USDA
United States Department of Agriculture

NRCS, Clarion Technical Office
22631 Route 68, Suite 233
Clarion, PA 16214
Phone: 814-226-8160
Fax: 814-226-4521

Subject: Maloney
Crawford County, PA

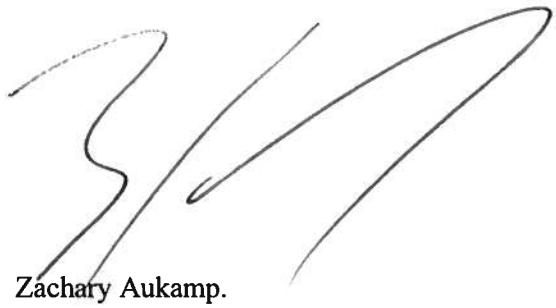
Date: May 19, 2025

To: Jody Lasko, District Conservationist

The HUA and Manure Stacking Facility design for Robin Maloney is approved following PA Tech Guide Standards. A Nutrient Management Plan will be required prior to implementing this design. The NMP should be reviewed and any discrepancies with the plan and this design brought to the attention of the plan writer.

Please contact us to schedule a preconstruction meeting with the landowner and contractors once the landowner is ready to begin construction.

Sincerely,



Zachary Aukamp.
Area Engineer
NRCS, Clarion Technical Office

USDA

United States Department of Agriculture

Appendix

HUA/WSF Design

Maloney - Crawford County, PA

MALONEY - CRAWFORD COUNTY, PA

ROOFED HUA/WSF

OPERATION AND MAINTENANCE PLAN

This project was designed specifically for your farm operation. As with any other aspect of your farm, a certain level of maintenance is required to keep the system operating properly. The main component of this project is the roof structure, concrete heavy use area, and manure stacking facility. There are a significant amount of practices proposed, some with inherently greater risks should they fail. The success of this system is dependent on the proper construction and maintenance of each and every one of these components.

Roofed Heavy Use Area / Manure Stacking Facility

Your facility is intended to eliminate nutrient laden runoff from leaving the concentrated animal areas and flowing directly into watercourses. Maintain fences and gates to control cattle access to areas not having heavy use protection. Do not provide locations in your pasture where cattle congregate and kill the vegetation. It is the landowner's responsibility for operating gates and fencing to avoid new concentration areas, as well as limiting animal access to streams. No brown areas may be allowed to develop outside of the HUAP, maintain adequate vegetation at all times on pastures and follow the grazing plan.

This roofed heavy use area may only be used as a sacrifice, loafing, feeding, or exercise area. It may not be converted into animal housing (by adding tie stalls, freestalls, or additional walls/curtains, etc.) or equipment storage for the practices lifespan (commonly 10 -15 years). This new facility was designed for the additional animal units that this farm has expanded to since the existing HUA was constructed. The farm has expanded by 28.4 animal units bringing the total animal units to 109.4. Calving pens was not included on the HUA, calving will take place in the pasture.

The landowner/farmer is responsible for avoiding development of new unprotected animal concentration areas or pathways located outside of improved areas resulting from future expansion.

All structural components- posts, girders, trusses, and their connections should be inspected periodically, at least twice a year to make sure they are structurally sound. This inspection should confirm that the structural components are not cracked or broken, and that all fasteners are secure. The main objective of the inspection is to confirm that the facility is not a safety hazard to the operator or the animals.

Use the HUA to confine animals during periods when pasture is wet and not conducive to grazing. Feeding animals on the HUA is a good management practice. Cleaning of HUA should be governed by animal usage but at a minimum it shall be cleaned once per week when the HUA is being used or when there is a ½" average depth of manure accumulated. Follow the NMP when spreading this manure.

Periodically inspect the fencing, gates and access areas for damages and repair as appropriate.

SAFETY

During the operation and maintenance of the components in this system, safety shall be given a high priority at all times.

Never walk on the surface of manure in any type of storage structure. The surface is not solid.

When excavating a trench to install or repair any underground pipes and outlets, dig with sloping sides to prevent cave-ins. Cave-ins can entrap people, which can be fatal. The Natural Resources Conservation Service can assist on the proper slope of trench sides.

Be careful when working around underground and overhead utilities. Before digging occurs, the landowner or excavator should call the Pennsylvania One Call System, Inc. (1-800-242-1776) to assist in the prevention of accidental damage to underground public utilities.

EMERGENCY RESPONSE

During the operation and maintenance of this waste storage system there may be an accidental spill as a result of equipment or component failure or other means. Immediate action is needed to contain any spilled waste and keep it from becoming a hazard to water quality or causing off site problems.

In the event of a failure in or around the storage, quickly contain or divert the spilled material. This could be done by plowing or digging a ditch down slope of the problem. Any spills associated with unloading equipment should be similarly contained.

If there is an uncontrolled spill you are to notify the Crawford County Conservation District at (814)-763-5269. Also, call the PA Department of Environmental Protection (DEP) northwest Regional Office in Meadville at (814) -332-6945. When calling, request guidance and assistance.

DISCLAIMER

This plan is not a substitute for any local, state or federal permits that might be required and any laws or regulations that may apply. It is the landowner's responsibility to comply with any and all such laws and regulations. This plan was prepared upon the landowner's request. All work is expected to be designed and to be implemented in compliance with the applicable standards and specifications of the "Pennsylvania Soil & Water Conservation Technical Guide".

Landowner's Signature: _____

Computation Sheet

NRCS–ENG-523A Rev. 6-2002

U.S. Department of Agriculture
Natural Resources Conservation Service

State	Project			
Crow Creek	Maloney			
By	Date	Checked by	Date	Job No.
zm	7/24/24	JSG	5-25	
Subject				Sheet ____ of ____
I&E sizing				

Old contract

54 cows @ 1500 lb
81 AU

=> size HUA : 4271 sf (79 sf/cow, 53 sf/au)

WSF : 2483 sf

calving is on pasture

Exhibit 5 : 100 sf/cow recommended

Current Animals

60 cows @ 1500 — 60 au
10 heifers @ 700 — 7 au
3 bulls @ 2000 — 6 au
5 steers @ 1275 — 6.4 au

109.4 au - old contract au's (81 au) = 28.4 au

EQIP Area : 28.4 au x 100 sf/au = 2840 sf

Recommended Exh. 5 w/ housing

60 cows x 75 sf = 4500 sf
10 heifers x 50 sf = 500 sf
3 bulls x 100 sf = 300 sf
5 steers x 60 sf = 300 sf
water : 16 sf
feeding standing room : 156' x 6' = 936 sf

6,522 sf - 4271 sf existing
= 2251 sf recommended
< EQIP area ∴ okay

Animal Waste Management Plan Report
prepared for Maloney

Designed By: zwa
Date: 5/19/2025

Checked By: JSC
Date: 5·25

Farm Information

# of Operating Periods: 1 **State:** PA **Data Source:** NRCS-2008

Operating Period: January - December

Climate Data

County: Crawford

Station: JAMESTOWN 2 NW PA4325

25 Yr - 24 Hr Storm Event: 4.3 inches

Lagoon Loadings:

Rational Design Method:

Barth KVAL: 0

Load Rate for Odor, OCV: 0 lbs VS/cu. ft/day

LRV Max: 0.00625 lbs VS/cu. ft/day

NRCS Design Method:

Anaerobic Load Rate: 0 lbs VS/1000 cu. ft/day

Month	Prec. (in)	Evap. (in)
January	2.19	0.84
February	2.24	0.84
March	3.03	1.40
April	3.29	1.96
May	3.88	2.80
June	4.01	3.64
July	3.99	4.20
August	3.80	3.92
September	3.79	3.36
October	2.99	2.52
November	3.60	1.68
December	3.23	0.84
Total	40.04	28.00

Animal Data

Animal	Type	Quantity	Weight	Manure	VS	TS	Manure	Manure	VS	TS
			lbs	cu.ft/day/AU	lbs/day/AU	lbs/day/AU	cu.ft/day	lbs/day	lbs/day	lbs/day
Beef Cow	Beef	60	1500	1.30	11.00	13.00	117.00	7020.0	990.00	1170.00
Bull	Beef	3	2000	1.30	0.00	0.00	7.80	468.0	0.00	0.00
Heifers	Beef	10	700	1.30	7.70	9.20	9.10	546.0	53.90	64.40
Steers	Beef	5	1275	1.30	4.30	5.20	8.29	497.4	27.41	33.15
Totals		78	N/A	N/A	N/A	N/A	142.19	8531.4	1071.31	1267.55

Location Data

Percent of Manure Deposited in Each Location:

Period 1

HUA	Animal Name	Percent Manure
	Bull	100
	Steers	100
	Beef Cow	100
	Heifers	100
Totals	**Animal Name**	**Percent Manure**
	Bull	100
	Steers	100
	Beef Cow	100
	Heifers	100

Additions Data

Waste Water VS Loading: 12.9

Operating Period: 1

Location	Wash Water	Flush Water	Bedding	Amount
	gal/day	gal/day		lbs/day
HUA	0.00	0.00	legume Hay (loose)	525.00

Runoff Data

Runoff Volume Method: Calculate Monthly Runoff Volumes with AWM

Pervious Watershed Area: 0 acres

Pervious Curve Number Storm: 90

Pervious Curve Number Monthly: 90 (1 day), 77 (30 day)

Impervious Area: 0 sq. ft

25 Year Pervious: 0.00 cu. ft

25 Year Impervious: 0.00 cu. ft

25 Year Total: 0.00 cu. ft

Runoff Volumes (1000 cu. ft.)

