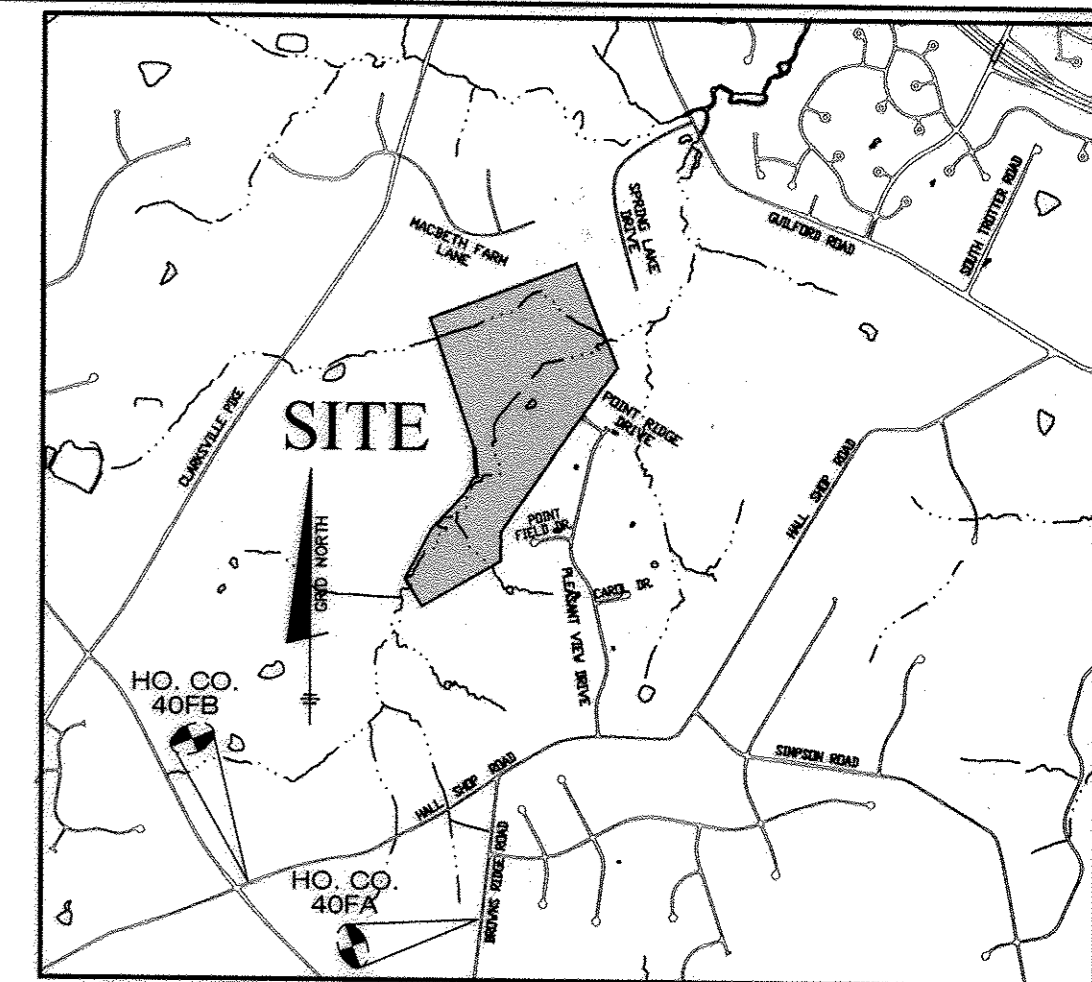


# REGAN PROPERTY

## FINAL PUBLIC SHARED SEPTIC PLANS

### CONTRACT NO. 50-4742-D



**VICINITY MAP**  
SCALE: 1" = 2000'  
ADC MAP 4933; GRID J10

QUANTITIES				
ITEMS	QUANTITIES ESTIMATED	AS-BUILT		
		QUANTITIES	TYPE	MANUF./SUPPLIER
FLUSHING CONNECTIONS	4	1	2" BALL VALVE	A.Y. McDONALD
1.25" FORCE MAIN SEWER	1192	1192	SCH 40 PVC	GREENLINE PLASTIC PIPE CO.
4" PVC SEWER	19	19	SCH 40 PVC	J.M. EAGLE
TRANSITION MANHOLE	1	1	CONCRETE	JORDAN'S WATERWORKS
5,300 GALLON SEPTIC TANKS	2	2	CONCRETE	BACK RIVER PRECAST
SIMPLEX GRINDER PUMPS	2	2	FLUID SOLUBLE WASTEWATER	FLUID SOLUBLE WASTEWATER
DUPLEX GRINDER PUMPS	2	2	FLUID SOLUBLE WASTEWATER	FLUID SOLUBLE WASTEWATER
1/8 HB	1	1	SCH 20 PVC	SEARS
MONITORING WELLS	2	2	CONCRETE	MANER BROS./HOME DEPOT
CONC. VALVE WITH CONDUCTING ROD	4	5	CONCRETE	CONCRETE
DISTRIBUTION BOX	2	2	CONCRETE	BACK RIVER PRECAST
AIR RELEASE VALVE	1	1	935	GA INDUSTRIES
NAME OF UTILITY CONTRACTOR: FOGLE'S SEPTIC SERVICE				
SURVEY AND DRAFTING DIVISION AS-BUILT DATE:				

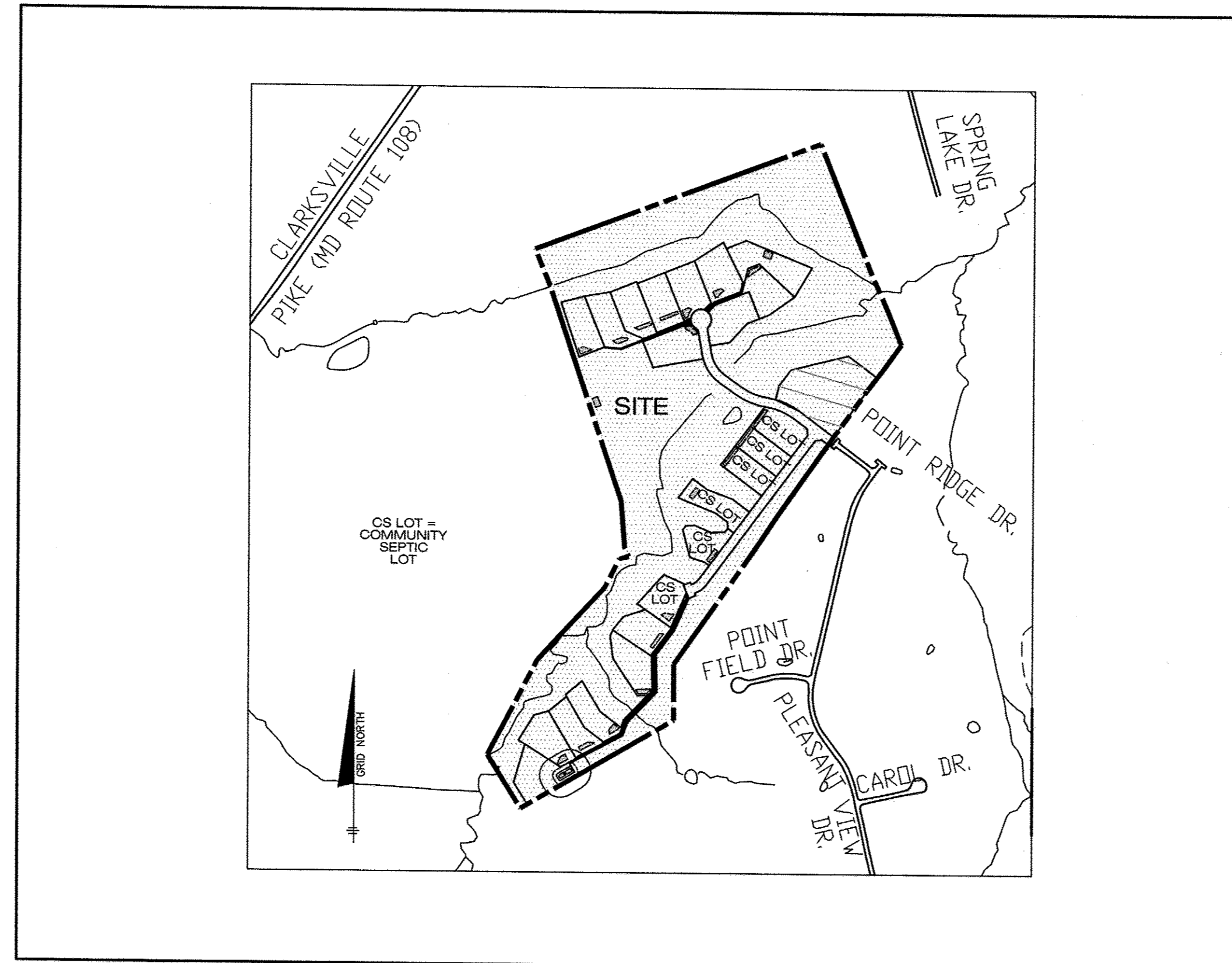
#### TRENCH REQUIREMENTS

CELL "A" INSTALLED AND OPERATIONAL, CELL "B" INSTALLED, CELL "C" IS SHOWN ONLY FOR DESIGN PURPOSES  
USE 5 BEDROOM HOUSE (WITH 150 GPD PER BEDROOM)

750 gpd PER HOUSE  
750 gpd/HOUSE X 6 HOUSES = 4,500 gpd  
4,500 gpd/1.2 ga./s.f./day = 3,750 s.f. EFFECTIVE AREA  
3,750 s.f./ 3 (3 ft. WIDE TRENCH) = 1,250 LF.  
OR USE A DEEP TRENCH CONFIGURATION  
FOR A 1.0' DEEP TRENCH THE TRENCH LENGTH IS 83.3%  
THE TRENCH LENGTH USING DEEP TRENCHES IS 1,042 LF

#### NOTES:

- WELLS ON THE LOTS SURROUNDING THE COMMON SHARED SEPTIC AREAS SHALL BE TESTED FOR BACKGROUND LEVELS OF CONTAMINANTS TO BE SPECIFIED BY THE DEVELOPER PRIOR TO PUTTING THE SHARED SEPTIC SYSTEM IN SERVICE.
- THE BUILDER SHALL INSTALL BACKFLOW PREVENTER AND RELIEF VENT ON THE SEWER SERVICE AT THE HOUSE, AT THE TIME OF THE HOUSE CONSTRUCTION OR AS REQUIRED BY THE PLUMBING INSPECTOR.
- INSTALLATION OF GRINDER PUMPS AND APPURTENANCES, AND THE 4" PVC SEWER HOUSE CONNECTIONS (SHC) SHALL BE THE RESPONSIBILITY OF THE DEVELOPER.
- ALL PRESSURE SEWER SHALL BE SDR 21 PVC OR HDPE EQUIVALENT, SDR 21 PVC SHALL BE SOFT WELDED EXCEPT PORTIONS WITHIN 50 FEET OF A WELL. IN THOSE INSTANCES THE SEWER SHALL BE HOPE SDR11. A 6 GAUGE TRACER WIRE SHALL BE WRAPPED AROUND OR ATTACHED TO THE PVC PIPE.
- SEPTIC TANKS SHALL BE VACUUM OR WATER TESTED ON-SITE BY THE MANUFACTURER. SEPTIC TANK SHOP DRAWINGS FROM THE MANUFACTURER SHOULD BE SUBMITTED TO THE HOWARD COUNTY ENVIRONMENTAL HEALTH DEPARTMENT PRIOR TO ISSUANCE OF SHARED SEPTIC SYSTEM PERMIT.
- ALL PRESSURE SEWER IS TO BE PRESSURE TESTED ACCORDING TO THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS STANDARDS AND SPECIFICATIONS.
- THE CONTRACTOR SHALL NOTIFY HOWARD CO. HEALTH DEPARTMENT AT 410-313-1771 AT LEAST FIVE (5) WORKING DAYS BEFORE ANY PRESSURE TEST OF PRESSURE SEWERS, AND ANY SEPTIC TANKS VACUUM OR WATER TESTING IS PERFORMED.
- THE DEVELOPER SHALL BE RESPONSIBLE FOR THE REQUIREMENTS AND METHOD OF INSTALLATION OF GRINDER PUMP AND ITS APPURTENANCES.
- Monitoring wells to be installed after trench installation is completed.
- LOTS WITH "CELLAR NOT SERVED VIA GRAVITY" IS INDICATED, EJECTOR PUMPS LOCATED INSIDE THE BASEMENT ARE REQUIRED IN ORDER TO SERVICE THE CELLAR.
- THE BAT UNIT LOCATIONS AS SHOWN ON THIS PLAN ARE PRELIMINARY. THE HEALTH DEPARTMENT MAY APPROVE REVISED LOCATIONS ON A BAT UNIT SITE PLAN ASSOCIATED WITH THE BUILDING PERMIT FOR EACH LOT. ALL BAT UNITS MUST BE LOCATED AT LEAST 100' FROM ALL WELLS.



**VICINITY MAP**  
SCALE: 1" = 600'

TYPE OF BUILDING:	SFD
NO. OF LOTS/PARCELS/UNITS:	6
NUMBER OF SHC'S:	6
NUMBER OF WHC'S:	NA
DRAINAGE AREA:	PATUXENT
WATER ZONE:	NA
TEST GRADIENT:	NA

#### SEPTIC PRETREATMENT NOTES:

- PRETREATMENT SHALL BE PROVIDED BY USE OF A SYSTEM APPROVED BY HOWARD COUNTY THAT ACHIEVES A REDUCTION OF CONSTITUENTS EQUAL TO OR BELOW THOSE LEVELS DEFINED BY MARYLAND DEPARTMENT OF ENVIRONMENT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE AND MONITORING OF THE PRETREATMENT SYSTEM AS ESTABLISHED IN THE DEVELOPER'S AGREEMENT WITH THE PRETREATMENT SYSTEM MANUFACTURER OR EQUIVALENT SERVICE PROVIDER.
- THE SYSTEM SHALL PROVIDE ACCESS FOR ACCURATE SAMPLING TO ENSURE SPECIFIED LEVELS ARE MAINTAINED.
- PRETREATMENT USING BEST AVAILABLE TECHNOLOGY SHALL BE PROVIDED ON EACH INDIVIDUAL LOT PRIOR TO PUMPING UP TO THE INDIVIDUAL ON-SITE DISPOSAL SYSTEM OR PUBLICLY OWNED GRINDER PUMP.
- PRETREATMENT UNIT SHALL BE REQUIRED FOR EACH LOT.
- A PRE-TREATMENT OPERATION AND MAINTENANCE AGREEMENT MUST BE SIGNED BY THE CONTRACTOR AND RECORDED IN THE LAND RECORDS OF HOWARD COUNTY, MARYLAND, FOR EACH LOT PRIOR TO HEALTH DEPARTMENT ISSUANCE OF A PERMIT TO INSTALL THE BAT UNITS.

#### SEPTIC TANK CAPACITY

USE 5 BEDROOM HOUSE

1500 GALLONS PER 4 BEDROOM HOUSE PLUS 250 GALLONS FOR EVERY BEDROOM ABOVE 4

6 HOUSES X 1500 GALLONS/HOUSE = 9,000 GALLONS  
6 HOUSES X 1 BEDROOM/HOUSE X 250 GALLONS/BEDROOM = 1,500 GALLONS  
TOTAL REQUIREMENT = 9,000 + 1,500 = 10,500 GALLONS

USE TWO 5,300 GALLON TANKS

SHEET INDEX	
NO.	DESCRIPTION
1	TITLE SHEET
2	PLAN AND PROFILE VIEW PUBLIC WATER & SEWER MAINS
3	DESIGN CHARTS
4	SEPTIC TANK AND WELL DESIGN
5	CONSTRUCTION DETAILS
6	PERCOLATION TEST RESULTS
7	STANDARD DETAILS

#### GENERAL NOTES PART I

- APPROXIMATE LOCATIONS OF EXISTING MAINS ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING MAINS AND SERVICES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
- TOPOGRAPHIC FIELD SURVEYS WERE PERFORMED IN MAY, 2007 BY ILL. ADCOCK & ASSOCIATES AND IN FEBRUARY, 2003 BY BENCHMARK ENGINEERING, INC.
- HORIZONTAL AND VERTICAL SURVEY CONTROLS:  
THE COORDINATES SHOWN ON THE DRAWINGS ARE BASED ON MARYLAND STATE REFERENCE SYSTEM NAD 83/91 AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS NO. 508A AND NO. 0015.  
ALL VERTICAL CONTROLS ARE BASED ON NAVD 88. VERTICAL CONTROLS PROVIDED ON THE DRAWINGS ARE 508A AND 0015.  
4. ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS UNLESS OTHERWISE NOTED ON THE PLANS.
- CLEAR ALL UTILITIES BY A MINIMUM OF 12 INCHES. CLEAR ALL POLES BY 5'-0" MINIMUM OR TUNNEL AS REQUIRED UNLESS OTHERWISE NOTED. THE OWNER HAS CONTACTED THE UTILITY COMPANIES AND HAS MADE ARRANGEMENTS FOR BRACING OF POLES AS SHOWN ON THE DRAWINGS. IN THE EVENT THE CONTRACTOR'S WORK REQUIRES THE BRACING OF ADDITIONAL POLES, ANY COST INCURRED BY THE OWNER FOR THE BRACING OF ADDITIONAL POLES OR DAMAGES SHALL BE DEDUCTED FROM MONIES OWED THE CONTRACTOR. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES TO SCHEDULE THE BRACING OF THE POLES.
- FOR DETAILS NOT SHOWN ON THE DRAWING, AND FOR MATERIALS AND CONSTRUCTION METHODS, USE HOWARD COUNTY DESIGN MANUAL VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (LATEST EDITION). THE CONTRACTOR SHALL HAVE A COPY OF VOLUME IV ON THE JOB.
- WHERE TEST PITS HAVE BEEN MADE ON EXISTING UTILITIES, THEY ARE NOTED BY THE SYMBOL AT THE LOCATIONS OF THE TEST PITS. A NOTE OR NOTES CONTAINING THE RESULTS OF THE TEST PIT OR PITS IS INCLUDED ON THE DRAWINGS. EXISTING UTILITIES IN THE VICINITY OF THE PROPOSED WORK FOR WHICH TEST PITS HAVE NOT BEEN DUG SHALL BE LOCATED BY THE CONTRACTOR TWO WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS AT HIS OWN EXPENSE.
- THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES OR AGENCIES AT LEAST FIVE WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:  
AT&T.....1-800-252-1133  
BGE (CONTRACTOR SERVICES).....410-637-8713  
BGE (EMERGENCY).....410-685-0123  
BUREAU OF UTILITIES.....410-313-4900  
COLONIAL PIPELINE CO.....410-795-1390  
MISS UTILITY.....1-800-257-7777  
STATE HIGHWAY ADMINISTRATION.....410-531-5533  
VERIZON.....1-800-743-0033/410-224-9210
- TREES AND SHRUBS ARE TO BE PROTECTED FROM DAMAGE TO THE MAXIMUM EXTENT. TREES AND SHRUBS LOCATED WITHIN THE CONSTRUCTION STRIP ARE NOT TO BE REMOVED OR DAMAGED BY THE CONTRACTOR.
- THE CONTRACTOR SHALL REMOVE TREES, STUMPS AND ROOTS ALONG LINE OF EXCAVATION. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONSTRUCTION OF THE MAIN.
- THE CONTRACTOR SHALL NOTIFY THE BUREAU OF HIGHWAYS, HOWARD COUNTY, AT (410)-313-7450 AT LEAST FIVE WORKING DAYS BEFORE OPEN CUTTING OR BORING/JACKING OF ANY COUNTY ROAD FOR LAYING WATER/SEWER MAINS OR HOUSE CONNECTIONS. THE APPROVAL OF THESE DRAWINGS WILL CONSTITUTE COMPLIANCE WITH DPW REQUIREMENTS PER SECTION 18.114(G) OF THE HOWARD COUNTY CODE.

