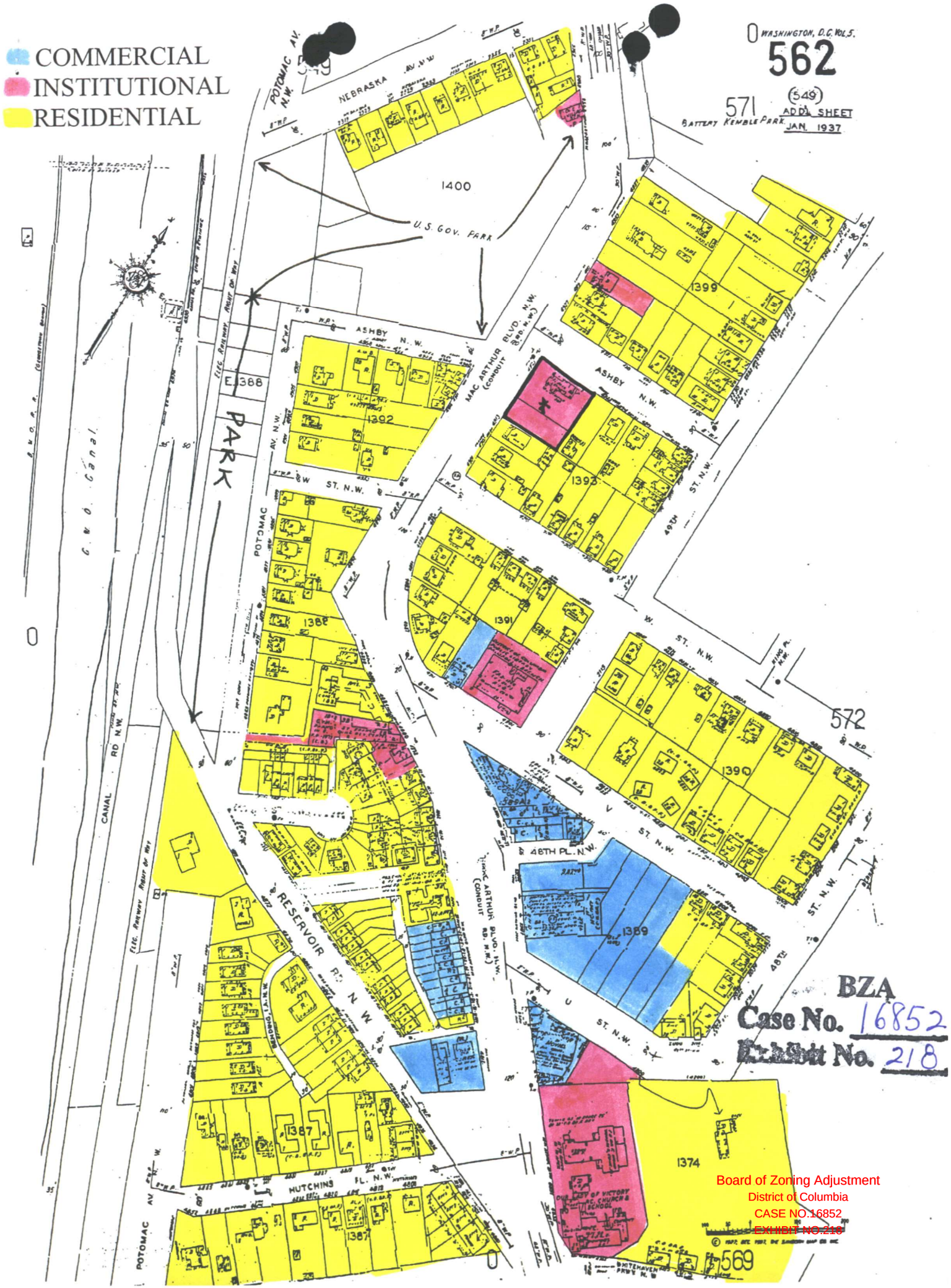
