EUCLID CORNERS - PARCEL 'A'
LOTS 1276 - 1278 & OPEN SPACE LOT 1279

RETAIL/OFFICE BUILDING, AND RESIDENTIAL LOTS
PART OF PARCEL: 873, 1st ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

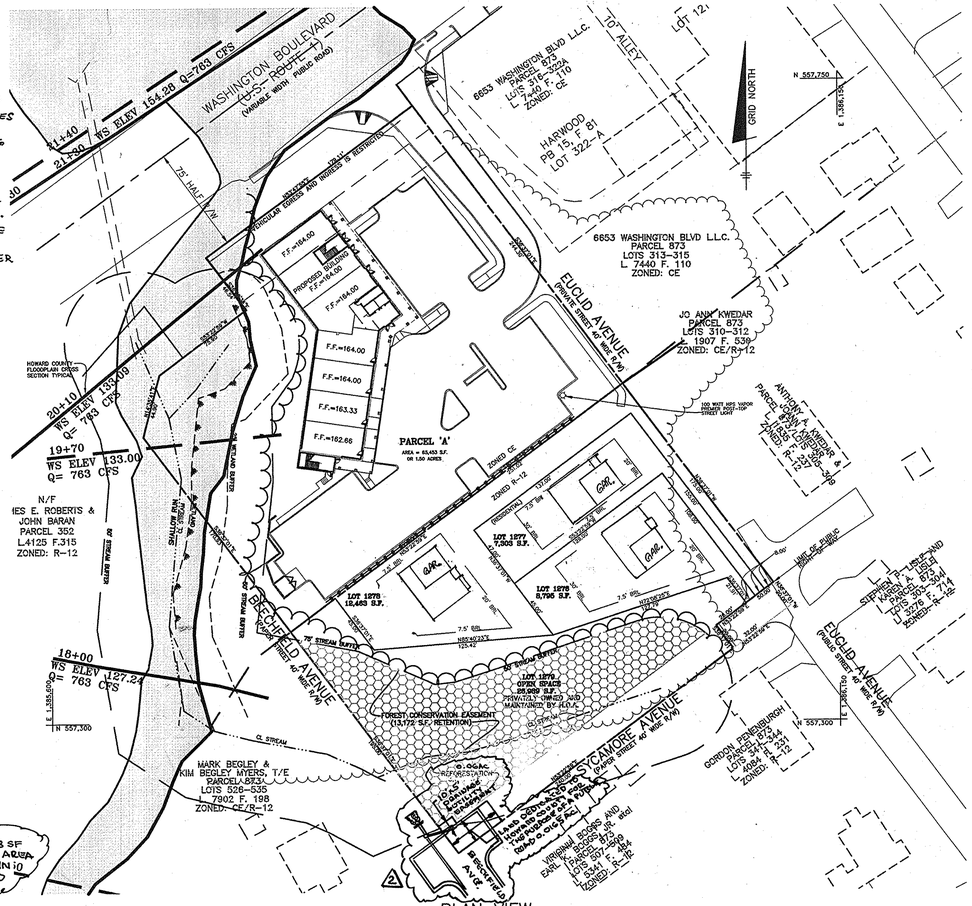
SITE DEVELOPMENT PLAN

SHEET INDEX	
NO.	DESCRIPTION
1	COVER SHEET
2	SITE DEVELOPMENT PLAN (GEOMETRY SHEET)
3	SITE DEVELOPMENT PLAN (GRADING) AND SEEDING CHART
4	SITE DEVELOPMENT PLAN (UTILITIES)
5	STORM DRAIN DRAINAGE AREA MAP
6	SEDIMENT AND EROSION CONTROL PLAN
7	SEDIMENT AND EROSION NOTES AND DETAILS
8	STORMWATER MANAGEMENT FACILITY (SAND FILTER)
9	UNDERGROUND SWMF NOTES AND DETAILS
10	LANDSCAPE PLAN
11	STORM DRAIN PROFILES AND DETAILS
12	STORM DRAIN PROFILES AND DETAILS
13	STORM DRAIN PROFILES AND DETAILS, ESD/WQ AND SEC NOTES, NOTES AND DETAILS
14	ENTRANCE, TRAFFIC CONTROL, STRIPING & SIGNAGE PLAN

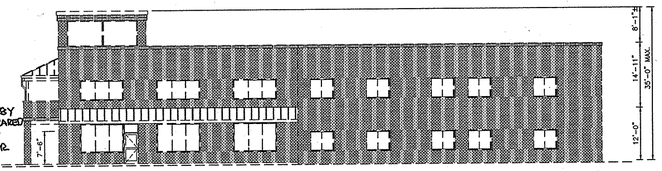
GENERAL NOTES

1. THE SUBJECT PROPERTIES ARE ZONED CE/R-12 PER THE 2/02/2004 COMPREHENSIVE ZONING PLAN.
2. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY, PLUS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
3. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST (FIVE) 5 WORKING DAYS PRIOR TO THE START OF WORK.
4. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK AND RECEIVE CONFORMATION THAT ALL UTILITIES HAVE BEEN MARKED BEFORE PROCEEDING WITH SITE WORK.
5. TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE MOST CURRENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
6. ALL DIMENSIONS ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
7. THE CONTOURS SHOWN HEREON HAVE BEEN TAKEN FROM FIELD RUN TOPOGRAPHIC SURVEYS AT 2' INTERVAL. THE TOPOGRAPHY WAS PREPARED BY BENCHMARK ENGINEERING, INC. DATED SEPTEMBER 2001.
8. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENTS NOS. 38D5 AND 38D6 WERE USED FOR THIS PROJECT.
9. BOUNDARY SURVEY FOR THIS PROJECT WAS PERFORMED BY BENCHMARK ENGINEERING, INC. ON OR ABOUT APRIL, 2003.
10. WATER AND SEWER FOR THIS SUBDIVISION IS PUBLIC. SEWER & WATER CONTRACT Nos. ARE # 23-5 AND # 44-0906.
11. THE WETLANDS DELINEATION FOR THIS PROJECT WAS PREPARED BY ECO-SCIENCE PROFESSIONALS, INC. DATED JANUARY 05, 2001.
12. FOREST CONSERVATION OBLIGATION FOR THIS PROJECT WAS ADDRESSED UNDER F-06-46.
13. A TRAFFIC STUDY HAS BEEN PREPARED BY TRAFFIC CONCEPTS, DATED FEBRUARY 2005.
14. GEOTECHNICAL REPORT HAS BEEN PREPARED BY MARSHALL ENGINEERING, INC. DATED DECEMBER, 2004.
15. EXISTING UTILITIES WERE LOCATED BY RECORD DRAWINGS AND FIELD LOCATIONS BY BENCHMARK ENGINEERING INC., DATED SEPTEMBER, 2001
16. UNLESS NOTED AS "PRIVATE" ALL EASEMENTS ARE PUBLIC.
17. CONTRACTOR SHALL ADJUST ALL UTILITIES, RIM ELEVATIONS AND INVERT ELEVATIONS AS NEEDED TO MATCH THIS PLAN.
18. ALL EXTERIOR LIGHTING SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL VOLUME III (1993), ZONING SECTION 134 AND AS SHOWN ON THESE PLANS.
19. ALL HANDICAP RAMPS SHALL BE IN ACCORDANCE WITH HOWARD COUNTY STD. DETAIL R 4.01 AND ALL CURRENT ADA REQUIREMENTS.
20. LANDSCAPING SURITY IN THE AMOUNT OF $13,980.00 HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT.
21. THE FLOOD PLAIN LIMITS SHOWN ON THIS PLAN HAVE BEEN TAKEN FROM EXISTING FLOODPLAIN INFORMATION TAKEN FROM THE HOWARD COUNTY DEEP RUN FLOOD PLAIN STUDY FOR THE AREA OF THIS SHALLOW RUN, TRIBUTARY D-5. GENERAL COUNTY PROJECT GC 0119 WITH REVISION DATED 1/97.
22. NO CLEARING GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE WETLANDS, STREAMS OR THEIR REQUIRED BUFFERS, FLOODPLAIN AND FOREST CONSERVATION EASEMENT AREAS.
23. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL.
23. PROPOSED BUILDING WILL HAVE AN AUTOMATIC FIRE PROTECTION SPRINKLER SYSTEM.
24. IN ACCORDANCE WITH SECTION 128 OF THE HOWARD COUNTY ZONING REGULATIONS, BAY WINDOWS, CHIMNEYS OR EXTERIOR STAIRWAYS NOT MORE THAN 16 FEET IN WIDTH MAY PROJECT NOT MORE THAN 4 FEET INTO ANY SETBACKS, PORCHES OR DECKS, OPEN OR ENCLOSED MAY PROJECT NOT MORE THAN 10 FEET INTO THE FRONT OR REAR YARD SETBACK.
25. DRIVEWAYS SHALL BE PROVIDED PRIOR TO ISSUANCE OF A USE AND OCCUPANCY PERMIT FOR ANY NEW DWELLINGS TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:
    - WIDTH – 12' (16' SERVING MORE THAN ONE RESIDENCE);
    - SURFACE – 6" OF COMPACTED CRUSHER RUN BASE W/TAR AND CHIP COATING (1-1/2" MIN.)
    - GEOMETRY – MAX. 15% GRADE, MAX, 10% GRADE CHANGE AND MIN, 45' TURNING RADIUS;
    - STRUCTURES – (CULVERTS/BRIDGES) – CAPABLE OF SUPPORTING 25 GROSS TONS (H25 LOADING);
    - DRAINAGE ELEMENTS – CAPABLE OF SAFELY PASSING 100-YEAR FLOOD WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY SURFACE;
    - MAINTENANCE – SUFFICIENT TO INSURE ALL WEATHER USE.
26. THE ARTICLES OF INCORPORATION FOR THE HOMEOWNERS ASSOCIATION WERE RECORDED ON 11-11-04 AS NO. D11583770 AMONG THE STATE OF MARYLAND DEPARTMENT OF ASSESSMENT AND TAXATION RECORDS.
2 27. THE FOREST CONSERVATION OBLIGATION FOR THE PROPERTIES SHOWN ON THIS PLAN HAS BEEN PROVIDED BY F-06-046, BY CREATING A 0.40 AC. ONSITE FOREST CONSERVATION EASEMENT CONTAINING 0.30 AC. OF RETENTION AND 0.10 AC. OF REFORESTATION AND A PAYMENT OF $9583.20 TO THE HOWARD COUNTY CONSERVATION FUND FOR THE REMAINING OBLIGATION OF 0.44 AC./19,166.4 S.F. OF REFORESTATION. SEE F-06-046 FOR THE FOREST CONSERVATION PLAN.
28. PREVIOUS DEPARTMENT OF PLANNING AND ZONING REFERENCE NUMBERS INCLUDE: F-06-046
29. THE 2007 SWM ACT PRACTICES ARE BEING USED FOR THIS SUBDIVISION.
    LOT 1276 – NON-ROOFTOP DISCONNECTION AND INFILTRATION BERM.
    LOT 1277 – 2 ROOFTOP DISCONNECTION.
    LOT 1278 – NON-ROOFTOP DISCONNECTION AND INFILTRATION BERM.
30. ALL ESD PRACTICES ARE PRIVATELY OWNED AND MAINTAINED.
2 31. DISTURBANCE WITHIN THE STREAM BUFFER HAS BEEN ACCEPTED AS NECESSARY DISTURBANCE IN ACCORDANCE WITH SECTION 16.116(a)(2) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS SINCE IT IS NECESSARY FOR CONSTRUCTION OF A PUBLIC ROAD.
32. WAIVER PETITION (WP-14-135) WAS APPROVED BY THE DIRECTOR OF THE DEPARTMENT OF PLANNING AND ZONING ON JUNE 12, 2014. IT WAS A REQUEST TO WAIVE SECTIONS 16.156(a)(1) & (2) TO EXTEND THE DEADLINES TO APPLY FOR BUILDING PERMITS. THE WAIVER WAS CONDITIONALLY APPROVED. THE CONDITIONS ARE:
    a) COMPLIANCE WITH DED COMMENTS CONCERNING SWM & STATE HIGHWAY PLANS.
    b) THE COMMERCIAL AND AT LEAST ONE RESIDENTIAL PERMIT SHALL BE APPLIED FOR ON OR BEFORE JUNE 12, 2015.
    c) ALL RESIDENTIAL BUILDING PERMITS MUST BE APPLIED FOR ON OR BEFORE APRIL 15, 2016.
    d) A NOTE SUMMARIZING THE WAIVER SHALL BE ADDED TO THE SDP.
    e) THE DEPARTMENT WILL NOT ALLOW FURTHER EXTENSION REQUESTS.

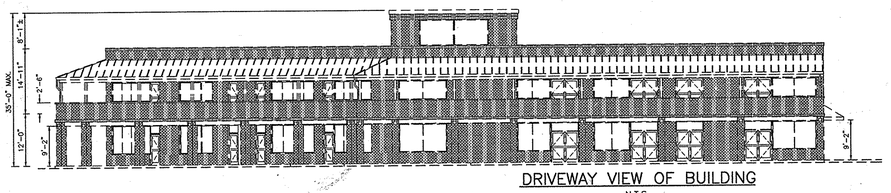
BASED ON REVISION 2 0.0033 Ac/405.8 SF OF FOREST CONSERVATION EASEMENT AREA WILL BE ABANDONED. A FEE-IN-LIEU IN TO THE AMOUNT OF $507.25 WILL BE PAID TO THE HOWARD COUNTY FOREST CONSERVATION FUND.



PLAN VIEW
SCALE: 1" = 50'



ROUTE 1 VIEW OF BUILDING
N.T.S.



DRIVEWAY VIEW OF BUILDING
N.T.S.

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS ARE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 15212, EXPIRATION DATE: 12/24/2012." THIS SEAL APPLIES ONLY TO REVISION 2 ON THIS SHEET

LEGEND

SOILS CLASSIFICATION	AbC1
SOILS DELINEATION	
EXISTING CONTOURS	999
PROPOSED CONTOURS	999
EXISTING WOODS LINE	
PROPOSED WOODS LINE	
EXISTING STRUCTURE	
LIMIT OF DISTURBANCE	
SILT FENCE	SF
SUPER SILT FENCE	SSF
FOREST CONSERVATION EASEMENT	

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT	7/27/07 DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION	7/4/07 DATE
DIRECTOR,	7/27/07 DATE

BENCH MARKS

HO. CO. #38D5 (NAD '83) ELEV. 193.71

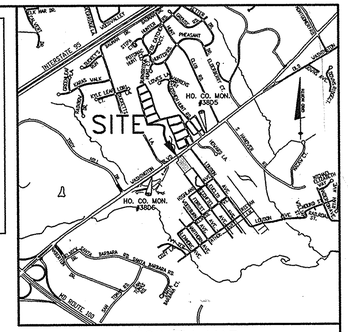
STAMPED DISC ON CONCRETE MONUMENT BEING 38.8 SOUTHEAST OF A FIRE HYDRANT, 5.6' NORTH OF THE EXISTING CONCRETE CURB ALONG NORTH SIDE OF WASHINGTON BLVD (RT.1)

N 558,378.581 E 1,386,524.195

HO. CO. #38D6 (NAD '83) ELEV. 175.23

STAMPED DISC ON CONCRETE MONUMENT BEING 44' SOUTHWEST OF A LIGHT POLE & 148' NORTH OF THE GATE AT ATLANTIC SUPPLY CO.

N 557,155.459 E 1,384,992.262



VICINITY MAP
SCALE: 1"=2000'

SITE ANALYSIS DATA CHART PARCEL 'A'

A.)	TOTAL COMMERCIAL PROJECT AREA:	1.50 AC.±
B.)	AREA OF PARCEL 'A':	1.50 AC.±
C.)	AREA OF DEDICATED RIGHT-OF-WAY:	0.00 AC.±
D.)	LIMIT OF DISTURBANCE AREA:	1.61 AC.±
E.)	PRESENT ZONING:	CE
F.)	PROPOSED USES FOR SITE AND STRUCTURES:	* USES PERMITTED SHALL BE AS OUTLINED IN SECTION 127.2 OF THE HOWARD COUNTY ZONING REGULATIONS.
G.)	SQUARE FOOT AREA FOR COMMERCIAL USE IN ACCORDANCE WITH ZONING SECTION 127.2.C.1.a ONLY A MAXIMUM OF 15% OF THE BUILDING FLOOR AREA CAN BE DEVOTED TO USES OTHER THAN OFFICE USE:	2,650 s.f. COMMERCIAL 15,020 s.f. OFFICE 17,670 s.f. TOTAL 1ST FLOOR 8,835 s.f. 2ND FLOOR 8,835 s.f. TOTAL 17,670 s.f.
H.)	MAXIMUM NUMBER OF EMPLOYEES, TENANTS ON SITE PER USE:	N/A
I.)	NUMBER OF PARKING SPACES REQUIRED ON SITE:	64
J.)	NUMBER OF PARKING SPACES REQUIRED BY HOWARD COUNTY ZONING REGULATIONS (PER SECTION 133.D) GENERAL OFFICE, 3.3 SPACES PER 1,000 S.F. * RETAIL, 5.0 SPACES PER 1,000 S.F. OFFICE SPACE: 15,020 S.F. REQUIRING 50 SPACES RETAIL SPACE: 2,650 S.F. REQUIRING 14 SPACES	PARKING IS REQUIRED BASED ON SPECIFIC USES.
K.)	TOTAL NUMBER OF SPACES PROVIDED: (INCLUDING 3 HANDICAPPED PARKING SPACES)	64
L.)	BUILDING COVERAGE FOR COMMERCIAL PORTION OF SITE:	14% (8,835s.f)

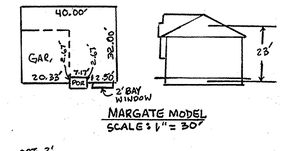
"NO CHANGE IN USE(S) OR THE SQUARE FOOT AREA(S) OF USE(S) IN THE COMMERCIAL BUILDING IS PERMITTED WITHOUT COMPLIANCE WITH THE PARKING REQUIREMENTS OF ZONING SECTION 133 AND THE APPROVAL OF THE DPZ."

SITE ANALYSIS DATA CHART LOTS 1274 THRU 1277

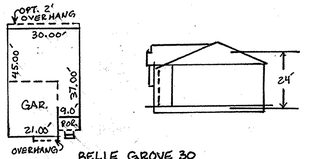
A.)	TOTAL RESIDENTIAL PROJECT AREA:	1.30 AC.±
B.)	AREA OF PLAN SUBMISSION:	1.30 AC.±
C.)	AREA OF LOTS 1274, 1275, & 1276:	0.61 AC.±
D.)	AREA OF OPEN SPACE LOT 1277:	0.60 AC.±
E.)	AREA OF DEDICATED RIGHT-OF-WAY:	0.09 AC.±
F.)	LIMIT OF DISTURBED AREA:	0.83 AC.±
G.)	PRESENT ZONING:	R-12
H.)	PROPOSED USES FOR SITE AND STRUCTURES:	SINGLE FAMILY DETACHED RESIDENTIAL
I.)	TOTAL NUMBER OF UNITS:	3
J.)	NUMBER OF PARKING SPACES REQUIRED:	2 PER DWELLING UNIT
K.)	NUMBER OF PARKING SPACES PROVIDED:	2 PER DWELLING UNIT
L.)	OPEN SPACE ON SITE:	0.63 AC.
M.)	AREA OF RECREATION OPEN SPACE REQUIRED BY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS ACRES REQUIRED: ACRES PROVIDED:	0.00 AC. 0.00 AC.

ADDRESS CHART	
LOT/PARCEL#	STREET ADDRESS
PARCEL 'A'	6661 WASHINGTON BLVD.
LOT 1276	6326 EUCLID AVENUE
LOT 1277	6322 EUCLID AVENUE
LOT 1278	6318 EUCLID AVENUE

USE TABULATION		
LOT/PARCEL	USE	AREA
PARCEL 'A'	COMMERCIAL/OFFICE	1.52 AC.
LOTS1274-1277	SINGLE FAMILY RESIDENTIAL	1.30 AC.
TOTAL	SITE DEVELOPMENT PLAN	2.82 AC.



MARGATE MODEL
SCALE: 1" = 50'



BELLE GROVE 30
SCALE: 1" = 30'

PERMIT INFORMATION CHART

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL#
EUCLID CORNERS	N/A	PARCEL 'A', LOTS 1274-1276 & OPEN SPACE LOT 1277

PLAT No.	GRID No.	ZONE	TAX MAP	ELEC. DIST.	CENSUS
19262 & 19263	13	CE/R-12	38	1st	6012.00
WATER CODE A02			SEWER CODE 2152209		

NO.	DATE	REVISION
3	12-16-14	REVISE HOUSE FOOT PRINT TO SHOW BELLE GROVE & MARGATE AND SHOW HOUSES ON LOTS
2	8-6-12	ADD CAPITAL PROJ. D-1124-03 (BRENTFIELD AVE. IMPROVEMENTS) BY KOLAN ASSOC.
1	10-13-10	ADD ESD/WQ INFORMATION FOR LOTS 1276-1278

By BEI

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

STATE OF MARYLAND — DONALD M. MOAN — No. 15212 — PROFESSIONAL ENGINEER — 6/29/07

OWNER:
BELLE GROVE CORP.
4024 BELLE GROVE ROAD
BALTIMORE, MD 21225-2657
410-789-7070

PROJECT: EUCLID CORNERS PARCEL 'A', LOTS 1276-1278 & OPEN SPACE LOT 1279

LOCATION: TAX MAP: 38, GRID: 13
PART OF PARCEL: 873
1st ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: COVER SHEET

DESIGN: RPS | DRAFT: RPS | CHECK: DAM

DATE: AUGUST, 2005 / JUNE, 2007 | PROJECT NO. 1465

SCALE: AS SHOWN | SHEET 1 OF 14

SDP-06-22

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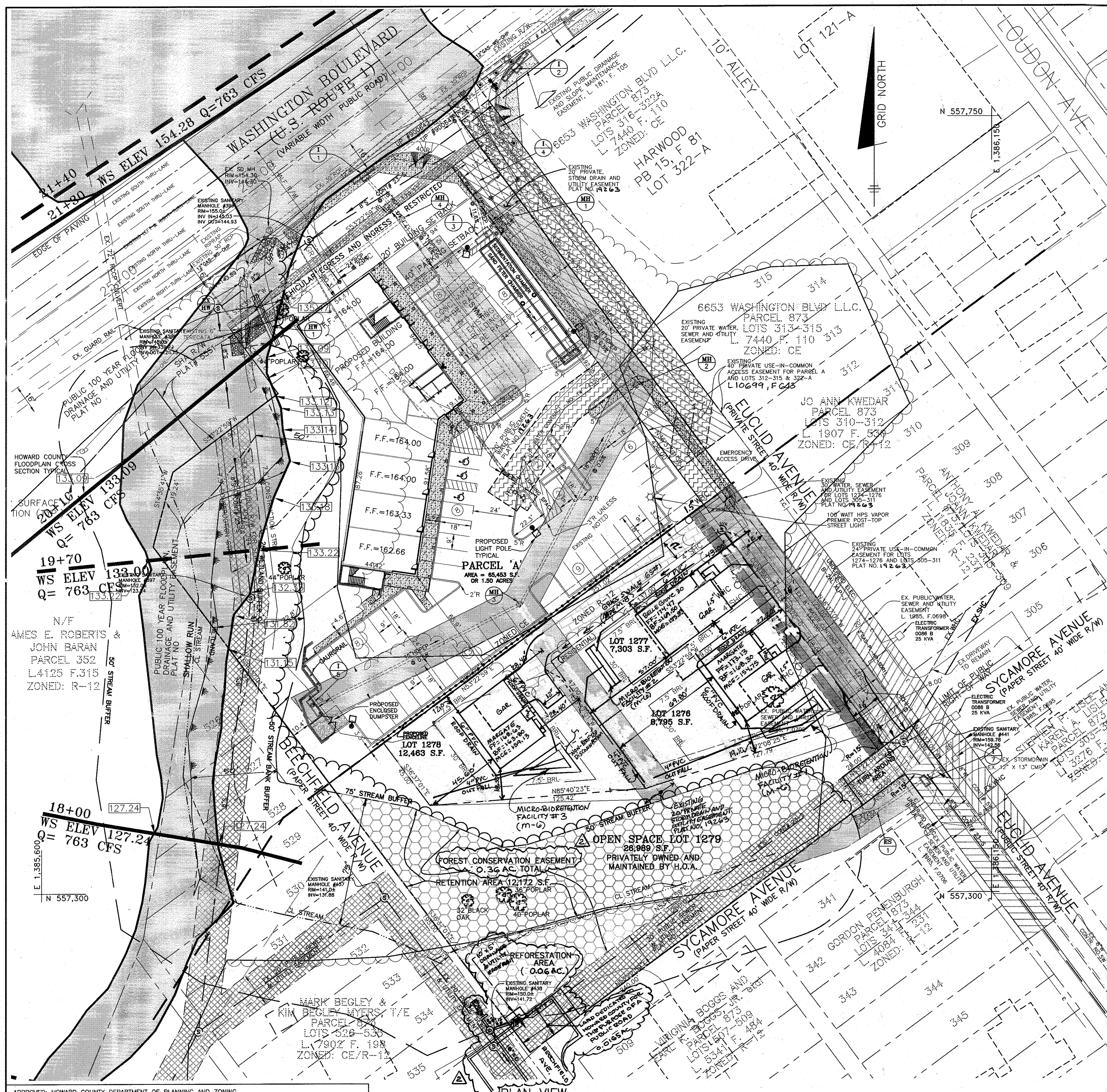
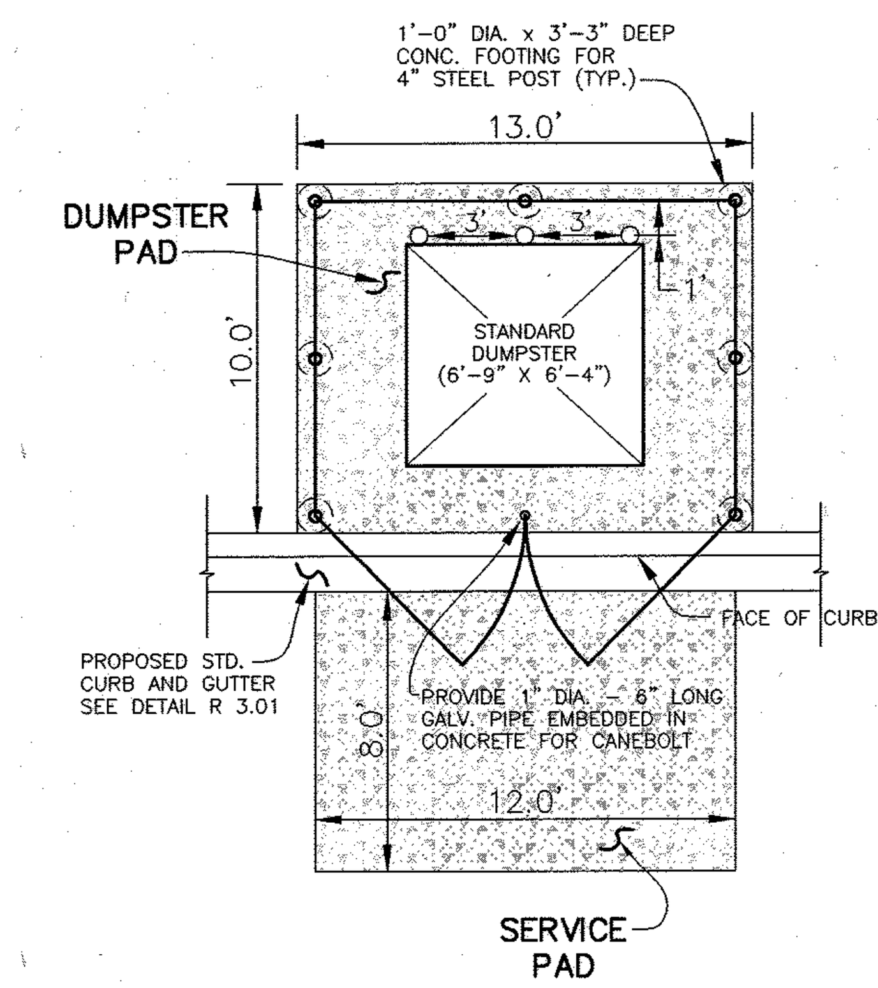
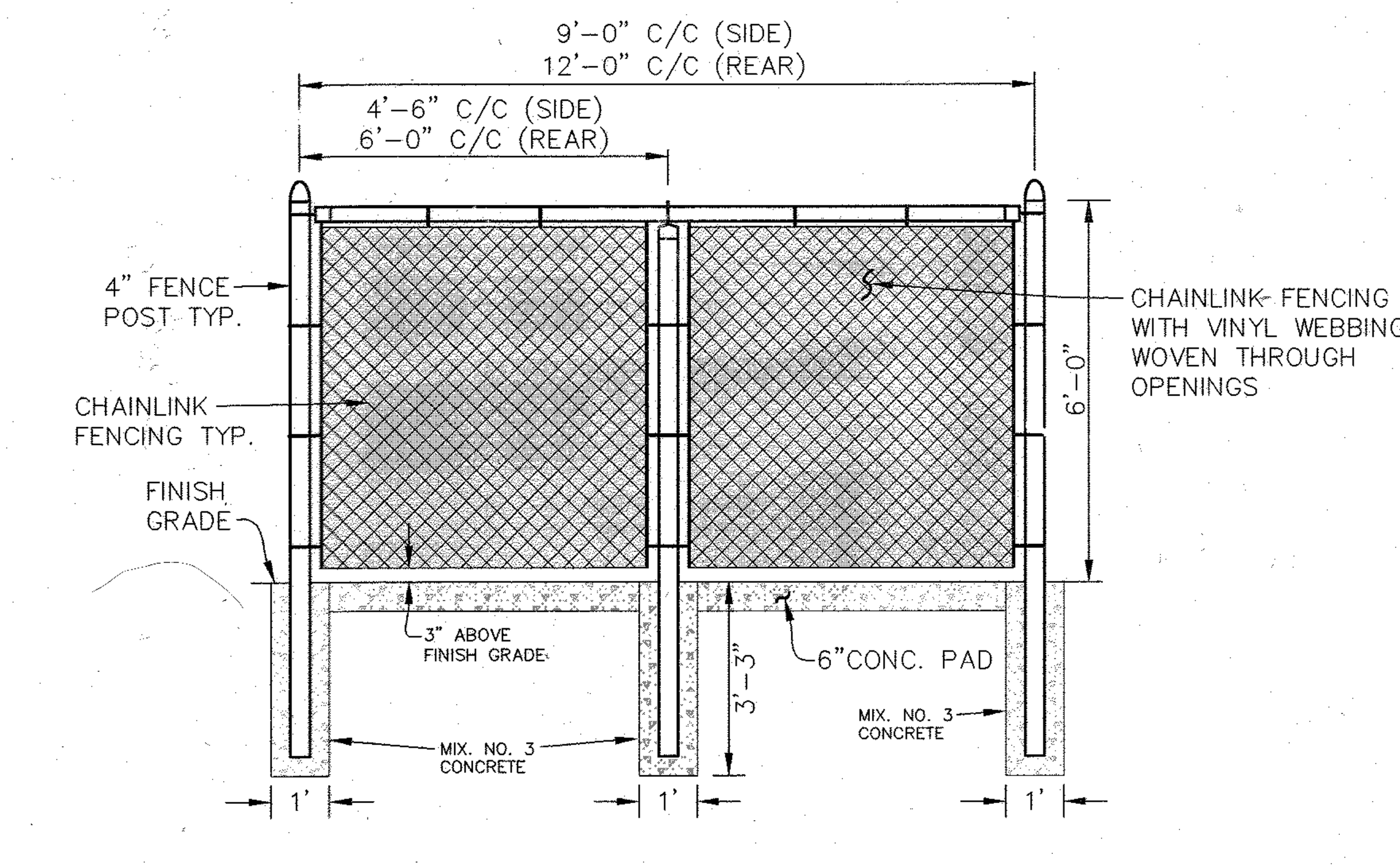


SPECIAL NOTE:

A KNOX BOX (FIRE DEPARTMENT ACCESS BOX) IS REQUIRED TO BE PLACED ON THE FRONT OF THE BUILDING. IT SHALL BE PLACED TO THE RIGHT OF THE MAIN ENTRANCE AT A RANGE OF 4–5' IN HEIGHT AND NO MORE THAN 6' LATERALLY FOR THE DOOR. THE BOX SHALL BE ELECTRONICALLY SUPERVISED TO NOTIFY THE OWNER THAT IT IS BEING ACCESSED (INTEGRATED WITH THE FIRE ALARM SYSTEM), NFPA–1.10.12.1.



