Site Development Plan
For
Mass Grading, Road Construction & Stormwater Management
Howard County Office Campus

PARCEL 'A'
CIP-C-0282

Howard County **Maryland**

General Notes

1. All construction shall be in accordance with the latest standards and specifications of Howard County plus MSHA standards and specifications if applicable.

2. The contractor shall notify the Department of Public Works/Bureau of Engineering/Construction Inspection division at 410-313-1880 at least five (5) working days prior to the start of work.

3. The contractor shall notify "Miss Utility" at 1-800-257-7777 at least 48 hours prior to any excavation work being done.

4. Traffic control devices, markings and signing shall be in accordance with the latest edition of the Manual of Uniform Traffic Control Devices (MUTCD). All street and regulatory signs be in place prior to the placement of any asphalt.

5. All plan dimensions are to face of curb unless otherwise noted.

6. The existing topography was field run by DMW in June 2001, and supplemented along Rogers Avenue and Ellicott Center Drive by DMW in June 2002. Wetlands were delineated and field located by DMW in Feb. 2001 and approved by the Army Corps of Engineers on Oct. 11, 2001. Boundary per Mildenberg Boender dated 12/2/99.

All streams on site are perennial.

7. The coordinates shown hereon are based upon the Howard County Geodetic Control which is based upon the Maryland State Plane Coordinate System. Howard County Monument Nos. 25A1 and 25A2 were used for this project.

8. Water is public, contract no. 44-4074.

9. Stormwater Management for this project will be addressed with the installation of three Stormwater Management Facilities (sand filter), two water quality/recharge swales (grass channel credit) and two possible bioretention areas which will control the runoff per the latest approved Design Standards. The facilities will be be surface sand filter. They will be owned and maintained by Howard County. The SWM facilities (#2 & #3) will be built as sediment basins/traps during this SDP and converted to sand filters in the future. SWM facility #1 will not be used for sediment control but will be converted to a sand filter in the future. The Howard County Office Campus will provide stormwater management for entire Parcel 847, which is provided in facility #3 under the ultimate SWM design.

10. Existing utilities are based on Construction Plans (contract no.'s 9W, 215, 427) and verified by field survey.

11. The floodplain study for this project was prepared by Daft-McCune-Walker, Inc., dated June 12, 2001, and was approved November 13, 2002.

12. The wetlands delineation study for this project was prepared by Daft-McCune-Walker, Inc., dated July 2001, revised September, 2001 and approved by the U.S. Army Corps of Engineers on October 11, 2001.

13. The queuing analysis dated Oct. 8, 2002 for this project was prepared by Wells and Associates, and was approved January 15, 2003.

14. Project background information:

Subdivision Name: Howard County Office Complex
Tax Map: 24/25
Lot./Parcel: P/O: Parcel 852 & P/O P. 847
Zoning: POR-MXD-6 per the Comprehensive Zoning Plan
Election District: 2
Total Tract Area: 24.6 AC.
File Numbers: F-03-21

15. Street light placement and the type of fixture and pole shall be in accordance with the Howard County Design Manual, Volume III (1993)
A minimum spacing of 20' shall be maintained between lights and any tree.

16. Sidewalk ramps shall meet current ADA requirements.

17. All sidewalks at intersections to have handicaps ramps meeting ADA requirements, See detail on sheet 30.

18. Street trees shall be planted at least 5' from any inlet structure.

19. Stormwater maintenance responsibility, routine, and non-routine schedule is shown on sheet 18.

20. Under Capital Project J4170, improvements will be made to the culvert passing the Sucker Branch floodplain at Rogers Avenue ; therefore, no 100 year storm water management is provided on-site. Also, a traffic signal at the intersection of Ellicott Center Drive and Rogers Avenue will be proposed under Capital Project J4170. Also under Capital Project J4170, the alignment of Linwood Drive with the project entrance will be restudied.

21. No clearing, grading, or construction is permitted within the wetlands, streams, or their required buffers and forest conservation easement areas. (See list of approved disturbances this sheet)

22. There are no known cemeteries, historic structures, or scenic roads on or adjacent to this property.

23. This plan has been prepared in accordance with provisional section 16.124 of the Howard County Code and the landscape manual.

24. This project complies with the requirements of section 16.1200 of the Howard County Code for forest conservation. The total forest conservation requirement for this project is 9.07 acres for Parcels 'A' (8.16 ac) and 'B' (0.91 acres). The total forest conservation easement provided for this property is 10.33 (9.38 ac. credited and 0.95 ac. non-credited)

25. This SDP is subject to the 5th Edition of the Howard County Subdivision and Land Development Regulations.

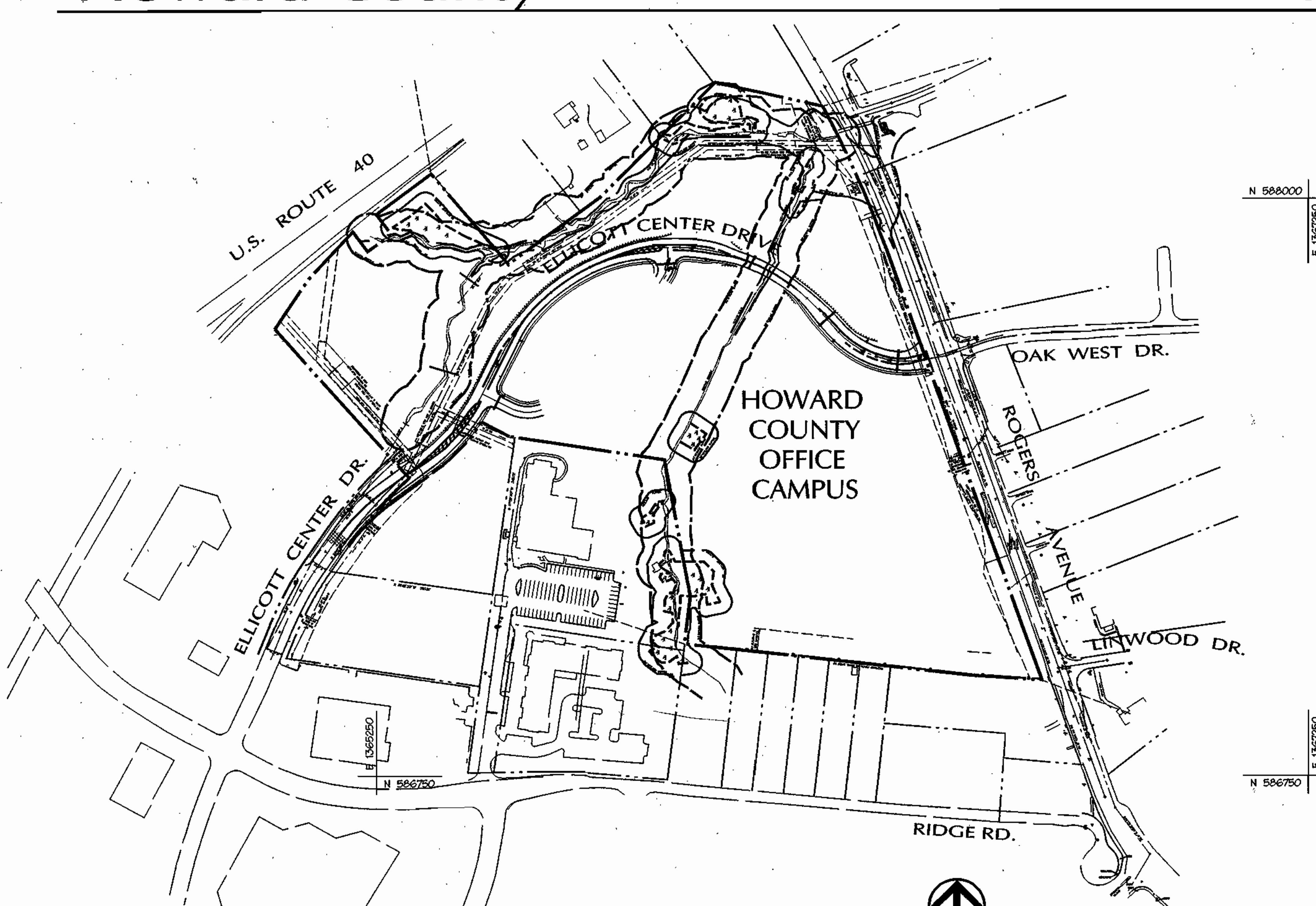
26. Geotechnical Study has been prepared by Froehling & Robertson dated August 2002.

27. MDE Permit and Tracking No. 200266336

28. The existing pipes and old structures in the stream shall be addressed in SDP #2.

SITE ANALYSIS DATA CHART

1. General Site Data
   a. Present Zoning: POR-MXD-6
   b. Applicable DPZ File References: F-03-21
   c. Proposed Use of Site or Structure(s): MASS GRADING, ROAD CONSTRUCTION AND STORMWATER MANAGEMENT
   d. Proposed Water and Sewer Systems: X Public - ___ Private
2. Area Tabulation
   a. Total Project Area: 24.6± Acres
   b. Area of This Plan Submission: 26.4± Acres
   c. Limit of Disturbed Area: 15.3± Acres
   d. Building Coverage of Site: 0% Acres and 0% % of Gross Area (Proposed)
   e. Area of floodplain: 1.3± Acres
   f. Area of steep slopes: 7.65± Acres
   g. Net area of site: 15.65± Acres
3. Building Area
   a. Building Area: N/A
   b. Building Coverage of Site: N/A %
4. Parking Space Data
   a. Number of Parking Spaces Required by Zoning Regulations and Criteria: N/A
   b. Total Number of Parking Spaces Provided On-Site: N/A
   c. Number of Handicapped Parking Spaces Provided: N/A



NORTH

Overall Property Outline
Scale: 1"=200'

Description of Essential Environmental Disturbances

DPZ-Approved Disturbances per Section 16.116(c) of the Subdivision and Land Development Regulations:

1. Essential Stream Crossing and Stream Buffer: Ellicott Center Drive extension requires crossing of a stream and is essential for the function of the campus and the neighborhood. There will be no disturbance to the actual stream or stream channel. Minimization efforts include locating the crossing at a section of the stream with no associated floodplain or wetland; only 9150 sf of grading and construction within the stream buffer; narrowed paving section across the stream and within the buffer; storm drain and public water main located under the roadway; and use of a bottomless arch in lieu of a culvert, with footings five feet beyond the stream channel on each side.
2. Necessary grading of Steep Slopes: Ellicott Center Drive extension impacts approximately 42,100 sf of steep slopes due to existing 50 foot grade change from the west to east side; the need for access to the employee parking garage and adequate storm water management; and the need for a road with safe horizontal and vertical grades. Minimization efforts include 800 linear feet of retaining walls; provision of a bottomless arch with supporting retaining walls; use of an interlocking block wall to minimize footing; narrowed pavement where turn lanes were not needed; and inclusion of a public water main under the road pavement.
The employee parking garage will impact approximately 2700 square feet of steep slopes. Minimization efforts include use of structured vs. surface parking; use of curved or segmented garage configuration; location of storm water management facility between the road and the structure; and use of a pedestrian bridge to link the garage to the office buildings.
Approximately 66,900 sf of steep slopes are impacted for construction of the office buildings. Minimization efforts include stepping the buildings into and down the site topo; segmented building configuration; use of a 6 to 7 percent gradient on the access drive; and use of a pedestrian bridge to link the offices buildings to employee parking garage.
3. Necessary Disturbance within 100 Year Floodplain The best location for site storm drain and swm system outfall occurs adjacent to an existing drainage swale within the 100 year floodplain. It maintains an existing drainage pattern; no wetland, stream, related buffer, forest or steep slope is impacted; and the existing channel gradient minimizes erosion potential. Approximately 1851 sf of floodplain will be disturbed for the outfall. Minimization efforts include a single rather than multiple outfalls for each swm facility; routing minimizes erosion potential to the stream, and reduces the one year velocity; a future capital project will pipe Rogers Avenue improvements in this location, so both improvements will have a single impact.

Description of Road Design Waivers

Road Design Waiver needed to minimize disturbances to environmentally sensitive features was conditionally approved on August 5, 2002 by DPW. Standards waived include:
-Sections 1.5.1.B, to use the Howard County Office Campus Master Plan(October, 2002) in lieu of a Preliminary Engineering Report;
-Table 2.01 13/32 Subtable 3, to use minor collector design and posted speed for a roadway with maximum volume of 3,000 VPD.
-Table 2.05, to use a 200 foot radius near Rogers Avenue intersection and 51 foot tangent for curve transition.
-Section 2.4.1, Figure 2.10, to use a 26 foot road section through stream crossing and stream buffer; to delete a sidewalk on the retaining wall side of the road; to allow mountable curb for a portion of the road, and to set the guard rail 30 inches behind the face of curb.
-Table 2.09, to allow a landing grade of 3.5%.

Description of Design Manual Waiver for Setbacks

Design manual waiver Volume 1, section 5.2.4.I was conditionally approved on January 21, 2003 by DPW. Standards waived include :
-Section 5.2.4.I, to use a setback that is less than 25 feet from the top of the slope cut to a structure for stormwater management facilities 2 and 3.

Description of Design Manual Waiver for Adequate Sight Distance

Design manual waiver Volume III, section 2.5.2H was conditionally approved on May 2, 2003 by DPW. Standards waived include :
-Section 2.5.2H requiring an adequate sight distance at the unsignalized intersection of Ellicott Center Drive extension and Rogers Avenue.

MDE PERMIT AND TRACKING No. 200266336

Sheet Index

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3	GRADING PLAN -- WEST SIDE
4	SEDIMENT AND EROSION CONTROL PLAN -- EAST SIDE
5	SEDIMENT AND EROSION CONTROL PLAN -- WEST SIDE
6	SEDIMENT AND EROSION CONTROL DETAILS AND SPECIFICATIONS
7	SEDIMENT AND EROSION CONTROL DETAILS (CONTINUED)
8	SEDIMENT AND EROSION CONTROL DETAILS (CONTINUED)
9	SEDIMENT AND EROSION CONTROL SPECIFICATIONS
10	SOIL BORING LOGS
11	SOIL BORING LOGS
12	STORMWATER MANAGEMENT FACILITY 1,3
13	STORMWATER MANAGEMENT FACILITY 2
14	STORMWATER MANAGEMENT RISER DETAILS
15	STORMWATER MANAGEMENT RISER DETAILS & ESC DETAILS
16	STORMWATER MANAGEMENT DETAILS
17	STORMWATER MANAGEMENT PROFILES
18	STORMWATER MANAGEMENT SPECIFICATIONS
19	LANDSCAPE AND STREET TREE PLAN -- EAST SIDE
20	LANDSCAPE AND STREET TREE PLAN -- WEST SIDE
21	LANDSCAPE NOTES AND DETAILS
22	FOREST CONSERVATION PLAN -- EAST SIDE
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24	FOREST CONSERVATION NOTES AND DETAILS
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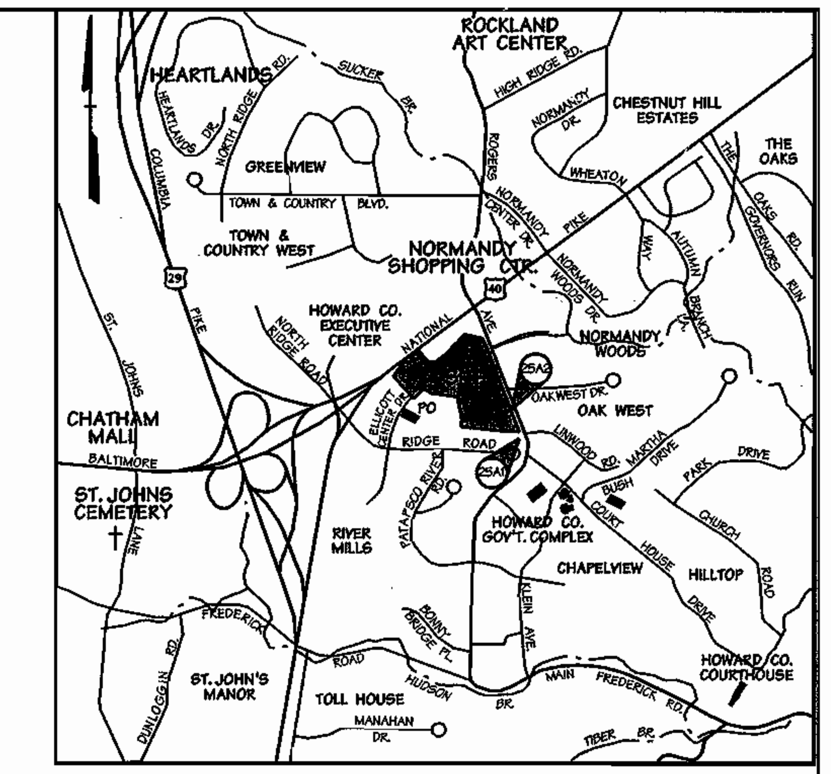
28	ELLICOTT CENTER DRIVE ROAD PLAN / PROFILE
29	ELLICOTT CENTER DRIVE ROAD PLAN / PROFILE
30	ELLICOTT CENTER DRIVE ROAD DETAILS
31	ELLICOTT CENTER DRIVE PAVEMENT MARKING & SIGNAGE PLAN
32	ELLICOTT CENTER DRIVE-ROGERS AVENUE ROAD INTERSECTION DETAILS
33	RETAINING WALLS #1 & #2 PLAN VIEW
34	RETAINING WALLS #1 & #2 PROFILES AND DETAILS
35	RETAINING WALLS #1 & #2 SPECIFICATIONS
36	RETAINING WALL #3 PLAN AND PROFILE VIEWS
37	RETAINING WALL #3 DETAILS AND SPECIFICATIONS
38	BOTTOMLESS ARCH PLAN VIEW & DETAILS
39	BOTTOMLESS ARCH HEADWALL ELEVATION VIEWS
40	BOTTOMLESS ARCH SPECIFICATIONS



VICINITY MAP
SCALE: 1"=2000'

Benchmark

25A1:
NORTHING: 586557.503
EASTING: 1366847.149
ELEVATION: 397.085'

25A2:
NORTHING: 587502.680
EASTING: 1366556.401
ELEVATION: 348.887'

ADDRESS CHART	
PARCEL NUMBERS	STREET ADDRESS
PARCEL A	3320 ROGERS AVENUE

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/16/03

DIRECTOR — DATE 7/21/03

Date	No.	Revision Description

6-04-03
Date

Professional Engr. No. 10550

Howard County Office Campus
PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705
A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
HO. CO. OFFICE CAMPUS	NA	852 & P/0847

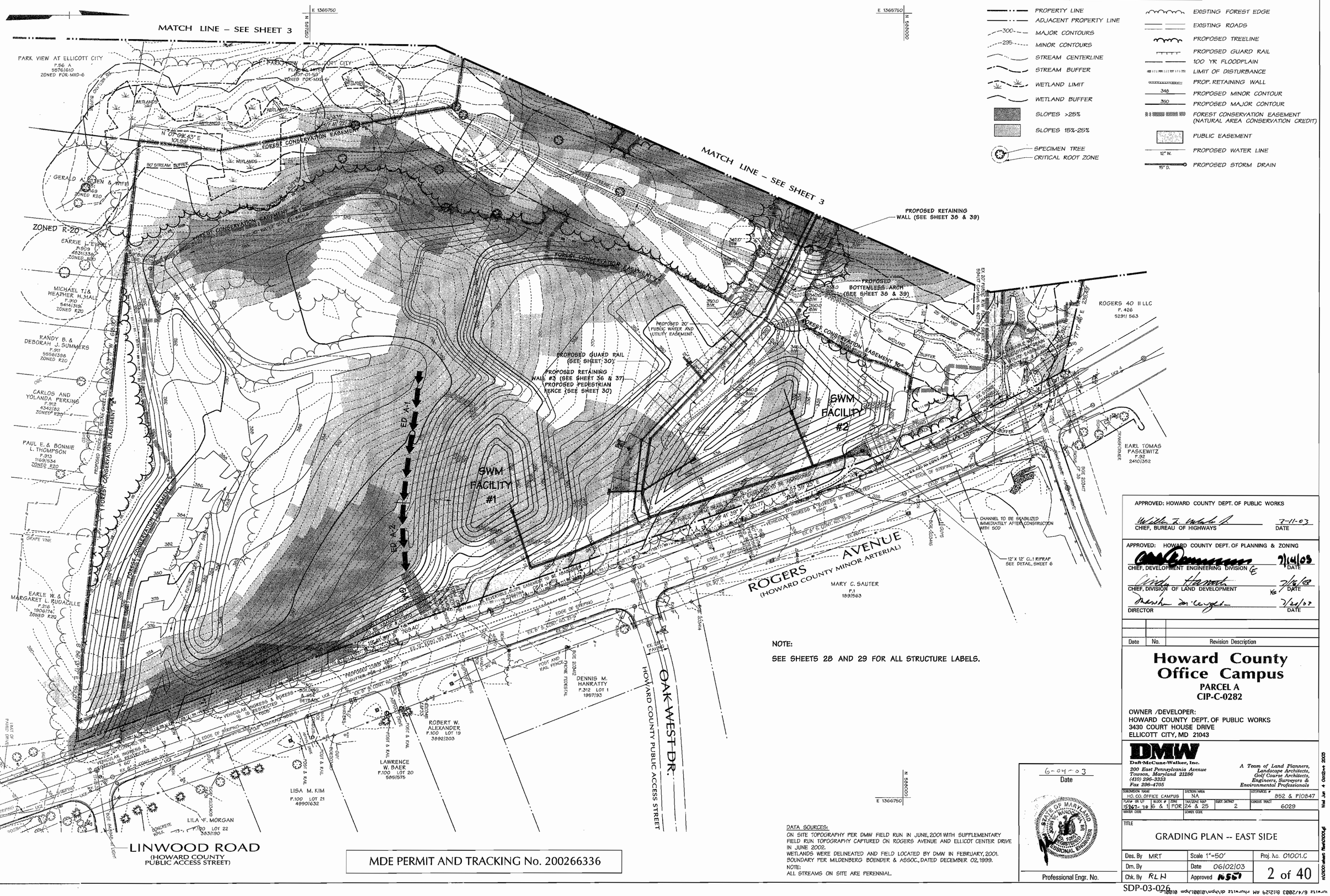
PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15867-15870	6 & 1	POR	24 & 25	2	6029

WATER CODE | SEWER CODE

TITLE
COVER SHEET

Des. By		Scale	1"=200'	Proj. No. 01001.C
Drn. By	KDE	Date	06/02/03	1 of 40
Chk. By	RLH	Approved		

SDP-03-026



LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- 300 MAJOR CONTOURS
- 295 MINOR CONTOURS
- STREAM CENTERLINE
- STREAM BUFFER
- WETLAND LIMIT
- WETLAND BUFFER
- SLOPES >25%
- SLOPES 15%-25%
- SPECIMEN TREE
- CRITICAL ROOT ZONE
- EXISTING FOREST EDGE
- EXISTING ROADS
- PROPOSED TREELINE
- PROPOSED GUARD RAIL
- 100 YR FLOODPLAIN
- LIMIT OF DISTURBANCE
- PROP. RETAINING WALL
- 346 PROPOSED MINOR CONTOUR
- 350 PROPOSED MAJOR CONTOUR
- FOREST CONSERVATION EASEMENT (NATURAL AREA CONSERVATION CREDIT)
- PUBLIC EASEMENT
- 12" W. PROPOSED WATER LINE
- 15" D. PROPOSED STORM DRAIN

NOTE:

SEE SHEETS 28 AND 29 FOR ALL STRUCTURE LABELS.

DATA SOURCES:
ON SITE TOPOGRAPHY PER DMW FIELD RUN IN JUNE, 2001 WITH SUPPLEMENTARY FIELD RUN TOPOGRAPHY CAPTURED ON ROGERS AVENUE AND ELLICOT CENTER DRIVE IN JUNE 2002.
WETLANDS WERE DELINEATED AND FIELD LOCATED BY DMW IN FEBRUARY, 2001.
BOUNDARY PER MILDENBERG BOENDER & ASSOC., DATED DECEMBER 02, 1999.
NOTE:
ALL STREAMS ON SITE ARE PERENNIAL.

MDE PERMIT AND TRACKING No. 200266336

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/16/03

DIRECTOR — DATE 7/22/03

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

DMW
Daft-McCune-Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME: HO. CO. OFFICE CAMPUS	SECTION/AREA: NA		LOT/PARCEL #: 852 & P10847
PLAT# OR L/F: 15967-70	BLOCK #: 6 & 1	ZONE: POR	TAX/ZONE MAP: 24 & 25
ELEC. DISTRICT: 2	CENSUS TRACT: 6029		
WATER CODE:	SEWER CODE:		

TITLE: GRADING PLAN -- EAST SIDE

Des. By MRT	Scale 1"=50'	Proj. No. 01001.C
Dm. By	Date 06/02/03	2 of 40
Chk. By RLH	Approved N.S.T.	

6-04-03
Date

Professional Engr. No.

SDP-03-026

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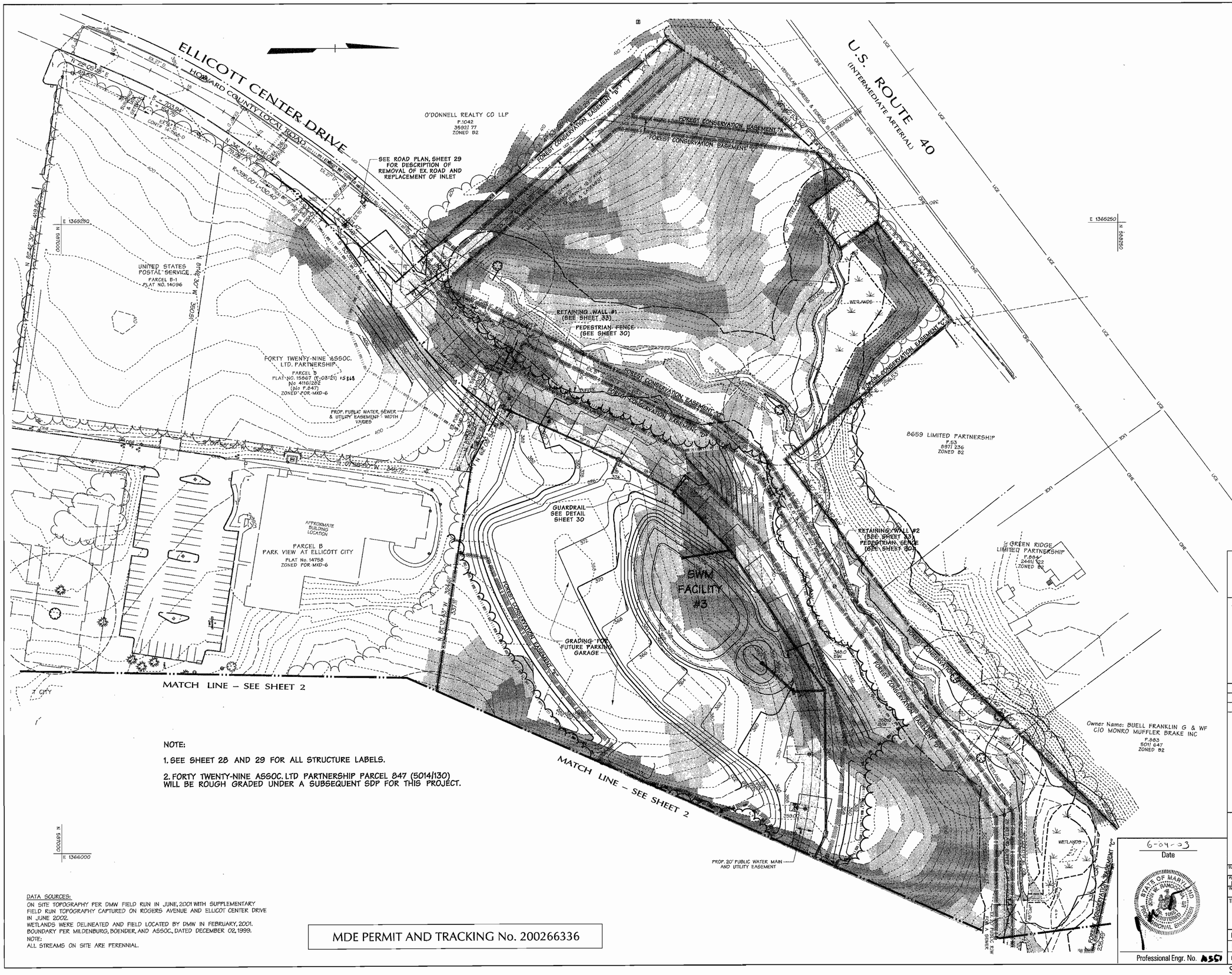

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- PROPOSED GUARD RAIL
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- PROP. RETAINING WALL
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- PUBLIC EASEMENT
- 12" W. PROPOSED WATER LINE
- 15" D. PROPOSED STORM DRAIN
- 8" S. PROPOSED SEWER LINE
- SPECIMEN TREE
- CRITICAL ROOT ZONE

NOTE:

1. SEE SHEET 28 AND 29 FOR ALL STRUCTURE LABELS.

2. FORTY TWENTY-NINE ASSOC. LTD PARTNERSHIP PARCEL 847 (5014/130) WILL BE ROUGH GRADED UNDER A SUBSEQUENT SDP FOR THIS PROJECT.

DATA SOURCES:
ON SITE TOPOGRAPHY PER DMW FIELD RUN IN JUNE, 2001 WITH SUPPLEMENTARY FIELD RUN TOPOGRAPHY CAPTURED ON ROGERS AVENUE AND ELLICOT CENTER DRIVE IN JUNE 2002.
WETLANDS WERE DELINEATED AND FIELD LOCATED BY DMW IN FEBRUARY, 2001.
BOUNDARY PER MILDENBURG, BOENDER, AND ASSOC., DATED DECEMBER 02, 1999.
NOTE:
ALL STREAMS ON SITE ARE PERENNIAL.

MDE PERMIT AND TRACKING No. 200266336

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/16/03

DIRECTOR — DATE 7/21/03

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

DMW
Daft-McCune-Walker, Inc.
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SUBDIVISION NAME: HO. CO. OFFICE CAMPUS		SECTION/AREA: NA	LOT/PARCEL #: 852 & P/O 847
PLAT # OR L/F: 15867-70	BLOCK #: 6 & 1	TYPE: POR	TAX/ZONE MAP: 24 & 25
ELEC. DISTRICT: 2	CENSUS TRACT: 6029		
WATER CODE	SEWER CODE		

TITLE

GRADING PLAN -- WEST SIDE

Des. By MRT	Scale 1"=50'	Proj. No. 01001.C	
Drn. By KDE/MRT	Date 06/02/03	3 of 40	
Chk. By RLH	Approved		

6-04-03
Date

STATE OF MARYLAND — ROBERT L. HOSMER — 10852 — REGISTERED PROFESSIONAL ENGINEER

Professional Engr. No. 10852

SDP-03-026

Wed Jun 4 08:08:43 2003 C:\Projects\01001\dgn\01001sht.dgn Plotted: 6/4/2003 8:08:28 AM

CERTIFICATION BY THE ENGINEER:

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

John W. Rancadio, Jr. — 6-4-03 DATE

BASIN TABLE

BASIN NUMBER		1
EXISTING DRAINAGE AREA: ACRES		5.72
INTERIM DRAINAGE AREA: ACRES		9.64
PROPOSED DRAINAGE AREA: ACRES		9.64
STORAGE REQUIRED: CUBIC FEET	WET	17,352
	DRY	17,352
	TOTAL	34,704
STORAGE PROVIDED: CUBIC FEET	WET	17,675
	DRY	19,384
	TOTAL	37,059
EXISTING GROUND ELEVATION		340.0
TOP EMBANKMENT ELEVATION		341.0
EMERGENCY SPILLWAY CREST ELEVATION		N/A
RISER CREST ELEVATION		337.5
WET STORAGE ELEVATION		335.5
CLEANOUT ELEVATION		334.3
BOTTOM ELEVATION		332.0
Q, EXISTING (C.F.S.)		2.49
Q, INTO BASIN (C.F.S.)		21.71
Q OUT BARREL (C.F.S.)		1.49
Q OUT EMERGENCY SPILLWAY		N/A
BASIN DEPTH	WET	3.5 FT.
	DRY	2.0 FT.
	TOTAL	5.5 FT.
DESIGN HIGHWATER		339.0
FREEBOARD PROVIDED		2.0 FT.
BARREL DIAMETER		24 IN.
RISER DIAMETER		4'x4'
EMERGENCY SPILLWAY WIDTH		N/A
WET STORAGE ZONE ELEVATION		332.0-335.5
DRY STORAGE ZONE ELEVATION		335.5-337.5
BOTTOM DIMENSIONS		SEE PLAN
S.E.C. CONTROL PLATE ORIFICE SIZE (IN.)		4.0 IN.

LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- MAJOR CONTOURS
- MINOR CONTOURS
- STREAM CENTERLINE
- STREAM BUFFER
- WETLAND LIMIT
- WETLAND BUFFER
- EXISTING FOREST EDGE
- EXISTING ROADS
- EARTH DIKE
- SSF — SUPER SILT FENCE
- GM — GABION INFLOW PROTECTION
- LIMIT OF DISTURBANCE
- PROPOSED TREELINE
- PROPOSED GUARD RAIL
- TREE PROTECTION FENCE
- SCE — STABILIZED CONSTRUCTION ENTRANCE
- 12" W. — PROPOSED WATER LINE
- 27" D. — PROPOSED STORM DRAIN

MATCH LINE – SEE SHEET 5

E 1365750 N 558750

E 1365750 N 559000

PARK VIEW AT ELLICOTT CITY P.56 A 5576/610 ZONED POR-MXD-6

GERALD A. OTTEN & WIFE P.851 2131/569 ZONED R20

CARRIE L. EVERLY P.902 4631/338 ZONED R20

MICHAEL J. & HEATHER H. HALL P.910 5414/319 ZONED R20

RANDY B. & DEBORAH J. SUMMERS P.911 5556/398 ZONED R20

CARLOS AND YOLANDA PERKINS P.912 4342/182 ZONED R20

PAUL E. & BONNIE L. THOMPSON P.913 1169/534 ZONED R20

EARLE W. & MARGARET L. RUDACILLE P.216 1806/174 ZONED R20

ZONED R-20

PHASE 1

SEE SHEET 8 FOR INTERIM GRADING. FINAL GRADING TO BE PERFORMED UPON ISSUANCE OF PERMIT, FROM MDE.

PHASE 3 (ROAD CROSSING)

IMBRICATION

TREE PROTECTION FENCE

A TEMPORARY MEASURE SHALL BE TAKEN AT THIS SPLITTER (1-1) TO DIVERT FLOW INTO BASIN. SEE STORM DRAIN PROFILE SHEET 26 FOR SPECIFIC DIRECTIVE.

INSTALL EARTH DIKE ONCE GRADING IS COMPLETE

TEMPORARY STOCKPILE AREA

SEE NOTE 6

SEE NOTE 7

SEE NOTE 8

SEDIMENT BASIN #1

3485 SEDIMENT BAFFLES

ESSENTIALLY TO BE PARALLEL TO EX. 340.0 CONTOUR

REGENT INTERNATIONAL LLC C/O RITE AID CORP #384 F.54 2805/637 ZONED B2

EARL TOMAS PASKEWITZ P.92 2410/352

MARY C. SAUTER P.1 189/563

ROBERT W. ALEXANDER P.100 LOT 19 3892/203

DENNIS M. HANRATTY P.312 LOT 1 1957/93

LAWRENCE W. BAER P.100 LOT 20 5851/575

LISA M. KIM P.100 LOT 21 4980/632

LILA E. MORGAN P.100 LOT 22 383/190

ROGERS AVENUE (HOWARD COUNTY MINOR ARTERIAL)

OAK WEST DR.

HOWARD COUNTY PUBLIC ACCESS STREET

CLASS I RIPRAP INFLOW PROTECTION

PROVIDE 24" TEMPORARY CULVERT PIPE WITH 12" MIN. COVER

TOP OF EMBANKMENT SHALL BE 8' WIDE WITH TOP ELEV. 341.0 DURING SEC PHASE

IMBRICATION FOR ALL SILT FENCE & SUPER SILT FENCE SECTIONS THAT INCLUDE IMBRICATIONS (SUCH AS THIS ONE), THE IMBRICATIONS SHALL BE TURNED BACK UPHILL A MINIMUM OF 2' IN ELEVATION.

SODDED SWALE (STABILIZE IMMEDIATELY AFTER CONSTRUCTION)

CHANNEL TO BE STABILIZED IMMEDIATELY AFTER CONSTRUCTION WITH SOD

22' LENGTH CLASS I RIPRAP APPRON

EAST SIDE - PHASE 1
SEE SHEET 8 FOR PHASE LIMITS.

NOTES:

1. FOR ALL SILT FENCE & SUPER SILT FENCE SECTIONS THAT INCLUDE IMBRICATIONS, THE IMBRICATIONS SHALL BE TURNED BACK UPHILL A MINIMUM OF 2' IN ELEVATION.

2. UPON CONSTRUCTION OF PERMANENT RISER S-2, INSTALL A HORIZONTAL PERFORATED DRAIN-DOWN PIPE IN LIEU OF THE ULTIMATE CONDITION SWM DEWATERING DEVICE. THIS PIPE SHALL BE SURROUNDED BY A 1' THICK LAYER OF 2" STONE AND CAPPED AT END. RISER S-3 SHALL HAVE A SEC DRAW-DOWN DEVICE UNTIL SITE IS STABILIZED. AT THAT TIME THE SEC DRAW-DOWN SHALL BE REMOVED AND REPLACED BY THE HORIZONTAL PERFORATED DRAIN DOWN DEVICE.

CERTIFICATION BY THE DEVELOPER:

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

6/23/03

DATA SOURCES:
ON SITE TOPOGRAPHY PER DMW FIELD RUN IN JUNE, 2001 WITH SUPPLEMENTARY FIELD RUN TOPOGRAPHY CAPTURED ON ROGERS AVENUE AND ELLICOT CENTER DRIVE IN JUNE 2002.
WETLANDS WERE DELINEATED AND FIELD LOCATED BY DMW IN FEBRUARY, 2001.
BOUNDARY PER MILDENBERG BOENDER & ASSOC., DATED DECEMBER 02, 1999.
NOTE:
ALL STREAMS ON SITE ARE PERENNIAL.

6-24-03 Date

STATE OF MARYLAND — ROBERT L. HOSTERMAN — 7065 — REGISTERED PROFESSIONAL ENGINEER

Professional Engr. No. 7065

MDE PERMIT AND TRACKING No. 200266336

REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS.
U.S. NATURAL RESOURCE CONSERVATION SERVICE — 7/1/03 DATE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
HOWARD S.C.D. — 7/1/03 DATE

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — 7-11-03 DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — 7/14/03 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT — 7/16/03 DATE
DIRECTOR — 7/22/03 DATE

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME: HO. CO. OFFICE CAMPUS	SECTION/AREA: NA		LOT/PARCEL #: 852 & P10847
PLAT # OR LOT: 5947-70	BLOCK # / ZONE: 6 & 11 / POR	TAX/ZONE MAP: 24 & 25	ELECT. DISTRICT: 2
WATER CODE:	SEWER CODE:		CENSUS TRACT: 6029

TITLE

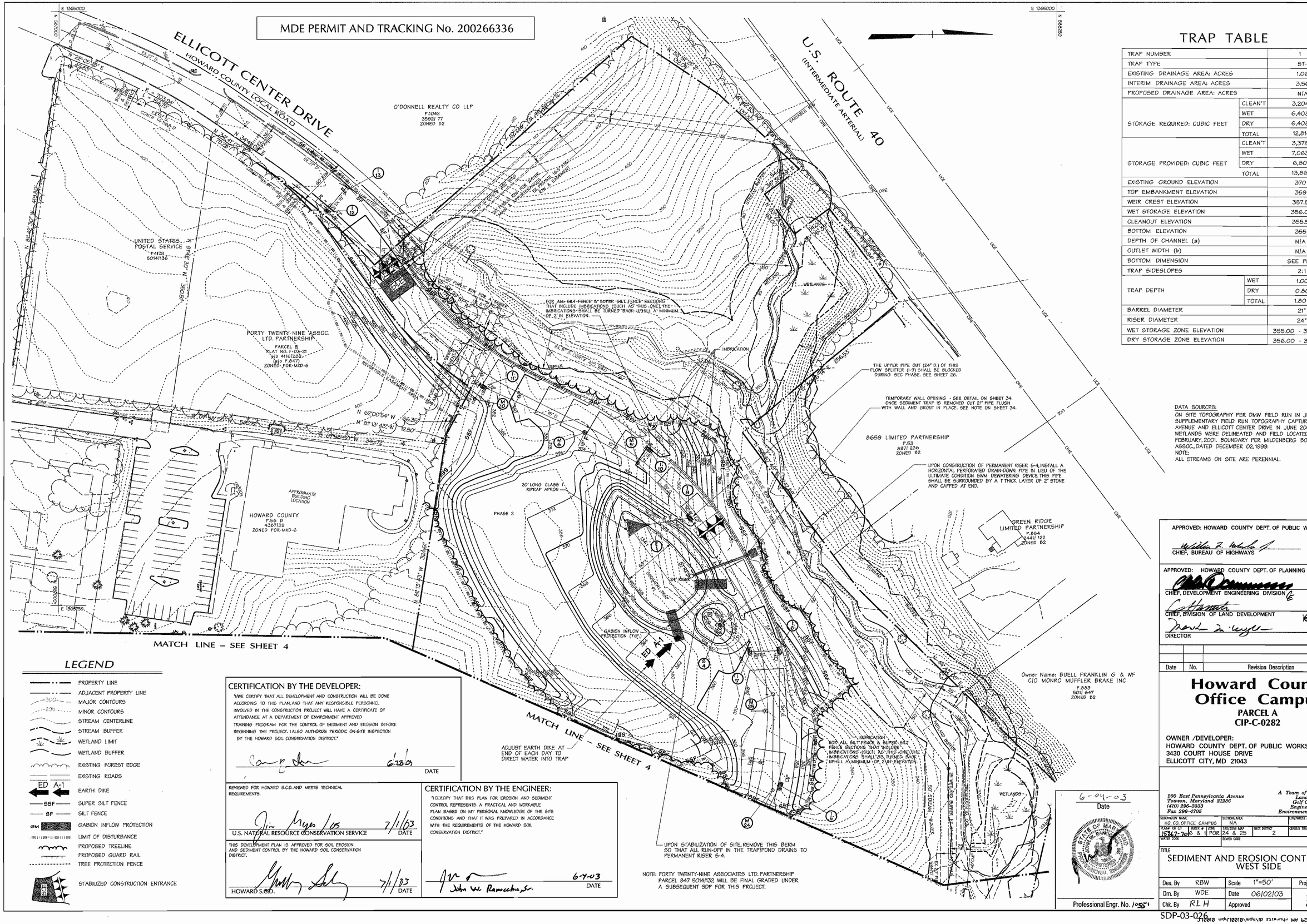
SEDIMENT AND EROSION CONTROL PLAN EAST SIDE

Des. By RBW	Scale 1"=50'	Proj. No. 01001.C
Drn. By WDE	Date 06/02/03	4 of 40
Chk. By RLH	Approved	

SDP-03-026

Wed Jun 4 08:56:05 2003

MDE PERMIT AND TRACKING No. 200266336



TRAP TABLE

TRAP NUMBER		1
TRAP TYPE		ST-1
EXISTING DRAINAGE AREA: ACRES		1.06
INTERIM DRAINAGE AREA: ACRES		3.56
PROPOSED DRAINAGE AREA: ACRES		N/A
STORAGE REQUIRED: CUBIC FEET	CLEAN'T	3,204
	WET	6,408
	DRY	6,408
	TOTAL	12,816
STORAGE PROVIDED: CUBIC FEET	CLEAN'T	3,378
	WET	7,063
	DRY	6,805
	TOTAL	13,868
EXISTING GROUND ELEVATION		370
TOP EMBANKMENT ELEVATION		359
WEIR CREST ELEVATION		357.50
WET STORAGE ELEVATION		356.00
CLEANOUT ELEVATION		355.50
BOTTOM ELEVATION		355
DEPTH OF CHANNEL (a)		N/A
OUTLET WIDTH (b)		N/A
BOTTOM DIMENSION		SEE PLAN
TRAP SIDESLOPES		2:1
TRAP DEPTH	WET	1.00
	DRY	0.80
	TOTAL	1.80
BARREL DIAMETER		21"
RISER DIAMETER		24"
WET STORAGE ZONE ELEVATION		355.00 - 356.00
DRY STORAGE ZONE ELEVATION		356.00 - 356.80

DATA SOURCES:
ON SITE TOPOGRAPHY PER DMW FIELD RUN IN JUNE, 2001 WITH SUPPLEMENTARY FIELD RUN TOPOGRAPHY CAPTURED ON ROGERS AVENUE AND ELLICOTT CENTER DRIVE IN JUNE 2002.
WETLANDS WERE DELINEATED AND FIELD LOCATED BY DMW IN FEBRUARY, 2001. BOUNDARY PER MILDENBERG BOENDER & ASSOC., DATED DECEMBER 02, 1999.
NOTE:
ALL STREAMS ON SITE ARE PERENNIAL.

LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- 300 MAJOR CONTOURS
- 298 MINOR CONTOURS
- STREAM CENTERLINE
- STREAM BUFFER
- WETLAND LIMIT
- WETLAND BUFFER
- EXISTING FOREST EDGE
- EXISTING ROADS
- ED A-1 EARTH DIKE
- SSF SUPER SILT FENCE
- SF SILT FENCE
- GM GABION INFLOW PROTECTION
- LIMIT OF DISTURBANCE
- PROPOSED TREELINE
- PROPOSED GUARD RAIL
- TREE PROTECTION FENCE
- SCE STABILIZED CONSTRUCTION ENTRANCE

CERTIFICATION BY THE DEVELOPER:

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

DATE 6/30/03

REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS.

U.S. NATURAL RESOURCE CONSERVATION SERVICE 7/1/03 DATE

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

HOWARD S.C.D. 7/1/03 DATE

CERTIFICATION BY THE ENGINEER:

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

John W. Ramacciotti Sr. 6-4-03 DATE

6-04-03 Date

Professional Engr. No. 19551

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS 7-11-03 DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION 7/14/03 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT 7/16/03 DATE

DIRECTOR 7/10/03 DATE

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME: HO. CO. OFFICE CAMPUS		SECTION/AREA: NA	LOT/PARCEL #: 852 & P10847
PLAT# OR LOT: 15847-706 & 11	BLOCK #: POR	ZONE: 24 & 25	TAX/ZONE MAP: 2
ELECT. DISTRICT: 2	CENSUS TRACT: 6029		
WATER CODE:	SEWER CODE:		

TITLE
SEDIMENT AND EROSION CONTROL PLAN WEST SIDE

Des. By RBW	Scale 1"=50'	Proj. No. 01001.C	
Drn. By WDE	Date 06/02/03	5 of 40	
Chk. By RLH	Approved		

SDP-03-026

Wed Jan 4 08:17:29 2003 J:\01001\dwg\01001sht 01001F

Sediment Control General Notes

Not to Scale

1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1855).
2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
   A. SEVEN CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES STEEPER THAN 3:1.
   B. FOURTEEN DAYS AS TO ALL OTHER DISTURBED OF GRADED AREAS ON THE PROJECT SITE.
4. ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL.1, CHAPTER 12, OF THE "HOWARD COUNTY DESIGN MANUAL", STORM DRAINAGE.
5. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE "1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" FOR PERMANENT SEEDINGS (SEC. 51), SODS (SEC. 54), TEMPORARY SEEDING (SEC. 50), AND MULCHING (SEC. 52). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
6. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
7. SITE ANALYSIS:

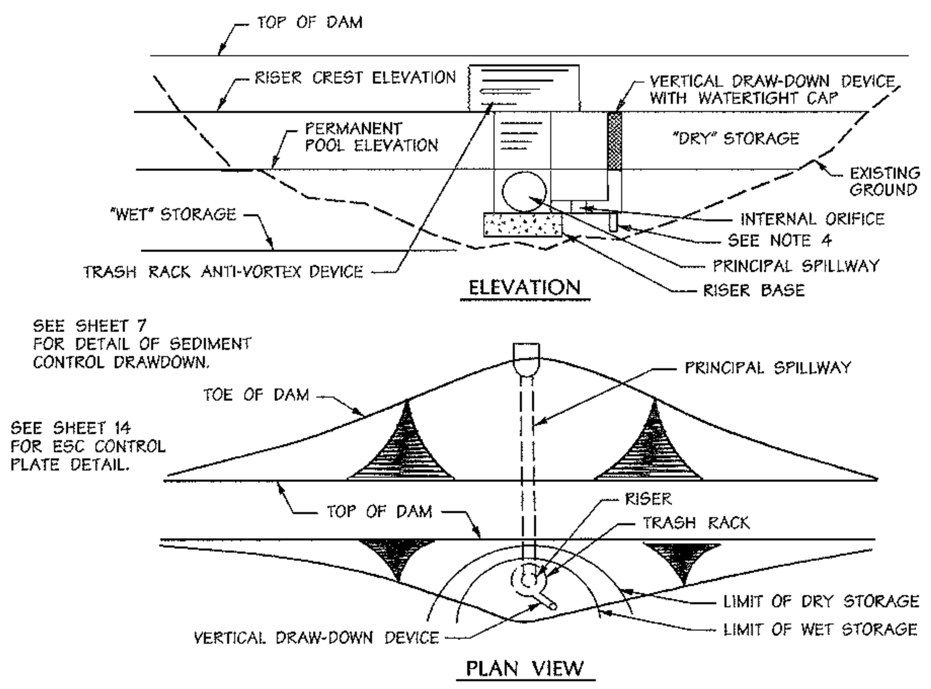
TOTAL AREA OR SITE	= 24.6 ACRES
AREA DISTURBED	= 15.3 ACRES
AREA TO BE ROOFED OR PAVED	= 0 ACRES
AREA TO BE VEGETATIVELY STABILIZED	= 15.3 ACRES
TOTAL CUT	= 187,850 CUBIC YARDS
TOTAL FILL	= 15,130 CUBIC YARDS
WASTE/ BORROW AREA	= 172,720 CUBIC YARDS

   (LOCATION TO BE DETERMINED BY CONTRACTOR, LOCATION POINT MUST HAVE OPEN GRADING PERMIT.)
8. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
9. ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
10. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
11. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.

Basin Drawdown Schematic Ver. Drawdown Device

SEE SHEET 7 FOR DETAIL OF SEDIMENT CONTROL DRAWDOWN.

SEE SHEET 14 FOR ESC CONTROL PLATE DETAIL.



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 4 TIMES THE AREA OF THE INTERNAL ORIFICE.
3. THE PERFORATED PORTION OF THE DRAW-DOWN DEVICE SHALL BE WRAPPED WITH ½" 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 FLOTATION. AN ACCEPTABLE PREVENTATIVE MEASURE IS TO STAKE BOTH SIDES OF THE DRAW-DOWN DEVICE WITH 1" STEEL ANGLE, OR 2" BY 2" SQUARE OR 2" ROUND WOODEN POSTS SET 3' MINIMUM INTO THE GROUND THEN JOINING THEM TO THE DEVICE BY WRAPPING WITH 12 GAUGE MINIMUM WIRE.

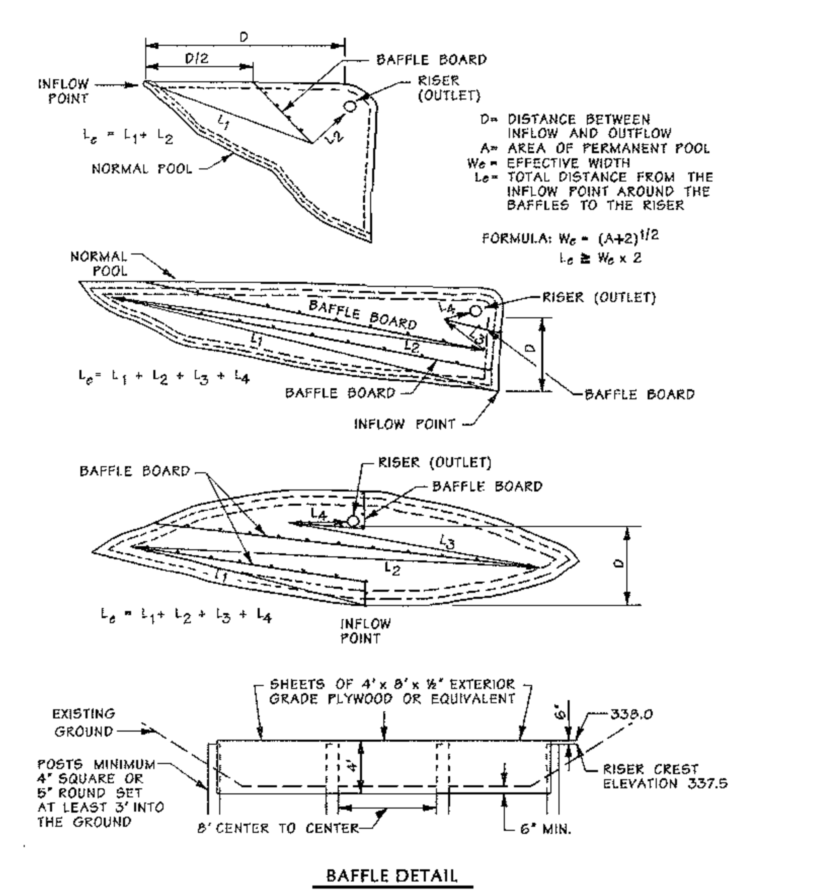
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE C - 10 - 30 *MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION*

Not to Scale

Sediment Basin Baffles

Not to Scale

PLAN VIEWS



U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE C - 10 - 28 **MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION**

Rock Outlet Protection III and Specifications

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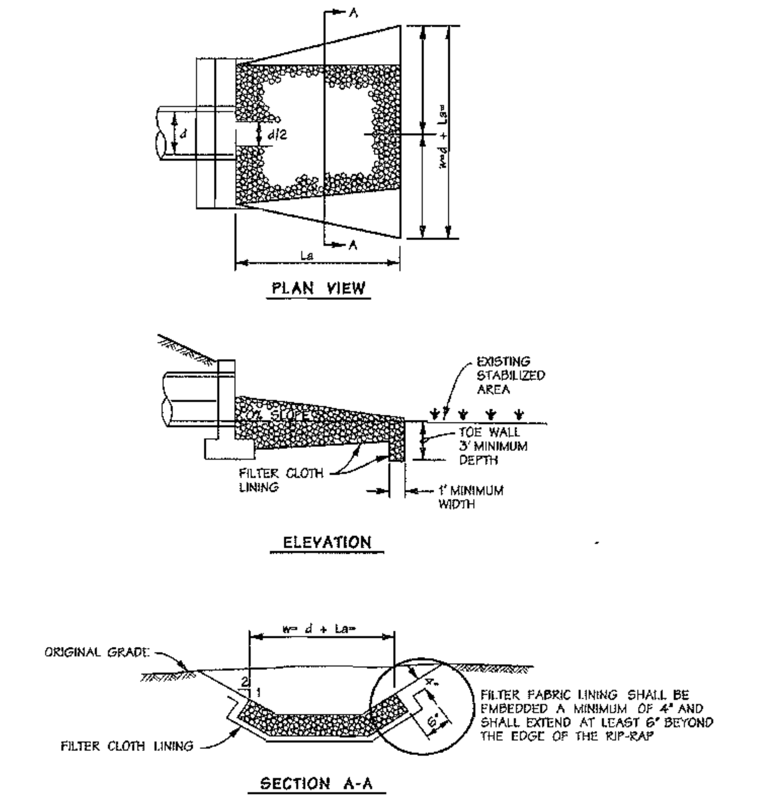

NOTE: FILTER CLOTH SHALL BE GEOTEXTILE CLASS C

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE *MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION*

CONSTRUCTION SPECIFICATIONS

1. 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.

2. THE ROCK OR GRAVEL SHALL CONFORM TO THE SPECIFIED GRADING LIMITS WHEN INSTALLED RESPECTIVELY IN THE RIP-RAP OR FILTER.

3. GEOTEXTILE CLASS C SHALL BE PROTECTED FROM PUNCHING, CUTTING, OR TEARING. ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE SHALL BE REPAIRED BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. ALL OVERLAPS WHETHER FOR REPAIRS OR FOR JOINING TWO PIECES OF GEOTEXTILE SHALL BE A MINIMUM OF ONE FOOT.

4. STONE FOR THE RIP-RAP OR GABION OUTLETS MAY BE PLACED BY EQUIPMENT. THEY SHALL 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 ENSURE THAT IT IS REASONABLY HOMOGENEOUS 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 GEOTEXTILE. HAND PLACEMENT WILL BE REQUIRED TO THE EXTENT NECESSARY TO PREVENT DAMAGE TO THE PERMANENT WORKS.

5. THE STONE SHALL BE PLACED SO THAT IT BLENDS IN WITH THE EXISTING GROUND. IF THE STONE IS PLACED TOO HIGH THEN THE FLOW WILL BE FORCED OUT OF THE CHANNEL AND SCOUR ADJACENT TO THE STONE WILL OCCUR.

Materials Specifications

TABLE 28 STONE SIZE

	Size Range	D_{50}	D_{100}	AASHTO	Weight
Number 57 *	⅜" - 1½"	½"	1½"	M-43	N/A
Number 1	2" - 3"	2½"	3"	M-43	N/A
Rip-Rap **	4" - 7"	5½"	7"	N/A	N/A
Class I	N/A	9.5"	15"	N/A	150 Lb. max.
Class II	N/A	16"	24"	N/A	700 Lb. max.
Class III	N/A	23"	34"	N/A	2000 Lb. max.

* This classification is to be used on the inside face of stone outlets and check dams.

** This classification is to be used when ever small rip-rap is required. The State Highway Administration designation for this stone is stone for gabions (905.01.04).

STONE FOR GABION BASKETS

Basket Thickness		Size of Individual Stones	
Inches	MM	Inches	MM
6	150	3 - 5	75 - 125
9	225	4 - 7	100 - 175
12	300	4 - 7	100 - 175
18	460	4 - 7	100 - 175
36	910	4 - 12	100 - 300

Note: Recycled concrete equivalent may be substituted for all stone classifications. Recycled concrete equivalent shall be concrete broken into the sizes meeting the appropriate classification, shall contain no steel reinforcement, and shall have a density of 150 pounds per cubic foot.

TABLE 27 GEOTEXTILE FABRICS

Class	Apparent Opening Size MM. Max.	Grab Tensile Strength Lb. Min.	Burst Strength PSI. Min.
A	0.30 **	250	500
B	0.60	200	320
C	0.30	200	320
D	0.60	90	145
E	0.30	90	145
F (silt fence)	0.40-0.80 *	90	190

* US Standard sieve CW-02215   ** .50 MM max. for super silt fence

The properties shall be determined in accordance with the following procedures:
- Apparent opening size msmt 323
- Grab tensile strength ASTMD 1682: 4 x 8" specimen, 1 x 2" clamps, 12" min. strain rate in both principal directions of geotextile fabric.
- Burst strength: ASTMD D 3786.

The fabric shall be inert to commonly encountered chemicals and hydrocarbons, and will be rot and mildew resistant. It shall be manufactured from fibers consisting of long chain synthetic polymers, and composed of a minimum of 85% by weight of polyolephins, polyesters, or polyamides. The geotextile fabric shall resist deterioration from ultraviolet exposure

In addition, classes A through E shall have a 0.01 cm./sec. minimum permeability when tested in accordance with msmt 507, and an apparent minimum elongation of 20 percent (20%) when tested in accordance with the grab tensile strength requirements listed above.

Silt fence
Class F geotextile fabric for silt fence shall have a 50 lb./in. minimum tensile strength and a 20 lb./in. minimum tensile modules when tested in accordance with msmt 509. The material shall also have a 0.3 gal./ft./min. flow rate and seventy-five percent (75%) minimum filtering efficiency when tested in accordance with msmt 322. Geotextile fabrics used in the construction of silt fence shall resist deterioration from ultraviolet exposure. The fabric shall contain sufficient amount of ultraviolet ray inhibitors and stabilizers to provide a minimum of 12 months of expected usable construction life at a temperature range of 0 to 120 degrees fahrenheit.

H - 24 - 1

Erosion Control Matting

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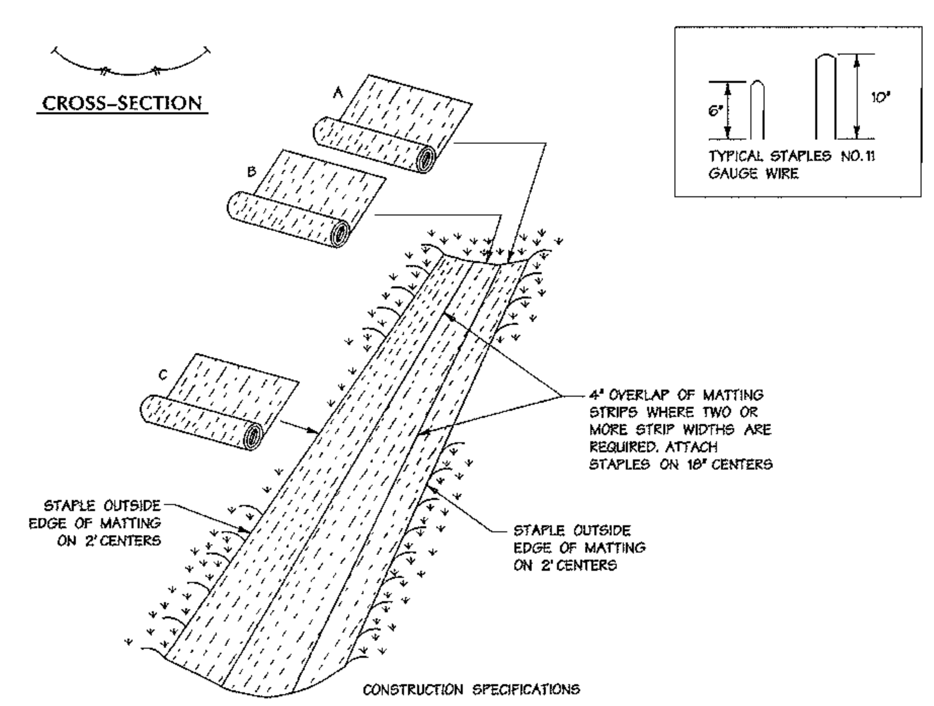

CONSTRUCTION SPECIFICATIONS

1. KEY-IN THE MATTING BY PLACING THE TOP ENDS OF THE MATTING IN A NARROW TRENCH, 6" IN DEPTH. BACKFILL THE TRENCH AND TAMP FIRMLY TO CONFORM TO THE CHANNEL CROSS-SECTION. SECURE WITH A ROW OF STAPLES ABOUT 4" DOWN SLOPE FROM THE TRENCH. SPACING BETWEEN STAPLES IN 6".
2. STAPLE THE 4" OVERLAP IN THE CHANNEL CENTER USING AN 18" SPACING BETWEEN STAPLES.
3. BEFORE STAPLING THE OUTER EDGES OF THE MATTING, MAKE SURE THE MATTING IS SMOOTH AND IN FIRM CONTACT WITH THE SOIL.
4. STAPLES SHALL BE PLACED 2' APART WITH 4 ROWS FOR EACH STRIP, 2 OUTER ROWS, AND 2 ALTERNATING ROWS DOWN THE CENTER.
5. WHERE ONE ROLL OF MATTING ENDS AND ANOTHER BEGINS, THE END OF THE TOP STRIP SHALL OVERLAP THE UPPER END OF THE LOWER STRIP BY 4', SHIPLAP FASHION. REINFORCE THE OVERLAP WITH A DOUBLE ROW OF STAPLES SPACED 6" APART IN A STAGGERED PATTERN ON EITHER SIDE.
6. THE DISCHARGE END OF THE MATTING LINER SHOULD BE SIMILARLY SECURED WITH 2 DOUBLE ROWS OF STAPLES.

