

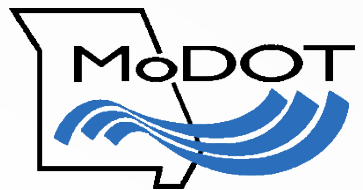


# JEFFERSON AVENUE | 22<sup>ND</sup> STREET

## A NEW GATEWAY

### *(PART 2)*

MARCH 15<sup>TH</sup>, 2024



# TODAY'S TOPICS

- Aaron Groff, PE - MoDOT
- Jeff Smith, PE - HNTB Corp.
  
- Project Overview
- Design & Construction Challenges





# PROJECT GOALS

- Improve Structurally Deficient Bridges
- Congestion Mitigation
- Improve Interstate Access Points from I-64 to Downtown St. Louis

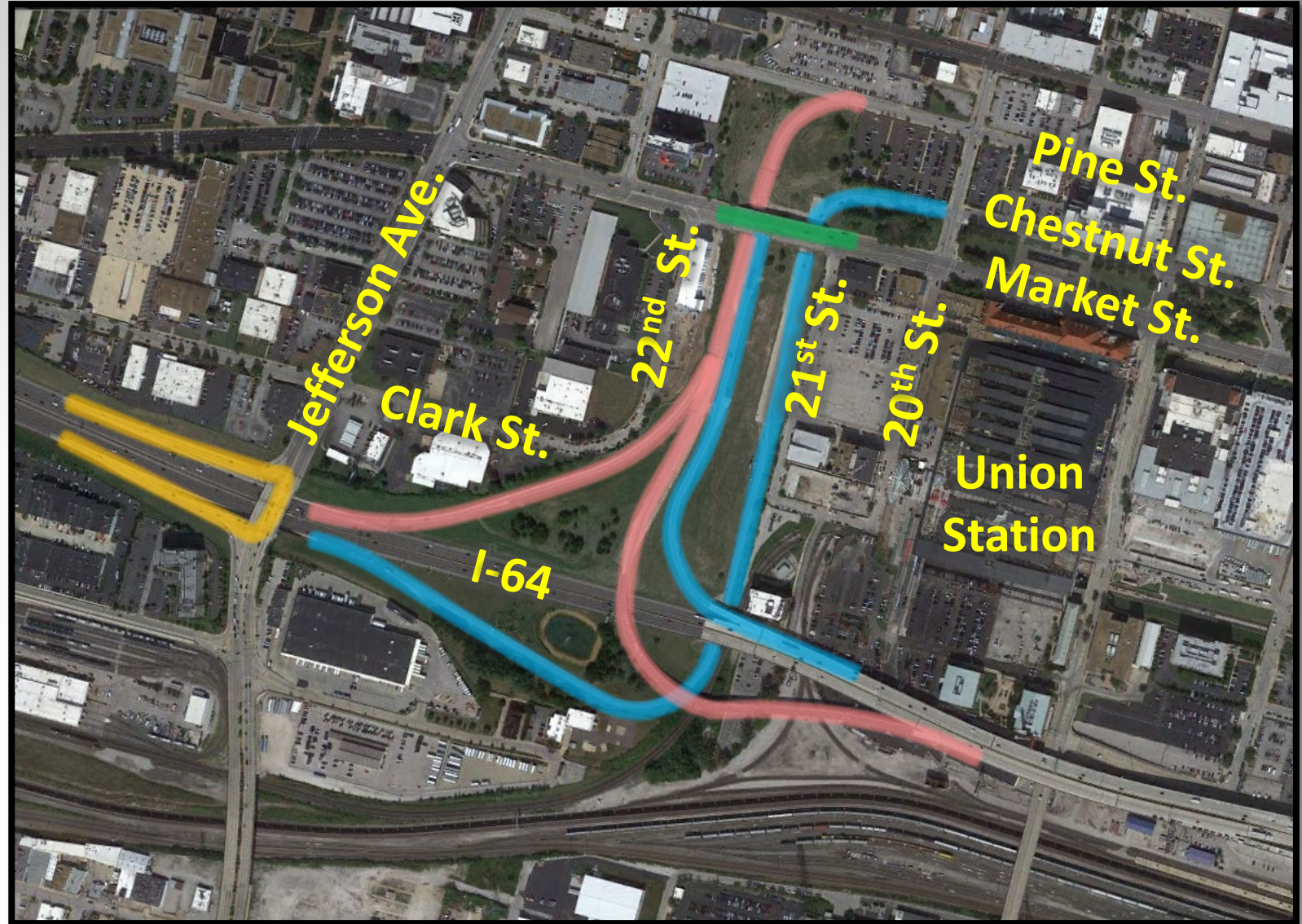




# PROJECT OVERVIEW

## DOWNTOWN WEST

- Half Diamond at Jefferson
- Ramps to Chestnut and Market
- Ramps from Pine St.
- Market Bridge

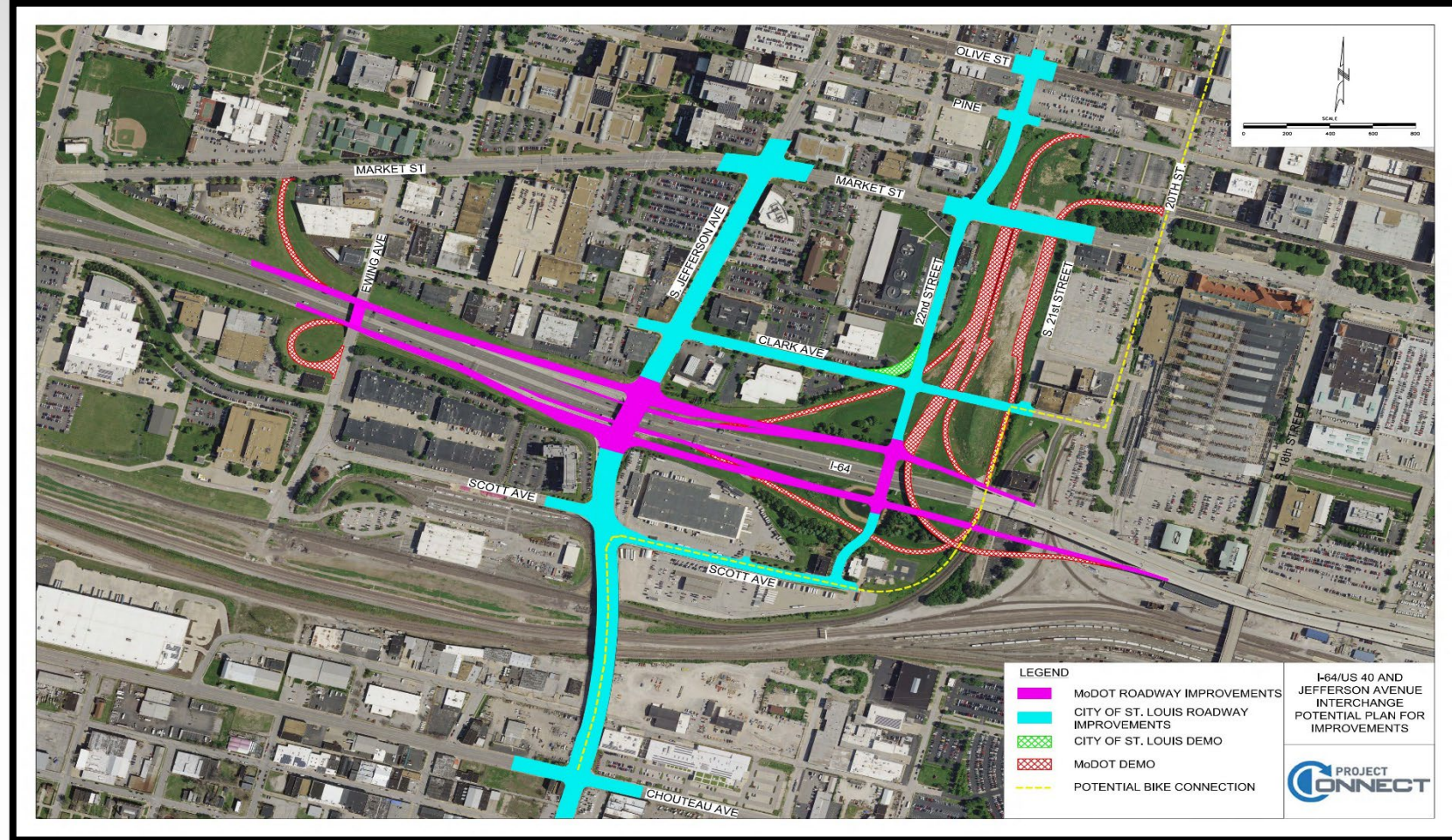




# PROJECT OVERVIEW

## NEW DOWNTOWN WEST

- MoDOT Demo
- MoDOT Interchange Improvements
- St. Louis City Street Grid Improvements
- St. Louis City Demo

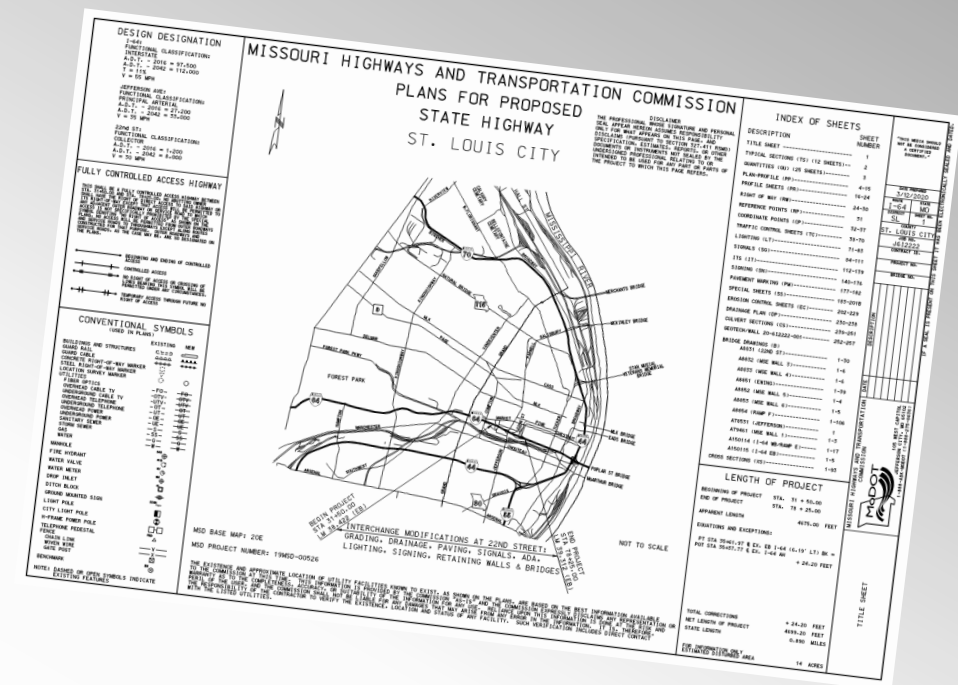




# PROJECT OVERVIEW

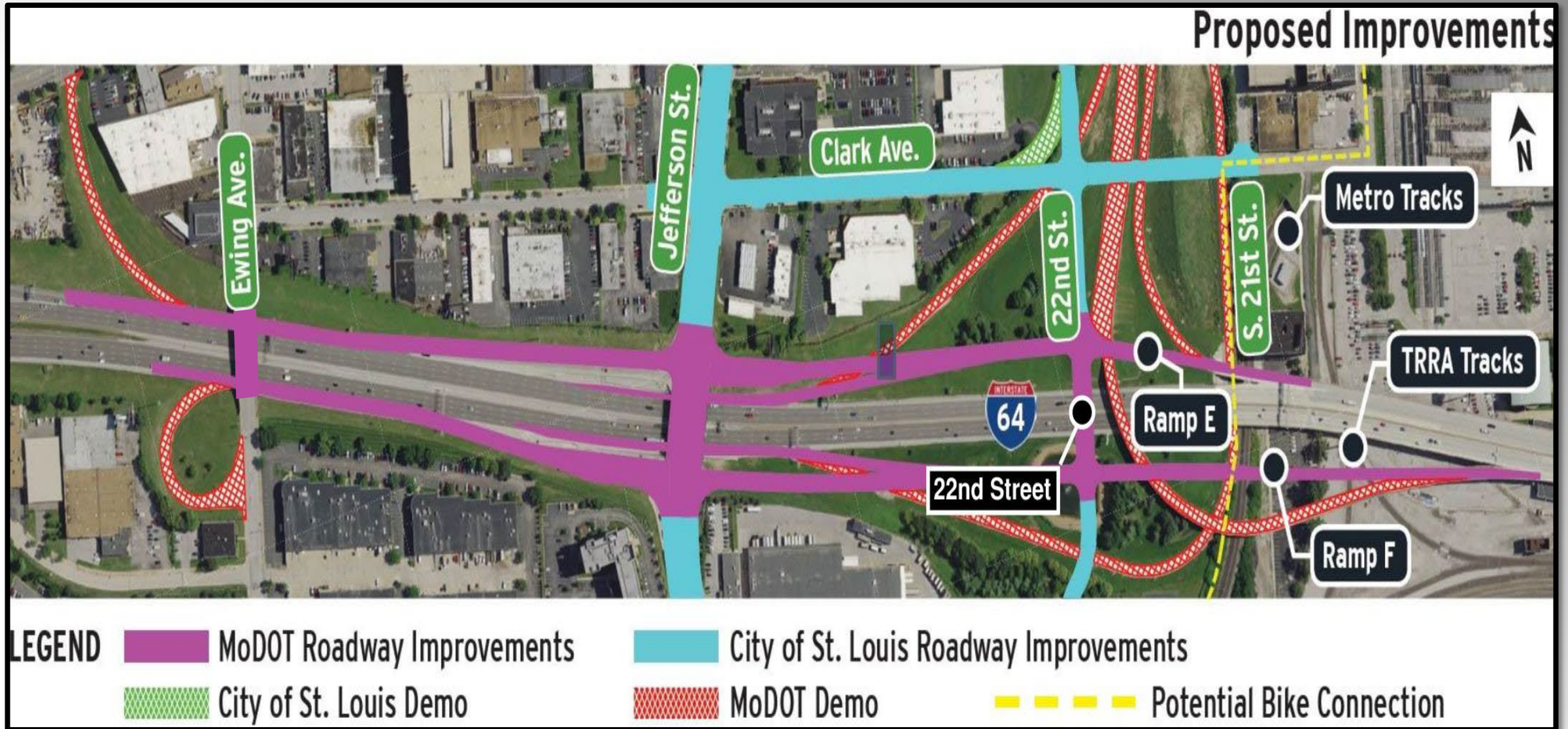
## DESIGN / BUDGET / TIMELINE

- MoDOT -- HNTB -- ABNA Eng. -- TSi Geotechnology
- Construction Budget = \$25.4 mil --- Design Estimate = \$24.7 mil
- Cost-Share bt. MoDOT & City of SL (\$11.6 mil)
- Plans Submitted March 13<sup>th</sup>, 2020
  - April 9<sup>th</sup>, 2020 --- Advertised
  - May 15<sup>th</sup>, 2020 --- Letting
  - Beginning of the Pandemic
- Awarded to KCI --- \$24.4 mil
- Completion Date = June 1<sup>st</sup>, 2022
- Revised Date = Dec. 31<sup>st</sup>, 2022



