ROAD AND STORM DRAIN CONSTRUCTION PLANS

KINGS ARMS SECTION 2

6th ELECTION DISTRICT

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, UNLESS WAIVER(S) HAVE BEEN APPROVED.

2.) THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/ CONSTRUCTION INPSECTION 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 DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.

5.) STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURE AND POLE SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (1993) AND AS MODIFIED BY "GUIDELINES FOR STREET LIGHTS IN RESIDENTIAL DEVELOPMENTS (JUNE 1993). A MINIMUM SPACING OF 20 FEET SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.

6.) THE EXISTING TOPOGRAPHY SHOWN IS BASED ON FIELD RUN SURVEY PERFORMED BY BENCHMARK ENGINEERING, INC. IN APRIL, 2000.

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. 50BA AND 50B5 WERE USED FOR THIS PROJECT.

8.) WATER AND SEWER SYSTEMS ARE PUBLIC UNDER CONTRACT NUMBER 24-3959-D. THE DRAINAGE AREA IS PATUXENT.

9.) STORMWATER MANAGEMENT SHALL BE PROVIDED BY EXTENDED DETENTION. THE FACILITY IS TO BE A CLASS 'A' STRUCTURE. THE FACILITY WILL BE PRIVATELY OWNED AND MAINTAINED.

10.) THERE ARE NO 100-YR FLOODPLAINS, STREAMS OR STEEP SLOPES LOCATED ON-SITE.

11.) WETLAND DELINEATION PROVIDED BY ECO-SCIENCE PROFESSIONALS, INC. DATED OCTOBER, 1998.

12.) TRAFFIC STUDY WAS PREPARED BY LEE CUNNINGHAM & ASSOCIATES, INC. DATE MAY, 1999.

13.) FOREST STAND DELINEATION PROVIDED BY ECO-SCIENCES, INC. DATED OCTOBER, 1998.

14.) NO DISTURBANCE SHALL OCCUR IN THE WETLANDS OR 25' WETLAND BUFFER EXCEPT AS PERMITTED BY THE DEPARTMENT OF PLANNING AND ZONING.

15.) MINIMUM BUILDABLE LOT SIZE SHALL BE 6,000 SQUARE FEET.

16.) THIS PROPERTY IS WITHIN THE METROPOLITAN DISTRICT.

17.) TO THE BEST OF OUR KNOWLEDGE THERE ARE NO CEMETERY LOCATIONS ON-SITE.

18.) BOUNDARY IS BASED ON A FIELD RUN MONUMENTED BOUNDARY SURVEY PERFORMED ON OR ABOUT JANUARY, 2001 BY BENCHMARK ENGINEERING, INC.

19.) ALL EXISTING WELLS AND SEPTICS IF LOCATED ON THIS PROPERTY SHALL BE ABANDONED AND VERIFICATION OF THE ABANDONMENT SHALL BE SUBMITTED TO THE HEALTH DEPARTMENT PRIOR TO RECORDATION OF THE PLAT OF SUBDIVISION.

20.) FOR FLAG OR PIPESTEM LOTS, REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE ARE PROVIDED TO THE JUNCTION OF THE FLAG OR PIPESTEM AND ROAD RIGHT OF WAY LINE AND NOT THE FLAG OR PIPESTEM LOT DRIVEWAY.

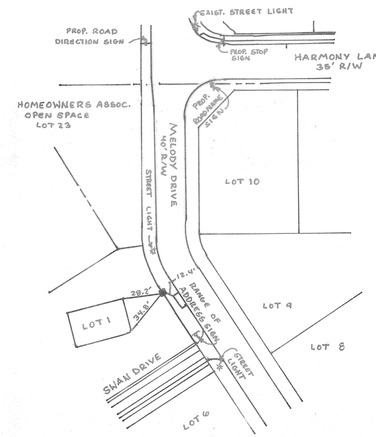
21.) DRIVEWAYS SHALL BE PROVIDED PRIOR TO RESIDENTIAL OCCUPANCY TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:

a) WIDTH - 12' (14' SERVING MORE THAN ONE RESIDENCE).
b) SURFACE - 6" OF COMPACT CRUSHER RUN BASE WITH TAR AND CHIP COATING (1-1/2" MIN.)
c) GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% GRADE CHANGE AND MINIMUM 45' TURNING RADIUS.
d) STRUCTURES (CULVERTS/BRIDGES) - CAPABLE OF SUPPORTING 25 GROSS TONS (H25 LOADING).
e) DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOODPLAIN WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY.
f) STRUCTURE CLEARANCES - MINIMUM 12 FEET.
g) MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE.

22.) DRY WELLS WILL BE PROVIDED FOR THE HOUSES ON LOTS 16-20 WHICH ARE NOT CONTROLLED AND ARE OVERMANAGED BY THE PROPOSED EXTENDED DETENTION POND.

23.) TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE, FOREST CONSERVATION ACT, AN OFFSITE REFORESTATION EASEMENT OF 3.2 ACRES IS PROPOSED ON NON-BUILDABLE PRESERVATION PARCEL 'B' OF HIGH FOREST ESTATES (F-98-167) PER REVISION PLAT F-02-56 TO BE RECORDED AMONG THE LAND RECORDS OF HOWARD COUNTY. THE ORIGINAL FOREST CONSERVATION PLAN FOR HIGH FOREST ESTATES WAS RECORDED UNDER F-98-165 AS BIG BRANCH OVERLOOK. A REVISION PLAT HAS BEEN PROVIDED AND WILL BE RECORDED AMONG THE LAND RECORDS OF HOWARD COUNTY, MARYLAND.

24.) A JOINT FEDERAL/STATE APPLICATION FOR THE ALTERATION OF THE NONTIDAL WETLANDS AND BUFFER LOCATED AT THE END OF MELODY DRIVE AND AT THE CROSSING OF THE PROPOSED SEWER LINE WAS RECEIVED AT THE MARYLAND DEPARTMENT OF THE ENVIRONMENT ON SEPTEMBER 26, 2001. THE WMA WILL ISSUE A LETTER OF AUTHORIZATION ONCE THE FINAL PLANS HAVE BEEN SIGNED. TRACKING NUMBER 01-NT-0435/200166476.

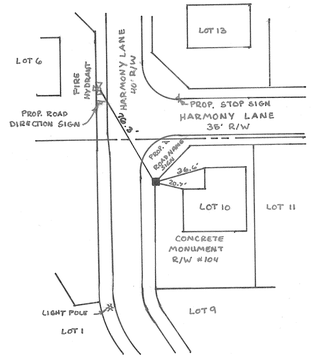


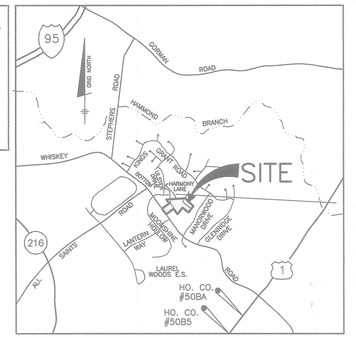
PLAN VIEW
SCALE: 1" = 50'

BENCH MARKS-(NAD'83)

HO. CO. #50BA EL. N/A
STANDARD DISC ON CONC. MONUMENT
N 527561.6702' E 1359772.5936'

HO. CO. #50B5 EL.178.242'
STANDARD DISC ON CONC. MONUMENT
N 524999.3640' E 1357925.6751'





VICINITY MAP
SCALE: 1" = 2000'

RIGHT OF WAY ELEVATION CHART NAD 83

R/W PT. NO.	DISCRIPTION	ELEVATIONS
1101	REBAR & CAP SET	292.13
1102	REBAR & CAP SET	283.60
1103	REBAR & CAP SET	290.81
1104	CONC. MON.	291.43
1105	REBAR & CAP SET	291.24
1106	REBAR & CAP SET	290.65
1107	REBAR & CAP SET	275.94
1108	CONC. MON.	290.79
1109	REBAR & CAP SET	291.88
1110	REBAR & CAP SET	289.77
1111	REBAR & CAP SET	299.57

SHEET INDEX

NO.	DATE	REVISION

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 2-19-02

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3/1/02

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2/11/02

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
phone: 410-465-6105 ▲ fax: 410-465-6644
email: Benchmrk@cois.com

STATE OF MARYLAND — DONALD MASON — NO. 21436 — REGISTERED PROFESSIONAL ENGINEER
1/15/02

AS-BUILT 1/5/05

OWNER/DEVELOPER:
SDC GROUP, INC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: KINGS ARMS
SECTION 2
LOTS 1-22 AND OPEN SPACE LOTS 23 AND 24

LOCATION: TAX MAP: 47, GRID: 22
PARCELS: 174, 496 AND 732
6th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: TITLE SHEET
S-99-23 P-00-14

DATE: FEBRUARY 18, 2001
JANUARY 2, 2002

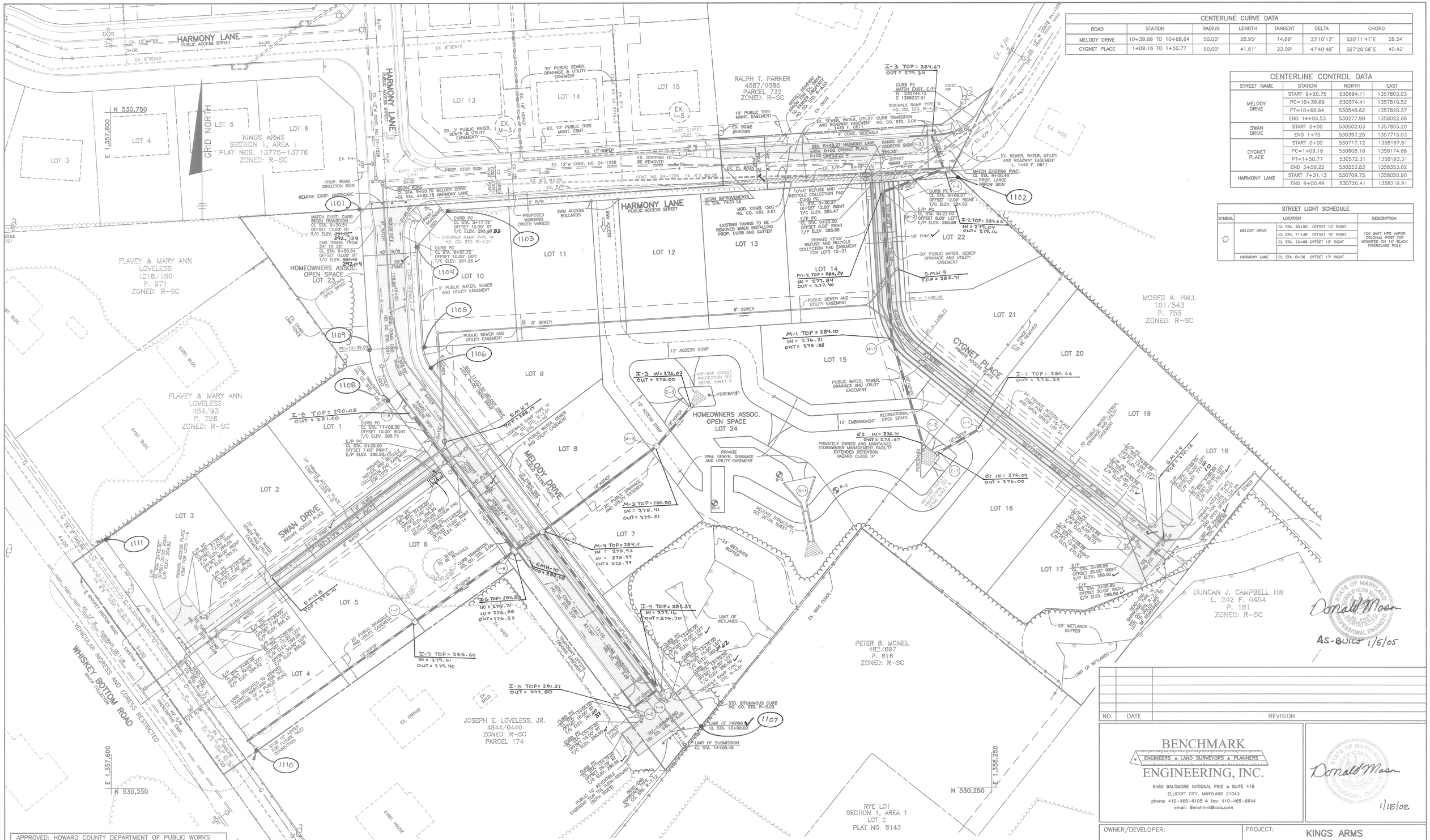
PROJECT NO. 1139

DESIGN: DBT | DRAFT: DBT | CHECK: DAM

SCALE: AS SHOWN

SHEET 1 OF 13

F-01-130



PLAN VIEW
SCALE: 1" = 30'

CENTERLINE CURVE DATA							
ROAD	STATION	RADIUS	LENGTH	TANGENT	DELTA	CHORD	
MELODY DRIVE	10+39.69 TO 10+68.64	50.00'	28.95'	14.89'	33°10'12"	S20°11'41"E	28.54'
CYGNET PLACE	1+09.16 TO 1+50.77	50.00'	41.61'	22.09'	47°40'48"	S27°26'59"E	40.42'

CENTERLINE CONTROL DATA			
STREET NAME	STATION	NORTH	EAST
MELODY DRIVE	START 9+20.75	530694.11	1357803.03
	PC=10+39.69	530574.41	1357810.52
	PT=10+68.64	530548.62	1357820.37
	END 14+06.53	530277.98	1358022.68
SWAN DRIVE	START 0+00	530502.03	1357855.20
	END 1+75	530397.25	1357715.03
CYGNET PLACE	START 0+00	530717.12	1358167.81
	PC=1+09.16	530608.18	1358174.68
	PT=1+50.77	530572.31	1358193.31
	END 3+56.22	530553.83	1358353.62
HARMONY LANE	START 7+31.13	530709.75	1358050.90
	END 9+00.49	530720.41	1358219.91

STREET LIGHT SCHEDULE			
SYMBOL	LOCATION		DESCRIPTION
☼	MELODY DRIVE	CL STA. 10+50 OFFSET 13' RIGHT	100 WATT HPS VAPOR COLONIAL POST TOP MOUNTED ON 14' BLACK FIBERGLASS POLE
		CL STA. 11+39 OFFSET 15' RIGHT	
		CL STA. 13+66 OFFSET 13' RIGHT	
	HARMONY LANE	CL STA. 8+36 OFFSET 17' RIGHT	

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 2-14-02

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/1/02

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2/14/02

AS-BUILT 1/5/05

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
phone: 410-465-6105 ▲ fax: 410-465-6644
email: Benchmrk@cols.com

1/15/02

OWNER/DEVELOPER:
SDC GROUP, INC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: KINGS ARMS
SECTION 2
LOTS 1-22 AND OPEN SPACE LOTS 23 AND 24

LOCATION: TAX MAP: 47, GRID: 22
PARCEL: 174, 496 AND P/O 732
6th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: ROAD PLAN
S-99-23 P-00-14

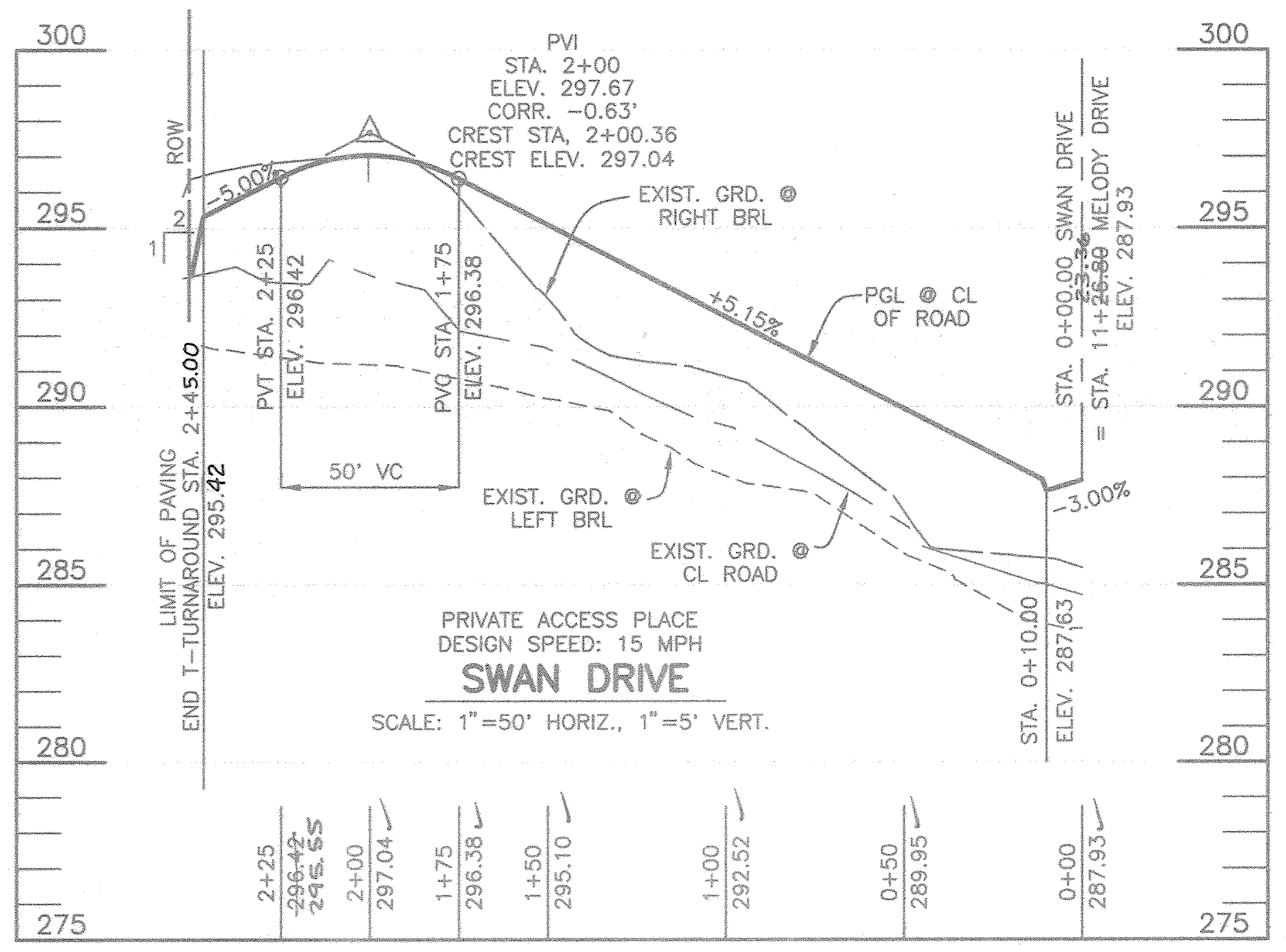
DATE: FEBRUARY 18, 2001 / JANUARY 2, 2002
PROJECT NO. 1139

