

### Jane Byrne Interchange: Complex Design in Historic Urban Area

Matthew Santeford, PE, SE

2024 ACEC-Iowa + Iowa DOT + FHWA  
Iowa Transportation Conference  
September 24, 2024



**GANNETT FLEMING** | **TRANSYSTEMS**

---

---

---

---

---

---

---

---

### AGENDA

- Introduction
- Complex Urban Street Interchange
- Historic Neighborhood
- Site Constraints
- Construction Staging
- Foundation Design
- Retaining Wall Design Complexity
- Conclusion



**GANNETT FLEMING** | **TRANSYSTEMS**

---

---

---

---

---

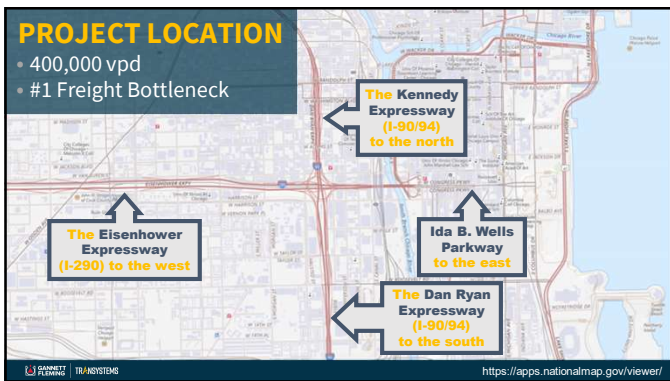
---

---

---

### PROJECT LOCATION

- 400,000 vpd
- #1 Freight Bottleneck



**GANNETT FLEMING** | **TRANSYSTEMS**

<https://apps.nationalmap.gov/viewer/>

---

---

---

---

---

---

---

---

### HISTORY & OVERVIEW



Late 1950's  
early 1960's

The facility was  
in need of  
major repair &  
reconstruction

SHANNETT  
FLANNERY | TRU | INSYSTEMS

---

---

---

---

---

---

---

---

### HISTORY & OVERVIEW



Slowest, most congested  
highway freight bottleneck  
in the nation

On average, 940  
crashes per year

More than  
400,000 vehicles a day  
travel through the interchange

SHANNETT  
FLANNERY | TRU | INSYSTEMS

American Transportation Research Institute (ATRI) + Federal Highway Administration