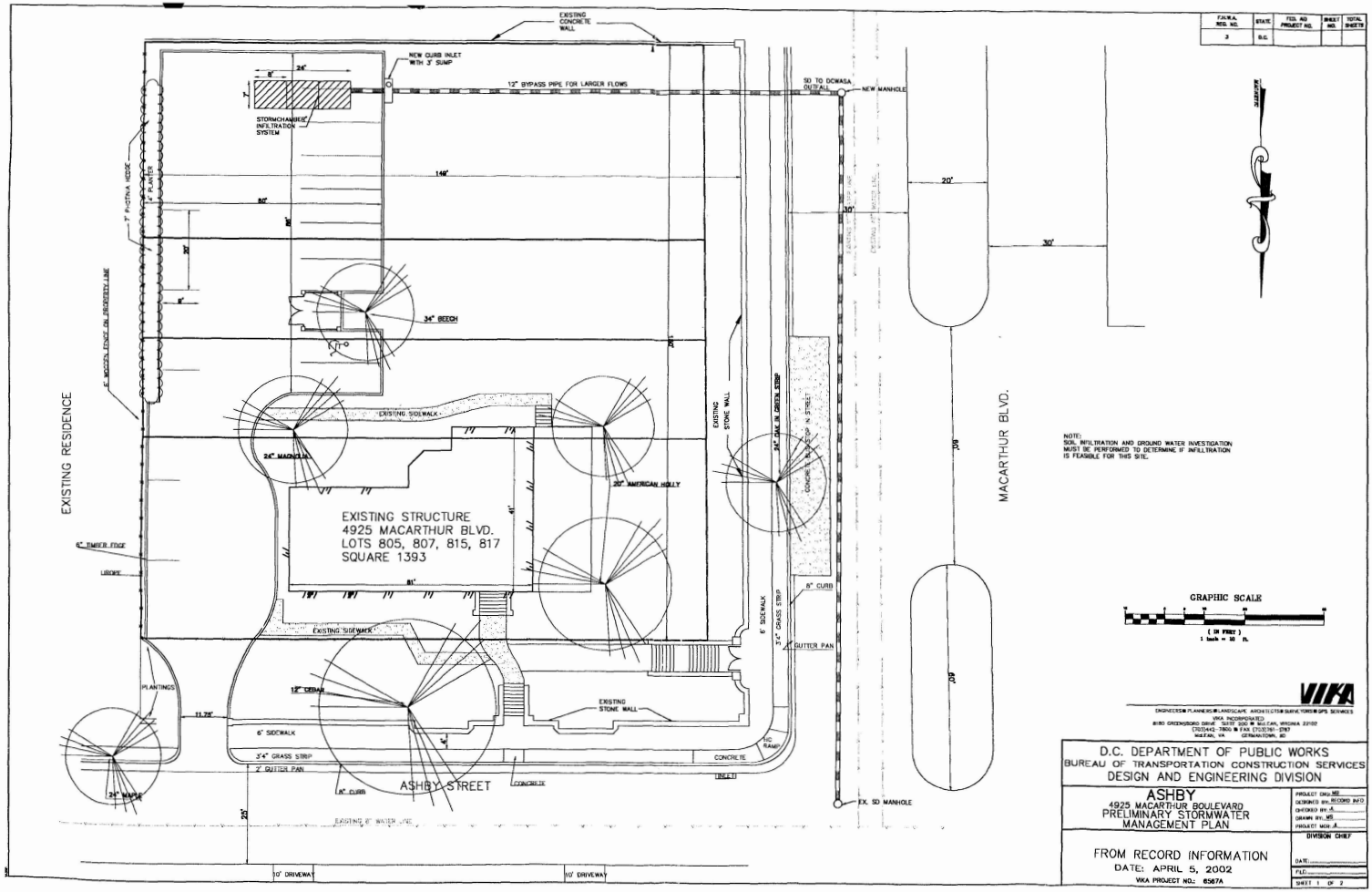


