



Howard County  
Health Department

Bureau of Environmental Health  
7178 Gateway Drive Columbia, MD 21046  
(410) 313-2640 Fax (410) 313-2648  
TDD (410) 313-2323 Toll Free 1-866-313-6300  
website: www.hchealth.org

Maura J. Rossman, M.D., Health Officer

RECEIPT DATE: 6.4.14 **ONSITE SEWAGE DISPOSAL SYSTEM** P 546387

INSTALLATION APPROVAL DATE: 9/12/2014 **PERMIT** A \_\_\_\_\_  
**CONSTRUCTION**

PROPERTY ADDRESS: 6255 Heather Glen Way

SUBDIVISION: Preserve at Clarksville LOT: 21 TAX ID: \_\_\_\_\_

CONTRACTOR: Hatfield's Equipment EMAIL: ken@hatfieldsequipment.com

CONTRACTOR ADDRESS: P.O. Box 519, Annapolis Junction, MD 20701 PHONE: \_\_\_\_\_

PROPERTY OWNER: Compass Homes EMAIL: \_\_\_\_\_

OWNER ADDRESS: 6206 Heather Glen Way, Clarksville, MD 21029 PHONE: \_\_\_\_\_

BAT UNIT MODEL: Norweco TNTLP BAT UNIT SIZE: 600GPD

PUMP CHAMBER CAPACITY (GALLONS): \_\_\_\_\_ PUMP SIZE: \_\_\_\_\_

NUMBER OF BEDROOMS: 4 HOUSE SQ. FT. 5171 APPLICATION RATE: 1.2

DISTRIBUTION SYSTEM: GRAVITY FED  LOW PRESSURE DOSED

|           |  |   |
|-----------|--|---|
| TRENCHES: | LINEAR FEET REQUIRED: <u>103.33</u>  | INLET DEPTH: <u>5'</u>                      |
|           | TRENCH WIDTH: <u>3</u>   | MAXIMUM BOTTOM DEPTH: <u>8'</u>             |
|           | MINIMUM SPACE BETWEEN TRENCHES: <u>9</u>   | EFFECTIVE AREA BEGINNING DEPTH: <u>5.5'</u> |
| LOCATION: | PER APPROVED SITE PLAN. SEWAGE DISPOSAL AREA AND BAT UNIT LOCATION MUST BE STAKED BY LICENSED SURVEYOR PRIOR TO PRE-CONSTRUCTION INSPECTION. |   |
| NOTES:    | Set BAT unit per plan.<br><u>2 x 52' Trenches</u>  |   |

ISSUED BY: Dana Bernard ISSUE DATE: 6.4.14 EXPIRATION DATE: 6.4.15

- NOTE: CONTRACTOR MUST SCHEDULE A PRE-CONSTRUCTION INSPECTION PRIOR TO BEGINNING ANY INSTALLATION
- NOTE: CONTRACTOR MUST SCHEDULE AN INSPECTION AND GAIN APPROVAL OF ALL COMPONENTS PRIOR TO COVERING
- NOTE: STONE MUST BE APPROVED BY HEALTH DEPARTMENT AND GRAVEL TICKET MUST BE AVAILABLE FOR REVIEW.
- NOTE: WATERTIGHT SEPTIC TANKS REQUIRED
- NOTE: ALL PARTS OF SEPTIC SYSTEM SHALL BE AT LEAST 100 FEET DOWNGRADIENT FROM ANY WATER WELL
- NOTE: MANHOLE RISERS REQUIRED ON ALL SEPTIC TANKS AND PUMP CHAMBERS
- NOTE: AN ELECTRICAL PERMIT IS REQUIRED FOR INSTALLATION OF ANY ELECTRICAL COMPONENTS OF THE SYSTEM

**NEITHER THE HOWARD COUNTY COUNCIL NOR THE HEALTH DEPARTMENT IS RESPONSIBLE FOR THE SUCCESSFUL OPERATION OF ANY SYSTEM.**

**PERMITTEE RESPONSIBLE FOR OBTAINING FINAL APPROVAL ON THIS PERMIT.  
CALL 410-313-1771 TO SCHEDULE INSPECTIONS.**

NOT TO SCALE

See As-Built Drawing  
On Separate Sheet

ROAD NAME

TRENCH/DRAINFIELD DATA

WIDTH 3' INLET 5' BOTTOM 8'

NUMBER OF TRENCHES 2

TOTAL LENGTH 104'

ABSORPTION AREA 3/2 Sidewalk

DISTRIBUTION BOX LEVEL Levelers

DISTRIBUTION BOX BAFFLE Yes

DISTRIBUTION BOX PORT Yes

SEPTIC TANK DATA

SEPTIC TANK I LEVEL Yes

MANUFACTURER Norweco

CAPACITY 1300 GAL

SEAM LOC Top

TANK LID DEPTH 2.5-3'

BAFFLES N/A

BAFFLE FILTER No

MANHOLE LOC Front, Middle, Rear

6" PORT LOC None

WATERTIGHT TEST No

SLOTTED N/A

DATE ON LID Dry

PUMP/SEPTIC TANK LEVEL N/A

MANUFACTURER

CAPACITY GAL

SEAM LOC

TANK LID DEPTH

BAFFLES

BAFFLE FILTER

MANHOLE LOC

6" PORT LOC

WATERTIGHT TEST

SLOTTED

DATE ON LID

PRE-CONSTRUCTION:

7/15/2014 Install two 52' trenches on contour across the top of the easement. Place the dist. box near where shown on the BAT plan. Put the septic tank in the area shown on the plan. (BB)

INSTALLATION:

7/22/2014 Tank and dist. box installed and plumbed. (BB) 7/23/2014 System finished except for Norweco BAT certification. (BB) 9/12/2014 Received approval from Norweco representative. (BB)

