

FEED PAD W/ATTACHED MANURE STACKER FACILITY WORK SHEET

STATE: West Virginia COUNTY: _____ FIELD OFFICE: _____

PROJECT/LANDOWNER: _____

DESIGNED BY: DATE _____ CHECKED BY: DATE _____ APPROVED BY: _____

Draft-06/29/09

SUBJECT: SIZE FEED PAD, PADDOCK OR LOT

INFORMATION: Circle the correct word, fill in the blank or calculate (as required).

1. TYPE OF OPERATION:

a. Feeder Calves , Cow/Bulls, Cow -Calf , Sheep, Equine, other _____.

2. MANAGEMENT:

a. The livestock will, will not have access (by means of animal trails, lanes, other, or _____) to winter pastures with water; will, will not be confined to an open surfaced lot, will, will not require an exercise lot.

b. Livestock are 100% confined, not confined to the pad, lot.

c. Livestock are on the pad an estimated _____ hours per day or _____% of the day.

d. Determine the equivalent Animal Units/Day (AU/day) for confined livestock.

AU/day =No. of Livestock x Weight of Livestock (Lbs.) x Time in Area (Hr/day) divided by 24000

_____ Type; _____ Number X _____ Weight (Lbs.) X _____ Hrs./day= _____ AU/day
24 X 1000

_____ Type; _____ Number X _____ Weight (Lbs.) X _____ Hrs./day= _____ AU/day
24 X 1000

_____ Type; _____ Number X _____ Weight (Lbs.) X _____ Hrs./day= _____ AU/day
24 X 1000

Total AU = (sum the above) _____ AU/day

e. Livestock will use the pad/lot _____ days or _____ months during winter.

f. The pad is roofed, not roofed.

g. The pad, lot surface or cover is ____ inch thick concrete, woodchips, gravel or other.

h. A Manure Dry Stacking Facility is, is not designed to store manure and waste from the feed pad or lot according to CP Waste Storage Facility 313. If “is not” is circled, explain _____
_____.

3. FEED AREA (SF):

Review references for sizing pad, lot or manure stacking facility; NRCS CP 561; Table 1, CP Waste Storage Facility (313); Table A for sizing manure storage facility

- a. Livestock fed hay require ____ hay rings @ ____ SF/ring.
- b. Livestock require ____ automatic watering facilities (freeze proof) @ ____ SF/waterer.
- c. Livestock fed feed in side wall J bunkers or internal bunkers; require ____ linear feet (animals side by side) and ____ width (animal length).
- d. Tractor Access is, is not required on the pad to scrap manure and deliver feed, the width (FT) required for access is ____ FT.

e. 1st- Estimate Minimum Feed Area

____ Livestock Type ____ Livestock No. X ____ (SF)/Type = ____ Livestock (SF)

____ Livestock Type ____ Livestock No. X ____ (SF)/Type = ____ Livestock (SF)

____ No. Round Bale Hay Rings* X ____ (SF)/ea = ____ Ring (SF)

____ No. Automatic Watering Facility * X ____ (SF)/ea = _____ Water (SF)

1st Estimate Minimum Feed Area (Sum all the above) = _____ (SF)

f. 1st Estimated Minimum Pad/Lot Length = _____ 1st Est. Pad Length (FT)

____ # Livestock X ____ Feeder Length(FT) /Livestock = ____ 1st Est. Pad Length (FT)

g. 1st Estimated Minimum Pad Width (FT) = _____ 1st Est. Min. Pad Width (FT)

Divide 1st Est. Minimum Area (SF) by 1st Est. Minimum Length (FT) =

_____ (SF) 1st Est. Min. Area = _____ 1st Est. Min. Pad Width (FT)
____ (FT) 1st Est. Min. Length

- h. Estimated Span Width (FT) = _____ Est. Span Width (FT)
- _____ (FT) 1st Est. Minimum Pad Width
- + 1.2' (FT) board (1.5" x 2) and post (5.5" x 2) width
- + _____ (FT) Width for Tractor Access (8-12 feet) (not used for exercise lots)
- + _____ Width for animal feeders, internal or external feed bunkers (4-8 feet)
- _____ Estimate Span Width; (Sum above, round up to multiply of 2 (24' – 54')

4. ESTIMATE PAD DIMENSIONS:

- a. _____ Estimated Span Width (FT) and _____ 1st Est. Length (FT): (try to get Length: Width ratio close to 2:1)
- b. Structure Proposal: _____ (FT) Structure Span Structure Width = _____ FT.
- c. Inside Width = _____ (FT) Structure Span minus 1.2 FT = _____ Inside width (FT)

5. ESTIMATE LIVESTOCK TO SPACE RATIO:

- a. Final Area divided by the # Livestock = Area (SF)/Livestock
- _____ Inside Width (FT) X _____ Length (FT) = _____ Area (SF)/Livestock
 _____ No. of Livestock

