

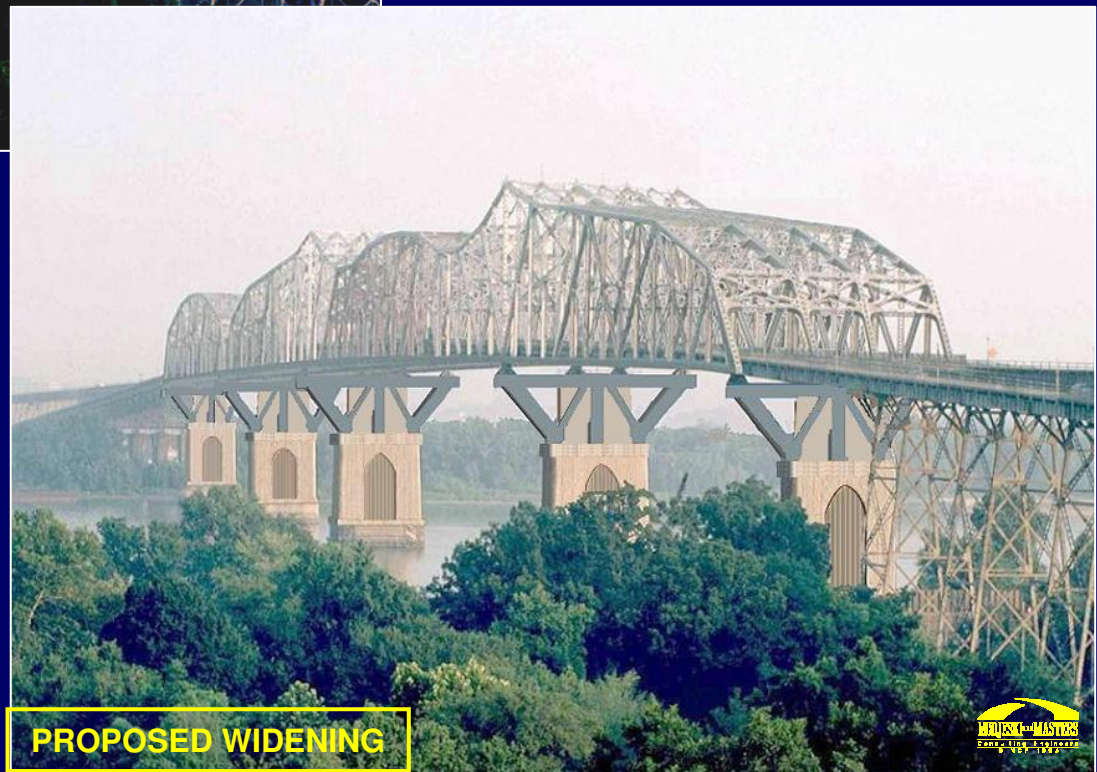
Widening of the Huey P. Long Bridge



EXISTING



**Tulane
Engineering
Forum - 2010**

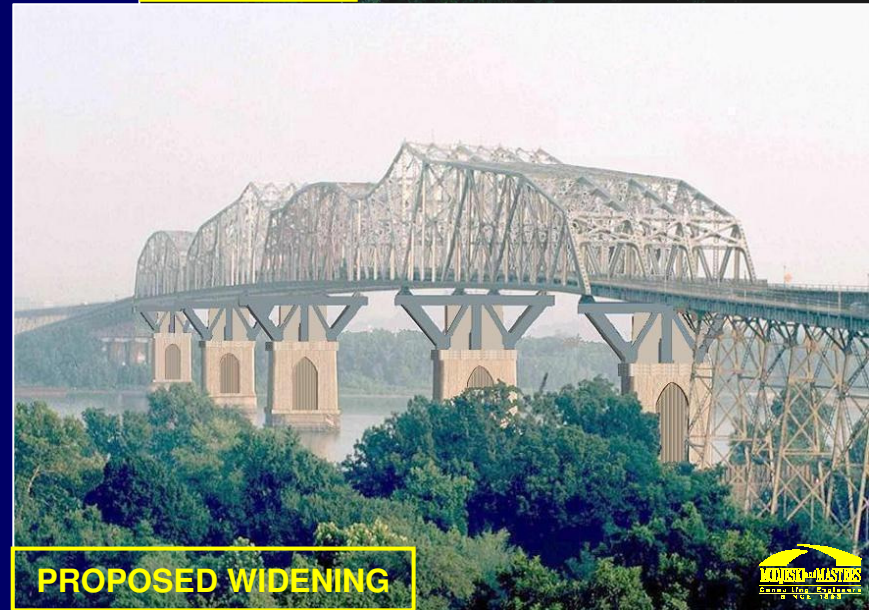


PROPOSED WIDENING



Introduction

- Background
- 4 Construction Contracts
 - Main Bridge – Substructure
 - Main Bridge – Superstructure Truss Widening
 - Railroad Modifications
 - Approaches and Main Bridge Deck Widening
- Project Status
 - Project Timeline
 - Construction Photographs



Location



Before the Bridge

Southern Pacific Barge crossing Mississippi River, largest barge in the world.



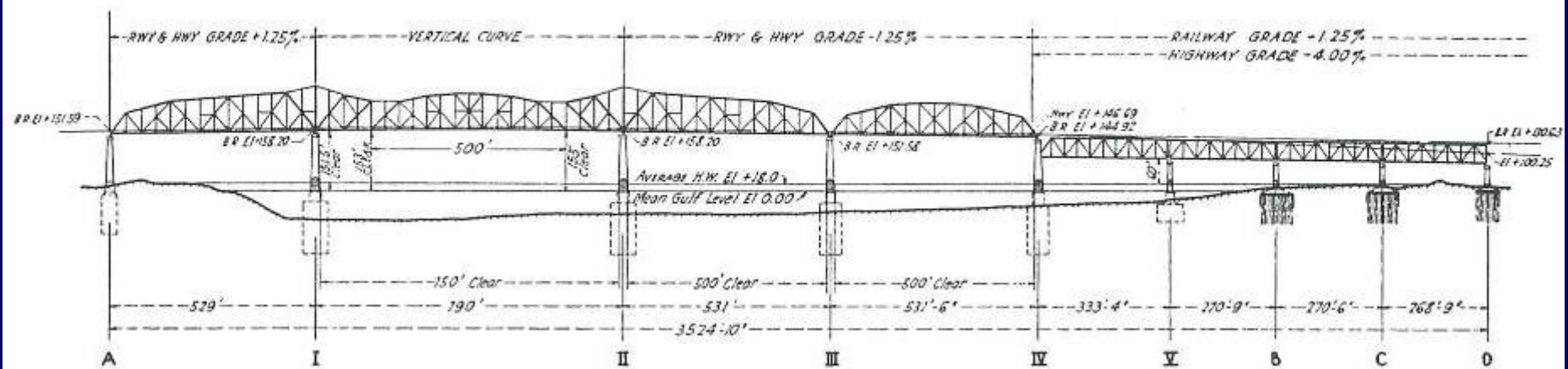
THE "MASTODON" SOUTHERN PACIFIC RAILWAY BARGE. THE LARGEST OF ITS CLASS IN THE WORLD.