#### PART III SEWER

- ALL SEWER MAINS SHALL BE D.I.P. OR P.V.C. UNLESS OTHERWISE NOTED.
- ALL MANHOLES SHALL BE 4'-0" INSIDE DIAMETER UNLESS OTHERWISE NOTED.
- FORCE MAINS SHALL BE SDR 21 OR HDPE EQUIVALENT.
- MANHOLES SHOWN WITH 12" AND 16" WALLS ARE FOR BRICK MANHOLES ONLY.
- MANHOLES DESIGNATED W.T. IN PLAN AND PROFILE SHALL HAVE WATER TIGHT FRAME AND COVER, STANDARD DETAIL GS-52. WHERE WATER TIGHT MANHOLE FRAMES AND COVERS ARE USED, SET TOP OF FRAME 1'-8" ABOVE FINISHED GRADE UNLESS OTHERWISE NOTED ON THE DRAWINGS.
- HOUSE(S) WITH THE SYMBOL "C.A.S." INDICATES THAT CELLAR CANNOT BE SERVED.
- THE DEVELOPER SHALL PROVIDE ONE SPARE GRINDER PUMP TO THE BUREAU OF UTILITIES UPON DEDICATION OF THE SHARED SEPTIC SYSTEM TO THE COUNTY.

APPROVED:

APPROVED FOR PRIVATE WATER AND A SHARED SEPTIC SYSTEM FOR LOTS 12-17 AND PRIVATE WATER AND PRIVATE SEWAGE FOR LOTS 2-11, 18-23 AND BUILDABLE PRESERVATION PARCEL 'A'.

*Bryan Lee Moore* 6/5/2014  
COUNTY HEALTH OFFICER DATE

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

*John K. Robertson* 6/14/14  
HOWARD SOIL CONSERVATION DISTRICT DATE

SEDIMENT CONTROL MEASURES FOR THIS CONTRACT WILL BE IMPLEMENTED IN ACCORDANCE WITH SECTION 308 OF THE HOWARD COUNTY STANDARD SPECIFICATIONS AND AS PER F-13-112.

**\*\*MAXIMUM NUMBER OF BEDROOMS FOR EACH HOUSE ON LOTS 12-17 SHALL BE FIVE (5).**

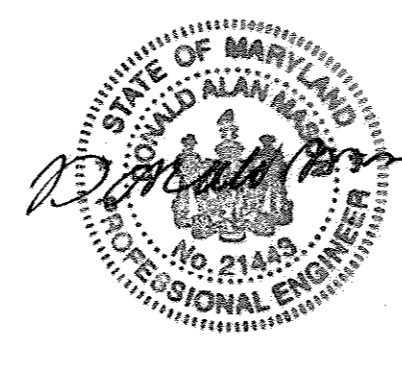
**\*\*ALL SEWAGE GRINDER PUMPS ARE TO BE PUBLICLY OWNED AND MAINTAINED**

AS-BUILT CERTIFICATION  
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications

Donald Mason, P.E. Date: 2-6-18

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. 21043, Expiration Date: 12-21-18



DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

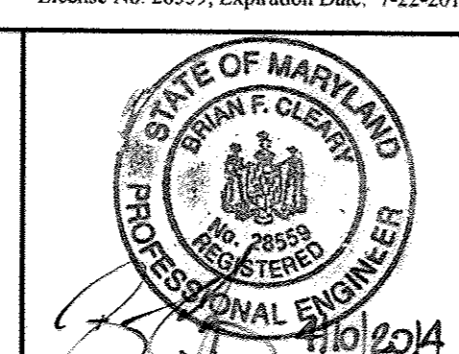
*Steve C. Green* 6/23/14  
CHIEF, BUREAU OF UTILITIES DATE

DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

*John K. Robertson* 6-12-14  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

**BENCHMARK**  
ENGINEERS AND SURVEYORS  
ENGINEERING, INC.

8480 BALTIMORE NATIONAL PIKE & SUITE 310 ELLICOTT CITY, MARYLAND 21043  
(P) 410-465-6106 (F) 410-465-6644  
WWW.BEN-CIVLENGINEERING.COM



DESIGN: JMC					
DRAFT: JMC/DBT					
CHK: BFC					
DATE: 03/2014	BY	NO.	REVISIONS	DATE	

**TITLE SHEET**  
PUBLIC SHARED SEPTIC PLAN

600 SCALE MAP NO: 34 BLOCK: 24 200 SCALE MAP NO: 202

**REGAN PROPERTY**  
LOTS 2 thru 23, BUILDABLE PRESERVATION PARCEL 'A' and  
NON-BUILDABLE PRESERVATION PARCELS 'B' thru 'E'

TAX MAP: 34 - BLOCK: 24 - PARCEL: 200 - ZONED: RR-DEO - ELECTION DISTRICT: 5

**CONTRACT NO. 50-4742-D**

**AS-BUILT**

SCALE:  
AS SHOWN

SHEET NO.  
1 OF 7

AS-BUILT CERTIFICATION  
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications  
Donald Mason, P.E. Date: 2-6-18

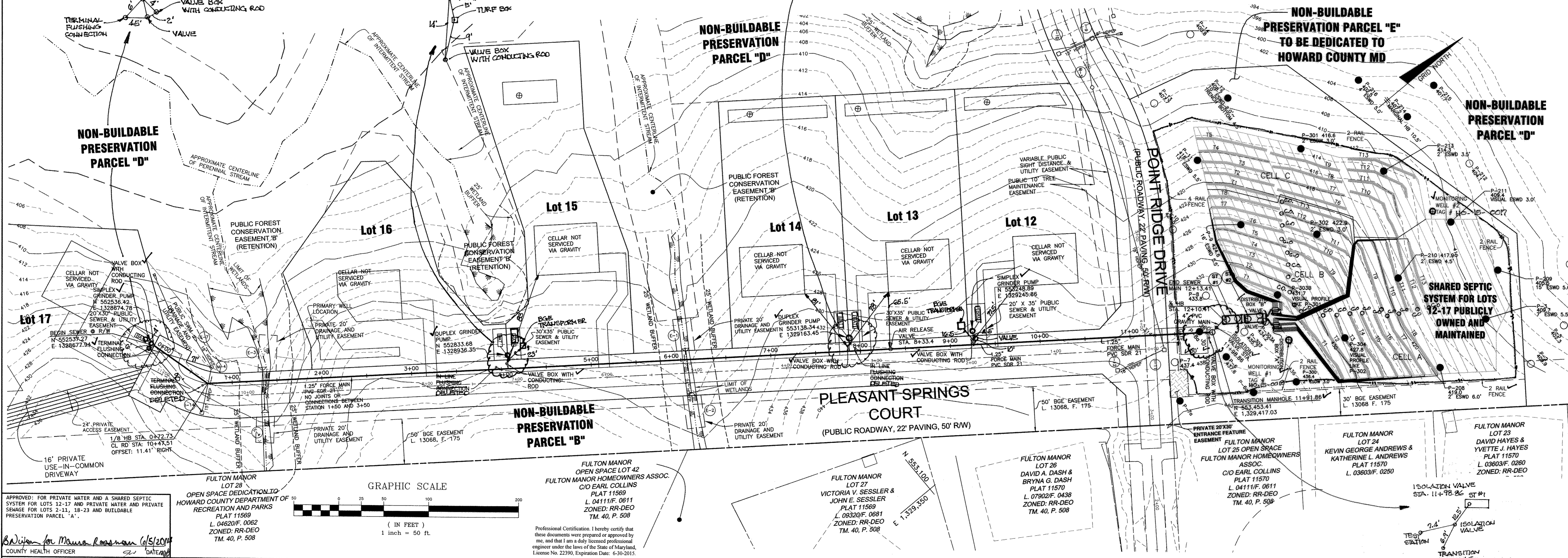
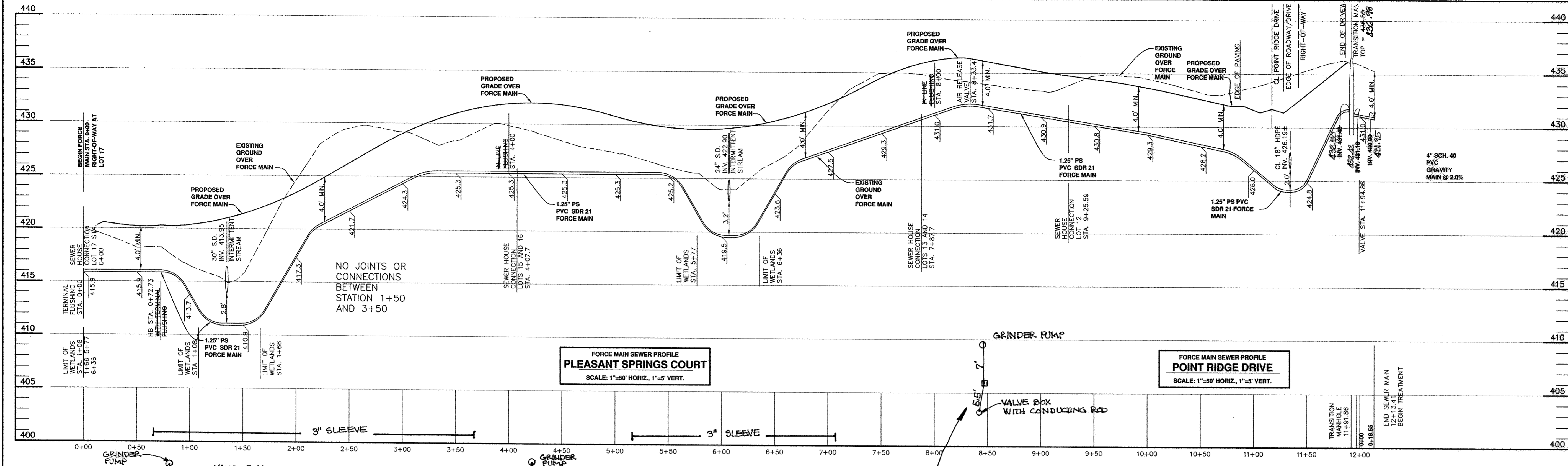


Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.  
License No. 21443 Expiration Date: 12-24-19

OWNER/DEVELOPER:  
MB HIGHLAND RESERVE, LLC  
1686 EAST GUDE DRIVE  
ROCKVILLE, MD 20850  
301-762-9511

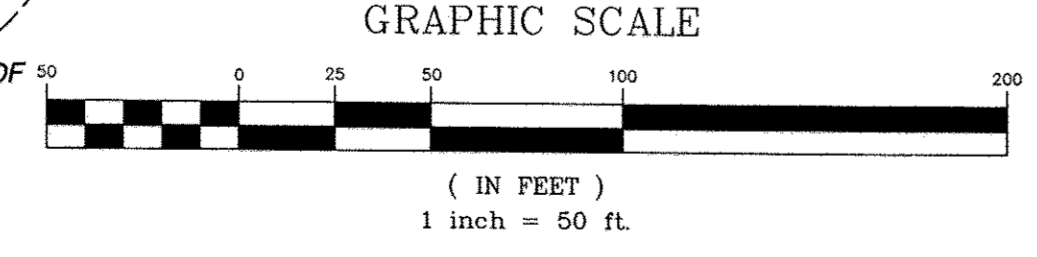
**\*\*MAXIMUM NUMBER OF BEDROOMS FOR EACH HOUSE ON LOTS 12-17 SHALL BE FIVE (5).**

**\*\*ALL SEWAGE GRINDER PUMPS ARE TO BE PUBLICLY OWNED AND MAINTAINED**



APPROVED: FOR PRIVATE WATER AND A SHARED SEPTIC SYSTEM FOR LOTS 12-17 AND PRIVATE WATER AND PRIVATE SEWAGE FOR LOTS 2-11, 18-23 AND BUILDABLE PRESERVATION PARCEL 'A'.  
Wojan for Maria Rosman 6/5/2014  
CITY HEALTH OFFICER

OPEN SPACE DEDICATION TO HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS PLAT 11569 L. 04620/F. 0062 ZONED: RR-DEO TM. 40, P. 508



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. 22390, Expiration Date: 6-30-2015.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE: 5/2/14	DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 6-12-14	<b>BENCHMARK</b> ENGINEERS AND SURVEYORS PLANNERS ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLIOTT CITY, MARYLAND 21043 (P) 410-465-8105 (F) 410-465-6544 WWW.BE-CIVLENGINEERING.COM	PROFESSIONAL ENGINEER DONALD MASON LICENSE NO. 21443 EXPIRES 12-24-19	DESIGN: JMC DRAFT: JMC/DBT CHK: BFC DATE: 03/2014	PLAN AND PROFILE PUBLIC SHARED SEPTIC PLAN 600 SCALE MAP NO: 34 BLOCK: 24 200 SCALE MAP NO: 202	<b>REGAN PROPERTY</b> LOTS 2 thru 23, BUILDABLE PRESERVATION PARCEL 'A' and NON-BUILDABLE PRESERVATION PARCELS 'B' thru 'E' TAX MAP: 34 - BLOCK: 24 - PARCEL: 200 - ZONED: RR-DEO - ELECTION DISTRICT: 5 <b>CONTRACT NO. 50-4742-D</b>	SCALE: AS SHOWN SHEET NO. 2 OF 7
---	--	---	--	--	---	--	---

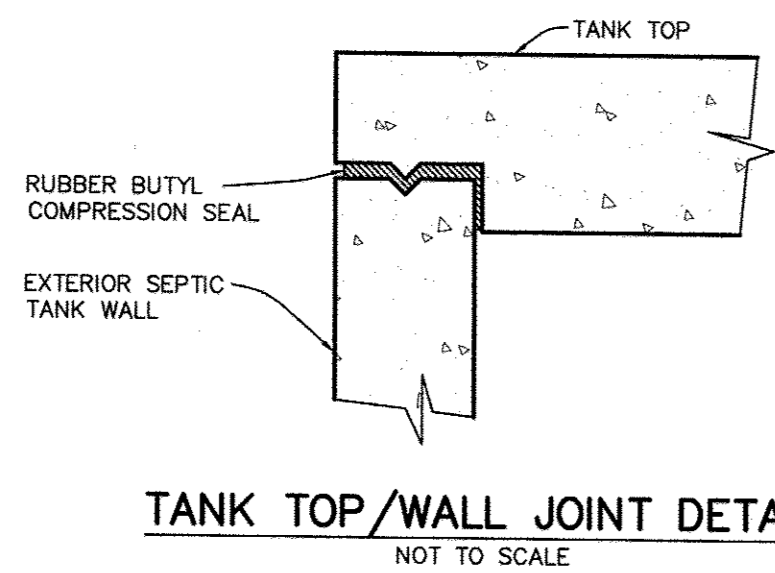
Deep Trench Calculations, per system	
Application Rate	4500 GPD
Septic Flow	1.2 GPD/sf
Design Flow	3750 GPD
Deep Trenches	
Trench Width	36" or 3.0 ft
Effective Depth	12" or 1.0 ft
Percent of Std. Trench	83.33 %
Trench Length	
Length of Std. Trench	1250 ft
Length of Deep Trench	1042 ft
Depth of Trench	
Effective area beginning depth	4 ft
Bottom Depth	5 ft
Trench Separation	
Separation Distance	9 ft
Distance Center to Center	12 ft

Prepared By: John Carney  
September 30, 2013

PRELIMINARY PRESSURE SEWER - PIPE SIZING AND BRANCH ANALYSIS  
Regan Property

Zone Number	Connections to Zone	Number of Pumps in Zone	Accum. per Pump	Max Flow (gpm)	Max. Sizing (GPM)	Pipe Size (inches)	Max. Velocity (FPS)	Length of Main (ft)	Friction Loss Factor (ft/100 ft)	Loss This Zone	Accum. Friction Loss (feet)	Max. Main Elevation	Minimum Pump Elevation (feet)	Pump Head (feet)	Total Dynamic Head (ft)	
1.00	2.00	1	1	750	11.00	1.25	2.00	407.00	1.33	5.40	48.90	432.00	413.55	18.45	67.35	
2.00	3.00	2	3	1500	11.00	2	22.00	1.25	4.00	679.10	4.79	32.53	432.00	421.25	10.75	54.25
3.00	3.00	1	4	750	11.00	3	33.00	1.25	6.01	108.10	10.15	10.97	431.48	422.75	8.73	19.70

This spreadsheet was calculated using pipe diameters for: SDR21 PVC  
Friction loss calculations were based on a Constant for inside roughness "C" of: 140



5,300 GALLON SEPTIC TANK DATA				
	TANK ELEVATION	INVERT ELEVATION	TANK COORDINATES	MANHOLE RIM ELEVATION
SEPTIC TANK #1	TOP = 432.47	431.75 430.8 IN	N 553474.17 E 1329416.13	432.18 435.00
	BOT = 425.30	424.77 423.8 OUT	N 553490.20 E 1329428.08	432.18 435.00
SEPTIC TANK #2	TOP = 431.87	431.53 430.2 IN	N 553493.41 E 1329430.47	432.18 434.50
	BOT = 424.70	424.26 423.0 OUT	N 553509.45 E 1329442.43	432.18 434.50

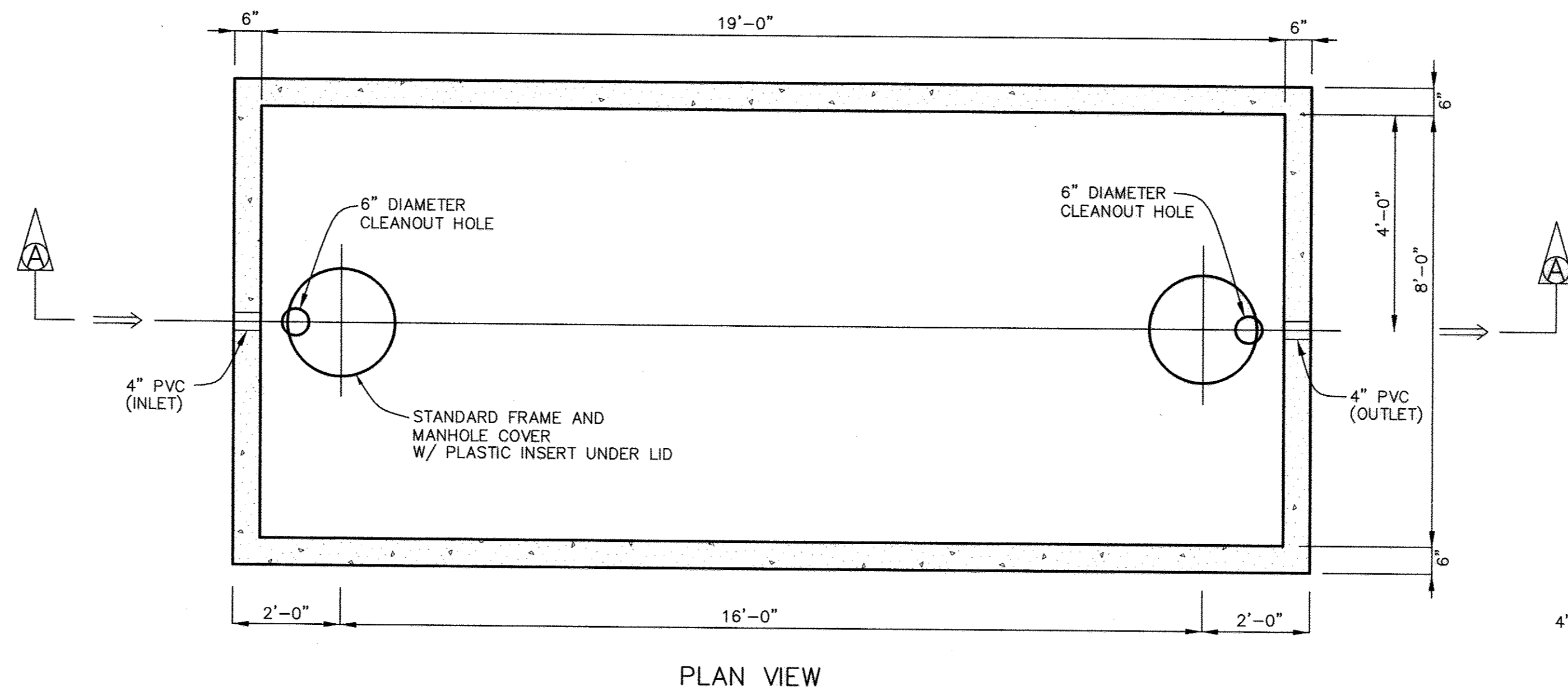
REINFORCING:  
WALLS - #4 REBAR, 8" C/C E/W  
SLAB TOP - #4 REBAR, 8" C/C E/W  
BASE - #4 REBAR, 8" C/C E/W  
REBAR GRADE 60

JOINTS SEALED WITH BUTYL ROPE  
FORM AND MORTAR.

