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9	PROFILES AND DETAILS

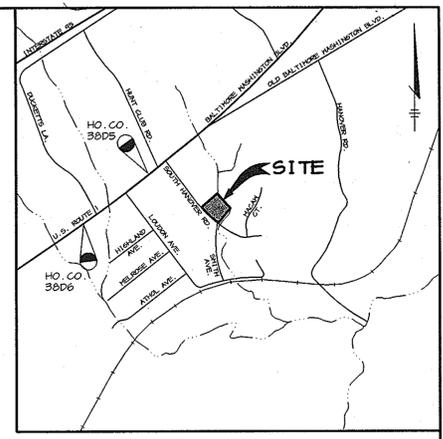
# SITE DEVELOPMENT PLAN

## W.O. GRUBB

### OFFICE/ MAINTENANCE FACILITY

#### 1st ELECTION DISTRICT

#### HOWARD COUNTY, MARYLAND



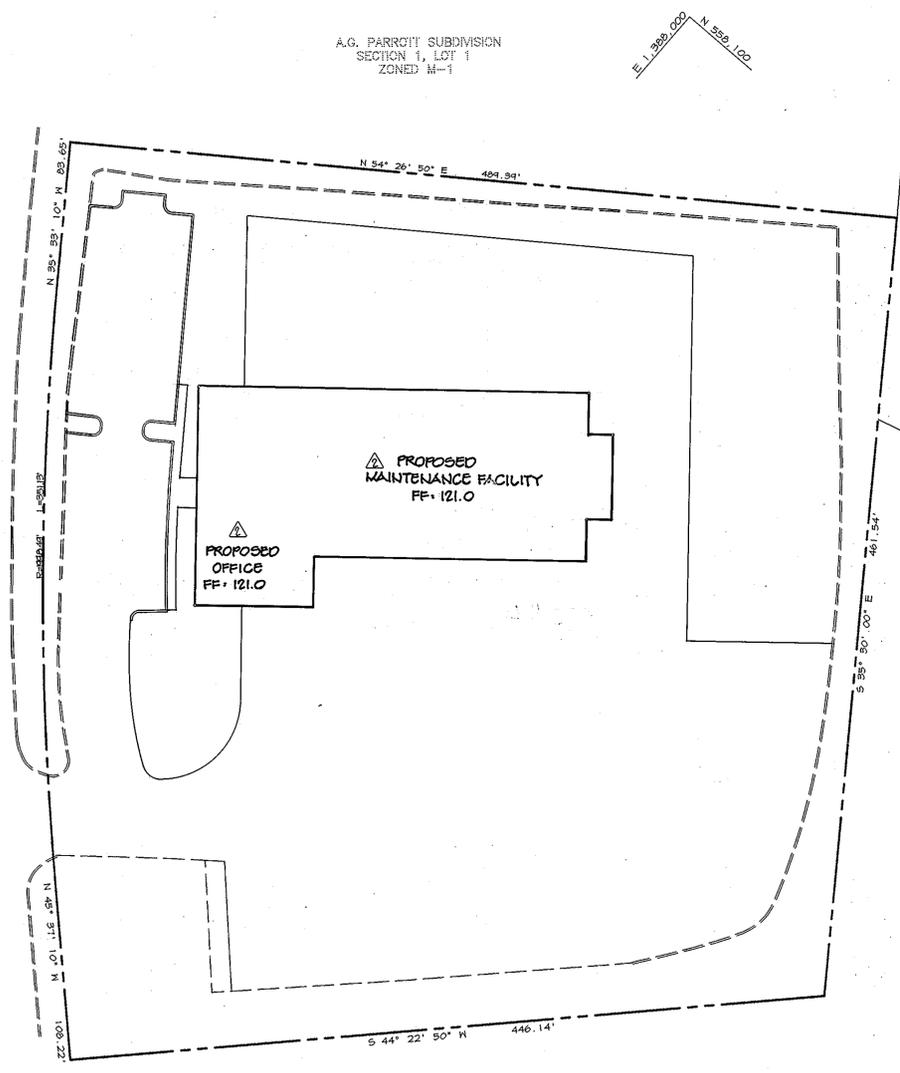
**VICINITY MAP**  
SCALE: 1" = 2000'

**GENERAL NOTES**

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/ CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- TRAFFIC CONTROL DEVICES, MARKINGS, AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
- ALL PLAN DIMENSIONS ARE TO FACE OF CURB AND FACE OF BUILDING UNLESS OTHERWISE NOTED.
- THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD SURVEY WITH MAXIMUM ONE FOOT CONTOUR INTERVALS PREPARED BY FISHER, COLLINS & CARTER, INC., DATED FEBRUARY 11, 1998.
- THE COORDINATES SHOWN HEREON ARE BASED UPON AN ASSUMED DATUM. THE BOUNDARY WAS TAKEN FROM THE BOUNDARY SURVEY PLAT (C.M.P. 18/30), SECTION 2, PARCEL A OF A.G. PARROTT INDUSTRIAL PARK.
- WATER IS PUBLIC. CONTRACT NO. 256 W&S (400 ZONE).
- SEWER IS PUBLIC. CONTRACT NO. 256 W&S (DRAINAGE AREA: PATAPSCO).
- STORMWATER MANAGEMENT IS PROVIDED BY AN EXISTING POND AND PARKING LOT STORAGE. THESE FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED BY PERI FORMWORKS SYSTEMS, INC.
- APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE. EXISTING UTILITIES ARE SHOWN BASED ON THE BEST AVAILABLE INFORMATION.
- A 100-YEAR FLOODPLAIN STUDY IS TAKEN FROM SDP-75-62 PREPARED BY PURDUM & JESCHKE, 1975.
- AN AFO TRAFFIC STUDY IS REQUIRED FOR THIS PROJECT AND HAS BEEN COMPLETED BY THE TRAFFIC GROUP, INC., ON JULY 2, 2002.
- A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.
- A GEOTECHNICAL STUDY FOR THIS PROJECT WAS PREPARED BY HERBST/BENSON & ASSOCIATES, DATED MARCH 20, 1998.
- SUBJECT PROPERTY ZONED M-1 PER 10-18-93 COMPREHENSIVE ZONING PLAN.
- SEE DEPARTMENT OF PLANNING AND ZONING FILE NO'S SDP-75-62 & F-69-18, WP-00-20
- THE CONTRACTOR SHALL TEST PIT EXISTING UTILITIES AT LEAST (5) DAYS BEFORE STARTING WORK SHOWN ON THESE DRAWINGS TO VERIFY SIZE, TYPE, LOCATION AND ELEVATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF LOCATION OF UTILITIES IS OTHER THAN SHOWN.
- CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, AND SAFETY PRECAUTIONS AND PROGRAMS.
- ALL PIPE ELEVATIONS SHOWN ARE INVERT  $\circ$  ELEVATIONS.
- ALL STORM DRAIN PIPE BEDDING SHALL BE AS SHOWN IN DETAIL G2.01 (TRENCH IN ROCK OR TRENCH IN EARTH AS DETERMINED BY FIELD CONDITIONS) IN VOL. IV OF HOWARD COUNTY DESIGN MANUAL UNLESS OTHERWISE DIRECTED BY THE ENGINEER OR AS SHOWN ON THE DRAWINGS.
- THE PAVEMENT DETAILS SHOWN ON THESE PLANS REFLECT THE HOWARD COUNTY MINIMUM STANDARD PAVEMENT SECTIONS AND ARE NOT BASED ON SITE SPECIFIC CONDITIONS. PRIOR TO PAVING, THE FINAL PAVEMENT SECTIONS SHALL BE DETERMINED BY A QUALIFIED GEOTECHNICAL ENGINEER BASED ON IN-SITU TESTING OF THE FINISHED SUBGRADE. ANY PAVEMENT SECTION DETERMINED BY THE GEOTECHNICAL ENGINEER THAT IS LESS THAN THE HOWARD COUNTY MINIMUM STANDARD, SHALL FIRST BE APPROVED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS. THE TESTING AND GEOTECHNICAL ENGINEER SHALL BE FURNISHED BY THE OWNER.
- ANY DAMAGE TO THE COUNTY'S RIGHT-OF-WAY SHALL BE CORRECTED AT THE DEVELOPER'S EXPENSE.
- NO PIPE SHALL BE LAID UNTIL LINES OF EXCAVATION HAVE BEEN BROUGHT WITHIN 6" OF FINISHED GRADE.
- ALL WATER LINES SHALL BE CONSTRUCTED A MINIMUM OF 42" COVER BELOW FINISHED GRADE.
- PROFILES STATIONS SHALL BE ADJUSTED AS NECESSARY TO CONFORM TO PLAN DIMENSIONS.
- THERE ARE NO WETLANDS ON THIS SITE.
- THE EXISTING WATER AND SEWER SERVICES SHOWN ON THIS PLAN SHALL BE USED FOR THE NEW BUILDING.
- THE PROPOSED OFFICE AND WAREHOUSE WILL BE SPRINKLED.
- STORAGE, LOADING/UNLOADING, DUMPSTER AND/OR OTHER BUSINESS/INDUSTRIAL USES SHALL NOT BE LOCATED WITHIN THE 50 FOOT STRUCTURE AND USE SETBACK.
- FOR CONSTRUCTION IN THE FLOODPLAIN, THE MARYLAND DEPARTMENT OF THE ENVIRONMENT HAS ISSUED AN "AUTHORIZATION TO PROCEED" NO. 98-NI-0275/199864858.
- ALL OUTDOOR LIGHTING SHALL COMPLY WITH ZONING SECTION 124.
- WP-00-25 - A REQUEST FOR WATER WAS APPROVED ON OCTOBER 22, 2002, SUBJECT TO THE FOLLOWING CONDITIONS:
  - THE BUILDING PERMIT TO INITIATE CONSTRUCTION ON THIS SITE SHALL BE APPLIED FOR WITHIN ONE YEAR FROM THE DATE OF THIS APPROVAL LETTER (BY OCTOBER 22, 2003)
  - COMPLIANCE WITH DED COMMENTS DATED AUGUST 15, 2002.
  - THE AFO STUDY SUBMITTED TO DEP ON AUGUST 6, 2002, SHALL BE SUBMITTED TO THE SHA FOR THEIR REVIEW AND APPROVAL. THIS PROJECT SHALL COMPLY WITH ANY SHA COMMENTS/REQUIREMENTS. THE FINAL REVISIONS SHALL NOT BE SUBMITTED TO THE DEP UNTIL THIS PROJECT IS APPROVED BY THE SHA, AND DEP RECEIVES A COPY OF THE SHA APPROVAL LETTER.
- SURETY FOR THE SWM PERIMETER LANDSCAPING SHALL BE POSTED IN THE AMOUNT OF \$1,000.00 AS PART OF THE DEVELOPER'S AGREEMENT.

**SITE ANALYSIS**

AREA OF PARCEL	5.4849 ACRES (238,922 SF)
DISTURBED AREA	1.4 ACRES (60,984 SF)
PRESENT ZONING	M-1
PROPOSED USE	TWO STORY OFFICE/ ONE STORY GRAVE MAINTENANCE FACILITY
BUILDING COVERAGE	
WAREHOUSE AREA	19,900 SF @ 6 BAYS
OFFICE AREA	FIRST FLOOR: 3,200 SF SECOND FLOOR: 3,500 SF MEZZANINE: 5,010 SF TOTAL: 11,710 SF (5.0% OF SITE)
TOTAL AREA	34,070 SF (14.5% OF SITE)
# OF PARKING SPACES REQUIRED	
SERVICE AREA = 6 BAYS SF @ 2.5 SP + 257/6A4	21 SPACES
OFFICE AREA = 14,170 SF @ 3.3 SP/1000 SF*	47 SPACES
TOTAL SPACES REQUIRED	68 SPACES (INCL. 2 HC SPACES)
# OF PARKING SPACES PROVIDED	68 SPACES (INCLUDING 2 HC)
APPLICABLE REFERENCES	SDP-75-62
	* PER HOWARD COUNTY ZONING REGULATIONS SECTION 133, INCLUDING 3000 SF OF OFFICE SPACE IN THE SECOND FLOOR MEZZANINE



WILLARD W. SHIPMAN  
GLORIA C. SHIPMAN  
W.H.H. 413/278  
ZONED M-1

A.G. PARROTT SUBDIVISION  
SECTION 1, LOT 1  
ZONED M-1

**HOWARD COUNTY SURVEY CONTROL STATIONS**

HO. CO. #3805	EL. 143.75
N 550.370.5751	
E 1,306.524.1431	
HO. CO. #3806	EL. 175.260
N 557.155.4548	
E 1,304.492.2544	

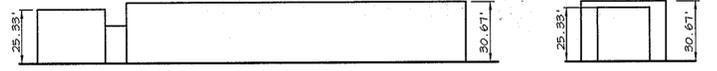
**OPERATION AND MAINTENANCE SCHEDULE OF PRIVATELY OWNED AND MAINTAINED STORMWATER MANAGEMENT FACILITY DETENTION POND**

- ROUTINE MAINTENANCE**
- Facility shall be inspected annually and after major storms. Inspections should be performed during wet weather to determine if the pond is functioning properly.
  - Top and side slopes of the embankment shall be mowed a minimum of two (2) times a year, once in June and once in September. Other side slopes, the bottom of the pond, and maintenance access should be mowed as needed.
  - Debris and litter next to the outlet structure shall be removed during regular mowing operations and as needed.
  - Visible signs of erosion in the pond as well as riprap outlet area shall be repaired as soon as it is noticed.
  - Inspect and clean as required the 4" toe drain outlet exiting through structure #1-1.
- NON-ROUTINE MAINTENANCE**
- Structural components of the pond such as the dam, the riser, and the pipes shall be repaired upon the detection of any damage. The components should be inspected during routine maintenance operations.
  - Sediment should be removed when its accumulation significantly reduces the design storage, interferes with the function of the riser, when deemed necessary for aesthetic reasons, or when deemed necessary by the Howard County's Department of Public Works.

**WIDE SWM HOTSPOT REQUIREMENTS**  
THIS SITE IS A DESIGNATED STORMWATER HOTSPOT AND MUST MEET THE REQUIREMENTS OF SECTION 2.6 OF THE 2000 STORMWATER DESIGN MANUAL VOLUME 1.