---

---

---

---

---

---

---

---

### Cross Road Bridges

### Flyover Ramps

### Other Bridges



Morgan Street

Peoria Street

Halsted Street

Harrison's Road

Jackson Blvd

Adams Street

Moore Street

Taylor Street

Van Buren Street

290

90/94

SHANNETT  
FLANNERY | TRU | INSYSTEMS

---

---

---

---

---

---

---

---



---

---

---

---

---

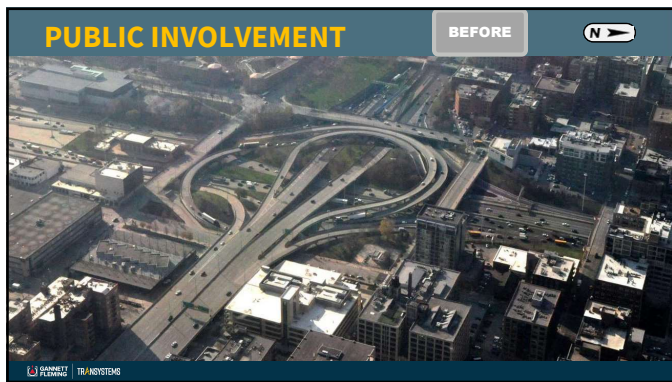
---

---

---

---

---



---

---

---

---

---

---

---

---

---

---



---

---

---

---

---

---

---

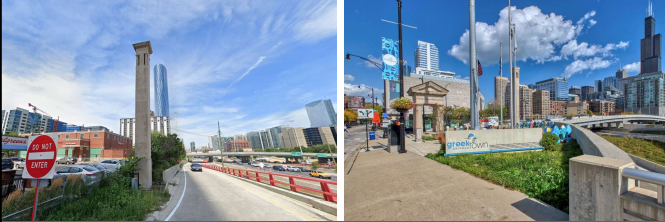
---

---

---

**PUBLIC INVOLVEMENT**

- Stakeholders include UIC, Greektown, Little Italy, CTA



SHANNETT FLEMING | TRU|IN|SYSTEMS

---

---

---

---

---


---

---

---

**PUBLIC INVOLVEMENT**

- Stakeholders include UIC, Greektown, Little Italy, CTA



SHANNETT FLEMING | TRU|IN|SYSTEMS

---

---

---

---

---

---

---

---

**PUBLIC INVOLVEMENT**

- Stakeholders include UIC, Greektown, Little Italy, CTA



SHANNETT FLEMING | TRU|IN|SYSTEMS

---

---

---

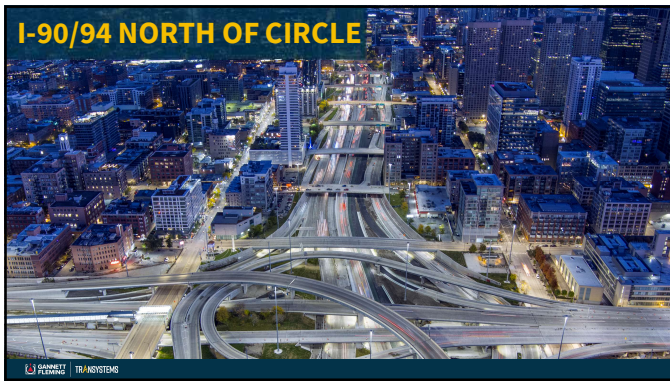
---

---

---

---

---



---

---

---

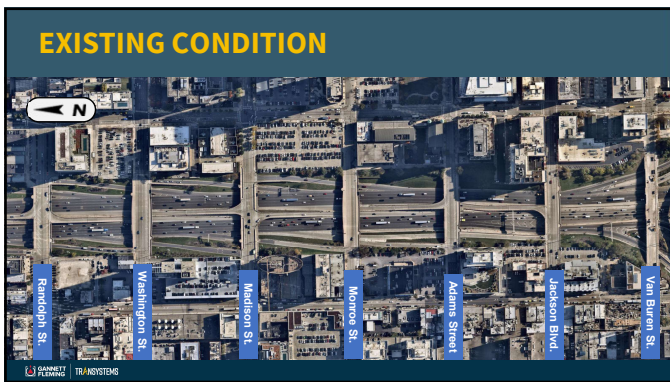
---

---

---

---

---



---

---

---

---

---

---

---

---



---

---

---

---

---

---

---

---



---

---

---

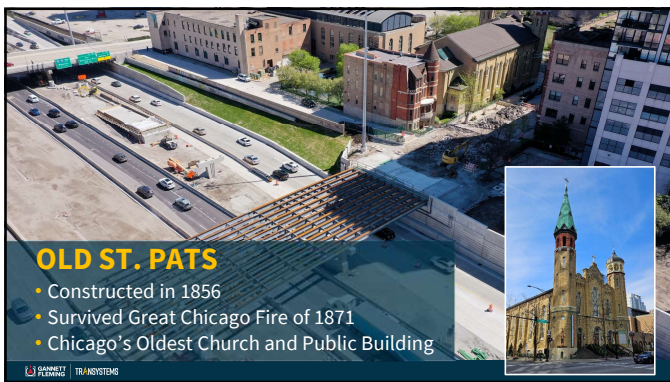
---

---

---

---

---



---

---

---

---

---

---

---

---



---

---

---

---

---

---

---

---



---

---

---

---

---

---

---

---



---

---

---

---

---

---

---

---



---

---

---

---

---

---

---

---

**CONTRACT 62A77**

- SB I-90/94 Mainline
- Lorig Construction, \$42.8M (Combo Bid)
- April 2020 Letting, Finished December 2022

