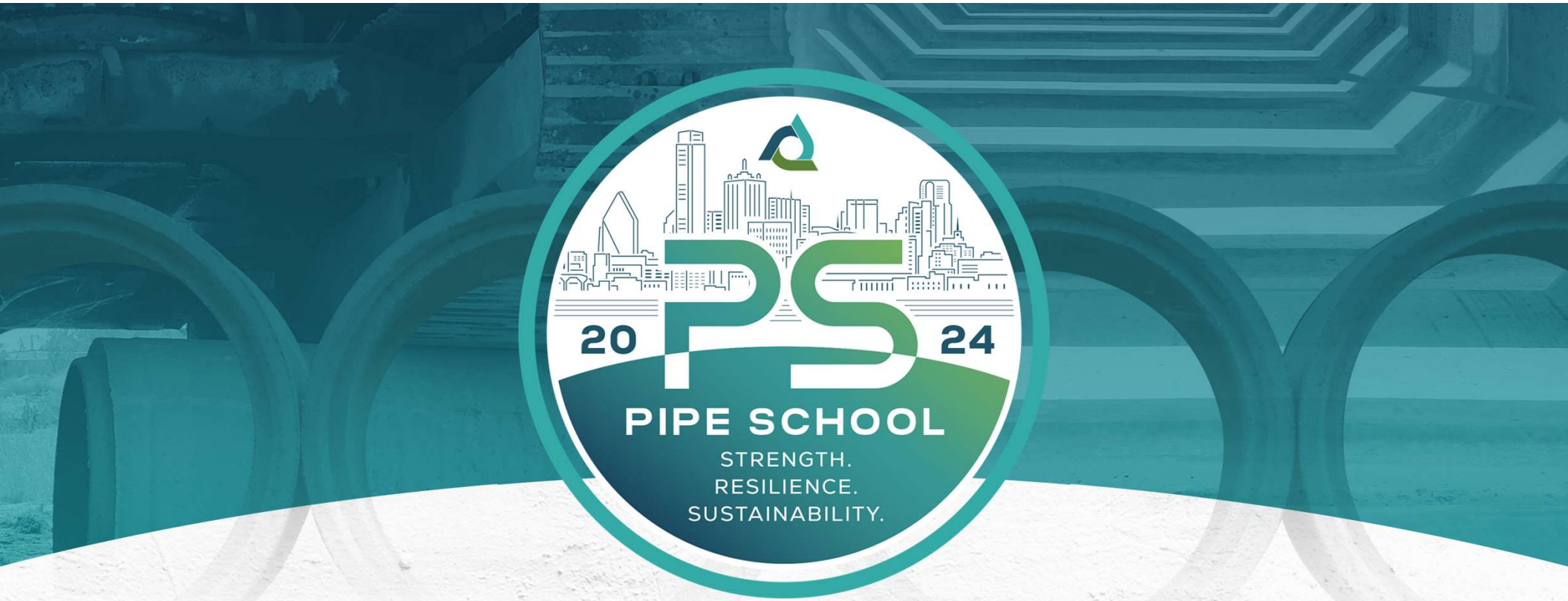

PACKERHEAD PRODUCTION

Dave Tuchscherer
Rinker

Todd Fesenmaier
Rinker


SAFETY FIRST
ACPA

SAFETY

ALWAYS FOLLOW COMPANY SAFETY PROTOCOLS

PROPER USE OF LOCK OUT TAG OUT

STORED ENERGY

FALL PROTECTION

SAFETY: LOCKOUT – TAG OUT

ALWAYS PRACTICE LOCKOUT – TAGOUT!

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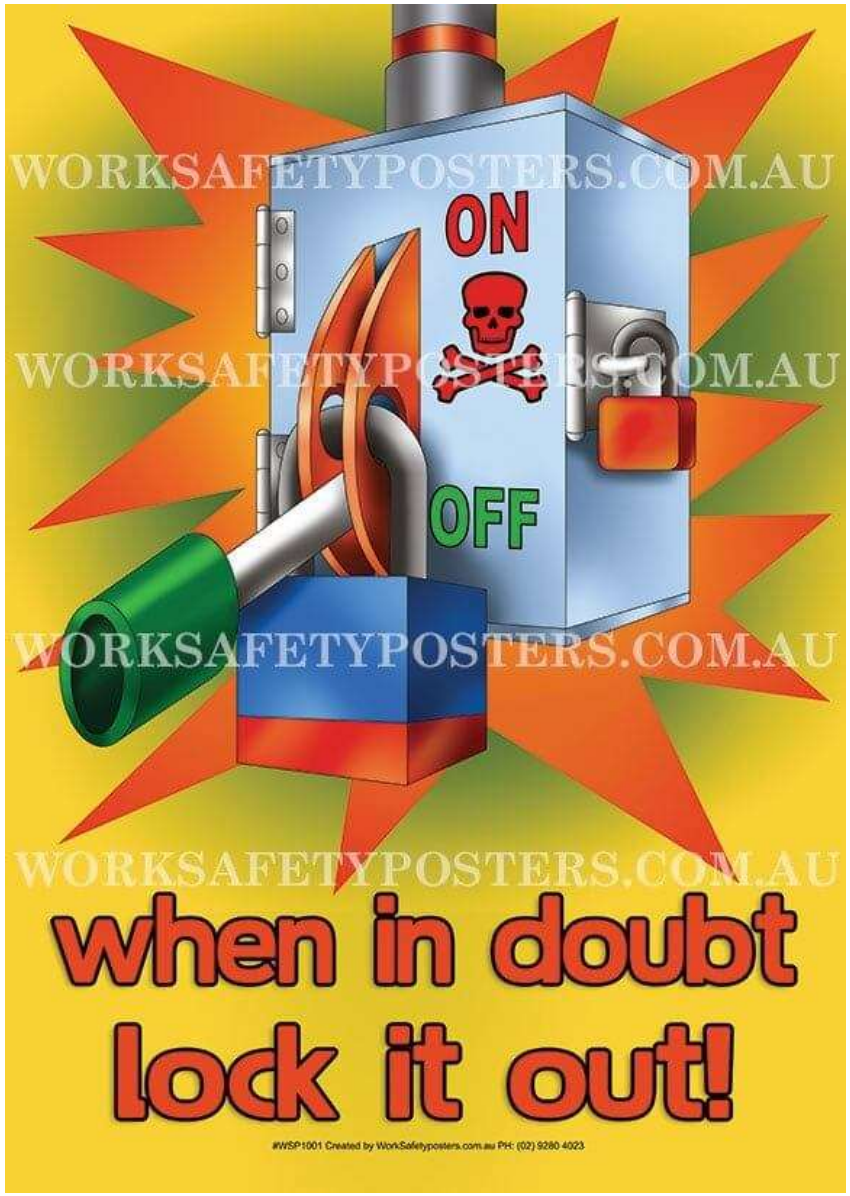

LOCKOUT TAGOUT

BEFORE IT IS TOO LATE !

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EMERGENCY STOPS AKA E-STOPS

- TRAINING
- All personnel must know where the E-STOPS are located and what they do
- Stops the equipment in the event of an emergency

STORED ENERGY

- CROSSHEAD WEIGHT #9600

- MUDPAN WEIGHT #3500

SAFETY VALVE

- NEWER DESIGN WITH Lock out tag out HANDLE

Main Lift Cylinder
Safety Valve Lock Out

STORED ENERGY

- SAFETY COLARS AND BRACKETS

BELL DOWN UNIT LOCKOUT SUPPORT BRACKET

COLLAR ADDED TO KEEP BELLPACKER SUSPENDED WHEN POWER CURCUIT IS INTERRUPTED

FALL PROTECTION

- PIT ACCESS COVER PLATES IN PLACE
- LADDER HOOPS AND SUSPENION TETHERING
- RAILING AND GUARDS
- FINGER AND EXTREMITY GRATING
- PIT ACCESS RESTRAINTS
- FORTRESS KEYS
- LIMITED FRAME/PIT ACCESS
- MUDPAN SAFETY COLLARS
- FAILSAFE VALVE SHUTOFFS WITH Lock out Tag out BRACKETS

MACHINE AUDIT OVERVIEW

EMERGENCY STOPS

OIL MAINTENANCE/REPLACEMENT/FILTERING

ALIGNMENT/TRACKING

BELLDOWN UNIT/MUDPAN LEVEL ALIGNMENT

ROLLERHEAD/LONGBOTTOM WEAR AND REBUILD

Alignment REQUIREMENTS

- The absolute first step to any alignment or tracking procedure is to replace all guide bushings or supports throughout the machine that are suspect to wear.
- When your equipment was installed, it was plumb and vertical. As such, any wear of bushings or guides must be returned to new per Original Equipment Manufacturer standards.

