

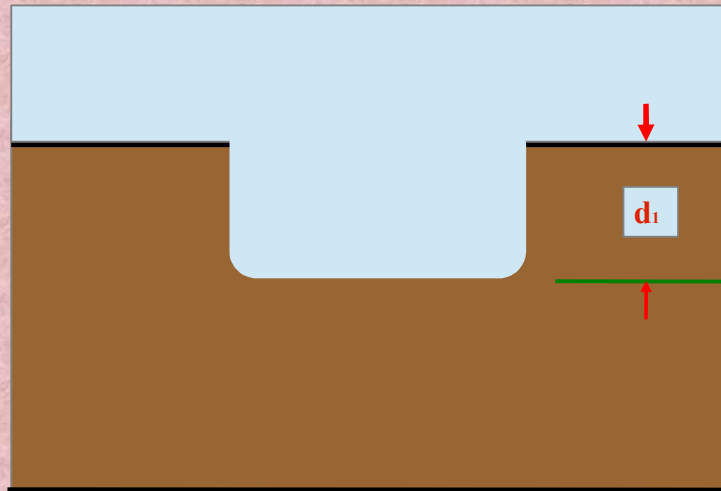
11

TREATMENT OF EXISTING PAVEMENTS

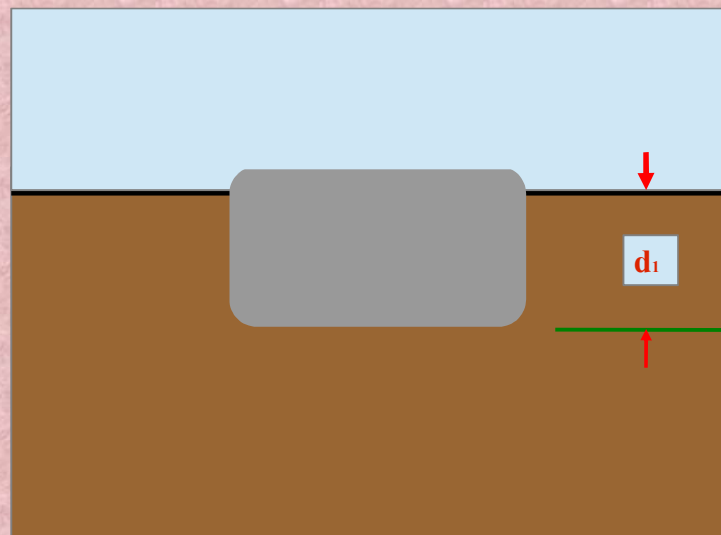
Localized Problems

- ❖ Potholes
- ❖ Drainage
- ❖ Moles
- ❖ Slips / Instabilities
- ❖ Patches