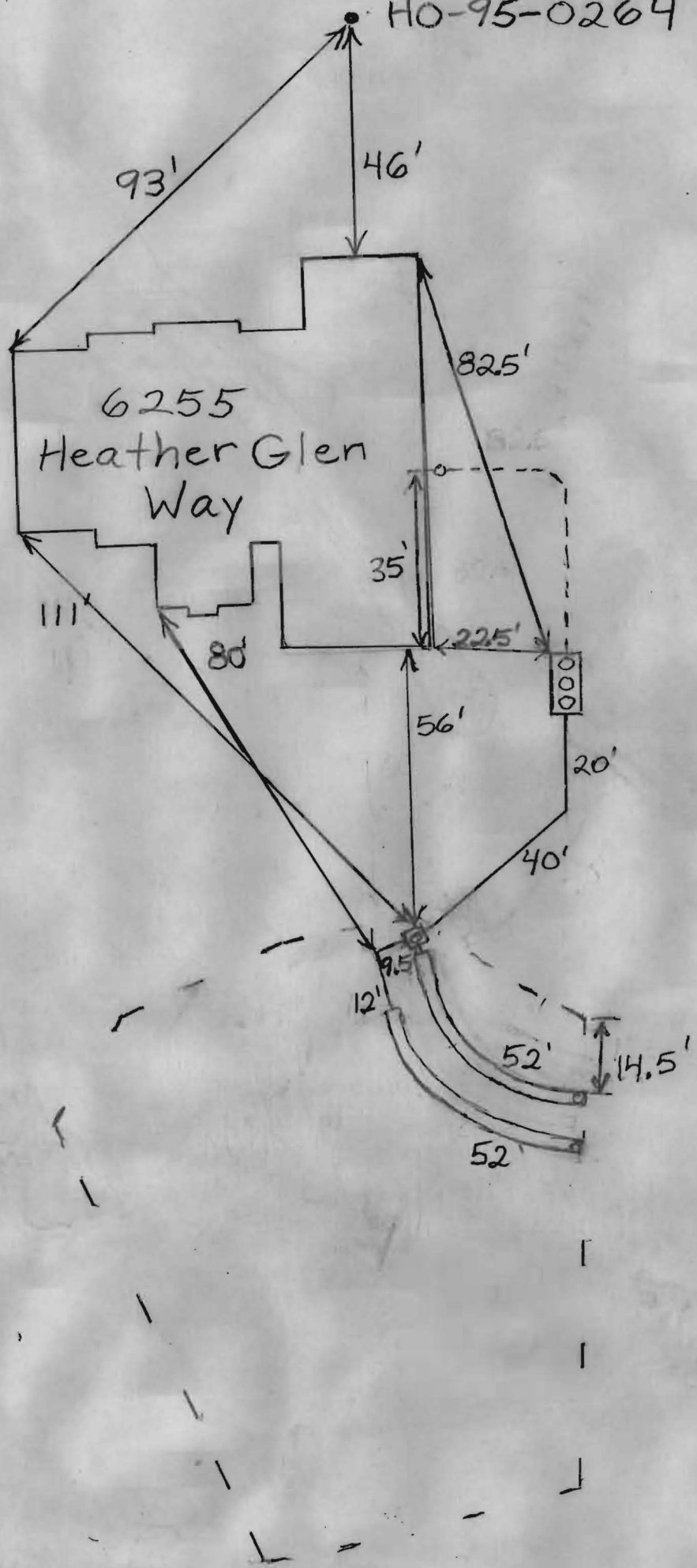
FINAL INSPECTOR

B. Baker

DATE OF APPROVAL

9/12/2014

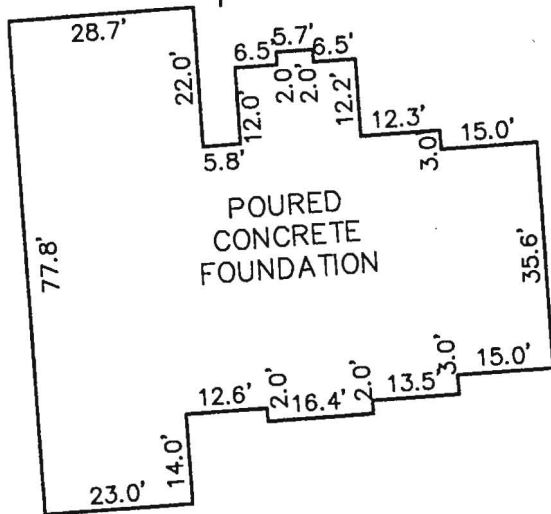
HO-95-0264



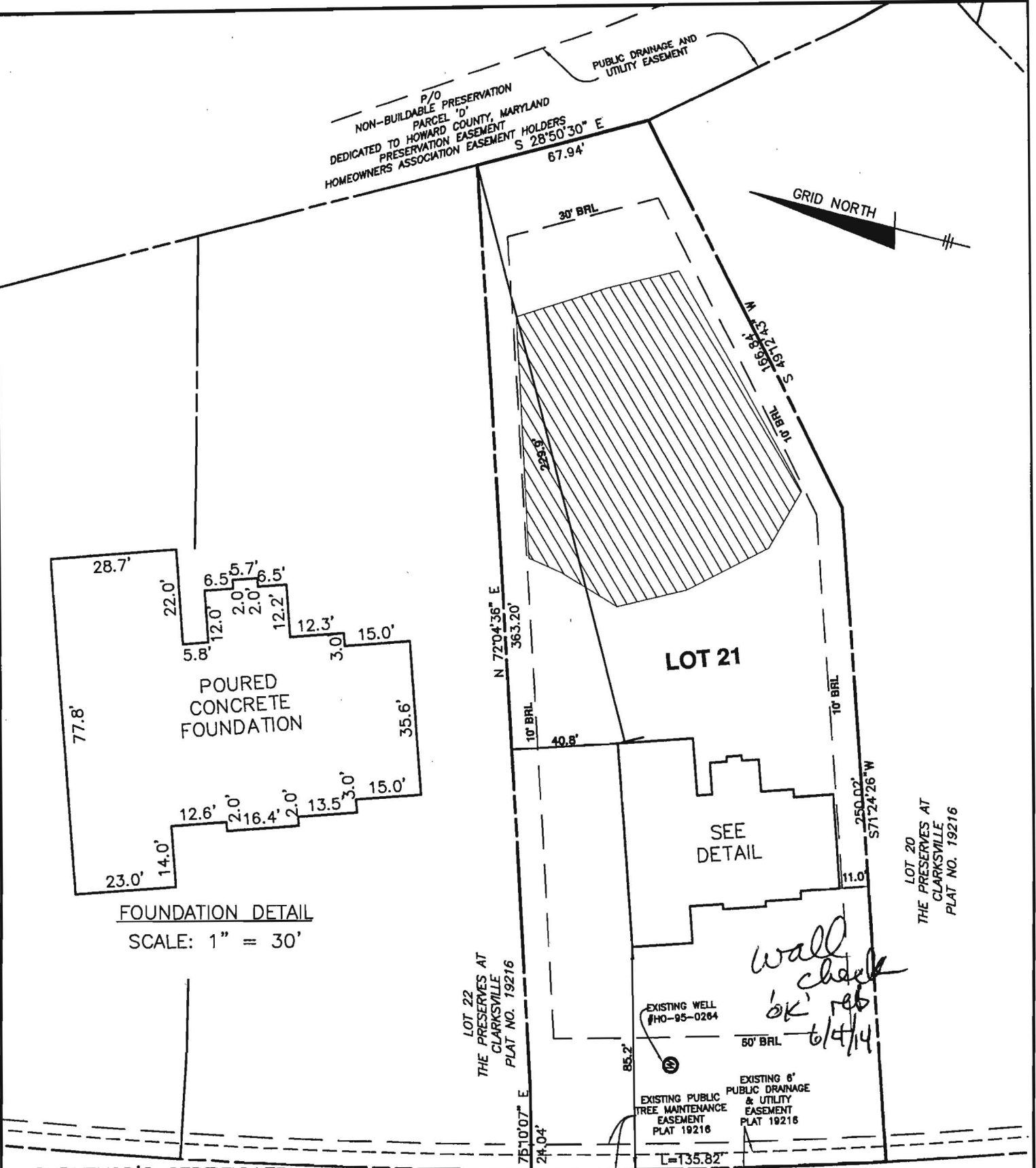
P/O  
NON-BUILDABLE PRESERVATION  
PARCEL 'D'  
DEDICATED TO HOWARD COUNTY, MARYLAND  
PRESERVATION EASEMENT  
HOMEOWNERS ASSOCIATION EASEMENT S 28°50'30" E

PUBLIC DRAINAGE AND  
UTILITY EASEMENT

GRID NORTH



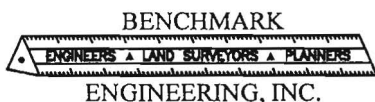
FOUNDATION DETAIL  
SCALE: 1" = 30'



**SURVEYOR'S CERTIFICATE**

I HEREBY CERTIFY THAT THESE DOCUMENTS, WERE PREPARED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND THAT I AM A DULY LICENSED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21320, EXPIRATION DATE 1-7-2015 AND TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, INFORMATION AND BELIEF, THAT THE DIMENSIONS OF THE BUILDING WALLS SHOWN HEREON ARE CORRECT; THAT THEY ARE BASED ON A FIELD RUN SURVEY PERFORMED BY BENCHMARK ENGINEERING, INC. ON 03/03/14.

*Donald A. Mason*  
DONALD A. MASON  
PROFESSIONAL LAND SURVEYOR  
MD REG. No. 21320  
FOR BENCHMARK ENGINEERING, INC.  
MD REG. No. 351  
FEMA FIRM No. 24027C0130D  
ZONE: X  
DATED: 11/06/2013



8480 BALTIMORE NATIONAL PIKE A SUITE 315  
ELLICOTT CITY, MARYLAND 21043  
phone: 410-465-6105 fax: 410-465-6644  
www.bei-civilengineering.com

FIELD OBS. BY PHIL  
COMP. BY EWF  
DRAWN BY EWF

**HEATHER GLEN WAY**

TOP OF FOUNDATION WALL ELEVATION = 438.7'  
OFFSET DIMENSIONS TO PROPERTY LINES ARE ± 0.1'

**WALL CHECK**

**THE PRESERVE AT CLARKSVILLE  
LOTS 1-32  
PLAT No. 19216  
LOT No. 21**

6255 HEATHER GLEN WAY

FIFTH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND  
SCALE: 1" = 50' DATE: 03/13/14

# Back River Pre-Cast, LLC

PO BOX 329  
Glyndon, MD 21071  
Phone # 410-833-3394  
Fax # 410-833-4116

## Letter of Certification

This is to certify that the Norweco Singulair TNT 600 GPD Septic Tank installed at 6255 Heather Glen Way, Clarksville, MD 21209 July 22, 2014 was installed according to the manufacture's specifications.

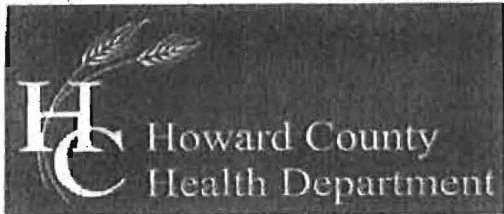
Installer: Jeff Reiter



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MATTHEW GECKLE

Vice-President



Bureau of Environmental Health

7178 Columbia Gateway Drive, Columbia, MD 21046-2147

Main: 410-313-2640 | Fax: 410-313-2648

TDD 410-313-2323 | Toll Free 1-866-313-6300

www.hchealth.org

Facebook: www.facebook.com/hocohealth

Twitter: HowardCoHealthDep

Maura J. Rossman, M.D., Health Officer

OPERATION AND MAINTENANCE AGREEMENT FOR AN ON-SITE SEWAGE DISPOSAL SYSTEM HAVING AN ADVANCED PRE-TREATMENT SYSTEM

000097

THIS AGREEMENT is made this 12 day of February 2014, among Himanshu M. Patel, hereinafter collectively referred to as "Owner", and the Howard County Health Department hereinafter referred to as the "County".

WHEREAS, Owner is the owner or contract owner of a parcel of land located at 6255 Heather Glen Way, in the ST2 Election District of Howard County, Maryland, and the deed to same is recorded or shall be recorded among the Land Records of Howard County, Maryland in Liber 5236 Folio 0004/

WHEREAS, The Lot is suitable for the installation of a conventional on-site sewage disposal system with an advanced pre-treatment system, utilizing best available technology to perform nitrogen reduction, in accordance with the Code of Maryland Regulations 26.04.02.07, effective January 1, 2013.

NOW, THEREFORE, the parties hereto agree as follows:

- A. Owner hereby grants to the County the right to enter upon the Lot at any reasonable time for access to the system to make periodic inspections and the Owner agrees to provide any information and data in Owner's possession reasonably requested and needed by the County to develop accurate and thorough test results.
B. Owner acknowledges and agrees that neither the County nor any of its agents or employees, either officially or individually, underwrites the operation of any system approved by them.
C. The Owner will devote reasonable care and effort to the operation and maintenance of the system in perpetuity or until a public sewer connection is made so that a system malfunction is not the result of poor maintenance, faulty operation, or neglect.
D. The Owner agrees to enter into a contract reasonably acceptable to the Owner and the County with a private entity to operate and maintain on a regularly scheduled basis an approved advanced pre-treatment system. The owner shall supply a copy of the contract to the County when it is renewed or altered.
E. This agreement shall run with the land and upon Owner's taking title to the Lot shall bind the Owner, their heirs, successors, and assigns to the provisions of the agreement as

20
40
M

PAC021

long as the property is in existence and after installation of the system. Owner further agrees that they shall inform in writing any subsequent purchaser or lessee of the Lot that the system shall require maintenance or other attention. Upon taking title to the Lot, the Owner agrees to cause this agreement to be recorded in the Land Records of Howard County and assure that it becomes part of the Deed for the subject property in order that prospective buyers may be aware of the special conditions affecting this property.