NOTE: IF FLOW WILL ENTER FROM THE EDGE OF THE MATTING THEN THE AREA EFFECTED BY THE FLOW MUST BE KEYED-IN.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE G - 22 - 2 ***MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION***

Earth Dike

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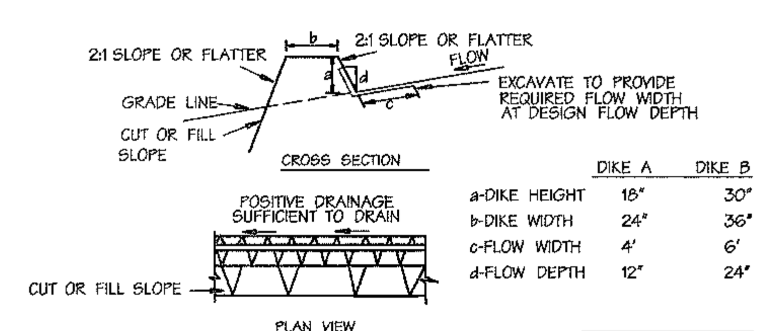

	DIKE A	DIKE B
a-DIKE HEIGHT	18"	30"
b-DIKE WIDTH	24"	36"
c-FLOW WIDTH	4'	6'
d-FLOW DEPTH	12"	24"

STANDARD SYMBOL A-2 B-3

FLOW CHANNEL STABILIZATION
GRADE 0.5% MIN. 10% MAX.

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

Construction Specifications

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 objectional 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.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE A - 1 - 6 ***MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION***

Stabilized Construction Entrance

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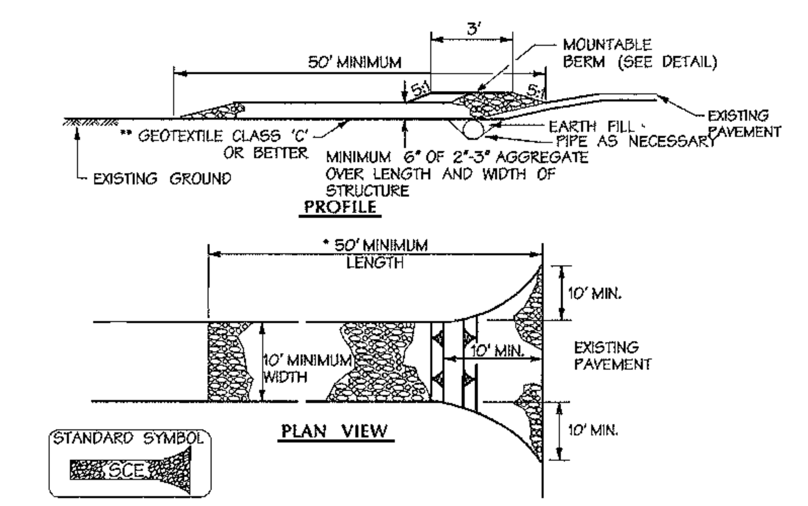

CONSTRUCTION SPECIFICATIONS

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 CLASS C (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.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE F - 17 - 3 ***MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION***

MDE PERMIT AND TRACKING No. 200266336

REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS.

Jim Myers / CB 7/1/03
U.S. NATURAL RESOURCE CONSERVATION SERVICE DATE

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

7/1/03
HOWARD S.C.D. DATE

CERTIFICATION BY THE ENGINEER:

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

John W. Rannochia Sr. 6-4-03
DATE

CERTIFICATION BY THE DEVELOPER:

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

6.23.03

6-04-03
Date

STATE OF MARYLAND — JOHN W. RANNOCHIA SR. — 10551 — REGISTERED PROFESSIONAL ENGINEER

Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

7-11-03
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

7/14/03
CHIEF, DEVELOPMENT ENGINEERING DIVISION CE DATE

7/16/03
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

7/21/03
DIRECTOR DATE

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA		LOT/PARCEL #
HO. CO. OFFICE CAMPUS	NA		852 & P10847

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15867-70	6 & 1	POR	24 & 25	2	6029

WATER CODE   SEWER CODE

TITLE

SEDIMENT AND EROSION CONTROL DETAILS AND SPECIFICATIONS

Des. By	RLH	Scale	AS SHOWN	Proj. No. 01001.C
Drn. By	WDE	Date	06/02/03	6 of 40
Chk. By	RLH	Approved		

SDP-03-026

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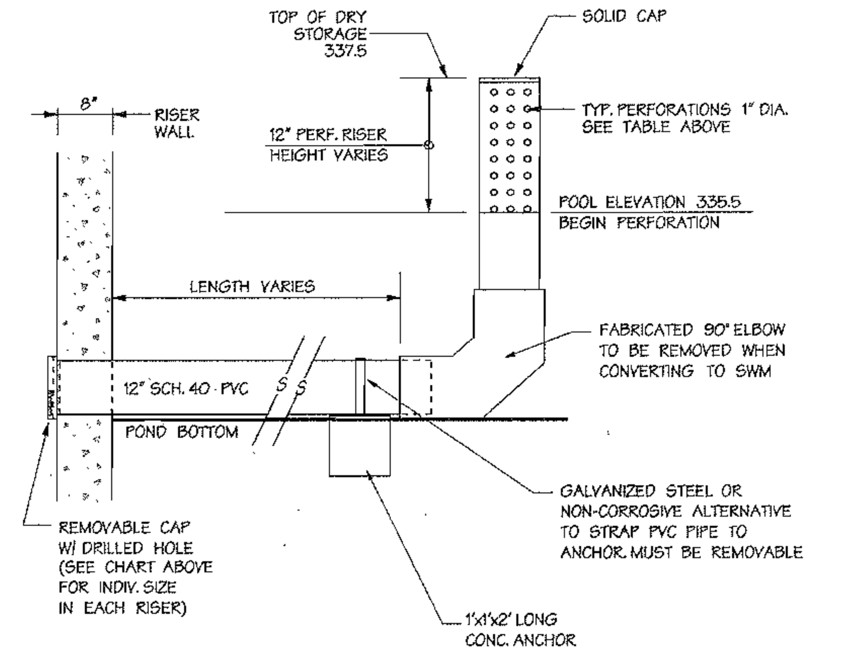
RISER #	LENGTH	WET POOL ELEV.	PERF. RISER HEIGHT	ORIFICE DRILLED HOLE SIZE	PERFORATION SPACING	PERFORATIONS PER VERT. FT.
BASIN 2	7'	335.5	2.0'	4"	2"	36



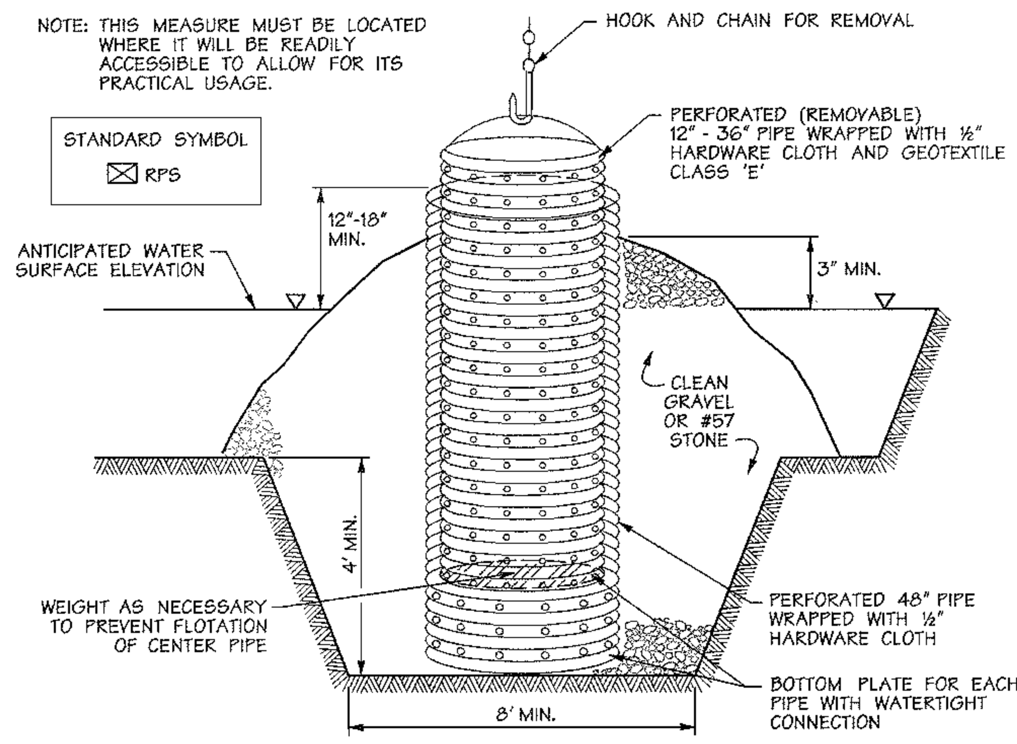
SEE SHEET 6 FOR BASIN DRAWDOWN DEVICE SPECIFICATIONS

SEE SHEET 14 FOR ESC CONTROL PLATE DETAIL

Sediment Control Draw-Down

Not to Scale

NOTE: THIS MEASURE MUST BE LOCATED WHERE IT WILL BE READILY ACCESSIBLE TO ALLOW FOR ITS PRACTICAL USAGE.



ELEVATION (CUT AWAY)

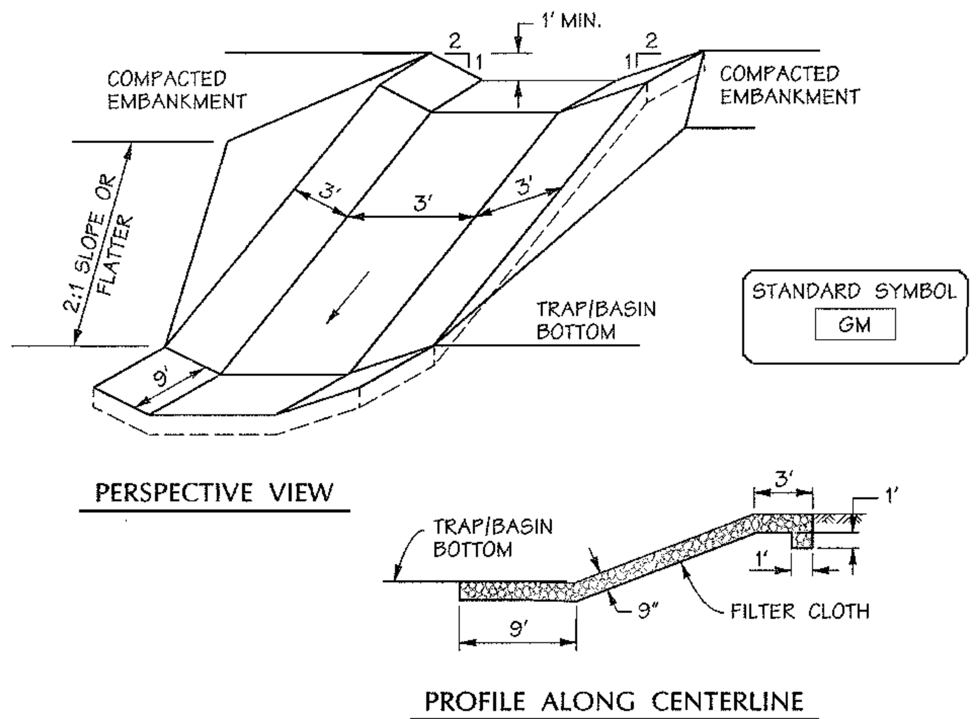
CONSTRUCTION SPECIFICATIONS

1. THE OUTER PIPE SHOULD BE 48" DIAMETER OR SHALL, IN ANY CASE, BE AT LEAST 4" GREATER IN DIAMETER THAN THE CENTER PIPE. THE OUTER PIPE SHALL BE WRAPPED WITH ½" 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 STAND PIPE (CENTER PIPE) SHOULD BE CONSTRUCTED BY PERFORATING A CORRUGATED OR PVC PIPE BETWEEN 12" AND 36" IN DIAMETER. THE PERFORATIONS SHALL BE ½" x 6" SLITS OR 1" DIAMETER HOLES 6" ON CENTER. THE CENTER PIPE SHALL BE WRAPPED WITH ½" HARDWARE CLOTH FIRST, THEN WRAPPED AGAIN WITH GEOTEXTILE CLASS E.
4. THE CENTER PIPE SHOULD EXTEND 12" TO 18" ABOVE THE ANTICIPATED WATER SURFACE ELEVATION OR RISER CREST ELEVATION WHEN DEWATERING A BASIN.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — D - 12 - 5 — MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Removable Pumping Station

Not to Scale



CONSTRUCTION SPECIFICATIONS

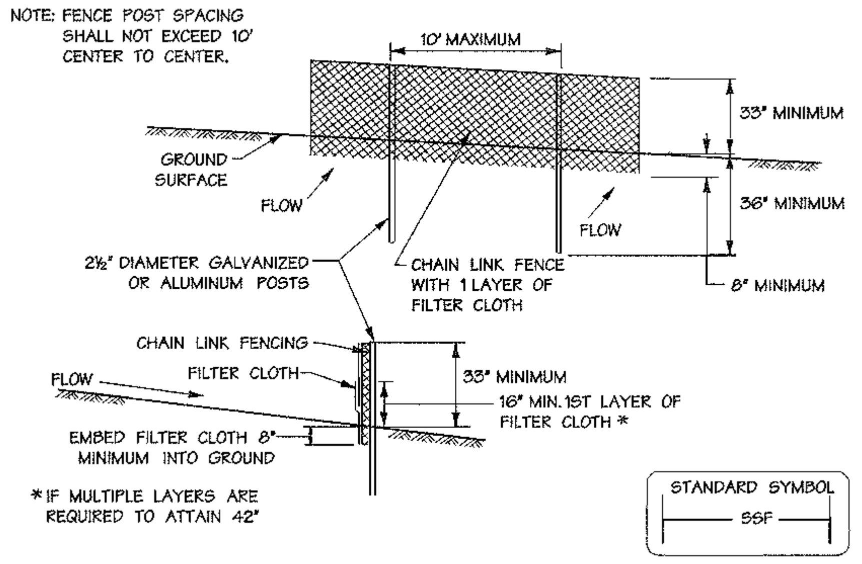
1. GABION INFLOW PROTECTION SHALL BE CONSTRUCTED OF 9' x 3' x 9" GABION BASKETS FORMING A TRAPEZOIDAL CROSS SECTION 1' DEEP, WITH 2:1 SIDE SLOPES, AND A 3' BOTTOM WIDTH.
2. GEOTEXTILE CLASS C SHALL BE INSTALLED UNDER ALL GABION BASKETS.
3. THE STONE USED TO FILL THE GABION BASKETS SHALL BE 4" - 7".
4. 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.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — B - 7 - 2 — MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Gabion Inflow Protection

Not to Scale

NOTE: FENCE POST SPACING SHALL NOT EXCEED 10' CENTER TO CENTER.



* IF MULTIPLE LAYERS ARE REQUIRED TO ATTAIN 42"

CONSTRUCTION SPECIFICATIONS

1. FENCING SHALL BE 42 INCHES IN HEIGHT AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST MARYLAND STATE HIGHWAY (SHA) DETAILS FOR CHAIN LINK FENCING. THE SPECIFICATION FOR A 6' FENCE SHALL BE USED, SUBSTITUTING 42" FABRIC AND 6' LENGTH POSTS.
2. THE POSTS DO NOT NEED TO BE SET IN CONCRETE.
3. CHAIN LINK FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIES OR STAPLES. THE LOWER TENSION WIRE, BRACE AND TRUSS RODS, DRIVE ANCHORS AND POST CAPS ARE NOT REQUIRED EXCEPT ON THE ENDS OF THE FENCE. THE CHAIN LINK FENCING SHALL BE SIX (6) GAUGE OR HEAVIER.
4. FILTER CLOTH SHALL BE FASTENED SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24" AT THE TOP AND MID SECTION.
5. FILTER CLOTH SHALL BE EMBEDDED A MINIMUM OF 8" INTO THE GROUND.
6. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6" AND FOLDED.
7. 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.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — H - 26 - 3 — MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Super Silt Fence

Not to Scale

DUST CONTROL SPECIFICATIONS

Temporary methods:

1. Mulches - see standards for vegetative stabilization with mulches only. Mulch should be crimped or tacked to prevent blowing.
2. Vegetative cover - see standards for temporary vegetative cover.
3. Tillage - to roughen surface and bring clods to the surface. This is an emergency measure which should be used before soil blowing starts. Begin plowing on windward side of site. Chisel-type plows spaced about 12 inches apart, spring-toothed harrows, and similar plows are examples of equipment which may produce the desired effect.
4. Irrigation - this is generally done as an an emergency treatment. Site is sprinkled with water until the surface is moist. repeat as needed. At no time should the site be irrigated to the point the runoff begins to flow.
5. Barriers - solid board fences, snow fences, burlap fences, straw bales, and similar material can be used to control air currents and soil blowing. Barriers placed at right angles to prevailing currents at intervals of about 10 times their height are affective in controlling soil blowing.
6. Calcium chloride - apply at a rate that will keep surface moist. May need retreatment.

Permanent methods:

1. Permanent vegetation - see standards for permanent vegetative cover, and permanent stabilization with sod. Existing trees or large shrubs may afford valuable protection if left in place.
2. Topsoiling - covering with less erosive soil materials. See standards for topsoiling.
3. Stone - cover surface with crushed stone or coarse gravel.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — H - 30 - 1 — MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Dust Control Specifications

Table 28. Stone Size

	SIZE RANGE	D_{50}	D_{100}	AASHTO	WEIGHT
NUMBER 57*	⅜" - 1½"	½"	1½"	M-43	N/A
NUMBER 1	2" - 3"	2½"	3"	M-43	N/A
RIP-RAP**	4" - 7"	5½"	7"	N/A	N/A
CLASS I	N/A	9.5"	15"	N/A	150lb max.
CLASS II	N/A	16"	24"	N/A	700lb max.
CLASS III	N/A	23"	34"	N/A	2000lb max.

* This classification is to be used on the inside face of stone outlets and check dams.
** This classification is to be used when ever small rip-rap is required. The State Highway Administration designation for this stone is Stone For Gabions (905.01.04)

Stone For Gabion Baskets

BASKET THICKNESS		SIZE OF INDIVIDUAL STONES	
INCHES	MM	INCHES	MM
6	150	3 - 5	75 - 125
9	225	4 - 7	100 - 175
12	300	4 - 7	100 - 175
18	460	4 - 7	100 - 175
36	910	4 - 12	100 - 300

NOTE: Recycled concrete equivalent may be substituted for all stone classifications. Recycled concrete equivalent shall be concrete broken into the sizes meeting the appropriate classification, shall contain no steel reinforcement, and shall have a density of 150 pounds per cubic foot.

Table 27 Geotextile Fabrics

CLASS	APPARENT OPENING SIZE MM. MAX.	GRAB TENSILE STRENGTH LB. MIN.	BURST STRENGTH PSI. MIN.
A	0.30 **	250	500
B	0.60	200	320
C	0.30	200	320
D	0.60	90	145
E	0.30	90	145
F (SILT FENCE)	0.40-0.80*	90	190

* US Std. Sieve CW-02215 ** .50 mm max. for Super Silt Fence

The properties shall be determined in accordance with the following procedures:
- Apparent opening size MSMT 323
- Grab tensile strength ASTMD 1682: 4x8" specimen, 1x2" clamps, 12"/min. strain rate in both principal directions of geotextile fabric.
- Burst strength ASTMD D 3786

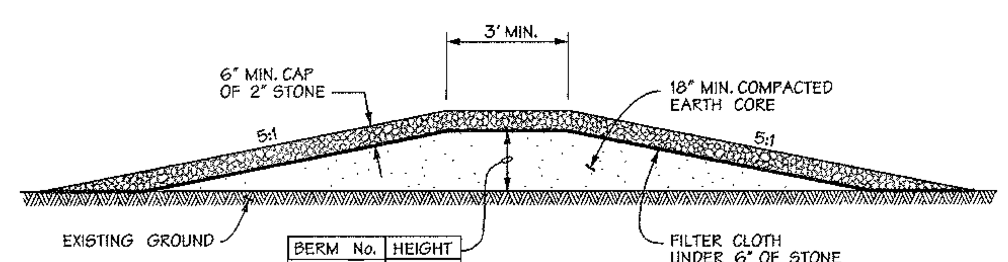
The fabric shall be inert to commonly encountered chemicals and hydrocarbons, and will be rot and mildew resistant. It shall be manufactured from fibers consisting of long chain synthetic polymers, and composed of a minimum of 85% by weight of polyolephins, polyesters, or polyamides. The geotextile fabric shall resist deterioration from ultraviolet exposure.

In addition, Classes A through E shall have a 0.01 cm./sec. minimum permeability when tested in accordance with MSMT 507, and an apparent minimum elongation of 20 percent (20%) when tested in accordance with the grab tensile strength requirements listed above.

Silt Fence
Class F geotextile fabrics for silt fence shall have a 50 lb./in. minimum tensile strength and a 20 lb./in. minimum tensile modules when tested in accordance with MSMT 509. The material shall also have a 0.3 gal./ft./min. flow rate and seventy-five percent (75%) minimum filtering efficiency when tested in accordance with MSMT 322. Geotextile fabrics used in the construction of silt fence shall resist deterioration from ultraviolet exposure. The fabric shall contain sufficient amounts of ultraviolet ray inhibitors and stabilizers to provide a minimum of 12 months of expected usable construction life at a temperature range of 0 to 120 degrees F.

H - 24 - 1

Geotextile Material Specifications



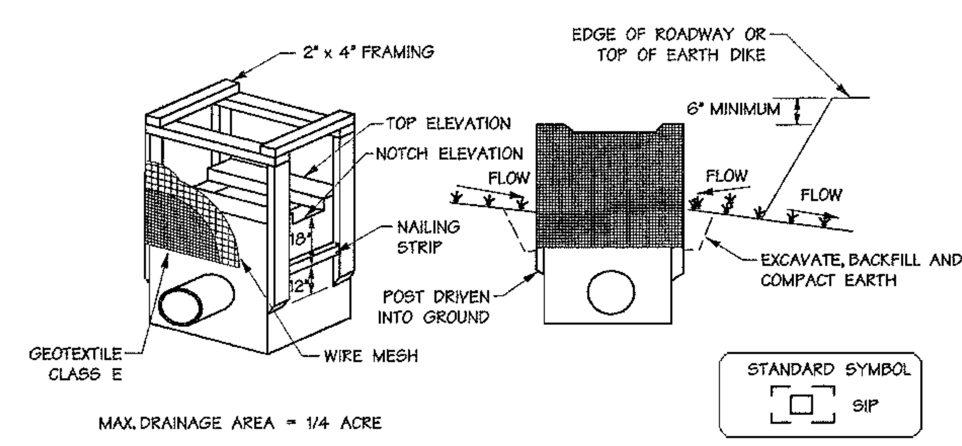
BERM No.	HEIGHT
A	18"
B	30"

FILTER CLOTH SHALL BE GEOTEXTILE CLASS 'C', OR BETTER

Sedctrl.cel / F175

Mountable Berm Detail

Not to Scale



MAX. DRAINAGE AREA = 1/4 ACRE

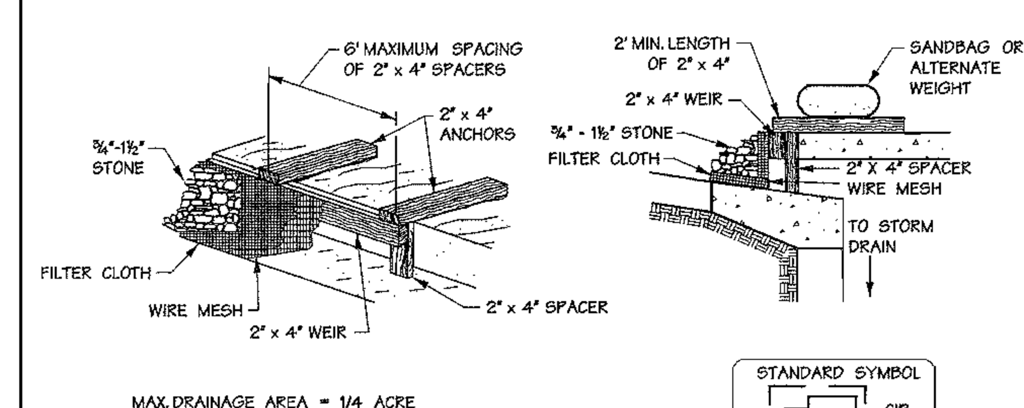
CONSTRUCTION SPECIFICATIONS

1. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18" BELOW THE NOTCH ELEVATION.
2. DRIVE THE 2" x 4" CONSTRUCTION GRADE LUMBER POSTS 1' INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE NAIL STRIPS BETWEEN THE POSTS ON THE ENDS OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2" x 4" FRAME USING THE OVERLAP JOINT SHOWN ON DETAIL. THE TOP OF THE FRAME (WEIR) MUST BE 6" BELOW ADJACENT ROADWAYS WHERE FLOODING AND SAFETY ISSUES MAY ARISE.
3. STRETCH THE ½" x ½" WIRE MESH TIGHTLY AROUND THE FRAME AND FASTEN SECURELY. THE ENDS MUST MEET AND OVERLAP AT A POST.
4. STRETCH THE GEOTEXTILE CLASS E TIGHTLY OVER THE WIRE MESH WITH THE GEOTEXTILE EXTENDING FROM THE TOP OF THE FRAME TO 18" BELOW THE INLET NOTCH ELEVATION. FASTEN THE GEOTEXTILE FIRMLY TO THE FRAME. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED, THEN FASTENED DOWN.
5. BACKFILL AROUND THE INLET IN COMPACTED 6" LAYERS UNTIL THE LAYER OF EARTH IS LEVEL WITH THE NOTCH ELEVATION ON THE ENDS AND TOP ELEVATION ON THE SIDES.
6. IF THE INLET IS NOT IN A SUMP, CONSTRUCT A COMPACTED EARTH DIKE ACROSS THE DITCH LINE DIRECTLY BELOW IT. THE TOP OF THE EARTH DIKE SHOULD BE AT LEAST 6" HIGHER THAN THE TOP OF THE FRAME.
7. THE STRUCTURE MUST BE INSPECTED PERIODICALLY AND AFTER EACH RAIN AND THE GEOTEXTILE REPLACED WHEN IT BECOMES CLOGGED.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — E - 16 - 5 — MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Standard Inlet Protection

Not to Scale



MAX. DRAINAGE AREA = 1/4 ACRE

CONSTRUCTION SPECIFICATIONS

1. ATTACH A CONTINUOUS PIECE OF ½" x ½" WIRE MESH (30" MINIMUM WIDTH BY THROAT LENGTH PLUS 4') TO THE 2" x 4" WEIR (MEASURING THROAT LENGTH PLUS 2') AS SHOWN ON THE STANDARD DRAWING.
2. PLACE A CONTINUOUS PIECE OF GEOTEXTILE CLASS E THE SAME DIMENSIONS AS THE WIRE MESH OVER THE WIRE MESH AND SECURELY ATTACH IT TO THE 2" x 4" WEIR.
3. SECURELY NAIL THE 2" x 4" WEIR TO A 9" LONG VERTICAL SPACER TO BE LOCATED BETWEEN THE WEIR AND THE INLET FACE (MAX. 4' APART).
4. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL (MINIMUM 2' LENGTHS OF 2" x 4" TO THE TOP OF THE WEIR AT SPACER LOCATIONS). THESE 2" x 4" ANCHORS SHALL EXTEND ACROSS THE INLET TOP AND BE HELD IN PLACE BY SANDBAGS OR ALTERNATE WEIGHT.
5. THE ASSEMBLY SHALL BE PLACED SO THAT THE END SPACERS ARE A MINIMUM 1' BEYOND BOTH ENDS OF THE THROAT OPENING.
6. FORM THE ½" x ½" WIRE MESH AND THE GEOTEXTILE FABRIC TO THE CONCRETE GUTTER AND AGAINST THE FACE OF THE CURB ON BOTH SIDES OF THE INLET. PLACE CLEAN ¾" X 1½" STONE OVER THE WIRE MESH AND GEOTEXTILE IN SUCH A MANNER TO PREVENT WATER FROM ENTERING THE INLET UNDER OR AROUND THE GEOTEXTILE.
7. THIS TYPE OF PROTECTION MUST BE INSPECTED FREQUENTLY AND THE FILTER CLOTH AND STONE REPLACED WHEN CLOGGED WITH SEDIMENT.
8. ASSURE THAT STORM FLOW DOES NOT BYPASS THE INLET BY INSTALLING A TEMPORARY EARTH OR ASPHALT DIKE TO DIRECT THE FLOW OF THE INLET.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — E - 16 - 5B — MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Curb Inlet Protection (COG or COS Inlets)

Not to Scale

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/16/03

DIRECTOR — DATE 7/24/03

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS.

U.S. NATURAL RESOURCE CONSERVATION SERVICE — 7/1/03 DATE

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

HOWARD S.C.D. — 7/1/03 DATE

CERTIFICATION BY THE ENGINEER:

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

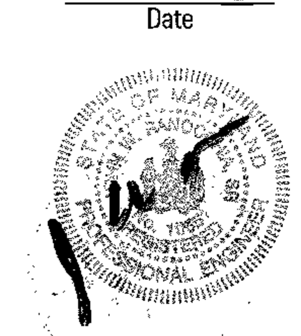
John W. Ranocchia, Jr. — 6-4-03 DATE

CERTIFICATION BY THE DEVELOPER:

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

6/23/03 DATE

6-04-03
Date



Professional Engr. No. 10551

MDE PERMIT AND TRACKING No. 200266336

DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
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(410) 296-3333
Fax 296-4705
A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
HO. CO. OFFICE CAMPUS	NA	852 & P10847

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15867-70	6 & 1	POR	24 & 25	2	6029

WATER CODE — SEWER CODE

TITLE
SEDIMENT AND EROSION CONTROL DETAILS (CONTINUED)

Des. By	RLH	Scale	AS SHOWN	Proj. No. 01001.C
Drn. By	WDE	Date	06/02/03	7 of 40
Chk. By	RLH	Approved		

SDP-03-026

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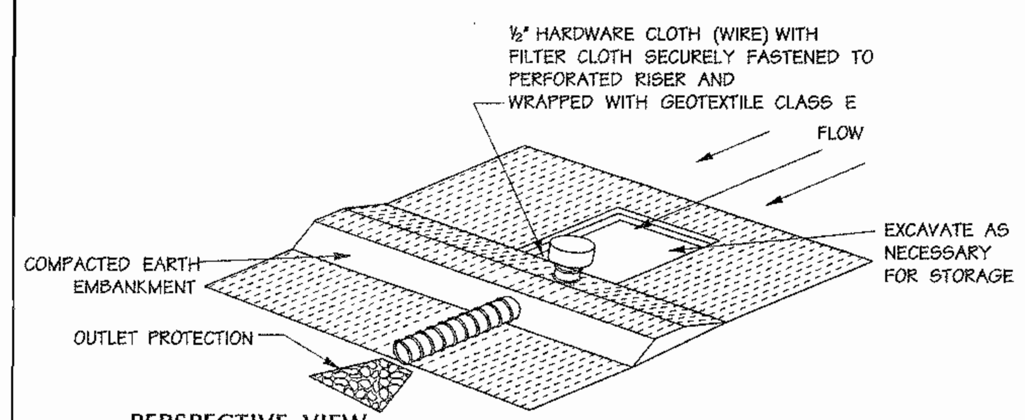
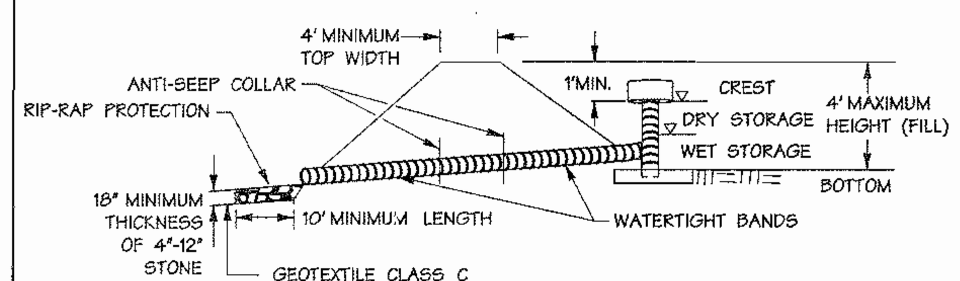


PERSPECTIVE VIEW



EMBANKMENT SECTION THROUGH RISER

NOTE: RISER EMBEDDED 9" INTO CONCRETE OR ¼" STEEL PLATE ATTACHED TO RISER WITH A CONTINUOUS WELD ON BOTTOM AND 2' OF STONE PLACED ON STEEL PLATE TWICE THE RISER DIAMETER (MIN.).

SEE SHEET 15 FOR DETAILS

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — C - 9 - 7 — *MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION*

Pipe Outlet Sediment Trap – ST I

Sequence of Construction:

Note: It is anticipated that the East (Phase 1) and West (Phase 2) sides will be worked concurrently. The Waterway Construction Permit (Phase 3) is anticipated to be released after the project construction has started. Contractor is restricted from performing any construction in stream, floodplain, wetland or wetland buffer until a Waterway Construction Permit has been obtained which outlines the specific impacts authorized by the Owner.

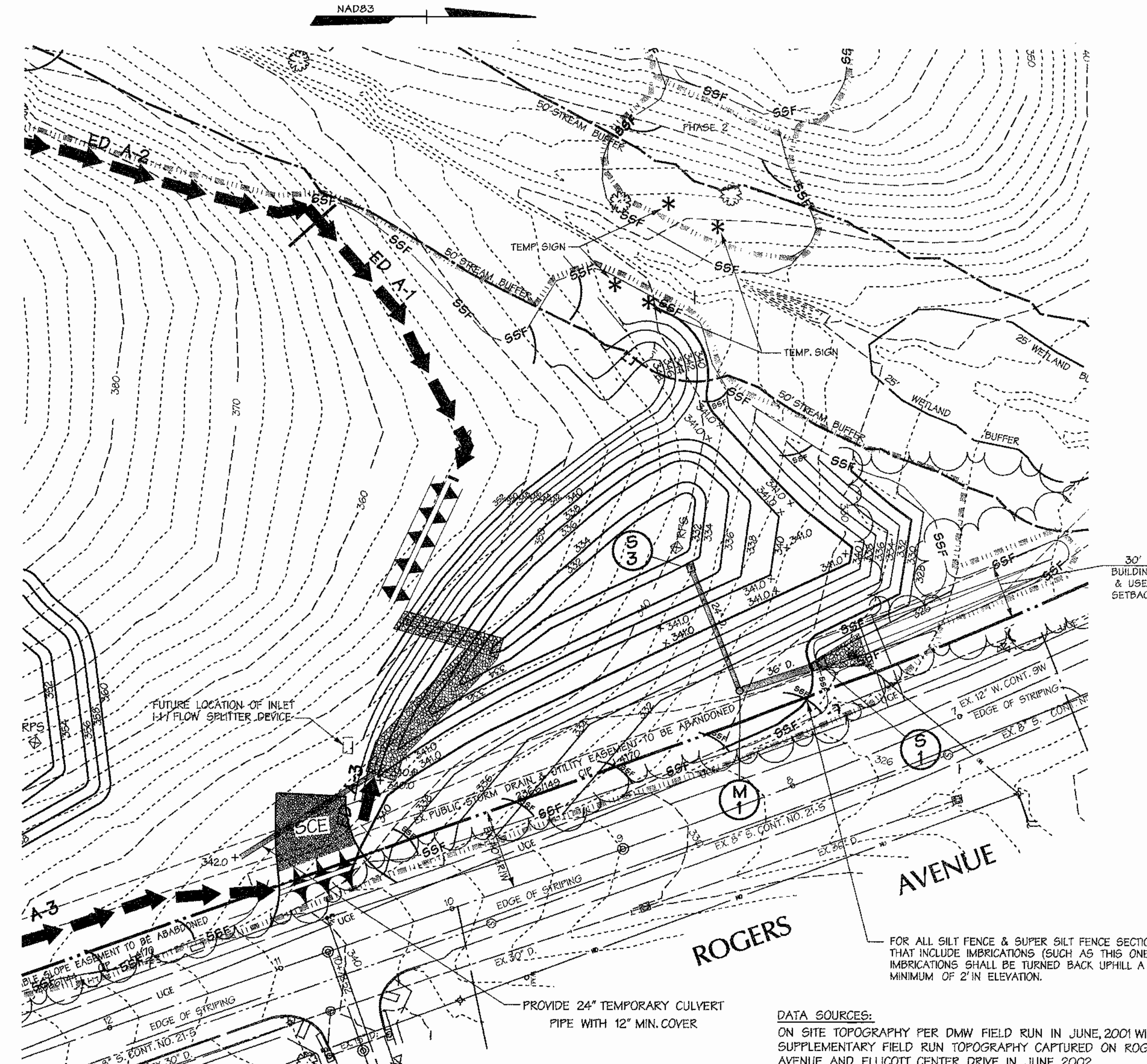
	Number of Days
1. Notify Maryland Department of Environment Nontidal Wetlands and Waterways Inspections and Compliance Sections at 410 631 3510 at least five days in advance of beginning any work in streams, 100 year Flood Plain, Nontidal Wetlands and Wetlands Buffers.	1
2. Notify HCD Department of Inspections 410 313 1855 at least 48 hours prior to beginning work.	1
3. If applicable, orange high visibility fence or super silt fence shall be manually installed along the limit of disturbance, where the limit is within 50 feet of the forest conservation easement, 100-year flood plain, wetlands, wetlands buffer, or stream buffer and as shown on sheets 4 and 5. This shall be completed by and inspected at the pre-construction meeting.	5
4. Install stabilized construction entrances at Ellicott Center Drive and at Rogers Ave.	1
5. Notify HCD Department of Inspection, upon completion of said installation.	1
6. Clear and grub for sediment and erosion control measures or devices only with the Sediment Control Inspector's permission.	14
7. Install Perimeter SSF; Sediment Basin #1, Sediment Trap #1 (see sheet 8 for interim conditions), SF and associated earth dikes. As part of sediment basin #1, install outflow barrel and subsequent storm drains downstream of it (S-3, M-1 and S-1) & outfall apron.	14
8. With the approval of the Sediment Control Inspector clear and grub remainder of site. For sediment control execute, maintain dust control per dust control specifications, sheet 7.	14
9. After first obtaining permission from Sediment Control Inspector, mass grade the East (Phase 1) and West (Phase 2) sides of the site by working the excavation to increase the drainage area into the sediment trap or basin. Contractor is to take great care that disturbance on the steep slopes is fully contained within the prescribed perimeter controls.	6 MONTHS
10. Construct the road, mass grading, including underground utilities. Remove abandoned portion of Ellicott Center Drive. Install retaining walls. Maintain positive outlet at Trap 1 with construction of a temporary opening in the retaining wall. Stabilize disturbed areas between forest buffer and retaining walls as soon as practical after mass grading is complete. Install CIP when inlets are constructed. When storm drains are constructed, the upper pipe out of each flow splitter (I-1, I-9) shall be blocked so that all flow drains into sediment basin 1 and trap 1 respectively. See sheet 26.	3 MONTHS
11. Once Waterway Construction Permit is issued, install sediment controls for bottomless arch located in the stream buffer (Phase 3), without entering the stream at any time, install bottomless arch, stabilize with ECM/seed. For conditions of MDE Permit, see tracking number 200266336	1 MONTH
12. Upon stabilization of site with established vegetation and with permission of the Sediment Control Inspector, remove all sediment control devices except for Sediment Basin 1. (see below) Stabilize newly disturbed areas. Flush storm drain system. Install temp. road barrier as needed until road is opened for use. a. Sediment basin 1 shall not yet be converted to a SWM facility but shall undergo several changes. The draw-down device shall be removed. A horizontal drain-down pipe shall immediately replace the draw-down device, so that it shall remain dry (and not function as a basin) until the next phase.	5
13. Perform periodic maintenance of site including sediment basin 1 and general maintenance of stabilized areas.	

MDE PERMIT AND TRACKING No. 200266336

NOTE:
DO NOT DISTURB OR GRADE IN STREAM OUTSIDE OF L.O.D. UNTIL MDE PERMIT IS ISSUED. POST FOUR TEMP. SIGNS ON 4'x4' WOOD POST @ 5' HEIGHT STATING: 'STREAM DISTURBANCE PROHIBITED - NO ACCESS BEYOND THIS POINT'.

LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- MAJOR CONTOURS
- MINOR CONTOURS
- STREAM CENTERLINE
- STREAM BUFFER
- WETLAND LIMIT
- WETLAND BUFFER
- EXISTING FOREST EDGE
- EXISTING ROADS
- ED A-1 — EARTH DIKE
- SSF — SUPER SILT FENCE
- SF — SILT FENCE
- GM — GABION INFLOW PROTECTION
- LIMIT OF DISTURBANCE
- PROPOSED TREELINE
- PROPOSED GUARD RAIL
- TREE PROTECTION FENCE
- SCE — STABILIZED CONSTRUCTION ENTRANCE



Sediment Basin #1 Interim Condition

SCALE: 1" = 50'

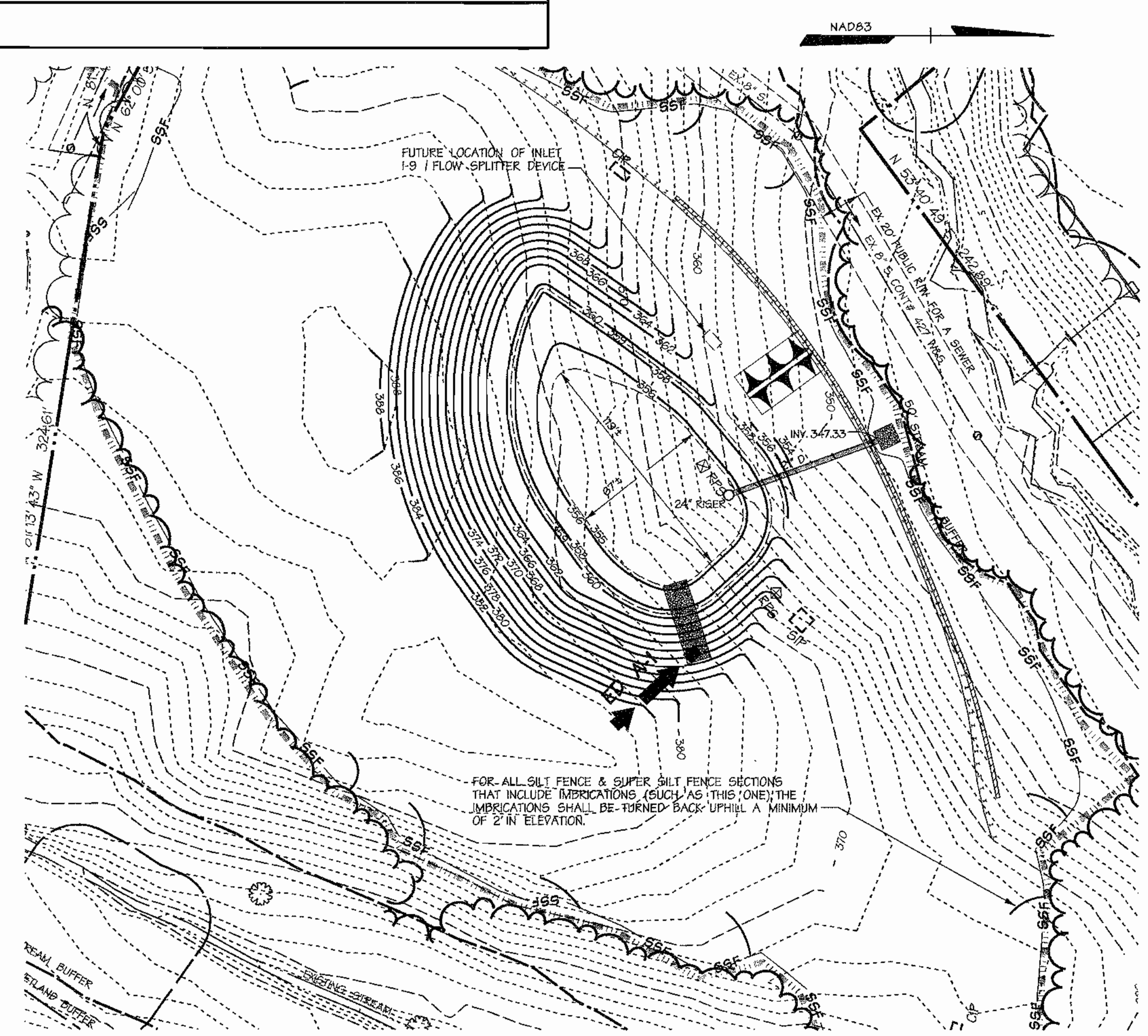
DATA SOURCES:
ON SITE TOPOGRAPHY PER DMW FIELD RUN IN JUNE, 2001 WITH SUPPLEMENTARY FIELD RUN TOPOGRAPHY CAPTURED ON ROGERS AVENUE AND ELLICOTT CENTER DRIVE IN JUNE 2002.
WETLANDS WERE DELINEATED AND FIELD LOCATED BY DMW IN FEBRUARY, 2001. BOUNDARY PER MILDENBERG BOENDER & ASSOC., DATED DECEMBER 02, 1999.
NOTE:
ALL STREAMS ON SITE ARE PERENNIAL.

CONSTRUCTION SPECIFICATIONS

1. THE AREA UNDER THE EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED OF ANY VEGETATION AND ROOT MAT. THE POOL AREA SHALL BE CLEARED.
2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS OR OTHER WOODY VEGETATION AS WELL AS OVERSIZED STONES, ROCKS, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHALL BE COMPACTED BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
3. THE TOTAL TRAP VOLUME AS MEASURED FROM THE BOTTOM TO RISER CREST ELEVATION SHALL BE 3600 CUBIC FEET PER ACRE OF DRAINAGE AREA (SEE TABLE 9). THE TOP OF EMBANKMENT MUST BE ± 1' ABOVE THE RISER CREST ELEVATION.
4. SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ONE HALF OF THE WET STORAGE DEPTH OF THE TRAP (900 CF/AC). THE SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
5. THE STRUCTURE SHALL BE INSPECTED PERIODICALLY AND AFTER EACH RAIN AND REPAIRS MADE AS NECESSARY.
6. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE ABATED. ONCE CONSTRUCTED, THE TOP AND OUTSIDE FACE OF THE EMBANKMENT SHALL BE STABILIZED WITH SEED AND MULCH. POINTS OF CONCENTRATED INFLOW SHALL BE PROTECTED IN ACCORDANCE WITH GRADE STABILIZATION STRUCTURE CRITERIA. THE REMAINDER OF THE INTERIOR SLOPES SHOULD BE STABILIZED (ONE TIME) WITH SEED AND MULCH UPON TRAP COMPLETION AND MONITORED AND MAINTAINED EROSION FREE DURING THE LIFE OF THE TRAP.
7. THE STRUCTURE SHALL BE REMOVED AND AREA STABILIZED WHEN THE DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.
8. ALL CUT AND FILL SLOPES SHALL BE 2:1 OR FLATTER.
9. ALL PIPE CONNECTIONS SHALL BE WATERTIGHT.
10. ABOVE THE WET STORAGE ELEVATION, THE RISER SHALL BE PERFORATED WITH ½" WIDE BY 6" LONG SLITS OR 1" DIAMETER HOLES SPACED 6" VERTICALLY AND HORIZONTALLY. NO PERFORATIONS WILL BE ALLOWED WITHIN 6" OF THE HORIZONTAL BARREL.
11. THE RISER SHALL BE WRAPPED WITH ½" HARDWARE CLOTH (WIRE) THEN WRAPPED WITH GEOTEXTILE CLASS E. THE FILTER CLOTH SHALL EXTEND 6" ABOVE THE HIGHEST SILT AND 6" BELOW THE LOWEST SILT. WHERE ENDS OF FILTER CLOTH COME TOGETHER, THEY SHALL BE OVERLAPPED, FOLDED AND FASTENED TO PREVENT BYPASS. FILTER CLOTH SHALL BE REPLACED AS NECESSARY TO PREVENT CLOGGING.
12. STRAPS OR CONNECTING BANDS SHALL BE USED TO HOLD THE FILTER CLOTH AND WIRE FABRIC IN PLACE. THEY SHALL BE PLACED AT THE TOP AND BOTTOM OF THE CLOTH.
13. FILL MATERIAL AROUND THE PIPE SPILLWAY SHALL BE HAND COMPACTED IN 4" LAYERS. A MINIMUM OF 2' OF HAND-COMPACTED BACKFILL SHALL BE PLACED OVER THE PIPE SPILLWAY BEFORE CROSSING IT WITH CONSTRUCTION EQUIPMENT.
14. THE RISER SHALL BE ANCHORED WITH EITHER A CONCRETE BASE OR STEEL PLATE BASE TO PREVENT FLOTATION. CONCRETE BASES SHALL BE AT LEAST TWICE THE RISER DIAMETER AND 12" DEEP WITH THE RISER EMBEDDED 9". STEEL PLATE BASES SHALL BE AT LEAST TWICE THE RISER DIAMETER, ¼" MINIMUM THICKNESS AND ATTACHED TO THE BOTTOM OF THE RISER BY A CONTINUOUS WELD TO FORM A WATERTIGHT CONNECTION. THEN PLACE 2' OF STONE, GRAVEL OR TAMPED EARTH ON THE PLATE.
15. ANTISEEP COLLARS SHALL BE CONSTRUCTED IN ACCORDANCE WITH PLANS (REF. TABLE 16 AND DETAIL C-10-23 AND C-10-24).
16. CONCENTRIC TRASH RACK AND ANTI-VORTEX DEVICE DESIGN DETAILS ARE ON DETAIL C-10-26 AND C-10-26A.
17. REFER TO SECTION D FOR DEWATERING REQUIREMENTS OF SEDIMENT TRAPS.
18. OUTLET - AN OUTLET SHALL BE PROVIDED, WHICH INCLUDES A MEANS OF CONVEYING THE DISCHARGE IN AN EROSION FREE MANNER TO AN EXISTING STABLE CHANNEL.
19. WHERE DISCHARGE OCCURS AT THE PROPERTY LINE, LOCAL ORDINANCES AND DRAINAGE EASEMENT REQUIREMENTS SHALL BE MET.

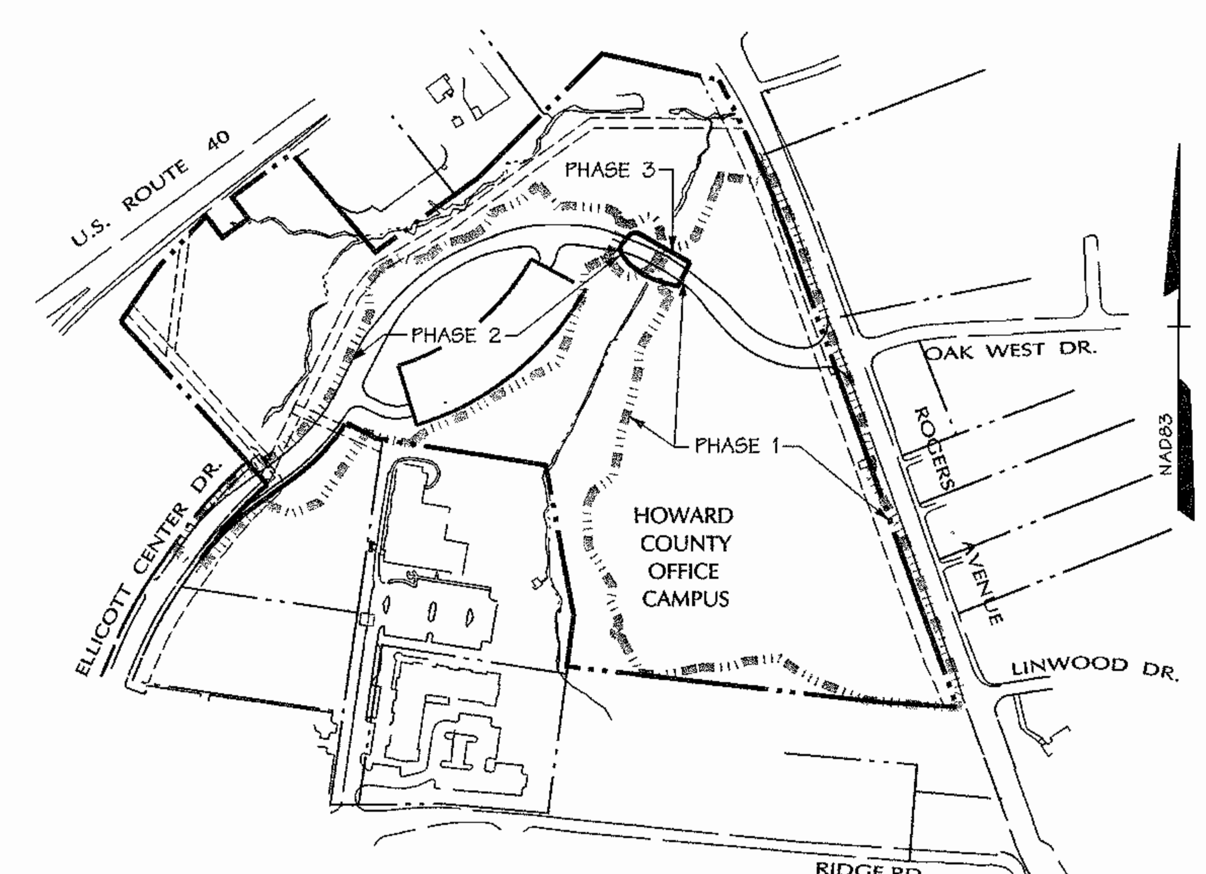
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — C - 9 - 7A — *MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION*

Pipe Outlet Sediment Trap – ST I



TRAP #1 Interim Condition

SCALE: 1" = 50'



Phasing Schematic

NOT TO SCALE

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

[signature] 7-11-03
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

[signature] 7/14/03
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

[signature] 7/16/03
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

[signature] 7/21/03
DIRECTOR — DATE

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue Towson, Maryland 21286 (410) 296-3333 Fax 296-4705

A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
HO. CO. OFFICE CAMPUS	NA	852 & P10847
PLAT# OR L/F: 15867-70 · BLOCK #: 6 & 1 · ZONE: POR	TAX/ZONE MAP: 24 & 25 · ELECT. DISTRICT: 2	CENSUS TRACT: 6029
WATER CODE	SEWER CODE	

TITLE
SEDIMENT AND EROSION CONTROL DETAILS AND SPECIFICATIONS (CONTINUED)

Des. By RLH	Scale AS SHOWN	Proj. No. 01001.C
Drn. By WDE	Date 06/02/03	8 of 40
Chk. By RLH	Approved	

REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS.

[signature] 7/1/03
U.S. NATURAL RESOURCE CONSERVATION SERVICE — DATE

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

[signature] 7/1/03
HOWARD S.C.D. — DATE

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

[signature] John H. Ranocchia Jr — DATE

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

[signature] 6/23/03

6-04-03
Date

Professional Engr. No. 10551

SDP-03-026

rhurwitz 6/4/2003 8:21:30 AM rhurwitz d:\hpm\0100\hpm 01001

STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

SECTION I - VEGETATIVE STABILIZATION METHODS AND MATERIALS

A. SITE PREPARATION

I. Install erosion and sediment control structures (either temporary or permanent) such as diversions, grade stabilization structures, berms waterways, or sediment control basins.

II. Perform all grading operations at right angles to the slope. Final grading and shaping is not usually necessary for temporary seeding.

III. Schedule required soil test to determine soil amendment composition and application rates for sites having disturbed area over 5 acres.

B. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)

I. Soil test 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 analysis.

II. Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers shall be delivered to the site fully labeled according to the applicable state fertilizer laws and shall bear the name, trade name or trademark and warrantee of the producer.

III. Lime materials shall be ground limestone (hydrated or brunt 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.

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

C. SEEDBED PREPARATION

I. TEMPORARY SEEDING

A. Seedbed preparation shall consist of loosening soil to a depth of 3 inches to 5 inches by means of suitable agricultural or construction equipment, such a 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 counter of the slope.

B. Apply fertilizer and lime as prescribed on the plans.

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

II. PERMANENT SEEDING

A. Minimum soil conditions required for permanent vegetative establishment:

1. Soil ph shall be between 6.0 and 7.0.
2. Soluble salts shall be less than 500 parts per million (PPM).
3. The soil shall contain less than 40% clay but enough fine grained material (> 30% silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception is if Lovegrass or Serecia Lespedeza is to be planted. Then a sandy soil (< 30% silt plus clay) would be acceptable.
4. Soil shall contain 1.5% minimum organic matter by weight.
5. Soil must contain sufficient pore space to permit adequate root penetration.
6. If these conditions cannot be met by the soils on site, adding topsoil is required in accordance with Section 21 - Standard and Specification for Topsoil.

B. 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 inches 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.

C. Apply soil amendments as per soil test or as included on the plans.

D. Mix soil amendments into the top 3 - 5 inches of topsoil by disking or other suitable means. Lawn areas should be raked to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Where site conditions will not permit normal seedbed 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 - 3 inches of soil should be loose and friable. Seedbed loosening may not be necessary on newly disturbed areas.

D. SEED SPECIFICATIONS

I. All seed must meet the requirements of the Maryland State Seed Law. All seed shall be subject to re-testing by a recognized seed laboratory. All seed used shall have been tested within the 6 months immediately preceding the date of sowing such material on this job.

Note: Seed tags shall be made available to the inspector to verify type and rate of seed used.

II. Inoculant - The inoculant for treating legume seed in the seed mixtures shall be a pure culture of nitrogen-fixing bacteria prepared specifically for the species. Inoculants shall not be used later than the date indicated on the container. Add fresh inoculant as directed on package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75-80 F. can weaken bacteria and make the inoculant less effective.

E. METHODS OF SEEDING

I. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer), broadcast or drop seeder, or cultipacker seeder.

A. If fertilizer is being applied at the time of seeding, the application rates amounts will not exceed the following:
Nitrogen; maximum of 100 pounds per acre total of soluble
Nitrogen; P205 (phosphorous): 200 pounds per acre; K20 (potassium): 200 pounds per acre.

B. 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 use burnt or hydrated lime when hydroseeding.

C. Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.

II. Dry Seeding: This includes use of conventional drop or broadcast spreaders.

A. Seed spread dry shall be incorporated into the subsoil at the rates prescribed on the temporary or permanent seeding summaries or tables 25 or 26. The seeded area shall then be rolled with a weighed roller to provide good seed soil contact.

B. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

III. Drill or cultipacker seeding: Mechanized seeders that apply and cover seed with soil.

A. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least ¼ inch of soil covering.

Seedbed must be firm after planting.

B. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

F. MULCH SPECIFICATIONS (IN ORDER OF PREFERENCE)

I. Straw shall consist of thoroughly threshed wheat, rye or oat straw, reasonably bright in color, and shall not be musty, moldy, caked, decayed, or excessively dusty and shall be free of noxious weeds seeds as specified in the Maryland Seed Law.

II. Wood cellulose fiber mulch (WCFM)

A. WCFM shall consist of specially prepared wood cellulose processed into a uniform fibrous physical state.

B. WCFM shall be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.

C. WCFM, including dye shall contain no germination or growth inhibiting factors.

D. 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 in contact with the soil without inhibiting the growth of the grass seedings.

E. WCFM material shall contain no elements or compounds at concentration levels that will be phyto-toxic.

F. WCFM must conform to the following physical requirements: Fiber length to approximately 10 mm., diameter approximately 1mm., ph range of 4.0 to 8.5, ash content of 1.6% maximum and water holding capacity of 90% minimum.

Note: Only sterile straw mulch should be used in areas where one species of grass is desired.

G. MULCHING SEEDED AREAS - Mulch shall be applied to all seeded areas where one species of grass is desired.

I. If grading is completed outside of the seeding season, mulch alone 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.

II. When straw mulch is used, it shall be spread over all seeded areas at the rate of 2 tons per acre. Mulch shall be applied in a uniform loose depth of between 1inches and 2 inches. Mulch applied shall achieve a uniform distribution and depth so that the surface is not exposed. If a mulch anchoring tool is to be used, the rate should be increased to 2.5 tons per acre.

III. Wood cellulose fiber used as a mulch shall be applied at a net dry weight of 1,500 pounds per 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.

H. SECURING STRAW MULCH - 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:

I. A mulch anchoring tool is a tractor drawn implement design to punch and anchor mulch into the soil surface a minimum of two (2) inches. This practice is most effective 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.

II. Wood cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 pounds per 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.

III. Application of liquid binders should be heavier at the edges where wind catches mulch, such as in valleys or on crest of banks. The remainder of area should appear uniform after binder application. Synthetic binders - such as Acrylic DLR (agro-tack), DCA-70, Petroset, Terra Tax II, Terra Tack AR or other approved equal may be used at rates recommended by the manufacturer to anchor mulch.

IV. 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.

SECTION II - TEMPORARY SEEDING

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.

Seed Mixture (Hardiness Zone 6B)					Fertilizer Rate (10-10-10)	Lime Rate
No.	Species	Application Rate (Lb./Ac.)	Seeding Dates	Seeding Depths		
1	Annual Ryegrass	50	2/1 - 4/30 8/15 - 11/1	¼"-½"	600 Lbs./Ac. (15 Lbs./1000 SF)	2 Tons/Ac. (100 Lbs./1000 SF)
2	Weeping Lovegrass	4	5/1 - 8/14	¼"-½"		

SECTION III - PERMANENT SEEDING

Seeding grass and legumes to establish ground cover for a minimum of one year on disturbed areas generally receiving low maintenance.

Seed Mixture No. 3 (Hardiness Zone 6B)					Fertilizer Rate (10-20-20)			Lime Rate
%	Species	Application Rate (Lb./Ac.)	Seeding * Dates	Seeding Depths	N	P205	K20	
85	Rebel II Tall Fescue	125	3/1 - 5/15 8/15 - 11/15	¼"-½"	90 Lb./Ac. (2 Lb./1000 Sq.Ft.)	175 Lb./Ac. (4 Lb./1000 Sq.Ft.)	175 Lb./Ac. (4 Lb./1000 Sq.Ft.)	2 Tons/Ac. (100 Lb./1000 Sq.Ft.)
10	Pennfine Perennial Ryegrass	15						
5	Kenblue Kentucky Bluegrass	10						

* For 5-16 through 8-14 add two (2) pounds of Weeping Lovegrass per acre or ten (10) pounds of Millet per acre to seed mixture (i.e. Mix #3 shown).

SECTION IV - SOD

To provide quick cover on disturbed areas (2:1 grade or flatter)

A. GENERAL SPECIFICATIONS

I. Class of turfgrass sod shall be Maryland or Virginia State certified or approved. Sod labels shall be made available to the job foreman and inspector.

II. Sod shall be machine cut at a uniform soil thickness of¾", plus or minus¼", at the time of cutting. Measurement for thickness shall exclude top growth and thatch. Individual pieces of sod shall be cut to the suppliers width length. Maximum allowable deviation from standard widths and lengths shall be 5 percent. Broken pads and torn or uneven ends will not be acceptable.

III. Standard size sections of sod shall be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.

IV. Sod shall not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.

V. Sod shall be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period shall be approved by an agronomist or soil scientist prior to its installation.

B. SOD INSTALLATION

I. During periods of excessively high temperature or in areas having dry subsoil, the subsoil shall be lightly irrigated immediately prior to laying the sod.

II. The first row of sod shall be laid in a straight line with subsequent rows placed parallel to and tightly wedged against each other. Lateral joints shall be staggered to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which air drying of the roots.

III. Wherever possible, sod shall be laid with the long edges parallel to the contour and with staggering joints. Sod shall be rolled and tamped, pegged or otherwise secured to prevent slippage on slopes and to ensure solid contact between sod roots and the underlying soil surface.

IV. Sod shall be watered immediately following rolling or tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. the operations laying, tamping and irrigating for any piece of sod shall be completed within eight hours.

C. SOD MAINTENANCE

I. In the absence of adequate rainfall, watering shall be performed daily or as often as necessary during the first week and in sufficient quantities to maintain moist soil to a depth of 4 inches. Watering should be done during the heat of the day to prevent wilting.

II. After the first week, sod watering is required as necessary to maintain adequate moisture content.

III. The first mowing of sod should not be attempted until the sod is firmly rooted. No more than 1/3 of the grass leaf shall be removed by the initial cutting or subsequent cuttings. Grass height shall be maintained between 2 inches and 3 inches unless otherwise specified.