Month	Pervious	Impervious	Month Total
January	0.00	0.00	0.00
February	0.00	0.00	0.00
March	0.00	0.00	0.00
April	0.00	0.00	0.00
May	0.00	0.00	0.00
June	0.00	0.00	0.00
July	0.00	0.00	0.00
August	0.00	0.00	0.00
September	0.00	0.00	0.00
October	0.00	0.00	0.00
November	0.00	0.00	0.00
December	0.00	0.00	0.00
Total	0.00	0.00	0.00

Management Train

HUA ---------> Dry Stack (Covered) #1 (Additional)

Facility Volume Data (cf/day)

Operating Period 1

Facility	Manure	Wash Water	Flush Water	Bedding	Total Vol
Dry Stack (Covered) #1 (Additional)	142.19	0.00	0.00	65.63	207.81

Waste Facilities

Dry Stack (Covered) #1 (Additional)

Max. Storage Vol. Method: Storage Volume

Storage Months: 4 months **Critical Months:** May - Aug

Design Dimensions

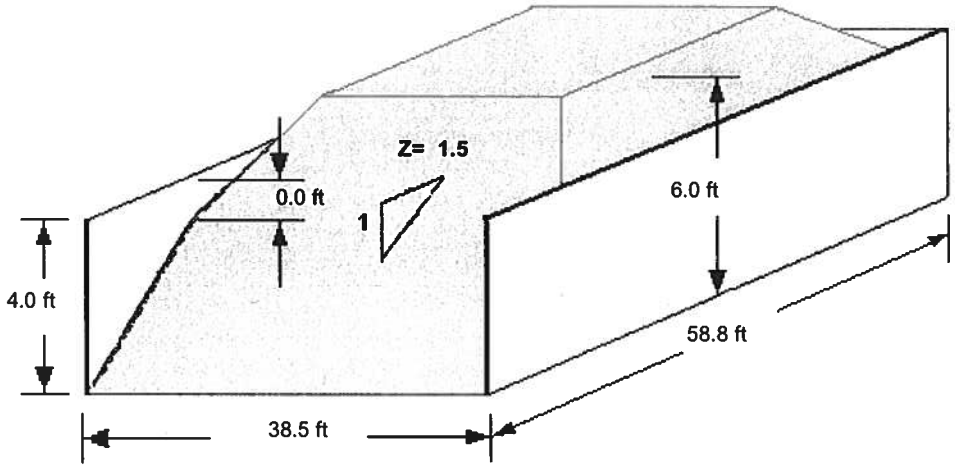
Shape:	Rectangle	**Top Length:**	46.8 ft
Sideslope:	1.5:1	**Bottom Length:**	58.8 ft
Storage Depth:	6.0 ft	**Top Width:**	32.5 ft
Freeboard:	0.0 ft	**Bottom Width:**	38.5 ft
Wall Height:	4.0 ft	**Bot Dimensions**	38.5 x 58.8 ft
		TopDimensions:	32.5 x 46.8 ft

Design Quantities

25Yr24Hr Storm Depth:

Prec Minus Evap Depth:

Volume Required (Wastes): 12144 cu. ft



AWM
Existing Facility Evaluation Data for: Maloney

Evaluated by: *zwa*

Dry Stack (Covered) #1

Max. Storage Vol. Method: Storage Volume

Storage Months: 4 months **Critical Months:** May - Aug

Waste generated:	25,561 *Cubic Feet*	191,196 *Gallons*
Existing capacity:	12,569 *Cubic Feet*	94,016 *Gallons*
Additional needed:	12,993 *Cubic Feet*	97,188 *Gallons*

Facility Dimensions

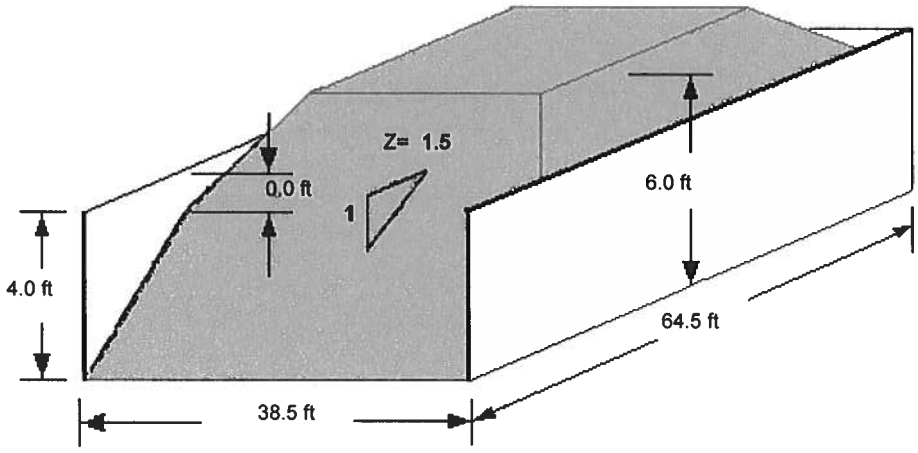
Shape:	Rectangle	**Top Length:**	52.5 ft
Sideslope:	1.5:1	**Bottom Length:**	64.5 ft
Storage Depth:	6.0 ft	**Top Width:**	32.5 ft
Freeboard:	0.0 ft	**Bottom Width:**	38.5 ft
Wall Height:	4.0 ft	**Bot Dimensions**	38.5 x 64.5 ft
		TopDimensions:	32.5 x 52.5 ft

Waste Components / Quantities

25Yr24Hr Storm Depth:

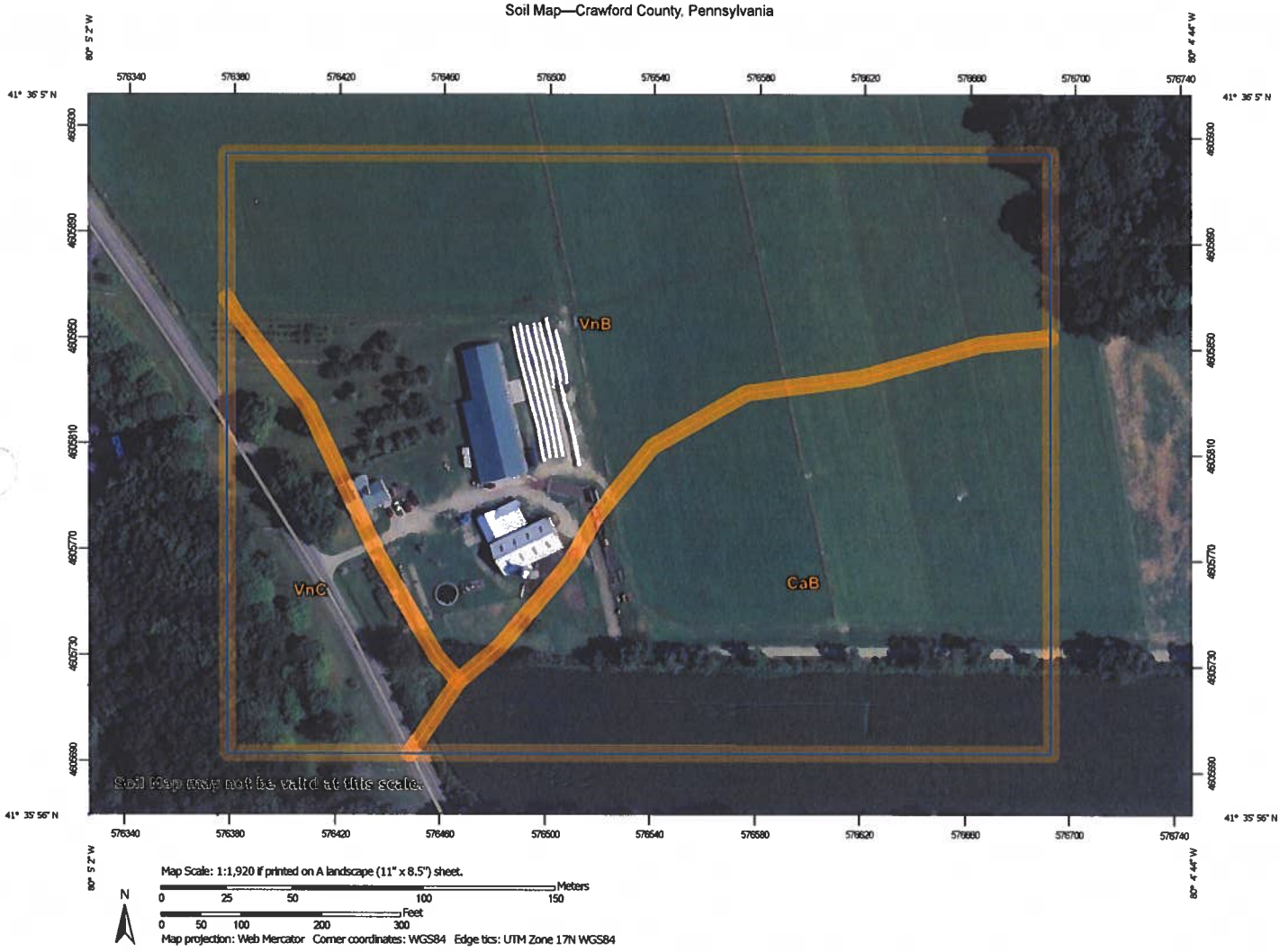
Prec Minus Evap Depth:

Volume Required (Wastes): 25561 cu. ft



Existing WSC

Soil Map—Crawford County, Pennsylvania



Map Scale: 1:1,920 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 25 50 100 150

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

Report—Engineering Properties

Absence of an entry indicates that the data were not estimated. The asterisk '*' denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Engineering Properties–Crawford County, Pennsylvania														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
CaB—Cambridge silt loam, 3 to 8 percent slopes														
Cambridge	85	D	0-8	Silt loam, loam, channery silt loam, gravelly loam	GC-GM, ML	A-4, A-7-5	0-0-0	0-0-17	58-92-100	57-92-100	51-86-100	41-70-84	23-31-47	4-7-13
			8-24	Silt loam, loam, channery silt loam, gravelly loam	GC-GM, CL	A-4, A-6, A-7-6	0-0-0	0-0-17	54-88-96	53-88-96	46-83-96	36-66-81	21-29-41	6-11-18
			24-53	Silt loam, loam, channery silt loam, gravelly loam, silty clay loam, clay loam	CL, GC	A-2-4, A-6	0-0-0	0-0-21	47-81-97	45-80-97	39-71-97	30-56-81	24-27-39	9-11-21
			53-72	Silt loam, loam, channery silt loam, gravelly loam	GC-GM, CL	A-2-4, A-4, A-6	0-0-0	0-0-22	45-86-97	43-86-97	36-76-97	28-58-77	21-25-36	6-9-18

Engineering Properties–Crawford County, Pennsylvania														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
VnB—Venango silt loam, 3 to 8 percent slopes														
Venango	90	D	0-8	Silt loam, loam, channery silt loam, gravelly loam	CL, GC, ML	A-4, A-6, A-7-5	0-0-0	0-0-20	51-91-100	50-90-100	44-84-100	38-73-90	26-36-48	8-12-17
			8-20	Silt loam, loam, channery silt loam, gravelly loam, silty clay loam, clay loam	CL, GC	A-6, A-7-6	0-0-0	0-0-16	56-89-97	55-89-97	48-82-97	40-70-83	28-33-42	12-15-21
			20-48	Channery silt loam, gravelly loam, silt loam, loam, silty clay loam, clay loam	CL, GC	A-6	0-0-0	0-0-15	58-84-97	57-84-97	48-75-94	40-62-79	28-32-40	12-15-21
			48-72	Silt loam, loam, channery silt loam, gravelly loam	GC-GM, CL	A-4, A-6	0-0-0	0-0-15	58-81-97	57-80-97	47-72-96	36-57-78	21-27-36	6-11-18

Map Unit Legend

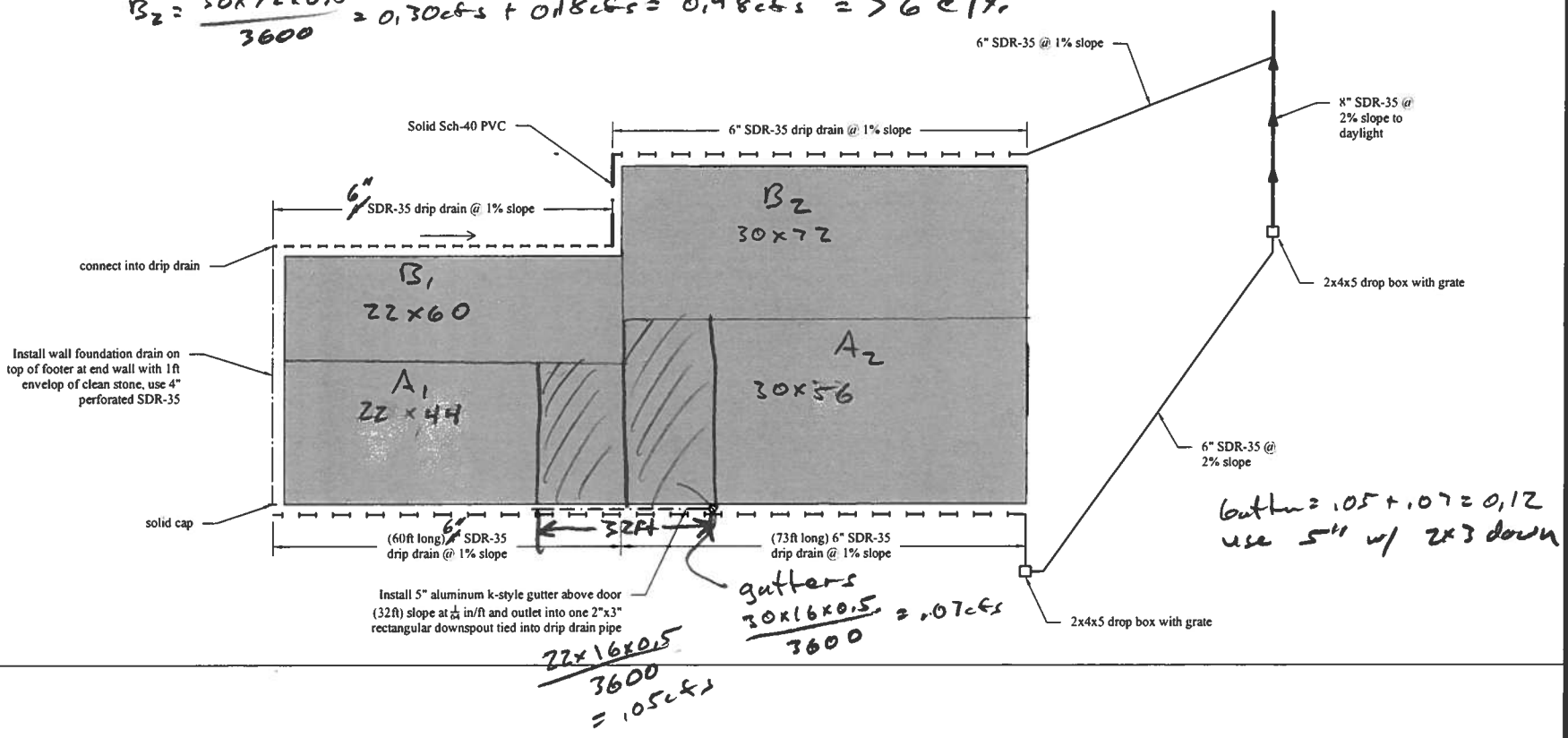
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CaB	Cambridge silt loam, 3 to 8 percent slopes	6.7	37.8%
VnB	Venango silt loam, 3 to 8 percent slopes	8.8	50.1%
VnC	Venango silt loam, 8 to 15 percent slopes	2.1	12.1%
Totals for Area of Interest		**17.7**	**100.0%**

Drip drain: $A_1 = \frac{22 \times 44 \times 0.5}{3600} = 0.13$ cfs => ~~4"@1%~~, use 6"

$A_2 = \frac{30 \times 56 \times 0.5}{3600} = 0.23$ cfs + .13 + .012 = 0.48 cfs => 6"@1%

$B_1 = \frac{22 \times 60 \times 0.5}{3600} = 0.18$ cfs => 6"@1%

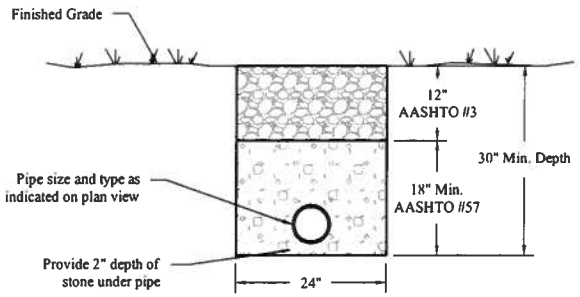
$B_2 = \frac{30 \times 72 \times 0.5}{3600} = 0.30$ cfs + 0.18 cfs = 0.48 cfs => 6"@1%



Drop Box Notes:

1. Drop boxes shall meet PennDOT Pub408 Spec and have a traffic rated grate installed.
2. Boxes shall be 2ft x 4ft x 5ft deep, inlet holes shall be field measured and core drilled to meet grade requirement of pipes. Outlet holes shall be cast at the bottom of the sidewall to the size shown.
3. Grout pipes into holes with hydraulic cement or water tight gasket.

