowledge Of The Site Condition And That It Was Prepared In Accordance With The Requirements Of The Howard Soil Conservation District.
Signature: *[Signature]* Date: 3/4/10

DEVELOPER'S CERTIFICATE
"I/We Certify That All Development And Construction Will Be Done According To This Plan Of Development And Plan For Erosion And Sediment Control And That All Responsible Personnel Involved In The Construction Project Will Have A Certificate Of Attendance At A Department Of Natural Resources Approved Training Program For The Control Of Sediment And Erosion Before Beginning The Project. I Also Authorize Periodic On-Site Inspection By The Howard Soil Conservation District Or Their Authorized Agents, As Are Deemed Necessary."
Signature Of Developer: *[Signature]* Date: 3/4/10

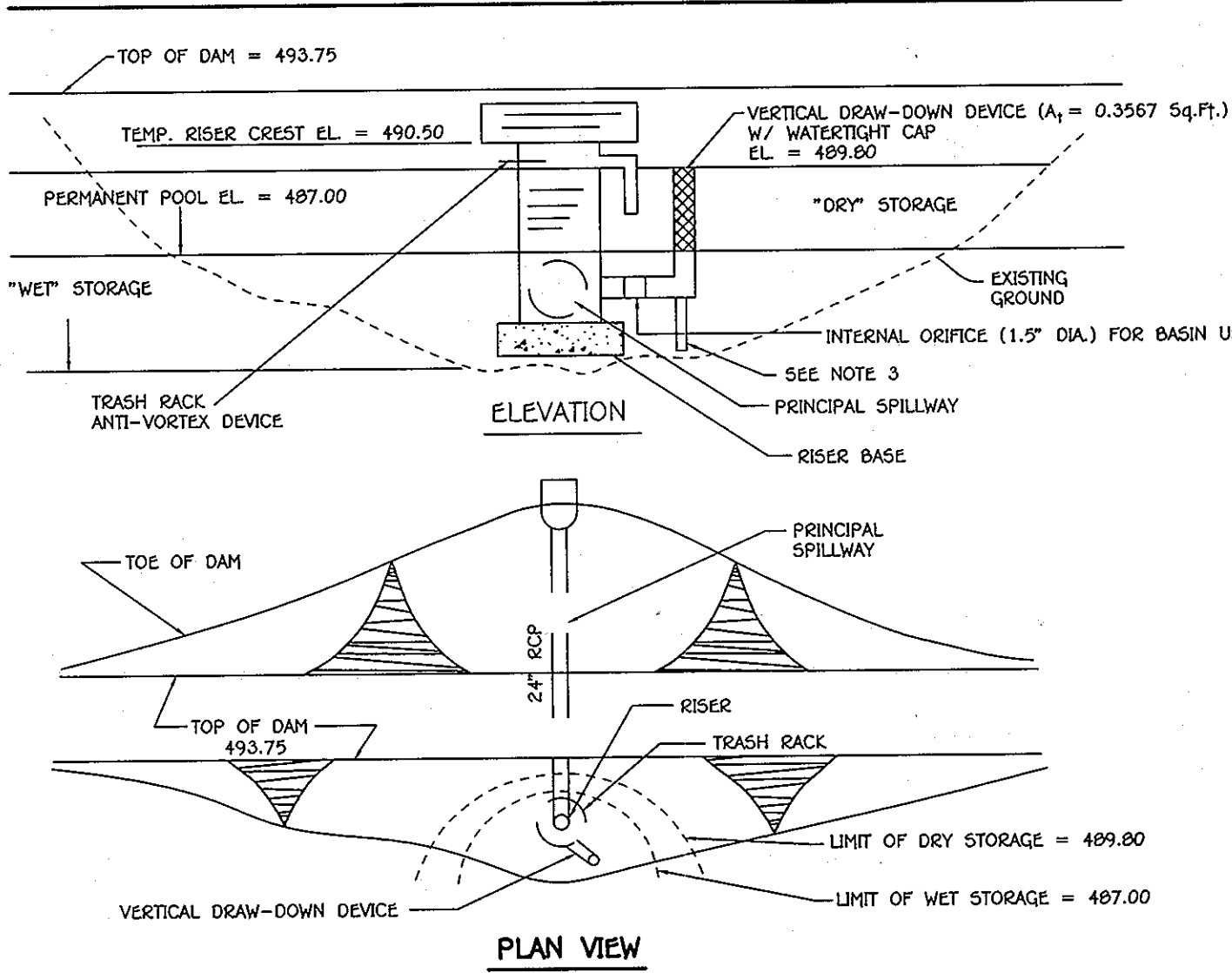
Approved: This Development Is Approved For Erosion And Sediment Control By The Howard Soil Conservation District.
District: Howard Soil Conservation Dist. Date: 3/1/10

Approved: Department Of Planning And Zoning
Chief, Division Of Land Development: *[Signature]* Date: 4/26/10

Approved: Department Of Public Works
Chief, Development Engineering Division: *[Signature]* Date: 4/28/10

Approved: Howard County Department Of Public Works
Chief, Bureau Of Highways: *[Signature]* Date: 4-7-10

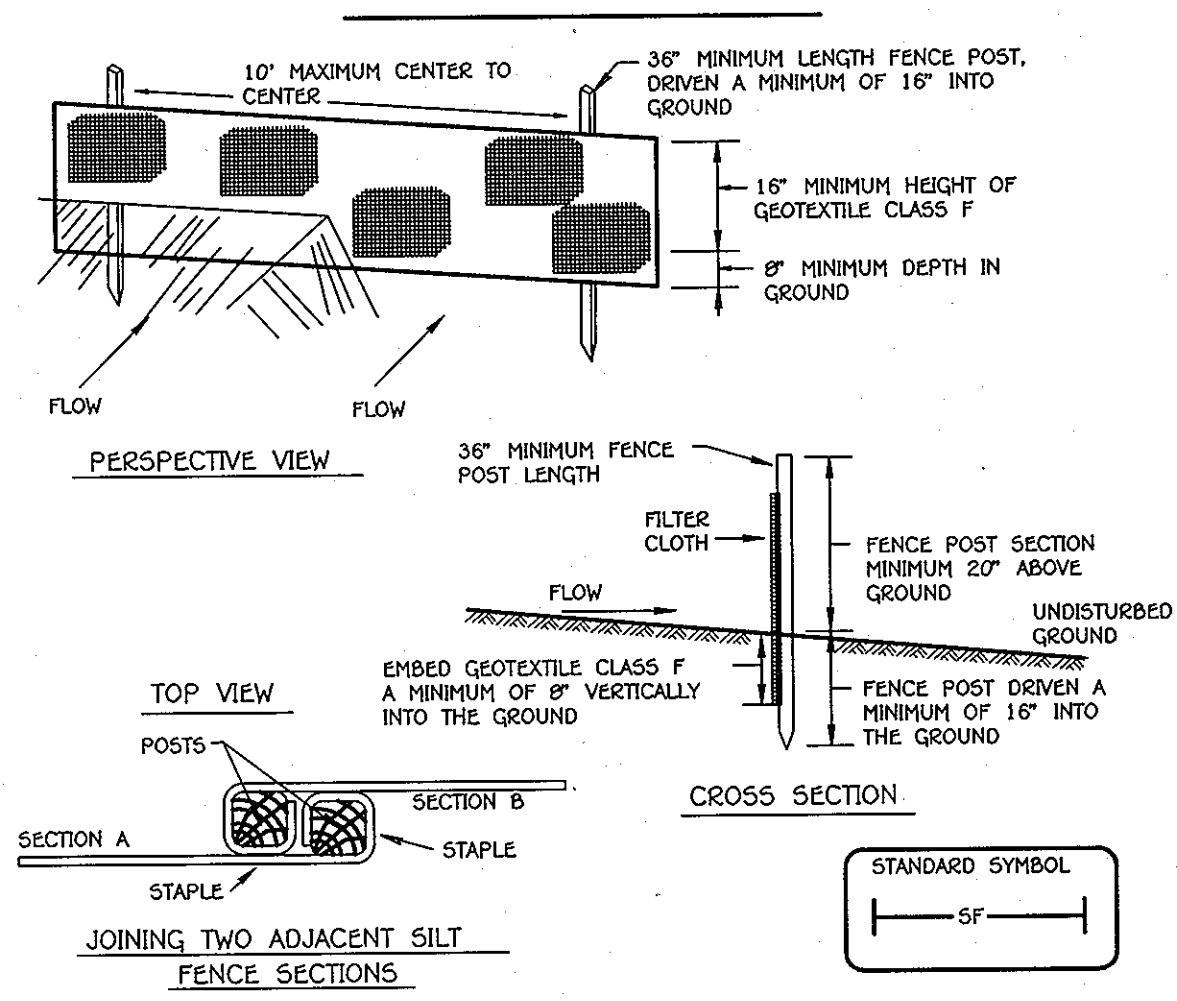
VERTICAL DRAW-DOWN DEVICE



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 E.
4. PROVIDE SUPPORT OF DRAW-DOWN DEVICE TO PREVENT SAGGING AND FLOATATION. 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.

SILT FENCE



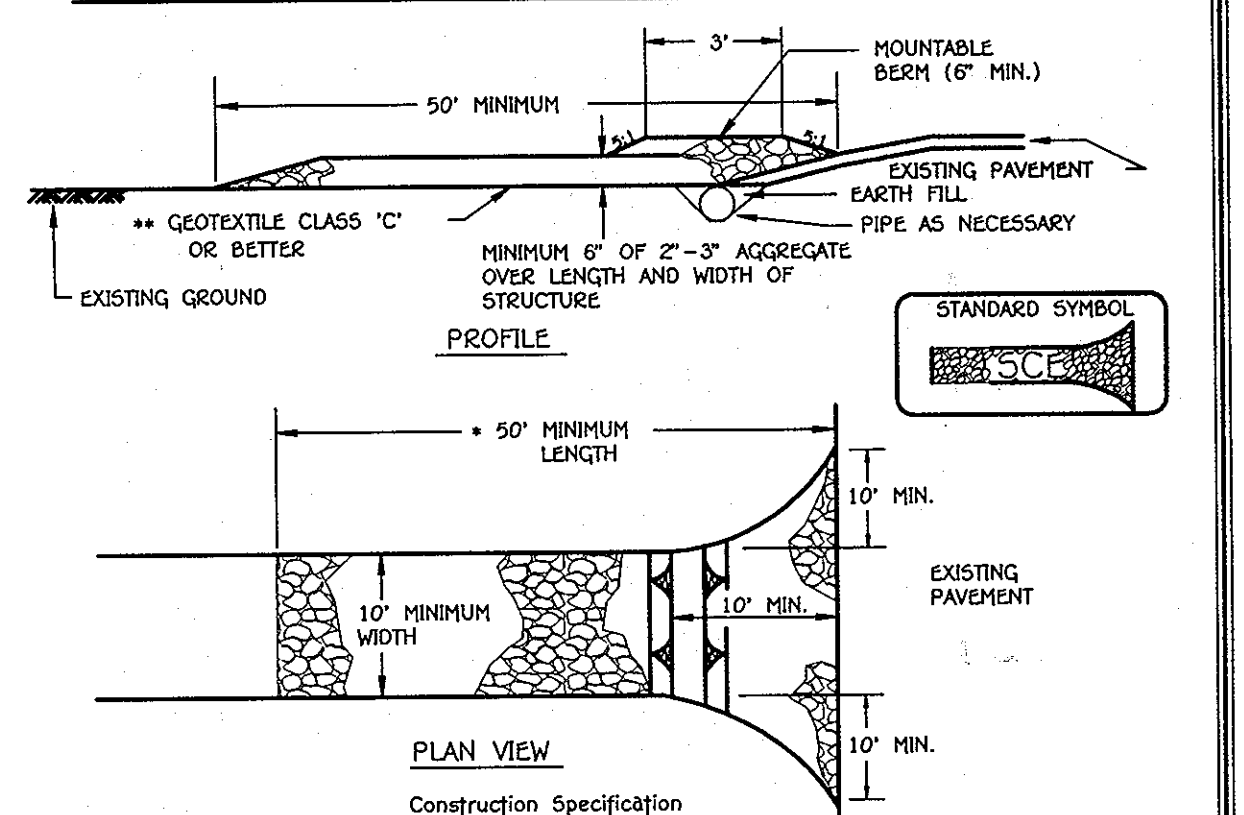
CONSTRUCTION SPECIFICATIONS

1. Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 1 1/2" x 1 1/2" square (minimum) cut, or 1 3/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighing not less than 1.00 pound per linear foot.
2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in. (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in. (min.)	Test: MSMT 509
Flow Rate	0.3 gal/ft /minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

3. Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.
4. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

STABILIZED CONSTRUCTION ENTRANCE



CONSTRUCTION SPECIFICATION

1. Length - minimum of 50' (+30' for single residence lot).
2. Width - 10' minimum, should be flared at the existing road to provide a turning radius.
3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. **The plan approval authority may not require single family residences to use geotextile.
4. Stone - crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.
5. Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.
6. Location - A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.

SEDIMENT AND EROSION CONTROL NOTES AND DETAILS
WAVERLY OVERLOOK
LOTS 1-26 AND OPEN SPACE LOTS 27-32
ZONING: R-20
TAX MAP No. 10, GRID No. 21 & TAX MAP No. 16; GRID No. 3
PARCEL Nos. 207 AND 224
THIRD ELECTION DISTRICT - HOWARD COUNTY, MARYLAND
DATE: MARCH 4, 2010
SHEET 17 OF 22

AS-BUILT 1-10-027

STORMWATER MANAGEMENT POND CONSTRUCTION SPECIFICATIONS

These specifications are appropriate to all ponds within the scope of the Standard Practice MD-376. 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 breaks shall be sloped to no steeper than 1:1. All trees shall be cleared and grubbed within 15 feet of the toe of the embankment.

Areas to be covered by the reservoir will be cleared of all trees, brush, logs, stumps, rubbish and other objectionable material unless otherwise specified on the plans. Trees, 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 directed by the owner or his representative. When specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the embankment and other designated areas.

EARTH FILL

Material - The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, stones greater than 6", frozen or other objectionable materials. Fill material for the center of the embankment and cut-off trench shall conform to Unified Soil Classification CC, SC, CH, or CL and for the outer shell of the embankment and cut-off trench shall conform to the use of other materials in the embankment if designed by a geotechnical engineer. Such special designs must have 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 fill shall be traversed by not less than one tread track of heavy equipment or compaction shall be achieved by a minimum of four complete passes of a sheepsfoot, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction will be obtained with the equipment used. The fill material shall contain sufficient moisture so that if formed into a ball it will not crumble, yet not be so wet that water can be squeezed out.

When required by the reviewing 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 ASTM Method T-99 (Standard Proctor).

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 covered by the equipment used for excavation, with the minimum width being four feet. The depth shall be at least four feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability.

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.

Structure Backfill

Backfill adjacent to pipes or structures shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete 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 unconfined compressive strength. The flowable fill shall have a minimum pH of 4.0 and a minimum resistivity of 2,000 ohm-cm. Material shall be placed such that a minimum of 6" (measured perpendicular to the outside of the pipe) of flowable fill shall be under (bedding), over and on the sides of the pipe. It only needs to extend up to the spring line for rigid conduits. Adequate 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 bituminous 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 needs to fill completely all spaces adjacent to the flowable fill zone. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a structure or pipe. Backfill material outside the structural backfill (flowable fill) zone shall be of the type and quality conforming to the specified for the core of the embankment or other embankment materials.

Pipe Conduits

All pipes shall be circular in cross section.

Corrugated Metal Pipe - All of the following criteria shall apply for corrugated metal pipe:

- Materials - (Polymer Coated steel pipe) - Steel pipes with polymeric coatings shall have a minimum coating thickness of 0.01 inch (10 mil) on both sides of the pipe. This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-245 & M-246 with watertight coupling bands or flanges.

Materials - (Aluminum Coated Steel Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-274 with watertight coupling bands or flanges. Aluminum Coated Steel Pipe, when used with flowable fill or when soil and/or water conditions warrant the need for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Any aluminum coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt.

Materials - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-196 or M-211 with watertight coupling bands or flanges. Aluminum Pipe, when used with flowable fill or when soil and/or water conditions warrant the need for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt. Hot dip galvanized bolts may be used for connections. The pH of the surrounding soils shall be between 4 and 9.

2. Coupling bands, anti-seep collars, and sections, etc., must be composed of the same material and fittings as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials of at least 24 mils in thickness.

3. Connections - All connections with pipes must be completely watertight. The drain pipe or barrel connection to the riser shall be made with a double gasket and pipe and riser are metal. Anti-seep collars shall be connected to the pipe in such a manner as to be completely watertight. Dimple bands are not considered to be watertight.

All connections shall use a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re-rolled an adequate number of corrugations to accommodate the bandwidth. The following pipe connections are acceptable for pipes less than 24-inches in diameter: flanges on both ends of the pipe with a circular 3/8 inch closed cell neoprene gasket, punched to the flange bolt circle, sandwiched between adjacent flanges; a 12-inch wide standard 100 type band with 12-inch wide by 3/8-inch thick closed cell circular neoprene gasket and a 12-inch wide hugger type band with o-ring gaskets having a minimum diameter of 1/2-inch greater than the corrugation depth. Pipes 24-inches in diameter and larger shall be connected by full length standard corrugated band using a minimum of 4 (four) rods and lugs, 2 on each connecting pipe end. A 24-inch wide by 3/8-inch thick closed cell circular neoprene gasket will be installed with 12-inches on the end of each pipe. Flanged joints with 3/8-inch closed cell gaskets the full width of the flange is also acceptable.

4. Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

5. Backfilling shall conform to "Structure Backfill".

6. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Reinforced Concrete Pipe - All of the following criteria shall apply for reinforced concrete pipe:

1. Materials - Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM C-361.

2. Bedding - Reinforced concrete pipe conduits shall be laid in a concrete bedding/cradle for their entire length. This bedding/cradle shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 200# per cubic yard with a minimum thickness of 6 inches. Where a concrete cradle is not needed for structural reasons, flowable fill may be used as described in the "Structure Backfill" section of this standard. Gravel bedding is not permitted.

3. Laying pipe - Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the pipe. After the bedding is laid, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 4 feet from the riser.

4. Backfilling shall conform to "Structure Backfill".

5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Plastic Pipe

The following criteria shall apply for plastic pipe:

1. Materials - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241 - Corrugated High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following: 4" - 10" inch pipe shall meet the requirement of AASHTO M252 Type 5, and 12" through 24" inch shall meet the requirement of AASHTO M254 Type 5.

2. Joints and connections to anti-seep collars shall be completely watertight.

3. Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

4. Backfilling shall conform to "Structure Backfill".

5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Drainage Diaphragms - When a drainage diaphragm is used, a registered professional engineer will supervise the design and construction inspection.

Concrete

Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 414, Mix No. 3.

Rock Riprap

Rock riprap shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 311.

Geotextile shall be placed under all riprap and shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 921.09, Class C.

