

# B. W. SINCLAIR, INC.

Bulk Material Handling

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## PRODUCTS AND CAPABILITIES

*Bulletin GP.001 (Rev. 06-2004)*

B. W. SINCLAIR, INC. provides **QUALITY** --- quality in the engineering and manufacture of **Bulk Material Handling Equipment**.

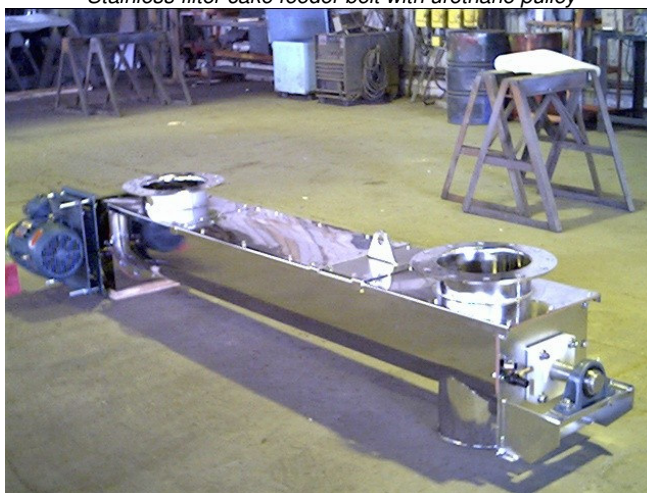
While our expertise is grounded in industrial and engineering standards, we actively pursue those special projects that others avoid. Our Engineering and Design staff combines 75 years of experience serving such diverse industries as food processing, pulp and paper, chemicals, coal and ore handling, carbon black, cogeneration facilities, steel mill alloy additive systems, and hazardous waste incineration and remediation.

You can depend on **SINCLAIR** to deliver the performance you demand. For conveying and feeding components and systems, see the problem solvers at **B.W. SINCLAIR**.

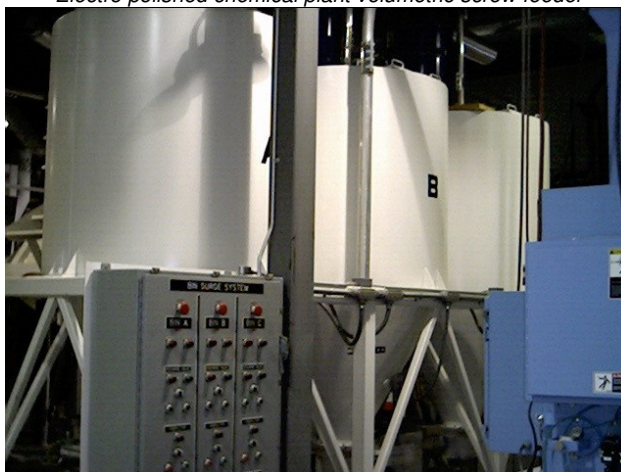
*Represented by*



*Stainless filter cake feeder belt with urethane pulley*



*Electro polished chemical plant volumetric screw feeder*



*Modular bin storage system with controls for fill and discharge equipment*

## SCREW CONVEYORS

The **SINCLAIR Series 100 Screw Conveyor** is one of the most versatile and economical bulk material transporters.

Equipment design is naturally compact, and the availability of standard mass-produced replacement parts guarantees minimum process disruption.

**SINCLAIR** screw conveyors are specified by many of America's leading industrial concerns because of our commitment to quality design and fabrication and our record of consistent on-time delivery.

Our "standards" include:

- ❖ 4 inch-to-36 inch diameters
- ❖ Enclosures designed to area requirements
- ❖ Mild steel, abrasion-resistant, or stainless steel construction
- ❖ Unlimited inlet and discharge spouts
- ❖ Shaft seals and bearings designed for your application
- ❖ *All conveyors completely pre-assembled and test-run at our factory*



*Soft Sugar distribution system conveyors*



*Dewatering screw conveyors for plastics industry*



*Weld-on hard facing treatment for abrasion resistance*





## **SCREW FEEDERS**

If your project calls for precise volumetric withdrawal of bulk materials from storage, a **SINCLAIR Series 200 Screw Feeder** can be the answer.