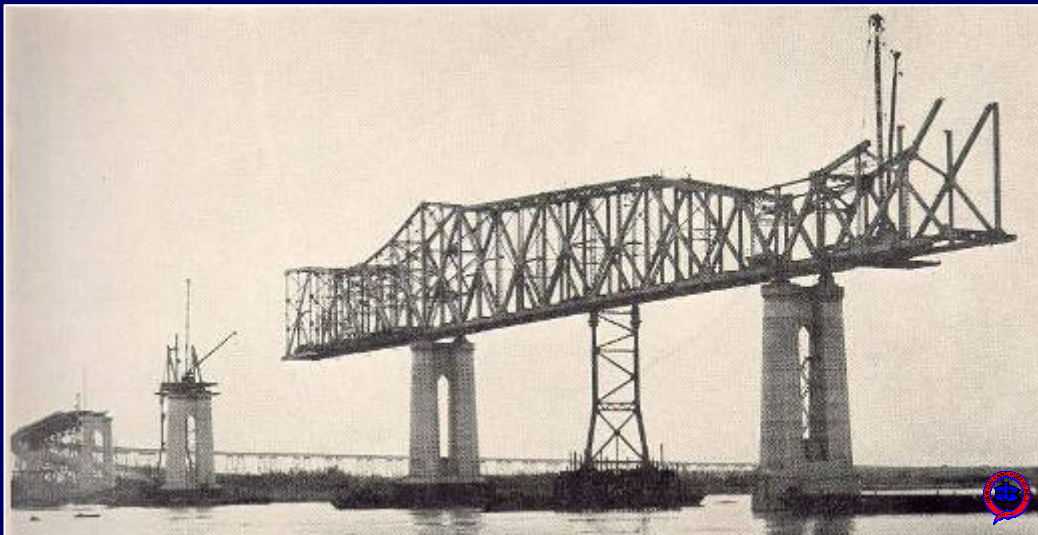
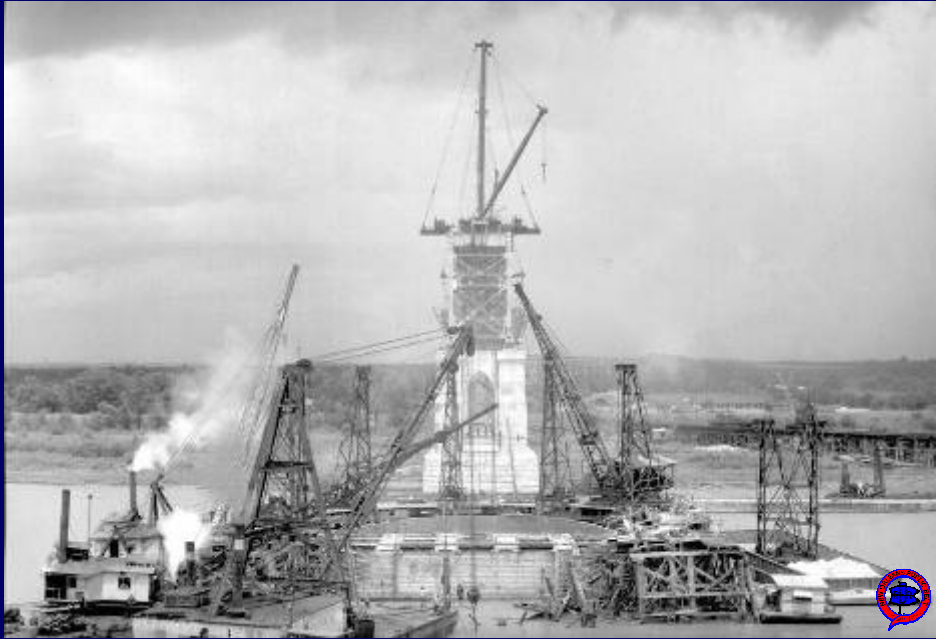
CROSSING MISSISSIPPI RIVER AT AVONDALE, TEN MILES ABOVE NEW ORLEANS, LA.



Construction of The Existing Bridge



Construction of The Existing Bridge



Background – Huey P. Long Bridge

- Combined railroad – highway bridge
 - 2 tracks
 - 4 lanes – 9 ft. width



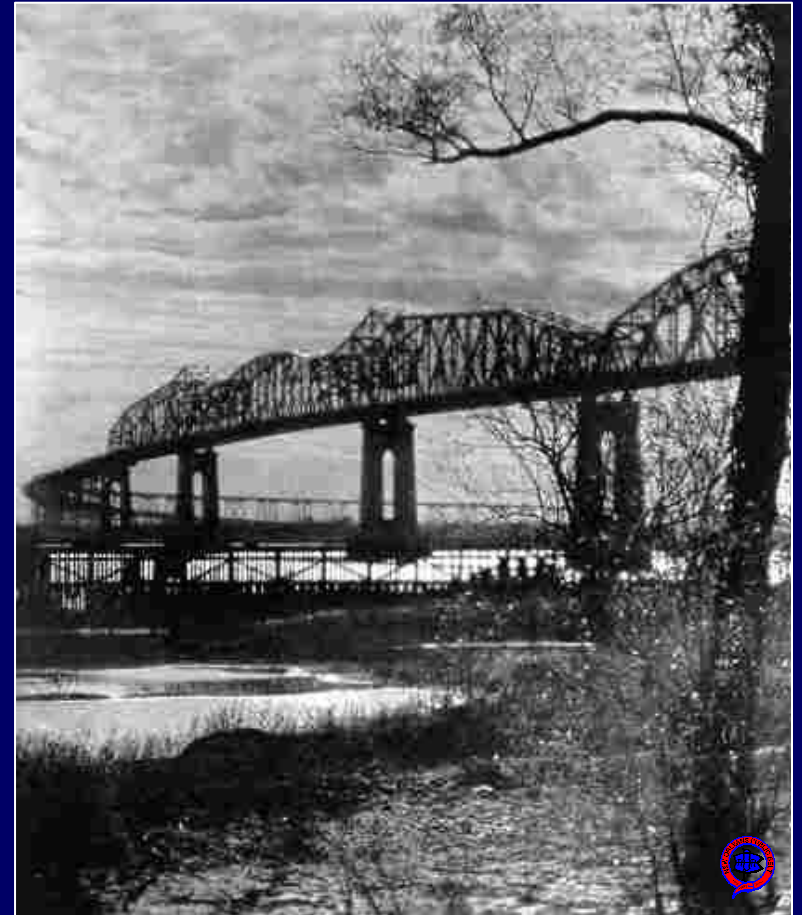
Background – Huey P. Long Bridge

- Very heavily built
- Carries largest modern RR load without distress
- Many years of service life remaining

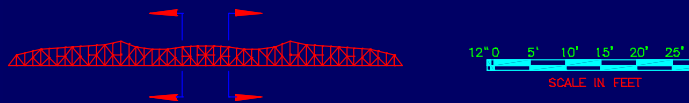
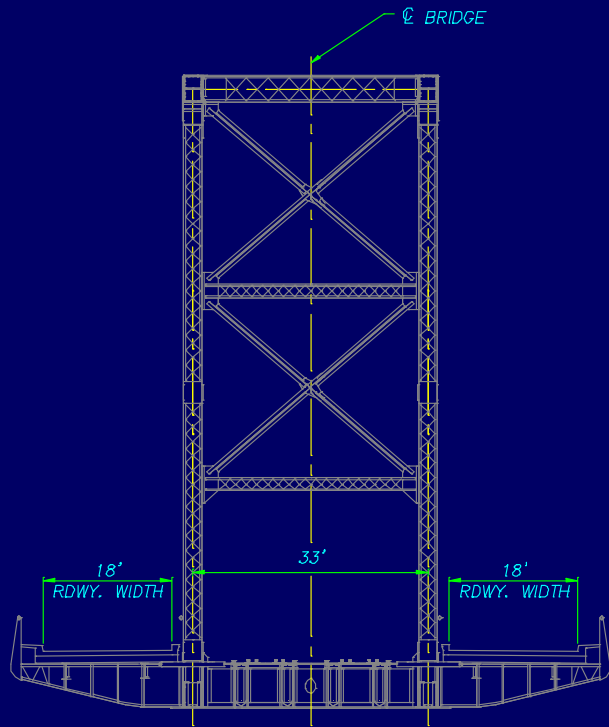