A.G. PARROTT INDUSTRIAL PARK  
PARCEL B  
PLAT C.M.P. 18/30  
ZONED M-1

**PLAN**  
SCALE: 1" = 50'



**ADDRESS CHART**

PARCEL	STREET ADDRESS
A	6331 SOUTH HANOVER ROAD

PROVISION NAME - A.G. PARROTT INDUSTRIAL PARK	SECT./AREA - SECTION 2	PARCEL - A
PLAT # - P.B 18 F.30	BLOCK # - 14	ZONING - M-1
FAX MAP NO. - 38	ELECT. DIST. - 1st	CENSUS TRACT - 6012
WATER CODE - A01	SEWER CODE - 2150518	

8-10-06	ADDED SHEETS AND NOTE	
4-7-04	MODIFIED SITE ANALYSIS	
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.		
<i>[Signature]</i>	12/9/98 DATE	
<i>[Signature]</i>	12/2/98 DATE	
<i>[Signature]</i>	12/6/95 DATE	
8-0-00	REV. PLAN, SITE ANALYSIS, GENERAL NOTES & TITLE BLOCK	
1-15-99	ADDED SHEET 7 TO SHEET INDEX 1 RETAINING WALL	
DATE	NO.	REVISION
<b>OWNER/DEVELOPER</b>		
W.O. GRUBB 2021 WHITTINGTON AVENUE BAULTEWICK, MARYLAND 21830 410-525-1225		
<b>PROJECT</b>		
W.O. GRUBB OFFICE/MAINTENANCE FACILITY		
<b>AREA</b>		
TAX MAP 38 ZONED M-1 PARCEL A A.G. PARROTT INDUSTRIAL PARK, SECTION 2 1st ELECTION DISTRICT HOWARD COUNTY, MARYLAND		
<b>TITLE</b>		
REVISED TITLE SHEET		

**RIEMER MUEGGE & ASSOCIATES, INC.**  
ENGINEERING • ENVIRONMENTAL SERVICES • PLANNING • SURVEYING  
8818 Centre Park Drive, Columbia, Maryland 21045  
tel 410.997.8900 fax 410.997.9282

DATE	DESIGNED BY: AAP/DCD
	DRAWN BY: MAD
	PROJECT NO: 98061 SDP1.DWG
	DATE: OCTOBER 16, 1998
	SCALE: AS SHOWN
	DRAWING NO. 1 OF 9



**LEGEND**

- P-2 PAVING
- CONCRETE SIDEWALK OR PATIO
- EMCO #ECA181-SH-400HS-BRP-NV5530-5-11
- DAY-BRITE #FLM-S-400S ON EMCO #555-30-5-11
- EMCO #ECA181-SH-400-HPS-BRP-NV5530-5-11-D1-T2-MOD AND DAY-BRITE #FLM-S-400S
- EMCO #ECA182-SH-400HS-BRP-NV5530-5-D1-T2-MOD AND DAY-BRITE #FLM-S-400S
- DAY-BRITE #FLM-S-400S-MT/N SRAB-2P
- SILT FENCE
- SUPER SILT FENCE
- AT GRADE INLET PROTECTION
- CURB INLET PROTECTION
- SOIL BORING LOCATION
- TRANSITION FROM STANDARD TO REVERSE CURB & GUTTER

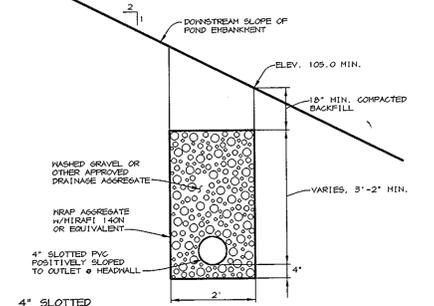
**NOTES:**

1. ALL LIGHTS TO BE DIRECTED/REFLECTED AWAY FROM ADJACENT PUBLIC ROADS AND RESIDENTIALLY ZONED PROPERTIES, AND BE IN ACCORDANCE WITH SECTION 134 OF THE HOWARD COUNTY ZONING REGULATIONS.
2. ALL CURB RADI ARE 5' UNLESS OTHERWISE NOTED.
3. ALL DIMENSIONS ARE TO FACE OF CURB OR BUILDING UNLESS OTHERWISE NOTED.
4. ALL ON-SITE ROADS ARE PRIVATE.
5. SEE SHEET 4 FOR HANDICAP ACCESS DETAIL.
6. SHC AND HWC TO BE CONSTRUCTED BY HOWARD COUNTY BY ADP.
7. SWM EMBANKMENT RECONSTRUCTION AND TRENCH DRAIN SHALL BE SUPERVISED BY A GEOTECHNICAL ENGINEER.
8. ALL EASEMENTS ON-SITE ARE PUBLIC, RECORDING NO. P.B. 19, P.6.30

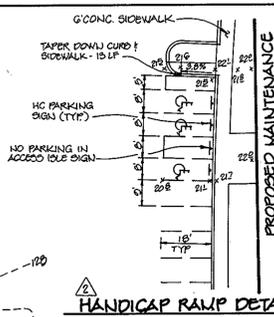
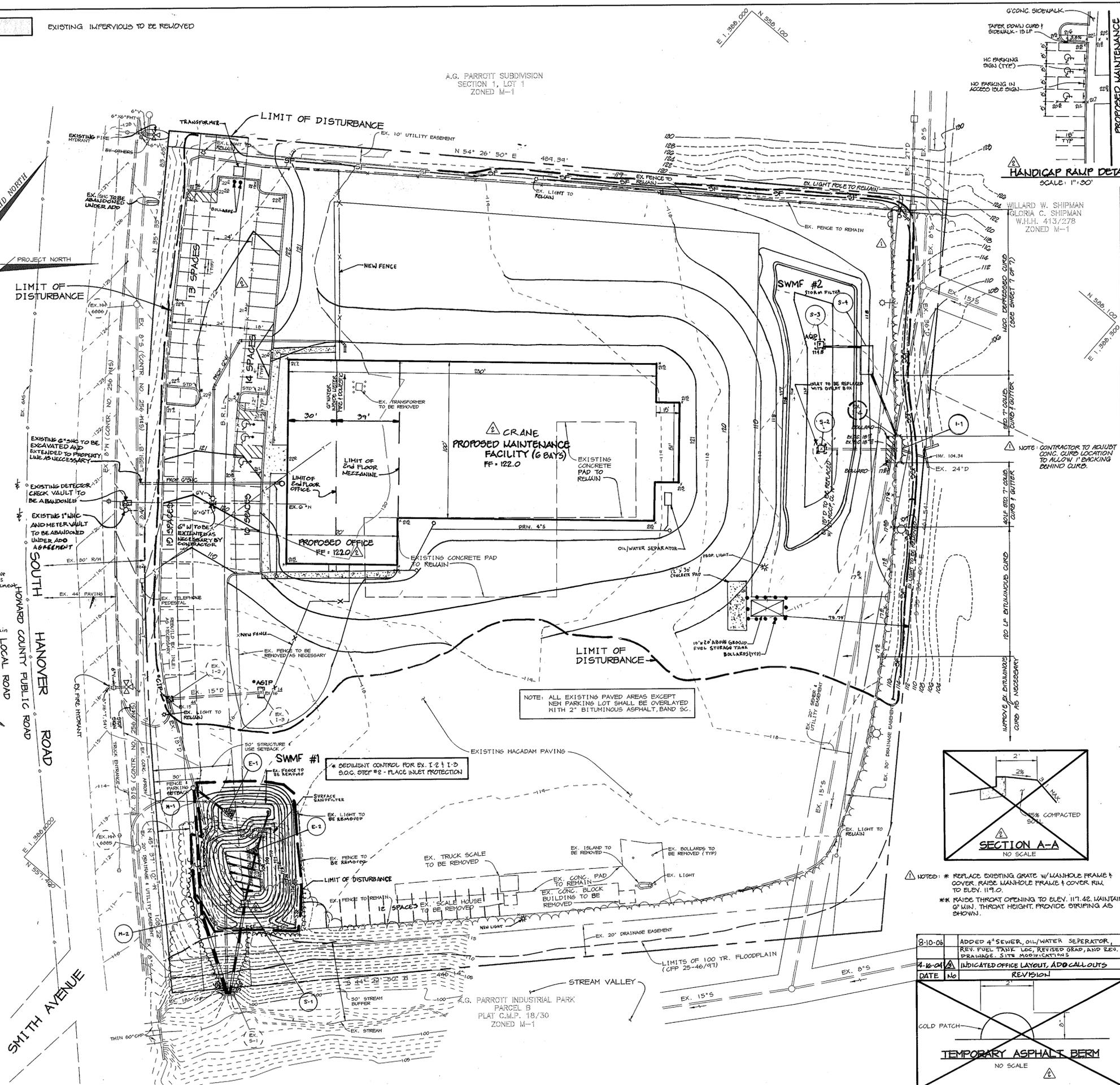
- SEQUENCE OF CONSTRUCTION**
1. Obtain a grading permit and other permits as necessary prior to construction. Notify the Howard County Department of Licenses & Permits (DLP) - 410 312-1855 to schedule a preconstruction meeting. (1 day)
  2. Install silt fence, super silt fence (remove pavement as necessary) and inlet protection. Divert drainage from SWM #1 with temporary silt fence and blocking existing inlets 1-2 & 1-3. (1 day)
  3. Begin rehabilitation of SWM #1. Excavate and remove existing 1-1, and remove existing 10" PVC concrete surface sand filter. Remove remaining existing trees on the embankment and in the surface sand filter. Stabilize the embankment immediately. See note T above. (2 weeks)
  4. Begin building parking lot construction and concrete retaining wall. (2 months)
  5. Complete SWM #1 rehabilitation. When pond is stabilized and with permission from SEC inspector, replace blocking at inlets 1-2 & 1-3 with inlet protection as shown. (1 day)
  6. When subgrade is reached, install water and sewer services, storm drain structures and pipes. (2 weeks)
  7. Begin rehabilitation of SWM #2. Remove 1-2 and 2" RCP pipe, install structures and pipes. (2 weeks)
  8. Complete site paving and overlay. Silt fence shall be removed when paving begins. (1 week)
  9. Complete building construction. (3 months)
  10. Fine grade, install lighting, flag pole, bollards, striping and landscaping. (1 week)
  11. With approval of the Howard County DEP sediment and erosion control (SEC) inspector, remove remaining SEC devices, and stabilize the areas disturbed by this process using permanent seeding. (1 day)

**PURPOSE STATEMENT:**

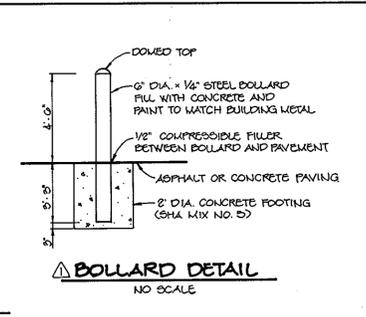
8/10/98 - THESE PLANS WERE REVISED TO ADD AN ABOVE-GROUND SAND FILTER ALONG WITH A STORMWATER STORAGE AREA FOR WATER QUALITY MANAGEMENT. ALSO, THE FUEL STORAGE TANK WAS RELOCATED, AN OIL/WATER SEPARATOR AND A NEW SEWER LATERAL WAS ADDED, THE LIGHTING WAS REVISED AND THE PROPOSED SITE FEATURES WERE UPDATED.



**TRENCH DRAIN DETAIL**  
NO SCALE



**HANDICAP RAMP DETAIL**  
SCALE: 1"=30'



**BOLLARD DETAIL**  
NO SCALE

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

DEVELOPER: *[Signature]* 11/18/98 DATE

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

ENGINEER: *[Signature]* 10/26/98 DATE

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.  
DIRECTOR: *[Signature]* 12/7/98 DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION: *[Signature]* 12/13/98 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT: *[Signature]* 12/15/98 DATE

REVISIONS:

DATE	NO.	REVISION
8-10-06	1	ADDED 4" SEWER, OIL/WATER SEPARATOR, REV. FUEL TANK, LOC. REVISED BRD, AND REV. DRAINAGE. SITE MODIFICATIONS.
4-16-04	2	INDICATED OFFICE LAYOUT, ADD CALL OUTS

OWNER/DEVELOPER:  
W.O. GRUBB  
2021 WHITTINGTON AVENUE  
BALTIMORE, MARYLAND 21230  
410-525-1203

PROJECT:  
OFFICE/MAINTENANCE FACILITY

AREA TAX MAP 3B ZONED: M-1 PARCEL A  
A.G. PARROTT INDUSTRIAL PARK, SECTION 2  
1ST ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

TITLE:  
SITE DEVELOPMENT PLAN  
AND SEDIMENT CONTROL PLAN

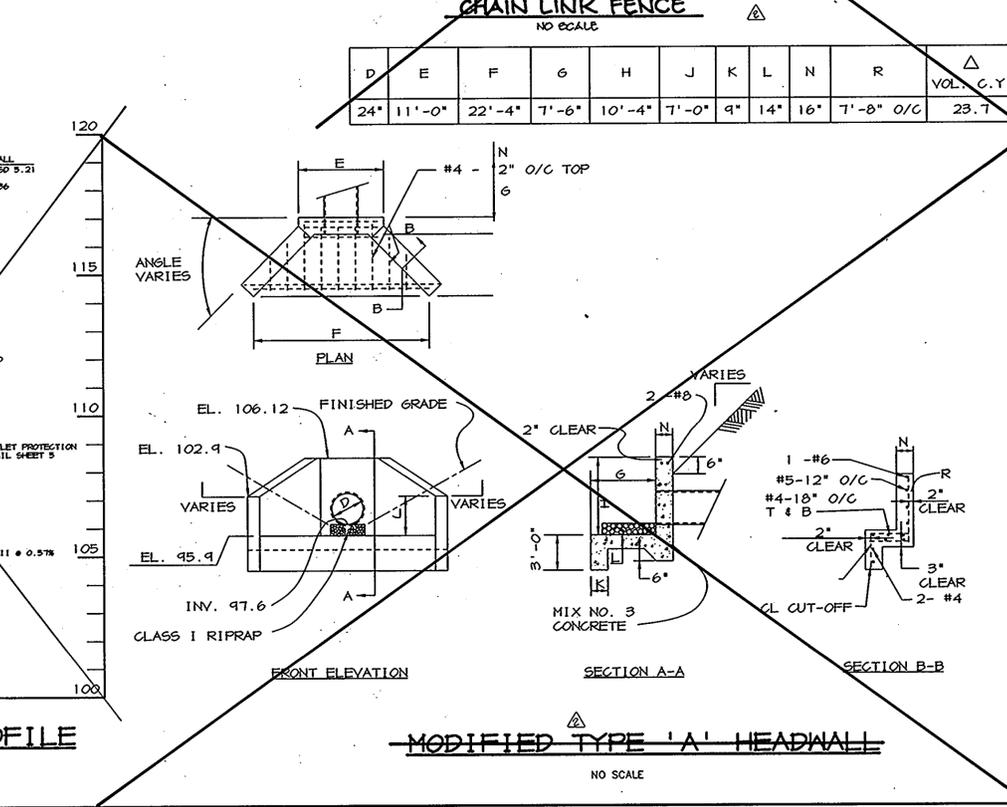
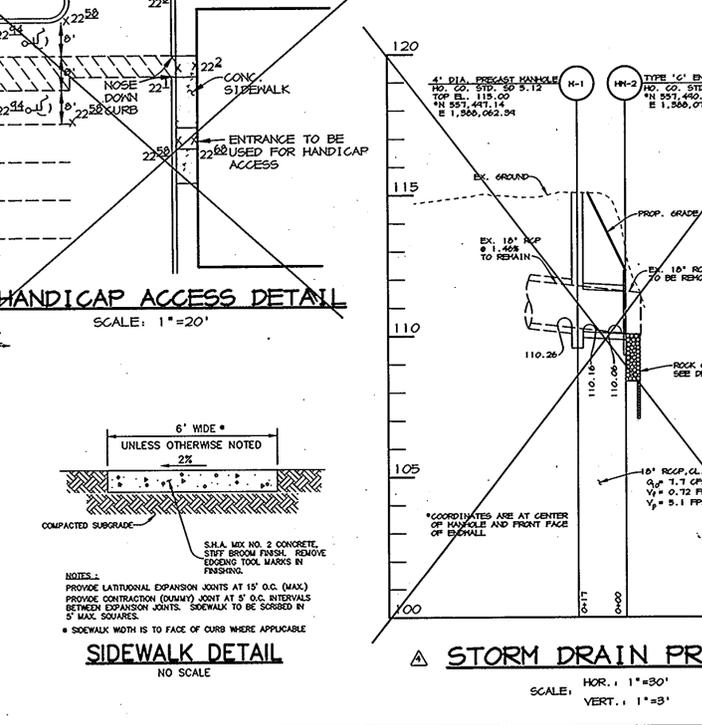
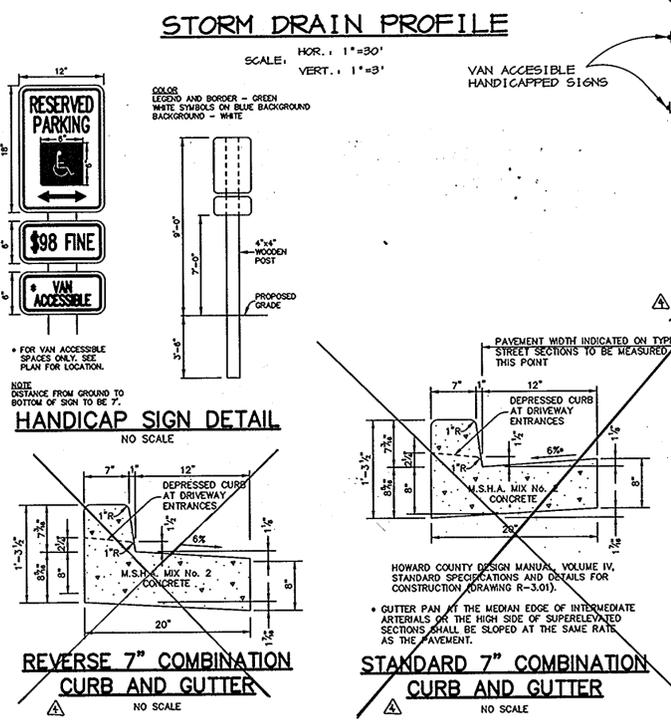
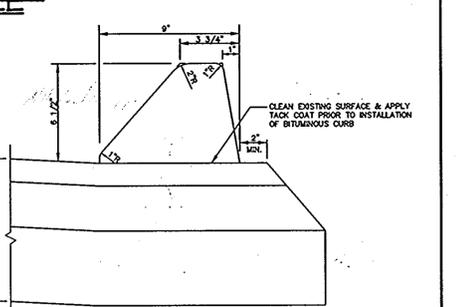
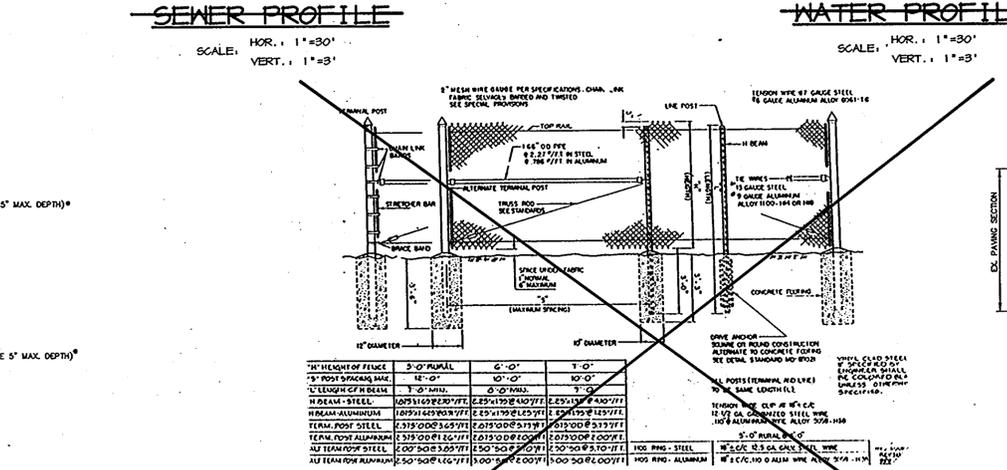
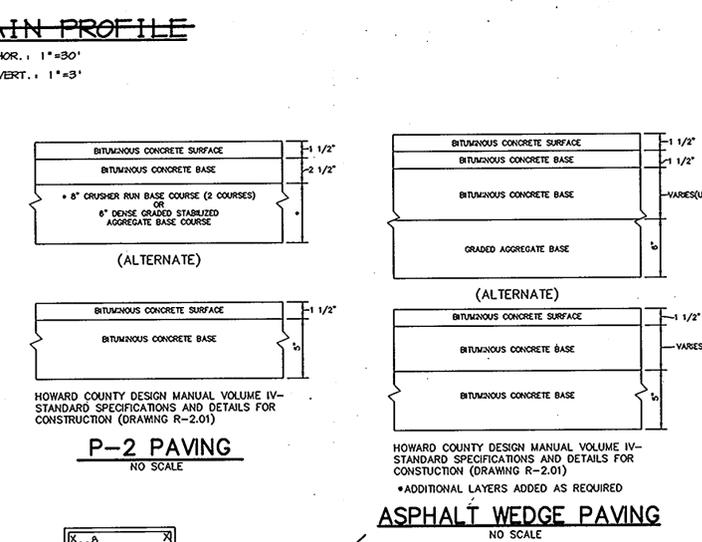
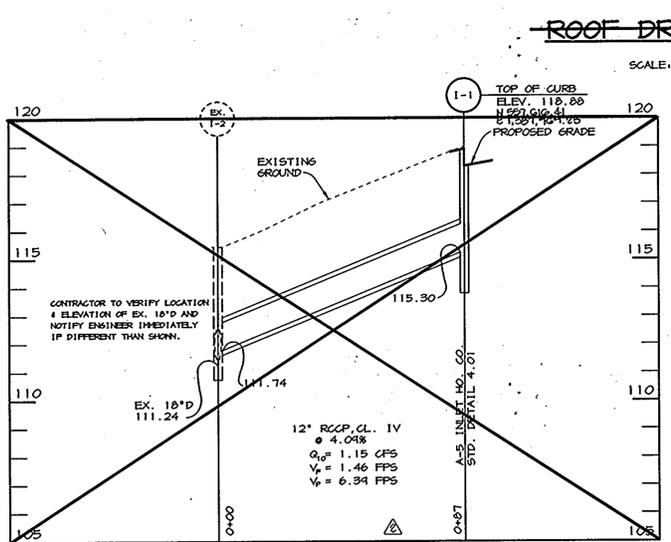
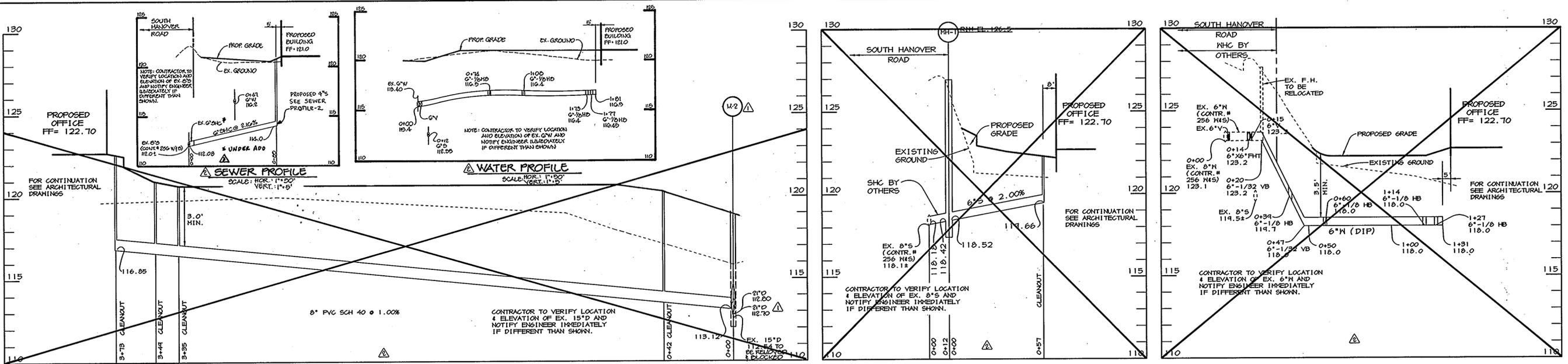
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8818 Centre Park Drive, Columbia, Maryland 21045  
tel 410.997.8900 fax 410.997.9282