SECTION V - TURFGRASS ESTABLISHMENT

Areas where turfgrass may be desired may include lawns, parks, playgrounds, and commercial sires which will receive a medium high level of maintenance. Areas to receive seed shall be tilled by disking or other approved methods to a depth of 2 to 4 inches, leveled and raked to prepare a proper seedbed. Stones and debris over 1½inches in diameter shall be removed. The resulting seedbed shall be in such condition that future mowing of grasses will pose no difficulty.

Note: Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line.

A. TURFGRASS MIXTURES

I. Kentucky Bluegrass - Full sun mixture - For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended certified Kentucky Bluegrass cultivars seeding rate: 1.5 to 2.0 pounds per 1000 square feet. A minimum of three Bluegrass cultivars should be chosen ranging from a minimum of 10% to a maximum of 35% of the mixture by weight.

II. Kentucky Bluegrass/Perennial Rye - Full sun mixture - For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass cultivars/certified Kentucky Bluegrass seeding rate: 2 pounds mixture per 1000 square feet. A minimum of 3 Kentucky Bluegrass cultivars must be chosen, with each cultivar ranging from 10% to 35% of the mixture by weight.

III. Tall Fescue/Kentucky Bluegrass - Full sun mixture - For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes; certified Tall Fescue cultivars 95-100%, certified Kentucky Bluegrass cultivars 0 - 5%, seeding rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.

IV. Kentucky Bluegrass/Fine Fescue - Shade mixture - For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes; certified Kentucky Bluegrass cultivars 30-40% and certified Fine Fescue and 60-70%. Seeding rate: 1½- 3 pounds per 1000 square feet. A minimum of 3 Kentucky Bluegrass cultivars must be chosen. With each cultivar ranging from a minimum of 10% to a maximum of 35% of the mixture by weight.

Note: Turfgrass varieties should be selected form those listed in the most current University of Maryland publication, agronomy mimeo number 77, "Turfgrass Cultivar Recommendations for Maryland".

B. IDEAL TIMES OF SEEDING

Western Maryland: March 15 - June 1, August 1 - October 1 (hardiness zones - 5B, 6A).

Central Maryland: March 1 - May 15, August 15 - October 15 (hardiness zone - 6B).

Southern Maryland, Eastern Shore: March 1 - May 15, August 15 - October 15 (hardiness zones - 7A , 7B).

C. IRRIGATION

If soil moisture is different, supply new seedlings with adequate water for plant growth (1/2" - 1" every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

D. REPAIRS AND MAINTENANCE

Inspect all seeded areas for failures and make necessary repairs, replacements, and reseedings within the planting season.

I. Once the vegetation is established, the site shall have 95% groundcover to be considered adequately stabilized.

II. If the stand provides less than 40% ground coverage, re-establish following original lime, fertilizer, seedbed preparation and seeding recommendations.

III. If the stand provides between 40% and 94% ground coverage, overseeding and fertilizing using half of the rates originally applied may be necessary.

IV. Maintenance fertilizer rates for permanent seedings are shown in Table 24, for lawns and other medium high maintenance turfgrass areas, refer to the University of Maryland publication "Lawn Care in Maryland" bulletin number 171.

21.0 STANDARD 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

I. This practice is limited to areas having 2:1 or flatter slopes where:

a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.

b. 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.

c. The original soil to be vegetated contains material toxic to plant growth.

d. The soil is so acidic that treatment with limestone is not feasible.

II. 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

I. Topsoil salvages from the existing site may be used provided that is meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-SCS in cooperation with Maryland Agricultural Experimental Station.

II. Topsoil Specifications - Soil to be used as topsoil must meet the following:

i. Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate 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 1-1/2¾₆ in diameter.

ii. Topsoil must be free of plants or plant parts such as bermuda grass, quackgrass, Johnsongrass, nutsedge, poison ivy, thistle, or others as specified.

iii. 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.

II. For sites having disturbed areas under 5 acres:

i. On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:

a. 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.

b. Organic content of topsoil shall be not less than 1.5 percent by weight.

c. Topsoil having soluble salt content greater than 500 parts per million shall not be used.

d. No sod 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 phyto-toxic materials.

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

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

V. Topsoil Application

i. When topsoiling, maintain needed erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slope Silt Fence and Sediment Traps and Basins.

ii. Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4" - 8" higher in elevation.

iii. 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.

iv. 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 seedbed preparation.

VI. 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:

i. Composted Sludge Material for use as a soil conditioner for sites having disturbed areas over 5 acres shall be tested to prescribe amendments and for sites having disturbed areas under 5 acres shall conform to the following requirements:

a. Composted sludge shall be supplied by, or originate from, a person or persons that are permitted (at the time of acquisition of the compost) by the Maryland Department of the Environment under COMAR 26.04.06.

b. 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.

c. Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.

iv. Composted sludge shall be amended with a potassium fertilizer applied at a rate of 4 lb/1,000 square feet, and 1/3 the normal lime application rate.

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

REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS.

U.S. NATURAL RESOURCE CONSERVATION SERVICE — DATE 7/1/03

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

HOWARD S.C.D. — DATE 7/1/03

CERTIFICATION BY THE ENGINEER:

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

John W. Ranocchia, Jr. — DATE 6-4-03

CERTIFICATION BY THE DEVELOPER:

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

DATE 6-23-03

MDE PERMIT AND TRACKING No. 200266336

6-04-03
Date

Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/16/03

DIRECTOR — DATE 7/21/03

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME: HO. CO. OFFICE CAMPUS	SECTION/AREA: NA		LOT/PARCEL #: 852 & P10847
PLAT# OR L/F: 15867-70 · BLOCK #: 6 & 1 · ZONE: POR	TAX/ZONE MAP: 24 & 25	ELECT. DISTRICT: 2	CENSUS TRACT: 6029
WATER CODE	SEWER CODE		

TITLE
SEDIMENT AND EROSION CONTROL SPECIFICATIONS

Des. By	RLH	Scale AS SHOWN	Proj. No. 01001.C	
Drn. By	WDE	Date 06/02/03	9 of 40	
Chk. By	RLH	Approved		

SDP-03-026

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BORING LOG — SWM-1

FROEHLING & ROBERTSON, INC. — SINCE 1881
GEOTECHNICAL • ENVIRONMENTAL • MATERIALS
ENGINEERS • LABORATORIES
"OVER ONE HUNDRED YEARS OF SERVICE"

Report No: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: SWM-1 (1 of 1) Total Depth 25.5' Elev: 368 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 7/3/02 Completed: 7/3/02 Driller: Estep

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
		Surficial Soil	5-7-9	0.0	16	
365.8	2.0	Medium dense silty SAND AND ROCK FRAGMENTS, little mica, damp, brown, gray (GM-SM) - Residuum	7-10-14	1.5 / 2.0	24	
363.8	4.0	Grades to moist	30-15-15	3.5 / 4.0	30	Dry
361.8	6.0	Medium dense silty SAND, trace decomposed rock, moist, brown (SM) - Residuum	12-9-9	5.5 / 6.0	18	
359.8	8.0	Medium dense silty SAND AND ROCK FRAGMENTS, tan, moist (GM-SM) - Residuum	5-8-14	7.5 / 8.0	22	
357.8	10.0	Medium dense silty SAND, moist-wet, green-brown, (SM) - Residuum	10-7-7	9.5 / 10.0	14	
355.8	12.0	Medium dense sandy SILT, little mica, trace decomposed rock fragments (ML) - Residuum	5-5-6	11.5 / 12.0	11	
353.8	14.0	Very dense silty SAND, some rock fragments, moist, tan-white (GM-SM) - Residuum	24-36-43	13.5 / 14.0	79	
351.8	16.0	Very dense silty SAND, some decomposed rock fragments, moist, gray (GM-SM) - Soft Weathered Rock	40-50/5	15.5 / 16.0 / 16.9		
349.8	18.0	Very dense SAND AND ROCK FRAGMENTS, trace silt, wet, brown (GP-SP) - Soft Weathered Rock	44-50/3	18.0 / 18.8		
347.8	20.0	Very dense silty SAND, some rock fragments, wet, green (SM) - Soft Weathered Rock	50/6	20.0		
			50/2	22.0		
343.8	24.0	No Recovery	50/1	24.0		
342.3	25.5	Boring Terminated at 25.5 feet				

DRAFT

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N.

BORING LOG C68-090G.GPJ F&R.GDT 7/25/02

BORING LOG — SWM-2

FROEHLING & ROBERTSON, INC. — SINCE 1881 GEOTECHNICAL • ENVIRONMENTAL • MATERIALS ENGINEERS • LABORATORIES "OVER ONE HUNDRED YEARS OF SERVICE"

Report No: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: SWM-2 (1 of 1) Total Depth 5.5' Elev: 358 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 7/3/02 Completed: 7/3/02 Driller: Estep

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
357.5	0.5	Surficial Soil / Loose silty SAND, moist, brown (SM)	3-4-6	0.0	10	
356.0	2.0	Stiff sandy CLAY, trace root matter, damp, brown (CL)	3-7-7	1.5 / 2.0	14	Dry, Cave-In at 2 feet
354.0	4.0	Medium dense silty SAND, dry-damp, brown (SM) - Residuum	5-6-7	3.5 / 4.0	13	
352.5	5.5	Boring Terminated at 5.5 feet		5.5		

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N.
BORING LOG C68-090G.GPJ F&R.GDT 7/25/02

BORING LOG — SWM-3

Report No: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: SWM-3 (1 of 1) Total Depth 9.5' Elev: 364 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 7/3/02 Completed: 7/3/02 Driller: Estep

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
363.3	0.5	Surficial Soil / Loose clayey SAND, damp, brown (SC)	2-3-3	0.0	6	
361.8	2.0	Loose silty SAND, damp, brown (SM)	4-4-5	1.5 / 2.0	9	
359.8	4.0	Grades to trace decomposed rock fragments, damp, brown (SM) - Residuum	5-5-6	3.5 / 4.0	11	Dry, Cave-In at 4.5 feet
			4-5-6	5.5 / 6.0	11	
355.8	8.0	Grades to Moist	6-6-7	7.5 / 8.0	13	
354.3	9.5	Boring Terminated at 9.5 feet		9.5		

DRAFT

BORING LOG — SWM-4

Report No: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: SWM-4 (1 of 1) Total Depth 10.0' Elev: 327 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 6/24/02 Completed: 6/24/02 Driller: Estep

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
326.5	0.5	Surficial Soil / Loose clayey SAND, trace silt, moist, brown (CL)	3-3-4	0.0	7	
325.0	2.0	Medium dense silty SAND, trace decomposed rock fragments, moist, green (SM)	2-6-6	1.5 / 2.0	12	Water at 3 feet at 0 hours
323.0	4.0	Medium stiff sandy SILT, trace decomposed rock fragments, moist, green (ML) - Residuum	3-4-4	3.5 / 4.0	8	
321.0	6.0	No Recovery	4-3-4	5.5 / 6.0	7	Cave-In at 5.5 feet Free water encounetred at 6 feet during drilling
318.5	8.5	Loose silty SAND, moist-wet, orange (SM) - Residuum	5-5-5	7.5 / 8.0	10	
317.0	10.0	Boring Terminated at 10 feet		9.5		

DRAFT

BORING LOG — SWM-5

Report No: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: SWM-5 (1 of 1) Total Depth 26.0' Elev: 330 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 6/28/02 Completed: 6/28/02 Driller: Lazaro

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
329.4	0.3	Loose silty SAND (SM) black to brown, damp	3-2-3 -3	0.0	5	
			2-2-8 -3	2.0	10	
325.7	4.0	Loose silty sandy ROCK FRAGMENTS (GM) beige and white, damp	4-2-3 -3	4.0	5	
323.7	6.0	Very loose silty SAND (SM) brown and beige, damp	3-2-1 -2	6.0	3	
321.7	8.0	Sand grades more coarse	1-1-2 -2	8.0	3	Water at 7.8 feet at 0 hours Cave-In at 8.6 feet
			2-1-2 -2	10.0	3	
			2-2-3 -5	12.0	5	
315.7	14.0	Grades to loose	2-4-4 -8	14.0	8	
313.7	16.0	Medium dense silty SAND AND ROCK FRAGMENTS (GM-SM) dark brown, damp	5-12-14 -20	16.0	26	Free water encountered at 16 feet during drilling
			13-18-19 -22	18.0	37	
309.7	20.0	Dense SAND, trace silt (SP-SM) red-white, damp - Residuum	7-16-19 -16	20.0	35	
307.7	22.0	Dense silty SAND (SM) brown, damp - Residuum	13-20-26 -40	22.0	46	
305.7	24.0	Very dense SAND, trace silt (SW-SM) brown-white, damp - Residuum	21-30-45 -50	24.0	75	
303.7	26.0	Boring Terminated at 26 feet		26.0		

DRAFT

BORING LOG — SWM-6

Report No: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: SWM-6 (1 of 1) Total Depth 16.0' Elev: 331 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 6/28/02 Completed: 6/28/02 Driller: Lazaro

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
330.2	0.5	Surficial Soil / Loose silty SAND, moist, brown (SM)	4-4-3 -3	0.0	7	
328.6	2.0	Loose silty SAND, moist, brown-white (SM)	4-3-3 -4	2.0	6	
326.6	4.0	Loose silty SAND, damp, decomposed rock fragments, brown (SM)	6-3-3 -3	4.0	6	
324.6	6.0	Grades to moist-wet	2-3-4 -4	6.0	7	
			3-3-4 -5	8.0	7	Water at 7.3 feet at 0 hours Cave-In at 8.2 feet
320.6	10.0	Medium dense silty SAND, damp, decomposed rock fragments, brown (SM) - Residuum	2-3-4 -8	10.0	7	Free water encountered at 10.5 feet during drilling
			5-7-8 -11	12.0	15	
			6-6-7 -10	14.0	13	
314.6	16.0	Boring Terminated at 16 feet		16.0		

DRAFT

BORING LOG — SWM-7

Report No: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: SWM-7 (1 of 1) Total Depth 29.3' Elev: 364 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 6/25/02 Completed: 6/25/02 Driller: Estep

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
363.5	0.5	Surficial Soil / Medium dense silty SAND (SM) dark and light brown, damp	4-5-5	0.0	10	
362.0	2.0	Grades to gray, brown and white	6-5-5	1.5 / 2.0	10	
360.0	4.0	Grades to dense, dry	7-12-13	3.5 / 4.0	25	
			7-15-21	5.5 / 6.0	36	
356.0	8.0	Grades to trace rock fragments	9-21-25	7.5 / 8.0	46	
354.0	10.0	Grades to very dense, trace rock fragments	27-35-42	9.5 / 10.0	77	
352.0	12.0	Sand becoming more coarse, beige and brown, damp - Residuum	11-17-21	11.5 / 12.0	38	
			12-13-13	13.5 / 14.0	26	
			7-8-14	15.5 / 16.0	22	
			10-14-14	17.5 / 18.0	28	Dry, Cave-In at 17 feet
			10-19-24	19.5 / 20.0	43	
342.0	22.0	Grades to gray and white - Residuum	32-21-17	21.5 / 22.0	38	Free water encountered at 21 feet during drilling
			7-8-15	23.5 / 24.0	23	
			24-30-35	25.5 / 26.0	65	
			28-29-50/4	27.5 / 28.0		
335.0 / 334.7	29.0 / 29.3	Very dense silty SAND (SM) dark and light brown, damp - Soft Weathered Rock		29.3		
		Boring Terminated at 29.3 feet				

BORING LOG — SWM-8

Report No: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: SWM-8 (1 of 1) Total Depth 19.5' Elev: 358 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 7/2/02 Completed: 7/2/02 Driller: Estep

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
357.4	0.5	Surficial Soil / Loose to medium dense silty SAND, damp, brown (SM)	3-3-5	0.0	8	
			9-10-10	1.5 / 2.0	20	
353.9	4.0	Grades to tan-orange, moist	5-6-5	3.5 / 4.0	11	
			5-5-5	5.5 / 6.0	10	
			6-7-7	7.5 / 8.0	14	Dry, Cave-In at 8.4 feet
			3-4-5	9.5 / 10.0	9	Free water encountered at 10 feet during drilling
345.9	12.0	Medium dense to dense silty SAND, damp, brown (SM) - Residuum	10-23-24	11.5 / 12.0	47	
			9-12-13	13.5 / 14.0	25	
341.9	16.0	Very dense silty SAND, damp, brown (SM) - Soft Weathered Rock	37-50/5	15.5 / 16.0 / 16.9		
			50/6	18.0		
338.4	19.5	Boring Terminated at 19.5 feet				

DRAFT

BORING LOG — SWM-9

Report No: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: SWM-9 (1 of 1) Total Depth 19.5' Elev: 352 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 7/2/02 Completed: 7/2/02 Driller: Estep

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
351.1	0.5	Surficial Soil / Medium stiff clayey SAND, dry-damp, brown (SC)	4-5-6	0.0	11	
			6-6-8	1.5 / 2.0	14	
347.6	4.0	Loose to medium dense silty SAND, moist, tan (SM) - Residuum	7-7-9	3.5 / 4.0	16	
345.6	6.0	Grades to with some decomposed rock, brown	6-5-5	5.5 / 6.0	10	
			4-6-10	7.5 / 8.0	16	
			5-8-9	9.5 / 10.0	17	Water at 9.5 feet at 24 hours Free water encountered at 10 feet during drilling Water at 10 feet at 0 hours Cave-In at 10.2 feet
			8-10-16	11.5 / 12.0	26	
337.6	14.0	Dense to very dense silty SAND, moist, brown (SM) - Residuum	9-16-25	13.5 / 14.0	41	
			15-25-36	15.5 / 16.0	61	
333.6	18.0	Very dense to silty SAND, moist, brown (SM) - Soft Weathered Rock	26-50/5	17.5 / 18.0 / 18.9		
332.1	19.5	Boring Terminated at 19.5 feet				

BORING LOG — I-1

Report No: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: I-1 (1 of 1) Total Depth 5.0' Elev: 364 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 7/1/02 Completed: 7/1/02 Driller: England

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
363.7	0.3	Surficial Soil / Medium dense silty SAND, and decomposed rock fragments, moist, orange-brown (SM) - Residuum	2-4-10	0.0	14	
			10-9-12	1.5 / 2.0	21	
360.0 / 359.0	4.0 / 5.0	Very dense silty SAND, damp-moist, tan (SM) - Soft Weathered Rock	12-50/3	3.5 / 4.0 / 4.8		Dry; Auger Refusal, Bent Rod, Bent Auger
		Auger Refusal at 5 feet				

DRAF

BORING LOG — I-1A

Report No: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: I-1A (1 of 1) Total Depth 10.0' Elev: 371 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 7/1/02 Completed: 7/1/02 Driller: Lazaro

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
370.5	0.5	Surficial Soil / Stiff sandy SILT, trace mica (ML) tan-brown, dry	2-4-5 -5	0.0	9	
369.0	2.0	Loose silty fine SAND (SM) gray-brown, dry	2-3-3 -3	2.0	6	
			3-3-3 -3	4.0	6	Dry Offset 30 feet south of I-1
365.0	6.0	Loose silty fine SAND (SM) orange, white & brown, dry - Residuum (Granite?)	2-3-3 -3	6.0	6	
			4-6-8 -9	8.0	14	
361.0	10.0	Boring Terminated at 10 feet		10.0		

BORING LOG — I-2

Report No: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: I-2 (1 of 1) Total Depth 10.0' Elev: 367 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 7/1/02 Completed: 7/1/02 Driller: England

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
366.1	0.4	Surficial Soil / Loose to medium dense silty SAND, trace mica, red-brown, damp (SM)	5-7-8	0.0	15	
			5-4-5	1.5 / 2.0	9	
362.5	4.0	Grades to tan and/or orange	5-5-6	3.5 / 4.0	11	Dry
			5-5-5	5.5 / 6.0	10	
			5-5-6	7.5 / 8.0	11	
356.5	10.0	Boring Terminated at 10 feet		9.5		

DRAFT

BORING LOG — I-2A

Report No: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: I-2A (1 of 1) Total Depth 10.0' Elev: 367 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 7/1/02 Completed: 7/1/02 Driller: Lazaro

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
366.0	0.5	Surficial Soil / Loose silty SAND, trace mica (SM) brown, damp	2-3-5 -6	0.0	8	
364.5	2.0	Loose clayey to silty SAND, trace mica (SM-SC) brown, damp	2-3-3 -4	1.5 / 2.0	6	
362.5	4.0	Medium dense to dense SAND AND SILT, little mica (SM-ML) gray & brown, dry-damp - Residuum (Mica Schist)	20-10-10 -10	3.5 / 4.0	20	Dry Offset 30 feet south of I-2
			8-9-9 -9	5.5 / 6.0	18	
			15-25-15 -16	7.5 / 8.0	40	
356.5	10.0	Boring Terminated at 10 feet		9.5		

MDE PERMIT AND TRACKING No. 200266336

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/16/03
DIRECTOR — DATE 7/21/03

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

LOCATION OF BORING SHOW ON SHEET 12, 13, OR IN GEOTECHNICAL STUDY.

6-04-03
Date

Professional Engr. No. 14551

DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705
A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
HO. CO. OFFICE CAMPUS	NA	852 & P10847

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15867-70	6 & 1	POR	24 & 25	2	6029

WATER CODE / SEWER CODE

TITLE: SOIL BORING LOGS

Des. By LC	Scale AS SHOWN	Proj. No. 01001.C
Drn. By	Date 06/02/03	10 of 40
Chk. By RLH	Approved	

SDP-03-026

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rhurwitz 6/4/2003 8:25:03 AM rhurwitz d:\hpm\01001.hpm 01001J

BORING LOG

FROEHLING & ROBERTSON, INC.
GEOTECHNICAL · ENVIRONMENTAL · MATERIALS
ENGINEERS · LABORATORIES
"OVER ONE HUNDRED YEARS OF SERVICE"
SINCE 1881

Report No.: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: I-3 (1 of 1) Total Depth 10.0' Elev: 350 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 6/24/02 Completed: 6/24/02 Driller: Estep

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
349.0	0.5	Surficial Soil Loose sandy SILT, trace mica (ML) dry, dark brown	3-3-3 -3	0.0	6	
			5-4-4 -4	1.5 2.0	8	
345.5	4.0	Dense silty SAND (SM) dry, brown	6-14-14 -18	3.5 4.0	28	Dry, Cave-In at 4 feet
343.5	6.0	Very dense SAND AND ROCK FRAGMENTS (GP-SP) dry, brown - Soft Weathered Rock (Boulder?)	50/2	5.5 6.0		
341.5	8.0	Very dense SAND AND ROCK FRAGMENTS (GP-SP) dry, brown - Residuum	15-20-20 -33	8.5	40	
339.5	10.0	Boring Terminated at 10 feet		10.0		

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N.

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Report No.: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: I-4 (1 of 1) Total Depth 10.0' Elev: 354 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 6/24/02 Completed: 6/24/02 Driller: Estep

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
353.4	0.5	Surficial Soil Loose SILT (ML) dry, brown	2-3-3	0.0	6	
351.9	2.0	Grades to sandy SILT	5-5-7	1.5 2.0	12	
			3-5-5	3.5 4.0	10	
347.9	6.0	Medium dense silty SAND, trace mica and decomposed rock fragments (SM) damp, brown - Residuum	4-5-6	5.5 6.0	11	Dry, Cave-In at 6 feet
			6-6-8	7.5 8.5	14	
343.9	10.0	Boring Terminated at 10 feet		10.0		

DRAFT

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N.

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Report No.: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: I-5 (1 of 1) Total Depth 10.0' Elev: 357 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 6/24/02 Completed: 6/24/02 Driller: Estep

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
356.3	0.5	Surficial Soil Medium dense clayey SAND (SC) damp, dark brown	6-7-7	0.0	14	
354.8	2.0	Medium dense SILT AND SAND (SM-ML) damp, tan to brown	5-6-7	1.5 2.0	13	
			5-6-5	3.5 4.0	11	Dry, Cave-In at 4 feet
			4-5-5	5.5 6.0	10	
348.8	8.0	Stiff SAND AND SILT-CLAY, damp, orange-brown (SM-SC-ML-CL)	5-6-7	7.5 8.5	13	
346.8	10.0	Boring Terminated at 10 feet		10.0		

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N.

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Report No.: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: I-6 (1 of 1) Total Depth 10.0' Elev: 372 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 7/1/02 Completed: 7/1/02 Driller: Estep

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
371.5	0.5	Surficial Soil Stiff clayey SILT (ML-CL) damp, orange	4-5-5	0.0	10	
370.0	2.0	Medium dense silty SAND AND ROCK FRAGMENTS (GM-SM) dry, brown	10-9-6	1.5 2.0	15	
368.0	4.0	Grades to sandy ROCK FRAGMENTS (GM) trace mica, trace silt	24-12-24	3.5 4.0	36	Dry, Cave-In at 5 feet
366.0	6.0	Very dense silty SAND AND ROCK FRAGMENTS (GM-SM) dry, brown - Soft Weathered Rock	50/6	5.5 6.0		
			50/4	8.5		
362.0	10.0	Boring Terminated at 10 feet				

DRAFT

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N.

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Report No.: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: I-7 (1 of 1) Total Depth 15.5' Elev: 378 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 6/24/02 Completed: 6/24/02 Driller: Estep

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
377.5	0.5	Surficial Soil Loose, sandy SILT (ML) damp, brown	3-3-3	0.0	6	
376.0	2.0	Grades to with trace clay	4-4-4	1.5 2.0	8	
374.0	4.0	Grades to without trace clay, orange and/or beige	4-4-4	3.5 4.0	8	
			4-6-6	5.5 6.0	12	
370.0	8.0	Grades to with decomposed rock fragments, gray	3-4-4	7.5 8.0	8	
368.0	10.0	Grades to orange-beige	4-5-5	9.5 10.0	10	Dry, Cave In at 9 feet
366.0	12.0	Very dense sandy SILT (ML) damp, orange-beige - Residuum	27-35-46	11.5 12.0	81	
364.0	14.0	Very dense sandy SILT (ML) damp, gray - Soft Weathered Rock	50/4	13.5 14.0		
362.5	15.5	Boring Terminated at 15.5 feet				

DRAFT

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Report No.: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: I-8 (1 of 1) Total Depth 25.5' Elev: 405 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 6/28/02 Completed: 6/28/02 Driller: Estep

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
404.5	0.5	Surficial Soil Loose SILT AND SAND (ML-SM) damp, dark brown	3-3-4	0.0	7	
			2-3-7	1.5 2.0	10	
401.0	4.0	Loose sandy ROCK FRAGMENTS, trace silt and mica (GP) dry, brown - Residuum	4-2-2	3.5 4.0	4	
			4-4-5	5.5 6.0	9	
397.0	8.0	Loose SILTY SAND (SM) dry, brown - Residuum	3-2-3	7.5 8.0	5	
395.0	10.0	Very dense SILTY SAND AND ROCK FRAGMENTS (GM-SM) damp, brown - Soft Weathered Rock (Boulder?)	44-50/4	9.5 10.0 10.8		
393.0	12.0	Dense SILT AND SAND with decomposed rock fragments (SM-ML) damp, gray-brown - Residuum	9-22-25	12.0	47	
391.0	14.0	Very dense SILT AND SAND, with decomposed rock fragments (SM-ML) damp, gray-brown - Soft Weathered Rock	33-50/5	13.5 14.0 14.9		Dry, Cave-In at 14 feet
389.0	16.0	Very dense silty SAND AND ROCK FRAGMENTS (GM-SM) dry, tan, brown and or gray - Soft Weathered Rock	50/2	16.0		
			50/4	18.0		
			50/2	20.0		
			50/2	22.0		
			50/2	24.0		
379.5	25.5	Boring Terminated at 25.5				

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*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N.

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Report No.: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: I-9 (1 of 1) Total Depth 19.5' Elev: 394 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 6/24/02 Completed: 6/24/02 Driller: Estep

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
393.0	0.5	Surficial Soil Medium dense SILT AND SAND (SM-ML) trace rock fragments, damp, brown	3-4-7	0.0	11	
			5-5-5	1.5 2.0	10	
389.5	4.0	Medium dense SILT AND SAND (SM-ML) damp, brown - Residuum	4-6-6	3.5 4.0	12	
387.5	6.0	Loose SAND, trace silt (SW-SM) dry, brown	4-4-4	5.5 6.0	8	
385.5	8.0	Medium dense clayey, silty SAND (SM-SC) damp, brown	4-5-5	7.5 8.0	10	
383.5	10.0	Grades to silty SAND (SM) gray and/or beige	7-8-15	9.5 10.0	23	
381.5	12.0	Grades to dense to very dense	20-25-27	11.5 12.0	52	Dry, Cave-In at 11.5 feet
			12-17-20	13.5 14.0	37	
			17-22-23	15.5 16.0	45	
			13-16-18	17.5 18.0	34	
374.0	19.5	Boring Terminated at 19.5 feet		19.5		

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Report No.: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: I-10 (1 of 1) Total Depth 20.0' Elev: 392 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 6/27/02 Completed: 6/27/02 Driller: England

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
391.1	0.4	Surficial Soil Medium stiff SILT, trace sand and mica, damp, brown (ML)	2-2-5	0.0	7	
389.5	2.0	Stiff silty SAND to sandy SILT, trace weathered rock fragments, mica, damp, brown (SM-ML)	8-5-8	1.5 2.0	13	
387.5	4.0	Grades to without rock fragments, damp to moist	2-2-5	3.5 4.0	7	
385.5	6.0	Very stiff sandy SILT to silty sand, trace rock fragments, mica, damp, brown (SM-ML) - Residuum	6-12-16	5.5 6.0	28	
383.5	8.0	Dense to very dense silty SAND, little rock fragments and mica, dry, brown (SM) - Residuum	8-20-19	7.5 8.0	39	
			18-38-50/4	9.5 10.0		
380.5	11.0	Dense to very dense silty SAND, little rock fragments and mica, dry, brown (SM) - Soft Weathered Rock (Boulder?)	48-50/2	11.3 12.0 12.7		
377.5	14.0	Grades to without rock fragments	8-14-21	14.0	35	
375.5	16.0	Grades to trace rock fragments	18-21-3	15.5 16.0	24	Dry, Cave-In at 16 feet
373.5	18.0	Very dense silty SAND (SM) little mica, dry, brown - Soft Weathered Rock	36-50/3	17.5 18.0 18.8		
371.5	20.0	Boring Terminated at 20 feet				

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N.

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Report No.: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: I-12 (1 of 1) Total Depth 20.0' Elev: 401 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 6/28/02 Completed: 6/28/02 Driller: England

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
400.3	0.5	Surficial Soil Loose silty SAND (SM) dry, brown	2-3-4	0.0	7	
398.8	2.0	Grades to trace rock fragments	4-4-5	1.5 2.0	9	
396.8	4.0	Medium dense to very dense silty SAND, dry, brown - Residuum	3-7-8	3.5 4.0	15	
			10-21-20	5.5 6.0	41	
			11-12-12	7.5 8.0	24	
			8-14-30 -32	9.5 10.0	44	
388.8	12.0	Medium dense to dense SILT AND SAND (SM-ML)	6-14-29 -21	12.0	43	
			29-40-50/2	14.0		
385.8	15.0	Very dense SILT AND SAND (SM-ML) - Soft Weathered Rock	46-50/2	15.2 16.0 16.7		Dry, Cave-In at 16 feet
382.8	18.0	Grades to with decomposed rock fragments	50/2	18.0		
380.8	20.0	Boring Terminated at 20 feet				

DRAFT

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N.

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Report No.: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: I-13 (1 of 1) Total Depth 25.5' Elev: 405 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 6/25/02 Completed: 6/25/02 Driller: Estep

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
404.2	0.5	Surficial Soil Loose sandy SILT (ML) dry, brown	3-3-4	0.0	7	
			5-5-8	1.5 2.0	13	
400.7	4.0	Medium dense to very dense sandy SILT (ML) dry, brown - Residuum	4-5-7	3.5 4.0	12	
			5-5-7	5.5 6.0	12	
			9-15-15	7.5 8.0	30	
			17-22-30	9.5 10.0	52	
392.7	12.0	Very dense sandy SILT (ML) dry, brown - Soft Weathered Rock	40-50/3	11.5 12.0 12.8		Dry, Cave-In at 13 feet
			50/5	14.0		
388.7	16.0	Very dense silty rocky SAND (SM) dry, brown and white - Soft Weathered Rock	50/3	16.0		
386.7	18.0	Very dense silty SAND, little rock fragments (SM) dry, gray - Hard Weathered Rock	50/1	18.0		
			50/1	20.0		
382.7	22.0	Grades to silty sandy ROCK FRAGMENTS (GM) dry, gray - Hard Weathered Rock	50/1	22.0		
380.7	24.0	No Recovery - Hard Weathered Rock	50/1	24.0		
379.2	25.5	Boring Terminated at 25 feet				

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N.

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Report No.: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: I-14 (1 of 1) Total Depth 20.0' Elev: 398 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 7/11/02 Completed: 7/11/02 Driller: Lazaro

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
397.7	0.3	Surficial Soil Medium dense silty SAND, little decomposed rock fragments, damp, brown (SM) - Residuum	9-6-8 -11	0.0	14	
			11-8-6 -5	2.0	14	
394.0	4.0	Loose silty fine SAND, little mica, little weathered rock fragments, damp, gray-brown (SM) - Residuum	5-5-5 -5	4.0	10	
392.0	6.0	Grades to medium dense with some mica, brown	5-6-9 -10	6.0	15	
390.0	8.0	Hard fine sandy SILT, little rock fragments, some mica, damp, brown (ML) - Residuum	18-18-27 -30	8.0	45	Dry, Cave-In at 9 feet
388.0	10.0	Very dense silty SAND, some decomposed rock fragments, damp, brown (SM) - Residuum	7-18-30 -42	10.0	48	
386.0	12.0	Grades to trace mica, trace decomposed rock fragments, green-brown	18-20-22 -27	12.0	42	
384.0	14.0	VEry dense silty fine SAND to fine sandy SILT, damp, tan-brown (SM-ML) - Residuum	12-18-21 -33	14.0	39	
382.0	16.0	Hard sandy SILT, some mica, dry, tan-brown (ML) - Soft Weathered Rock	26-50/6	16.0 17.0		
380.0	18.0	Hard sandy SILT, some mica, dry, tan-brown (ML) - Residuum	10-20-30 -50/5	18.0	50	
378.5	19.5	Hard sandy SILT, some mica, dry, tan-brown (ML) - Soft Weathered Rock		19.0		
378.0	20.0	Boring Terminated at 20 feet				

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N.

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Report No.: C68-090G Date: 7-26-02
Client: Trammell Crow Company
Project: Howard County Gov't Office Campus, Ellicott City, MD
Boring No.: I-15 (1 of 1) Total Depth 26.0' Elev: 402 ± Location: See Boring Location Plan
Type of Boring: HSA Started: 7/9/02 Completed: 7/11/02 Driller: Lazaro

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	* Sample Blows	Sample Depth (feet)	N Value (blows/ft)	REMARKS
402.0	0.4	Surficial Soil Loose to medium dense silty SAND, trace mica and rock fragments, trace to little decomposed rock fragments (SM) gray-brown, dry - Residuum	2-2-6 -9	0.0	8	
			5-6-6 -6	2.0	12	
398.4	4.0	Grades to dense to very dense	6-10-23 -20	4.0	33	
			25-24-24 -26	6.0	48	
			12-33-50/5	8.0		
393.4	9.0	Very dense silty SAND, trace mica and rock fragments, trace to little decomposed rock fragments (SM) gray-brown, dry - Soft Weathered Rock (Boulder?)		9.4		
392.4	10.0		8-14-21 -30	10.0	35	
390.4	12.0	Dense to very dense silty SAND, trace mica and rock fragments, trace to little decomposed rock fragments (SM) gray-brown, dry - Residuum	12-50/4	12.0 12.8		
		Very dense rocky SAND, trace silt and mica, little decomposed rock fragments (SP-SM) gray-brown, dry - Soft Weathered Rock	50/5	14.0		
			50/6	16.0		
			50/3	18.0		Dry, Cave-In at 17.3 feet
382.4	20.0	Very dense sandy ROCK FRAGMENTS, trace silt and mica, some decomposed rock fragments (GP-GM) gray-brown, dry - Soft Weathered Rock	50/2	20.0		
			50/4	22.0		
376.4	26.0	Boring Terminated at 26 feet				

DRAFT

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N.

MDE PERMIT AND TRACKING No. 200266336

LOCATION OF BORING SHOW ON SHEET 12, 13, OR IN GEOTECHNICAL STUDY.

6-04-03
Date

STATE OF MARYLAND
REGISTERED PROFESSIONAL ENGINEER
10551

Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 7/14/03

CHIEF, DIVISION OF LAND DEVELOPMENT DATE 7/16/03

DIRECTOR DATE 7/21/03

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
HO. CO. OFFICE CAMPUS	NA	852 & P10847

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15867-70	6 & 1	POR	24 & 25	2	6029

WATER CODE SEWER CODE

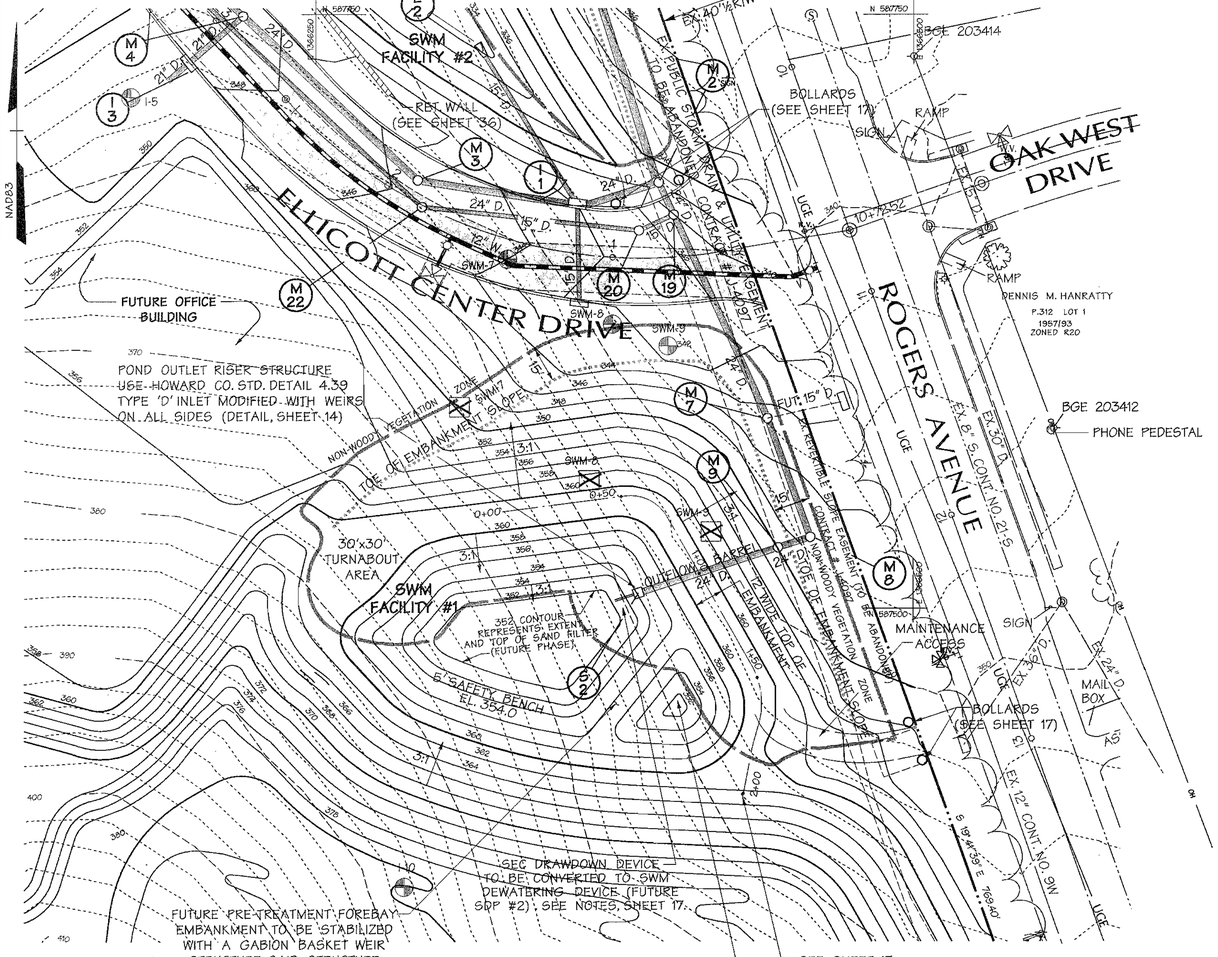
TITLE

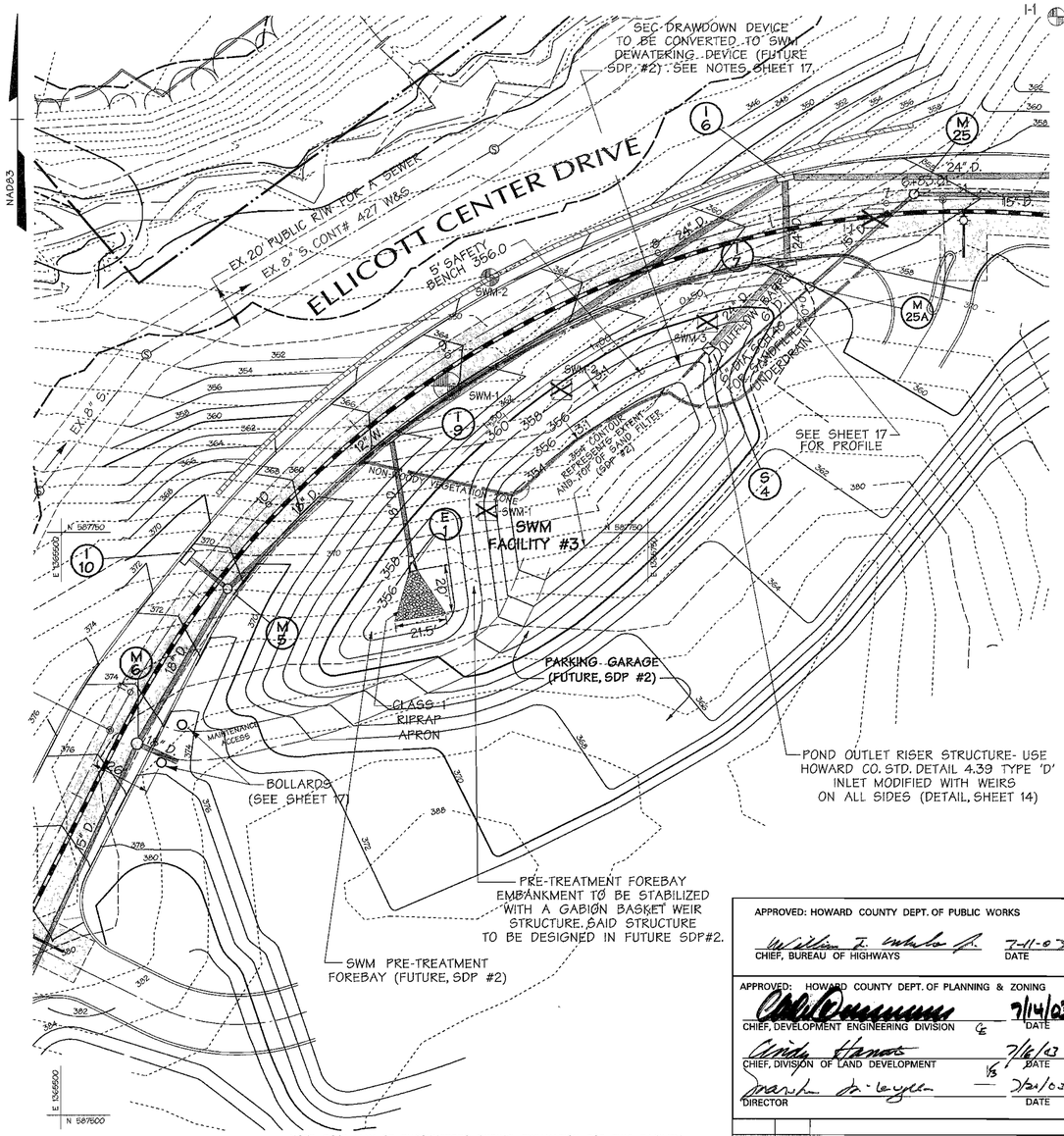
SOIL BORING LOGS

Des. By	LC	Scale	AS SHOWN	Proj. No. 01001.C
Drn. By		Date	06/02/03	11 of 40
Chk. By	RLN	Approved		

SDP-03-026

Wed Jun 4 08:35:29 2003





Legend (SWM Facility #1 & #3)

- 304 -- EXISTING MINOR CONTOURS
- 310 -- EXISTING MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- PROPOSED MAJOR CONTOURS
- I-4 / SWM-6 SOIL BORING
- SWM-1 AS BUILT SOIL BORING
- PROPERTY LINE
- ROADWAY RIGHT-OF-WAY
- EX. 15" D EXISTING STORM DRAIN
- TOE OF EMBANKMENT SLOPE DELINEATOR LINE
- NON-WOODY VEGETATION ZONE
- 25' WETLAND BUFFER
- 50' STREAM BUFFER
- 15" D. PROP. STORM DRAIN
- 12" W. PROP. WATER LINE
- RETAINING WALL
- ORDINARY HIGH WATER MARK

NOTES:
SWM FACILITY IS BEING BUILT AS A SEDIMENT BASIN AND WILL BE CONVERTED INTO A SWM FACILITY IN THE FUTURE.

PLANTING WITHIN SWM FACILITIES DEFERRED TO SDP#2.

NOTES: SEE SHEET 2 & 3 FOR GRADING UNDER THIS SDP.

SWM FACILITY #1

SCALE: 1"=30'

SWM FACILITY #1
DESIGN FLOW SUMMARY PROPOSED CONDITIONS

Structure Type	Sand Filter
Water Quality Type	Surface Sand Filter (F-1)
Structure Classification	'A'
Watershed Area to Facility	0.0069 Sq.Mi.
Level of Management Required	1-Year, Cpv
Level of Management Provided	1-Year, Cpv
Top Width Provided	12'
Maximum Height of Fill	7.0'
Freeboard Required	2.0'
Freeboard Provided	2.0'
Water Quality Vol. WQ_v Required (Ac-ft)	0.086
Water Quality Vol. WQ_v Provided (Ac-ft)	0.108
Recharge Vol. Re_v Provided (Ac-ft)	See Note Below *
Channel Protection Vol. Cp_v Required (Ac-ft)	0.34
Channel Protection Vol. Cp_v Provided (Ac-ft)	0.55
WQ_v Water Surface Elev.	354.0
Cp_v Water Surface Elev.	357.5
Riser Crest Elev.	357.5
100 Yr. Clogged Water Surface Elev.	358.0
Pond Volume Below 100 Yr. Clogged WSE (Ac-ft)	0.776

* Recharge provided for the entire site in grass swales used for the grass swale credit.

SWM FACILITY #3
DESIGN FLOW SUMMARY PROPOSED CONDITIONS

Structure Type	Sand Filter
Water Quality Type	Surface Sand Filter (F-1)
Structure Classification	'A'
Watershed Area to Facility	0.0057 Sq.Mi.
Level of Management Required	1-Year, Cpv
Level of Management Provided	1-Year, Cpv
Top Width Provided	12'
Maximum Height of Fill	4.5'
Freeboard Required	2.0'
Freeboard Provided	2.0'
Water Quality Vol. WQ_v Required (Ac-ft)	0.12
Water Quality Vol. WQ_v Provided (Ac-ft)	0.12
Recharge Vol. Re_v Provided (Ac-ft)	See Pond 1 Chart
Channel Protection Vol. Cp_v Required (Ac-ft)	0.232
Channel Protection Vol. Cp_v Provided (Ac-ft)	0.348
WQ_v Water Surface Elev.	356.0
Cp_v Water Surface Elev.	358.0
Riser Crest Elev.	358.0
100 Yr. Clogged Water Surface Elev.	358.5
Pond Volume Below 100 Yr. Clogged WSE (Ac-ft)	0.573

NOTE: ROCK MAY BE ENCOUNTERED DURING EXCAVATION FOR THIS FACILITY. ANY ROCK SHALL BE UNDERCUT TO 4' BELOW PROPOSED BOTTOM OF EXCAVATION. THE ROCK SURFACE SHALL THEN BE DIRECTLY COVERED BY FILTER CLOTH AND 4' OF SOIL. AT THE TIME OF THIS UNDERCUTTING PROCEDURE THE GEOTECHNICAL ENGINEER SHALL BE PRESENT TO DETERMINETHE LIMITS OF UNDERCUTTING.

SWM FACILITY #3

SCALE: 1"=30'

FORTY TWENTY NINE PARTNERSHIP PARCEL 847 5014/132 IS TREATED FOR WQv AND Cpv IN THIS FACILITY IN ADDITION TO THE ONSITE DEVELOPED AREAS. THIS IS BEING DONE AS A RESULT OF A PRIOR AGREEMENT BETWEEN HOWARD COUNTY AND THE PROPERTY OWNER. SEE SWM DRAINAGE AREA MAPS (IN REPORT) AND SWM REPORT NARRATIVE FOR ADDITIONAL EXPLANATION.

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

U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE — DATE 7/1/03

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

APPROVED: HOWARD SOIL CONSERVATION DISTRICT — DATE 7/1/03

PLAN NUMBER _____

DEVELOPERS CERTIFICATE:

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

SIGNATURE OF DEVELOPER — DATE 6-23-03
PRINT NAME BELOW SIGNATURE

ENGINEERS CERTIFICATE:

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

SIGNATURE OF ENGINEER — REG. NO. 10551 — DATE 6-4-03
PRINT NAME BELOW SIGNATURE
John W. Ranocchia, Jr.

MDE PERMIT AND TRACKING No. 200266336

6-04-03 Date

STATE OF MARYLAND — JOHN W. RANOCCHIA, JR. — No. 10551 — REGISTERED PROFESSIONAL ENGINEER

Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/16/03
DIRECTOR — DATE 7/21/03

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

DMW
Daft-McCune-Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME: HO. CO. OFFICE CAMPUS	SECTION/AREA: NA		LOT/PARCEL #: 852 & P10847
PLAT# OR L / BLOCK # / ZONE: (5867-706 & 1 / POR	TAX/ZONE MAP: 24 & 25	ELECT. DISTRICT: 2	CENSUS TRACT: 6029
WATER CODE	SEWER CODE		

TITLE
STORMWATER MANAGEMENT FACILITY #1, #3

Des. By MRT	Scale 1"=30'		Proj. No. 01001.C
Drn. By WDE	Date 06/02/03		12 of 40
Chk. By RLH/MRT	Approved		

SDP-03-026

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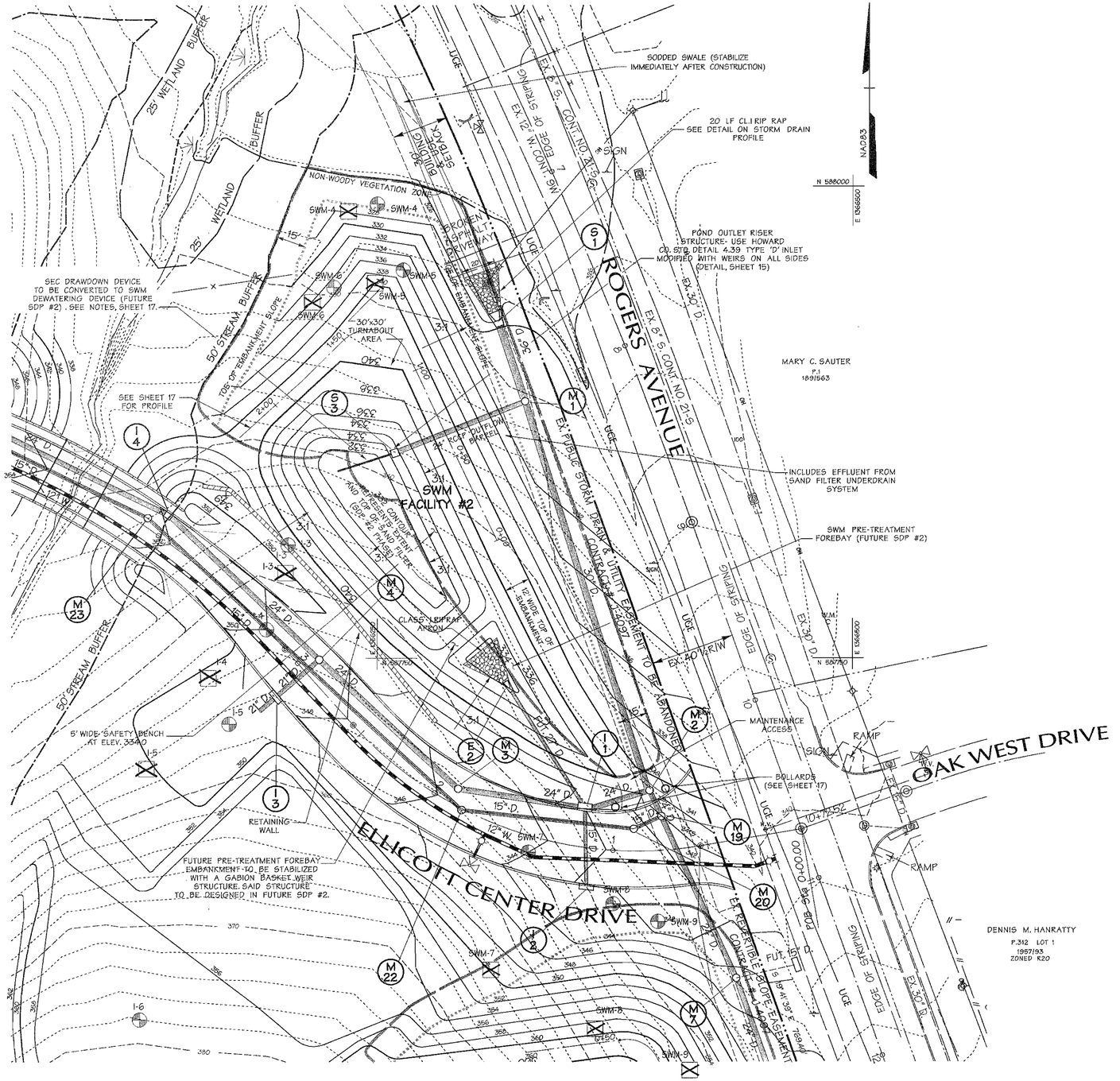

SWM FACILITY #2

SCALE: 1"=30'

NOTES: SEE SHEET 2 FOR GRADING UNDER THIS SDP.

NOTES:
SWM FACILITY IS BEING BUILT AS A SEDIMENT BASIN AND WILL BE CONVERTED INTO A SWM FACILITY IN THE FUTURE.

PLANTING WITHIN SWM FACILITIES DEFERRED TO SDP#2.

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

U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE — 7/1/03 DATE

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

APPROVED: HOWARD SOIL CONSERVATION DISTRICT — 7/1/03 DATE

PLAN NUMBER _____

DEVELOPERS CERTIFICATE:

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

SIGNATURE OF DEVELOPER — DATE 6/30/03
PRINT NAME BELOW SIGNATURE

ENGINEERS CERTIFICATE:

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

SIGNATURE OF ENGINEER — REG. NO. 10551 — DATE 6-4-03
PRINT NAME BELOW SIGNATURE
John W. Ramsey Sr.

MDE PERMIT AND TRACKING No. 200266336

6-04-03 Date

Professional Engr. No. 10551

FACILITY #2
DESIGN FLOW SUMMARY PROPOSED CONDITIONS

Structure Type	Sand Filter
Water Quality Type	Surface Sand Filter (F-1)
Structure Classification	'A'
Watershed Area to Facility	0.0049 Sq. Mi.
Level of Management Required	1-Year, Cpv
Level of Management Provided	1-Year, Cpv
Top Width Provided	12'
Maximum Height of Fill	10.0'
Freeboard Required	2.0'
Freeboard Provided	2.0'
Water Quality Vol. WQ_v Required (Ac-ft)	0.11
Water Quality Vol. WQ_v Provided (Ac-ft)	0.11
Recharge Vol. Re_v Provided (Ac-ft)	See Pond 1 Chart
Channel Protection Vol. Cp_v Required (Ac-ft)	0.295
Channel Protection Vol. Cp_v Provided (Ac-ft)	0.663
WQ_v Water Surface Elev.	333.6
Cp_v Water Surface Elev.	337.5
Riser Crest Elev.	337.5
100 Yr. Clogged Water Surface Elev.	338.0
Pond Volume Below 100 Yr. Clogged WSE (Ac-ft)	0.910

Legend

- 304 — EXISTING MINOR CONTOURS
- 310 — EXISTING MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- PROPOSED MAJOR CONTOURS
- I-4 / SWM-6 — SOIL BORING
- I-5 — AS-BUILT SOIL BORING
- PROPERTY LINE
- ROADWAY RIGHT-OF-WAY
- EX. 15" D. — EXISTING STORM DRAIN
- TOE OF EMBANKMENT SLOPE DELINEATOR LINE
- NON-WOODY VEGETATION ZONE
- 25' WETLAND BUFFER
- 50' STREAM BUFFER
- 15" D. — PROP. STORM DRAIN
- RETAINING WALL
- ORDINARY HIGH WATER MARK

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — 7-11-03 DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — 7/11/03 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT — 7/16/03 DATE

DIRECTOR — 7/21/03 DATE

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

DMW
Daft-McCune-Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME: HO. CO. OFFICE CAMPUS	SECTION/AREA: NA		LOT/PARCEL #: 852 & P10847
TAX MAP OR LOT: 15&17-70	BLOCK #: 20	ZONE: R20	TAX/ZONE MAP: 24 & 25
ELECT. DISTRICT: 2	CENSUS TRACT: 6029		
WATER CODE	SEWER CODE		

TITLE

STORMWATER MANAGEMENT FACILITY #2

Des. By LC/MRT	Scale 1"=30'	Proj. No. 01001.C	
Drn. By	Date 06102103	13 of 40	
Chk. By RL H/MRT	Approved		

SDP-03-026

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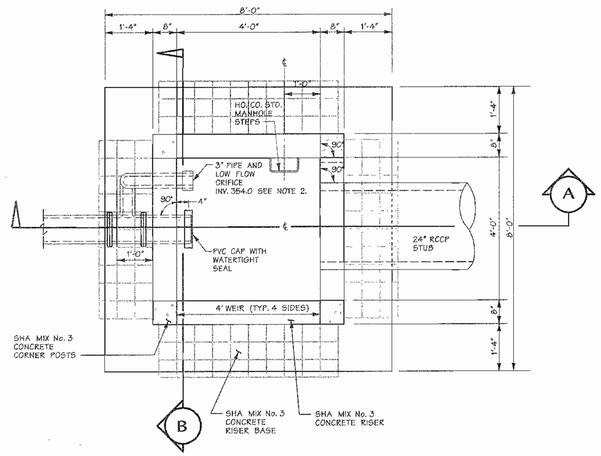
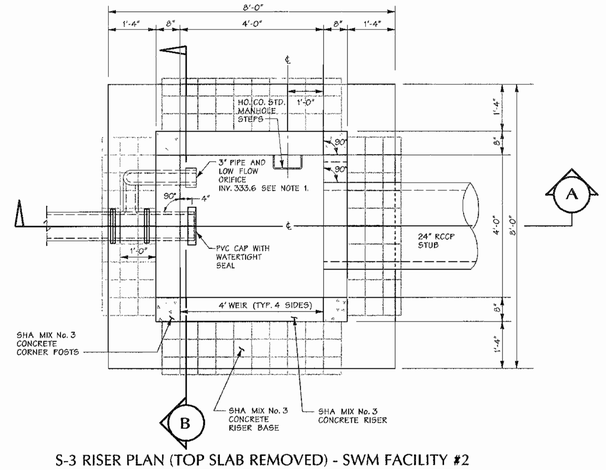
MDE PERMIT AND TRACKING No. 200266336

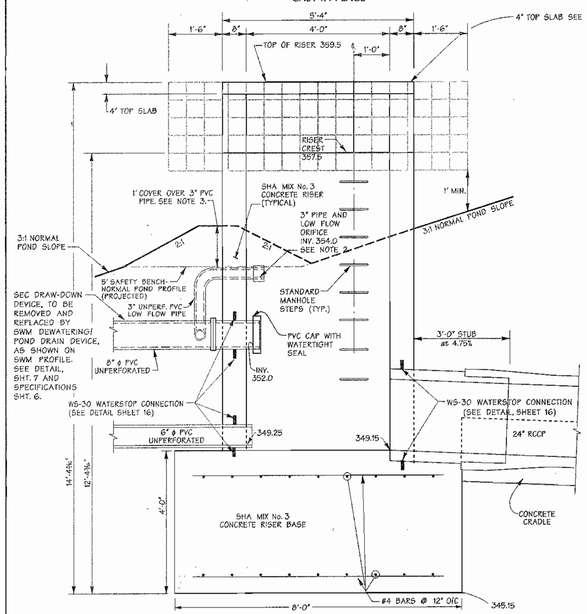


S-2 RISER PLAN (TOP SLAB REMOVED) - SWM FACILITY #1

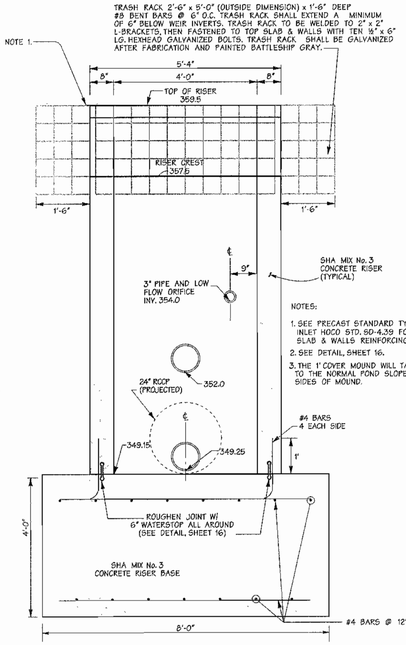


S-3 RISER PLAN (TOP SLAB REMOVED) - SWM FACILITY #2

Scale: ½" = 1'-0"
CAST IN PLACE



SECTION A



SECTION B

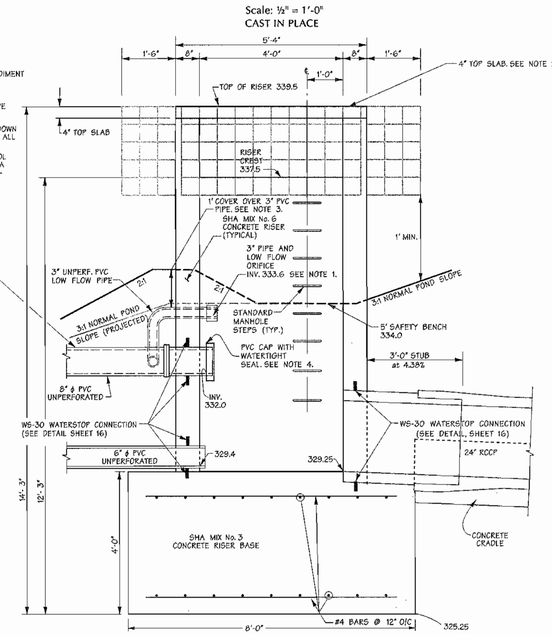
S-2 RISER DETAIL FOR POND - SWM FACILITY #1

Scale:1/2" = 1'-0"
CAST IN PLACE

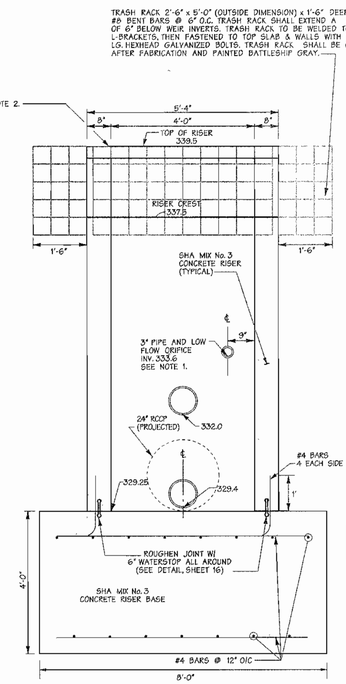
NOTES:

1. SEE DETAIL, SHEET 16, LOW FLOW ORIFICE SHALL BE BLOCKED DURING SEDIMENT EROSION CONTROL (SEC) PHASE.
2. FOR REINFORCEMENT IN THE RISER WALLS/ TOP SLAB, SEE PRECAST STD. TYPE 'D' INLET DETAIL, HO. CO. STD SO. 4-39.
3. THE 1' COVER MOUND WILL TAPER OFF DOWN TO THE NORMAL POND SLOPE AT 2:1 ON ALL SIDES OF MOUND.
4. IN THE SEDIMENT AND EROSION CONTROL (SEC) PHASE THIS CAP WILL SERVE AS A CONTROL PLATE WITH ORIFICE FOR DRAW-DOWN DEVICE. SEE DETAIL, SHEET 16.
5. FOR PRECAST RISER TIE-IN SEE RISER BASE DETAIL, SHEET 15.