Care of Water during Construction

All work on permanent structures shall be carried out in areas free from water. The Contractor shall construct and maintain all temporary dikes, levees, cofferdams, drainage channels, and stream diversions necessary to protect the areas to be occupied by the permanent works. The contractor shall also furnish, install, operate, and maintain all necessary pumping and other equipment required for removal of water from various parts of the work and for maintaining the excavations, foundation, and other parts of the work free from water as required or directed by the engineer for constructing each part of the work. After having served their purpose, all temporary protective works shall be removed or leveled and graded to the extent required to prevent obstruction in any degree whatsoever of the flow of water to the spillway or outlet works and so as not to interfere in any way with the operation or maintenance of the structure. Stream diversions shall be maintained until the full flow can be passed through the permanent works. The removal of water from the required excavation and the foundation shall be accomplished in a manner and to the extent that will maintain satisfactory performance of all construction operations. During the placing and compacting of material in required excavations, the water level at the locations being refilled shall be maintained below the bottom of the excavation at such locations which may require draining the water sumps from which the water shall be pumped.

Stabilization

All borrow areas shall be graded to provide proper drainage and left in a slightly convex. All exposed surfaces of the embankment, spillway, silt 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.

OPERATION AND MAINTENANCE

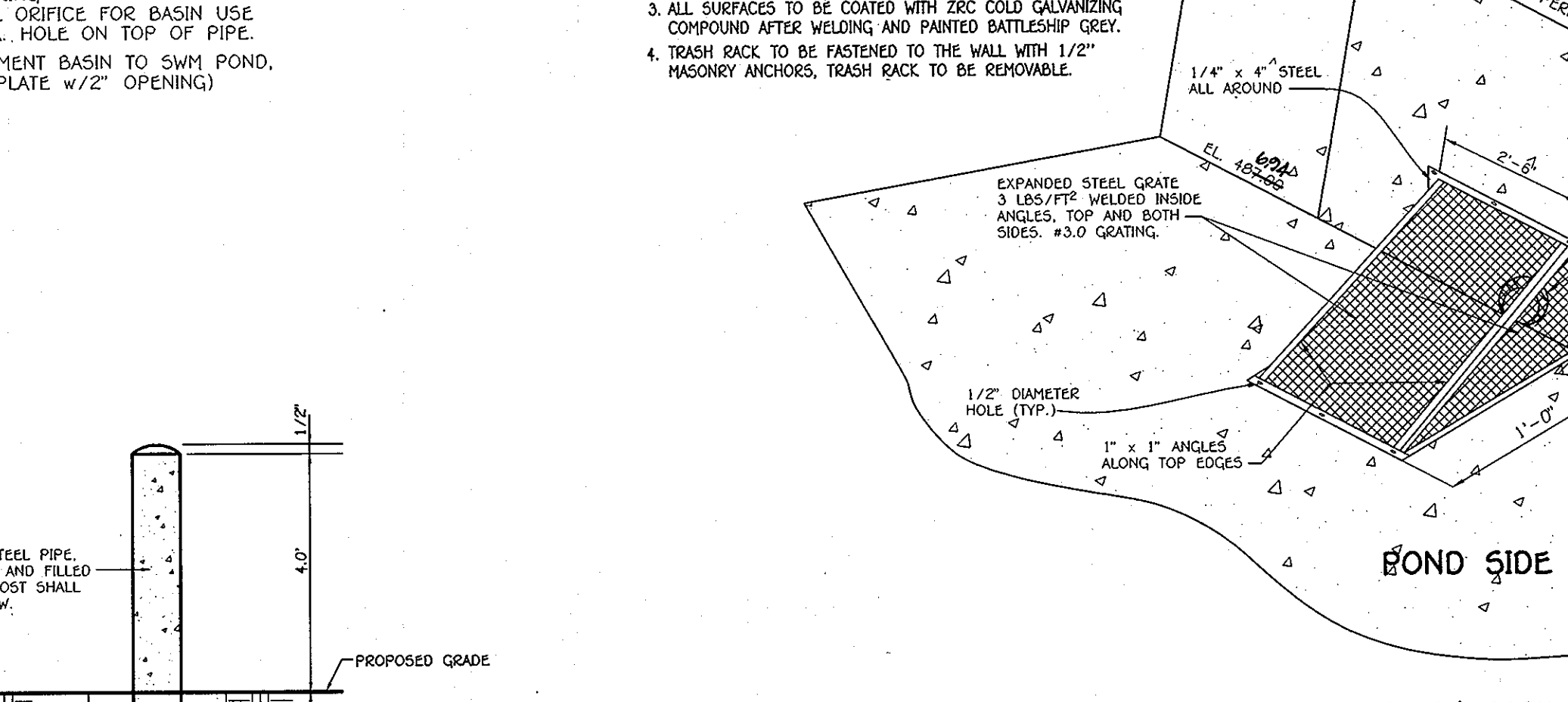
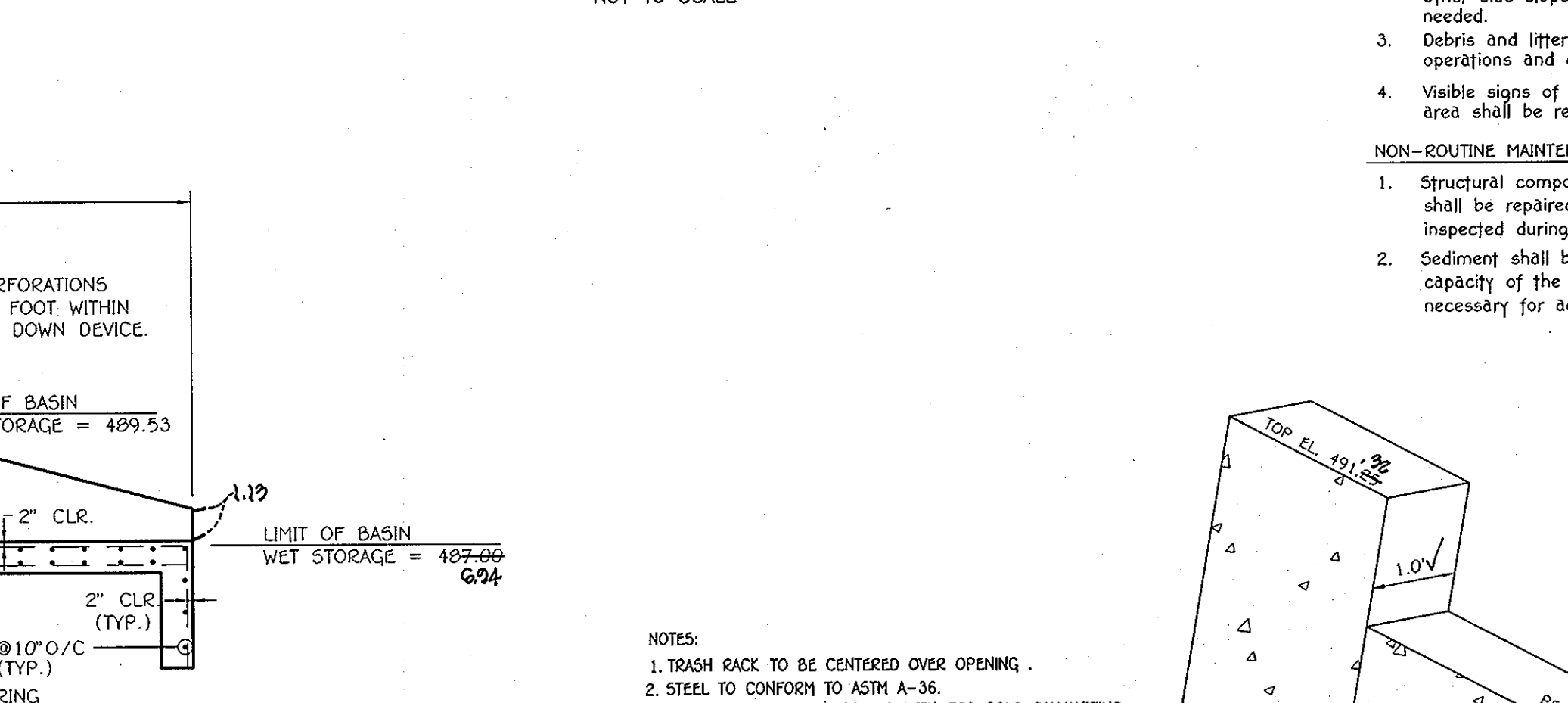
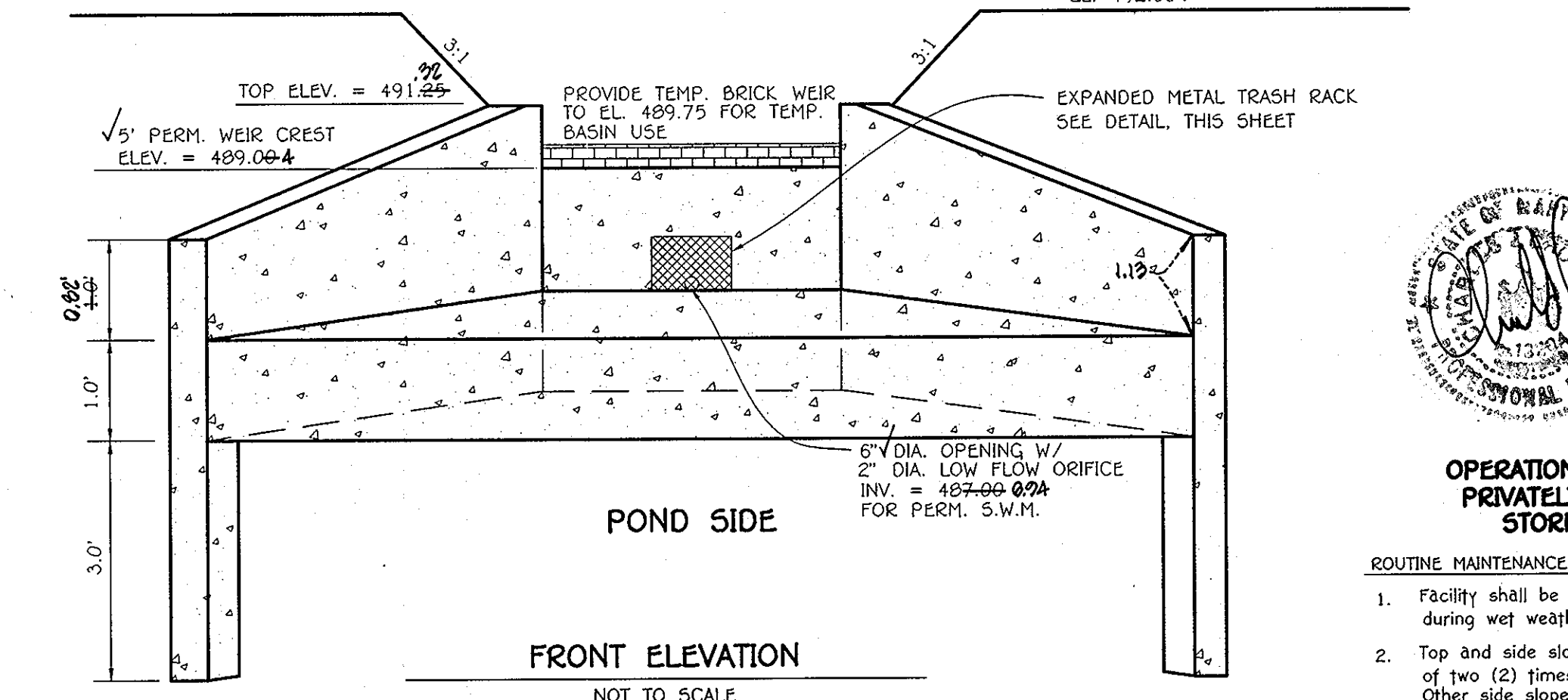
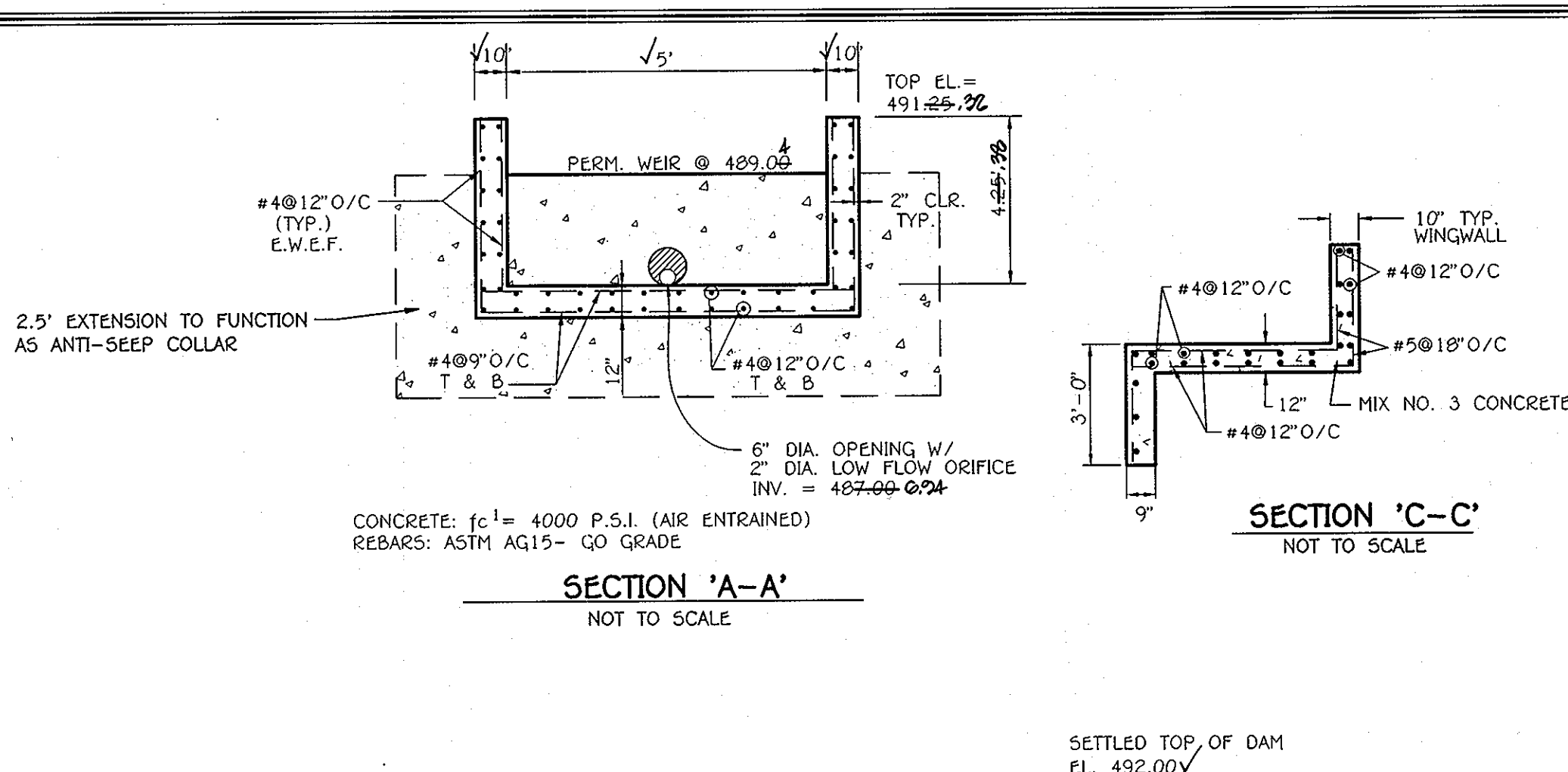
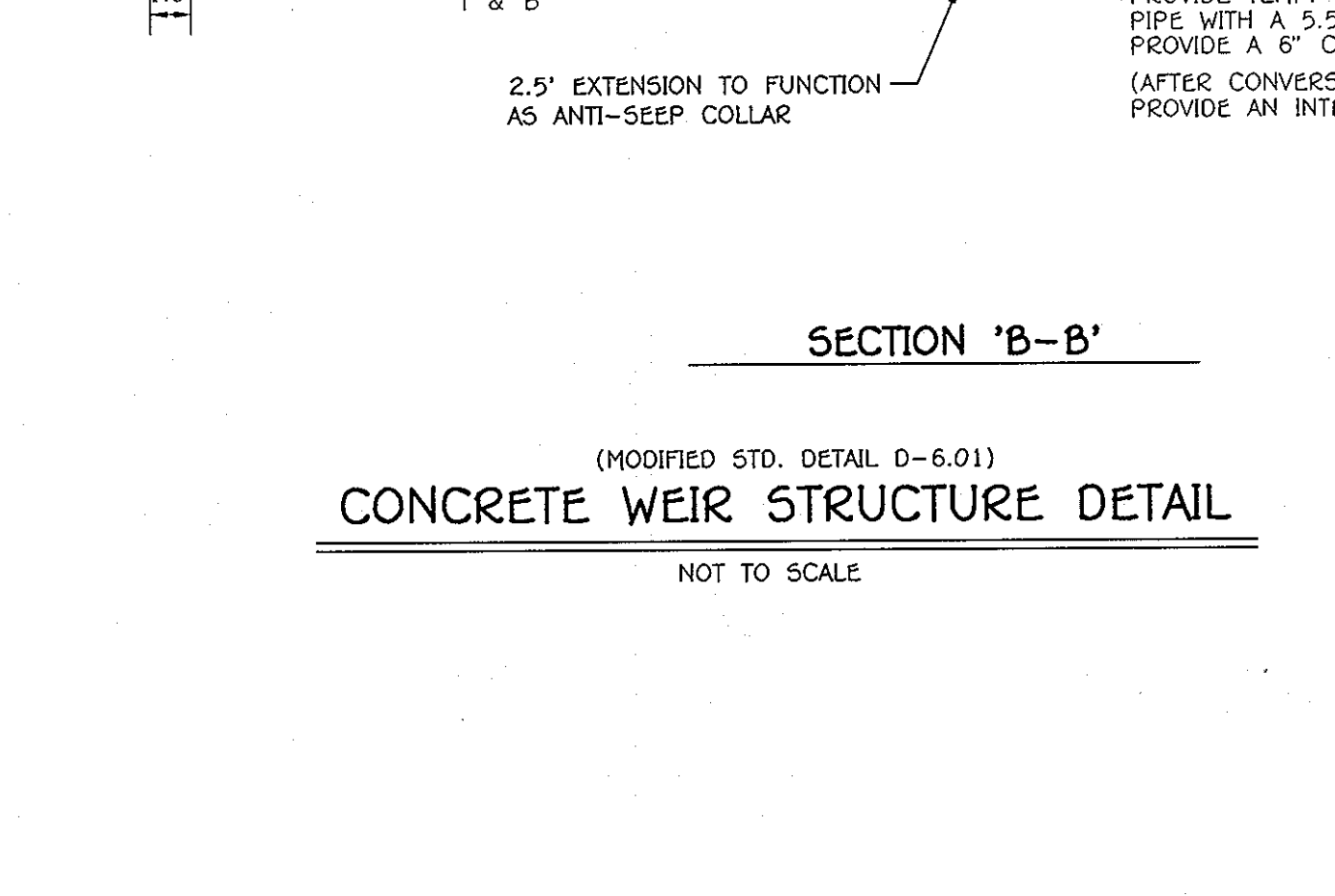
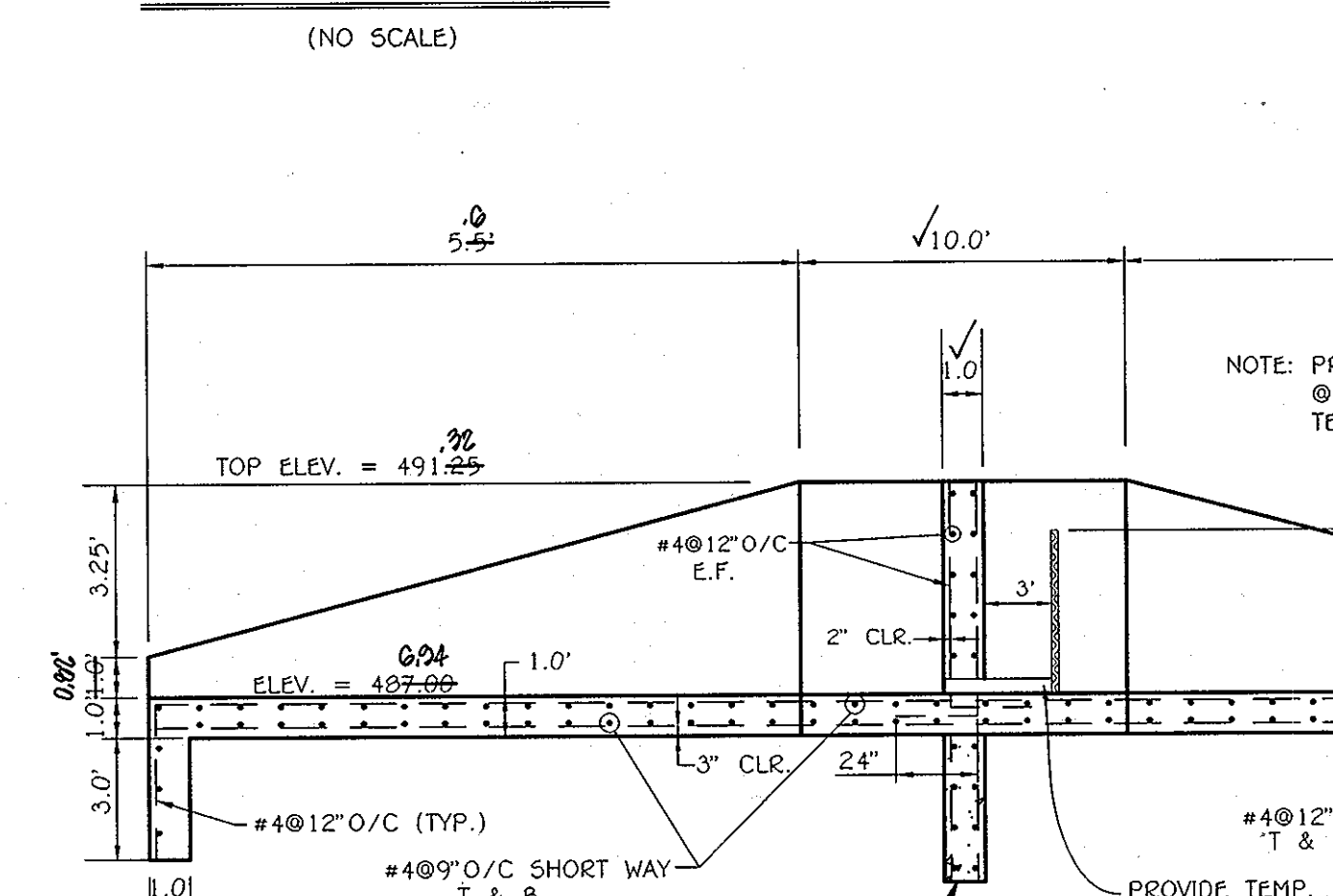
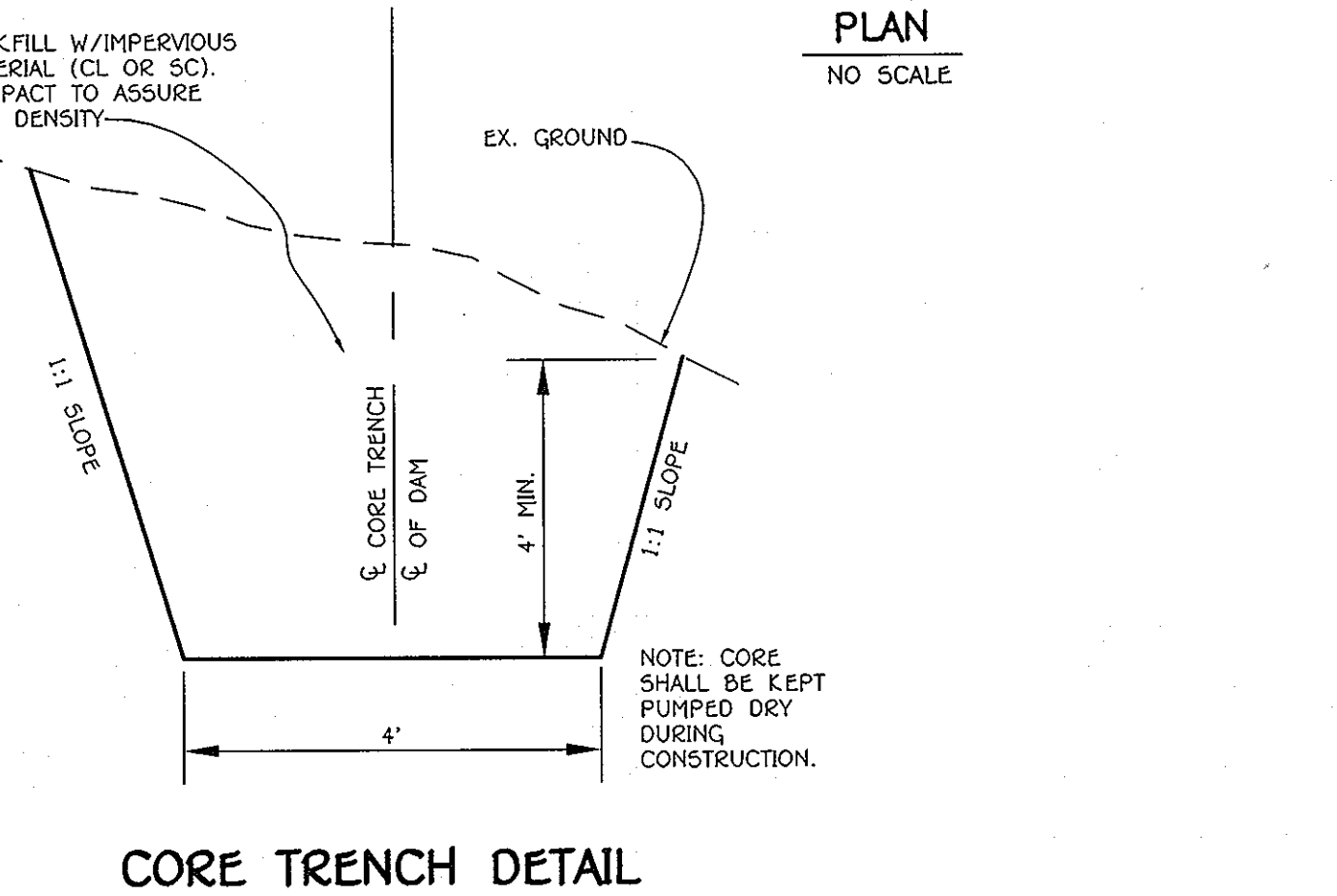
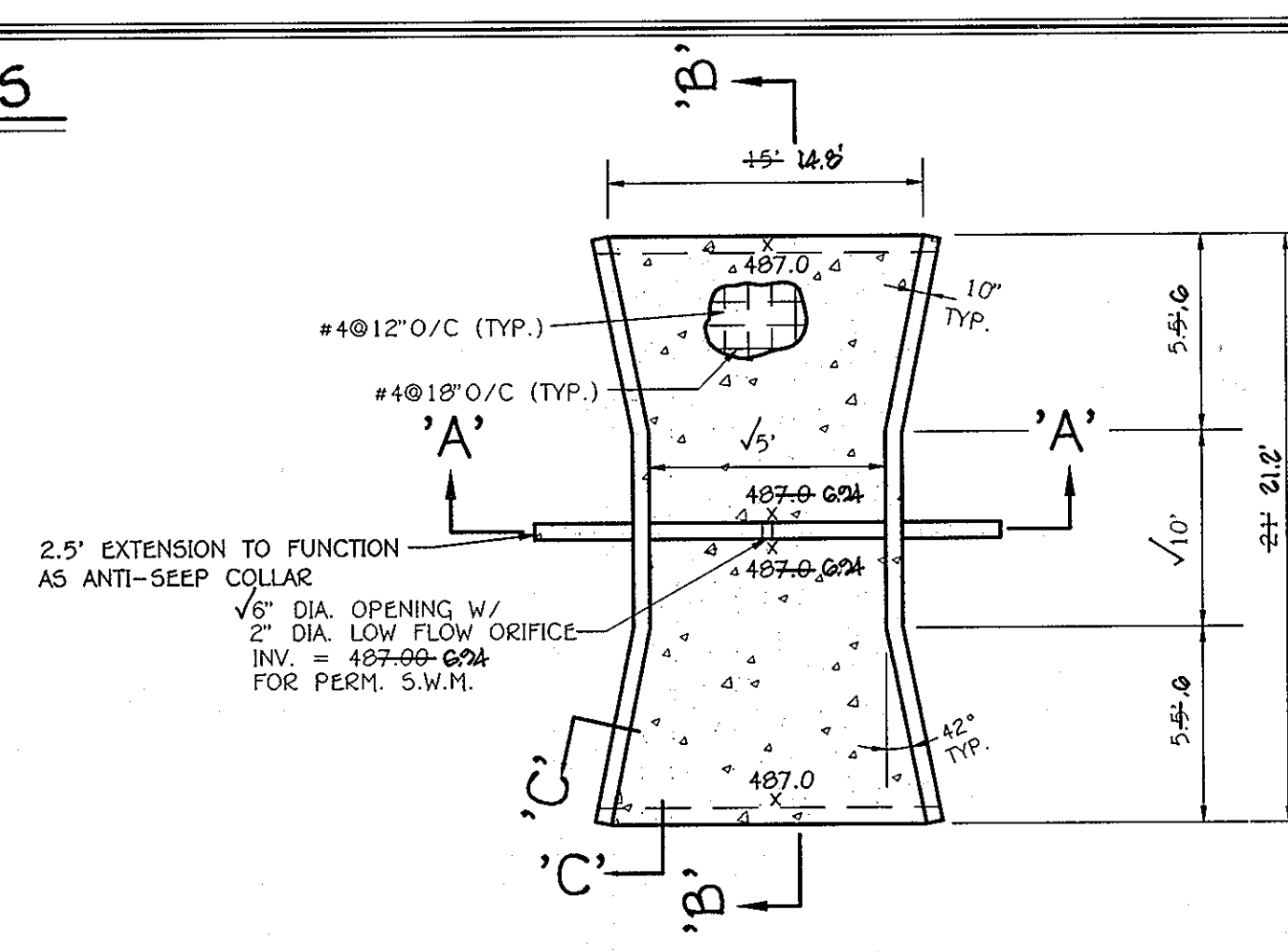
An operation and maintenance plan in accordance with Local or State Regulations will be prepared for all ponds. As a minimum, the dem inspection checklist located in Appendix A shall be included as part of the operation and maintenance plan and performed at least annually. Written records of maintenance and repair work shall be maintained in a file. The issuance of a Maintenance and Repair Permit for any repairs or maintenance that involves the modification of the dam or spillway from its original design and specifications is required. A permit is also required for any repairs or reconstruction that involve a substantial portion of the structure. All indicated repairs are to be made as soon as practical.