BZA
Case No. 16852
Exhibit No. 218

Board of Zoning Adjustment
District of Columbia
CASE NO.16852
EXHIBIT NO.218



F.H.W.A. REG. NO.	STATE	FED. AID PROJECT NO.	SHEET NO.	TOTAL SHEETS
3	D.C.			

VIKA

ENGINEERS ■ PLANNERS ■ LANDSCAPE ARCHITECTS ■ SURVEYORS ■ GPS SERVICES

VIKA INCORPORATED
8180 GREENSBORO DRIVE SUITE 200 ■ MCLEAN, VIRGINIA 22102
(703)442-7800 ■ FAX (703)761-2787
MCLEAN, VA GERMANTOWN, MD

D.C. DEPARTMENT OF PUBLIC WORKS
BUREAU OF TRANSPORTATION CONSTRUCTION SERVICES
DESIGN AND ENGINEERING DIVISION

ASHBY

4925 MACARTHUR BOULEVARD
PRELIMINARY STORMWATER MANAGEMENT PLAN

PROJECT ENG: MD
DESIGNED BY: RECORD INFO
CHECKED BY: A
DRAWN BY: MS
PROJECT MGR: A

DIVISION CHIEF

DATE:

FILE:

SHEET 1 OF 2

FROM RECORD INFORMATION
DATE: APRIL 5, 2002
VIKA PROJECT NO.: 6567A

6567902.dwg 4-15-02 2:32:27 pm EST

Installation of StormChamber Systems

Trench Preparation

1. Excavate the earth to a width, length and depth sufficient to accommodate the number of chambers plus one foot around the entire perimeter of the bed. The bottom of the bed should be approximately level.
2. Line all walls of the trench with the specified 4-ounce non-woven filter fabric to help retard the movement of soil particles into the chamber system.
3. Place 6"of crushed, washed, 1.5" to 2"diameter stone on the bottom of the trench as a bites the chambers. The base should be approximately level.

Chamber Installation

1. Put all the Start Model chambers in place for the entire bed, spaced 8" apart at the base. Position the closest end of the Start Model chambers approximately 1'from the bench wall. (Very large systems can be done in multiple rows at a time).
2. Place the same 4-ounce non-woven filter fabric under each chamber that will be accessed by a feed pipe from the stormwater inlet structure(s) to prevent under cutting from stormwater flows. Extend this filter fabric at least one foot beyond the width of the chamber to help secure it in place.
3. Surround the Start Model chambers with crushed, washed, 1.5"to 2" diameter stone. Bring the stone up only to the bottom of the side portals to allow for flood pipe installation. This procedure holds the chambers in place to guide the rest of the installation. Topsoil the stone directly along the center-line of the chambers so that it evenly flows down each side. This provides new pressure on both sides of the chamber to help keep them in proper alignment. Do not place the stone directly against the closed end wall. Let the stone fall in place at the chamber end from placement directly on the chamber.
4. Be sure that the stone placement does not interfere with your next chamber placement for each chamber row. Place the next 2-3 chambers (Middle Models) of each row, overlapping the larger open rib over the smaller rib of the preceding chamber.
5. Place additional stone, as above, to hold these chambers in place and repeat the process until all chambers of the rows are installed.
6. Place a heavy duty woven, open weave geotextile material beneath each chamber that will be installed with a 10 inch PVC riser for access for vacuum truck clean out(when) the base gravel from being removed. Extend this geotextile material at least one foot beyond all sides of the chamber to help secure it in place.
7. The last chamber of each row is an End Model, with the closed end approximately 1' from the trenchwall.
8. Install feeder pipe(s) and outflow pipes into the specified side portals and install chamber row interconnecting pipes, as defined in the engineering plans.
9. Complete placement of the stone all the way to the top of the chambers. Stone should also be put around the perimeter of the bed creating a 1'stone border.
10. Cover all chambers and the 1'perimeter area with the specified filter fabric.

IMPORTANT: Be sure not to traffic on top of the chambers with your loader or other equipment when putting the stone in place. Caution must be exercised when placing stone on top of the chambers so that excessive pressure is not applied directly on the chambers by equipment "buckets" while placing or spreading the stone.

Backfilling

1. Excavated soil may be used for backfilling only if it is free from large stones and is capable of being compacted to at least 95%. If not, crusher run or other suitable backfill material must be used. It is also advisable to check the soil for acceptable soil moisture content to ensure proper compaction rates.
2. Compaction must be done in 6"- 8" lifts. Caution must be exercised with the type of equipment used for compacting all lifts. Care must be taken not to use the type and/or weight of equipment that may jeopardize the structural integrity of the chambers while achieving the required compaction.
3. Backfill starting in one corner of the bed and work outwards. Put backfill material on the sides and around over the top of the chambers before traveling over the system for further grading.
4. When covering the system for final backfill and determination of grade, it is best to use a small tract machine or backhoe bucket. If using a loader or straight blade type machine, keep loose fill in front of the blade to a height of 1'- 1 ½". Traverse perpendicular to the line of chambers. After this has been done, proceed to set the final grade to complete the installation process.
5. The recommended minimum cover is 12" for non trafficked installations; 18" for unpaved trafficked installations and 17" under 2 ½" of pavement for paved installations.

