

MANCHESTER BRIDGE DESIGN-BUILD

KCITE JULY CHAPTER MEETING

JULY 10, 2014

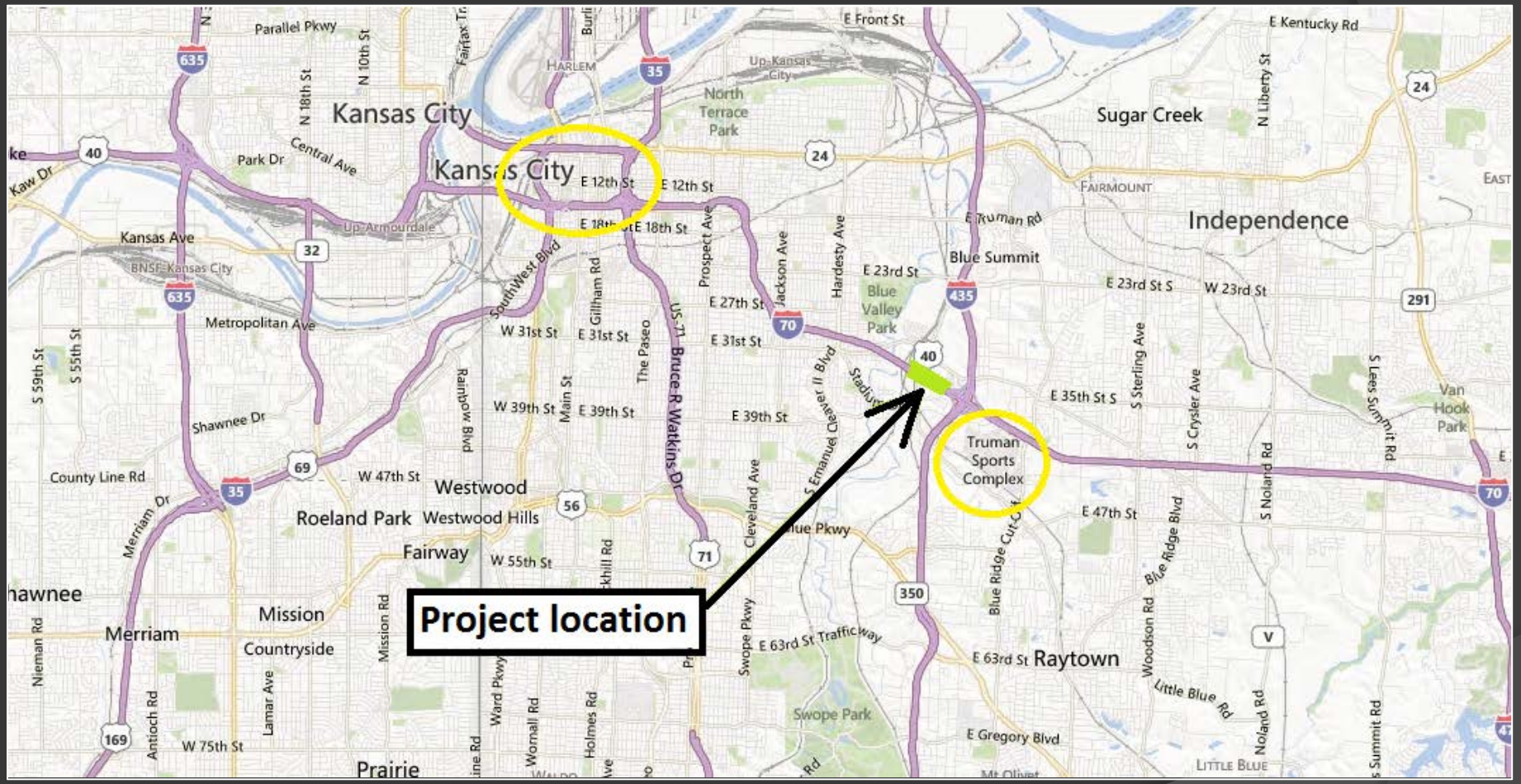
Manchester Bridge

James Pflum, P.E.