PLAN
DUMPSTER ENCLOSURE
NOT TO SCALE



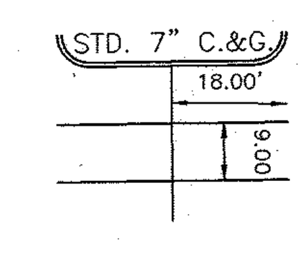
CHAIN LINK FENCE SCREENING FOR DUMPSTER PAD AREA
NOT TO SCALE

NOTE: BASED ON HO. CO. STD. R 11.02

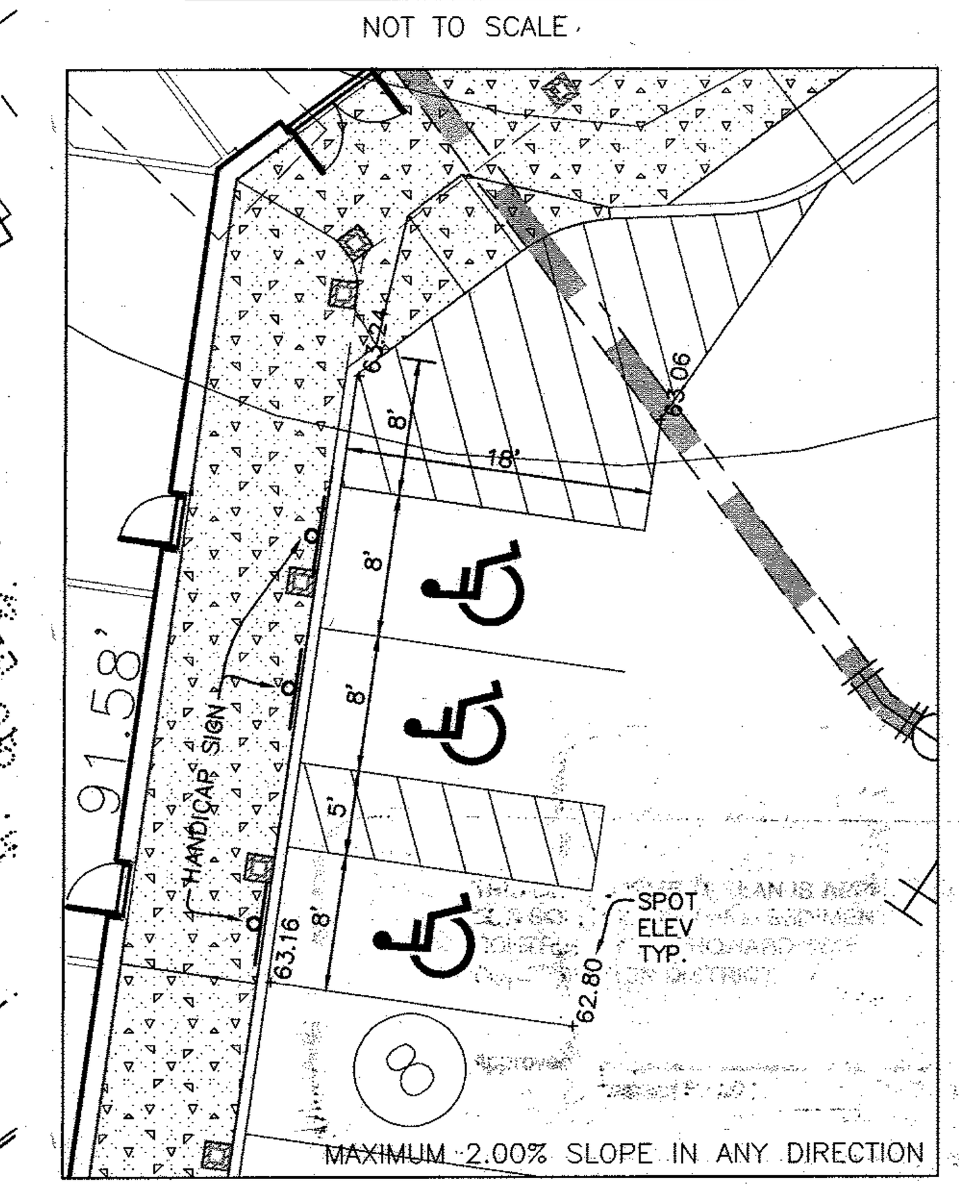
DUMPSTER ENCLOSURE DETAILS

FLOODPLAIN EASEMENT LINE TABLE		
LINE	BEARING	LENGTH
F1	N 13°56'52" E	47.57'
F2	N 00°29'05" E	12.14'
F3	N 25°40'12" W	7.93'
F4	N 04°26'58" W	12.62'
F5	N 13°11'48" W	18.38'
F6	N 24°00'08" E	23.13'
F7	N 16°31'27" E	26.71'
F8	N 11°25'03" E	31.05'
F9	N 37°44'17" E	15.09'
F10	N 09°18'51" E	19.61'

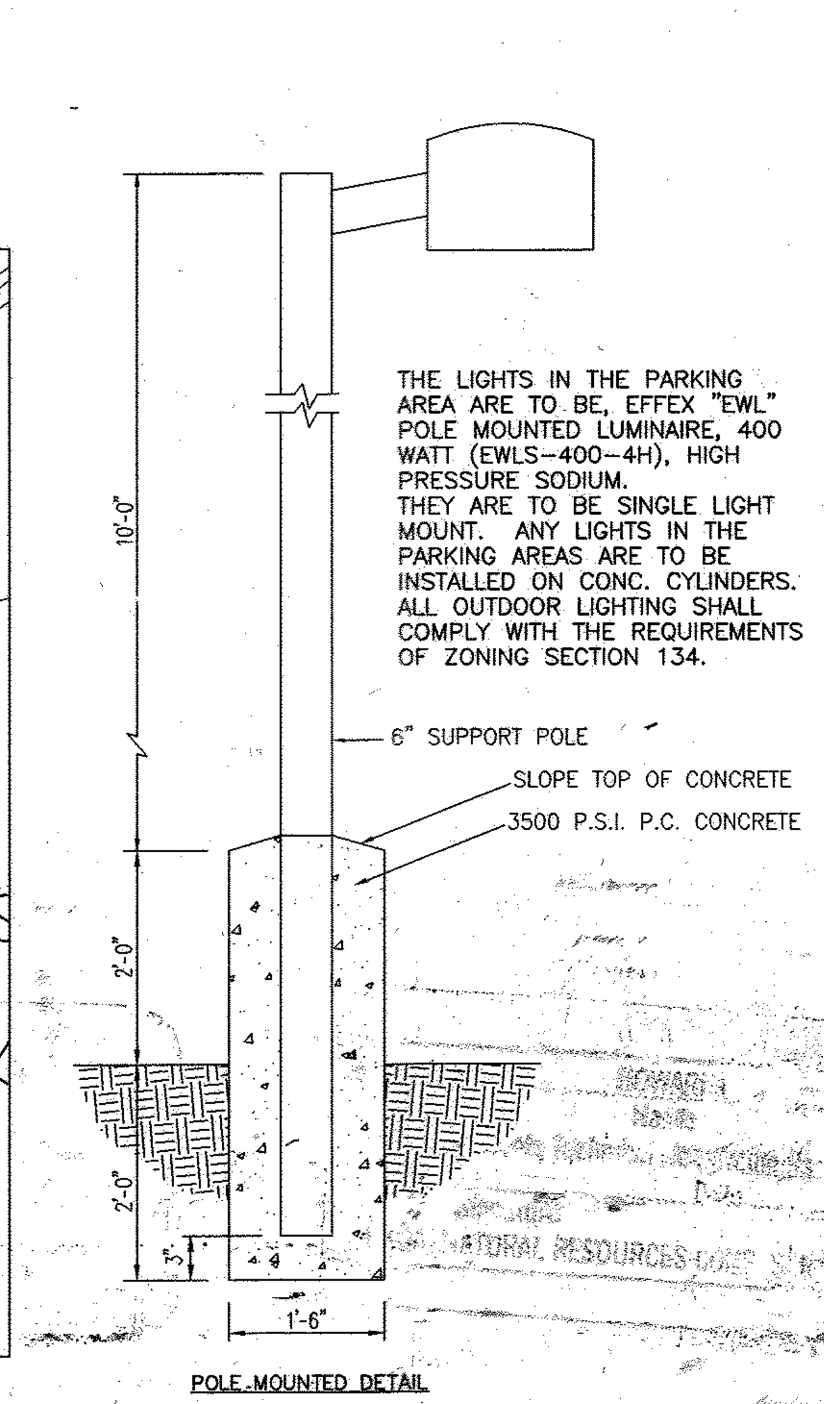
STREET LIGHT SCHEDULE		
SYMBOL	DESCRIPTION	LOCATION
▪□	400-WATT HPS, MOUNTED ON 6" SQUARE POLE, 10' IN LENGTH ON A 2' HIGH CONCRETE CYCLINDER.	PARKING LOT LANDSCAPED ISLANDS



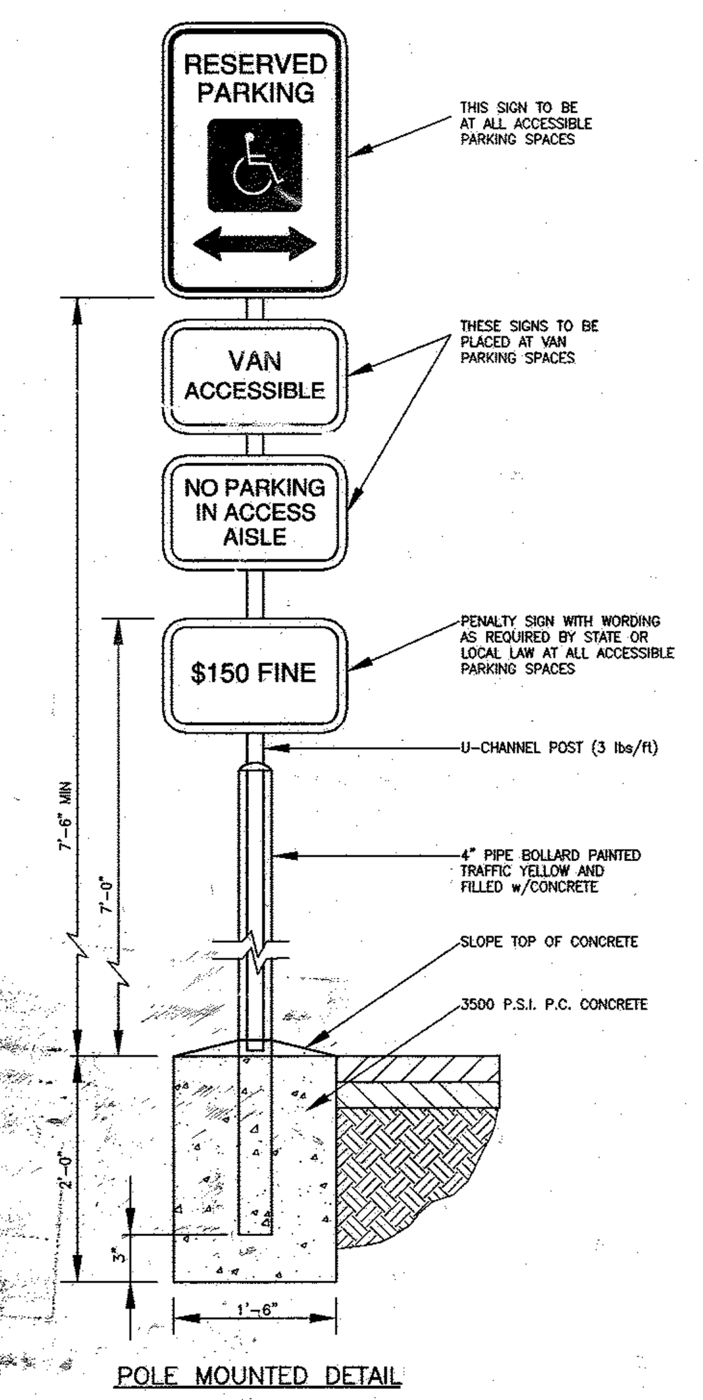
STANDARD PARKING DETAIL
NOT TO SCALE



HANDICAP PARKING DETAIL
NOT TO SCALE



PARKING LOT LIGHTING DETAIL
NOT TO SCALE



HANDICAP PARKING SIGN DETAIL
NOT TO SCALE

LEGEND:

- EX. PUBLIC 100 YEAR FLOODPLAIN, DRAINAGE AND UTILITY EASMENT
- EXISTING SEWER EASEMENT
- EX. PUBLIC SEWER, WATER AND UTILITY EASEMENT
- PROPOSED WATERLINE EASEMENT
- FOREST CONSERVATION EASEMENT
- SPECIMEN TREE (42"POPLAR)
- EXISTING TREELINE
- PROPOSED TREELINE
- PROPOSED CONCRETE SIDEWALK
- EXISTING SANITARY MANHOLE
- PROPOSED LIGHT POLE
- PROPOSED FENCELINE

(2) NOTE: FOR PROPOSED STORM DRAIN IMPROVEMENTS PROFILE REFER TO CAPITAL PROJECT D-1124-03.

SEAL & SIGNATURE FOR REV. (2) ONLY
8/6/12

NO	DATE	REVISION
4	10.12.16	Adjust WHC to 1.5" For Residential lots. & DRIVEWAYS
3	12-16-14	SHOW MARGATE HSE TYPE ON LOTS 1276 & 1278 BELLE GROVE ON LOT 1277 REVISE SWM
2	8-6-12	ADD CAPITAL PROJ. D-1124-03 (BEECHFIELD AVE. IMPROVEMENTS) BY NOLAN ASSOC.
1	10-13-10	ADD ESD/WQv INFORMATION FOR LOTS 1276-1278

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	7/4/07 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT	7/24/07 DATE
DIRECTOR	7/27/07 DATE

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

5/29/07

OWNER:
BELLE GROVE CORP.
4024 BELLE GROVE ROAD
BALTIMORE, MD 21225-2657
410-789-7070

PROJECT: EUCLID CORNERS PARCEL 'A', LOTS 1276-1278 & OPEN SPACE LOT 1279

LOCATION: TAX MAP: 38, GRID: 13; PART OF PARCEL: 873; 1st ELECTION DISTRICT; HOWARD COUNTY, MARYLAND

TITLE: SITE PLAN (GEOMETRY)

DATE:	AUGUST, 2005 / JUNE, 2007	PROJECT NO.	1465
SCALE:	1"=30'	SHEET	2 OF 14
DESIGN:	DRAFT: RPS	CHECK: DAM	

SDP-06-22

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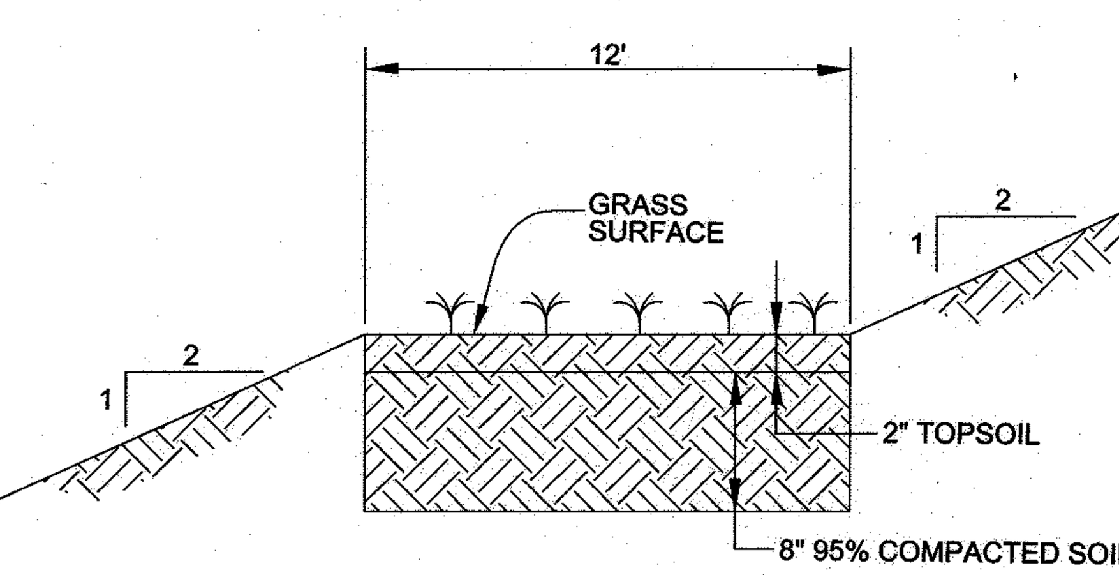
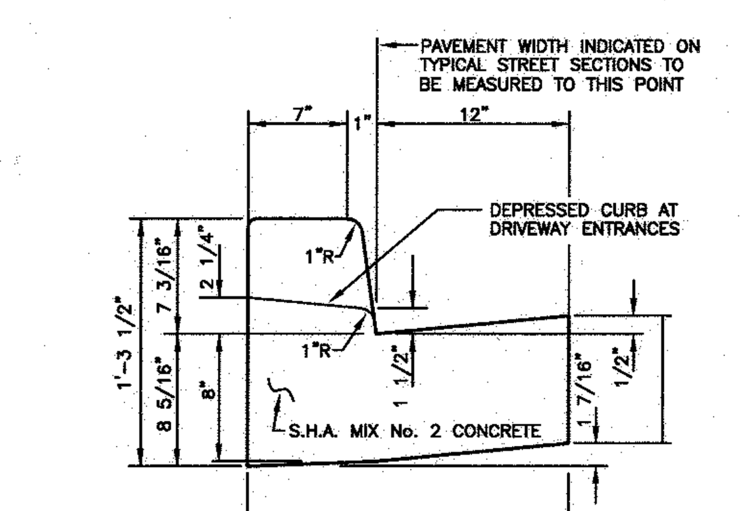
1 inch = 30 ft.

LEGEND:

SOILS CLASSIFICATION	AbC1
SOILS DELINATION	
EXISTING CONTOURS	999 / 999
PROPOSED CONTOURS	999
STEEP SLOPES 10% TO 24.99%	
STEEP SLOPES 25%+	
EX. PUBLIC 100 YEAR FLOODPLAIN, DRAINAGE AND UTILITY EASMENT	
EXISTING SEWER EASEMENT	
EX. PUBLIC SEWER, WATER AND UTILITY EASEMENT	
PROPOSED WATERLINE EASEMENT	
FOREST CONSERVATION EASEMENT	
SPECIMEN TREE	42"POPLAR
EXISTING TREELINE	
PROPOSED TREELINE	
PROPOSED CONCRETE SIDEWALK	
EXISTING SANITARY MANHOLE	
PROPOSED LIGHT POLE	
LIMIT OF DISTURBANCE	LOD
PROPOSED FENCELINE	
ROOF DIS-CONNECT	



EMERGENCY ACCESS ROAD TYPICAL SECTION
NOT TO SCALE



STANDARD 7" COMBINATION CURB AND GUTTER (R-3.01)
N.T.S.

Table B.1: Temporary Seeding for Site Stabilization

Plant Species	Seeding Rate [1/] lb/ac	Seeding Rate [1/] lb/1000 ft²	Seeding Depth [2/] (inches)	Recommended Seeding Dates by Plant Hardiness Zone [3/] 5b and 6a	6b	7a and 7b
Annual Ryegrass (*Lolium perenne ssp. multiflorum*)	40	1.0	0.5	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Aug 15 to Nov 30
Barley (*Hordeum vulgare*)	96	2.2	1.0	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Aug 15 to Nov 30
Oats (*Avena sativa*)	72	1.7	1.0	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Aug 15 to Nov 30
Wheat (*Triticum aestivum*)	120	2.8	1.0	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Aug 15 to Nov 30
Cereal Rye (*Secale cereale*)	112	2.8	1.0	Mar 15 to May 31; Aug 1 to Oct 31	Mar 1 to May 15; Aug 1 to Nov 15	Feb 15 to Apr 30; Aug 15 to Dec 15
Foxtail Millet (*Setaria italica*)	30	0.7	0.5	Jun 1 to Jul 31	May 16 to Jul 31	May 1 to Aug 14
Pearl Millet (*Pennisetum glaucum*)	20	0.5	0.5	Jun 1 to Jul 31	May 16 to Jul 31	May 1 to Aug 14

NOTES:
1/ Seeding rates for the warm-season grasses are in pounds of Pure Live Seed (PLS). Actual planting rates shall be adjusted to reflect percent seed germination and purity, as tested. Adjustments are usually not needed for the cool-season grasses.

Seeding rates listed above are for temporary seedings, when planted alone. When planted as a nurse crop with permanent seed mixes, use 1/3 of the seeding rate listed above for barley, oats, and wheat. For smaller-seeded grasses (annual ryegrass, pearl millet, foxtail millet), do not exceed more than 5% (by weight) of the overall permanent seeding mix. Cereal rye generally should not be used as a nurse crop, unless planting will occur in very late fall beyond the seeding dates for other temporary seedings. Cereal rye has allelopathic properties that inhibit the germination and growth of other plants. If it must be used as a nurse crop, seed at 1/3 of the rate listed above.

Oats are the recommended nurse crop for warm-season grasses.

2/ For sandy soils, plant seeds at twice the depth listed above.
3/ The planting dates listed are averages for each Zone and may require adjustment to reflect local conditions, especially near the boundaries of the zone.

B.20

Table B.3: Recommended Planting Dates for Permanent Cover in Maryland [1/]

Type of Plant Material	Plant Hardiness Zones 5b and 6a	6b	7a and 7b
Seeds - Cool-Season Grasses (includes mixes with forbs and/or legumes)	Mar 15 to May 31 Aug 1 to Sep 30	Mar 1 to May 15 Aug 1 to Oct 15	Feb 15 to Apr 30 Aug 15 to Oct 31 Nov 1 to Nov 30♦
Seeds - Warm-Season/Cool-Season Grass Mixes (includes mixes with forbs and/or legumes)	Mar 15 to May 31♦♦ Jun 1 to Jun 15*	Mar 1 to May 15♦♦ May 16 to Jun 15*	Feb 15 to Apr 30♦♦ May 1 to May 31*
Sod - Cool-Season	Mar 15 to May 31 Jun 1 to Aug 31* Sep 1 to Nov 1*+	Mar 1 to May 15 May 16 to Sep 14* Sep 15 to Nov 15*+	Feb 15 to Apr 30 May 1 to Sep 30* Oct 1 to Dec 1*+
Unrooted Woody Materials; Bare-Root Plants; Bulbs, Rhizomes, Corms, and Tubers [2/]	Mar 15 to May 31 Jun 1 to Jun 30*	Mar 1 to May 15 May 16 to Jun 30*	Feb 15 to Apr 30 May 1 to Jun 30*
Containerized Stock; Balled-and-Burlapped Stock	Mar 15 to May 31 Jun 1 to Jun 30* Sep 1 to Nov 15*+	Mar 1 to May 15 May 16 to Jun 30* Sep 15 to Nov 30*+	Feb 15 to Apr 30 May 1 to Jun 30* Oct 1 to Dec 15*+

Table B.3 Notes:

1. The planting dates listed are averages for each zone. These dates may require adjustment to reflect local conditions, especially near the boundaries of the zones. When seeding toward the end of the listed planting dates, or when conditions are expected to be less than optimal, select an appropriate nurse crop from Table 1 and plant with the permanent seeding mix. (See Table B.2, Note 1, for more information.)
2. When planted during the growing season, most of these materials must be purchased and kept in a dormant condition until planting. Bare-root grasses are the exception—they may be supplied as growing (non-dormant) plants.

♦ Additional planting dates for the lower Coastal Plain, dependent on annual rainfall and temperature trends. Recommend adding a nurse crop, as noted above, if planting during this period.

♦♦ Warm-season grasses need a soil temperature of at least 50 degrees F in order to germinate. If soil temperatures are colder than 50 degrees, or moisture is not adequate, the seeds will remain dormant until conditions are favorable. In general, planting during the latter portion of this period allows more time for weed emergence and weed control prior to planting. When selecting a planting date, consider the need for weed control vs. the likelihood of having sufficient moisture for later plantings, especially on droughty sites.

* Additional planting dates during which supplemental watering may be needed to ensure plant establishment.

\+ Frequent freezing and thawing of wet soils may result in frost-heaving of materials planted in late fall, if plants have not sufficiently rooted in place. Sod usually needs 4 to 6 weeks to become sufficiently rooted. Large containerized and balled-and-burlapped stock may be planted into the winter months as long as the ground is not frozen and soil moisture is adequate.

B.32

DRAFT October 15, 2009

ENGINEER'S CERTIFICATE

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

[signature] 1/30/15
ENGINEER DATE

DEVELOPER'S CERTIFICATE

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

[signature] 1/30/15
DEVELOPER DATE

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

John R Robertson 2/10/15
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[signature] 7.31.15
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[signature] 8.5.15
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[signature] 8.10.15
DIRECTOR DATE

PLEASE NOTE THAT THIS REVISION IS SUPERSEDING THE PREVIOUS SHEET DATED JUNE, 2007

NO	DATE	REVISION
4	10.12.16	Res. WHC to 1.5"
3	11-18-14	REPLACEMENT SHEET TO REVISE SEC CHARTS AND DETAILS, REV. TO MG
2	8-6-12	ADD CAPITAL PROJ. D-1124-03,(BEECHFIELD AVE. IMPROVEMENTS) BY NOLAN ASSOC
1	10-13-10	ADD ESD/WQv INFORMATION FOR LOTS 1276-1278

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315 ▲ ELLICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (P) 301-371-3505
(F) 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 6-8-2016.

STATE OF MARYLAND — JOHN M. CARNEY — No. 45577 — PROFESSIONAL ENGINEER
[signature] 1/30/15

OWNER:
BELLE GROVE CORP.
4024 BELLE GROVE ROAD
BALTIMORE, MD 21225-2657
410-789-7070

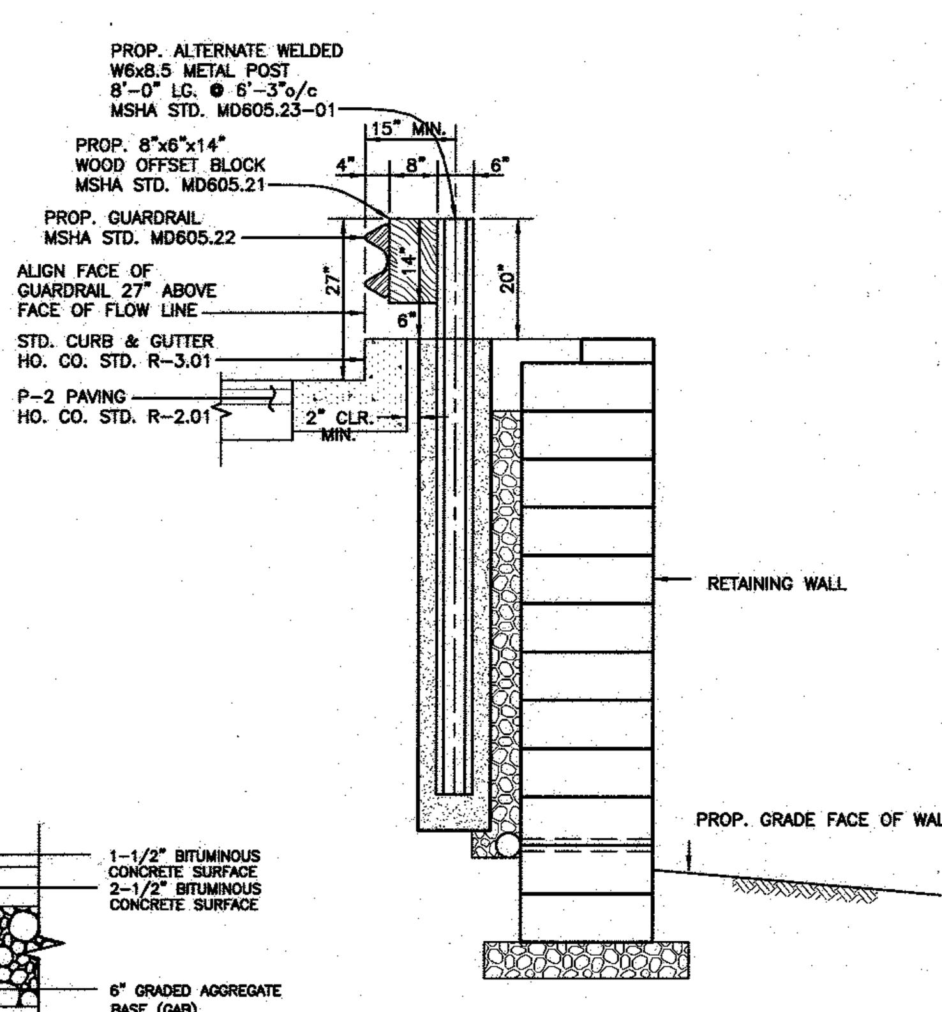
PROJECT: REVISED
EUCLID CORNERS PARCEL 'A', LOTS 1276 -1278 OPEN SPACE LOT 1279

LOCATION: TAX MAP: 38, GRID: 13
PART OF PARCEL: 873
1st ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

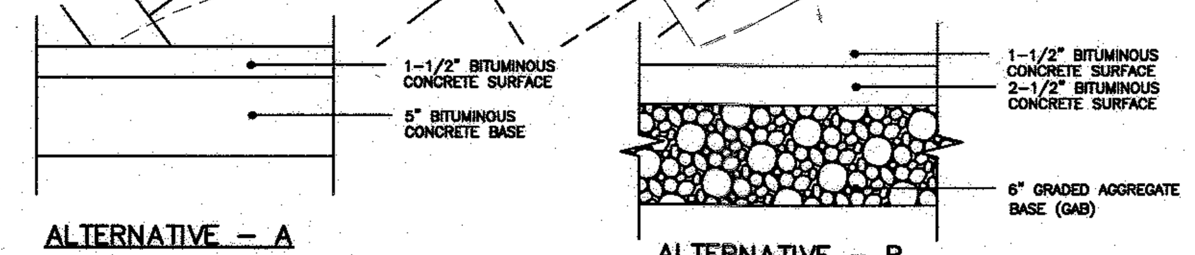
TITLE: **SITE DEVELOPMENT PLAN (GRADING) AND SEEDING CHARTS**

DATE: JUNE, 2007 / NOVEMBER, 2014		PROJECT NO. 1465	
DESIGN:	DRAFT: RPS	CHECK: DAM	
SCALE: 1"=30'		SHEET 3 OF 14	

SDP-06-22



TYPICAL SECTION GUARDRAIL PLACEMENT AT RETAINING WALLS
NOT TO SCALE



P-2 PAVING SECTION
TO BE USED IN THE DRIVE AISLE AS INDICATED ON THE PLAN VIEW
NOT TO SCALE

SOILS LEGEND

MAP SYMBOL	SOIL GROUP	SOIL TYPE
* IuB	C	IUKA LOAM, LOCAL ALLUVIUM, 1 TO 5 PERCENT SLOPES
Md	C	MADE LAND
ScD	C	SAND AND CLAYEY LAND , MODERATELY STEEP
ScE	C	SAND AND CLAYEY LAND , MODERATELY SLOPING
Ha	D	HATBORO SILT LOAM

* INDICATES HYDRIC SOILS
TAKEN FROM SOILS SURVEY, ISSUED JULY 1968, MAP NO. 7

NOTE: FOR PROPOSED STORM DRAIN IMPROVEMENTS PROFILE REFER TO CAPITAL PROJECT D-1124-03.

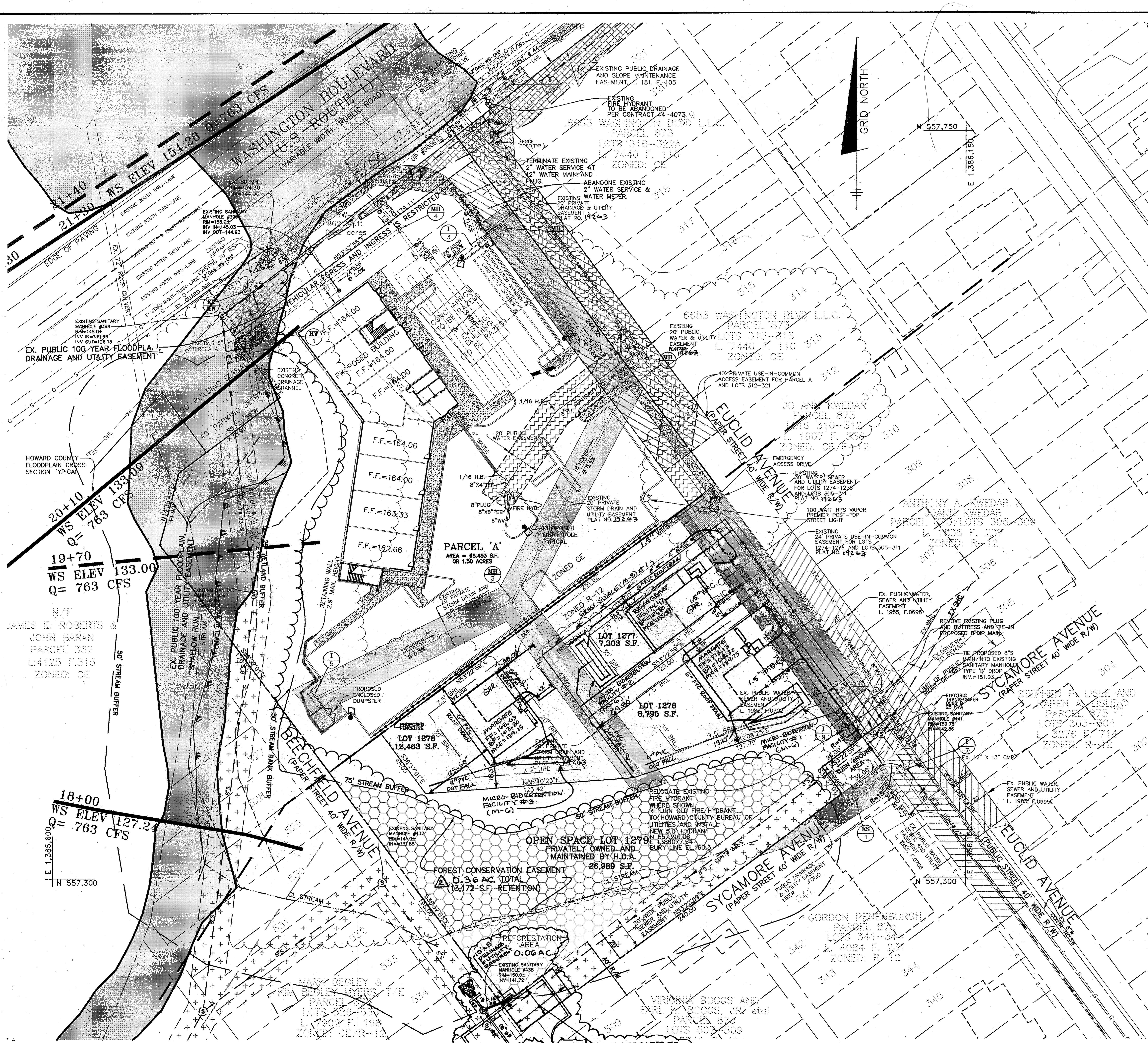
NOTE: BEECHFIELD AVENUE IMPROVEMENTS ARE SHOWN PER CAPITAL PROJECT D-1124-03.

