

# 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) (LOTS 16 AND 33 HAVE
NUMBER OF S.H.C.'s	87 INDIVIDUAL SEPTIC FIELDS (THERE WILL BE A WELL
NUMBER OF W.H.C.'s	N/A 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.

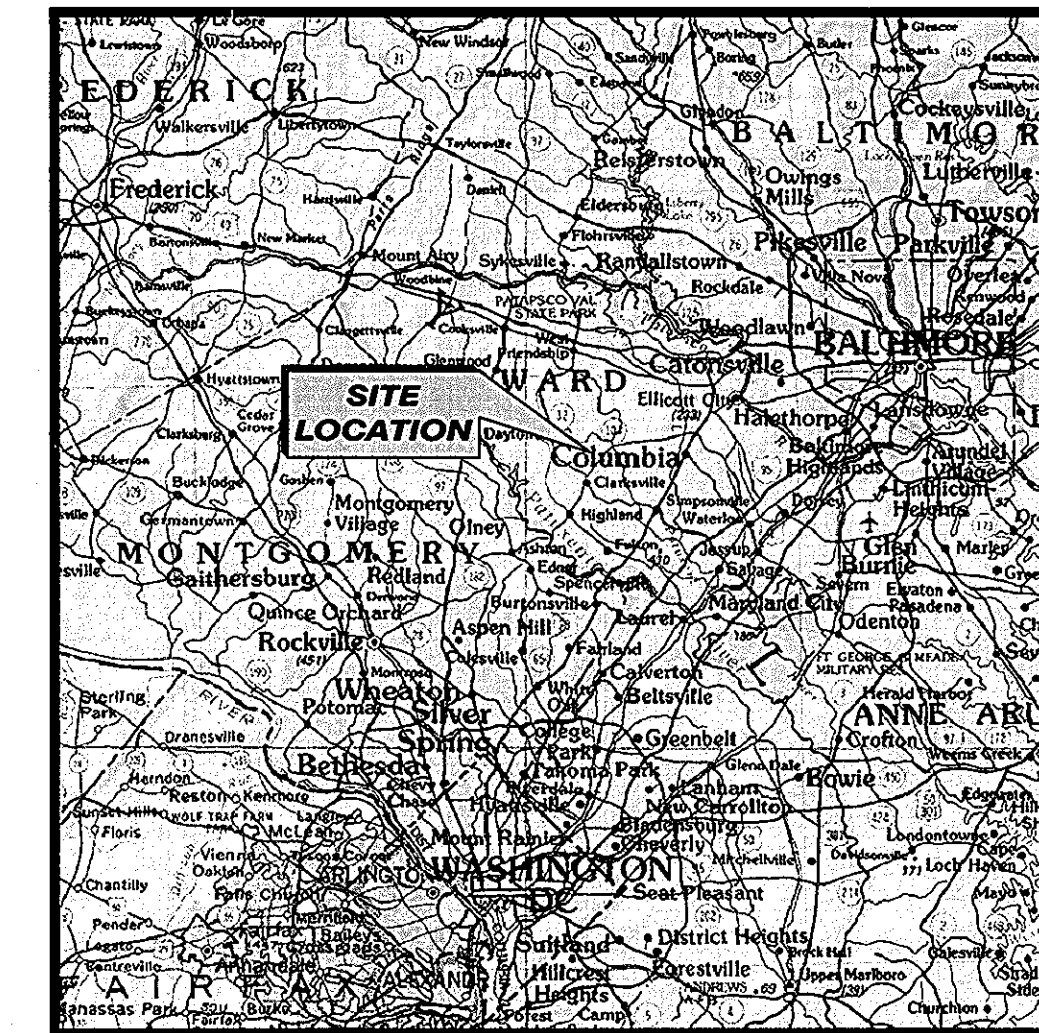
### PART II - WATER

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

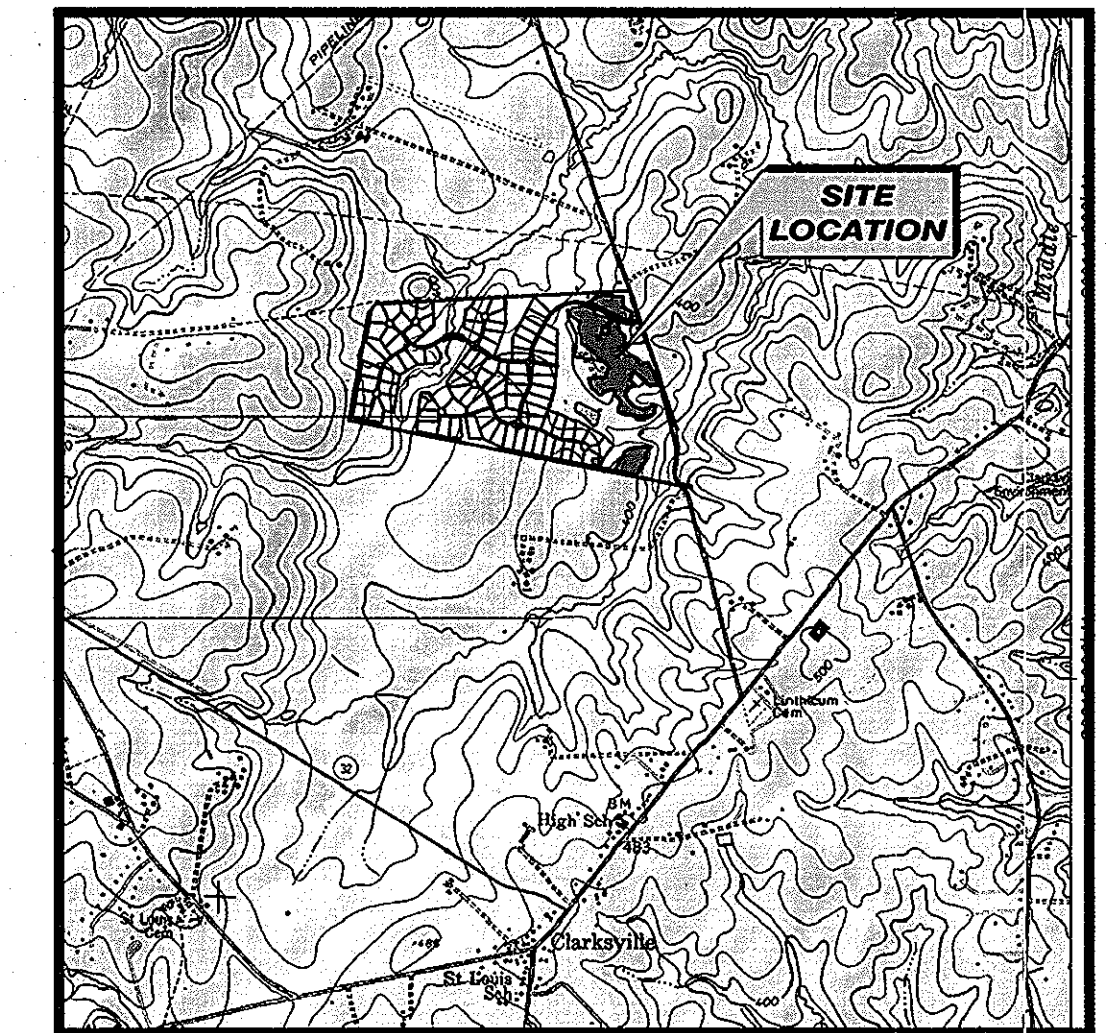
### PART III - SEWER

- 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.

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



**VICINITY MAP**  
10 MILES 0 10 MILES  
SCALE: 1" = 10 MILES  
QUADRANGLE LOCATION



**LOCATION MAP**  
1/2 MILE 0 1/2 MILE  
SCALE: 1" = 1/2 MILE

### DEVELOPER'S CERTIFICATION

I HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE IN ACCORDANCE WITH 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.

*Feago* 5/12/07  
SIGNATURE OF DEVELOPER DATE

REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS.

*Agos* 6/2/07  
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.

*Seby* 6/12/07  
HOWARD S.C.D. DATE

HEALTH DEPARTMENT  
HOWARD COUNTY, MARYLAND

*B. Wilton for Peter Beilenson* 6/5/07  
WELL AND SEPTIC PROGRAM DATE

DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

*Seby* 6/12/07  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Seby* 5/21/07  
CHIEF, BUREAU OF UTILITIES DATE

\* SEE EROSION AND SEDIMENT CONTROLS OF F-06.31

### QUANTITIES

ITEMS	QUANTITIES ESTIMATED	AS-BUILT		
		QUANTITIES	TYPE	MANUFACTURER/SUPPLIER
3W X 4H DRAINFIELD TRENCHES	22,890 LF.			
1/2" PVC 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 DRAFTING DIV. CHECKBOX: .....  
AS-BUILT DATE: .....

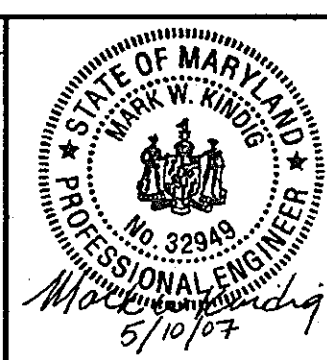
### WALNUT GROVE

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



10 As-Built Drawing Set	04/29/10	MDS	MDH
9 Howard County/MDE Construction Plan (Mylar)	05/10/07	DAK	MDH
8 Final Design (MYCAR SUBMITTAL)	12/21/06	MRA	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			

### SITE PLAN

600' 0 600'  
SCALE IN FEET

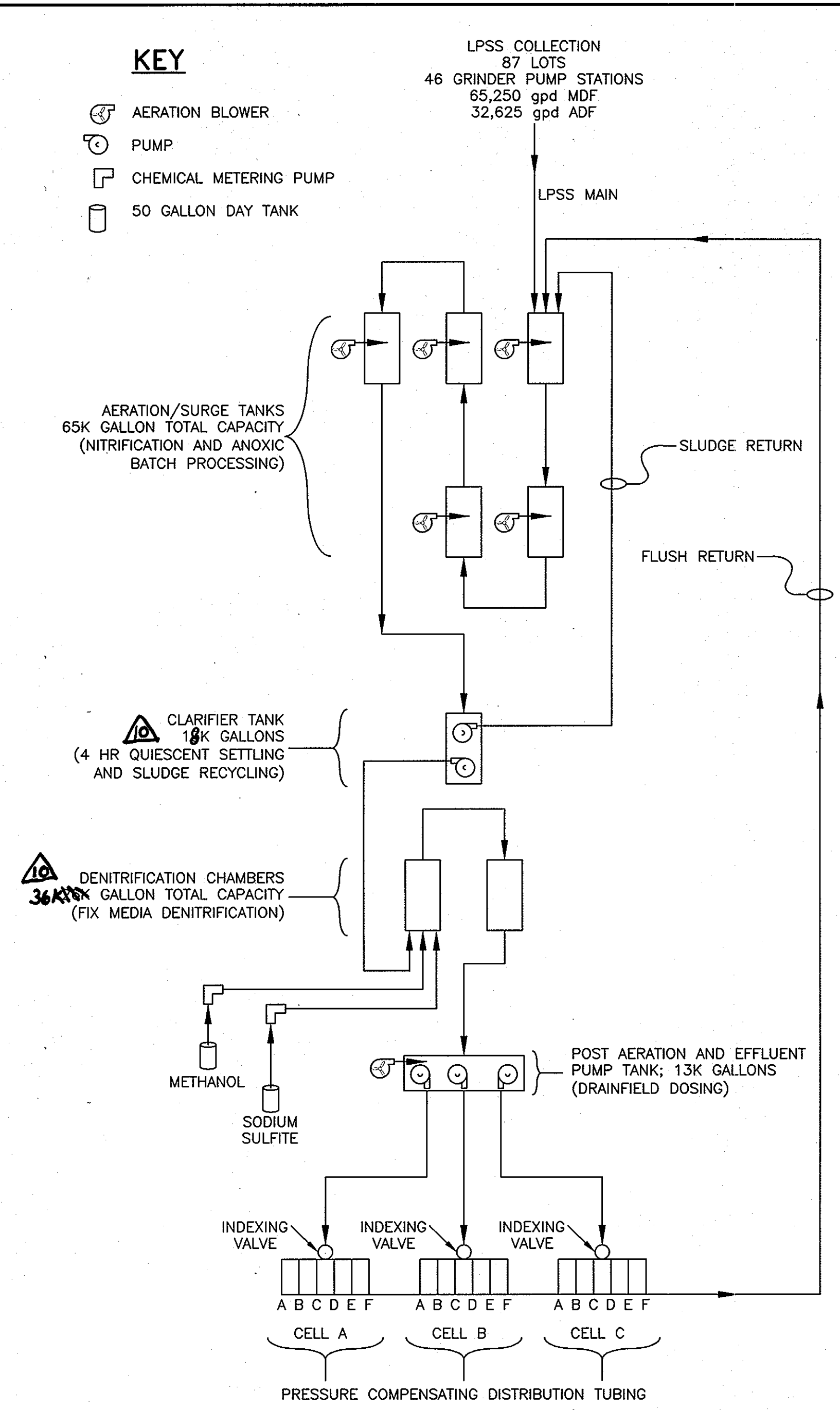
WALNUT GROVE  
HOWARD COUNTY, MARYLAND

WASTEWATER TREATMENT SYSTEM  
TITLE SHEET

sheet no. G-1

drawn: DAK struct: N/A  
checked: CAS mech: KAS  
designed: RMC elec: N/A  
approved: MDS  
date: 12/21/04  
file no: 3927-G01.DWG  
job no: 01-1633-00-3927-000

SAC  
From Science to Solutions



**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

LPSS MAIN

AERATION/SURGE TANKS  
65K GALLON TOTAL CAPACITY  
(NITRIFICATION AND ANOXIC BATCH PROCESSING)

CLARIFIER TANK  
18K GALLONS  
(4 HR QUIESCENT SETTLING AND SLUDGE RECYCLING)

DENITRIFICATION CHAMBERS  
36K GALLON TOTAL CAPACITY  
(FIX MEDIA DENITRIFICATION)

METHANOL  
SODIUM SULFITE

POST AERATION AND EFFLUENT PUMP TANK; 13K GALLONS  
(DRAINFIELD DOSING)

INDEXING VALVE INDEXING VALVE INDEXING VALVE

CELL A CELL B CELL C

PRESSURE COMPENSATING DISTRIBUTION TUBING

SLUDGE RETURN  
FLUSH RETURN

**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

**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**

200' 0 200'

SCALE IN FEET

DEPARTMENT OF PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

*[Signature]* 4/14/07  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

no.	description	date	by	approved
10	As-Built Drawing Set	4/29/14	MDS, JMB	
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	

**WALNUT GROVE**  
HOWARD COUNTY, MARYLAND

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

sheet no. **G-2**

file no. 3927-G02.DWG  
job no. 01-1633-00-3927-000

drawn: DAK, struct: N/A, date: 12/21/04, notes: AS NOTED  
checked: KAS, mech: KAS, job no. 01-1633-00-3927-000  
designed: RMC, elec: N/A  
QA/QC: MJK

**SAIC**  
From Science to Solutions

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*[Signature]* for LMS 5/21/07  
CHIEF BUREAU OF UTILITIES DATE

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

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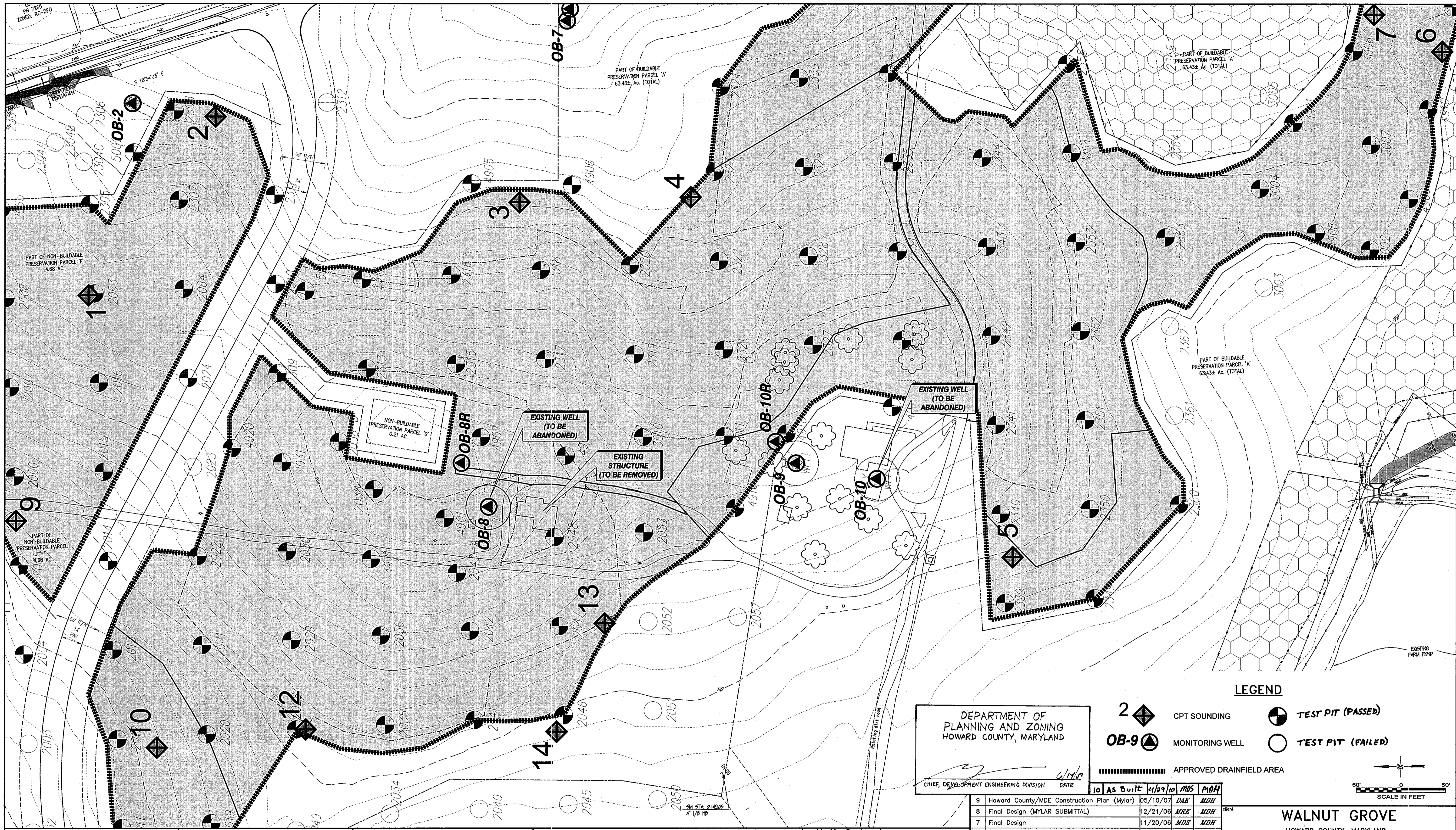
2129 Business Parkway South; Suite 10  
Westminster, Maryland 21157  
(410) 876-0280

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

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**Professional Seal**

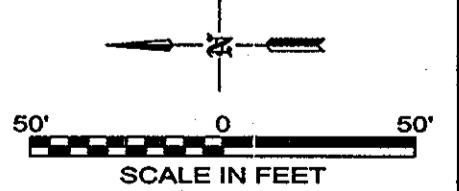


DEPARTMENT OF  
PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 4/10/10

**LEGEND**

- 2 (diamond with cross) CPT SOUNDING
- OB-9 (circle with cross) MONITORING WELL
- (circle with cross) TEST PIT (PASSED)
- (circle with dot) TEST PIT (FAILED)
- (thick dashed line) APPROVED DRAINFIELD AREA



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

**WALNUT GROVE**  
HOWARD COUNTY, MARYLAND

**WASTEWATER TREATMENT SYSTEM  
EXISTING SITE CONDITIONS**

sheet no. G-3

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

AS NOTED

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DEPARTMENT OF  
PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

5/21/10

BUREAU OF UTILITIES

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",  
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HOWARD COUNTY, MARYLAND  
ELECTION DISTRICT No. 6  
CONTRACT No. 50-4359-D

