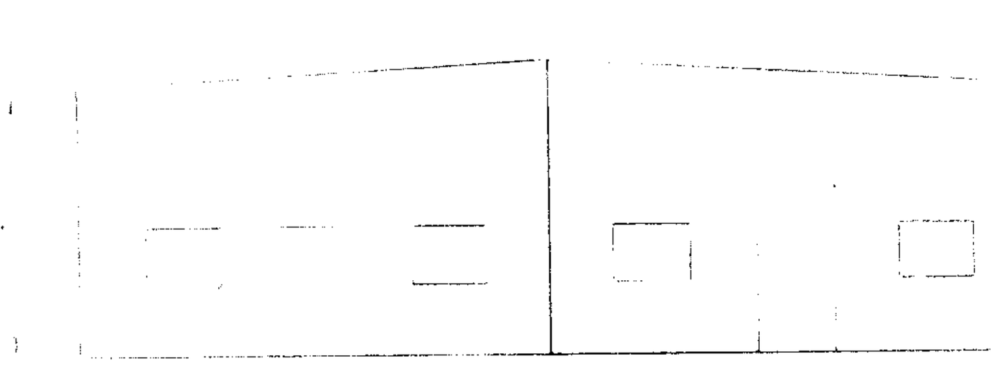


WATER QUALITY STRUCTURES

DESIGN AND GENERAL NOTES:

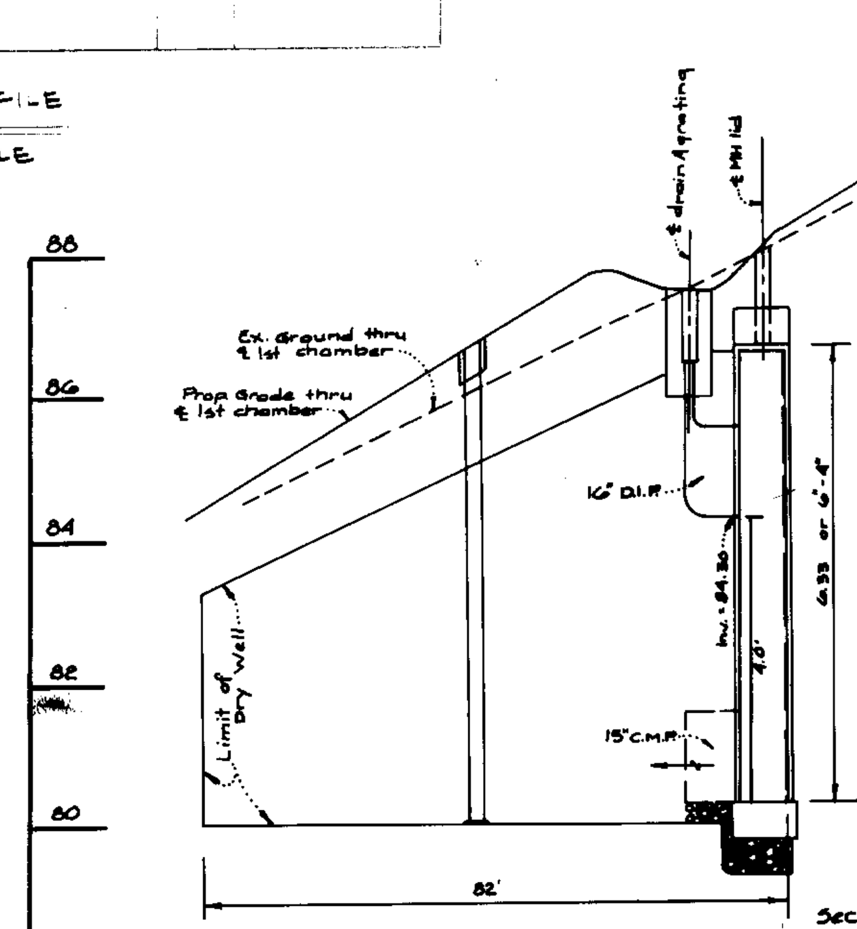
1. Use poured-in place concrete for the entire structure.
2. Refer to Maryland State Highway Administration for materials and methods of construction.
3. Wall thickness shall be as follows:

   Minimum 8 inches thick for the first 8'-0" of depth, 12 inch thick walls between 8'-0" and 12'-0" of depth and 16 inch thick walls for depth greater than 12'-0". Depth to be measured from top of top slab to crown of outgoing pipe.
4. f'c = 3,500 psi at 28 days.
5. All reinforcing steel to be ASTM A615, GR.60.
6. For details concerning throat openings, refer to HCDOT Standard No. 55.

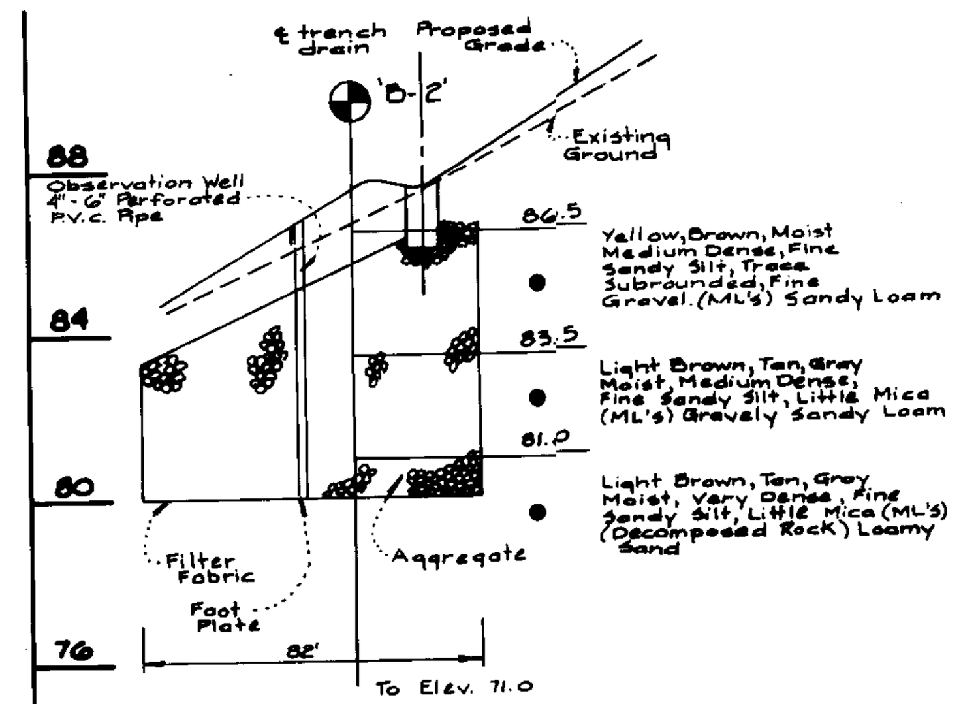
Throat Length	No. of Pipe Supports
5'	0
10'	1
15'	2
20'	3

   pipe supports to be spaced at 5'-0" O.C.

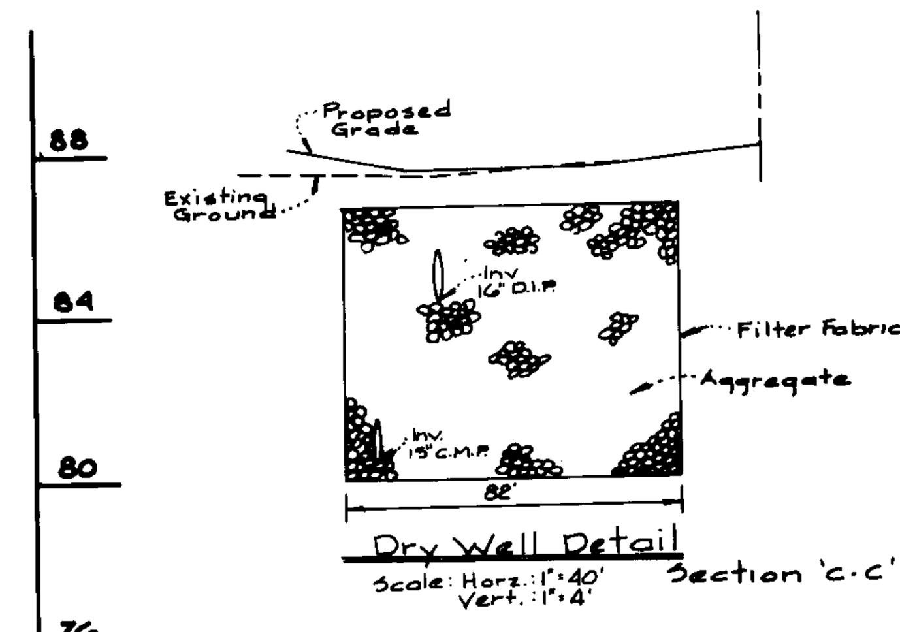
7. For details not noted in this standard, refer to HCDOT Standard No. 55.
8. The top 4 inches of walls may be brick masonry for leveling, if required. Brick masonry shall comply with the latest SHA Specification.
9. When grate opening is used, refer to the appropriate SHA Standard for details. Details shall be shown on the plans.
10. When inside width of structure is greater than 4'-0", reinforcing shall be revised as needed.
11. When structure is subject to traffic loading, reinforcing shall be designed for the appropriate traffic loads. Design loads shall be indicated on the plan.
12. All inlets and incoming pipes shall be checked for possible backwater or tailwater problems.



