

TBM Hydrated Bentonite Plant

Seattle Tunnel Partners SR99 Viaduct Replacement Tunnel Project Seattle, WA



SIZE / CAPACITY

180 m³/hr

SERVICES PROVIDED

Conceptual Design
Mechanical Engineering
Fabrication of all Equipment
Commissioning
On-Site Training and Site Support

SUPPLIED EQUIPMENT

108 m³ Capacity Bentonite Silo
Screw Conveyor
20' Heated Container
Bentonite Loss-In-Weight Feeder
Two 6x8-13 Centrifugal Water Pumps
6" Venturi Mixer
Automated PLC/MCC Control System
Pneumatic System
Two 150 m³ Hydration Tanks with Circulation
Two 150 m³/hr Progressing Cavity Pumps

As a safety precaution to operating the world's largest EPB tunnelling machine, Seattle Tunnel Partners wanted to be able to quickly flood the machine's massive excavation chamber with hydrated bentonite if a hyperbaric intervention was required. Team Mixing Technologies Inc. was awarded the contract to design and supply this system.

The fully automated bentonite plant utilizes a 6" venturi mixer capable of producing 180 m³/hr of bentonite slurry. Two holding tanks, 150 m³ capacity each, allow the bentonite to hydrate. These tanks incorporate radial eductors along with a centrifugal pump to circulate the bentonite within the tank.

Each tank has a dedicated 150 m³/hr capacity progressing cavity pump to transfer the hydrated bentonite to the TBM's holding tank via an 8" pipeline.

Hydrated bentonite is also pumped to the grout plant where it is used in the preparation of the "A" component grout. The use of hydrated bentonite significantly reduces grout bleed.