# 2011 STUDY TOUR

# *Spray sealing*

# *Contractors experience*

# Overview

- Binders
- Stone precoating
- Seal design
- Chip spreading
- Rolling & spraying
- Geofabric & graded seals

# Binders

- Hot bitumen
  - C170
  - C320
- PMBs
  - SBS
  - PBD
- CRB
  - 5, 15 & 18 parts
- Emulsions
  - CRS 60
  - CRS 67
  - CRS 80
- Cutbacks
  - 10 -15% for primer seals

# Stone precoat fluids

- Vary from State to State
  - Bitumen cutback with diesel + adhesion additive
  - Diesel
  - Waste oil – problems with tracking
- Precoat on-site
  - Use immediately
- Precoat in quarry
  - Use after 28 days

# Seal design

- Contractors does own design
- Use embedment hammer to check hardness of base course
- Use sand patch to check surface texture

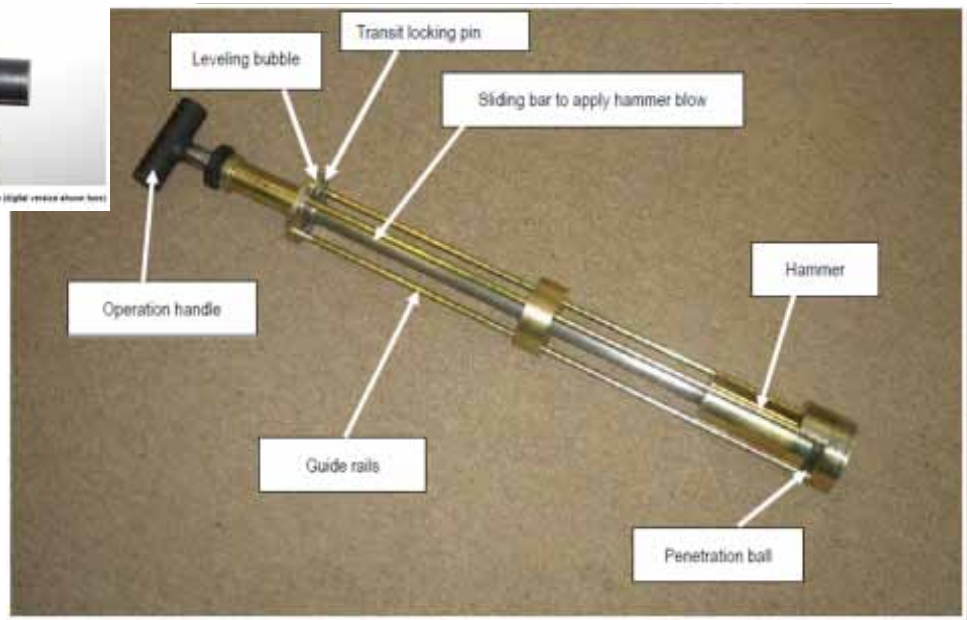



Figure 1: Type 1 ball penetrometer

# Texture pretreatment

If texture across mat varies by more than 0.3 l/m2 then:

- Regulate the surface with a size 5mm or 7mm seal
- Pre-spray
- Use a bitumen sprayer with a variable rate spray bar
- Use a modified binder
- Water texturising

# Chip Spreaders versus Roller Boxes

# Chip Spreaders

**Advantages**

- Will give a more uniform and consistent mat
- Can spread at widths from 0.3 m to 4.4m in one pass
- Once aggregate spread rate is set it is locked in an will not change unless operator changes it
- Saves around 5% of aggregate (Which generally covers float charges)
- Operator sits in cab facing direction he is travelling (Better Visibility)
- No loose aggregate (Overlaps kept to minimum)
- Less sweeping

**Disadvantages**

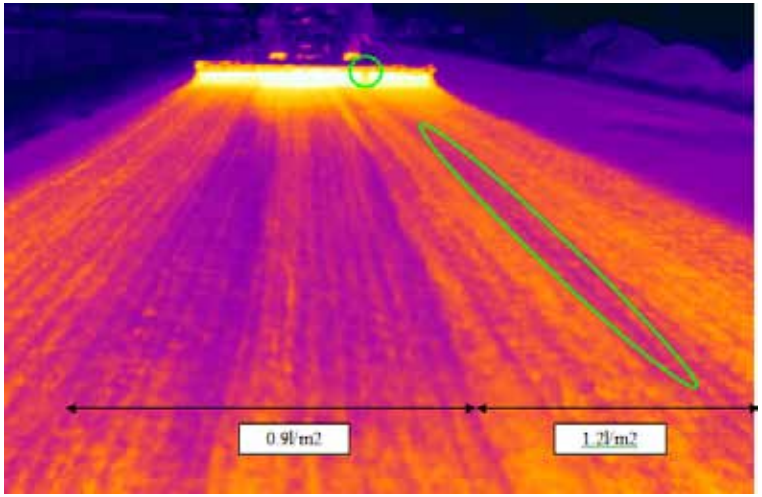
- Maximum width would be more effective if you could go out to 6.2 m
- Slower then roller boxes when road width is over 4 m (Need to do in two passes)
- Has to transported via float to job sites

