TRIPLE/S DYNAMICS, INC.

SCREENING STRATEGIES DIVISION

HOW TO FEED THE TEXAS SHAKER® FOR BEST PERFORMANCE

A straight-line reciprocating flat screen, the TEXAS SHAKER® delivers its peak performance when the incoming feed stream is spread evenly across the width of the screen. This requires an expansion in width from the usually concentrated stream discharged from a conveyor or elevator to the width of the screen feed inlet, a few inches less than the nominal screen width.

Feed system designs to achieve this expansion can be separated into two categories: the dynamic and the static. The dynamic system is preferred when the infeed stream entering the stationary expansion zone can be centered in a vertical plane through the centerline of the screen, Fig. 1(a). The static system is best when a concentrated feed stream is off-center to the screen Fig. 1(b), or enters at an oblique angle to the centerline Fig. 1(c).

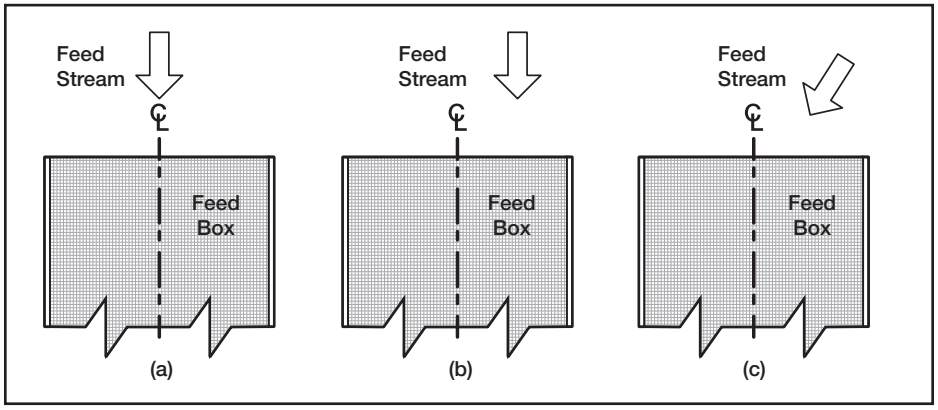

Figure 1 – Concentrated Feed

Any feed system design should include some provision for bypassing the material around the Screener.

THE DYNAMIC SYSTEM

The essential characteristic of the dynamic system is that the material flow is continuous. Retarding steps at the inlet to the expansion zone are intended to slow the velocity of the stream, but the volumetric flow is never interrupted. The desired "pooling" effect of the reduced velocity in the expansion can be enhanced by a contour baffle (Fig. 2) or distributing vanes, which can be augmented with an adjustable slide gate (Fig. 3).

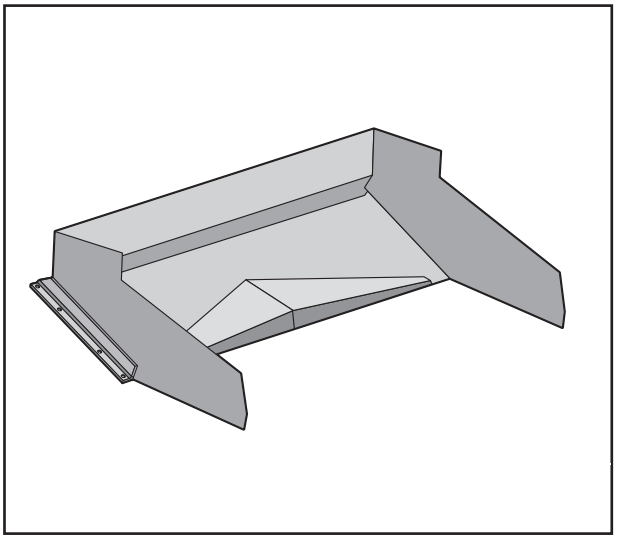

Figure 2 – Contour Baffle

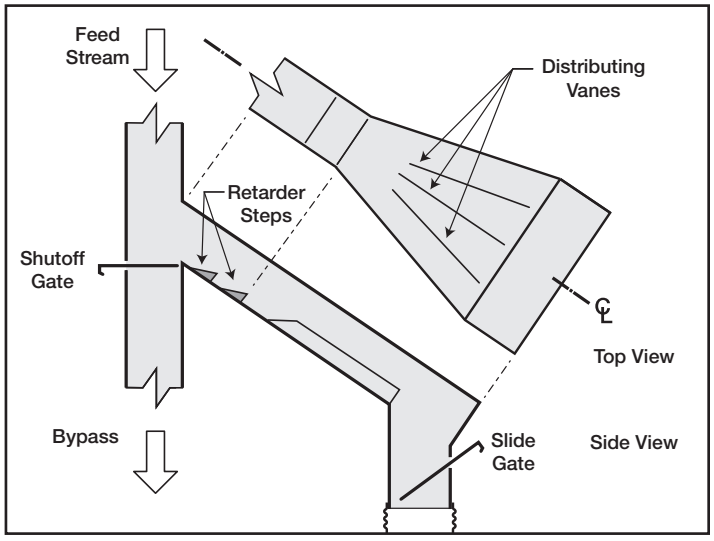

Figure 3 – Distributing Valves

A cascade system of vanes in the expansion zone, (Fig. 4) is very effective in distribution of free-flowing granular materials that are free of foreign objects or trash that could obstruct the passages.