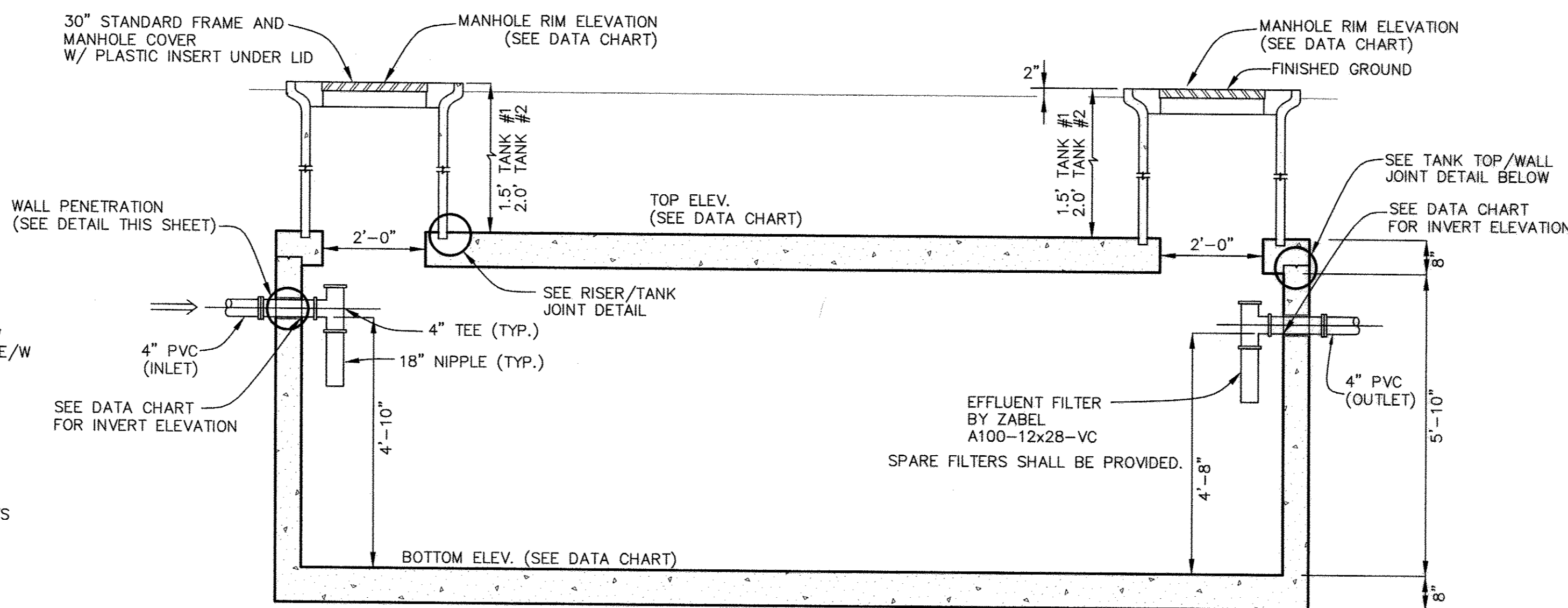
CONCRETE 4,000 PSI IN 28 DAYS

INTERIOR COATED WITH TWO COATS  
INERT COATING.

- NOTES:
1. MANHOLE RIM ELEVATION SHOWN HEREON IS AT THE CENTER OF THE RIM.
  2. TANK COORDINATES ARE AT THE MIDPOINT OF EACH END.



PLAN VIEW

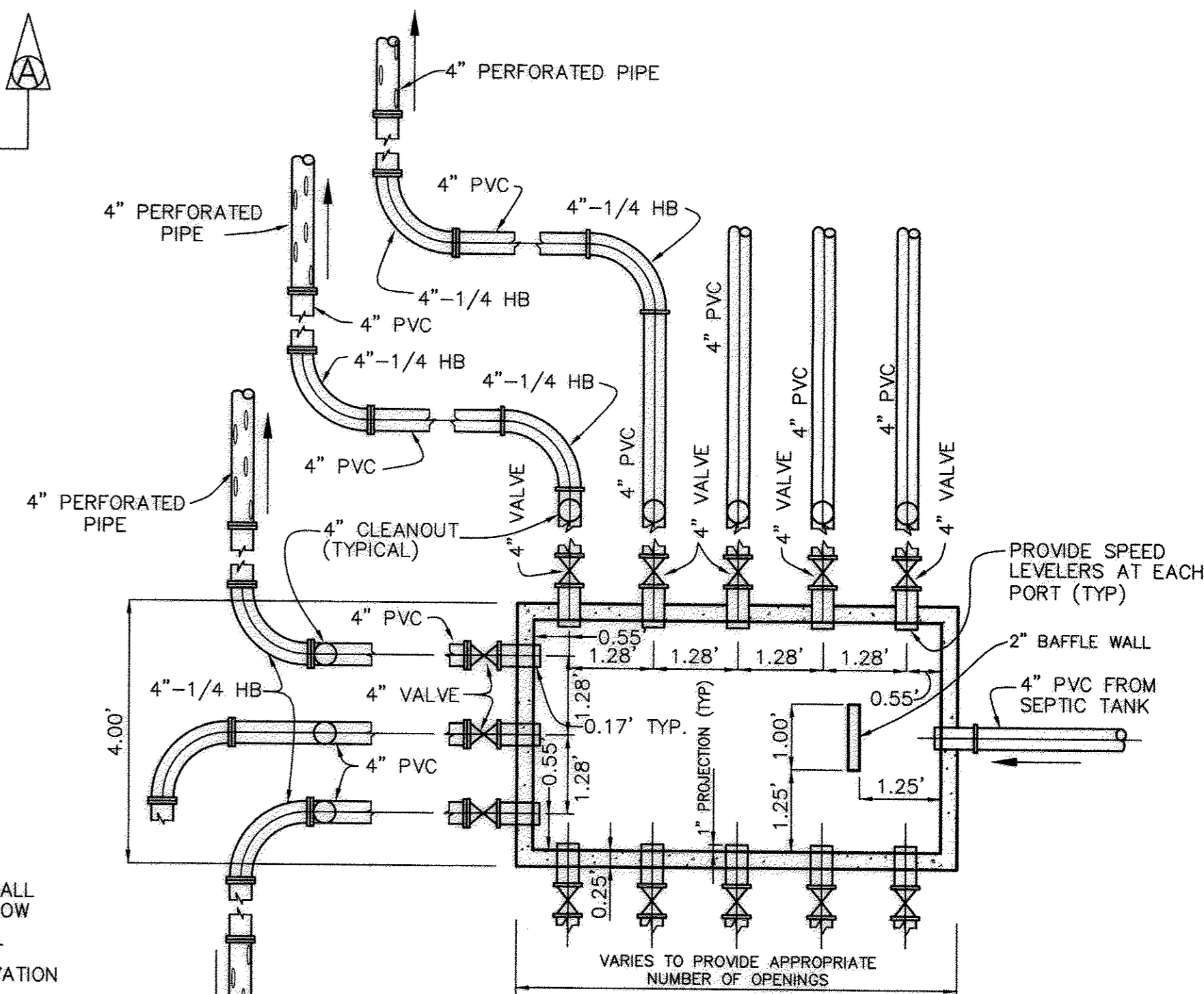


SECTION VIEW A-A

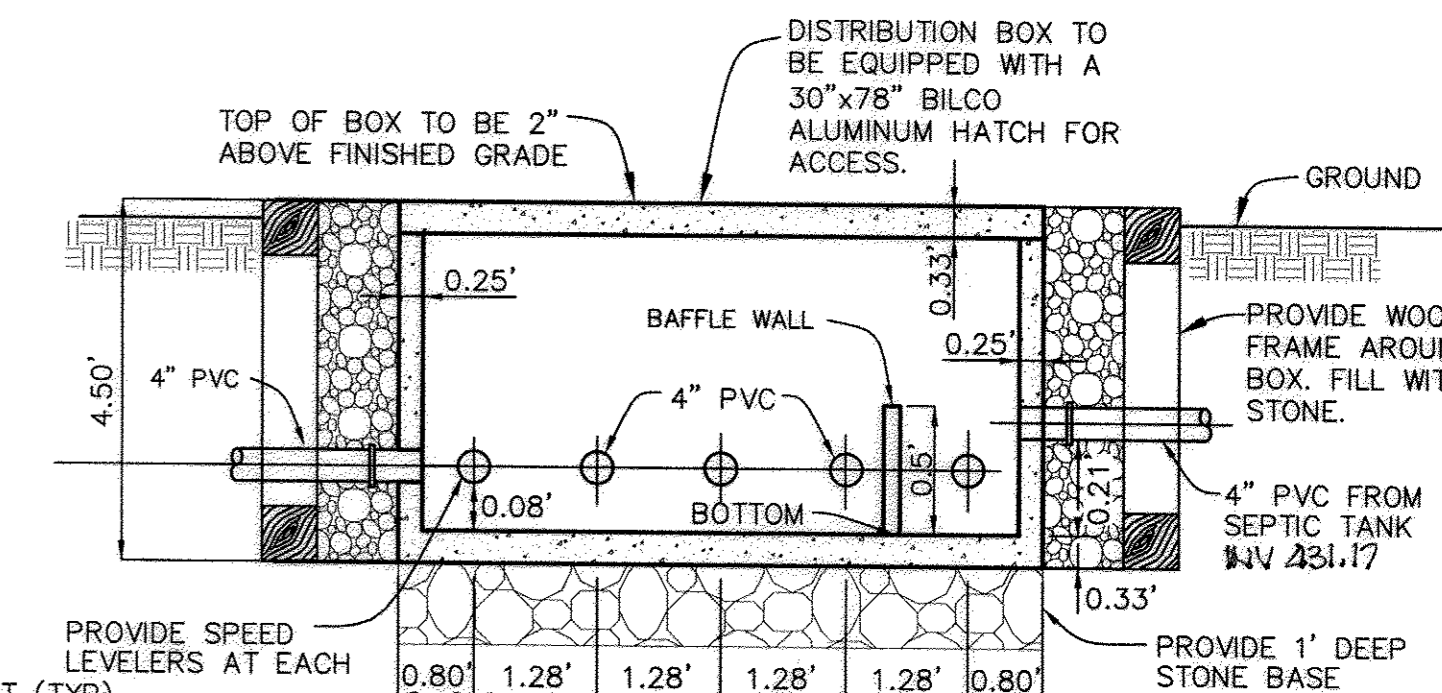
SEPTIC TANK TO BE PRECAST BY J.F. GILLESPIE, INC., MAYER BROTHERS PRECAST OR EQUAL.

**PRECAST CONCRETE 5,300 GALLON CAPACITY SINGLE COMPARTMENT SEPTIC TANK**

SCALE: 1" = 2'



PLAN VIEW



SECTION VIEW

**TYPICAL CONCRETE DISTRIBUTION BOX DETAIL**

NOT TO SCALE

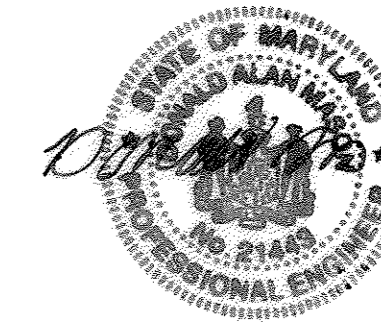
DISTRIBUTION BOX DATA		
BOX NO.	INLET SIDE	TOP ELEV.
BOX #1	N 553515.64 E 1329447.04	435.11 433.6

COORDINATE LOCATION IS AT THE OUTSIDE EDGE OF THE BOX.

AS-BUILT CERTIFICATION  
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications

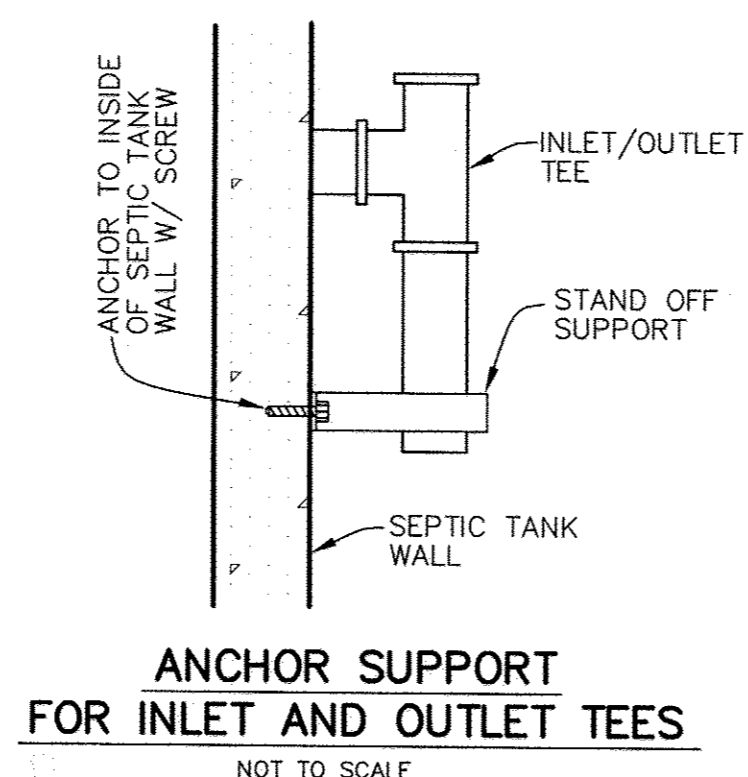
Donald Mason, P.E.

Date: 2-6-19

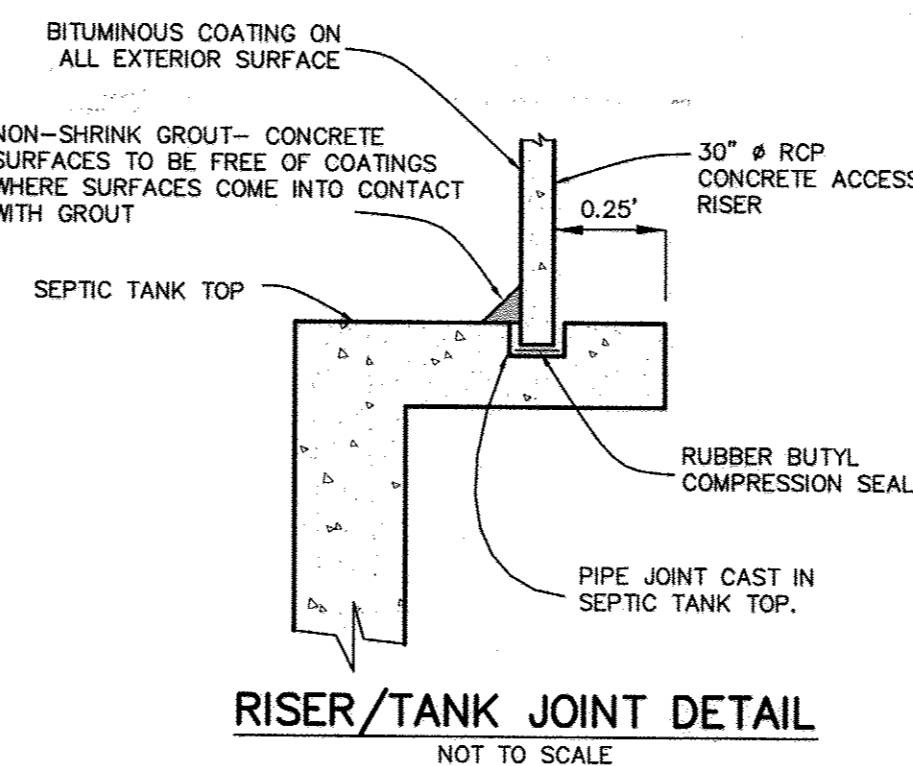


Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

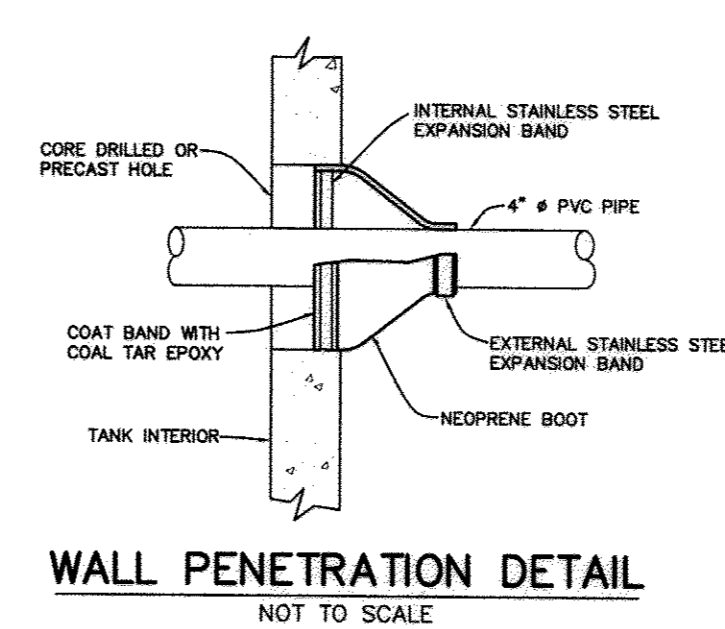
License No. 21443 Expiration Date: 12-31-19



ANCHOR SUPPORT FOR INLET AND OUTLET TEES



RISER/TANK JOINT DETAIL

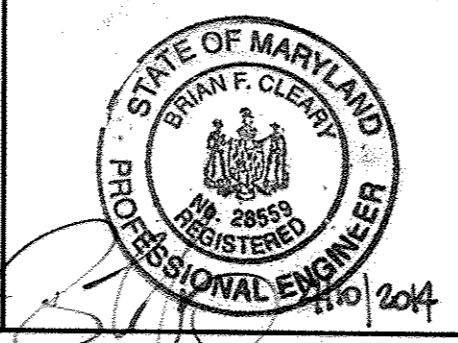


WALL PENETRATION DETAIL

APPROVED: FOR PRIVATE WATER AND A SHARED SEPTIC SYSTEM FOR LOTS 12-17 AND PRIVATE WATER AND PRIVATE SEWAGE FOR LOTS 2-11, 18-23 AND BUILDABLE PRESERVATION PARCEL 'A'.  
B. Wilson for Maura Roseman 6/5/2014  
COUNTY HEALTH OFFICER

OWNER/DEVELOPER:  
MB HIGHLAND RESERVE, LLC  
1686 EAST GUDE DRIVE  
ROCKVILLE, MD 20850  
301-762-9511

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. 28559, Expiration Date: 7-32-2015.