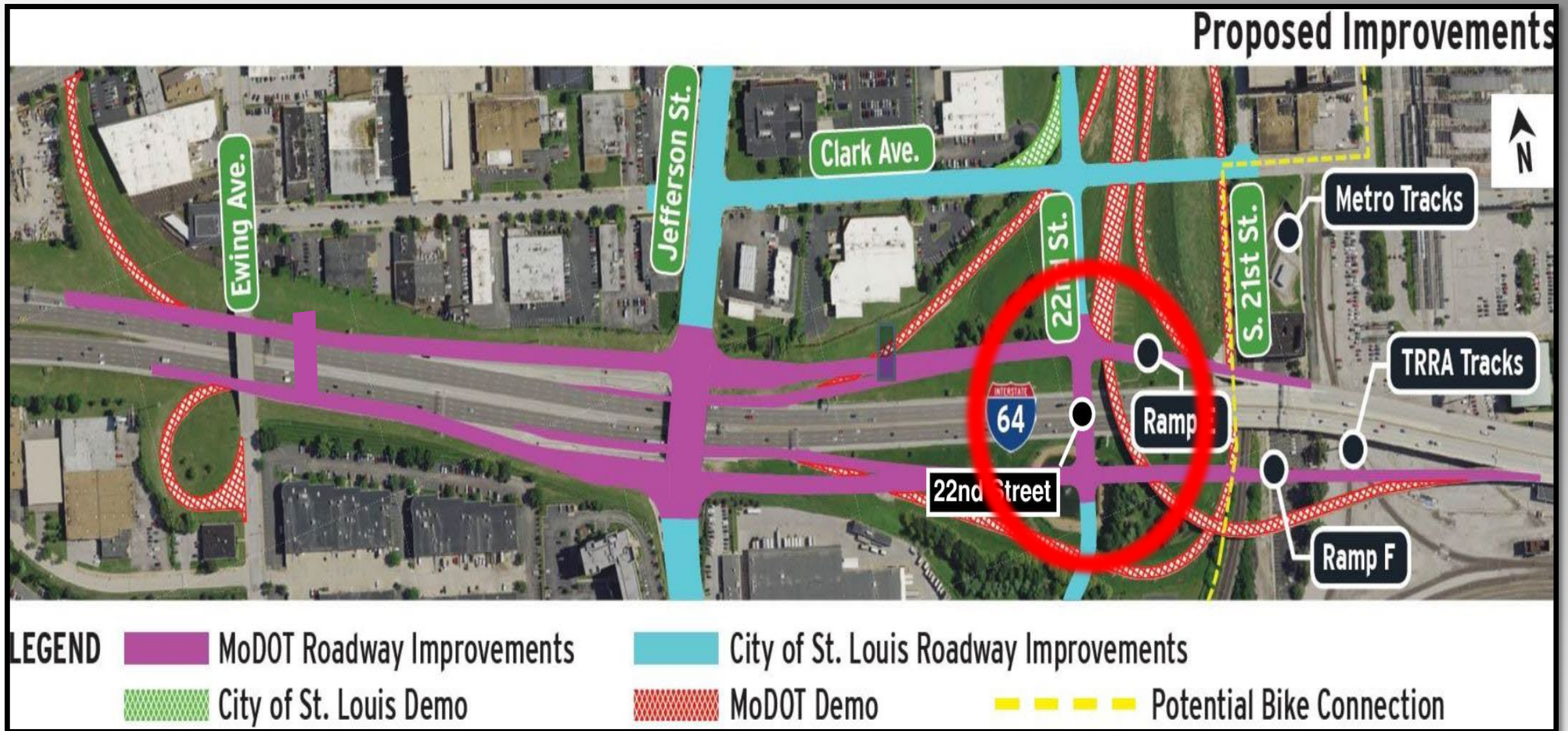


# PROJECT COMPONENTS





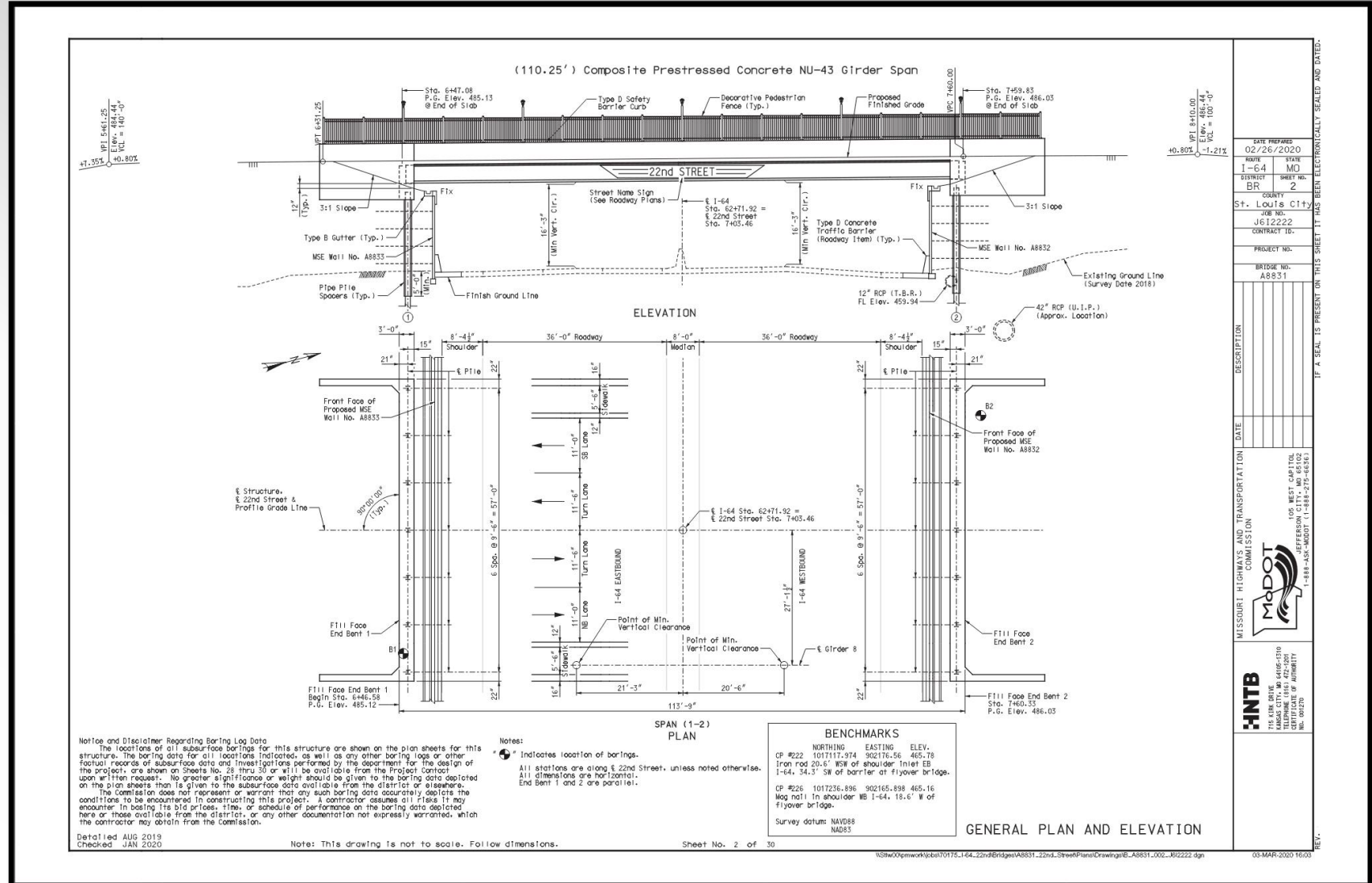
# 22<sup>ND</sup> STREET BRIDGE





# 22<sup>ND</sup> STREET OVER I-64

## ORIGINAL CONCEPT



# 22<sup>ND</sup> STREET OVER I-64

## BORING LOGS

**TSI** Missouri Department of Transportation  
Construction and Materials

**BORING NO. W4-1**  
Page 1 of 2

Job No.: 20191028.00 County: St. Louis Route: I-64  
 Design: Skew: Location: Jefferson Avenue, 22nd Street and Ewing Brick  
 Bent: Logged By: JAB Operator: R. Kelly  
 Station: 1017115.398 Date of Work: 08/06/19-08/06/19  
 Offset: 901812.7948 Easting: 901812.7948 Depth to Water: 12.0  
 Elevation: 461.5 Requested Northing: 1017206 Depth Hole Open: 39.5  
 Requested Station: Requested Easting: 901895.4 Time Change: 0 hours  
 Requested Offset: Equipment: CME 550 Split-Spoon Sampler, Shelby Tube  
 Requested Elevation: Location Note: Hammer Efficiency: 90% Drilling Method: HSA

Depth (ft)	Description	Elevation (ft)	Sample Type	REC % (RDC %)	Blow Counts (N <sub>60</sub> )	Shear Data	Field Tests	Index Tests
0	0.0-2.5' (CL) FILL: Brown, dry, LEAN CLAY, some gravel, little brick chips	460		89	5-5 (15)		PP = 4.50 tat	
2.5	2.5-4.5' (CL) Brown, moist, very stiff, LEAN CLAY	458		100			PP = 2.25 tat	
4.5	4.5-8.0' (CL) Brown, moist, firm, LEAN CLAY	455		100	2-1-3 (6)		PP = 0.75 tat	
8.0	8.0-11.5' (CL) Brown, moist, stiff, LEAN CLAY	452		100	2-2-3 (7)	Qu Test Results UCS = 3.20 tat	PP = 0.75 tat	LL = 32 PL = 21 MC = 26.1%
11.5	11.5-13.0' (CL) Brown, moist, firm, LEAN CLAY	450		92			PP = 1.50 tat	
13.0	13.0-16.8' (CL) Brown, moist, stiff, LEAN CLAY	447		100	2-2-3 (7)		PP = 1.00 tat	
16.8	16.8-26.8' (CL) Brown, very moist, soft, LEAN CLAY	445		100			PP = 2.00 tat	LL = 42 PL = 18
26.8	26.8-36.8' (CH) Gray and brown, moist, soft, FAT CLAY	440		100	1-1-2 (4)		PP = 0.75 tat	
36.8	36.8-39.5' (CH) Gray, very moist, very stiff, FAT CLAY, little gravel	435		100	1-2-2 (6)		PP = 1.25 tat	
39.5	Bottom of borehole at 39.5 feet.	430		100	1-1-2 (4)		PP = 2.00 tat	
		430		100	1-1-2 (4)		PP = 1.50 tat	

N<sub>60</sub> = (Em/60)N<sub>60</sub> - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; N<sub>60</sub> - Observed N-value (1) = Assumed, (2) = Actual  
 Coordinate System: \_\_\_\_\_ Coordinate Zone: \_\_\_\_\_ Coordinate Proj. Factor: \_\_\_\_\_  
 Coordinate Datum: \_\_\_\_\_ Coordinate Units: U.S. Survey Feet

\* Persons using this information are cautioned that the materials shown are determined by the equipment noted and accuracy of the "log of materials" is limited thereby and by judgement of the operator. THIS INFORMATION IS FOR DESIGN PURPOSES ONLY.

**TSI** Missouri Department of Transportation  
Construction and Materials

**BORING NO. W4-1**  
Page 2 of 2

Job No.: 20191028.00 County: St. Louis Route: I-64  
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 Elevation: 461.5 Requested Northing: 1017206 Depth Hole Open: 39.5  
 Requested Station: Requested Easting: 901895.4 Time Change: 0 hours  
 Requested Offset: Equipment: CME 550 Split-Spoon Sampler, Shelby Tube  
 Requested Elevation: Location Note: Hammer Efficiency: 90% Drilling Method: HSA

Depth (ft)	Description	Elevation (ft)	Sample Type	REC % (RDC %)	Blow Counts (N <sub>60</sub> )	Shear Data	Field Tests	Index Tests
35	26.8-36.8' (CH) Gray and brown, moist, soft, FAT CLAY (continued)	425						
	36.8-39.5' (CH) Gray, very moist, very stiff, FAT CLAY, little gravel			100			PP = 3.50 tat	
	Bottom of borehole at 39.5 feet.							

N<sub>60</sub> = (Em/60)N<sub>60</sub> - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; N<sub>60</sub> - Observed N-value (1) = Assumed, (2) = Actual  
 Coordinate System: \_\_\_\_\_ Coordinate Zone: \_\_\_\_\_ Coordinate Proj. Factor: \_\_\_\_\_  
 Coordinate Datum: \_\_\_\_\_ Coordinate Units: U.S. Survey Feet

\* Persons using this information are cautioned that the materials shown are determined by the equipment noted and accuracy of the "log of materials" is limited thereby and by judgement of the operator. THIS INFORMATION IS FOR DESIGN PURPOSES ONLY.

Note: For locations of borings, see Sheet No. 1.

**BORING DATA (1 OF 2)**


Detailed NOV 2019  
Checked JAN 2020

Note: This drawing is not to scale. Follow dimensions.

Sheet No. 5 of 6

W:\Stw00\pwork\job\01715-1-64-22ndErligeA8833-MSE-Wat\_SouthPlane\Drawings\B8833\_005\_061222.dgn

26-FEB-2020 11:59

DATE PREPARED: 02/26/2020  
 ROUTE: I-64 STATE: MO  
 DISTRICT: BR SHEET NO.: 5  
 COUNTY: ST. LOUIS CITY  
 JOB NO.: J1612222  
 CONTRACT ID: \_\_\_\_\_  
 PROJECT NO.: \_\_\_\_\_  
 BRIDGE NO.: A8833  
 MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
  
 MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
 105 WEST CAPITOL  
 JEFFERSON CITY, MO 64102  
 1-888-688-6800 T-888-242-6800  
 HNTB  
 MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
 105 WEST CAPITOL  
 JEFFERSON CITY, MO 64102  
 1-888-688-6800 T-888-242-6800



