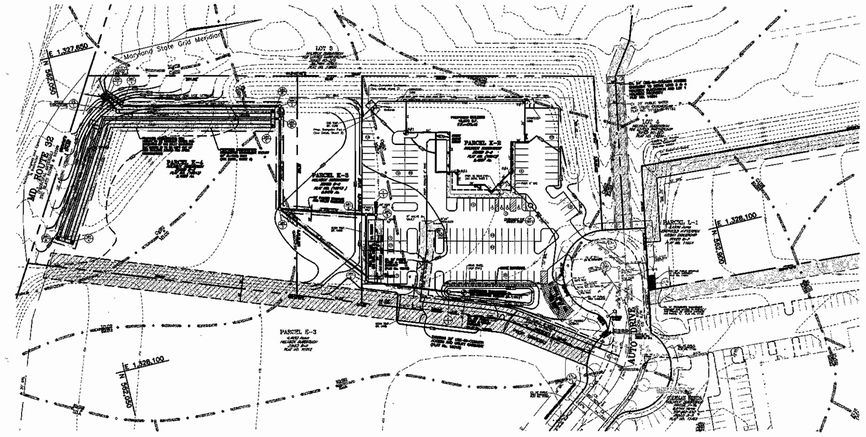
SITE DEVELOPMENT PLAN
WIN KELLY MITSUBISHI

GENERAL NOTES

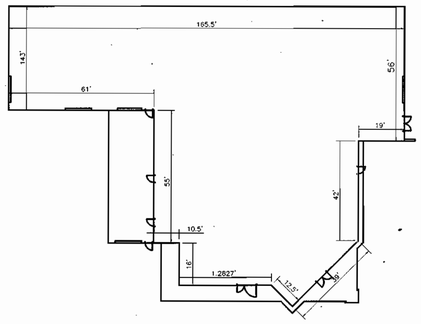
1. All construction shall be in accordance with the latest standards and specifications of Howard County plus MSHA standards and specifications, if applicable.
2. The contractor shall notify "Miss Utility" at 1-800-257-7777 at least 48 hours prior to any excavation work.
3. The contractor is to notify the following utilities or agencies at least five days before starting work on these drawings:

Miss Utility	1-800-257-7777
Verizon Telephone company:	1-410-954-6281
Howard County Bureau of Utilities:	313-2366
AT&T Cable Location Division:	393-3553
B.G.&E. Co. Contractor Services:	850-4620
B.G.&E. Co. Underground Damage Control:	787-4620
State Highway Administration:	531-5533

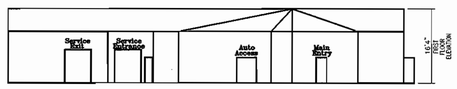
4. Site analysis:
   Area of Parcel: 2.4987 Ac.
   Present Zoning: B-2
   Use of Structure: Auto Retail Sales & Service
   Automobile Sales = 7100 sf.
   Automobile Service = 8470 sf.
   Building Area: 15,570 sf.
   Building Coverage On Site: .36 Ac. or 14.4% of Gross Area
   Paved Parking Lot/Area On Site: 1.17 Ac. or 46.8% of Gross Area
   Area of Landscape Island: .09 Ac. or 3.6% of Gross Area
   Limit of Disturbed Area: 208,350 sf. or 4.78 Ac.
5. Project background:
   Location : Clarksville, Md.; Tax Map 34, K-2
   Zoning : B-2
   Subdivision : Holweck Subdivision
   Section/Area : N/A
   Site Area : 2.4987 Ac.
   DPZ references : F-94-38; F-98-144; F-99-205; SP-93-14; WP-93-90; ZB-947M; ZB-1008M; F-01-29; WP-03-41; F-03-___
6. The contractor shall notify the Department of Public Works/Bureau of Engineering/Construction Inspection Division at (410) 313-1880 at least five (5) working days prior to start of work.
7. Any damage to public right-of-ways, paving, or existing utilities will be corrected at the contractor's expense.
8. Existing utilities located from Road Construction Plans, Field Surveys, Public Water and and Sewer Extension Plans and available record drawings. Approximate location of existing utilities are shown for the contractors information. Contractor shall locate existing utilities well in advance of construction activities and take all necessary precautions to protect the existing utilities and to maintain uninterrupted service. Any damage incurred due to contractor's operation shall be repaired immediately at the contractor's expense.
9. All reinforced concrete for storm drain structures shall have a minimum of 28 days strength of 3,500 p.s.i.
10. Traffic control devices, markings and signing shall be in accordance with the latest 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.
11. Estimates of earthwork quantities are provided soley for the purpose of calculating fees.
12. Soil compaction specifications, requirements, methods and materials are to be in accordance with the recommendations of the project Geotechnical Engineer. Geotechnical Engineer to confirm acceptability of proposed paving section, based on soil test prior to construction.
13. All storm drain pipe bedding shall be Class 'C'.
14. The existing topography is taken from field run survey with two foot contour intervals prepared by Frederick Ward and Associates, dated May 24, 2001. The coordinates shown hereon are based upon the Howard County Geodetic Control which is based upon the Maryland State Plane Coordinate System.
15. A noise study is not required for this project.
16. All paving to be minimum Howard County Standard Detail P-2 unless otherwise noted. (See details, sheet 5)
17. All curb and gutter to be Detail 3.01 unless otherwise noted. (See detail, sheet 5)
18. Contractor responsible to construct all handicap ramps and handicap access in accordance with current ADA requirements.
19. Where drainage flows away from curb, contractor to reverse the gutter pan.
20. All elevations are to flowline/bottom of curb unless otherwise noted.
21. All dimensions are to face of curb unless otherwise noted.
22. Public water is available through Contract No. 39-3942-D;
    Public sewer is available through Contract No. 39-3942-D.
23. Stormwater management quantity is provided by the proposed underground detention system. Water quality is proposed by a bio-retention system, and an underground sand filter structure. The proposed SWM system and water quality system are to be privately owned and maintained by Win Kelly Mitsubishi.
24. All exterior lighting to conform to section 134 of the Howard County Zoning Regulations. (Detail on Sheet 3)
25. Building to have inside water meter setting.
26. Traffic impact study prepared by Street Traffic Studies, LTD., dated March 20, 2003. APFO Study approval date April 29, 2003.
27. This plan has been prepared in accordance with the provisions of Section 16.124 of the Howard County Code and Landscape Manual.
28. Any existing street trees damaged or destroyed during construction will be replaced by the contractor.
29. Forest Conservation requirements for Parcel K-1 are provided in conjunction with F-01-029.
30. Financial surety for the required landscaping shall be posted as part of the developer's agreement in the amount of $12,360.00 for 23 shade trees, 28 evergreen trees, and 42 shrubs.
31. No mezzanine level or second story is permitted in the building unless adequate parking has been approved by the Department of Planning and Zoning.
32. Reference ZB 947M and ZB 1008M for zoning cases for this site:
    A) ZB 947M:
       1. Date of approval for Decision and Order: March 11, 1994
          a. Action Taken: Rezone part of property from B-2 to R-C and R-c to B-2
       2. Conditions of approval: A 300' private easement buffer area between the zoned B-2 use on lot 4 and the existing residential house on lot 3.
    B) ZB 1008M:
       1. Date of approval for Decision and Order: December 4, 2000
          a. Action Taken: Rezone part of Parcel "L" from B-2 to RC
       2. Conditions of approval: No conditions of approval were specified.
33. Debris is to be kept out of all stormwater management facilities during and after construction.
34. Adjoining Parcel E-2 was the subject of WP-03-41, which allowed a temporary sales trailer to be established. A condition of approval required that within 180 days of signature approval of a site plan for Parcel K-1, the temporary use on Parcel E-2 must be vacated and all improvements removed.
35. Geotechnical report prepared by Specialized Engineering, dated January 17, 2003.



LOCATION MAP
SCALE: 1" = 100'



PROPOSED BUILDING PLAN VIEW
NOT TO SCALE

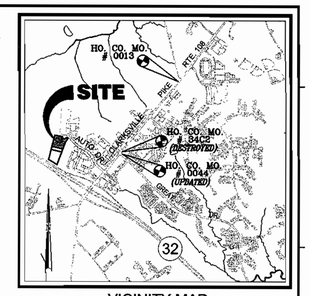


PROPOSED BUILDING ELEVATION
NOT TO SCALE

BENCHMARKS

Howard County Station 34C2 (Destroyed)
N 562,321.798 E 1,329,750.722
Updated: Station 0044
N 562,176.474 E 1,329,641.868 Elev: 485.252'

Howard County Station 0013
N 564,285.946 E 1,331,309.715 Elev: 484.671'



VICINITY MAP
SCALE: 1"=2000'

LEGEND:

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING GUY WIRE
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING BOLLARD
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING SD MANHOLE
- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN INLET
- EXISTING TREES (FIELD LOCATED)
- EXISTING TREELINE (FIELD LOCATED)
- EXISTING VEGETATION (APPROXIMATE LOCATION)
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- SOILS BOUNDARY
- SILT FENCE
- SUPER SILT FENCE
- LIMIT OF DISTURBANCE
- EXISTING PAVING TO BE REMOVED AND REPLACED
- PROPOSED P-2 PAVING
- PROPOSED BUILDING ADDITION
- AT GRADE INLET PROTECTION
- PROPOSED SIDEWALK
- STABILIZED CONSTRUCTION ENTRANCE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 12/12/03
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 12/12/03
DIRECTOR	DATE 12/22/03

PARKING TABULATION

AUTOMOBILE DISPLAY: 9140 SF	REQUIRED
@ 1 SPACE/1000 SF	10 SPACES
SALES/OFFICE: 7100 SF (INCLUDING MEZZANINE)	
@ 2 SPACES/1000 SF	15 SPACES
SERVICE BAYS: 11 BAY AUTOMOBILE SERVICE AREA	
@ 3 SPACES/SERVICE BAY	33 SPACES
(SEE SCHEMATIC FOR DOOR LOCATIONS)	
TOTAL SPACES: REQUIRED	58 SPACES
TOTAL SPACES: PROVIDED	63 SPACES (INCLUDING 4 HANDICAP)

SHEET INDEX

DESCRIPTION	SHEET NO.
Cover Sheet	1 of 7
Site Development, Grading, and Sediment and Erosion Control Plan	2 of 7
Sediment and Erosion Control Notes and Details	3 of 7
Storm Drain Drainage Area Map, Storm Drain Profiles and Details	4 of 7
Stormwater Management Notes and Details, Water and Sewer Profiles and Details	5 of 7
Stormwater Management Notes and Details	6 of 7
Landscape Plan	7 of 7

ADDRESS CHART

LOT/PARCEL#	STREET ADDRESS
K-2	12500 NEW CAR DRIVE

PERMIT INFORMATION CHART

SUBDIVISION NAME / HOLWECK SUBDIVISION			SECTION/AREA N/A		PARCEL NUMBER K-2, K-3, K-4
PLAT REF.	BLOCK NO.	ZONE	TAX/ZONE	ELECT. DIST.	CENSUS TR.
16013	6	B2	34	5th	6051
WATER CODE: 110			SEWER CODE: 665300		

REVISIONS

REV#	DATE	DESCRIPTION

OWNER/DEVELOPER
KEVIN BELL
c/o WIN KELLY CHEVROLET/GEO
12421 AUTO DRIVE
CLARKSVILLE, MARYLAND 21029
(410) 988-9522

FREDERICK WARD ASSOCIATES, INC.
ARCHITECTS | ENGINEERS | PLANNERS | SURVEYORS
7125 RIVERWOOD DRIVE
COLUMBIA, MARYLAND 21046-2354
410-720-6900
410-720-6226 fax
REGIONAL OFFICES:
BEL AIR, MARYLAND AND WARRENTON, VIRGINIA
www.frederickward.com

SITE DEVELOPMENT PLAN
COVER SHEET
WIN KELLY MITSUBISHI

TAX MAP #34 BLOCK #6
5TH ELECTION DISTRICT
PARCEL K-2
HOWARD COUNTY, MARYLAND

STATE OF MARYLAND — ROBERT HARRIS VOGEL — NO. 16193 — REGISTERED PROFESSIONAL ENGINEER — 11/24/03
ROBERT H. VOGEL, PE No.16193

DATE	SEPT 2003
SCALE	JAN. 2003
DESIGN BY	MMR
CHECKED BY	RHV
DRAWN BY	DZ
DRAWING NO.	SHEET 1 OF 7
FWA JOB NUMBER	2024096.00

SDP-03-93

M:\PROJECTS\2019\ENG\dwg\WK_Mitsubishi\C001.dwg Fri Oct 17 08:45:13 2003 M.A.N.

SITE DEVELOPMENT PLAN

JAGUAR/LANDROVER OF COLUMBIA WEST

GENERAL NOTES

1. All construction shall be in accordance with the latest standards and specifications of Howard County plus MSHA standards and specifications, if applicable.
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B.G.&E. Co. Contractor Services:	850-4620
B.G.&E. Co. Underground Damage Control:	787-4620
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4. Site analysis:
   Area of Parcel: 2.4987 Ac.
   Present Zoning: B-2
   Use of Structure: Auto Retail Sales & Service
   Automobile Sales = 7629 sf.

   Building Area: 21,887 sf.
   Building Coverage On Site: 0.50 Ac. or 20% of Gross Area
   Paved Parking Lot/Area On Site: 1.17 Ac. or 46.8% of Gross Area
   Area of Landscape Island: .09 Ac. or 3.6% of Gross Area
   Limit of Disturbed Area: 208,350 sf. or 4.78 Ac.
5. Project background:
   Location : Clarksville, Md., Tax Map 34, K-2
   Zoning : B-2
   Subdivision : Holweck Subdivision
   Section/Area : N/A
   Site Area : 2.4987 Ac.
   DPZ references : F-94-38; F-98-144; F-99-???; SP-93-14; WP-93-90; ZB-947M; ZB-1008M; F-01-29; WP-03-41; F-03-202
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       1. Date of approval for Decision and Order: March 11, 1994
       2. Action Taken: Rezone part of property from B-2 to R-C and R-c to B-2
       2. Conditions of approval: A 300' private easement buffer area between the zoned B-2 use on lot 4 and the existing residential house on lot 3.

    B) ZB 1008M
       1. Date of approval for Decision and Order: December 4, 2000
       2. Action Taken: Rezone part of Parcel "L" from B-2 to RC
       2. Conditions of approval: No conditions of approval were specified
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34. Adjoining Parcel E-2 was the subject of WP-03-41, which allowed a temporary sales trailer to be established. A condition of approval required that within 180 days of signature approval of a site plan for Parcel K-1, the temporary use on Parcel E-2 must be vacated and all improvements removed.
35. Geotechnical report prepared by Specialized Engineering, dated January 17, 2003.

BENCHMARKS

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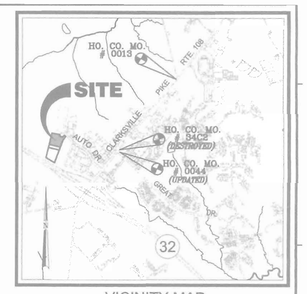
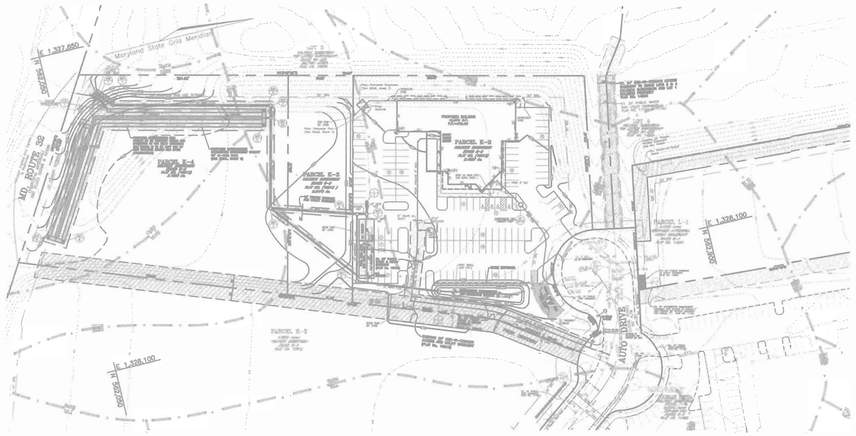
N 562,321.798 E 1,329,750.722
Updated Station 0044
N 562,176.474 E 1,329,641.868 Elev: 485.252'

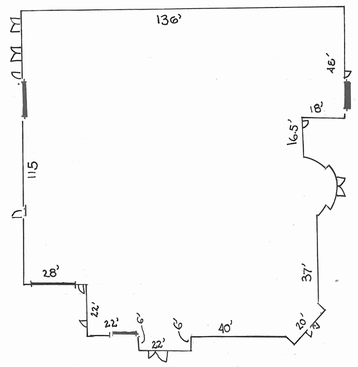
Howard County Station 0013
N 564,285.946 E 1,331,309.715 Elev: 484.671'



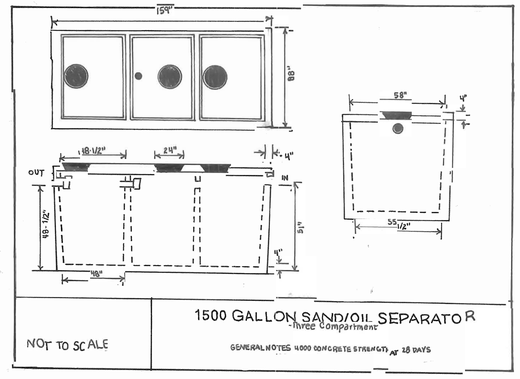
VICINITY MAP
SCALE: 1"=2000'



LOCATION MAP
SCALE: 1" = 100'



PROPOSED BUILDING PLAN VIEW
1" = 30'



PROPOSED BUILDING ELEVATION
NOT TO SCALE

LEGEND:

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING GUY WIRE
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
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- EXISTING SIGN
- EXISTING BOLLARD
- EXISTING SANITARY MANHOLE
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- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING SD MANHOLE
- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN INLET
- EXISTING TREES (FIELD LOCATED)
- EXISTING TREELINE (FIELD LOCATED)
- EXISTING VEGETATION (APPROXIMATE LOCATION)
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- SOILS BOUNDARY
- SILT FENCE
- SUPER SILT FENCE
- LIMIT OF DISTURBANCE
- EXISTING PAVING TO BE REMOVED AND REPLACED
- PROPOSED P-2 PAVING
- PROPOSED BUILDING ADDITION
- AGIP AT GRADE INLET PROTECTION
- PROPOSED SIDEWALK
- STABILIZED CONSTRUCTION ENTRANCE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 12/12/03
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 12/17/03
DIRECTOR	DATE 12/22/03

PARKING TABULATION

	REQUIRED
AUTOMOBILE DISPLAY: 9525 SF @ 1 SPACE/1000 SF	10 SPACES
SALES/OFFICE: 7629 SF (INCLUDING MEZZANINE) @ 2 SPACES/1000 SF	16 SPACES
SERVICE BAYS: 13 BAY AUTOMOBILE SERVICE AREA @ 3 SPACES/SERVICE BAY (SEE SCHEMATIC FOR DOOR LOCATIONS)	39 SPACES
TOTAL SPACES: REQUIRED	65 SPACES
TOTAL SPACES: PROVIDED	66 SPACES (INCLUDING 4 HANDICAP)

SHEET INDEX

DESCRIPTION	SHEET NO.
Cover Sheet	1 of 7
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Stormwater Management Notes and Details	6 of 7
Landscape Plan	7 of 7

ADDRESS CHART	
LOT/PARCEL#	STREET ADDRESS
K-2	12500 NEW CAR DRIVE

PERMIT INFORMATION CHART					
SUBDIVISION NAME			SECTION/AREA	PARCEL NUMBER	
HOLWECK SUBDIVISION			N/A	K-2, K-3, K-4	
PLAT REF.	BLOCK NO.	ZONE	TAX/ZONE	ELECT. DIST.	CENSUS TR.
16013	6	B2	34	5th	6051
WATER CODE: 110			SEWER CODE: 665300		

REVISIONS		
REV#	DATE	DESCRIPTION
2	10/24/05	REVISE SAND FILTER; REVISE WHC; ADD SAND/OIL SEPARATOR; REVISE VEHICLE DISPLAY AREAS
1	03/28/05	REVISE BUILDING FOOTPRINT, DESIGNATED GRADING CHANGES, TITLE AND PROJECT NAME CHANGES

OWNER/DEVELOPER
1318 COMPANY LLC
10400 AUTO PARK DRIVE
BETHESDA, MD 20817

FREDERICK WARD ASSOCIATES, INC.
ARCHITECTS | ENGINEERS | PLANNERS | SURVEYORS
7125 RIVERWOOD DRIVE
COLUMBIA, MARYLAND 21046-2354
410-720-6900
410-720-6226 fax
REGIONAL OFFICES:
BEL AIR, MARYLAND AND WARRENTON, VIRGINIA
www.frederickward.com

SITE DEVELOPMENT PLAN
COVER SHEET
JAGUAR/LANDROVER OF COLUMBIA WEST

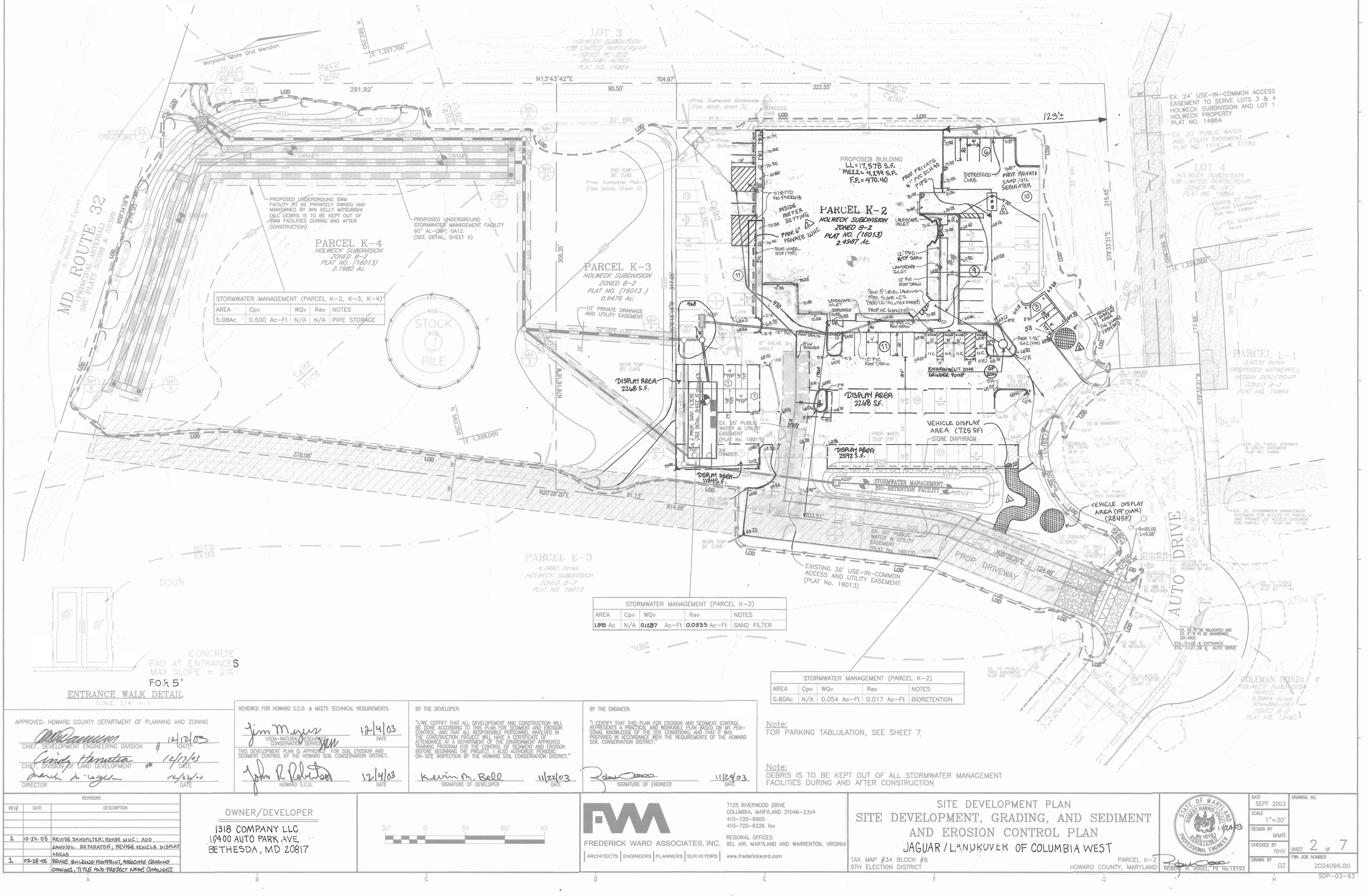
TAX MAP #34 BLOCK #6
5TH ELECTION DISTRICT
PARCEL K-2
HOWARD COUNTY, MARYLAND

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — REGISTERED PROFESSIONAL ENGINEER
11/24/03
ROBERT H. VOGEL, PE No.16193

DATE	SEPT 2003
SCALE	JAN. 2003
DESIGN BY	MMR
CHECKED BY	RHV
DRAWN BY	DZ
DRAWING NO.	SHEET 1 OF 7
FWA JOB NUMBER	2024096.00

SDP-03-93

M:\PROJECTS\2019\SHEETS\ENGR\dwg\WK_Mitsubishi\C001.dwg Fri Oct 17 08:45:13 2003 M.A.N.



STORMWATER MANAGEMENT (PARCEL K-2, K-3, K-4)				
AREA	Cpv	WQv	Rev	NOTES
5.08Ac	0.500 Ac-Ft	N/A	N/A	PIPE STORAGE

STORMWATER MANAGEMENT (PARCEL K-2)					
AREA	Cpv	WQv		Rev	NOTES
1.895 Ac	N/A	0.1287	Ac-Ft	0.0835 Ac-Ft	SAND FILTER

STORMWATER MANAGEMENT (PARCEL K-2)				
AREA	Cpv	WQv	Rev	NOTES
0.80Ac	N/A	0.054 Ac-Ft	0.017 Ac-Ft	BIORETENTION

Note:
FOR PARKING TABLULATION, SEE SHEET 7.

Note:
DEBRIS IS TO BE KEPT OUT OF ALL STORMWATER MANAGEMENT FACILITIES DURING AND AFTER CONSTRUCTION.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 12/12/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/12/03

DIRECTOR — DATE 12/22/03

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

USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE 12/4/03

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

HOWARD S.C.D. — DATE 12/4/03

BY THE DEVELOPER:

"I/WE CERTIFY THAT ALL DEVELOPEMENT 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."

Kevin M. Bell — SIGNATURE OF DEVELOPER — DATE 11/22/03

BY THE ENGINEER:

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

SIGNATURE OF ENGINEER — DATE 11/24/03

REVISIONS

REV#	DATE	DESCRIPTION
2	10-24-05	REVISE SANDFILTER; REVISE WHC; ADD SAND/OIL SEPARATOR; REVISE VEHICLE DISPLAY AREAS
1	03-28-05	REVISE BUILDING FOOTPRINT, ASSOCIATE GRADING CHANGES, TITLE AND PROTECT NAME CHANGES

OWNER/DEVELOPER

1318 COMPANY LLC
10400 AUTO PARK AVE.
BETHESDA, MD 20817

30' 0 30' 60' 90'

FREDERICK WARD ASSOCIATES, INC.
ARCHITECTS | ENGINEERS | PLANNERS | SURVEYORS
7125 RIVERWOOD DRIVE
COLUMBIA, MARYLAND 21046-2354
410-720-6900
410-720-6226 fax
REGIONAL OFFICES:
BEL AIR, MARYLAND AND WARRENTON, VIRGINIA
www.frederickward.com

SITE DEVELOPMENT PLAN
SITE DEVELOPMENT, GRADING, AND SEDIMENT AND EROSION CONTROL PLAN
JAGUAR / LANDROVER OF COLUMBIA WEST

TAX MAP #34 BLOCK #6
5TH ELECTION DISTRICT

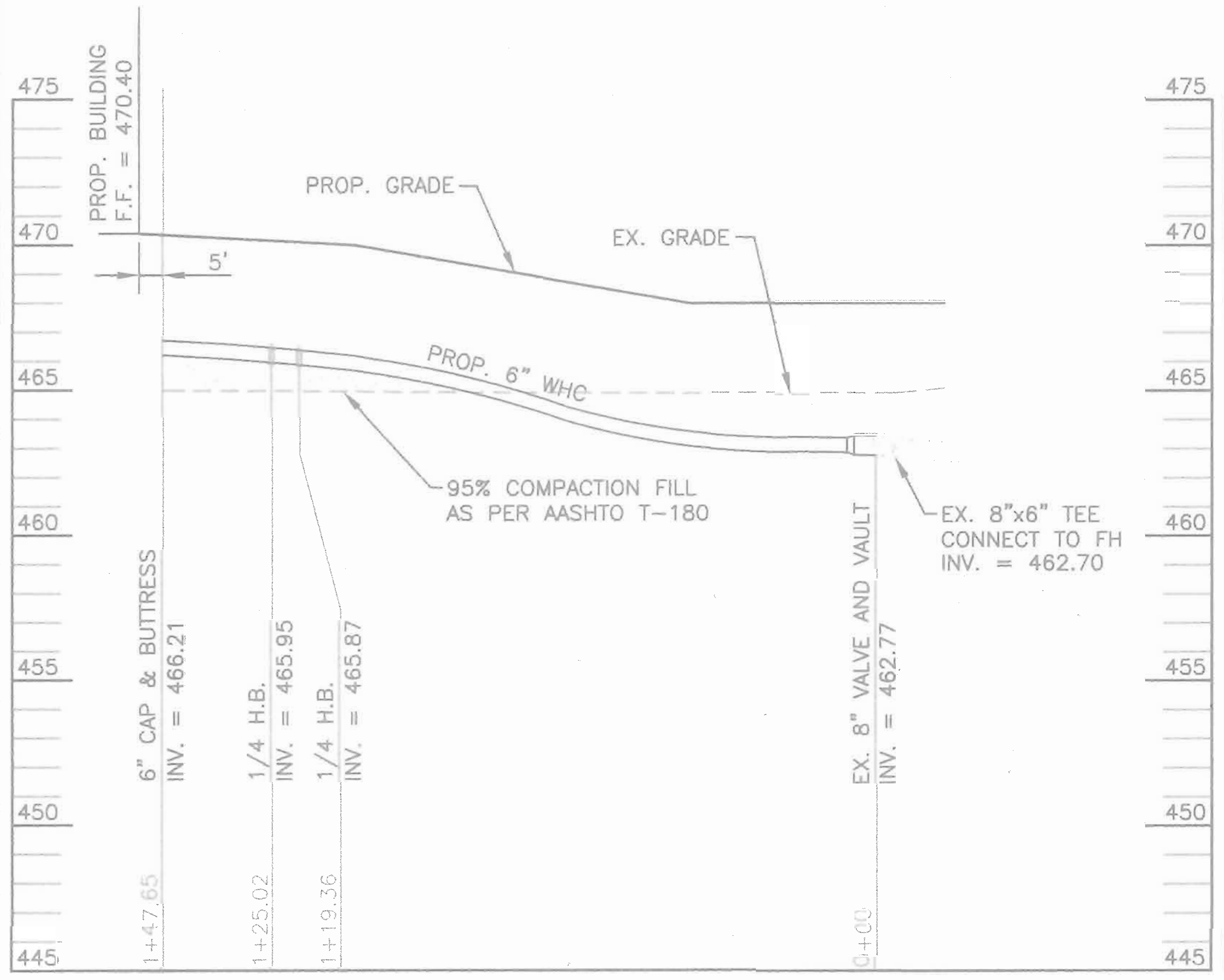
PARCEL K-2
HOWARD COUNTY, MARYLAND

STATE OF MARYLAND — ROBERT HARRIS VOGEL — NO. 16193 — REGISTERED PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE No.16193 — 11/24/03

DATE	SEPT 2003
SCALE	1"=30'
DESIGN BY	MMR
CHECKED BY	RHV
DRAWN BY	DZ
DRAWING NO.	SHEET 2 OF 7
FWA JOB NUMBER	2024096.00

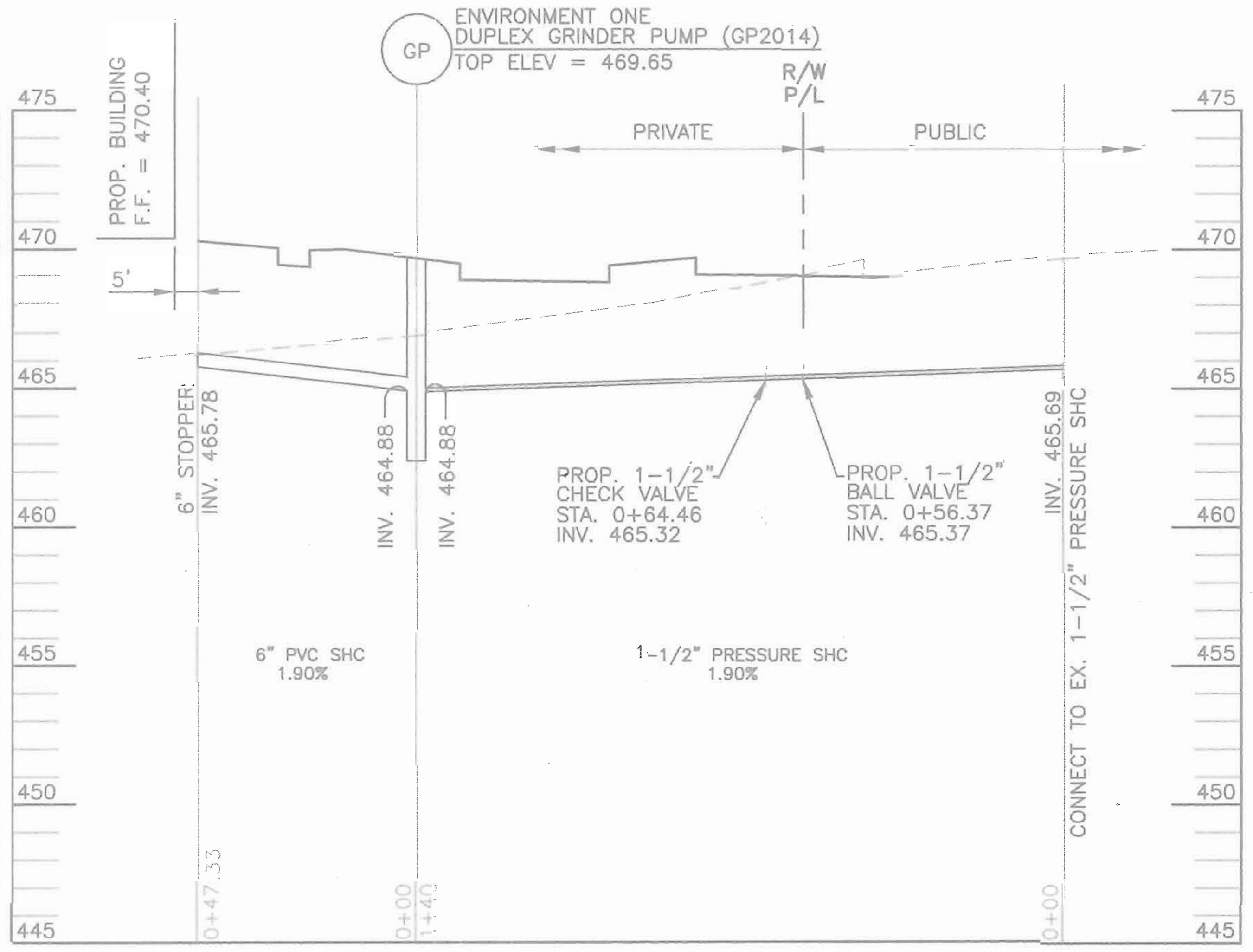
SDP-03-93

M:\PROJECTS\2019\58\ENGR\dwg\WK_Mitsubishi\D002.dwg Thu Oct 16 10:50:32 2003 M.A.N.



WATER HOUSE CONNECTION PROFILE

SCALE: HORIZONTAL 1" = 30'
VERTICAL 1" = 5'



SEWER HOUSE CONNECTION PROFILE

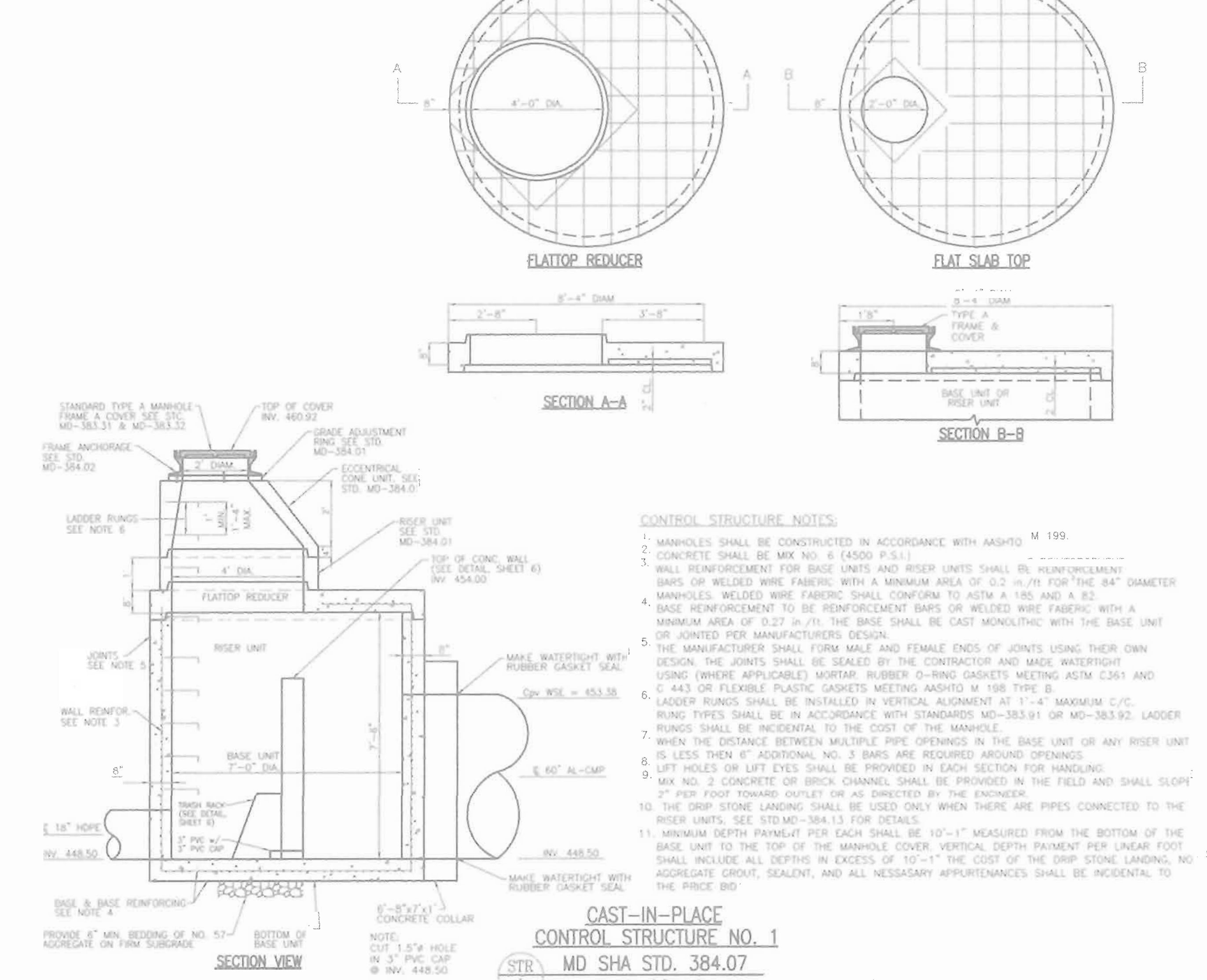
SCALE: HORIZONTAL 1" = 30'
VERTICAL 1" = 5'

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED UNDERGROUND STORMWATER FILTRATION SYSTEM (F-2)

1. THE SEDIMENT CHAMBER OUTLET DEVICES SHALL BE CLEANED AND/OR REPAIRED WHEN DRAW-DOWN TIMES WITHIN THE CHAMBER EXCEED 36 HOURS.
2. DEBRIS AND LITTER SHALL BE REMOVED AS NECESSARY TO ENSURE PROPER OPERATION OF THE SYSTEM.
3. SEDIMENT SHALL BE CLEANED OUT OF THE SEDIMENTATION CHAMBER WHEN IT ACCUMULATES TO A DEPTH OF 6 INCHES. VEGETATION WITHIN THE SEDIMENT CHAMBER SHALL BE LIMITED TO A HEIGHT OF 18 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 AND LIQUID MUST BE FOLLOWED BY THE OWNER.
5. A LOG BOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
6. THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO ENSURE 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.

