



JBS USA – Meat Processing

Greeley, Colorado, USA



Owner
**JBS USA – GREELEY,
COLORADO**

Concrete Supplier
**MARTIN MARIETTA
MATERIALS**

Concrete Finisher
RED WILLOW CONSTRUCTION

Products
ADMIX C-500

Project Type
**CONCRETE FLOOR
PROTECTION**

JBS USA headquarters in Greeley, Colorado, and is a subsidiary of Brazil-based JBS SA, a worldwide leader in animal protein production. The JBS USA Greeley beef processing plant has replaced deteriorated kill room floors with concrete treated with Xypex Admix C-500 and is achieving improved durability and fast return to production.

JBS® USA, based in scenic Greeley, Colorado, is a subsidiary of Brazil-based JBS SA, the world's largest meat processing firm with 2019 sales of nearly US\$52 billion. JBS USA processes, prepares, packages and delivers fresh beef, pork and poultry products to consumers in more than 80 countries on six continents.

ing plants is based in Greeley. With 850,000 ft² (79,000 m²), the plant (fig 2) employs more than 5,000 and processes over 5,400 head of cattle daily.

other meat processors are highly regulated and continually inspected by the USDA and others.

Concrete in Harsh Conditions

Most of the Greeley plant consists of tilt-up concrete panel walls on concrete slab floors. The plant operates two shifts and maintains the highest levels of sanitation for the safety of its workers and product quality. JBS USA and

Certain areas of the plant that are used most intensively are regularly exposed to biological byproducts, chemical cleaners, and high pressure steam. An area of the plant known as the "harvest floor", processes more than 5,400 head of cattle per day. The concrete slab floor in this area has a very high level of exposure to all of the aggressive measures noted.



Fig 1 -- The JBS USA beef processing plant has more than 850,000 ft² of production space. Most of the plant is constructed of tilt-up precast concrete walls on concrete slab floors.

JBS USA (fig 1) was created in 2007 when the parent firm entered the U.S. market through the purchase of Swift & Company. The firm employs more than 80,000 and operates 100 facilities in the United States and other regions. One of JBS USA's largest beef process-



Fig 2 -- JBS USA Greeley, Colorado beef processing plant encompasses more than 850,000 ft² of production space.

The concrete harvest floor is divided into four sections, each measuring about 30 x 30 feet (9 x 9 m) for a total area of about 3,600 ft² (334 m²). Due to the extreme service this floor experiences on an ongoing basis, the floor surface has traditionally degraded relatively rapidly. Due to the need for absolute hygiene coupled with the known difficulty in maintaining acceptable levels of sanitation in degraded concrete, USDA inspectors regularly require the plant to replace sections of this and other floors throughout the plant.

“The concrete harvest floor experienced deterioration and had to be replaced on a rotating basis,” notes Bernie Lucero, sales representative for Martin Marietta Materials, based in Greeley. Martin Marietta provides ready-mix concrete from 17 locations in Colorado and has been supplying concrete to the JBS facility for many years.

Need to Curtail Replacement

According to Lucero, the JBS USA Greeley plant was replacing a quarter of the harvest floor about every six months, so that the entire floor was being replaced about every two years. The plant used a high early-strength mix that could achieve 3,000 psi strength within 48 hours, which allowed the plant to complete a section of the floor over a weekend and have it back in production by Monday morning. The 28-day strength is 4,500 psi.

“Several years ago, we recommended to the plant that they try adding Xypex Admix to their ready-mix order,” Lucero says. The concrete was supplied by Martin Marietta’s Greeley dry batch plant, located a few miles from JBS (fig 3).



Fig 3 – Ready-mix supplier Martin Marietta Materials added Xypex Admix C-500 at a dosage rate of 3% to the concrete it supplied to the Greeley, Colorado JBS beef processing plant.



Fig 4 -- Xypex Admix C-500 was added to the ready-mix concrete used to replace the floor of a high production area at the heart of the huge JBS USA beef processing plant in Greeley, CO. In the past, the floor was replaced every two years due to corrosion caused by biological byproducts, chemical agents and high pressure steam. Thanks to Admix C-500, the floor looks as good as new three years later.

“We added the Xypex Admix C-500 (fig 4) at a 3 percent rate and it worked great,” Lucero notes. The floor replacement project was carried out by Red Willow Construction, of Severance, Colorado. “It took a total of 60 yards to replace the four sections over about 18 months. That was about three years ago, and the floor still looks like new today.”

The addition of Xypex Admix was the only change to the concrete mix, according to Lucero. “It’s very easy to use. There is no impact on the characteristics of the mix itself in terms of workability, slump, etc. The fact that it makes the concrete incredibly durable and resistant to water, chemicals, and all types of corrosion is the big benefit.”

Built-in Protection

Xypex Admix contains proprietary chemicals in powdered form that react with water and with the byproducts of cement hydration to generate a non-soluble crystalline formation in the pores and capillaries of concrete. Admix C-500 becomes an integral part of the concrete and will continue to waterproof and protect for the life of the structure.

Xypex Admix C-500 enables the concrete to resist both positive and negative hydraulic pressure, can heal hairline cracks up to 0.4 mm, and provides chemical resistance

against the attack of acids, chlorides, sulfates, carbonation and other negative effects. Xypex admixture provides permanent protection that will not degrade like synthetic coatings and membranes.

Based on its success with Xypex Admix in the harvest floor project, the plant requested that it be added to another heretofore troublesome concrete floor. “When they saw how well it worked to protect the harvest floor, we also added it to a smaller area that’s used as a boot wash station where thousands of employees clean their boots every shift,” says Lucero. “We’re also going to add it to more of their concrete floors in the future.”

Thanks to its experience with the JBS USA plant, Lucero says Martin Marietta is also promoting Xypex Admix for other customers with concrete floors exposed to harsh and wet environments. In particular, Lucero has been talking to dairy farmers in his area who regularly replace concrete washing stations and other structures.

“Farmers are very frugal—they have to be,” he says. “Our experience with the JBS meat processing plant is practical example that they can relate to. So far, the reaction has been very positive.”