

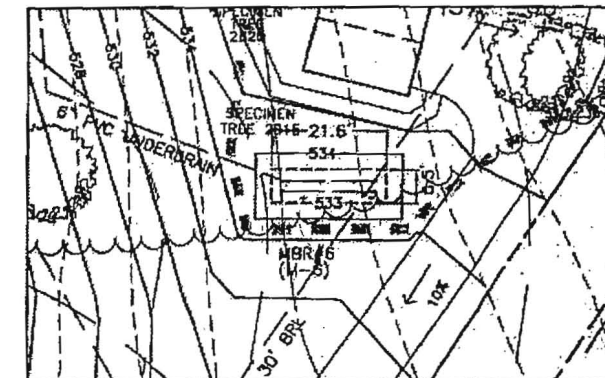
LEGEND

- SOILS CLASSIFICATION **GgC**
- SOILS DELINEATION
- PROPOSED CONTOURS
- EXISTING CONTOURS
- LIMIT OF WETLANDS
- EXISTING WOODS LINE
- PROPOSED WOODS LINE
- EXISTING STRUCTURE
- EXISTING WELL
- EXISTING WELL BOX
- EXISTING SEWAGE DISPOSAL AREA
- EXISTING PRIVATE PIPE LINE EASEMENT AREA
- SWM DRAINAGE AREA

BUILDING PERMIT PLAN NOTES:

1. THE LOT SHOWN HEREON WAS RECORDED ON THE PLAT FOR BRIGHTON MILL II, PLAT Nos. 24469-24474. REFER TO THE PLATS FOR LOT DIMENSIONS, LOT AREAS, ALL EASEMENTS AND CONDITIONS.
2. SEDIMENT AND EROSION CONTROLS WERE APPROVED BY HOWARD SOIL CONSERVATION.
3. TOPOGRAPHY SHOWN HEREON IS TAKEN FROM THE APPROVED ROAD CONSTRUCTION PLANS AND TOPOGRAPHIC INFORMATION PROVIDED BY F-17-054, ON OR ABOUT MAY, 2017.
4. ALL SEDIMENT AND EROSION CONTROL FEATURES USED ON THIS SITE SHALL COMPLY WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
5. ALL DRAINAGE AND STORMWATER MANAGEMENT FEATURES USED ON THIS SITE MUST COMPLY WITH THE APPROVED ROAD CONSTRUCTION PLANS EXCEPT AS WAIVED.
6. THE EXISTING WELL SHOWN ON THIS PLAN, HO-17-0152, HAS BEEN FIELD LOCATED BY BENCHMARK ENGINEERING, INC., AND IS ACCURATELY SHOWN.
7. THERE ARE NO EXISTING WELLS OR SEPTIC SYSTEMS WITHIN 100' OF THIS PROJECT'S BOUNDARY EXCEPT AS NOTED.
8. ANY CHANGES TO A PRIVATE SEWAGE DISPOSAL AREA OR WELL BOX SHALL REQUIRE A REVISED PERCOLATION CERTIFICATION PLAN.
9. STORMWATER MANAGEMENT FOR THIS LOT WAS DESIGNED AND PROVIDED BY TWO NON-ROOFTOP DISCONNECTIONS, TWO DRY WELLS, AND ONE MICRO-BIORETENTION FACILITY.
10. MICRO-BIORETENTION SHALL HAVE EITHER A 4" OR 6" ROOF LEADER DEPENDING ON ROOF-TOP AREA.
11. THE SEPTIC TANK WILL HAVE A 2000 GALLON 2 COMPARTMENT TANK.
12. FOR DEVELOPMENT LANDSCAPING SEE ROAD CONSTRUCTION PLAN F-17-054.

PERMIT B18002763

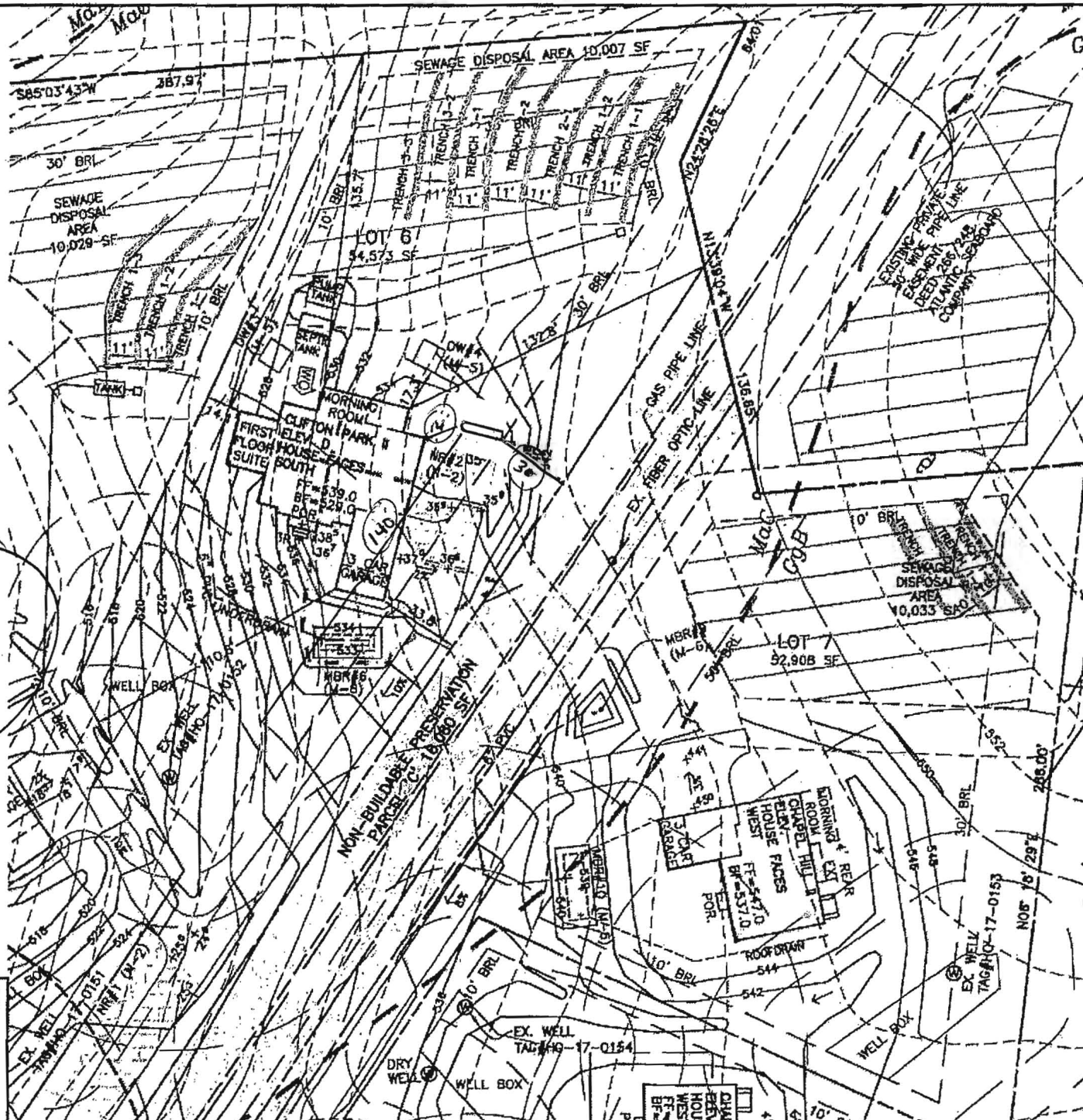


MBR-6 (M-6) DETAIL
1" = 30'

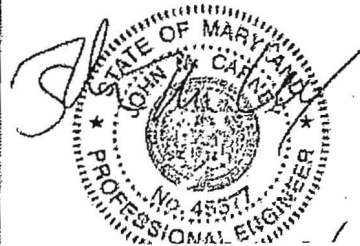
Approved for UPT
B18003136
R-RT 9/14/18



PLAN VIEW
1" = 60'



