

# Mound Design - Aitkin county

Property Owner: Scott Bressler

Date: 8/14/2020

Site Address: 11994 State Hwy. 27

PID: 04-0-036700

Comments: \_\_\_\_\_

Instructions:    = enter data         = adjust if desired         = computer calculated - DO NOT CHANGE!

- 1) 2 bedroom      Type 1      Residential System
- 2) 300 GPD design flow
- 3) No Garbage disposal or pumped to septic
- 4) 1000 Gal Septic tank (code minimum)      1140 Gal Septic tank (design size / LUG req'd)  
Tank options: none
- 5) 1.2 GPD/ft<sup>2</sup> mound sand loading rate      contour loading rate of 12 req's a min      25 ft. long rockbed
- 6) 10.0 ft rockbed width      25.0 ft rockbed length
- 7) 3.0 ft lateral spacing      3.0 ft perforation spacing      (maximum of 3 for both)  
end feed manifold connection
- 8) 3 laterals      23.0 feet long      8.0 perms / lateral      24 perms total  
(1/2 a perf means the first perf starts at the middle feed manifold)
- 9) 1/4" inch perms at 1 feet residual head      gives 0.74 gpm flow rate per perforation  
for this perf size & spacing, & pipe size on line 12, max perms/lateral = 16, line #8 must be less --> OK
- 10) 4.0 doses per day      (4 minimum)
- 11) 75 gallons per dose      (treatment volume) 2.00 5x
- 12) 1.50 inch diameter laterals must be used to meet "4x pipe volume" requirement 2.00 3x
- 13) 32 feet of 2.0 inch supply line      leads to 5 gallons of drainback volume  
(Tip: "top feed" manifold to control the drainback)
- 14) 80 gallons TOTAL pump out volume (treatment + drainback)
- 15) 9 feet vertical lift from pump to mound laterals, leads to a:
- 16) 18 GPM @ 15 feet of head, Pump requirement      (note: >50gpm may require an extra 3-6' of head)
- 17) 500 gal Dose tank (code minimum)      510 gal Dose tank (design size / LUG req'd)      at 11.20 gpi  
leads to a
- 18) 7.1 inch swing on Demand float,      or timed dosing of 4.4 min ON      (confirm pump rate with drawdown  
(this delivers Average flow, =70% of Peak design flow) 9 hrs OFF      test and adjust as necessary)
- 19) 12 inches from bottom of tank to "Pump OFF" float
- 20) 19 inches from bottom of tank to "Pump ON" float, or 12 inches to "Timer ON" float if time dosed
- 21) 22 inches from bottom of tank to "Hi Level" float, or 32 inches to "Hi Level" float if time dosed
- 22) 264 gallons reserve capacity      (after High Level Alarm is activated)

### Soil Information

**Evidence of site:**

- |           |                              |  |
|-----------|------------------------------|--|
| Cut       | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| Filled    | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| Compacted | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| Disturbed | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |

Original soils  Yes  No

Soil logs completed and attached  Yes  No

Perk test completed and attached (if applicable)  Yes  No

Soil loading rate (gpd/ft<sup>2</sup>) 0.60

Percolation rate (if applicable) \_\_\_\_\_

Depth/elev to SHWT 12.00

Flooding or run-on potential  Yes  No  
(comments)

Depth to system bottom maximum (or elev minimum) -24.00

Flood elevation (if applicable) \_\_\_\_\_

Depth/elev to standing water (if applicable) \_\_\_\_\_

Elevation of ordinary high water level (if applicable) \_\_\_\_\_

Depth/elev to bedrock (if applicable) \_\_\_\_\_

Soil Survey information determined (see attachment)  Yes  No

Floodplain designation and elev - 100 yr/10 yr (if applicable) \_\_\_\_\_

Differences between soil survey and field evaluation (if applicable) \_\_\_\_\_

*I hereby certify this evaluation was completed in accordance with MN 7080 and any local req's.*

