

# WASTEWATER TREATMENT SYSTEM

CONTRACT NO. 50-4359-D

WALNUT GROVE

LOTS 1 THRU 88, PRESERVATION PARCELS "A" THRU "G" AND

NON-BUILDABLE PARCEL "H"

LIBER 572 FOLIO 430

HOWARD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS

TYPE OF BUILDING	RESIDENTIAL
NUMBER OF UNITS	89 (88 NEW; 1 EXISTING)
NUMBER OF S.H.C.'s	87 (INDIVIDUAL SEPTIC FIELD)
NUMBER OF W.H.C.'s	N/A (THERE WILL BE A WELL ON EACH INDIVIDUAL LOT)
DRAINAGE AREA	N/A
TREATMENT PLANT	COMMUNITY SEPTIC FIELD ON PRESERVATION PARCEL "A"

## 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 NOV. 2002 BY GLW PA. WASTEWATER TREATMENT PLANS ARE BASED UPON THE SITE DEVELOPMENT PLANS DESIGNED BY GLW PA.
- 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. 28FB AND NO. 35A2.

ALL VERTICAL CONTROLS ARE BASED ON NAVD '29. VERTICAL CONTROLS PROVIDED ON DRAWINGS IS NO. 28FB AND NO. 35A2.

35A2: NORTHING: 564154.799 ft. 28FB: NORTHING: 570710.155 ft.  
EASTING: 1331201.065 ft. EASTING: 1329525.498 ft.  
ELEVATION: 488.647 ft. ELEVATION: 386.506 ft.

- 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. IN THE EVENT THE CONTRACTOR'S WORK REQUIRES 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 ON THESE PLANS:

AT&T	1-800-252-1133
BGE (CONTRACTOR SERVICES)	410-850-4620
BGE (UNDER GROUND DAMAGE CONTROL)	410-685-1400/410-291-4607
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

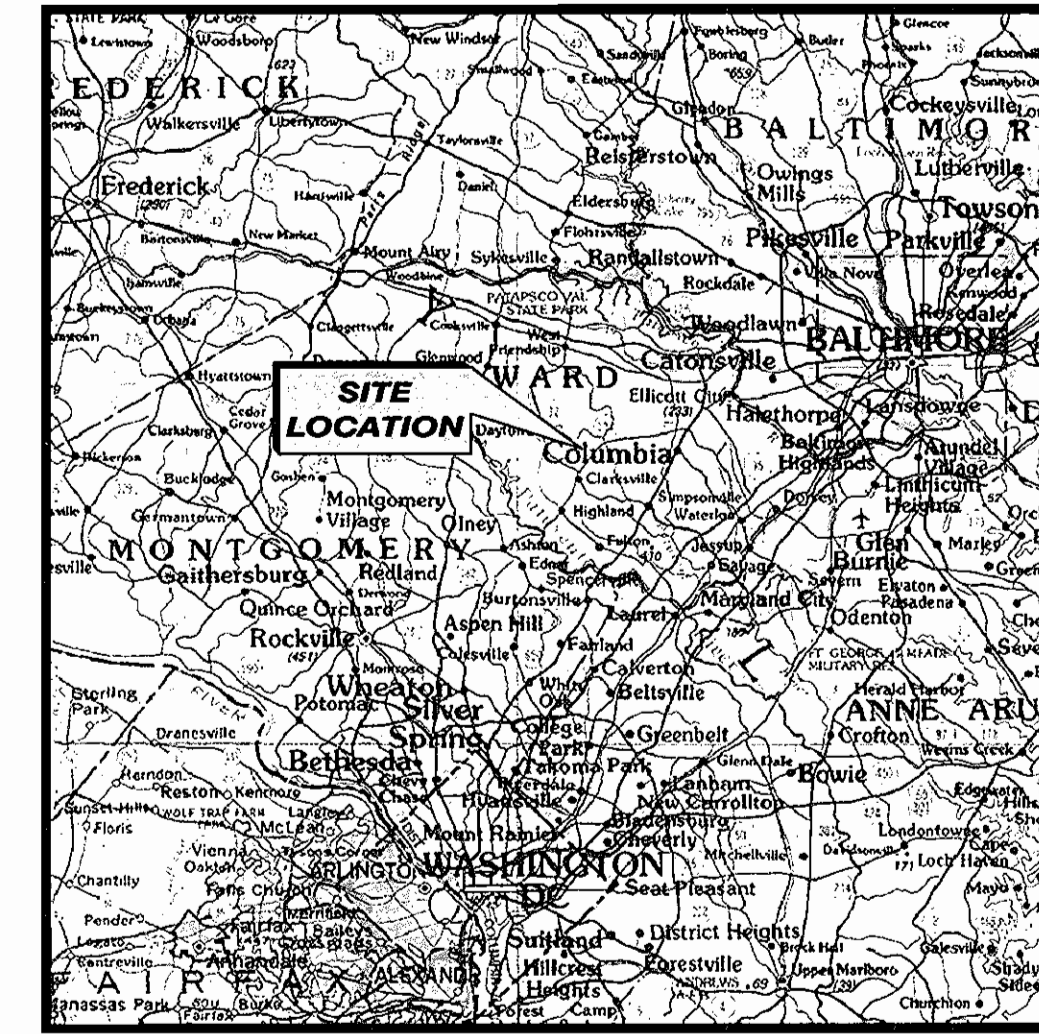
- TREES AND SHRUBS ARE TO BE PROTECTED FROM DAMAGE TO THE MAXIMUM EXTENT. TREES AND SHRUBS LOCATED WITHIN THE CONSTRUCTION AREA ARE NOT TO BE REMOVED OR DAMAGED BY THE CONTRACTOR.
- THE CONTRACTOR SHALL REMOVE TREES, STUMPS AND ROOTS ALONG THE LINE OF EXCAVATION. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONSTRUCTION OF THE MAIN.
- THE CONTRACTOR SHALL NOTIFY THE BUREAU OF HIGHWAYS, HOWARD COUNTY, AT (410)-313-2450 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(a) OF THE HOWARD COUNTY CODE.

### PART II - WATER

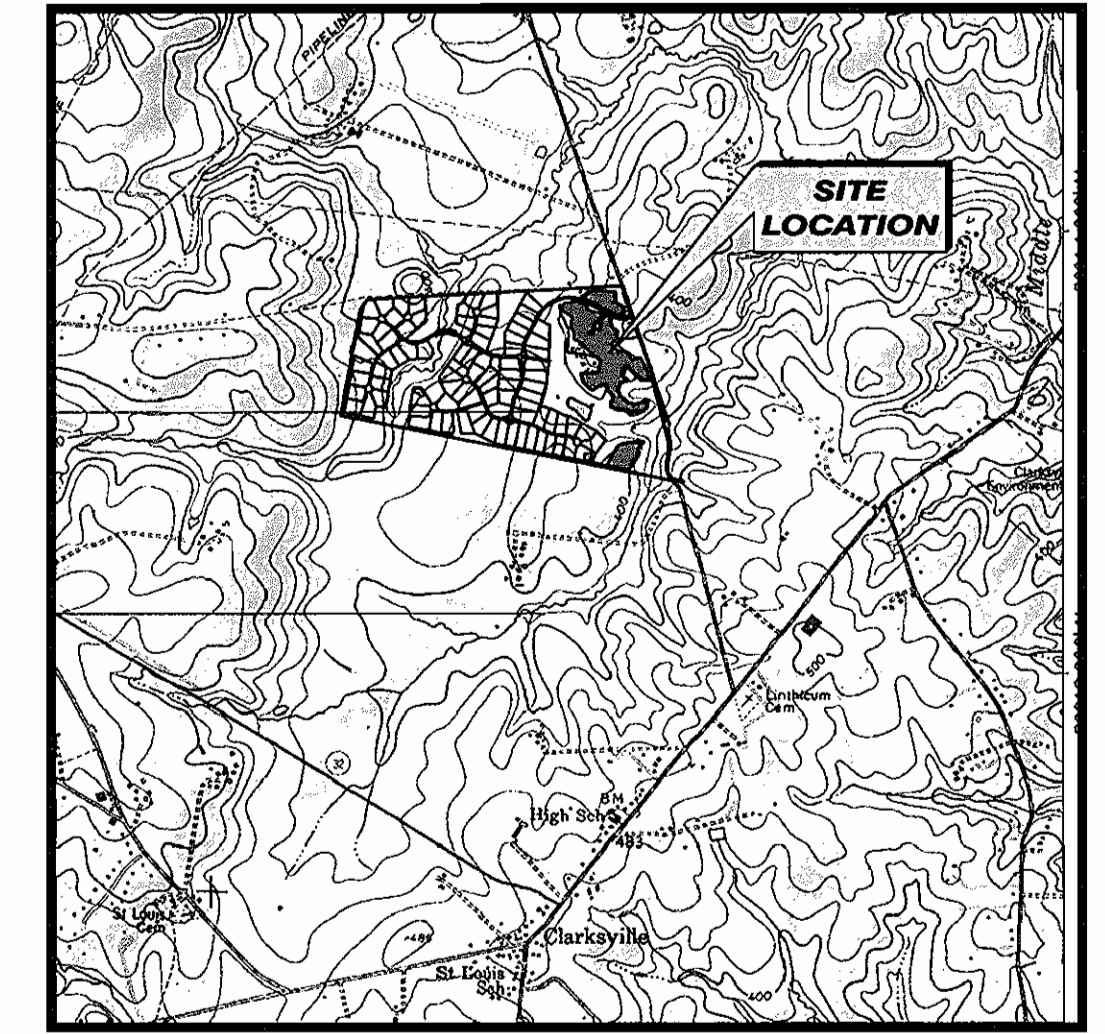
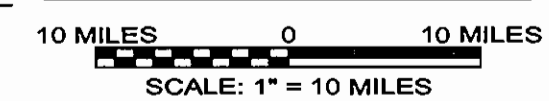
- ALL WATER ON THIS SITE IS TO BE PROVIDED BY PRIVATE WELLS LOCATED ON INDIVIDUAL LOTS.

### PART III - SEWER

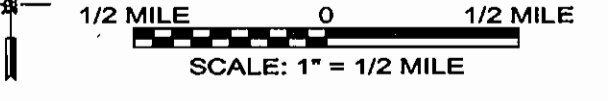
- ALL LOW PRESSURE SEWER MAINS SHALL BE IN ACCORDANCE WITH CONTRACT NO. 50-4330-D DRAWINGS.
- ALL DRAINFIELD TRENCHES AND DISTRIBUTION PIPE LOCATIONS SHALL BE STAKED OUT IN THE LOCATION SHOWN.
- ALL VALVE BOXES / VAULTS SHALL BE FINISHED AT THE SURFACE WITH FRAME AND GRAVEL.



VICINITY MAP



LOCATION MAP



SITE PLAN



INDEX OF DRAWINGS	
SHT NO.	DESCRIPTION
G-1	Title Sheet
G-2	General Design Site Plan & PFD
G-3	Existing Site Conditions
G-4	P & ID - Treatment System
G-5	P & ID - Dosing System
G-6	P & ID - Building Components
C-1	Treatment System Site Plan
C-2	Trench Layout
C-3	SBR Treatment System Sections
C-4	Drainfield Design Information & Details
C-5	Trench Sections and Details
A-1	Chemical & Blower Building Plan Layout
M-1	System Details

ITEMS	QUANTITIES ESTIMATED	AS-BUILT		
		QUANTITIES	TYPE	MANUFACTURER/SUPPLIER
3W' X 4'H DRAINFIELD TRENCHES	22,890 LF.			
1/2" PC EMITTER LINES	22,890 LF.			
2" PVC HEADER	10,000 LF.			
2" PVC RETURN LINES	5,000 LF.			
2" PVC WASTE MAINS	1,500 LF.			

NAME OF UTILITY CONTRACTOR: \_\_\_\_\_

SURVEY AND CHECKBOX: ..... DRAFTING DIV. AS-BUILT DATE: \_\_\_\_\_

### DEVELOPER'S CERTIFICATION

I HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THIS PLAN AND SEDIMENT CONTROL MEASURES WILL BE IMPLEMENTED IN ACCORDANCE WITH SECTION 219 HOCO DESIGN MANUAL SPECIFICATIONS AND DRAWINGS FOR SEDIMENT AND EROSION CONTROL (S&EC). ALL RESPONSIBLE CONSTRUCTION PERSONNEL WILL HAVE AN MDE S&EC TRAINING CERTIFICATE. I AUTHORIZE PERIODIC ON-SITE INSPECTION BY HOCO S.C.D.

*Timothy A. Feaga* 5/17/07  
SIGNATURE OF DEVELOPER DATE

\* SEE EROSION AND SEDIMENT CONTROLS OF F-06-31

REVIEWED FOR HOWARD TECHNICAL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS.

*Jim Hayes* 6/12/07  
U.S.D.A. NATURAL RES. CONSRV. SERVICE DATE

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

*Anthony Selby* 6/12/07  
HOWARD S.C.D. DATE

HEALTH DEPARTMENT  
HOWARD COUNTY, MARYLAND

*Peter Beilenson* 6/5/07  
WELL AND SEPTIC PROGRAM DATE

DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

*[Signature]* 6/19/07  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Jeff Waddy* 5/21/07  
CHIEF BUREAU OF UTILITIES DATE

HOWARD COUNTY AND MDE CONSTRUCTION PLAN SET FOR PERMIT APPLICATION / APPROVAL

2129 Business Parkway South; Suite 10  
Westminster, Maryland 21157  
(410) 876-0280

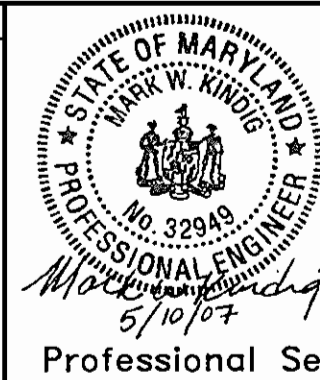


WALNUT GROVE  
LOTS 1 THRU 88, BUILDABLE PRESERVATION PARCEL "A", NON-BUILDABLE PRESERVATION PARCELS "B" THRU "I" AND NON-BUILDABLE BULK PARCEL "J"  
LIBER 572 FOLIO 430  
HOWARD COUNTY, MARYLAND  
ELECTION DISTRICT NO. 6  
CONTRACT NO. 50-4359-D