* FOR SINGLE RESIDENTIAL LOTS ESD/WQv INFO: SEE SHEET 3

STREET LIGHT SCHEDULE

SYMBOL	LOCATION		DESCRIPTION
☼	PRIVATE DRIVEWAY		100 WATT HPS VAPOR PREMIER POST TOP

J:\1465\dwg\REDLINE REPLACEMENT SHT 3.dwg, REPLACEMENT SHT 3, 1/30/2015 10:00:36 AM, bdodson



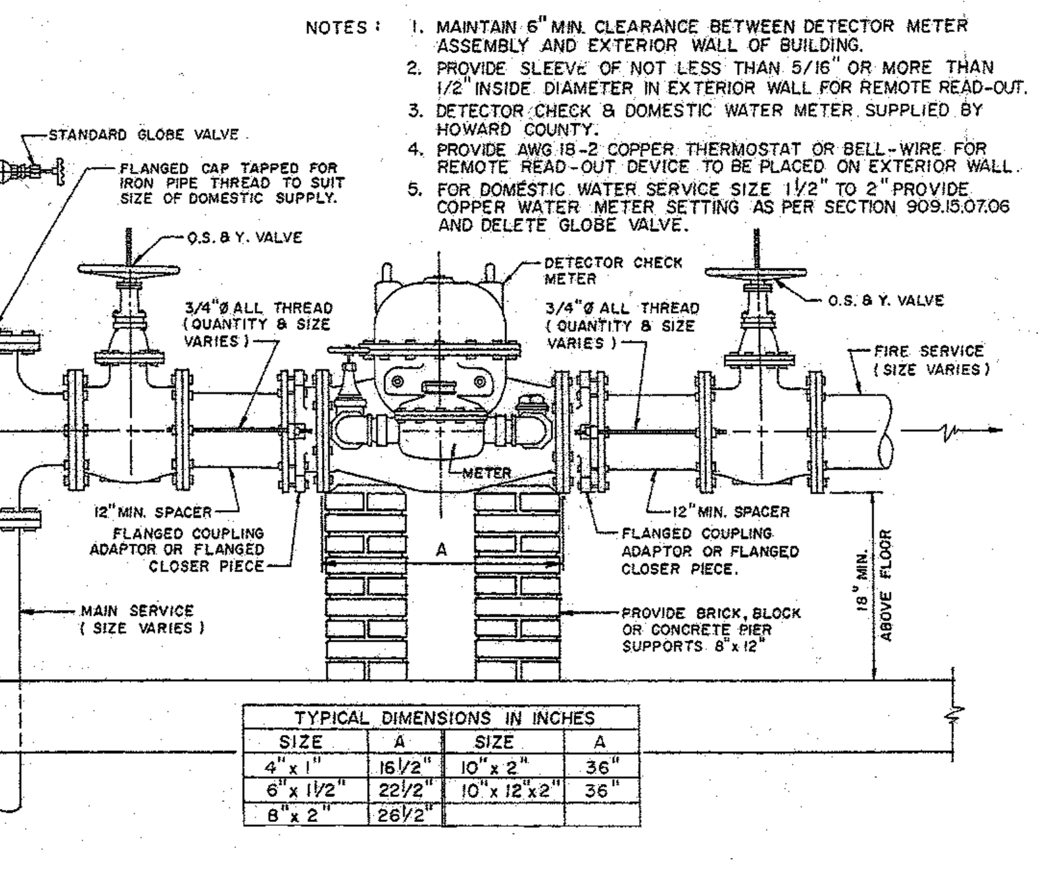
PLAN VIEW
SCALE: 1" = 30'

LAND DEDICATED TO HOWARD COUNTY FOR THE PURPOSE OF A PUBLIC ROAD, 0.0163AC

NOTE: FOR PROPOSED STORM DRAIN IMPROVEMENTS PROFILE REFER TO CAPITAL PROJECT D-1124-03

SEAL & SIGNATURE FOR REV. 2 ONLY

NOTES:
1. MAINTAIN 6" MIN. CLEARANCE BETWEEN DETECTOR METER ASSEMBLY AND EXTERIOR WALL OF BUILDING.
2. PROVIDE SLEEVE OF NOT LESS THAN 5/16" OR MORE THAN 1/2" INSIDE DIAMETER IN EXTERIOR WALL FOR REMOTE READ-OUT.
3. DETECTOR CHECK & DOMESTIC WATER METER SUPPLIED BY HOWARD COUNTY.
4. PROVIDE AWG 18-2 COPPER THERMOSTAT OR BELL-WIRE FOR REMOTE READ-OUT DEVICE TO BE PLACED ON EXTERIOR WALL.
5. FOR DOMESTIC WATER SERVICE SIZE 1 1/2" TO 2" PROVIDE COPPER WATER METER SETTING AS PER SECTION 909.15.07.06 AND DELETE GLOBE VALVE.



TYPICAL DIMENSIONS IN INCHES			
SIZE	A	SIZE	A
4" x 1"	16 1/2"	10" x 2"	36"
6" x 1 1/2"	22 1/2"	10" x 12" x 2"	36"
8" x 2"	26 1/2"		

INSTALLATION OF 4" INSIDE FIRE SUPPLY WITH
2" METERED WATER SERVICE DETAIL (W-3.44)

LEGEND

- EXISTING GAS LINE
- EXISTING UNDERGROUND ELEC
- EXISTING SANITARY SEWER
- EXISTING WATER MAIN
- EXISTING SANITARY MANHOLE
- EXISTING OVERHEAD LINE
- PROPOSED WATER LINE
- PROPOSED SANITARY LINE
- PROPOSED STORM DRAIN
- PROPOSED SANITARY MANHOLE
- EX. PUBLIC 100 YEAR FLOODPLAIN, DRAINAGE AND UTILITY EASEMENT
- EXISTING SANITARY EASEMENT
- PRIVATE STORM DRAIN EASEMENT
- EXISTING PUBLIC WATER, SEWER AND UTILITY EASEMENT
- PROPOSED PUBLIC SANITARY EASEMENT
- PROPOSED PUBLIC WATER EASEMENT
- PROPOSED FENCELINE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 7/11/07
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 7/24/07
DIRECTOR	DATE 7/27/07

NO	DATE	REVISION
4	10.12.16	Residential WHCs to 1.5"
3	12-15-14	REVISE HOUSE FOOTPRINTS, DRIVEWAYS AND SWM ON LOTS 1276-1278
2	8-6-12	ADD CAPITAL PROJ. D-1124-03 (BEECHFIELD AVE. IMPROVEMENTS) BY NOLAN ASSOC.
1	10-13-10	ADD ESD/WQv INFORMATION FOR LOTS 1276-1278

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

STATE OF MARYLAND REGISTERED PROFESSIONAL ENGINEER
5/29/07

OWNER:
BELLE GROVE CORP.
4024 BELLE GROVE ROAD
BALTIMORE, MD 21225-2657
410-789-7070

PROJECT: EUCLID CORNERS PARCEL 'A', LOTS 1276-1278 & OPEN SPACE LOT 1279

LOCATION: TAX MAP: 38, GRID: 13
PART OF PARCEL: 873
1st ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: SITE DEVELOPMENT PLAN (UTILITIES)

DATE:	AUGUST, 2005 / JUNE, 2007	PROJECT NO.	1465
DESIGN:	DRAFT: RPS	CHECK: DAM	
SCALE:	1"=30'	SHEET	4 OF 14

SDP-06-22

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PLAN VIEW
SCALE: 1" = 50'

NOTE: FOR STORM DRAIN IMPROVEMENTS PROFILE REFER TO CAPITAL PROJECT D-1124-03 (2)

LEGEND

- SOILS CLASSIFICATION — *ScD*
- SOILS DELINEATION
- EXISTING CONTOURS — 999
- PROPOSED CONTOURS — 999
- STEEP SLOPES 15% TO 24.99%
- STEEP SLOPES 25% +
- 100 YEAR FLOODPLAIN DRAINAGE AND UTILITY EASEMENT
- DRAINAGE AREA LIMITS
- TC PATH — K1 K2
- DRAINAGE AREA DESIGNATION — I / 1
- PROPOSED FENCELINE

STORM DRAIN RUNOFF

INLET	DA (Ac.)	C	%IMP	ZONE
I-1	0.38	.82	95	CE
I-2	1.42	.71	76	CE
I-3	0.28	.72	85	CE
I-4	0.13	.86	100	CE
I-5	0.88	.66	89	CE
I-7	0.48	.00	57	R-12
Ex. Inlet	2.21	.33	38	R-12

TIME OF CONCENTRATION DRAINAGE AREA I-1:
A1 TO A2 = LAWN, SHEET FLOW, 49', SLOPE 14.0%
A2 TO A3 = PAVED, CONCENTRATED FLOW, 63', SLOPE 1.0%

TIME OF CONCENTRATION DRAINAGE AREA I-2:
B1 TO B2 = LAWN, SHEET FLOW, 100', SLOPE 5.5%
B2 TO B3 = UNPAVED, CONCENTRATED FLOW, 52', SLOPE 9.6%
B3 TO B4 = PAVED, CONCENTRATED FLOW, 172', SLOPE 6.3%

TIME OF CONCENTRATION DRAINAGE AREA I-3:
C1 TO C2 = ROOF, SHEET FLOW, 58', SLOPE 0.5%
C2 TO C3 = PAVED CONCENTRATED FLOW, 97', SLOPE 5.0%

TIME OF CONCENTRATION DRAINAGE AREA I-4:
D1 TO D2 = PAVED, SHEET FLOW, 24', SLOPE 3.0%
D2 TO D3 = PAVED, CONCENTRATED FLOW, 110', SLOPE 8.0%

TIME OF CONCENTRATION DRAINAGE AREA I-5:
F1 TO F2 = LAWN, SHEET FLOW, 100', SLOPE 2.6%
F2 TO F3 = UNPAVED, CONCENTRATED FLOW, 103', SLOPE 5.7%
F3 TO F4 = UNPAVED CONCENTRATED FLOW, 26', SLOPE 15.0%
F4 TO F5 = PAVED CONCENTRATED FLOW, 241', SLOPE 3.6%

TIME OF CONCENTRATION DRAINAGE AREA I-7:
J1 TO J2 = LAWN, SHEET FLOW, 60', SLOPE 2.0%
J2 TO J3 = PAVED CONCENTRATED FLOW, 298', SLOPE 6.7%

TIME OF CONCENTRATION DRAINAGE AREA EX. INLET:
K1 TO K2 = LAWN, SHEET FLOW, 100', SLOPE 8.0%
K2 TO K3 = UNPAVED, CONCENTRATED FLOW, 144, SLOPE 6.4%

NO	DATE	REVISION
(2)	8-6-12	ADD CAPITAL PROJ. D-1124-02 (BEECHFIELD AVE. IMPROVEMENTS) BY NOLAN ASSOC.
1	10-13-10	ADD ESD/WQv INFORMATION FOR LOTS 1276-1278

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/11/07

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/24/07

DIRECTOR — DATE 7/21/07

SEAL & SIGNATURE FOR REV. (2) ONLY

SOILS LEGEND		
MAP SYMBOL	SOIL GROUP	SOIL TYPE
* IuB	C	IUKA LOAM, LOCAL ALLUVIUM, 1 TO 5 PERCENT SLOPES
Md	C	MADE LAND
ScD	C	SAND AND CLAYEY LAND , MODERATELY STEEP
ScE	C	SAND AND CLAYEY LAND , MODERATELY SLOPING
Ha	D	HATBORO SILT LOAM

* INDICATES HYDRIC SOILS
TAKEN FROM SOILS SURVEY, ISSUED JULY 1968, MAP NO. 7

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

STATE OF MARYLAND REGISTERED PROFESSIONAL ENGINEER 5/29/07

OWNER:
BELLE GROVE CORP.
4024 BELLE GROVE ROAD
BALTIMORE, MD 21225-2657
410-789-7070

PROJECT: EUCLID CORNERS PARCEL 'A', LOTS 1276-1278 & OPEN SPACE LOT 1279

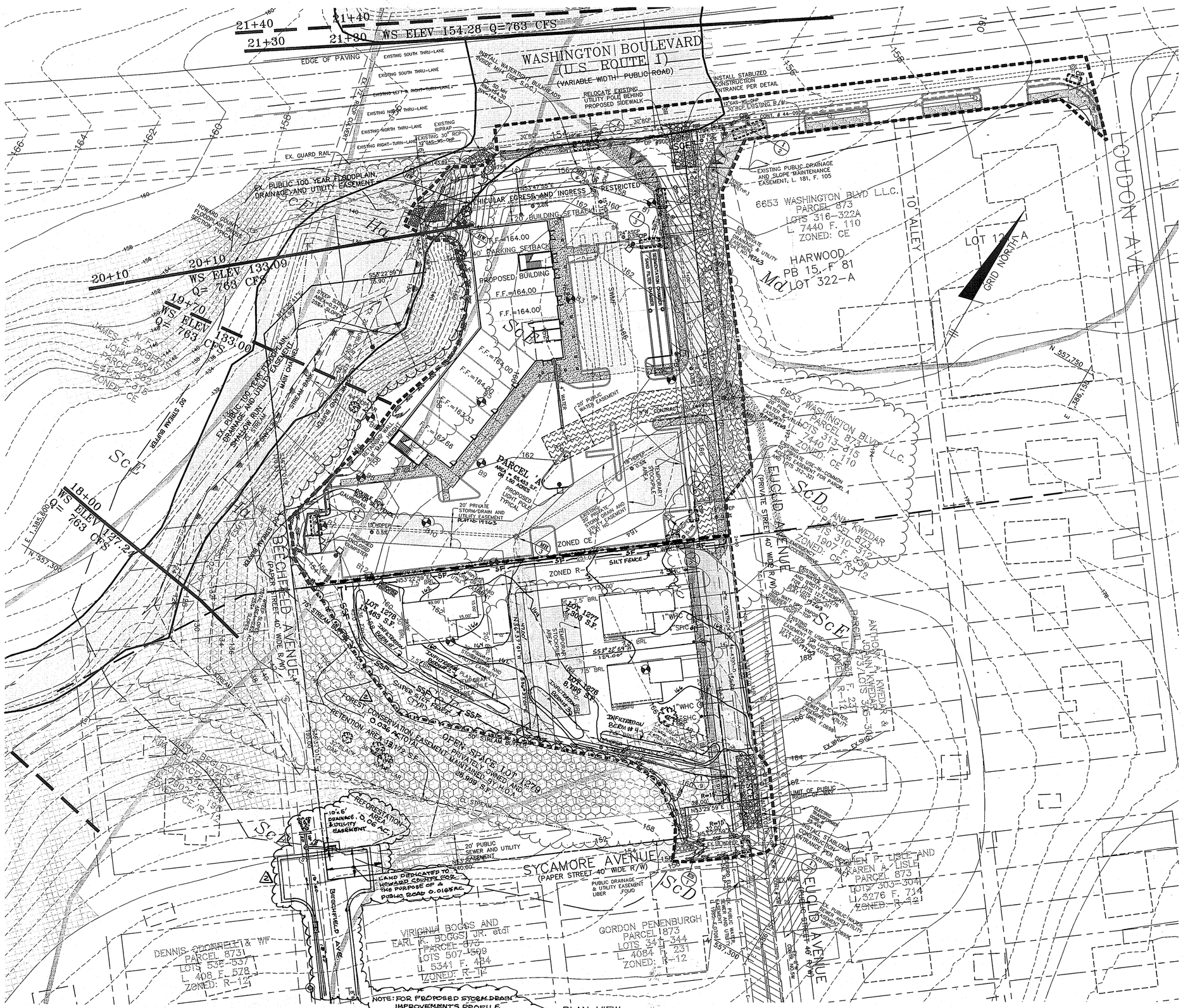
LOCATION: TAX MAP: 38, GRID: 13; PART OF PARCEL: 873; 1st ELECTION DISTRICT; HOWARD COUNTY, MARYLAND

TITLE: STORM DRAIN, DRAINAGE AREA MAP

DATE: AUGUST, 2005 / JUNE, 2007 — PROJECT NO. 1465

DESIGN: — DRAFT: RPS — CHECK: DAM — SCALE: AS SHOWN — SHEET 5 OF 14

SDP-06-22



PLAN VIEW
SCALE: 1" = 30'

LEGEND

SOILS CLASSIFICATION	ScE
SOILS DELINEATION	
EXISTING CONTOURS	999
PROPOSED CONTOURS	999
STEEP SLOPES 15% TO 24.99%	
STEEP SLOPES 25% +	
EX. PUBLIC 100 YEAR FLOODPLAIN, DRAINAGE AND UTILITY EASEMENT	
CURB INLET PROTECTION	
STD. INLET PROTECTION	
SILT FENCE	SF SF SF SF
SUPER SILT FENCE	SSF SSF SSF
LIMIT OF DISTURBANCE	
EROSION CONTROL MATTING	
SPECIMEN TREE	42"POPLAR
STABLIZED CONSTRUCTION ENTRANCE	SCE
PROPOSED FENCELINE	

SEAL & SIGNATURE FOR REV. 2 ONLY

BY THE DEVELOPER:

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

DEVELOPER – BELLE GROVE, CORP.
ROB JONES, OWNER — DATE 5-31-07

BY THE ENGINEER:

"I/WE 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."

ENGINEER – DONALD A. MASON, P.E. # 21443 — DATE 5/29/07

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

NATURAL RESOURCES CONSERVATION SERVICE — DATE 6/29/07

REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS.

HOWARD SOIL CONSERVATION DISTRICT — DATE 6/29/07

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/6/07

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/29/07

DIRECTOR — DATE 7/27/07

NO	DATE	REVISION
2	8-6-12	ADD CAPITAL PROJ. D-1124-03 (BEECHFIELD AVE. IMPROVEMENTS) BY NOLAN ASSOC.
1	10-13-10	ADD ESD/MQG INFORMATION FOR LOTS 1276-1278

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

STATE OF MARYLAND — DONALD A. MASON — PROFESSIONAL ENGINEER — 5/29/07

OWNER:
BELLE GROVE CORP.
4024 BELLE GROVE ROAD
BALTIMORE, MD 21225-2657
410-789-7070

PROJECT: EUCLID CORNERS PARCEL 'A', LOTS 1276-1278 & OPEN SPACE LOT 1279

LOCATION: TAX MAP: 38, GRID: 13
PART OF PARCEL: 873
1st ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: SEDIMENT AND EROSION CONTROL PLAN

DATE: AUGUST, 2005 / JUNE, 2007 — PROJECT NO. 1465

DESIGN: RPS | DRAFT: RPS | CHECK: DAM | SCALE: 1"=30' | SHEET 6 OF 14

SDP-06-22

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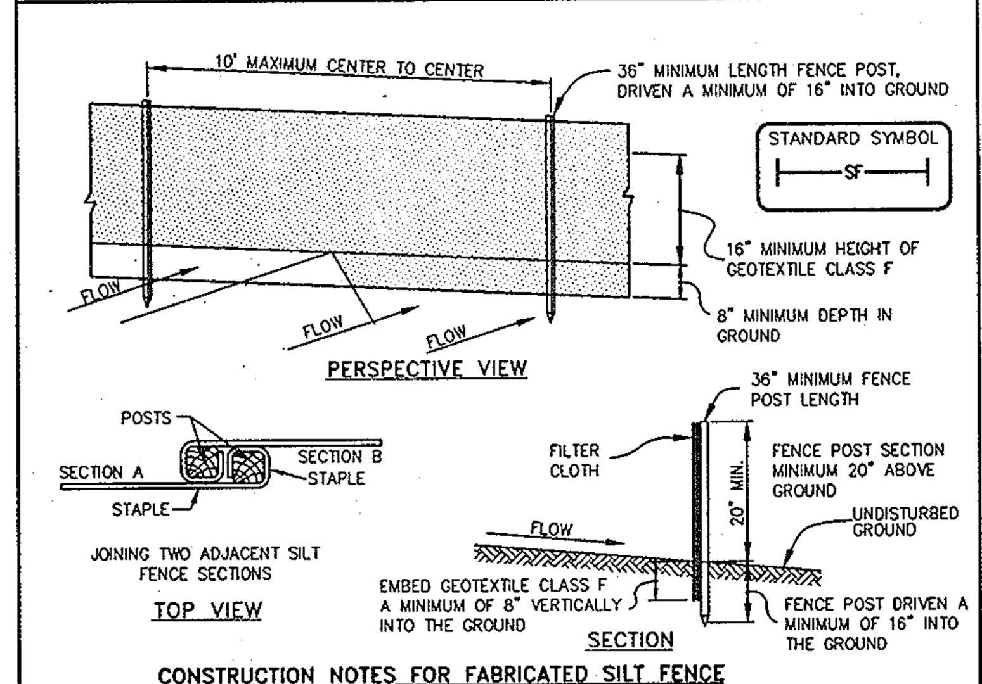
DETAIL 22 – SILT FENCE



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 11/2" x 11/2" square (minimum) cut, or 13/4" 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

SILT FENCE

SILT FENCE DESIGN CRITERIA

Slope Steepness	(Maximum) Slope Length	(Maximum) Silt Fence Length
Flatter than 50:1	unlimited	unlimited
50:1 to 10:1	125 feet	1,000 feet
10:1 to 5:1	100 feet	750 feet
5:1 to 3:1	60 feet	500 feet
3:1 to 2:1	40 feet	250 feet
2:1 and steeper	20 feet	125 feet

Note: In areas of less than 2% slope and sandy soils (USDA general classification system, soil Class A) maximum slope length and silt fence length will be unlimited. In these areas a silt fence may be the only perimeter control required.

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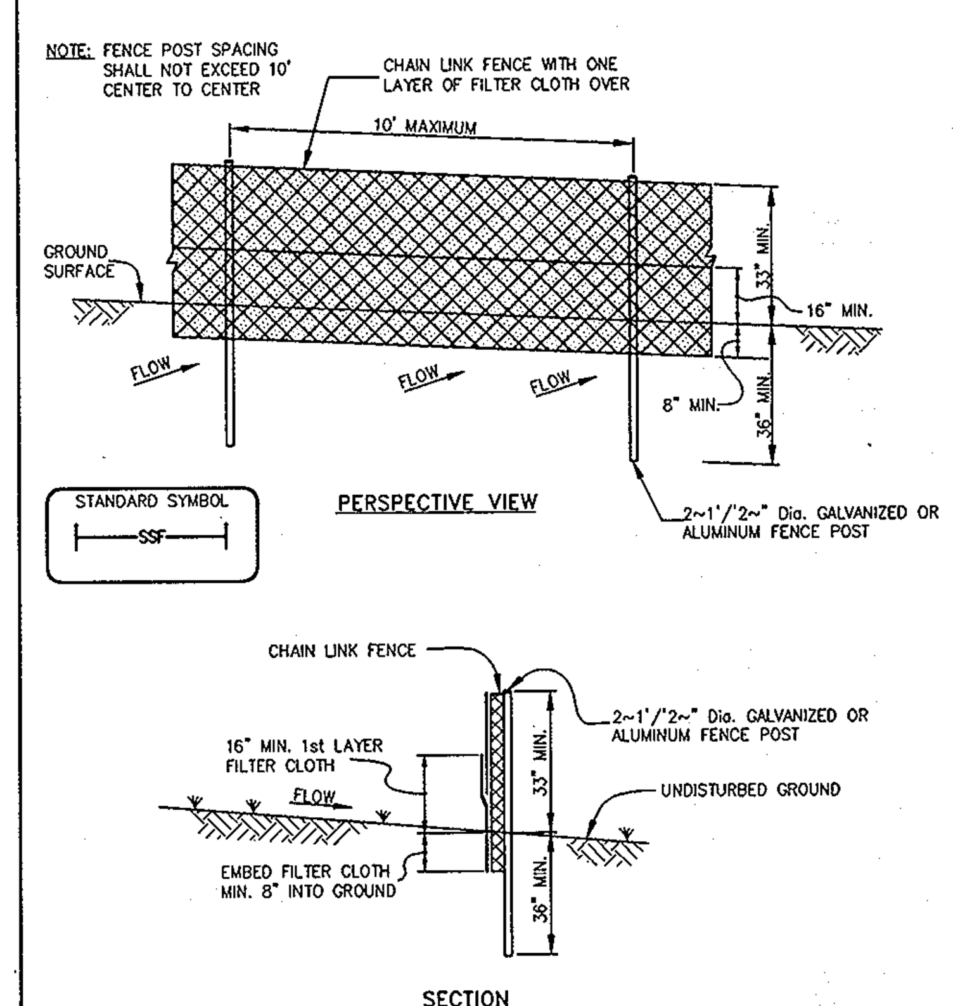
DETAIL 33 – SUPER SILT FENCE



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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

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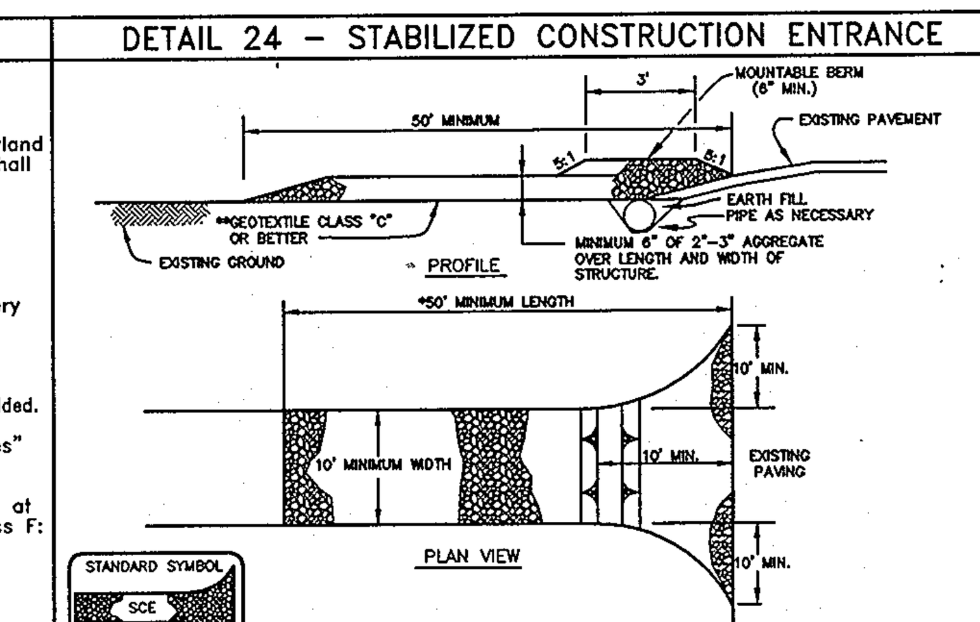
DETAIL 24 – STABILIZED CONSTRUCTION ENTRANCE



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.

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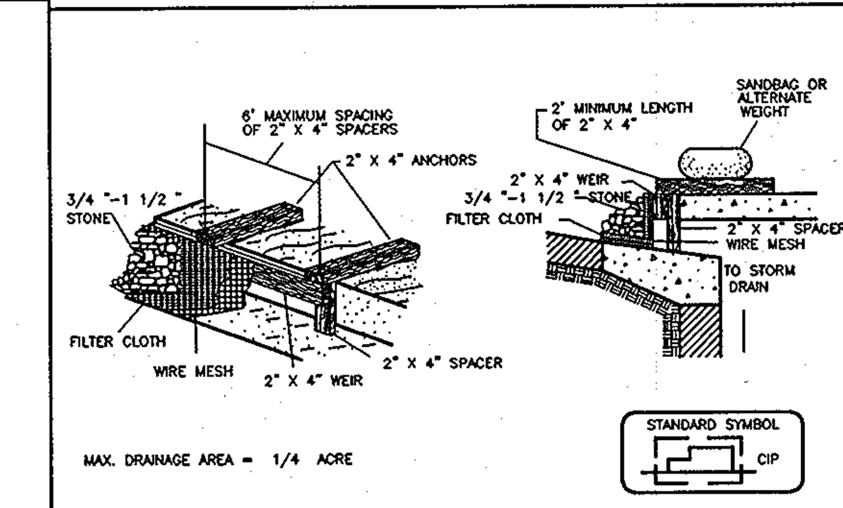
DETAIL 23C – CURB INLET PROTECTION (COG OR COS INLETS)



MAX. DRAINAGE AREA = 1/4 ACRE

Construction Specifications

1. Attach a continuous piece of wire mesh (30" minimum width by throat length plus 4') to the 2" x 4" weir (measuring throat length plus 2') as shown on the standard drawing.
2. Place a continuous piece of Geotextile Class E the same dimensions as the wire mesh over the wire mesh and securely attach it to the 2" x 4" weir.
3. Securely nail the 2" X 4" weir to a 9" long vertical spacer to be located between the weir and the inlet face (max. 4' apart).
4. Place the assembly against the inlet throat and nail (minimum 2' lengths of 2" x 4" to the top of the weir at spacer locations). These 2" x 4" anchors shall extend across the inlet top and be held in place by sandbags or alternate weight.
5. The assembly shall be placed so that the end spacers are a minimum 1' beyond both ends of the throat opening.
6. Form the 1/2 " x 1/2 " wire mesh and the geotextile fabric to the concrete gutter and against the face of the curb on both sides of the inlet. Place clean 3/4 " x 1 1/2 " stone over the wire mesh and geotextile in such a manner to prevent water from entering the inlet under or around the geotextile.
7. This type of protection must be inspected frequently and the filter cloth and stone replaced when clogged with sediment.
8. Assure that storm flow does not bypass the inlet by installing a temporary earth or asphalt dike to direct the flow to the inlet.

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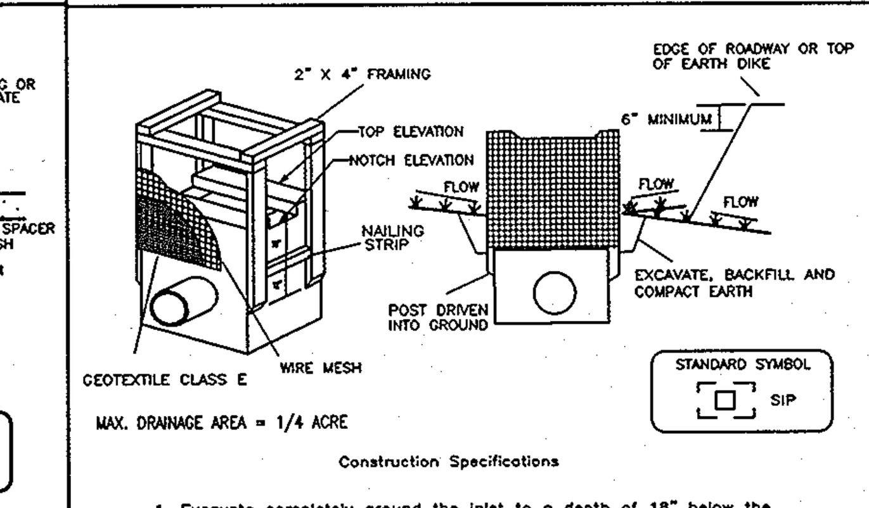
DETAIL 23A – STANDARD INLET PROTECTION



MAX. DRAINAGE AREA = 1/4 ACRE

Construction Specifications

1. Excavate completely around the inlet to a depth of 18" below the notch elevation.
2. Drive the 2" x 4" construction grade lumber posts 1' into the ground at each corner of the inlet. Place nail strips between the posts on the ends of the inlet. Assemble the top portion of the 2" x 4" frame using the overlap joint shown on Detail 23A. The top of the frame (weir) must be 6" below adjacent roadways where flooding and safety issues may arise.
3. Stretch the 1/2" x 1/2" wire mesh tightly around the frame and fasten securely. The ends must meet and overlap at a post.
4. Stretch the Geotextile Class E tightly over the wire mesh with the geotextile extending from the top of the frame to 18" below the inlet notch elevation. Fasten the geotextile firmly to the frame. The ends of the geotextile must meet at a post, be overlapped and folded, then fastened down.
5. Backfill around the inlet in compacted 6" layers until the layer of earth is level with the notch elevation on the ends and top elevation on the sides.
6. If the inlet is not in a sump, construct a compacted earth dike across the ditch line directly below it. The top of the earth dike should be at least 6" higher than the top of the frame.
7. The structure must be inspected periodically and after each rain and the geotextile replaced when it becomes clogged.

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SEDIMENT CONTROL NOTES

1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS AND PERMITS SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION.
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 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND 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:

	RES./COMM./TOTAL		
TOTAL AREA OF SITE		1.47	ACRES
TOTAL AREA DISTURBED	0.81/0.95	1.76	ACRES
AREA TO BE ROOFED OR PAVED	0.20/0.84	1.04	ACRES
AREA TO BE VEGETATIVELY STABILIZED	0.61/0.11	0.42	ACRES
TOTAL CUT	2787/3277	6,066	CU. YDS.
TOTAL FILL	927/1088	2,015	CU. YDS.
OFFSITE HAUL		*4,051	CU. YDS.

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

* – IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO IDENTIFY AN OFF-SITE FILL AREA WITH AN APPROVED SEDIMENT & EROSION CONTROL PLAN.

TEMPORARY SEEDBED PREPARATION

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 PREPARATION

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.

21.0 STANDARD AND SPECIFICATIONS FOR TOPSOIL

Definition

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

Purpose

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

Conditions Where Practice Applies

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

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

b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.

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

d. The soil is so acidic that treatment with limestone is not feasible. II. For the purpose of these Standards and Specifications, areas having slopes steeper than 2:1 require special consideration and design for adequate stabilization. Areas having slopes steeper than 2:1 shall have the appropriate stabilization shown on the plans.

Construction and Material Specifications

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

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 textured subsoils and shall contain less than 5% by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1 ½" 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 of topsoil shall be not less than 1.5 percent by weight.

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

d. No sod or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.

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

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

V. Topsoil Application

i. When topsoiling, maintain needed erosion and sediment control practices such as diversion, 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 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. G-21-2

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

i. Composted Sludge Material for use as a soil conditioner for sites having disturbed areas over 5 acres shall be tested to prescribed 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: Guideline Specifications, Soil Preparation and Sodding. MD-VA, Pub. #1, Cooperative Extension Service, University of Maryland and Virginia Polytechnic Institutes. Revised 1973.

SEQUENCE OF CONSTRUCTION
RESIDENTIAL DEVELOPMENT

NOTIFY SEDIMENT CONTROL DIVISION 48 HOURS PRIOR TO START OF CONSTRUCTION

DAY-1 OBTAIN GRADING PERMIT

DAY 2-8 CLEAR & GRUB RESIDENTIAL AREA (LOTS 1276-1278); INSTALL SEDIMENT CONTROLS AS SHOWN ON THIS SDP

DAY 9-20 UPON APPROVAL OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR BEGIN GRADING OF SITE; UPON COMPLETION IMMEDIATELY STABILIZE DISTURBED AREAS IN ACCORDANCE WITH TEMPORARY SEEDBED NOTES.