F. This agreement shall not be construed to limit any authority of the County to protect the public health, safety or comfort or to issue any other orders to take any other action which is now or may hereafter be within its authority.

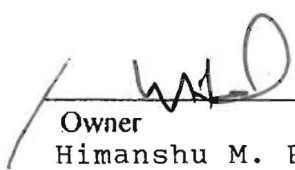
G. This agreement may be voided at any time at the discretion of the County.

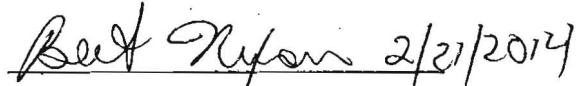
H. This agreement contains the entire agreement and understanding between the County and the Owner. There are no additional terms other than as contained in this agreement. This agreement may not be modified, except in writing signed by each of the parties or by their authorized representatives.

I. The laws of the State of Maryland govern the provisions of all transactions pursuant to this agreement.

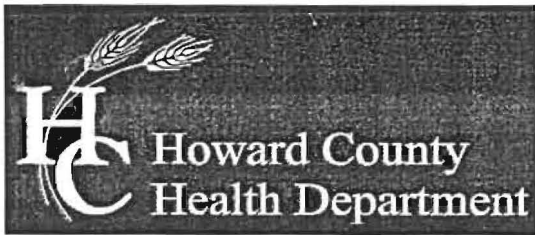
J. Owner acknowledges and agrees that interior renovations to increase the number of bedrooms or an increase in living space shall not be permitted without approval from the County.

IN WITNESS WHEREOF, the parties have signed and sealed this agreement on the date indicated above.

|       |       |  |         |
|-------|-------|--|---------|
| _____ | _____ |  | 2/20/14 |
| Owner | Date  | Owner  | Date    |
|       |       | Himanshu M. Patel  |         |

  
 \_\_\_\_\_  
 Howard County Health Department

LR - Recording Fee (No Taxes) 20.00  
 Grantor/Grantee Name: Patel  
 Reference/Control #: 07  
 LR - Surcharge 40.00  
 =====  
 SubTotal: 60.00  
 =====  
 Total: 60.00  
 #2500955-1  
 02/25/2014 09:20  
 CC13-NN  
 #2500955 CC0503 -  
 Howard Co  
 Columbia/CC05.03.03 -  
 Register 03 495



Bureau of Environmental Health

8930 Stanford Boulevard, Columbia, MD 21045

Main: 410-313-2640 | Fax: 410-313-2648

TDD 410-313-2323 | Toll Free 1-866-313-6300

www.hchealth.org

Facebook: www.facebook.com/hocohealth

Twitter: HowardCoHealthDep

Maura J. Rossman, M.D., Health Officer

**AGREEMENT FOR APPROVAL OF AN INDIVIDUAL DRINKING WELL WITH AN ON-SITE TREATMENT SYSTEM**

This agreement is entered into by and between the Howard County Health Department (“the Health Department”) and Himanshu + Gopi Patel (“the Owner”).

WHEREAS, the Owner owns a tract of land at street address 6255 Heather Glen Way, Clarksville, Md 21029 and the deed and subdivision plat of the property is recorded among the Land Records of Howard County, Maryland, Tax Map # 34, Block #     , Parcel # 77, Deed Reference # 15236-004 and Tax Account # 05-448352 (“the Property”).

WHEREAS, the Property lacks an available public drinking water source and is required to have and individual well as the source of drinking water for the residence of the property.

WHEREAS, the Owner has installed a residential drinking well under well permit HO-95-0264 that has been tested by the Health Department (or a private laboratory certified to perform testing) for radionuclide particles. The results of the tests have shown that the gross alpha particle content and/or the gross beta particle content and/or the combined radium 226/228 levels exceeds the standards of 15 picocuries per liter (pCi /L), 4 millirems per year (mrem/yr) and/or 5pCi/L respectively.

WHEREAS, The Maryland Department of the Environment (MDE) has promulgated rules and regulations under which a Certificate of Potability may be issued and has delegated the authority to issue such Certificate to the Health Department.

WHEREAS, MDE regulations permit the Health Department to issue as a special condition, a permanent deviation to the Certificate of Potability for individual wells where treatment has been installed to meet the maximum contaminate levels (MCL’s) for radionuclides.

WHEREAS, MDE has determined that radium can be effectively removed from the drinking water by the use of treatment devices (e.g., ion exchange or reverse osmosis).

WHEREAS, the Owner is requesting that the Health Department issue a Certificate of Potability contingent upon installation and maintenance of a water treatment device to reduce radionuclides.

WHEREAS, neither the Owner nor the Health Department has knowledge of an alternative safe source of water for the Property.




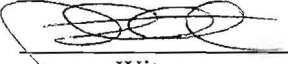
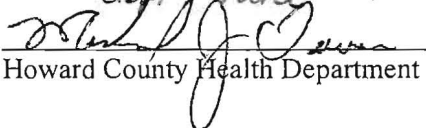
NOW THEREFORE, the parties have agreed to the following terms and conditions:

1. The Owner will record this Agreement among the Land Records of Howard County, Maryland and provide confirmation to the Health Dept.
2. The Owner agrees to install and maintain a water treatment device, which effectively reduces the gross alpha, gross beta and radium levels to below their respective MCL. The Health Department

shall verify that the treatment device is operating effectively and the Owner agrees to allow access to the Health Department, to collect a follow-up sample(s).

3. The Health Department shall issue a Certificate of Potability for the well once follow-up sampling shows acceptable gross alpha, gross beta (short and long term) and radium 226 / 228 levels.
4. The Owner agrees that there shall be no liability on part of the Health Department for any immediate or long term impacts to health or property, under any circumstance or including, but not limited to, treatment device failure, improper maintenance or installation, or defect. The Health Department does not warranty or guarantee that the device will adequately or properly function and the Owner agrees to implement and pay for any necessary changes or corrections.
5. The Owner acknowledges and agrees that neither the Health Department nor any of its agents or employees, either officially or individually, underwrites the operation of any system or treatment device.
6. This Agreement shall not be construed to limit any authority of the Health Department to protect the public health, safety or enjoyment of property or to issue any other orders to take any other action, which is now or may hereafter be within its authority.
7. This agreement contains the entire agreement and understanding between the Health Department and the Owner. There are no additional terms other than as contained in this Agreement. This Agreement may not be modified except in writing signed by each of the parties or their authorized representatives.
8. The Agreement shall run with the land and binds the Owner, his heirs, successors, and assigns. The owner agrees to provide a copy of this agreement to any purchaser or lessee of the property.
9. The laws of the State of Maryland govern the provisions of all transactions.

The parties have signed and sealed this Agreement on the dates set forth below.

|  |                 |   |                 |
|--|-----------------|---|-----------------|
| <br>Owner Himanshu Patel            | 9/17/14<br>Date | <br>Witness | 9/17/14<br>Date |
| <br>Owner Himanshu Patel            | 9/17/14<br>Date | <br>Witness | 9/17/14<br>Date |
| <br>Howard County Health Department | 9/18/14<br>Date |   |                 |

Clerk of the Circuit Court for  
Howard County  
Land Records/Licensing

The Thomas Dorsey Building  
9250 Bendix Road  
Columbia, MD 21045  
410-313-5850