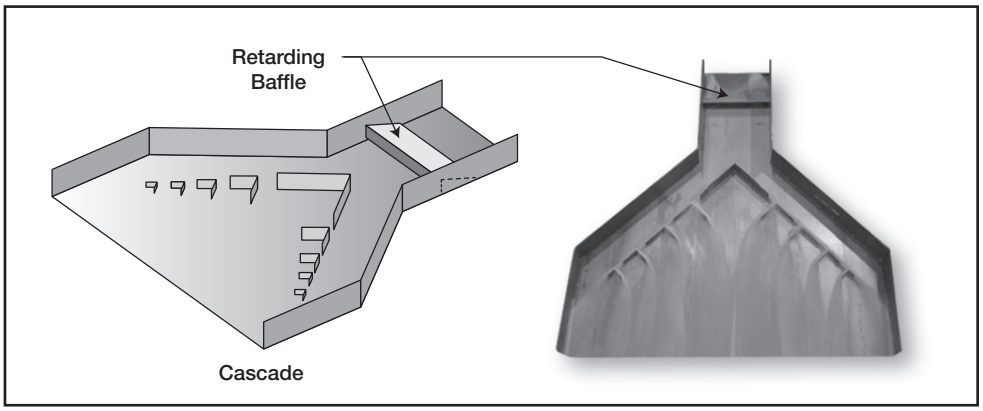

Figure 4 – Cascade distribution

THE STATIC SYSTEM

The static system should be considered when an off-center or oblique entrance to the screen feed inlet cannot be avoided. To get good distribution across the width of the screen, the material flow must be briefly interrupted. This is done in a small surge bin. The depth from inlet to the full-width exit opening is determined graphically in each case, taking into account the position and approach angle of the feed chute, and the angle of repose for the material. Minimum volume held should be equal to at least 1 second at the design flow rate. The purpose of the surge bin is to maintain a minimum inventory of material behind the exit opening, regardless of the position or orientation of the delivery chute.

Gravity flow from the exit can be controlled with a variable-rpm rotary feeder (Fig. 5) or a counterweighted gate (Fig. 6). These gravity-flow metering systems are vulnerable to partial flow blockages from tramp oversize objects and trash caught behind the gate openings, or trapped in the mouth of the rotary feeder. As a safeguard against accidental flow interruptions, it's a good idea to provide access doors in the surge bin for quick cleanout, supplemented with an emergency bypass from or upstream of the surge bin, (Fig. 7).

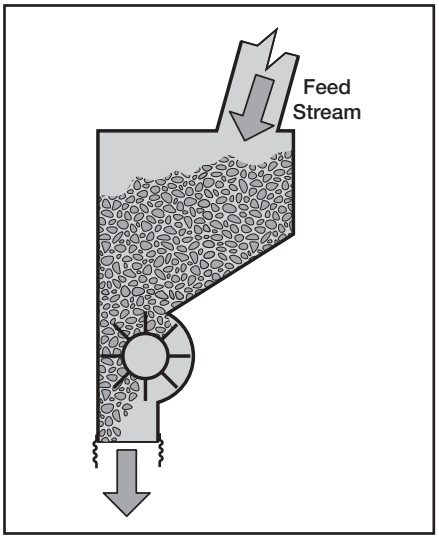

Figure 5 – Rotary feeder

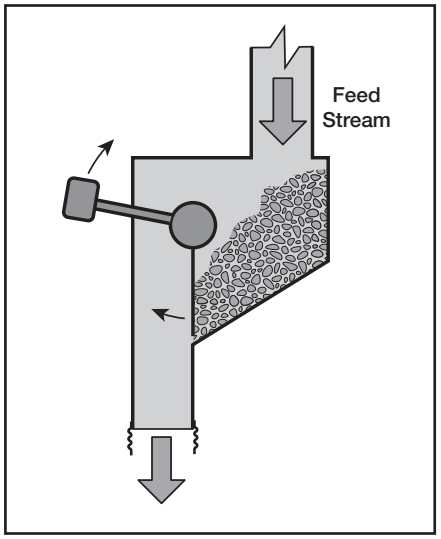

Figure 6 – Counterweighted gate

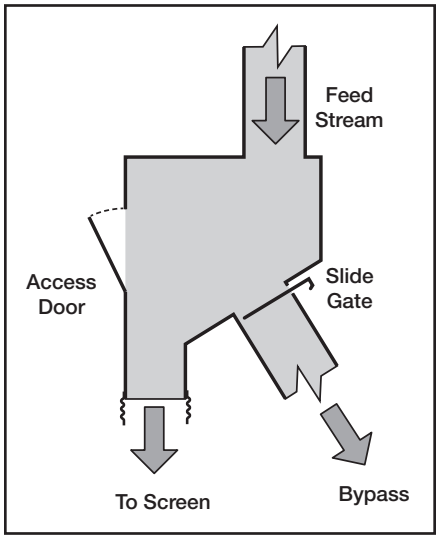

Figure 6 – Static surgehopper bypass