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. 45577, Expiration Date: 06-08-2020.



| | | | | | | | | |
|---|---|---|--|--|---------------------------------------|--|----------------------------|---------------------------|
| BUILDER: NV HOMES, INC. 9720 PATUXENT WOODS DRIVE SUITE 100 COLUMBIA, MD 21046 | OWNER: HIGHLAND DEVELOPMENT CORP P.O. BOX 228 CLARKSVILLE, MARYLAND 21029 | BENCHMARK ENGINEERING, INC. ENGINEERS LAND SURVEYORS PLANNERS 8480 BALTIMORE NATIONAL PIKE SUITE 315 | PROJECT: BRIGHTON MILL II LOT 6 | LOCATION: TAX MAP: 34, GRID: 2, PARCEL: 16 ZONED: RR-DEO 13623 CURTIS VISTA WAY CLARKSVILLE, MD 21029 FIFTH ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #05-600587 | TITLE: BUILDING PERMIT PLAN | HOUSE TYPE: CLIFTON PARK - ELEVATION D | DATE: JULY, 2018 | PROJECT NO 2627 |
|---|---|---|--|--|---------------------------------------|--|----------------------------|---------------------------|

LEGEND

GgC

SOILS CLASSIFICATION

SOILS DELINEATION

PROPOSED CONTOURS

EXISTING CONTOURS

LIMIT OF WETLANDS

EXISTING WOODS LINE

PROPOSED WOODS LINE

EXISTING STRUCTURE

EXISTING WELL

EXISTING WELL BOX

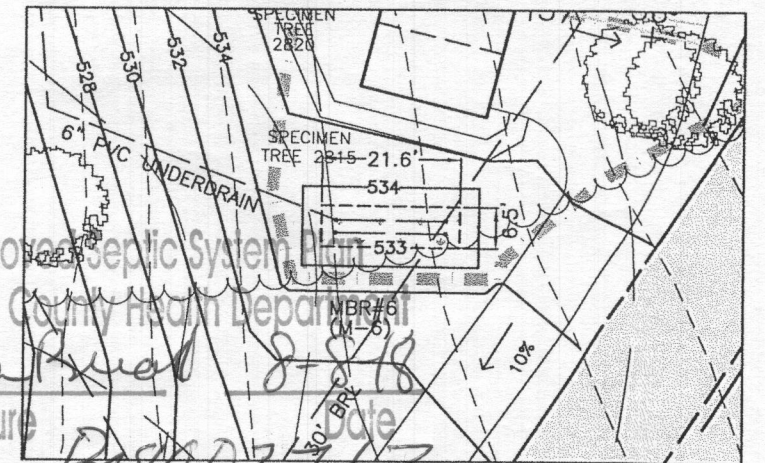
EXISTING SEWAGE DISPOSAL AREA

EXISTING PRIVATE PIPE LINE EASEMENT AREA

SWM DRAINAGE AREA

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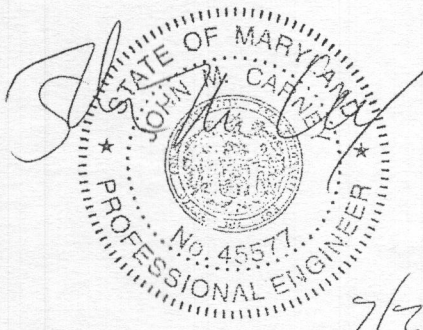
MBR-6 (M-6) DETAIL
1" = 30'

GRID NORTH

PLAN VIEW

1" = 50'

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. 45577, Expiration Date: 06-08-2020.



7/25/18

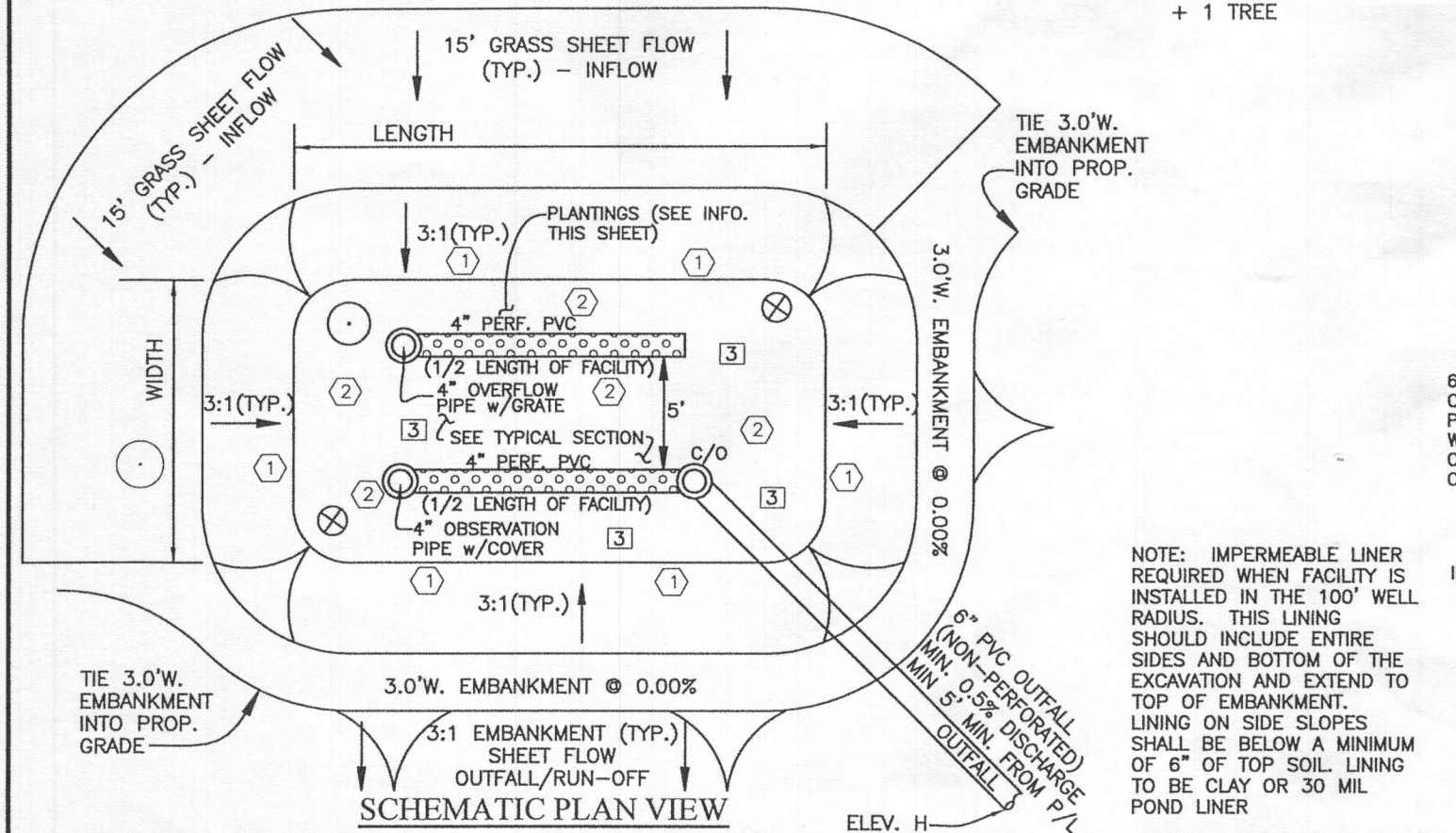
| | | |
|---|--|--|
| <p>BUILDER: NV HOMES, INC. 9720 PATUXENT WOODS DRIVE SUITE 100 COLUMBIA, MD 21046 410-379-5956</p> | <p>OWNER: HIGHLAND DEVELOPMENT CORP P.O. BOX 228 CLARKSVILLE, MARYLAND 21029 410-365-0414</p> | <p>BENCHMARK ENGINEERS LAND SURVEYORS PLANNERS ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE SUITE 315 ELLCOTT CITY, MARYLAND 21043 (P) 410-465-8105 (F) 410-465-8644 WWW.BEI-CMLEENGINEERING.COM</p> |
|---|--|--|

| | |
|--|------------------|
| PROJECT: BRIGHTON MILL II | |
| LOT 6 | |
| LOCATION: TAX MAP: 34, GRID: 2, PARCEL: 16 ZONED: RR-DEO 13623 CURTIS VISTA WAY CLARKSVILLE, MD 21029 FIFTH ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #05-600587 | |
| TITLE: BUILDING PERMIT PLAN | |
| HOUSE TYPE: CLIFTON PARK - ELEVATION D | |
| DATE: JULY, 2018 | PROJECT NO. 2627 |
| SCALE: AS SHOWN | DRAWING 1 OF 3 |