EMBANKMENT AND CUT-OFF TRENCH CONSTRUCTION

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

A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER SHOULD BE PRESENT TO MONITOR PLACEMENT AND COMPACTION OF FILL FOR THE EMBANKMENT AND CUT-OFF TRENCH IN ACCORDANCE WITH NRCS-MD CODE NO. 376 FOND STANDARDS/SPECIFICATIONS. SOILS CONSIDERED SUITABLE FOR THE CENTER OF 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.

IT IS OUR PROFESSIONAL OPINION THAT IN ADDITION TO THE SOIL MATERIALS DESCRIBED ABOVE A FINE-GRAINED SOIL INCLUDING SILT (ML) WITH A PLASTICITY INDEX OF 10 OR MORE CAN BE UTILIZED FOR THE CENTER OF THE EMBANKMENT AND CORE TRENCH. ALL FILL MATERIALS MUST BE PLACED AND COMPACTED IN ACCORDANCE WITH NRCS-MD CODE NO. 376 SPECIFICATIONS.



By the Developer:
"I/We Certify that All Development And/or Construction Will Be Done According To These Plans. And That All Responsible Personnel Involved In The Construction Project Will Have A Certificate Of Approval From A Department Of The Environment Approved Training Program For The Control Of Sediment And Erosion Before Beginning The Project. I Shall Engage A Registered Professional Engineer To Supervise Pond Construction And Provide The Howard Soil Conservation District With An "As-Built" Plan Of The Pond Within 30 Days Of Completion. I Also Authorize The District To Hire Inspectors By The Howard Soil Conservation District."
Signature: *Robert R. Reuber, Jr.*
Date: 3/4/10

By the Engineer:
"I Certify That This Plan For Pond Construction, Erosion And Sediment Control Represents A Practicable And Suitable 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 Reviewed The Plans And I Certify That They Meet The Requirements Of The Howard Soil Conservation District Within 30 Days Of Completion."
Signature: *[Signature]*
Date: 3/4/10

Printed Name of Engineer:
These Plans For Small Pond Construction, Erosion And Sediment Control Meet The Requirements Of The Howard Soil Conservation District.
Signature: *[Signature]*
Date: 3/11/10
Approved Department of Public Works
Signature: *[Signature]*
Date: 4-7-10
Approved Department of Planning And Zoning
Signature: *[Signature]*
Date: 4/26/10
Chief, Division Of Land Development
Signature: *[Signature]*
Date: 4/22/10
Chief, Development Engineering Division

AS-BUILT CERTIFICATION
I Solely Certify that the Plans Shown on this Plan Was Constructed As Shown On the "As-Built" Plans And Meets The Approved Plans And Specifications.
Signature: *[Signature]*
Date: 13/04/10
10/18/13

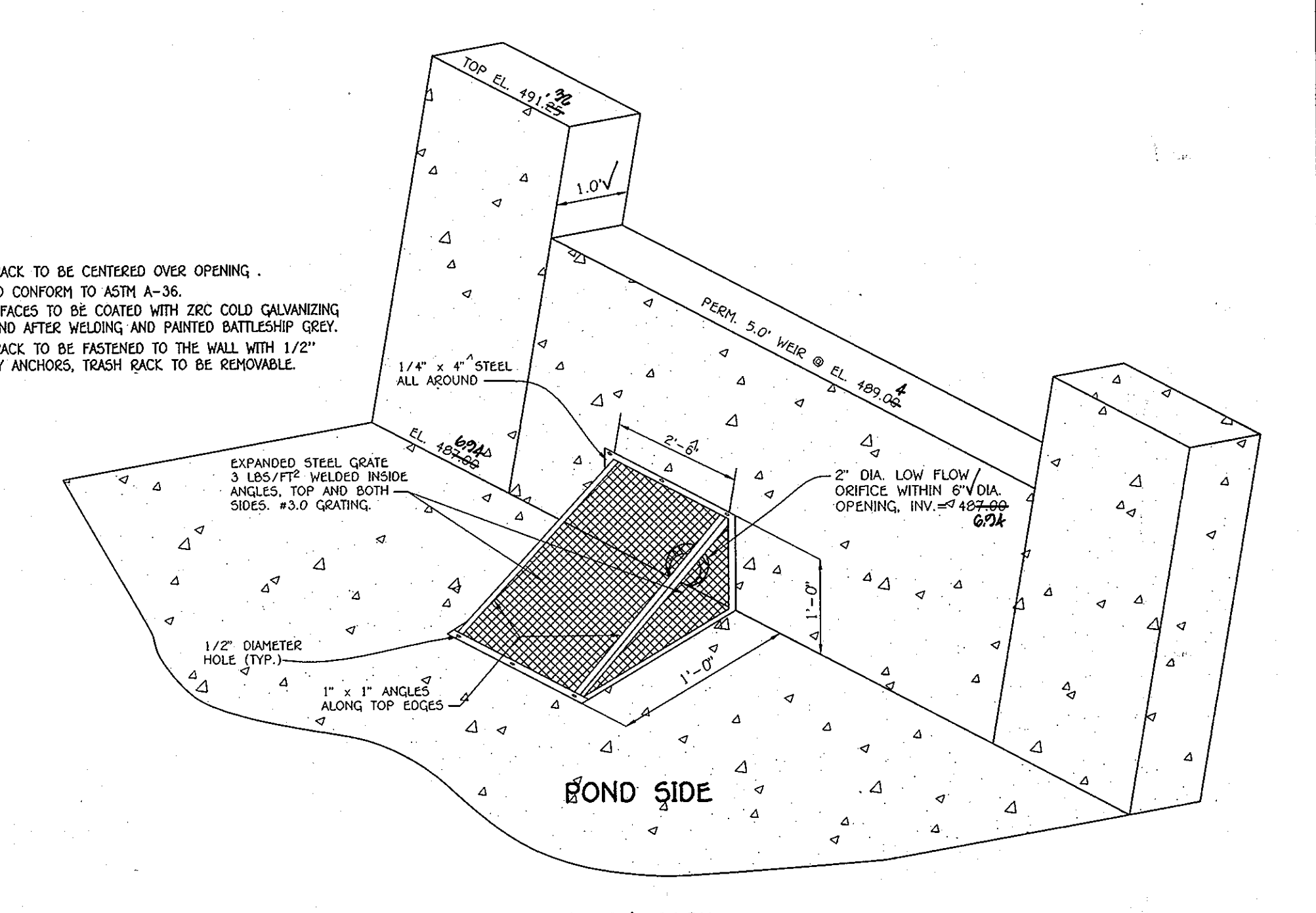
OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND JOINTLY MAINTAINED STORMWATER MANAGEMENT FACILITIES FOR BMP POND #1

ROUTINE MAINTENANCE

- Facility shall be inspected annually and after major storms. Inspections shall be performed during wet weather to determine if the pond is functioning properly.
- Top and side slopes of the embankment shall be mowed a minimum of two (2) times a year, once in June and once in September. Other side slopes and maintenance access shall be mowed as needed.
- Debris and litter shall be removed during regular mowing operations and as needed.
- Visible signs of erosion in the pond as well as the rip-rap or gabion outlet area shall be repaired as soon as it is noticed.

NON-ROUTINE MAINTENANCE

- Structural components of the pond such as the dam, the riser, and the pipes shall be repaired upon the detection of any damage. The components shall be inspected during routine maintenance operations.
- Sediment shall be removed from the pond, and forebay, no later than the capacity of the pond or forebay, is half full of sediment, or when deemed necessary for aesthetic reasons, upon approval from the Department of Public Works.



