



## Sampling Systems

# Sampling Systems



## INTRODUCTION

For over 60 years, the James A. Redding Company has been the pioneer in the design, production, and supply of bulk material sampling systems and components. The company has installed over 500 systems around the world and is the leader in providing customized sampling systems that meet all current sampling standards. James A. Redding's experienced staff works closely with clients in designing systems that meet the requirements of each individual situation from new installations, improving existing systems, or retrofitting new systems in existing facilities. Qualified field service technicians are available to assist in installation and startup and can also provide expertise in particular sampling techniques.

With close to 70,000 square feet of manufacturing space, the James A. Redding Company is fully equipped to build the largest of systems and all the components needed to meet customer needs. Our clients rely on us to furnish quality, precision, and service in every project we undertake.

## DESIGNERS | ENGINEERS | MANUFACTURERS

The James A. Redding Company is the pioneer in the design, production, and supply of sampling systems. When precision, quality, dependability, and service are a must; the James A. Redding Company is the clear solution to your sampling needs.

### Sampling Systems

- Two-Stage Sampling Systems
- Three-Stage Sampling Systems
- Auger Sampling Systems



### Sampling Components

- Primary Samplers
- Secondary Samplers
- Tertiary Samplers
- Belt Feeders
- Sample Crushing
- Final Sample Collectors



# Sampling Systems

## TWO-STAGE SAMPLING SYSTEM



**Two-Stage Dual Primary Sampling System**



**Barge Unloading Sampling System**



**As Fired Sampling System**



**Nuclear Analyzer Feed System**

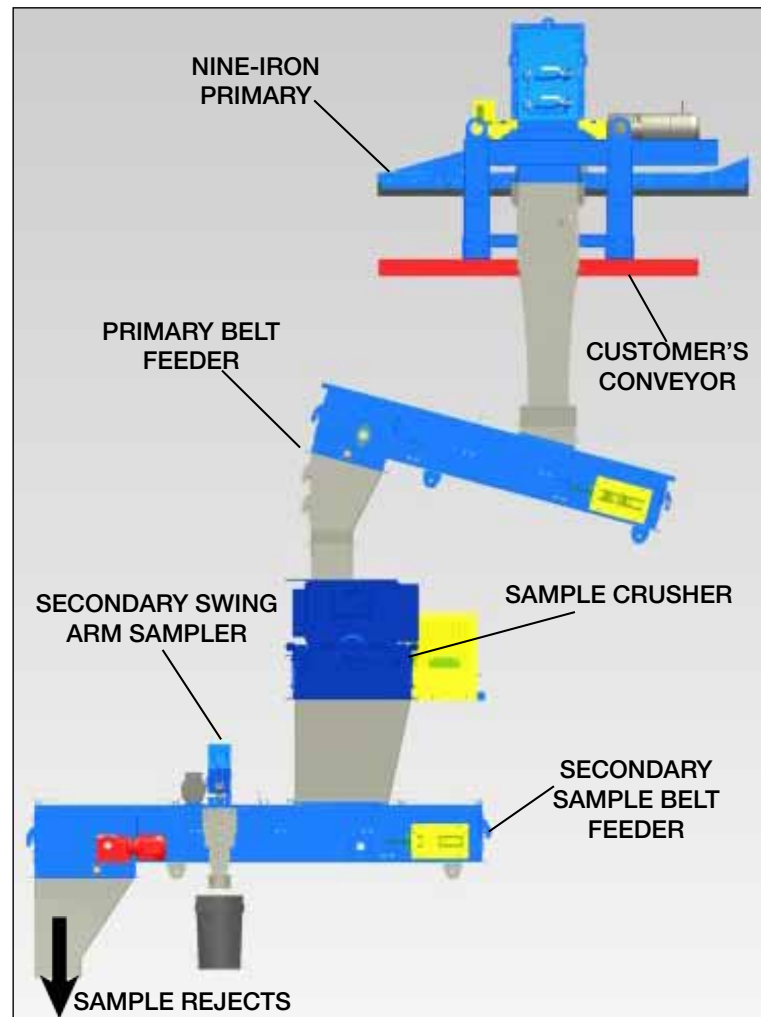
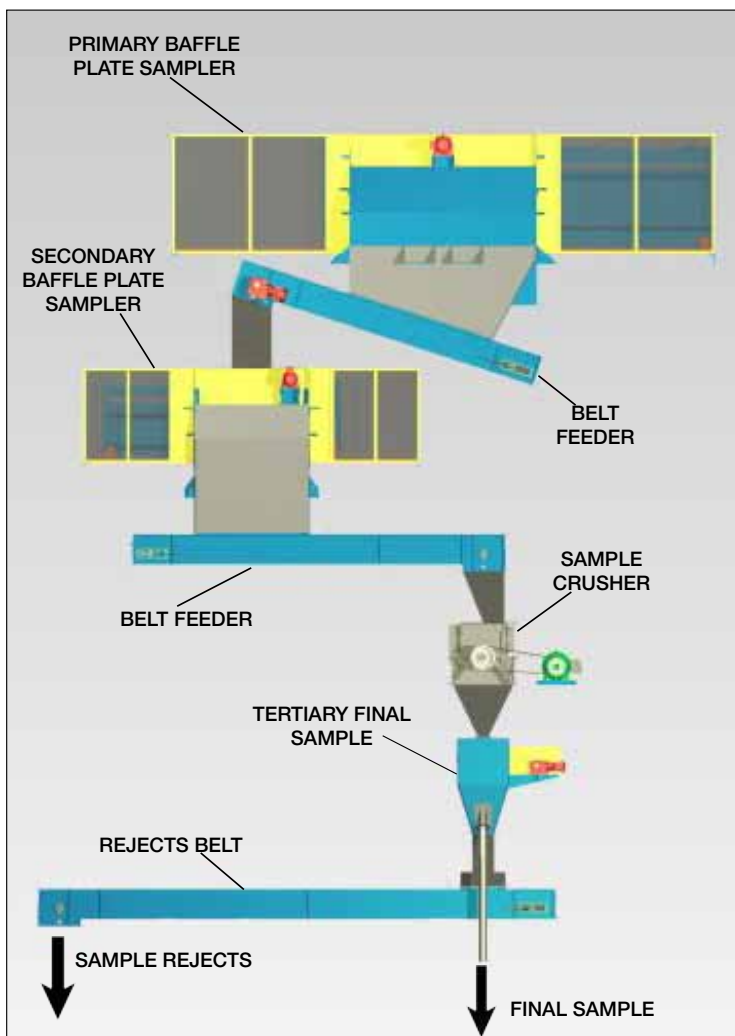


