



### Project Location & Study Area

### Practical Design

**PRACTICAL / adjective**  
 (of an idea, plan, or method) likely to succeed or be effective in real circumstances; feasible.  
 "neither of these strategies is practical for smaller businesses"  
 synonyms: **feasible**, practicable, realistic, **viable**, workable, possible, reasonable, sensible

### Root of the Problem

- 27% of NB Interstate traffic take exit loop
- 88% of exit loop traffic continue north
- Loop over capacity
- Minimal decision sight distance to exit loop
- Persistent queuing on Interstate
- Crash rates above statewide averages on Highway 141

### Purpose and Need

Purpose of Project	Need for Action
<ul style="list-style-type: none"> <li>Improve safety and increase traffic capacity</li> <li>Evaluate new Interstate System access between the Douglas Ave and NW 86th Street Interchanges</li> </ul>	<ul style="list-style-type: none"> <li>Back ups during peak traffic hours</li> <li>Northbound exit loop ramp over capacity</li> <li>Crashes are above statewide average</li> </ul>

### Other Needs/Constraints

- Rail Corridor
  - Rail Spur with:
    - High Power Transmission
    - HP Gas
- Access to existing commercial
- New access to developing ground

## Alternatives Considered

## Multiple Solutions Have Been Studied

Significant systems interchange

- Feasible?
  - Maybe – limited ability to extend I-80 west
- Viable?
  - Not really – Cost and ROW impacts too high

## Multiple Solutions Have Been Studied

Rebuild existing form of interchange to current standards

- Feasible?
  - Yes
- Viable?
  - Not so much – Limited operations improvement for cost

## Solve the Most Critical Problem First

## Alternatives Considered

**LEGEND**

- SEPARATE PROJECT (NW 100TH ST BRIDGE INTERCHANGE PROJECT) NOT INCLUDED IN PROPOSED ACTION
- PROPOSED I-35A-80/141 INTERCHANGE IMPROVEMENTS
- EXISTING / NO IMPROVEMENT

## Preferred Alternative

- Dual-Lane Flyover
- New interchange access at Meredith Dr. and 100th St
- Collector-Distributor
- Grade separation at SE 37th
- Achieved adding 4th lane each direction on mainline w/ existing 141 bridge





### Initial Build

35 80 141 INTERCHANGE IWA IOWA DOT HPS HFC Green

- Dual-Lane Flyover
- New interchange access at Meredith Dr. and 100th St.
- Partial access at Meredith connected via local network
- Achieved adding 4th lane each direction on mainline w/ existing 141 bridge

**LEGEND**

- PROPOSED PAVEMENT
- PROPOSED BRIDGE
- EXISTING PAVEMENT
- EXISTING BRIDGE OR WAY LINES
- NUMBER OF LANES
- EXISTING STOP LOCATION
- TRAFFIC SIGNAL LOCATION



### Project Sequencing for the Initial Build of the Preferred Alternative

**Proposed Sequencing - Initial Build**

- 2017/18 - Grade and Pave
- 2018/20 - Grade and Pave
- 2019/20 - Bridge
- 2020 - Paving Loop Removal

LOCAL ROADWAY NETWORK PROJECT REORDERING  
 IOWA DOT HPS HFC Green  
 LOCAL ROADWAY NETWORK PROJECT REORDERING  
 IOWA DOT HPS HFC Green  
 FEB 2018  
 FIGURE 9  
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### Project Sequencing for the Final Build of the Preferred Alternative

**Proposed Sequencing - Final Build**


- 2017-2020 - Initial Build Construction
- Planned Improvements - Final Build

LOCAL ROADWAY NETWORK PROJECT REORDERING  
 IOWA DOT HPS HFC Green  
 LOCAL ROADWAY NETWORK PROJECT REORDERING  
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 FEB 2018  
 FIGURE 9  
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### Practical Design Elements

35 80 141 INTERCHANGE IWA

### Practical Design Elements



**Interchange Spacing – Douglas to Meredith**

A Policy on Geometric Design of Highways and Streets – AASHTO 2011:

Interchange Type	Minimum Length (ft)	Minimum Length (m)
Full Access	1,000	305
Partial Access	800	244
At-grade	600	183
Grade-separated	400	122


A Policy on Design Standards – Interstate System – AASHTO May 2016:  
 "Minimum spacing should be not less than 1 mile in urban areas..."

