

# RUBISCO2 Feeder — Q23: Sand Discharge Geometry

Conceptual drawings of five options for where and how sand exits the feeder. Andi (2026-05-08): the lower side ramp is too short / improperly positioned, sand lands near the legs. Pablo (voice note 2026-05-08) named two candidate fixes: wider deflector overhanging beyond the legs, or an opening in the base plate so the tractor scoops from underneath without entering the footprint.

## Our recommendation — Option B (deflector alargado en Y)

**Option B** is the simplest fix that solves Pablo's stated problem:

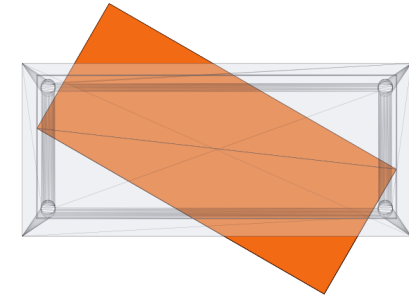
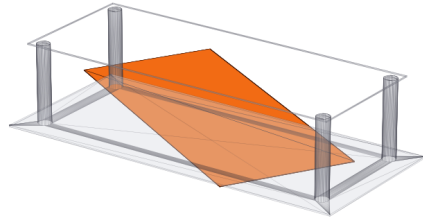
- Pure dimension change — wider 304 SS plate, same hanger-tab pattern.
- Sand lands clear of the leg footprint by design.
- No structural changes to the base plate (D's risk).
- No additional fab steps (C's side walls).
- Doesn't introduce asymmetric loading (E's con).

Option D (hueco en placa base) is operationally cleanest — the tractor never enters the machine footprint — but it cuts the base plate that's already doing tipping-stability duty per item 14, and needs structural verification + reinforcement. Worth considering if Pablo wants a one-pass fix for items 10 + 14 combined. Options C (side walls) and E (lateral tilt) are stronger if the discharge needs to be a single point — pick those if the tractor approach pattern is rigid.

Generated 2026-05-08 from *feeder\_q23\_discharge\_concepts.py* + *feeder\_q22\_q23\_render\_png.py*. STEP + STL available per variant.

## Option A — Status quo

Current design: PRT-30070 deflector 2300 × 1000 mm at 30° fore-aft tilt, sitting below the bin floor. Sand falls through the perforated bin floor, hits the deflector, and slides off the leading edge onto the base plate area.



Iso

Side

Plan

### **Pros**

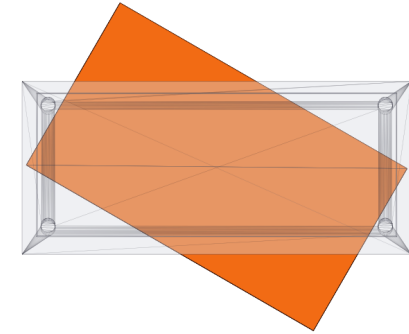
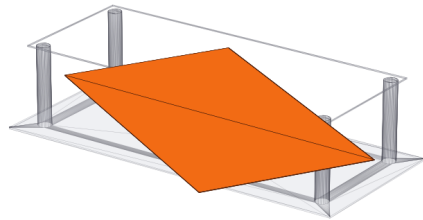
- Already designed and exported as PRT-30070.
- Simple geometry — single tilted plate + 10 hanger tabs.
- Decoupled from the vibrating bin (mounted to frame, not bin).

### **Cons**

- Sand lands on or very near the leg footprint — exactly the failure mode Andi flagged.
- Tractor has to reach in close to the legs to scoop sand, awkward.
- Wider frame (after the X-bracing redesign) makes the leg footprint extend past the deflector edge in some directions.

## Option B — Deflector alargado en Y — RECOMMENDED

Deflector widened from 1000 mm to 1300 mm Y-span — overhangs the leg footprint by ~150 mm on each side. Same X length, same 30° tilt. Sand lands clear of the legs by gravity.