STORMWATER MANAGEMENT NOTES AND DETAILS
WAVERLY OVERLOOK
LOTS 1-26 AND OPEN SPACE LOTS 27-32
TAX MAP NO. 21 & TAX MAP NO. 16, GRID NO. 3
PARCEL NOS. 207 AND 224
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE: MARCH 4, 2010
SHEET 18 OF 22

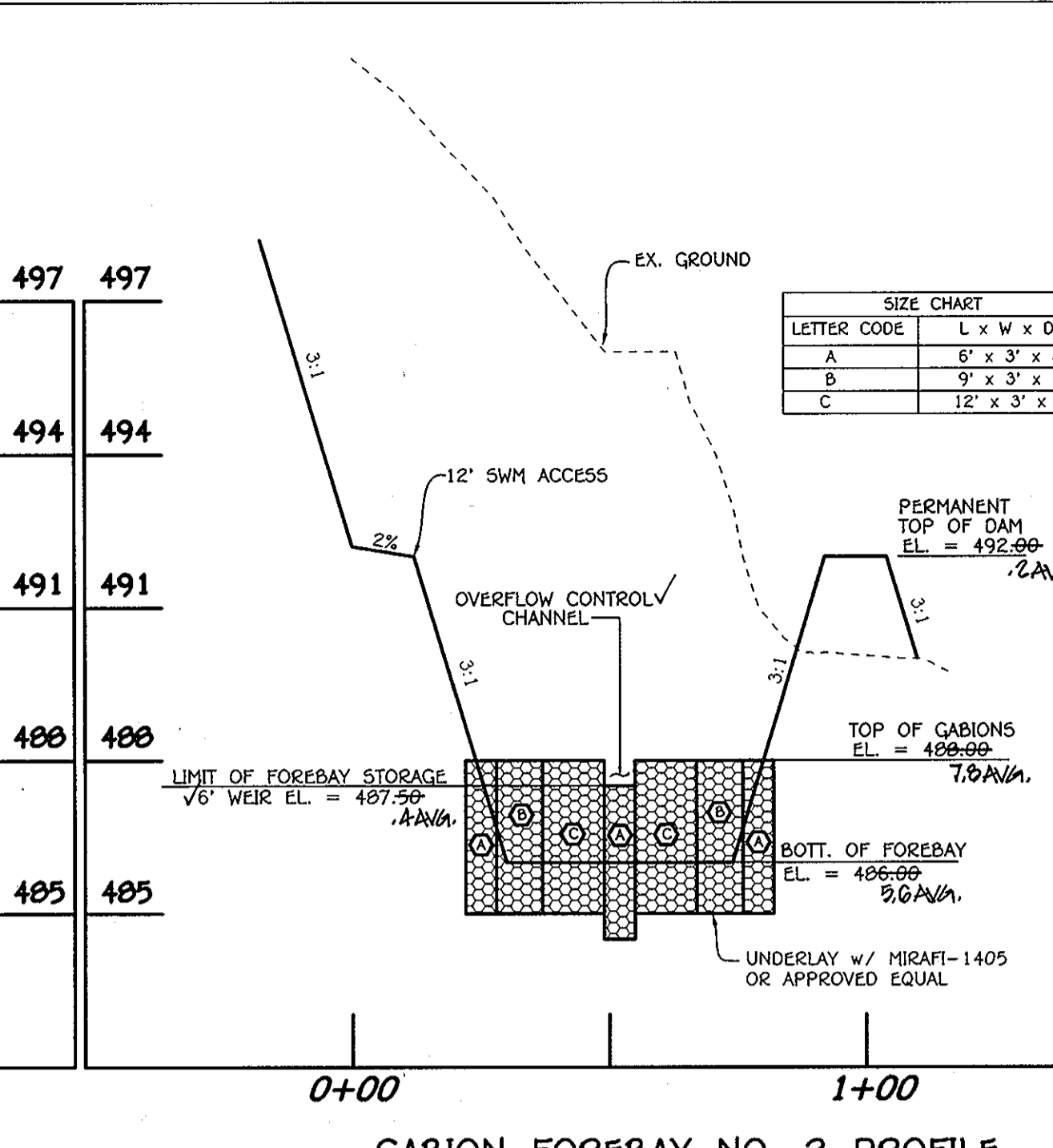
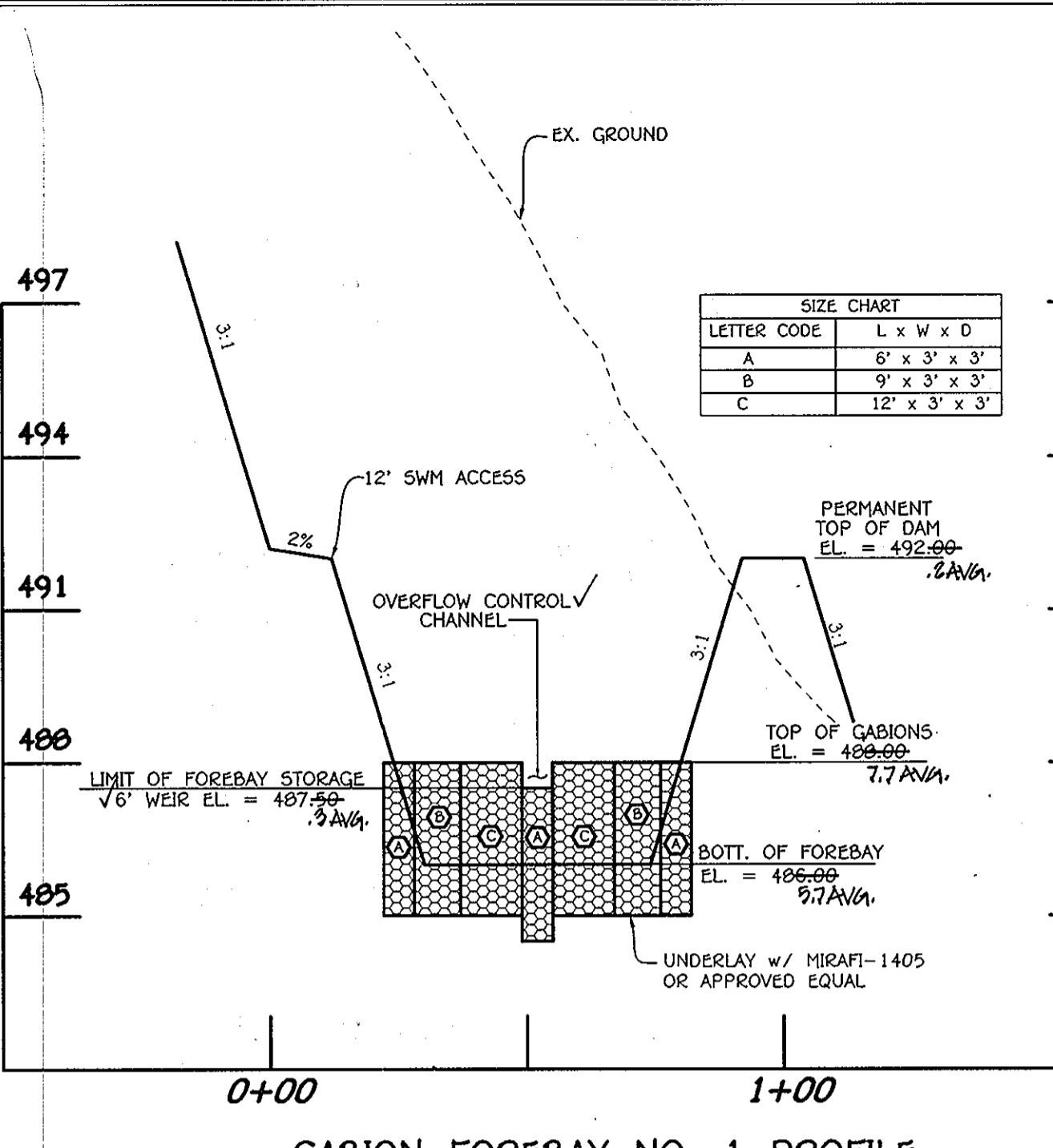
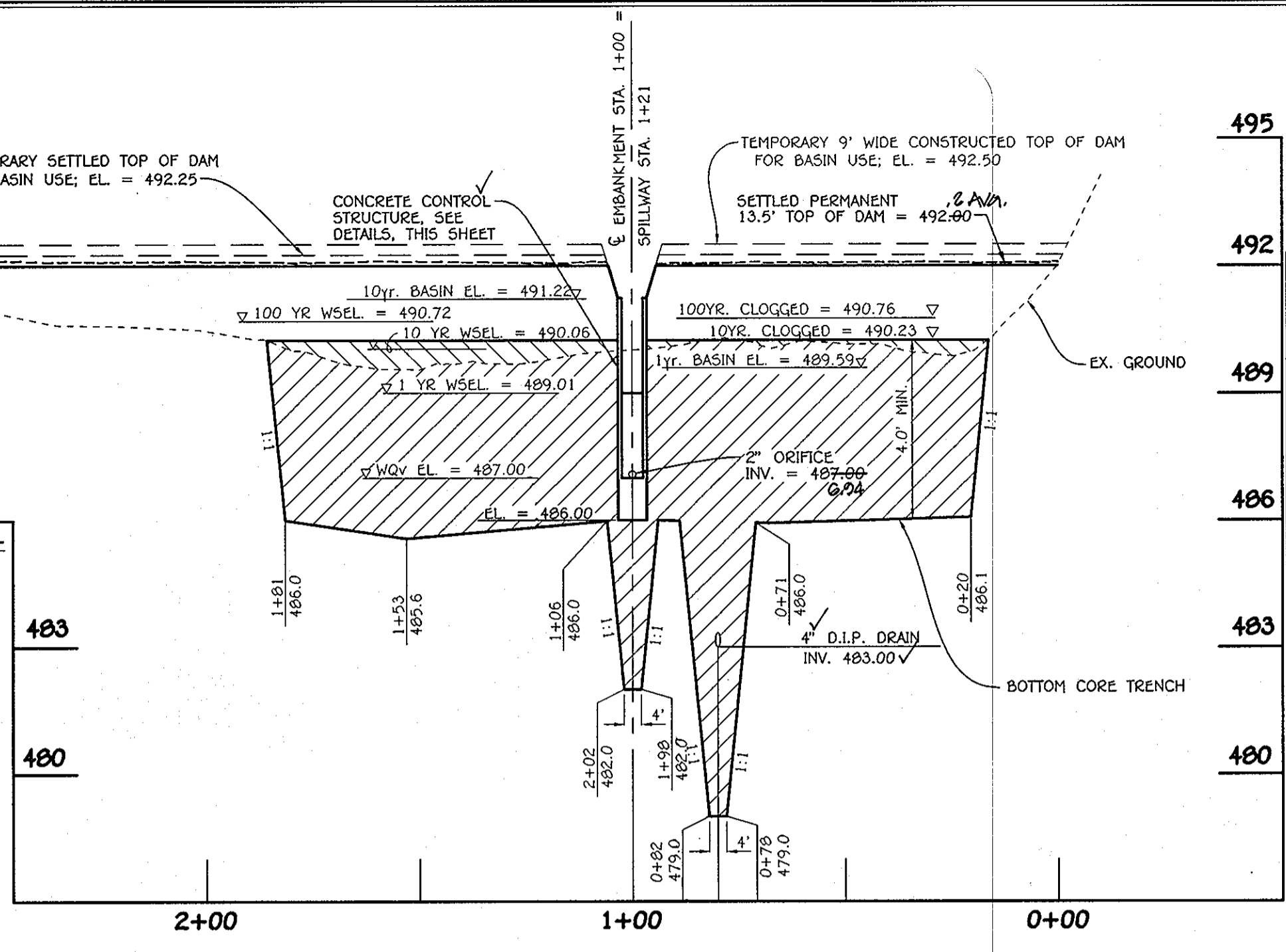
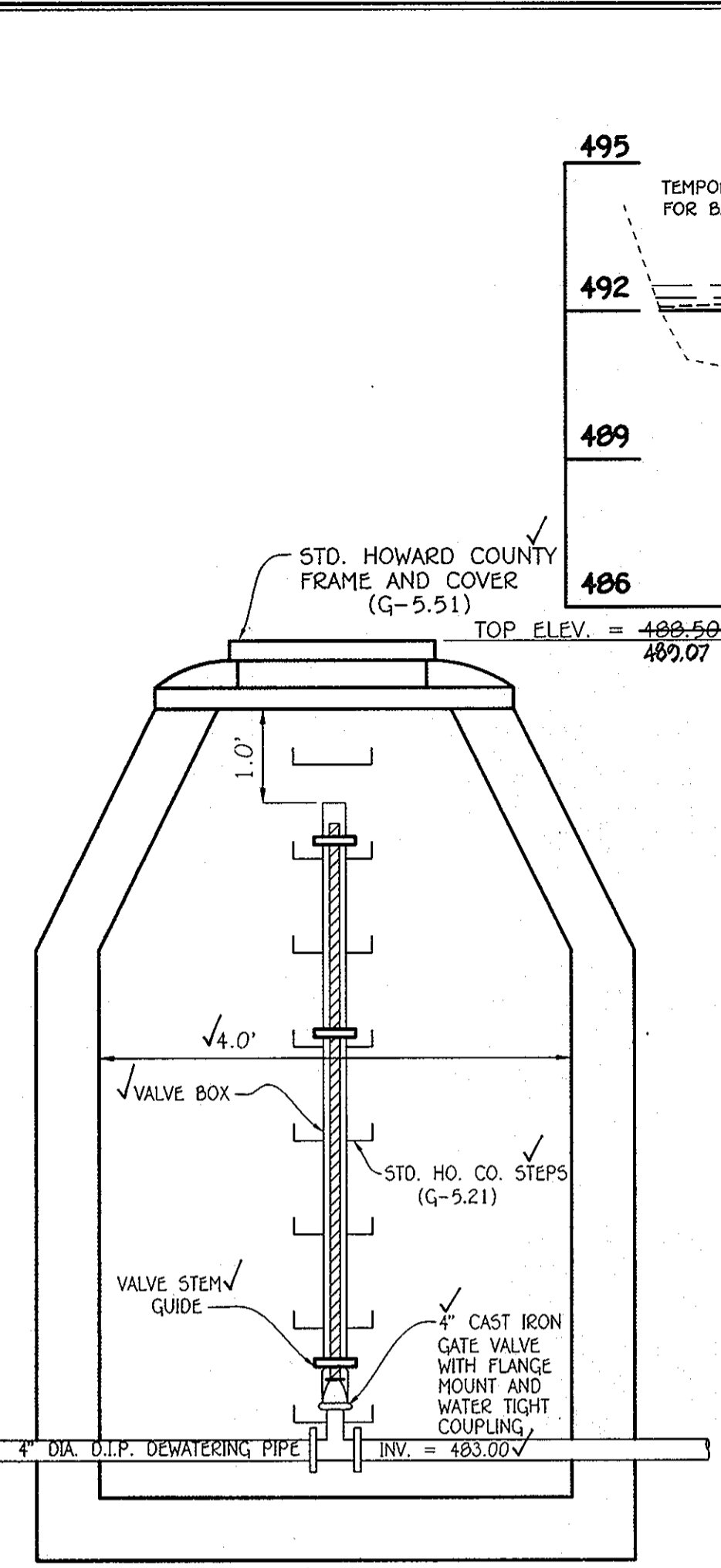
FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING SURVEILLANTS & LAND SURVEYORS
CENTRAL SQUARE OFFICE PARK - 10772 BALTIMORE NATIONAL PIKE
ELICOTT CITY, MARYLAND 21042
(410) 461-1255

OWNER AND DEVELOPER
MORSBERGER, LLC
c/o LAND DESIGN & DEVELOPMENT, INC.
5300 DORSEY HALL DRIVE, SUITE 102
ELICOTT CITY, MARYLAND 21042
(410) 367-0422