Project Engineer on Manchester Design-Build Project

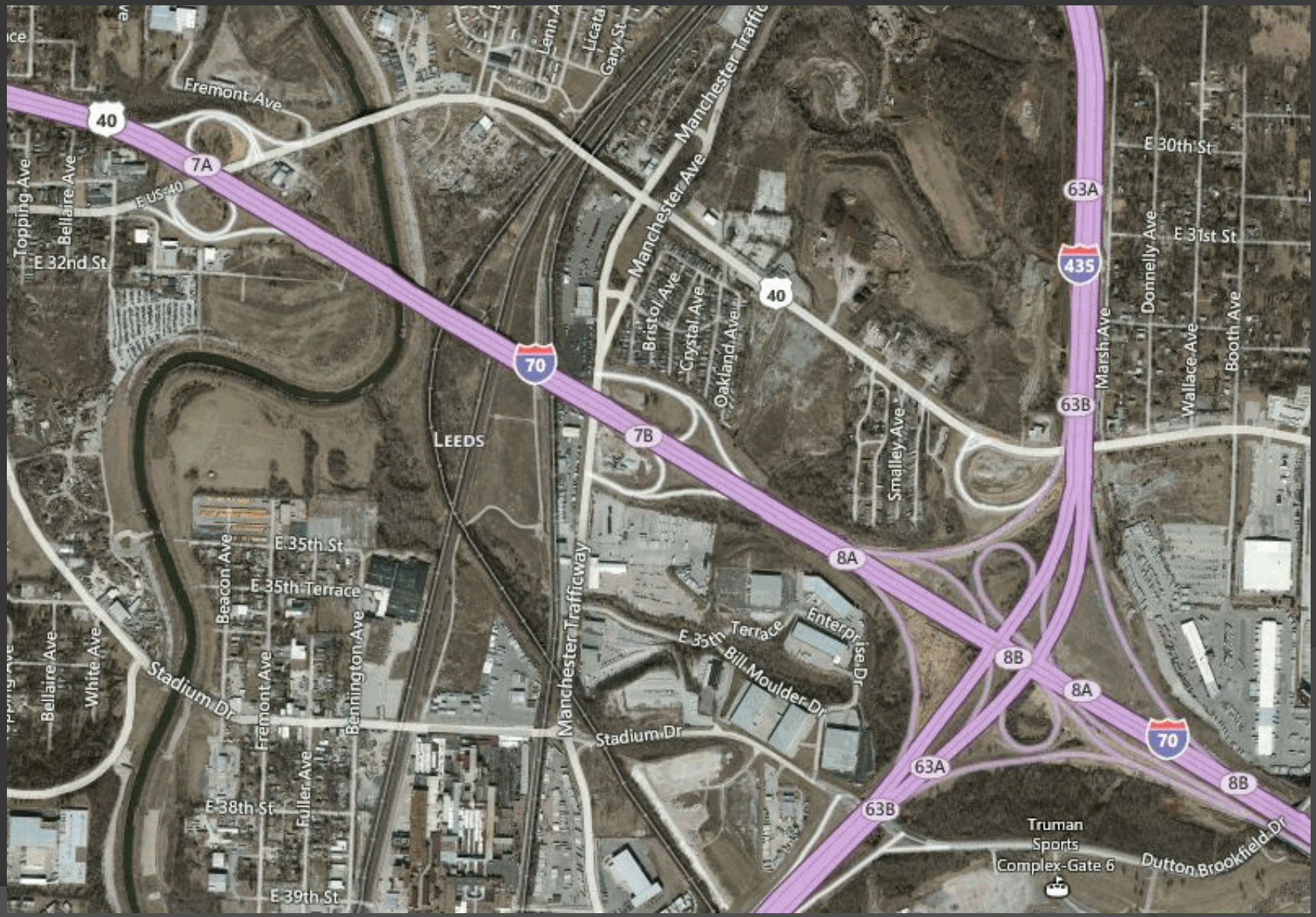
Worked for MoDOT for 5 years

PROJECT LOCATION



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AERIAL VIEW


Fremont Ave
40
7A
E US-40
Topping Ave
Bellaire Ave
E 32nd St
Manchester Ave
Manchester Traffic
Bristol Ave
Crystal Ave
Oakland Ave
70
LEEDS
7B
63A
435
E 30th St
E 31st St
Donnelly Ave
Marsh Ave
Wallace Ave
Booth Ave
63B
Smalley Ave
8A
E 35th St
E 35th Terrace
Beacon Ave
Bennington Ave
Manchester Trafficway
Enterprise Dr
Bill Moulder Dr
8B
Stadium Dr
White Ave
Fremont Ave
Fuller Ave
E 38th St
E 39th St
Truman
Sports
Complex-Gate 6
Dutton Brookfield Dr

CURRENT CONFIGURATION



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PROJECT NEED

- Built in 1959
- Concrete overlay in 2008
- Modified latex overlay done in October 2011
- “Last Resort” asphalt overlay in March 2012
- On-call emergency repair contract ongoing