DESIGN: DBT | DRAFT: DBT | CHECK: DAM

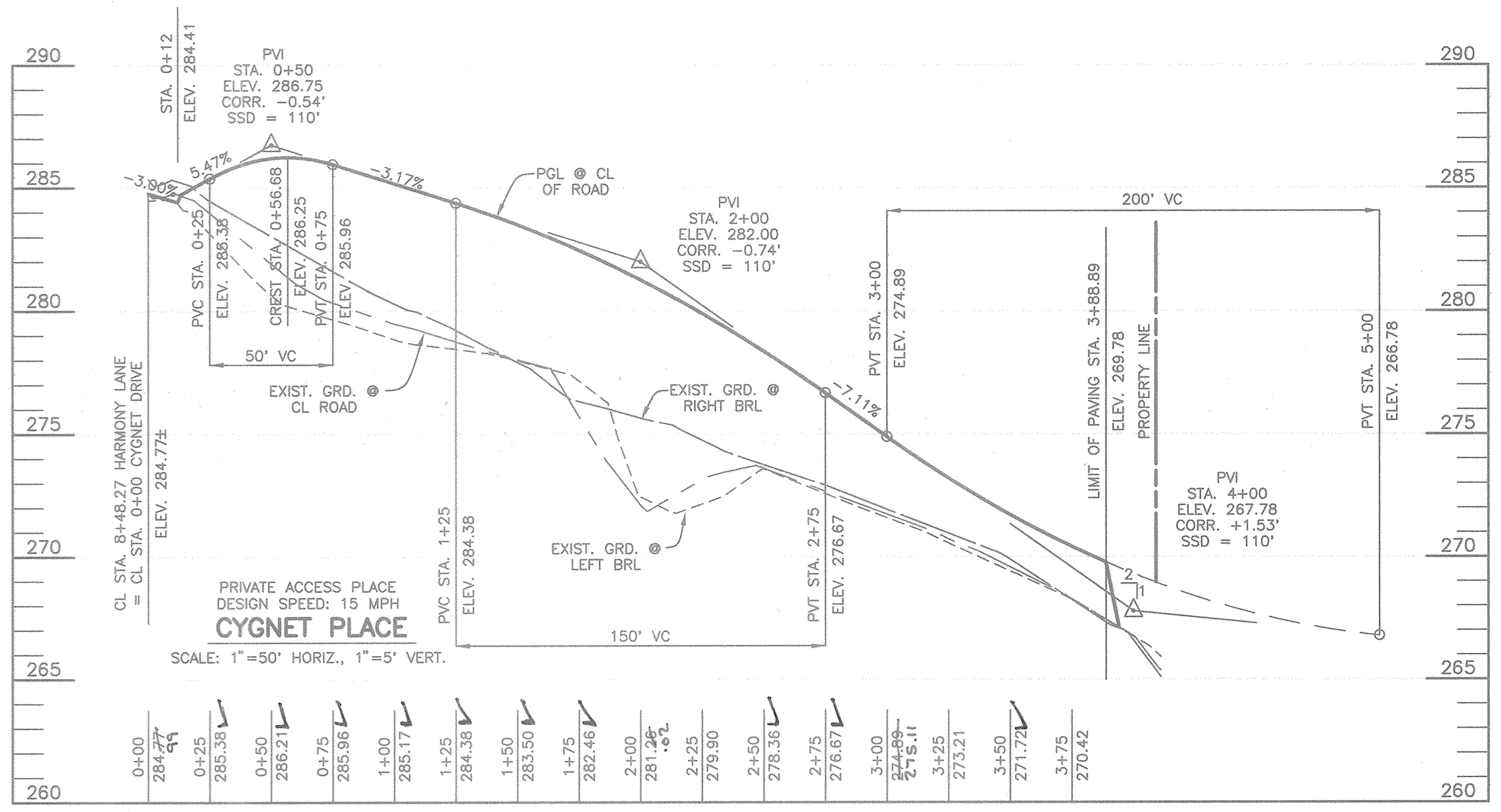
SCALE: AS SHOWN
SHEET 2 OF 13

F-01-130

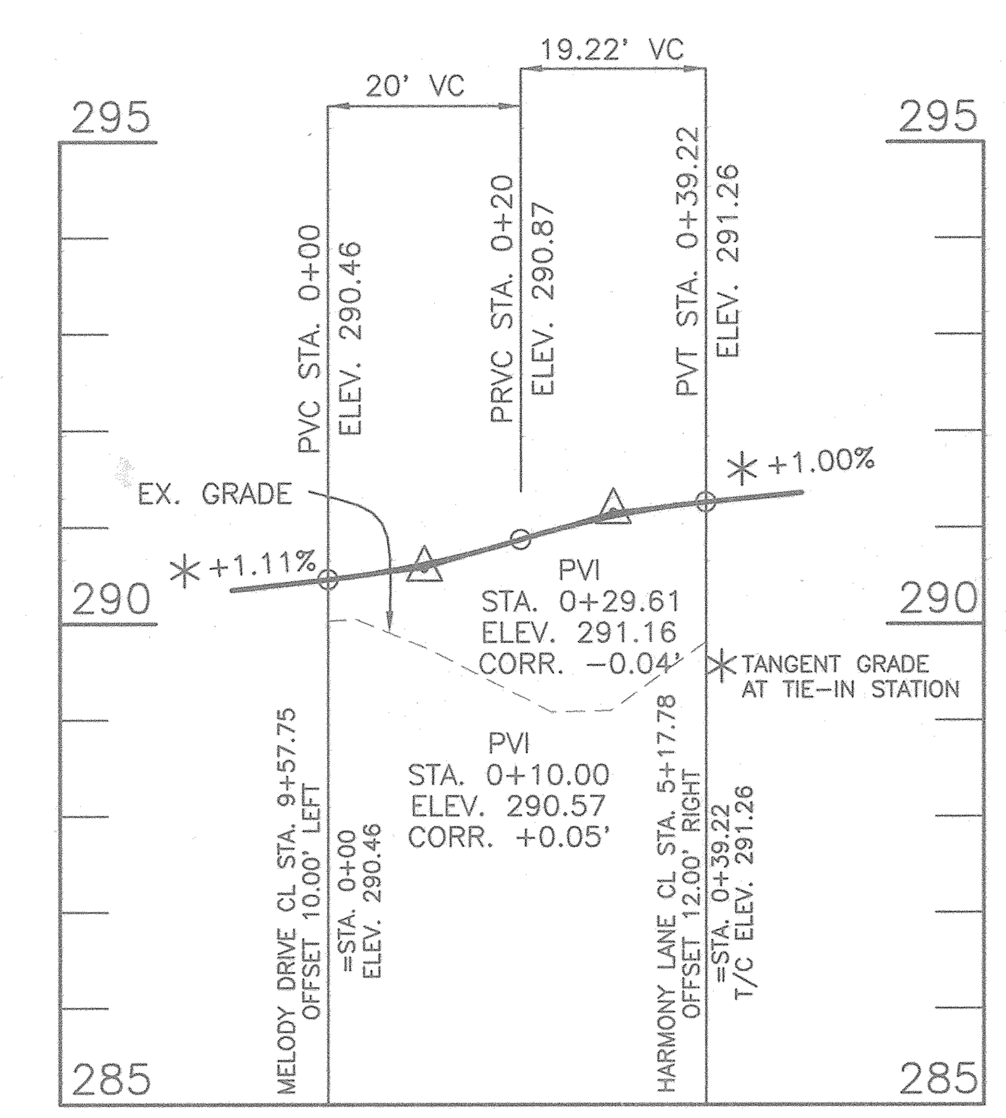
\\tsa\vol1\engineer\projects\1139 Loveless\dwg\7017s02.dwg, 01/12/2002 09:47:56 AM



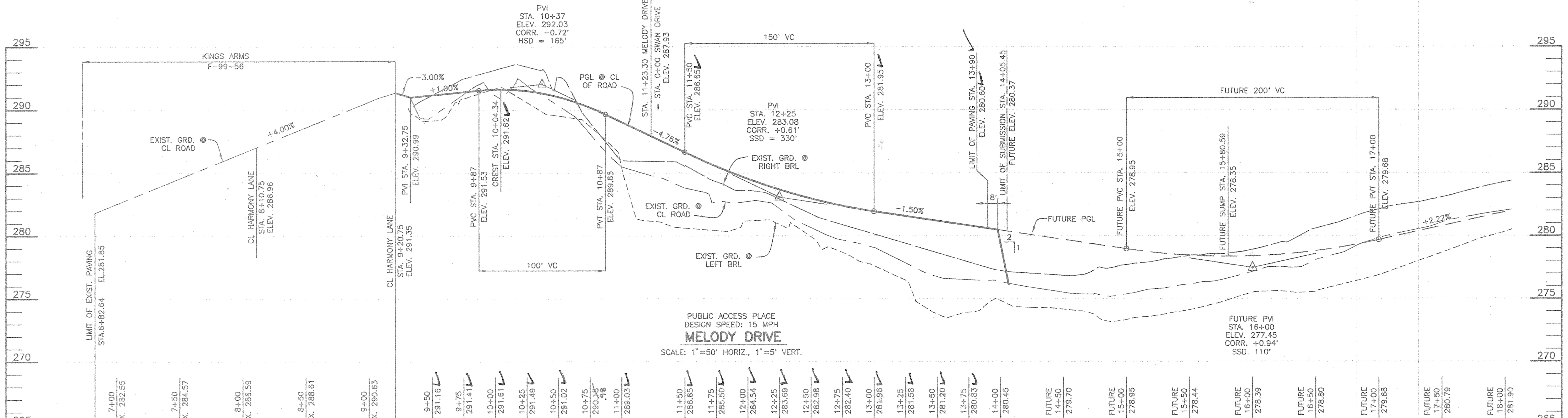
PRIVATE ACCESS PLACE
DESIGN SPEED: 15 MPH
SWAN DRIVE
SCALE: 1"=50' HORIZ., 1"=5' VERT.



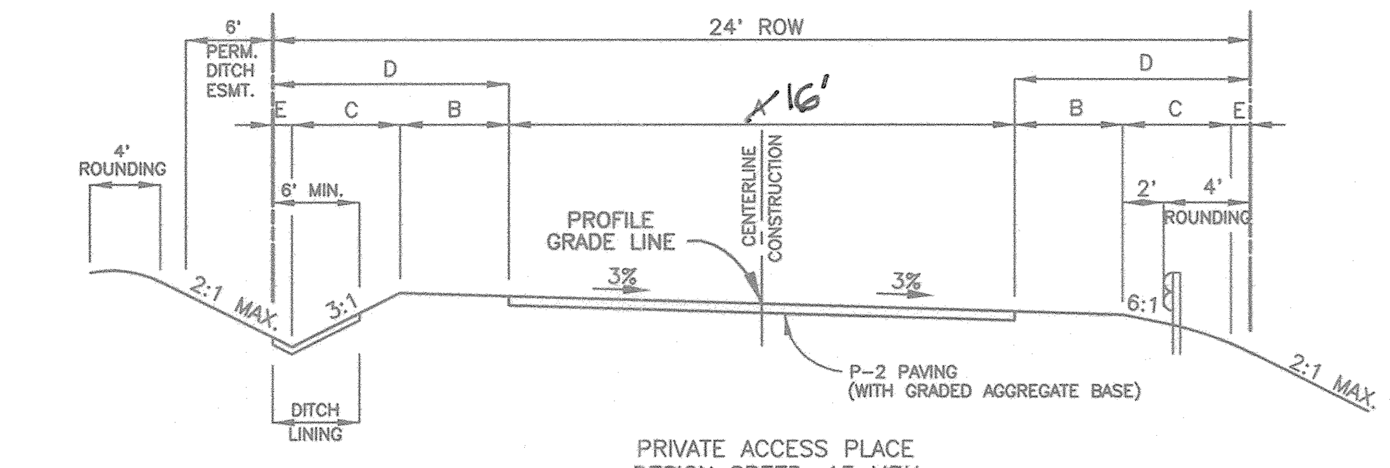
PRIVATE ACCESS PLACE
DESIGN SPEED: 15 MPH
CYGNET PLACE
SCALE: 1"=50' HORIZ., 1"=5' VERT.



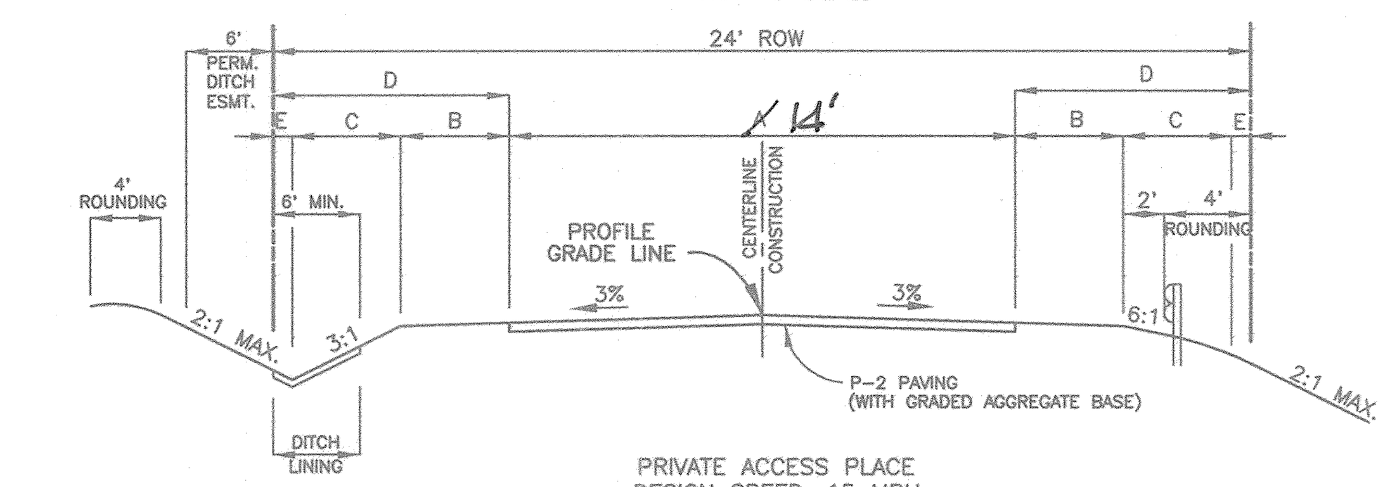
CURB RETURN PROFILE
MELODY DRIVE/HARMONY LANE - EAST
SCALE: 1"=20' HORIZ., 1"=2' VERT.



PUBLIC ACCESS PLACE
DESIGN SPEED: 15 MPH
MELODY DRIVE
SCALE: 1"=50' HORIZ., 1"=5' VERT.



PRIVATE ACCESS PLACE
DESIGN SPEED: 15 MPH
CYGNET PLACE
NOT TO SCALE

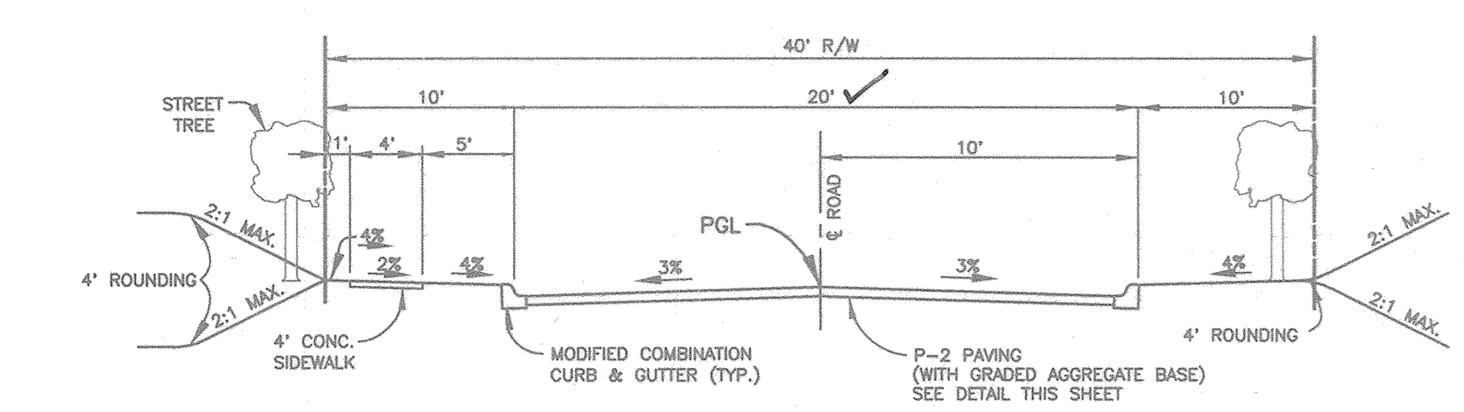


PRIVATE ACCESS PLACE
DESIGN SPEED: 15 MPH
SWAN DRIVE
NOT TO SCALE

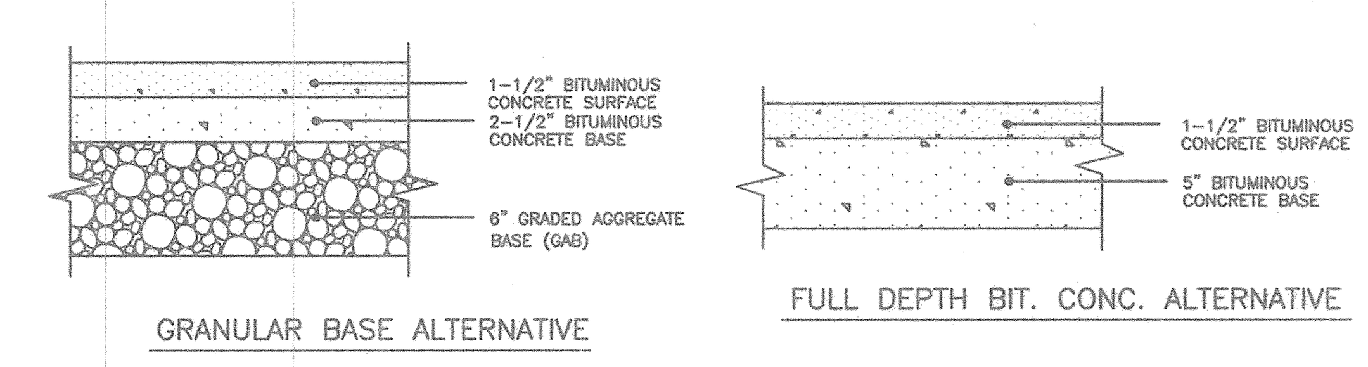
NOTE: USE GUARD RAIL WHERE INDICATED BY FIGURE 2.14.

CLASSIFICATION		A	B	C	D	E	R/W
ACCESS PLACE	PRIVATE - 100 ADT	14'*	4'	1'	5'	0'	24'
	PUBLIC - 200 ADT	18'	4'	4'	11'	3'	40'
ACCESS STREET	PRIVATE - 100 ADT	22'	4'	4'	9'	1'	40'
	PRIVATE - 100 ADT	24'	4'	4'	13'	5'	50'
MINOR COLLECT.	PRIVATE - 100 ADT	24'	4'	4'	13'	5'	50'

* 16' FOR CYGNET PLACE



PUBLIC ACCESS PLACE
DESIGN SPEED: 15 MPH
MELODY DRIVE
NOT TO SCALE



P-2 PAVING DETAIL
NOT TO SCALE

AS-BUILT 1/5/05

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2-14-02
APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3/1/02
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2/4/02

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
phone: 410-465-6105 ▲ fax: 410-465-6644
email: Benchmrk@cais.com

1/15/02

OWNER/DEVELOPER:
SDC GROUP, INC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: **KINGS ARMS**
SECTION 2
LOTS 1-22 AND OPEN SPACE LOTS 23 AND 24

LOCATION: TAX MAP: 47, GRID: 22
PARCELS: 174, 496 AND P/O 732
6th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

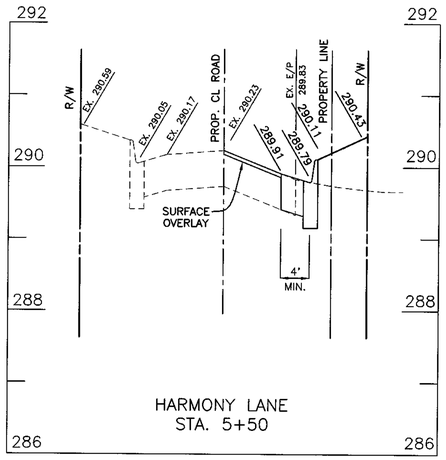
TITLE: ROAD PROFILES AND DETAILS
S-99-23 P-00-14

DATE: FEBRUARY 18, 2001 / JANUARY 2, 2002 — PROJECT NO. 1139

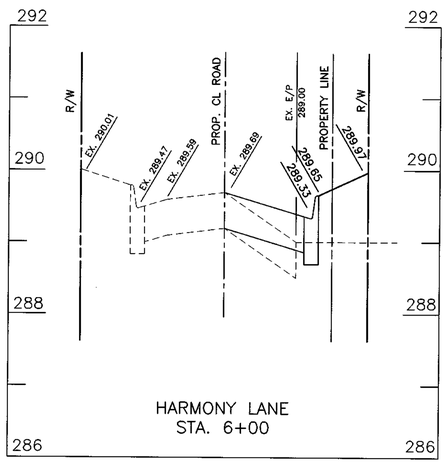
DESIGN: DBT | DRAFT: DBT | CHECK: DAM | SCALE: AS SHOWN | SHEET 3 OF 13

F-01-130

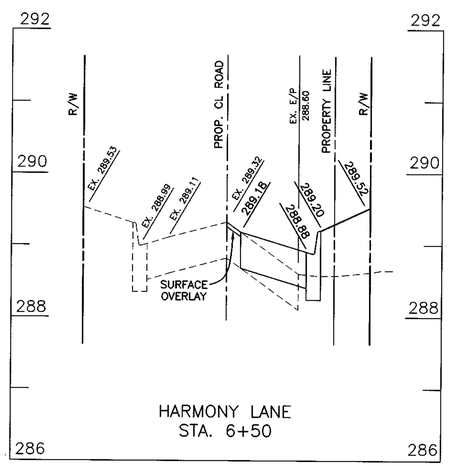
P:\PROJECTS\1139 Loveless\dwg\7017s03.dwg, 12/31/2001 01:25:05 PM