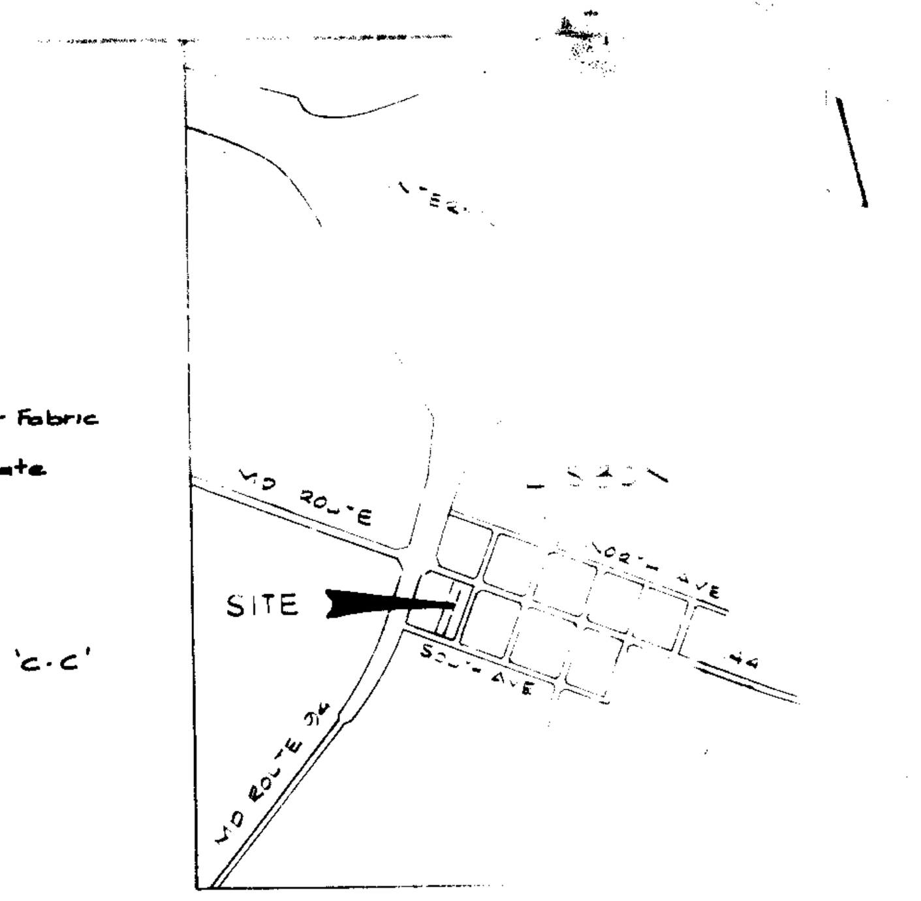
WATER QUALITY CONTROL STRUCTURE



Dry Well Detail
Scale: Horz.: 1"=40' Vert.: 1"=4'
Section 'D-D'



Dry Well Detail
Scale: Horz.: 1"=40' Vert.: 1"=4'
Section 'C-C'



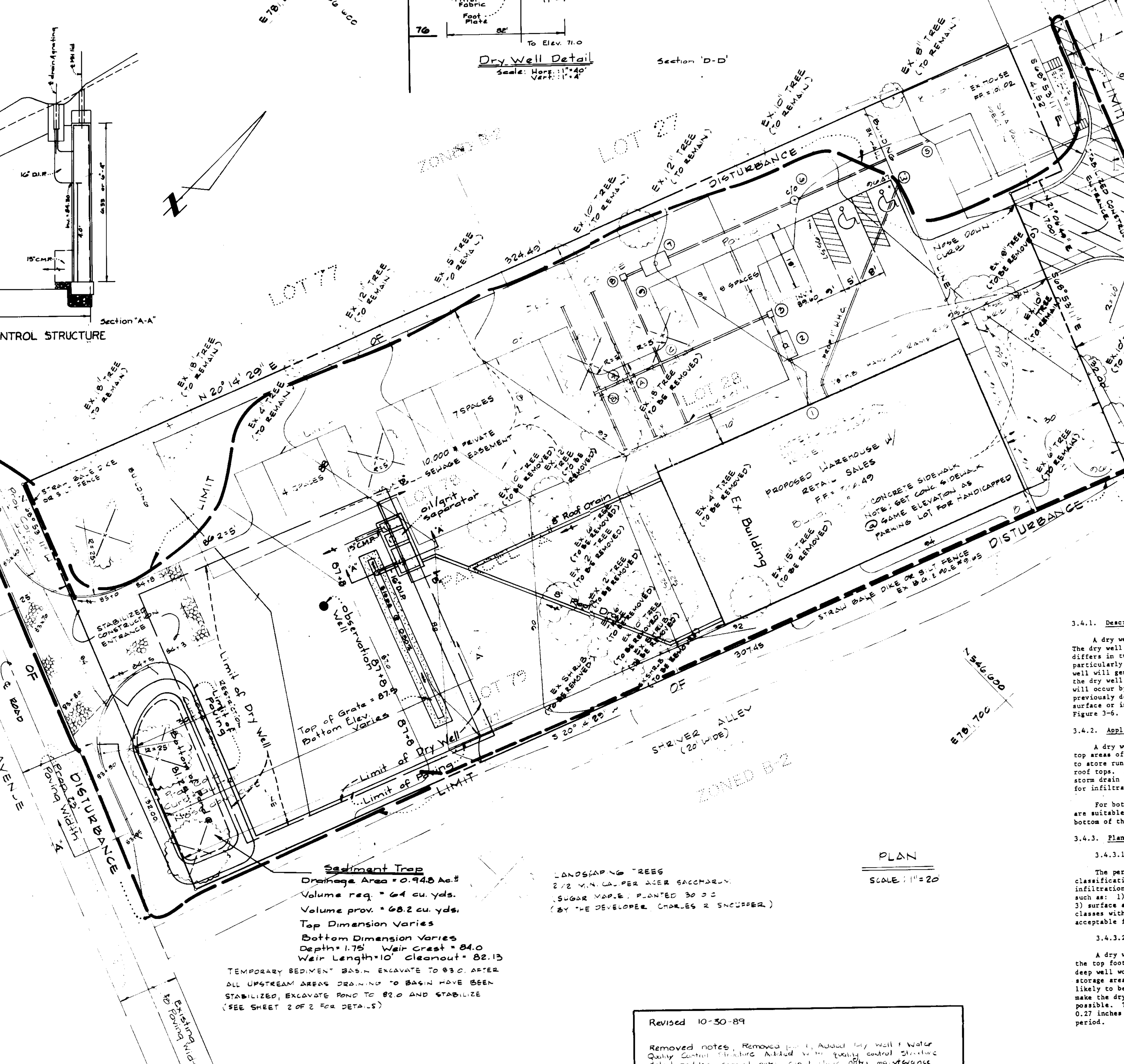
VICINITY MAP
SCALE 1"=200'

SNOUFFER - 40138

GENERAL NOTES:

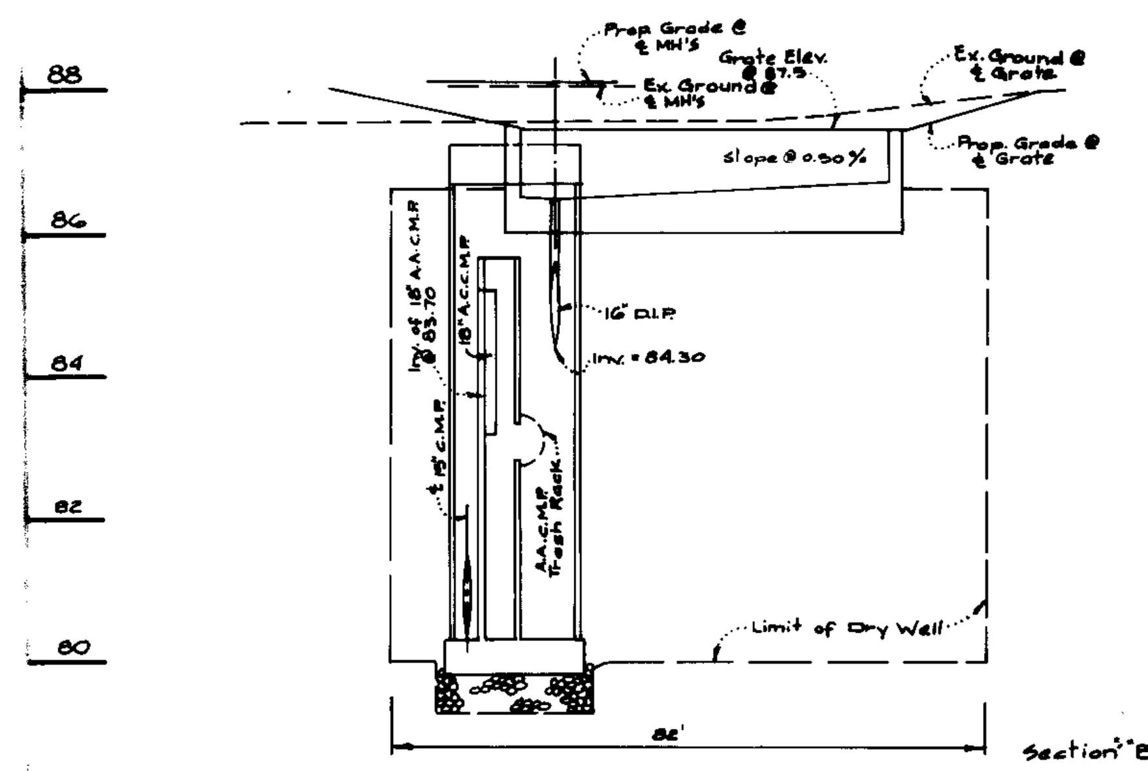
1. TOTAL AREA OF PARCEL: 0.948 AC.±
2. PRESENT ZONING: B-2
3. PROPERTY IS RECORDED IN LIBER 1423, FOLIO 118.
4. PROPERTY SUBJECT TO VARIANCE PETITION VP-86-145.
5. PROPERTY IS SHOWN ON TAX MAP NO. 7, PARCEL A.
6. SITE DATA:
   - A) INTENDED USE: WAREHOUSE W/RETAIL AREA
   - B) BUILDING COVERAGE AREA:
     - EXISTING: 819 SQ.FT. (2.0%) Building #2
     - PROPOSED: 5500 SQ.FT. (13.3%) Building #1
     - TOTAL: 6319 SQ.FT. (15.3%)
     - PROPOSED AREA INCLUDES LOADING DOCK = 500 SQ.FT.
   - C) TOTAL AREA OF BUILDING = 5,000 SQUARE FEET Building #1
     - AREA TO BE USED BY WAREHOUSE = 2,500 SQUARE FEET
     - AREA TO BE USED FOR RETAIL = 2,500 SQUARE FEET
   - D) PARKING REQUIRED:
     - WAREHOUSE (1 SPACE/500 SQ.FT.) = 5 SPACES
     - RETAIL (1 SPACE/200 SQ.FT.) = 13 SPACES
     - TOTAL = 18 SPACES
   - E) PARKING REQUIRED: 19 SPACES (2 HANDICAPPED)
   - F) OPEN SPACE (GREEN AREA): 0.39 AC.± (41%)
   - G) LANDSCAPED ISLAND AREA REQUIRED:
     - TOTAL AREA OF PARKING AREA = 11,670 SQ.FT.
     - LANDSCAPED AREA REQUIRED (5%) = 584 SQ.FT.
     - LANDSCAPED AREA PROVIDED = 655 SQ.FT. (5.6%)
   - H) INTENDED USE FOR EXISTING HOUSE: Building #2
     - PROPOSED USE: OFFICE (w/ 1 employee)
     - AREA/LEVEL: FIRST FLOOR = 819 SQ.FT.
     - SECOND FLOOR = 819 SQ.FT.
     - PARKING SPACES REQUIRED: 1
7. PROPOSED BUILDING IS TO BE USED ONLY FOR THE USE SHOWN AS APPROVED BY HOWARD COUNTY HEALTH DEPARTMENT.
8. THE CONTRACTOR SHALL NOTIFY THE HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION 24 HOURS PRIOR TO COMMENCEMENT OF WORK AT 992-2437.
9. THE CONTRACTOR SHALL NOTIFY MISS UTILITY AT 559 0100 A MINIMUM OF THREE (3) DAYS PRIOR TO BEGINNING ANY CONSTRUCTION SHOWN HEREON.
10. HANDICAPPED FACILITIES TO BE CONSTRUCTED IN ACCORDANCE WITH THE "DESIGN OF BARRIER FREE FACILITIES" AND THE "MARYLAND BUILDING CODE FOR THE HANDICAPPED AND AGED".
11. EXISTING UTILITIES SHOWN HEREON HAVE BEEN LOCATED FROM FIELD AND OFFICE INFORMATION. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF EXISTING UTILITIES TO HIS OWN SATISFACTION BEFORE MAKING ANY CONNECTION THERETO OR EXCAVATING IN THE AREA THEREOF.
12. SEE ARCHITECTURAL AND LANDSCAPING PLANS FOR DETAILS OF LANDSCAPING AND SIDEWALKS.
13. SEE ARCHITECTURAL DRAWINGS FOR BUILDING DIMENSIONS.
14. ALL LIGHTING WILL BE WALL MOUNTED (SECURITY LIGHTS ONLY AND DIRECTED DOWNWARD AND INWARD FROM ALL ADJACENT PROPERTIES.

SNOUFFER - 40138



PLAN
SCALE: 1"=20'

WATER QUALITY CONTROL STRUCTURE



	STREET ADDRESS
PARCEL A	16021 FREDERICK ROAD

APPROVED
DIVISION OF LAND DEVELOPMENT & ZONING ADMINISTRATION
HOWARD COUNTY, MARYLAND
DATE 9-23-87

3.4 DRY WELL

(DW)

3.4.1. Description

A dry well consists of a small excavated pit backfilled with aggregate. The dry well is similar to the infiltration trench previously described but differs in two ways. The dry well is generally a much smaller structure particularly with respect to the surface area dimensions. The depth of the well will generally range from 3 to 12 feet. An important difference between the dry well and the trench is the inflow mechanism. Inflow to the dry well will occur by means of an inflow pipe and through surface infiltration. As previously described, the infiltration trench can only accept inflow through surface or inlet inflow. A typical dry well cross section is presented in Figure 3-6.

3.4.2. Applicability

A dry well will generally be used to capture and store runoff from roof top areas of less than one acre in surface area. This practice can be used to store runoff from residential, commercial, industrial and institutional roof tops. A secondary application can be found in those instances where storm drain catch basins can be built as open-bottomed structures to provide for infiltration of stormwater as shown in Figure 3-7.

For both areas of application, the site conditions must include soils that are suitable for infiltration with sufficient depth available between the bottom of the well and the top of the groundwater table.

3.4.3. Planning Considerations

3.4.3.1. Soil Permeability

The permeability or final infiltration rate of the various soil textural classifications will be a limiting factor in the selection of dry wells. The infiltration rate becomes a factor when combined with other considerations such as: 1) minimum construction depth, 2) maximum allowable storage time, and 3) surface area requirements for a specified level of control. Soil textural classes with infiltration rates greater or equal to 0.27 inches per hour are acceptable for use of dry wells.

3.4.3.2. Depth of Well

A dry well is expected to range from 3 to 12 feet in depth. In all cases the top foot of the well will consist of a soil filter medium. Thus, a 3 foot deep well would consist of 1 foot of soil filter media and 2 feet of aggregate storage area. This 3 foot depth is felt to represent the shallowest dry well likely to be built. In general, the developer and design engineer will seek to make the dry well as deep as possible to obtain the maximum area of control possible. Table 2-2 indicates that a silt loam soil texture with an f value of 0.27 inches per hour can drain a 4-foot deep storage area in a 72-hour period.

(cont. Sh. 2 of 2)

SEPTIC SYSTEM DESIGN DATA:

1. INV. @ WALL: ELEV. = 91.00
2. 1500 GALLON SEPTIC TANK
   PROVIDE CLEANOUT TO FINISHED GRADE
   FINISHED GRADE OVER TANK: ELEV. = 94.12
   EXISTING GRADE OVER TANK: ELEV. = 94.00
   INV. IN = 90.12
   INV. OUT = 89.97
3. DISTRIBUTION BOX
   PROVIDE CLEANOUT TO FINISHED GRADE
   FINISHED GRADE OVER BOX: ELEV. = 94.3
   EXISTING GRADE OVER BOX: ELEV. = 94.
   INV. IN = 89.87
   INV. OUT = 89.77
4. TRENCHES
   A) INV. OF 4" PERF. SANITARY PIPE
      BOTTOM TRENCH = 84.11
   B) INV. OF 4" PERF. SANITARY PIPE
      BOTTOM TRENCH = 83.80
5. INV. @ WALL = 93.00
6. CLEANOUT
   PROVIDE CLEANOUT TO FINISHED GRADE
   FINISHED GRADE OVER CLEANOUT
   EXISTING GRADE OVER CLEANOUT
   INV. @ CLEANOUT = 91.21
7. 1000 GALLON SEPTIC TANK
   PROVIDE CLEANOUT TO FINISHED GRADE
   FINISHED GRADE OVER TANK: ELEV. = 94.
   EXISTING GRADE OVER TANK: ELEV. = 95.4
   INV. IN = 90.00
   INV. OUT = 89.88
8. DISTRIBUTION BOX
   PROVIDE CLEANOUT TO FINISHED GRADE
   FINISHED GRADE OVER BOX: ELEV.
   EXISTING GRADE OVER BOX: ELEV.
   INV. IN = 89.67
   INV. OUT = 89.57
9. TRENCHES
   C) INV. OF 4" PERF. SANITARY PIPE
      BOTTOM TRENCH = 83.81

OWNER / DEVELOPER

MR. CHARLES SNOUFFER
1725 MARYLAND ROUTE 144
WOODBINE MARYLAND 21797
(301) 489-7327

Revised 10-30-89

Removed notes, Removed [illegible], Added Dry Well & Water Quality Control Structure. Added water quality control structure detail, profiles, general notes, construction notes, maintenance notes, Drywell details, profiles, general notes, construction notes and maintenance notes

FISHER, COLLINS & CARTER, INC.
ENGINEERS & LAND SURVEYORS
8388 COURT AVENUE
ELLICOTT CITY, MARYLAND 21043
(301) 461-2855

ENGINEER'S CERTIFICATE

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

SIGNATURE OF ENGINEER — DATE 4/13/87

DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN FOR EROSION AND SEDIMENT CONTROL AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF NATURAL RESOURCES APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ONSITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY"