PROJECT NEED



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PROJECT NEED

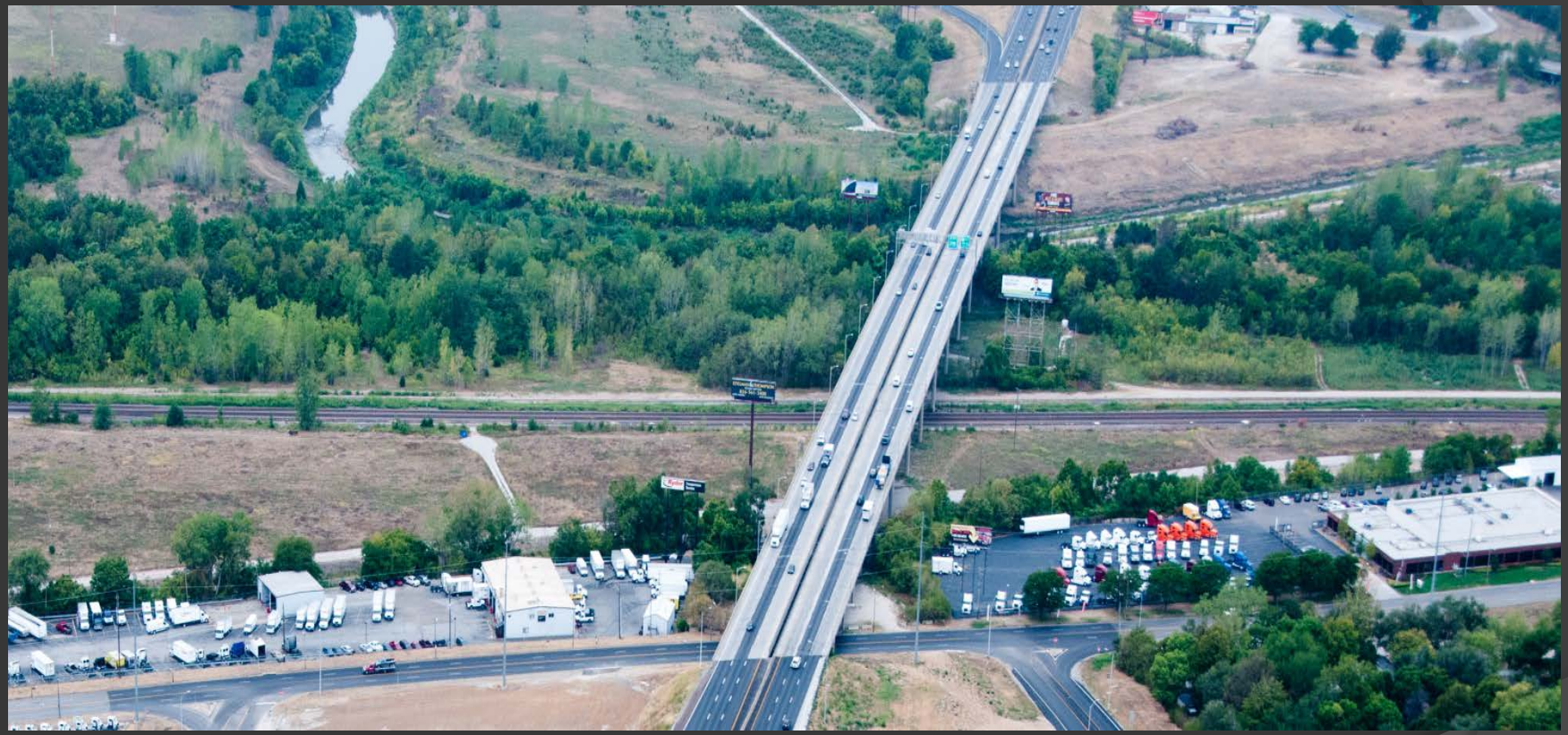


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PROJECT NEED



PROJECT NEED



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PROJECT NEED



WHY DESIGN-BUILD?

- Minimal impacts to traffic
- Innovation
- Thinking outside the box
- Speed of construction
- Get more for your money
- Alternate standards from other states

HOW MODOT DOES DESIGN-BUILD?

- MoDOT identifies project to use Design-Build
- Internal team is picked
- Goals are established and scope is defined
- MoDOT issues RFQ and then RFP
- Proposers are short-listed down
- Proposals are submitted and then scored, with highest scorer being award project
- More on MoDOT's Engineering Policy Guide, Section 139

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CHALLENGE: TRAFFIC IMPACTS

- 108,000 vehicles/day
- Major east/west corridor into downtown KC
- Very few good alternate routes
- Many previous bridge and roadway projects along corridor over last 10 years

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PROJECT GOALS

1. Impress our customers through innovative solutions that conveniently and efficiently move drivers through the project during and after construction.

2. Construct durable structures that minimize future maintenance impacts.

3. Balance regional mobility with total project cost to achieve optimal value. ($75 Million Max)

4. Deliver the Project no later than December 15, 2016.