Dripline Drain Detail



Construction Notes:

1. Perforated pipe used shall be SDR-35 and conform to ASTM D-3034 and be installed to the grade shown on plan view.
2. Base course stone shall be 18" minimum depth and consist of clean AASHTO #57 (PADOT 2B) and is allowed to be river gravel or crusher run stone.
3. Top course of stone shall be 12" thick and be clean meeting the gradation requirements of AASHTO #3. This is allowed to be river gravel or crusher run stone.

Maloney
CRAWFORD COUNTY, PENNSYLVANIA
Roof Runoff Plan and Details

USDA United States Department of Agriculture

Computation Sheet

NRCS–ENG-523A Rev. 6-2002

U.S. Department of Agriculture
Natural Resources Conservation Service

State		Project Maloney		
By	Date 5/5/25	Checked by JSG	Date 5.25	Job No.
Subject Drop Box Q				Sheet ____ of ____

Box 1

Area is 4300 sf

C = 0.8 (driveway), I = 6.36 in/hr storm 14

Q = 0.8 (4300/43560) (6.36 in/hr) = 0.5 cfs

Box 2

Area is 4700 sf

Q = 0.8 (4700/43560) (6.36 in/hr) = 0.55 cfs

UGO Box 1 to Box 2

Box = 0.5 cfs
Roof Runoff : $\frac{22 \times 132 \times 0.5}{3600}$ = 0.40 cfs

Total is 0.9 cfs

Use 6" PVC @ 2% slope

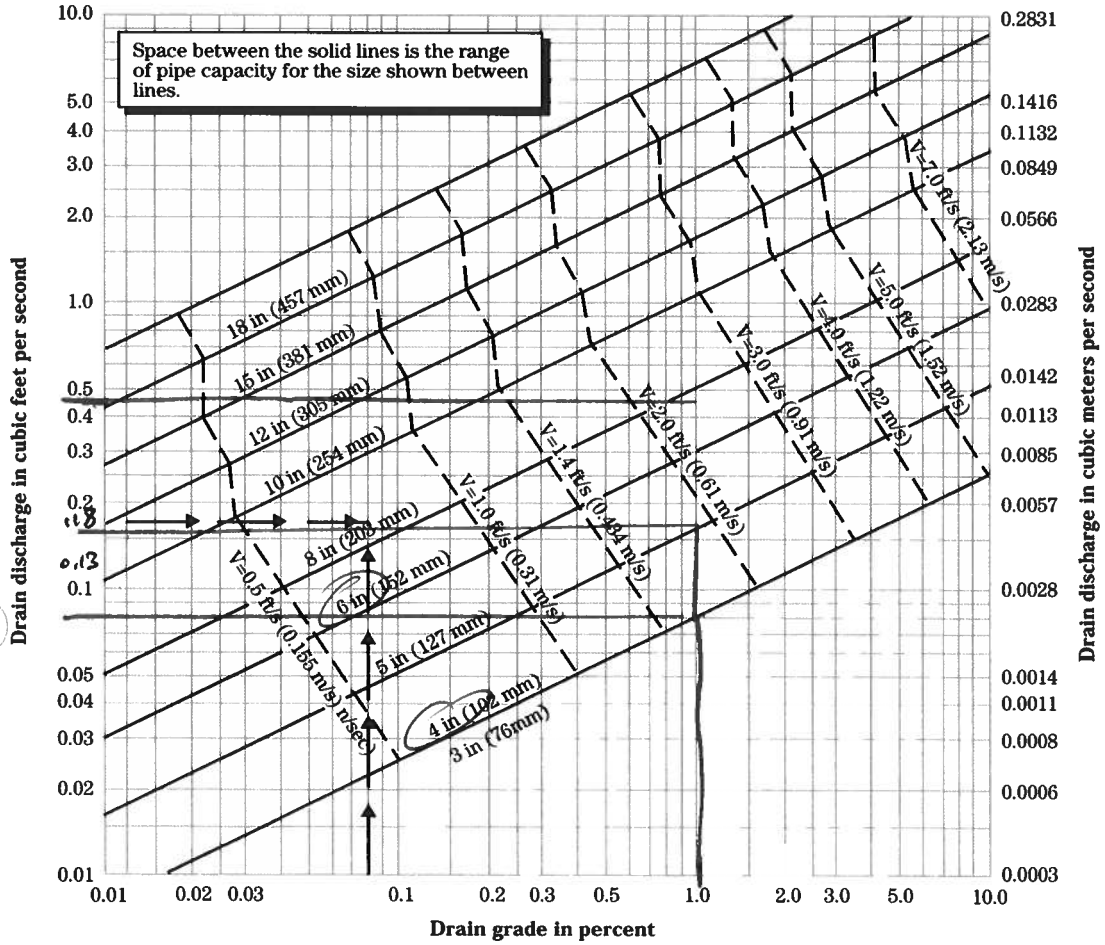
UGO Box 2 to Outlet

Box 1 : 0.9 cfs
Box 2 : 0.55 cfs
roof (east side) : $\frac{(22 \times 60) + (30 \times 72)(0.5)}{3600}$ = 0.48 cfs

total = 1.93 cfs

Use 8" @ 2%

Figure 14–34 Determining size of corrugated plastic pipe



Drain grade = hydraulic gradient
Percent = ft per 100 ft, or m per 100 m
V = velocity in ft/s (m/s)

3 to 8 in (76 to 203 mm) : n = 0.015
10, 12 in (254, 305 mm) : n = 0.017
15, 18 in (381, 457 mm) : n = 0.02

(Source-ASAE Standard EP260.4)

DESIGN GUIDE NO. PA-1: ROOF GUTTERS & DOWNSPOUTS

REV. 9/2017

Gutter Style	Gutter Size (inches)	Gutter Slope (in/ft)	Max Roof Areas for [1] P = 0.5" [2]	Max Roof Areas for [1] P = 0.5" [3]	Max Gutter Capacity (CFS) [4]	Compatible Downspouts - size / cfs [5]									
						Plain Rectangular		Corrugated Round		Octagonal		Corrugated Square		Plain Rectangular	
BOX OGEE GALVANIZED	5	1/16	1580	1320	0.22	3" 0.15		3" 0.13		3" 0.13		3" 0.17		2"x3" 0.13	3"x4" 0.26
		1/8	2230	1860	0.31										
		1/4	3170	2640	0.44										
	6	1/16	2450	2040	0.34	3" 0.16	4" 0.29	3" 0.14	4" 0.25	3" 0.14	4" 0.26	3" 0.18	4" 0.27	3"x4" 0.27	4"x5" 0.46
		1/8	3460	2880	0.48										
		1/4	4900	4080	0.68										
	7	1/16	4250	3540	0.59	4" 0.32	5" 0.5	4" 0.28	5" 0.45	4" 0.28	5" 0.45	4" 0.3	5" 0.48	4"x5" 0.51	5"x6" 0.74
		1/8	5980	4980	0.83										
		1/4	8420	7020	1.17										
BOX OGEE ALUMINUM	5	*1/64*	*633*	*528*	*0.088*	3" 0.13		3" 0.11		3" 0.13		3" 0.14		2"x3" 0.11	3"x4" 0.22
		1/32	*892*	*744*	*0.124*										
		1/16	*1260*	*1050*	*0.175*										
		1/8	*1785*	*1488*	*0.248*										
		1/4	*2527*	*2106*	*0.351*										
	6	*1/64*	*1094*	*912*	*0.152*	3" 0.15	4" 0.28	3" 0.13	4" 0.24	3" 0.13	4" 0.23	3" 0.17	4" 0.26	2"x3" 0.13	3"x4" 0.26
		1/32	*1548*	*1290*	*0.215*										
		1/16	*2188*	*1824*	*0.304*										
		1/8	*3096*	*2580*	*0.43*										
		1/4	*4377*	*3648*	*0.608*										
SEMI-CIRCLE	6	1/16	1150	960	0.16	3" 0.12	4" 0.21	3" 0.10	4" 0.18	3" 0.11	4" 0.19	3" 0.13	4" 0.19	3"x4" 0.20	4"x5" 0.33
		1/8	1660	1380	0.23										
		1/4	2300	1920	0.32										

[1] Square feet (max gutter capacity controls)

[2] 10-year, 5-minute rainfall

[3] 25-year, 5-minute rainfall

[4] with 1/2" freeboard. For roof area less than maximum, actual gutter discharge is this value times (actual roof area/maximum roof area)

[5] Sizes that fit the gutter bottom width and their respective orifice discharge. Select size and number of downspouts that provide discharge equal to or greater than gutter capacity.