DESIGNED BY: AAP/DCD  
DRAWN BY: MAD  
PROJECT NO.: 98061  
SDP2.DWG  
DATE: OCTOBER 16, 1998  
SCALE: 1"=30'  
DRAWING NO.: 2 OF 9

DATE: \_\_\_\_\_

ARTHUR E. MUEGGE #8107

SDP-98-111



STANDARD BITUMINOUS CURB	
NO SCALE	
0-10-00	DELETED DETAILS AND PROFILE, REVISE PROFILE
4-16-04	ADDED ADD NOTE TO SEWER PROFILE
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.	
<i>John S. Suter</i>	12/3/28 DATE
<i>John Suter</i>	12/3/28 DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION	
<i>Chris Hanley</i>	12/3/28 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT	
0-10-00	REMOVED PROFILES & DETAILS, REV. TITLE BLOCK.
1-10-79	REV. ROOF DRAIN PROFILE
DATE NO.	REVISION
OWNER/DEVELOPER	
W.O. GRUBB 2021 WHITTINGTON AVENUE BALTIMORE, MARYLAND 21220 410-825-1200	
PROJECT	
W.O. GRUBB OFFICE/MAINTENANCE FACILITY	
AREA TAX MAP 30 ZONED: M-1 PARCEL A A.G. PARROTT INDUSTRIAL PARK, SECTION 2 1st ELECTION DISTRICT HOWARD COUNTY, MARYLAND	
TITLE	
REVISED PROFILES AND DETAILS	
RIEMER MUEGGE & ASSOCIATES, INC. ENGINEERING • ENVIRONMENTAL SERVICES • PLANNING • SURVEYING 8818 Centre Park Drive, Columbia, Maryland 21045 tel 410.997.8900 fax 410.997.9282	
DATE	DESIGNED BY: AAP/DCD
STATE OF MARYLAND PROFESSIONAL ENGINEER	DRAWN BY: MAD
ARTHUR E. MUEGGE #8107	PROJECT NO: 98061 SDP4.DWG
	DATE: OCTOBER 16, 1998
	SCALE: AS SHOWN
	DRAWING NO. 3 OF 9

**MD-378 STANDARDS AND SPECIFICATIONS**

**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, rocks and other objectionable material shall be removed. Channel banks and sharp breaks shall be sloped to no steeper than 1:1.

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 removed. Channel banks and sharp breaks shall be sloped to no steeper than 1:1.

All cleared and grubbed material shall be disposed of outside and below the limits of the shall reservoir or on 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.

**EROSION CONTROL**  
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" or frozen or other objectionable materials. Fill material for the center of the embankment and out of trench shall conform to Unified Soil Classification 6C, SC, CH, or CL. Consideration may be given to other materials in the accompanying drawings.

**Placement - Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in maximum 6-inch thick layers which are to be compacted to the level with the level of the fill. The most permeable borrow material shall be placed in the downstream portions of the embankment. The principal spillways must be installed concurrently with fill placement and not excavated into the embankment.**

**Compaction - The movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each lift shall be traversed by not less than one tread track of the equipment or compaction shall be achieved by a minimum of four passes of a sheepsfoot, rubber tire 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.**

Where a minimum required density is specified, it shall not be less than 45% of maximum dry density with a moisture content within +/- 2% of the optimum. Each layer of fill shall be compacted to the specified density, and is to be certified by the Engineer at the time of construction. All compaction is to be determined by ASTM Method T-99.

**Cutoff 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 sides of the trench shall be 1 to 1 or flatter.**

The back fill shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability.

**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 12 inches in thickness, compacted by hand tampers or other manually directed compaction equipment. The material nearest to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall any equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be allowed to move over a concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure or pipe.

**PIPE CONDUITS**

All pipes shall be circular in cross section.  
Aluminum Coated Steel Pipe - All of the following criteria shall apply for steel pipe:

1. 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. Any minimum coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound.

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

3. Connections - All connections with pipes must be completely watertight. The drain pipe or barrel connection to the riser shall be welded all around when the pipe and riser are metal. Anti-seep collars shall be connected to the pipe in such a manner as to be completely watertight. Dipole 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 to an adequate number of corrugations to accommodate the bond width. The following type connections are acceptable for pipes less than 48" in diameter: Flanges on both ends of the pipe, a 12" wide standard top type band with 1/2" wide by 3/8" thick closed cell circular neoprene gasket, and a 12" wide hugger type band with 3/8" thick closed cell circular neoprene gasket and a 1/2" greater than the corrugation depth of the pipe. Pipes 48" in diameter and larger shall be connected by a 24" long annular corrugated band using rods and lugs. A 12" wide by 3/8" thick closed cell circular neoprene gasket shall be installed at the end of each pipe for a total of 24". Helically corrugated pipe shall have either continuously welded seams or have lock seams.

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 Designation C-361.

2. Bedding - All reinforced concrete pipe conduits shall be laid in a concrete bedding for their entire length. This bedding shall consist of high slump concrete placed under the pipe and up the side of the pipe at least 10% of its outside diameter with a minimum thickness of 3 inches, or as shown on the drawings.

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 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 2 feet from the riser.

4. Backfilling shall conform to Structure Backfill.

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

**Polyvinyl Chloride (PVC) Pipe - All of the following criteria shall apply for polyvinyl chloride (PVC) pipe:**

1. Materials - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241.

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.

**CONCRETE**

Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 609, Mix No. 3.

**ROCK RIPRAP**

Rock riprap shall meet the requirements of Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials, Section 609, Mix No. 3.

The riprap shall be placed to the required thickness in one operation. The rock shall be delivered and placed in a manner that will insure the riprap in place shall be reasonably homogeneous with the larger rocks uniformly distributed and firmly in contact one to another with the smaller rocks filling the voids between the larger rocks. Filter cloth shall be placed under all riprap and shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 419.12.

**CARE OF WATER DURING CONSTRUCTION**

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

**STABILIZATION**

All borrow areas shall be graded to provide proper drainage and left in a slightly condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and barge shall be stabilized by seeding, liming, fertilizing and mulching in accordance with the Maryland Soil 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 control will be followed. Construction plans shall detail erosion and sediment control measures to be employed during the construction process.

Refer to the 1984 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for rate and methods not covered.

**21.0 STANDARD AND SPECIFICATIONS**

**FOR TOPSOIL**

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

**Definition**

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

**Conditions Where Practice Applies**

- This practice is limited to areas having 2:1 or flatter slopes where:
  - The texture of the exposed subsoil is not adequate to produce vegetative growth.
  - The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
  - The original soil to be vegetated is material toxic to plant growth.
  - The soil is so acidic that treatment with limestone is not feasible.
- For the purpose of these Standards and Specifications, areas having slopes steeper than 2:1 require special consideration and design for adequate stabilization. Areas having slopes steeper than 2:1 shall have the appropriate stabilization shown on the plans.

**Construction and Material Specifications**

- Topsoil salvaged from the existing site may be used provided that it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-SCS in cooperation with Maryland Agricultural Experimentation Station.
- Topsoil Specifications - Soil to be used as topsoil must meet the following:
  - Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand, other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. 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, trash, or other materials larger than 1 1/2" in diameter.
  - Topsoil must be free of plants or plant parts such as bermuda grass, quackgrass, Johnsongrass, nutgrass, poison ivy, thistle, or others as specified.
  - Where subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 4-8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.
  - For sites having disturbed areas over 5 acres:
    - Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section 1 - Vegetative Stabilization Methods and Materials.
  - For sites having disturbed areas over 5 acres:
    - On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:
      - pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.
      - Organic content of topsoil shall be not less than 1.5 percent by weight.
      - Topsoil having soluble salt content greater than 500 parts per million shall not be used.
      - No sod or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phytotoxic materials.

Note: Topsoil substitutes to 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.

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

**V. Topsoil Application**

- 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.
- Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4" - 8" higher in elevation.
- Topsoil shall be uniformly distributed in a 4" - 8" layer and lightly compacted to a minimum thickness of 4". Spreading shall be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.
- Topsoil shall not be placed while the topsoil or subsoil is in a condition that may otherwise be detrimental to proper grading and seeded preparation.

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

- Composted Sludge Material for use as a soil conditioner for sites having disturbed areas over 5 acres shall be tested to prescribe amendments and for site having disturbed areas under 5 acres shall conform to the following requirements:
  - Composted sludge shall be supplied by, or originate from, a person or persons that are permitted (at the time of acquisition of the compost) by the Maryland Department of the Environment under Chapter 26.04.
  - Composted sludge shall contain at least 1 percent nitrogen, 1.5 percent phosphorus, and 0.2 percent potassium and have a pH of 7.0 to 8.0. If compost does not meet these requirements, the appropriate constituents must be added to meet the requirements prior to use.
  - Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.
  - Composted sludge shall be amended with a potassium fertilizer applied at the rate of 4 lb/1,000 square feet and 1/2 the normal lime application rate.

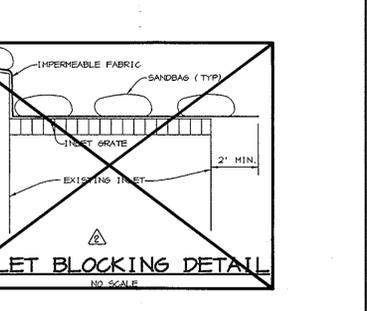
References: Guideline Specifications, Soil Preparation and Seeding, MD-WA, Pub. #1, Cooperative Extension Service, University of Maryland and Virginia Polytechnic Institute, Revised 1975.

**SEDIMENT CONTROL NOTES**

- A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES, AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO ANY CONSTRUCTION (319-1855).
- ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE HOWARD COUNTY STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
- FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMIT OR APPROVAL OF STABILIZATION SHALL BE COMPLETED WITHIN ALL CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES STEEPER THAN 2:1. DIKES SHALL BE AS TO ALL OTHERS DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND MARKING SIGNS POSTED AROUND THE PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 7, OF THE HOWARD COUNTY DESIGN MANUAL - STORM DRAINAGE.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1984 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING, SOIL TEMPORARY SEEDING, AND MULCHING (SEC. 4). TEMPORARY STABILIZATION WITH MULCH ALONE SHALL ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMITS FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- SITE ANALYSIS:
  - AREA DISTURBED: 5.4844 ACRES
  - AREA TO BE PROTECTED OR PAVED: 330 ACRES
  - AREA TO BE VEGETATIVELY STABILIZED: 227 ACRES
  - TOTAL FILL: 115 ACRES
  - TOTAL FILL: 200 CU. YDS.
  - TOTAL FILL: 4260 CU. YDS.
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- SITE GRADING WILL BEGIN ONLY AFTER ALL PERIMETER SEDIMENT CONTROL MEASURES HAVE BEEN INSTALLED AND ARE IN A FUNCTIONING CONDITION.
- SEDIMENT WILL BE REMOVED FROM TRAPS WHEN ITS DEPTH REACHES CLEAN OUT ELEVATION SHOWN ON THE PLANS.
- CUT AND FILL QUANTITIES PROVIDED UNDER SITE ANALYSIS DO NOT REPRESENT BID QUANTITIES. THESE QUANTITIES DO NOT DISTINGUISH BETWEEN TOPSOIL, STRUCTURAL FILL OR EMBANKMENT MATERIAL. WORK DO THEY REFLECT CONSIDERATION OF UNDERCUTTING OR REMOVAL OF UNSUITABLE MATERIAL. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH SITE CONDITIONS WHICH MAY AFFECT THE WORK.
- ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 AC., 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 BUILDINGS OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
- TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LEADINGS OR THAT WHICH CAN BE BACKFILLED AND STABILIZED WITHIN ONE WORKING DAY. PIPE/EVER IS SHORTER.

