BRIAN L. HEWITT ENGINEERING L.L.C.

May 13, 2015

Lewis County Public Health
Environmental Health Unit
2025 NE Kresky Ave.
Chehalis, Washington 98532
Attn: Mr. Michael Hamling

DESIGNS APPROVED
And Will Expire
MAY 29 2017
LEWIS COUNTY DISTRICT HEALTH
ENVIRONMENTAL HEALTH SECTION

Re: 14-030; Soil Analysis and Septic Design for Animals at 560 Centralia Alpha rd. Centralia, Wa.

Parcel Number: 021767001001

Clients: Lewis County Animal Shelter – Mr. Doug Carey, Facilities Manager

Dear Mr. Hamling,

Attached you will find a design for the animal portion of the Lewis County Animal Shelter located at 560 Centralia Alpha rd. Centralia, Wa.. The existing septic drainfield has failed. I have changed the design and separated the human waste from the animal waste. I tested the BOD5 with ten dogs at the facility and found it to be 95. The TSS was 24.0 (testing was performed by ALS). The facility is supported with a water well with a meter. The meter was read monthly for over a year with a high daily usage of 375 gallons. The facility has personnel working 6 days a week (8-10 hrs). The facility normally housed 10 dogs but can reach as high as 30. There is not much technology on Dog Kennel Waste. I have attached a guidance sheet by Ecology Northwest Regional Office of Water Quality program (June 2009). They suggest 50 gallons per day per dog. I find that extremely high when looking at the current meter readings. Therefore I sized the system for 30 dogs and using a safety factor rounded off to 1,000 gallons per day. I feel this is very conservative considering this will be the third system installed at this facility.

The system is designed using a Recirculating Gravel Filter (17 ft x 15 ft). Circulating 5,000 gallons per day. The drainfield is a Pressure Distribution to six 84 foot drain lines. The restrictive layer is at 31". The maximum depth will be 19" on the uphill side with 6" minimum depth on the downhill side. The drainfield is split into two sections using a distribution valve.

I will be abandoning all of the exiting drainfield and tanks starting anew with a fresh new system. It is imperative that the system have a Professional Operation & Maintenance contract to maintain this system. An approved contract should be signed and recorded with the county before the final inspection is approved.

If you have any questions about the design please feel free to contact me.

Sincerely,

Brian L. Hewitt P.E.

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Xc Lewis County Animal Shelter – Mr. Doug Carey, Facilities Manager

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Site Evaluation Report- Animal Design

July 24, 2014

Job # 14-030.1

Property Address: 560 Centralia Alpha rd. Chehalis, Washington 98532

Parcel Number: 021767001001

Applicant Name: Lewis County Animal Shelter 560 Centralia Alpha rd. Chehalis, Washington 98532

Septic Design: 1000 gallon per day Acres: 14.49

Site Characteristics

General Topographic Characteristics: Melborne Loam

Drainage Characteristics: Well Drained

Slopes: General: 15-30 % Proposed Drainfield Location: 8 %

Geology: Type of Bedrock & depth: none

Vegetation: forested, underbrush

Distance to, and type of, nearest surface water: 150 ft.
(If less than 250 ft.)

Distance to nearby wells: 200 ft.

Distance to public Sewers: none

Other Structures on Property: 50 ft. Shed

MAY 2015 Received Community Development

Engineer's statement regarding type of system required:

Based upon the soil analysis performed February 2, 2015, it is my determination that the primary on-site sewage system is approved for an Treatment Level E, Pressure Distribution drainfield system

The primary Drainfield area will require 2,500 sq. ft. (of Drainfield) minimum and 6,250 sq. ft. (land area) or 84 ft. by 75 ft.

The reserve area is approved for a Treatment Level E, Pressure Distribution system and will require 2,500 sq. ft. (of Drainfield) minimum and 6,250 sq. ft. (land area) or 84 ft. by 75 ft.

Submitted by: Brian L. Hewitt P.E. # 29393
Date: May 13, 2015

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Soil Evaluation Report- Animal Design

February 2, 2015

Job # 14-030.1

Property Address: 560 Centralia Alpha rd. Chehalis, Washington 98532

Parcel Number: 021767001001

Applicant Name: Lewis County Animal Shelter 560 Centralia Alpha rd. Chehalis, Washington 98532

Section 27 Township 14N Range 2W Tax Lot #

Subdivision Number Lot of

Soil Information

As mapped by U.S. Soil Conservation Service (S.C.S.): Melborne Loam

Appears to be (if different from S.C.S. Classification):

Soil Profile:

	Depth	Description	Comments
Test Hole #1	0-24"	Clay Loam (cl)	mixed, 2/m/sbk, fill
	24-34"	Clay Loam (cl)	drk brn, 2/f-m/sbk
	34-50"	Clay ©	ylw brn, 1/c/ pr
	50-60"	Clay ©	mixed, massive
	Roots to 50",	Moderate Mottling 50"	No Water
Test Hole #2	0-38"	Clay Loam (cl)	mixed, 2/m/sbk, fill
	38-48"	Clay Loam (cl)	drk brn, 2/f-m/sbk
	48-60"	Clay ©	ylw brn, massive
	Roots to 48",	Moderate Mottling 48"	No Water
Test Hole #3	0-28"	Clay Loam (cl)	mixed, 2/m/sbk,
	28-44"	Clay Loam (cl)	drk brn, 2/f-m/sbk
	44-51"	Clay ©	ylw brn, massive
	Roots to 44",	Moderate Mottling 44"	No Water
Test Hole #4	0-13"	Clay Loam (cl)	mixed, 2/m/sbk, fill
	13-26"	Clay Loam (cl)	drk brn, 2/f-m/sbk
	26-31"	Clay ©	ylw brn, 1/c/ pr
	31-50"	Clay ©	mixed, massive
	Roots to 31",	Moderate Mottling 31"	No Water

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Cont. Soil Evaluation Report- Animal Design

February 2, 2015

Job # 14-030.1

Property Address: 560 Centralia Alpha rd. Chehalis, Washington 98532

Parcel Number: 021767001001

Applicant Name: Lewis County Animal Shelter 560 Centralia Alpha rd. Chehalis, Washington 98532

Test Hole #5	0-17"	Clay Loam (cl)	mixed, 2/m/sbk, fill
	17-27"	Clay Loam (cl)	drk brn, 2/f-m/sbk
	27-47"	Clay ©	ylw brn, 1/c/ pr
	47-60"	Clay ©	mixed, massive
	Roots to 47",	Moderate Mottling 47"	No Water

Maximum Seasonal Groundwater Elevation:

Soil Mottling: Restrictive layer 31" Primary area
(Depth and degree of development)

WAC Soil Classification: Type 5
(1A,1B,2A etc.)

Hydraulic Loading Rate: 0.40 gallons/sq ft/day

Water Table: none
(depth to standing water)

Additional Comments:

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14-030.1 Design Specifications- Animal Design

May 1, 2015

Design Criteria

- Number of Dogs; 30
- Department of Ecology Dog Kennel Waste Guidance sheet 50gpd/day/dog. (1,500 gpd)
- Existing Well Water meter monthly daily average; 375 gpd readings taken monthly (closed on Sundays)
- Design with safety factor for daily gallons per day at 667 gallons

Design Requirements for Recirculating Gravel Filter

- Design requirements for non-residential daily flow x 1.5 = 667 x 1.5 = 1,000 gallons per day
- Loading Rate (gpd/ sq ft.) = 1,000/ 0.4 Loading Rate = 2,500 sq ft.
- BOD sample 95 during 10 dog at facility = 30 x 9.5 per day = 285
- Loading Rate (gpd/ sq ft.) = 1,150/ BOD Loading Rate = 1,150/285 = 4.03 gpd/ sq. ft.
- Area of Gravel Filter = Gallons per day/ Loading Rate = 1,000 / 4.03 = 248 sq. ft. or 17' x 15'
- Daily flow to Gravel Filter = 5 times daily flow = 5 x 1,000 = 5,000 gallons per day
- Dose volume to Gravel Filter = 5,000 gpd / 48 doses (every 30 minutes) = 104 gallons per dose

Design Requirements for Drainfield

- 1,000 gallons per day
- Drainfield Area; 1,000 gpd/0.4 gal/ sq. ft. = 2,500 sq ft.
- Drainfield length; 1,000 gpd/.40 gal /sq ft./3 ft wide trenches x 0.60 reduction (gravelless chambers = 500 lineal ft. or six 84 ft drain lines using a two zone distribution valve
- Dose volume to Drainfield 1,000 gpd / 12 doses per day = 83 gallons per dose

Design Requirements for two chamber Septic Tank

- 1,000 gallons per day
- Septic Tank = 1,000 gpd x 2.604 gal/gpd = 2,604 gallons or use 2,700 gallon two chamber tank

Design Requirements for Recirculating/Mixing Tank

- RS&G's recommends 2 times daily volume = 1,000 gpd x 2 = 2,000 gallon tank, use 2,700 gallon tank

Design Requirements for Pump Chamber Tank

- 1,000 gallons per day
- Pump Chamber tank = 1,000 gpd x 1.75 safety factor = 1,750 gallons or use 1,800 gallon tank

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Re: 14-030.1; Lewis County Animal Shelter – Animal design, 560 Centralia Alpha rd. Centralia, Wa.

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BRIAN L. HEWITT ENGINEERING L.L.C.

14-030.1 Pressure Distribution Worksheet for Recirculating Gravel Filter

May 1, 2015

Step 1: **Determine the daily wastewater load and select a pretreatment process**

- Daily design flow 1,000 gallons per day 5,000 gallons per day for Filter
- Pretreatment method: Septic & RGF
- Size: Septic tank 2,700 gallons, RGR 255 sq. ft.
- Other pretreatment required? No

Step 2: **Size the infiltration area and make a detailed preliminary drawing**

- Required infiltration area: 1,000/4.03= 248 sq ft (daily wastewater load / soil load rate) 17 ft. x 15 ft.
- Preliminary drawing of layout. (on separtate sheet of paper)

Step 3: **Specify and layout components of the pressure distribution network**

• Transport line:	Length:	75 ft
	Diameter:	1.25 in
	Material:	PVC Sch 40
	Highest elevation:	10 ft.
• Manifold	End Manifold	
	Length:	20 ft.
	Diameter:	1.25 in
	Material:	PVC Sch 40
	Highest elevation:	0 ft.
• Lateral:	How many?	5
	Length:	12 ft (16' installed)
	Diameter:	1.25 in
	Material:	PVC Class 200
	Highest elevation:	0 ft.
• Orifice	Diameter:	1/8 in.
	Spacing:	2.3 ft.
	Orientation:	12:00
	How many/lateral:	6
	How many total:	30

Step 5: **Calculate the total Dynamic Head in the network**
(See attached Orenco Pump Selection Program)
Total Dynamic Head : 18.1 ft.