Project Background

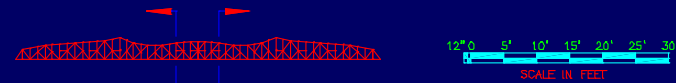
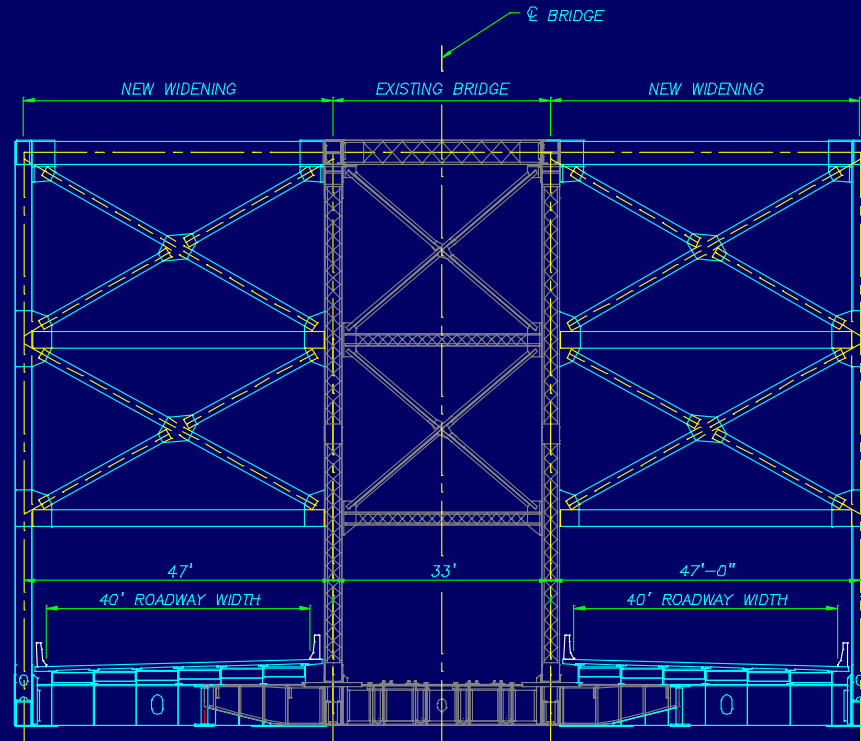
- By widening the existing structure rather than constructing a new river crossing:
 - Reduce environmental impact, property takings.
 - Reduce project cost.
 - Reuse existing right-of-way and traffic corridors.
- Final report published April 1988.



