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Tires 101: Construction & Function

Tires 101:
Construction & Function

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Discussion Topics

- Gain better understanding of the construction & function of commercial truck tires
- Importance of inspections & inspection best practices
- Strengthen your team's ability to identify and incorporate the best practices needed to reduce costs related to downtime, road calls, lost productivity, door traffic, premature tire failures, reduced casing life…

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4 Basic Functions of a Tire

- Absorbing road shocks
- Changes & maintains direction of travel *(Steers the Vehicle)*
- Transfers traction & braking forces to the road surface *(Stops the Vehicle!)*
- Carries the load?

"What component of the tire assembly supports the truck/load?"
The AIR in the tire

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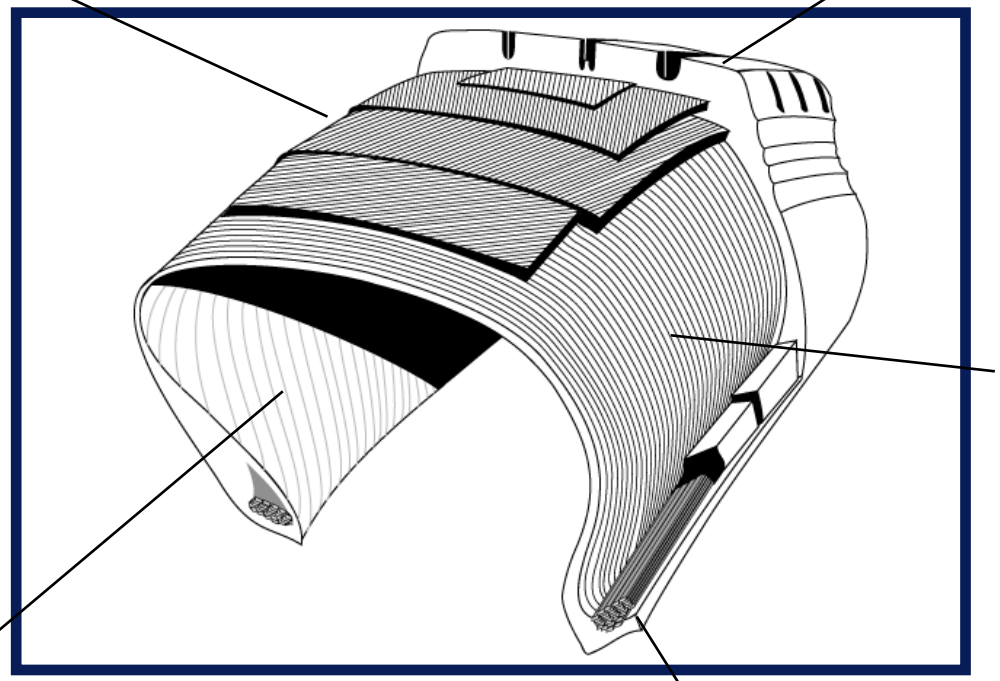
COMPONENTS OF RADIAL TIRES



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COMPONENTS OF RADIAL TIRES

1. Tread	• Rubber that provides the interface between the tire and the road
2. Belt Package	• Belt plies, especially steel, provide strength to the tire • Stabilizes the tread • Protects the air chamber from punctures
3. Radial Body Ply	• Contains the air pressure, together with the belt package
4. Inner Liner	• A layer of rubber in tubeless tires compounded for resistance to air diffusion
5. Bead Bundle	• Made of high-tensile wire wound to form a high-strength unit • Anchor foundation of the casing • Maintains the required tire diameter on the rim