**BENCHMARK**  
ENGINEERING, INC.  
8480 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLCOTT CDT, MARYLAND 21043  
(P) 410-465-6105 (F) 410-465-6144  
WWW.BEI-ENGINEERING.COM

DESIGN: JMC					
DRAFT: JMC/DBT					
CHK: BFC					
DATE: 03/2014	BY	NO.	REVISIONS	DATE	

**DESIGN CHARTS  
PUBLIC SHARED SEPTIC PLAN**

600 SCALE MAP NO: 34 BLOCK: 24 200 SCALE MAP NO: 202

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND  
Steve C. ... 6-12-14  
CHIEF, BUREAU OF UTILITIES

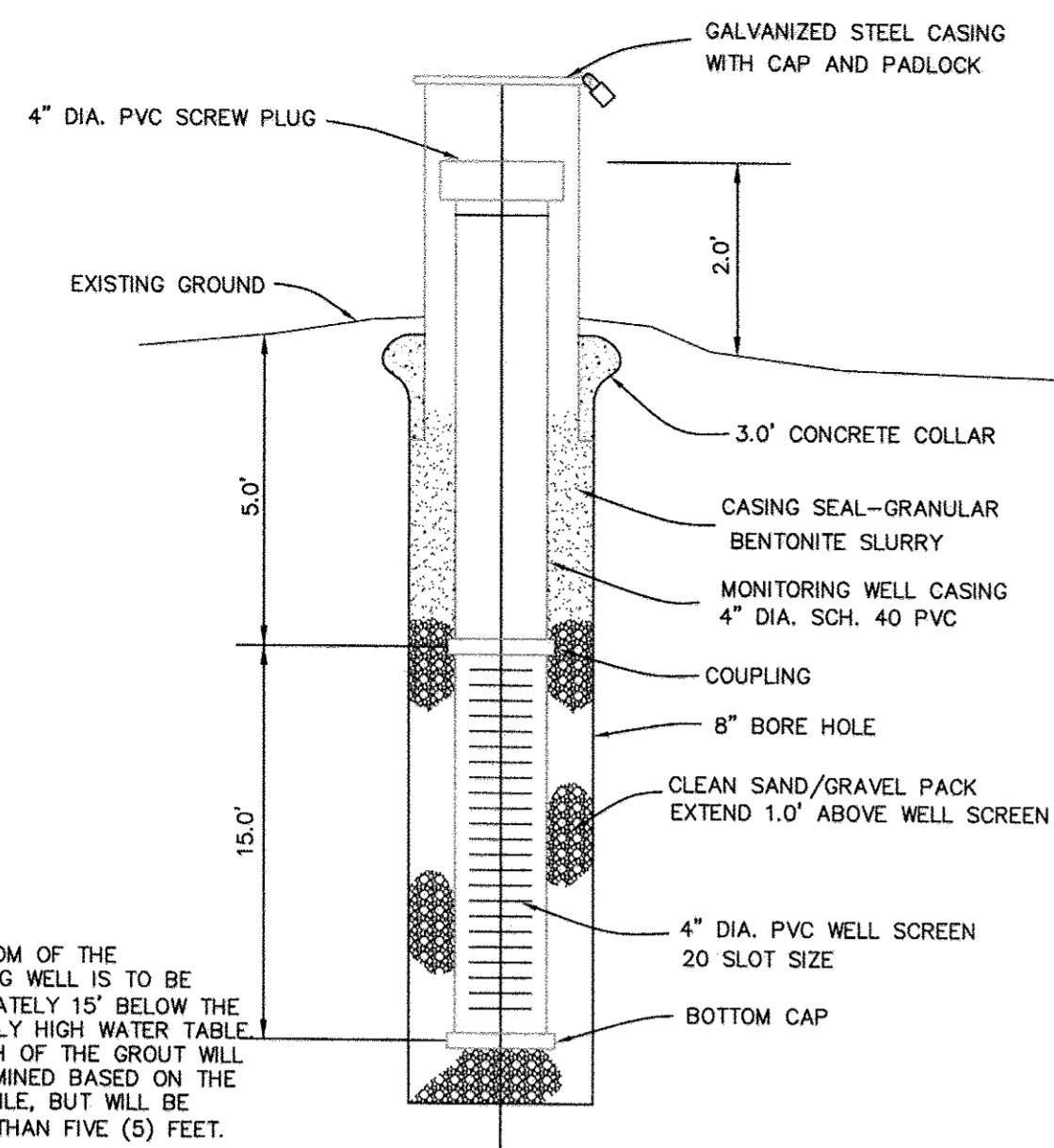
DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND  
Chief, Development Engineering Division

**REGAN PROPERTY**  
LOTS 2 thru 23, BUILDABLE PRESERVATION PARCEL 'A' and  
NON-BUILDABLE PRESERVATION PARCELS 'B' thru 'E'  
TAX MAP: 34 - BLOCK: 24 - PARCEL: 200 - ZONED: RR-DEO - ELECTION DISTRICT: 5

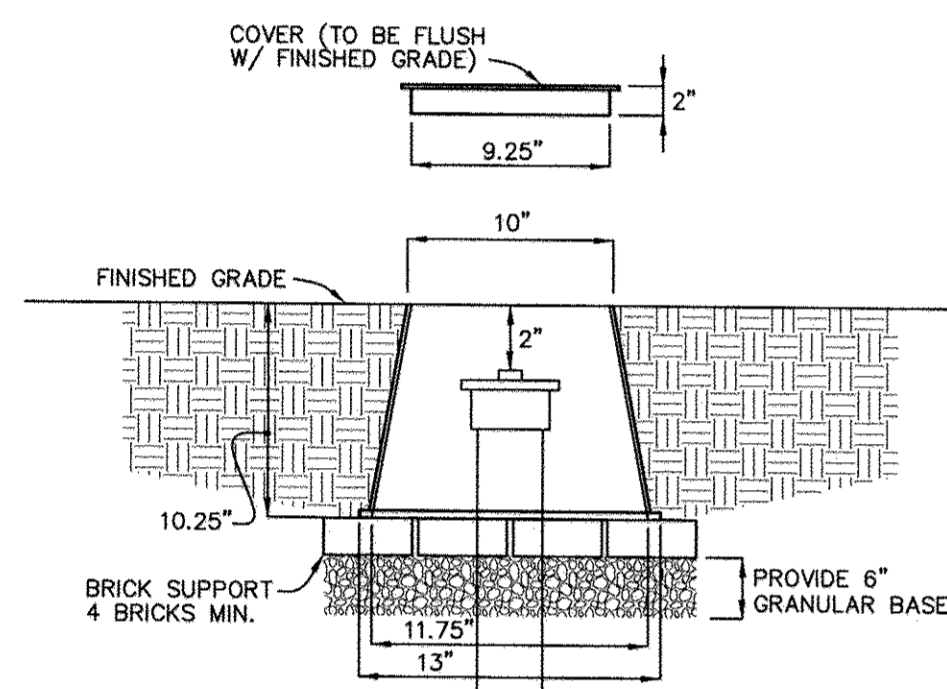
**CONTRACT NO. 50-4742-D**

AS-BUILT

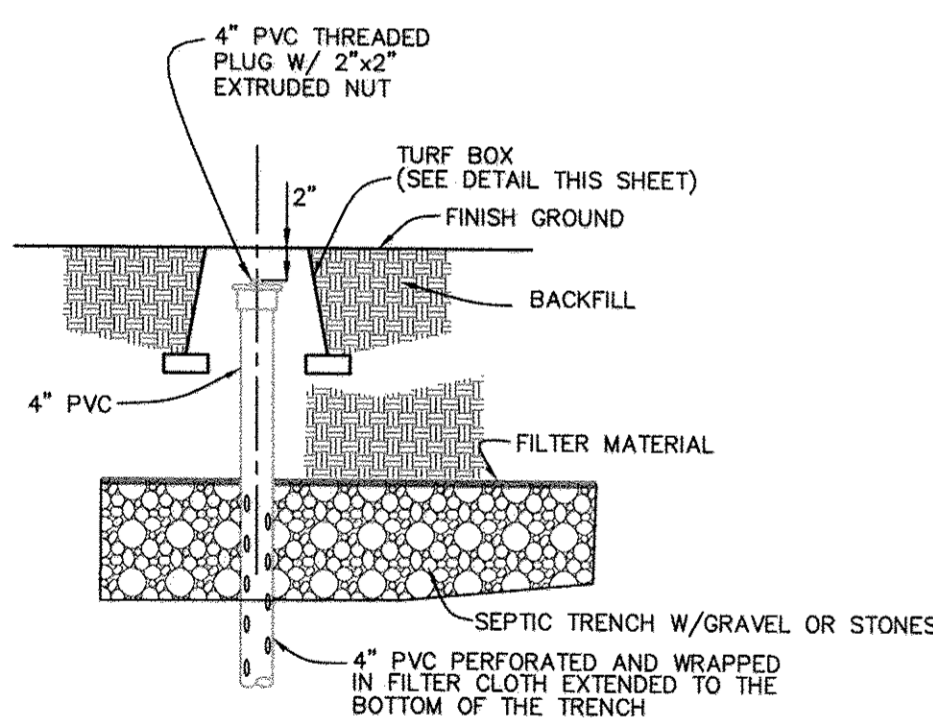
SCALE:  
AS SHOWN  
SHEET NO.  
3 OF 7



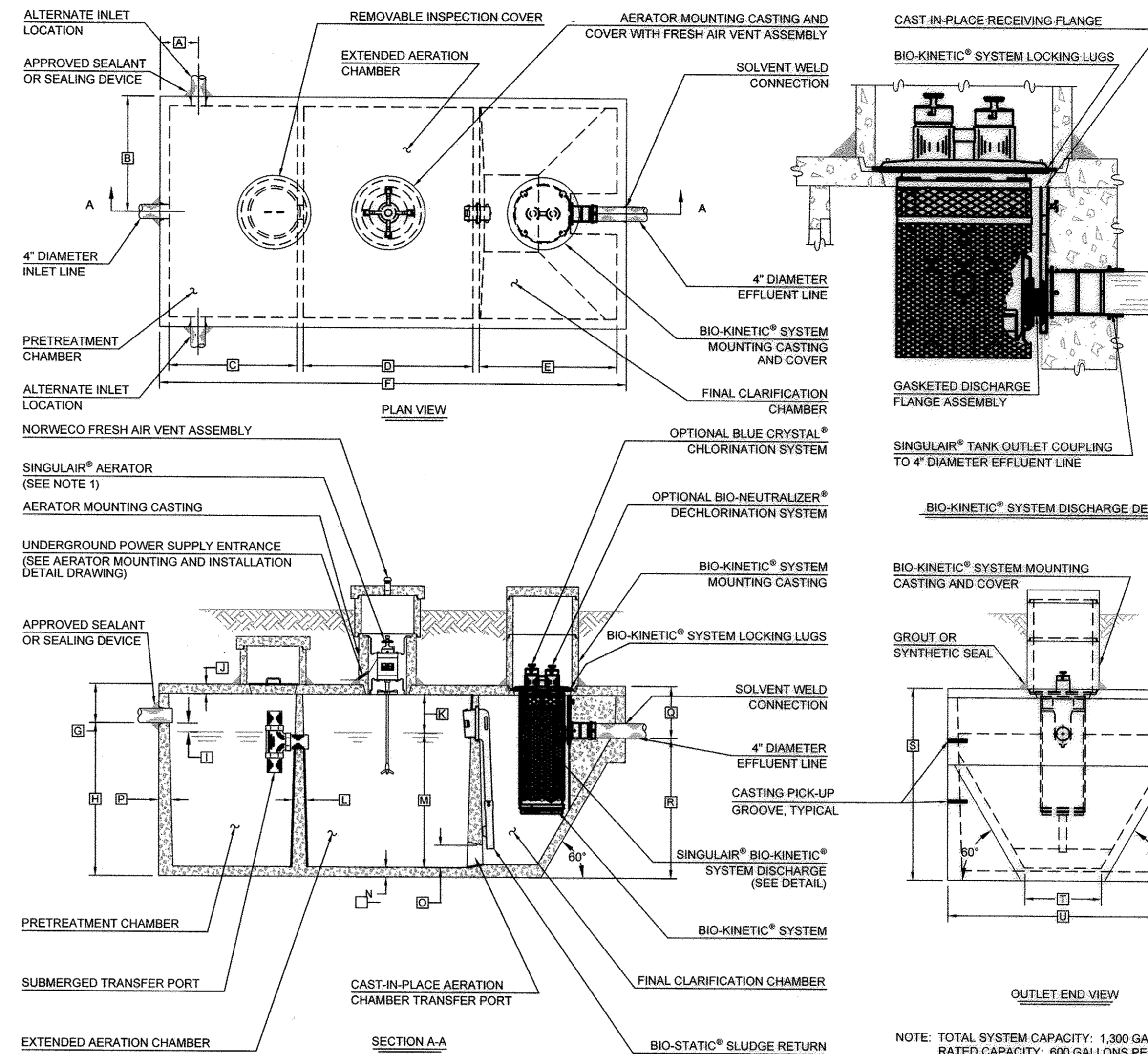
**MONITORING WELL DETAIL**  
NOT TO SCALE



**TURF BOX DETAIL**  
NOT TO SCALE



**OBSERVATION PIPE DETAIL**  
NOT TO SCALE



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

SEE MANUFACTURER SPECIFICATIONS FOR DETAILS. WWW.NORWECO.COM

CRITICAL DIMENSIONS			
A	1'-0"	B	0'-3"
B	3'-0"	C	0'-6"
C	3'-4"	D	0'-6"
D	4'-5"	E	1'-4"
E	3'-7"	F	3'-8"
F	12'-2"	G	5'-0"
G	1'-0"	H	2'-0"
H	0'-3"	I	5'-8"
I	0'-3"	J	0'
J	1'-0"	K	0'
K	0'-2"	L	0'
L	3'-6"	M	0'

**AS-BUILT CERTIFICATION**  
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications  
Date: 2-6-19  
Donald Mason, P.E.

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. 21443, Expiration Date: 12-21-19



- Required BAT Site Plan Notes**
- 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.
  - The maximum depth of the BAT shall be per the manufacturer's specification, 3.0'.
  - The blower may not be located further from the tank than the manufacturer's specifications, 75'.
  - The BAT system shall be maintained and operated for the life of the system.
  - The BAT shall be operated by and maintained by a certified service provider.
  - Within one 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.
  - Electrical work for the BAT installation must be performed by a licensed electrician.
  - An agreement and Easement must be completed and signed by all applicable parties, and recorded in Land Records of Howard County.
  - The Health Department requires documentation for the start-up certification from the manufacturer prior to final approval of the installation.

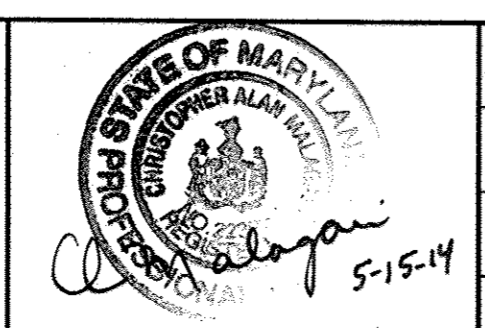
Lot	Grinder Invert in	BAT Tank Invert out	BAT Tank Invert in	BAT Tank Top	Ground Over	Cover (ft)	Fall from Tank to Grinder (ft)
12	426.67	428.17	428.50	429.50	432.40	2.90	1.50
13	427.67	428.87	429.20	430.20	433.20	3.00	1.20
14	427.67	428.87	429.20	430.20	433.20	3.00	1.20
15	420.67	421.87	422.20	423.20	426.20	3.00	1.20
16	420.67	421.87	422.20	423.20	426.20	3.00	1.20
17	414.17	416.67	417.00	418.00	421.00	3.00	2.50

APPROVED: FOR PRIVATE WATER AND A SHARED SEPTIC SYSTEM FOR LOTS 12-17 AND PRIVATE WATER AND PRIVATE SEWAGE FOR LOTS 2-11+13-15 AND BUILDABLE PRESERVATION PARCEL 'A'.  
R. Mason for Maureen Rosman  
COUNTY HEALTH OFFICER  
DATE: 2/6/19

OWNER/DEVELOPER:  
MB HIGHLAND RESERVE, LLC  
1886 EAST GUIDE DRIVE  
ROCKVILLE, MD 20850  
301-762-9511

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. 22390, Expiration Date: 6-30-2015

**BENCHMARK ENGINEERING, INC.**  
ENGINEERS AND SURVEYORS PLANNERS  
8480 BALTIMORE NATIONAL PIKE SUITE 315 ELLICOTT CITY, MARYLAND 21043  
(P) 410-485-6105 (F) 410-485-8644  
WWW.BE-ENGINEERING.COM



DESIGN: JMC	
DRAFT: JMC/DBT	
CHK: -	
DATE: 03/2014	
BY: NO.	
REVISIONS	
DATE	

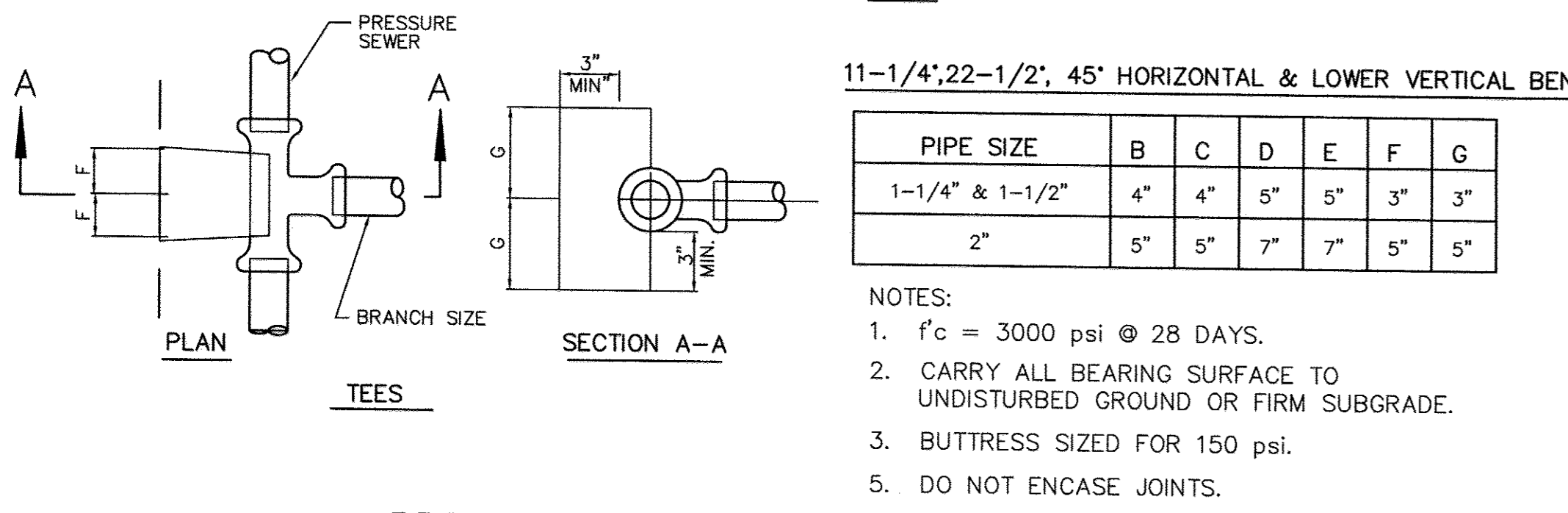
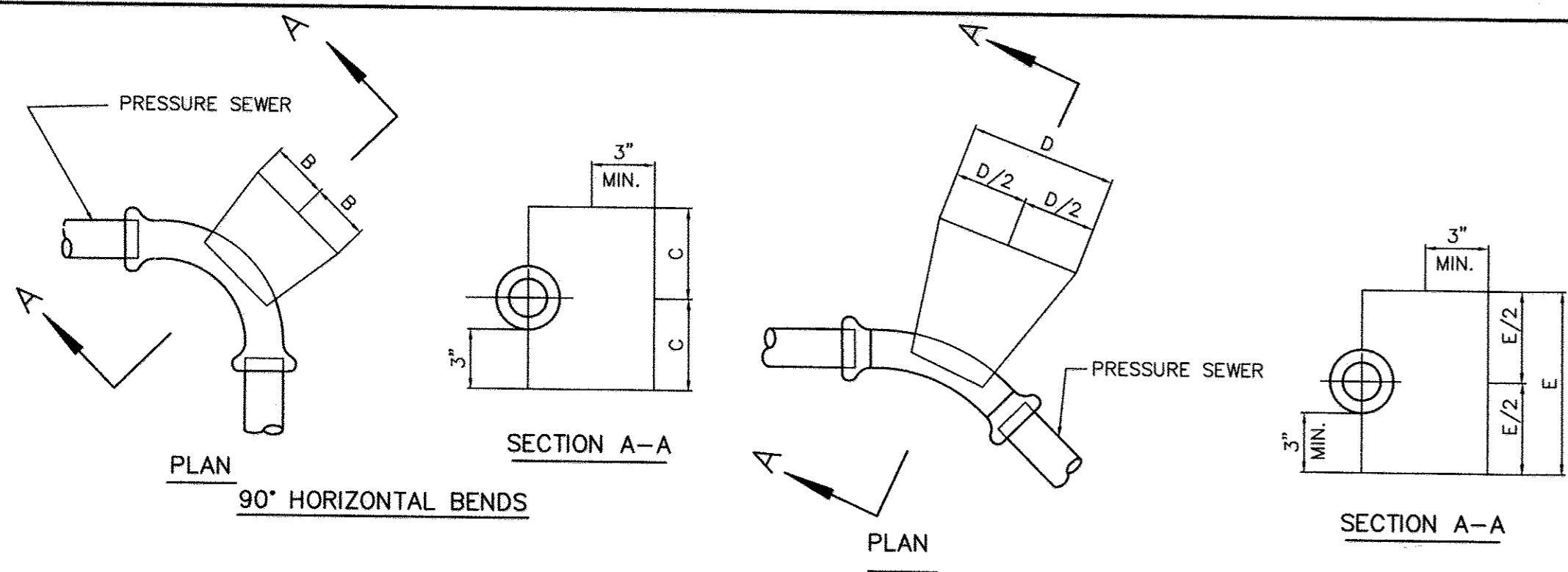
**SEPTIC TANK AND WELL DETAILS  
PUBLIC SHARED SEPTIC PLAN**