UNDERGROUND SAND FILTER CONSTRUCTION SPECIFICATIONS

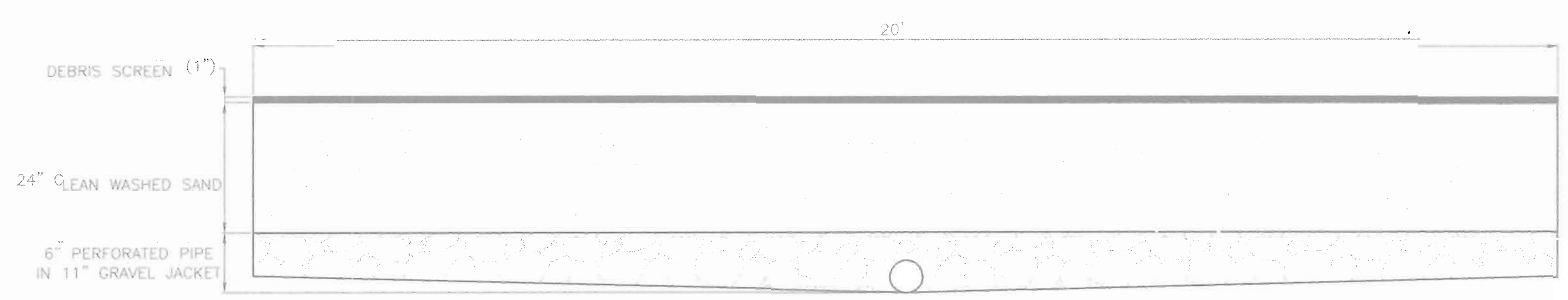
1. PROVIDE MANHOLE AND/OR GRATES TO ALL UNDERGROUND AND BELOW GRADE STRUCTURES. MANHOLES SHALL BE IN COMPLIANCE WITH STANDARD SPECIFICATIONS FOR EACH COUNTY, BUT DIAMETERS SHOULD BE 30" MINIMUM (TO COMPLY WITH OSHA CONFINED SPACE REQUIREMENTS). ALUMINUM AND STEEL LOUVERED DOORS ARE ALSO ACCEPTABLE. TEN INCH WIDE (MINIMUM) MANHOLE STEPS (12"O.C.) SHALL BE CAST IN PLACE OR DRILLED AND MORTARED INTO THE WALL BELOW EACH MANHOLE. A 5' MINIMUM HEIGHT CLEARANCE (FROM THE TOP OF THE SAND LAYER TO THE BOTTOM OF THE UPPER/SURFACE SLAB) IS REQUIRED FOR ALL PERMANENT UNDERGROUND STRUCTURES. LIFT RINGS ARE TO BE SUPPLIED TO REMOVE/REPLACE TOP SLABS ON PRE-FABRICATED STRUCTURES. MANHOLE COVERS SHOULD ALLOW FOR PROPER VENTILATION.
2. UNDERGROUND SANDFILTERS SHOULD BE CONSTRUCTED WITH A GATE VALVE LOCATED JUST ABOVE THE TOP OF THE FILTER BED FOR DEWATERING IN THE EVENT THAT CLOGGING OCCURS.
3. UNDERGROUND SAND BEDS SHALL BE PROTECTED FROM TRASH ACCUMULATION BY A WIDE MESH GEOTEXTILE SCREEN TO BE PLACED ON THE SURFACE OF THE SAND BED; SCREEN IS TO BE ROLLED UP, REMOVED, CLEANED AND RE-INSTALLED DURING MAINTENANCE OPERATIONS.



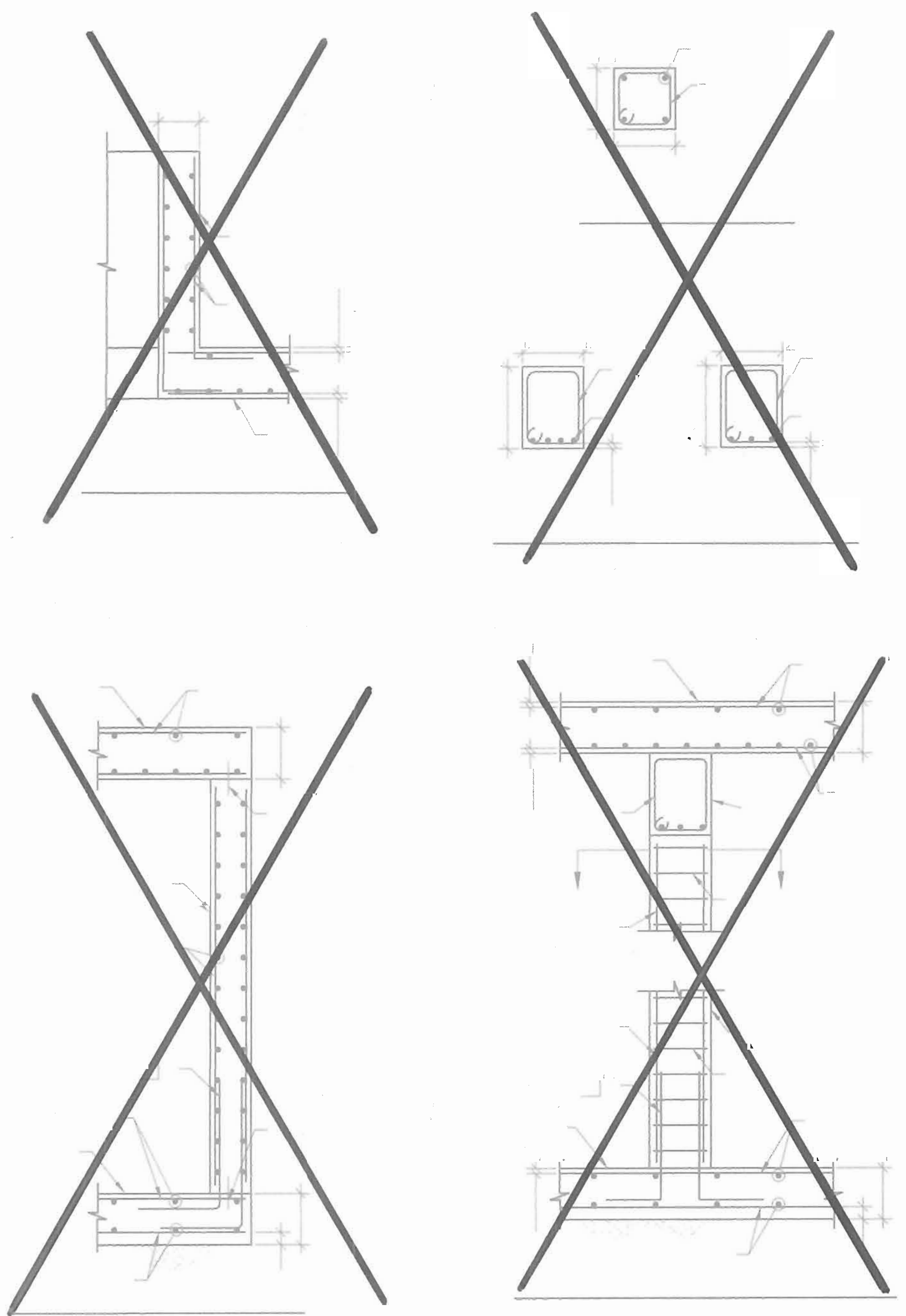
CONTROL STRUCTURE NOTES:

1. MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M 199.
2. CONCRETE SHALL BE MIX NO. 6 (4500 P.S.I.)
3. WALL REINFORCEMENT FOR BASE UNITS AND RISER UNITS SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABERIC WITH A MINIMUM AREA OF 0.2 in./ft FOR THE 84" DIAMETER MANHOLES. WELDED WIRE FABERIC SHALL CONFORM TO ASTM A 185 AND A 82.
4. BASE REINFORCEMENT TO BE REINFORCEMENT BARS OR WELDED WIRE FABERIC WITH A MINIMUM AREA OF 0.27 in./ft. THE BASE SHALL BE CAST MONOLITHIC WITH THE BASE UNIT OR JOINTED PER MANUFACTURERS DESIGN.
5. THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR AND MADE WATERTIGHT USING (WHERE APPLICABLE) MORTAR, RUBBER O-RING GASKETS MEETING ASTM C361 AND C 443 OR FLEXIBLE PLASTIC GASKETS MEETING AASHTO M 198 TYPE B.
6. LADDER RUNGS SHALL BE INSTALLED IN VERTICAL ALIGNMENT AT 1'-4" MAXIMUM C/C. RUNG TYPES SHALL BE IN ACCORDANCE WITH STANDARDS MD-383.91 OR MD-383.92. LADDER RUNGS SHALL BE INCIDENTAL TO THE COST OF THE MANHOLE.
7. WHEN THE DISTANCE BETWEEN MULTIPLE PIPE OPENINGS IN THE BASE UNIT OR ANY RISER UNIT IS LESS THEN 6" ADDITIONAL NO. 3 BARS ARE REQUIRED AROUND OPENINGS.
8. LIFT HOLES OR LIFT EYES SHALL BE PROVIDED IN EACH SECTION FOR HANDLING.
9. MIX NO. 2 CONCRETE OR BRICK CHANNEL SHALL BE PROVIDED IN THE FIELD AND SHALL SLOPE 3" PER FOOT TOWARD OUTLET OR AS DIRECTED BY THE ENGINEER.
10. THE DRIP STONE LANDING SHALL BE USED ONLY WHEN THERE ARE PIPES CONNECTED TO THE RISER UNITS. SEE STD.MD-384.13 FOR DETAILS.
11. MINIMUM DEPTH PAYMENT PER EACH SHALL BE 10'-1" MEASURED FROM THE BOTTOM OF THE BASE UNIT TO THE TOP OF THE MANHOLE COVER. VERTICAL DEPTH PAYMENT PER LINEAR FOOT SHALL INCLUDE ALL DEPTHS IN EXCESS OF 10'-1" THE COST OF THE DRIP STONE LANDING, NO AGGREGATE GROUT, SEALENT, AND ALL NESSASARY APPURTENANCES SHALL BE INCIDENTAL TO THE PRICE BID.

CAST-IN-PLACE
CONTROL STRUCTURE NO. 1
MD SHA STD. 384.07
SCALE: 1/4" = 1'



TYPICAL SECTION THROUGH SAND FILTER
SCALE: 1/2" = 1'



CONCRETE

1. ALL FOOTINGS, FOUNDATIONS AND INTERIOR SLABS SHALL BE NORMAL WT CONCRETE WITH A COMPRESSIVE STRENGTH EQUAL TO AT LEAST 3,000 PSI WITHIN 28 DAYS AFTER POURING. THE WATER/CEMENT RATIO SHALL BE NO GREATER THAN 0.50 AND SLUMP SHALL BE 3 IN. OR LESS. MIN CEMENT CONTENT SHALL BE 504 LBS PER CU YARD.
2. UNLESS OTHERWISE NOTED, ALL CONSTRUCTION JOINTS SHALL BE KEYED WITH A KEY 1-1/2 IN. DEEP, A LENGTH 2 IN. LESS THAN THE MEMBER, AND A WIDTH 1/2 OF THE MEMBER. REINFORCING SHALL BE CONTINUOUS THRU JOINT.
3. ALL CONCRETE WORK SHALL BE PLACED, CURED, STRIPPED, AND PROTECTED AS DIRECTED BY THE SPECIFICATIONS AND ACI STANDARDS AND PRACTICES.
4. BEFORE CONCRETE IS POURED CHECK WITH ALL TRADES TO INSURE PROPER PLACEMENT OF ALL OPENINGS, SLEEVES, CURBS, CONDUITS, BOLTS, INSERTS, ETC. RELATIVE TO WORK.
5. CONTRACTOR IS RESPONSIBLE FOR ALL SHORING AND FORMWORK.
6. REFER TO CIVIL DRAWINGS FOR MOLDS, GROOVES, ORNAMENT, CLIPS OR GROUNDS, REQUIRED TO BE ENCASED IN CONCRETE AND FLOOR LOCATION OF FLOOR FINISHES AND SLAB DEPRESSIONS.
7. CONCRETE DESIGN AND DETAILING SHALL CONFORM TO THE REQUIREMENTS OF ACI 318-02. CONTRACTOR SHALL SUBMIT MIX DESIGNS ACCOMPANIED BY APPROPRIATE GRAPHS AND BACKGROUND DATA FOR APPROVAL. MIX DESIGN SHALL INDICATE 7 AND 28 DAY STRENGTHS, CEMENT CONTENT, AIR CONTENT, WATER-CEMENT RATIO, AMOUNT OF FINE AND COARSE AGGREGATES, AND ADMIXTURES.
MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE:

SLABS ON GRADE	3000 PSI
FOOTINGS AND PEDESTALS	3000 PSI
PEA-GRAVEL CONCRETE (OR GROUT)	3000 PSI (FOR FILLING CMU UNITS)
ALL OTHER CONCRETE	3000 PSI

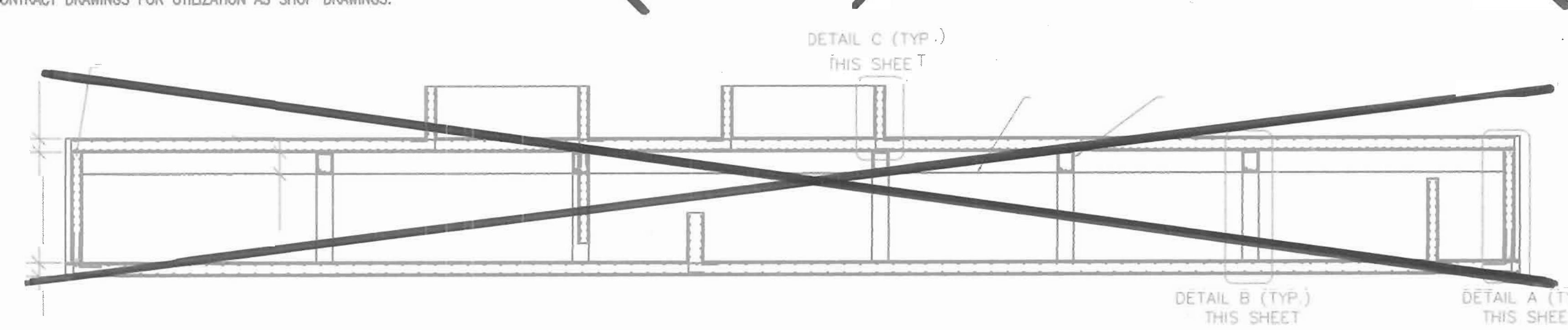
8. ALL EXTERIOR CONCRETE AND CONCRETE EXPOSED TO WEATHER SHALL BE AIR-ENTRAINED.
9. CONTRACTOR TO SUPPLY SHOP DRAWINGS OF ALL STRUCTURAL COMPONENTS FOR APPROVAL PRIOR TO CONSTRUCTION.
10. USE OF ADDITIVES SHALL NOT BE PERMITTED UNLESS SPECIFICALLY APPROVED BY THE STRUCTURAL ENGINEER.
11. THE CONCRETE SUBCONTRACTOR SHALL NOT REPRODUCE ANY PORTION OF THE STRUCTURAL CONTRACT DRAWINGS FOR UTILIZATION AS SHOP DRAWINGS.

REINFORCING STEEL

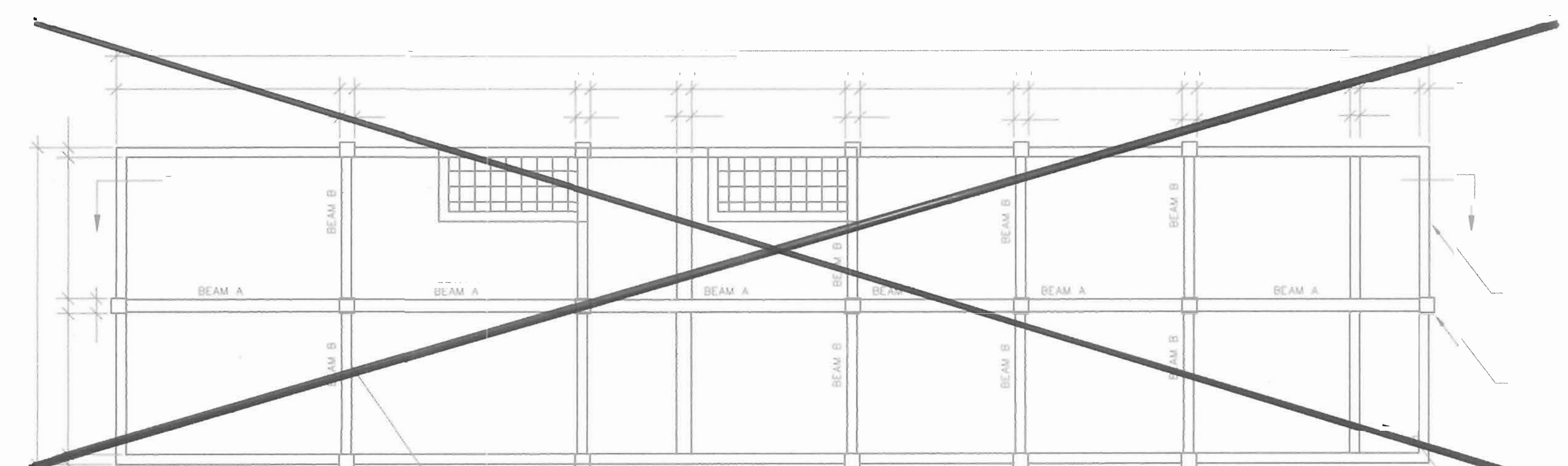
1. REINFORCING BARS SHALL BE DEFORMED BILLET STEEL CONFORMING TO ASTM A615 GRADE 60. ALL WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-185. BARS SHALL BE BRANDED BY THE MANUFACTURER WITH BAR SIZE AND GRADE OF STEEL AND CERTIFIED MILL REPORTS SHALL BE SUBMITTED FOR RECORD. REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE WITH THE ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", LATEST EDITION. PROVIDE CORNER BARS AT JUNCTIONS OF CONCRETE WALLS AND WALL FOOTINGS AND LAP
2. WITH WALL REINFORCING AS SHOWN IN TYPICAL DETAILS. SIZE AND SPACING OF CORNER BARS TO BE SAME AS HORIZONTAL WALL REINFORCING, UNLESS SHOWN OTHERWISE. WHERE CONTINUOUS BARS ARE CALLED FOR, THEY SHALL RUN CONTINUOUSLY AROUND CORNERS AND LAPPED AS NECESSARY. PROVIDE STANDARD HOOKS AT DISCONTINUOUS ENDS. TENSION AND COMPRESSION LAP SPLICES SHALL NOT BE LESS THAN THE SPLICE LENGTHS AS GIVEN IN ACI-318. GENERALLY LAP TOP BARS AT MID SPAN AND BOTTOM BARS AT SUPPORTS. PROVIDE PLACING ACCESSORIES IN ACCORDANCE WITH ACI RECOMMENDATIONS.
3. ALL REINFORCING TO BE LAPPED 48 X BAR DIA. ZIGZAG ALL LAPS IN THE SLAB.

FOOTINGS

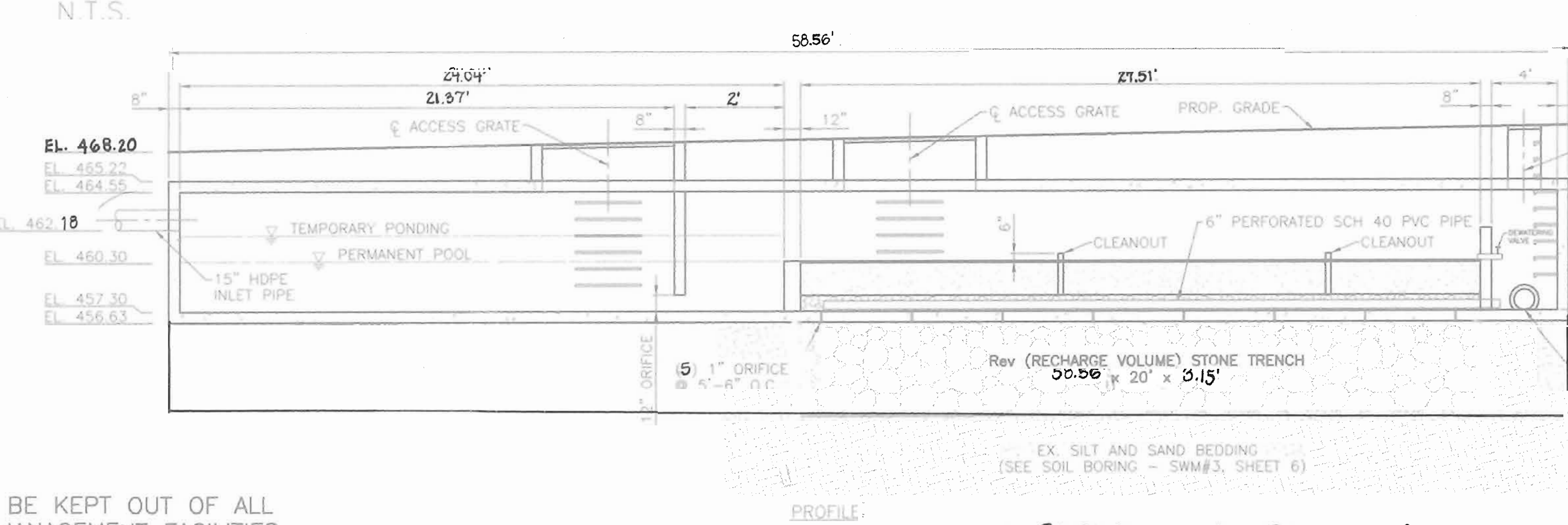
1. ALL FOOTINGS ARE BASED ON AN ALLOWABLE SOIL BEARING PRESSURE OF 3,000 PSF. ANY SOIL CONDITION ENCOUNTERED DURING EXCAVATION THAT IS CONTRARY TO THOSE USED FOR DESIGN OF FOOTINGS AS OUTLINED IN WORKING DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING.
2. BOTTOM OF ALL EXTERIOR FOOTINGS SHALL BE A MINIMUM OF 2'-6" BELOW FINISHED EXTERIOR GRADE, UNLESS A LOWER ELEVATION IS NOTED. FOOTING ELEVATIONS NOTED ARE ESTIMATED BASED ON AVAILABLE GEOTECHNICAL AND GRADING INFORMATION. ALL FOOTINGS ADJACENT TO EXISTING FOOTINGS SHALL BE LOWERED TO MATCH EXISTING FOOTING ELEVATION.
3. ALL FOUNDATION SUBGRADES SHALL BE INSPECTED AND APPROVED UNDER THE SUPERVISION OF A REGISTERED PROFESSIONAL ENGINEER PRIOR TO BEING CONCRETED. FOOTINGS MAY BE LOWERED TO ACHIEVE BEARING CAPACITY.



SECTION A-A
N.T.S.

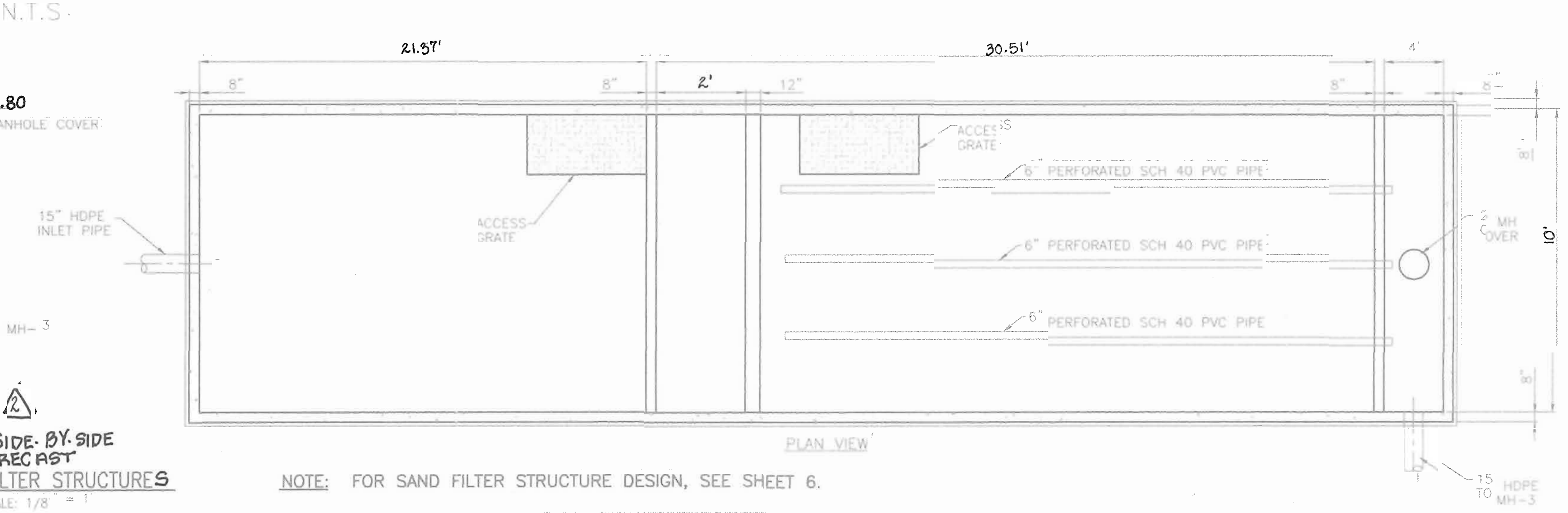


SAND FILTER PLAN
N.T.S.



NOTE: PRECAST SAND FILTERS MUST BE ENGINEERED AND CERTIFIED

2 SIDE-BY-SIDE PRECAST SAND FILTER STRUCTURES
SCALE: 1/8" = 1'



NOTE: FOR SAND FILTER STRUCTURE DESIGN, SEE SHEET 6.

NOTE: DEBRIS IS TO BE KEPT OUT OF ALL STORMWATER MANAGEMENT FACILITIES DURING AND AFTER CONSTRUCTION.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 12/12/03
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 12/17/03
DIRECTOR	DATE 12/22/03

REVISIONS

REV#	DATE	DESCRIPTION
2	10-24-05	REVISE SANDFILTER; REVISE WHC; ADD SAND/OIL SEPARATOR; REVISE VEHICLE DISPLAY AREAS
1	03-28-05	REVISE BUILDING FOOTPRINT, ASSOCIATED GRADING CHANGES, TITLE AND PROJECT NAME CHANGES

OWNER/DEVELOPER
1318 COMPANY LLC
0400 AUTO PARK DRIVE
BETHESDA, MD 20817

30' 0 30' 60' 90'

FREDERICK WARD ASSOCIATES, INC.
ARCHITECTS | ENGINEERS | PLANNERS | SURVEYORS
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REGIONAL OFFICES:
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SITE DEVELOPMENT PLAN
STORMWATER MANAGEMENT NOTES AND DETAILS
WATER & SEWER PROFILES AND DETAILS
JAGUAR/LANDROVER OF COLUMBIA WEST
TAX MAP #34 BLOCK #6 PARCEL K-2
5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

STATE OF MARYLAND ROBERT HARRIS VOGEL No.16193 REGISTERED PROFESSIONAL ENGINEER 11/24/03
ROBERT H. VOGEL, PE No.16193

DATE	SEPT 2003
SCALE	1"=30'
DESIGN BY	MMR
CHECKED BY	RHV
DRAWN BY	DZ
SHEET	5 OF 7
FWA JOB NUMBER	2024096.00

SDP-03-93

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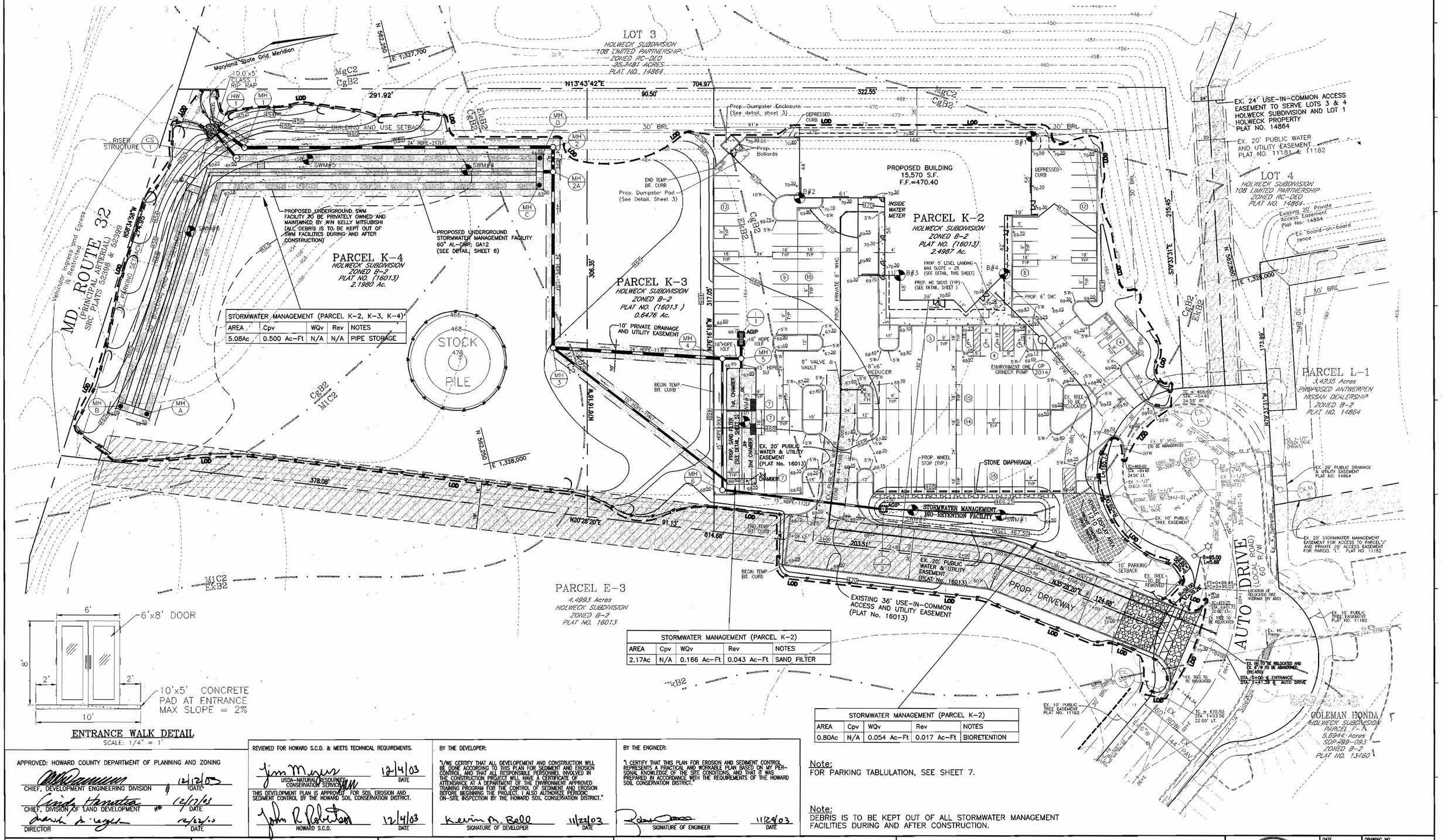
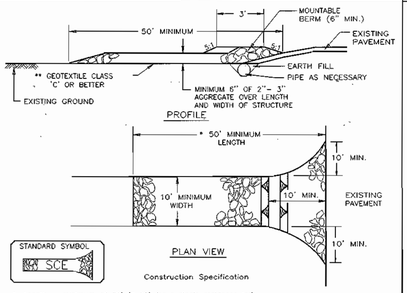

LOT 3
HOLWECK SUBDIVISION
108 LIMITED PARTNERSHIP
ZONED RC-DEO
25.7481 ACRES
PLAT NO. 14864
Maryland State Grid Meridian
N 562250
E 1,327,700
10.0'x5' CLASS I RIP RAP
HW 1
MH 1
LOD
291.92'
N13°43'42"E
90.50'
704.97'
322.55'
30' BRL
50' BUILDING AND USE SETBACK
24" HDPE-217LF
RISER STRUCTURE CS 1
SWM#5
SWM#4
SWM#6
MD. ROUTE 32
(PRINCIPAL ARTERIAL)
SHA PLATS 52398 & 52399
Vehicular Ingress and Egress is Restricted
N58°34'58"W
274.95'
30' BUILDING AND USE SETBACK
PARKING SETBACK
PROPOSED UNDERGROUND SWM FACILITY TO BE PRIVATELY OWNED AND MAINTAINED BY WIN KELLY MITSUBISHI (ALL DEBRIS IS TO BE KEPT OUT OF SWM FACILITIES DURING AND AFTER CONSTRUCTION)
PROPOSED UNDERGROUND STORMWATER MANAGEMENT FACILITY 60" AL-CMP; GA12 (SEE DETAIL, SHEET 6)
PARCEL K-4
HOLWECK SUBDIVISION
ZONED B-2
PLAT NO. (16013)
2.1980 Ac.
PARCEL K-3
HOLWECK SUBDIVISION
ZONED B-2
PLAT NO. (16013)
0.6476 Ac.
306.35'
317.05'
N76°16'18"W
10' PRIVATE DRAINAGE AND UTILITY EASEMENT
24" HDPE-117LF
MH 4
MH 5
MH 3
MH 6
MH A
MH B
MH C
MH D
MH 2
MH 2A
AGIP
18" HDPE 10LF
15" HDPE 5LF
8" VALVE & VAULT
8"x6" REDUCER
18" HDPE 10LF
BEGIN TEMP. BIT. CURB
END TEMP. BIT. CURB
Prop. Dumpster Pad (See Detail, Sheet 3)
Prop. Dumpster Enclosure (See detail, sheet 3)
Prop. Bollards
DEPRESSED CURB
PROPOSED BUILDING
15,570 S.F.
F.F.=470.40
INSIDE WATER METER
PARCEL K-2
HOLWECK SUBDIVISION
ZONED B-2
PLAT NO. (16013)
2.4987 Ac.
PROP. 5' LEVEL LANDING MAX SLOPE = 2% (SEE DETAIL, THIS SHEET)
PROP. HC SIGNS (TYP.) (SEE DETAIL, SHEET)
PROP. 6" SMC
PROP. PRIVATE 6" WHC
ENVIRONMENT ONE GRINDER PUMP GP 2014
EX. TREE TO BE RELOCATED
EX. 20' PUBLIC WATER & UTILITY EASEMENT (PLAT No. 16013)
PROP. SAND FILTER (SEE DETAIL SHEET 6)
1st CHAMBER
2nd CHAMBER
PROP. WHEEL STOP (TYP.)
STONE DIAPHRAGM
STORMWATER MANAGEMENT BIO-RETENTION FACILITY SWM#1
466.25'
467.50'
203.51'
N35°28'20"E
124.69'
PROP. DRIVEWAY
EXISTING 36' USE-IN-COMMON ACCESS AND UTILITY EASEMENT (PLAT No. 16013)
EX. 24' USE-IN-COMMON ACCESS EASEMENT TO SERVE LOTS 3 & 4 HOLWECK SUBDIVISION AND LOT 1 HOLWECK PROPERTY PLAT NO. 14864
EX. 20' PUBLIC WATER AND UTILITY EASEMENT PLAT NO. 11181 & 11182
LOT 4
HOLWECK SUBDIVISION
108 LIMITED PARTNERSHIP
ZONED RC-DEO
PLAT NO. 14864
Existing 20' Private Access Easement Plat No. 14864
Ex. board-on-board fence
S74°33'31"E
215.45'
N 562360
E 1,328,000
PARCEL L-1
3.4235 Acres
PROPOSED ANTWERPEN NISSAN DEALERSHIP
ZONED B-2
PLAT NO. 14864
N13°43'41"W
173.99'
EX. 20' PUBLIC DRAINAGE & UTILITY EASEMENT PLAT NO. 14864
EX. 20' STORMWATER MANAGEMENT EASEMENT FOR ACCESS TO PARCEL "L" AND PRIVATE 20' ACCESS EASEMENT FOR PARCEL "L" PLAT NO. 11182
AUTO DRIVE (LOCAL ROAD) 60' R/W
R=85.00 L=45.66
LOCATION OF RELOCATED FIRE HYDRANT (BY ABD)
EX. 10' PUBLIC TREE EASEMENT PLAT NO. 11182
EX. HC RAMP
EX. #8 TO BE RELOCATED AND EX. #7 & #9 TO BE ABANDONED (BY ABD)
STA. 0+00 @ ENTRANCE
STA. 1+41.38 @ AUTO DRIVE
EX. 6" W.C. (TO BE ABANDONED)
EX. 8" W.C.
EX. 1-1/2" ENGR. VALVE
EX. 1-1/2" BALL VALVE (PRIVATE)
EX. 1-1/2" BALL VALVE
EX. 1-1/2" BLOW OFF
EX. 8" W.C.
EX. 6" W.C.
EX. 1" W.C.

DETAIL 24 – STABILIZED CONSTRUCTION ENTRANCE



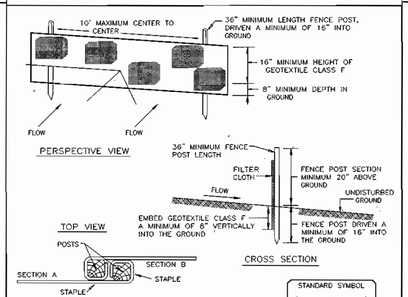
STANDARD SYMBOL: SCE

Construction Specification

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

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

DETAIL 22 – SILT FENCE



STANDARD SYMBOL: SF

Construction Specifications

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

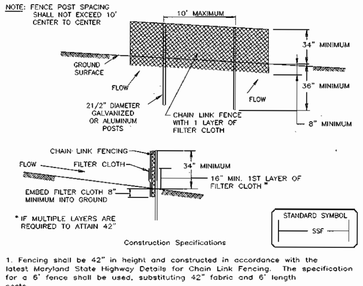
Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal/ft²/minute (max.)	Test: MSMT 322
Filtering Eggeciency	75% (min.)	Test: MSMT 322

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 reaches 50% of the fabric height.

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

DETAIL 33 – SUPER SILT FENCE

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



STANDARD SYMBOL: SSF

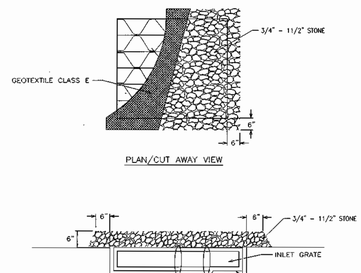
Construction Specifications

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/ft²/minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

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

DETAIL 23B – AT GRADE INLET PROTECTION



STANDARD SYMBOL: AGIP

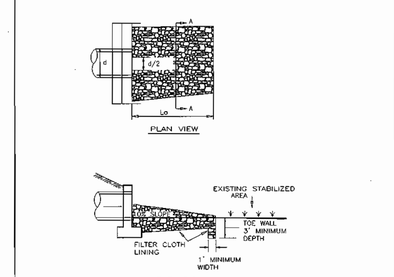
MAX. DRAINAGE AREA = 1/4 ACRE

Construction Specifications

1. Lift grate and wrap with Geotextile Class E to completely cover all openings, then set grate back in place.
2. Place 3/4" to 1 1/2" stone, 4"–6" thick on the grate to secure the fabric and provide additional filtration.

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

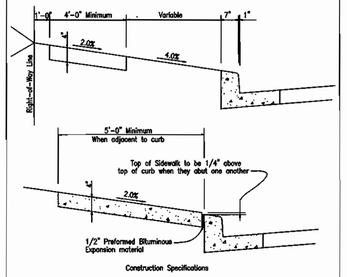
DETAIL 27 – ROCK OUTLET PROTECTION III



NOTE: FILTER CLOTH SHALL BE GEOTEXTILE CLASS C

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F - 18 - 10	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

CONCRETE SIDEWALK HOWARD COUNTY STANDARD DETAIL R3.05



Construction Specifications

1. Sidewalk to be scribed in 5'–0" maximum squares.
2. Expansion joints across the sidewalk not to be more than 15' apart.
3. 1/2" Preformed Bituminous Expansion material in expansion joints to be kept 1/4" below surface of sidewalk.
4. Concrete to be min number 2.
5. Where sidewalk abuts curb, sidewalk shall be 1/4" above curb with 1/2" Preformed Bituminous Expansion material between sidewalk and curb.
6. On longitudinal sidewalk grades of 5% or greater, a concrete header, 6" thick and 6" deep below the normal 4" sidewalk thickness shall be constructed for the full width of the sidewalk at intervals of 48 feet. The headers shall be placed at expansion joint locations and shall be monolithic with the curb.
7. Sidewalk width adjacent to curb shall be 5'–0" minimum except sidewalk adjacent to curb in cul–de–sac bulbs may be 4'–0" wide.
8. Sidewalks located 7' or more from curb may be 4'–0" in width with a 5'x5' paved section placed 30' apart.

PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG–LIVED VEGETATIVE

SEEDBED PREPARATION: Loosen upper three inches of soil by raking, discing or other acceptable means before seeding, if not previously

SOIL AMENDMENTS: In lieu of soil test recommendations, use one of

1) Preferred–Apply 2 tons per acre dolomitic limestone (92 lbs/ 100 sq.ft.) and 600 lbs per acre 10–10–10 fertilizer. (14 lbs./ 1000 sq.ft.) before seeding. Harrow or disc into upper three inches of soil. At the time of seeding, apply 400 lbs. per acre 30–0–0 ureaform fertilizer (9 lbs/1000 sq.ft.)
2) Acceptable–Apply 2 tons per acre dolomatic limestone (92 lbs/ 1000 sq.ft.) and apply 1000 lbs. per acre 10–10–10– fertilizer (23 lbs./1000 sq.ft.) before seeding. Harrow or disc into upper

SEEDING: For the periods March 1 thru April 30, and August 1 thru October 15, seed with 60 lbs. per acre (1.4 lbs/1000 sq.ft.) of Kentucky 31 Tall Fescue. For the period May 1 thru July 31, seed with 60 lbs. Kentucky 31 Tall Fescue per acre and 2 lbs. per acre (.05 lbs./1000 sq.ft.) of weeping lovegrass. During the period of October 16 thru February 28, protect site by: Option (1) 2 tons per acre well anchored straw mulch and seed as soon as possible in the spring. Option (2) Use sod. Option (3) Seed with 60 lbs/acre Kentucky 31 Tall Fescue and mulch with 2 tons/acre well anchored

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

MAINTENANCE: Inspect all seeded areas and make needed repairs.

TEMPORARY SEEDING NOTES

SEEDBED PREPARATION: Loosen upper three inches of soil by raking, discing or other acceptable means before seeding, if not previously

SOIL AMENDMENTS: Apply 600 lbs. per acre 10–10–10 fertilizer

SEEDING: For periods March 1 thru April 30 and from August 15 thru November 15, seed with 2 1/2 bushel per acre of annual rye (3.2 lbs./1000 sq.ft.) For the period May 1 thru August 14, seed with 3 lbs. per acre of weeping lovegrass (.07 lbs./1000 sq.ft.). For the period November 1 thru February 28, protect site by applying 2 tons per acre of well anchored straw mulch and seed as soon as possible

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

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

21.0 STANDARDS AND SPECIFICATIONS FOR TOPSOIL

Placement of topsoil over a prepared subsoil prior to

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

Conditions Where Practice Applies

I. This practice is limited to areas having 2:1 or flatter
   a. The texture of the exposed subsoil/parent material
   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
   d. The soil is so acidic that treatment with

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

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

II. Topsoil Specifications – Soil to be used as topsoil
   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 a soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be a mixture of contrasting textured subsoils and shall contain less than 5% by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger that 1 and 1/2" in
   ii. Topsoil must be free of plants or plant parts such as Bermuda grass, quackgrass, Johnsongrass, nutsedge, poison
   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

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.
   ii. 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 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 ammendments specified in 20.0 Vegetative Stabilization–Section I–Vegetative Stabilization Methods and Materials.

V. Topsoil Application
   i. When topsoiling, maintain needed erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slope Silt Fence and Sediment Traps and Basins.
   ii. Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4" – 8" higher in elevation.
   iii. Topsoil shall be uniformly distributed in a 4" – 8" layer and lightly compacted to a minimum thickness of 4". Spreading shall be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.
   iv. Topsoil shall not be place 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.

SEQUENCE OF CONSTRUCTION

1. OBTAIN HOWARD COUNTY GRADING PERMIT. (WEEK 1)
2. NOTIFY HOWARD COUNTY AT LEAST 48 HOURS PRIOR TO START OF CONSTRUCTION. (WEEK 1)
3. CONDUCT A PRE–CONSTRUCTION MEETING WITH THE SEDIMENT CONTROL INSPECTOR PRIOR TO ANY LAND DISTURBANCE. (WEEK 1)
4. INSTALL ALL SILT FENCE AS INDICATED ON PLANS. (WEEK 2)
5. INSTALL STABILIZED CONSTRUCTION ENTRANCE WITH MOUNTABLE BERM. (WEEK 2)
6. ROUGH GRADE SITE. (WEEK 3)
7. SEED AND STOCKPILE TOPSOIL. STABILIZE STOCKPILE WITH SEED AND MULCH. (WEEK 3)
8. INSTALL STORM DRAIN UTILITIES AND STORMWATER MANAGEMENT FACILITY. STABILIZE INLET WITH INLET PROTECTION, IMMEDIATELY UPON COMPLETION OF STORM DRAIN INSTALLATION. (WEEK 4)
9. COMPLETE INSTALLATION OF STORM DRAIN/SWM FACILITY SYSTEM AND REMAINING ON–SITE UTILITIES. STORM DRAINS SHALL BE BLOCKED OR INLET PROTECTION SHALL BE ADDED TO PREVENT SEDIMENT FROM ENTERING THE SYSTEM. (WEEK 4)
10. INSTALL CURB AND GUTTER. (WEEK 6)
11. BEGIN BUILDING CONSTRUCTION. (WEEK 6)
12. INSTALL PAVING BASE COURSE. REMOVE INLET PROTECTION PER THE SEDIMENT CONTROL INSPECTOR AS WORK PROGRESSES. (WEEK 26)
13. COMPLETE BUILDING CONSTRUCTION. (WEEK 27)
14. INSTALL PAVING SURFACE COURSE. (WEEK 28)
15. FINE GRADE AND STABILIZE REMAINING SITE. INSTALL LANDSCAPING. (WEEK 29)
16. CLEAN AND FLUSH OUT STORM DRAIN SYSTEM. DISPOSE OF SEDIMENT LADEN MATERIAL CLEANED OUT OF STORM DRAIN IN A MANNER APPROVED BY THE SEDIMENT CONTROL INSPECTOR. (WEEK 30)
17. REMOVE ALL SEDIMENT CONTROL MEASURES AFTER RECEIVING APPROVAL FROM THE SEDIMENT CONTROL INSPECTOR. (WEEK 30)

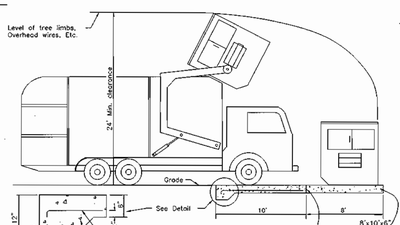
SEDIMENT CONTROL NOTES

1. A minimum of 48 hours notice must be given to the Howard County Department of inspection, License and Permits Sediment Control Division prior to the start of any construction (313–1855).
2. All vegetation and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL and revisions 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 7, 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 seeding, sod, temporary seeding, and mulching (Sec. G). Temporary stabilization with mulch alone shall be done when recommended seeding dates do not allow for proper germination and establishment of ground cover.
6. All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.
7. Site Analysis :

Total Area	2.50 Acres
Area Disturbed	4.78 Acres
Area to be roofed or paved	1.53 Acres
Area to be vegetatively stabilized	3.25 Acres
Total Cut	50 CY
Total Fill	14,800 CY
Offsite waste/borrow area location	

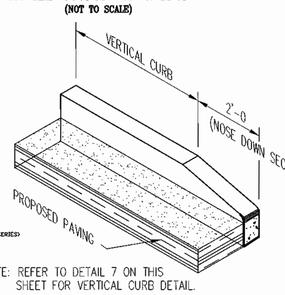
8. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
9. Additional sediment controls must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
10. On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.
11. Trenches for the construction of utilities is limited to three pipe lengths or that which shall be back–filled and stabilized within one working day, whichever is shorter.

* To be determined by contractor, with pre–approval of the Sediment Control Inspector with an approved and active grading permit



SOLID WASTE SERVICE PAD

HOWARD COUNTY STD. R 11.01
(NOT TO SCALE)



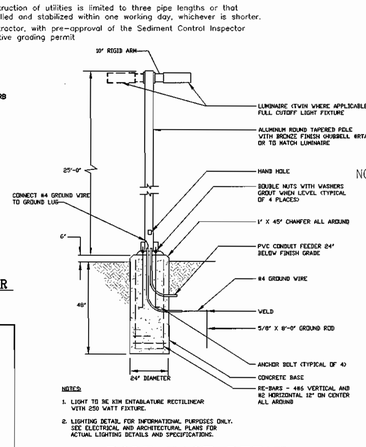
NOTE: REFER TO DETAIL 7 ON THIS SHEET FOR VERTICAL CURB DETAIL.

CONCRETE CURB – NOSE DOWN

NOT TO SCALE

HANDICAP PARKING SIGNS

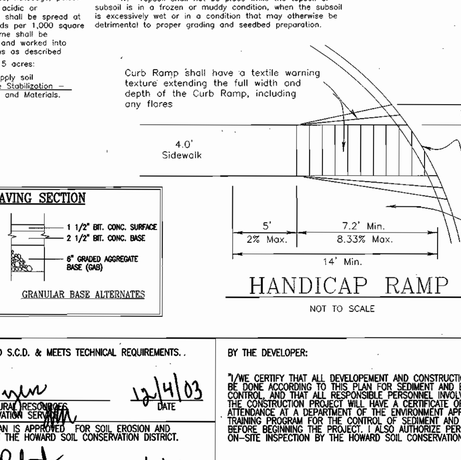
(NOT TO SCALE)



NOTES:
1. LIGHT TO BE 30K ENTABLATURE RECTILINEAR WITH 250 WATT FIXTURE.
2. LIGHTING DETAIL FOR INFORMATIONAL PURPOSES ONLY. SEE ELECTRICAL AND ARCHITECTURAL PLANS FOR ACTUAL LIGHTING DETAILS AND SPECIFICATIONS.

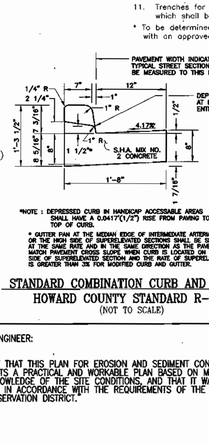
POLE BASE DETAIL

(NOT TO SCALE)



HANDICAP RAMP

NOT TO SCALE

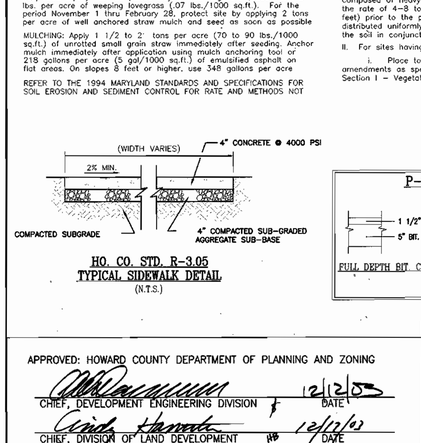


*NOTE : DEPRESSED CURB IN HANDICAP ACCESSABLE AREAS SHALL HAVE A 0.0417'(1/2") RISE FROM PAVING TO TOP OF CURB.

* GUTTER PAN AT THE MEDIAN EDGE OF INTERMEDIATE ARTERIAL OR THE HIGH SIDE OF SUPERELEVATED SECTIONS SHALL BE SLOPED AT THE SAME RATE AND IN THE SAME DIRECTION AS THE PAVEMENT. MATCH PAVEMENT CROSS SLOPE WHEN CURB IS LOCATED ON THE LOW SIDE OF SUPERELEVATED SECTIONS AND THE SUPERELEVATION IS GREATER THAN 3% FOR MODIFIED CURB AND GUTTER.

STANDARD COMBINATION CURB AND GUTTER

HOWARD COUNTY STANDARD R–3.01
(NOT TO SCALE)

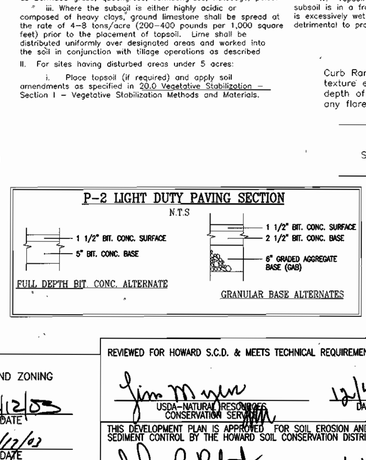


HO. CO. STD. R–3.05 TYPICAL SIDEWALK DETAIL

(N.T.S.)

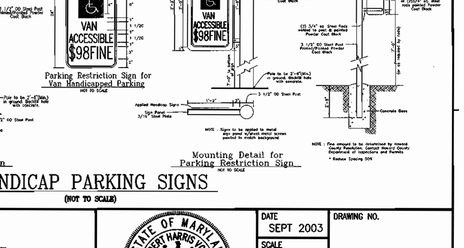
P–2 LIGHT DUTY PAVING SECTION

N.T.S



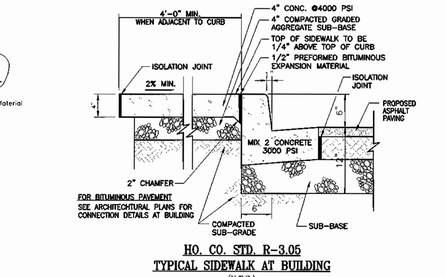
TRASH ENCLOSURE GATE DETAIL

(NOT TO SCALE)



SOLID WASTE SERVICE PAD

HOWARD COUNTY STD. R 11.01
(NOT TO SCALE)



FOR BITUMINOUS PAVEMENT SEE ARCHITECTURAL PLANS FOR CONNECTION DETAILS AT BUILDING

HO. CO. STD. R–3.05 TYPICAL SIDEWALK AT BUILDING

(N.T.S.)

SUMMARY TABLE

	Required	Provided
WQv	9,583 c.f.	2,352 c.f. Bio Retention; 7,231 c.f. Underground Sand Filter
Rev	2,613 c.f.	740 c.f. Bio Retention; 1,873 c.f. Underground Sand Filter
Cpv	21,780 c.f.	21,780 c.f. Underground Extended Detention
Q10	N/A	Safe Conveyance Via storm drain bypass
Q100	N/A	N/A

Note: WQv, Rev are only being provided for proposed parcels K–2 (2.50 acres), and K–3 (0.85 acres). Onsite WQv and Rev will be provided for K–4 by a future SDP when K–4 is developed.
Cpv is being provided for proposed parcels K–2, K–3, and K–4.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 12/2/03
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/2/03
DIRECTOR — DATE 12/2/03

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

USDA–NATURAL RESOURCES CONSERVATION SERVICE — DATE 12/4/03

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

HOWARD S.C.D. — DATE 12/4/03

BY THE DEVELOPER:

"I/WE CERTIFY THAT ALL DEVELOPEMENT 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."

Kevin M. Bell — SIGNATURE OF DEVELOPER — DATE 11/22/03

BY THE ENGINEER:

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

SIGNATURE OF ENGINEER — DATE 11/24/03

REVISIONS

REV#	DATE	DESCRIPTION

OWNER/DEVELOPER

KEVIN BELL
c/o WIN KELLY CHEVROLET/GEO
12421 AUTO DRIVE
CLARKSVILLE, MARYLAND 21029
(410) 988–9522

FREDERICK WARD ASSOCIATES, INC.
ARCHITECTS | ENGINEERS | PLANNERS | SURVEYORS
7125 RIVERWOOD DRIVE
COLUMBIA, MARYLAND 21046–2354
410–720–6900
410–720–6226 fax
REGIONAL OFFICES:
BEL AIR, MARYLAND AND WARRENTON, VIRGINIA
www.frederickward.com

SITE DEVELOPMENT PLAN SEDIMENT AND EROSION CONTROL NOTES AND DETAILS WIN KELLY MITSUBISHI

TAX MAP #34 BLOCK #6
5TH ELECTION DISTRICT
PARCEL K–2
HOWARD COUNTY, MARYLAND

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 REGISTERED PROFESSIONAL ENGINEER
11/24/03
ROBERT H. VOGEL, PE No.16193

DATE	SEPT 2003
SCALE	NO SCALE
DESIGN BY	MMR
CHECKED BY	RHV
DRAWN BY	DZ
DRAWING NO.	SHEET 3 OF 7
FWA JOB NUMBER	2024096.00

SDP–03–93

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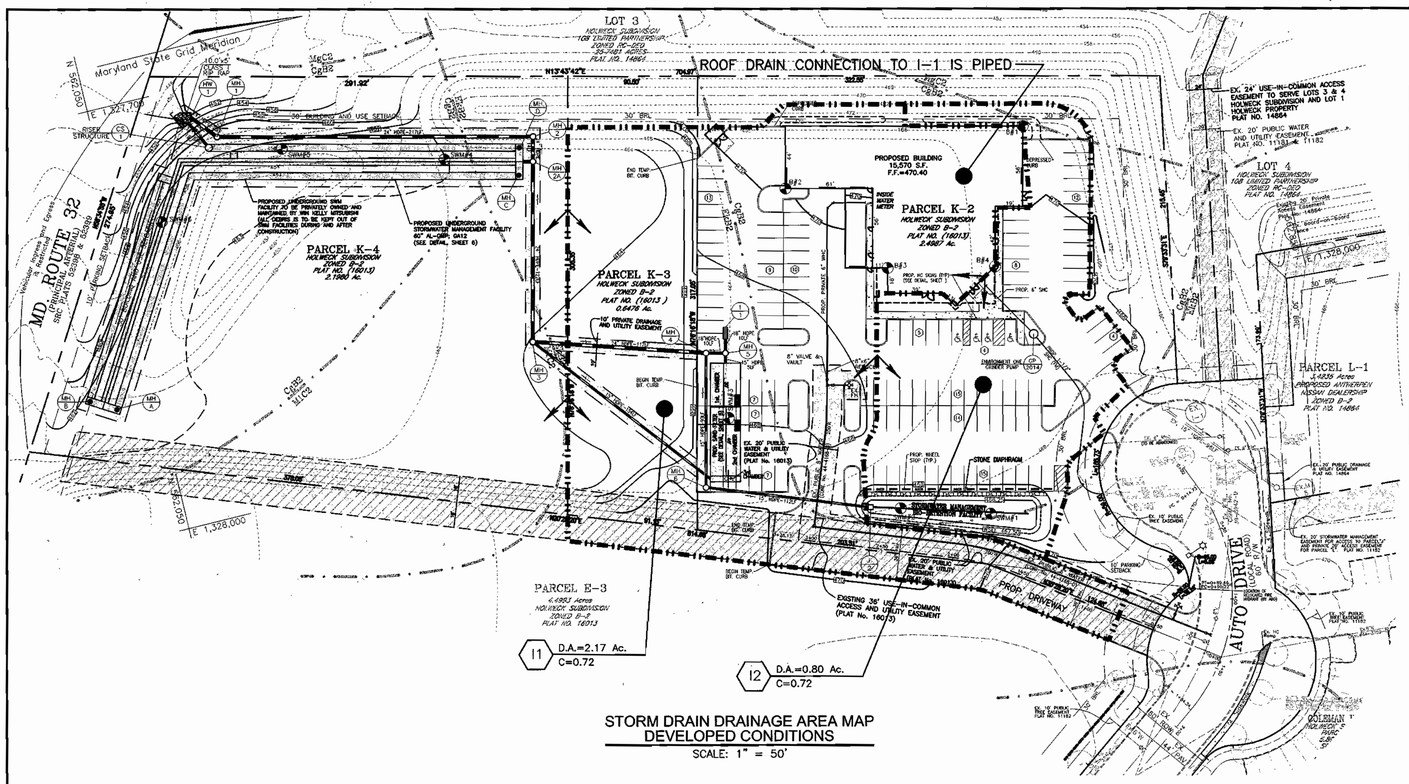
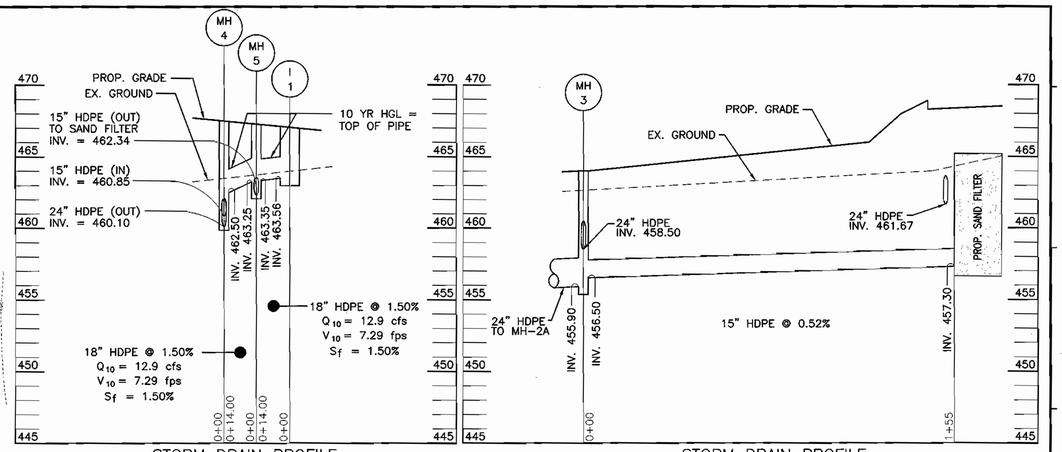


STORM DRAIN DRAINAGE AREA MAP
DEVELOPED CONDITIONS
SCALE: 1" = 50'



STORM DRAIN PROFILE
SCALE: HORIZONTAL 1" = 30'
VERTICAL 1" = 5'

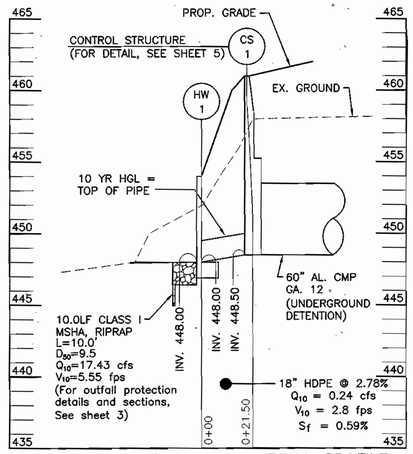
STORM DRAIN PROFILE
SCALE: HORIZONTAL 1" = 30'
VERTICAL 1" = 5'

DRAINAGE STRUCTURE SCHEDULE

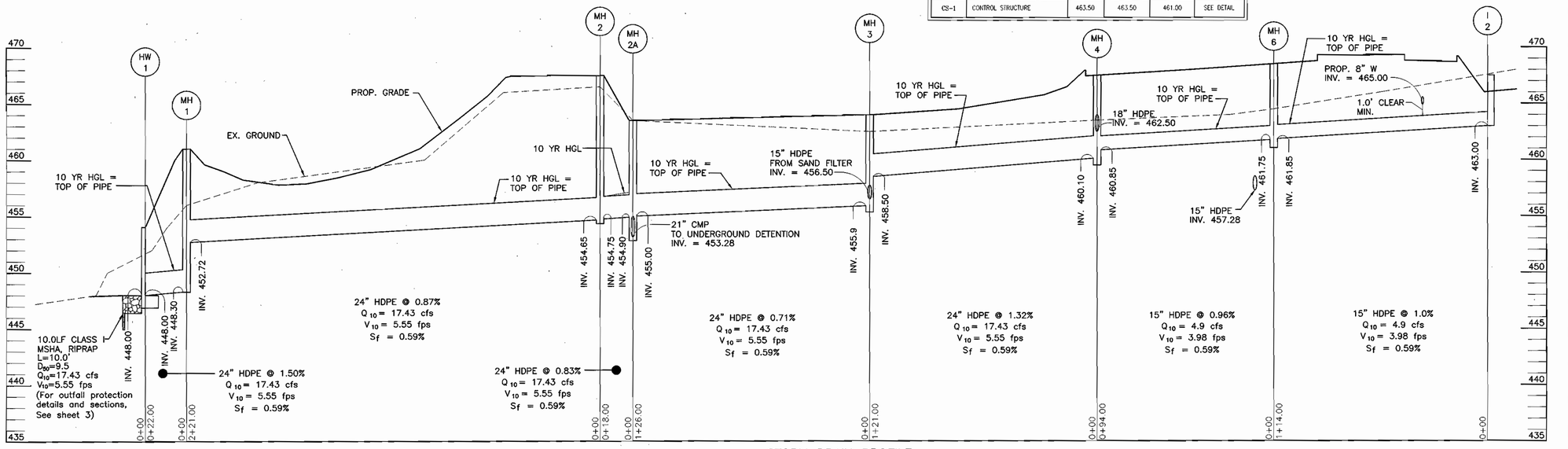
NO.	TYPE	INV. IN	INV OUT	TOP EL.	DETAIL
I-1	DOUBLE 'S' INLET	-	463.50	466.70	SD-4.41
I-2	TYPE 'D' INLET	-	463.00	468.33	SD-4.39
MH-1	4' PRECAST	452.72	448.30	461.00	G-5.12
MH-2	4' PRECAST	454.75	454.65	467.50	G-5.12
MH-2A	4' PRECAST	455.00	453.28 454.90	463.50	G-5.12
MH-3	4' PRECAST	456.50 458.50	455.90	464.00	G-5.12
MH-4	4' SHALLOW PRECAST	460.85 462.50	460.10	467.00	G-5.12
MH-5	4' SHALLOW PRECAST	463.35	462.34 463.25	466.80	G-5.12
MH-6	4' PRECAST	461.85	461.75	468.50	G-5.12
HW-1	TYPE 'H' HEADWALL	448.00	448.00	451.50	MSHA MD 362.01
CS-1	CONTROL STRUCTURE	463.50	463.50	461.00	SEE DETAIL

STORM DRAIN PIPE SCHEDULE

SIZE	TYPE	LENGTH
15"	HDPE	363 LF
18"	HDPE	49 LF
24"	HDPE	508 LF
21"	CMP	10 LF



UNDERGROUND DETENTION OUTFALL PROFILE
SCALE: HORIZONTAL 1" = 30'
VERTICAL 1" = 5'



STORM DRAIN PROFILE
SCALE: HORIZONTAL 1" = 30'
VERTICAL 1" = 5'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 12/12/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/12/03

DIRECTOR — DATE 12/22/03

REVISIONS		
REV#	DATE	DESCRIPTION

OWNER/DEVELOPER

KEVIN BELL
c/o WIN KELLY CHEVROLET/GEO
12421 AUTO DRIVE
CLARKSVILLE, MARYLAND 21029
(410) 988-9522

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410-720-6900
410-720-6226 fax
REGIONAL OFFICES:
BEL AIR, MARYLAND AND WARRENTON, VIRGINIA

SITE DEVELOPMENT PLAN
STORM DRAIN DRAINAGE AREA MAP, PROFILES AND DETAILS
WIN KELLY MITSUBISHI

TAX MAP #34 BLOCK #6
5TH ELECTION DISTRICT

PARCEL K-2
HOWARD COUNTY, MARYLAND

STATE OF MARYLAND — ROBERT HARRIS VOGEL — NO. 16193 — REGISTERED PROFESSIONAL ENGINEER — 11/24/03
ROBERT H. VOGEL, PE No.16193

DATE	SEPT 2003
SCALE	AS SHOWN
DESIGN BY	MMR
CHECKED BY	RHV
DRAWN BY	DZ
DRAWING NO.	
SHEET	4 OF 7
FWA JOB NUMBER	2024096.00

SDP-03-93

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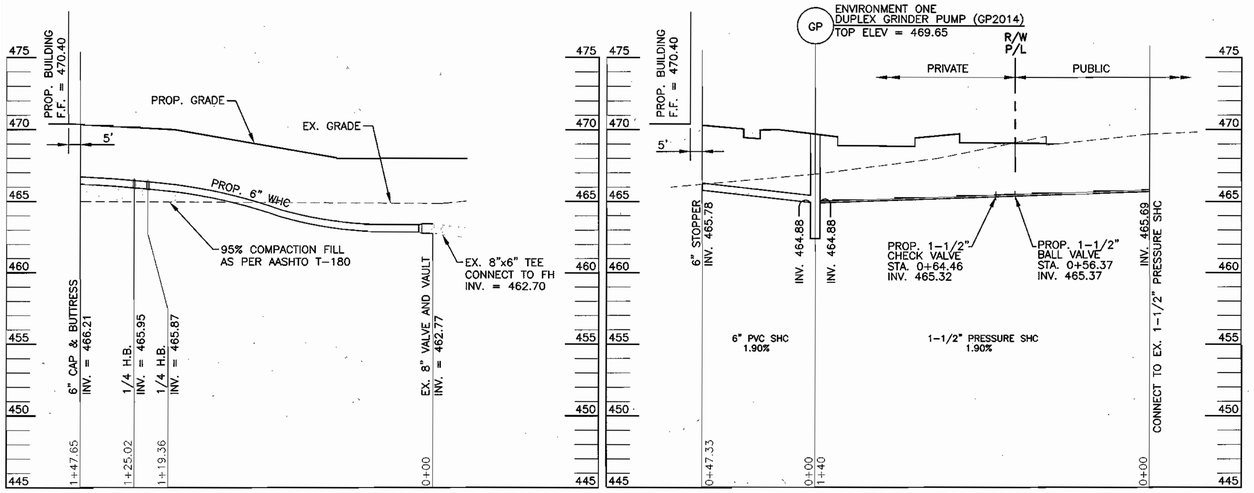


WATER HOUSE CONNECTION PROFILE

SCALE: HORIZONTAL 1" = 30'
VERTICAL 1" = 5'

SEWER HOUSE CONNECTION PROFILE

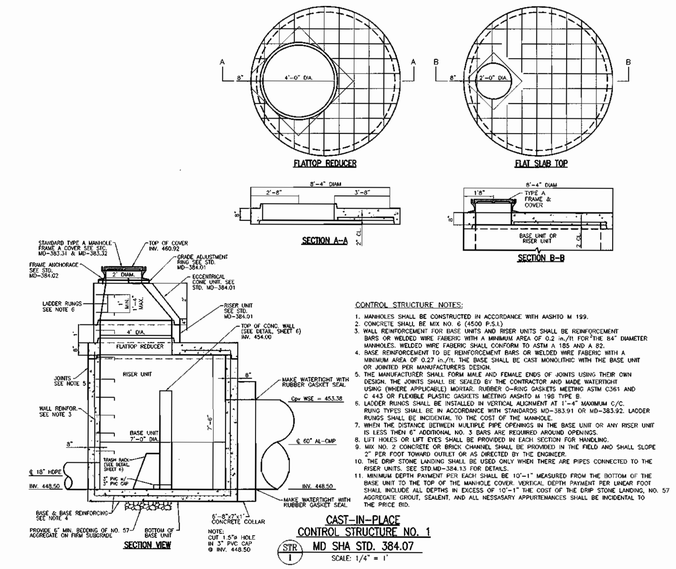
SCALE: HORIZONTAL 1" = 30'
VERTICAL 1" = 5'

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED UNDERGROUND STORMWATER FILTRATION SYSTEM (F-2)

1. THE SEDIMENT CHAMBER OUTLET DEVICES SHALL BE CLEANED AND/OR REPAIRED WHEN DRAW-DOWN TIMES WITHIN THE CHAMBER EXCEED 36 HOURS.
2. DEBRIS AND LITTER SHALL BE REMOVED AS NECESSARY TO ENSURE PROPER OPERATION OF THE SYSTEM.
3. SEDIMENT SHALL BE CLEANED OUT OF THE SEDIMENTATION CHAMBER WHEN IT ACCUMULATES TO A DEPTH OF 6 INCHES. VEGETATION WITHIN THE SEDIMENT CHAMBER SHALL BE LIMITED TO A HEIGHT OF 18 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 AND LIQUID MUST BE FOLLOWED BY THE OWNER.
5. A LOG BOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
6. THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO ENSURE 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.

UNDERGROUND SAND FILTER CONSTRUCTION SPECIFICATIONS

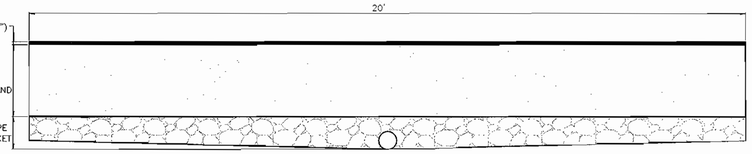
1. PROVIDE MANHOLE AND/OR GRATES TO ALL UNDERGROUND AND BELOW GRADE STRUCTURES. MANHOLES SHALL BE IN COMPLIANCE WITH STANDARD SPECIFICATIONS FOR EACH COUNTY, BUT DIAMETERS SHOULD BE 30" MINIMUM (TO COMPLY WITH OSHA CONFINED SPACE REQUIREMENTS). ALUMINUM AND STEEL LOUVERED DOORS ARE ALSO ACCEPTABLE. TEN INCH WIDE (MINIMUM) MANHOLE STEPS (12"O.C.) SHALL BE CAST IN PLACE OR DRILLED AND MORTARED INTO THE WALL BELOW EACH MANHOLE. A 5' MINIMUM HEIGHT CLEARANCE (FROM THE TOP OF THE SAND LAYER TO THE BOTTOM OF THE UPPER/SURFACE SLAB) IS REQUIRED FOR ALL PERMANENT UNDERGROUND STRUCTURES. LIFT RINGS ARE TO BE SUPPLIED TO REMOVE/REPLACE TOP SLABS ON PRE-FABRICATED STRUCTURES. MANHOLE COVERS SHOULD ALLOW FOR PROPER VENTILATION.
2. UNDERGROUND SANDFILTERS SHOULD BE CONSTRUCTED WITH A GATE VALVE LOCATED JUST ABOVE THE TOP OF THE FILTER BED FOR DEWATERING IN THE EVENT THAT CLOGGING OCCURS.
3. UNDERGROUND SAND BEDS SHALL BE PROTECTED FROM TRASH ACCUMULATION BY A WIDE MESH GEOTEXTILE SCREEN TO BE PLACED ON THE SURFACE OF THE SAND BED; SCREEN IS TO BE ROLLED UP, REMOVED, CLEANED AND RE-INSTALLED DURING MAINTENANCE OPERATIONS.



CAST-IN-PLACE CONTROL STRUCTURE NO. 1
STR 1 MD SHA STD. 384.07
SCALE: 1/4" = 1'

CONTROL STRUCTURE NOTES:

1. MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M 199.
2. CONCRETE SHALL BE MIX NO. 6 (4500 P-S1).
3. WALL REINFORCEMENT FOR BASE UNITS AND RISER UNITS SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABERIC WITH A MINIMUM AREA OF 0.2 in./ft FOR THE 84" DIAMETER MANHOLES. WELDED WIRE FABERIC SHALL CONFORM TO ASTM A 185 AND A 82.
4. BASE REINFORCEMENT TO BE REINFORCEMENT BARS OR WELDED WIRE FABERIC WITH A MINIMUM AREA OF 0.27 in./ft. THE BASE SHALL BE CAST MONOLITHIC WITH THE BASE UNIT OR JOINTED PER MANUFACTURERS DESIGN.
5. THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR AND MADE WATERTIGHT USING (WHERE APPLICABLE) MORTAR, RUBBER O-RING GASKETS MEETING ASTM C361 AND C 443 OR FLEXIBLE PLASTIC GASKETS MEETING AASHTO M 198 TYPE B
6. LADDER RUNGS SHALL BE INSTALLED IN VERTICAL ALIGNMENT AT 1'-6" MAXIMUM C/C. RUNG TYPE1 SHALL BE IN ACCORDANCE WITH STANDARDS MD-383.91 OR MD-383.92. LADDER RUNGS SHALL BE INCIDENTAL TO THE COST OF THE MANHOLE.
7. WHEN THE DISTANCE BETWEEN MULTIPLE PIPE OPENINGS IN THE BASE UNIT OR ANY RISER UNIT IS LESS THEN 6" ADDITIONAL NO. 3 BARS ARE REQUIRED AROUND OPENINGS.
8. LIFT HOLES OR LIFT EYES SHALL BE PROVIDED IN EACH SECTION FOR HANDLING.
9. MIN NO. 2 CONCRETE OR BRICK CHANNEL SHALL BE PROVIDED IN THE FIELD AND SHALL SLOPE 2" PER FOOT TOWARD OUTLET OR AS DIRECTED BY THE ENGINEER.
10. THE DRIP STONE LANDING SHALL BE USED ONLY WHEN THERE ARE PIPES CONNECTED TO THE RISER UNITS. SEE STD.MD-384.53 FOR DETAILS.
11. MINIMUM DEPTH PAYMENT PER EACH SHALL BE 10'-1" MEASURED FROM THE BOTTOM OF THE BASE UNIT TO THE TOP OF THE MANHOLE COVER. VERTICAL DEPTH PAYMENT PER LINEAR FOOT SHALL INCLUDE ALL DEPTHS IN EXCESS OF 10'-1" THE COST OF THE DRIP STONE LANDING, NO. 57 AGGREGATE GROUT, SEALENT, AND ALL NESSASARY APPURTENANCES SHALL BE INCIDENTAL TO THE PRICE BID.



TYPICAL SECTION THROUGH SAND FILTER
SCALE: 1/2" = 1'

CONCRETE

1. ALL FOOTINGS, FOUNDATIONS AND INTERIOR SLABS SHALL BE NORMAL WT CONCRETE WITH A COMPRESSIVE STRENGTH EQUAL TO AT LEAST 3,000 PSI WITHIN 28 DAYS AFTER POURING. THE WATER/CEMENT RATIO SHALL BE NO GREATER THAN 0.60 AND SLUMP SHALL BE 3 IN. OR LESS. MIN CEMENT CONTENT SHALL BE 564 LBS PER CU YARD.
2. UNLESS OTHERWISE NOTED, ALL CONSTRUCTION JOINTS SHALL BE KEYED WITH A KEY 1-1/2 IN. DEEP, A LENGTH 2 IN. LESS THAN THE MEMBER, AND A WIDTH 1/2 OF THE MEMBER. REINFORCING SHALL BE CONTINUOUS THRU JOINT.
3. ALL CONCRETE WORK SHALL BE PLACED, CURED, STRIPPED, AND PROTECTED AS DIRECTED BY THE SPECIFICATIONS AND ACI STANDARDS AND PRACTICES.
4. BEFORE CONCRETE IS POURED CHECK WITH ALL TRADES TO INSURE PROPER PLACEMENT OF ALL OPENINGS, SLEEVES, CURBS, CONDUITS, BOLTS, INSERTS, ETC. RELATIVE TO WORK.
5. CONTRACTOR IS RESPONSIBLE FOR ALL SHORING AND FORMWORK.
6. REFER TO CIVIL DRAWINGS FOR MOLDS, GROOVES, ORNAMENT, CLIPS OR GROUNDS, REQUIRED TO BE ENCASED IN CONCRETE AND FLOOR LOCATION OF FLOOR FINISHES AND SLAB DEPRESSIONS.
7. CONCRETE DESIGN AND DETAILING SHALL CONFORM TO THE REQUIREMENTS OF ACI 318-02. CONTRACTOR SHALL SUBMIT MIX DESIGNS ACCOMPANIED BY APPROPRIATE GRAPHS AND BACKGROUND DATA FOR APPROVAL. MIX DESIGN SHALL INDICATE 7 AND 28 DAY STRENGTHS, CEMENT CONTENT, AIR CONTENT, WATER-CEMENT RATIO, AMOUNT OF FINE AND COARSE AGGREGATES, AND ADMIXTURES.
   MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE:

SLABS ON GRADE	3000 PSI
FOOTINGS AND PEDESTALS	3000 PSI
PEA-GRAVEL CONCRETE (OR GROUT)	3000 PSI (FOR FILLING CMU UNITS)
ALL OTHER CONCRETE	3000 PSI

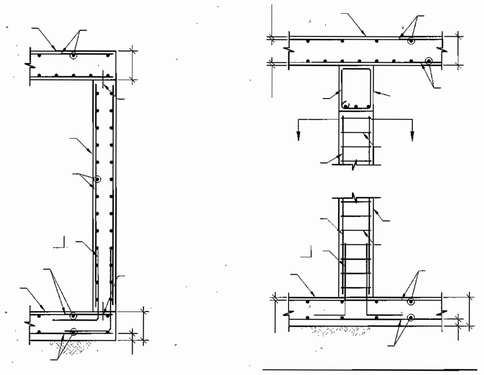
8. ALL EXTERIOR CONCRETE AND CONCRETE EXPOSED TO WEATHER SHALL BE AIR-ENTRAINED.
9. CONTRACTOR TO SUPPLY SHOP DRAWINGS OF ALL STRUCTURAL COMPONENTS FOR APPROVAL PRIOR TO CONSTRUCTION.
10. USE OF ADDITIVES SHALL NOT BE PERMITTED UNLESS SPECIFICALLY APPROVED BY THE STRUCTURAL ENGINEER.
11. THE CONCRETE SUBCONTRACTOR SHALL NOT REPRODUCE ANY PORTION OF THE STRUCTURAL CONTRACT DRAWINGS FOR UTILIZATION AS SHOP DRAWINGS.