=====  
LR - Recording Fee (No Taxes)  
1x 20.00 20.00

Grantor/Grantee Name: Patel  
Reference/Control #: 97

LR - Surcharge  
1x 40.00 40.00

=====  
SubTotal: 60.00  
Total: 60.00

=====  
REV-Check-BOA 60.00  
Number : 238840

02/25/2014 09:20 CC13-NN  
#2500955 /495/109  
Thank you for visiting us today~

*RECORDING of SEPTIC O+M AGREEMENT*

*PAC 021*

*6255 HEATHER GLEN WAY*

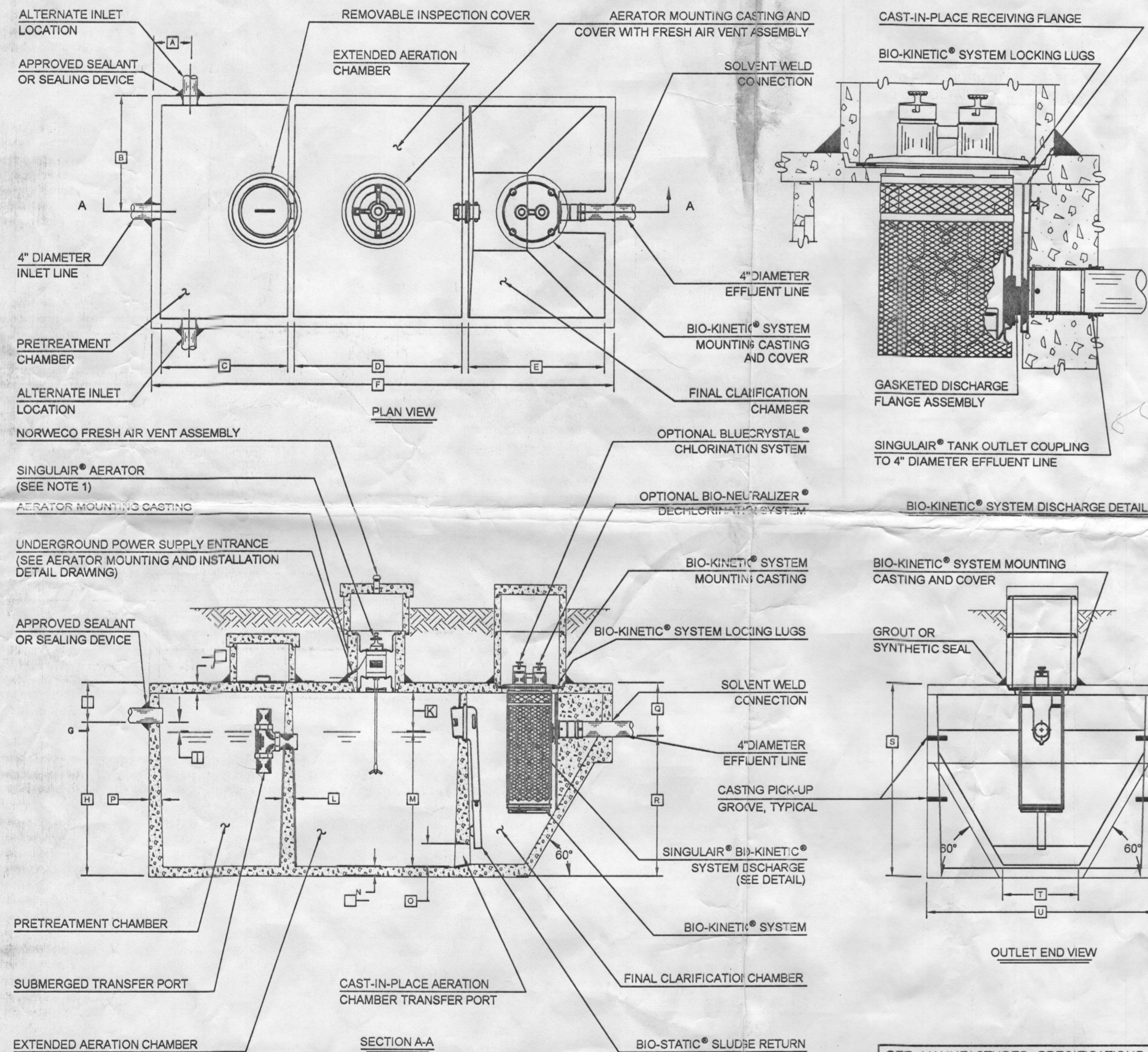
**NOTES:**

1. ANY CHANGE TO THE LOCATIONS OR DEPTHS TO ANY COMPONENTS MUST BE APPROVED BY THE ENGINEER AND THE HOWARD COUNTY HEALTH DEPARTMENT PRIOR TO INSTALLATION. A REVISED SITE PLAN MAY BE REQUIRED.
2. THE MAXIMUM DEPTH OF THE BAT PER THE MANUFACTURER'S SPECIFICATION IS 3 FEET.
3. THE BAT SYSTEM SHALL BE MAINTAINED AND OPERATED FOR THE LIFE OF THE SYSTEM.
4. THE BAT SHALL BE OPERATED BY AND MAINTAINED BY A CERTIFIED SERVICE PROVIDER.
5. WITHIN ONE (1) MONTH OF INSTALLATION, A PERSON INSTALLING THE BAT SYSTEM SHALL REPORT TO THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) IN A MANNER ACCEPTABLE TO MDE, THE ADDRESS AND DATE OF COMPLETION OF THE BAT INSTALLATION AND THE TYPE OF BAT INSTALLED.
6. ELECTRICAL WORK FOR THE BAT INSTALLATION MUST BE PERFORMED BY A LICENSED ELECTRICIAN.
7. AN AGREEMENT AND EASEMENT MUST BE COMPLETED AND SIGNED BY ALL APPLICABLE PARTIES, AND RECORDED IN LAND RECORDS OF HOWARD COUNTY.
8. THE HEALTH DEPARTMENT REQUIRES DOCUMENTATION FOR THE START-UP CERTIFICATION FROM THE MANUFACTURER PRIOR TO FINAL APPROVAL OF THE INSTALLATION.

**LEGEND**

- BOUNDARY
- - - EXISTING TOPOGRAPHY
- [Hatched Box] SEWAGE DISPOSAL AREA
- [Cross-hatched Box] 1,500 SF WELLBOX
- (W) WELL LOCATION
- (●) PASSED TEST HOLE TESTED APRIL/MAY 2003
- (○) FAILED TEST HOLE TESTED APRIL/MAY 2003
- (■) PASSED TEST HOLE TESTED JANUARY/FEB 2004
- (□) FAILED TEST HOLE TESTED JANUARY/FEB 2004
- (▲) PASSED TEST HOLE TESTED AUGUST 2004
- (△) FAILED TEST HOLE TESTED AUGUST 2004
- GgB SOILS CLASSIFICATION

|                    |        |
|--------------------|--------|
| INV @ HOUSE        | 434.61 |
| GROUND @ HOUSE     | 436.00 |
| INV IN BAT TANK    | 433.81 |
| INV OUT BAT TANK   | 433.48 |
| TOP OF BAT TANK    | 434.81 |
| GROUND OVER TANK   | 436.00 |
| INV IN DIST-BOX    | 433.05 |
| INV OUT DIST BOX   | 432.80 |
| GROUND AT DIST-BOX | 435.80 |



SEE MANUFACTURER SPECIFICATIONS FOR DETAILS. WWW.NORWECO.COM

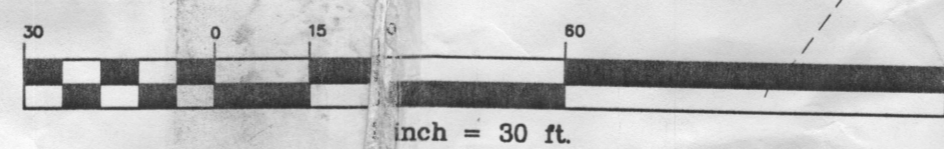
**GENERAL NOTES:**

1. SINGULAR® AERATOR, AS TESTED AND ACCEPTED BY NSF, OPERATING 60 MINUTES ON / 60 MINUTES OFF.
2. FALL THROUGH SINGULAR® P ANT FROM INLET INVERT TO OUTLET INVERT IS FOUR INCHES. INLET INVERT IS TWELVE INCHES BELOW TANKTOP.
3. ON DEEPER INSTALLATIONS, PRECAST RISERS MUST BE USED TO EXTEND AERATOR MOUNTING CASTING AND BIO-KINETIC® SYSTEM MOUNTING CASTING TO GRADE.
4. TANK REINFORCED PER ACI STD. 318-05.
5. REMOVABLE COVERS ON RISERS WEIGH IN EXCESS OF SEVENTY-FIVE POUNDS EACH TO PREVENT UNAUTHORIZED ACCESS.
6. CONTACT THE LOCAL LICENSED SINGULAR® DISTRIBUTOR FOR ELECTRICAL REQUIREMENTS.

|          |         |
|----------|---------|
| A 1'-0"  | N 0'-3" |
| B 3'-0"  | O 0'-6" |
| C 3'-4"  | P 0'-3" |
| D 4'-5"  | Q 1'-4" |
| E 3'-7"  | R 3'-8" |
| F 12'-2" | S 5'-0" |
| G 1'-0"  | T 2'-0" |
| H 4'-0"  | U 6'-0" |
| I 0'-3"  | V       |
| J 0'-3"  | W       |
| K 1'-0"  | X       |
| L 0'-2"  | Y       |
| M 3'-6"  | Z       |

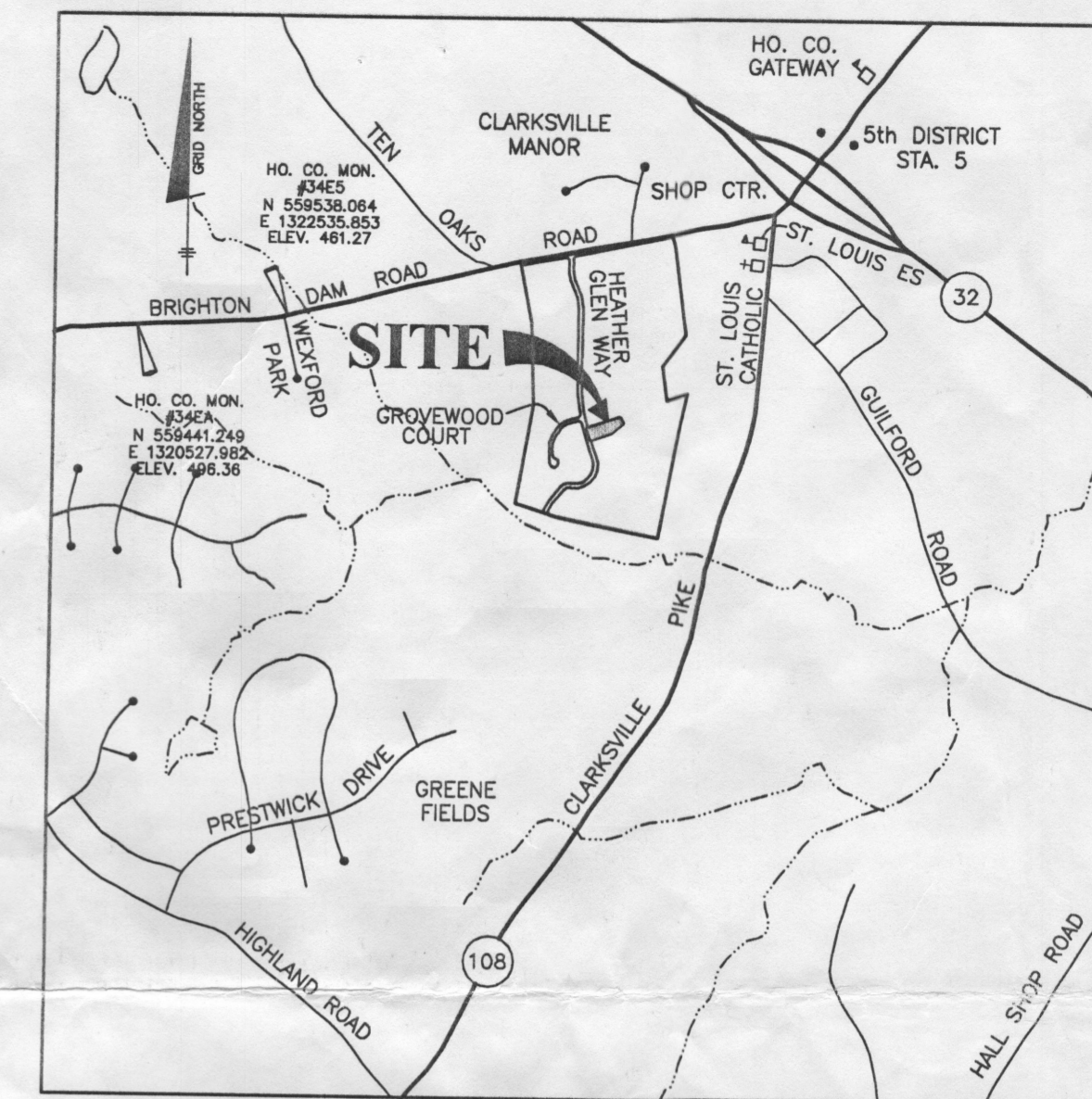
NOTES: TOTAL SYSTEM CAPACITY: 1,300 GALLONS  
 RATED CAPACITY: 600 GALLONS PER DAY PER MANUFACTURER.  
 ABLE TO SERVICE UP TO FIVE (5) BEDROOMS.