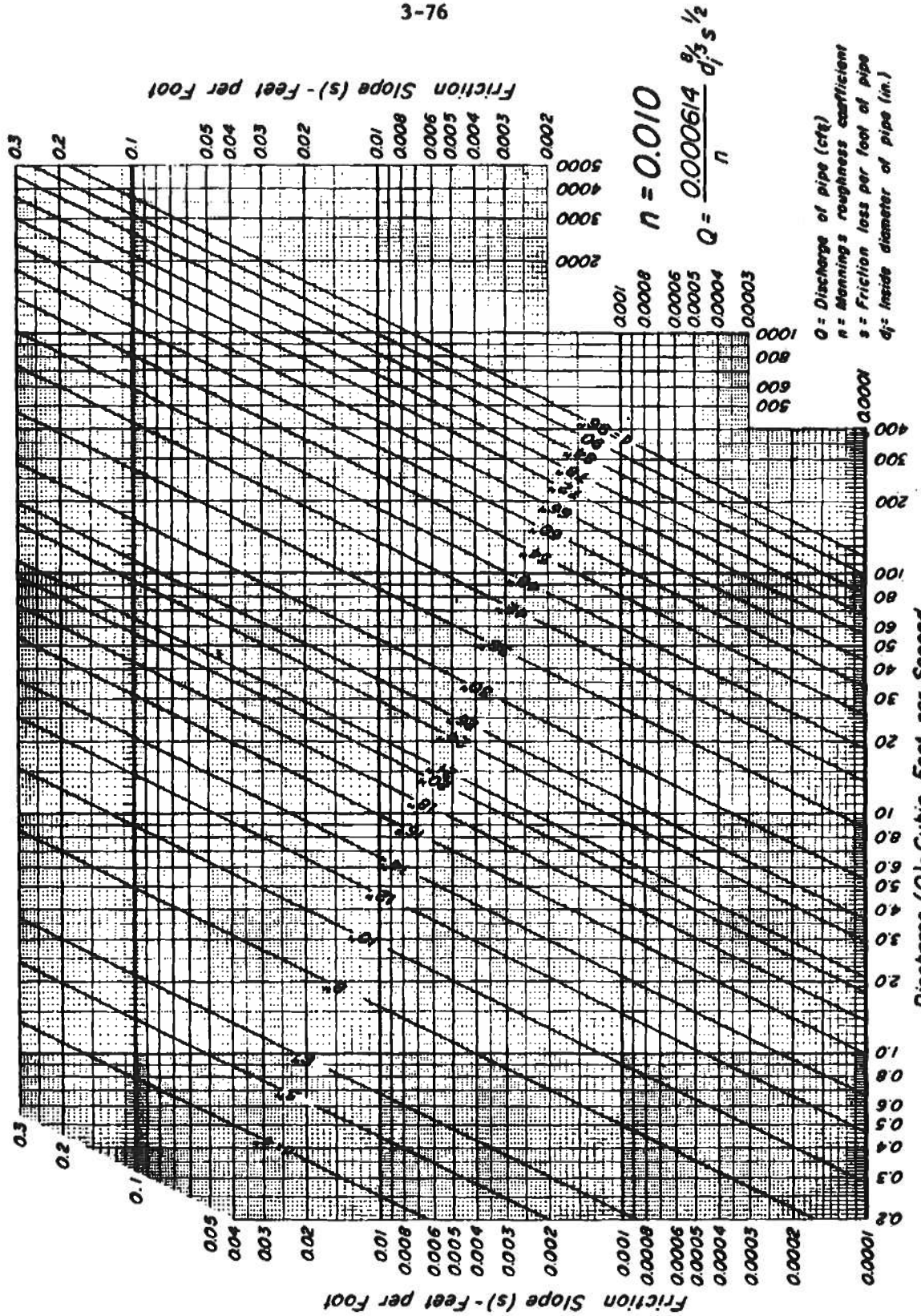


Exhibit 3-5 Discharge of circular pipes flowing full.
Manning's n = 0.010

(Sheet 1 of 6)

NOAA Atlas 14, Volume 2, Version 3
Location name: Meadville, Pennsylvania, USA*
Latitude: 41.6271°, Longitude: -80.0964°
Elevation: 1425 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	3.88 (3.49-4.30)	4.63 (4.18-5.14)	5.62 (5.04-6.20)	6.36 (5.69-7.02)	7.32 (6.53-8.08)	8.04 (7.15-8.87)	8.75 (7.75-9.65)	9.48 (8.36-10.5)	10.5 (9.17-11.5)	11.2 (9.72-12.3)
10-min	3.01 (2.71-3.34)	3.62 (3.26-4.01)	4.36 (3.92-4.82)	4.90 (4.39-5.42)	5.59 (5.00-6.17)	6.10 (5.42-6.72)	6.59 (5.83-7.27)	7.07 (6.24-7.80)	7.69 (6.74-8.48)	8.14 (7.08-8.99)
15-min	2.46 (2.22-2.73)	2.95 (2.66-3.27)	3.57 (3.20-3.95)	4.02 (3.60-4.44)	4.61 (4.12-5.09)	5.03 (4.47-5.54)	5.46 (4.83-6.02)	5.87 (5.17-6.47)	6.40 (5.60-7.06)	6.79 (5.90-7.49)
30-min	1.63 (1.47-1.80)	1.97 (1.78-2.19)	2.44 (2.19-2.70)	2.79 (2.50-3.09)	3.25 (2.91-3.59)	3.60 (3.20-3.96)	3.94 (3.49-4.34)	4.28 (3.77-4.72)	4.74 (4.15-5.23)	5.09 (4.42-5.61)
60-min	0.994 (0.896-1.10)	1.21 (1.09-1.34)	1.53 (1.38-1.70)	1.78 (1.59-1.96)	2.11 (1.88-2.33)	2.37 (2.11-2.61)	2.63 (2.33-2.90)	2.90 (2.56-3.20)	3.28 (2.87-3.62)	3.57 (3.10-3.94)
2-hr	0.572 (0.520-0.633)	0.696 (0.631-0.768)	0.877 (0.793-0.968)	1.02 (0.918-1.12)	1.21 (1.09-1.33)	1.37 (1.22-1.50)	1.53 (1.36-1.68)	1.70 (1.50-1.86)	1.92 (1.69-2.11)	2.11 (1.84-2.31)
3-hr	0.408 (0.369-0.453)	0.494 (0.448-0.549)	0.623 (0.564-0.690)	0.724 (0.654-0.801)	0.866 (0.778-0.957)	0.979 (0.878-1.08)	1.10 (0.977-1.21)	1.22 (1.08-1.35)	1.39 (1.22-1.54)	1.53 (1.33-1.69)
6-hr	0.243 (0.220-0.270)	0.293 (0.266-0.326)	0.366 (0.332-0.407)	0.425 (0.384-0.471)	0.510 (0.457-0.563)	0.579 (0.516-0.638)	0.652 (0.577-0.717)	0.729 (0.641-0.801)	0.839 (0.728-0.921)	0.928 (0.798-1.02)
12-hr	0.145 (0.131-0.161)	0.173 (0.157-0.193)	0.215 (0.195-0.239)	0.249 (0.224-0.275)	0.298 (0.267-0.329)	0.338 (0.302-0.373)	0.382 (0.338-0.419)	0.428 (0.376-0.470)	0.494 (0.430-0.541)	0.548 (0.471-0.601)
24-hr	0.086 (0.080-0.093)	0.103 (0.096-0.111)	0.126 (0.117-0.136)	0.145 (0.134-0.156)	0.172 (0.159-0.185)	0.194 (0.178-0.208)	0.217 (0.199-0.232)	0.241 (0.220-0.258)	0.275 (0.249-0.293)	0.302 (0.272-0.322)
2-day	0.050 (0.046-0.053)	0.059 (0.055-0.064)	0.072 (0.067-0.077)	0.082 (0.077-0.088)	0.097 (0.090-0.103)	0.108 (0.100-0.116)	0.120 (0.111-0.128)	0.132 (0.122-0.141)	0.149 (0.136-0.159)	0.163 (0.148-0.174)
3-day	0.036 (0.033-0.038)	0.042 (0.040-0.045)	0.051 (0.048-0.055)	0.058 (0.055-0.062)	0.068 (0.064-0.073)	0.076 (0.071-0.081)	0.084 (0.078-0.090)	0.093 (0.086-0.099)	0.104 (0.096-0.111)	0.114 (0.103-0.121)
4-day	0.029 (0.027-0.031)	0.034 (0.032-0.036)	0.041 (0.038-0.044)	0.046 (0.044-0.050)	0.054 (0.051-0.058)	0.060 (0.056-0.064)	0.067 (0.062-0.071)	0.073 (0.068-0.078)	0.082 (0.075-0.087)	0.089 (0.081-0.094)
7-day	0.020	0.023	0.028	0.031	0.036	0.040	0.044	0.047	0.053	0.056