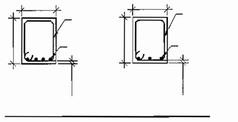
REINFORCING STEEL

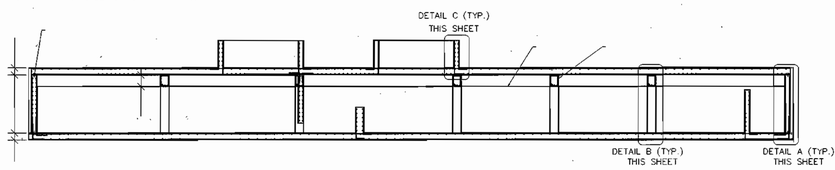
1. REINFORCING BARS SHALL BE DEFORMED BILLET STEEL CONFORMING TO ASTM A615, GRADE 60. ALL WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-185. BARS SHALL BE BRANDED BY THE MANUFACTURER WITH BAR SIZE AND GRADE OF STEEL AND CERTIFIED MILL REPORTS SHALL BE SUBMITTED FOR RECORD. REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE WITH THE ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", LATEST EDITION. PROVIDE CORNER BARS AT JUNCTIONS OF CONCRETE WALLS AND WALL FOOTINGS AND LAP
2. WITH WALL REINFORCING AS SHOWN IN TYPICAL DETAILS. SIZE AND SPACING OF CORNER BARS TO BE SAME AS HORIZONTAL WALL REINFORCING, UNLESS SHOWN OTHERWISE. WHERE CONTINUOUS BARS ARE CALLED FOR, THEY SHALL RUN CONTINUOUSLY AROUND CORNERS AND LAPPED AS NECESSARY. PROVIDE STANDARD HOOKS AT DISCONTINUOUS ENDS. TENSION AND COMPRESSION LAP SPLICES SHALL NOT BE LESS THAN THE SPLICE LENGTHS AS GIVEN IN ACI-318. GENERALLY LAP TOP BARS AT MID SPAN AND BOTTOM BARS AT SUPPORTS. PROVIDE PLACING ACCESSORIES IN ACCORDANCE WITH ACI RECOMMENDATIONS.
3. ALL REINFORCING TO BE LAPPED 48 X BAR DIA. ZIGZAG ALL LAPS IN THE SLAB.

FOOTINGS

1. ALL FOOTINGS ARE BASED ON AN ALLOWABLE SOIL BEARING PRESSURE OF 3,000 PSF. ANY SOIL CONDITION ENCOUNTERED DURING EXCAVATION THAT IS CONTRARY TO THOSE USED FOR DESIGN OF FOOTINGS AS OUTLINED IN WORKING DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING.
2. BOTTOM OF ALL EXTERIOR FOOTINGS SHALL BE A MINIMUM OF 2'-6" BELOW FINISHED EXTERIOR GRADE, UNLESS A LOWER ELEVATION IS NOTED. FOOTING ELEVATIONS NOTED ARE ESTIMATED BASED ON AVAILABLE GEOTECHNICAL AND GRADING INFORMATION. ALL FOOTINGS ADJACENT TO EXISTING FOOTINGS SHALL BE LOWERED TO MATCH EXISTING FOOTING ELEVATION.
3. ALL FOUNDATION SUBGRADES SHALL BE INSPECTED AND APPROVED UNDER THE SUPERVISION OF A REGISTERED PROFESSIONAL ENGINEER PRIOR TO BEING CONCRETED. FOOTINGS MAY BE LOWERED TO ACHIEVE BEARING CAPACITY.

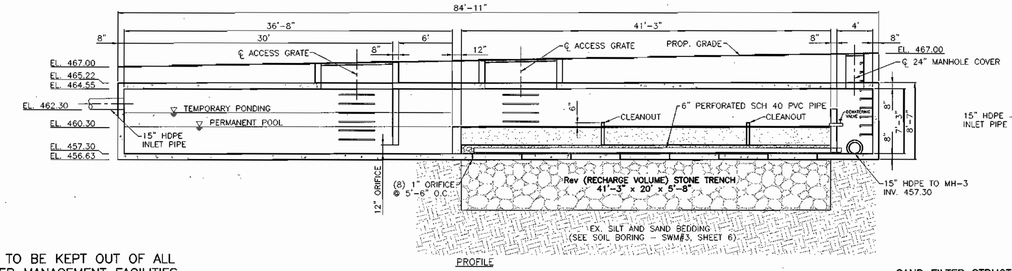






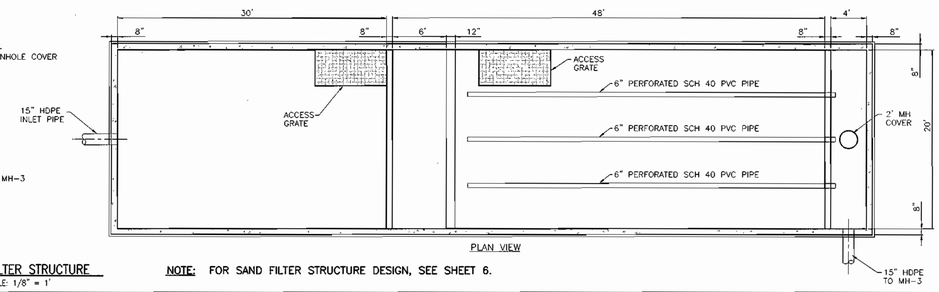
SECTION A-A

N.T.S.



SAND FILTER PLAN

N.T.S.



SAND FILTER STRUCTURE
SCALE: 1/8" = 1'

NOTE: FOR SAND FILTER STRUCTURE DESIGN, SEE SHEET 6.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 12/2/03
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 12/2/03
DIRECTOR	DATE 12/22/03

NOTE: DEBRIS IS TO BE KEPT OUT OF ALL STORMWATER MANAGEMENT FACILITIES DURING AND AFTER CONSTRUCTION.

REVISIONS

REV#	DATE	DESCRIPTION

OWNER/DEVELOPER

KEVIN BELL
c/o WIN KELLY CHEVROLET/GEO
12421 AUTO DRIVE
CLARKSVILLE, MARYLAND 21029
(410) 988-9522

30' 0 30' 60' 90'

FREDERICK WARD ASSOCIATES, INC.
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410-720-6900
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REGIONAL OFFICES:
BEL AIR, MARYLAND AND WARRENTON, VIRGINIA
www.frederickward.com

SITE DEVELOPMENT PLAN
STORMWATER MANAGEMENT NOTES AND DETAILS
WATER & SEWER PROFILES AND DETAILS
WIN KELLY MITSUBISHI

TAX MAP #34 BLOCK #6 PARCEL K-2
5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

STATE OF MARYLAND ROBERT HARRIS VOGEL II 21193 REGISTERED PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE No.18193

DATE	SEPT 2003
SCALE	1"=30'
DESIGN BY	MMR
CHECKED BY	RHV
DRAWN BY	DZ
DRAWING NO.	SHEET 5 OF 7
FWA JOB NUMBER	2024096.00

SDP-03-93

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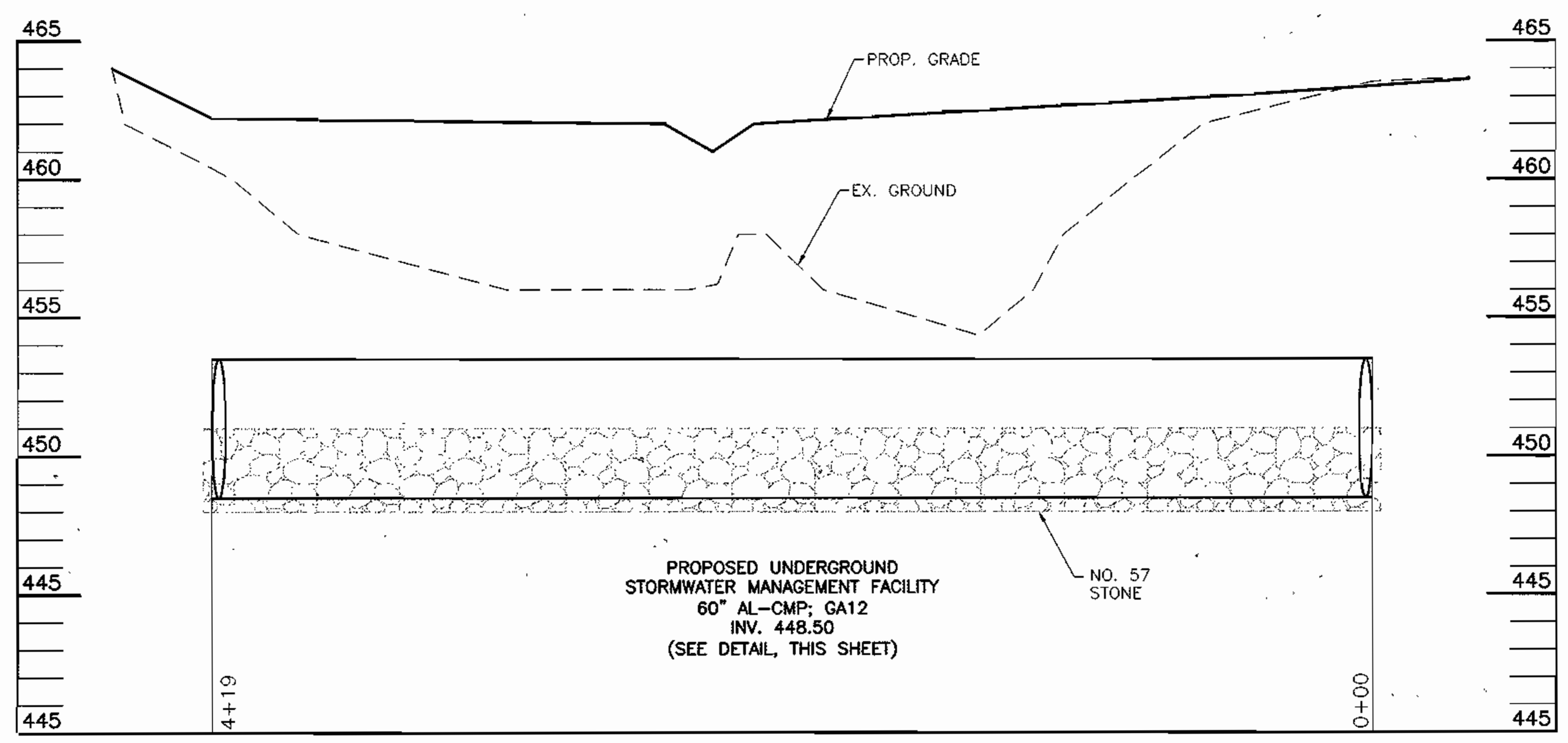
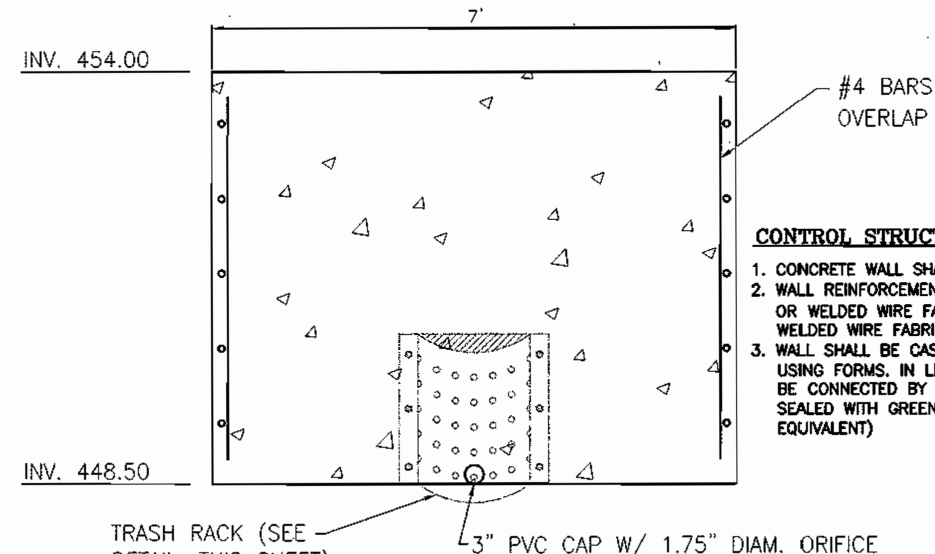


UNDERGROUND STORMWATER MANAGEMENT FACILITY PROFILE

SCALE: HORIZONTAL 1" = 50'
VERTICAL 1" = 5'



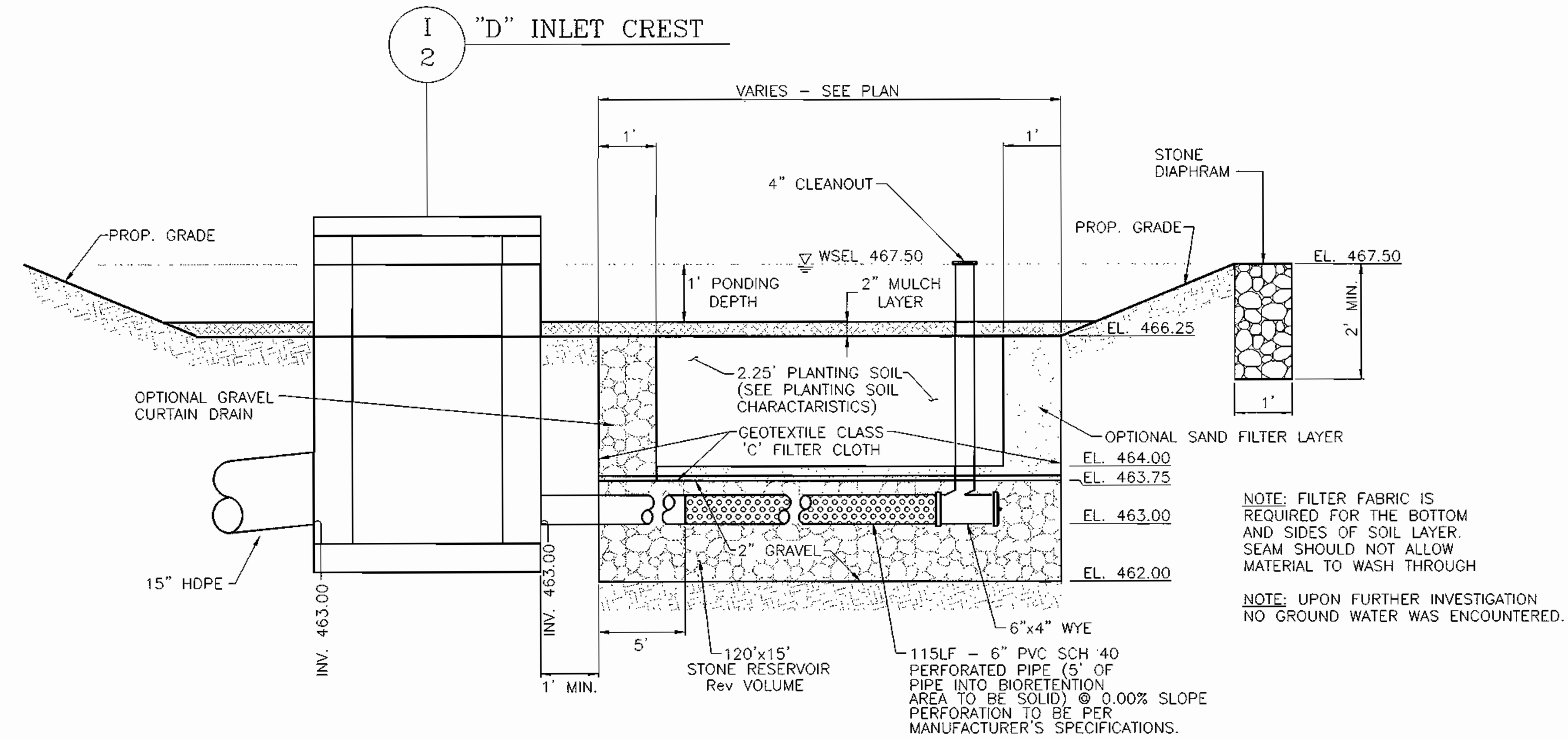
CONTROL STRUCTURE NO. 1

STR 1 CONCRETE WALL DETAIL

SCALE: 1/2" = 1'

CONTROL STRUCTURE CONCRETE WALL NOTES

1. CONCRETE WALL SHALL BE MIX NO. 6 (4500 p.s.i.)
2. WALL REINFORCEMENT SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MIN. AREA OF 0.21 in./ft WELDED WIRE FABRIC.
3. WALL SHALL BE CAST-IN-PLACE, POURED MONOLITHIC USING FORMS. IN LIEU OF MONOLITHIC POUR, WALL SHALL BE CONNECTED BY OVERLAPPING BARS ONE WAY 24", AND SEALED WITH GREEN STREAK WATERSTOP (OR APPROVED EQUIVALENT)

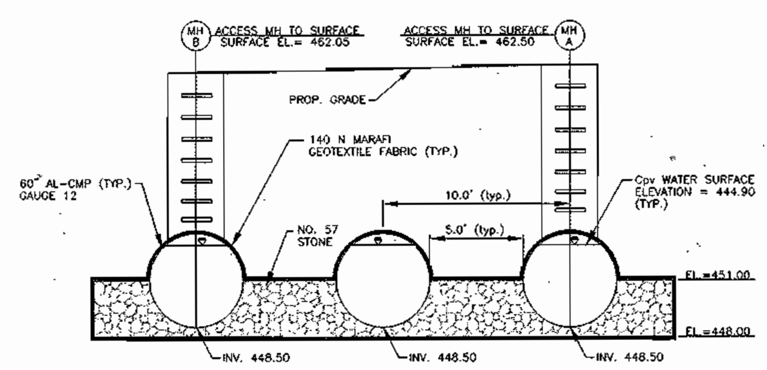


NOTE: FILTER FABRIC IS REQUIRED FOR THE BOTTOM AND SIDES OF SOIL LAYER. SEAM SHOULD NOT ALLOW MATERIAL TO WASH THROUGH

NOTE: UPON FURTHER INVESTIGATION NO GROUND WATER WAS ENCOUNTERED.

BIORETENTION AREA DETAIL

SCALE: 1/2" = 1'



UNDERGROUND DETENTION SYSTEM CROSS SECTION #1 (ACCESS MH-B TO MH-A)

SCALE: 1/8" = 1'

OPERATION AND MAINTAINANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED UNDERGROUND FACILITIES

A. THE UNDERGROUND STORMWATER 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.
B. THE UNDERGROUND STORMWATER MANAGEMENT FACILITY SHALL BE INSPECTED YEARLY AT A MINIMUM AND AFTER ESPECIALLY SEVERE STORM EVENTS.
C. WHEN SEDIMENT ACCUMULATION OF MORE THAN 2" IS OBSERVED OR ANY DEBRIS THAT MIGHT OBSTRUCT THE OUTFALL IS OBSERVED, THE FACILITY SHALL BE CLEANED.
D. THE FACILITY SHALL BE CLEANED IMMEDIATELY AFTER PETROLEUM SPILLS. THE OWNER SHALL CONTACT THE APPROPRIATE REGULATORY AGENCIES NOTIFYING THEM OF THE SPILL AND CLEANUP OPERATION.
E. THE SEDIMENT AND DEBRIS SHALL BE REMOVED FROM THE UNDERGROUND STORMWATER MANAGEMENT FACILITY BY VACUUM TRUCK OR OTHER MANUAL MEANS. THE OWNER SHALL FOLLOW PROPER CLEANING AND DISPOSAL OF THE REMOVED MATERIAL AND LIQUID.
F. 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.

MATERIALS SPECIFICATIONS FOR BIO-RETENTION

MATERIAL	SPECIFICATION	SIZE	NOTES
PLANTINGS	SPECIFICATION	N/A	PLANTINGS ARE SITE-SPECIFIC
PLANTING SOIL (2.5' TO 4' DEEP)	SAND 35-60% SILT 30-55% CLAY 10-25%	N/A	USDA SOIL TYPES LOAMY SAND, SANDY LOAM OR LOAM
MULCH	SHREDDED HARDWOOD		AGED 6 MONTHS, MINIMUM
PEA GRAVEL DIAPHRAGM AND CURTAIN DRAIN	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 RESISTACE (ASTM-D-4833)	N/A	FOR USE AS NECESSARY BENEATH UNDERDRAINS ONLY
UNDERDRAIN GRAVEL	AASHTO M-43	0.375" TO 0.75"	
UNDERDRAIN PIPING	F 758, TYPE PS 28 OOR AASHTO M-278	4" TO 6" RIGID SCHEDULE 40 PVC OR SDR35	3/8" PERF. @ 6" O.C., 4 HOLES PER ROW: MIN. OF 3" OF GRAVEL OVER PIPES; NOT NECESSARY UNDERNEATH PIPES
POURED IN PLACE CONCRETE (IF REQUIRED)	MSHA MIX NO. 3; fc=3500 PSI @ 28 DAYS, NORMAL WEIGHT, AIR-ENTRAINED; REINFORCING TO MEET ASTM-615-60	N/A	ON-SITE TESTING OF POURED-IN-PLACE CONCRETE REQUIRED: 28 DAY STRENGTH AND SLUMP TEST; ALL CONCRETE DESIGN (CAST-IN-PLACE OR PRE-CAST) NOT USING PREVIOUSLY APPROVED STATE OR LOCAL STANDARDS REQUIRES DESIGN DRAWINGS SEALED AND APPROVED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND - 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' 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

Appendix B.3. Construction Specifications for Sand Filters, Bioretention and Open Channels

Specifications for Bioretention

1. Material Specifications

The allowable materials to be used in bioretention area are detailed in Table B.3.2.

2. 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 bioretention area 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:

pH range 5.2 - 7.0
organic matter 1.5 - % (by weight)
magnesium 35 lb./ac
phosphorus (phosphate - P 20§ 75 lb./ac
potassium (potash - K 20) 85 lb./ac
soluble salts nit to exceed 500 ppm

All bioretention areas shall have a minimum of one test. Each test shall consist of both the standard soil test for pH, phosphorus, and potassium and additional test of organic matter, and soluble salts. A textural analysis shall be performed for each location where the top soil was excavated.

Since different lab calibrate their testing equipment differently, all testing results shall come from the same testing facility.

Should the pH fall out of the acceptable range, it may be modified (higher) with lime or (lower) with iron sulfate plus sulfur.

3. Compaction

It is very important to minimize compaction of both the base of the bioretention area and the required backfill. When possible, use hoes to remove original soil. If bioretention areas are excavated using loader, the contractor should use wide track or marsh track equipment, or light equipment with turf type tire. 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 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 bioretenion facility before backfilling the required 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 bioretention areas can be found in Appendix A, Section A.2.3. of the 2000 Maryland Stormwater Design Manual.

5. Plant Installation

Mulch should be placed to a uniform thickness of 2" to 3". Shredded hardwood much 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.

Root stock 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.

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 plnting 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 of nitrogen per 1000 square feet.

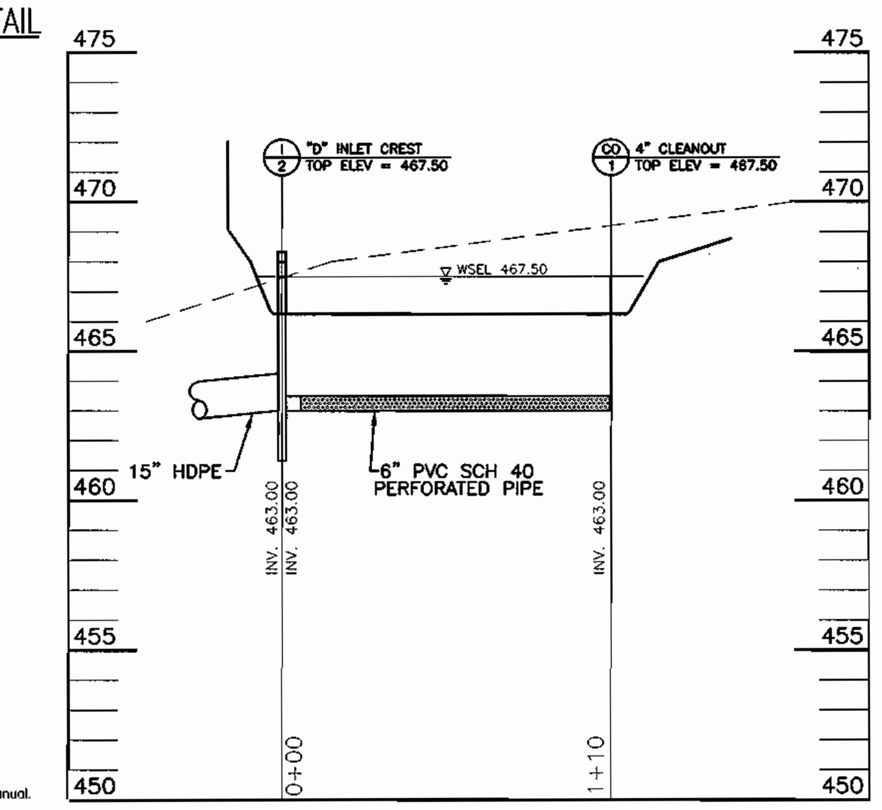
6. Underdrains

Underdrains are to be placed on a 3'-0" wide section filter cloth. Pipe is placed next, followed by the gravel bedding. The ends of underdrain pipes not terminating in an observation well shall be capped.

The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%. Observation well and/or clean-out pipes must be provided (one minimum per every 1000 square feet of surface area).

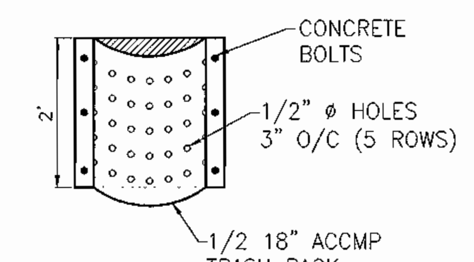
7. Miscellaneous

The bioretention facility may not be constructed until all contributing drainage area has been stabilized.



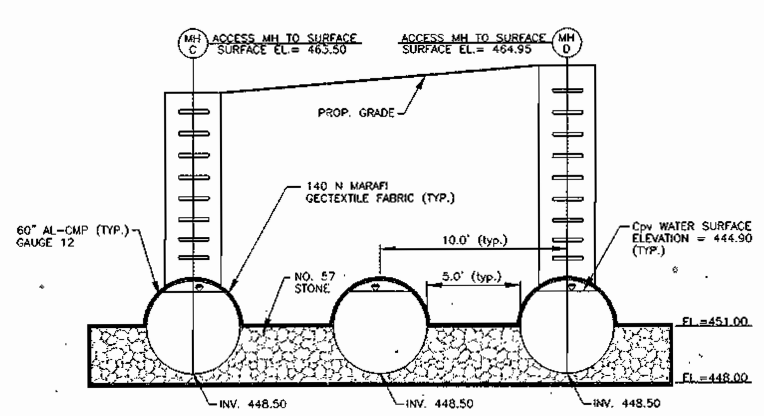
BIORETENTION PROFILE

SCALE: HORIZONTAL 1" = 50'
VERTICAL 1" = 5'



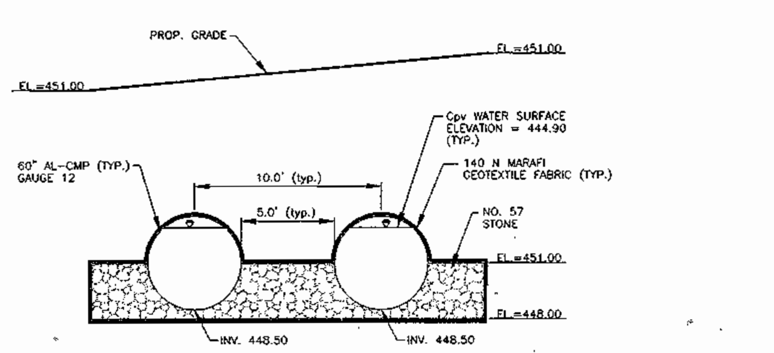
CONTROL STRUCTURE TRASH RACK DETAIL

SCALE: 1/2" = 1'



UNDERGROUND DETENTION SYSTEM CROSS SECTION #2 (ACCESS MH-C TO MH-D)

SCALE: 1/8" = 1'



UNDERGROUND DETENTION SYSTEM CROSS SECTION #3 (SECTION AT BEND)

SCALE: 1/8" = 1'

NOTE: DEBRIS IS TO BE KEPT OUT OF ALL STORMWATER MANAGEMENT FACILITIES DURING AND AFTER CONSTRUCTION.

MARYLAND 378
STORMWATER MANAGEMENT POND CONSTRUCTION SPECIFICATIONS

CONSTRUCTION SPECIFICATIONS

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

Site Preparation

Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped of topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Channel banks and sharp breaks shall be sloped to no steeper than 1:1. All trees shall be cleared and grubbed within 15 feet of the toe of the embankment.

Areas to be covered by the reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush, and stumps shall be cut approximately level with the ground surface. For dry stormwater management ponds, a minimum of a 25-foot radius around the inlet structure shall be cleared.

All cleared and grubbed material shall be disposed of outside and below the limits of the dam and reservoir as directed by the owner or his representative. When specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the embankment and other designated areas.

Earth Fill

Material - The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, stones greater than 6", frozen or other objectionable materials. Fill material for the center of the embankment, and cut off trench shall conform to Unified Soil Classification GC, SC, CH, or CL and must have at least 30% passing the #200 sieve. Consideration may be given to the use of other materials in the embankment if designed by a geotechnical engineer. Such special designs must have construction supervised by a geotechnical engineer. Materials used in the outer shell of the embankment must have the capability to support vegetation of the quality required to prevent erosion of the embankment.

Placement - Areas on which fill is to be placed shall be scorified prior to placement of fill. Fill materials shall be placed in maximum 8 inch thick (before compaction) layers which are to be continuous over the entire length of the fill. The most permeable borrow material shall be placed in the downstream portions of the embankment. The principal spillway must be installed concurrently with fill placement and not excavated into the embankment.

Compaction - The movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each lift shall be traversed by not less than one tread track of heavy equipment or compaction shall be achieved by a minimum of four complete passes of a sheepsfool, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction will be obtained with the equipment used. The fill material shall contain sufficient moisture so that if formed into a ball it will not crumble, yet not be so wet that water can be squeezed out.

When required by the reviewing agency the minimum required density shall not be less than 95% of maximum dry density with a moisture content within +\-2% of the optimum. Each layer of fill shall be compacted as necessary to obtain that density, and is to be certified by the Engineer at the time of construction. All compaction is to be determined by AASHTO Method T-99 (Standard Proctor).

Cut Off Trench - The cutoff trench shall be excavated into impervious material along or parallel to the centerline of the embankment as shown on the plans. The bottom width of the trench shall be governed by the equipment used for excavation, with the minimum width being four feet. The depth shall be at least four feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability.

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

Structure Backfill

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

Structure backfill may be flowable fill meeting the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 313 as modified. The mixture shall have a 100-200 psi; 28 day unconfined compressive strength. The flowable fill shall have a minimum pH of 4.0 and a minimum resistivity of 2,000 ohm-cm. Material shall be placed such that minimum of 6" (measured perpendicular to the outside of the pipe) of flowable fill shall be under (bedding), over and, on the sides of the pipe. It only needs to extend up to the spring line for rigid conduits. Average slump of the fill shall be 7" to assure flowability of the material. Adequate measures shall be taken (sand bags, etc.) to prevent floating the pipe. When using flowable fill, all metal pipe shall be bituminous coated. Any adjoining soil fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material shall completely fill all voids adjacent to the flowable fill zone. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of the structure. Under no circumstances shall equipment be driven over any part of a structure or pipe unless there is a compacted fill of 24" or greater over the structure or pipe. Backfill (flowable fill)zone shall be of the type and quality conforming to that specified for the core of the embankment or other embankment materials.

Pipe Conduits

All pipes shall be circular in cross section.

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

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

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

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

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

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

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

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

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

5. Backfilling shall conform to "Structure Backfill."
6. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Reinforced Concrete Pipe - All of the following criteria shall apply for reinforced concrete pipe:
1. Materials - Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM C-361.
2. Bedding - Reinforced concrete pipe conduits shall be laid in a concrete bedding/cradle for their entire length. This bedding/cradle shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 50% of its outside diameter with a minimum thickness of 6 inches. Where a concrete cradle is not needed for structural reasons, flowable fill may be used as described in the "Structure Backfill" section of this standard. Gravel bedding is not permitted.
3. Laying pipe - Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 4 feet from the riser.
4. Backfilling shall conform to "Structure Backfill."
5. Other details (anti-seep collars, valves, etc.) shall be shown on the drawings.

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

1. Materials - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241. Corrugated High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following: 4" -10" inch pipe shall meet the requirements of AASHTO M252 Type S, and 12" through 24" inch shall meet the requirements of AASHTO M294 Type S.
2. Joints and connections to anti-seep collars shall be completely watertight.
3. Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.
4. Backfilling shall conform to "Structure Backfill."
5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

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

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

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

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

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

Stabilization
All borrow areas shall be graded to provide proper drainage and left I a sightly condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and berms shall be stabilized by seeding, liming, fertilizing and mulching in accordance with the Natural Resources Conservation Service Standards and Specifications for Critical Area Planting (MD-342) or as shown on the accompanying drawings.

Erosion and Sediment Control

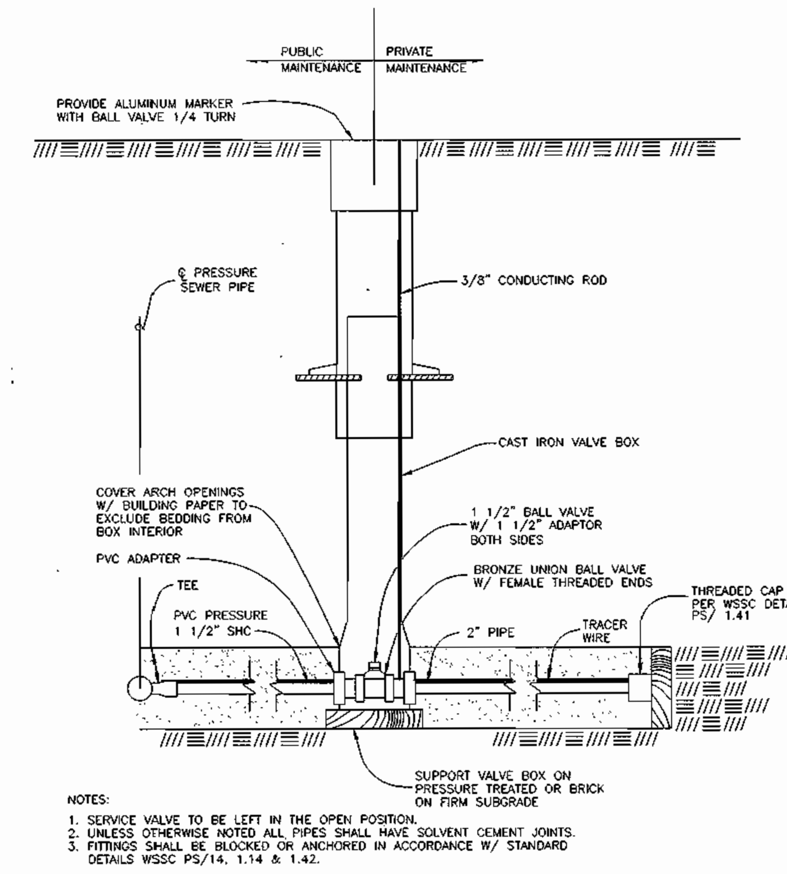
Construction operations will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures.

OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS

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.
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 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 WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.

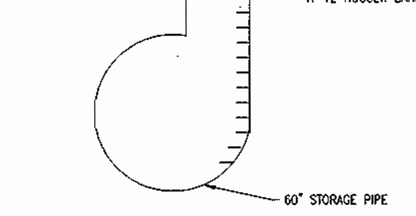
NOTE: CONTRACTOR SHALL ENSURE THAT THE S.W.M. FACILITY IS WATERTIGHT.

1. ALL PIPE CONNECTIONS AT STRUCTURES SHALL BE CEMENTED TO ENSURE WATERTIGHT CONNECTION.
2. ALL ACCMP PIPE JOINTS SHALL USE 12" WIDE HUGGER BAND WITH "O" RING GASKETS.
3. TEES AND ELBOWS TO BE FACTORY FABRICATED WELDS, ONE PIECE.
4. TRENCH BEDDING TO BE IN ACCORDANCE WITH RECOMMMENDATIONS FROM THE GEOTECHNICAL ENGINEER IN THE FIELD.
5. PROVIDE WATERTIGHT JOINTS AT ALL PIPE CONNECTIONS. (FOR REINFORCED CONCRETE PIPE, ASTM C-361, RUBBER GASKET PIPE).



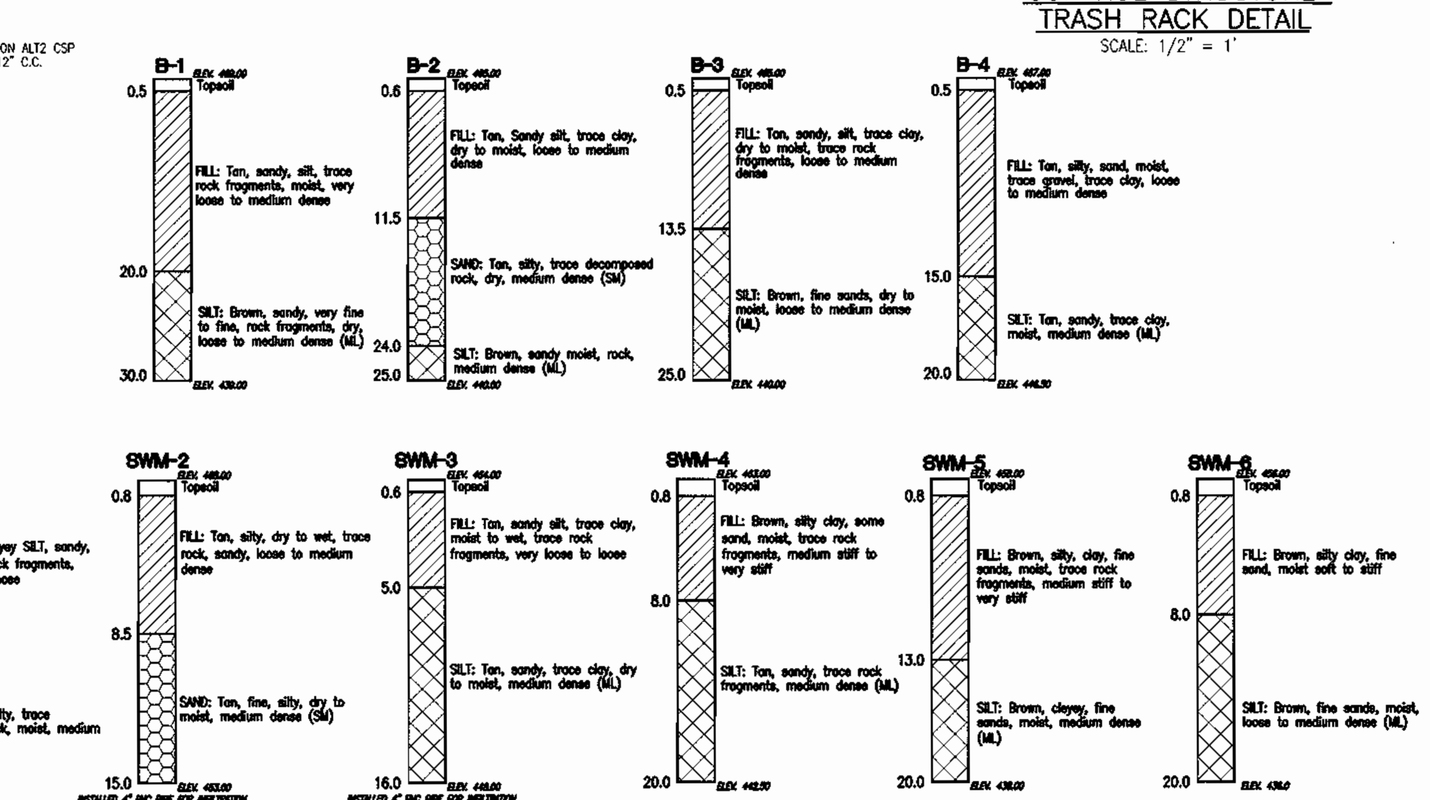
BALL VALVE CONNECTION DETAIL

SCALE: N.T.S.



