

New ISU Dairy MOOVes In and Ahead

A.S. Leaflet R2317

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Summary and Implications

After many years (decades) of discussions, plans, and sometimes speculation, the new ISU Dairy Farm project is steamrolling ahead (mooooooving!!). Since Board of Regents approval in August 2004 of the architect and engineering firms as well as the funding dollars, this dairy team along with all the stakeholders (ISU, NADC, dairy industry) have been intensely working to finalize the components and layout and construct a “state of the art” 450 milking cow (525 total) facility with all replacements included on site. Unique bidding of the dairy in 6 packages or components was completed in 2006 and timetable for completion and milking cows was fall 2007. Following an excellent pre- animal open house in October 2007, the new farm was christened with animals in late November (all female replacements on 11/26 and all lactating and dry cows on 11/27). The animals adjusted well (no loss in milk production, SCC maintained ~ 150,000) and it sure was nice (for animals and people) to be inside the new facilities when the ice storm and cold weather and wind hit that weekend. We’re still working through the growing pains of a new facility and systems but are extremely pleased and excited to be moving along and ahead! This facility will provide unique and excellent opportunities for teaching, research, and extension, and is forward designed for ISU to successfully lead the industry both now and into the future.

Facility Features

- 456 stall lactating cow naturally ventilated freestall barn
 - surface and subsurface mattresses and bedding research
 - manure solid separation (recycling and usage)
 - extra crossovers/ waterers to facilitate small pen research
 - unique electrical /water grids for ventilation/water/lighting
 - headlocks / 108 individual feeding Calan gates
- State of the Art Milking / Education Center
 - Fully automated double 12 parallel subway parlor
 - Automatic animal ID / 5 way sorting post parlor
 - Classroom / laboratory / computer networked
- Student / Animal Interaction Facility (small pavilion)
- Special needs/ herd health teaching and veterinary area
 - Chutes / standing and tilt tables
 - Automated foot baths / lameness detection
 - Automated scale for weighing animals
 - Veterinary teaching office / surgery area
- Dry cow / transition facility (naturally ventilated)
 - Freestalls and bedded pack (BP) / calan gates on BP
 - Unique designs for animal handling / data capture
- 16 stall individual calving barn

- 100 head calf facility (unique environmental controls)
- Young heifer barns (2) : 2-16 months old
 - Bedded pack / counterslopes / 8/pen; 3 moves in 14 mo.
 - Naturally ventilated / access to outdoor pens
- Bred heifer barns (2): Open front freestalls / curtains
- Comprehensive feed storage /mixing areas
- Facility mimics commercial but great research capacity!

Research Activities and Areas

- Nutrition trials / metabolic diseases / transition cows
- Manure solids separation and individual manure capture
- Calving/ pre-weaned calves (physiology/ behavior/nutrition)
- Activity / Energy balance and Reproduction
- Genetic control of nutrition / energy balance / immunity
- Water and chemical usage and treatment
- Milking equipment / technologies studies and evaluations

Conclusions

As you can see, things are mooving and are very exciting on the new ISU Dairy Farm. By next year’s report, they’ll be plenty more details as both cows and personnel will be adjusted.

Success breeds success (it’s a phrase we’ve all heard and used). This phrase epitomizes the new ISU Dairy Farm. Many years of success with tremendous education and training of young dairy people was accomplished at the Mortensen Road (campus) Dairy Facility to supply our industry with valuable, very successful personnel (look around at the dairy industry worldwide and ISU is a name associated with success and accomplishments). A great deal of success was also achieved in research (ex. - metabolic disease discoveries and prevention) and outreach at Mortensen (although it was always called the ISU Dairy Teaching Farm). The ISU Dairy Breeding Research Farm at Ankeny was second to none in utilizing paired cohorts (average vs highest selection indices) to create divergent genetic lines that have answered many questions about genetics and management for high productivity in our industry. The data from this farm has had impact worldwide, from calving ease for sires through genetics of immune response and all the factors in between (income and expenses associated with higher producing animals). **Now a new era has begun with our new ISU Dairy Farm facility, but it isn’t the end but rather a new beginning to continue to foster and grow the successful impact that ISU has in the life of students and the dairy industry.**

If you have questions, don’t hesitate to contact anyone on the dairy science team (on campus or in the field). Give us a call at 515-294-6021 or drop an email (ltimms@iastate) as your thoughts and input are valuable to us.