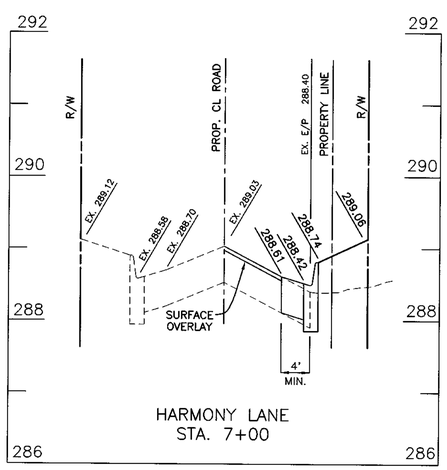
HARMONY LANE
STA. 5+50



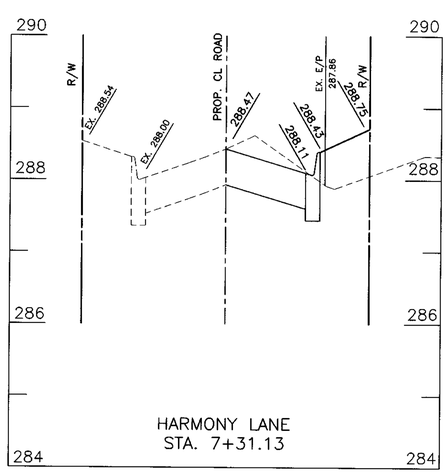
HARMONY LANE
STA. 6+00



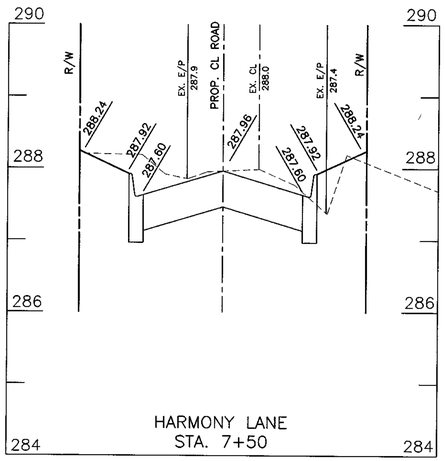
HARMONY LANE
STA. 6+50



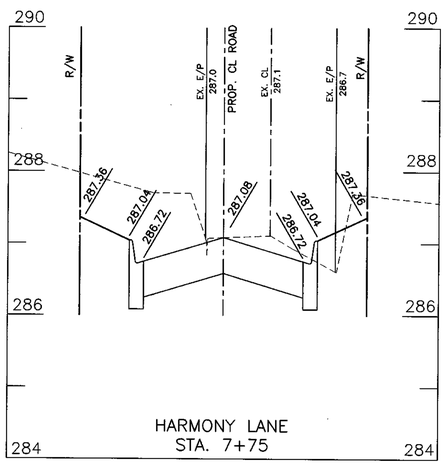
HARMONY LANE
STA. 7+00



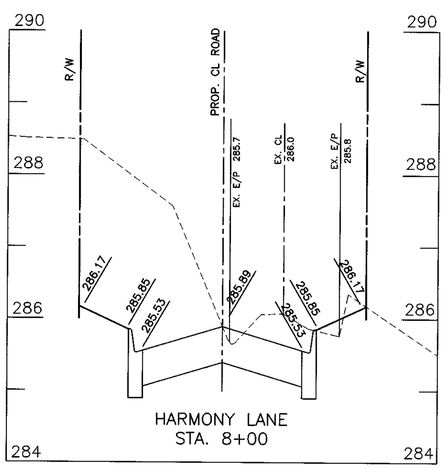
HARMONY LANE
STA. 7+31.13



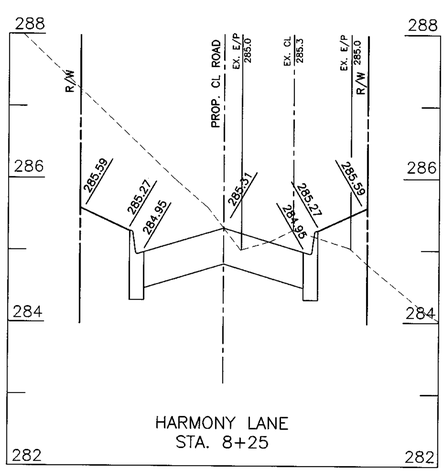
HARMONY LANE
STA. 7+50



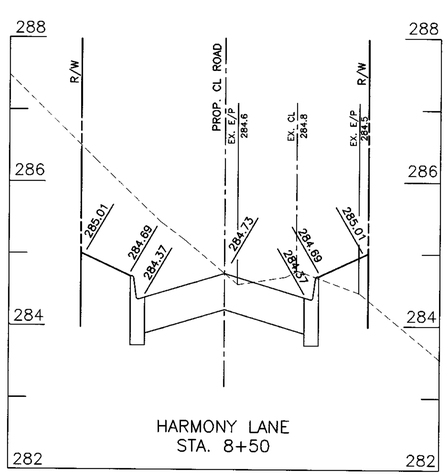
HARMONY LANE
STA. 7+75



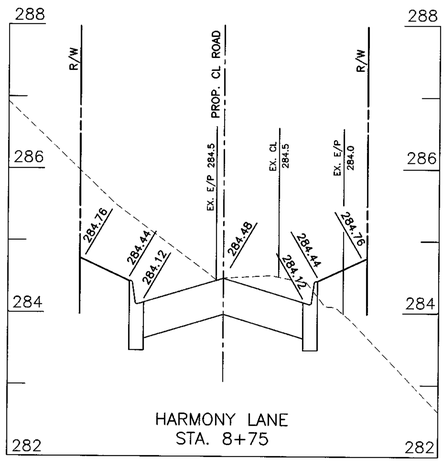
HARMONY LANE
STA. 8+00



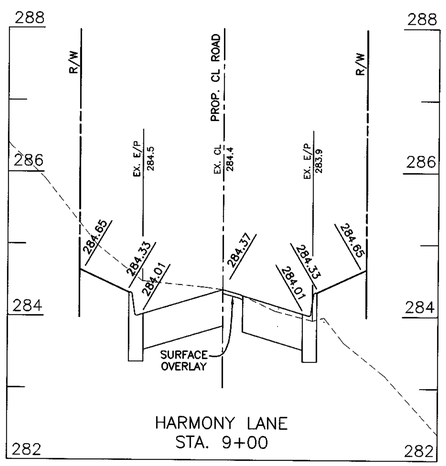
HARMONY LANE
STA. 8+25



HARMONY LANE
STA. 8+50



HARMONY LANE
STA. 8+75

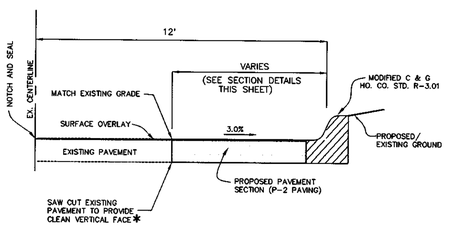


HARMONY LANE
STA. 9+00

WIDENING SECTIONS FOR HARMONY LANE

SCALE: 1" = 10' HORIZ., 1" = 1' VERT.

NOTES:
1. THE SURFACE OVERLAY SHALL BE CARRIED TO THE CENTERLINE OF THE ROAD AND BE NOTCHED AND SEALED.
2. SURFACE OVERLAY COURSE TO BE EQUAL TO SURFACE COURSE OF TYPICAL PAVING SECTION OF SUBDIVISION.
3. CENTERLINE OF ROAD TO BE MILLED AT DEPTH OF 1-1/2" x 1' WIDE USING A MILLING MACHINE.



STA. 4+82.78 TO 7+31.13 (RIGHT)

PAVEMENT DETAIL FOR HARMONY LANE WIDENING

NOT TO SCALE

* NOTE:
A MINIMUM 1 FOOT SAWCUT INTO THE EXISTING PAVING IS REQUIRED.

NO.	DATE	REVISION

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

Donald Moon
1/15/02

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2-14-02
APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/1/02
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2/11/02

OWNER/DEVELOPER:
SDC GROUP, INC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: KINGS ARMS
SECTION 2
LOTS 1-22 AND OPEN SPACE LOTS 23 AND 24

LOCATION: TAX MAP: 47, GRID: 22
PARCELS: 174, 496 AND P/O 732
6th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

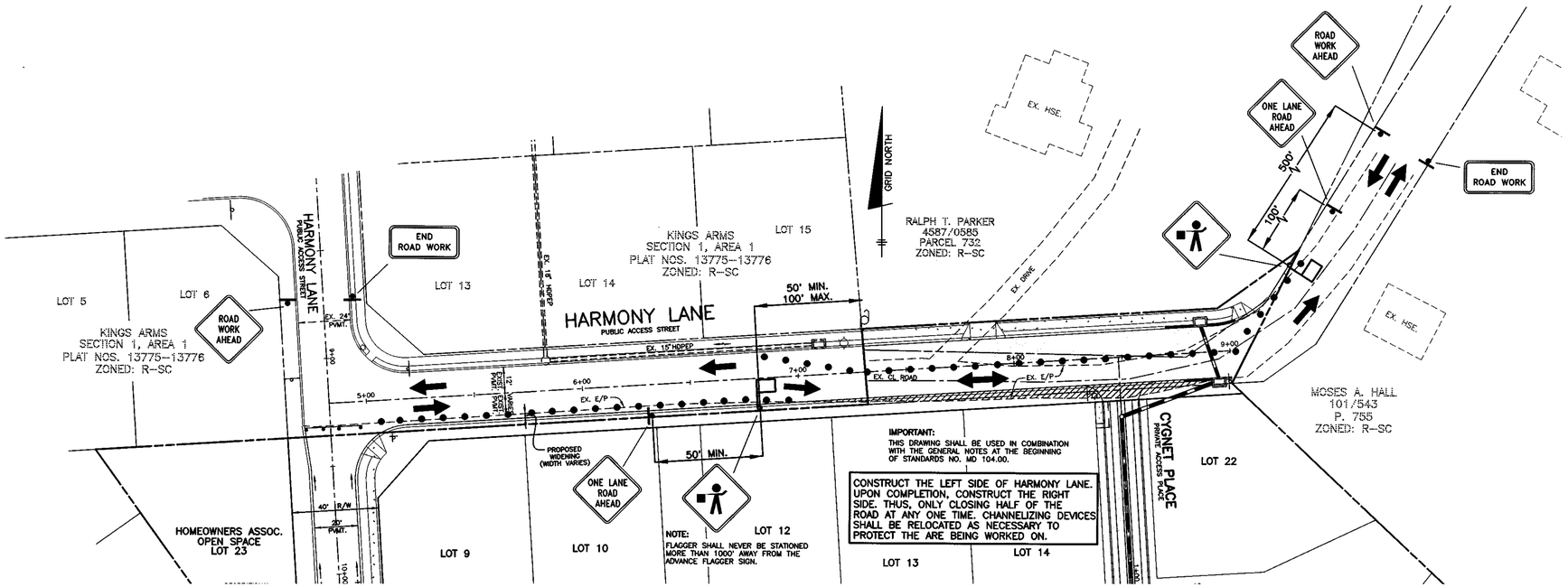
TITLE: HARMONY LANE CROSS-SECTIONS
S-99-23 P-00-14

DATE: FEBRUARY 18, 2001 / JANUARY 2, 2002
PROJECT NO. 1139
SCALE: AS SHOWN
SHEET 4 OF 13

DESIGN: DBT | DRAFT: DBT | CHECK: DAM

P:\PROJECTS\1139 Loveless\dwg\7017s04.dwg, 12/27/2001 10:09:22 AM

F-01-130



PLAN VIEW
SCALE: 1" = 30'

NOTE:

THE CONTRACTOR SHALL SCHEDULE TO COMPLETE A MINIMUM OF A STONE BASE BY THE END OF EACH DAY AND THE ROAD SHALL BE RETURNED TO TWO LANE TRAFFIC WHEN NOT ATTENDED BY FLAGGERS.

KEY

- FLAGGER
- DIRECTION OF TRAFFIC FLOW
- CHANNELIZING DEVICE
- SIGN SUPPORT
- FACE OF SIGN
- WORK AREA

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 2/14/02

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3/1/02

CHIEF, DEVELOPMENT ENGINEERING DIVISION MAJ — DATE 2/4/02

NO.	DATE	REVISION

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

Donald Maar 1/15/02

OWNER/DEVELOPER:

SDC GROUP, INC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: **KINGS ARMS**
SECTION 2
LOTS 1-22 AND OPEN SPACE LOTS 23 AND 24

LOCATION: TAX MAP: 47, GRID: 22
PARCELS: 174, 496 AND P/O 732
6th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: TRAFFIC CONTROL PLAN
S-99-23 P-00-14

DATE: FEBRUARY 18, 2001
JANUARY 2, 2002

PROJECT NO. 1139

DESIGN: DBT | DRAFT: DBT | CHECK: DAM

SCALE: AS SHOWN

SHEET 5 OF 13

P:\PROJECTS\1139 Loveless\dwg\7064s05.dwg, 12/27/2001 10:11:14 AM

F-01-130

SOILS LEGEND		
MAP SYMBOL	SOIL TYPE	MAPPING UNIT
• BeC3	C	BELTSVILLE SILT LOAM, 5 TO 10 PERCENT SLOPES, SEVERELY ERODED
EvB	A	EVESBORO LOAMY SAND, 1 TO 5 PERCENT SLOPES
EvC	A	EVESBORO LOAMY SAND, 5 TO 15 PERCENT SLOPES
Li	D	LEONARDTOWN SILT LOAM
ScD	C	SANDY AND CLAYEY LAND, MODERATELY SLOPING

• INDICATES HYDRIC SOILS
SOILS MAP NO. 33

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 2-14-02

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/1/02

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2/4/02

PLAN VIEW
SCALE: 1" = 30'

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
phone: 410-465-6105 ▲ fax: 410-465-6644
email: Benchmrk@cols.com

Donald Mann
1/15/02

OWNER/DEVELOPER:
SDC GROUP, INC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: KINGS ARMS
SECTION 2
LOTS 1-22 AND OPEN SPACE LOTS 23 AND 24

LOCATION: TAX MAP: 47, GRID: 22
PARCELS: 174, 496 AND P/O 732
6th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: STORM DRAIN
DRAINAGE AREA MAP
S-99-23 P-00-14

DES: DBT/MLV | DRAFT: DBT | CHECK: DAM

DATE: FEBRUARY 18, 2001
JANUARY 2, 2002

PROJECT NO. 1139

SCALE: 1" = 30'

SHEET 6 OF 13

F-01-130

P:\PROJECTS\1139 Loveless\dwg\7025s06.dwg, 12/31/2001 01:16:18 PM

STORMWATER MANAGEMENT FACILITY CONSTRUCTION SPECIFICATIONS

These specifications are appropriate to all ponds within the scope of the Standard for practice MD-378. All references to ASTM and AASHTO specifications apply to the most recent version.

Site Preparation

Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped to 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.

Earth Fill

Material – The fill material shall be taken from approved designated borrow areas. If shall be free of roots, stumps, wood, rubbish, stones greater than 6", frozen or other objectionable material. 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 heavy equipment or compaction shall be achieved by a minimum of four complete passes of a sheepsfoot, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction will be obtained with teh equipment used. The fill material shall contain sufficient moisture so that it formed into a ball it will not crumble, yet not be so wet that water can be squeezed out.

When required by the reviewing agency the minimum required density shall not be less than 95% of maximum dry density with a moisture content within ± 2% of the optimum. Each layer of fill shall be compacted as necessary to obtain that density, and is to be certified by the Engineer at the time of construction. All compaction is to be determined by 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 bottom width of the trench shall be governed by the equipment used for excavation, with the minimum width being four feet. The depth shall be a least four feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability.

Embankment Core – The core shall be parallel to the centerline of the embankment as shown on the plans. The top width of the cores shall be a minimum of four feet. The height shall extend up to at least the 10 year water elevation or as shown on the plans. The side slopes shall be 1 to 1 or flatter. The core shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability. In addition, the core shall be placed concurrently with the outer shell of the embankment.

Structure Backfill

Backfill adjacent to pipes or structures shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure or pipe.

Structure backfill may be flowable fill meeting the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 313 as modified. The mixture shall have a 100-200 psi, 28 day unconfined compressive strength. The flowable fill shall have a minimum pH of 4.0 and a minimum resistivity of 2,000 ohm-cm. Material shall be placed such that a minimum of 6" (measured perpendicular to the outside of the pipe) of flowable fill shall be under (bedding), over and, on the sided 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 four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material shall completely fill all voids adjacent to the flowable fill zone. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a structure or pipe 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.

Pipe Conduits

All pipes shall be circular in cross section

Corrugated Metal Pipe – all of the following criteria shall apply for corrugated metal pipe:

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

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

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

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

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

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

Helically corrugated pipe shall have either continuously welded seams or have lock seams with internal caulking or a neoprene bead.

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

5. Backfilling shall conform to "Structure Backfill".

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

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

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

2. Bedding – Reinforced concrete pipe conduits shall be laid in a concrete bedding/cradle for their entire length. This bedding/cradle shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 50% of its outside diameter with a minimum thickness of 6 inches. Where a concrete cradle is not needed for structural reasons, flowable fill may be used a described in the "Structure Backfill" section of this standard. Gravel bedding is not permitted.

3. Laying pipe – Bell and spigot pipe shall be places 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. Other details (anti-seep collars, valves, etc.) shall be shown on the drawings.

Plastic Pipe – The following criteria shall apply for plastic pipe:

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

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

Concrete

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

Rock Riprap

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

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

Care of Water during Construction

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

Stabilization

All borrow areas shall be graded to provide proper drainage and left in a 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.

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.

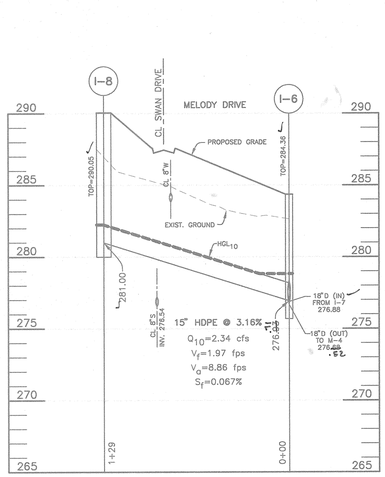
PIPE SCHEDULE

RUN	SIZE	LENGTH	TYPE
E-1 TO I-1	18"	31'	HDPEP
E-2 TO M-1	18"	78.5'	HDPEP
M-1 TO M-2	18"	108'	HDPEP
M-2 TO I-2	18"	48'	HDPEP
I-2 T I-3	15"	29.5'	HDPEP
E-3 TO M-3	18"	34.5'	HDPEP
M-3 TO M-4	18"	105'	HDPEP
M-4 TO I-4	18"	144.5'	HDPEP
I-4 TO I-5	15"	24.5'	HDPEP
M-4 TO I-6	18"	25'	HDPEP
I-6 TO I-7	18"	90'	HDPEP
I-6 TO I-8	15"	129'	HDPEP
I-7 TO STUB	15"	154.5'	HDPEP

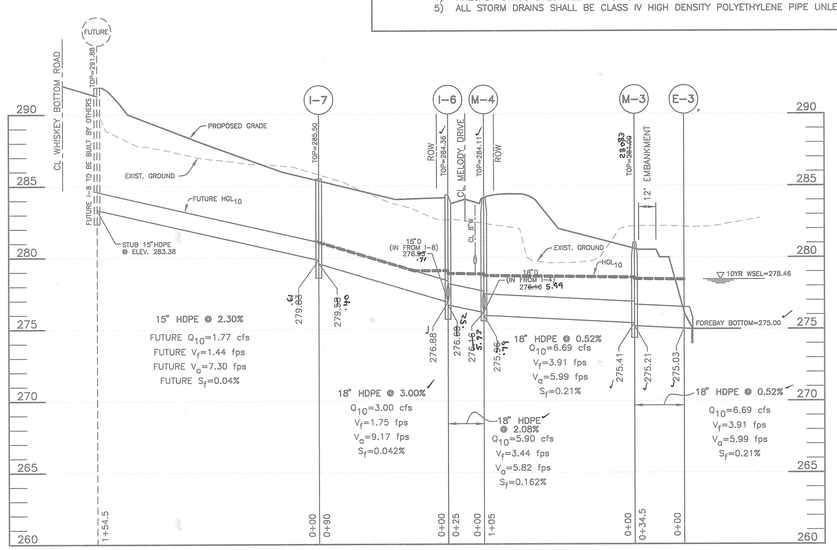
STRUCTURE SCHEDULE

NO.	TYPE	LOCATION	INV. IN	INV. OUT	TOP ELEV.	HO. CO. STD.
E-1	18"CONC. END SECTION	N 530499.20 E 1358214.28	276.04	276.00	–	SD – 5.52
E-2	18"CONC. END SECTION	N 530506.40 E 1358198.31	~~276.04~~ 5.71	~~276.00~~ 275.67	–	SD – 5.52
E-3	18"CONC. END SECTION	N 530528.54 E 1358025.30	275.03	275.00	–	SD – 5.52
I-1	TYPE 'D' INLET	N 530514.86 E 1358241.03	–	276.35	280.66	SD – 4.01 OR 4.40
I-2	A-5	CL STA. 8+94.29 HARMONY LANE OFFSET 12.43' RIGHT	279.04	~~278.79~~ 9.16	284.63	SD – 4.02 OR 4.41
I-3	A-5	CL STA. 8+87.00 HARMONY LANE OFFSET 12.43' LEFT	–	279.34	284.67	SD – 4.02 OR 4.41
I-4	A-5	CL STA. 13+59.33 MELODY DRIVE OFFSET 10.43' LEFT	277.16	276.91.70	281.37	SD – 4.02 OR 4.41
I-5	A-5	CL STA. 13+59.33 MELODY DRIVE OFFSET 10.43' RIGHT	.71	277.29.5	281.37	SD – 4.11 OR 4.39
I-6	A-5	CL STA. 12+13.80 MELODY DRIVE OFFSET 10.43' RIGHT	276.93 (15") 276.88 (18")	276.88.52	284.36	SD – 4.11 OR 4.39
I-7	TYPE 'D' INLET	N 530372.95 E 1357824.34	279.85.61	279.68 NO	285.50	SD – 4.02 OR 4.41
I-8	A-10	CL STA. 10+85.00 MELODY DRIVE OFFSET 10.43' RIGHT	–	281.00	290.05	SD – 4.11 OR 4.39
			~~6.21~~	~~5.88~~		
M-1	4'-0" MANHOLE	CL STA. 1+33.51 CYGNET PLACE OFFSET 6.57' RIGHT	277.03	276.83	284.10	G – 5.12
M-2	4'-0" MANHOLE	CL STA. 0+27.39 CYGNET PLACE OFFSET 0.00'	278.37 8.84	278.11 7.40	286.08 5.24	G – 5.12
M-3	4'-0" MANHOLE	CL STA. 12+14.87 MELODY DRIVE OFFSET 118.25' LEFT	275.41	275.21	284.00 8.80	G – 5.12
M-4	4'-0" MANHOLE	CL STA. 12+14.87 MELODY DRIVE OFFSET 12.95' LEFT	276.46 (18") 5.93 276.16 (18") 5.93	275.88.79	284.11	G – 5.12
S-1	SEE DETAIL	N 530454.20 E 1358112.45	275.00	274.78	280.52	–

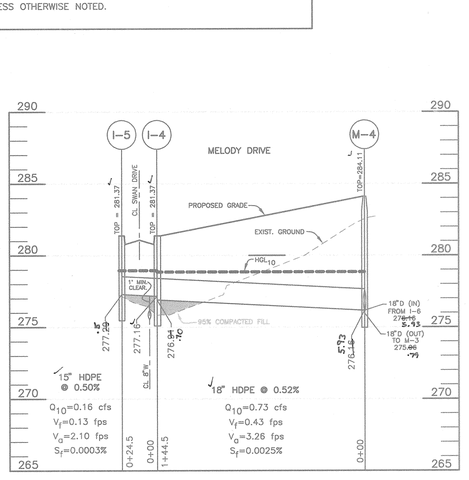
1) STRUCTURE ELEVATION AND LOCATION FOR MANHOLES IS AT THE TOP AND CENTER OF RIM.
2) STRUCTURE ELEVATION AND LOCATION FOR INLETS IS AT THE TOP OF CURB AT MIDPOINT OF THE INLET.
3) STRUCTURE ELEVATION AND LOCATION FOR ENDSECTIONS IS AT THE CONNECTION OF PIPE AND END SECTION.
4) PRECAST STRUCTURES MEETING HS-20 LOADING MAY BE USED.
5) ALL STORM DRAINS SHALL BE CLASS IV HIGH DENSITY POLYETHYLENE PIPE UNLESS OTHERWISE NOTED.