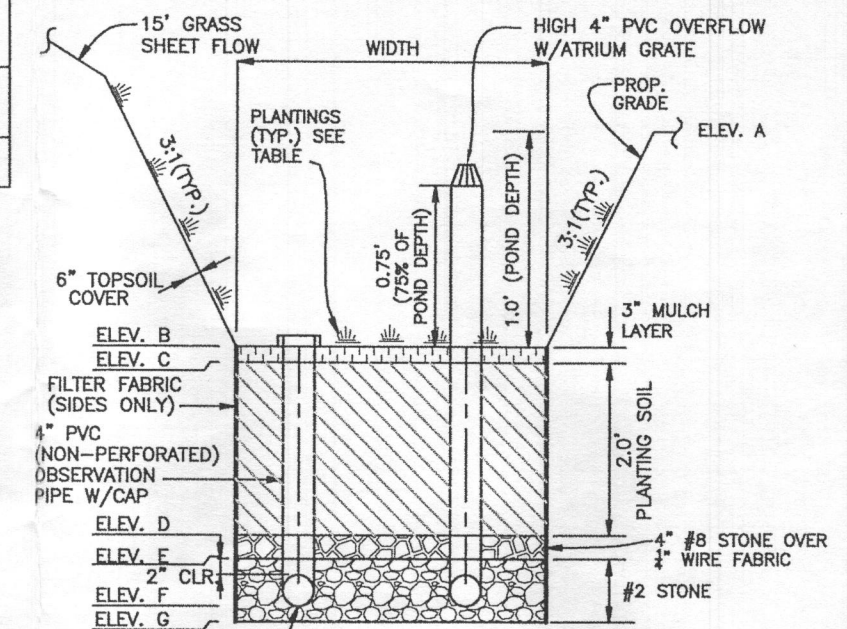
ON-LOT BIORETENTION DIMENSIONS

| FACILITY | A | B | C | D | E | F | G | H | LENGTH | WIDTH | FILTER (A) | PLANTINGS | | | LINER |
|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|------------|-----------|----|----|-------|
| | | | | | | | | | | | | 1 | 2 | 3 | |
| MBR-15 | 534.00 | 533.00 | 532.75 | 530.75 | 530.25 | 529.75 | 528.35 | 524.00 | 21.6 | 6.5 | 140 | 31 | 31 | 16 | YES |

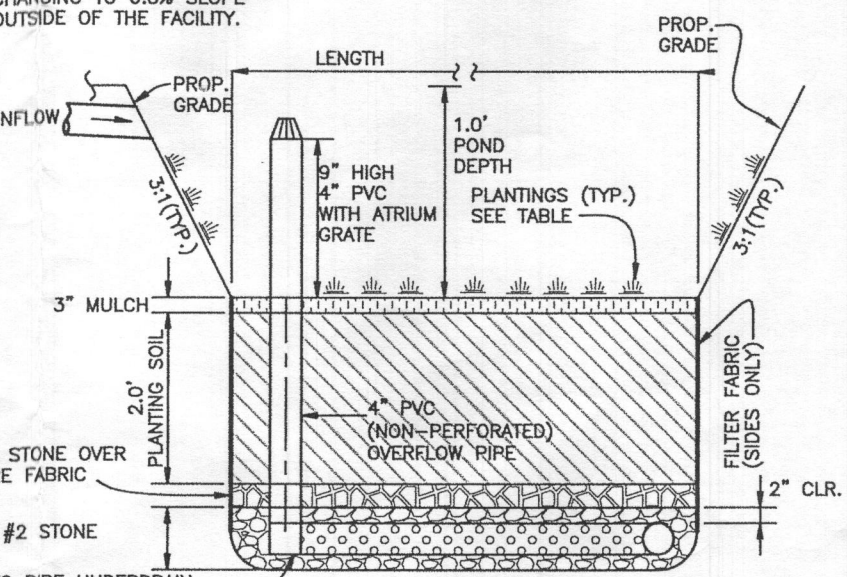
ADDITIONAL
2 SHRUBS
+ 1 TREE



NOTE: IMPERMEABLE LINER REQUIRED WHEN FACILITY IS INSTALLED IN THE 100' WELL RADIUS. THIS LINING SHOULD INCLUDE ENTIRE SIDES AND BOTTOM OF THE EXCAVATION AND EXTEND TO TOP OF EMBANKMENT. LINING ON SIDE SLOPES SHALL BE BELOW A MINIMUM OF 6" OF TOP SOIL. LINING TO BE CLAY OR 30 MIL POND LINER



TYPICAL PROFILE



TYPICAL SECTION
MICRO-BIORETENTION DETAILS
NOT TO SCALE

MICROBIORETENTION PLANTING SCHEDULE

- (PLANTING SPECIES AND DENSITY CAN BE CHANGED OR SUBSTITUTED BY A LANDSCAPE ARCHITECT OR QUALIFIED DESIGNER)
- 1 IRIS FULVA (COPPER IRIS)
 - 2 LOBELIA CARDINALIS (CARDINAL FLOWER)
 - 3 RUDBECKIA SUBTOMENTOSA (SWEET CONEFLOWER)
 - ⊗ CALLUNA VULGARIS (HEATHER) (1 PER FACILITY)
 - ACER GINNALA (ARMUR MAPLE) (1 PER FACILITY)

MICROBIORETENTION PLANTING DATA

1. PLANTINGS WITHIN THE PONDING AREA OF THE FACILITY ARE TO BE OF A MEDIUM TO HIGH WATER TOLERANCE
2. PLANTINGS ALONG THE PERIMETER (BERM) AREA OF THE FACILITY ARE TO BE OF A LOW TO MEDIUM WATER TOLERANCE
3. AVOID PLANTINGS WITH EXCESSIVE ROOT MASS IN POND AREA OF THE RAIN GARDEN NEAR O.B. PIPE AND UNDERDRAIN.

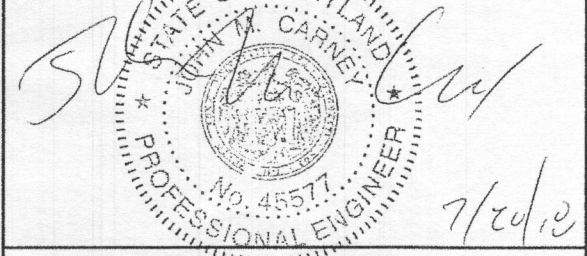
OPERATION AND MAINTENANCE SCHEDULE FOR MICRO-BIORETENTION (M-6)

FOR THE OPERATION AND MAINTENANCE OBLIGATIONS AND SCHEDULE, REFER TO THE DECLARATION OF COVENANTS RECORDED AMONG THE LAND RECORDS OF HOWARD COUNTY MARYLAND FOR THIS LOT.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2)

FOR THE OPERATION AND MAINTENANCE OBLIGATIONS AND SCHEDULE, REFER TO THE DECLARATION OF COVENANTS RECORDED AMONG THE LAND RECORDS OF HOWARD COUNTY MARYLAND FOR THIS LOT.

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. 45577, Expiration Date: 06-08-2020.



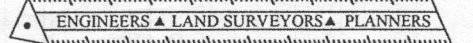
BUILDER:

NV HOMES, INC.
9720 PATUXENT WOODS DRIVE
SUITE 100
COLUMBIA, MD 21046
410-379-5956

OWNER:

HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-365-0414

BENCHMARK



ENGINEERING, INC.