Packershaft Plumb Overload supports

String lines at 90˚

Remove the overload bearings

Checking the frame for plumb

Using a stringline and heavy plumb measure the top and bottom of the machine frame for plumb

Under most circumstances, the frame will be as it was on day one

Rest assured, if the frame is not plumb neither is the rest of the machine

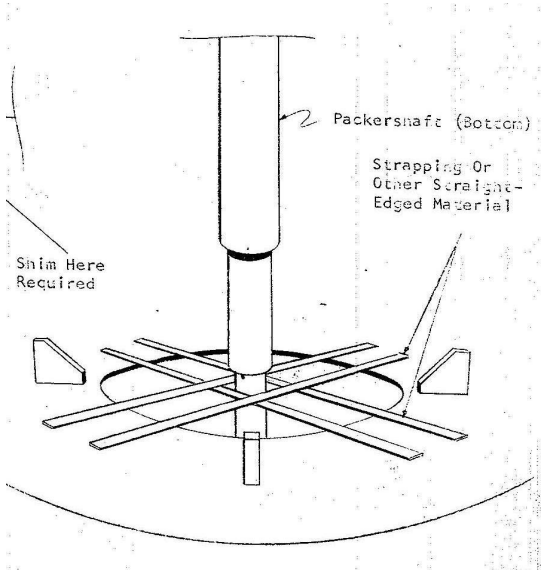
Packershaft Plumb Overload supports

String lines at 90˚

Remove the overload bearings

Crosshead guidetubes

Packershaft runout check



BELL Down Unit Alignment

Ensure the bellpacker is centered on the packershaft while the bellpacker is in the UP position

MUDPAN ALIGNMENT

- Ensure the mudpan is aligned to the centerline of the packershaft.
- Remember the centerline of the packershafts are in charge.

BOTTOM CENTERING PLATES

These plates must be level

Check them in all directions (North, South, East, West)

BELLPACKER LEVEL

Ensure the bellpacker is level in all directions

In this photo we are measuring across the lifting lugs. These must be within 1/8” of level and must lift the pallet 1/8” above your pallet locks on the bottom of the form.

BOTTOM CENTERING PLATE

Align to the mold placement point.

It is mission critical that every attachment aligns with the center of the packershafts.

Packershaft Plumb Overload supports

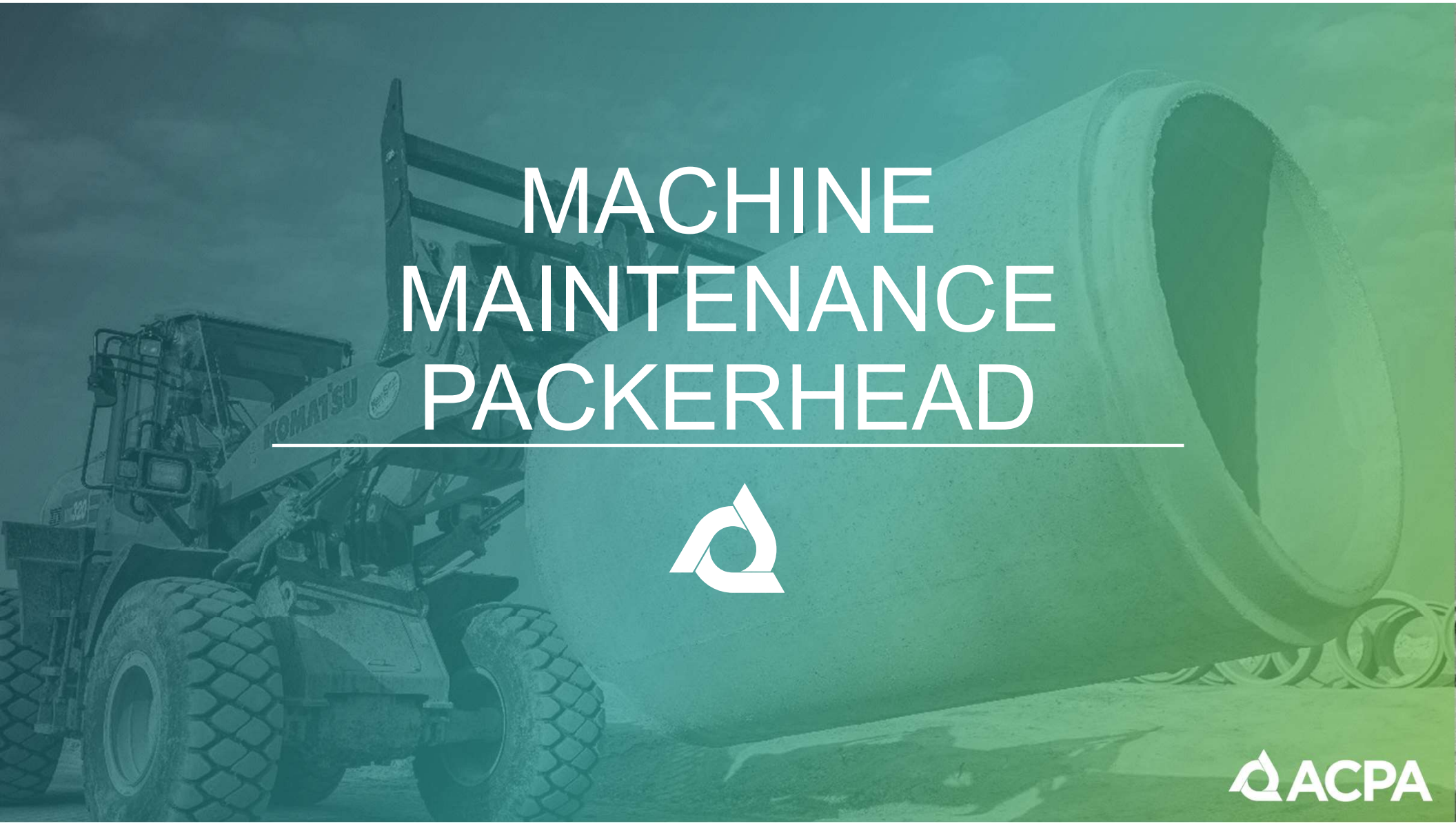
String lines at 90˚
Remove the string lines
Reinstall the overloads

MUDPAN LEVEL

Check the mudpan and top table for level in all directions (North to South, East to West)

CHECKING TRACKING

It is imperative that the head travel vertical. We check this using the stringline, lifting the head in 1-2 foot increments and checking to see if the head has wondered. Before any alignment is attempted, the bushings should be replaced.