Project Background

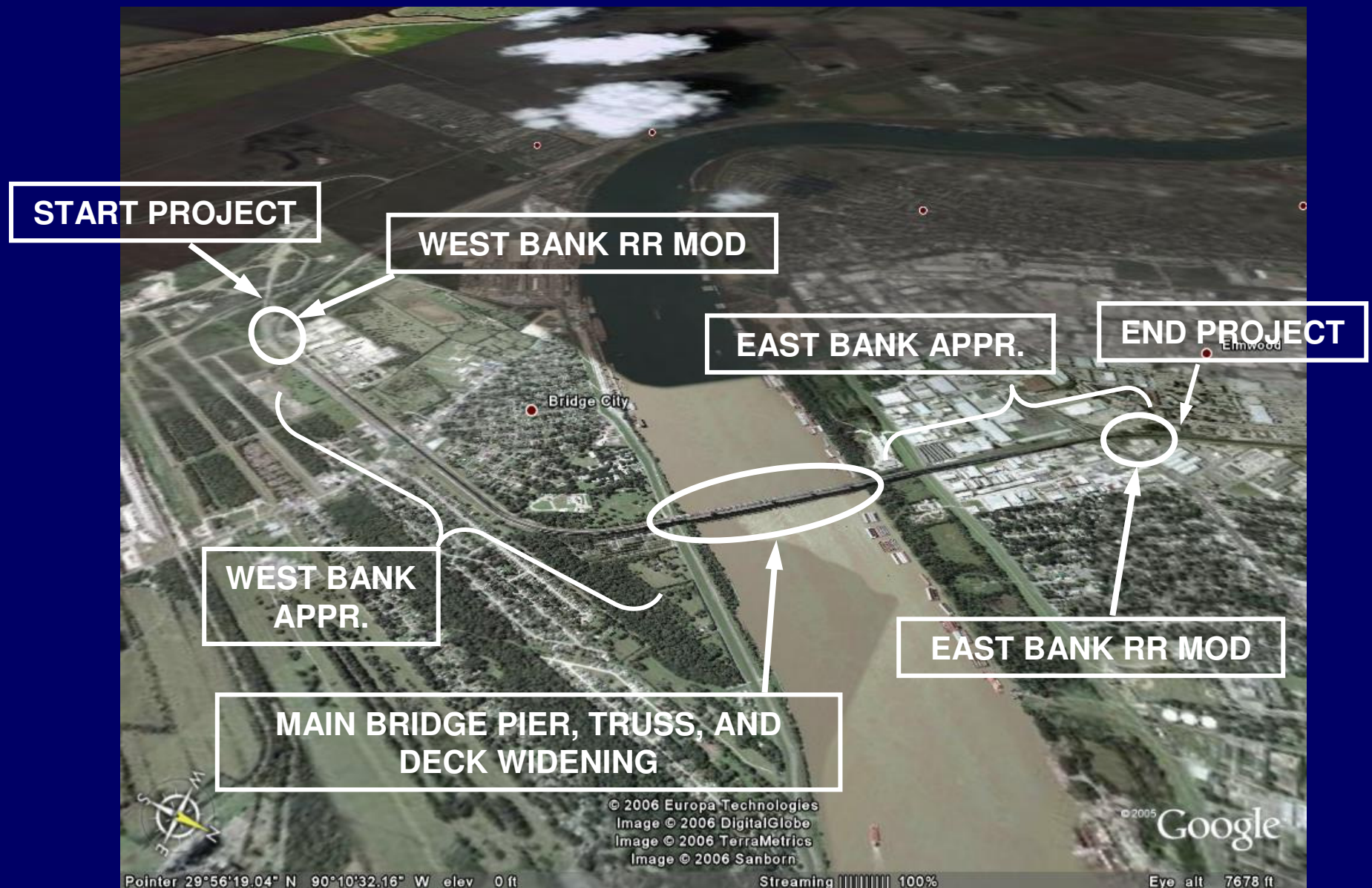


EXISTING

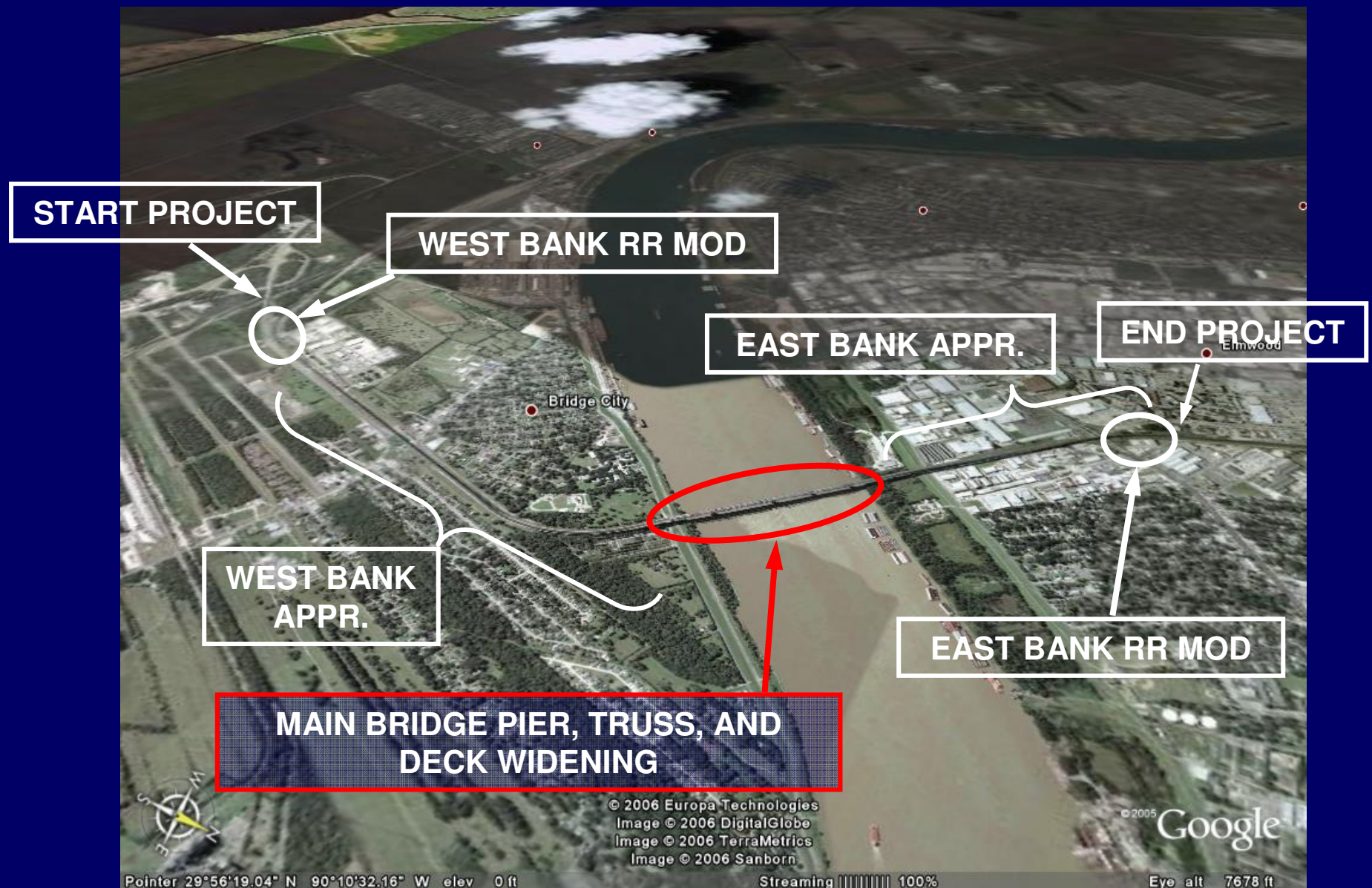


PROPOSED WIDENING

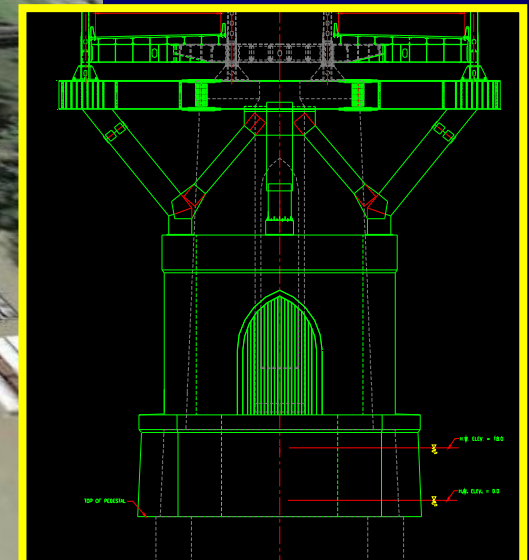
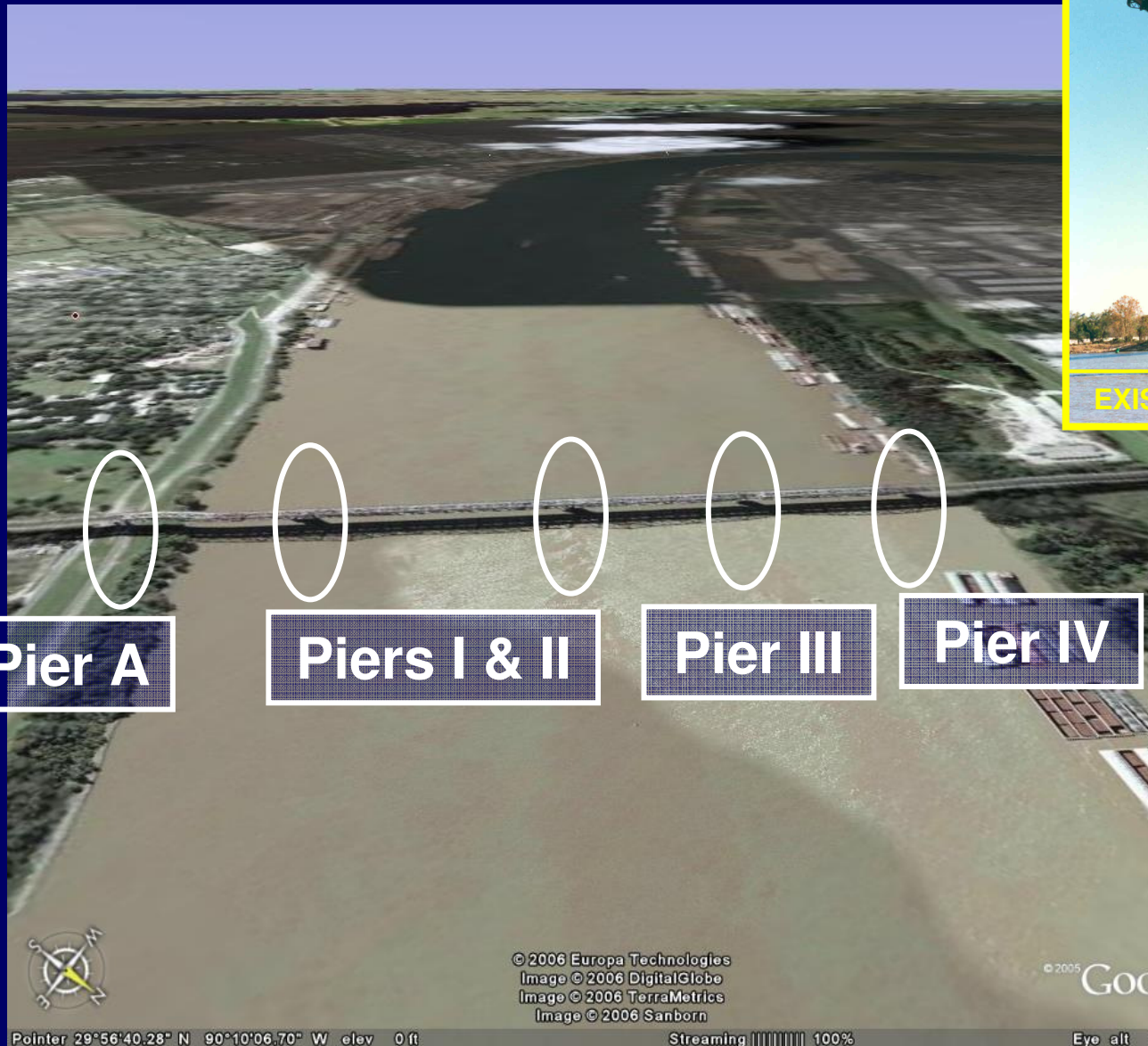
Huey P. Long Widening Project