We specialize in engineered Feeder Systems throughout industry. Variable speed drive modules offer you the ability to "fine tune" the volumetric feed rate to match your process requirements. Variable pitch flighting, tapered internal shaft sleeves, tapered flighting or combinations of the above offer precise "mass flow" emptying of bins and hoppers.

The **SINCLAIR Series 200 Feeder** offers such design features as:

- ❖ Uniform or tapered screw diameter
- ❖ Conical shaft sleeves for mass flow bin withdrawal
- ❖ 95% flooded inlet sections
- ❖ Internal shrouds or shear plates for flow regulation
- ❖ Precise feed rate control
- ❖ Carbon or stainless steel construction
- ❖ Inlet agitators for flow assistance
- ❖ Operation testing
- ❖ Custom engineering

*In this highly critical process area, our experience is your assurance.*



*Feeder screw fabrication, featuring mass-flow cone design*



*Polished ribbon feeder helix passing beneath shroud*



*Stainless twin feeder with integral surge hopper*

## BUCKET ELEVATORS

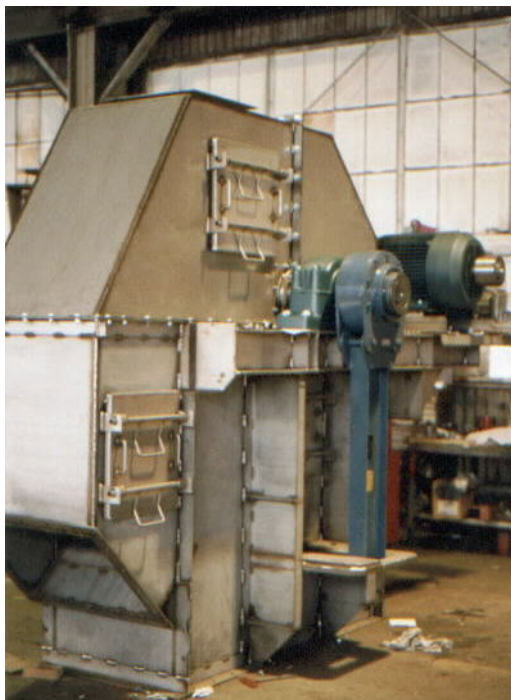
**SINCLAIR Series 300 Industrial Bucket Elevators** comprise one of the cornerstones of our business. We provide high-lift elevators with buckets up to 48" wide. Our standard engineering designs include:

- ❖ **Centrifugal**  
Discharge styles with buckets mounted on chain or belt.
- ❖ **Continuous**  
Discharge chain or belt styles, for more gentle product handling
- ❖ **Mill-Duty** styles for high-volume, severe service applications

We offer all styles in mild or stainless steel, as well as abrasion-resistant alloys. We also provide various options including OSHA-standard caged safety ladders, intermediate rest platforms, hoist beam assemblies and lateral bracing.

A **SINCLAIR** Elevator normally includes:

- ❖ Heavy gauge steel casings, seal-welded
- ❖ Split removable hood sections
- ❖ *Cam-Lock* access doors and ports
- ❖ Pillow Block roller head bearings
- ❖ Ball bearing screw take-ups (auto counterweights also available)
- ❖ Assembly fasteners and gaskets



*Head section of limestone elevator with external backstop*



*Boot section with gravity take-up module and open access doors*



## BELT CONVEYORS

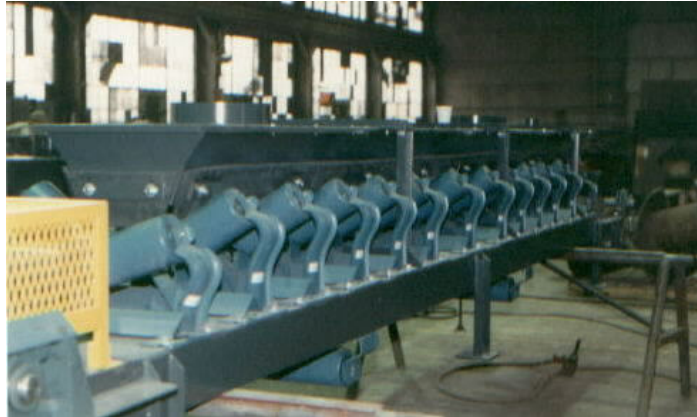
### Does this set of requirements sound familiar?