MACHINE MAINTENANCE PACKERHEAD

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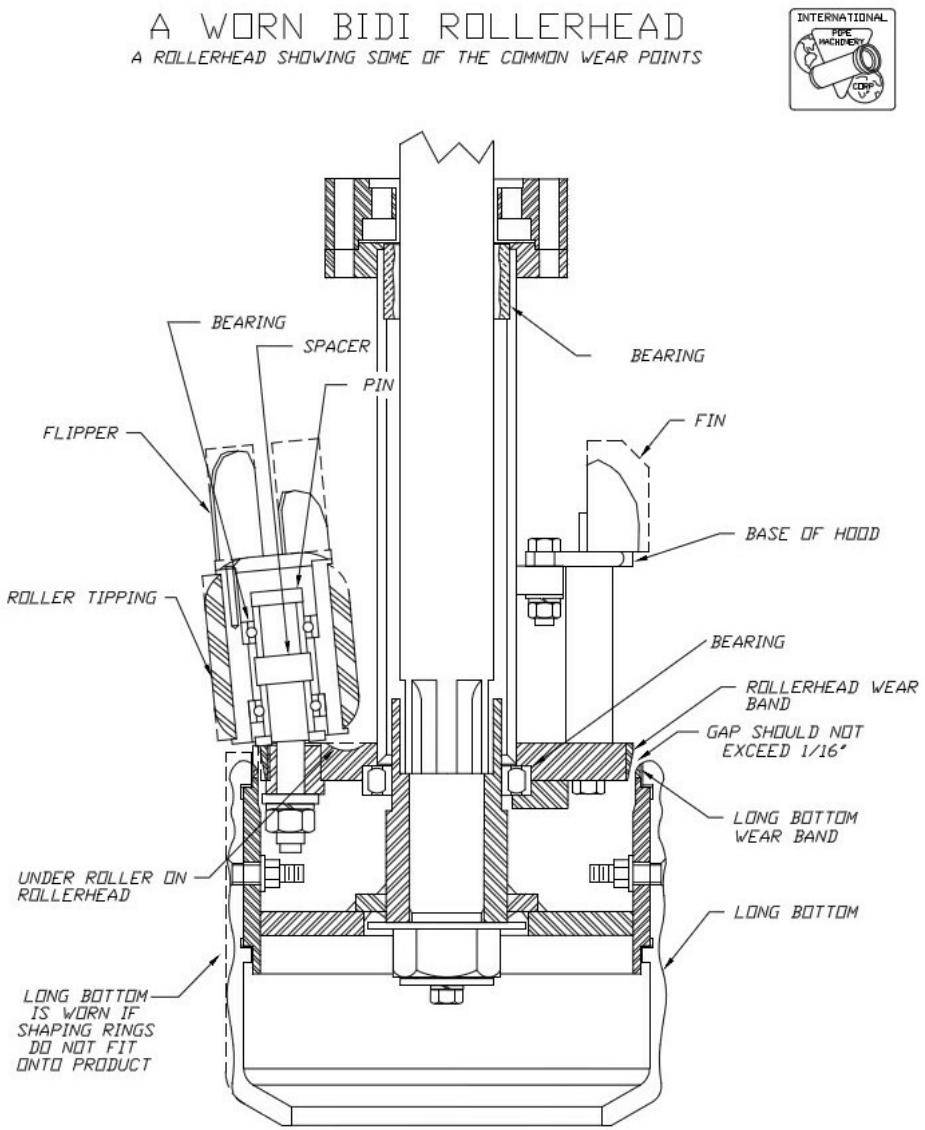

ROLLERHEAD MAINTENANCE

Look for obvious wear

Measure the diameter of the trowels

Replace worn parts immediately

Keep the critical wears and spares on the shelf.

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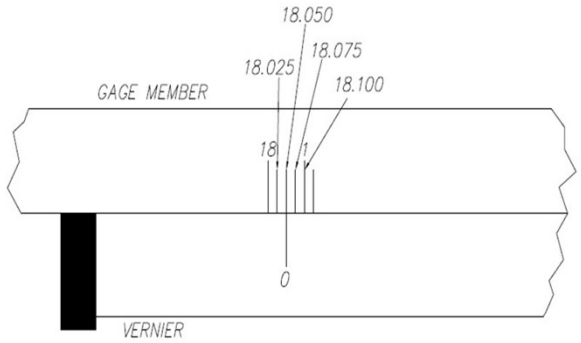
TROWEL DIAMETER

- Trowels should be maintained to the nominal diameter minimally. While it is permissible for the ID to be less than designed, poor products are the result

Rollerhead/Long Bottom

Use a Pi-TAPE to measure the wear of the trowels/segments.

TO READ OUTSIDE DIAMETER TAPES



Vernier Scale divides each graduation on gage member in 25 parts or .001 in an inch.

- If we find a reverse taper, the trowel/segment should be replaced.
- Use shims to build out trowels/segments to proper specification.
- ❖ See attached handout for rollerhead inspection and shimming procedure.
- A maximum of 4 shims can be used before trowels/segments should be replaced.
- Each shim is 0.015 thick. Adding 1 shim around the complete longbottom equals 0.030 to the Pi-tape measurement.
- 12"-21" should be shimmed to 0.110
- 24" – 36" should be shimmed to 0.125
- A new 24" longbottom has a machined taper from top to bottom.
  - Top 24.095-24.125 Note: 2/10 of 1 degree or .050 per side taper
  - Bottom 24.003-24.033 Note: New pallets measure .155 ID

PI-TAPE

This tool is an engineering device. It requires training to use it properly. I prefer the LUFKIN NUBIAN PI TAPE. It is simple to use. I have one for you to use in the classroom.

How small can a pipe ID be?

TROWEL DIMENSIONS AND PERFORMANCE

Broken edges

Uneven segments

Minimal Diameters (nominal diameter per ASTM C-76)

ASTM C76

12. Permissible Variations

12.1 Internal Diameter- The internal diameter of 12-in. through 24-in. pipe shall not vary by more than 2 % of the design diameter for 12-in. pipe and 1.5 % for 24-in. pipe with intermediate sizes variation being a linear scale between 2 % and 1.5 %. The internal diameter of sizes 27-in. and larger shall not vary by more than 1 % of the design diameter or 3⁄8-in., whichever is greater. These diameter requirements are based on the average of four diameter measurements at a distance of 12 in. from the end of the bell or spigot of the pipe.

Pipe Internal diameter

SO, Why is the diameter of the trowel segments so critical?

Example:

24” new trowel segments new measure 24.125”

24” pallet ID measures 24.1875

Pipe Internal diameter

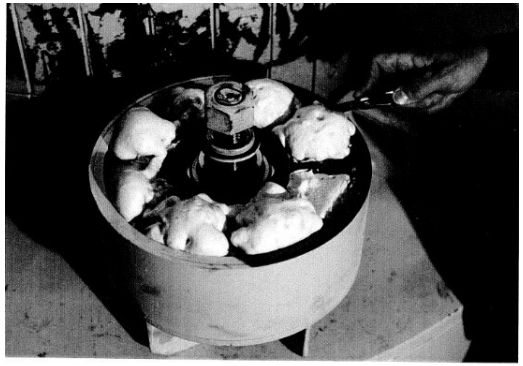
SO, Why is the diameter of the trowel segments so critical?

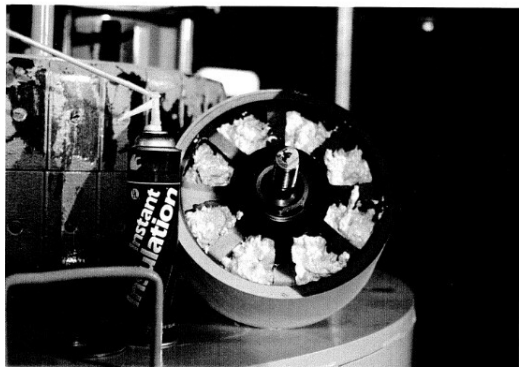
Maximum wear as per ASTM C76, 24” trowels=23.640”

Standard gap between the trowel and the pallet ID is .125

With the segments at MAX wear, the gap is now .5475”

ROLLER MAINTENANCE
FOAM FILLED ROLLER BODY

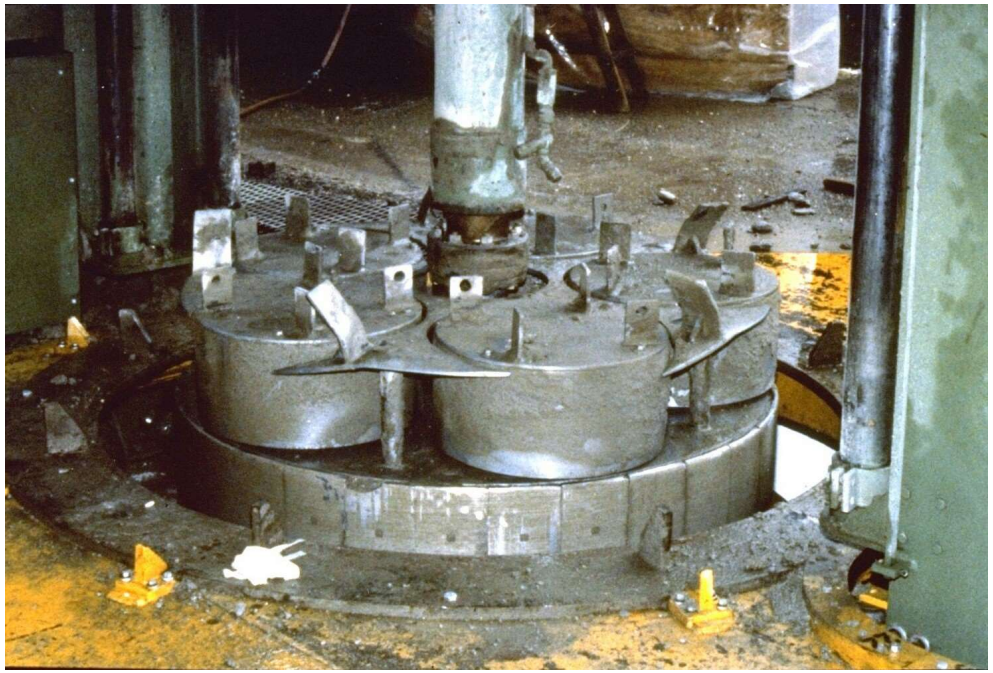




Worn Eccentric Bushings

Worn Rollerheads
Damaged Heads

Worn Rollerheads
Damaged Heads



MACHINE MAINTENANCE

WELDING ON YOUR MACHINE

Periodically, it will be a requirement to weld on your machine.