Step 6: **Select a pump**
(See attached Orenco Pump Selection Program)
GPM: 12.9 Model# PF 3005, 1/2 hp

Step 7: **Calculate dose volume:**

- Total number of doses/day selected/required 48
- Dose volume: 104 gal. (Daily design flow / # of doses/day)

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Re: 14-030.1; Lewis County Animal Shelter – Animal design, 560 Centralia Alpha rd. Centralia, Wa.

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14-030.1Pressure Distribution Worksheet for Recirculating Gravel Filter cont.

May 1, 2015

Step 8: **Set the method of pump operation:**
Timer Controlled

- Outlet Filter on septic Tank? Yes Biofilter
- Floats (from tank lid down)

Float	Function
22"	High Level Alarm
42"	Pump On- Ok to start for time dosing
46"	Redundant Pump off- Alarm

- If timer-controlled system:
  Pump-time: 104/12.9 =8.0 min. Pump-off time: 0 hours 28 min.
- Drawdown: 104/45= 2.31 in. (#gal /dose/# gal /in. in tank)

Re: 14-030.1; Lewis County Animal Shelter – Animal design, 560 Centralia Alpha rd. Centralia, Wa.

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Pump Selection for a Pressurized System - Single Family Residence Project

14-030.1 Lewis County Animal Shelter Animal RGF / 560 Centralia Alpha rd. Centralia, Wa.

Parameters

Discharge Assembly Size	1.25	inches
Transport Length	75	feet
Transport Pipe Class	40	
Transport Line Size	1.25	inches
Distributing Valve Model	None	
Max Elevation Lift	10	feet
Manifold Length	20	feet
Manifold Pipe Class	40	
Manifold Pipe Size	1.25	inches
Number of Laterals per Cell	5	
Lateral Length	12	feet
Lateral Pipe Class	40	
Lateral Pipe Size	1.25	inches
Orifice Size	1/8	inches
Orifice Spacing	2.3	feet
Residual Head	5	feet
Flow Meter	None	inches
'Add-on' Friction Losses	0	feet

Calculations

Minimum Flow Rate per Orifice	0.43	gpm
Number of Orifices per Zone	30	
Total Flow Rate per Zone	12.9	gpm
Number of Laterals per Zone	5	
% Flow Differential 1st/Last Orifice	0.0	%
Transport Velocity	2.8	fps

Frictional Head Losses

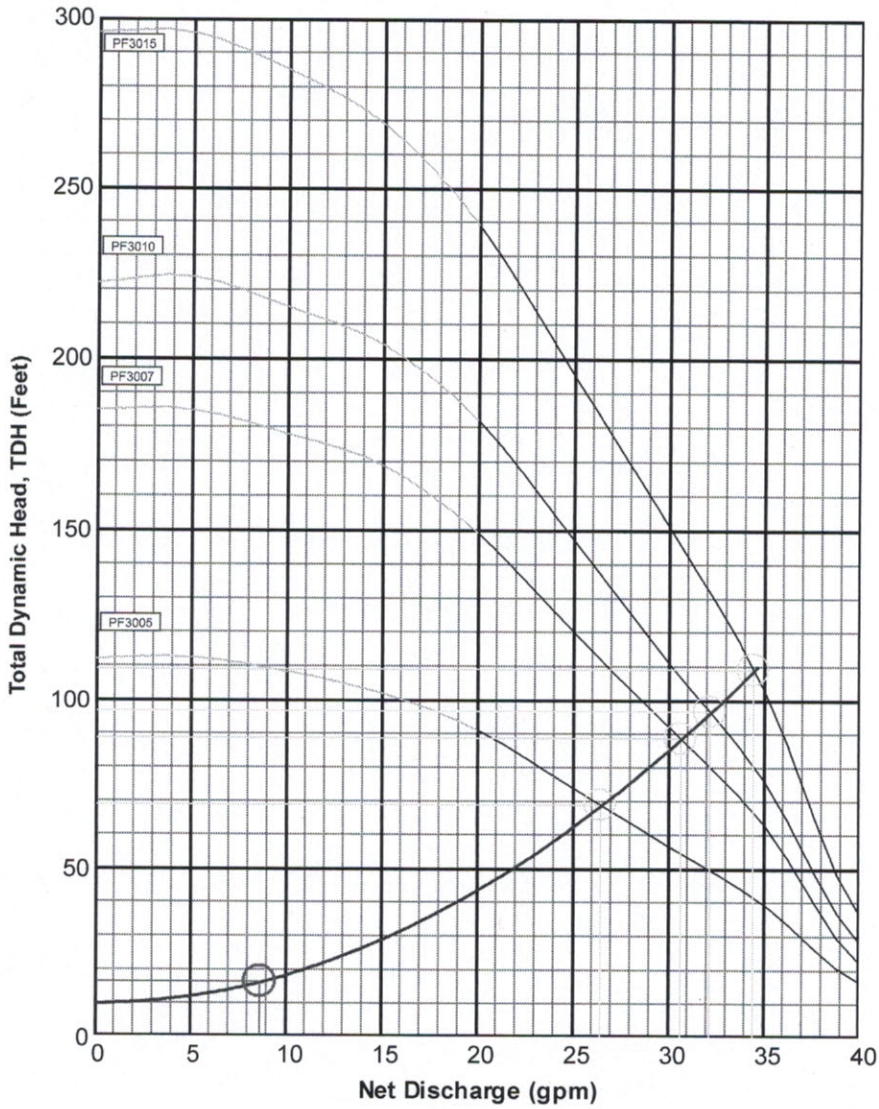
Loss through Discharge	1.2	feet
Loss in Transport	1.8	feet
Loss through Valve	0.0	feet
Loss in Manifold	0.1	feet
Loss in Laterals	0.0	feet
Loss through Flowmeter	0.0	feet
'Add-on' Friction Losses	0.0	feet

Pipe Volumes

Vol of Transport Line	5.8	gals
Vol of Manifold	1.6	gals
Vol of Laterals per Zone	4.7	gals
Total Volume	12.0	gals

Minimum Pump Requirements

Design Flow Rate	12.9	gpm
Total Dynamic Head	18.1	feet



PumpData

PF3005 High Head Effluent Pump
30 GPM, 1/2HP
115/230V 1Ø 60Hz, 200V 3Ø 60Hz

PF3007 High Head Effluent Pump
30 GPM, 3/4HP
230V 1Ø 60Hz, 200/460V 3Ø 60Hz

PF3010 High Head Effluent Pump
30 GPM, 1HP
230V 1Ø 60Hz, 200/460V 3Ø 60Hz

PF3015 High Head Effluent Pump
30 GPM, 1-1/2HP
230V 1Ø 60Hz, 200/230/460V 3Ø 60Hz

Legend

System Curve:
Pump Curve:
Pump Optimal Range:
Operating Point:
Design Point:

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14-030.1 Pressure Distribution Worksheet for Drainfield

May 1, 2015

Step 1: **Determine the daily wastewater load and select a pretreatment process**

- Daily design flow 1,000 gallons per day
- Pretreatment method: Recirculating Gravel Filter, Size: 248 sq. ft.. total
- Other pretreatment required? Septic Tank

Step 2: **Size the Drainfield area and make a detailed preliminary drawing**

- Required infiltration area: 1,000/0.40 = 2,500 sq ft (daily wastewater load /loading rate)
- Preliminary drawing of layout. (on separtate sheet of paper)

Step 3: **Specify and layout components of the pressure distribution network**

- Transport line:
  - Length: 500 ft
  - Diameter: 2.0 in
  - Material: PVC Sch 40
  - Highest elevation: 10 ft.
- Distribution Valve; two zone (6402)
- Manifold
  - End Manifold
  - Length: 16 ft.
  - Diameter: 1.25 in
  - Material: PVC Sch 40
  - Highest elevation: 0 ft.
- Lateral:
  - How many? 6
  - Length: 80 ft (84' installed)
  - Diameter: 1.25 in
  - Material: PVC Class 200
  - Highest elevation: 0 ft.
- Orifice
  - Diameter: 1/8 in.
  - Spacing: 2.0 ft.
  - Orientation: 12:00
  - How many/lateral: 21
  - How many total: 126

Step 5: **Calculate the total Dynamic Head in the network**
(See attached Orenco Pump Selection Program)
Total Dynamic Head : 30.2 ft.

Step 6: **Select a pump**
(See attached Orenco Pump Selection Program)
GPM: 27.5 Model# PF5005, 1/2 hp

Step 7: **Calculate dose volume for drainfield:**

- Total number of doses/day selected/required 12
- Dose volume: 83 gal. (Daily design flow / # of doses/day)

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Re: 14-030.1; Lewis County Animal Shelter – Animal design, 560 Centralia Alpha rd. Centralia, Wa.

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14-030.1 Pressure Distribution Worksheet for Drainfield cont.
May 1, 2015

Step 8: **Set the method of pump operation:**
Timer Controlled

Step 9: **Septic Tank/Pump Chamber Reserve area**

- Required Volume = 1,000 gal x 1.75 = 1,750 gal.
- Pump Chamber 1,800 gal,= 1,896 gallons
  - Dose Volume = 83 gal.
  - Dead Space = 15" x 32.5 gal/in = 488 gal
  - Emergency Volume available =1896-83-488 = 1,325< 1,750 .

  (with people at the facility 6 days a week should be ok)

- Outlet Filter on septic Tank? Yes Biofilter
- Floats (from tank lid down)

Float	Function
22"	High Level Alarm
42"	Pump On- Ok to start for time dosing
44"	Redundant Pump off- Alarm

- If timer-controlled system:
  Pump-time: 235/36.4=6.5 min. Pump-off time: 0 hours 23.5 min.
- Drawdown: 235/45= 5.2 in. (#gal /dose/# gal /in. in tank)

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Pump Selection for a Pressurized System - Single Family Residence Project

14-030.1 Lewis County Animal Shelter Animal drainfield pump to Drainfield / 560 Centralia Alpha rd. Centralia, Wa.