	(0.019-0.021)	(0.022-0.025)	(0.026-0.030)	(0.029-0.033)	(0.034-0.038)	(0.037-0.042)	(0.041-0.046)	(0.044-0.050)	(0.049-0.056)	(0.052-0.060)
10-day	**0.016** (0.015-0.017)	**0.019** (0.018-0.020)	**0.022** (0.021-0.024)	**0.025** (0.023-0.026)	**0.028** (0.027-0.030)	**0.031** (0.029-0.033)	**0.034** (0.032-0.036)	**0.037** (0.034-0.039)	**0.040** (0.037-0.043)	**0.043** (0.040-0.046)
20-day	**0.011** (0.010-0.012)	**0.013** (0.012-0.014)	**0.015** (0.014-0.016)	**0.017** (0.016-0.018)	**0.019** (0.018-0.020)	**0.021** (0.020-0.022)	**0.022** (0.021-0.024)	**0.024** (0.022-0.025)	**0.026** (0.024-0.027)	**0.028** (0.026-0.029)
30-day	**0.009** (0.009-0.010)	**0.011** (0.010-0.011)	**0.013** (0.012-0.013)	**0.014** (0.013-0.015)	**0.015** (0.015-0.016)	**0.017** (0.016-0.018)	**0.018** (0.017-0.019)	**0.019** (0.018-0.020)	**0.021** (0.019-0.022)	**0.022** (0.020-0.023)
45-day	**0.008** (0.008-0.008)	**0.009** (0.009-0.010)	**0.011** (0.010-0.011)	**0.012** (0.011-0.012)	**0.013** (0.012-0.013)	**0.014** (0.013-0.014)	**0.015** (0.014-0.015)	**0.015** (0.015-0.016)	**0.017** (0.016-0.017)	**0.017** (0.016-0.018)
60-day	**0.007** (0.007-0.007)	**0.008** (0.008-0.009)	**0.009** (0.009-0.010)	**0.010** (0.010-0.011)	**0.011** (0.011-0.012)	**0.012** (0.012-0.013)	**0.013** (0.012-0.013)	**0.013** (0.013-0.014)	**0.014** (0.014-0.015)	**0.015** (0.014-0.015)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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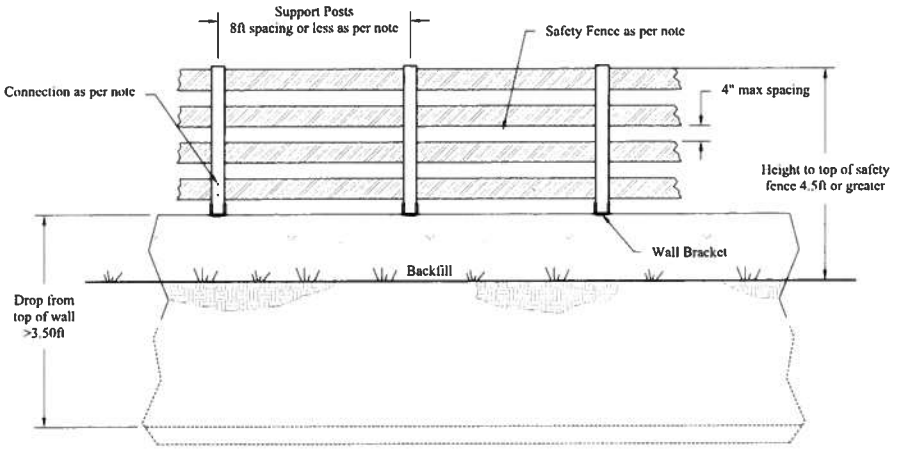
PF graphical

SAFETY FENCE DETAIL
for
WASTE STACKING STRUCTURES AND HEAVY USE AREAS



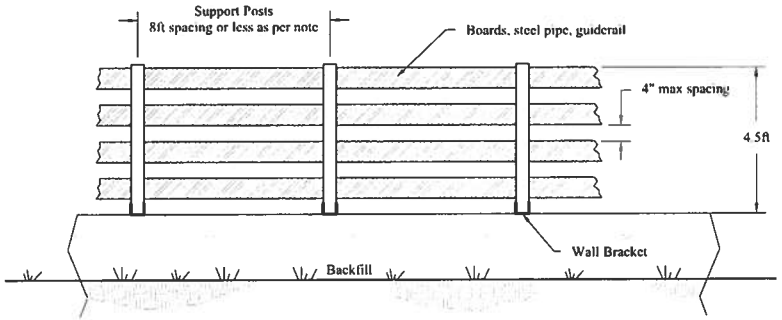
CONSTRUCTION NOTES

1. A safety fence is required along a waste stacking facility or heavy use area when the total drop from top of wall exceeds 3.5ft. The fence shall be installed above the wall to a height measured 4.5ft above the top of backfill. Fence is not required when there is greater than 4ft of wall exposed above the ground. For qualification of EQIP payment the full height of fence must be installed regardless of backfill.
2. Acceptable fence material shall be as such:
   - Wood boards: minimum board width shall be 6" and shall be rough cut 2" or pressure treated
   - Steel Pipe: minimum diameter shall be 1.5" galvanized or stainless
   - Galvanized Guiderail
   - Galvanized cattle panels: 4"x6" maximum opening size, must be used in combination with top, center, and bottom lateral supports
   - Galvanized welded wire or woven wire fencing: 4" x 6" maximum opening size, must be used in combination with top, center, and bottom later supports, fence must be pulled tight with minimal sag
3. Connections of horizontal members to support posts shall be dependent on the type of fence material used, acceptable connections shall be lag screws, bolts, welding, or as otherwise approved by engineer.
4. The maximum vertical spacing between fencing material shall be 4-inches
5. Support posts shall be spaced no greater than 8ft c-c and shall be 2" diameter galvanized or stainless steel, 4"x4" or larger pressure treated posts. Posts if not part of the roof structure design shall be connected to the top of wall by appropriate bracket. The bracket shall be strong and durable and capable of withstanding force on the fence caused by animals or manure.

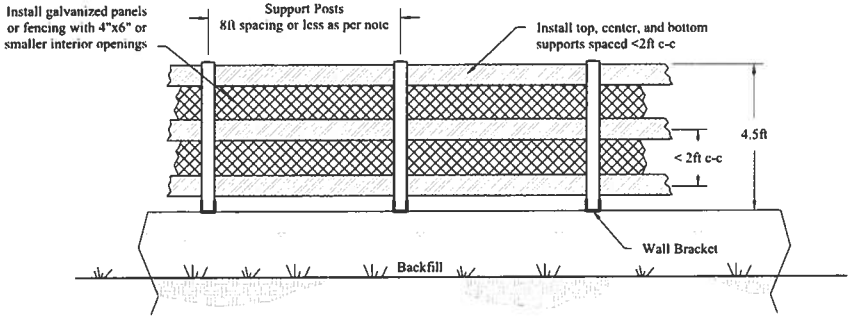
QUALIFICATIONS FOR EQIP PAYMENTS FOR SAFETY FENCE

1. If safety fencing is part of an EQIP contract it must be installed to a minimum height of 54" above the top of wall regardless of backfill height.
2. Exterior siding and/or girts are not a substitute for safety fencing, additional fencing as shown in this detail must be installed

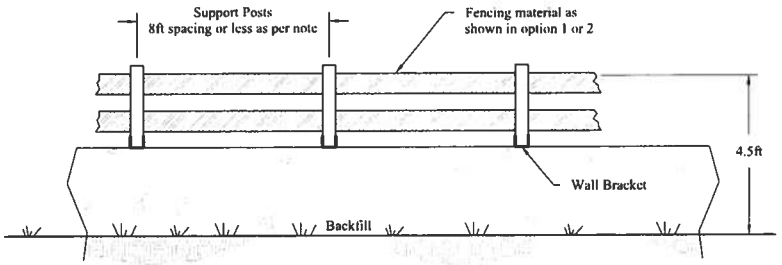
SAFETY FENCE OPTION #1



SAFETY FENCE OPTION #2



SAFETY FENCE OPTION #3 (NO EQIP PAYMENT)



Safety Fence Detail
For HUA and WSF
Western PA NRCS

USDA
United States Department of Agriculture

Confinement Fence Guide

Listed below are the minimum requirements for confinement fence around heavy use areas. This is required to contain the animals to the heavy use area, any access points shall have gates installed. Siding and girts to enclose the heavy use area cannot be a substitute for fencing, confinement fence is still required along these areas. This guide is not for safety fence around manure storages.

GUIDERAIL		Minimum height shall be 48-inches, concrete curbing or walls can be included for this height. Maximum vertical spacing is 8-inches and span between supports is 8ft Used guiderail is acceptable
WOOD BOARD		Minimum height shall be 48-inches, concrete curbing or walls can be included for this height. Maximum vertical spacing is 8-inches and span between supports is 8ft Minimum board width shall be 6-inches, lumber shall be rough cut 2" boards or pressure treated
STEEL PIPE		Minimum height shall be 48-inches, concrete curbing or walls can be included for this height. Minimum pipe diameter: 1.5-inches Maximum vertical spacing is 8-inches and span between supports is 8ft
SLANT BARS		Minimum height shall be 48-inches, this can be accomplished with additional fence above the slant bars. Horizontal spacing shall follow industry standards. *Note: Slant Bars are not eligible for NRCS incentive payments.*

*Other: Electric high tensile, steel cable

Note: If confinement fence is serving as protection against fall for drops of more than 3.5 feet, the max opening size is limited to 4" for horizontal members unless distance is limited to 6" and then spacing can be up to 6".

Concrete Design Mix Requirements for

Heavy Use Areas and Waste Stacking Facilities

No less than seven (7) days prior to the start of concrete placement the Contractor is responsible for submitting documentation of the proposed design mix to the Engineer. The design mix shall meet the following requirements listed below.