# 22<sup>ND</sup> STREET OVER I-64

## LAKE CHOUTEAU





# 22<sup>ND</sup> STREET OVER I-64

LAKE CHOUTEAU -1851





# 22<sup>ND</sup> STREET OVER I-64

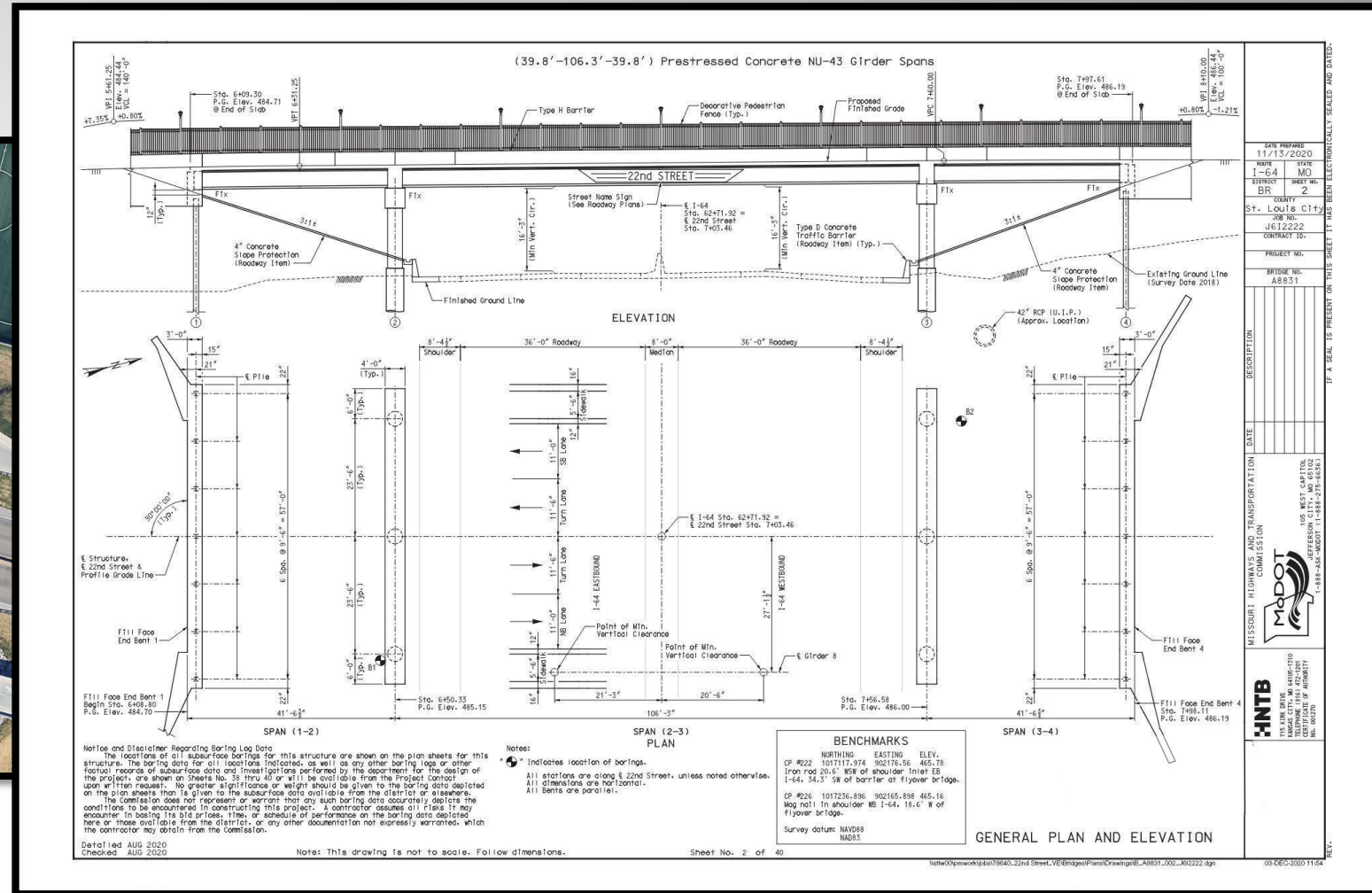
~~Lake Chouteau -1854~~





# 22<sup>ND</sup> STREET OVER I-64

## VALUE-ENGINEERED SOLUTION









# 22<sup>ND</sup> STREET OVER I-64

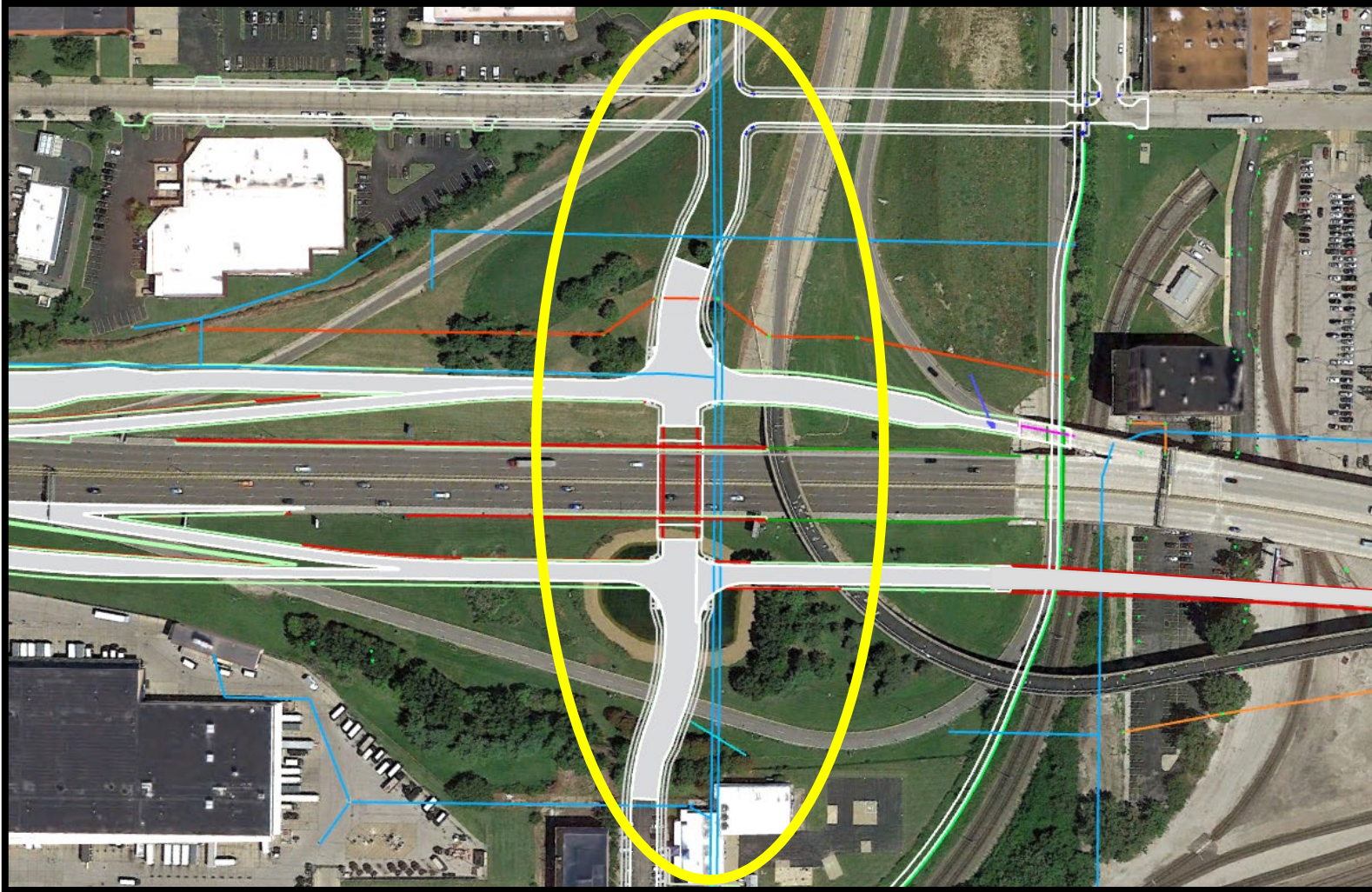
- **AS-BUILT AERIAL**





# ROADWAY ALIGNMENT RESTRICTIONS

## 22<sup>ND</sup> ST. / MSD SEWER

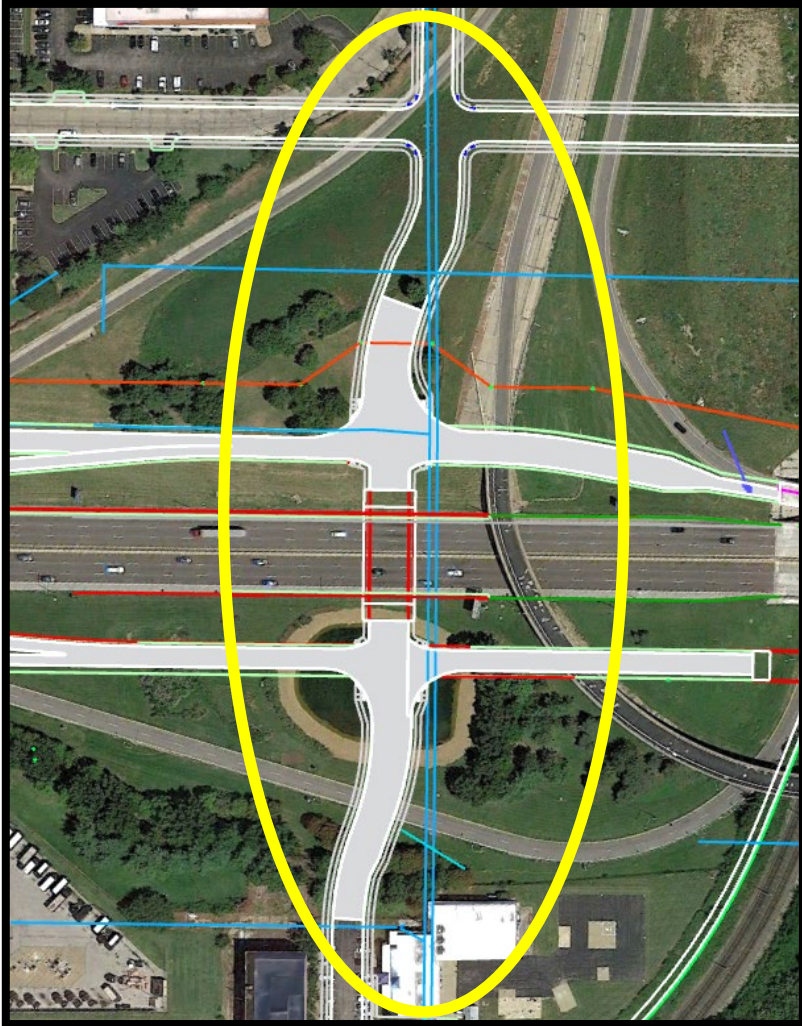


- 22<sup>nd</sup> St. Alignment Adjusted
- MSD Brick Sewer Conflict

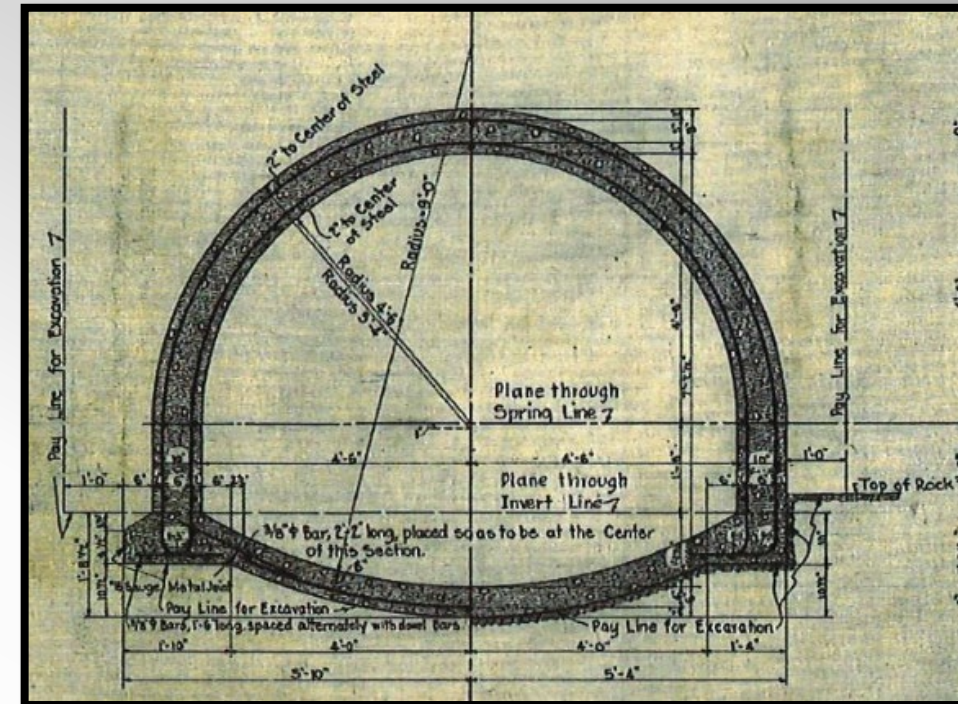


# ROADWAY ALIGNMENT RESTRICTIONS

## 22<sup>ND</sup> ST. / MSD SEWER



- 22<sup>nd</sup> St. Alignment Adjusted
- MSD Brick Sewer Conflict
- 9' Brick Sewer
- Ex. Ramp Soil Surcharged
- Light Weight Fill





# 22<sup>ND</sup> STREET OVER I-64

- CONSTRUCTION PHOTOS





# 22<sup>ND</sup> STREET OVER I-64

- COMPLETED BRIDGE





# RIGHT OF WAY COORDINATION

## CITY OF ST. LOUIS / MLS

- **MoDOT's Excess R/W**
  - **22 Acres**
- **Sale of R/W to St. Louis Development Corp. (SLDC)**
  - **\$14 million**
- **Stockpile Dirt Mound**





# RIGHT OF WAY COORDINATION

## CITY OF ST. LOUIS / MLS

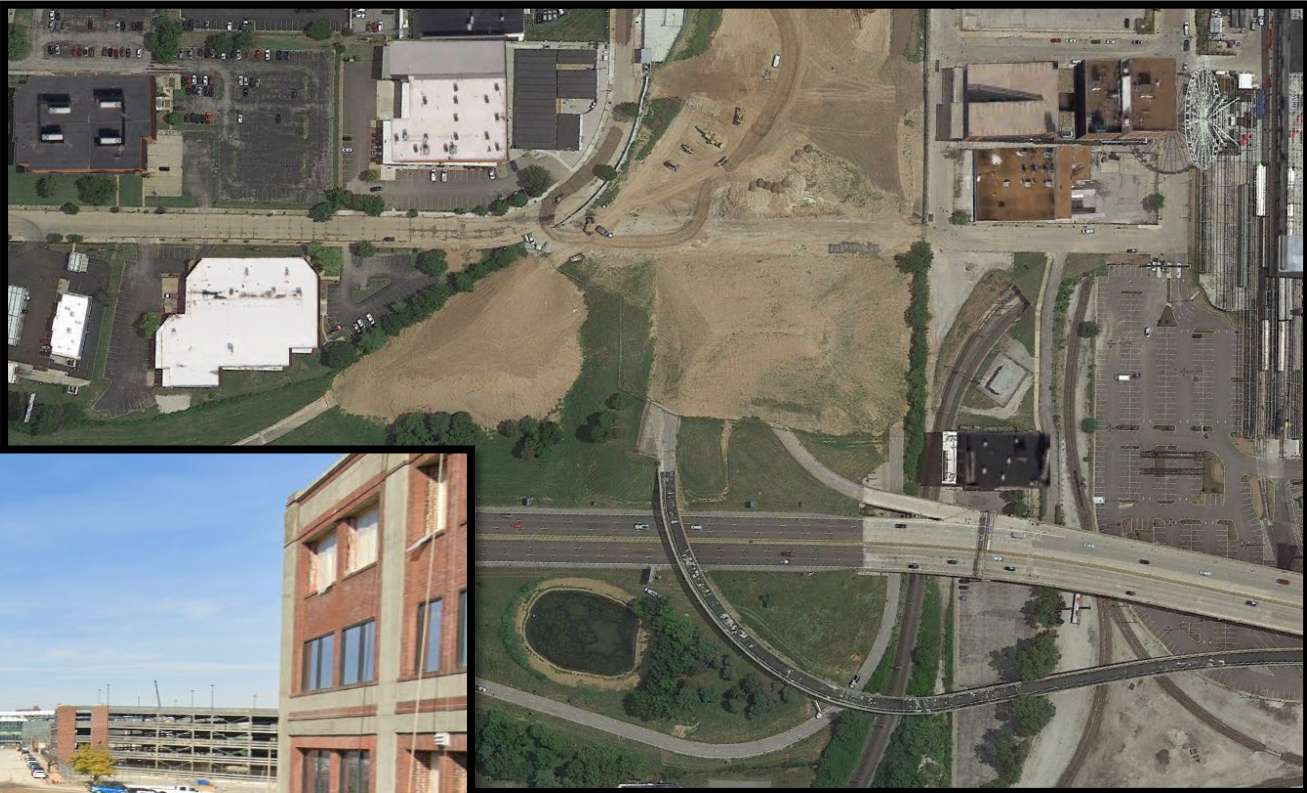
- Final R/W Line Set
- Sale of R/W Included:
  - 130,000 CY's of Dirt
  - TCE until Dec. 2021
- Construction Coordination
  - Dirt Removal / Survey