**BENCHMARK ENGINEERING, INC.**  
 ENGINEERS & LAND SURVEYORS & PLANNERS  
 6480 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLICOTT CITY, MARYLAND 21043  
 (P) 410-465-8105 (F) 410-465-8644  
 60 THOMAS JOHNSON DRIVE & FREDERICK, MARYLAND 21702  
 (P) 301-371-3505 (F) 301-371-3508  
 WWW.BE-CHEENGINEERING.COM

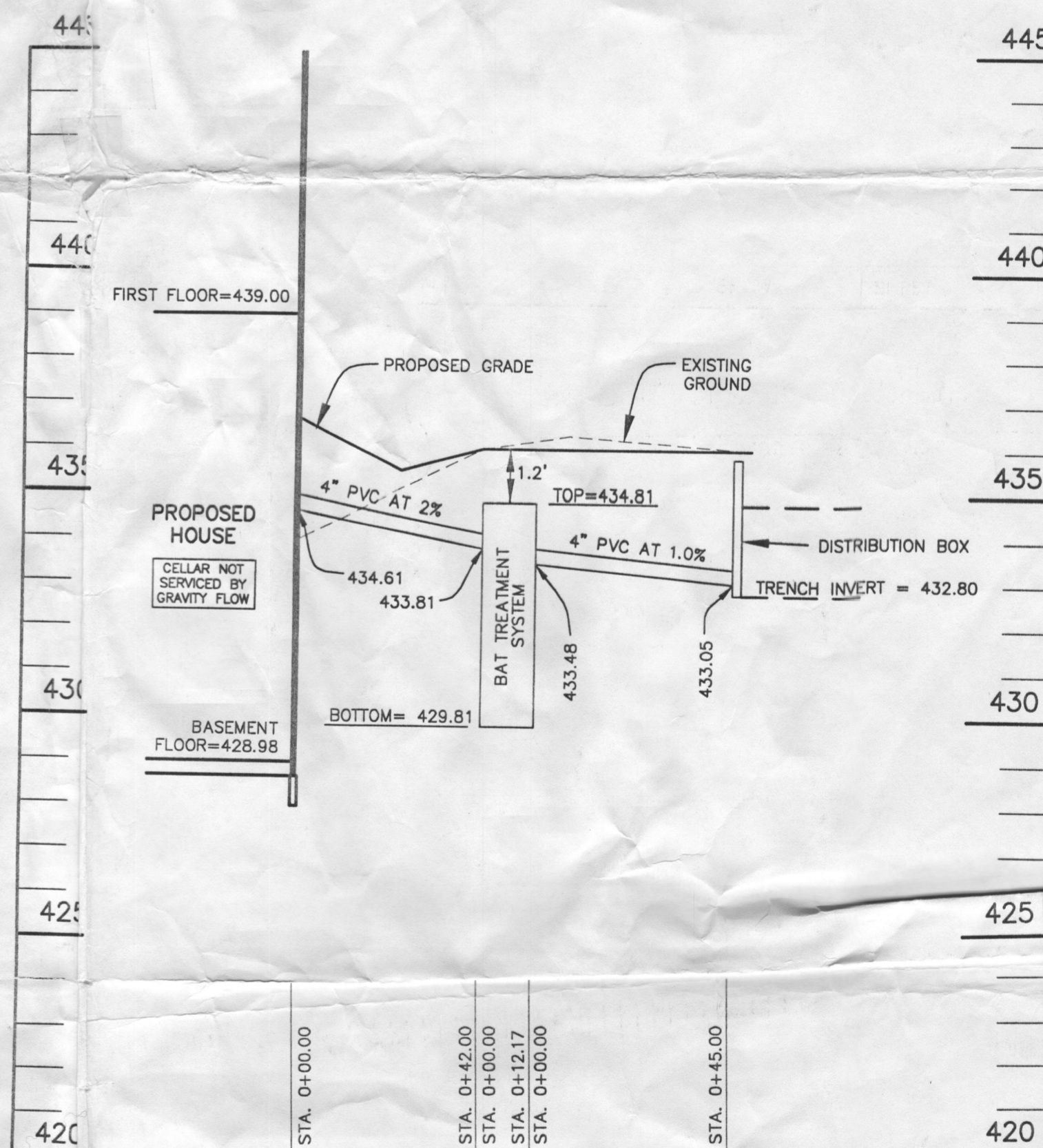


I CERTIFY THAT THE INFORMATION SHOWN HEREON IS BASED ON FIELD WORK PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION, AND IS CORRECT, TO THE BEST OF MY KNOWLEDGE AND BELIEF.

DAVID THOMPSON  
 PLAN PREPARER



VICINITY MAP  
 SCALE: 1" = 2000'



SEPTIC PROFILE  
 SCALE: VERTICAL 1"=3', HORIZONTAL 1"=30'

|   |  |                           |
|---|--|---------------------------|
| BUILDER:<br>WILLIAMSBURG HOMES, INC.<br>5485 HARPERS FARM ROAD<br>SUITE 200<br>COLUMBIA, MARYLAND 21044<br>410-997-8800 | <b>THE PRESERVE AT CLARKSVILLE</b><br>LOT 21<br>6255 HEATHER GLEN WAY<br>CLARKSVILLE, MARYLAND 21029 |                           |
|   | TAX MAP: 34<br>ZONED: RC-DEO<br>ELECTION DISTRICT NO. 5  | GRID: 11<br>PARCEL: 77    |
| <b>SITE PLAN FOR BAT INSTALLATION</b>   |  |                           |
| DATE: DECEMBER 17, 2013<br>SCALE: AS SHOWN  | BEI PROJECT NO: 1407-W<br>SHEET 1 OF 1   | DESIGN: DBT<br>DRAWN: DBT |

**LEGEND**

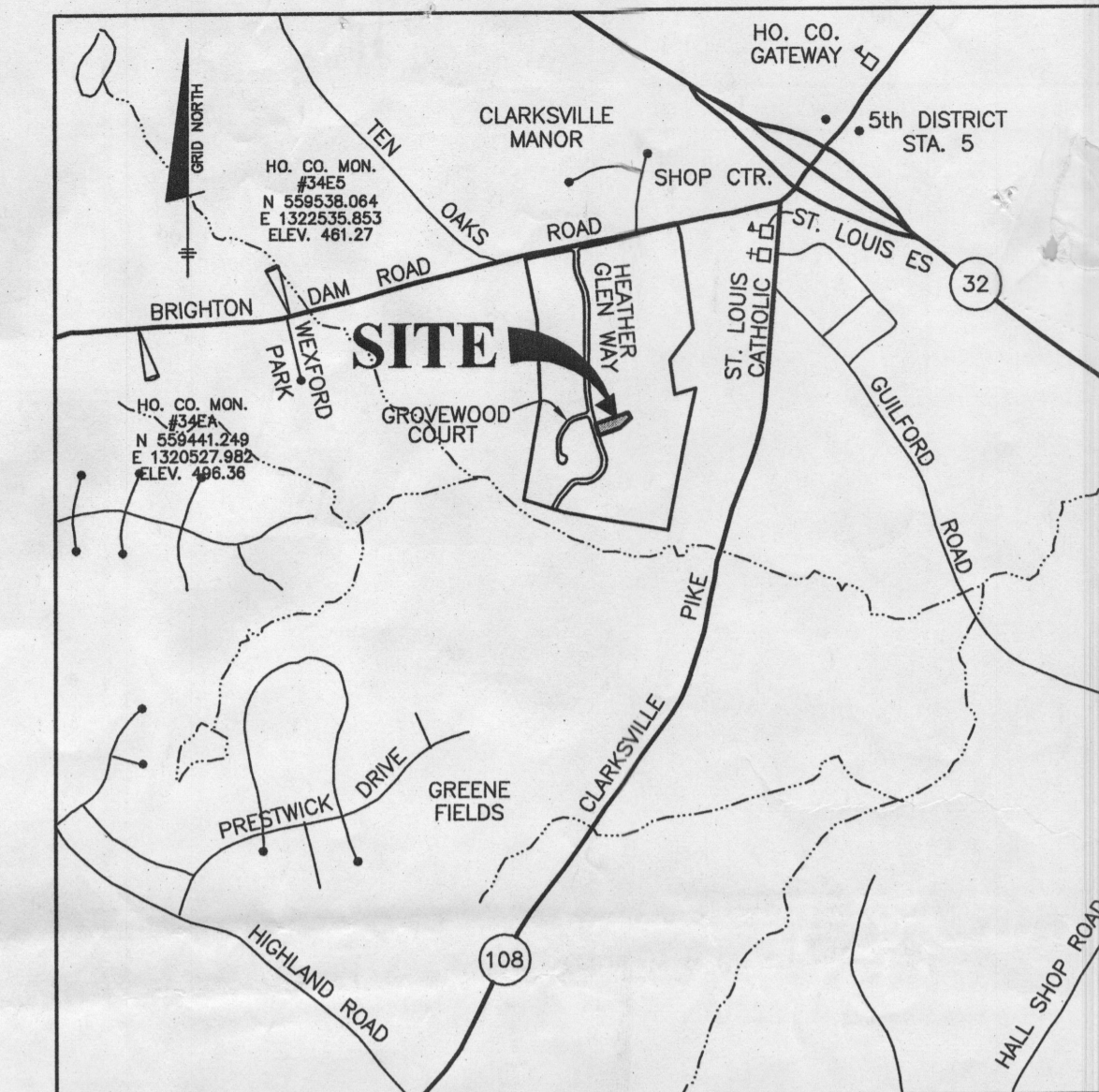
- BOUNDARY
- EXISTING TOPO
- SEWAGE DISPOSAL AREA
- 1,500 SF WELLBOX
- WELL LOCATION
- LIMIT OF DISTURBANCE
- STABILIZED CONSTRUCTION ENTRANCE
- SSF SUPER SILT FENCE
- DF DIVERSION FENCE
- EROSION CONTROL MATTING
- SOILS CLASSIFICATION