Design Mix

1. 28-day compressive strength shall be a minimum of 4,000 psi
2. Portland Cement Type I or II meeting ASTM C-150, or Type IL meeting ASTM C-595
    a. Fly ash may be substituted up to 25% by weight of total cement, meeting ASTM C-618
    b. Ground Granulated Blast Furnace Slag may be substituted up to 50% by weight of total cement, meeting ASTM C-989
3. Air Entrainment content by volume shall be 6% (±1%) and meet ASTM C-260
4. Fine Aggregate shall meet ASTM C-33
5. Coarse Aggregate shall meet ASTM C-33 and shall meet the following gradation requirements:
    a. Flatwork: Maximum size aggregate shall be 1.5", AASHTO #57
    b. Walls/Curbs: Maximum size aggregate shall be 1", AASHTO #67 or #8
6. Water Cement Ratio (w/c) shall not exceed 0.48 for all concrete
7. Slump shall be 3" – 5" unless superplasticizers are added in which the slump prior to the addition shall be 2"-4".
8. Admixtures when used shall meet ASTM C-494 and may be the following types:
    a. Type A - Water-reducing admixtures.
    b. Type B - Retarding admixtures.
    c. Type C - Accelerating admixtures.
    d. Type D - Water-reducing and retarding admixtures.
    e. Type E - Water-reducing and accelerating admixtures.
    f. Type F - Water-reducing, high range admixtures (superplasticizers)
    g. Type G - Water-reducing, high range, and retarding admixtures (superplasticizers).
        i. If Type C or E is used, the manufacturer shall provide the Technician a product data sheet verifying that the product is a non-chloride accelerator.

Batch Delivery Ticket Information

The Contractor shall obtain from the supplier a batch delivery ticket for each load of concrete before unloading at the site. The following minimum information shall be included on the batch delivery ticket.

1. Job-pertinent information, date, location, etc.
2. Quantity of concrete and compressive strength of design mix
3. Truck number and time truck was loaded
4. Type, brand, and amount of admixtures
5. Type and amount of aggregate, cement, and pozzolan
6. Water to cement ratio
7. Trim water withheld (addition of this water requires 30 revolutions of the mixer)

Cold Weather Concreting Inspection Guidelines

(reference: ACI 306R-16)

The conditions of cold weather concreting exist when the air temperature has fallen to, or is expected to fall below, 40°F (4°C) during the protection period. The protection period is defined as the amount of time recommended to prevent concrete from being adversely affected by exposure to cold weather during construction. The protection period is determined using the table in this guide.

GENERAL GUIDELINES

- Concrete shall not be placed when the forecasted low temperatures are below 40°F or anytime between December 1 to March 15 for liquid waste storage structures unless specifically approved on a site by site basis by the NRCS engineer. Approval will be based upon the review of a written cold weather concreting plan from the contractor meeting ACI 306R-16. Approval will be at the discretion of the NRCS design engineer and should not be assumed.

- Cold weather concrete shall follow the requirements of ACI 306R-16

- The contractor is required to provide protection from freezing regardless if the cold weather definition is met

- Review the five-day forecast with concrete contractor and landowner. Maintain current forecast through the completion of the project.

- The contractor shall document the temperatures with high/low thermometers throughout the protection period.

- No pouring on frozen ground or forms
  - When temp is forecasted below 32^0 the sub-grade is to be covered with plastic to prevent freezing prior to pouring

- Follow the minimum concrete temperatures as mixed and placed in the table below:

Table 5.1—Recommended concrete temperatures

		Section size, minimum dimension			
		< 12 in. (300 mm)	12 to 36 in. (300 to 900 mm)	36 to 72 in. (900 to 1800 mm)	> 72 in. (1800 mm)
Line	Air temperature	Minimum concrete temperature as placed and maintained			
1	—	55°F (13°C)	50°F (10°C)	45°F (7°C)	40°F (5°C)
		Minimum concrete temperature as mixed for indicated air temperature*			
2	Above 30°F (–1°C)	60°F (16°C)	55°F (13°C)	50°F (10°C)	45°F (7°C)
3	0 to 30°F (–18 to –1°C)	65°F (18°C)	60°F (16°C)	55°F (13°C)	50°F (10°C)
4	Below 0°F (–18°C)	70°F (21°C)	65°F (18°C)	60°F (16°C)	55°F (13°C)
5	—	Maximum allowable gradual temperature drop in first 24 hours after end of protection			
		50°F (28°C)	40° (22°C)	30°F (17°C)	20°F (11°C)

*For colder weather, a greater margin in temperature is provided between concrete as mixed and required minimum temperature of fresh concrete in place.

Note 1: For Line 1, maximum placement temperature is minimum temperature in the table plus 20°F (11°C).

Note 2: For Lines 2-4, maximum temperature is minimum temperature in the table plus 15°F (9°C).

- Concrete design mix shall have a minimum of 500lb/cy cement content for normal-set or accelerate-set concrete, (no fly ash or slag shall be substituted for cement)

- The protection period shall be determined from the table below, contact the engineer for the correct protection period. Typical NRCS work falls into Line 2 and requires a 3-day protection period.

Table 7.2—Length of protection period for concrete placed during cold weather

Line	Service condition	Protection period at minimum temperature indicated in Line 1 of Table 5.1, days*	
		Normal-set concrete	Accelerated-set concrete
1	No load, not exposed	2	1
2	No load, exposed	3	2
3	Partial load, exposed	6	4
4	Full load	Refer to Chapter 8	

*A day is a 24-hour period

Accelerated-Set Requirements	
Option 1:	Use Type III cement
Option 2:	Use Accelerator admixture (ASTM C-494, type C or E)

- Consider covering stockpile fill in extreme conditions to prevent frozen backfill material. At no time shall frozen material be used for backfill against concrete

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CONCRETE FLOORS

- Concrete floors shall not be poured when the temperature is forecasted to be below 32° during placement or during the 72-hour protection period unless the floor can be enclosed and heated to maintain air temperature above 40° for the protection period

- Concrete design mix shall have a minimum of 500lb/cy of cement content (no fly ash or slag shall be substituted for cement)

- Follow protection period for normal-set or accelerated-set concrete, if accelerated set is used follow the requirements and use either type III cement or a chemical accelerator admixture meeting ASTM C-494 type C or E

- After pouring floors during "COLD WEATHER" (by ACI definition), when forecasted low during curing/protection period is:
  - 32° - 40° cover with R-8 insulated blankets or 6mil plastic with 8" of straw on top
  - Less than 32° cover with blankets and heat to maintain air temperature above 40° for the protection period

- Direct fired heaters (fossil fuel), shall be vented properly to eliminate carbon dioxide and carbon monoxide

build-up
  - Avoid excess heat in one area

- At the end of the curing period, the concrete shall be allowed to cool gradually. The maximum temperature decrease at the concrete surface in a 24-hour period shall not exceed 40°

CONCRETE WALLS

- Concrete design mix shall have a minimum of 500lb/cy of cement content (no fly ash or slag shall be substituted for cement)

- Follow protection period for normal-set or accelerated-set concrete, if accelerated set is used follow the requirements and use either type III cement or a chemical accelerator admixture meeting ASTM C-494 type C or E

- After pouring walls during "COLD WEATHER" (by ACI definition) when forecasted low during curing/protection period is:
  - 17° - 40° cover with R-8 insulated blankets
  - Less than 17° cover with blankets and heat to maintain air temperature above 40° for the protection period

- Direct fired heaters (fossil fuel), shall be vented properly to eliminate carbon dioxide and carbon monoxide build-up
  - Avoid excess heat in one area

- At the end of the curing period, the concrete shall be allowed to cool gradually. The maximum temperature decrease at the concrete surface in a 24-hour period shall not exceed 40°

This is not a replacement for the site-specific cold weather concreting plan required of the contractor to be submitted to gain approval from the NRCS design engineer prior to planning on placing concrete during cold weather conditions or anytime between December 1st and March 15th. These measures are minimums and are provided for comparison with the site-specific plan. This can be used to help determine inspection methods (high/low thermometers, Technical Office assistance, etc.) to document the level of success of contractor's proposed protection methods.

It is the contractor's responsibility to meet and provide documentation that the requirements of ACI 306R and NRCS Construction Specifications have been met by ensuring successful levels of protection, even when methods exceeding the recommendations made here are required.

Concrete Design Mix Requirements for

Heavy Use Areas and Waste Stacking Facilities

No less than seven (7) days prior to the start of concrete placement the Contractor is responsible for submitting documentation of the proposed design mix to the Engineer. The design mix shall meet the following requirements listed below.