TYPICAL ACCESS MANHOLE DETAIL FOR FOR UNDERGROUND SWM FACILITY

(NOT TO SCALE)



SOIL BORING DETAIL

(NOT TO SCALE)

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 12/12/03
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 12/17/03
DIRECTOR	DATE 12/22/03

REVISIONS

REV#	DATE	DESCRIPTION

OWNER/DEVELOPER

KEVIN BELL
c/o WIN KELLY CHEVROLET/GEO
12421 AUTO DRIVE
CLARKSVILLE, MARYLAND 21029
(410) 988-9522

FWA
FREDERICK WARD ASSOCIATES, INC.
ARCHITECTS | ENGINEERS | PLANNERS | SURVEYORS

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410-720-6900
410-720-6226 fax

REGIONAL OFFICES:
BEL AIR, MARYLAND AND WARRENTON, VIRGINIA

www.frederickward.com

SITE DEVELOPMENT PLAN
STORMWATER MANAGEMENT
NOTES AND DETAILS
WIN KELLY MITSUBISHI

TAX MAP #34 BLOCK #6
5TH ELECTION DISTRICT

PARCEL K-2
HOWARD COUNTY, MARYLAND

STATE OF MARYLAND ROBERT HARRIS VOGEL No.16193 REGISTERED PROFESSIONAL ENGINEER

ROBERT H. VOGEL, PE No.16193

DATE	SEPT 2003
SCALE	AS SHOWN
DESIGN BY	MMR
CHECKED BY	RHV
DRAWN BY	DZ

DRAWING NO.

SHEET 6 OF 7

FWA JOB NUMBER 2024096.00

SDP-03-93

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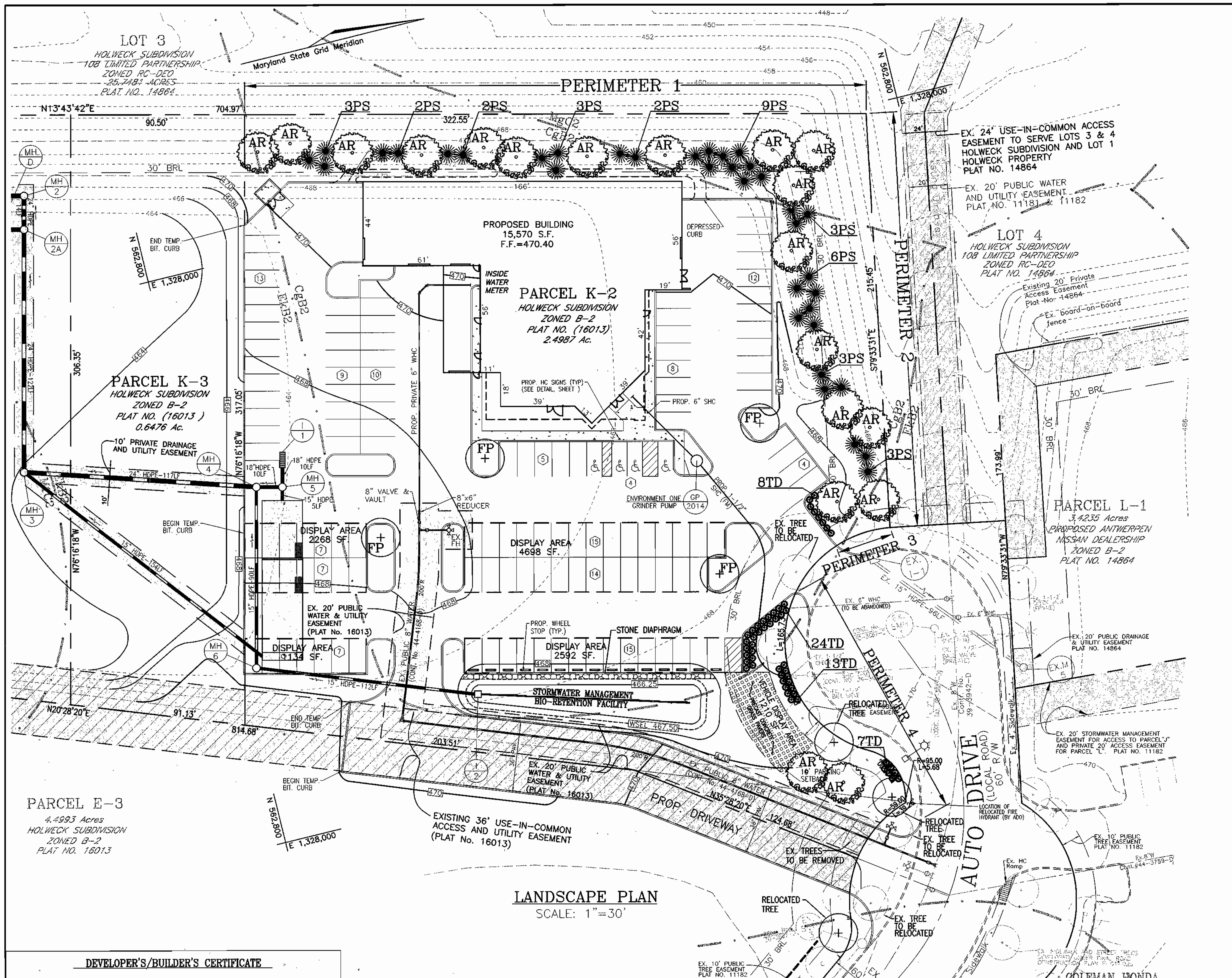
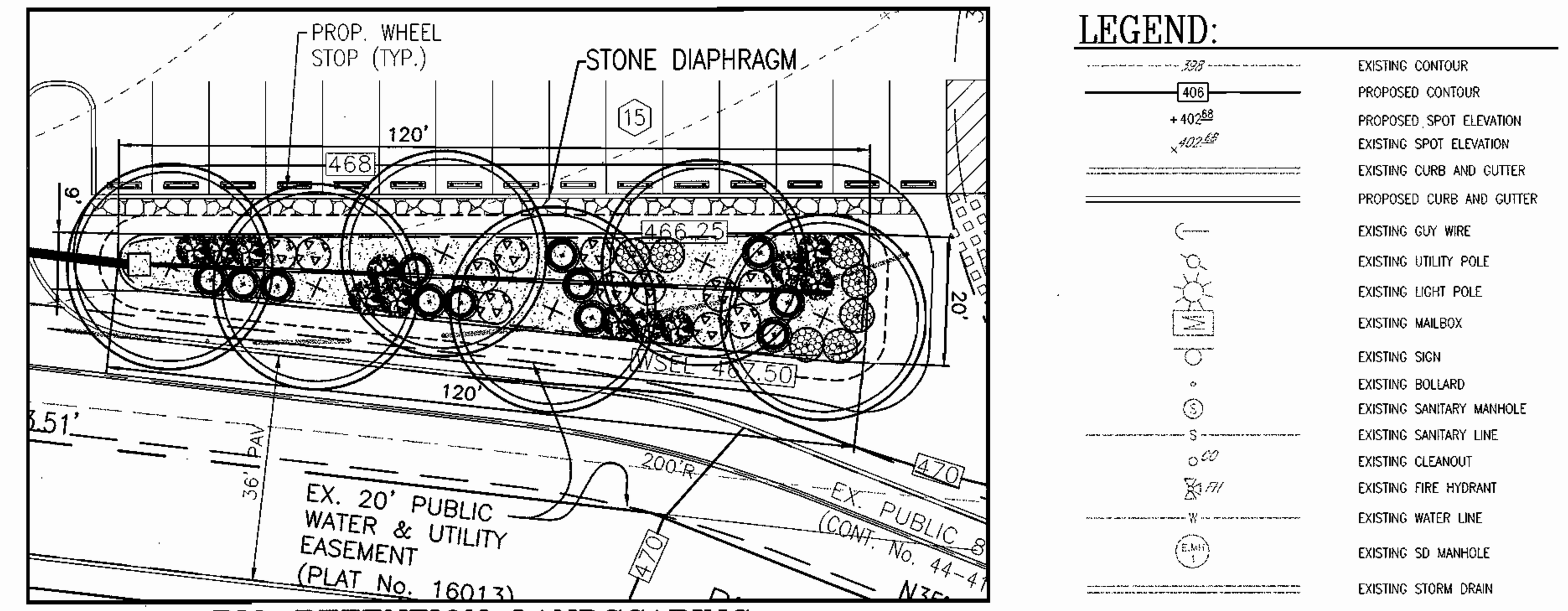


LANDSCAPE PLAN

SCALE: 1"=30'



BIO RETENTION LANDSCAPING

SCALE: 1"=20'

LEGEND:

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING GUY WIRE
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING BOLLARD
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING SD MANHOLE
- EXISTING STORM DRAIN
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- SOILS BOUNDARY
- PROPOSED SIDEWALK
- PROPOSED STORM DRAIN INLET
- PROPOSED LIGHT POLE
- PROPOSED SHADE TREE
- PROPOSED EVERGREEN TREE
- PROPOSED SHRUB

SCHEDULE D : STORMWATER MANAGEMENT AREA LANDSCAPING

LINEAR FEET OF PERIMETER	269 LF
CREDIT FOR EXISTING VEGETATION (NO, YES AND LINEAR FEET)	NO
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	YES, 100%*
NUMBER OF TREES REQUIRED SHADE TREES EVERGREEN TREES	(C BUFFER) 6 SHADE TREES 7 EVERGREEN TREES
NUMBER OF TREES PROVIDED SHADE TREES EVERGREEN TREES	SEE BIORETENTION PLANT LIST

*SURETY FOR BIORETENTION PROVIDED IN THE DED COST ESTIMATE

BIORETENTION PLANTING REQUIREMENTS

NBR	AREA	STEMS REQUIRED	STEMS PROVIDED
1	1924 SF	45	49

BIORETENTION AREAS ARE LANDSCAPED BASED ON A MINIMUM DENSITY OF 1000 STEMS PER PLANTED ACRE (.0229 STEMS PER SQUARE FOOT).

BIORETENTION PLANTING SCHEDULE

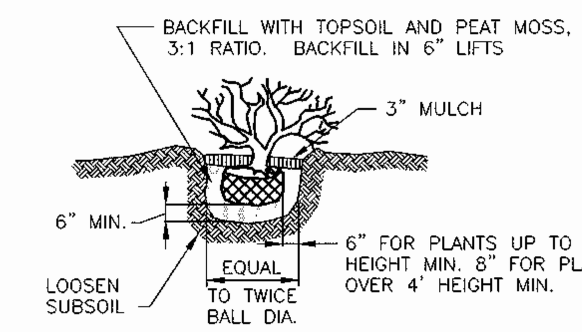
KEY	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
	6	CLADRASTIS LUTEA 'SWEETSHADE' SWEETSHADE YELLOWWOOD	1 1/2"-2" CAL	B & B
	7	ILEX GLABRA COMPACTA DWARF INKBERRY	3 GALLON	CONT
	12	VIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY	5 GALLON	CONT
	12	KALMIA LATIFOLIA MOUNTAIN LAUREL	5 GALLON	CONT
	12	RHODODENDRON HY. 'GLACIER' OR 'WHITE ROSEBUD' GLACIER OR WHITE ROSEBUD HYBRID AZALEA	3 GALLON	CONT
	1270	LIRIOPE MUSCARI 'MAJESTIC' MAJESTIC LILY TURF	2" POT	1' O.C.

LANDSCAPE SCHEDULE NOTE:

1. ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AAN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH LCAMW PLANTING SPECIFICATIONS.
2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
3. FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
4. CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.
5. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING SHALL BE POSTED WITH THE DEVELOPER'S AGREEMENT, IN THE AMOUNT OF $12,360.00 FOR 23 SHADE TREES, 28 EVERGREEN TREES AND 42 SHRUBS.

GENERAL NOTES:

1. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. THE REQUIRED PARKING AND PERIMETER LANDSCAPING WILL BE BONDED PER THIS SUBMISSION.
2. THE FUTURE SITE DEVELOPMENT PLANS FOR PARCELS K-3 AND K-4 WILL ADDRESS THE LANDSCAPE REQUIREMENTS FOR EACH PARCEL.

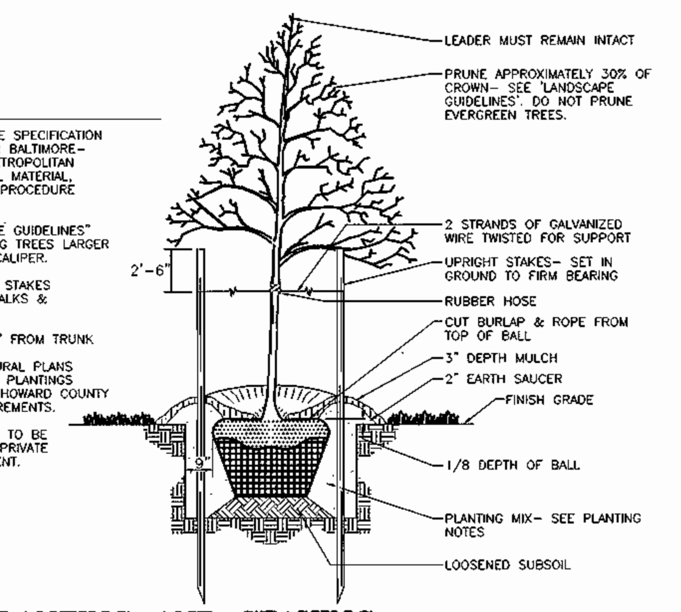


SHRUB PLANTING DETAIL

NOT TO SCALE

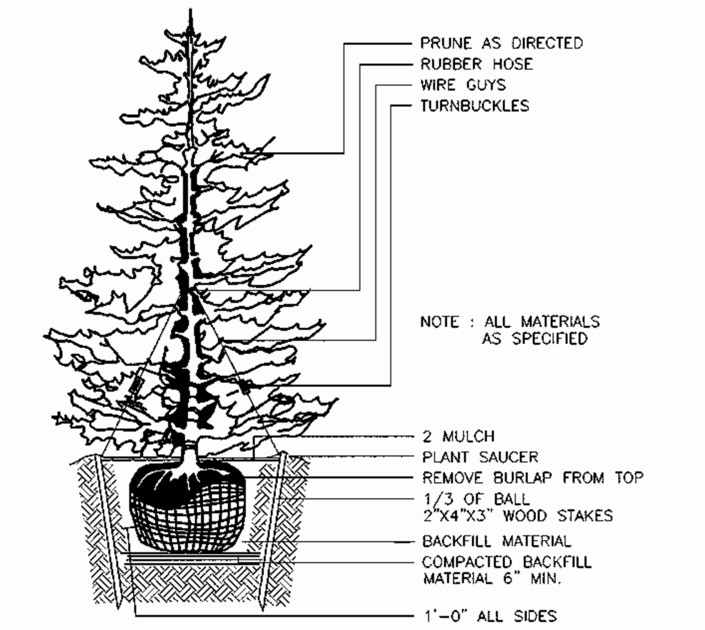
NOTES

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



TREE PLANTING AND STAKING

DECIDUOUS TREES UP TO 2-1/2" CALIPER — NOT TO SCALE



TYPICAL EVERGREEN TREE PLANTING DETAIL

NOT TO SCALE

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 (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

Kevin M. Bell — 11/22/03
SIGNATURE OF DEVELOPER — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[signature] — 12/12/03
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

[signature] — 12/17/03
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

[signature] — 12/22/03
DIRECTOR — DATE

SCHEDULE A PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT TO ROADWAYS		ADJACENT TO PERIMETER PROPERTIES	
Perimeter/Frontage Designation Landscape Type	3 E	4 E	1 C	2 C
Linear Feet of Roadway Frontage/Perimeter	30	135	323	215
Credit for Existing Vegetation (Yes, No, Linear Feet Describe below if needed)	No	No	No	No
Credit for Wall, Fence or Berm (Yes, No, Linear Feet Describe below if needed)	No	No	No	No
Number of Plants Required Shade Trees Evergreen Trees Shrubs	 1:40 1 – 1:4 8	 1:40 3* – 1:4 34	 1:40 9 1:20 17 –	 1:40 6 1:20 11 –
Number of Plants Provided Shade Trees Evergreen Trees Other Trees (2:1 Substitution) Shrubs (10:1 Substitution) Describe Plant Substitution Credits Below if needed)	 1 – – 8	 2 – – 44*	 10 21 – –	 6 15 – –

*10 shrubs subsituted for 1 shade tree in perimeter 4.

LANDSCAPE SCHEDULE

KEY	QUAN.	BOTANICAL NAME	SIZE	REM
AR	19	ACER RUERUM 'OCTOBER GLORY' OCTOBER GLORY RED MAPLE	2 1/2" – 3" CAL.	B & B
FP	4	FRAXINUS P. 'MARSHALLS SEEDLESS'	2 1/2" – 3" CAL.	B & B
PS	36	PINUS STROBUS PINE WHITE	6' – 8' HT.	B & B
TD	44	TAXUS X MEDIA 'DENSIFORMIS' DENSIFORMIS YEW	36" HT.	B & B OR CONT.

SCHEDULE B PARKING LOT INTERNAL LANDSCAPING

Number of parking spaces	64
Number of trees and islands required	4
Number of trees and islands provided Shade Trees Other Trees (2:1 Substitution)	 4 –

REVISIONS		
REV#	DATE	DESCRIPTION

OWNER/DEVELOPER

KEVIN BELL
c/o WIN KELLY CHEVROLET/GEO
12421 AUTO DRIVE
CLARKSVILLE, MARYLAND 21029
(410) 988-9522

30' 0 30' 60' 90'

FREDERICK WARD ASSOCIATES, INC.
ARCHITECTS | ENGINEERS | PLANNERS | SURVEYORS

7125 RIVERWOOD DRIVE
COLUMBIA, MARYLAND 21046-2354
410-720-6900
410-720-6226 fax
REGIONAL OFFICES:
BEL AIR, MARYLAND AND WARRENTON, VIRGINIA
www.frederickward.com

SITE DEVELOPMENT PLAN

LANDSCAPE PLAN

WIN KELLY MITSUBISHI

TAX MAP #34 BLOCK #6
5TH ELECTION DISTRICT

PARCEL K-2
HOWARD COUNTY, MARYLAND

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 REGISTERED PROFESSIONAL ENGINEER 11/24/03
ROBERT H. VOGEL, PE No.16193

DATE SEPT 2003	DRAWING NO.
SCALE 1"=30'	
DESIGN BY MMR	
CHECKED BY RHV	SHEET 7 OF 7
DRAWN BY DZ	FWA JOB NUMBER 2024096.00

SDP-03-93

A B C D E F G H

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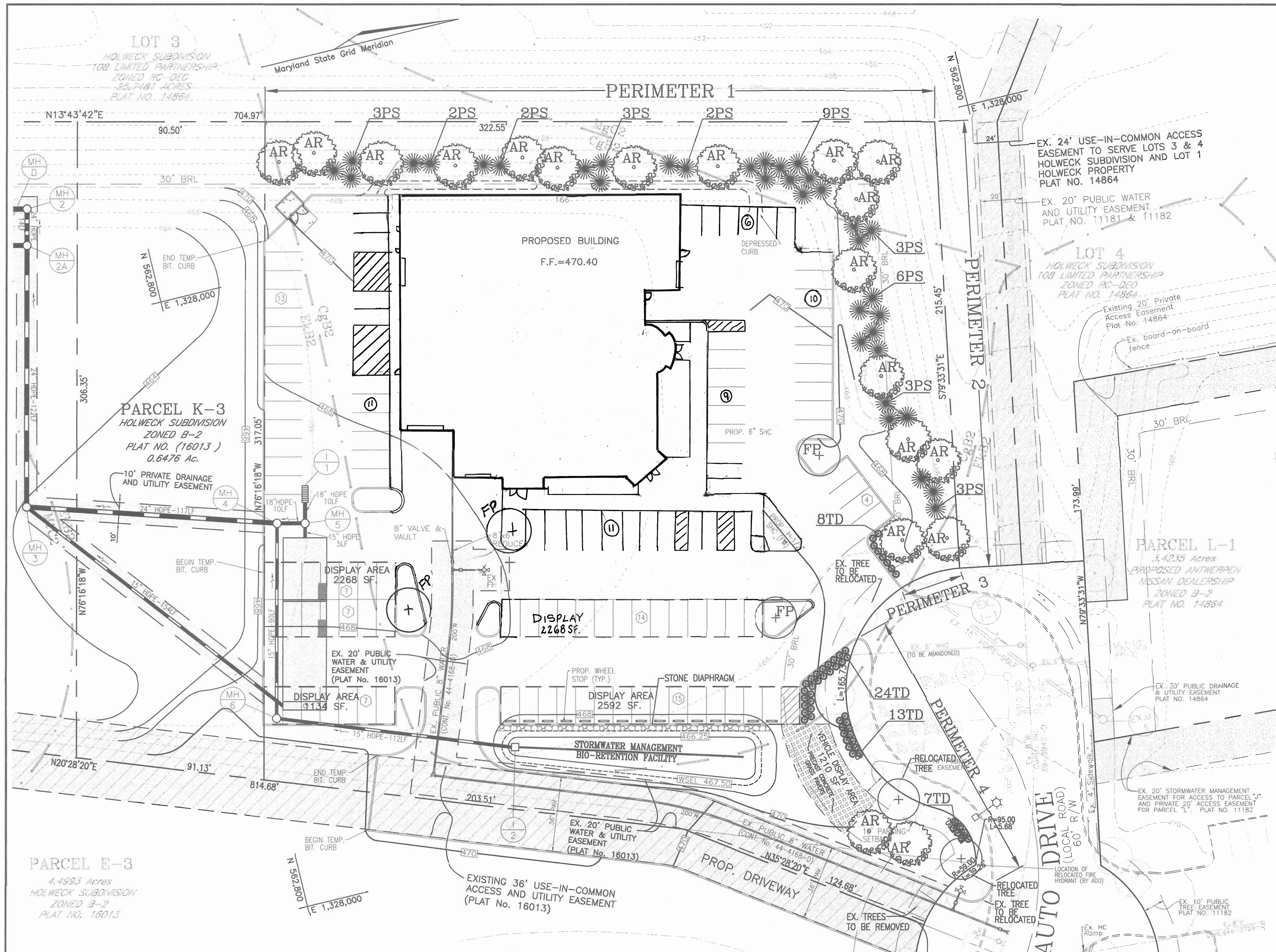
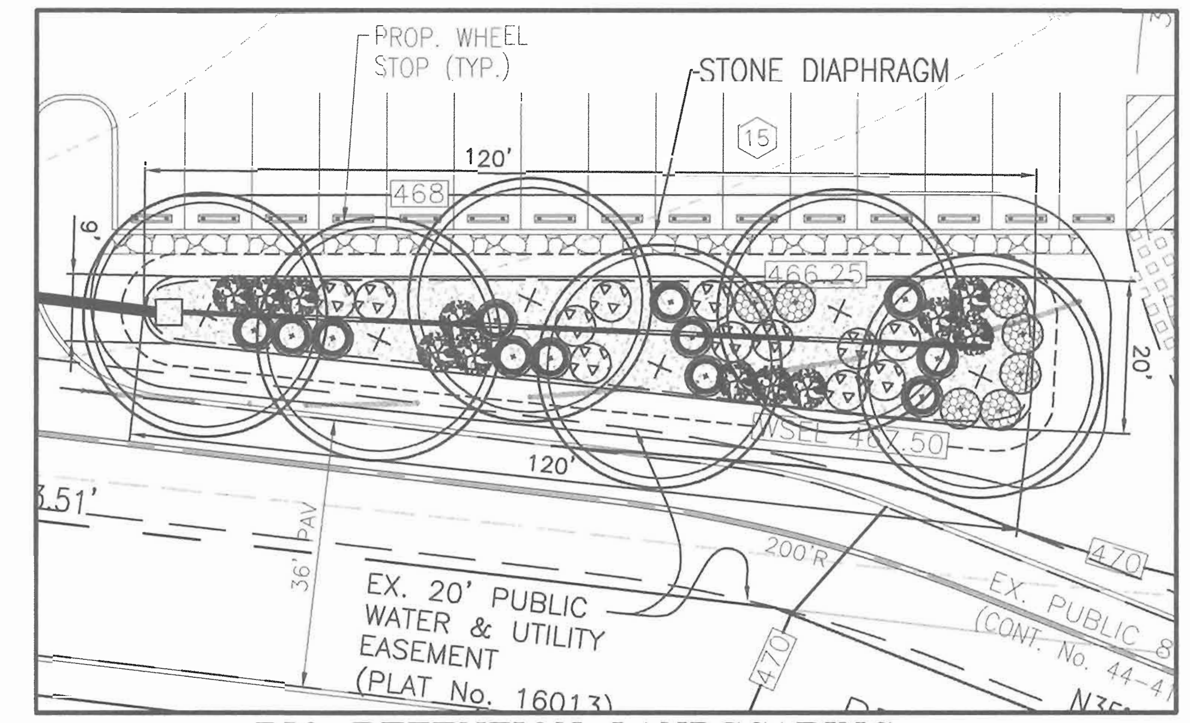


LANDSCAPE PLAN

SCALE: 1"=30'



BIO RETENTION LANDSCAPING

SCALE: 1"=20'

SCHEDULE D : STORMWATER MANAGEMENT AREA LANDSCAPING	
LINEAR FEET OF PERIMETER	269 LF
CREDIT FOR EXISTING VEGETATION (NO, YES AND LINEAR FEET)	NO
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	YES, 100%*
NUMBER OF TREES REQUIRED SHADE TREES EVERGREEN TREES	(C BUFFER) 6 SHADE TREES 7 EVERGREEN TREES
NUMBER OF TREES PROVIDED SHADE TREES EVERGREEN TREES	SEE BIORETENTION PLANT LIST

*SURETY FOR BIORETENTION PROVIDED IN THE DED COST ESTIMATE

BIORETENTION PLANTING REQUIREMENTS

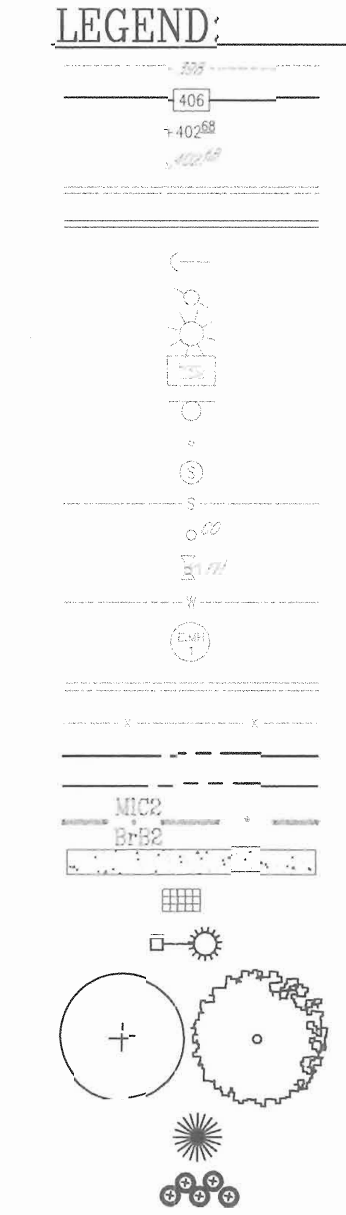
NBR	AREA	STEMS REQUIRED	STEMS PROVIDED
1	1924 SF	45	49

BIORETENTION AREAS ARE LANDSCAPED BASED ON A MINIMUM DENSITY OF 1000 STEMS PER PLANTED ACRE (.0229 STEMS PER SQUARE FOOT).

BIORETENTION PLANTING SCHEDULE

KEY	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
	6	CLADRASTIS LUTEA 'SWEETSHADE' SWEETSHADE YELLOWWOOD	1 1/2"-2" CAL	B & B
	7	ILEX GLABRA COMPACTA DWARF INKBERRY	3 GALLON	CONT
	12	VIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY	5 GALLON	CONT
	12	KALMIA LATIFOLIA MOUNTAIN LAUREL	5 GALLON	CONT
	12	RHODODENDRON HY. 'GLACIER' OR 'WHITE ROSEBUD' GLACIER OR WHITE ROSEBUD HYBRID AZALEA	3 GALLON	CONT
	1270	LIRIOPE MUSCARI 'MAJESTIC' MAJESTIC LILY TURF	2" POT	1' O.C.

LEGEND:



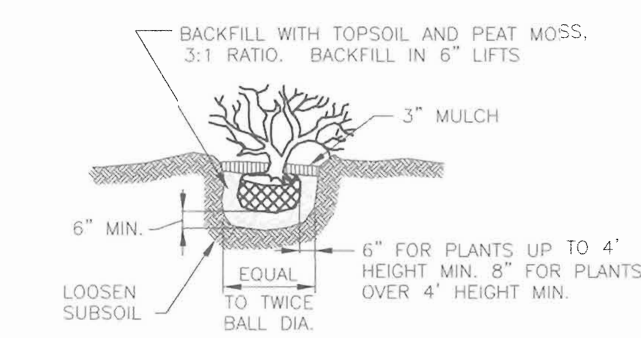
EXISTING CONTOUR
PROPOSED CONTOUR
PROPOSED SPOT ELEVATION
EXISTING SPOT ELEVATION
EXISTING CURB AND GUTTER
PROPOSED CURB AND GUTTER
EXISTING GUY WIRE
EXISTING UTILITY POLE
EXISTING LIGHT POLE
EXISTING MAILBOX
EXISTING SIGN
EXISTING BOLLARD
EXISTING SANITARY MANHOLE
EXISTING SANITARY LINE
EXISTING CLEANOUT
EXISTING FIRE HYDRANT
EXISTING WATER LINE
EXISTING SD MANHOLE
EXISTING STORM DRAIN
EXISTING FENCE
PROPERTY LINE
RIGHT-OF-WAY LINE
SOILS BOUNDARY
PROPOSED SIDEWALK
PROPOSED STORM DRAIN INLET
PROPOSED LIGHT POLE
PROPOSED SHADE TREE
PROPOSED EVERGREEN TREE
PROPOSED SHRUB

LANDSCAPE SCHEDULE NOTE:

1. ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AAN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH LCAMW PLANTING SPECIFICATIONS.
2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
3. FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
4. CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.
5. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING SHALL BE POSTED WITH THE DEVELOPER'S AGREEMENT, IN THE AMOUNT OF $12,360.00 FOR 23 SHADE TREES, 28 EVERGREEN TREES AND 42 SHRUBS.

GENERAL NOTES:

1. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. THE REQUIRED PARKING AND PERIMETER LANDSCAPING WILL BE BONDED PER THIS SUBMISSION.
2. THE FUTURE SITE DEVELOPMENT PLANS FOR PARCELS K-3 AND K-4 WILL ADDRESS THE LANDSCAPE REQUIREMENTS FOR EACH PARCEL.



SHRUB PLANTING DETAIL

NOT TO SCALE

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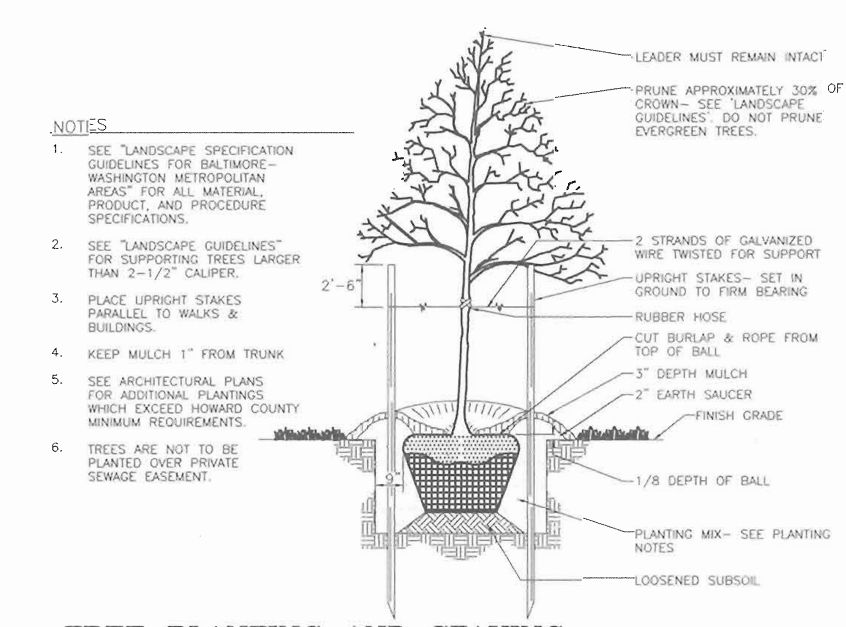
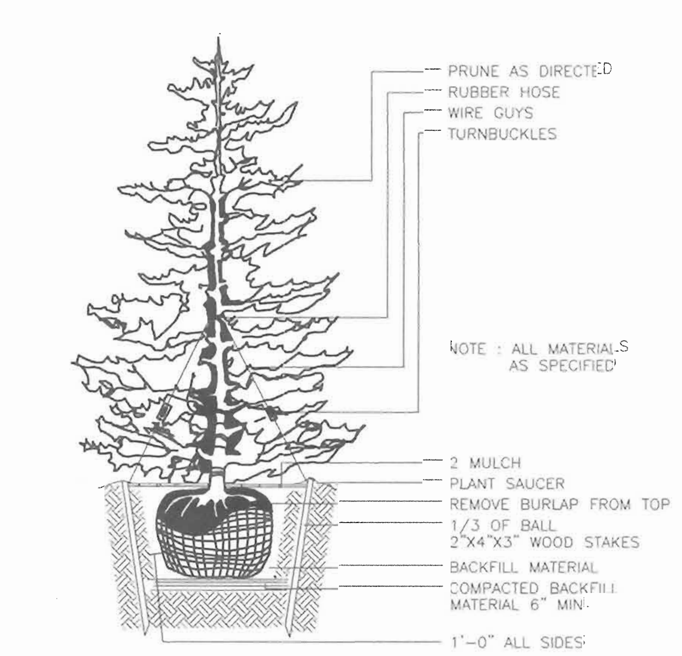


TREE PLANTING AND STAKING

DECIDUOUS TREES UP TO 2-1/2" CALIPER — NOT TO SCALE



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Kevin M. Bell — 11/22/03
SIGNATURE OF DEVELOPER — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[signature] — 12/12/03
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

Cindy Hamilton HB — 12/17/03
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

Marsha L. McLaughlin — 12/22/03
DIRECTOR — DATE

SCHEDULE A
PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT TO ROADWAYS		ADJACENT TO PERIMETER PROPERTIES	
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TD	44	TAXUS X MEDIA 'DENSIFORMIS' DENSIFORMIS YEW	36" HT.	B & B OR CONT.

SCHEDULE B
PARKING LOT INTERNAL LANDSCAPING

Number of parking spaces	67
Number of trees and islands required	4
Number of trees and islands provided	
Shade Trees	4
Other Trees (2:1 Substitution)	–

REVISIONS

REV#	DATE	DESCRIPTION
1	03-28-05	REVISE BUILDING FOOTPRINT, ASSOCIATED GRADING CHANGES, TITLE AND PROJECT NAME CHANGES

OWNER/DEVELOPER
1318 COMPANY LLC
10400 AUTO PARK DRIVE
BETHESDA, MD 20817

30' 0 30' 60' 90'

FREDERICK WARD ASSOCIATES, INC.
ARCHITECTS | ENGINEERS | PLANNERS | SURVEYORS

7125 RIVERWOOD DRIVE
COLUMBIA, MARYLAND 21046-2354
410-720-6900
410-720-6226 fax
REGIONAL OFFICES:
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www.frederickward.com

SITE DEVELOPMENT PLAN
LANDSCAPE PLAN
JAGUAR/LANDROVER OF COLUMBIA WEST

TAX MAP #34 BLOCK #6
5TH ELECTION DISTRICT
PARCEL K-2
HOWARD COUNTY, MARYLAND

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No.16193 — REGISTERED PROFESSIONAL ENGINEER — 11/24/03
ROBERT H. VOGEL, PE No.16193

DATE: SEPT 2003
SCALE: 1"=30'
DESIGN BY: MMR
CHECKED BY: RHV
DRAWN BY: DZ
DRAWING NO.
SHEET 7 OF 7
FWA JOB NUMBER 2024096.00
SDP-03-93

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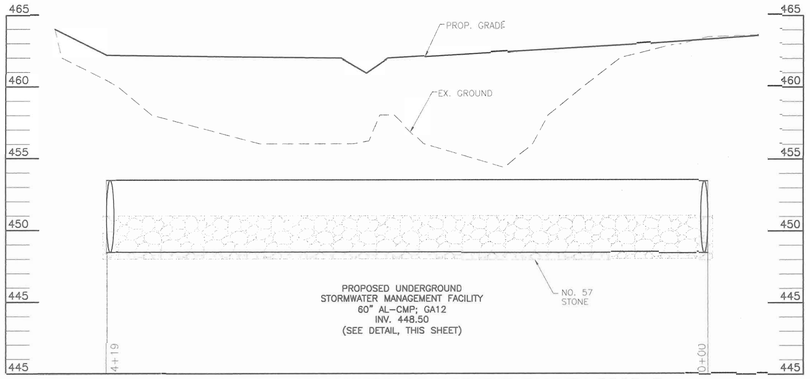
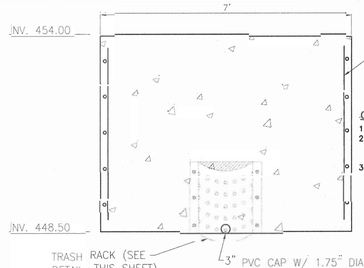


UNDERGROUND STORMWATER MANAGEMENT FACILITY PROFILE

SCALE: HORIZONTAL 1" = 50'
VERTICAL 1" = 5'

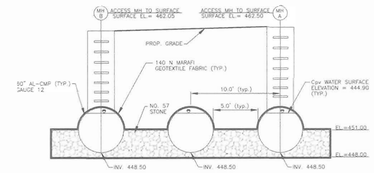


CONTROL STRUCTURE NO. 1

STR 1 CONCRETE WALL DETAIL
SCALE: 1/2" = 1'

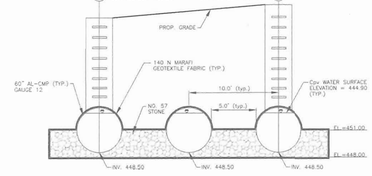
CONTROL STRUCTURE CONCRETE WALL NOTES

1. CONCRETE WALL SHALL BE MIX NO. 6 (4500 p.s.i.)
2. WALL REINFORCEMENT SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABRIC WITH A MIN. AREA OF 0.21 in.²/ft WELDED WIRE FABRIC.
3. WALL SHALL BE CAST-IN-PLACE, POURED MONOLITHIC USING FORMS. IN LIEU OF MONOLITHIC POUR, WALL SHALL BE CONNECTED BY OVERLAPPING BARS ONE WAY 24", AND SEALED WITH GREEN STREAK WATERSTOP (OR APPROVED EQUIVALENT)



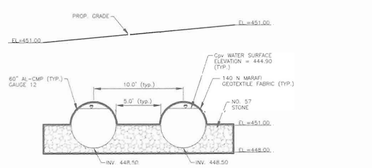
UNDERGROUND DETENTION SYSTEM CROSS SECTION #1 (ACCESS MH-B TO MH-A)

SCALE: 1/8" = 1'



UNDERGROUND DETENTION SYSTEM CROSS SECTION #2 (ACCESS MH-C TO MH-D)

SCALE: 1/8" = 1'



UNDERGROUND DETENTION SYSTEM CROSS SECTION #3 (SECTION AT BEND)

SCALE: 1/8" = 1'

NOTE: DEBRIS IS TO BE KEPT OUT OF ALL STORMWATER MANAGEMENT FACILITIES DURING AND AFTER CONSTRUCTION.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING:

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE: 12/12/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE: 12/17/03

DIRECTOR — DATE: 12/22/03

OPERATION AND MAINTAINANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED UNDERGROUND FACILITIES

A. THE UNDERGROUND STORMWATER 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.
B. THE UNDERGROUND STORMWATER MANAGEMENT FACILITY SHALL BE INSPECTED YEARLY AT A MINIMUM AND AFTER ESPECIALLY SEVERE STORM EVENTS.
C. WHEN SEDIMENT ACCUMULATION OF MORE THAN 2" IS OBSERVED OR ANY DEBRIS THAT MIGHT OBSTRUCT THE OUTFALL IS OBSERVED, THE FACILITY SHALL BE CLEANED.
D. THE FACILITY SHALL BE CLEANED IMMEDIATELY AFTER PETROLEUM SPILLS. THE OWNER SHALL CONTACT THE APPROPRIATE REGULATORY AGENCIES NOTIFYING THEM OF THE SPILL AND CLEANUP OPERATION.
E. THE SEDIMENT AND DEBRIS SHALL BE REMOVED FROM THE UNDERGROUND STORMWATER MANAGEMENT FACILITY BY VACUUM TRUCK OR OTHER MANUAL MEANS. THE OWNER SHALL FOLLOW PROPER CLEANING AND DISPOSAL OF THE REMOVED MATERIAL AND LIQUID.
F. 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.

