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North Dakota Ready Mix &  
Concrete Products Association

[www.ndconcrete.com](http://www.ndconcrete.com)

**Count on Concrete**



# Dickinson Ready Mix Batch Plant

**Owner/Concrete Supplier:** Dickinson Ready Mix Co. & Concrete Products  
**Tilt-Up Consultants:** Innova Associates  
LiteForm Technologies  
Benchmark Foam, Inc.  
**Structural Engineer:** Advanced Technology Engineering Group  
**Construction Manager:** General Steel / Pat Bren  
**Tilt-Up Contractor:** Winn Construction, Inc.  
**Concrete Sub-Contractors:** Winn Construction, Inc.  
J & L Concrete Construction  
Grizzly Concrete Services (a Division of Tooz Construction, Inc.)



When it came time to replace the existing 33 year old concrete batch plant at Dickinson Ready Mix Co., several building options were considered. The various options were evaluated on several factors including: 1) DRM wanted to showcase the product they sell so they wanted to use concrete and they wanted the concrete exposed; 2) they wanted an energy efficient building; 3) they wanted a durable, low-maintenance exterior; 4) cost-effectiveness was critical; and 5) they wanted to utilize local contractors and sub-contractors. After evaluating the different construction types based on those factors, DRM selected site-cast tilt-up.

The new office/batch plant is a 15,780 square foot building which includes a 3,200 square foot office, an 8,000 square foot shop, a 3,600 square foot batch plant and a 980 square foot lab/admixture room.. The complex utilizes tilt-up concrete walls with a post-tensioned concrete roof. The DRM complex used 82 individual wall and roof panels including 75 wall panels ranging between 16' and 50'9" tall and 12 roof panels up to 60' long. The 82 panels totaled 27,153 square feet of site cast tilt-up wall and roof.

Dickinson Ready Mix used a Lite-Deck Tilt system for both their wall and roof panels. Lite-Deck Tilt panels are cast on beds of expanded polystyrene (EPS) which remain in place when the panels are tilted-up. These EPS beds are profile cut to achieve a structural "concrete beam" in the panel and to insert attachment rail for interior finishing. The wall panels for the batch plant portion of the facility were 13" thick at the beams and 50'9" tall. The 3" concrete face forms the exterior of the panel and the 10" EPS bed provides an average R-31.2 for the walls. Most of the 50'9" panels were 12' wide and weighed 24 tons.



# SITE-CAST TILT-UP CATEGORY



Post tensioning was employed in the roof panels to enable DRM to reach the desired clear span. The roof panels for the batch plant portion of the facility were 24.5" thick at the beams and were almost 60' long. The EPS component on these panels provides an average R-60.8. The largest roof panels weighed 30.5 tons. A 12'4" diameter circular opening was designed into the roof panels to accommodate a cement silo that extends through the roof.

The casting location in relationship to the panels location in the building was critical so DRM cast panels in a predeter-

mined sequence around the building perimeter on casting beds constructed with 70% flyash concrete. During the erection process the panels were tilted into place, set and braced, then welded and grouted. The roof panels were set in place next. They had to fly over the 50'9" tall wall panels, eventually bearing on previously cast embeds on the inside of the wall panels. All told, the project utilized 2,432 CY of ready mix concrete.

The result is a state-of-the-art concrete batch plant sheltered by a building that will serve Dickinson Ready Mix Co. & Concrete Products for years to come with minimum maintenance over the life of the structure along with minimal life-cycle heating and cooling costs. Strength, economy and operational efficiency; such performance is currently recognized as the primary tool of sustainable design for any building in the 21<sup>st</sup> century.