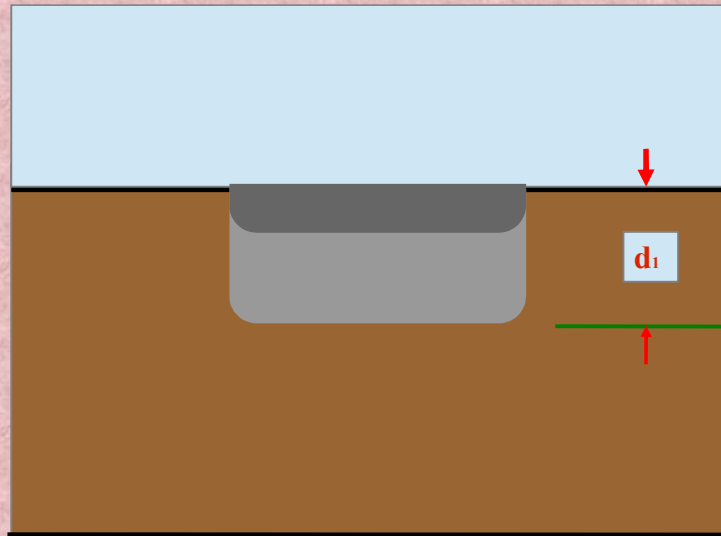
CRITICAL COMPACTION STORY



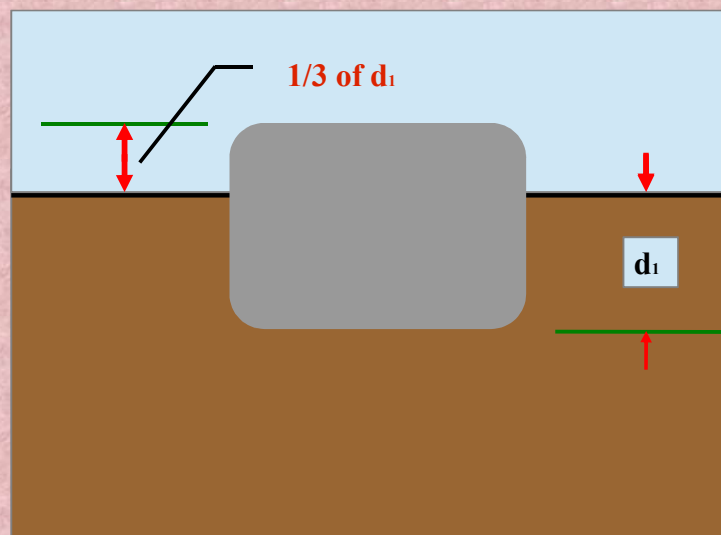
1. Excavation



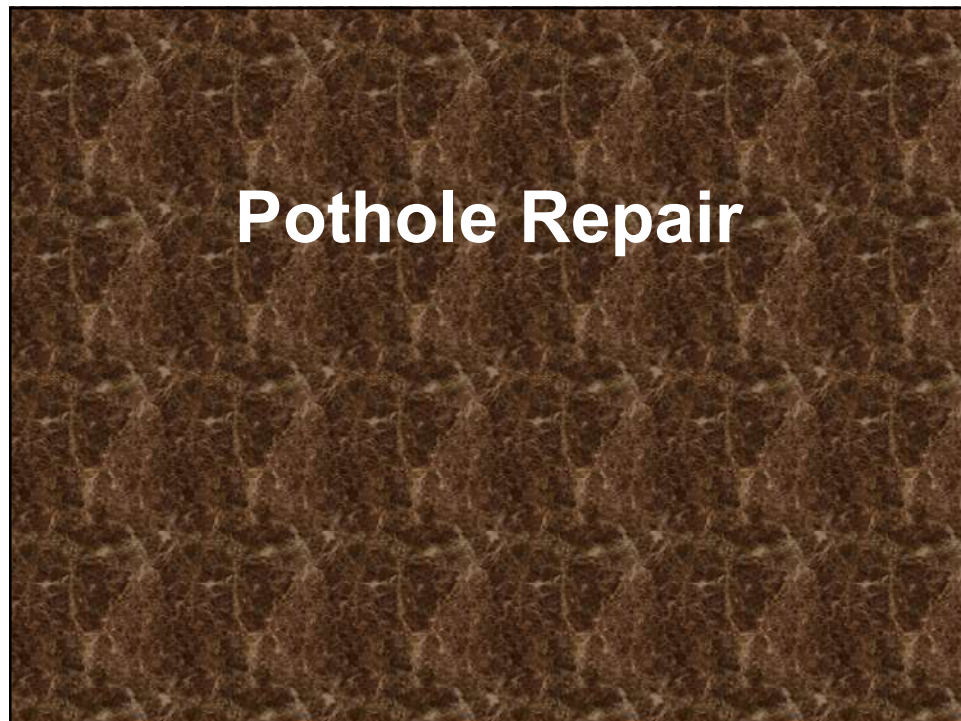
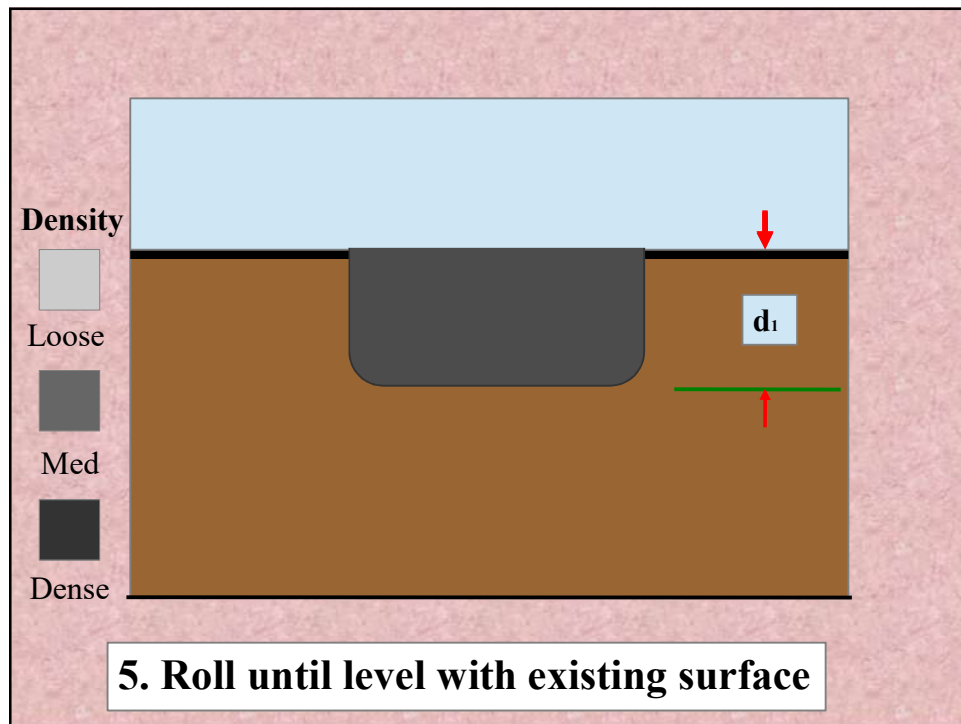
2. Loose Backfill