Verify Scale

THIS BAR IS ONE INCH ON ORIGINAL DRAWING

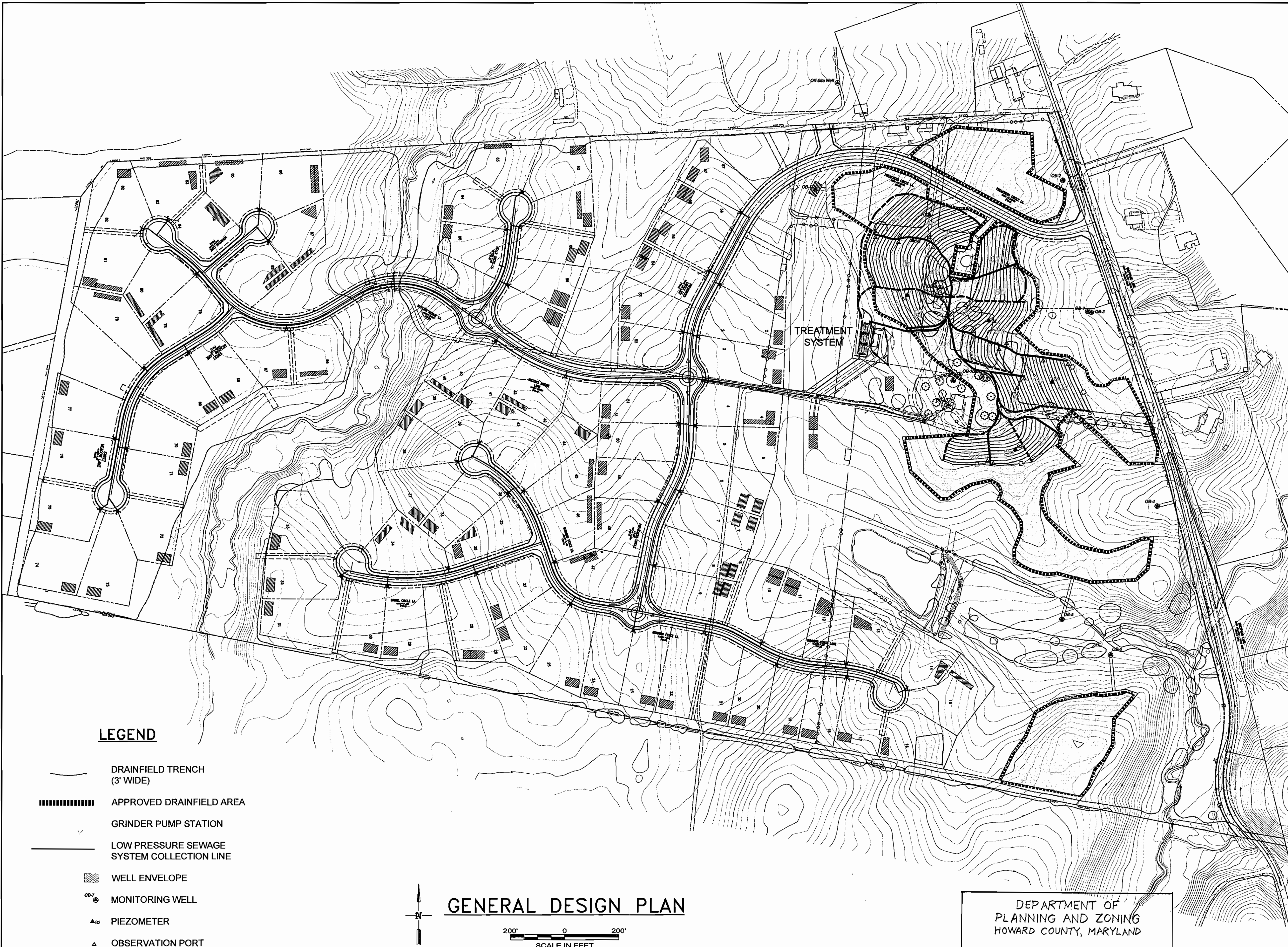
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY



no.	description	date	by	approved
9	Howard County/MDE Construction Plan (Mylar)	05/10/07	DAK	MDH
8	Final Design (MYLAR SUBMITTAL)	12/21/06	MRK	MDH
7	Final Design	11/20/06	MDS	MDH
6	Wastewater Treatment System Design Submittal	09/19/06	MDS	MDH
5	Wastewater Treatment System Design Submittal	07/20/06	MDS	MDH
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2	SBR Resubmittal	11/22/05	MDS	MDH
1	BioCiera Resubmittal	08/24/05	MDS	MDH

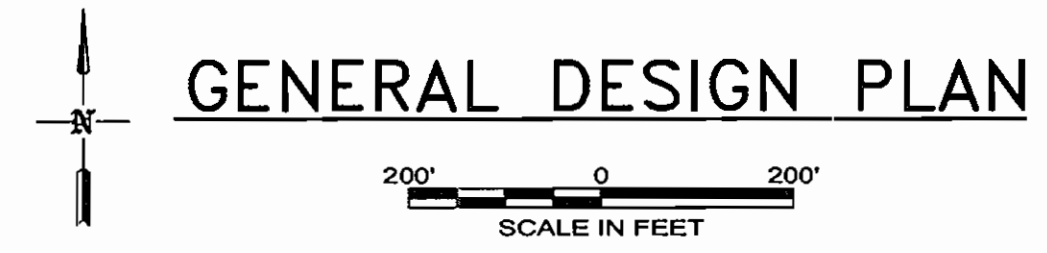
  

client	WALNUT GROVE		sheet no.
	HOWARD COUNTY, MARYLAND		G-1
drawn	DAK		checked
struct.	N/A		mech.
date	12/21/04	scale	AS NOTED
etc.	KAS		file no.
etc.	KAS		01-1633-00-3927-000
designer	RMC		
etc.	N/A		
civil	N/A		SAIC logo
etc.	MVK		



**LEGEND**

- DRAINFIELD TRENCH (3' WIDE)
- APPROVED DRAINFIELD AREA
- GRINDER PUMP STATION
- LOW PRESSURE SEWAGE SYSTEM COLLECTION LINE
- WELL ENVELOPE
- MONITORING WELL
- PIEZOMETER
- OBSERVATION PORT

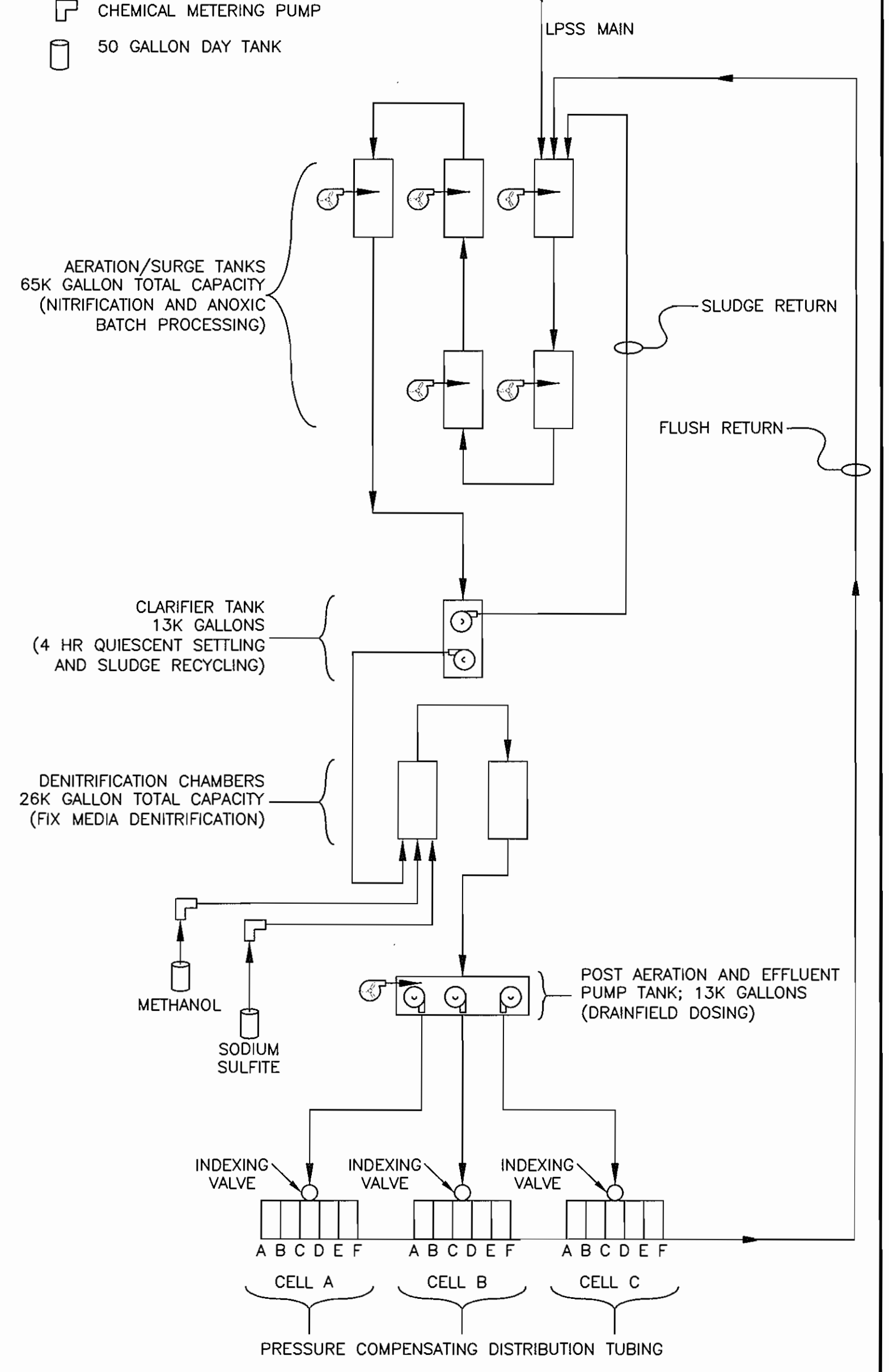


**GENERAL DESIGN PLAN**

**KEY**

- AERATION BLOWER
- PUMP
- CHEMICAL METERING PUMP
- 50 GALLON DAY TANK

LPSS COLLECTION  
87 LOTS  
46 GRINDER PUMP STATIONS  
65,250 gpd MDF  
32,625 gpd ADF



**PROCESS FLOW DIAGRAM**

- SBR = SEQUENTIAL BATCH REACTOR TREATMENT
- MDF = MAXIMUM DAILY FLOW
- ADF = AVERAGE DAILY FLOW
- gpd = GALLONS PER DAY
- LPSS = LOW PRESSURE SEWER SYSTEM

DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

*[Signature]* 4/17/07  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Verify Scale  
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2	SBR Resubmittal	11/22/05	MDS	MDH
1	BioClerc Resubmittal	08/24/05	MDS	MDH
no.	description	date	by	approved

client  
**WALNUT GROVE**  
HOWARD COUNTY, MARYLAND

site  
**WASTEWATER TREATMENT SYSTEM GENERAL DESIGN PLAN & AND PFD**

sheet no. **G-2**

drawn *DAK* struct. *N/A* date *12/21/04* scale *AS NOTED* file no. *3927-G02.DWG*

checked *KAS* mech. *N/A* job no. *01-1633-00-3927-000*

designing *RMC* design *KAS* job no. *01-1633-00-3927-000*

no./qc *N/A* mech. *N/A* civil *N/A* mech. *N/A*

revisions

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

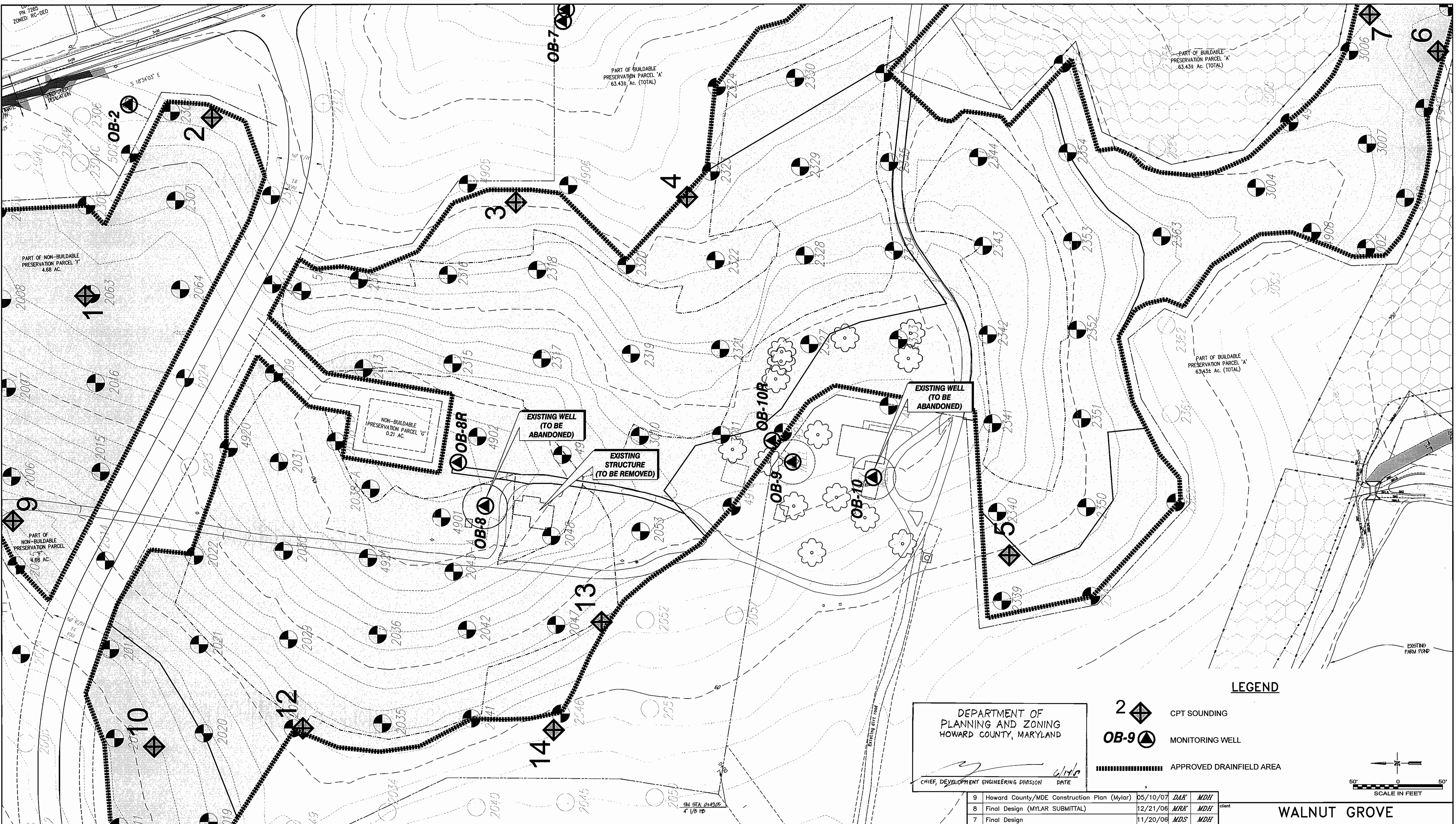
*[Signature]* 5/21/07  
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From Science to Solutions

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ELECTION DISTRICT No. 6  
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DEPARTMENT OF  
PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 6/14/06

**LEGEND**

2 ◆ CPT SOUNDING

OB-9 ▲ MONITORING WELL

■■■■■■■■■■ APPROVED DRAINFIELD AREA

50' 0 50'  
SCALE IN FEET

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1	BioClerc Resubmittal	08/24/05	MDS	MDH
no.	description	date	by	approved
	revisions			

client: **WALNUT GROVE**  
HOWARD COUNTY, MARYLAND

sheet no. **G-3**

title: **WASTEWATER TREATMENT SYSTEM EXISTING SITE CONDITIONS**

drawn: DAK struct: N/A date: 12/21/04 scale: AS NOTED file no.: 3927-G03.DWG

checked: KAS mech: KAS job no.: 01-1633-00-3927-000

designed: RMC elec: N/A

civil: N/A

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PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

CHIEF BUREAU OF UTILITIES DATE 5/21/07

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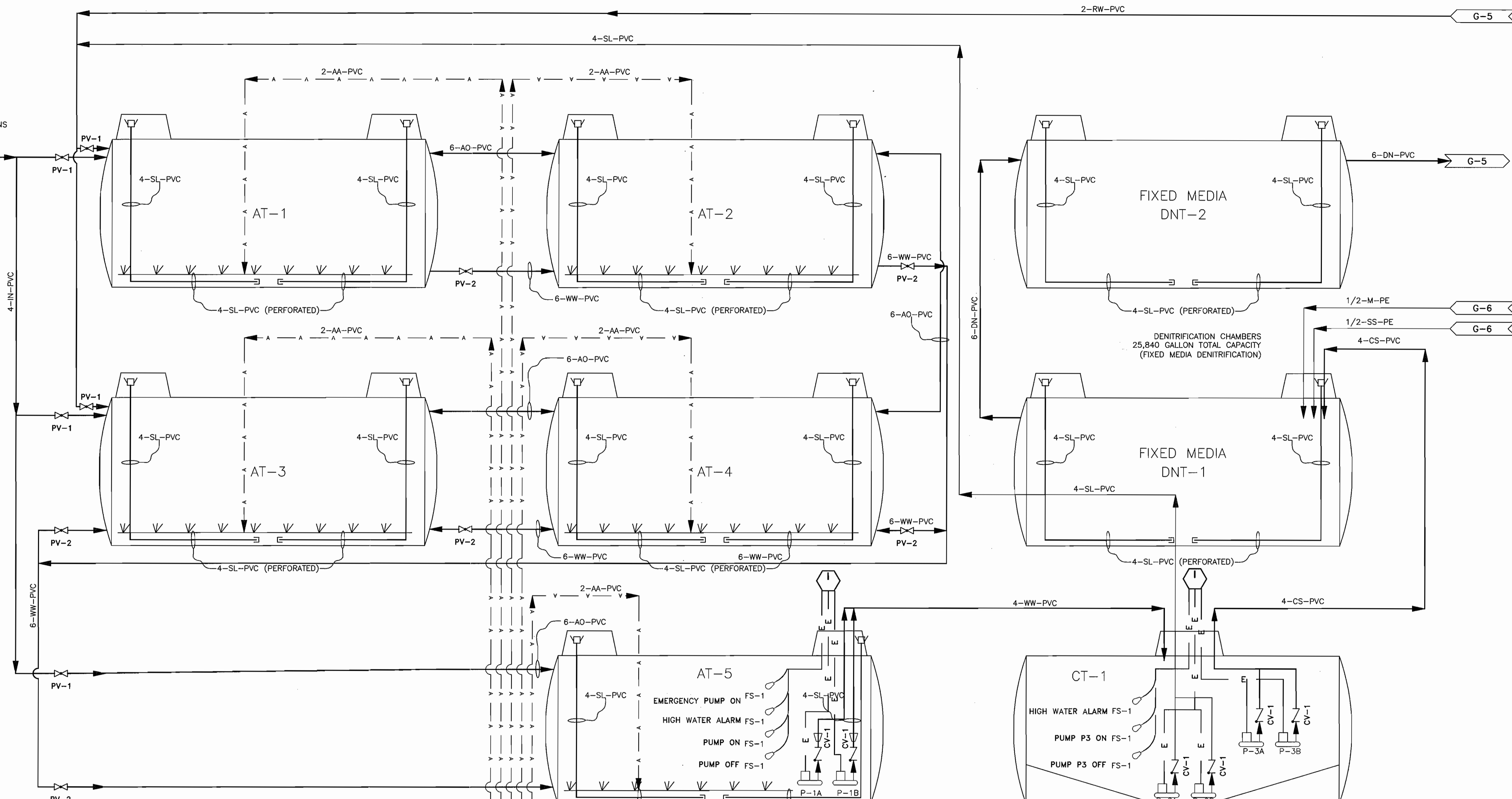
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THIS SHEET, ADJUST  
SCALES ACCORDINGLY