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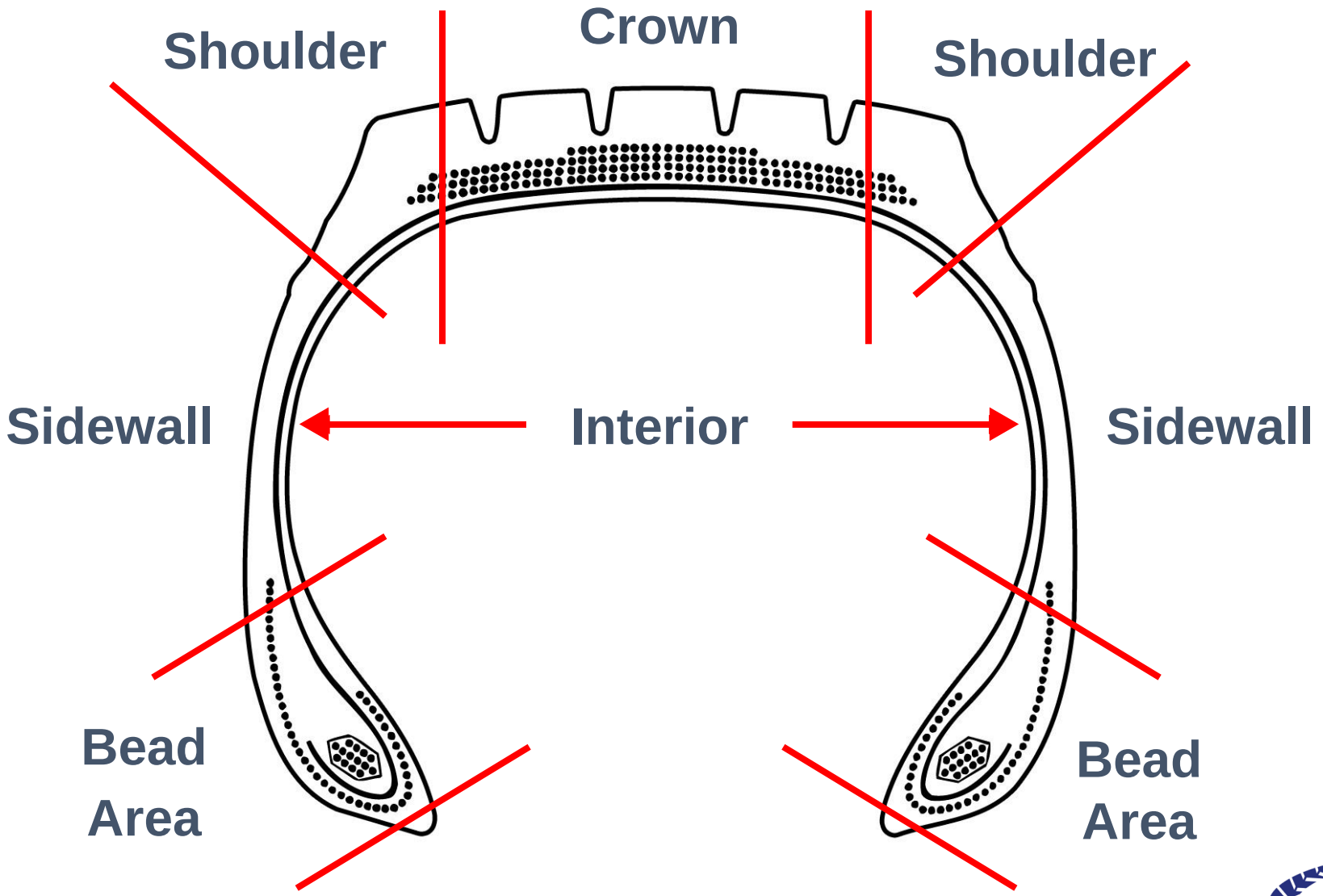
CROSS SECTION of a TIRE



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New Tires Vs. Retreaded Tires

Bridgestone M870

Bandag BRM3

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New Tires Vs. Retreaded Tires

- If done well, only the trained eye can tell the difference.
- American Retreaders Association study shows small percentage of alligators due to retread failure.
- All comes down to maintenance practices. Take care of the casings and retreads often out perform new tires.
- Cost half of what a new tire costs.