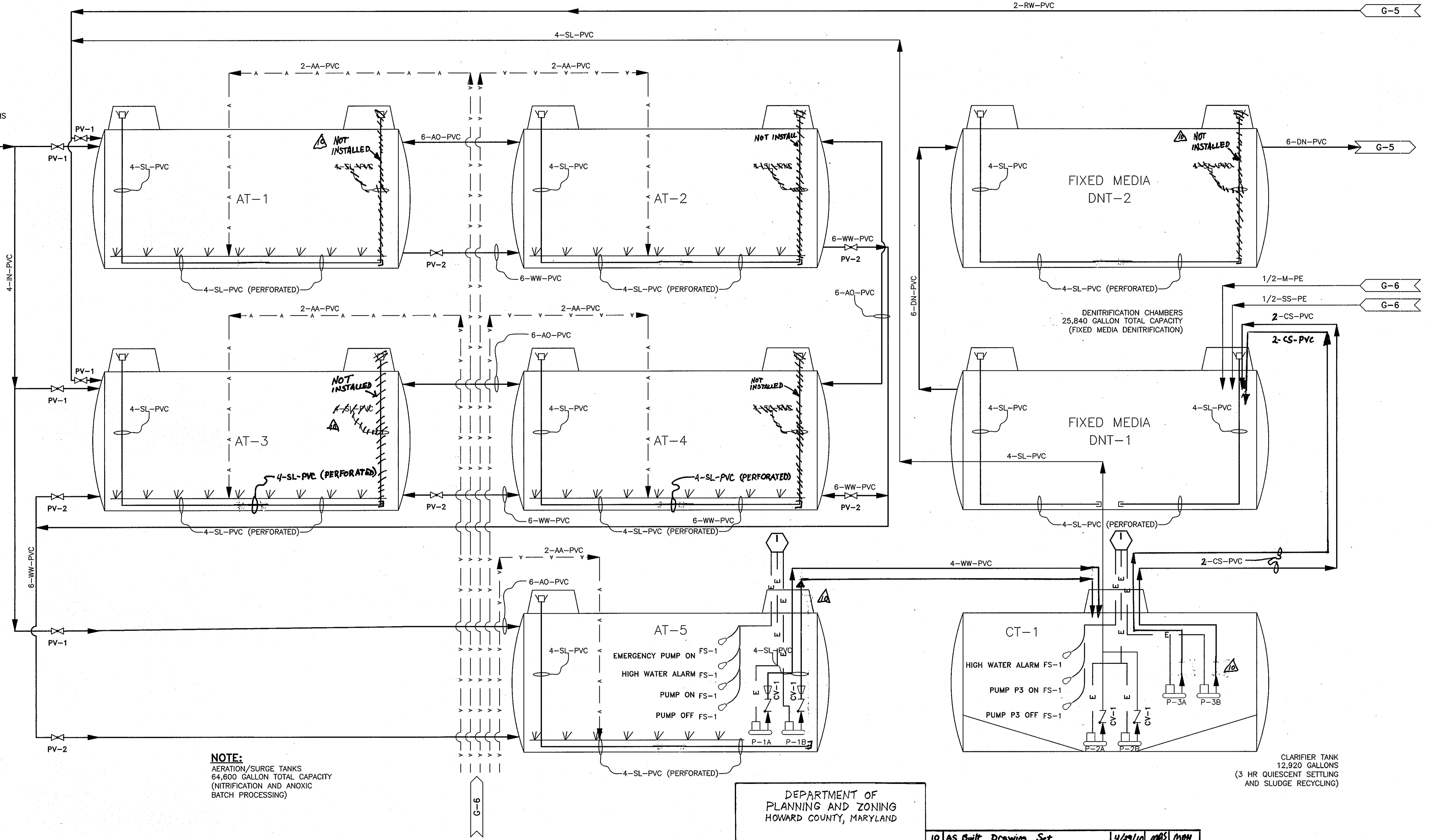
Verify Scale  
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DRAWING

IF NOT ONE INCH ON  
THIS SHEET, ADJUST  
SCALES ACCORDINGLY

Professional Seal

STATE OF MARYLAND  
PROFESSIONAL ENGINEER  
No. 32945  
5/10/07

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



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

DEPARTMENT OF  
PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

*[Signature]* 4/1/10  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

no.	description	date	by	approved
10	AS Built Drawing Set	4/29/10	MDS	MDH
9	Howard County/MDE Construction Plan (Mylar)	05/10/07	DAK	MDH
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1	BioClere Resubmittal	08/24/05	MDS	MDH

**WALNUT GROVE**  
HOWARD COUNTY, MARYLAND

**WASTEWATER TREATMENT SYSTEM**  
P&ID - TREATMENT SYSTEM

sheet no. **G-4**

scale: **AS NOTED** file no. 3927-G04.dwg  
job no. 01-1633-00-3927-000

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From Science to Solutions

DEPARTMENT OF  
PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*[Signature]* 5/2/10  
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  
Westminster, Maryland 21157  
(410) 876-0280

**WALNUT GROVE**  
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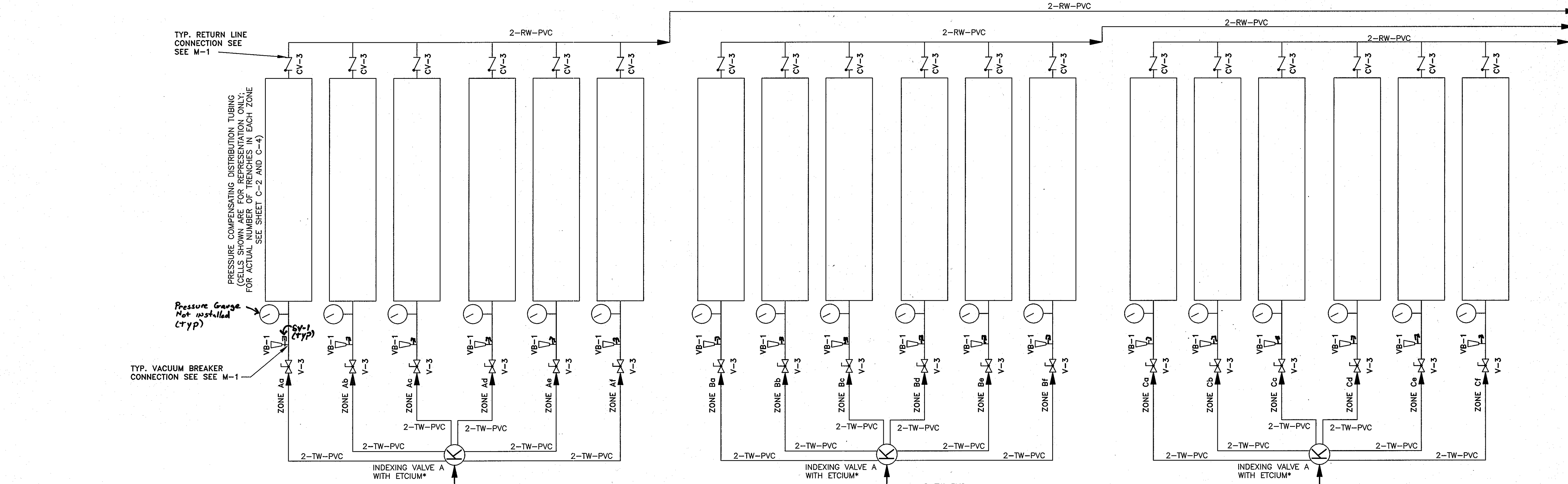


TYP. RETURN LINE CONNECTION SEE M-1

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)

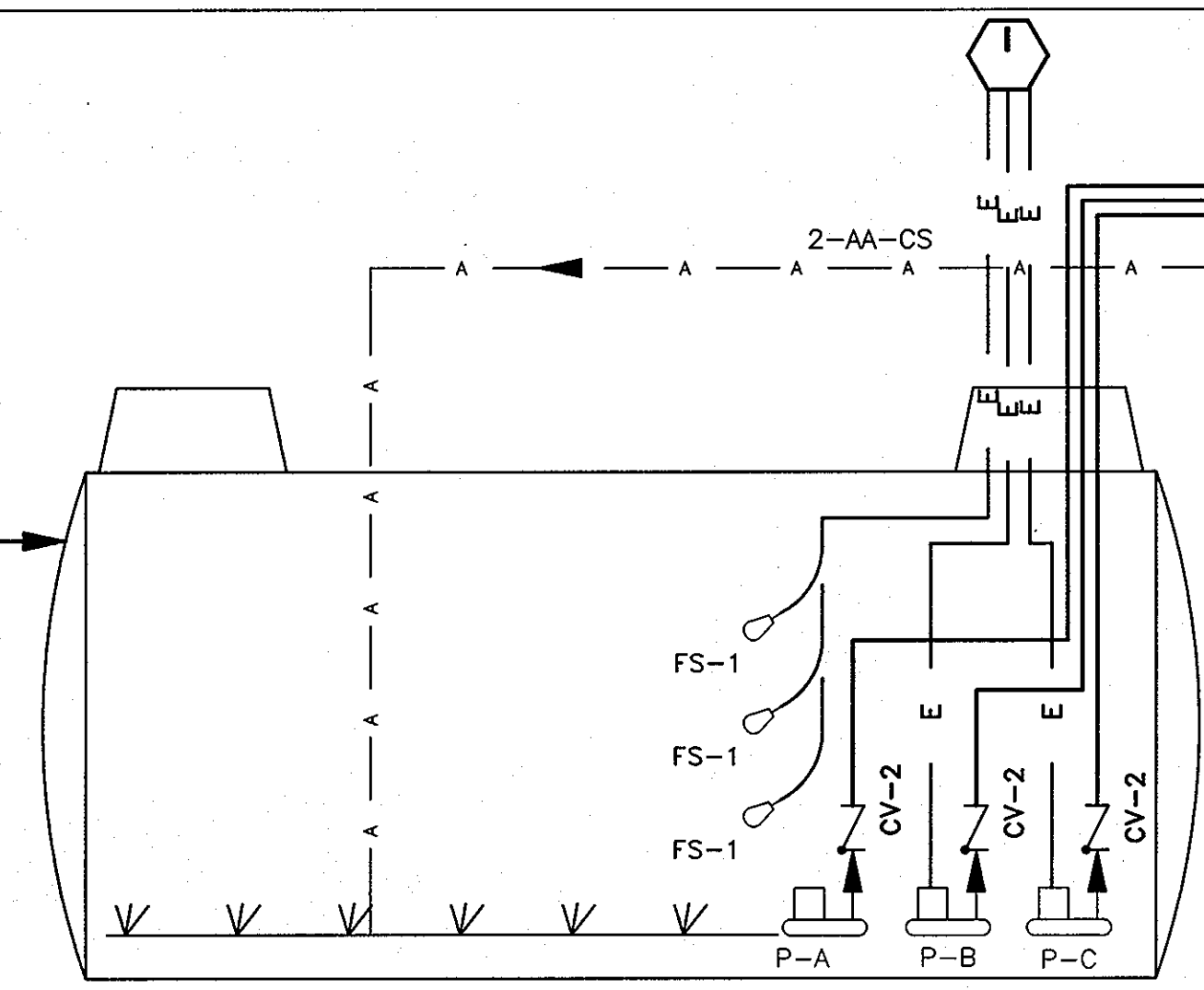
Pressure Gauge Not installed (typ)

TYP. VACUUM BREAKER CONNECTION SEE M-1



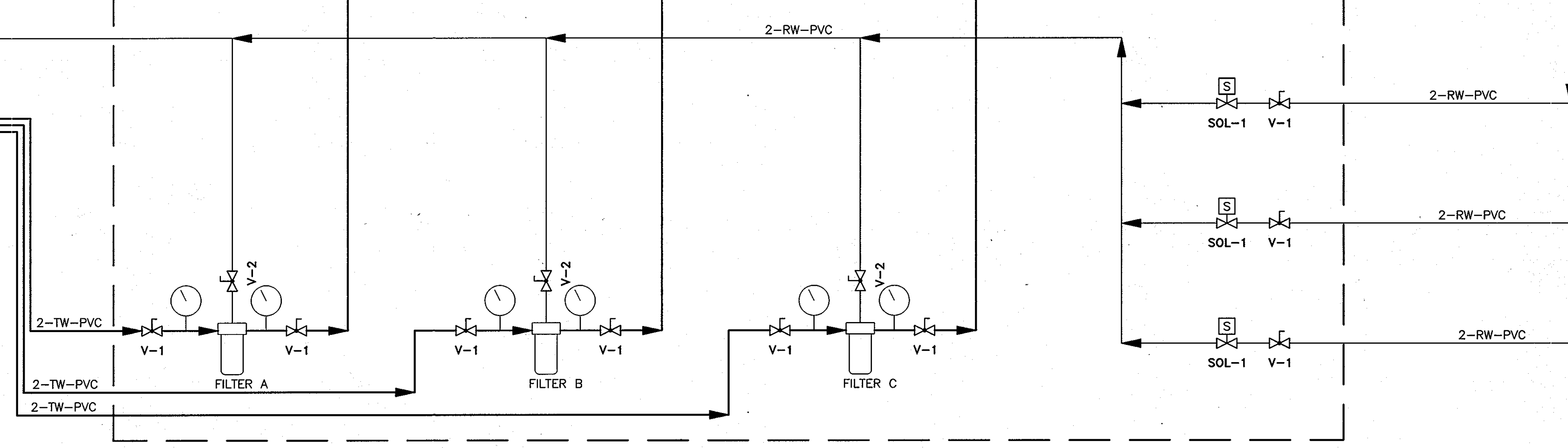
G-4 2-RW-PVC

G-4 6-DN-PVC



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

LIMITS OF VALVE VAULT



LIMITS OF VALVE VAULT

DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY, MARYLAND

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 6/10/07

Verify Scale THIS BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY



\*ETCIVM ENGINEERING TECHNOLOGIES CORP. INDEXING VALVE MONITOR

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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 P&ID - DOSING SYSTEM sheet no. G-5

12/21/04 AS NOTED 3927-G04.dwg 01-1633-00-3927-000



DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

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



1129 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

DATE 5/10/07

**LEGEND**

LINE CODE	
LINE SIZE	PIPE MATERIAL OF CONSTRUCTION
6-SL-DIP/F	

CS	CARBON STEEL	AA	AERATION AIR
DIP/MJ	DUCTILE IRON PIPE/MECHANICAL JOINT	BP	BYPASS
DIP/F	DUCTILE IRON PIPE/FLANGED	CS	CLARIFIER SUPERNATANT
DIP/G	DUCTILE IRON PIPE/GROOVED JOINT	D	DRAIN
CPVC	CHLORINATED POLYVINYL CHLORIDE PIPE	DN	DENITRIFIED
PVC	POLYVINYL CHLORIDE	IN	INFLUENT
PE	POLYETHYLENE	M	METHANOL
C	COPPER	PW	POTABLE WATER
SS	STAINLESS STEEL	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
NC	NORMALLY CLOSED		PRESSURE GAUGE
NO	NORMALLY OPEN		TO OR FROM OUTSIDE PROJECT LIMITS
	FLOAT SWITCH		CONTINUATION TO ANOTHER SHEET
	VACUUM BREAKER		
	INDEXING DISTRIBUTING VALVE		
	FLEX CONNECTION		
	QUICK CONNECT		

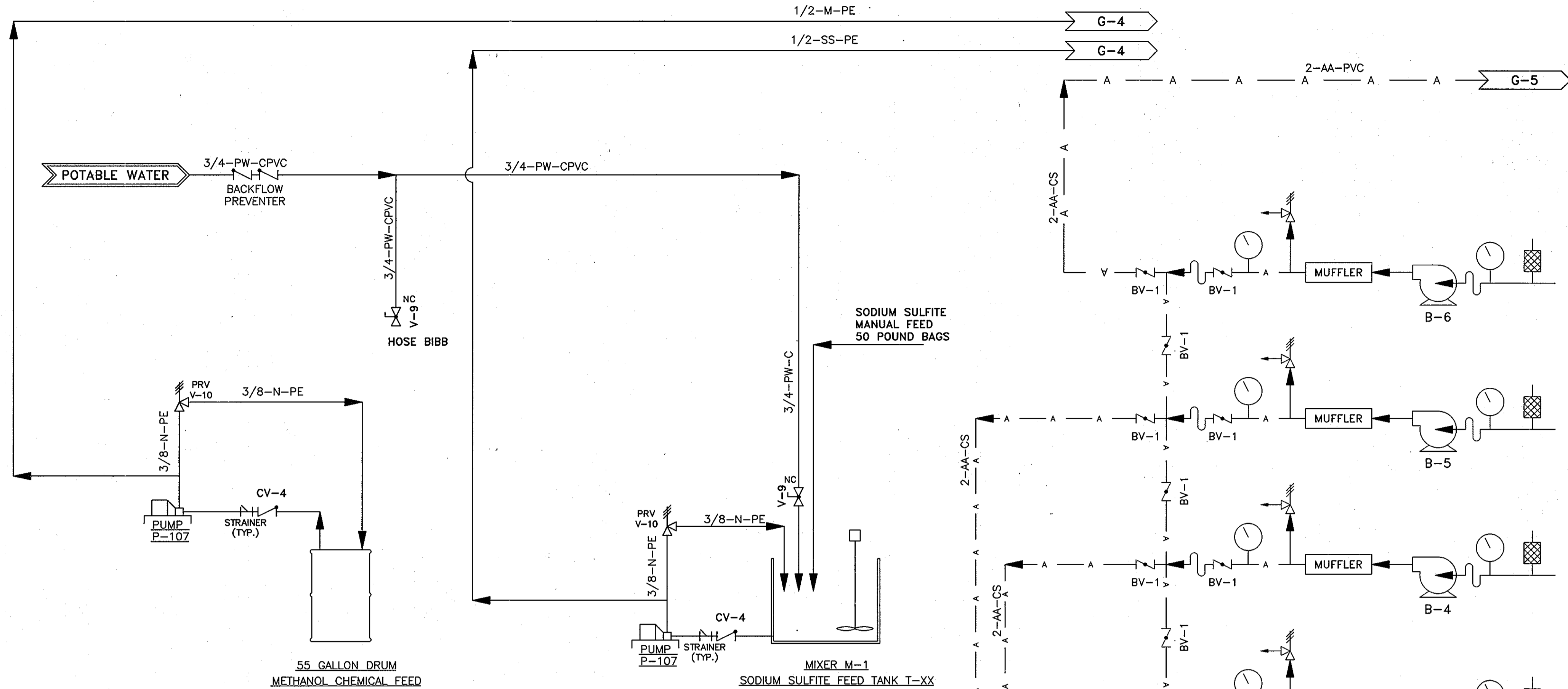
Qd - DESIGN FLOW, GPM  
Q - DESIGN AVERAGE FLOW, GPD

**LINE SYMBOLS**

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

DEPARTMENT OF  
PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



**PIPING AND INSTRUMENTATION DIAGRAM**

Valves	ID No.	DESCRIPTION	SIZE, MATERIAL, TYPE	QUANTITY	SHEET NO.
	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
	SV-1	SCHRADER VALVE	1/4-INCH BRASS	18	G5

NO.	DESCRIPTION	DATE	BY	APPROVED
10	AS BUILT DRAWING SET	4/29/10	MDS	MDH
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

WALNUT GROVE  
HOWARD COUNTY, MARYLAND

WASTEWATER TREATMENT SYSTEM  
P&ID - BUILDING  
COMPONENTS

sheet no. G-6

DATE: 12/21/06 AS NOTED  
JOB NO. 01-1633-00-3927-000

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DEPARTMENT OF  
PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

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

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

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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

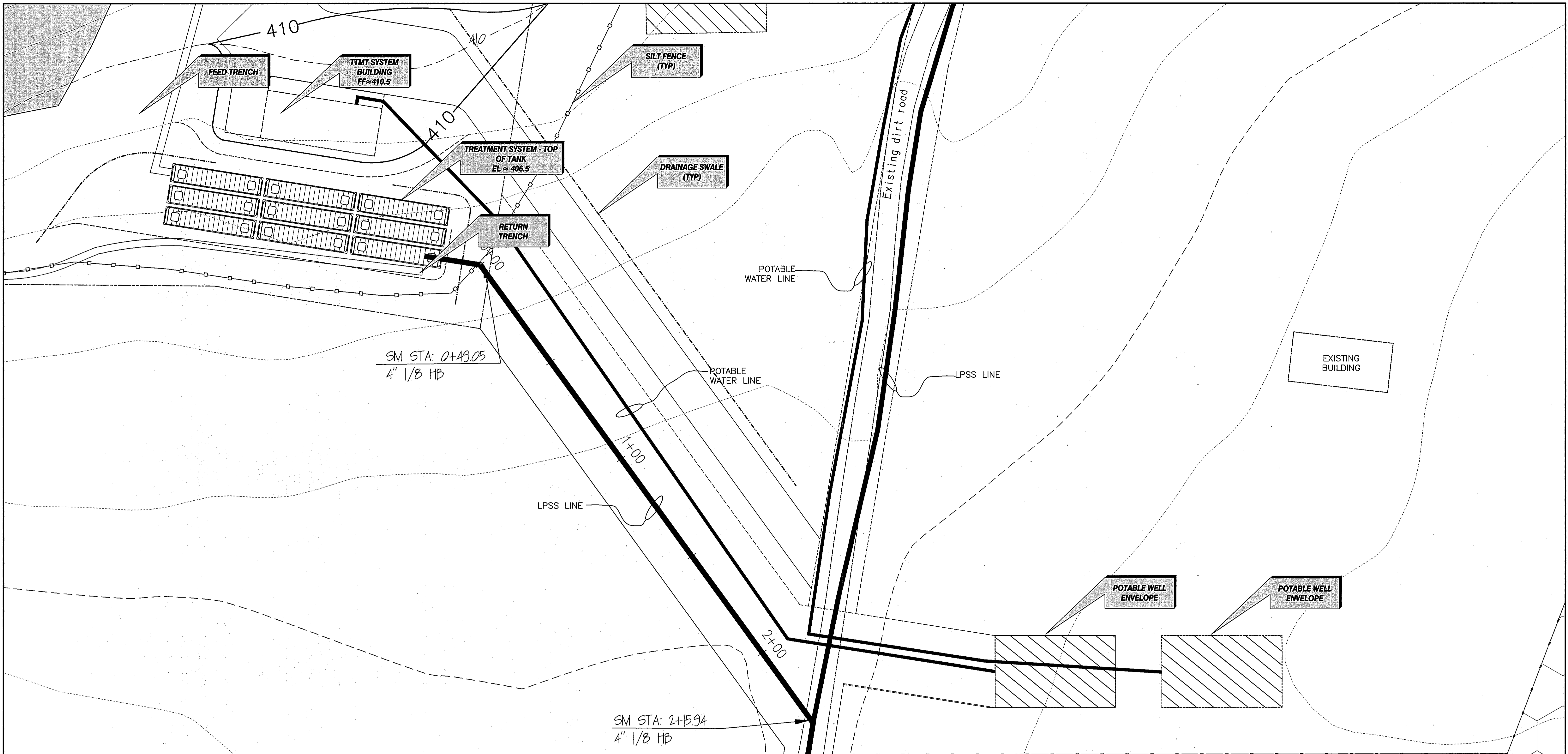
Verify Scale

THIS BAR IS ONE  
INCH ON ORIGINAL  
DRAWING

IF NOT ONE INCH ON  
THIS SHEET, ADJUST  
SCALES ACCORDINGLY

Professional Seal  
STATE OF MARYLAND  
PROFESSIONAL ENGINEER  
No. 32948  
Mark W. King  
5/10/07

revisions



DEPARTMENT OF  
PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

*[Signature]*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 6/16/07

no.	description	date	by	approved
10	AS-BUILT DRAWING SET	4/21/10	MAS	MDH
9	Howard County/MDE Construction Plan (Mylar)	05/10/07	DAK	MDH
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1	BioClere Resubmittal	08/24/05	MDS	MDH

client  
**WALNUT GROVE**  
HOWARD COUNTY, MARYLAND

sheet no.  
**C-1**

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

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

struct: N/A  
mech: KAS  
elec: N/A  
so/gc: MRK

date: 12/21/06  
book: AS NOTED  
job no.: 01-1633-00-3927-000  
file no.: 3927-C02.DWG