STATE OF MARYLAND  
MARK W. KING  
PROFESSIONAL ENGINEER  
No. 32949  
5/10/07

Professional Seal

LPSS COLLECTION  
87 LOTS  
46 GRINDER PUMP STATIONS  
65,250 gpd MDF  
32,625 gpd ADF

LPSS MAIN



**NOTE:**  
AERATION/SURGE TANKS  
64,600 GALLON TOTAL CAPACITY  
(NITRIFICATION AND ANOXIC  
BATCH PROCESSING)

DEPARTMENT OF  
PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

*[Signature]* 6/10/06  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

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Professional Seal

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client		WALNUT GROVE HOWARD COUNTY, MARYLAND	
title		WASTEWATER TREATMENT SYSTEM P&ID - TREATMENT SYSTEM	
sheet no.		G-4	
drawn	DAK	struct.	N/A
checked	KAS	mech.	N/A
designed	PMC	elec.	N/A
civil	N/A	sq./gc	MRK

DEPARTMENT OF  
PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*[Signature]* 5/21/06  
CHIEF, BUREAU OF UTILITIES DATE

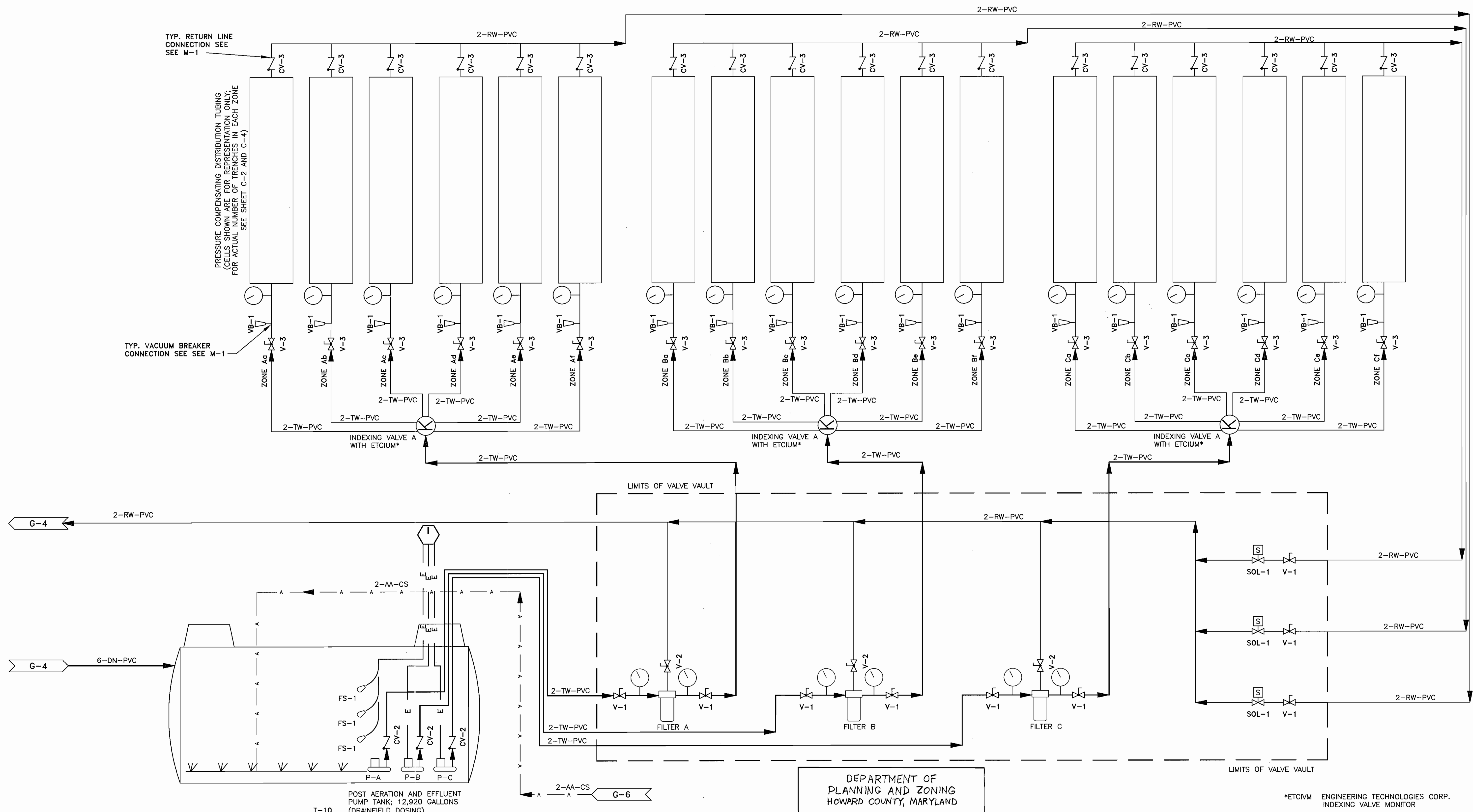
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TYP. RETURN LINE CONNECTION SEE M-1

PRESSURE COMPENSATING DISTRIBUTION TUBING (CELLS SHOWN ARE FOR REPRESENTATION ONLY; FOR ACTUAL NUMBER OF TRENCHES IN EACH ZONE SEE SHEET C-2 AND C-4)

TYP. VACUUM BREAKER CONNECTION SEE M-1

T-10 POST AERATION AND EFFLUENT PUMP TANK; 12,920 GALLONS (DRAINFIELD DOSING)

DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

CHIEF, DEVELOPMENT ENGINEERING DIVISION

\*ETCIVM ENGINEERING TECHNOLOGIES CORP.  
INDEXING VALVE MONITOR

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*[Signature]*  
CHIEF BUREAU OF UTILITIES

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client		<b>WALNUT GROVE</b> HOWARD COUNTY, MARYLAND	
title		<b>WASTEWATER TREATMENT SYSTEM P&amp;ID - DOSING SYSTEM</b>	
sheet no.		G-5	
drawn	struct.	date	scale
DAK	N/A	12/21/04	AS NOTED
checked	mech.	job no.	file no.
KAS	KAS	01-1633-00-3927-000	3927-G04.dwg
designated	etc.	SAIC From Science to Solutions	
RMC	N/A		
civil	qc	MWK	
N/A	N/A		

**LEGEND**

**LINE CODE**

LINE SIZE  
LINE DESIGNATION  
PIPE MATERIAL OF CONSTRUCTION

6-SL-DIP/F

CS	CARBON STEEL
DIP/MJ	DUCTILE IRON PIPE/MECHANICAL JOINT
DIP/F	DUCTILE IRON PIPE/FLANGED
DIP/G	DUCTILE IRON PIPE/GROOVED JOINT
CPVC	CHLORINATED POLYVINYL CHLORIDE PIPE
PVC	POLYVINYL CHLORIDE
PE	POLYETHYLENE
C	COPPER
SS	STAINLESS STEEL

AA	AERATION AIR
BP	BYPASS
CS	CLARIFIER SUPERNATANT
D	DRAIN
DN	DENITRIFIED
IN	INFLUENT
M	METHANOL
PW	POTABLE WATER
OF	OVERFLOW
RW	RETURN WASTE WATER (FLUSHING)
SL	SLUDGE RETURN
SS	SODIUM SULFITE
TSL	THICKENED SLUDGE
TW	TREATED WASTEWATER
V	VENT
WW	WASTE WATER

**ABBREVIATIONS**

ETCIVM ENGINEERING TECHNOLOGIES CORP.  
INDEXING VALVE MONITOR

**PROCESS SYMBOLS**

	CHECK VALVE		BLOWER
	BALL VALVE		METERING PUMP
	CONCENTRIC REDUCER		SUBMERSIBLE PUMP
	BUTTERFLY VALVE		AIR DIFFUSER
	PRESSURE RELIEF VALVE		FLOW ARROW
	NORMALLY CLOSED		PRESSURE GAUGE
	NORMALLY OPEN		TO OR FROM OUTSIDE PROJECT LIMITS
	FLOAT SWITCH		CONTINUATION TO ANOTHER SHEET
	VACUUM BREAKER		
	INDEXING DISTRIBUTING VALVE		
	FLEX CONNECTION		
	QUICK CONNECT		

\* EQUIPMENT SUPPLIED BY SBR VENDOR

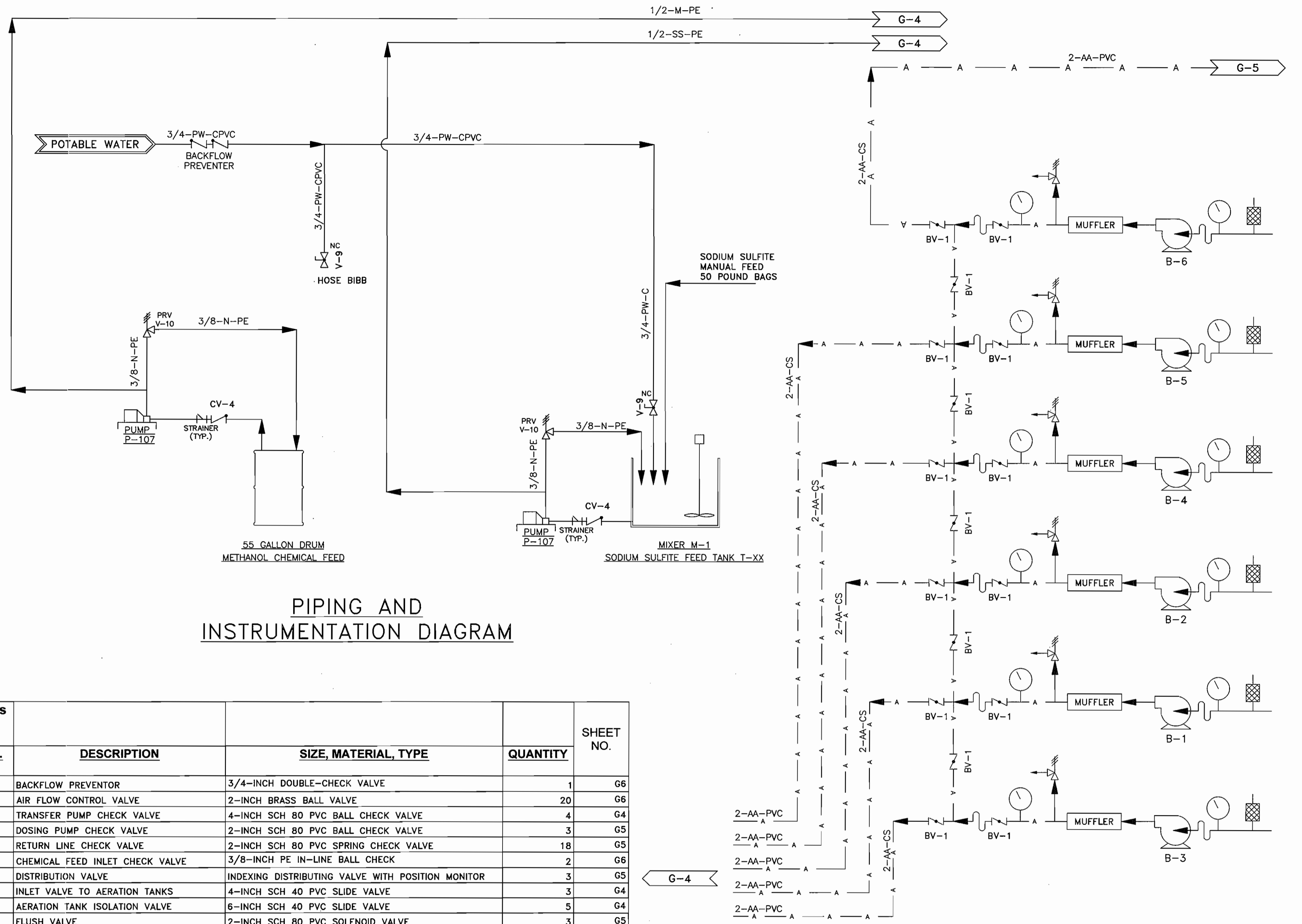
Qd - DESIGN FLOW, GPM  
Q - DESIGN AVERAGE FLOW, GPD

**LINE SYMBOLS**

--- EXISTING  
--- SECONDARY AND UTILITY LINES  
--- MAIN PROCESS LINES  
--- E --- POWER/CONTROL  
--- CHANGE IN LINE DESIGNATION  
--- FUTURE  
--- A --- AIR LINES

DEPARTMENT OF  
PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

*[Signature]* 5/14/07  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



**PIPING AND INSTRUMENTATION DIAGRAM**

Valves				SHEET NO.
ID No.	DESCRIPTION	SIZE, MATERIAL, TYPE	QUANTITY	
BF-1	BACKFLOW PREVENTOR	3/4-INCH DOUBLE-CHECK VALVE	1	G6
BV-1	AIR FLOW CONTROL VALVE	2-INCH BRASS BALL VALVE	20	G6
CV-1	TRANSFER PUMP CHECK VALVE	4-INCH SCH 80 PVC BALL CHECK VALVE	4	G4
CV-2	DOSING PUMP CHECK VALVE	2-INCH SCH 80 PVC BALL CHECK VALVE	3	G5
CV-3	RETURN LINE CHECK VALVE	2-INCH SCH 80 PVC SPRING CHECK VALVE	18	G5
CV-4	CHEMICAL FEED INLET CHECK VALVE	3/8-INCH PE IN-LINE BALL CHECK	2	G6
K	DISTRIBUTION VALVE	INDEXING DISTRIBUTING VALVE WITH POSITION MONITOR	3	G5
PV-1	INLET VALVE TO AERATION TANKS	4-INCH SCH 40 PVC SLIDE VALVE	3	G4
PV-2	AERATION TANK ISOLATION VALVE	6-INCH SCH 40 PVC SLIDE VALVE	5	G4
SOL-1	FLUSH VALVE	2-INCH SCH 80 PVC SOLENOID VALVE	3	G5
V-1	ISOLATION VALVE	2-INCH SCH 80 PVC BALL VALVE	6	G5
V-2	FILTER FLUSH VALVE	1-INCH BRASS BALL VALVE	3	G5
V-3	CONTROL VALVE	2-INCH BRASS GATE VALVE	18	G5
V-8	DRAIN VALVE	1/2-INCH BRASS DRAIN VALVE / HOSE BIB	2	G6
V-9	POTABLE WATER SPIGOT	3/4-INCH BRASS SPIGOT / HOSE BIB	2	G6
VB-1	VACUUM BREAKER FOR DRAINFIELD FEED	1-INCH SCH 40 PVC	18	G5

no.	description	date	by	approved
9	Howard County/MDE Construction Plan (Mylar)	05/10/07	DAK	MDH
8	Final Design (MYLAR SUBMITTAL)	12/21/06	MRK	MDH
7	Final Design	11/20/06	MDS	MDH
6	Wastewater Treatment System Design Submittal	09/19/06	MDS	MDH
5	Wastewater Treatment System Design Submittal	07/20/06	MDS	MDH
4	Wastewater Treatment System Design Submittal	04/03/06	MDS	MDH
3	Drainfield Design Submittal	3/10/06	MDS	MDH
2	SBR Resubmittal	11/22/05	MDS	MDH
1	BioClerc Resubmittal	08/24/05	MDS	MDH

revisions

DEPARTMENT OF  
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HOWARD COUNTY, MARYLAND

