LONG-TERM STORAGE SILOS
for Asphalt Facilities
Astec silos store mix for four days* without loss of mix quality. That’s true storage. And we guarantee it in writing.

Use the silos as a conventional surge bin during the busy time of day. At day’s end avoid time-consuming start/stop operations and begin filling silos while continuing loadout. The next work-day, begin selling mix right away from full silos. Nobody has to wait for mix. Uninterrupted production runs allow you to maximize equipment efficiency and reduce material waste. Incorporate multiple silos in your plant layout and you will be ready to meet customer needs for a number of different mixes. That’s how Astec storage silos reduce operating costs and improve plant operating efficiency.

Astec hot mix storage systems come complete with drag conveyors, traverse conveyors and batchers. Bucket elevators are available. Silo support structures are designed to meet the site specific design criteria at your location based on the current building codes in your area. Our structural engineering staff will design your foundations based on soil conditions at your site.

Service Sets Us Apart
Our in-house service technicians and our traveling service personnel are responsive and available around the clock. Talk to anyone who runs Astec equipment.

* polymer modified, open-graded and SMA mixes excluded
Silo

DRAG CONVEYOR

The Astec drag conveyor is tough. Lined with hard alloy castings, it is made to withstand the demands of asphalt production.

DRAG CHAINS

Wide return idler wheels are mounted on floating idler shafts. Floating idler shafts allow the shaft idler to move when necessary. As a result, there is less wear to the sprockets, liners, and chain. Return idler shaft bearings have grease lines that let you lube both bearings from one side when your conveyor has one set of stairs.

ROLLER CHAINS

The drag conveyor reaches from the mixer exit chute to the top of the silo. Strong, wear-resistant, 6-inch roller chain runs from bottom to top, with 3/4-inch thick, 7-inch deep, steel slats attached every 12 inches. This heavy slat chain assembly resists hydroplaning over the mix. Depending upon required capacity, Astec offers either single or dual chain configurations.
SEGMENTED SPROCKETS
The drag chain rides on segmented sprockets located at the head and tail shafts. Case hardening gives the sprockets a uniform, hardened wear surface for a long-life while maintaining ductility for severe service.

Each sprocket bolts to a split hub. You can replace the sprocket one piece at a time without removing the chain, which drastically reduces the time and effort required. The tall shaft is adjustable so the drag chain can be tightened at ground level.

DRAG CONVEYORS
The top sprocket is positioned beyond the conveyor discharge, creating a longer discharge opening. This, plus the special slat sweep angle makes sure that the slats are discharged, minimizing the amount of residual mix that is dropped on the sprocket, so the sprocket and chain last much longer.

TRAVERSE CONVEYORS LOAD BATCHERS
The drag conveyor discharges into the traverse conveyor installed atop batchers. The operator selects the silo to be filled, and the traverse empties its contents into the designated silo’s batcher.
Astec’s innovative batcher helps eliminate mix segregation. It is designed to ensure that the quality of mix that leaves the drum is the same quality stored in the silos.
**BIN INDICATORS SHOW MIX LEVEL IN SILOS**

Each Astec silo has a high and a low radio-frequency bin indicator. Mounted on top of the silo, the sensing rods extend down into the mix. The low bin indicator reaches deep into the silo; the high bin indicator is short. Both the high and low bin indicator information is transmitted to the control house. The high bin level indicator signal allows the operator sufficient time to finish loading mix already in the transfer conveyor, while the low signal informs the operator to begin filling the silo before the cone surface liners become exposed.

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**FILL SILOS WITHOUT SEGREGATING THE MIX**

The mix moves by drag conveyor or bucket elevator into a three-ton batcher atop the silo. When full, the batcher releases the slug of mix. Mix drops through the rapid-opening double-clam gate into the silo and flattens on impact. Astec’s double-clam gates are not like conventional pinch-closed style double-clam gates. Astec’s overlapping gates slice through material flow as the gate closes. This slicing action and overlapping gates result in better gate wear resistance when compared to pinch-closed style gates. The double gates also center the drop into the silo and form a flattened mix surface, which prevents mix segregation.

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**AUTOMATIC BATCHER GATES**

The precisely activated batcher gate operates automatically. When the batcher is full, the cylinder-operated clam gate opens. Mix discharges in bulk and the gate closes just before the batcher is completely emptied. This way mix always collects in the batcher first and never falls straight from the drag conveyor into the silo.

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**SILO PRESSURE EQUALIZED**

As mix level rises, it displaces air in the silo. Integrated vents inside the batcher enclosure allow bidirectional air flow and equalize silo pressure as mix level changes during fill and loadout.
**Silo INSULATION**  Thick insulation on Astec silos allows longer mix storage periods.

**KEEPING MIX HOT**
Twelve inches of insulation at silo tops, four inches around the cone, and six inches along the cylinder keep the mix hot. Batchers are insulated as well because uninsulated batchers are a major source of heat loss.

Two layers of stiff sheet insulation are staggered to eliminate heat-leaking seams along the silo cylinder. Astec uses thick, full R-value non-compressed insulation.

**SEALED SILOS**
In storage mode, it is crucial to seal the silo. Oxidation, or premature hardening of the mix, happens in the silo when the mix is exposed to air. In storage mode, Astec silos are completely sealed from top to bottom.

**TOP SEAL**
In storage mode, the cylinder-operated gate at the top of the batcher is completely sealed. The gate runs in rails which tightly wedge it against a ring of grease. This forms a tight seal and keeps air from entering at the silo top. When filling operations begin again, the gate is opened and remains open until filling operations stop. An air actuated grease pump replenishes the grease and ensures a continued, perfect seal.