# RIGHT OF WAY COORDINATION

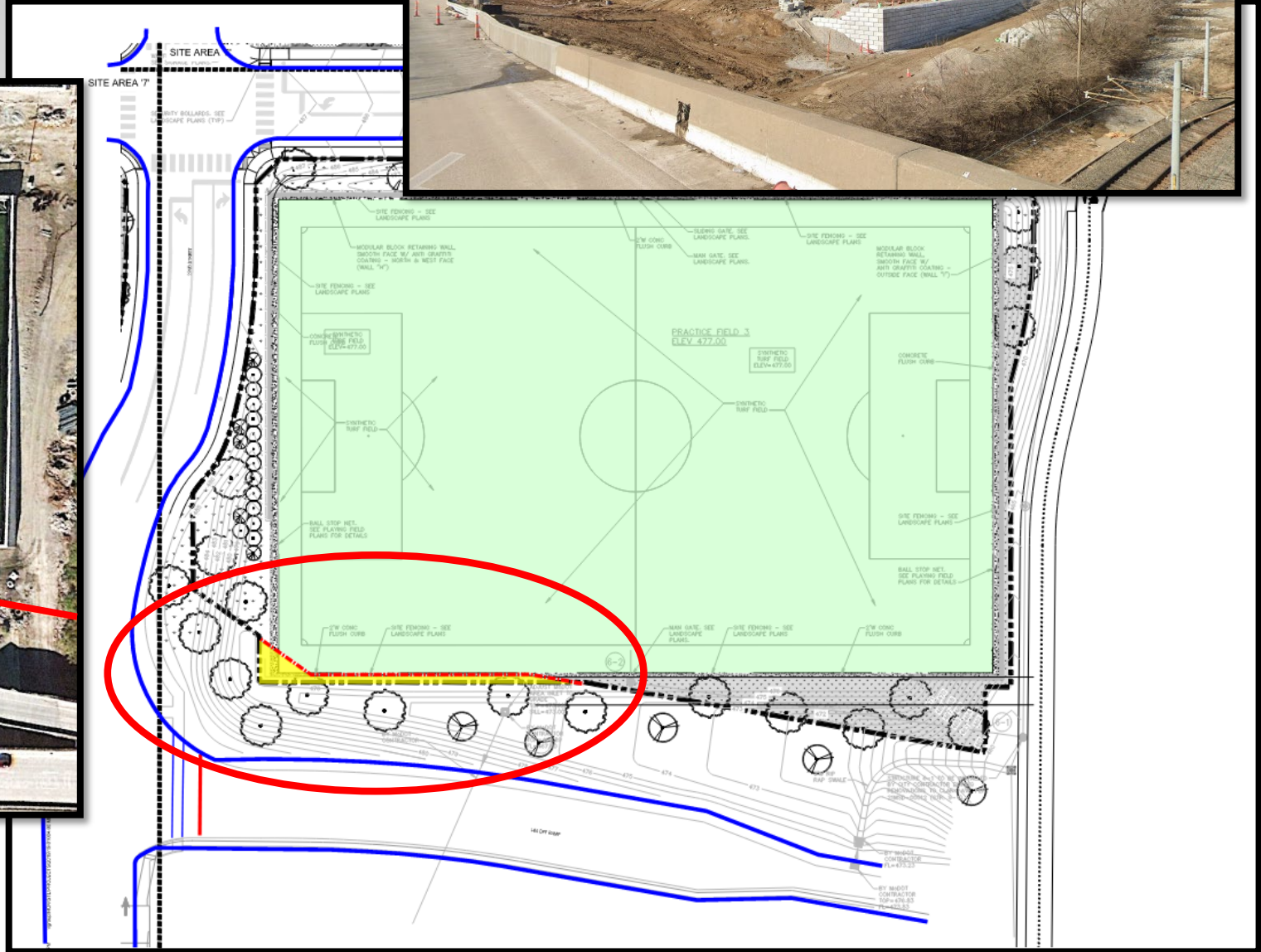
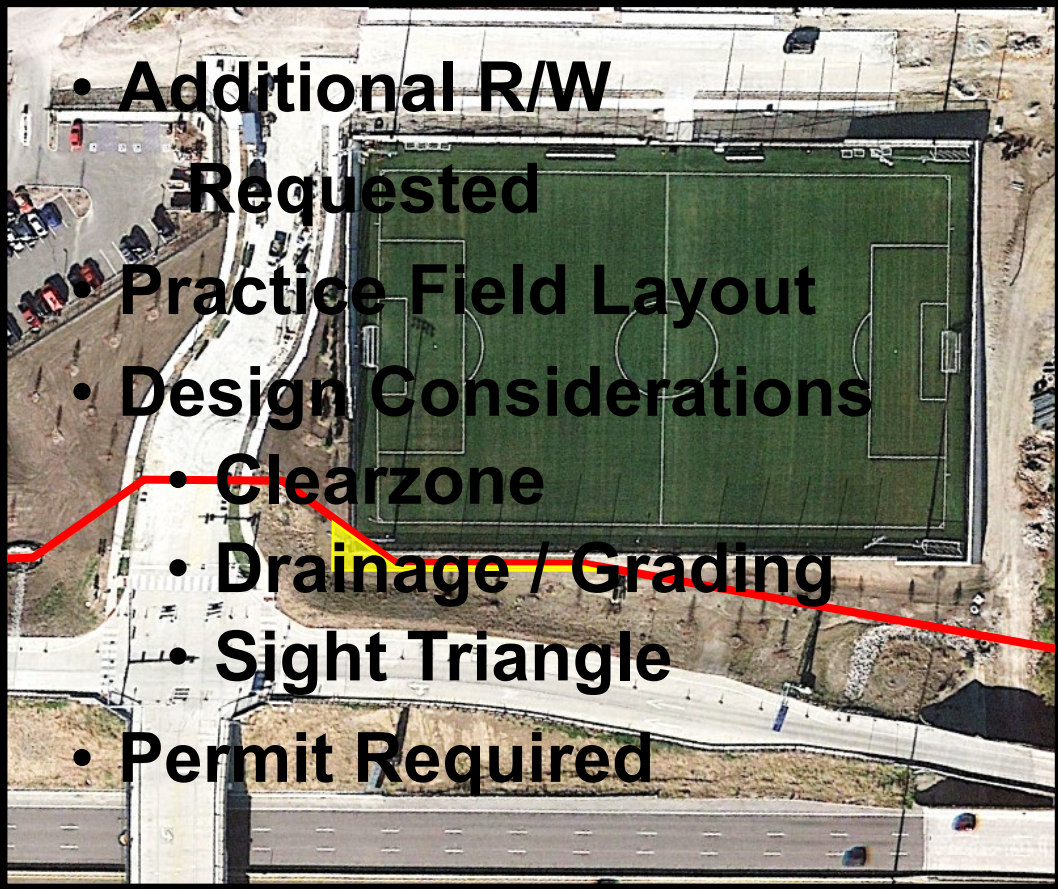
CITY OF ST. LOUIS / MLS