*[Signature]* 5/14/07  
CHIEF, BUREAU OF UTILITIES DATE

HOWARD COUNTY AND  
MDE CONSTRUCTION  
PLAN SET FOR PERMIT  
APPLICATION / APPROVAL

**SAIC**  
From Science to Solutions

1129 Business Parkway South; Suite 10  
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(410) 876-0280

**WALNUT GROVE**  
LOTS 1 THRU 88, BUILDABLE PRESERVATION PARCEL "A",  
NON-BUILDABLE PRESERVATION PARCELS "B" THRU "I" AND  
NON-BUILDABLE BULK PARCEL "J"  
LIBER 572 FOLIO 430  
HOWARD COUNTY, MARYLAND  
ELECTION DISTRICT No. 6  
CONTRACT No. 50-4359-D

Verify Scale  
THIS BAR IS ONE  
INCH ON ORIGINAL  
DRAWING  
0" 1"

IF NOT ONE INCH ON  
THIS SHEET, ADJUST  
SCALES ACCORDINGLY

Professional Seal

client  
**WALNUT GROVE**  
HOWARD COUNTY, MARYLAND

title  
**WASTEWATER TREATMENT SYSTEM  
P&ID - BUILDING  
COMPONENTS** sheet no. G-6

drawn DAK  
checked KAS  
designed RMC  
civil N/A

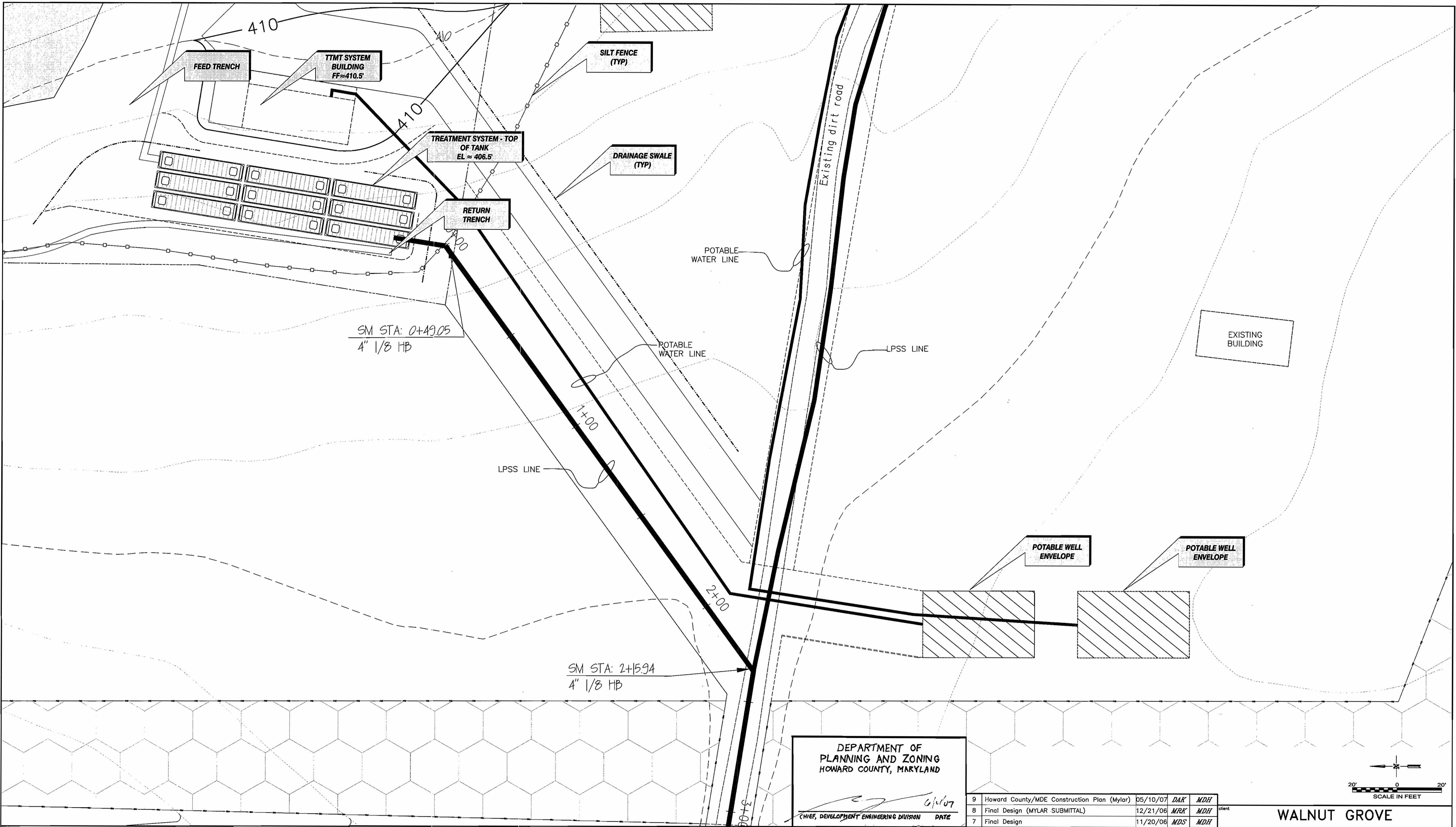
mech. N/A  
elec. N/A  
QA/QC N/A

date 12/21/04  
AS NOTED

file no. 3927-G04.dwg

01-1633-00-3927-000

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PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

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CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

9	Howard County/MDE Construction Plan (Mylar)	05/10/07	DAK	MDH	
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1	BioClere Resubmittal	08/24/05	MDS	MDH	
no.	description	date	by	approved	
revisions					

client  
**WALNUT GROVE**  
HOWARD COUNTY, MARYLAND

title  
**WASTEWATER TREATMENT SYSTEM  
TREATMENT SYSTEM  
SITE PLAN**

sheet no.  
**C-1**

drawn *DAK* struct. *N/A* date *12/21/04* notes *AS NOTED* file no. *3927-C02.DWG*

checked *KAS* mech. *KAS* job no. *01-1633-00-3927-000*

designed *RMG* elec. *N/A*

civil *N/A* qa/qc *MPK*

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HOWARD COUNTY AND  
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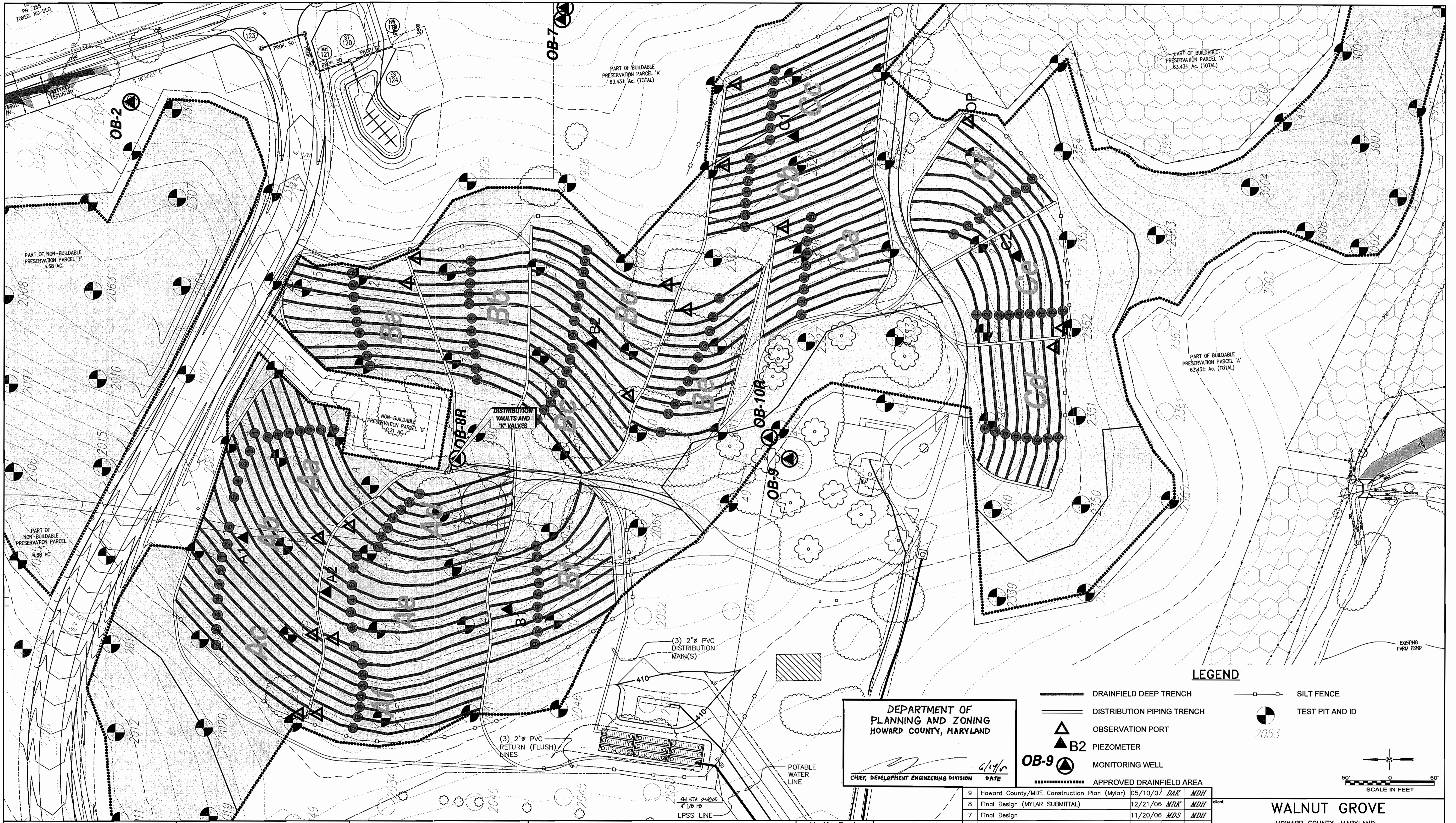
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ELECTION DISTRICT No. 6  
CONTRACT No. 50-4359-D

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Professional Seal  
**STATE OF MARYLAND**  
PROFESSIONAL ENGINEER  
No. 32949  
*[Signature]*  
5/10/07



DEPARTMENT OF  
PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

6/19/08  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

**LEGEND**

- DRAINFIELD DEEP TRENCH
- DISTRIBUTION PIPING TRENCH
- ▲ B2 PIEZOMETER
- ▲ OB-9 MONITORING WELL
- SILT FENCE
- ⊙ TEST PIT AND ID

APPROVED DRAINFIELD AREA

SCALE IN FEET

DEPARTMENT OF  
PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

6/19/08  
BUREAU OF UTILITIES DATE

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APPLICATION / APPROVAL

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1	BioClere Resubmittal	08/24/05	MDS	MDH

**WALNUT GROVE**  
HOWARD COUNTY, MARYLAND

**WASTEWATER TREATMENT SYSTEM  
TRENCH LAYOUT**

sheet no. C-2

client

title

drawn: DAK, checked: KAS, designed: RMC, civil: N/A

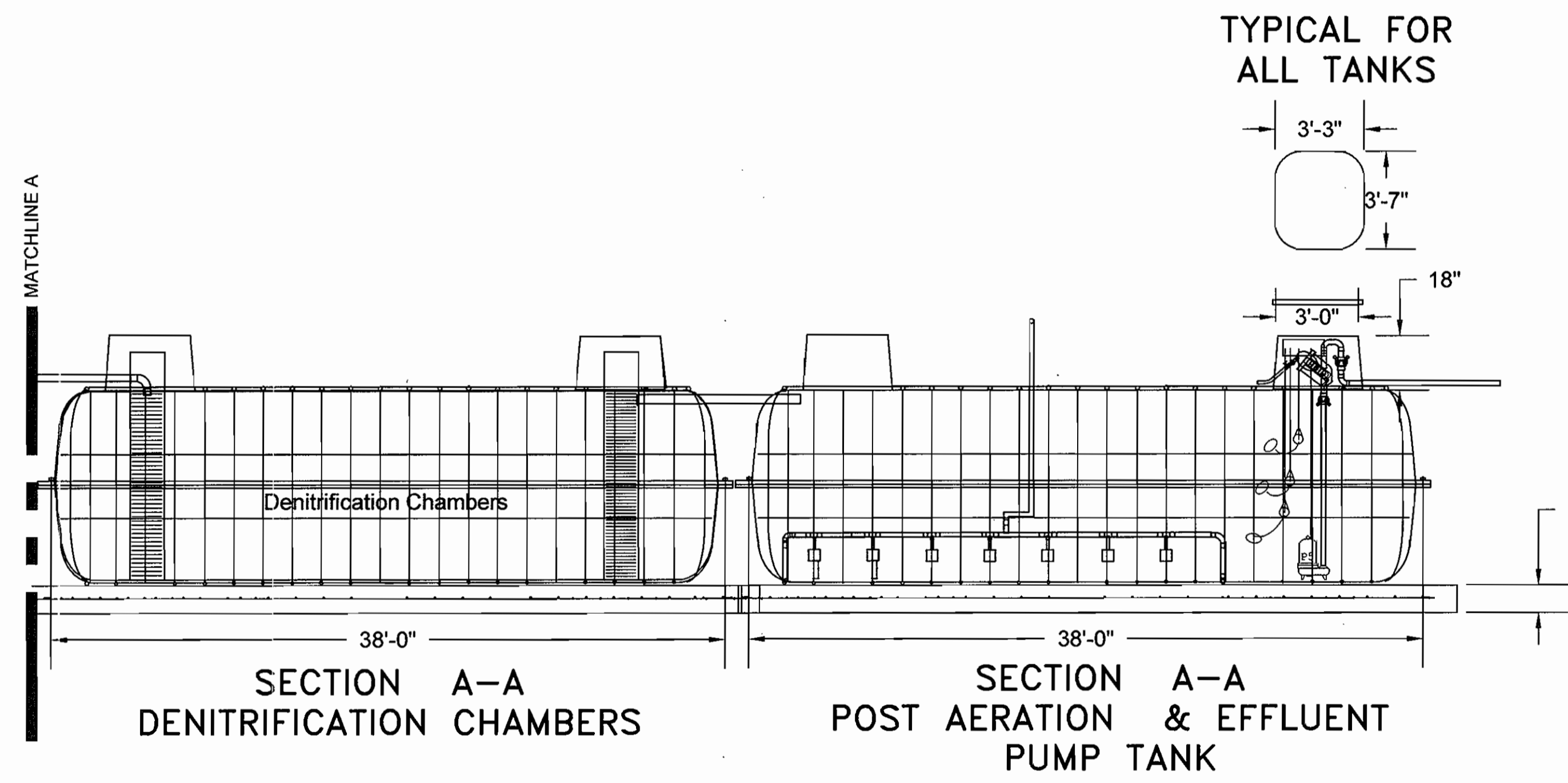
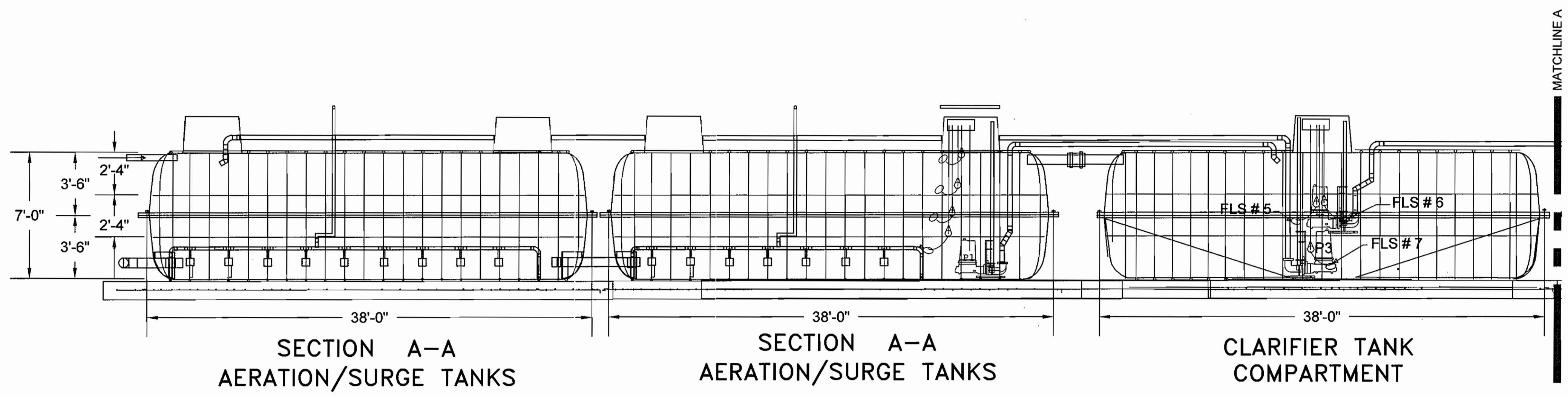
struct.: N/A, mech.: KAS, elec.: N/A

date: 12/21/06, scale: AS NOTED, file no.: 3927-C02.DWG

job no.: 01-1633-00-3927-000

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DEPARTMENT OF  
 PLANNING AND ZONING  
 HOWARD COUNTY, MARYLAND

*[Signature]* 6/14/07  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

no.	description	date	by	approved
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1	BioClerc Resubmittal	08/24/05	MDS	MDH

