



#### I-WA | DOT

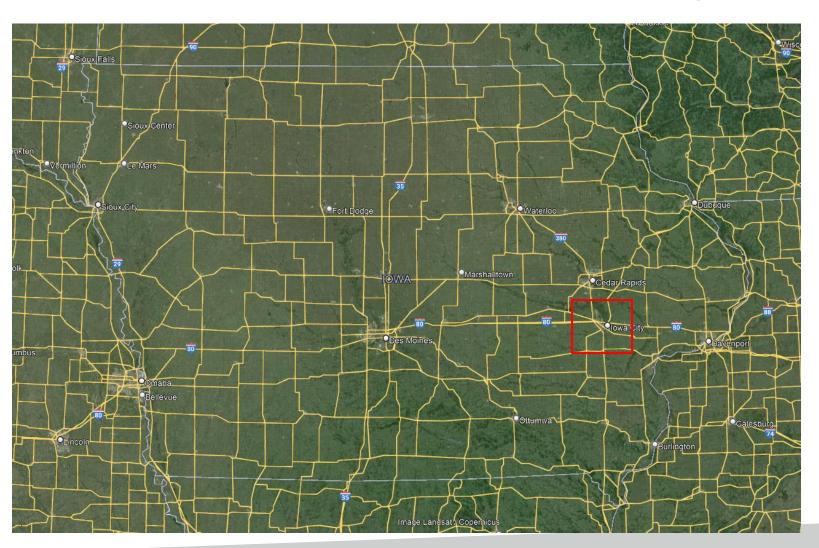


# Coralville, Iowa I-80 & 1<sup>st</sup> Avenue Diverging Diamond Interchange Project

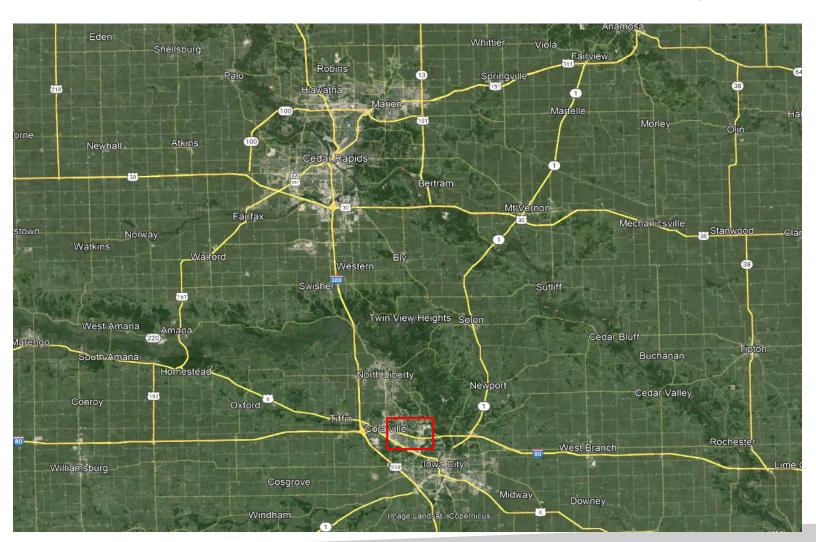
Tyler Wiles, PE, PTOE, LEED-AP HR Green Senior Project Manager



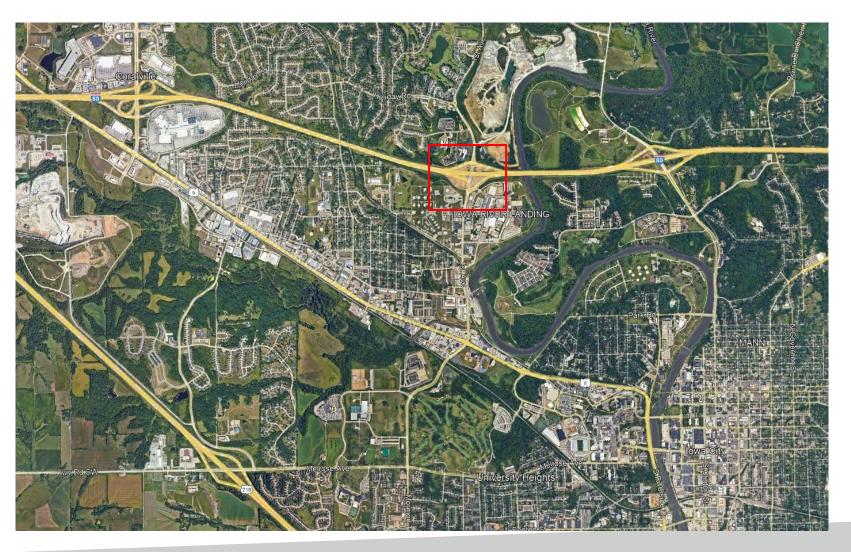




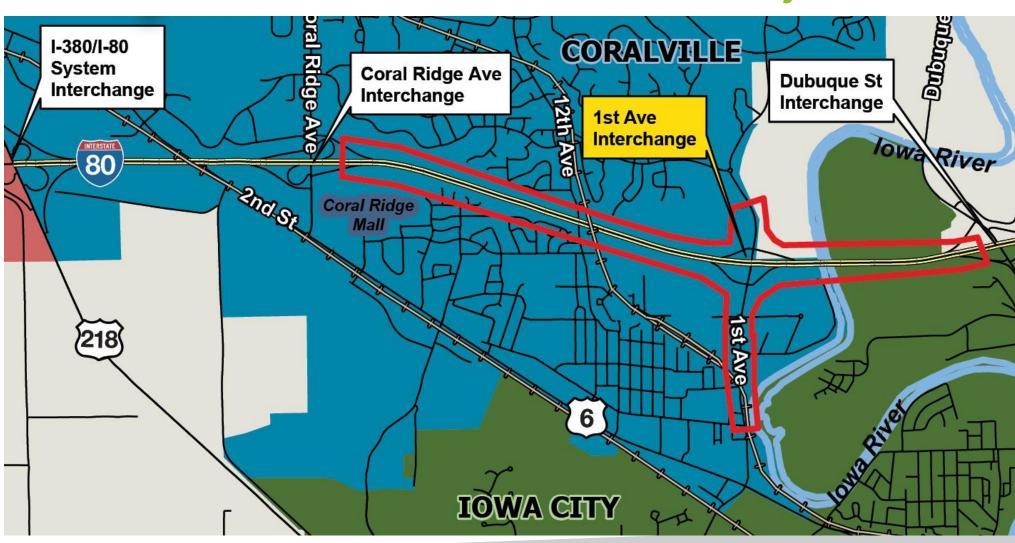














#### Quadrants



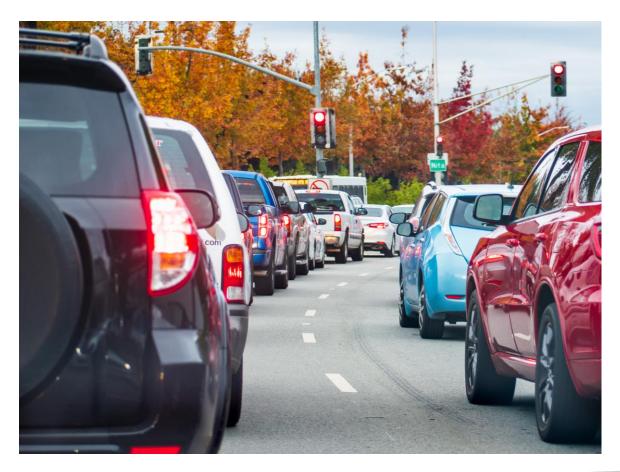






#### Project Goals and Objectives

- Provide adequate near and long-term Interstate operations
- Provide safe access to and from the Interstate system for Project:
  - Improve capacity, access and safety concerns of existing interchange (manage Magellan Terminal; peak local events, football Saturdays)
  - Improve regional travel reliability (peak local events not impacting I-80 through traffic; accommodate future I-80 widening)
  - Integrate local planned improvements (1<sup>st</sup> Ave multi-phase reconstruction; trail network improvements)
  - Allow for existing and planned economic development (expand access to IRL; about 25% of IRL remains undeveloped)







#### **Project Funding**

- City of Coralville and Iowa DOT partnered to apply for BUILD Grant
- \$20 million awarded to Coralville, passed to Iowa DOT
- Iowa DOT budgets \$21 million in five-year plan
- Coralville cost contribution included initial investment with Iowa DOT for initial design & engineering, grant application, grant funding, and associated City support through design and construction







# Design Evolution

I-80 & 1st Avenue Interchange | Coralville, Iowa

**Project Journey** 

2004 Planning Began SEPTEMBER 2020

Preliminary Design Plans submitted for ROW design

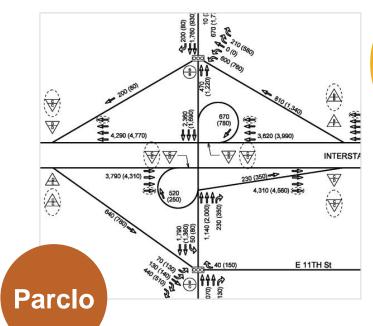
BUILD Grant Award received JULY 2022 Final plans submitted OCTOBER 2022 Contract Award \$36M