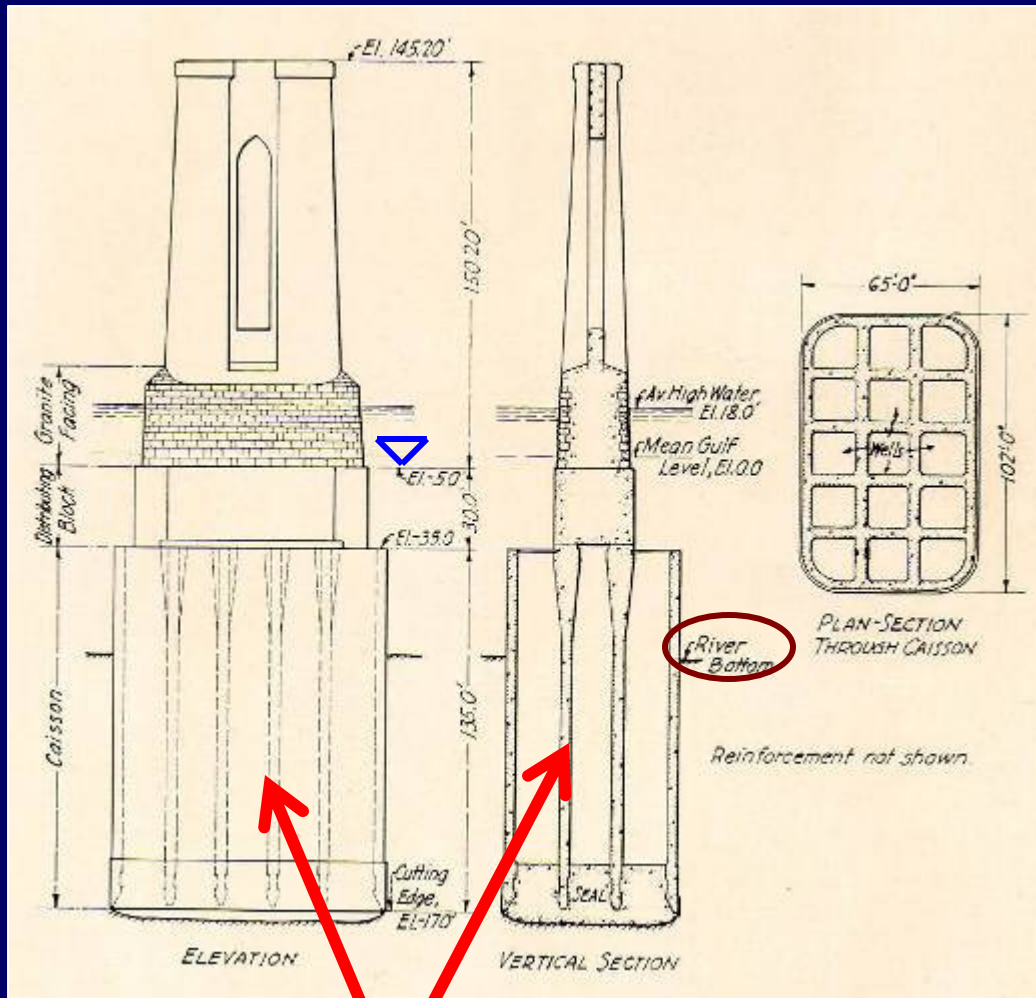
Main Bridge Pier Widening



Main Bridge Pier Widening



Widened Pier

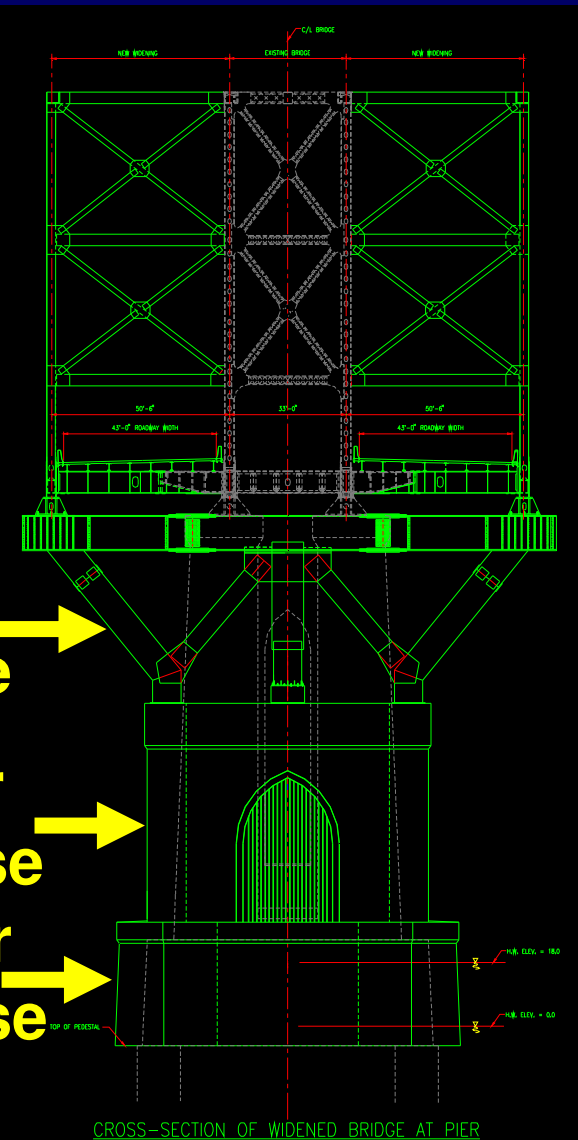


Caisson

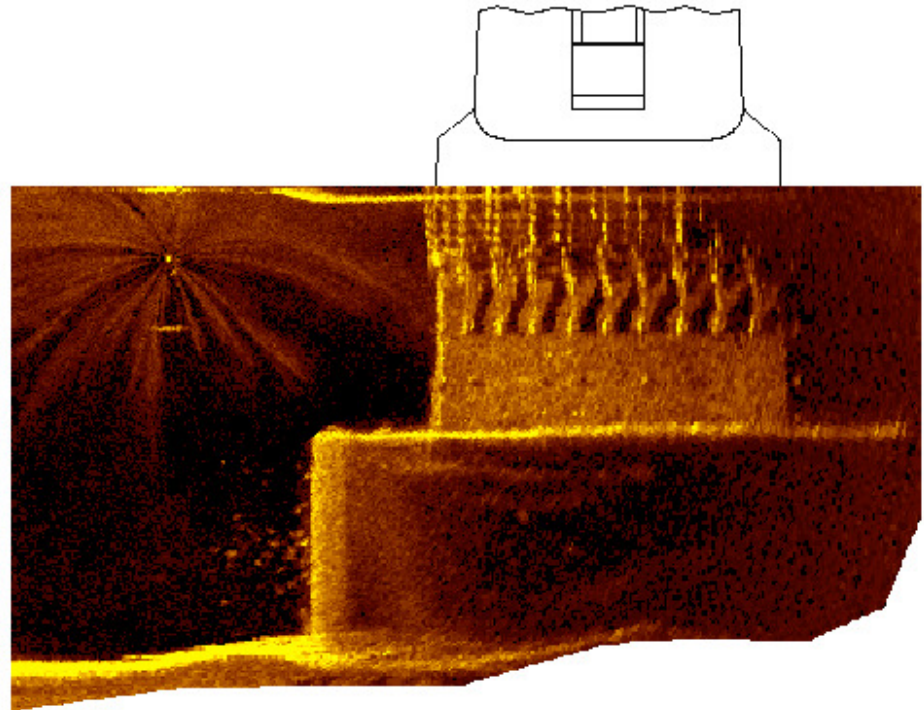
Steel Frame

Upper Encase

Lower Encase



Existing Pier Conditions

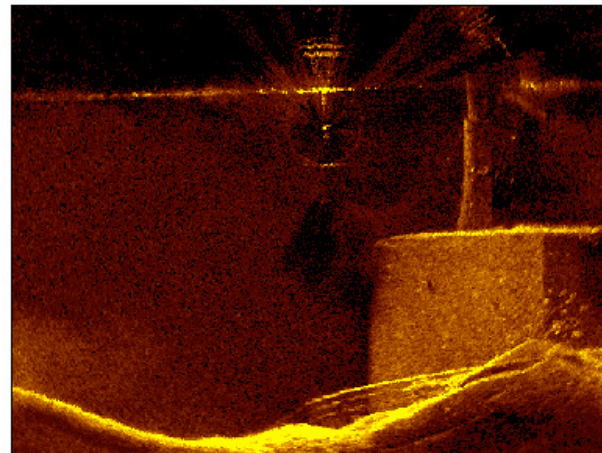
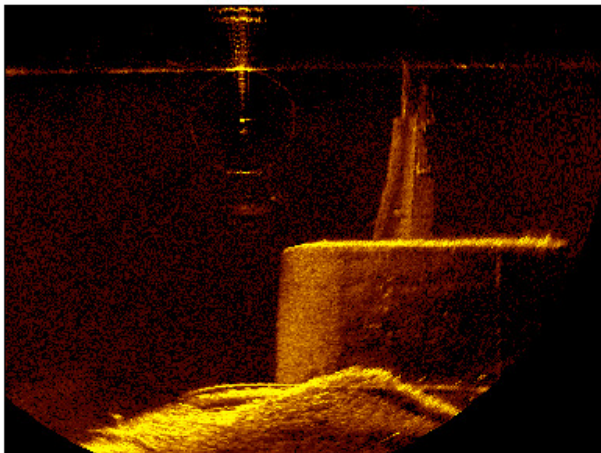
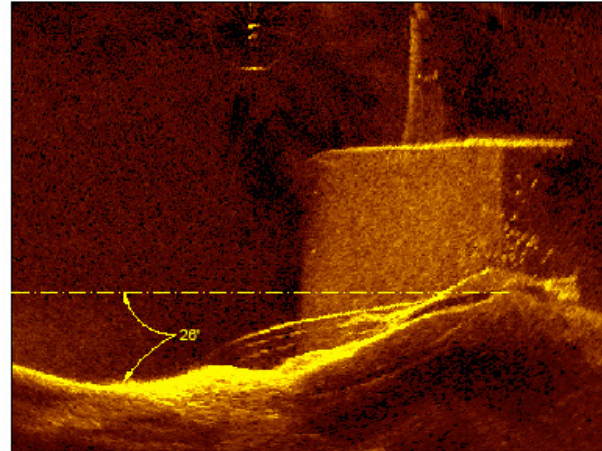