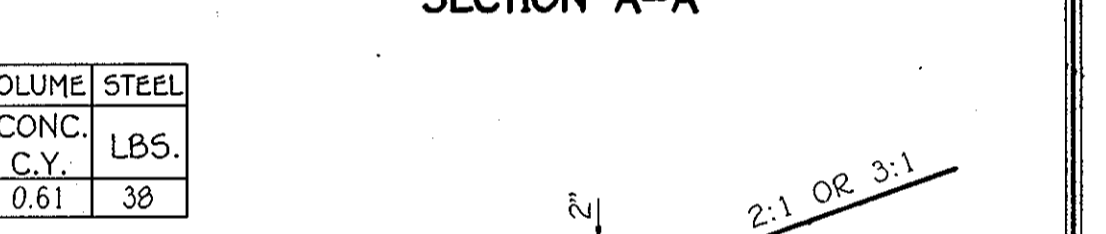
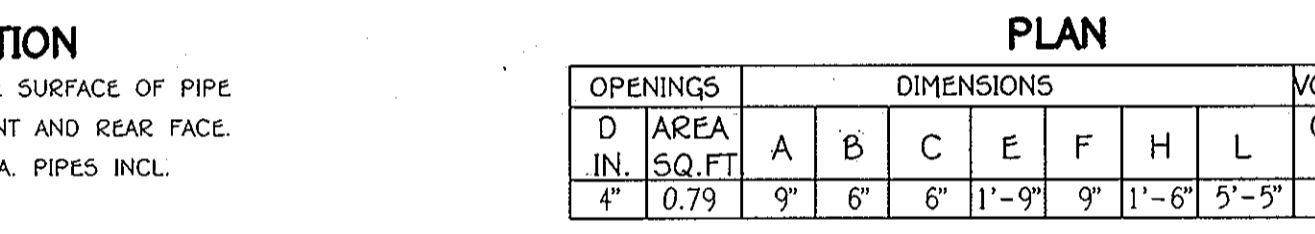
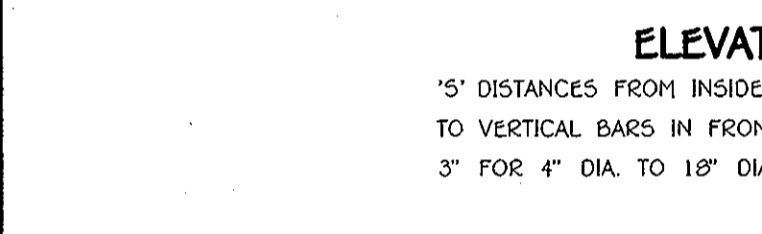
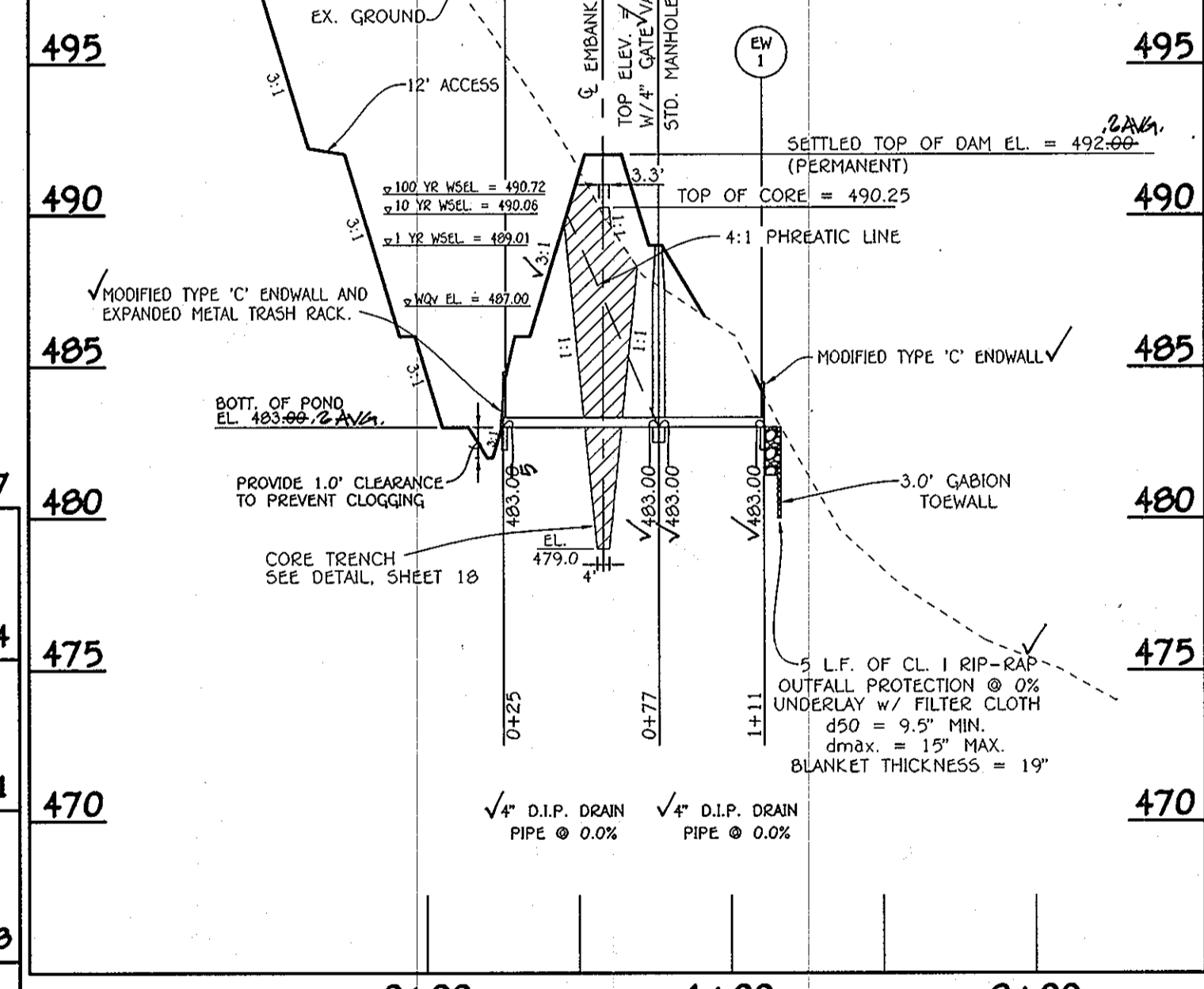
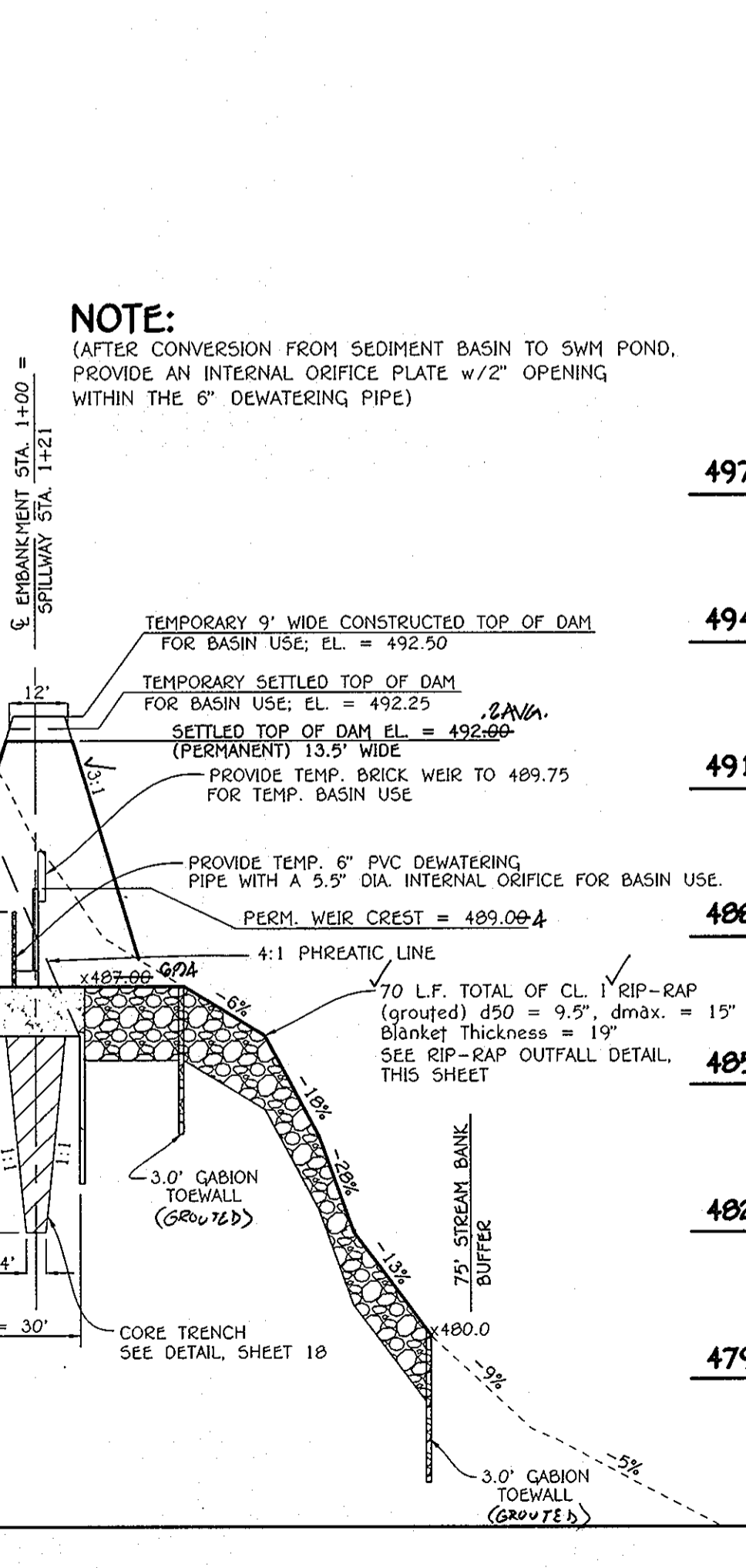
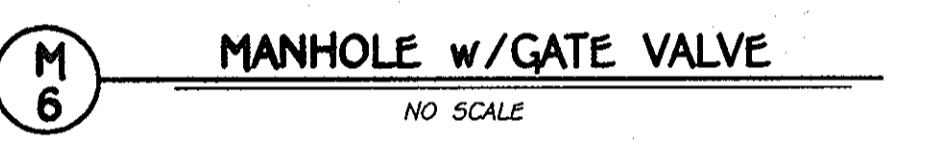
TYPICAL METAL BOLLARD DETAIL
NOT TO SCALE (STD. G-7.42)

STATE OF MARYLAND
Professional Engineer
Signature: *[Signature]*
Date: 3/4/10
"I, the undersigned, hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-11."

AS-BUILT - 10-027



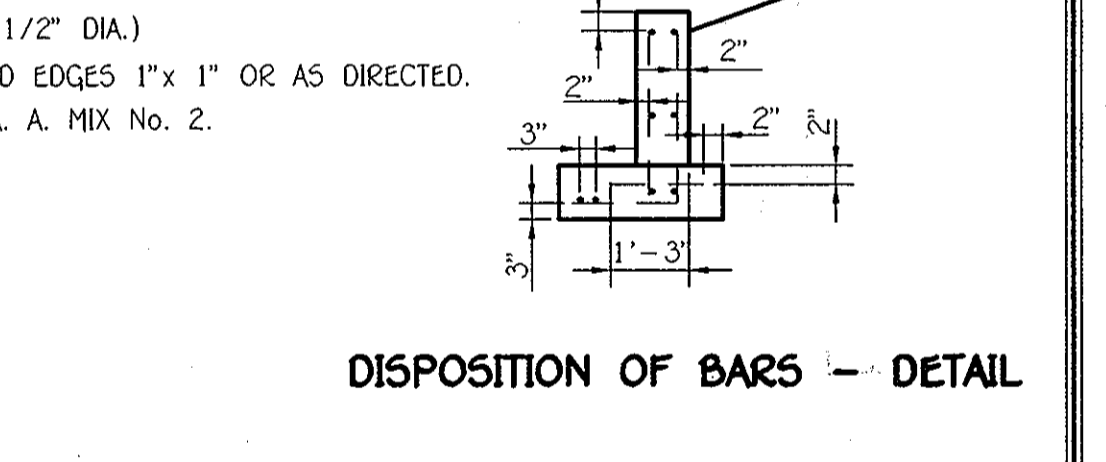
By the Developer:
 Signature: *[Signature]* Date: 3/4/10
 By the Engineer:
 Signature: *[Signature]* Date: 3/4/10
 Approved: Department of Public Works
 Signature: *[Signature]* Date: 4-7-10
 Approved: Department of Planning and Zoning
 Signature: *[Signature]* Date: 4/20/10
 AS-BUILT CERTIFICATION
 Signature: *[Signature]* Date: 10/9/10
 I hereby certify that the Facility shown on this Plan was constructed as shown on the Plans and Tests the Approved Plans and Specifications.
 Signature: *[Signature]* Date: 10/9/10
 I certify that I am a duly Licensed Professional Engineer in the State of Maryland, License No. 20748, Expiration Date 2-22-11.



OPENINGS	DIMENSIONS		VOLUME	STEEL
D	A	B	CONC.	LBS.
IN.	IN.	IN.	C.Y.	
4"	0.79	9"	0.61	38

REINFORCING: DEFORMED STEEL BARS (1/2" DIA.)
 CHAMFER: ALL EXPOSED EDGES 1" x 1" OR AS DIRECTED.
 CONC. SHALL BE 5.H.A. A. MIX No. 2.

MODIFIED TYPE 'C' ENDWALL @ EW-1 & EW-2
 NO SCALE



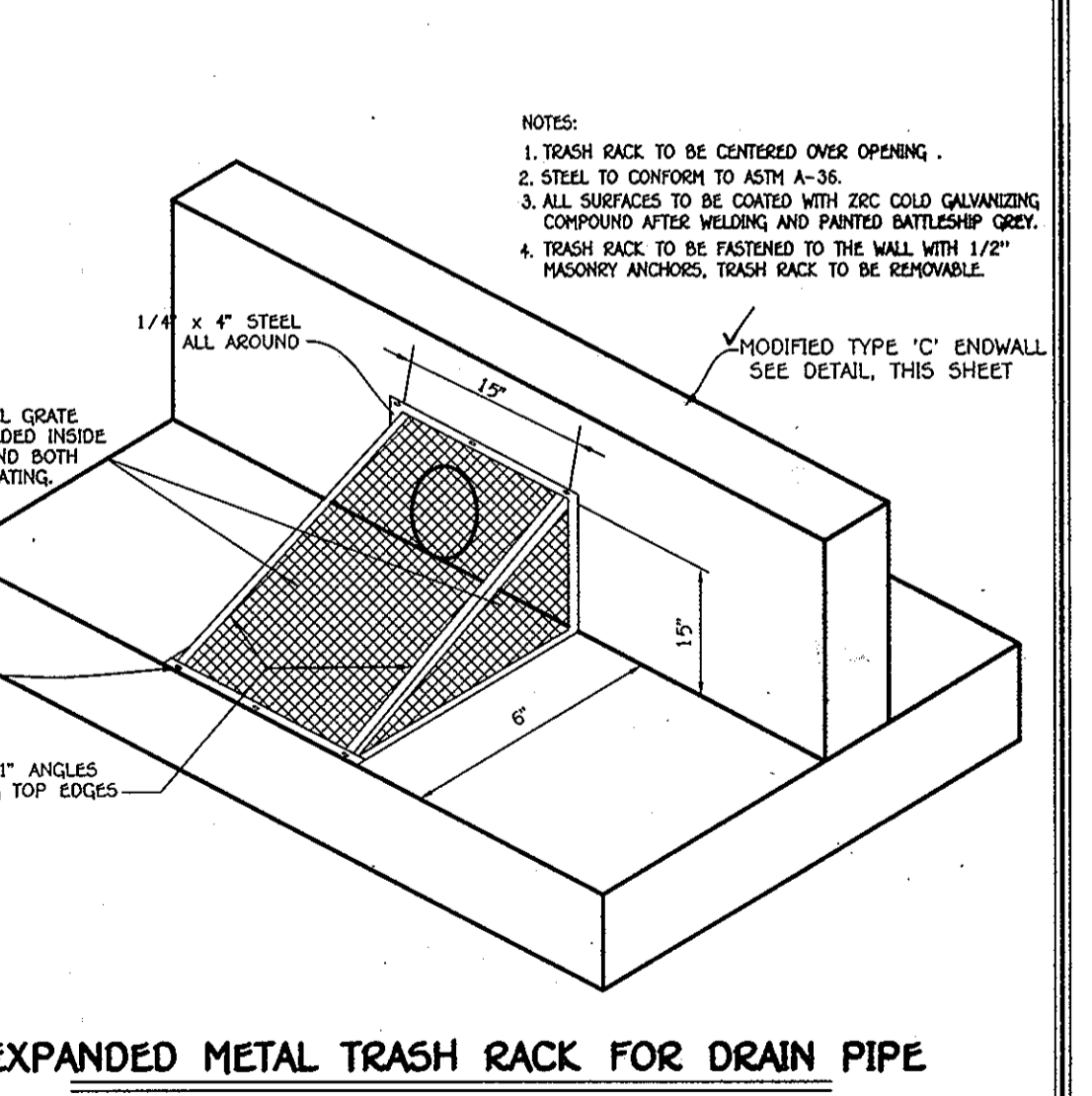
FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 1100 NATIONAL SQUARE OFFICE PARK - 10722 BAITORNE NATIONAL, FDC
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-2899

NOTE: (AFTER CONVERSION FROM SEDIMENT BASIN TO SWM POND, PROVIDE AN INTERNAL ORIFICE PLATE W/ 2" OPENING WITHIN THE 6" DEWATERING PIPE)

NOTE: FILTER CLOTH SHALL BE EMBEDDED A MINIMUM OF 4" AND SHALL EXTEND AT LEAST 6" BEYOND THE EDGE OF THE RIP-RAP

SECTION 'A-A' THRU EMBANKMENT
 SCALE: HORIZ. 1" = 30'
 VERT. 1" = 3'

EXPANDED METAL TRASH RACK FOR DRAIN PIPE
 NOT TO SCALE



STORMWATER MANAGEMENT NOTES AND DETAILS (B.M.P. No. 1)
WAVERLY OVERLOOK
 LOTS 1-26 AND OPEN SPACE LOTS 27-32
 ZONING: R-20
 TAX MAP No. 10, GRID No. 21 & TAX MAP No. 16, GRID No. 3
 PARCEL Nos. 207 AND 224
 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 DATE: MARCH 4, 2010
 SHEET 19 OF 22

AS-BUILT F-10-027

APPROVED: DEPARTMENT OF PUBLIC WORKS
Walter J. ... 4-7-10
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Victor ... 4/26/10
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Walter ... 4/28/10
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

NET TRACT AREA		Acres
A. Total tract area		13.5
B. Area within 100 Year Floodplain		1.0
C. Area to remain in agricultural production		0
D. Net Tract Area		12.5

LAND USE CATEGORY: (from table 3.2.1, page 40, Manual)

ARA	MDR	IDA	HDR	MFD	CIA
E. Afforestation Threshold (percentage)	0.15	1.9			
F. Conservation Threshold (percentage)	0.20	2.5			

EXISTING FOREST COVER:

G. Existing forest cover (excluding floodplain)	1.3
H. Area of forest above afforestation threshold	0
I. Area of forest above conservation threshold	0

BREAK EVEN POINT:

J. Forest retention above threshold with no mitigation	Break-even Point	0
K. Clearing permitted without mitigation	Break-even Point	0

PROPOSED FOREST CLEARING

L. Total area of forest to be cleared or Retained Outside FCE	0.4
M. Total area of forest to be Retained in FCE	0.9

PLANTING REQUIREMENTS

N. Reforestation for clearing above conservation threshold	0
P. Reforestation for clearing below conservation threshold	0.8
Q. Credit for retention above conservation threshold	0
R. Total reforestation required	0.8
S. Total afforestation required	0.6
T. Total reforestation and afforestation required	1.4

ON-SITE FOREST STAND DATA

KEY	COMMUNITY TYPE	ACREAGE	DOMINANT VEGETATION	GENERAL CONDITION	PRIORITY ACREAGE
F1	POPULAR	1.3	Liriodendron Tulipifera, Acer Rubrum, Fraxinus Pennsylvanica, Quercus Albilindera Benzoin	GOOD	1.3 * BUFFERS

ON-SITE WETLAND DATA

WETLAND SYSTEM	COWARDIN CLASSIFICATION	DOMINANT VEGETATION	ACREAGE
A	PROIA / R3UB1	Acer Rubrum, Fraxinus Pennsylvanica, Liriodendron Benzoin, Impatiens Capensis, Boehmeria Cylindrica, Symlocarpus Foetidus	0.6*

SOILS LEGEND

SOIL	NAME	CLASS
ELC2	Eliok silt loam, 0 to 15 percent slopes, moderately eroded	B
ELB2	Eliok silt loam, 3 to 8 percent slopes, moderately eroded	B
ChB2	Chester silt loam, 3 to 8 percent slopes, moderately eroded	B
GIC2	Glenelg loam, 0 to 15 percent slopes, moderately eroded	B
GIC3	Glenelg loam, 0 to 15 percent slopes, severely eroded	B
GnA	Glenville silt loam, 0 to 3 percent slopes	C
MJ02	Manor loam, 15 to 25 percent slopes, moderately eroded	B
** Ha	Hatboro silt loam	D

NOTES:
 * Hydric soils and/or contains hydric inclusions
 ** May contain hydric inclusions
 † Generally only within 100-year floodplain areas

LITTLE PATUXENT WATERSHED #2131105

NOTES:
 1. ACCORDING TO THE "WETLAND DELINEATION, FOREST STAND DELINEATION AND FOREST CONSERVATION PLAN REPORT" PREPARED BY ECO-SCIENCE PROFESSIONALS, INC., THEY DID NOT DETECT THE PRESENCE OF CRITICAL HABITATS OR TREES, SHRUBS AND PLANTS OF ANY RARE, THREATENED OR ENDANGERED SPECIES ON THIS SITE.
 2. IN ADDITION, SEVERAL SPECIMEN TREES WERE IDENTIFIED WITHIN THE EXISTING FOREST; HOWEVER, THEY WERE NOT SPECIFICALLY IDENTIFIED BECAUSE THERE WILL BE NO PROPOSED DISTURBANCES WITHIN THE EXISTING FOREST.
 3. THE FOREST CONSERVATION EASEMENT HAS BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION ACT. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT. HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED. THE FOREST CONSERVATION ACT REQUIREMENTS FOR THIS PROJECT WILL BE MET THROUGH THE RETENTION OF 0.9 ACRES OF EXISTING FOREST ON-SITE AND 1.4 ACRES OF ON-SITE REFORESTATION. THE FOREST CONSERVATION SURETY IN THE AMOUNT OF \$38,332.80 (0.9 ACRES x 43,560 SQ.FT./ACRE x \$0.20 + 1.40 ACRES x 43,560 SQ.FT./ACRE x \$0.50) SHALL BE POSTED WITH THE FINAL PLAT DEVELOPER'S AGREEMENT.