**As Received Sampling System**

## TWO-STAGE SAMPLING SYSTEM

### Sample Process

For large flow applications, the extracted sample from the "Nine-Iron" swing sampler is fed by a belt feeder to a crusher. The crushed product is resampled by a secondary swing sampler to meet the need of the customer requirements and applicable ASTM standards. The extracted sample is deposited into a single container or a pre-selected container on a multi-position sample collector. The rejects material is returned to the main conveyor, rejects storage area, or a customer designated area.



## THREE-STAGE SAMPLING SYSTEM

### Sample Process

Three-Stage sampling is required when the quantity of primary sample is too large for economical crushing and to obtain an adequate final sample extraction. The additional stage re-samples the primary increment to reduce the pre-crushing sample to a manageable quantity; this is a factor of high tonnage and in some cases larger particle size.

### Optional Equipment

- Cross-the-Belt Secondary Sampler
- Cross-the-Belt Final Sample
- Multi-Positional Collectors
- Nuclear Analyzer Feed



## AUGER SAMPLING SYSTEMS

A true sample of a truck or railcar of coal can only be obtained prior to unloading. Once it is unloaded, the individual load mixes with other coals, and loses its specific characteristics. Auger sampling systems designed by James A. Redding Company produce a true sample from the container, thus retaining its identity. All Redding auger sampling systems are designed in accordance with the applicable ASTM standards, and rugged enough to maintain its reliability.

### Optional Equipment

- Hydraulic Drip Pan
- Split Sample Augers
- Customized Control Room
- Sample Processing Enclosure.



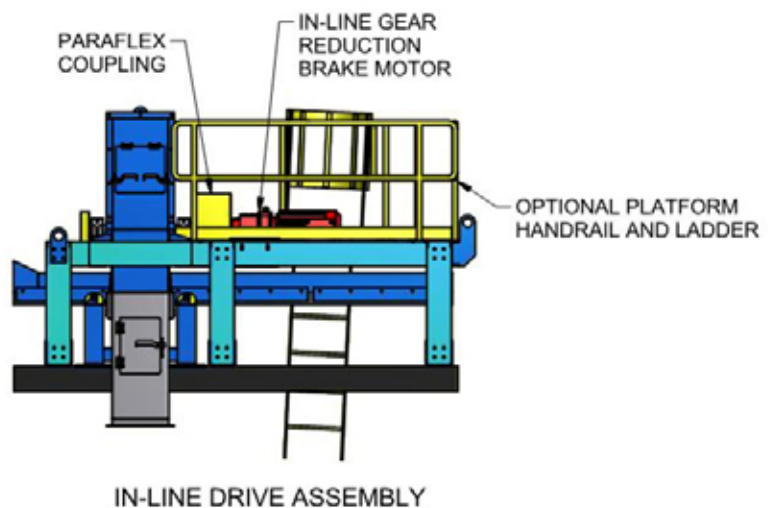
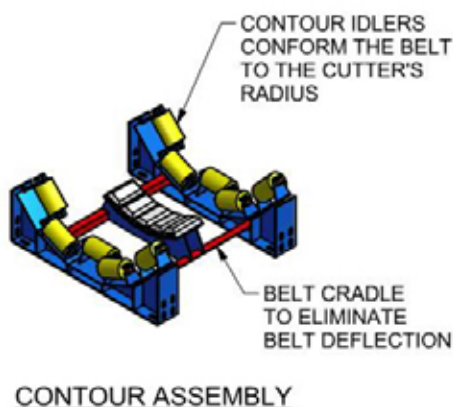
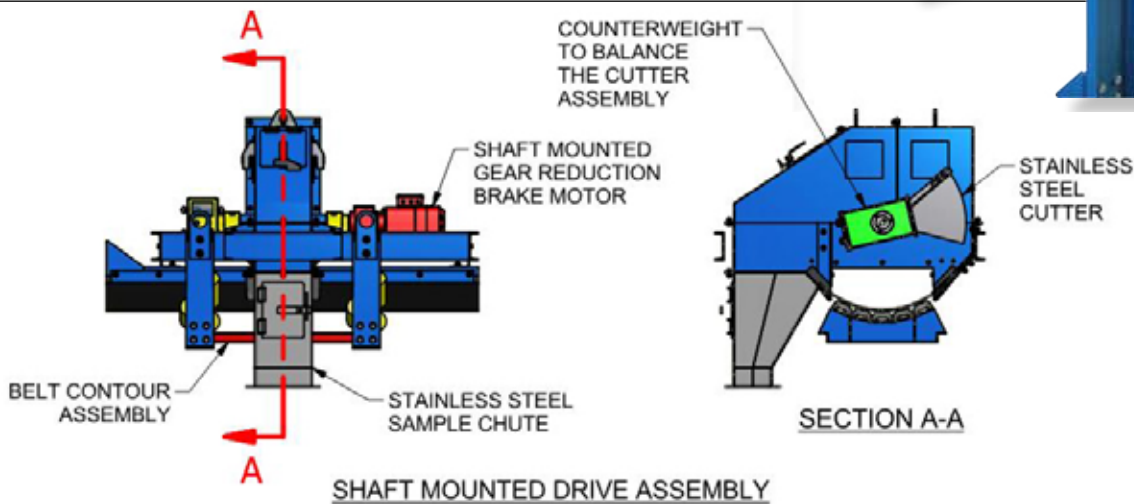
## "NINE-IRON" SWING SAMPLERS