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PROJECT SCOPE



EVALUATION CRITERIA

Area	Available Points
Maintenance of Traffic	350 + 50
Durability	200
Optional Improvements	100
Environmental	50
Completion Schedule	50
Cost	200
TOTAL	**1000**

TRAFFIC IMPACT SCORING

- Goal: “Don’t screw up traffic.”
- 350 points maximum

Closure Duration Deadlines Point Reduction Table			
Route	Time Period Description	Impacts	Points Per Impact
Interstate 70 Impacts (Per Direction)	Weekday (or portion of a Weekday)	Full Closure	15.00
		Two Lane	15.00
		Single Lane	3.50
		Width/Speed Reduction	2.50
	Weekday Non-Peak Impacts (8pm to 5am)	Full Closure	1.75
		Two Lane	0.80
		Single Lane	0.45
	Weekend Impacts (8pm Friday to 5am Monday)	Full Closure	3.50
		Two Lane	1.50
		Single Lane	0.90
US 40 Impacts	Per Day (or portion of a Day) (First 100 Impacts Free)	Full Closure	3.25
Ramp Impacts	I-435 Ramps	Full Closure (Per day or portion of a day)	0.40
	Other Ramps (each)	Full Closure (Per day or portion of a day)	0.10

OPTIONAL IMPROVEMENTS – 100 PTS

*Impress our customers through innovative solutions that conveniently and efficiently move drivers through the project during and **after construction**.*

Balance regional mobility with total project cost to achieve optimal value.

- Supplemental scope items desired:
  - Weave/merge area (60 Points)
  - I-70 over US-40 widening/repairs (30 Points)
  - Any and all other improvements (10 Points)

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COMPLETION SCHEDULE – 50 PTS

Deliver the project no later than December 15, 2016.