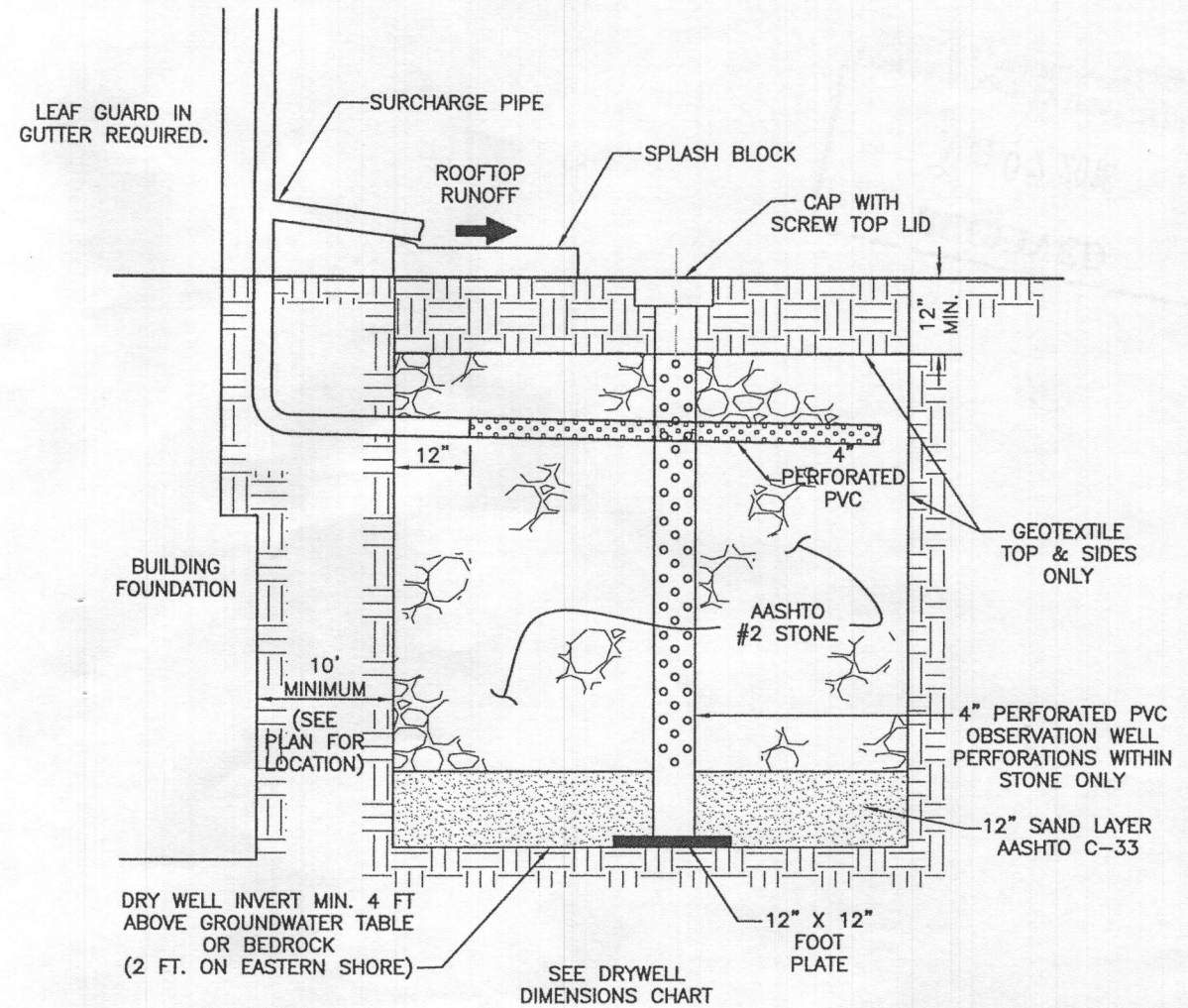
8480 BALTIMORE NATIONAL PIKE & SUITE 315
ELLCOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BEI-CVLENGINEERING.COM

MATERIALS & SPECIFICATIONS FOR MICRO-BIORETENTION

| MATERIAL | SPECIFICATION | SIZE | NOTES: |
|-----------------------------------|---|--|---|
| PLANTINGS | SEE APPENDIX A; TABLE A.4 | N/A | PLANTINGS ARE SITE SPECIFIC |
| PLANTING SOIL (2.0' TO 4.0' DEEP) | LOAMY SAND 60-65% COMPOST 35-40% OR SANDY LOAM 30% COARSE SAND 30% & COMPOST 40% | N/A | USDA SOIL TYPES: LOAMY SAND OR SANDY LOAM; CLAY CONTENT <5% |
| ORGANIC CONTENT | MIN 10% BY DRY WEIGHT ASTM D 2974 | | |
| MULCH | SHREDDED HARDWOOD | N/A | AGED 6 MONTHS, MINIMUM, NO PINE OR WOOD CHIPS |
| GEOTEXTILE (CLASS "C") | | N/A | PE TYPE 1 NONWOVEN |
| GEOTEXTILE (1/4" WIRE MESH) | | 1/4" WIRE MESH | 1/4" WIRE MESH |
| UNDERDRAIN GRAVEL | AASHTO M-43 | NO. 57 OR NO. 6 0.375" TO 0.750" | |
| UNDERDRAIN PIPING | F758, TYPE PS28 OR AASHTO M-278 | 4" TO 6" RIGID SCH.40 PVC, SDR35 OR HDPE | 3/8" PERF. @ 6" O/C, 4 HOLES PER ROW; MINIMUM OF 3" OF GRAVEL OVER PIPES, NOT NECESSARY UNDERNEATH PIPES. PIPE SHALL BE WRAPPED WITH 1/4-INCH GALVANIZED HARDWARE CLOTH |
| IMPERVIOUS LINER | ASTM-D-4833 (THICKNESS) ASTM-D-412 (TENSILE STRENGTH 1,100 LB., ELONGATION 200%) ASTM-D-624 (TEAR RESISTANCE - 150 LB./IN) ASTM-D-471 (WATER ADSORPTION: +8 TO -2% MASS) | 30 MIL. THICK | LINER TO BE ULTRAVIOLET RESISTANT. A GEOTEXTILE FABRIC SHOULD BE USED TO PROTECT THE LINER FROM PUNCTURE. |
| GEOTEXTILE (BELOW IMPERV. LINER) | ASTM-D-4833 (PUNCTURE STRENGTH 125LB) ASTM-D-4632 (TENSILE STRENGTH 300 LB.) | | |

| | | |
|-------------|--|------------------|
| PROJECT: | BRIGHTON MILL II LOT 6 | |
| LOCATION: | TAX MAP: 34, GRID: 2, PARCEL: 16 ZONED: RR-DEO 13623 CURTIS VISTA WAY CLARKSVILLE, MD 21029 FIFTH ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #05-600587 | |
| TITLE: | BUILDING PERMIT PLAN | |
| HOUSE TYPE: | CLIFTON PARK - ELEVATION D | |
| DATE: | JULY, 2018 | PROJECT NO. 2627 |
| SCALE: | AS SHOWN | DRAWING 2 OF 3 |

| Drywell Designation | Length (ft) | Width (ft) | Depth (ft) | Grade | Top of Stone | Bottom of Stone |
|---------------------|-------------|------------|------------|-------|--------------|-----------------|
| DW-3 | 7.00 | 7.00 | 5.00 | 528.0 | 527.0 | 522.0 |
| DW-4 | 7.00 | 7.00 | 5.00 | 533.0 | 532.0 | 527.0 |



