Missouri 2026

Asphalt Plant Calibration

Agenda

- Cold Feed System Design
- Weigh idler
- Volumetric vs. Gravometric
- Feed bin / Feeder Calibration
- Calibration Frequency
- Asphalt Calibration

Presentation Sources of Information

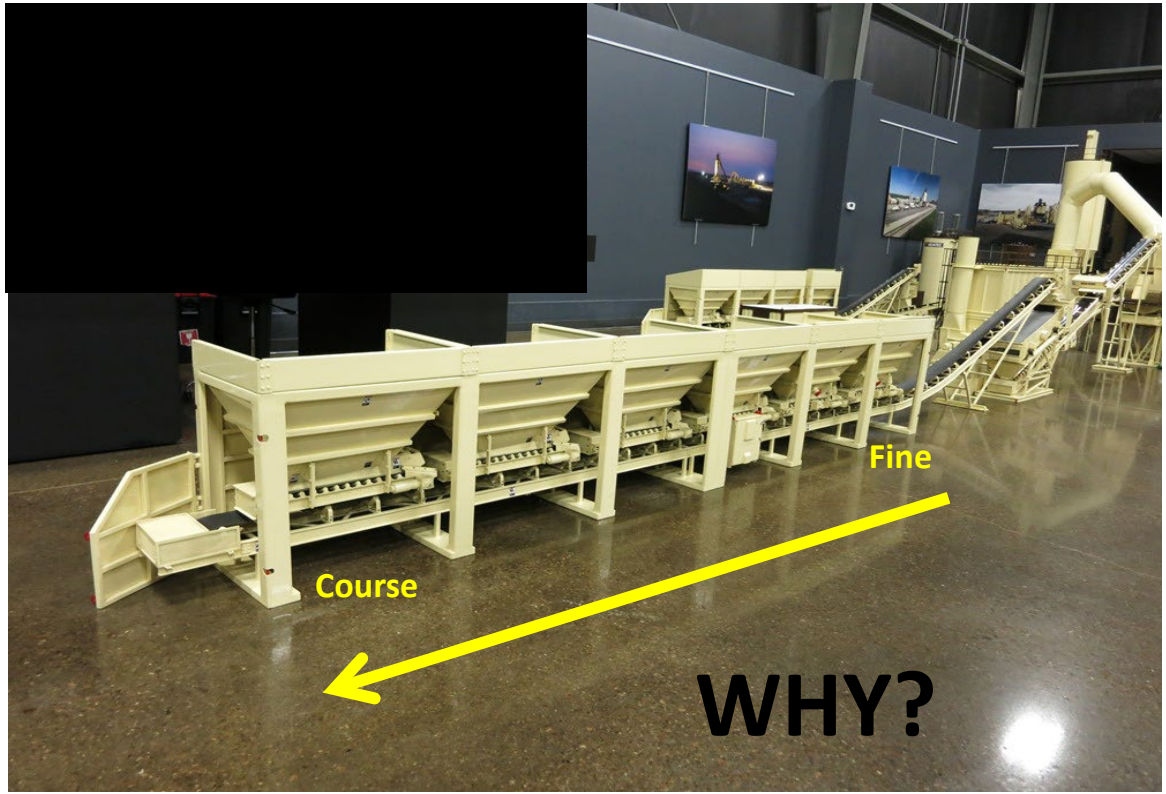
- **Daniel Francisco**: 26 years Service Dept.
- **Gary Keylon**: 35 years Service Dept.
- **Rick Hodge**: 38 years Service Dept.
- **Casey Holland**: 20 years Service Dept.
- **Patrick Jordan**: 17 years Service Dept.

