

SHARED SEPTIC TREATMENT SYSTEM NOTES

1. ALL INSPECTION, VIEWING AND PUMP OUT PORTS MUST BE SECURED TO PREVENT ACCIDENTAL OR UNAUTHORIZED ACCESS.
2. CONCRETE SHALL BE 5,000 P.S.I.
3. NO MORE THAN 3' OF FILL SHALL BE PLACED OVER ANY TANK LID. ALL TANKS SHALL BE SET UPON 6" TO 8" OF GRAVEL BEDDING.
4. TANK MEASUREMENTS AND ELEVATIONS ARE BASED ON SEPTIC TANKS AND PUMP CHAMBERS AS MANUFACTURED BY GILLESPIE PRECAST, LLC (1-800-638-6884). TANKS FROM ALTERNATIVE MANUFACTURERS MAY BE USED. ALL TANK SHOP DRAWINGS SHALL BE SUBMITTED FOR ENGINEER'S APPROVAL PRIOR TO FABRICATION.
5. ALL NEW TANKS SHALL BE TESTED FOR WATER TIGHTNESS PRIOR TO BACKFILLING. A VACUUM AIR TEST IS AN ACCEPTABLE METHOD.
6. BLOWER PIPING TO FAST MAY NOT EXCEED 100 FT TOTAL LENGTH AND USE 45° ELBOWS MAXIMUM. BLOWER MUST BE LOCATED ABOVE FLOOD/STANDING WATER LEVELS ON A CONCRETE BASE 28" X 42" X 2" MINIMUM OR WITHIN CONTROL SHED.
7. VENT TO BE LOCATED ABOVE FINISHED GRADE TO AVOID INFILTRATION. VENTILATION AREA SHALL BE PROVIDED PER MANUFACTURER'S SPECIFICATION. SECURE WITH STAINLESS STEEL SCREWS.
8. ALL APPURTENANCES TO FAST UNIT SHALL CONFORM TO ALL PLUMBING AND ELECTRICAL CODES.
9. ALL VALVES AND QUICK CONNECTS WITHIN PORTS SHALL BE ACCESSIBLE FROM FINISHED GRADE AND SHALL NOT REQUIRE TANK ENTRY FOR SERVICE. ALL PUMPS SHALL HAVE SAFETY ROPES.
10. REMOTE MONITORING SYSTEM (RMS) SHALL AUTOMATICALLY NOTIFY THE COUNTY IN THE EVENT OF A PUMP FAILURE OR HIGH WATER ALARM. REMOTE NOTIFICATION SHALL BE ROUTINELY TESTED AS PART OF REGULAR O&M.
11. TWO BLOWERS SHALL BE PROVIDED BY THE TREATMENT SYSTEM MANUFACTURER AND SHALL EACH BE CAPABLE OF CONTINUOUS DUTY AT THE DESIGN VALUES, WITH ONE BLOWER SERVING AS AN INSTALLED SPARE. BLOWER SHALL BE BY SPENCER TURBINE, INC.
12. ONE CONTROL PANEL SHALL BE PROVIDED FOR BLOWER CONTROL. BLOWER CONTROL PANEL SHALL HAVE A GASKETED, HINGED, LOCKABLE DOOR; DOOR-MOUNTED BLOWER ON-OFF SWITCHES; AND ALARM LIGHTS/SILENCERS. CONTROL PANEL SHALL BE BY SJE RHOMBUS OR APPROVED EQUAL.

Design Input		Calculations
Primary and Secondary Treatment and Equalization		
settling tank capacity (gallons per inch)	44.9	maximum daily flow (MDF) (gpd) 3,750
normal settling tank fluid level (inches)	45	average daily flow (ADF) (gpd) 1,875
		recommended minimum settling tank volume (gal) 1,875
		normal settling tank volume (gal) 2,020
Static Hydraulic Profile (with invert elevations)		
influent invert elev. (feet msl)	491.80	From Bohler
dose tank influent invert elev. (feet msl)	490.88	
dose tank floor elev. (feet msl)	484.88	
dose pump elev. (feet msl)	485.38	
Cell A lateral elev. (feet msl)	489.50	Cell A in-service lift (feet) 4.1
Cell B lateral elev. (feet msl)	487.50	Cell B in-service lift (feet) 2.1
Drainfield Dosing		
cell A flow (gpm)	120	force main velocity (feet/second) 5.2
Cell A force main length (feet)	78	Cell A force main friction loss (feet) 4.7
Cell A minor loss equivalent lengths (feet)	44.4	Cell A max. total dynamic head (feet) 12.5
		Cell A main volume (gal) 30
		Cell A total lateral volume (gal) 63
		Cell A dose vol. @ main + 5x lateral (gal) 343
cell B flow (gpm)	120	force main velocity (feet/second) 5.2
Cell B force main length (feet)	100	Cell B force main friction loss (feet) 5.5
Cell B minor loss equivalent lengths (feet)	44.4	Cell B max. total dynamic head (feet) 11.4
		Cell B main volume (gal) 38
		Cell B total lateral volume (gal) 63
		Cell B dose vol. @ main + 5x lateral (gal) 352
dose tank length (inches)	192	dose tank capacity (gal) 5,745
dose tank width (inches)	96	dose tank height to invert (inches) 79.8
dose tank height to invert (inches)	72	design dose volume (gals)/Cell B) 352
# cells in service	2	
lag pump on (inches)	27	effective dose volume (gals) 399
high water alarm height (inches)	25	min # daily doses @ ADF 5.3
lead pump on (inches)	23	average dose time (minutes) 2.9
low water cutoff (inches)	18	dose off time setting (hours) 4.5
Pump model (Goolds)	WS07BHF	residual settling volume (gal) 1,436
min. tank height above invert (inches)	9	volume above high water alarm (gal) 3,750
dose pump control panel model (SJE Rhombus)	1FS 41W-4H 4A 4D 8AC 10E 19F	
Notes		
gpd = gallons per day	design distal head (feet)= 3.0	
gpm = gallons per minute	friction C factor for plastic pipe= 130	
msl = mean sea level in feet	force main ID (3" dia sch40PVC, in)= 3.069	
calculated values in <i>italics</i>	lateral inside diameter (2" dia sch40PVC, in)= 2.067	
set floats based on weight +/- 3"		
one cell is always in service, with the other resting		

