



# Circular



## Worksheet for Sizing Hay Storage Pads and Calculating FGD Needs

Dimensions may be rounded to the nearest ft., areas to nearest 10 sq. ft.

1) Size of bales to be stored on the pad = \_\_\_\_\_ ft. x \_\_\_\_\_ ft.  
length diameter or width

2) Number of bales to be stored on the pad = \_\_\_\_\_  
typical maximum

If, over the next few years, hay storage needs are expected to increase, use a projected number of bales (and reduce costs of transporting construction equipment twice).

3) Select the number of bales to be stored per row = \_\_\_\_\_ bales per row  
(placed end-to-end/lengthwise as shown in Figure 3) typical maximum

4) Number of rows =  $\frac{\text{number of bales}}{\text{bales per row}} = \text{_____} \implies \text{_____ rows}$   
(round up)

Bales are assumed to be stored in a single layer (not stacked). To adjust the number of rows required, change the number of bales in each row and repeat this calculation. Or, divide the number of bales by the desired number of rows to obtain the number of bales per row.

Revised calculation (if desired): \_\_\_\_\_ bales ÷ \_\_\_\_\_ = \_\_\_\_\_

5) Pad length = 3 ft. + (  $\frac{\text{_____}}{\text{bales per row}} \times \frac{\text{_____}}{\text{bale length}} \text{ ft.} \times 1.1$  ) + \_\_\_\_\_ ft. = \_\_\_\_\_ feet  
edge end approach width or another 3-ft edge

6) Pad width:  
 Width used by bales = (  $\frac{\text{_____}}{\text{\# of rows}} \times \frac{\text{_____}}{\text{bale width}} \text{ ft.}$  ) + [ (  $\frac{\text{_____}}{\text{\# of rows}} - 1$  ) x 2 ft. ] = \_\_\_\_\_ feet  
gap

Total pad width = 3 ft. + \_\_\_\_\_ ft. + \_\_\_\_\_ ft. = \_\_\_\_\_ feet  
edge width for bales side approach width or another 3-ft edge

To adjust the dimensions of a pad significantly at this point, return to Step 3, specify a different number of bales per row or number of rows, and repeat Steps 3-6.

7) Storage pad area = \_\_\_\_\_ ft. x \_\_\_\_\_ ft. = \_\_\_\_\_ sq. ft.  
pad length pad width

8) Access area (for bale-handling traffic onto and off of the pad only):

Access area = \_\_\_\_\_ ft. x \_\_\_\_\_ ft. = \_\_\_\_\_ sq. ft.  
Ave. length of access Ave. width of access

9) Total pad area = \_\_\_\_\_ sq. ft. + \_\_\_\_\_ sq. ft. = \_\_\_\_\_ sq. ft.  
storage pad area access area

10) FGD requirement = \_\_\_\_\_ sq. ft. ÷ 16 sq. ft. per ton = \_\_\_\_\_ tons  
total pad area



# Circular



## SAMPLE

### Worksheet for Sizing Hay Storage Pads and Calculating FGD Needs

Dimensions may be rounded to the nearest ft., areas to nearest 10 sq. ft.

1) Size of bales to be stored on the pad =  $\frac{5}{\text{length}}$  ft. x  $\frac{6}{\text{diameter or width}}$  ft.

2) Number of bales to be stored on the pad =  $\frac{50}{\text{typical maximum}}$

If, over the next few years, hay storage needs are expected to increase, use a projected number of bales (and reduce costs of transporting construction equipment twice).

3) Select the number of bales to be stored per row =  $\frac{6}{\text{typical maximum}}$  bales per row  
(placed end-to-end/lengthwise as shown in Figure 3)

4) Number of rows =  $\frac{50}{\text{number of bales}} \div \frac{6}{\text{bales per row}} = \frac{8.3}{\text{typical maximum}} \implies \frac{9}{\text{(round up)}}$  rows

Bales are assumed to be stored in a single layer (not stacked). To adjust the number of rows required, change the number of bales in each row and repeat this calculation. Or, divide the number of bales by the desired number of rows to obtain the number of bales per row.

Revised calculation (if desired):  $\frac{50}{\text{number of bales}} \div \frac{5 \text{ rows}}{\text{typical maximum}} = \frac{10 \text{ bales/row}}{\text{typical maximum}}$

5) Pad length = 3 ft. +  $(\frac{10}{\text{edge}} \times \frac{5}{\text{bales per row}} \times \frac{5}{\text{bale length}} \text{ ft.} \times 1.1) + \frac{3}{\text{end approach width or another 3-ft edge}}$  ft. =  $\frac{61}{\text{feet}}$

6) Pad width:  
Width used by bales =  $(\frac{5}{\text{\# of rows}} \times \frac{6}{\text{bale width}} \text{ ft.}) + [(\frac{5}{\text{\# of rows}} - 1) \times \frac{2}{\text{gap}} \text{ ft.}] = \frac{38}{\text{feet}}$

Total pad width = 3 ft. +  $\frac{38}{\text{width for bales}}$  ft. +  $\frac{16}{\text{(side approach) width or another 3-ft edge}}$  ft. =  $\frac{57}{\text{feet}}$

To adjust the dimensions of a pad significantly at this point, return to Step 3, specify a different number of bales per row or number of rows, and repeat Steps 3-6.

7) Storage pad area =  $\frac{61}{\text{pad length}}$  ft. x  $\frac{57}{\text{pad width}}$  ft. =  $\frac{3,480}{\text{sq. ft.}}$

8) Access area (for bale-handling traffic onto and off of the pad only):

Access area =  $\frac{16}{\text{Ave. length of access}}$  ft. x  $\frac{12}{\text{Ave. width of access}}$  ft. =  $\frac{190}{\text{sq. ft.}}$

9) Total pad area =  $\frac{3,480}{\text{storage pad area}}$  sq. ft. +  $\frac{190}{\text{access area}}$  sq. ft. =  $\frac{3,670}{\text{sq. ft.}}$

10) FGD requirement =  $\frac{3,670}{\text{total pad area}}$  sq. ft.  $\div$  16 sq. ft. per ton =  $\frac{229}{\text{tons}}$