136 years

Portable Asphalt Plant

Stationary Asphalt Plant

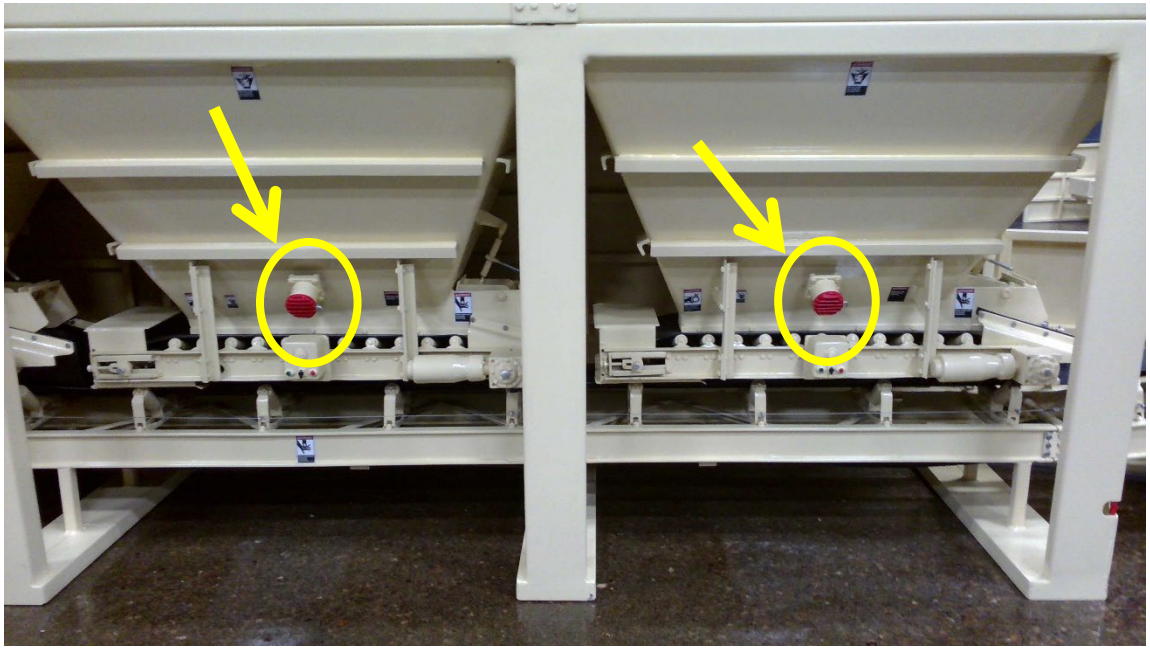
Which bin gets what material…does it matter?



Bin Grizzly…beware

Bin Vibrators

Where? When? Why?