600 SCALE MAP NO: 34 BLOCK: 24 200 SCALE MAP NO: 202

**REGAN PROPERTY**  
LOTS 2 thru 23, BUILDABLE PRESERVATION PARCEL 'A' and NON-BUILDABLE PRESERVATION PARCELS 'B' thru 'E'  
TAX MAP: 34 - BLOCK: 24 - PARCEL: 200 - ZONED: RR-DEO - ELECTION DISTRICT: 5  
**CONTRACT NO. 50-4742-D**

SCALE:  
AS SHOWN  
SHEET NO.  
4 OF 7

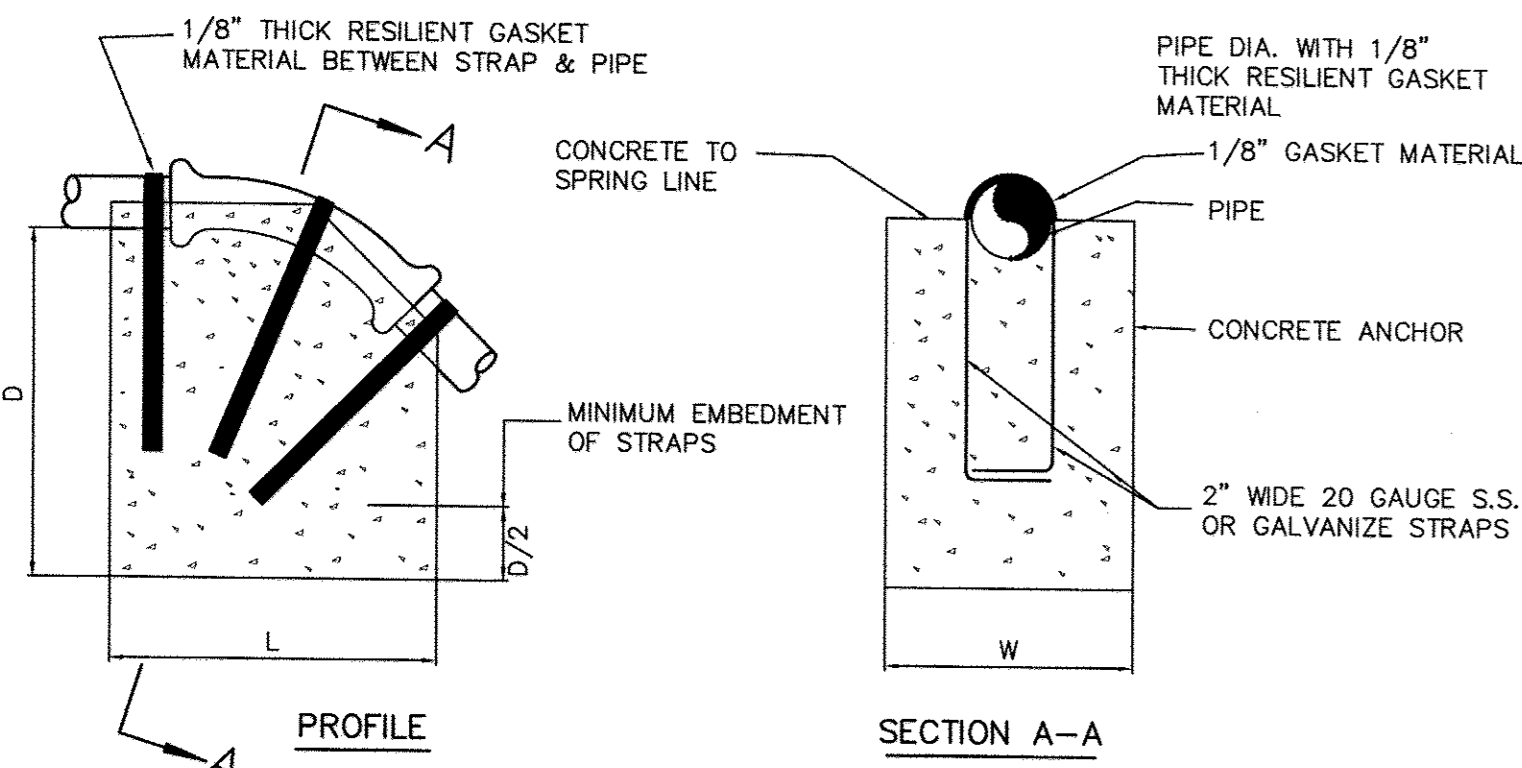
AS-BUILT



PIPE SIZE	B	C	D	E	F	G
1-1/4" & 1-1/2"	4"	4"	5"	5"	3"	3"
2"	5"	5"	7"	7"	5"	5"

- NOTES:
- f'c = 3000 psi @ 28 DAYS.
  - CARRY ALL BEARING SURFACE TO UNDISTURBED GROUND OR FIRM SUBGRADE.
  - BUTTRESS SIZED FOR 150 psi.
  - DO NOT ENCASE JOINTS.

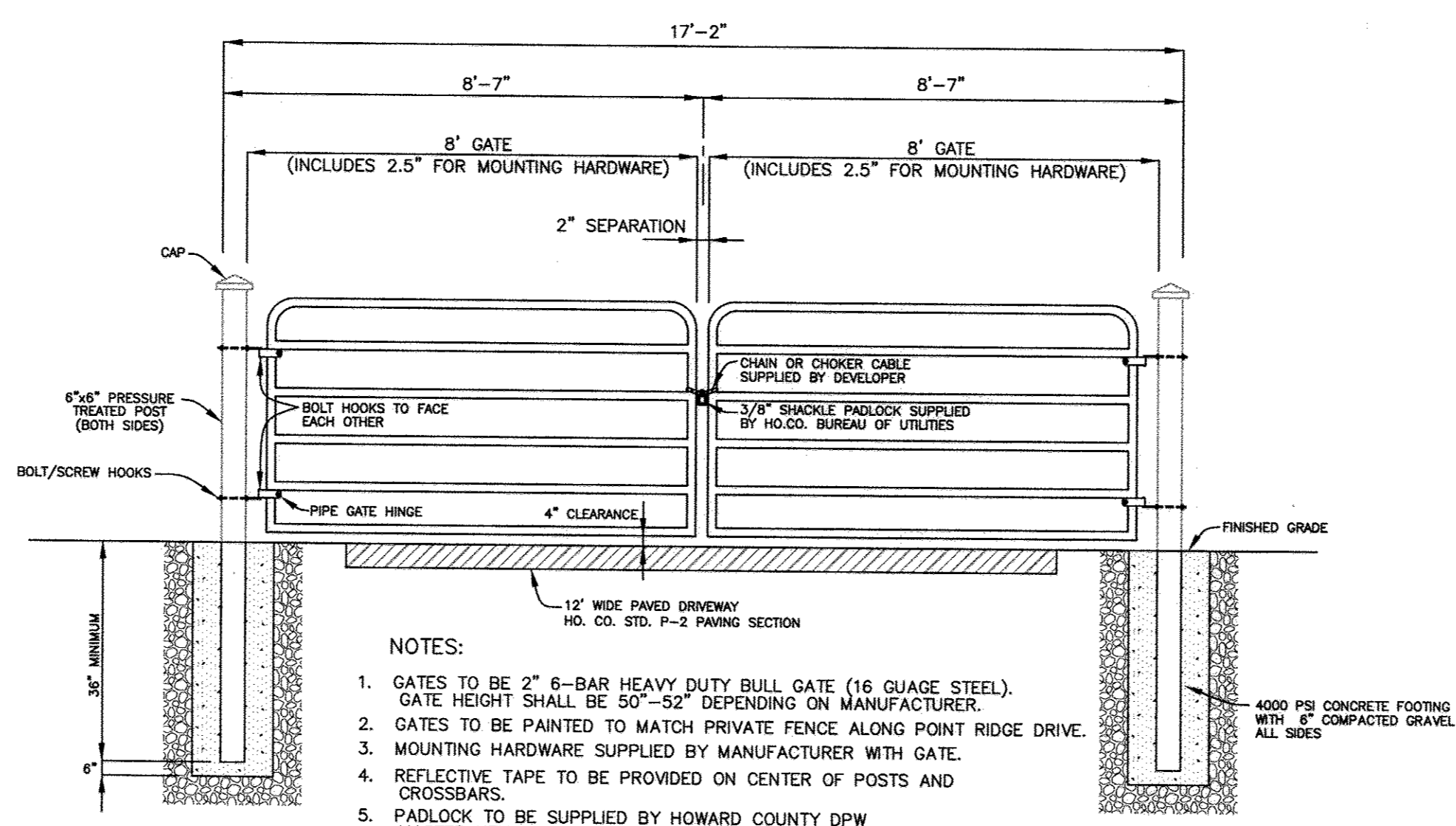
**PRESSURE SEWER BLOCKING DETAILS**  
NOT TO SCALE



BEND	1-1/4"	1-1/2"
11-1/4"	L 12"	12"
	W 10"	10"
	D 10"	10"
22-1/2"	L 15"	15"
	W 15"	15"
	D 12"	12"
45°	L 20"	20"
	W 20"	20"
	D 12"	12"

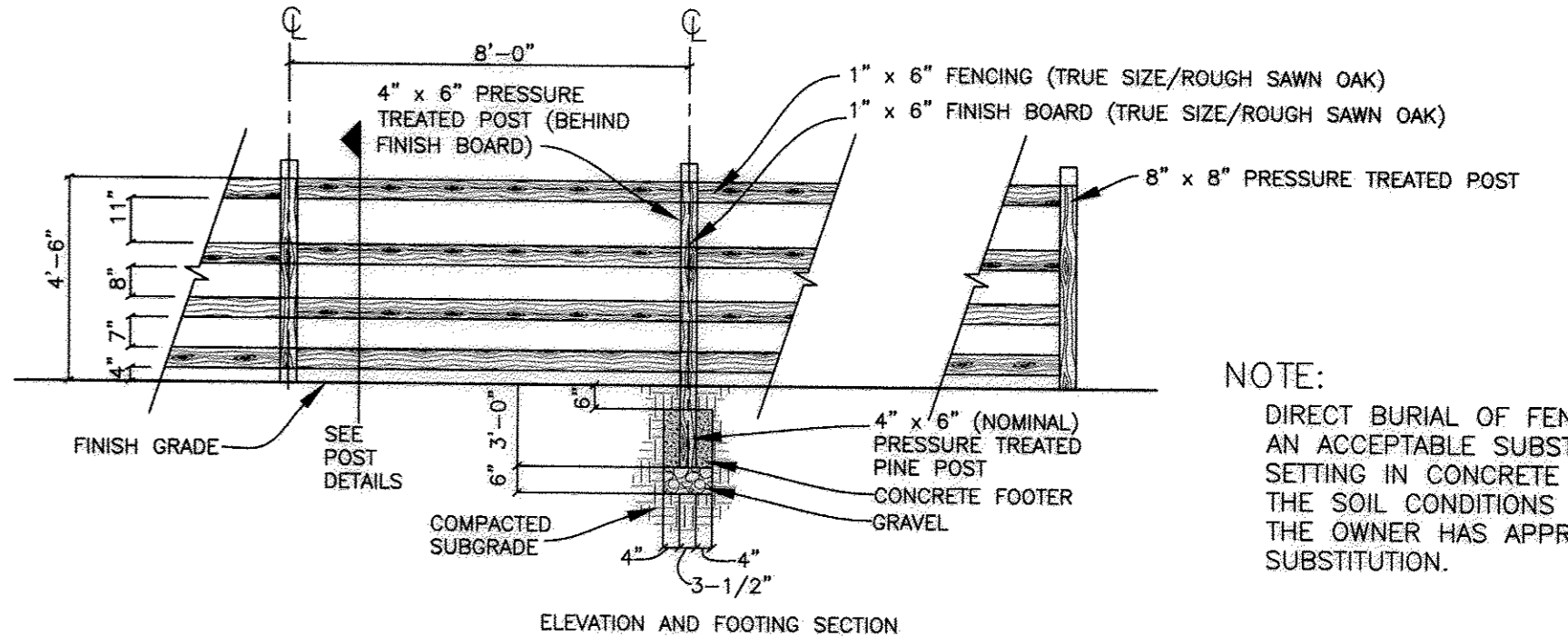
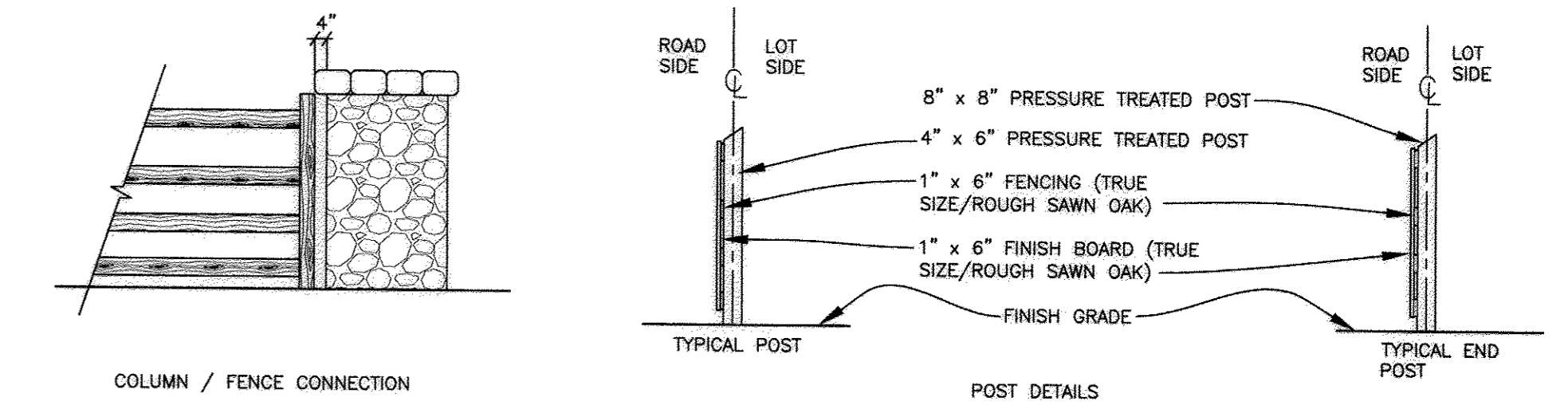
- NOTES:
- PAINT EXPOSED GALVANIZE STRAPS WITH TWO(2) COATS OF BITUMINOUS PAINT.
  - f'c = 3000 psi AT 28 DAYS.
  - CARRY ALL BEARING SURFACE TO UNDISTURBED EARTH OR FIRM SUBGRADE.
  - CONCRETE ANCHORAGE DIMENSIONS ARE BASED ON TOTAL PRESSURE OF 150 psi.

**ANCHORING PRESSURE SEWERS (UPPER VERTICAL BENDS)**  
NOT TO SCALE



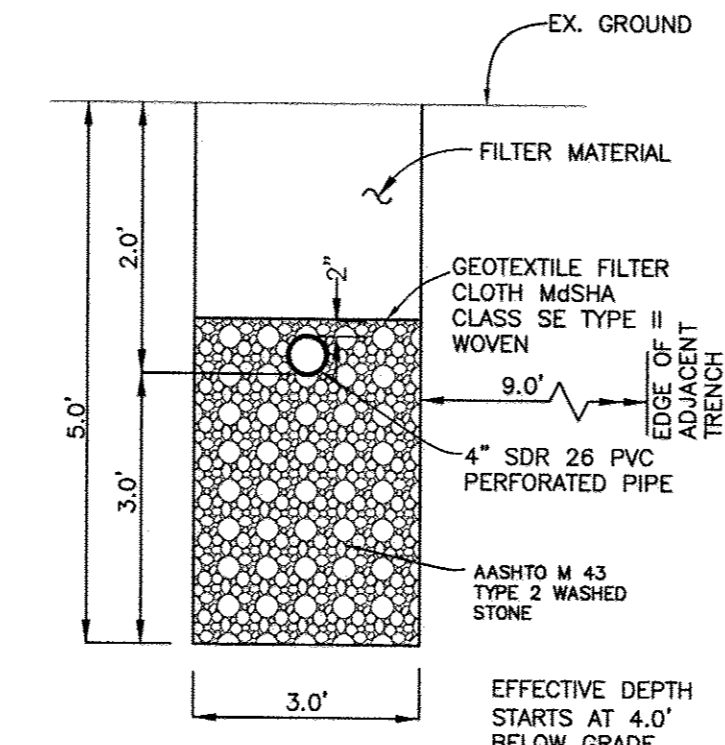
- NOTES:
- GATES TO BE 2" 6-BAR HEAVY DUTY BULL GATE (16 GAUGE STEEL). GATE HEIGHT SHALL BE 50"-52" DEPENDING ON MANUFACTURER.
  - GATES TO BE PAINTED TO MATCH PRIVATE FENCE ALONG POINT RIDGE DRIVE.
  - MOUNTING HARDWARE SUPPLIED BY MANUFACTURER WITH GATE.
  - REFLECTIVE TAPE TO BE PROVIDED ON CENTER OF POSTS AND CROSSBARS.
  - PADLOCK TO BE SUPPLIED BY HOWARD COUNTY DPW MASTER KEY SYSTEM.