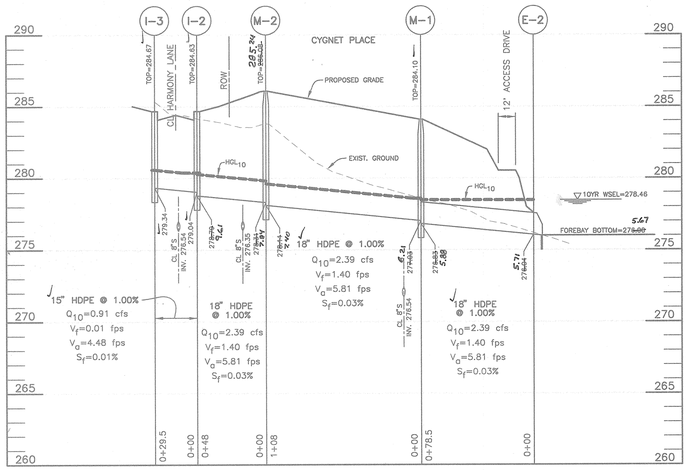
STORM DRAIN PROFILE
SCALE: 1"=50' HORIZ., 1"=5'VERT.



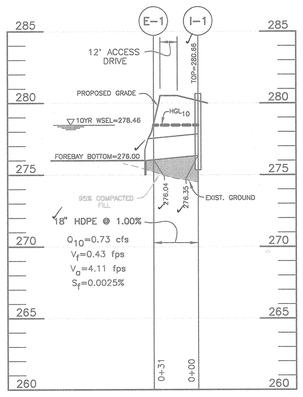
STORM DRAIN PROFILE
SCALE: 1"=50' HORIZ., 1"=5'VERT.



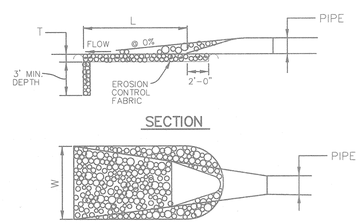
STORM DRAIN PROFILE
SCALE: 1"=50' HORIZ., 1"=5'VERT.



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



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



STRUCTURE	D-50	LENGTH (L)	WIDTH (W)	THICKNESS (T)	SHA CLASS
E-1	9.5"	10'	12'	19"	I
E-2	9.5"	10'	12'	19"	I
E-3	9.5"	10'	12'	19"	I
S-1	9"	12'	14'	19"	I

OUTLET PROTECTION DETAIL
NOT TO SCALE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2-14-02

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2/11/02
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2/11/02

STATE OF MARYLAND — DONALD MASON — REGISTERED PROFESSIONAL ENGINEER
As-Built 1/15/02

NO.	DATE	REVISION

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

STATE OF MARYLAND — DONALD MASON — REGISTERED PROFESSIONAL ENGINEER
1/16/02

OWNER/DEVELOPER:
SDC GROUP, INC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: KINGS ARMS
SECTION 2
LOTS 1-22 AND OPEN SPACE LOTS 23 AND 24

LOCATION: TAX MAP: 47, GRID: 22
PARCELS: 174, 496 AND P/O 732
6th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: STORM DRAIN PROFILES AND STORMWATER MANAGEMENT CONSTRUCTION SPECS.
S-99-23 P-00-14

DATE: FEBRUARY 18, 2001 / JANUARY 2, 2002 — PROJECT NO. 1139

DES: MLV/DBT | DRAFT: DBT | CHECK: DAM | SCALE: AS SHOWN | SHEET 7 OF 13

F-01-130

P:\PROJECTS\1139 Loveless\dwg\7044s07.dwg, 12/31/2001 02:19:09 PM

OPERATION, MAINTENANCE AND INSPECTION NOTE

INSPECTION OF THE POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, 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.

AS-BUILT CERTIFICATION

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

DONALD A. MASON — PE NO. _____ DATE _____

CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ONSITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ONSITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERING STANDARDS. CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

DEVELOPER'S 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 THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT."

James N. Mackey III V.P. — SDC GROUP, INC. — 1/17/02 DATE

ENGINEER'S 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."

Donald Mason — ENGINEER – DONALD A. MASON, P.E. # 21443 — 1/15/02 DATE

APPROVED:

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 — NATURAL RESOURCES CONSERVATION SERVICE — DATE

APPROVED:

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

HOWARD SOIL CONSERVATION DISTRICT — 2/27/02 DATE

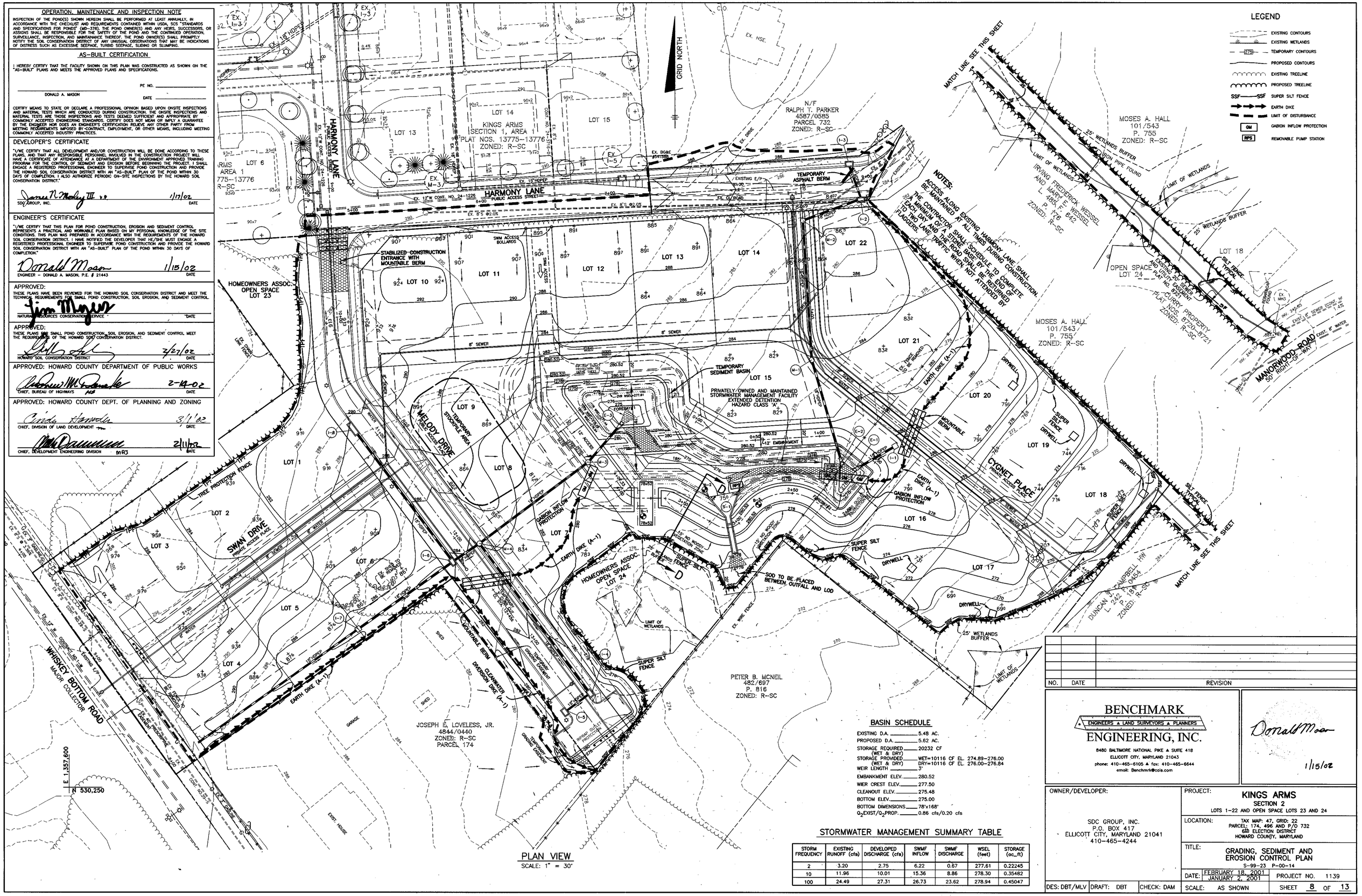
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — 2-14-02 DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

Cinda Hanvolo — CHIEF, DIVISION OF LAND DEVELOPMENT — 3/1/02 DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION — 2/14/02 DATE



BASIN SCHEDULE

EXISTING D.A.	5.48 AC.
PROPOSED D.A.	5.62 AC.
STORAGE REQUIRED (WET & DRY)	20232 CF
STORAGE PROVIDED (WET & DRY)	WET=10116 CF EL. 274.89–276.00 DRY=10116 CF EL. 276.00–276.84
WEIR LENGTH	3'
EMBANKMENT ELEV.	280.52
WIER CREST ELEV.	277.50
CLEANOUT ELEV.	275.48
BOTTOM ELEV.	275.00
BOTTOM DIMENSIONS	78'x168'
Q_2EXIST/Q_2PROP.	0.86 cfs/0.20 cfs

STORMWATER MANAGEMENT SUMMARY TABLE

STORM FREQUENCY	EXISTING RUNOFF (cfs)	DEVELOPED DISCHARGE (cfs)	SWMF INFLOW	SWMF DISCHARGE	WSEL (feet)	STORAGE (ac.-ft)
2	3.20	2.75	6.22	0.67	277.61	0.22245
10	11.96	10.01	15.36	8.86	278.30	0.35482
100	24.49	27.31	26.73	23.62	278.94	0.45047

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
phone: 410-465-6105 ▲ fax: 410-465-6644
email: Benchmrk@cois.com

Donald Mason — 1/15/02

OWNER/DEVELOPER:

SDC GROUP, INC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: **KINGS ARMS**
SECTION 2
LOTS 1-22 AND OPEN SPACE LOTS 23 AND 24

LOCATION: TAX MAP: 47, GRID: 22
PARCEL: 174, 496 AND P/O 732
6th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

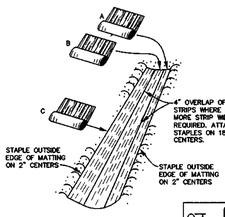
TITLE: **GRADING, SEDIMENT AND EROSION CONTROL PLAN**
S-99-23 P-00-14

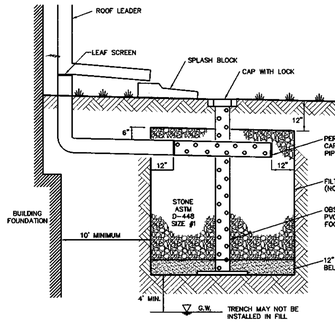
DATE: FEBRUARY 18, 2001 / JANUARY 2, 2001 — PROJECT NO. 1139

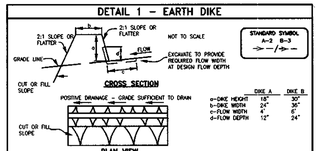
DES: DBT/MLV | DRAFT: DBT | CHECK: DAM | SCALE: AS SHOWN | SHEET 8 OF 13

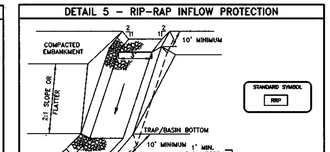
F-01-130

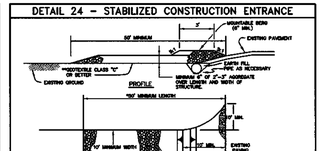
P:\PROJECTS\1139 Loveless\dwg\7026s08.dwg, 12/31/2001 01:15:16 PM

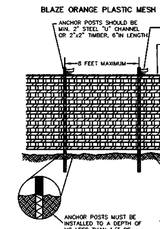


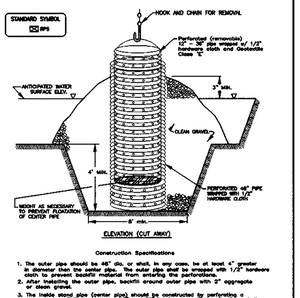


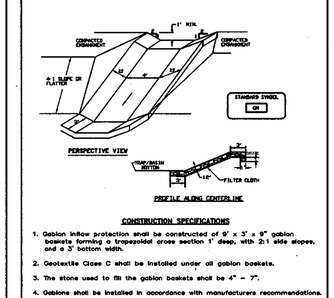












SEDIMENT CONTROL NOTES

1. A MINIMUM OF 24 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION, (313-1850).
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 SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL", REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, B) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
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) SOD (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 OF SITE	5.46	ACRES
AREA DISTURBED	5.24	ACRES
AREA TO BE ROOFED OR PAVED	0.63	ACRES
AREA TO BE VEGETATIVELY STABILIZED	4.61	ACRES
TOTAL CUT	1,631	CY
TOTAL FILL	19,489	CY
OFFSITE BORROW LOCATION	SITE WITH APPROVED SED. CONTROL PLAN	

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 CONTROL 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 CAN BE BACK FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.

TEMPORARY SEEDBED PREPARATIONS

APPLY TO GRADED OR CLEARED AREAS LIKELY TO BE REDISTURBED WHERE A SHORT-TERM VEGETATIVE COVER IS NEEDED.

SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

SOIL AMENDMENTS: APPLY 600 LBS PER ACRE 10-10-10 FERTILIZER (14 LBS/1000 SQ FT).

SEEDING: FOR PERIOD MARCH 1 THROUGH APRIL 30 AND FROM AUGUST 15 THROUGH NOVEMBER 15, SEED WITH 2-1/2 BUSHELS PER ACRE OF ANNUAL RYE (3.2 LBS/1000 SQ FT). FOR THE PERIOD MAY 1 THROUGH AUGUST 14, SEED WITH 3 LBS PER ACRE OF WEEPING LOVEGRASS (.07 LBS/1000 SQ FT). FOR THE PERIOD NOVEMBER 16 THROUGH FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.

MULCHING: APPLY 1-1/2 TO 2 TONS PER ACRE (70 TO 90 LBS/1000 SQ FT) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ FT) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES, 8 FT. OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL/1000 SQ FT) FOR ANCHORING.

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

PERMANENT SEEDBED PREPARATIONS

SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ON OF THE FOLLOWING SCHEDULES:

1. PREFERRED – APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQ FT) AND 600 LBS PER ACRE 10-10-10 FERTILIZER (14 LBS/1000 SQ FT) BEFORE-SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 LBS PER ACRE 30-0-0- UREAFORM FERTILIZER (9 LBS/1000 SQ FT).
2. ACCEPTABLE – APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQ FT) AND 1000 LBS PER ACRE 10-10-10 FERTILIZER (23 LBS/1000 SQ FT) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL.

SEEDING: FOR THE PERIODS MARCH 1 THROUGH APRIL 30 AND AUGUST 1 THROUGH OCTOBER 15, SEED WITH 60 LBS PER ACRE (1.4 LBS/1000 SQ FT) OF KENTUCKY 31 TALL FESCUE PER ACRE AND 2 LBS PER ACRE (.05 LBS/1000 SQ FT) OF WEEPING LOVEGRASS. DURING THE PERIOD OF OCTOBER 16 THROUGH FEBRUARY 28, PROTECT SITE BY: OPTION (1) 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING. OPTION (2) USE SOD. OPTION (3) SEED WITH 60 LBS PER ACRE OF KENTUCKY 31 TALL FESCUE AND MULCH WITH 2 TONS PER ACRE OF WELL ANCHORED STRAW.

MULCHING: APPLY 1-1/2 TO 2 TONS PER ACRE (70 TO 90 LBS/1000 SQ FT) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ FT) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL/1000 SQ FT) FOR ANCHORING.

MAINTENANCE: INSPECT ALL SEEDED AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.

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 IS 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 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.

SOIL STABILIZATION MATTING

NOT TO SCALE

TOPSOIL SPECIFICATIONS

I. Topsoil salvaged from the existing site may be used provided that it meets that 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 approval authority. Regardless, topsoil shall not be a mixture of contrasting texture subsoils and shall contain less than 5% by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1-1/2" in diameter.
- ii. Topsoil must be free of plants or plant parts such as Bermuda grass, quack grass, Johnson grass, 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.

III. For sites having disturbed areas under 5 acres:

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

IV. For sites having disturbed areas over 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 or 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 distributed 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 the 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.

HILLIS-CARNES ENGINEERING ASSOCIATES, INC. RECOMMENDATIONS

Embankment and Cut-off trench Construction

The site should be stripped of topsoil and any other unsuitable materials from the embankment or structure area in accordance with Soil Conservation Guidelines. After stripping operations have been completed, the exposed subgrade materials should be proofrolled with a loaded dumptruck or similar equipment in the presence of a geotechnical engineer or his/her representative. For areas that are not accessible to a dump truck, the exposed materials should be observed and tested by a geotechnical engineer or his/her representative utilizing a Dynamic Cone Penetrometer. Any excessively soft or loose materials identified by proofrolling or penetrometer testing should be excavated to suitable firm soil, and then grades re-established by backfilling with suitable soil.

A representative of the geotechnical Engineer should be present to monitor placement and compaction of fill for each embankment and cut-off trench. In accordance with Maryland Soil Conservation Specification 378, soils considered suitable for the center of embankment and cut-off trench shall conform to Unified Soil Classification GC, SC, CH, or CL. Per SCS 378, consideration may be given to the use of other materials in the embankment if design and construction are supervised by a geotechnical engineer.

Additionally, the following procedures should be utilized to construct the proposed embankments:

1. Slope construction should commence at the toes of the proposed slopes and continue upwards as additional fill is placed. The engineered fill placed for slope construction should be benched into the natural slopes in the abutment areas to provide good contact and to prevent the presence of weak zones.
2. Typically during slope construction, compaction equipment has difficulty compacting soils along the shoulder. It is therefore important that the bank be overfilled during slope construction and then cut back to the required geometry.
3. After construction, the slopes should be promptly vegetated to prevent erosion. Also, to prevent erosion from occurring prior to sprouting of the vegetation, the slopes should be protected with straw or an erosion control geotextile.
4. The embankment construction should be done under the supervision of an experienced soil inspector or the Geotechnical Engineer. Sufficient testing during fill placement should be done to verify adequate compaction.