- Place the ground wire as close to the welding lead as possible.
- Turn the power to the machine OFF!!

FILTER THAT OIL!!!

- OIL, NO MATTER IF IT IS NEW AND IN A SEALED CONTAINER, MUST BE FILTERED PRIOR TO OR DURING PLACEMENT INTO A MACHINE RESERVIOR.

What is a MICRON?

40-90 MICRON is the thickness of a human hair.

3175 micron = 1/8” or .125”

What is a MICRON

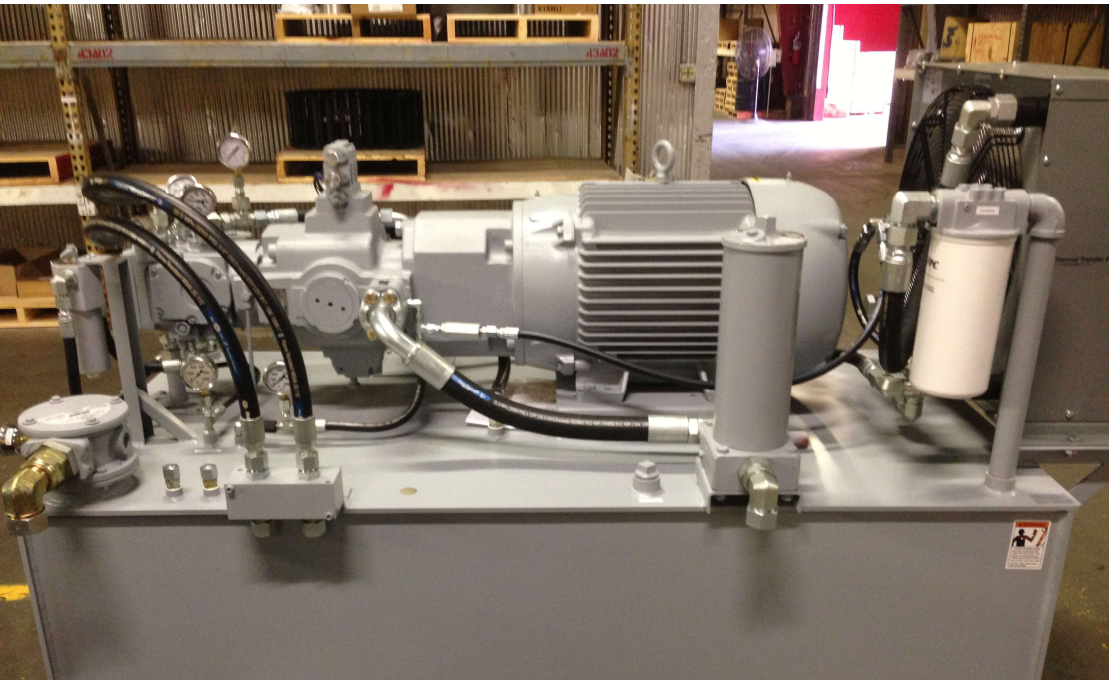
MICRON is 1/millionth of a meter

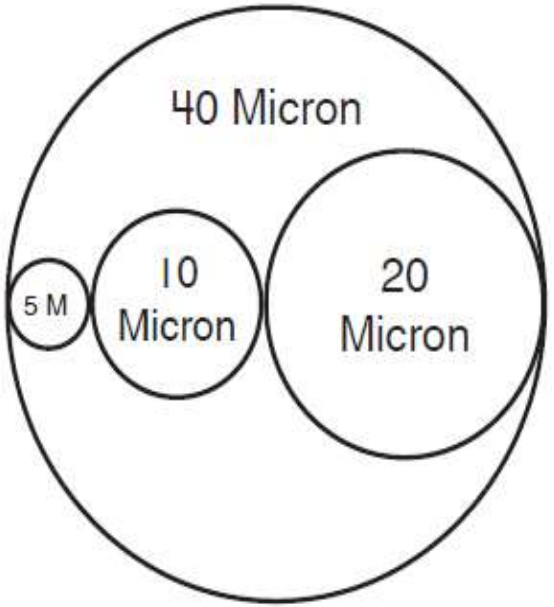
3175 Micron is an 1/8”

40-90 micron is the thickness of a human hair

FILTER REPLACEMENT

- Filters should be replaced every 6 months religiously.
- Pay attention to the micron requirements from Original equipment Manufacturer
- Change the filters more often if oil temperature is in excess of 160 F.
- Seek Original equipment manufacturer assistance for oil overheating issues





lationship of Particle Sizes by Diam

1 Micron = 1 Millionth of a Meter.
1 Micron = 1 Thousandth of a Millimeter.
1 Micron = 39 Millionth of an Inch (0.00003
5.4 Micron = 1 Thousandth of an Inch (0.0
40 Microns = Visible with Magnification.
0 to 90 Microns = Diameter of a Human H


SCHROEDER
KZ10
S/DG-C

Filter Debris

- Return line stone and sand

GREASE SCHEDULE

Seek OEM assistance

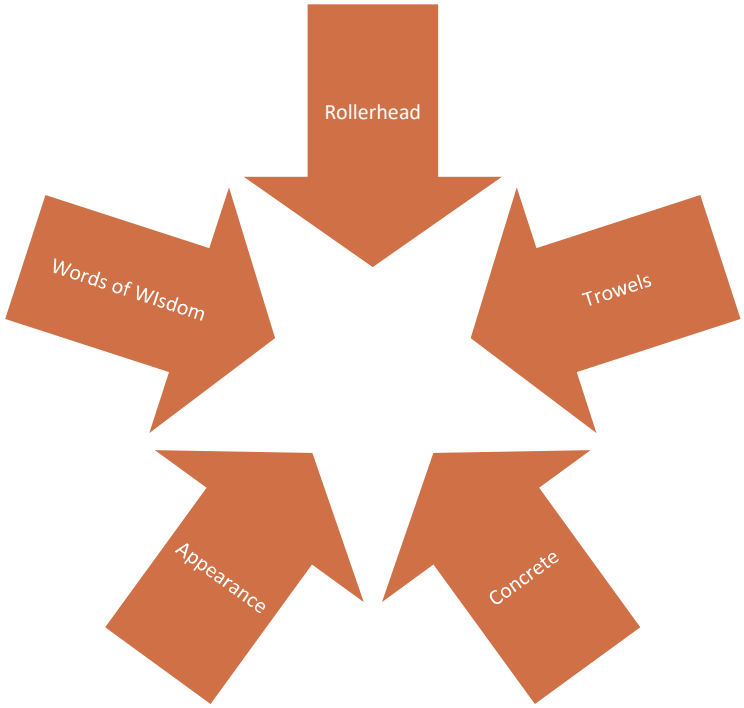
Grease is your friend

All pivot points on ALL

machines require GREASE!!