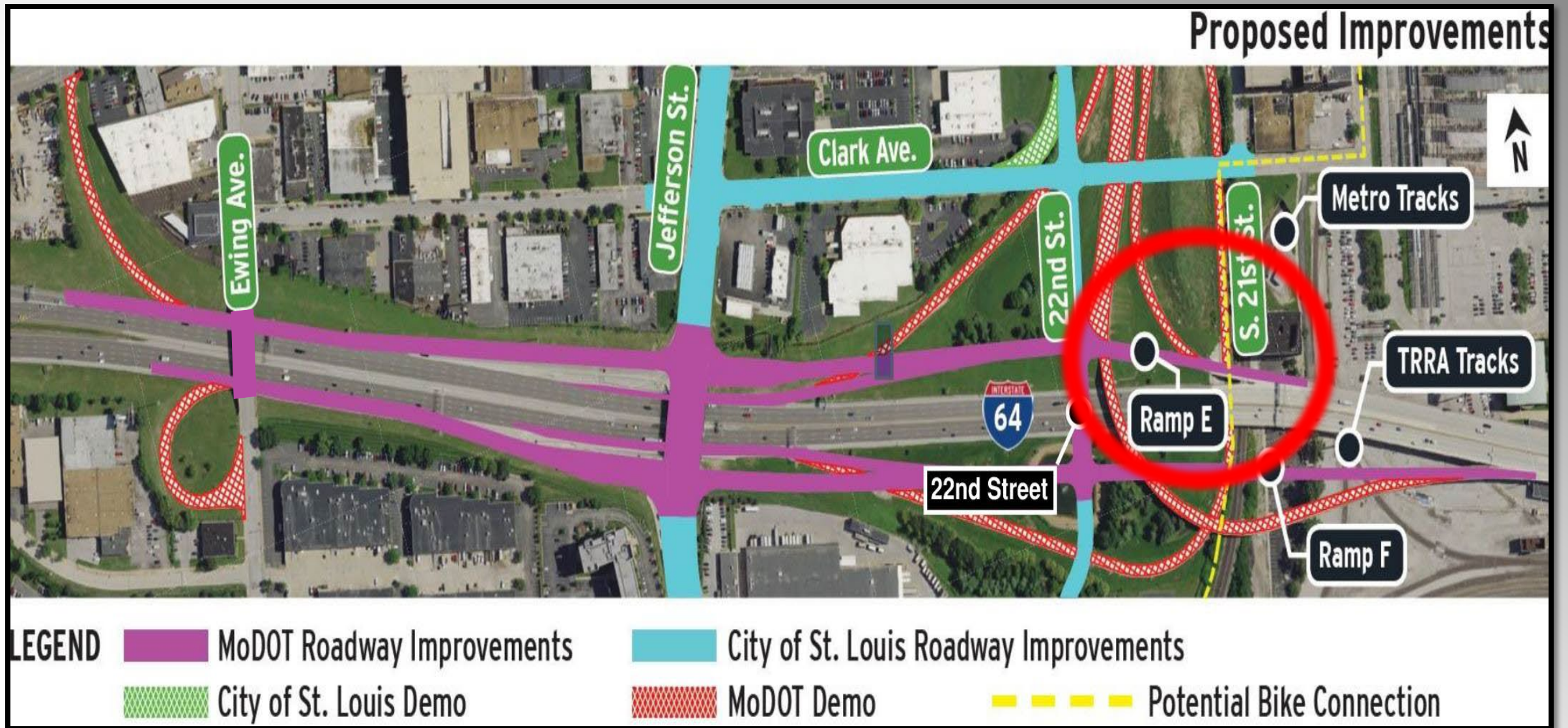
# RIGHT OF WAY COORDINATION

## CITY OF ST. LOUIS / MLS





# WB OFF RAMP E

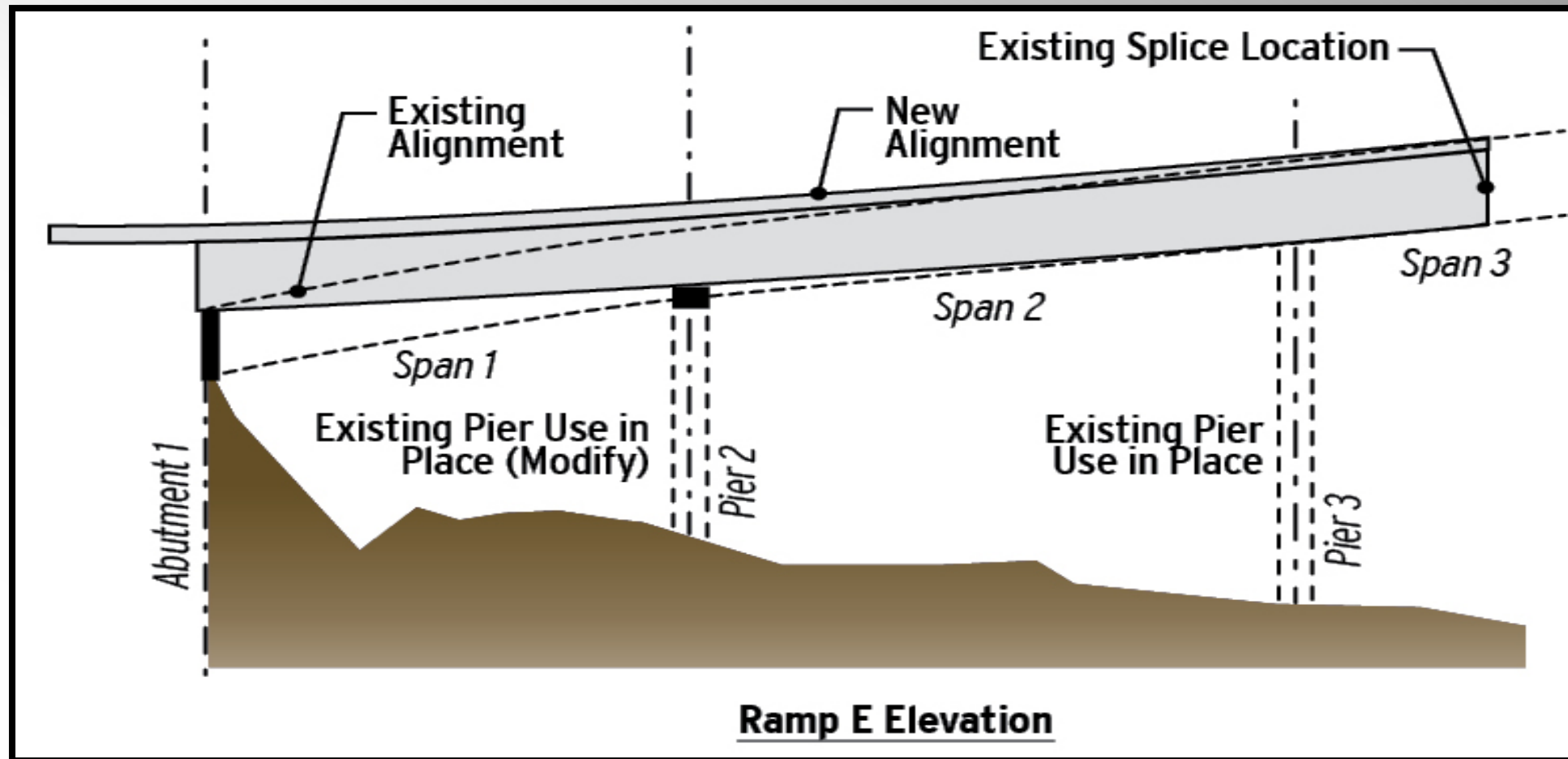




# WB OFF RAMP "E"

ALTERNATE PROPOSAL TO HEAT STRAIGHTEN

USED COMFORT CRITERIA FOR GRADE DESIGN





# WB OFF RAMP E

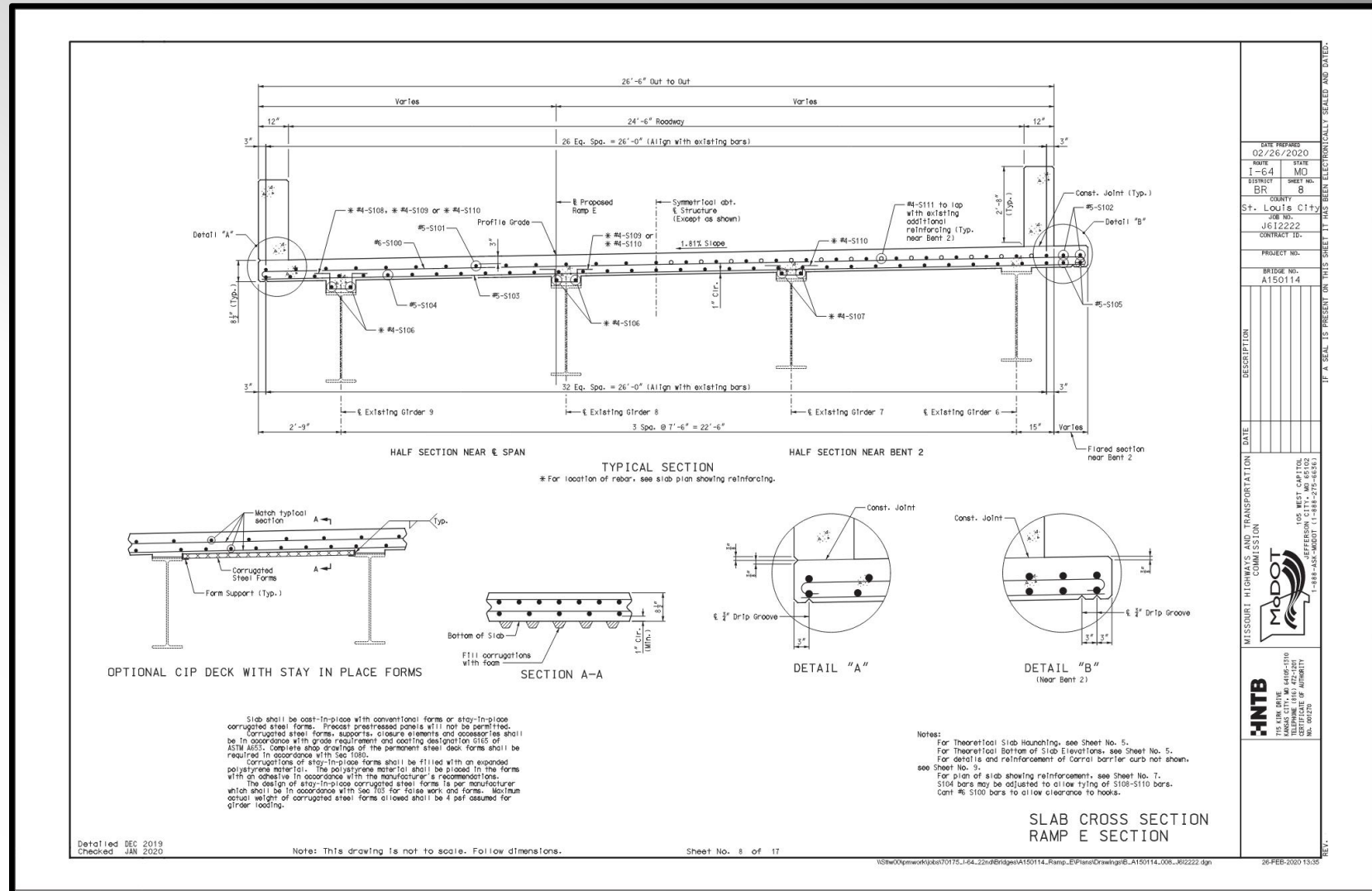
## CONSTRAINTS





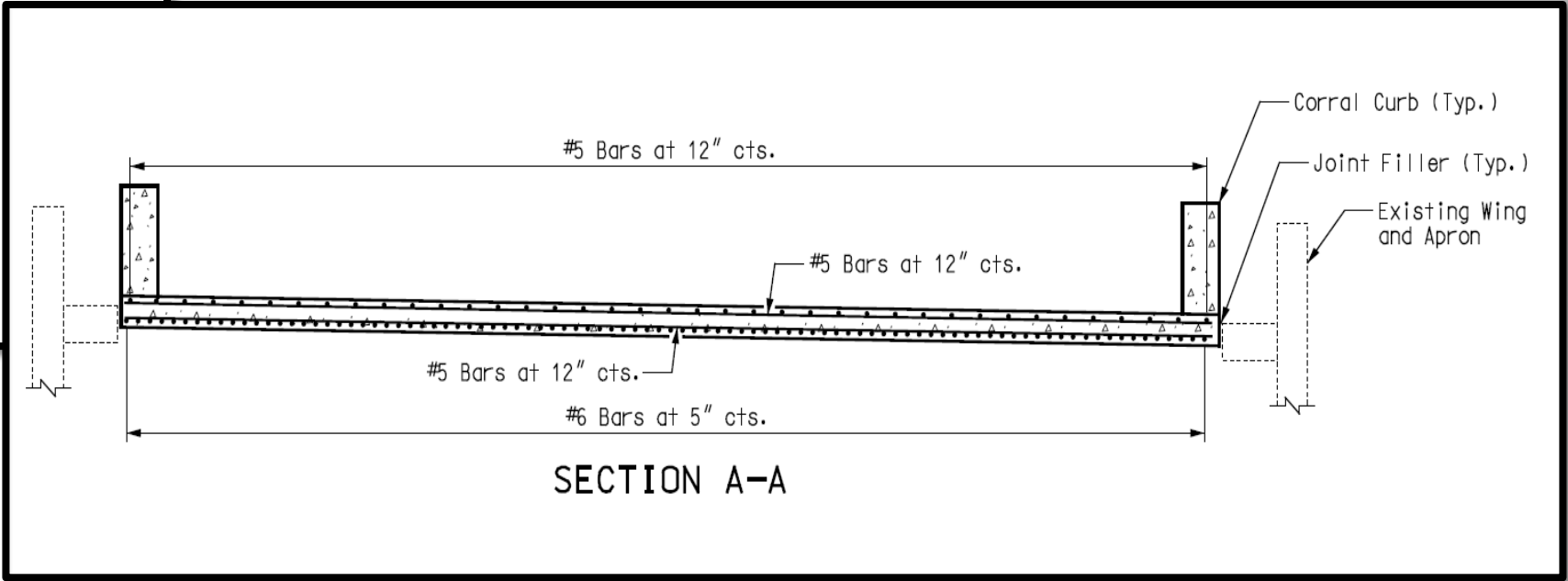
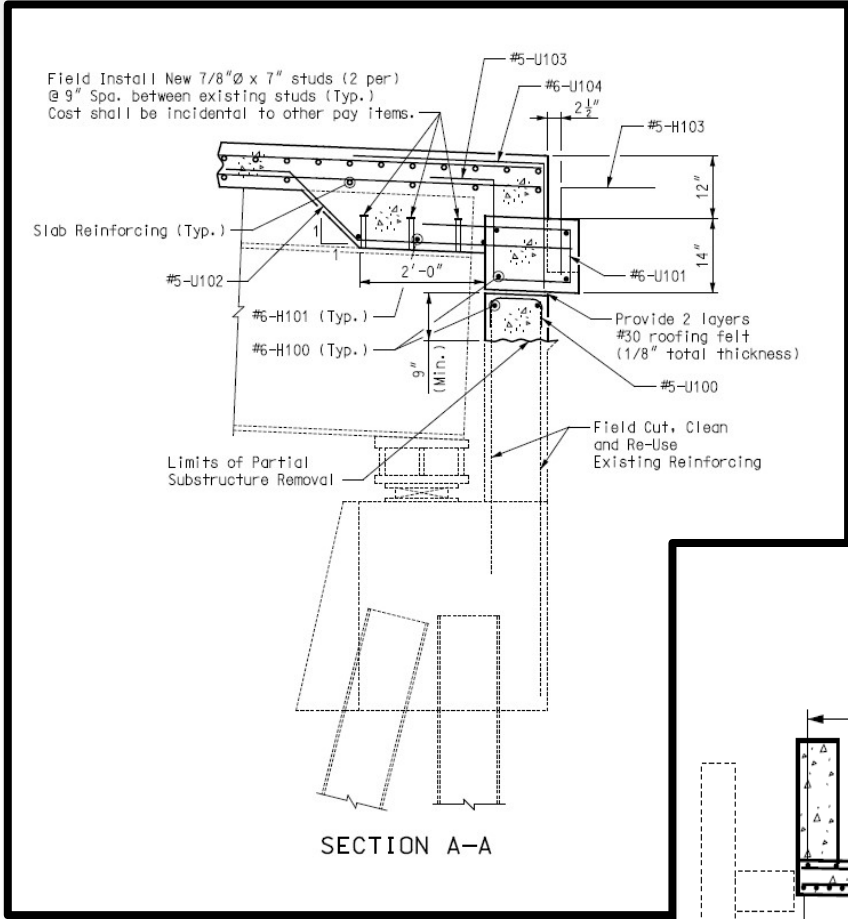
# WB Off Ramp E

## NEW SUPERELEVATION





# WB OFF RAMP E





# WB OFF RAMP E









# WB OFF RAMP E

## CONSTRUCTION PHOTOS

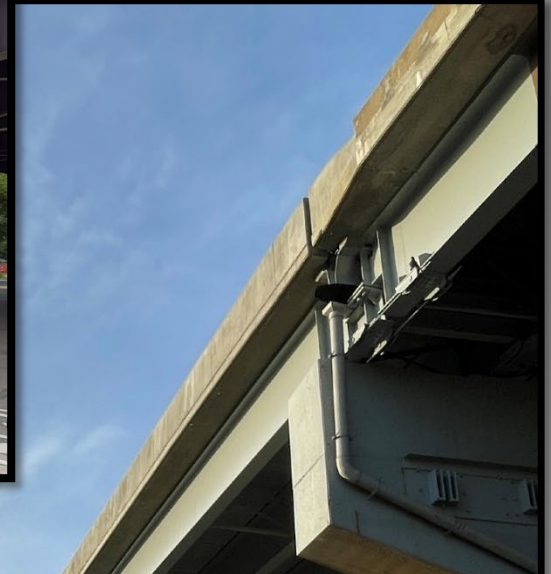




# RIGHT OF WAY

## ACCESS RESTRICTIONS

- I-64 Aerial Easements vs Right of Way

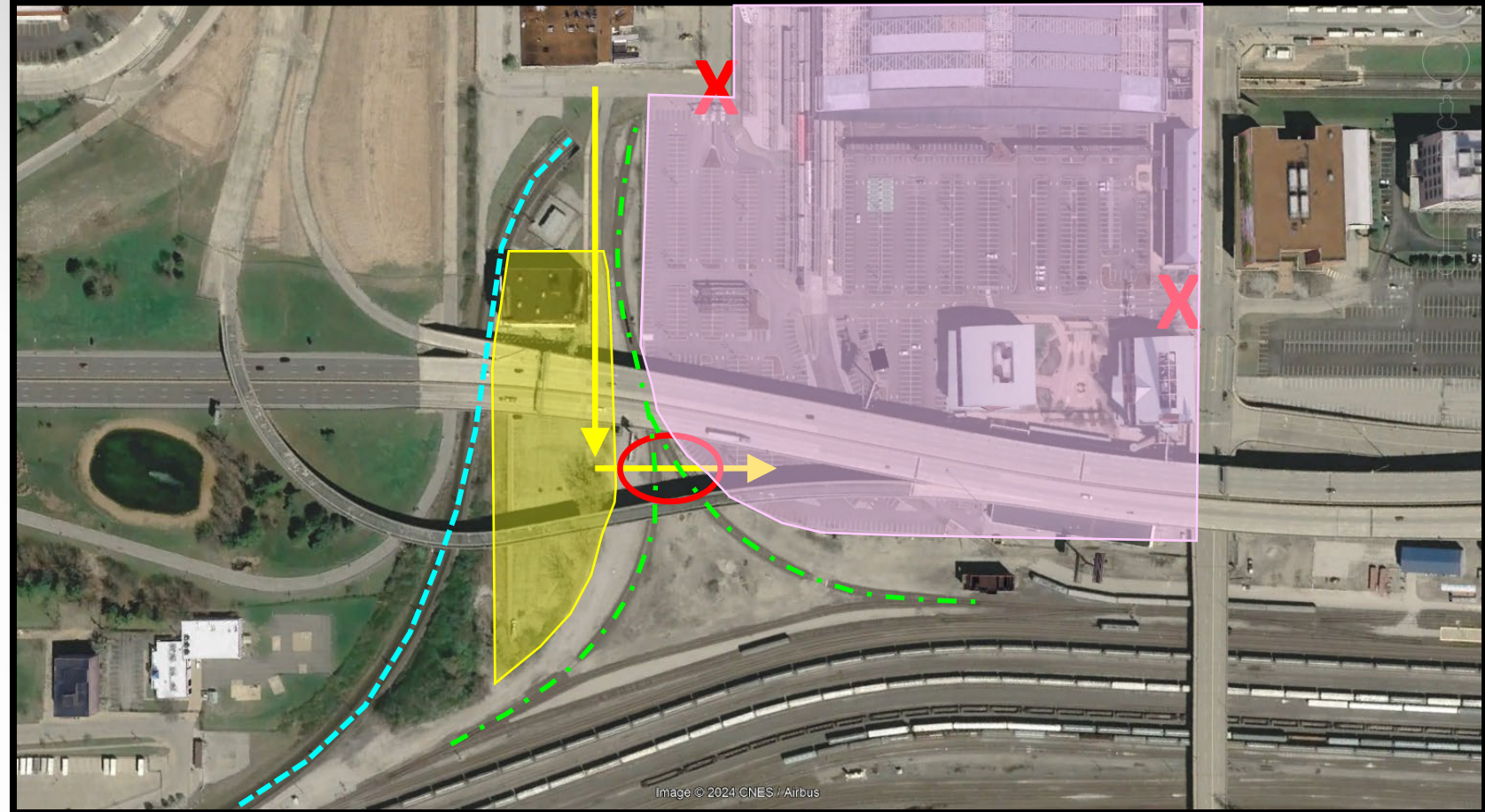




# RIGHT OF WAY

## ACCESS RESTRICTIONS

- Access Limitations
  - Aerial Esmt. Only
  - Metro Link
  - Amtrak Spur
  - Private Property
    - Union Station
    - Mr. Benhr
  - Amtrak Critical Path