*DAY 21-100 EXCAVATE FOR FOUNDATION, CONSTRUCT HOUSE, BACKFILL, CONSTRUCT DRIVEWAY, ESD; FINAL GRADE AND STABILIZE IN ACCORDANCE WITH PERMANENT SEEDBED NOTES.

DAY 101-105 UPON APPROVAL OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR REMOVE SEDIMENT CONTROL DEVICES AND STABILIZE ANY REMAINING DISTURBED AREAS.

NOTE; 1) SEDIMENT CONTROL LOCATION AND IMPLEMENTATION SHOWN ON THESE PLANS IS SUBSECT TO REVISION IN THE FEILD AT THE DISCRETION OF THE SEDIMENT CONTROL INSPECTOR.

*- INDICATES SINGLE HOUSE CONSTRUCTION

DRILL HOLE LOG
BORING NO.: B-1

PROJECT: 6661 Washington Blvd. PROJECT NO.: 04293
CLIENT: Belle Grove Corporation DATE: 11/09/04
LOCATION: See Boring Plan ELEVATION: 162.22'
DRILLER: Geomatrix Inc. LOGGED BY: RAO
DRILL RIG: Truck
DEPTH TO WATER> AT COMPLETION: Dry AFTER HOURS:
DEPTH TO CAVING> AT COMPLETION: 11.0' AFTER HOURS:

Depth	USCS	Description	NMC	SPT Depth	N
	SM	Moist Brown and Dark Brown loose f-m Silty Sand (SM) w/gravel (Fill?)	8	0'-1'6"	4
2.0	CL	Moist Brown very stiff fine Sandy Silty Clay (CL)	5	2'6"-4'	20
		– brown and dark brown stiff below 4.5'	4	5'-6'6"	13
7.0	ML	Very Moist Brown and Light Tan very stiff fine Sandy Silt (ML)	29	7'6"-9'	26
		– reddish brown and brown hard w/thin ironstone layers below 9.5'		10'-11'6"	51
13.0	SC-SM	Moist Gray and Brown very dense f-m Silty Clayey Sand (SC-SM)		15'-16'3"	88+
				18'6"-18'7"	51+
20.0		Bottom of Boring 20'			

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

DRILL HOLE LOG
BORING NO.: B-2

PROJECT: 6661 Washington Blvd. PROJECT NO.: 04293
CLIENT: Belle Grove Corporation DATE: 11/09/04
LOCATION: See Boring Plan ELEVATION: 167.81'
DRILLER: Geomatrix Inc. LOGGED BY: RAO
DRILL RIG: Truck
DEPTH TO WATER> AT COMPLETION: Dry AFTER HOURS:
DEPTH TO CAVING> AT COMPLETION: 4.4' AFTER HOURS:

Depth	USCS	Description	NMC	SPT Depth	N
	ML	Moist Brown stiff fine Sandy Silt (ML)	16	0'-1'6"	10
		– moist to very moist hard w/gravel and trace Clay below 2'	26	2'6"-4'	49
			30	5'-6'6"	59
7.0	ML	Very Moist Brown and Light Tan very stiff fine Sandy Silt (ML)	35	7'6"-9'	26
		– reddish brown, brown and light tan w/ironstone layers below 18'		10'-11'6"	19
				15'-16'6"	18
		– hard below 18.5'		18'6"-19'5"	51+
20.0		Bottom of Boring 20'			

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

DRILL HOLE LOG
BORING NO.: B-3

PROJECT: 6661 Washington Blvd. PROJECT NO.: 04293
CLIENT: Belle Grove Corporation DATE: 11/09/04
LOCATION: See Boring Plan ELEVATION: 164.08'
DRILLER: Geomatrix Inc. LOGGED BY: RAO
DRILL RIG: Truck
DEPTH TO WATER> AT COMPLETION: Dry AFTER HOURS:
DEPTH TO CAVING> AT COMPLETION: 11.0' AFTER HOURS:

Depth	USCS	Description	NMC	SPT Depth	N
	Fill	Moist Dark Brown medium dense f-m Silty Sand (SM) w/trace gravel (Fill)	12	0'-1'6"	10
2.0	CL	Moist Pale Red hard f-m Sandy Silty Clay (CL)	14	2'6"-4'	31
		– brown and pale red very stiff w/trace gravel and thin Silty Clayey Sand (SC-SM) layers below 4.5'	13	5'-6'6"	28
7.0	SC-SM	Moist Brown dense f-m Silty Clayey Sand (SC-SM) w/gravel	9	7'6"-9'	35
9.5	SM-ML	Moist to Very Moist Brown dense fine Silty Sand (SM) to very stiff Sandy Silt (ML)		10'-11'6"	28
13.0	SC-SM	Moist Grayish Brown and Tan dense f-m Silty Clayey Sand (SC-SM) w/Sandy Silt (ML) layers		15'-16'6"	41
		– very dense below 18.5'		18'6"-19'5"	51+
20.0		Bottom of Boring 20'			

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

DRILL HOLE LOG
BORING NO.: B-4

PROJECT: 6661 Washington Blvd. PROJECT NO.: 04293
CLIENT: Belle Grove Corporation DATE: 11/08/04
LOCATION: See Boring Plan ELEVATION: 150.78'
DRILLER: Geomatrix Inc. LOGGED BY: RAO
DRILL RIG: Truck
DEPTH TO WATER> AT COMPLETION: Dry AFTER HOURS:
DEPTH TO CAVING> AT COMPLETION: 14.4' AFTER HOURS:

Depth	USCS	Description	NMC	SPT Depth	N
	SM-ML	Moist Light Brown loose f-m Silty Sand (SM) to medium stiff Sandy Silt (ML)	11	0'-1'6"	5
2.0	CL-ML	Layered Damp to Moist Brown and Pale Red hard fine Sandy Clayey Silt (ML) and Sandy Silty Clay (CL)	11	2'6"-4'	31
			9	5'-6'6"	40
			13	7'6"-9'	32
8.5	SC-SM	Moist Reddish Brown dense f-m Silty Clayey Sand (SC-SM) – w/ironstone fragments from 9.5' to 13'		10'-11'6"	25
		– olive gray and reddish brown below 13'			
		– medium dense below 15'		15'-16'6"	20
		– dense w/thin Sandy Silt (ML) layers below 18'		18'6"-20'	46
20.0		Bottom of Boring 20'			

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

DRILL HOLE LOG
BORING NO.: B-5

PROJECT: 6661 Washington Blvd. PROJECT NO.: 04293
CLIENT: Belle Grove Corporation DATE: 11/08/04
LOCATION: See Boring Plan ELEVATION: 158.96'
DRILLER: Geomatrix Inc. LOGGED BY: RAO
DRILL RIG: Truck
DEPTH TO WATER> AT COMPLETION: Dry AFTER HOURS:
DEPTH TO CAVING> AT COMPLETION: 15.0' AFTER HOURS:

Depth	USCS	Description	NMC	SPT Depth	N
	Fill	Moist Brown and Dark Brown loose f-m Silty Sand (SM) w/trace gravel and organics (Fill)	9	0'-1'6"	10
		– medium dense below 2.5'	9	2'6"-4'	15
3.5	ML	Very Moist Brown and Light Tan stiff fine Sandy Silt (ML)	40	5'-6'6"	14
		– very stiff below 7.5'	37	7'6"-9'	23
		– reddish brown and light tan below 9.5'		10'-11'6"	22
		– hard below 15'		15'-16'6"	37
17.0	SM-ML	Moist Reddish Brown very dense f-m Silty Sand (SM) to very hard Sandy Silt (ML)		18'6"-19'9"	87+
19.8		Bottom of Boring 19.8'			

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Marshall Engineering, Inc.

SEQUENCE OF CONSTRUCTION
RETAIL DEVELOPMENT

NOTIFY SEDIMENT CONTROL DIVISION 48 HOURS PRIOR TO START OF CONSTRUCTION

DAY 1	OBTAIN GRADING PERMIT.
DAY 2–7	INSTALL STABILIZED CONSTRUCTION ENTRANCE, SILT FENCES, AND SUPER SILT FENCES.
DAY 8–10	INSTALL I–7 TO ES–1
DAY 11–40	INSTALL SAND FILTER AND UNDERGROUND SWMF AND SITE STORM DRAIN SYSTEM, PLACE INLET PROTECTION AROUND INSTALLED INLETS. PROVIDE WATERTIGHT BULKHEADS AT MH4 FROM RECEIVING/SENDING FLOW TO HW1 UNTIL EXISTING SITE IS PERMANENTLY STABLE, AND AND PERMISSION GRANTED FROM INSPECTOR.
DAY 40–48	UPON APPROVAL OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, BRING DRIVEWAY AND PARKING AREA TO SUBGRADE AND STABILIZE SLOPES IN ACCORDANCE WITH TEMPORARY SEEDBED NOTES.
DAY 48–55	UPON APPROVAL OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, INSTALL WATER, SEWER AND UTILITY LINES.
DAY 55–145	UPON APPROVAL OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, CONSTRUCT BUILDING, AND STABILIZE IN ACCORDANCE WITH TEMPORARY SEEDBED NOTES.
DAY 145–160	UPON APPROVAL OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, INSTALL CURB AND GUTTER, PAVING, AND CONCRETE SIDEWALK.
DAY 161–165	COMPLETE GRADING OF SITE AND STABLIZE DISTURBED AREAS IN ACCORDANCE WITH THE PERMANENT SEEDBED NOTES.
DAY 166–170	UPON APPROVAL OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, REMOVE REMAINING SEDIMENT CONTROL DEVICES, AND STABILIZED DISTURBED AREAS IN ACCORDANCE WITH THE PERMANENT SEEDBED NOTES. REMOVE BULKHEADS AT MH4 AND REMOVE ANY AND ALL JUNK, TRASH AND DEBRIS FROM THE STREAMS, WETLANDS, FLOODPLAINS, BUFFERS AND FOREST CONSERVATION AREAS.

BY THE DEVELOPER:

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

Rob [signature] 5-31-07
DEVELOPER – BELLE GROVE CORP. ROB JONES, OWNER — DATE

BY THE ENGINEER:

"I/WE 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 5/29/07
ENGINEER – DONALD A. MASON, P.E. # 21443 — DATE

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

Jim Myers 6/29/07
NATURAL RESOURCES CONSERVATION SERVICE — DATE

REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS.

John R Robertson 6/29/07
HOWARD SOIL CONSERVATION DISTRICT — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[signature] 7/11/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

[signature] 7/24/07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

[signature] 7/23/07
DIRECTOR — DATE

NO	DATE	REVISION
1	10-13-10	ADD ESD/WQv INFORMATION TO LOTS 1276-1278

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

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — REGISTERED PROFESSIONAL ENGINEER — 5/29/07

OWNER: BELLE GROVE CORP. 4024 BELLE GROVE ROAD BALTIMORE, MD 21225-2657 410-789-7070

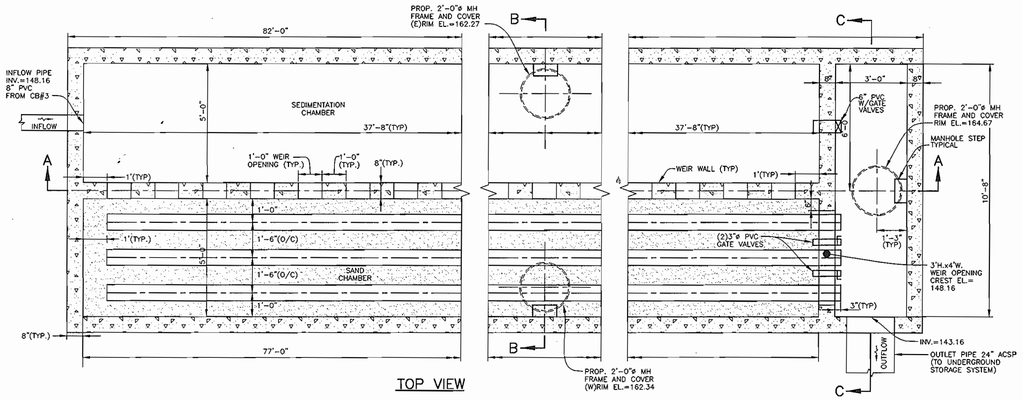
PROJECT: EUCLID CORNERS PARCEL 'A', LOTS 1276–1278 & OPEN SPACE LOT 1279

LOCATION: TAX MAP: 38, GRID: 13 PART OF PARCEL: 873 1st ELECTION DISTRICT HOWARD COUNTY, MARYLAND

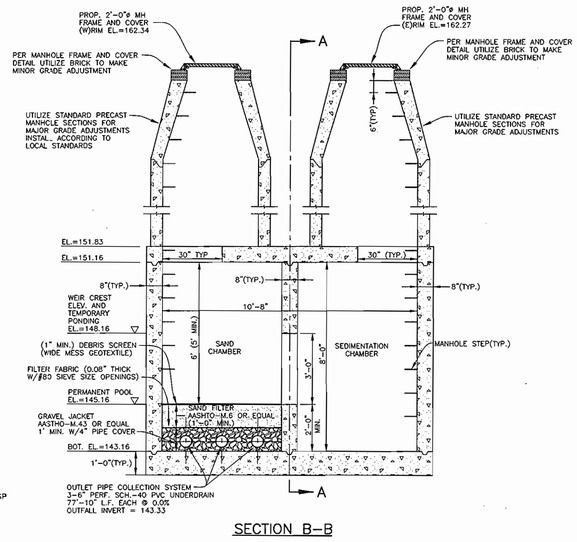
TITLE: SEDIMENT AND EROSION CONTROL NOTES AND DETAIL

DESIGN: RPS	DRAFT: RPS	CHECK: DAM	
DATE: AUGUST, 2005 / JUNE, 2007	PROJECT NO. 1465	SCALE: 1"=30'	SHEET 7 OF 14

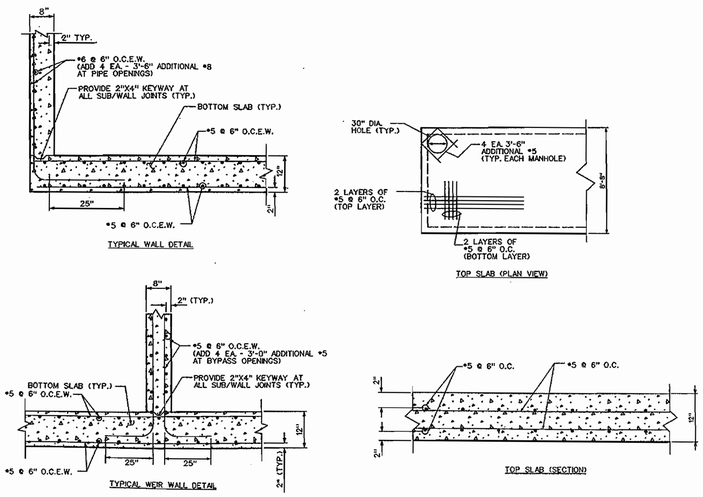
SDP-06-22



TOP VIEW

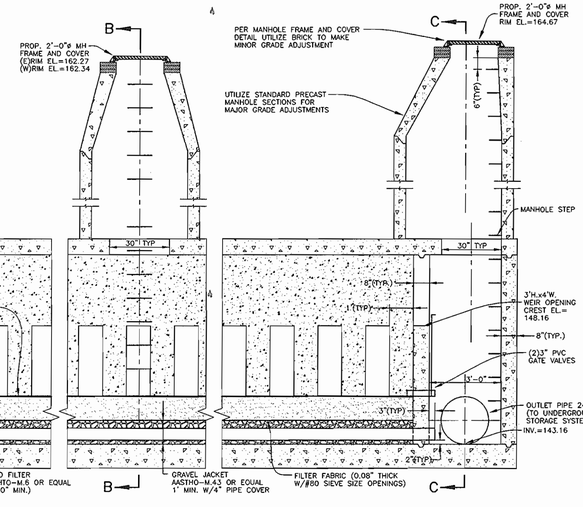


SECTION B–B
SIDE VIEW–FILTRATION

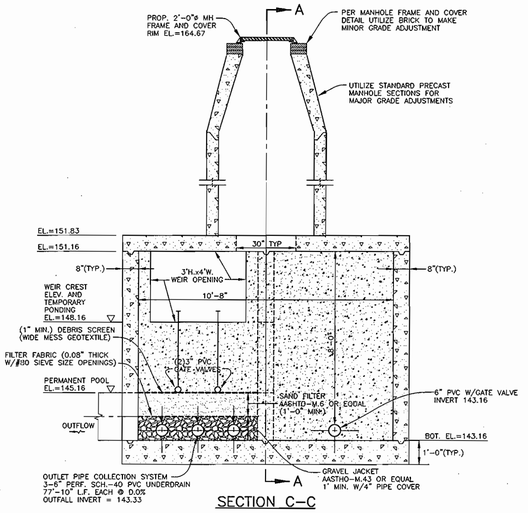


SAND FILTER REINFORCEMENT DETAIL

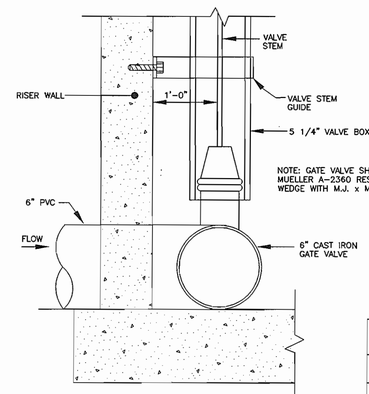
NOT TO SCALE



SECTION A–A
FRONT VIEW

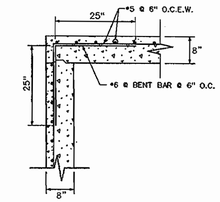


SECTION C–C
SIDE VIEW–CLEAR WELL



ANCHOR DETAIL FOR VALVE STEM

NOT TO SCALE



TYPICAL CORNER DETAIL

NOT TO SCALE

SUMMARY OF GENERAL STORAGE REQUIREMENTS D.A. #1 WITHIN UNDERGROUND SWMF AND SAND FILTER			
STEP	REQUIREMENT	VOLUME REQUIRED (AC.–FT.)	NOTES
1	WATER QUALITY VOLUME (WQv)	0.0985	PROVIDED BY SAND FILTER
2	RECHARGE VOLUME (Rev)	0.0108	REV FOR D.A. 1 COMPENSATED FOR WITHIN THE STONE BED OF THE UNDERGROUND STORM WATER MANAGEMENT FACILITY
3	CHANNEL PROTECTION VOLUME (CPv)	0.125	24 HOUR DETENTION WILL BE PROVIDED FOR WITHIN THE UNDERGROUND STORMWATER MANAGEMENT FACILITY
4	OVERBANK FLOOD PROTECTION VOLUME (Qp)	N/A	D.A. NOT IN DESIGNATED FLOOD AREA
5	EXTREME FLOOD VOLUME (Qf)	N/A	D.A. NOT IN DESIGNATED FLOOD AREA

SPECIAL STRUCTURE NOTE:

SAND FILTER REQUIRES SHOP DRAWINGS SEALED AND APPROVED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND.

NOTE: ENTIRE STRUCTURE TO BE MSHA MIX No.3 CONCRETE

SANDFILTER

SCALE: 1"=3'

TABLE B.3.1 MATERIALS AND SPECIFICATIONS FOR SAND FILTERS			
MATERIAL	SPECIFICATION	SIZE	NOTES:
NON-REBAR STEEL	ASTM A-36	N/A	STRUCTURAL STEEL TO BE HOT-DIPPED GALVANIZED ASTM A-123
	PEA GRAVEL: ASTM D-448 ORNAMENTAL STONE: WASHED COBBLES (),	PEA GRAVEL: NO.6 STONE: 2" TO 5"	
GEOTEXTILE (CLASS "C")	APPARENT OPENING SIZE: (ASTM D-4751) GRAB TENSILE STRENGTH: (ASTM D-4632) PUNCTURE RESISTANCE: (ASTM D-4833)	0.8" THE EQUIVALENT OPENING SIZE OF #80 SIEVE	MUST MAINTAIN 125 GPM / SQ. FT. FLOW RATE. NOTE: A PEA GRAVEL LAYER MAY BE SUBSTITUTED FOR GEOTEXTILES MEANT TO "SEPERATE" SAND FILTER LAYERS
UNDERDRAIN GRAVEL	AASHTO M-43	0.375" TO 0.750"	
UNDERDRAIN PIPING	F758, TYPE PS28 OR AASHTO M-278	6" RIGID SCH. 40 PVC OR SDR 35	3/8" PERF. @ 6" O/C, 4 HOLES PER ROW; MINIMUM OF 3" OF GRAVEL OVER PIPES, NOT NECESSARY UNDERNEATH PIPES
POURED-IN-PLACE CONC. (IF REQUIRED)	MSHA MIX NO.3; f'c=3500psi @ 28 DAYS, NORMAL WEIGHT, AIR ENTRAINED; REINFORCING TO MEET ASTM 615-60	N/A	ON-SITE TESTING OF POURED-IN-PLACE CONC. REQUIRED; 28 DAY STRENGTH TEST AND SLUMP TEST; ALL CONC. DESIGN (CAST -IN-PLACE or PRE-CAST) NOT USING PREVIOUSLY APPROVED STATE OR LOCAL STANDARDS REQUIRES DESIGN DRAWINGS SEALED AND APPROVED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND.
SAND (2.0' DEEP)	AASHTO M-6 OR ASTM C-33	0.02" TO 0.04"	SAND SUBSTITUTIONS SUCH AS DIABASE AND GRAYSTONE#10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATED OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND

OPERATION & MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED UNDERGROUND STORMWATER FILTRATION SYSTEMS SAND FILTER WQv#1

1. THE SEDIMENT CHAMBER OUTLET DEVICES SHALL BE CLEANED AND/OR REPAIRED WHEN DRAWDOWN TIMES WITHIN THE CHAMBER EXCEEDS 36 HOURS.
2. DEBRIS & LITTER SHALL BE REMOVED AS NECESSARY TO INSURE PROPER OPERATION OF THE SYSTEM.
3. SEDIMENT SHALL BE CLEANED–OUT OF THE SEDIMENTATION CHAMBER WHEN IT ACCUMULATES TO A DEPTH OF 6 INCHES.
4. WHEN WATER PONDS ON THE SURFACE OF THE FILTER BED FOR MORE THAN 72 HOURS, THE TOP FEW INCHES OF DISCOLORED MATERIAL SHALL BE REPLACED WITH FRESH MATERIAL. PROPER CLEANING AND DISPOSAL OF THE REMOVED MATERIALS & LIQUIDS MUST BE FOLLOWED BY THE OWNER.
5. A LOGBOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
6. THE MAINTENANCE LOGBOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.
7. ONCE THE PERFORMANCE CHARACTERISTICS OF THE INFILTRATION SYSTEM HAVE BEEN VERIFIED, THE MONITORING SCHEDULE CAN BE REDUCED TO AN ANNUAL BASIS UNLESS THE PERFORMANCE DATA INDICATES THAT A MORE FREQUENT SCHEDULE IS REQUIRED.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/11/07

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/17/07

DIRECTOR — DATE 7/23/07

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

STATE OF MARYLAND — DONALD A. DAM — REG. NO. 21437 — PROFESSIONAL ENGINEER — 5/24/07

OWNER:
BELLE GROVE CORP.
4024 BELLE GROVE ROAD
BALTIMORE, MD 21225-2657
410-789-7070

PROJECT: EUCLID CORNERS PARCEL 'A', LOTS 1276–1278 & OPEN SPACE LOT 1279

LOCATION: TAX MAP: 38, GRID: 13
PART OF PARCEL: B73
1st ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: STORMWATER MANAGEMENT FACILITY (SAND FILTER)

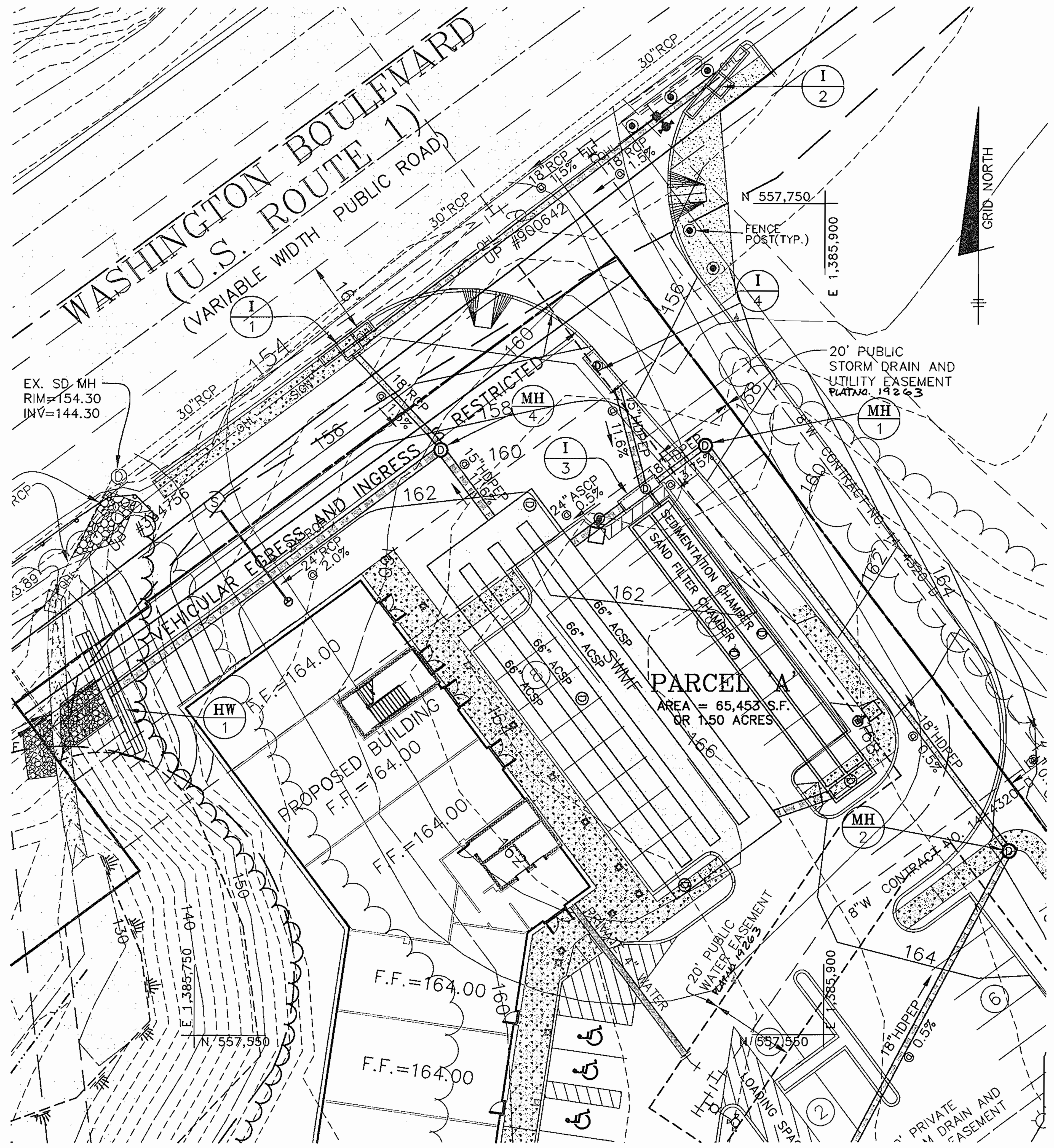
DATE: AUGUST, 2005 / JUNE, 2007 — PROJECT NO. 1465

DESIGN: RPS | DRAFT: RPS | CHECK: DAM

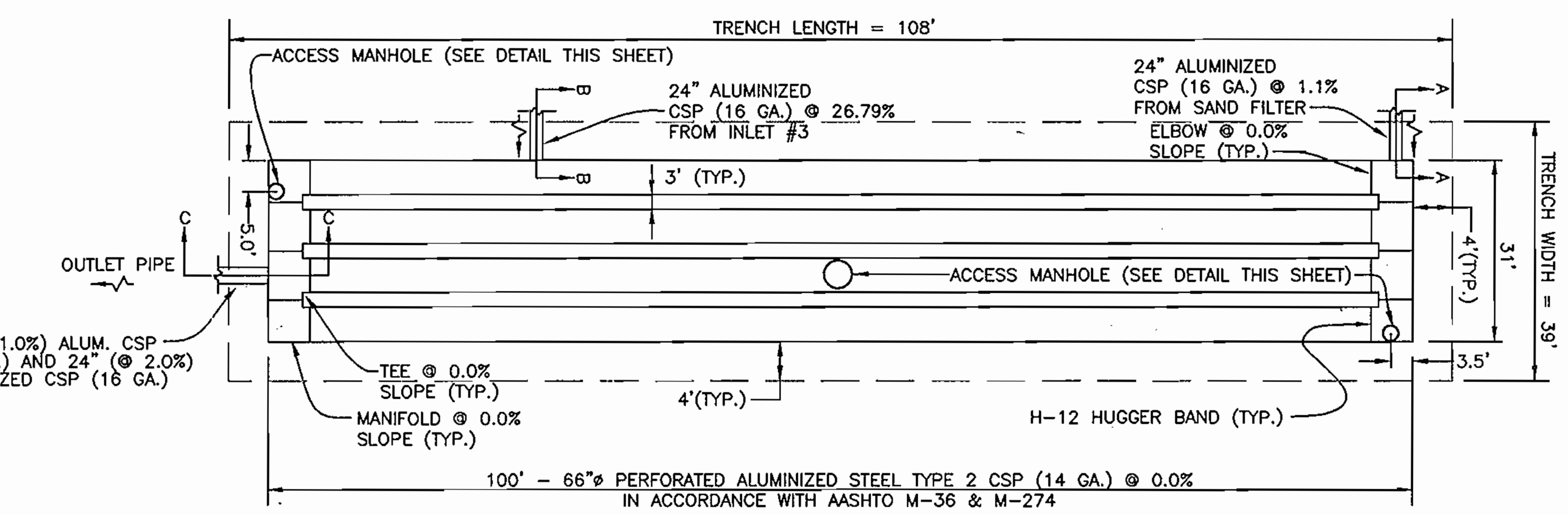
SCALE: AS SHOWN — SHEET 8 OF 14

SDP–06–22

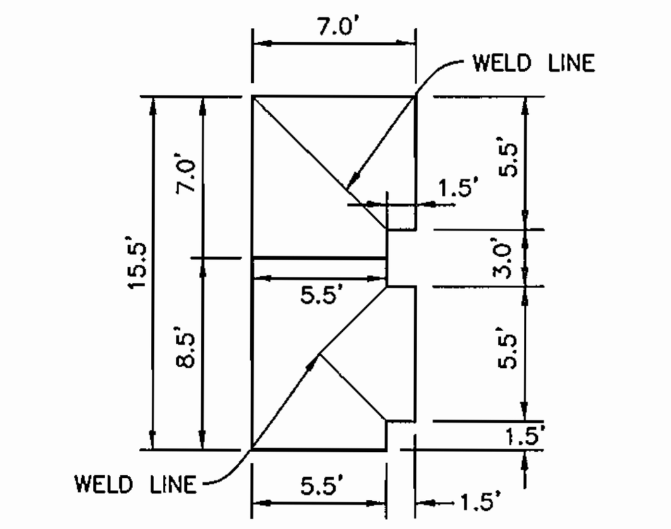
P:\1465\dwg\6024508509.dwg, Sand Filter Detail Sht3, 5/25/2007 2:15:46 PM, edd



PLAN
SCALE: 1" = 20'

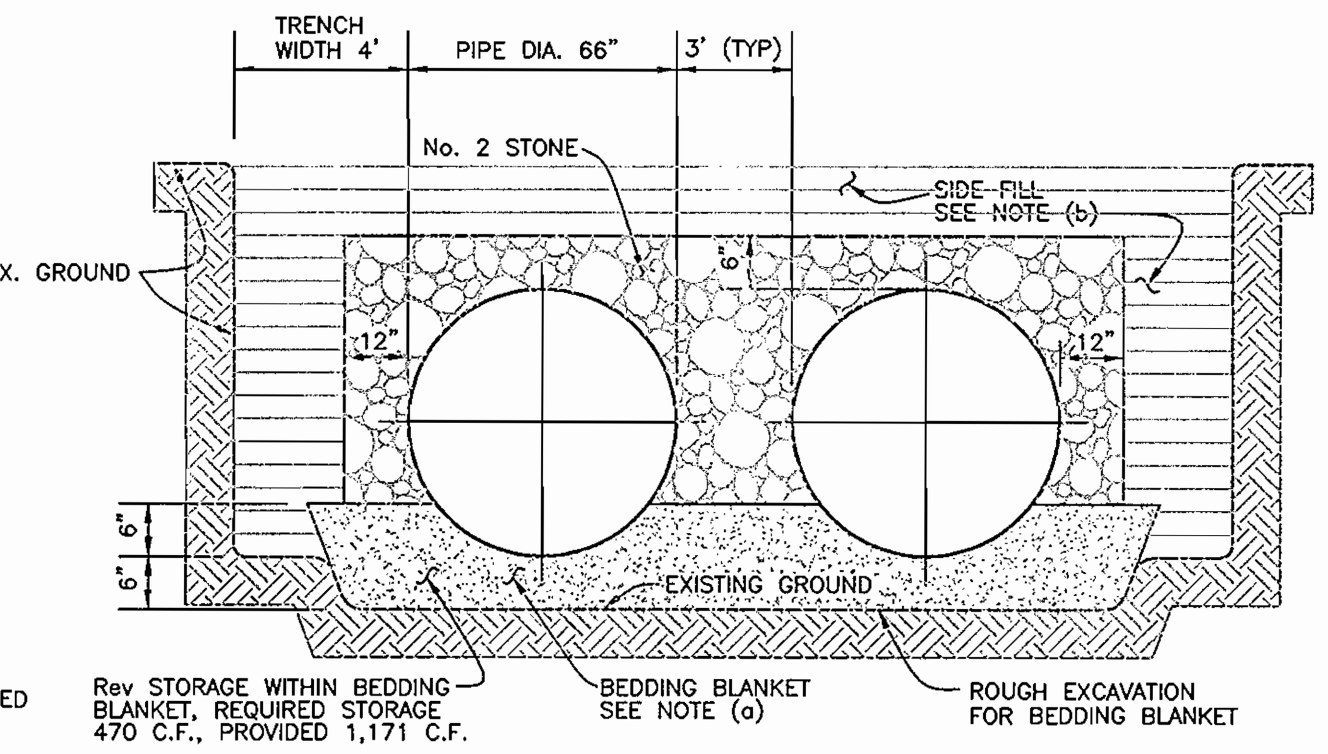


PIPE LAYOUT
NTS



NOTE:
ALL ADJOINING PIPES AND ELBOWS TO BE COUPLED USING THE H-12 HUGGER BAND, BY CONTECH CONSTRUCTION PRODUCTS, INC., OR EQUIVALENT

ELBOW/TEE DETAIL
NOT TO SCALE

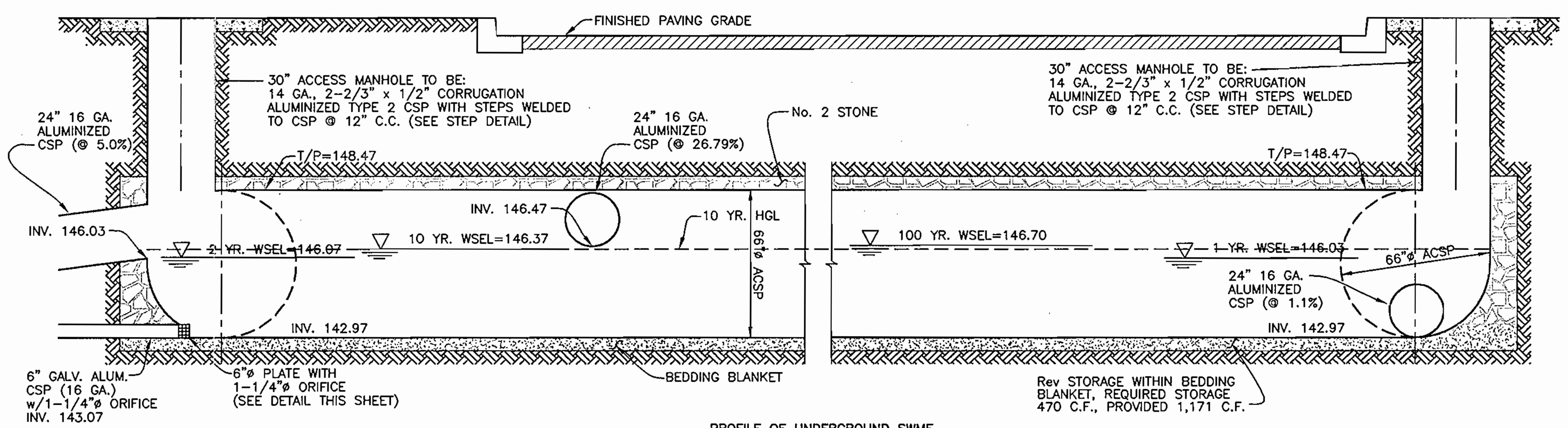


NOTES

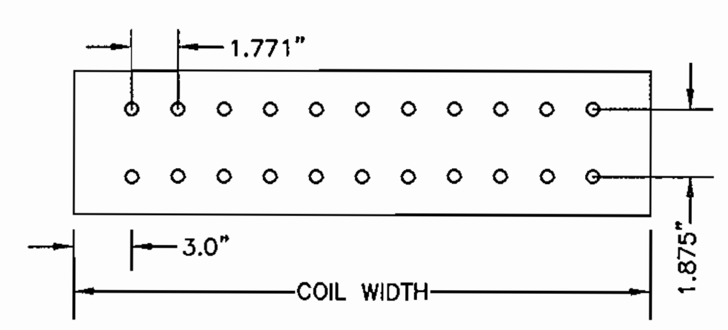
(a) BEDDING BLANKET OF LOOSE GRANULAR FILL (#57 STONE) ROUGHLY SHAPED TO FIT BOTTOM OF PIPE, MINIMUM THICKNESS BEFORE PLACING PIPE SHALL BE SIX INCHES.