Parameters

Discharge Assembly Size	2.00	inches
Transport Length Before Valve	100	feet
Transport Pipe Class	40	
Transport Line Size	2.00	inches
Distributing Valve Model	6402	
Transport Length After Valve	400	feet
Transport Pipe Class	40	
Transport Pipe Size	2.00	inches
Max Elevation Lift	10	feet
Manifold Length	16	feet
Manifold Pipe Class	40	
Manifold Pipe Size	1.25	inches
Number of Laterals per Cell	6	
Lateral Length	80	feet
Lateral Pipe Class	40	
Lateral Pipe Size	1.25	inches
Orifice Size	1/8	inches
Orifice Spacing	4	feet
Residual Head	5	feet
Flow Meter	None	inches
'Add-on' Friction Losses	0	feet

Calculations

Minimum Flow Rate per Orifice	0.43	gpm
Number of Orifices per Zone	63	
Total Flow Rate per Zone	27.5	gpm
Number of Laterals per Zone	3	
% Flow Differential 1st/Last Orifice	3.3	%
Transport Velocity Before Valve	2.6	fps
Transport Velocity After Valve	2.6	fps

Frictional Head Losses

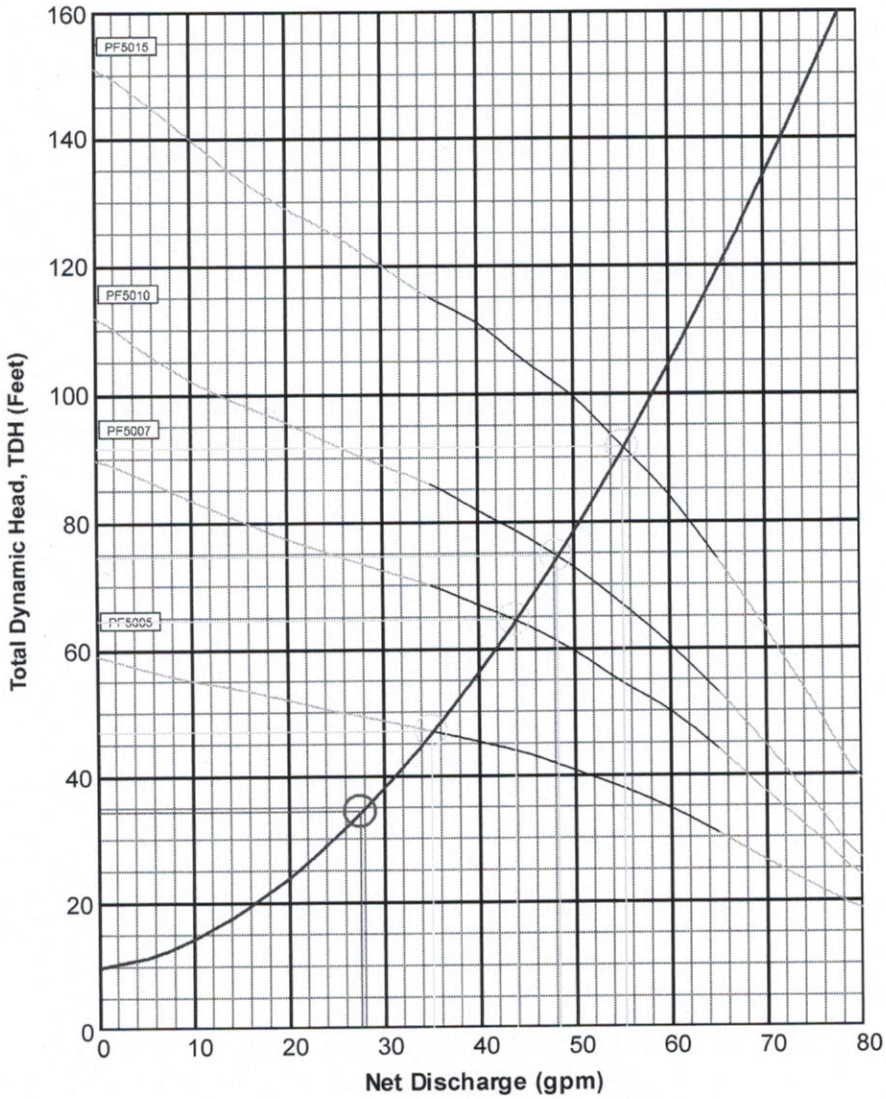
Loss through Discharge	1.5	feet
Loss in Transport Before Valve	1.3	feet
Loss through Valve	6.2	feet
Loss in Transport after Valve	5.3	feet
Loss in Manifold	0.4	feet
Loss in Laterals	0.4	feet
Loss through Flowmeter	0.0	feet
'Add-on' Friction Losses	0.0	feet

Pipe Volumes

Vol of Transport Line Before Valve	17.4	gals
Vol of Transport Line After Valve	69.7	gals
Vol of Manifold	1.2	gals
Vol of Laterals per Zone	18.6	gals
Total Vol Before Valve	17.4	gals
Total Vol After Valve	89.6	gals

Minimum Pump Requirements

Design Flow Rate	27.5	gpm
Total Dynamic Head	30.2	feet



PumpData

PF5005 High Head Effluent Pump
50 GPM, 1/2HP
115/230V 1Ø 60Hz, 200/230V 3Ø 60 Hz

PF5007 High Head Effluent Pump
50 GPM, 3/4HP
230V 1Ø 60Hz, 200/230/460V 3Ø 60Hz

PF5010 High Head Effluent Pump
50 GPM, 1HP
230V 1Ø 60Hz, 200/460V 3Ø 60Hz

PF5015 High Head Effluent Pump
50 GPM, 1-1/2HP
230V 1Ø 60Hz, 200V 3Ø 60Hz

Legend

System Curve:
Pump Curve:
Pump Optimal Range:
Operating Point:
Design Point:

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14-030.1 Material List- Animal Design

This list is an attempt for the contractor to get a good idea what is to be purchased. It is not intended to be the complete list of all necessary materials for the project.

Any substitutions must be pre-approved!

- Septic Tank- 2,700 gal, two chamber concrete tank, Sound Placement or equal
- RGF Pump Tank- 2,700 gal, single chamber concrete tank, Sound Placement or equal
- Pump Chamber Tank, 1,800 gal, single chamber concrete tank, Sound Placement or equal
- Pump Vault- Orenco Model PVU 68-1819 (68" length)
- Flow Inducer (6" Pump vault, 68" long)
- (2) Float Switch Model MF-3A with 3 float switches mounted on PVC stem (120 volt)
- Pump- to Gravel Filter -12.9 gpm, 18.1' tdh, Orenco PF3005, ½ hp 120v
- Pump- to Drainfield, 27.5 gpm, 30.2'tdh, Orenco PF5005, ½ hp 120v
- One Control panel (120 V) to control both pumps in separate locations with High Level Alarms lock-out, Orenco MVP-SSF-1-PT-PT
- (2) External Splice Boxes, Orenco SBEX4
- (156) Infiltrators 4.0' x 2.8' (Low Profile Graveless Chambers)
- Orenco Distribution Valve Model V6402, two zones, 1.5" dia.
- Orenco Recirculating Splitter Valve Model RSV4U (for RGF)
- Orenco Commercial Effluent Filter FT1548-36

- Piping
- 2.0" &1.25" diameter- PVC Schedule 40 Transport piping
- 1.25"diameter PVC Class 200 lateral piping
- 4" dia slotted drain pipe 3034 PVC
- PVC Liner Boot Kit, Orenco LIB400 (for RGF)

- Valves
  - 2.0", 1.5", 1.25", PVC ball valves, 150 lb rating
  - 2.0" & 1.5" diameter PVC check valves

  - Fiberglass valve boxes for Laterals valves and Cleanouts- locking lids
  - 4" PVC schedule 40 pipe and threaded caps for observation ports and cleanouts

  - PVC Liner, 30 mils, No seams, approved for sanitary service.
- Gravel Filter Media material- (see specifications attached)
- Pea Gravel
- Bed Gravel Material- Washed and clean , non-deteriorating drain rock DOT specs for Coarse Aggregate
- Top soil- use local from property- clean of debris
- Plywood or Structure wood and lumber for forming walls of Recirculating Gravel Filter

  - **Electrical (3) 20 amp, 120 volt circuits, one circuit to each pump and one for Level Switches. All with external disconnects. Must be provided or system will not be approved.**

Re: 14-030.1; Lewis County Animal Shelter – Animal design, 560 Centralia Alpha rd. Centralia, Wa.

BRIAN L. HEWITT
STATE OF WASHINGTON
29393
REGISTERED
PROFESSIONAL ENGINEER
5/13/15

3029 MAPLE STREET • LONGVIEW, WA 98632 • (360) 751-3751 • FAX (360) 425-2255 • hewitt.engineering@comcast.net

BRIAN L. HEWITT ENGINEERING L.L.C.

14-031.1 Recirculating Gravel Filter Media Specifications

A. Particle Size Analysis- The standard method to be used for performing particle size analysis must comply with one of the following:
   a. The Sieve method specified in ASTM D136 and ASTM C-117
   b. The method specified in Soil Survey Laboratory Methods and Procedures for Collecting Soil Samples, Soil Survey Investigation Report #1, US Department of Agriculture, 1984.

   Information concerning these methods can also be obtained from Methods of Soil Analysis, Part I, 2nd edition; A. Lute, ASA Monograph #9, American Society of Agronomy, Madison, WI. 1986.

B. Recirculating Gravel Filter Media- All Four conditions must be met to satisfy media criteria.
   a. Particle Size Distribution

	Sieve	Particle Size	Percent Passing
i.			
ii.	3/8 in.	9.5 mm	100 %
iii.	No. 4	4.75 mm	0-to 95 %
iv.	No. 8	2.36 mm	0-2 %
v.	No. 30	0.60 mm	0-0.1 %

   b. Effective Size: 3 mm to 5 mm.
   c. Uniformity coefficient: less than or equal to 2.
   d. Filter media must be washed

Re: 14-030.1; Lewis County Animal Shelter – Animal design, 560 Centralia Alpha rd. Centralia, Wa.