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTRAL SQUARE OFFICE PARK - 10732 BALTIMORE NATIONAL FEE
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-8295

Eco-Science Professionals, Inc.
 CONSULTING ECOLOGISTS

MD DNR Qualified Professional
 USACE Wetland Delineator
 Certification # WDCP93MD06100448
John P. Canoles 4-8-10
 JOHN P. CANOLES

OWNER AND DEVELOPER
 MORSBERGER, LLC
 c/o LAND DESIGN & DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (410) 367-0422

No.	Description	Date
2	Revised B.M.P. No. 1, B.M.P. No. 2, B.M.P. No. 3, B.M.P. No. 4, B.M.P. No. 5, B.M.P. No. 6, B.M.P. No. 7, B.M.P. No. 8, B.M.P. No. 9, B.M.P. No. 10, B.M.P. No. 11, B.M.P. No. 12, B.M.P. No. 13, B.M.P. No. 14, B.M.P. No. 15, B.M.P. No. 16, B.M.P. No. 17, B.M.P. No. 18, B.M.P. No. 19, B.M.P. No. 20, B.M.P. No. 21, B.M.P. No. 22, B.M.P. No. 23, B.M.P. No. 24, B.M.P. No. 25, B.M.P. No. 26, B.M.P. No. 27, B.M.P. No. 28, B.M.P. No. 29, B.M.P. No. 30, B.M.P. No. 31, B.M.P. No. 32, B.M.P. No. 33, B.M.P. No. 34, B.M.P. No. 35, B.M.P. No. 36, B.M.P. No. 37, B.M.P. No. 38, B.M.P. No. 39, B.M.P. No. 40, B.M.P. No. 41, B.M.P. No. 42, B.M.P. No. 43, B.M.P. No. 44, B.M.P. No. 45, B.M.P. No. 46, B.M.P. No. 47, B.M.P. No. 48, B.M.P. No. 49, B.M.P. No. 50, B.M.P. No. 51, B.M.P. No. 52, B.M.P. No. 53, B.M.P. No. 54, B.M.P. No. 55, B.M.P. No. 56, B.M.P. No. 57, B.M.P. No. 58, B.M.P. No. 59, B.M.P. No. 60, B.M.P. No. 61, B.M.P. No. 62, B.M.P. No. 63, B.M.P. No. 64, B.M.P. No. 65, B.M.P. No. 66, B.M.P. 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CONSTRUCTION PERIOD PRACTICES

The construction period extends from final approval of the development proposal until the release of all required guarantees specified for forest conservation requirements in the developers agreement.

CONSTRUCTION PERIOD SUPERVISION

As part of the construction period management and planting program, the developer shall designate an individual or firm to be fully responsible for implementing the requirements of approved forest conservation plan or requesting modifications of previously approved requirements concerning planting techniques, species or maintenance needs. Those responsible for implementation of the approved forest conservation plan during the construction period shall conform to the professional qualifications cited in Chapter VI of this manual.

PROTECTING AND MANAGING FOREST RETENTION AREAS

Forest retention stands are extremely vulnerable to damage, long term decline, and death stemming from improper design and construction practices. Saving forests and specimen trees during the construction process requires site planning, engineering practices and construction methods that respect the biological needs of trees. A few fundamental horticultural principals are the basis of the protection guidelines and requirements cited in this manual:

- A tree's root system can be large, extending well beyond the dieline of the crown. Typically, root system are very shallow, in the most cases being only 12" - 18" deep.
- Trees generally do not have tap roots.
- There are about as many roots as there are twigs and branches. If roots die, branches will die to keep the tree in balance.
- Tree roots need a balance of water and air in the soil. Air only penetrates 12" - 18" into the soil. Stress and decline in tree health results when soil is piled on top of existing roots or roots are suddenly forced to sit in waterlogged soil or overly dry soils due to topography changes during construction.
- Soil compacted to bulk densities of 1.7 gram/cubic centimeters or greater cannot support root growth. Existing roots in heavily compacted soils usually die.
- Trees growing in disturbed or tilled soils usually die back in proportion to the root area disturbed. Even minor disturbances such as tilling within the root zone for lawn installation will cause harm.
- Trees, especially large trees, may take a long time to show the effects of construction damage. Trees may die 5 or even 10 years after being weakened by construction activity. Secondary stresses such as insects, disease, or drought may kill weakened trees while the same stress would not have affected a healthy tree.

SOIL PROTECTION ZONE

The soil protection zone must be protected from construction activity and other stresses (e.g., flooding) to protect the forest stand from damage. The forest retention practices for a development must address the specific needs and stresses the proposal may cause. Nevertheless, the need to define the soil protection zone (critical root area) for forest areas is the one factor common to all retention efforts.

The extent of the root system is quite large. The ratio of root expansion to crown spread can be 2:1 or larger on open grown specimen trees and can be significantly larger (up 5:1) for trees growing in the interior of forest stands. Furthermore, the minimum requirement for root protection varies from species and from soil type to soil type. For open grown trees, it is generally accepted that protecting the soil within the dieline of the tree is adequate to the soil protection zone may have to be modified to reflect a more complex relationship between crown spread and root growth.

Techniques for management of the soil protection zone are described in detail in Appendix G.

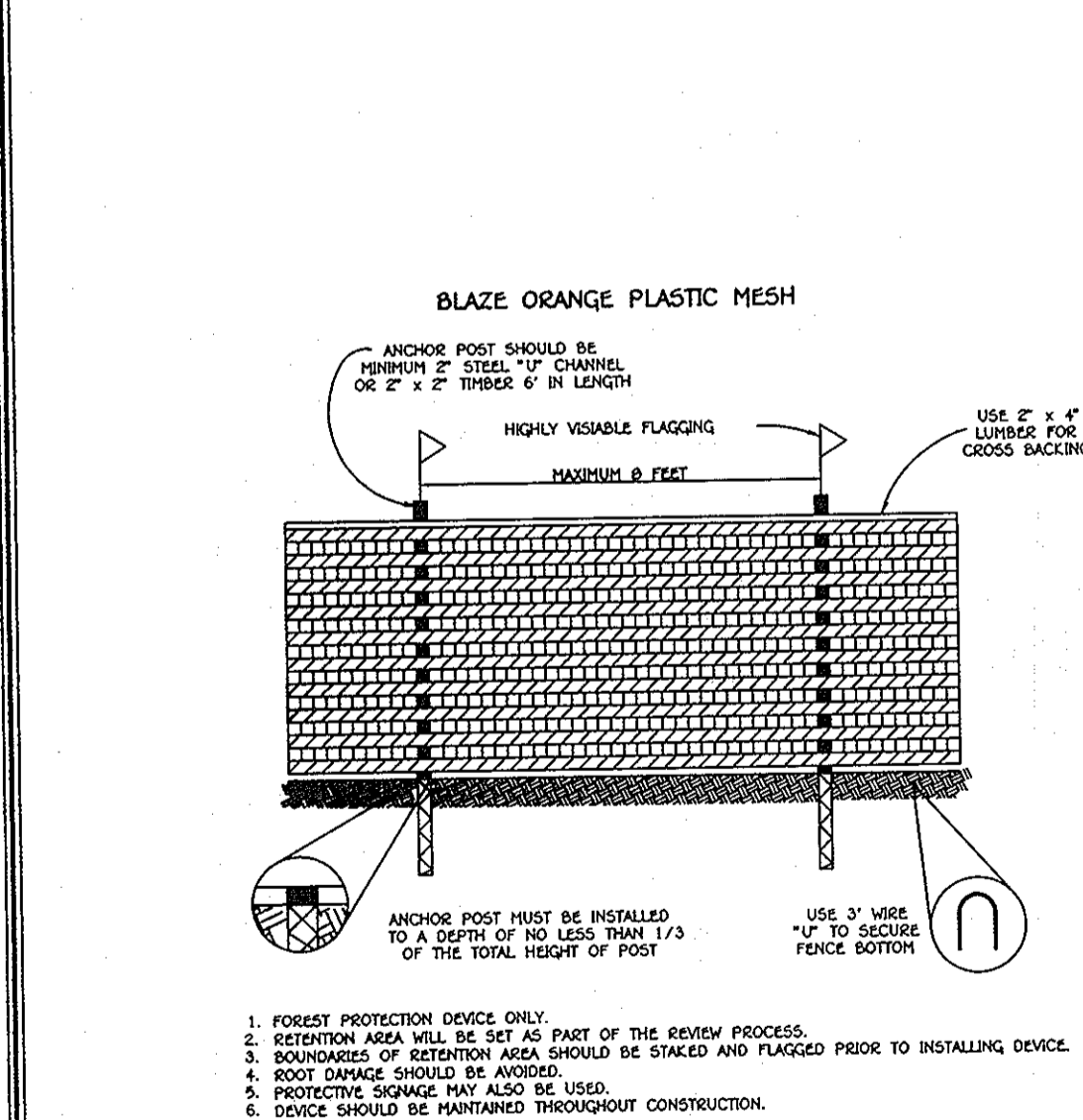
BEST MANAGEMENT PRACTICES DURING CONSTRUCTION

Many of the construction period measures cited in the manual are for areas that should not be disturbed. The desire to protect areas within the limit of disturbance can be easily nullified by poor construction site management. The required construction period management programs must therefore specify how construction activities will be managed to protect forest retention areas. The following should be depicted on site construction documents and/or forest conservation plans; they shall also be itemized in the developers agreement.

- storage of equipment and materials
- disposal of construction debris
- washing of equipment, disposal of wastewater from concrete operations, etc.
- employee parking
- temporary structures such as trailers, sanitary facilities, etc.

Unless specifically exempted by the approved forest conservation plan, any use of forest retention area for these activities or other intrusion shall be a violation of the approved forest conservation plan.

Because reforestation and afforestation typically may involve disturbances greater than 5,000 square feet, proper sediment and erosion controls may be required. Developers should refer to the Howard County Soil Conservation District for current standards, specifications and requirements. It may be necessary to protect forest retention areas from erosion and sedimentation caused by implementation of reforestation or afforestation plantings.



TREE PROTECTION DETAIL
NOT TO SCALE

1. FOREST PROTECTION DEVICE ONLY.
2. RETENTION AREA SHALL BE SET AS PART OF THE REVIEW PROCESS.
3. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
4. ROOT BALLS SHOULD BE PROTECTED BY MULCH.
5. PROTECTIVE SIGNAGE MAY ALSO BE USED.
6. DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTRAL SQUARE OFFICE PARK - 10272 BAYDOR NATIONAL PIKE
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Eco-Science Professionals, Inc.
CONSULTING ECOLOGISTS

CONSTRUCTION PERIOD PLANTING PROCEDURES

The measures to protect forest retention areas emphasize isolating them from development impacts. Reforestation or afforestation, in contrast, will often occur on land already disturbed by development activities or may be located on land which will require substantial preparation enable forest plantings to survive and thrive. Reforestation and afforestation plantings may also require a great deal of management once they are installed. Appendix H provides guideline specifications for proper planting, including techniques for site preparation and management. The following issues are of particular concern.

- General site preparation for planting: For undisturbed sites, disturbance of soils should be limited to the planting field for each plant. For disturbed areas, soils should be treated by incorporating natural mulch within the top 12 inches, or with needed amendments such as organic mulch or leaf mold compost are preferred.
- Stream buffer planting: Borders of streams and other waterways may have been damaged before reforestation and afforestation and therefore may need more extensive restoration work before reforestation or afforestation can be successful. The following are guidelines for any work within a riparian zone.
 - Correct any erosion problems
 - Minimize or eliminate any chemical use
 - Maintain an undisturbed leaf layer and understory
 - Eliminate exotics
- Steep slope planting: In areas of steep slopes or erodible soils, the preferred method of reforestation or afforestation is the use of seedlings to minimize disturbance. Planting on open or disturbed steep slopes eventually will stabilize them. Until the roots become established, however, there may still be erosion problems. Monitoring the stability of the soil will be important to the survival of the trees.
- Post-planting Considerations: For areas of large-scale disturbance, soils must be stabilized using a non-turf building ground cover or engineering fabric. To protect against intrusion and to prevent damage of planted areas, all reforestation and afforestation sites must be posted with appropriate signs and fenced.

CERTIFICATION OF COMPLETION

At the end of the construction period, the designated qualified professional shall convey to the Department of Planning and Zoning certification that all forest retention areas have been preserved, all reforestation and afforestation plantings have been installed as required by the forest conservation plan, and that all protection measures required for the post-construction period have been put in place. Appendix J contains a sample format for such certification. Planting must occur before June 30th to be credited toward the current growing season.

Upon review of the certification document for completeness and accuracy, the Department will notify the developer of the beginning of the post-construction management period.

POST-CONSTRUCTION MANAGEMENT PRACTICES

Many of the protection and management practices for the construction period must be continued for atleast 2 growing seasons following official notification of completion of the development (or a specific phase of the overall development if phasing has been approved). The responsibility to meet the survival standards requires adequate watering, replanting, thinning or other appropriate measures. Also, inappropriate uses or intrusions must not occur, a responsibility that requires the knowledge and cooperation of the new occupants of the development.

Construction Period Protection Program

A. Forest Protection Techniques

- 1. Soil Protection Area (Critical Root Zone)**
The soil protection area, or critical root zone, of a tree is that portion of the soil column whose most of its roots may be found. The majority of roots responsible for water and nutrient uptake are located just below the soil surface. The limit of disturbance (LDD) line depicted on the plan shows the proposed extent of construction activities. Eco-Science Professionals, or another qualified professional designated by the developer, will assist in the field flagging of the LDD to ensure that the Critical Root Zone for the Forest Retention Area is depicted in accordance with the In-Field Edge Determination Guidelines in Appendix G. Eco-Science Professionals, or another qualified professional, will also assess the condition of the new forest edge to determine if selective planting or seeding is needed to improve the condition of the edge.
- 2. Fencing and Signage**
All forest retention areas will be protected from unauthorized intrusion by appropriate signage and fencing. Signage and fencing will be installed prior to any construction activity. Installation of these devices will be supervised by Eco-Science Professionals or another qualified professional. Fencing will consist of 100 foot high LDD lines that occur within 30 feet of existing lines. Signage will be placed along the edge of the FCE every 100 feet. Fencing will consist of three orange mesh fence or super net fence. See Forest Conservation Plan for standard specifications.

B. Pre-Construction Meeting

Upon signing of limits of disturbance and installation of all signage, a pre-construction meeting will be held between the developer, contractor and approved County inspector. The purpose of the meeting will be to verify that all tree protection measures outlined in the TCP are in place, that all sediment control is in place, and to notify the contractor of possible penalties for non-compliance with the TCP.

C. Storage Facilities/Equipment Cleaning

All equipment storage, parking, assembly facilities, material stockpiling, etc. associated with construction of the project will be restricted to those areas shown within the limit of disturbance. Washing of equipment will be prohibited from all forest retention areas. Wastewater resulting from equipment cleaning will be contained to prevent runoff into wetlands, streams and other environmentally sensitive areas.

D. Sequence of Construction

The following timetable represents the proposed timetable for construction of the proposed project. The construction start date for this project has not been formalized. The actual project start date is predicated on the issuance of all necessary permits and approvals for the project. The items outlined in the Forest Conservation Plan will be enacted upon commencement of the project.

E. Construction Monitoring

Eco-Science Professionals, or another qualified professional designated by the developer, will monitor construction of the project to ensure that all activities are in compliance with the Forest Conservation Plan. This will include inspections to ensure that signage is properly maintained and that no unauthorized intrusions have been made into forest retention areas.

F. Activities Permitted During Construction

The forest conservation plan will allow the following activities within forest retention areas during the construction phase of the project:

1. Passive recreation (birdwatching, hiking, etc.)
2. These activities will not damage or negatively impact the forest resources on the property.

G. Post-Construction Meeting

Upon completion of construction, Eco-Science Professionals, or another qualified professional designated by the developer, will notify the County that construction has been completed and arrange for a post-construction meeting to review the project site. The meeting will allow the County inspector to verify that all Forest Conservation Easement areas have been properly retained and that all post construction protection measures (permanent signage) have been installed.

Post-Construction Management Plan

The post-construction management plan will require that all Forest Conservation Easement Areas are maintained. The developer will be responsible for implementation of the post-construction management plan.

A. Signage

Signage indicating the limits of the forest retention areas shall be maintained.

FCE Planting Area (F.C.E. #2) - 0.91 acres

Planting required: (350 WHIPS PER ACRE) = 0.91 x 350 = 319 WHIPS
Planting provided: (275 WHIPS AND 25 - 1" TREES)

Qty	Species	Size	Spacing
10	Acer rubrum - Red maple	1" cal.	15' o.c.
15	Quercus alba - White oak	1" cal.	15' o.c.
25 Total 1" caliper trees			
50	Acer rubrum - Red maple	2-3" whip	11' o.c.
50	Cercis canadensis - Red bud	2-3" whip	11' o.c.
30	Cornus florida - Flowering dogwood	2-3" whip	11' o.c.
30	Liriodendron tulipifera - Tulip poplar	2-3" whip	11' o.c.
30	Prunus serotina - Black cherry	2-3" whip	11' o.c.
30	Robinia pseudo-acacia - Black locust	2-3" whip	11' o.c.
30	Quercus alba - White oak	2-3" whip	11' o.c.
25	Viburnum prunifolium - Blackhaw	2-3" whip	11' o.c.
275 Total whip plantings			

1" CAL TREES = 200/ACRE (25 TREES/200) = 0.125 AC.
WHIPS w/shelters = 350/ACRE = (350 x 0.285 AC. (0.91 - 0.125)) = 275 WHIPS

FCE Planting Area (F.C.E. #3) - 0.21 acres

Planting required: (350 WHIPS PER ACRE) = 0.21 x 350 = 74 WHIPS
Planting provided: (46 WHIPS AND 15 - 1" TREES)

Qty	Species	Size	Spacing
5	Acer rubrum - Red maple	1" cal.	15' o.c.
10	Quercus alba - White oak	1" cal.	15' o.c.
15 Total 1" caliper trees			
6	Acer rubrum - Red maple	2-3" whip	11' o.c.
6	Cercis canadensis - Red bud	2-3" whip	11' o.c.
6	Cornus florida - Flowering dogwood	2-3" whip	11' o.c.
6	Liriodendron tulipifera - Tulip poplar	2-3" whip	11' o.c.
6	Prunus serotina - Black cherry	2-3" whip	11' o.c.
6	Robinia pseudo-acacia - Black locust	2-3" whip	11' o.c.
6	Quercus alba - White oak	2-3" whip	11' o.c.
6	Viburnum prunifolium - Blackhaw	2-3" whip	11' o.c.
46 Total whip plantings			

1" CAL TREES = 200/ACRE (15 TREES/200) = 0.075 AC.
WHIPS w/shelters = 350/ACRE = (350 x 0.13 AC. (0.21 - 0.075)) = 46 WHIPS

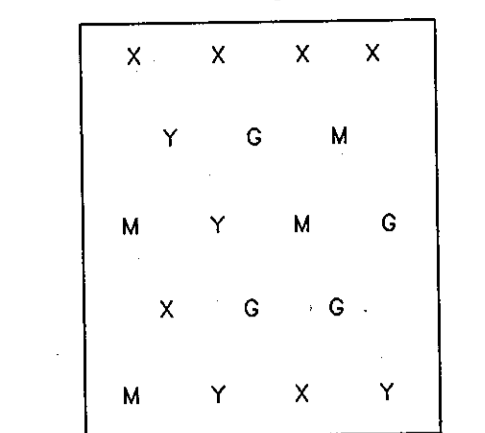
FCE Planting Area (F.C.E. #4) - 0.28 acres

Planting required: (350 WHIPS PER ACRE) = 0.28 x 350 = 98 WHIPS
Planting provided: (70 WHIPS AND 15 - 1" TREES)

Qty	Species	Size	Spacing
5	Acer rubrum - Red maple	1" cal.	15' o.c.
10	Quercus alba - White oak	1" cal.	15' o.c.
15 Total 1" caliper trees			
10	Acer rubrum - Red maple	2-3" whip	11' o.c.
10	Cercis canadensis - Red bud	2-3" whip	11' o.c.
10	Cornus florida - Flowering dogwood	2-3" whip	11' o.c.
10	Liriodendron tulipifera - Tulip poplar	2-3" whip	11' o.c.
10	Prunus serotina - Black cherry	2-3" whip	11' o.c.
7	Robinia pseudo-acacia - Black locust	2-3" whip	11' o.c.
7	Quercus alba - White oak	2-3" whip	11' o.c.
6	Viburnum prunifolium - Blackhaw	2-3" whip	11' o.c.
70 Total whip plantings			

1" CAL TREES = 200/ACRE (15 TREES/200) = 0.075 AC.
WHIPS w/shelters = 350/ACRE = (350 x 0.2 AC. (0.28 - 0.075)) = 70 WHIPS

Plant Spacing Diagram



Tree Shelters - Installation Specifications

After planting the tree in accordance with proper tree planting directions, pound or press the stake into the inside. The purpose of the collar is to provide a soft rim so the trees bark won't be damaged. The stake should be on the side of the tree toward the prevailing wind; e.g. if the prevailing wind is from the west, the stake should be on the west side of the tree. The top of the stake should be several inches higher than the top of the collar that secures the protector to the stake. See table below for stake sizes.