(b) SIDE FILL TO BE COMPACTED IN 6 TO 8 INCHES OF COMPACTED LAYERS. COMPACTION SHALL NOT BE LESS THAN 90% STANDARD PROCTOR DENSITY (AASHTO T99).

BEDDING AND BACKFILL DETAIL
N.T.S.

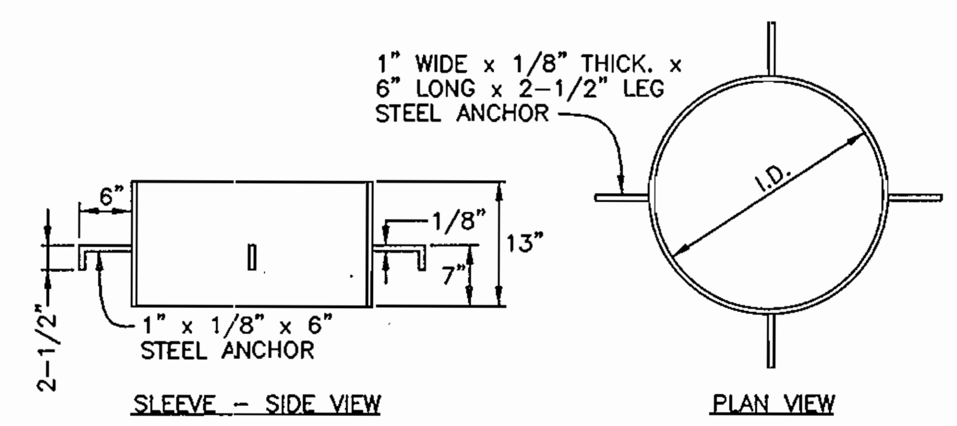


PROFILE OF UNDERGROUND SWMF
NOT TO SCALE

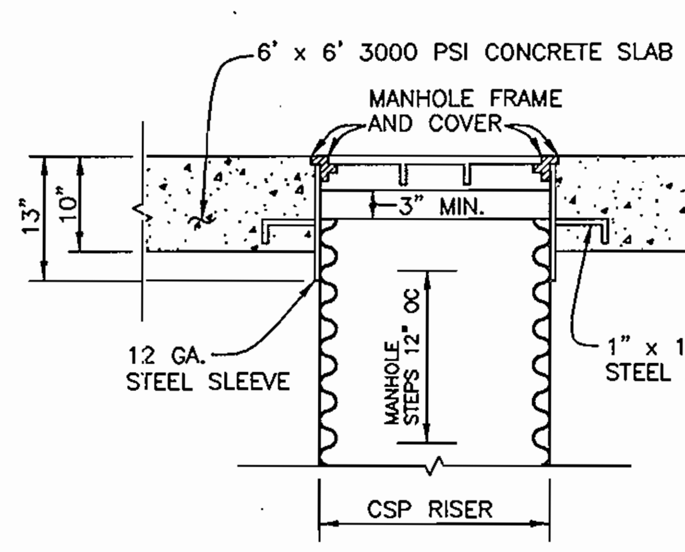


1. 5/16"ø HOLES APPROX. 2.3% OPEN AREA 5" X 1" CORRUGATION.
2. EDGE SPACING EQUAL ON BOTH SIDES
3. PERFORATIONS MEET AASHTO & ASTM SPECIFICATIONS.
4. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.

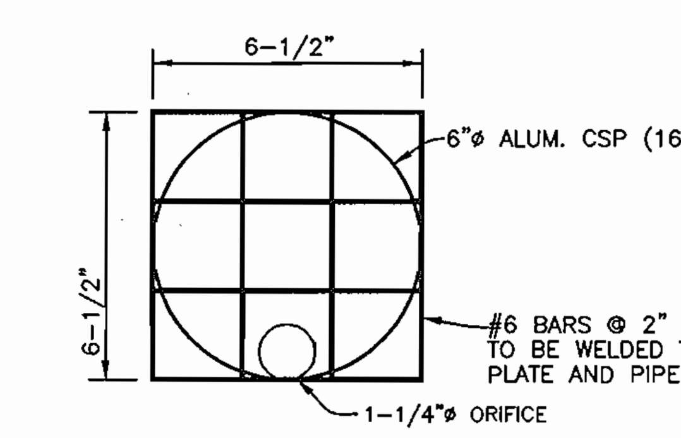
CORRUGATED ALUMINUM PIPE
PERFORATION HOLE LAYOUT
NOT TO SCALE



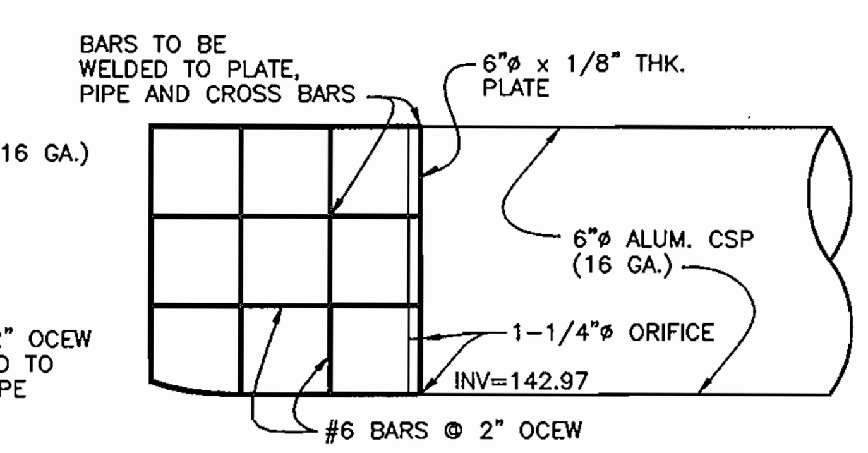
MANHOLE SLEEVE DETAIL
NOT TO SCALE



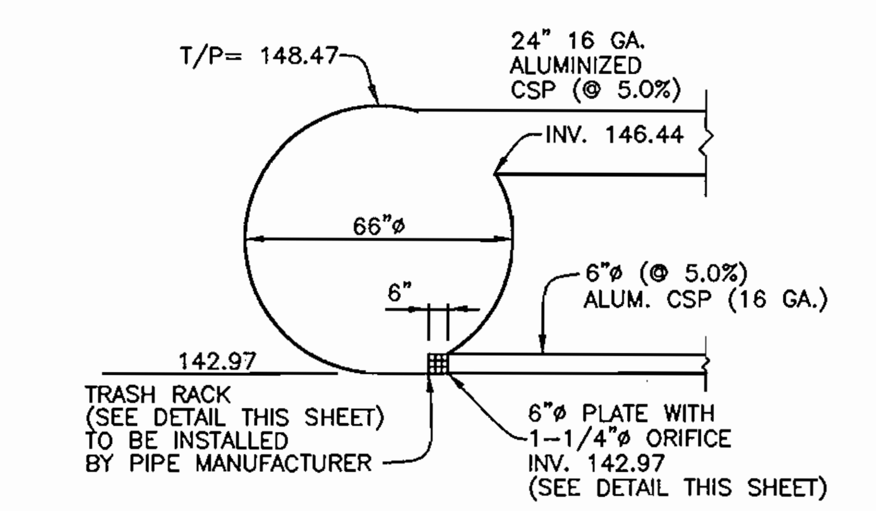
CSP RISER
MANHOLE SLEEVE DETAIL
NOT TO SCALE



TRASH RACK DETAIL - FRONT
NOT TO SCALE



TRASH RACK DETAIL - SIDE
NOT TO SCALE



TRASH RACK DETAIL
NOT TO SCALE

OPERATION AND MAINTENANCE SCHEDULE
FOR UNDERGROUND SWM FACILITIES

1. THE UNDERGROUND STORM WATER MANAGEMENT FACILITY IS PRIVATELY OWNED AND IT SHALL BE THE RESPONSIBILITY OF THE OWNER TO PERIODICALLY INSPECT AND CLEAN THE FACILITY TO MAINTAIN IT'S OPERATION AND FUNCTION.
2. THE UNDERGROUND STORM WATER MANAGEMENT FACILITY SHALL BE INSPECTED YEARLY AT A MINIMUM AND AFTER ESPECIALLY SEVERE STORM EVENTS.
3. WHEN SEDIMENT ACCUMULATION OF MORE THAN 2" IS OBSERVED OR ANY DEBRIS THAT MIGHT OBSTRUCT THE OUTFALL IS OBSERVED, THE FACILITY SHALL BE CLEANED.
4. THE FACILITY SHALL BE CLEANED IMMEDIATELY AFTER PETROLEUM SPILLS. THE OWNER AT SHALL CONTACT THE APPROPRIATE REGULATORY AGENCIES NOTIFYING THEM OF THE SPILL AND CLEAN-UP OPERATION
5. THE SEDIMENT AND DEBRIS SHALL BE REMOVED FROM THE UNDERGROUND STORM WATER MANAGEMENT FACILITY BY VACUUM TRUCK OR OTHER MANUAL MEANS. THE OWNER SHALL FOLLOW PROPER CLEANING AND DISPOSAL OF THE REMOVED MATERIAL AND LIQUID.
6. THE INLET AND OUTLET PIPES SHALL BE CHECKED FOR ANY OBSTRUCTIONS AT LEAST ONCE EVERY SIX(6) MONTHS. IF OBSTRUCTIONS ARE FOUND, THE OWNER SHALL HAVE THEM REMOVED AND PROPERLY DISPOSED OF.

CONSTRUCTION SPECIFICATIONS

A. BEDDING
1. THE BED SHALL BE PLACED TO UNIFORM GRADE AND LINE TO ENSURE GOOD VERTICAL ALIGNMENT AND TO AVOID EXCESSIVE STRESSES AT PIPE JOINTS. THE BEDDING SHALL BE FREE OF ROCK FORMATIONS, PROTRUDING STONES, FROZEN LUMPS, ROOTS, AND FOREIGN MATERIAL. THE BEDDING FOUNDATION MUST BE A STABLE, WELL GRADED GRANULAR MATERIAL. ANY MATERIAL THAT HAS INADEQUATE BEARING CAPACITY MUST BE REMOVED AND REPLACED WITH A COMPACTED SELECT FILL APPROVED BY THE GEOTECHNICAL ENGINEER.

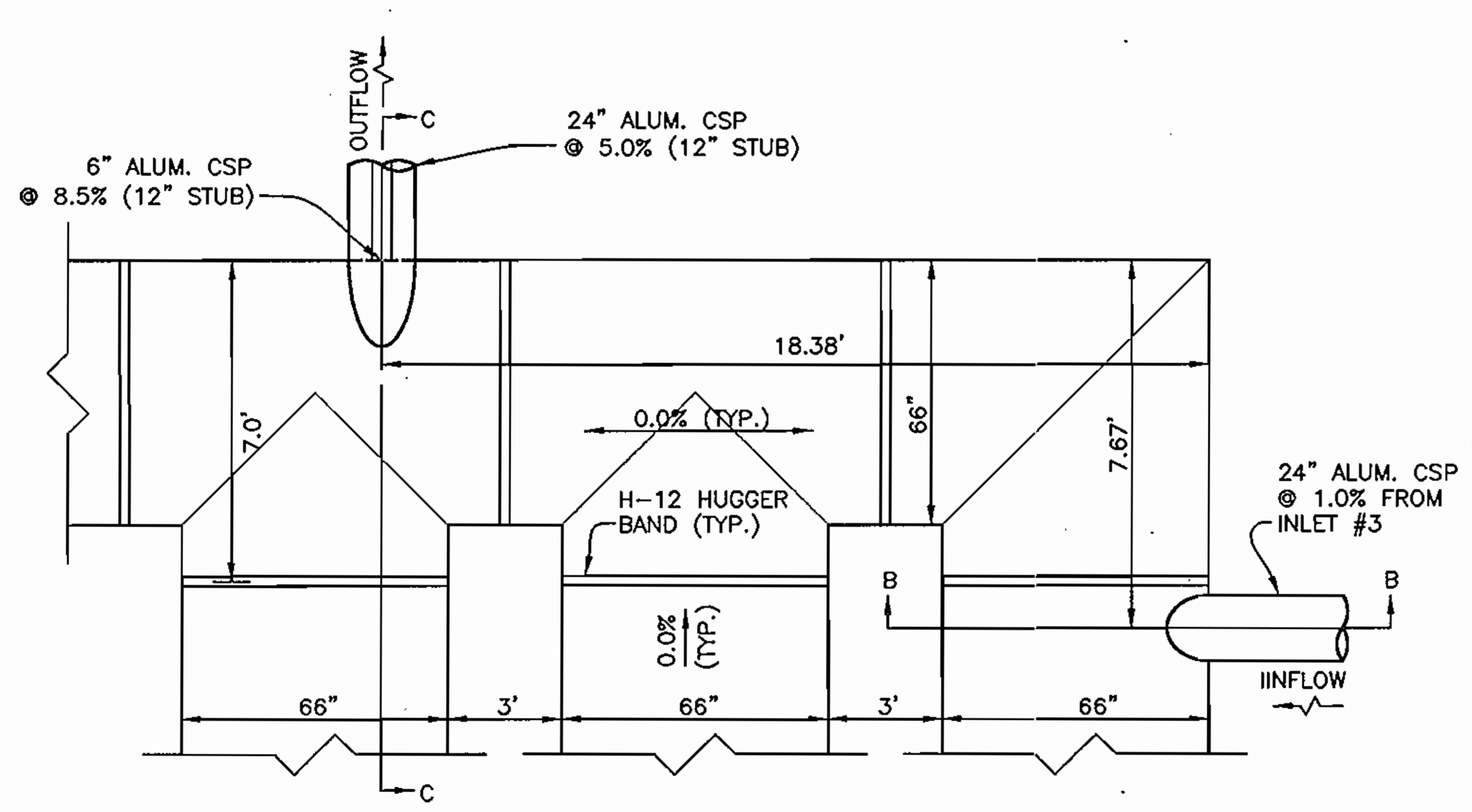
B. BACKFILL
1. THE FILL MATERIAL SHALL BE FREE OF ROCKS, FROZEN LUMPS, AND FOREIGN MATTER THAT COULD CAUSE HARD SPOTS IN BACKFILL OR THAT COULD DECOMPOSE AND CREATE VOIDS.
2. BACKFILL MATERIAL SHALL BE A WELL GRADED GRANULAR MATERIAL.
3. HIGHLY PLASTIC SILTS, HIGHLY PLASTIC CLAYS, ORGANIC SILTS, ORGANIC CLAYS AND PEATS SHALL NOT BE USED AS BACKFILL MATERIAL.
4. BACKFILL SHALL BE PLACED SYMMETRICALLY ON EACH SIDE OF THE STRUCTURE IN SIX-INCH TO EIGHT-INCH LOOSE LAYERS TO ONE FOOT ABOVE THE TOP OF THE PIPE. EACH LAYER IS TO BE COMPACTED TO THE SPECIFIED DENSITY (MINIMUM 90%) BEFORE PLACING THE NEXT LAYER. REFERENCE ASTM A798.

C. PIPE:
1. THE PIPE FABRICATOR SHALL PROVIDE SPECIFICATIONS OF ALL MATERIALS (BASED ON HS25 LOADING).
2. SHOP DRAWINGS ARE TO BE PROVIDED BY FABRICATOR. APPROVAL BY ENGINEER IS REQUIRED PRIOR TO CONSTRUCTION.
3. CONTRACTOR IS REQUIRED TO COORDINATE APPROVAL OF SHOP DRAWINGS AND SPECIFICATIONS AND SHALL BE OBLIGATED FOR ANY COST THEREOF.

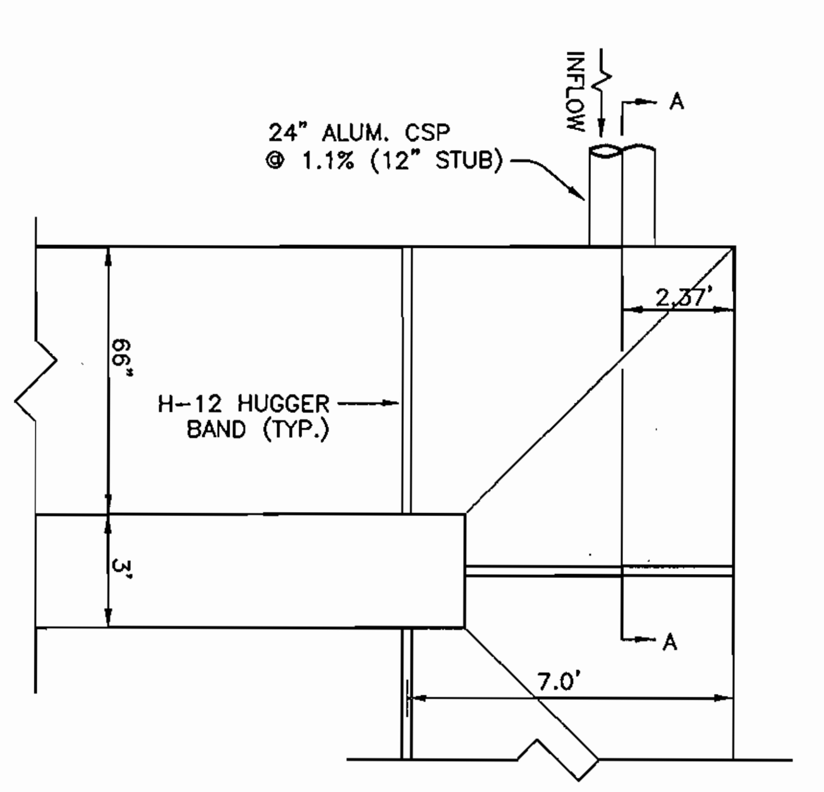
D. GENERAL:
1. DEBRIS IS TO BE KEPT OUT OF THE FACILITY DURING AND AFTER CONSTRUCTION.

SWM SUMMARY TABLE – D.A.=1.688 AC.±

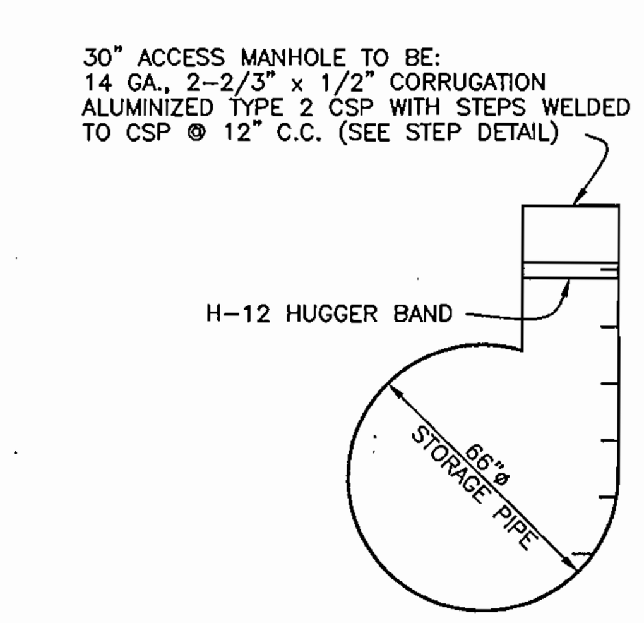
STORM FREQUENCY (YRS.)	EX. RUNOFF (cfs)	DEVELOPED RUNOFF AND DISCHARGE (cfs)	WSEL (FT.)	STORAGE (AC.-FT.)
1	1.10	0.08	146.03	0.1810
2	1.84	0.90	146.07	0.1836
10	4.67	7.57	146.37	0.2030
100	8.22	10.37	146.50	0.2114



SWMF DETAIL
PLAN VIEW



SWMF DETAIL
PLAN VIEW



ACCESS MANHOLE DETAIL
NOT TO SCALE

SUMMARY OF GENERAL STORAGE REQUIREMENTS D.A. #1 WITHIN UNDERGROUND SWMF AND SAND FILTER

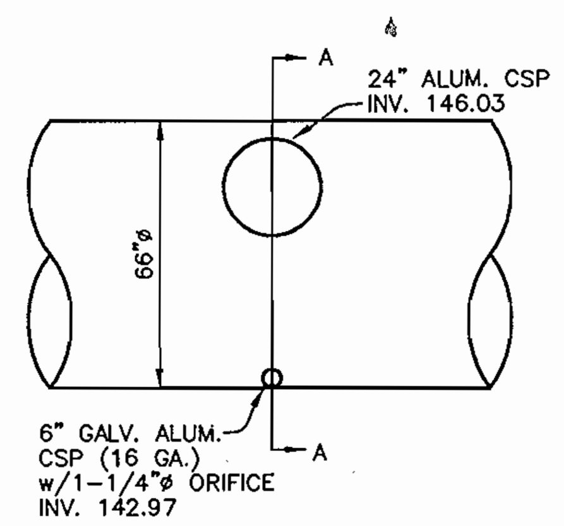
STEP	REQUIREMENT	VOLUME REQUIRED (AC.-FT.)	NOTES
1	WATER QUALITY VOLUME (WQv)	0.0985	PROVIDED BY SAND FILTER
2	RECHARGE VOLUME (Rev)	0.0108	REV FOR D.A. 1 COMPENSATED FOR WITHIN THE STONE BED OF THE UNDERGROUND STORM WATER MANAGEMENT FACILITY
3	CHANNEL PROTECTION VOLUME (CPv)	0.125	24 HOUR DETENTION WILL BE PROVIDED FOR WITHIN THE UNDERGROUND STORMWATER MANAGEMENT FACILITY
4	OVERBANK FLOOD PROTECTION VOLUME (Qp)	N/A	D.A. NOT IN DESIGNATED FLOOD AREA
5	EXTREME FLOOD VOLUME (Qf)	N/A	D.A. NOT IN DESIGNATED FLOOD AREA

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

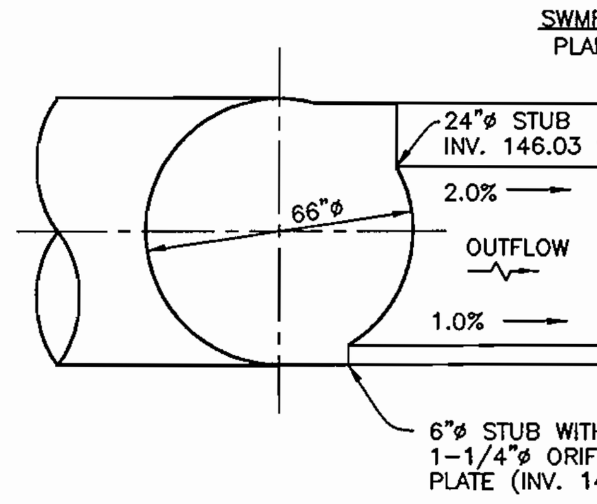
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/11/07

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/24/07

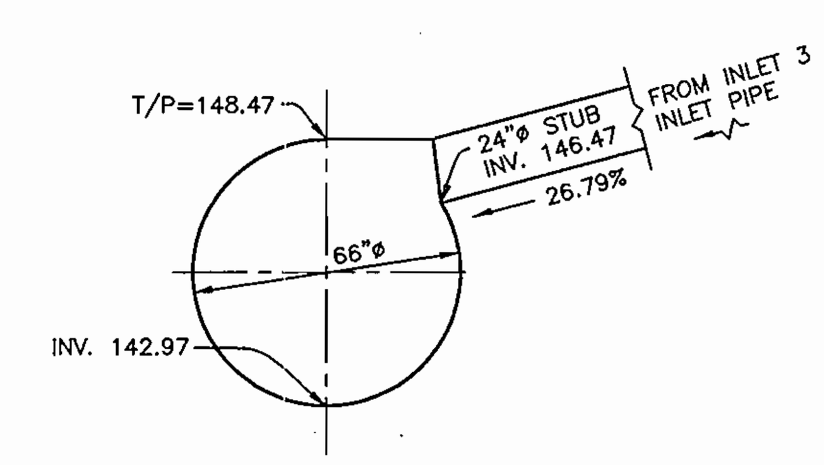
DIRECTOR — DATE 7/23/07



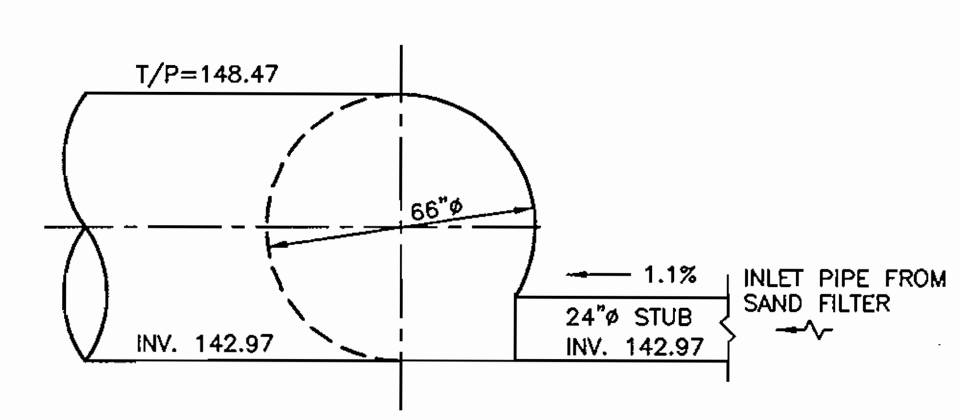
SWM CONTROL DETAIL
NOT TO SCALE



SECTION C-C
NOT TO SCALE



SECTION B-B
NOT TO SCALE



SECTION A-A
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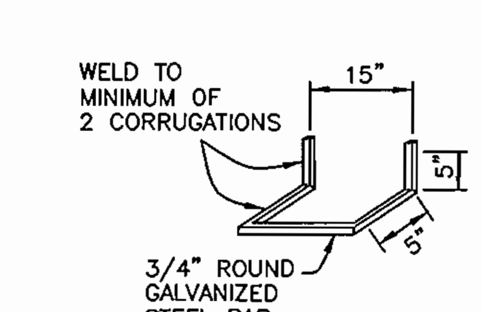

STEP DETAIL
NOT TO SCALE

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

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — REGISTERED PROFESSIONAL ENGINEER — 5/29/07

OWNER/DEVELOPER:
BELLE GROVE CORP.
4024 BELLE GROVE ROAD
BALTIMORE, MD 21225-2657
410-789-7070

PROJECT: EUCLID CORNERS PARCEL 'A', LOTS 1276-1278 & OPEN SPACE LOT 1279

LOCATION: TAX MAP: 38, GRID: 13; PART OF PARCEL: 873; 1st ELECTION DISTRICT; HOWARD COUNTY, MARYLAND

TITLE: UNDERGROUND SWMF NOTES AND DETAILS

DATE: AUGUST, 2005 / JUNE, 2007 — PROJECT NO. 1465

DESIGN: RPS | DRAFT: RPS | CHECK: DAM | SCALE: AS SHOWN | SHEET 9 OF 14

SDP-06-22

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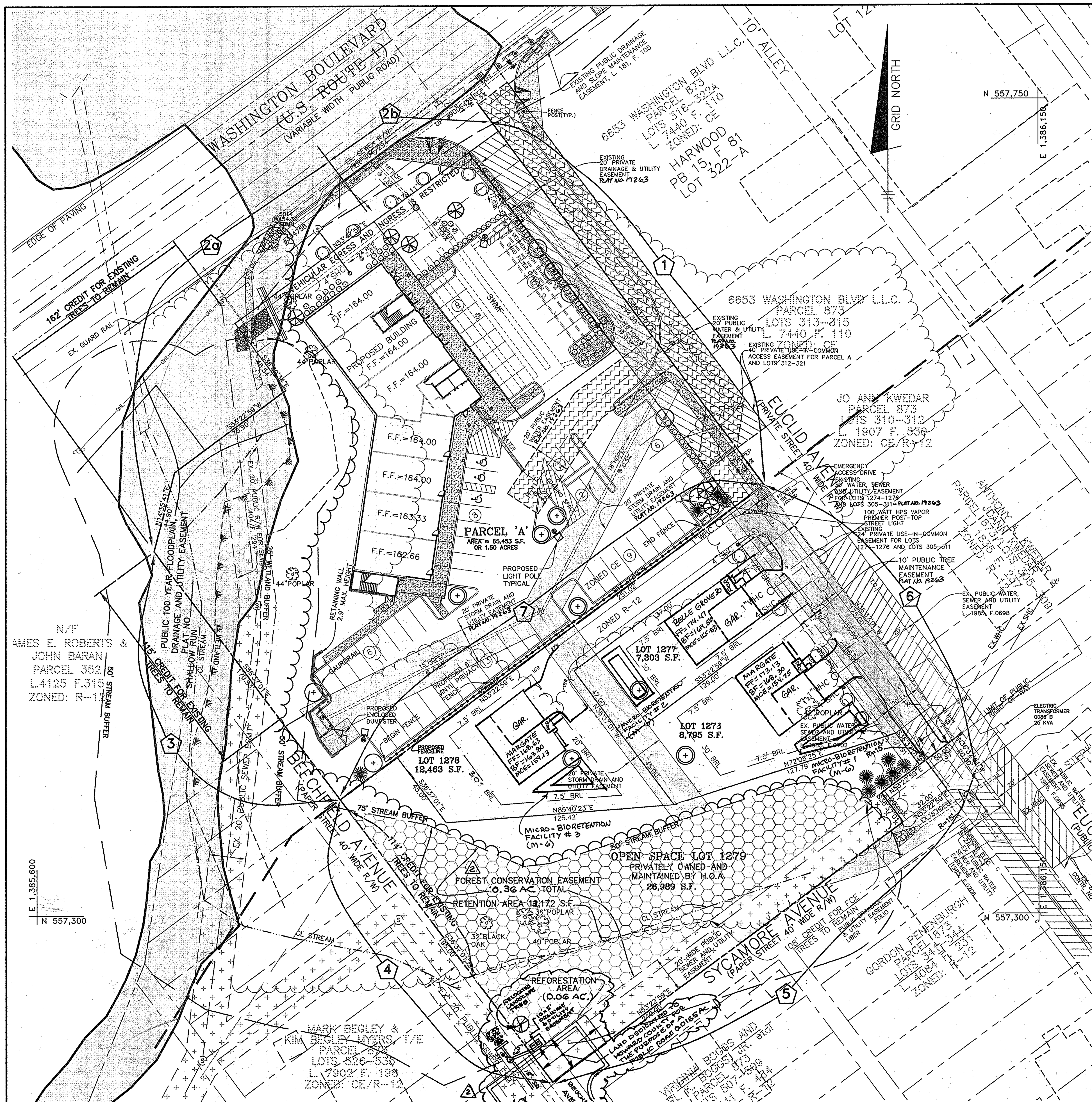


PLAN VIEW
SCALE: 1" = 30'

LANDSCAPING NOTES

1.) PERIMETER LANDSCAPING SHALL BE PROVIDED BY THE EXISTING VEGETATION TO REMAIN AND BY THE PLANTINGS AS SHOWN ON THESE PLANS.