MACHINE SET UP

QUALITY ASSURANCE



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Machine Setups

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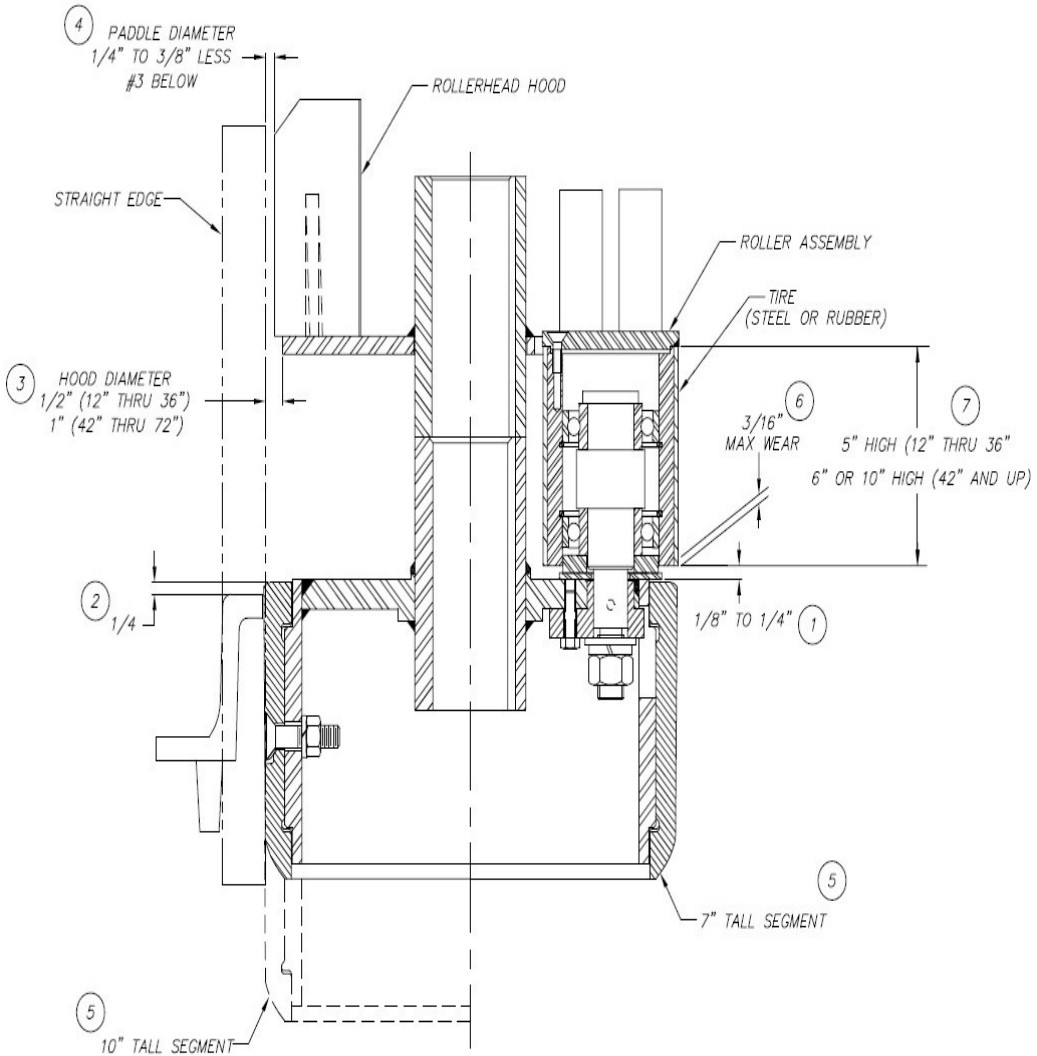