SEE DRAW-DOWN DEVICE, TO BE REMOVED AND REPLACED BY SWM DEWATERING/ POND DRAIN DEVICE, AS SHOWN ON SWM PROFILE. SEE DETAIL, SHEET 7 AND SPECIFICATIONS SHEET 6.



SECTION A



SECTION B

S-3 RISER DETAIL FOR POND - SWM FACILITY #2

Scale:1/2" = 1'-0"
CAST IN PLACE

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

U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE — 7/1/03 DATE

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

APPROVED: HOWARD SOIL CONSERVATION DISTRICT — 7/1/03 DATE

PLAN NUMBER _____

DEVELOPERS CERTIFICATE:

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

SIGNATURE OF DEVELOPER
PRINT NAME BELOW SIGNATURE — 6-23-03 DATE

ENGINEERS CERTIFICATE:

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

SIGNATURE OF ENGINEER
PRINT NAME BELOW SIGNATURE
John W. Ranocchia, Sr. — 10551 REG. NO. — 6-4-03 DATE

DATA SOURCES:
ON SITE TOPOGRAPHY PER DMW FIELD RUN IN JUNE, 2001 WITH SUPPLEMENTARY FIELD RUN TOPOGRAPHY CAPTURED ON ROGER'S AVENUE AND ELLICOT CENTER DRIVE IN JUNE 2002.
WETLANDS WERE DELINEATED AND FIELD LOCATED BY DMW IN FEBRUARY, 2001.
BOUNDARY PER MILDENBERG BOENDER & ASSOC., DATED DECEMBER 02, 1999.
NOTE:
ALL STREAMS ON SITE ARE PERENNIAL.

6-4-03
Date

Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — 7-1-03 DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — 7/14/03 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT — 7/16/03 DATE

DIRECTOR — 7/21/03 DATE

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

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(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME: HO. CO. OFFICE CAMPUS		SECTION/AREA: NA	LOT/PARCEL #: 852 & P10847
PLAT OR L/F: 15347-70	BLOCK #: 6	ZONE: POR	TAX/ZONE MAP: 24
ELECT DISTRICT: 2	CENSUS TRACT: 6029		
WATER CODE	SEWER CODE		

TITLE
STORMWATER MANAGEMENT RISER DETAILS

Des. By RLH/LC/MRT	Scale AS SHOWN	Proj. No. 0100'..C	
Drn. By KDE	Date 03/06/03	14 of 40	
Chk. By MRT	Approved		

SDP-03-026

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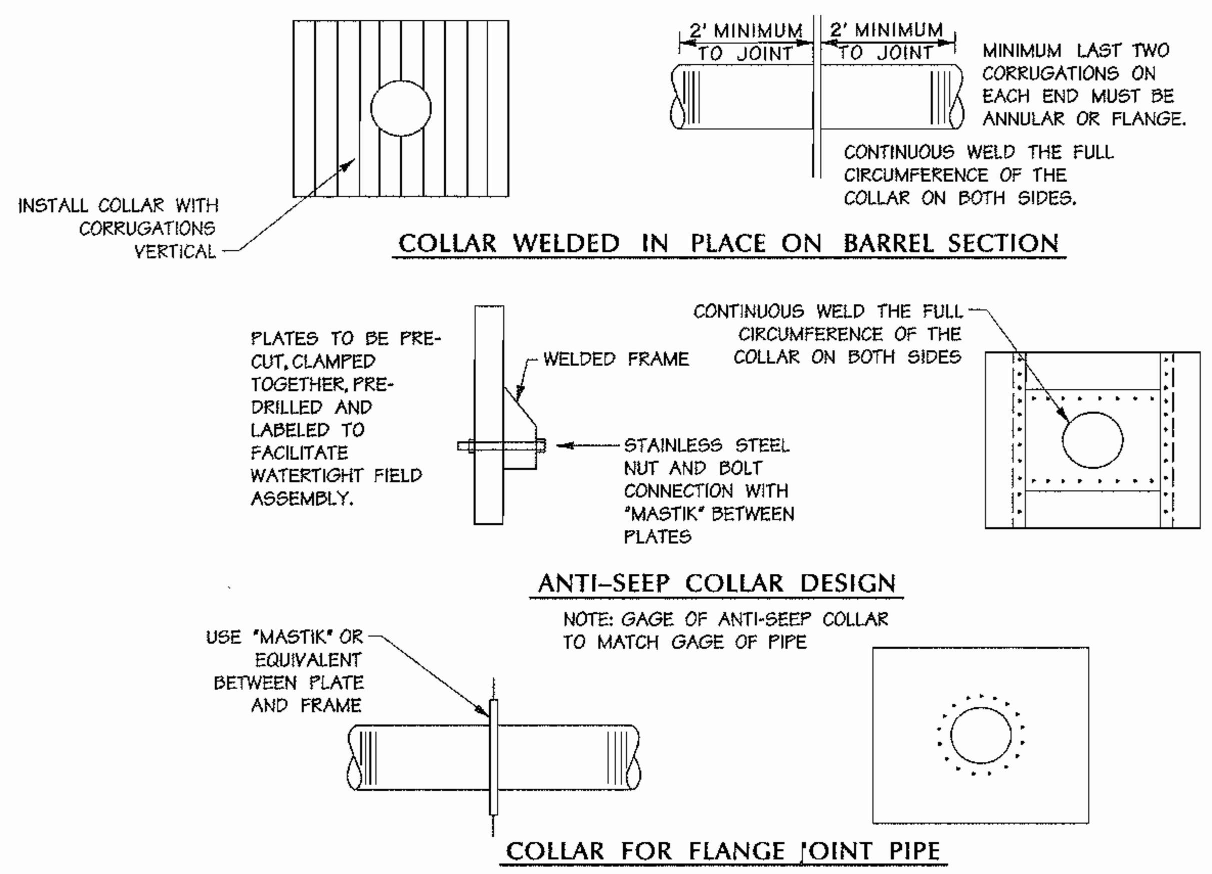
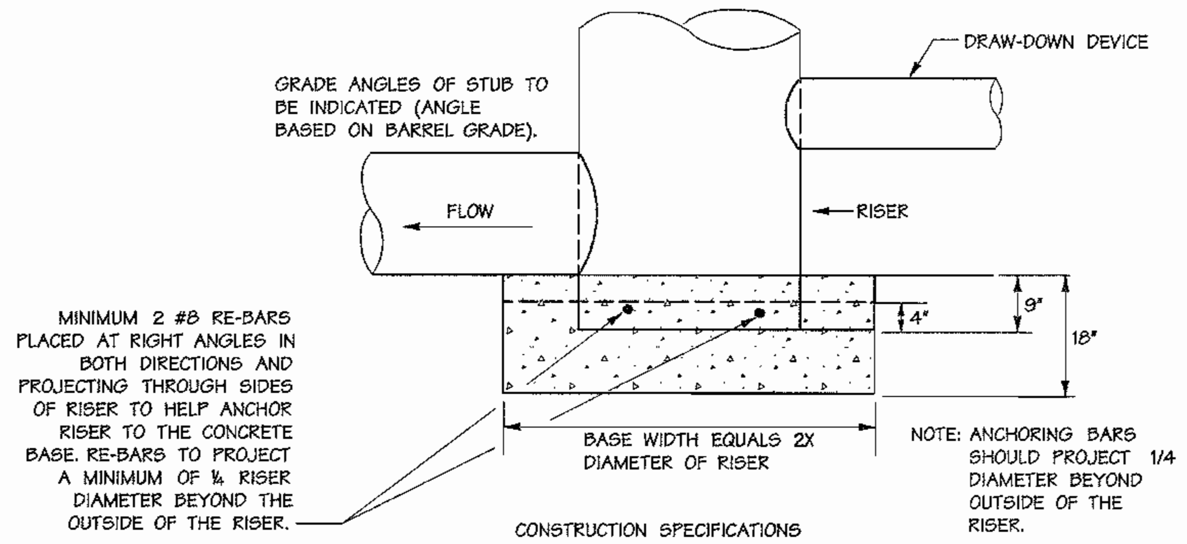


U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — C - 10 - 24 — *MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION*

Typical Anti–Seep Collars
(METAL PIPE) Not To Scale



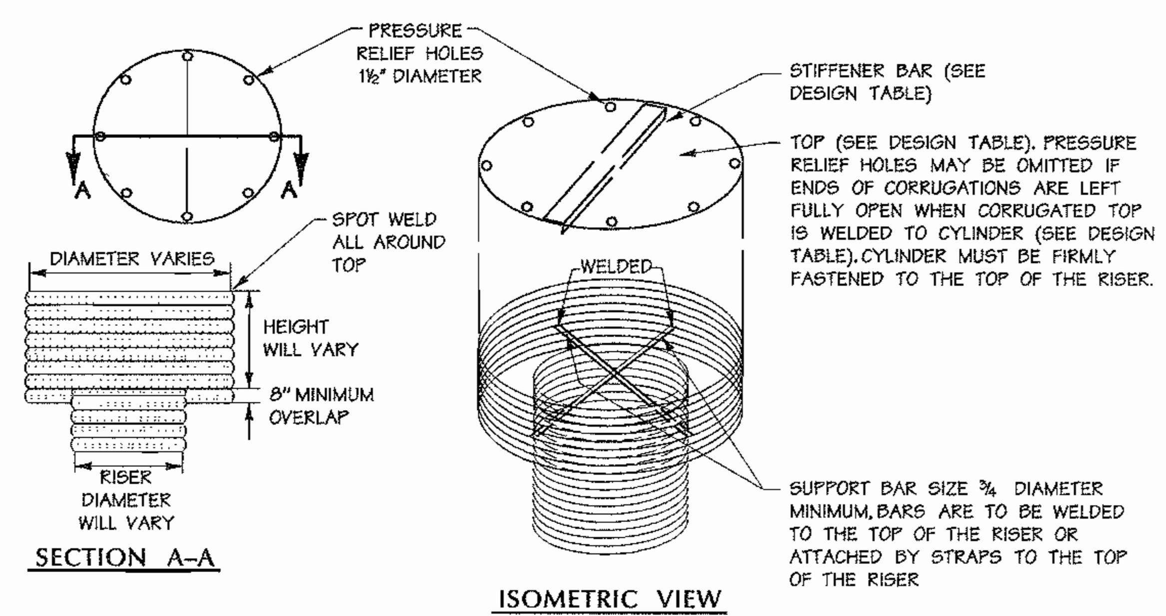
THE RISER SHALL HAVE A BASE ATTACHED WITH A WATERTIGHT CONNECTION AND SHALL HAVE SUFFICIENT WEIGHT TO PREVENT FLOTATION OF THE RISER. TWO APPROVED BASES FOR RISERS 10' OR LESS IN HEIGHT ARE:

1. A CONCRETE BASE 18" THICK WITH THE RISER EMBEDDED 9" IN THE BASE
2. A ¼" MINIMUM THICKNESS STEEL PLATE ATTACHED TO THE RISER BY A CONTINUOUS WELD AROUND THE CIRCUMFERENCE OF THE RISER TO FORM A WATERTIGHT CONNECTION. THE PLATE SHALL HAVE 2' OF STONE, GRAVEL, OR COMPACTED EARTH PLACED ON IT TO PREVENT FLOTATION. IN EITHER CASE, EACH SIDE OF THE SQUARE BASE SHALL BE TWICE THE RISER DIAMETER.

NOTE: FOR RISERS GREATER THAN TEN FEET HIGH, COMPUTATIONS SHALL BE MADE TO DESIGN A BASE WHICH WILL PREVENT FLOTATION. THE MINIMUM FACTOR OF SAFETY SHALL BE 1.20 (DOWNWARD FORCES = 1.20 X UPWARD FORCES).

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — C - 10 - 25 — *MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION*

Riser Base Detail



NOTE: THE TRASH RACK AND ANTI-VORTEX DEVICE INFORMATION IS ONLY FOR CORRUGATED METAL PIPE. CONCRETE RISERS MUST MEET THE REQUIREMENTS FOR MD 378.

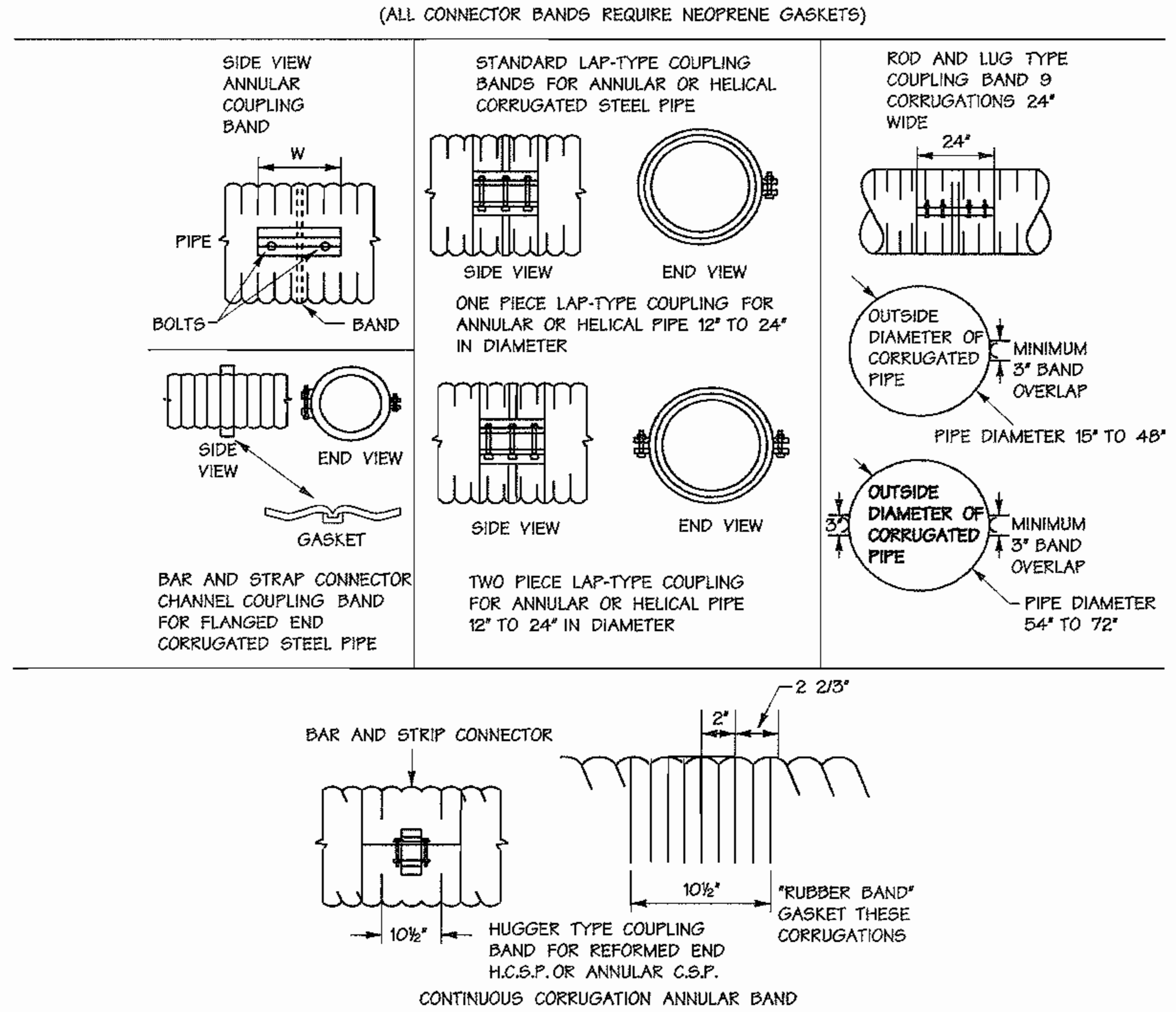
RISER DIAM., IN.	TRASH RACK CYLINDER DIAM. IN.	TRASH RACK CYLINDER THICK., GAGE	H. IN.	MINIMUM SIZE SUPPORT BAR	MINIMUM TOP THICKNESS	MINIMUM TOP STIFFENER
12	18	16	6	#6 REBAR	16 GA.	--
15	21	16	7	"	"	--
18	27	16	8	"	"	--
21	30	16	11	"	"	--
24	36	16	13	"	14 GA.	--
27	42	16	15	"	14 GA.	--
36	54	14	17	#8 REBAR	12 GA.	--
42	60	14	19	"	"	--
48	72	12	21	1-1/4" PIPE OR 1-1/4 x 1-1/4 x 1/4 ANGLE	10 GA.	--
54	78	12	25	"	"	--
60	90	12	29	1-1/2" PIPE OR 1-1/2 x 1-1/2 x 1/4 ANGLE	8 GA.	--
66	96	10	33	2" PIPE OR 2 x 2 x 3/16 ANGLE	8 GA., W/ STIFFENER	2 x 2 x 1/4 ANGLE
72	102	10	36	"	"	2-1/2 x 2-1/2 x ¼ ANGLE
78	114	10	39	2-1/2" PIPE OR 2 x 2 x ¼ ANGLE	"	"
84	120	10	42	2-1/2" PIPE OR 2-1/2 x 2-1/2 x 1/4 ANGLE	"	2-1/2 x 2-1/2 x 5/16 ANGLE

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — C - 10 - 26 — *MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION*

Concentric Trash Rack & Anti–Vortex Device
Not To Scale

MDE PERMIT AND TRACKING No. 200266336

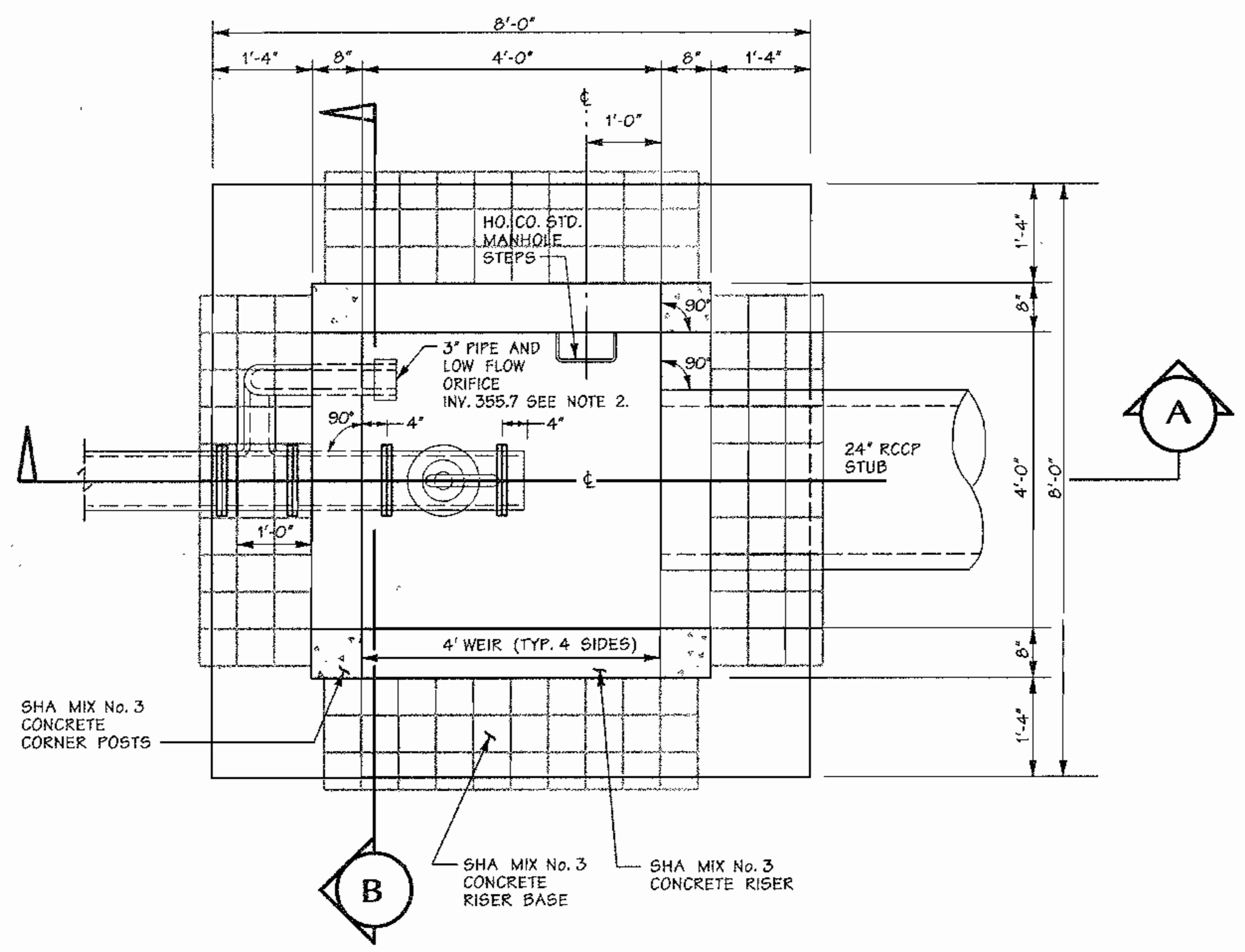
(ALL CONNECTOR BANDS REQUIRE NEOPRENE GASKETS)



NOTE: UNDER NO CIRCUMSTANCES WILL THE DIMPLE (UNIVERSAL) CONNECTOR BAND BE ACCEPTED FOR USE IN ANY SEDIMENT CONTROL OR STORMWATER MANAGEMENT STRUCTURE.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — C - 10 - 27 — *MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION*

Types of Couplers for Corrugated Steel Pipe
Not To Scale



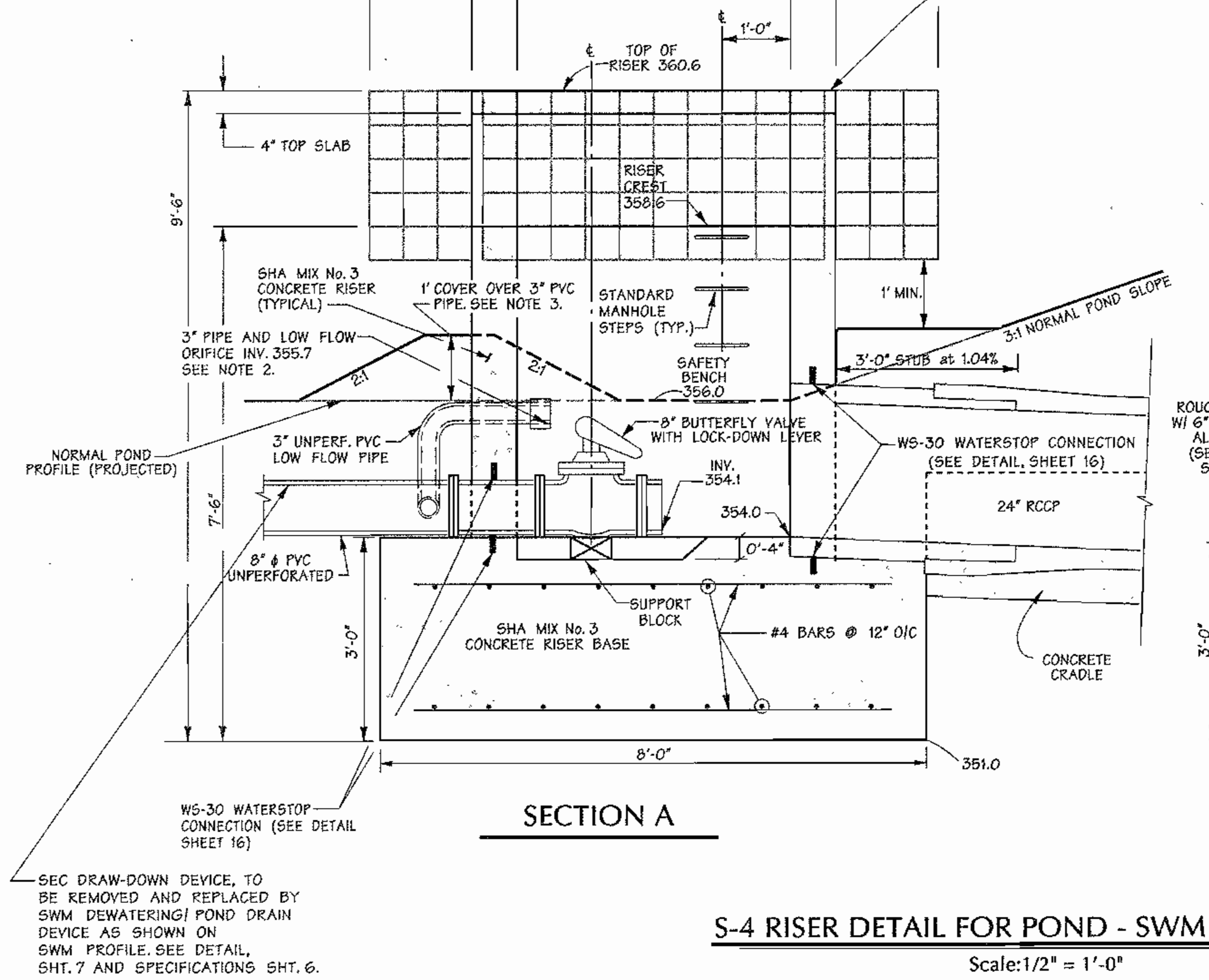
S-4 RISER PLAN (TOP SLAB REMOVED) - SWM FACILITY #3
Scale: ½" = 1'-0"
CAST IN PLACE

NOTES:

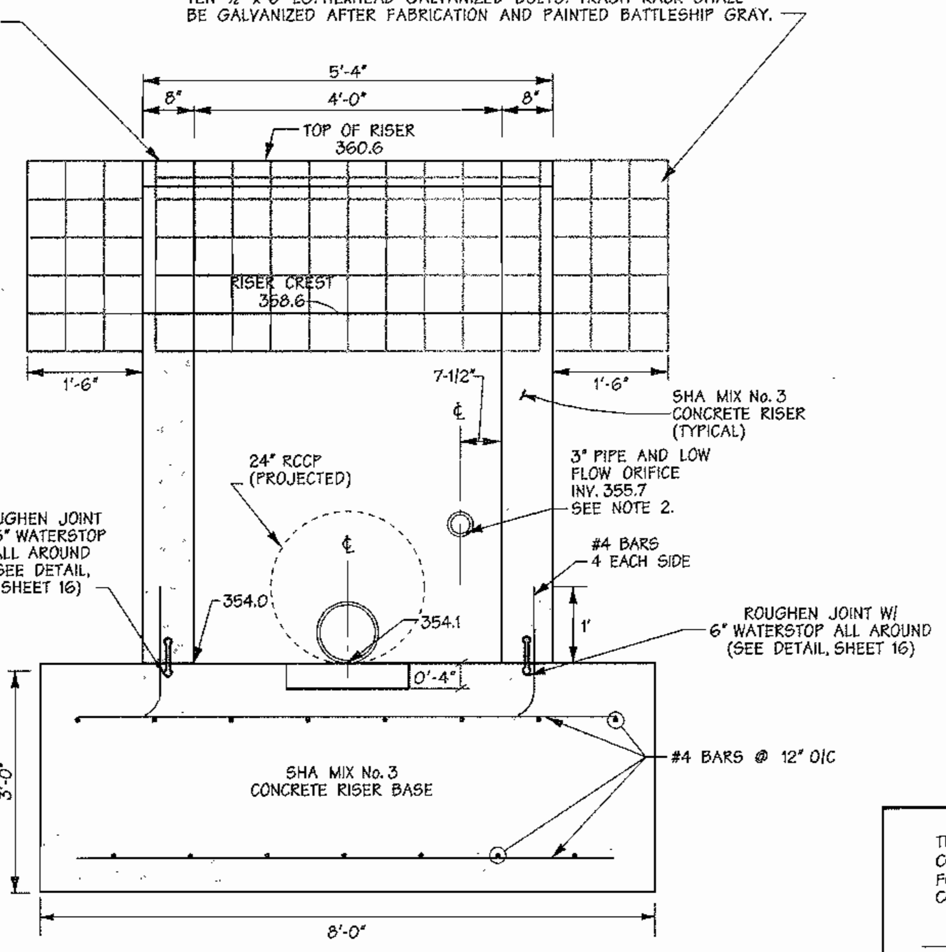
1. FOR REINFORCEMENT IN THE RISER WALLS/ TOP SLAB, SEE PRECAST STD. TYPE 'D' INLET DETAIL, HO. CO. STD SD. 4-39.
2. SEE DETAIL, SHEET 16.
3. THE 1' COVER MOUND WILL TAPER OFF DOWN TO THE NORMAL POND SLOPE AT 2:1 ON ALL SIDES OF MOUND.

TRASH RACK 2'-6" x 5'-0" (OUTSIDE DIMENSION) x 1'-6" DEEP #8 BENT BARS @ 6" O.C. TRASH RACK SHALL EXTEND A MINIMUM OF 6" BELOW WEIR INVERTS. TRASH RACK TO BE WELDED TO 2" x 2" L-BRACKETS, THEN FASTENED TO TOP SLAB & WALLS WITH TEN ½" x 6" LG. HEXHEAD GALVANIZED BOLTS. TRASH RACK SHALL BE GALVANIZED AFTER FABRICATION AND PAINTED BATTLESHIP GRAY.

4" TOP SLAB. SEE NOTE 1.



SECTION A



SECTION B

S-4 RISER DETAIL FOR POND - SWM FACILITY #3
Scale: 1/2" = 1'-0"
CAST IN PLACE

ENGINEERS CERTIFICATE:

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

[signature] SIGNATURE OF ENGINEER — 10551 REG. NO. — 6-4-03 DATE
PRINT NAME BELOW SIGNATURE John W. Ramacha, Sr.

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

[signature] U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE — 7/1/03 DATE

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

APPROVED: [signature] HOWARD SOIL CONSERVATION DISTRICT — 7/1/03 DATE

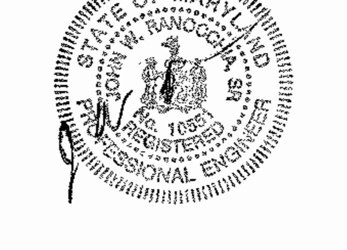
PLAN NUMBER ______

DEVELOPERS CERTIFICATE:

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

[signature] SIGNATURE OF DEVELOPER — 6/23/03 DATE
PRINT NAME BELOW SIGNATURE

6-04-03
Date



Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

[signature] CHIEF, BUREAU OF HIGHWAYS — 7-11-03 DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

[signature] CHIEF, DEVELOPMENT ENGINEERING DIVISION — 7/14/03 DATE

[signature] CHIEF, DIVISION OF LAND DEVELOPMENT — 7/16/03 DATE

[signature] DIRECTOR — 7/21/03 DATE

Date	No.	Revision Description

Howard County Office Campus
PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
HO. CO. OFFICE CAMPUS	NA	852 & P10847

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15567-70	6	POR	24	2	6029

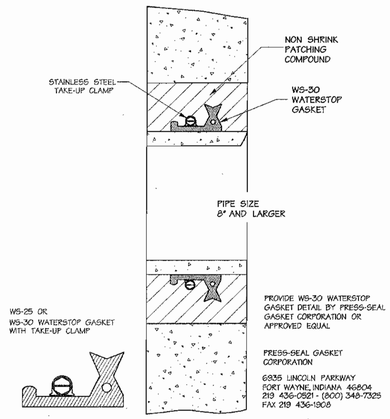
WATER CODE — SEWER CODE

TITLE
STORMWATER MANAGEMENT
RISER DETAILS & EROSION SEDIMENT
CONTROL DETAILS

Des. By RLH/LC/MRT	Scale AS SHOWN	Proj. No. 01001.C
Drn. By KDE	Date 03/06/03	15 of 40
Chk. By RLH/MRT	Approved	

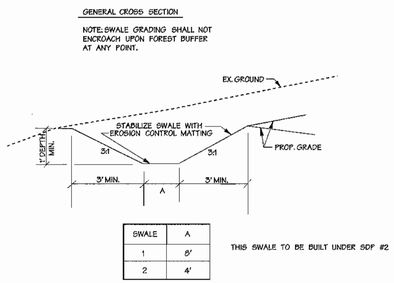
SDP-03-026

Wed Jun 4 08:40:49 2003 — n:01001\sheet files\01001LM14



WS-30 WATERSTOP PIPE WATERSTOP DETAIL

NOT TO SCALE

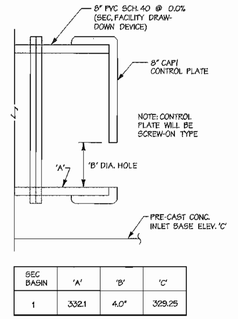


SWALE	A
1	8'
2	4'

THIS SWALE TO BE BUILT UNDER SDP #2

PERMANENT WATER QUALITY AND RECHARGE SWALE DETAIL

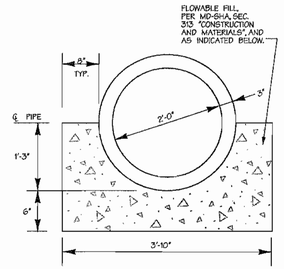
NOT TO SCALE



SEC BASIN	'A'	'B'	'C'
1	332.1	4.0"	329.25

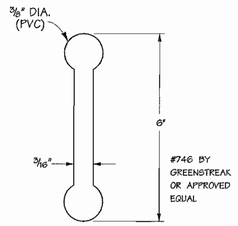
SEDIMENT AND EROSION CONTROL 8" CAP/CONTROL PLATE DETAIL

NTS



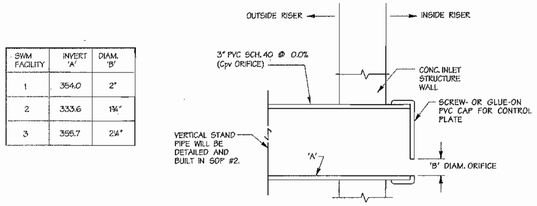
CONCRETE CRADLE DETAIL

NTS



6" WATERSTOP

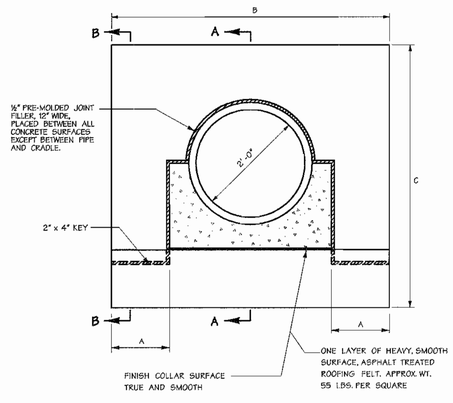
NOT TO SCALE

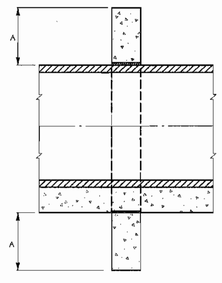


SWM FACILITY	INVERT 'A'	DIAM. 'B'
1	354.0	2"
2	333.6	1¼"
3	395.7	2¼"

CHANNEL PROTECTION (Cpv) CONTROL PLATE DETAIL

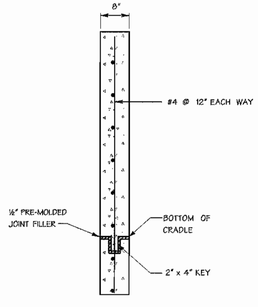
NTS





SECTION A-A

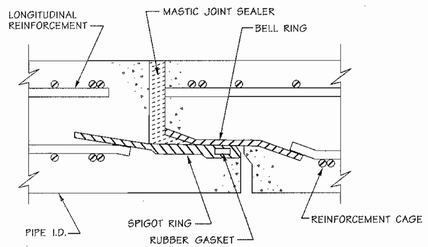
SWM FACILITY	'A'	'B'	'C'
1	2'-9"	9'-4"	8'-6"
2	2'-9"	9'-4"	8'-6"
3	2'-6"	8'-10"	8'-0"



SECTION B-B

ANTI - SEEP COLLAR DETAIL

CAST IN PLACE - NOT TO SCALE
SEE SPECIFICATIONS SHEET 18



BARREL JOINT SEAL DETAIL

NTS

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

U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE — 7/1/03 DATE

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

APPROVED: HOWARD SOIL CONSERVATION DISTRICT — 7/1/03 DATE

PLAN NUMBER _____

DEVELOPERS CERTIFICATE:

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

SIGNATURE OF DEVELOPER
PRINT NAME BELOW SIGNATURE — 6.23.03 DATE

ENGINEERS CERTIFICATE:

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

SIGNATURE OF ENGINEER
PRINT NAME BELOW SIGNATURE
John W. Ranocchia Jr. — 10551 REG. NO. — 6-4-03 DATE

MDE PERMIT AND TRACKING No. 200266336

6-04-03 Date

STATE OF MARYLAND — JOHN WILLIAM RANOCCHIA JR. — No. 10551 — REGISTERED PROFESSIONAL ENGINEER

Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — 7-11-03 DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — 7/14/03 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT — 7/16/03 DATE

DIRECTOR — 7/21/03 DATE

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

DMW
Daft-McCune-Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME: HO. CO. OFFICE CAMPUS		SECTION/AREA: NA	LOT/PARCEL #: 852 & P10847
TAX MAP: 15	GRID: 6 & 1	PARCEL: POR	TAX/ZONE MAP: 24 & 25
ELECT. DISTRICT: 2	CENSUS TRACT: 6029		
WATER CODE	SEWER CODE		

TITLE: STORMWATER MANAGEMENT DETAILS

Des. By MRT	Scale AS SHOWN	Proj. Nr. 01001.C	
Drn. By MRT/JB	Date 06/02/03	16 of 40	
Chk. By RL H/ MRT	Approved		

SDP-03-026

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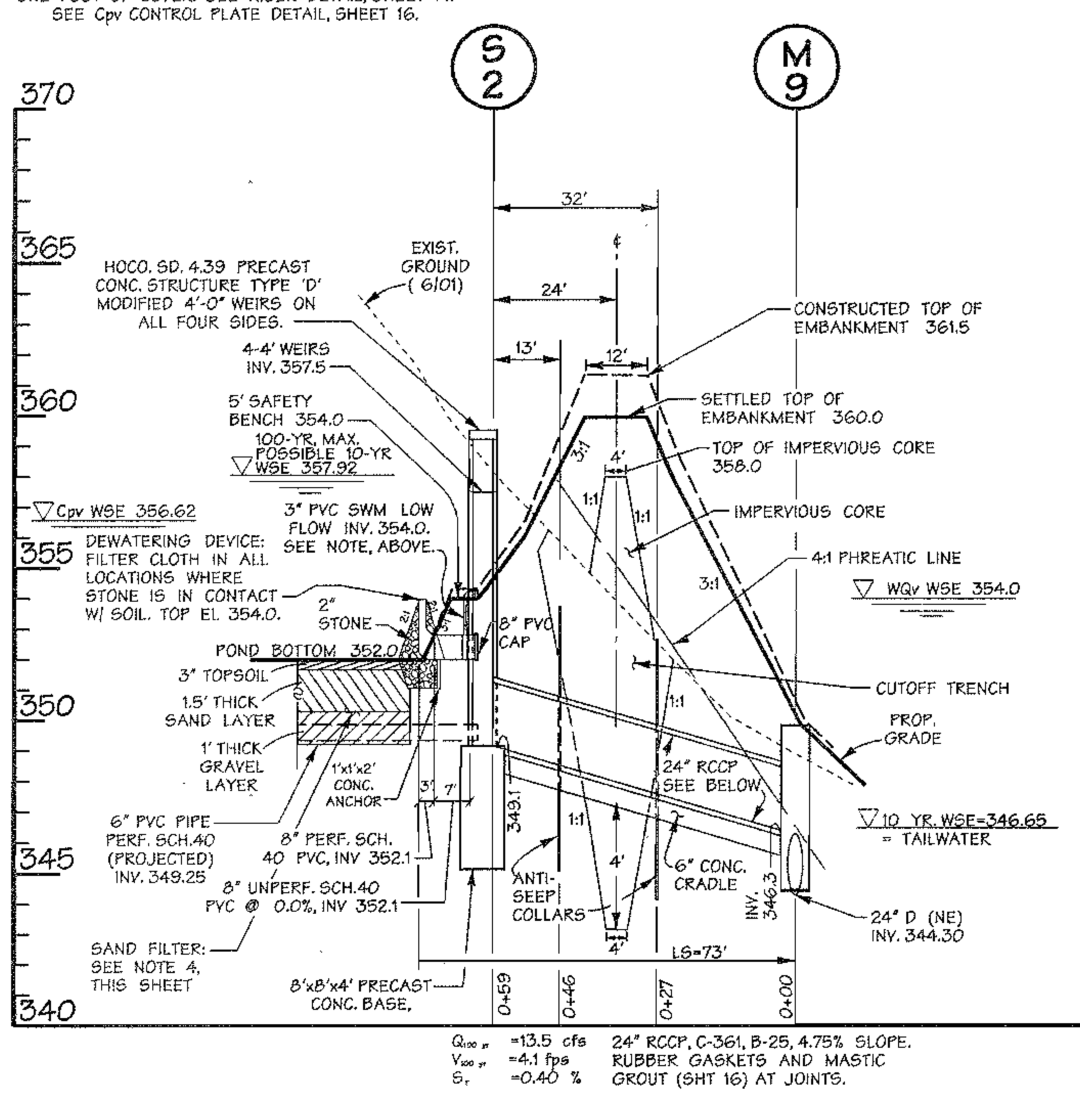
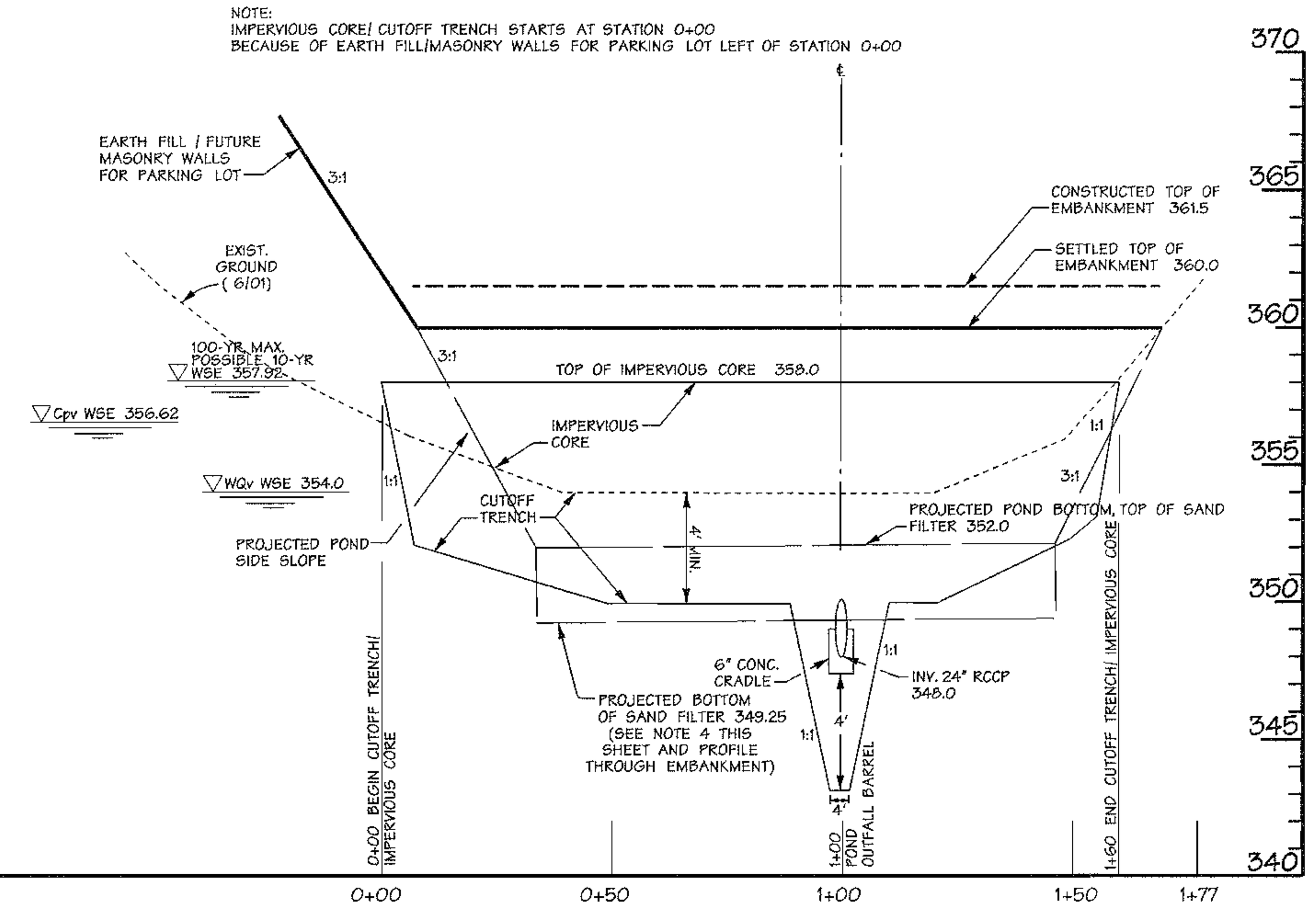


PROFILE THROUGH EMBANKMENT

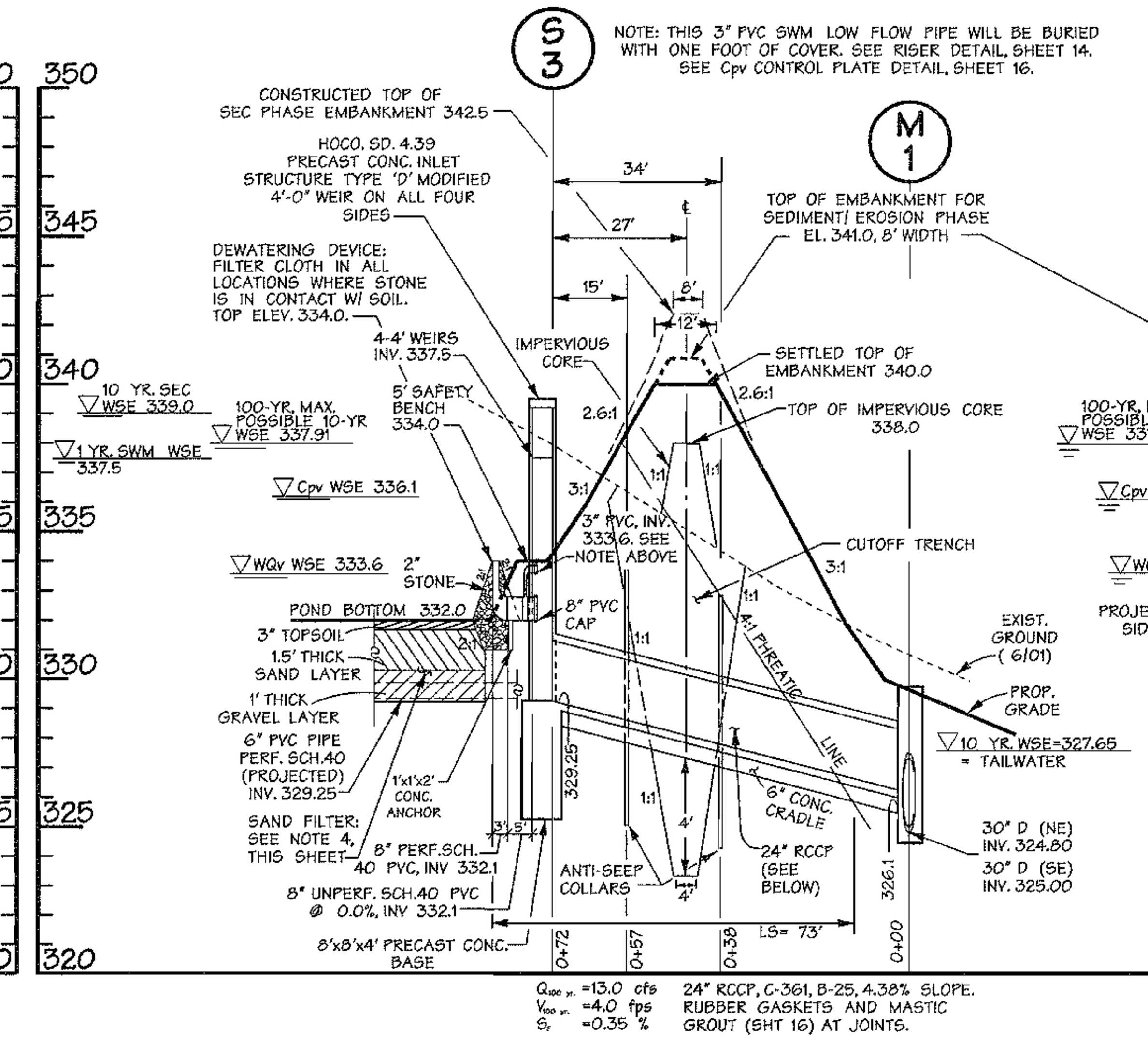
SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'

SWM FACILITY #1
(SAND FILTER)



PROFILE ALONG EMBANKMENT

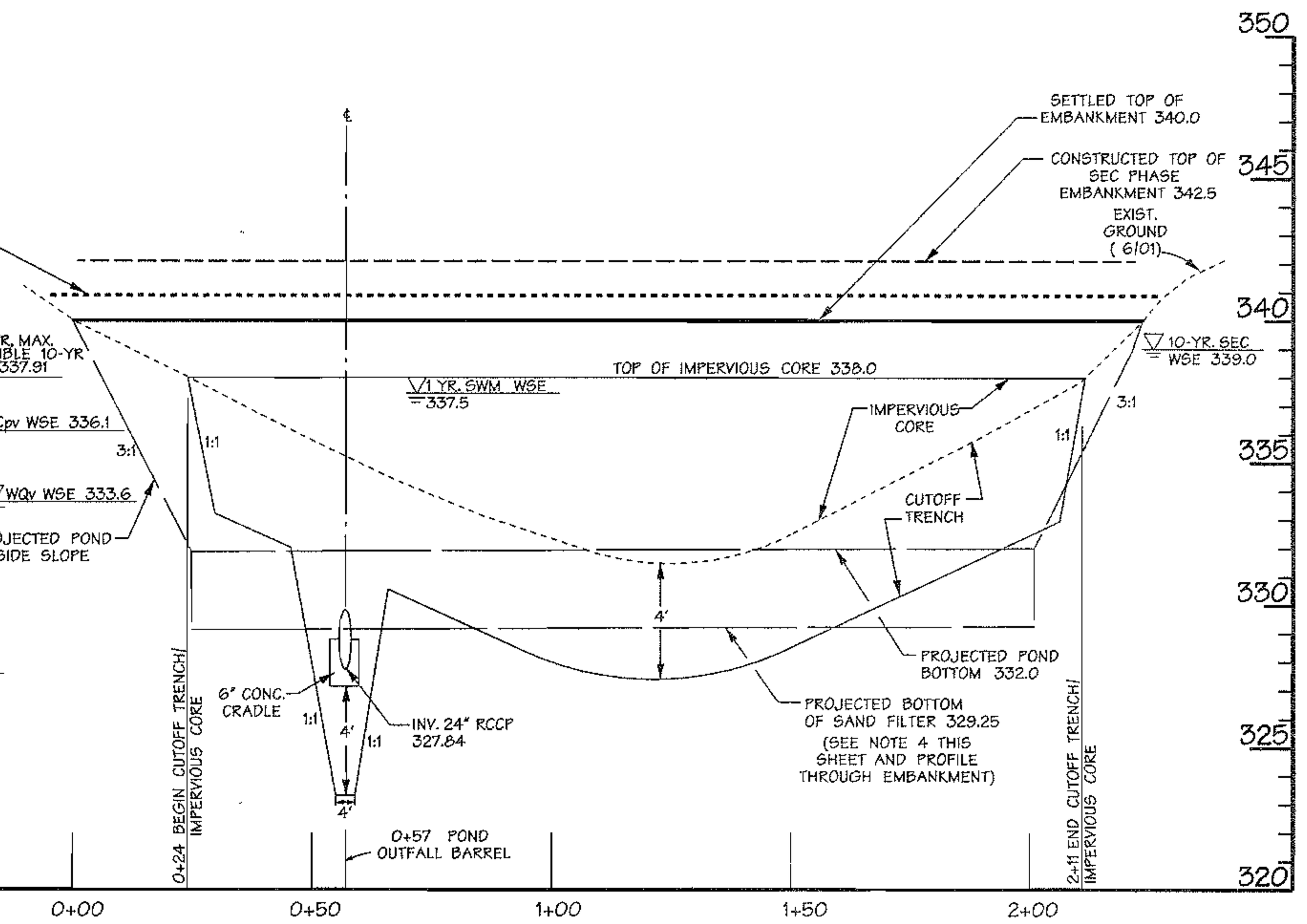
SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'



PROFILE THROUGH EMBANKMENT

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'

SWM FACILITY #2
(SAND FILTER)



PROFILE ALONG EMBANKMENT

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'

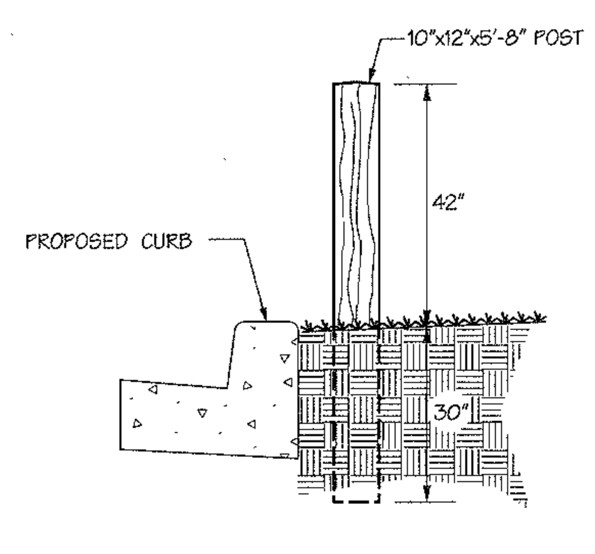
NOTES:

1. FACILITIES #1 AND #3 WILL NOT BE USED AS SEDIMENT BASINS. ONCE DRAINAGE AREAS TO THESE TWO FACILITIES ARE STABILIZED, INSTALL 8" UNPERF. SCH. 40 PVC AND DRAWDOWN DEVICE, PER DETAIL, SHEET 7. DO NOT REMOVE DRAWDOWN DEVICE AND INSTALL 8" PERF. SCH 40 PVC /SWM DEWATERING DEVICE UNTIL SDP #2.

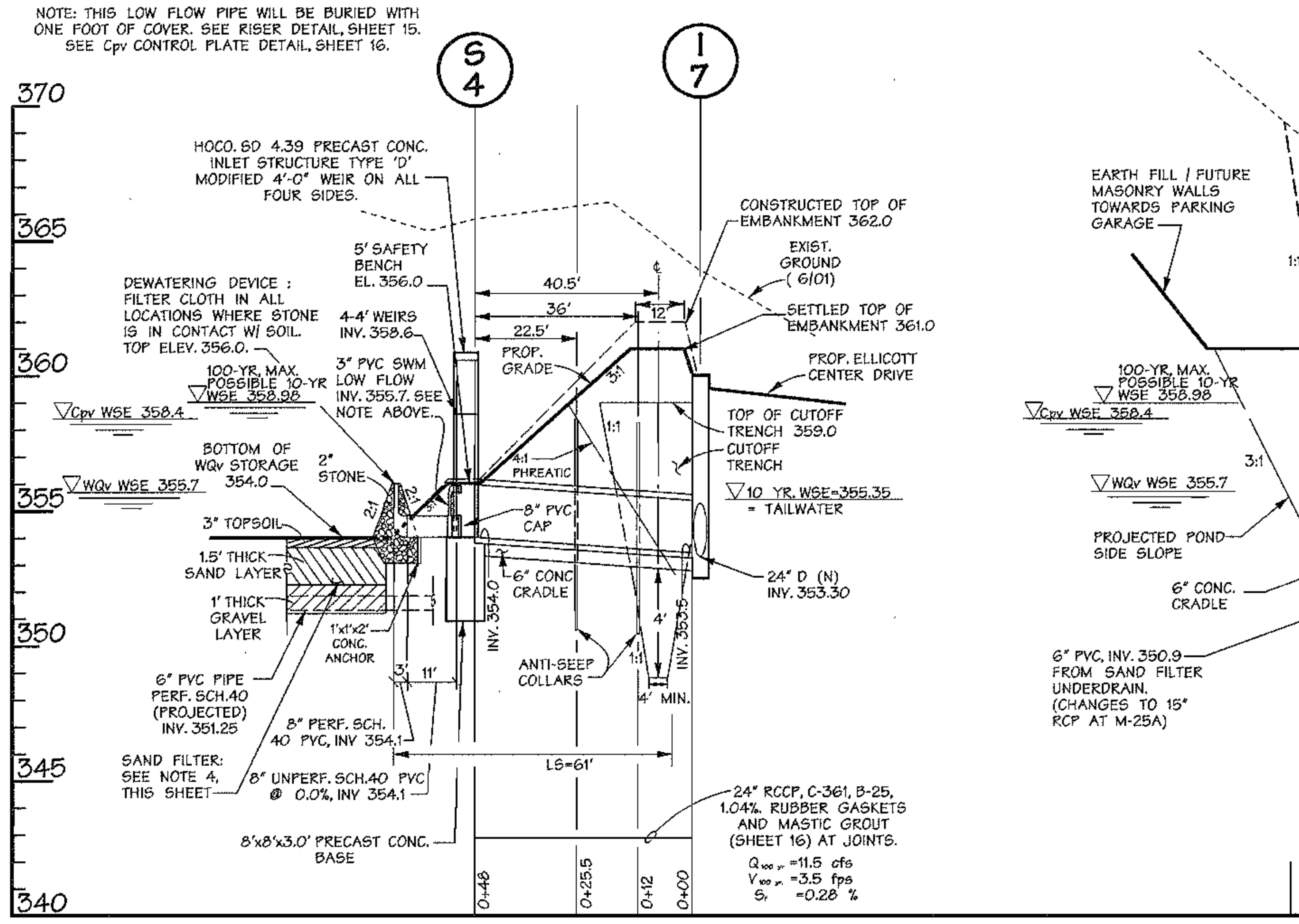
2. FACILITY #3 WILL FUNCTION AS A SEDIMENT TRAP PRIOR TO ITS USE AS A SWM FACILITY. WATER IN THIS TRAP SHALL BE DISCHARGED VIA TEMPORARY PIPE OUTLET. SEE TRAP DETAIL AND SPECIFICATIONS, SHEET 8.

3. FACILITY #2 WILL FUNCTION AS A SEDIMENT BASIN PRIOR TO ITS USE AS A SWM FACILITY. DURING THE BASIN PHASE, RUNOFF WILL BE DISCHARGED THROUGH THE CONCRETE INLET STRUCTURE. A DRAW-DOWN DEVICE WILL TEMPORARILY REPLACE THE DEWATERING DEVICE SHOWN IN THE PROFILE - SEE DETAIL, SHEET 7. THE 8" PVC CAP INSIDE THE INLET STRUCTURE WILL HAVE A 4-INCH ORIFICE DRILLED AT INVERT ELEVATION 332.1. THIS CAP WILL BE REPLACED BY A CAP WITHOUT ORIFICE WHEN CONVERTED TO SWM FACILITY. THE EMBANKMENT WILL BE CONSTRUCTED TO A TOP ELEVATION OF NO LOWER THAN 341.5 FOR THE SEC BASIN PHASE.

4. THE SAND FILTER PORTION OF EACH FACILITY WILL BE CONSTRUCTED IN A FUTURE PHASE OF THIS DESIGN (SDP 2).



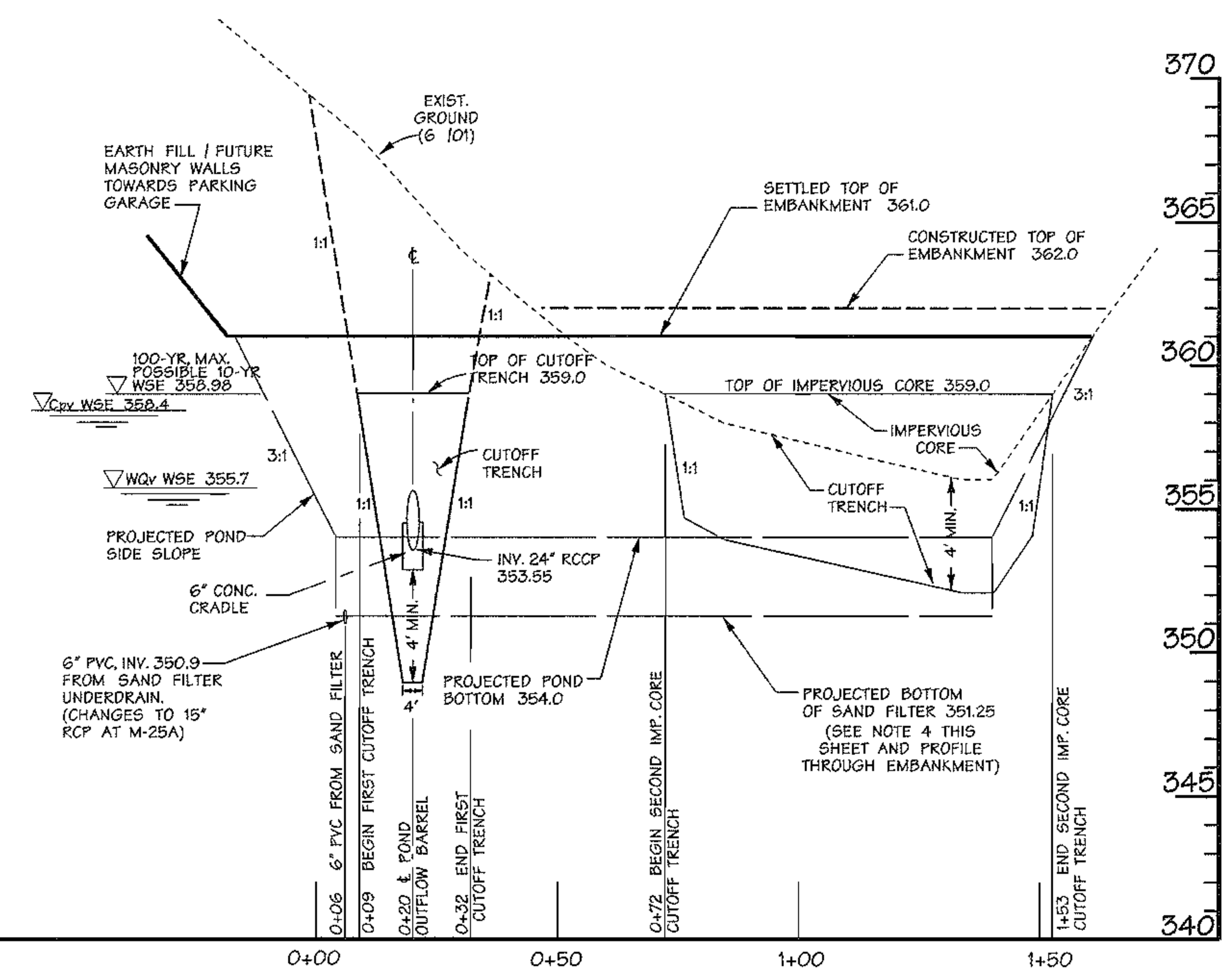
BOLLARD
N.T.S.