SIGNATURE OF DEVELOPER — DATE 4/13/87

REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS

U.S. SOIL CONSERVATION SERVICE — DATE 11-10-87

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

APPROVED

HOWARD SOIL CONSERVATION DISTRICT — DATE 11/10/87

APPROVED: OFFICE OF PLANNING AND ZONING

PLANNING DIRECTOR — DATE 11.23.87

CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION — DATE 20 NOV 87

APPROVED: HOWARD COUNTY HEALTH DEPARTMENT FOR PRIVATE WATER AND SEWERAGE SYSTEMS

HEALTH OFFICER — DATE 11-19-87

APPROVED: DEPARTMENT OF PUBLIC WORKS FOR STORM DRAINAGE SYSTEMS AND ROADS

DIRECTOR, PUBLIC WORKS — DATE 11/13/87

CHIEF, BUREAU OF ENGINEERING — DATE 11/12/87

PROPERTY/SUBDIVISION	SECTION/AREA	PARCEL/LOT NO.
CHARLES R SNOUFFER ET AL	--	A

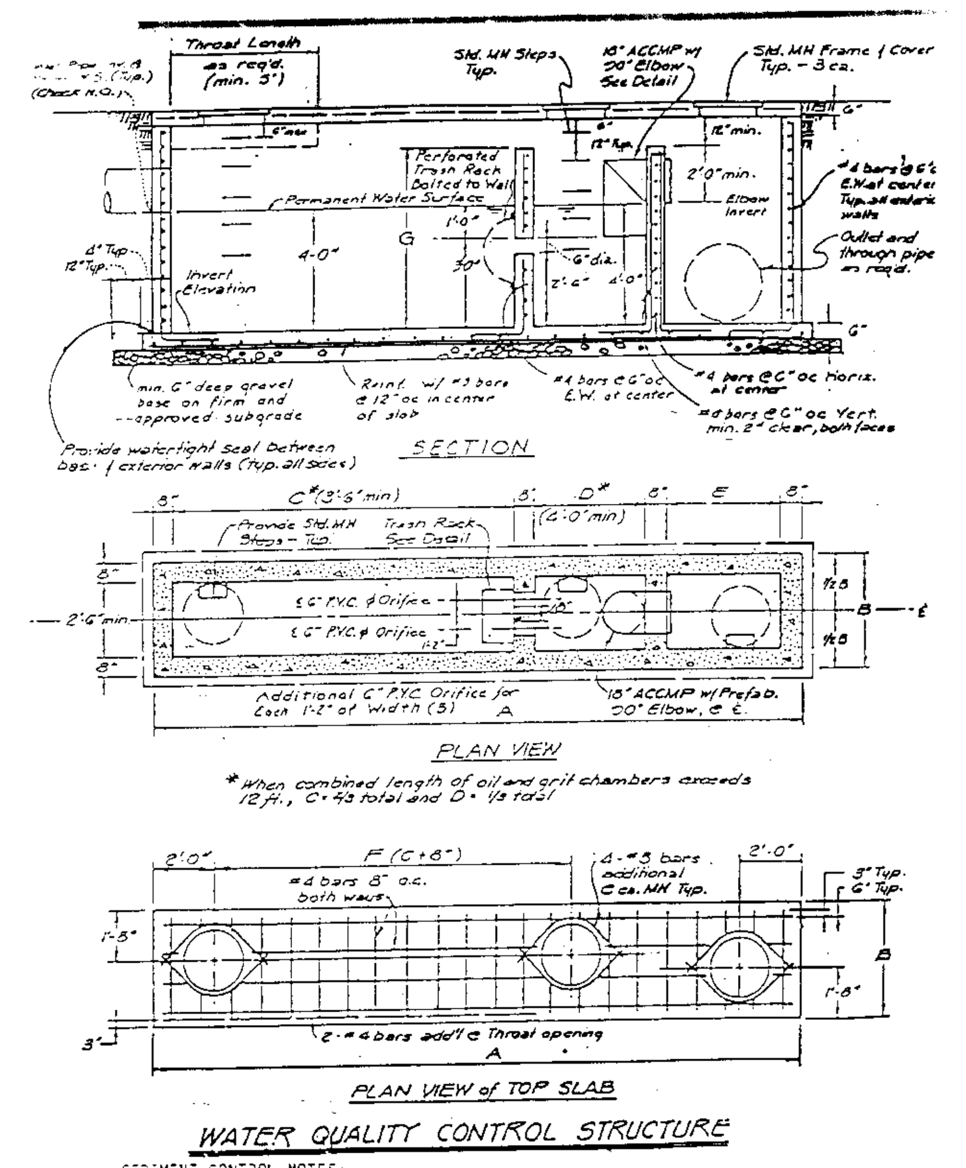
PLAT NO./L.F.	BLOCK NO.	ZONE	TAX ZONE	ELEC. DIST.	
L.1423/F.118	2	B-2	7	4	6040

WATER CODE

SITE DEVELOPMENT PLAN

PROPERTY OF
CHARLES R. SNOUFFER, ET AL SUBD.
TAX MAP 7 PARCEL A
4TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
APR. 7TH 1987 SCALE: AS SHOWN
SHEET 1 OF 2

SDP-87-209



WATER QUALITY CONTROL STRUCTURE

SEDIMENT CONTROL NOTES:

1) A MINIMUM OF 24 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY OFFICE OF INSPECTIONS AND PERMITS PRIOR TO THE START OF ANY CONSTRUCTION (992-2437).
2) ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
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 DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDINGS (SEC. 51) SOD (SEC. 54), TEMPORARY SEEDING (SEC.50) AND MULCHING (SEC.52). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
5) 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.
6) SITE ANALYSIS:

TOTAL AREA OF SITE	0.948	ACRES
AREA DISTURBED	0.957	ACRES
AREA TO BE ROOFED OR PAVED	0.570	ACRES
AREA TO BE VEGETATIVELY STABILIZED	0.387	ACRES
TOTAL CUT	–	CU.YDS.
TOTAL FILL	–	CU.YDS.
OFFSITE WASTE/BORROW AREA LOCATION	–	

7) ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
8) ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY DPW SEDIMENT CONTROL INSPECTOR.

PERMANENT SEEDING NOTES:

APPLY TO GRADED OR CLEARED AREA NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LIVED VEGETATIVE COVER IS NEEDED.

SEEDBED PREPARATION: LOOSEN UPPER THREE-INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING.

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

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

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 OF 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 STRAW.

MULCHING: APPLY 1½ TO 2 TONS PER ACRE (70 TO 90 LBS/1000 SQ.FT.) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ.FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL/1000 SQ.FT.) FOR ANCHORING.

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

TEMPORARY SEEDING NOTES:

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

SEEDBED PREPARATION: LOOSEN UPPER THREE-INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING.

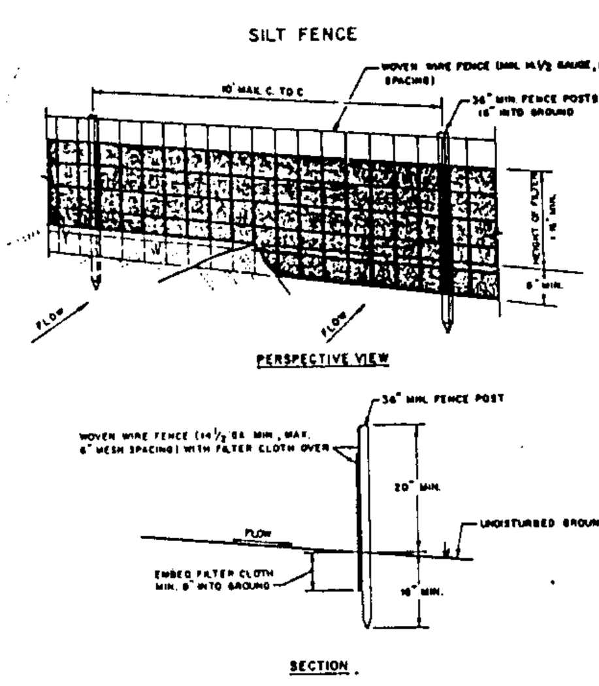
SOIL AMENDMENTS: APPLY 600 LBS PER ACRE 10-10-10 FERTILIZER (14 LBS/1000 SQ.FT.)

SEEDING: FOR PERIODS MARCH 1 THRU APRIL 30 AND FROM AUGUST 15 THRU NOVEMBER 15, SEED WITH 2½ 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 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 1½ 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 GAL PER ACRE (5 GAL/1000 SQ.FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES, 8 FT. OR HIGHER, USE 348 GAL PER ACRE (8 GAL/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.

SILT FENCE



CONSTRUCTION NOTES FOR FABRICATED SILT FENCE

1. Woven wire fence to be fastened securely to fence posts with wire ties or staples.
2. Filter cloth to be fastened securely to woven wire fence with ties spaced every 24" at top and mid section.
3. When two sections of filter cloth adjoin each other they shall be overlapped by six inches and folded.
4. Maintenance shall be performed as needed and material removed when "bulges" develop in the silt fence.