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AIR PRESSURE STANDARDS

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Major Causes of Tire Damage

1 UNDER-INFLATION

RESULT:	RISK:
• Produces extra friction, causing the tire to heat up • Heat is the #1 cause of tire failure • Leads to extreme flexing of the sidewalls	• Tire is at its greatest risk of total failure under these conditions • Tire is susceptible to sidewall damage resulting in failure

2 OVER-INFLATION

RESULT:	RISK:
• Tire has little tolerance for extra pressure because it is at capacity	• Tire is very susceptible to impact damage

3 MISMATCHED TIRES

RESULT:	RISK:
• Tires are loaded differently causing uneven wear	• Tire is more likely to be over-flexed or over- heated

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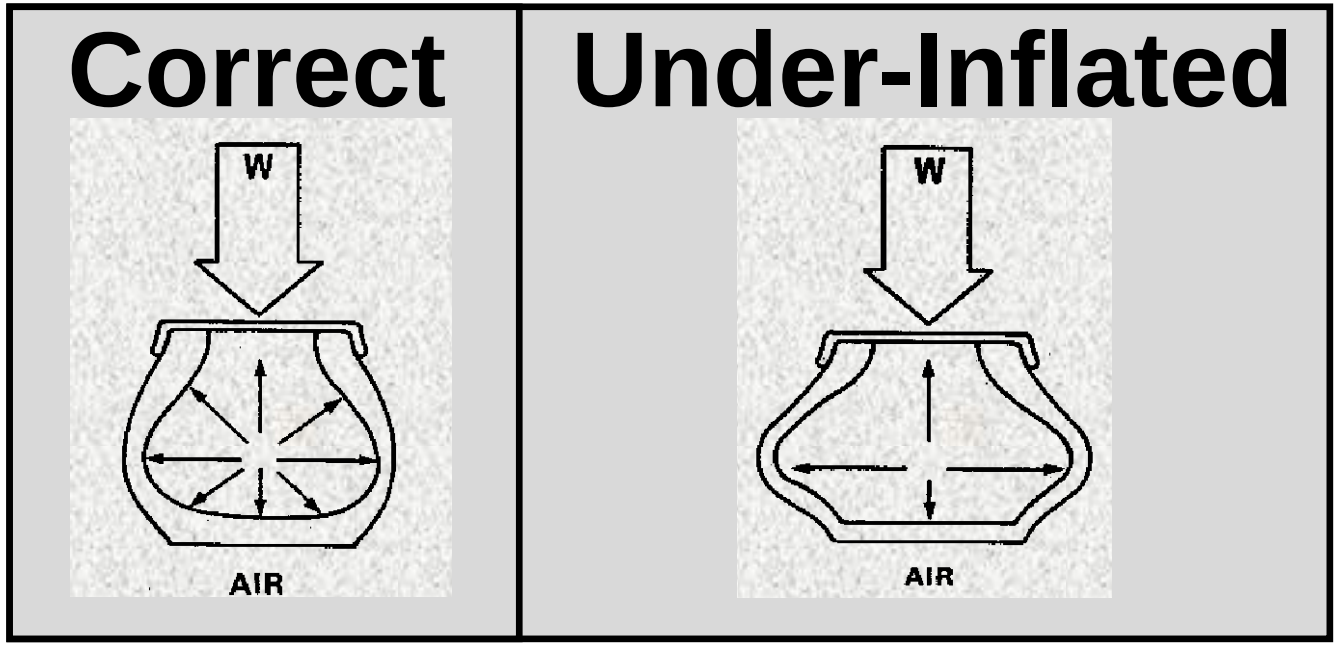
Why is under-inflation such a big issue?

It increases heat build up due to over flexing.