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14-030.1 Inspection-Testing Plan

May 13, 2015

The installing contractor is to contact Brian Hewitt Engineering for the following areas for inspection points and testing points during the installation of the Septic system.

- Liner Water test with under drain piping. This test is a 24 hour test that provides no leakage inside the under drain piping up to the surface and the liner (within 1 foot of top of liner) and discharge boot. Installer is to mark the level and time at the start of the test. Notify Brian Hewitt Engineering when this test began and when it is to finish.

- Inspection of piping before covering the transport piping and drip drainfield. Installer to have pressure tested the piping and leak tested the new pump tanks to verify no leaks prior to this inspection.

- Final Inspection and start up of the system. Installer to have set the control floats to the proper height. Verify no leaks in piping, Flush all piping. Verified that squirt heights have been met for the Recirculating Gravel Filter and Absorption Bed. Verify all floats are working properly.

Re: 14-030.1; Lewis County Animal Shelter – Animal design, 560 Centralia Alpha rd. Centralia, Wa.

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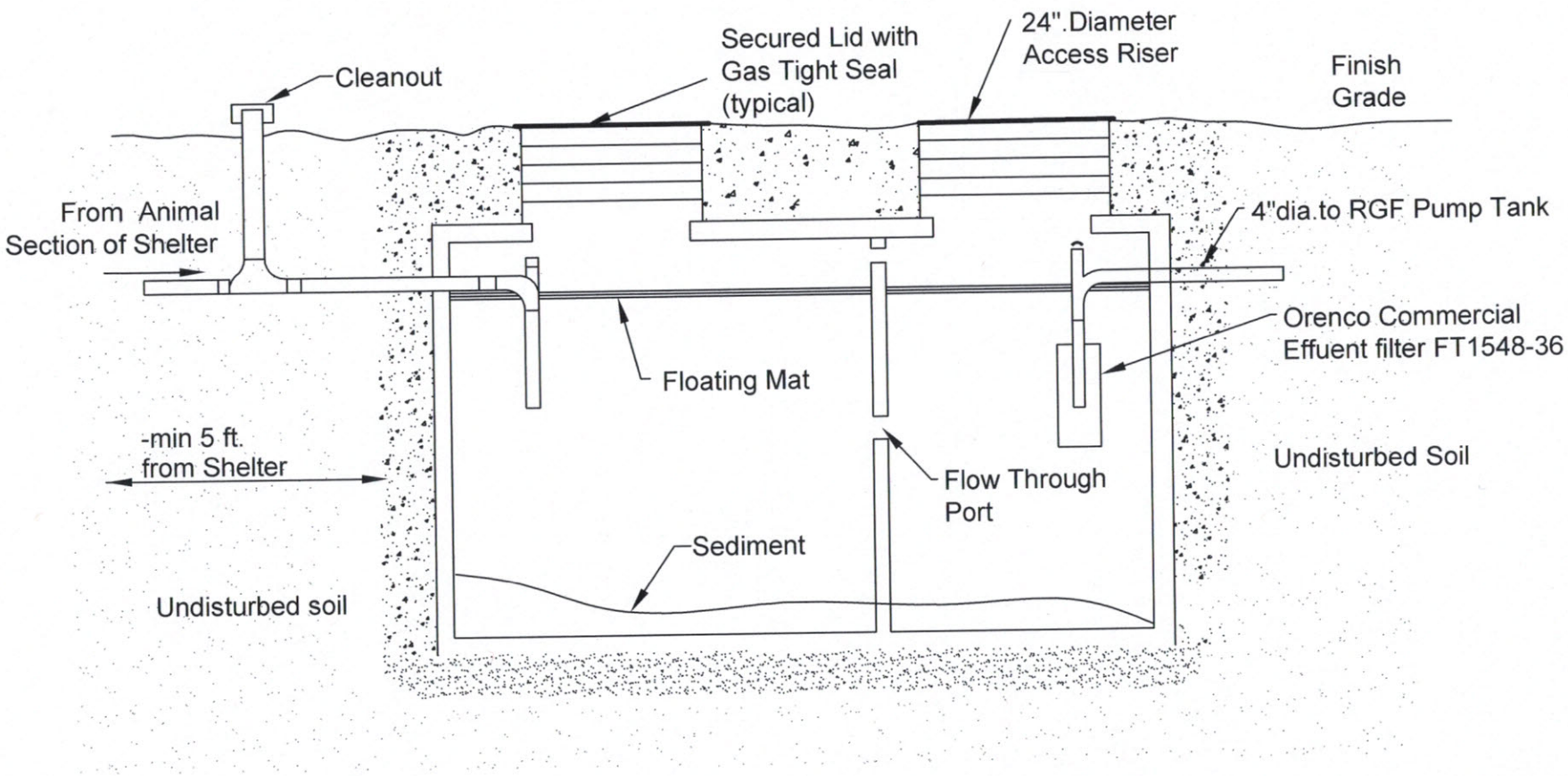
1
M-1

Typical 2-Chamber Septic Tank

2,700 Gallon Sound Placement or Equal



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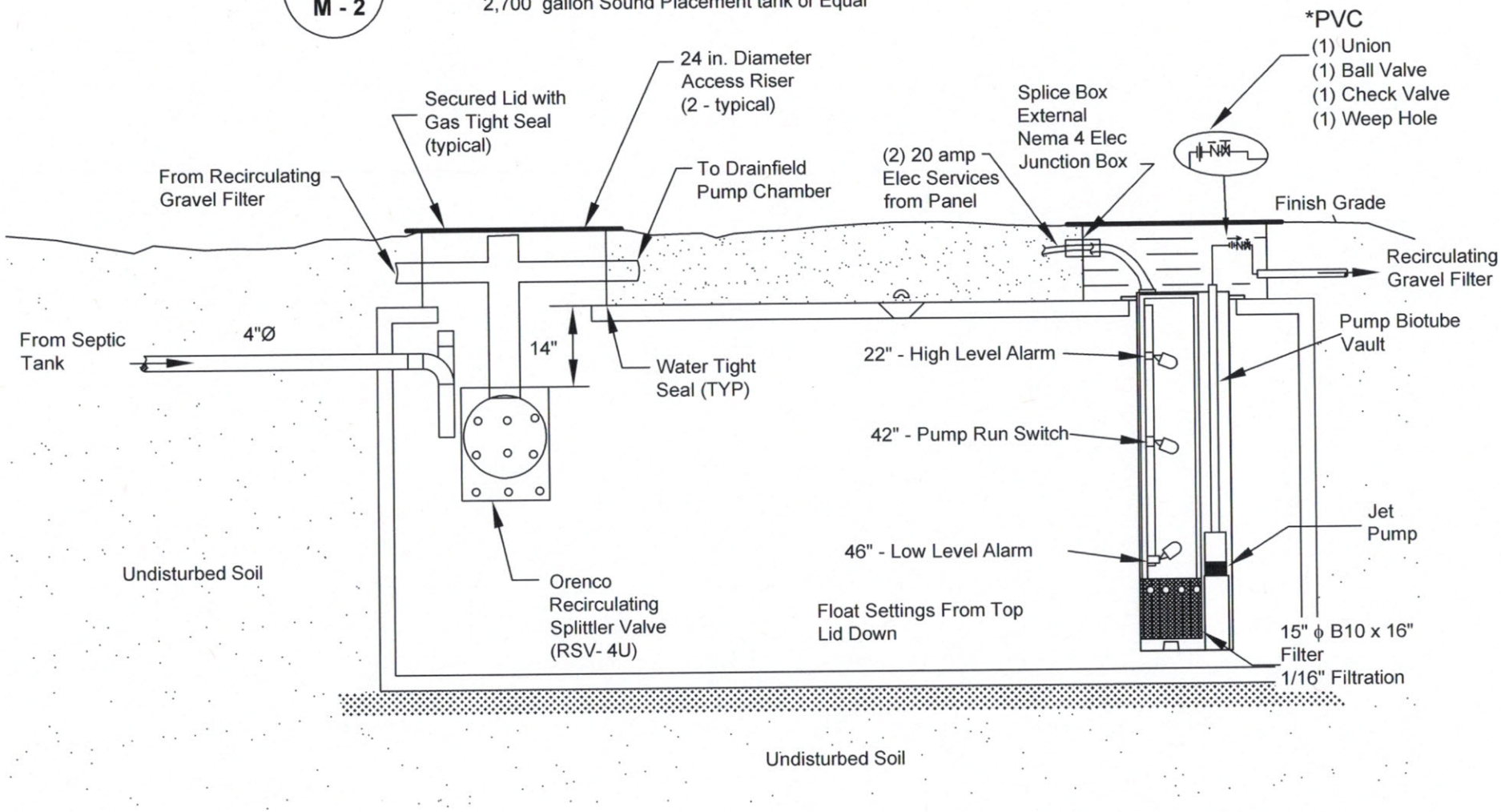
e-mail: Hewitt.Engineering@comcast.net