### How It Works:

In its parked position over a conveyor belt, the counterweighted, stainless steel cutter rests at the top of it backswing. When activated, the electromechanical drive rotates the cutter through its swing in a perfect arc, extracting a cross-sectional sample cut that represents the material on the moving belt. An adjustable wiper blade mounted on the rear of the cutter and (2) two contour idlers adapt the customer's belt to the cutters radius to help ensure that all sampled material is deposited into the stainless steel sample chute. The cutter follows through and is stopped by the brake motor in its original parked position.

### The "Nine-Iron" Sampler Features and Benefits

- Models for all belt sizes
- User friendly sampling
- Minimal system height
- Easy retrofit
- Flexibility
- Low cost

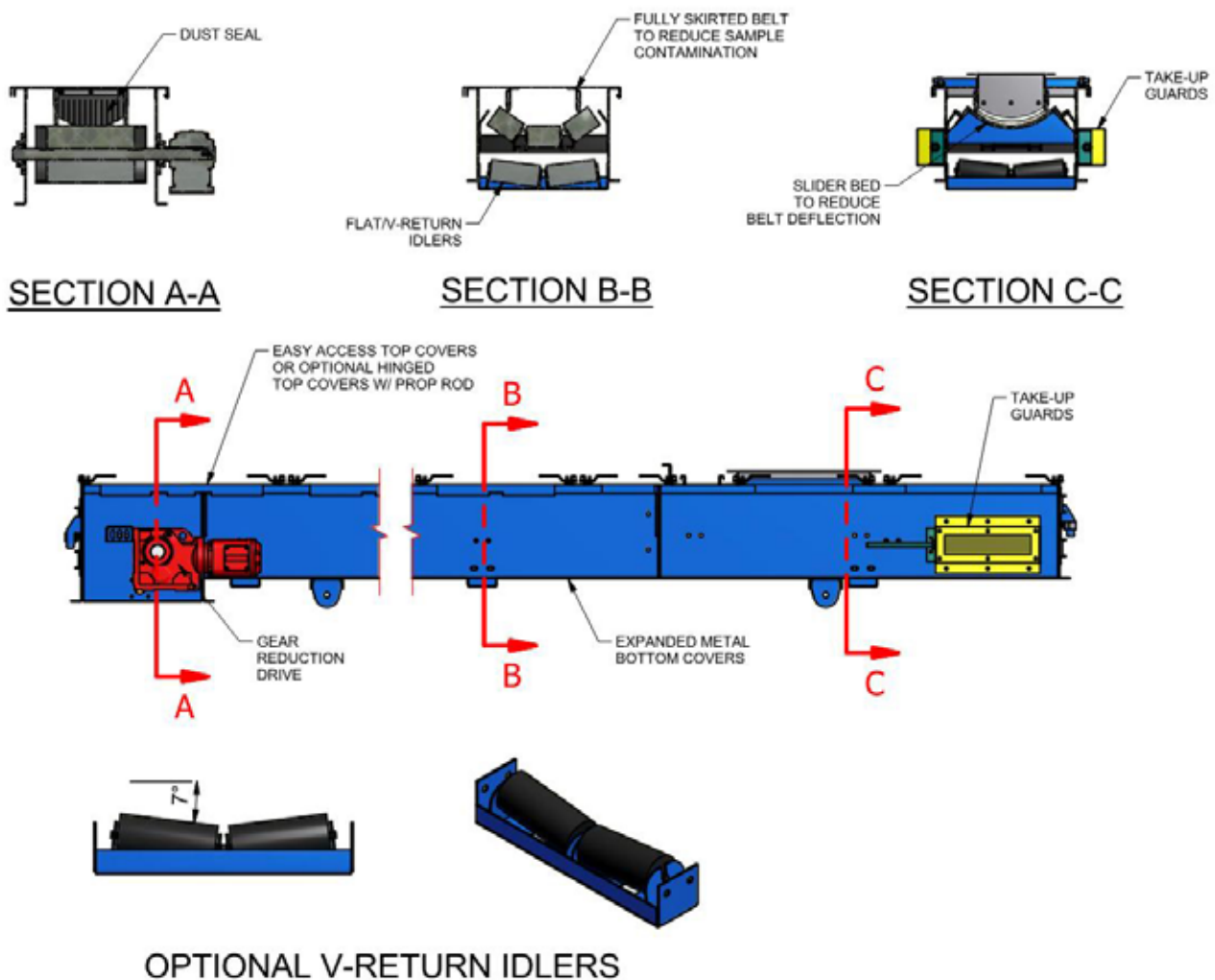


# Sampling Systems

## BELT FEEDERS

James A. Redding belt feeders offer a wide range of design options

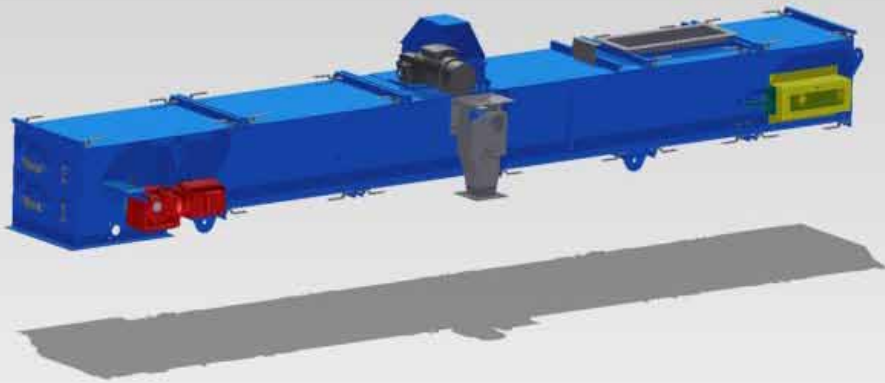
- Fully Skirted Belts
- 35 Degree Troughing Idlers
- V-Return Idlers (optional)
- Easy Access Top Covers
- Hinged Top Covers with Prop Rod (optional)
- Heavy-Duty Design





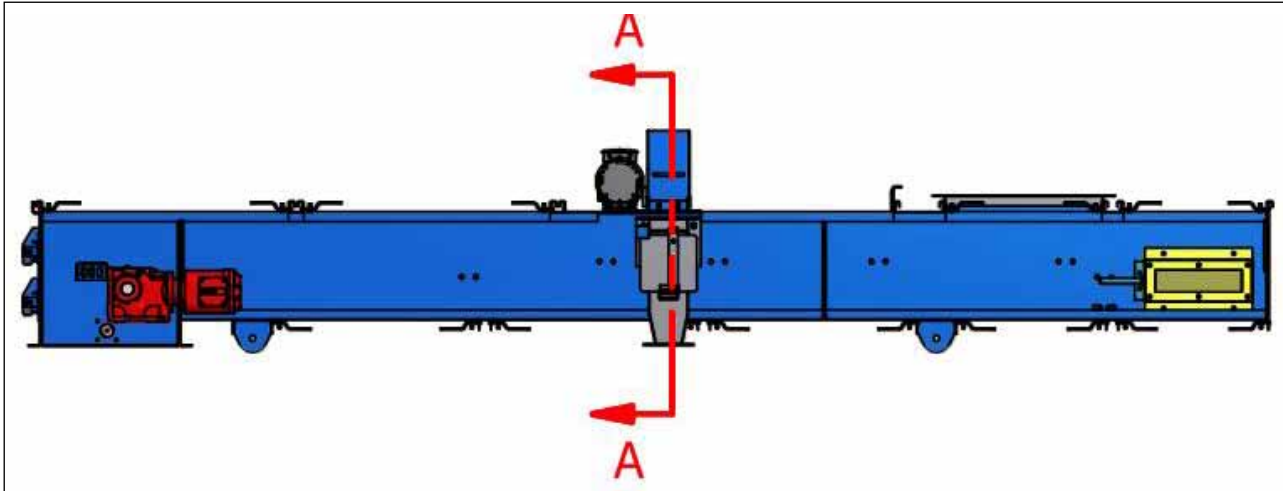
## SECONDARY SAMPLE BELT FEEDER

Our model WJS swing samplers are incorporated onto our belt feeders. Like our Nine-Iron primary swing sampler, the WJS swing sampler extracts a sample directly from our moving belt feeder. Models are available for our 14", 18", and 24" wide belt feeders. WJS swing samplers are available with single or double discharge (reversible) cutters.





