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 = ___________ ÷ ___________ = __________ => __________ rows
   number of bales bales per row (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. + ( __________ x __________ ft. x 1.1) + ____________ ft. = __________ feet
   edge bales per row bale length end approach width or another 3-ft edge

6) Pad width:
   Width used by bales = ( _______ x _________ ft.) + [( ______ - 1) x 2 ft.] = __________ feet
   # of rows bale width # of rows 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.

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
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 = \( \frac{5}{\text{length}} \times \frac{6}{\text{diameter or width}} \) ft.

2) Number of bales to be stored on the pad = 50 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 = \( \frac{6}{\text{bales per row}} \) typical maximum

   (placed end-to-end/lengthwise as shown in Figure 3)

4) Number of rows = \( \frac{50}{\text{number of bales}} \div \frac{6}{\text{bales per row}} = 8.3 \Rightarrow 9 \text{ rows} \)

   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): \( \frac{50}{\text{bales}} \div \frac{5 \text{ rows}}{\text{rows}} = 10 \text{ bales/row} \)

5) Pad length = 3 ft. + \( \frac{10}{\text{edge}} \times \frac{5}{\text{ft.}} \times \frac{1.1}{\text{x}} \) ft. + \( \frac{3}{\text{end approach width}} \) ft. = 61 ft.

6) Pad width:

   Width used by bales = \( \frac{5}{\text{# of rows}} \times \frac{6}{\text{ft.}} \) ft. + \( \frac{5}{\text{# of rows}} - 1 \times 2 \text{ ft.} \) = 38 ft.

   Total pad width = 3 ft. + \( \frac{38}{\text{edge}} \times \frac{ft.}{\text{width for bales}} \) ft. + \( \frac{16}{\text{side approach width}} \) ft. = 57 ft.

   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 = \( \frac{61}{\text{pad length}} \times \frac{57}{\text{pad width}} \) ft. = 3,480 sq. ft.

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

   Access area = \( \frac{16}{\text{Ave. length of access}} \times \frac{12}{\text{Ave. width of access}} \) ft. = 190 sq. ft.

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

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