- ❖ Need to convey materials of many different lump sizes?
- ❖ Need a contact surface that resists corrosion and abrasion?
- ❖ Need to keep annual maintenance costs as low as possible?
- ❖ Need to convey material gently so that the particles are not broken?

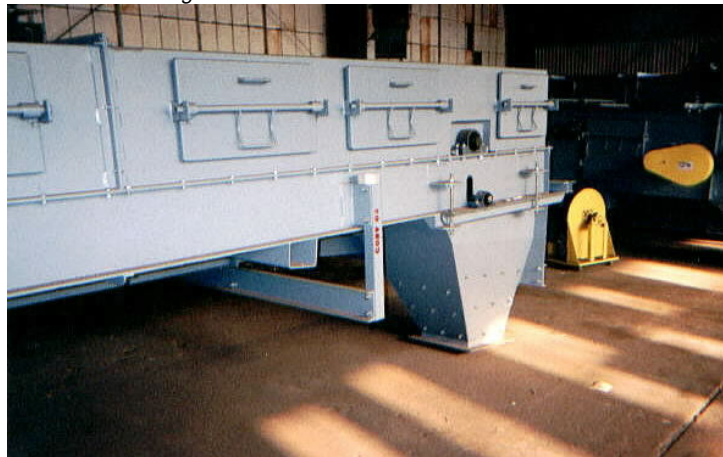
If this looks like your current project worksheet, a **SINCLAIR Series 400 Belt Conveyor** may be the solution.

We maintain a staff of Registered Professional Engineers, Design Engineers, and Equipment Designers to translate your requirements into a finished system. We can take complete responsibility, or furnish your standard designs. Our supply can include:

- ❖ Box truss or structural channel frame
- ❖ Jig-fit bearing-shaft-pulley assemblies
- ❖ Idlers and belting selection for your application
- ❖ Dust or weather enclosures
- ❖ Accessory structures, including walkways, machinery service platforms, support bents and towers
- ❖ Power transmission components



*Troughed belt with continuous skirtboard module*



*Totally enclosed belt conveyor with Cam-Lock access doors*



*Inclined belt with weather hoods and attached walkway*

## FLEXIBLE SIDEWALL CONVEYORS

**SINCLAIR** is an industry leader in the design and manufacture of L-flow and Z-flow **High Incline Flexible Sidewall Conveyors**. Our **Series 600-FSW** offers the most efficient configuration to satisfy both conveying and elevating requirements.

Our wide experience in these systems offers you:

- ❖ Steep incline capability *up to 90 degrees*
- ❖ Decreased maintenance costs due to fewer power components
- ❖ Better use of investment capital because less is spent on drives, structures and transitions
- ❖ Maximum employment of site floor space

Follow the leaders in American industry. Consider a **Series 600-FSW** for your next application. *We think we have an "angle" that will work for you.*

The **SINCLAIR Series 600-FSW** normally includes:

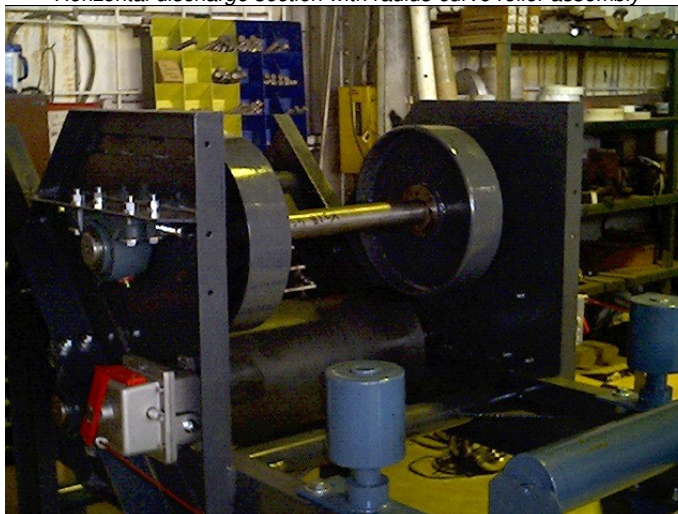
- ❖ Quality belting with flexible sidewalls and conveying
- ❖ Heavy jig-built conveyor frames
- ❖ Dust or weather enclosures
- ❖ Machined and balanced hold-down wheel modules
- ❖ Support bents and towers
- ❖ State-of-the-art belt cleaning devices