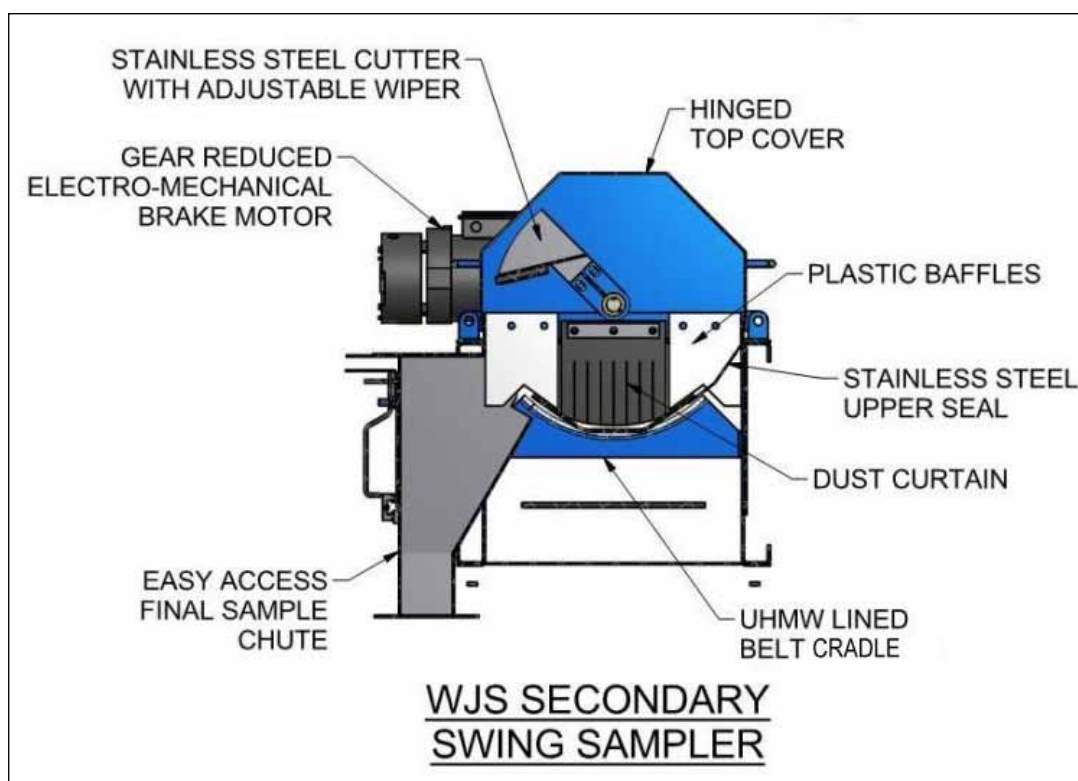
## SECONDARY SAMPLE BELT FEEDER



### How It Works:

In its normal park position, over our moving feeder belt, the stainless steel cutter rests. When activated, the gear reduced electro-mechanical drive rotates the cutter through its 360 degree swing in a perfect circle, extracting a cross sectional cut of material from the moving belt feeder.

An adjustable wiper on the cutter ensures that all of the material is deposited into the stainless steel final sample chute. The cutter follows through and is stopped by the motor brake in its original parked position.

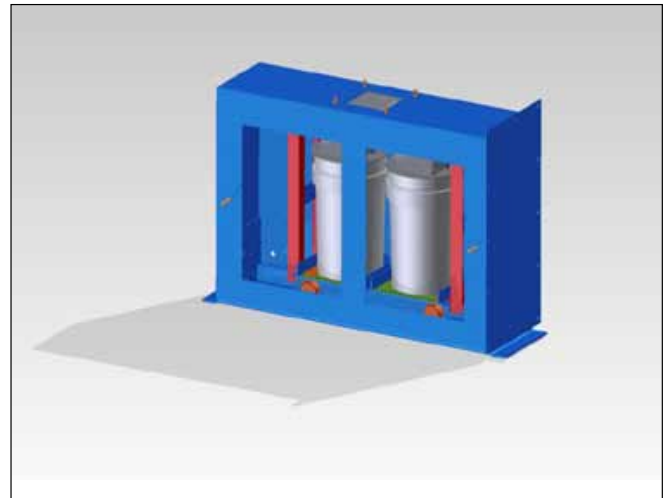


## FINAL SAMPLE COLLECTORS

The best final sample collection is accomplished with non-corrosive, airtight containers that are located as close as possible to the final sampler. By using this method, the moisture integrity of the sample is retained.