Design Mix

1. 28-day compressive strength shall be a minimum of 4,000 psi
2. Portland Cement Type I or II meeting ASTM C-150, or Type IL meeting ASTM C-595
    a. Fly ash may be substituted up to 25% by weight of total cement, meeting ASTM C-618
    b. Ground Granulated Blast Furnace Slag may be substituted up to 50% by weight of total cement, meeting ASTM C-989
3. Air Entrainment content by volume shall be 6% (±1%) and meet ASTM C-260
4. Fine Aggregate shall meet ASTM C-33
5. Coarse Aggregate shall meet ASTM C-33 and shall meet the following gradation requirements:
    a. Flatwork: Maximum size aggregate shall be 1.5", AASHTO #57
    b. Walls/Curbs: Maximum size aggregate shall be 1", AASHTO #67 or #8
6. Water Cement Ratio (w/c) shall not exceed 0.48 for all concrete
7. Slump shall be 3" – 5" unless superplasticizers are added in which the slump prior to the addition shall be 2"-4".
8. Admixtures when used shall meet ASTM C-494 and may be the following types:
    a. Type A - Water-reducing admixtures.
    b. Type B - Retarding admixtures.
    c. Type C - Accelerating admixtures.
    d. Type D - Water-reducing and retarding admixtures.
    e. Type E - Water-reducing and accelerating admixtures.
    f. Type F - Water-reducing, high range admixtures (superplasticizers)
    g. Type G - Water-reducing, high range, and retarding admixtures (superplasticizers).
        i. If Type C or E is used, the manufacturer shall provide the Technician a product data sheet verifying that the product is a non-chloride accelerator.

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The Contractor shall obtain from the supplier a batch delivery ticket for each load of concrete before unloading at the site. The following minimum information shall be included on the batch delivery ticket.

1. Job-pertinent information, date, location, etc.
2. Quantity of concrete and compressive strength of design mix
3. Truck number and time truck was loaded
4. Type, brand, and amount of admixtures
5. Type and amount of aggregate, cement, and pozzolan
6. Water to cement ratio
7. Trim water withheld (addition of this water requires 30 revolutions of the mixer)

USDA
United States Department of Agriculture

QUALITY ASSURANCE PLAN

Landowner/Operator: Maloney Location: Crawford County

Job Description: Roofed HUA/WSF Engineering Job Class: IV

Primary QA Inspector: Doug Torok Designer: zwa

The items listed below are the critical items for inspection as determined by the designer of the project to assure quality workmanship is performed and the intent of the design is met. This is not a complete list, but shows the minimum required to assure that the work meets FOTG standards and specifications. The items listed in **bold** require continuous inspection and is typically required where quality of work cannot be verified by intermittent observations, all other items shall be checked intermittently.

- Excavation – follow all safety regulations as per OSHA
- Sub-grade elevations, foundation conditions, fill quality and placement technique
- Installation of sub-base material – check grade, dimensions, and material conformance
- Installation of reinforcing steel in concrete walls and floor
- Installation of concrete forms for dimensions and elevations
- Obtain and submit concrete design mix to engineer prior to contractor ordering concrete
- **Concrete placement** – obtain batch tickets for each load, document results of any on-site testing
- Installation of any pipes – check grade, size, and material conformance
- Installation of access roads, animal walkways – check grade, size, and material conformance
- Installation of waterways, diversions – check grade, size, and material conformance
- Installation of any precast structures, pumps and components
- Timber frame roof materials – submit material specifications for all girders, headers, and columns
- **Installation of timber columns and their foundation**
- Installation of trusses – contractor shall submit PE truss design prior to ordering trusses
- Installation of all roof components
- Other items: _____

In addition to the plan the inspector shall follow all requirements of the National Engineering Manual and the PA State Supplement, Part 512 to this manual. Daily construction activity shall be documented on the SCS-CPA-6 sheets. As-builts must be completed prior to certification of the job, these shall be in red pen and shall include the inspector's initials and date. No changes or modifications are allowed to this design without approval from the designer.

The undersigned agree to commit time to act as the quality assurance inspector on this job. It is the primary inspector's responsibility to provide continued inspection of this job, if unavailable they shall be responsible for assigning a backup inspector.

Primary Inspector: _____ Date: _____

Inspector's Supervisor: _____ Date: _____

USDA
United States Department of Agriculture

NRCS, Clarion Technical Office
22631 Route 68, Suite 233
Clarion, PA 16214
Phone: 814-226-8160
Fax: 814-226-4521

Subject: Maloney
Crawford County, PA

Date: May 19, 2025

To: Jody Lasko, District Conservationist

The HUA and Manure Stacking Facility design for Robin Maloney is approved following PA Tech Guide Standards. A Nutrient Management Plan will be required prior to implementing this design. The NMP should be reviewed and any discrepancies with the plan and this design brought to the attention of the plan writer.

Please contact us to schedule a preconstruction meeting with the landowner and contractors once the landowner is ready to begin construction.

Sincerely,

Zachary Aukamp.
Area Engineer
NRCS, Clarion Technical Office

CERTIFICATION OF CONFORMANCE

The undersigned primary manufacturer/supplier has furnished to:

Farmer's Name: _____

Address: _____

City/State/Zip: _____

Type of Structure: Roof Installation

and hereby states that the quality of work and materials meets the requirements as set forth on NRCS contract drawings and Specifications No. 313 and/or 367 as approved by the Natural Resources Conservation Service.

Name of Contractor/Supplier: _____

Signature/Title/Date: _____

Description of items completed:_____
_____
_____

In addition, the landowner and/or the following subcontractors were also involved in the installation and they hereby certify their work meets the requirements of the drawings and/or specifications as stated previously.

Landowner Signature/Date: _____

Description of items completed:_____

Subcontractor Signature/Date: _____

Description of items completed:_____

****

Received By: _____ _____

Signature Title Date

Note: It is the primary contractor/supplier's responsibility to obtain and furnish all required signatures.

CERTIFICATION OF CONFORMANCE

The undersigned primary manufacturer/supplier has furnished to:

Farmer's Name: _____

Address: _____

City/State/Zip: _____

Type of Structure: Concrete Installation

and hereby states that the quality of work and materials meets the requirements as set forth on NRCS contract drawings and Specifications No. 313 and/or 561 as approved by the Natural Resources Conservation Service.

Name of Contractor/Supplier: _____

Signature/Title/Date: _____

Description of items completed:_____

_____

_____

In addition, the landowner and/or the following subcontractors were also involved in the installation and they hereby certify their work meets the requirements of the drawings and/or specifications as stated previously.

Landowner Signature/Date: _____

Description of items completed:_____

Subcontractor Signature/Date: _____

Description of items completed:_____

****

Received By: _____ _____

Signature Title Date

Note: It is the primary contractor/supplier's responsibility to obtain and furnish all required signatures.

100	530821	1330634	1496.549	base
101	530821	1330634	1496.519	base
102	530860.7	1330637	1499.238	Bm nail in pole
103	530898.6	1330688	1500.273	Cor barn
104	530909.6	1330739	1499.998	Cor barn
105	530910.3	1330740	1499.803	GATE
106	530902.3	1330769	1499.568	GATE
107	530892.3	1330816	1497.808	GATE
108	530905.2	1330842	1497.616	GATE
109	530890.6	1330809	1498.23	Fence
110	530898.6	1330816	1497.766	T
111	530904.6	1330826	1497.312	T
112	530908.9	1330798	1498.566	T
113	530914.3	1330763	1499.539	T
114	530913.3	1330746	1499.62	T
115	530930.2	1330738	1499.666	T
116	530952	1330734	1499.998	T
117	530962	1330731	1499.82	Water trough
118	530982	1330727	1500.088	T
119	530996.5	1330723	1500.354	Apron
120	531000	1330740	1500.31	Apron
121	531028	1330735	1500.302	Apron
122	531025.6	1330719	1500.358	T
123	531040.5	1330717	1501.657	T
124	531071.8	1330711	1502.302	T
125	531071.7	1330706	1502.43	Cor barn
126	531071.7	1330721	1501.597	T
127	531089.9	1330704	1502.341	T
128	531105.6	1330699	1501.915	Fence
129	531104.4	1330753	1499.344	Fence
131	531103.3	1330778	1498.141	GATE
132	531103.2	1330803	1497.396	GATE
133	531129.5	1330827	1494.953	T
134	531126	1330780	1497.761	T
135	531131.4	1330735	1499.942	T
136	531129.8	1330695	1502.003	T
137	531102.9	1330832	1495.065	T
138	531067.5	1330842	1495.054	T
139	531027.8	1330849	1495.592	T
140	530986.8	1330860	1495.454	T
141	530952.9	1330866	1495.753	T
142	530914.5	1330875	1495.606	T
143	530894.1	1330866	1496.086	T
144	530889.2	1330838	1496.909	T

145	530928.6	1330837	1497.878	Fence
146	530973.5	1330828	1498.011	Fence
147	531020.9	1330818	1497.983	Fence
148	531059.1	1330813	1497.391	Fence
149	531065	1330799	1497.527	T
150	531054.3	1330773	1498.718	T
151	531053.3	1330747	1499.982	T
152	531019.9	1330752	1499.696	T
153	530978.3	1330765	1499.105	T
154	530941.7	1330775	1498.916	T
155	530935.8	1330804	1498.015	T
156	530985.8	1330799	1498.378	T
157	531008.9	1330721	1500.603	GATE
158	530908.4	1330739	1499.98	Floor elev