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HOWARD COUNTY, MARYLAND

*[Signature]*  
CHIEF, BUREAU OF UTILITIES DATE 5/21/07

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

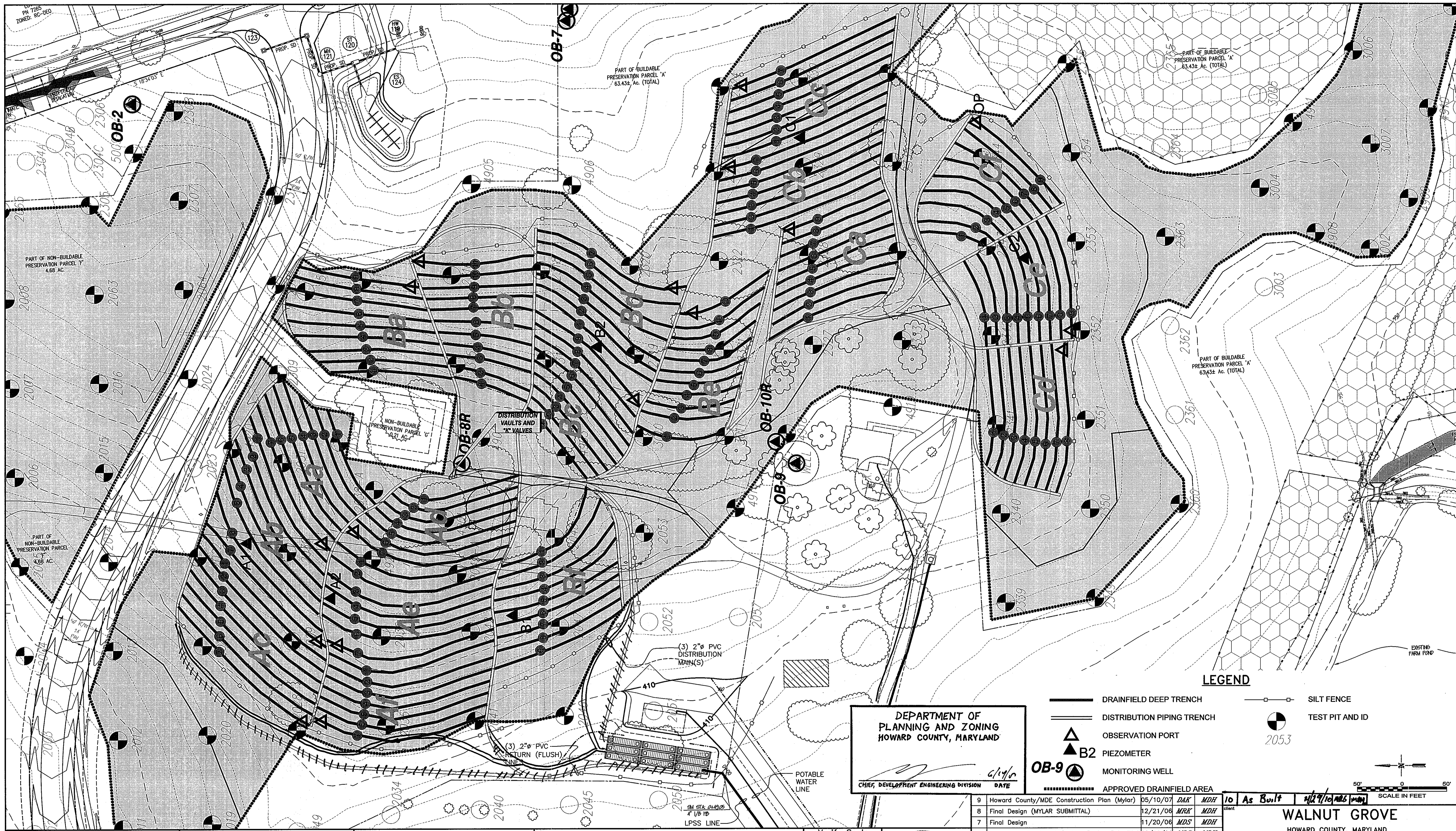
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**WALNUT GROVE**  
LOTS 1 THRU 88, BUILDABLE PRESERVATION PARCEL "A",  
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LIBER 572 FOLIO 430  
HOWARD COUNTY, MARYLAND  
ELECTION DISTRICT No. 6  
CONTRACT No. 50-4359-D

Verify Scale  
THIS BAR IS ONE  
INCH ON ORIGINAL  
DRAWING  
0" = 1"  
IF NOT ONE INCH ON  
THIS SHEET, ADJUST  
SCALES ACCORDINGLY

Professional Seal  
*[Signature]*  
5/10/07



DEPARTMENT OF  
PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

6/19/06  
DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION

**LEGEND**

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

50' 0 50'

SCALE IN FEET

DEPARTMENT OF  
PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*[Signature]* R. Rupp 5/2/06  
DATE

BUREAU OF UTILITIES

HOWARD COUNTY AND  
MDE CONSTRUCTION  
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CONTRACT No. 50-4359-D

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DRAWING  
0 1"

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SCALES ACCORDINGLY



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

10 As Built 4/19/06

**WALNUT GROVE**  
HOWARD COUNTY, MARYLAND

**WASTEWATER TREATMENT SYSTEM  
TRENCH LAYOUT**

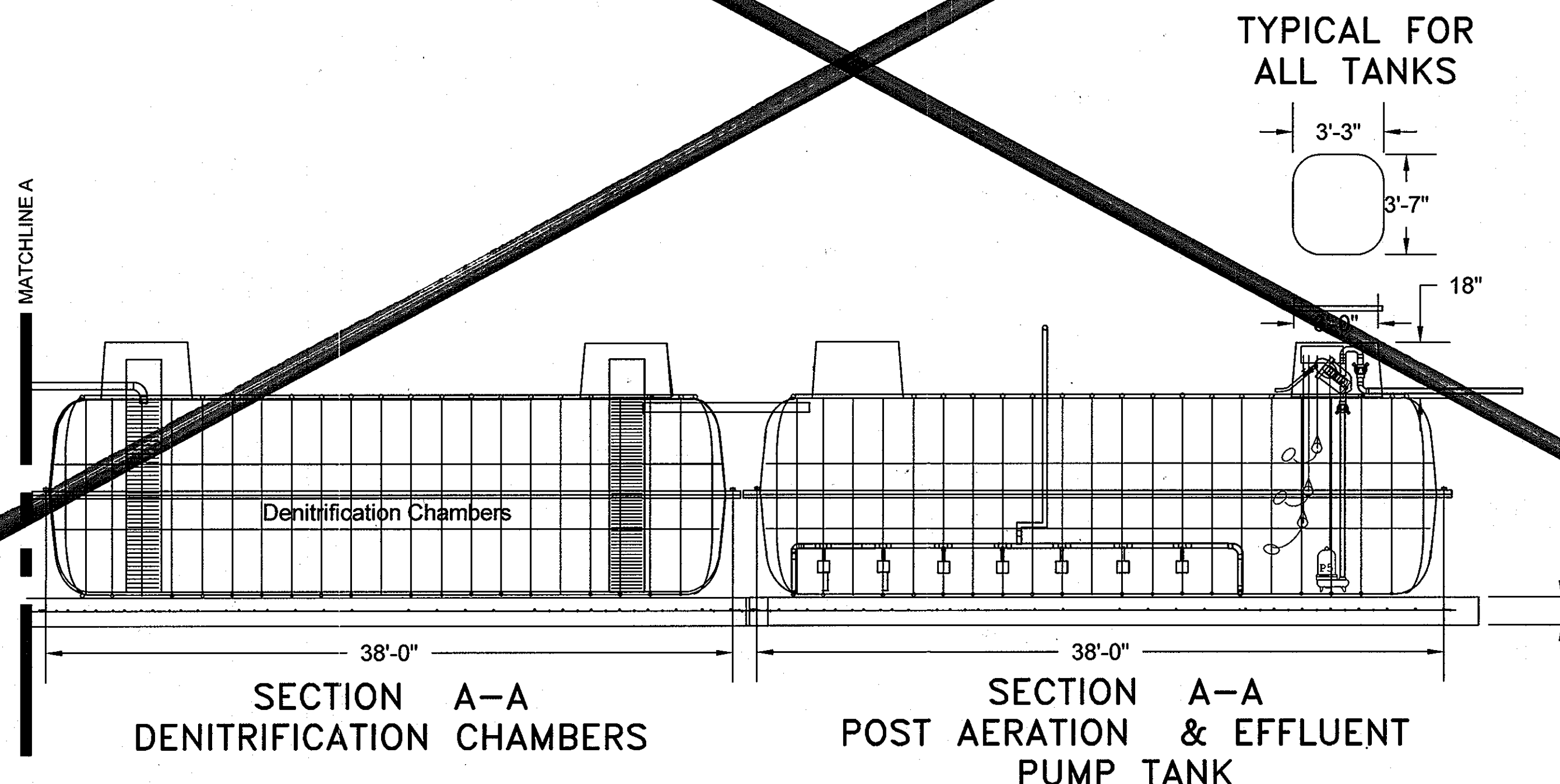
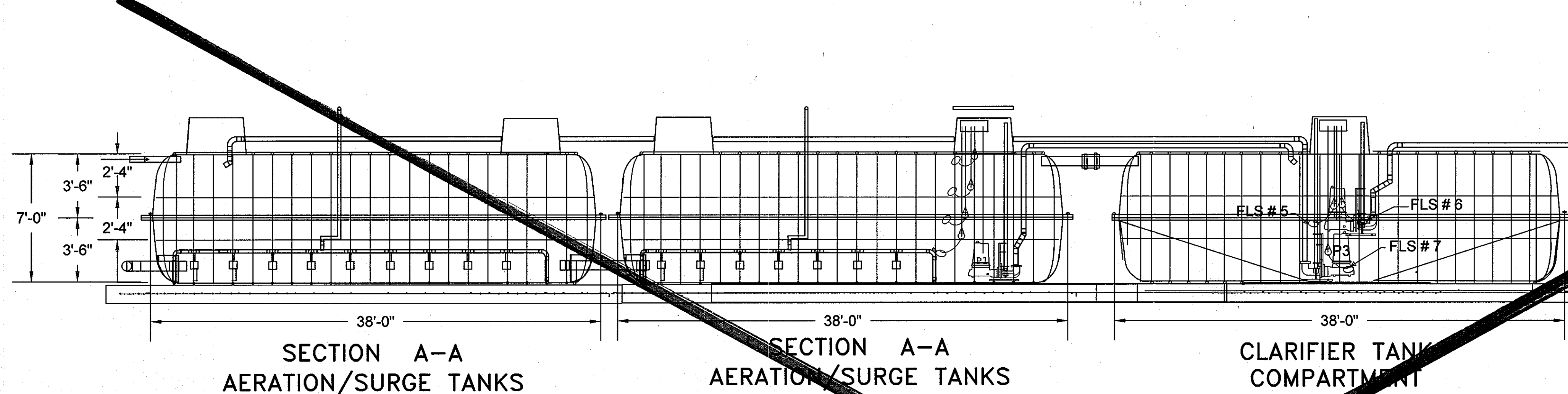
sheet no. C-2

file no. 3927-C02.DWG

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

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 PLANNING AND ZONING  
 HOWARD COUNTY, MARYLAND

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

NOT TO SCALE

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

client  
**WALNUT GROVE**  
 HOWARD COUNTY, MARYLAND

sheet no.  
**WASTEWATER TREATMENT SYSTEM**  
**SBR TREATMENT SYSTEM**  
**SECTIONS**  
 C-3

drawn: DAK  
 checked: EAS  
 designed: RMG  
 civil: N/A

title: N/A  
 scale: N/A  
 date: 12/21/06  
 job no.: 01-1633-00-3927-000

file no.: 3927-C03.DWG

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 HOWARD COUNTY, MARYLAND

*[Signature]* 5/21/07  
 BUREAU OF UTILITIES DATE

HOWARD COUNTY AND  
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 PLAN SET FOR PERMIT  
 APPLICATION / APPROVAL

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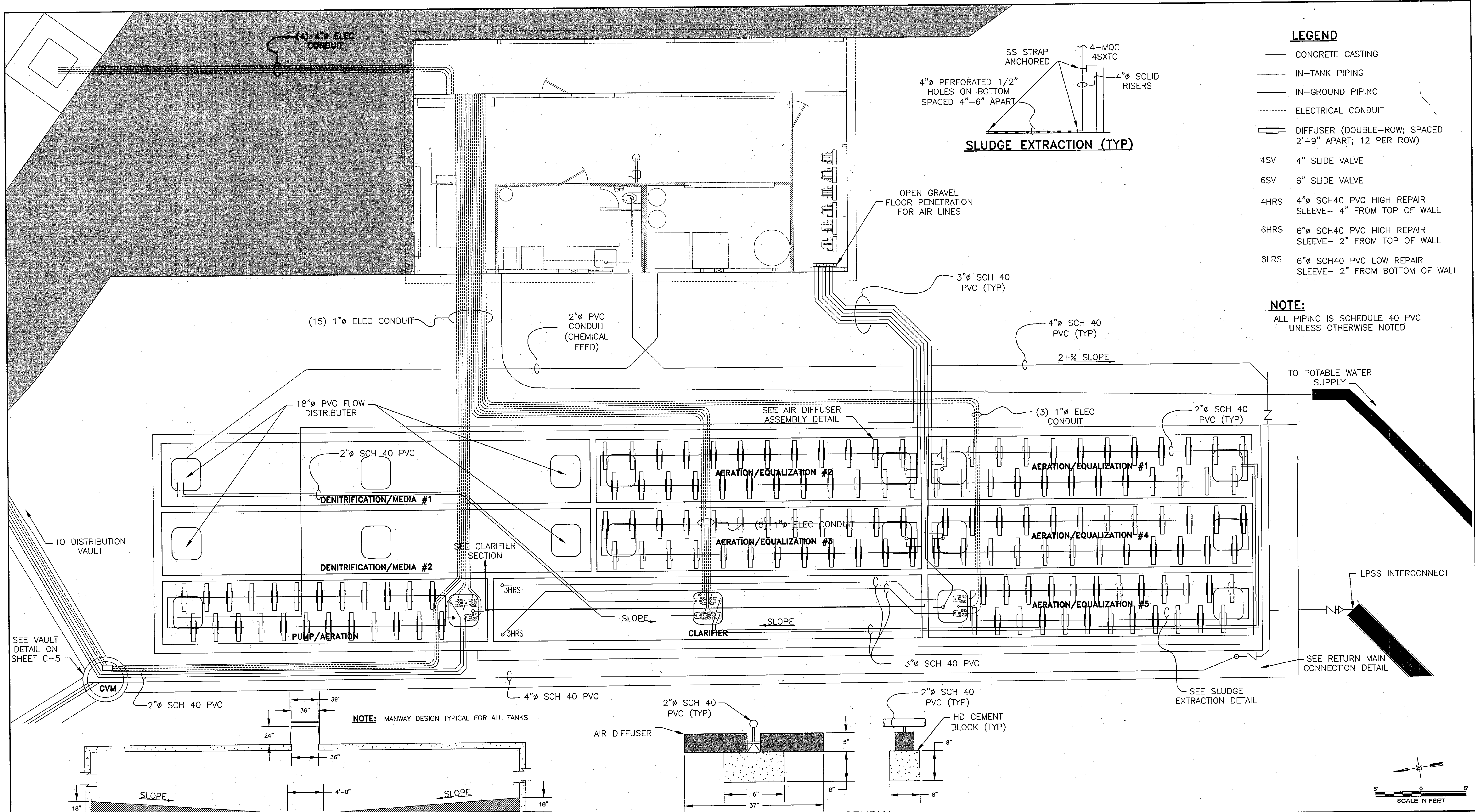
1129 Business Parkway South; Suite 10  
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 (410) 876-0280

**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"

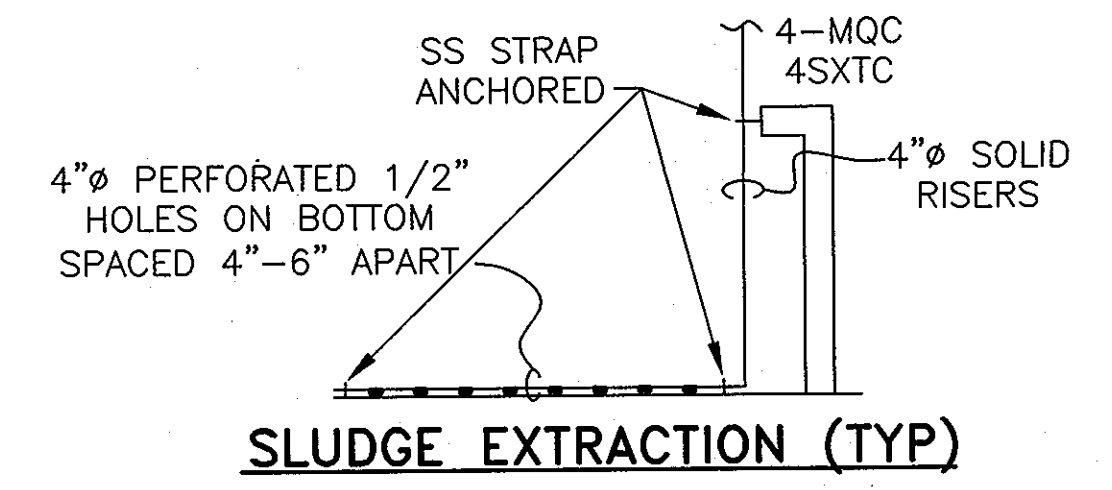
IF NOT ONE INCH ON  
 THIS SHEET, ADJUST  
 SCALES ACCORDINGLY

Professional Seal



- LEGEND**
- CONCRETE CASTING
  - IN-TANK PIPING
  - IN-GROUND PIPING
  - ELECTRICAL CONDUIT
  - DIFFUSER (DOUBLE-ROW; SPACED 2'-9" APART; 12 PER ROW)
  - 4SV 4" SLIDE VALVE
  - 6SV 6" SLIDE VALVE
  - 4HRS 4" SCH40 PVC HIGH REPAIR SLEEVE- 4" FROM TOP OF WALL
  - 6HRS 6" SCH40 PVC HIGH REPAIR SLEEVE- 2" FROM TOP OF WALL
  - 6LRS 6" SCH40 PVC LOW REPAIR SLEEVE- 2" FROM BOTTOM OF WALL

**NOTE:**  
ALL PIPING IS SCHEDULE 40 PVC UNLESS OTHERWISE NOTED



(15) 1" ELEC CONDUIT

2" PVC CONDUIT (CHEMICAL FEED)

3" SCH 40 PVC (TYP)

4" SCH 40 PVC (TYP)

2+% SLOPE

TO POTABLE WATER SUPPLY

18" PVC FLOW DISTRIBUTER

SEE AIR DIFFUSER ASSEMBLY DETAIL

(3) 1" ELEC CONDUIT

2" SCH 40 PVC (TYP)