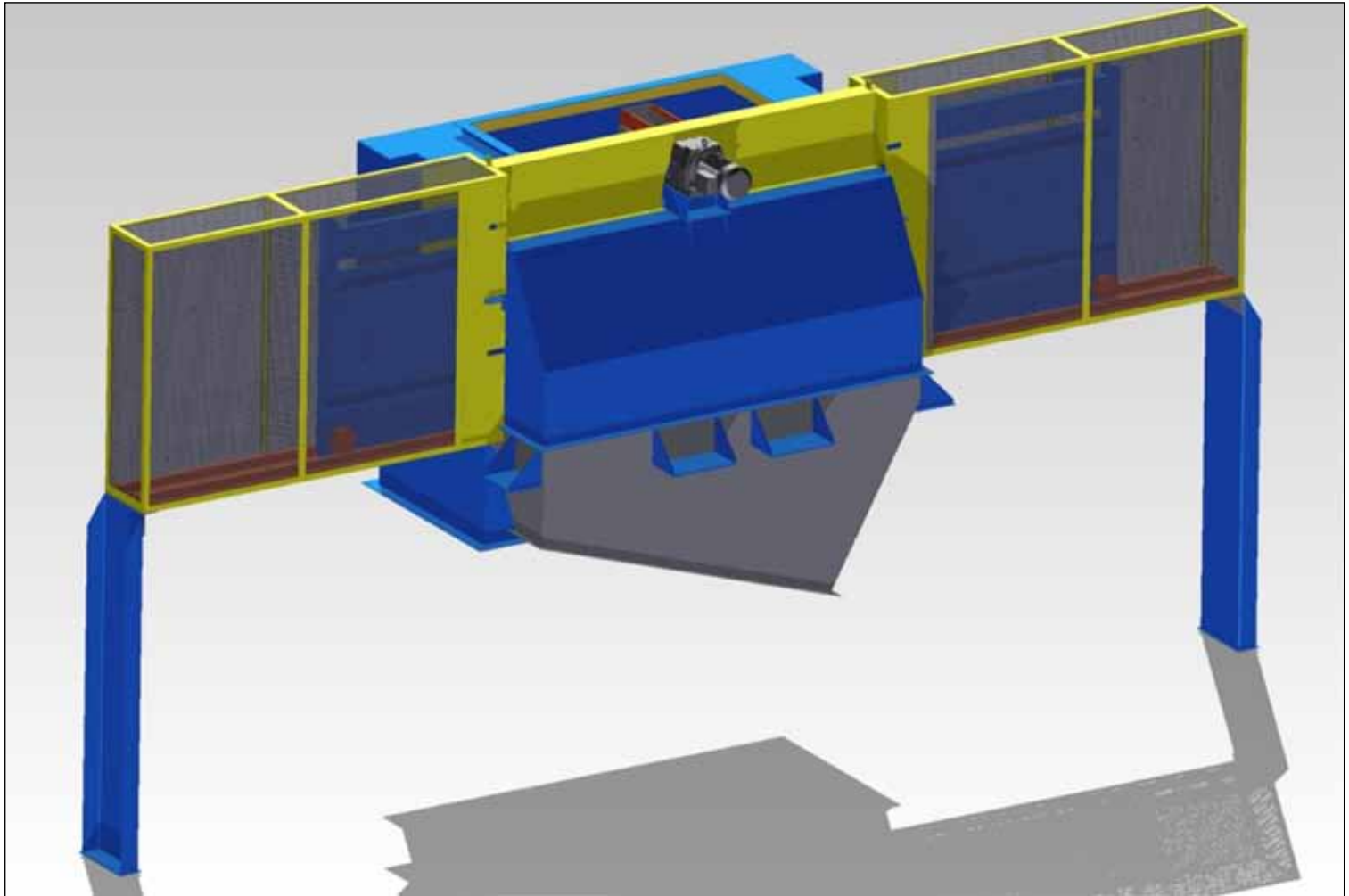
James A. Redding Company offers customers their choice of single container, or 2, 4, 6, 8, 10, 12, or 14 position collectors, all are provided with heavy duty plastic containers.

These multiple-position collectors can be indexed locally or by a remote signal.





## BAFFLE PLATE SAMPLERS



### How it Works:

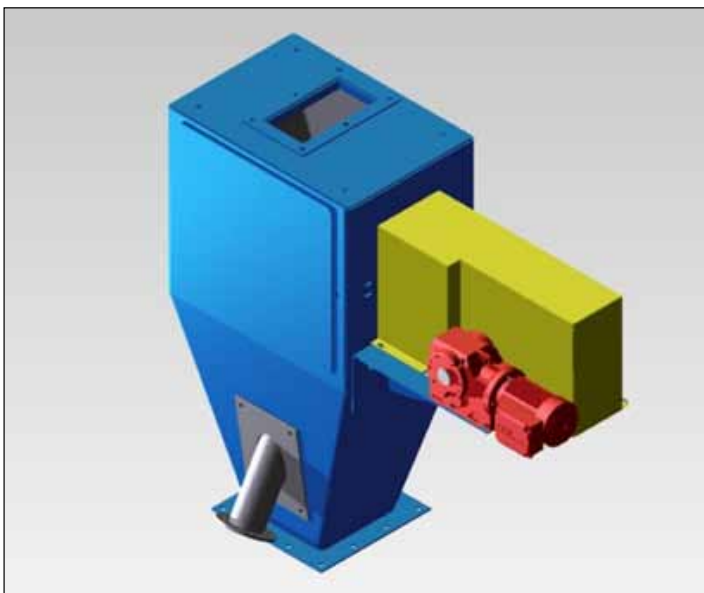
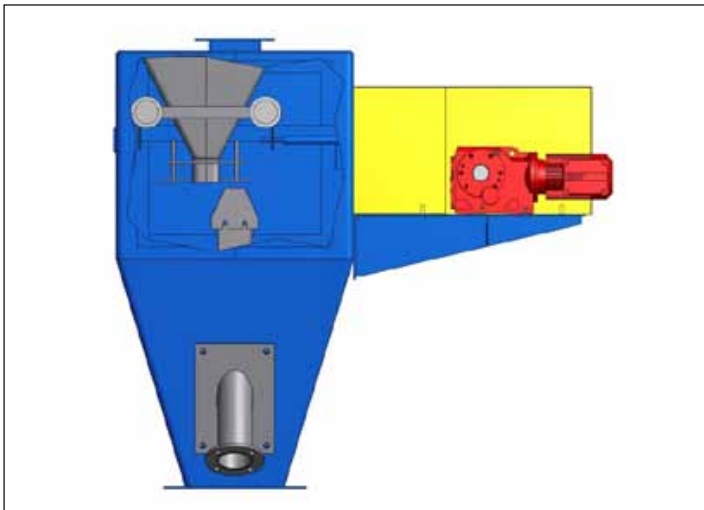
From the parked position the baffle plate cutter moves into the falling stream of material at 18 inches per second. As it passes through, the cutter collects a sample of material, and distributes it onto a transfer belt feeder. The rejects material passes through the sampler and continues through the existing chute work.