*Model 0624-FSW-Z-90 infeed section with Cam-Lock doors*



*Horizontal discharge section with radius-curve roller assembly*



*45-degree deflection module with Holddown Wheels*



## **SPECIALTY CONVEYORS**

If you process ash, abrasive ores, hot billets, burnt lime, foundry sands, contaminated earth or hazardous waste, our **Series 700 Apron Conveyors** can be invaluable.

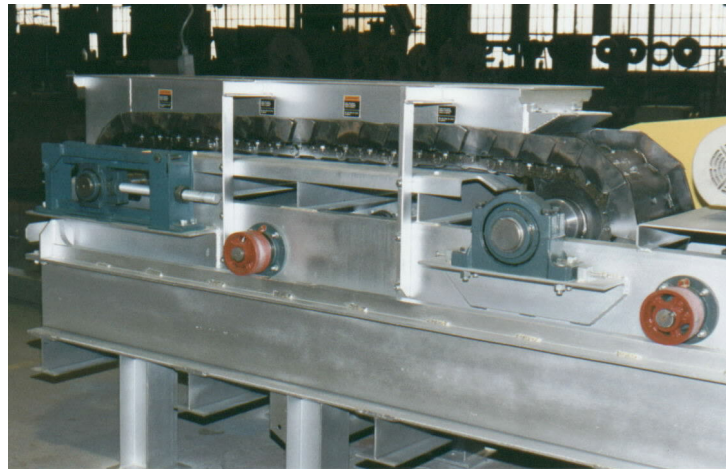
The **Apron Conveyor** consists of a live bed of interlocking, overlapping heavy steel pans, driven by twin strands of chain and often supported on a live bed of outboard rollers. Totally enclosed or open frame construction is available to suit your needs. Material can be handled on a **SINCLAIR Apron** at temperatures up to 2000 degrees F.

**SINCLAIR** can also furnish a conveyor mated to other process equipment. For example, we can provide belt conveyors fitted with suspended magnetic separation equipment to remove tramp iron contamination, or we can fit our conveyors with aperture-style metal detectors to locate both magnetic and non-magnetic contaminants. Reject devices are also available to provide a complete system.

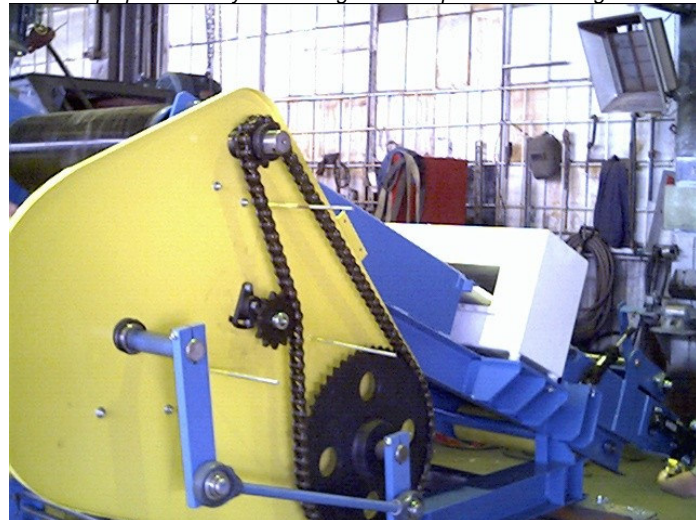
Our Engineering Staff is available for consultation on your next project.