2" SCH 40 PVC

AERATION/EQUALIZATION #2

AERATION/EQUALIZATION #1

DENITRIFICATION/MEDIA #1

AERATION/EQUALIZATION #3

AERATION/EQUALIZATION #4

DENITRIFICATION/MEDIA #2

SEE CLARIFIER SECTION

CLARIFIER

AERATION/EQUALIZATION #5

PUMP/AERATION

3HRS

SLOPE

SLOPE

3" SCH 40 PVC

SEE SLUDGE EXTRACTION DETAIL

SEE RETURN MAIN CONNECTION DETAIL

TO DISTRIBUTION VAULT

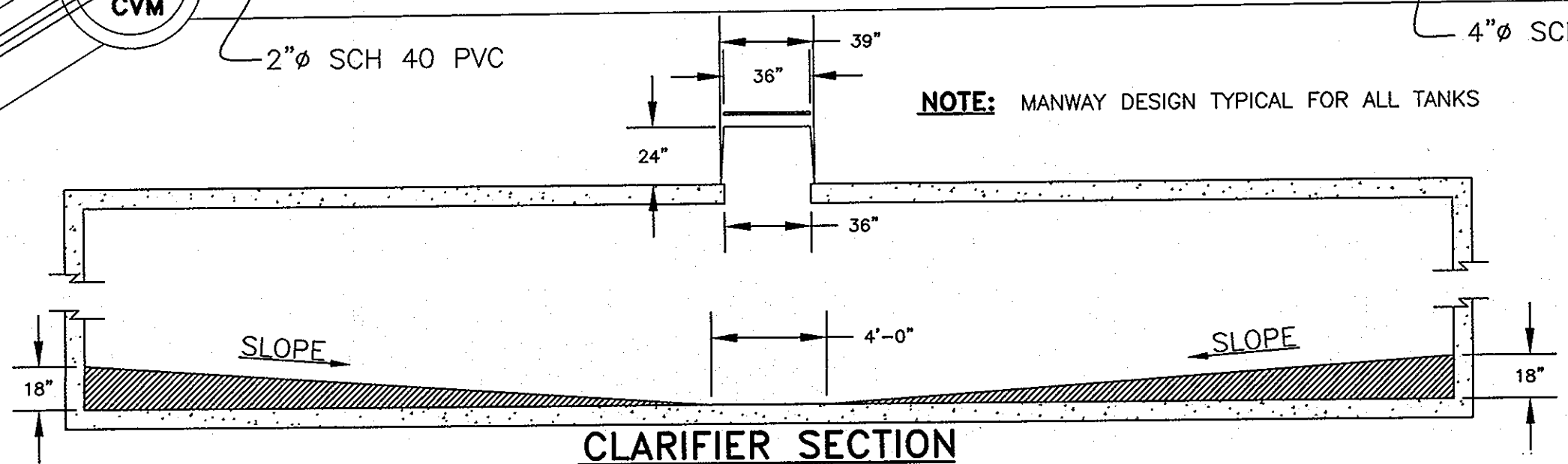
SEE VAULT DETAIL ON SHEET C-5

2" SCH 40 PVC

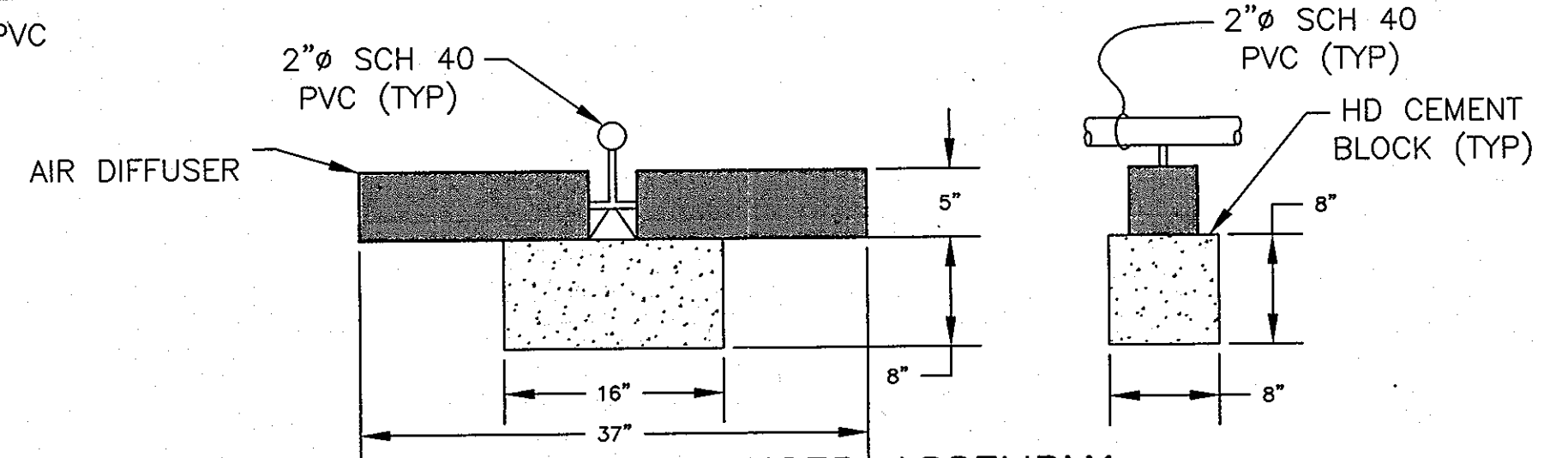
4" SCH 40 PVC

2" SCH 40 PVC (TYP)

2" SCH 40 PVC (TYP)



**CLARIFIER SECTION**  
SCALE: 1" = 5'-0"



**AIR DIFFUSER ASSEMBLY**  
SCALE: 1" = 1'-0"

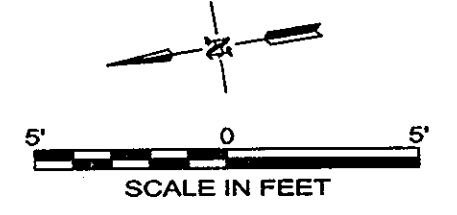
**NOTE:** MANWAY DESIGN TYPICAL FOR ALL TANKS

**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  
Bar is one inch on original drawing  
0 1"  
If not one inch on this sheet, adjust scales accordingly

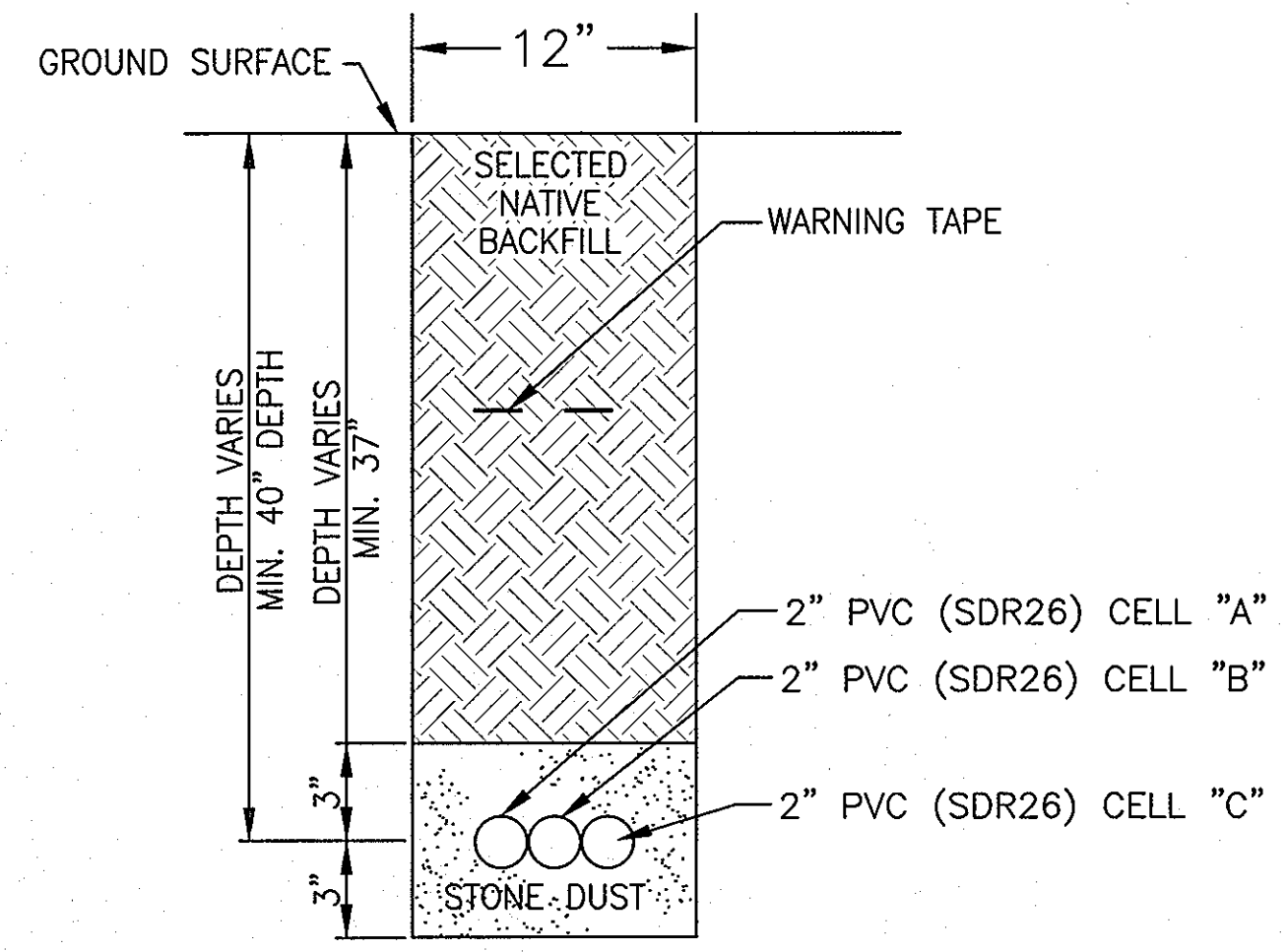
no.	description	date	by	approved
0	As-Built Drawing Set Replacement Sheet	04/29/10	MDS	MDH

client: **Walnut Grove**  
project location: **Clarksville, Howard County, Maryland**  
project: **Wastewater Treatment System**  
title: **SBR Treatment System**  
file no.: 3927-C02.dwg sheet: 3927-C02.DWG  
drawn: M. Swann 04/29/10  
checked: J. Lindsay 04/29/10  
approved: M. Hauster 04/29/10  
www.hydro-terra.com

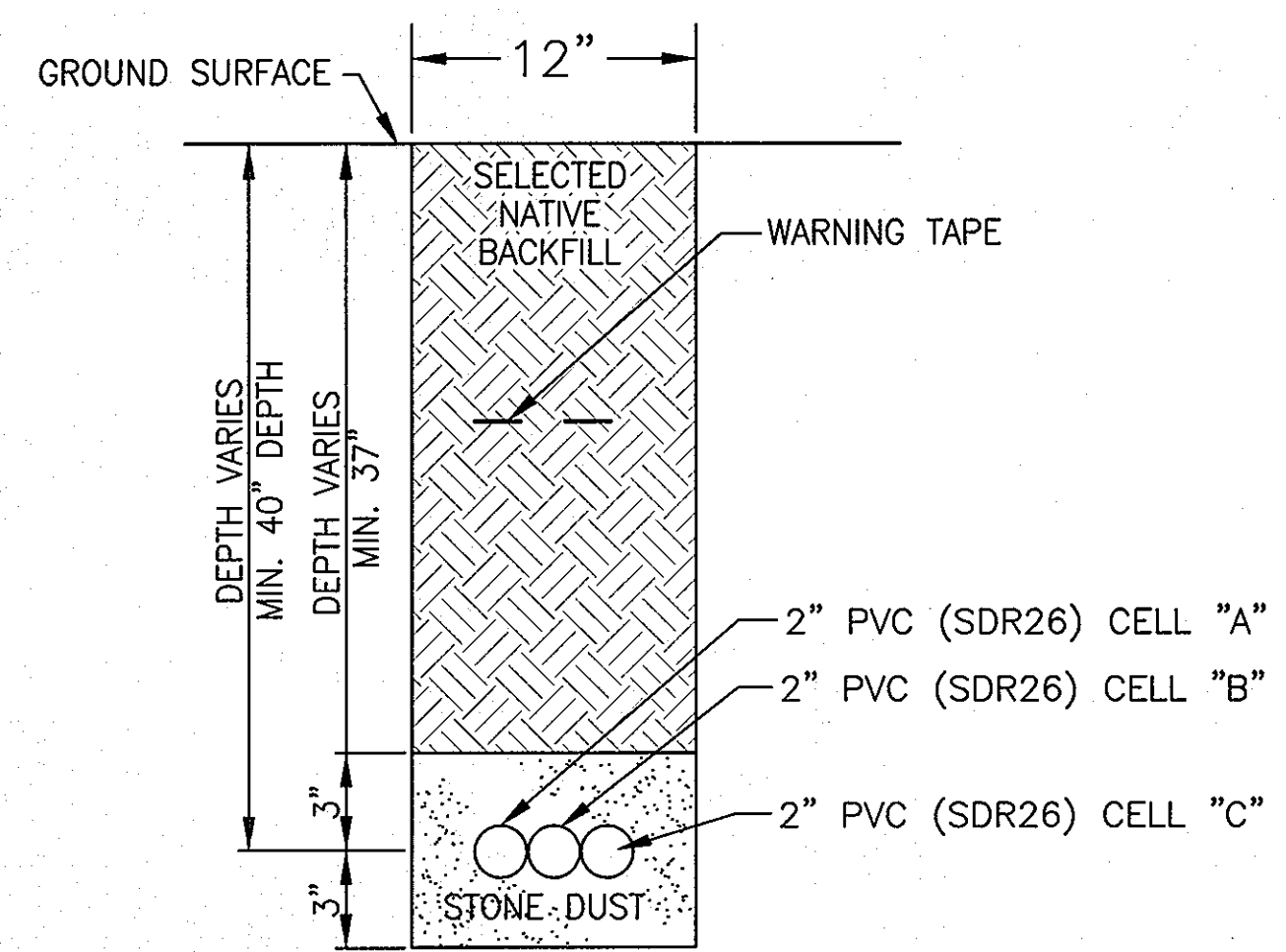


C-3a

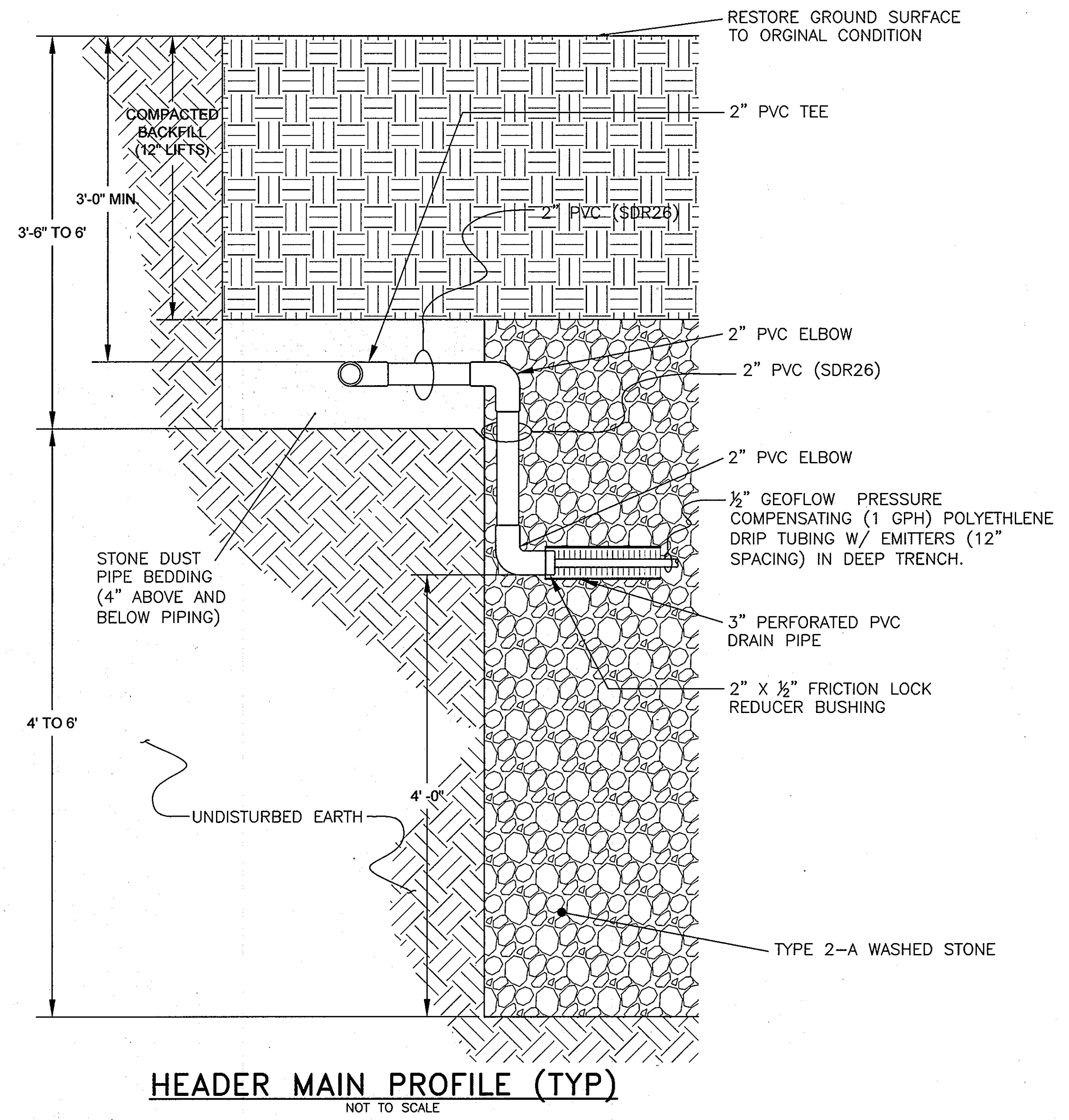




**FEED TRENCH SECTION (TYP)**  
NOT TO SCALE



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



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

DEPARTMENT OF  
PLANNING AND ZONING  
HOWARD COUNTY, MARYLAND

*[Signature]*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

DEPARTMENT OF  
PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

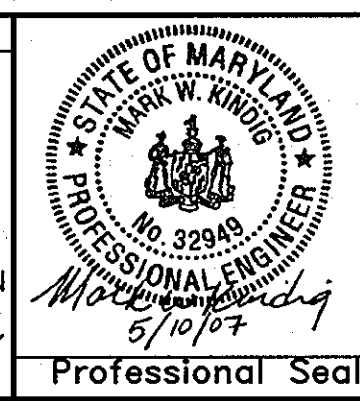
*[Signature]*  
BUREAU OF UTILITIES DATE

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

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**WALNUT GROVE**  
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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



no.	description	date	by	approved
10	As-Built Drawing Set	04/29/10	MDH	MDH
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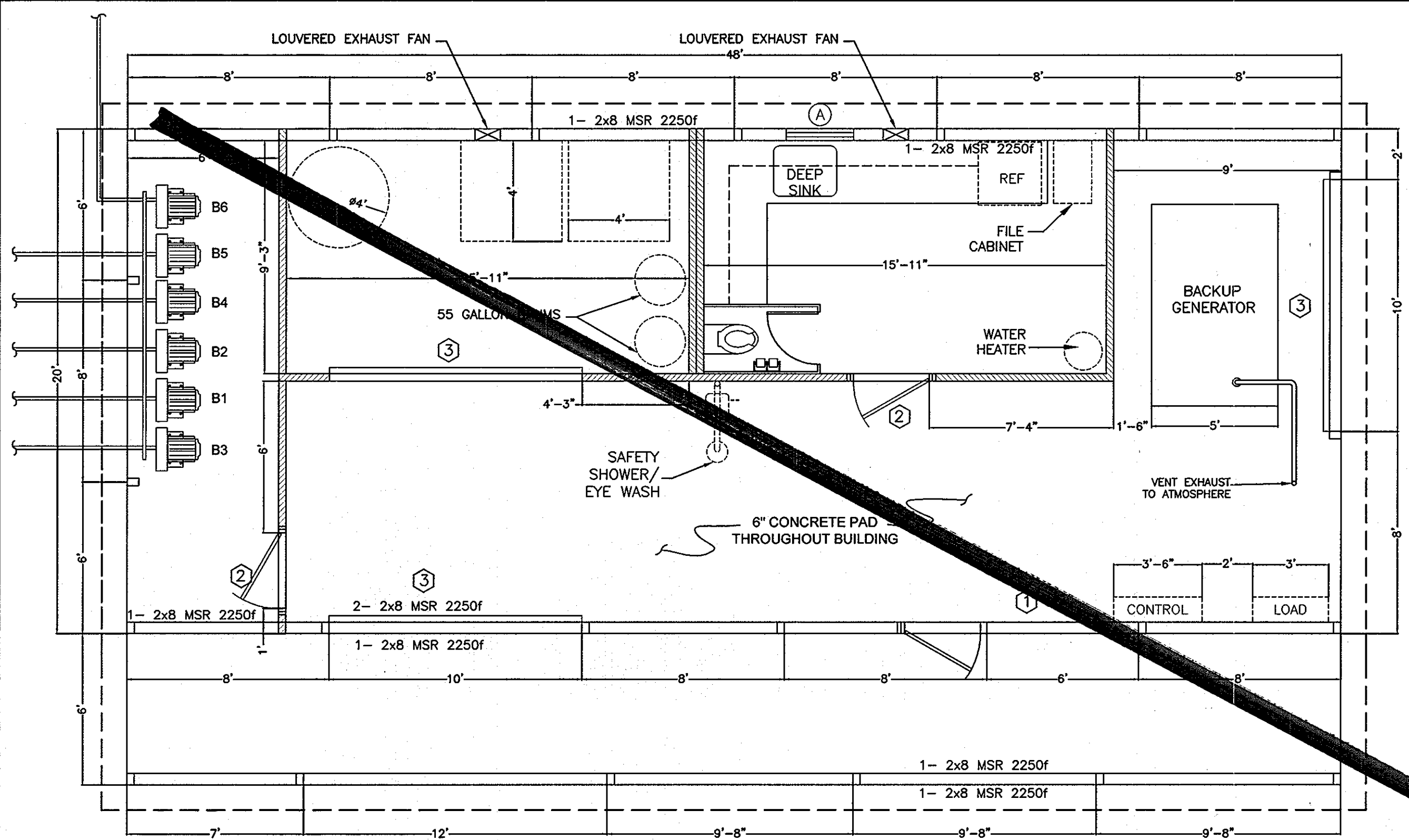
**WALNUT GROVE**  
HOWARD COUNTY, MARYLAND

