

7

REHABILITATION

INVESTIGATION AND DESIGN

REHABILITATION

MAINTENANCE

“Maintaining an adequate level of service by means of either: Minor Works or Superficial Treatments to the existing pavement”

REHABILITATION

“Improving the level of service by means of reworking, replacing and/or overlaying the existing pavement”

REHABILITATION

- TYPICAL DISTRESS

Distress or Failure?

Potholes

Soft patches

Slips

Mole action

Water

Ruts

Cracks

Displacement

Localised

Common &
widespread

REHAB SITUATIONS

MAJOR SLIP



SLOPE DEGRADATION



ROCKFALLS



EDGEBREAK

EDGEBREAK



SEVERE EDGE-BREAK



BELLMOUTH



GRAVEL LOSS



CRACKS

CTB CRACKING

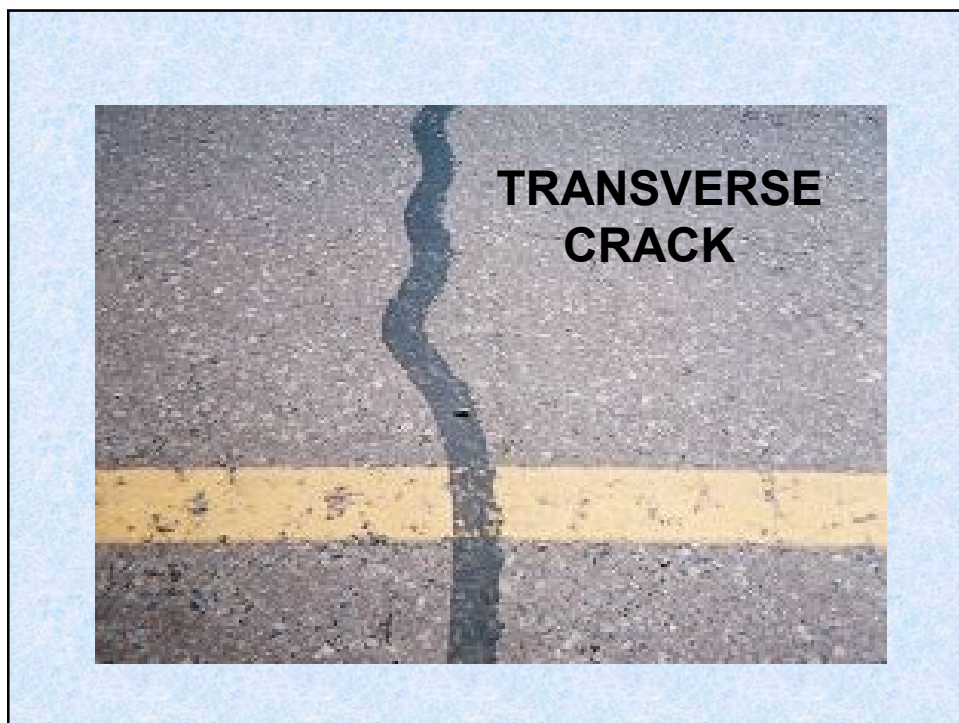


LIGHT CTB



LIGHT CTB Severe





EXPANSIVE SOIL



EXPANSIVE CRACKS



Note crack width!

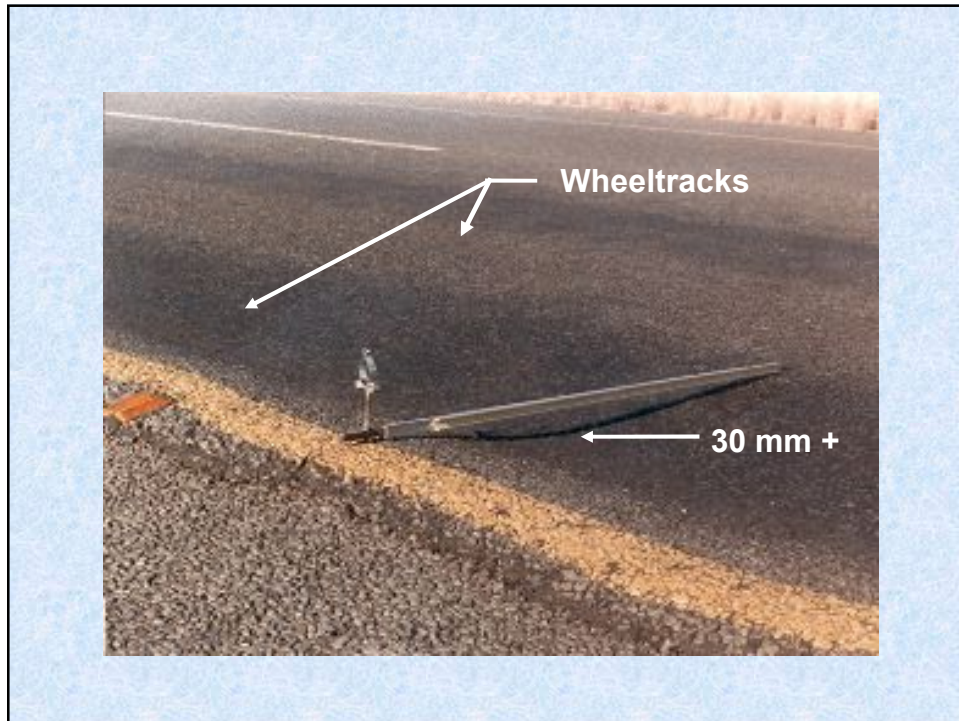




RUTTING

RUTTING





CONSEQUENCES !