SEQUENCE OF CONSTRUCTION

NOTIFY SEDIMENT CONTROL DIVISION 48 HOURS PRIOR TO START OF CONSTRUCTION

DAY 1	1.	OBTAIN GRADING PERMIT. THE WMA WILL ISSUE A LOA FOR THE PROPOSED WETLANDS DISTURBANCE ONCE FINAL PLANS ARE SIGNED. TRACKING NUMBER 01-NT-0435/200166476.
DAY 2-7	2.	CLEAR AND GRUB AS REQUIRED TO INSTALL SEDIMENT CONTROL DEVICES ONLY AND INSTALL THE DEVICES.
DAY 8-20	3.	CONSTRUCT STORMWATER MANAGEMENT FACILITY/SEDIMENT TRAP AND MODIFY RELEASE STRUCTURE WEIR FOR SEDIMENT CONTROL PURPOSES. OBTAIN PERMISSION FROM SEDIMENT CONTROL INSPECTOR TO PROCEED WITH CONSTRUCTION.
DAY 21-27	4.	CLEAR AND GRUB REMAINDER OF SITE AND ROUGH GRADE.
DAY 28-35	5.	CONSTRUCT WATER AND SEWER MAINS AND OTHER UTILITIES.
DAY 36-42	6.	INSTALL CURB AND GUTTER AND PAVING.
DAY 43-49	7.	FINE GRADE REMAINING AREAS AND STABILIZE.
DAY 50-55	8.	WITH THE APPROVAL OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR CONVERT SWMF/SEDIMENT TRAP TO PERMANENT USE, REMOVE REMAINING SEDIMENT CONTROL DEVICES AND STABILIZE ALL REMAINING DISTURBED AREAS WITH PERMANENT STABILIZATION.

DRY WELL DETAIL

NOT TO SCALE

LOT NUMBER	DEPTH (FT.)	'B' LENGTH (FT.)	'A' WIDTH (FT.)
16	5.5	5.5	5.5
17	5.5	5.5	5.5
18	5.5	5.5	5.5
19	5.5	5.5	5.5
20	5.5	5.5	5.5

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

Page 1 of 1

PROJECT NAME: Loveless Property
LOCATION: Howard County, Maryland
Boring Number: B-1
Job Number: 99515A

SAMPLER
Datum:
Surf. Elev.: 279.34
Date Started: 02-04-00
Hammer Wt.: Lbs.
Hammer Drop: Inches
Pipe Size: Inches OD
Hole Diameter:
Rock Core Dia.:
Boring Method: Backhoe
Foreman: Rob Yonkers
Inspector:
Complete: 02-04-00

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, SIZE, PROPORTION	STRA. DEPTH	DEPTH SCALE	SAMPLE CON	BLOWS 6"	NO.	REC.	BORING & SAMPLING NOTES
	SURFACE		0.0					
	Brown/gray, moist, silty sand with organics rootmatter (SM)	1.0						12" Topsoil and rootmat
	Orange-brown/gray, very moist to wet, silty sand trace gravel and clay seams (SM)		5.0					Perched water at 5.0' Groundwater encountered at 10.0'
	Brown/tan, wet, sand, little silt and gravel (SM-SP)	9.0	10.0					
	Bottom of Hole at 11.0'	11.0	15.0 20.0					Backfilled at completion

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE NOTED. PT-PRESSED SHELBY TUBE, CA-CONTINUOUS FLIGHT AUGER, RC-ROCK CORE
SAMPLE CONDITIONS: D-DISINTEGRATED, I-INTACT, U-UNDISTURBED, L-LOST
GROUND WATER DEPTH: AT COMPLETION 10.0 FT.; AFTER FT.; AFTER FT.
BORING METHOD: HSA-HOLLOW STEM AUGERS, CFA-CONT. FLIGHT AUGERS, DC-DRIVING CASING, MD-MUD DRILLING

STANDARD PENETRATION TEST – DRIVING 2" OD SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS

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

Boring Number: B-2

STANDARD PENETRATION TEST – DRIVING 2" OD SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS

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

Boring Number: B-3

STANDARD PENETRATION TEST – DRIVING 2" OD SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS

DETAIL 1 – EARTH DIKE

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

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	PAGE A – 1 – 6	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 5 – RIP-RAP INFLOW PROTECTION

CONSTRUCTION SPECIFICATIONS

1. All lined inflow channels shall be 1' in depth, have a trapezoidal cross section with 2:1 or flatter side slopes and 3' (min.) bottom width. The channel shall be lined with 4" to 12" rip-rap to a depth of 18".
2. Filter cloth shall be installed under all rip-rap. Filter cloth shall be Geotextile Class C.
3. Entrance and exit sections shall be installed as shown on the detail section.
4. Rip-Rap used for the lining may be recycled for permanent outlet protection if the basin is to be converted to a stormwater management facility.
5. Gabion Inflow Protection may be used in lieu of Rip-Rap Inflow Protection.
6. Rip-Rap should blend into existing ground.
7. Rip-Rap Inflow Protection shall be used where the slope is between 4:1 and 10:1, for slopes flatter than 10:1 use Earth Dike or Temporary Swale lining criteria.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE B – 6 – 2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 24 – STABILIZED CONSTRUCTION ENTRANCE

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 (filter cloth) shall be placed over the existing ground prior to placing stone. **The plan approval authority may not require single family residence 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 mounted 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	PAGE F – 17 – 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 20A – REMOVABLE PUMPING STATION

Construction Specifications

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

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

DETAIL 6 – GABION INFLOW PROTECTION

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	PAGE B – 7 – 2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

BASIN DRAWDOWN SCHEMATIC
VERTICAL DRAW-DOWN DEVICE

Construction Specifications

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

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

DETAIL 22 – SILT FENCE

CONSTRUCTION NOTES FOR FABRICATED SILT FENCE

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

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

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

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE E – 15 – 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 33 – SUPER SILT FENCE

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

SUPER SILT FENCE

CONSTRUCTION SPECIFICATIONS

1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.
2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.
3. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.
4. Filter cloth shall be embedded a minimum of 8" into the ground.
5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.
6. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height
7. Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for Geotextile Class F:

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

SUPER SILT FENCE DESIGN CRITERIA

Slope	Slope Steepness	Slope Length (maximum)	Silt Fence Length (maximum)
0 – 10%	0 – 10:1	Unlimited	Unlimited
10 – 20%	10:1 – 5:1	200 feet	1,500 feet
20 – 33%	5:1 – 3:1	100 feet	1,000 feet
33 – 50%	3:1 – 2:1	100 feet	500 feet
50% +	2:1 +	50 feet	250 feet

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE E – 26 – 3A	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

NOTES:

1. FOREST PROTECTION DEVICE ONLY.
2. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
3. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICES.
4. AVOID ROOT DAMAGE WHEN PLACING ANCHOR POSTS.
5. DEVICE SHOULD BE PROPERLY MAINTAINED DURING CONSTRUCTION
6. PROTECTIVE SIGNAGE IS ALSO REQUIRED.

TREE PROTECTION FENCE

ENGINEER'S CERTIFICATE

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

Donald Mason — 1/15/02
ENGINEER — DATE

DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE IN ACCORDANCE WITH THIS PLAN OF DEVELOPMENT AND SEDIMENT AND EROSION CONTROL AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION OF THIS PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I/WE ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICTOR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY."

James R. Moxley III V.P. — 1/17/02
SDC GROUP, INC. — DATE

APPROVED:
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
NATURAL RESOURCES CONSERVATION SERVICE — DATE

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

2/27/02
HOWARD SOIL CONSERVATION DISTRICT — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

2-14-02
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

Cindy Hamilton — 3/1/02
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

2/11/02
CHIEF, DEVELOPMENT ENGINEERING DIVISION — MAJ — DATE

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
phone: 410-465-6105 ▲ fax: 410-465-6644
email: Benchmrk@cois.com

Donald Mason
1/15/02

OWNER/DEVELOPER:
SDC GROUP, INC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: KINGS ARMS
SECTION 2
LOTS 1-22 AND OPEN SPACE LOTS 23 AND 24

LOCATION: TAX MAP: 47, GRID: 22
PARCELS: 174, 496 AND P/O 732
6th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

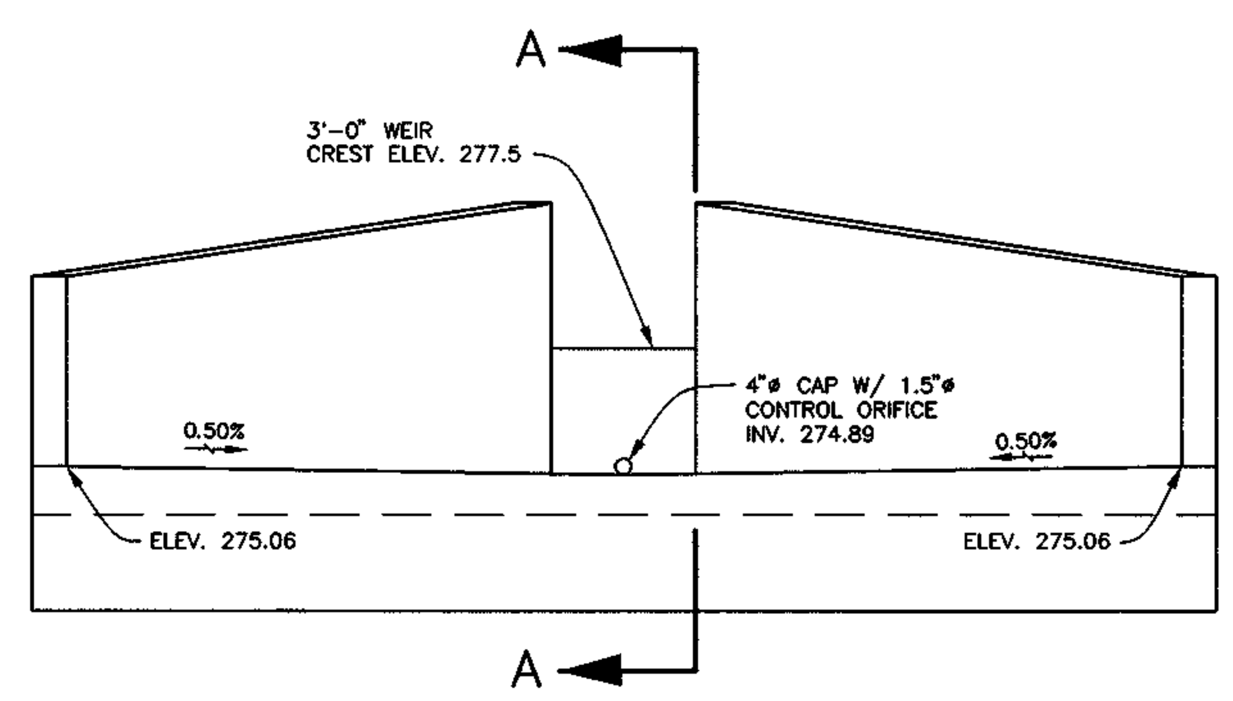
TITLE: SEDIMENT CONTROL NOTES AND DETAILS
S-99-23 P-00-14

DATE: FEBRUARY 18, 2001
JANUARY 2, 2002
PROJECT NO. 1139

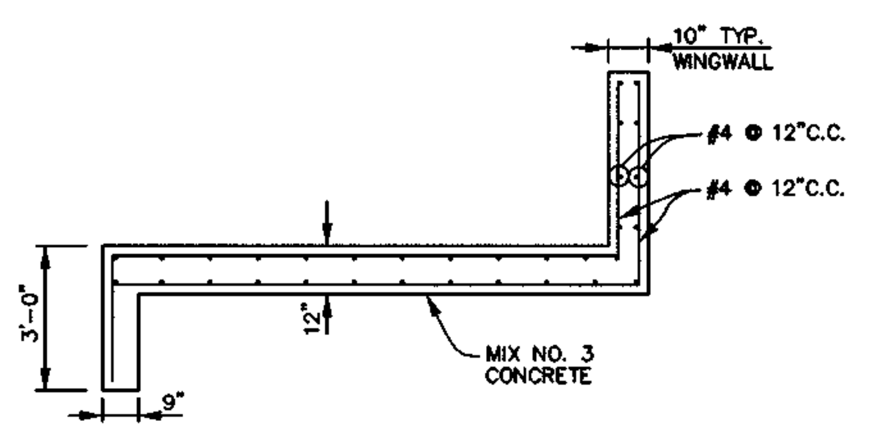
DES: DBT/MLV | DRAFT: DBT | CHECK: DAM | SCALE: AS SHOWN | SHEET 9 OF 13

P:\PROJECTS\1139 Loveless\dwg\7023s09.dwg, 12/31/2001 02:27:21 PM

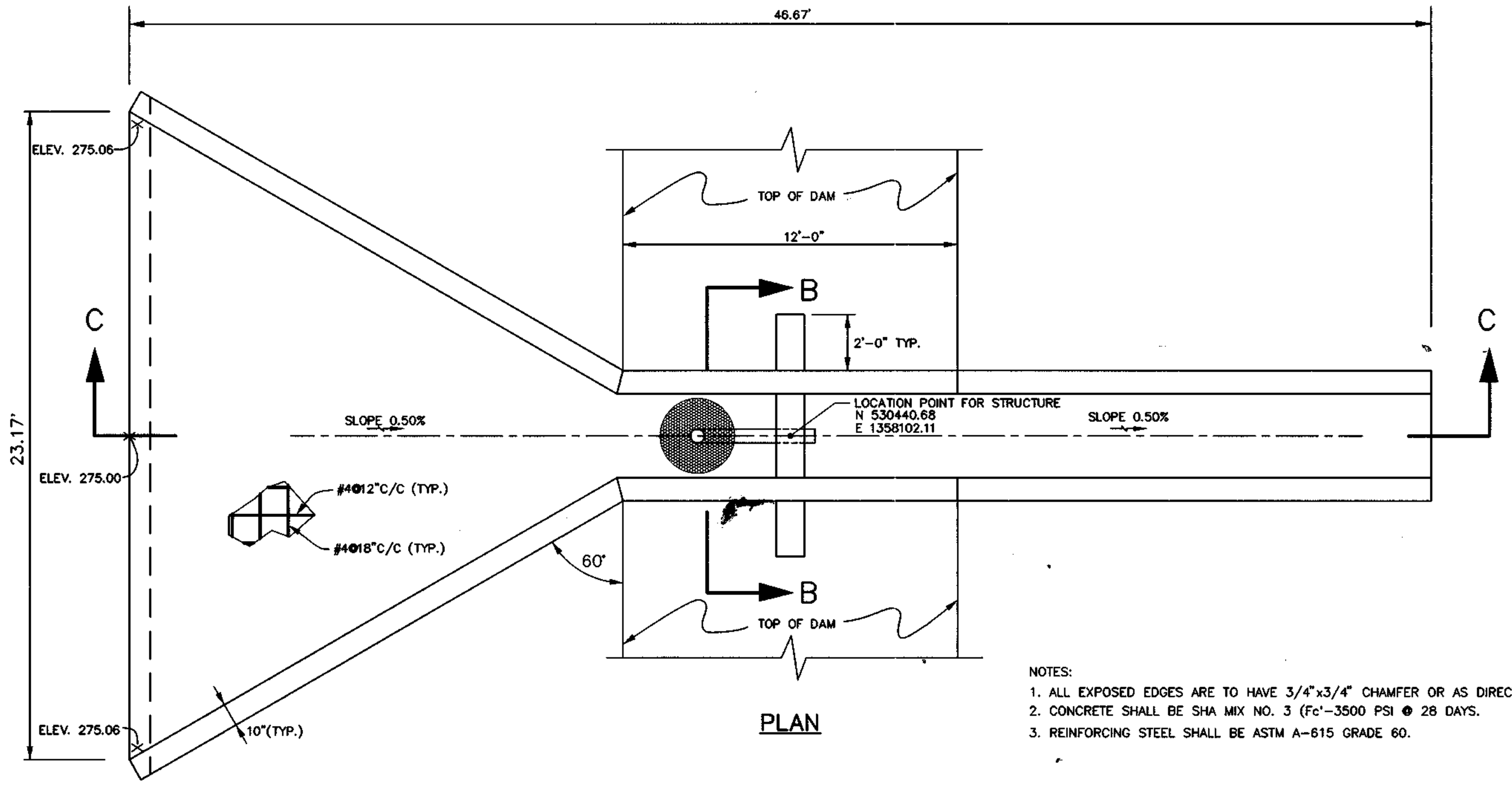
F-01-130



FRONT ELEVATION



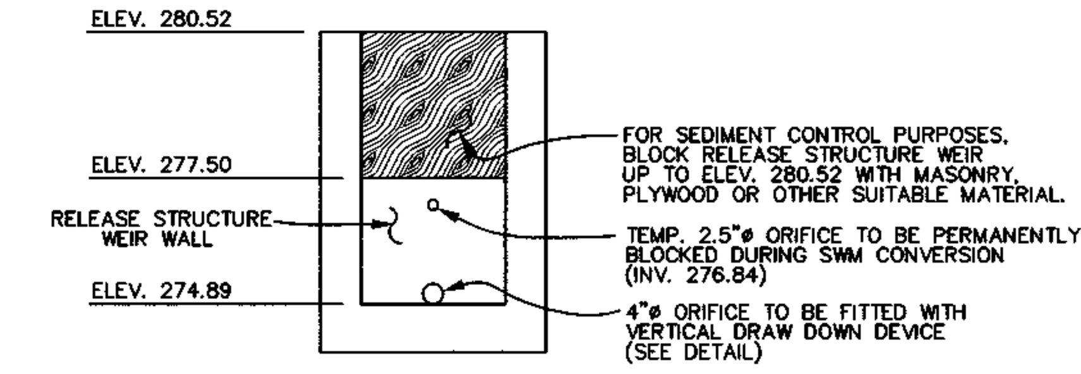
SECTION A–A



PLAN

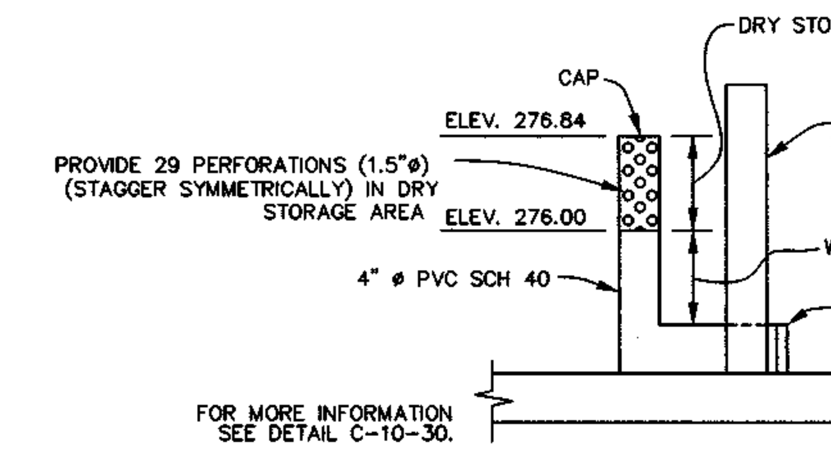
NOTES:

1. ALL EXPOSED EDGES ARE TO HAVE 3/4"x3/4" CHAMFER OR AS DIRECTED.
2. CONCRETE SHALL BE SHA MIX NO. 3 (Fc'-3500 PSI @ 28 DAYS.
3. REINFORCING STEEL SHALL BE ASTM A-615 GRADE 60.