2.) THE DEVELOPER SHALL BE RESPONSIBLE FOR THE INTERNAL STREET PARKING PLANTINGS, THE PRESERVATION OF THE PERIMETER VEGETATION AND FOR THE PERIMETER PLANTINGS AS SHOWN ON THESE PLANS. BOUNDING FOR PLANTINGS IS THE OBLIGATION OF THE DEVELOPER AS PART OF THE DEVELOPERS AGREEMENT.

3.) TREES MUST BE A MINIMUM OF FOUR (4) FEET FROM THE CURB OR SIDEWALK AND MUST BE A MINIMUM OF FIVE (5) FEE FROM ANY STORM DRAIN.

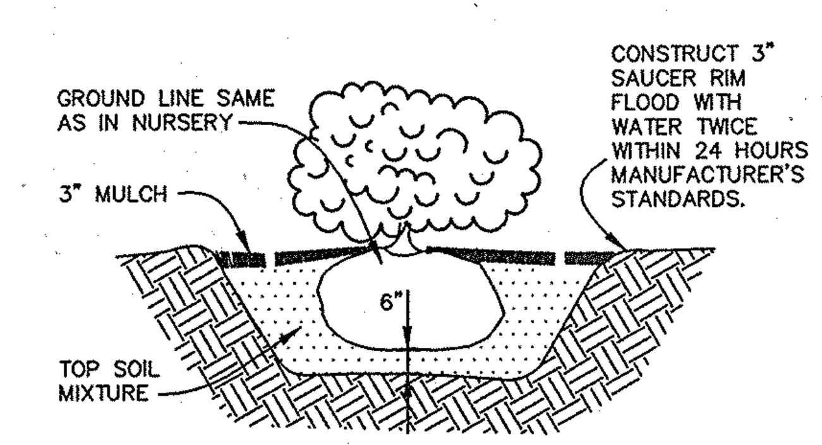
4.) A MINIMUM DISTANCE OF TWENTY (20) FEET MUST BE MAINTAINED BETWEEN ANY TREES LOCATED ALONG THE CURB LINE AND FROM ANY STREET LIGHTS.

5.) THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SEC.-16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL.

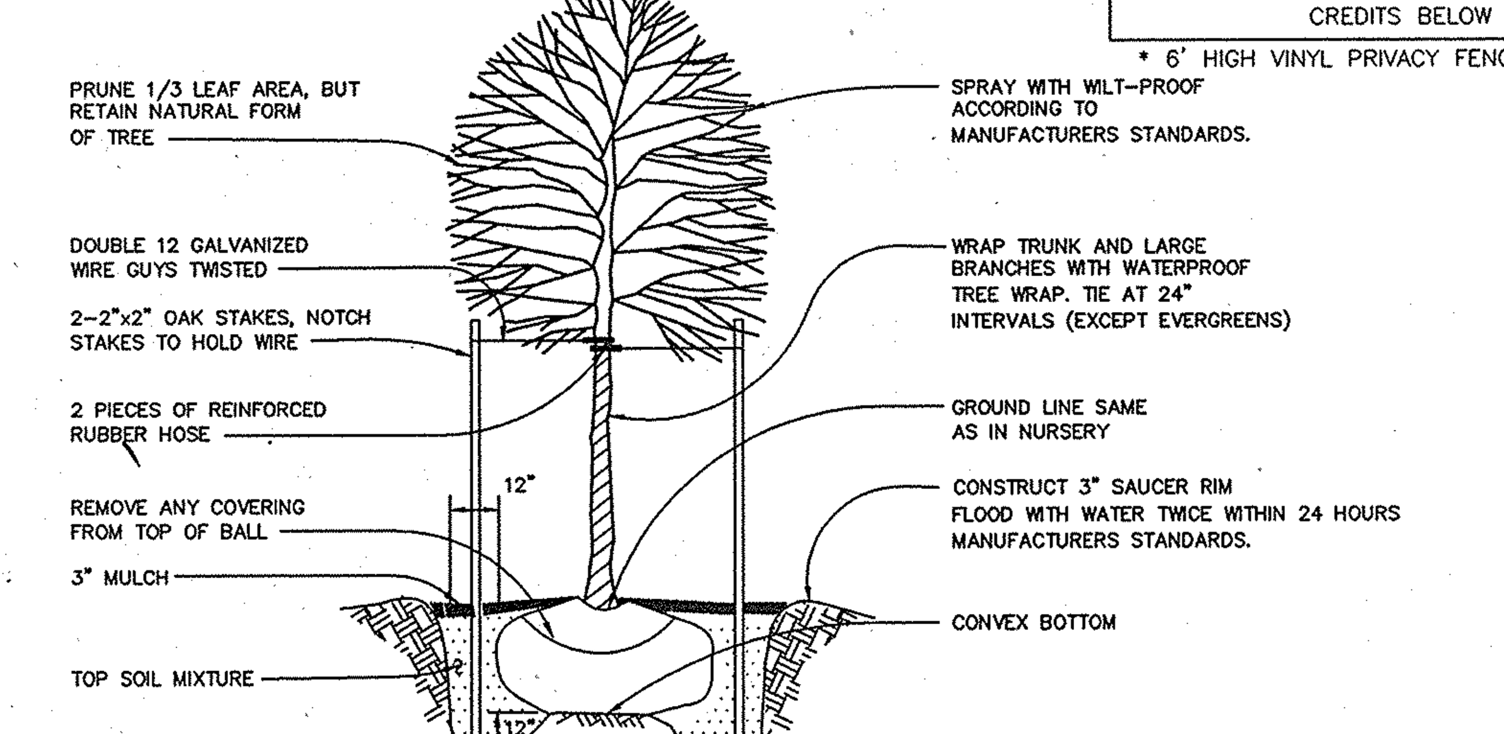
6.) LANDSCAPE SURETY IN THE AMOUNT OF $13,980.00, WHICH INCLUDES $300.00 FOR THE 30' OF DUMPSTER FENCING, HAS BEEN POSTED AS A PART OF THE DEVELOPER'S AGREEMENT.

LEGEND

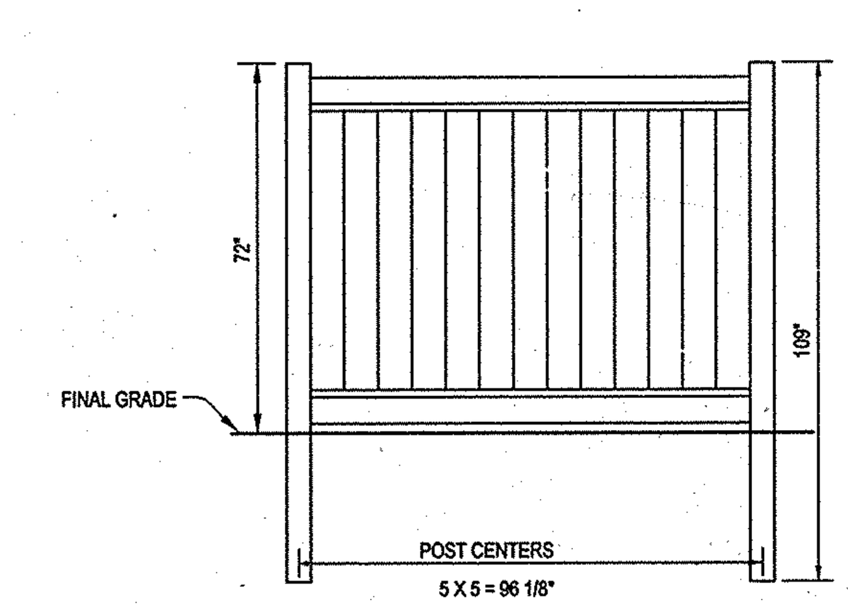
- SPECIMEN TREE — 42"POPLAR
- EXISTING TREELINE
- PROPOSED TREELINE
- PROPOSED STORM DRAIN
- PROPOSED WATER LINE
- PROPOSED SD MANHOLE
- EXISTING FLOODPLAIN
- PROPOSED FENCELINE



SHRUB PLANTING DETAIL
NOT TO SCALE



TREE PLANTING DETAIL
NOT TO SCALE



CERTAINTEED - OUTDOOR PRODUCTS DIVISION
CHESTERFIELD 6' HIGH / 8' WIDE

CHESTERFIELD VINYL FENCING

SEE ACCOMPANYING SPECIFICATIONS FOR MORE INFORMATION FENCE INSTALLATION IS TO BE IN ACCORDANCE WITH MANUFACTURER'S SHOP DRAWINGS (800) 333-0569

NOTES: CONTAINER PLANTINGS SHOULD BE UTILIZED ALONG THE SIDEWALK AREA OF THE BUILDING.

SCHEDULE B - PARKING LOT INTERNAL LANDSCAPING

NUMBER OF PARKING SPACES: (OUTSIDE BUILDING)	70
NUMBER OF TREES/LS-ISLES REQUIRED:	4
NUMBER OF TREES PROVIDED: SHADE TREES / OTHER TREES (2:1 SUBSTITUTION) / SHRUBS (10:1 SUBSTITUTION)	4 / – / –

DUMPSTER/LOADING/SERVICE AREA LANDSCAPING

CATEGORY	ADJACENT TO ROADWAY	NO
	ADJACENT TO RESIDENTIAL	NO
	ADJACENT TO NON-RESIDENTIAL	YES
LANDSCAPE / BUFFER TYPE		C
LOCATION OF DUMPSTER/LOADING/SERVICE AREA:		DUMPSTER
CREDIT FOR WALL OR FENCE: NO OR YES (w/LINEAR FEET) (DESCRIBE BELOW IF NEEDED)		YES 30'
NUMBER OF PLANTS REQUIRED: SHADE TREES / EVERGREEN TREES / OTHER TREES (2:1 SUBSTITUTE) / SHRUBS		1 / 2 / – / –
NUMBER OF PLANTS PROVIDED: SHADE TREES / EVERGREEN TREES / OTHER TREES (2:1 SUBSTITUTE) / SHRUBS (10:1 SUBSTITUTE) / (DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)		– / – / – / – / *30'

* 6' CHAIN LINK FENCING WITH VINYL WEBBING.

PERIMETER PLANTING LIST

SYMBOL	QUANTITY	NAME	REMARKS
	5	PLANTANUS ACERFOLIA "BLOODGOOD LONDON PLANE"	2.5"-3.0" MIN. CAL. B & B FULL HEAD
	7	ACER CAMPESTRE "HEDGE MAPLE"	2.5"-3.0" MIN. CAL. B & B FULL HEAD
	10	CUPPRESSOCYPARIS LEYLANDI "LEYLAND CYPRESS"	5'-6' MIN. HT. UNSHEARED
	75	TAXUS MEDIA 'DENSIFORMIS' "DENSIFORMIS YEW"	2-1/2' - 3' HT. UNSHEARED
	21	EUONYMUS KIAUTSCHOVICUS MANHATTAN MANHATTAN EUONYMUS	2-1/2' - 3' HT.

INTERNAL PARKING PLANTING LIST

SYMBOL	QUANTITY	NAME	REMARKS
	4	ACER RUBRUM 'RED SUNSET' "RED SUNSET RED MAPLE"	2.5"-3.0" MIN. CAL. B & B FULL HEAD

STREET TREE PLANTING LIST

SYMBOL	QUANTITY	NAME	REMARKS
	12	ACER GRISEUM "PAPERBARK MAPLE"	2.5"-3.0" MIN. CAL. B & B FULL HEAD

RESIDENTIAL INTERNAL PLANTING LIST

SYMBOL	QUANTITY	NAME	REMARKS
	3	ACER RUBRUM "RED SUNSET RED MAPLE"	2.5"-3.0" MIN. CAL. B & B FULL HEAD

SCHEDULE A PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT TO ROADWAY	NO	YES	YES	NO	NO	NO	NO	NO
	ADJACENT TO PERIMETER PROPERTIES	YES	NO	NO	YES	YES	YES	YES	YES
PERIMETER NO. / LANDSCAPE TYPE		1 E	2a B	2b E	3 A	4 A	5 A	6 A	7 C
LINEAR FEET OF (FRONTAGE/PERIMETER)		219'	257	84'	171'	195'	290'	195'	290'
CREDIT FOR EXISTING VEGETATION: NO OR YES (w/LINEAR FEET) (DESCRIBE BELOW IF NEEDED)		NO –	YES 162'	NO –	YES 115'	YES 114'	YES 108'	NO –	NO –
CREDIT FOR WALL, FENCE OR BERM: NO OR YES (w/LINEAR FEET) (DESCRIBE BELOW IF NEEDED)		NO –	NO –	NO –	NO –	NO –	NO –	NO –	YES *216'
NUMBER OF PLANTS REQUIRED: SHADE TREES / EVERGREEN TREES / OTHER TREES (2:1 SUBSTITUTE) / SHRUBS		5 / – / – / 55	2 / 2 / – / –	2 / – / – / 21	1 / – / – / –	1 / – / – / –	3 / – / – / –	3 / – / – / –	2 / 4 / – / –
NUMBER OF PLANTS PROVIDED: SHADE TREES / EVERGREEN TREES / OTHER TREES (2:1 SUBSTITUTE) / SHRUBS (10:1 SUBSTITUTE) / (DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)		5 / – / – / 55 / – / –	2 / – / – / 20 / – / –	2 / – / – / 21 / – / –	1 / – / – / – / – / –	1 / – / – / – / – / –	– / 6 / – / – / – / –	3 / – / – / – / – / –	2 / 4 / – / – / – / –

* 6' HIGH VINYL PRIVACY FENCE

STREET TREE CALCULATIONS

STREET TREES REQUIRED FOR 288 LF OF ROUTE 1, AND 334' OF EUCLID AVENUE RIGHT-OF-WAY WITH 162 LF OF CREDIT FOR PRESERVING EXISTING VEGETATION.
(288 + 334 - 162) / 40 = 12 TREES REQUIRED

12 TREES PROVIDED

NO	DATE	REVISION
3	12-16-14	REVISE HOUSE FOOT PRINTS, DRIVEWAYS AND SWM ON LOTS 1276-1278
2	8-6-12	ADD CAPITAL PROJ. D-1124-03 (BEECHFIELD AVE. IMPROVEMENTS) BY NOLAN ASSOC.
1	10-13-10	ADD ESD/WQv INFORMATION FOR LOTS 1276-1278

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[signature] CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/11/07

[signature] CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/24/07

[signature] DIRECTOR — DATE 7/27/07

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

[signature] DEVELOPER: BELLE GROVE CORPORATION — DATE 5-31-07

SEAL & SIGNATURE FOR REV. 2 ONLY

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

STATE OF MARYLAND REGISTERED PROFESSIONAL ENGINEER [signature] 5/29/07

OWNER: BELLE GROVE CORP. 4024 BELLE GROVE ROAD BALTIMORE, MD 21225-2657 410-789-7070

PROJECT: EUCLID CORNERS PARCEL 'A', LOTS 1276-1278 & OPEN SPACE LOT 1279

LOCATION: TAX MAP: 38, GRID: 13 PART OF PARCEL: 873 1st ELECTION DISTRICT HOWARD COUNTY, MARYLAND

TITLE: LANDSCAPE PLAN

DATE: AUGUST, 2005 / JUNE, 2007 — PROJECT NO. 1465

DESIGN: RPS — DRAFT: RPS — CHECK: DAM — SCALE: 1"=30' — SHEET 10 OF 14

SDP-06-22

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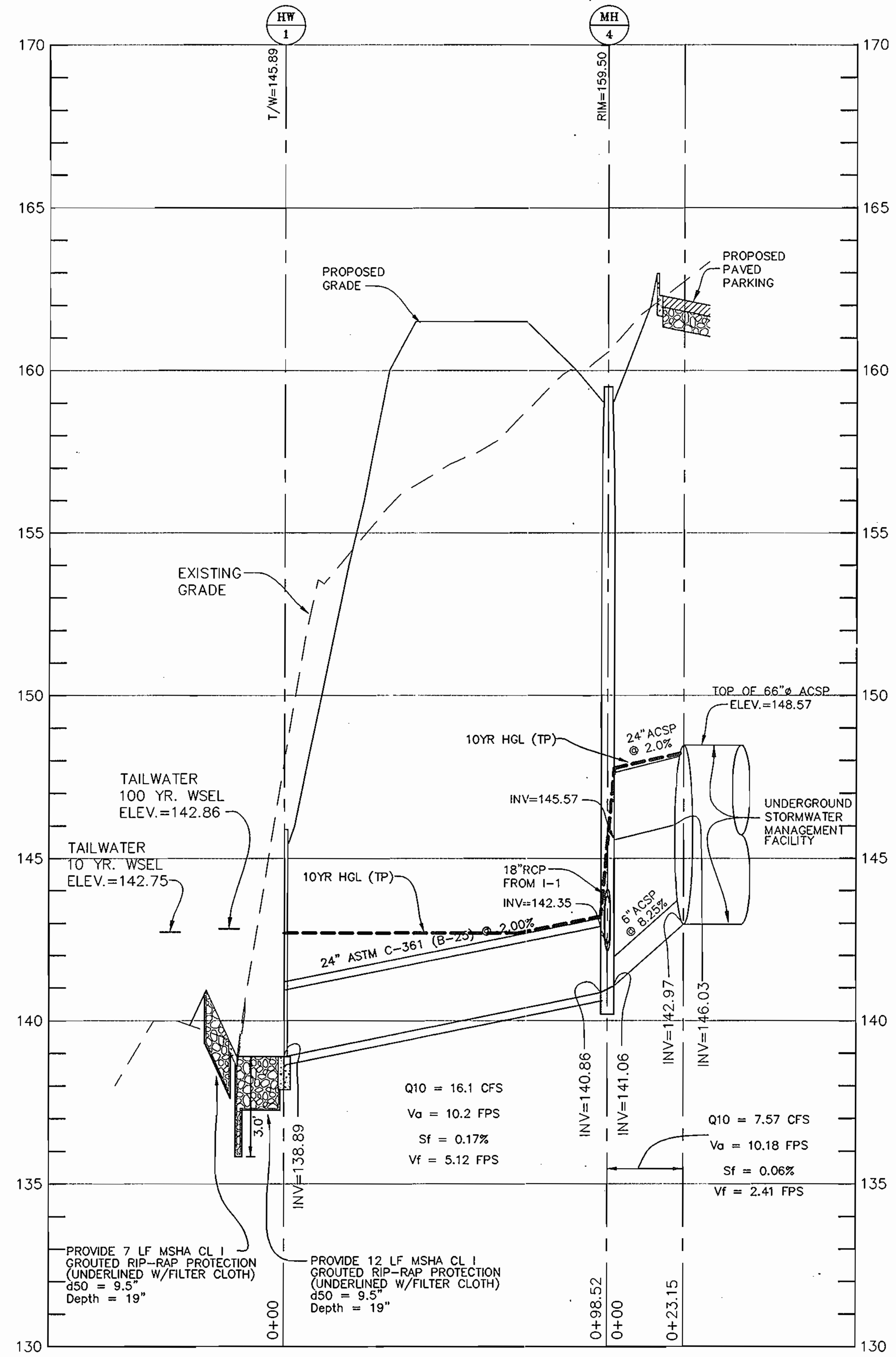
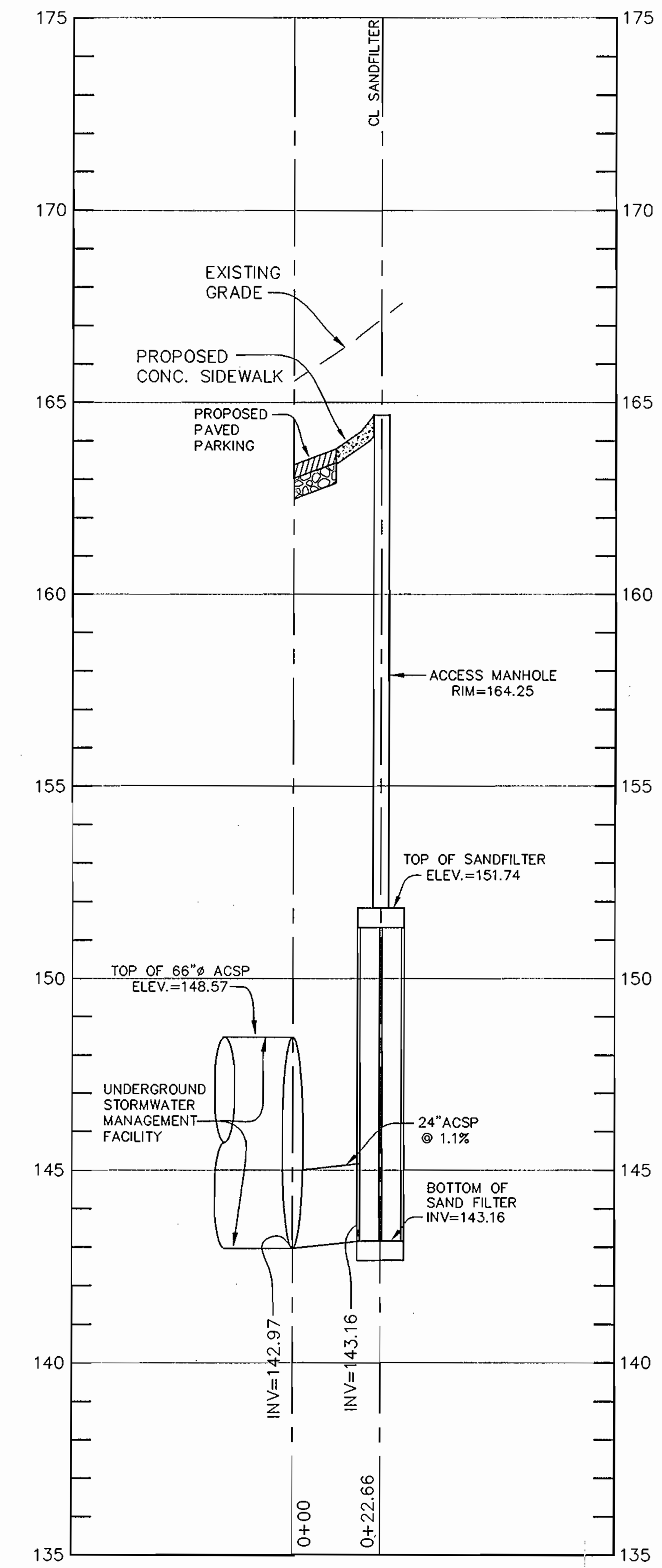


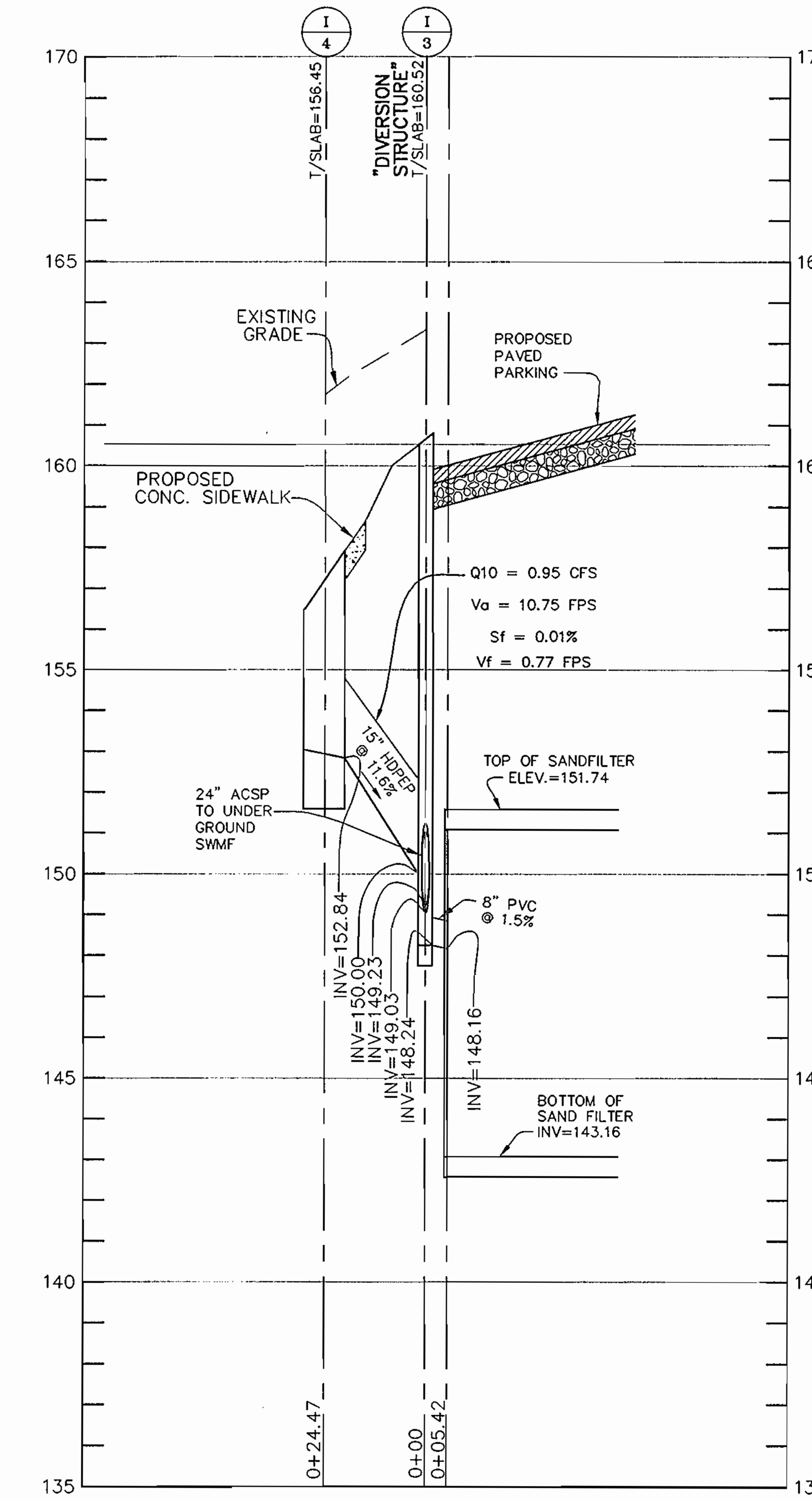
HW1 TO SWMF

SCALE: VERT.= 1"=3' , HORZ.= 1"=30'



SWMF TO SAND FILTER

SCALE: VERT.= 1"=3' , HORZ.= 1"=30'

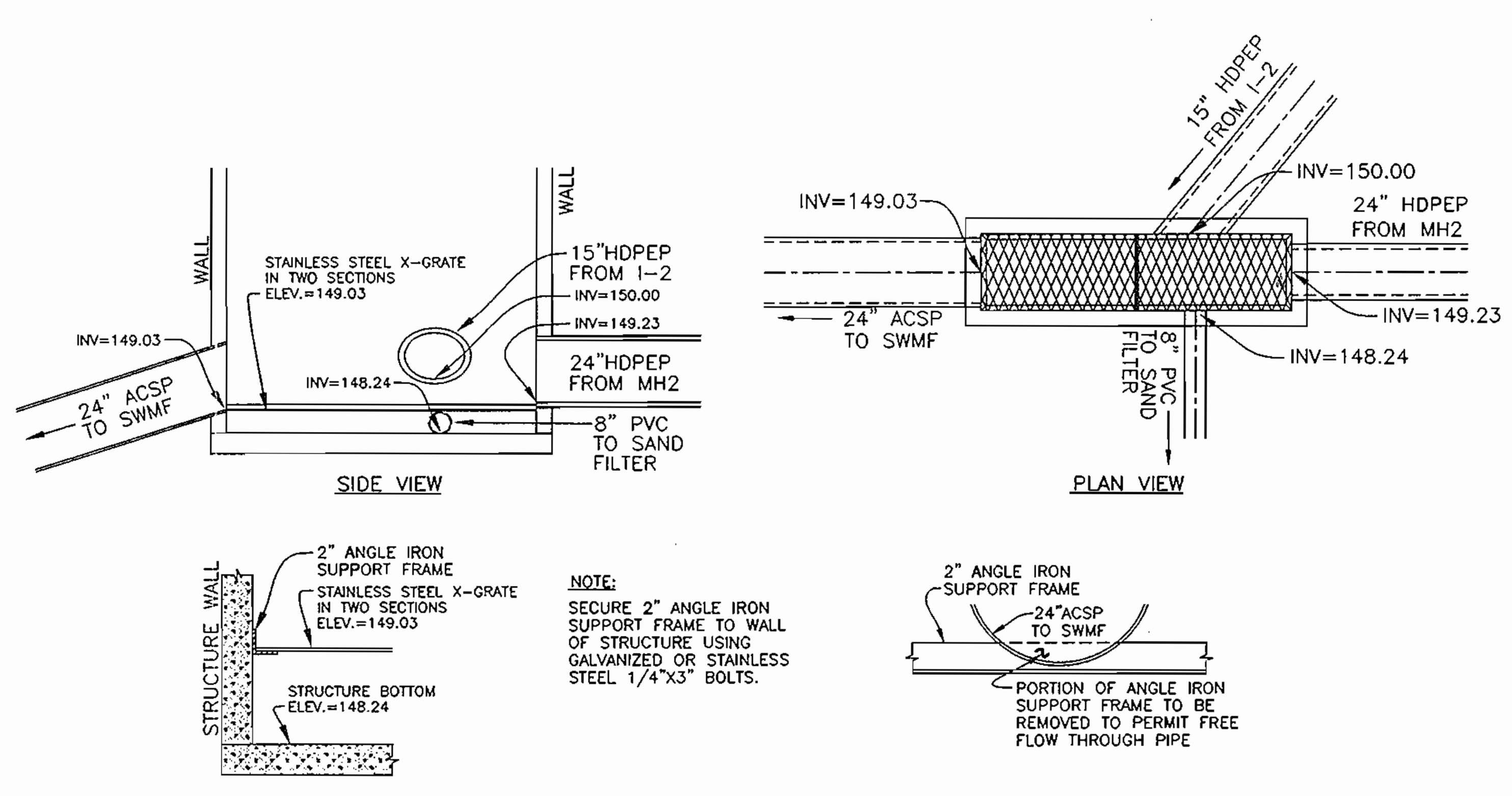


SAND FILTER TO INLET 4

SCALE: VERT.= 1"=3' , HORZ.= 1"=30'

Style Designation	Width in Inches	Length in Inches	Lbs/Sq Ft	Approx. size of opening in inches
3.0	48, 60, 72	96, 120, 144	3.000	15/16 x 3-7/16
3.14	48, 72	120	3.140	1-5/8 x 4-7/8
4.0	48, 60, 72	96, 120	4.000	15/16 x 3-7/16
4.27	48, 60, 72	96, 120	4.270	1 x 2-7/8
6.25	48, 60, 72	96, 120	6.250	13/16 x 3-3/8

X-GRATE DETAIL



INLET #3

HO.CO. STD. SD 4.02
NOT TO SCALE

DIVERSION STRUCTURE DETAILS

NO	DATE	REVISION

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/11/07

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/24/07

DIRECTOR — DATE 7/23/07

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

STATE OF MARYLAND REGISTERED PROFESSIONAL ENGINEER 5/29/07

OWNER:
BELLE GROVE CORP.
4024 BELLE GROVE ROAD
BALTIMORE, MD 21225-2657
410-789-7070

PROJECT: EUCLID CORNERS PARCEL 'A', LOTS 1276-1278 & OPEN SPACE LOT 1279

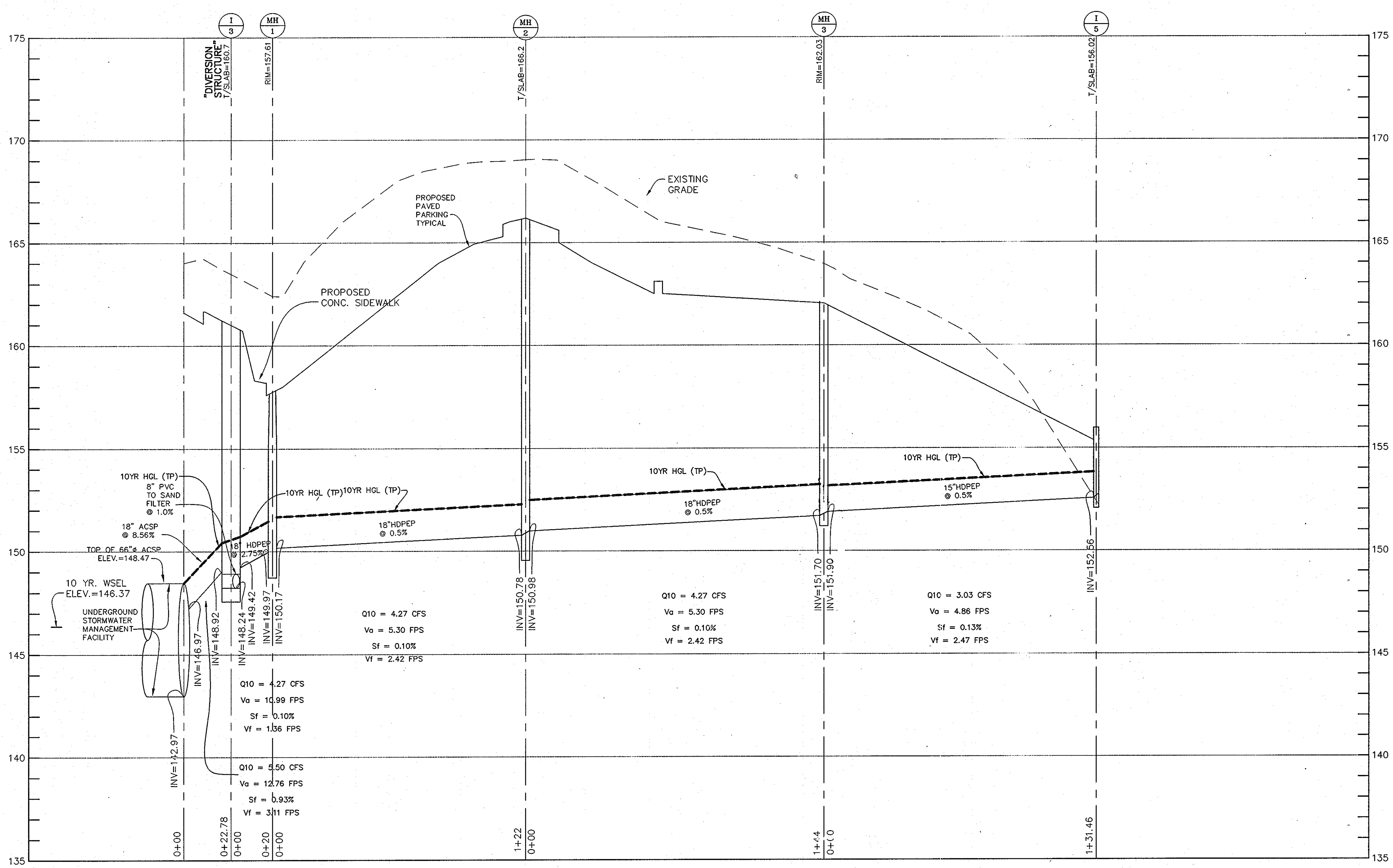
LOCATION: TAX MAP: 38, GRID: 13
PART OF PARCEL: 873
1st ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: STORM DRAIN PROFILES AND DETAILS

DATE: AUGUST, 2005 / JUNE, 2007 — PROJECT NO. 1465

DESIGN: RPS — DRAFT: RPS — CHECK: DAM — SCALE: AS SHOWN — SHEET 11 OF 14

SDP-06-22



SWMF TO INLET 5

SCALE: VERT.= 1"=3', HORZ.= 1"=30'

STRUCTURE SCHEDULE

STORM INLETS

NO.	TYPE	LOCATION	INV. IN	INV. OUT	TOP ELEV.	HO. CO. STD.
I-1	COS-15	N 557717.7801, E 1385785.1075	143.26	143.06	154.71	SHA, MD 374.61
I-2	COG-20	N 557780.0468, E 1385872.8599	–	148.36	155.44	SHA, MD 374.61
I-3	A-10	N 557678.8461 E 1385857.1304	149.42	150.00/149.23	160.52	SD-4.02
I-4	A-10	CL STA. 0+44.50 O/S 12.50' RIGHT (ENTRANCE DRIVE)	–	152.84	156.45	SD-4.02
I-5	A-10	N 557408.8232 E 1385759.4016	–	152.56	156.02	SD-4.02

STORM MANHOLES

NO.	TYPE	LOCATION	INV. IN	INV. OUT	TOP ELEV.	HO. CO. STD.
M-1	4'-0" MANHOLE	CL STA. 0+73.86 O/S 10.00' LEFT (ENTRANCE DRIVE)	150.17	149.97	157.61	G – 5.12
M-2	4'-0" MANHOLE	N 557594.1542 E 1385944.2486	150.98	150.78	166.2	G – 5.12
M-3	4'-0" MANHOLE	N 557467.1144 E 1385876.6875	151.90	151.70	162.03	G – 5.12
M-4	4'-0" MANHOLE	N 557690.8026 E 1385808.5712	142.74/141.06	140.86	159.50	G – 5.12

HEADWALLS

NO.	TYPE	LOCATION	INV. IN	INV. OUT	TOP ELEV.	HO. CO. STD.
HW1	TYPE 'C' HEADWALL	N 557632.1175 E 1385729.4634	–	138.89	145.89	MD 354.01 (NOTE 8)

END SECTIONS

NO.	TYPE	LOCATION	INV. IN	INV. OUT	TOP ELEV.	HO. CO. STD.