3. Superficial compaction



4. Correct loose backfill



POTHOLE REPAIR



Pothole Repair

- ✓ Check surrounding pavement – sound?
- ✓ Trim to neat outline
- ✓ Remove all loose material to hard
- ✓ Prime with emulsion
- ✓ Fill with asphalt (hot if possible) – allow 30% bulking
- ✓ Compact to level with old surface
- ✓ Seal cold-mix asphalt with Viaseal/Petraseal

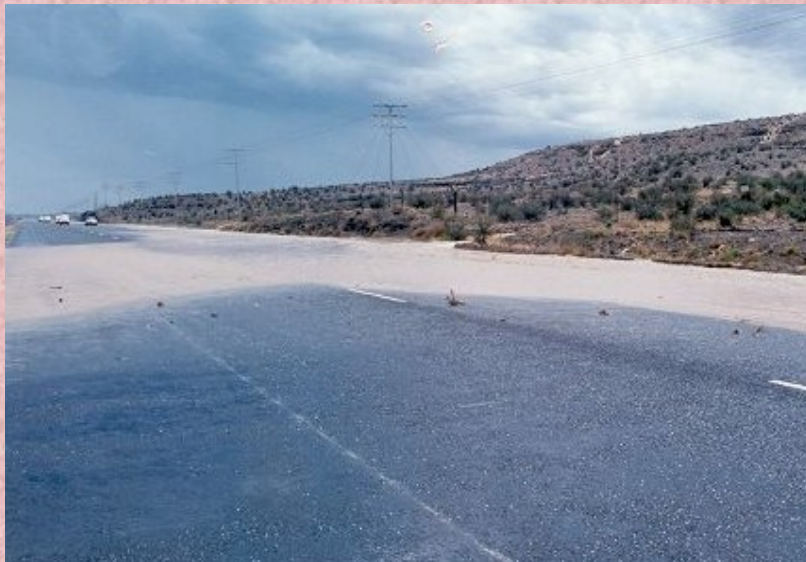
Drainage



Wet Areas

- **Surface Drainage**
 - Good falls from shoulder and along the drain
 - Adequate capacity
 - No ponding / Standing water
- **Subsurface Drainage**
 - Is there a problem?
 - Rock & clay, fabric may block; check compatibility
 - Geofabrics
 - Strength, Clogging, Iron oxide growth, Flow rates, Critical head