NOT TO SCALE

client	WALNUT GROVE HOWARD COUNTY, MARYLAND
title	WASTEWATER TREATMENT SYSTEM SBR TREATMENT SYSTEM SECTIONS
sheet no.	C-3
drawn	DAK
checked	KAS
designed	RMC
date	12/21/04
scale	NTS
file no.	3927-C03.DWG
job no.	01-1633-00-3927-000
req'd	N/A
rev'd	MWK

DEPARTMENT OF  
 PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

*[Signature]* R. Run 5/24/07  
 BUREAU OF UTILITIES DATE

HOWARD COUNTY AND  
 MDE CONSTRUCTION  
 PLAN SET FOR PERMIT  
 APPLICATION / APPROVAL

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 (410) 876-0280

**WALNUT GROVE**  
 LOTS 1 THRU 88, BUILDABLE PRESERVATION PARCEL "A",  
 NON-BUILDABLE PRESERVATION PARCELS "B" THRU "I" AND  
 NON-BUILDABLE BULK PARCEL "J"  
 LIBER 572 FOLIO 430  
 HOWARD COUNTY, MARYLAND  
 ELECTION DISTRICT No. 6  
 CONTRACT No. 50-4359-D

Verify Scale  
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 DRAWING  
 0 1"

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 THIS SHEET, ADJUST  
 SCALES ACCORDINGLY

PROFESSIONAL SEAL  
 STATE OF MARYLAND  
 MARK W. KING  
 PROFESSIONAL ENGINEER  
 No. 22949  
 5/10/07

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Table with columns: Test pit field data (drainfield area only), final design data, notes. Includes test pit ID, ground elev, total depth, clayey soils, perc'd loam, perc'd sand, trench depth, trench elev, sidewall elev, and in/out of drainfield.

Table with columns: cell zone, avg. ground surface elev, trench bottom elev, trench sidewall elev, trench depth, trench length, zone trench length, cell trench totals. Includes multiple rows for cells A, B, C, D, E, F.

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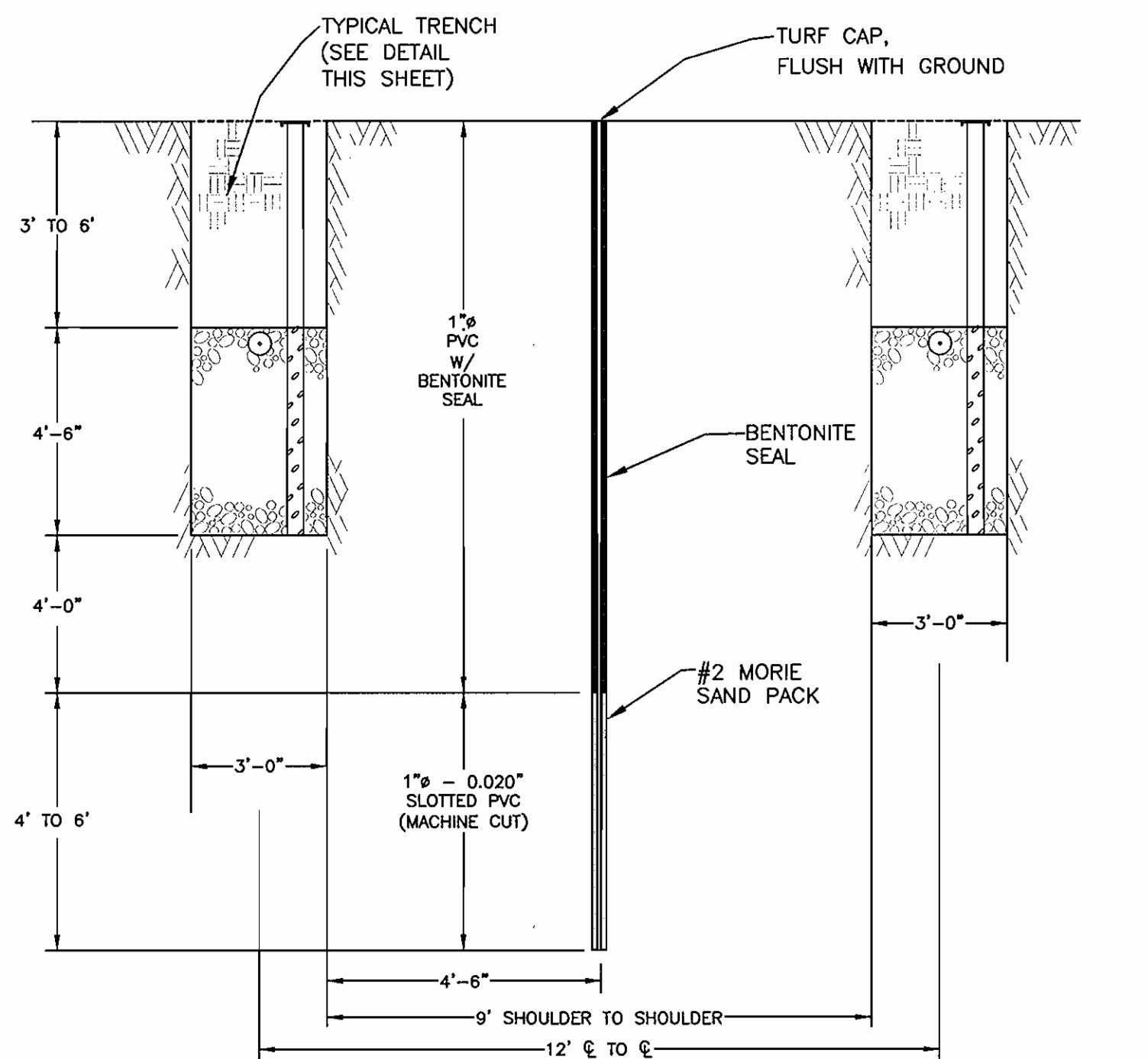
Table with columns: cell zone, avg. ground surface elev, trench bottom elev, trench sidewall elev, trench depth, trench length, zone trench length, cell trench totals. Includes multiple rows for cells A, B, C, D, E, F.

Capacity requirements table with columns: lots served, bedrooms per home, use rate/bedroom in gpd, flows, MDF, ADF, gpm. Includes distribution, dosing, and distribution flows and pressures.

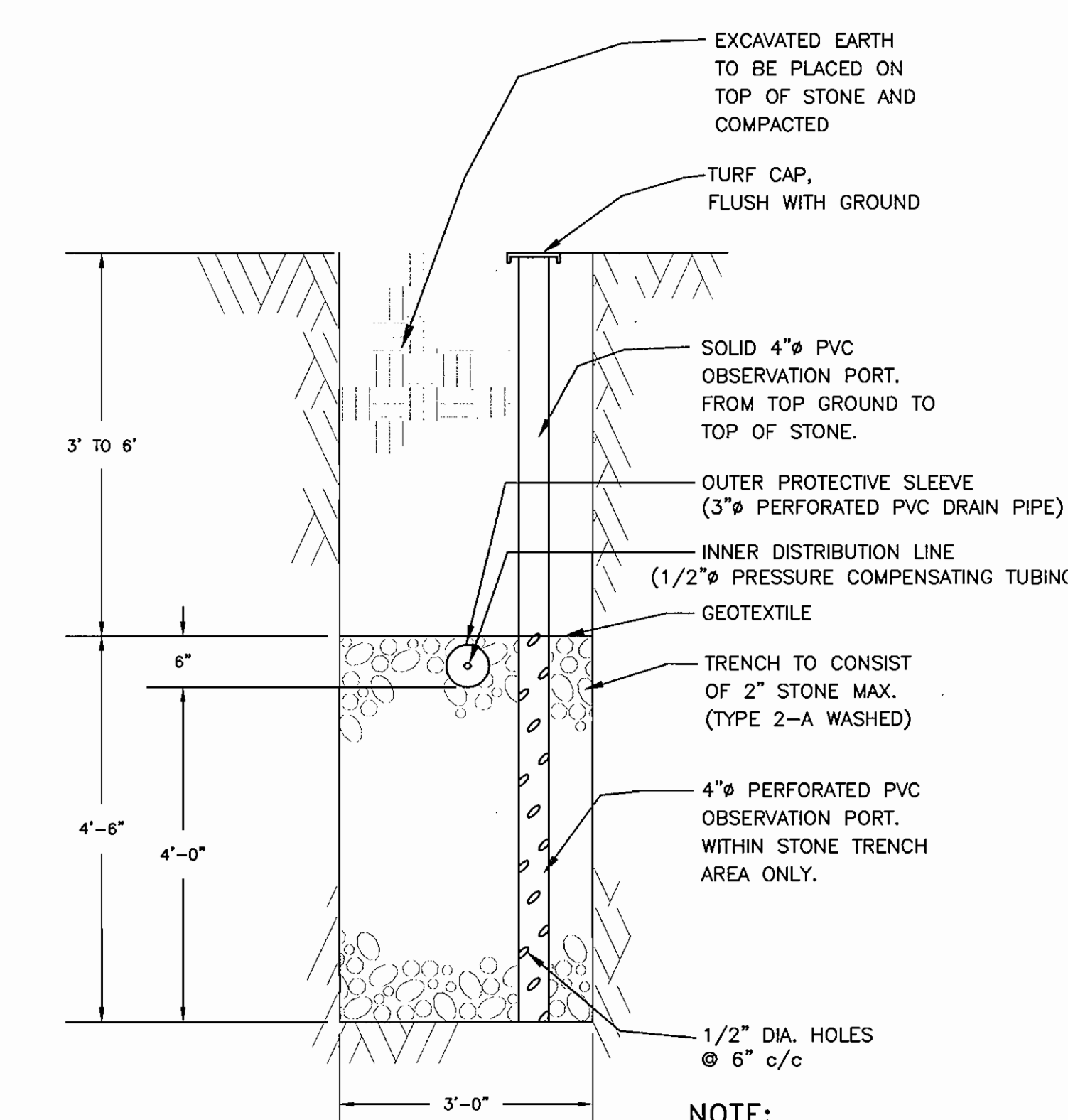
Table with columns: cell, zone, total emitter line length, top of cell elevation, # emitter lines served, header main length, cell return line length, total # emitters, dose flow, cell main friction loss, header main friction loss, max. design TDH, dose pressure at effluent tank.

Table with columns: cell, zone, total emitter line length, top of cell elevation, # emitter lines served, header main length, cell return line length, total # emitters, dose flow, cell main friction loss, header main friction loss, max. design TDH, dose pressure at effluent tank.

Table with columns: cell, zone, total emitter line length, top of cell elevation, # emitter lines served, header main length, cell return line length, total # emitters, dose flow, cell main friction loss, header main friction loss, max. design TDH, dose pressure at effluent tank.



NOTE: ONE OBSERVATION PORT PER ZONE (18 TOTAL). TYPICAL PIEZOMETER. NOT TO SCALE.



TYPICAL DEEP TRENCH SECTIONAL VIEW. NOTE: ONE INSPECTION PORT PER TRENCH. NOT TO SCALE.

DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND. CHIEF, DEVELOPMENT ENGINEERING DIVISION. DATE.

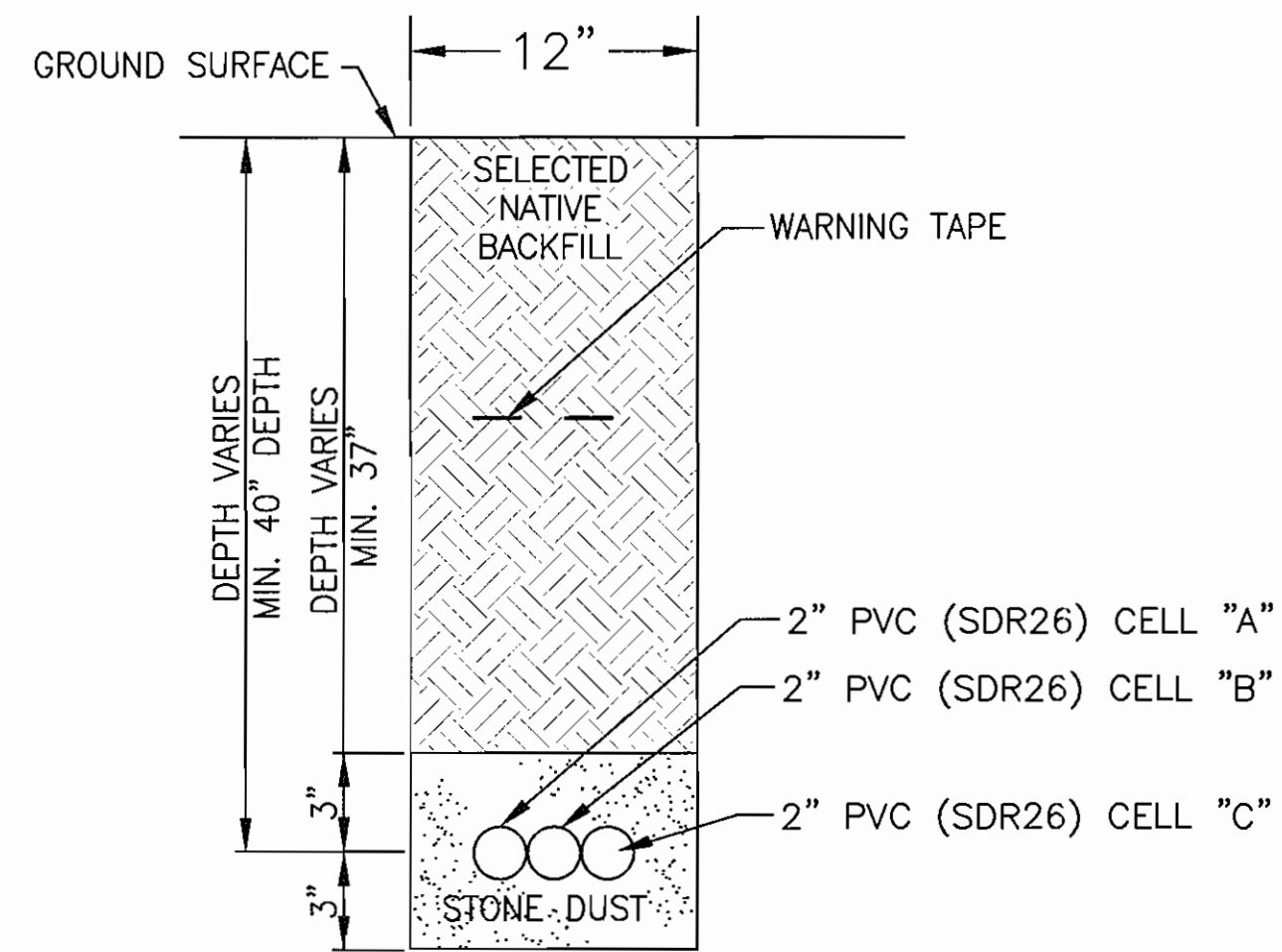
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND. HOWARD COUNTY AND MDE CONSTRUCTION PLAN SET FOR PERMIT APPLICATION / APPROVAL. DATE.

SAIC logo and address: 2129 Business Parkway South; Suite 10 Westminister, Maryland 21157 (410) 876-0280.