**GATE DETAIL**  
NOT TO SCALE



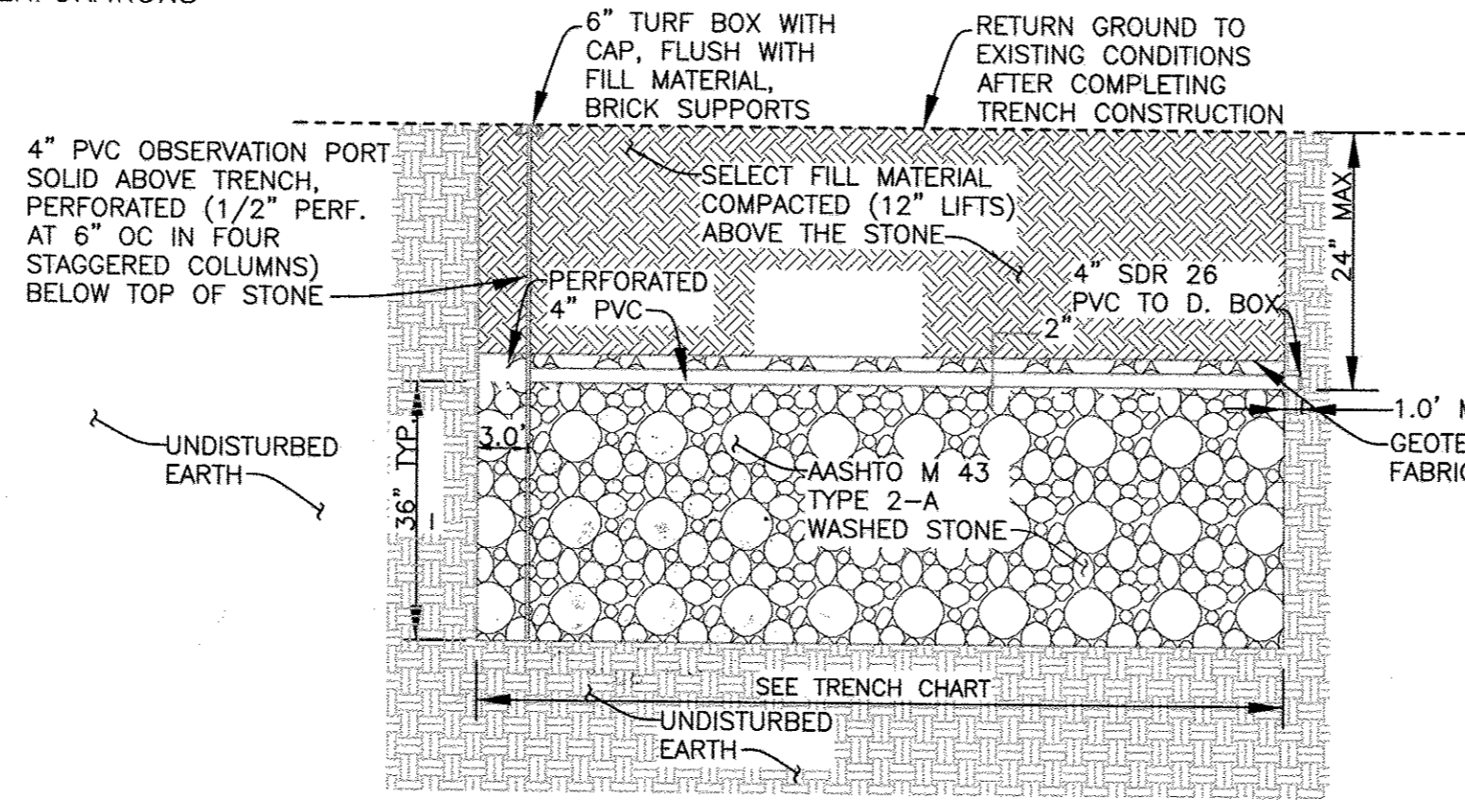
**FENCE DETAIL**  
NOT TO SCALE

NOTE: DIRECT BURIAL OF FENCE POST IS AN ACCEPTABLE SUBSTITUTION TO SETTING IN CONCRETE PROVIDED THE SOIL CONDITIONS PERMIT AND THE OWNER HAS APPROVED THE SUBSTITUTION.



**SEPTIC TRENCH DETAIL**  
NOT TO SCALE

LATERALS ARE TO BE 4" SDR 26 PVC WITH 1/4" DIAMETER HOLES PERFORATIONS



**LATERAL AND 3' WIDE TRENCH DESIGN**

"NO AS BUILT INFORMATION IS" PROVIDE ON THIS SHEET

SEPTIC TRENCH DESIGN			
SYSTEM	TRENCH DESIGNATION	LENGTH FEET	TOTAL LENGTH FEET
A	T1	80.15	80.2
	T2	80.15	160.3
	T3	80.15	240.5
	T4	80.15	320.6
	T5	80.15	400.8
	T6	80.15	480.9
	T7	80.15	561.1
	T8	80.15	641.2
	T9	80.15	721.4
	T10	80.15	801.5
	T11	80.15	881.7
	T12	80.15	961.8
	T13	80.15	1042.0
REQ: 1042			okay
B	T1	80.15	80.2
	T2	80.15	160.3
	T3	80.15	240.5
	T4	80.15	320.6
	T5	80.15	400.8
	T6	80.15	480.9
	T7	80.15	561.1
	T8	80.15	641.2
	T9	80.15	721.4
	T10	80.15	801.5
	T11	80.15	881.7
	T12	80.15	961.8
	T13	80.15	1042.0
REQ: 1042			okay
C	T1	80.15	80.2
	T2	80.15	160.3
	T3	80.15	240.5
	T4	80.15	320.6
	T5	80.15	400.8
	T6	80.15	480.9
	T7	80.15	561.1
	T8	80.15	641.2
	T9	80.15	721.4
	T10	80.15	801.5
	T11	80.15	881.7
	T12	80.15	961.8
	T13	80.15	1042.0
REQ: 1042			okay

Trench Design					
Cell	Trench	Pipe Elev.	Trench Bottom Elev.	Highest Ground Over	Lowest Ground Over
A	1	429.7	426.7	431.8	431.7
	2	427.9	424.9	430.0	429.9
	3	426.0	423.0	428.1	428.0
	4	424.1	421.1	426.2	426.1
	5	422.6	419.6	424.7	424.6
	6	420.9	417.9	423.0	422.9
	7	419.2	416.2	421.4	421.2
	8	417.6	414.6	419.8	419.6
	9	419.7	416.7	421.9	421.7
	10	418.0	415.0	420.0	420.0
	11	416.1	413.1	418.3	418.1
	12	414.9	411.9	417.0	416.9
	13	412.4	409.4	414.5	414.4
B	1	429.4	426.4	431.6	431.4
	2	427.9	424.9	430.2	429.9
	3	426.5	423.5	428.8	428.5
	4	425.4	422.4	427.6	427.4
	5	423.9	420.9	426.0	425.9
	6	422.2	419.2	424.4	424.2
	7	421.0	418.0	423.1	423.0
	8	419.7	416.7	421.9	421.7
	9	424.1	421.1	426.2	426.1
	10	422.5	419.5	424.7	424.5
	11	421.5	418.5	423.5	423.5
	12	419.9	416.9	422.0	421.9
	13	420.0	417.0	422.0	422.0
C	1	418.2	415.2	420.3	420.2
	2	416.7	413.7	418.7	418.7
	3	415.3	412.3	417.5	417.3
	4	413.8	410.8	416.0	415.8
	5	412.2	409.2	414.3	414.2
	6	417.2	414.2	419.3	419.2
	7	415.8	412.8	417.9	417.8
	8	414.4	411.4	416.5	416.4
	9	412.9	409.9	415.2	414.9
	10	415.0	412.0	417.3	417.0
	11	414.0	411.0	416.2	416.0
	12	412.6	409.6	414.8	414.6
	13	411.6	408.6	413.7	413.6
Ground cover over Trench			2.0	Feet	
Depth of stone below lateral			3.0	Feet	

APPROVED:  
APPROVED FOR PRIVATE WATER AND A SHARED SEPTIC SYSTEM FOR LOTS 12-17 AND PRIVATE WATER AND PRIVATE SEWAGE FOR LOTS 2-11, 18-23 AND BUILDABLE PRESERVATION PARCEL 'A'.

*Walter J. Moore* 6/5/2014  
COUNTY HEALTH OFFICER

OWNER/DEVELOPER:  
MB HIGHLAND RESERVE, LLC  
1686 EAST GUDE DRIVE  
ROCKVILLE, MD 20850  
301-762-9511

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. 28559, Expiration Date: 7-22-2015.



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. 21443, Expiration Date: 12-21-15.

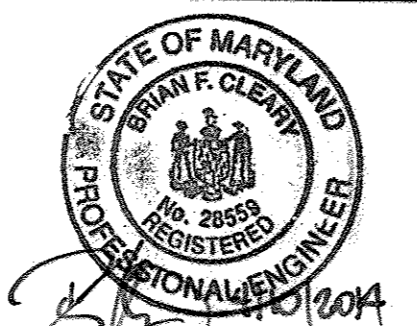
DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Steve Chen* 6-12-14  
CHIEF, BUREAU OF UTILITIES

DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

*John Chen* 6-12-14  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

**BENCHMARK ENGINEERING, INC.**  
4840 BALTIMORE NATIONAL PIKE SUITE 315 ELLICOTT CITY, MARYLAND 21043  
(P) 410-465-6105 (F) 410-465-6644  
WWW.BEN-ENR.COM



DESIGN: JMC					
DRAFT: JMC/DBT					
CHK: BFC					
DATE: 03/2014	BY: NO.	REVISIONS	DATE		

**CONSTRUCTION DETAILS**  
PUBLIC SHARED SEPTIC PLAN

600 SCALE MAP NO: 34 BLOCK: 24 200 SCALE MAP NO: 202

**REGAN PROPERTY**  
LOTS 2 thru 23, BUILDABLE PRESERVATION PARCEL 'A' and NON-BUILDABLE PRESERVATION PARCELS 'B' thru 'E'

TAX MAP: 34 - BLOCK: 24 - PARCEL: 200 - ZONED: RR-DEO - ELECTION DISTRICT: 5

**CONTRACT NO. 50-4742-D**

AS-BUILT

SCALE:  
AS SHOWN

SHEET NO.  
5 OF 7

AP

1' brn scl  
1.5' brn scl  
2' brn scl  
3' brn scl  
4' brn scl  
5' brn scl  
6' brn scl  
7' brn scl  
8' brn scl  
9' brn scl  
10' brn scl  
11' brn scl  
12' brn scl  
13' brn scl  
14' brn scl  
15' brn scl  
16' brn scl  
17' brn scl  
18' brn scl  
19' brn scl  
20' brn scl

DATE	TEST #	DEPTH	START	BREAK 1" DROP	STOP 2" DROP	TIME OF 2ND INCH	P/F/H
5-20	11	5' 1/2"	1:54	2:02	2:15	13	P
	9	5' 1/2"	2:00	2:08	2:24	16	P
	3	5' 1/2"	2:41	2:40	2:53	7	P

REMARKS: SANITARIAN \_\_\_\_\_ BACKHOE \_\_\_\_\_ OTHERS \_\_\_\_\_  
TEST HOLES USED IN SDA \_\_\_\_\_ AVG. PERC TIME \_\_\_\_\_ SQ. FT/BR \_\_\_\_\_  
TRENCH WIDTH \_\_\_\_\_ INLET DEPTH \_\_\_\_\_ MAX. BOT DEPTH \_\_\_\_\_ EFFECTIVE SW \_\_\_\_\_

Round II of Testing 2/15

AP

1' brn scl  
1.5' brn scl  
2' brn scl  
3' brn scl  
4' brn scl  
5' brn scl  
6' brn scl  
7' brn scl  
8' brn scl  
9' brn scl  
10' brn scl  
11' brn scl  
12' brn scl  
13' brn scl  
14' brn scl  
15' brn scl  
16' brn scl  
17' brn scl  
18' brn scl  
19' brn scl  
20' brn scl

DATE	TEST #	DEPTH	START	BREAK 1" DROP	STOP 2" DROP	TIME OF 2ND INCH	P/F/H
10-21	209	5' 1/2"	2:04	2:11	2:26	15	P
10-21	210	14'	Visual	Pass		F	
10-21	212	4'	2:25	3:00	3:01	1 min	F
10-21	215	3' 7/8"	3:39	3:41	3:43	2 min	P

REMARKS: SANITARIAN HS/DB BACKHOE Bruce OTHERS \_\_\_\_\_  
TEST HOLES USED IN SDA \_\_\_\_\_ AVG. PERC TIME \_\_\_\_\_ SQ. FT/BR \_\_\_\_\_  
TRENCH WIDTH \_\_\_\_\_ INLET DEPTH \_\_\_\_\_ MAX. BOT DEPTH \_\_\_\_\_ EFFECTIVE SW \_\_\_\_\_

AP

1' brn scl  
1.5' brn scl  
2' brn scl  
3' brn scl  
4' brn scl  
5' brn scl  
6' brn scl  
7' brn scl  
8' brn scl  
9' brn scl  
10' brn scl  
11' brn scl  
12' brn scl  
13' brn scl  
14' brn scl  
15' brn scl  
16' brn scl  
17' brn scl  
18' brn scl  
19' brn scl  
20' brn scl

DATE	TEST #	DEPTH	START	BREAK 1" DROP	STOP 2" DROP	TIME OF 2ND INCH	P/F/H
10-21-09	232	4' 5"	10:27	10:28	10:30	2	P
	234	5' 1/2"	10:50	11:00	11:07	7	P
	233	7' 5"	Visual			F	
	234	12'	Visual			F	
	222	8'	Visual			F	
	208	10' 1/2"	2:12	2:13	2:15	2	P

REMARKS: SANITARIAN HS/DB BACKHOE Bruce OTHERS \_\_\_\_\_  
TEST HOLES USED IN SDA \_\_\_\_\_ AVG. PERC TIME \_\_\_\_\_ SQ. FT/BR \_\_\_\_\_  
TRENCH WIDTH \_\_\_\_\_ INLET DEPTH \_\_\_\_\_ MAX. BOT DEPTH \_\_\_\_\_ EFFECTIVE SW \_\_\_\_\_

Percolation Information- Regan Property  
NOT TO SCALE (Round III of Testing)

Date	Test	Depth	Start	Break 1" Drop	Break 2" Drop	Time of 2" Inch	P/F/H
8-31-10	300	4.5'/12'	9:56	9:59	10:03	4 min.	Pass
8-31-10	301	4.6'/11'	11:22	11:24	11:26	2 min.	Pass
8-31-10	302	4.6'/11'	11:11	11:13	11:15	2 min.	Pass
8-31-10	303	4.8'/11'	10:22	10:32	11:09	37 min.	Fail
8-31-10	303A	4.8'/11'					Fail
8-31-10	303B	4.8'/11'					Pass
8-31-10	304	11'	Visual	Pass			Pass

Remarks: Additional testing for community Septic Reserve.  
Sanitarian D. Bernard Backhoe Bruce Anderson Others \_\_\_\_\_  
Test Holes Used in 7 Avg. Perc Time 4 min. SQ. FT/BR \_\_\_\_\_  
Trench Width 3 Inlet Depth 4 Max Bot. Depth 7 Effective S/W 2'

AP

1' brn scl  
1.5' brn scl  
2' brn scl  
3' brn scl  
4' brn scl  
5' brn scl  
6' brn scl  
7' brn scl  
8' brn scl  
9' brn scl  
10' brn scl  
11' brn scl  
12' brn scl  
13' brn scl  
14' brn scl  
15' brn scl  
16' brn scl  
17' brn scl  
18' brn scl  
19' brn scl  
20' brn scl

DATE	TEST #	DEPTH	START	BREAK 1" DROP	STOP 2" DROP	TIME OF 2ND INCH	P/F/H
10/21/09	210	4' 5"	2:21	2:22	2:24	2	P
	213	3' 4"	2:47	2:49	2:51	2	P
	214	10' 5"	Visual			(M)	P
	214	9' 1/2"	3:16	3:19	3:23	4	P

REMARKS: Lot 3 (M) = marginal  
SANITARIAN HS/DB BACKHOE \_\_\_\_\_ OTHERS \_\_\_\_\_  
TEST HOLES USED IN SDA \_\_\_\_\_ AVG. PERC TIME \_\_\_\_\_ SQ. FT/BR \_\_\_\_\_  
TRENCH WIDTH \_\_\_\_\_ INLET DEPTH \_\_\_\_\_ MAX. BOT DEPTH \_\_\_\_\_ EFFECTIVE SW \_\_\_\_\_

AP

1' brn scl  
1.5' brn scl  
2' brn scl  
3' brn scl  
4' brn scl  
5' brn scl  
6' brn scl  
7' brn scl  
8' brn scl  
9' brn scl  
10' brn scl  
11' brn scl  
12' brn scl  
13' brn scl  
14' brn scl  
15' brn scl  
16' brn scl  
17' brn scl  
18' brn scl  
19' brn scl  
20' brn scl

DATE	TEST #	DEPTH	START	BREAK 1" DROP	STOP 2" DROP	TIME OF 2ND INCH	P/F/H
7/2/09	14	6' 5"	Visual			>50% bedded rock	F
5/10/09	13	7' 5"	Visual			>50% cemented track	F
5/18/09	12	7' 5"	4:08	4:15	4:25	10	P

REMARKS: #12 Trench Bottom at 4' 5"  
SANITARIAN DB BACKHOE Bruce OTHERS John Carney  
TEST HOLES USED IN SDA \_\_\_\_\_ AVG. PERC TIME \_\_\_\_\_ SQ. FT/BR \_\_\_\_\_  
TRENCH WIDTH \_\_\_\_\_ INLET DEPTH \_\_\_\_\_ MAX. BOT DEPTH \_\_\_\_\_ EFFECTIVE SW \_\_\_\_\_

Percolation Information- Regan Property  
NOT TO SCALE (Round III of Testing)

Date	Test	Depth	Start	Break 1" Drop	Break 2" Drop	Time of 2" Inch	P/F/H
8-31-10	300	4.5'/12'	9:56	9:59	10:03	4 min.	Pass
8-31-10	301	4.6'/11'	11:22	11:24	11:26	2 min.	Pass
8-31-10	302	4.6'/11'	11:11	11:13	11:15	2 min.	Pass
8-31-10	303	4.8'/11'	10:22	10:32	11:09	37 min.	Fail
8-31-10	303A	4.8'/11'					Fail
8-31-10	303B	4.8'/12'					Pass
8-31-10	304	11'	Visual	Pass			Pass

Remarks: Additional testing for community Septic Reserve.  
Sanitarian D. Bernard Backhoe Bruce Anderson Others \_\_\_\_\_  
Test Holes Used in 7 Avg. Perc Time 4 min. SQ. FT/BR \_\_\_\_\_  
Trench Width 3 Inlet Depth 4 Max Bot. Depth 7 Effective S/W 2'

APPROVED:  
APPROVED FOR PRIVATE WATER AND A SHARED SEPTIC SYSTEM FOR LOTS 12-17 AND PRIVATE WATER AND PRIVATE SEWAGE FOR LOTS 2-11, 18-23 AND BUILDABLE PRESERVATION PARCEL 'A'.  
William J. Phelan COUNTY HEALTH OFFICER  
6/5/2014 DATE