*Bar-flight drag detail*



*Hi-Temp apron conveyor handling lead scrap into re-smelting furnace*



*Inclined slider belt conveyor with metal detector (guard not shown)*



*Bar-flight drag conveyor for sludge stabilization system*

## **STORAGE HOPPERS & BINS**

**SINCLAIR** can also furnish our **Series 900 Cylindrical or Square Surge Bins and Storage Hoppers** as a part of our "sole source" philosophy. Bins and hoppers are available in carbon and stainless steel, as well as abrasion-resistant alloys, and in standard sizes from 1.5 to 300 cubic feet live capacity.

All fabrication is done with heavy steel construction and seal welding is standard. Accessory devices including bin level indicators, feed devices, ladders and platforms, bin vents and flow aids are available. *Internal and external surfaces are custom finished to your specifications.*

Our years of experience in the design of bulk material handling equipment and conveying systems guarantees you a high quality, low cost solution to intermediate storage problems.

Standard sizes in these hoppers range from 2 to 6 foot diameter, with live capacities up to 300 cubic feet. Excellent material flow and withdrawal capabilities are standard with our 60-degree discharge bottoms.

You have a guarantee of compatibility when **SINCLAIR** furnishes the hoppers along with the infeed and discharge material handling systems.



*Agitated feed hopper with integral screw feeder*



*Stainless pack-out hopper with gyratory bin discharger and support structure*



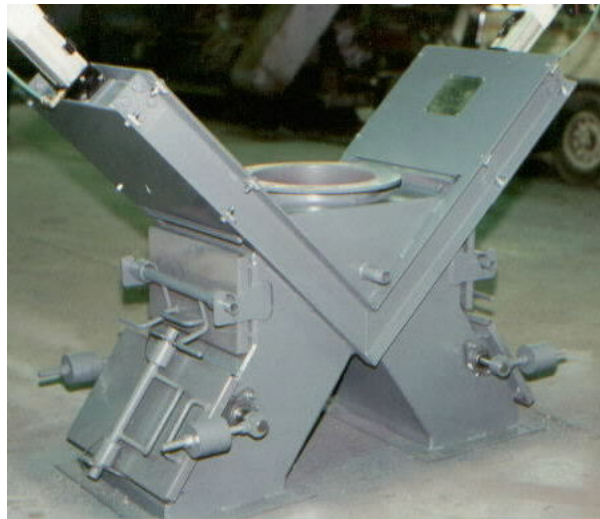
## DIVERTER GATES & SLIDE VALVES

**SINCLAIR Series 1000 Diverter Gate Valves** are available in single blade/two-way configurations, single-offset designs, and double-blade/three-way styles. Our gate valves are guaranteed to mate to our conveying components, offering you a smooth flow of product throughout the plant.

**SINCLAIR** also offers the unique **Series 1000-BV2 Bucket Valve Diverter** for those applications where material build-up on the internal walls of the diverter causes actuation problems. The internal bucket-wing blade routes the product positively from leg to leg, and the product never touches the internal walls.

The **SINCLAIR Series 1100 Cam-Roller Slide Gate Valve** is the premium live-roller valve on today's market. Because the gate blade operates over a live bed of precision rollers rather than through a mechanical slide pathway, most causes of gate jamming are eliminated.

We offer these gates activated by chain or hand wheels, pneumatic or hydraulic cylinders and either rotary or linear electric actuators. Dust enclosures, product return chutes, square-to-round transition spools, safety instrumentation and control enclosures are all available from **SINCLAIR**.



*Two-way Vee-Gate Valve for steel mill service*



*Model 1024SB9-HD-PN pneumatic valve, AR Plate construction*



*Modulating cam-roller gate valve with electric linear actuator*

## MULTI-SCREW LIVE BIN BOTTOMS

If you are handling materials that tend to pack, bridge, or interlock under pressure, the **SINCLAIR Series 200-LBB Live Bin Bottom** could be a valuable addition to your material handling system.