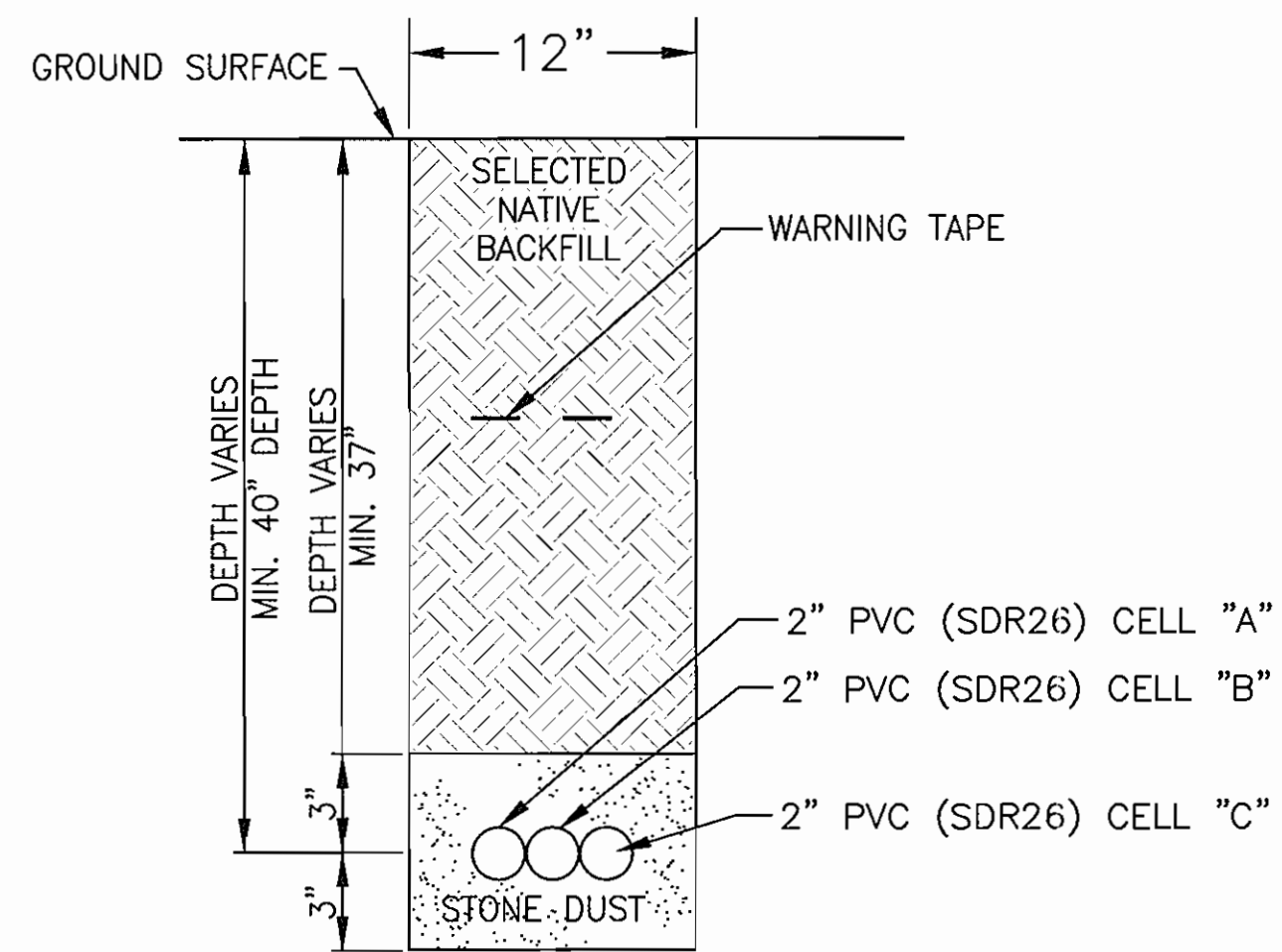
WALNUT GROVE LOTS 1 THRU 88, BUILDABLE PRESERVATION PARCEL "A", NON-BUILDABLE PRESERVATION PARCELS "B" THRU "I" AND NON-BUILDABLE BULK PARCEL "J" LIBER 572 FOLIO 430 HOWARD COUNTY, MARYLAND ELECTION DISTRICT NO. 6 CONTRACT NO. 50-4359-D

Verify Scale: THIS BAR IS ONE INCH ON ORIGINAL DRAWING 0" = 1". PROFESSIONAL SEAL.

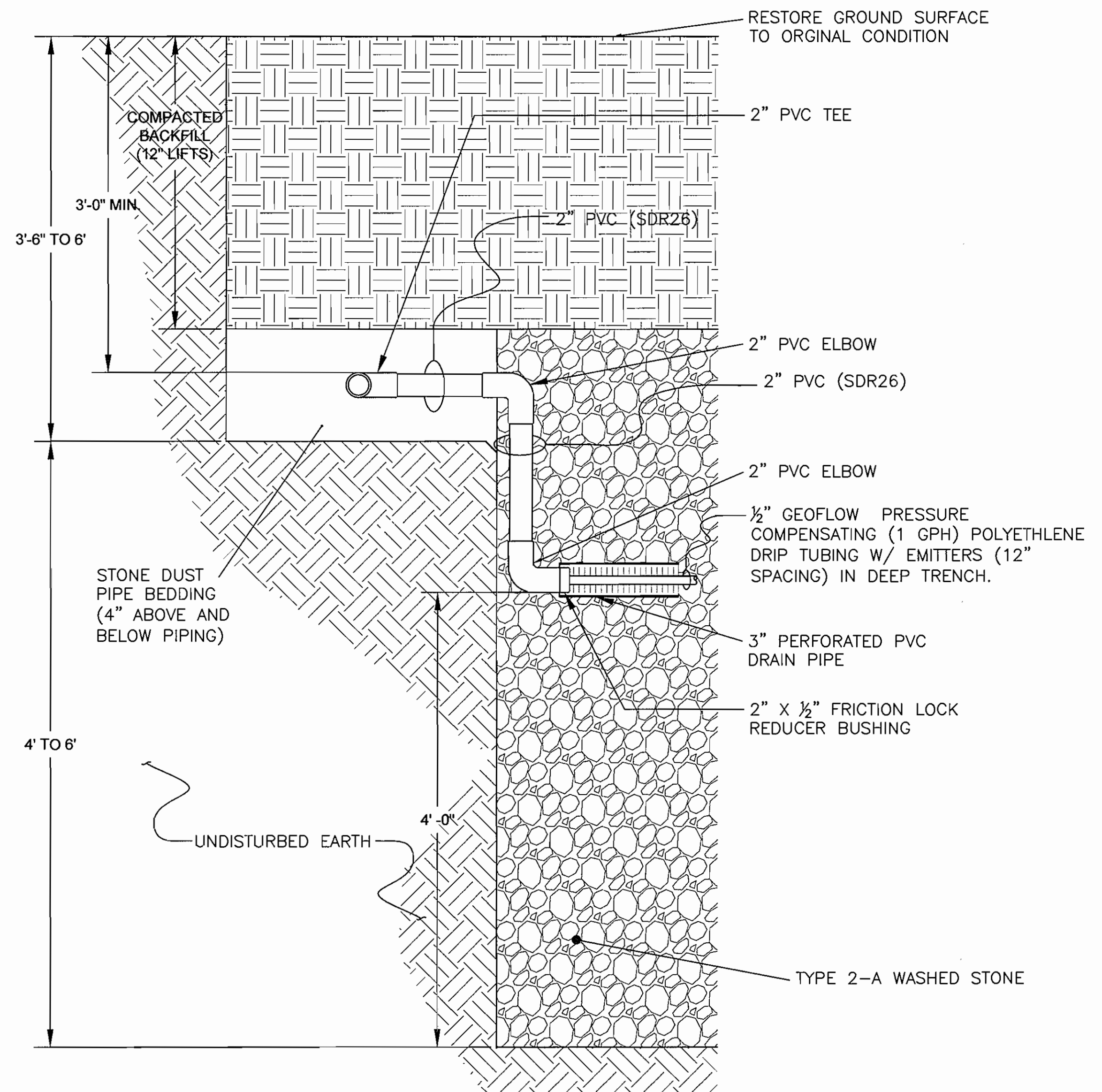
Revisions table with columns: no., description, date, by, approved. Includes project information: WALNUT GROVE HOWARD COUNTY, MARYLAND. WASTEWATER TREATMENT SYSTEM DRAINFIELD DESIGN INFORMATION & DETAILS. SHEET NO. C-4.



**FEED TRENCH SECTION (TYP)**  
NOT TO SCALE



**RETURN TRENCH SECTION (TYP)**  
NOT TO SCALE



**HEADER MAIN PROFILE (TYP)**  
NOT TO SCALE

DEPARTMENT OF  
PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

*[Signature]* 6/14/07  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

DEPARTMENT OF  
PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

HOWARD COUNTY AND  
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**WALNUT GROVE**  
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LIBER 572 FOLIO 430  
HOWARD COUNTY, MARYLAND  
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CONTRACT No. 50-4359-D

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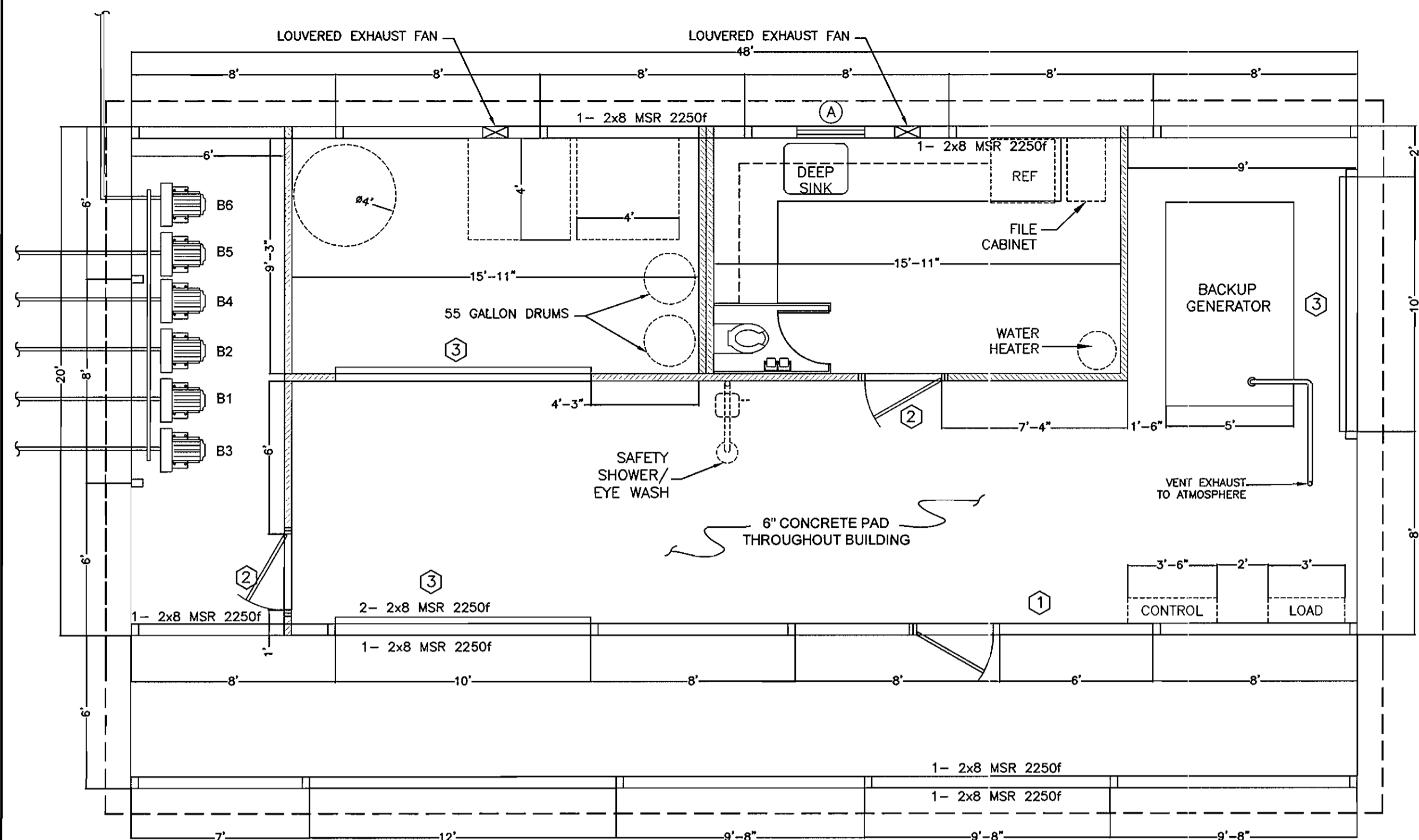


Professional Seal

9	Howard County/MDE Construction Plan (Mylar)	05/10/07	DAK	MDH
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no.	description	date	by	approved
	revisions			

client		WALNUT GROVE HOWARD COUNTY, MARYLAND		sheet no.	C-5
title		WASTEWATER TREATMENT SYSTEM TRENCH SECTIONS AND DETAILS		file no.	3927-C05.DWG
drawn	DAK	struct.	N/A	date	12/21/04 AS NOTED
checked	KAS	mech.	KAS	job no.	01-1633-00-3927-000
designed	RMC	elec.	N/A		
civil	N/A	geo/geo	MWK		





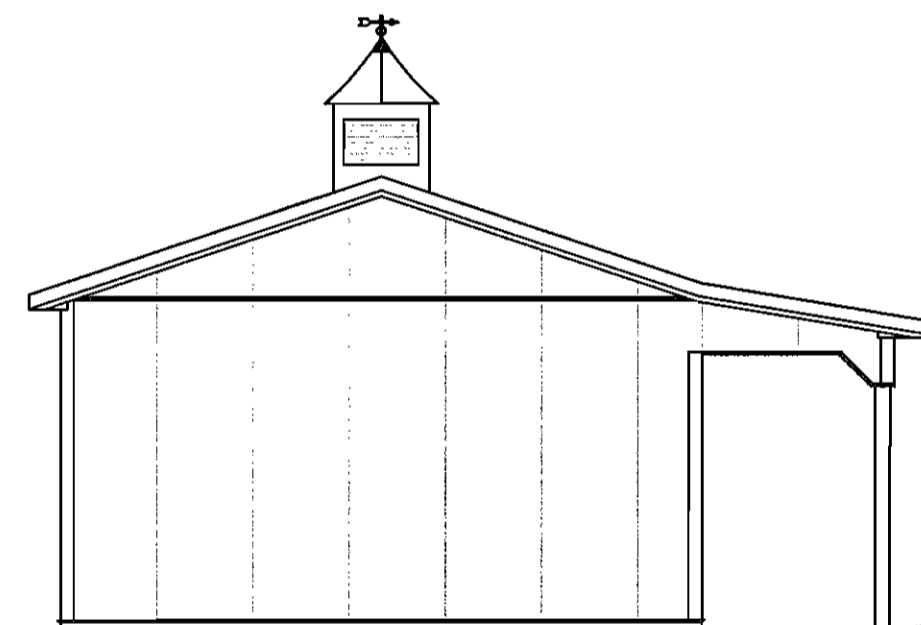
**NOTES:**

- 20' Truss, 10 1/2" o.h., 4/12 Pitch, 48" o.c.
- Bottom Chord Ties As Per Truss Manufacturer
- 10'-6" Inside Height
- (A) (1) 32"x44" S.H. Window w/ Shutters
- (1) (1) 3068 LHOS 6-Panel Service Door w/ Panic Hardware & Auto Closer
- (2) (2) 3068 LHOS 6-Panel Service Door
- (3) (3) 10'x8' R.P. Ins. Overhead Doors w/ Dutch Corners
- Ridge Cap w/ Versa Vent RX-10
- 12" Gable Overhang
- USP RT-16 Hurricane Ties on Interior Trusses
- USP RT-7 Hurricane Ties on Gable Trusses
- R-30 Insulation w/ Liner Panel Ceiling
- R-19 Insulation on Walls
- [Hatched Pattern] = 2x4 Stud Framing
- (1) 36"x36" Plyco Cupola
- 6'x48" Lean-To w/ Dutch Bracing & Liner Panel Ceiling
- Seamless Gutter w/ ( ) Downspouts
- All Footers 18" Ø x 8" Wet-Pour Concrete, Except:
  - = 20" Ø x 10"
- 4x6 PT Posts

