



CASE STUDY - GOAT CAROUSEL MILKING PAD STABILIZATION

Wisconsin



THE PROBLEM

A carousel milking pad at an active livestock milking facility was experiencing movement and cracking due to consolidation of the gravel and soil beneath and around the pad.

As the supporting material continued to consolidate, the pad became uneven. This created alignment issues with the carousel system and caused rollers to wear prematurely. Left unaddressed, the continued movement could have led to increased maintenance costs, additional equipment wear, and greater disruption to daily operations.

Several critical challenges defined the project:

- **Active Production Environment:** The carousel was part of a regular milking schedule, making downtime a major concern.
- **Animal Health and Stress Considerations:** Disruption to the milking schedule could impact production while also increasing stress on the animals.
- **Uneven Support Conditions:** Consolidating soil and gravel beneath the pad were contributing to movement, cracking, and equipment misalignment.
- **Sensitive Site Conditions:** In-floor heating and a cinder block structure near a pit required a controlled injection strategy to reduce the risk of unintended movement.
- **Limited Work Window:** Work needed to be completed only during scheduled equipment maintenance periods, from 8:00 a.m. to 12:00 p.m. each day.

Dynamic Cone Penetrometer testing was performed at four locations to help verify soil conditions, confirm treatment depth, and guide the final injection plan.





THE SOLUTION

The contractor used HMI's Deep Foamjection™ method to stabilize the carousel pad by performing deep injection of 4 lb. HMI polyurethane foam beneath the slab and into the supporting soils.

The original stabilization approach called for treatment points around the carousel pad perimeter. However, the presence of in-floor heating and nearby block construction required a more cautious and precise injection pattern. Because polyurethane foam expansion must be carefully managed near sensitive structures, the crew adjusted the treatment plan in the field.

The revised plan used 32 air-purged deep injection points spaced approximately 3.5 feet on center. Each point was treated to a depth of approximately 4 feet, with 4 lb. HMI foam injected incrementally to help densify and stabilize the supporting soils while managing lift response and minimizing risk to surrounding features.

Key project specifications:

- **Application:** Carousel milking pad stabilization
- **Method:** Deep Injection
- **Material:** 4 lb. HMI polyurethane foam
- **Verification:** DCP testing at four locations
- **Treatment Pattern:** 32 air-purged deep injection points
- **Spacing:** Approximately 3.5 feet on center
- **Treatment Depth:** Approximately 4 feet
- **Schedule Constraint:** Four-hour daily work windows during planned maintenance

By working in controlled stages, the crew was able to address the underlying soil and gravel consolidation while accounting for sensitive site conditions and the operational demands of the facility.



THE SUMMARY

The carousel pad stabilization was completed in three days, working only from 8:00 a.m. to 11:00 a.m. during scheduled maintenance windows.

Results:

- **Project Duration:** Completed over three days
- **Production Impact:** Work performed during planned maintenance to avoid disrupting the milking schedule
- **Treatment Completed:** 32 air-purged deep injection points installed at approximately 3.5 feet on center
- **Depth Achieved:** Approximately 4 feet
- **Material Used:** 4 lb. HMI polyurethane foam
- **Verification:** DCP testing performed at four points to support treatment planning
- **Operational Benefit:** Helped stabilize the pad, reduce movement, and address conditions contributing to premature roller wear

The project demonstrates how Deep Foamjection™ can be used in active agricultural and production environments where downtime is limited and surrounding structures require careful attention. With proper testing, field adjustment, and controlled injection strategy, the team was able to complete the stabilization work without disrupting the facility's regular milking operation.