FLOODING



SLOPEWASH EROSION



CUT FACE DRAIN



CONCRETE LINED DRAIN



LINED DRAIN



SUBSURFACE DRAIN



GABION WALL



Patch and Repair





Patch Repairs

- Less than 50 m long or 25 m²

Pay for good material up front or you will pay again, and again, and again

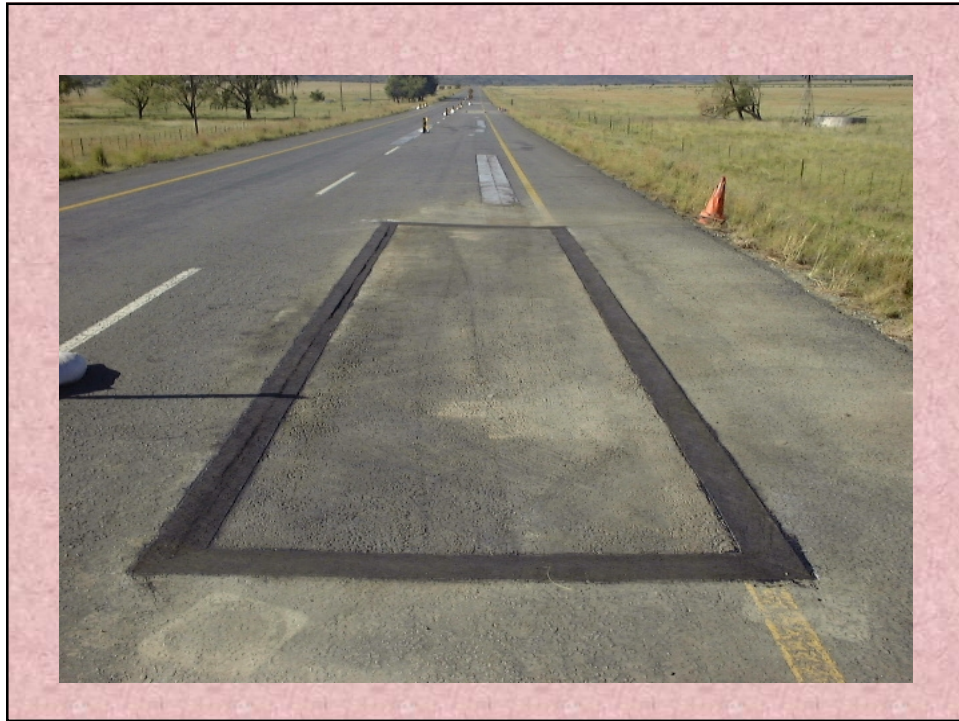
- Excavate layer by layer and separate
- Re-use good upper layers for SSG & SB
- Import crushed stone for Base (G2)
 - Treat with 3% Emulsion & 1% Cement
 - Mix in concrete mixer
- Allow 30% bulk & compact well

Patch Repairs

- Light prime
- Surface with asphalt (preferably hot)
 - If cold mix used seal with Viaseal / Petraseal
- Seal edges with Viaseal / Petraseal
- Same day patches use BTB for base
- Before reseal could use light seal
instead: coarse slurry, latex emuls + grit
or 7 mm chip, or Roadpatch







Treatment of Flexible Pavements

Treatment of Flexible Pavements

Three critical interrelated factors:-


- ❑ Existing condition
- ❑ Management of Water
- ❑ Traffic

NB Water and Heavy Vehicles do the damage

Basically the worse they are the more you have to do and the more it costs

Corollary: The less you do, the lower the cost and the higher the risk!

Fundamentals

- Wherever possible go  and you will:-
 - Increase cover to Subgrade
 - Reduce risk of wetting up of layers
 - Retain years of 'consolidation' of lower layers
- ❖ Not possible in certain circumstances
 - Urban areas - Kerbs, Channels, Sidewalk, Structure

Possible Measures

Most obvious measures in increasing complexity and cost:-

- Repairs and Reseal
- Repair and Overlay
- Rework, Strengthen & Seal
- Replace, Strengthen & Seal
- Rework, Strengthen & Overlay
- Replace, Strengthen & Overlay

Increased
Cost Risk



Repair and Reseal

Repair and Reseal

- Expected life: 5 to 10 years
- Relatively cheap
- Time to do this is while pavement condition is still good!
- If you do this when pavement condition is poor – expected life will be low and risk high

Repair and Reseal

- Crack Sealing - active or passive?
 - Single open cracks:
 - Pretreat with Viaseal
 - Clean – brush, compressed air, Hot dog lance
 - Wide – seal with B-R , Vialflex, etc
 - Small – Latex emulsion or geofabric strip
 - Multiple cracks (active):
 - Seal with geofabric bandage (1 L/m² x 2 & grit)
- Texturing
 - Pre-treat coarse or uneven surface
 - Use fine slurry and traffic

SHORT BREAK

10 Minutes



SEALING OPEN CRACKS





This is
crazy &
costly !

Crocodile cracks



Texturing



Repair and Reseal

- **Rut Filling**
 - After Patching, Crack-sealing and Edge-break repairs
 - Use rapid set coarse slurry – but must traffic as much as possible, or
 - Use fine asphalt
 - **Edge-break**
 - Trim off into sound material
 - Use asphalt or coarse slurry
- Ask yourself '**why is it breaking?**'

RUTS



RUTFILLING



TOO LATE !



SEVERE EDGE-BREAK



BELLMOUTH



Why is it breaking?