### Baffle Plate Sampler Options

- Hydraulic Cylinder Drive
- Rack and Pinion Electro-Mechanical Drive
- Ceramic Lined Baffle Plate
- Easy Access Guards

## SAMPLE CRUSHERS

Crushing is usually part of a sampling system where on-line sample preparation is required. Sampling standards dictate the required reduction of material size and volume. Crushing is also the primary source of possible moisture loss in the extracted sample. James A. Redding Company sampling systems minimize moisture loss by sealing the path of the sample, and sizing the crusher drive to achieve the lowest practical rotor speed. Hammermill crushers are used in the majority of cases. A number of models are available to handle different material sizes and tonnages. Most crushers we utilize have fixed hammers, and easy access upper housings to reduce dust and provide ease of inspection and maintenance.



## SECONDARY SAMPLER MODEL DTS-200

### How it Works:

This Sampler uses a traveling hopper above a fixed "Type-C" cutter with a rounded bottom. It is the after-crushing sampler in either a two-stage or three-stage system. The final sample is extracted as the hopper passes at a constant speed over the fixed cutter. Sealing plates cover the cutter opening completely to prevent contamination when the hopper is parked.

### Optional Equipment

- Hydraulic Drive
- Electro-Mechanical Drive
- Rack and Pinion Drive
- Electric Actuator Drive



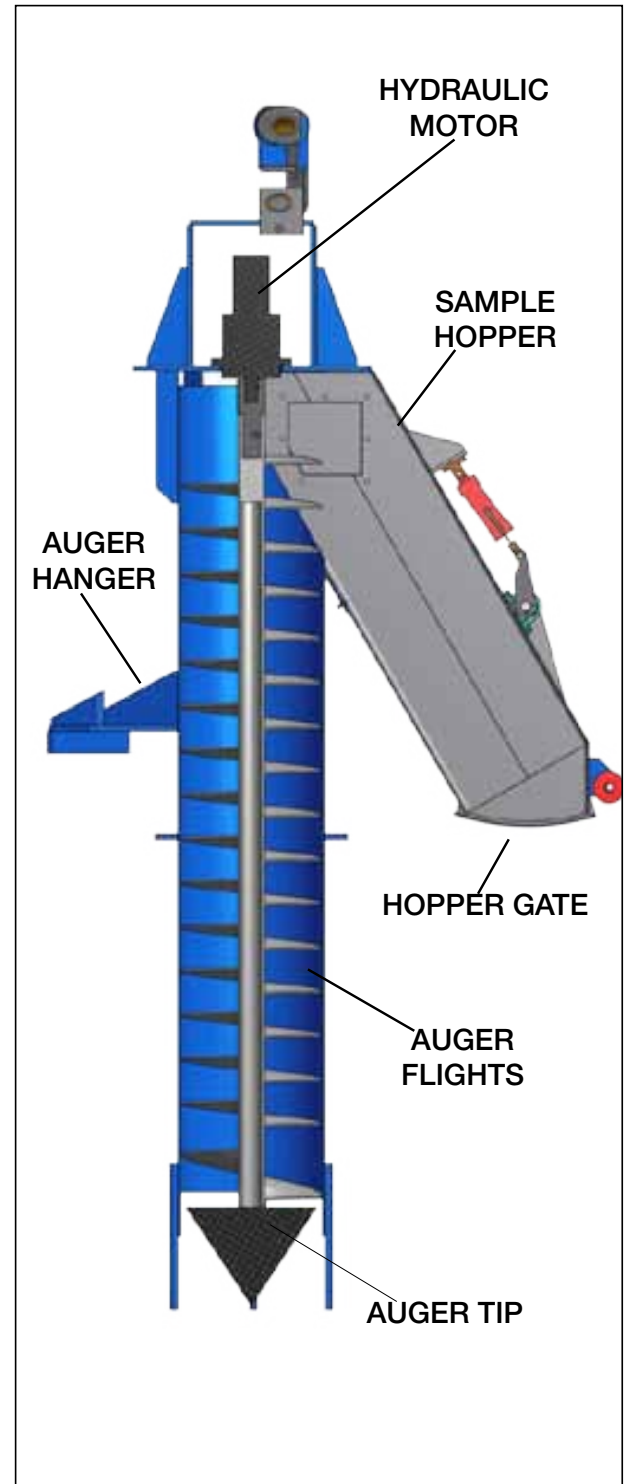
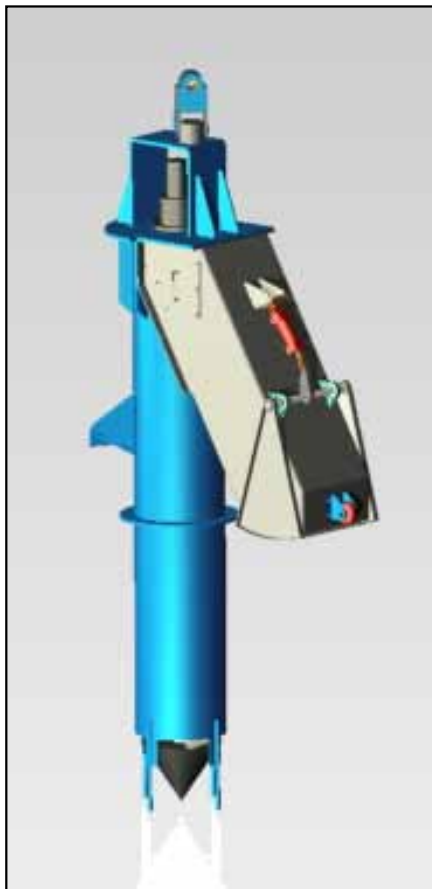
## SAMPLE AUGER