DESIGN INPUT

APPROVED FOR PRIVATE WATER AND SHARED SEWER SYSTEM FOR LOTS 23, 38, 39, 40 & 42

Brandon for Mauna Rossman 2/12/2020
HOWARD COUNTY HEALTH OFFICER DATE

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND



Hydro-Terra Group
1106 Business Parkway South
Suite E
Westminster, Maryland 21157
(410) 861-5376 (phone)
(410) 861-5467 (fax)



PROFESSIONAL ENGINEER
SJE RHOMBUS
LICENSE NO. 92291 EXPIRATION DATE: 12/31/2020

DES: MJM
DRN: MDS
CK: MDH
DATE: 1/3/2020

REV	DATE	DESCRIPTION	BY
2	1/24/22	AS-BUILT	S/L
1	11/23/21	AS BUILT	W/RA

Water and Sewer Plans
TREATMENT SYSTEM DETAIL
PARCEL NO. 34, 36, 98, 111 & 112
60' SCALE MAP NO. 27 & 28 BLOCK NO.

WILLOWSHIRE
LOTS 1-45, BUILDABLE PRESERVATION PARCEL C, NON-BUILDABLE PRESERVATION PARCEL A, B, E-G & L, NON-BUILDABLE BULK PARCEL D & H-K
5232 GREEN BRIDGE ROAD
TAX MAP 27, GRID 18, PARCELS 34, 36, 98, 111 & 112
5TH ELECTION DISTRICT
HOWARD COUNTY MARYLAND
CONTRACT NO.: 60-5062-D