*Raymond Hund*  
Designer Signature

R.H. Inspection & Design  
Company

3847  
License #

# Preliminary & Field Evaluation Form

www.SepticResource.com vers 12.4

Owner Information			
Date	<u>8/14/2020</u>	Sec / Twp / Rng	<u>S.23 T.46 R.22</u>
Parcel ID	<u>04-0-036700</u>	LUG (county, city, township)	<u>Aitkin County</u>
Property Owner:	<u>Scott Bressler</u>	Owners address (if different)	
Property Address:	<u>11994 State Hwy. 27</u>	<u>1366 96th Ave. NE</u>	
City / State / Zip:	<u>Sturgeon Lake, MN. 55783</u>	<u>Blaine, MN. 55434</u>	

Flow Information and Waste Type / Strength			
Estimated Design flow	<u>300</u>	Anticipated Waste strength	<input type="checkbox"/> Hi Strength <input checked="" type="checkbox"/> Domestic
Comments:		Any Non-Domestic Waste	<input type="checkbox"/> Yes (class V) <input checked="" type="checkbox"/> No
		Sewage ejector/grinder pump	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Water softener	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Garbage Disposal	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Daycare / In home business	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Site Information				
Existing & proposed lot improvements located (see site map)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Well casing depth	<u>No Well Yet</u>
Easements on lot located (see site map)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Drainfield w/in 100' of residential well	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Property lines determined (see site map)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Site w/in 200' of transient noncommunity water supply (TNCWS)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Req'd setbacks determined (see site map)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Site w/in an inner wellhead mgmt zone (CWS/NTNCWS)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Utilities located & identified (gopher state one call)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Buried water supply pipe w/in 50' of system	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Access for system maintenance (shown on site map)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Site located in Shoreland (w/in 1000' of lake, 300' of river)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Soil treatment area protected	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Site map prepared with previous items included	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Construction related issues	<hr/> <hr/>			

# Installer Summary

1140 gallon Septic tank (minimum)

Tank options: none

510 gallon Dose tank (minimum)

at 11.20 gpi

18 GPM @ 15 ft. of head, Pump required

7.1 inch swing on Demand float which translates to roughly 4.6 inches of float tether length

if time dosing is required --> 4.4 minutes ON time & 9 hours OFF time

19 inches from bottom of tank to "pump ON" float, or 12 inches to "timer ON" float

22 inches from bottom of tank to "Hi Level Alarm" or 32 inches to "Hi level alarm" if time dosed

32 ft. of 2.0 inch supply line with end feed manifold connection

(Tip: "top feed" manifold to control drainback)

24 inch, or 2.0 ft. Sand Lift Mound

10.0 ft. wide by 25.0 ft. long Rock bed

3 laterals 1.50 inch diameter 23.0 ft. long 3.0 ft. lateral spacing

1/4" inch perfs 3.0 ft. perforation spacing

No Effluent filter & alarm

3 clean out & valve box assemblies

34.0 ft. Total sand ABSORPTION width (minimum)

12.0 ft. upslope and sideslope (sand beyond rockbed, minimum)