1) STRUCTURE ELEVATION AND LOCATION FOR MANHOLES IS AT THE TOP AND CENTER OF RIM.
2) STRUCTURE ELEVATION AND LOCATION FOR CURB INLETS IS AT THE TOP OF CURB AT MIDPOINT OF THE INLET AT THE FACE.
3) STRUCTURE ELEVATION AND LOCATION FOR TYPE "D" AND "WR" INLETS IS AT THE TOP OF SLAB/GRATE AT CENTER OF THE INLET.
4) PRECAST STRUCTURES MEETING HS-20 LOADING MAY BE USED.
5) ALL STORM DRAINS SHALL BE REINFORCED CONCRETE PIPE (CLASS IV) UNLESS OTHERWISE NOTED.
6) STRUCTURE ELEVATION AND LOCATION FOR HEADWALL IS AT THE TOP CENTER AT DOWN STREAM FACE OF WALL.
7) STRUCTURE ELEVATION AND LOCATION FOR END SECTION IS AT THE INVERT WHERE PIPE JOINS END SECTION
8) HEADWALL TO BE CONSTRUCTED UTILIZING THE 72" PIPE SIZE DIMENSIONS.

PIPE SCHEDULE

TYPE & CLASS	SIZE	LENGTH
RCP CLASS IV	24"	35'
RCP CLASS IV	15"	95'
ACSP	24"	46'
ACSP	18"	23'
ACSP	6"	23'
HDPEP	18"	286'
HDPEP	15"	165'
RCP ASTM C-361	24"	99'

ACSP = ALUMINIZED CORRUGATED STEEL PIPE
HDPEP = SMOOTH BORE HIGH DENSITY POLYVINYL CHLORIDE PIPE
PVC = POLYVINYL CHLORIDE PIPE

NO	DATE	REVISION
1	10-13-10	ADD ESD/WQv INFORMATION FOR LOTS 1276-1278

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/11/07

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/24/07

DIRECTOR — DATE 7/20/07

BENCHMARK
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ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644

STATE OF MARYLAND — REGISTERED PROFESSIONAL ENGINEER — No. 21443 — 5/29/07

OWNER:
BELLE GROVE CORP.
4024 BELLE GROVE ROAD
BALTIMORE, MD 21225-2657
410-789-7070

PROJECT: EUCLID CORNERS PARCEL 'A', LOTS 1274-1276 & OPEN SPACE LOT 1277

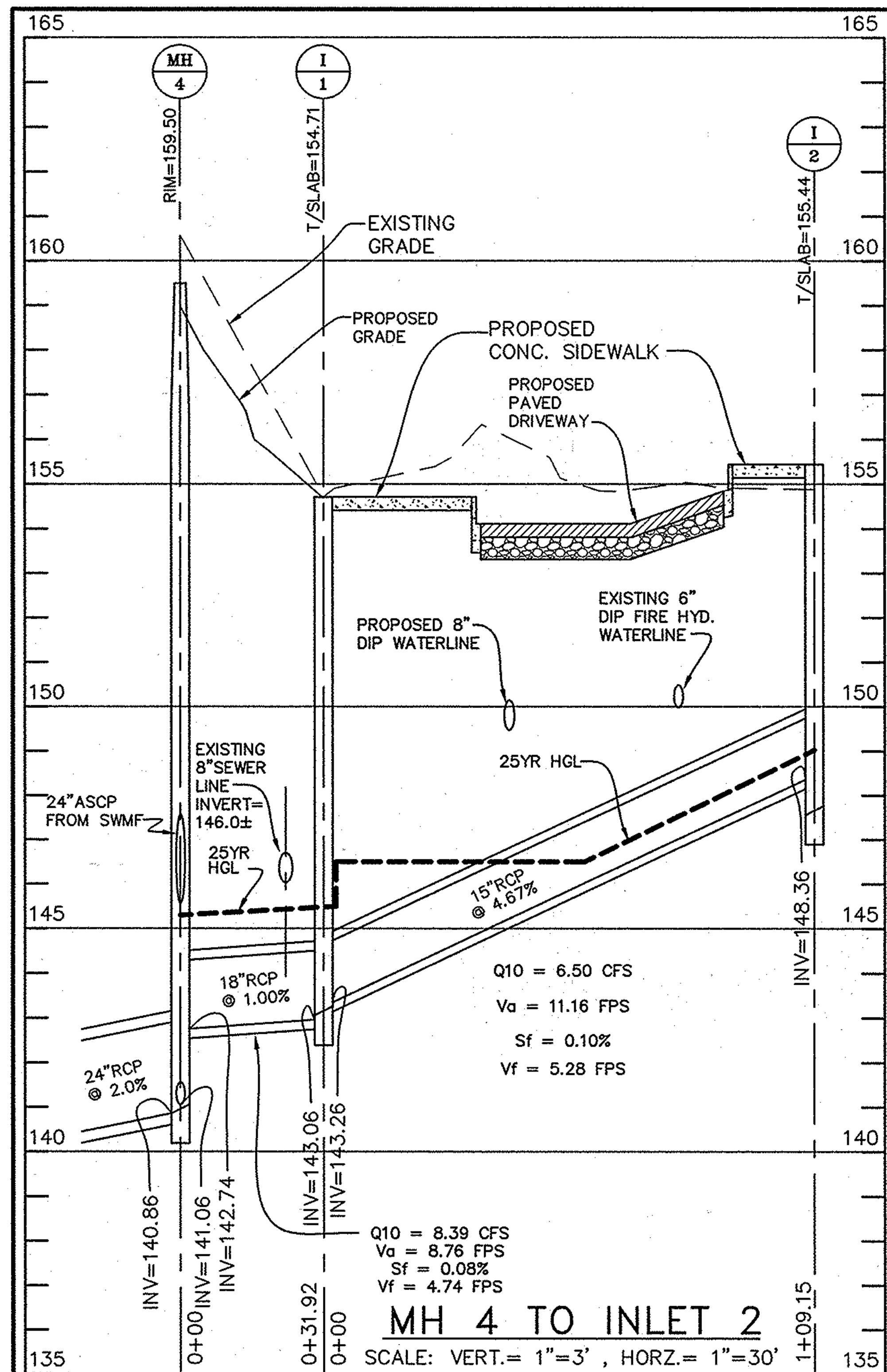
LOCATION: TAX MAP: 38, GRID: 13
PART OF PARCEL: 873
1st ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: STORM DRAIN PROFILES AND DETAILS

DATE: AUGUST, 2005 / JUNE, 2007 — PROJECT NO. 1465

DESIGN: RPS | DRAFT: RPS | CHECK: DAM | SCALE: AS SHOWN | SHEET 12 OF 14

SDP-06-22



CONSTRUCTION SPECIFICATIONS

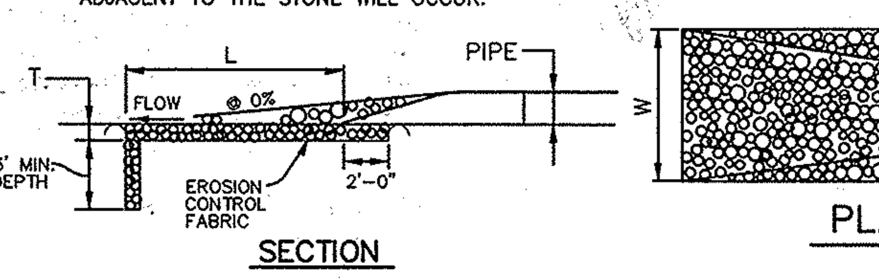
1. THE SUBGRADE FOR THE FILTER, RIP-RAP, OR GABION SHALL BE PREPARED TO THE REQUIRED LINES AND GRADES. ANY FILL REQUIRED IN THE SUBGRADE SHALL BE COMPACTED TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.

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

3. GEOTEXTILE CLASS C28 OR BETTER SHALL BE PROTECTED FROM PUNCHING, CUTTING, OR TEARING. ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE SHALL BE PREPARED BY PLACING ANOTHER PIECE OF GEOTEXTILE FABRIC OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE FABRIC. ALL OVERLAPS WHETHER FOR REPAIRS OR FOR JOINING TWO PIECES OF GEOTEXTILE FABRIC SHALL BE A MINIMUM OF ONE FOOT.

4. STONE FOR THE RIP-RAP OR GABION OUTLETS MAY BE PLACED BY EQUIPMENT. THEY SHALL BE CONSTRUCTED TO THE FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. THE STONE FOR HE RIP-RAP OR GABION OUTLETS SHALL BE DELIVERED AND PLACED IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. RIP-RAP SHALL BE PLACED IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE FABRIC. HAND PLACEMENT WILL BE REQUIRED TO THE EXTENT NECESSARY TO PREVENT DAMAGE TO THE PERMANENT WORKS.

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



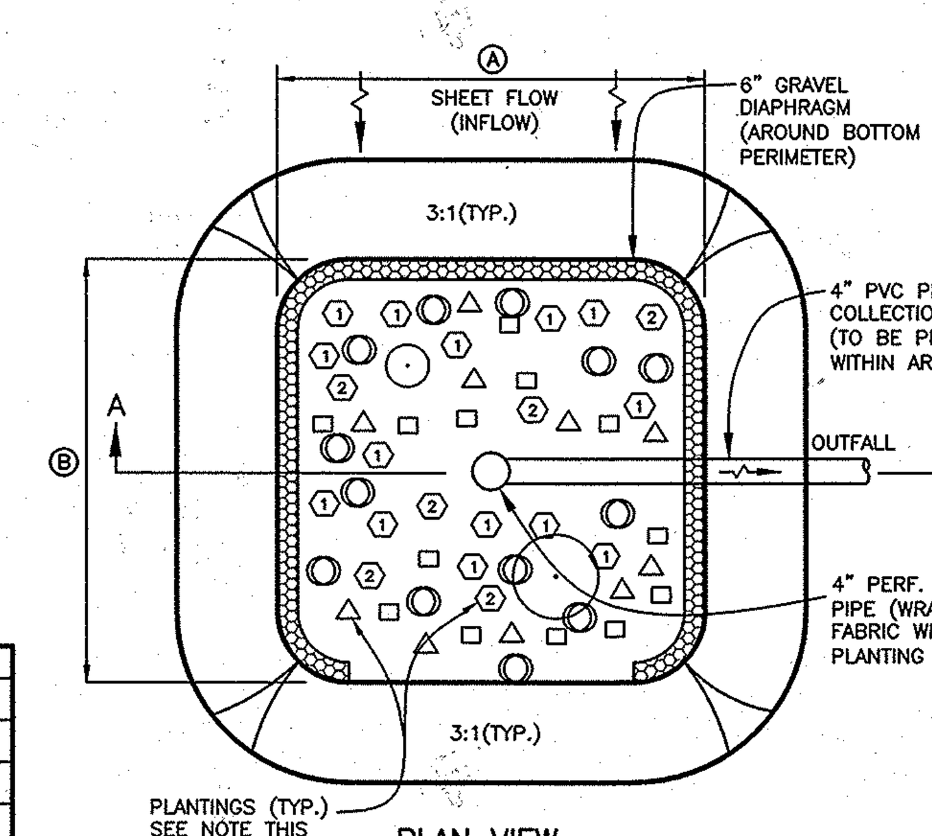
STRUCTURE	D-50	LENGTH (L)	WIDTH (W)	THICKNESS (T)	SHA CLASS
ES-1	9.5"	20'	9.5'	19"	I
HW-1	9.5"	12'	7'	19"	I

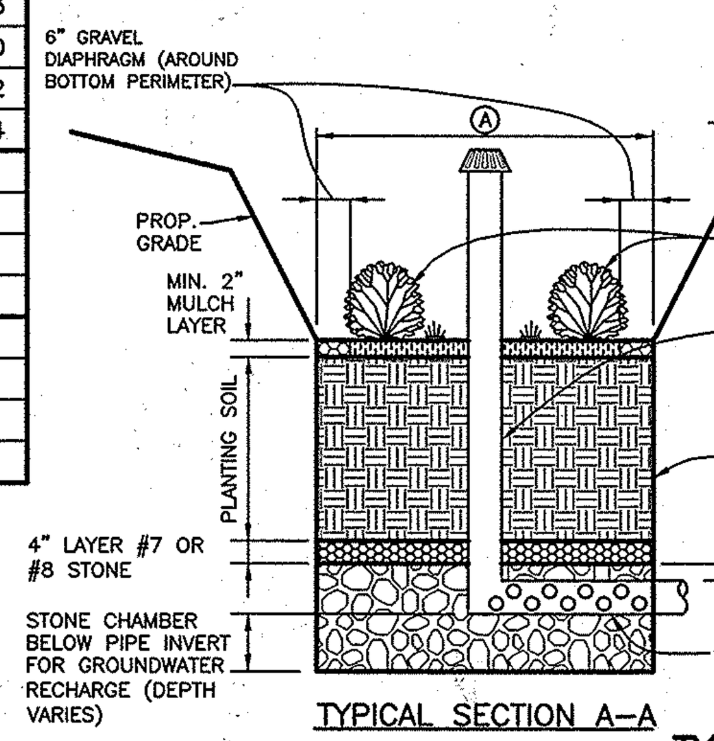
OUTLET PROTECTION DETAIL

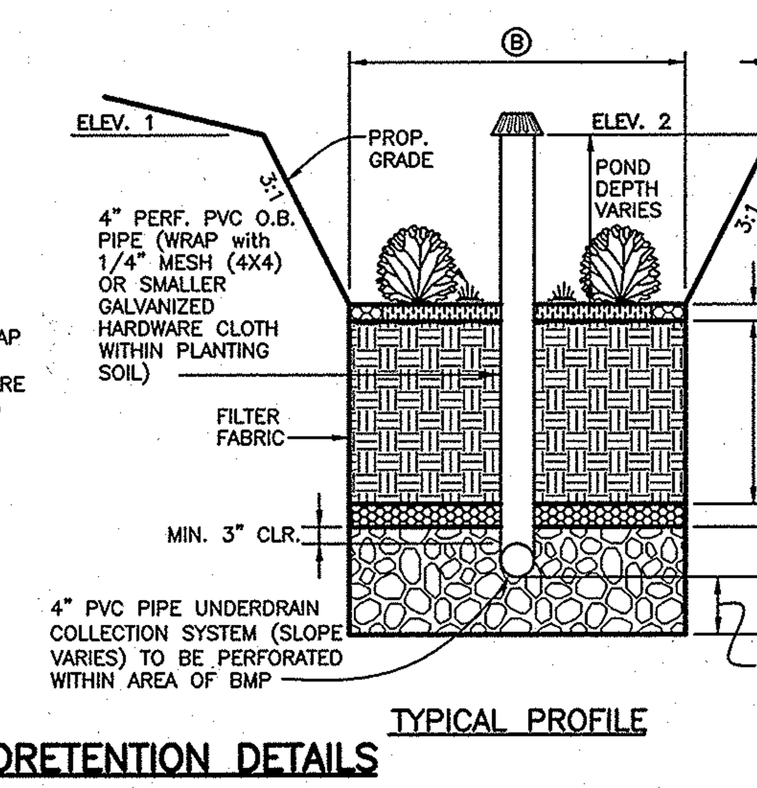
NOT TO SCALE

UNDERDRAIN, OVERFLOW AND OUTFALL NOTES

1. THE LAST CLEAN-OUT LOCATION WITHIN EACH MICRO-BIORETENTION FACILITY SHALL BE FITTED WITH A NON-CLOGGING SURFACE DRAIN (EXAMPLE: 4" ABS ROOF DRAIN W/CAST ALUMINUM DOME) AT THE POND SURFACE ELEVATION INDICATED IN THE CORRESPONDING TABLE ELEV. 2.
2. THE PVC WITHIN THE FACILITY SHALL BE PERFORATED.
3. THE UNDER-DRAIN AND PIPE TO OUTFALL SHALL BE INSTALLED TO A MINIMUM DEPTH OF 2' BELOW FINISHED GRADE AND SHALL MAINTAIN A MINIMUM 1% SLOPE AND MAINTAIN A MINIMUM OF 1' OF SEPARATION AT ALL CROSSINGS.







TYPICAL MICRO-BIORETENTION DETAILS

NOT TO SCALE

(M-6) MICRO-BIORETENTION DESIGN TABLES

MBR #1		MBR #2		MBR #3	
ELEV. 1	165.00	ELEV. 1	164.00	ELEV. 1	161.00
ELEV. 2	165.00	ELEV. 2	164.00	ELEV. 2	161.00
ELEV. 3	164.00	ELEV. 3	163.00	ELEV. 3	160.00
ELEV. 4	163.83	ELEV. 4	162.83	ELEV. 4	159.83
ELEV. 5	161.83	ELEV. 5	160.83	ELEV. 5	157.83
ELEV. 6	161.50	ELEV. 6	160.50	ELEV. 6	157.50
ELEV. 7	160.92	ELEV. 7	159.92	ELEV. 7	156.92
ELEV. 8	160.75	ELEV. 8	159.75	ELEV. 8	155.84
DIMENSIONS		DIMENSIONS		DIMENSIONS	
'A'	33'	'A'	26'	'A'	19'
'B'	9'	'B'	6'	'B'	12.3'
TOTAL SF	227	TOTAL SF	155	TOTAL SF	117
OUTFALL PIPE		OUTFALL PIPE		OUTFALL PIPE	
SIZE	4"	SIZE	4"	SIZE	4"
LENGTH	69'	LENGTH	82'	LENGTH	61'
SLOPE	1.3%	SLOPE	1.1%	SLOPE	1.0%

PLANTING LEGEND

SYMBOL	NAME
①	AJUGA REPTANS (CREEPING BUGLEWEED)
②	IRIS VERSICOLOR (IRIS)
□	Lobelia cardinalis (CARDINAL FLOWER)
△	ELYMUS VIRGINICUS (VIRGINIA WILD RYE)
◎	VACCINIUM ATROCOCCUM (HIGHBUSH BLUEBERRY)
⊙	BETULA NIGRA (RIVER BIRCH)

SWM PRACTICE INTERNAL LANDSCAPING CHART

				MBR 1	MBR 2	MBR 3
Facility square footage				227	155	117
PLANT NAME	COMMON NAME	TYPE	SIZE	QUANTITY	QUANTITY	QUANTITY
Lobelia cardinalis	CARDINAL FLOWER	herbaceous	quart bulb	19	13	10
Ajuga reptans	CREEPING BUGLEWEED	herbaceous	quart bulb	19	13	10
Iris versicolor	IRIS	herbaceous	quart bulb	19	13	10
Elymus virginicus	VIRGINIA WILD RYE	herbaceous	quart bulb	19	13	10
Vaccinium atrococcum	HIGHBUSH BLUEBERRY	shrub	2.5'-3' ht	3	2	2

MATERIALS AND SPECIFICATIONS FOR (M-6) MICRO-BIORETENTION

MATERIAL	SPECIFICATION	SIZE	NOTES:
PLANTINGS (IF REQUIRED)	SEE APPENDIX A; TABLE A.4	N/A	PLANTINGS ARE SITE SPECIFIC
PLANTING SOIL (2.0' TO 4.0' DEEP)	LOAMY SAND (60-65%) & COMPOST (35-40%) OR LOAMY SAND (30%) COARSE SAND (30%) & COMPOST (35-40%)	N/A	USDA SOIL TYPES: LOAMY SAND, SANDY LOAM; CLAY CONTENT <5%
ORGANIC CONTENT	MIN. 10% BY DRY WEIGHT (ASTM D2974)	N/A	-
MULCH	SHREDDED HARDWOOD	N/A	AGED 6 MONTHS, MINIMUM
PEA GRAVEL DIAPHRAGM	PEA GRAVEL: ASTM D-448	#8 OR #9 (1/8" TO 3/8")	
GEOTEXTILE		N/A	PE TYPE 1 - NONWOVEN
GRAVEL (UNDERDRAINS & BERMS)	AASHTO M-43	#57 OR #6 AGGREGATE (3/8" TO 3/4")	#8 STONE
UNDERDRAIN PIPING	F758, TYPE PS28 OR AASHTO M-278	4" TO 6" RIGID SCH.40 PVC OR SDR35	SLOTTED OR PERFORATED: 3/8" PERFS. @ 6" O/C, 4 HOLES PER ROW; MINIMUM OF 3" OF GRAVEL OVER PIPES, NOT NECESSARY UNDERNEATH PIPES. PERFORATED PIPE SHALL BE WRAPPED WITH 1/4" GALVANIZED HARDWIRE CLOTH
POURED-IN-PLACE CONC. (IF REQUIRED)	MSHA MIX NO.3; f'c=3500psi @ 28 DAYS, NORMAL WEIGHT, AIR ENTRAINED; REINFORCING TO MEET ASTM 615-60	N/A	ON-SITE TESTING OF POURED-IN-PLACE CONC. REQUIRED; 28 DAY STRENGTH TEST AND SLUMP TEST: ALL CONC. DESIGN (CAST -IN-PLACE or PRE-CAST) NOT USING PREVIOUSLY APPROVED STATE OR LOCAL STANDARDS REQUIRES DESIGN DRAWINGS SEALED AND APPROVED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND. - DESIGN TO INCLUDE MEETING ACI CODE 350.R/89: VERTICAL LOADING (H-10 or H-20) ALLOWABLE HORIZONTAL LOADING (BASED ON SOIL PRESSURES); AND ANALYSIS OF POTENTIAL CRACKING
SAND (1.0' DEEP)	AASHTO M-6 OR ASTM C-33	0.02" TO 0.04"	SAND SUBSTITUTIONS SUCH AS DIABASE AND GRAYSTONE (AASHTO) #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATED OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chad Edmondson — CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7.31.15

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 8-5-15

DIRECTOR — DATE 8-10-16

J:\1465\dwg\RED LINE REPLACEMENT SHT 13.dwg, SD Profiles 3 Sht 13 of 13, 1/20/2015 2:07:41 PM, bdodson

Non-Rooftop Disconnection Credit

Credit Designation	Lot	Address	Impervious Area (SF)	Contrib. Length Impervious (FT)	Contrib. Length Pervious (FT)	Disconnection Length (FT)	Pe (in.) Treated	Pe (in.) Remaining	Rev Provided (Ac.)
FS #1	1278	Euclid Ave.	593	27	0	27	1.0	0.6	0.014
Target Pe =			1.6 inches				1	0.4	0.014

ESD PRACTICE SUMMARY TABLE

Pe= 1.6 inches; Qe= 0.47 inches; ESDv= 1401 cf for site

Practice			Lot	Ref.	Address	DA to practice	Imp Area to practice	Af Required	Af Provided	Af 2% DA?	ESDv Req. for DA	ESDv Provided*	ESDv Req.?	Rev Area	Rev Volume
(N-2) Non-rooftop	N-2	#1	1278	FS 1	6318 Euclid Ave.	593	593				75	47	not fully met	0.014	
(M-8) Grass Swale	M-8	#1	1278	GS 1	6318 Euclid Ave.	4,481	2,054	90	290	PASS	276	276	PASS		22
(M-6) Micro-Bioretention	M-6	#1	1276	MBR 1	6326 Euclid Ave.	8,849	2,565	177	227	PASS	367	481	PASS		0
(M-6) Micro-Bioretention	M-6	#2	1277	MBR 2	6322 Eulcid Ave.	5,223	2,144	104	155	PASS	292	359	PASS		0
(M-6) Micro-Bioretention	M-6	#3	1278	MBR 3	6318 Euclid Ave.	1,908	1,297	38	117	PASS	168	301	PASS		38
							8653 TOTAL =				1179	1465		0.014	60
* ESDv provided in MBRs is the volume of the facility divided by 75%.												Rev Required =		0.03	114
												Percent of Requirement =		47%	53%
												Rev requirement met?			True

GRASS SWALE #1

2 YEAR DESIGN		
Q2 = c*I*A		
c =	0.33	
I =	4.5	IN/HR
A =	0.1	AC.
Q2 =	0.15	CFS
10 YEAR DESIGN		
Q10 = c*I*A		
c =	0.33	
I =	6.6	IN/HR
A =	0.1	AC.
Q10 =	0.22	CFS
SLOPE =	0.034	FT/FT
BOTTOM =	24.00	INCHES
SIDES =	0.13	
n2 =	0.15	
n10 =	0.03	
V2 =	0.44	FPS
d2 =	1.69	INCHES
V10 =	1.44	FPS
d10 =	0.83	INCHES
d2 IS LESS THAN 4 INCHES AND V10 IS LESS THAN 2 CFS		

(M-8) Swale — Date: — Project: #2 — Sw 2 — Lot 4 — Drainage Area = Sw 2

DA =	4,481	sf	ok Check		
Imp =	2,054	sf Impervious	$R_{(v)}$ =	0.46	Runoff Coefficient
I =	46%	Percent Impervious	$A_{(f\text{-req'd})}$ =	89.6	SF (Eqn. 5.2)
$PE_{(target)}$=	1.6	Rainfall in Inches	$A_{(f\text{-prov'd})}$ =	290.0	SF ok
ESD_v =	276	CF Calc.	$A_{(f)}$% =	6.5%	ok Check
s =	0.034	ft/ft	v =	0.44	ft/s PASS
w =	2	ft	d =	1.7	in PASS
l =	145	ft	$Actual_{(v)}$ =	276	CF Storage Provd
sides =	3:1	H/V	Storage =	100%	ok Check

Swale Design

Depth of Channel =	0.66
Freeboard =	0.52
Depth of flow =	0.14
Grass	

Recharge Provided

Surface Area =	290.0	sf
S =	0.13	ft
Rv =	0.46	
A =	4481	sf
Recharge provided=	22	cf

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DISCONNECTION OF ROOFTOP RUNOFF (N-1), DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2)

1. Maintenance of areas receiving disconnected runoff is generally no different than that required for other lawn or landscaped areas. The areas receiving runoff should be protected from future compaction or development of impervious area. In commercial areas, foot traffic should be discouraged as well.

OPERATION AND MAINTENANCE SCHEDULE FOR LANDSCAPE INFILTRATION (M-3) MICRO-BIORETENTION (M-6), RAIN GARDENS (M-7), BIORETENTION SWALE (M-8), ENHANCED FILTERS (M-9)

1. Annual maintenance of plant material, mulch layer and soil layer is required. Maintenance of mulch and soil is limited to correcting areas of erosion or wash out. Any mulch replacement shall be done in the spring. Plant material shall be checked for disease and insect infestation and maintenance will address dead material and pruning. Acceptable replacement plant material is limited to the following: 2000 Maryland Stormwater Design Manual Volume II, Table A.4.1 and 2.
2. Schedule of plant inspection will be twice a year in spring and fall. This inspection will include removal of dead and diseased vegetation considered beyond treatment, treatment of all diseased trees and shrubs and replacement of all deficient stakes and wires.
3. Mulch shall be inspected each spring. Remove previous mulch layer before applying new layer once every 2 to 3 years.
4. Soil erosion to be addressed on an as needed basis, with a minimum of once per month and after heavy storm events.

B-4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

Definition

Using vegetation as cover to protect exposed soil from erosion.

Purpose

To promote the establishment of vegetation on exposed soil.

Conditions Where Practice Applies

On all disturbed areas not stabilized by other methods. This specification is divided into sections on incremental stabilization; soil preparation, soil amendments and topsoiling; seeding and mulching; temporary stabilization; and permanent stabilization.

Effects on Water Quality and Quantity

Stabilization practices are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and runoff to downstream areas.

Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Over time, vegetation will increase organic matter content and improve the water holding capacity of the soil and subsequent plant growth. Vegetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone.

Sediment control practices must remain in place during grading, seedbed preparation, seeding, mulching, and vegetative establishment.

Adequate Vegetative Establishment

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

1. Adequate vegetative stabilization requires 95 percent groundcover.
2. If an area has less than 40 percent groundcover, restabilize following the original recommendations for lime, fertilizer, seedbed preparation, and seeding.
3. If an area has between 40 and 94 percent groundcover, over-seed and fertilize using half of the rates originally specified.
4. Maintenance fertilizer rates for permanent seeding are shown in Table B.6.

B-4-1 STANDARDS AND SPECIFICATIONS FOR INCREMENTAL STABILIZATION

Definition

Establishment of vegetative cover on cut and fill slopes.

Purpose

To provide timely vegetative cover on cut and fill slopes as work progresses.

Conditions Where Practice Applies

Any cut or fill slope greater than 15 feet in height. This practice also applies to stockpiles.

Criteria

A. Incremental Stabilization - Cut Slopes
1. Excavate and stabilize cut slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all cut slopes as the work progresses.
2. Construction sequence example (Refer to Figure B.1):
   a. Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the excavation.
   b. Perform Phase 1 excavation, prepare seedbed, and stabilize.
   c. Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase 1 areas as necessary.
   d. Perform final phase excavation, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

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

B. Incremental Stabilization - Fill Slopes
1. Construct and stabilize fill slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all slopes as the work progresses.
2. Stabilize slopes immediately when the vertical height of a lift reaches 15 feet, or when the grading operation ceases as prescribed in the plans.
3. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
4. Construction sequence example (Refer to Figure B.2):
   a. Construct and stabilize all temporary swales or dikes that will be used to divert runoff around the fill. Construct silt fence on low side of fill unless other methods shown on the plans address this area.
   b. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
   c. Place Phase 1 fill, prepare seedbed, and stabilize.
   d. Place Phase 2 fill, prepare seedbed, and stabilize.
   e. Place final phase fill, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

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

Figure B.

B-4-2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

Definition

The process of preparing the soils to sustain adequate vegetative stabilization.

Purpose

To provide a suitable soil medium for vegetative growth.

Conditions Where Practice Applies

Where vegetative stabilization is to be established.

Criteria

A. Soil Preparation
1. Temporary Stabilization
   a. Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.
   b. Apply fertilizer and lime as prescribed on the plans.
   c. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.
2. Permanent Stabilization
   a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
      i. Soil pH between 6.0 and 7.0.
      ii. Soluble salts less than 500 parts per million (ppm).
      iii. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
      iv. Soil contains 1.5 percent minimum organic matter by weight.
      v. Soil contains sufficient pore space to permit adequate root penetration.
   b. Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
   c. Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.
   d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
   e. Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

B. Topsoiling
1. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.
2. Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.
3. Topsoiling is limited to areas having 2:1 or flatter slopes where:
   a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
   b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
   c. The original soil to be vegetated contains material toxic to plant growth.
   d. The soil is so acidic that treatment with limestone is not feasible.
4. Areas having slopes steeper than 2:1 require special consideration and design.
5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:
   a. Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1½ inches in diameter.
   b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnsongrass,nut sedge, poison ivy, thistle, or others as specified .
   c. 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.
6. Topsoil Application
   a. Erosion and sediment control practices must be maintained when applying topsoil.
   b. Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to 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 must be corrected in order to prevent the formation of depressions or water pockets.
   c. Topsoil must not be placed if 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.