PROFILE THROUGH EMBANKMENT

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'

SWM FACILITY #3
(SAND FILTER)



PROFILE ALONG EMBANKMENT

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'

NOTE: ROCK MAY BE ENCOUNTERED DURING EXCAVATION FOR THIS FACILITY. ANY ROCK SHALL BE UNDERCUT TO 4' BELOW PROPOSED BOTTOM OF EXCAVATION INDICATED IN THE PROFILES ABOVE. THE ROCK SURFACE SHALL THEN BE DIRECTLY COVERED BY FILTER CLOTH AND 4' OF SOIL. AT THE TIME OF THIS UNDERCUTTING PROCEDURE THE GEOTECHNICAL ENGINEER SHALL BE PRESENT TO DETERMINE THE LIMITS OF UNDERCUTTING.

MDE PERMIT AND TRACKING No. 200266336

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

Jim Myers /IE 7/1/03
U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE — DATE

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

APPROVED: [signature] 7/1/03
HOWARD SOIL CONSERVATION DISTRICT — DATE

PLAN NUMBER ____________

DEVELOPERS CERTIFICATE:

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

[signature] 6/23/03
SIGNATURE OF DEVELOPER — DATE
PRINT NAME BELOW SIGNATURE

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[signature] 10551 6-4-03
SIGNATURE OF ENGINEER — REG. NO. — DATE
PRINT NAME BELOW SIGNATURE
John W. Ranocchia, Sr.

DATA SOURCES:
ON SITE TOPOGRAPHY PER DMW FIELD RUN IN JUNE, 2001 WITH SUPPLEMENTARY FIELD RUN TOPOGRAPHY CAPTURED ON ROGERS AVENUE AND ELLICOT CENTER DRIVE IN JUNE 2002.
WETLANDS WERE DELINEATED AND FIELD LOCATED BY DMW IN FEBRUARY, 2001.
BOUNDARY PER MILDENBERG BOENDER & ASSOC., DATED DECEMBER 02, 1999.
NOTE:
ALL STREAMS ON SITE ARE PERENNIAL.

6-04-03
Date
Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
[signature] 7-11-03
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
[signature] 7/14/03
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE
[signature] 7/16/03
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE
[signature] 7/21/03
DIRECTOR — DATE

Date	No.	Revision Description

Howard County Office Campus
PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

DMW
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SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
HO. CO. OFFICE CAMPUS	NA	852 & P10847
PLAT# OR L/F 15867-766 / BLOCK # & 1 / ZONE POR	TAX/ZONE MAP 24 & 25 / ELECT. DISTRICT 2	CENSUS TRACT 6029
WATER CODE	SEWER CODE	

TITLE
STORMWATER MANAGEMENT PROFILES

Des. By RLH/LC/MRT	Scale AS SHOWN	Proj. No. 01001.C
Drn. By KDE	Date 06/02/03	17 of 40
Chk. By RLH/MRT	Approved	

SDP-03-026

STORMWATER MANAGEMENT POND
GENERAL CONSTRUCTION SPECIFICATIONS

1. GENERAL

ALL STORMWATER MANAGEMENT FACILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOWARD COUNTY'S "STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (1985)" AND THE N.R.C.S. MARYLAND "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378, 2000).

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

2. 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, FENCES, RUBBISH AND OTHER OBJECTIONABLE MATERIAL UNLESS OTHERWISE DESIGNATED 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.

3. 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 GC, SC, CH, OR CL AND MUST HAVE AT LEAST 30% PASSING THE #200 SIEVE. CONSIDERATION MAY BE GIVEN TO THE USE OF OTHER MATERIALS IN THE EMBANKMENT IF DESIGNED BY A GEOTECHNICAL ENGINEER. 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 LIFT SHALL BE TRAVERSED BY NOT LESS THAN ONE TREAD TRACK OF THE EQUIPMENT OR COMPACTION SHALL BE ACHIEVED BY A MINIMUM OF FOUR COMPLETE PASSES OF A SHEEPSFOOT, RUBBER 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 THE MAXIMUM DRY DENSITY WITH A MOISTER CONTENT WITHIN +/- 2% OF THE OPTIMUM. EACH LAYER OF FILL SHALL BE COMPACTED AS NECESSARY TO OBTAIN THAT DENSITY, AND IS TO BE CERTIFIED BY THE ENGINEER AT THE TIME OF CONSTRUCTION. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T-99 (STANDARD 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 EQUIPMENT USED FOR EXCAVATION, WITH THE MINIMUM WIDTH BEING FOUR FEET SHALL GOVERN THE BOTTOM WIDTH OF THE TRENCH. THE DEPTH SHALL BE AT LEAST 4 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.

4. 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 4 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 4 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, SECTION313 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. AVERAGE SLUMP OF THE FILL SHALL BE 7" TO ASSURE FLOWABILITY OF THE MATERIAL. ADEQUATE MEASURES SHALL BE TAKEN (SAND BAGS, ETC.) TO PREVENT FLOATING THE PIPE. WHEN USING FLOWABLE FILL, ALL METAL PIPE SHALL BE BITUMINOUS COATED. ANY ADJOINING SOIL FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL SHALL COMPLETELY FILL ALL VOIDS ADJACENT TO THE FLOWABLE FILL ZONE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN 4 FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A STRUCTURE OR PIPE, UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE. BACKFILL MATERIAL OUTSIDE THE STRUCTURAL BACKFILL (FLOWABLE FILL) ZONE SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE CORE OF THE EMBANKMENT OR OTHER EMBANKMENT MATERIALS.

5. REMOVAL AND REPLACEMENT OF DEFECTIVE FILL

FILL PLACED AT DENSITIES LOWER THAN SPECIFIED MINIMUM DENSITY OR AT MOISTURE CONTENTS OUTSIDE THE SPECIFIED ACCEPTABLE RANGE OF MOISTURE CONTENT OR OTHERWISE NOT CONFORMING TO THE REQUIREMENTS OF THE SPECIFICATIONS SHALL BE REWORKED TO MEET THE REQUIREMENTS OR REMOVED AND REPLACED BY ACCEPTABLE FILL. THE BOTTOMS OF SUCH EXCAVATIONS SHALL BE FINISHED FLAT OR GENTLY CURVING AND AT THE SIDES OF SUCH EXCAVATIONS THE ADJACENT SOUND FILL SHALL BE TRIMMED TO A SLOPE NOT STEEPER THAN 3 FEET HORIZONTALLY TO 1 FOOT VERTICALLY EXTENDING FROM THE BOTTOM OF THE EXCAVATION TO THE FILL SURFACE.

6. PIPE CONDUITS

ALL PIPES SHALL BE CIRCULAR IN CROSS SECTION. ALL PERFORATED PIPES SHALL HAVE A MINIMUM OF 3.31 SQUARE INCHES OF OPENING PER SQUARE FOOT OF PIPE SURFACE (EX.30 3/8-INCH HOLES PER SQUARE FOOT). PERFORATIONS ARE TO BE UNIFORMLY SPACED AROUND THE FULL PERIPHERY OF THE PIPE. ANY HOLES BLOCKED OR PARTIALLY BLOCKED BY BITUMINOUS COATING SHALL BE OPENED PRIOR TO INSTALLATION.

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 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 50 PERCENT OF ITS OUTSIDE DIAMETER WITH A MINIMUM THICKNESS OF 6 INCHES. WHERE 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 MATERIAL. AFTER THE JOINTS ARE SEALED FOR THE ENTIRE LINE, 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. CONNECTIONS - ALL CONNECTIONS (TO ANTI-SEEP COLLARS, RISER, ETC.) SHALL BE WATERTIGHT.
6. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

PLASTIC PIPE - ALL OF 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), COUPLINGS AND FITTINGS SHALL CONFORM TO THE FOLLOWING; 4" - 10" INCH PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M252 TYPE S, AND 12" THROUGH 24" SHALL MEET THE REQUIREMENTS OF AASHTO M294 TYPE S.
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.

7. CONCRETE

CONCRETE SHALL MEET THE REQUIREMENTS OF THE MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 414, MIX NO. 3

CAST-IN-PLACE CONCRETE STRUCTURES

1. SPECIFICATIONS: MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, LATEST EDITION.

   AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, LATEST EDITION, FOR DESIGN. CONCRETE DESIGN BY THE "SERVICE LOAD DESIGN METHOD".
2. CONCRETE: SHALL MEET THE REQUIREMENTS OF THE MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 414 AND 902, MIX NO. 3.
3. CONTRACTOR MAY ADD COLOR MIX AT PLANT IN ACCORDANCE WITH MANUFACTURES RECOMMENDATION "C-12 MESA BEIGE" AS MANUFACTURED BY L.M. SCOFIELD COMPANY (213) 723-5285.

   CONTRACTOR SHALL SUPPLY MIX DESIGN FOR APPROVAL PRIOR TO APPLICATION. LOAD AND MIX TICKETS SHALL BE SUPPLIED FOR EACH TRUCK DELIVERY. NO PARTIAL FIELD MIXES SHALL BE ALLOWED.

   ALL EXPOSED EDGES SHALL BE CHAMFERED¾" X¾". ALL CONSTRUCTION KEYS ARE SHOWN NOMINAL SIZE.
4. REINFORCING STEEL: REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60. WHERE NOT INDICATED, BAR LAP SPLICES SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATIONS. THE MINIMUM CONCRETE COVER SHALL BE 2 INCHES UNLESS OTHERWISE NOTED. DESIGN FS = 24,000 PSI.
5. FOUNDATION: PRESUMED SOIL BEARING CAPACITY = 2,500 PSF. THE ENGINEER MUST APPROVE ALL FOUNDATIONS PRIOR TO CONCRETE PLACEMENT. IF UNSUITABLE MATERIAL IS ENCOUNTERED, THE MATERIAL SHALL BE UNDERCUT AND BACKFILLED WITH STRUCTURAL BACKFILL.
6. STRUCTURAL BACKFILL: CAST-IN-PLACE CONCRETE STRUCTURES AND PIPE SHALL BE BACKFILLED WITH SELECT GRANULAR BACKFILL MEETING THE REQUIREMENTS OF SHA GRADED AGGREGATE-SUBBASE. STRUCTURAL FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED 4 INCHES, AND COMPACTED TO 95 PERCENT OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY IN ACCORDANCE WITH AASHTO T=99. THE STATIC WEIGHT OF EQUIPMENT USED ADJACENT TO WALLS SHALL NOT EXCEED 3,000 POUNDS. NO BACKFILL SHALL BE PLACED AGAINST THE CAST-IN-PLACE WALLS UNTIL THE CONCRETE HAS ATTAINED THE SPECIFIED 28 DAY STRENGTH.

PRE-CAST CONCRETE STRUCTURES

SHOP DRAWINGS FOR PRE-CAST STRUCTURES WITH SUPPORTING STRUCTURAL COMPUTATIONS (SIGNED AND SEALED BY A MARYLAND REGISTERED PROFESSIONAL ENGINEER) MEETING ASTM REQUIREMENTS FOR PRE-CAST STRUCTURES MUST BE SUBMITTED TO THE ENGINEER, AND THE APPROVING AGENCY (HOWARD COUNTY DEVELOPMENT ENGINEERING DIVISION) FOR APPROVAL PRIOR TO FABRICATION.

8. ROCK RIP-RAP

ROCK RIP-RAP SHALL MEET THE REQUIREMENTS OF THE MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 311.

GEOTEXTILE SHALL BE PLACED UNDER ALL RIP-RAP AND SHALL MEET THE REQUIREMENTS OF THE MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 921.09, CLASS C.

THE RIP-RAP SHALL BE PLACED TO THE REQUIRED THICKNESS IN ONE OPERATION. THE ROCK SHALL BE DELIVERED AND PLACED IN A MANNER THAT WILL INSURE THE RIP-RAP IN PLACE SHALL BE REASONABLY HOMOGENEOUS WITH THE LARGER ROCKS UNIFORMLY DISTRIBUTED AND FIRMLY IN CONTACT ONE TO ANOTHER WITH THE SMALLER ROCKS FILLING THE VOIDS BETWEEN THE LARGER ROCKS.

9. CARE OF WATER DURING CONSTRUCTION

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

10. STABILIZATION

ALL BORROW AREAS SHALL BE GRADED TO PROVIDE PROPER DRAINAGE AND LEFT IN A SIGHTLY CONDITION. ALL EXPOSED SURFACES OF THE EMBANKMENT, SPILLWAY, SPOIL 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.

11. EROSION AND SEDIMENT CONTROL

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

ALL DISTURBED AREAS SHALL BE CONTROLLED BY AN EROSION AND SEDIMENT CONTROL PLAN WHICH HAS BEEN APPROVED BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.

12. SEEDING

SEEDING, FERTILIZING AND MULCHING SHALL BE AS FOLLOWS:

SEED MIX: 50% KENBLUE KENTUCKY BLUEGRASS
40% PENNLAWN CREEPING RED FESCUE
10% STREAKER REDTOP
APPLIED AT A RATE OF 150 LBS. PER ACRE.
(OR)
REBEL II TALL FESCUE (125 LBS. PER ACRE)
PENNFINE PERENNIAL RYEGRASS (15 LBS. PER ACRE)
KENBLUE KENTUCKY BLUEGRASS (10 LBS. PER ACRE)
(OR)
PENNLAWN CREEPING RED FESCUE (70 LBS. PER ACRE)
AURORA HARD FESCUE (50 LBS. PER ACRE)
COMMON WHITE CLOVER (6 LBS. PER ACRE)
WINTER RYE (45 LBS. PER ACRE)
(OR)
70% FORAGER TALL FESCUE
30% CHEMUNG CROWNVETCH, INOCULATED
APPLIED AT A RATE OF 55 LBS. PER ACRE
OPTIMUM SEEDING DATES: MARCH 1 TO APRIL 30.

LIME: 2 TONS/ACRE DOLOMITIC LIMESTONE.

FERTILIZER: 600 LBS./ACRE 10-10-10 FERTILIZER BEFORE SEEDING.
400 LBS./ACRE 30-0-0 UREAFORM FERTILIZER AT TIME OF SEEDING.

MULCH: STRAW AT 4,000 LBS. PER ACRE.

ANCHORING: MULCHING TOOL OR WOO CELLULOSE FIBER BINDER AT A NET DRY BINDER RATE OF 750 POUNDS PER 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 OR AT RATES RECOMMENDED BY THE MANUFACTURER.

13. FILTER CLOTH

ALL FILTER CLOTH SHALL CONFORM TO THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, OR THE LATEST EDITION.

14. GABIONS

ALL GABIONS SHALL BE PVC COATED WOVEN WIRE BASKETS. STONE SIZE SHALL BE 4 INCHES TO 7 INCHES. (CLASS IV GABIONS).

15. CONSTRUCTION INSPECTION BY DESIGNATED ENGINEERS

THE CONSTRUCTION OF THE POND AND EMBANKMENT, AND CERTIFICATION THAT THE POND AND EMBANKMENT HAVE BEEN BUILT IN ACCORDANCE WITH THE PLANS SHALL BE UNDER THE SUPERVISION OF A REGISTERED PROFESSIONAL ENGINEER. THE ENGINEER SHALL BE NOTIFIED SUFFICIENTLY IN ADVANCE OF CONSTRUCTION IN ORDER THAT ARRANGEMENTS CAN BE MADE FOR (1) INSPECTION OF PIPE TRENCH AND BEDDING, (2) INSPECTION OF RISER AND ANTI-SEEP COLLARS AND (3) SUPERVISION OF EMBANKMENT CONSTRUCTION AND COMPACTION TESTING. THE ENGINEER SHALL DIRECT THE HANDLING OF WATER DURING CONSTRUCTION, MINOR CHANGES NOT AFFECTING THE INTEGRITY OF THE DAM IN ORDER TO COMPENSATE FOR UNUSUAL SOIL CONDITIONS, AND THE REMOVAL AND REPLACEMENT OF DEFECTIVE FILL.

16. INSPECTION SCHEDULE

1. PRIOR NOTIFICATION SHALL BE GIVEN TO THE ENGINEER SO THAT INSPECTIONS MAY BE MADE AT THE FOLLOWING STAGES:

   (1) UPON COMPLETION OF EXCAVATION TO SUBFOUNDATION AND WHERE REQUIRED, INSTALLATION OF STRUCTURAL SUPPORTS OR REINFORCEMENT FOR STRUCTURES, INCLUDING BUT NOT LIMITED TO:
   (I) CORE TRENCHES FOR STRUCTURAL EMBANKMENTS.
   (II) INLET-OUTLET STRUCTURES AND ANTI-SEEP STRUCTURES, WATERTIGHT CONNECTORS ON PIPES AND
   (III) TRENCHES FOR ENCLOSED STORM DRAINAGE FACILITIES.
   (2) DURING PLACEMENT OF STRUCTURAL FILL, REINFORCING AND CONCRETE, AND INSTALLATION OF PIPING AND CATCH BASINS
   (3) DURING BACKFILL OF FOUNDATIONS AND TRENCHES
   (4) DURING EMBANKMENT CONSTRUCTION AND
   (5) UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

NO WORK SHALL PROCEED UNTIL THE ENGINEER INSPECTS AND APPROVES THE WORK PREVIOUSLY COMPLETED.

2. GEOTECHNICAL COMPACTION TESTING OF THE FACILITY EMBANKMENT IS REQUIRED. CERTIFICATION MUST BE PROVIDED TO THE DESIGNATED ENGINEER IN CHARGE OF THE AS-BUILT.
3. A COPY OF ALL MATERIAL SUPPLY TICKETS MUST BE GIVEN TO THE DESIGNATED ENGINEER IN CHARGE OF THE AS-BUILT.

17. MAINTENANCE SCHEDULE

1. THE FACILITY SHALL BE INSPECTED TWICE ANNUALLY, MARCH AND SEPTEMBER, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, SCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378). THE POND OWNER(S) AND ANY HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION, AND MAINTENANCE THEREOF. THE POND OWNER(S) SHALL PROMPTLY NOTIFY THE SOIL CONSERVATION DISTRICT OF ANY UNUSUAL OBSERVATIONS THAT MAY BE INDICATIONS OF DISTRESS SUCH AS EXCESSIVE SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.
2. VEGETATED COVER SHALL BE MAINTAINED AT ALL TIMES.
3. RILLS ON THE SLOPES OF THE DAM AND WASHED IN THE EARTH SPILLWAY SHALL BE FILLED WITH SUITABLE MATERIAL AND THOROUGHLY COMPACTED. THESE AREAS SHALL BE RESEEDED OR RESODDED, LIMED, AND FERTILIZED AS NEEDED.
4. ALL APPURTENANCES SHALL BE KEPT FREE OF TRASH.
5. SEDIMENT SHALL BE REMOVED FROM FOREBAYS WHEN THE DEPTH EXCEEDS 1'.
6. TRASH AND DEBRIS SHALL BE REMOVED AS NECESSARY.
7. VEGETATION ON EMBANKMENT AND ACCESS BENCH SHALL NOT EXCEED 18" IN HEIGHT.
8. TOP AND OUTSIDE SIDE SLOPE OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES A YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. INSIDE SIDE SLOPE, AND MAINTENANCE ACCESS SHOULD BE MOWED AS NEEDED. CARE SHALL BE TAKEN NOT TO MOW ANY OF THE WETLAND PLANTINGS IN THE VICINITY OF THE 5' SAFETY BENCH.

18. OPERATION, MAINTENANCE AND INSPECTION

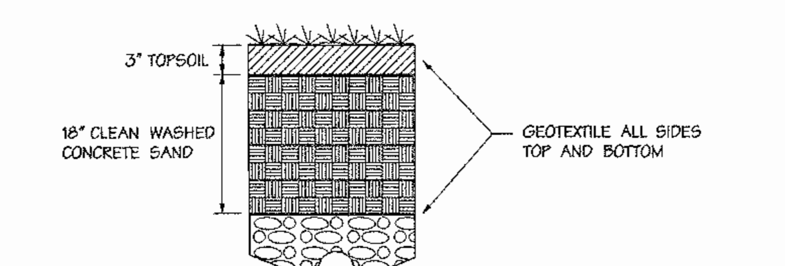
INSPECTION OF PONDS SHOWN HEREON SHALL BE PERFORMED AT LEAST TWICE ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, SCA "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378). THE POND OWNER(S) AND ANY HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE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

19. UTILITIES

NO UTILITIES MAY BE CONSTRUCTED WITHIN/ALONG ANY MD-378 EMBANKMENT.

Table B.3.1 Material Specifications for Sand Filters

Material	Specification/Test Method	Size	Notes
sand	clean AASHTO-M-6 or ASTM-C-33 concrete sand	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.
peat	ash content <15 percent pH range: 5.2 to 4.9 loose bulk density 0.12 to 0.15 g/cc	n/a	The material must be reed-sedge hemic peat, shredded, uncompacted, uniform, and clean.
leaf compost		n/a	
underdrain gravel	AASHTO-M-43	0.375" to 0.75"	
geotextile fabric (if required)	ASTM-D-4833 (puncture strength - 125 lb.) ASTM-D-4632 (tensile strength - 300 lb.)	0.08" thick equivalent opening size of #80 sieve	Must maintain 125 gpm per sq. ft. flow rate. Note: a 4" pea gravel layer may be substituted for geotextiles meant to "separate" said filter layers.
impermeable liner (if required)	ASTM-D-4833 (thickness) ASTM-D-412 (tensile strength 1,100 lb., elongation 200%) ASTM-D-624 (Tear resistance - 150 lb./in) ASTM-D-471 (water absorption: +8 to 2 percent mass)	30 mil thickness	Liner to be untraviolet resistant. A geotextile fabric should be used to protect the liner from puncture.
underdrain piping	F 758, Type PS 28 or AASHTO-M-278	4" - 6" rigid schedule 40 PVC or SDR35	3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes.
concrete (cast-in-place)	MSHA Standards and Specs. Section 902, Mix No. 3, f'_c = 3500 psi, normal weight, air-entrained; re-inforcing to meet ASTM 615 60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) *not using previously approved State or local standards* requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland.
concrete (pre-cast)	per pre-cast manufacturer	n/a	SEE ABOVE NOTE
non-rebar steel	ASTM A-36	n/a	structural steel to be hot-dipped galvanized ASTM-A-123



SAND FILTER TYPICAL SECTION

OPERATION AND MAINTENANCE SCHEDULE

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-inches in height or as needed.
3. Filters that have a grass cover shall be mowed a minimum of three 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 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. Proper cleaning and disposal of the removed materials and liquid must be followed by the owner.
8. A log book shall be maintained to determine the rate at which the facility drains.
9. The maintenance log book 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.

B.3.A 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 percent; gravel slopes to 15 percent; paved slopes to 25 percent.

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" sand filters shall be sized with a stone "window" that covers approximately 10 percent of the filter area. This "window" shall be filled with pea gravel (3.4-inch stone).

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

[signature] 7-1-03
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

[signature] 7/14/03
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

[signature] 7/16/03
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

[signature] 7/21/03
DIRECTOR — DATE

Date	No.	Revision Description

Howard County Office Campus
PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
HO. CO. OFFICE CAMPUS	NA	852 & P/0847

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15967-70	6 & 1	POR	24 & 25	2	6029

WATER CODE — SEWER CODE

TITLE
STORMWATER MANAGEMENT SPECIFICATIONS

Des. By RLH	Scale		Proj. No. 0100I.C
Drn. By WDE	Date 06/02/03		18 of 40
Chk. By RLH	Approved		

MDE PERMIT AND TRACKING No. 200266336

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

[signature] 7/1/03
U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE — DATE

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

APPROVED: [signature] 7/1/03
HOWARD SOIL CONSERVATION DISTRICT — DATE

PLAN NUMBER

DEVELOPERS CERTIFICATE:

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

[signature] 6/23/03
SIGNATURE OF DEVELOPER — DATE
PRINT NAME BELOW SIGNATURE

ENGINEERS CERTIFICATE:

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

[signature] 10551 6-4-03
SIGNATURE OF ENGINEER — REG. NO. — DATE
PRINT NAME BELOW SIGNATURE
John W. Ranocchia, Sr.

6-04-03
Date

STATE OF MARYLAND — JOHN W. RANOCCHIA, SR. — No. 10551 — REGISTERED PROFESSIONAL ENGINEER

Professional Engr. No. 10551

SDP-03-026

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Wed Jun 4 08:46:27 2003 m:\01001\sheets\files\01001.m5

STREET LIGHT LEGEND

250 WATT HIGH PRESSURE SODIUM (HPS) VAPOR PENDANT FIXTURE (SAG) MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING 12' ARM.

150 WATT HIGH PRESSURE SODIUM (HPS) VAPOR PREMIER POST TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE.

Plant List (Perimeter Landscaping and Street Trees)

QTY	SYM	BOTANICAL NAME/ COMMON NAME	SIZE	REMARKS
SHADE TREES				
4	AR	ACER RUBRUM RED MAPLE	2 1/2" - 3" CAL. 12'-14' HT	B & B FULL HEAD.
3	QC	QUERCUS COCCINEA SCARLET OAK	2 1/2" - 3" CAL. 12'-14' HT	B & B FULL HEAD
6	QP	QUERCUS PALUSTRIS PIN OAK	2 1/2" - 3" CAL. 12'-14' HT	B & B FULL HEAD
68	PA	PLATANUS ACERIFOLIA LONDON PLANE TREE	2 1/2" - 3" CAL. 12'-14' HT	B & B FULL HEAD
EVERGREEN TREES				
27	10	ILLEX OPACA AMERICAN HOLLY	6'-8' HT.	B & B ONE MALE / HEAVY / 1 CENTRAL LEADER
21	PS	PINUS STROBUS WHITE PINE	6'-8' HT.	B & B HEAVY / UNSHEARED / 1 CENTRAL LEADER
16	TO	THUJA OCCIDENTATLIS 'GREEN GIANT' GIANT ARBORVITAE	6'-8' HT.	B & B HEAVY / 1 CENTRAL LEADER
SHRUBS				
61	LB	LINDERA BENZOIN SPICEBUSH	30"-36" HT.	7' O.C. / 5 CANE MINIMUM
18	VD	VIBURNUM DENTATUM ARROWWOOD VIRBURNUM	30"-36" HT.	7' O.C. / 5 CANE MINIMUM
42	VP	VIBURNUM PRUNIFOLIA BLACKHAW VIRBURNUM	30"-36" HT.	7' O.C. / 5 CANE MINIMUM

LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- 300 MAJOR CONTOURS
- 295 MINOR CONTOURS
- STREAM CENTERLINE
- STREAM BUFFER
- WETLAND LIMIT
- WETLAND BUFFER
- 100 YR FLOODPLAIN
- EXISTING FOREST EDGE
- EXISTING ROADS
- PROPOSED FOREST EDGE (RETENTION)
- FOREST CONSERVATION EASEMENT
- PROPOSED REFORESTATION
- EXISTING UTILITY EASEMENTS
- NON-WOODY VEGETATION ZONE
- PROPOSED SHADE TREE
- PROPOSED EVERGREEN TREE
- PROPOSED SHRUBS
- STREET TREE PROVIDED BY OTHERS

MATCH LINE – SEE SHEET 18

MATCH LINE – SEE SHEET 18

PARK VIEW AT ELLICOTT CITY
P.96 A
5576/610
ZONED POR-MXD-6

PARK VIEW AT ELLICOTT CITY
P.96 B
4389/288
ZONED POR-MXD-6

PERIMETER 2
406 LF - CREDIT

PERIMETER 13A (CONT)

PERIMETER 1
ADDITIONAL SCREENING REQUIREMENTS
427 LF - CREDIT
±162 LF - TYPE "C"

±191 LF - CREDIT
SDP-2 MAY GENERATE ADDITIONAL

±280 LF - TYPE "C"

PERIMETER 10-A
±519 LF - TYPE "E"

PERIMETER 10
223 LF - CREDIT

PERIMETER 9
±235 LF - CREDIT

±220 LF - CREDIT

GERALD A. OTTEN & WIFE
P. 852
218169
ZONED R20

MICHAEL N. & JENNIFER L. KRAMER
P.910
3429/338
ZONED R20

KAREN & DEBORAH SUMMERS
P.819
5591/420
ZONED R20

CARLOS AND YOLANDA PEREIRA
P. 912
4348/82
ZONED R20

PAUL E. & BONNIE L. THOMPSON
P. 913
1555/334
ZONED R20

EARL W. & MARGARET L. MCNEILLY
P.76
1555/334
ZONED R20

REGENT INTERNATIONAL LLC
C/O RITE AID CORP #3384
P.54
2805/637
ZONED B2

WETLANDS
WETLAND BUFFER
50' STREAM BUFFER
FLOODPLAIN BUFFER
FUTURE PEDESTRIAN BRIDGE
FUTURE BUILDING
FUTURE PARKING
FUTURE ROAD
(LOCATION TO BE DETERMINED IN THE FIELD)
SWM FACILITY #1
SWM PERIMETER ±713 LF - TYPE "B"
SWM FACILITY #2
SWM PERIMETER ±694 LF - TYPE "B"
ELLICOTT CENTER DRIVE
ROGERS AVENUE
OAK WEST DR.
BUILDING & USE SETBACK
LIMIT OF DISTURBANCE
EDGE OF PAVEMENT
EDGE OF STRIPING
EX. 8" S. CONT. NO. 21.0'
EX. 30' D.
PROP. 8" D.I. CO
PROP. 6" SAN. CO
POST AND RAIL FENCE
PHONE PEDESTAL
MAIL BOX
SIGN
INLET
MANHOLE
E 1366000
N 589000

NOTES:
SEE PLANT LIST ON THIS SHEET.
SEE PLANTING NOTES AND DETAILS ON SHEET 21.

NOTE: ROGERS AVENUE STREET TREES PER J4097.

DATA SOURCES:
ON SITE TOPOGRAPHY PER DMW FIELD RUN IN JUNE, 2001 WITH SUPPLEMENTARY FIELD RUN TOPOGRAPHY CAPTURED ON ROGERS AVENUE AND ELLICOT CENTER DRIVE IN JUNE 2002.
WETLANDS WERE DELINEATED AND FIELD LOCATED BY DMW IN FEBRUARY, 2001. BOUNDARY PER MILDENBERG BOENDER & ASSOC., DATED DECEMBER 02, 1999.
NOTE:
ALL STREAMS ON SITE ARE PERENNIAL.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/16/03

DIRECTOR — DATE 7/16/03

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

DMW
Daft-McCune-Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME: HO. CO. OFFICE CAMPUS	SECTION/AREA: NA		LOT/PARCEL #: 552 & P/O847
PLAT # OR L/F: 15367-20	BLOCK #: 6 & 11	ZONE: POR	TAX/ZONE MAP: 24 & 25
ELECT. DISTRICT: 2	CENSUS TRACT: 6029		
WATER CODE:	SEWER CODE:		

10-4-03
Date

STATE OF MARYLAND — KELLANIE K. WALKER — No. 661 — REGISTERED LANDSCAPE ARCHITECT

Landscape Architect

TITLE
LANDSCAPE & STREET TREE PLAN
EAST SIDE

Des. By FPB	Scale 1"=50'	Proj. No. 01001.C	
Drn. By BKC	Date 06/02/03	19 of 40	
Chk. By RLW	Approved		

SDP-03-026

Wed Jun 4 08:46:54 2003
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NOTES:
SEE PLANT LIST ON SHEET 19.
SEE PLANTING NOTES AND DETAILS ON SHEET 21.

STREET LIGHT LEGEND

250 WATT HIGH PRESSURE SODIUM (HPS) VAPOR PENDANT FIXTURE (SAG) MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING 12' ARM.

150 WATT HIGH PRESSURE SODIUM (HPS) VAPOR, PREMIER POST TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE.

LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- 300 MAJOR CONTOURS
- 295 MINOR CONTOURS
- STREAM CENTERLINE
- STREAM BUFFER
- WETLAND LIMIT
- WETLAND BUFFER
- 100 YR FLOODPLAIN
- EXISTING FOREST EDGE
- EXISTING ROADS
- PROPOSED FOREST EDGE (RETENTION)
- FOREST CONSERVATION EASEMENT
- PROPOSED REFORESTATION
- EXISTING UTILITY EASEMENTS
- NON-WOODY VEGETATION ZONE
- PROPOSED SHADE TREE
- PROPOSED EVERGREEN TREE
- STREET TREE PROVIDED BY OTHERS

ELLICOTT CENTER DRIVE
U.S. ROUTE 40
O'DONNELL REALTY CO LLP
P.1042
36921 77
ZONED B2
PERIMETER 5
±380 LF - CREDIT
PERIMETER 6
±587 LF - CREDIT
(INCLUDES PROPERTY LINE INDENT)
UNITED STATES POSTAL SERVICE
PARCEL B-1
PLAT NO. 14096
PERIMETER 4
±395 LF - TYPE "A"
FORTY TWENTY-NINE ASSOC. LTD. PARTNERSHIP
PARCEL 'B'
PLAT NO. 15867 (6-08-21)
No 4116/282
(No F.847)
ZONED POR-MXD-6
PERIMETER 3B
±91 LF - TYPE "A"
PERIMETER 3A
±257 LF - CREDIT
APPROXIMATE BUILDING LOCATION
PARK VIEW AT ELLICOTT CITY
F.56 A
5576/610
ZONED POR-MXD-6
MATCH LINE - SEE SHEET 17
SWM FACILITY #3
SWM PERIMETER
±669 LF
TYPE "B"
FUTURE PARKING GARAGE
FUTURE PEDESTRIAN BRIDGE
8659 LIMITED PARTNERSHIP
F.53
897/ 236
ZONED B2
PERIMETER 7
±257 LF - CREDIT
GREEN RIDGE LIMITED PARTNERSHIP
F.882
2449/ 122
ZONED B2
PERIMETER 8
±396 LF - CREDIT
Owner Name: BUELL FRANKLIN G & WF C/O MONRO MUFFLER BRAKE INC
F.883
501/ 647
ZONED B2
PERIMETER 9 (CONT)
WETLANDS
WETLAND BUFFER
STREAM
100 YR FLOODPLAIN
E 1365000
N 597000
E 1366000
N 596000

DATA SOURCES:
ON SITE TOPOGRAPHY PER DMW FIELD RUN IN JUNE, 2001.
WETLANDS WERE DELINEATED AND FIELD LOCATED BY DMW IN FEBRUARY, 2001.

NOTE:
ALL STREAMS ON SITE ARE PERENNIAL.

6.4.03
Date

STATE OF MARYLAND
MELANIE MACGILL
No. 651
REGISTERED LANDSCAPE ARCHITECT

Landscape Architect

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/16/03

DIRECTOR — DATE 7/21/03

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

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ELLICOTT CITY, MD 21043

DMW
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200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
HO. CO. OFFICE CAMPUS	NA	852 & P/0847

PLAT # OR L/F	BOOK #	FOLIO	MAP/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15867-70	26 & 1	POR	24 & 25	2	6029

WATER CODE	SEWER CODE

TITLE
LANDSCAPE & STREET TREE PLAN
WEST SIDE

Des. By	FPB	Scale 1"=50'	Proj. No. 01001.C
Drn. By	BKC	Date 06/02/03	20 of 40
Chk. By	RLN	Approved	

SDP-03-026

Wed Jun 4 09:56:26 2003
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Landscape Notes

1. The contractor shall review architectural/engineering plans to become thoroughly familiar with grading and surface utilities.

2. All equipment and tools shall be placed so as not to interfere or hinder the pedestrian and vehicular traffic flow. No vehicles, equipment, tools, etc. shall be placed on or within any tree protection zone. No staging (storing or stockpiling of supplies or material) within the tree protection zones

3. The contractor shall coordinate with lighting and irrigation contractors regarding timing of installation of plant material.

4. The contractor shall insure that his work does not interrupt established or projected drainage patterns.

5. During planting operations, excess waste materials from landscape installation shall be removed daily

6. The contractor is advised of the existence of underground utilities on the site. Their exact location shall be verified in the field with the owner or general contractor prior to the commencement of any digging operations. In the event they are uncovered, the contractor shall be held responsible for all damage to utilities and such damage shall not result in any additional expenses to the owner.

7. If utility lines are encountered in excavation of tree pits, other locations for trees shall be made by the contractor without additional compensation. No changes of location shall be made without approval of the landscape architect.

8. Maintain positive drainage out of planting beds at a minimum 2% slope. All grades, dimensions, and existing conditions shall be verified by the contractor on site before construction begins. Any discrepancies shall be brought to the attention of the landscape architect or owner.

9. Every possible safeguard shall be taken to protect building surfaces, equipment, existing trees and furnishing. The contractor shall be responsible for any damage or injury to person or property which may occur as a result of his negligence in the execution of the work.

10. In the event of variation between quantities shown on the plant list and the plans, the plans shall control. The contractor is responsible for verifying all plant quantities prior to the commencement of work. Sod quantity take-offs are the responsibility of the contractor. All discrepancies shall be reported to the landscape architect for clarification prior to bidding. The contractor shall furnish plant material in sizes as specified in plant list.

11. The contractor shall stake all material located on the site for review and/or adjustment by the landscape architect prior to planting. All locations are to be approved by the landscape architect before excavation.

12. Plants shall conform to current "American Standards for Nursery Stock" by American Association of Nurserymen (AAN), particularly with regard to size, growth, size of ball, and density of branch structure. Plant material shall be tagged at the source by the landscape architect unless this requirement is specifically waived.

13. All plants (B&B or container) shall be properly identified by weather-proof labels securely attached thereto before delivery to project site. Labels shall identify plants by name, species, and size. Labels shall not be removed until the final inspection by the landscape architect or agent in charge.

14. Any material and/or work may be rejected by the landscape architect if it does not meet the requirements of the specifications. All rejected materials shall be removed from the site by the contractor.

15. No substitutions shall be made without written consent of the owner or landscape architect.

16. The landscape architect or owner shall have the right, at any stage of the operations, to reject any and all work and material which, in his opinion, does not meet the requirements of these plans and specifications.

17. The contractor shall be wholly responsible for stability and conditions of all trees and shrubs and shall be legally liable for any damage caused by instability of any plant materials.

18. All proposed trees to be installed either entirely in or entirely out of planting beds. Planting bed lines are not to be obstructed. All shrubs and ground covers shall be planted in a continuously prepared bed that has been Roto-tilled to a depth of 8 inches. Then a 3 inch layer of organic matter (Leaf Gro or similar product) is to be added. The bed is to then be tilled once again immediately prior to planting. Beds should be top dressed with 3 inch shredded hardwood mulch. Mulch shall have been shredded within the last six months.

19. All planting beds adjacent to lawn, sod, or seeded areas shall be spade edged to a depth of 3 inches.

20. Maintenance shall begin after each plant has been installed and shall continue until 90 days after final acceptance by the architect or owner representative. Maintenance includes mowing of turf, watering, pruning, weeding, fertilizing, mulching, replacement of sick or dead plants, and any other care necessary for the proper growth of the plant material. The contractor must be able to provide continued maintenance if requested by the owner.

21. Upon completion of all landscaping, an acceptance of the work shall be held. The contractor shall notify the landscape architect or owner for scheduling the inspection at least seven (7) days prior to the anticipated inspection date.

22. All trees shall be guaranteed for 12 months from the date of acceptance. All shrubs and ground covers shall be guaranteed for 12 months from the date of acceptance.

23. The contractor is responsible for testing project soils at a minimum of 12 locations, determined by project landscape architect. The contractor is to provide a certified soils report to the owner which contains the following:
Soil PH
Nitrogen (N)
Phosphorus (P)
Potassium (K)
Iron (Fe)
Nutrient Retention Capacity (CEC)
Organic material (%)
The contractor shall verify that the soils on site are acceptable for the proper growth of the proposed plant material. Should the contractor find poor soil conditions, the contractor shall be required to provide soil amendments as necessary. These amendments shall include, but not be limited to, fertilizers, lime, and topsoil. Proper planting soils must be verified prior to planting of materials. Any fertilization should be prescription based and in accordance with the current ANSI-300 fertilization standards.

24. PLANTING MIX:
a. Planting mix shall be prepared at approved on-site staging area using approved on-site existing soil. Mix minimum quantities of 20 cubic yards or sufficient mix for entire job if less than 20 cubic yards is required. Only thoroughly composted wood materials should be utilized.

b. Thoroughly mixed in the following proportions for tree and shrub planting mix:
.5 cy existing soil
.2 cy sharp sand
.3 cy wood residuals
4.5 lbs treble superphosphate
5 lbs dolomite limestone (eliminate for acid loving plants)

c. For bed planting, shrubs and groundcover spaces 24 inches or closer, incorporate the following ingredients per 20 sf and incorporate into top 8 inches of existing soils by rototilling or similar method of incorporation.
.2 cy sharp sand
.3 cy organic material
4.5 lbs treble superphosphate
5 lbs dolomite limestone (eliminate for acid loving plants)

Note: PH altering additives should be applied when soil analysis indicates and then only in the amount specified in soil analysis

25. The contractor shall dispose of stumps and major roots of all plants to be removed. Any depressions caused by removal operations shall be refilled with fertile, friable soil placed and compacted so as to reestablish proper grade for new planting and/or lawn areas.

26. The contractor shall insure adequate vertical drainage in all plant beds and planters.

27. All disturbed areas on the site not planted with shrubs or ground cover shall be fine graded and seeded or sodded as noted on landscape plan.

28. All sod shall be obtained from areas having growing conditions familiar to areas to be covered. Areas to be sodded shall be raked of stones and debris. Debris and stones over 1 inch in diameter shall be removed from the site. All damaged sod will be rejected. All sod must be placed with staggered joints, tightly butted, with no inequalities in grade. Place all sod in rows at right angles to slopes (where applicable).

30. Some field located plants are not graphically shown on this plan but are within the limit of construction line. All plants (field located plants and graphically shown plants) are noted on the plant list.

31. Watering shall take place on the same day that the plant materials are installed

32. Interlock all protective hose sections when wiring the trees.

33. Do not twist wires. Hand tighten wires around stakes so that they are slightly slack.

34. Remove top 2/3 of wire baskets on root balls.

35. No mulch is to be placed against trunk and stems of trees and shrubs.

36. A minimum spacing of 20' shall be maintained between lights and any trees.

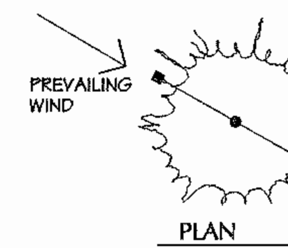
General Planting Notes

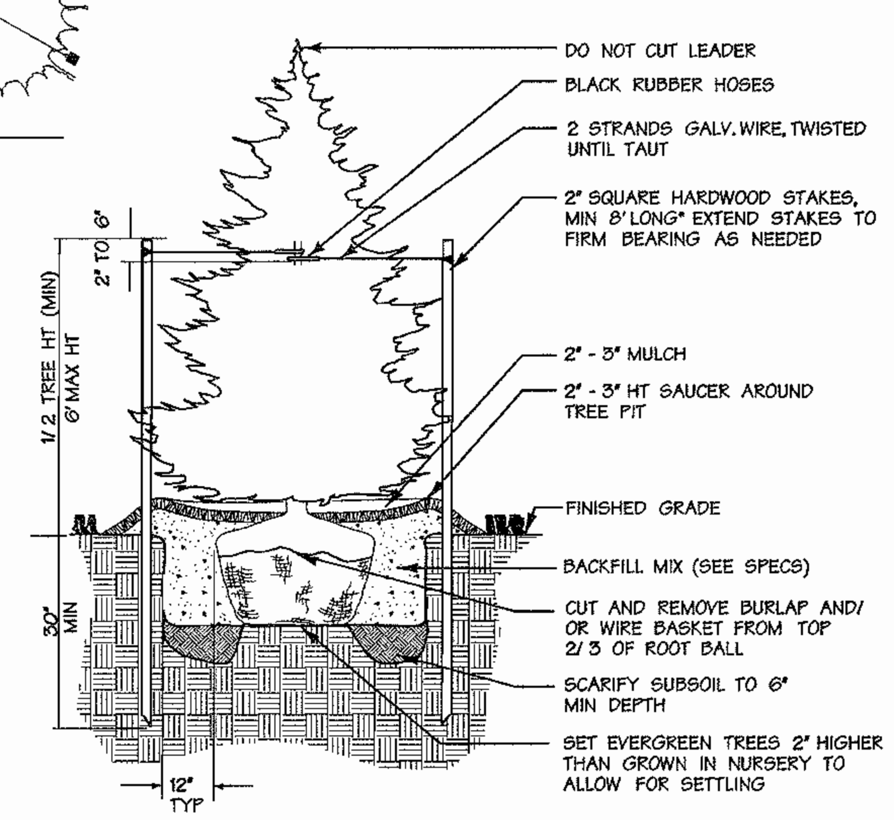
1. All plant material to meet A.A.N. Standards.
2. All planting procedures shall conform to Landscape Contractors Association (LCA) specification guidelines for Baltimore/Washington metropolitan area (latest edition) LCA Landscape Specification Guidelines (5th Ed.) section 1.16, replacement and conditions, item F. Plant losses due to abnormal weather does not apply.
3. No substitutions to be made without consent of Landscape Architect or Owner.
4. All beds to be topped with three inches of hardwood mulch.
5. Landscape Contractor to verify location of utilities with Owner before planting.
6. Landscape Architect/Owner shall select, verify and/or approve all plant material. At Owner's discretion, specimen and other plant material will be selected.
7. Landscape Contractor shall coordinate plant bed filling operations and plant material installation with General Contractor and Utilities Contractor. At the time of final inspection with acceptance, all electric, water, drainage, and fountain utilities, as well as all plant materials, shall remain undamaged. Likewise, Landscape Contractor and Utilities Contractor shall coordinate efforts to ensure that surface utilities are at the proper elevation relative to final grades.
8. Contractor shall notify Miss Utility 72 hours prior to construction.
9. The owner, tenant, and/or their agents shall be responsible for maintenance of the required landscaping, including both plant materials and berms, fences and walls. 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 other required landscaping shall be permanently maintained in good condition, and when necessary, repaired or replaced.
10. This plan has been prepared in accordance with the provisions of Section 16.124 of the Ho. Co. code.
11. At the time of installation, all shrubs and other plantings herewith listed and approved for this site, shall be of proper height requirements in accordance with the Howard County Landscape Manual. In addition, no substitutions or relocation of required plantings as shown on this plan may be made without prior approval from the Department of Planning and Zoning. Any deviation from this 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 applicable plans and certificates.

12. Developer's/Builder's Certificate

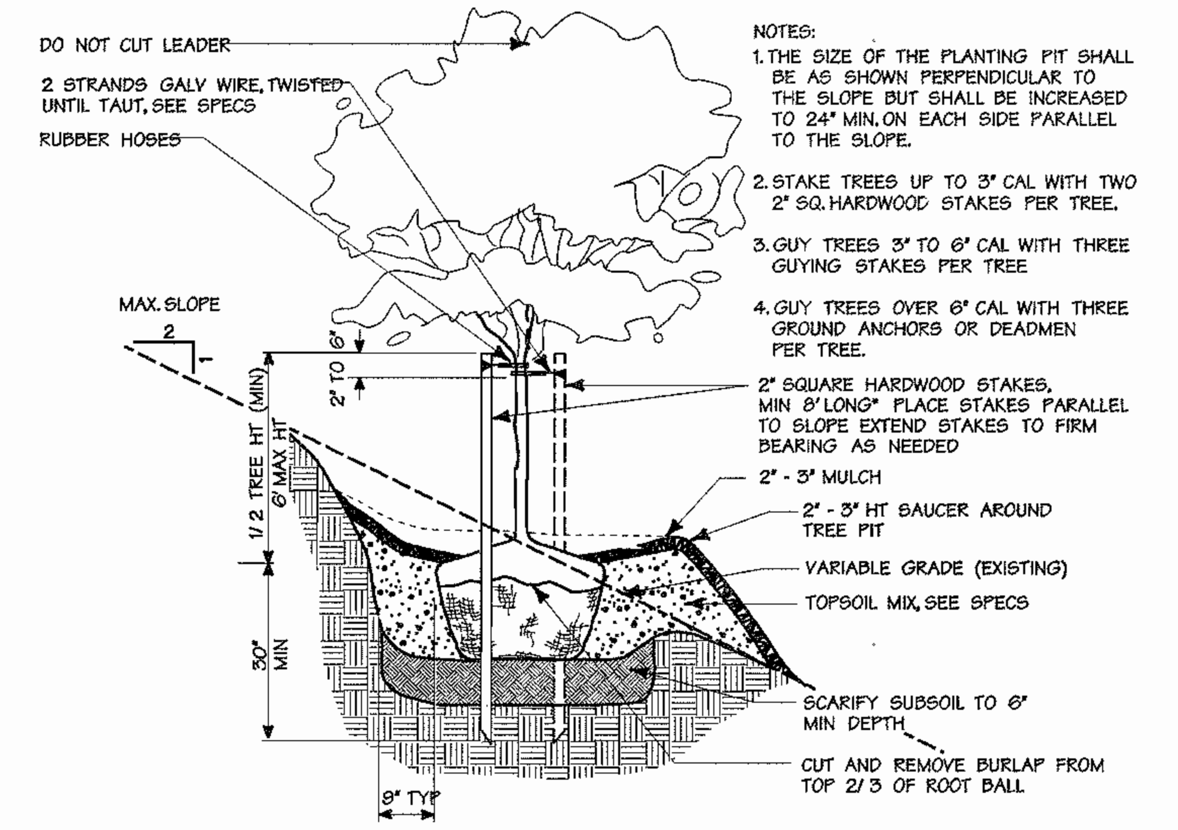
I/we certify that the landscaping shown on this plan will be done according to the plan, Section 16.124 of the Howard County code and the Howard County Landscape Manual. I/we further certify that upon completion, a letter of notice of landscape installation, accompanied by an executed one-year guarantee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

NAME: [signature] DATE 6/25/03





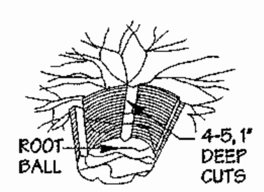
(A) Evergreen Tree Planting
Not To Scale

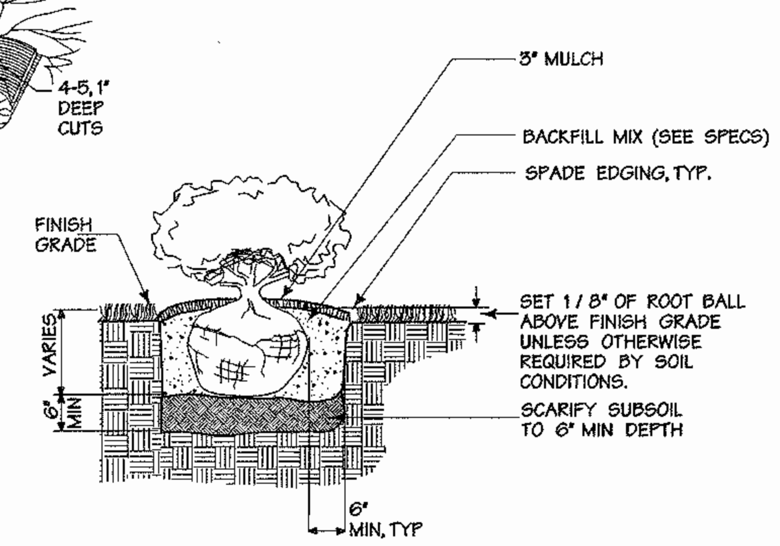


NOTES:
1. THE SIZE OF THE PLANTING PIT SHALL BE AS SHOWN PERPENDICULAR TO THE SLOPE BUT SHALL BE INCREASED TO 24" MIN. ON EACH SIDE PARALLEL TO THE SLOPE.
2. STAKE TREES UP TO 3" CAL WITH TWO 2" SQ. HARDWOOD STAKES PER TREE.
3. GUY TREES 3" TO 6" CAL WITH THREE GUYING STAKES PER TREE
4. GUY TREES OVER 6" CAL WITH THREE GROUND ANCHORS OR DEADMEN PER TREE.

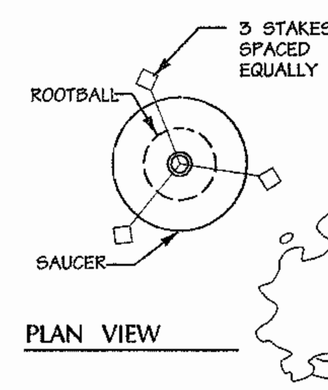
(E) Tree Planting on Slope
Not To Scale

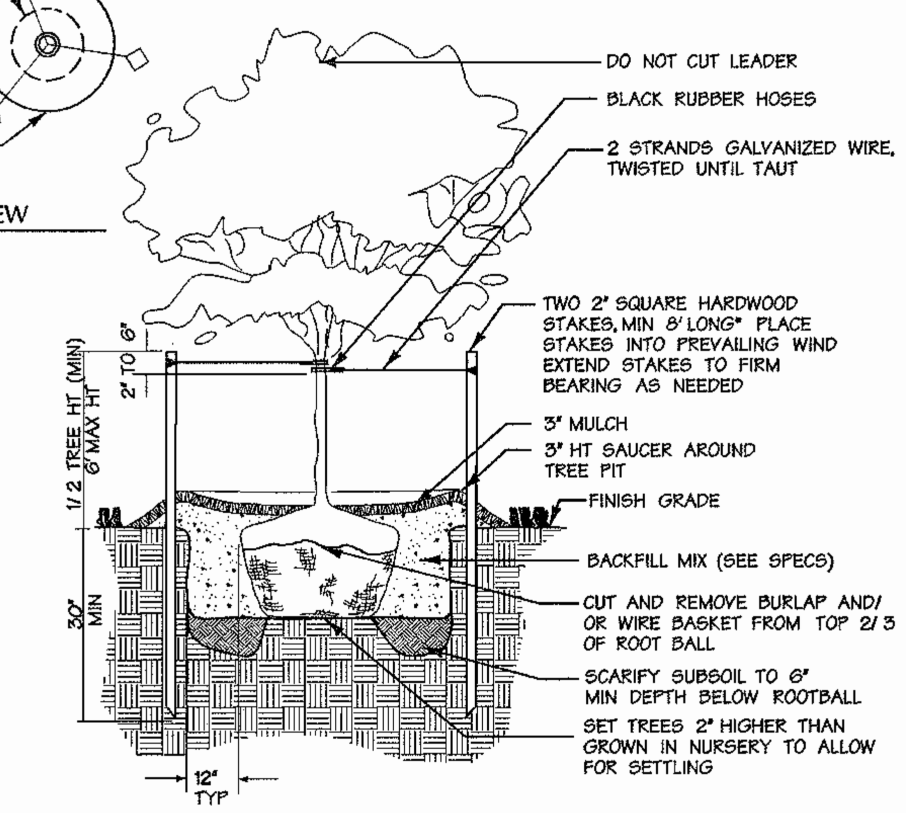
NOTES:
1. FOR CONTAINER SHRUBS, COMPLETELY REMOVE ALL NON-BIODEGRADABLE CONTAINERS AND SCARIFY ROOTBALL BY USING A SHARP BLADE AND MAKING 4 TO 5 ONE INCH CUTS THE LENGTH OF THE ROOTBALL.
2. FOR B&B SHRUBS, CUT AND REMOVE BURLAP FROM TOP 1/3 OF ROOT BALL



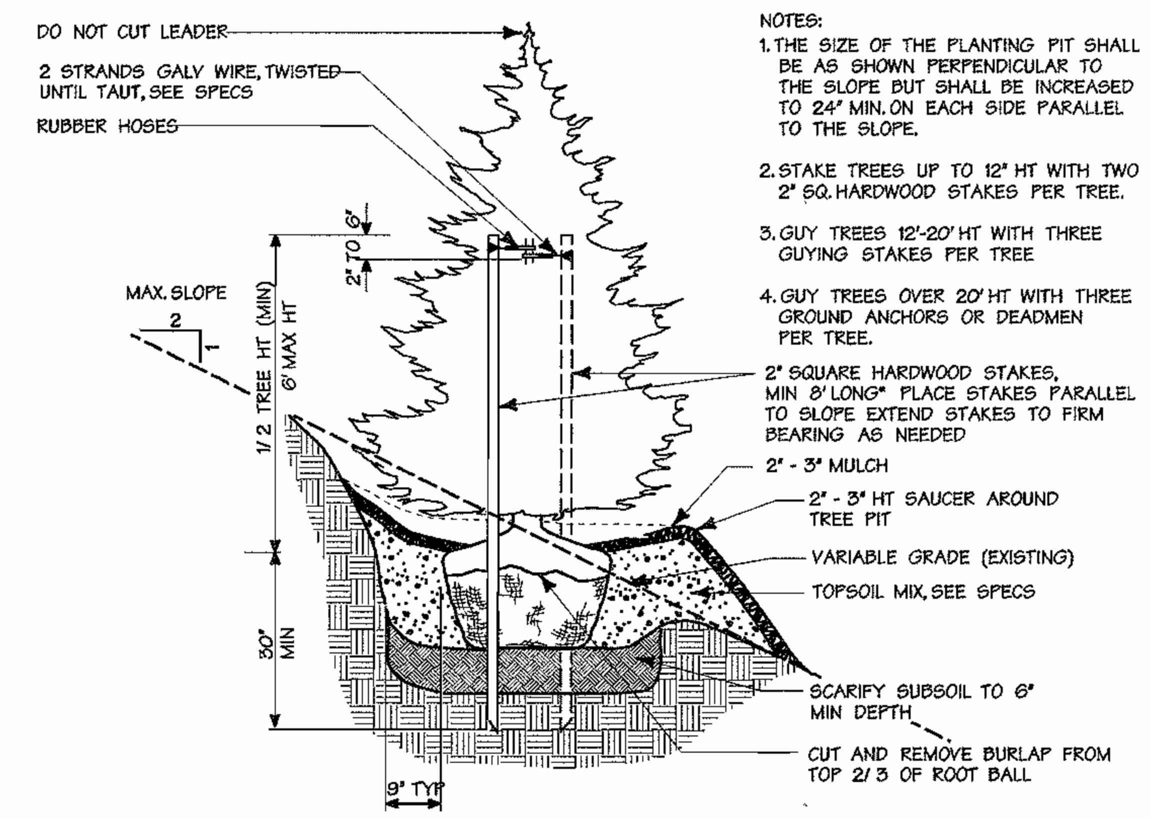


(B) Shrub Bed Planting
Not To Scale





(C) Less Than 3" Cal. Tree Planting
Not To Scale



NOTES:
1. THE SIZE OF THE PLANTING PIT SHALL BE AS SHOWN PERPENDICULAR TO THE SLOPE BUT SHALL BE INCREASED TO 24" MIN. ON EACH SIDE PARALLEL TO THE SLOPE.
2. STAKE TREES UP TO 12' HT WITH TWO 2" SQ. HARDWOOD STAKES PER TREE.
3. GUY TREES 12'-20' HT WITH THREE GUYING STAKES PER TREE
4. GUY TREES OVER 20' HT WITH THREE GROUND ANCHORS OR DEADMEN PER TREE.

(D) Evergreen Tree Planting on Slope
Not To Scale

SCHEDULE A
PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT to ROADWAYS			ADJACENT to PERIMETER PROPERTIES								
LANDSCAPE TYPE "A"							P 3B	P 4	P 5	P 7	P 8	P 9
LINEAR FEET OF PERIMETER							91	395	380	257	596	235
LANDSCAPE TYPE "B"	P 10											
LINEAR FEET OF PERIMETER	223											
LANDSCAPE TYPE "C"			P 6	P 1	P 2	P 3A						
LINEAR FEET OF PERIMETER			587	770	406	324						
LANDSCAPE TYPE "E"		P 10A										
LINEAR FEET OF PERIMETER		519										
CREDIT FOR EXISTING VEGETATION (DESCRIBE BELOW IF NEEDED)	223	N/A	587	318	406	237	N/A	***	380	257	596	235
PERIMETER REMAINING AFTER CREDIT	0	519	0	452	0	87	N/A	N/A	0	0	0	0
CREDIT FOR BERM (DESCRIBE BELOW IF NEEDED)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NUMBER OF PLANTS REQUIRED SHADE TREES EVERGREEN TREES SHRUBS	 0 0 0	 13 0 130	 0 0 0	 11 23 0	 0 0 0	 2 4 0	 2 0 0	 0 0 0	 0 0 0	 0 0 0	 0 0 0	 0 0 0
PLANTING DEFERRED UNTIL LATER PHASE	N/A	YES SDP 2	N/A	NO**	N/A	NO	NO	N/A	N/A	N/A	N/A	N/A
NUMBER OF PLANTS PROVIDED SHADE TREES EVERGREEN TREES OTHER TREES (2 :1 SUBSTITUTION) SHRUBS (10 :1 SUBSTITUTION) (DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)	0 0 0	0 0 0	0 0 0	8* 50 0 121	0 0 0	3 9 0	2 5 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0

* - 6 EVERGREEN TREES HAVE BEEN SUBSTITUTED FOR 3 SHADE TREES
** - SDP 2 MAY GENERATE ADDITIONAL SCREENING REQUIREMENTS
*** - P4 LANDSCAPING SHALL BE DEFERRED UNTIL SDP 2 FOR PARCEL B-WEISSBERG PROPERTY

SCHEDULE D
STORMWATER MANAGEMENT AREA LANDSCAPING

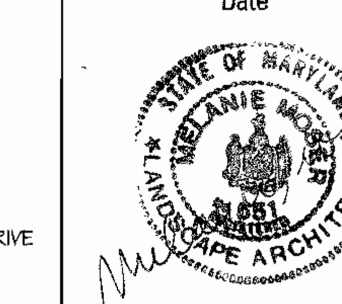
STORMWATER MANAGEMENT AREA	I	II	III
LANDSCAPE TYPE "B" (LINEAR FT OF PERIMETER)	713 LF	694 LF	669 LF
NUMBER OF TREES REQUIRED SHADE TREES @ 1/50 L.F EVERGREEN TREES @ 1/40 L.F	 14 18	 14 17	 14 17
CREDIT FOR EXISTING VEGETATION	N/A	220	N/A
CREDIT FOR OTHER LANDSCAPING	N/A	N/A	N/A
PLANTING DEFERRED UNTIL LATER PHASE	YES SDP 2	YES SDP 2	YES SDP 2
NUMBER OF TREES PROVIDED SHADE TREES FLOWERING TREES EVERGREEN TREES	 0 0 0	 0 0 0	 0 0 0

ELLICOTT CENTER DRIVE
STREET TREE REQUIREMENT

LINEAR FEET OF ROADWAY (BOTH SIDES OF ELLICOTT CENTER DRIVE)	2720
NUMBER OF TREES REQUIRED @ 1:40'	68
NUMBER OF TREES PROVIDED	68

DATA SOURCES:
ON SITE TOPOGRAPHY PER DMW FIELD RUN IN JUNE, 2001 WITH SUPPLEMENTARY FIELD RUN TOPOGRAPHY CAPTURED ON ROGERS AVENUE AND ELLICOT CENTER DRIVE IN JUNE 2002.
WETLANDS WERE DELINEATED AND FIELD LOCATED BY DMW IN FEBRUARY, 2001.
BOUNDARY PER MILDENBERG BOENDER & ASSOC., DATED DECEMBER 02, 1999.
NOTE:
ALL STREAMS ON SITE ARE PERENNIAL.

6.4.03
Date



Landscape Architect

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
[signature] 7-1-03
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
[signature] 7/14/03
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
[signature] 7/16/03
CHIEF, DIVISION OF LAND DEVELOPMENT DATE
[signature] 7/21/03
DIRECTOR DATE

Date	No.	Revision Description

Howard County Office Campus
PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705
A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
HO. CO. OFFICE CAMPUS	NA	852 & P10847

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
(5867-70	6 & 1	POR	24 & 25	2	6029

WATER CODE | SEWER CODE

TITLE
LANDSCAPE NOTES & DETAILS

Des. By	Scale AS NOTED	Proj. No. 01001.C
Drn. By	Date 06/02/03	21 of 40
Chk. By RLH	Approved	

SDP-03-026

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m01001\sheet files\01001L03 Wed Jun 4 09:01:41 2003

MDE PERMIT AND TRACKING No. 200266336

MATCH LINE – SEE SHEET 23

FOREST CONSERVATION EASEMENT "E" - ±3.80 AC.

±2.84 AC. RETENTION

±0.96 AC. REFORESTATION

NOTE: FOREST CONSERVATION EASEMENT MAY BE ADJUSTED WHEN FINAL LOCATION OF PEDESTRIAN BRIDGE IS DETERMINED.

MATCH LINE – SEE SHEET 23

FOREST CONSERVATION EASEMENT "D" (CONT.)

FOREST CONSERVATION EASEMENT "C" (CONT.)