# EASTBOUND ON-RAMP F

## Proposed Improvements

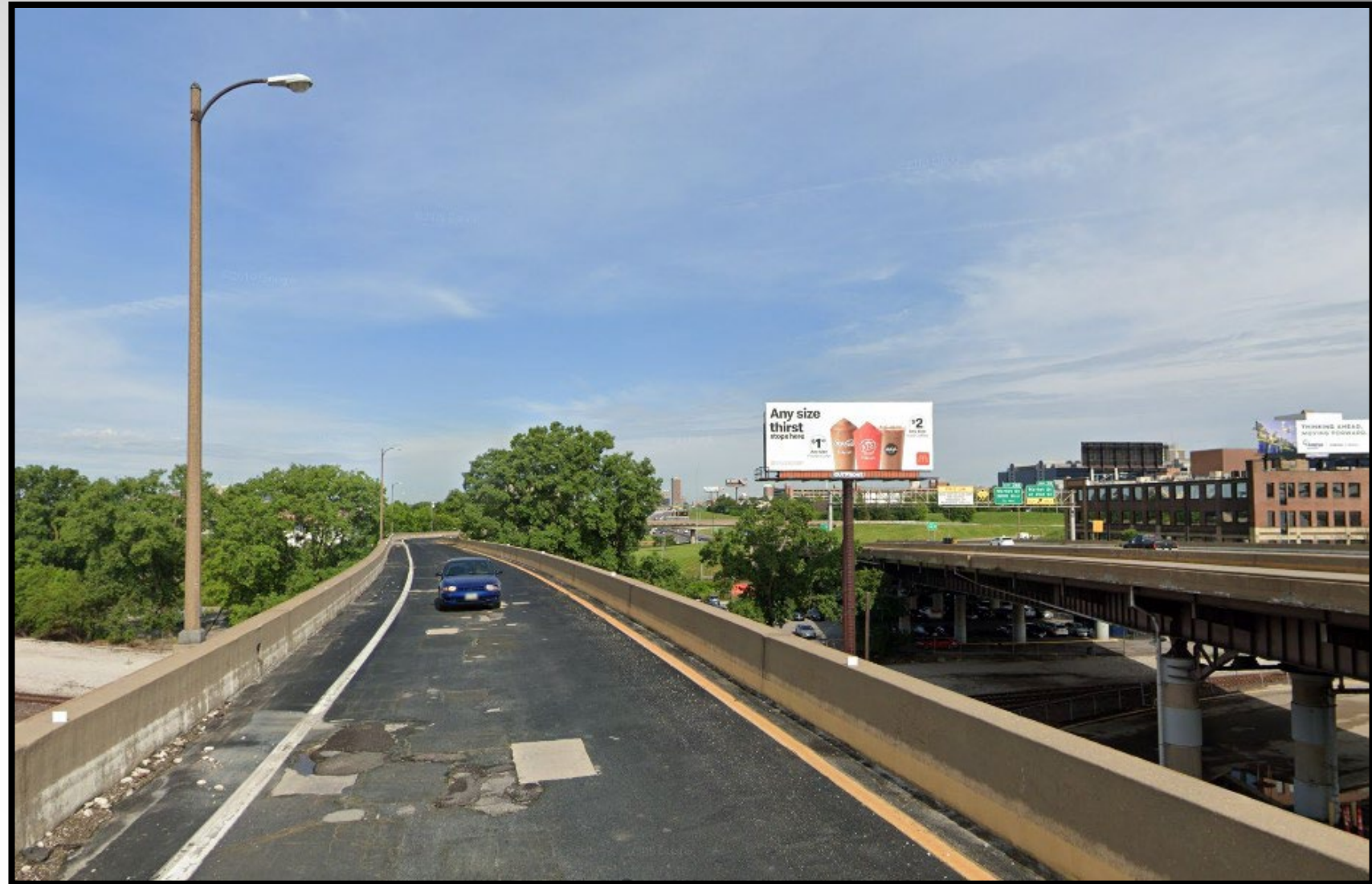


<b>LEGEND</b>	MoDOT Roadway Improvements	City of St. Louis Roadway Improvements	
	City of St. Louis Demo	MoDOT Demo	Potential Bike Connection