NCHRP Report 687 - Guidelines for Ramp and Interchange Spacing:  
 "Actual ramp spacing values should be determined based on considering the complete range of geometric, operational, safety and signing needs for a particular location."

### Practical Design Elements

**Policy Point 4 - Full Access**

- Initial Build - Meredith and 141 act as a pair to provide full access
- Initial Build Way-Finding
- City improved NW Urbandale Drive/Meredith Drive Intersection
- Full Build provides direct connectivity between Meredith and 100th Street w/ C-D




### Practical Design Elements

- Maintain existing 2907' radius mainline curve with  $e=3.3\%$  (Standards say it should be 5.5%)
- Repurpose loop Accel/Decel lanes on the existing bridge to additional through lanes

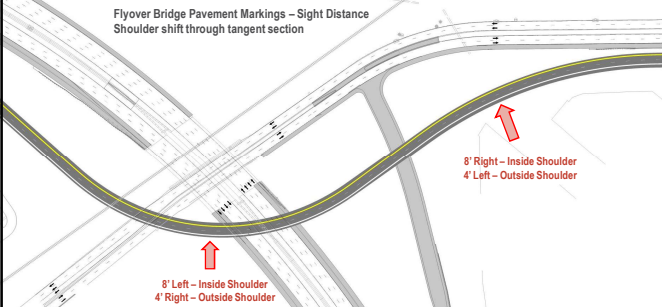
**Flyover Geometric Design Criteria**

Semi-Directional Ramp – 2 Lane – Design Criteria	Preferred		Acceptable		Project		Notes
	Design Speed	Radius/Super e	Design Speed	Radius/Super e	Design Speed	Radius/Super e	
Design Speed	50 mph	1530/5%	40 mph	960/5%	40 mph	600/3%*	35mph advisory signage for Horizontal Stopping Sight Distance
Radius/Super e	2480/4%	1530/4%	1530/4%	1530/4%	1530/4%	1530/4%	*Low Speed Urban Criteria Winter conditions & inspection equipment
Shoulder - L/R	4'16"	4'16"	4'6"	4'6"	8'14"	8'14"	
Horiz SSD	425'	425'	305'	305'	254'	254'	*w/ 8' Slidr on Left. Adequate for 35mph. 44' Bridge Rail



### Practical Design Elements

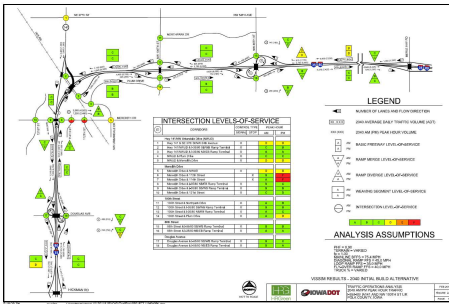
**Flyover Bridge Pavement Markings – Sight Distance**  
 Shoulder shift through tangent section



8' Left – Inside Shoulder  
 4' Right – Outside Shoulder

8' Right – Inside Shoulder  
 4' Left – Outside Shoulder

### 2040 Initial Traffic Operations



**INTERSECTION LEVEL OF SERVICE**

Intersection	Level of Service
141 & Meredith	A
141 & 100th	B
141 & 10th	C
141 & 20th	D
141 & 30th	E
141 & 40th	F
141 & 50th	G
141 & 60th	H
141 & 70th	I
141 & 80th	J
141 & 90th	K
141 & 100th	L
141 & 110th	M
141 & 120th	N
141 & 130th	O
141 & 140th	P
141 & 150th	Q
141 & 160th	R
141 & 170th	S
141 & 180th	T
141 & 190th	U
141 & 200th	V
141 & 210th	W
141 & 220th	X
141 & 230th	Y
141 & 240th	Z