LEADING TO

- Deterioration
- Tire Fatigue
- Eventual break, detachment, and failure

Every -2 Lbs Tire Pressure = +5 °F Internal Heat Build-Up



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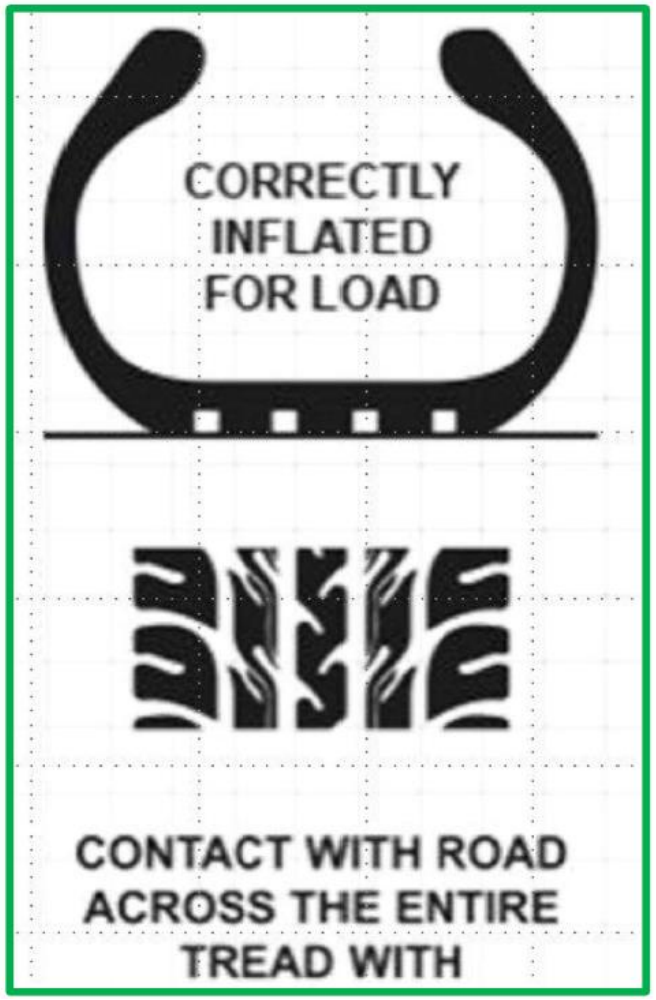

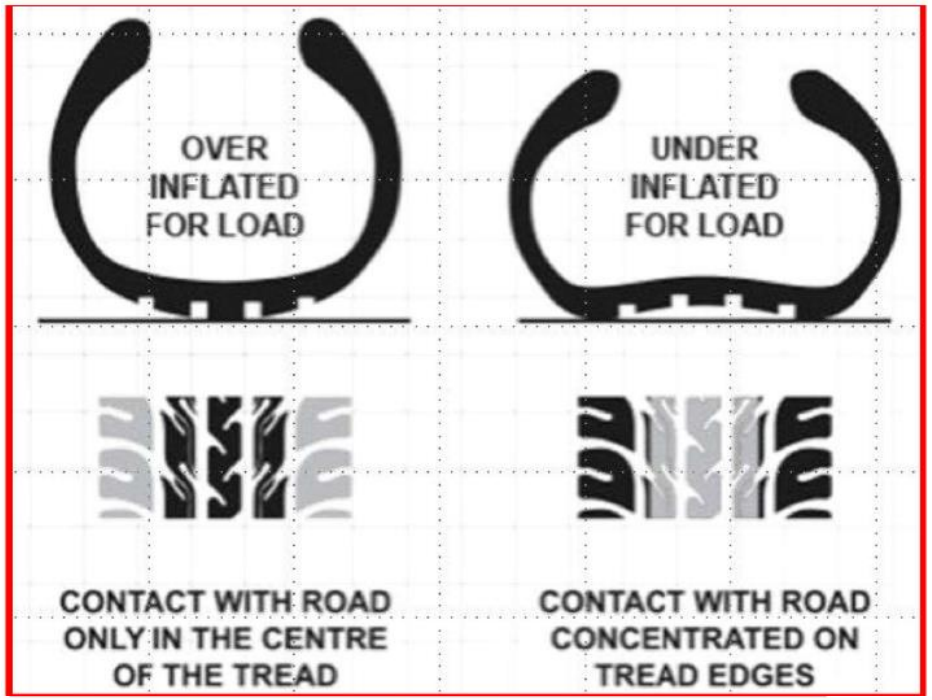

Low Air Pressure Causes Heat Build Up

- Every 1 PSI low = 2.5 degree increase in tire temperature
- At 65 mph on an 80-degree day, tire temp = 200 Degrees
- Rubber starts to break down above 270-290 degrees
- Running a tire 20 lbs low = 50 degree increase in tire temp

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PSI & Temperature

- Tire pressure varies based on tire temperature
- According to Bridgestone/Bandag, tire pressure may increase from 10 to 20 % on hot days or after several hours of driving
- You will see higher pressures in warm conditions and lower pressures in cold conditions
- Do not deflate tires to meet spec