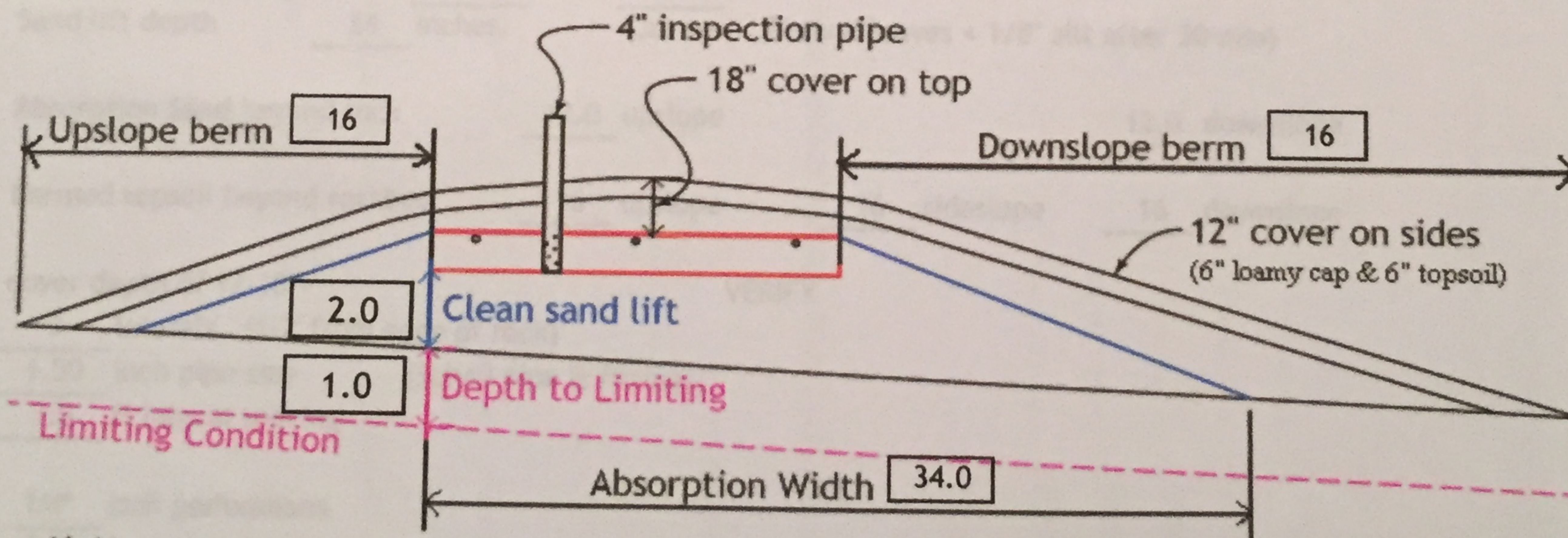
12.0 ft. Downslope (sand beyond rockbed, minimum)

Specific slope ratios give BERM widths (topsoil beyond rockbed) of:

4:1 upslope ratio 16 ft. upslope berm

4:1 sideslope 16 ft. sideslope berms

4:1 downslope 16 ft. downslope berm



## Note:

For 0 to 1% slopes, *Absorption Width* is measured from the *Bed* equally in both directions.  
For slopes >1%, *Absorption Width* is measured downhill from the upslope edge of the *Bed*.