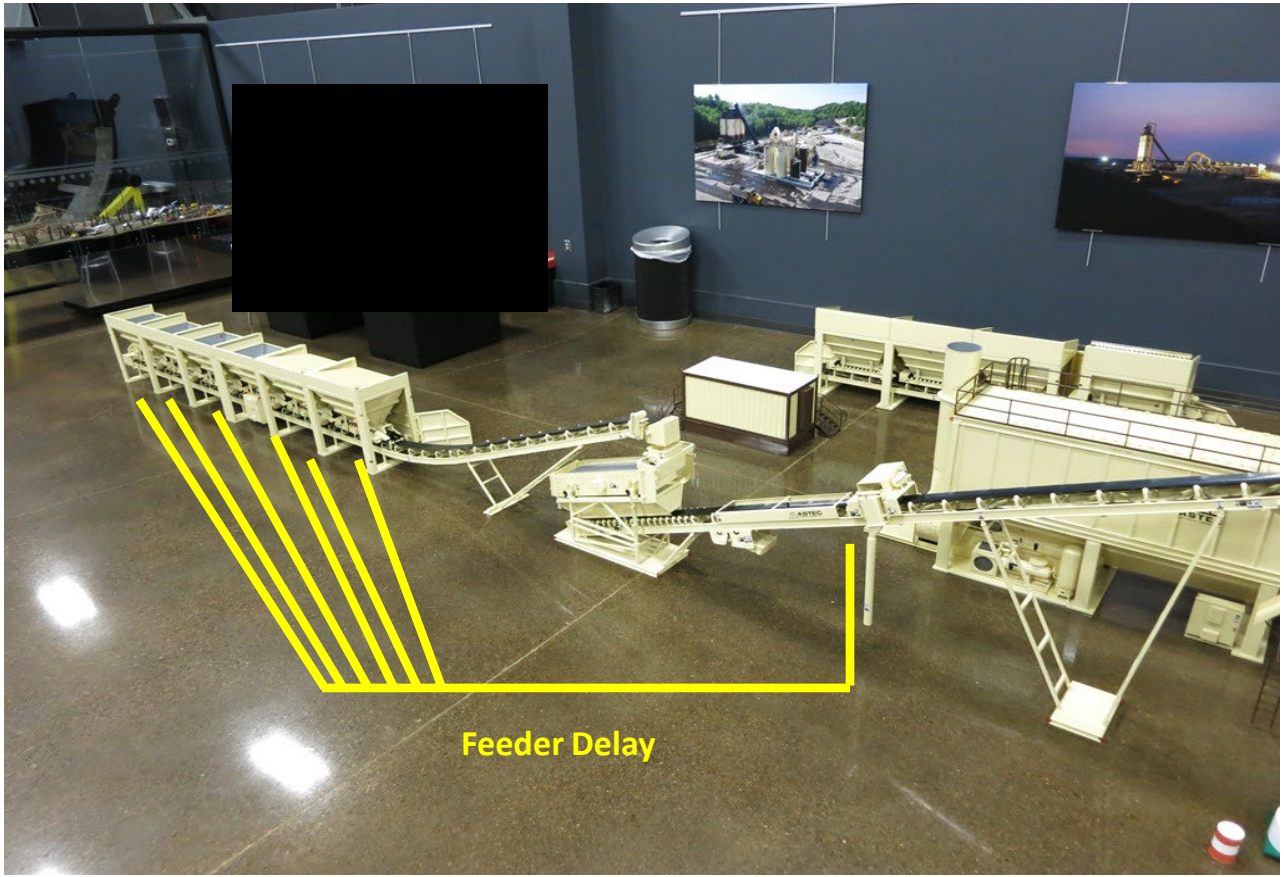


Bin design considerations…trade-offs

Bin gate opening considerations…don’t forget the grizzly

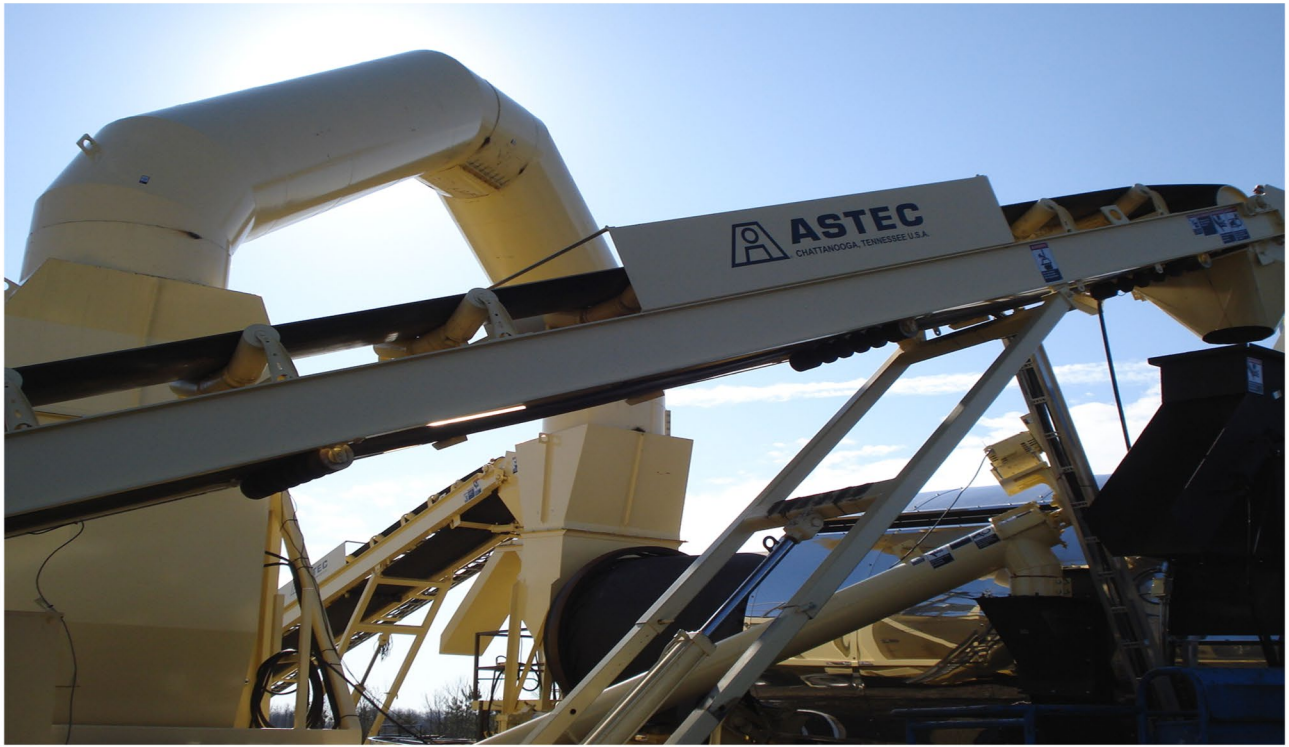
Do all bins start feeding material at the same time?