Date: 05/13/15	Job #14-030
Scale: NTS	Sheet M-1

1
M - 2

Typical 1-Chamber RGF Pump Tank

2,700 gallon Sound Placement tank or Equal



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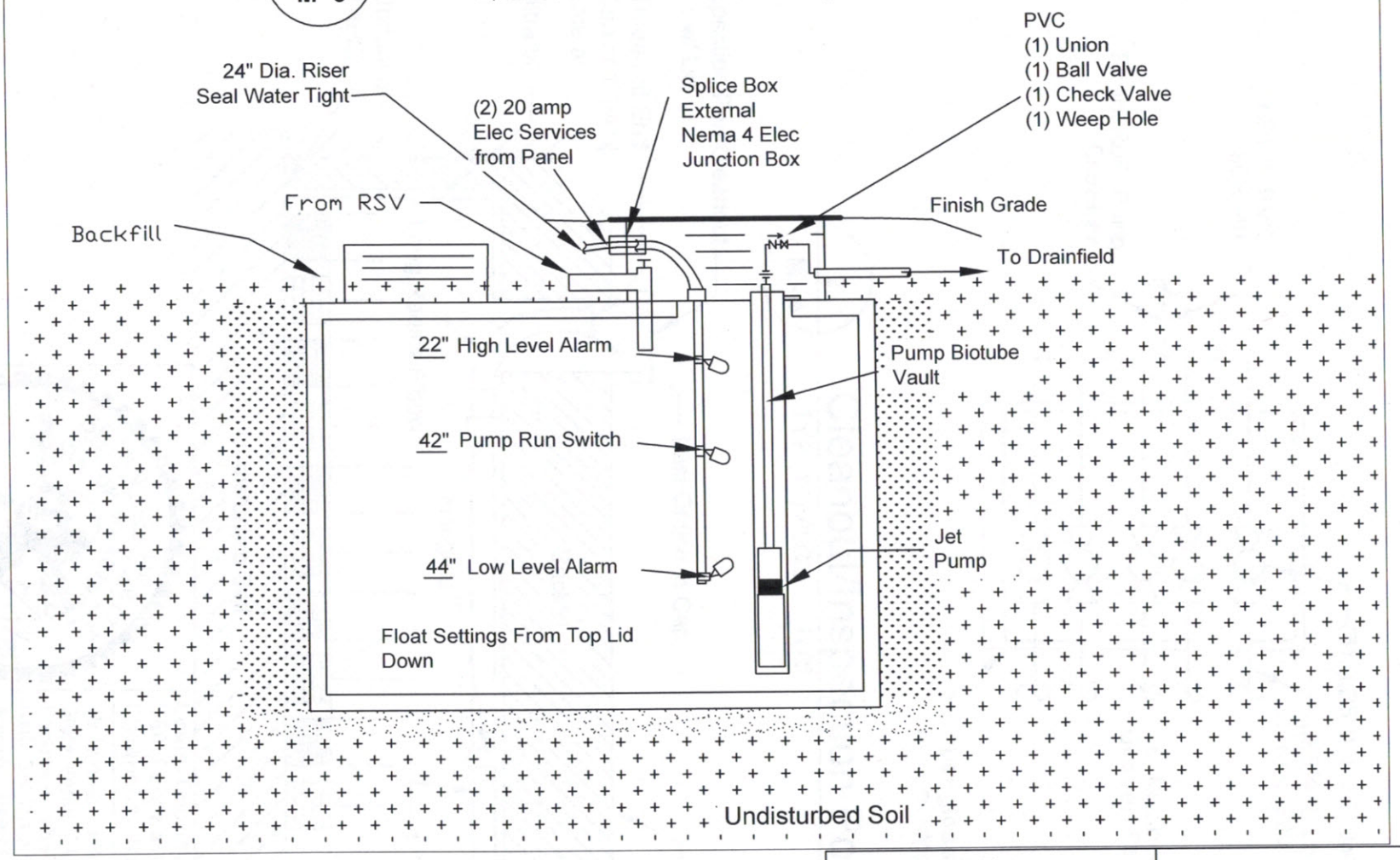
Scale: NTS	Sheet M-2

1
M -3

Typical Pump Chamber Tank to Drainfield

2,700 Gallon - Sound Placement or Equal



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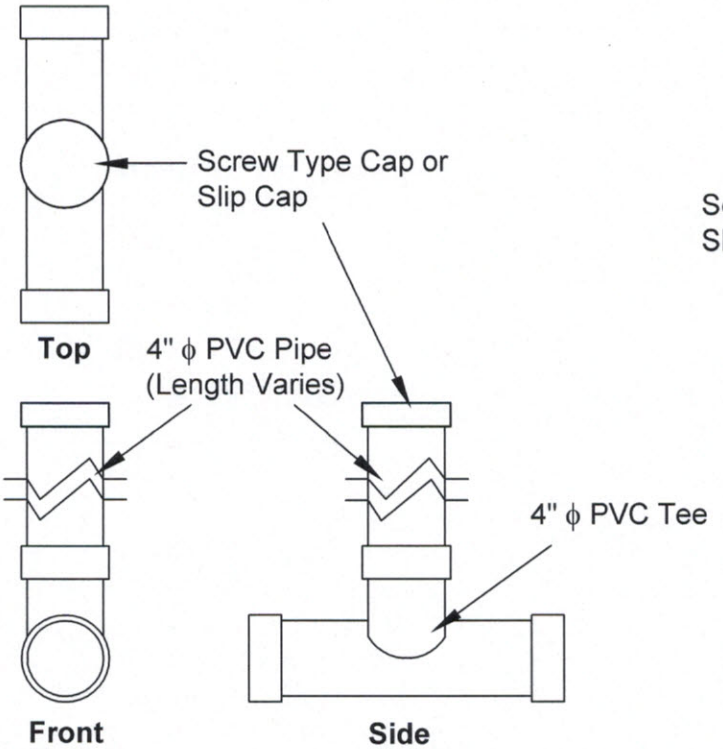
1
M - 5

Monitoring Wells



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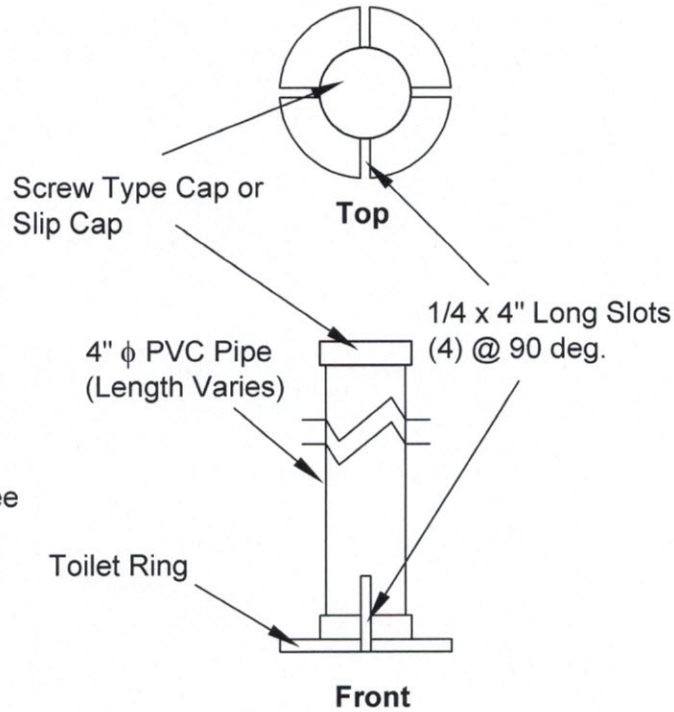

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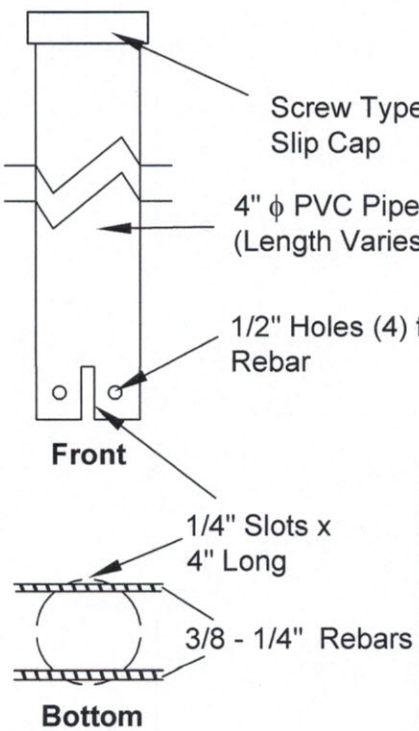

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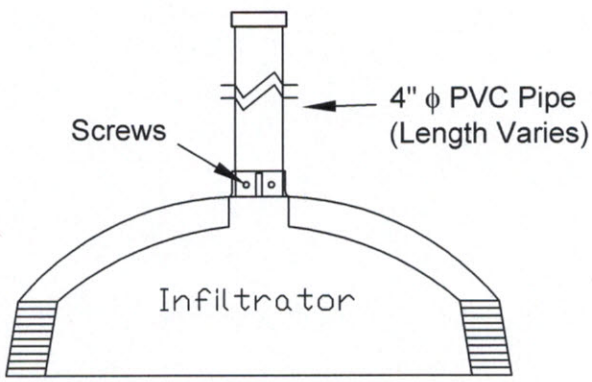

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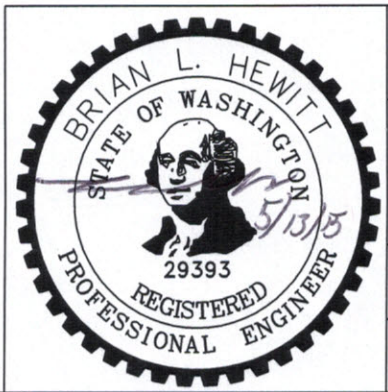

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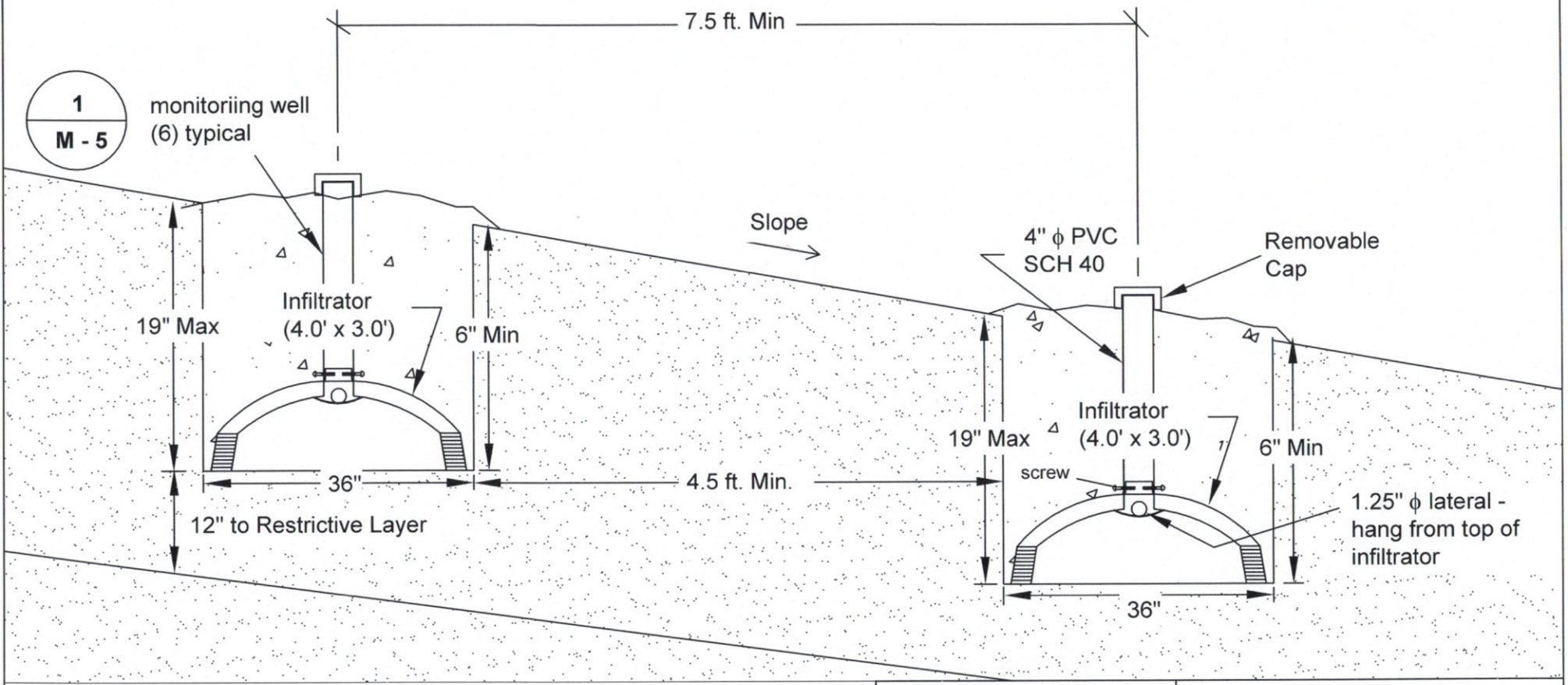
Infiltrators Drainfield Cross Section w/ Lateral Pipe