**ANALYSIS ASSUMPTIONS**

- Analysis Period: 2040
- Analysis Type: Initial Build
- Analysis Method: VISSIM
- Analysis Software: VISSIM
- Analysis Version: 5.0
- Analysis Date: 9/17/2018
- Analysis Location: 141 & Meredith
- Analysis Scale: 1:1000
- Analysis Units: Feet
- Analysis Language: English
- Analysis Author: [Name]
- Analysis Reviewer: [Name]
- Analysis Approver: [Name]

### Practical Design Elements

**Initial Build at SE 37th**

- Expanded intersection
- 1,200 foot weaving section from flyover
- VISSIM simulations indicated acceptable operations
- Influenced flyover geometry



### Practical Design Elements

Final Build at SE 37th

- Bridge over for NB flyover traffic
- Mitigate queuing concerns
- Does not preclude full interchange in future

### Practical Design Elements

#### Queue Detection Warning System

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#### Queue Detection Warning System

### Environmental Assessment and Impacts – EA

Issue	No Build Alternative	Preferred Alternative
Right of Way Acquisition (acres)	0	8.5
Potential Displacements (number)	0	1 Building / 6 Tenants
Wetland Impacts (acres)	0	1.86
Surface Waters and Water Quality (linear feet)	0	948
Floodplains (acres)	0	1.9
Noise Impacts (number)	1	7
Utilities (number of crossings)	0	13
Visual	No Change	Minor Change

\*Impacts based on project level data and field study information.




## The Bid Packages





## The Bid Packages




**Bid Summary for Proposal 77-0803-183**

Listing ID: 180317  
 Cut Off Date: 02:00:00 AM  
 Call Order: 000

Bidder Name	Bid Amount
UNITED CONTRACTORS INC. AND SUBSIDIARIES	\$35,891,463.00
COVERED AND ASSOC., INC.	\$25,979,897.00
SHIGEN CONSTRUCTION CO.	\$27,766,424.74


(1 Bidder)

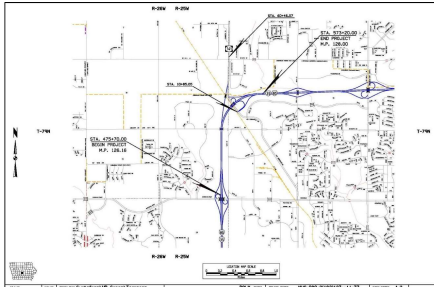
## The Bid Packages




- **Grading Project:** NHS-080-3(182)127--11-77
  - \$16 Million
- **Bridge Project:** IM-080-3(183)127--13-77
  - \$19.6 Million
- **Completion Date:** June 28, 2020
- **\$10,000/Day Liquidated Damages**
- **Some Construction May begin in September of This Year**

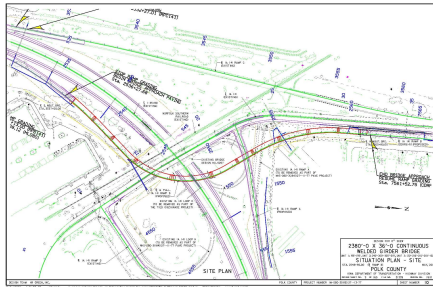
## Location






## Location





## Bid Package #2



**Total Programmed: \$18.4 Million**

- **Paving Project:** NHS-080-3(184)127--11-77
  - \$15.1 Million
- **Signing Project:** IM-080-3(185)127--13-77
  - \$2.5 Million
- **Lighting Project:** IM-080-3(186)127--13-77
  - \$0.15 Million
- **Signals:** IM-080-3(204)127--13-77
  - \$0.6 Million

**Completion Date:** November 20, 2020 +/-

### Contract Proposal

### Contract Proposal

Site ID	Site Details	Liquidated Damages
00	6/28/2020 COMPLETION DATE	\$10,000.00
Final Contract Completion		
01	11/15/2019 COMPLETION DATE	\$10,000.00
See Site ID 01 description in the Proposal Notes.		
02	No Start Date Specified 11 CALENDAR DAYS	\$7,000.00
See Site ID 02 description in the Proposal Notes.		
03	Approximate Start Date 09/04/2018 28 CALENDAR DAYS	\$4,000.00
See Site ID 03 description in the Proposal Notes.		

### Contract Proposal

### Questions from the Audience?

### Contact Information

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