C. Soil Amendments (Fertilizer and Lime Specifications)
1. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
2. Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.
3. Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #20 mesh sieve.
4. Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means.
5. Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

Definition: A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

Purpose: To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

Conditions Where Practice Applies

Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

Criteria

1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
2. The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.
3. Runoff from the stockpile area must drain to a suitable sediment control practice.
4. Access the stockpile area from the upgrade side.
5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
7. Stockpiles must be stabilized in accordance with the 3/7 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.
8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

Maintenance

The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 30 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

B.4.C Specifications for Micro-Bioretention, Rain Gardens, Landscape Infiltration & Infiltration Berms

1. **Material Specifications:** The allowable materials to be used in these practices are detailed in Table B.4.1.
2. **Filtering Media or Planting Soil:** The soil shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the micro-bioretention practice that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil shall be free of Bermuda grass, Quackgrass, Johnson grass, or other noxious weeds as specified under COMAR 15.08.01.05. The planting soil shall be tested and shall meet the following criteria:
   Soil Component - Loamy Sand or Sandy Loam (USDA Soil Textural Classification)
   Organic Content - Minimum 10% by dry weight (ASTM D 2974). In general, this can be met with a mixture of loamy and (60%-65%) and compost (35% to 40%) or sandy loam (30%), coarse sand (30%), and compost (40%).
   Clay Content - Media shall have a clay content of less than 5%.
   pH Range - Should be between 5.5 - 7.0. Amendments (e.g., lime, iron sulfate plus sulfur) may be mixed into the soil to increase or decrease pH.
   There shall be at least one soil test per project. Each test shall consist of both the standard soil test for pH, and additional tests of organic matter, and soluble salts. A textural analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the topsoil was excavated.
3. **Compaction:** It is very important to minimize compaction of both the base of bioretention practices and the required backfill. When possible, use excavation hoes to remove original soil. If practices are excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with turf type tires. Use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high-pressure tires will cause excessive compaction resulting in reduced infiltration rates and is not acceptable. Compaction will significantly contribute to design failure. Compaction can be alleviated at the base of the bioretention facility by using a primary tilling operation such as a chisel plow, ripper, or subsoiler. These tilling operations are to refracture the soil profile through the 12 inch compaction zone. Substitute methods must be approved by the engineer. Rototillers typically do not till deep enough to reduce the effects of compaction from heavy equipment. Rototill 2 to 3 inches of sand into the base of the bioretention facility before backfilling the optional sand layer. Pump any ponded water before preparing (rototilling) base. When backfilling the topsoil over the sand layer, first place 3 to 4 inches of topsoil over the sand, then rototill the sand/topsoil to create a gradation zone. Backfill the remainder of the topsoil to final grade. When backfilling the bioretention facility, place soil in lifts 12" to 18". Do not use heavy equipment within the bioretention basin. Heavy equipment can be used around the perimeter of the basin to supply soils and sand. Grade bioretention materials with light equipment such as a compact loader or a dozer/loader with marsh tracks.
4. **Plant Material:** Recommended plant material for micro-bioretention practices can be found in Appendix A, Section A.2.3.
5. **Plant Installation:** Compost is a better organic material source, is less likely to float, and should be placed in the invert and other low areas. Mulch should be placed in surrounding to a uniform thickness of 2" to 3". Shredded or chipped hardwood mulch is the only accepted mulch. Pine mulch and wood chips will float and move to the perimeter of the bioretention area during a storm event and are not acceptable. Shredded mulch must be well aged (6 to 12 months) for acceptance. Rootstock of the plant material shall be kept moist during transport and on-site storage. The plant root ball should be planted so 1/8th of the ball is above final grade surface. The diameter of the planting pit shall be at least six inches larger than the diameter of the planting ball. Set and maintain the plant straight during the entire planting process. Thoroughly water ground bed cover after installation. Trees shall be braced using 2" by 2" stakes only as necessary and for the first growing season only. Stakes are to be equally spaced on the outside of the tree ball. Grasses and legume seed should be drilled into the soil to a depth of at least one inch. Grass and legume plugs shall be planted following the non-grass ground cover planting specifications. The topsoil specifications provide enough organic material to adequately supply nutrients from natural cycling. The primary function of the bioretention structure is to improve water quality. Adding fertilizers defeats, or at a minimum, impedes this goal. Only add fertilizer if wood chips or mulch are used to amend the soil. Rototill urea fertilizer at a rate of 2 pounds per 1000 square feet.
6. **Underdrains:** Underdrains should meet the following criteria:
   - Pipe- Should be 4" to 6" diameter, slotted or perforated rigid plastic pipe (ASTMF 758, Type PS 28, or AASHTO-M-278) in a gravel layer. The preferred material is slotted, 4" rigid pipe (e.g., PVC or HDPE).
   - Perforations - If perforated pipe is used, perforations should be ⅜" diameter located 6" on center with a minimum of four holes per row. Pipe shall be wrapped with a ¼" (No. 4 or 4x4) galvanized hardware cloth.
   - Gravel - The gravel layer (No. 57 stone preferred) shall be at least 3" thick above and below the underdrain
   - The main collector pipe shall be at a minimum 0.5% slope.
   - A rigid, non-perforated observation well must be provided (one per every 1,0000 square feet) to provide a clean-out port and monitor performance of the filter.
   - A 4" layer of pea gravel (⅛" to ⅜" stone) shall be located between the filter media and underdrain to prevent migration of fines into the underdrain. This layer may be considered part of the filter bed when bed thickness exceeds 24".

   The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%. Observation wells and/or clean-out pipes must be provided (one minimum per every 1000 square feet of surface area).
7. **Miscellaneous:** These practices may not be constructed until all contributing drainage area has been stabilized.

B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

Definition

The application of seed and mulch to establish vegetative cover.

Purpose

To protect disturbed soils from erosion during and at the end of construction.

Conditions Where Practice Applies

To the surface of all perimeter controls, slopes, and any disturbed area not under active grading.

Criteria

A. Seeding
1. Specifications
   a. All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject to re-testing by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be available upon request to the inspector to verify type of seed and seeding rate.
   b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.
   c. Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.
   d. Sod or seed must not 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.
2. Application
   a. Dry Seeding: This includes use of conventional drop or broadcast spreaders.
      i. Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries.
      ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact.
   b. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
      i. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after planting.
      ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction.
   c. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer).
      i. If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble nitrogen; P2O5 (phosphorous), 200 pounds per acre; K2O (potassium), 200 pounds per acre.
      ii. Lime: Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.
      iii. Mix seed and fertilizer on site and seed immediately and without interruption.
      iv. When hydroseeding do not incorporate seed into the soil.

B. Mulching
1. Mulch Materials (in order of preference)
   a. Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright in color. Straw is to be free of noxious weed seeds as specified in the Maryland Seed Law and not musty, moldy, caked, decayed, or excessively dusty.

   Note: Use only sterile straw mulch in areas where one species of grass is desired.
   b. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.
      i. WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
      ii. WCFM, including dye, must contain no germination or growth inhibiting factors.
      iii. WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material must form a blotter-like ground cover, on application, having moisture absorption and percolation properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
      iv. WCFM material must not contain elements or compounds at concentration levels that will be phyto-toxic.
      v. WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum.
2. Application
   a. Apply mulch to all seeded areas immediately after seeding.
   b. When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre to a uniform loose depth of 1 to 2 inches. Apply mulch to achieve a uniform distribution and depth so that the soil surface is not exposed. When using a mulch anchoring tool, increase the application rate to 2.5 tons per acre.
   c. Wood cellulose fiber used as mulch must be applied at a net dry weight of 1500 pounds per acre. Mix the wood cellulose fiber with water to attain a mixture with a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
3. Anchoring
   a. Perform mulch anchoring immediately following application of mulch to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon the size of the area and erosion hazard:
      i. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of 2 inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should follow the contour.
      ii. Wood cellulose fiber may be used for anchoring straw. Apply the fiber binder at a net dry weight of 750 pounds per acre. Mix the wood cellulose fiber with water at a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
      iii. Synthetic binders such as Acrylic DLR (Agro-Tack), DCA-70, Petroset, Terra Tax II, Terra Tack AR or other approved equal may be used. Follow application rates as specified by the manufacturer. Application of liquid binders needs to be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. Use of asphalt binders is strictly prohibited.
      iv. Lightweight plastic netting may be stapled over the mulch according to manufacturer recommendations. Netting is usually available in rolls 4 to 15 feet wide and 300 to 3,000 feet long.

B-4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABLIZATION

Definition

To stabilize disturbed soils with vegetation for up to 6 months.

Purpose

To use fast growing vegetation that provides cover on disturbed soils.

Conditions Where Practice Applies

Exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time, permanent stabilization practices are required.

Criteria

1. Select one or more of the species or seed mixtures listed in Table B.1 for the appropriate Plant Hardiness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. If this Summary is not put on the plan and completed, then Table B.1 plus fertilizer and lime rates must be put on the plan.
2. For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.
3. When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3.A.1.b and maintain until the next seeding season.

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

Definition

To stabilize disturbed soils with permanent vegetation.

Purpose

To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils.

Conditions Where Practice Applies

Exposed soils where ground cover is needed for 6 months or more.

Criteria

A. Seed Mixtures
1. General Use
   a. Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
   b. Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guild, Section 342 - Critical Area Planting.
   c. For sites having disturbed areas over 5 acres, use and show the rates recommended by the soil testing agency.
   d. For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 ½ pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary.
2. Turfgrass Mixtures
   a. Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.
   b. Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan.
      i. Kentucky Bluegrass: Full sun Mixture: For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky Bluegrass Cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
      ii. Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky Bluegrass Cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
      iii. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes; Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
      iv. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1 ½ to 3 pounds per 1000 square feet.

      Notes:Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo #77, "Turfgrass Cultivar Recommendations for Maryland" Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line.
   c. Ideal Times of Seeding for Turf Grass Mixtures
      Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b, 6a)
      Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6b)
      Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 7a, 7b)
   d. Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1 ½ inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty.
   e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (½ to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is not especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

B. Sod: to provide quick cover on disturbed areas (2:1 grade or flatter).
1. General Specifications
   a. Class of turfgrass must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.
   b. Sod must be machine cut at a uniform soil thickness of ¾ inch, plus or minus ¼ inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torn or uneven ends will not be acceptable.
   c. Standard size sections of sod must be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
   d. Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
   e. Sod must be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its installation.
2. Sod Installation
   a. During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod.
   b. Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger lateral joints to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.
   c. Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure solid contact exists between sod roots and the underlying soil surface.
   d. Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.
3. Sod Maintenance
   a. In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.
   b. After the first week, sod watering is required as necessary to maintain adequate moisture content.
   c. Do not mow until the sod is firmly rooted. No more than 1/3 of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless otherwise specified.

ENGINEER'S CERTIFICATE

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

ENGINEER - JOHN M. CARNEY, P.E. #45577 — DATE 1/20/15

DEVELOPER'S CERTIFICATE

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

OWNER — DATE 1/26/16

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

John R. Roberts — HOWARD SCD — DATE 2/10/15

PLEASE NOTE THAT THIS REVISION IS SUPERSEDING THE PREVIOUS SHEET DATED JUNE, 2007 AND REVISED 10/13/10

NO	DATE	REVISION
2	11-18-14	REPLACEMENT SHEET TO REVISE SEC CHARTS AND DETAILS, ADD M6 INFORMATION
1	10-13-10	ADD ESD/WQv INFORMATION FOR LOTS 1276-1278

BENCHMARK ENGINEERING, INC.
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
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(F) 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 6-8-2016.

STATE OF MARYLAND — JOHN M. CARNEY — No. 45577 — PROFESSIONAL ENGINEER — 1/20/15

OWNER: BELLE GROVE CORP. 4024 BELLE GROVE ROAD BALTIMORE, MD 21225-2657 410-789-7070

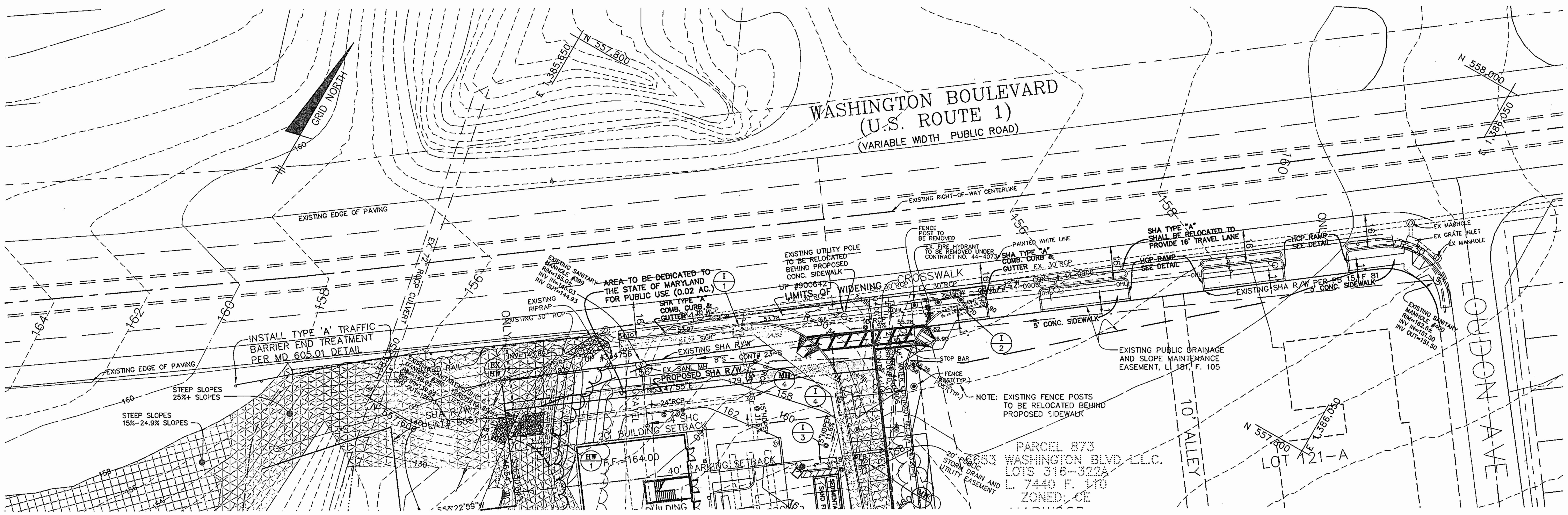
PROJECT: EUCLID CORNERS PARCEL 'A', LOTS 1276-1278 & OPEN SPACE LOT 1279

LOCATION: TAX MAP: 38, GRID: 13; PART OF PARCEL: 873; 1st ELECTION DISTRICT; HOWARD COUNTY, MARYLAND

TITLE: Revised STORM DRAIN PROFILES AND DETAILS ESD/WQv NOTES AND DETAILS

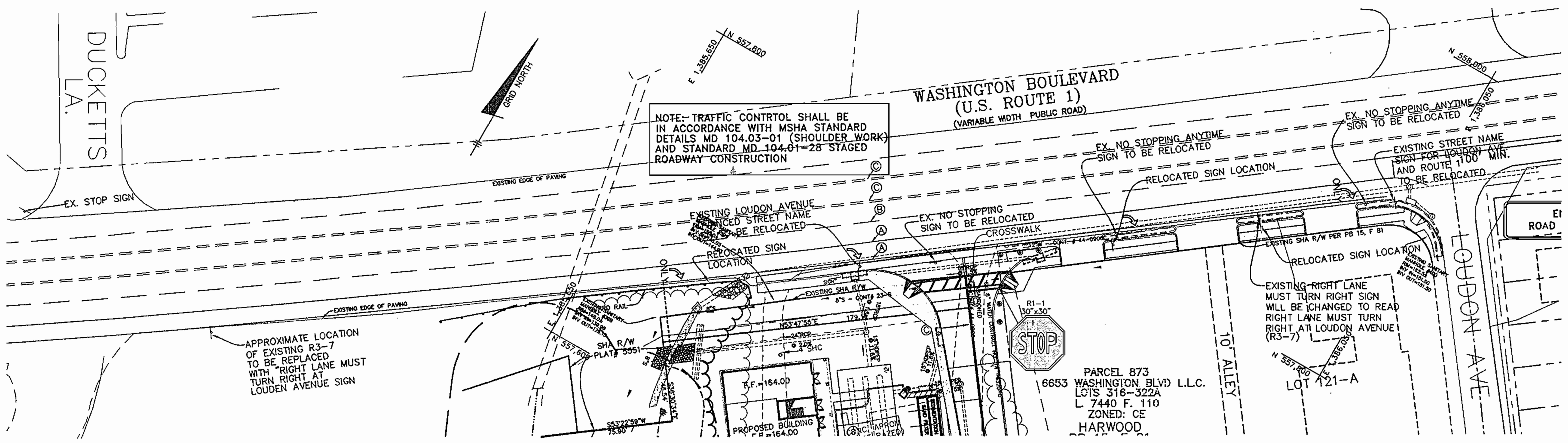
DESIGN: JMC	DRAFT: EDD	CHECK: JMC	DATE: NOVEMBER, 2014	PROJECT NO. 1465
			SCALE: AS SHOWN	SHEET 13 OF 14

SDP-06-22



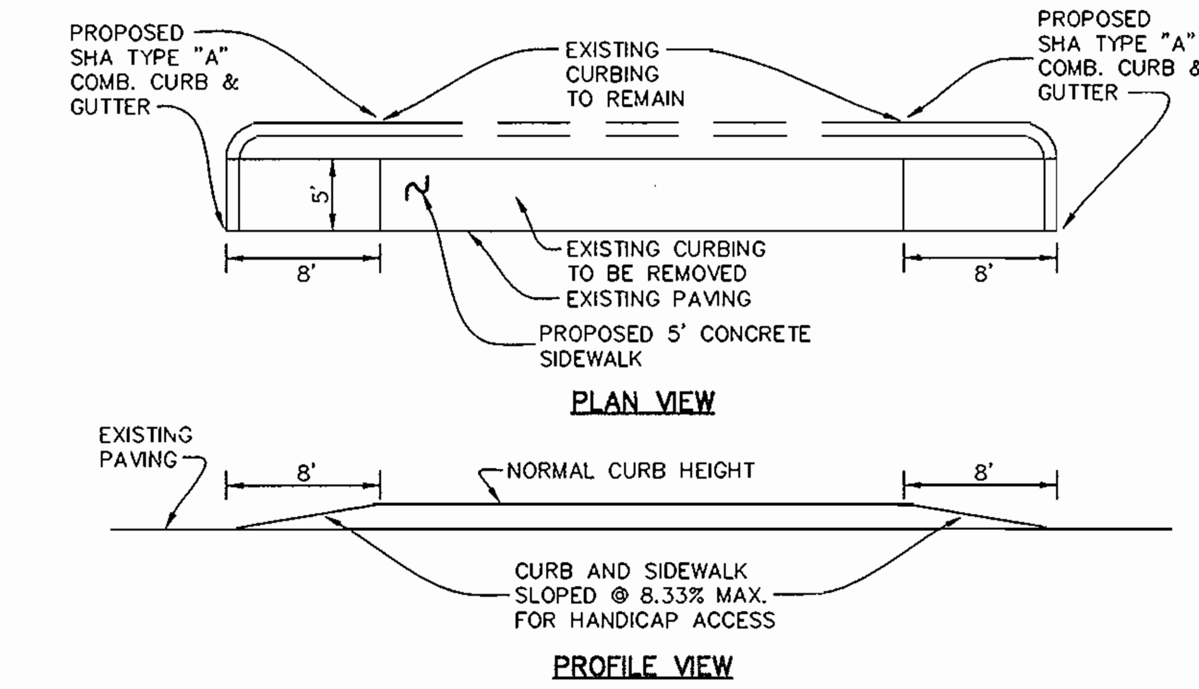
PLAN VIEW

SCALE: 1" = 30'



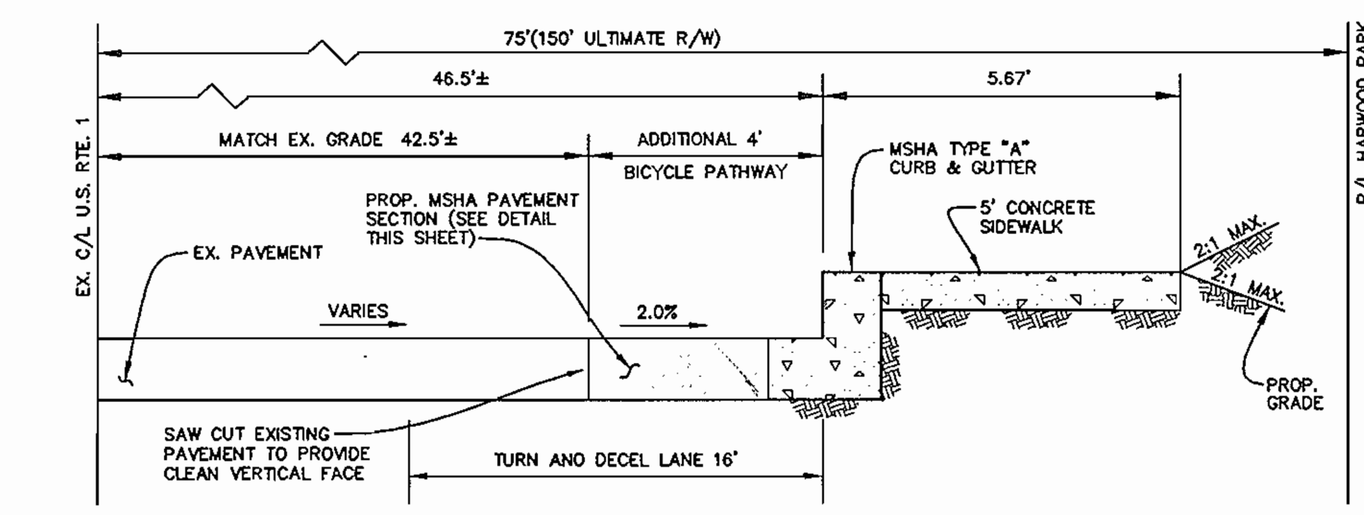
TRAFFIC STRIPING & SIGNAGE PLAN

SCALE: 1" = 50'



DETAIL OF EXISTING ISLAND MODIFICATION

NOT TO SCALE



FRONT OF PROJECT SITE ALONG U.S. RTE. 1

TYPICAL ROAD WIDENING SHALL BE IN ACCORDANCE WITH HOWARD COUNTY TYPICAL DETAIL R-10.01

EX. U.S. ROUTE 1 C/L STA.25+93± TO C/L STATION 27+70±

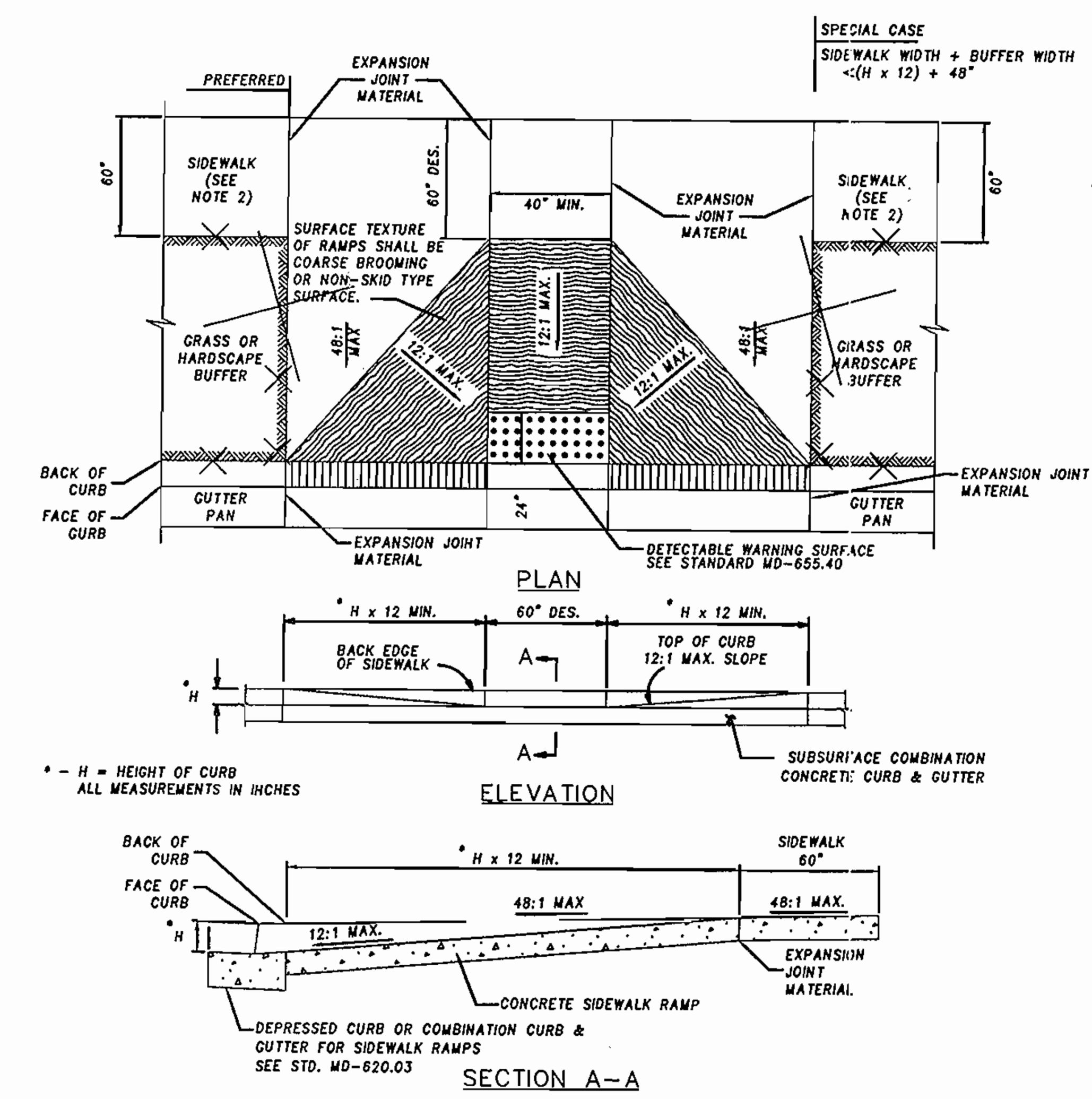
CLASSIFICATION : INTERMEDIATE ARTERIAL
DESIGN SPEED: 50 MPH

TYPICAL ROAD WIDENING SECTION FOR U.S. ROUTE 1

NOT TO SCALE

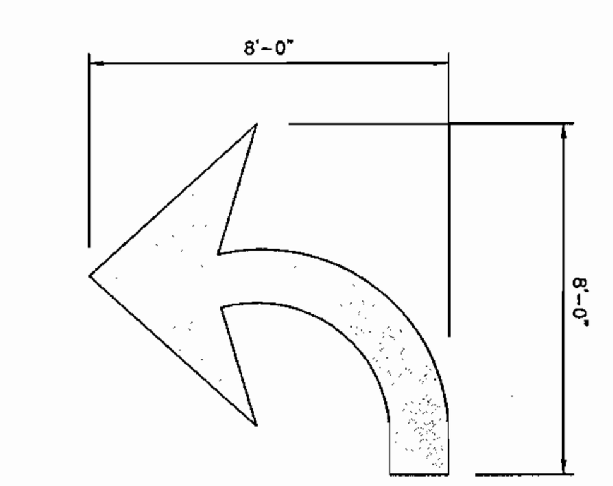
TRAFFIC CONTROL PLAN KEY

- SIGN SUPPORT
- SIGN
- 50' (TYP.) CHANNELIZING DEVICES
- ARROW PANEL



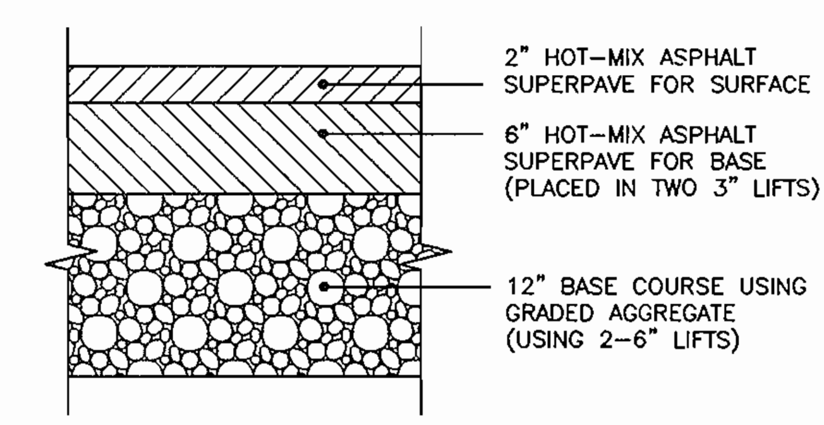
NOTES

1. TO BE USED ON WIDE SIDEWALKS OR SIDEWALKS WITH SIGNIFICANT SEPARATION FROM THE ROADWAY WHERE THE GEOMETRY SPECIFIED IN THE DETAILS ABOVE CAN BE SATISFIED. MAY BE MODIFIED TO SUIT A PARTICULAR LOCATION.
2. WHERE 60" SIDEWALK CAN NOT BE PROVIDED, A DESIGN WAIVER MUST BE REQUESTED
3. NO TRAVERSABLE SLOPE ON THE RAMP OR SIDEWALK SHALL EXCEED 12:1 IN THE DIRECTION OF PEDESTRIAN TRAVEL, OR 48:1 PERPENDICULAR TO THE DIRECTION OF PEDESTRIAN TRAVEL.
4. EXPANSION JOINT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH STD. MD-655.01.
5. SIDEWALK RAMP SHALL BE INCLUDED IN PRICE BID FOR CONCRETE SIDEWALK. DEPRESSED CURB AND CURB TRANSITION SHALL BE INCLUDED IN PRICE BID FOR CURB OR CURB & GUTTER ADJACENT TO SIDEWALK RAMP. DETECTABLE WARNING SURFACE SHALL BE PAID FOR IN ACCORDANCE WITH SECTION 611 OF THE SPECIFICATIONS.
6. SIDEWALK RAMPS TO BE SHOWN ON PLANS SYMBOLICALLY AND REFERENCED WITH THE CENTER OF THE RAMP ALIGNED TO A STATION ON THE CONSTRUCTION CENTERLINE. SEPARATE DETAILS SHALL BE SHOWN WHERE PROPOSED RAMP VARIES FROM STANDARD CASES.



TRAFFIC STRIPING PAVEMENT SYMBOLS

NOT TO SCALE



MSHA "D" PAVING SECTION

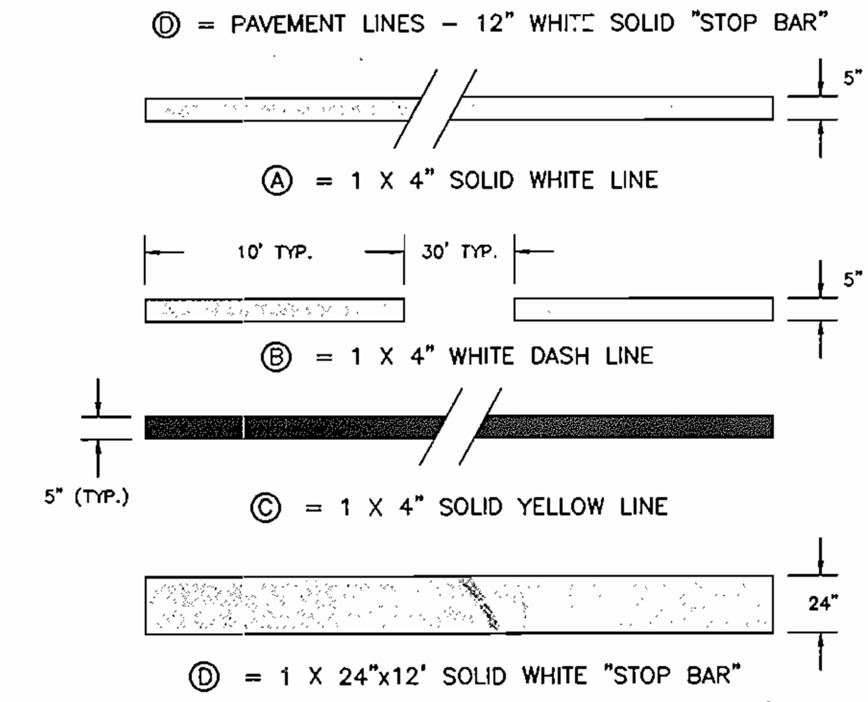
NOT TO SCALE

CRCSSWALK

NOT TO SCALE

PAVEMENT MARKING LEGEND

Ⓐ = PAVEMENT LINES – 5" WHITE SOLID
Ⓑ = PAVEMENT LINES – 5" WHITE DASH
Ⓒ = PAVEMENT LINES – 5" DOUBLE YELLOW SOLID
Ⓓ = PAVEMENT LINES – 12" WHITE SOLID "STOP BAR"



TYPICAL SPACING LONGITUDINAL PAVEMENT LINES

NOT TO SCALE

PAVEMENT MARKING NOTES

1) ALL PAVEMENT MARKINGS TO BE 5" WIDE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS. A SINGLE HEAT APPLIED REFLECTIVE THERMOPLASTIC "LEFT-TURN" ARROW SHALL BE APPLIED IN EACH OF THE PROP. LEFT-TURN LANES
2) ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (2003 EDITION)
3) EX. PAVEMENT MARKINGS THAT ARE IN CONFLICT WITH THE PROP. PAVEMENT MARKINGS FOR THIS CONTRACT WILL BE REMOVED BY THE CONTRACTOR

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 7/11/07
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 7/24/07
DIRECTOR	DATE 7/27/07

BENCHMARK
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STATE OF MARYLAND — REGISTERED PROFESSIONAL ENGINEER — No. 21463 — 5/29/07

OWNER:
BELLE GROVE CORP.
4024 BELLE GROVE ROAD
BALTIMORE, MD 21225-2657
410-789-7070

PROJECT: EUCLID CORNERS PARCEL 'A', LOTS 1276-1278 and O/S LOT 1279

LOCATION: TAX MAP: 38, GRID: 13; PART OF PARCEL: 873; 1st ELECTION DISTRICT; HOWARD COUNTY, MARYLAND

TITLE: ENTRANCE, TRAFFIC CONTROL, STRIPING AND SIGNAGE PLAN

DESIGN: RPS	DRAFT: RPS	CHECK: DAM	
DATE: NOVEMBER, 2005 / JUNE, 2007	PROJECT NO. 1465	SCALE: AS SHOWN	SHEET 14 OF 14

SDP-06-22