


**Practical Design for
Transportation Project Delivery**

Scott Adams
Practical Design Director



INDOT Bridge Conference
February 11, 2015

Open Roads

SR9 Haw Creek Bridge



Route:	SR9	Project Manager:	Greg Prince
Location:	Bartholomew Co.	Designer:	Strand Associates
District Office:	Seymour		

Open Roads




SR9 Haw Creek Bridge



Open Roads

SR9 Haw Creek Bridge

- ❑ History:
 - Built in 1959
 - Rehabilitated in 1991 - Deck Overlay
- ❑ Programmed Scope:
 - Bridge Replacement - \$808,000
- ❑ 2014 Open Roads Solution (\$376,000):
 - Re-evaluated scope at initial field investigation - Changed to Rehab project
 - Replace existing Latex Modified Concrete Overlay
 - Epoxy injection of cracks in approach slabs instead of replacement
 - Leave existing bridge and approach railing due to lack of accident history



Open Roads

SR101 Markland Dam Bridge



Route: SR101
Location: Switzerland Co.
District Office: Seymour

Project Manager: Travis Mankin
Designer: Strand Associates



Open Roads

SR101 Markland Dam Bridge





Open Roads

SR101 Markland Dam Bridge


- History:
 - Built in 1975
 - Rehabilitated in 2001 - Deck Overlay and Joint Replacement
 - Maintained by 3 different agencies – KYTC, ACE, INDOT
- Programmed Scope:
 - Deck Overlay
 - Fiber wrap all columns and beams
 - Replace bridge approach slabs
 - \$1.1 million construction budget
- 2014 Open Roads Solution:
 - Deck Overlay
 - Epoxy injection in vertical cracks on columns
 - Fiber wrap beams only in areas with visible deterioration
 - Epoxy injection of cracks in approach slabs

**Savings:
\$393,000 (36%)**




Open Roads

I65 Kankakee River Bridge



Route: Interstate 65 Project Manager: Charles Bradsky
Location: Lake County Designer: Janssen & Spaans Eng.
District Office: LaPorte



Open Roads

I65 Kankakee River Bridge

- Built in 1961
- Various girder and deck repairs/reconstruction in '81, '89, '94
- Programmed as Bridge Replacement in 2012 - \$8.1 million
- Design modified in 2013; Added \$1.6 million to widen
- 2014 Open Roads Solution:
 - Critical evaluation of structure and corridor improvement plans
 - Thin Deck Overlay
 - Joint Replacement
 - MOT – Night time Lane Closures
 - No widening of the bridge or deck
 - Steel Girder Retrofit
 - Life Cycle Cost 27% less



Open Roads

SR218 Small Structure Replacement



Route: SR218
Location: Cass County

District Office: Laporte
Project Manager: Amber Thomas



Open Roads

SR218 Small Structure Replacement

Site Parameters		
Drainage Area	2.9	sq. mi.
Q ₁₀₀ Discharge	850	cfs
Q ₁₀₀ Depth	6.58	ft.
Approximate Skew	0	°



Site Parameters		
Drainage Area	3.57	sq. mi.
1% EP Discharge	813	cfs
1% Depth	6.82	feet
4% EP Discharge	553	cfs

Culvert Properties				
Parameter	Existing		Proposed	
Structure	10' x 6.5' CMP		20' span RCB with wingwalls, sumped	
Waterway Opening Below Q ₁₀₀ Elevation (Str.)	53.46	sq. ft.	131.6	sq. ft.
Road Overflow Area Below Q ₁₀₀ Elevation	64.5	sq. ft.	0	sq. ft.
Minimum Low Structure Elevation	94.28	ft.	94.78	ft.
Backwater	4.96	ft.	0.98	ft.
Outlet velocity	10.54	ft./sec.	6.48	ft./sec.

Culvert Properties			
Parameter	Existing	Proposal 1	Proposal 2
Structure	10' x 6.5' CMPA (structural plate)	12' x 7' RCB	15'-6" x 7'-3" Aluminum Box
1% EP Road Overflow (cfs)	383.1	173.5	139.1
4% EP Road Overflow (cfs)	102.6	0	0
Headwater Depth	9.80	9.62	9.51
Backwater Depth	2.98	2.80	2.69
4% EP Outlet Velocity	9.11	8.82	6.73
Sump Depth	0	15	12
Energy Dissipater	n/a	Class 1 Riprap Apron	Class 1 Riprap Apron

Initial Solution

Final Solution

Open Roads

SR218 Small Structure Replacement

History:


- Existing 10'x6.5' CMP inadequately sized and poor condition
- Initially investigated pipe liner as option; limited by size and backwater increase
- Initial evaluation, July 2012
- Second evaluation, May 2014
- Final evaluation, June 2014

Programmed Scope:



- 20' Span Reinforced Concrete Box (\$340,000)

2014 *Open Roads* Solution (\$242,000):

- No flooding problems or history of road over-topping
- In-kind Replacement
- 12'x7' RCB (non-standard size); 12'x8' may be even more cost-effective
- No r/w acquisition needed (Located in county legal drain)



**Savings:
\$108,000(31%)**



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