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Typical Road Quick Repair Patterns by In-Situ Rehabilitation & Stabilization

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1. Introduction

- Economy development triggers heavier traffic loading with higher frequency which induce more damages to road pavement.

- Due to the increasing traffic loading, serious damages often occur to roads that were constructed using conventional methods, especially in swampy and soft ground areas.

- How to do a quickly and effectively repair the damaged roads with less inconveniences to users and with longer durability under the existing road heavy operational conditions is a challenge.

1. Introduction

- Chemilink Soil Stabilization Agent for Base/Sub-base Stabilization
  - Polymer modified cementitious chemical agent in fine powder form
  - Mix with in-situ materials to form a “Floating” Semi-Rigid Platform on the top of weak underlying soils
  - Designed especially for sandy and clayey soils under tropical condition and environment

- Typical achievable results:
  - California Bearing Ratio (CBR, %) : 30 ~ 200 (7 days)
  - Unconfined Compressive Strength (UCS, MPa): 0.75~6.00 (7 days)
  - Resilient Modulus (M_R, MPa): 1,000~10,000 (28 days)

1. Introduction

In- situ rehabilitation/stabilization method

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2. Cases of Damaged Roads

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2. Cases of Damaged Roads

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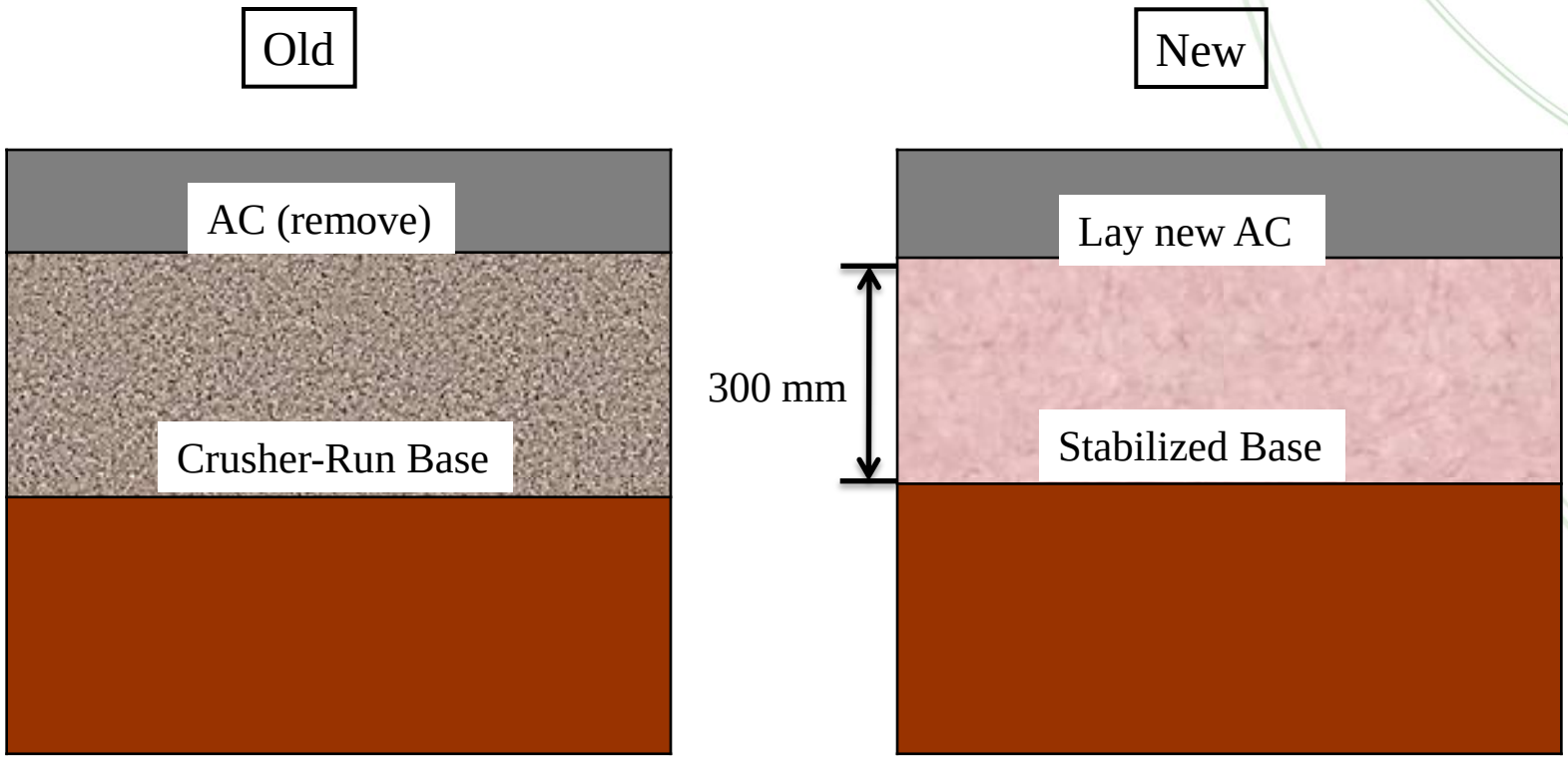
2. Cases of Damaged Roads

3. Chemilink Quick Repair Design Patterns

P-1) Rehabilitation of Existing Base Course (most common case e.g. Brunei, Malaysia)

Suitable condition: Heavy operational road (very fast construction)

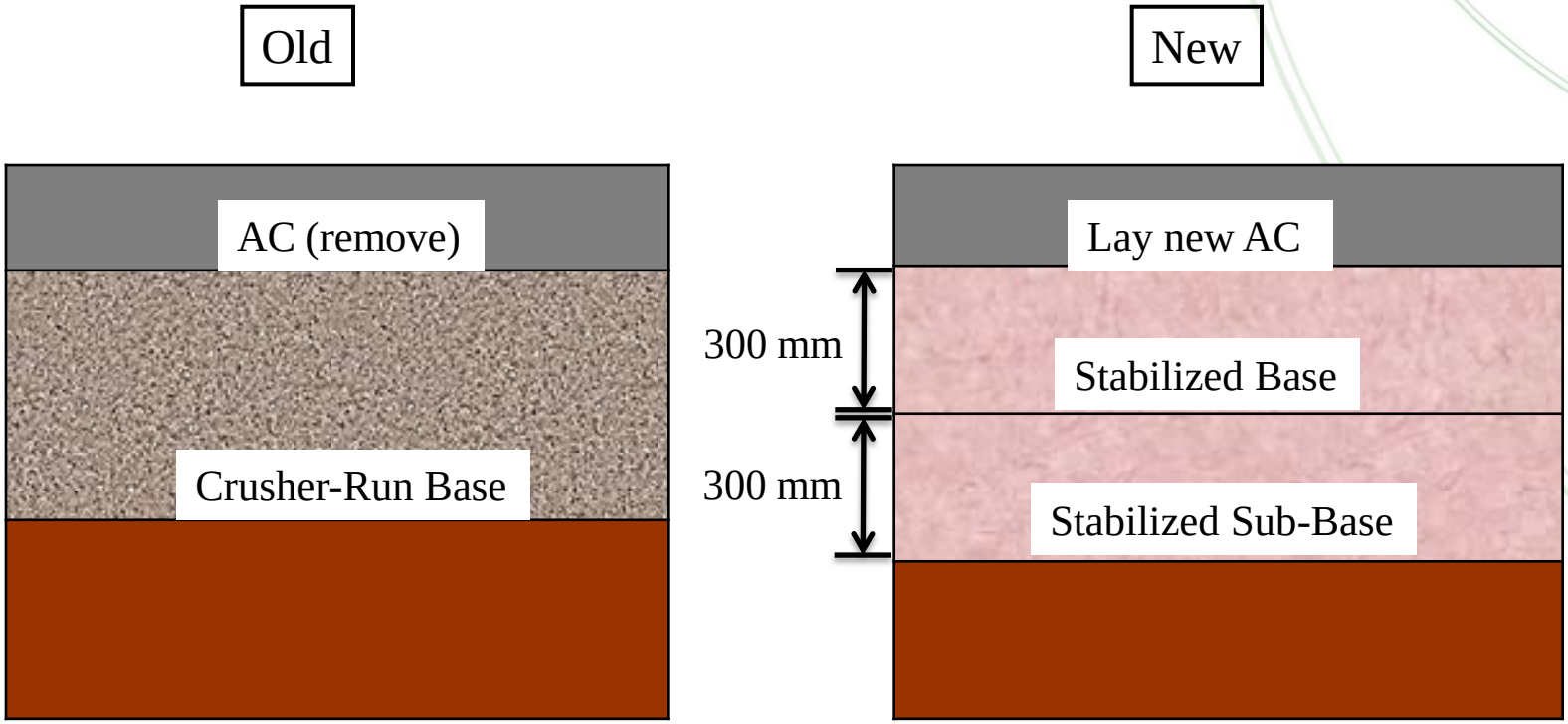


Ave. Construction Rate : (4.5 m ~ 6.0 m) x 1,000 m / 24 hours

3. Chemilink Quick Repair Design Patterns

P-2) Rehabilitation of Existing Base & Sub-base Courses

Suitable condition: Heavy loading and/or poor sub-grade

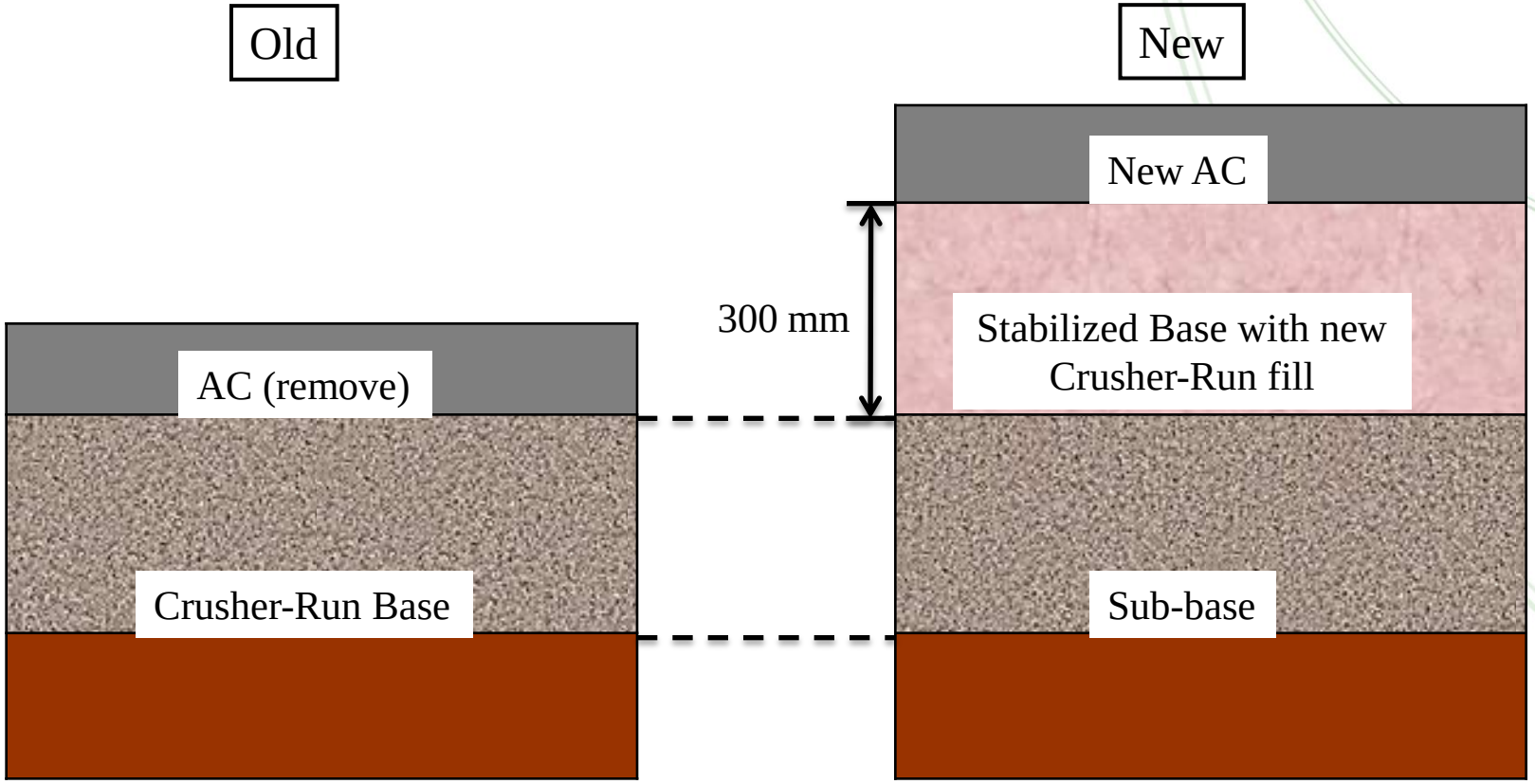


Ave. Construction Rate : (4.5 m ~ 6.0 m) x 500 m / 24 hours

3. Chemilink Quick Repair Design Patterns

P-3) New Stabilized Base Course

Suitable condition: Existing Base can still function as Sub-base

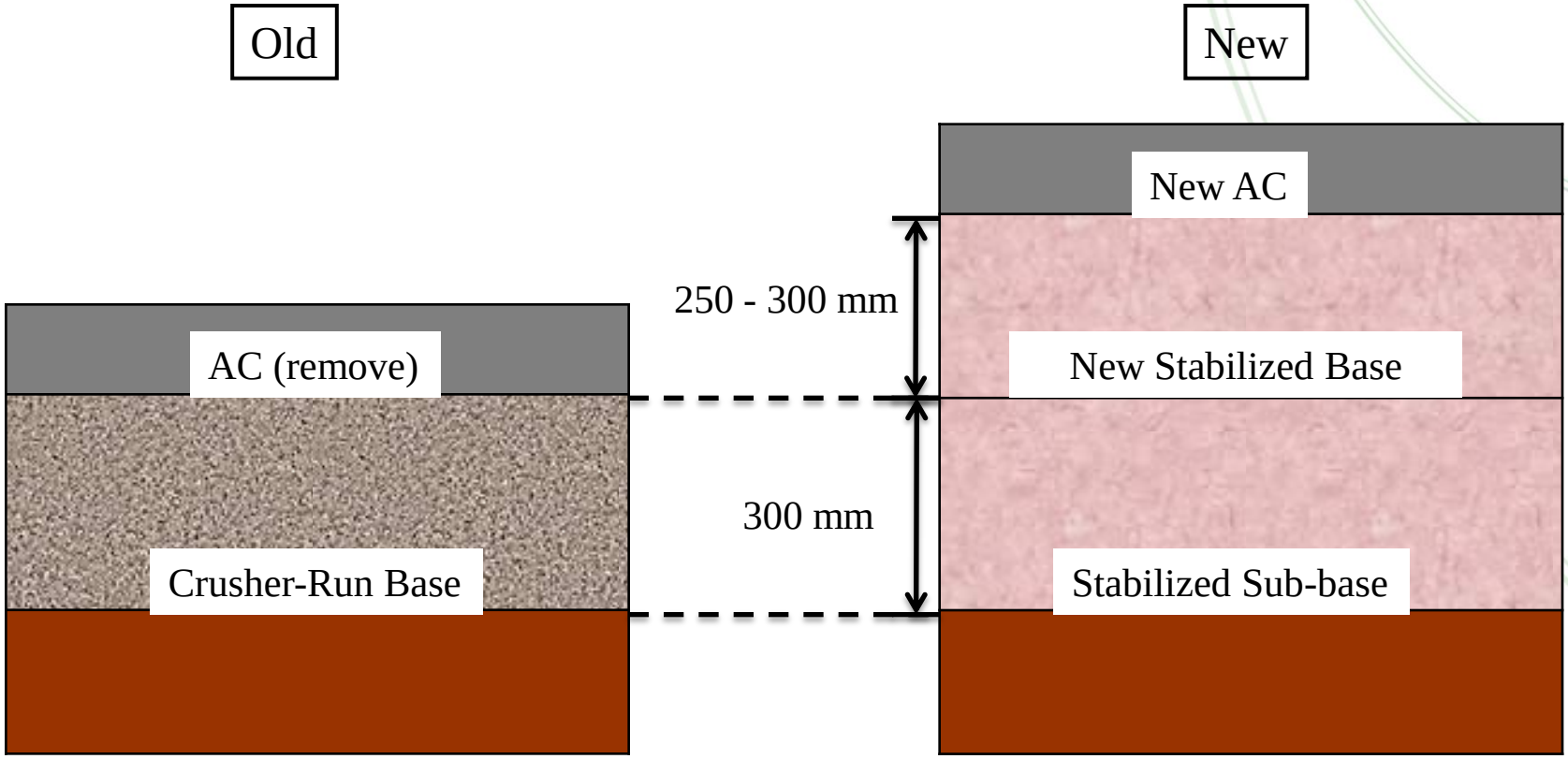


Ave. Construction Rate : (4.5 m ~ 6.0 m) x 700 m / 24 hours

3. Chemilink Quick Repair Design Patterns

P-4) Rehabilitation of Old Base as Sub-base and New Stabilized Base

Suitable condition: Poor existing base and in need of higher performance road

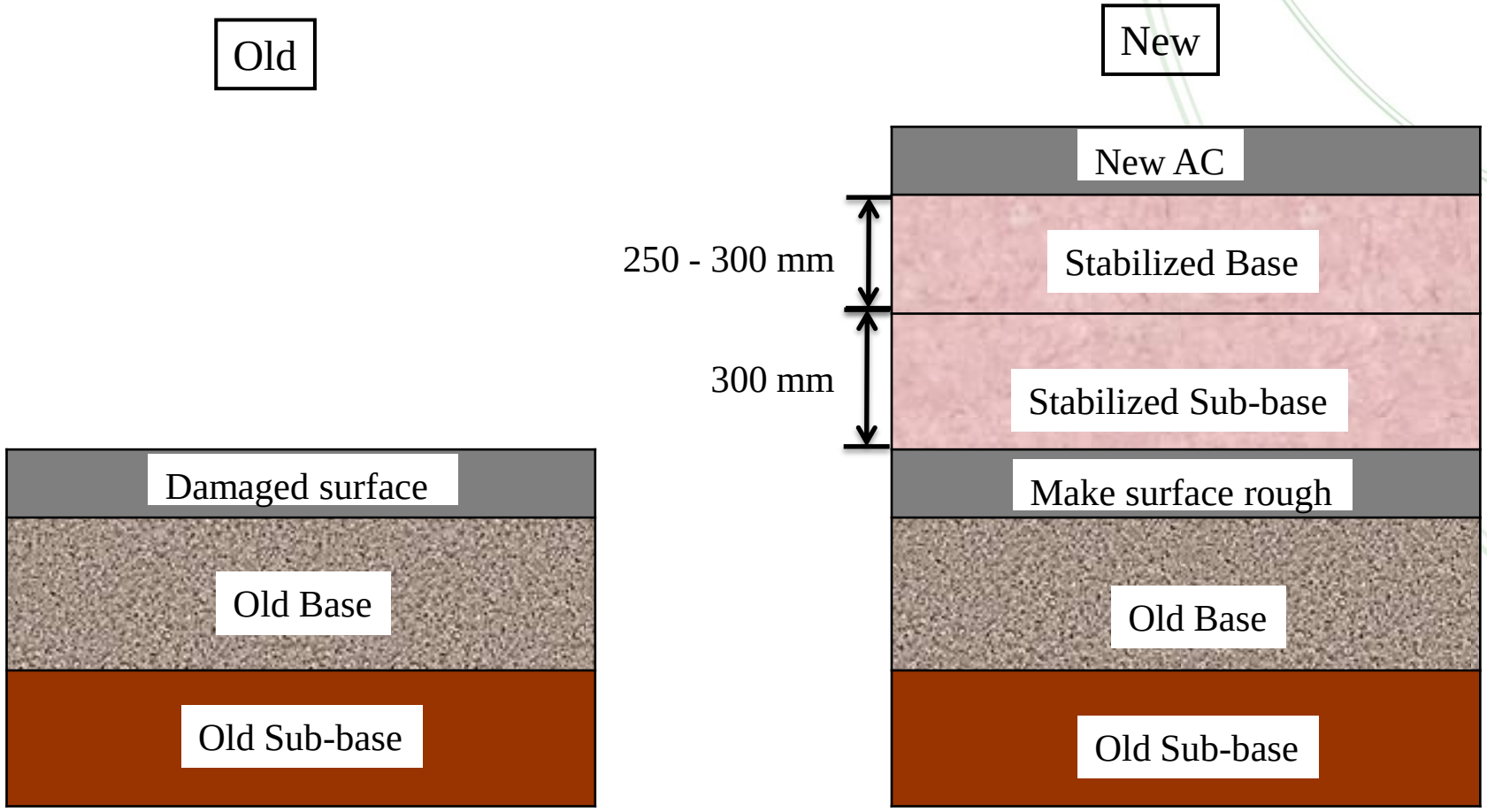


Ave. Construction Rate : 4.5 m x 500 m / 24 hours

3. Chemilink Quick Repair Design Patterns

P-5) New Stabilized Sub-base and/or Base without Removing the Existing Surface Layers