MATERIALS SPECIFICATIONS FOR BIO-RETENTION

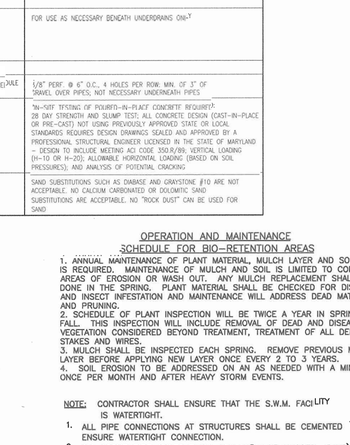
MATERIAL	SPECIFICATION	SIZE	NOTES
PLANTINGS	SPECIFICATION	N/A	PLANTINGS ARE SITE-SPECIFIC
PLANTING SOIL (2.5' TO 4' DEEP)	SAND 35%-60% SILT 30-50% CLAY 10-25%	N/A	USDA SOIL TYPES LOAMY SAND, SANDY LOAM OR LOAM
MULCH	SHREDDED HARDWOOD		AGED 6 MONTHS, MINIMUM
PEA GRAVEL DIAPHRAGM AND CURTAIN DRAIN	PEA 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)	N/A	FOR USE AS NECESSARY BENEATH UNDERDRAINS ONLY
UNDERDRAIN GRAVEL	AASHTO M-43	.375" TO 0.75"	
UNDERDRAIN PIPING	F 758, TYPE PS 28 OR AASHTO M-278	4" TO 6" RIGID SCHEDULE 40 PVC OR SDR35	1/8" PERF. @ 6" O.C., 4 HOLES PER ROW. MIN. OF 3" OF GRAVEL OVER PIPES; NOT NECESSARY UNDERNEATH PIPES
POURED IN PLACE CONCRETE (IF REQUIRED)	ASTM MIX NO. 2, f'c=3000 PSI @ 28 DAYS, NORMAL WEIGHT, NR-ENTRAINED, REINFORCING TO ASTM A615-60	N/A	"IN-SITU TESTING OF POURED-IN-PLACE CONCRETE REQUIRED": 28 DAY STRENGTH AND SLUMP TEST; ALL CONCRETE DESIGN (CAST-IN-PLACE OR PRE-CAST) NOT USING PREVIOUSLY APPROVED STATE OR LOCAL STANDARDS REQUIRES DESIGN DRAWINGS SEALED AND APPROVED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND – 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' DEEP)	AASHTO-M-6 OR ASTM-C-33	.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 AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS

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.
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 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 WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.

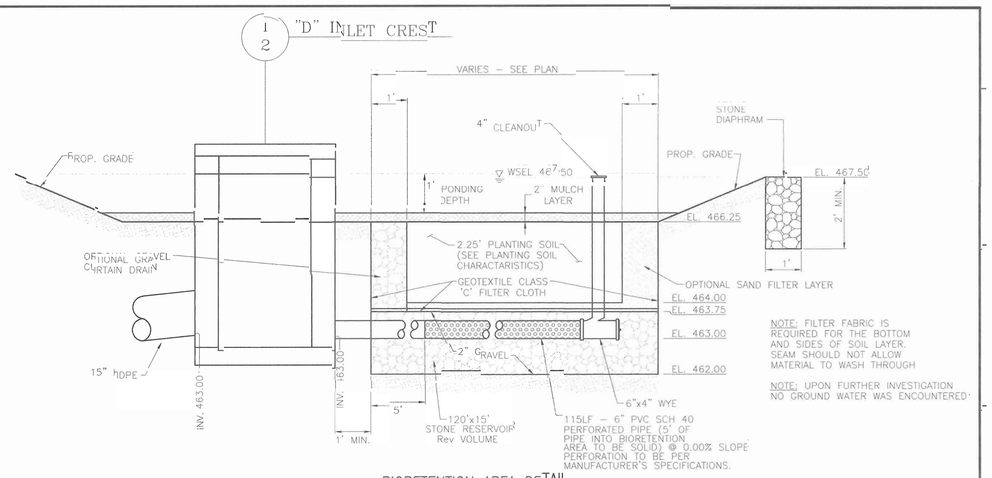
NOTE: CONTRACTOR SHALL ENSURE THAT THE S.W.M. FACILITY IS WATERTIGHT.

1. ALL PIPE CONNECTIONS AT STRUCTURES SHALL BE CEMENTED TO ENSURE WATERTIGHT CONNECTION.
2. ALL ACCMP PIPE JOINTS SHALL USE 12" WIDE HUGGER BAND WITH "O" RING GASKETS.
3. TEES AND ELBOWS TO BE FACTORY FABRICATED WELDS, ONE PIECE.
4. TRENCH BEDDING TO BE IN ACCORDANCE WITH RECOMMENDATIONS FROM THE GEOTECHNICAL ENGINEER IN THE FIELD.
5. PROVIDE WATERTIGHT JOINTS AT ALL PIPE CONNECTIONS. (FOR REINFORCED CONCRETE PIPE, ASTM C-361, RUBBER GASKET PIPE).



BALL VALVE CONNECTION DETAIL

SCALE: N.T.S.



NOTE: FILTER FABRIC IS REQUIRED FOR THE BOTTOM AND SIDES OF SOIL. SEAM SHOULD NOT ALLOW MATERIAL TO WASH THROUGH

NOTE: UPON FURTHER INVESTIGATION NO GROUND WATER WAS ENCOUNTERED.

BIORETENTION AREA DETAIL

SCALE: 1/2" = 1'

Appendix B.3. Construction Specifications for Sand Filters, Bioretention and Open Channels

Specifications for Bioretention

1. Material Specifications

The allowable materials to be used in bioretention area are detailed in Table B.3.2.

2. 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 bioretention area 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:

pH range 5.2 – 7.0
organic matter 1.5 – % (by weight)
magnesium 35 lb./ac
phosphorus (phosphate – P 2O5 75 lb./ac
potassium (potash – K 2O) 85 lb./ac
soluble salts nit to exceed 500 ppm

All bioretention areas shall have a minimum of one test. Each test shall consist of both the standard soil test for pH, phosphorus, and potassium and additional test of organic matter, and soluble salts. A textural analysis shall be performed for each location where the top soil was excavated.

Since different lab calibrate their testing equipment differently, all testing results shall come from the same testing facility.

Should the pH fall out of the acceptable range, it may be modified (higher) with lime or (lower) with iron sulfate plus sulfur.

3. Compaction

It is very important to minimize compaction of both the base of the bioretention area and the required backfill. When possible, use tracked equipment to grade around soil. If bioretention areas are excavated using 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 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 required 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 bioretension areas can be found in Appendix A, Section A.2.3. of the 2000 Maryland Stormwater Design Manual.

5. Plant Installation

Mulch should be placed to a uniform thickness of 2" to 3". Shredded 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.

Root stock 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 finish 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.

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 of nitrogen per 1000 square feet.

6. Underdrains

Underdrains are to be placed on a 3'-0" wide section filter cloth. Pipe is placed next, followed by the gravel bedding. The ends of underdrain pipes not terminating in an observation well shall be capped.

The main collector pipe in these systems shall be constructed at a minimum slope of 0.5%. Observation well and/or clean-out pipes must be provided (one minimum per every 1000 square feet of surface area).

7. Miscellaneous

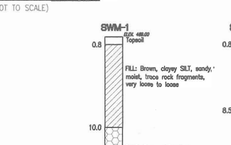
The bioretention facility may not be constructed until all contributing drainage area has been stabilized.

BIORETENTION PROFILE

SCALE: HORIZONTAL 1" = 50'
VERTICAL 1" = 5'

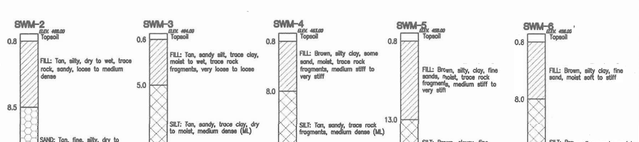
CONTROL STRUCTURE TRASH RACK DETAIL

SCALE: 1/2" = 1'



TYPICAL ACCESS MANHOLE DETAIL FOR UNDERGROUND SWM FACILITY

(NOT TO SCALE)



SOIL BORING DETAIL

(NOT TO SCALE)

MARYLAND 378
STORMWATER MANAGEMENT POND CONSTRUCTION SPECIFICATIONS

CONSTRUCTION SPECIFICATIONS

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

Site Preparation

Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped of topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Channel banks and sharp breaks shall be sloped to no steeper than 1:1. All trees shall be cleared and grubbed within 15 feet of the toe of the embankment.

Areas to be covered by the reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush, and stumps shall be cut approximately level with the ground surface. For dry stormwater management ponds, a minimum of a 25-foot radius around the inlet structure shall be cleared.

All cleared and grubbed material shall be disposed of outside and below the limits of the dam and reservoir as directed by the owner or his representative. When specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the embankment and other designated areas.

Earth Fill

Material — The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, stones greater than 6", frozen or other objectionable materials. Fill material for the center of the embankment, and cut off trench shall conform to Unified Soil Classification GC, SC, CH, or CL and must have at least 30% passing the #200 sieve. Consideration may be given to the use of other materials in the embankment if designed by a geotechnical engineer. Such special designs must have construction supervised by a geotechnical engineer. Materials used in the outer shell of the embankment must have the capability to support vegetation of the quality required to prevent erosion of the embankment.

Placement — Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in maximum 8 inch thicks (before compaction) layers which are to be continuous over the entire length of the fill. The most pervious materials shall be placed in the downstream portions of the embankment. The principal spillway must be installed concurrently with fill placement and not excavated into the embankment.

Compaction — The movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each lift shall be traversed by not less than one track tread track of heavy equipment or compaction shall be achieved by a minimum of four complete passes of a sheepsfoot, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction will be achieved with the equipment used. The fill material shall contain sufficient moisture so that if formed into a ball it will not crumble, yet not be so wet that water can be squeezed out.

When required by the reviewing agency the minimum required density shall not be less than 95% of maximum dry density with a moisture content within +1-2% of the optimum. Each layer of fill shall be compacted as necessary to obtain that density, and is to be certified by the Engineer at the time of construction. All compaction is to be determined by AASHTO Method T-99 (Standard Proctor).

Cut Off Trench — The cutoff trench shall be excavated into impervious material along or parallel to the centerline of the embankment as shown on the plans. The bottom width of the trench shall be governed by the equipment used for excavation, with the minimum width being four feet. The depth shall be at least four feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability.

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

Structure Backfill

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

Structure backfill may be flowable fill meeting the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 313 as modified. The mixture shall have a 100-200 psi; 28 day unconfined compressive strength. The flowable fill shall have a minimum grit of 4.0 and a minimum resistivity of 2,000 ohm-cm. Material shall be placed such that minimum of 6" (measured perpendicular to the outside of the pipe) of flowable fill shall be under (bedding), over, and on the sides of the pipe. It only needs to extend up to the spring line for rigid conduits. Average slump of the fill shall be 7" to assure flowability of the material. Adequate measures shall be taken (sand bags, etc.) to prevent floating the pipe. When using flowable fill, all metal pipe shall be bituminous coated. Any adjoining soil fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material shall completely fill all voids adjacent to the flowable fill zone. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of the structure. Under no circumstances shall equipment be driven over any part of a structure or pipe unless there is a compacted fill of 24" or greater over the structure or pipe. Backfill (flowable fill)zone shall be of the type and quality conforming to that specified for the core of the embankment or other embankment materials.

Pipe Conduits

All pipes shall be circular in cross section.

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

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

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

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

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

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

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

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

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

5. Backfilling shall conform to "Structure Backfill."

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

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

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

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

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

4. Backfilling shall conform to "Structure Backfill."

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

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

1. Materials – PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241. Corrugated High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following: 4" – 10" inch pipe shall meet the requirements of AASHTO M252 Type S, and 12" through 24" inch shall meet the requirements of AASHTO M294 Type S.

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

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

4. Backfilling shall conform to "Structure Backfill."

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

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

Concrete

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

Rock Riprap

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

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

Care of Water during Construction

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

Stabilization

All borrow areas shall be graded to provide proper drainage and left in a sightly condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and berms shall be stabilized by seeding, liming, fertilizing and mulching in accordance with the Natural Resources Conservation Service Standards and Specifications for Critical Area Planting (MD-342) or as shown on the accompanying drawings.

Erosion and Sediment Control

Construction operations will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures.

REVISIONS		
REV#	DATE	DESCRIPTION
1	03-28-05	REVISED BUILDING FOOTPRINT, ASSOCIATED GRADING CHANGES, TITLE AND PROJECT NAME CHANGES

OWNER/DEVELOPER:

1318 COMPANY LLC
10400 AUTO PARK DRIVE
BETHESDA, MD 20817

FREDERICK WARD ASSOCIATES, INC.
ARCHITECTS | ENGINEERS | PLANNERS | SURVEYORS
7125 RIVERWOOD DRIVE
COLUMBIA, MARYLAND 21046-2354
410-720-6900
410-720-6226 fax
REGIONAL OFFICES:
BEL AIR, MARYLAND AND WARRENTON, VIRGINIA
www.frederickward.com

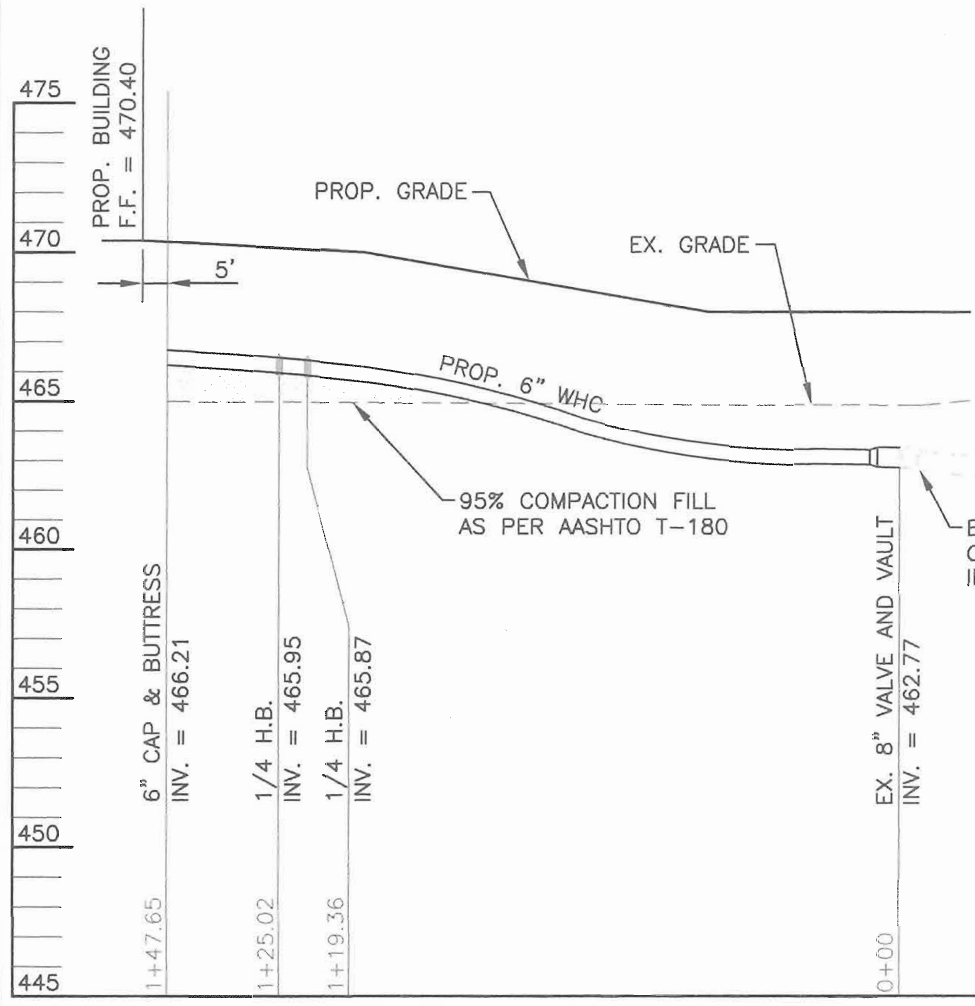
SITE DEVELOPMENT PLAN
STORMWATER MANAGEMENT
NOTES AND DETAILS
JAGUAR/LANDROVER OF COLUMBIA WEST

TAX MAP #34 BLOCK #6
5TH ELECTION DISTRICT

PARCEL K-2
HOWARD COUNTY, MARYLAND

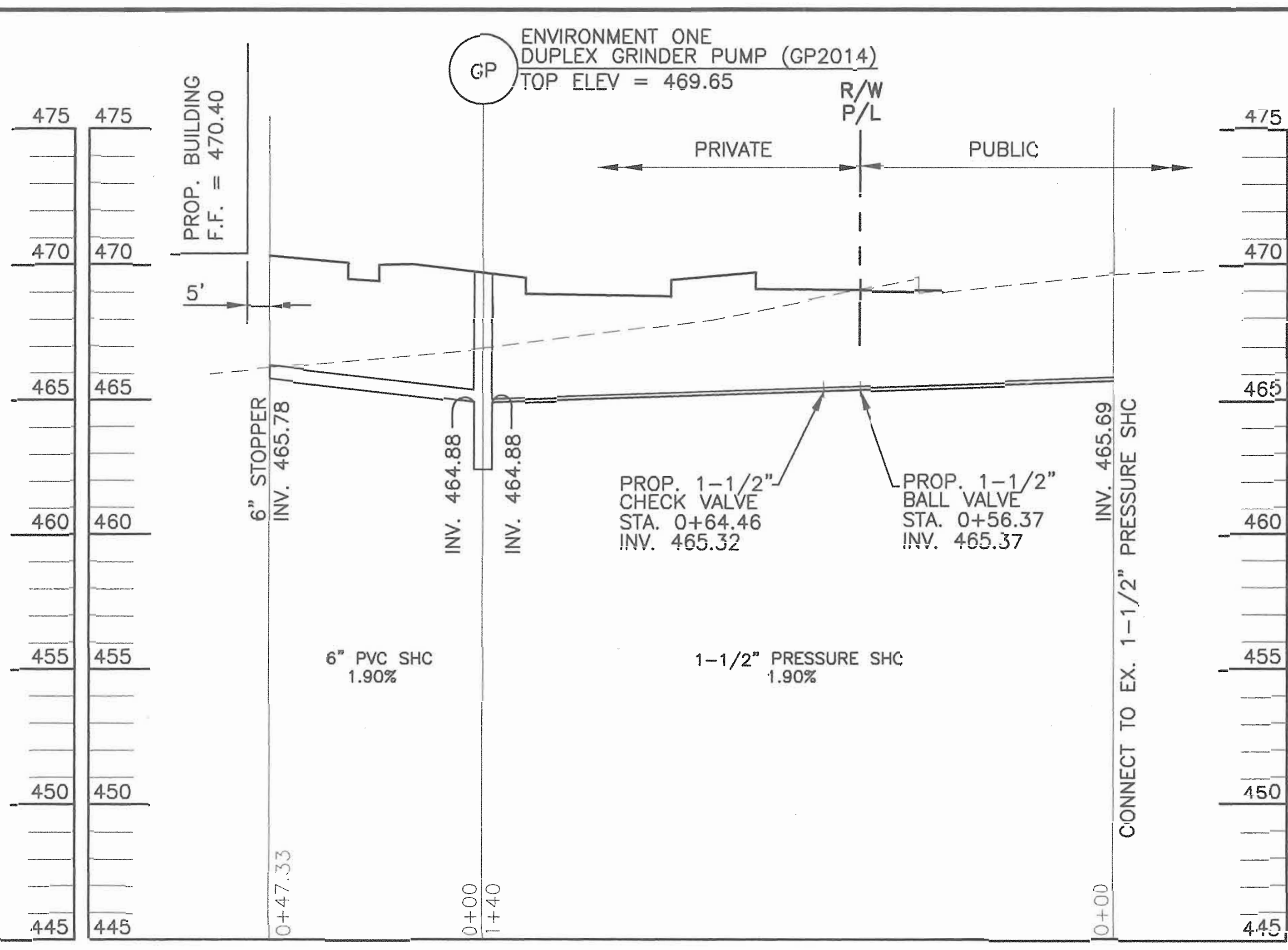
STATE OF MARYLAND
ROBERT HARRIS VOGEL
No. 16193
REGISTERED
PROFESSIONAL ENGINEER
11/6/03
ROBERT H. VOGEL, PE No.16193

DATE	SEPT 2003
SCALE	AS SHOWN
DESIGN BY	MMR
CHECKED BY	RHV
DRAWN BY	DZ



WATER HOUSE CONNECTION PROFILE

SCALE: HORIZONTAL 1" = 30'
VERTICAL 1" = 5'



SEWER HOUSE CONNECTION PROFILE

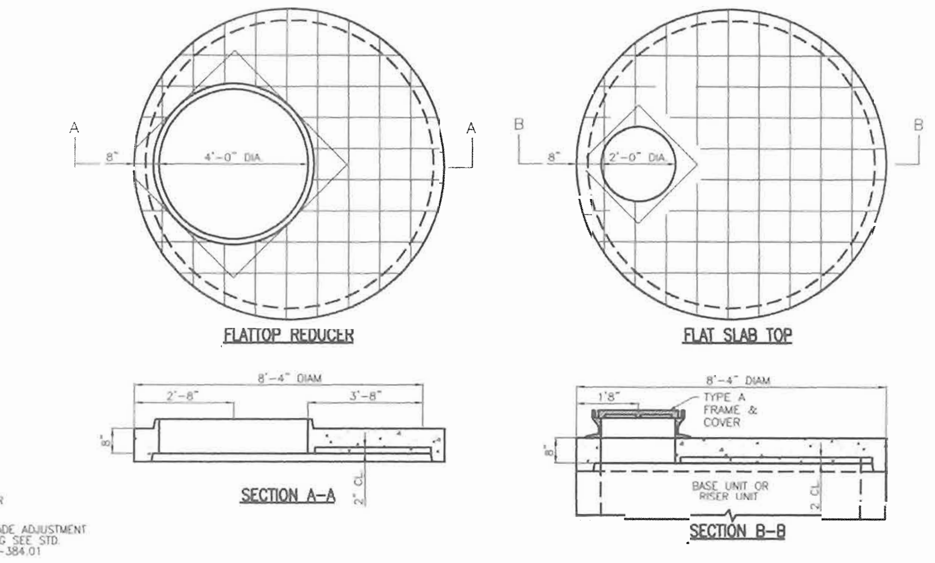
SCALE: HORIZONTAL 1" = 30'
VERTICAL 1" = 5'

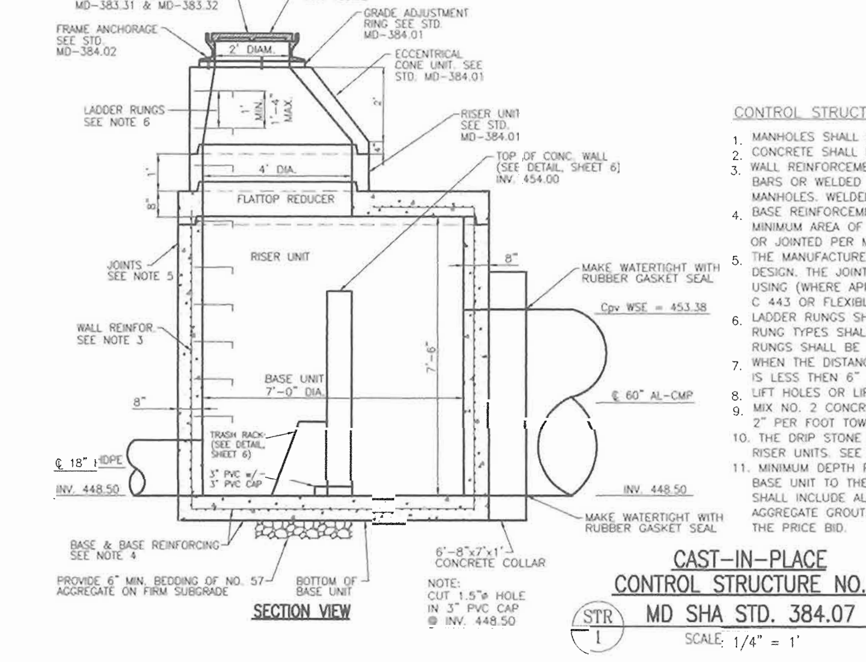
OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED UNDERGROUND STORMWATER FILTRATION SYSTEM (F-2)

1. THE SEDIMENT CHAMBER OUTLET DEVICES SHALL BE CLEANED AND/OR REPAIRED WHEN DRAW-DOWN TIMES WITHIN THE CHAMBER EXCEED 36 HOURS.
2. DEBRIS AND LITTER SHALL BE REMOVED AS NECESSARY TO ENSURE PROPER OPERATION OF THE SYSTEM.
3. SEDIMENT SHALL BE CLEANED OUT OF THE SEDIMENTATION CHAMBER WHEN IT ACCUMULATES TO A DEPTH OF 6 INCHES. VEGETATION WITHIN THE SEDIMENT CHAMBER SHALL BE LIMITED TO A HEIGHT OF 18 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 AND LIQUID MUST BE FOLLOWED BY THE OWNER.
5. A LOG BOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
6. THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO ENSURE 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.

UNDERGROUND SAND FILTER CONSTRUCTION SPECIFICATIONS

1. PROVIDE MANHOLE AND/OR GRATES TO ALL UNDERGROUND AND BELOW GRADE STRUCTURES. MANHOLES SHALL BE IN COMPLIANCE WITH STANDARD SPECIFICATIONS FOR EACH COUNTY, BUT DIAMETERS SHOULD BE 30" MINIMUM (TO COMPLY WITH OSHA CONFINED SPACE REQUIREMENTS). ALUMINUM AND STEEL LOUVERED DOORS ARE ALSO ACCEPTABLE. TEN INCH WIDE (MINIMUM) MANHOLE STEPS (12"O.C.) SHALL BE CAST IN PLACE OR DRILLED AND MORTARED INTO THE WALL BELOW EACH MANHOLE. A 5' MINIMUM HEIGHT CLEARANCE (FROM THE TOP OF THE SAND LAYER TO THE BOTTOM OF THE UPPER/SURFACE SLAB) IS REQUIRED FOR ALL PERMANENT UNDERGROUND STRUCTURES. LIFT RINGS ARE TO BE SUPPLIED TO REMOVE/REPLACE TOP SLABS ON PRE-FABRICATED STRUCTURES. MANHOLE COVERS SHOULD ALLOW FOR PROPER VENTILATION.
2. UNDERGROUND SANDFILTERS SHOULD BE CONSTRUCTED WITH A GATE VALVE LOCATED JUST ABOVE THE TOP OF THE FILTER BED FOR DEWATERING IN THE EVENT THAT CLOGGING OCCURS.
3. UNDERGROUND SAND BEDS SHALL BE PROTECTED FROM TRASH ACCUMULATION BY A WIDE MESH GEOTEXTILE SCREEN TO BE PLACED ON THE SURFACE OF THE SAND BED; SCREEN IS TO BE ROLLED UP, REMOVED, CLEANED AND RE-INSTALLED DURING MAINTENANCE OPERATIONS.

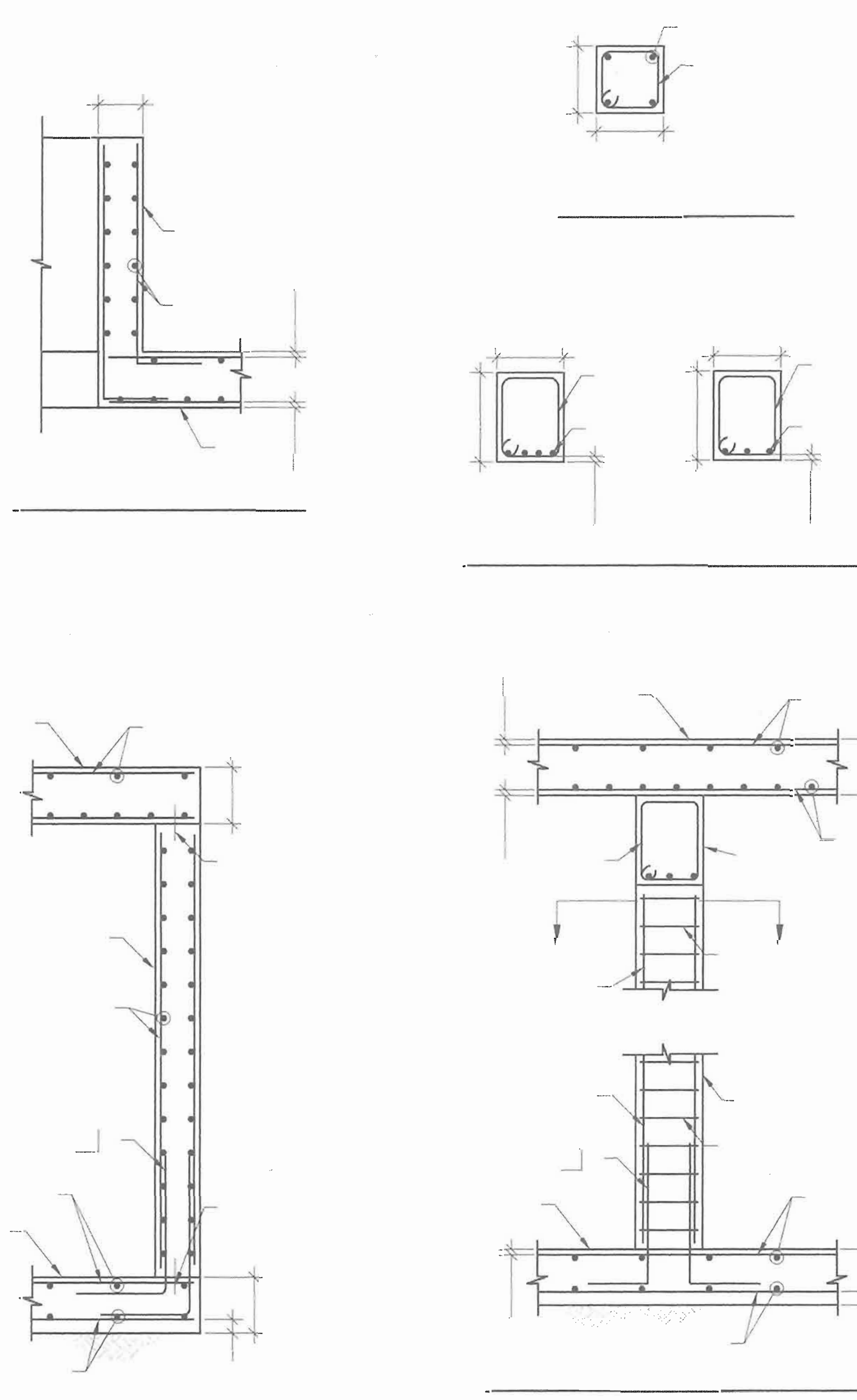




CONTROL STRUCTURE NOTES:

1. MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M 199.
2. CONCRETE SHALL BE MIX NO. 6 (4500 P.S.I.)
3. WALL REINFORCEMENT FOR BASE UNITS AND RISER UNITS SHALL BE REINFORCEMENT BARS OR WELDED WIRE FABERIC WITH A MINIMUM AREA OF 0.2 in./ft FOR THE 84" DIAMETER MANHOLES. WELDED WIRE FABERIC SHALL CONFORM TO ASTM A 185 AND A 82.
4. BASE REINFORCEMENT TO BE REINFORCEMENT BARS OR WELDED WIRE FABERIC WITH A MINIMUM AREA OF 0.27 in./ft. THE BASE SHALL BE CAST MONOLITHIC WITH THE BASE UNIT OR JOINTED PER MANUFACTURERS DESIGN.
5. THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR AND MADE WATERTIGHT USING (WHERE APPLICABLE) MORTAR. RUBBER O-RING GASKETS MEETING ASTM C361 AND C 443 OR FLEXIBLE PLASTIC GASKETS MEETING AASHTO M 198 TYPE B.
6. LADDER RUNGS SHALL BE INSTALLED IN VERTICAL ALIGNMENT AT 1'-4" MAXIMUM C/C. RUNG TYPES SHALL BE IN ACCORDANCE WITH STANDARDS MD-383.91 OR MD-383.92. LADDER RUNGS SHALL BE INCIDENTAL TO THE COST OF THE MANHOLE.
7. WHEN THE DISTANCE BETWEEN MULTIPLE PIPE OPENINGS IN THE BASE UNIT OR ANY RISER UNIT IS LESS THEN 6" ADDITIONAL NO. 3 BARS ARE REQUIRED AROUND OPENINGS.
8. LIFT HOLES OR LIFT EYES SHALL BE PROVIDED IN EACH SECTION FOR HANDLING.
9. MIX NO. 2 CONCRETE OR BRICK CHANNEL SHALL BE PROVIDED IN THE FIELD AND SHALL SLOPE 2" PER FOOT TOWARD OUTLET OR AS DIRECTED BY THE ENGINEER.
10. THE DRIP STONE LANDING SHALL BE USED ONLY WHEN THERE ARE PIPES CONNECTED TO THE RISER UNITS. SEE STD.MD-384.13 FOR DETAILS.
11. MINIMUM DEPTH PAYMENT PER EACH SHALL BE 10'-1" MEASURED FROM THE BOTTOM OF THE BASE UNIT TO THE TOP OF THE MANHOLE COVER. VERTICAL DEPTH PAYMENT PER LINEAR FOOT SHALL INCLUDE ALL DEPTHS IN EXCESS OF 10'-1" THE COST OF THE DRIP STONE LANDING, NO. 57 AGGREGATE GROUT, SEALENT, AND ALL NESSASARY APPURTENANCES SHALL BE INCIDENTAL TO THE PRICE BID.

CAST-IN-PLACE
CONTROL STRUCTURE NO. 1
STR 1 MD SHA STD. 384.07
SCALE: 1/4" = 1'



CONCRETE

1. ALL FOOTINGS, FOUNDATIONS AND INTERIOR SLABS SHALL BE NORMAL WT CONCRETE WITH A COMPRESSIVE STRENGTH EQUAL TO AT LEAST 3,000 PSI WITHIN 28 DAYS AFTER POURING. THE WATER/CEMENT RATIO SHALL BE NO GREATER THAN 0.50 AND SLUMP SHALL BE 3 IN. OR LESS. MIN CEMENT CONTENT SHALL BE 504 LBS PER CU YARD.
2. UNLESS OTHERWISE NOTED, ALL CONSTRUCTION JOINTS SHALL BE KEYED WITH A KEY 1-1/2 IN. DEEP, A LENGTH 2 IN. LESS THAN THE MEMBER, AND A WIDTH 1/2 OF THE MEMBER. REINFORCING SHALL BE CONTINUOUS THRU JOINT.
3. ALL CONCRETE WORK SHALL BE PLACED, CURED, STRIPPED, AND PROTECTED AS DIRECTED BY THE SPECIFICATIONS AND ACI STANDARDS AND PRACTICES.
4. BEFORE CONCRETE IS POURED CHECK WITH ALL TRADES TO INSURE PROPER PLACEMENT OF ALL OPENINGS, SLEEVES, CURBS, CONDUITS, BOLTS, INSERTS, ETC. RELATIVE TO WORK.
5. CONTRACTOR IS RESPONSIBLE FOR ALL SHORING AND FORMWORK.
6. REFER TO CIVIL DRAWINGS FOR MOLDS, GROOVES, ORNAMENT, CLIPS OR GROUNDS, REQUIRED TO BE ENCASED IN CONCRETE AND FLOOR LOCATION OF FLOOR FINISHES AND SLAB DEPRESSIONS.
7. CONCRETE DESIGN AND DETAILING SHALL CONFORM TO THE REQUIREMENTS OF ACI 318-02. CONTRACTOR SHALL SUBMIT MIX DESIGNS ACCOMPANIED BY APPROPRIATE GRAPHS AND BACKGROUND DATA FOR APPROVAL. MIX DESIGN SHALL INDICATE 7 AND 28 DAY STRENGTHS, CEMENT CONTENT, AIR CONTENT, WATER-CEMENT RATIO, AMOUNT OF FINE AND COARSE AGGREGATES, AND ADMIXTURES.
MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE:

SLABS ON GRADE	3000 PSI
FOOTINGS AND PEDESTALS	3000 PSI
PEA-GRAVEL CONCRETE (OR GROUT)	3000 PSI (FOR FILLING CMU UNITS)
ALL OTHER CONCRETE	3000 PSI

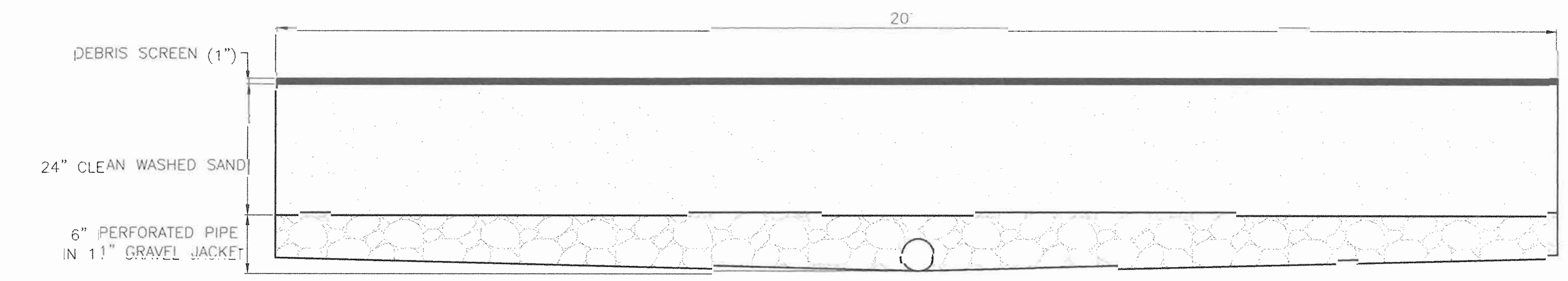
8. ALL EXTERIOR CONCRETE AND CONCRETE EXPOSED TO WEATHER SHALL BE AIR-ENTRAINED.
9. CONTRACTOR TO SUPPLY SHOP DRAWINGS OF ALL STRUCTURAL COMPONENTS FOR APPROVAL PRIOR TO CONSTRUCTION.
10. USE OF ADDITIVES SHALL NOT BE PERMITTED UNLESS SPECIFICALLY APPROVED BY THE STRUCTURAL ENGINEER.
11. THE CONCRETE SUBCONTRACTOR SHALL NOT REPRODUCE ANY PORTION OF THE STRUCTURAL CONTRACT DRAWINGS FOR UTILIZATION AS SHOP DRAWINGS.

REINFORCING STEEL

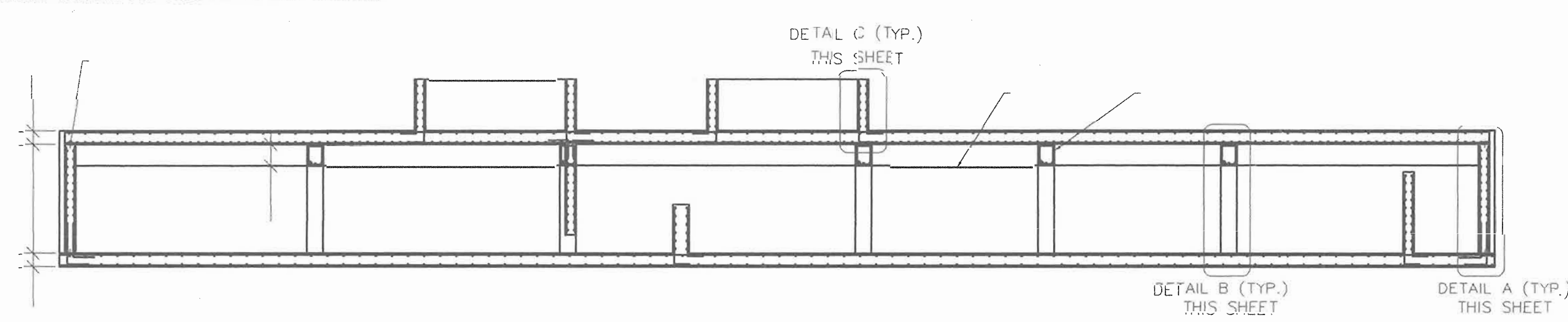
1. REINFORCING BARS SHALL BE DEFORMED BILLET STEEL CONFORMING TO ASTM A615. GRADE 60. ALL WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-185. BARS SHALL BE BRANDED BY THE MANUFACTURER WITH BAR SIZE AND GRADE OF STEEL AND CERTIFIED MILL REPORTS SHALL BE SUBMITTED FOR RECORD. REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE WITH THE ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", LATEST EDITION.
PROVIDE CORNER BARS AT JUNCTIONS OF CONCRETE WALLS AND WALL FOOTINGS AND LAP
2. WITH WALL REINFORCING AS SHOWN IN TYPICAL DETAILS. SIZE AND SPACING OF CORNER BARS TO BE SAME AS HORIZONTAL WALL REINFORCING, UNLESS SHOWN OTHERWISE. WHERE CONTINUOUS BARS ARE CALLED FOR, THEY SHALL RUN CONTINUOUSLY AROUND CORNERS AND LAPPED AS NECESSARY. PROVIDE STANDARD HOOKS AT DISCONTINUOUS ENDS. TENSION AND COMPRESSION LAP SPLICES SHALL NOT BE LESS THAN THE SPLICE LENGTHS AS GIVEN IN ACI-318. GENERALLY LAP TOP BARS AT MID SPAN AND BOTTOM BARS AT SUPPORTS. PROVIDE PLACING ACCESSORIES IN ACCORDANCE WITH ACI RECOMMENDATIONS.
3. ALL REINFORCING TO BE LAPPED 48 X BAR DIA. ZIGZAG ALL LAPS IN THE SLAB.