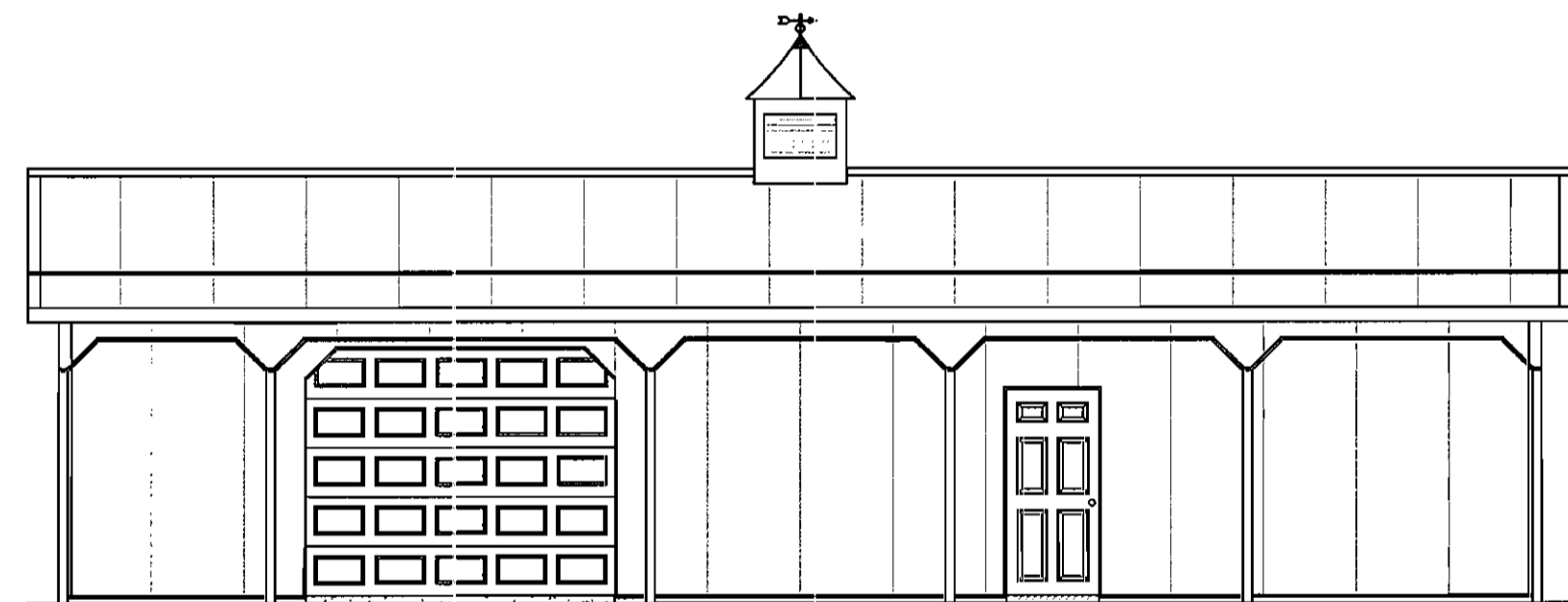
- Design Load Criteria:**
- Roof Load:**  
 Top Chord Live Load= 35 psf  
 Top Chord Dead Load= 5 psf  
 Bottom Chord Live Load= 0 psf  
 Bottom Chord Dead Load= 5 psf
- Snow Load:**  
 Ground Snow Load= 35 psf
- Wind Load:**  
 Basic Wind Speed (3 second gust)= 90 mph

**FLOOR PLAN**

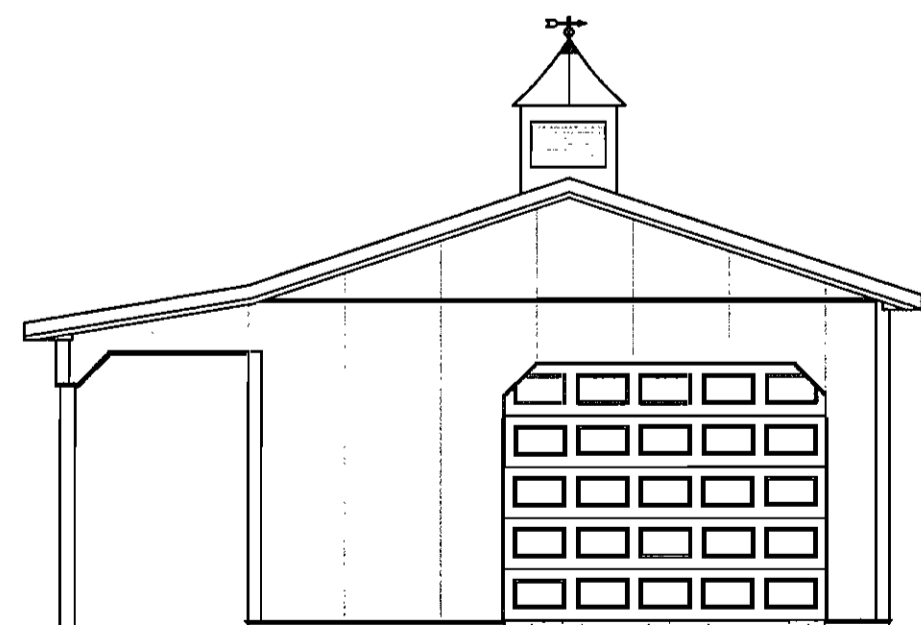
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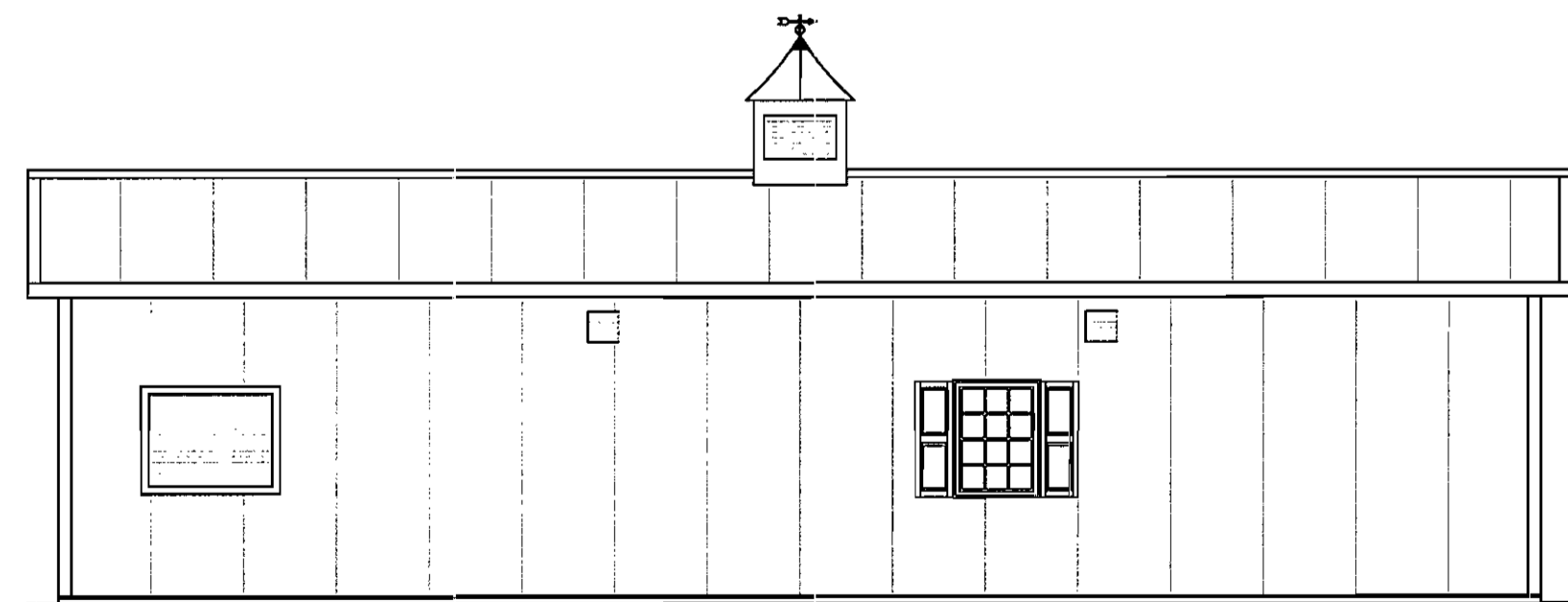
**LEFT SIDE GABLE ELEVATION**



**FRONT EAVE ELEVATION**



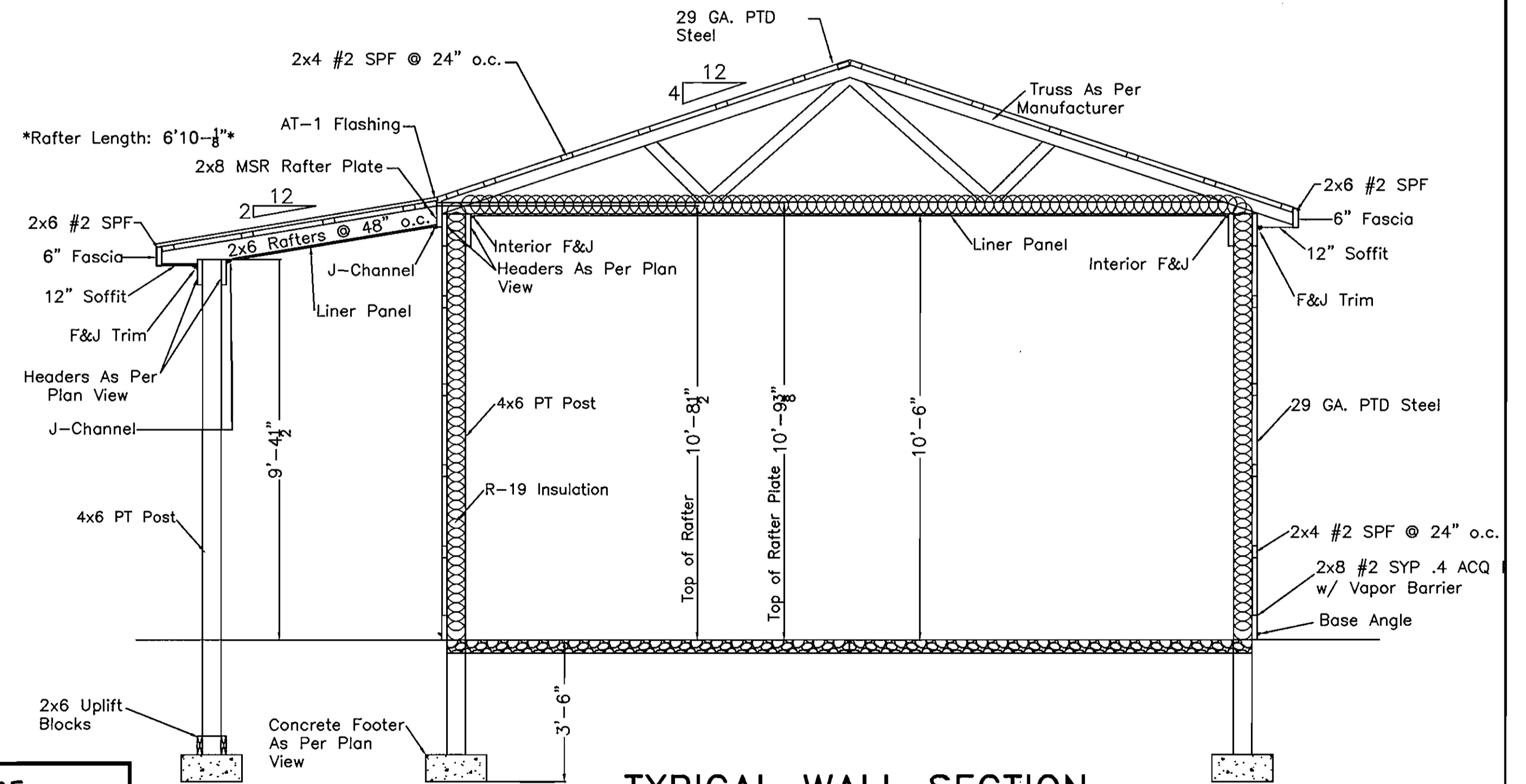
**RIGHT SIDE GABLE ELEVATION**



**REAR EAVE ELEVATION**

**BUILDING ELEVATIONS**

SCALE: 1" = 6'-0"



**TYPICAL WALL SECTION**

SCALE: 3/8" = 1'-0"

DEPARTMENT OF  
 PLANNING AND ZONING  
 HOWARD COUNTY, MARYLAND

6/14/07  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

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1	BioClere Resubmittal	08/24/05	MDS	MDH
no.	description	date	by	approved
	revisions			

**WALNUT GROVE**  
 HOWARD COUNTY, MARYLAND

**WASTEWATER TREATMENT SYSTEM  
 CHEMICAL AND BLOWER  
 BUILDING PLAN LAYOUT**

sheet no.  
**A-1**

12/21/04 AS NOTED  
 01-1633-00-3927-000



DEPARTMENT OF  
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 HOWARD COUNTY, MARYLAND