Typical applications include:

- ❖ Wood chip feed bins
- ❖ Bark Boiler Feed systems
- ❖ Centrifuge Discharge hoppers
- ❖ Filter Cake storage bins
- ❖ Dewatered sludge facilities
- ❖ Contaminated soil remediation systems

The **200-LBB** is normally designed to provide either mass-flow or sequential withdrawal from large openings. **SINCLAIR** can include single or multiple variable speed drive modules in AC, DC or Eddy Current configurations. Heavy duty thrust bearing assemblies and shaft seals are standard. Materials of construction can be carbon, abrasion-resistant or stainless steel.

The discharge of the **200-LBB** can be mated to a **SINCLAIR** conveyor system to transport the metered product throughout the process.



*Model 0218-LBB-4-RF ribbon feeder for soil remediation system*



*Model 0209-LBB-6-NS intermittent-spiral feeder for synthetic gypsum*



*Six-screw bin bottom with integral collection screw conveyor*



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## **ENGINEERING SERVICES**

**SINCLAIR** is a Sales and Manufacturing Company, but equally important, we are an *ENGINEERING* organization.

We use Computer-Assisted Design software to integrate our years of experience with today's technology. In response to the need for technical enhancement, we continue to add Engineers and Designers to our staff. Computer programs have been developed to aid in product design, and our Integrated File System allows rapid access to **SINCLAIR** equipment designs already field-tested and proven.

A Professional Engineer registered in the State of Texas oversees our Engineering activities. We apply industry and engineering standards to insure that every job works right the first time.

The ultimate goal of our Engineering Enhancement Program is to serve our customers by providing the best designs and the most efficient service possible.

At **SINCLAIR Engineering**, as throughout **B.W. SINCLAIR, INC.**, our goal is simple:

*"We want you to be satisfied with the services and equipment you receive from **SINCLAIR.**"*

**100% satisfied.**



*Engineered "LongSpan" conveyor helix @ ~ 40 ft.*



*BWSI Plant and Engineering facility – Wichita Falls TX*



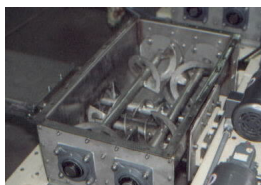
*Waste gypsum handling system with drag conveyor, bucket elevator, and hopper*

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## SYSTEMS & COMPONENTS



**B.W. SINCLAIR, INC.** prides itself on its willingness to tackle those projects that our “competitors” avoid.

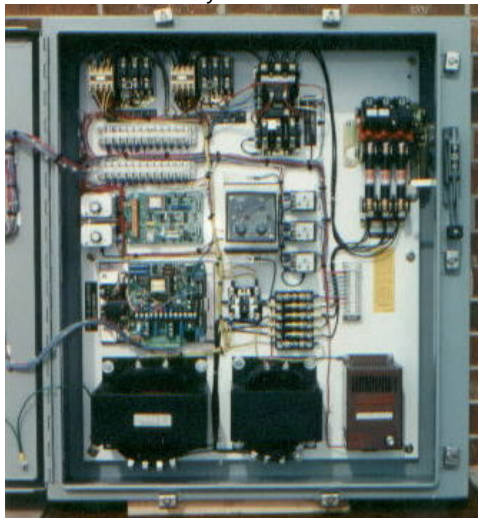
If you need Bag Dump Stations with Integral Bag Compactors and discharge devices, **SINCLAIR** can do it. If you need a Bulk Bag unloading coupled to feeders and conveyors and system controls, we can do it. If you need Belt Conveyors with automated metal detection and rejection systems, we can do it.

From sanitary pharmaceutical-grade screw conveyors with explosion-proof control enclosures... to portable inclined screws with integral surge hoppers... to complete raw material handling systems for wallboard manufacturing facilities... to synthetic gypsum handling belt conveyors in FGD systems... **WE CAN DO IT.**

*For specialty fabrications, custom designs, unusual applications, and complete systems, **SINCLAIR** wants to talk.*



*Hazardous soil remediation system for kiln feed and ash discharge*



*System control panel for hydrated lime injection system*



*Bulk bag unloader and system controls for kaolin clay feed system*