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Side

Plan

### **Pros**

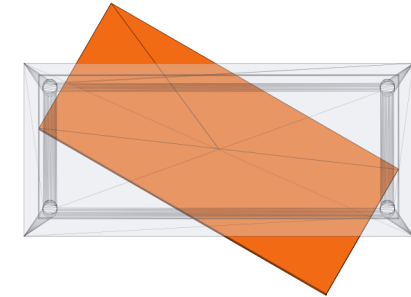
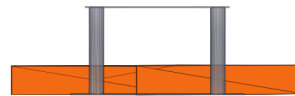
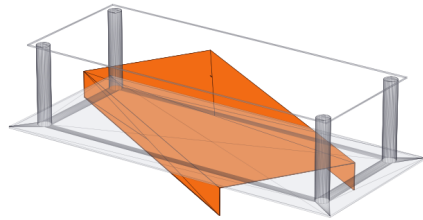
- Pure dimension change — no new fab operations beyond cutting a wider plate.
- Sand lands beyond the leg footprint by design.
- Simplest fix Pablo named in the voice note.
- Same hanger-tab pattern reused (+/- minor offset adjustment).

### **Cons**

- Wider plate = ~30% more 304 SS material per unit (cost).
- Cantilevered overhang adds a small bending moment to the hanger tabs.
- Doesn't change WHERE the tractor scoops — still has to come close, just further from the legs.

## Option C — Deflector con guías laterales

Same Y-span as A but with 200 mm side walls running along the long edges. The walls funnel sand toward one end (loader-side or drum-side, configurable by tilt direction). Concentrated discharge at one well-defined point.



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Side

Plan

### **Pros**

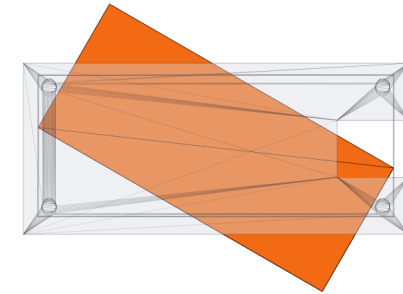
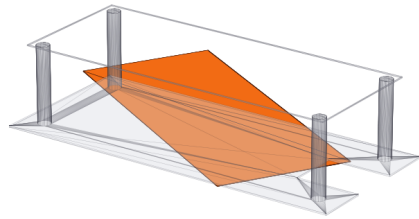
- Tractor knows exactly where sand exits — no need to scoop along a line.
- Walls keep sand contained on the deflector, no lateral spillage.
- Higher pile density at the discharge point → less tractor passes.

### **Cons**

- More fab — 4 weld lines per side wall, plus more 304 SS sheet.
- Walls can pin fibrous material if any sargasso falls through (rare, but real edge case).
- Concentrated pile = more localised ground load (minor).

## Option D — Hueco en placa base

Cut a 600 × 400 mm slot in the common base plate at the deflector exit. Sand falls onto the underlying ground (beach), tractor approaches from outside the machine footprint and scoops without reaching under the legs.



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Side

Plan

### **Pros**

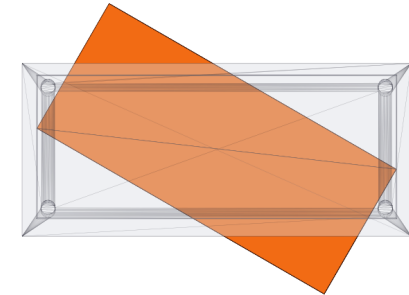
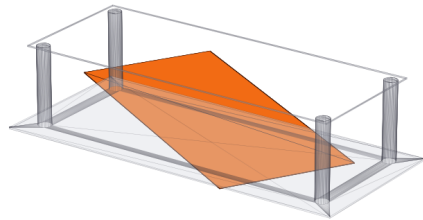
- Tractor never has to enter the machine footprint — operationally clean.
- Sand goes directly to the ground, no accumulation on the skid.
- No deflector geometry change required.

### **Cons**

- Cuts the base plate — load-bearing cross-section reduced. Need structural verification (the base plate is already doing tipping-stability duty per item 14).
- Requires reinforcement around the slot edges (perimeter angle iron or doubler ring) — adds fab.
- Sand piles directly under the machine — if the operator forgets to scoop, the pile interferes with the next dump cycle.

## Option E — Tilt lateral 30°

Deflector tilted 30° to one Y side instead of fore-aft. All sand exits to one well-defined side (the side facing the tractor approach). Geometry of the plate itself is unchanged from A; only the tilt axis rotates 90°.



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Side

Plan

### **Pros**

- Same fab as A — only the hanger-tab Z positions change to encode the new tilt axis.
- Single discharge side → tractor approach is unambiguous.
- Sand can exit fully past the leg footprint on the chosen side.

### **Cons**

- All weight + impact load on one set of hanger tabs → asymmetric loading on the frame.
- Doesn't fully clear the leg footprint on the discharge side unless combined with Option B (wider span).
- The other Y-side now carries no discharge — that area becomes a dead zone.