DRY WELL DETAIL

NOT TO SCALE

MATERIALS & SPECIFICATIONS FOR MICRO-BIORETENTION

| MATERIAL | SPECIFICATION | SIZE | NOTES: |
|-----------------------------------|--|--|---|
| PLANTINGS | SEE APPENDIX A; TABLE A.4 | N/A | PLANTINGS ARE SITE SPECIFIC |
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| ORGANIC CONTENT | MIN 10% BY DRY WEIGHT ASTM D 2974 | | |
| MULCH | SHREDDED HARDWOOD | N/A | AGED 6 MONTHS, MINIMUM, NO PINE OR WOOD CHIPS |
| GEOTEXTILE (CLASS "C") | | N/A | PE TYPE 1 NONWOVEN |
| GEOTEXTILE (1/4" WIRE MESH) | | 1/4" WIRE MESH | 1/4" WIRE MESH |
| UNDERDRAIN GRAVEL | AASHTO M-43 | NO. 57 OR NO. 6 0.375" TO 0.750" | |
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| GEOTEXTILE (BELOW IMPERV. LINER) | ASTM-D-4833 (PUNCTURE STRENGTH 125LB) ASTM-D-4632 (TENSILE STRENGTH 300 LB.) | | |

OWNER/DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-365-0414

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315
ELLICOTT CITY, MARYLAND 21043
(P) 410-465-6105 ▲ (F) 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

PROJECT: **BRIGHTON MILL II**
LOT 6

LOCATION: TAX MAP: 34, GRID: 2, PARCEL: 16 ZONED: RR-DEO
13623 CURTIS VISTA WAY
CLARKSVILLE, MD 21029
FIFTH ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #05-600587

TITLE: **BUILDING PERMIT PLAN**

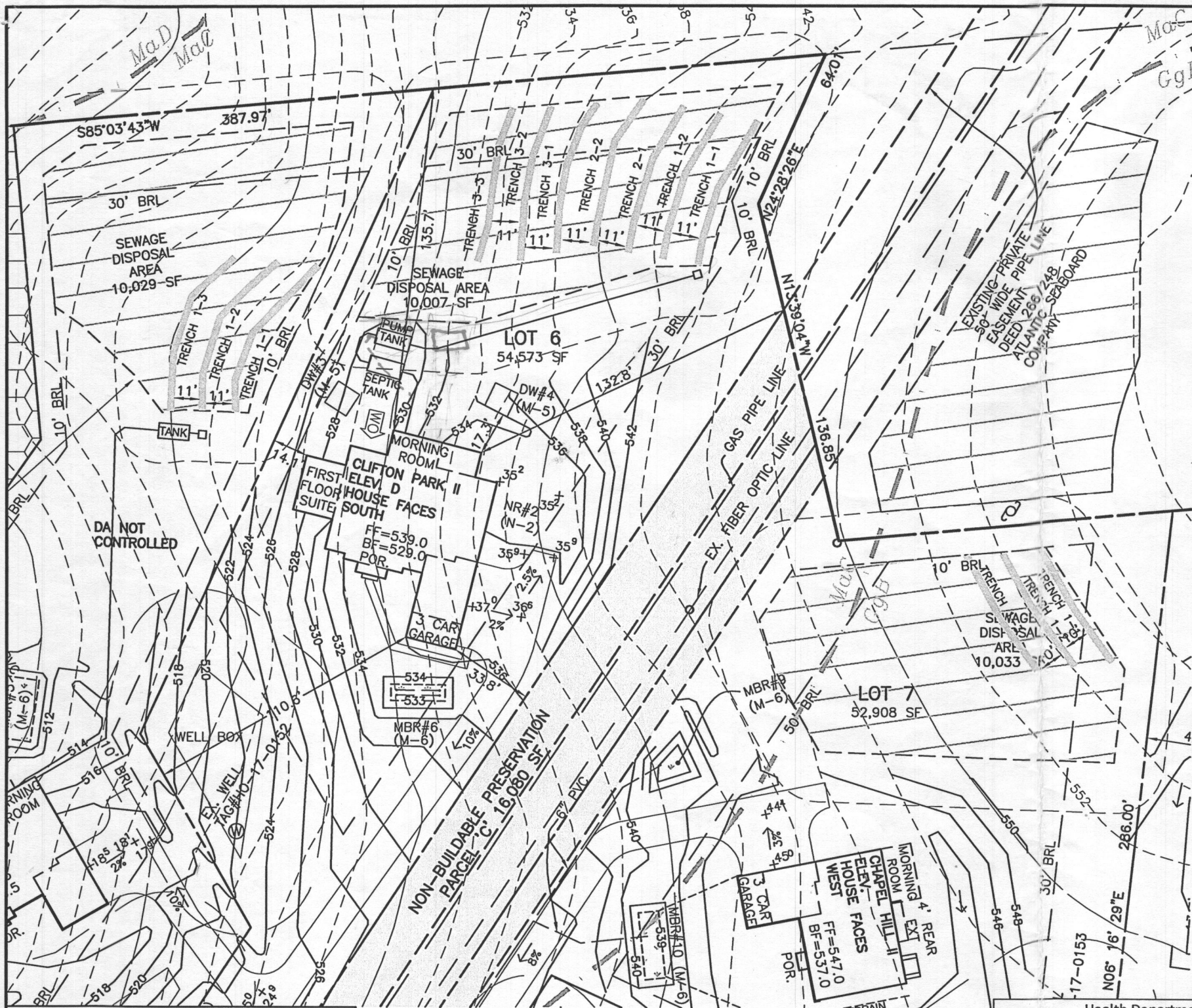
HOUSE TYPE: **CLIFTON PARK - ELEVATION D**

DATE: JULY, 2018 PROJECT NO. 2627

SCALE: AS SHOWN DRAWING 3 OF 3

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. 45577, Expiration Date: 06-08-2018.





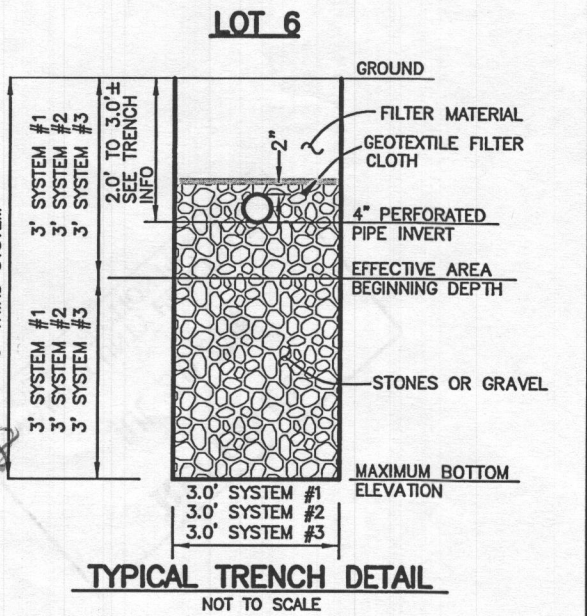
LEGEND

| | |
|-------------------------------|------------|
| SOILS CLASSIFICATION | GgC |
| SOILS DELINEATION | --- |
| PROPOSED CONTOURS | 480 478 |
| EXISTING CONTOURS | 480 478 |
| LIMIT OF WETLANDS | --- |
| EXISTING WOODS LINE | --- |
| PROPOSED WOODS LINE | --- |
| EXISTING STRUCTURE | --- |
| EXISTING WELL | ⊙ |
| EXISTING WELL BOX | --- |
| EXISTING SEWAGE DISPOSAL AREA | --- |

- ONSITE SEWAGE DISPOSAL PLAN NOTES:**
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SEPTIC INVERT CHART - LOT 6

| | |
|-------------------------|------------|
| INV @ HOUSE | 526.3 |
| GROUND @ HOUSE | 530.9 |
| INV IN SEPTIC TANK | 525.8 |
| INV OUT SEPTIC TANK | 525.5 |
| TOP OF SEPTIC TANK | 526.6 |
| GROUND OVER SEPTIC TANK | 528.7 |
| INV IN PUMP TANK | 525.0 |
| INV OUT PUMP TANK | 524.8 |
| TOP OF PUMP TANK | 525.9 |
| GROUND OVER PUMP TANK | 528.6 |
| TOTAL DYNAMIC HEAD | 20.3 ft |
| PUMP FLOW RATE | 29 gal/min |
| INV IN DIST BOX | 540.6 |
| INV OUT DIST BOX | 540.5 |
| GROUND AT DIST BOX | 543.6 |



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. 45577, Expiration Date: 06-08-2020.