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Double 12 parallel parlor



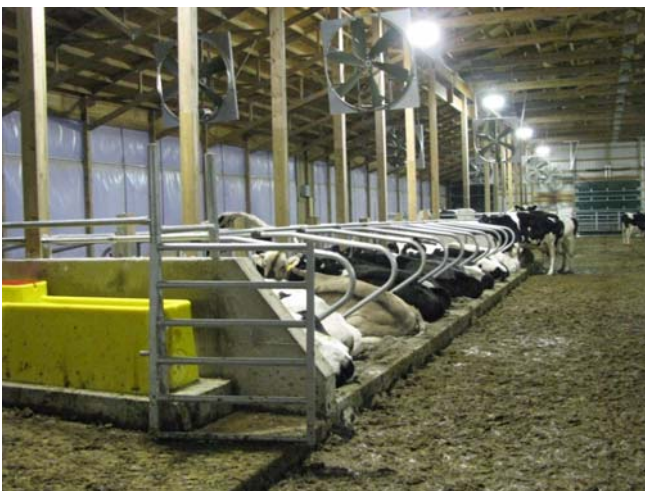
Milking parlor subway



Automated footbaths and Stepmatrix lameness detection



Dry cow barn animal handling area



Dry cow barn: sand freestalls



Dry cow barn: bedded pack and maternity area

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Calf barn: 96 head; rock drainage with geotextile fabric



Heifer barn: 2-9 month old



Heifer barn: counterslope 6-9 month old heifers



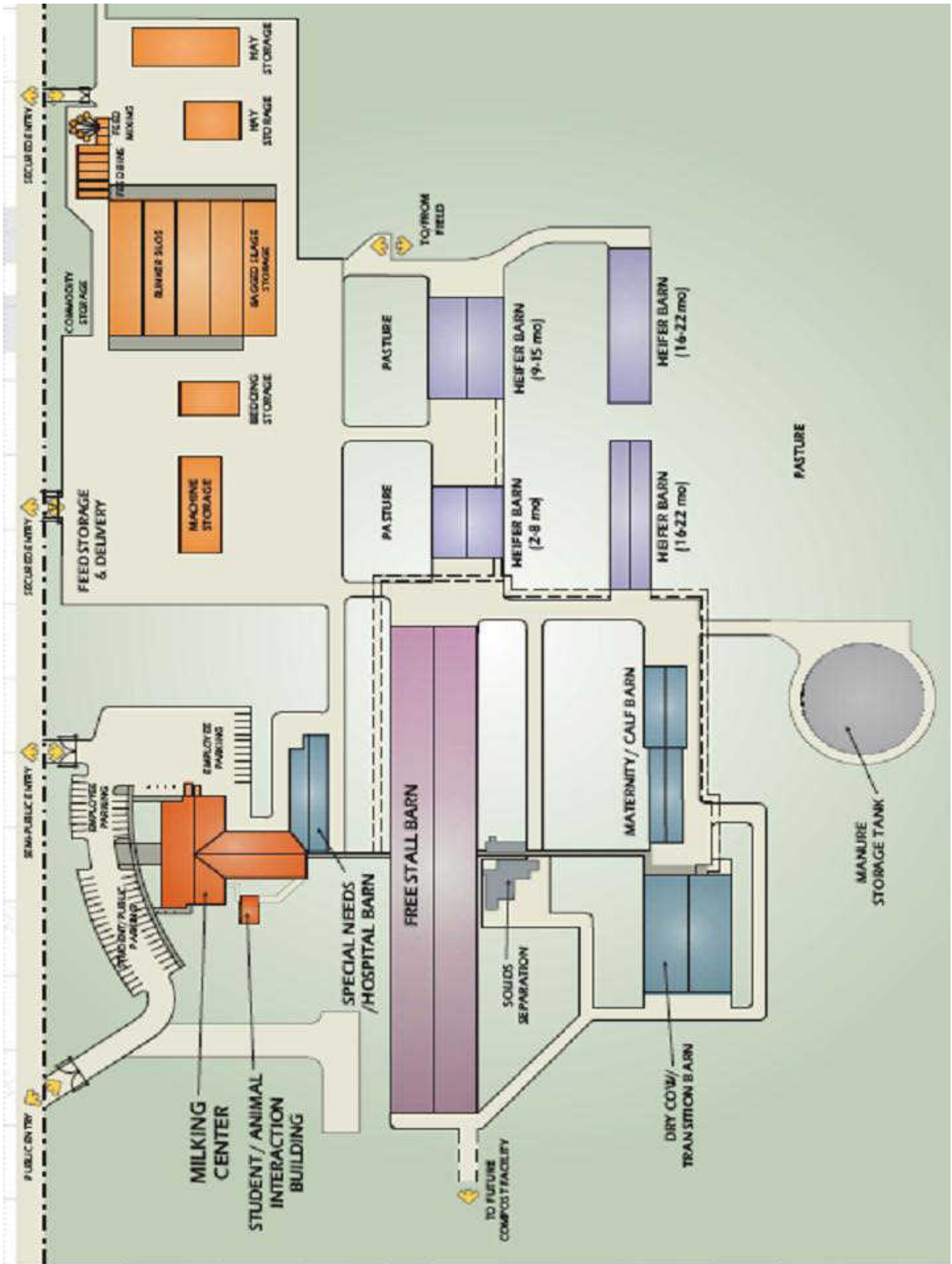
Heifer barn: 9-15 month old: headlocks on breeding heifers



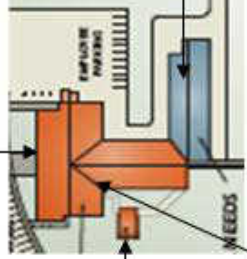
Bred heifer barn: fence line feeding



Bred heifer barn: Sand freestalls – on the beach!!