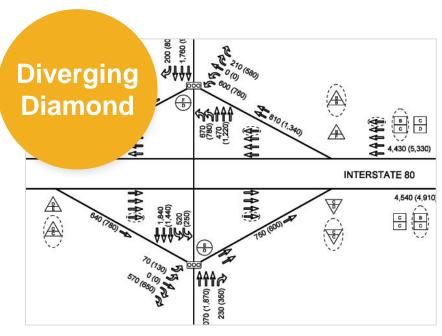
AUGUST 2018
Design project
kick-off

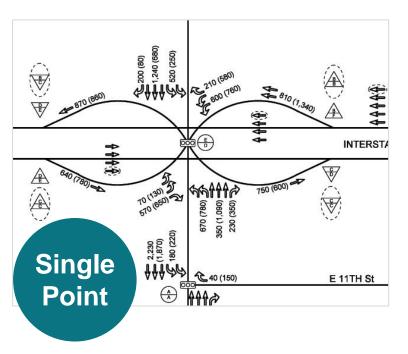
2021 Amendment for IJR approval SEPTEMBER 2022 Letting MARCH 2023
Major
Construction
Starts



#### Interchange Alternatives



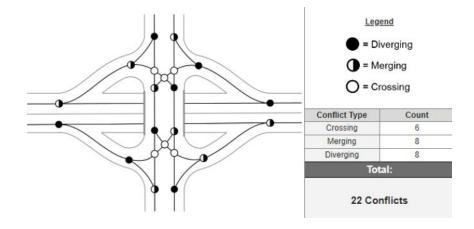


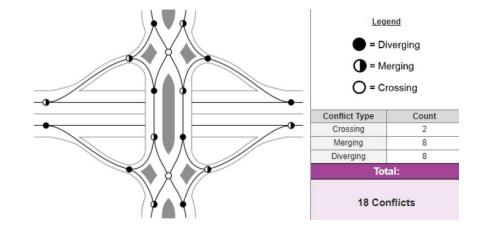




#### **DDI** Benefits

- Drivers have been shown to ADJUST SAFELY to a new DDI with thoughtful placement of signage, barriers, and pavement markings
- Removes free-flow left turn conflicts
- Decreases vehicle conflict points by nearly half, and removes left turns across oncoming traffic
- Increase capacity and efficiency

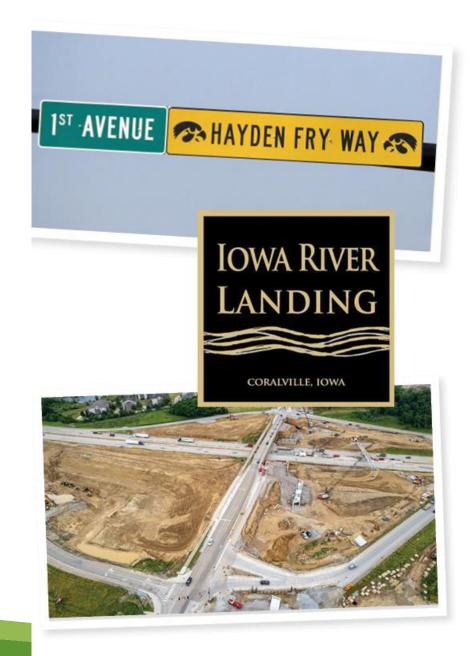






#### **Unique Considerations**

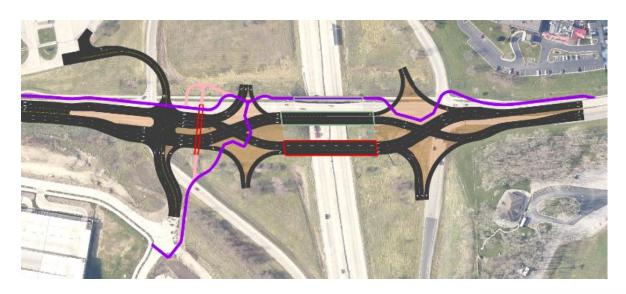
- Foundation improvements
- Limited space to work with
- Access to Iowa River Landing
- Accommodate traffic for special events
- Utility Coordination
- State fiber
- Bike and pedestrian accommodations
- Staging and traffic control
- Stormwater best management practices

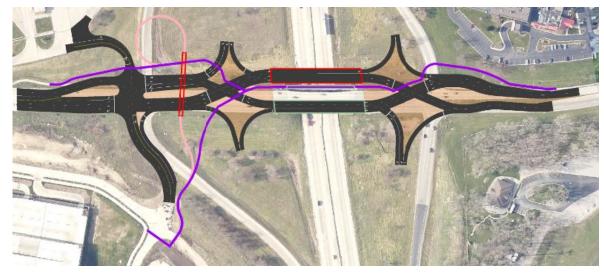




#### **Bridge Alternatives**

• Bridges over I-80 were built in 1962 and 1986 and were both in fair condition





#### LEGEND





# Path Alignment **Alternative** Analysis

HRGreen<sub>®</sub>

#### Improvements to I-80/1st Avenue Interchange IM-080-6(253)242-13-52

CONCEPT LEVEL: RANGE OF ALTERNATIVES-TRAIL	

	Weight	At-Grade Sidewalk		Under 1st Ave. Bridges			Cross-DDI 1st Ave. Box			
	Factor	Evaluation	Notes: Pro / Con	Score	Evaluation	Notes: Pro / Con	Score	Evaluation	Notes: Pro / Con	Score
Trail Grade		150' @ 5.5% 507' @ 5% 254' @ 2.8% 1639' @ 2% or less	Follows roadway grade		1400' @ 5% 270' @ 3% 1460' @ 2% or less	Fairly constant uphill grade with a minor change over the bridge		1190' @ 5% 450'@ 3.5% 1180' @ 2% or less	Fairly constant uphill grade with a minor change over the bridge	
Trail Grade Rating	6		2	12		3	18		3	18
Length of Trail along 1st Avenue		2550'	Shortest length		3130'			2820'		
Out-of-Distance Travel (Length Over a Straight-line from 9th Street to Hampton Inn Entrance)		180°	Lowest out-of-distance travel		760'			450'	Low out-of-distance travel	
Stair Length		N/A	No Stairs		N/A	No Stairs		N/A	No Stairs	
Square Yardage of Stairs		0 sy	No Stairs		0 sy	No Stairs		0 sy	No Stairs	
Length/Out-of-Distance Travel Rating	6		1	6		4	24		1	6
Roadway At-Grade Crossings		5	2 Unsignalized Crossings 3 Signalized Crossings		0	No at grade crossings		0	No at grade crossings	
Roadway At-Grade Crossings Rating	9		10	90		1	9		1	9
Length of Walls		890'			3670'			3080'		
Maximum Wall Heights (Exposed)		24'			24'			25'		]
Square Footage of Walls		14500 sf	Lowest Wall Quantity		42000 sf			43650 sf		
Wall Area Rating	3		1	3		7	21		9	27
				•	over I-80)			over I-80)		
Length of Pedestrian Bridges (16' Wide)		399'	Pedestrian Bridge		0'	No Pedestrian Bridge		0'	No Pedestrian Bridge	
Square Footage of Pedestrian Bridges		6384 sf	Pedestrian Bridge		0 sf	No Pedestrian Bridge		0 sf	No Pedestrian Bridge	
Length of Roadway Bridges (15' Widening)		0'			205'		1	205'		1
Square Footage of Roadway Bridge Widening		0 sf			3075 sf			3075 sf		
Bridge Area Rating	3		9	27		1	3		1	3
Number of Tunnels		0			2		l	4		
Length of Tunnels (Total)		0,			88'	Low Quantity		289'		
Tunnel Length & User Comfort Rating	3		1	3		2	6		7	21
Right of Way Impacts			Sheet Pile Wall to protect NW ROW Line			Minimal Temp. Easements			Minimal Temp. Easements	
ROW Rating	6		4	24		3	18		3	18
Alignment Radii		60' Min.			60' Min.	SW Ramp B would need to be realigned. Radii may need to decrease.		60' Min.	SW Ramp B would need to be realigned. Radii may need to decrease.	
Horizontal Trail Curve Rating	6		1	6		4	24		4	24
						Cost				
Trail [\$80/SY] *			,900.00			1,500.00			,400.00	
Ped Signals [\$5000/EA (crossing)] *					0,000.00	1		\$0.00		
Flashing Beacon [\$15000/EA (crossing)] *		\$0.00 \$990,000.00			\$0.00		l		\$0.00	
MSE Walls [\$60/SF] *						90,000.00	l		9,000.00	I
Roadway Bridges [\$126/SF] *			0.00 ,400.00			7,500.00 \$0.00	ł		7,500.00	l l
Pedestrian Bridges [\$126/SF] * Steel Pedestrian Bridges [\$200/SF] *			0.00			\$0.00	ł		0.00	l l
aceer redestrian bridges [\$200/5F] "			0.00			3,200.00	ł		1,600.00	l I
PCB (Underpass Boyes) [\$1400/LE] *					215	J,200.00	1		1,000.00	ıl
RCB (Underpass Boxes) [\$1400/LF] * Stairs [\$450/SY] *			0.00			\$0.00	1		0.00	
Stairs [\$450/SY] *		\$	0.00 7.300.00			\$0.00 12.200.00			0.00	
		\$2,10	0.00 <b>7,300.00</b> ,600.00		\$2,4	\$0.00 <b>12,200.00</b> 9,500.00		\$3,52	0.00 6,500.00 3,800.00	