Why the delay?



The aggregates have been sized. Why a screen?

“Captain of the ship” – Why?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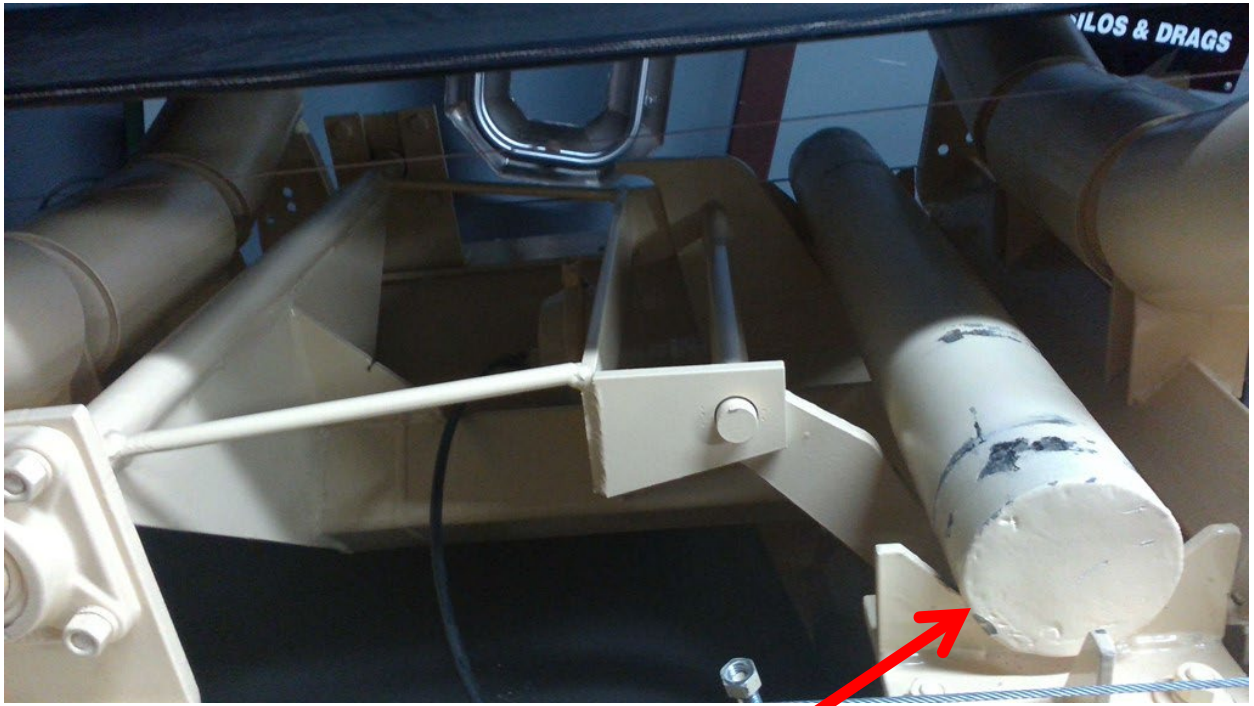
Gravity Take-up