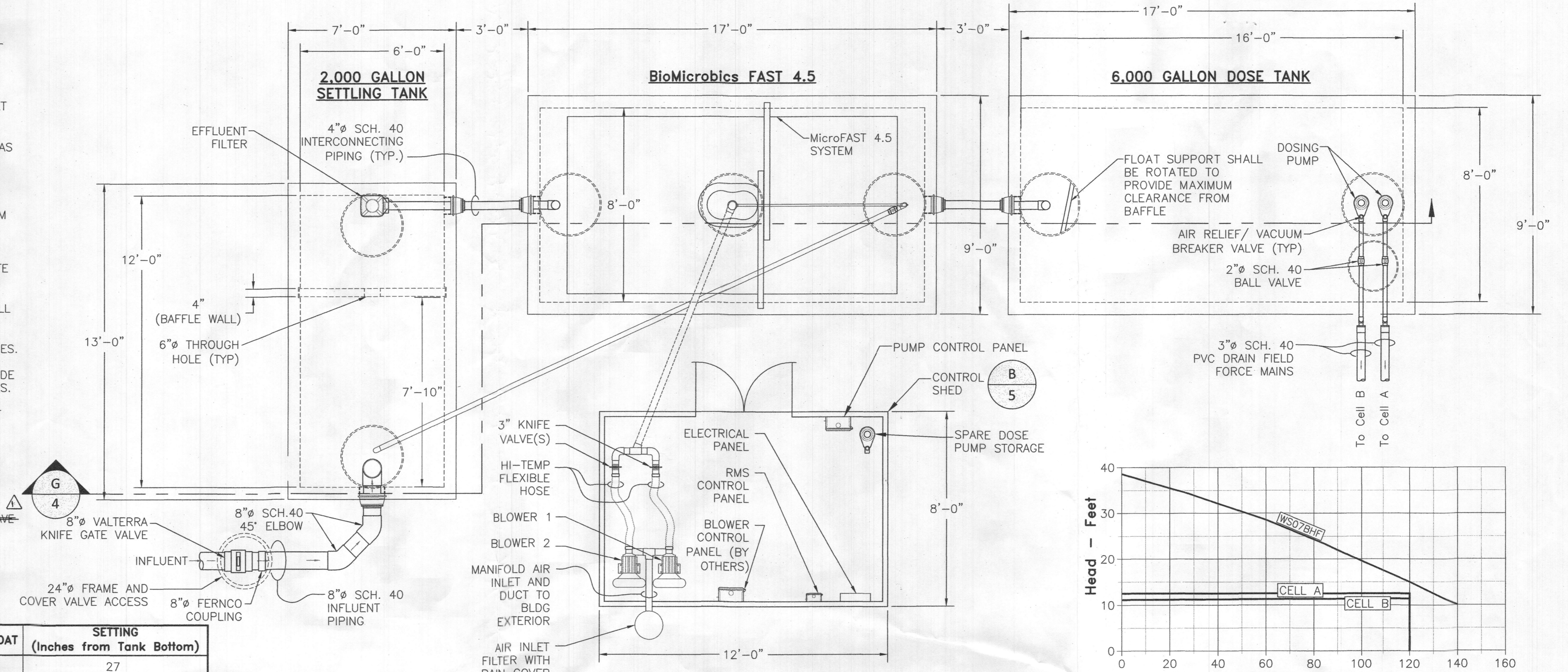
SCALE: As Noted
SHEET: 4 OF 5

DOSE PUMP TANK FLOAT	SETTING (Inches from Tank Bottom)
LAG PUMP ON	27
HIGH WATER	25
LEAD PUMP ON	23
LOW WATER CUT-OFF	18

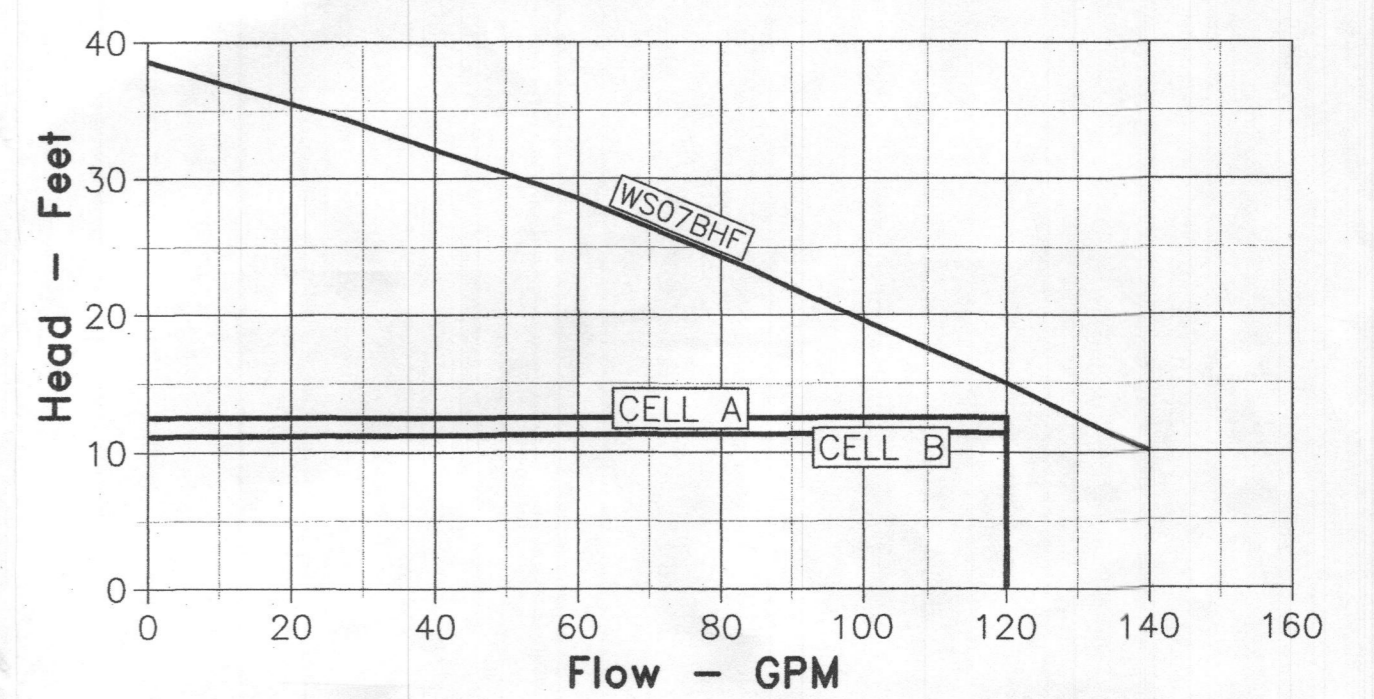
Float settings are based upon tank dimensions indicated. If