Tree Fro

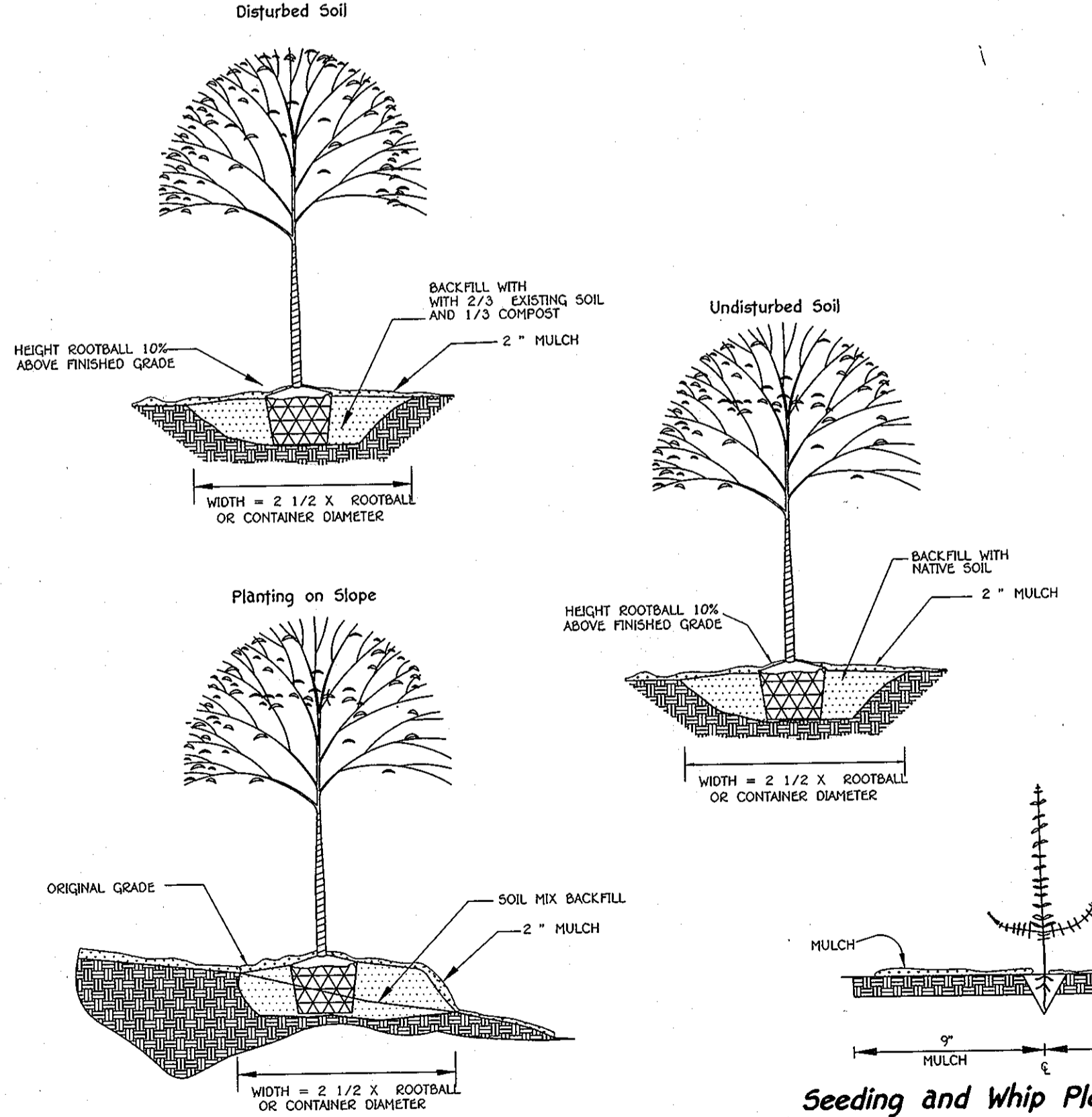
1. Fold the collar back over the outside of the protector, with the smooth side of the protector on the inside. The purpose of the collar is to provide a soft rim so the trees bark won't be damaged.
 2. With the holes lined up, slide the lockties through both holes in each side wall and lock the tie two or three clicks to keep it from falling out. See table below for the number of lockties.
 3. Carefully slide the protector down over the top of the tree and the lower down over the stake. PLEASE NOTE: If the tree has branches, carefully gather them together with their tips facing up before lowering the protector.
 4. Make sure the bottom of the protector is in good contact with the ground.
- PLEASE NOTE: Proper protector installation does not require the protector to be pressed down into the ground because doing so can sometimes cause rodent problems. Mice, voles and other animals often build nests inside protectors that are too firmly planted in the ground.

PROTECTOR SIZE	NUMBER OF TIES*	MINIMUM STAKE SIZE
12"	1	1 1/2"
18"	2	2"
24"	2	3"
30"	3	3 1/2"
48"	3	4"
60"	PRE-INSERTED	5"
72"	PRE-INSERTED	7"

BIRD NETS

Netting is provided for 48", 60" and 72" protectors only. They are usually not necessary for smaller sizes. Installing protectors without Bird Nets is hazardous to bluebirds and other insect-eating birds. Installation is fast, simple and the responsible thing to do. Simply slide the net over the top of the protector.

Without bird nets, birds trapped inside protectors will not only die, they can also destroy the tree as they try to escape. Please inspect your trees periodically to make sure the net is in place. The mesh must be removed before the tree grows from the protector, otherwise, they can deform the tree.



Seeding and Whip Planting Specification

APPROVED: DEPARTMENT OF PUBLIC WORKS
Walter J. ... 4-7-10
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Ken ... 4/26/10
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

... 4/20/10
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Planting/Soil Specifications

1. Installation of bareroot plant stock shall take place between March 15 - April 20. Barb/containers stock March 15 - May 30 or September 15 - November 15. Fall planting of Barb stock is not recommended.
2. Disturbed areas shall be seeded and established as per general construction plan for project. Planting areas not impacted by site grading shall have no additional topsoil installed.
3. Bareroot plants shall be installed so that the top of root mass is level with the top of existing grade. Roots shall be dipped in an anti-desiccant gel prior to planting. Backfill in the planting pits shall consist of 3 parts existing soil to 1 part pine fines or equivalent.
4. Fertilizer shall consist of Agriform 22-20-20, or equivalent, applied as per manufacturer's specifications, for woody plants. Herbaceous plants shall be fertilized with Osmocote 0-6-12.
5. Plant material shall be transported to the site in a tarped or covered truck. Plants shall be kept moist prior to planting.
6. All non-organic debris associated with the planting operation shall be removed from the site by the contractor.

Sequence of Construction

1. Sediment control shall be installed in accordance with general construction plan for site.
2. Plants shall be installed as per Plant Schedule and the Planting/Soil Specifications for the project.
3. Upon completion of the planting, signage shall be installed as shown.
4. Plantings shall be maintained and guaranteed in accordance with the Maintenance and Guarantee requirements or project.

Maintenance of Plantings

1. Maintenance of plantings shall last for 3 period of 2 years.
2. Plantings must receive 2 gallons of water, either through precipitation or watering, weekly during the 1st growing season, as needed. During second growing season, once a month during May-September, if needed.
3. Invasive exotics and noxious weeds will be removed, as required, from planting areas mechanically and/or with limited herbicide application (see groundcover note where appropriate). Old field successional species will be retained. Serious problems will be treated with the appropriate agent.
5. Dead branches will be pruned from plantings.

Guarantee Requirements

1. A 75 percent survival rate of forestation plantings will be required at the end of 2 growing seasons. All plant material below the 75 percent threshold will be replaced at the beginning of the next growing season. Wild trees arising from natural regeneration may be counted up to 50 percent towards the total survival number if they are healthy, native species at least 12 inches tall.

Surety for Forestation

1. The developer shall post a surety (bond, letter of credit) to ensure that forestation plantings are completed. See general note no. 22, sheet 1.

Planting Notes

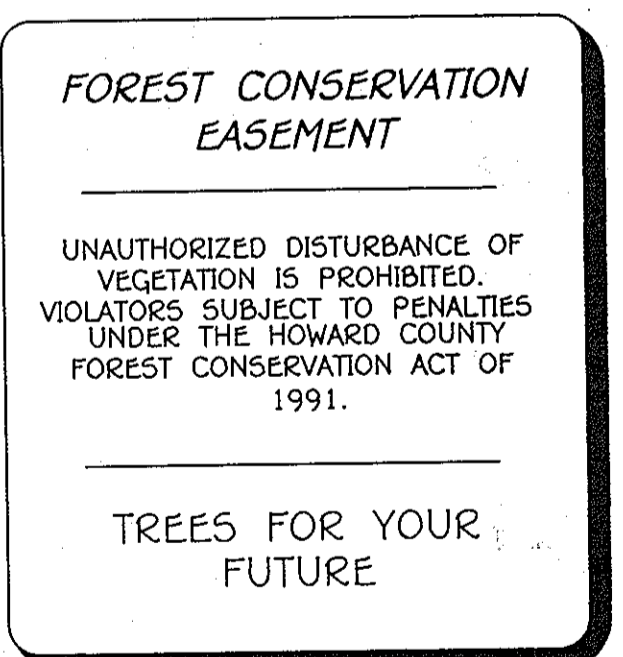
When possible, plants shall be installed within 24 hours of delivery. If installation cannot be performed within this time frame, plant stock shall be watered and protected from desiccation. Application of herbicide, Round-up or equivalent, may be used to reduce plant competition from old field successional growth at the time of installation. Mowing, re-application of herbicide, or a combination thereof, may be used to control unwanted, competing vegetation.

Planting shall be installed within one year or two growing seasons of subdivision approval. Plantings shall be installed in accordance with the time schedule included in Note 1 of the planting /Seeding Specifications.

Planting Note per B.G.&E.

*Trees with mature heights greater than 20' shall not be planted within 20' of either side of the utility pole line. Trees with mature heights greater than 40' shall not be planted within 45' of the utility pole line. Finally, the records of Howard County shall note that trees retained or planted to comply with FCA requirements shall meet the conditions prescribed above for mature tree heights and planting distances from the lines, and that BGE shall have the right without mitigation requirements to remove or prune any trees situated within the Forest Conservation Area that BGE deems to pose a hazard to the overhead facilities regardless of the distance of the tree or trees from the overhead lines.

ON-SITE SIGNAGE



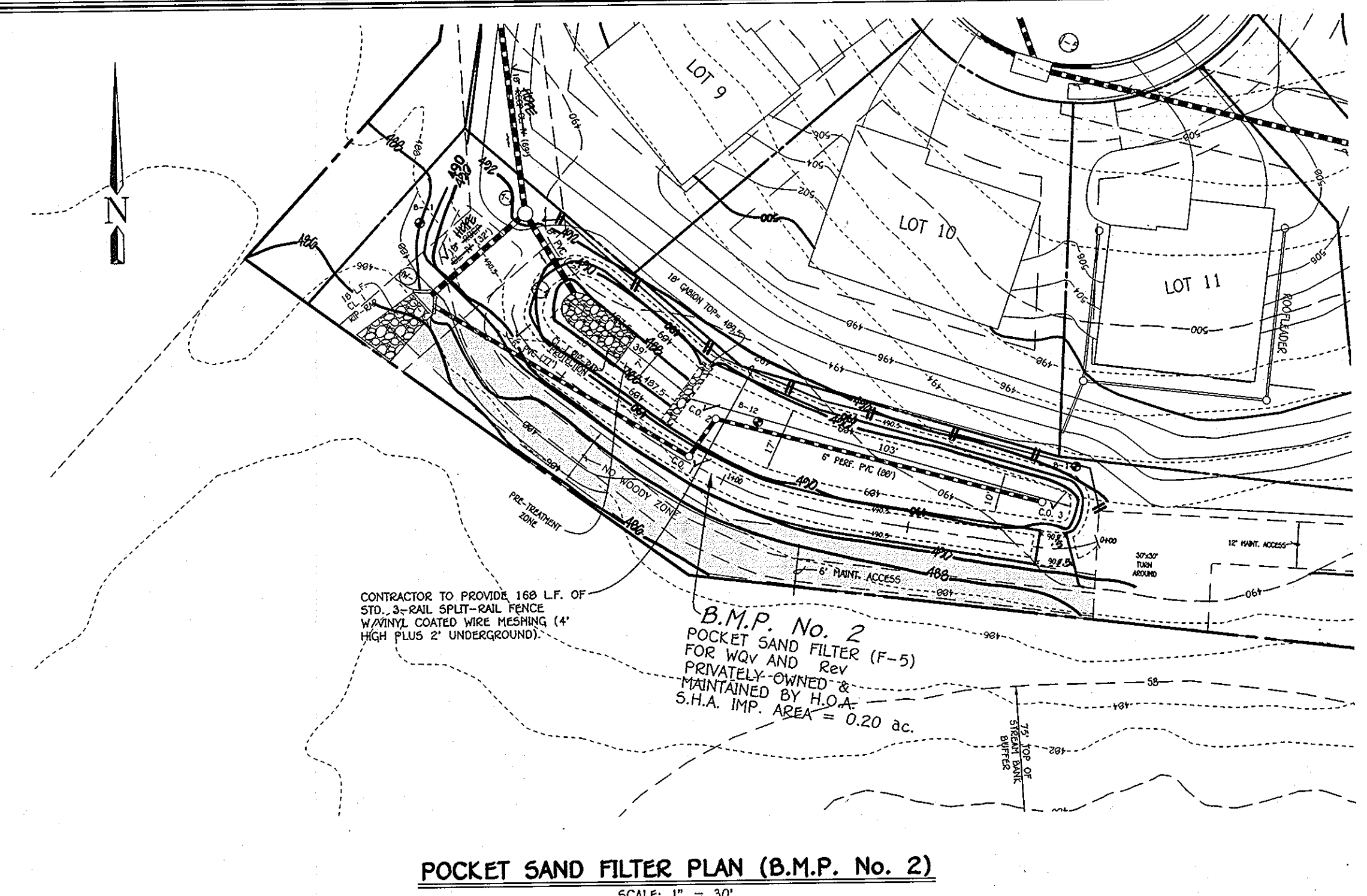
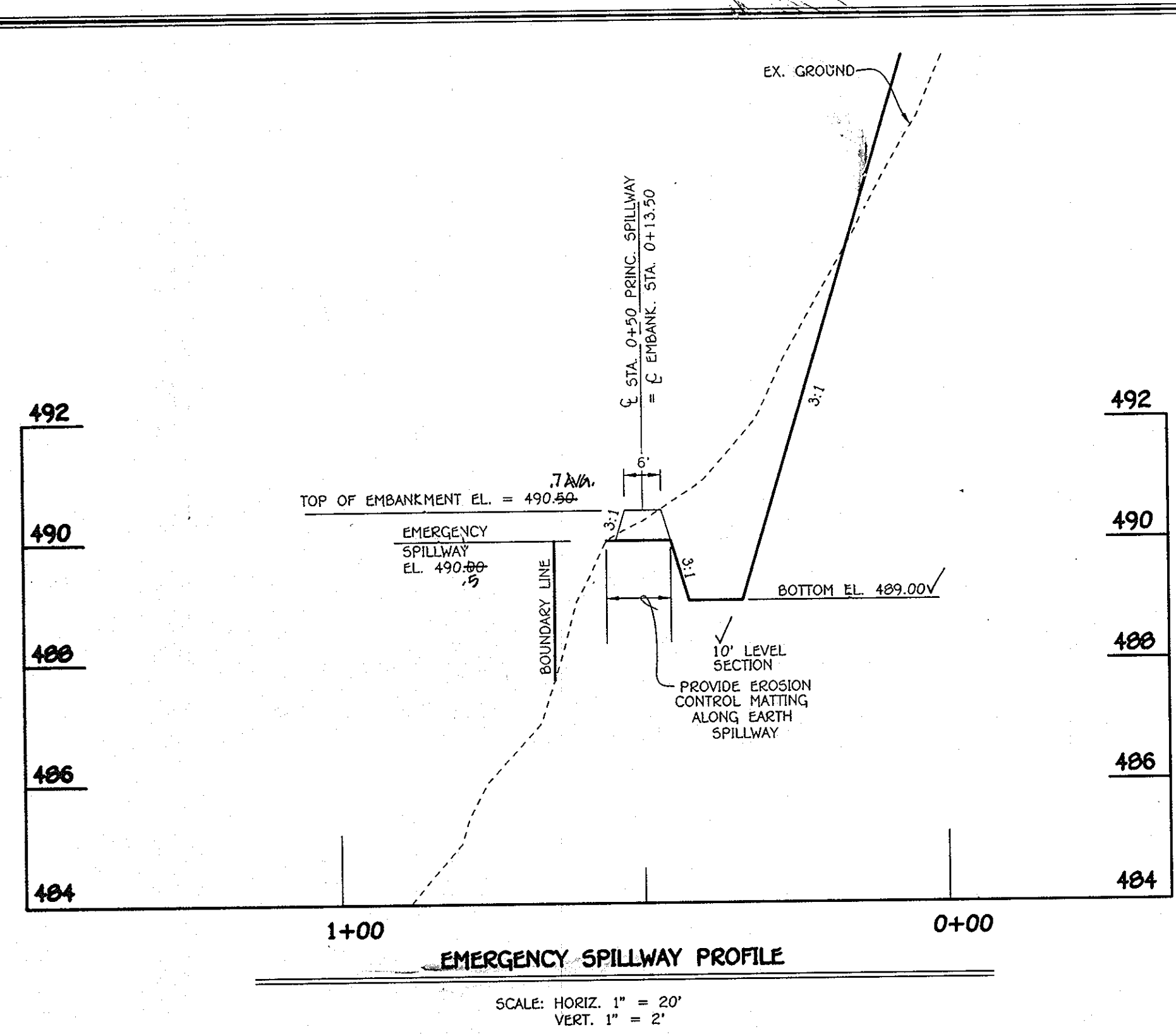
FOREST CONSERVATION NOTES & DETAILS
WAVERLY OVERLOOK
LOTS 1-26 AND OPEN SPACE LOTS 27-32
ZONING: R-20
TAX MAP No. 10, GRID No. 21 & TAX MAP No. 16, GRID No. 3
PARCEL Nos. 207 AND 224
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE: MARCH 4, 2010
SHEET 21 OF 22

STATE OF MARYLAND
...
DATE: 3-4-10
I, hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-11.