Weigh bridge wind guards

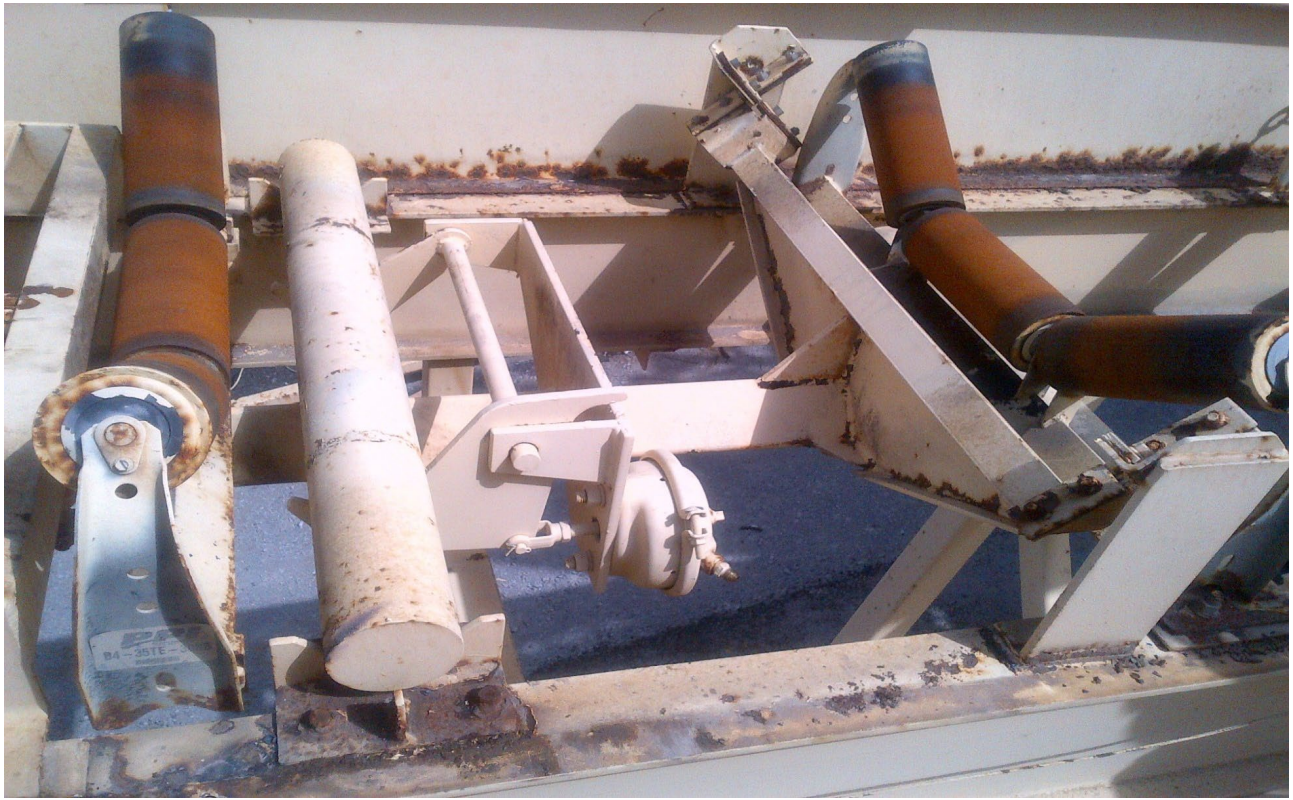
Does wind matter?