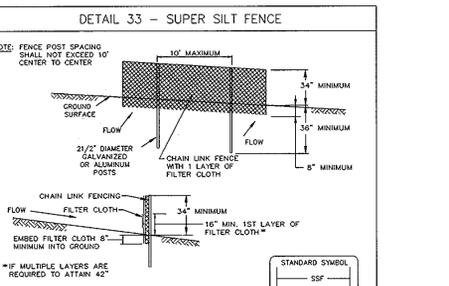
**TEMPORARY SEEDING NOTES**

- Apply to graded or cleared areas likely to be redistributed where a short-term vegetative cover is needed.
- Seeded Preparation - Loosen upper three inches of soil by raking. Disc or other acceptable means before seeding, if not previously loosened.**
- Soil Amendments - Apply 600 lbs. per acre 10-10-10 fertilizer (14 lbs. per 1000 sq. ft.).**
- Seeding - For the period March 1 thru April 30 and from August 15 thru November 30, seed with 2-1/2 bushels per acre of annual rye (3.2 lbs. per 1000 sq. ft.). For the period May 1 thru August 14, seed with 3 lbs. per acre of creeping lovegrass (3.07 lbs. per 1000 sq. ft.). For the period November 16 thru February 28, protect site by applying 2 tons per acre of well-anchored straw mulch and seed as soon as possible in the spring, or use sod.**
- Mulching - Apply 1-1/2 to 2 tons per acre (70 to 80 lbs. per 1000 sq. ft.) of untreated small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 210 gal. per acre (5 gal. per 1000 sq. ft.) of emulsified asphalt on flat areas, on slopes, 8 ft. or higher, use 347 gal. per acre (8 gal. per 1000 sq. ft.) for anchoring.**
- Refer to the 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for rate and methods not covered.



**PERMANENT SEEDING NOTES**

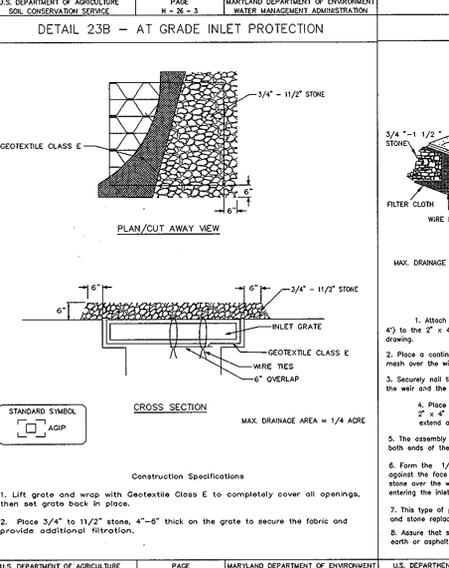
- Apply to graded or cleared areas not subject to immediate further disturbance where a permanent long-lived vegetative cover is needed.
- Seeded Preparation - Loosen upper three inches of soil by raking, discing or other acceptable means before seeding, if not previously loosened.**
- Soil Amendments - Use one of the following schedules:**
- Preferred - Apply 2 tons per acre dolomitic limestone (42 lbs. per 1000 sq. ft.) and 600 lbs. per acre 10-10-10 fertilizer (14 lbs. per 1000 sq. ft.) before seeding. At time of seeding, apply 400 lbs. per acre of well-anchored straw mulch and seed as soon as possible in the spring, or use sod.
  - Acceptable - Apply 2 tons per acre dolomitic limestone (42 lbs. per 1000 sq. ft.) and 1000 lbs. per acre 10-10-10 fertilizer (23 lbs. per 1000 sq. ft.) before seeding. Harvest or disc into upper three inches of soil.
- Seeding - For the period March 1 thru April 30 and from August 15 thru October 15, seed with 60 lbs. per acre (1.4 lbs. per 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 (0.2 lbs. per 1000 sq. ft.) of creeping lovegrass. During the period October 16 thru February 28, protect site by one of the following options:**
- 2 tons per acre of well-anchored straw mulch and seed as soon as possible in the spring.
  - Use sod.
  - Seed with 60 lbs. per acre Kentucky 31 Tall Fescue and mulch with 2 tons per acre well anchored straw.
- Mulching - Apply 1-1/2 to 2 tons per acre (70 to 80 lbs. per 1000 sq. ft.) of untreated small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 210 gal. per acre (5 gal. per 1000 sq. ft.) of emulsified asphalt on flat areas, on slopes, 8 ft. or higher, use 347 gal. per acre (8 gal. per 1000 sq. ft.) for anchoring.**
- Maintenance - Inspect all seeded areas and make needed repairs, replacements and reseedings.**



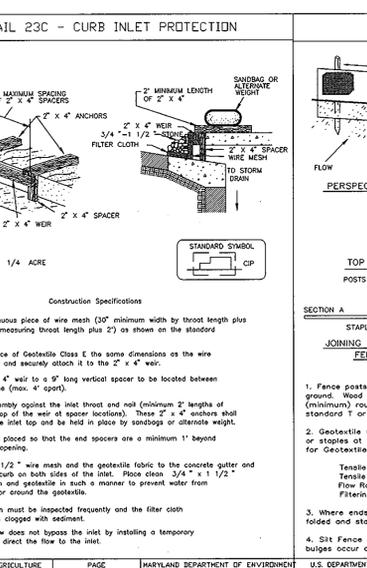
- Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6" fence shall be used, substituting 42" fabric and 6" length posts.
- Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and tension rods, drive anchors and post caps are not required except on the ends of the fence.
- Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.
- Filter cloth shall be embedded a minimum of 8" into the ground.
- When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and fastened.
- Maintenance shall be performed as needed and silt basins removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height.
- 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 (1.7 minute) (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322
- Maintenance shall be performed as needed and silt basins removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height.
- 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:
 

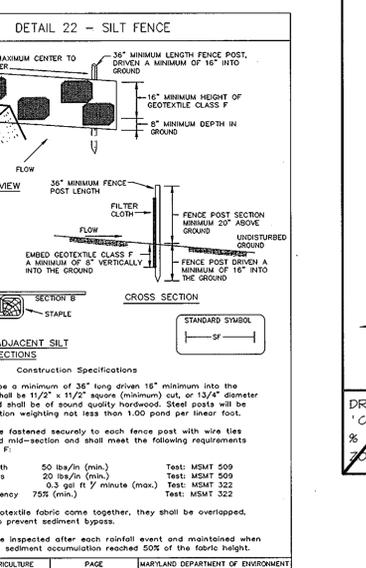
Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal (1.7 minute) (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322



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

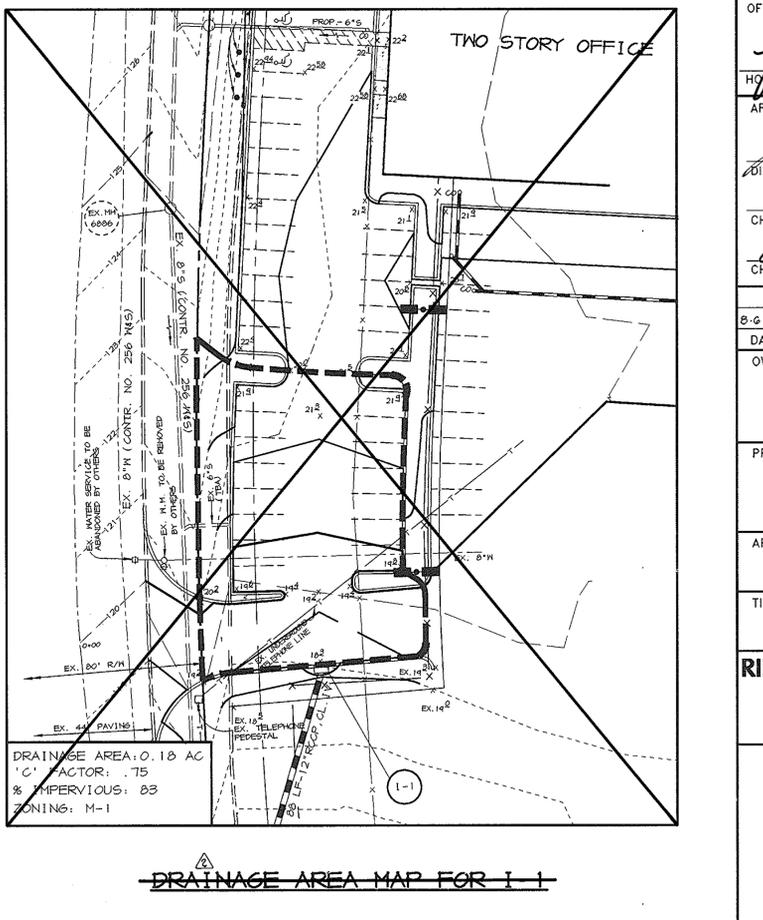


- Attach a continuous piece of wire mesh (3/4" minimum width by throat length plus 4") to the 2" x 4" weir (measuring throat length plus 2") as shown on the standard drawing.
- Place a continuous piece of Geotextile Class E the same dimensions as the wire mesh over the wire mesh and securely attach it to the 2" x 4" weir.
- Securely fasten the 2" x 4" weir to the 4" long vertical spacer to be located between the weir and the inlet face (max. 4' apart).
- Place the assembly against the inlet throat and not (minimum 2" lengths of 2" x 4" to the top of the weir at upper locations). These 2" x 4" anchors shall extend across the inlet top and be held in place by wedges or alternate weight.
- The assembly shall be placed so that the end spacers are a minimum 1" beyond both ends of the throat opening.
- Form the 1/2" x 1/2" wire mesh and the geotextile fabric to the concrete gutter and against the face of the curb on both sides and securely attach it to the 2" x 4" weir.
- Securely fasten the 2" x 4" weir to the 4" long vertical spacer to be located between the weir and the inlet face (max. 4' apart).
- Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.
- Silt fence shall be inspected after each rainfall event and maintained when built over or when sediment accumulation reaches 50% of the fabric height.



- Fence posts shall be a minimum of 38" long driven 15" minimum into the ground. Round posts shall be 1 1/2" x 1 1/2" square (minimum) and 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.
- Geotextile shall be fastened securely to each fence post with wire ties and 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 (1.7 minute) (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322
- Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.
- Silt fence shall be inspected after each rainfall event and maintained when built over or when sediment accumulation reaches 50% of the fabric height.



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

*Arthur E. Muegge* 11/18/98  
DEVELOPER DATE

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

*Arthur E. Muegge* 10-26-98  
ENGINEER DATE

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

*Royal Simmons* 11/24/98  
NATURAL RESOURCES CONSERVATION SERVICE DATE

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

*John R. Robertson* 11/24/98  
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

*John R. Robertson* 12/9/98  
DIRECTOR DATE

*John R. Robertson* 12/15/98  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Condy Hamilton* 12/15/98  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

B-G-03 REV. SEDIMENT CONTROL NOTES, REVISED ON PLAN INLET BLOCKING DETAIL.

DATE NO. REVISION

OWNER/DEVELOPER  
W.O. GRUBB  
8031 WHITTINGTON AVENUE  
BALTIMORE, MARYLAND 21220  
410-920-1020

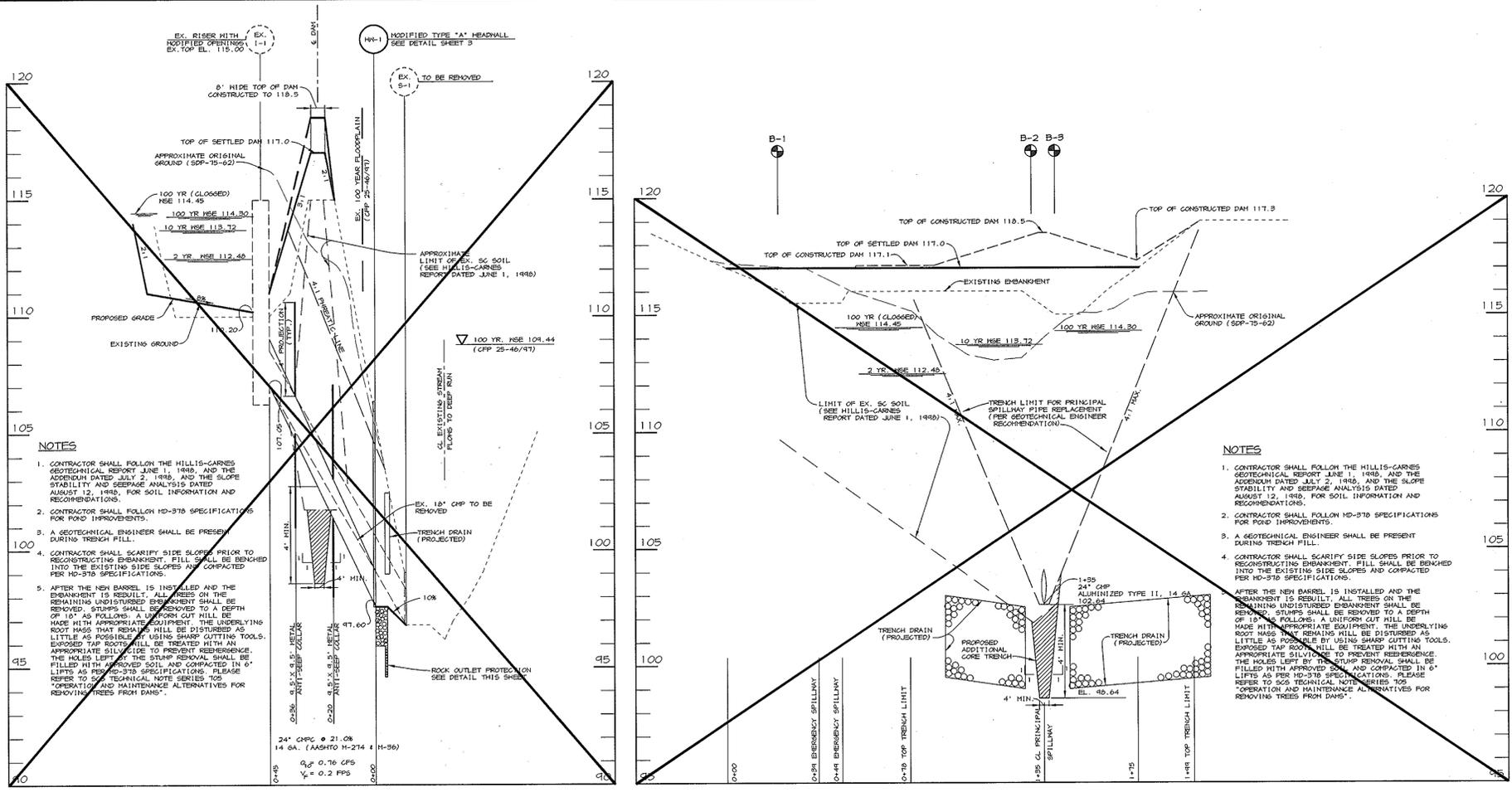
PROJECT  
W.O. GRUBB  
OFFICE/MAINTENANCE FACILITY

AREA TAX MAP 88 ZONED M-1 PARCEL A  
A.G. FARROTT INDUSTRIAL PARK, SECTION 2  
1ST ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