Setting up the packerhead

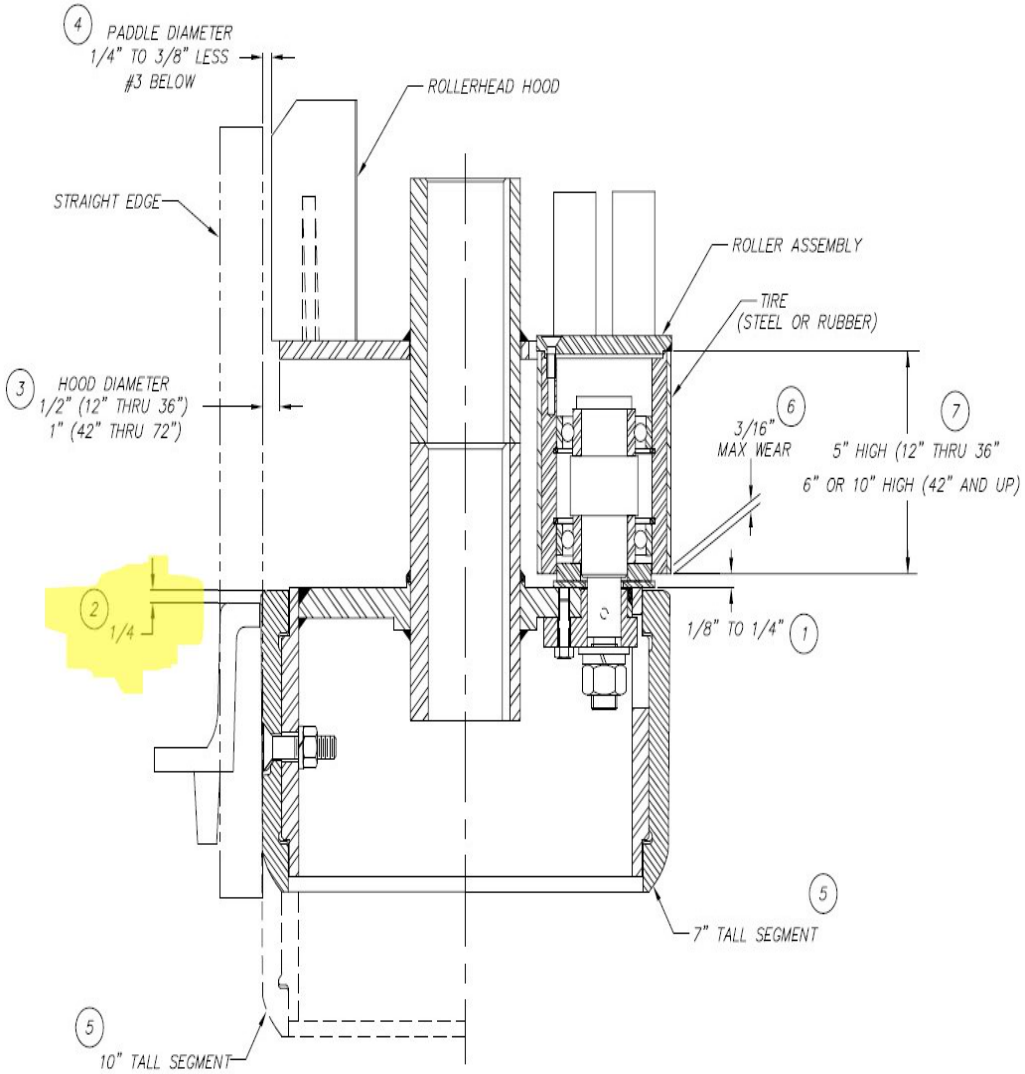
Check the diameter of the trowels

Set up the rollers to trowel dimension

Ensure all rollers are turning easily

Check for concrete build up in the frame

Grease the bushings with a high temp grease a little every day

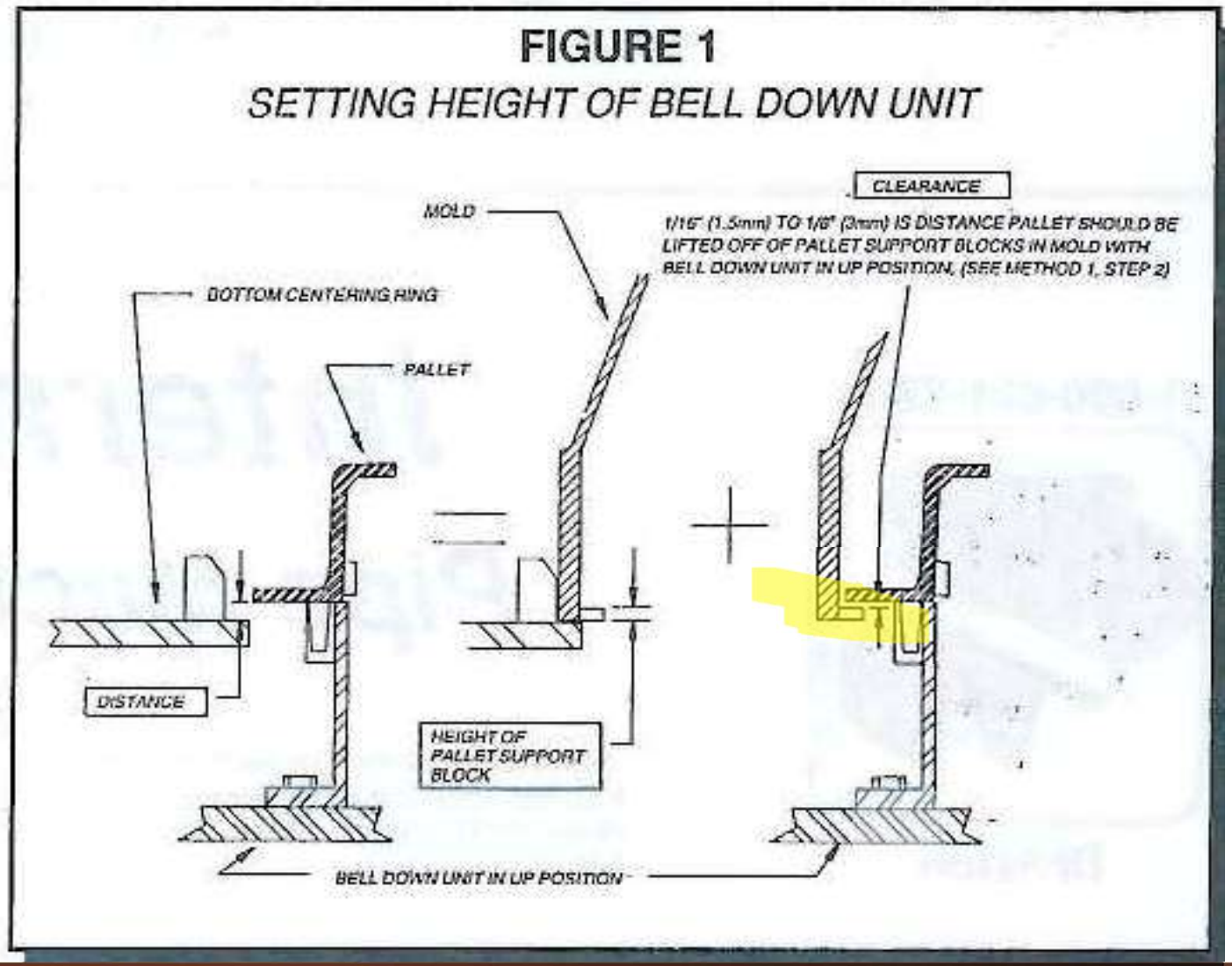


PALLET/TROWEL DIMENSIONS

It is imperative that the top of the pallet in the lifted position be ¼" below the top of the trowels during the bell cycle.

WHY?

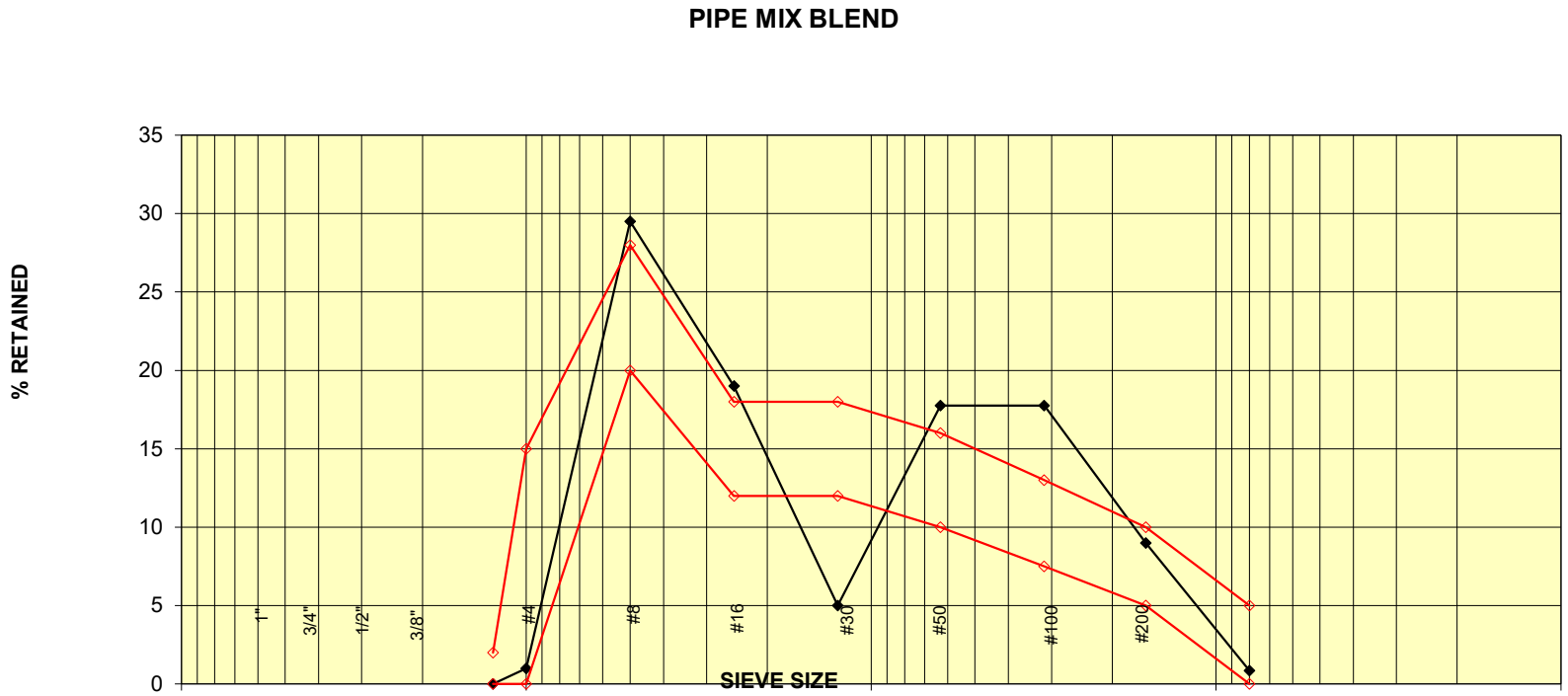
Everything from the bottom of the roller down MUST be compacted by the vibrator.



Bell Down Unit Adjustments

- Adjust the lift stop height of the bell down unit to lift the pallet 1/8” above the pallet feet or locks.

CONCRETE REQUIREMENTS



CONCRETE REQUIREMENTS

It all begins with good concrete

If the concrete is questionable, then the whole process is in question. It is not MAGIC!!

Good, well-blended homogenous concrete is a requirement for high quality high performance concrete pipes

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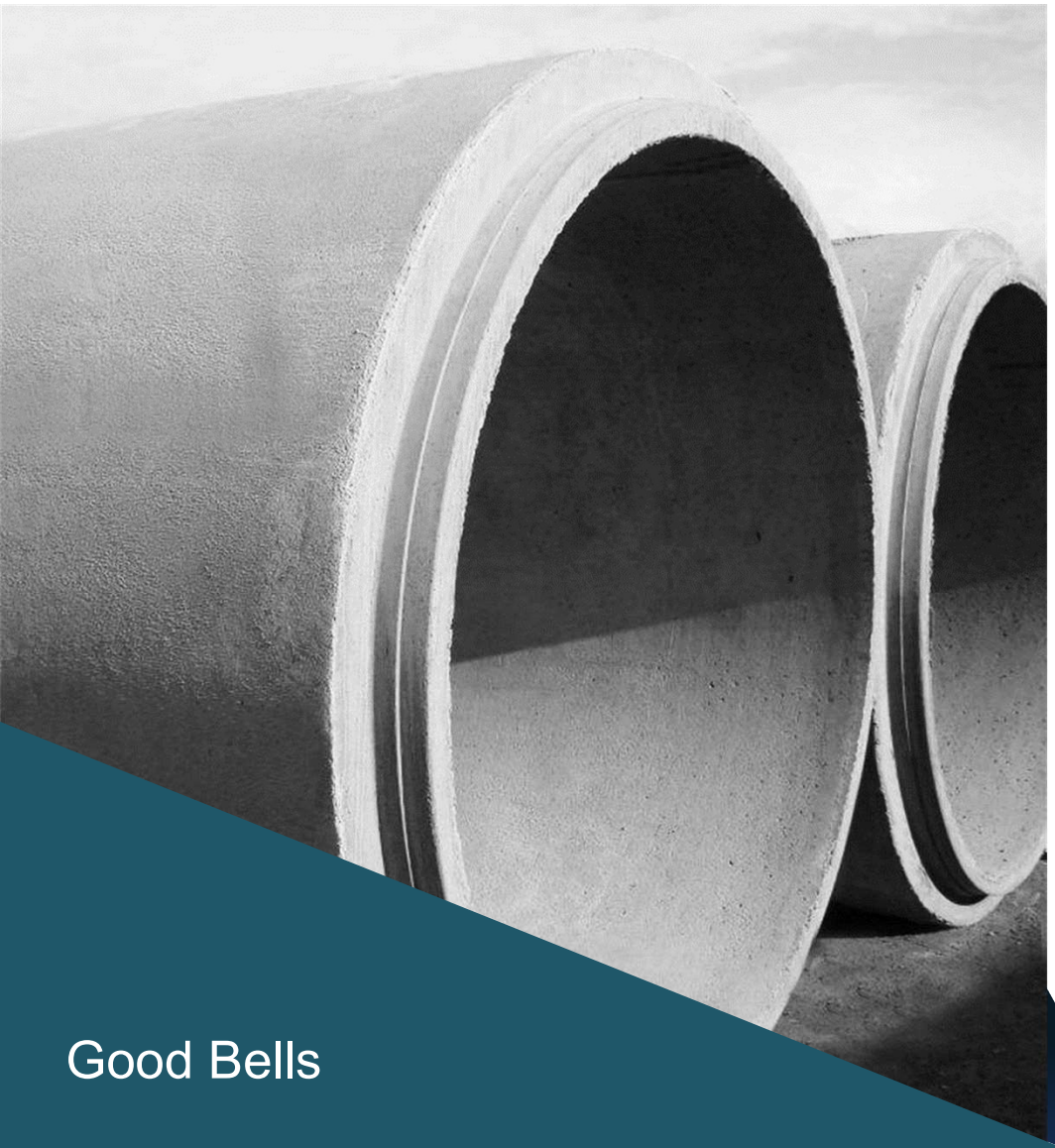
CONCRETE REQUIREMENTS

Today’s concrete performance

Ingredients

Sand, Stone, Cement, Flyash, Water and Admixtures in the proper ratio.