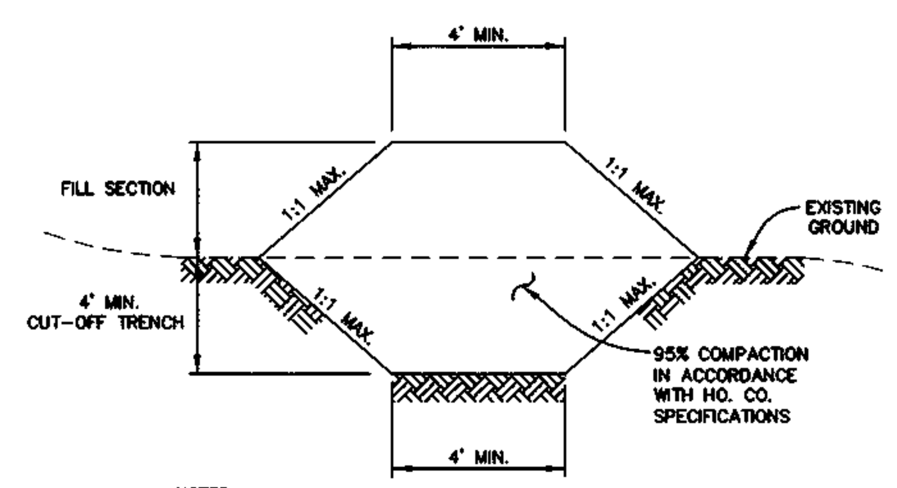
RELEASE STRUCTURE WEIR BLOCKING DETAIL FOR TEMPORARY STORMWATER MANAGEMENT

SCALE: 1" = 4'



TEMPORARY DEWATERING DEVICE DETAIL

NOT TO SCALE

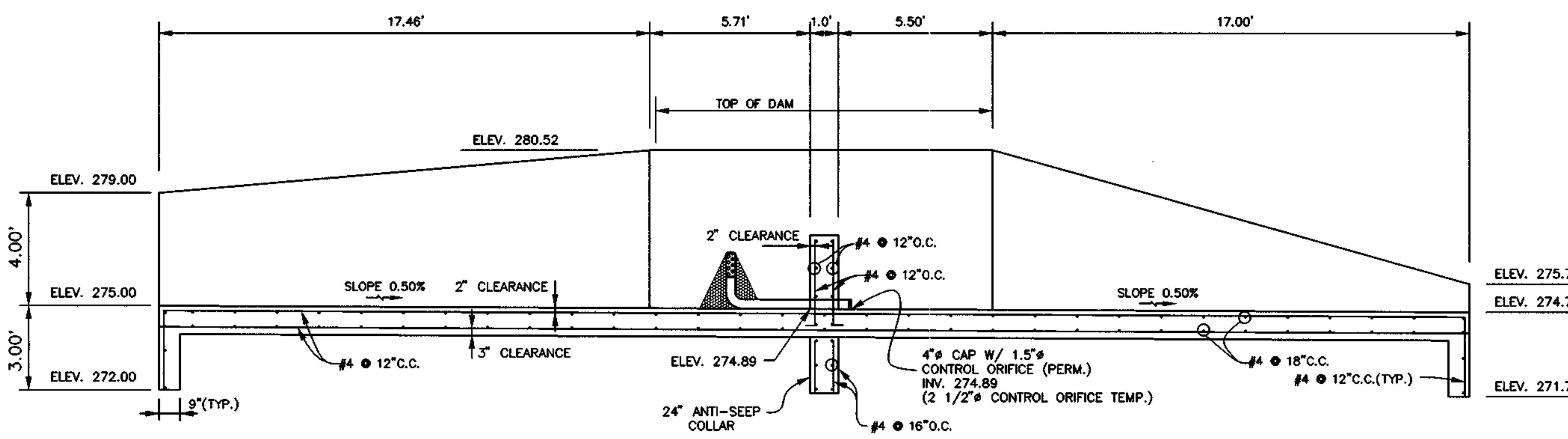


NOTES:

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

CORE TRENCH SECTION

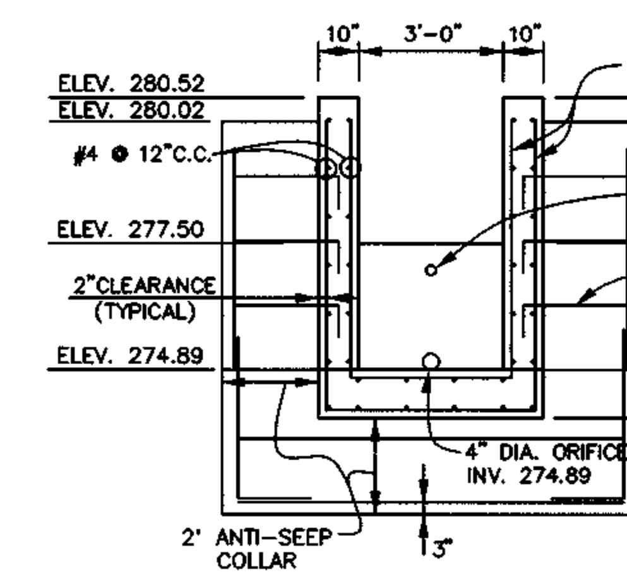
NOT TO SCALE



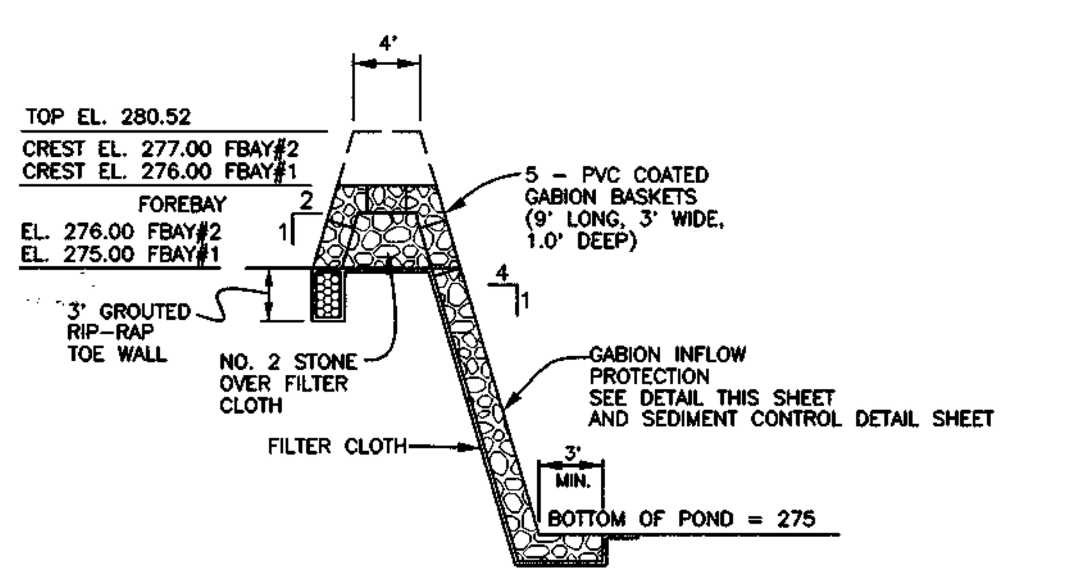
SECTION C–C

STORMWATER MANAGEMENT RELEASE STRUCTURE

SCALE: 1" = 4'

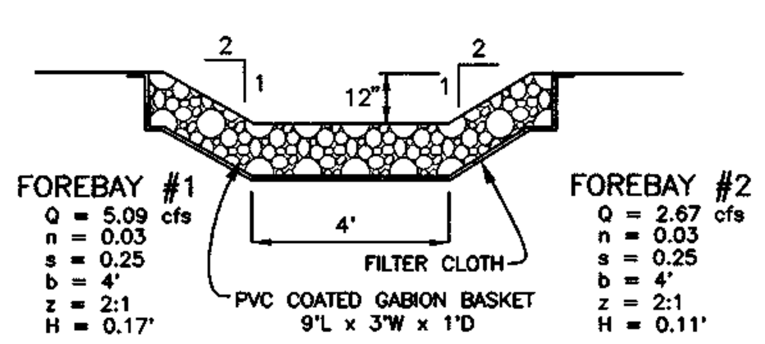


SECTION B–B



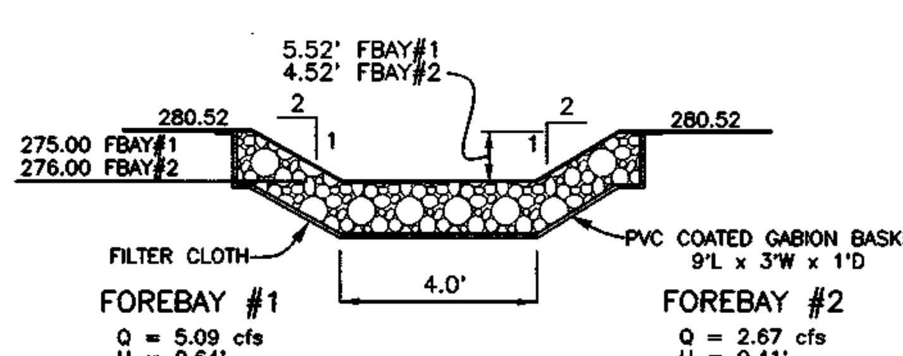
TYPICAL SECTION OF GABION WEIR AT FOREBAY

NOT TO SCALE



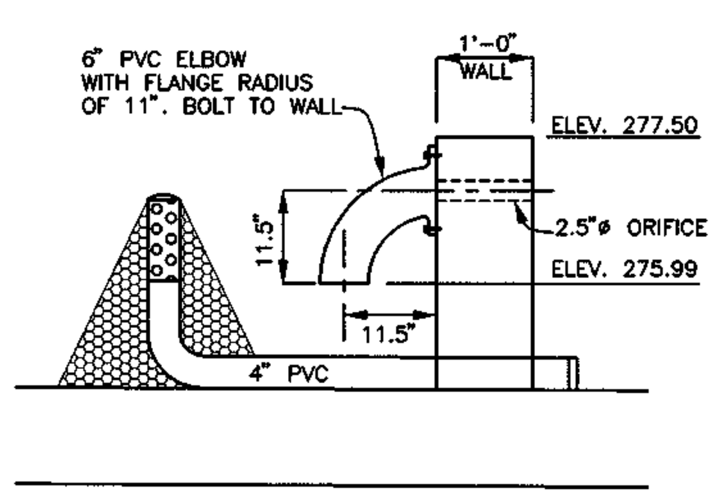
GABION INFLOW PROTECTION CHANNEL AT FOREBAY

NOT TO SCALE



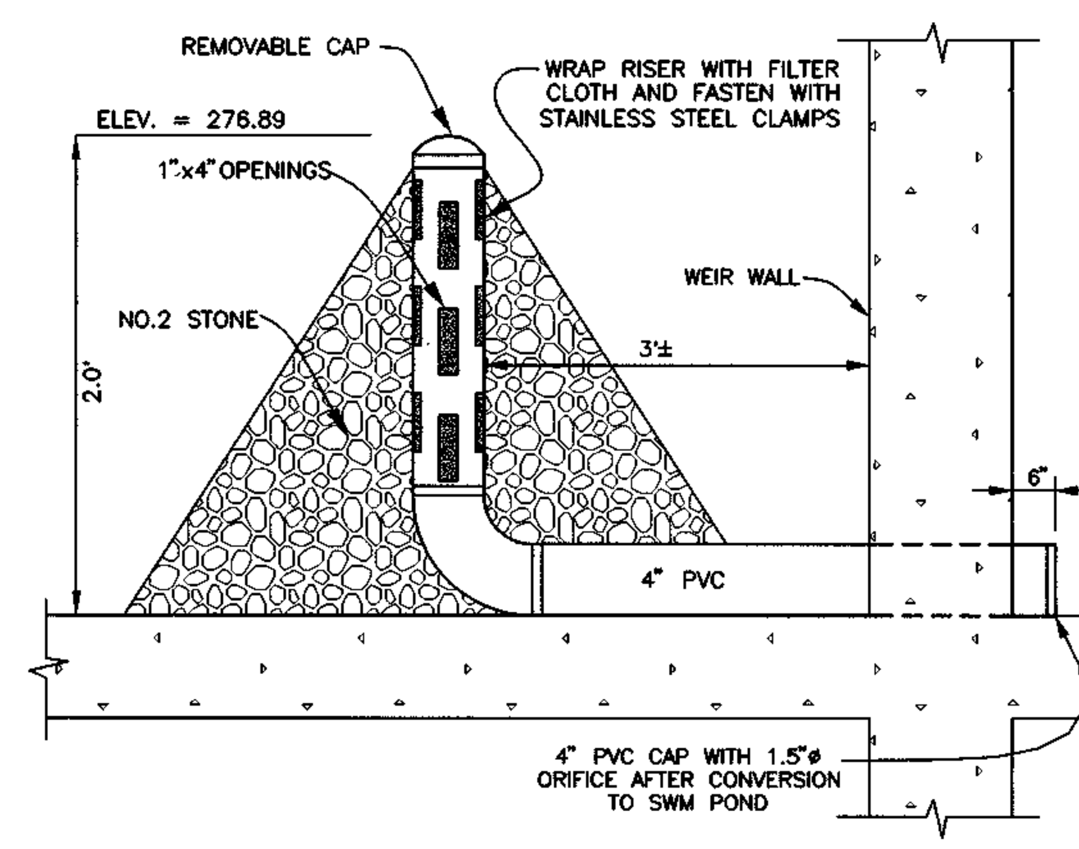
PROFILE THROUGH FOREBAY WEIR

NOT TO SCALE



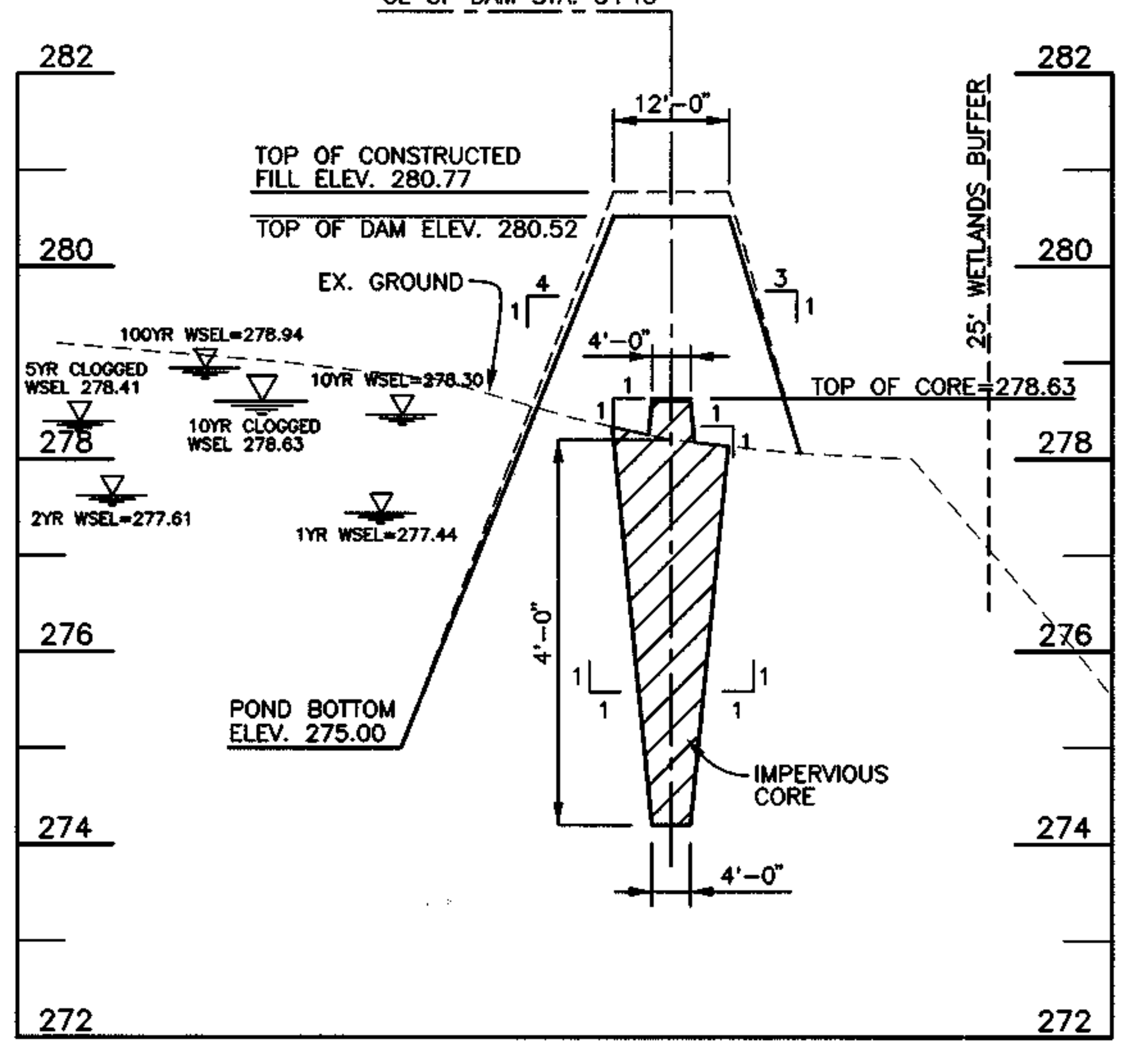
TRASH RACK (INVERTED ELBOW) FOR 2.5" ORIFICE

SCALE: 1" = 2'



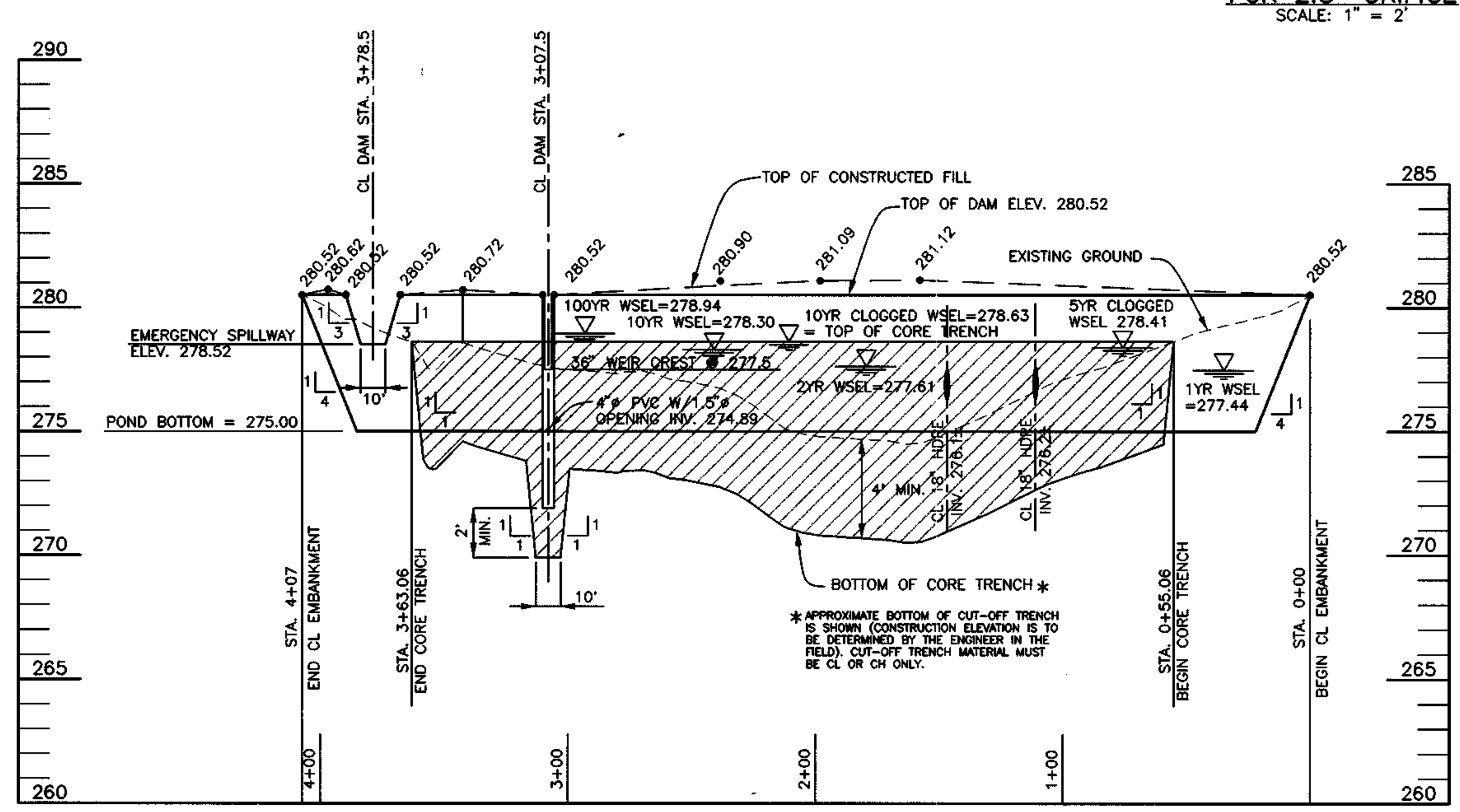
PERMANENT DEWATERING DEVICE DETAIL

NOT TO SCALE



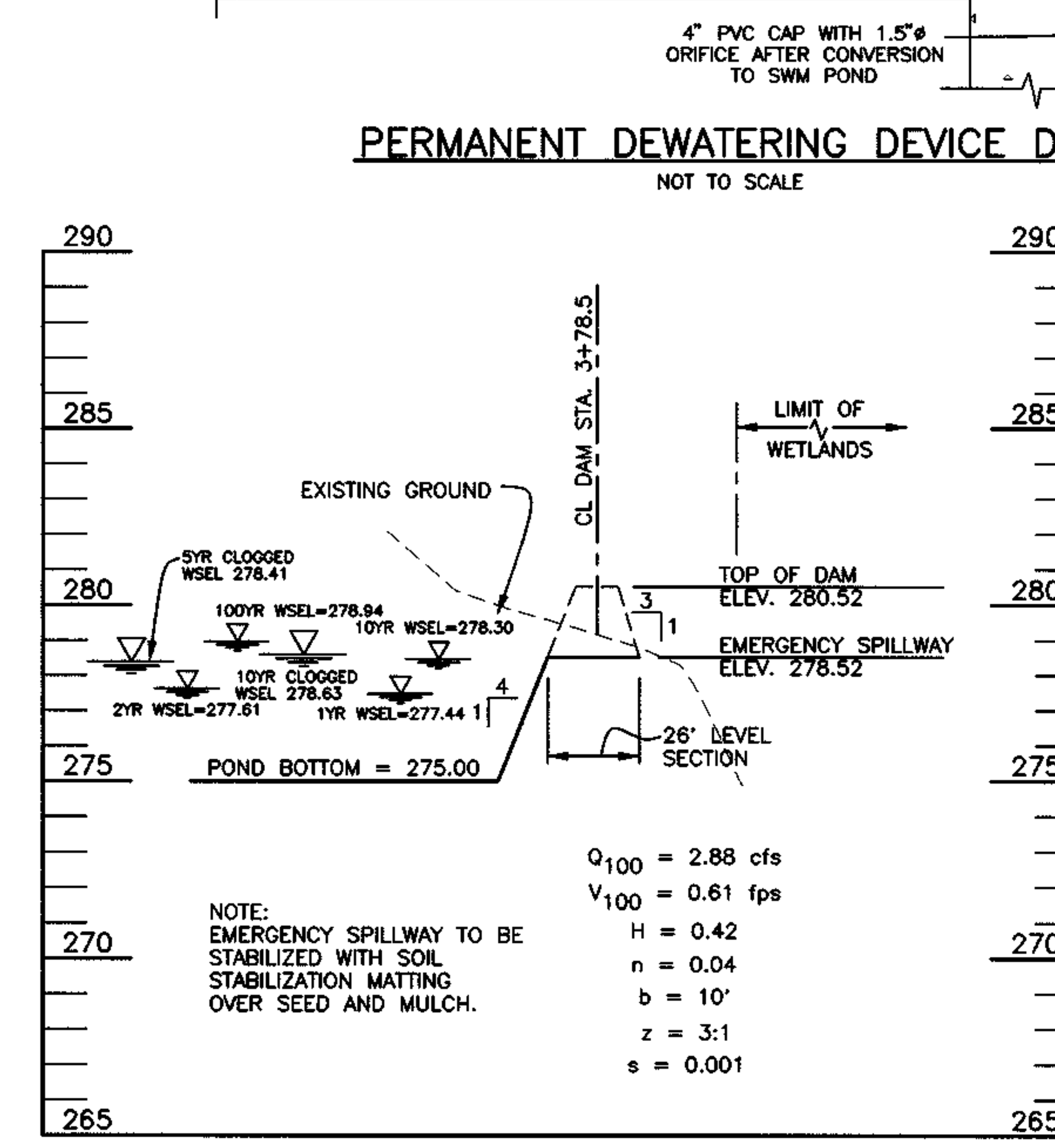
SECTION D–D

SCALE: 1"=20' HORIZ., 1"=2' VERT.