TITLE  
SEDIMENT CONTROL NOTES  
AND DETAILS

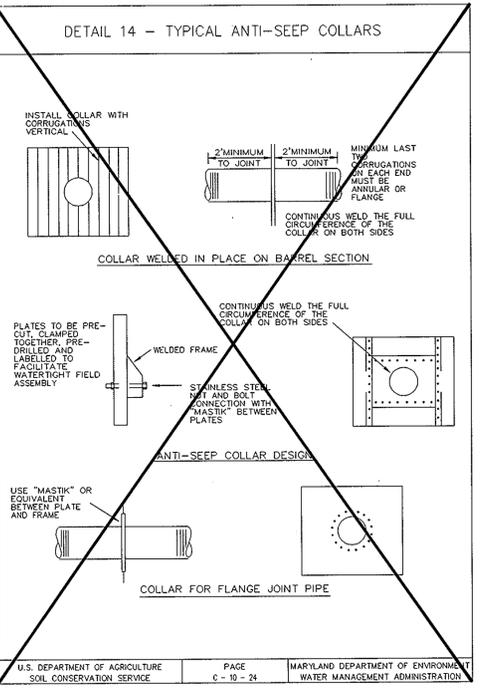
RIEMER MUEGGE & ASSOCIATES, INC.  
ENGINEERING • ENVIRONMENTAL SERVICES • PLANNING • SURVEYING  
8818 Centre Park Drive, Columbia, Maryland 21045  
tel 410.997.8900 fax 410.997.9282

DATE  
DESIGNED BY: AAP/DCD  
DRAWN BY: MAD  
PROJECT NO: 98061  
SDP3.DWG  
DATE: OCTOBER 16

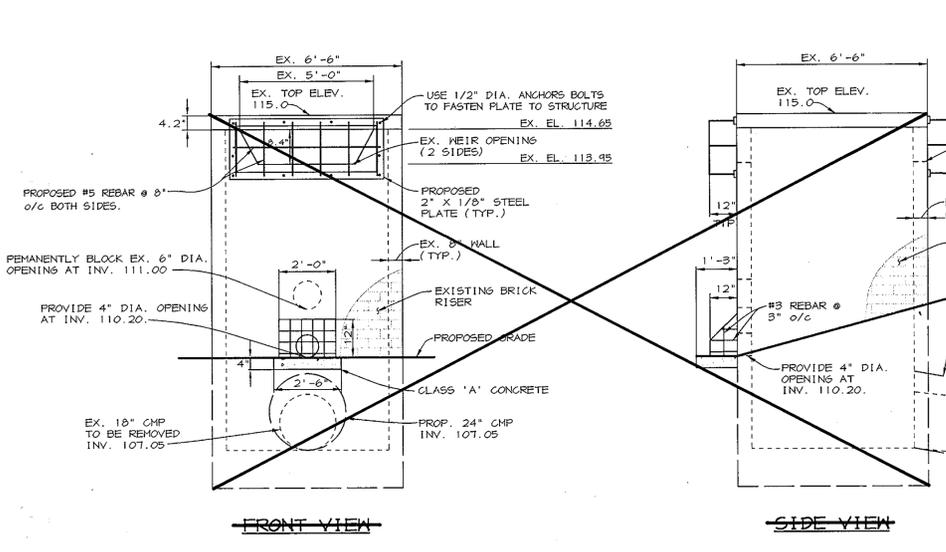


**PRINCIPAL SPILLWAY PROFILE**  
SCALE: HOR. 1"=30'  
VERT. 1"=5'

**EMBANKMENT CENTERLINE PROFILE**  
SCALE: HOR. 1"=30'  
VERT. 1"=5'

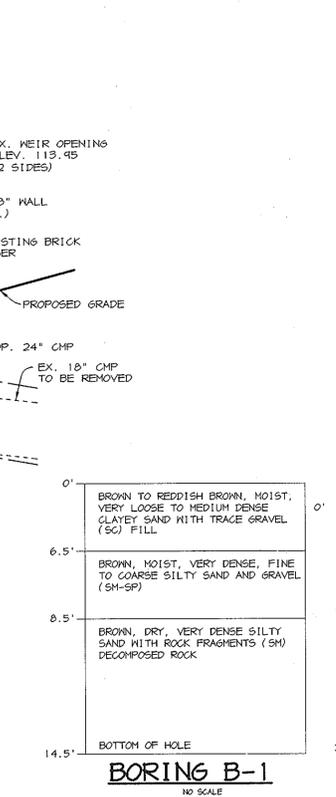


U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE C-10-24 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



- NOTES**
- EXISTING MORTAR OF BRICK RISER TO BE INSPECTED AND REPOINTED AS NECESSARY.
  - CONTRACTOR TO USE NON-SHRINK GROUT FOR PIPE CONNECTION AT EXISTING RISER.
  - BARREL CONNECTION TO BE WATER-TIGHT JOINT AND COATED WITH ZINC PHOSPHATE AT RISER AND PIPE CONNECTIONS.
  - TRASH TRACKS TO BE GALVANIZED AFTER FABRICATION AND PAINTED BATTLESHIP GRAY.

**RISER DETAIL (EX. I-1)**  
NO SCALE

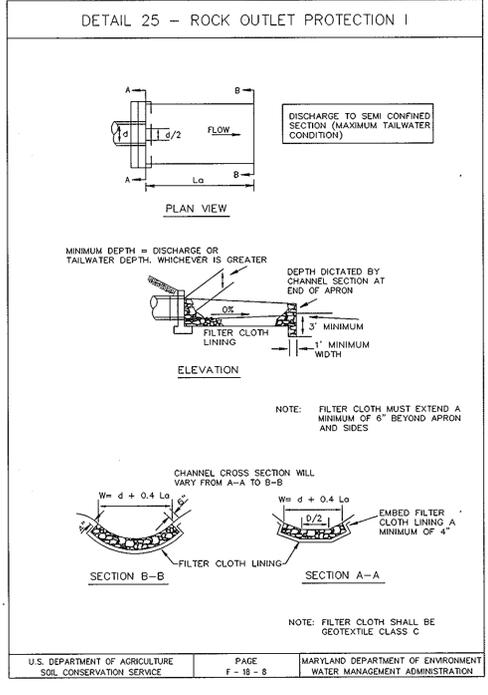


**BORING B-1**  
NO SCALE

**BORING B-2**  
NO SCALE

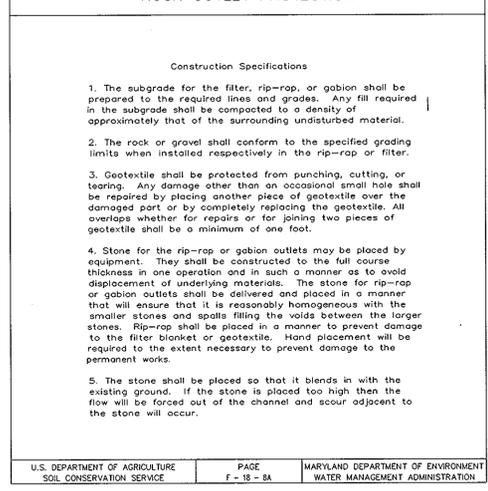
**BORING B-3**  
NO SCALE

**GEOTECH REPORT INFORMATION**  
(HILLIS-CARNES, DATED JUNE 1, 1998)

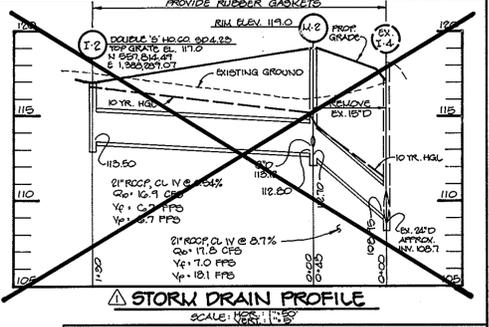


STRUCTURE	MEDIAN STONE DIA.	LENGTH (L)	WIDTH (W)	THICKNESS (T)
HW-1	9.5'	5'	5'	20"
HW-2	9.5'	5'	5'	20"

E-1	6"	8'	4'	12"
E-2	6"	8'	4'	12"



U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE F-18-8A MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



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

DEVELOPER: *[Signature]* DATE: 11/18/98

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

ENGINEER: *[Signature]* DATE: 10-26-98

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

*[Signature]* DATE: 11/24/98  
NATURAL RESOURCES CONSERVATION SERVICE

*[Signature]* DATE: 11/24/98  
HOWARD SOIL CONSERVATION DISTRICT

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

*[Signature]* DATE: 12/2/98  
DIRECTOR

*[Signature]* DATE: 12/3/98  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

*[Signature]* DATE: 12/3/98  
CHIEF, DIVISION OF LAND DEVELOPMENT

OWNER/DEVELOPER  
W.O. GRUBB  
2031 WHITTINGTON AVENUE  
BALTIMORE, MARYLAND 21230

PROJECT  
OFFICE/MAINTENANCE FACILITY

AREA TAX MAP 38 ZONED M-1 PARCEL A  
A.G. PARROTT INDUSTRIAL PARK, SECTION 2  
1st ELECTION DISTRICT  
HONARD COUNTY, MARYLAND

TITLE  
REVISED  
STORMWATER MANAGEMENT DETAILS

**RIEMER MUEGGE & ASSOCIATES, INC.**  
ENGINEERING • ENVIRONMENTAL SERVICES • PLANNING • SURVEYING  
8818 Centre Park Drive, Columbia, Maryland 21045  
tel 410.997.8900 fax 410.997.9282

DATE: \_\_\_\_\_  
DESIGNED BY: AAP/DCD  
DRAWN BY: MAD  
PROJECT NO: 98061 SDP5.DWG  
DATE: OCTOBER 16, 1998  
SCALE: AS SHOWN  
DRAWING NO. 5 OF 9

**GENERAL NOTES:**

- "THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL."
- "FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING MUST BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$5,020.00."
- CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES AND SAFETY PRECAUTIONS AND PROGRAMS.
- SURETY FOR SWM PERIMETER LANDSCAPING SHALL BE POSTED IN THE AMOUNT OF \$1,050.00 AS PART OF THE DEVELOPER'S AGREEMENT.

SCHEDULE B PARKING LOT INTERNAL LANDSCAPING	
NUMBER OF PARKING SPACES	45
NUMBER OF SHADE TREES REQUIRED @ 1 S.T./20 SPACES	2
NUMBER OF TREES PROVIDED	2
SHADE TREES	2
OTHER TREES (2:1 SUBSTITUTION)	2
NUMBER OF ISLANDS REQUIRED (1 ISLAND/20 SPACES)	2
NUMBER OF ISLANDS PROVIDED	2

SCHEDULE D - STORMWATER MANAGEMENT AREA LANDSCAPING	
S.W.M. POND PERIMETER	1
LANDSCAPE TYPE	8
LINEAR FEET OF TOTAL PERIMETER	±107
CREDIT FOR EX. VEGETATION (NO OR YES + %)	NO
CREDIT FOR OTHER PROP. LANDSCAPING (NO OR YES + %)	NO
LINEAR FEET OF REMAINING PERIMETER	107
NUMBER OF TREES REQUIRED:	
SHADE TREES	2
EVERGREEN TREES	2
NUMBER OF PLANTS PROVIDED:	
SHADE TREES	2
EVERGREEN TREES	2
OTHER TREES (2:1 SUBSTITUTION 50% MAX.)	0

SCHEDULE A PERIMETER LANDSCAPE EDGE				
	ADJACENT TO ROADWAYS		ADJACENT TO PERIMETER PROPERTIES	
	1	2	3, 5, & 6	4
PERIMETER	B	E	N/A	C
LANDSCAPE TYPE	±100'	±250'	N/A	±160'
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET (DESCRIBE BELOW IF NEEDED))	NO	NO	N/A	YES 160'
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET (DESCRIBE BELOW IF NEEDED))	NO	NO	N/A	-
NUMBER OF PLANTS REQUIRED:				
SHADE TREES	@ 1/50' = 2	@ 1/40' = 6		NOTE 2
EVERGREEN TREES	@ 1/40' = 3	@ 1/4' = 63		
SHRUBS				
NUMBER OF PLANTS PROVIDED:				
SHADE TREES	0	0		
EVERGREEN TREES	21	20		
SHRUBS		63		

**LANDSCAPE SCHEDULE NOTES:**

- SUBSTITUTION / CREDIT NOTES:  
PERIMETER LANDSCAPE EDGE, SCHEDULE A  
PERIMETER 1:  
SUBSTITUTE (21) SHRUBS FOR 3 EVERGREEN TREES  
PERIMETER 2:  
SUBSTITUTE (2) EVERGREEN TREES FOR (1) SHADE TREE
- PERIMETER LANDSCAPING NOT REQUIRED BETWEEN PARCELS WITHIN THE SAME DEVELOPMENT.

8-10-06	3	ADDED 4" SEWER, OIL/WATER SEPARATOR
		REV FUEL TANK LOG, REV GRADE, AND REV. DRAINAGE. SITE MODIFICATIONS

**PLANT MATERIAL LIST**

KEY	QTY	BOTANICAL & COMMON NAME	SIZE	ROOT	REMARKS
<b>SHADE TREES</b>					
QC	2	Quercus coccinea Scarlet Oak	2 1/2" - 3" Cal.	B & B	Full Crown
AR	7	Acer rubrum 'October Glory' October Glory Red Maple	2 1/2" - 3" Cal.	B & B	Full Crown
<b>EVERGREEN TREES</b>					
PW	2	Pinus strobus White Pine	6' - 8' Ht.	B & B	Full Form Sheared
<b>SHRUBS, PERENNIALS &amp; GROUNDCOVER</b>					
FI	6	Foraythia intermedia Flowering Forsythia	2' - 2 1/2' Ht.	B & B	6" O.C.
EA	27	Eucygnus alata 'compactus' Dwarf Burning Bush	2' - 2 1/2' Ht.	B & B	4" O.C.
IC	48	Ilex compacta 'retundifolia' Roundleaf Japanese Holly	2 1/2" - 3" Ht.	B & B	4" O.C.
AG	9	Abelia grandiflora 'Edvard Goucher' Edvard Goucher Abelia	2 1/2" - 3" Ht.	B & B	4" O.C.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

 DIRECTOR 12/2/98 DATE  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION 12/2/98 DATE  
 CHIEF, DIVISION OF LAND DEVELOPMENT 12/5/98 DATE

8-10-05 2 REV. TITLE BLOCK, CURBING & BUILDING  
 DATE NO. REVISION

OWNER/DEVELOPER  
 W.O. GRUBB  
 2931 WHITTINGTON AVENUE  
 BALTIMORE, MARYLAND 21230  
 410-529-1929

PROJECT  
 W.O. GRUBB  
 OFFICE/MAINTENANCE FACILITY

AREA TAX MAP 38 ZONED: M-1 PARCEL A  
 A.O. PARROTT INDUSTRIAL PARK, SECTION 2  
 1st ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

TITLE REVISED  
**LANDSCAPE PLAN**

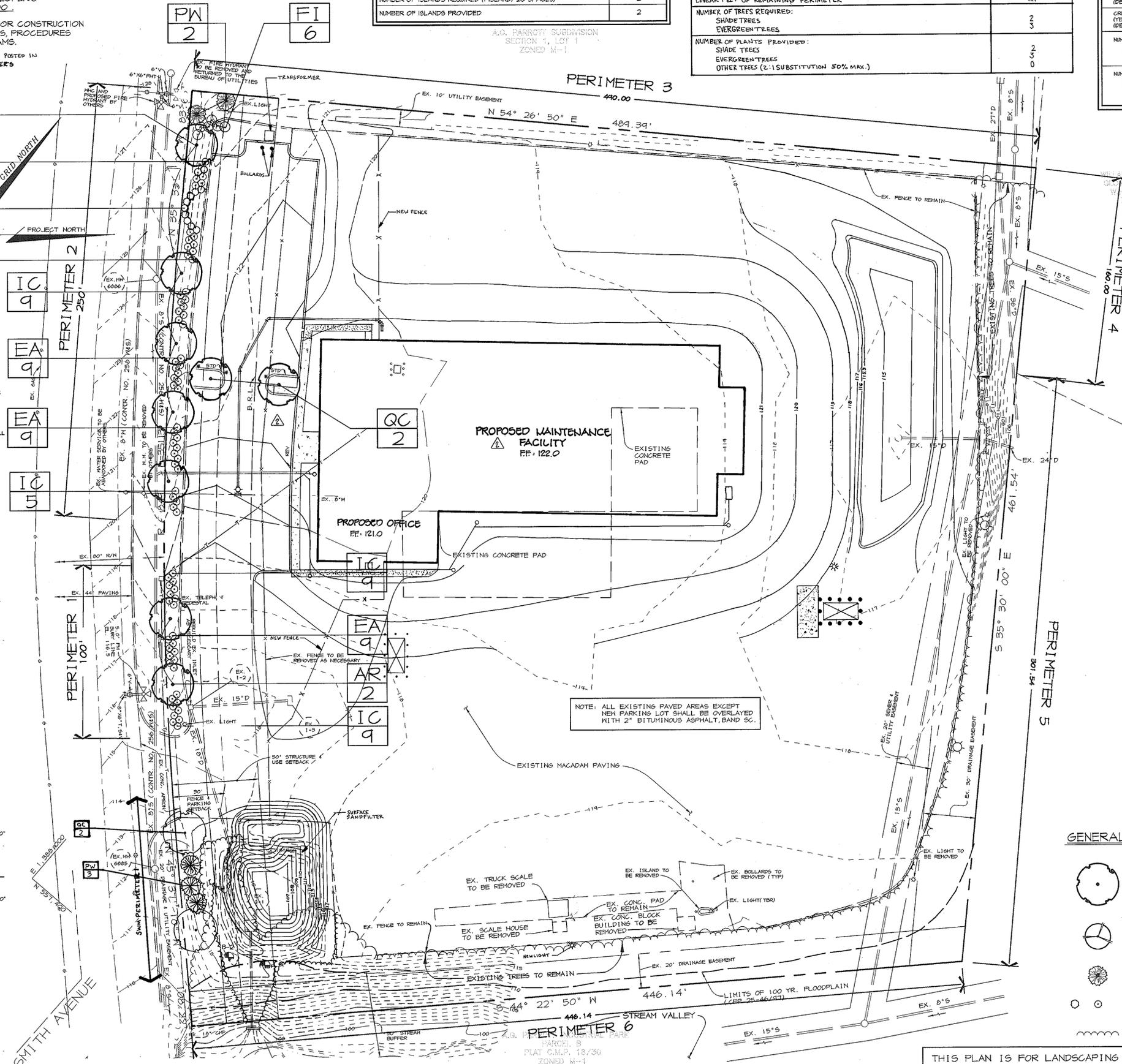
**RIEMER MUEGGE & ASSOCIATES, INC.**  
 ENGINEERING • ENVIRONMENTAL SERVICES • PLANNING • SURVEYING  
 8818 Centre Park Drive, Columbia, Maryland 21045  
 tel 410.997.8900 fax 410.997.9282

10-29-98  
 DATE  
 DESIGNED BY: D.T.D.