FOOTINGS

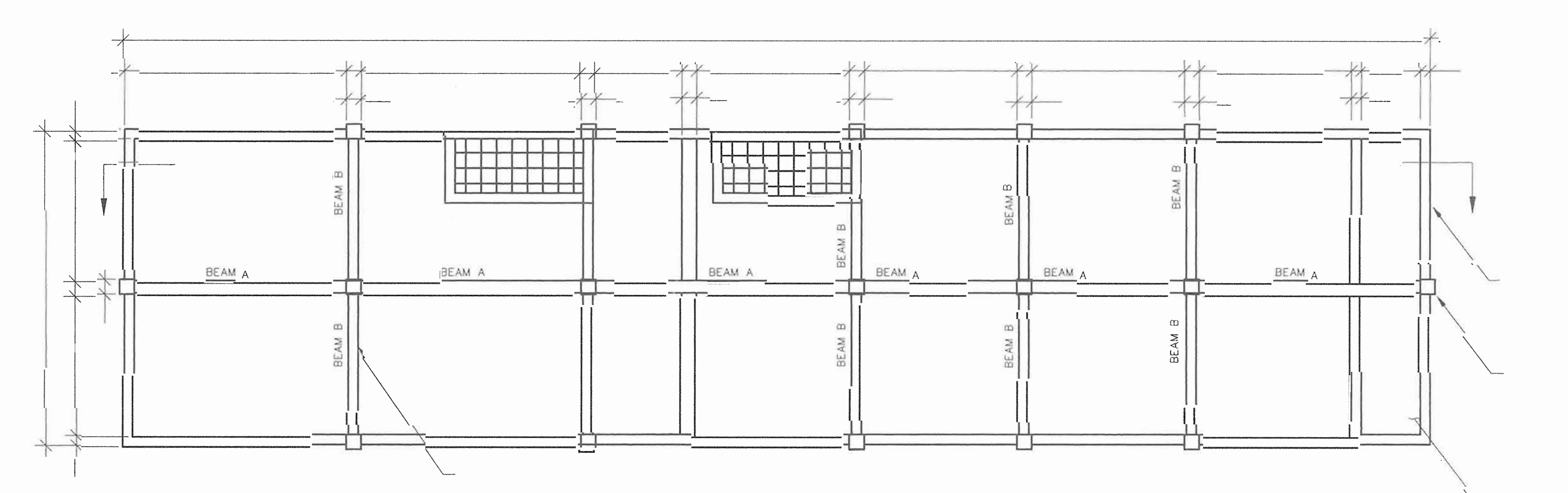
1. ALL FOOTINGS ARE BASED ON AN ALLOWABLE SOIL BEARING PRESSURE OF 3,000 PSF. ANY SOIL CONDITION ENCOUNTERED DURING EXCAVATION THAT IS CONTRARY TO THOSE USED FOR DESIGN OF FOOTINGS AS OUTLINED IN WORKING DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING.
2. BOTTOM OF ALL EXTERIOR FOOTINGS SHALL BE A MINIMUM OF 2'-6" BELOW FINISHED EXTERIOR GRADE, UNLESS A LOWER ELEVATION IS NOTED. FOOTING ELEVATIONS NOTED ARE ESTIMATED BASED ON AVAILABLE GEOTECHNICAL AND GRADING INFORMATION. ALL FOOTINGS ADJACENT TO EXISTING FOOTINGS SHALL BE LOWERED TO MATCH EXISTING FOOTING ELEVATION.
3. ALL FOUNDATION SUBGRADES SHALL BE INSPECTED AND APPROVED UNDER THE SUPERVISION OF A REGISTERED PROFESSIONAL ENGINEER PRIOR TO BEING CONCRETED. FOOTINGS MAY BE LOWERED TO ACHIEVE BEARING CAPACITY.



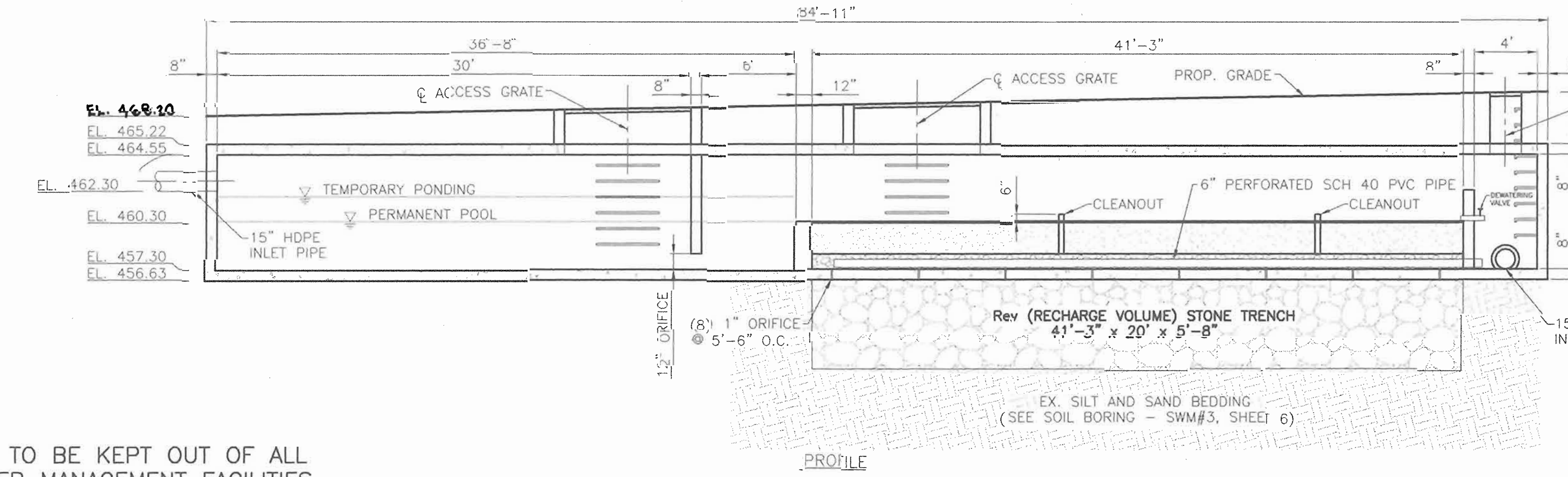
TYPICAL SECTION THROUGH SAND FILTER
SCALE: 1/2" = 1'

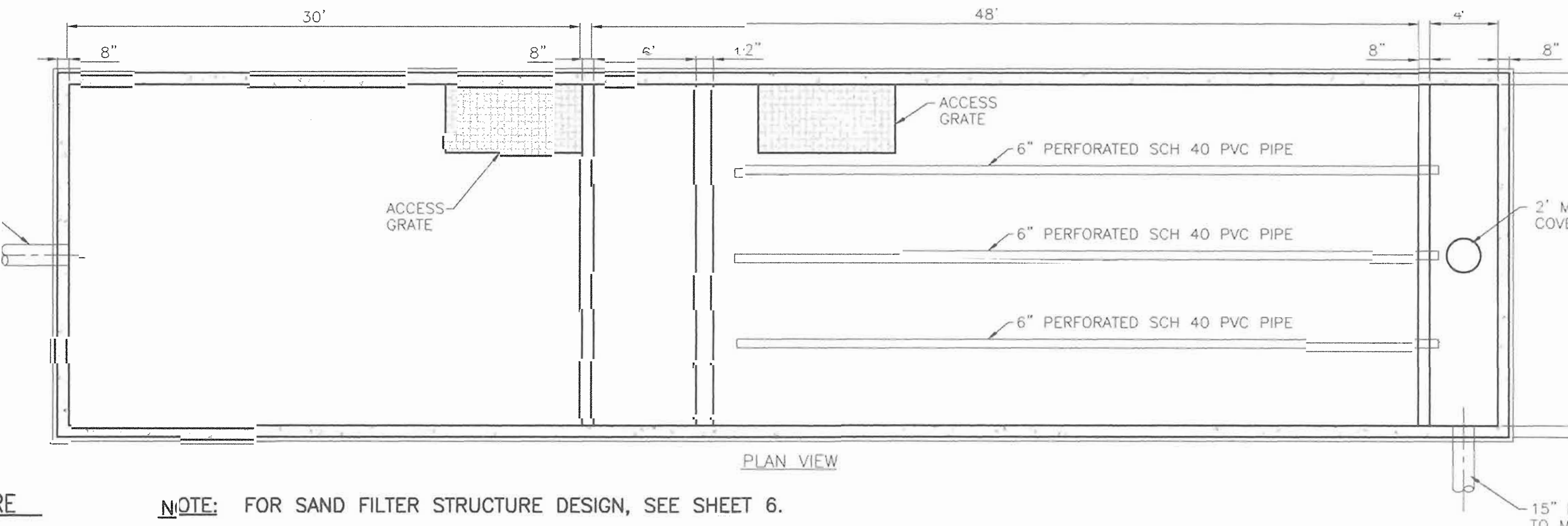


SECTION A-A
N.T.S.



SAND FILTER PLAN
N.T.S.





SAND FILTER STRUCTURE
SCALE: 1/8" = 1'

NOTE: FOR SAND FILTER STRUCTURE DESIGN, SEE SHEET 6.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 12/12/03
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 12/17/03
DIRECTOR	DATE 12/22/03

NOTE: DEBRIS IS TO BE KEPT OUT OF ALL STORMWATER MANAGEMENT FACILITIES DURING AND AFTER CONSTRUCTION.

REVISIONS

REV#	DATE	DESCRIPTION
1	03-28-05	REVISE BUILDING FOOTPRINT, ASSOCIATED GRADING CHANGES, TITLE AND PROJECT NAME CHANGES

OWNER/DEVELOPER
1318 COMPANY LLC
10400 AUTO PARK DRIVE
BETHESDA, MD 20817

30' 0 30' 60' 90'

FWA
FREDERICK WARD ASSOCIATES, INC.
ARCHITECTS | ENGINEERS | PLANNERS | SURVEYORS

7125 RIVERWOOD DRIVE
COLUMBIA, MARYLAND 21046-2354
410-720-6900
410-720-6226 fax
REGIONAL OFFICES:
BEL AIR, MARYLAND AND WARRENTON, VIRGINIA
www.frederickward.com

SITE DEVELOPMENT PLAN
STORMWATER MANAGEMENT NOTES AND DETAILS
WATER & SEWER PROFILES AND DETAILS
JAGUAR/LANDROVER OF COLUMBIA WEST

TAX MAP #34 BLOCK #6 PARCEL K-2
5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

STATE OF MARYLAND ROBERT HARRIS VOGEL NO.16193 REGISTERED PROFESSIONAL ENGINEER 11/24/03
ROBERT H. VOGEL, PE No.16193

DATE	SEPT 2003
SCALE	1"=30'
DESIGN BY	MMR
CHECKED BY	RHV
DRAWN BY	DZ
DRAWING NO.	
SHEET	5 OF 7
FWA JOB NUMBER	2024096.00

SDP-03-93

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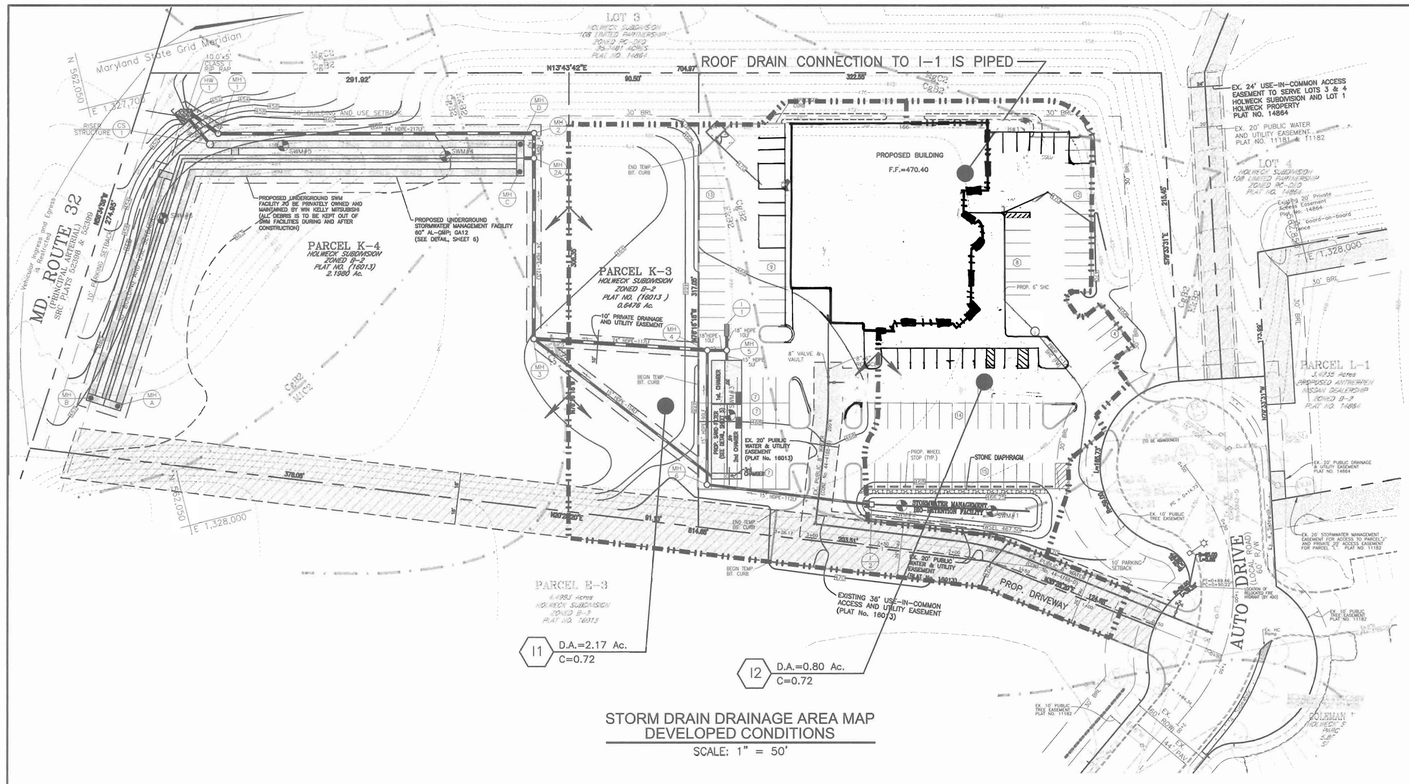
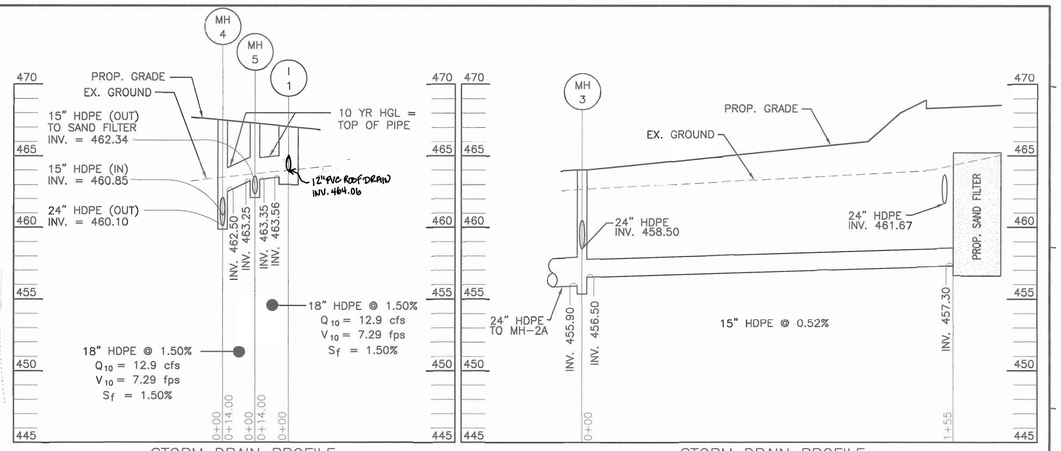


STORM DRAIN DRAINAGE AREA MAP
DEVELOPED CONDITIONS
SCALE: 1" = 50'



STORM DRAIN PROFILE
SCALE: HORIZONTAL 1" = 30'
VERTICAL 1" = 5'

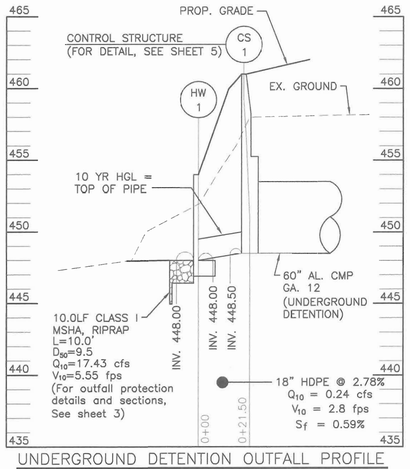
STORM DRAIN PROFILE
SCALE: HORIZONTAL 1" = 30'
VERTICAL 1" = 5'

DRAINAGE STRUCTURE SCHEDULE

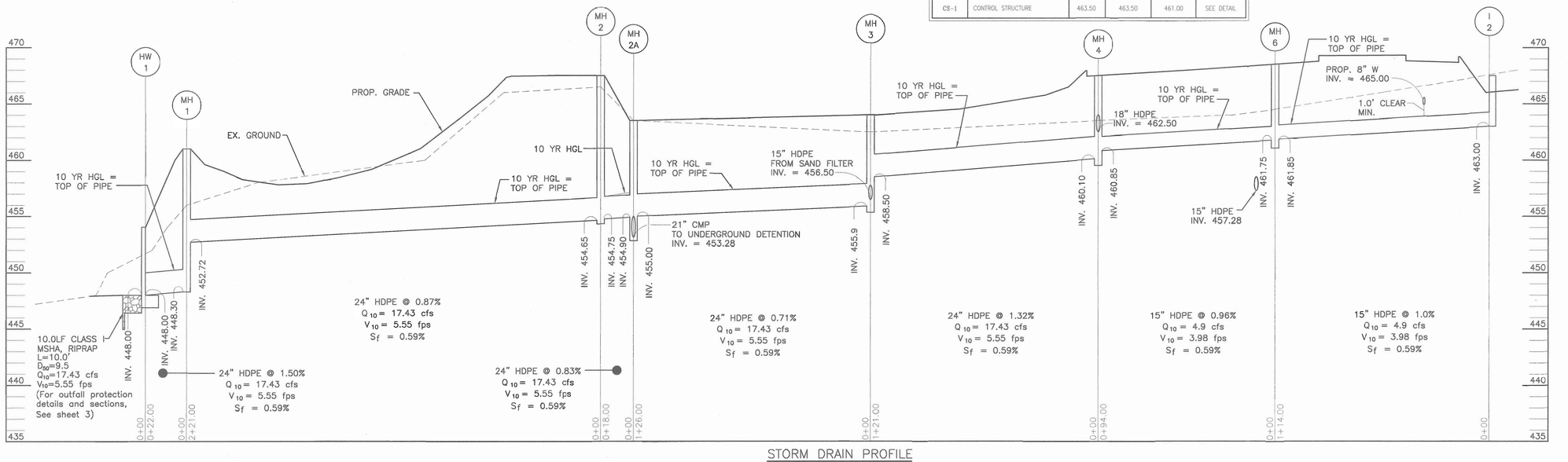
NO.	TYPE	INV. IN	INV OUT	TOP EL.	DETAIL
I-1	DOUBLE "S" INLET	--	463.50	**467.50**	SD-4.41
I-2	TYPE "D" INLET	--	463.00	468.33	SD-4.39
MH-1	4' PRECAST	452.72	448.30	461.00	G-5.12
MH-2	4' PRECAST	454.75	454.65	467.50	G-5.12
MH-2A	4' PRECAST	455.00	453.28 454.90	463.50	G-5.12
MH-3	4' PRECAST	456.50 458.50	455.90	464.00	G-5.12
MH-4	4' SHALLOW PRECAST	460.85 462.50	460.10	**468.15**	G-5.12
MH-5	4' SHALLOW PRECAST	463.35	462.34 463.25	**468.10**	G-5.12
MH-6	4' PRECAST	461.85	461.75	**468.90**	G-5.12
HW-1	TYPE "H" HEADWALL	448.00	448.00	451.50	MSHA MD 362.01
CS-1	CONTROL STRUCTURE	463.50	463.50	461.00	SEE DETAIL

STORM DRAIN PIPE SCHEDULE

SIZE	TYPE	LENGTH
15"	HDPE	363 LF
18"	HDPE	49 LF
24"	HDPE	508 LF
21"	CMP	10 LF



UNDERGROUND DETENTION OUTFALL PROFILE
SCALE: HORIZONTAL 1" = 30'
VERTICAL 1" = 5'



STORM DRAIN PROFILE
SCALE: HORIZONTAL 1" = 30'
VERTICAL 1" = 5'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 12/12/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/12/03

DIRECTOR — DATE 12/22/03

REVISIONS

REV#	DATE	DESCRIPTION
1	03-28-05	REVISE BUILDING FOOTPRINT, ASSOCIATED GRADING CHANGES, TITLE AND PROJECT NAME CHANGES

OWNER/DEVELOPER
1318 GROUP LLC
10400 AUTO PARK DRIVE
BETHESDA, MD 20817

FREDERICK WARD ASSOCIATES, INC.
ARCHITECTS | ENGINEERS | PLANNERS | SURVEYORS
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SITE DEVELOPMENT PLAN
STORM DRAIN DRAINAGE AREA MAP, PROFILES AND DETAILS
JAGUAR/LANDROVER OF COLUMBIA WEST

TAX MAP #34 BLOCK #6
5TH ELECTION DISTRICT
PARCEL K-2
HOWARD COUNTY, MARYLAND

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — REGISTERED PROFESSIONAL ENGINEER — 11/24/03
ROBERT H. VOGEL, PE No.16193

DATE: SEPT 2003
SCALE: AS SHOWN
DESIGN BY: MMR
CHECKED BY: RHV
DRAWN BY: DZ
DRAWING NO.
SHEET 4 OF 7
FWA JOB NUMBER 2024096.00
SDP-03-93

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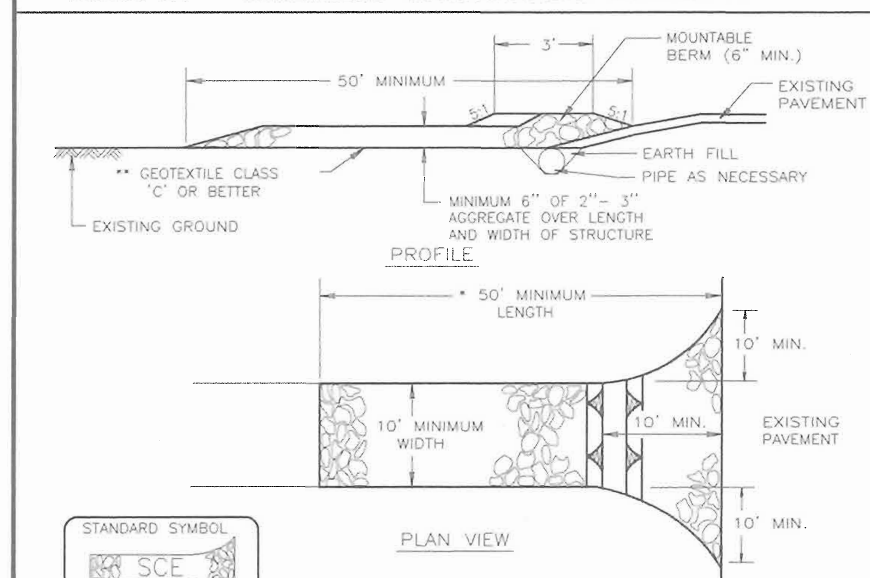
DETAIL 24 – STABILIZED CONSTRUCTION ENTRANCE

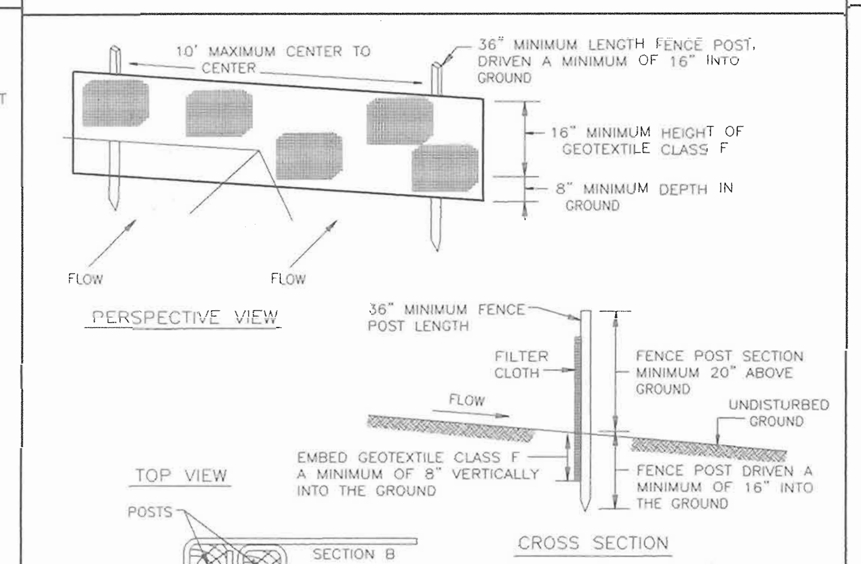


Construction Specification

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

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

DETAIL 22 – SILT FENCE



Construction Specifications

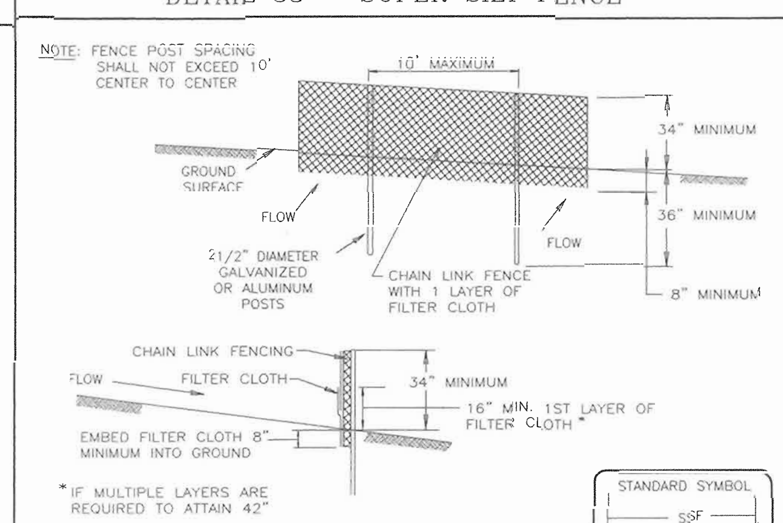
1. Fence posts shall be a minimum of 36" long, driven 16" minimum into the ground. Wood posts shall be 1 1/2" x 1 1/2" square (minimum) cut, or 1 3/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighing not less than 1.00 pound per linear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

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal ft /minute (max.)	Test: MSMT 322
Filtering Eqgeciency	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 reaches 50% of the fabric height.

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

DETAIL 33 – SUPER SILT FENCE



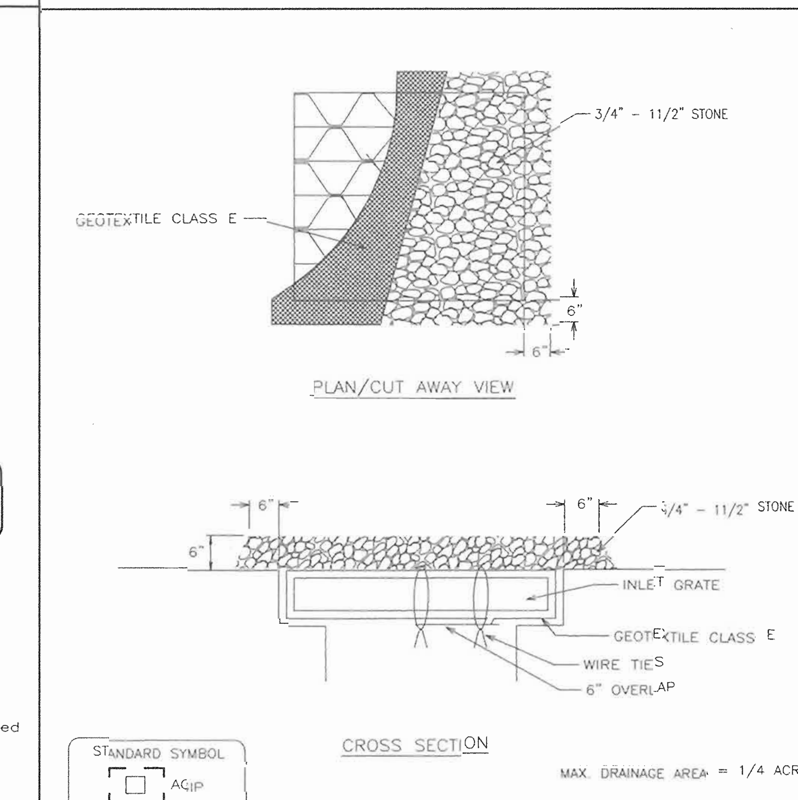
Construction Specifications

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/ft²/minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

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

DETAIL 23B – AT GRADE INLET PROTECTION

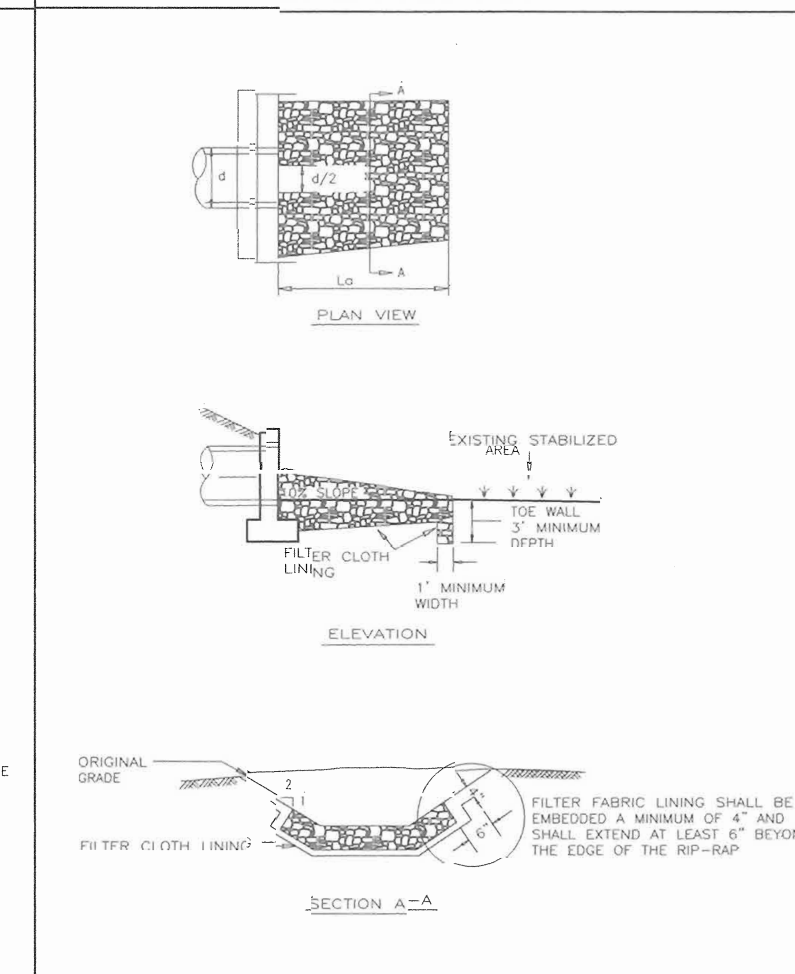


Construction Specifications

1. Lift grate and wrap with Geotextile Class E to completely cover all openings, then set grate back in place.
2. Place 3/4" to 11/2" stone, 4"-6" thick on the grate to secure the fabric and provide additional filtration.

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

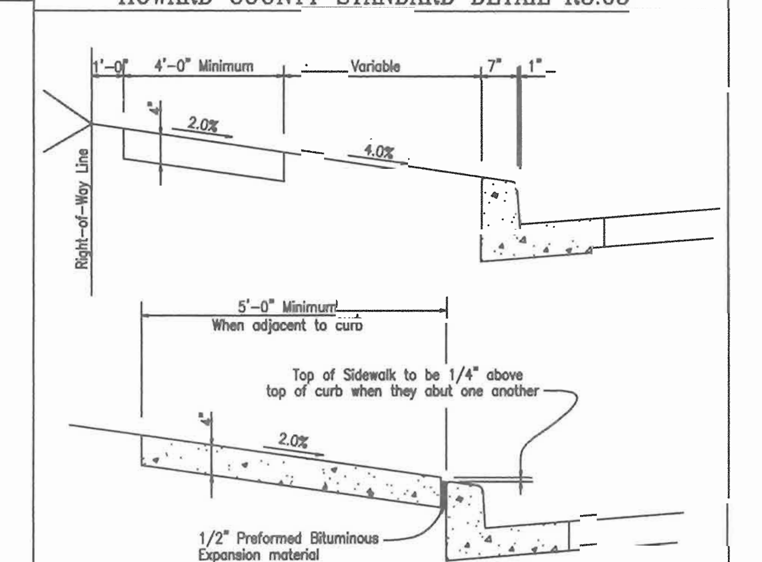
DETAIL 27 – ROCK OUTLET PROTECTION III



NOTE: FILTER CLOTH SHALL BE GEOTEXTILE CLASS C

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F - 18 - 10	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

CONCRETE SIDEWALK
HOWARD COUNTY STANDARD DETAIL R3.05



Construction Specifications

1. Sidewalk to be scribed in 5'-0" maximum squares.
2. Expansion joints across the sidewalk not to be more than 15' apart.
3. 1/2" Preformed Bituminous Expansion material in expansion joints to be kept 1/4" below surface of sidewalk.
4. Concrete to be mix number 2.
5. Where sidewalk abuts curb, sidewalk shall be 1/4" above curb with 1/2" Preformed Bituminous Expansion material between sidewalk and curb.
6. On longitudinal sidewalk grades of 5% or greater, a concrete header, 6' thick and 6" deep below the normal 4" sidewalk thickness shall be constructed for the full width of the sidewalk at intervals of 48 feet. The headers shall be placed at expansion joint locations and shall be monolithic with the curb.
7. Sidewalk width adjacent to curb shall be 5'-0" minimum except sidewalk adjacent to curb in cul-de-sac bulbs may be 4'-0" wide.
8. Sidewalk located 2' or more from curb may be 4'-0" in width with a 5'x5' paved section placed 200' apart.

PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LIVED VEGETATIVE

SEEDBED PREPARATION: Loosen upper three inches of soil by raking, discing or other acceptable means before seeding, if not previously

SOIL AMENDMENTS: In lieu of soil test recommendations, use one of

1) Preferred–Apply 2 tons per acre dolomitic limestone (92 lbs/100 sq.ft.) and 600 lbs per acre 10-10-10 fertilizer (14 lbs./1000 sq.ft.) before seeding. Harrow or disc into upper three inches of soil. At the time of seeding, apply 400 lbs. per acre 30-0-0 ureaform fertilizer (9 lbs/1000 sq.ft.)
2) Acceptable–Apply 2 tons per acre dolomatic limestone (92 lbs/1000 sq.ft.) and apply 1000 lbs. per acre 10-10-10- fertilizer (23 lbs./1000 sq.ft.) before seeding. Harrow or disc into upper

SEEDING: For the periods March 1 thru April 30, and August 1 thru October 15, seed with 60 lbs. per acre (1.4 lbs/1000 sq.ft.) of Kentucky 31 Tall Fescue. For the period May 1 thru July 31, seed with 60 lbs. Kentucky 31 Tall Fescue per acre and 2 lbs. per acre (.05 lbs./1000 sq.ft.) of weeping lovegrass. During the period of October 16 thru February 28, protect site by: Option (1) 2 tons per acre well anchored straw mulch and seed as soon as possible in the spring. Option (2) Use sod. Option (3) Seed with 60 lbs/acre Kentucky 31 Tall Fescue and mulch with 2 tons/acre well anchored

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

MAINTENANCE: Inspect all seeded areas and make needed repairs,

TEMPORARY SEEDING NOTES

SEEDBED PREPARATION: Loosen upper three inches of soil by raking, discing or other acceptable means before seeding, if not previously

SOIL AMENDMENTS: Apply 600 lbs. per acre 10-10-10 fertilizer

SEEDING: For periods March 1 thru April 30 and from August 15 thru November 15, seed with 2 1/2 bushel per acre of annual rye (3.2 lbs./1000 sq.ft.) For the period May 1 thru August 14, seed with 3 lbs. per acre of weeping lovegrass (.07 lbs./1000 sq.ft.). For the period November 1 thru February 28, protect site by applying 2 tons per acre of well anchored straw mulch and seed as soon as possible

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

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

21.0 STANDARDS AND SPECIFICATIONS FOR TOPSOIL

Placement of topsoil over a prepared subsoil prior to

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

Conditions Where Practice Applies

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

a. The texture of the exposed subsoil/parent material

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

d. The soil is so acidic that treatment with

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

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

II. Topsoil Specifications – Soil to be used as topsoil

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 a soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be a mixture of contrasting textured subsoils and shall contain less than 5% by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger that 1 and 1/2" in

ii. Topsoil must be free of plants or plant parts such as Bermuda grass, quackgrass, Johnsongrass, nutsedge, poison

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

II. 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.

iii. 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 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 ammendments specified in 20.0 Vegetative Stabilization–Section I–Vegetative Stabilization Methods and Materials.

V. Topsoil Application

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

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

iii. Topsoil shall be uniformly distributed in a 4" – 8" layer and lightly compacted to a minimum thickness of 4". Spreading shall be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.

iv. Topsoil shall not be place 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.