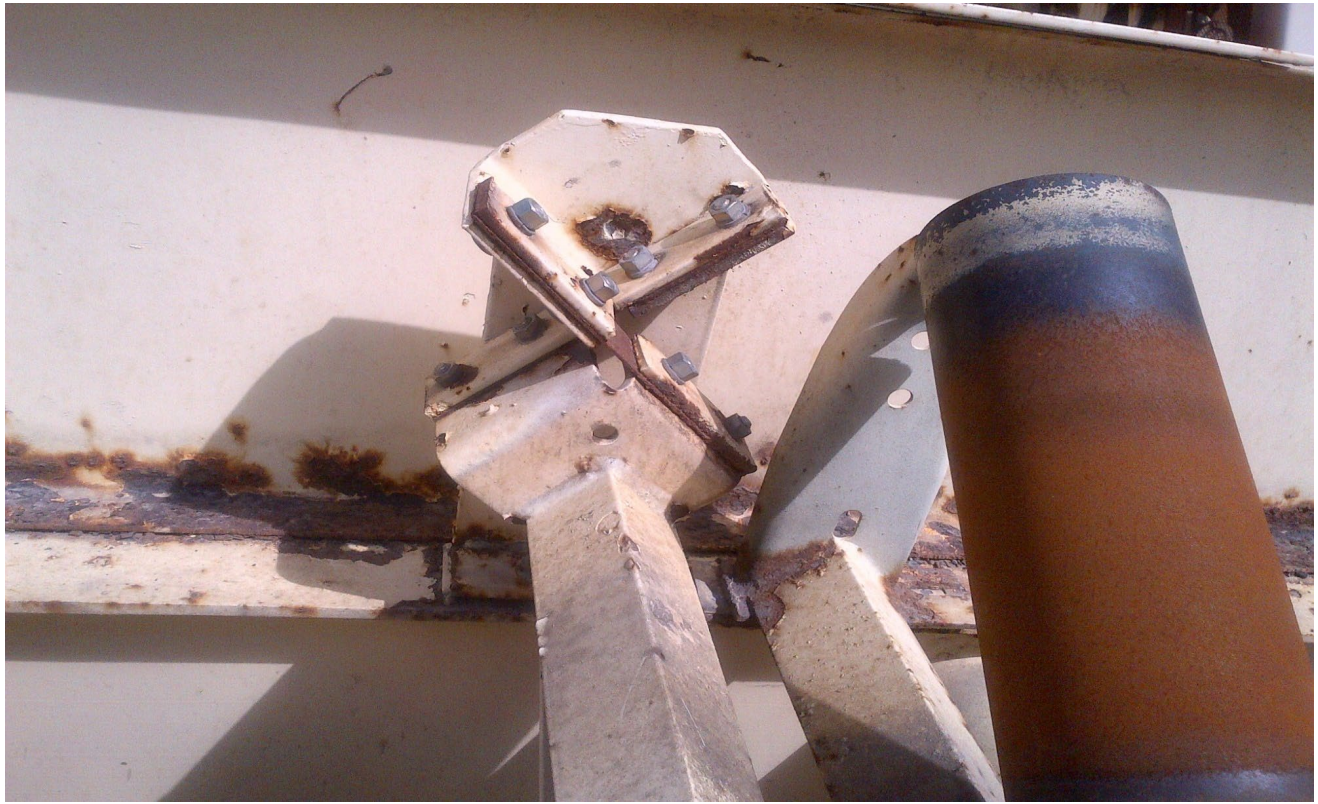
Probably not the day to calibrate

Weigh bridge test weight



Test Weight


B4 – 35TE –



Weigh bridge load cell

Virgin vs. RAP load cell size

The most important measurement in the plant process

Calibration: Feed Bins / Belt Feeders

- Volumetric (no load cell on bin or feeder)
- Gravimetric (load cell on bin or feeder)

Volumetric control characteristics

- Good for virgin aggregate and RAP.
- Simple and much more reliable
- If actual tph does not equal target tph, which bin(s) is “out”?

Gravimetric control characteristics

- Better suited for RAS (low tph, high AC, difficult materials)
- More complex, less reliable. Service department does not like!!
- Can tell which bin is out of calibration.
- Bin should be isolated from the grizzly and bulkhead if entire bin is on load cells (RAS bin on load cells). $$$
- Bin susceptible to wind loading (RAS bin on load cells)
- Independent of density change with moisture

Feed bin / feeder calibration

- 1% is the standard calibration requirement.
- Will not “see” 2-3% inaccuracy.
- Can run spec mix with 5% feeder accuracy.
- Two-point calibration is sufficient.
- Calibrate at 40% and 80% of bin capacity.
- Be aware of bin level effects.

Who is the “judge”?

- Calibrate to a (certified) truck scale…the best “judge”
- Possible to check calibration with the weigh bridge if it was calibrated to a “low-low” tph
- Gary Keylon calibrated the feeders by using the plant weigh bridge instead of the truck scale. Why?
  - Pushed for time
  - Meticulous set up
  - Very experienced