Reseal

Reseal

- Old dry surface – little distress **Life**
 - Surface is sound: **3 Y +**
 - Rejuvenator – penetrates
 - Conventional binder **5 Y +**
 - Single 7 mm seal – with traffic increase use larger stone – finally double seal
 - Some low crack activity **5 Y +**
 - Use SBR Latex- emulsion or hot
- Use pre-coated stone and/or fog spray to 'lock' the surface up

Reseal

Life

- More cracks – increased activity **5 Y ?**
 - ❑ Use 13 mm single seal – B-R or SBS
- Major movements (CTB or Concrete) **? Y**
 - ❑ Use 40 mm B-R Asphalt – **NB**
cracks will still reflect through!
- Speed / Splash / Noise / Heavies **5 Y +**
 - ❑ Porous asphalt or UTFC

Special Cases

CTB CRACKING



LIGHT CTB





Cement Treated Base

- Special and obvious case
- **Severe distress:** Mill out & replace
Import new material – very costly
- **Moderate distress:**
Replace local areas, check crack
activity, Hot-dog clean and B-R seal
cracks – then:-

Overlay: Modified binder seal
Geotextile and seal
Base and seal
B-R Asphalt

Cost



Cold In-situ Recycling Machine



Cracked / Failed Asphalt

Surface failure only

- Usually due to asphalt aging and becoming brittle
- Check that underlying pavement is sound
- Mill out cracked and rutted areas, replace with HMA, seal any single cracks and overlay with HMA Wearing Course
- **or** In situ recycle whole layer
- **or** remove and replace whole layer

SURFACE CRACKS



SURFACING FAILURE





**Labour Intensive
Construction**

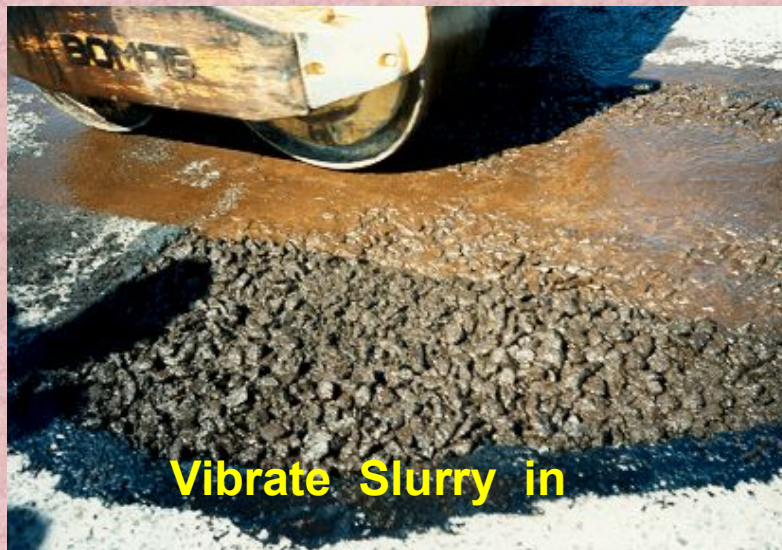
SLURRY MACADAM PATCH



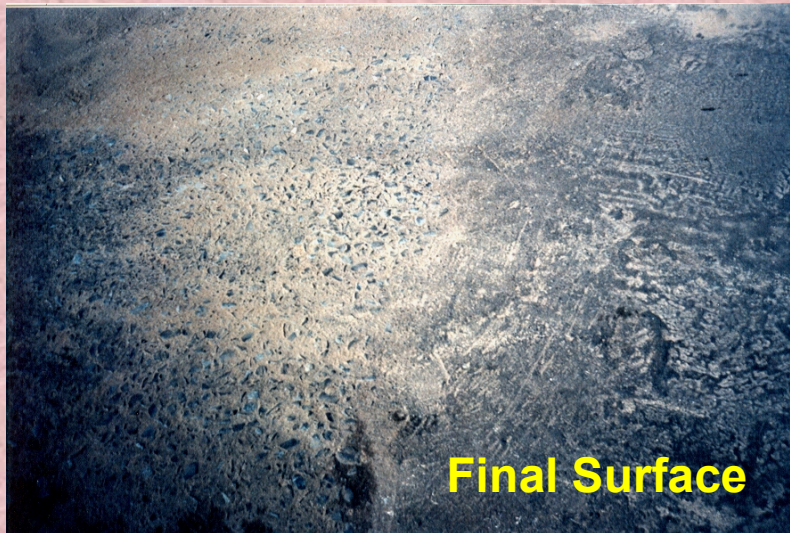


SLURRY

Not too wet



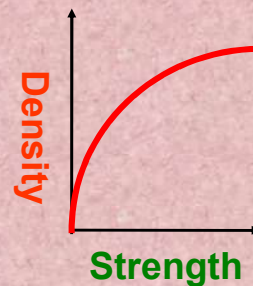
Vibrate Slurry in





Construction Control

- **COMPACTION is Critical**
Degree of Compaction
has strong effect on
Material Strength



- **Watch method, equipment, effort, material type and moisture (HMA binder) very carefully**

A square area with a brown, textured background, resembling leather or a similar material. The texture consists of a repeating pattern of small, raised, diamond-shaped or scale-like structures.

End