IMPORTANT: After compaction of backfill and setting of final grade, avoid traversing over the chamber installation with heavily loaded trucks and heavy equipment until paved. The only heavy equipment that should be allowed over the StormChamber system after setting the final grade is the asphalt paver and the asphalt truck.

IMPORTANT: These installation instructions assume accepted construction conditions and procedures and asphalt trucks that do not exceed specified GVT load limits. Unusualarmory loads or improper load distributions in vehicles may require additional cover. Contact Hydrologic Solutions for installation under abnormal conditions.

* Contact Hydrologic Solutions for technical assistance at 703-492 0666 or email us at hydrologicsolutions.com.

STATEMENT BY PERSON RESPONSIBLE FOR MAINTENANCE

The undersigned agrees to maintain and operate the discharge facilities in such a manner as to comply with the provisions of Section 526 through 535 of DCMR-21 Chapter 5. Responsibility for maintenance and operation may be transferred to another entity upon written notice to the Watershed Protection Division of the Department of Health from the undersigned and the entity assuming responsibility, certifying that the transfer of responsibility for maintenance and operation in compliance with Section 526 through 535 of DCMR-21, Chapter 5 has been accepted.

Signature of the person responsible for maintenance (it may be the applicant)

Name and Title (please type)

Address

Date_____Telephone No._____

STATEMENT BY PROFESSIONAL ENGINEER REGISTERED IN THE DISTRICT OF COLUMBIA

This is to certify that the engineering features of this stormwater discharge facility have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of stormwater pollutants. I further certify that the facility has been designed in accordance with the specification required under Section 526 through 535 of DCMR-21 Chapter 5. It is also stated that the undersigned has furnished the applicant with a set of instructions for the maintenance and operation of the stormwater discharge facility.

Signature of Engineer

Name and Title (please type)
8180 GREENSBORO DR. SUITE 200
MCLEAN, VA 22102
Address

Affix Seal

Date_____Telephone No.(703)-442-7800

AS-BUILT CERTIFICATION BY PROFESSIONAL ENGINEER

Within 21 days after completion of construction of the stormwater discharge facility, please send this page to the Watershed Protection Division Department of Health

1. Stormwater Discharge Facility Information

Source Name: _____

Source Location: Street: _____

City: _____

DCRA Permit No.: _____

Date Issued: _____

2. As-Built Certification

I hereby certify that this stormwater discharge facility has been built substantially in accordance with the approved plans and specifications, and that any substantial deviations (noted below) will not prevent the system from functioning in compliance with the requirements of Section 526 through 535 of DCMR-21, Chapter 5 when properly maintained and operated. These determinations have been based upon on-site observation of construction, scheduled and conducted by me or by a project representative under my direct supervision. I have enclosed one set of as-built engineering drawings.

Signature of Engineer Name (please type) D.C. Reg. No.

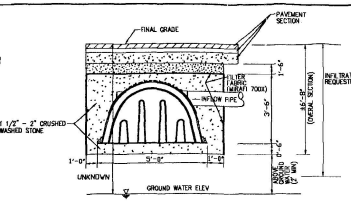
Company Name

Affix Seal

Company Address

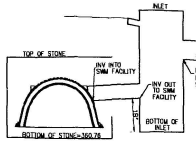
Date_____Telephone No._____

Substantial deviations from the approved plans and specifications (attach additional sheets if required).



UNIT CROSS SECTION

AREA OF CROSS SECTION = 7'x4' = 28 SF
AREA OF STORMCHAMBER = 10 SF
AREA OF STONE = 28-10 = 18 SF
AREA OF VOIDS WITHIN STONE = 18x0.4 = 7.2 SF
TOTAL VOID AREA = 17.2 SF
VOLUME OF SINGLE CHAMBER = 17.2 sf X 8 FT LONG = 137.6 CF



For nearest distributor contact
HydroLogic SOLUTIONS
PO Box 672 Occoquan, Virginia 22125
TOLL FREE: 1-877-426-9128 FAX: (703) 491-9656
e-mail: hydrologicsolutions@erols.com



START CHAMBER CONFIGURATION



MIDDLE CHAMBER CONFIGURATION



END CHAMBER CONFIGURATION

DESIGN NOTES:

* CAPACITY OF VOID PROVIDED BY STONE IS CALCULATED AT 40%
* CAPACITY OF STORMCHAMBER™ IS 10 CU. FT. PER LINEAR FOOT

ENGINEERING SPECIFICATIONS FOR STORMCHAMBER™

EACH UNIT WILL BE 34.04" HIGH, 90" WIDE AND 102.5" LONG.

