



Calcium Magnesium Acetate
as a de-icing/anti-icing agent
on local authority urban roads
in Dunedin

ICE / GRIT

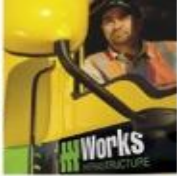


Introduction

Winter maintenance activities in Dunedin are quite extensive due to the geographical location. Winters here involve many frosts that require reactive maintenance to ensure road user safety.

- Dunedin City Council is actively seeking to enhance its winter maintenance programme with the use of CMA.
- This presentation is in two parts:
 - Strategic Planning
 - Fred Coralde, Dunedin City Council
 - Operational Aspects
 - Paul Howard, Downer EDi Works





STRATEGIC PLANNING



Why bother?

- current policy working perfectly
- rate payers do not know
- is it worth trying?



Council's approach

- roads are narrow and rolling
- improve the levels of service
- increasing road safety awareness profile
- long term LTCCP strategy



The 2006 trial

- resource consent
- roads affected
- the strategy



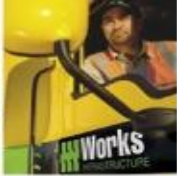
The result.....

- public initial perception
- the positive 'buying-in'
- environmental report
- the disadvantages



Strategy developed

- **trial continuity**
- **the expansion strategy**
- **desired outcome**



OPERATIONAL ASPECTS



CMA vrs Grit

- Calcium Magnesium Acetate – de-icing/anti-icing agent applied in pellet form or dissolved to form a liquid (common in NZ).
- CMA as an anti-icing agent remains active on the road for up to five days weather permitting.
- CMA allows forward planning and is safer to apply in dry conditions.
- CMA is visually difficult to detect so driver confidence lowers.
- Grit is a cheaper raw material (low initial capital).
- Grit used historically as a mechanical prevention to skidding on ice.
- Grit is a reactive treatment and is very abrasive to road markings it also needs to be collected or will fill mudtanks.



Objectives

- Meet the needs of the Dunedin City Council
- Improve knowledge of CMA abilities and applications
 - lower PSV chip
 - urban environment, lower speed, alignment.



Methodology

- Vehicle was a Toyota Corolla fitted with a Vericom VC3000, ABS system disabled.
- Tyre size, type and pressure recorded.
- Vehicle speed was 30km/hr.
- Selected sites were:

#	Locaton	Surface	Slope (deg)
1	Stevenson Rd	Mix 6 Asphaltic Concrete	1.7
2	Stevenson Rd	Type 2 Slurry Seal	2.1
3	Stuart Street	Mix 10 Asphaltic Concrete	7.1
4	Three Mile Hill	Second Coat seal (Gr4) –Worn, in good condition	0.3
5	Three Mile Hill	Second Coat seal (Gr4) – Worn, flushed areas	0.3
6	Taeiri Rd	Two Coat seal (Gr 4/6) – Worn, in good condition	5.9



Methodology continued

- Sites selected based on surface type and location.
- Sequence of testing:
 - an untreated state
 - after gritting (road then swept)
 - immediately after CMA application
 - post CMA application, after drying.
- Locked Wheel Braking (LWB) used as test method.
- NZ Police driver and Police measuring equipment used.

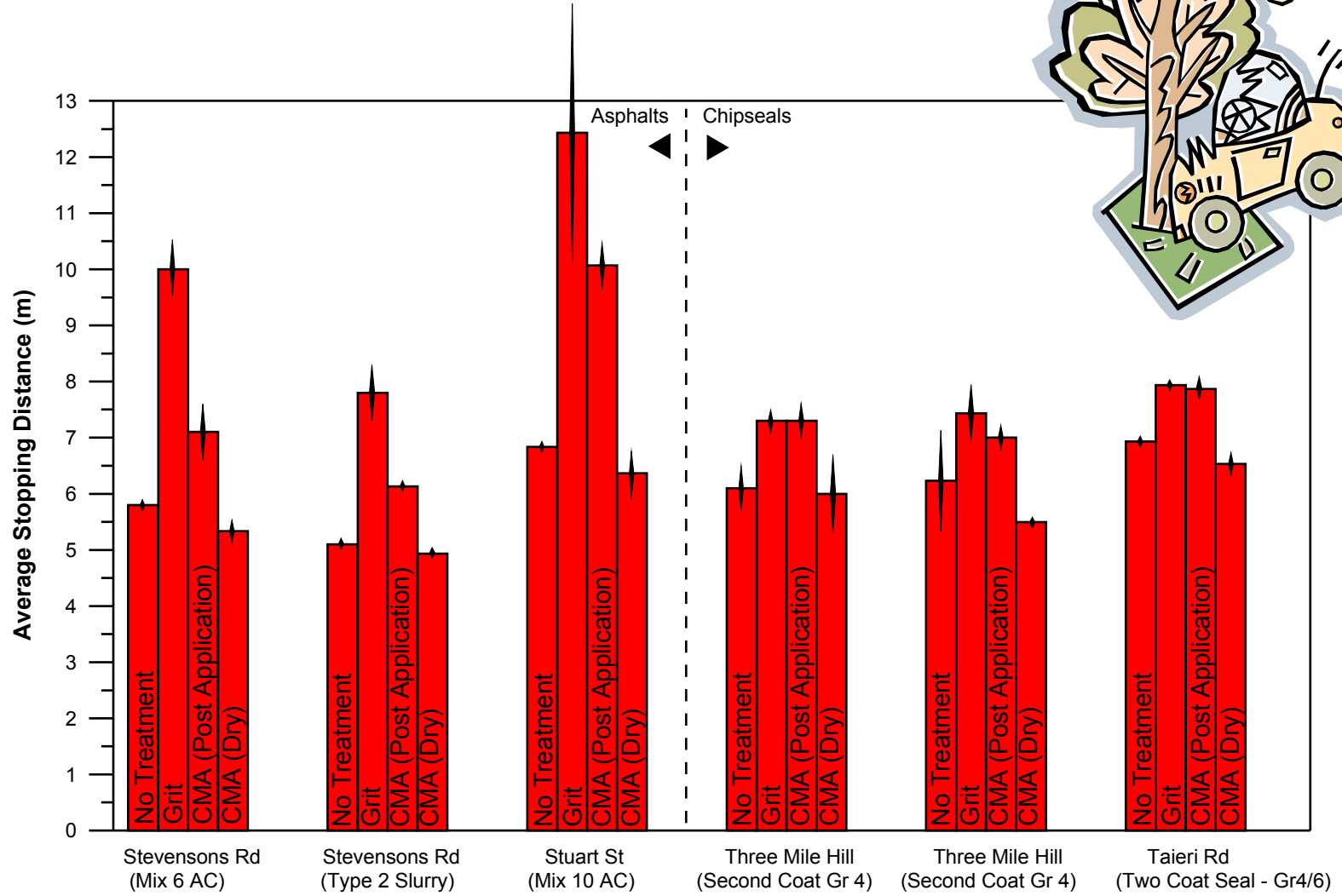


The Setup





Results





Conclusion

- Grit significantly increased average stopping distances
- The increase in stopping distance was more significant on the finer textured asphalt and slurry surfaces
- CMA (post application) performed better on average than grit
- CMA (dry) performed better on all surfaces than a dry untreated road.

