Pavement Rehabilitation Training Course: Condition Evidence, Treatment Selection and Quality Control

13 – 24 September 2027
Tokyo

Pavement Rehabilitation Training Course: Condition Evidence, Treatment Selection and Quality Control

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Programme Summary

This two-week pavement rehabilitation training course is for roads directors, asset managers and client-side engineers, and ends in a rehabilitation programme pack for one road section. Treatments chosen without condition and structural evidence often fail early or cost more than the repair they replace. The programme moves from condition surveys and deflection evidence to diagnosis, treatment options, whole-life cost, contract risk and site quality control, using prepared records from highway and urban street sections. Mars Training Centre UK delivers this programme on pavement rehabilitation to mixed-organisation cohorts.

The Business Case

Pavements carry growing traffic on fixed budgets, so each rehabilitation choice must show why one treatment was preferred over another. Owners who rest that choice on survey and deflection records can defend it to boards and funders, and can hold contractors to a stated standard. Without that evidence, thin overlays are laid on weak structures and the same sections return to the programme within a few seasons.

- Treatment Life: Extends when the chosen treatment matches the measured cause of failure.
- Whole-Life Cost: Falls when options are ranked on agency and user cost over a stated period.
- Rework Rate: Reduces when specifications, trials and acceptance checks are written for the treatment chosen.

Principles and Evidence Base

- ISO 55001: Requirements for an asset management system, applied in Sessions 1 and 10 to link rehabilitation choices to asset objectives.
- ISO 31000: Guidelines for risk management, applied in Session 8 to rank contract and traffic risks.
- ISO 14040: Principles and framework for life-cycle assessment, applied in Session 7 to compare treatments on whole-life impact.
- PIARC pavement management guidance: Practice from the World Road Association, applied in Sessions 2 and 7 to condition indices and ranking.

Intended Participants

- Roads directors who approve rehabilitation budgets and treatment policy.
- Asset managers who hold condition data and rank sections for treatment.
- Client-side engineers who review evaluations, designs and trial results.
- Contract managers who write specifications and accept completed works.

Typical settings include national highways, urban streets, airport pavements and port yards.

Learning Outcomes

1. Participants will be able to construct a condition survey record and divide a road into homogeneous sections.
2. Participants will be able to diagnose structural capacity and failure cause from deflection, core and drainage evidence.
3. Participants will be able to evaluate overlay, mill and fill, recycling and reconstruction for each section.
4. Participants will be able to prioritise treatments on whole-life cost and risk.
5. Participants will be able to construct specification and acceptance criteria for the chosen treatment.
6. Participants will be able to justify a rehabilitation programme to a roads board.

Programme Structure

Day 1: Pavement Rehabilitation Foundations

What does a rehabilitation decision rest on, and who owns it?

- Pavement Structure Layer Map
- Distress Type Glossary
- Rehabilitation Decision Chain
- ISO 55001 Asset Policy Link
- Network and Project Level Split

Day 2: Condition Survey and Distress Rating

How is surface condition recorded so that sections can be compared?

- Visual Condition Survey Sheet
- Rutting and Roughness Measures
- Cracking Severity Scale
- Homogeneous Section Division
- Condition Index Table

Day 3: Structural Evaluation by Deflection

How much structural capacity remains in each section?

- Falling Weight Deflectometer Review
- Deflection Bowl Reading
- Core and Trial Pit Plan
- Remaining Life Estimate
- Subgrade Strength Back-Analysis

Day 4: Failure Causes and Diagnosis

Why did the pavement fail, and does the cause shape the remedy?

- Traffic Loading Growth Check
- Moisture and Drainage Findings
- Material and Mix Defect Review
- Failure Cause Tree
- Diagnosis Summary Sheet

Day 5: Surface Treatment, Mill and Fill, and Overlay

When does a thin treatment suffice, and when does it fail early?

- Surface Treatment Selection
- Mill and Fill Applicability
- Overlay Thickness Check
- Reflective Cracking Control
- Treatment Trigger Table

Day 6: Recycling and Reconstruction

When do in-place recycling or full reconstruction justify their cost?

- Cold In-Place Recycling Review
- Full-Depth Reclamation Review
- Stabilising Binder Choice
- Reconstruction Case Test
- Material Reuse Balance

Day 7: Whole-Life Cost and Treatment Ranking

Which treatment costs least over the analysis period?

- Analysis Period Setting
- Agency and User Cost Model
- ISO 14040 Life-Cycle Inventory Outline
- Discount Rate Sensitivity
- Treatment Ranking Matrix

Day 8: Specification, Contracts and Risk

How are treatments written into contracts that can be policed?

- Performance Specification Clauses
- Trial Section Protocol
- ISO 31000 Risk Register
- Traffic Management Plan
- Contract Acceptance Criteria

Day 9: Site Quality Control and Acceptance

How is quality checked on site and at acceptance?

- Compaction and Density Checks
- Mix Sampling Plan
- Layer Thickness Verification
- Nonconformance Log
- Early Performance Monitoring Sheet

Day 10: Rehabilitation Programme for One Road Section

Do the earlier steps join into a programme that a roads board can approve?

- Applying the Session 2 Condition Index Table
- Applying the Session 3 Remaining Life Estimate
- Testing the Session 7 Treatment Ranking Matrix
- Reviewing the Session 8 Risk Register
- Completing the Pavement Rehabilitation Programme Pack

Methodology

The programme is a structured exercise built on prepared records for two road sections, one on a highway and one on an urban street, with survey sheets, deflection readings and cost data. Participants rate condition, estimate remaining life, test treatments and defend rankings to peers acting as a roads board.

- Suggested activity: Dividing a survey record into homogeneous sections and rating their condition.
- Suggested activity: Reading deflection data and deciding which sections need strengthening.
- Suggested activity: Ranking three treatments on whole-life cost and explaining the result.

Capstone Output

Each participant completes a pavement rehabilitation programme pack for one road section. It holds a condition index table, a remaining life estimate, a diagnosis sheet, a treatment ranking matrix, a risk register and acceptance criteria. At work it goes to the roads board and sets the routine for later sections.

Frequently Asked Questions

Is pavement rehabilitation suitable for managers who are not pavement specialists?

Yes. Pavement rehabilitation is taught through prepared survey and deflection records. You need responsibility for roads, assets or contracts, but no earlier pavement design experience.

Which standards does pavement rehabilitation planning rest on in this programme?

Pavement rehabilitation planning rests on ISO 55001 for asset management, ISO 31000 for risk and ISO 14040 for life-cycle assessment, with PIARC guidance used for pavement management practice.

How is the pack from pavement rehabilitation used at work?

You put the programme pack to the roads board, use its ranking and risk register to justify treatments, and keep its checks as the routine for later sections.

How does pavement rehabilitation differ from a programme on road maintenance management?

Pavement rehabilitation concentrates on diagnosing structural and surface failure and choosing a treatment, while a road maintenance management programme concentrates on planning routine works and contractor performance.