PROFILE ALONG CL EMBANKMENT

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



PROFILE THRU EMERGENCY SPILLWAY

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

OPERATION, MAINTENANCE AND INSPECTION NOTE

INSPECTION OF THE POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, 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 MAINTAINANCE 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.

AS–BUILT CERTIFICATION

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

DONALD A. MASON — PE NO. ______ DATE ______

CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ONSITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ONSITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERING STANDARDS. CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

DEVELOPER'S 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 THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS–BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON–SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT."

James R. Moxley III V.P. — 1/17/02

SDC GROUP, INC. — DATE

ENGINEER'S 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."

Donald Mason — 1/15/02

ENGINEER – DONALD A. MASON, P.E. # 21443 — DATE

APPROVED:

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.

2/27/02

NATURAL RESOURCES CONSERVATION SERVICE — DATE

APPROVED:

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

2/27/02

HOWARD SOIL CONSERVATION DISTRICT — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

2-14-02

CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

3/1/02

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

2/11/02

CHIEF, DEVELOPMENT ENGINEERING DIVISION MAJ — DATE

OPERATION AND MAINTENANCE SCHEDULE OF PRIVATELY OWNED AND MAINTAINED STORMWATER MANAGEMENT FACILITY

ROUTINE MAINTENANCE

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

NON–ROUTINE MAINTENANCE

1. STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE RISER, AND THE PIPES SHALL BE REPAIRED UPON THE DETECTION OF ANY DAMAGE. THE COMPONENTS SHOULD BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
2. SEDIMENT SHOULD BE REMOVED FROM THE POND NO LATER THAN WHEN THE CAPACITY OF THE POND IS HALF FULL OF SEDIMENT, WHEN DEEMED NECESSARY FOR AESTHETIC REASONS, OR WHEN DEEMED NECESSARY BY HOWARD COUNTY'S DEPARTMENT OF PUBLIC WORKS.

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
phone: 410-465-6105 ▲ fax: 410-465-6644
email: Benchmrk@cais.com

Donald Mason 1/15/02

OWNER/DEVELOPER:

SDC GROUP, INC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

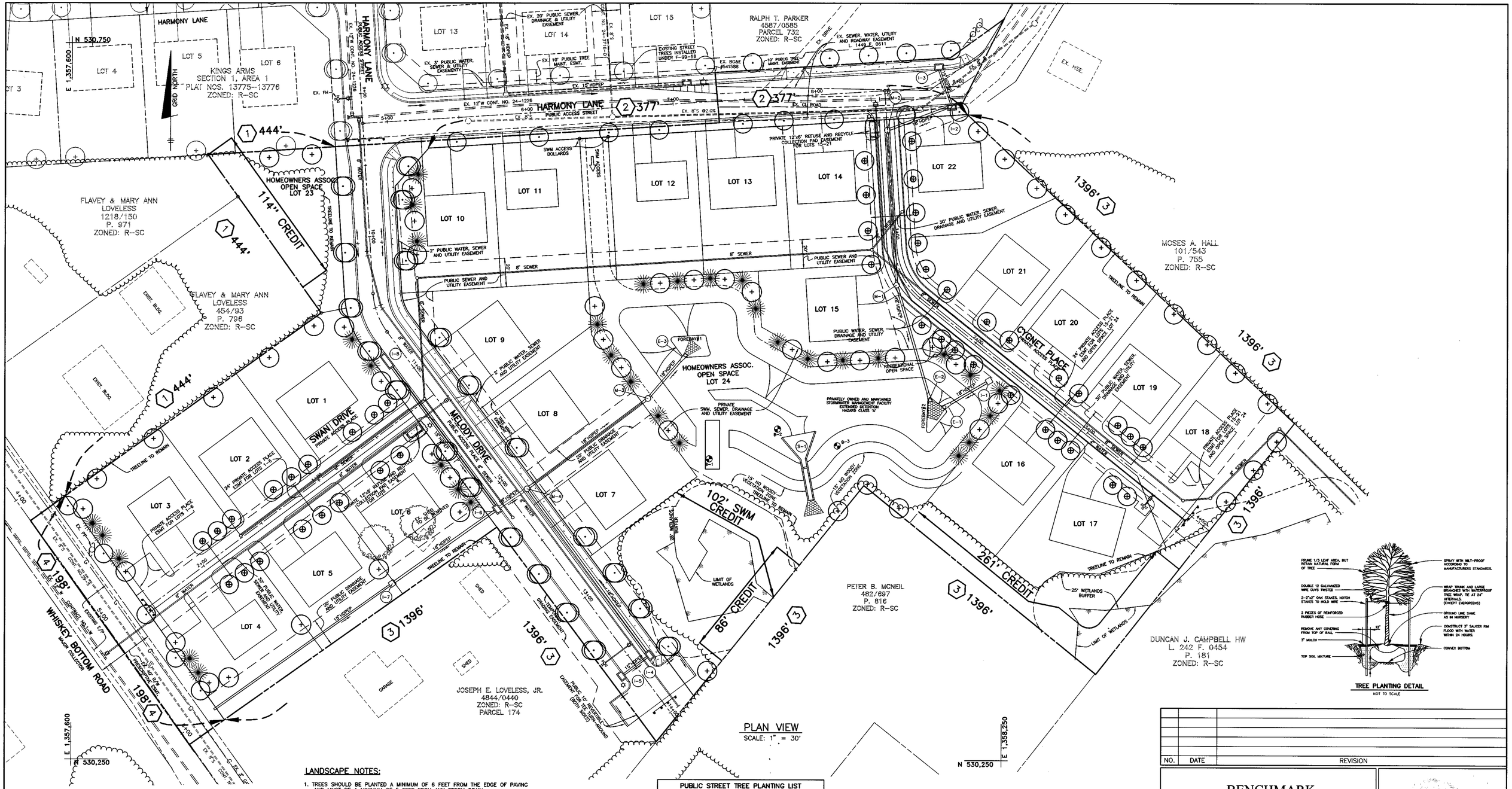
PROJECT: KINGS ARMS
SECTION 2
LOTS 1-22 AND OPEN SPACE LOTS 23 AND 24

LOCATION: TAX MAP: 47, GRID: 22
PARCELS: 174, 496 AND P/O 732
6th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: STORMWATER MANAGEMENT DETAILS
S-99-23 P-00-14

DATE: FEBRUARY 18, 2001 / JANUARY 2, 2002	PROJECT NO. 1139
DESIGN: MLV, DRAFT: DBT, CHECK: DAM, SCALE: AS SHOWN	SHEET 10 OF 13

F-01-130



PLAN VIEW
SCALE: 1" = 30'

TREE PLANTING DETAIL
NOT TO SCALE

LANDSCAPE NOTES:

1. TREES SHOULD BE PLANTED A MINIMUM OF 6 FEET FROM THE EDGE OF PAVING AND MUST BE A MINIMUM OF 5 FEET FROM ANY STORM DRAIN.
2. TREES MUST BE PLANTED A MINIMUM OF 5 FEET FROM AN OPEN SPACE ACCESS STRIP AND 10 FEET FROM A DRIVEWAY.
3. SEE TREE PLANTING DETAIL – THIS SHEET.
4. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL.
5. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DPW DEVELOPER'S AGREEMENT IN THE AMOUNT OF $35,850.00.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

2-14-02
CHIEF, BUREAU OF HIGHWAYS MS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

Cindy Hamilton 3/1/02
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

2/11/02
CHIEF, DEVELOPMENT ENGINEERING DIVISION MAJ — DATE

SCHEDULE D
SWM AREA LANDSCAPING

	FACILITY 1
LINEAR FEET OF PERIMETER	863
LINEAR FEET OF EXISTING WOODS LINE	102
LINEAR FEET OF REQUIRED PLANTING	761
BUFFER TYPE	"B"
NUMBER OF TREES REQUIRED SHADE TREES EVERGREEN TREES	 16 20
CREDIT FOR EXISTING VEGETATION (NO, YES AND %)	YES, 11.8%
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	NO
NUMBER OF TREES PROVIDED SHADE TREES EVERGREEN TREES OTHER TREES (2:1 SUBSTITUTE)	 16 20

LANDSCAPE LEGEND

SYMBOL	DESCRIPTION
⊕ ⊙ ⊙	STREET TREES TO BE PROVIDED BY THE DEVELOPER TO BE INCORPORATED ON FINAL PLANS.
⊕	SHADE TREES ALONG PERIMETER AND STORMWATER MANAGEMENT TO BE PROVIDED BY THE DEVELOPER AND INCORPORATED ON FINAL PLANS.
✳	EVERGREEN TREES ALONG PERIMETER AND STORMWATER MANAGEMENT AREA TO BE PROVIDED BY THE DEVELOPER AND INCORPORATED ON FINAL PLANS.
◡	EVERGREEN SHRUBS TO BE PLANTED ALONGSIDE TRASH PAD LOCATIONS TO BE PROVIDED BY THE DEVELOPER AND INCORPORATED ON FINAL PLANS.

PUBLIC STREET TREE PLANTING LIST

SYMBOL	QUANTITY	NAME	REMARKS
◎	21	ACER RUBRA (Red Maple)	2 1/2" MIN. CAL. B&B FULL HEAD
⊙	19	ACER SACCHARUM (Sugar Maple)	2 1/2" MIN. CAL. B&B FULL HEAD

PRIVATE STREET TREE PLANTING LIST

SYMBOL	QUANTITY	NAME	REMARKS
◉	44 (1:30')	ACER GRISEUM (Paperback Maple)	2 1/2" MIN. CAL. B&B FULL HEAD

LANDSCAPE PLANTING LIST

SYMBOL	QUANTITY	NAME	REMARKS
⊕	55	PLANTANUS ACERFOLIA 'BLOODGOOD' (Bloodgood London Plane)	2 1/2" MIN. CAL. B&B FULL HEAD
✳	33	PINUS STROBUS (Eastern White Pine)	5'-6' ht. UNSHEARED
◡	40	JUNIPERUS CHINESIS "SEA GREEN" (Sea Green Juniper)	18"-24" SP

SCHEDULE A
PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT TO ROADS					ADJACENT TO PERIMETER PROP.		ADJACENT TO TRASH PADS
LANDSCAPE TYPE	LOT 1 B	LOT 6 B	LOT 9 B	② N/A	④ B	① A	③ A	B
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	78'	85'	111'	377'	192'	444'	1396'	36' (EACH)
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO	NO	NO	NO	NO	② YES, 114'	② YES, 347'	NO
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO	NO	NO	NO	NO	NO	NO	NO
NUMBER OF PLANTS REQUIRED SHADE TREES EVERGREEN TREES OTHER TREES (2:1 SUBSTITUTE) SHRUBS	78 L.F. 2 2 – –	85 L.F. 2 3 – –	111 L.F. 3 3 – –	377 L.F. N/A N/A – –	192 L.F. 4 5 – –	330 L.F. 7 – – –	1049 L.F. 21 – – –	36 L.F. 1 (EACH PAD) 1 (EACH PAD) – –
NUMBER OF PLANTS PROVIDED SHADE TREES EVERGREEN TREES OTHER TREES (2:1 SUBSTITUTE) SHRUBS (10:1 SUBSTITUTE) (DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)	 2 2 – –	 2 3 – –	 3 3 – –	 – – – –	 4 5 – –	 7 – – –	 21 – – –	 – – – 20 (EACH PAD)

② EXISTING WOODS 20' OR GREATER IN WIDTH.

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
phone: 410-465-6105 ▲ fax: 410-465-6644
email: Benchmrk@cais.com

Donald Mason
1/29/02

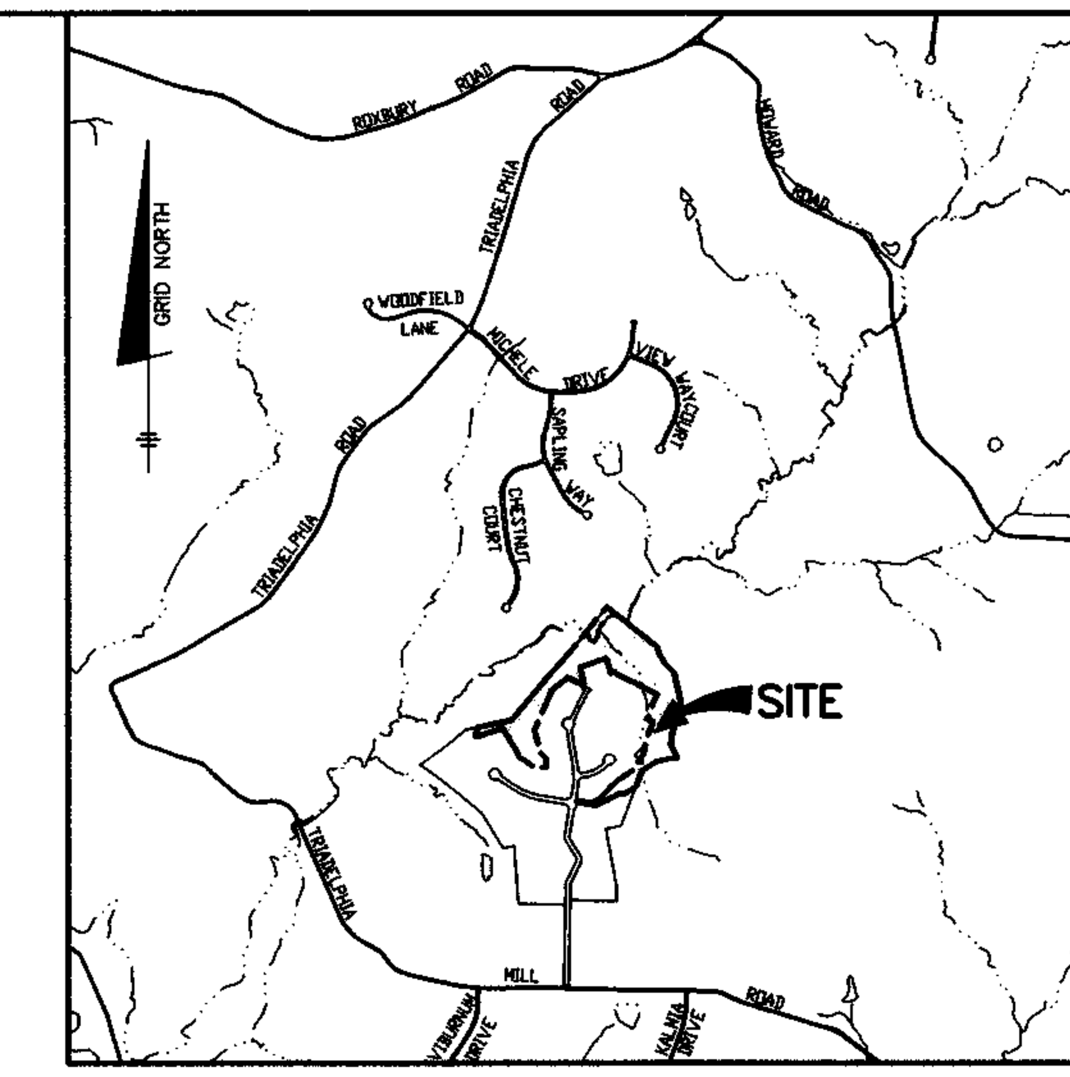
OWNER/DEVELOPER:
SDC GROUP, INC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT:
KINGS ARMS
SECTION 2
LOTS 1-22 AND OPEN SPACE LOTS 23 AND 24

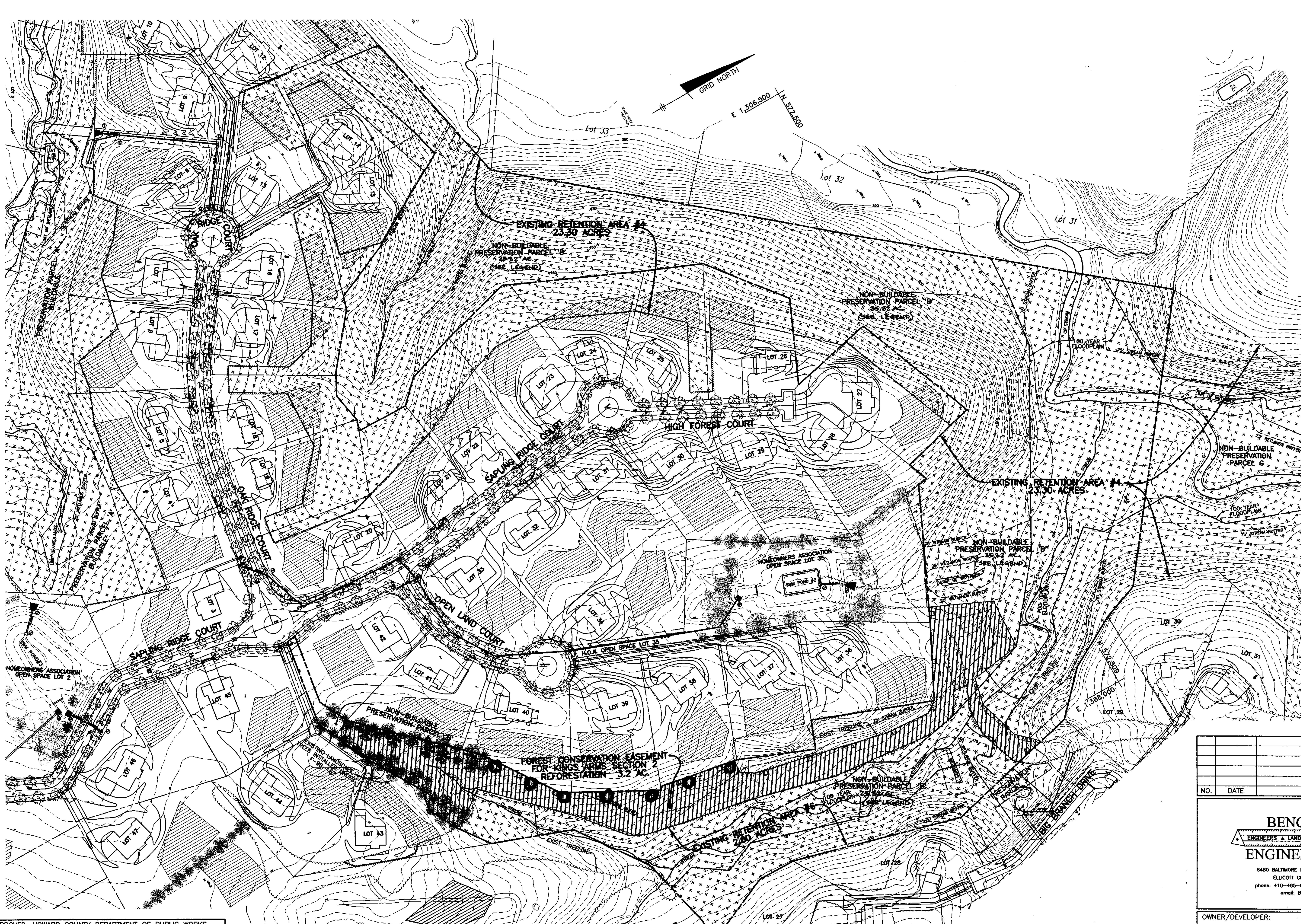
LOCATION:
TAX MAP: 47, GRID: 22
PARCEL: 174, 496 AND P/O 732
6th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE:
LANDSCAPE PLAN
S-99-23 P-00-14