On or Before	Points	On or Before	Points	On or Before	Points	On or Before	Points	On or Before	Points
12/01/16	1	07/01/16	11	02/01/16	21	09/01/15	31	04/01/15	41
11/15/16	2	06/15/16	12	01/15/16	22	08/15/15	32	03/15/15	42
11/01/16	3	06/01/16	13	01/01/16	23	08/01/15	33	03/01/15	43
10/15/16	4	05/15/16	14	12/15/15	24	07/15/15	34	02/15/15	44
10/01/16	5	05/01/16	15	12/01/15	25	07/01/15	35	02/01/15	45
09/15/16	6	04/15/16	16	11/15/15	26	06/15/15	36	01/15/15	46
09/01/16	7	04/01/16	17	11/01/15	27	06/01/15	37	01/01/15	47
08/15/16	8	03/15/16	18	10/15/15	28	05/15/15	38	12/15/14	48
08/01/16	9	03/01/16	19	10/01/15	29	05/01/15	39	12/01/14	49
07/15/16	10	02/15/16	20	09/15/15	30	04/15/15	40	11/15/14	50

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COST – 200 PTS

Balance regional mobility with total project cost to achieve optimal value.

- 200 points for lowest price
- Deduct 1 point for each $100,000 above low price
- Maximum: $75,000,000

PROJECT SCHEDULE

- MHTC Delegation of Authority - August 2012
- Industry Meeting - January 8, 2013
- Issue Request for Qualifications (RFQ) - January 8
- Short-listed - February 22
- Issued Request for Proposals (RFP) - March 4
- Proposals submitted – June 7
- Recommendation to MHTC – July 9

SHORT-LISTED TEAMS

Clarkson

HNTB

EMERY SAPP& SONS, INC

PARSONS

KIEWIT PKS SINCE 1884

Kiewit

HDR

Walsh Design-Build Team

WALSH RS-H GBA CFS

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TECHNICAL SCORE SUMMARY

Area	Clarkson	Emery Sapp	Kiewit	Walsh
Maintenance of Traffic (350 Points)	338	324	345	334
Maintenance of Traffic (50 Points)	23	28	21	28
Durability (200 Points)	165	185	175	172
Optional Improvements (100 Points)	72	94	85	71
Environmental (50 Points)	38	43	44	38
Completion Schedule (50 Points)	24	27	40	26
Cost (200 Points)				
Total (1000 Points)	660	701	710	669

TECHNICAL SCORE SUMMARY

Area	Clarkson	Emery Sapp	Kiewit	Walsh
Maintenance of Traffic (350 Points)	338	324	345	334
Maintenance of Traffic (50 Points)	23	28	21	28
Durability (200 Points)	165	185	175	172
Optional Improvements (100 Points)	72	94	85	71
Environmental (50 Points)	38	43	44	38
Completion Schedule (50 Points)	24	27	40	26
Cost (200 Points)	200	128	117	97
Total (1000 Points)	860	829	827	766

THE WINNER IS:



Clarkson

HNTB

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CLARKSONS PROPOSAL

- No complete closures of I-70
- No lane closures during peak periods
- New four-lane bridges on I-70
- Improved overall safety
- Committed to environmental stewardship
- One year ahead of schedule