Rating	Legend

Range: 1 thru 10 Rating 1 - Preferred

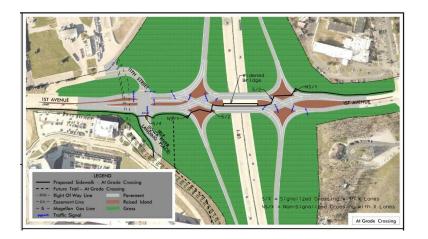
Rating 5 - Acceptable/ Average Ranking 10 - Undesirable

Score = (Weight Factor) x (Rating) Weight Factor

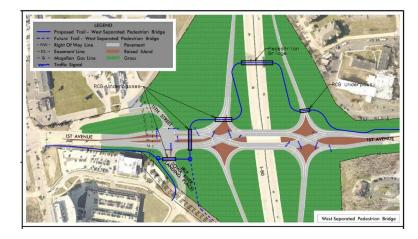
Range: 1 thru 9

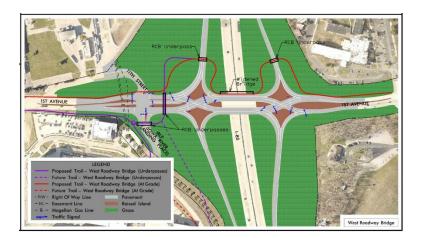
Rating 1 - Low Importance

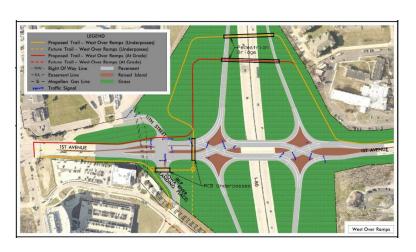
Rating 5 - Average Importance Rating 9 - High Importance

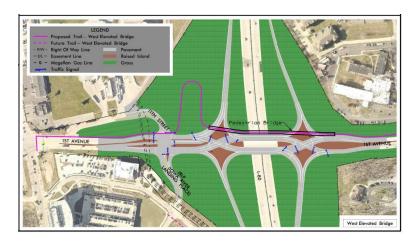






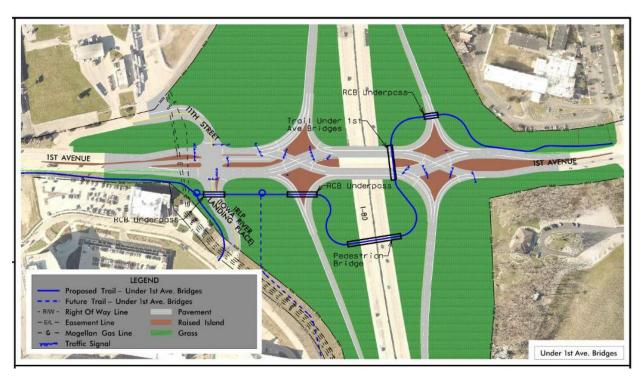


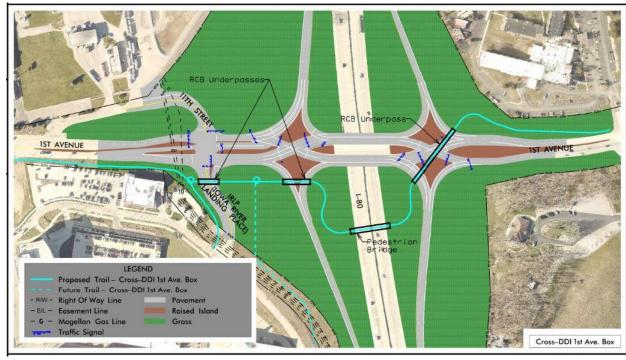






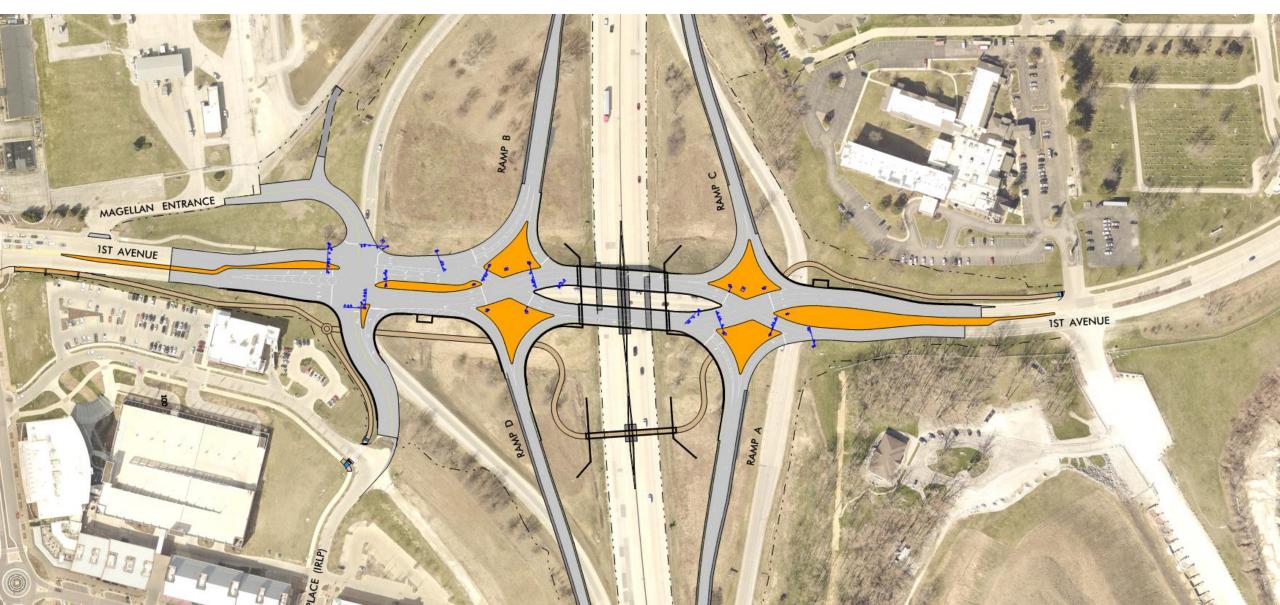
#### Path Alignment Alternative Analysis







# Chosen Path Alignment



#### Public Involvement

- Coralville and Iowa DOT prioritized Public Involvement
- One-on-one Stakeholder meetings

Ex: The Iowa Bucycle Coalition, residents, businesses, UI

 Virtual Public Meeting held in May 2021





#### Interchange Improvements at I-80 and 1st Avenue, in Coralville, Johnson County

The lowa Department of Transportation is requesting public input for proposed improvements to Interstate 80 and right of way needs at the 1st Avenue interchange in Coralville, Johnson County. The proposed improvements include reconstruction of the interchange at Exit 242/1st Avenue in Coralville, on I-80, with a diverging diamond interchange (DDI). The project is anticipated to take place starting Fall 2022. The roadway and bridge work is expected to be completed after two construction stasons, with final trail, landscaping, erosion control, and other related work occurring in the 3rd year.

The project will utilize staged construction, including temporary pavement, so there will be limited brief closures with no planned large disruption of traffic on 1st Avenue or 1-80.

An online public meeting is now available to view on the lowa DOT's Public Involvement webpage: www.iowadot.gov/pim. To view the meeting and related content, click on "Interstate 80 and 1st Avenue, Johnson County" from the list of public involvement events. The online meeting allows you to watch a pre-recorded presentation with information about the project at your own pace and at any time. The Iowa DOT is asking interested parties to take a few minutes to view the information and offer any feedback. If you do not have access to the internet, or need assistance viewing the materials, please contact the DOT representative listed below.

The 1st Avenue shared use path is located on the eastern edge of the City of Coralville starting north of I-80 and running along 1st Avenue across the I-80/1st Avenue interchange. This trail is owned and operated by the City of Coralville and consists of a shared use path crossing I-80, providing access to city trails. The proposed project will reconstruct the current trail along with a new pedestrian bridge. The existing trail will be removed, and construction of new trail may take one to two years to complete. During this time, there will be disruptions to the 1st Avenue shared use side path traffic across the interchange.

The 1st Avenue shared use path has been determined to be a Section 4(f) resource and reconstruction of the trail across the interchange is expected to have a de minimis impact on the resource.

Section 4(f) of the U.S. Department of Transportation Act of 1966 was enacted as a means of protecting publicly owned parks, recreation areas, and wildlife/water fowl refuges, as well as historic sites of local, state, or national significance from conversion to transportation uses. De minimis impacts are defined as those that, after consideration no fany measure(s) to minimize harm (such as avoidance, minimization, mitigation, or enhancement measures), do not adversely affect the activities, features, and attributes of the Section 4(f) resource.