6. SIZE DRY STACK MANURE STACKER (Non-Dairy)

- a. PROVIDE WSF GENERAL INFORMATION:
- _____ Livestock Type _____ Animal Unit (AU)/day
- _____ No. of Days Pad/Lot is in use _____ %Day on Pad
- b. Total Storage Days (TSD) (assume same number of days livestock on feed pad or lot).
- _____ No. of Days Pad/Lot is in use X _____ %Day on Pad = _____ TSD
- c. Daily Manure Production (DMP) = _____ AU X _____ MWP¹ /Day = _____ DMP (CF/Day)
- d. Volume Extra Bedding (VEB/Day) = _____ MWP X 30% X 50% (compaction)
 = _____ VEB (CF/Day)

7. MANURE AND WASTE STORAGE:

The dry volume of manure plus other waste (includes bedding) that is stored in the WSF and the total storage days necessary to store material prior to crop utilization, use or land application is based on the CNMP.

a. Determine the Manure and Waste Storage Volume (MWSV) =

$$((\text{DMP (CF/Day)} + \text{VEB (CF/Day)}) \times \text{TSD (Day)}) = \text{MVS (CF)}$$

$$((\text{___ DMP (CF/Day)} + \text{___ VEB (CF/Day)}) \times \text{___ TSD (Day)}) = \text{___ MWSV (CF)}$$

b. Estimate Manure Waste Storage Area (MWSA) (SF)

If MWSV is stacked 4' high (SH), divide the MWSV by the SH to determine the

Manure Waste Storage Area (MWSA) (SF) .

$$\text{___ MWSV (CF)} / \text{___ 4 ___ SH (FT)} = \text{___ (SF) MWSA}$$

c. ROOFED STRUCTURE:

Use standard drawings WV-ENG-_____ for structure design,

d. Proposed Structure Span (same as feeding facility) = _____ FT. w/ _____ foot overhangs _____ sidewall and _____ end wall enclosed completely.

e. MWS Inside Width (MWS IW)

$$= \text{Structure Span} \text{ ___ FT} - (1' \text{ (post width} \times 2) = \text{MWS IW} \text{ ___ (FT)}$$

f. Additional Structure Length for Waste Storage (ASLWS) = MWSA divided by MWS IW)

$$\text{MWSA} \text{ ___ (SF)} / \text{MWS IW} \text{ ___ (FT)} = \text{ASLWS} \text{ ___ (FT)}$$

Waste Facility Structure Length = ASLWS _____ (FT) + 6 FT. (For 2H:IV slope at open end) + 2 FT. separation distance = _____ FT. (Round up to nearest FT.)

8. FINAL ROOFED STRUCTURE SIZE:

Feed Pad (FT)	+	Waste Storage (FT)	=	Total (FT)
Length _____	+	_____	=	_____ (multiple of 8)
Width _____	+	_____	=	_____ (multiple of 2)
		Height _____	=	_____

Use Standard Drawings WV-ENG-_____ for entire structure with _____ FT. Overhangs.

FEED PAD W/ATTACHED MANURE STACKER FACILITY WORK SHEET

STATE: West Virginia COUNTY: _____ FIELD OFFICE: _____

PROJECT/LANDOWNER: _____

DESIGNED BY: DATE _____ CHECKED BY: DATE _____ APPROVED BY: DATE _____

TABLE A	
DAILY MANURE WASTE PRODUCTION (MWP)	
<i>Type of Livestock</i>	<i>MWP Volume (Cubic Feet)/day per 1000 pound animal weight</i>
<i>Dairy Cattle (100 lb/day milk production)</i>	<i>1.9 (Feces and Urine)</i>
<i>Beef Growing Calf (450 #-750# range)</i>	<i>1.2 (Feces and Urine)</i>
<i>Beef Finish Cattle</i>	<i>1.1 (Feces and Urine)</i>
<i>Beef Brood Cows</i>	<i>1.2 (Feces and Urine)</i>
<i>Cow (confinement)</i>	<i>1.5 (Feces and Urine)</i>
<i>Poultry-Layer</i>	<i>1.0 (Feces and Urine)</i>
<i>Poultry-Broiler</i>	<i>1.4 (Feces and Urine)</i>
<i>Turkey</i>	<i>0.6 (Feces and Urine)</i>
<i>Sheep</i>	<i>0.7 (Feces and Urine)</i>
<i>Lactating Swine</i>	<i>0.75 (Feces and Urine)</i>
<i>Immature Swine</i>	<i>1.4 (Feces and Urine)</i>
<i>Horse</i>	<i>0.9 (Feces and Urine)</i>
<i>Milk House & Milk Parlor</i>	<i>0.6</i>
<i>Milk House, Milk Parlor Holding Area</i>	<i>1.4</i>
<i>Reference Chapter 4 Agricultural Waste Characteristics of the (AWMFH), MWPS-18 Section 2</i>	