DRAWN BY: A.J.L.  
 PROJECT NO: 98061  
 LSCP

DATE: OCTOBER 16, 1998  
 SCALE: 1" = 30'

DRAWING NO. 6 OF 9  
 DAVID DONS #830



THIS PLAN IS FOR LANDSCAPING PURPOSES ONLY.

**GENERAL NOTES**

**SPECIFICATIONS:**  
 ALLOWABLE BEARING PRESSURE 2000 LBS./SQ. FT.  
 SOIL WEIGHT 125 LBS./SQ. FT.  
 LIVE LOAD 375 LBS./SQ. FT.  
 SERVICE LOAD DESIGN METHOD:  
 CONCRETE ALLOWABLE STRENGTH  $f_c = 12000$  psi  
 REINFORCING STEEL ALLOWABLE STRENGTH  $f_s = 24000$  psi

**CHAMFER:**  
 ALL EXPOSED CORNERS OF CONCRETE SHALL BE CHAMFERED WITH 3/4"x3/4" MILLED CHAMFER STRIPS, EXCEPT ON UNEXPOSED FOOTINGS OR WHERE INDICATED BY THE FOLLOWING NOTATION ON THE PLANS "DO NOT CHAMFER".

**REINFORCING STEEL:**  
 REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60. ALL SPLICES NOT SHOWN, SHALL BE LAPED AS PER BAR LAP CHARTS. MINIMUM COVER FOR ANY BAR SHALL BE 2" UNLESS OTHERWISE NOTED, WITH THE EXCEPTION OF BARS AT THE BOTTOM OF ALL FOOTINGS WHICH SHALL HAVE A 3" MINIMUM COVER.

**KEYS:** ALL KEYS ARE NOMINAL SIZE.

**JOINTS:**  
 1. JOINT LOCATIONS AS SHOWN ON DRAWING.  
 2. STOP KEY 9" BELOW TOP OF WALL.  
 3. REINFORCING STEEL SHALL NOT PASS THROUGH CONTRACTION JOINT.  
 4. CONTRACTION JOINTS TO BE IN STEM ONLY (NOT IN THE FOOTINGS).

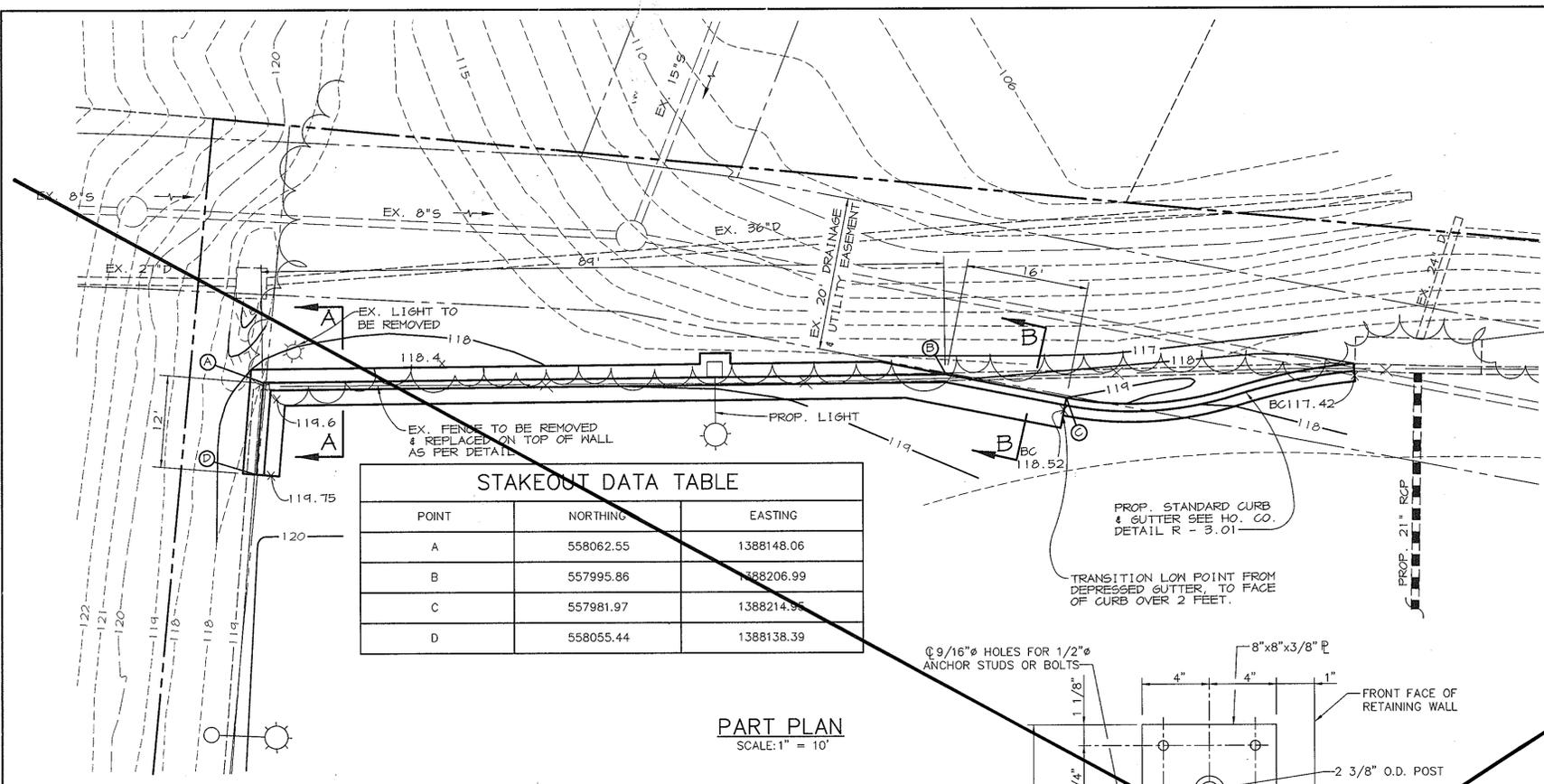
**CONCRETE:** CONCRETE FOR RETAINING WALL TO BE MIX. NO. 3 (3500 PSI).

**DRAINAGE:**  
 INSTALL MIRADRRAIN 6000 OR EQUAL FOR FULL WIDTH OF WALL AND FULL DEPTH UP TO WEEPHOLES. INSTALL M6000 DRAIN GRATE AT WEEPHOLES.

**FENCE:**  
 MATERIALS TO MEET REQUIREMENTS OF AASHTO M-181. MESH TO BE FIXED TO FRAME WITH 9" GALVANIZED STEEL WIRE.

**COMPACTION:**  
 1. BACKFILL TO BE PLACED IN 6" LAYERS & COMPACTED TO 95% MOD - AASHTO.  
 2. BACKFILL TO BE BROUGHT UP EVENLY ON BOTH SIDES OF WALL TO AVOID OVERLOADING WALL BY BACKFILLING ONE SIDE ONLY.

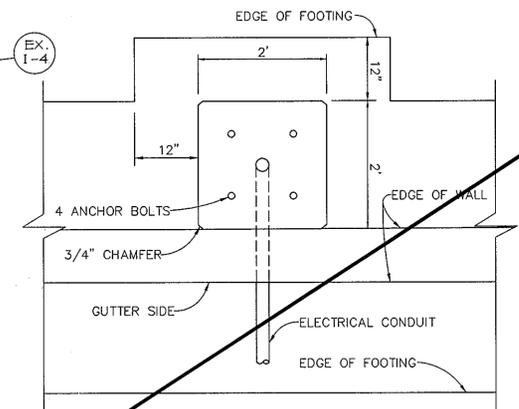
**CONSTRUCTION:**  
 CONSTRUCTION OF THIS RETAINING WALL SHALL BE PERFORMED UNDER THE OBSERVATION OF A MARYLAND REGISTERED PROFESSIONAL ENGINEER.



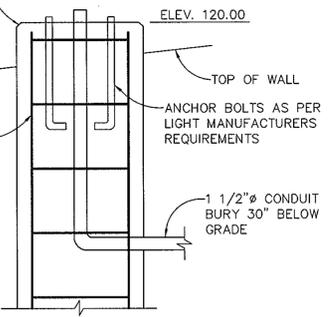
**STAKEOUT DATA TABLE**

POINT	NORTHING	EASTING
A	558062.55	1388148.06
B	557995.86	1388206.99
C	557981.97	1388214.99
D	558055.44	1388138.39

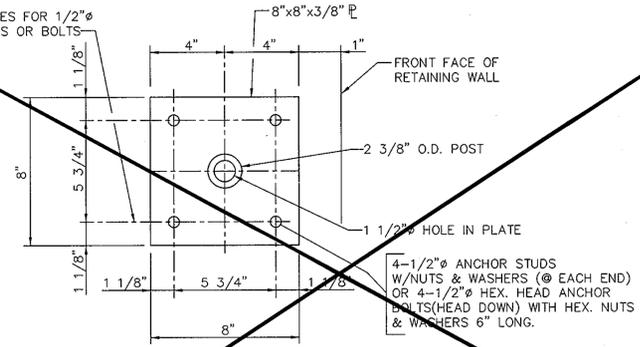
**PART PLAN**  
SCALE: 1" = 10'



**PLAN**

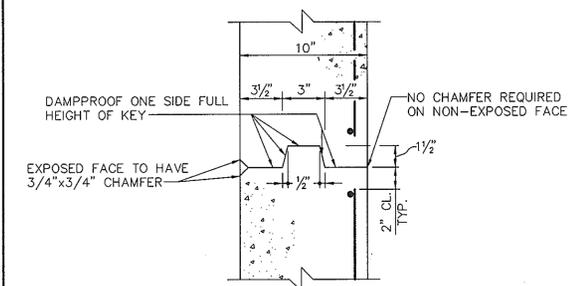


**ELEVATION**

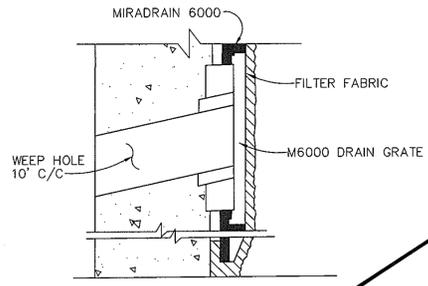


**FENCE POST MOUNTING PLATE DETAIL**  
N.T.S.

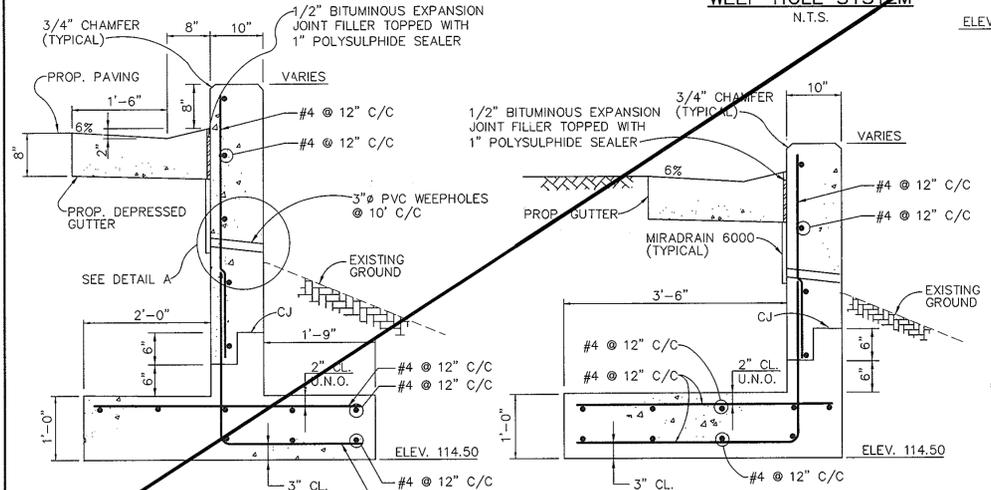
**LIGHT POST DETAIL AT WALL ELEVATION**  
SCALE: 3/4" = 1'



**STEM CONTRACTION JOINT**  
N.T.S.

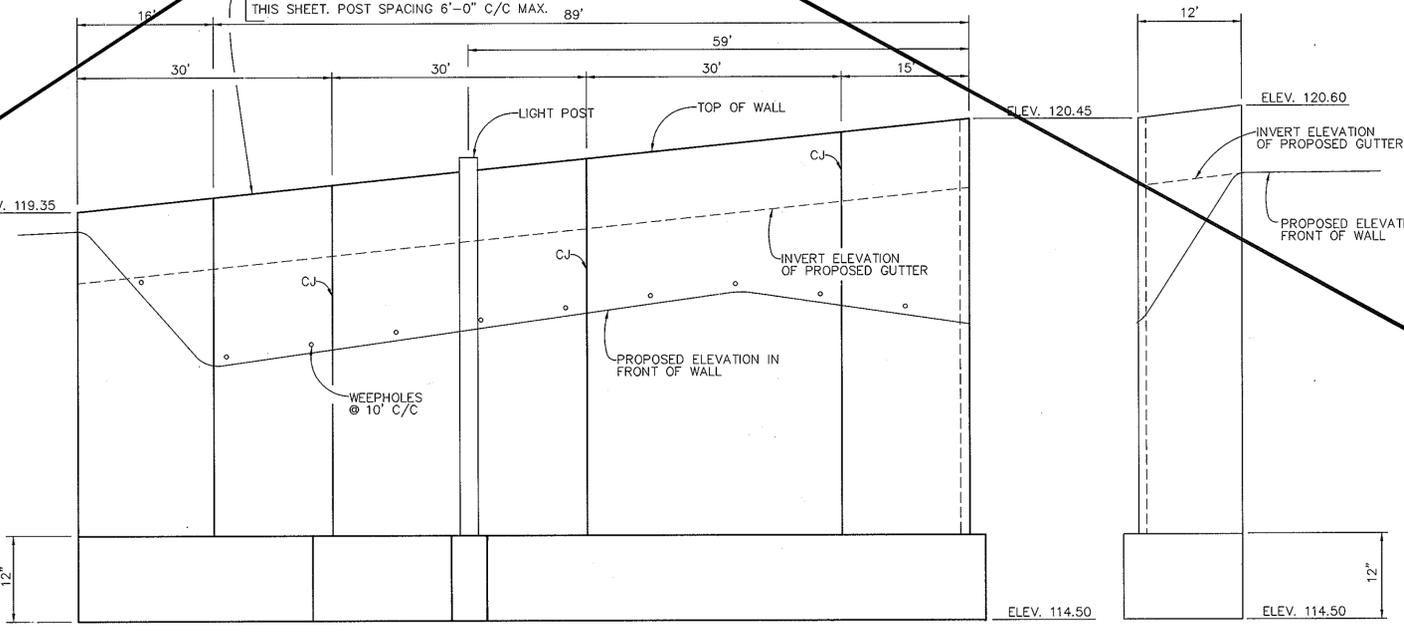


**DETAIL A WEEP HOLE SYSTEM**  
N.T.S.



**SECTION A-A**  
SCALE: 3/4" = 1'

**SECTION B-B**  
SCALE: 3/4" = 1'



**WALL ELEVATION**  
SCALE: HORIZ.: 1" = 10'  
VERT.: 1" = 1'

**WALL ELEVATION**  
SCALE: HORIZ.: 1" = 10'  
VERT.: 1" = 1'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

*Howard E. Muegge* 2/25/99  
DIRECTOR DATE

*W. O. Grubb* 2/25/99  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Cindy Hammit* 2/25/99  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