7/19/18



PLAN VIEW
1" = 50'

Health Department Spec Sheet information

| System | Application Rate | Effective Depth | Bottom Depth |
|-----------------|------------------|-----------------|--------------|
| Initial | 1.2 | 3.0 | 6.0 |
| 1st Replacement | 1.2 | 3.0 | 6.0 |
| 2nd Replacement | 0.8 | 3.0 | 6.0 |

Note: BAT Unit. Pump to Dist. Req. Low pressure dist. Recommended.

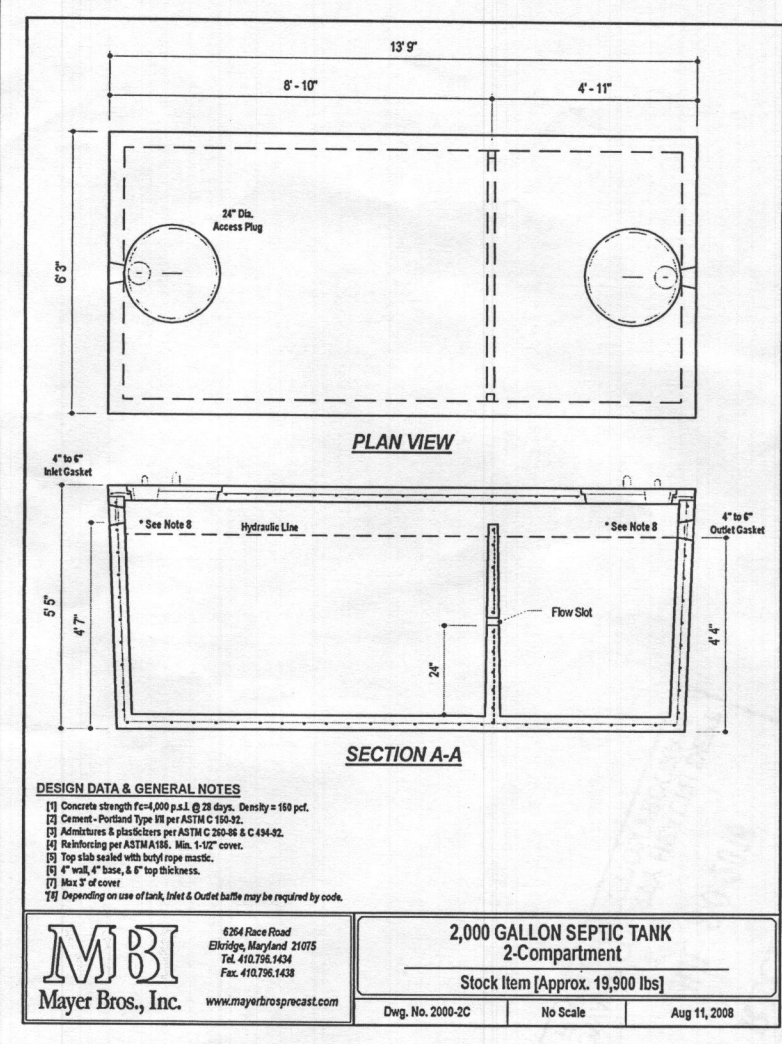
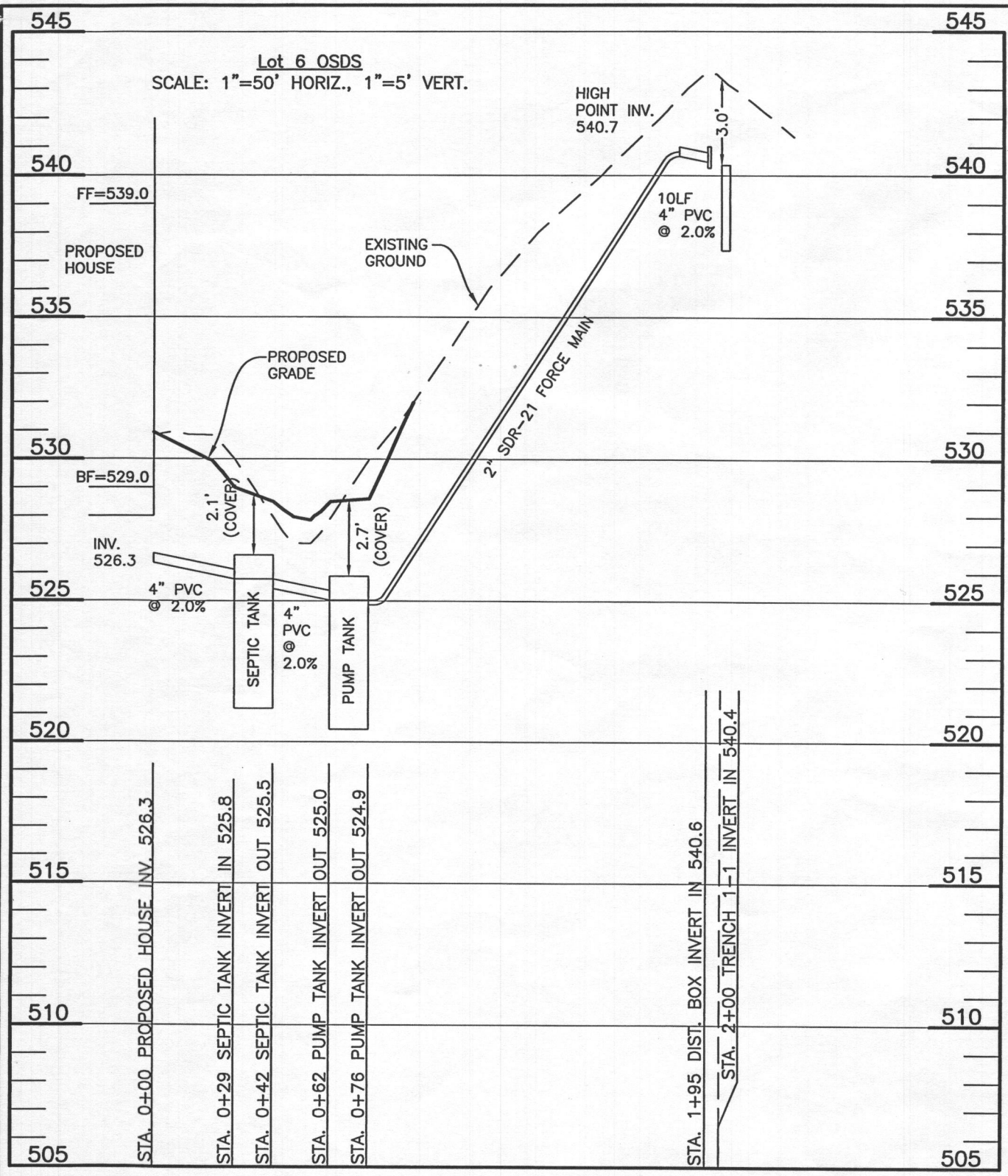
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| TITLE: | ONSITE SEPTIC DESIGN SYSTEM PLAN | | |
| HOUSE TYPE: | CLIFTON PARK - ELEVATION D | | |
| DATE: | JULY, 2018 | PROJECT NO. | 2627 |
| SCALE: | AS SHOWN | DRAWING | 1 OF 3 |

BUILDER:
NV HOMES, INC.
9720 PATUXENT WOODS DRIVE
SUITE 100
COLUMBIA, MD 21046
410-379-5956

OWNER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-365-0414

BENCHMARK ENGINEERING, INC.
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315
ELLCOTT CITY, MARYLAND 21043
(P) 410-465-6105 ▲ (F) 410-465-6644
WWW.BEI-CMLENGINEERING.COM

