Cleveland Innerbelt Bridge Project

September 17, 2013

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

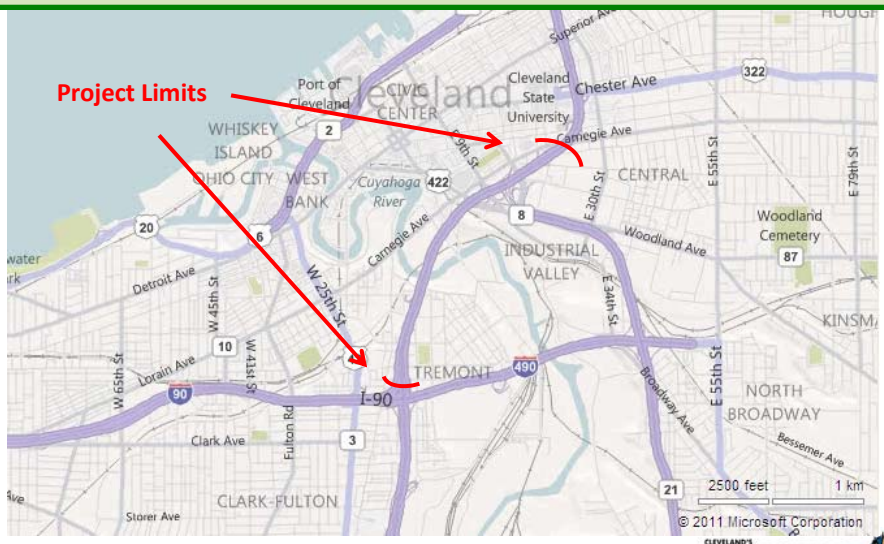
Today's Presentation

- Orientation to the Project
- Design-Build Process
- Innovations & Girder Selection
- Project Update Photos

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

Regional Reference Map



WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90

In 1888, $675,000 could buy a bridge

Photo Courtesy of Cleveland Memory Project

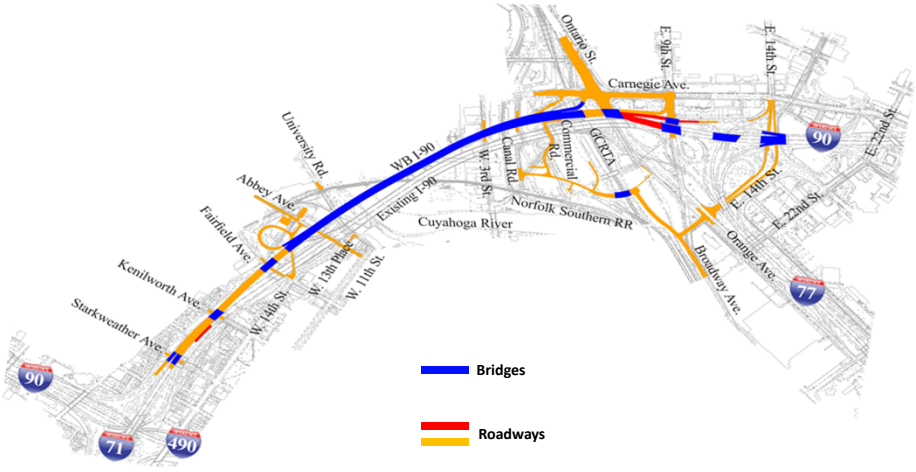
Current Innerbelt Bridge-Open 1959

Photo Courtesy of Mr Z-man

Key Project Details

- Project will build a new I-90 westbound bridge
- During construction, the old bridge will remain OPEN
- New WB bridge to be complete in late 2013, configured to temporarily carry both directions of traffic
- A separate contract will be awarded to build the second new bridge (P3: Design-Build-Finance)
- When first bridge is open, the old bridge will be removed and the second new bridge will be built to carry eastbound traffic
- By late 2016, both bridges open and carrying traffic

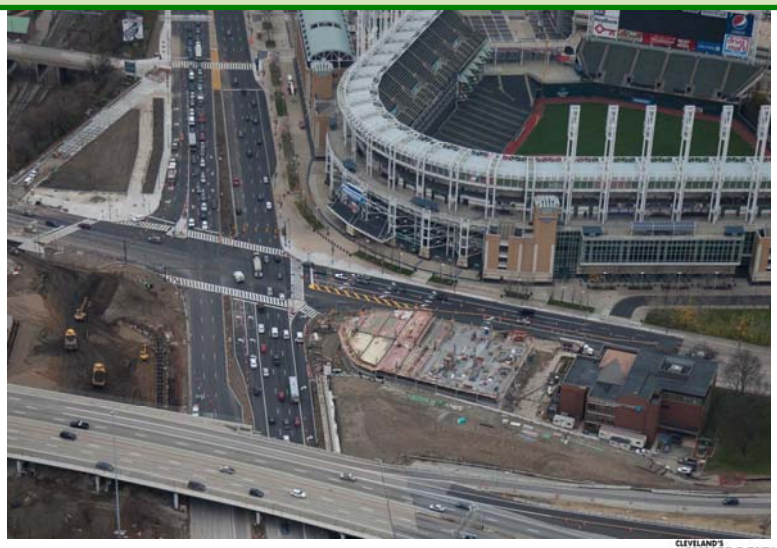
What Will Be Built



WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

Baseball !