1 / M - 6

(Sloping Site, Full Depth Trench with Capping Fill)



Construction Notes

Backfill:
~ Backfill with soil excavated from trench.
~ 12" capping fill above the top of the Infiltrators

Trenches:
~ Trench bottoms must be level and follow slope contours.
~ Bottom of each trench must be within +/- 1/2" level over entire length.

Latteral Pipe:
~ 1.25" ϕ lateral - hang from top of infiltrator
~ 1/8" ϕ orifices - 4' on center, 12:00 position

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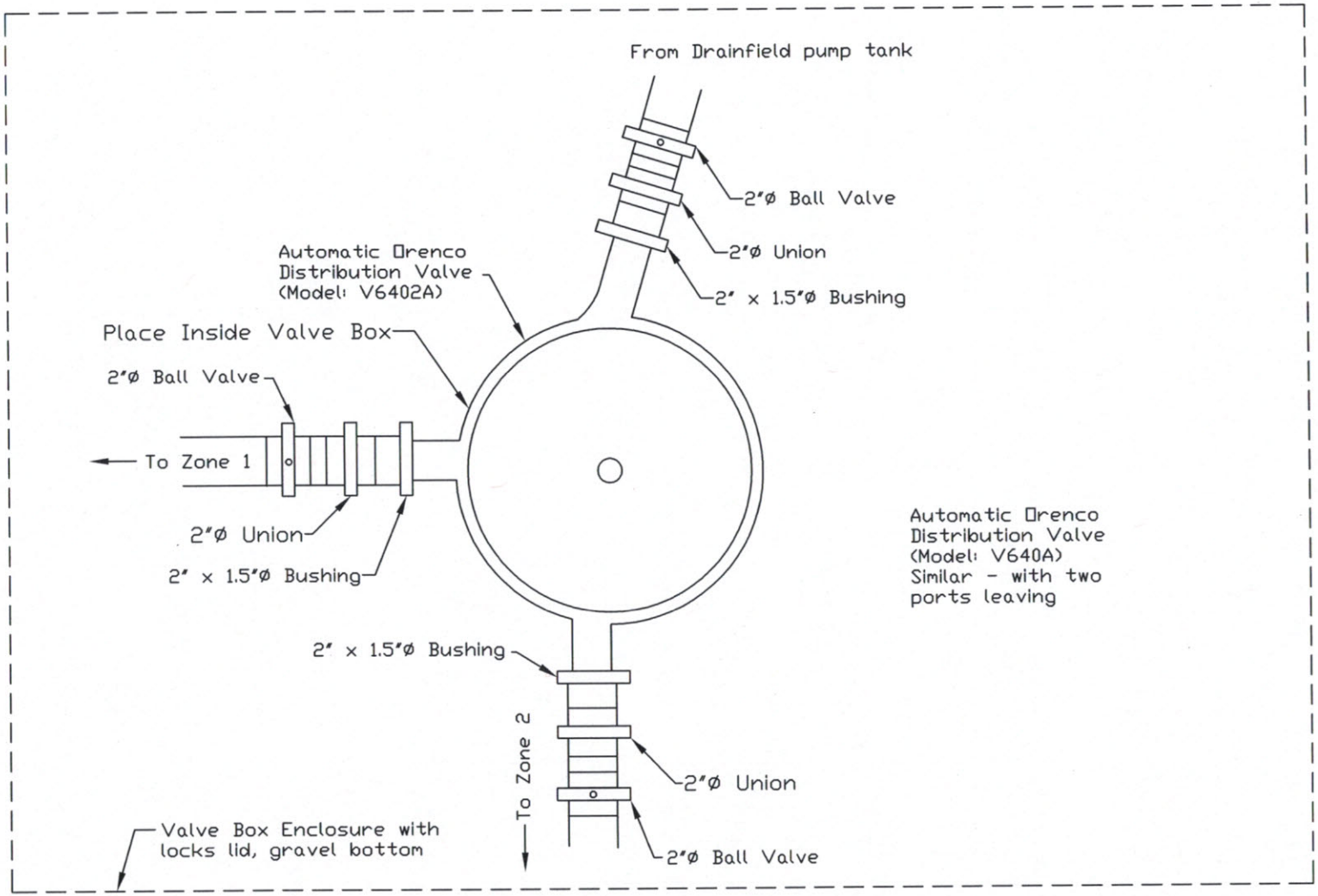

1

M-7

Auto Distribution Valve

NTS

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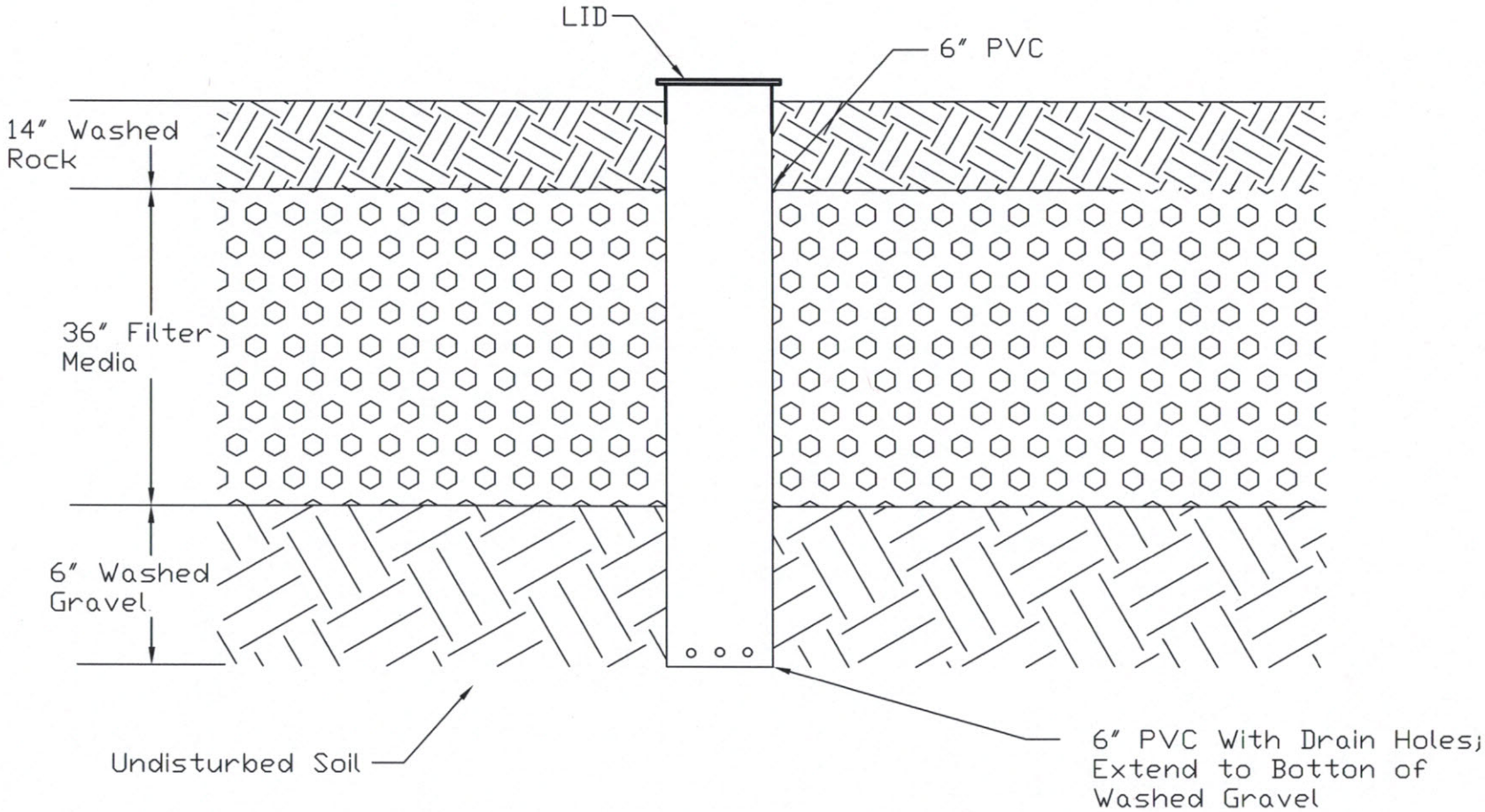