LAY-UP LENGTH IS 97.1" (START AND END UNIT) AND 91.1" (MIDDLE UNIT).

EACH CHAMBER WILL BE FORMED FROM HIGH MOLECULAR WEIGHT/HIGH DENSITY POLYETHYLENE.

USE OF FILTER FABRIC BETWEEN THE SOIL AND STONE BACKFILL LAYER AND LINING THE SIDE WALLS OF THE EXCAVATED AREA IS REQUIRED TO PREVENT INTRUSION OF SOIL OR SILT INTO THE CHAMBERS AND SURROUNDING STONE.

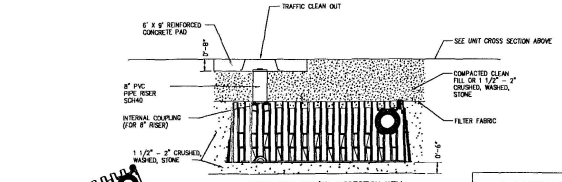
EACH CHAMBER HAS 14 RIBS OF APPROXIMATELY 3.6" IN HEIGHT, 3.8" WIDE AT THE TOP AND TAPERING TO 4.4" AT THE BOTTOM. SPACING OF THE RIBS AT THE BOTTOM OF THE CHAMBER IS APPROXIMATELY 7.4" AND APPROXIMATELY 3.2" AT THE TOP. ONE SMALLER RIB SIZED ONEKSONALLY TO EFFECTIVELY NEST UNDER AND INTERLOCK TO CONNECT UNITS IS 2.8" HIGH, 3.3" WIDE AT THE TOP OF RIB, AND 4.1" WIDE AT THE BASE.

OVERALL HEIGHT TO THE INSIDE RIB IS 30.44".
OVERALL HEIGHT TO THE OUTSIDE RIB IS 34.04".

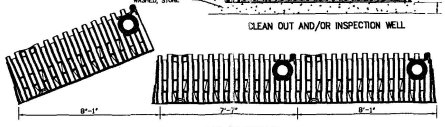
INVERT HEIGHT FOR 12" PIPE IS 16.48".
INVERT HEIGHT FOR 10" PIPE IS 17.48".
INVERT HEIGHT FOR 8" PIPE IS 18.48".

EACH UNIT HAS THE ABILITY TO ACCEPT UP TO A 12" FEED PIPE IN THE UNIT'S SIDE PORTAL.

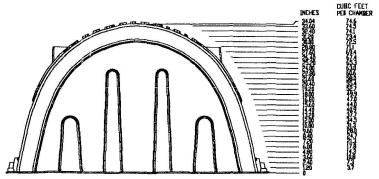
STONE DIAMETER WILL BE 1.5"- 2".



CLEAN OUT AND/OR INSPECTION WELL



LAY-UP LENGTHS



A IMPERVIOUS=APPROX 9200SF (0.21 AC.)
A SITE=APPROX. 21.295 SF (0.49 AC.)
Q15 PRE=0.3X7.56 IN/HR X 0.49 AC.=1.11 CFS
Q15 POST=0.56X7.56 IN/HR X .049 AC.=2.07 CFS
QN VOL REQUIRED=1.25 (Q15 POST-Q15 PRE) 5MIN(60 SEC/MW)=360 CF
QL VOL REQUIRED=1/2" (0.21 AC)(43,560 SF/AC) 1 FT/12"=381CF
THEREFORE, USE 3 CHAMBERS AT 137.6 CF/CHAMBER
QL & QN VOLUME PROVIDED = 412.8 CF>381 CF

VIKA
SURVEYORS ENGINEERS PLANNERS ARCHITECTS INSPECTIONS RECONSTRUCTION MANAGEMENT
8180 GREENSBORO DRIVE, SUITE 200 MCLEAN, VIRGINIA 22102
(703)442-7800 FAX (703)761-2787
METRO (703)522-6446

ASHBY
SQUARE 1772, LOTS 3-8
WASHINGTON, D.C.

PRELIMINARY STORMWATER MANAGEMENT DETAILS AND NOTES

VIKA REVISIONS

DATE: 4-3-02
DES. HKZ | DWN. HKZ
SCALE: NO SCALE
PROJECT/FILE NO. 82850
SHEET NO. 2 OF 2