Milking Center
 "Meet Jersey Jewel at the door"
 State of the art classroom/ laboratory
 Full view of milking parlor
 Dairy Industry learning center



Student /Animal Interaction Building

- live animal demos
- flexible penning
- Bleacher seating
- "Hands On"

Milking Parlor

- Double 12 parallel parlor
- Automatic animal ID/milk weights/ pedometry
- Subway: electronic equip. below parlor
 - water and chemical recycling

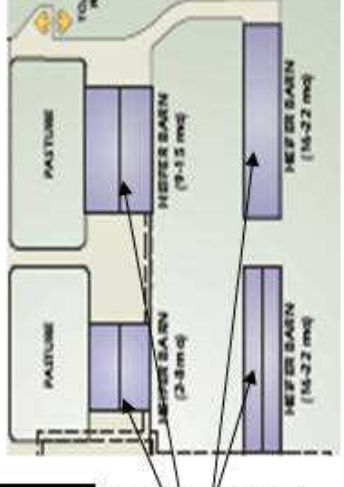
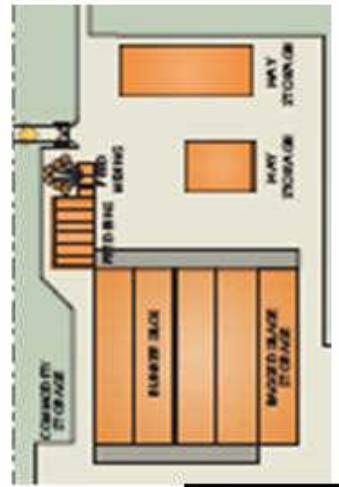
ISU Dairy Farm
 "A dairy for Iowa and the world"
 ✓ teaching/research/extension
 ✓ commercial farm flavor

Health / special needs/ veterinary

- Animal health learning center
- Chutes/ standing & tilt tables
- automated foot baths/ lameness detect
- Automated scale for weighing
- Vet teaching office/ surgery area

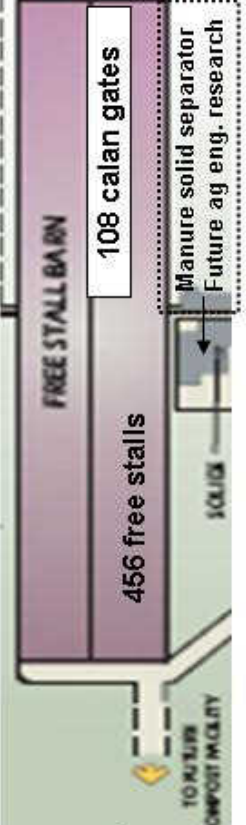
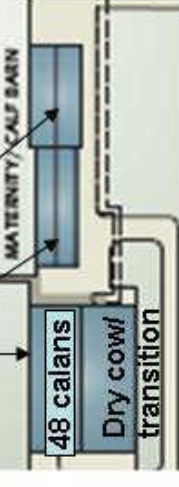
Heifer barns

- young heifers: std pens of 8
- bred heifers: 176 free stalls
- water/ bedding/ stall research
- nutrition / feet and leg health



Dry cow/ maternity / calf barns

- DC: 48 free stalls/ bedded pack
- 48 calan gates: nutrition res.
- metabolism/ cow comfort res.
- Mat: 16 ind. maternity stalls
- nutrition/ physiology/ behavior
 - Calf: 96 individual pens
 - novel ventilation research
 - nutrition/ mgmt/ behavior res.



Compost Bld.
 Dairy/other farms
 Vet med
 ISU tree leaves
 ISU food service
 Quality product out!!
 Heat recovery?

Lactating Cow Free Stall Barn

- ❖ 456 free stalls / flexible pen sizes/ 108 calan gates
- ❖ natural ventilation / fans and H₂O heat abatement
- ❖ lighting / ventilation/ water usage & trt. Research
 - ❖ Stall surface / bedding / cow comfort research
 - ❖ Nutrition research / genetics of energy balance
 - ❖ Reproduction research: Pedometry / heat detection
 - ❖ Animal health : feet and legs/ disease (NADC)

