

# **TOMLINSON**

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## **AMIR / TRAK ASPHALT COMPACTOR**

**PUTTING THE THEORY INTO PRACTICE  
– A CONTRACTOR'S PERSPECTIVE**

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– R.W. Tomlinson Ltd.**

# Contractor Benefits

Why are we interested in this new technology?

# CONTRACTOR BENEFITS – AMIR / TRAK COMPACTOR

- **Contractor's can be stubborn and resistant to change**
  - Current method utilizing 3-roller train has been used for years, why change?
    - Our industry is evolving... more to come on next slides
  - Paving contractors have already made significant capital investments into purchasing 3 traditional rollers
    - AMIR/TRAK conversion kits to convert current rollers
  - Fear of unknown / concerns on quality / skepticism
    - Library of technical data to prove the theory
    - Pave-in days such as this to prove the theory
    - MTO historical case studies etc.

# Conventional Compaction





# AMIR II Model – Compaction

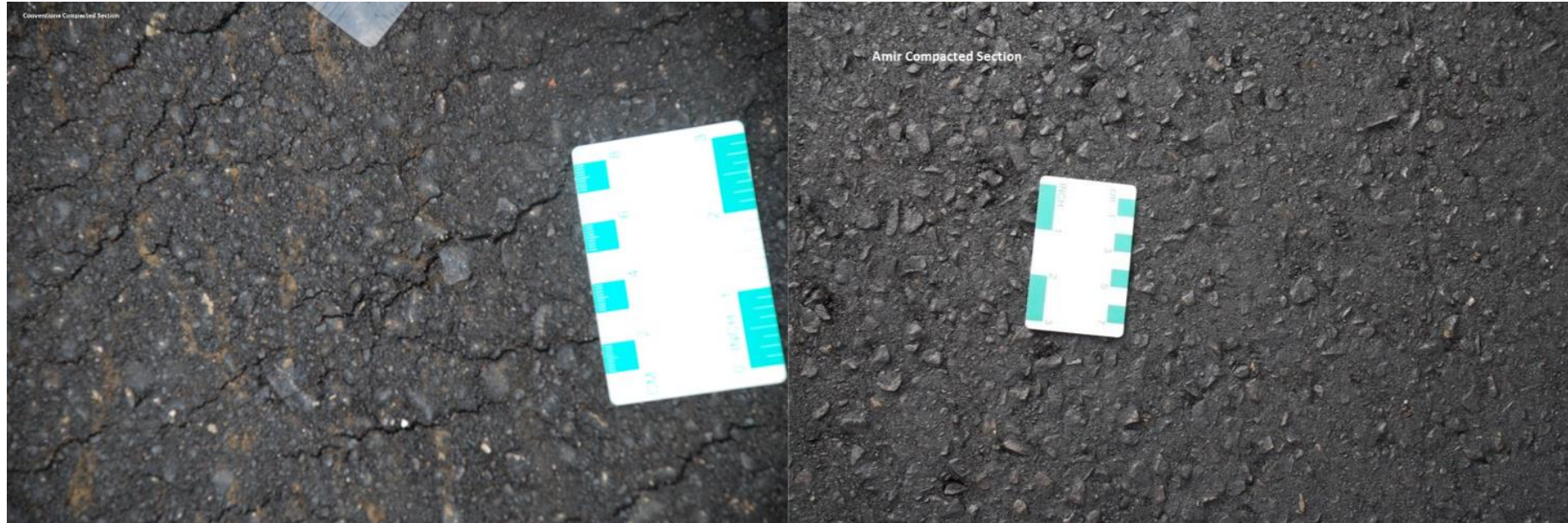




# AMIR II Model – Compaction



# Compaction Comparison – Conventional to AMIR





# Hwy 28 @ Apsley - September 2012 – Conventional





# Hwy 28 @ Apsley - September 2012 – Conventional





# Hwy 28 @ Apsley - September 2012 – Conventional





# AMIR II Model – Circa. Fall 2012



# Hwy 28 @ Apsley - September 2012 – AMIR II





# Hwy 28 @ Apsley - September 2012 – AMIR II





# Then vs. Now

- So we've shown you how we started.... Where is the technology now???