# EASTBOUND ON-RAMP F

## OLD RAMP CONDITION





# EASTBOUND ON-RAMP F

## SEISMIC RETROFITTING



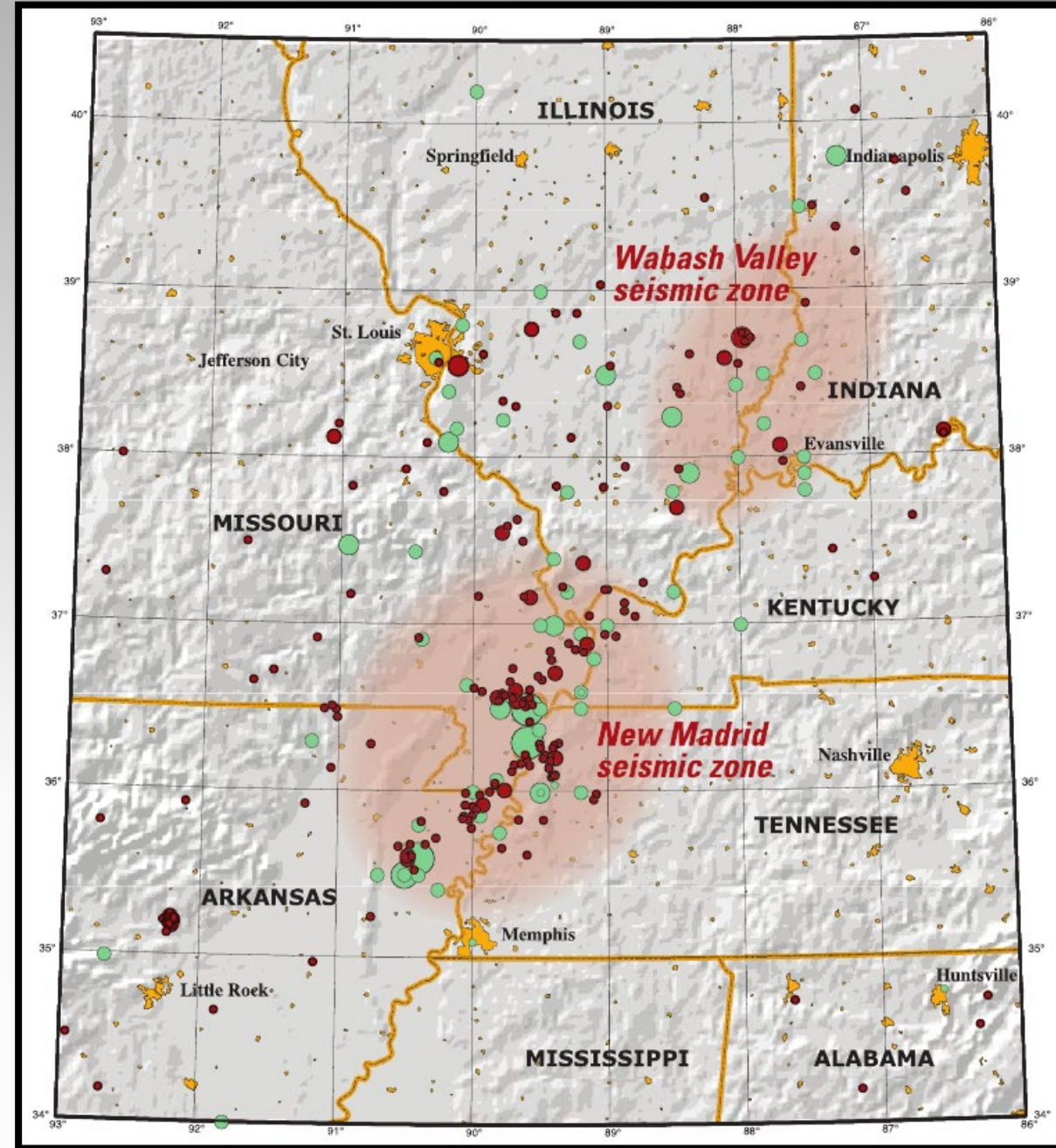


# EASTBOUND ON-RAMP F

## NEARBY SEISMIC ZONES

## PAST NEW-MADRID QUAKES

- AD 300
- AD 900
- AD 1450
- AD 1811-12

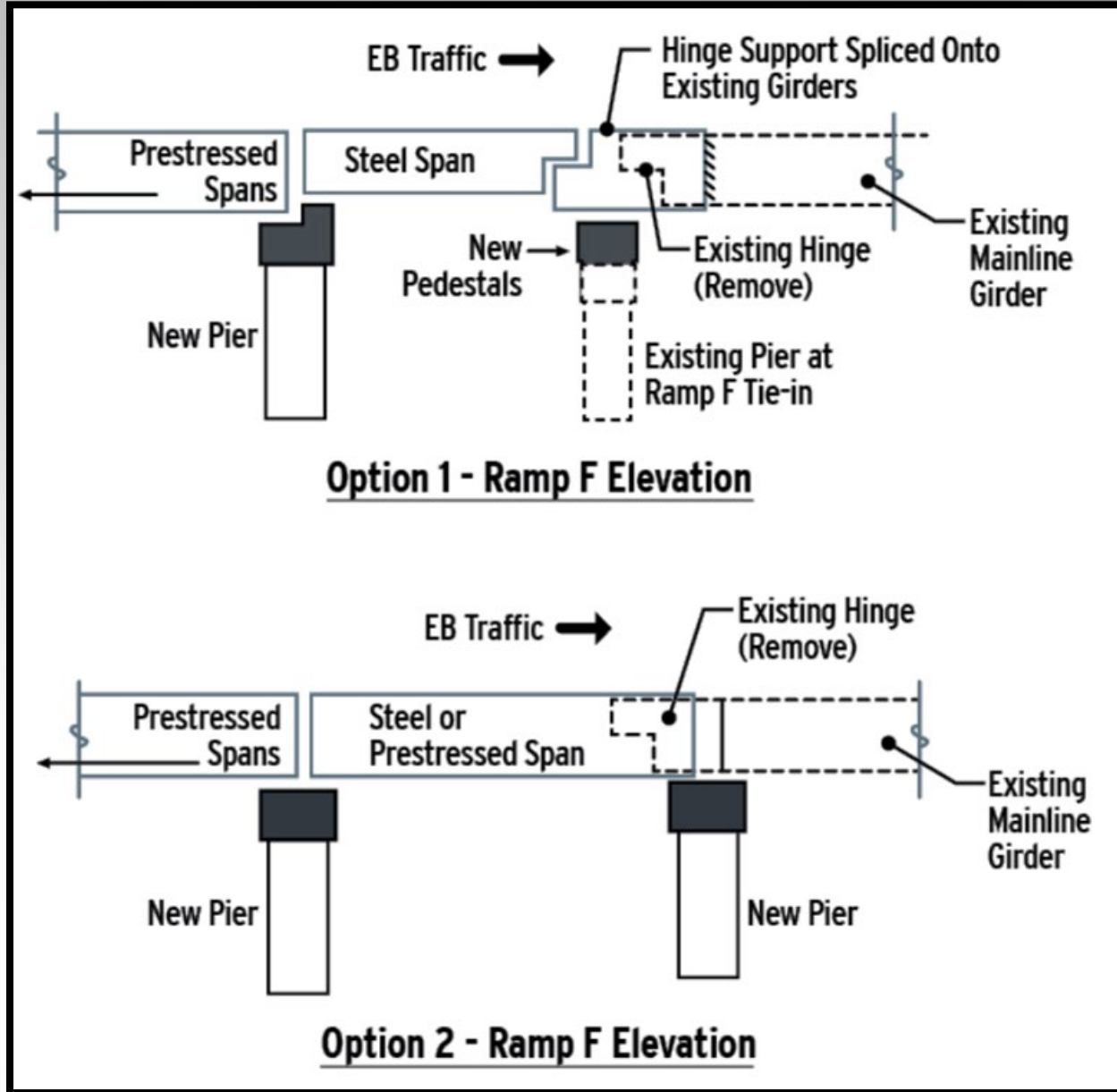




# EASTBOUND ON-RAMP F

## Isolation Options

1. Shift hinge to the west and reuse existing pier.
2. Construct new pier to the east with an isolated simple span.









# EASTBOUND ON-RAMP F





# EASTBOUND ON-RAMP F

- TIE-IN TO MAINLINE











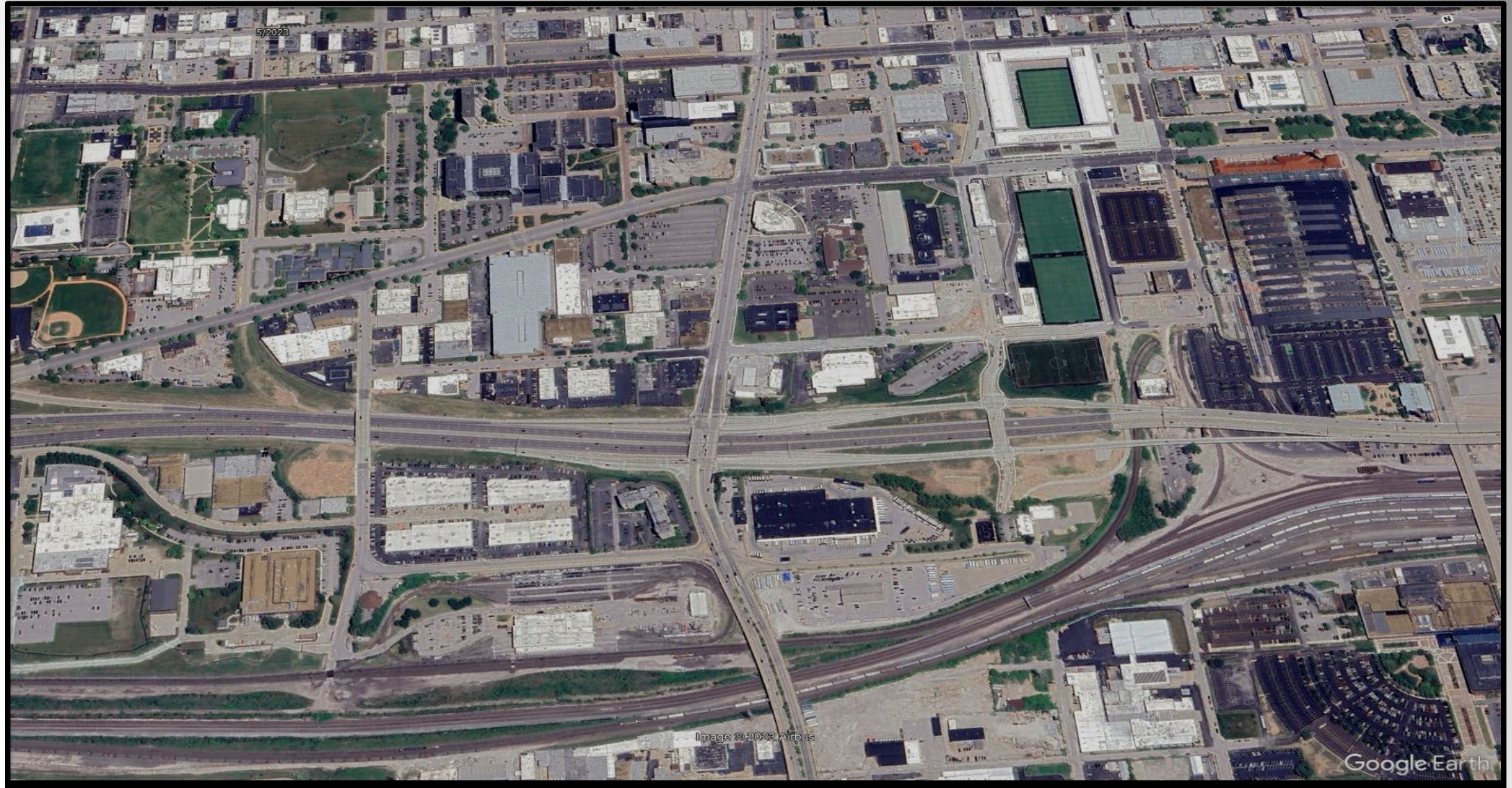


# EASTBOUND ON-RAMP F

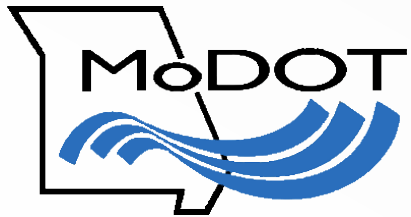




# AERIAL VIEW - TRANSFORMATION







**QUESTIONS?**





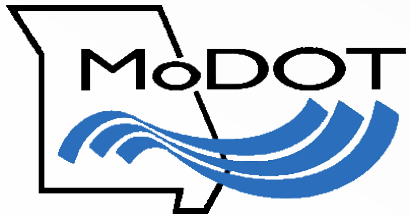






- **XX**
- **XX**





**QUESTIONS?**





# QUESTIONS?





# COMPARISON OF CONDITIONAL MEAN SPECTRUM VERSUS UNIFORM HAZARD SPECTRUM

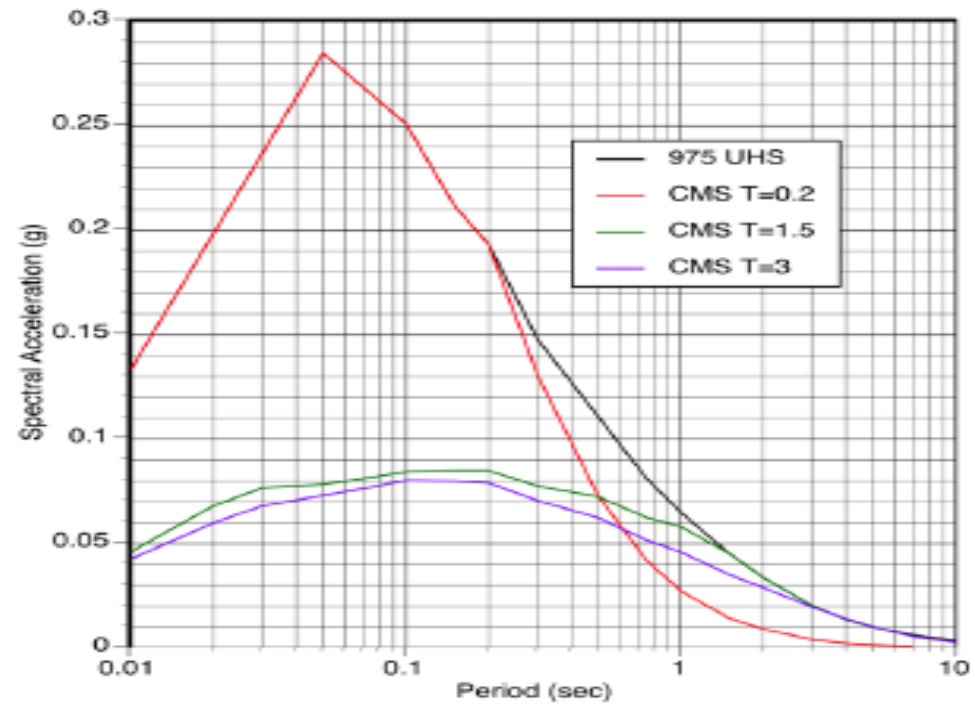


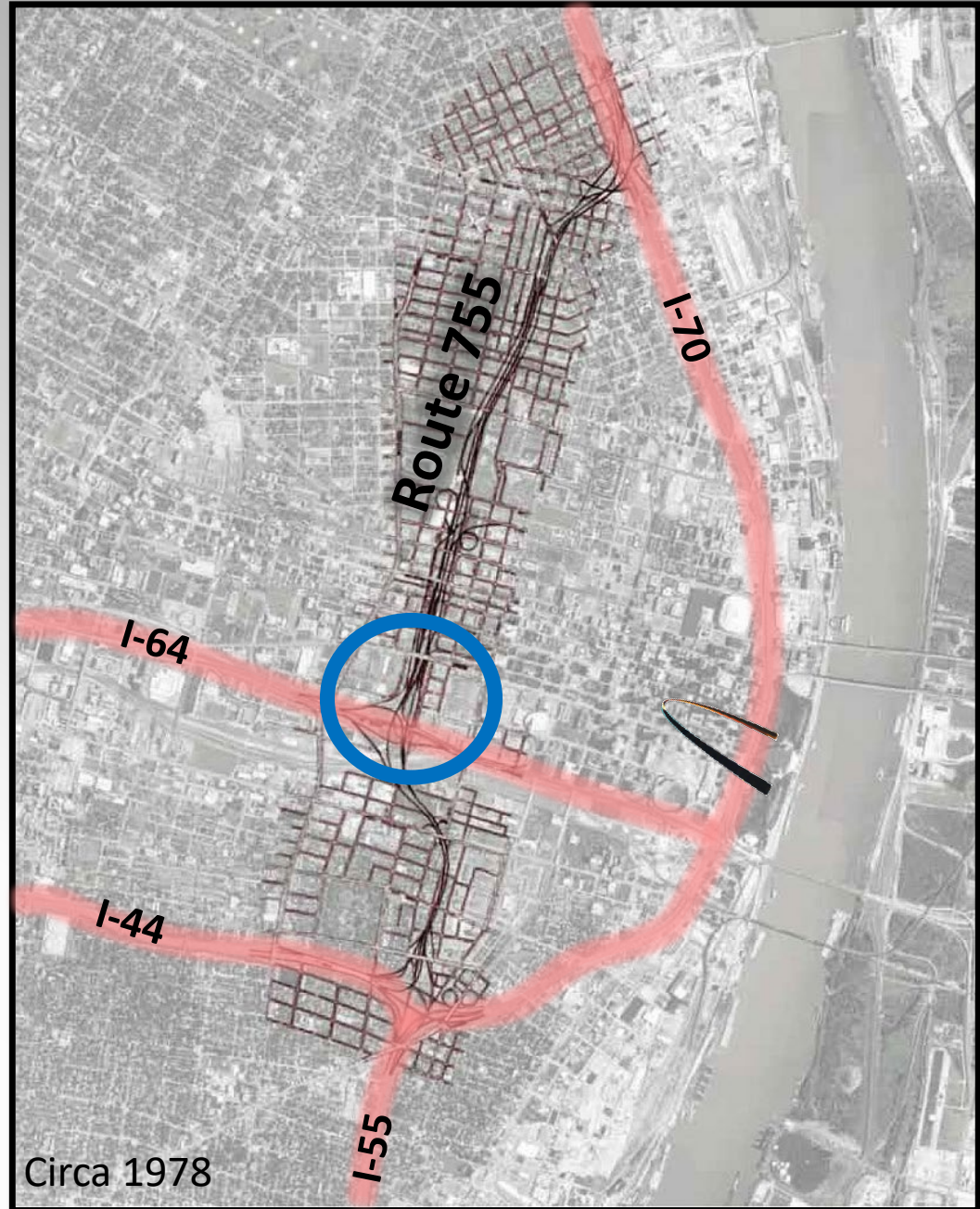
Figure 4-5. Comparison of the 975 uniform hazard spectrum (UHS) with the conditional mean spectra.



# PROJECT OVERVIEW

## HISTORY LESSON

- Route 755 - Planned from 1940's to 1980's
- Would have connected four interstates
- Construction began in late 1960's
- Significant resistance began in 1969
- Concept Died around 1980

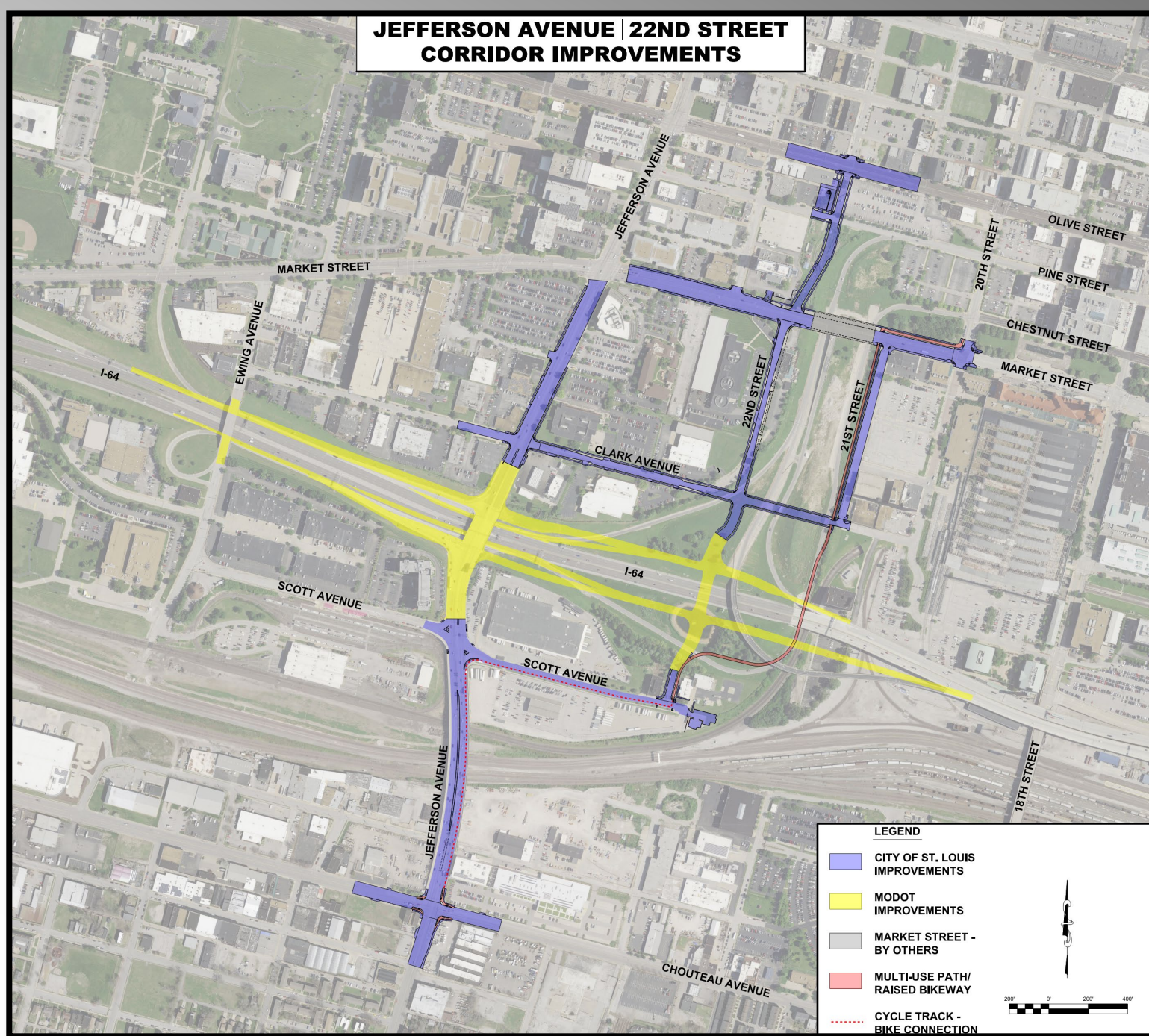




# PROJECT OVERVIEW

## TIMELINE

- Access Justification Report
  - Began in 2016
  - Approved June 2019
  - Two Addendums
- STP & CMAQ Funds were awarded in 2018
- Design September 2019 to February 2021
- Project bid for \$11.6M in Jan. 2022 with anticipated completion end of 2023

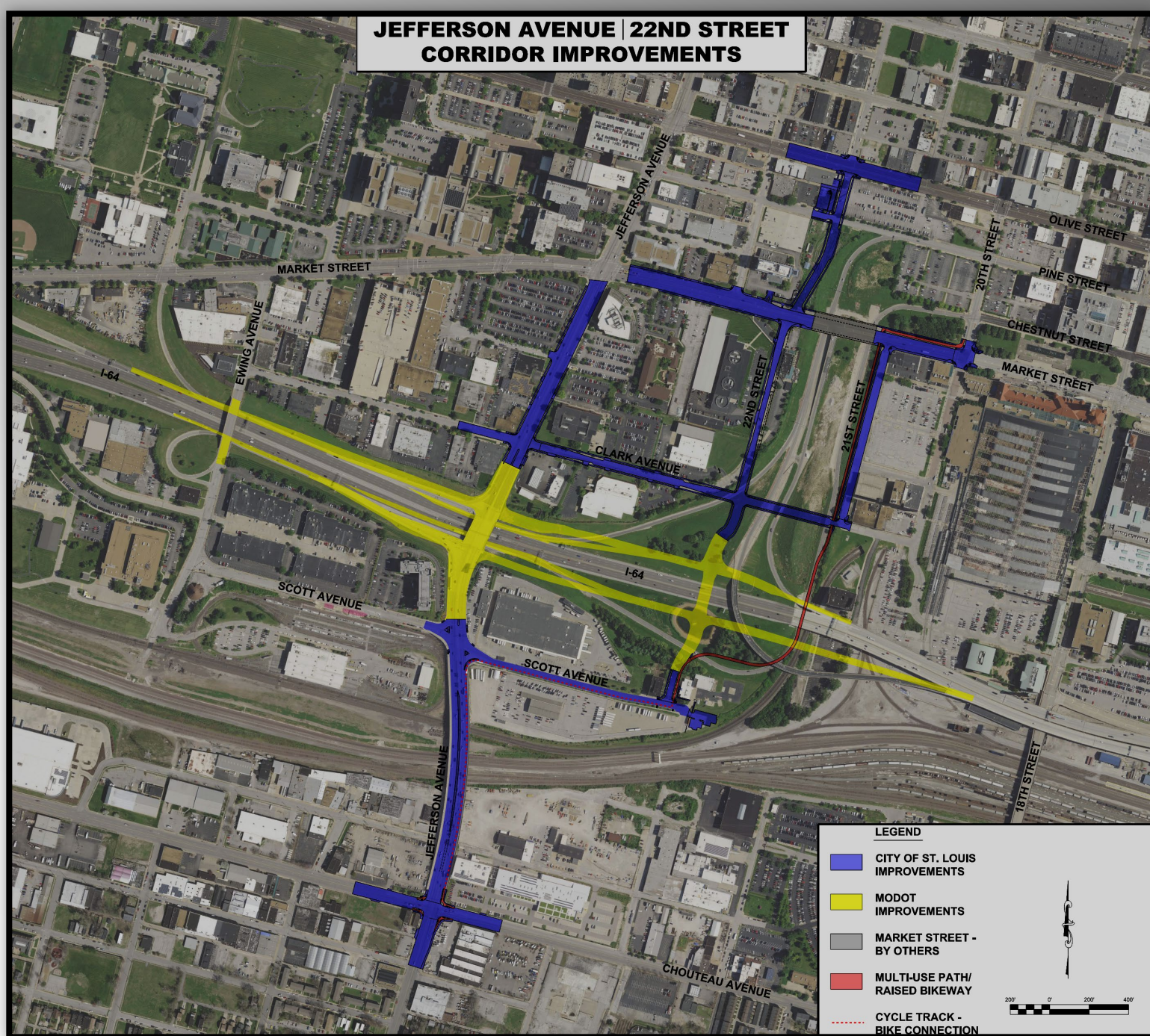




# PROJECT OVERVIEW

## TIMELINE

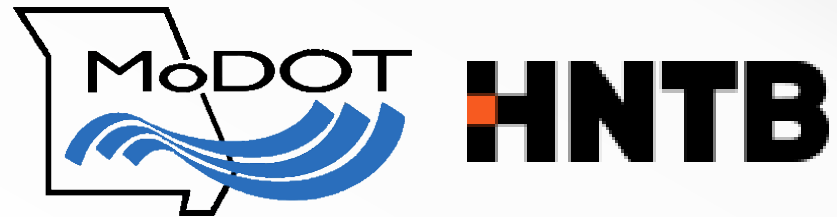
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**QUESTIONS?**