Rock Bed: 9.0 yd<sup>3</sup> or \*1.4= 13 ton

Mound Sand: 117 yd<sup>3</sup> or \*1.4= 163 ton

Loamy Cap: 45 yd<sup>3</sup> or \*1.4= 63 ton

Topsoil: 54 yd<sup>3</sup> or \*1.4= 76 ton

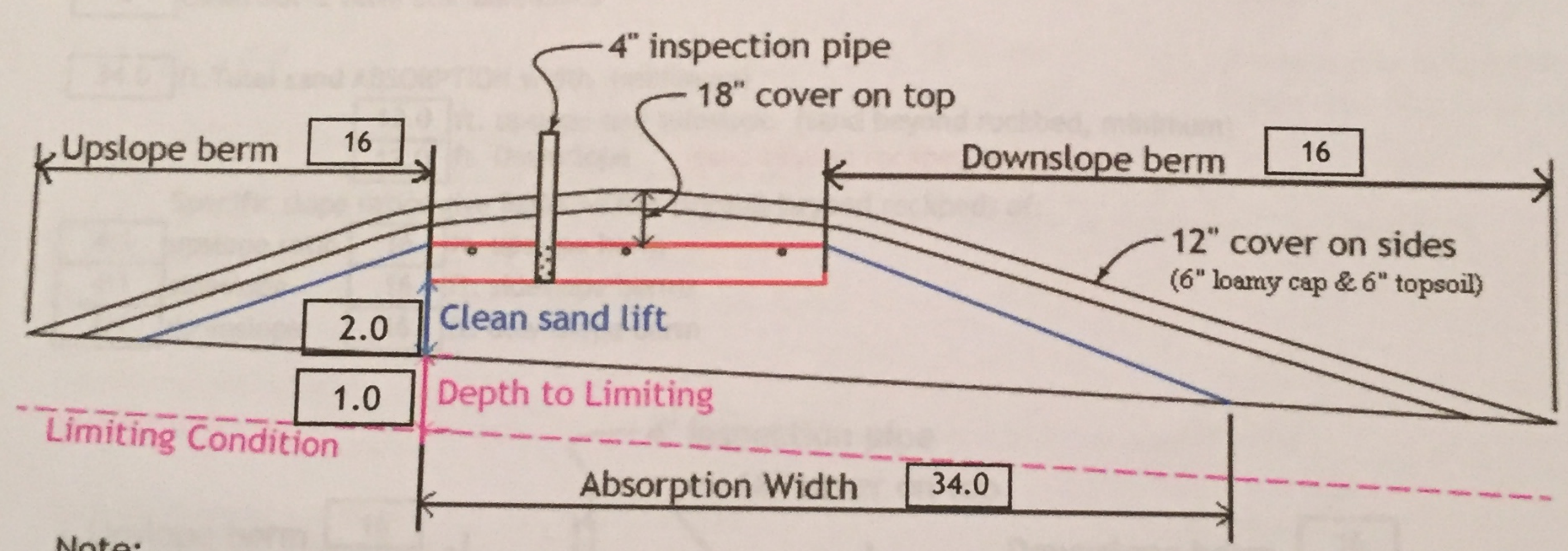
6 inches under pipe

calculation based on 3:1/4:1 slope from top of rockbed

6" deep

6" deep

- 23) 0.60 gpd/ft<sup>2</sup> Absorption area Soil Loading Rate, which gives a mound ratio of 2 (minimum)  
 (this must match the soil boring log) desired mound ratio 2.0
- 24) 0 percent site slope (0-20% range) 0 (% downslope site slope, if different than upslope)
- 25) 12 inches, or 1.0 ft. to Redox or other limiting condition (need at least 12" to be a Type I)  
 Treatment zone contains 0 inches of 0% soil credit, and 0 inches of 50% soil credit. Giving a:
- 26) 24 inch, or 2.0 ft. Sand Lift Mound **CRITICAL FOR FUTURE CERTIFICATIONS!!!**
- 27) 20.0 ft. base absorption width (with sand beyond rockbed as follows):  
 34.0 greater of: absorption width OR sand slope
- 28) 5.0 ft. upslope and sideslope sand upslope 12.0  
 5.0 ft. Downslope sand down slope 12.0
- Individual slope ratios give BERM widths (topsoil beyond rockbed) of:
- 29) 4:1 upslope ratio 16 ft. upslope berm
- 30) 4:1 sideslope 16 ft. sideslope berms
- 31) 4:1 downslope 16 ft. downslope berm
- 32) Overall Dimensions: 10.0 ft. wide by 25.0 ft. long Rock bed  
 42 ft. wide by 57 ft. long Mound footprint



**Note:**  
 For 0 to 1% slopes, *Absorption Width* is measured from the *Bed* equally in both directions.  
 For slopes >1%, *Absorption Width* is measured downhill from the upslope edge of the *Bed*.

- 33) Rock Bed:  
 10.0 ft. by 25.0 ft. by 6 inches under pipe, plus 20% gives 9 yd<sup>3</sup> or \*1.4= 13 ton
- 34) Mound Sand: (note: volume is based on 3:1/4:1 slope from top of rockbed, Exchange sand for loamy cap if desired)  
 32.7 up + 32.7 downslope + 13.3 ends + 18.5 under rock = 117 yd<sup>3</sup> or \*1.4= 163 ton  
 plus 20%
- 35) Loamy Cap:  
 38 ft. by 53 ft. 6" deep, plus 20% gives 45 yd<sup>3</sup> or \*1.4= 63 ton
- 36) Topsoil:  
 42 ft. by 57 ft. 6" deep, plus 20% gives 54 yd<sup>3</sup> or \*1.4= 76 ton

I hereby certify that I have completed this work in accordance with all applicable ordinances, rules and laws.

Rogan Hurd Designer Signature
 R.H. Inspection & Design Company
 3847 License#
 8/14/2020 Date