GgB

| SEPTIC INVERT CHART |        |
|---------------------|--------|
| INV @ HOUSE         | 434.61 |
| GROUND @ HOUSE      | 436.00 |
| INV IN BAT TANK     | 433.81 |
| INV OUT BAT TANK    | 433.48 |
| TOP OF BAT TANK     | 434.81 |
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| GROUND AT DIST-BOX  | 435.80 |

**NOTES:**

- THE TOPOGRAPHY OF THIS PLAN IS TAKEN FROM FIELD SURVEY BY BENCHMARK ENGINEERING, INC. AND SIGNED F-06-072 PLANS AND IS VERIFIED TO ACCURATELY REPRESENT THE RELATIVE CHANGES ON THE SUBJECT PROPERTY.
- THIS AREA DESIGNATES A PRIVATE SEWAGE DISPOSAL AREA OF AT LEAST 10,000 SQUARE FEET AS REQUIRED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL SEWAGE DISPOSAL. IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED. THIS SEWAGE DISPOSAL AREA SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC SEWERAGE SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWAGE EASEMENT. RECORDATION OF A REVISED SEWAGE EASEMENT SHALL NOT BE NECESSARY.
- THE LOT SHOWN HEREON COMPLIES WITH THE MINIMUM OWNERSHIP WIDTH AND LOT AREA AS REQUIRED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT.
- ANY CHANGES TO THE PRIVATE SEWERAGE EASEMENT SHALL REQUIRE A REVISED PERCOLATION CERTIFICATION PLAN.
- ALL WELLS AND SEPTIC SYSTEMS LOCATED WITHIN 100' OF THE LOT BOUNDARIES AND 200' DOWN GRADIENT OF ANY WELLS AND/OR SEPTIC SYSTEMS HAVE BEEN SHOWN.
- THE EXISTING WELL ON THIS LOT (TAG NO. HO-95-0264) HAS BEEN FIELD LOCATED BY BENCHMARK ENGINEERING, INC. AND IS ACCURATELY SHOWN.
- EXACT LENGTH OF SEPTIC TRENCHES ARE TO BE DETERMINED BY THE HEALTH DEPARTMENT AT THE TIME OF PRECONSTRUCTION INSPECTION.
- SPOIL FROM THE TRENCHING OF THE SEPTIC AREA IS TO BE PLACED ON THE UPHILL SIDE OF THE EXCAVATION FOR EACH INDIVIDUAL LOT.
- SEDIMENT AND EROSION CONTROLS SHALL BE PER THIS PLAN AND COMPLY WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
- DRIVEWAY CULVERT COMPUTATIONS WERE APPROVED UNDER F-06-072. THE CULVERT SHALL BE A 15" CIRCULAR PIPE OR ELLIPTICAL EQUIVALENT.
- STORMWATER MANAGEMENT FOR THIS LOT WAS PROVIDED UNDER F-06-072.

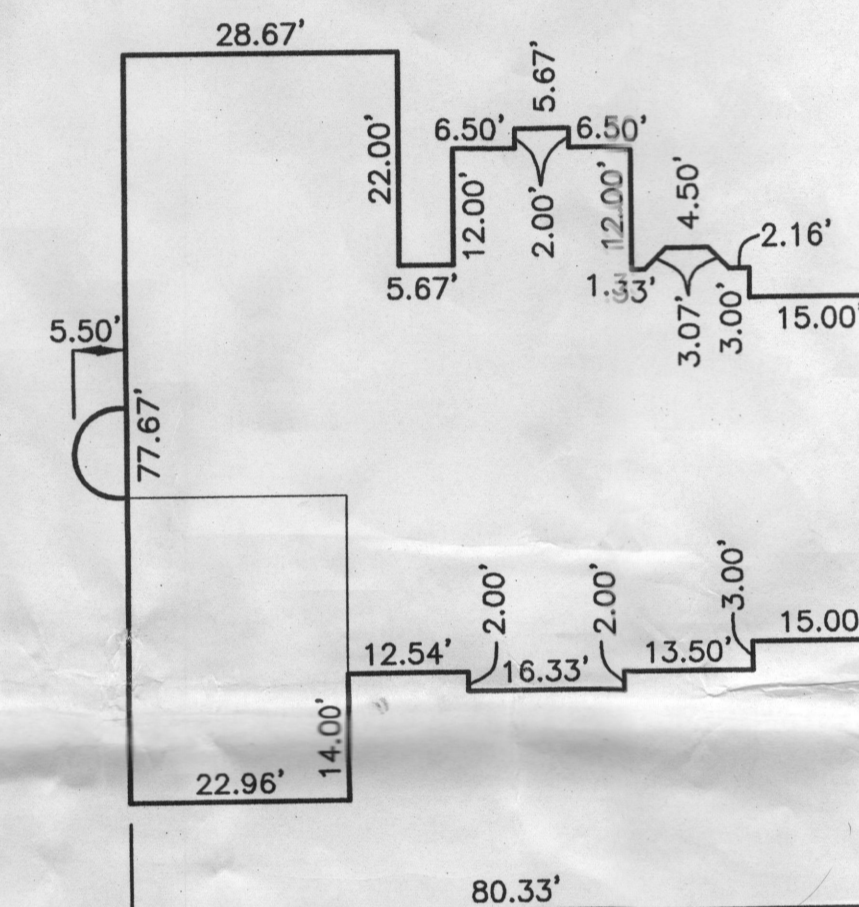


34E5 - STAMPED BRASS DISK SET ON TOP OF CONCRETE BASE  
34EA - STAMPED BRASS DISK SET ON TOP OF CONCRETE BASE  
**VICINITY MAP**  
SCALE: 1" = 2000'

**SEQUENCE OF CONSTRUCTION**

NOTIFY SEDIMENT CONTROL DIVISION 48 HOURS PRIOR TO START OF WORK

- Obtain grading permit. (day 1)
- On-site Pre-Construction meeting. (day 2)
- Install the driveway culvert and provide adequate cover. Clear and grub as necessary to install stabilized construction entrance and perimeter controls (diversion fence and super silt fences) (day 3)
- Upon approval from the Howard County sediment control inspector, proceed to clear and grub within the perimeter. (day 4)
- Excavate for foundation, pour and backfill. (day 5-12)
- Install septic lines and tank. (day 13)
- Finish house construction. (day 14-90)
- Pave driveway. (day 91)
- Final grade the lot and stabilize in accordance with the permanent seedbed notes including erosion control matting within all swales as shown on the plan. (day 92)
- Upon approval from the Howard County sediment control inspector, remove sediment control devices and stabilize any remaining disturbed areas. (day 93)



**HOUSE FOOTPRINT**  
SCALE: 1" = 20'

Approved Septic System Plan  
Howard County Health Department  
Prima Burnard HSE14  
Signature Date  
B13004595

| NRCS SOILS CHART |        |                  |                 |                                     |
|------------------|--------|------------------|-----------------|-------------------------------------|
| SYMBOL           | HYDRIC | HYDROLOGIC GROUP | ALTERNATE GROUP | NAME                                |
| GgB              |        | B                |                 | GLENELG LOAM, 3 TO 8 PERCENT SLOPES |

**ENGINEER'S CERTIFICATE**

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

Brian F. Cleary 12/16/13  
DATE

**DEVELOPER'S CERTIFICATE**

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

Williamsburg Homes, Inc. 12/16/13  
DATE

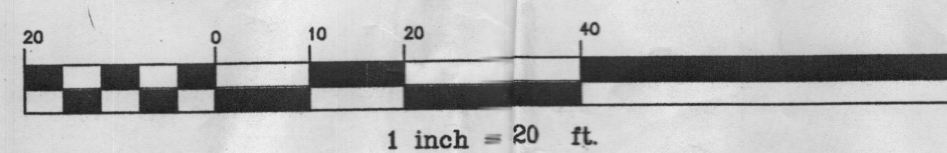
John R. Whitton 12/17/13  
DATE

NOTE:  
TEMPORARY OR PERMANENT STABILIZATION IS TO BE PERFORMED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR OR AT THE INTERVALS REQUIRED BY THE 2011 STANDARD & SPECIFICATIONS WHICHEVER IS MORE STRINGENT.

NOTE:  
SHOULD THE STOCKPILE EXCEED 15 FEET IN HEIGHT, IT MUST BE BENCHED. SEE SPECIFICATIONS B-4-8 ON SHEET 2.