▲
FLOW



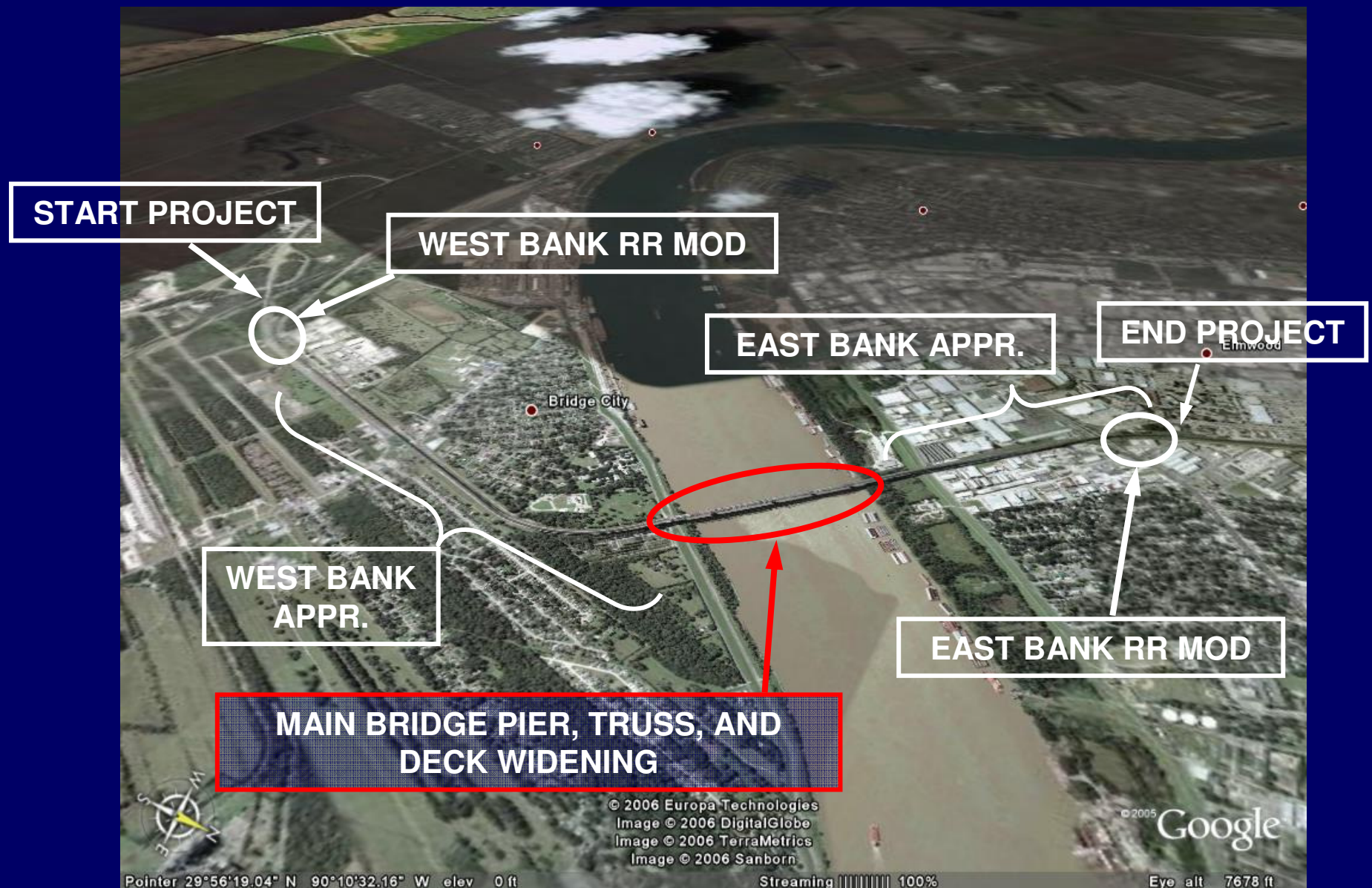
Pier I – North Face

Existing Pier Conditions

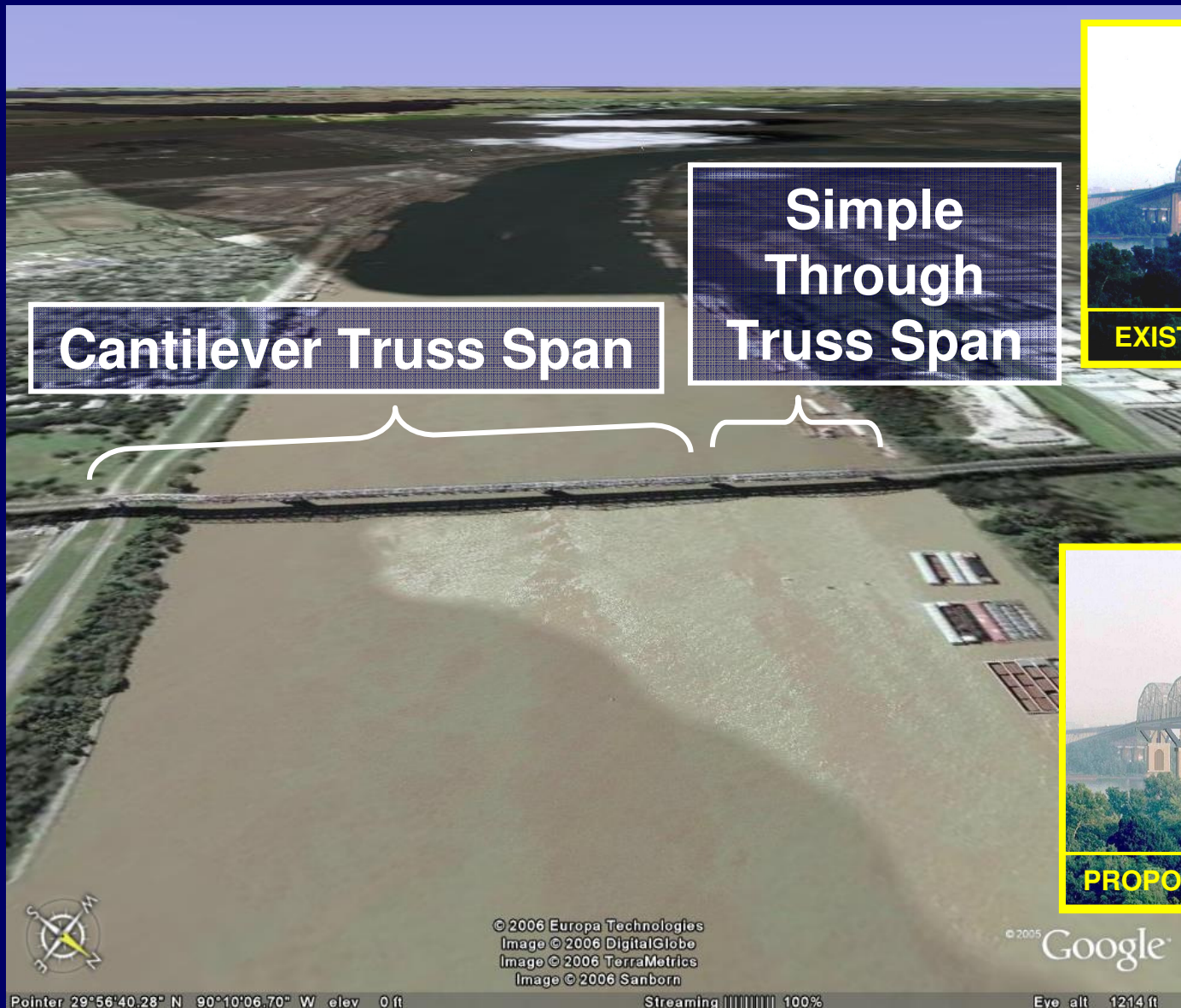