OWNER/DEVELOPER:  
MB HIGHLAND RESERVE, LLC  
1686 EAST GUDE DRIVE  
ROCKVILLE, MD 20850  
301-762-9511

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

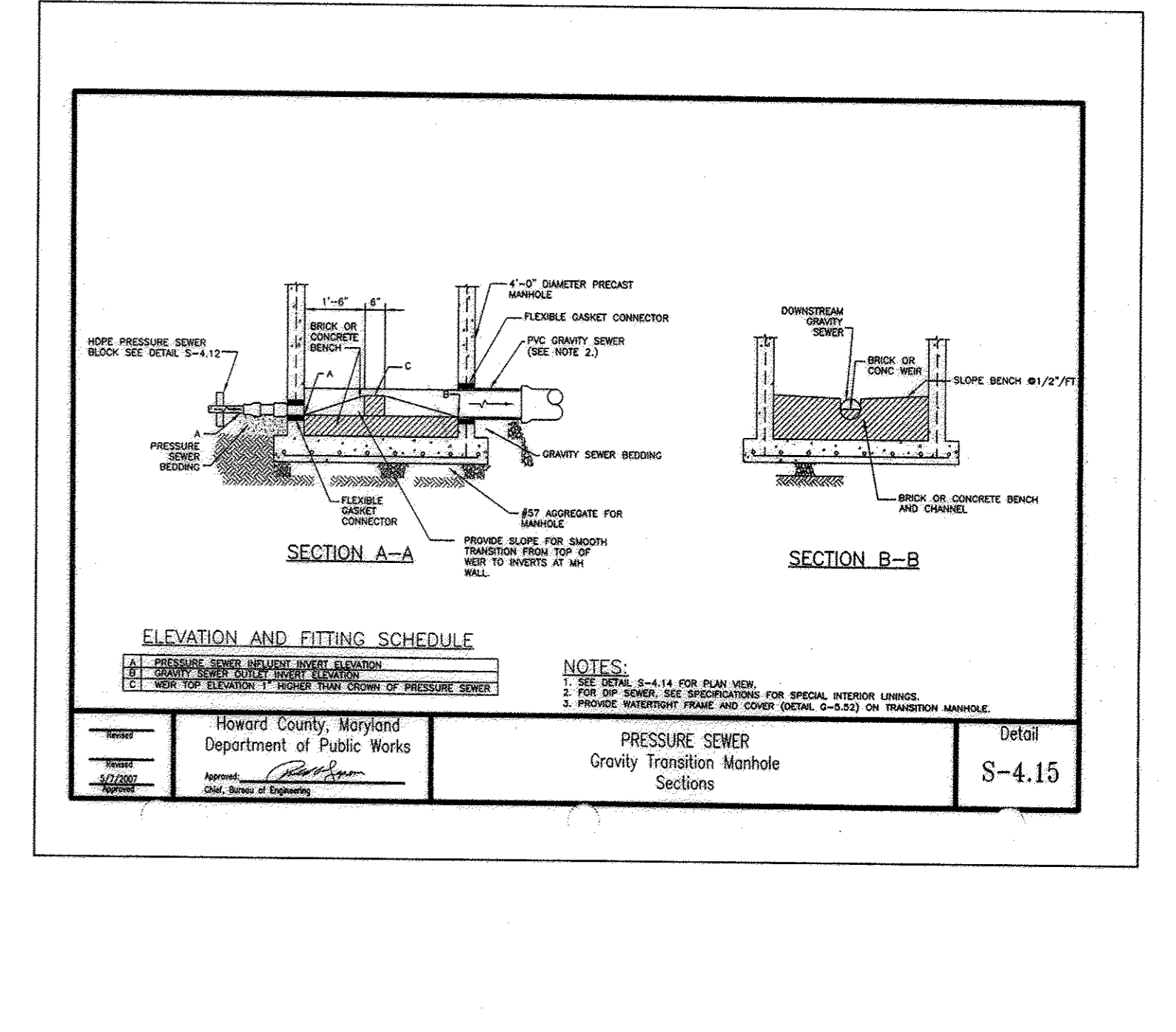
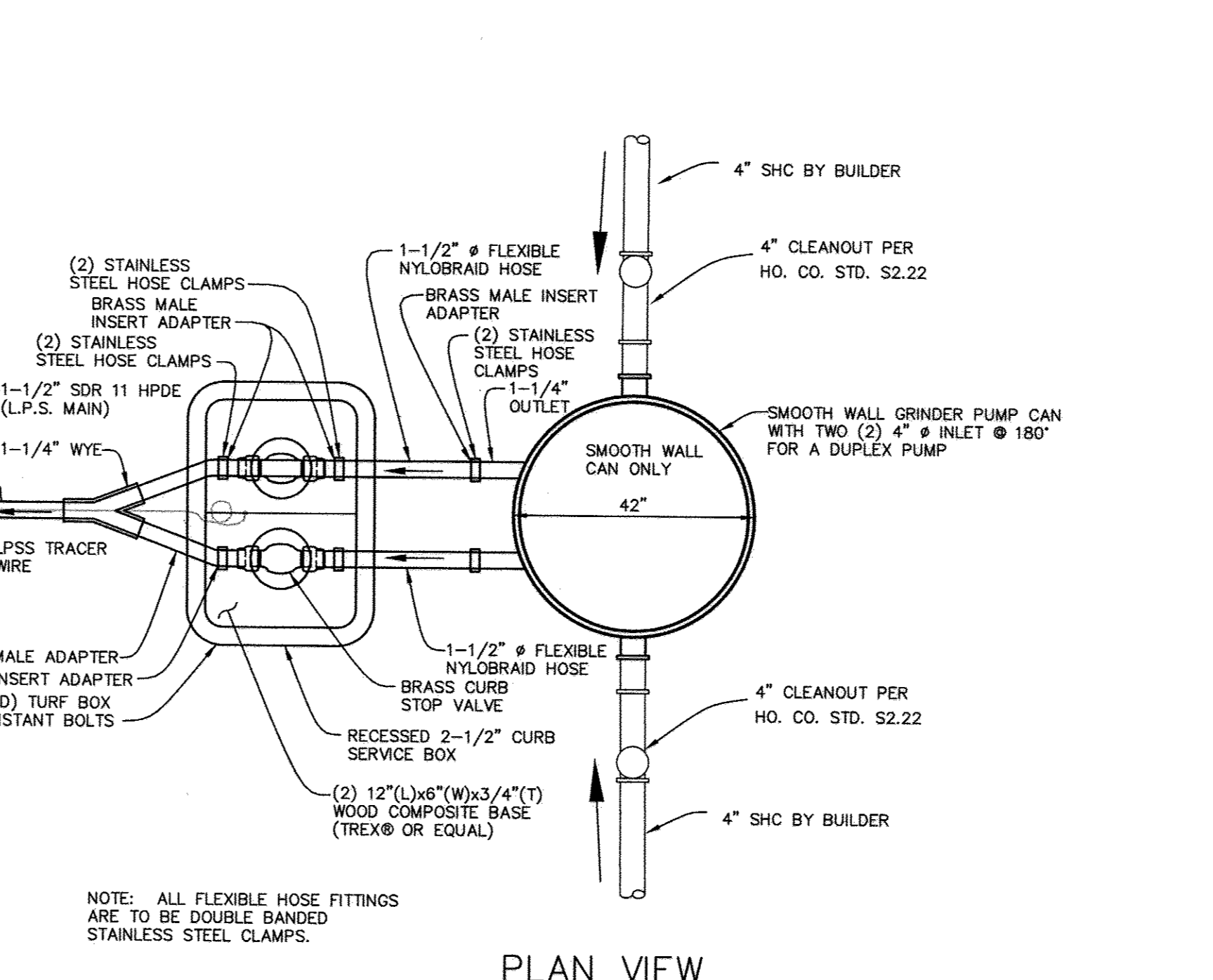
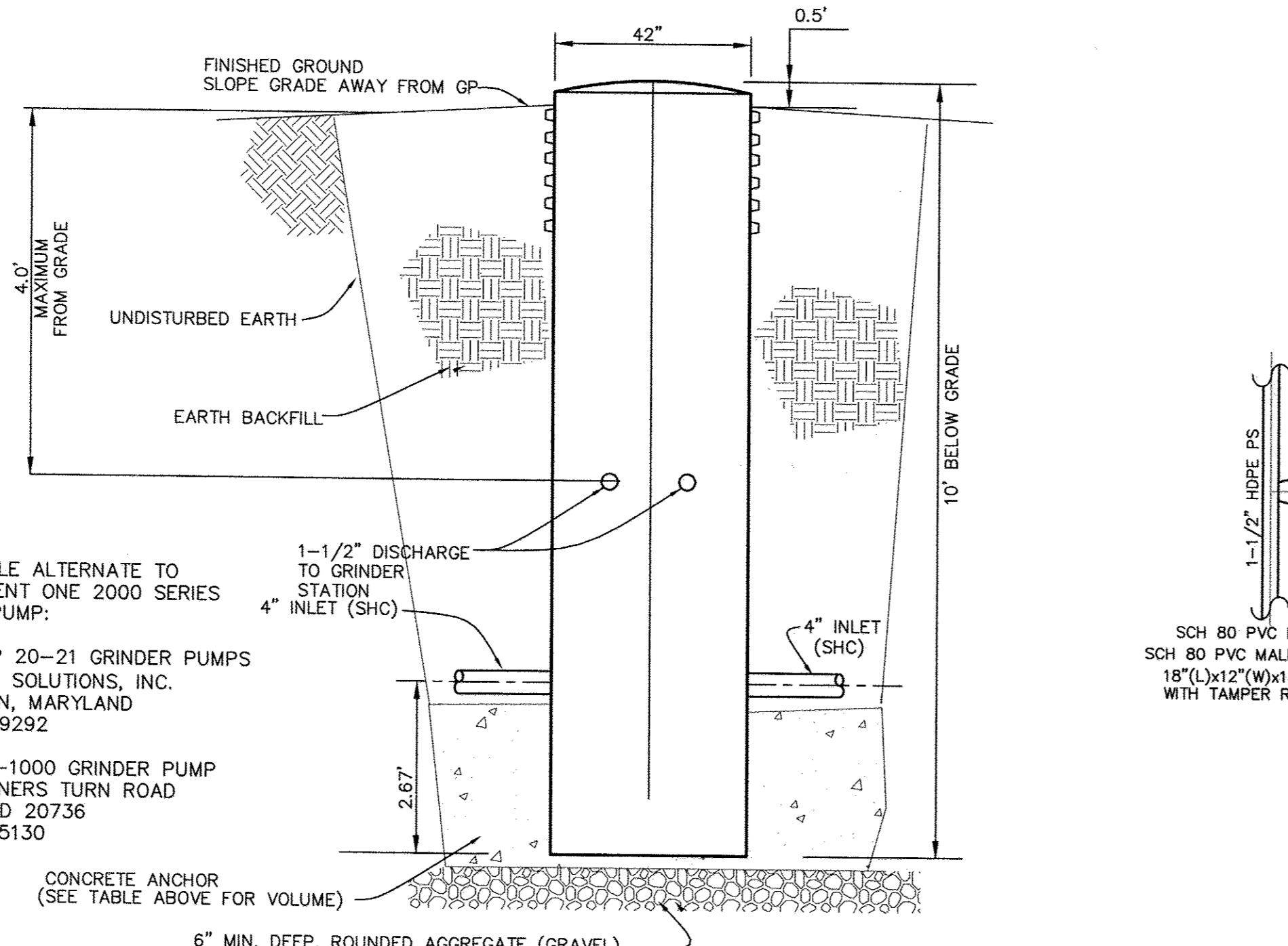
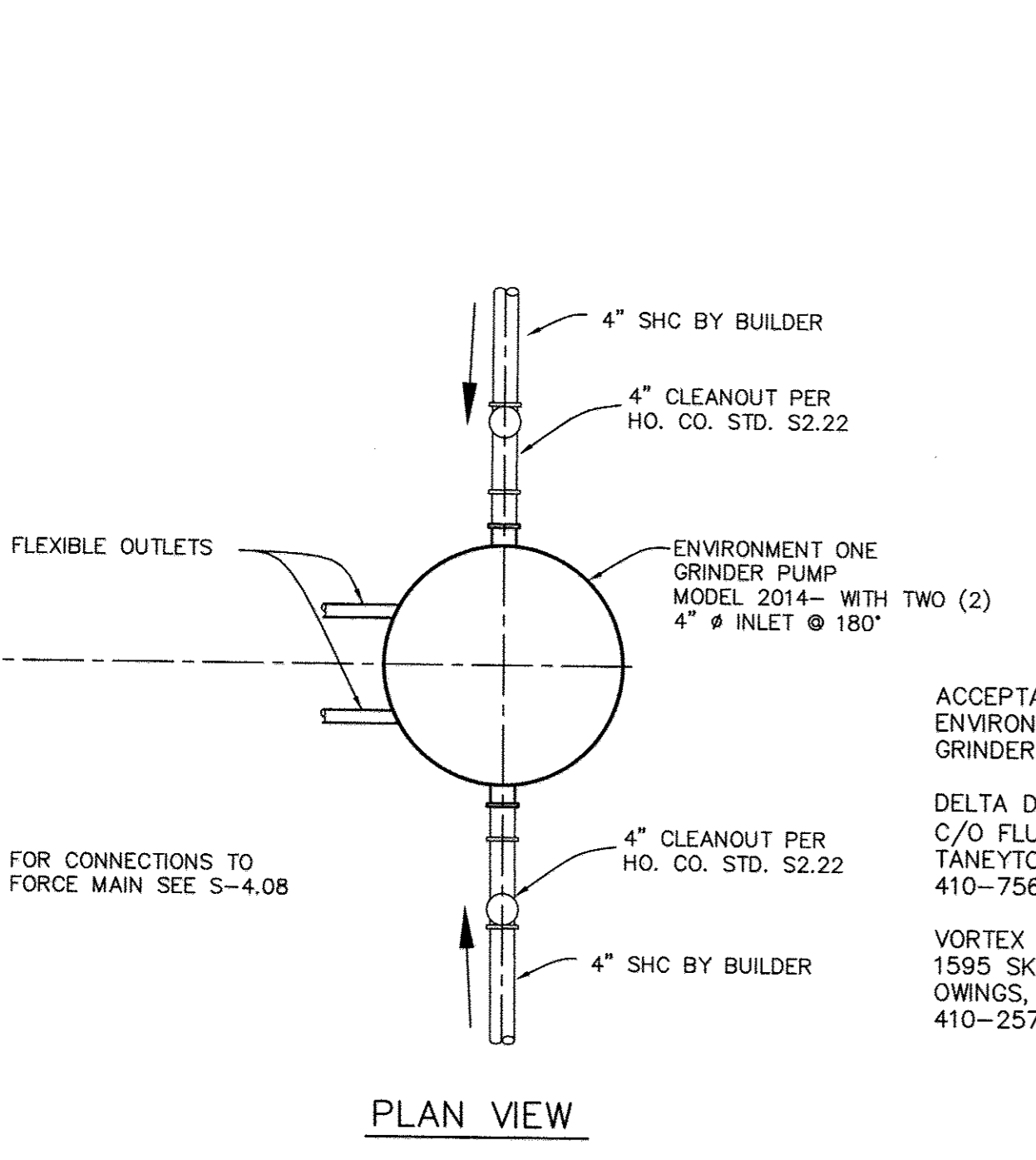
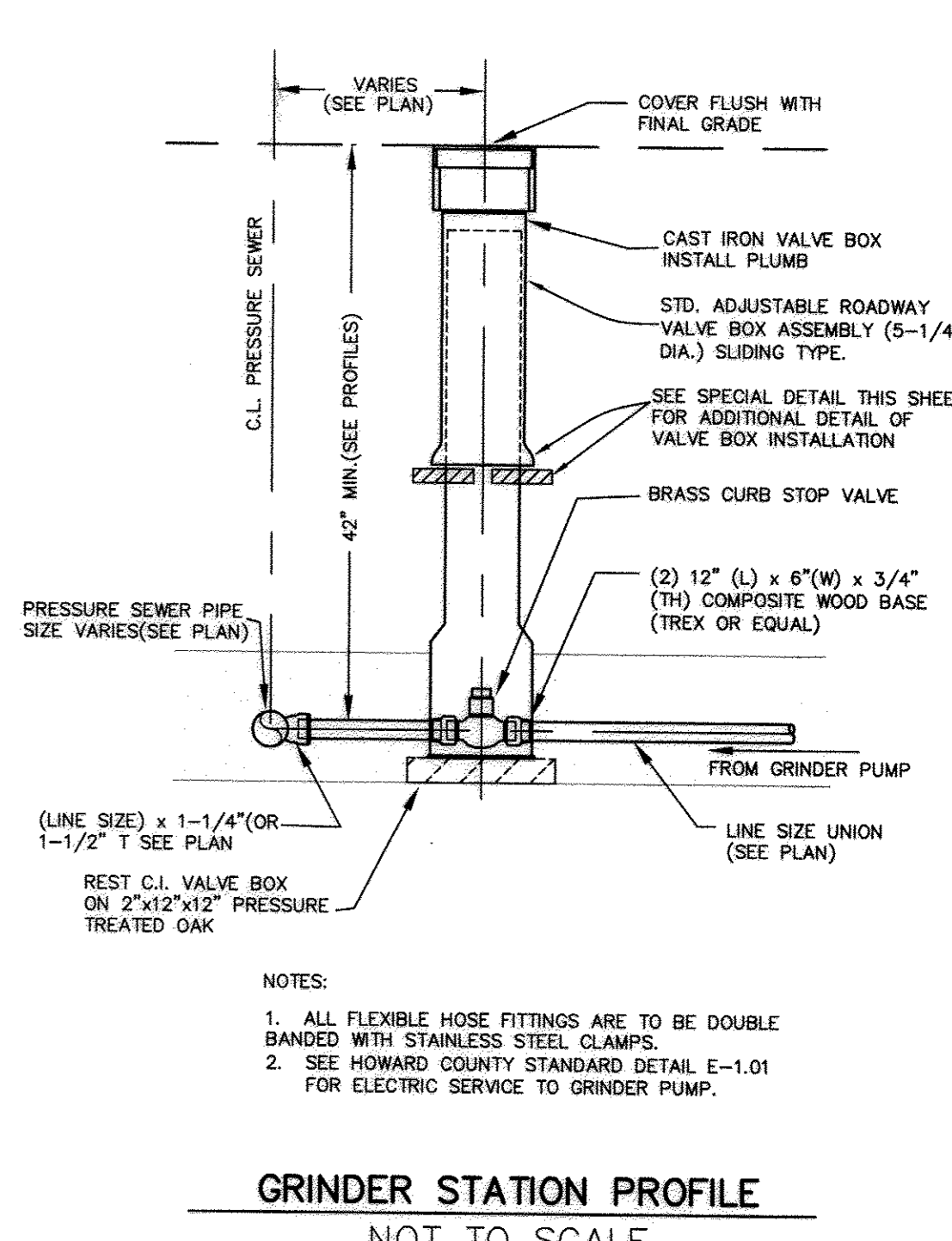
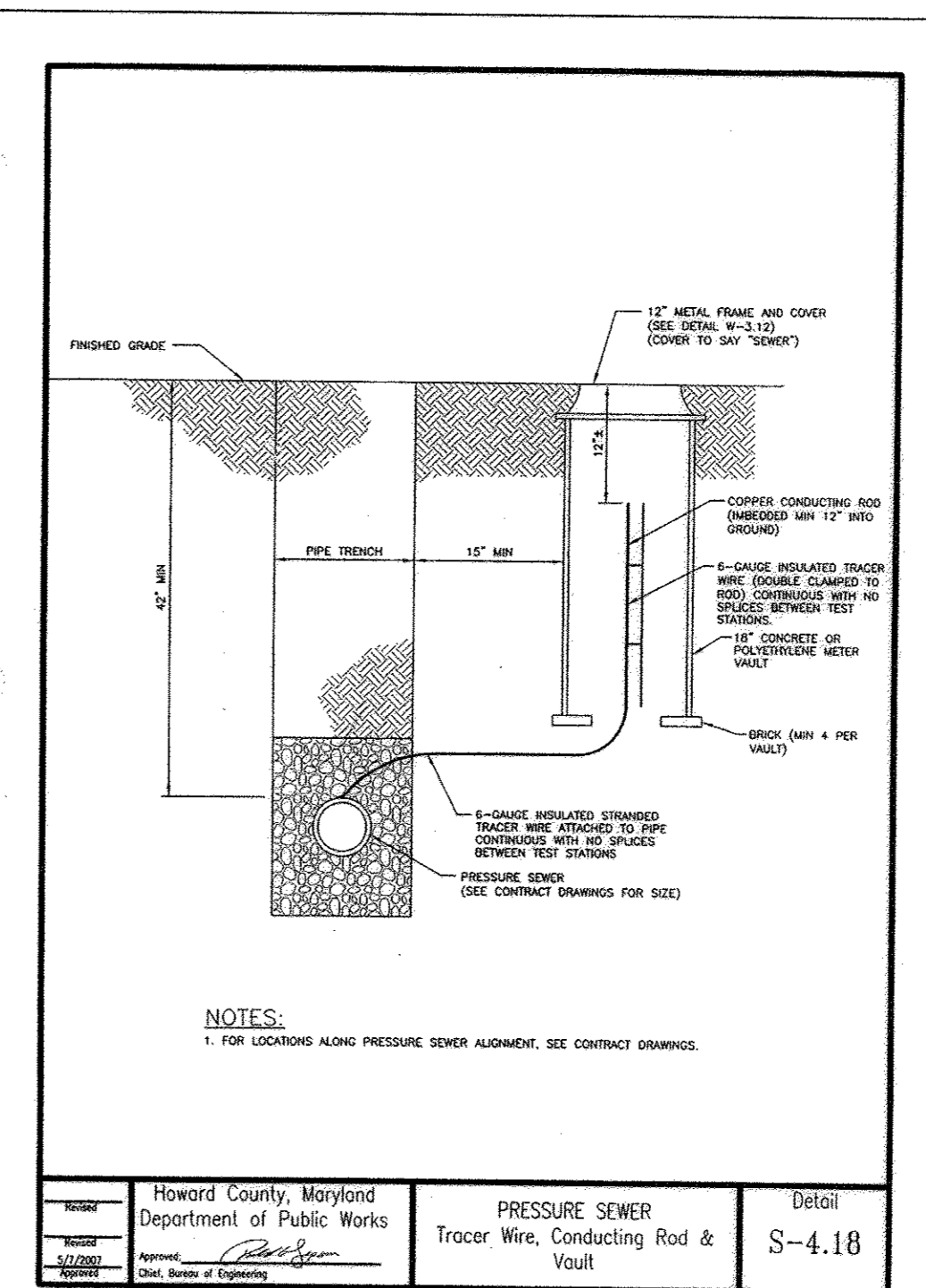
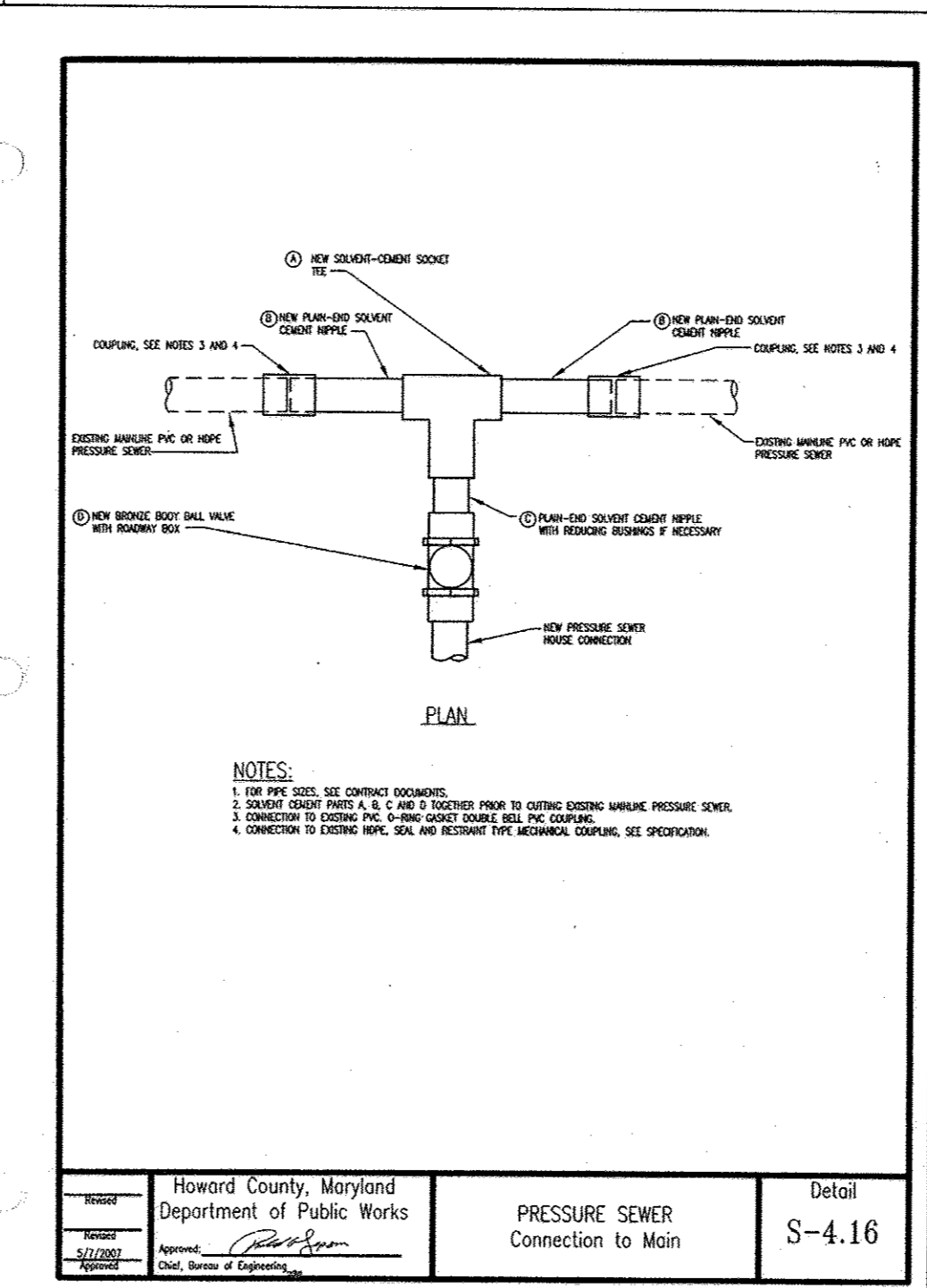
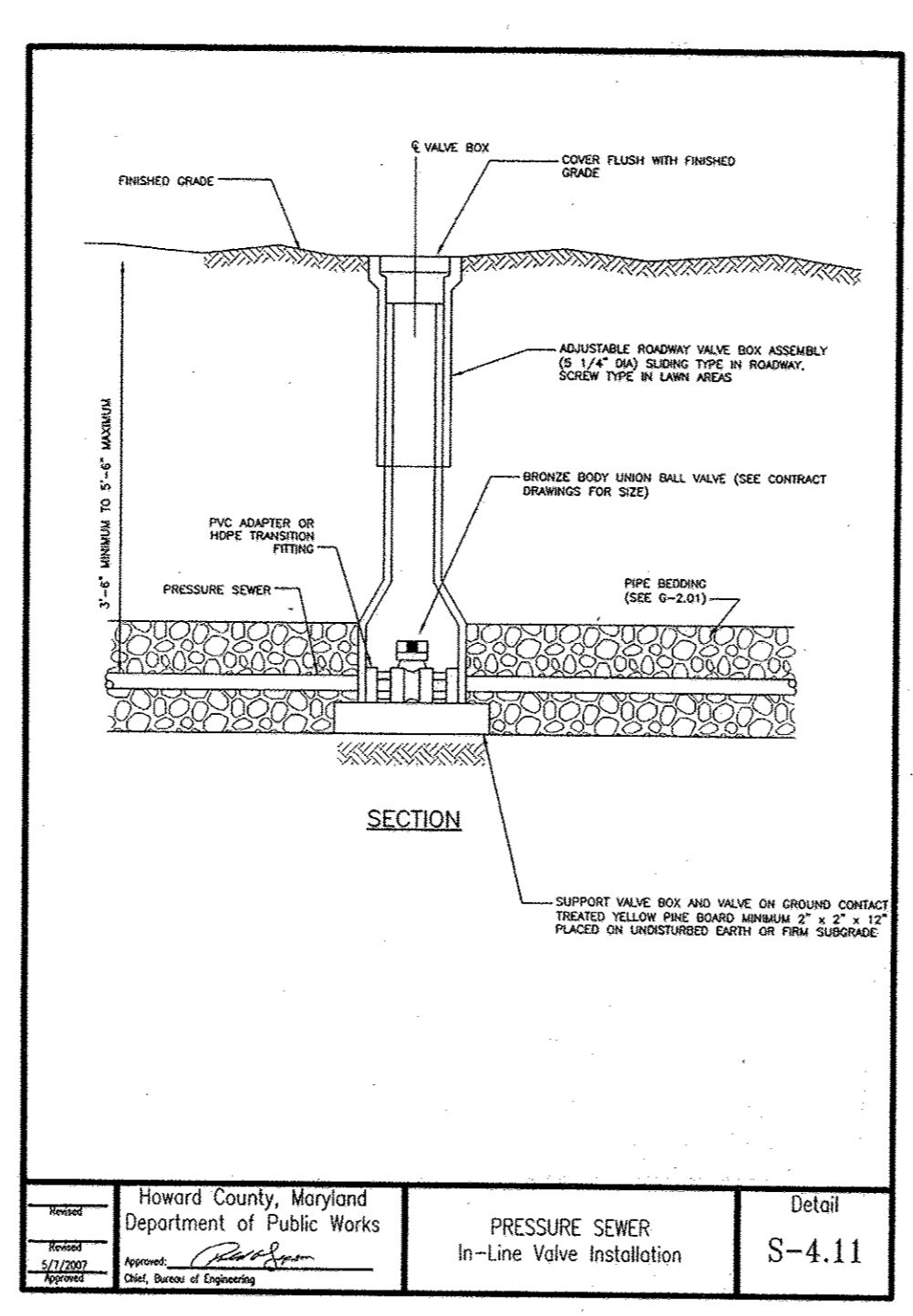
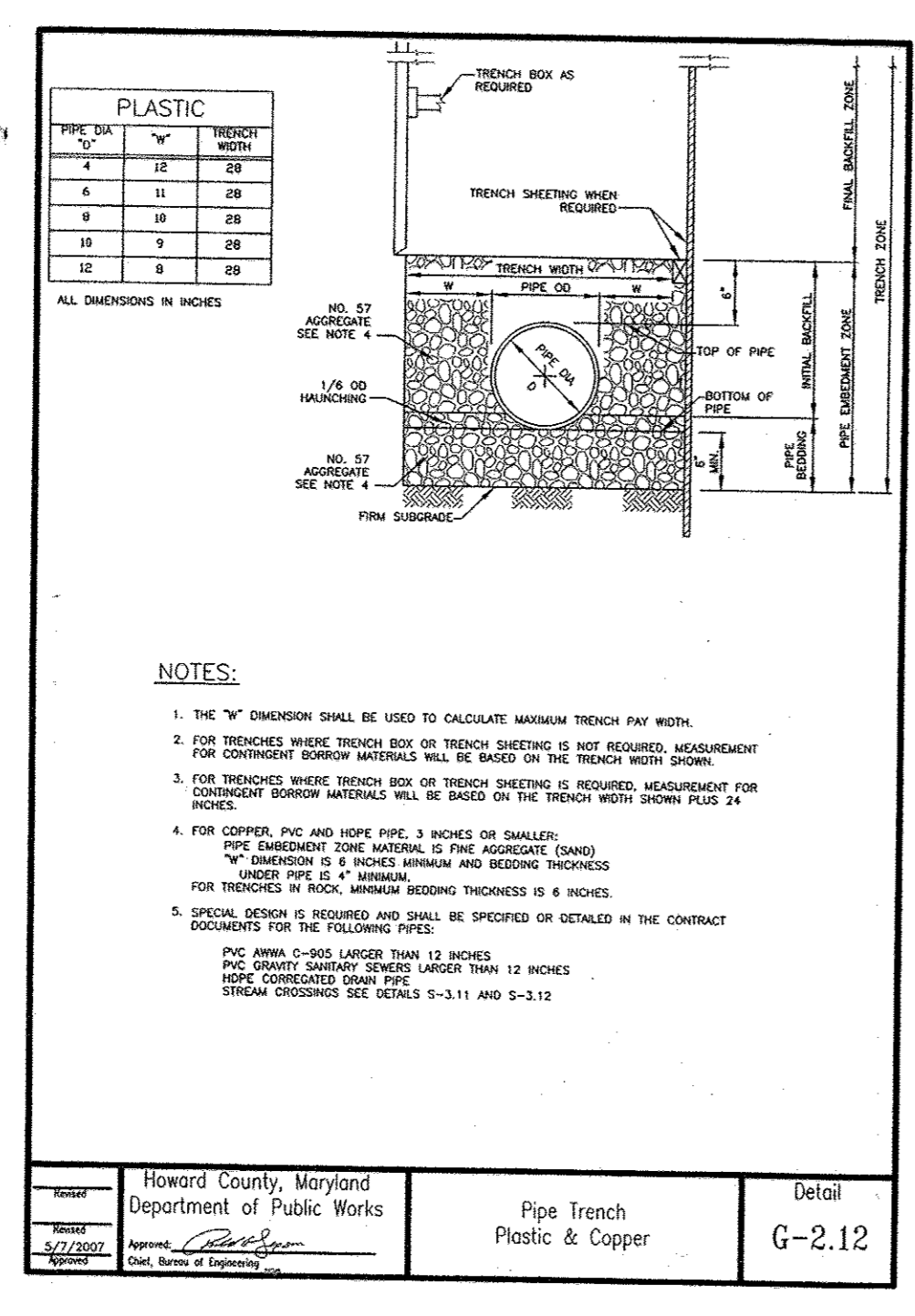
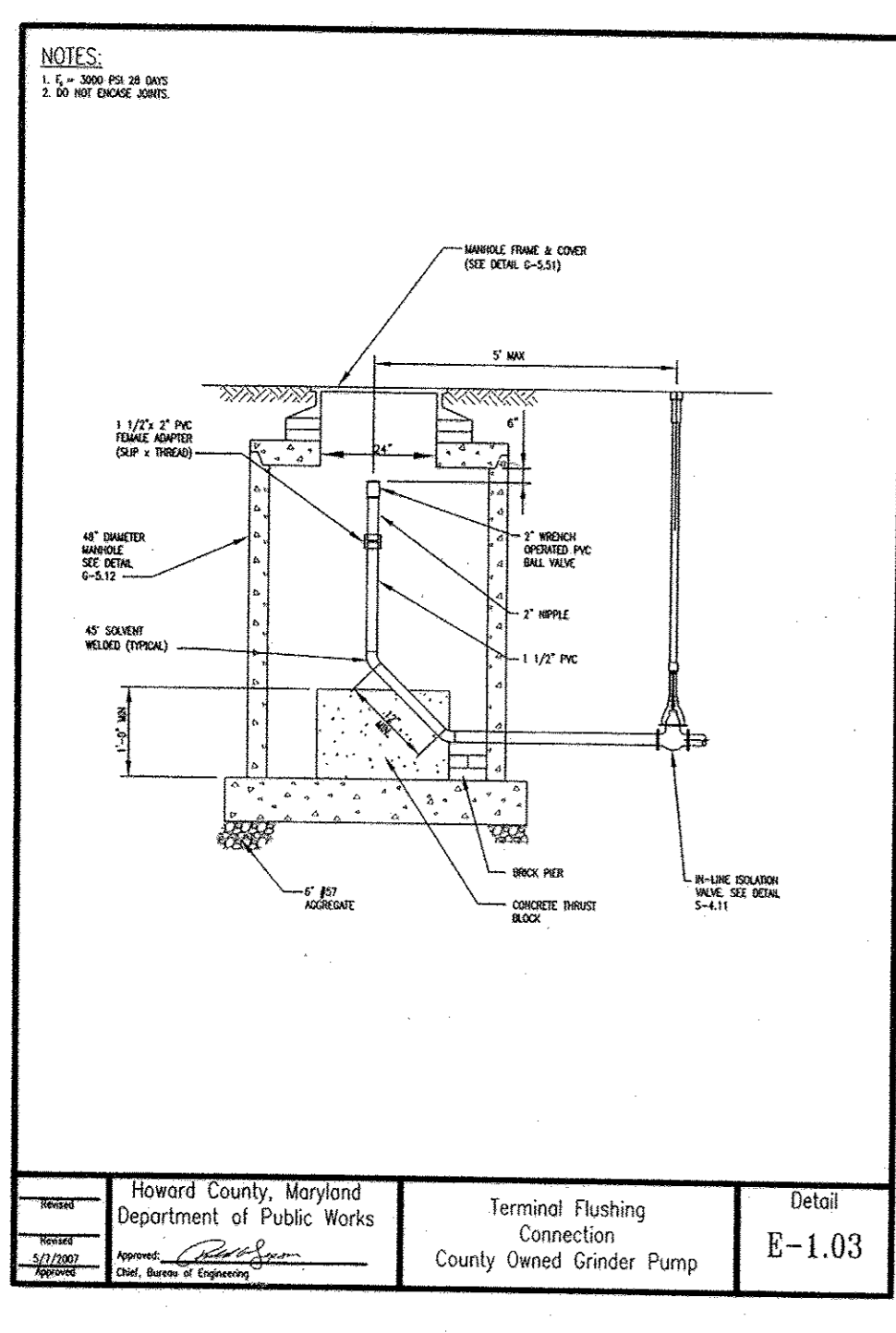
DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