**WASTEWATER TREATMENT SYSTEM  
TRENCH SECTIONS AND  
DETAILS**

sheet no. **C-5**

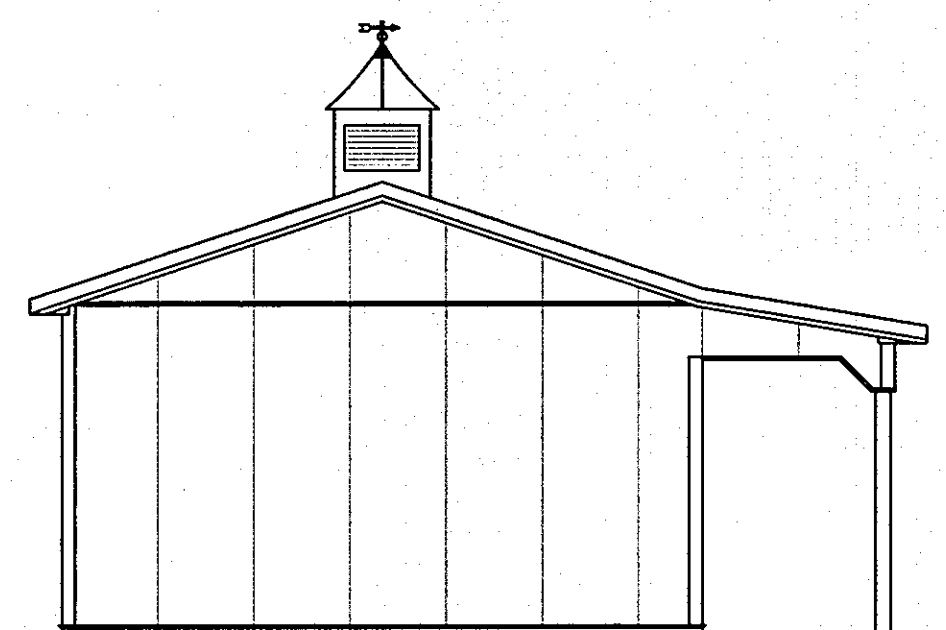
drawn: DAK, checked: EAS, designed: RMC, in chg: MJK  
struct: N/A, mech: KAS, elec: N/A  
date: 12/21/06, scale: AS NOTED  
job no. 01-1633-00-3927-000  
file no. 3927-C05.DWG

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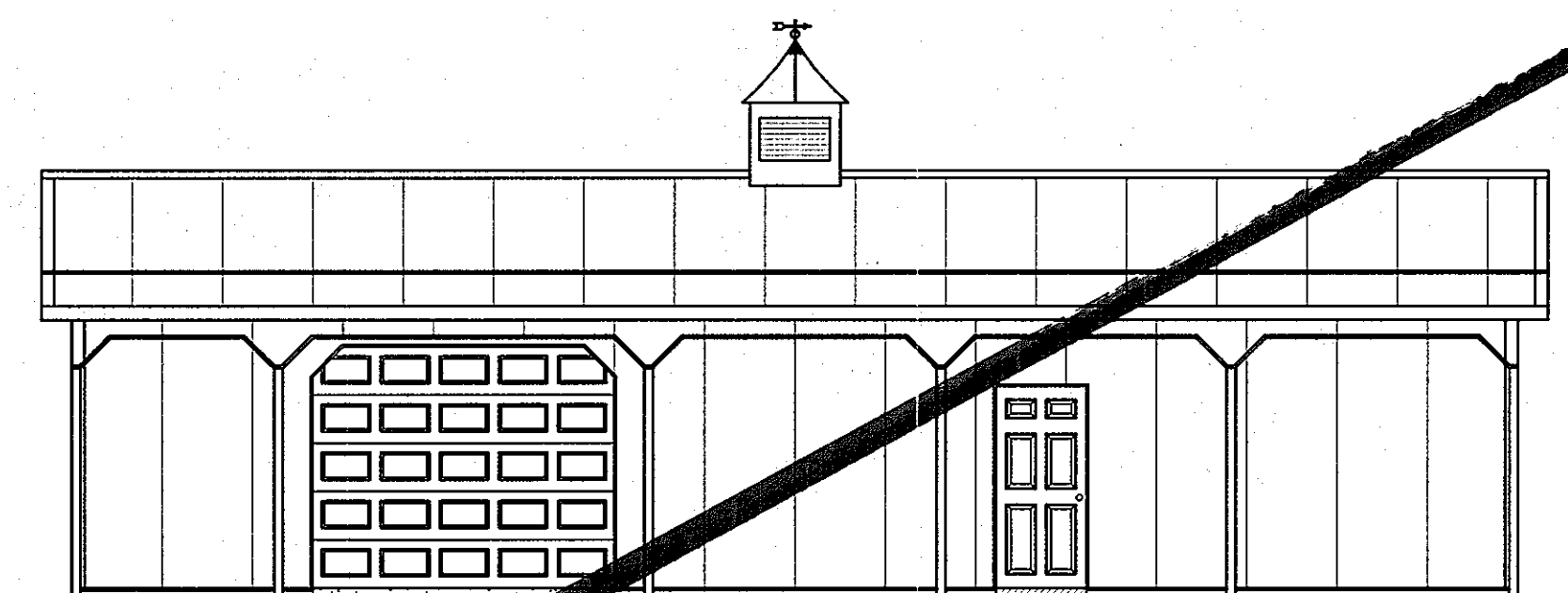


- NOTES:**
- 20' Truss, 10 $\frac{3}{8}$ " o.h., 4/12 Pitch, 48" o.c.
  - Bottom Chord Ties As Per Truss Manufacturer
  - 10'-6" Inside Height
  - (1) 32"x44" S.H. Window w/ Shutters
  - (1) 3068 LHOS 6-Panel Service Door w/ Panic Hardware & Auto Closer
  - (2) 3068 LHOS 6-Panel Service Door
  - (3) 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
  - 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"  $\emptyset$  x 8" Wet-Pour Concrete, Except:
    - = 20"  $\emptyset$  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

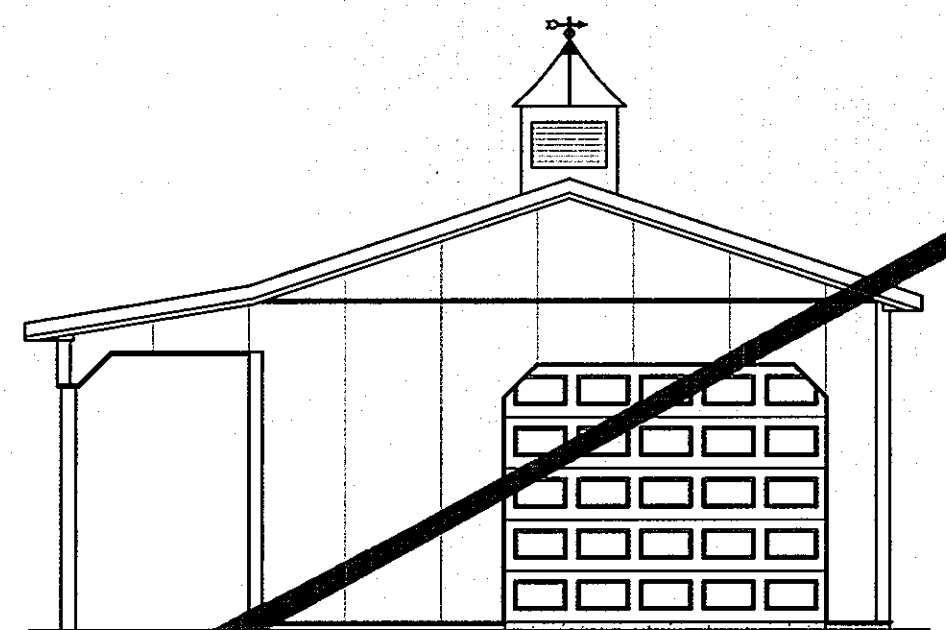
**FLOOR PLAN**  
 SCALE:  $\frac{1}{4}$ " = 1'-0"



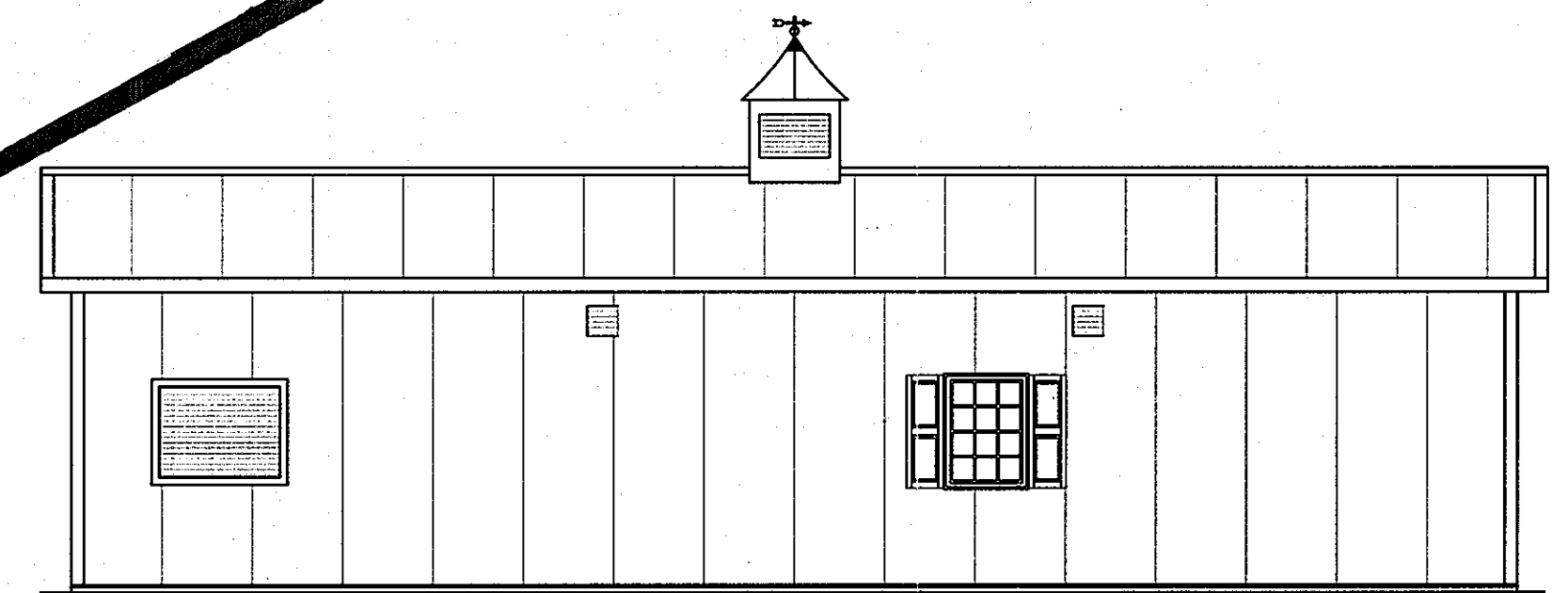
**LEFT SIDE GABLE ELEVATION**



**FRONT EAVE ELEVATION**

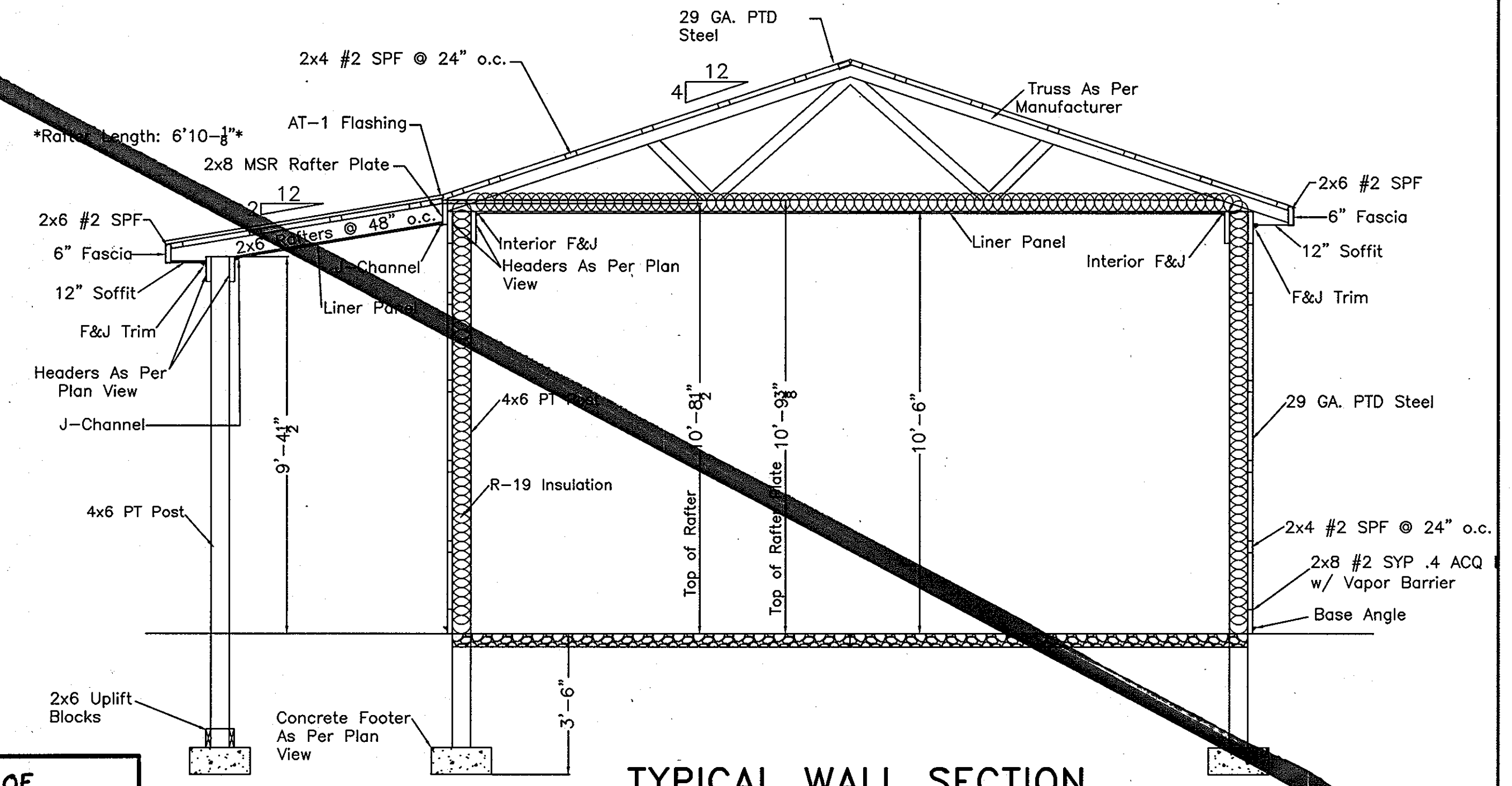


**RIGHT SIDE GABLE ELEVATION**



**REAR EAVE ELEVATION**

**BUILDING ELEVATIONS**  
 SCALE: 1" = 6'-0"



**TYPICAL WALL SECTION**  
 SCALE:  $\frac{3}{8}$ " = 1'-0"

DEPARTMENT OF  
 PLANNING AND ZONING  
 HOWARD COUNTY, MARYLAND

6/21/07  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

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

**WALNUT GROVE**  
 HOWARD COUNTY, MARYLAND

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

sheet no. **A-1**

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

DATE: 12/21/04

SAIC  
 From Science to Solutions

DEPARTMENT OF  
 PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

6/21/07  
 BUREAU OF UTILITIES DATE

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

**SAIC**  
 From Science to Solutions

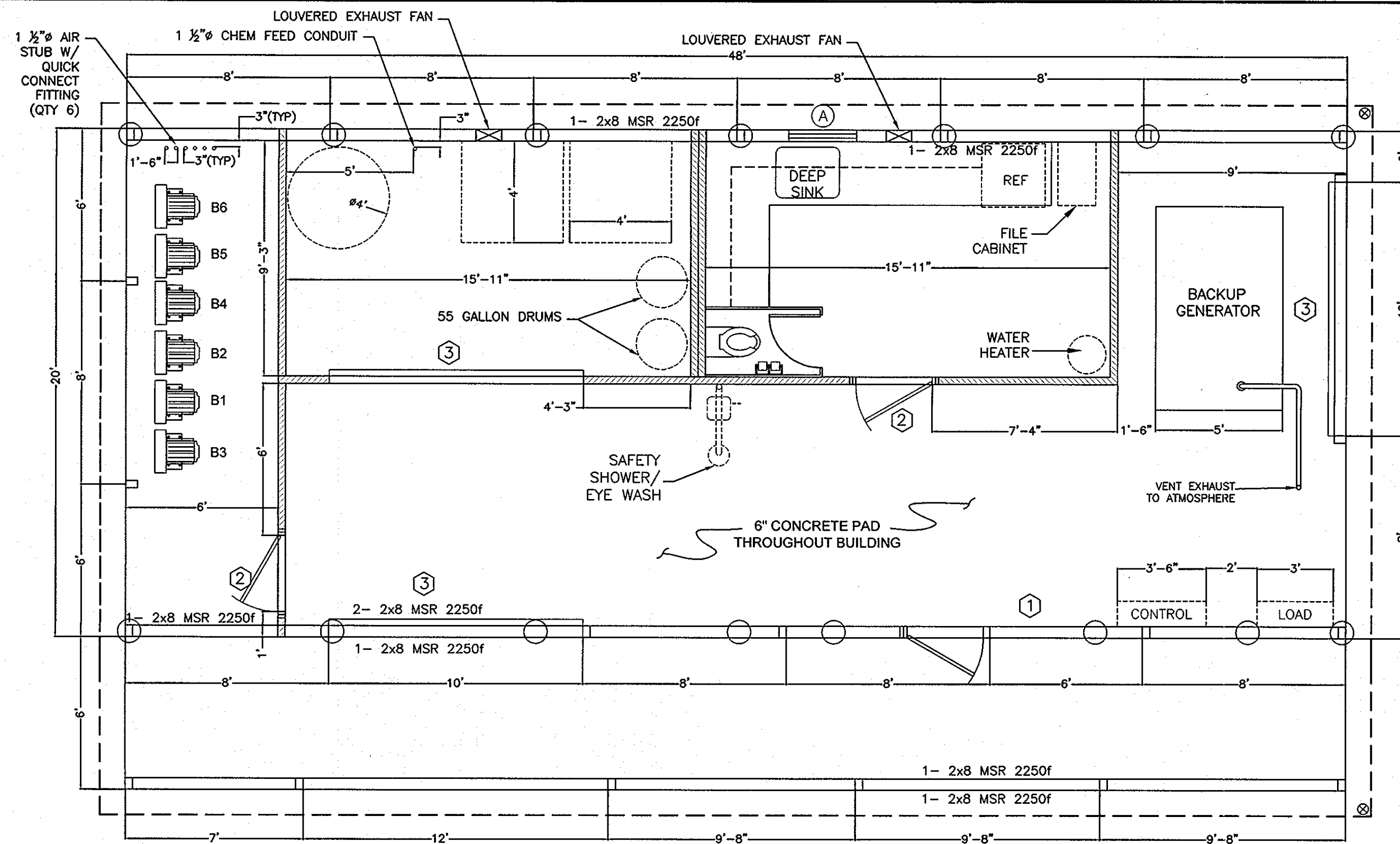
1129 Business Parkway South; Suite 10  
 Westminister, Maryland 21157  
 (410) 876-0280

**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 1"

IF NOT ONE INCH ON  
 THIS SHEET, ADJUST  
 SCALES ACCORDINGLY

Professional Seal  
 STATE OF MARYLAND  
 PROFESSIONAL ENGINEER  
 No. 32949  
 5/10/07



**FLOOR PLAN**

SCALE: 1/4" = 1'-0"

**NOTES:**

- 20' Truss, 10 1/2" o.h., 1/2 Pitch, 48" o.c.
- Bottom Chord Ties As Per Truss Manufacturer
- 10'-6" Inside Height
- (1) 36"x44" S.H. Window w/ Shutters
- (1) Exhaust Fan Frame Out
- (1) 3068 LHOS 6-Panel Service Door w/ Panic Hardware & Auto Closer
- (2) 3068 RHOS 6-Panel Service Door
- (2) 10'x8' Amarr Carriage Overhead Doors
- (1) 10'x8' R.P. Ins. Overhead Door
- 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 Rear Eave Wall (32')
- 2x4 Stud Framing w/ R-11 Insulation
- (1) 36"x36" Plyco Cupola
- 6"x48" Lean-To w/ Dutch Bracing & Liner Panel Ceiling
- Seamless Gutter w/ (2) Downspouts
- All Footers 18" Ø x 8" Wet-Pour Concrete
- 4x6 PT Posts
- 6x6 PT Post

2006 IBC Code:

Design Category: III

Design Load Criteria:

Roof Load:

- Top Chord Live Load= 30 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
- Importance Factor= 1.1

Wind Load:

- Basic Wind Speed (3 second gust)= 90 mph
- Importance Factor= 1.15

Seismic Load:

- Site Class D
- Seismic Use Group II
- Ss= 0.2
- Si= 0.07

Importance Factor= 1.25

Floor Live Load: 100 psf

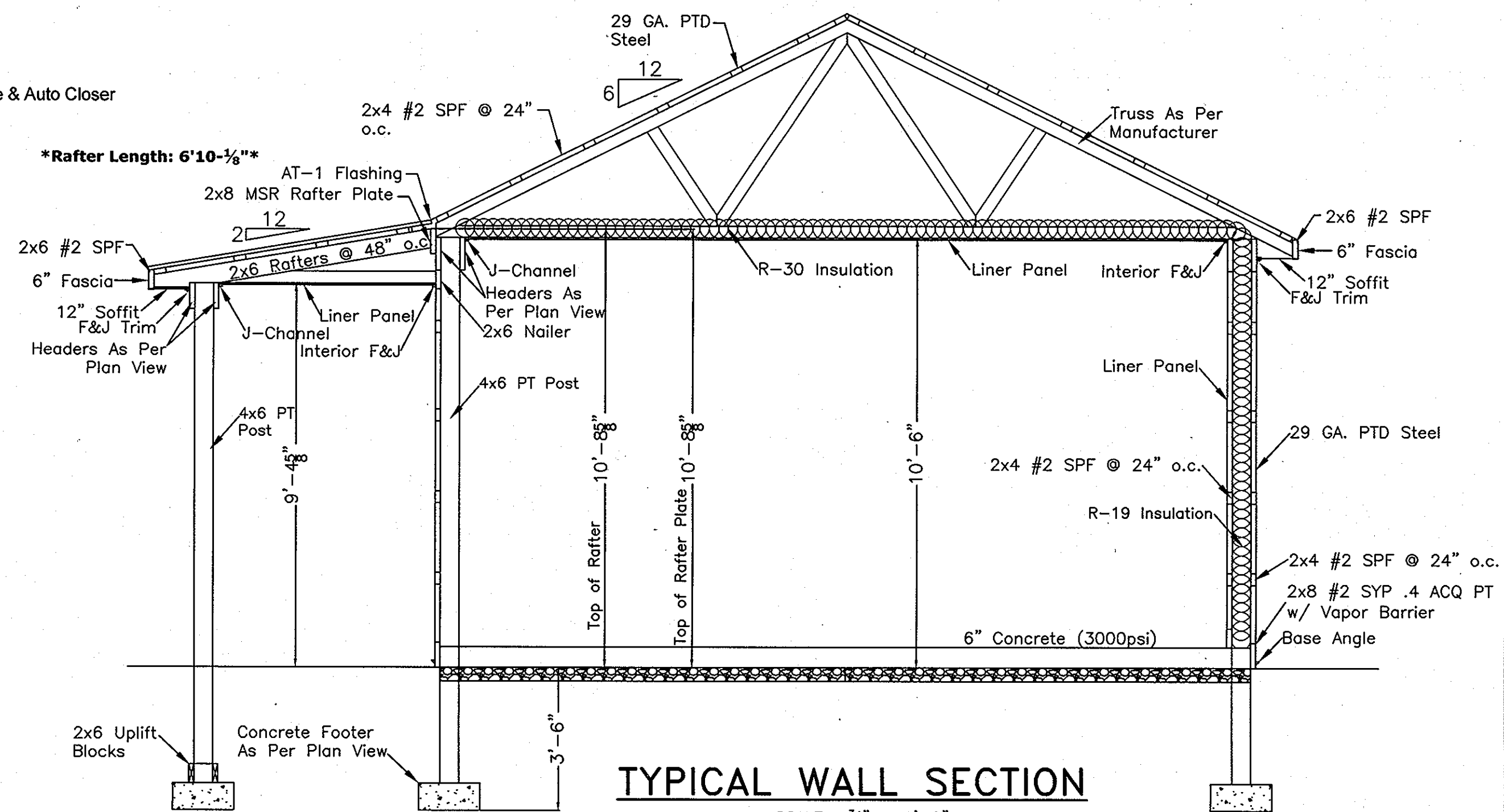
Building Peak Height: 15'-11 1/4"

Ventilation Required= 6.4 Sq. Ft. Total (3.2 Sq Ft in Ridge)

Ventilation Supplied:

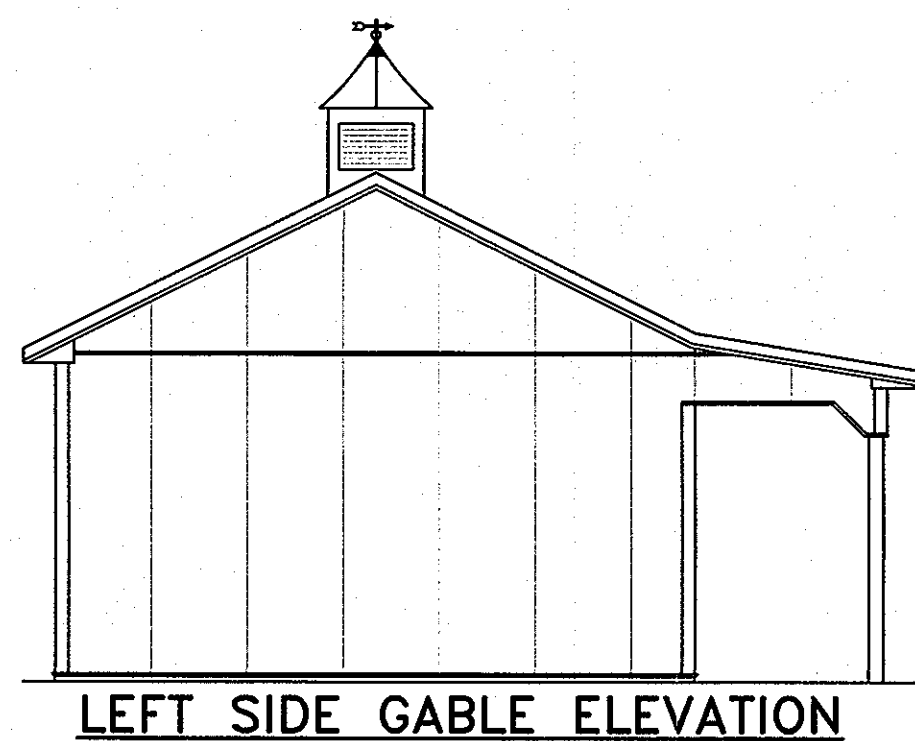
Eaves= 48 Sq Ft

Ridge= 16 Sq Ft

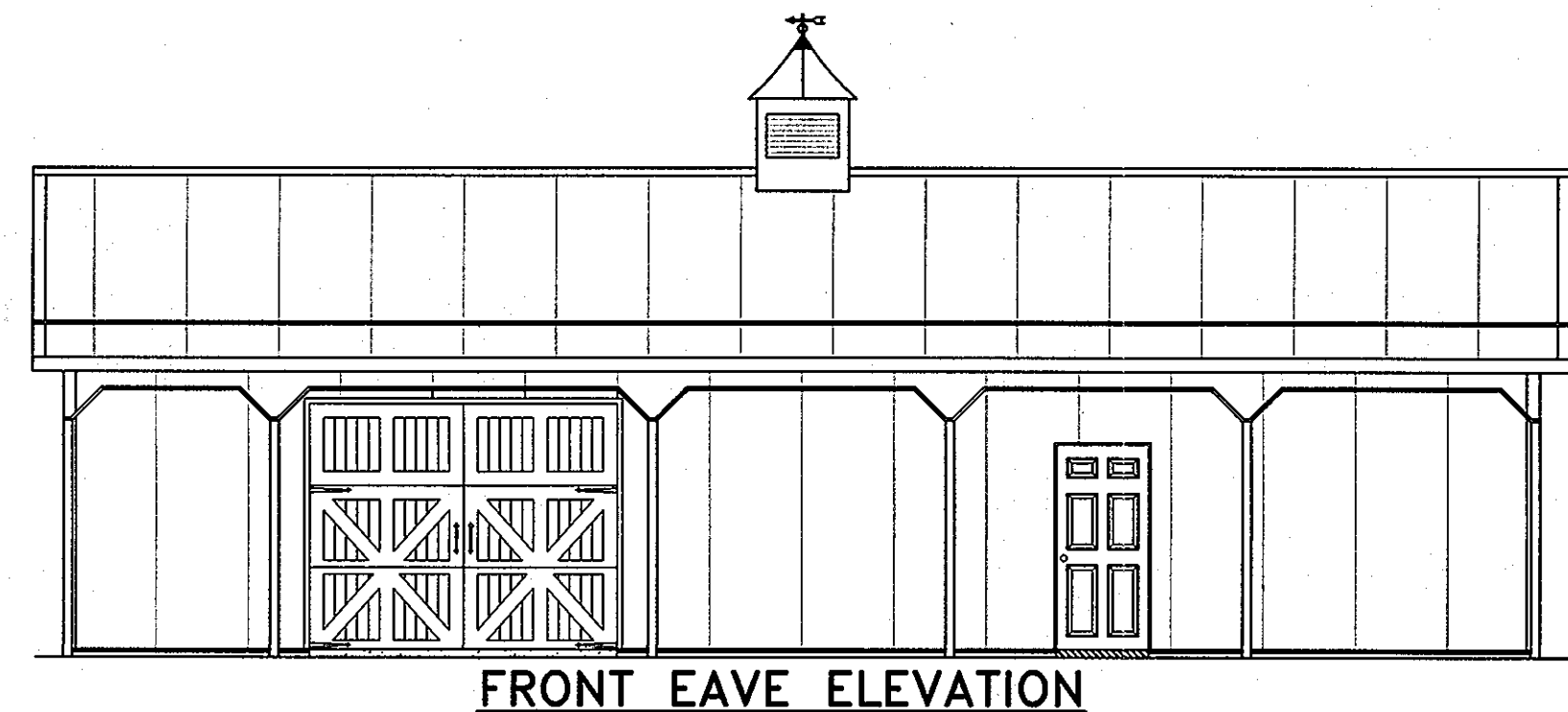


**TYPICAL WALL SECTION**

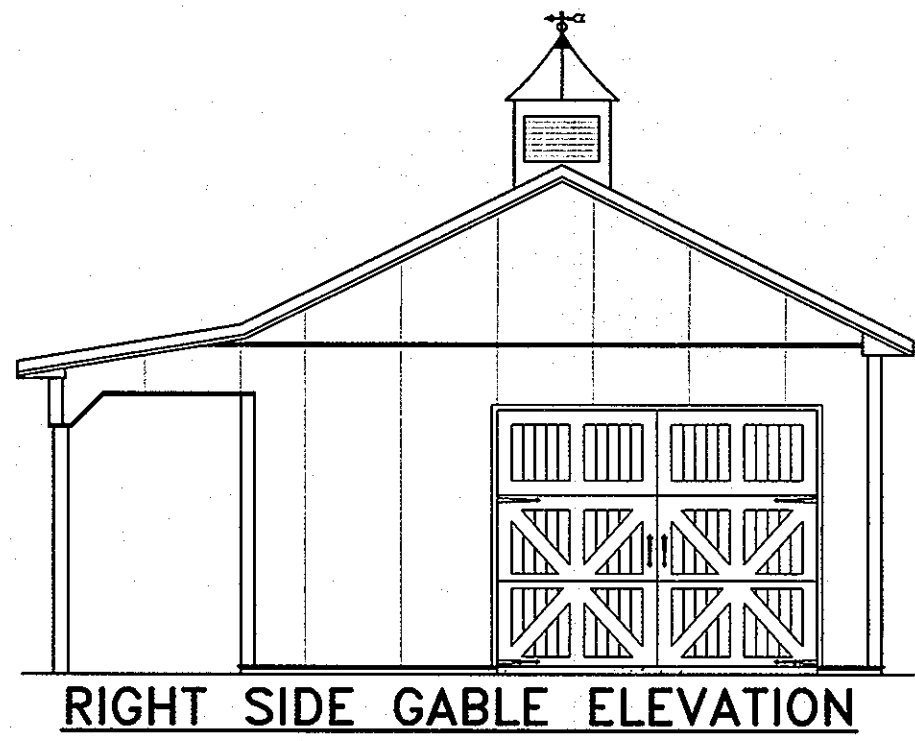
SCALE: 3/8" = 1'-0"



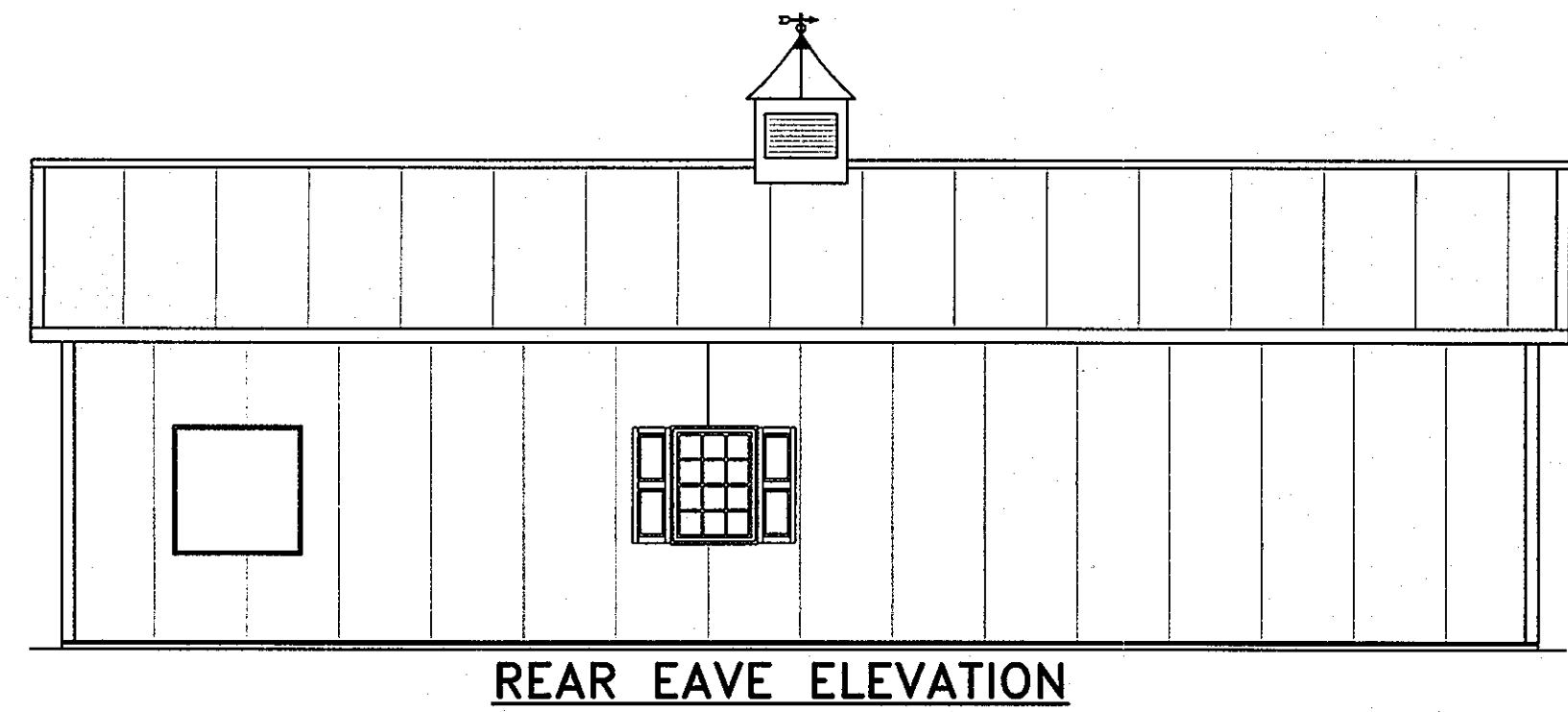
**LEFT SIDE GABLE ELEVATION**



**FRONT EAVE ELEVATION**



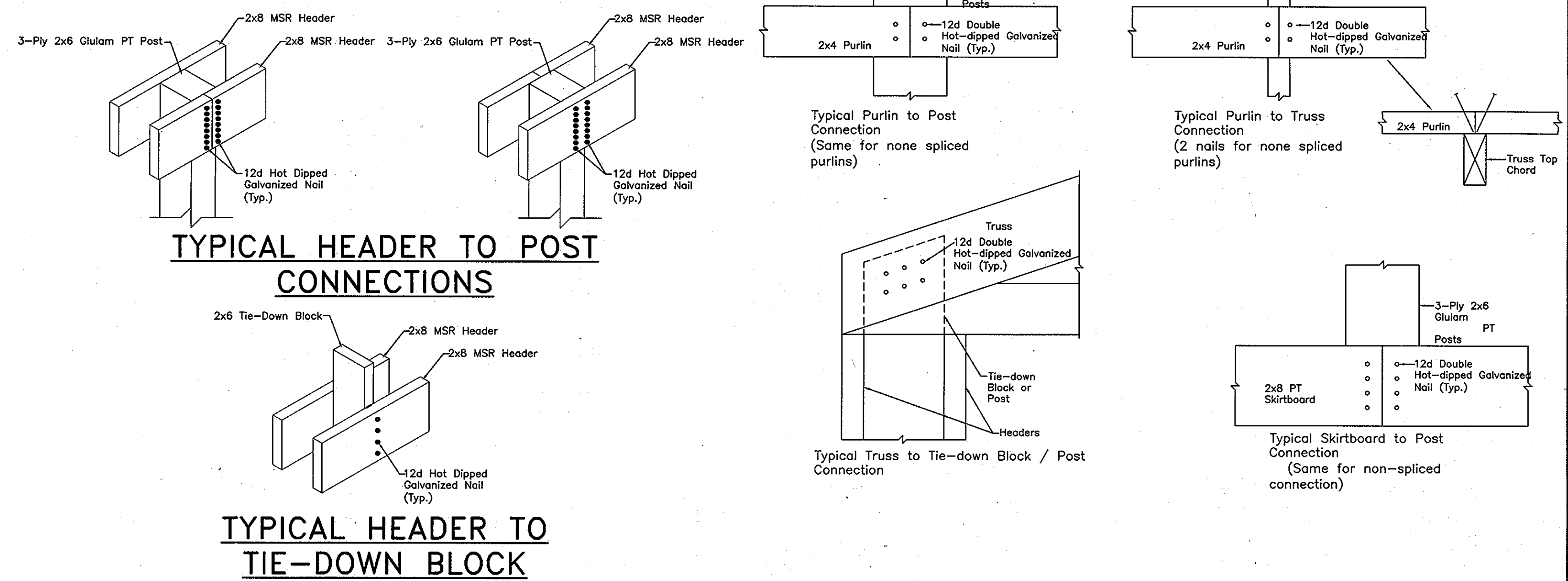
**RIGHT SIDE GABLE ELEVATION**



**REAR EAVE ELEVATION**

**BUILDING ELEVATIONS**

SCALE: 1" = 6'-0"