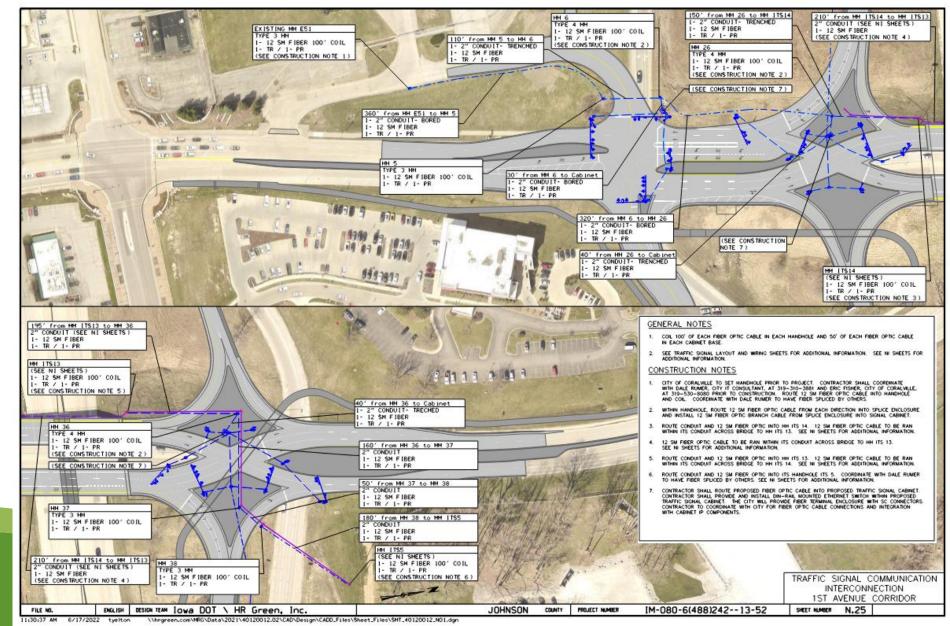
The public is invited to review the impacts of the proposed interchange project on the protected activities, features, and attributes of the trail by contacting Michael Delp (see below).

For general information regarding the proposed work or online public meeting, contact Catherine Cutler, transportation planner, Iowa DOT District 6 Office, 5455 Kirkwood Bivd. SW, Cedar Rapids, Iowa 52404, phone 319-364-0235 or 800-866-4368, email catherine.cutler@lowadotus. For information regarding impacts to the trail, please contact Michael Delp, NEPA planner, Location & Environment Bureau, 800 Lincoln Way, Ames, Iowa 50010, phone 515-233-7973, email michael.delp@lowadot.us.

Visit the Iowa DOT's project-related public involvement event website at www.lowadot.gov/pim for information about scheduled public meetings and hearings, or to view and offer input on any DOT project using the new "Map Search" feature. Comments and questions regarding the online meeting should be received by May 27, 2021. If you would like to receive future email notifications, or submit a comment or question regarding this project, go to: www.bit.lyflowadot17061.

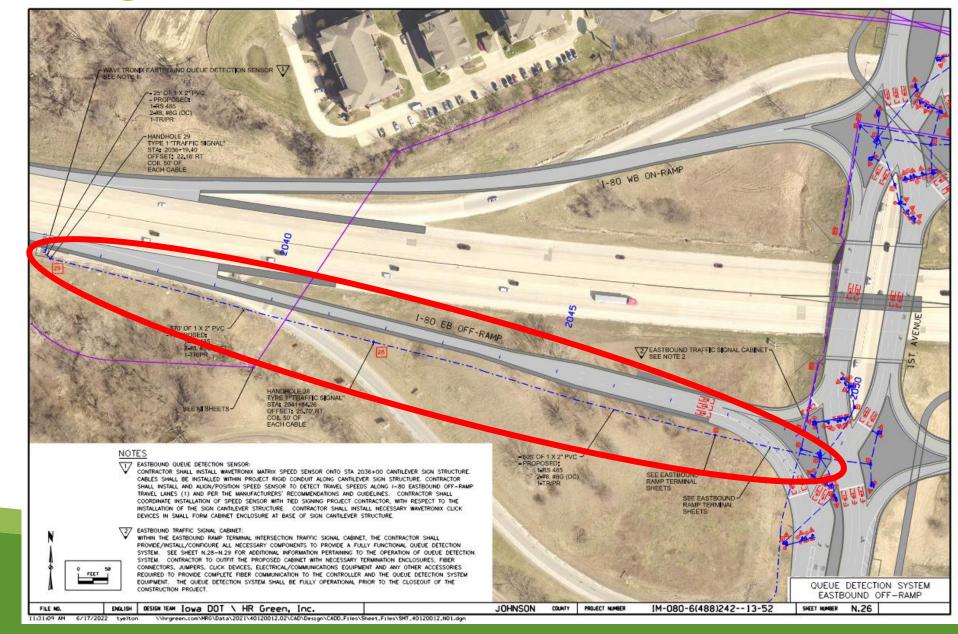
lows DOT ensures and dad introstion and equal employment in all programs and activities in accordance with TriplYI and TeleVI of the CIVE Rights, Act of 1964. If you need more information or special assessments or persons with disabilities or limited English proficiency, contact Tenertees. Hards, July, CIVE Rights by your Devotor at \$15,900-4014.

 Traffic Signal Interconnect
 Fiber



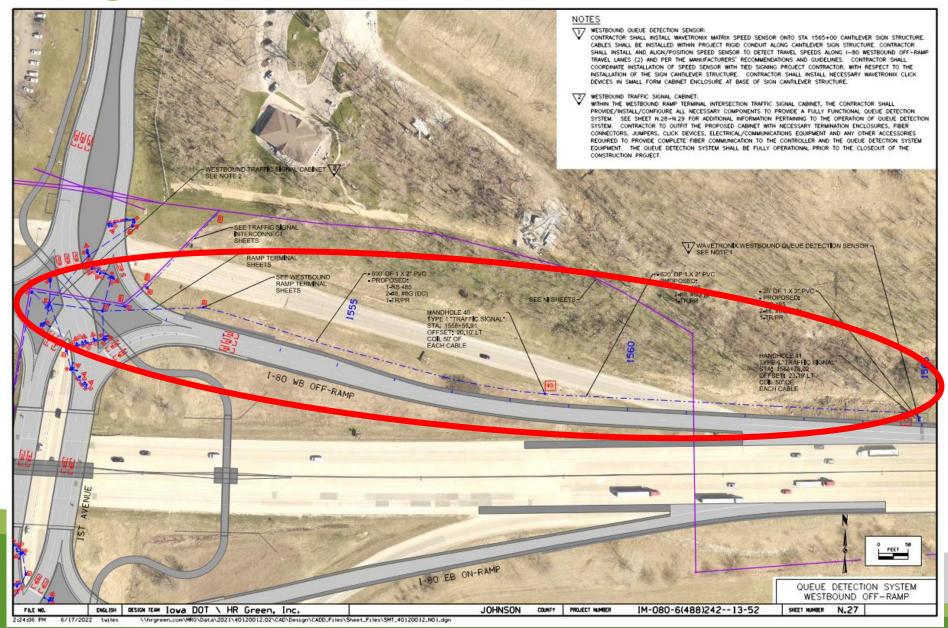


Eastbound
 Off-Ramp
 Queue
 Detection
 Warning
 System





Westbound
 Off-Ramp
 Queue
 Detection
 Warning
 System





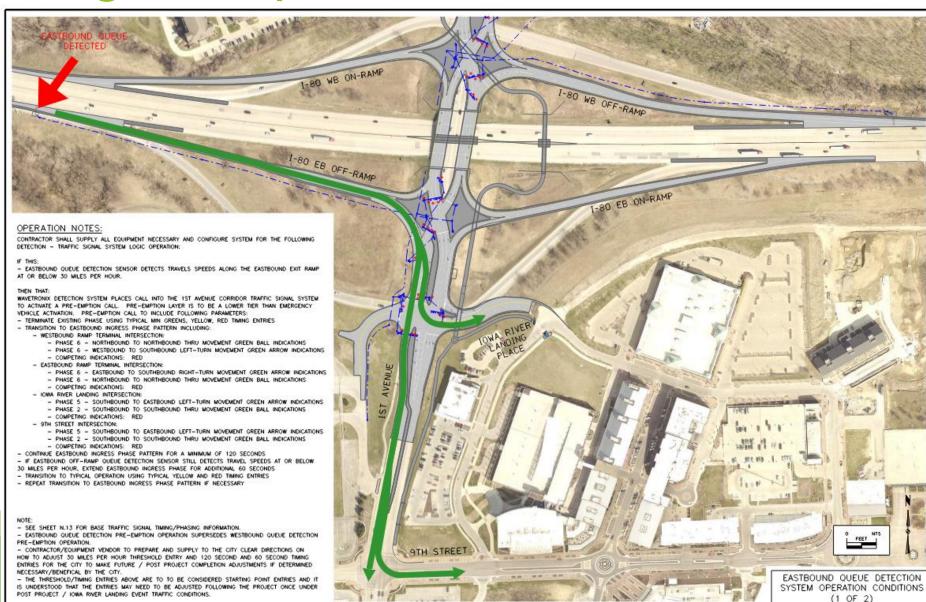
ENGLISH DESIGN TEAM IOWA DOT \ HR Green, Inc.