# PROJECT DESIGN TEAM

- MoDOT
- HNTB
- ABNA Engineering
- TSi Geotechnical

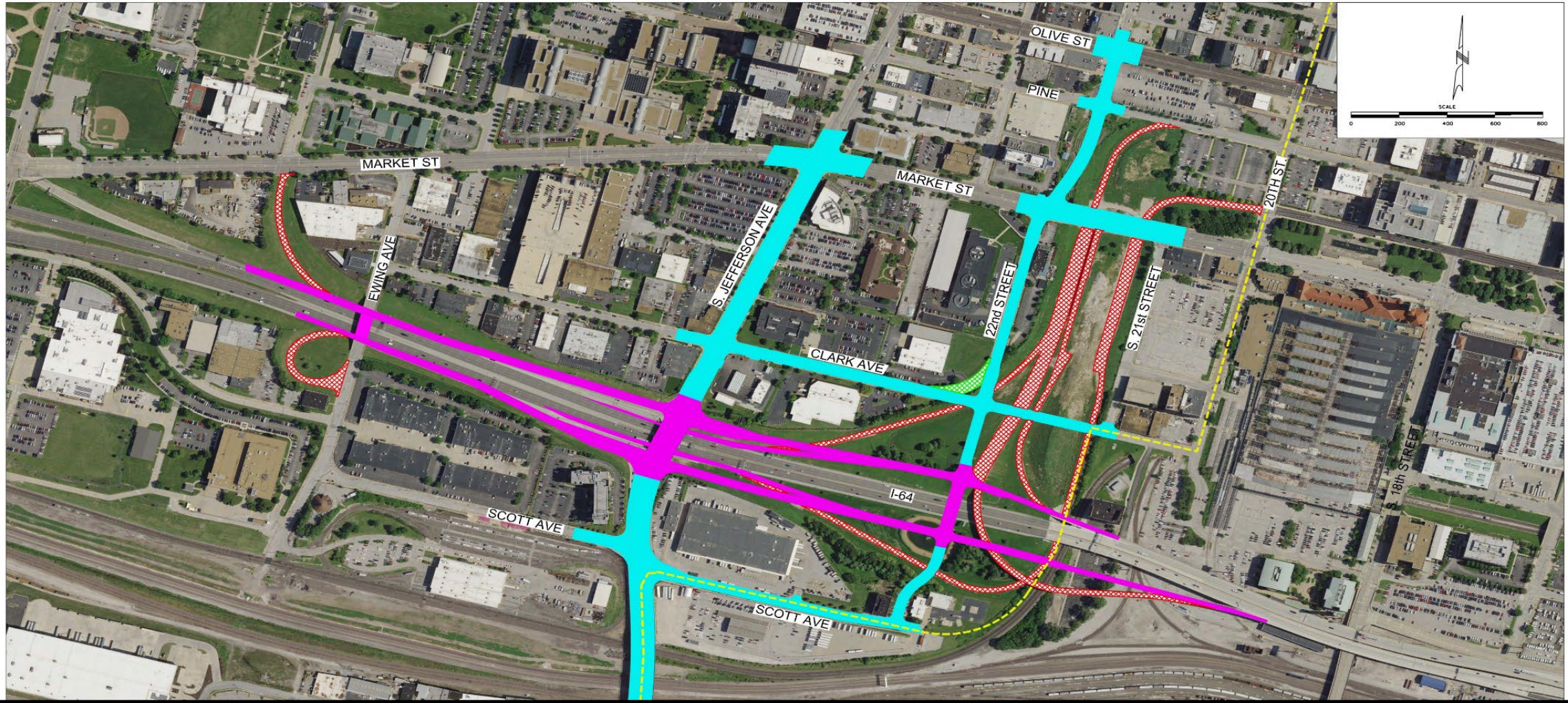
## Contractor

- KCI Construction
- \$24.3M bid, May 2020 – **AARON?**





# PROJECT LOCATION





# PROJECT GOALS – AARON?

- Provide additional access points to and from I-64 and downtown STL
- Replace structurally deficient bridges



# AARON DISCUSS TRUNK LINE



# RIGHT OF WAY COORDINATION

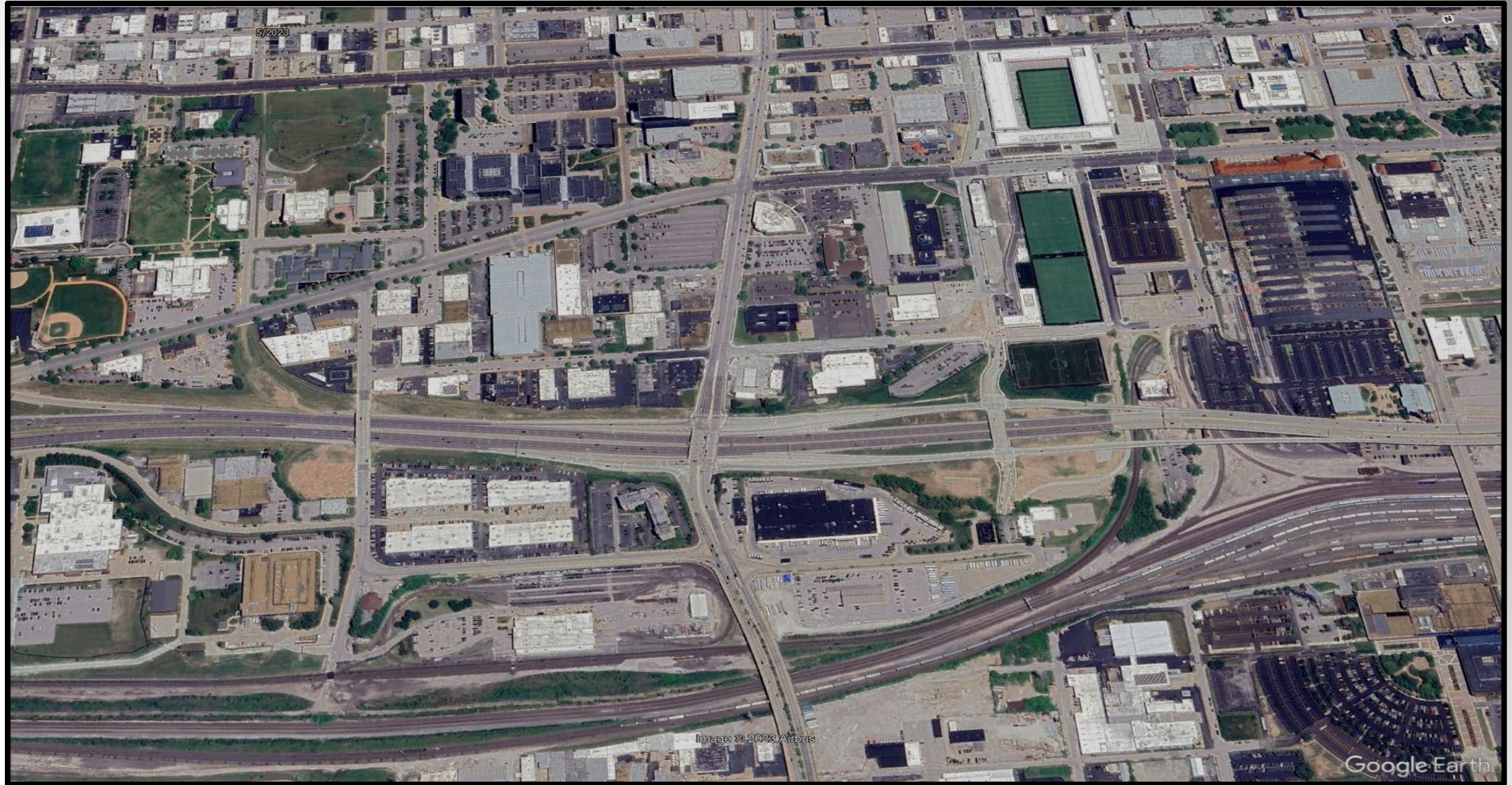
## CITY OF ST. LOUIS / MLS

- MoDOT's Excess R/W
  - 22 Acres
- Sale of R/W to St. Louis Development Corp. (SLDC)
  - \$14 million
- Stockpile Dirt Mound
  - 130,000 CY's



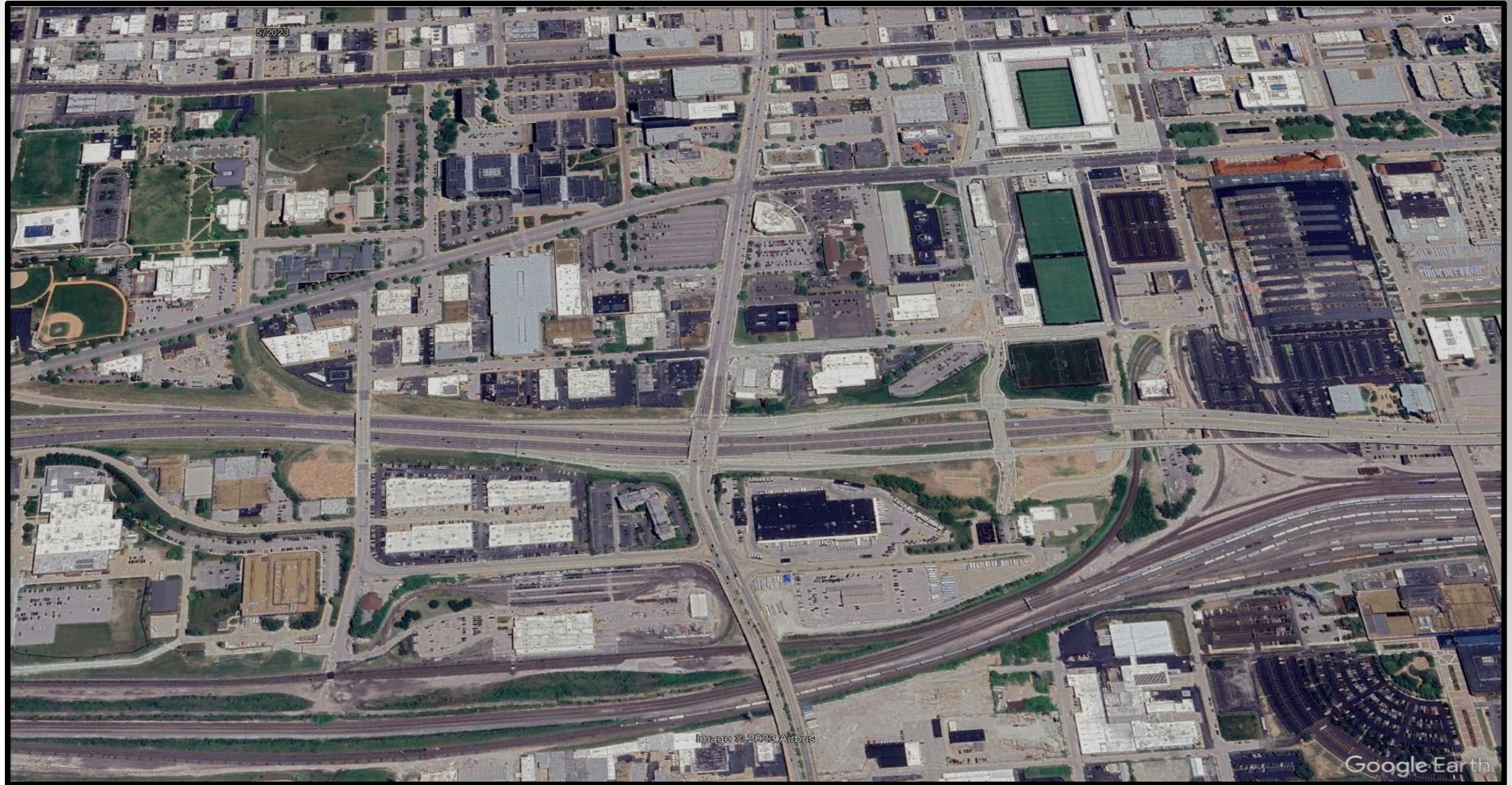


# AERIAL VIEW - SEPTEMBER 2019



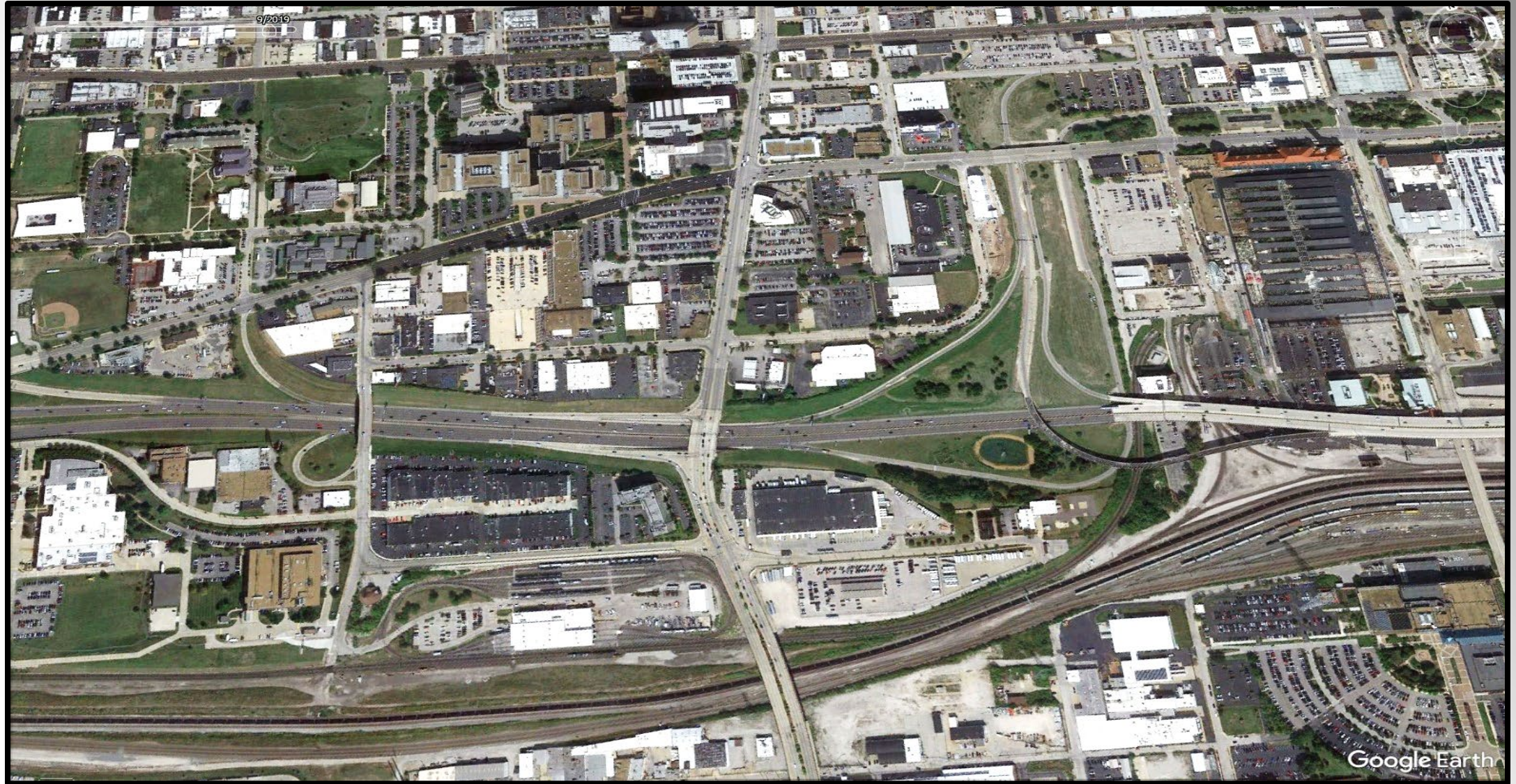


# AERIAL VIEW - MAY 2023





# AERIAL VIEW - SEPTEMBER 2019





# AERIAL VIEW - MAY 2023