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 ANY WORK.

THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.



**BENCHMARK ENGINEERING, INC.**  
ENGINEERS • LAND SURVEYORS • PLANNERS  
8480 BALTIMORE NATIONAL PIKE SUITE 315 A ELLETTT CITY, MARYLAND 21143  
(P) 410-465-4105 (F) 410-465-8644  
60 THOMAS JOHNSON DRIVE A FREDERICK, MARYLAND 21702  
(P) 301-371-3505 (F) 301-371-3508  
WWW.BEI-ENGINEERING.COM

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 15899.

**THE PRESERVE AT CLARKSVILLE**  
**LOT 21**  
**6255 HEATHER GLEN WAY**

BUILDER:  
WILLIAMSBURG HOMES, INC  
5485 HARPERS FARM ROAD  
SUITE 200  
COLUMBIA, MARYLAND 21044  
410-997-8800

TAX MAP: 34 GRID: 11 PARCEL: 77  
ZONED: RR-BEO ELECTION DISTRICT NO. 5  
HOWARD COUNTY, MARYLAND

**CUSTOM GRADING PLAN & BUILDING PERMIT PLAN**

DATE: DECEMBER 16, 2013 BEI PROJECT NO: 1407-W  
SCALE: AS SHOWN SHEET 1 OF 2

DESIGN: DBT DRAWN: DBT

- A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (31-1853).
- ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERE TO.
- FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A) 3 CALENDAR DAYS FOR ALL PERMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, B) 7 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING (SEC. B-4-5), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-3). TEMPORARY STABILIZATION WITH MULCH ALONE CAN 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 PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

6. SITE ANALYSIS:

|                                     |            |
|-------------------------------------|------------|
| TOTAL AREA OF SITE:                 | 1.10 ACRES |
| AREA DISTURBED:                     | 0.76 ACRES |
| AREA TO BE ROOFED OR PAVED:         | 0.22 ACRES |
| AREA TO BE VEGETATIVELY STABILIZED: | 0.54 ACRES |
| TOTAL CUT:                          | 666* CY    |
| TOTAL FILL:                         | 666* CY    |
| OFFSITE WASTE/BORROW LOCATION:      | N/A        |

- ANY SEDIMENT CONTROL PRACTICE THAT IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF PERMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
- TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.
- ANY CHANGES OR REVISIONS TO THE SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE PLAN APPROVAL AUTHORITY PRIOR TO PROCEEDING WITH CONSTRUCTION.
- A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGON ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 30 ACRES PER GRADING UNIT) AT A TIME. WORK MAY PROCEED INTO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE AUTHORITY. MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.

\* CUT/FILL NUMBERS ARE FOR SEDIMENT CONTROL PURPOSES ONLY. CONTRACTOR TO VERIFY.

**B-4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION**

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

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

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

**Criteria:**

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

**B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA**

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

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

**Conditions Where Practice Applies:** Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

**Criteria:**

- The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
- The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio not steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.
- Runoff from the stockpile area must drain to a suitable sediment control practice.
- Access the stockpile area from the upgrade side.
- Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary awale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
- Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
- Stockpiles must be stabilized in accordance with the 3/7 day stabilization procedure as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.
- If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

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

**H-5 STANDARDS AND SPECIFICATIONS FOR DUST CONTROL**

**Definition:** Controlling the suspension of dust particles from construction activities.

**Purpose:** To prevent blowing and movement of dust from exposed soil surfaces to reduce on and off-site damage including health and traffic hazards.

**Conditions Where Practice Applies:** Areas subject to dust blowing and movement where on and off-site damage is likely without treatment.

- Mulches:** See Section B-4-2 Soil Preparation, Topsoiling, and Soil Amendments, Section B-4-3 Seeding and Mulching, and Section B-4-4 Temporary Stabilization. Mulch must be anchored to prevent blowing.
- Vegetation:** See Section B-4-4 Temporary Stabilization.
- Tillage:** Till to roughen surface and bring clods to the surface. Begin hewing on windward side of site. Chisel-type plows spaced about 12 inches apart, spring-tonged hoes, and similar plows are examples of equipment that may produce the desired effect.
- Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.**
- Sod must be harvested, delivered, and installed within a period of 36 hours.** Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its installation.

- 2.d Installation:**
  - During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod.
  - Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger lateral joints to promote more uniform growth and strength.
  - Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent moisture loss and air drying of the roots.
  - Whenever possible, lay sod with the long edges parallel to the contour and with staggering joints on the windward side of the slope.
  - Roll and tamp, pad or otherwise secure the sod to prevent slippage on slopes. Ensure solid contact on both the top and bottom surfaces of the sod and the underlying soil surface.
  - Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.
- 3.d Maintenance:**
  - In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.
  - After the first week, sod watering is required as necessary to maintain adequate moisture content.
  - Do not mow until the sod is firmly rooted. No more than 1/3 of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless otherwise specified.

**B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION**

**Definition:** To stabilize disturbed soils with permanent vegetation.

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

**Conditions Where Practice Applies:** Exposed soils where ground cover is needed for 6 months or more.

**Criteria:**

- Seed Mixtures:**
  - Use one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
  - Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic sites may be found in USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planning.
  - For sites having disturbed areas over 5 acres, use and show the rates recommended by the soil testing agency.
  - For areas requiring low maintenance, apply urea form fertilizer (46-0-0) at 3 1/2 pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary.
- Turfgrass Mixtures:**
  - Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.
  - Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
  - Kentucky Bluegrass: Full sun. For use in areas that receive intensive management. Certified Kentucky Bluegrass Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
  - V. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1 1/2 to 3 pounds per 1000 square feet.
  - Notes: Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo #77, "Turfgrass Cultivar Recommendations for Maryland" (choose certified material). Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a genetic line.

- 1. Application:**
  - Dry Seeding:** This includes use of conventional drop or broadcast spreaders.
    - Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries.
    - Apply seed in two directions, perpendicular to each other. Apply half the seeding rate to each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact.
  - Drill or Cultipacker Seeding:** Mechanized seeders that apply and cover seed with soil. Cultipacker seeders are necessary to bury the seed in the soil. Seeded must be firm after planting.
  - Hydroseeding:** Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer).
  - Fertilizer:** If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble nitrogen; P2O5 (phosphorus), 200 pounds per acre; K2O (potassium), 200 pounds per acre.
  - Lime:** Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime.
  - Mix seed and fertilizer on site and seed immediately and without interruption.**
  - When hydroseeding do not incorporate seed into the soil.**

- 2. Mulching:**
  - Mulch Materials (in order of preference):**
    - Straw consisting of thoroughly treshed wheat, rye, oat, or barley and reasonably bright in color. Straw is to be free of noxious weed seeds as specified in the Maryland Seed Law and not moist, moldy, caked, decayed, or excessively dusty.
    - The only sterile straw mulch material toxic to plant growth.
    - Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.
  - WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.**
  - WCFM, including dye, must contain no germination or growth inhibiting factors.**
  - WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry.** The water material must form a bottle-like ground cover, on application, having moisture absorption and percolation properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
  - WCFM material must not contain elements or compounds at concentration levels that will be phytotoxic.**
  - WCFM must conform to the following physical requirements:** fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 50 percent minimum.

- 3. Anchoring:**
  - Perform mulch anchoring immediately following application of mulch to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon the size of the area and erosion hazard:
    - A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of 2 inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should follow the contour.
    - Wood cellulose fiber mulch may be used for anchoring straw. Apply the fiber binder at a net dry weight of 750 pounds per acre. Mix the wood cellulose fiber with water at a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
    - Synthetic binders such as Acro-Tack (Acro-Tack), DCA-70, Parosol, Terra Tax II, Terra-Tack AR or other approved equal may be used. Follow application rates as specified by the manufacturer. Application of liquid binders needs to be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. Use of asphalt binders is strictly prohibited.
    - Lightweight plastic netting may be stapled over the mulch according to manufacturer recommendations. Netting is usually available in rolls 4 to 15 feet wide and 300 to 3,000 feet long.

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

**Definition:** The application of seed and mulch to establish vegetative cover.

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

**Conditions Where Practice Applies:** To the surface of all perimeter controls, slopes, and any disturbed area not under active grading.

**Criteria:**

- 1. Specifications:**
  - All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject to re-testing by a recognized seed laboratory. All seed must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B.4 for specific quality of seed. Seed tags must be available upon request to the inspector to verify type of seed and seeding rate.
  - Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.
  - Inoculants: The inoculant used in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended rate. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.
  - Sod or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min) to permit dissipation of phytotoxic materials.
- 2. Application:**
  - Dry Seeding:** This includes use of conventional drop or broadcast spreaders.
    - Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries.
    - Apply seed in two directions, perpendicular to each other. Apply half the seeding rate to each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact.
  - Drill or Cultipacker Seeding:** Mechanized seeders that apply and cover seed with soil. Cultipacker seeders are necessary to bury the seed in the soil. Seeded must be firm after planting.
  - Hydroseeding:** Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer).
  - Fertilizer:** If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble nitrogen; P2O5 (phosphorus), 200 pounds per acre; K2O (potassium), 200 pounds per acre.
  - Lime:** Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime.
  - Mix seed and fertilizer on site and seed immediately and without interruption.**
  - When hydroseeding do not incorporate seed into the soil.**

- 1. Topsoiling:**
  - Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium of moisture content, low nutrient levels, low pH, and good gradation.
  - Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile in the Soil Survey published by USDA-NRCS.
  - Topsoiling is limited to areas having 2:1 or flatter slopes where:
    - The texture of the exposed subsoil/pit material is not adequate to produce a suitable soil medium.
    - The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of phosphate and plant nutrients.
    - The original soil to be vegetated contains material toxic to plant growth.
    - The soil is so acidic that treatment with limestone is not feasible.
    - Areas having slopes steeper than 2:1 require special consideration and design.
  - Topsoil Specifications:** Topsoil to be used as topsoil must meet the following criteria:
    - Topsoil must be a loam, sandy loam, silty loam, silty loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel/clods, roots, trash, or other materials larger than 1 1/2 inches in diameter.
    - Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, blackberry, thistle, or others as specified.
    - Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.