different tanks are used, float settings shall be adjusted accordingly.

Elevation I.D.	Elevation (Feet; MSL)
A	Varies (497'-498')
B	491.80
C	486.22
D	491.55
E	491.30
F	486.22
G	491.13
H	490.88
I	484.88
J	484.38

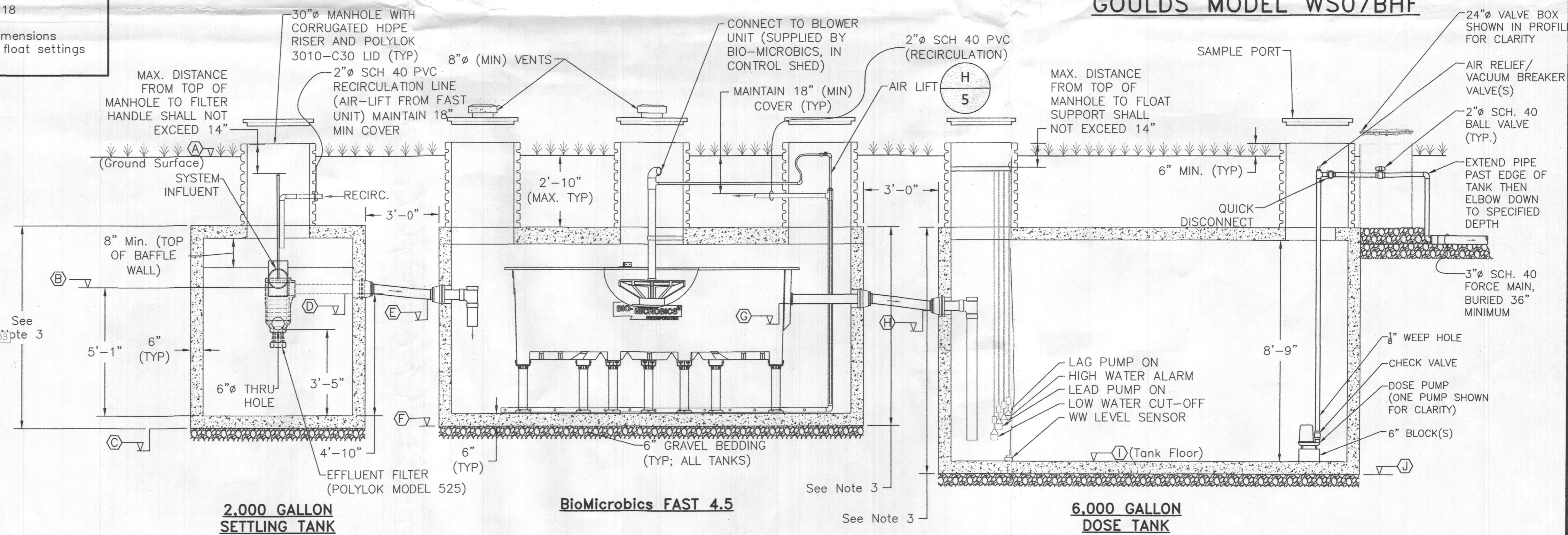
Elevations for Pipes refer to invert.