---

---

---

---

---

---

---

---

**CONTRACT 60X94**

- Adams Street and Jackson Blvd Bridges, Walls 8, 24, 36 and 37
- Lorig Construction, \$42.6M
- June 2020 Letting, Finished December 2022

---

---

---

---

---

---

---

---

**JACKSON BLVD. BRIDGE**

- Asymmetric Spans 104'-9" – 101'-5" – 55'-2"
- Substructures with Four Different Skews
- On Ramp "T" Framing into Main Bridge

---

---

---

---

---

---

---

---



### ADAMS STREET BRIDGE

- Four Spans 60' – 69'-1" – 88'-5" – 69'-6"
- On Ramp "T" Framing into Main Bridge
- Ramp and Alley 15' from Back of West Abutment



SHANNETT FLEMING TRU/SYSTEMS

---

---

---

---

---

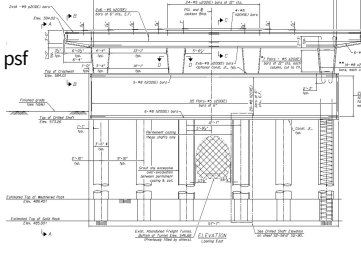
---

---

---

### FOUNDATION DESIGN

- Soft Blue Clay
- Blow Counts 1 per 6"
- Undrained Shear Strength <500 psf
- Single Row of Drilled Shafts
- 90' Long, Set in Bedrock
- Permanent Casing



SHANNETT FLEMING TRU/SYSTEMS

---

---

---

---

---

---

---

---

### CHICAGO FREIGHT TUNNELS

- 40' Below Street Level, Along City Street Grid System
- Constructed in 1900, Abandoned in 1959
- Damaged in 1992, Caused Chicago Flood
- Bulkheaded before Foundation Construction