1
M-8

MONITORING PORT

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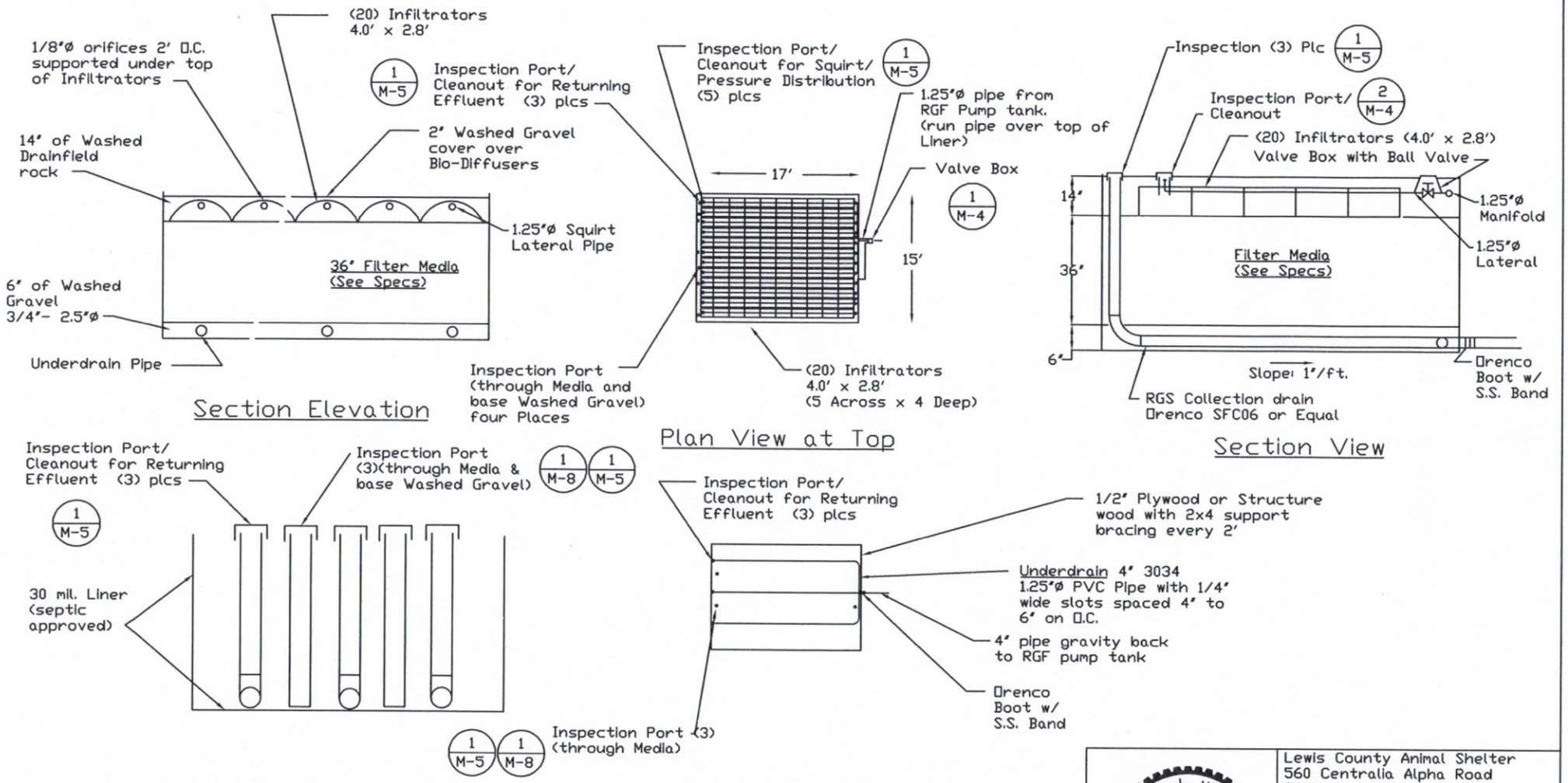

Recirculating Gravel Filter Details

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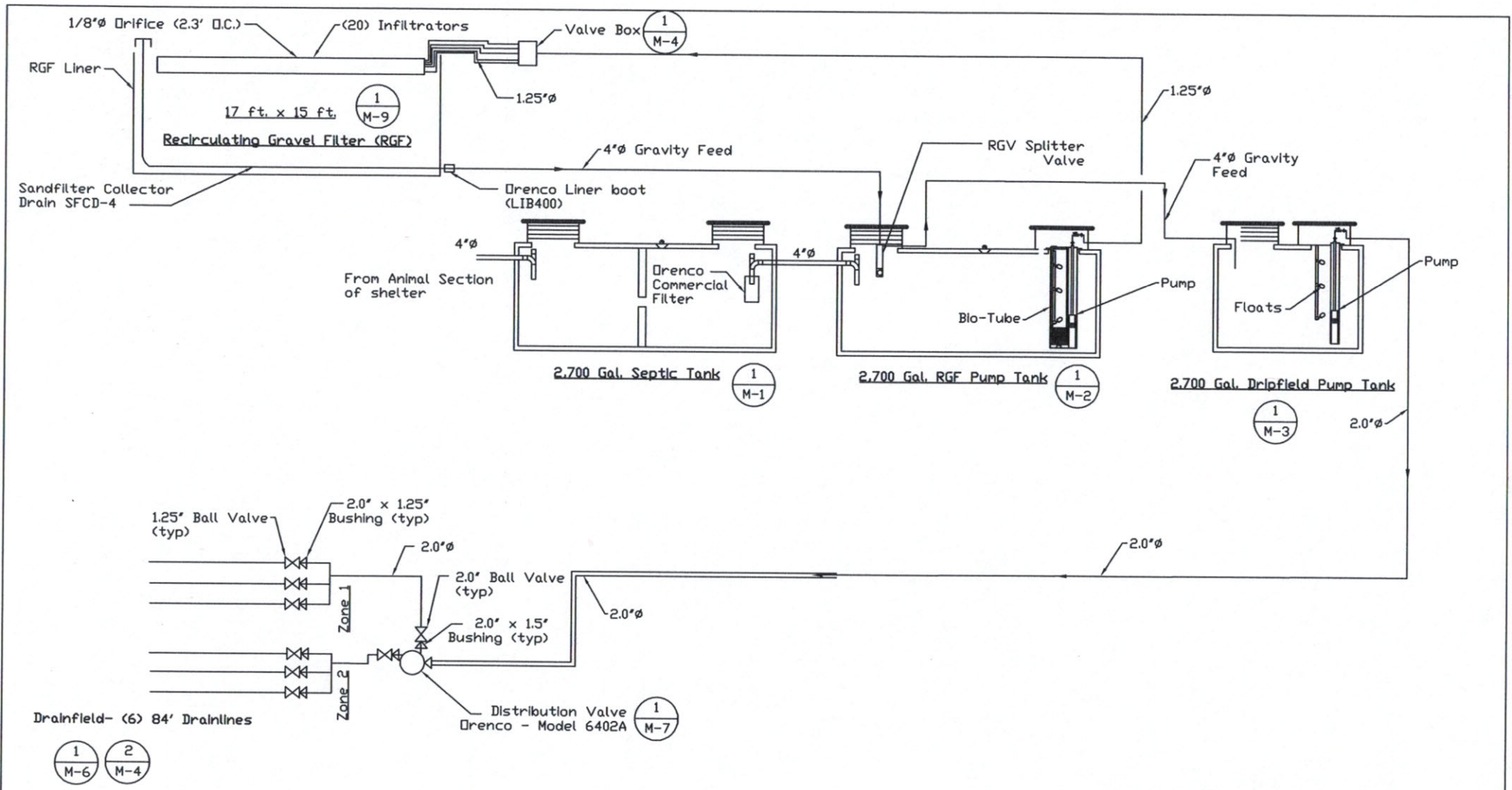