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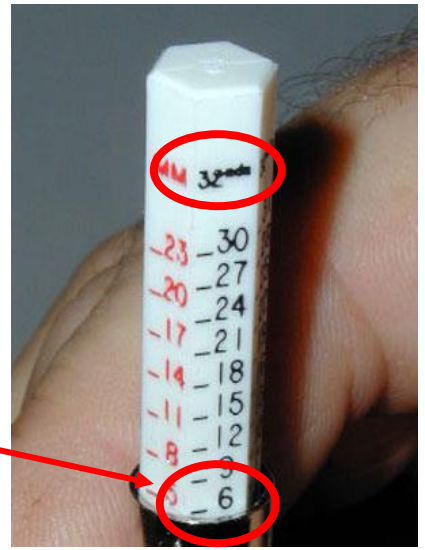
Visual Inspection

- Tread Depth Inspections:
  - STEER - 4/32nd DOT Min.
  - OTHER - 2/32nd DOT Min.
- Depth – Between Duals 4/32nd
- Check at Lowest Point
  - *Not on Wear Indicator*
- More Tread Remaining =

  Better Traction, Braking, &

  Stability, plus longer Casing Life



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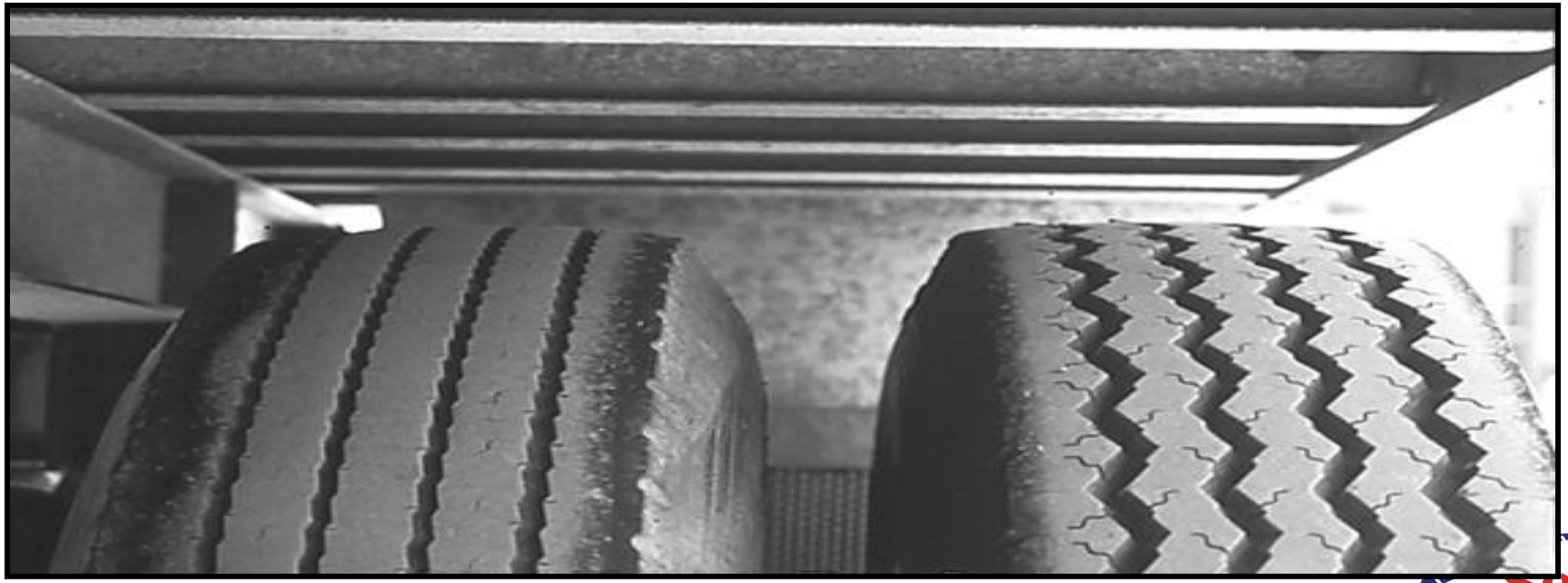
Dual Matching