**BOTTOM SEAL**
The design of Astec’s discharge gate completely seals the bottom of the cone when the silo is in storage mode. The heated and insulated discharge gate closes to completely cover the cone opening. Oil is pumped into the gate to seal the bottom silo opening. The oil reservoir is located by the silo legs, and a motor-driven pump moves the oil from the reservoir into the gate. A sensor monitors the oil level in the gate and controls the pump. When the silo is taken out of storage mode, the pump is reversed and the oil is automatically withdrawn from the gate.
CONE DESIGN PREVENTS MIX SEGREGATION

Astec silo cones are taller, because they are built with a steeper angle than other brands. To achieve optimal mass material flow, Astec, with the aide of third party research, determined that the precise angle at which the entire column of mix evenly flows through the cone is 66 degrees. This steeper angle of the cone provides true first-in/first-out inventory rotation, there is no mix buildup on silo walls, and mass flow loadout minimizes mix segregation. Mass flow occurs when mix flows out across the entire silo cross-section and that only happens with the correct cone angle.

Silo CONE

The Astec silo cone is exceptional. It prevents segregation and mix build-up with its mass-flow slope. It is equipped to resist wear, protect from heat loss, and its gate seals the silo for storage.

Steep 66° angled cones allow mix to move by “mass flow”, helping prevent mix build-up on silo walls.

Cone insulation and an electric blanket surround the lower part of cone, preventing excessive heat loss.
PREVENTS DROPS INTO THE CONE
If the mix level falls below the top of the cone, the level indicator signals the silo discharge gate to remain closed. To open the gate and empty the cone in this situation, you manually override the gate controls. This helps to maximize silo cone service life.

MINIMAL HEAT LOSS THROUGH ASTEC CONES
Unheated cones can result in excessive heat loss. Our heating system operates during fill/run and storage modes. Together with the cone insulation, the system works to keep mix hot.

A silicone electric heating blanket surrounds the lower cone section. A thermostat activates the blanket when the temperature drops below set point. This sensor saves money, because the energy to heat the cone is used only when required. Hot-oil heating is available as an alternative to the electric blanket.

Four inches of insulation on the outside of the cone’s bottom portion help hold in the heat. A partition covered with a six-inch layer of insulation forms a warm, dead-air space around the top portion of the cone for even greater energy savings.

PROTECT CRITICAL AREAS
Mix can be abrasive and can wear on the area where the cylinder and silo cone meet. Astec lines this area with abrasion-resistant steel liners. Optional ceramic liners are available.

Optional ceramic liners in the cone and spool are preferred for abrasive conditions. Mass flow load-out greatly minimizes mix segregation.
HEAVY-DUTY CONSTRUCTION DELIVERS RELIABLE PERFORMANCE
The walls of the silo are made from rolled steel plate joined by structural weld. Jogged radial joints form a smooth inner surface, reducing wear at the joints.
Standard silo legs provide 13-1/2 feet of clearance for trucks from the top of the truck scale. Legs and the silo support frame are made of heavy, structural, wide-flange beams. Silo support structures are designed to meet the site specific design criteria at your location based on the current building codes in your state.

STAIRS, HANDRAILS, AND TOP PLATFORMS
One standard grated stairway runs parallel to the drag conveyor. It provides access to conveyor components and to the top of the silos. As an option, a second stairway can be supplied on the other side of the drag conveyor.

PLENTY OF SAFE WORKING SPACE ON TOP
The Astec work platform atop the silos is big. Square corners increase its size even more over round platforms. Safety features include skid resistant paint on the platform surface and guard-rails made of structural tubing. Continuous kick plates around each silo and bridge plates between adjacent silos prevent spillage from the top.
Work Platform

Batcher

Batcher Gate

Work Platform

12” of Insulation in Top Seal

6” of Insulation around Silo

66˚ Cone Angle

Optional Ceramic Tiles

Silicone Heat Blanket

Mass Flow Loadout Discharge

Oil Reservoir

Drag Conveyor

Handrails

Staircase

Optional Second Staircase

Staircase
With an Astec silo, you will have an opportunity to configure your facility with options to better serve your customers and your community.

**BLUE SMOKE PACKAGES**

Blue smoke (hydro-carbon vapor) can escape at mix transfer points. Blue smoke is actually a haze of petroleum droplets suspended in the air. The blue smoke collection system prevents the vapor from escaping when asphalt is transferred from the mixer to the storage silo. The result is extremely effective. Virtually no blue smoke escapes into the air during silo filling.

Load-out tunnels and fiberbed blue smoke collectors can also be supplied for installations where environmental compliance is a priority.

**SILO DIAMETER CAPACITY**

Standard silos are 12 ft. (3.66 meters) or 14 ft. (4.27 meters) diameter depending upon application. Each available with the following standard capacities:

<table>
<thead>
<tr>
<th>Tons</th>
<th>100</th>
<th>150</th>
<th>200</th>
<th>250</th>
<th>300*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metric Tons</td>
<td>91</td>
<td>136</td>
<td>181</td>
<td>227</td>
<td>272*</td>
</tr>
</tbody>
</table>

Capacities are based on 120 lbs/cu.ft. for mix (1.92 metric tons / cu. meter)

*14 ft (4.27 meters) diameter only

**LOW PROFILE, ELECTRONIC SCALES**

The LPSII truck scale is a totally electronic scale with a low profile. It only needs small foundation pads at each load cell. Weigh sections have checkered-steel deck plates. The scale is wired in conduit. When a truck scale cannot be used, Astec can provide optional weigh batchers parallel truck loading.

**CONTROL SILO FUNCTIONS**

Motor starts and stops, filling operations and manual loadout are handled from one central location in the control house. The operator also monitors current draws, bin indicators and cone heating information from here. Choose either the latest, state-of-the-art TCIII controls utilizing a computer screen, keyboard, and mouse, or the traditional analog control panels.