Pier II – West Nose

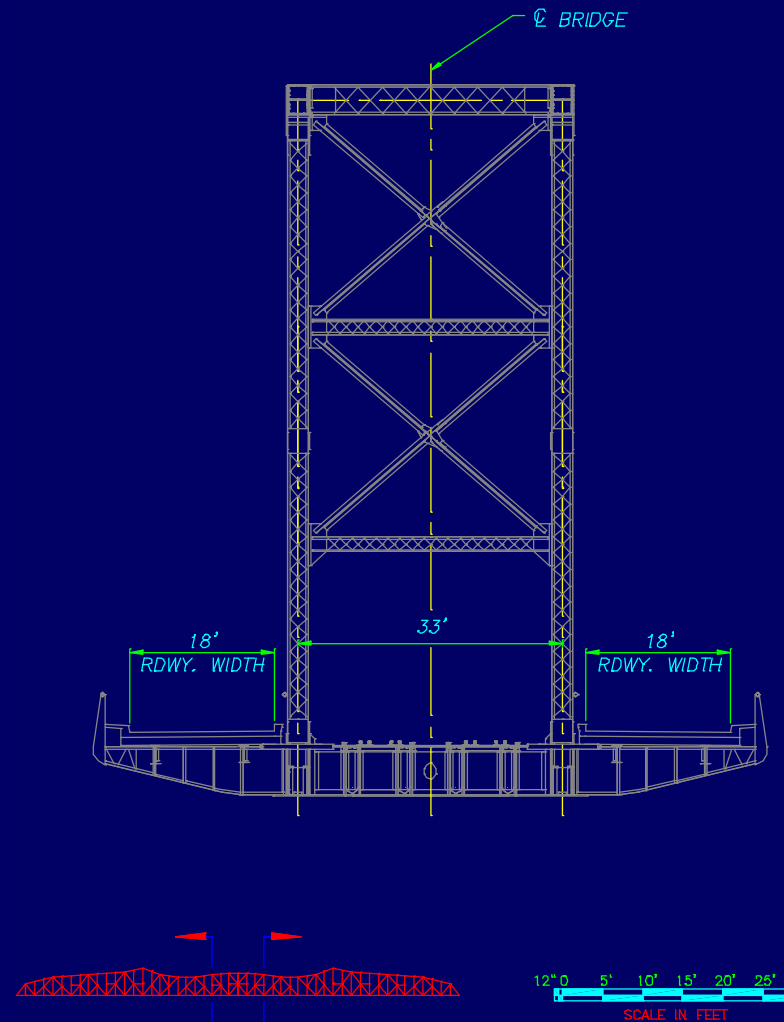
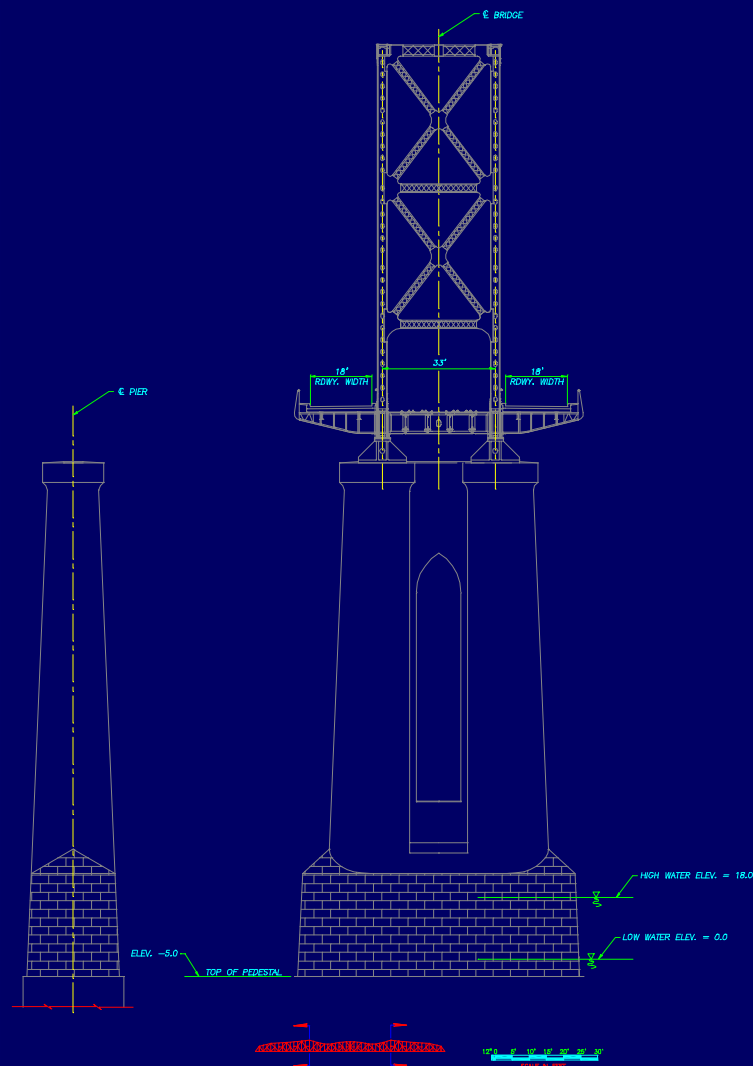
Main Bridge Truss Widening