Signature: *B18002763* Date: 8-8-18



INITIAL SYSTEM - LOT 6

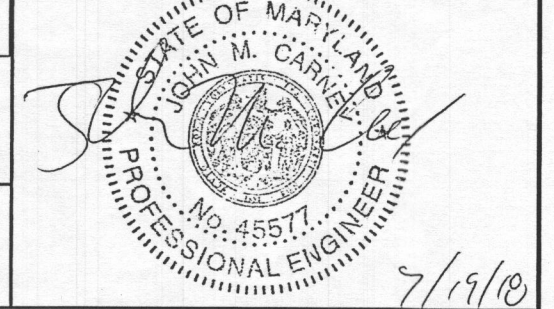
| | | |
|----------------------------------|------|--------|
| Number of Bedrooms | 6 | |
| Application Rate | 1.2 | gpd/sf |
| Effective Area Beginning Depth | 3.0 | ft |
| Bottom Max Depth | 6.0 | ft |
| Design Flow | 900 | gpd |
| Drainage Field square footage | 750 | sf |
| Sidewall Reduction Credit | 0.50 | |
| Trench width | 3 | ft |
| Effective Area Depth | 3 | ft |
| Trench Spacing | 10 | ft |
| Linear Length of trench Required | 125 | lf |

1st REPLACEMENT SYSTEM

| | | |
|----------------------------------|------|--------|
| Number of Bedrooms | 6 | |
| Application Rate | 1.2 | gpd/sf |
| Effective Area Beginning Depth | 3.0 | ft |
| Bottom Max Depth | 6.0 | ft |
| Design Flow | 900 | gpd |
| Drainage Field square footage | 750 | sf |
| Sidewall Reduction Credit | 0.50 | |
| Trench width | 3 | ft |
| Effective Area Depth | 3 | ft |
| Trench Spacing | 10 | ft |
| Linear Length of trench Required | 125 | lf |

THIS PLAN IS FOR SEPTIC DESIGN ONLY

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. 45577, Expiration Date: 06-08-2020.



2nd REPLACEMENT SYSTEM

| | | |
|----------------------------------|------|--------|
| Number of Bedrooms | 6 | |
| Application Rate | 0.8 | gpd/sf |
| Effective Area Beginning Depth | 3.0 | ft |
| Bottom Max Depth | 6.0 | ft |
| Design Flow | 900 | gpd |
| Drainage Field square footage | 1125 | sf |
| Sidewall Reduction Credit | 0.50 | |
| Trench width | 3 | ft |
| Effective Area Depth | 3 | ft |
| Trench Spacing | 10 | ft |
| Linear Length of trench Required | 188 | lf |

SEE MANUFACTURERS SPECIFICATIONS FOR DETAILS. WWW.MAYERPRECAST.COM EQUIVALENT FROM OTHER MANUFACTURERS CAN BE SUBSTITUTED.

SIGNATURE AND SEAL ARE FOR SEPTIC PROFILE AND CALCULATIONS ONLY, TANK AND DETAILS WERE NOT DESIGNED OR REVIEWED BY THE ENGINEER:

BENCHMARK ENGINEERING, INC.
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315
ELLCOTT CITY, MARYLAND 21043
(P) 410-465-6105 ▲ (F) 410-465-6644
WWW.BEI-CMLENGINEERING.COM

TRENCH DATA - LOT 6

| INITIAL SYSTEM | | FIRST REPLACEMENT | | SECOND REPLACEMENT | | | |
|----------------------|---------|----------------------|---------|----------------------|---------|----------------------|---------|
| TRENCH 1-1 | | TRENCH 2-1 | | TRENCH 3-1 | | TRENCH 3-3 | |
| LENGTH | 62.5 ft | LENGTH | 62.5 ft | LENGTH | 62.5 ft | LENGTH | 62.5 ft |
| GROUND ELEVATION | 543.4 | GROUND ELEVATION | 541.1 | GROUND ELEVATION | 538.1 | GROUND ELEVATION | 532.9 |
| INVERT ELEVATION | 540.4 | INVERT ELEVATION | 538.1 | INVERT ELEVATION | 535.1 | INVERT ELEVATION | 529.9 |
| MAX BOTTOM ELEVATION | 537.4 | MAX BOTTOM ELEVATION | 535.1 | MAX BOTTOM ELEVATION | 532.1 | MAX BOTTOM ELEVATION | 526.9 |
| TRENCH 1-2 | | TRENCH 2-2 | | TRENCH 3-2 | | | |
| LENGTH | 62.5 ft | LENGTH | 62.5 ft | LENGTH | 62.5 ft | | |
| GROUND ELEVATION | 542.3 | GROUND ELEVATION | 539.8 | GROUND ELEVATION | 535.9 | | |
| INVERT ELEVATION | 539.3 | INVERT ELEVATION | 536.8 | INVERT ELEVATION | 532.9 | | |
| MAX BOTTOM ELEVATION | 536.3 | MAX BOTTOM ELEVATION | 533.8 | MAX BOTTOM ELEVATION | 529.9 | | |

BUILDER:
NV HOMES, INC.
9720 PATUXENT WOODS DR.
SUITE 100
COLUMBIA, MD 21046
410-379-5956

OWNER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-365-0414

PROJECT: **BRIGHTON MILL II LOT 6**

LOCATION: TAX MAP: 34, GRID: 2, PARCEL: 16 ZONED: RR-DEO
13623 CURTIS VISTA WAY
CLARKSVILLE, MD 21029
FIFTH ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #05-600587

TITLE: **ONSITE SEPTIC DESIGN SYSTEM PLAN**

HOUSE TYPE: **CLIFTON PARK - ELEVATION D**

DATE: **JULY, 2018** PROJECT NO. **2627**

SCALE: **AS SHOWN** DRAWING **2** OF **3**

Pumping Station

Diameter of Force Main and Manifold = 2 of SDR 21 pipe
 Length of Force Main = 109 feet SDR 21 gallons/100 feet = 18.8 Table 4.2

Volume of Main = 20.5 gallons ID = 2.149
 length = 100 gallon/sq ft 7.480519

Total Volume = 20.5 gallons volume = 18.84222 gal/100 lf

Minimum Dose must be greater than 1/6 of the design flow 150 gallons

Minimum Dose must be greater than the volume of the main 21 gallons

Use minimum dose of 150 gallons okay Doses per Day = 6.0

Size Pump Chamber

Pump chamber must be able to hold one dose and one days design flow

One day Capacity = 900 gallons
 Dose = 150 gallons
 Totals = 1050 gallons

Use 2,000 gallon pump tank

| | | | | | |
|------------------|------------|----------|------------|-----------|-----------|
| Tank Dimensions: | Exterior | Interior | | | |
| Length: | 13.75 feet | Length: | 13.08 feet | Walls: | 0.33 feet |
| Width: | 6.25 feet | Width: | 5.58 feet | Bottom: | 0.33 feet |
| Height: | 5.42 feet | Height: | 4.67 feet | Top: | 0.42 feet |
| | | Area: | 73.05 sf | Bottom to | |
| | | Volume: | 341.14 cf | Inlet: | 4.58 feet |

Sizing the Pump

Flow: runtime = 6 minutes
 rate = 25.00 gallons/minute

Design Head: Design Head = Static Head + Friction Head

Static Head = highest elevation of main - pump off elevation

Highest component of system = 540.70 Main HP
 Pump off elevation = 522.48
 Static Head = 18.22 feet

Friction Head = Head loss due to pipe friction

2.0" pipe = 109 feet
 45° bends 0 loss for bend 0 feet per table 4.3
 Gate Valve 0 loss for tee 0 feet per table 4.3

Friction loss per table 4.4 = 1.1 (R/100 ft)

Equivalent Length = 109 Friction loss 1.20 feet

Total Friction Head = 1.20

Design Head = 19.42 feet

Pump Requirements:

Performance = 25.00 gpm
 Head of Water = 19.42 feet of head

Pump Selection: Zoeller Pump Company Dose-mate Series, Model 151
 1/3 horse power