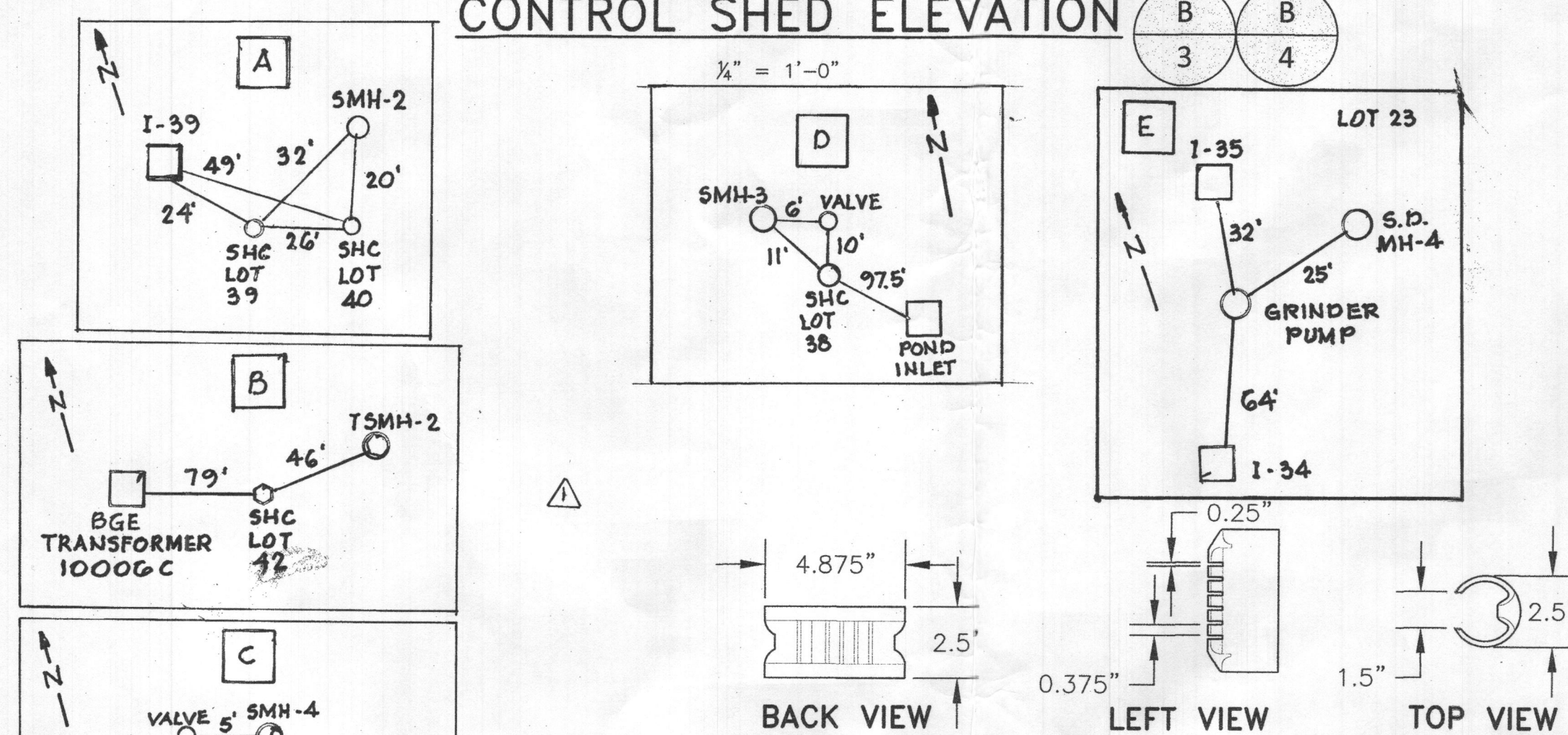
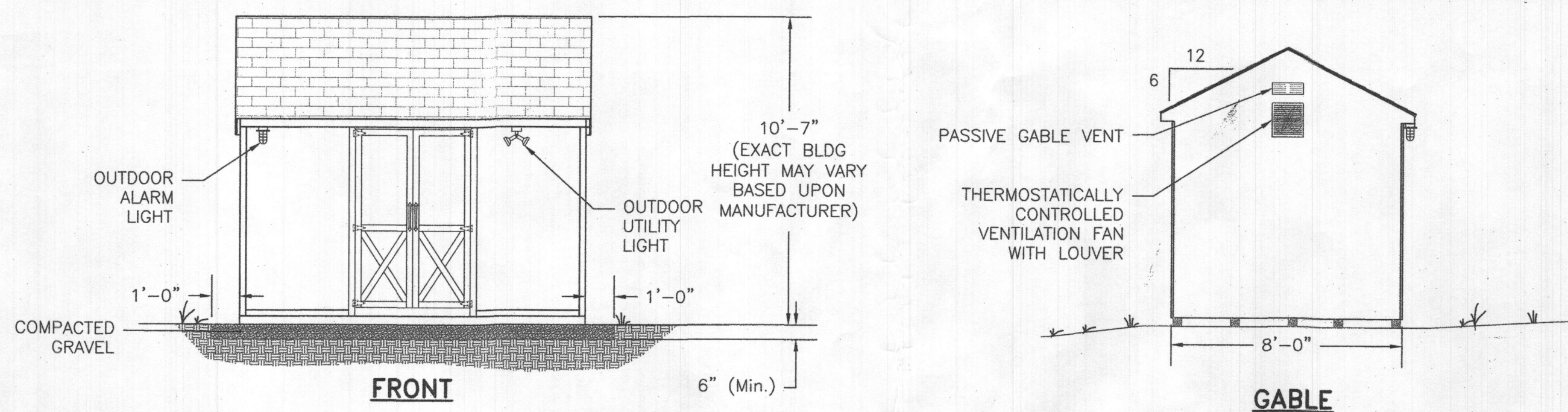
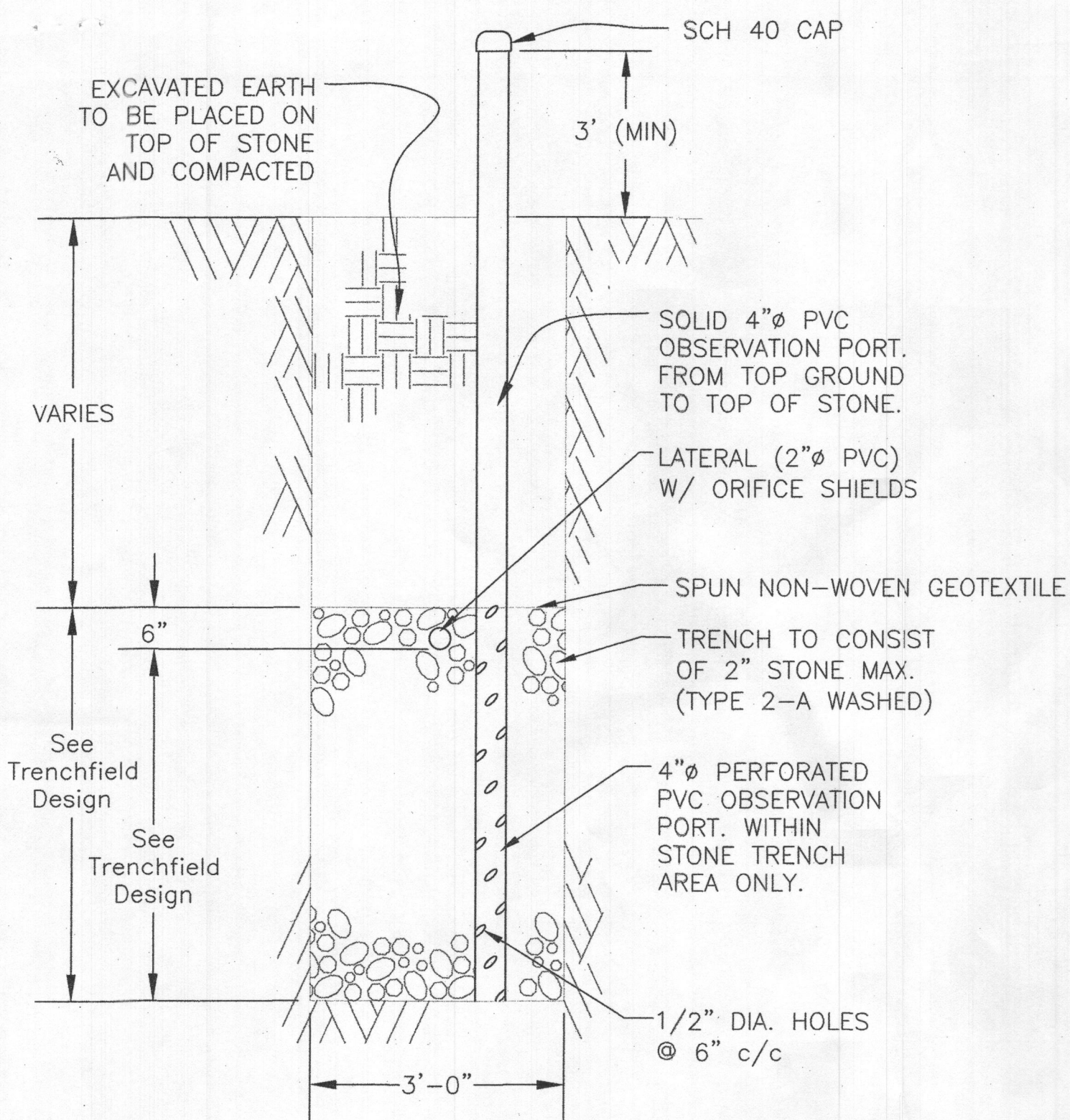
TREATMENT SYSTEM PLAN
SCALE: 3/8" = 1'-0"