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Eastbound
 Off-Ramp
 Queue
 Detection
 Warning
 System

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Operation Conditions



JOHNSON

PROJECT NUMBER

IM-080-6(488)242--13-52

SHEET NUMBER

N.28



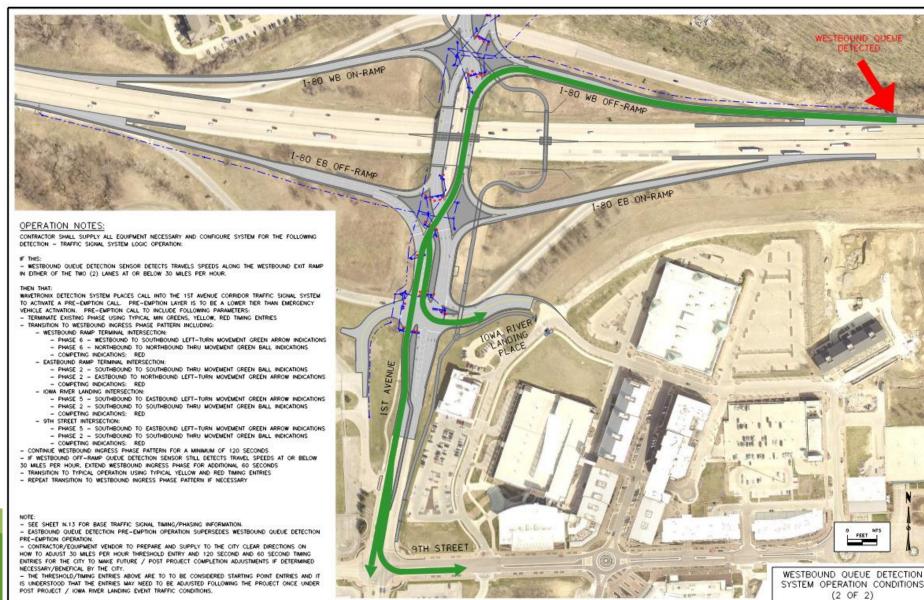
ENGLISH DESIGN TEAM IOWA DOT \ HR Green, Inc.

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Eastbound
 Off-Ramp
 Queue
 Detection
 Warning
 System

-

Operation Conditions



IM-080-6(488)242--13-52









#### Construction

I-80 & 1st Avenue Interchange | Coralville, Iowa

#### **Construction Overview**

#### Project Includes:

- Replacing existing dual roadway bridges and pedestrian bridge over Interstate 80
- Realignment of exit and entrance ramps
- Relocating one ramp terminal intersection with a 6ft. Change in elevation
- Construction crossover intersections at the ramp terminal intersections
- PCI \$35.6 Million





# Limited Space



## Pipelines under First Avenue





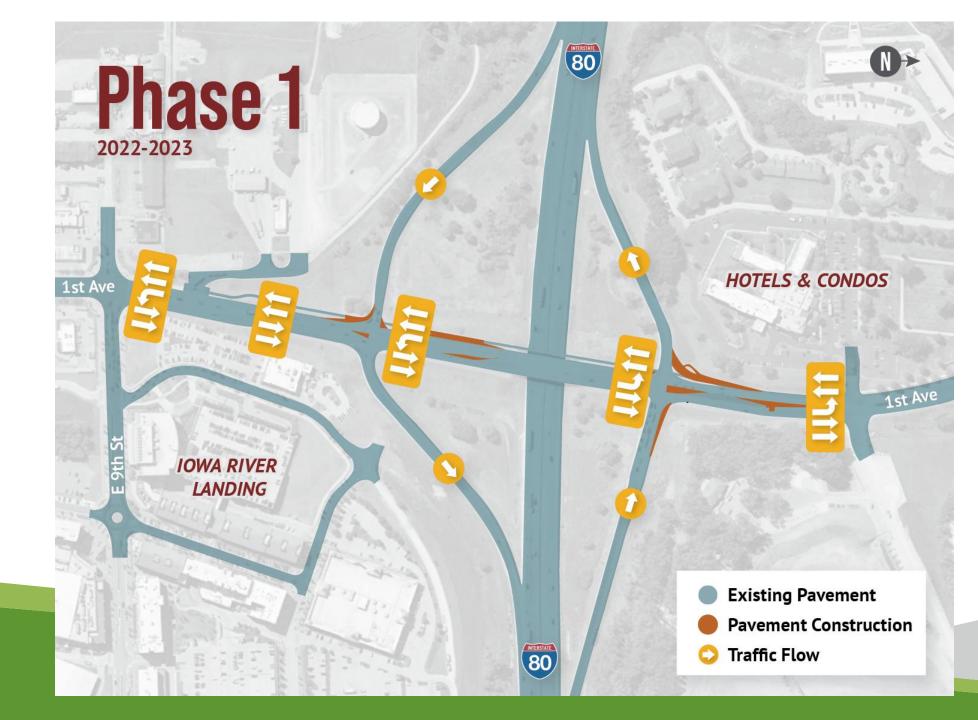
## Staging

- Difference in grade between new 1st Ave. and existing bridge.
  - ~ 6 ft higher.



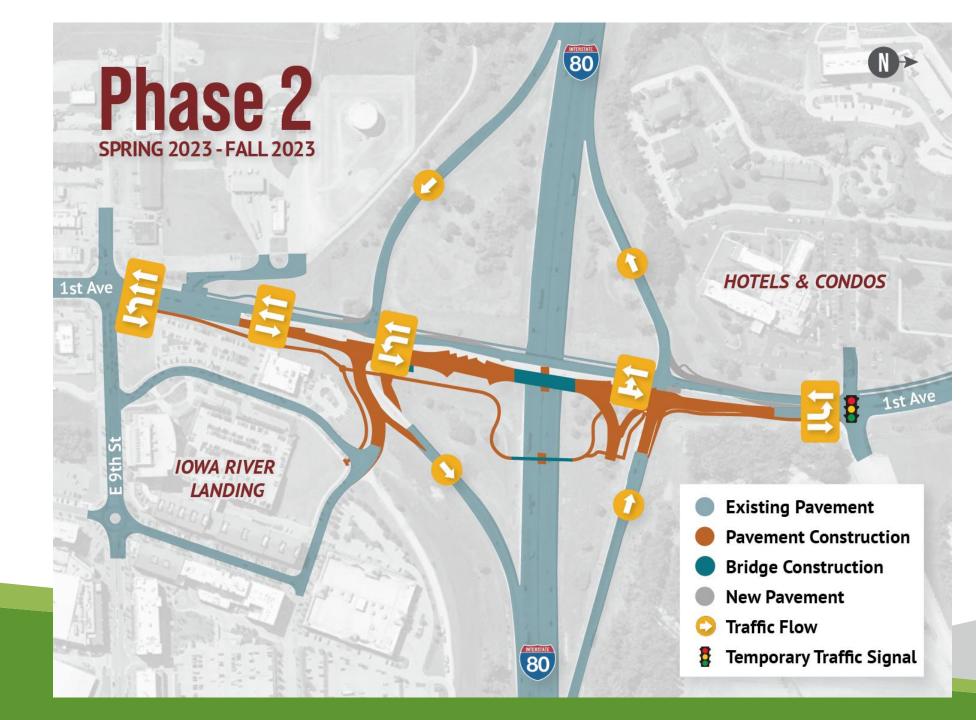


- Phase I (2022-23)
  - Stripping, clearing and grubbing
  - MSE wall construction
  - Storm sewer construction



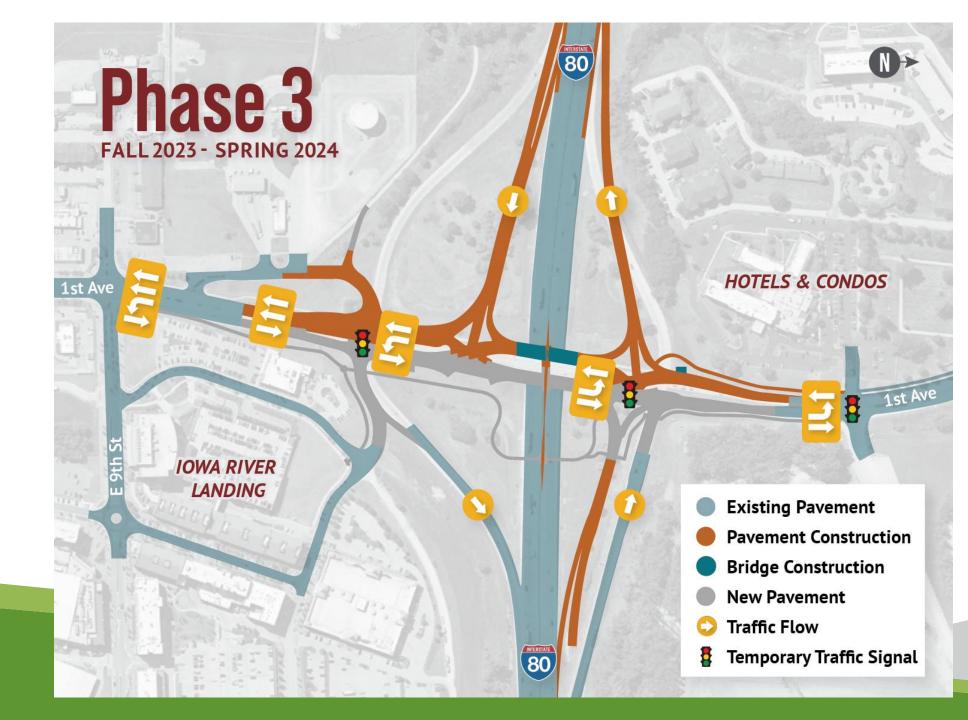


- Phase II (March 2023-November 2023)
  - NB 1st Ave bridge demolition
  - Various paving and bridge construction
  - MSE wall and storm sewer construction
  - Ramp and trail construction