B-10-06	DELETED WALL
B-10-00	REV. TITLE BLOCK
DATE NO.	REVISION

OWNER/DEVELOPER  
 W.O. GRUBB  
 2201 WHITTINGTON AVENUE  
 BALTIMORE, MARYLAND 21200  
 410-525-1200

PROJECT  
**W.O. GRUBB**  
 OFFICE/MAINTENANCE FACILITY

AREA TAX MAP 38 ZONED: M-1 PARCEL A  
 A.G. PARROTT INDUSTRIAL PARK, SECTION 2  
 1st ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

TITLE  
 REVISED  
**RETAINING WALL**

**RIEMER MUEGGE & ASSOCIATES, INC.**  
 ENGINEERING • ENVIRONMENTAL SERVICES • PLANNING • SURVEYING  
 8818 Centre Park Drive, Columbia, Maryland 21045  
 tel 410.997.8900 fax 410.997.9282

DATE	DESIGNED BY: G.C.L.
	DRAWN BY: E.L.R.
	PROJECT NO: 98061/104 PLAN_DET.DWG
	DATE: JANUARY 18, 1999
	SCALE: AS SHOWN
	DRAWING NO. 7 of 9

*Arthur E. Muegge*  
 ARTHUR E. MUEGGE 8707  
 Supplements 1 sheet SDP-98-111

**GENERAL NOTES**

- VOLUME STORMFILTER BY CONTECH STORMWATER SOLUTIONS, PORTLAND, OREGON (800) 548-4687.
- FILTER CARTRIDGE(S) TO BE SIPHON-ACTUATED AND SELF-CLEANING. STANDARD DETAIL DRAWING SHOWS MAXIMUM NUMBER OF CARTRIDGES. ACTUAL NUMBER REQUIRED TO BE SPECIFIED ON SITE PLANS OR IN DATA TABLE BELOW.
- PRECAST VAULT TO BE CONSTRUCTED IN ACCORDANCE WITH ASTM C857 AND C858. DETAIL DRAWING REFLECTS DESIGN INTENT ONLY. ACTUAL DIMENSIONS AND CONFIGURATION OF STRUCTURE WILL BE SHOWN ON PRODUCTION SHOP DRAWING.
- STRUCTURE AND ACCESS COVERS TO MEET AASHTO H-20 LOAD RATING.
- VOLUME STORMFILTER REQUIRES 2.0 FEET OF DROP FROM INLET TO OUTLET. IF LESS DROP IS AVAILABLE, CONTACT CONTECH STORMWATER SOLUTIONS.
- INLET AND OUTLET PIPING TO BE SPECIFIED BY ENGINEER AND PROVIDED BY CONTRACTOR. PRECAST STORMFILTER VAULT EQUIPPED WITH CAST-IN BOOT CONNECTIONS AT INLET AND OUTLET LOCATIONS FOR WATER-TIGHT CONNECTIONS.
- PROVIDE MINIMUM CLEARANCE FOR MAINTENANCE ACCESS. IF A SHALLOWER SYSTEM IS REQUIRED, CONTACT CONTECH STORMWATER SOLUTIONS FOR OTHER OPTIONS.
- ANTI-FLOTATION BALLAST TO BE SPECIFIED BY ENGINEER AND PROVIDED BY CONTRACTOR, IF REQUIRED. BALLAST TO BE SET ALONG ENTIRE LENGTH OF BOTH SIDES OF THE STRUCTURE.
- ALL STORMFILTERS REQUIRE REGULAR MAINTENANCE. REFER TO OPERATION AND MAINTENANCE GUIDELINES FOR MORE INFORMATION.

**8' x 18' PRECAST VOLUME STORMFILTER DATA**

STRUCTURE ID	SIWB
WATER QUALITY VOLUME (ft <sup>3</sup> )	6380
STORAGE IN STORMFILTER	79.5
# OF CARTRIDGES REQUIRED	35
CARTRIDGE FLOW RATE (15 OR 7.5 gpm)	0-58
MEDIA TYPE (CSF, PERLITE, ZPG)	MEDIA

PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE #	113.04	HDPE	8"
OUTLET PIPE	110.54	HDPE	8"

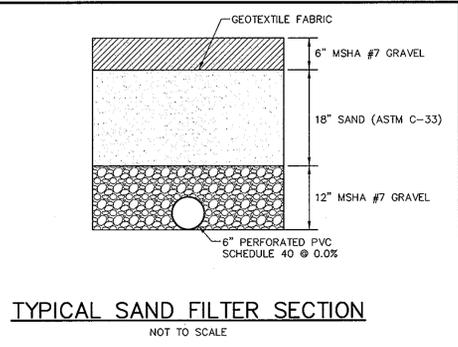
  

RIM	8"	
DOWNSTREAM	FLOW	UPSTREAM

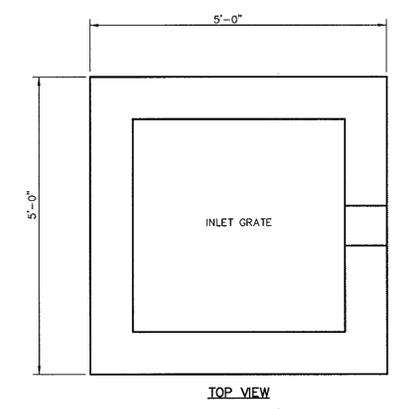
  

LADDER	YES/NO
ANTI-FLOTATION BALLAST	WIDTH HEIGHT
	WIDTH HEIGHT

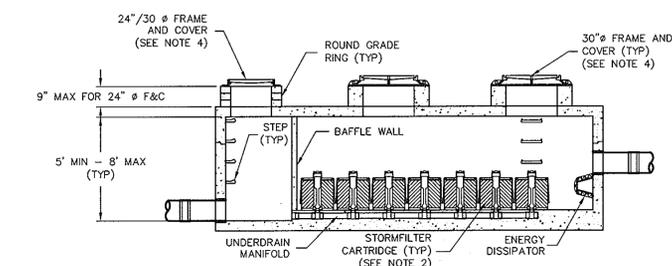
NOTES/SPECIAL REQUIREMENTS: TOTAL WOV BEFORE STORAGE IS 8507 CF.



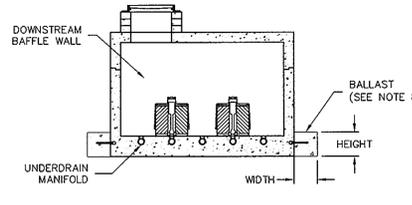
**TYPICAL SAND FILTER SECTION**  
NOT TO SCALE



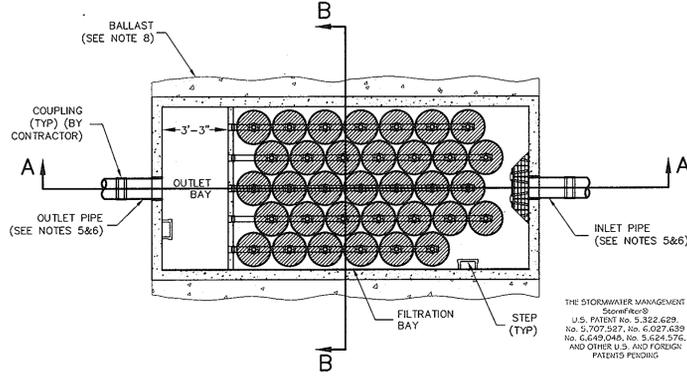
**TOP VIEW**



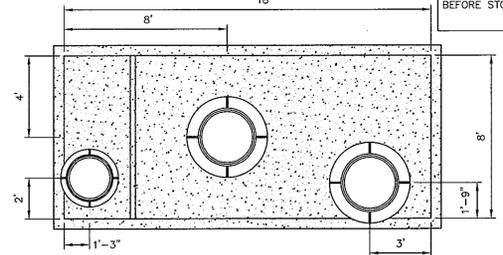
**SECTION A-A**  
NOT TO SCALE



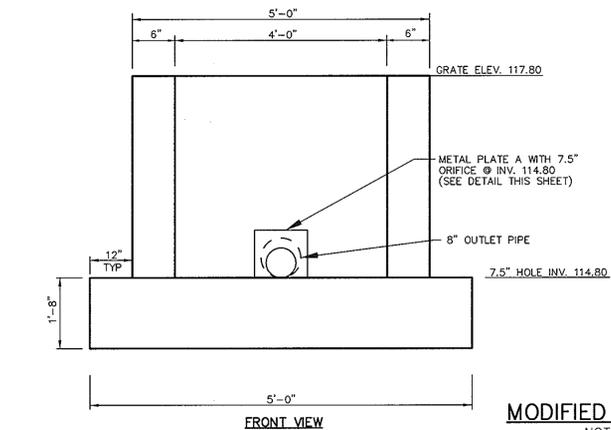
**SECTION B-B**  
NOT TO SCALE



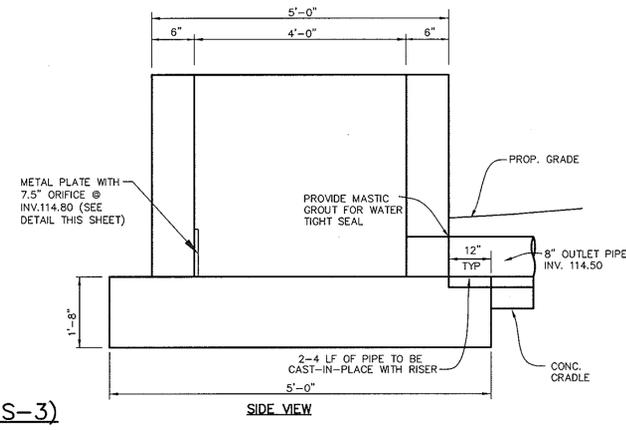
**8' x 18' VOLUME STORMFILTER - PLAN VIEW**  
NOT TO SCALE



**SECTION B-B**  
NOT TO SCALE

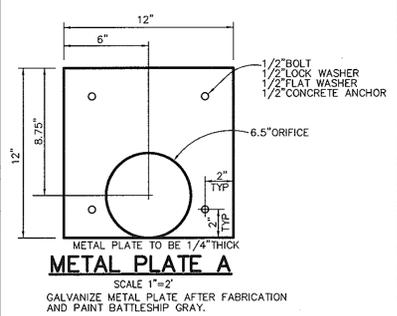


**MODIFIED INLET (S-3)**  
NOT TO SCALE

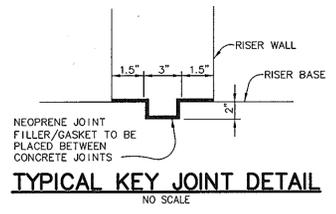


**SIDE VIEW**

NOTE:  
SEE HO.CO STANDARD DETAIL SD 4.41 FOR REINFORCEMENT.



**METAL PLATE A**  
SCALE 1\"/>



**TYPICAL KEY JOINT DETAIL**  
NO SCALE

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

*Donald L. Coughlin* 11/20/06  
DIRECTOR DATE

*John G. ...* 11/20/06  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*David ...* 11/30/06  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

08-10-08	1	ADDED SHEET
DATE	NO.	REVISION
OWNER / DEVELOPER		
W.O. GRUBB 2931 WHITTINGTON AVENUE BALTIMORE, MARYLAND 21230 410-525-1293		

PROJECT **W.O. GRUBB**  
OFFICE/MAINTENANCE FACILITY

AREA PARCEL 827 ZONED M-1  
TAX MAP NO. 38 BLOCK 14  
1<sup>st</sup> ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE **REVISED**  
**PROFILES AND DETAILS**

Patton Harris Rust & Associates, pc  
Engineers, Surveyors, Planners, Landscape Architects.  
8818 Centre Park Drive  
Columbia, MD 21045  
T 410.997.8900  
F 410.997.9282

09/28/06 DATE

DESIGNED BY : JMK

DRAWN BY: MAD

PROJECT NO: 11427/1-0/PLANS  
C9000TL.dwg

DATE : AUGUST 10, 2006

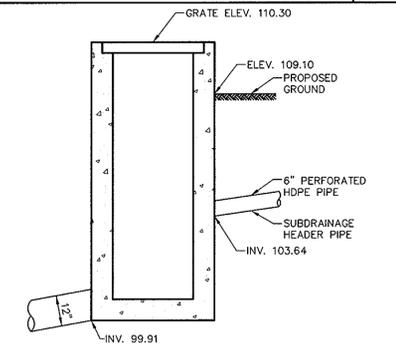
SCALE : AS SHOWN

DRAWING NO. 8 OF 9

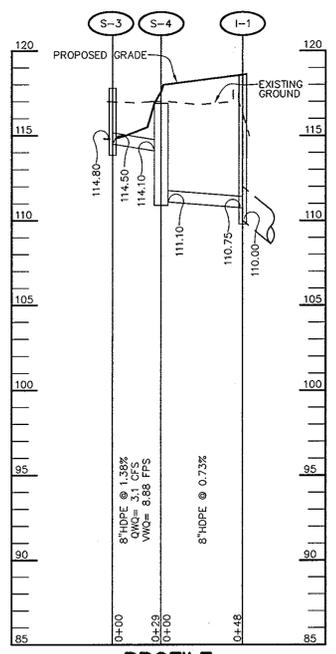
Domenick W. Colangelo #27200

**RISER STRUCTURE NOTES**

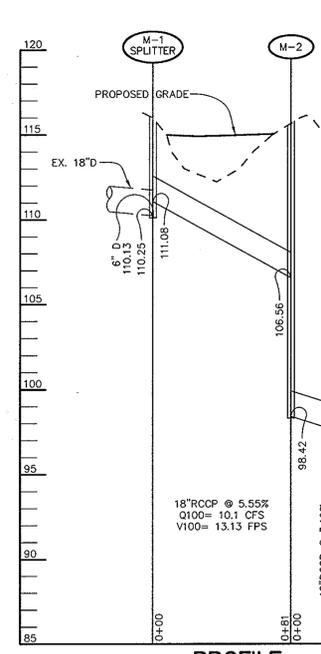
- RISER SHALL BE PRECAST OR CAST-IN-PLACE. SHOP DRAWINGS FOR ALL CONCRETE STRUCTURES SHALL MEET THE MINIMUM ASTM REQUIREMENTS FOR CAST-IN-PLACE STRUCTURES. A SHOP DRAWING SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO FABRICATION AND SHALL BE SIGNED AND SEALED BY A MARYLAND REGISTERED PROFESSIONAL ENGINEER.
- CONCRETE SHALL BE MSHA MIX NO. 3 (f<sub>c</sub>=3,500 PSI MINIMUM)
- REFER TO HOWARD COUNTY STD. G-5.21 FOR MANHOLE STEP DETAILS.
- ALL PIPE CONNECTIONS SHALL PROVIDE RUBBER GASKET FOR WATER TIGHTNESS.
- RISER SHALL BE PLACED ON A FIRMLY COMPACTED SUBGRADE AND SHALL BE APPROVED BY A GEOTECHNICAL ENGINEER.
- PROVIDE SUPPORT OF GALV. STEEL ELBOWS TO PREVENT SAGGING. AN ACCEPTABLE METHOD IS TO STAKEOUT BOTH SIDES OF STEEL ELBOW WITH 1" STEEL ANGLE OR 1" BY 4" SQUARE OR 2" ROUND STEEL POSTS SET 3 FEET MIN. INTO GROUND THE JOINING THEM TO THE ELBOW BY WRAPPING WITH 12 GAUGE MIN. WIRE.



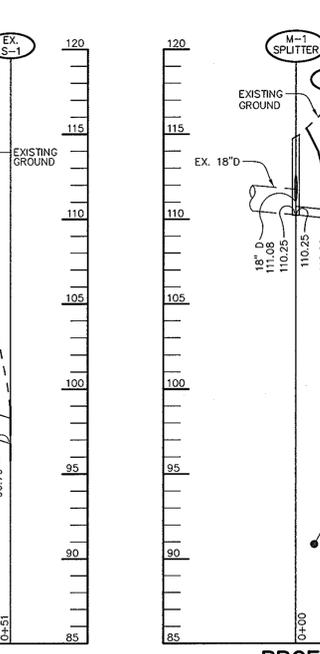
**MODIFIED INLET (S-1)**  
NOT TO SCALE



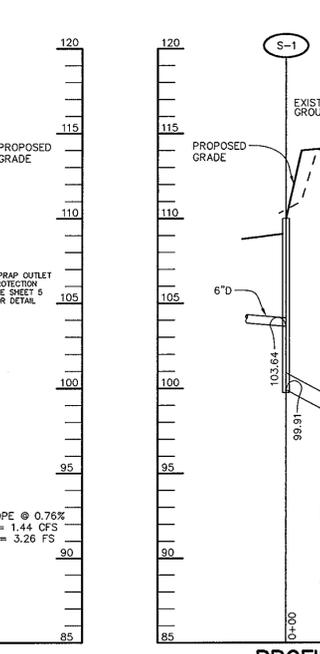
**PROFILE**  
SCALE:  
HOR.-1"=50'  
VERT.-1"=5'



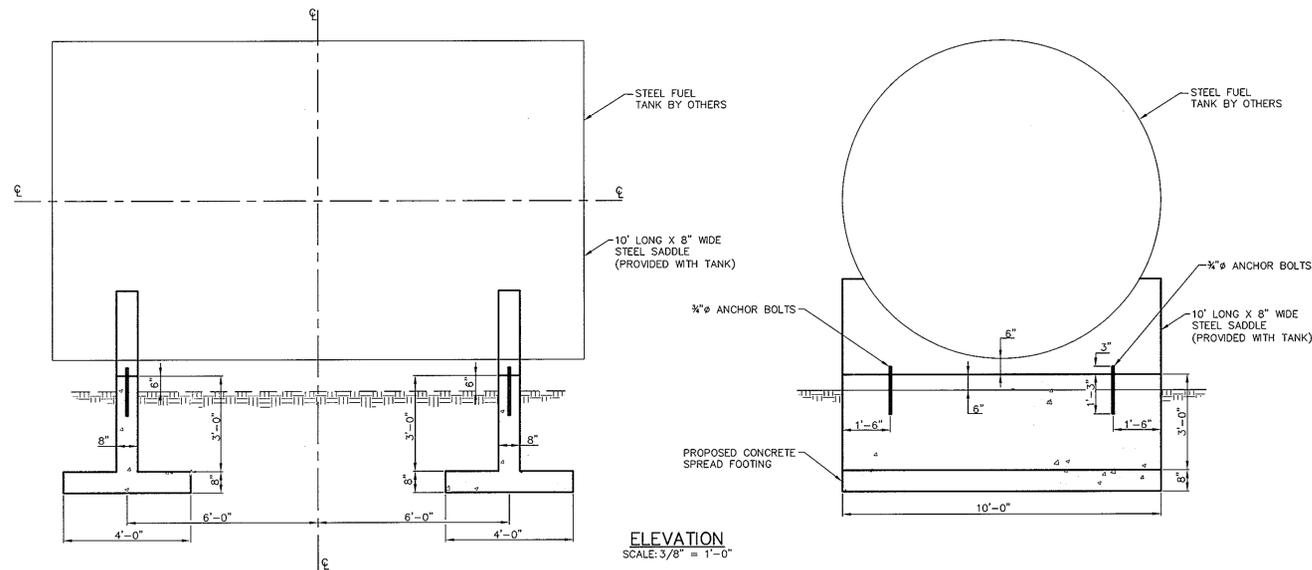
**PROFILE**  
SCALE:  
HOR.-1"=50'  
VERT.-1"=5'



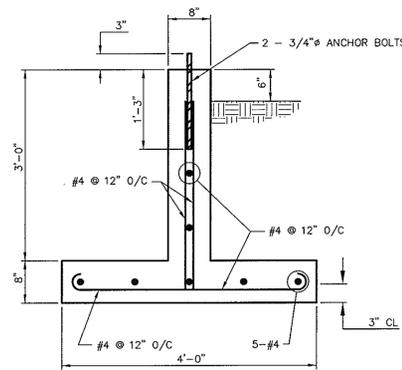
**PROFILE**  
SCALE:  
HOR.-1"=50'  
VERT.-1"=5'



**PROFILE**  
SCALE:  
HOR.-1"=50'  
VERT.-1"=5'

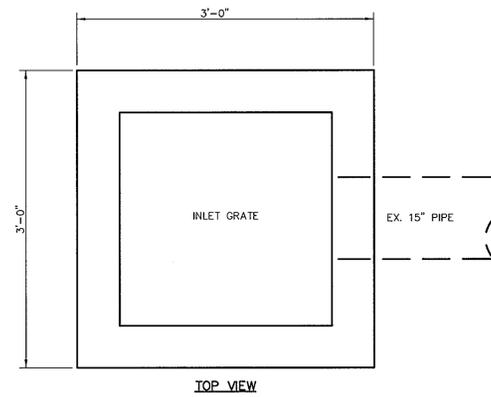


ELEVATION  
SCALE: 3/8" = 1'-0"

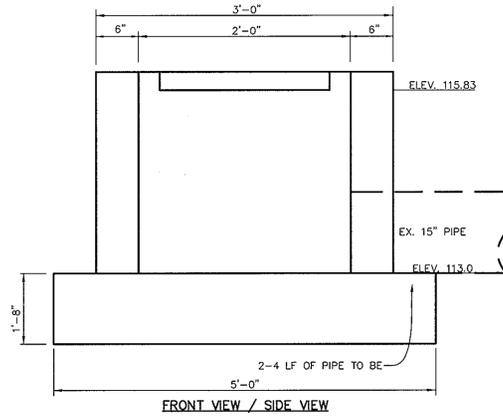


SECTION  
SCALE: 3/4" = 1'-0"

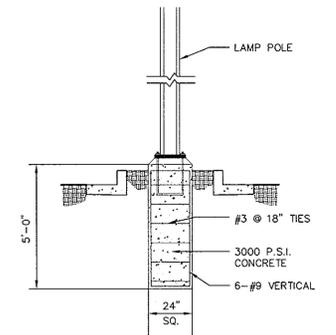
FUEL TANK CONCRETE SPREAD FOOTING DETAILS



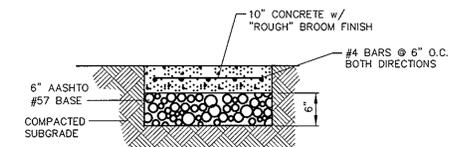
TOP VIEW



MODIFIED INLET (S-2)  
NOT TO SCALE

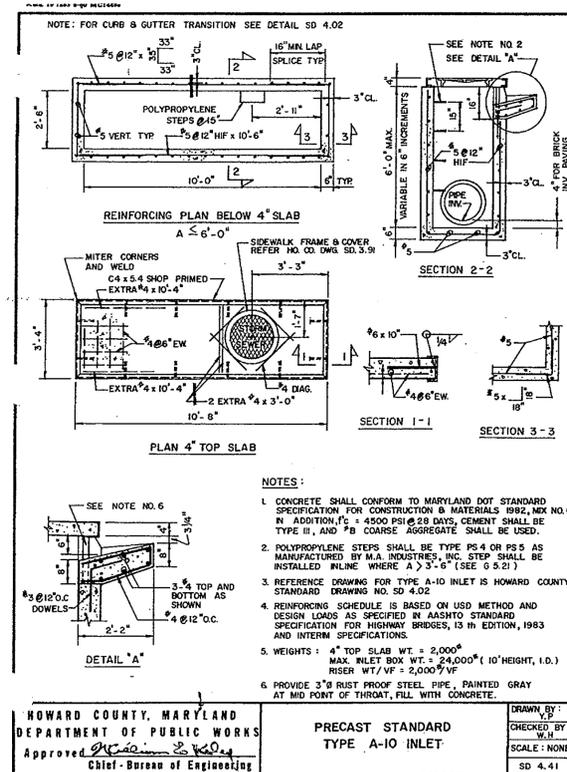


LAMP POLE BASE DETAIL  
NOT TO SCALE



CONCRETE PAD DETAIL  
NOT TO SCALE

- NOTES:  
1. CONTROL JOINTS ON PAD SHALL BE PLACED LINEARLY EVERY 10 FEET.  
2. REFER TO SITE PLAN FOR DIMENSIONS.



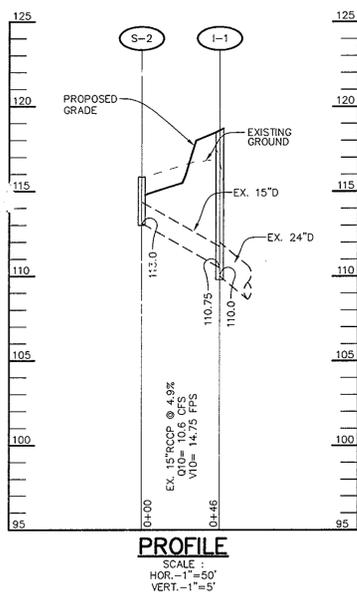
HOWARD COUNTY, MARYLAND  
DEPARTMENT OF PUBLIC WORKS  
Approved: [Signature] Chief - Bureau of Engineering

PRECAST STANDARD  
TYPE A-10 INLET

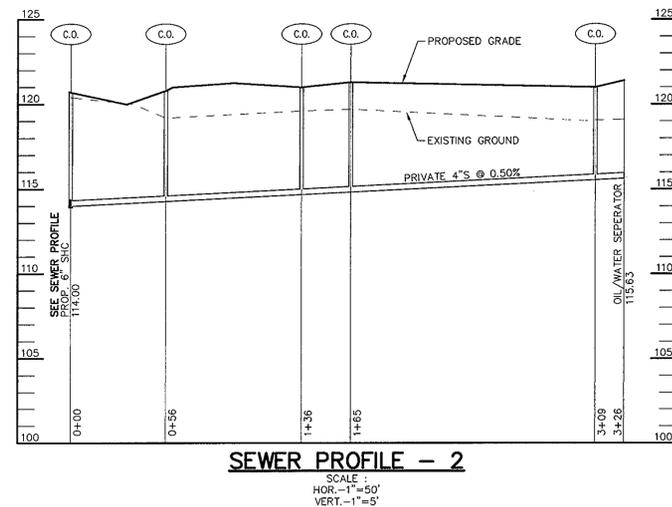
DRAWN BY: [Signature]  
CHECKED BY: [Signature]  
SCALE: NONE  
SD 4.41

- STORMFILTER O & M SCHEDULE**
- THE PRIMARY PURPOSE OF THE VOLUME STORMFILTER IS TO PROVIDE BOTH STORAGE AND TREATMENT OF A WATER QUALITY VOLUME. THE STORAGE/PRETREATMENT BAY OF THE SYSTEM PROVIDES SETTLING OF PARTICULATES AND CAPTURE OF TRASH AND DEBRIS, WHILE THE SYSTEM'S FILTER BAY USES MEDIA-FILLED FILTER CARTRIDGES TO REMOVE POLLUTANTS, INCLUDING FINER PARTICLES, NUTRIENTS, TOTAL AND DISSOLVED METALS, ORGANICS, AND OIL AND GREASE.
  - INSPECTION OF THE STORAGE/PRETREATMENT BAY SHOULD OCCUR AT A MINIMUM OF TWICE A YEAR. IT IS RECOMMENDED TO WAIT 7-14 DAYS AFTER THE LAST STORM EVENT, PRIOR TO MAKING AN INSPECTION. THIS SHOULD ALLOW FOR IMPROVED WATER CLARITY FOR OBSERVATIONS IN THE UPSTREAM STORAGE FACILITY. TRASH AND DEBRIS, OIL, AND ROBUST SEDIMENT MEASUREMENTS SHOULD BE WRITTEN IN AN INSPECTION LOG. SEDIMENT DEPTH CAN BE MEASURED WITH A ROD OR WITH A SLUDGE JUDGE. IF SEDIMENT DEPTH IS GREATER THAN 1 FOOT, MAINTENANCE OF THE STORAGE FACILITY IS WARRANTED. IF NOTICEABLE OIL SHEEN IS PRESENT IN THE BAY, ADDITIONAL SOURCE CONTROL MEASURES SHOULD BE PURSUED AND THE ADDITION OF OIL ABSORBENTS SHOULD BE PERFORMED.
  - PERIODICALLY POLLUTANTS MUST BE REMOVED FROM THE FILTER BAY TO RESTORE THE SYSTEM TO ITS FULL EFFICIENCY AND EFFECTIVENESS.
  - TWO SCHEDULED INSPECTIONS/MAINTENANCE ACTIVITIES SHOULD TAKE PLACE DURING THE YEAR. FIRST, AN INSPECTION/ANNUAL MAINTENANCE ACTIVITY SHOULD BE DONE. DURING THE MINOR MAINTENANCE ACTIVITY (ROUTINE INSPECTION/ DEBRIS REMOVAL), THE NEED FOR MAJOR MAINTENANCE SHOULD BE DETERMINED AND, IF DISPOSAL DURING MAJOR MAINTENANCE WILL BE REQUIRED, SAMPLES OF THE SEDIMENTS AND MEDIA SHOULD BE OBTAINED. SECOND, IF REQUIRED, A MAJOR MAINTENANCE ACTIVITY (REPLACEMENT OF THE FILTER CARTRIDGES AND ASSOCIATED SEDIMENT REMOVAL) SHOULD BE PERFORMED.
  - THE PRIMARY FACTOR CONTROLLING TIMING OF MAINTENANCE FOR THE VOLUME STORMFILTER IS SEDIMENTATION. IF FUNCTIONING PROPERLY, THE UPSTREAM STORAGE CONTAINER WILL HAVE SEDIMENTS AT THE BASE OF THE UNIT. THIS CONTAINER AREA SHOULD BE CLEANED WHEN A FOOT OR MORE OF SEDIMENT HAS BEEN CAPTURED.

- SANDFILTER O & M SCHEDULE**
- ANNUAL MAINTENANCE OF GRAVEL, GEO-TEXTILE FABRIC AND SAND FILTER IS REQUIRED. MAINTENANCE OF GRAVEL AND SAND IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH-OUT. ANY GRAVEL REPLACEMENT SHALL BE DONE IN THE SPRING.
  - REMOVE DEBRIS, UNUSED SEDIMENT MATERIAL SHOULD BE REMOVED IN 3-4 DAYS AFTER EACH STORM.
  - REPLACE GEO-TEXTILE FABRIC EVERY 2 YEARS AND REPLACE AFTER HEAVY STORM.



PROFILE  
SCALE:  
HOR. - 1" = 50'  
VERT. - 1" = 5'



SEWER PROFILE - 2  
SCALE:  
HOR. - 1" = 50'  
VERT. - 1" = 5'

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

*Mark A. Leyle* 11/20/06  
DIRECTOR DATE

*[Signature]* 11/20/09  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Conda Hannah* 11/20/06  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

08-10-06 1 ADDED SHEET

DATE NO. REVISION

OWNER / DEVELOPER  
W.O. GRUBB  
2931 WHITTINGTON AVE  
BALTIMORE, MARYLAND  
410-525-1293

PROJECT  
W.O. GRUBB  
OFFICE/MAINTENANCE FACILITY

AREA PARCEL 821 ZONED M-1  
TAX MAP NO. 3B BLOCK 14  
1st ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE  
REVISED  
PROFILES AND DETAILS

Patton Harris Rust & Associates, pc  
Engineers, Surveyors, Planners, Landscape Architects.  
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PROJECT NO: 11427/1-0/PLANS  
WGRUBBTANKDET

DATE : AUGUST 10, 2006

SCALE : AS SHOWN

DRAWING NO. 9 OF 9

Domenic W. Colangelo #27200