FAILURES

POTHOLE



SURFACE FAILURE



DISPLACEMENT



DISPLACEMENT



Note Bleeding

LOCAL DISPLACEMENT & FAILURE



CAUSED BY WATER !



**OBSTRUCTED
EDGE**



EDGE FAILURE



DRAINAGE FAILURE



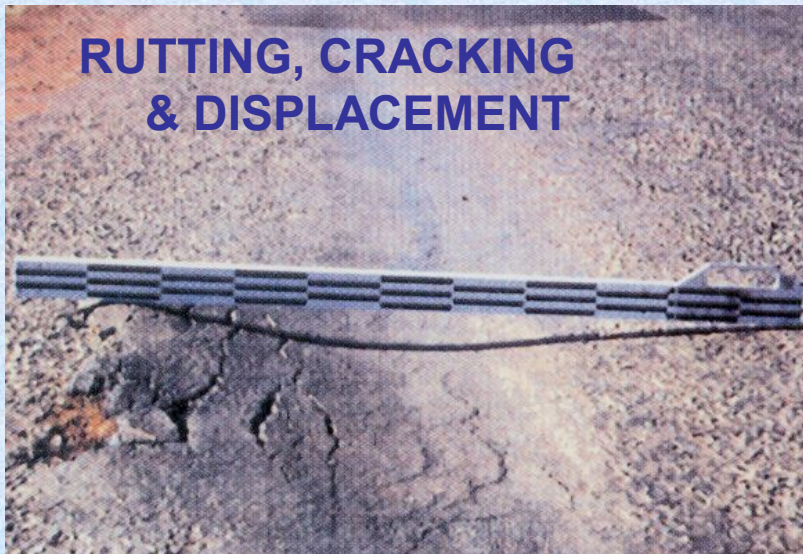
BLEEDING - PLUCKOUT



BLOCKPAVE FAIL



**RUTTING, CRACKING
& DISPLACEMENT**



MAJOR FAILURE !



SHORT BREAK

5 Minutes



REHAB

REHABILITATION – S I

1. NETWORK PMS

Identify projects for rehabilitation

2. DESK STUDY

Collect: Construction records – if any

Traffic data – accidents

Previous maintenance & rehab data

Ride quality data

IDM data

Rehabilitation S I

3. FIELD INVESTIGATION

PHASE 1- VISUAL

Set out reference marks (20 m intervals)

Walk full length of project recording all forms of Distress on

Detailed Visual Inspection Sheet

Extent: Sketch to rough scale

Type & Degree: Tables 1 & 2 TRH12

Remote sensing technology now available

Rehabilitation S I

“ In at least 80% of cases the Visual Inspection can provide enough data to identify the cause of failure and select a suitable rehab measure”

IMPORTANT – Do it carefully and well

Also provides data for quantities

**Refer: TRH6 for Definitions of Distress
and Degree categories (Table vi)
TMH9 for Visual examples**

Rehabilitation S I

PHASE 2 – FIELD TESTING

- **Consolidate visual data on Assessment Summary Sheets together with desk study data.**
- **Make preliminary overall pavement condition evaluation**
Good – Warning – Severe
- **Identify problem areas / lack of knowledge**
- **Plan field testing and trial pitting carefully**
This part can be costly – balance type & extent of tests against your uncertainties

Rehabilitation S I

- **Trial Pits: layer type, thickness & samples for lab testing**
Take enough material - including for treatment design
- **DCP Tests: In situ strength (NB @ current mc) including subgrade – note time of year**
- **Falling weight deflections (eg IDM)**
Provides deflection data and an estimate of layer elasticity - Quite costly

Rehabilitation S I

S U M M A R Y

NETWORK PMS – Identify problem sections



PROJECT LEVEL INVESTIGATION



VISUAL Inspection (Cornerstone of investigation)



PRELIM ID of Structural Problems



FIELD TESTS

NEXT STEP – PROJECT ASSESSMENT

Rehabilitation Design

PROJECT ASSESSMENT

After site/field investigation is complete
summarise all data on

Assessment Summary Sheets (see
NOTES)

3 Categories:

Sound condition < X

Warning X to Y

Severe > Y

Rehabilitation Design

Visual conditions judged on the extent of Degree 3 to 5 Distress (Table 15)

Mechanical measurements judged on the size of the readings (Tables 17 & 18)

Distress Indicators

Certain mechanical tests can indicate at what level in the pavement the cause of distress lies.

Beware of using mech data on it's own.

Rehabilitation Design

- **OVERALL CONDITION**

Review the individual distress modes – and in conjunction with the visual, trial pit, lab testing and mechanical measurements; determine an **Overall Condition**. This is based on **Experience & Understanding** (no tables).

- **IMPORTANT**

Wrong decision = wrong rehab!!

Rehabilitation Design

UNIFORM SECTIONS

Divide the project into sensible lengths of

Uniform Condition & Distress

For example:

Isolated local failures

Base failure, widespread

Expansive subgrade

Surface failure, pavement structurally sound