INDIANA DEPARTMENT OF TRANSPORTATION
Driving Indiana's Economic Growth

100 North Senate Avenue
Room N758 - Engineering
Indianapolis, Indiana 46204

PHONE: (317) 232-5347

Eric Holcomb, Governor
Michael Smith, Commissioner

December 20, 2023

NICHOLAS COSENZA REGISTERED No. 11500659 INDIANA PROFESSIONAL ENGINEER

Nicholas Cosenza
12/20/23

MEMORANDUM

TO: Abel Powers,
INDOT Project Manager

THRU: Kumar Dave, P.E. kpd 12/20/2023
Manager, Office of Pavement Engineering

FROM: Nicholas Cosenza, P.E.
Pavement Engineer, Office of Pavement Engineering

SUBJECT: Final Abbreviated Pavement Analysis and Design
CONTRACT: **R-45256** Wayne County
RE: **Des 2000500 - I 70 Centerville Welcome Center Renovation**
CATEGORY: Rest Area Modernization Project
COST: $22,775,742.00
LETTING: Spring 2023
PURPOSE: Pavement Replacement

This memorandum addresses the pavement design for the pavement widening and reconstruction at the Centerville Welcome Center Renovation.

Pavement Scope

The pavement of the welcome center was originally constructed in the 2010s. The entire rest area was constructed with 14" of jointed concrete on 9" of subbase for PCCP. During preliminary site visits, the existing pavement was observed to be in good condition with some areas of full depth replacement required primarily around the existing car parking area adjacent to drainage structures. With the proposed site reconfiguration, additional new pavement and widening of the existing pavement will be required.

Recommendations

All designs are consistent with the Indiana Design Manual, Part 6 "Pavement Design". Design alternatives have been analyzed using "AASHTOWare Pavement ME".

The Design Data is as follows:

Design Data	Rest Area
Growth Factor (%)	0.5
Design AADTT (V.P.D) (One Way)	2,000
Design Traffic Speed (MPH)	30
Design ESALs (Millions)	10 ≤ ESAL < 30

1. **New Truck Ramps – Jointed Pain Concrete Pavement:**
   - 14” QC/QA-PCCP* with 15 ft D-1 Contraction Joint Spacing and 1.5” Diameter Dowel Bars
   - 300 lb/yd^2 QC/QA-HMA, 4, 76, Intermediate, OG 19.0mm, on
   - 6” of Compacted Aggregate No. 53, on
   - Geotextile for Pavement, Type 2B, on
   - Subgrade Treatment, Type IBC (14” of Chemical Soil Modification with Cement)

2. **Widening or Repair of Existing Pavement – Jointed Pain Concrete Pavement:**
   - 14” QC/QA-PCCP* with Match Existing/Extend Existing D-1 Contraction Joint Spacing and 1.5” Diameter Dowel Bars
   - Subbase for PCCP (9" of Aggregate), on
   - Geotextile for Pavement, Type 2B, on
   - Subgrade Treatment, Type IC (12” of #53 Aggregate)

3. **New Car Parking Area – Jointed Pain Concrete Pavement:**
   - 10” QC/QA-PCCP* with 15 ft D-1 Contraction Joint Spacing and 1.5” Diameter Dowel Bars
   - 300 lb/yd^2 QC/QA-HMA, 4, 76, Intermediate, OG 19.0mm, on
   - 6” of Compacted Aggregate No. 53, on
   - Geotextile for Pavement, Type 2B, on
   - Subgrade Treatment, Type IBC (14” of Chemical Soil Modification with Cement)

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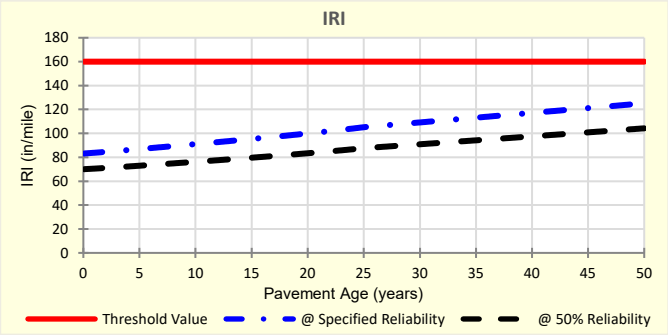
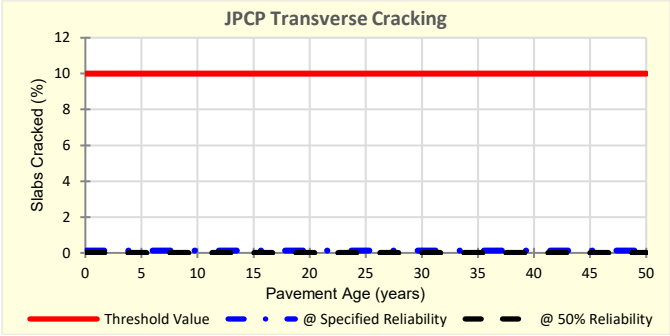
* If the PCCP pay item has a quantity less than 7200 yd^2 (one lot), the pay item should be “PCCP, ___ in.” [Use 502 pay items].

Notes:
- Subgrade treatment should extend 2 feet beyond the curb.
- In instances where construction operations prohibit the use of Subgrade Treatment Type IBC, Subgrade Treatment Type IC may be used in its place. The pavement section has been designed to account for either subgrade treatment.
- Underdrains should be designed and constructed at the edge of the pavement following chapter 605 of the Indiana Design Manual.

Service Life

The full depth PCCP Pavement as designed has a functional design life of 30-year design and a structural design life of 50+ years.





Cc: Thomas Duncan - FHWA
District Pavement Engineer
Pavement Area Engineer
INDOT Coordinator
Project Designer
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