# AMIR / TRAK ASPHALT COMPACTOR



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## 2018 Jobs Include :

Hwy 401 – La Rue Mills Underpass (November 2018)

Hwy 401 @ 3<sup>rd</sup> Line Road Underpass (November 2018)

## 2019 Job :

Hwy 401 Emergency Culvert Replacement, Cardinal





- **Reduction in the amount of Asphalt Rollers required to do the job**
  - Skilled labour force is getting harder to find, fewer rollers = fewer operators required
  - If we are capable of achieving similar or greater results with fewer rollers, we can become more competitive in the market
  - Environmentally responsible - Reduction in overall Greenhouse Gases by having fewer rollers
  - Reduction in Fuels/oils being used – traditional rollers require significant amounts of hydraulic oil, reduction in fuel
  - Reduction of conventional 3-roller train down to 2 rollers and eventually with enough performance results, 1 single roller
  - Less capital investment into purchasing your Roller fleet, reduction in overall operating and maintenance costs

# CONTRACTOR BENEFITS – AMIR / TRAK COMPACTOR

## ▪ Bridge Deck Paving

- Ask any contractor and they will all say that paving bridge decks is one of the most difficult paving situation they come across in a season. Typically we're paving bridge decks towards the end of each construction season, and trying to pave a thin initial lift over top of waterproofing, and of course there is no vibration permitted on decks
  - – The AMIR/TRAK allows the contractor to pave an entire deck in one single lift (80mm or 100mm)
  - The AMIR/TRAK enables a contractor to achieve target densities at lower ambient temperatures (good for late season paving) – lower compaction temperatures overall
  - The AMIR/TRAK enables a contractor to achieve a nice tight mat on bridge decks with consistent texture (no coarse aggregate loss)



# Hwy 417 @ Hwy 34 Bridge Deck – Nov. 2014 – AMIR II

Stage 2 bridge deck paving occurred November 27, 2014 @ -1 Degrees, 1 x80mm Lift



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# CONTRACTOR BENEFITS – AMIR / TRAK COMPACTOR

## ▪ Performance Benefits

- Historical data is proving that contractor's are able to achieve similar density to conventional compactors in fewer passes overall (typically 6-8 passes) – an operational efficiency
- Lower compaction temperature requirement – allowing you to extend the paving season deeper into the Fall (also works well with Warm Mix asphalt technology)
- Ability to compact thicker lifts of asphalt (up to 4" lifts) – speeds up production on culvert cuts / road cuts
- MTO have introduced Performance Based contract specifications that contractor's are having to meet or exceed
  - 5-year and 7-year warranty projects... with AMIR/TRAK we see an improved surface texture of the mat with minimal aggregate loss = presumably longer lasting asphalt



# CONTRACTOR BENEFITS – AMIR / TRAK COMPACTOR

Traditional CAT CB-534 Converted to AMIR/TRAK using conversion kit  
- Contractor's are able to utilize their existing equipment utilizing an AMIR/TRAK conversion kit



# Contractor's Observations / Ongoing Studies

- Traditional nuclear gauge does not work in estimating density, like it does for conventional compaction. The nuclear gauges are giving low, often very low (eg. 87 – 89%) obviously incorrect results compared to the extracted and lab-tested asphalt core results.
  - Couple of theories on this :
    - 1) The AMIR rubber belt leaves the surface aggregates proud so the nuclear gauge doesn't sit flat on the asphalt surface, potentially causing air space under the gauge. With conventionally compacted surfaces the steel roller crushes the surface aggregates flat so the nuclear gauge sits flush.
    - 2) Another theory is that the surface is so tight the nuclear gauge in backscatter mode doesn't penetrate the same (almost acting like a mirror in the sense)
  - Recommendations around this issue in the field:
    - 1) Lay down a control strip, establish a rolling pattern/ record compaction temps, core samples and record densities achieved... apply knowledge to mainline production and stay on top of coring for QC requirements



# Contractor's Observations / Ongoing Studies

- COMPACTION TEMPERATURE OBSERVATIONS:
- With conventional paving we are aiming our compaction temperatures primarily based on our PGAC supplier's temperature viscosity charts – For example, today's mix is a simple SP12.5 w/ PGAC 58-34 from McAsphalt, with recommended compaction temperature for this mix of 132°C... other highway mixes can be recommended around 145°C on higher grade PGAC's
- AMIR-TRAK Compaction Temperatures - There has been a learning curve over the years to establish optimum compaction temperatures to ensure we achieve target densities – success has been found as low as 90°C and all the way up to 130°C, likely with the optimum actually falling in and around the 110-115°C mark

## Other Notes:

- Utilizing BioPav biodegradable release agent on roller belts... Little-to-no sticking or pickup
- No vibration... traditional breakdown rollers are essentially built to self-destruct due to constant vibration

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## Questions ???

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