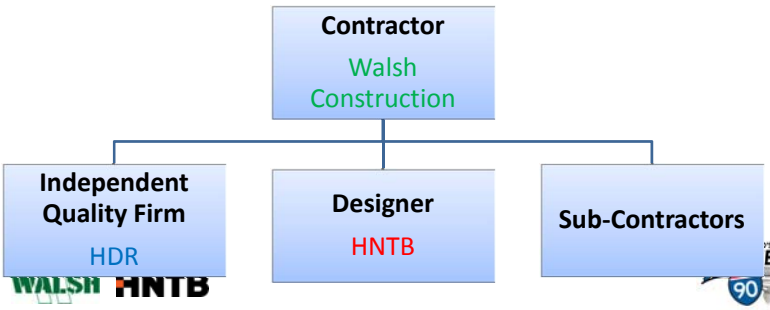
WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

Design-Build Process on This Project

- Design began during proposal phase
- Construction estimate/bid based on 30% design
- Construction began while design continues
- Design complete in one year
- Construction complete in three years

Project Team



Selection Process

- **Scoring**

$S_B = 100\,[c\,(T_B/T_H) + (1-c)\,(P_L/P_B)]$

Where

$c = 0.30$

P_B = Bidder's Price Proposal

P_L = Lowest Price Proposal (all bidders)

S_B = Bidder's Overall Score (Technical Proposal and Price Proposal)

T_B = Bidder's Technical Proposal Score

T_H = Highest Technical Proposal Score (all bidders)

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

Innovations to Add Value

Where to make the greatest impact??

- **Largest Cost on the project = the big bridge**
- **Most complicated Technical aspect = the big bridge**
- **Highest Aesthetic potential = the big bridge**

WALSH HNTB

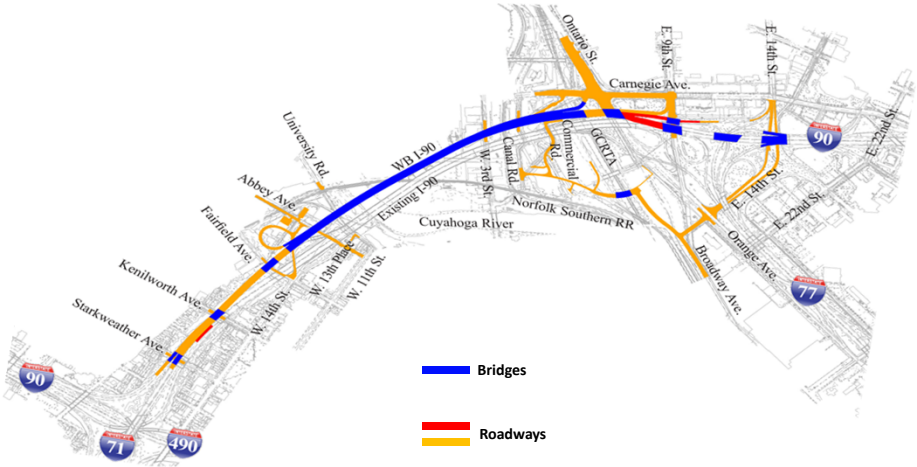
CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

Innovations to Add Value

Horizontal alignment

- **Proposed by owner – curve-tangent-curve**
- **Proposed by team – one continuous curve**

Innovations to Add Value



Innovations to Add Value

Horizontal alignment

Innovations to Add Value

Horizontal alignment – Benefits of change

- **Uniform elements**
- **No super transitions on bridge**
- **Better drainage**

Innovations to Add Value

Vertical alignment

- **Proposed by owner – high vertical curve**
- **Proposed by team – lowered vertical curve**

