Building Experience; Delivering Value

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Reducing metal usage and extending grading cycles by continuous compaction
Benefits Of Continuous Compaction

• Reduction in grading, users are saying up to 60%
• Reduction in metal application on roads again up to 30%
• 4 Track road - cars drive either side
• Reduced moisture impact on road, road is sealed up again immediately after grading
• Less reactive maintenance, potholes, rutting, wash-boarding
• Less complaints
• Happy drivers
• Happy clients
Why does it work

How many in this room remember the lecture on the three enemies of a road

Water Water and Water
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When we build sealed roads we:

- water
- grade and compact
- Let them dry back
- And a water proof seal to the surface

When we build an unsealed road:

- we do the same except for the sealing, we just slurry the surface get a crust and leave it.
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Let's digress for a moment

- Cut to Fill

- Always taught two basic rules

- Rule 1: to dry fill material disc and turn regularly

- Rule 2: always seal fills off at night
• Rule 1: disc to dry

• Why
  – Self explanatory we are trying to get moisture out.
  – Typically average summers day 3% reduction in MC
  – Windy day 6%+
So that you might ask

- That’s what we are doing with our roads when we grade them.
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• We open them up
Rule 2: always seal the fills at night

• Why
  – Stops dew and rain wetting the fill down
  – Saves time and money
  – One hour can save a week
So what you might ask

- By rolling immediately after grading we seal the moisture in and we seal the moisture out.
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Typical 3 track road

- High speed high metal loss
- High wear factor
- Wide enough to be a 4 track road
Case Study 1: Transfield Services - Franklin District

- Contract spec grade and roll
- Grade/Roll was grader, roller, transport, now a 1 man 1 machine operation
- Initial savings 40% or 16k/mth roller paid for itself in under 3 months
- Increased productivity by 30%
- Result client happy, consultant happy, contractor happy
- Operator/maintenance supervisor happy
Case Study 1: Transfield Services - Franklin District

• 2yrs on
  – Reduction on metal application – 30%
  – Reduction in grading cycles – 30%
  – Reduction in potholes – 40%
  – Reduction in corrugations - 30%
  – Reduction in complaints to client – 30 to 40%

Recent handover audit the auditors commented on the extremely good state of the roads and the difference of the roads compared to their roads immediately south,
Case study 2: Downer Rodney trial

- High volume road selected
- Trial sections constructed 1 with vib, 1 with static, 1 with PTR, 1 with grader attached roller, 1 graded only.
- Result all rolled sections performed in a similar manner.
- Unrolled section potholed within three weeks and fell to pieces after 6 weeks.
- Visibly less dust on rolled sections even up to 6 weeks later.
- Traffic used 4 track road on rolled sections
Woodcocks Road After 6 weeks of traffic
Woodcocks Road After 6 weeks of traffic
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Substantially less Dust
Case study 3: Downer Queenstown

- Roller has been used over last 2 years
- It is part of a combined innovative maintenance strategy which has seen
  - Less metal applied to roads
  - Less complaints from road users
  - 4 track roads
  - Less reactive maintenance ie potholes and corrugations
  - Better audit score
  - Happy grader driver uses roller for up to 100mm overlays
  - Happy client
Case study 4: Fulton Hogan Timaru

- Roller has been used over last 14 months
- It is part of a combined initiative between the client and contract to improve the network and has seen
  - Less metal applied to roads
  - Shape maintained for longer
  - Less complaints from road users
  - Less reactive i.e. potholes and corrugations
  - Better audit score
  - Happy grader driver uses roller for up to 100mm overlays
  - Happy client

Walk ‘n’ Roll packer / roller
Overall aggregate usage

- NZ has 32,400km of unsealed roads
- Using 35m³ per km per year = 1,135,000 m³
- Cost of metal at average $30 = $34 million
- 20% reduction would equate to annual saving of in excess of $6.8 million per year.
- CO₂ reduction of 20% = 2000tons per year.
- Cost of depletion of resource now recognised at $4/t
- Less trucks on roads = less damage
Case Study 5: Southern Hemisphere proving Grounds

- Compaction trial of Snow at 1500m

- Result trial 1\textsuperscript{st} set of tests roller was highest 2\textsuperscript{nd} set it was highest equal
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Roller in action in Montana

Walk 'n' Roll 
packer / roller

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