



SE Minnesota Dairy

2023



Feed Center Design

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Background – This farm milks 950 cows, housed at two sites that are approximately 5 miles (8 km) from each other. The feed center is located at the main dairy site and includes a semi-enclosed commodity shed with an opening on the south side of the building. This is a compact design with bunkers and drive-over piles surrounding the feed center.

General Layout:



Top left: Aerial overview of main site

Bottom left: Close-up of feeding area

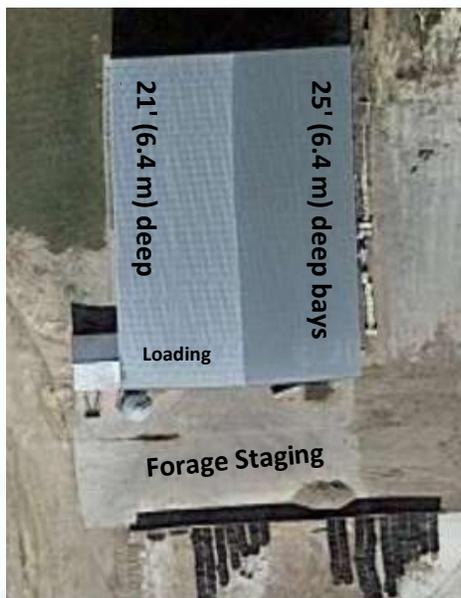
Right: View of south end of commodity shed with opening

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Commodity Shed – This commodity shed has a 120' x 80' (36.6 m x 24.4 m) footprint with 9 bays inside that house all ingredients. Forages are staged against a concrete wall just outside the shed. Due to the elevation difference between the bunkers and loading area, forages can be dumped from the topside of the bunkers to ground level. This minimizes the travel time for staging.

Dimensions:

- 120' x 80' (36.6 m x 24.4 m) footprint
- 36' (11 m) entrance
- 32' (9.8 m) between front of bay walls
- 10' (3.1 m) tall concrete walls, extended by plywood to bottom of rafters
- 18' (5.5 m) to rafters
- Bay sizes
 - i. West side- Back to front
 1. One bay is 29' (8.8 m) wide x 21' (6.4 m) deep
 2. Three bays are 17' (5.2 m) wide x 21' (6.4 m) deep
 3. Front bay has a shorter wall towards the entry to allow room for mixer loading
 - ii. East side- Back to front
 1. One bay is 29' (8.8 m) wide x 25' (7.6 m) deep
 2. Two bays are 24' (7.3 m) wide x 25' (7.6 m) deep
 3. Two bays are 19' (5.8 m) wide x 25' (7.6 m) deep



Left: Aerial view of commodity shed and forage staging area

Right: Front view of south side of commodity shed with opening

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Left: Inside view of commodity shed bays

Right: Forage staging view from the feed center, looking towards the bunkers



Left: View of ingredient bays

Middle: View of ingredient bays

Right: Bags stored close to loading area for easy access when adding hand-add ingredients



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Loading Area: This loading area measures 12' (3.7 m) wide by 36' (11 m) long and is 4.25' (1.3 m) deep, with a 12" (31 cm) curb. The stairs are located such that they require the driver to walk around the truck to reach the loading area. If the pit was located on the opposite side of the shed, it would allow the driver to exit the mixer and be right at the stairs. An adjustment was made to the floor (Picture A) in order to fit the mixer. It is important to get measurements correct the first time and consider changes/future upgrades to the mixer to prevent having to make additional construction changes. It was originally intended to be able to load from both sides, however bins and liquid were added to the outside of the pit. Fans are strategically placed to prevent feedstuffs from blowing over the cab of the truck and into the engine area (Picture B).

The farm utilizes an underground liquid storage tank. This eliminates any freezing issues in the winter, however it is more difficult to clean out, if desired. The long "sock" hoses coming down from 3" (8 cm) PVC pipe ensure all liquid gets into the mixer (Picture C).



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