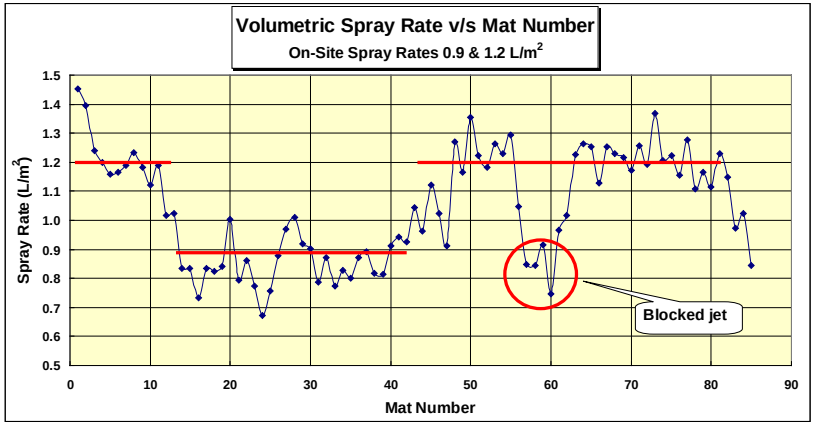
# Chip & pray?

## Combo Rollers

- Steel wheel with rubber covering and 4 pneumatic tyres
- Achieve compaction with fewer passes
  - o broom test
- Need flat surface be effective
- Difficult to replace rubber when damaged.

## Sprayers



# Graded aggregate surfacings

Why we need graded aggregate seals?

- Almost 60% of Australia's proclaimed road network is unsealed
- Gravel roads are a problem for:

road users, communities, road

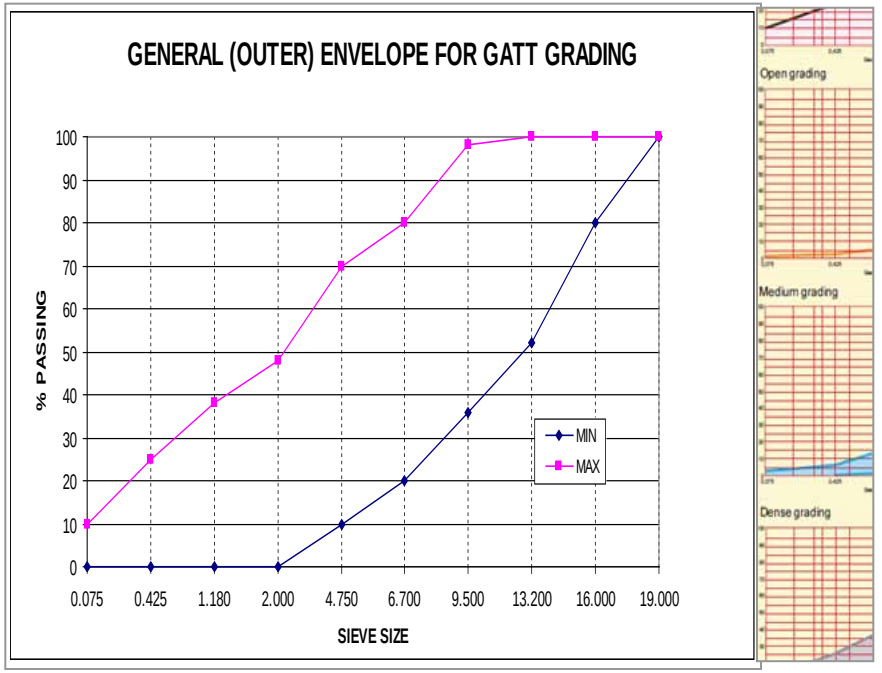
providers & environment

| | Km | % |
|---|---|---|
| Surfaced | 332,863 | 41% |
| Unsurfaced | 477,373 | 59% |
| | 810,236 | 100% |

# Why we need graded aggregate seals?

- low cost surfacings include:
  - Primer seal, sand seal or single seal
- Limited performance of other surfacings because:
  - Limited amount of binder in seal
  - Sometimes gravel not primed to reduced cost
  - Require to be resealed within 2 years to avoid pot holes
  - Performance very sensitive to having a good quality base
- Has improved performance because:
  - Self-priming binder
  - High binder application rate i.e. >1.8 litres/m2
  - Incorporation of a polymer in the binder improves flexibility
  - Use of cutter ensures self healing of seal
  - Higher stone application rate i.e. > 60 m2/m3
  - Graded aggregate ensures better stone interlock

# Aggregate Grading



# 600,000 m2 placed since 1999

# Geo-Fabric Seals

# Typical surface for GRS would be used

# Spray 0.6 l/m2 on overlapped to avoid stripping

# Example of a nailed join

# Equipment used - WA Method

# Victorian method- multityred roller

# What not to use

# Why not to spray when temperature > 55 C