DOSE PUMP CURVE
GOULDS MODEL WS07BHF

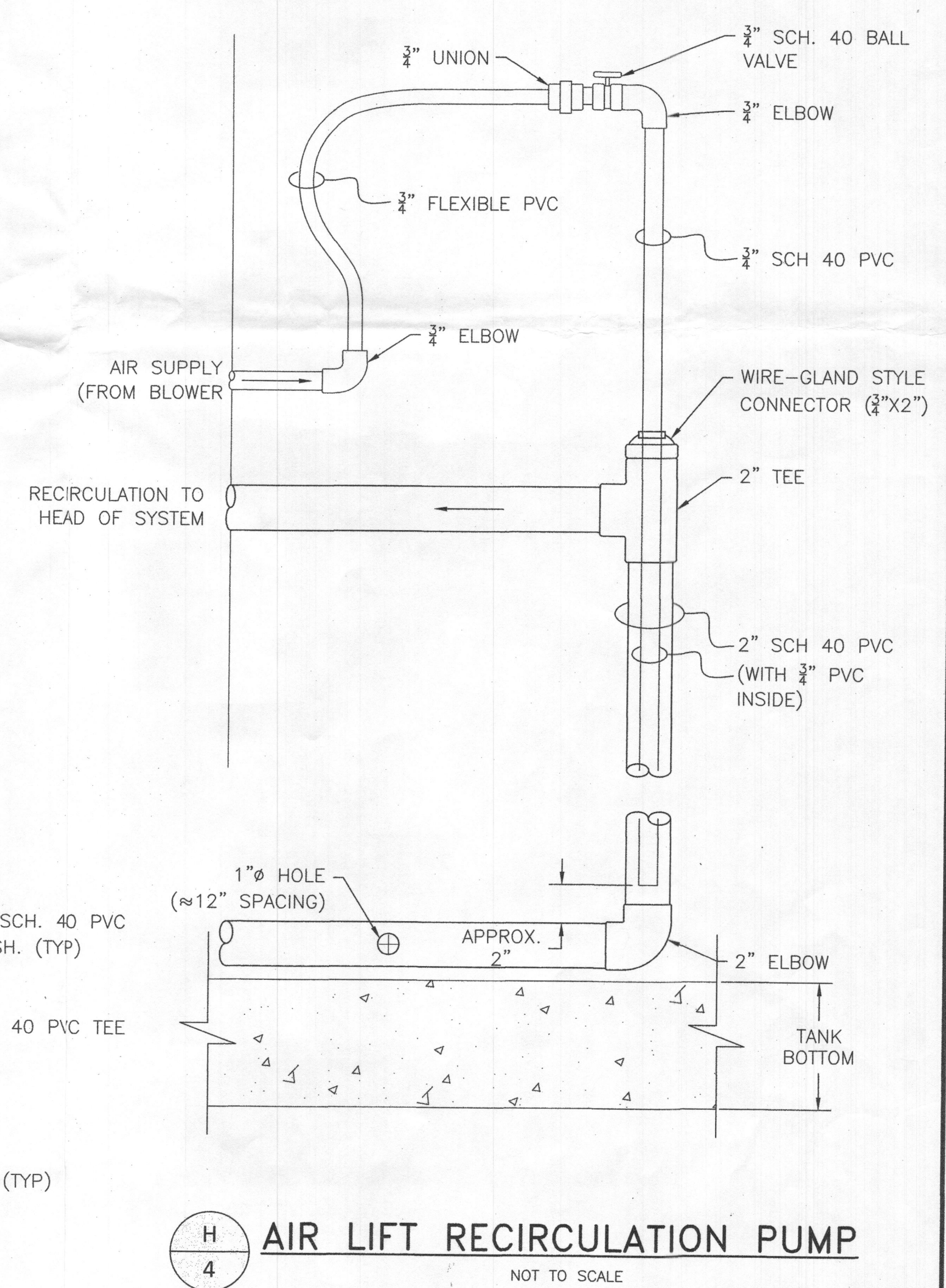