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90

Innovations to Add Value

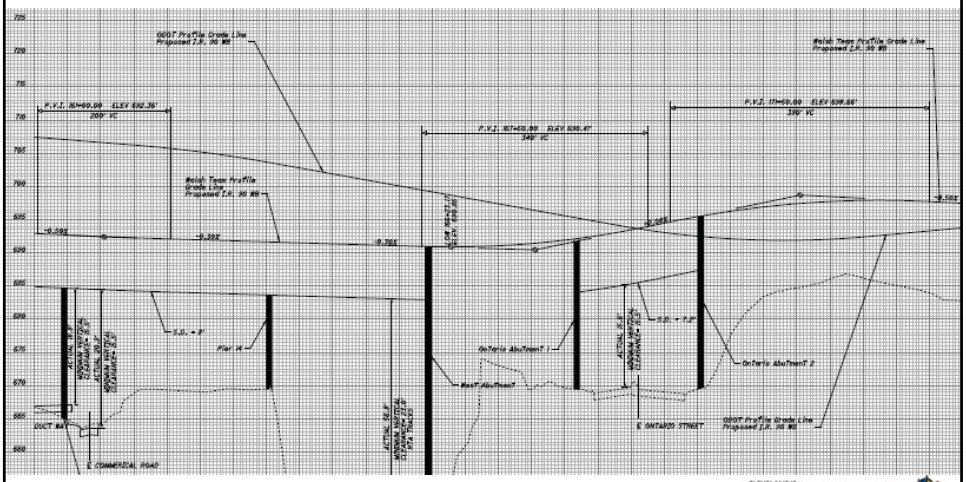
Vertical alignment – owner's proposal

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90

Innovations to Add Value

Vertical change



WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90

Innovations to Add Value

Vertical alignment – showing "soil-plug"

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90

Innovations to Add Value

"Soil-Plug"

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90

Innovations to Add Value

Vertical alignment – Benefits of change

- **Drop spans at end of bridge via a "soil-plug"**
- **Simplified tie-in for ramp**
- **Simplified connection for future EB bridge phase**

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90

Innovations to Add Value

Girder Selection

- **Parabolic Requirement**
  - **Tied to Main span, thus connecting ramp bridge to soil-plug meant it was free of that requirement**
- **Considered segmental concrete vs. haunched steel**
- **Came up with the "Delta Girders"**

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

Innovations to Add Value

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

Innovations to Add Value

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

Innovations to Add Value

Girder Selection – Benefits of Delta Girders

- **Satisfied parabolic requirements**
- **Reduced pier heights**
- **Aesthetically interesting**

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

Innovations to Add Value

Aesthetic Requirements

- **One of the scoring components**
- **Public vote was held, counted in the score**
- **Influenced the selection of "Delta Girder"**

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

Innovations to Add Value

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

Project Updates

Lots of photos to wake you up

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

Main Bridge Foundations-Pile Driving

WALSH HNTB

Spring 2011

CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

Main Bridge-Mud Mat & Footer Forms

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90

Main Bridge - Rebar Inside Footer

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90

Main Bridge – First Footer Complete

WALSH HNTB

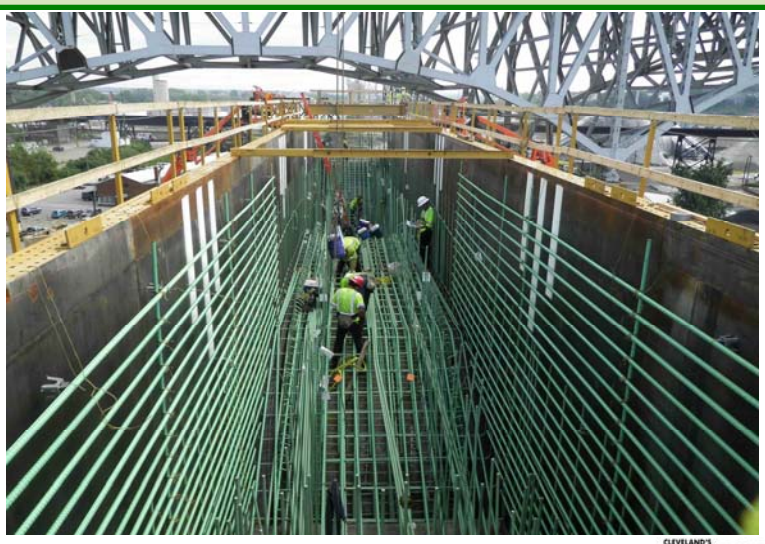
CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

Main Bridge – Columns Begin

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

Main Bridge – Cap Filled With Rebar



WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

Main Bridge – Cap Pour

WALSH HNTB

October 29, 2011 – The First Pier!

