SR 600 (US92)
Precast Prestressed Concrete Pavement

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Outline

• Introduction
• Layout
• Panel Design
• Details
• Construction Sequence
• Conclusions
Introduction

• The System: the transversely prestressed slabs are post-tensioned longitudinally into units.

• Design Loading:
  – 2.8 million-20 kip ESAL, 30 Years Design Life
  – Concrete Tensile Strength 700 psi
  – Concrete Modulus of Elasticity 3800 ksi
  – Minimum 28 day Concrete Compressive Strength 5.5 ksi
  – Concrete cover 2 ¼ in.
Layout

PARTIAL PLAN – SLAB UNIT 1
(Bolsters not shown)
Layout

C.I.P. Conc. Pavement

Expansion Jt.

See Expansion Joint Detail

Precast Prestressed Concrete Roadway

One layer of polyethylene sheeting

Existing Concrete Pavement Slabs

Base

TYPICAL LONGITUDINAL SECTION
Design

- Panel reinforcement designed for lifting.
- Net transverse prestress: 184 psi
- Net Longitudinal PT stress: 200 psi
- Tolerance
Panel Design

PRESTRESSING LAYOUT INTERIOR PANELS

$\frac{1}{2}$" φ Prestressed Strands
Top & Bottom (Typ.)

P.T. Duct Spacing

Ø 45 mm φ Plastic

Spacing
Panel Design

REINFORCING LAYOUT INTERIOR PANELS
Panel Design

Panel Design Specifications:
- Dowel spacing
- 24' 0"
- 3' 4½"
- 1' 3"
- 2' 9"
- 1' 3"
- 4' 0"
- 4' 0"
- 4' 0"
- 2' 0"
- Ø 45 mm Ø Plastic P.T. Duct Spacing

- 1½" Ø GFRD Dowels (Typ.)
- 3S1 (Typ.)
- ½" Ø Prestressed Strands Top & Bottom (Typ.)

PRESTRESSING LAYOUT END PANEL 1
Keyway with non-shrink grout

Heat Shrink Wrap

KEYWAY DETAIL

KEYWAY JOINT
Details
Details

ANCHORAGE BLOCK-OUT DETAILS
Details

Dowel Embedment Detail

1½" Ø GFRP Dowel

Poured Expansion Joint

Dowel Bar Expansion Cap

1' - 8"
8"
1' - 0"

4½"

1¾"
3"
Details

Dowel Pocket
Side View

Dowel Pocket
Top View
Construction Sequence

- Prepare base and lay down polyethylene.
- Place Panels (end-interior-end).
- Splice PT ducts using Heat Shrink Wrap.
- Grout keyways using non-shrink grout.
- Thread longitudinal PT strands and stress.
- Place FRGD.
- Grout Dowels and PT anchorages.
- Plane and groove.
Conclusions

• Under-slab grouting is not needed.