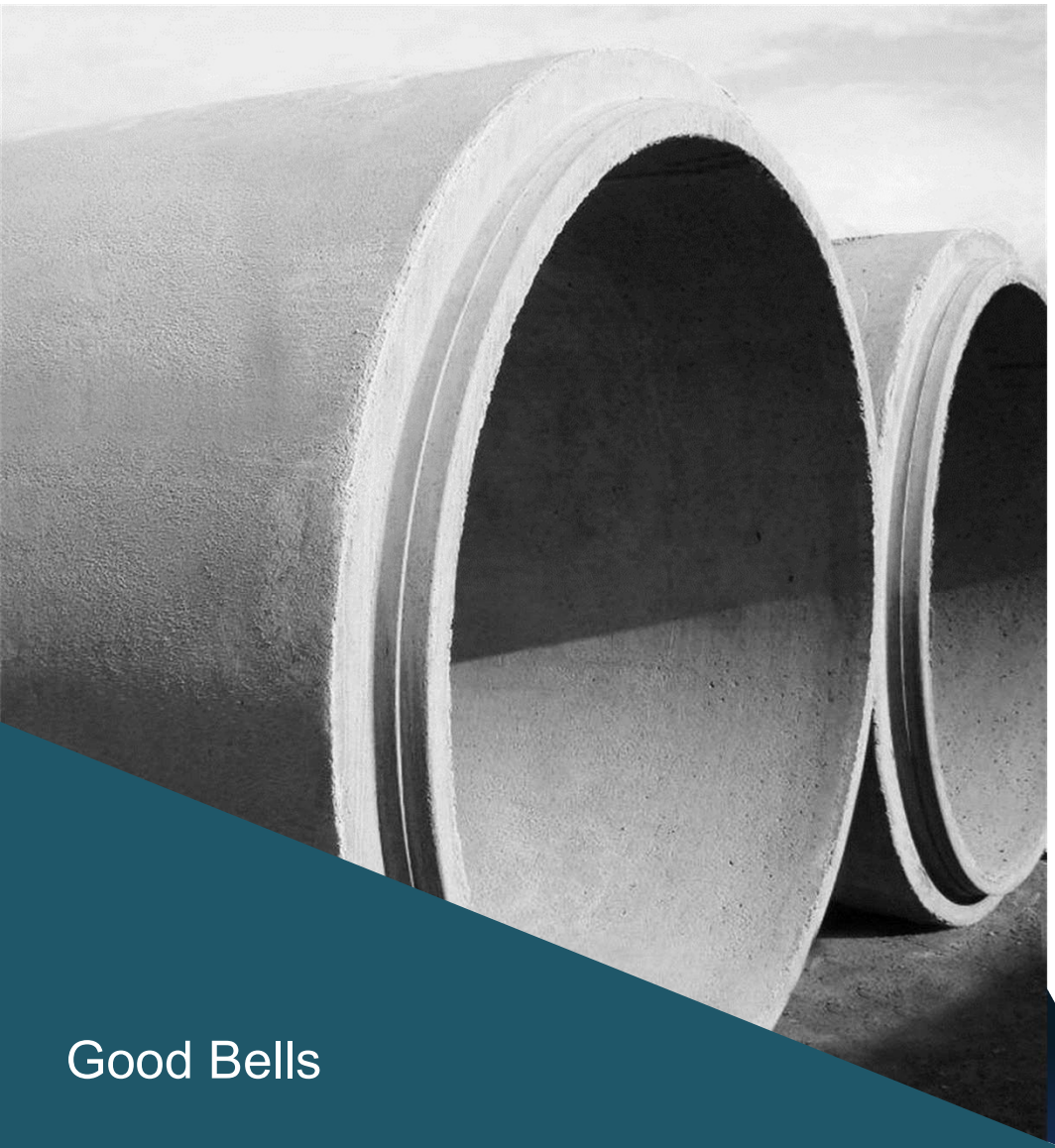
Does more cement mean for strength?



Good Bells

PIPE APPEARANCE
If it looks bad, it is bad

Bells must be consolidated and smooth to perform properly in the field.



Good Bells

PIPE APPEARANCE
If it looks bad, it is bad

What causes each of us to struggle with making a nice bell?

1. The concrete blend and moisture content
2. Cage positioning, bell expansion and spacers
3. Pallet maintenance and lubrication
4. Form maintenance
5. Bellpacker maintenance
6. Machine centerline (alignment)

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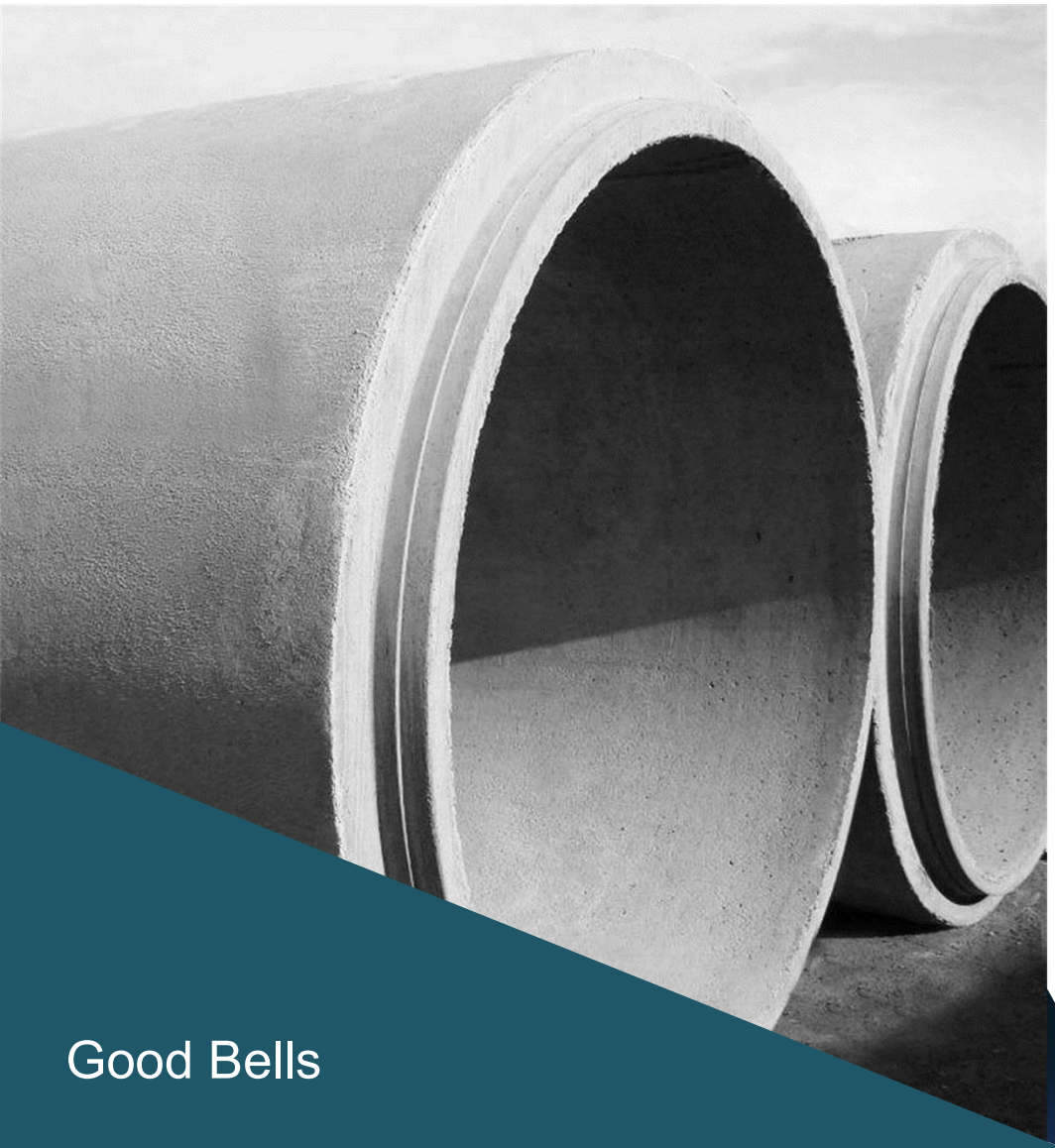


