



12 – 14 November 2018  
Resorts World Sentosa, Singapore



# Maintenance Culture of Myanmar

Myanmar Engineering Society (MES)

---

12 Nov 2018

# Outlines

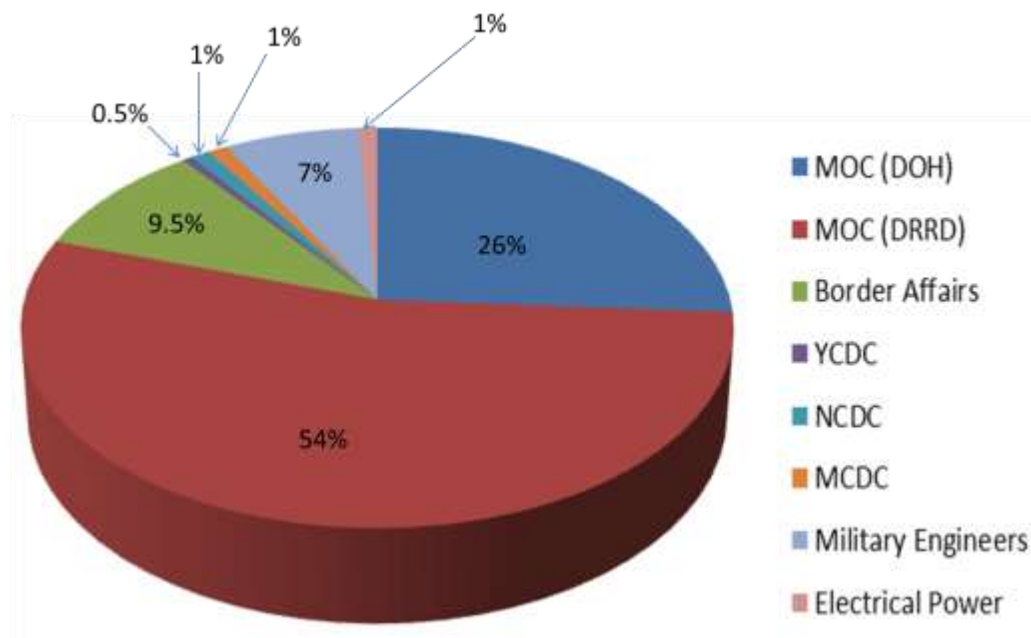
## Maintenance Culture

- Road
- Bridge
- Railway



Source: Ministry of construction , Myanma Railways

# Major Road Network



# Types of Road Maintenance

- **Routine Maintenance**
- **Periodic Maintenance**
- **Emergency Maintenance**
- **Preventive Maintenance**

# Implementation to apply Road Asset Management System (RAMS) for Systematic Budget Control

## ADB Technical Assistance Project

- (1) International Roughness Index (IRI) Survey by  
Survey Vehicles (ROMDAS Laser Roughness Meter  
and ROMDAS Bump Integrator)
- (2) Road Condition Visual Survey Manual
- (3) Proposed Road Decision Tree Method  
(For Road Maintenance Budget Management)



# Data Collecting Road Condition

## ROMDAS Laser Roughness Meter



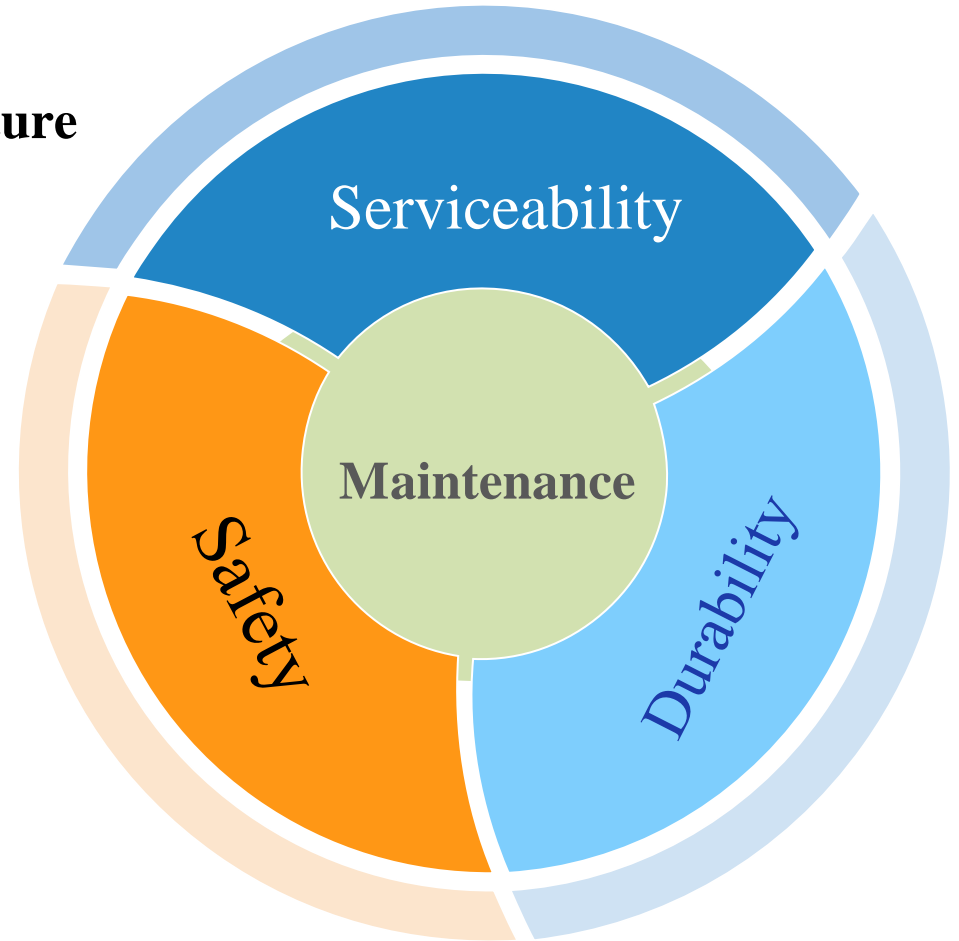
## ROMDAS Bump Integrator

# Bridge Maintenance

**To Preserve the function of the structure**

**To secure the safety of users**

**To minimize economical loss**



# Preventive Measures of Disaster

- 1. Regular inspection (Before moon soon & after moon soon)**
  - ❖ **Local scour /General scour around abutments and Piers**
  - ❖ **Bank Erosion**
  - ❖ **Water direction changes**
  - ❖ **Damage of Bridge Elements**
- 2. Clearing water way at Inlet & Outlet**
- 3. River Training for water way in sandy soil beds**



- 4. No permission for sand and gravel production in the range of one mile of upstream and downstream.**
- 5. No permission for agriculture during low water level at upstream and downstream.**
- 6. Protection of bed level around piers, having serious scour problem**
- 7. Raising free board of bridge which has higher bed level due to deposit.**
- 8. Replace with new bridge where existing Bridge is too old to resist on disaster.**
- 9. To prepare full consideration on hydrology information and hydraulic documents during design stage to get strong enough bridge with higher free board.**
- 10. To consider length deck level of existing bridges if free board is not enough due to current direction changes.**



Main Cable Inspection



Main Cable Force Test



Measuring of Coating Thickness



Temperature & Humidity Monitoring



Dynamic Test



Dynamic Test



**Examination of the Protection Layer for the Reinforcing Bar**



**Concrete Resistivity Test**



**Concrete Strength Testing**



**Concrete Carbonation Depth Detection**



**Examination of Crack Width**

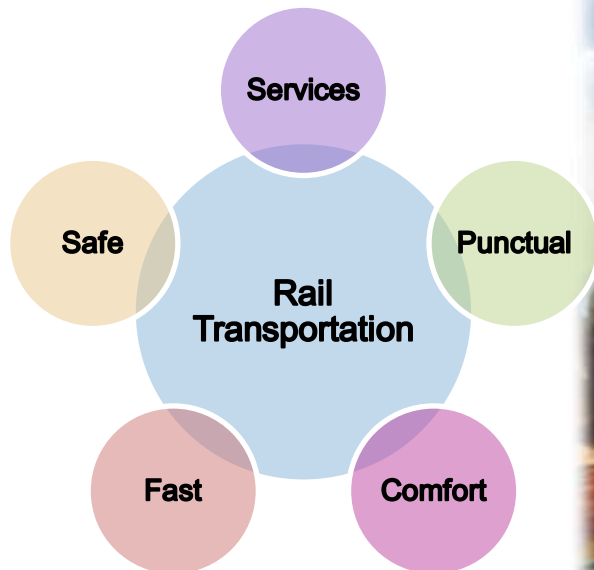


**Rebar Rust Potential Detection**



# Brief History of Myanma Railways

- **1<sup>st</sup> Railway Line in Myanmar between Yangon and Pyay (161 miles apart) was opened on 1<sup>st</sup> May 1877, by the Irrawaddy State Railway.**
- **Burma Railways Corporation changed to Myanma Railways on 1<sup>st</sup> April 1989**



# Myanma Railways Network



Single Route	5405.285 km
Double Route	705.19 km
Total Route Length	6110.481 km
Total Track Length	7944.320 km
Bridges	12103 Nos
Tunnels	12 Nos
Railway Stations	960 Nos

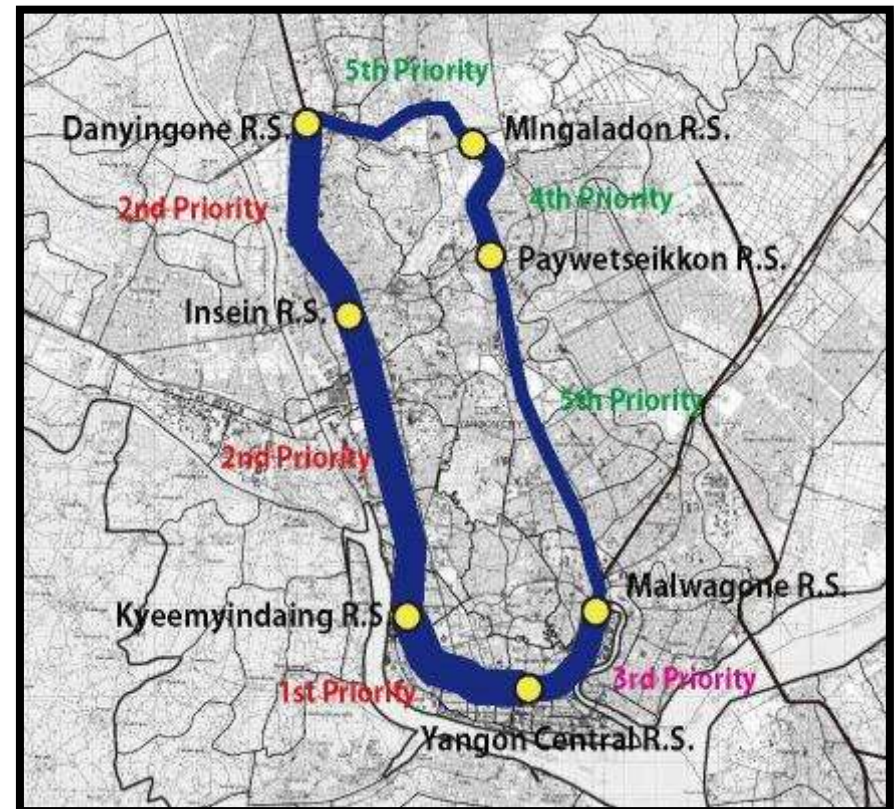
# Standards for judging the soundness of railway structures

Classification	Influence on train operation safety	Degree of deformation	Measures
AA	Imminent danger	Serious	Repair immediately
A1	Threatening to have an affect in the near future	Deformation and reduction of performance are in progress	Repair at an early time
A2	Threatening to have an affect in the future	Deformation is in progress and reduction in performance may result	Repair when necessary
B	Possibility to become class A if progressed	Possibility to become class A	Surveillance
C	No influence at present	Slight	Inspection with emphasis on points of concern
S	No influence		



## Twining Track maintenance work with Hand Held Tie tampers at Yangon Central Railway Station of MR and JICA

- Post-monsoon attention
- Pre-monsoon attention
- Attention during monsoon





**Measuring of Track Inspection Trolley (Portable)**



**Ballast Tamping with Hydraulic Off Track Tamping Machine**





Track Maintenance with Automatic Leveling, Lining and Tamping Machine







## Work Sequences Track Maintenance with Off Track Tamping Machines

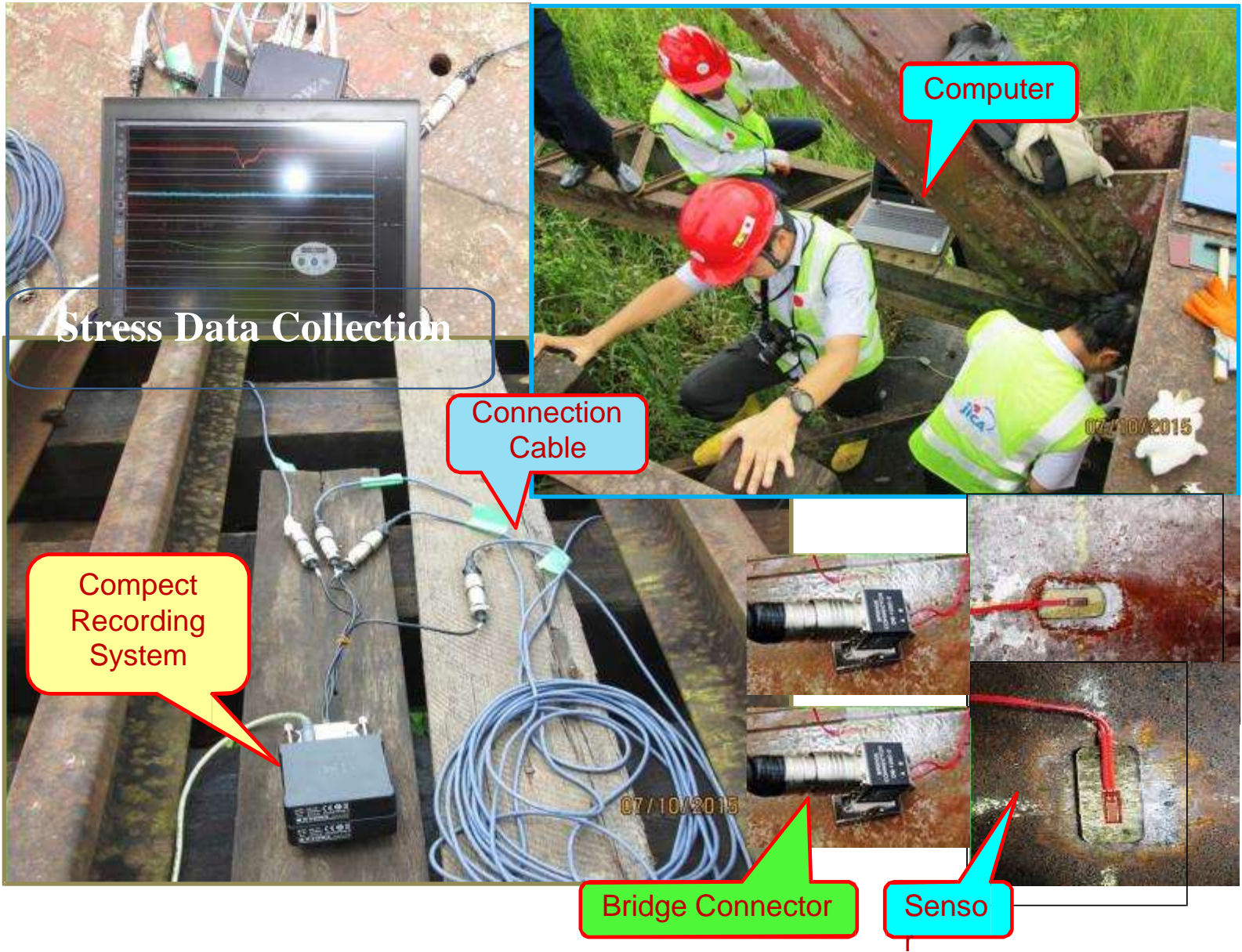




# Deflection measurement







Stress Data Collection

Computer

Connection Cable

Compact Recording System

Bridge Connector

Senso



# Flash Butt Welding Machine and Replacing



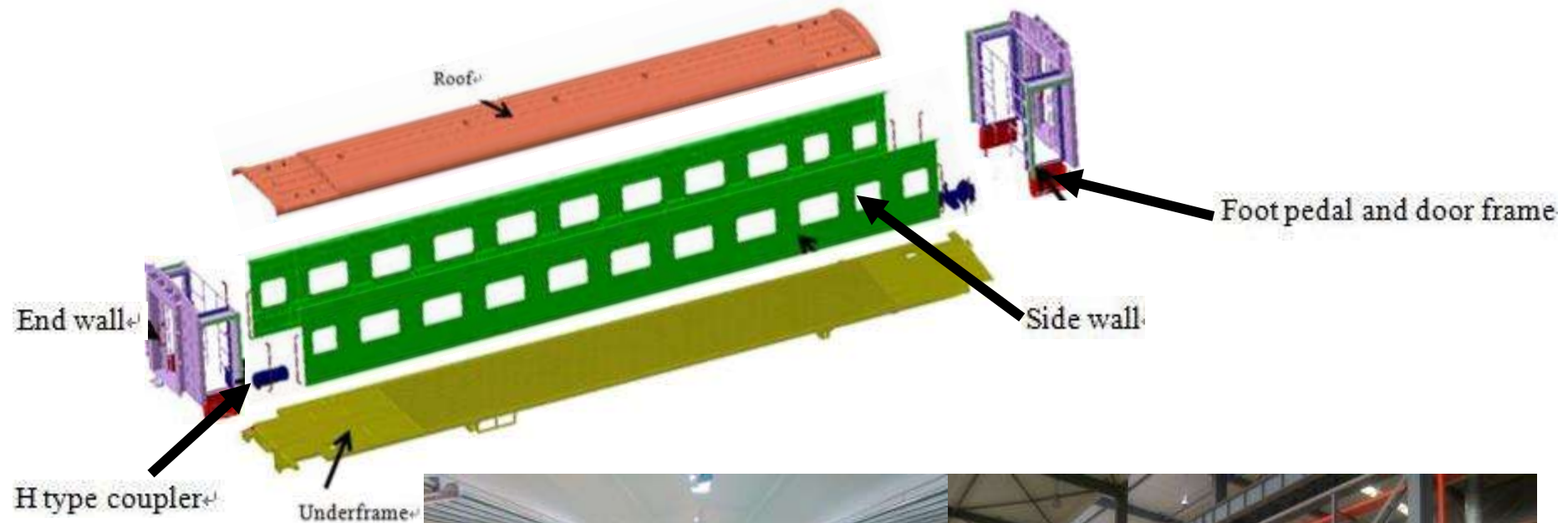


# Locomotive Workshop





# Carriage Workshop





# Thank You !

Contact email: [waiwaithaw.mm@gmail.com](mailto:waiwaithaw.mm@gmail.com)