Pier 9

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90

January 24, 2012 – Three Piers ++

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90

April 5, 2012 Five Piers ++

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90

Structural Steel Begins to Arrive April 5, 2012

WALSH HNTB

Pier 6-Begin Falsework June 19, 2012

July 25, 2012

September 13, 2012

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

October 21, 2012

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

November 7, 2012

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90

November 29, 2012

Pier 7 to Pier 8

WALSH HNTB

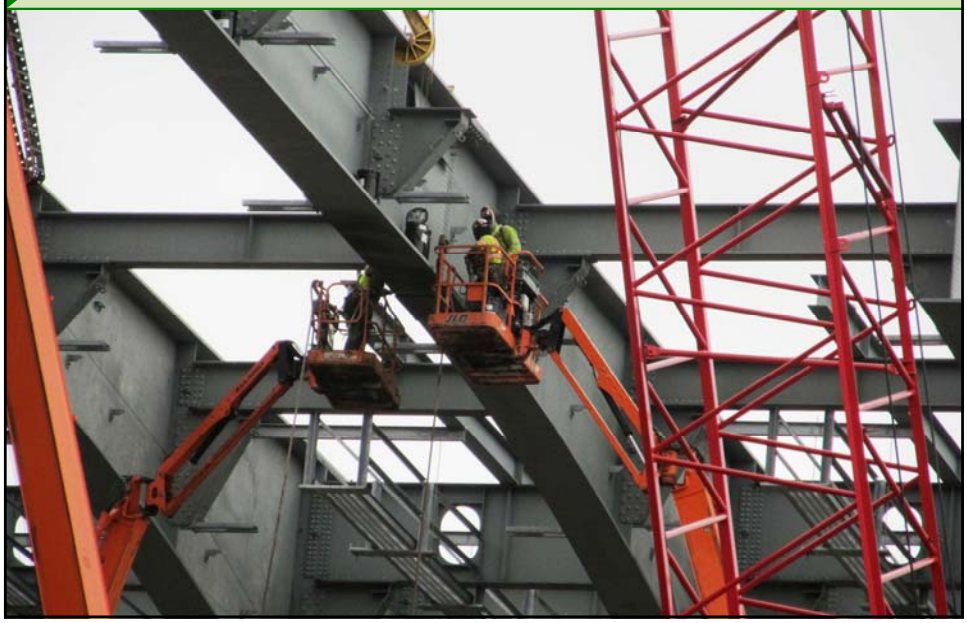
CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

Pier 7 to Pier 8-Closure Girders

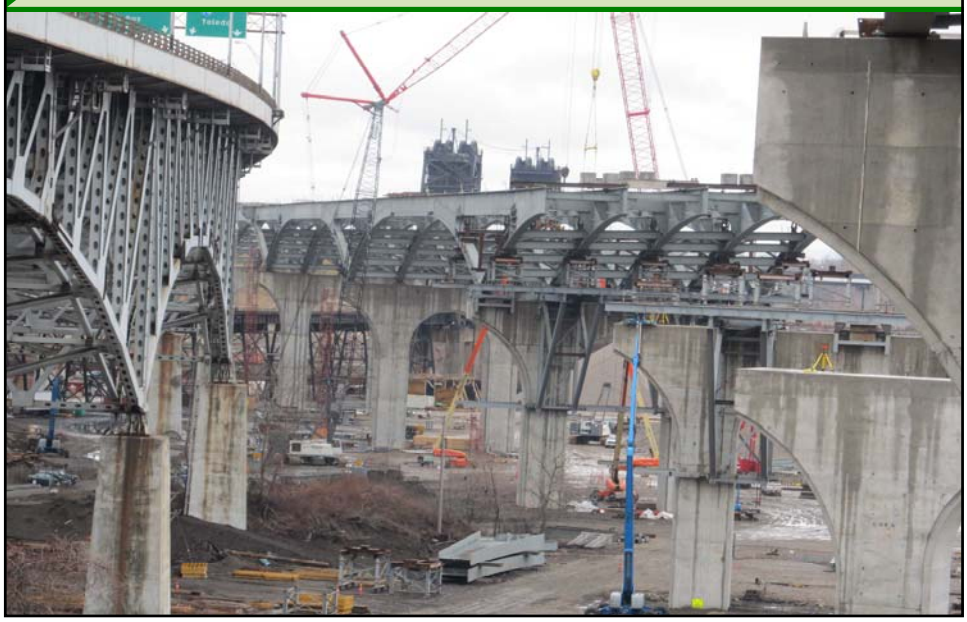
WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

Pier 7 Splice To Closure Girder



View From Pier 11-Fire Museum Overlook



June 2013 – View from Unit 1

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

Pier 6 to Pier 7

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

July 2013 – View from Existing Bridge

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

Late 2013

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION

Late 2016

Questions?

- Project website www.Innerbelt.org
- Dave McDougall, PE
  - dmcdougall@hntb.com
  - 317-917-5340
- Dan Thatcher, PE
  - dthatcher@hntb.com
  - 317-917-5323

WALSH HNTB

CLEVELAND'S INNERBELT BRIDGE 90 OHIO DEPARTMENT OF TRANSPORTATION