SEQUENCE OF CONSTRUCTION

1. OBTAIN HOWARD COUNTY GRADING PERMIT. (WEEK 1)
2. NOTIFY HOWARD COUNTY AT LEAST 48 HOURS PRIOR TO START OF CONSTRUCTION. (WEEK 1)
3. CONDUCT A PRE-CONSTRUCTION MEETING WITH THE SEDIMENT CONTROL INSPECTOR PRIOR TO ANY LAND DISTURBANCE. (WEEK 1)
4. INSTALL ALL SILT FENCE AS INDICATED ON PLANS. (WEEK 2)
5. INSTALL STABILIZED CONSTRUCTION ENTRANCE WITH MOUNTABLE BERM. (WEEK 2)
6. ROUGH GRADE SITE. (WEEK 3)
7. SEED AND STOCKPILE TOPSOIL. STABILIZE STOCKPILE WITH SEED AND MULCH. (WEEK 3)
8. INSTALL STORM DRAIN UTILITIES AND STORMWATER MANAGEMENT FACILITY. STABILIZE INLET WITH INLET PROTECTION, IMMEDIATELY UPON COMPLETION OF STORM DRAIN INSTALLATION. (WEEK 4)
9. COMPLETE INSTALLATION OF STORM DRAIN/SWM FACILITY SYSTEM AND REMAINING ON-SITE UTILITIES. STORM DRAINS SHALL BE BLOCKED OR INLET PROTECTION SHALL BE ADDED TO PREVENT SEDIMENT FROM ENTERING THE SYSTEM. (WEEK 4)
10. INSTALL CURB AND GUTTER. (WEEK 6)
11. BEGIN BUILDING CONSTRUCTION. (WEEK 6)
12. INSTALL PAVING BASE COURSE. REMOVE INLET PROTECTION PER THE SEDIMENT CONTROL INSPECTOR AS WORK PROGRESSES. (WEEK 26)
13. COMPLETE BUILDING CONSTRUCTION. (WEEK 27)
14. INSTALL PAVING SURFACE COURSE. (WEEK 28)
15. FINE GRADE AND STABILIZE REMAINING SITE. INSTALL LANDSCAPING. (WEEK 29)
16. CLEAN AND FLUSH OUT STORM DRAIN SYSTEM. DISPOSE OF SEDIMENT LADEN MATERIAL CLEANED OUT OF STORM DRAIN IN A MANNER APPROVED BY THE SEDIMENT CONTROL INSPECTOR. (WEEK 30)
17. REMOVE ALL SEDIMENT CONTROL MEASURES AFTER RECEIVING APPROVAL FROM THE SEDIMENT CONTROL INSPECTOR. (WEEK 30)

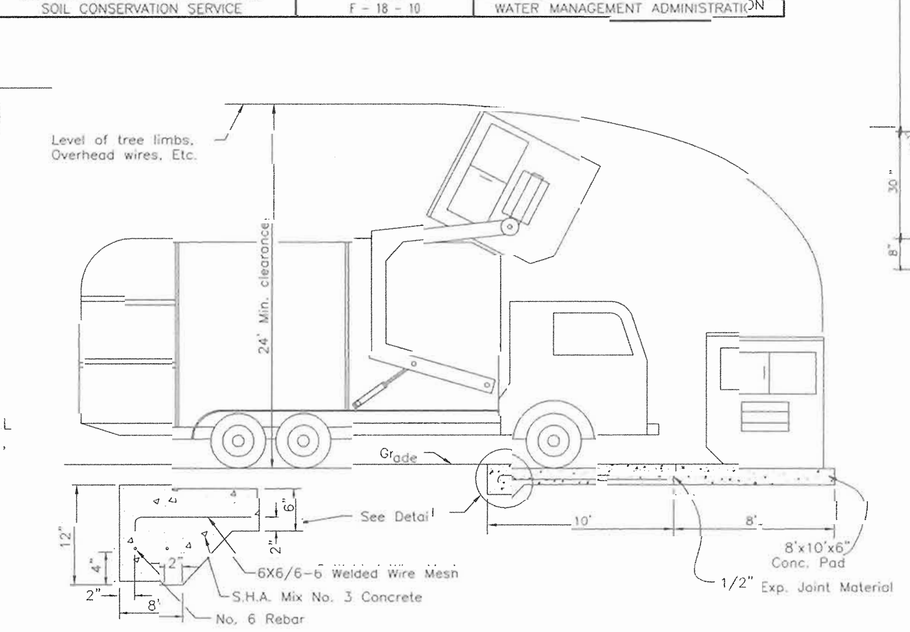
SEDIMENT CONTROL NOTES

1. A minimum of 48 hours notice must be given to the Howard County Department of Inspection, License and Permits Sediment Control Division prior to the start of any construction (313-1855).
2. All vegetation and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL and revisions 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 7, 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 seeding, sod, temporary seeding, and mulching (Sec. G). Temporary stabilization with mulch alone shall be done when recommended seeding dates do not allow for proper germination and establishment of grasses.
6. All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.
7. Site Analysis :

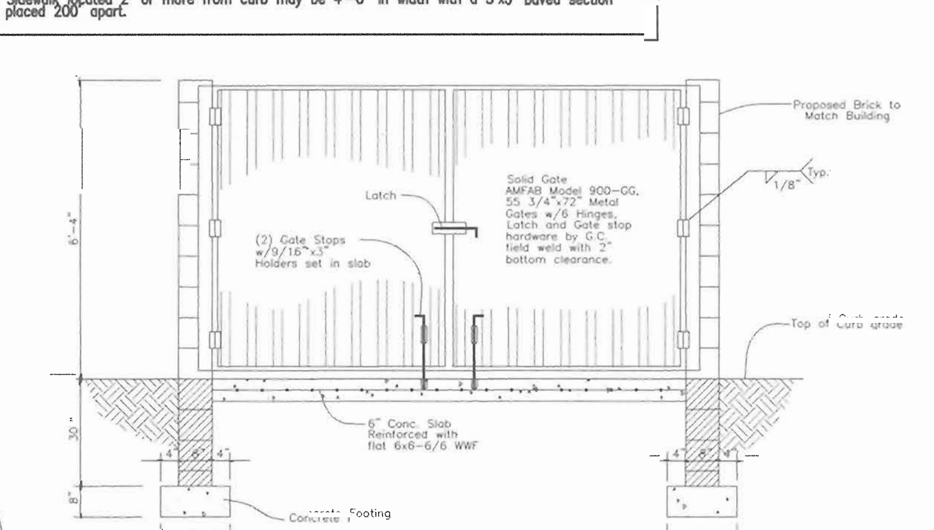
Total Area	2.50 Acres
Area Disturbed	4.78 Acres
Area to be roofed or paved	1.53 Acres
Area to be vegetatively stabilized	3.25 Acres
Total Cut	50 CY
Total Fill	14,800 CY
Offsite waste/borrow area location	

8. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
9. Additional sediment controls must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
10. On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.
11. Trenches for the construction of utilities is limited to three pipe lengths or that which shall be back-filled and stabilized within one working day, whichever is shorter.

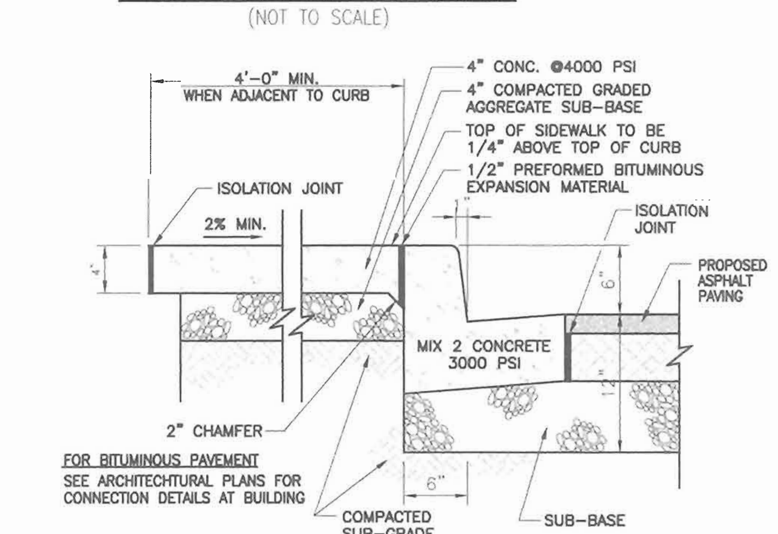
* To be determined by contractor, with pre-approval of the Sediment Control Inspector with an approved and active grading permit



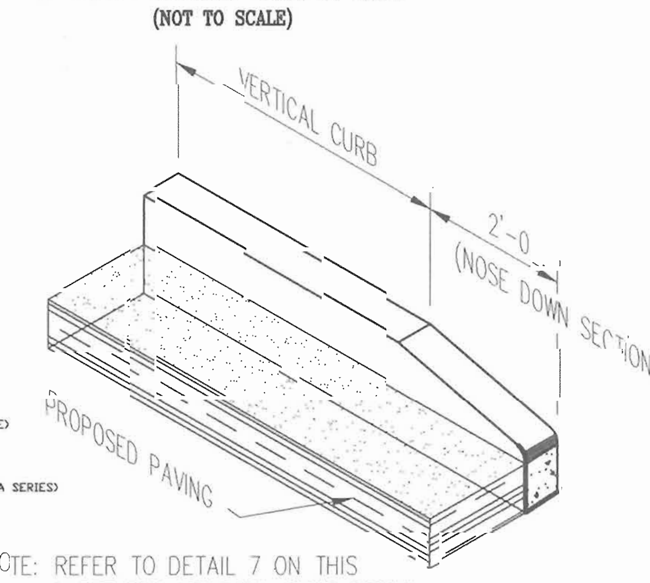
SOLID WASTE SERVICE PAD
HOWARD COUNTY STD. R 11.01
(NOT TO SCALE)



TRASH ENCLOSURE GATE DETAIL
(NOT TO SCALE)



HO. CO. STD. R-3.05
TYPICAL SIDEWALK AT BUILDING
(N.T.S.)



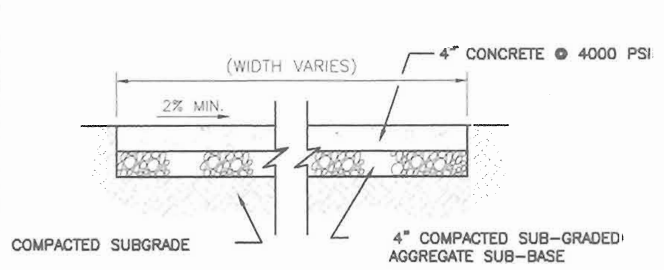
NOTE: REFER TO DETAIL 7 ON THIS SHEET FOR VERTICAL CURB DETAIL.

CONCRETE CURB - NOSE DOWN
NOT TO SCALE

SUMMARY TABLE

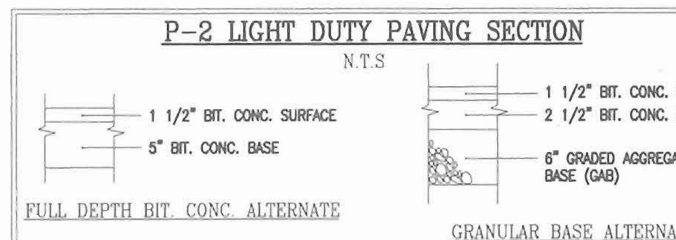
	Required	Provided
WQv	9,583 c.f.	2,352 c.f. Bio Retention; 7,231 c.f. Underground Sand Filter
Rev	2,613 c.f.	740 c.f. Bio Retention; 1,873 c.f. Underground Sand Filter
Cpv	21,780 c.f.	21,780 c.f. Underground Extended Detention
Q10	N/A	Safe Conveyance Via storm drain bypass
Q100	N/A	N/A

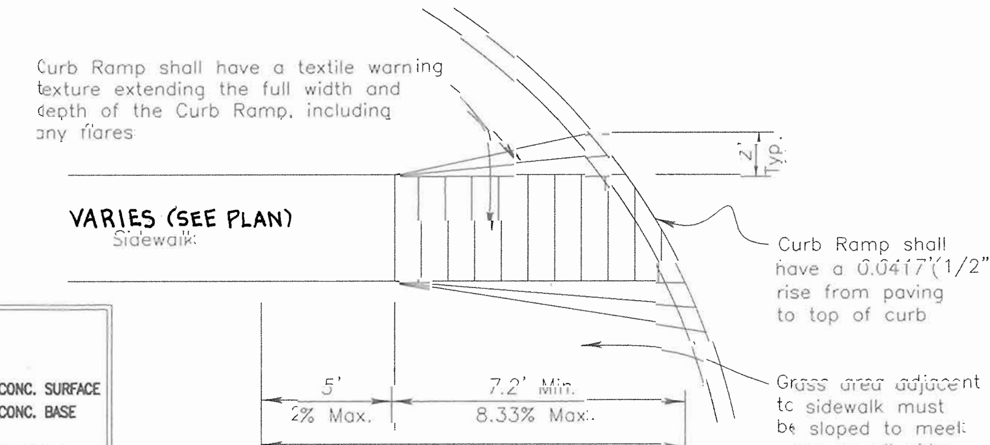
Note: WQv, Rev are only being provided for proposed parcels K-2 (2.50 acres), and K-3 (0.65 acres). Onsite WQv and Rev will be provided for K-4 by a future SDP when K-4 is developed.
Cpv is being provided for proposed parcels K-2, K-3, and K-4.



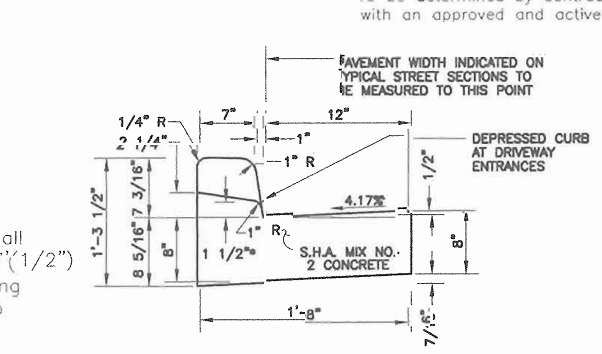
HO. CO. STD. R-3.05
TYPICAL SIDEWALK DETAIL
(N.T.S.)

P-2 LIGHT DUTY PAVING SECTION
N.T.S





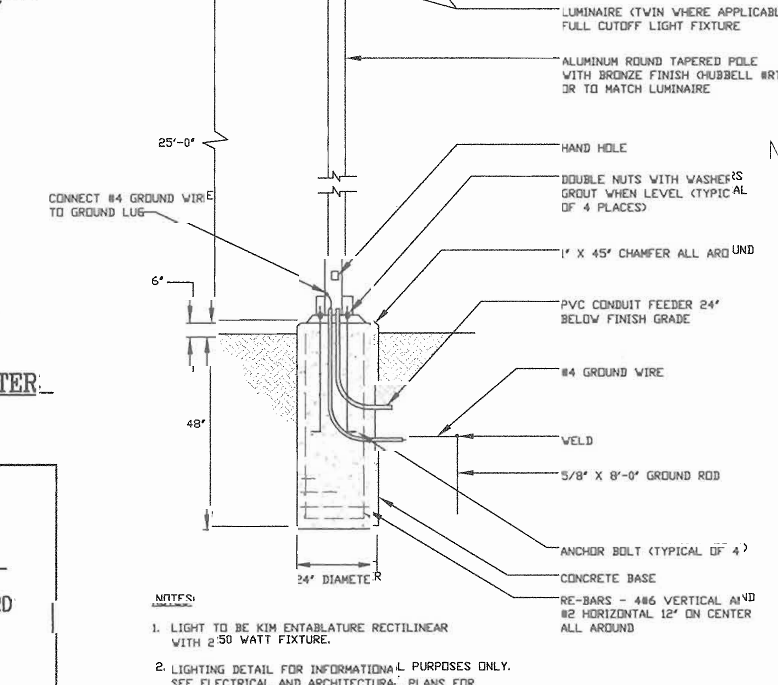
HANDICAP RAMP
NOT TO SCALE



*NOTE : DEPRESSED CURB IN HANDICAP ACCESSABLE AREAS SHALL HAVE A 0.0417'(1/2") RISE FROM PAVING TO TOP OF CURB.

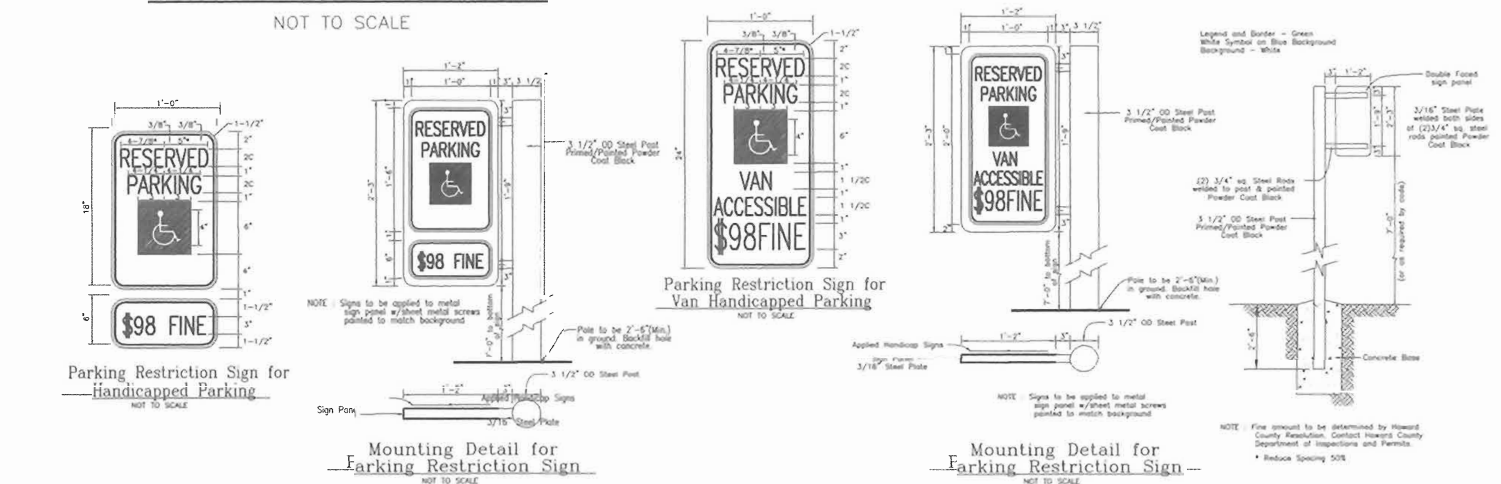
* GUTTER PAN AT THE MEDIAN EDGE OF INTERMEDIATE ARTERIAL OR THE HIGH SIDE OF SUPERELEVATED SECTIONS SHALL BE SLOPED AT THE SAME RATE AND IN THE SAME DIRECTION AS THE PAVEMENT. MATCH PAVEMENT CROSS SLOPE WHEN CURB IS LOCATED ON THE LOW SIDE OF SUPERELEVATED SECTION AND THE RATE OF SUPERELEVATION IS GREATER THAN 3% FOR MODIFIED CURB AND GUTTER.

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



NOTES:
1. LIGHT TO BE KIM ENTABLATURE RECTILINEAR WITH 250 WATT FIXTURE.
2. LIGHTING DETAIL FOR INFORMATIONAL PURPOSES ONLY. SEE ELECTRICAL AND ARCHITECTURAL PLANS FOR ACTUAL LIGHTING DETAILS AND SPECIFICATIONS.

POLE BASE DETAIL
(NOT TO SCALE)



HANDICAP PARKING SIGNS
(NOT TO SCALE)

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING	
[signature] CHIEF, DEVELOPMENT ENGINEERING DIVISION	12/12/03 DATE
[signature] CHIEF, DIVISION OF LAND DEVELOPMENT	12/17/03 DATE
[signature] DIRECTOR	12/22/03 DATE

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

[signature] USDA-NATURAL RESOURCES CONSERVATION SERVICE — 12/4/03 DATE

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

[signature] HOWARD S.C.D. — 12/4/03 DATE

BY THE DEVELOPER:

"I/WE CERTIFY THAT ALL DEVELOPEMENT 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."

Kevin M. Ball — SIGNATURE OF DEVELOPER — 11/22/03 DATE

BY THE ENGINEER:

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

[signature] SIGNATURE OF ENGINEER — 11/24/03 DATE

REVISIONS

REV#	DATE	DESCRIPTION
1	03-28-05	REVISE BUILDING FOOTPRINT, ASSOCIATED GRADING CHANGES, TITLE AND PROJECT NAME CHANGES

OWNER/DEVELOPER
1318 COMPANY LLC
10400 AUTO PARK DRIVE
BETHESDA, MD 20817

FREDERICK WARD ASSOCIATES, INC.
ARCHITECTS | ENGINEERS | PLANNERS | SURVEYORS
7125 RIVERWOOD DRIVE
COLUMBIA, MARYLAND 21046-2354
410-720-6900
410-720-6226 fax
REGIONAL OFFICES:
BEL AIR, MARYLAND AND WARRENTON, VIRGINIA
www.frederickward.com

SITE DEVELOPMENT PLAN
SEDIMENT AND EROSION CONTROL NOTES AND DETAILS
JAGUAR/LANDROVER OF COLUMBIA WEST

TAX MAP #34 BLOCK #6
5TH ELECTION DISTRICT
PARCEL K-2
HOWARD COUNTY, MARYLAND

STATE OF MARYLAND · ROBERT HARRIS VOGEL · NO. 16193 · REGISTERED PROFESSIONAL ENGINEER · 11/24/03
ROBERT H. VOGEL, PE No.16193

DATE	SEPT 2003
SCALE	NO SCALE
DESIGN BY	MMR
CHECKED BY	RHV
DRAWN BY	DZ
DRAWING NO.	
SHEET	3 OF 7
FWA JOB NUMBER	2024096.00

SDP-03-93

M:\PROJECTS\2019158\ENGR\dwg\WK_Mitsubishi\CD03.dwg Thu Oct 16 10:54:16 2003 M.A.N.

Maryland State Grid Meridian

N 562,250 E 1,327,700

LOT 3
HOLWECK SUBDIVISION
108 LIMITED PARTNERSHIP
ZONED MC-DEO
28.2481 ACRES
PLAT NO. 14864

MD. ROUTE 32
(PRINCIPAL ARTERIAL)
SHA PLATS 52398 & 52399

Vehicular ingress and Egress is Restricted

N53°34'58"W 214.95'

10.0'x5' CLASS I RIP RAP

291.92'

N13°43'42"E 90.50' 704.97' 322.55'

30' BUILDING AND USE SETBACK

24" HDPE-217LF

SWM#5 SWM#4 SWM#6

PROPOSED UNDERGROUND SWM FACILITY TO BE PRIVATELY OWNED AND MAINTAINED BY WIN KELLY MITSUBISHI (ALL DEBRIS IS TO BE KEPT OUT OF SWM FACILITIES DURING AND AFTER CONSTRUCTION)

PROPOSED UNDERGROUND STORMWATER MANAGEMENT FACILITY 60" AL-CMP; GA12 (SEE DETAIL, SHEET 6)

PARCEL K-4
HOLWECK SUBDIVISION
ZONED B-2
PLAT NO. (16013)
2.1980 Ac.

STORMWATER MANAGEMENT (PARCEL K-2, K-3, K-4)				
AREA	Cpv	WQv	Rev	NOTES
5.08Ac	0.500 Ac-Ft	N/A	N/A	PIPE STORAGE

STOCK PILE

PARCEL K-3
HOLWECK SUBDIVISION
ZONED B-2
PLAT NO. (16013)
0.6476 Ac.

306.35' 317.95'

10' PRIVATE DRAINAGE AND UTILITY EASEMENT

24" HDPE-117LF

BEGIN TEMP. BIT. CURB

DISPLAY AREA 2268 S.F.

PROP. SAND FILTER (SEE DETAIL SHEET)

1st CHAMBER

2nd CHAMBER

3rd CHAMBER

EX. 20' PUBLIC WATER & UTILITY EASEMENT (PLAT No. 16013)

DISPLAY AREA 1134 S.F.

END TEMP. BIT. CURB

N20°28'20"E 91.13' 814.68'

PARCEL E-3
4.4933 Acres
HOLWECK SUBDIVISION
ZONED B-2
PLAT NO. 16013

Prop. Dumpster Enclosure (See detail, sheet 3)

Prop. Dumpster Pac (See Detail, Sheet 3)

END TEMP. BIT. CURB

Prop. Bollards

PROPOSED BUILDING
LL = 17,578 S.F.
MEZZ = 4,299 S.F.
F.F. = 470.40

PARCEL K-2
HOLWECK SUBDIVISION
ZONED B-2
PLAT NO. (16013)
2.4987 Ac.

DEPRESSED CURB

STRIPED NO PARKING

PROP. WHEEL STOP (TYP.)

INSIDE WATER SETTING

PROP. 6" PRIVATE WYE

PROP. 5' LEVEL LANDING MAX. SLOPE = 2% (SEE DETAIL/TYP. SHEET)

LANDSCAPE INLET

12" PVC ROOF DRAIN

ENVIROWELL DNE GRINDER PUMP

DISPLAY AREA 2268 S.F.

DISPLAY AREA 2592 S.F.

STONE DIAPHRAGM

STORMWATER MANAGEMENT BIO-RETENTION FACILITY SWM#1

WSEL 467.50

EX. 20' PUBLIC WATER & UTILITY EASEMENT (PLAT No. 16013)

EX. 8" PUBLIC WATER (CONT. No. 14-4168)

EX. TREE TO BE REMOVED

EX. TREE TO BE RELOCATED

VERTICAL DISPLAY AREA 1134 S.F.

10' PARKING SETBACK

EXISTING 36' USE-IN-COMMON ACCESS AND UTILITY EASEMENT (PLAT No. 16013)

PROP. DRIVEWAY

123'±

EX. 24' USE-IN-COMMON ACCESS EASEMENT TO SERVE LOTS 3 & 4 HOLWECK SUBDIVISION AND LOT 1 HOLWECK PROPERTY PLAT NO. 14864

EX. 20' PUBLIC WATER AND UTILITY EASEMENT PLAT NO. 11181 & 11182

LOT 4
HOLWECK SUBDIVISION
108 LIMITED PARTNERSHIP
ZONED MC-DEO
PLAT NO. 14864

Existing 20' Private Access Easement Plat No. 14864

Ex. board-on-board fence

PARCEL L-1
3.4235 Acres
PROPOSED ANTHERPEX NISSAN DEALERSHIP
ZONED B-2
PLAT NO. 14864

EX. 20' PUBLIC DRAINAGE & UTILITY EASEMENT PLAT NO. 14864

EX. 20' STORMWATER MANAGEMENT EASEMENT FOR ACCESS TO PARCEL "L" AND PRIVATE 20' ACCESS EASEMENT FOR PARCEL "L" PLAT NO. 11182

EX. 10' PUBLIC TREE EASEMENT

AUTO DRIVE (LOCAL ROAD) 60' R/W

EX. 10' PUBLIC TREE EASEMENT PLAT NO. 11182

EX. HC Ramp

EX. 8" W TO BE RELOCATED AND EX. 8" W TO BE ABANDONED (BY ADC)

STA. 0+00 @ ENTRANCE
STA. 1+41.39 @ "AUTO DRIVE"

LOCATION OF RELOCATED FIRE HYDRANT (BY ADC)

EX. 10' PUBLIC TREE EASEMENT PLAT NO. 11182

COLEMAN HONDA
HOLWECK SUBDIVISION
PARCEL "L"
5.8944 Acres
SDP-89-183
ZONED B-2
PLAT NO. 13460

STORMWATER MANAGEMENT (PARCEL K-2)				
AREA	Cpv	WQv	Rev	NOTES
2.17Ac	N/A	0.166 Ac-Ft	0.043 Ac-Ft	SAND FILTER

STORMWATER MANAGEMENT (PARCEL K-2)				
AREA	Cpv	WQv	Rev	NOTES
0.80Ac	N/A	0.054 Ac-Ft	0.017 Ac-Ft	BIORETENTION

DOOR

CONCRETE PAD AT ENTRANCES MAX SLOPE = 2% FOR 5'

ENTRANCE WALK DETAIL
SCALE: 1/4" = 1'

Note:
FOR PARKING TABLULATION, SEE SHEET 7.

Note:
DEBRIS IS TO BE KEPT OUT OF ALL STORMWATER MANAGEMENT FACILITIES DURING AND AFTER CONSTRUCTION

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 12/12/03

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/17/03

DIRECTOR — DATE 12/22/03

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

USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE 12/4/03

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

HOWARD S.C.D. — DATE 12/4/03

BY THE DEVELOPER:

"I/WE CERTIFY THAT ALL DEVELOPEMENT 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"

Kevin M. Ralo — SIGNATURE OF DEVELOPER — 11/24/03 DATE

BY THE ENGINEER

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

Robert Vogel — SIGNATURE OF ENGINEER — 11/24/03 DATE

REVISIONS		
REV#	DATE	DESCRIPTION
1	03-28-06	REVISE BUILDING FOOTPRINT, ASSOCIATE GRADING CHANGES, TITLE AND PROJECT NAME CHANGES

OWNER/DEVELOPER
1318 COMPANY LLC
10400 AUTO PARK AVE.
BETHESDA, MD 20817

30' 0 30' 60' 90'

FREDERICK WARD ASSOCIATES, INC.
ARCHITECTS | ENGINEERS | PLANNERS | SURVEYORS
7125 RIVERWOOD DRIVE
COLUMBIA, MARYLAND 21046-2354
410-720-6900
410-720-6226 fax
REGIONAL OFFICES:
BEL AIR, MARYLAND AND WARRENTON, VIRGINIA
www.frederickward.com

SITE DEVELOPMENT PLAN
SITE DEVELOPMENT, GRADING, AND SEDIMENT AND EROSION CONTROL PLAN
JAGUAR / LANDROVER OF COLUMBIA WEST

TAX MAP #34 BLOCK #6 PARCEL K-2
5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

STATE OF MARYLAND — ROBERT HARRIS VOGEL — NO. 16193 — REGISTERED PROFESSIONAL ENGINEER — 11/24/03

ROBERT H. VOGEL, PE No.16193

DATE	SEPT 2003
SCALE	1"=30'
DESIGN BY	MMR
CHECKED BY	RHV
DRAWN BY	DZ
DRAWING NO.	SHEET 2 OF 7
FWA JOB NUMBER	2024096.00

SDP-03-93

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SITE DEVELOPMENT PLAN

JAGUAR/LANDROVER OF COLUMBIA WEST

GENERAL NOTES

1. All construction shall be in accordance with the latest standards and specifications of Howard County plus MSHA standards and specifications, if applicable.
2. The contractor shall notify "Miss Utility" at 1-800-257-7777 at least 48 hours prior to any excavation work.
3. The contractor is to notify the following utilities or agencies at least five days before starting work on these drawings:

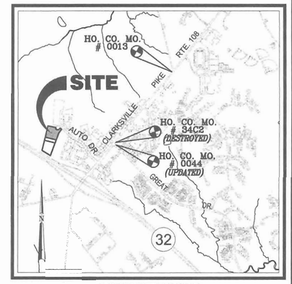
Miss Utility	1-800-257-7777
Verizon Telephone company:	1-410-954-6281
Howard County Bureau of Utilities:	313-2366
AT&T Cable Location Division:	393-3553
B.G.&E. Co. Contractor Services:	850-4620
B.G.&E. Co. Underground Damage Control:	787-4620
State Highway Administration:	531-5533

4. Site analysis:
   - Area of Parcel: 2.4987 Ac.
   - Present Zoning: B-2
   - Use of Structure: Auto Retail Sales & Service
     Automobile Sales = 7629 sf.
   - Building Area: 21,887 sf.
   - Building Coverage On Site: 0.50 Ac. or 20% of Gross Area
   - Paved Parking Lot/Area On Site: 1.17 Ac. or 46.8% of Gross Area
   - Area of Landscape Island: .09 Ac. or 3.6% of Gross Area
   - Limit of Disturbed Area: 208,350 sf. or 4.78 Ac.
5. Project background:
   - Location : Clarksville, Md.; Tax Map 34, K-2
   - Zoning : B-2
   - Subdivision : Holweck Subdivision
   - Section/Area : N/A
   - Site Area : 2.4987 Ac.
   - DPZ references : F-94-38; F-98-144; F-99-205; SP-93-14; WP-93-90; ZB-947M; ZB-1008M; F-01-29; WP-03-41; F-03-202
6. The contractor shall notify the Department of Public Works/Bureau of Engineering/Construction Inspection Division at (410) 313-1880 at least five (5) working days prior to start of work.
7. Any damage to public right-of-ways, paving, or existing utilities will be corrected at the contractor's expense.
8. Existing utilities located from Road Construction Plans, Field Surveys, Public Water and and Sewer Extension Plans and available record drawings. Approximate location of existing utilities are shown for the contractors information. Contractor shall locate existing utilities well in advance of construction activities and take all necessary precautions to protect the existing utilities and to maintain uninterrupted service. Any damage incurred due to contractor's operation shall be repaired immediately at the contractor's expense.
9. All reinforced concrete for storm drain structures shall have a minimum of 28 days strength of 3,500 p.s.i.
10. Traffic control devices, markings and signing shall be in accordance with the latest 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.
11. Estimates of earthwork quantities are provided soley for the purpose of calculating fees.
12. Soil compaction specifications, requirements, methods and materials are to be in accordance with the recommendations of the project Geotechnical Engineer. Geotechnical Engineer to confirm acceptability of proposed paving section, based on soil test prior to construction.
13. All storm drain pipe bedding shall be Class 'C'.
14. The existing topography is taken from field run survey with two foot contour intervals prepared by Frederick Ward and Associates, dated May 24, 2001. The coordinates shown hereon are based upon the Howard County Geodetic Control which is based upon the Maryland State Plane Coordinate System.
15. A noise study is not required for this project.
16. All paving to be minimum Howard County Standard Detail P-2 unless otherwise noted. (See details, sheet 5)
17. All curb and gutter to be Detail 3.01 unless otherwise noted. (See detail, sheet 5)
18. Contractor responsible to construct all handicap ramps and handicap access in accordance with current ADA requirements.
19. Where drainage flows away from curb, contractor to reverse the gutter pan.
20. All elevations are to flowline/bottom of curb unless otherwise noted.
21. All dimensions are to face of curb unless otherwise noted.
22. Public water is available through Contract No. 39-3942-D; Public sewer is available through Contract No. 39-3942-D.
23. Stormwater management quantity is provided by the proposed underground detention system. Water quality is proposed by a bio-retention system, and an underground sand filter structure. The proposed SWM system and water quality system are to be privately owned and maintained by Win Kelly Mitsubishi.
24. All exterior lighting to conform to section 134 of the Howard County Zoning Regulations. (Detail on Sheet 3)
25. Building to have inside water meter setting.
26. Traffic impact study prepared by Street Traffic Studies, LTD., dated March 20, 2003. APFO Study approval date April 29, 2003.
27. This plan has been prepared in accordance with the provisions of Section 16.124 of the Howard County Code and Landscape Manual.
28. Any existing street trees damaged or destroyed during construction will be replaced by the contractor.
29. Forest Conservation requirements for Parcel K-1 are provided in conjunction with F-01-029.
30. Financial surety for the required landscaping shall be posted as part of the developer's agreement in the amount of $12,360.00 for 23 shade trees, 28 evergreen trees, and 42 shrubs.
31. No mezzanine level or second story is permitted in the building unless adequate parking has been approved by the Department of Planning and Zoning.
32. Reference ZB 947M and ZB 1008M for zoning cases for this site:
    A) ZB 947M:
       1. Date of approval for Decision and Order: March 11, 1994
          a. Action Taken: Rezone part of property from B-2 to R-C and R-c to B-2
       2. Conditions of approval: A 300' private easement buffer area between the zoned B-2 use on lot 4 and the existing residential house on lot 3.
    B) ZB 1008M:
       1. Date of approval for Decision and Order: December 4, 2000
          a. Action Taken: Rezone part of Parcel "L" from B-2 to RC
       2. Conditions of approval: No conditions of approval were specified.
33. Debris is to be kept out of all stormwater management facilities during and after construction.
34. Adjoining Parcel E-2 was the subject of WP-03-41, which allowed a temporary sales trailer to be established. A condition of approval required that within 180 days of signature approval of a site plan for Parcel K-1, the temporary use on Parcel E-2 must be vacated and all improvements removed.
35. Geotechnical report prepared by Specialized Engineering, dated January 17, 2003.

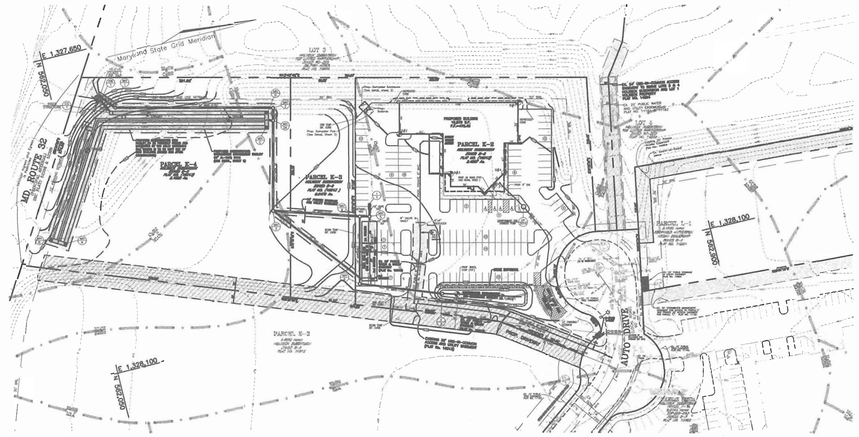
BENCHMARKS

Howard County Station 34C2 (Destroyed)
N 562,321.798 E 1,329,750.722
Updated: Station 0044
N 562,176.474 E 1,329,641.868 Elev: 485.252'

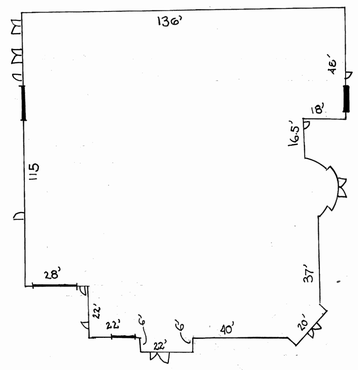
Howard County Station 0013
N 564,285.946 E 1,331,309.715 Elev: 484.671'



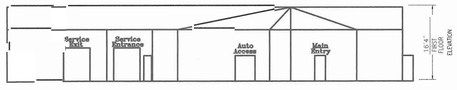
VICINITY MAP
SCALE: 1"=2000'



LOCATION MAP
SCALE: 1" = 100'



PROPOSED BUILDING PLAN VIEW
1" = 30'



PROPOSED BUILDING ELEVATION
NOT TO SCALE

LEGEND:

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING GUY WIRE
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING BOLLARD
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING SD MANHOLE
- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN INLET
- EXISTING TREES (FIELD LOCATED)
- EXISTING TREELINE (FIELD LOCATED)
- EXISTING VEGETATION (APPROXIMATE LOCATION)
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- SOILS BOUNDARY (MIC2, BrB2)
- SILT FENCE (SF)
- SUPER SILT FENCE (SSF)
- LIMIT OF DISTURBANCE (LOD)
- EXISTING PAVING TO BE REMOVED AND REPLACED (OR)
- PROPOSED P-2 PAVING
- PROPOSED BUILDING ADDITION
- AT GRADE INLET PROTECTION (AGIP)
- PROPOSED SIDEWALK
- STABILIZED CONSTRUCTION ENTRANCE

PARKING TABULATION

	REQUIRED
AUTOMOBILE DISPLAY: 9769 SF @ 1 SPACE/1000 SF	10 SPACES
SALES/OFFICE: 7629 SF (INCLUDING MEZZANINE) @ 2 SPACES/1000 SF	16 SPACES
SERVICE BAYS: 13 BAY AUTOMOBILE SERVICE AREA @ 3 SPACES/SERVICE BAY (SEE SCHEMATIC FOR DOOR LOCATIONS)	39 SPACES
TOTAL SPACES: REQUIRED	65 SPACES
TOTAL SPACES: PROVIDED	67 SPACES (INCLUDING 4 HANDICAP)

SHEET INDEX

DESCRIPTION	SHEET NO.
Cover Sheet	1 of 7
Site Development, Grading, and Sediment and Erosion Control Plan	2 of 7
Sediment and Erosion Control Notes and Details	3 of 7
Storm Drain Drainage Area Map, Storm Drain Profiles and Details	4 of 7
Stormwater Management Notes and Details, Water and Sewer Profiles and Details	5 of 7
Stormwater Management Notes and Details	6 of 7
Landscape Plan	7 of 7

ADDRESS CHART	
LOT/PARCEL#	STREET ADDRESS
K-2	12300 NEW CAR DRIVE

PERMIT INFORMATION CHART

SUBDIVISION NAME			SECTION/AREA		PARCEL NUMBER
HOLWECK SUBDIVISION			N/A		K-2, E-1, E-2
PLAT REF.	BLOCK NO.	ZONE	TAX/ZONE	ELECT. DIST.	CENSUS TR.
16013	6	B2	34	5th	6051
WATER CODE: 110			SEWER CODE: 665300		

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 12/12/03
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 12/17/03
DIRECTOR	DATE 12/22/03

REVISIONS

REV#	DATE	DESCRIPTION
2	03/20/05	REVISE BUILDING FOOTPRINT, ASSOCIATED GRADING CHANGES, TITLE AND PROJECT NAME CHANGES

OWNER/DEVELOPER

1318 COMPANY LLC
10400 AUTO PARK DRIVE
BETHESDA, MD 20817

FREDERICK WARD ASSOCIATES, INC.
ARCHITECTS | ENGINEERS | PLANNERS | SURVEYORS
7125 RIVERWOOD DRIVE
COLUMBIA, MARYLAND 21046-2354
410-720-6900
410-720-6226 fax
REGIONAL OFFICES:
BEL AIR, MARYLAND AND WARRENTON, VIRGINIA
www.frederickward.com

SITE DEVELOPMENT PLAN

COVER SHEET
JAGUAR/LANDROVER OF COLUMBIA WEST

TAX MAP #34 BLOCK #6
5TH ELECTION DISTRICT

PARCEL K-2
HOWARD COUNTY, MARYLAND

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — REGISTERED PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE No.16193 — 11/24/03

DATE	SEPT 2003
SCALE	JAN. 2003
DESIGN BY	MMR
CHECKED BY	RHV
DRAWN BY	DZ
DRAWING NO.	SHEET 1 OF 7
FWA JOB NUMBER	2024096.00

SDP-03-93

M:\PROJECTS\2019\SITE\ENGR\dwg\MK_MitSubish\GD01.dwg Fri Oct 17 08:45:13 2003 M.A.N.