The Importance of Best Practice Training for Contractors Involved with the Maintenance & Construction of LVR

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Introduction

• The maintenance & construction of LVR presents many challenges to the contractor

• LVR provide a completely different environment than major routes

• Low traffic counts but with some intense periodic HV events
This presentation will look at the development of crews around NZ over the last 3 – 4 years.

Development was achieved through the implementation of a regular training program which included short courses and site work.
Training modes

• Initially through a series of short courses ran at the branch with practical sessions in the yard

• Initially the level of understanding of basic best practice principles were limited

• This was highlighted due to the high amount of remedial work in certain areas

• Site follow-ups were then conducted over the next few years and involved a day or two with each crew observing and providing feedback and instruction directly to field staff. The progress was very encouraging
LVR – a unique environment

• LVR present many challenges to the authorities responsible for their upkeep

• Often, the environment provides very little room to work, is remote from services and the traffic is variable

• However, it can be done!
How to build and maintain LVR

• In short it requires access to good materials (e.g. well graded ‘GAP’ style aggregates), water, and compaction equipment

• Compaction equipment should not be limited to the conventional items

• Some of the best compactors are the least obvious!
Best Practice Principles

• To build or maintain LVR we need to follow some Best Practice Principles:
  • How to recognise good material by way of observation
  • How to recognise OWC in the field
  • How to determine correct layer thickness
  • How to compact properly and efficiently and know when enough is enough
  • How to apply cement and lime for stabilised areas
  • How to achieve a surface that can be sealed (or unsealed as the case may be)
Materials

• Not enough can be said about the importance of good materials

• Material needs to be well graded, and have enough non-plastic fines to be workable

• Material should be close to OWC, especially if large distances are involved for transport to site
OWC in the field – critical!

- Obtain palm size sample of material
- Remove all large stones
- Squeeze as tight as you can
- Observe the material
- Water can act as glue or lubricant
Layer thickness

- Some of the biggest causes of failure on LVR is incorrect layer thickness

- Layer thickness (and OWC) are the two most important criteria for efficient compaction

- 2.5 max stone rule....as a guide
Compaction

- Falls in to two categories, Primary and Secondary

- Primary is achieved with vibration and CAN BE OVERDONE!

- Secondary is achieved by weight and kneading

- If done in this order (and properly!) then compaction can be achieved quickly
Compaction – con’t

• Don’t just use rollers, plates etc

• For the best surface finish and reduced material breakdown, as much as possible should be done with rubber tyres

• Where do we get the rubber tyres from?
Rubber Tyres

- Most compaction gear used on LVR is lightweight.
- However, the aggregate truck, water cart, and even the crew truck are outstanding compactors and will yield a decent surface.
Stabilising

• One of the best ways to increase in-situ strength and reduce the need for imported aggregate

• Commonly done with up to 3 or 4% cement or lime (typically around 2%)

• Time is of the essence here and access to the right gear and water
Stabilising con’t

• Use water injection on hoes if fitted

• Apply some thought to dose rates

• Remove large clumps of seal after hoe has passed

• Water + primary is the 1st thing
Stabilising – con’t

• Then add shape through clipping with underbelly grader (or the real thing if you can)

• Apply secondary through rollers with **NO VIBE** and rubber tyres

• Water cart to be kept active during this phase
Drag-brooming for surface prep

- A bit of a lost art these days!

- Drag-brooming (which can be done by hand on small patches) is the process of dragging the fines across the surface to fill in voids.

- If allowed to dry a mosaic surface can be achieved.
Surface prep – con’t

• Be careful not to over water if the patch is to be sealed the same day

• If the patch is to be left open, keep an eye open for cracks, and water if necessary

• Apply a running course or membrane to protect basecourse
Thank you for your time. Do you have any questions?