MAINTENANCE OF TRAFFIC

Figure 3-1: I-70 Phase 1, Stage 1 Typical Section

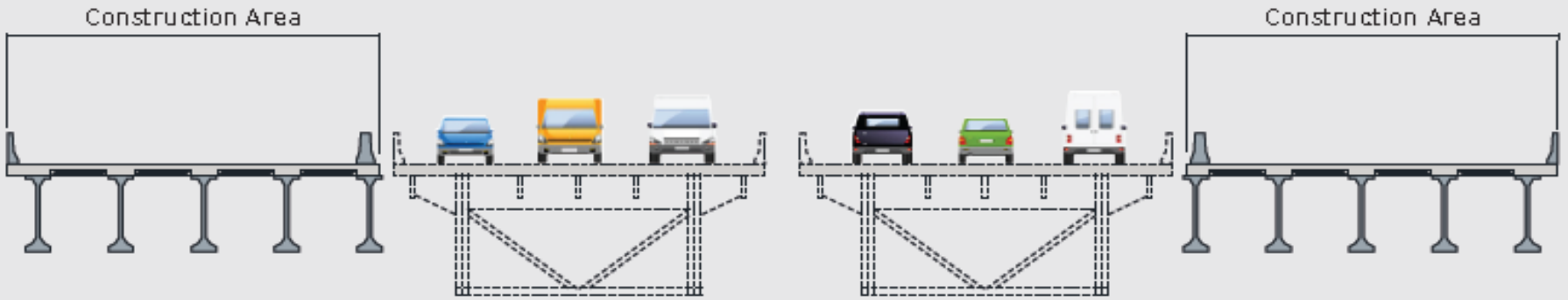
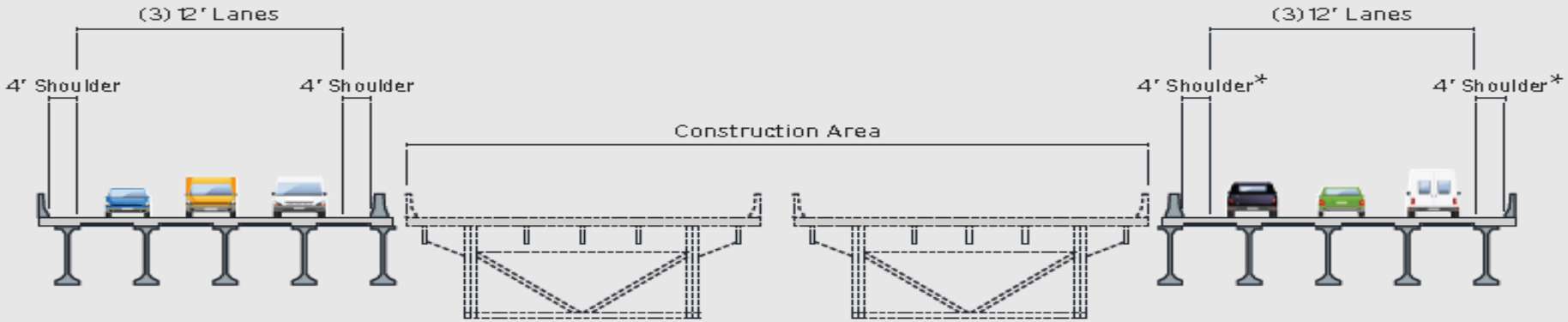


Figure 3-4: I-70 Phase 2, Stage 1 Typical Section



** 0' shoulder for 270' portion*

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MAINTENANCE OF TRAFFIC

Impress our customers through innovative solutions that conveniently and efficiently move drivers through the project during and after construction.

Location	Impact(s)	Point Reduction
I-70 Weekday Night **2-Lane Closure**		
I-70 Weekday Night **1-Lane Closure**		
I-70 Weekend **2-Lane Closure**	8	(12 points)
I-70 Weekend **1-Lane Closure**		

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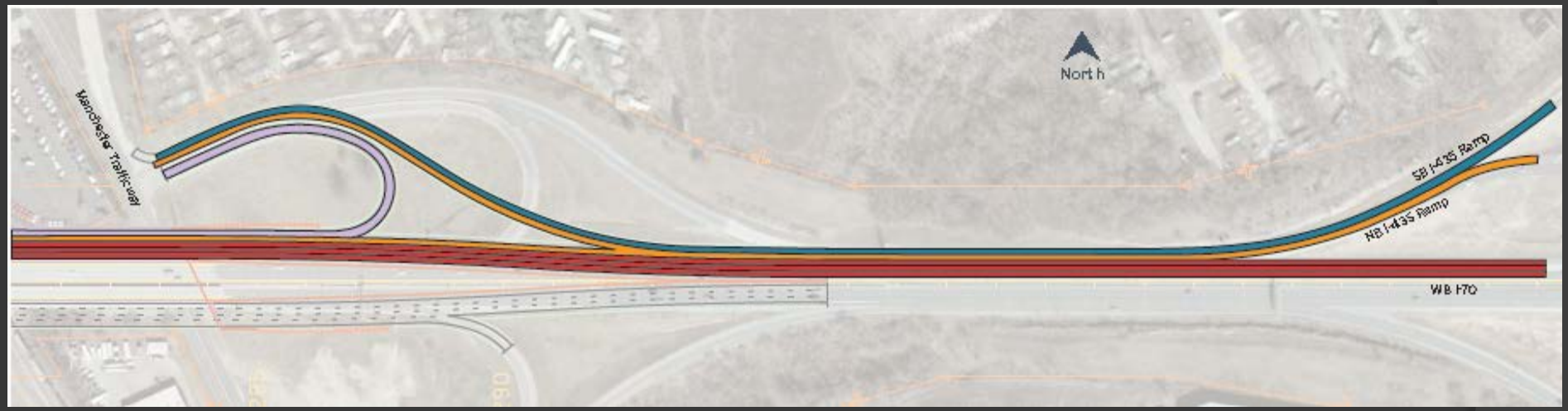
OPTIONAL IMPROVEMENTS – WEAVE/MERGE AREA