- 2. Topsoil Application:**
  - Erosion and sediment control practices must be maintained when applying topsoil.
  - Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spraying the topsoil in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
  - Topsoil must not be placed if the subsoil is in a frozen or muddy condition, when the subsoil is excessively wet in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

- 3. Soil Amendments (Fertilizer and Lime Specifications):**
  - Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
  - Fertilizers must be uniform in composition, the flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.
  - Lime materials must be ground limestone (hydrated or burnt lime) may be substituted except when hydroseeding which contains at least 90 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 90 to 100 percent will pass through a #200 mesh sieve.
  - Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means.
  - Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

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

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

**Purpose:** To provide a suitable soil medium for vegetative growth.

**Conditions Where Practice Applies:** Where vegetative stabilization is to be established.

**Criteria:**

- 1. Soil Preparation:**
  - Temporary Stabilization:**
    - Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be trenched with ridges running parallel to the contour of the slope.
    - Apply fertilizer and lime as prescribed on the plans.
    - Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.
  - Permanent Stabilization:**
    - A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
      - Soil pH between 6.0 and 7.0.
      - Soluble salts less than 500 parts per million (ppm).
      - Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent all pass clay) to provide the capacity to hold a moderate amount of moisture.
      - An exception: if covergrass will be planted, then a sandy soil (less than 30 percent all pass clay) would be acceptable.
      - Soil contains 1.5 percent minimum organic matter by weight.
      - Soil contains sufficient pore space to permit adequate root penetration.
      - Soil contains sufficient phosphorus and potassium to meet the above conditions.
    - Graded areas must be maintained in a plus and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.
    - Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
    - Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rake large areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to rippen the surface where site conditions will not permit normal seedbed preparation. The depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile in the Soil Survey published by USDA-NRCS.
    - Unnecessary on newly disturbed areas.

- 2. Topsoiling:**
  - Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium of moisture content, low nutrient levels, low pH, and good gradation.
  - Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile in the Soil Survey published by USDA-NRCS.
  - Topsoiling is limited to areas having 2:1 or flatter slopes where:
    - The texture of the exposed subsoil/pit material is not adequate to produce a suitable soil medium.
    - The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of phosphate and plant nutrients.
    - The original soil to be vegetated contains material toxic to plant growth.
    - The soil is so acidic that treatment with limestone is not feasible.
    - Areas having slopes steeper than 2:1 require special consideration and design.
  - Topsoil Specifications:** Topsoil to be used as topsoil must meet the following criteria:
    - Topsoil must be a loam, sandy loam, silty loam, silty loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel/clods, roots, trash, or other materials larger than 1 1/2 inches in diameter.
    - Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, blackberry, thistle, or others as specified.
    - Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.

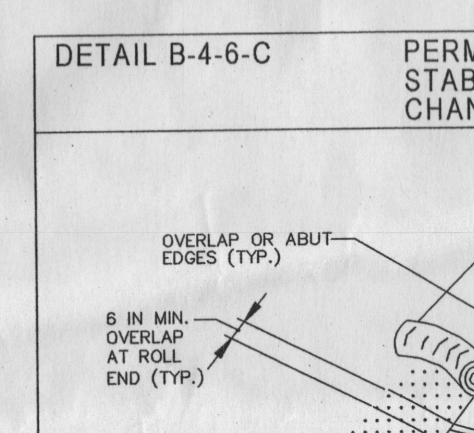
- 3. Soil Amendments (Fertilizer and Lime Specifications):**
  - Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
  - Fertilizers must be uniform in composition, the flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.
  - Lime materials must be ground limestone (hydrated or burnt lime) may be substituted except when hydroseeding which contains at least 90 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 90 to 100 percent will pass through a #200 mesh sieve.
  - Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means.
  - Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

- 4. Maintenance:**
  - When the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

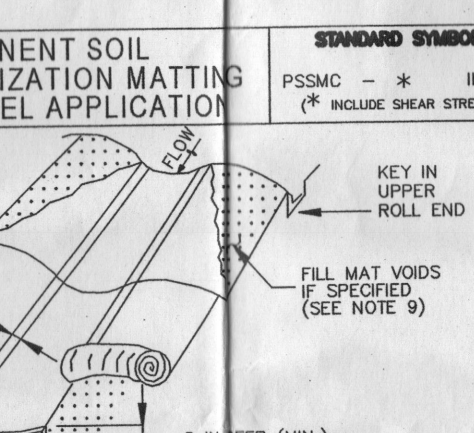
- 5. Note:** Once the placement of fill has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation of the seeding season will necessitate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

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

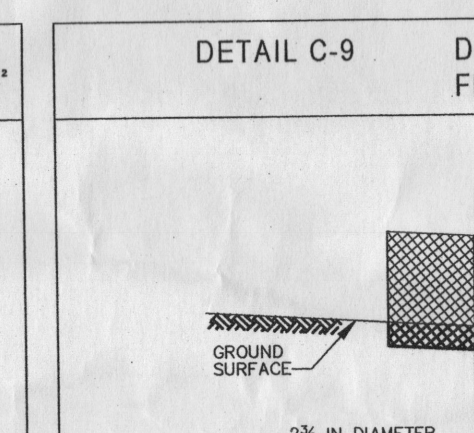
- 7. Note:** Once the placement of fill has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation of the seeding season will necessitate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



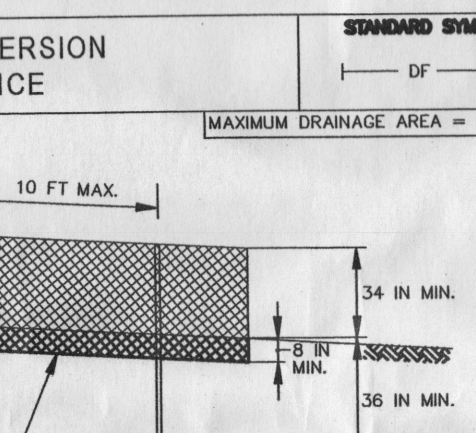
- CONSTRUCTION SPECIFICATIONS:**
- USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
  - USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DESTROYED WITHIN 60 HOURS OF SEEDING OPERATIONS. MATTING MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATING AND NON-INJURIOUS TO THE SHEET IF PRESENT. MATTING MUST BE EXTENDED TO A MAXIMUM WIDTH OF OPENING OF 242 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
  - SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 1/8 INCHES WIDE AND BE 4 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 3 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUND-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1 1/2 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
  - PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MAT WITHIN 6 HOURS OF SEEDING SEEDING OPERATIONS. ACCORDANCE WITH SPECIFICATIONS IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
  - UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTER LINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDBED SURFACE. AVOID STRIPPING THE MAT.
  - OVERLAP OR BUTT EDGES OF MATTING OVERLAPPING OR BUTTING ON TOP OF THE NEXT DOWNSTREAM MAT BY 6 INCHES (MINIMUM). WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
  - KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE TRENCH.
  - STAPLE/STAKE MAT IN A STAGGERED PATTERN ON A FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
  - IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DESCRIBED ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEPT AND TAMPED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL CONTACT WITHIN THE MAT VOIDS.
  - ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4-5 VEGETATIVE STABILIZATION.



- CONSTRUCTION SPECIFICATIONS:**
- USE 42 INCH HIGH, 9 GAUGE OR THICKER CHAIN LINK FENCING (2% INCH MAXIMUM OPENING).
  - USE 2 INCH DIAMETER GALVANIZED STEEL POSTS OF 0.95 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. THE POSTS DO NOT NEED TO BE SET IN CONCRETE.
  - FASTEN CHAIN LINK FENCE SECURELY TO THE FENCE POSTS WITH WIRE TIES.
  - SECURE TO 1/4 INCH OR THICKER UV RESISTANT, IMPERMEABLE SHEETING TO CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT TOP, MID SECTION, AND BELOW GROUND SURFACE.
  - EXTEND SHEETING A MINIMUM OF 4 FEET ALONG FLOW SURFACE AND EMBED END A MINIMUM OF 8 INCHES INTO GROUND. IMPERMEABLE SHEETING MAY BE USED IN LIEU OF IMPERMEABLE SHEETING ALONG FLOW SURFACE.
  - WHEN TWO SECTIONS OF SHEETING ADJOIN EACH OTHER, OVERLAP BY 6 INCHES AND FOLD WITH SEAM FACING DOWNWARD.
  - KEEP FLOW SURFACE ALONG DIVERSION FENCE AND POINT OF DISCHARGE FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE. REPLACE IMPERMEABLE SHEETING IF TORN, IF UNDERMINING OCCURS, REINSTALL FENCE.



- CONSTRUCTION SPECIFICATIONS:**
- INSTALL 2 INCH DIAMETER GALVANIZED STEEL POSTS OF 0.95 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED IN FURTHER THAN 10 FEET APART. DURE THE POSTS A MINIMUM OF 30 INCHES INTO THE GROUND.
  - FASTEN 9 GAUGE OR HEAVY GALVANIZED CHAIN LINK FENCE (2% INCH MAXIMUM OPENING) 42 INCHES HIGH TO SECURELY TO THE FENCE POSTS WITH WIRE TIES OR RUG RINGS.
  - FASTEN WOVEN SILT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPOPER SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
  - WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
  - EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPLOPE AT THE MAT FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
  - PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
  - REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN, IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.



- CONSTRUCTION SPECIFICATIONS:**
- PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (\*30 FEET FOR SINGLE RESIDENTIAL LOTS). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT EACH END OF THE PARENT MATERIAL.
  - PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE