FULL DEPTH PRECAST PRESTRESSED CONCRETE PAVEMENT SYSTEM

KEN FLECK
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Background

• Focus on full-depth, large scale pavement construction for new pavements or removal and replacement of existing deteriorated pavements.
• Overnight or weekend construction time frame
• Extended design life compared to conventional PCC pavements
Background

• Benefits
  – Expedited construction → Reduced User Costs
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• Benefits
  – Expedited construction ↑ Reduced User Costs
  – Reduced pavement thickness
    (prestressed pavement)
  – Controlled concrete fabrication conditions ↑
    Improved performance
Proposed Concept

• Surface preparation
  • 2” ACP layer as leveling course, plane/grind if necessary
  • Place single layer of polyethylene as friction reducing membrane

• Joints
  – Epoxy – similar to segmental bridge construction
Base Panel

- Continuous Shear Key
- Ducts for Post-tensioning
- Pretensioning Strands

Dimensions:
- 10 ft
Base Panel: “Partial Width” Panels

- Continuous Shear Key
- Longitudinal Post-tensioning Ducts
- Transverse Post-tensioning Duct
- Pretensioning Strands
- 10 ft
Expansion Joint Panel

Access Pockets

Ducts for Post-tensioning

Continuous Shear Key

Pretensioning Strands

Expansion Joint Detail
Expansion Joint Detail

Joint Panel

- Neoprene Expansion Seal
- 0.5 in x 2 ft deformed bar anchors
- Post-Tensioning duct
- 0.5 in threaded studs for anchorage
- Fully encapsulated spring loaded post-tensioning anchor
- Stainless steel dowel expansion sleeve
- 5 x 3 x 1/4
- 1-1/4 in stainless steel plated dowel
Central Stressing Panel

- 10 ft
- D
- Ducts for Post-tensioning
- Continuous Shear Key
- Stressing Pockets
- Pretensioning Strands
Central Stressing
Coupler/Stressing Device in Stressing Pockets

Approximate Position of Coupler
Before Start of Stressing Operation

Fixed-End Tendon Anchorage

Segment 2 of the Tendon

Coupler

Segment 1 of the Tendon

Jacking Device Location

Top Surface of Pavement

Post-tensioning Duct

Central Stressing Pocket

Plan View
Central Stressing
Circumferential Tank Anchors
Panel Assembly

Post-tensioning

Post-tensioning
Panel Assembly
Fabrication
Fabrication
Fabrication
Fabrication
Fabrication
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Fabrication
Fabrication
Fabrication
Fabrication
Fabrication
Fabrication
Fabrication
Fabrication
Fabrication
Fabrication
Fabrication
Fabrication
AC Leveling Course
Polyethylene Sheet
Panel Placement
Panel Placement
Panel Placement
Panel Placement
Panel Placement
Panel Placement
Panel Placement
Panel Placement
Panel Placement
Panel Placement
Panel Placement
Panel Placement
Panel Placement
Partial Width Slabs
Approach Slab Joint
Post-Tensioning
Post-Tensioning
Post-Tensioning
Slab Anchor
Slab Anchor
Post-Tensioning
Post-Tensioning
Expansion Joint After Stressing
Finished P/T Pocket
Finished Central Stressing Panel
POMEROY CORPORATION
and
SUMIDEN WIRE PRODUCTS

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