- Phase III
   (November 2023-April 2024)
  - SB 1st Ave bridge demolition
  - Various paving and bridge construction
  - Interstate exit ramp construction
  - MSE wall and storm sewer construction
  - Ramp and trail construction





- Phase IV (Estimated June 2024-November 2024)
  - Final storm sewer construction
  - Temporary traffic control removal and permanent control installation
  - Temporary pavement removal
  - Grading and finishing touches
  - I-80 median barrier installation



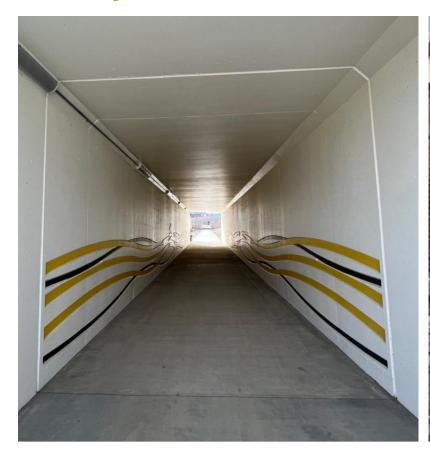


#### Where Are We Now?

- Phase 3, Stage 3
- Milestone: SB 1<sup>st</sup> Ave. bridge deck and pedestrian bridge deck poured, and traffic shifted
- Phase 3 began 11/14/2023
- Phase 3, Stage 4 around May 10<sup>th</sup>, 2024
- Phase 4, Stage 1 beginning Mid-June 2024
- All lanes open by end of calendar 2024



### Bicycle & Pedestrian Accomodations







## Trail Impacts



## Trail Impacts



#### **Aesthetic Features**





## Minimizing Traffic Impacts

HRGreen.



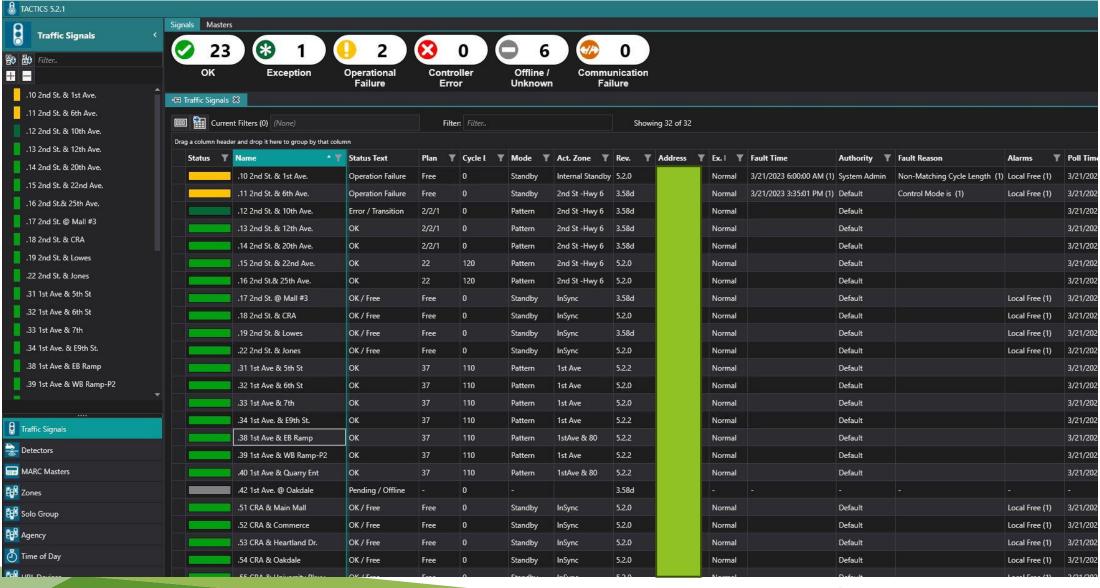
### Signal Coordination



# Typical Operations Approach

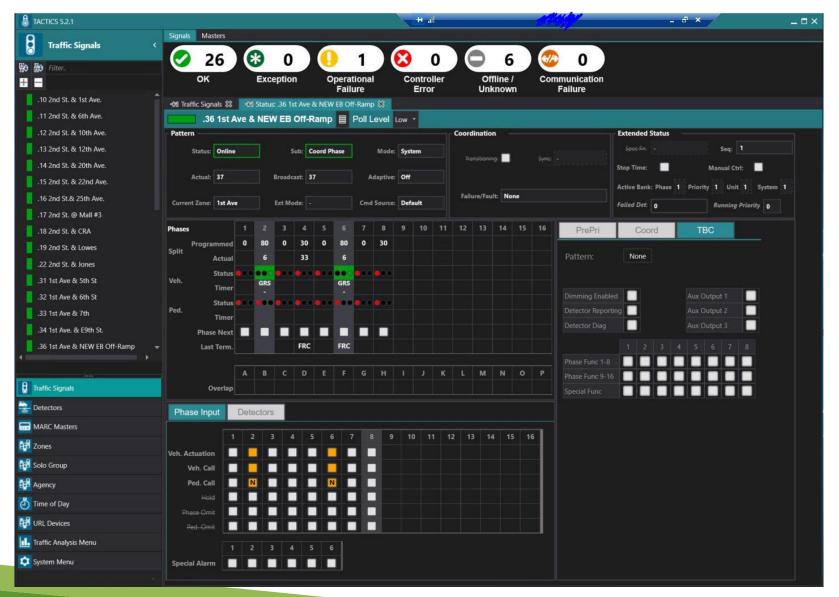
- Tuesday afternoon weekly construction meetings
  - DOT, City, PCI, K&W, Sub Contractors, HR Green
- Ahead of traffic control switches, HR Green provides timing/phasing plans for new Phase/Stage configuration
- Eric Fisher / K&W Electric / HR Green signal timing input
- Traffic Control Switch / Observations
- Iterations to Signal Timing/Phasing Plans
- Continual Observation
- PRIMARY GOAL MINIMIZE QUEUING ONTO I-80 MAINLINE