WEAVE/MERGE AREA

Impress our customers through innovative solutions that conveniently and efficiently move drivers through the project during and after construction.

Balance regional mobility with total project cost to achieve optimal value.



- Provide separate lanes for I-435 NB and I-435 SB
- Increase weave distance by 300’
- Maximum of one lane change in tight weave section

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COMPLETION SCHEDULE

Deliver the Project no later than December 15, 2016.

December 15, 2015

One year ahead of schedule

COMPLETION SCHEDULE

- Start Construction
  February 2014
- Manchester WB ramps closed (15 days each)
  Summer/Fall 2014
- 31st Street WB off ramp closed (60 days max)
  31st Street EB off ramp closed (60 days max)
  Summer/Fall 2014
- US 40 bridge closed (100 days max)
  January 2, 2015 – try to miss Chiefs and Royals seasons
- Construction complete and open to traffic
  December 15, 2015

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PROJECT COST

Balance regional mobility with total project cost to achieve optimal value.

$63,757,689

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PROJECT AWARD

- Announced winner on July 9
- Met with teams to discuss proposals
- Signed contract on August 1, 2013

DESIGN INTO CONSTRUCTION

- Design phase was about six months long
- Partially due to the winter
- Major phase of work is bridges, which took a while to design
- Began work while design of big bridges continued

PILE-SUPPORTED FOOTING





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PILE-SUPPORTED FOOTING





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PILE-SUPPORTED FOOTING





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COLUMNS





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DRILLED SHAFTS





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DRILLED SHAFTS





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DRILLED SHAFTS





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BEAM CAPS





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BEAM CAPS





GRADING WORK





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GRADING WORK





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SETTING GIRDERS

- Longest Concrete Pre-Stressed Girders in the State
- Maximum length 168’
- Height: 6’ – 9”
- Weight: Varies up to 197,000 lbs

SETTING GIRDERS





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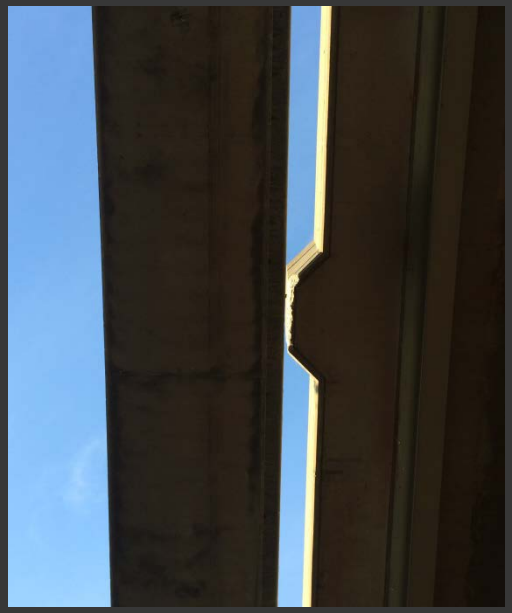
WORKING IN TIGHT SPACES





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WORKING IN TIGHT SPACES





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HIGH WATER





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TIMEFRAME

- Start Construction – Mid-February 2014
- Switch eastbound traffic to new eastbound bridge – Fall 2014
- US 40 historic bridge removal/relocation – January – March 2015
- Switch westbound traffic to new westbound bridge – Spring 2015
- Demolition of both existing bridges – Winter/Spring 2015
- Addition of 4th lane to both bridges – Summer/Fall 2015
- New 4-lane bridges open to traffic in final configuration – no later than December 15, 2015

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