Good Bells

PIPE APPEARANCE
If it looks good, it is good

Spigots

PIPE APPEARANCE Spigots

Header/Former Alignment

Step formation

Compaction

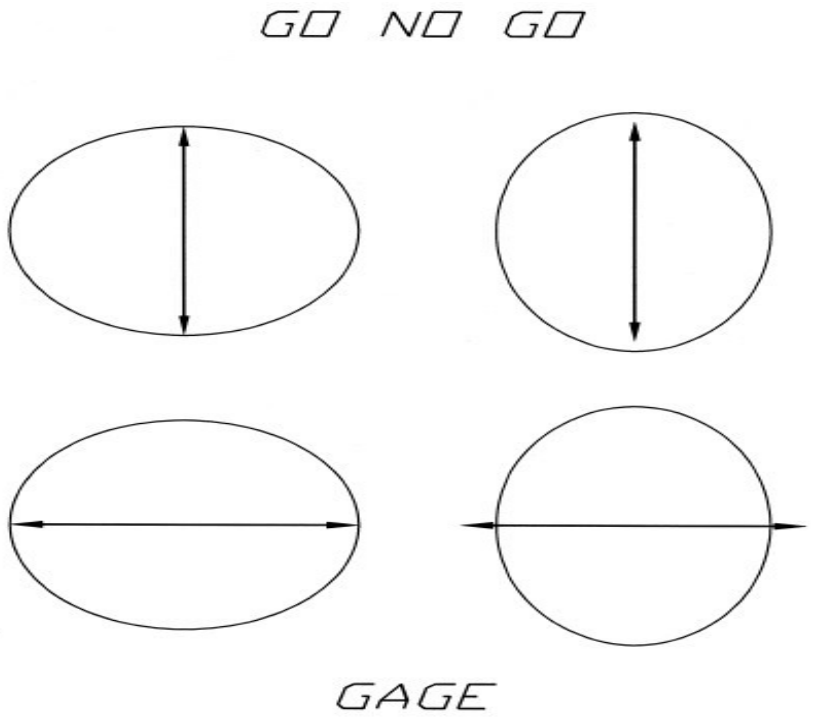
Spigots

PIPE APPEARANCE
Spigots

Spigots

PIPE APPEARANCE
Spigots

PIPE APPEARANCE Spigot GO/NO GO



Spigots

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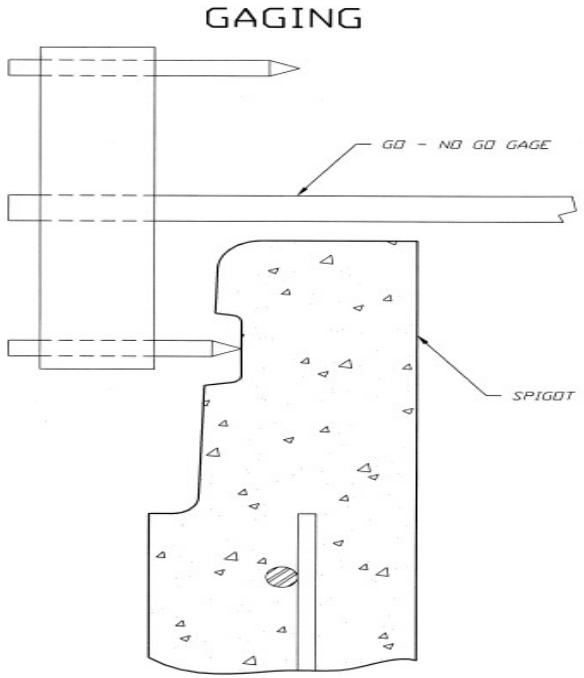
Spigots

PIPE APPEARANCE
Spigot Gaging



Barrels

How to identify cage twist

Root causes

Cage Twist

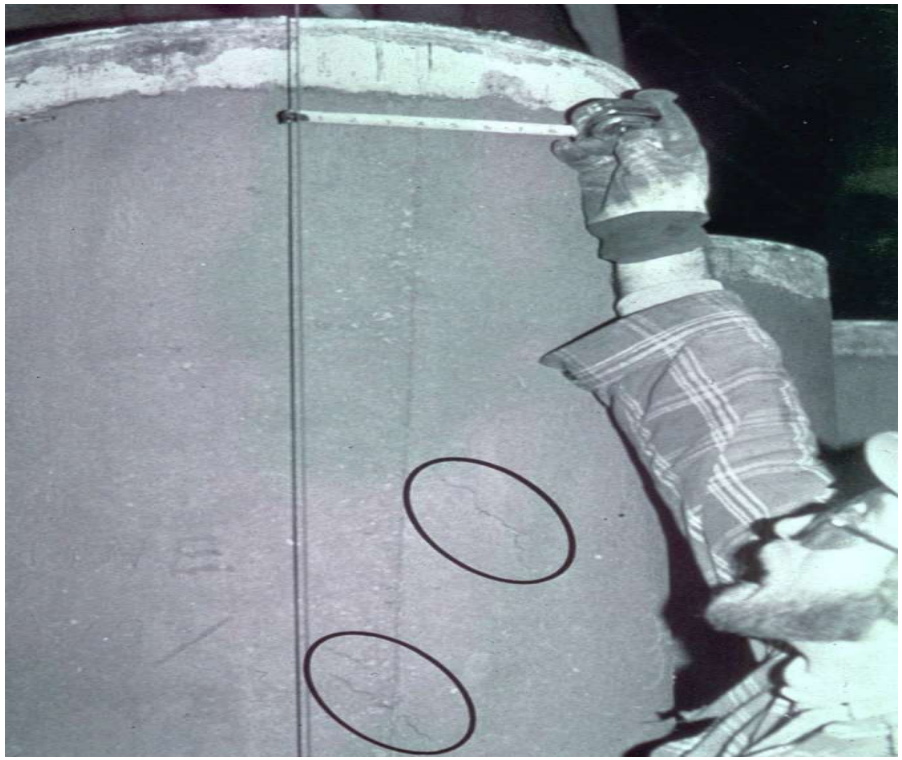
Cage Twist

Barrels

Cage twist occurs when the applied energy is stored on the cage, it is retained by the forming. Once the forming is removed, the stored energy is released, causing the cage to try to return to its original position.

Cage Twist

Barrels



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Cage Twist

Barrels

Root causes:

Too much power

Roller to trowel dimension improper

Cage too close to the packerhead

Cage manufactured improperly

Rifling

Pipe Barrels

Cage Shadow

Pipe Barrels

Cracks

Pipe Barrels

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PACKERHEAD PARTS AND TOOLS

Production Quotes to Remember

Don’t run out of concrete.

If it’s working, LEAVE IT ALONE!

When you make a change, change only one parameter at a time.

Clean oil is your friend.

Grease is cheaper than steel.

Use all of your senses.

Take care of the little things to avoid big problems.

Production Quotes to Remember

- **MAINTAIN YOUR MACHINE!!!! This is not optional.**
- **Proper setup equals better products.**
- **NEVER sacrifice quality for speed.**
- **Cleanliness is next to impossible, but cleanliness is necessary.**
- **Take pride in your equipment, machinery and products.**
- **Good well-made cage reinforcement is critical.**
- **Good well-made concrete is critical.**

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Production Quotes to Remember

Crap in crap out. It's not magic.

There are no such things as shortcuts. Shortcuts equal sloppy work.

Band-Aid's and bailing wire (quick fixes) must never become permanent.


ACPA
American Concrete Pipe Association