Siemens Tactics 5.2.1



























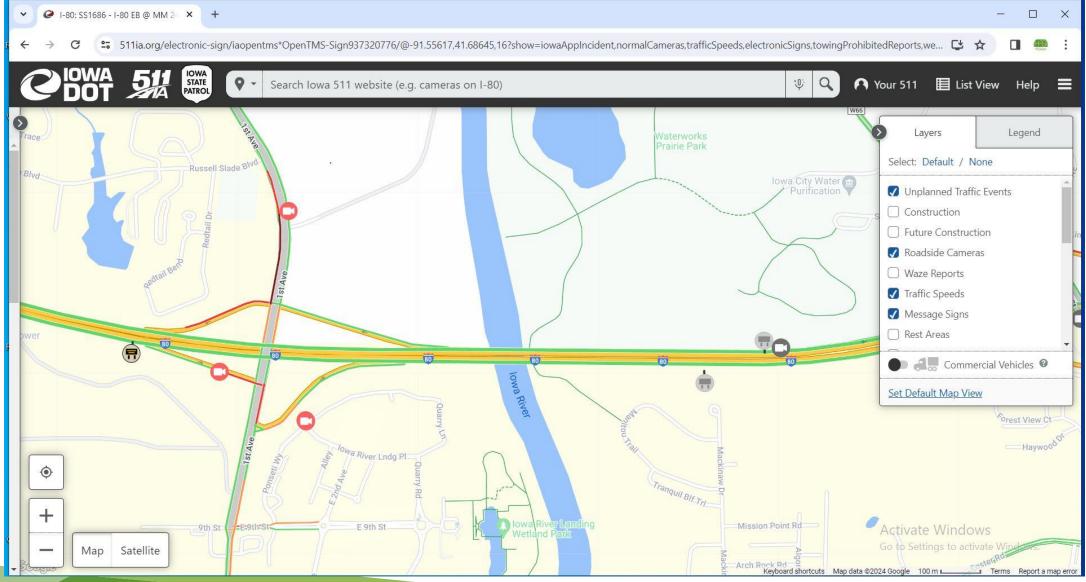
Axis Companion PTZ





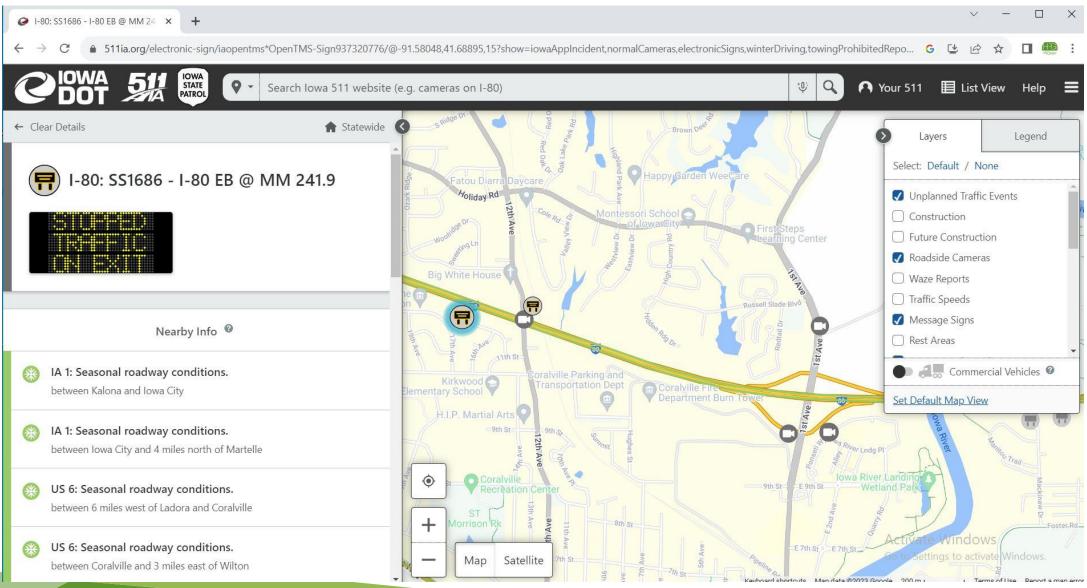






Iowa DOT 511 Coordination





Iowa DOT 511 Coordination





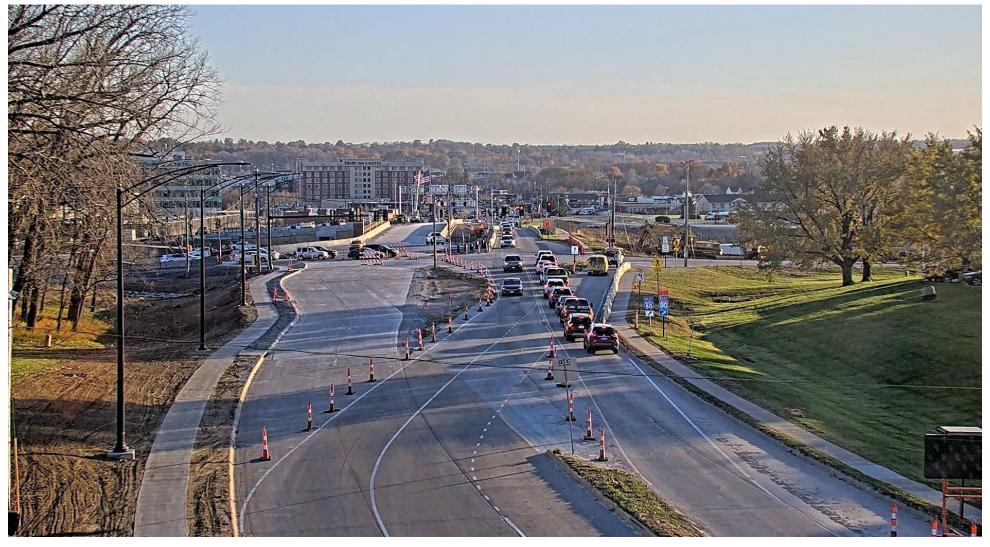
Tuesday 3/21/2023 – 5:54 PM Phase 2 New Switch





Tuesday 8/22/2024 – 3:52 PM Phase 2 Progress

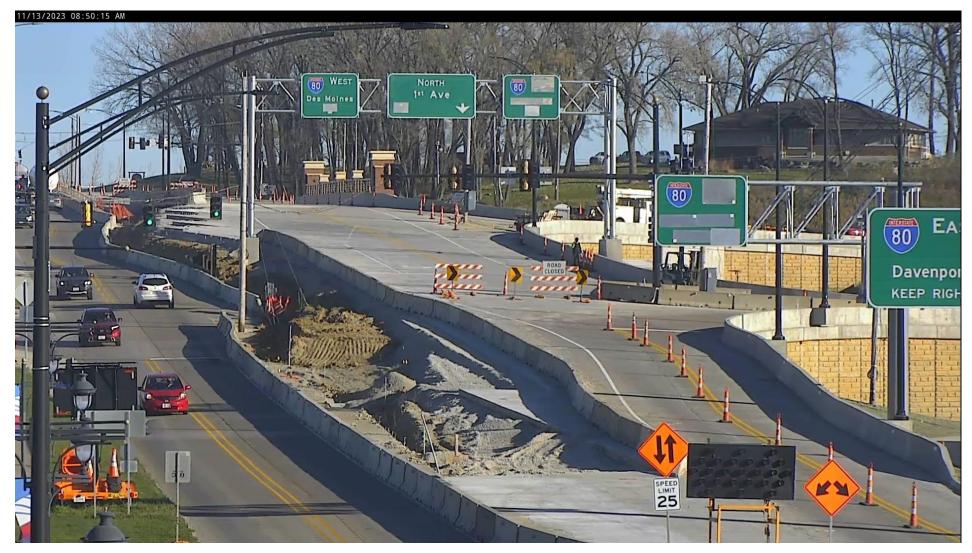




Thursday 11/9/2023 – 4:00 PM

Pre Phase 3 Switch





Tuesday 11/13/2023 – 8:50 AM Traffic Control Switch to Phase 3 Note 6' Grade Difference







Tuesday 11/14/2023 – 9:30 AM
Magellen Trucking Terminal
Down during Traffic Control
Switch Day....





Tuesday 11/14/2023 – 10:23 AM
Magellen Trucking Terminal
Down during Traffic Control
Switch Day....



Tuesday 11/14/2023 – 10:59 AM





Tuesday 11/14/2023 – 11:25 PM Advantage of PTZ camera coverage



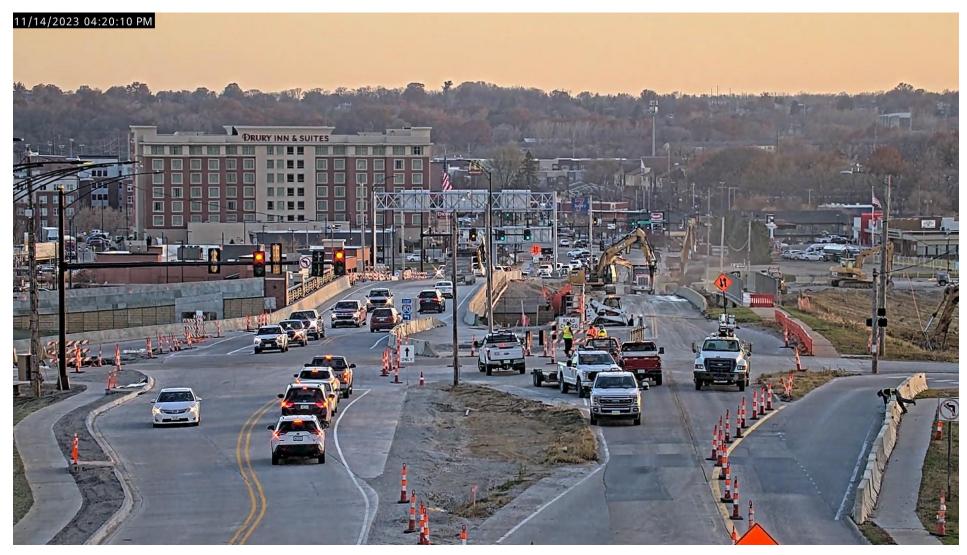
EB-Off Ramp monitoring



Tuesday 11/14/2023 – 1:25 PM

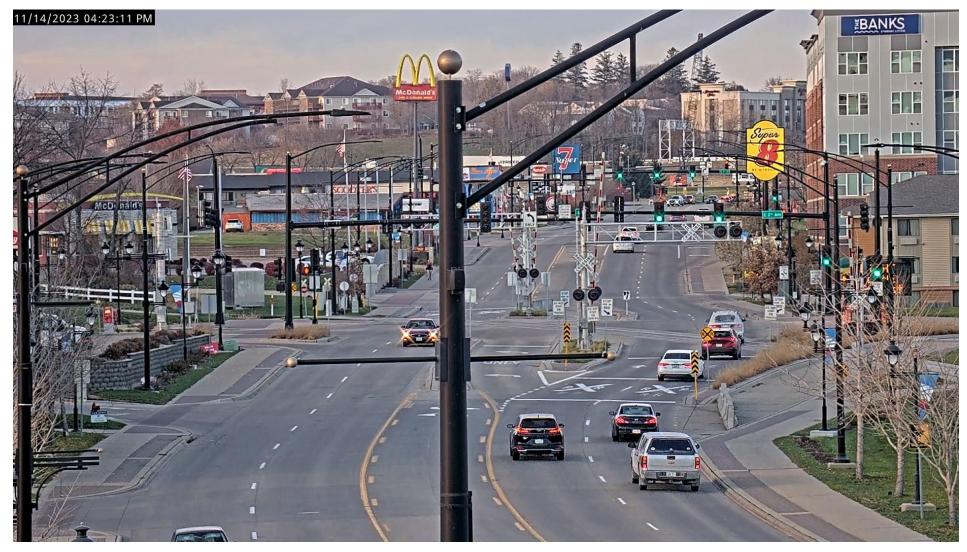
Surprising number of pedestrians/bicyclist Signal Timing Progression Impacts





Tuesday 11/14/2023 – 4:20 PM Removal of West Bridge!!





