

**“Appendix No. 1”****Technical Information**

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**70' Back-On Truck Dump and  
Receiving Hopper**

## “Appendix No. 1”

# Technical Information

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### Engineering and Project Management:

#### Engineering:

BRUKS® Rockwood will provide the engineering and design services necessary for this project as described below. A Project Engineer/Manager assigned to the project with staff support from the various engineering disciplines will coordinate the engineering work. Engineering will include development and preparation of the following drawings.

#### Mechanical Engineering:

⇒ General Arrangement Drawings

#### Civil/Structural Engineering:

⇒ Foundation Load Drawings

#### Reclaimer Engineering

⇒ Bill of Materials

⇒ Specifications for Mechanical Components

#### Electrical Engineering:

⇒ Motor List

⇒ Control List and Corresponding Cut Sheets

⇒ P&ID Drawing

⇒ Suggested Control Panel Drawing

#### Project Management:

BRUKS® Rockwood offers to provide project management services for the project consisting of home office management to execute the project. Project management services will include the following:

#### Home Office Management:

- ⇒ A part time Project Engineer/Manager will be assigned to the project during the engineering phase to execute the engineering scope of work. The Project Engineer/Manager will also coordinate the engineering work being performed for the major purchased equipment.
- ⇒ A project schedule will be developed using Microsoft "Project". The schedule will include engineering, procurement, fabrication, and shipping activities. The schedule will be updated on a monthly basis during the project.
- ⇒ Procurement services will be provided for purchasing engineered equipment, conveyor components, fabricated steel and miscellaneous materials and services as required for the project.
- ⇒ Expediting services for vendor drawings, equipment delivery and steel fabricators, including on-site expediting of fabrication as required.

**“Appendix No. 1”****Technical Information**

---

**Equipment Supply:**

BRUKS® will supply the mechanical equipment as described to provide a complete system. Preliminary selections of equipment have been made for the purpose of developing the proposal. Mechanical specifications for equipment have been based on information provided by the customer and BRUKS Standards. For this proposal, equipment sizing and selection have been made based on this information and may change during the engineering phase.

All purchased equipment and components will be furnished with the manufacturer's standard surface preparation, paint system, and warranty.



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## “Appendix No. 1”

# Technical Information

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### **Platform Description:**

The BRUKS platform has been designed to survive under extreme high use conditions typical of most wood processing facilities. Unlike others, the BRUKS platform has a life expectancy of 2,000,000 cycles. This will far exceed 25 years of full-time service. The platform is designed for a GVW of 130,000 pounds and utilizes two, multi-stage, inverted telescopic cylinders to utilize the natural cleaning of the cylinder face. Once the receiving truck has backed onto the platform it is raised to its maximum angle causing the material to flow freely into the hopper. The full lift and lower cycle is completed in approximately 4.5 minutes.

### **Hopper Description:**

BRUKS offers a compatible receiving hopper used to convey materials away from the chip trailer and onto the customer’s take-away conveyor. The BRUKS design utilizes above grade construction eliminating the need for civil excavation or below grade pits. The live bottom design uses heavy duty class drag chain with wings to efficiently convey the materials in mass through a shear gate prior to discharging onto the take-away conveyor. The spacing of these chains is specially designed to your application and is based on many years of experience in the material handling industry.

The BRUKS hopper is offered in multiple widths. A 12’ wide design is recommended for clean, uniform and free flowing materials. For processes that may receive lower quality materials, BRUKS recommends the extra wide 16’ hopper design.

The hopper’s conveying capacity is controlled by chain speed and the adjustable shear gate opening. In typical operations these parameters are permanently established as part of the commissioning phase. By utilizing a VFD (by others) the customer will maintain the ability to fine tune reclaim capacities through chain speed control.

Where material clumping or bridging is a concern, the BRUKS hopper can be equipped with ancillary devices to improve material flow. A spike roll can be provided inside the hopper to

**“Appendix No. 1”****Technical Information**

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break apart large clumps of material that may result in “frozen” or “high sap” conditions. The spike roll is designed to reduce the size of these clumps prior to shear gate. Another option for improved material flow is a leveling roll at the discharge head of the hopper. The levelling roll is designed to uniformly distribute material onto the take-away conveyor.

The BRUKS equipment is provided with a discharge hood that covers the head pulley of the hopper. This hood includes a mounting flange for the chute work leading to the take-away conveyor’s skirt board. For proper material transition and flow, a minimum valley angle of 55 degrees should be applied to a properly sized belt. BRUKS engineering will provide recommended guidelines as part of the approval documentation process unless included in our scope..

Zero speed switches are provided for the drag chains and optional roll devices

Necessary bolts and fastening hardware are provided by BRUKS. (Excluding anchor bolts)

## “Appendix No. 1”

# Technical Information

---

### Hopper General Installation:

The major components of the hopper are shop assembled. The components are shipped to field in the largest pieces possible for standard ground freight; this type of construction minimizes erection content and costs.

### Hydraulic Power Unit Details:

The BRUKS® HPU system consists of an overhead reservoir design to provide a compact and efficient power unit solution. This design utilizes gravity to improve the performance of the system components and increase the efficiency of its power components. All of the system’s components are contained on a mounting deck that includes containment provisions for minor spillages.

Power unit components include:

|                                |
|--------------------------------|
| 600 Gallon Reservoir           |
| 60 HP Motors                   |
| 53 GPM Vane Pumps              |
| Vented Unloading Relief Valves |
| 10 Micron Vent Line Filters    |
| 10 Micron Return Line Filters  |
| Proportional Throttling Valves |
| Temperature Level Switch       |
| Warren Electric Tank Heater    |

### Controls:

NEMA 4X Push Button Control Panel. Panel is prepared for the end users PLC. (PLC can be provided as an option)

One inclinometer per platform is provided. The inclinometer will be field mounted and stubbed for Purchaser wiring.

One limit switch is provided per platform. One max-up.

Electrical power wiring to motor, controls, and instruments is by Purchaser.

### Piping:

Hydraulic power unit is self-contained. Purchaser provides materials required for piping from the power unit to the cylinders. Sizes and pressure specifications are provided by Bruks.

### Options:

## “Appendix No. 1”

# Technical Information

---

### Dust Covers:

As an option, the receiving hopper can be equipped with a hinged cover and rubber strips at the opening to minimize fugitive dusting as the truck is being unloaded. A transparent hard cover provides a seal over the back side of the hopper. This dust hood will be designed to accommodate a dust collection system (by others) chosen by the customer.

### Spike Roll:

If needed, a spike roll can be installed at the receiving end of the hopper. It is a shaft mounted drive that extends the full width of the hopper which rotates opposite the flow to break up large clumps of material before reaching the shear gate. This reduces chain drive torque.

### Leveling Roll:

Located outside the hopper shear gate above the head roll, it is designed to fluff material that has become compressed as it passes through the shear gate. As the Leveling Roll rotates with the flow of material it evenly distributes material as it discharges onto the take-away conveyor.

### Passenger Side Walkway:

A 24” walkway with handrails can be installed on the passenger side identical to the driver side walkway.

### Access Platform:

This additional platform provides access to the Hopper drive. Includes grating, handrails, and ladder.

### Hydraulic Adjustable Backstop:

Typically backstops are manually adjustable. In the case that trucks of many different sizes are used for receiving material, a hydraulic adjustable backstop is available for quick and easy adjusting.

### PLC:

This option provides a programmed PLC in our electrical panel that will be fully programmed for the truck dump system to operate stand-alone from other equipment. This option includes an emergency relay that can be reset from an operator/control room.