BENCHMARK  
ENGINEERING, INC.  
2400 BALTIMORE NATIONAL PIKE & SUITE 315 ELLICOTT CITY, MARYLAND 21043  
(P) 410-465-6105 (F) 410-465-6644  
WWW.BEG-ENGLINEERING.COM

DESIGN: JMC  
DRAFT: JMC/DBT  
CHK: BFC  
DATE: 03/2014

PERCOLATION TEST RESULTS  
PUBLIC SHARED SEPTIC PLAN  
600 SCALE MAP NO: 34 BLOCK: 24 200 SCALE MAP NO: 202

REGAN PROPERTY  
LOTS 2 thru 23, BUILDABLE PRESERVATION PARCEL 'A' and NON-BUILDABLE PRESERVATION PARCELS 'B' thru 'E'  
TAX MAP: 34 - BLOCK: 24 - PARCEL: 200 - ZONED: RR-DEO - ELECTION DISTRICT: 5  
CONTRACT NO. 50-4742-D  
SCALE: AS SHOWN  
SHEET NO. 6 OF 7



APPROVED:  
 APPROVED FOR PRIVATE WATER AND A SHARED SEPTIC SYSTEM FOR LOTS 12-17 AND PRIVATE WATER AND PRIVATE SEWAGE FOR LOTS 2-11, 18-23 AND BUILDABLE PRESERVATION PARCEL 'A'.  
 [Signature] 4/5/2014  
 COUNTY HEALTH OFFICER

OWNER/DEVELOPER:  
 MB HIGHLAND RESERVE, LLC  
 1686 EAST GUDE DRIVE  
 ROCKVILLE, MD 20850  
 301-762-9511

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. 28559, Expiration Date: 7-22-2015.

LOTS	TOP ELEV.	BOTTOM ELEV.	DEPTH	INLET ELEV.	DISCHARGE ELEV.	CONC. ANCHOR VOLUME	REMARKS
17	422.5	410.5	10.00' (120")	414.17	414.75	35.7 C.F.	MODEL NO. 2014 (SIMPLEX)
15 & 16	422.12	418.0	10.00' (120")	420.67	421.25	35.7 C.F.	MODEL NO. 2014 (DUPLEX)
13 & 14	425.26	425.0	10.00' (120")	427.67	428.25	35.7 C.F.	MODEL NO. 2014 (DUPLEX)
12	424.10	424.0	10.00' (120")	426.67	427.25	35.7 C.F.	MODEL NO. 2014 (SIMPLEX)

NOTE: SEE MANUFACTURER'S MANUAL FOR GRINDER PUMP INSTALLATION REQUIREMENT, PROCEDURE, AND ELECTRICAL CONNECTION.

ACCEPTABLE ALTERNATE TO ENVIRONMENT ONE GRINDER PUMP:  
 VORTEX GRINDER PUMPS  
 C/O FLUID SOLUTIONS, INC.  
 TANEYTOWN, MARYLAND  
 410-756-9292

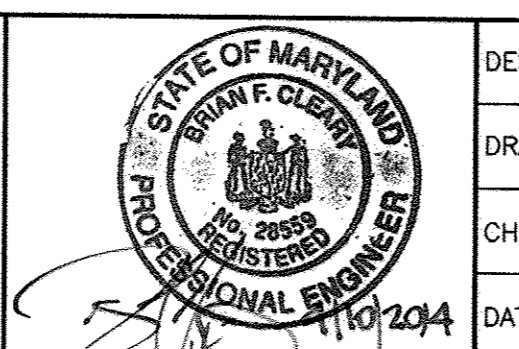


Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.  
 License No. 21443, Expiration Date: 12-21-18

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND  
 [Signature] DATE

DEPARTMENT OF PLANNING AND ZONING  
 HOWARD COUNTY, MARYLAND  
 [Signature] DATE

BENCHMARK ENGINEERING, INC.  
 8480 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLICOTT CITY, MARYLAND 21043  
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DESIGN: JMC					
DRAFT: JMC/DBT					
CHK: BFC					
DATE: 03/2014	BY	NO.	REVISIONS	DATE	

STANDARD DETAILS  
 PUBLIC SHARED SEPTIC PLAN  
 600 SCALE MAP NO: 34 BLOCK: 24 200 SCALE MAP NO: 202

REGAN PROPERTY  
 LOTS 2 thru 23, BUILDABLE PRESERVATION PARCEL 'A' and NON-BUILDABLE PRESERVATION PARCELS 'B' thru 'E'  
 TAX MAP: 34 - BLOCK: 24 - PARCEL: 200 - ZONED: RR-DEO - ELECTION DISTRICT: 5  
 CONTRACT NO. 50-4742-D  
 SCALE: AS SHOWN  
 SHEET NO. 7 OF 7

AS-BUILT