Tuesday 11/14/2023 – 4:23 PM Advantage of PTZ Coverage





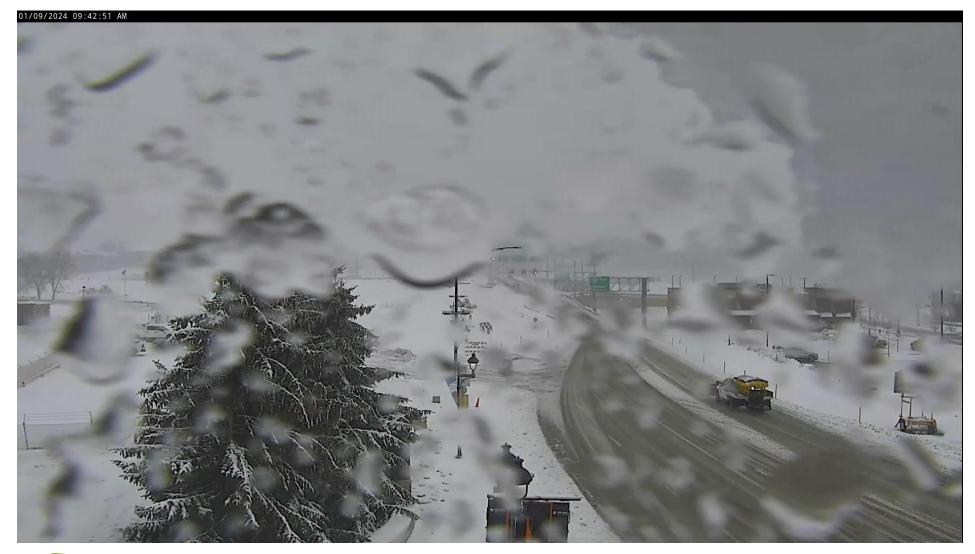
Friday 12/22/2023 – 10:52 AM
Off- Ramp Queueing Primary Focus





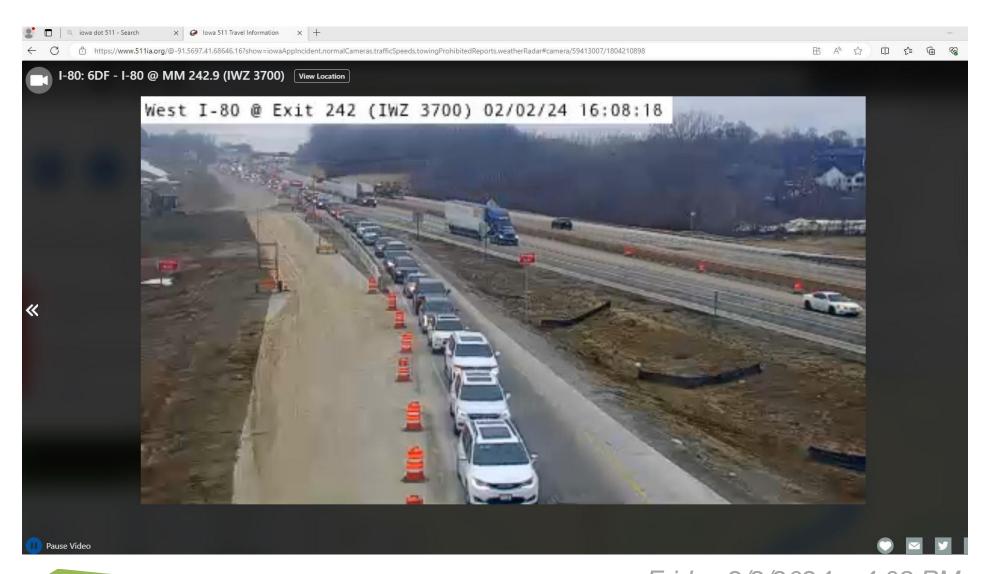
Tuesday 1/9/2024 – 11:55 AM Weather happens....





Tuesday 1/9/2024 – 9:42 AM Covered cameras when you need them...



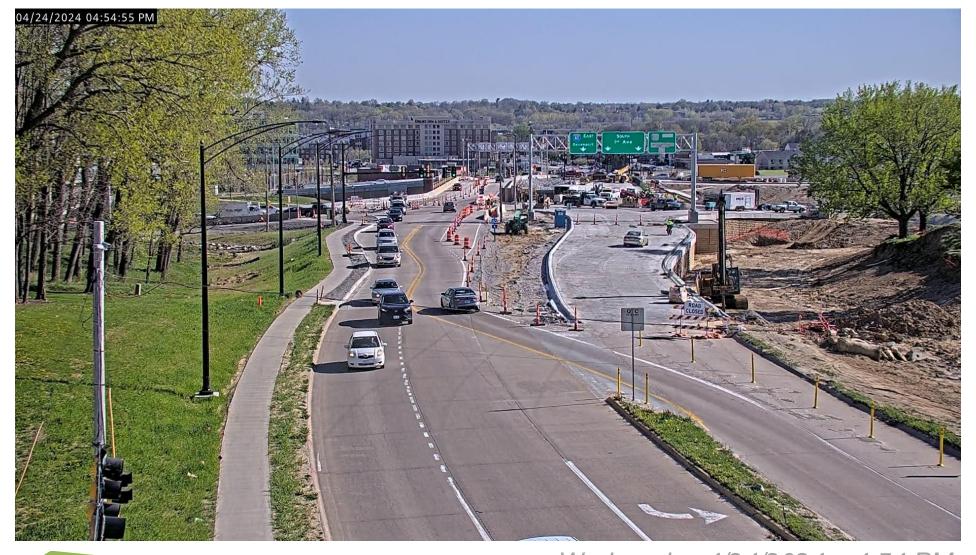




Friday 2/2/2024 – 4:08 PM

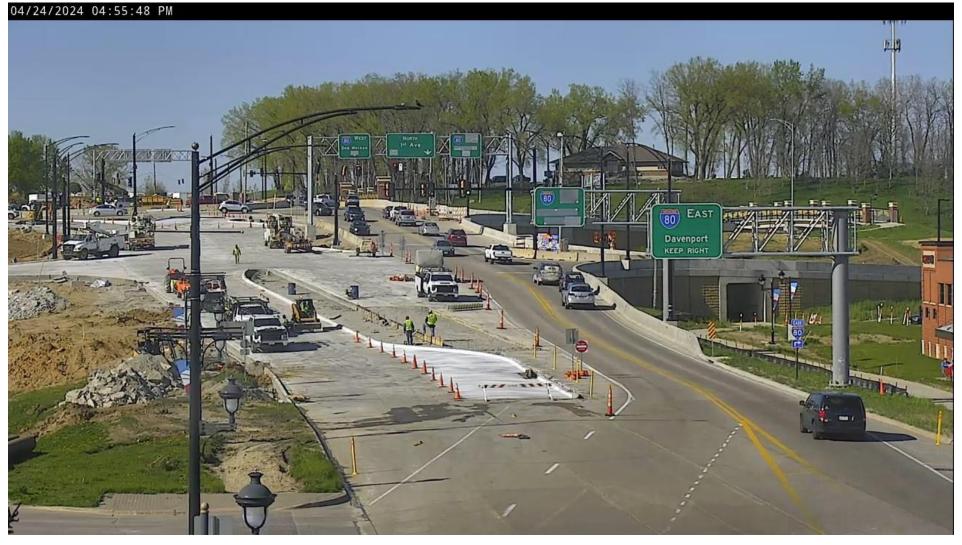
Friday – PM Events Trend

State Events at Arena



Wednesday 4/24/2024 – 4:54 PM Recent Photo





Wednesday 4/24/2024 – 4:55 PM Recent Photo













#### Communication with Public

Iowa DOT & City of Coralville partner to successfully reach stakeholders:

Online

Social

- Residents
- Commuters
- Businesses

- **CORALVILLE**
- U of Iowa Community
  - Visitors
  - **Athletics**
  - Hospitals & Clinics
  - **Special Events**







#### Keys to Success

- Strong partnership between Coralville, Iowa DOT, consultants, and contractors
- Adaptability to challenges
- Ongoing public conversation during planning, design, and construction
- Planning ahead



#### I-80 Improvements and Benefits

- Reduced risk to traffic backups onto the interstate
- Grading and bridge clearance for a possible future 4<sup>th</sup> through lane on I-80
- Aesthetics to complement Iowa River Landing



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- Reduced risk to traffic backups onto the interstate
- Grading and bridge clearance for a possible future 4<sup>th</sup> through lane on I-80
- Aesthetics to complement Iowa River Landing



# Coralville I-80 & 1<sup>st</sup> Avenue Diverging Diamond Interchange Project









# Questions





Tyler Wiles, PE, PTOE, LEED-AP Senior Project Manager HR Green, Inc. twiles@hrgreen.com (515) 657 - 5294



# Questions



https://www.youtube.com/watch?v=HZVCvfksFYw



### Safety Considerations





# Questions



Please contact Tyler Wiles, PE, PTOE, LEED-AP with any additional questions!

twiles@hrgreen.com





#### **Partners**

Work together to apply for BUILD Grant