SHANNETT FLEMING TRU/SYSTEMS

---

---

---

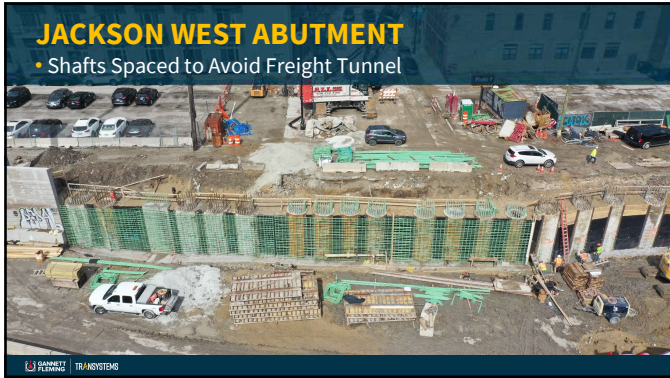
---

---

---

---

---



---

---

---

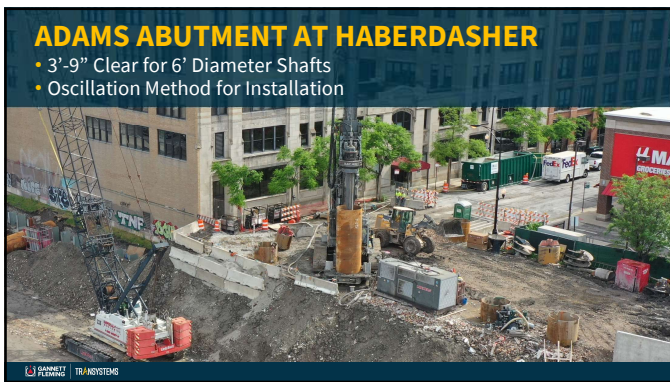
---

---

---

---

---



---

---

---

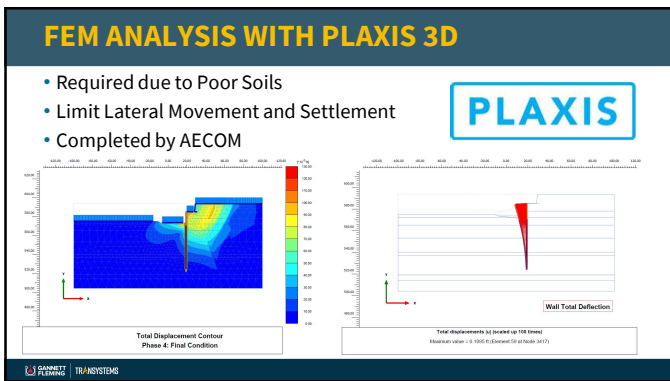
---

---

---

---

---



---

---

---

---

---

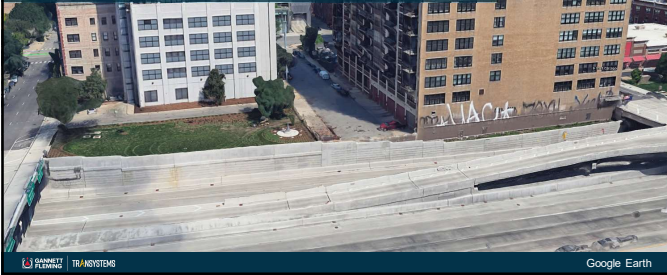
---

---

---

### WALL 24 OVERVIEW

- East Side between Jackson and Adams
- 396' Long, Tight Constraints, 3 Wall Types




---

---

---

---

---

---

---

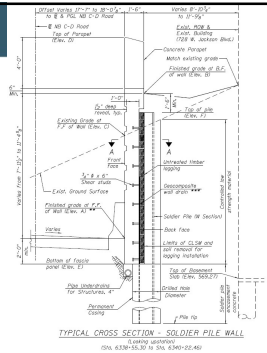
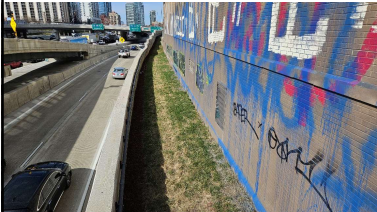
---

---

---

### WALL 24 SECTION 1

- Along Haberdasher
- 5' of Clearance
- Drilled Soldier Pile W-Shapes




---

---

---

---

---

---

---

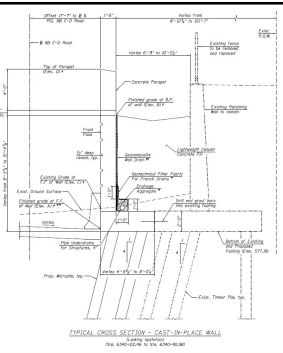
---

---

---

### WALL 24 SECTION 2

- Along Quincy Street
- 4'-8" Clearance to Exist. Wall
- Drilled Micropiles matching Batter




---

---

---

---

---

---

---


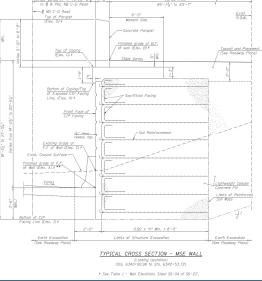
---

---

---

### WALL 24 SECTION 3

- Between Quincy and Adams
- Wide ROW – 85' to 101'
- MSE with Lightweight Cellular Conc.

**TRANSYSTEMS**

---

---

---

---

---

---

---

---

---

---

### CONCLUSION

- \$804M Construction
- 19 New Bridges, 50 Retaining Walls
- No ROW Acquisition
- 35+ Construction Contracts



**TRANSYSTEMS**

---

---

---

---

---

---

---

---

---

---

### PROJECT TEAM

**LEAD AGENCIES**



**JOINT VENTURE CONSULTANT TEAM**

**TRANSYSTEMS** **AECOM**



**TRANSYSTEMS**

---

---

---

---

---

---

---

---

---

---



**Questions?**  
Contact Information:  
mdsanteford@transystems.com or 847-407-5235

QUALITY  
PLANNING | TRANSYSTEMS

---

---

---

---

---

---

---

---