OWNER AND DEVELOPER

MOSSBERGER, LLC
c/o LAND DESIGN & DEVELOPMENT, INC.
5300 DORSEY HALL DRIVE, SUITE 102
ELICOTT CITY, MARYLAND 21042
(410) 367-0422

MD DNR Qualified Professional
USACOE Wetland Delinquent
Certification: WDCPS3M00610048
John P. Canoles 3/5/10
JOHN P. CANOLES



- ### OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED SURFACE STORMWATER FILTRATION SYSTEMS
1. 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.
 2. THE TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF ONCE PER YEAR, WHEN VEGETATION REACHES 18" IN HEIGHT OR AS NEEDED.
 3. FILTERS THAT HAVE A GRASS COVER SHALL BE MOWED A MINIMUM OF THREE (3) TIMES PER GROWING SEASON TO MAINTAIN A MAXIMUM GRASS HEIGHT OF LESS THAN 12 INCHES.
 4. DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
 5. VISIBLE SIGNS OF EROSION IN THE FACILITY SHALL BE REPAIRED AS SOON AS IT IS NOTICED.
 6. REMOVE SILT WHEN IT EXCEEDS FOUR (4) INCHES DEEP IN THE FOREBAY.
 7. 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. THE OWNER MUST FOLLOW PROPER CLEANING AND DISPOSAL OF THE REMOVED MATERIALS AND LIQUID.
 8. A LOGBOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
 9. THE MAINTENANCE LOGBOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.
 10. 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.

- ### SAND FILTER SPECIFICATIONS
1. MATERIAL SPECIFICATIONS FOR SAND FILTERS
THE ALLOWABLE MATERIALS FOR SAND FILTER CONSTRUCTION ARE DETAILED IN TABLE B.3.1.
 2. SAND FILTER TESTING SPECIFICATIONS
UNDERGROUND SAND FILTERS, FACILITIES WITHIN SENSITIVE GROUNDWATER AQUIFERS, AND FILTERS DESIGNED TO SERVE URBAN HOT SPOTS ARE TO BE TESTED FOR WATER TIGHTNESS PRIOR TO PLACEMENT OF FILTER MEDIA. ENTRANCES AND EXITS SHOULD BE PLUGGED AND THE SYSTEM COMPLETELY FILLED WITH WATER TO DEMONSTRATE WATER TIGHTNESS. WATER TIGHTNESS MEANS NO LEAKAGE FOR A PERIOD OF 8 HOURS.
ALL OVERFLOW WEIRS, MULTIPLE ORIFICES AND FLOW DISTRIBUTION SLOTS ARE TO BE FIELD-TESTED TO VERIFY ADEQUATE DISTRIBUTION OF FLOWS.
 3. SAND FILTER CONSTRUCTION SPECIFICATIONS
PROVIDE SUFFICIENT MAINTENANCE ACCESS (I.E., 12'-FOOT-WIDE ROAD WITH LEGALLY RECORDED EASEMENT). VEGETATED ACCESS SLOPES ARE TO BE A MAXIMUM OF 10% ; GRAVEL SLOPES TO 15% ; PAVED SLOPES TO 25%.
ABSOLUTELY NO RUNOFF IS TO ENTER THE FILTER UNTIL ALL CONTRIBUTING DRAINAGE AREAS HAVE BEEN STABILIZED. SURFACE OF FILTER BED IS TO BE LEVEL.
ALL UNDERGROUND SAND FILTERS SHOULD BE CLEARLY DELINEATED WITH SIGNS SO THAT THEY MAY BE LOCATED WHEN MAINTENANCE IS DUE.
SURFACE SAND FILTERS MAY BE PLANTED WITH APPROPRIATE GRASSES; SEE APPENDIX A.
"POCKET" SANDFILTERS (AND RESIDENTIAL BIO-RETENTION FACILITIES TREATING AREAS LARGER THAN AN ACRE) SHALL BE SIZED WITH A "WINDOW" THAT COVERS APPROXIMATELY 10% OF THE FILTER AREA. THIS "WINDOW" SHALL BE FILLED PEA GRAVEL (3/4 INCH STONE).

By The Developer:
"I/We Certify That All Development And/Or Construction Will Be Done According To These Plans. And That Any Reasonable Personnel Involved In The Construction Project Will Have A Certificate Of Attendance As A Department Of The Environment Approved Training Program For The Control Of Erosion And Sedimentation. I Shall Engage A Registered Professional Engineer To Supervise Final Construction And Provide The Howard Soil Conservation District With A 'As-Built' Plan Of The Work Within 30 Days Of Completion. I Also Authorize Periodic Inspections By The Howard Soil Conservation District."

Signature of Developer: *David R. Redner* Date: 3/4/10
Printed Name of Developer: David R. Redner

By The Engineer:
"I Certify That I Am A Registered Professional Engineer In The State Of Maryland. I Have Reviewed These Plans For Final Construction, Erosion And Sediment Control Represents A Practical And Feasible Method For The Control Of Erosion And Sedimentation. The Plans Meet The Requirements Of The Howard Soil Conservation District. I Have Reviewed The Plans And I Agree That The Plans Meet The Requirements Of The Howard Soil Conservation District. I Shall Engage A Registered Professional Engineer To Supervise Final Construction And Provide The Howard Soil Conservation District With A 'As-Built' Plan Of The Work Within 30 Days Of Completion."

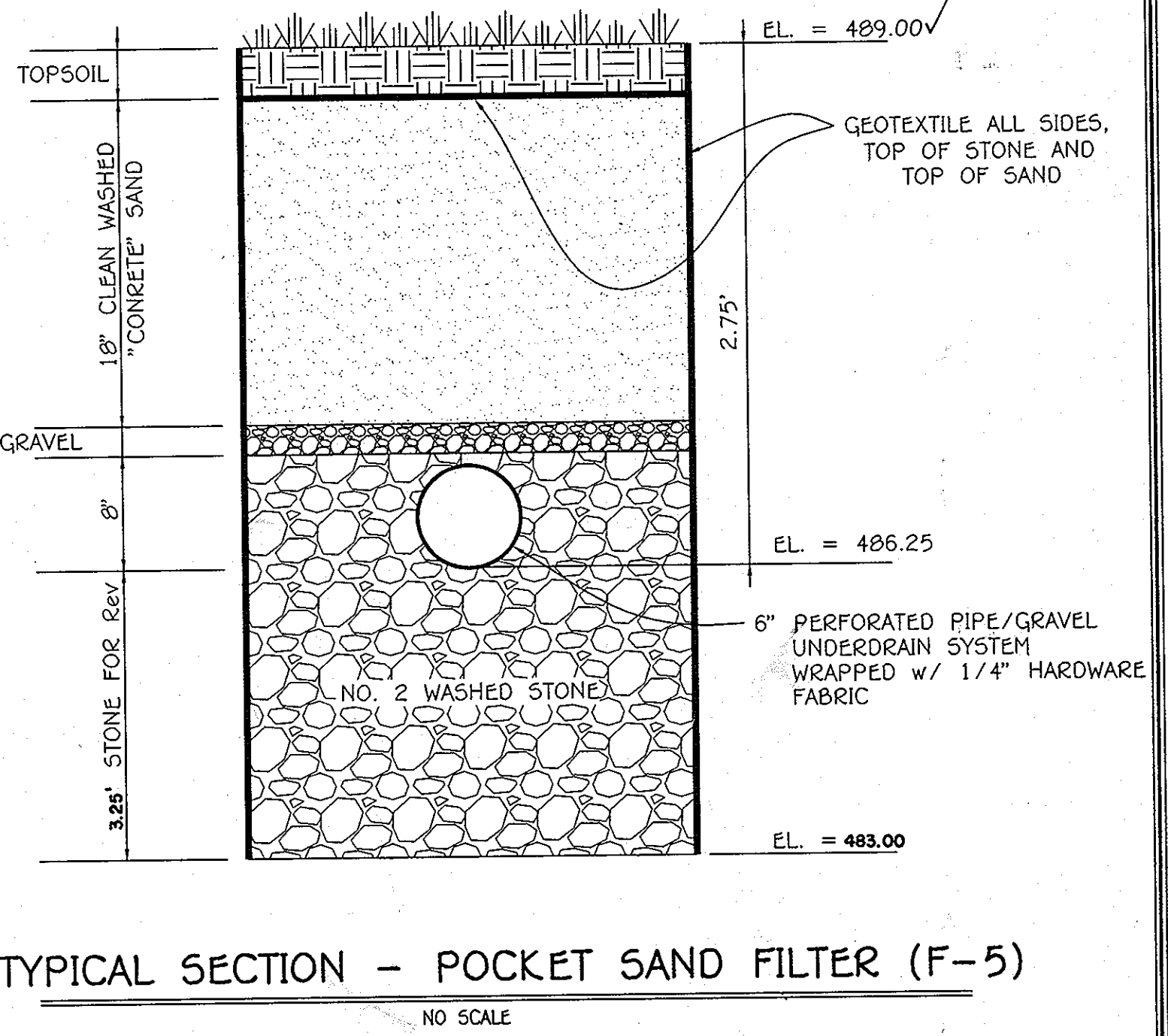
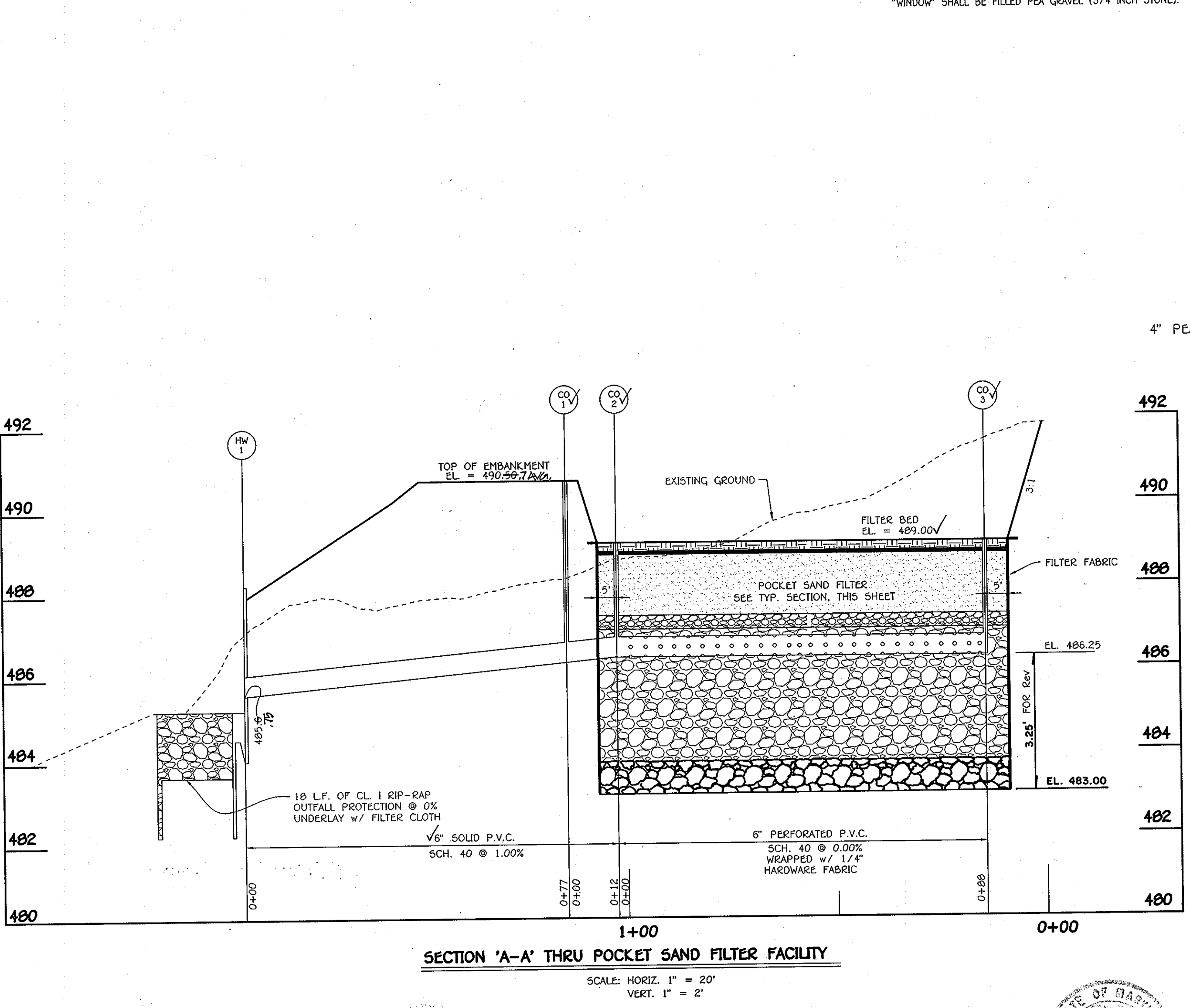
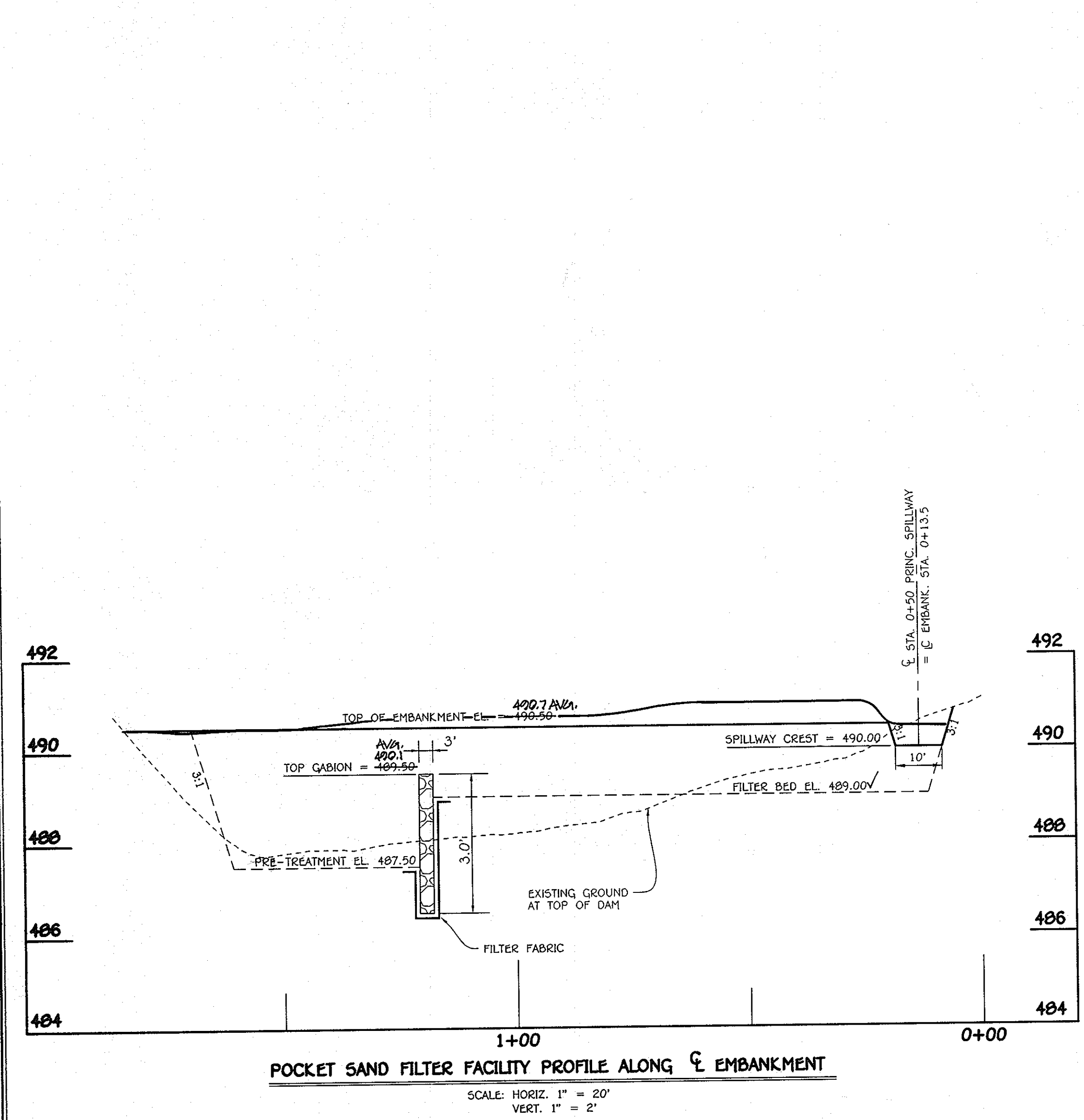
Signature of Engineer: *John J. ...* Date: 3/4/10
Printed Name of Engineer: John J. ...

Approved: Department of Public Works
Signature: *Michelle R. ...* Date: 4-7-10
Chief, Bureau of Highways

Approved: Department of Planning And Zoning
Signature: *Kevin ...* Date: 4/26/10
Chief, Division of Land Development

Approved: Department of Engineering
Signature: *John ...* Date: 4/20/10
Chief, Development Engineering Division

AS-BUILT CERTIFICATION
I Herby Certify That The Facility Shown On This Plan Was Constructed As Shown On The "As-Built" Plans And Meets The Approved Plans And Specifications.
Signature: _____ P.E. No. _____ Date: _____
Certify Means To State Or Deny A Professional Opinion Based Upon Onsite Inspections And Material Tests Which Are Conducted During Construction. The Onsite Inspections And Material Tests Are Those Inspections And Tests Deemed Sufficient And Appropriate Commonly Accepted Engineering Standards. "Certify" Does Not Create Or Imply A Guarantee By The Engineer Nor Does An Engineer's Certification Release Other Parties From Meeting Requirements Imposed By Contract, Ordinance, Or Other Means, Including Meeting Commonly Accepted Safety Practices.



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CENTRAL SQUARE OFFICE BLDG. - 10270 BALTIMORE NATIONAL PIKE
ELLCOTT CITY, MARYLAND 21042
(410) 481-2899

No.	Description	Date
1	Revised Rev Stone Bottom Elevation	4/30/10
No.	Description	Date
	Revisions	

OWNER AND DEVELOPER
MORSBERGER, LLC
c/o LAND DESIGN & DEVELOPMENT, INC.
5300 DORSEY HALL DRIVE, SUITE 102
ELLCOTT CITY, MARYLAND 21042
(410) 367-0422

Professional Engineer Seal
Signature: *John J. ...* Date: 3/4/10
"I/We Certify That I Am A Registered Professional Engineer In The State Of Maryland. I Have Reviewed These Plans For Final Construction, Erosion And Sediment Control Represents A Practical And Feasible Method For The Control Of Erosion And Sedimentation. The Plans Meet The Requirements Of The Howard Soil Conservation District. I Have Reviewed The Plans And I Agree That The Plans Meet The Requirements Of The Howard Soil Conservation District. I Shall Engage A Registered Professional Engineer To Supervise Final Construction And Provide The Howard Soil Conservation District With A 'As-Built' Plan Of The Work Within 30 Days Of Completion."

POCKET SAND FILTER PLAN AND DETAILS
WAVERLY OVERLOOK
LOTS 1-26 AND OPEN SPACE LOTS 27-32
ZONING: R-20
TAX MAP No. 10, GRID No. 21 & TAX MAP No. 16, GRID No. 3
PARCEL Nos. 207 AND 224
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE: MARCH 4, 2010
SHEET 22 OF 22

AS-BUILT F-10-027