TOTAL FOREST CLEARING: ±13.97 AC (ENTIRE SITE)

PARK VIEW AT ELLICOTT CITY
P.56 A
5576/610
ZONED: POR-MXD-6

PARK VIEW AT ELLICOTT CITY
PLANNING BOARD
SDP-01-152
ZONED: POR-MXD-6

GERALD ALLEN & WIFE
P.381
488/159
ZONED: R20

CARRIE L. EVANS
P.909
831/334
ZONED: R20

MICHAEL T. & HEATHER H. HALL
P.910
5414/319
ZONED: R20

RANDY B. & DEBORAH J. SUMMERS
P.911
5556/398
ZONED: R20

CARLOS AND YOLANDA PERKINS
P.912
4342/82
ZONED: R20

PAUL E. & BONNIE L. THOMPSON
P.913
1169/534
ZONED: R20

EARLE W. & MARGARET L. RUDACILLE
P.216
1906/174
ZONED: R20

EARL TOMAS PASKEWITZ
P.92
2410/352

MARY C. SAUTER
P.1
189/563

DENNIS M. HANRATTY
P.312 LOT 1
1957/93

ROBERT W. ALEXANDER
P.100 LOT 19
3892/203

FUTURE BUILDING

FUTURE PARKING

SWM FACILITY #1

SWM FACILITY #2

ELLICOTT CENTER DRIVE

ROGERS AVENUE

OAK WEST DR.

FUTURE ROAD

PROPOSED PEDESTRIAN BRIDGE

50' STREAM BUFFER

WETLANDS

WETLAND BUFFER

N 07°09'43" E 101.99'

E 1366000 N 590000

E 1366500 N 590000

NOTE: SEE PLAT, F-03-21, FOR FOREST CONSERVATION EASEMENT BEARINGS AND DISTANCES

DATA SOURCES:
ON SITE TOPOGRAPHY PER DMW FIELD RUN IN JUNE, 2001 WITH SUPPLEMENTARY FIELD RUN TOPOGRAPHY CAPTURED ON ROGERS AVENUE AND ELLICOT CENTER DRIVE IN JUNE 2002.
WETLANDS WERE DELINEATED AND FIELD LOCATED BY DMW IN FEBRUARY, 2001. BOUNDARY PER MILDENBERG BOENDER & ASSOC., DATED DECEMBER 02, 1999.
NOTE:
ALL STREAMS ON SITE ARE PERENNIAL.

LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- 300 MAJOR CONTOURS
- 295 MINOR CONTOURS
- STREAM CENTERLINE
- STREAM BUFFER
- WETLAND LIMIT
- WETLAND BUFFER
- 100 YR FLOODPLAIN
- SLOPES >25%
- SLOPES 15%-25%
- EXISTING FOREST EDGE
- EXISTING ROADS
- PROPOSED FOREST EDGE (RETENTION)
- FOREST CONSERVATION EASEMENT
- PROPOSED REFORESTATION
- EXISTING UTILITY EASEMENTS
- NON-WOODY VEGETATION LIMIT
- SWM FACILITY TOE OF SLOPE
- PERMANENT FOREST PROTECTION SIGNAGE
- FOREST PROTECTION FENCE
- LIMIT OF DISTURBANCE
- SPECIMEN TREE
- CRITICAL ROOT ZONE

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/14/03

DIRECTOR — DATE 7/21/03

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

DMW
Daft-McCune-Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME: HO. CO. OFFICE CAMPUS		SECTION / AREA: NA	LOT/PARCEL #: 852 & P/O847
PLAT OR L/F: 15947-76	BLOCK #: 6 & 11	ZONE: POR	TAX/ZONE MAP: 24 & 25
ELEC. DISTRICT: 2	CENSUS TRACT: 6029		
WATER CODE:	SEWER CODE:		

6.4.03
Date

STATE OF MARYLAND — MELANIE R. BOMER — No. 661 — LANDSCAPE ARCHITECT

Landscape Architect

TITLE

FOREST CONSERVATION PLAN - EAST SIDE

Des. By: MRT	Scale: 1"=50'	Proj. No. 01001.C
Drn. By: BKC	Date: 06/02/03	22 of 40
Chk. By: RLH	Approved:	

SDP-03-026

Wed Jun 4 08:22:54 2003
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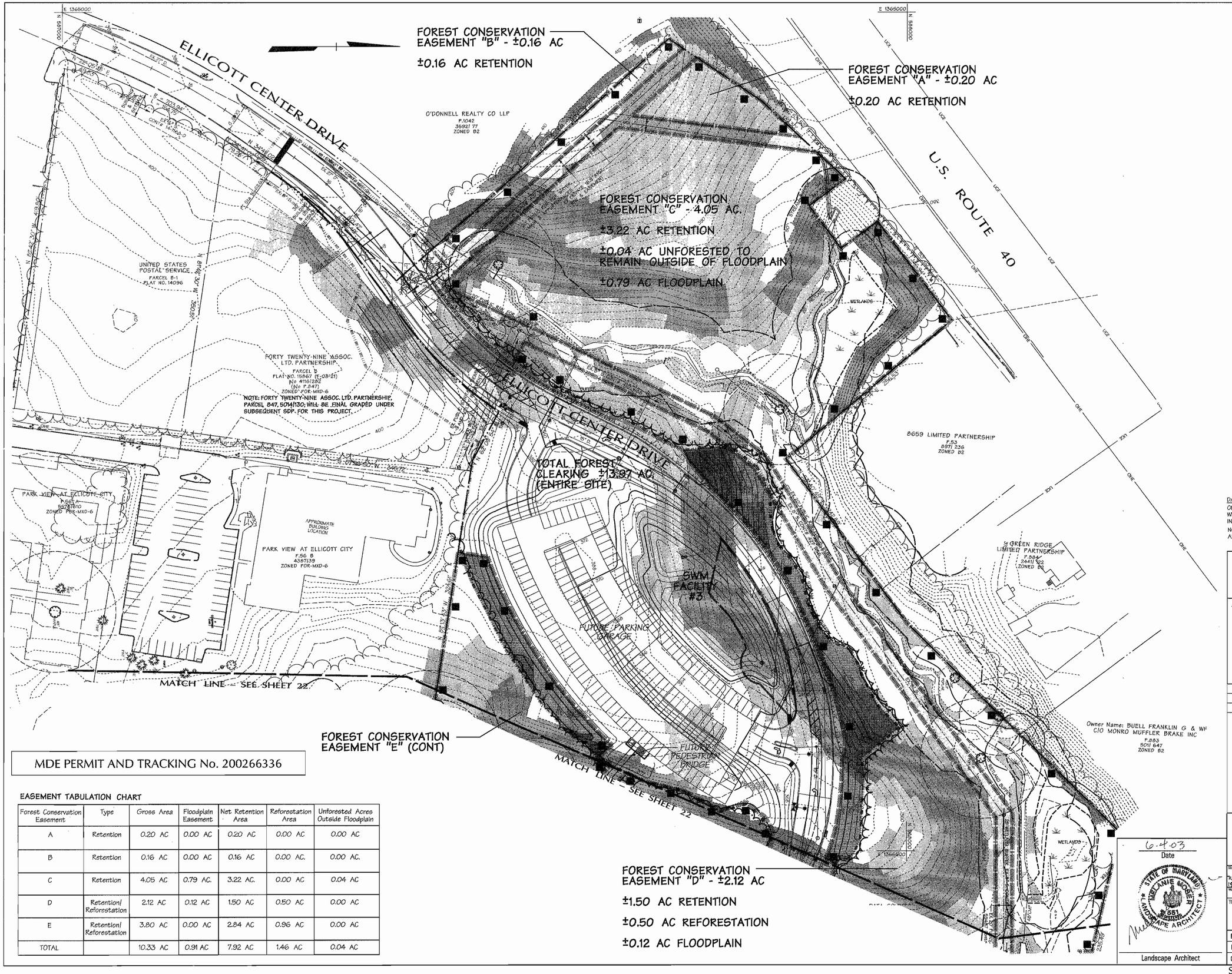
w:\12 6/4/2003 9:02:19 AM Plotted by: d:\hpm\01001\hpm



LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- MAJOR CONTOURS
- MINOR CONTOURS
- STREAM CENTERLINE
- STREAM BUFFER
- WETLAND LIMIT
- WETLAND BUFFER
- 100 YR FLOODPLAIN
- SLOPES >25%
- SLOPES 15%-25%
- EXISTING FOREST EDGE
- EXISTING ROADS
- PROPOSED FOREST EDGE (RETENTION)
- FOREST CONSERVATION EASEMENT
- PROPOSED REFORESTATION
- EXISTING UTILITY EASEMENTS
- NON-WOODY VEGETATION LIMIT
- PERMANENT FOREST PROTECTION SIGNAGE
- FOREST PROTECTION FENCE
- LIMIT OF DISTURBANCE
- SPECIMEN TREE
- CRITICAL ROOT ZONE

MDE PERMIT AND TRACKING No. 200266336

EASEMENT TABULATION CHART

Forest Conservation Easement	Type	Gross Area	Floodplain Easement	Net Retention Area	Reforestation Area	Unforested Acres Outside Floodplain
A	Retention	0.20 AC	0.00 AC	0.20 AC	0.00 AC	0.00 AC
B	Retention	0.16 AC	0.00 AC	0.16 AC	0.00 AC.	0.00 AC.
C	Retention	4.05 AC	0.79 AC.	3.22 AC.	0.00 AC	0.04 AC
D	Retention/ Reforestation	2.12 AC	0.12 AC	1.50 AC	0.50 AC	0.00 AC
E	Retention/ Reforestation	3.80 AC	0.00 AC	2.84 AC	0.96 AC	0.00 AC
TOTAL		10.33 AC	0.91 AC	7.92 AC	1.46 AC	0.04 AC

DATA SOURCES:
ON SITE TOPOGRAPHY PER DMW FIELD RUN IN JUNE, 2001.
WETLANDS WERE DELINEATED AND FIELD LOCATED BY DMW IN FEBRUARY, 2001.
NOTE:
ALL STREAMS ON SITE ARE PERENNIAL.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/16/03

DIRECTOR — DATE 7/21/03

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

DMW
Daft-McCune-Walker, Inc.
200 East Pennsylvania Avenue
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SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
HO. CO. OFFICE CAMPUS	NA	852 & P/O847

PLAT # OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15867 70	6 & 1	POR	24 & 25	2	6029

WATER CODE	SEWER CODE

TITLE
FOREST CONSERVATION PLAN - WEST SIDE

Des. By MRT	Scale 1"=50'	Proj. No. 01001.C	
Drn. By BKC	Date 06/02/03	23 of 40	
Chk. By RLH	Approved		

6.4.03
Date

STATE OF MARYLAND — MELANIE MOSER — No. 681 — LANDSCAPE ARCHITECT

Landscape Architect

SDP-03-026

Wed Jun 4 08:**:** 2003
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GOALS AND OBJECTIVES

The goals and objectives of this forest conservation plan are to account for forest clearing and to identify areas to be retained and reforested for compliance with the current Forest Conservation Act. Under the proposed design for the new office campus, approximately 13.97 acres of forest will be cleared. 7.92 acres of existing forest will be retained. A reforestation requirement of 0.24 acres is generated. Reforestation areas have been identified to satisfy 0.91 acres of reforestation required for the adjacent Parcel, B, where Ellicott Center Drive will be extended; an additional 0.31 acres of reforestation is provided voluntarily. A Maximum of 20% of the reforestation obligations, or 0.23± Acres of reforestation will be provided by native, large caliper landscape material planted within forest conservation easement along the southern property boundary.(See Landscape Plan Sheet 19)

FOREST CONSERVATION CALCULATIONS HOCO CAMPUS ONLY (PARCEL A)

BASIC SITE DATA	ACRES (1/10)
GROSS SITE AREA	24.59
AREA WITHIN 100 YEAR FLOODPLAIN	1.26
NET TRACT AREA	23.33
LAND USE CATEGORY	INSTITUTIONAL
INFORMATION FOR CALCULATIONS	
A. NET TRACT AREA	23.33
B. REFORESTATION THRESHOLD (20% x A)	4.67
C. AFFORESTATION MINIMUM (15% x A)	3.50
D. EXISTING FOREST ON NET TRACT AREA	21.89
E. FOREST AREAS TO BE CLEARED	13.97
F. FOREST AREAS TO BE RETAINED	7.92
REFORESTATION CALCULATIONS	
A. NET TRACT AREA	23.33
B. REFORESTATION THRESHOLD (20% x A)	4.67
C. EXISTING FOREST ON NET TRACT AREA	21.89
D. FOREST AREAS TO BE CLEARED	13.97
E. FOREST AREAS TO BE RETAINED	7.92
F. FOREST AREAS CLEARED ABOVE REFORESTATION THRESHOLD	13.97
G. FOREST AREAS CLEARED BELOW REFORESTATION THRESHOLD	0.0
H. FOREST AREAS RETAINED ABOVE REFORESTATION THRESHOLD	3.25
CLEARING ABOVE THE THRESHOLD ONLY	
IF FOREST AREAS TO BE RETAINED ARE GREATER THAN THE REFORESTATION THRESHOLD (IF E IS GREATER THAN B), THE FOLLOWING CALCULATIONS APPLY:	
REFORESTATION FOR CLEARING ABOVE THRESHOLD Fx1/4	3.49
REFORESTATION FOR CLEARING BELOW THRESHOLD Gx2	0.0
TOTAL REFORESTATION REQUIRED (Fx1/4) + (Gx2)	3.49
CREDIT FOR RETENTION ABOVE CONSERVATION THRESHOLD	3.25
REFORESTATION REQUIRED	0.24 ACRES
REFORESTATION PROVIDED	1.46 ACRES*

* THIS AREA INCLUDES THE 0.91 ACRES OBLIGATION FOR PARCEL 'B'

FOREST CONSERVATION CALCULATIONS FORTY TWENTY-NINE ASSOC. LTD. PARTNERSHIP PROPERTY ONLY (PARCEL B)

BASIC SITE DATA	ACRES (1/10)
GROSS SITE AREA	1.82
AREA WITHIN 100 YEAR FLOODPLAIN	0.0
AREA WITHIN AGRICULTURAL USE OR PRESERVATION PARCEL (IF APPLICABLE)	0.0
NET TRACT AREA	1.82
LAND USE CATEGORY	FOR
INFORMATION FOR CALCULATIONS	
A. NET TRACT AREA	1.82
B. REFORESTATION THRESHOLD (15% x A)	0.27
C. AFFORESTATION MINIMUM (15% x A)	0.27
D. EXISTING FOREST ON NET TRACT AREA	1.75
E. FOREST AREAS TO BE CLEARED	1.75
F. FOREST AREAS TO BE RETAINED	0.0
REFORESTATION CALCULATIONS	
A. NET TRACT AREA	1.82
B. REFORESTATION THRESHOLD (15% x A)	0.27
C. EXISTING FOREST ON NET TRACT AREA	1.75
D. FOREST AREAS TO BE CLEARED	1.75
E. FOREST AREAS TO BE RETAINED	0.0
F. FOREST AREAS CLEARED ABOVE REFORESTATION THRESHOLD	0.37
G. FOREST AREAS CLEARED BELOW REFORESTATION THRESHOLD	0.54
H. FOREST AREAS RETAINED ABOVE REFORESTATION THRESHOLD	0.0
CLEARING ABOVE THE THRESHOLD ONLY	
IF FOREST AREAS TO BE RETAINED ARE GREATER THAN THE REFORESTATION THRESHOLD (IF E IS GREATER THAN B), THE FOLLOWING CALCULATIONS APPLY:	
REFORESTATION FOR CLEARING ABOVE THRESHOLD Fx1/4	0.37
REFORESTATION FOR CLEARING BELOW THRESHOLD Gx2	0.54
TOTAL REFORESTATION REQUIRED (Fx1/4) + (Gx2)	0.91
CREDIT FOR RETENTION ABOVE CONSERVATION THRESHOLD	0.0
REFORESTATION REQUIRED	0.91 ACRES
REFORESTATION PROVIDED ON SITE	0.0 ACRES
OFF-SITE REFORESTATION	0.91 ACRES

FOREST RETENTION

Tree retention/Soil Protection areas will be delineated with temporary forest protection fencing and retention area signage as appropriate. See forest protection fence and temporary signage Detail prior to the beginning of any construction activity.

Attachment of signs to trees is prohibited.

PRECONSTRUCTION MEETING/CONSTRUCTION PERIOD PRACTICES

Before construction begins, a required preconstruction meeting shall be held. The principle contractors, engineer, Howard County Inspectors and a qualified forest professional familiar with the plan shall be present. All items pertaining to forest retention, tree preservation, and construction period practices shall be discussed.

Any changes to the plan due to on-site conditions must be approved by the Howard County Department of Planning and Zoning.

No grading, excavation, utility placement, sediment and erosion control activities, or vehicular traffic will occur within forest retention areas.

Storage of equipment and materials shall not be permitted in the forest retention areas.

There will be no burial or disposal of discarded material on-site within the retention area.

There will be no open burning within 100 feet of woodlands.

Temporary structures including, but not limited to construction trailers, sanitary facilities, etc. shall not be placed within the forest retention areas.

Employee parking shall not be permitted in the forest retention areas.

POST CONSTRUCTION MANAGEMENT/MAINTENANCE BY CONTRACTOR

All dead trees or tree limbs which pose an immediate safety hazard will be felled. Trees dropped within the forest retention area will not be removed.

All temporary forest protection structures will be removed after construction and permanent signage will be placed where indicated on the plan.

A 2-year Contractor's Maintenance and Monitoring Period shall begin at mobilization. Seventy five percent survivorship must be guaranteed for this period. The site shall be inspected at the end of the two year period to ascertain survivorship and provide for replacement if necessary.

The Contractor's maintenance of new planting shall consist of watering, cultivating, weeding, and mulching as necessary to insure survival.

Contractor shall protect planting areas and plants at all times against damage of all kinds for duration of maintenance period. Maintenance includes temporary protection barriers and signs as required for protection. If any plants become damaged or injured, because sufficient protection was not provided, treat or replace as directed by Landscape Architect at no additional cost to Owner.

ALL FOREST RETENTION & REFORESTATION AREAS SHOWN ON THIS PLAN TO BE PLACED IN FOREST CONSERVATION EASEMENT

STANDARDS AND SPECIFICATIONS FOR PLANTING

1. PLANT MATERIAL SELECTION

A. Nursery grown plant materials greater than 1" caliper should meet or exceed the requirements of the American Nurserymen Specifications, i.e. should be typical of the species and variety, have a normal habit of growth, be first quality, sound, vigorous, well-branched, have healthy, well furnished root systems, and be free of disease, insect pests and mechanical injuries.

B. Planting stock less than 1" caliper should meet the following standards:

Seedling/whips:

Hardwoods – 1/4" to 1/2" caliper with roots not less than 8" long
Shrubs – 1/8" or larger caliper with 8" root system.

2. PLANTING SITE PREPARATION

Soils shall not be disturbed outside the area necessary for planting individual specimens and the removal of exotic invasive plant material. These areas should be stabilized as shown on the temporary seeding notes on sheet 8.

3.PLANTING PERIOD

All material shall be planted between September 1 and November 30. Material shall not be installed when ground is frozen.

4.PLANT MATERIAL STORAGE

Plants should be planted within 24 hours of delivery if possible. Plant material which are left unplanted for more than 24 hours shall be protected from direct sun and weather and kept moist. Nursery stock should not be left unplanted for more than two weeks.

5.ON-SITE INSPECTION

Prior to planting, planting stock shall be inspected by the landscape architect or other qualified professional familiar with this plan. Plant material not conforming to standard nurseryman specifications for size, form, vigor, roots, trunk wounds, insects and disease should be replaced.

6.TOPSOIL FOR PLANTING SOIL

A. On-site material or imported from same source as topsoil used on site for finish grading.

1. Uniform composition, free of subsoil, clay lumps, stones, stumps, roots or similar objects larger than 1 inch.

2. Topsoil must be free of plants or plant parts of bermudagrass, quackgrass, Johnsongrass, nutsedge, poison ivy, Canada thistle, or others as specified.

3. All topsoil shall be tested by a recognized laboratory for pH and soluble salts. A pH of 4.5 to 7.5 is required. Soluble salts shall not be higher than 500 parts per million.

4. PH altering products are to be applied only when and at the rate indicated by the soil analysis reports.

7. ADDITIVE FOR BACKFILL MIX

A. Wood Residuals:

1. Source shall be well composted, not chemically treated.

2. Physical properties – grading:

U.S. Sieve	Dry Weight Percent Passing
3/8"	100
1/4"	90 – 100
No. 8	70 – 100
No. 35	0 – 30

3. Organic content by ash analysis: 90 – 100 percent dry weight

4. Chemistry:

Range

a. Saturation Extract Conductivity (EC) ———— Nil – 3.5
b. Reaction (pH) ———— 3.0 – 5.5

5. Salinity: Maximum saturation extract conductivity 1.0 milliohms per cm at 25 degrees centigrade.

B. Sand

1. Physical Properties – Grading:

U.S. Sieve	Dry Weight Percent Passing
No. 4	100
No. 10	95 – 100
No. 18	90 – 100
No. 35	65 – 100
No. 60	0 – 50
No. 140	0 – 20
No. 270	0 – 7

2. Chemistry:

Saturation Extract Conductivity (EC) ———— Nil – 3.0
Sodium Absorption Ratio (SAR) ———— Nil – 6.0
Boron - ppm in saturation extract solution ———— Nil – 1.0
Reaction (pH) ———— 6.0 – 7.5
Available calcium – sodium acetate extractable – ppm — Nil – 2000 dry weight

C. Treble Superphosphate: Commercial product containing 19 to 20 percent available phosphoric acid.

8. MULCH

A. Shredded long fiber hardwood.

B. Mulch shall have been shredded within the last six (6) months.

9. PLANTING MIX

A. Planting mix shall be prepared at approved on-site staging area using approved on-site existing soil. Mix minimum quantities of 20 cubic yards or sufficient mix for entire job if less than 20 cubic yards is required.

B.Thoroughly mixed in the following proportions for tree and shrub planting mix:

.5 cy Existing soil
.2 cy Sharp sand
.3 cy Wood residuals
4.5 lbs. Treble superphosphate
5 lbs. Dolomite limestone (eliminate for acid loving plants)

10. LAYOUT AND EXCAVATION OF PLANTING AREAS

A. Plants shall be placed in each zone at random locations shown at spacing as indicated on the plan.

B. The Landscape Architect or qualified professional will check location of plants in the field and shall adjust to exact position before planting begins.

C. Subsoil shall not be worked when moisture content is so great that excessive compaction will occur, nor when it is so dry that clods will not readily break. Water shall be applied, if necessary, to bring soil to an optimum moisture content before tilling and planting.

D. Tree pits shall not be excavated more than 24 hours in advance of planting operation. Tree pits shall be excavated to the following dimensions:

Excavation for	Width	Depth
Canned Trees	Can + 12 in.	Can + 4 in.
B&B Trees	Ball + 12 in.	Ball + 4 in.

E. Excavate shrub pits to the following depths:

Excavation for	Width	Depth
Shrubs	Ball or Can + 8 in.	Can + 4 in., not less than 12 in.

11. PREPARING PLANT MATERIALS FOR PLANTING

A. Container stock shall be removed carefully after cans have been cut on two sides with approved cutter. Do not use spade to cut cans. Do not lift or handle container plants by tops, stems or trunks at any time.

B. Do not bind or handle any plant with wire or rope at any time so as to damage bark or break branches. Lift and handle plants only from bottom of ball.

C. Balled and burlapped (B&B) plants shall have firm balls of earth. Plants moved with a ball will not be accepted if the ball is cracked or broken before or during planting operations. B&B material shall be dug only when dormant. Pre-dug stored B&B material shall be inspected and approved at the storage site.

D. Do not force roots for bare rooted trees into excavated pits – custom dig pits to receive roots without deformation.

12. MIXING

A. Mix soil base, amendments and chemical additives by mechanical means.

B. Soil and sand bases shall be completely pulverized and free of lumps or aggregated material. Moisture content of base materials shall not be such that chemical granular or pelletized additives become dissolved during the mixing process.

C. Mix media in quantities of not less than 20 cubic yards or mix total quantity required if less than 50 cubic yards. The Contractor shall be responsible for continuity between batches.

D. Contaminating backfill mix with unmixed soil in backfill mixing lots shall be avoided.

13. INSTALLATION OF CONTAINERIZED PLANT MATERIAL

A. Scarify the walls and bottom of all plant pits immediately prior to the placement of plant and backfill mix. The Contractor shall remove all glazing of soil caused by an auger or mechanical hole digger.

B. Wells around trees and shrubs: after planting is complete, form a soil well 3 inches high around each plant, extending to the outer limit of the plant pit in accordance with planting details shown on the Drawings.

C. Smooth planted areas to conform to specified grades after full settlement as occurred. Contractor shall bear final responsibility for proper surface drainage of planted areas. Any discrepancy in the drawings or specifications, obstructions on the site, or prior work done by another party, which Contractor feels precludes establishing proper drainage, shall be brought to the attention of the Landscape Architect in writing.

D. Water all plants immediately again after planting.

E. Spread mulch in required areas to the compacted depth of 2 inches. No mulch is to be placed against trunk and stems of trees and shrubs

F. Install tree shelters around new plantings.

GUARANTEE:

A MINIMUM SURVIVAL RATE OF 75% IS TO BE GUARANTEED BY THE DEVELOPER AT THE END OF THE TWO YEAR MAINTENANCE PERIOD.

Reforestation Area Planting Plan

Total reforestation to be provided 1.46 acres.
Credit derived from landscape plantings within FCE = 0.23 Acres (Max. 20% x 1.15 Ac. reforestation obligations)
Total potential credit for landscaping = 0.39 acres and is calculated as follows: 8, 2½" caliper trees x 400 s.f., 50 6'-8' trees x 225 s.f., and 121 shrubs x 225 sf/10shrubs.)
Reforestation plantings required = 246 trees (1.23 acres x 200 1" caliper trees/acre)
0.24 acres reforestation is provided for HCOC (Parcel A) obligation, 0.91 acres reforestation is provided for the Weissberg Property (Parcel B) obligation and 0.31 acres reforestation is provided voluntarily.

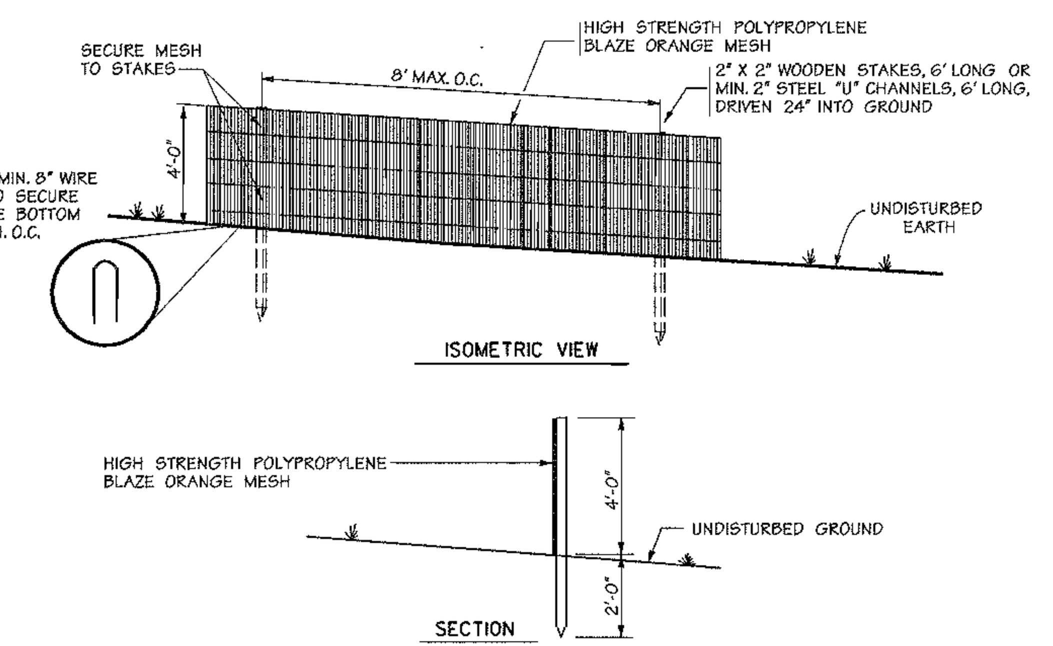
Species	Common name	Size	Spacing	Quantity	Stage	Stratum	Remarks
Acer rubrum	Red maple	1" caliper cont. grown	15' x 15'	46	all	tree	FAC
Amelanchier canadensis	Serviceberry	30" - 36" cont. grown	15' x 15'	25	late	shrub	FAC
Cercis canadensis	Eastern redbud	6' - 8' cont. grown	15' x 15'	40	late	tree	FACU
Ilex opaca	American holly	6' - 8' cont. grown	15' x 15'	35	late	tree	FACU
Liriodendron tulipifera	Tulip poplar	1" caliper cont. grown	15' x 15'	25	pioneer	tree	FACU
Pinus strobus	Eastern white pine	1" caliper cont. grown	15' x 15'	75	mid	tree	FACU
TOTALS				246			

Note: Reforestation plantings to be randomly located outside landscape areas within the FCE along the southern property line. White Pines shall be located outside forest to remain.

GENERAL NOTES:

1. The forest conservation easement has been established to fulfill the requirements of Section 16.1200 of the Howard county code and the Forest Conservation Manual. 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.

2. See Plat F-03-21 for Forest Conservation Easement Bearings and Distances, recorded as plat No. 15867.



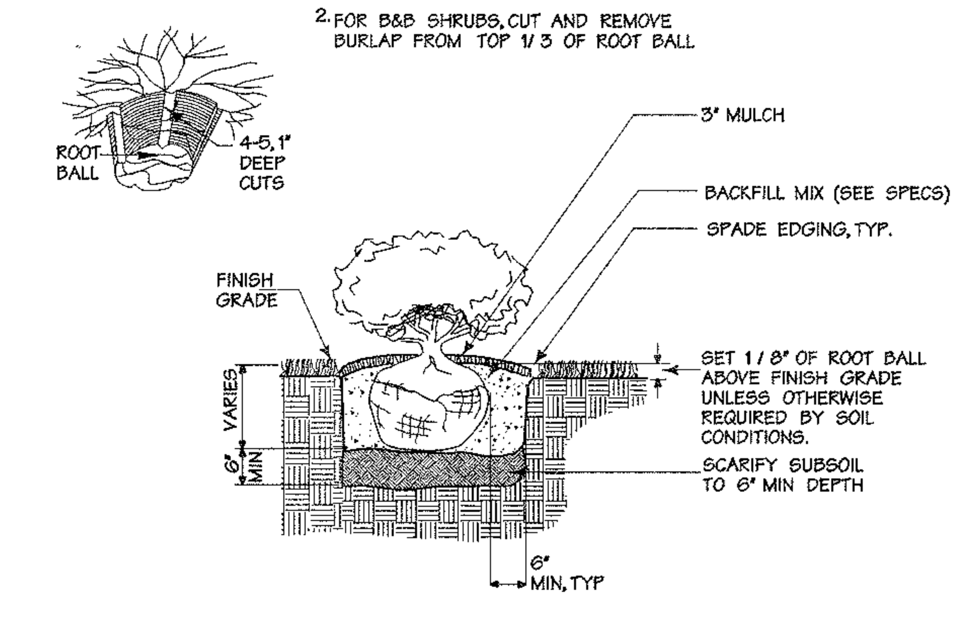
NOTES:
1. THIS DETAIL IS FOR FOREST PROTECTION DEVICE ONLY
2. FOREST RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS
3. BOUNDARIES OF FOREST RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING THE DEVICE
4. ROOT DAMAGE SHALL BE AVOIDED
5. PROTECTION SIGNAGE MAY ALSO BE USED
6. FOREST PROTECTION FENCE SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION

Forest Protection Fence*

Not To Scale

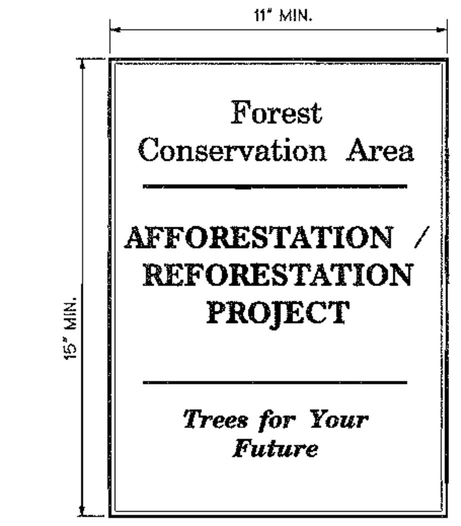
* WHERE SUPER SILT FENCE (S.S.F.) IS TO BE INSTALLED ADJACENT TO FOREST RETENTION AREAS, ATTACH HIGH VISIBILITY TAPE OR FLAGGING TO THE TOP EDGE OF S.S.F. AT 5' INTERVALS AND USE S.S.F. IN LIEU OF BLAZE ORANGE FENCE. TEMPORARY FOREST PROTECTION SIGNAGE MAY BE ATTACHED TO S.S.F.

NOTES:
1. FOR CONTAINER SHRUBS, COMPLETELY REMOVE ALL NON-BIODEGRADABLE CONTAINERS AND SCARIFY ROOTBALL BY USING A SHARP BLADE AND MAKING 4 TO 5 ONE INCH CUTS THE LENGTH OF THE ROOTBALL.
2. FOR B&B SHRUBS, CUT AND REMOVE BURLAP FROM TOP 1/3 OF ROOT BALL



(B) Shrub Bed Planting

Not To Scale



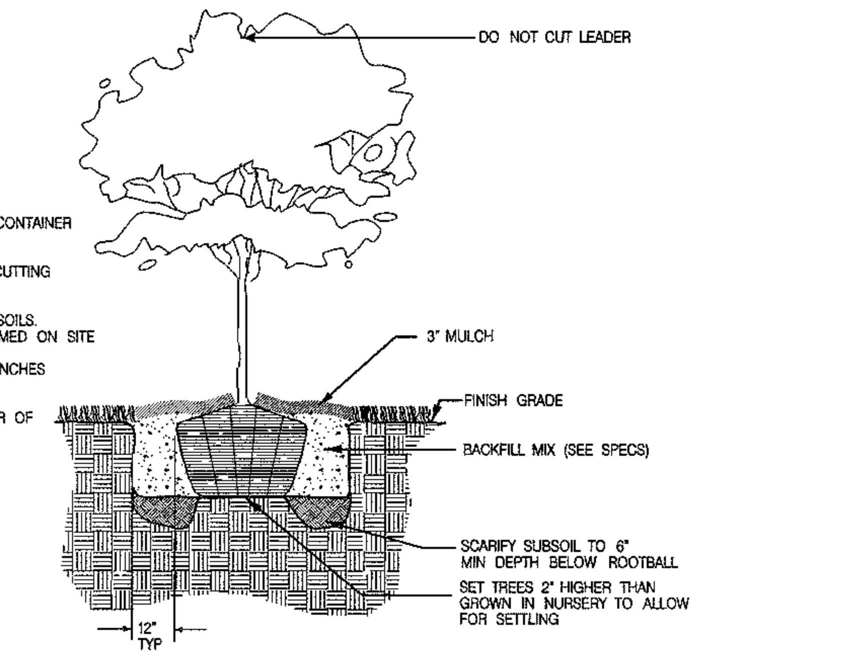
SIGNS TO BE PLACED ON METAL POSTS 5' +/- ABOVE FINISH GRADE PRIOR TO PLANTING. PLACE SIGNS EVERY 100' AROUND PERIMETER OF FOREST CONSERVATION AREA.

Permanent Signage

Not To Scale

PLANTING PROCEDURES FOR ALL CONTAINER GROWN TREES AND SHRUBS:

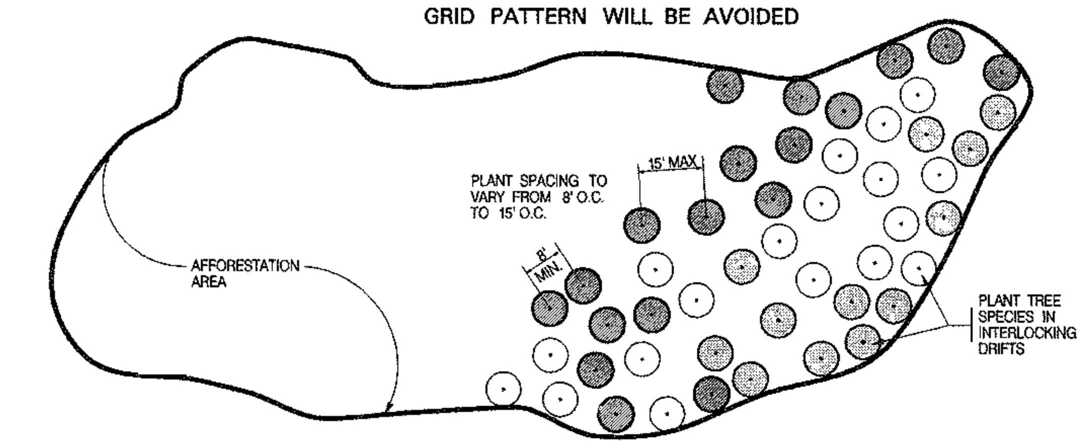
1. REMOVE THE PLANT EITHER BY CUTTING OR INVERTING THE CONTAINER
2. GENTLY LOOSEN ROOTS FROM SOILS. ROOTS MAY NOT BE CUT OR TRIMMED ON SITE
3. PLANT SHRUB OR TREE 1 TO 2 INCHES ABOVE THE EXISTING GRADE
4. APPLY 2 TO 3 INCH THICK LAYER OF SHREDDED HARDWOOD MULCH



Typical Tree Planting (For container grown)

Not To Scale

GRID PATTERN WILL BE AVOIDED



Planting Design Schematic

Not To Scale

MDE PERMIT AND TRACKING No. 200266336

6.4.03
Date

STATE OF MARYLAND MELANIE MOSER 551 REGISTERED LANDSCAPE ARCHITECT

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/16/03

DIRECTOR — DATE 7/24/03

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
HO. CO. OFFICE CAMPUS	NA	852 & P10847

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15867-70	6 & 1	POR	24 & 25	2	6029

WATER CODE — SEWER CODE

TITLE
FOREST CONSERVATION
DETAILS & NOTES

Des. By	Scale AS SHOWN	Proj. No. 01001.C
Drn. By	Date 06/02/03	24 of 40
Chk. By RLH	Approved	

SDP-03-026

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LEGEND

- EX. CONTOURS
- EX. BUILDING
- PROP. WOODS LINE
- EX. WOODS LINE
- SOIL LINE
- PROPERTY LINE
- PROPOSED DA LIMITS
- Area=1.35 Ac. Imp= 16% Ac. 1 C = 0.29 PROPOSED DA LABEL

MDE PERMIT AND TRACKING No. 200266336

DATA SOURCES:
ON SITE TOPOGRAPHY PER DMW FIELD RUN IN JUNE, 2001 WITH SUPPLEMENTARY FIELD RUN TOPOGRAPHY CAPTURED ON ROGERS AVENUE AND ELLICOT CENTER DRIVE IN JUNE 2002.
WETLANDS WERE DELINEATED AND FIELD LOCATED BY DMW IN FEBRUARY, 2001.
BOUNDARY PER MILDENBERG BOENDER & ASSOC., DATED DECEMBER 02, 1999.
NOTE:
ALL STREAMS ON SITE ARE PERENNIAL.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-1-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/1/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/6/03

DIRECTOR — DATE 7/2/03

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

6-04-03
Date

Professional Engr. No. 19357

200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-2333
Fax: 296-4705

A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
HO. CO. OFFICE CAMPUS	NA	852 & P10847

PLAT# OR L/F	BLOCK # / ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15847-70	6 & 1 / POR	24 & 25	2	6029

WATER CODE — SEWER CODE

TITLE

STORM DRAIN
DRAINAGE AREA MAP

Des. By	Scale 1"=100'	Proj. No. 01001.C
Drn. By	Date 06/02/03	25 of 40
Chk. By RLN	Approved	

SDP-03-026

PROJECT#\plot#\0200336.dwg Wed Jun 4 09:29:40 2003
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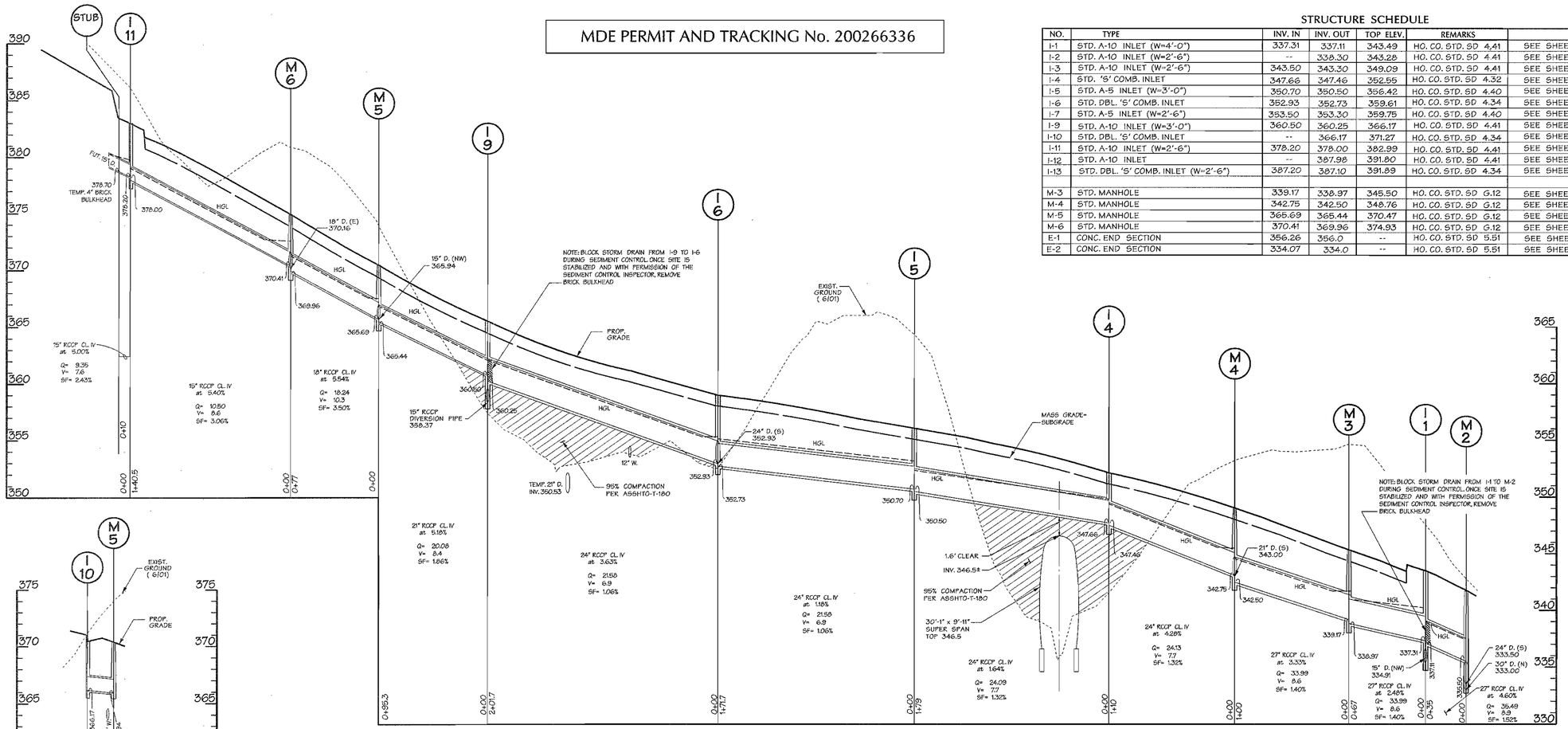
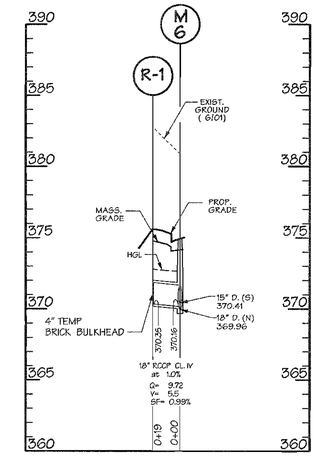
MDE PERMIT AND TRACKING No. 200266336

STRUCTURE SCHEDULE

NO.	TYPE	INV. IN	INV. OUT	TOP ELEV.	REMARKS	LOCATION
I-1	STD. A-10 INLET (W=4'-0")	337.31	337.11	343.49	HO. CO. STD. SD 4.41	SEE SHEET 28 INV. 334.91 15" D. INTO FACILITY #2
I-2	STD. A-10 INLET (W=2'-6")	--	338.30	343.28	HO. CO. STD. SD 4.41	SEE SHEET 28
I-3	STD. A-10 INLET (W=2'-6")	343.50	343.30	349.09	HO. CO. STD. SD 4.41	SEE SHEET 28
I-4	STD. 'S' COMB. INLET	347.66	347.46	352.55	HO. CO. STD. SD 4.32	SEE SHEET 28
I-5	STD. A-5 INLET (W=3'-0")	350.70	350.50	356.42	HO. CO. STD. SD 4.40	SEE SHEET 28
I-6	STD. DBL. 'S' COMB. INLET	352.93	352.73	359.61	HO. CO. STD. SD 4.34	SEE SHEET 28
I-7	STD. A-5 INLET (W=2'-6")	353.50	353.30	359.75	HO. CO. STD. SD 4.40	SEE SHEET 28
I-9	STD. A-10 INLET (W=3'-0")	360.50	360.25	366.17	HO. CO. STD. SD 4.41	SEE SHEET 28 INV. 358.37 15" D. INTO FACILITY #3
I-10	STD. DBL. 'S' COMB. INLET	--	366.17	371.27	HO. CO. STD. SD 4.34	SEE SHEET 28
I-11	STD. A-10 INLET (W=2'-6")	378.20	378.00	382.99	HO. CO. STD. SD 4.41	SEE SHEET 29
I-12	STD. A-10 INLET	--	387.98	391.80	HO. CO. STD. SD 4.41	SEE SHEET 29
I-13	STD. DBL. 'S' COMB. INLET (W=2'-6")	387.20	387.10	391.88	HO. CO. STD. SD 4.34	SEE SHEET 29
M-3	STD. MANHOLE	339.17	338.97	345.50	HO. CO. STD. SD G.12	SEE SHEET 28
M-4	STD. MANHOLE	342.75	342.50	348.76	HO. CO. STD. SD G.12	SEE SHEET 28
M-5	STD. MANHOLE	365.69	365.44	370.47	HO. CO. STD. SD G.12	SEE SHEET 29
M-6	STD. MANHOLE	370.41	369.96	374.93	HO. CO. STD. SD G.12	SEE SHEET 29
E-1	CONC. END SECTION	356.26	356.0	--	HO. CO. STD. SD 5.51	SEE SHEET 28
E-2	CONC. END SECTION	334.07	334.0	--	HO. CO. STD. SD 5.51	SEE SHEET 28



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



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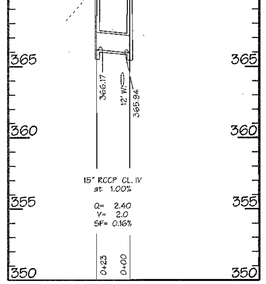

STORM DRAIN PROFILE
SCALE: HORZ. 1" = 50'
VERT. 1" = 5'

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/16/03

DIRECTOR — DATE 7/21/03

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

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200 East Pennsylvania Avenue
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SUBDIVISION NAME			SECTION/AREA	LOT/PARCEL #
HO. CO. OFFICE CAMPUS			NA	852 & P10847
PLAT # OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELEC. DISTRICT	CENSUS TRACT
15887-70	6 & 1	POR	24 & 25	2	6029
WATER CODE			SEWER CODE		

TITLE

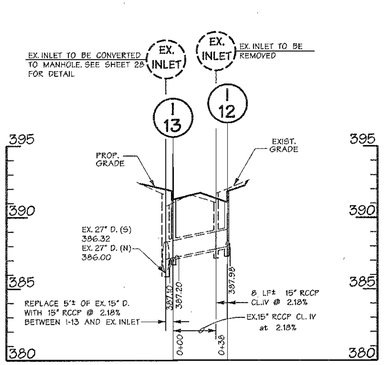
STORM DRAIN PROFILES

Des. By		Scale AS SHOWN	Proj. No. 01001.C
Drn. By	WDE	Date 06/02/03	26 of 40
Chk. By	RLH	Approved	

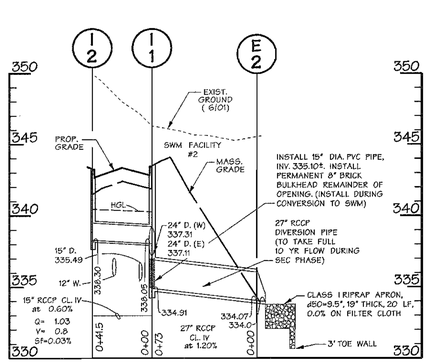
6-04-03
Date

STATE OF MARYLAND — ROBERT L. HOFFMAN — No. 10551 — REGISTERED PROFESSIONAL ENGINEER

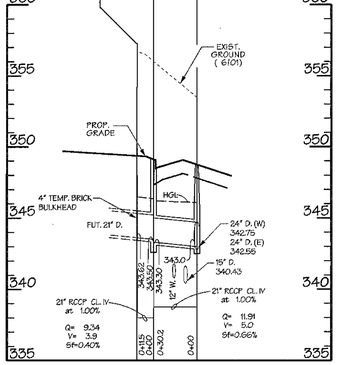
Professional Engr. No. 10551



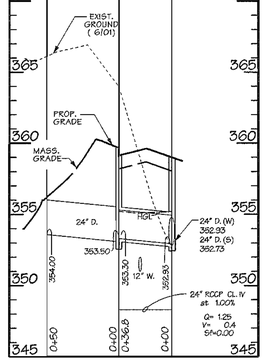
STORM DRAIN PROFILE
SCALE: HORZ. 1" = 50'
VERT. 1" = 5'



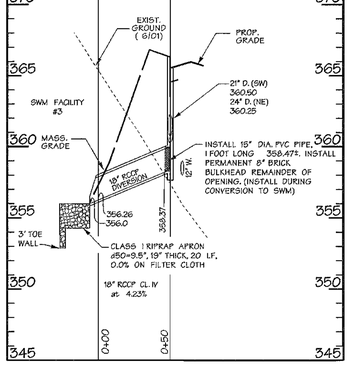
STORM DRAIN PROFILE
SCALE: HORZ. 1" = 50'
VERT. 1" = 5'



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



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



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

PIPE SCHEDULE

SIZE (IN.)	CATEGORY	L (FT.)
15	RCCP CL. IV	203'
18	RCCP CL. IV	146'
21	RCCP CL. IV	232'
24	RCCP CL. IV	700'
27	RCCP CL. IV	243'

SDP-03-026

I:\2002\01001\dwg\01001sht.dwg 6/4/2003 9:06:59 AM Plotter.plt3
Wed Jun 4 09:07:00 2003
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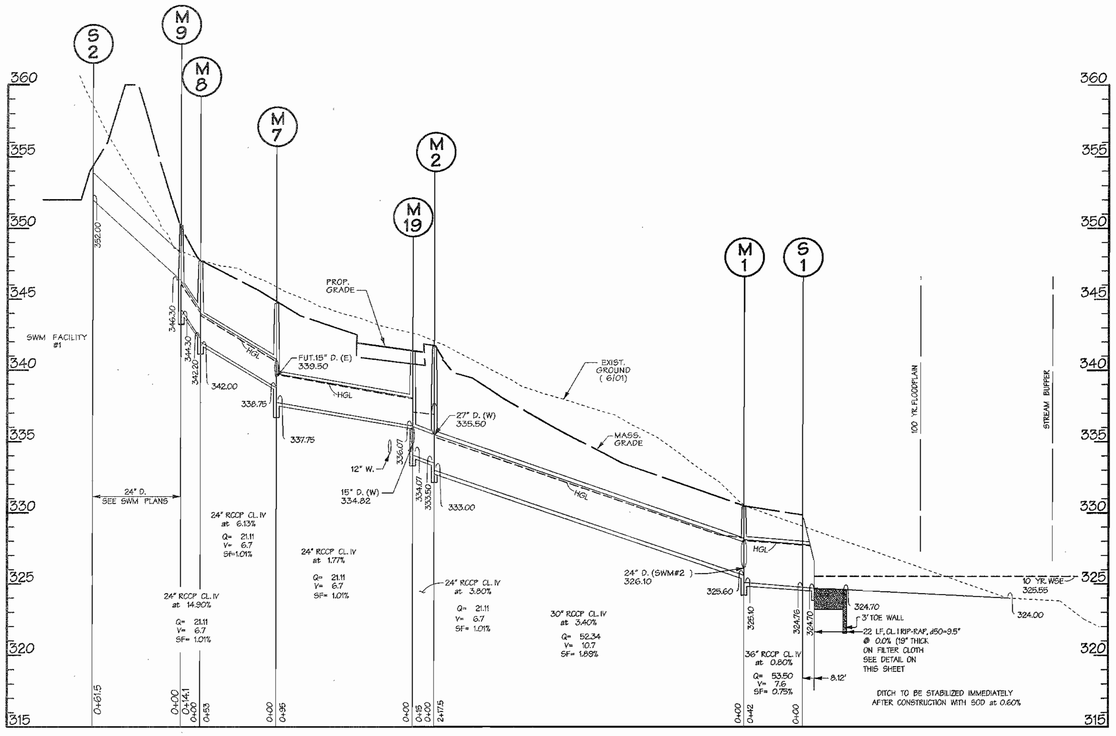
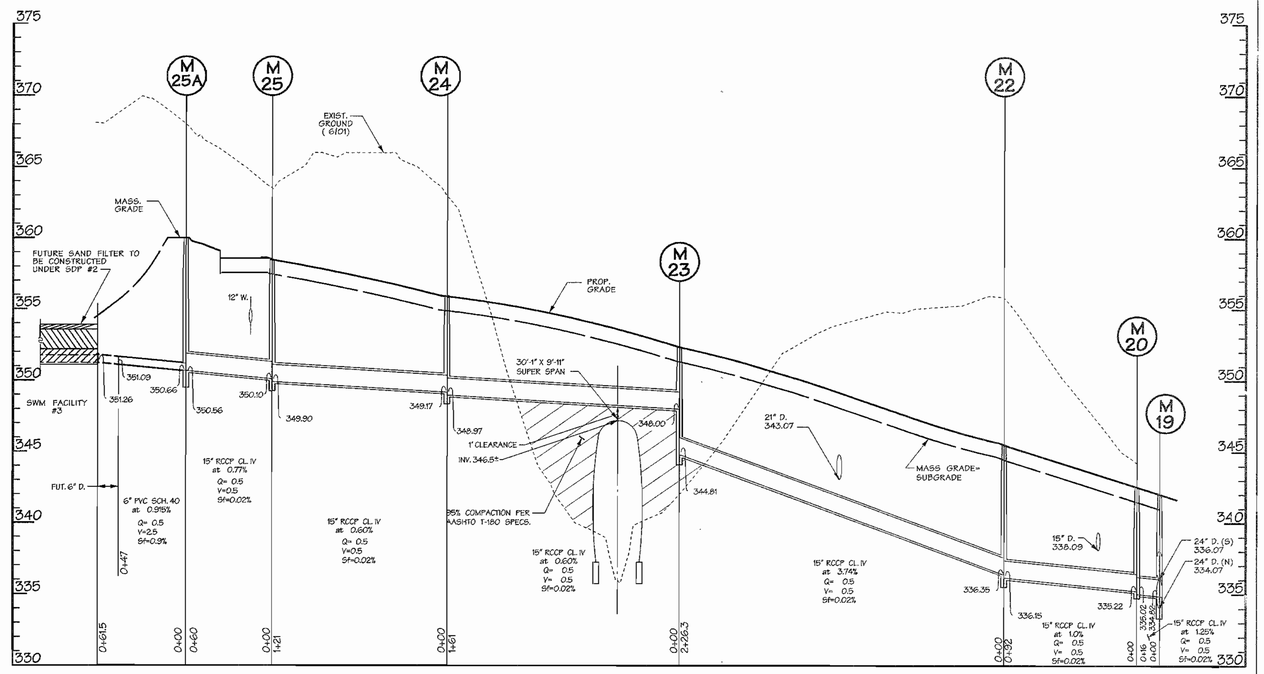
MDE PERMIT AND TRACKING No. 200266336



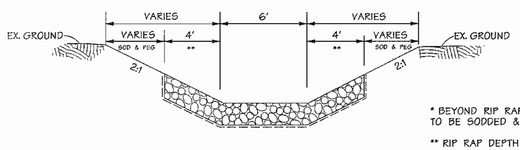
STORM DRAIN PROFILE
SCALE: HORZ. 1" = 50'
VERT. 1" = 5'



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

STRUCTURE SCHEDULE

NO.	TYPE	INV. IN	INV. OUT	TOP ELEV.	REMARKS	LOCATION
M-1	STD. MANHOLE	325.60	325.10	330.50	HO.CO. STD. G.5.13	SEE SHEET 28
M-2	STD. MANHOLE	333.50	333.00	341.70	HO.CO. STD. G.5.13	SEE SHEET 28
M-7	STD. MANHOLE	338.75	337.75	344.70	HO.CO. STD. G.5.12	SEE SHEET 28
M-8	STD. MANHOLE	342.20	342.00	347.70	HO.CO. STD. G.5.12	SEE SHEET 28
M-9	STD. MANHOLE	346.30	344.30	350.20	HO.CO. STD. G.5.12	SEE SHEET 28
M-19	STD. MANHOLE	336.07	334.07	341.55	HO.CO. STD. G.5.12	SEE SHEET 28
M-20	STD. MANHOLE	335.22	335.02	342.25	HO.CO. STD. G.5.12	SEE SHEET 28
M-22	STD. MANHOLE	336.35	336.15	345.50	HO.CO. STD. G.5.12	SEE SHEET 28
M-23	STD. MANHOLE	348.00	344.81	352.35	HO.CO. STD. G.5.12	SEE SHEET 28
M-24	STD. MANHOLE	349.17	348.97	355.87	HO.CO. STD. G.5.12	SEE SHEET 28
M-25	STD. MANHOLE	350.10	349.90	358.45	HO.CO. STD. G.5.12	SEE SHEET 28
M-25A	STD. MANHOLE	350.66	350.56	360.00	HO.CO. STD. G.5.12	SEE SHEET 28
S-1	CONC. END SECTION	324.76	324.70	——	HO.CO. STD. SD-.5.51	SEE SHEET 28



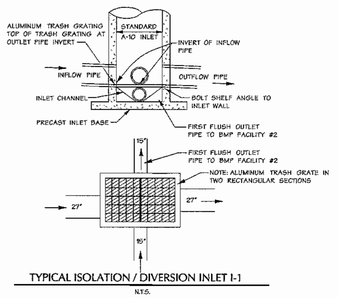
* BEYOND RIP RAP, ENTIRE SWALE TO BE SODDED & PEGGED

** RIP RAP DEPTH IS 19"

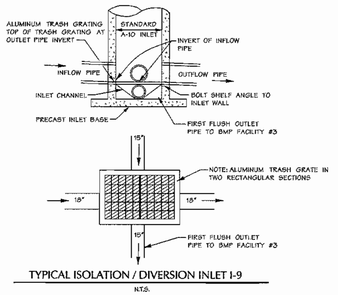
RIP RAP & DITCH DETAIL @ S-1
N.T.S.

PIPE SCHEDULE

SIZE (IN.)	CATEGORY	L (FT.)
15"	RCCP CL. IV	617
24"	RCCP CL. IV	177
30"	RCCP CL. IV	218
36"	RCCP CL. IV	42
6"	PVC	107



TYPICAL ISOLATION / DIVERSION INLET I-1
N.T.S.



TYPICAL ISOLATION / DIVERSION INLET I-9
N.T.S.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/16/03

DIRECTOR — DATE 7/21/03

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

DMW
Daft-McCune-Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
HO. CO. OFFICE CAMPUS	NA	852 & P10847

PLAT OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15347-70	6 & 1	POR	24 & 25	2	6029

WATER CODE — SEWER CODE

TITLE

STORM DRAIN PROFILES

Des. By	DFM	Scale AS SHOWN	Proj. No. 01001.C
Drn. By	WDE	Date 06/02/03	
Chk. By	RLN	Approved	27 of 40

6-04-03
Date

Professional Engr. No. 10557

SDP-03-026

Wed Jun 4 09:06:06 2003
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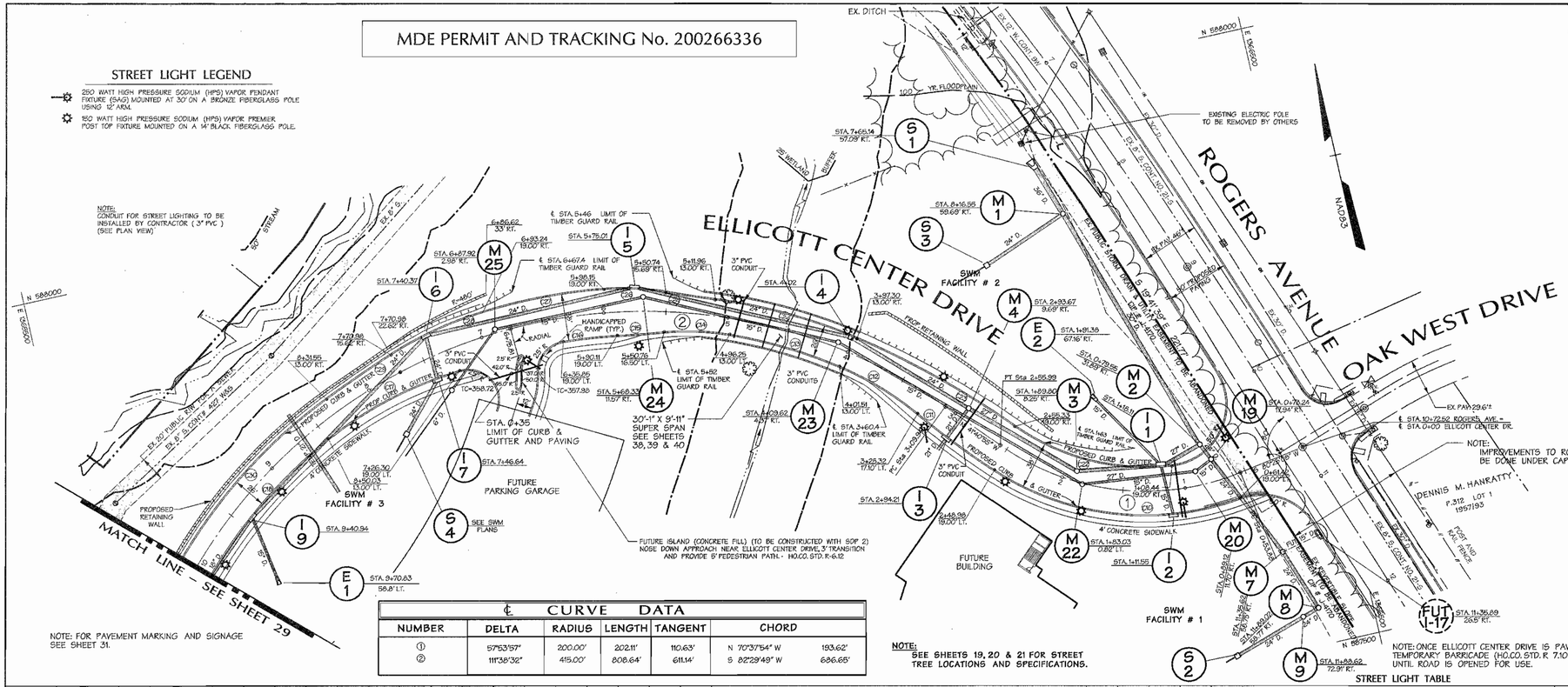
MDE PERMIT AND TRACKING No. 200266336

STREET LIGHT LEGEND

- 250 WATT HIGH PRESSURE SODIUM (HPS) VAPOR PENDANT FIXTURE (SAG) MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING 12' ARM.
- 150 WATT HIGH PRESSURE SODIUM (HPS) VAPOR PREMIER POST TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE.