### How it Works:

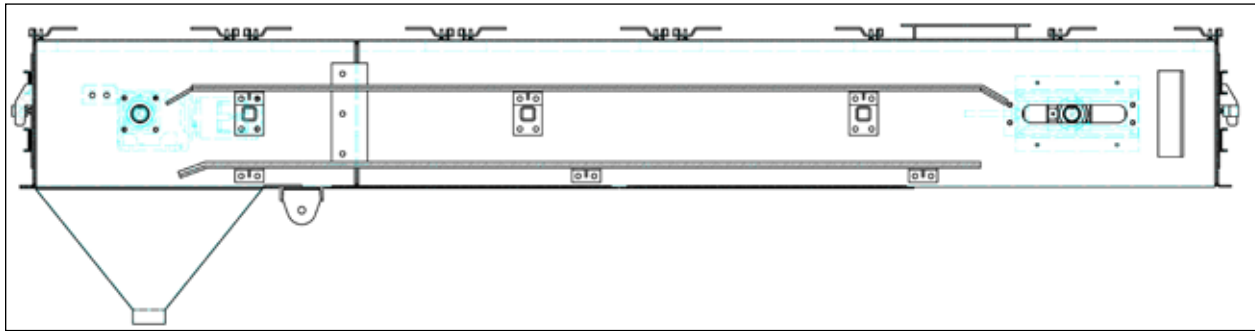
As the truck or train car approach the auger system, an operator remotely positions the auger over the load. The auger is then lowered into the material, collecting the predetermined amount of sample and depositing it in the auger's sample hopper. The auger is then swung into position with the sample hopper in the primary sample bin. The operator then remotely opens the hopper gate and distributes the sample into the sample reduction system.

### Optional Arrangements

- Hydraulic Cylinder Drive
- Rack and Pinion Electro-Mechanical Drive
- Ceramic Lined Baffle Plate
- Easy Access Guards



## FALLING STREAM SAMPLER



### How it Works:

The falling stream sampler is usually located under the head chute of a conveyor. As the material falls through the sampler housing, the sample bucket, driven by an electric motor, chains, and sprockets pulled passes through the stream and collects a sample. The sample then rotates around the sprocket and stops, emptying the sample into the sample discharge chute. The sample discharge chute directs the sample into a final sample container. The falling stream sampler can be programmed to collect samples by truck, hour, or shift.





# Sampling Systems

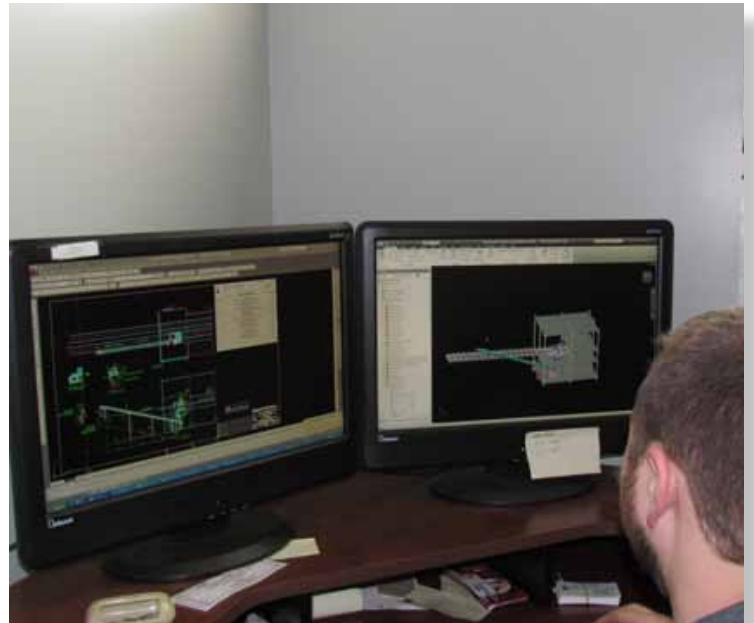


## ENGINEERING

The James A. Redding Company has over 60 years of experience designing sampling systems. With state of the art software, like Autodesk Inventor, our design team can provide you with 3D modeling, drawings, detailed plans, and layouts.

**AutoCAD/Inventor** contains the most advanced technology for building information, modeling, and providing field-proven solutions built specifically for engineers, designers, and drafters.

**Tekla Structure** is a modeling system that covers the entire structural design process from conceptual design to detailing, fabrication, and construction.



## FIELD SERVICE

Our highly qualified field service team can assist you with:

- New System Start-Up
- System Troubleshooting
- Existing System Inspection
- New System Training
- • Pre-Bias Test Inspection





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