Suitable condition: Poor structural pavement layers and damaged existing surface

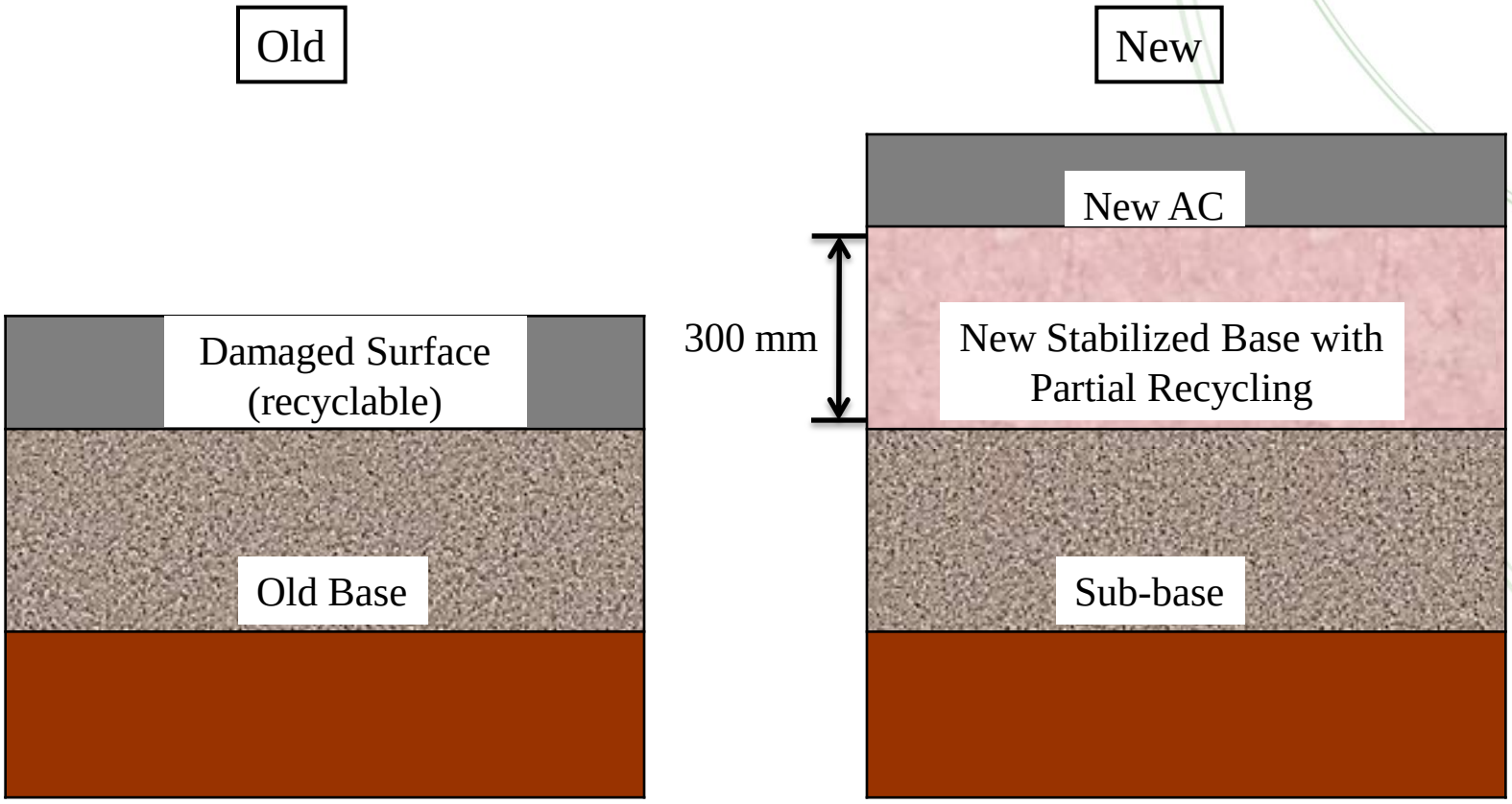


Ave. Construction Rate : 4.5 m x 500 m / 24 hours

3. Chemilink Quick Repair Design Patterns

P-6) Recycling of Existing Surface to be the New Base

Suitable condition: recyclable existing surface material



Ave. Construction Rate : (4.5 m ~ 6.0 m) x 800 m / 24 hours

4. Supported Projects-New Stabilized Base Course

1. Lay crusher run over damaged road

2. Spread Chemilink SS-108

3. Mixing - Compaction

4. Finished Road

4. Supported Projects-Recycling of Existing Surface

1. Excavation of existing layer

2. Spreading

3. Mixing

4. Completed

4. Supported Projects-Rehab. of Existing Base

1. Work preparation

2. Spreading

3. Mixing

3. Finished Road

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4. Supported Projects-Rehab. of Existing Base

1. Distribution

2. Spreading

3. Mixing

3. Finished Road

5. Conclusions

- The in-situ rehabilitation and stabilization method is a green and sustainable approach for road repairing within short time frame under various difficult conditions and it can be properly designed to meet different projects requirements.

- These road repairing fashions with the minimized traffic control time period can significantly reduce inconveniences to road users, avoid public safety issues, rapidly strengthen and upgrade road pavements.

- The proposed several typical road quick repair patterns incorporated with the in-situ rehabilitation/stabilization in this paper have been used in many road projects in this tropical region and have performed well even under many difficult conditions such as heavy traffic, high water table, swampy and very soft ground, and etc..

- Chemilink rehabilitation, recycling and stabilization have been technically and commercially proven to be the effective and durable for past 20 years, especially for pavement construction and repairing in airfield, seaport, highways and various roads.

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Thank You for Your Attention!