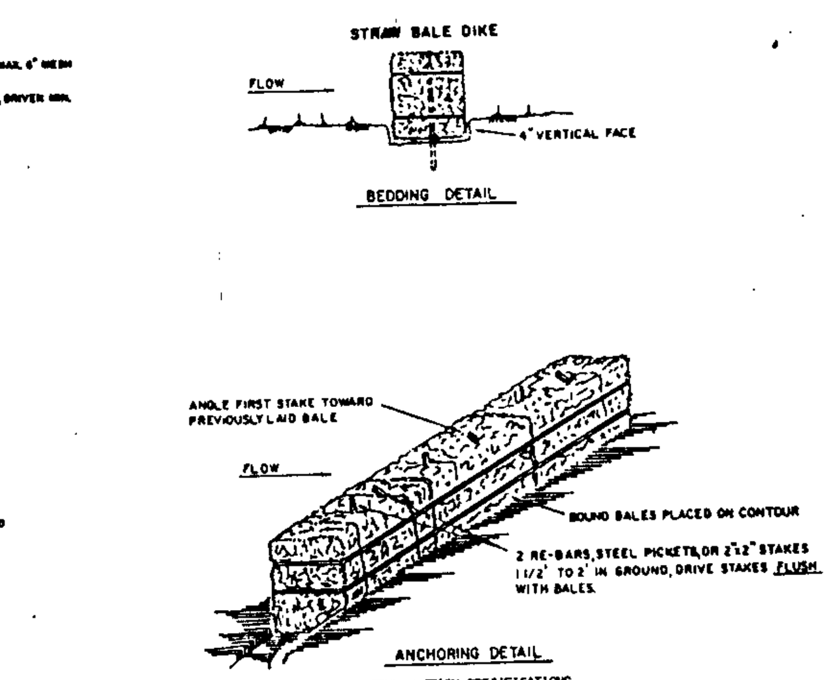
POSTS: Steel either T or U type or 2" hardwood

FENCE: Woven wire, 14 Ga. 6" max. mesh opening

FILTER CLOTH: Filter X, Mirafi 100X, Stabilinka T140N or approved equal

PREFABRICATED UNIT: Geofab, Envirofence, or approved equal

STRAW BALE DIKE

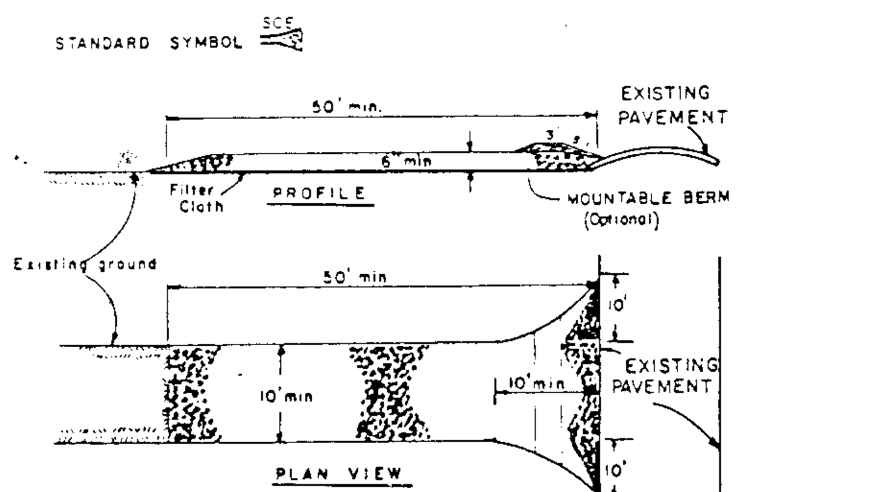


1. Bales shall be placed at the toe of a slope or on the contour and in a row with ends tightly abutting the adjacent bales.
2. Each bale shall be embedded in the soil a minimum of (4) inches, and placed so the bindings are horizontal.
3. Bales shall be securely anchored in place by either two stakes or re-bars driven through the bale. The first stake in each bale shall be driven toward the previously laid bale at an angle to force the bales together. Stakes shall be driven flush with the bale.
4. Inspection shall be frequent and repair replacement shall be made promptly as needed.
5. Bales shall be removed when they have served their usefulness so as not to block or impede storm flow or drainage.

STABILIZED CONSTRUCTION ENTRANCE

not to scale

STANDARD SYMBOL SCE

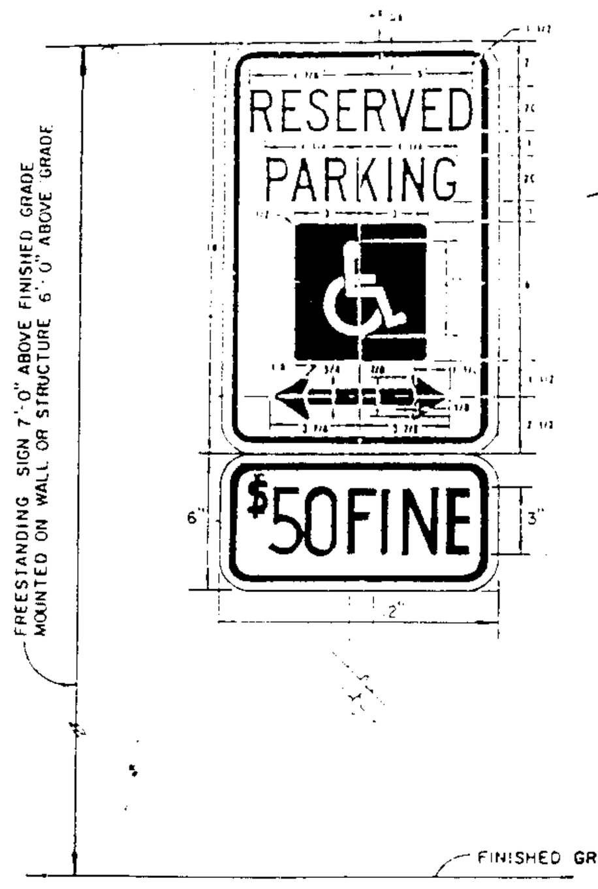


CONSTRUCTION SPECIFICATIONS

1. Stone Size - Use 2" stone, or reclaimed or recycled concrete equivalent.
2. Length - As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum length would apply).
3. Thickness - Not less than six (6) inches.
4. Width - Ten (10) foot minimum, but not less than the full width at points where ingress or egress occurs.
5. Filter Cloth - Will be placed over the entire area prior to placing of stone. Filter will not be required on a single family residence lot.
6. Surface Water - All surface water flowing or diverted toward construction entrances shall be piped across the entrance. If piping is impractical, a mountable berm with 5:1 slopes will be permitted.
7. Maintenance - The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed or tracked onto public rights-of-way must be removed immediately.
8. Washing - Wheels shall be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with stone and which drains into an approved sediment trapping device.
9. Periodic inspection and needed maintenance shall be provided after each rain.

NO	STREET ADDRESS
	ADDRESS CHART
PARCEL A	16021 FREDERICK ROAD

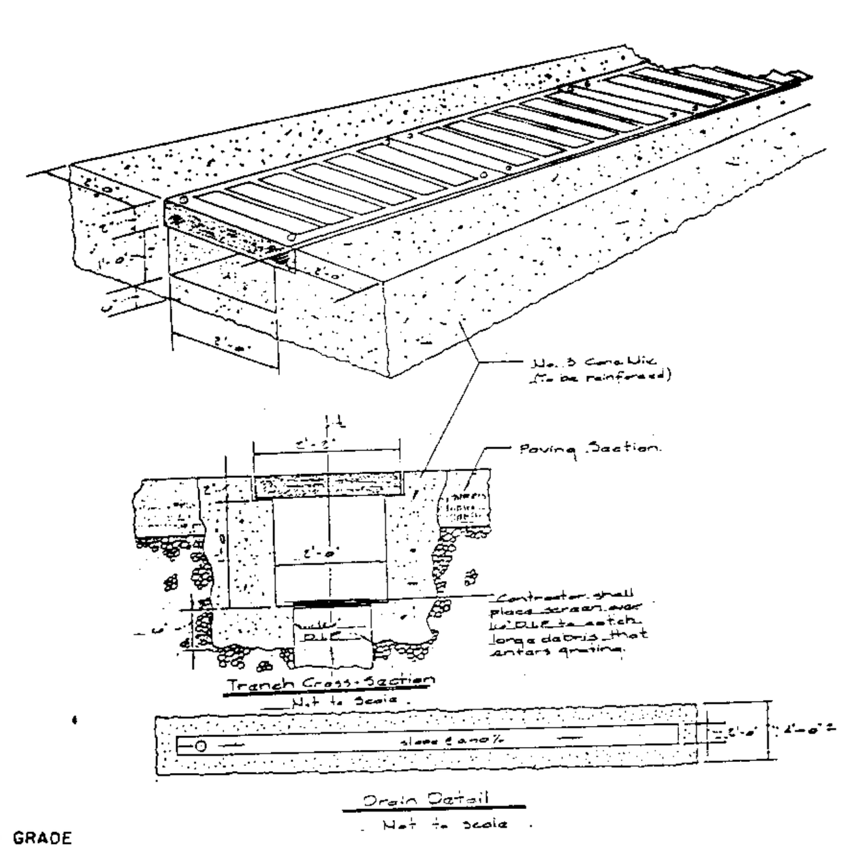
APPROVED
DIVISION OF LAND DEVELOPMENT & ZONING ADMINISTRATION
HOWARD COUNTY, MARYLAND
DATE 9-23-87



* REDUCE SPACING 50%
** SEE PAGE 4 FOR SYMBOL DESIGN

COLORS
LEGEND AND BORDERS - GREEN
WHITE SYMBOL ON BLUE BACKGROUND
BACKGROUND - WHITE

HANDICAPPED PARKING SIGN



Revised 10-30-89 DLH

Removed notes, Added Water Quality Control Structure details, general notes, construction notes, maintenance notes Dry Well details, profiles, general notes, construction notes, and maintenance notes

(cont. Sh. 1 of 2)

The maximum depth of dry wells will generally be determined by a number of factors. These include: 1) the soil textural characteristics and 2) the depth to the water table or bedrock.

3.4.3.3. Water Table, Bedrock, and Groundwater Conditions

The bottom of the dry well shall be located at least 2 to 4 feet above the seasonally high groundwater table as well as bedrock. Therefore, these two parameters will often determine the maximum allowable depth for the well. Also dry wells shall be located at least 100 feet horizontally away from any water supply well.

3.4.4. Design Criteria

3.4.4.1. Design Storm

All hydrologic and hydraulic calculations shall be based on the design storm criteria provided in the Maryland SWM Regulations.

3.4.4.2. Storage Time

All dry wells shall be designed to be empty within 3 days from the beginning of the storm. Thus an allowable storage time (T_s) of 72 hours shall be used.