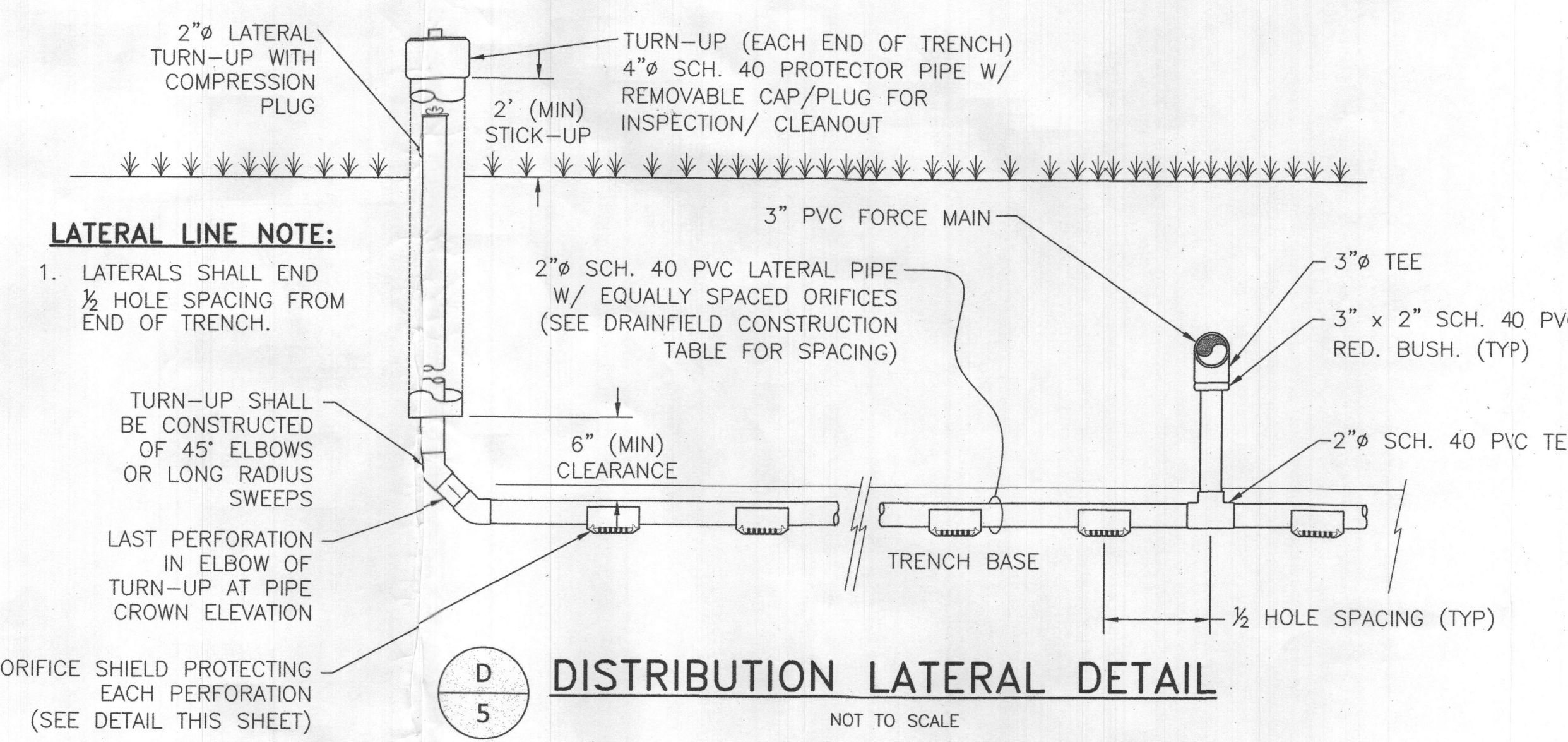
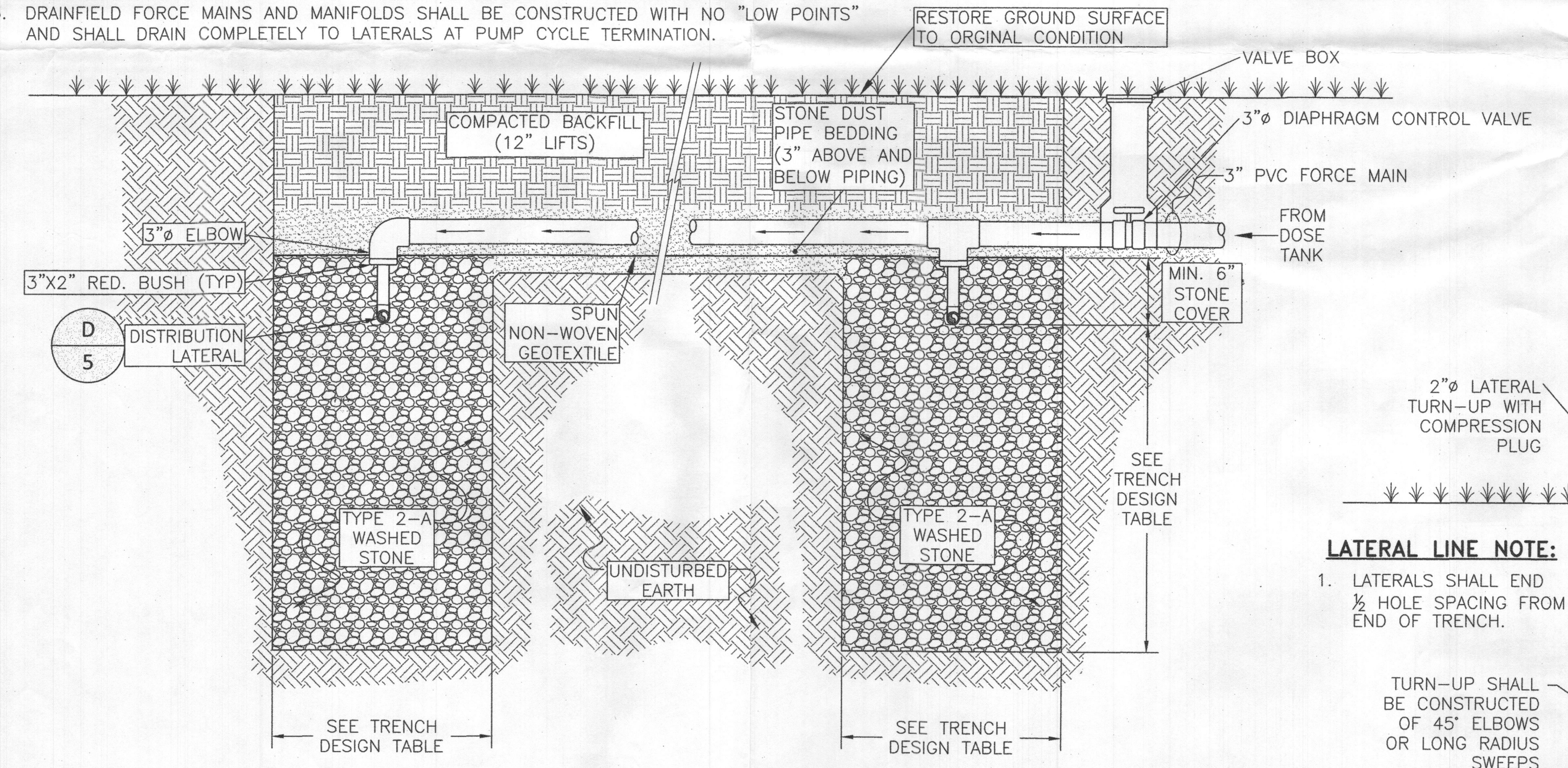