NOTE: CONDUIT FOR STREET LIGHTING TO BE INSTALLED BY CONTRACTOR (3" PVC) (SEE PLAN VIEW)



NOTE: FOR PAVEMENT MARKING AND SIGNAGE SEE SHEET 31.

NOTE: SEE SHEETS 19, 20 & 21 FOR STREET TREE LOCATIONS AND SPECIFICATIONS.

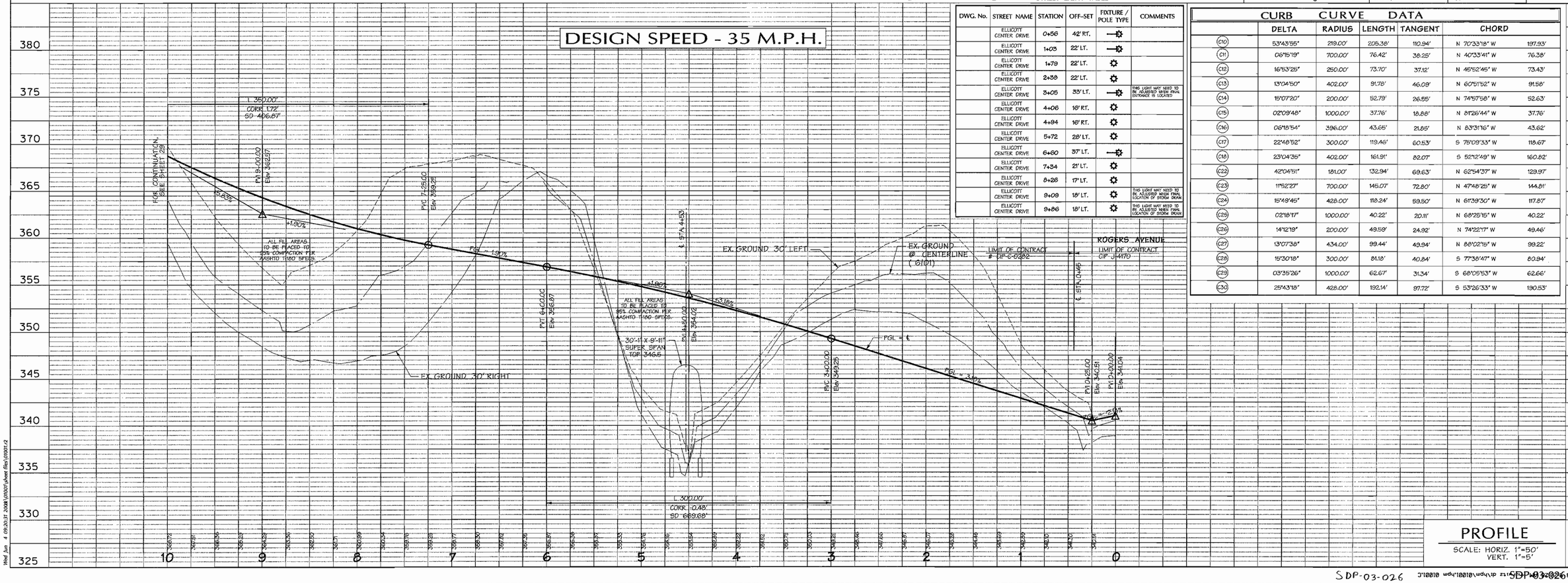
℄ CURVE DATA

NUMBER	DELTA	RADIUS	LENGTH	TANGENT	CHORD	
①	57°53'57"	200.00'	202.11'	110.63'	N 70°37'54" W	193.62'
②	111°38'32"	415.00'	808.64'	611.14'	S 82°29'49" W	686.65'

STREET LIGHT TABLE

DWG. No.	STREET NAME	STATION	OFF-SET	FIXTURE / POLE TYPE	COMMENTS
	ELLICOTT CENTER DRIVE	0+56	42' RT.		
	ELLICOTT CENTER DRIVE	1+03	22' LT.		
	ELLICOTT CENTER DRIVE	1+79	22' LT.		
	ELLICOTT CENTER DRIVE	2+38	22' LT.		
	ELLICOTT CENTER DRIVE	3+05	33' LT.		THIS LIGHT MAY NEED TO BE ADJUSTED WHEN FINAL ENTRANCE IS LOCATED
	ELLICOTT CENTER DRIVE	4+06	18' RT.		
	ELLICOTT CENTER DRIVE	4+94	18' RT.		
	ELLICOTT CENTER DRIVE	5+72	28' LT.		
	ELLICOTT CENTER DRIVE	6+80	37' LT.		
	ELLICOTT CENTER DRIVE	7+34	21' LT.		
	ELLICOTT CENTER DRIVE	8+26	17' LT.		
	ELLICOTT CENTER DRIVE	9+09	18' LT.		THIS LIGHT MAY NEED TO BE ADJUSTED WHEN FINAL LOCATION OF STORM DRAIN
	ELLICOTT CENTER DRIVE	9+86	18' LT.		THIS LIGHT MAY NEED TO BE ADJUSTED WHEN FINAL LOCATION OF STORM DRAIN

DESIGN SPEED - 35 M.P.H.



CURB CURVE DATA

	DELTA	RADIUS	LENGTH	TANGENT	CHORD	
C10	53°43'55"	219.00'	205.38'	110.94'	N 70°33'18" W	197.93'
C11	06°15'19"	700.00'	76.42'	38.25'	N 40°33'41" W	76.38'
C12	16°53'25"	250.00'	73.70'	37.12'	N 46°52'45" W	73.43'
C13	13°04'50"	402.00'	91.78'	46.09'	N 60°51'52" W	91.58'
C14	15°07'20"	200.00'	52.79'	26.55'	N 74°57'58" W	52.63'
C15	02°09'48"	1000.00'	37.76'	18.88'	N 81°26'44" W	37.76'
C16	06°18'54"	396.00'	43.65'	21.85'	N 83°31'16" W	43.62'
C17	22°48'52"	300.00'	119.46'	60.53'	S 75°09'33" W	118.67'
C18	23°04'35"	402.00'	161.91'	82.07'	S 52°12'49" W	160.82'
C22	42°04'51"	181.00'	132.94'	69.63'	N 62°54'37" W	129.97'
C23	11°52'27"	700.00'	145.07'	72.80'	N 47°48'25" W	144.81'
C24	15°48'45"	428.00'	118.24'	59.50'	N 61°39'30" W	117.87'
C25	02°18'17"	1000.00'	40.22'	20.11'	N 68°25'15" W	40.22'
C26	14°12'19"	200.00'	49.59'	24.92'	N 74°22'17" W	49.46'
C27	13°07'38"	434.00'	99.44'	49.94'	N 68°02'15" W	99.22'
C28	15°30'18"	300.00'	81.18'	40.84'	S 77°38'47" W	80.94'
C29	03°35'26"	1000.00'	62.67'	31.34'	S 68°05'53" W	62.66'
C30	25°43'18"	428.00'	192.14'	97.72'	S 53°26'33" W	190.53'

LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- 300 MAJOR CONTOURS
- 295 MINOR CONTOURS
- STREAM CENTERLINE
- STREAM BUFFER
- WETLAND LIMIT
- WETLAND BUFFER
- EXISTING FOREST EDGE
- EXISTING ROADS
- PROPOSED GUARD RAIL
- 100 YR FLOODPLAIN
- PROP. RETAINING WALL
- PROP. CURB & GUTTER
- PROP. REVERSE CURB & GUTTER

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/15/03

DIRECTOR — DATE 7/24/03

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

DMW
Daft-McCune-Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

6-04-03
Date

STATE OF MARYLAND — JOHN W. MACCUNE — No. 10793 — REGISTERED PROFESSIONAL ENGINEER

Professional Engr. No. 10793

SUBDIVISION NAME: HO. CO. OFFICE CAMPUS		SECTION / AREA: NA	LOT / PARCEL #: 852 & P10847
PLAT # OR L/F: 13347-79	BLOCK #: 6 & 1	ZONE: POR	TAX / ZONE MAP: 24 & 25
ELECT. DISTRICT: 2	CENSUS TRACT: 6029	WATER CODE:	SEWER CODE:

TITLE

ELLICOTT CENTER DRIVE ROAD PLAN / PROFILE

Des. By: DFM	Scale: 1"=50'		Proj. No. 01001.C
Drn. By: WDE	Date: 06/02/03		28 of 40
Chk. By:	Approved:		

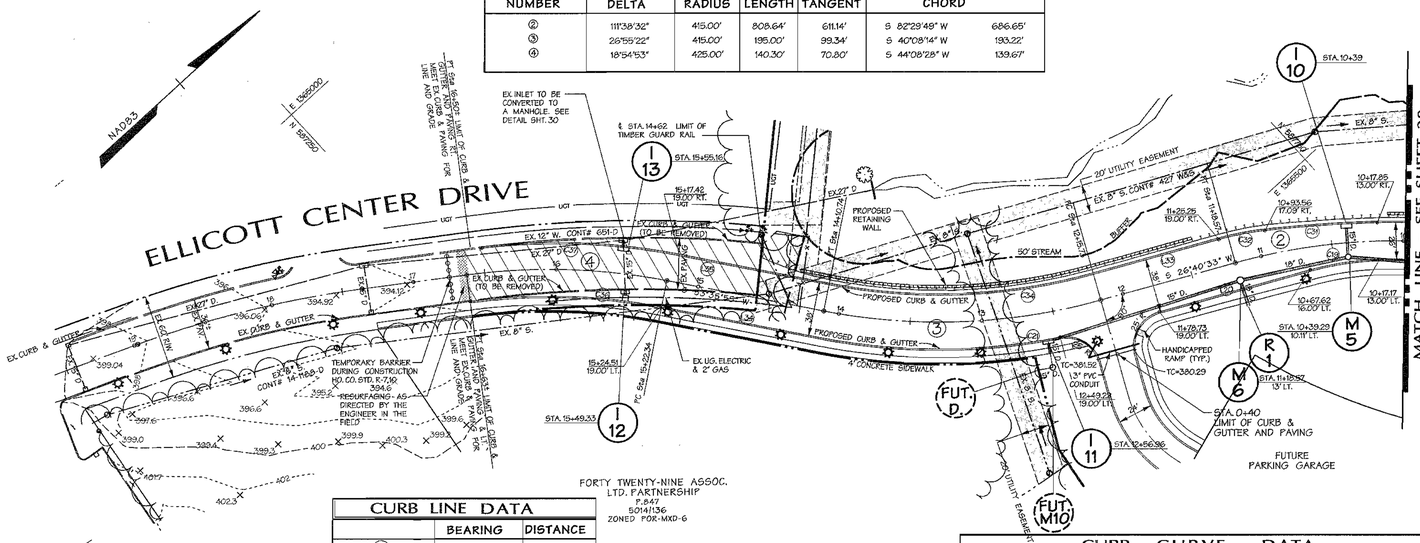
PROFILE
SCALE: HORIZ. 1"=50'
VERT. 1"=5'

SDP-03-026

Wed Jun 4 09:30:37 2003 \\Dft01\Juneau Files\01001.C2
6/4/2003 d:\hcp\01001\hcp01001c.dgn

℄ CURVE DATA

NUMBER	DELTA	RADIUS	LENGTH	TANGENT	CHORD	
②	111°38'32"	415.00'	808.64'	611.14'	S 82°29'49" W	686.65'
③	26°55'22"	415.00'	195.00'	99.34'	S 40°08'14" W	193.22'
④	18°54'53"	425.00'	140.30'	70.80'	S 44°08'28" W	139.67'



NOTE: FOR PAVEMENT MARKING AND SIGNAGE SEE SHEET 31.

CURB LINE DATA

	BEARING	DISTANCE
(20)	S 26°40'33" W	109.03'
(33)	S 26°40'33" W	90.49'
(34)	S 53°35'55" W	113.67'
(35)	S 53°35'55" W	106.68'

CURB CURVE DATA

	DELTA	RADIUS	LENGTH	TANGENT	CHORD	
(19)	13°59'59"	200.00'	48.87'	24.56'	S 33°40'32" W	48.75'
(21)	22°17'57"	434.00'	168.91'	85.54'	S 42°26'56" W	167.85'
(31)	04°29'46"	1000.00'	78.47'	39.26'	S 38°20'01" W	78.46'
(32)	09°24'35"	200.00'	32.85'	16.46'	S 31°22'50" W	32.81'
(34)	26°55'22"	396.00'	186.08'	94.79'	S 40°08'14" W	184.37'
(36)	12°35'04"	406.00'	131.69'	66.43'	S 44°18'23" W	131.11'
(37)	17°50'33"	444.00'	138.27'	69.70'	S 44°40'39" W	137.71'

N 597250 E 1365000

NOTE: SEE SHEETS 19, 20 & 21 FOR STREET TREE LOCATIONS AND SPECIFICATIONS.

MDE PERMIT AND TRACKING No. 200266336

STREET LIGHT LEGEND

250 WATT HIGH PRESSURE SODIUM (HPS) VAPOR PENDANT FIXTURE (SAG) MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING 12' ARM.

150 WATT HIGH PRESSURE SODIUM (HPS) VAPOR PREMIER POST TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE.

STREET LIGHT TABLE

DWG. No.	STREET NAME	STATION	OFF-SET	FIXTURE / POLE TYPE	COMMENTS
	ELLICOTT CENTER DR.	10+72	22' LT.	☼	
	ELLICOTT CENTER DR.	11+54	22' LT.	☼	
	ELLICOTT CENTER DR.	12+33	37' LT.	—☼	
	ELLICOTT CENTER DR.	13+02	22' LT.	☼	
	ELLICOTT CENTER DR.	13+63	22' LT.	☼	
	ELLICOTT CENTER DR.	14+37	22' LT.	☼	
	ELLICOTT CENTER DR.	15+17	22' LT.	☼	
	ELLICOTT CENTER DR.	16+02	22' LT.	☼	
	ELLICOTT CENTER DR.	16+98	22' LT.	☼	
	ELLICOTT CENTER DR.	17+60	21' LT.	☼	
	ELLICOTT CENTER DR.	18+39	21' LT.	☼	
	ELLICOTT CENTER DR.	19+20	21' LT.	☼	

NOTE: CONDUIT FOR STREET LIGHTING TO BE INSTALLED BY CONTRACTOR (3" PVC)

LEGEND

PROPERTY LINE
ADJACENT PROPERTY LINE
300 MAJOR CONTOURS
295 MINOR CONTOURS
STREAM CENTERLINE
STREAM BUFFER
WETLAND LIMIT
WETLAND BUFFER
EXISTING FOREST EDGE
EXISTING ROADS
PROPOSED GUARD RAIL
100 YR FLOODPLAIN
PROP. RETAINING WALL
PROP. CURB & GUTTER
PROP. REVERSE CURB & GUTTER
EXISTING PAVING TO BE REMOVED

6-04-03
Date

Professional Engr. No. 10557

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/14/03

DIRECTOR — DATE 7/15/03

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

DMW
Daft-McCune-Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

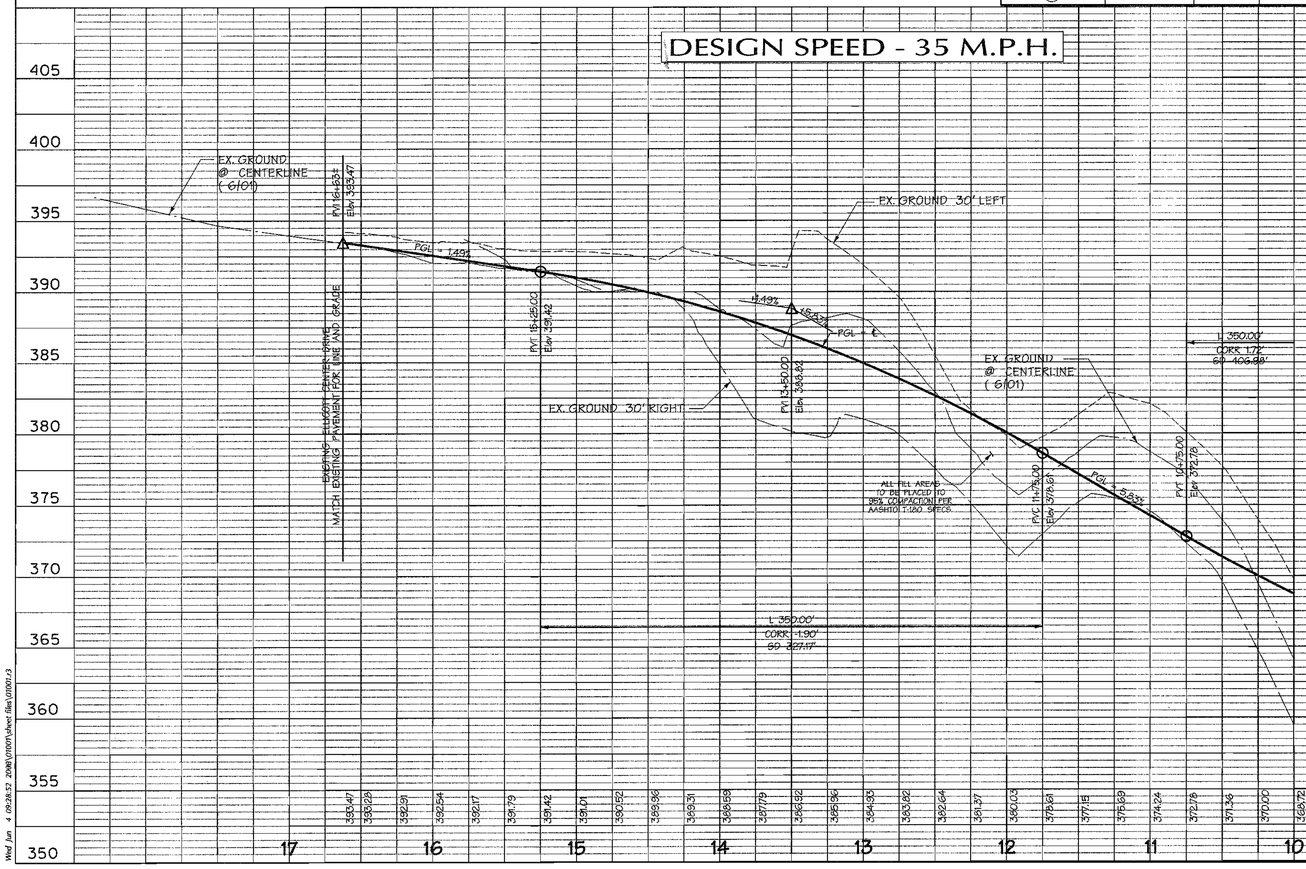
SUBDIVISION NAME: HO. CO. OFFICE CAMPUS	SECTION/AREA: NA		CIP/PARCEL #: 852 & P10847
PLAT # OR LOT: 13217-76	BLOCK #: 6 & 1	ZONE: POR	TAX/ZONE MAP: 24 & 25
ELECT DISTRICT: 2	CENSUS TRACT: 6029		
WATER CODE:	SEWER CODE:		

TITLE

ELLICOTT CENTER DRIVE ROAD PLAN / PROFILE

Des. By: DFM	Scale: 1"=50'	Proj. No. 01001.C	
Drn. By: WDE	Date: 06/02/03	29 of 40	
Chk. By: RLH	Approved		

DESIGN SPEED - 35 M.P.H.



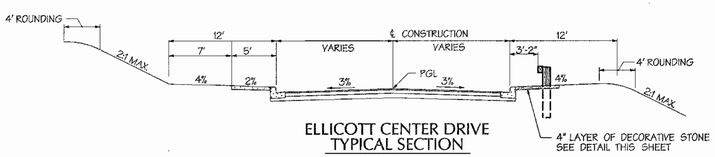
PROFILE

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

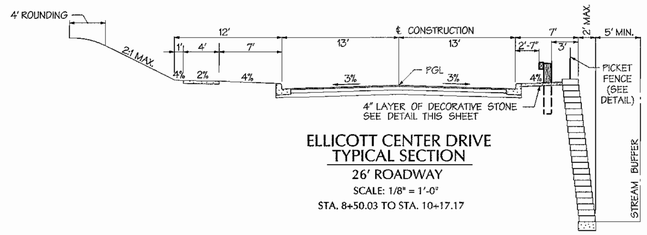
SDP-03-026

Wed Jun 4 09:26:52 2003 Z:\WP\01001\sheet files\01001-23
Wed, 6/4/2003 9:28:47 AM PM\01001.dgn 01001.C

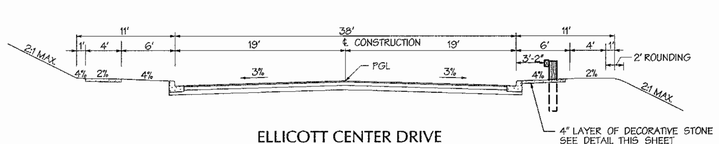
MDE PERMIT AND TRACKING No. 200266336



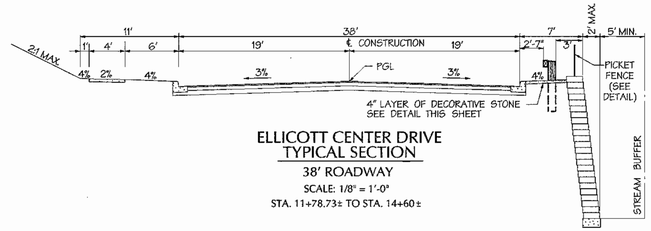
ELLICOTT CENTER DRIVE TYPICAL SECTION
26' ROADWAY
SCALE: 1/8" = 1'-0"
STA. 3+85 TO STA. 4+01.51



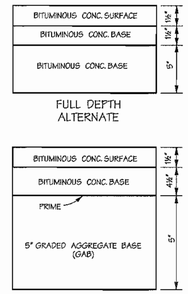
ELLICOTT CENTER DRIVE TYPICAL SECTION
26' ROADWAY
SCALE: 1/8" = 1'-0"
STA. 8+50.03 TO STA. 10+17.17



ELLICOTT CENTER DRIVE TYPICAL SECTION
38' ROADWAY
SCALE: 1/8" = 1'-0"
STA. 1+08.44 TO STA 2+48.98
STA. 5+98.15 TO STA 6+35.85 (OMIT GUARDRAIL & 4" STONE LAYER)
STA. 14+62 TO STA 16+00 (OMIT GUARDRAIL & 4" STONE LAYER)



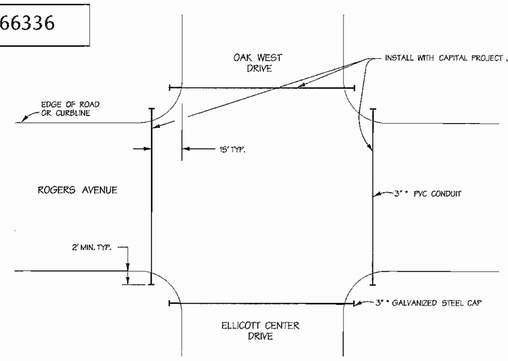
ELLICOTT CENTER DRIVE TYPICAL SECTION
38' ROADWAY
SCALE: 1/8" = 1'-0"
STA. 11+78.73± TO STA. 14+60±



FULL DEPTH ALTERNATE

GRANULAR BASE ALTERNATE

PAVING SECTION P-3 MINOR COLLECTORS
NO SCALE

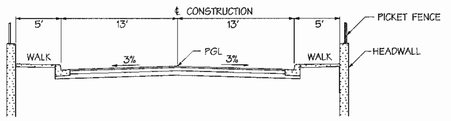


* LARGER CONDUITS SHALL BE INSTALLED WHEN SO DIRECTED BY THE DEPARTMENT OF PUBLIC WORKS.

NOTES:

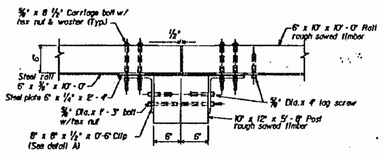
1. CONDUITS SHALL BE INSTALLED WHEN DIRECTED BY THE DEPT. OF PUBLIC WORKS. SEE SHEET 28 & 29 FOR LOCATIONS.
2. CONDUITS SHALL BE LAID AT A DEPTH OF 18", SLOPED TO DRAIN, AND THE ENDS CAPPED.
3. SEE FIGURES 2.18 AND 2.19 OF DESIGN MANUAL FOR LOCATION OF UTILITIES.

HOWARD COUNTY DETAIL R-9.01
NO SCALE

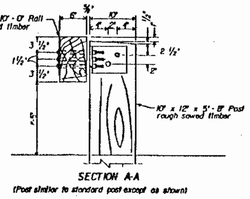


TYPICAL SECTION
26' ROADWAY OVER SUPER SPAN
SCALE: 1/8" = 1'-0"
STA. 4+01.51 TO STA. 4+96.25

NOTE:
SEE SHEETS 28 AND 29 FOR LIMITS OF EACH TYPICAL SECTION AND TRANSITIONS.

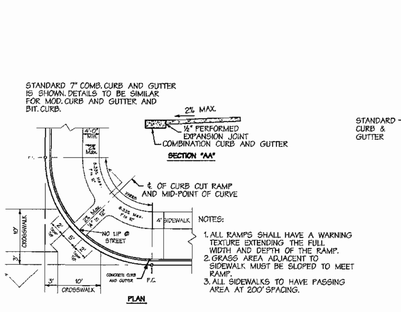


POST CONNECTION DETAIL

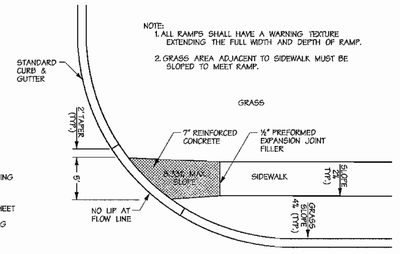


SECTION A-A
(Post similar to standard post except as shown)

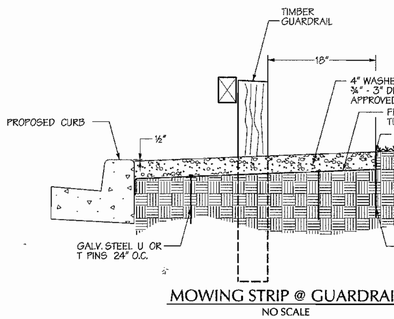
TIMBER GUARDRAIL
NO SCALE



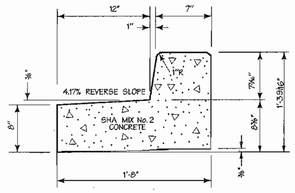
SIDEWALK RAMP
TYPE "A"



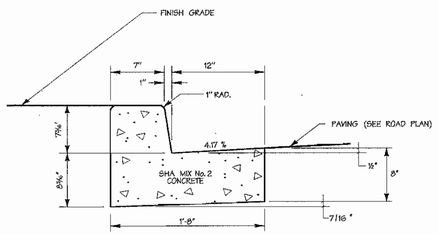
SIDEWALK RAMP
RAMP PERPENDICULAR TO CURB
NO SCALE



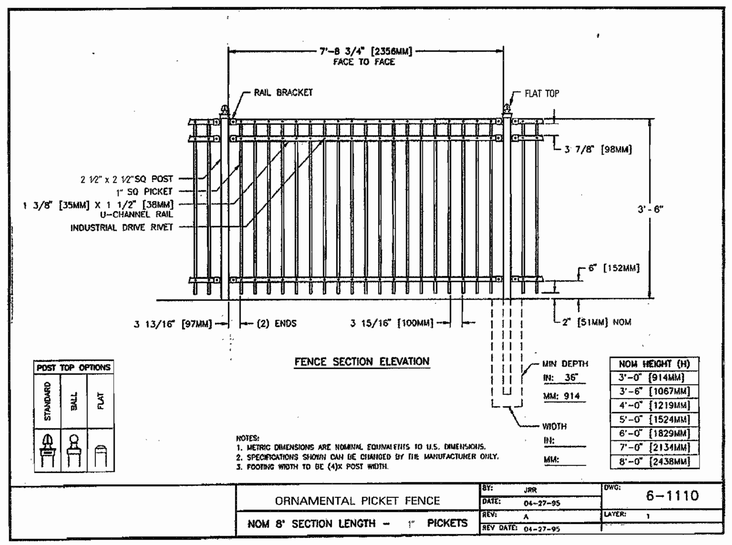
MOWING STRIP @ GUARDRAIL
NO SCALE



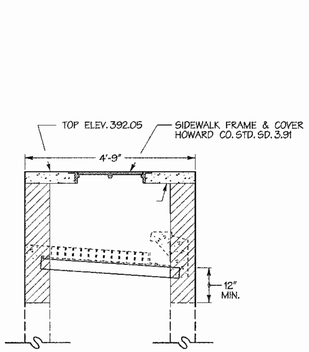
REVERSE 7" COMBINATION CURB & GUTTER
NO SCALE

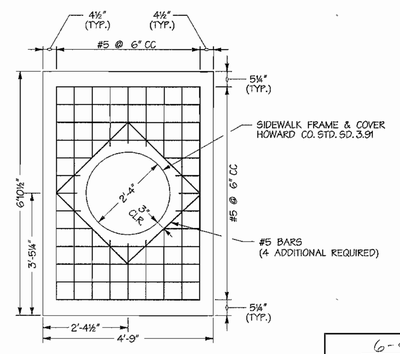


SECTION
7" COMBINATION CURB AND GUTTER
NO SCALE



FENCE DETAIL
NO SCALE





GENERAL NOTES:
1. REMOVE HEAD PIECE, FRAME & GRATE.
2. BRICK UP AND PLACE TOP SLAB TO PROPOSED ELEVATION.
3. CONCRETE SHOULD CONFORM TO HOWARD CO. SPECIFICATIONS.
4. REINFORCING SHALL BE DEFORMED BARS (EPOXY COATED).
5. ALL MATERIALS TO CONFORM TO HOWARD CO. SPECIFICATIONS.

DETAIL DOUBLE 'S' COMBINATION INLET CONVERSION TO MANHOLE
SCALE: ½" = 1'-0"

6-04-03
Date

STATE OF MARYLAND — JOHN W. TODD — No. 10555 — REGISTERED PROFESSIONAL ENGINEER

Professional Engr. No. 10555

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/16/03
DIRECTOR — DATE 7/25/03

Date	No.	Revision Description

Howard County Office Campus
PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

DMW
Daft-McCune-Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705
A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
HO. CO. OFFICE CAMPUS	NA	852 & P10847
PLAT # OR L/F: 15967-70	BLOCK # / ZONE: 6 & 1 / POR	TAX/ZONE MAP: 24 & 25
ELECT. DISTRICT: 2	CENSUS TRACT: 6029	
WATER CODE	SEWER CODE	

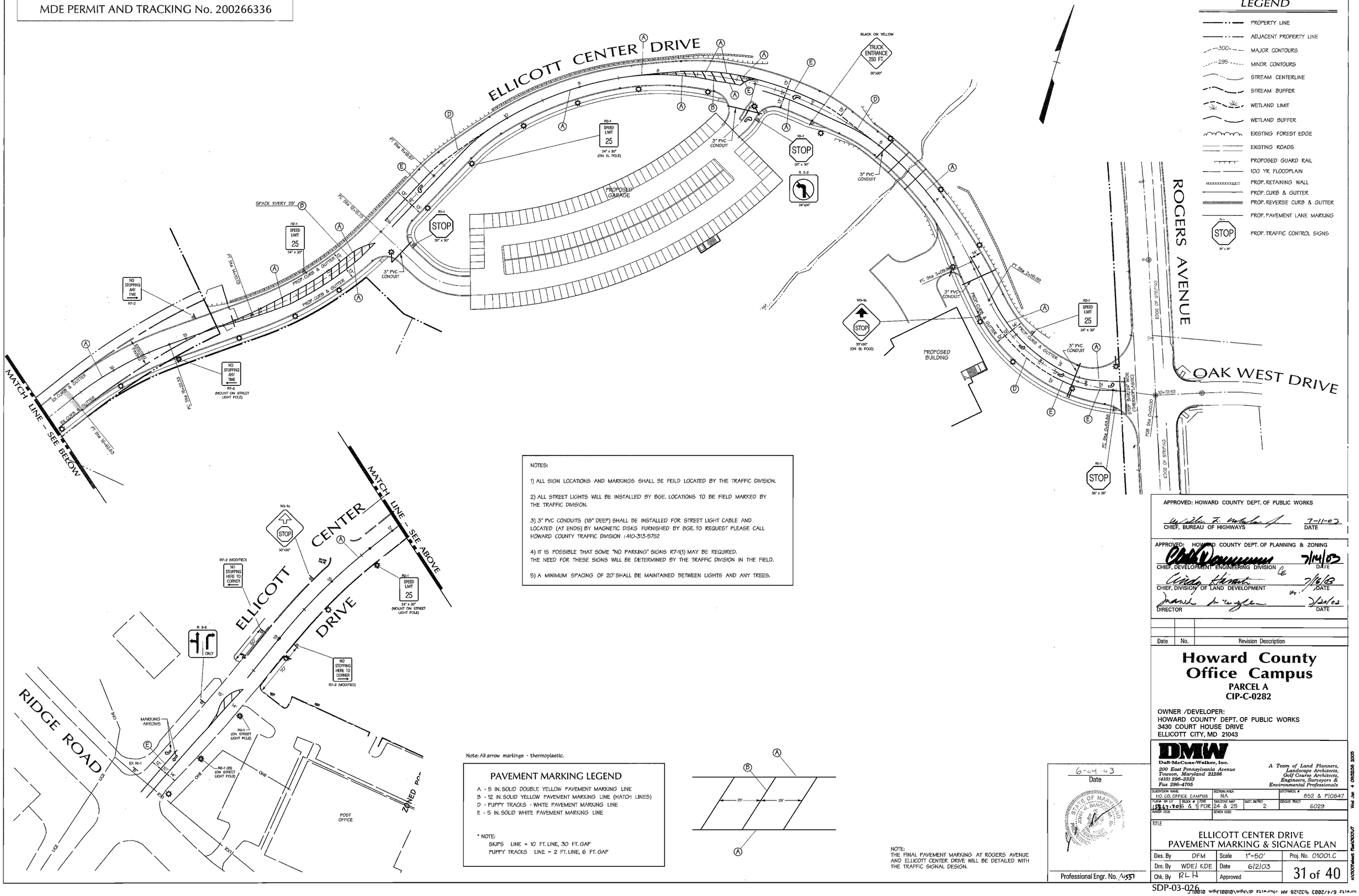
TITLE
ELLICOTT CENTER DRIVE ROAD DETAILS

Des. By	DFM	Scale	AS SHOWN	Proj. No.	01001.C
Drn. By	WDE	Date	06/02/03	30 of 40	
Chk. By	RLH	Approved			

SDP-03-026

Wed Jun 4 08:00:06 2003
m:\2001\detail files\01001-4
Plotted: 6/4/2003 9:38:27 AM Plotted by: dkhan\01001khan 01001

MDE PERMIT AND TRACKING No. 200266336



LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- 300 MAJOR CONTOURS
- 295 MINOR CONTOURS
- STREAM CENTERLINE
- STREAM BUFFER
- WETLAND LIMIT
- WETLAND BUFFER
- EXISTING FOREST EDGE
- EXISTING ROADS
- PROPOSED GUARD RAIL
- 100 YR FLOODPLAIN
- PROP. RETAINING WALL
- PROP. CURB & GUTTER
- PROP. REVERSE CURB & GUTTER
- PROP. PAVEMENT LANE MARKING
- PROP. TRAFFIC CONTROL SIGNS

NOTES:

1) ALL SIGN LOCATIONS AND MARKINGS SHALL BE FEILD LOCATED BY THE TRAFFIC DIVISION.

2) ALL STREET LIGHTS WILL BE INSTALLED BY BGE. LOCATIONS TO BE FIELD MARKED BY THE TRAFFIC DIVISION.

3) 3" PVC CONDUITS (18" DEEP) SHALL BE INSTALLED FOR STREET LIGHT CABLE AND LOCATED (AT ENDS) BY MAGNETIC DISKS FURNISHED BY BGE. TO REQUEST PLEASE CALL HOWARD COUNTY TRAFFIC DIVISION : 410-313-5752.

4) IT IS POSSIBLE THAT SOME "NO PARKING" SIGNS R7-1(1) MAY BE REQUIRED. THE NEED FOR THESE SIGNS WILL BE DETERMINED BY THE TRAFFIC DIVISION IN THE FIELD.

5) A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN LIGHTS AND ANY TREES.

Note: All arrow markings - thermoplastic.

PAVEMENT MARKING LEGEND

A - 5 IN. SOLID DOUBLE YELLOW PAVEMENT MARKING LINE
B - 12 IN. SOLID YELLOW PAVEMENT MARKING LINE (HATCH LINES)
D - PUPPY TRACKS - WHITE PAVEMENT MARKING LINE
E - 5 IN. SOLID WHITE PAVEMENT MARKING LINE

* NOTE:
SKIPS LINE = 10 FT. LINE, 30 FT. GAP
PUPPY TRACKS LINE = 2 FT. LINE, 6 FT. GAP

NOTE:
THE FINAL PAVEMENT MARKING AT ROGERS AVENUE AND ELLICOTT CENTER DRIVE WILL BE DETAILED WITH THE TRAFFIC SIGNAL DESIGN.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/16/03

DIRECTOR — DATE 7/21/03

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

DMW
Daft-McCune-Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME			SECTION/AREA		LOT/PARCEL #
HO. CO. OFFICE CAMPUS			NA		P52 & P10847
PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELEC. DISTRICT	CENSUS TRACT
15867-70	6 & 1	POR	24 & 25	2	6029
WATER CODE			SEWER CODE		

TITLE

ELLICOTT CENTER DRIVE PAVEMENT MARKING & SIGNAGE PLAN

Des. By	DFM	Scale	1"=50'
Drn. By	WDE/ KDE	Date	6/2/03
Chk. By	RLH	Approved	

Proj. No. 01001.C

31 of 40

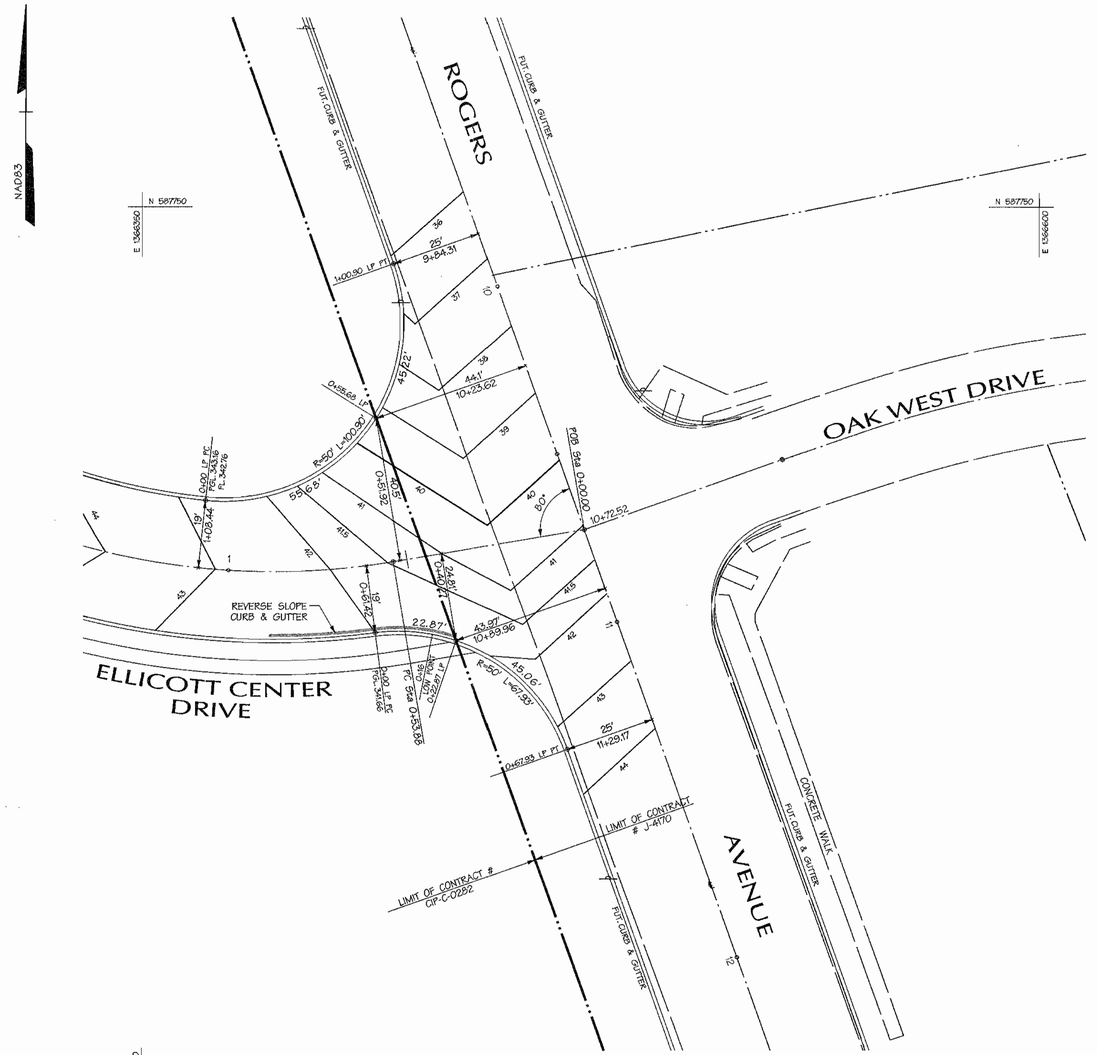
6-04-03
Date

Professional Engr. No. 15551

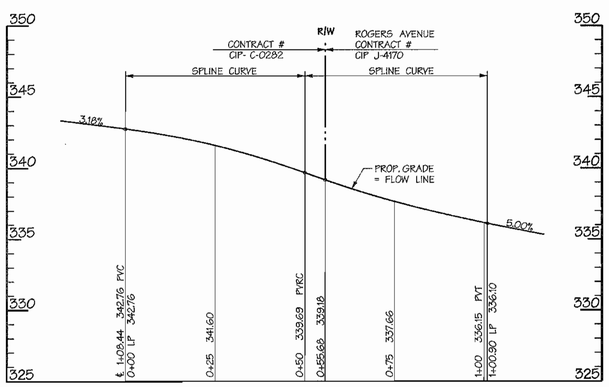
SDP-03-026

J:\01001\dwg\01001.dwg 6/4/2003 9:32:28 AM rhurwitz

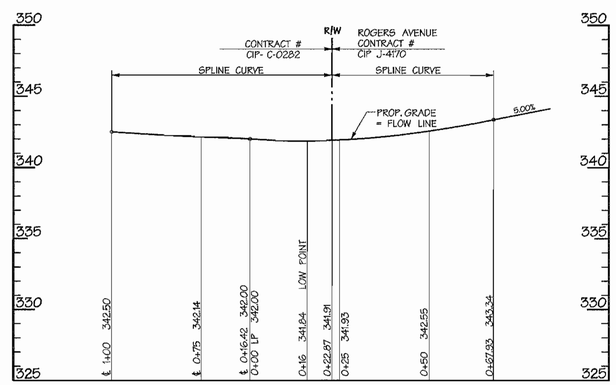
MDE PERMIT AND TRACKING No. 200266336



PLAN
SCALE: 1"=20'



LINEAR PROFILE
NORTHWEST CURB RETURN
SCALE: HORZ. 1"=20'
VERT. 1"=5'



LINEAR PROFILE
SOUTHWEST CURB RETURN
SCALE: HORZ. 1"=20'
VERT. 1"=5'

LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- MAJOR CONTOURS
- MINOR CONTOURS
- STREAM CENTERLINE
- STREAM BUFFER
- WETLAND LIMIT
- WETLAND BUFFER
- EXISTING FOREST EDGE
- EXISTING ROADS
- PROPOSED GUARD RAIL
- 100 YR FLOODPLAIN
- PROP. RETAINING WALL
- PROP. CURB & GUTTER
- PROP. REVERSE CURB & GUTTER

NOTE:
THE DEMARCATION LINE BETWEEN CIP-C-0282 AND J-4170 MAY BE ALTERED IN CONJUNCTION WITH FUTURE CAPITAL CONTRACT.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/18/03

DIRECTOR — DATE 7/21/03

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER /DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

DMW
Daft-McCune-Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Golf Course Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA			CUT/PARCEL #
HO. CO. OFFICE CAMPUS	NA			852 & P10847
PLAT# OR LIT	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15867-70	6 & 1	POR	24 & 25	2	6029
WATER CODE			SEWER CODE		

6-04-03
Date

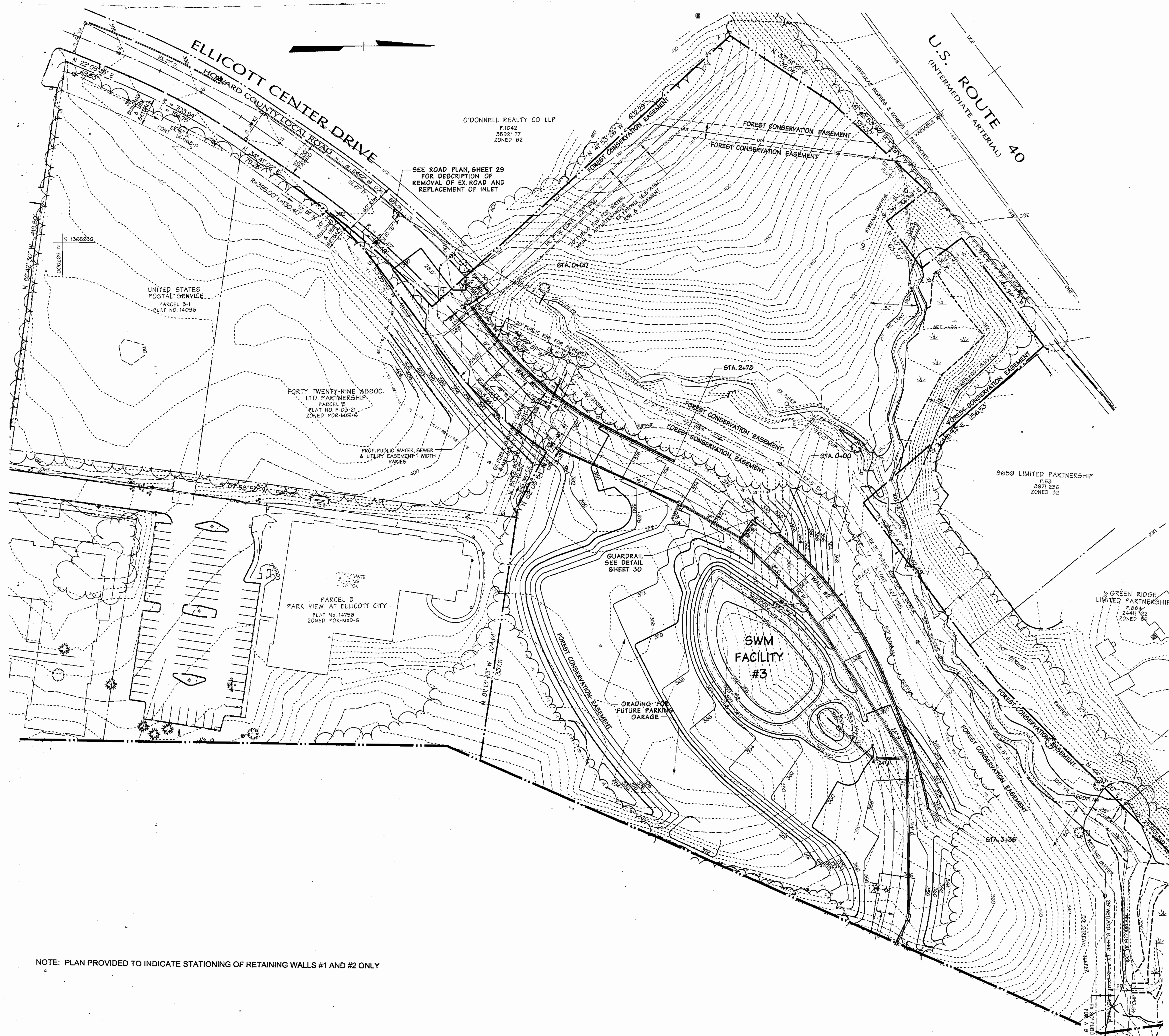
STATE OF MARYLAND — JOHN H. HANDLEY — REGISTERED PROFESSIONAL ENGINEER

Professional Engr. No. 10551

TITLE
ELLICOTT CENTER DRIVE - ROGERS AVE
ROAD INTERSECTION DETAILS

Des. By DFM	Scale AS SHOWN	Proj. No. 01001.C
Drn. By WDE	Date 06/02/03	32 of 40
Chk. By RLN	Approved	

SDP-03-026



NOTE: PLAN PROVIDED TO INDICATE STATIONING OF RETAINING WALLS #1 AND #2 ONLY

LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- MAJOR CONTOURS (300)
- MINOR CONTOURS (295)
- STREAM CENTERLINE
- STREAM BUFFER
- WETLAND LIMIT
- WETLAND BUFFER
- SLOPES >25%
- SLOPES 15%-25%
- EXISTING FOREST EDGE
- EXISTING ROADS
- PROPOSED TREELINE
- PROPOSED GUARD RAIL
- 100 YR FLOODPLAIN
- LIMIT OF DISTURBANCE
- PROP. RETAINING WALL
- PROPOSED MINOR CONTOUR (348)
- PROPOSED MAJOR CONTOUR (350)
- FOREST CONSERVATION EASEMENT (NATURAL AREA CONSERVATION CREDIT)
- PUBLIC EASEMENT
- PROPOSED WATER LINE (12" W.)
- PROPOSED STORM DRAIN (15" D.)
- PROPOSED SEWER LINE (8" S.)

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/16/03

DIRECTOR — DATE 7/21/03

Date	No	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER / DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

ECS LTD — ENGINEERING CONSULTING SERVICES, LTD

ENGINEERING CONSULTING SERVICES, LTD.
1340 CHARWOOD ROAD, SUITE P
HANOVER, MARYLAND 21076
(410) 859-4300
(410) 859-4324 (FAX)

6/19/03
Date

STATE OF MARYLAND — MICHAEL E. LEFFEL — No. 13725 — REGISTERED PROFESSIONAL ENGINEER

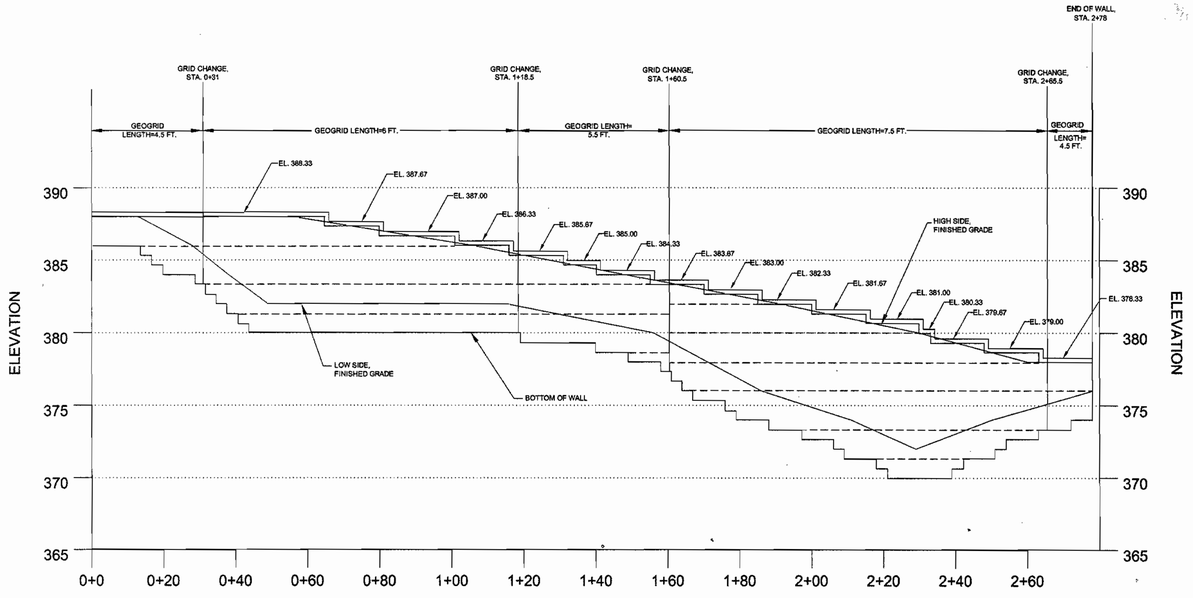
SUBDIVISION NAME	SECTION AREA			TAX PARCEL
HO. CO. OFFICE CAMPUS				852 & P/0847
PLAT OR L F / BLOCK	ZONE	TAX ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15867-70 / 6	POR	24	2	6029

WATER CODE — SEWER CODE

RETAINING WALLS #1 AND #2
PLAN VIEW

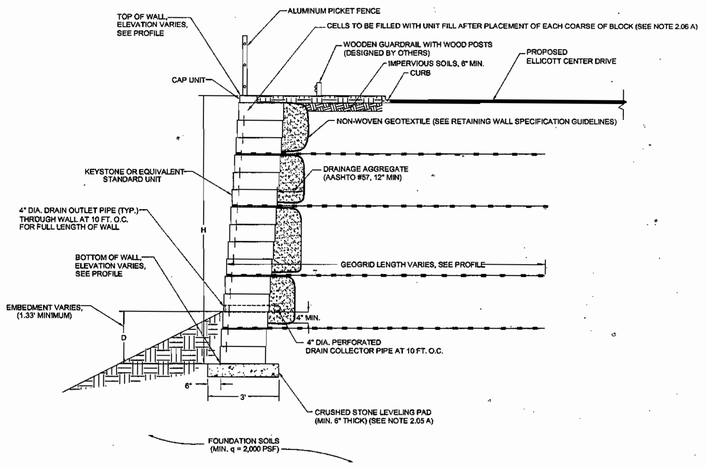
Des By	NCH	Scale	1"=50'	Proj. No.	02-2594
Drn By	KDR	Date	08/12/02		
Chk By		Approved			

SDP-03-26

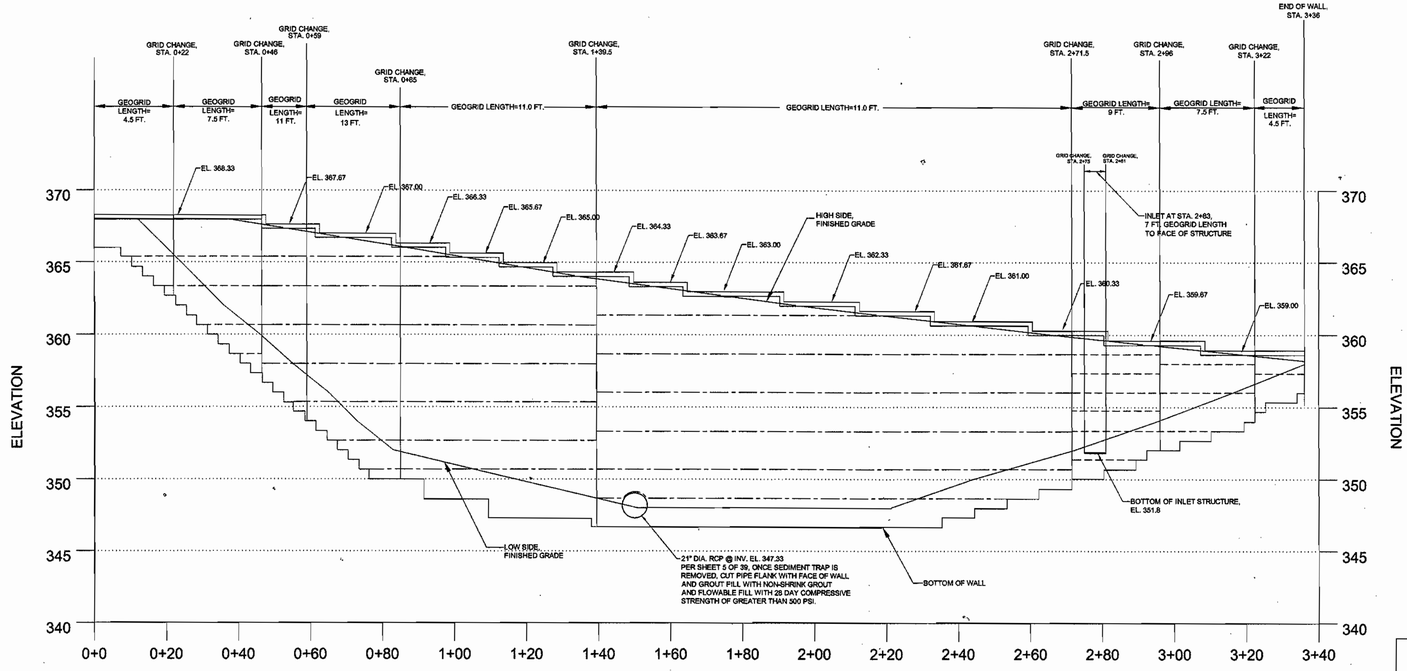


WALL #1

SCALE
VERTICAL SCALE 1"=5'
HORIZONTAL SCALE 1"=20'



1/34 TYPICAL RETAINING WALL DETAIL
4.4% BATTERED FACE
SCALE: NTS



WALL #2

SCALE
VERTICAL SCALE 1"=5'
HORIZONTAL SCALE 1"=20'

LEGEND

TENSAR UX1400SB TYPE GEOGRID

TENSAR UX1500SB TYPE GEOGRID

6/19/03
Date

STATE OF MARYLAND — REGISTERED — PROFESSIONAL ENGINEER

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/16/03

DIRECTOR — DATE 7/24/03

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER / DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

ECS LTD
ENGINEERING CONSULTING SERVICES, LTD
ENGINEERING CONSULTING SERVICES, LTD.
1340 CHARWOOD ROAD, SUITE P
HANOVER, MARYLAND 21076
(410) 859-4300
(410) 859-4324 (FAX)

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
HO. CO. OFFICE CAMPUS		852 & P/0847

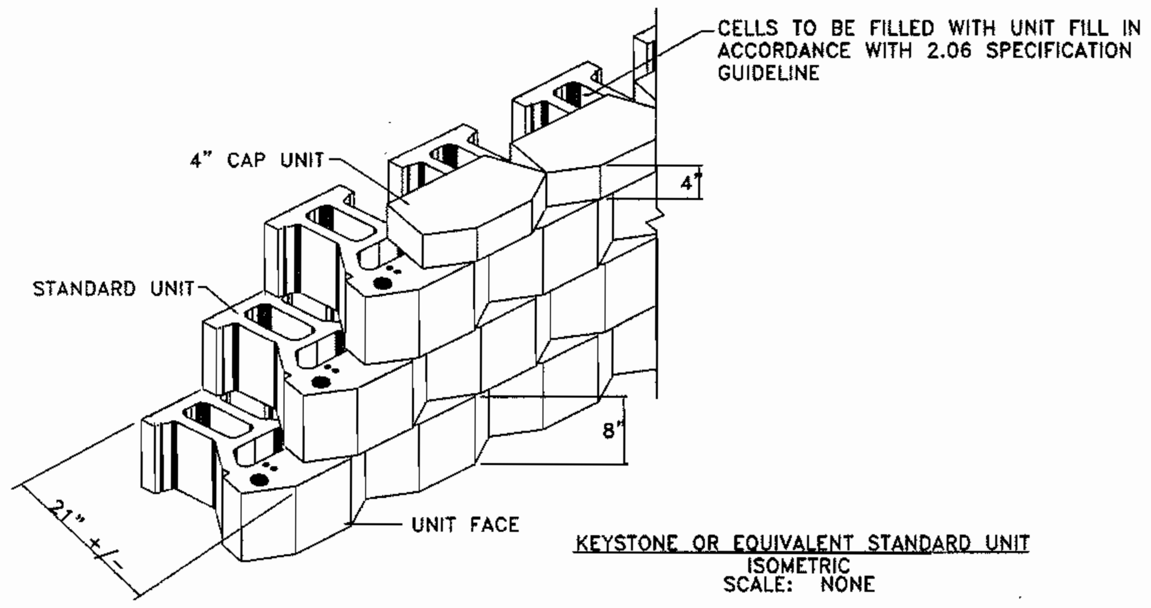
PLAT# OR L/F	BLOCK #	ZONE	TAX ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15867-70	6&1	POR	24&25	2	6029

WATER CODE — SEWER CODE

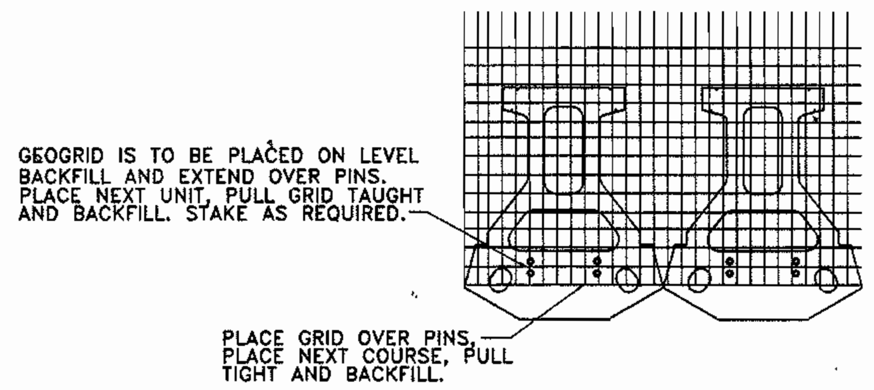
RETAINING WALLS #1 AND #2
PROFILE VIEWS AND DETAIL

Des. By	NCH	Scale	NTS	Proj. No.	02-2594
Drn. By	KDR	Date	08/12/02		34 of 40
Chk. By		Approved			

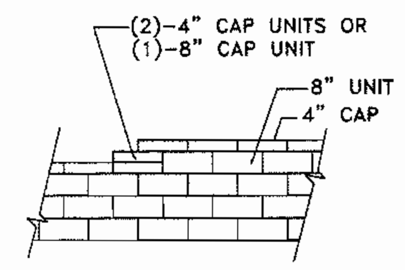
SDP-03-26



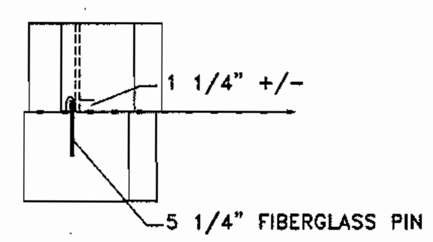
KEYSTONE OR EQUIVALENT STANDARD UNIT
ISOMETRIC
SCALE: NONE



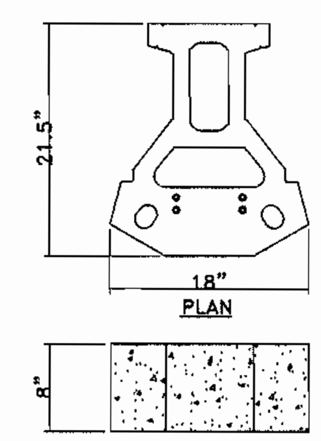
KEYSTONE OR EQUIVALENT STANDARD UNIT
GRID/PIN CONNECTION
SCALE: NONE



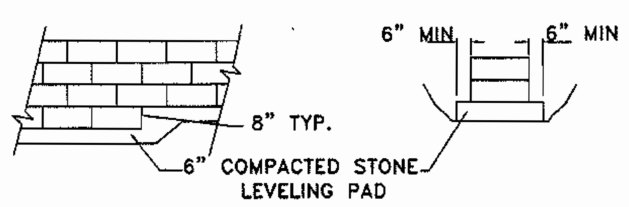
TOP OF WALL STEPS
SCALE: NONE



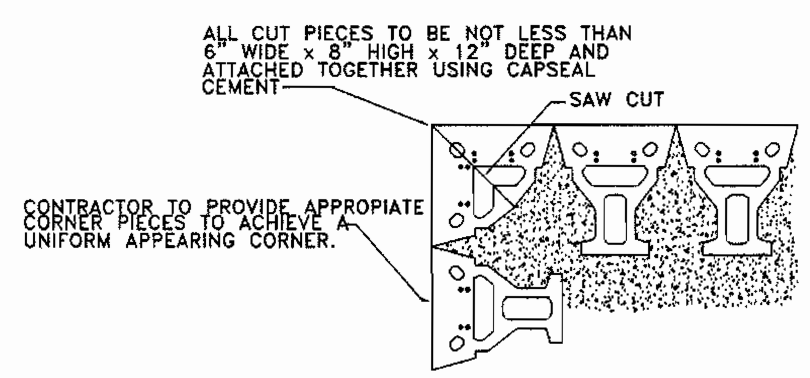
KEYSTONE OR EQUIVALENT STANDARD UNIT
GRID CONNECTION
SCALE: NONE



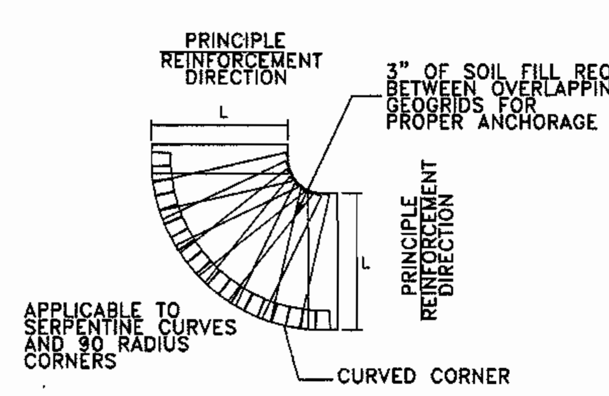
KEYSTONE OR EQUIVALENT STANDARD UNIT
SCALE: NONE



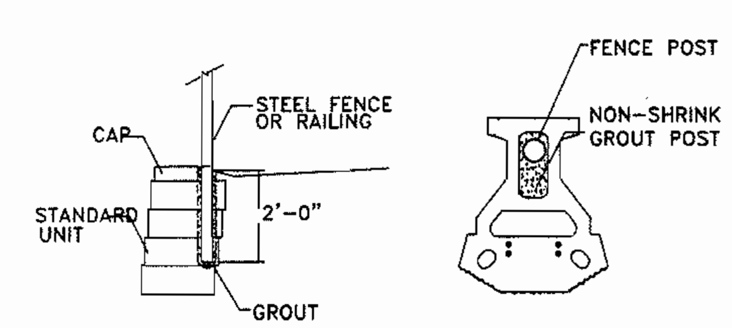
LEVELING PAD AND STEP DETAILS
SCALE: NONE



TYPICAL STANDARD CORNER DETAIL PLAN
SCALE: NONE



CONVEX CORNER GEOGRID PLACEMENT DETAIL
SCALE: NONE



TOP OF WALL SECTION FENCE/RAILING
DETAIL – STANDARD UNIT – OPTION 1
SCALE: NONE

RETAINING WALL SPECIFICATION GUIDELINES

PART 1: GENERAL

1.01 Description

A. Retaining walls must be constructed under the supervision of a Maryland Registered Professional Engineer.

B. Work includes furnishing and installing concrete modular block retaining wall units to the lines and grades shown on the construction drawings and as specified herein.