WV NRCS

HEAVY USE AREA
PROTECTION (561)

WVENG WS 561A

FEED PAD W/ATTACHED MANURE STACKER FACILITY WORK SHEET

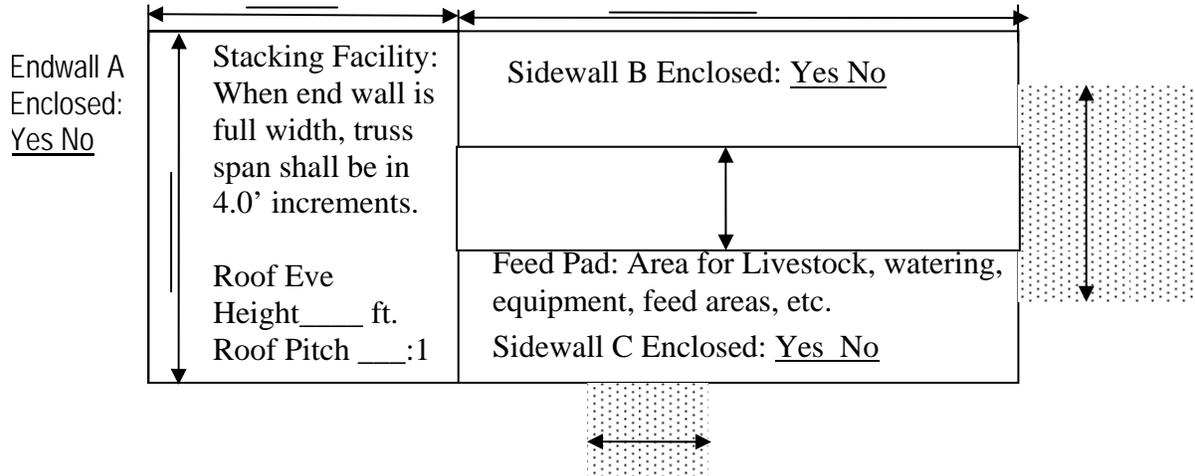
STATE: West Virginia COUNTY: _____ FIELD OFFICE: _____

PROJECT/LANDOWNER: _____

DESIGNED BY: DATE _____ CHECKED BY: DATE _____ APPROVED BY: DATE _____

Feed Pad and Stacking Pad Field Sheet				
LANDOWNER:	COUNTY:	FIELD OFFICE:	PLANNER:	DATE:
Latitude: _____; Longitude: _____; Drawing Name: _____				
LIVESTOCK				
Livestock Type	Cow/Calf	Beef	Dairy	Other
Winter Number				
Summer Number				
Average Weight				
Days of Storage				
% Day Confined				
STRUCTURE ¹				
Structure Concrete Thickness (4" or 5")	Truss Overhang (0-3') ²	Purlin Overhang (0-2') ²	Outside Structure Width (ft)	Outside Structure Length (ft)
Eve Height (FT)	Roof Pitch X :1	End Wall A Height (ft)	Side Wall B Height (ft)	Side Wall C Height (ft)
STRUCTURE PROPERTIES (Circle Appropriate Section)				
Structure Width	Span ≤ 24'-0"	24'-0" < Span ≤ 30'-0"	30'-0" < Span ≤ 40'-0"	40'-0" < Span ≤ 54'-0"
POST TYPE	#2 SYP 6" X 6" 3 PLY MechLam Unspliced	#2 SYP 6" X 6" 3 PLY MechLam Unspliced	#1 SYP 6" X 6" 3 PLY MechLam Unspliced	#1 SYP 6" X 6" 3 PLY MechLam Unspliced
	3 PLY GluLam ³ Spliced	4 PLY MechLam Spliced	4 PLY MechLam Spliced	4 PLY GluLam ³ Spliced
		3 PLY GluLam ³ Spliced	4 PLY GluLam ³ Spliced	
STRUCTURE HEIGHT (at eve)	10' - 14'	10' - 14'	14' ONLY	14' ONLY
Post Spacing Center to Center	8'	8'	8'	8'
Max. Con. Casing Dia.	18"	22"	24"	28"
¹ Feed Pad and Stacking Facility Field Sheet for use with WV-Eng-82 or WV ENG-84 Series Standard Drawing ² Max. overall width (Span + Overhangs) shall not exceed the Max.Truss Span (concern when Truss overhang >1.0') ³ A Certification Sheet must accompany any purchased laminated post and meet the minimum strength required.				

GENERAL STRUCTURE DIMENSIONS: Mark, circle or fill in information concerning, building dimensions (feet), sidewall entrances, width, roof eve height, etc.



Mark location and number of roof runoff downspouts, gutter size and direction of flow, etc. _____ Size of Gutter, _____ Number of downspouts (both sides)