TREATMENT SYSTEM SECTION
SCALE: 3/8" = 1'-0"



- CONTROL SHED NOTES:**
- UTILITY STORAGE BUILDING SHALL BE PROVIDED NEAR WASTE WATER TREATMENT SYSTEM WITH CONTROL PANEL MOUNTED INSIDE.
 - BUILDING SHALL BE RIDGE CABINET COMPANY "COTTAGE A-FRAME" STYLE STORAGE BUILDING. 8' X 12', VINYL SIDED WITH NOMINAL 7" SIDE WALLS AND NO WINDOWS, WITH ONE DOUBLE DOOR CENTERED ON 12' SIDE OF BUILDING. BUILDING SHALL HAVE 10" RIDGE VENT, 4"x4" PRESSURE TREATED SKIDS, 2"x4" FLOOR JOISTS (16" ON CENTER), 5/8" PLYWOOD FLOOR SHEATHING, 2"x4" VENT, ALL WALLS TO BE PLATED AT BOTTOM AND DOUBLE PLATED AT THE TOP, 1/2" ROOF SHEATHING, ARCHITECTURAL SHINGLES, DOORS AND FRAME TO BE REINFORCED, DOOR HINGES MUST BE "T" TYPE OR STRAP TYPE, 3 HINGES PER DOOR SIDE (PIANO HINGES ARE NOT ACCEPTABLE), LOCKS ARE TO BE KEYPED ALIKE WITH BAUER CH751 LOCK.
 - VINYL SIDING SHALL BE ALMOND COLOR AND SHINGLES SHALL BE BROWN COLOR.
 - A RED ALARM BEACON SHALL BE MOUNTED ON THE OUTSIDE OF THE BUILDING.
 - BUILDING SHALL BE PLACED ON TOP OF 6" (MIN.) COMPACTED STONE.
 - GRADING TO BE LEVEL AND COMPACTED PRIOR TO PLACEMENT OF BUILDING.
 - FIELD PLACEMENT OF PANELS, PIPING, BLOWERS, AND TANKS SHALL BE APPROVED BY SITE ENGINEER.
 - BUILDING SHALL HAVE A 230 VAC LOAD CENTER WITH APPROPRIATE CIRCUIT BREAKERS, POWER SHALL BE PROVIDED TO SERVE ALL EQUIPMENT SPECIFIED HEREIN.
 - BUILDING SHALL HAVE AT LEAST 3 DOUBLE-DUPLEX CONVENIENCE OUTLETS, A CEILING LIGHT, OUTDOOR FLOODLIGHTS, AND AN OUTDOOR ALARM LIGHT.
 - A REMOTE MONITORING SYSTEM (RMS) SHALL BE INSTALLED THAT SHALL REMOTELY NOTIFY THE COUNTY IN THE EVENT OF A PUMP FAILURE OR A HIGH WATER ALARM. THE RMS SHALL BE COMPATIBLE WITH THE COUNTY'S EXISTING REMOTE MONITORING NETWORK AND INFRASTRUCTURE. RMS ALERT SYSTEM TESTING SHALL BE PART OF REGULAR O&M.
 - ADEQUATE VENTILATION SHALL BE PROVIDED FOR SHED TO AVOID EQUIPMENT WEAR DUE TO EXTREME HEAT. (MAX PERMISSIBLE INTERIOR TEMPERATURE IS 104°F).
 - HOWARD COUNTY ISSUED LOCKS SHALL BE PROVIDED TO SECURE UTILITY SHED AND ANY OTHER APPROPRIATE SYSTEM APPURTENANCES (E.G. MANHOLE COVERS AND EXTERIOR MOUNTED CONTROL BOXES).

- FEED LINE NOTES:**
- ALL HOLES (EXCEPT LAST) ARE FACE DOWN AND PROTECTED WITH ORIFICE DIFFUSER (SEE DETAIL THIS SHEET)
 - SEE DRAINFIELD CONSTRUCTION TABLE FOR TRENCH DIMENSIONS AND LATERAL PERFORATIONS NOT SHOWN.
 - DRAINFIELD FORCE MAINS AND MANIFOLDS SHALL BE CONSTRUCTED WITH NO "LOW POINTS" AND SHALL DRAIN COMPLETELY TO LATERALS AT PUMP CYCLE TERMINATION.



APPROVED FOR PRIVATE WATER AND SHARED SEWER SYSTEM FOR LOTS 23, 38, 39, 40 & 42

Maureen Rollman 2/12/2020
HOWARD COUNTY HEALTH OFFICER DATE

FEED LINE/DEEP TRENCH DETAIL (TYP) (C/3)
NOT TO SCALE

- LATERAL LINE NOTE:**
- LATERALS SHALL END 1/2" HOLE SPACING FROM END OF TRENCH.
- TURN-UP SHALL BE CONSTRUCTED OF 45° ELBOWS OR LONG RADIUS SWEEPS
- LAST PERFORATION IN ELBOW OF TURN-UP AT PIPE CROWN ELEVATION
- ORIFICE SHIELD PROTECTING EACH PERFORATION (SEE DETAIL THIS SHEET)

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND <i>Chris Stuy</i> 1-15-2020 CHIEF, BUREAU OF UTILITIES DATE	DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND <i>Shelley</i> 2-19-20 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE	 Hydro-Terra Group 1105 Business Parkway South Suite E Westminster, Maryland 21157 (410) 861-5376 (phone) (410) 861-5467 (fax)	 PROFESSIONAL ENGINEER MARYLAND LICENSE NO. 8020 I, MARK J. MAZDREK, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 8020, EXPIRATION DATE: 12/31/2020	DES: MJM DRN: MDS CK: MDH DATE: 1/3/2020	Water and Sewer Plans DISTRIBUTION DETAILS	WILLOWSHIRE LOTS 1 - 45, BUILDABLE PRESERVATION PARCEL C, NON-BUILDABLE PRESERVATION PARCEL A, B, E-G & L, NON-BUILDABLE BULK PARCEL D & H-K 5232 GREEN BRIDGE ROAD TAX MAP 27, GRID 18, PARCELS 34, 36, 98, 111 & 112 5TH ELECTION DISTRICT HOWARD COUNTY MARYLAND CONTRACT NO.: 60-5062-D	SCALE As Noted SHEET 5 OF 5
				REV. DATE DESCRIPTION BY 1/25/21 AS BUILT W/RA	PARCEL NO. 34, 36, 98, 111 & 112 600' SCALE MAP NO. 27 & 28 BLOCK NO.		