Weigh bridge calibration

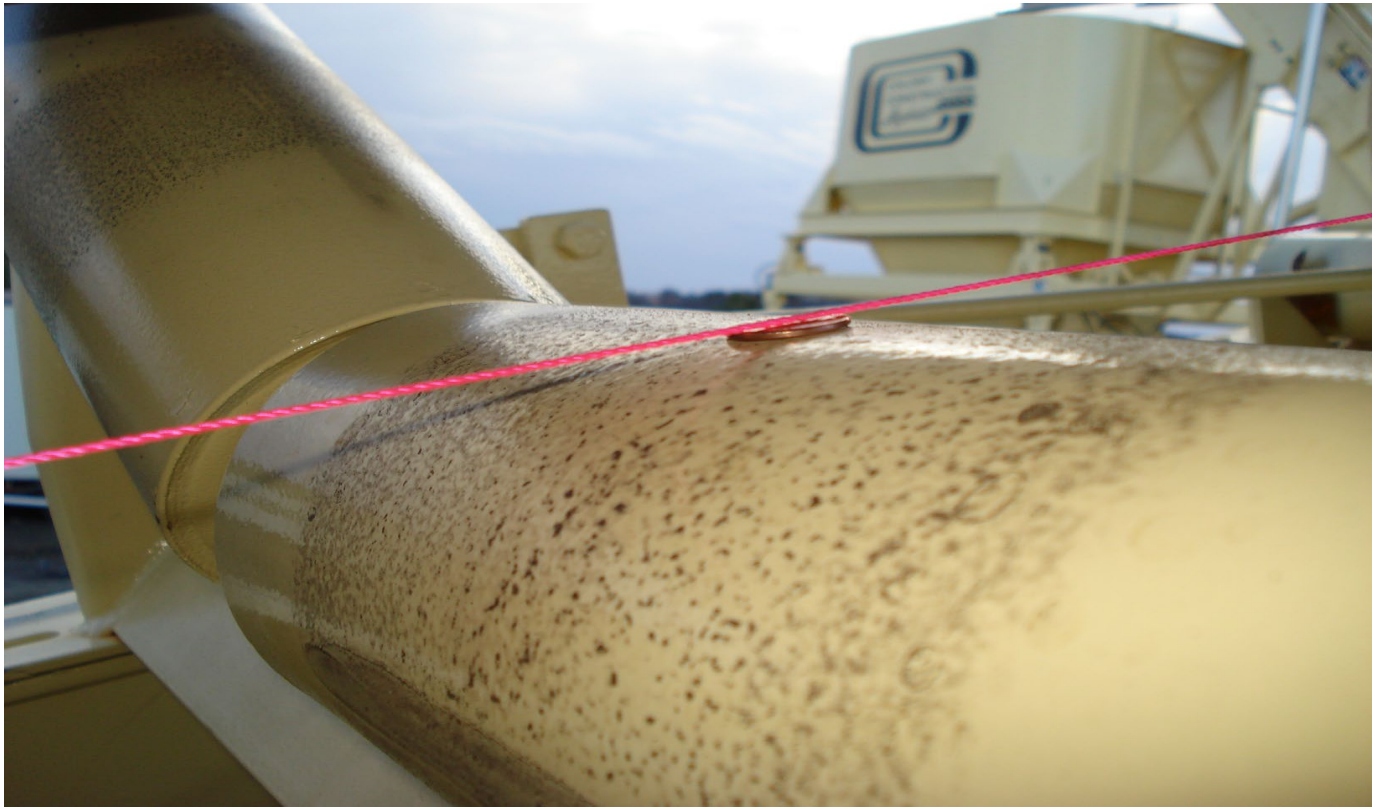
- GK: No shortcuts!!
- Calibrate high, medium, low.
  - High: Max tph with dry aggregate (450 tph)
  - Medium: Typical cruse tph (370 tph)
  - Low: Start-up tph (150 tph)
- Record scale factors. Why? Change indicates mechanical issues
- If scale factors vary for high, medium, low, look for a mechanical cause. They should all be the same.
- Required calibration accuracy is 0.5%.

Other Important weigh scale calibration items

- Belt tracking – don't use tail pulley – use return idlers
- Idler alignment (square to the conveyor frame)
- Seven idlers level (3 up + 3 down from weigh idler)
- Idlers equally spaced
- Steady tach signal (no wobble on tach)

Other Important weigh scale calibration items

- All seven idlers in good condition – rolling
- Weigh idler - no wobble
- Belt not too thick
- Calibrate with enough material (7-10 tons)
- 6-8 lbs per linear foot of belt (minimum for RAP)



Calibration frequency

- Check monthly
- DF: Recalibrate 2x per year
- GK: Don’t mess with it unless there is a problem
- If cold feed out over 1%, recalibrate
- If weigh bridge is out over 0.5%, recalibrate
- Portable plant: Recalibrate after each move
- Portable plant: Weigh conveyor must be rock steady

Additional information

- If there is a feed problem, it is probably the sand bin.
- Do not run a material different than that which was used during calibration, even if it is the same size. Each material has its own scale factor.
- Use 3/8” or ½” virgin rock to calibrate the RAP weigh bridge.

AC Calibration

- Required calibration accuracy? 0.5%
- How AC much for calibration? 2500 lb. A tanker is better.
- Calibrate how often? Check once a month. Recalibrate 2X per year.
- Calibrate a portable plant every time it is moved.
- Is temperature compensation required? Yes, especially with polymer AC.
- The 3 most common causes of AC problems?
  - Mechanical problem with the virgin agg weighbridge
  - Issues with RAP
  - Segregation

AC Content Problems

- Don’t forget about segregation.
- Astec Technical bulletin T-117

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QUESTIONS ?