- **When Duals are Mismatched**
  - The larger diameter tire carries more load
  - The smaller diameter tire wears faster



TIRE DAMAGE

- Cuts
- Punctures
- Foreign Objects

These tires may be repairable…

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These tires are NOT repairable

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These tires are NOT repairable

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Tire Failure Cost

- Average down time is 2 hours
- Cost per hour- $200 x 2 = $ 400.00
- Flat or destroyed tire - $ 700.00+
- Replacement tire - $ 700.00+
- Service truck per hour - $ 100 x 2 = $ 200.00
- Direct cost for (1) tire related service call $2000.00!

- Cost for second truck to complete route? $$$$$$$
- Loss of Customer due to missed P/U $$$$$$$
- Loss of retreads you didn't get out of lost tire $$$$$$$

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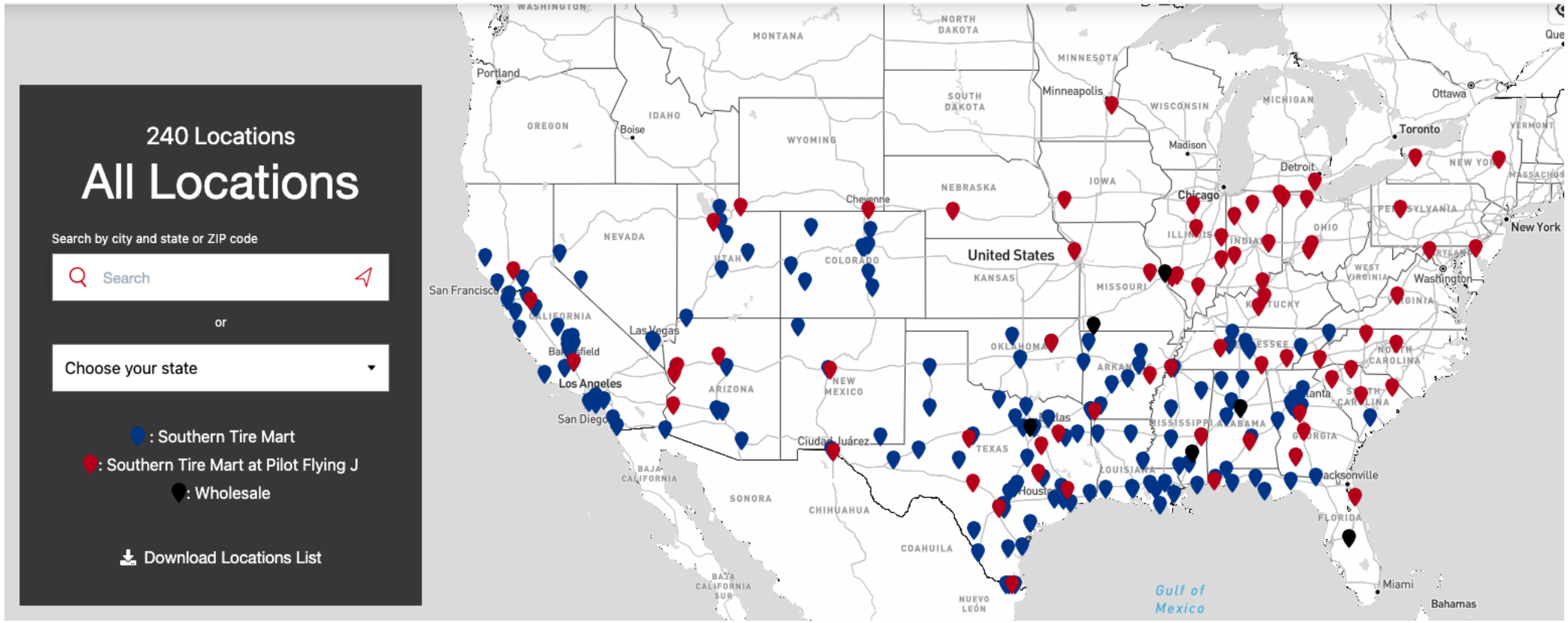
STM and STMP is here to Help!



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THANK YOU

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