DATE: ~~FEBRUARY 18, 2001~~ JANUARY 2, 2002
PROJECT NO. 1139
DESIGN: DBT
DRAFT: DBT
CHECK: DAM
SCALE: AS SHOWN
SHEET 11 OF 13



VICINITY MAP
SCALE: 1" = 2000'



PLAN VIEW
SCALE: 1" = 100'

LEGEND

- HIGH FOREST ESTATES F-98-167 PRESERVATION PARCEL B (NON-BUILDABLE) EASEMENT HOLDER: HO. CO., MD AND BIG BRANCH OVER LOOK H.O.A., INC. PLAT # 13961-13962
- EXISTING FOREST CONSERVATION EASEMENTS
- PROPOSED REFORESTATION EASEMENT FOR KINGS ARMS 2 (F-01-130) 3.2 AC. (F-02-56, HIGH FOREST ESTATES)
- SIGNAGE LOCATIONS

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS	
CHIEF, BUREAU OF HIGHWAYS	2-14-02 DATE
APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING	
CHIEF, DIVISION OF LAND DEVELOPMENT	3/1/02 DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION MAJ	2/11/02 DATE

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

MD DNR Qualified Professional
USACOE Wetland Delineator
Certification # WDCB03MD0610044B2
John P. Canoles

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
phone: 410-465-6105 ▲ fax: 410-465-6644
email: Benchmrk@cais.com

STATE OF MARYLAND — REGISTERED PROFESSIONAL ENGINEER No. 21443
1/15/02

OWNER/DEVELOPER: SDC GROUP, INC. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244 PRESERVATION PARCEL 'B' OWNER: RIDGE VIEW, L.L.C. c/o ADAMS & ADAMS 8808 CENTRE PARK DRIVE, SUITE 205 COLUMBIA, MARYLAND 21045	PROJECT: **KINGS ARMS** SECTION 2 LOTS 1-22 AND OPEN SPACE LOTS 23 AND 24
	LOCATION: TAX MAP: 47, GRID: 22 PARCELS: 174, 496 AND 732 6th ELECTION DISTRICT HOWARD COUNTY, MARYLAND
	TITLE: OFFSITE REFORESTATION FOREST CONSERVATION PLAN AT HIGH FOREST ESTATES (F-98-167)(F-02-56) S-99-23 P-00-14
DESIGN: DBT / DRAFT: DBT / CHECK: DAM	DATE: FEBRUARY 18, 2001 / OCTOBER 19, 2001 — PROJECT NO. 1139
	SCALE: AS SHOWN — SHEET 12 OF 13

F-01-130

P:\PROJECTS\1139 Loveless\dwg\7052s12.dwg, 07/10/2001 09:40:41 AM

KINGS ARMS SECTION 2
Offsite Planting Schedule

Planting Area (3.2 acres)

Qty.	Species	Size	Spacing
7	Fraxinus americana - White ash	1" cal.	*
125	Acer rubrum - Red maple	2-3 whip	**
83	Cercis canadensis - Red bud	2-3 whip	**
150	Fraxinus pennsylvanica	2-3' whip	**
150	Liriodendron tulipifera - Poplar	2-3' whip	** ^
90	Nyssa sylvatica - Black gum	2-3' whip	**
125	Prunus serotina - Black cherry	2-3' whip	** ^
125	Platanus occidentalis - Sycamore	2-3' whip	**
100	Quercus rubra - Red oak	2-3' whip	**
80	Viburnum dentatum - Arrowwood	2-3' b.t.	**
80	Viburnum prunifolium - Blackhaw	2-3' b.t.	**

Key:

** Plantings to be spaced on 11 foot centers, no shelters required - plantings should be installed in rows to facilitate future maintenance. Where possible rows should be made along contour.

^ - species should not be planted in wetlands or on stream bank

* One caliper plants shall be planted in locations shown by - ●

b.t. - branched transplant

Planting Notes:

1. Multiflora rose control must be performed as part of this planting plan.

2. Bareroot plant material may be used to offset the cost of multiflora rose removal and maintenance. If bareroot material is used it must be planted in March-April and an anti-desiccant gel should be utilized to protect root systems. Container grown stock is recommended.

3. Plants should be flagged to aid on location during maintenance. Plantings should also be planted in grid pattern to facilitate maintenance and removal of invasive and exotic species.

Estimated Planting/Maintenance Cost: $16,000

NOTE:
SURETY IN THE AMOUNT OF $ 69,696.00 HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT FOR THE 3.2 ACRE REFORESTATION EASEMENT.

Planting/Soil Specifications

1. Planting of nursery stock shall take place between March 15th and April 30th. Container stock may be planted September 1-October 30.
2. A twelve (12) inch layer of topsoil shall be spread over all afforestation areas impacted by site grading to assure a suitable planting area. Disturbed areas shall be seeded and stabilized as per general construction plan for project. Planting areas not impacted by site grading shall have no additional topsoil installed.
3. All bareroot planting stock shall have their root systems dipped into an anti-desiccant gel prior to planting.
4. Plants shall be installed so that the top of root mass is level with the top of existing grade. Backfill in the planting pits shall consist of 3 parts existing soil to 1 part pine fines or equivalent.
5. Fertilizer shall consist of Agriform 22-8-2, or equivalent, applied as per manufacturer's specifications.
6. A two (2) inch layer of hardwood mulch shall be placed over the root area of all plantings.
7. Plant material shall be transported to the site in a tarped or covered truck. Plants shall be kept moist prior to planting.
8. All non-organic debris associated with the planting operation shall be removed from the site by the contractor.

Sequence of Construction

1. Plants shall be installed as per Plant Schedule and the Planting/Soil Specifications for the project.
2. Upon completion of the planting, signage shall be installed as shown on sheet 13.
3. Plantings shall be maintained and guaranteed in accordance with the Maintenance and Guarantee requirements for project.

Maintenance of Plantings

1. Maintenance of plantings shall last for a period of 24 months.
2. All plant material shall be watered twice a month during the 1st growing season. Watering may be more or less frequent depending on weather conditions. During second growing season, once a month during May-September, if needed.
3. Invasive exotics and noxious weeds will be removed from reforestation areas. Old field successional species will be retained.
4. Plants will be examined a minimum two times during the growing season for serious plant pests and diseases. Serious problems will be treated with the appropriate agent.
5. Dead branches will be pruned from plantings.

Guarantee Requirements

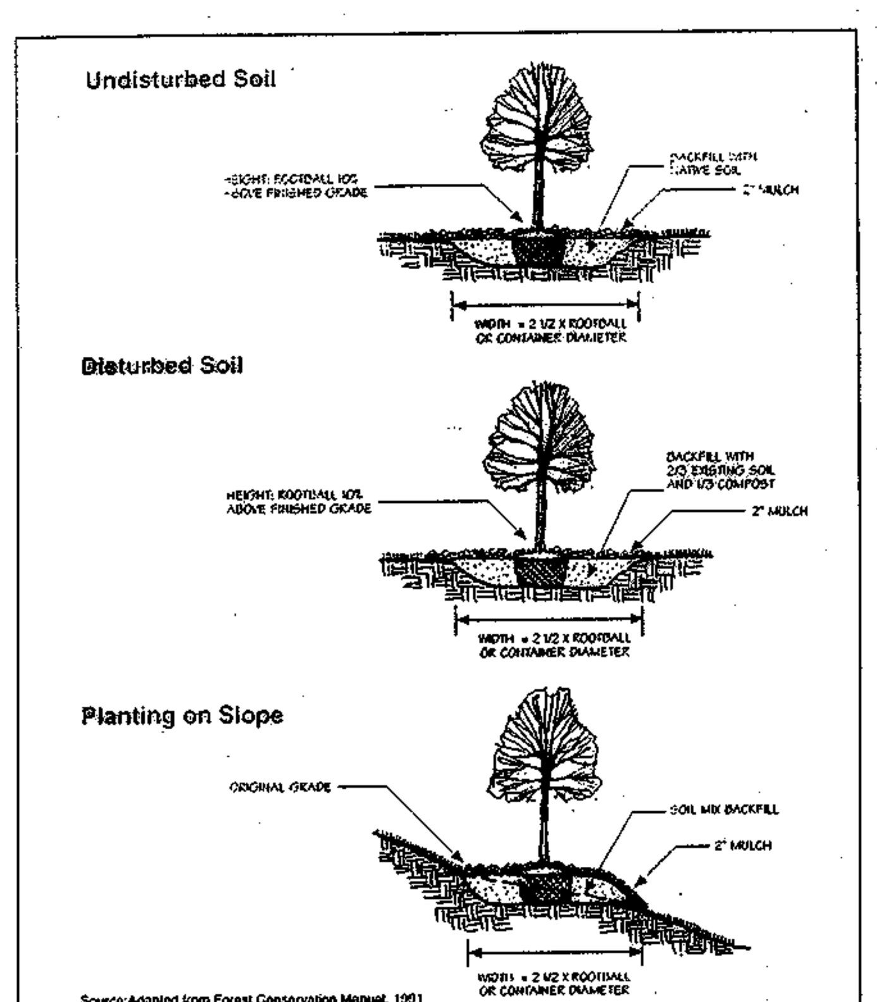
1. After one growing season, plant material shall be maintained at 90% survival threshold. A 75 percent survival rate of forestation plantings will be required at the end of the 24 month maintenance period. All plant material below the 75 percent threshold will be replaced at the beginning of the next growing season.
2. The contractor will not be liable for plant loss due to theft or vandalism.

Surety for Reforestation

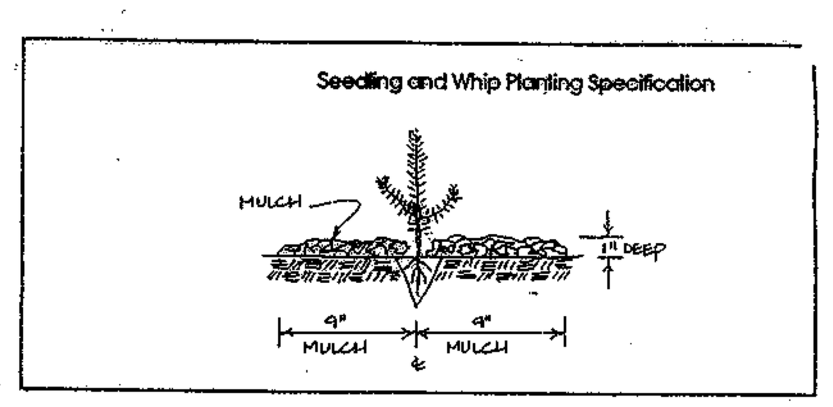
1. The developer shall post a surety (bond, letter of credit) to ensure that reforestation plantings are completed. Upon acceptance of the plantings by the County, the bond shall be released.

Multiflora Rose Control Note

Multiflora rose is prevalent in certain areas to be afforested. Prior to planting all multiflora rose shall be removed. Removal of the rose may be performed with mowing and herbicide treatments. Physical removal of all top growth following by a periodic herbicide treatment of stump sprouts is recommended. Native tree and shrub species occurring within the rose thickets should be retained wherever possible. Herbicides treatments shall occur on 2 month intervals during the first growing season and once each in the spring and fall for subsequent years. Herbicide used shall be made specifically to address woody plant material and shall be applied as per manufacturers specifications. Care should be taken not to spray planted trees or naturally occurring native tree/shrub seedlings. It is recommended that initiation of rose removal begin at least six months prior to planting.

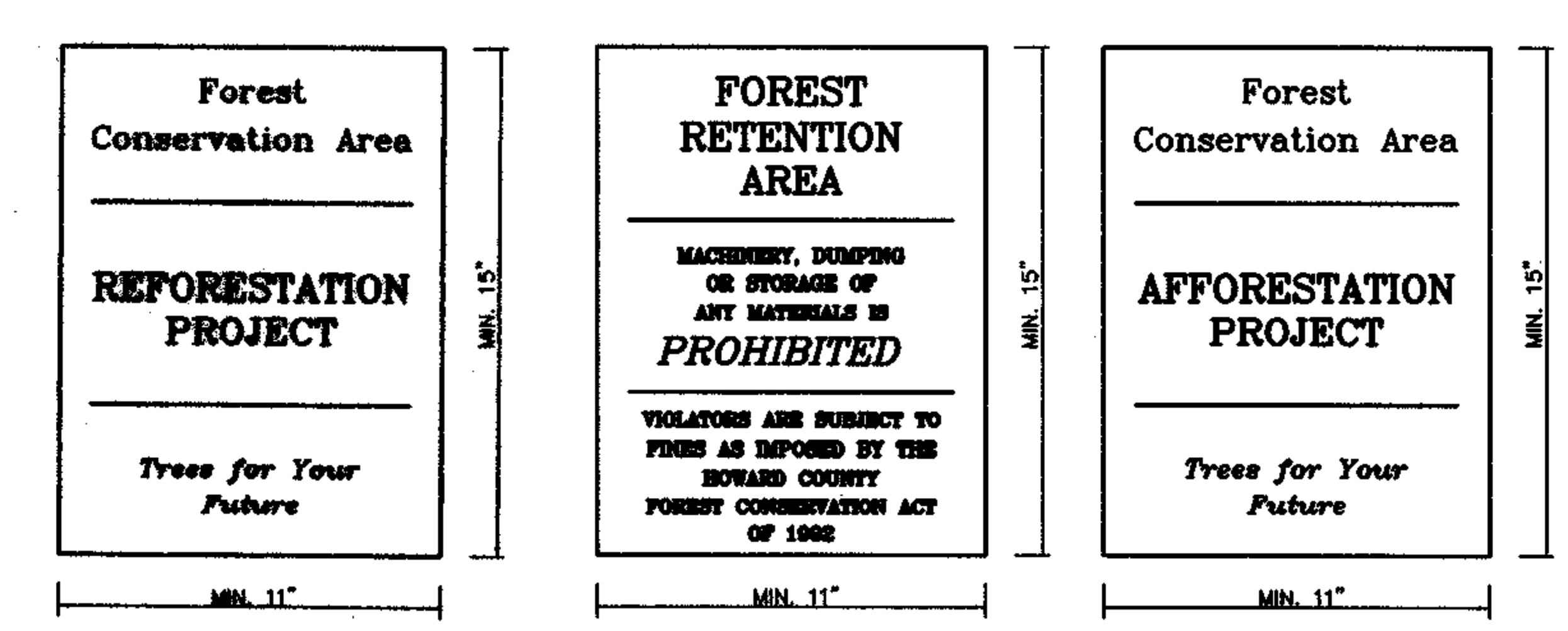


Container Grown and B&B Planting Techniques — Figure C-16



Planting Density Requirements

3.2 acres * 700 units/acre =	2240 units required
One inch caliper: 7 plants * 3.5 units/plant =	24.5 units
Whips: 1,108 plants * 2 units/plant =	2,216 units
	2,240.5 units provided



SIGNAGE
NOT TO SCALE

PLANTING NOTES:

1.) Planting stock should be 3' to 4' whips and 1 1/2 to 2 gallon container stock at a minimum, with 5' – 6' trees for the oaks, maple and white pine.

2.) Only composted mulch may be used.

3.) Whips should be planted an average of 11ft. on center with 5 ft. trees an average of 15 ft. (see random planting detail). Pines should be concentrated on the outside perimeter of Planting Area #2 (adjacent to the lots).

4.) White oak, white pine and flowering dogwood should be planted outside of wetland limits and wetland buffer in Planting Area #1. Larger trees should be planted along the outside perimeter with a random planting scheme inside. Pines should be concentrated on the outside perimeter.

APPENDIX G
FOREST CONSERVATION WORKSHEET

I. BASIC SITE DATA

	ACRES (1/10 acre)
GROSS SITE AREA	5.6
AREA WITHIN 100 YEAR FLOODPLAIN	0.0
AREA WITHIN AGRICULTURAL USE OR PRESERVATION PARCEL (IF APPLICABLE)	N/A
NET TRACT AREA	5.6
LAND USE CATEGORY (R-RLD, R-RMD, R-S, C/I/O, I)	R-SC

II. INFORMATION FOR CALCULATIONS

A. NET TRACT AREA	5.6
B. REFORESTATION THRESHOLD (20% x A)	1.1
C. AFFORESTATION MINIMUM (15% x A)	0.8
D. EXISTING FOREST ON NET TRACT AREA	5.1
E. FOREST AREAS TO BE CLEARED	4.6
F. FOREST AREAS TO BE RETAINED	0.0

III. DETERMINIG REQUIREMENTS: AFFORESTATION OR REFORESTATION

1. Reforestation

If existing forest areas equal or exceed the afforestation minimum (if D equals or is more than C), and clearing of forest areas is proposed, reforestation requirements may apply.

GO TO SECTION IV

If existing forest areas equal or exceed the afforestation minimum (if D equals or is more than C), and no clearing of existing forest resources is proposed, no reforestation is required. No further calculations are needed.

2. Afforestation

If existing forest areas are less than the afforestation minimum (if D is less than C), afforestation requirements apply.

GO TO SECTION V

IV. REFORESTATION CALCULATIONS

	ACRES (1/10 acre)
A. NET TRACT AREA	5.6
B. REFORESTATION THRESHOLD (20% x A)	1.1
D. EXISTING FOREST ON NET TRACT AREA	5.1
E. FOREST AREAS TO BE CLEARED	5.1
F. FOREST AREAS TO BE RETAINED	0.0
G. FOREST AREAS CLEARED ABOVE REFORESTATION THRESHOLD (D–F, If F equals or is greater than B, Alternate 1) (D–B, if F is less than B, Alternate 2)	4.0
H. FOREST AREAS CLEARED BELOW REFORESTATION THRESHOLD (B–F, If applicable)	1.1
I. FOREST AREAS RETAINED ABOVE REFORESTATION THRESHOLD (F–B, Retention Credit, if applicable)	N/A

SELECT THE ALTERNATE THAT APPLIES:

1. Clearing above the threshold only

If forest areas to be retained equal or are greater than the reforestation threshold (if F equals or is greater than B), the following calculations apply:

REFORESTATION FOR CLEARING ABOVE THRESHOLD G x 1/4	____
CREDIT FOR FOREST AREAS RETAINED ABOVE THRESHOLD I = Retention Credit	____
TOTAL REFORESTATION REQUIRED (G x 1/4) – I	____

If the total reforestation requirement is equal to or less than 0, no reforestation is required.

2. Clearing below the threshold

If forest areas to be retained are less than the reforestation threshold (if F is less than B), the following calculations apply:

REFORESTATION FOR CLEARING ABOVE THRESHOLD G x 1/4	1.0
REFORESTATION FOR CLEARING BELOW THRESHOLD H x 2	2.2
TOTAL REFORESTATION REQUIRED (G x 1/4) + (H x 2)	3.2

Since clearing occurs below the threshold, no forest retention credit is possible

KINGS ARMS 2 SITE DATA

	ACRES
GROSS AREA:	5.6
EX. LOTS/UNFORESTED PRESERVATION PARCEL/FLOODPLAIN:	0.0
NET TRACT AREA (NTA):	5.6
EXISTING FOREST ON NTA:	5.1
REFORESTATION THRESHOLD:	1.1
FOREST TO BE CLEARED:	5.1
FOREST TO BE RETAINED (NTA):	0.0
REFORESTATION REQUIRED:	3.2
REFORESTATION PROPOSED:	3.2

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
phone: 410-465-6105 ▲ fax: 410-465-6644
email: Benchmrk@cois.com

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — REGISTERED PROFESSIONAL ENGINEER — 1/15/02

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2-19-02

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3/1/02
CHIEF, DEVELOPMENT ENGINEERING DIVISION MAJ — DATE 2/11/02

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

MD DNR Qualified Professional
USACOE Wetland Delineator
Certification # WDCP93MD0610044B2
John P. Canoles 7/10/01

NO.	DATE	REVISION

OWNER/DEVELOPER:
SDC GROUP, INC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PRESERVATION PARCEL 'B' OWNER:
RIDGE VIEW, L.L.C.
c/o ADAMS & ADAMS
8808 CENTRE PARK DRIVE, SUITE 205
COLUMBIA, MARYLAND 21045

DESIGN: DBT | DRAFT: DBT | CHECK: DAM

PROJECT: KINGS ARMS SECTION 2
LOTS 1-22 AND OPEN SPACE LOTS 23 AND 24

LOCATION: TAX MAP: 47, GRID: 22
PARCEL: 174, 496 AND P/O 732
6th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: OFFSITE REFORESTATION
FOREST CONSERVATION NOTES AND DETAILS
S-99-23 P-00-14 F-02-56

DATE: OCTOBER 19, 2001 | PROJECT NO. 1139
SCALE: AS SHOWN | SHEET 13 OF 13

P:\PROJECTS\1139 Loveless\dwg\7052s13.dwg, 07/10/2001 09:25:06 AM