Pump Flow Rate = 29.00 gallons/minute per rating curve 5.17 Minutes
 TDH analysis 20.28 ft
 Between design and curve? Yes

Design Pump Chamber

Ground over Tank = 528.60 Cover 2.7 ft
 Top of Tank = 525.90
 Invert of Tank = 520.81
 6" Riser = 0.50 feet
 Pump Height = 1.10 feet

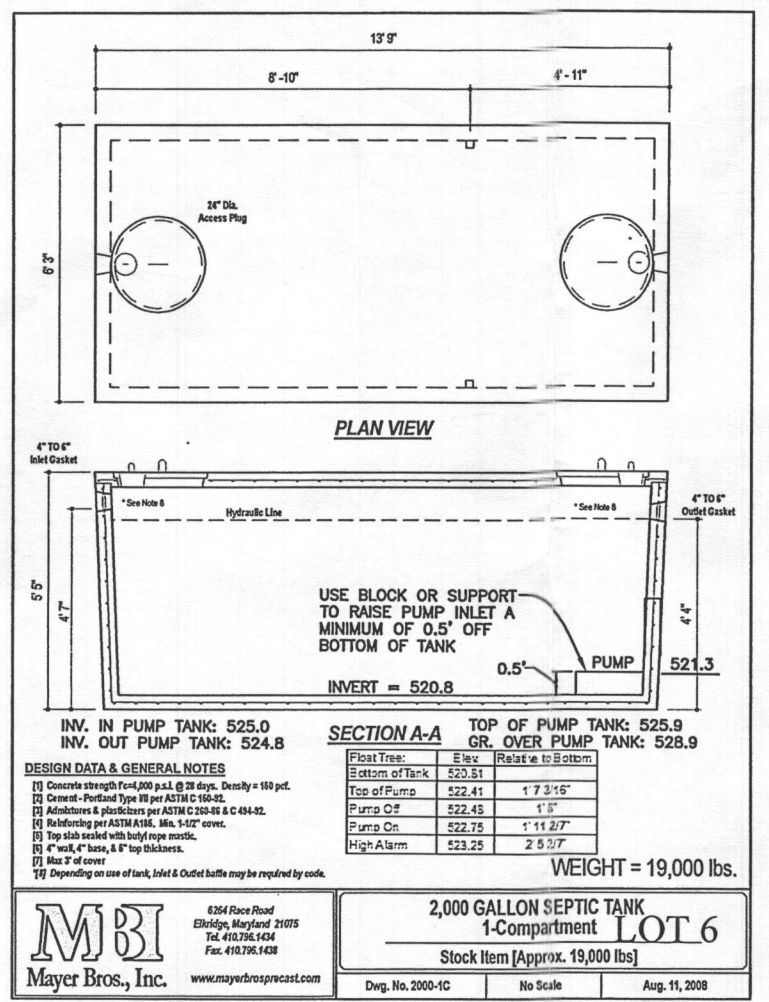
Min. Pump off = 522.41
 Selected Pump off = 522.48

Dose = 20.1 cf
 Area of Pit = 73.05 sf

Pump on dist. = 0.27
 Pump on Elev. = 522.75

Distance between Pump on and Highwater Alarm = 0.5 feet
 Highwater Alarm Elevation = 523.25

Dist. for a dose above alarm = 1.85
 Minimum Inlet Elev. = 524.90
 Tank Inlet = 525.06 Okay
 Dist. Alarm to Inlet = 1.81 Okay



TOTAL DYNAMIC HEAD FLOW PER MINUTE

| MODEL | 151 | | 152 | | 153 | |
|----------------|--------------|--------|---------------|--------|---------------|--------|
| | Feet | Meters | Gal. U.S. | Liters | Gal. U.S. | Liters |
| 5 | 1.5 | 50 | 189 | 69 | 261 | 77 |
| 10 | 3.0 | 100 | 179 | 61 | 231 | 70 |
| 15 | 4.5 | 150 | 144 | 53 | 201 | 61 |
| 20 | 6.1 | 200 | 110 | 44 | 167 | 52 |
| 25 | 7.6 | 250 | 81 | 34 | 129 | 42 |
| 30 | 9.1 | 300 | 61 | 27 | 97 | 33 |
| 35 | 10.7 | 350 | 46 | 20 | 72 | 25 |
| 40 | 12.2 | 400 | 34 | 15 | 54 | 19 |
| Shut Off Head: | 30 ft (9.1m) | | 38 ft (11.6m) | | 44 ft (13.4m) | |

USE BN151. CONTRACTOR MAY USE EQUIVALENT PUMP

PUMP PERFORMANCE CURVE MODEL 151/152/153

SELECTION GUIDE

- For automatic, use single piggyback variable level float switch or double piggyback variable level float switch. Refer to FM0472.
- See FM1228 for correct model of simplex control panel.
- See FM0712 for correct model of duplex control panel.

OPTIONAL PUMP STAND P/N 10-2421

- Reduces potential clogging by debris
- Replaces rocks or bricks under the pump
- Made of durable, noncorrosive AISI
- Raises pump 2" (5 cm) off bottom of basin
- Provides the ability to raise intake by adding sections of 1/2" or 2" (12.7 or 50.8) PVC piping
- Attaches securely to pump
- Accommodates sump, dewatering and effluent applications

CAUTION All installation of controls, protection devices and wiring should be done by a qualified licensed electrician. All electrical and safety codes should be followed including the most recent National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).

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 502-778-2731 | 800-928-7867 | 3649 Cane Run Road | Louisville, KY 40211-1961 | zoellerpumps.com

Trusted. Tested. Tough.™

ZOELLER PUMP COMPANY

SECTION: 2.15 080
 FM2784
 1017
 Supersedes 0315

TECHNICAL DATA SHEET DOSE-MATE SERIES
 Models 151, 152, 153 Effluent Pumps

| PRODUCT SPECIFICATIONS | |
|------------------------|---|
| MOTOR | Horse Power 1/3 (151), 4/10 (152), 1/2 (153) |
| | Voltage 115 or 230 |
| | Phase 1 Ph |
| | Hertz 60 Hz |
| | RPM 3450 |
| | Type Permanent split capacitor |
| | Insulation Class B |
| | Amps 3.0 - 10.5 |
| PUMP | Operation Automatic or nonautomatic |
| | Discharge Size 1-1/2" NPT |
| | Solids Handling 1/2" (12 mm), 3/4" (19 mm) spherical solids |
| | Cord Length 20' (6 m) |
| | Cord Type UL listed power cord |
| | Max. Head 44' (13.4 m) |
| | Max. Flow Rate 77 GPM (291 LPM) |
| | Max. Operating Temp. 130 °F (54 °C) |
| | Cooling Oil filled |
| | Motor Protection Auto reset thermal overload |
| MATERIALS | Cap Cast iron |
| | Motor Housing Cast iron |
| | Pump Housing Cast iron |
| | Base Plastic or cast iron |
| | Upper Bearing Sleeve bearing |
| | Lower Bearing Ball bearing |
| | Mechanical Seals Carbon and ceramic |
| | Impeller Type Non-clogging vortex |
| | Impeller Engineered thermoplastic |
| | Hardware Stainless steel |
| | Motor Shaft AISI 1215 steel |
| | Gasket Neoprene |

MODEL 151

MODEL 152 & 153

NOTE: The sizing of effluent systems normally requires variable level float controls and properly sized basins to achieve required pumping cycles or dosing timers with nonautomatic pumps.

NOTE: See model comparison chart for specific details.

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 SUITE 100
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 FIFTH ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #05-600587

TITLE: ONSITE SEPTIC DESIGN SYSTEM PLAN

HOUSE TYPE: CLIFTON PARK - ELEVATION D

DATE: JULY, 2018 **PROJECT NO.** 2627

SCALE: AS SHOWN **DRAWING** 3 OF 3

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. 45577, Expiration Date: 06-08-2020.

STATE OF MARYLAND
JOHN M. CARNE
PROFESSIONAL ENGINEER
 No. 45577
 7/9/18

BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS

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