3.4.4.3. Backfill Material

The aggregate fill material for the infiltration trench shall consist of a clean aggregate with a maximum diameter of 3" and a minimum diameter of 1-1/2". The aggregate should be poorly graded with few stones smaller than the selected size. Void space for these aggregates are assumed to be between the ranges of 30 to 40 percent.

Any stone aggregate shall be completely surrounded with an engineering filter fabric as shown in Figure 3-6.

3.4.4.4. Runoff Filtering

At all times grease, oil, floatable organic materials, and settleable solids should be removed from runoff water before it enters the dry well. These materials can take up storage capacity in addition to reducing infiltration rates. Screens should be placed at the top of the roof leader to prevent leaves from entering the dry well.

When a runoff filtering system or structure is included in the design, the maintenance requirements shall be included.

3.4.4.5. Outflow Structures

Other than overflow provisions outflow structures are generally not used with infiltration systems. Some counties, however, have been requiring the use of a positive drain or discharge pipe from such structures. This practice is not acceptable, though, because it converts the infiltration structure into a detention structure, unless the positive drain is located such that a volume of storage is provided below the positive drain invert.

In all cases, however, the overland flow path of surface runoff exceeding the capacity of the well shall be evaluated to preclude the development of uncontrolled, erosive concentrated flow. An overflow system leading to a stabilized channel or watercourse including measures to provide non-erosive flow conditions along its length and at the outfall shall be provided. An overflow orifice shall be installed in the inflow pipe above the dry well surface area to allow drainage in extreme events as shown in Figure 3-6.

3.4.4.6. Seepage Analysis and Control

A foundation analysis shall be made to determine any possible adverse effects of seepage zones on nearby building foundations, roads, parking lots, and other structures. This is particularly important on a steeply sloping site. Developments on sloping sites often require the use of extensive cut and fill operations. The use of dry wells on large or steeply sloping fill sites is not recommended. Fill areas can be very susceptible to slope failure due to slippage along the interface of the in-situ and fill material. This condition could be further aggravated if the fill material is saturated by using infiltration practices. The methods for seepage analysis and estimation of infiltration rates using Darcy's law and flow nets can be used to conduct the seepage analysis.

When dry wells are used in residential areas, special care must be taken to prevent seepage from the dry wells creating wet basements. Dry wells 3 or more feet deep should be located at least 10 feet down gradient from foundation walls.

3.4.4.7. Hydrologic Design Methods

A hydrologic design method based on SCS procedures is provided in Chapter 4.

3.4.4.8. Observation Well

An observation well shall be installed in every dry well. The observation well will serve two primary functions: 1) it will indicate how quickly the trench dewaters following a storm, and 2) it will provide a method of observing how quickly the dry well fills up with silt and thus requires maintenance cleanout.

The observation well should consist of perforated PVC pipe, 4 inches in diameter. It should be located in the center of the structure and be constructed flush with the ground elevation of the structure as shown in Figure 3-5. The top of the well shall be capped to discourage vandalism and tampering. The depth of the well at the time of installation should be clearly marked on the well cap.

3.4.5. Water Quality

The effectiveness of this practice for runoff and pollution control is dependent upon the size and design of the structure. If a dry well is designed to collect and infiltrate the total volume of runoff for a design storm over a given drainage area, the practice theoretically should be effective for both runoff control and pollution abatement for storms up to and including the design storm (COG, 1979).

3.4.6. Construction Specifications

3.4.6.1. Timing

A dry well shall not be constructed or placed in service until all of the contributing drainage area has been stabilized and approved by the responsible inspector.

3.4.6.2. Dry Well Preparation

Excavate the dry well to the design dimensions. Excavated materials shall be placed away from the excavated sides to enhance wall stability. Large tree roots shall be trimmed flush with the sides in order to prevent fabric puncturing or tearing during subsequent installation procedures. The side walls of the dry well shall be roughened where sheared and sealed by heavy equipment

3.4.6.3. Fabric Laydown

The filter fabric roll shall be cut to the proper width prior to installation. The cut width must include sufficient material to conform to well perimeter irregularities and for a 6-inch minimum top overlap. Place the fabric roll over the well and unroll a sufficient length to allow placement of the fabric down into the well. Stones or other anchoring objects should be placed on the fabric at the edge of the well to keep the lined well open during windy periods. When overlaps are required between rolls, the upstream roll shall lap a minimum of 2 feet over the downstream roll in order to provide a shingled effect. The overlap ensures fabric continuity or the fabric conforms to the excavation surface during aggregate placement and compaction.

3.4.6.4. Aggregate Placement and Compaction

Drainage aggregate shall be placed in lifts and compacted using plate compactors. As a rule of thumb, a maximum loose lift thickness of 12 inches is recommended. The compaction process ensures fabric conformity to the excavation sides, thereby reducing the potential for soil piping and fabric clogging.

3.4.6.5. Overlapping and Covering

Following aggregate placement, the fabric previously weighted by stones should be folded over the aggregate to form a 6" minimum longitudinal lap. The desired fill soil should be placed over the lap at sufficient intervals to maintain the lap during subsequent backfilling.

3.4.6.6. Contamination

Care shall be exercised to prevent natural or fill soils from intermixing with the drainage aggregate. All contaminated aggregate shall be removed and replaced with uncontaminated aggregate.

3.4.6.7. Voids Behind Fabric

Voids can be created between the fabric and excavation sides and should be avoided. Removing boulders or other obstacles from the trench walls is one source of such voids. Natural soils should be placed in these voids at the most convenient time during construction to ensure fabric conformity to the excavation sides. Soil piping, fabric clogging, and possible surface subsidence will be avoided by this remedial process.

3.4.6.8. Unstable Excavation Sides

Vertically excavated trench walls may be difficult to maintain in areas where the soil moisture is high or where soft cohesive or cohesionless soils predominate. These conditions may require laying back of the side slopes to maintain stability; trapezoidal rather than rectangular cross sections may result.

3.4.6.9. Foundation Protection

Dry wells 3 or more feet deep shall be located at least 10 feet down gradient from foundation walls.

3.4.6.10. Observation Well

An observation well, as described in subsection 3.4.4.8 and Figure 3-5, will be provided. The depth of the well, at the time of installation, will be clearly marked on the well cap.

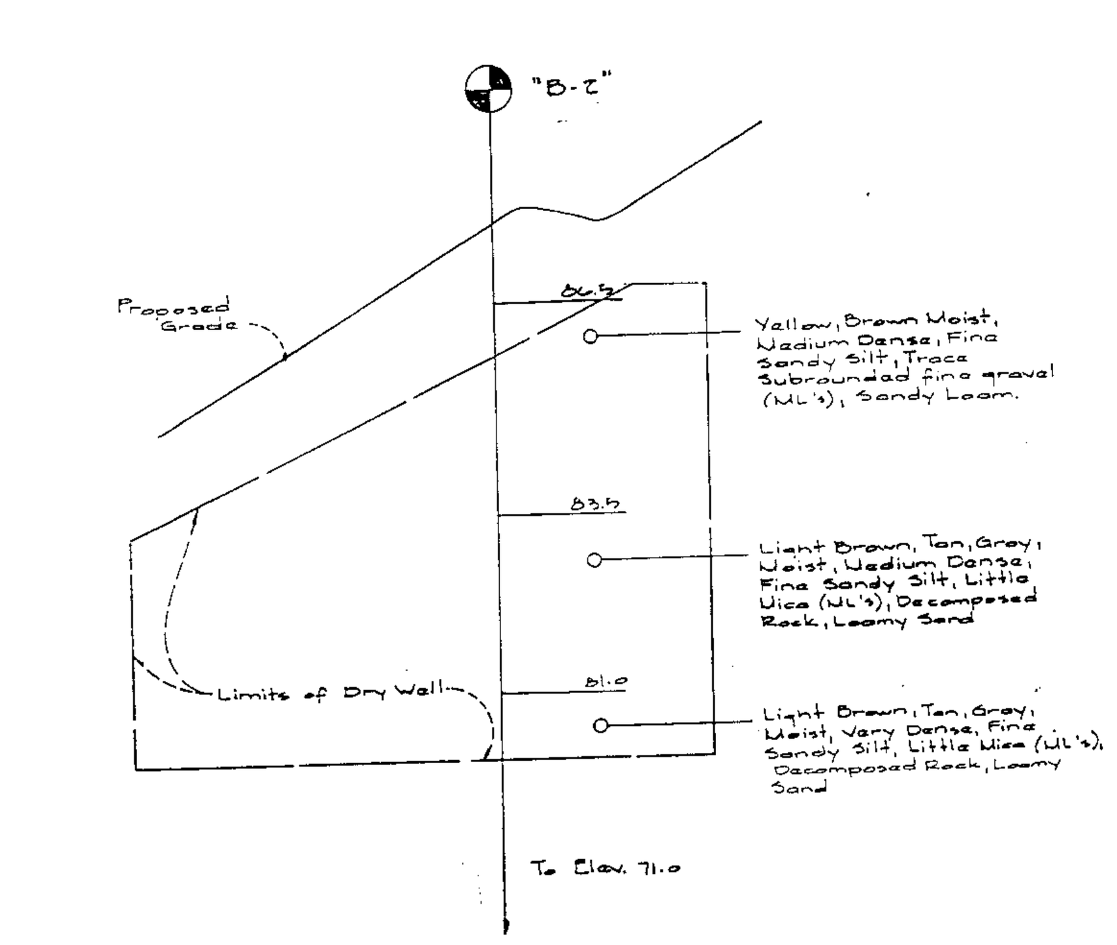
3.4.7. Maintenance

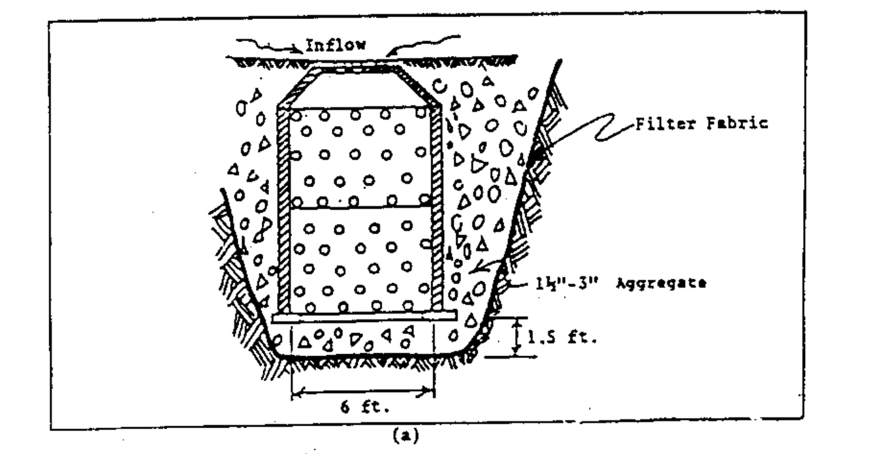
Dry wells shall be designed to minimize maintenance. However, it is recognized that all infiltration facilities are subject to clogging by sediment, oil, grease, grit and other debris. In addition, the performance and longevity of these structures is not well documented. Consequently, a monitoring observation well is required for all infiltration structures.

The observation well should be monitored periodically. For the first year after completion of construction, the well should be monitored on a quarterly basis and after every large storm. It is recommended that a log book be maintained indicating the rate at which the facility dewaters after large storms and the depth of the well for each observation. Once the performance characteristics of the structure have been verified, the monitoring schedule can be reduced to an annual basis, unless the performance data indicate that a more frequent schedule is required.

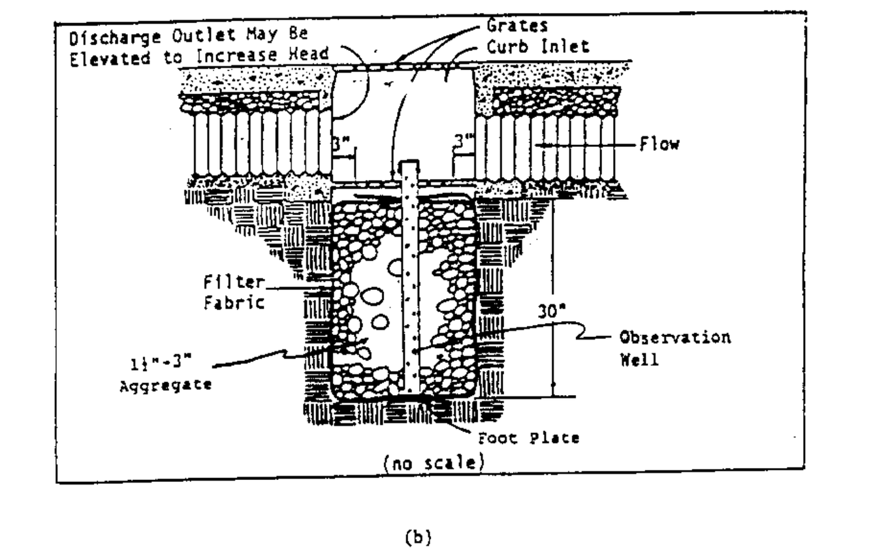
3.4.8. References

1. Becker, B.C., M.L. Clar, and R.R. Kautzman, Approaches to Stormwater Management, prepared by Hittman Associates, Inc. for the Office of Water Resources Research, USDI, November, 1973.
2. Sullivan, R.H., editor, Urban Stormwater Management, Special Report No. 49, American Public Works Association, Chicago, Illinois, 1981.
3. Anonymous, Controlling Stormwater Runoff in Developing Areas: Selected Best Management Practices, Metropolitan Washington Council of Governments, July, 1979.
4. Design Guidelines for Subsurface Drainage Structures, MIRAFI, Inc., P.O. Box 240967, Charlotte, NC 28224.



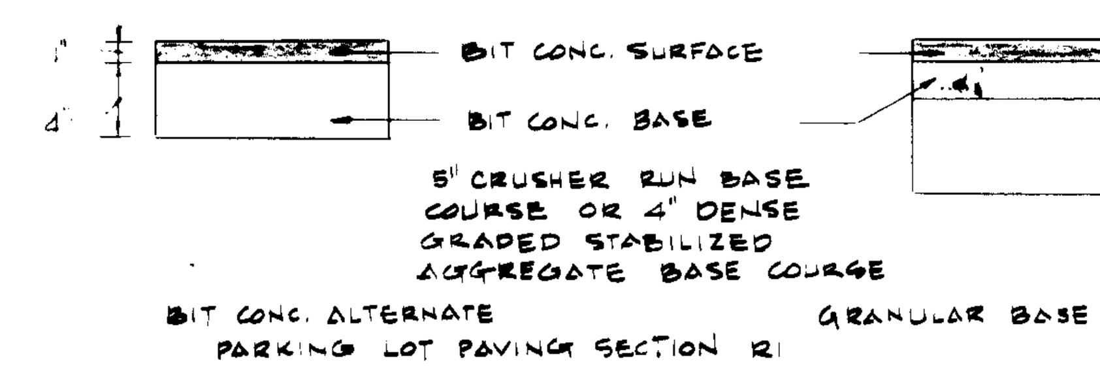


Source: Modified from Sullivan (1981)



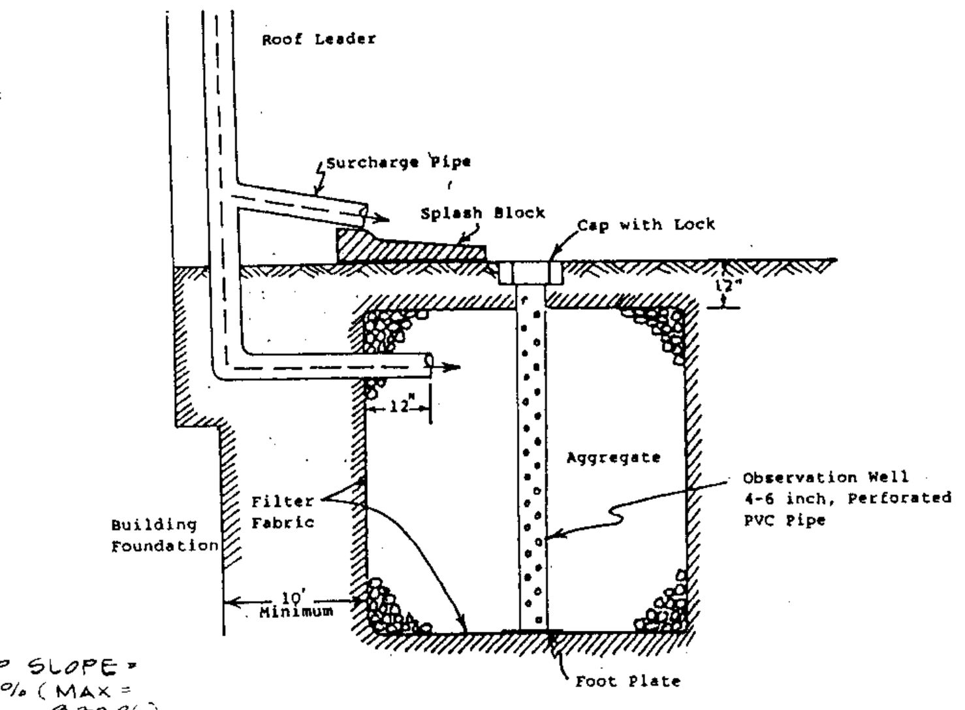
Source: COG (1979)

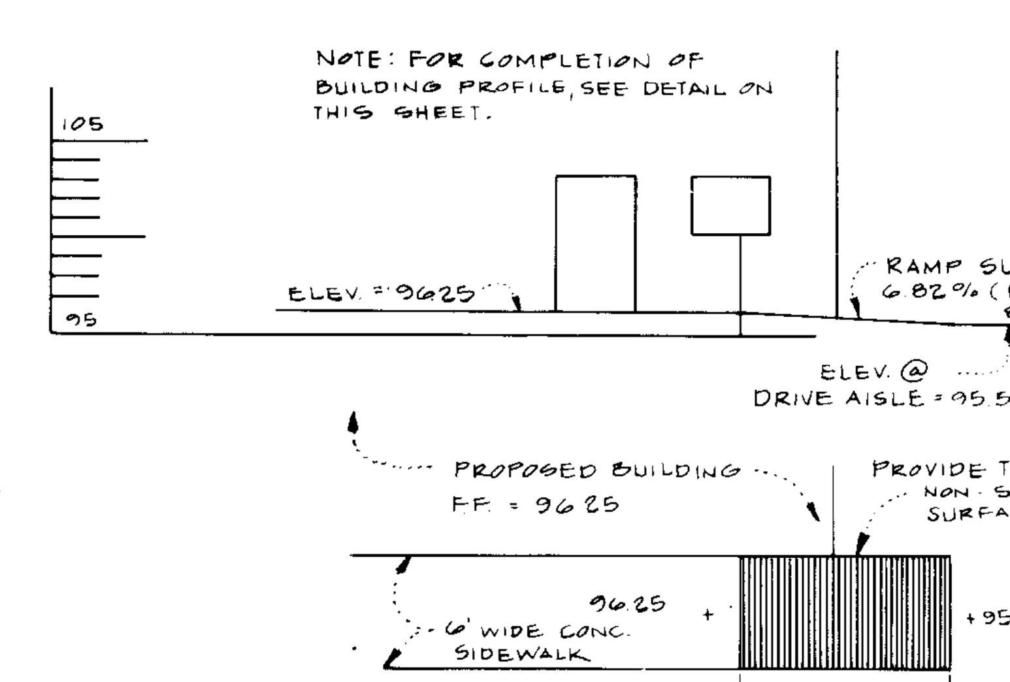
Figure 3-7. Examples of Storm Drain Catch Basins Used as Dry Wells



TYPICAL PAVING SECTIONS

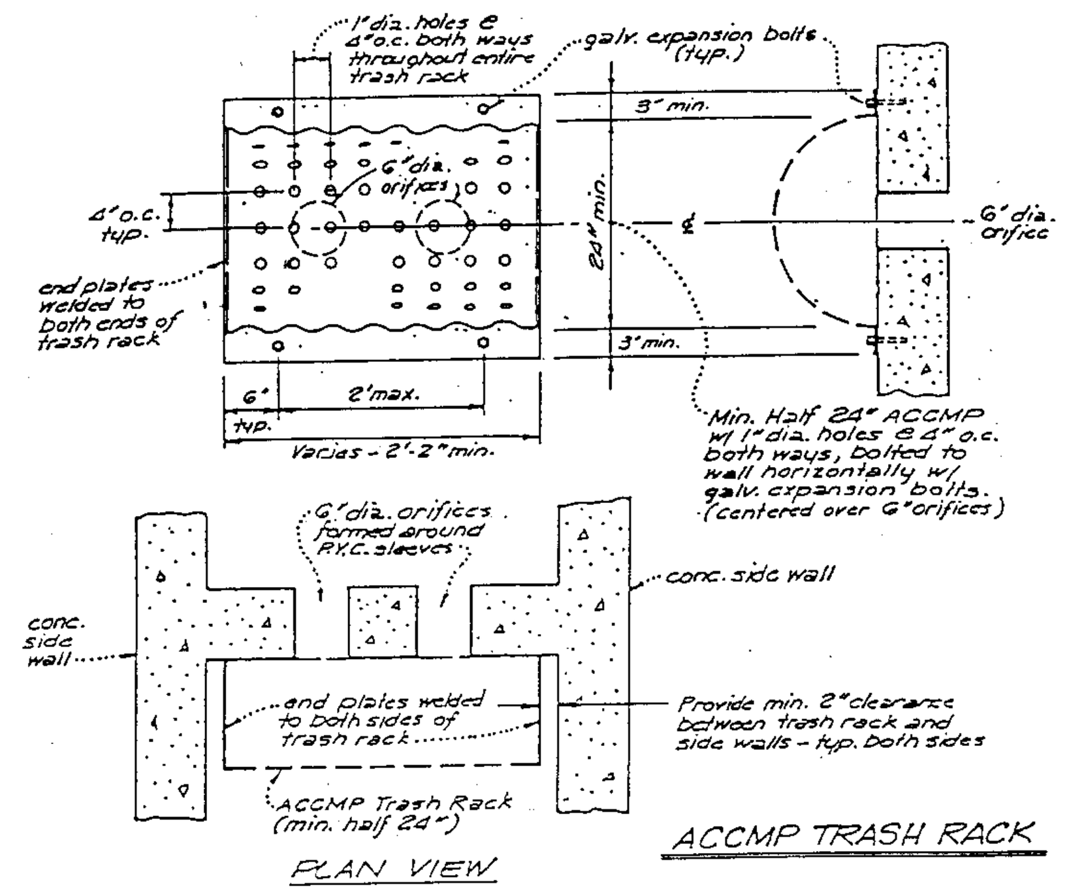
NOT TO SCALE

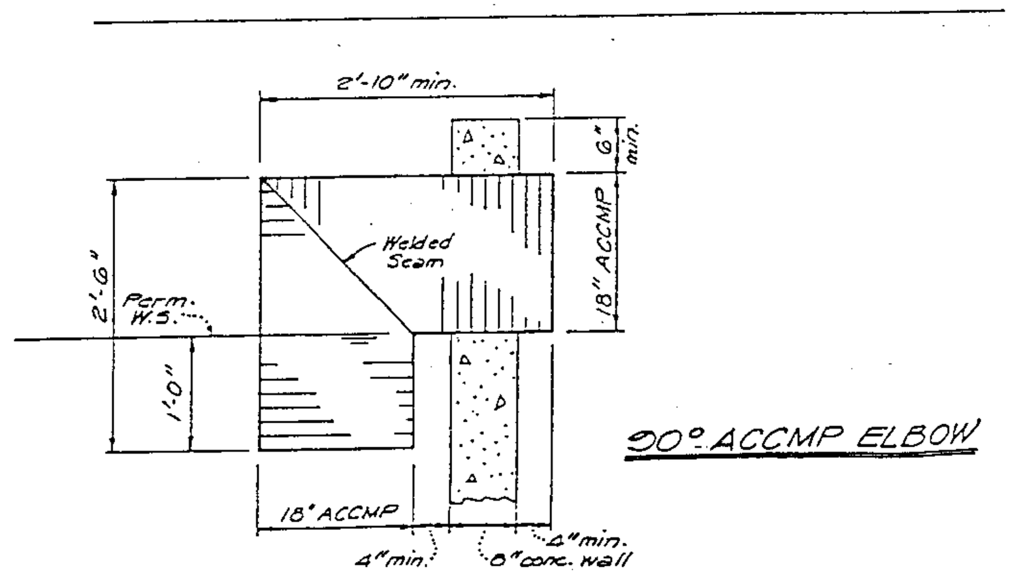




HANDICAPPED RAMP DETAIL

NO SCALE





CONSTRUCTION NOTES:

1. Silt and debris shall not be allowed to enter the structures until contributing drainage areas have been permanently stabilized.
2. All openings to structures shall be protected with the appropriate sediment control measures during construction.

INSPECTION NOTES:

1. Prior to start of construction on water quality structures, the MCDEP inspector must be called 48 hours in advance at 251-2624.
2. The MCDEP inspector must be notified (251-2624) at each of the following stages:
   - A. Approval of subgrade for footings.
   - B. Footing formed and steel set prior to pouring.
   - C. Structure sides formed and steel set prior to pouring.
   - D. Prior to top slab and manholes being set, MCDEP inspector must check structure and all debris and silt in structure removed.
   - E. When site is permanently stabilized and sediment control measures to protect inlet are to be removed.

MAINTENANCE NOTES (WATER QUALITY STRUCTURE WASTE)

1. Water Quality Structures will require periodical cleaning. Owners of these facilities will have to clean them as needed or on a frequency that the County determines is appropriate. Owners of water quality structures will be notified by the County of the frequency of maintenance.
2. Maintenance of these facilities will consist of cleaning out the separator and disposal of the waste and the repair of the facility as needed. Periodic inspections of these facilities will be made by the County Stormwater Management group.
3. The disposal of the liquid and solid matter should be as follows:
   - A. All liquid material in the separator inlet shall be pumped into a suitable tank truck and disposed of at an approved sanitary district discharge manhole or be taken to an approved sewage treatment plant for discharge.
   - B. The solid material shall be landfilled in an approved sanitary landfill.
4. The inlet pipes, trash racks, grates, and structural parts shall be repaired as needed.

OWNER / DEVELOPER

MR. CHARLES SNOUFFER
1725 MARYLAND ROUTE 94
WOODBINE, MARYLAND 21797
(301) 489-7327

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERS & LAND SURVEYORS
8388 COURT AVENUE
ELLICOTT CITY, MARYLAND 21043
(301) 461-2855

ENGINEER'S CERTIFICATE

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

SIGNATURE OF ENGINEER — DATE 4/13/87

DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN FOR EROSION AND SEDIMENT CONTROL AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF NATURAL RESOURCES APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT I ALSO AUTHORIZE PERIODIC ONSITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY."

SIGNATURE OF DEVELOPER — DATE 4/13/87

REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS

U.S. SOIL CONSERVATION SERVICE — DATE 11-10-87

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

APPROVED:

DISTRICT — DATE 11/10/87
HOWARD SOIL CONSERVATION DISTRICT

APPROVED: OFFICE OF PLANNING AND ZONING

PLANNING DIRECTOR — DATE 11.23.87

CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION — DATE 20 NOV 87

APPROVED: HOWARD COUNTY HEALTH DEPARTMENT FOR PRIVATE WATER AND SEWERAGE SYSTEMS

HEALTH OFFICER — DATE 11-19-87

APPROVED: DEPARTMENT OF PUBLIC WORKS FOR STORM DRAINAGE SYSTEMS AND ROADS.

DIRECTOR, PUBLIC WORKS — DATE 11/13/87

CHIEF, BUREAU OF ENGINEERING — DATE 11-12-87

PROPERTY/SUBDIVISION				SECTION/AREA	PARCEL/LOT NO
CHARLES R. SNOUFFER, ET AL				– –	A
PLAT NO./L.F.	BLOCK NO	ZONE	TAX/ZONE	ELEC DIST	CENSUS TR
L.1423/F.118	2	B-2	7	4	6040
WATER CODE	[illegible]		SEWER CODE		

SITE DEVELOPMENT PLAN

PROPERTY OF
CHARLES R. SNOUFFER, ET AL SUBDIVISION
TAX MAP 7 PARCEL A
4TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
APRIL 7TH, 1987 SCALE: AS SHOWN
SHEET 2 OF 2

SDP-87-209