C. Work includes preparing foundation soil, furnishing and installing leveling pad, unit fill and reinforced backfill to the lines and grades shown on the construction drawings.

D. Work includes furnishing and installing all related materials required for construction of the retaining wall as shown on the construction drawings.

1.02 Reference. Standards

A.	ASTM C 90	Load Bearing Concrete Masonry Units.
B.	ASTM C 140	Sampling and Testing Concrete Masonry Units.
C.	ASTM D 448	Sizes of Aggregate for Road and Bridge Construction.
D.	ASTM D 698	Laboratory Compaction Characteristics using Standard Effort.

1.03 Delivery, Storage and Handling

A. Contractor shall check the materials upon delivery to assure that proper materials have been received.

B. Contractor shall prevent excessive mud, wet cement, epoxy, and similar materials (which may affix themselves) from coming in contact with the materials.

C. Contractor shall protect the materials from damage and exposure to sunlight. Damaged materials shall not be incorporated into the retaining wall structure and backfill.

1.04 Quality Assurance

A. Owner will be responsible for soil testing and construction observations for quality control during earthwork and retaining wall construction operations.

PART 2: MATERIALS

2.01 Definitions

A. Modular Wall Units – KEYSTONE or equivalent modular concrete facing units, machine made from portland cement, water and mineral aggregates.

B. Structural Geogrid – a structural geogrid formed by a regular network of integrity connected tensile elements with apertures of sufficient size to allow interlocking with surrounding soil, rock, or earth and function primarily as reinforcement.

C. Unit Fill/Drainage Aggregate – drainage aggegrate, such as No. 57 Stone, which is placed within the cells of the modular concrete units and immediately behind the units to a width of at least 12 inches.

D. Reinforced Backfill – Compacted soil which is within the reinforced soil volume as shown on the plans.

E. Excavation Face – The interface between the reinforced backfill and the retained fill. During construction, measures shall be taken to avoid developing a shear plane at this interface.

F. Retained Backfill – On-site material located behind the reinforced zone of soil.

2.02 Concrete Units

A. Concrete segemental units shall conform to the requirements of NCMA TEK 2-4 and have a minimum 28-day compression strength of 4,000 psi. The units shall also pass 150 freeze thaw cycles in water with less than 1% weight loss for samples tested in accordance with ASTM C-1262.

B. KEYSTONE or equivalent units for general wall construction shall be Standard Units. Sculptured face or straight (flat) face may be used.

C. KEYSTONE or equivalent Cap Units for general wall construction may be either angular-sided or straight-sided units.

2.03 Fiberglass Connecting Pins

A. Connecting pins shall be 1/2" diameter thermoset isopathalic polyester resin-pultruded fiberglass reinforcement rods supplied by the unit manufacturer.

2.04 Construction Adhesive

A. Construction adhesive for Capstones and corner blocks shall be KEYSTONE KapSealTM or equivalent construction adhesive, or an approved equivalent. Material shall conform to ASTM 2339 and shall be supplied by the KEYSTONEor equivalent unit supplier.

2.05 Base Leveling and Pad Material

A. Material shall consist of crushed stone (GA S/B) as shown on the construction drawing. The leveling pad shall be, at a minimum, 6-inches thick. MSHA No. 57 Stone or pea gravel is not permitted.

2.06 Unit Fill

A. Fill for units shall be free draining crushed stone or gravel, 1/2" to 3/4", with no more than 5% passing the No. 50 sieve and conforming to ASTM D 448. Gradation of the unit fill shall be approved by the Geotechnical Engineer. "Pea Gravel" shall not be used. MSHA No. 57 stone may be used.

2.07 Reinforced Backfill

A. Material shall consist of silty sand (SM) or more granular soils per USCS. The material shall contain no particles greater than 2.5 inches in diameter. The material shall constain no more than 35 percent by weight passing the US Standard No. 200 sieve. Other materials may be approved by the Geotechnical Engineer. The contractor shall submit samples and material specifications of the proposed backfill soils (unit fill, pad material, reinforced backfill, and impervious soils) to the Geotechnical Engineer for approval.

B. Soil must meet or exceed friction angle specifics in design parameters..

C. Direct sheer testing is required for all soil samples used for wall backfill.

2.08 Impervious Soil

A. Material may be site excavated soils exhibiting a USCS designation of a lean clay (CL) or clayey sand (SC). The material shall contain no less than 40 percent by weight passing the US Standard No. 200 sieve and exhibit a plasticity index no less than 4 and no greater than 20. Other materials may be approved by the Geotechnical Engineer.

2.09 Structural Geogrid

A. The geogrid identified for the retaining wall consists of the following:
Tensar UX1400 SB,
Tensar UX1500 SB,

2.10 Geotextile

Other geogrid may be utilized provided the materials meet or exceed the minimum strength with similar or better strain characteristics of the Tensar geogrid and are approved by the Geotechnical Engineer for use with soil backfill. At corners or angled locations, the geogrid shall overlap and where overlaps occur, a layer of fill material (1 to 3 inches thick) shall be placed between the geogrids. Overlapping geogrids shall not be permitted at the wall face. The material shall be protected from sunlight and weather while stored on site in accordance with the manufacturer's recommendation.

A. A non-woven geotextile shall be utilized as shown on the plans to provide a filter between the unit fill/drainage aggregate and the reinforced backfill. The geotextile shall conform to the criteria for a Geotextile Class A or Class B (depending on the reinforced backfill material used) according to the Maryland Department of Transportation Standards and Specifications for Construction and Materials, Section 921.09. Where geogrids are located, the geotextile shall be placed as illustrated on the plans. At junctions and ends, the geotextile shall be overlapped at least 12 inches. The geotextile shall be placed so that intimate contact is made between the geotextile and the backfill material. Ripped or otherwise damaged material shall not be used. The material shall be protected from sunlight and weather while stored on site in accordance with the manufacturer's

PART 3:

3.01 Excavation

A. Contractor shall excavate to the lines and grades shown on the construction drawings. Contractor shall be careful not to disturb emabankment and foundation materials beyone lines shown.

B. All existing topsoil, rootmate and other soft or unsuitable materials shall, at a minimum, be removed from the footprint of the retained soil mass.

C. If groundwater is encountered during the excavation of the backslope, a backslope drainage system shall be utilized. The system shall tie into the internal wall drainage system to provide adequate release of any water which accumulates behind the reinforced zone.

3.02 Foundation Preparation

A. Foundation shall be excavated as required for leveling pad dimensions shown on the construction drawings, or as directed by the Engineer.

B. The required bearing pressure beneath the footing of the wall must be verified in the field by a Geotechnical Engineer.

C. Unsuitable soils shall be removed and replaced with approved material.

D. Over-excavated areas shall be backfilled with approved, compacted backfill material or as approved by the Engineer.

3.03 Base Leveling Pad

A. Leveling pad materials shall be placed upon an approved foundation as shown on the construction drawings to a minimum thickness of 6 inches.

B. Aggregate material ahsll be compacted to provide a dense, level surface on which to place the first course of modular units. Compaction shall be to at least 95% of the maximum dry density as determined by the Standard Proctor Compaction Test (ASTM D 698). Leveling pad shall be prepared and leveled to ensure complete contact of retaining wall unit with base.

3.04 Unit Installation

A. The first course of concrete modular wall units shall be carefully placed on the base leveling pad. Each unit shall be checked for level (in both directions) and alignment.

B. At locations where the new wall is constructed over the existing wall, the existing cap block must be removed.

C. Ensure that all units are in full contact with the base and properly seated.

D. Install fiberglass connecting pins and fill all voids in and around the modular units with unit fill material. Tamp or rod unit fill to ensure that all voids are completely filled.

E. Sweep excess material from top of units and install the next course. Ensure that the units of each course are completely filled, backfilled and compacted prior to proceeding to next course.

F. Place each subsequent course, ensuring that pins protrude into adjoining courses a minimum of 1 inch. Two pins are required per unit. Pull each unit forward to obtain the desired offset (as noted on the plans), away from the fill zone, locking against the pins in the previous course and backfill as the course is completed.

G. Repeat procedure to the extent of wall height. Wall construction shall not exceed 2 courses in height before reinforced backfill is placed.

H. Follow wall erection and unit fill placement closely with any other backfilling required. Compaction of all soils shall be to 95% of the maximum dry density as determined in accordance with ASTM D 698. The top 8 to 12 inches of the reinforced backfill shall be a low permeability soil (impervious soils as described above) to reduce surface water runoff from directly entering the drainage aggregate/unit fill or reinforced soil zones.

I. As appropriate where the wall changes elevation, units can be stepped with the grade or turned into the embankment with a convex return end. Provide appropriate buried units on compacted leveling pad in area of convex return end.

3.05 Geogrid Installation

A. The geogrid type and length (direction perpendicular to the wall face) shall conform to those indicated on the construction drawings. Geogrid shall be laid continuously at the proper elevations and orientation as shown on the construction drawings or as directed by the Engineer. A minimum of 4 inches of soil cover is required between layers of geogrid.

B. Correct orientation (roll direction) of the geogrid shall be verified by the Contractor.

C. The geogrid shall be connected to the modular wall units by placing the geogrid over fiberglass pins and laying the grid back to the fill side.

D. A filtering, non-woven geotextile shall be located between the drainage aggregate/unit fill and the reinforced backfill. The geotextile shall be folded back parallel, above and below the geogrid as necessary to ensure continuous grid placement.

E. The geogrid shall be pulled taut to set the geogrid against the fiberglass pins and to eliminate loose folds in the material. The fill surface shall be level. To tension the geogrid, backfill shall be placed over the geogrid from immediately behind the wall to the back end of the geogrid.

F. No geogrid overlaps will be allowed in any length of geogrid perpendicular to the wall face except at corners or angled locations, the geogrid shall overlap rather than provide no coverage.

3.06 Fill Placement

A. Backfill material shall be placed in 8 inch lifts and compacted to at least 95% of the maximum dry density as determined by the Standard Proctor Compaction Test (ASTM D 698). The in-place moisture content shall be within +/-3% of the optimum moisture content, as determined in accordance with ASTM D 698.

B. Backfill shall be placed, spread and compacted in such a manner that minimizes the development of slack or loss of pretension of the geogrid. Backfill shall be placed in horizontal layers. The excavation face shall be stepped or notched to provide compaction of backfill on a level surface and to increase the interlock between the retained soils and the reinforced backfill.

C. Only hand-operated compaction equipment shall be allowed within 5 feet of the back surface of the KEYSTONE or equivalent units.

D. Backfill shall be placed from immediately behind the wall towards the excavation face/retained soils and compacted to the specifications presented herin with appropriate compaction equipment.

D. Tracked construction equipment shall not be operated directly on the geogrid. A minimum backfill thickness of 6 inches is required prior to operation of tracked vehicles over the geogrid. Turning of tracked vehicles shall not be permitted overtop the geogrid.

F. Rubber-tired equipment may pass over the geogrid reinforcement at slow speeds (less than 10 mph). Avoid sudden braking and sharp turning.

G. The suitability of the fill material must be confirmed by a Geotechnical Engineer.

3.07 Cap Installation

A. Place KEYSTONE or equivalent cap units over projecting pins from the units below. Pull forward to setback position. Backfill and compact to finished grade with low permeability soil (impervious soil as described herein). Provide permanent mechanical connection wall units with KEYSTONE KapSealTM or equivalent construction adhesive.

B. Apply adhesive to top surface of lower unit and place cap unit atop adhesive.

DESIGN PARAMETERS

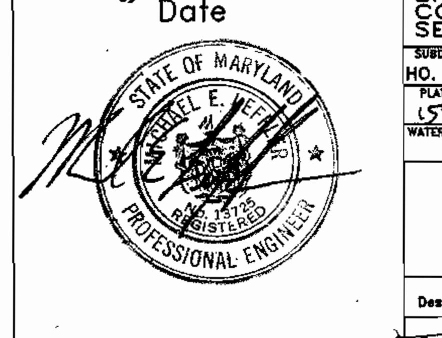
Characteristics

Configuration:	Battered face wall (4.4%)
Maximum Exposed Height:	14.0 feet
Backslope Angle:	Varies
Bearing Capacity:	See profile
Wall Embedment:	See profile
Surcharge:	250 psf for roadway

Soil Parameters:

Soil Type	Friction Angle	Cohesion	Unit Weight (pcf)
Reinforced fill	30	0	125
Retained soils	28	0	125
Foundation soils	28	0	125

6/19/03
Date



APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/16/03
DIRECTOR — DATE 7/21/03

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER/DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

ECS LTD
ENGINEERING CONSULTING SERVICES, LTD
ENGINEERING CONSULTING SERVICES, LTD.
1340 CHARWOOD ROAD
SUITE P
HANOVER, MD 21076
(410) 859-4300
(410 859-4324 (FAX)

SUBDIVISION NAME	SECTION AREA			LOT PARCEL #
HO. CO. OFFICE CAMPUS				852 & P/0847
PLAT# OR L F: 5867-70 / BLOCK #: 6&1 / ZONE: POR	TAX ZONE MAP: 24&25	ELECT. DISTRICT: 2		CENSUS TRACT: 6029
WATER CODE	SEWER CODE			

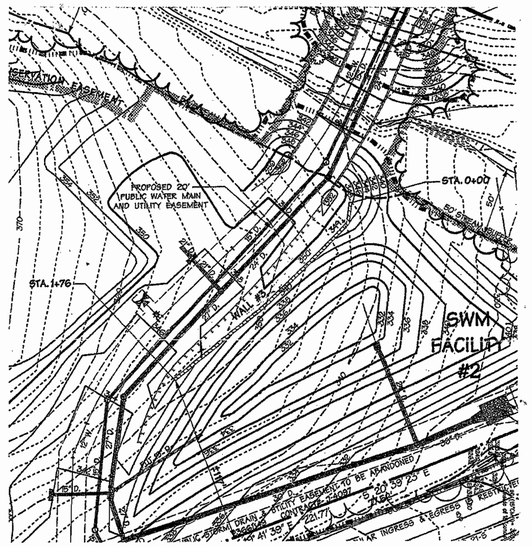
RETAINING WALLS #1 AND #2
DETAILS AND SPECIFICATIONS

Des. By	NCH	Scale	NTS	Proj. No.	02-2594
Drn. By	KDR	Date	08/12/02		35 of 40
Chk. By		Approved			

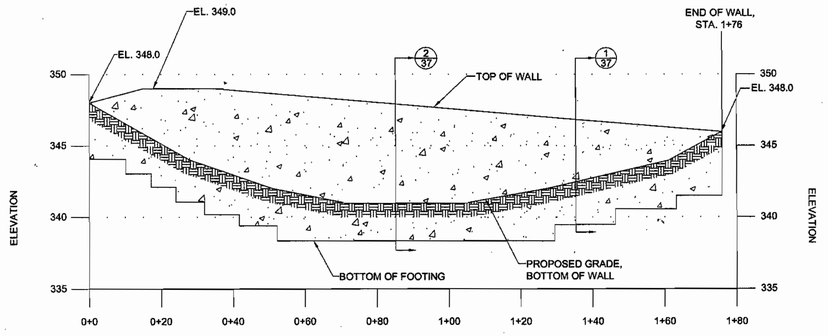
SDP-03-26

LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- 300 MAJOR CONTOURS
- 295 MINOR CONTOURS
- STREAM CENTERLINE
- STREAM BUFFER
- WETLAND LIMIT
- WETLAND BUFFER
- SLOPES >25%
- SLOPES 15%-25%
- EXISTING FOREST EDGE
- EXISTING ROADS
- PROPOSED TREELINE
- PROPOSED GUARD RAIL
- 100 YR. FLOODPLAIN
- LIMIT OF DISTURBANCE
- PROP. RETAINING WALL
- 348 PROPOSED MINOR CONTOUR
- 350 PROPOSED MAJOR CONTOUR
- FOREST CONSERVATION EASEMENT (NATURAL AREA CONSERVATION CREDIT)
- PUBLIC EASEMENT
- 12" W. PROPOSED WATER LINE
- 15" D. PROPOSED STORM DRAIN



PLAN VIEW
SCALE: 1"=50'



WALL #3
SCALE
VERTICAL SCALE 1"=5'
HORIZONTAL SCALE 1"=20'

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/8/03

DIRECTOR — DATE 7/21/03

Date	No.	Revision Description

Howard County Office Campus

PARCEL A
CIP-C-0282

OWNER/DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

ECS LTD
ENGINEERING CONSULTING SERVICES, LTD

ENGINEERING CONSULTING SERVICES, LTD.
1340 CHARWOOD ROAD
SUITE P
HANOVER, MD 21076
(410) 859-4300
(410 859-4324 (FAX)

6/19/03
DATE

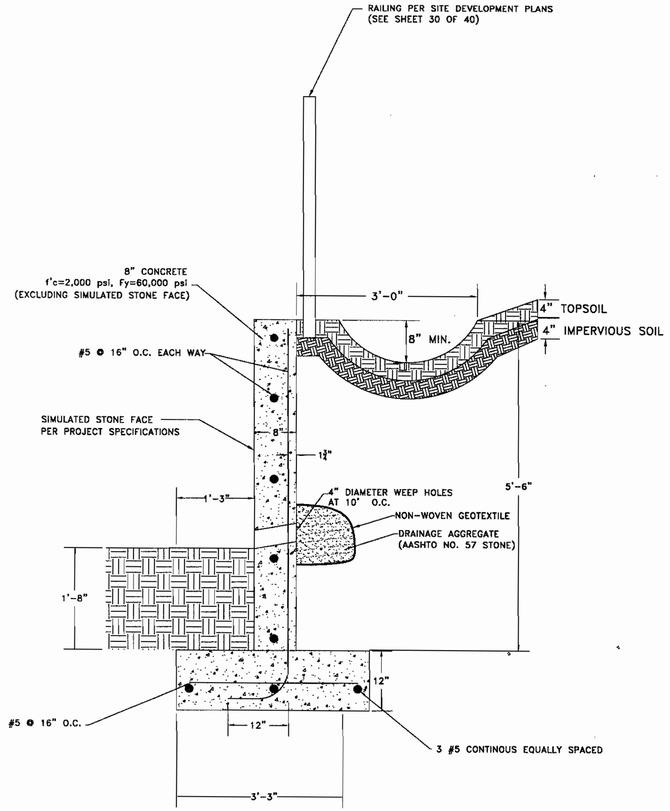
STATE OF MARYLAND — NICHOLAS C. HOLLMAN — 21172 — REGISTERED PROFESSIONAL ENGINEER

SUBDIVISION NAME			SECTION AREA		LOT/PARCEL #
HO. CO. OFFICE CAMPUS					852 & P/O847
PLAT# OR L/F	BLOCK #	ZONE	TAX MAP/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
5367-90	68.1	POR	24&25	2	6029
WATER CODE			SEWER CODE		

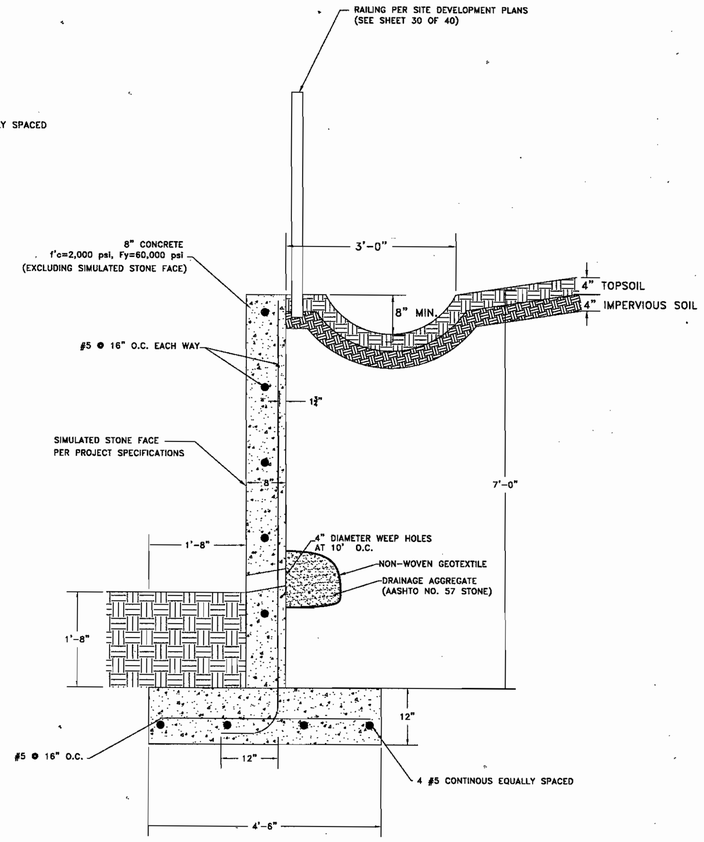
RETAINING WALL #3
PLAN AND PROFILE VIEWS

Des. By	NCH	Scale	NOTED	Proj. No.	02-2594
Drn. By	KDR	Date	08/12/02		36 of 40
Chk. By		Approved			

SDP-03-26



1/37 RETAINING WALL #3 DETAIL
WALL HEIGHT 6'-6" OR LESS



2/37 RETAINING WALL #3 DETAIL
WALL HEIGHT 8'-0" OR LESS

RETAINING WALL SPECIFICATION GUIDELINES

GENERAL

1. Retaining walls must be constructed under the supervision of a Maryland Registered Professional Engineer.

SITE GRADING

1. The subgrade preparation of the proposed retaining wall shall consist of the removal of all pavements, vegetation, rootmat, topsoil, frozen soils, and other soft or unsuitable materials.
2. Earthwork clearing of retaining wall shall be extended a minimum of 5 feet beyond the foundation limits.
3. Stripping operations shall be performed in a manner consistent with local requirements concerning erosion and sediment control.
4. After stripping or undercutting foundation lines to the desired grade, and prior to foundation installation, the stripped surface shall be observed by an experienced geotechnical engineer or his authorized representative.
5. Proofrolling shall be used at this time to aid in identifying localized soft or unsuitable materials which should be removed.
6. Any soft or unsuitable material encountered during the proofrolling operations shall be removed and replaced with an approved backfill compacted to the criteria given below.
7. The site shall be graded such that surface water runoff is directed away from excavations.
8. Erosion and siltation controls must be in place and shall be installed in accordance with current local requirements.
9. The contractor shall be responsible for restoring the subgrade conditions to acceptable levels of moisture and density. This process may require scarification and recompaction to required depths or in-place stabilization to assure a firm and unyielding subgrade.

CONTROLLED FILL OPERATIONS

1. All soil placed as fill shall be an approved material, free or organic matter or debris, be non-frost susceptible, and have a liquid limit less than 40, and a plasticity index less than 12.
2. Suitable soils for the backfill materials include GW, GP, GM, SW, SP and SM. The suitability of fill material must be confirmed by a Geotechnical Engineer.
3. Unsuitable backfill soils are all soils not listed as "suitable soils".
4. Wall backfill shall be placed in lifts not exceeding 8 inches in loose thickness, moisture conditioned to within +2% of the optimum moisture content, and compacted to at least 95% of the maximum dry density obtained in accordance with ASTM Specification D-698, Modified Proctor Test Method.
5. All fill operations shall be observed on a full-time basis by a qualified soil technician to determine if the minimum compaction and material requirements are being met.
6. The fill placed adjacent to the retaining walls shall not be overcompacted. Heavy compaction equipment should be a minimum horizontal distance away from the retaining walls of 1 foot per foot of vertical wall height. Lighter compaction equipment shall be used close to the retaining walls.
7. The ground surface shall be sealed with a smooth drum roller at the end of each day's fill operations or prior to periods of precipitation.
8. Impervious soil material may be site excavated soils exhibiting a USCS designation of a lean clay (CL) or clayey sand (SC). The material shall contain no less than 40 percent by weight passing the US Standard No. 200 sieve and exhibit a plasticity index no less than 4 and no greater than 20. Other materials may be approved by the Geotechnical Engineer.

FOUNDATIONS

1. The proposed retaining wall shall be supported on continuous footing foundations bearing on firm natural soils or newly placed and compacted engineered fill, capable of supporting a design bearing pressure of 2,000 psf. The required bearing pressure beneath the footing of the wall must be verified in the field by a Geotechnical Engineer.
2. The backfill soils shall be engineered fill placed and compacted in accordance with the guidelines contained elsewhere in this specification.
3. Foundation concrete shall be placed the same day that excavations are dug.
4. If the bearing soils are softened by surface water intrusion or exposure, the softened soils must be removed from the foundation excavation bottom prior to placement of concrete. The footing subgrade shall be rechecked prior to the placement of concrete.

CONCRETE AND REBAR

1. Concrete shall have natural sand fine aggregate and normal weight coarse aggregated conforming to ASTM C 150, and shall have a compressive strength of 2,000 psi at 28 days.
2. Concrete mix designs shall be submitted to the Owner for review and approval prior to placement of concrete.
3. Mixing, transporting and placing of concrete shall conform to ACI 301.
4. Concrete reinforcing bars shall conform to ASTM A 615, Grade 60. Reinforcing bars shall not be tack welded, welded, heated or cut unless indicated on the contract documents.
5. Reinforcing bars shall have a minimum concrete coverage of 3 inches (maximum 4 inches) where the face of concrete will be in contact with ground and 1.75 inches (maximum 2.5 inches) when the face of concrete will be in contact with the atmosphere.
6. Reinforcement splices shall lap a minimum of 36 bar diameters.
7. Provide standard bar chairs and spacers as required to maintain concrete protection specified.
8. Detailing of concrete reinforcing bars and accessories shall conform to the recommendations of ACI 31 "Details and Detailing of Concrete Reinforcement" and ACI SP-66 "Detailing Manual". Placing of reinforcing bars shall conform to the recommendations of ACI 315R "Manual of Engineering and Placing Drawings for Reinforced Concrete Structures" and CRSI "Manual of Standard Practice".

DRAINAGE

1. Four inch diameter weep holes shall be placed @ 10 feet on center as shown on the Retaining Wall Detail.

CONSTRUCTION CONSIDERATIONS

1. Water shall not be allowed to pond on top of retaining wall areas. Additional surcharge loads from stockpile soils, construction supplies or equipment are prohibited within a distance from the top of the slope equal to the height of the slope.
2. Foundations for new structures (i.e. canopies) within 5 feet of the retaining wall should be constructed at the same level as the footings for the retaining wall so that no additional foundation loads are imposed on the retaining wall and to avoid undermining the retaining wall.

6/19/03
DATE

STATE OF MARYLAND
MICHAEL E. LEE
No. 21706
REGISTERED
PROFESSIONAL ENGINEER

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/16/03

DIRECTOR — DATE 7/25/03

Date	No.	Revision Description

Howard County Office Campus
PARCEL A
CIP-C-0282

OWNER/DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

ECS LTD
ENGINEERING CONSULTING SERVICES, LTD

ENGINEERING CONSULTING SERVICES, LTD.
1340 CHARWOOD ROAD
SUITE P
HANOVER, MD 21076
(410) 859-4300
(410 859-4324 (FAX)

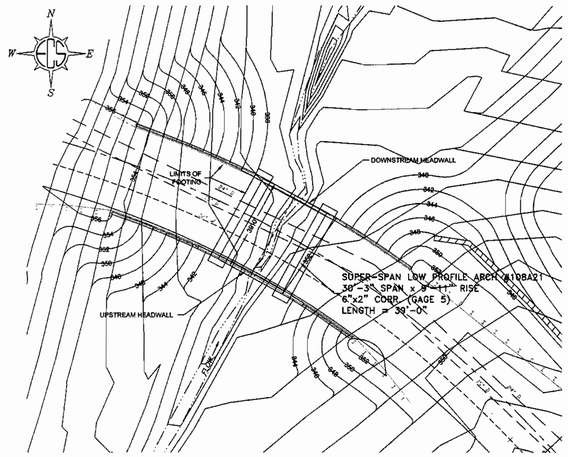
SUBDIVISION NAME		SECTION AREA			LOT/PARCEL #
HO. CO. OFFICE CAMPUS					852 & P/0847
PLAT OR L/F	BLOCK #	ZONE	TAX ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15367-70	6	POR	24	2	6029
WATER CODE		SEWER CODE			

RETAINING WALL #3 DETAILS AND SPECIFICATIONS

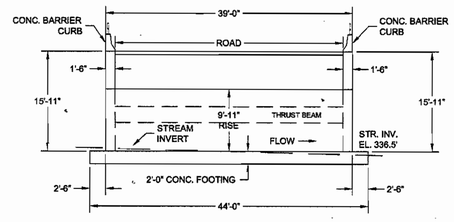
Des. By	NCH	Scale	NTS	Proj. No.	02-2594
Drn. By	KDR	Date	08/12/02		37 of 40
Chk. By		Approved			

SDP-03-26

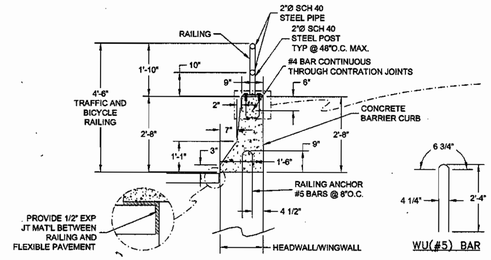
STRUCTURE NO.:	108A21
SIZE:	30'-3" - 9'-11" GAGE: 0.218 INCHES
END AREA:	237.1 FT. SQ.
LENGTH:	45.0'
PAVEMENT TYPE:	ASPHALT
MIN. HT. OF COVER:	3.0' MAX. HT. OF COVER: 20.0'



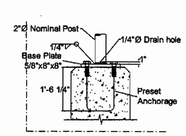
PLAN VIEW
SCALE: 1"=30'

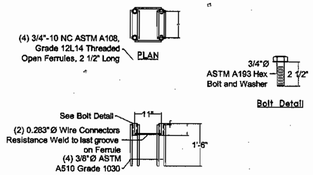


PROFILE THRU ℄ OF SUPER-SPAN

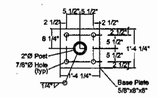


CONCRETE BARRIER CURB



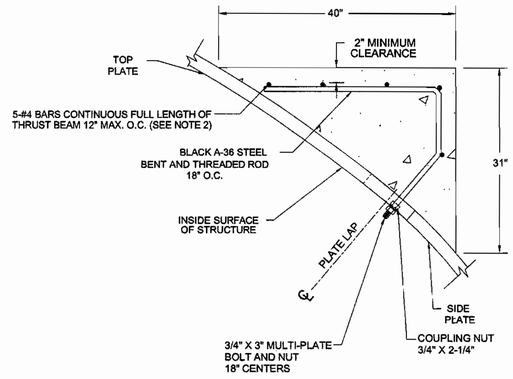


ELEVATION
PRESET ANCHORAGE SYSTEM

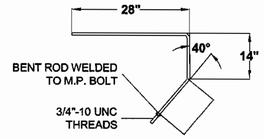


BASE PLATE

ADDITIONAL NOTES FOR RAILING:
1.) All posts shall be installed plumb.
2.) All rails shall be parallel to the top of the wall.
3.) Steel posts and rails shall conform to the requirements of ASTM A53, Type E or S, Grade B or with AASHTO M 181, Grade 2 and shall not be pvc coated.
4.) Base plates and steel plates, including plate washers, shall conform to the requirements of ASTM A709, Grade 36.
5.) Bolts shall conform to the requirements of ASTM A307, Grade A. Washers shall be standard size conforming to the requirments of ASTM F844.
6.) Post and base plate assemblies, anchoreges and other structural steel shall be hot-dip galvanized after fabrication in accordance with ASTM A123.

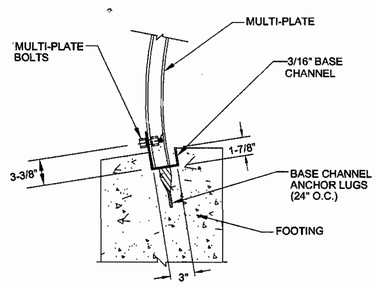


THRUST BEAM DETAIL



BENT ROD

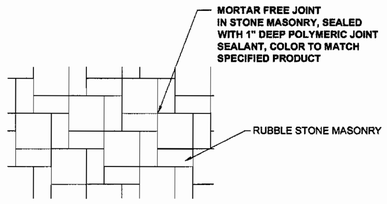
ADDITIONAL NOTES FOR THRUST BEAM:
1.) REINFORCED CONCRETE THRUST BEAMS TO BE POURED IN A MANNER TO MAINTAIN A BALANCED LOADING ON EACH SIDE OF THE STRUCTURE.
2.) LONGITUDINAL REINFORCING BARS MAY BE PLACED ON EITHER SIDE OF BENT ROD.
3.) CONCRETE MAY BE f'_c = 2,400 psi.
4.) REINFORCEMENT SHALL BE ASTM A-615 GRADE 40.



BASE CHANNEL DETAIL

PRELIMINARY ESTIMATED QUANTITIES

	CONCRETE (cu.yd.)	STEEL (lbs)	COMPACTED GRANULAR MAT. (cu.yd.)	TENSAR (sq.yd.)	BACKFILL (cu.yd.)
ARCH FOOTINGS	47.6	4150			
HEADWALLS	40.3	7000			
WINGWALLS	149.6	17900			
THRUST BEAMS	10.4	580			
FOUNDATION IMPROV.			450	1650	
SELECT BACKFILL					400

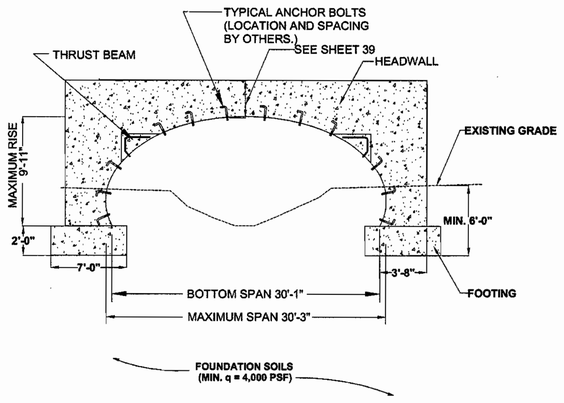


LEGEND

CRITICAL BACKFILL ZONE, PRESSURE ON SOIL GREATEST HERE.

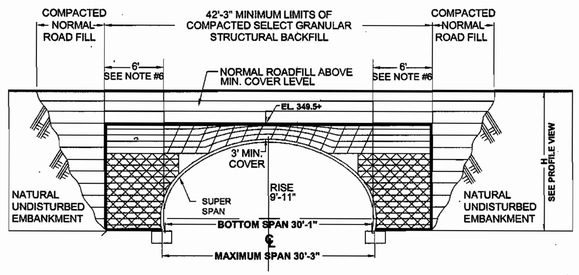
INITIAL LIFTS OVER CROWN OF STRUCTURE AS INDICATED BY SHADED AREA TO BE COMPACTED TO REQUIRED DENSITY WITH HAND OPERATED EQUIPMENT OR WITH SMALL TRACTOR (D-4 OR SMALLER) DRAWN EQUIPMENT.

SELECT GRANULAR STRUCTURAL BACKFILL LIMITS.



END VIEW OF SUPER SPAN

SUPER SPAN
TYPICAL BACKFILL PLAN
LOW PROFILE ARCH



SECTION

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/16/03

DIRECTOR — DATE 7/21/03

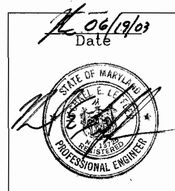
Date	No.	Revision Description

Howard County Office Campus
PARCEL A
CIP-C-0282

OWNER / DEVELOPER:
HOWARD COUNTY DEPT. OF PUBLIC WORKS
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MD 21043

ENGINEERING CONSULTING SERVICES, LTD
ENGINEERING CONSULTING SERVICES, LTD
1340 CHARWOOD ROAD, SUITE P
HANOVER, MARYLAND 21076
(410) 859-4300
(410) 859-4324 (FAX)

06/19/03
Date

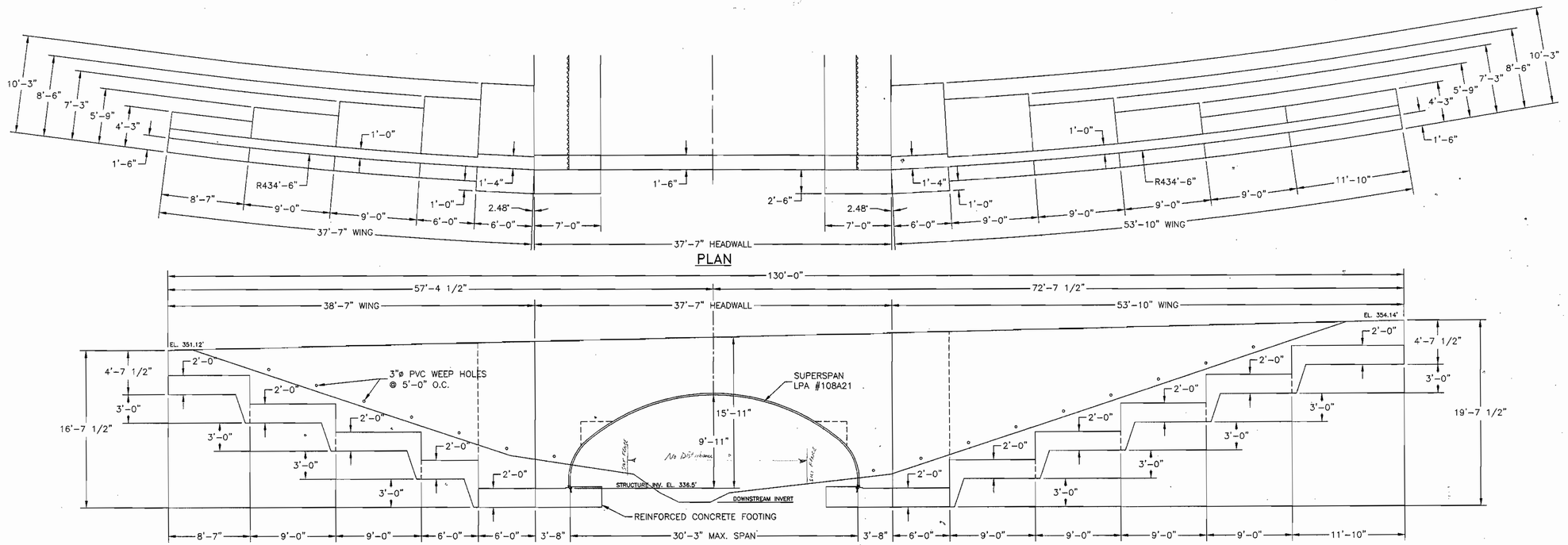


SUBDIVISION NAME	HO.CO. OFFICE CAMPUS	SECTION AREA	LOT PARCEL # 652 & P/0847
PLAT# OR L/F	5267-70	BLOCK # 81	ZONE POR
TAX MAP	24&25	ELECT. DISTRICT 2	CENSUS TRACT 6029
WATER CODE		SEWER CODE	

BOTTOMLESS ARCH
PLAN VIEW AND DETAILS

Des. By	MEL	Scale	NTS	Proj. No.	02-2594
Drn. By	KDR	Date	08/12/02		38 of 40
Chk. By		Approved			

SDP-03-26



APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

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(410) 859-4300
(410) 859-4324 (FAX)

6/19/03
Date

STATE OF MARYLAND — MARLENE E. LEE — No. 21437 — PROFESSIONAL ENGINEER

SUBDIVISION NAME				SECTION/AREA		LOT/PARCEL #
HO. CO. OFFICE CAMPUS						852 & P/0847
PLAT/L OR L.P.	BLOCK	ZONE	TAX MAP/GRID	ELECT. DISTRICT	CENSUS TRACT	
15817-70	68	POR	24 & 25	2	6029	
WATER CODE			SEWER CODE			

BOTTOMLESS ARCH HEADWALL ELEVATION VIEWS

Des. By	MEL	Scale	NTS	Proj. No.	02-2594
Drn. By	KDR	Date	08/12/02		
Chk. By		Approved			

SDP-03-26

1. GENERAL DESCRIPTION

THE LONG SPAN STEEL STRUCTURAL PLATE STRUCTURE, CONFORMING TO THE DIMENSIONS SHOWN ON THE PLANS AND SPECIFICATIONS, SHALL BE INSTALLED AT THE LOCATION DESIGNATED. THE DESIGN AND INSTALLATION SHALL CONFORM TO AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DIVISION I, "SOIL-CORRUGATED METAL STRUCUTRE INTERACTIONS SYSTEMS", SECTION 12.7, "LONG SPAN STRUCTURAL PLATE STRUCTURES", AND DIVISION II, SECTION 26, "METAL CULVERTS" AND DIVISION II, SECTION 8, "CONCRETE STRUCTURES".

2. MATERIALS

THE GALVANIZED STEEL STRUCTURAL PLATE SHALL HAVE 6"X2" CORRUGATIONS AND SHALL BE OF THE GAGE SHOWN ON THE PLANS. THE PLATES SHALL BE MANUFACTURED IN CONFORMANCE WITH AASHTO SPECIFICATION M167. BOLTS AND NUTS SHALL MEET THE PROVISIONS OF ASTM A 449, TYPE 1 AND ASTM A 563, GRADE C, RESPECTIVELY. THE STEEL ANCHOR BOLTS SHALL CONFORM TO ASTM A 307, GRADE A.

3. LONGITUDINAL STRUCTURAL STIFFENERS (THRUST BEAMS)

LONGITUDINAL STIFFENERS SHALL BE LOCATED AT THE RADIUS TRANSITION AT THE ENDS OF THE TOP ARC. THE THRUST BEAMS SHALL CONSIST OF REINFORCED CONCRETE CONFORMING TO DIVISION II, SECTION 8, CLASS B OF THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES HAVING A MINIMUM COMPRESSION STRENGTH OF 2,400 PSI. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 40, HAVING A MINIMUM YEILD STRENGTH OF 40,000 PSI. THRUST BEAMS SHALL BE FORMED AND POURED CONFORMING TO THE PLAN DIMENSIONS WHEN THE BACKFILL REACHES THE BOTTOM ELEVATION OF THE THRUST BEAMS.

4. DESIGN

THE LONG SPAN STRUCTURE SHALL BE DESIGNED IN ACCORDANCE WITH THE LATEST AASHTO DESIGN CRITERIA AND SHALL BE REQUIRED TO INCORPORATE THE USE OF CONTINIOUS LONGITUDINAL STRUCTURAL STIFFENERS (CONCRETE THRUST BEAMS). THE MATERIAL SUPPLIER SHALL BE A QUALIFIED MANUFACTURER OF STEEL STRUCTURAL PLATE AND LONG SPAN STURCTURES WITH A MINIMUM OF 50 SUCCESSFUL INSTALLATIONS. THE FOUNDATION, STRUCTURAL BACKFILL AND END TREATMENT SHALL BE AS REQUIRED HEREIN AND DETAILED ON THE PLANS.

5. STRUCTURE ERECTION

THE STRUCTURE SHALL BE ERECTED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND TO THE DESIGN SHAPE SHOWN ON THE PLANS. PLATES SHALL BE ASSEMBLED ACCORDING TO PLATE ASSEMBLY DRAWINGS SUPPLIED BY THE MANUFACTURER.

6. STRUCTURAL BACKFILL MATERIAL

A GRANULAR TYPE OF MATERIAL SHALL BE USED AROUND AND OVER THE STRUCTURE. THIS SELECT STRUCTURAL BACKFILL MATERIAL SHALL CONFORM TO ONE OF THE FOLLOWING CLASSIFICATIONS OF SOIL FROM AASHTO SPECIFICATION M-145, AS MODIFIED IN THE INCLUDED TABLE FOR A-1, A-2-4, OR A-2-5.

AASHTO M-145 TABLE 2 (MODIFIED*)

	A-1		A-2	
GROUP CLASSIFICATION	A-1-a	A-1-b	A-2-4	A-2-5
SIEVE ANALYSIS, PERCENT PASSING:				
NO. 10 (2.00 mm)	50 MAX.	--	--	--
NO. 40 (0.425 mm)	30 MAX.	50 MAX.	--	--
NO. 100 (0.150 mm)	--	--	50 MAX.	50 MAX.
NO. 200 (0.075 mm)	15 MAX.	25 MAX.	20 MAX.	20 MAX.
CHARACTERISTICS OF FRACTION PASSING NO. 40 (0.425 mm)				
LIQUID LIMIT	--		40 MAX.	41 MAX.
PLASTICITY INDEX	6 MAX.		10 MAX.	10 MAX.
USUAL TYPES OF SIGNIFICANT CONSTITUENT MATERIALS	STONE FRAGMENTS GRAVEL AND SAND		SILTY OR CLAYEY GRAVEL AND SAND	

7. ADDITIONAL REQUIREMENTS

7.1. MATERIALS MUST BE DENSE-GRADED (OPEN-GRADED OR GAP-GRADED MATERIALS ARE NOT ALLOWED).

7.2. FINE BEACH SANDS, WINDBLOWN SANDS, STREAM DEPOSITED SANDS EXHIBITING FLUE, ROUNDED PARTICLES AND TYPICALLY CLASSIFIED BY AASHTO M-145 AS A-3 MATERIALS ARE NOT ALLOWED.

7.3. ON-SITE MIXING OR BLENDING TO ACHIVE SPECIFIED GRADATION IS NOT ALLOWED.

MAXIMUM PARTICLE SIZE SHALL NOT EXCEED 3 INCHES. FOR THE A-2 MATERIALS, MOISTURE CONTENT MUST BE BETWEEN -3% TO +2% OPTIMUM AS DEFINED BY AASHTO T-180.

ALL SOIL CLASSIFICATIONS ARE LIMITED IN HEIGHT OF COVER AND STRUCTURE SHAPE APPLICATIONS AS FOLLOWS:

A) A-1-a MATERIAL IS SUITABLE FOR ALL LONG SPAN SHAPES, SIZES AND FILL HEIGHTS.
B) A-1-b MATERIAL IS SUITABLE ONLY FOR USE WITH HIGH PROFILE ARCH AND PEAR SHAPE STRUCTURES TO A 12' MAXIMUM FILL HEIGHT AND FOR USE WITH ELLIPTICAL AND LOW PROFILE ARCH STRUCTURES TO A 20' MAXIMUM FILL HEIGHT.
C) A-2-4 AND A-2-5 MATERIALS ARE RESTRICTED TO MAXIMUM HEIGHTS OF COVER OF 12'.

THESE MATERIALS ARE NOT ALLOWED FOR USE WITH PEAR, PEAR-ARCH AND HIGH-PROFILE ARCHES WITH MORE THAN 30 pi IN THE SIDE ARC. OTHER BACKFILL MATERIALS WHICH PROVIDE EQUIVALENT STRUCTURAL PROPERTIES, LONG TERM, IN THE ENVIRONMENTAL CONDITIONS EXPECTED (SATURATION, FREEZE-THAW, ETC.) MAY BE USED. SUCH MATERIALS SHALL BE APPROVED ONLY AFTER THOROUGH INVESTIGATION AND TESTING BY A SOILS ENGINEER FAMILIAR WITH THE REQUIREMENTS FOR STRUCTURAL BACKFILL OF LONG SPAN STRUCTURES.

8. BACKFILL ENVELOPE LIMITS

THE BACKFILL ENVELOPE LIMITS ARE AS DETAILED ON THE PLANS.

9. BACKFILL PLACEMENT

BEFORE BACKFILLING, THE ERECTED STRUCTURE SHALL MEET THE TOLERANCE AND SYMMETRY REQUIREMENTS OF AASHTO AND THE MANUFACTURER.

APPROVED BACKFILL MATERIAL SHALL BE PLACED IN HORIZONTAL, UNIFORM LAYERS NOT EXCEEDING 8" IN THICKNESS BEFORE COMPACTION, AND SHALL BE BROUGHT UP UNIFORMLY ON BOTH SIDES OF THE STRUCTURE. EACH LAYER OF BACKFILL SHALL BE COMPACTED TO A RELATIVE DENSITY OF NOT LESS THAN 90%, MODIFIED PROCTOR PER AASHTO TEST METHOD NO. T-180. FIELD DENSITY TESTS OF COMPACTED BACKFILL WILL BE MADE AT REGULAR INTERVALS DURING BACKFILL.

LONG-SPAN STUCTURES, DUE TO THEIR SIZE AND SHAPE, ARE SENSITIVE TO THE TYPES AND WEIGHTS OF EQUIPMENT USED TO PLACE AND COMPACT THE SELECT BACKFILL MATERIAL. THIS IS ESPECIALLY CRITICAL IN THE AREAS IMMEDIATELY ADJACENT TO AND ABOVE THE STRUCTURE. THEREFORE, EQUIPMENT TYPES WILL BE RESTRICTED IN THOSE CRITICAL ZONES. COMPACTION EQUIPMENT OR METHODS THAT PRODUCE HORIZONTAL OR VERTICAL EARTH PRESSURES WHICH CAUSE EXCESSIVE DISTORATION OR DAMAGE TO STRUCTURES SHALL NOT BE USED.

CONTRACTORS SHOULD PLAN TO HAVE A D4 (APPROXIMATELY 20,000 LBS.) OR SIMILAR WEIGHT TRACKED DOZER TO PLACE AND GRADE BACKFILL IMMEDITALEY ALONGSIDE AND ABOVE THE STRUCTURE UNTIL MINIMUM COVER LEVEL IS REACHED. LIGHTWEIGHT VIBRATORY PLATE OR ROLLER TYPE COMPACTION EQUIPMENT MUST BE USED TO COMPACT THE BACKFILL IN THESE ZONES. USE OF HEAVIER EQUIPMENT AND/OR RUBBER TIRED EQUIPMENT SUCH AS SCRAPERS, GRADERS AND FRONT END LOADERS WILL LIKELY BE PROHIBITED INSIDE THE SELECT FILL ENVELOPE ZONE UNTIL APPROPRIATE MINIMUM COVER HEIGHT HAS BEEN OBTAINED.

10. SHAPE CONTROL MONITORING

CONTECH SHALL PROVIDE A SHAPE CONTROL TECHNICIAN WHO IS A QUALIFIED REPRESENTATIVE OF A PROFESSIONAL SOILS ENGINEERING FIRM OR OTHER QUALIFIED ORGANIZATION TO MONITOR THE INSTALLATION AND BACKFILLING OF THE STRUCTURE. THE SHAPE CONTROL TECHNICIAN SHALL MONITOR THE STRUCTURE SHAPE DURING THE PLACEMENT OF THE STRUCTURAL BACKFILL TO THE MINIMUM COVER HEIGHT OVER THE STRUCTURE. THE SHAPE CONTROL TECHNICIAN SHALL TAKE INITIAL MEASUREMENTS OF THE ERECTED STRUCTURE BEFORE BACKFILLING, OBSERVE ALL BACKFILL MATERIALS, THEIR PLACEMENT AND RECORD COMPACTION DENSITIES. HE SHALL RECORD ALL DENSITY READINGS AND ENSURE THEY MEET THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS. HOWEVER, IN NO CASE SHALL THE RELATIVE DENSITIES BE LESS THAN 90% PER AASHTO T-180 80. NO STRUCTURAL BACKFILL SHALL BE PLACED WITHOUT THE SHAPE CONTROL TECHNICIAN ON SITE. THE SHAPE CONTROL TECHNICIAN SHALL:
A) MONITOR THE STRUCTURE'S SHAPE THROUGHOUT THE BACKFILLING OPERATION AND REPORT SHAPE CHANGE RATES TO THE CONTRACTOR.
B) CONTACT THE CONTECH REGION ENGINEER IMMEDIATELY IF THERE ARE PROBLEMS IN MEETING THE ESTABLISHED TOLERANCES, AND HAVE FULL AUTHORITY TO STOP BACKFILL WORK IF NECESSARY.

11. PRE-CONSTRUCTION CONFERENCE

PRIOR TO CONSTRUCTION, A MEETING WILL BE HELD TO REVIEW THE CONSTRUCTION PROCEDURES. A QUALIFIED REPRESENTATIVE OF THE MANUFACTURER OF THE STRUCTURE WILL BE PRESENT TO DISCUSS METHODS AND RESPONSIBILITY FOR SHAPE MONITORING AND CONTROL, BACKFILL MATERIAL SELECTION, TESTING AND PLACEMENT, AND COMPACTION METHODS AND TESTING. A REPRESENTATIVE OF THE ENGINEER, PRIME CONTRACTOR, AND ANY INVOLVED SUBCONTRACTORS MUST BE PRESENT.

12. CONCRETE AND REBAR

12.1 CONCRETE SHALL HAVE NATURAL SAND FINE AGGREGATE AND NORMAL WEIGHT COARSE AGGREGATE CONFORMING TO ASTM C 150, AND SHALL HAVE A COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS.

12.2 CONCRETE MIX DESIGNS SHALL BE SUBMITTED TO THE OWNER FOR REVIEW AND APPROVAL PRIOR TO PLACEMENT OF CONCRETE.

12.3 MIXING, TRANSPORTING AND PLACING OF CONCRETE SHALL CONFORM TO ACI 301.

12.4 CONCRETE REINFORCING BARS SHALL CONFORM TO ASTM A 615, GRADE 60. REINFORCING BARS SHALL NOT BE TACK WELDED, WELDED, OR HEATED OR CUT UNLESS INDICATED ON THE CONTRACT DOCUMENTS.

12.5 REINFORCING BARS SHALL HAVE A MINIMUM CONCRETE COVERAGE OF 3 INCHES (MAXIMUM 4 INCHES) WHERE THE FACE OF CONCRETE WILL BE IN CONTACT WITH GROUND AND 1.75 INCHES (MAXIMUM 2.5 INCHES) WHEN THE FACE OF CONCRETE WILL BE IN CONTACT WITH THE ATMOSPHERE.

12.6 REINFORCEMENT SPLICES SHALL LAP A MINIMUM OF 36 BAR DIAMETERS.

12.7 PROVIDE STANDARD BAR CHAIRS AND SPACERS AS REQUIRED TO MAINTAIN CONCRETE PROTECTION SPECIFIED.

12.8 DETAILING OF CONCRETE REINFORCING BARS AND ACCESSORIES SHALL CONFORM TO THE RECOMMENDATIONS OF ACI 31 "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT" AND ACI SP-66 "DETAILING MANUAL". PLACING OF REINFORCING BARS SHALL CONFORM TO THE RECOMMENDATIONS OF ACI 315R "MANUAL OF ENGINEERING AND PLACING DRAWINGS FOR REINFORCED CONCRETE STRUCTURES" AND CRSI "MANUAL OF STANDARD PRACTICE".

6/19/03
Date

STATE OF MARYLAND
MICHAEL E. LEFFLER
No. 12725 REGISTERED
PROFESSIONAL ENGINEER

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-11-03

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/14/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/16/03

DIRECTOR — DATE 7/21/03

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CIP-C-0282

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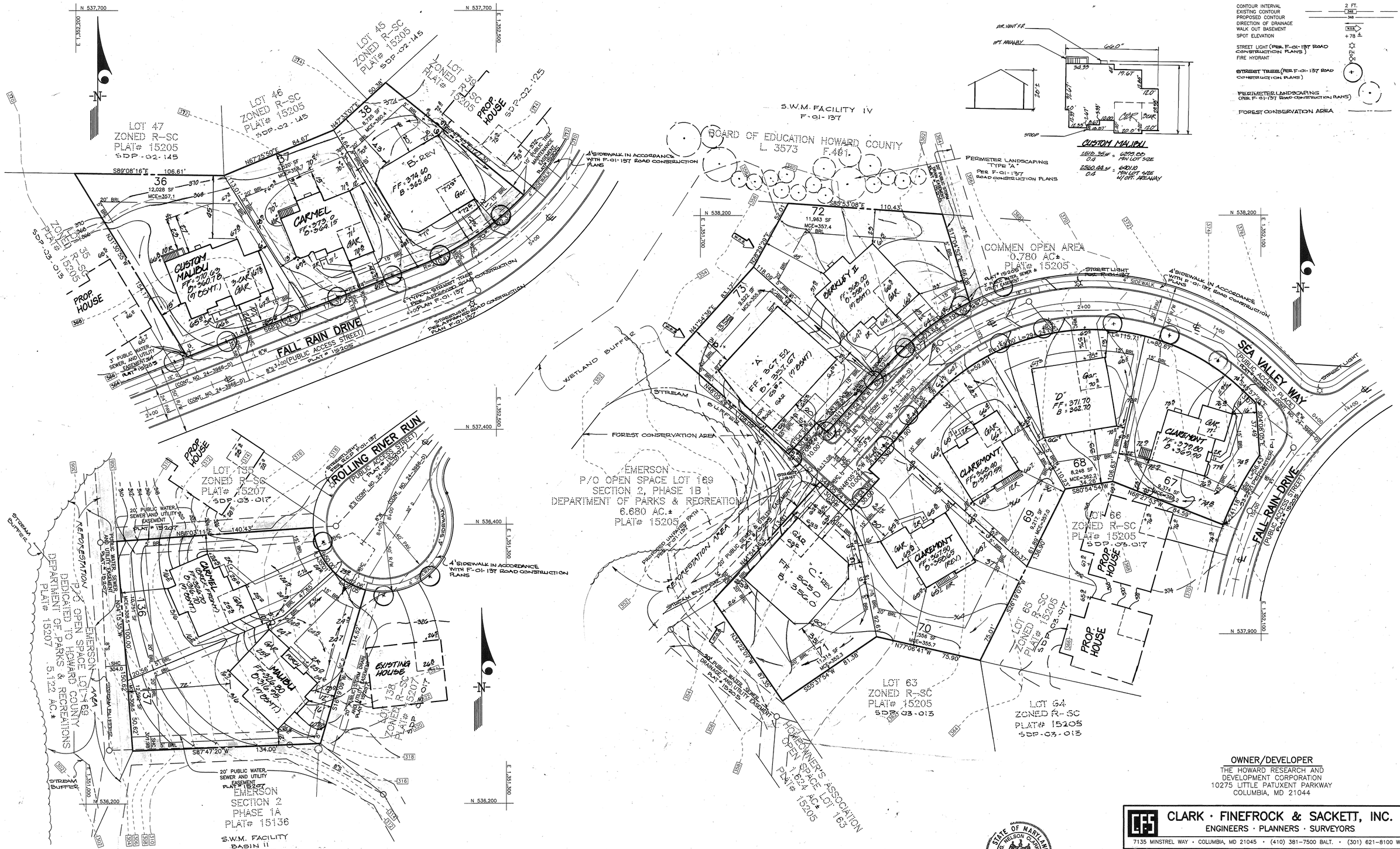
SUBDIVISION NAME			SECTION AREA		LOT PARCEL #
HO. CO. OFFICE CAMPUS					852 & P/0847
PLAT# OR L F	BLOCK #	ZONE	TAX ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
15867-74	6&1	POR	24 & 25	2	6029
WATER CODE			SEWER CODE		

BOTTOMLESS ARCH SPECIFICATIONS

Des. By	MEL	Scale	NTS	Proj. No.	02-2594
Drn. By	KDR	Date	08/12/02	40 of 40	
Chk. By		Approved			

SDP-03-26



APPROVED: DEPARTMENT OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 3/14/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3/12/03

DIRECTOR — DATE 3/17/03

NO	REVISION	DATE
9	REV. HSE. ELEV. LOT 36 TO SHOW AS-BUILT CONDITIONS	8-5-04
8	REV. LOT 137 & 136 TO SHOW AS-BUILT CONDITION	7-7-04
7	REV. HSE. GRD. LOT 37 TO SHOW AS-BUILT CONDITIONS	6-24-04
6	REV. HSE. LABEL LOT 36 FROM "B" REV TO CUSTOM MALIBU	4-2-04
5	REV. HSE. & GRD. LOT 67 FROM "C" BOX TO CARMEL TO SHOW AS-BUILT	12-18-03
4	REV. HSE. & GRD. LOT 67 FROM "D" BOX TO CLAREMONT	11-18-03
3	REV. HSE. & GRD. LOT 72 FROM CARMEL TO BERKLEY II	11-25-02
2	REV. HSE. LOT TO RAISED REAR B.W.L. ; ADDED 2 EXIT.	10-23-03
1	REV. HSE. & GRD. LOT 136 FROM "C" BOX TO CARMEL (10 CSMT.) REV. HSE. & GRD. LOT 137 FROM "B" BOX TO MALIBU (9 CSMT.) REV. HSE. & GRD. LOT 72 FROM "A" BOX TO CARMEL (REV.) REV. HSE. & GRD. LOT 60 FROM "A" BOX TO CLAREMONT REV. HSE. & GRD. LOT 70 FROM "C" BOX TO CLAREMONT (REV.)	9-25-03

OWNER/DEVELOPER
THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MD 21044

STATE OF MARYLAND — G. NELSON CLARK — NO. 7139 — REGISTERED PROFESSIONAL ENGINEER — 10-28-02

CLARK · FINEFROCK & SACKETT, INC.
ENGINEERS · PLANNERS · SURVEYORS
7135 MINSTREL WAY · COLUMBIA, MD 21045 · (410) 381-7500 BALT. · (301) 621-8100 WASH.

DESIGNED RMT / KQL	SITE DEVELOPMENT PLAN LOTS 36-38, 67-73, 136 & 137	SCALE 1" = 30'
DRAWN JPH / KQL R.M.T.	EMERSON (SINGLE FAMILY UNITS)	DRAWING 2 OF 4
CHECKED KQL	TAX MAP 47 PART OF PARCEL 3 & 837 BLOCK 8 SECTION 2 PHASE 1B SIXTH (6th) ELECTION DISTRICT HOWARD COUNTY, MARYLAND	JOB NO. 02-076
DATE 10-25-02	FOR : ALLAN HOMES, INC 10280 OLD COLUMBIA ROAD COLUMBIA, MARYLAND 21076 (410) 381-1414	FILE NO. 02-076-X

(11)C:\DRAWINGS\02076 EMERSON\DWG\02076SDP.DWG

SDP-03-029