**TYPICAL HEADER TO POST CONNECTIONS**

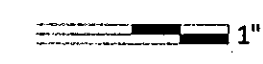
**TYPICAL HEADER TO TIE-DOWN BLOCK**

**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

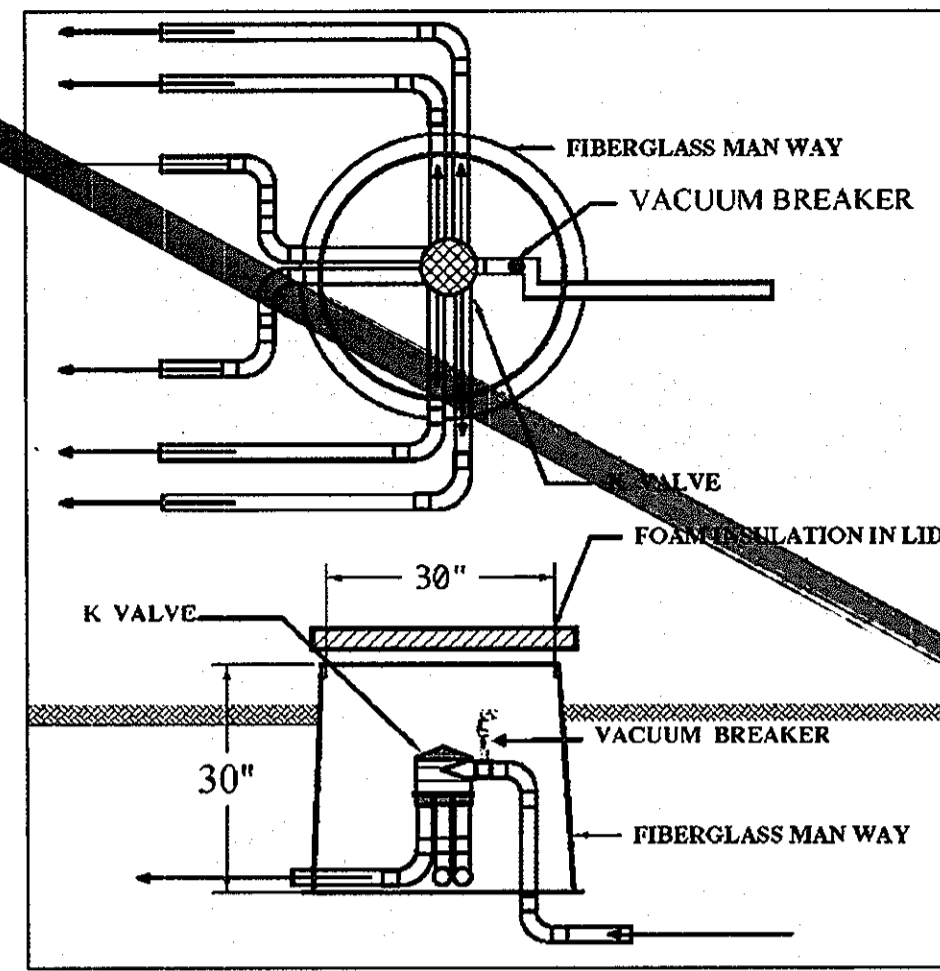
Bar is one inch on original drawing



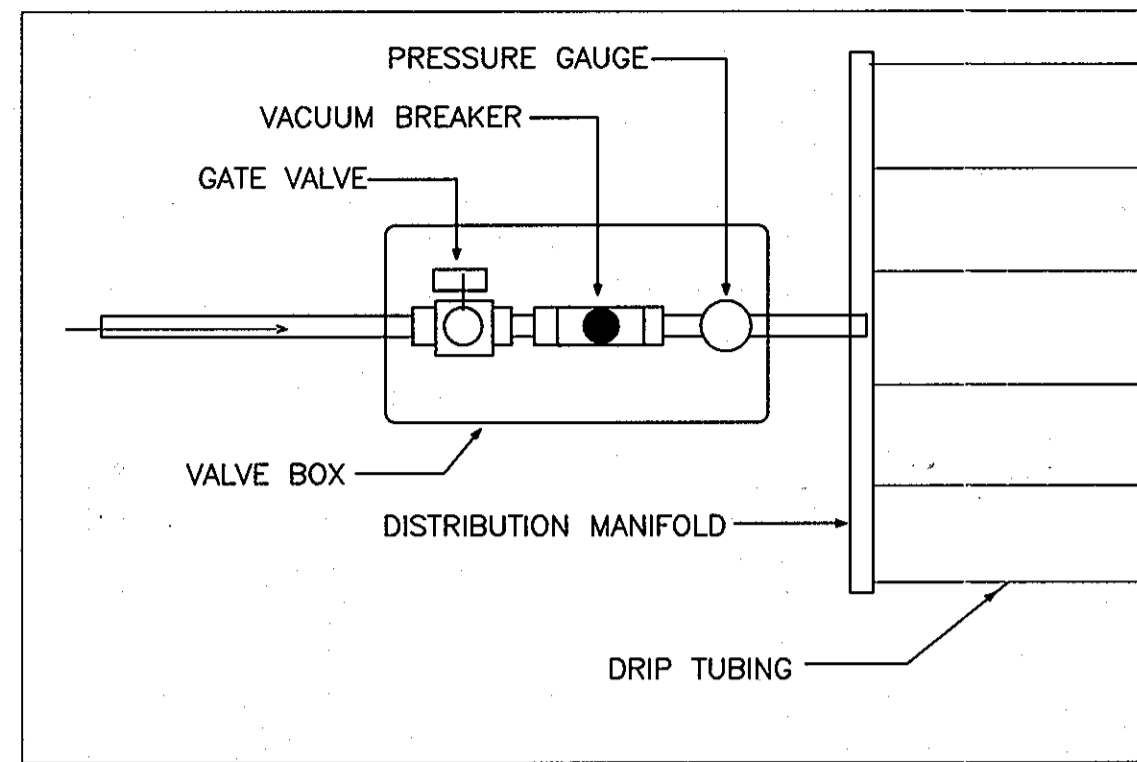
if not one inch on this sheet, adjust scales accordingly

no.	description	date	by	approved
0	As-Built Drawing Set Replacement Sheet	04/29/10	MDS	MDH

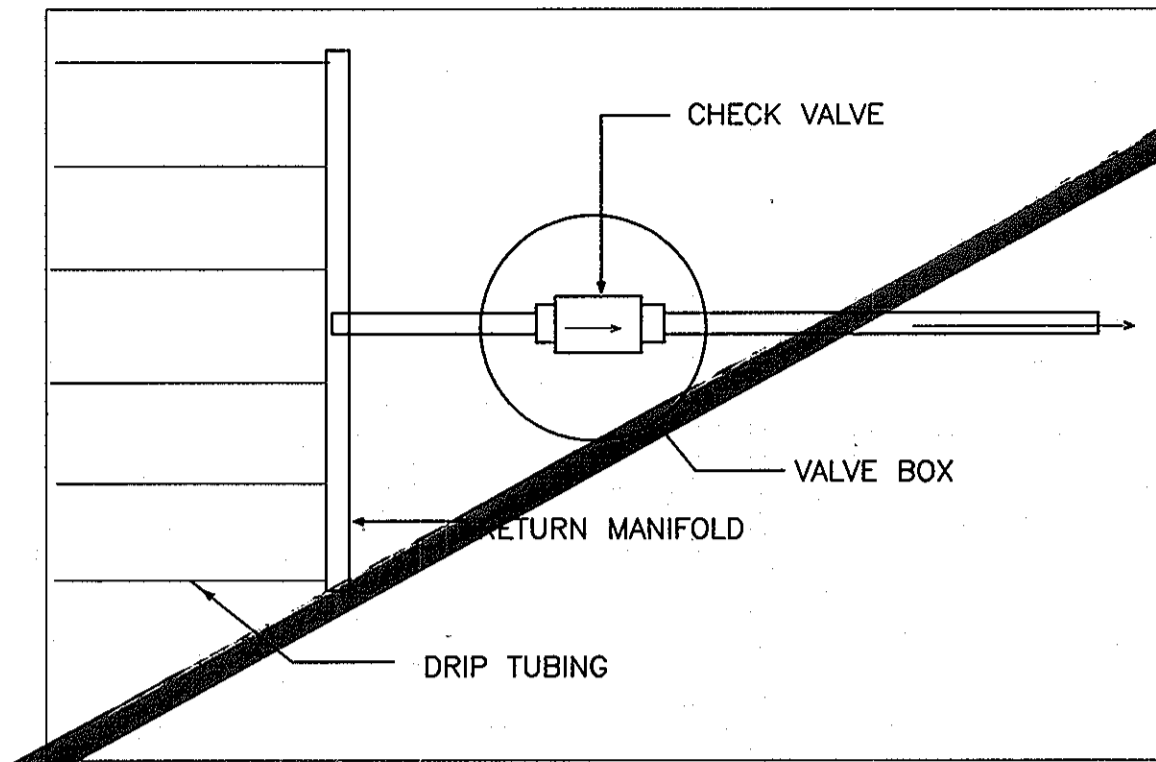
client: **Walnut Grove**  
 project location: **Clarksville, Howard County, Maryland**  
 project: **Wastewater Treatment System**  
 title: **Chemical and Blower Building Plan Layout**  
 file no. 3927-A01.dwg sheet: 3927-A01.DWG  
 drawn: M. Swann date: 04/29/10  
 checked: J. Lindaw date: 04/29/10  
 approved: M. Hanfler date: 04/29/10  
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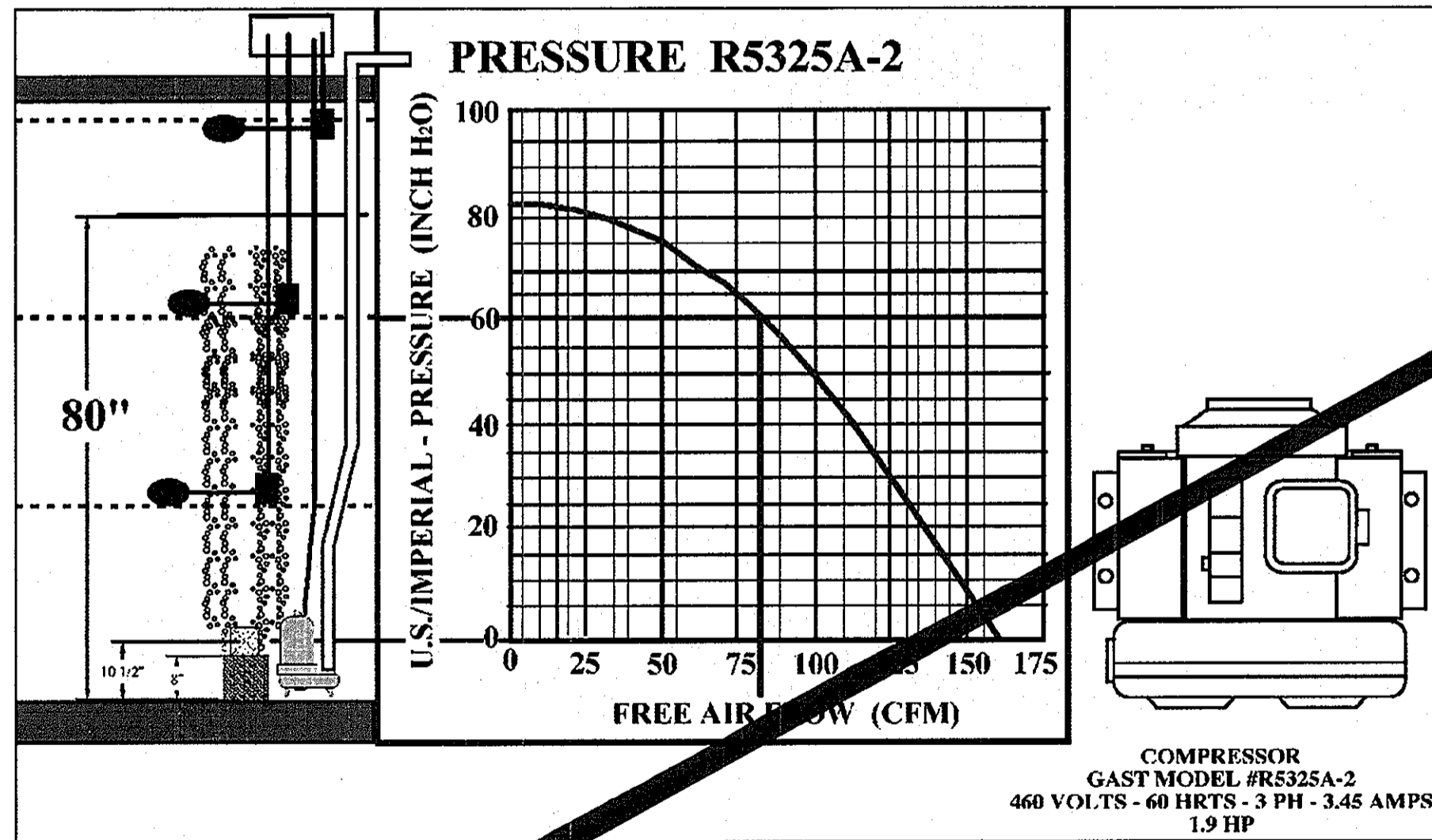
**"K" VALVE ASSEMBLY (TYP)**  
NOT TO SCALE



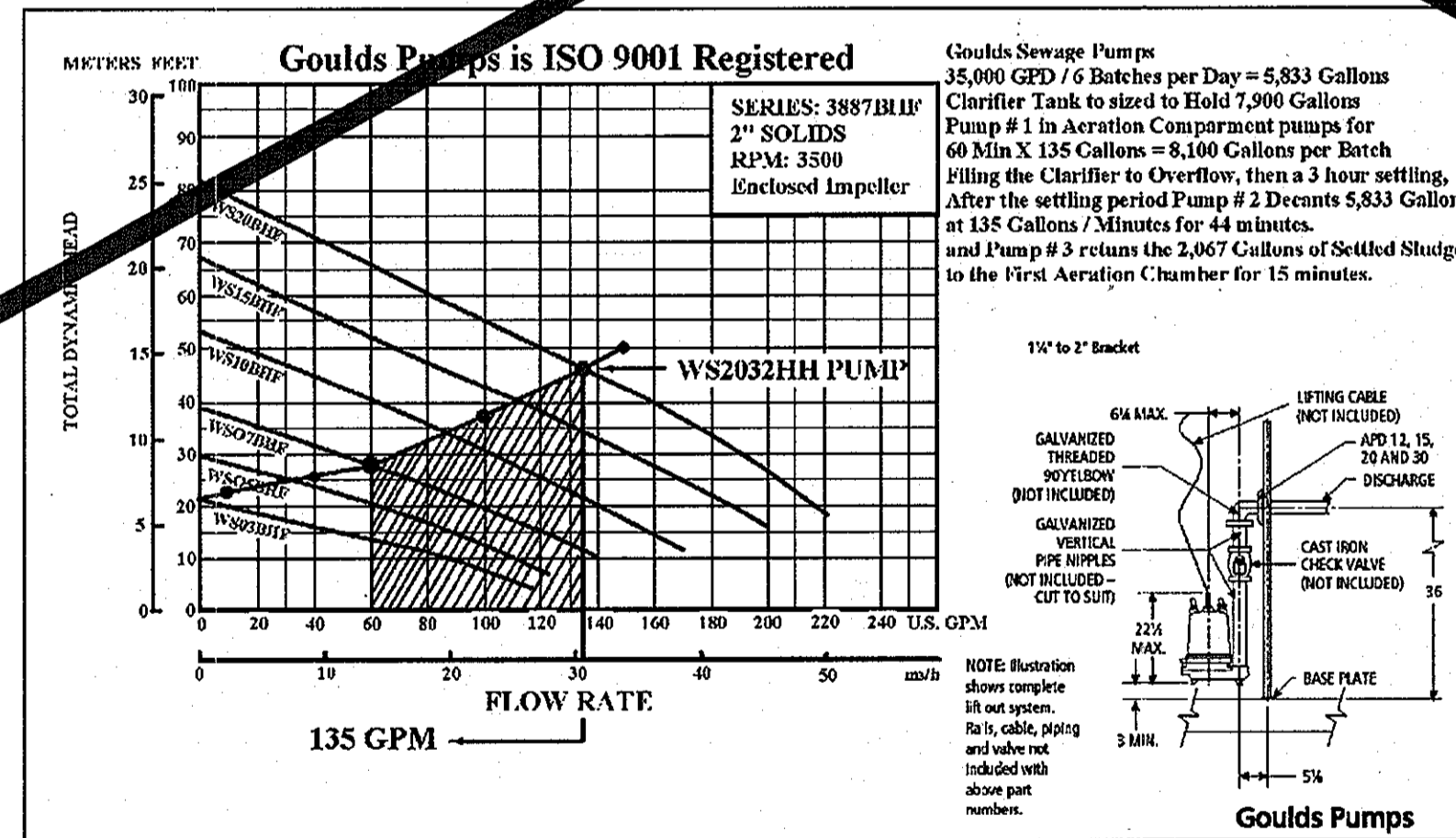
**INLET LINE CONNECTION (TYP)**  
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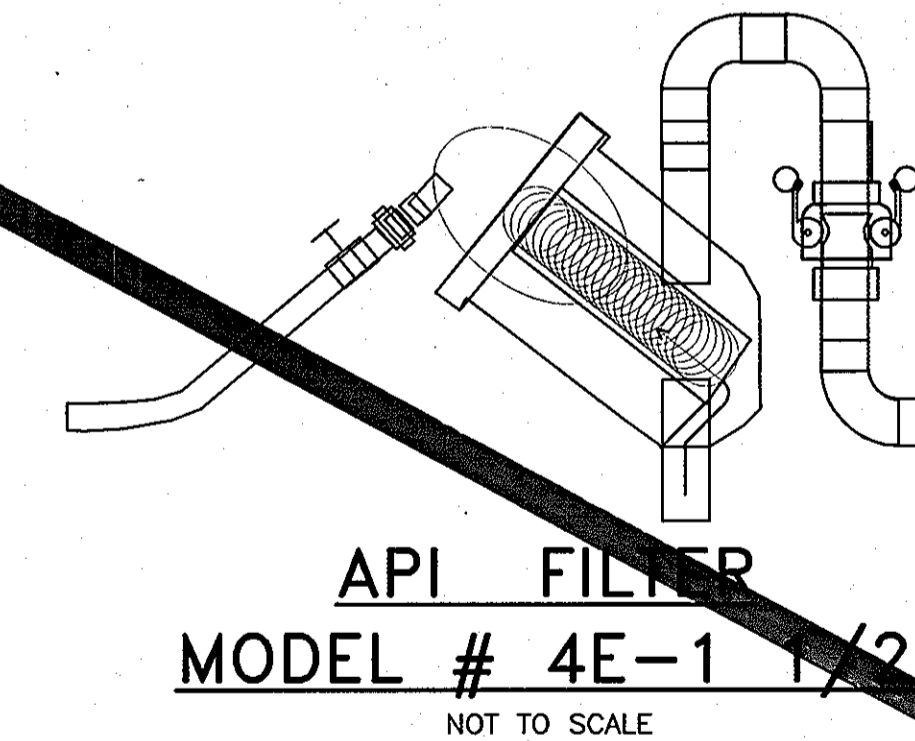
**RETURN LINE CONNECTION (TYP)**  
NOT TO SCALE



**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

*[Signature]*  
6/10/07  
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
				designated: RMC checked: KAS approved: N/A

client		<b>WALNUT GROVE</b> HOWARD COUNTY, MARYLAND	
title		<b>WASTEWATER TREATMENT SYSTEM</b> <b>SYSTEM DETAILS</b>	
sheet no.		M-1	
drawn	DAK	check	N/A
date	12/21/06	scale	AS NOTED
file no.	3927-M01.DWG	job no.	01-1633-00-3927-000
SAIC		From Science to Solutions	

DEPARTMENT OF  
PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*[Signature]*  
BUREAU OF UTILITIES  
DATE: 5/24/07

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

**SAIC**  
From Science to Solutions

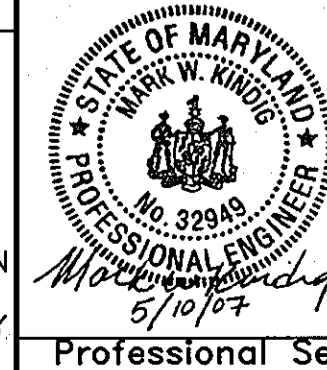
1129 Business Parkway South; Suite 10  
Westminster, Maryland 21157  
(410) 876-0280

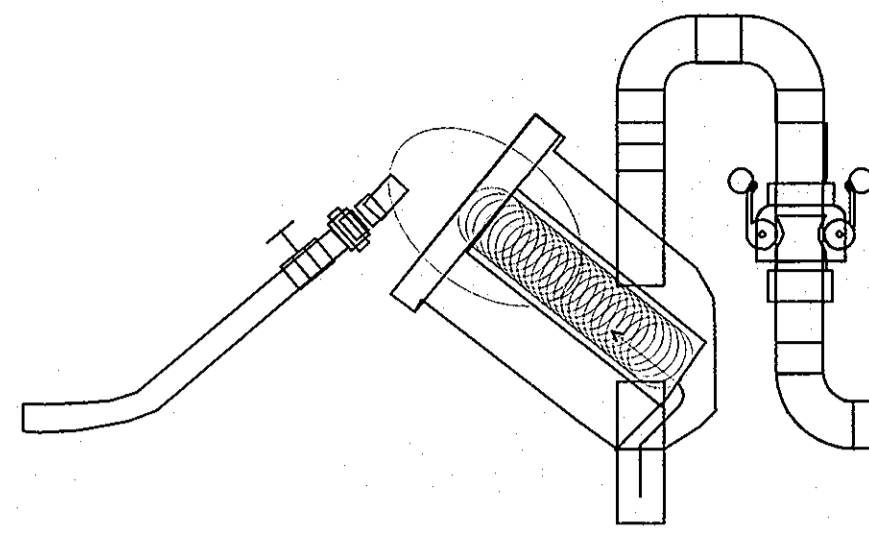
**WALNUT GROVE**  
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HOWARD COUNTY, MARYLAND  
ELECTION DISTRICT No. 6  
CONTRACT No. 50-4359-D

Verify Scale  
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INCH ON ORIGINAL  
DRAWING  
0 1"

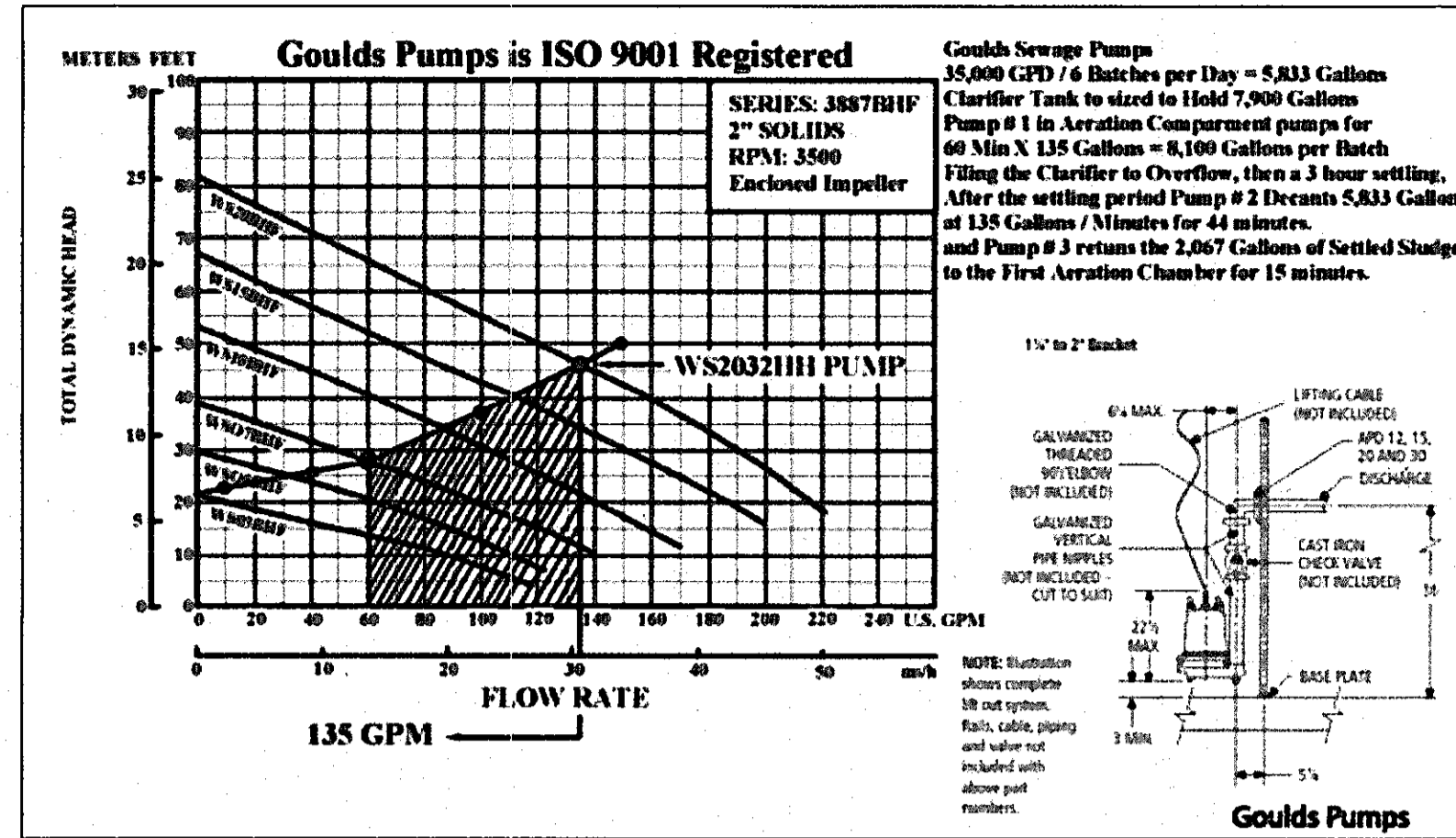
IF NOT ONE INCH ON  
THIS SHEET, ADJUST  
SCALES ACCORDINGLY