HOWARD COUNTY AND  
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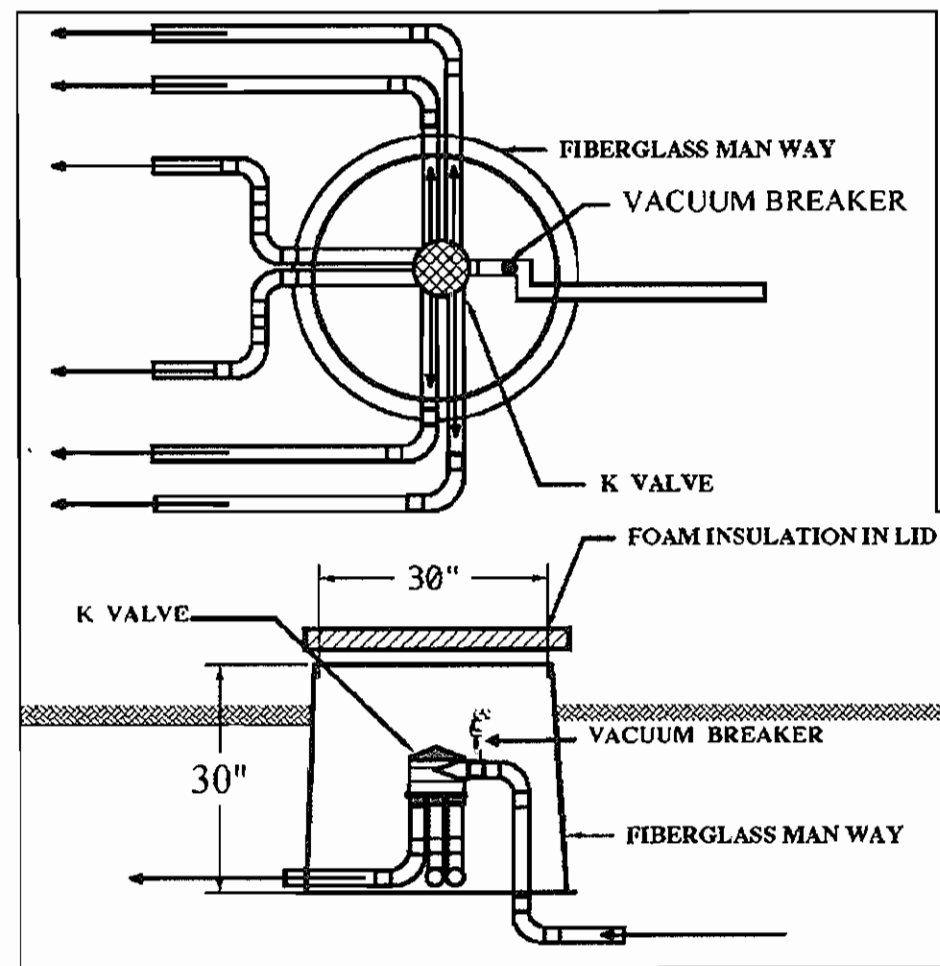
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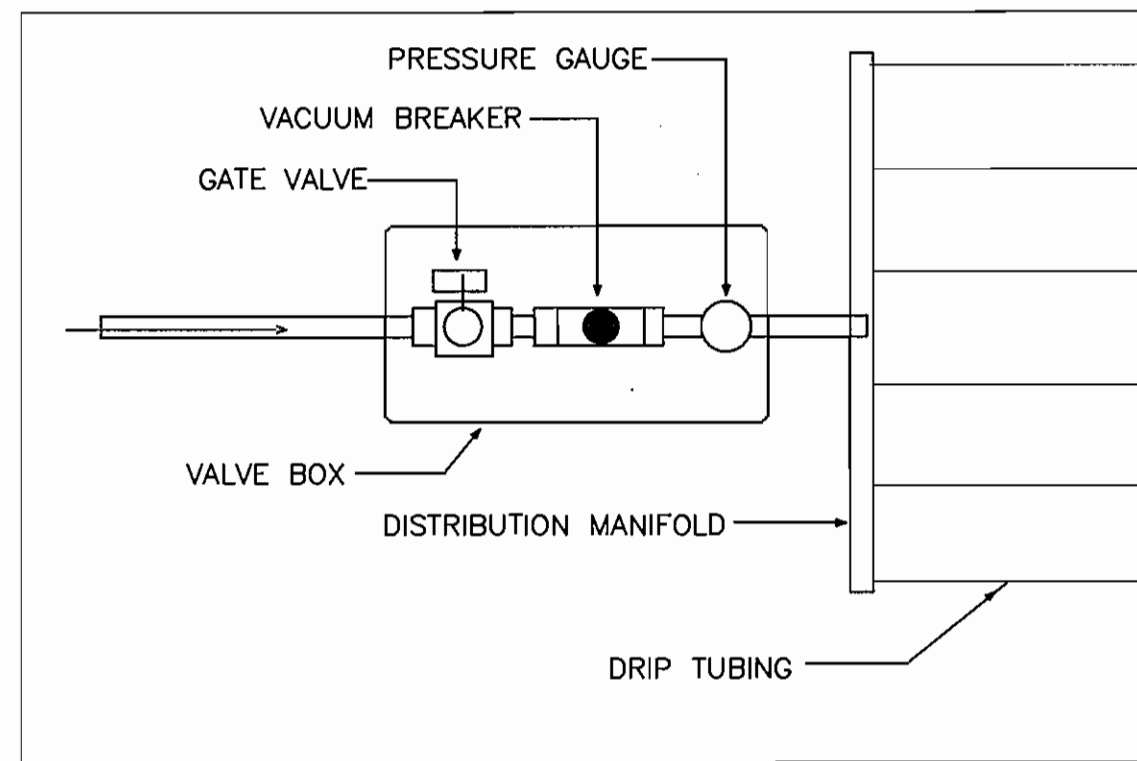
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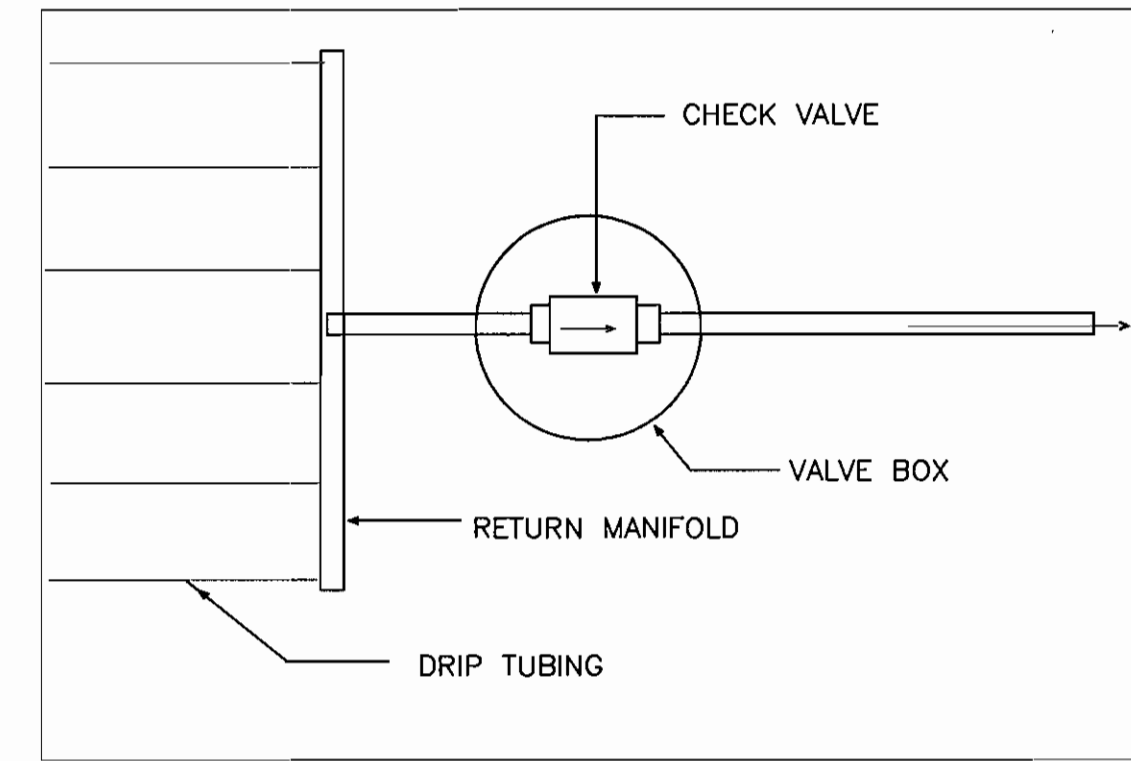
6/14/07  
 BUREAU OF UTILITIES DATE



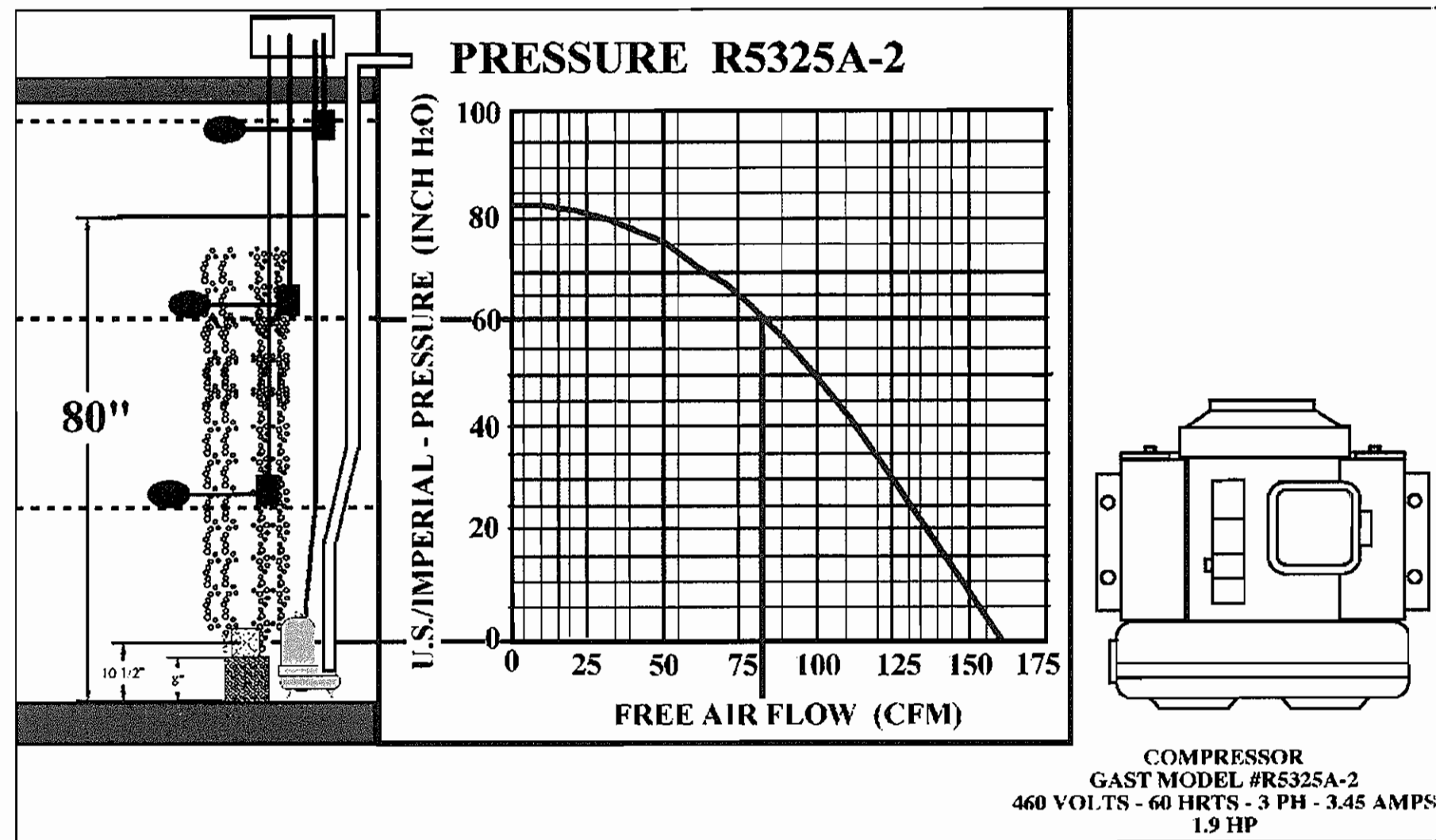
**"K" VALVE ASSEMBLY (TYP)**  
NOT TO SCALE



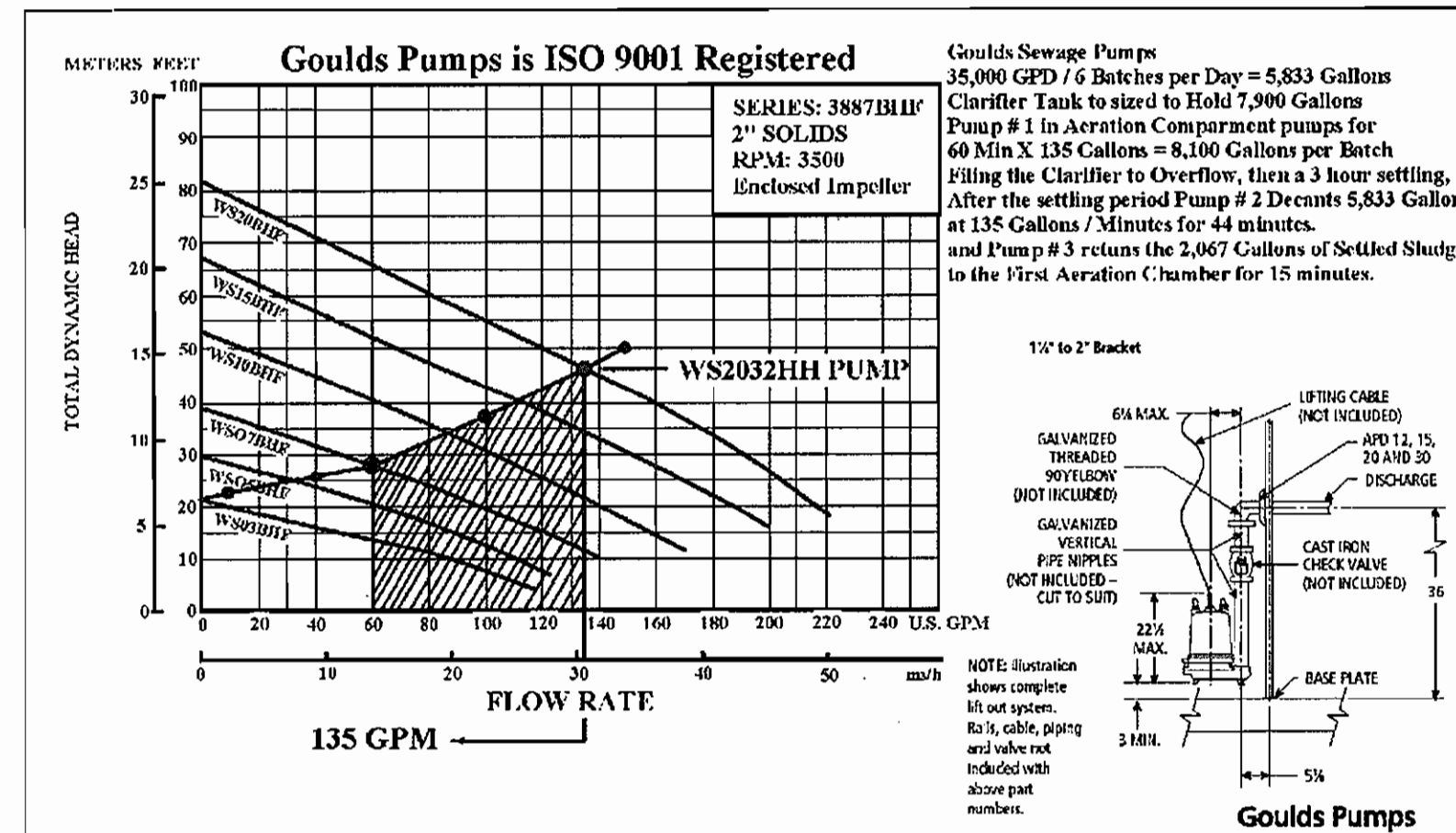
**INLET LINE CONNECTION (TYP)**  
NOT TO SCALE



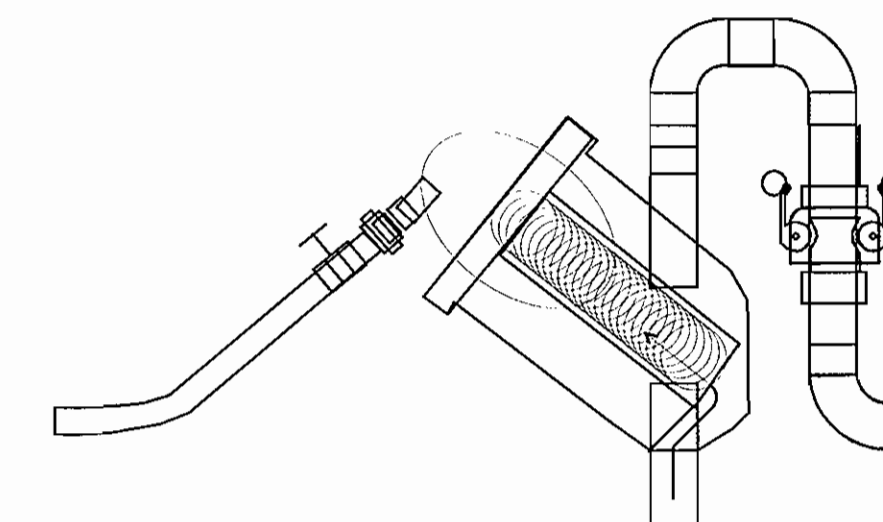
**RETURN LINE CONNECTION (TYP)**  
NOT TO SCALE



**BLOWER DETAIL**  
NOT TO SCALE



**TRANSFER PUMP ASSEMBLY**  
NOT TO SCALE



**API FILTER**  
**MODEL # 4E-1 1/2**  
NOT TO SCALE

DEPARTMENT OF  
PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

6/14/07  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

9	Howard County/MDE Construction Plan (Mylar)	05/10/07	DAK	MDH
8	Final Design (MYLAR SUBMITTAL)	12/21/06	MRK	MDH
7	Final Design	11/20/06	MDS	MDH
6	Wastewater Treatment System Design Submittal	09/19/06	MDS	MDH
5	Wastewater Treatment System Design Submittal	07/20/06	MDS	MDH
4	Wastewater Treatment System Design Submittal	04/03/06	MDS	MDH
3	Drainfield Design Submittal	3/10/06	MDS	MDH
2	SBR Resubmittal	11/22/05	MDS	MDH
1	BioClere Resubmittal	08/24/05	MDS	MDH
no.	description	date	by	approved
	revisions			

**WALNUT GROVE**  
HOWARD COUNTY, MARYLAND

**WASTEWATER TREATMENT SYSTEM**  
SYSTEM DETAILS

sheet no. **M-1**

12/21/04 AS NOTED

01-1633-00-3927-000

SAIC  
From Science to Solutions

DEPARTMENT OF  
PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

5/21/07  
BUREAU OF UTILITIES DATE

HOWARD COUNTY AND  
MDE CONSTRUCTION  
PLAN SET FOR PERMIT  
APPLICATION / APPROVAL

**SAIC**  
From Science to Solutions

1129 Business Parkway South; Suite 10  
Westminster, Maryland 21157  
(410) 876-0280

**WALNUT GROVE**  
LOTS 1 THRU 88, BUILDABLE PRESERVATION PARCEL "A",  
NON-BUILDABLE PRESERVATION PARCELS "B" THRU "I" AND  
NON-BUILDABLE BULK PARCEL "J"  
LIBER 572 FOLIO 430  
HOWARD COUNTY, MARYLAND  
ELECTION DISTRICT No. 6  
CONTRACT No. 50-4359-D

Verify Scale  
THIS BAR IS ONE  
INCH ON ORIGINAL  
DRAWING  
0 1"

IF NOT ONE INCH ON  
THIS SHEET, ADJUST  
SCALES ACCORDINGLY

Professional Seal