Flow Diagram - RGF with Absorption Beds

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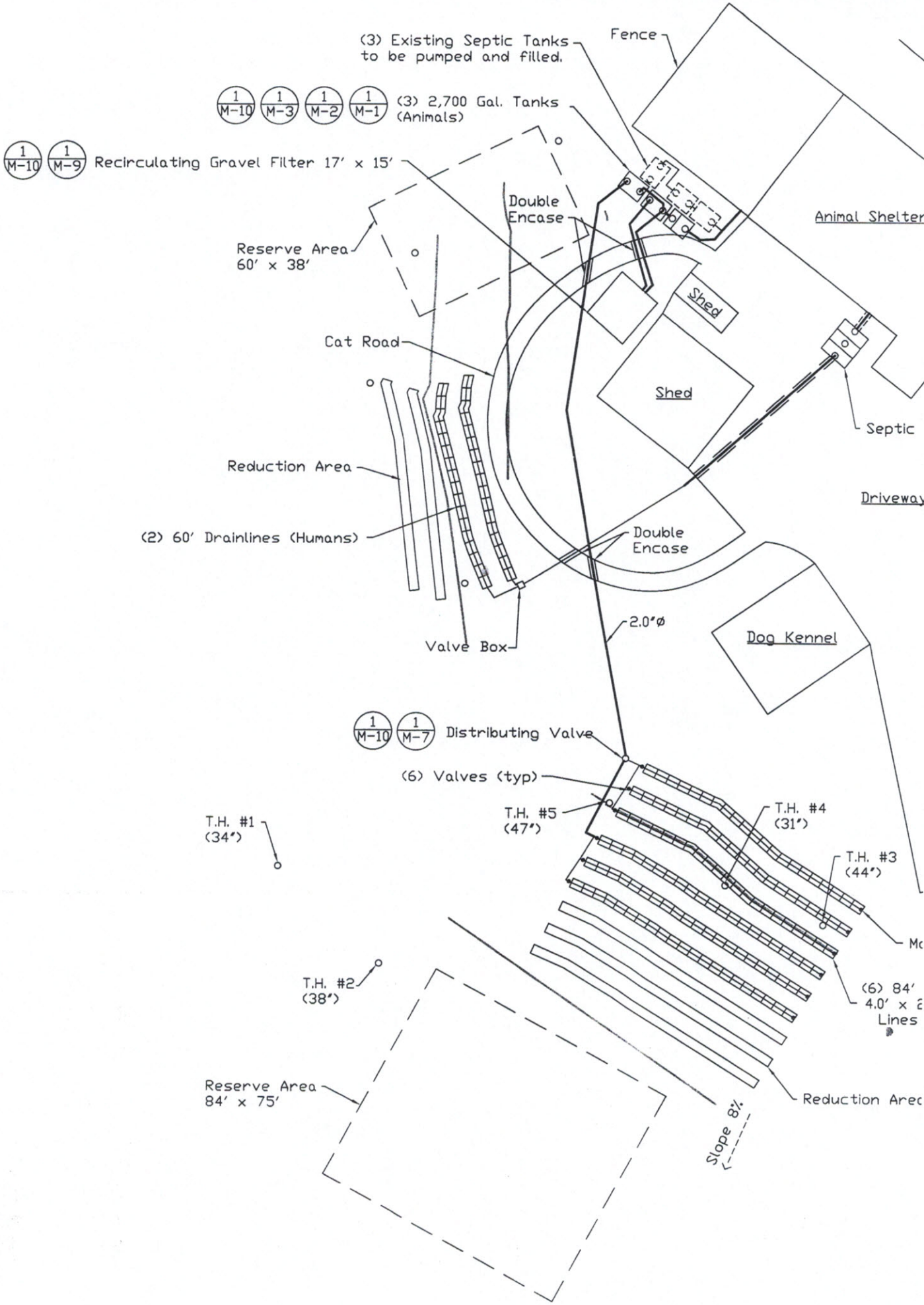
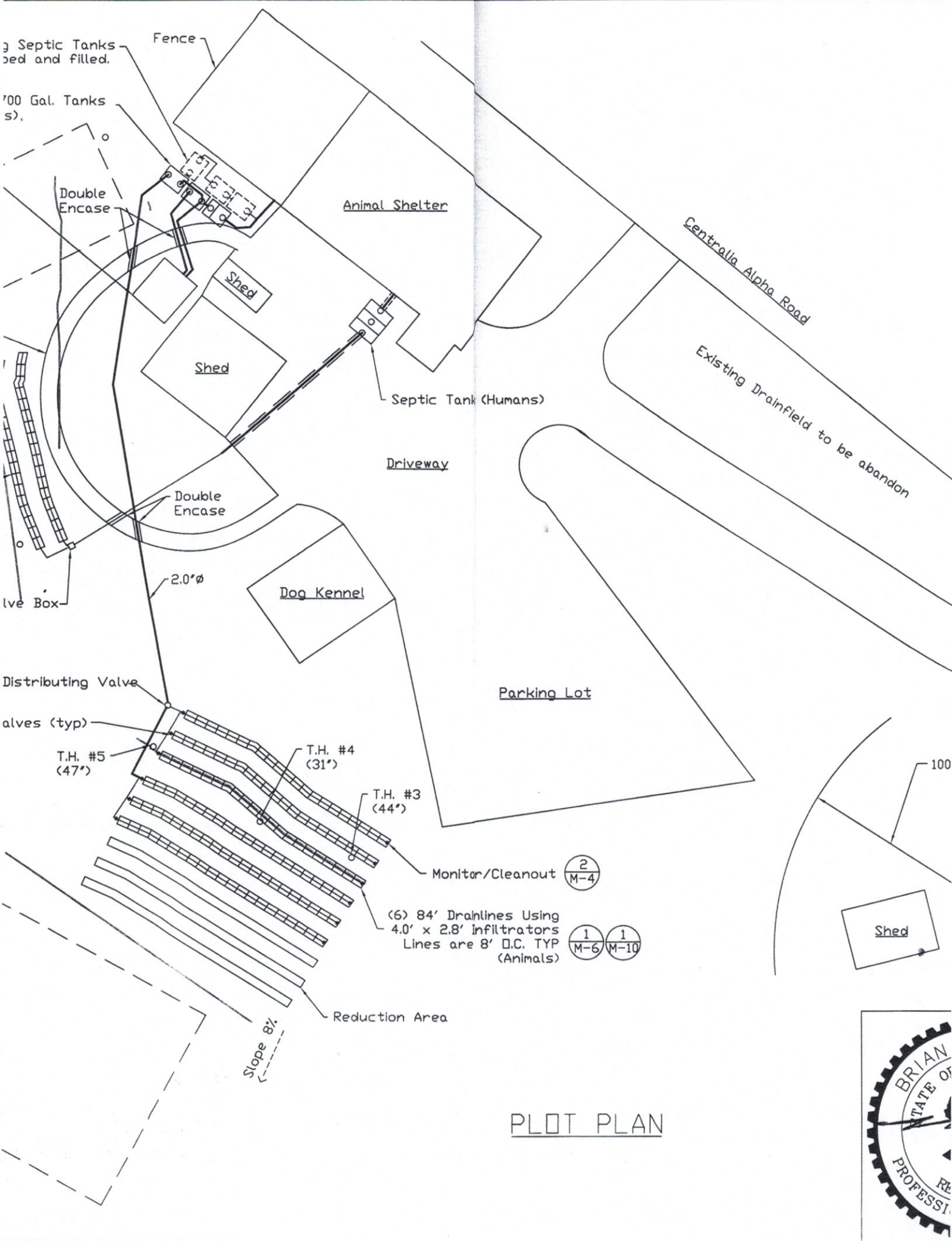

(3) Existing Septic Tanks to be pumped and filled.
Fence
1 M-10 1 M-3 1 M-2 1 M-1 (3) 2,700 Gal. Tanks (Animals)
1 M-10 1 M-9 Recirculating Gravel Filter 17' x 15'
Double Encase
Reserve Area 60' x 38'
Animal Shelter
Shed
Cat Road
Shed
Septic
Reduction Area
Driveway
(2) 60' Drainlines (Humans)
Double Encase
2.0"ø
Valve Box
Dog Kennel
1 M-10 1 M-7 Distributing Valve
(6) Valves (typ)
T.H. #5 (47")
T.H. #4 (31")
T.H. #1 (34")
T.H. #3 (44")
T.H. #2 (38")
(6) 84' 4.0' x 2 Lines
Reserve Area 84' x 75'
Reduction Area
Slope 8%


g Septic Tanks
ped and filled.
'00 Gal. Tanks
s).
Fence
Double
Encase
Animal Shelter
Centralia Alpha Road
Shed
Shed
Existing Drainfield to be abandon
Septic Tank (Humans)
Driveway
Double
Encase
2.0"ø
lve Box
Dog Kennel
Distributing Valve
alves (typ)
Parking Lot
T.H. #5
(47")
T.H. #4
(31")
T.H. #3
(44")
100
Monitor/Cleanout
2
M-4
(6) 84' Drainlines Using
4.0' x 2.8' Infiltrators
Lines are 8' O.C. TYP
(Animals)
1
M-6
1
M-10
Shed
Reduction Area
Slope 8%
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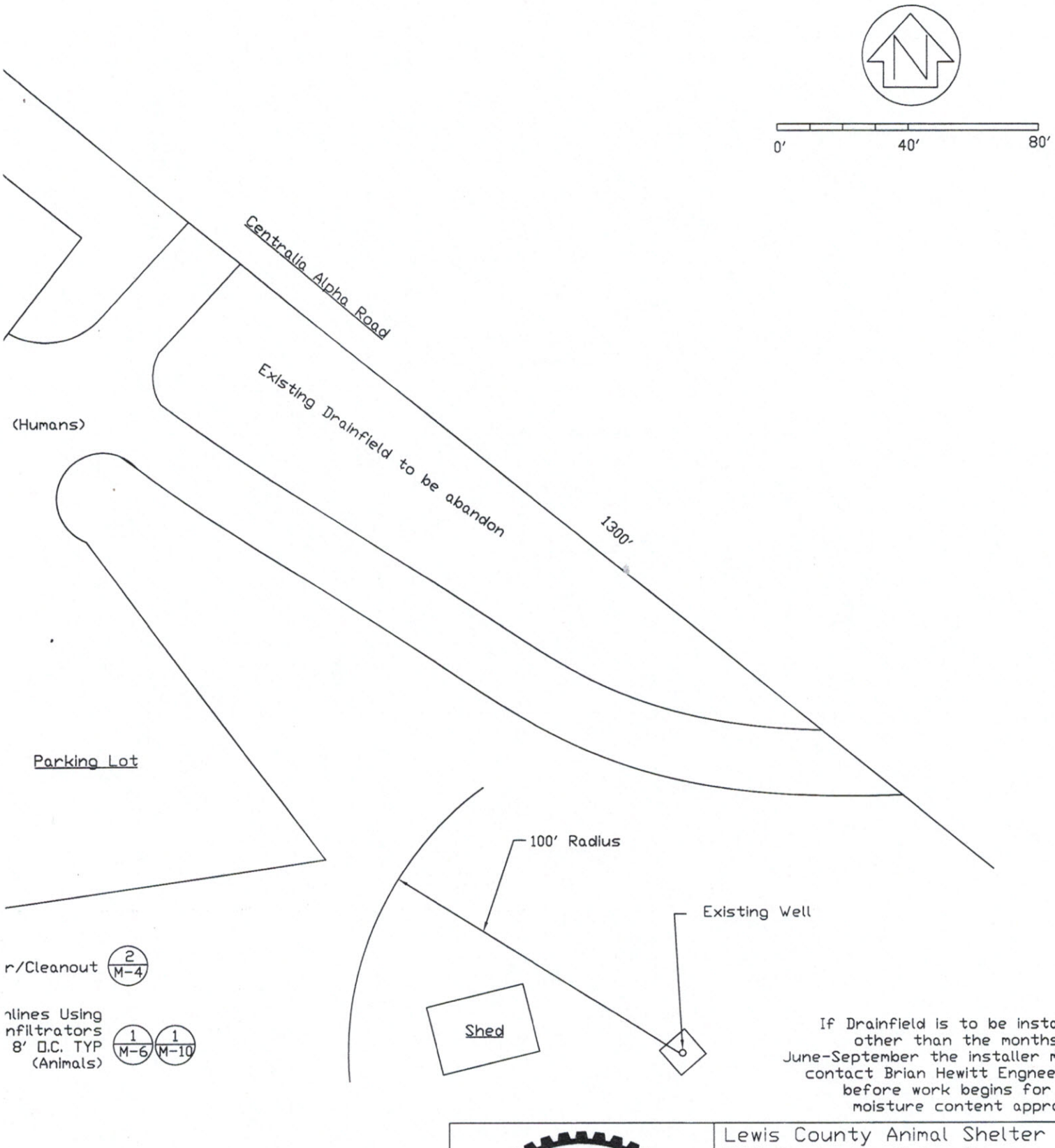
PLOT PLAN



If Drainfield is to be installed other than the months of June-September the installer must contact Brian Hewitt Engneering before work begins for soil moisture content approval

PLOT PLAN

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Scale: 1"=40'-0" | Sheet M-