Professional Seal

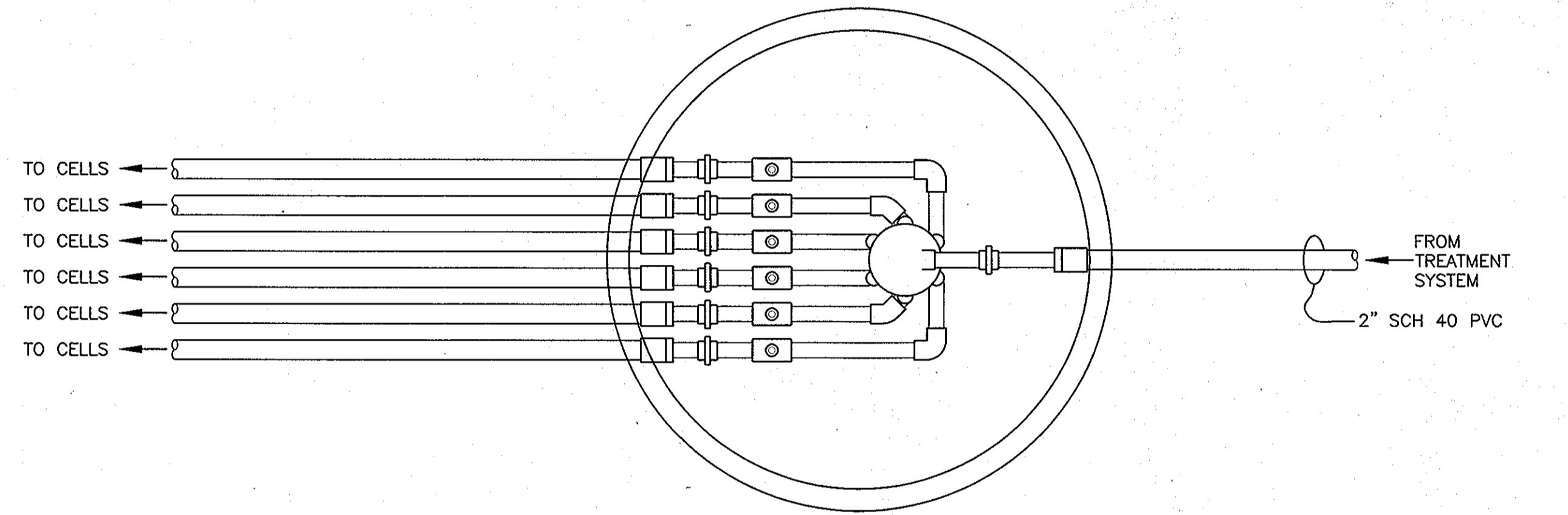
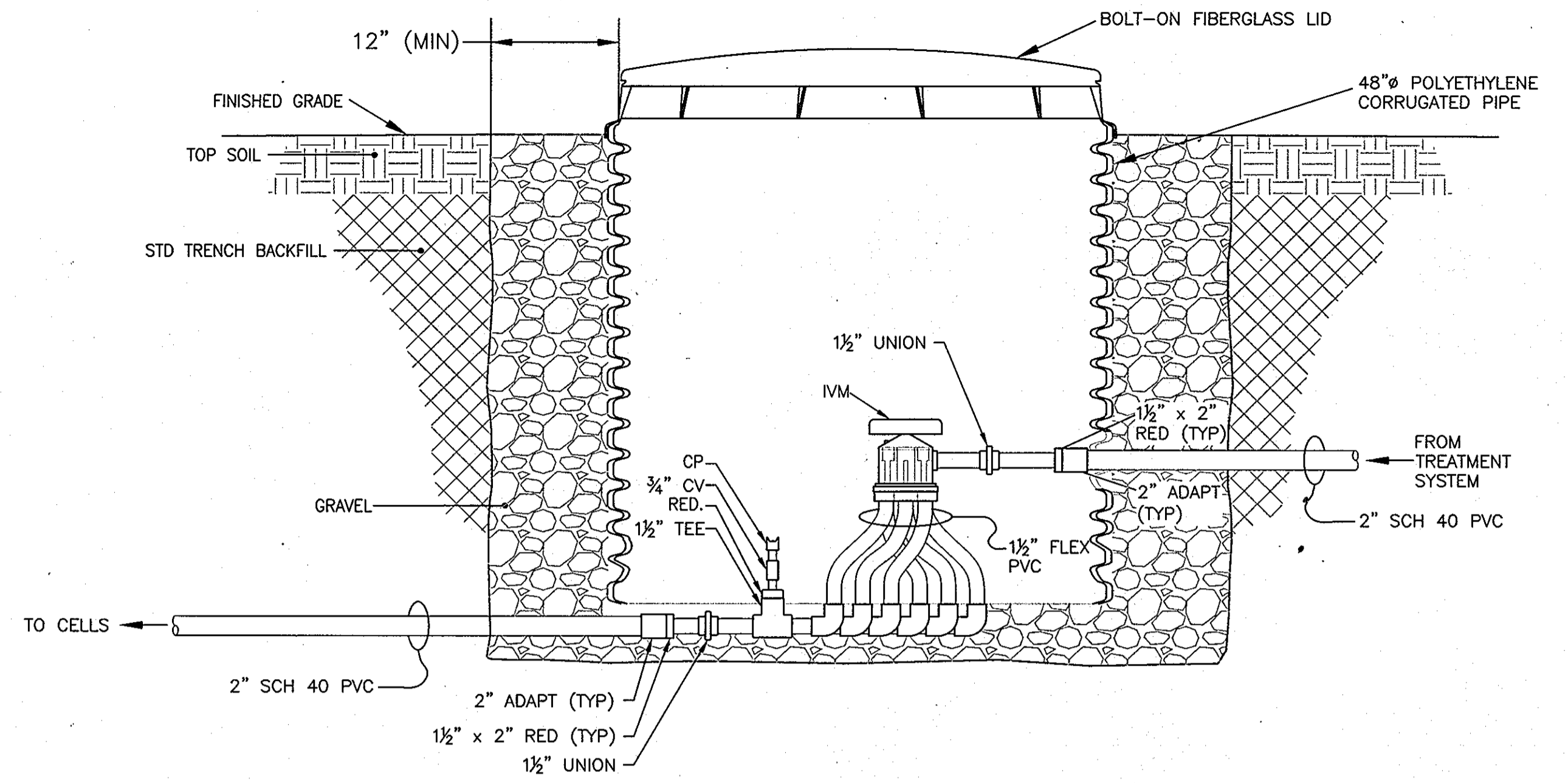




**API FILTER**  
**MODEL # 4E-1 1/2**  
NOT TO SCALE



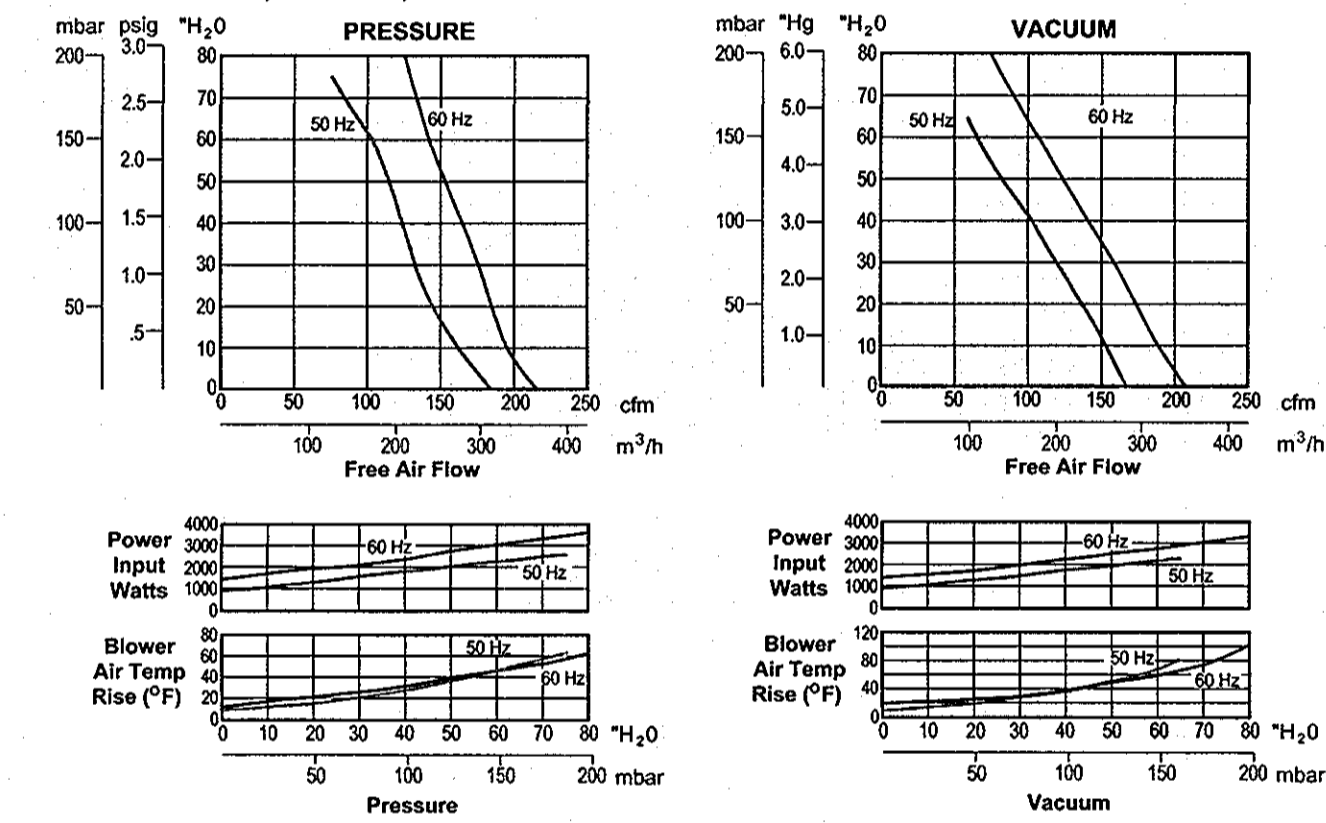
**TRANSFER PUMP ASSEMBLY**  
NOT TO SCALE



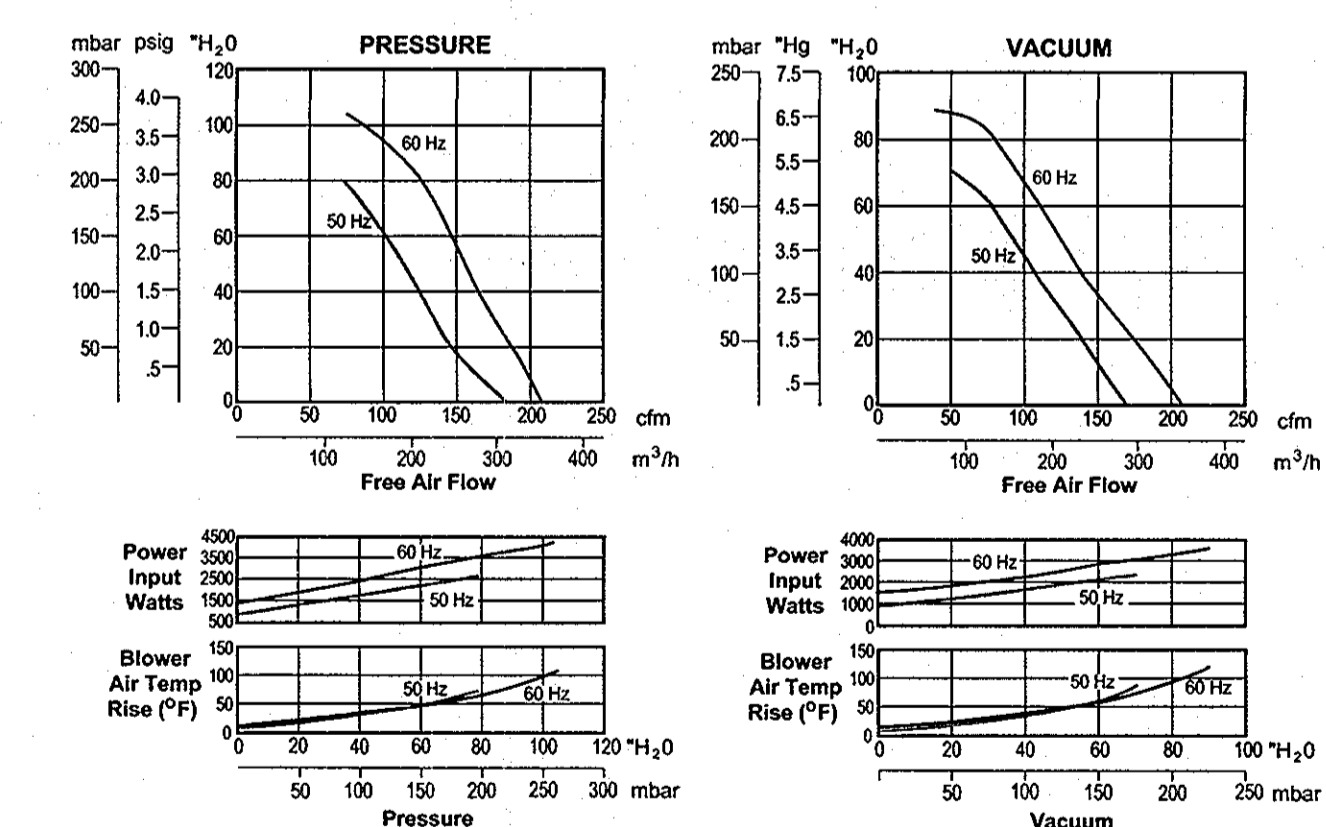
**"K" VALVE ASSEMBLY (TYP)**  
NOT TO SCALE

**Product Performance**

Models R6135J-10, R6335A-2, R6335B



Models R6150J-2, R6350A-2, R6350B-2



**Product Specifications**

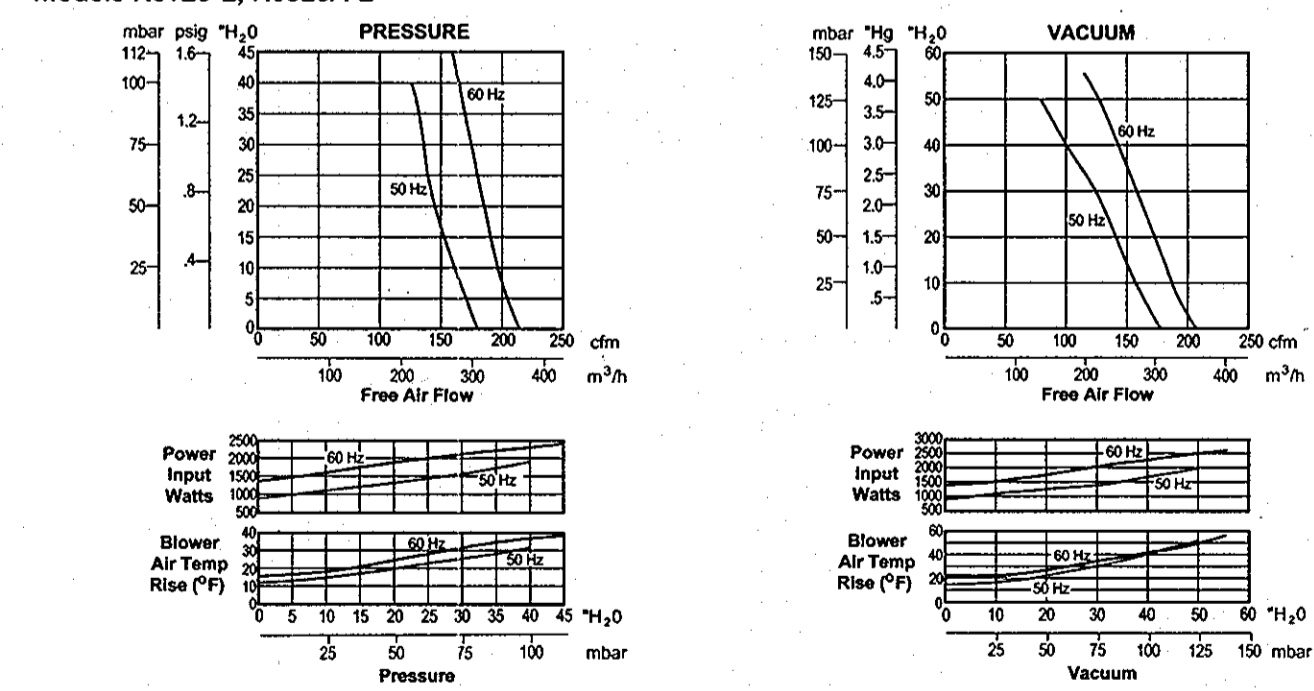
MODEL NUMBER	R6125-2	R6325A-2	R6135J-10	R6335A-2
Motor Enclosure	TEFC	TEFC	ODP	TEFC
HP/kW	60 Hz: 2.5/1.9 50 Hz: 1.5/1.1	2.5/1.9 1.85/1.38	3.5/2.6	3.5/2.6 2.5/1.9
Voltage	60 Hz: 115/208-230-1 50 Hz: 110/220-240-1	208-230/460-3 180-220/380-415-3	230-1	208-230/460-3 180-220/380-415-3
Amps	60 Hz: 23.6/12.9-11.8 50 Hz: 17.6/8.8-8.5	6.9-6.9/3.45 6.6-6.7/3.3-3.5	19	9.7-8.8/4.4 8.8/4-3.9
Starting Amps	60 Hz: 76 @ 230V 50 Hz: 87 @ 240V	58 @ 230V 23.5 @ 380V	125 @ 230V	50 @ 460V 40.5 @ 380V
Insulation Class	B	B	F	F
Recommended NEMA Starter Size	1/0	0/00	1P	1/0
Net Weight (lbs/kg)	87/39.5	78/34.5	112/50.8	82/37.2

MODEL NUMBER	R6335B	R6150J-2	R6350A-2	R6350B-2
Motor Enclosure	TEFC	ODP	TEFC	TEFC
HP/kW	60 Hz: 3.5/2.6 50 Hz: 1.5/1.1	5.0/3.7	5.0/3.7 4.8/3.6	5.0/3.7
Voltage	60 Hz: 575-3 50 Hz: 575-3	230-1	208-230/460-3 180-220/380-415-3	575-3
Amps	60 Hz: 3.6 50 Hz: 2.2	22.3	13.0-12.0/6.0 14.4-13.4/7.2-6.8	4.8
Starting Amps	60 Hz: 34.9 @ 575V 50 Hz: 34.9 @ 575V	96 @ 230V	125 @ 230V 57 @ 380V	35 @ 575V
Insulation Class	F	F	F	F
Recommended NEMA Starter Size	0	1P	1/0	0
Net Weight (lbs/kg)	82/37.2	125/56.8	112/50.8	112/50.8

**Product Performance**

Models R6125-2, R6325A-2



**BLOWER INFORMATION**

NOT TO SCALE

**WALNUT GROVE**

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LIBER 572 FOLIO 430  
HOWARD COUNTY, MARYLAND  
ELECTION DISTRICT No. 6  
CONTRACT No. 50-4359-D

Verify Scale

Bar is one inch on original drawing

1"

if not one inch on this sheet, adjust scales accordingly

client: **Walnut Grove**  
project location: **Clarksville, Howard County, Maryland**  
project: **Wastewater Treatment System**  
System Details

Hydro-Terra GROUP

file no. 3927-M01.dwg  
drawn M. Swann 04/29/10  
checked J. Lindaw 04/29/10  
approved M. Hoyer 04/29/10

sheet: **M-1a**

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no.	description	date	by	approved
0	As-Built Drawing Set Replacement Sheet	04/29/10	MDS	MDH

Revisions