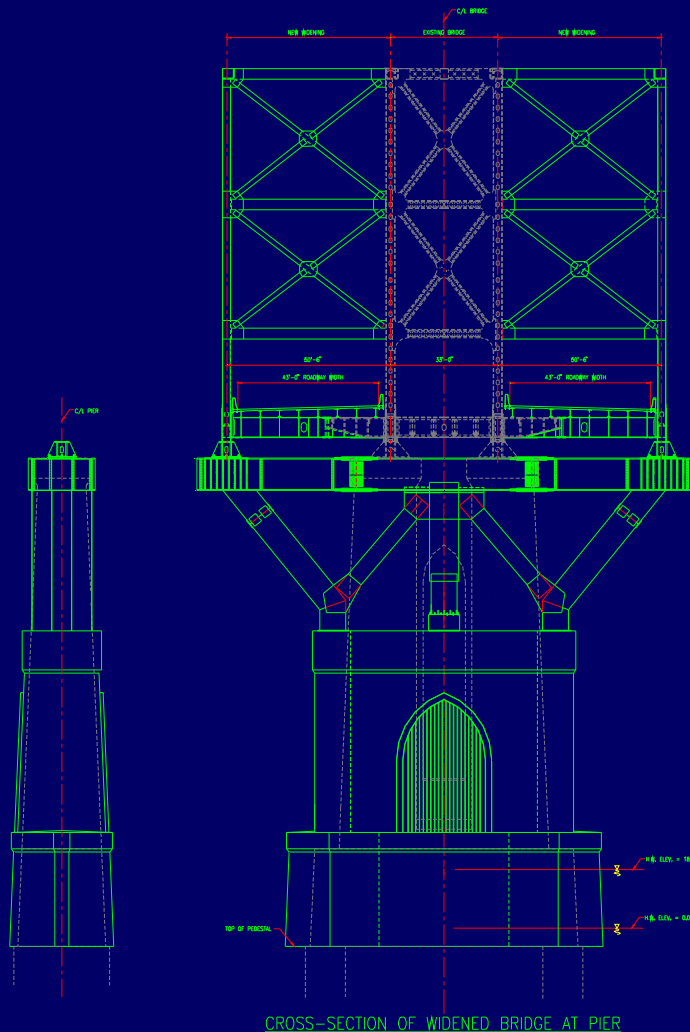
Main Bridge Truss Widening



Cross Sections – Existing Bridge



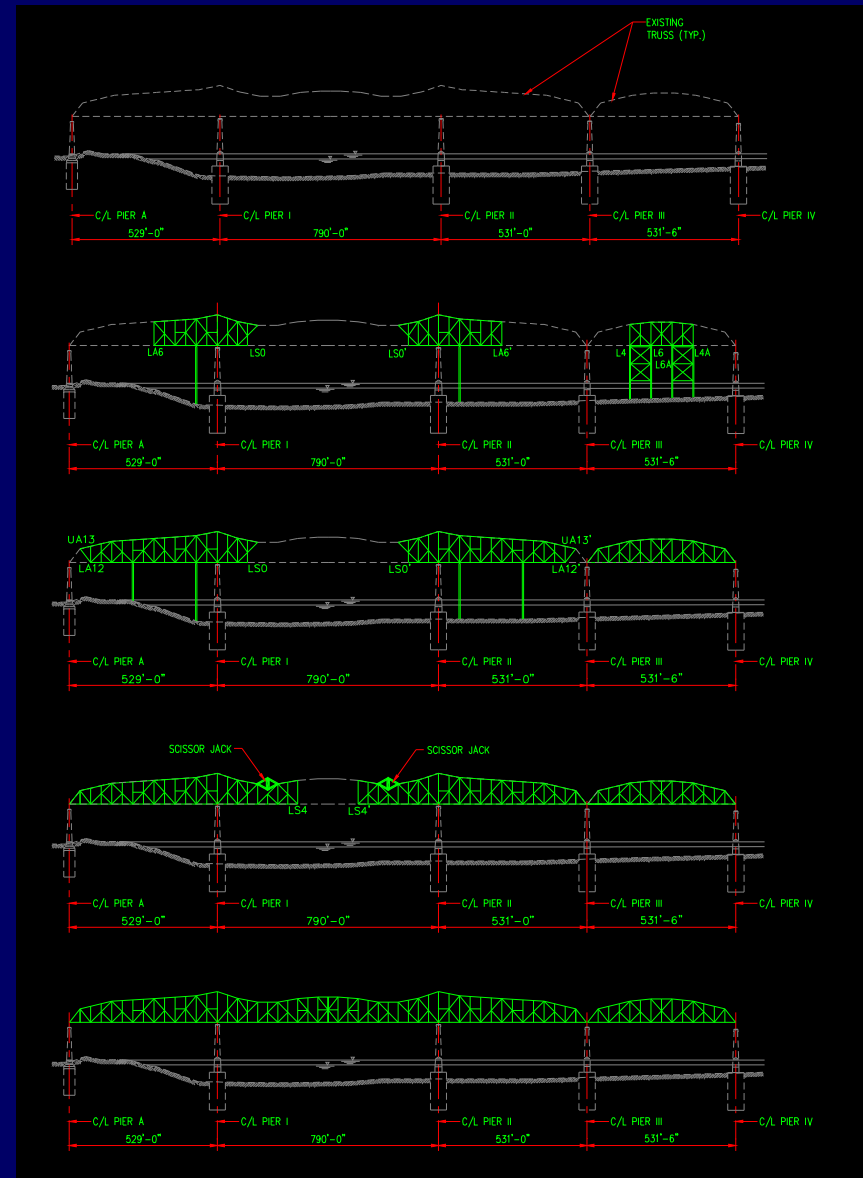
Widened Main Bridge Features



- 2 new trusses added, parallel to existing trusses.
- Roadways widened from 18 ft. to 43 ft.
- Currently: 2 – 9 ft. lanes
No offset
- Proposed: 3 – 11 ft. lanes
8 ft. shoulder
2 ft. offset

Construction and Erection

- Sequence of construction
 - Widening Truss
 - Imbalance
 - Widened Floor System

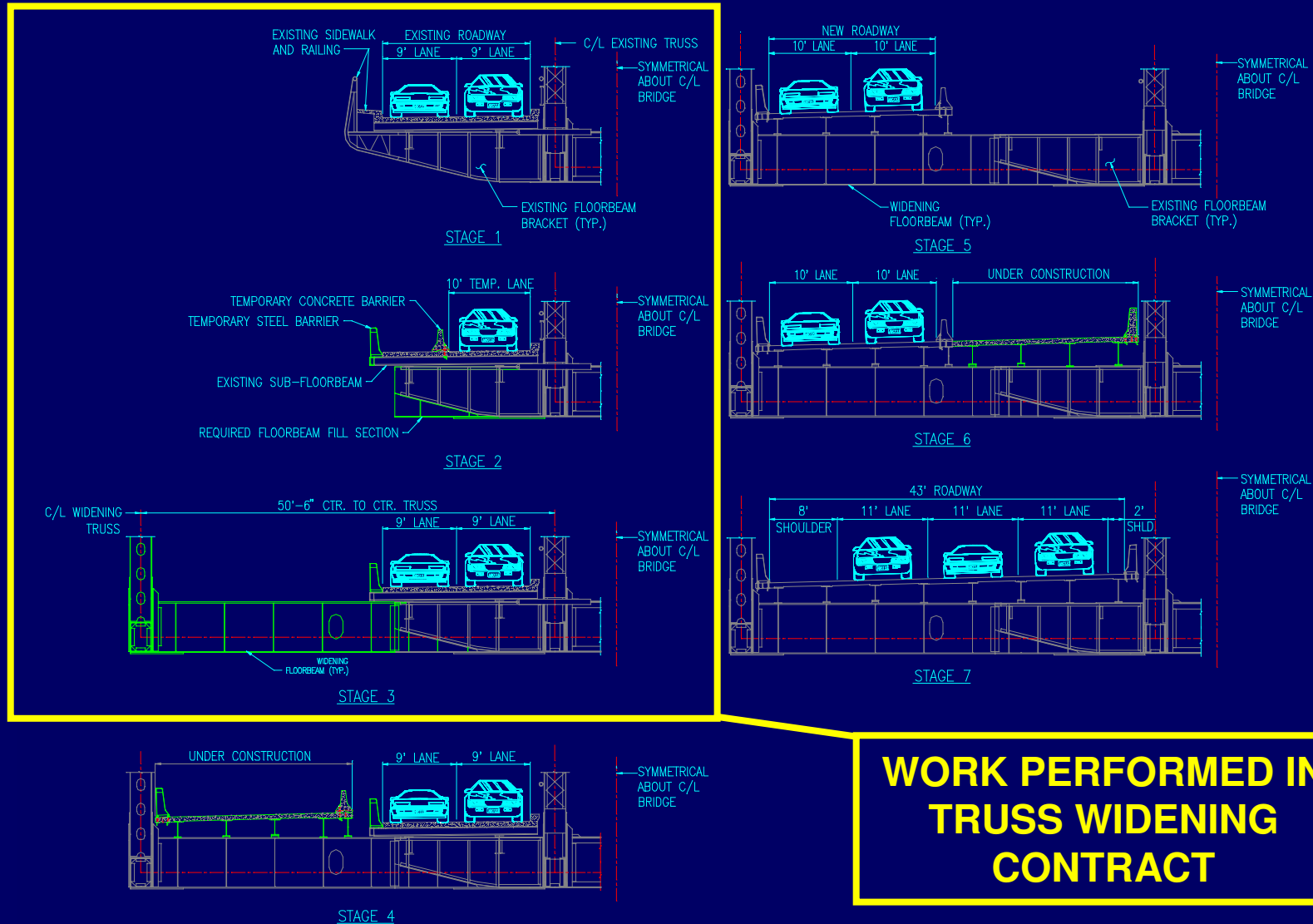


Maintenance of Traffic Through Construction

- Marine Traffic Maintained
 - same vertical and horizontal clearances
- Rail Traffic Maintained
- Vehicular Traffic Maintained
 - by use of staged construction

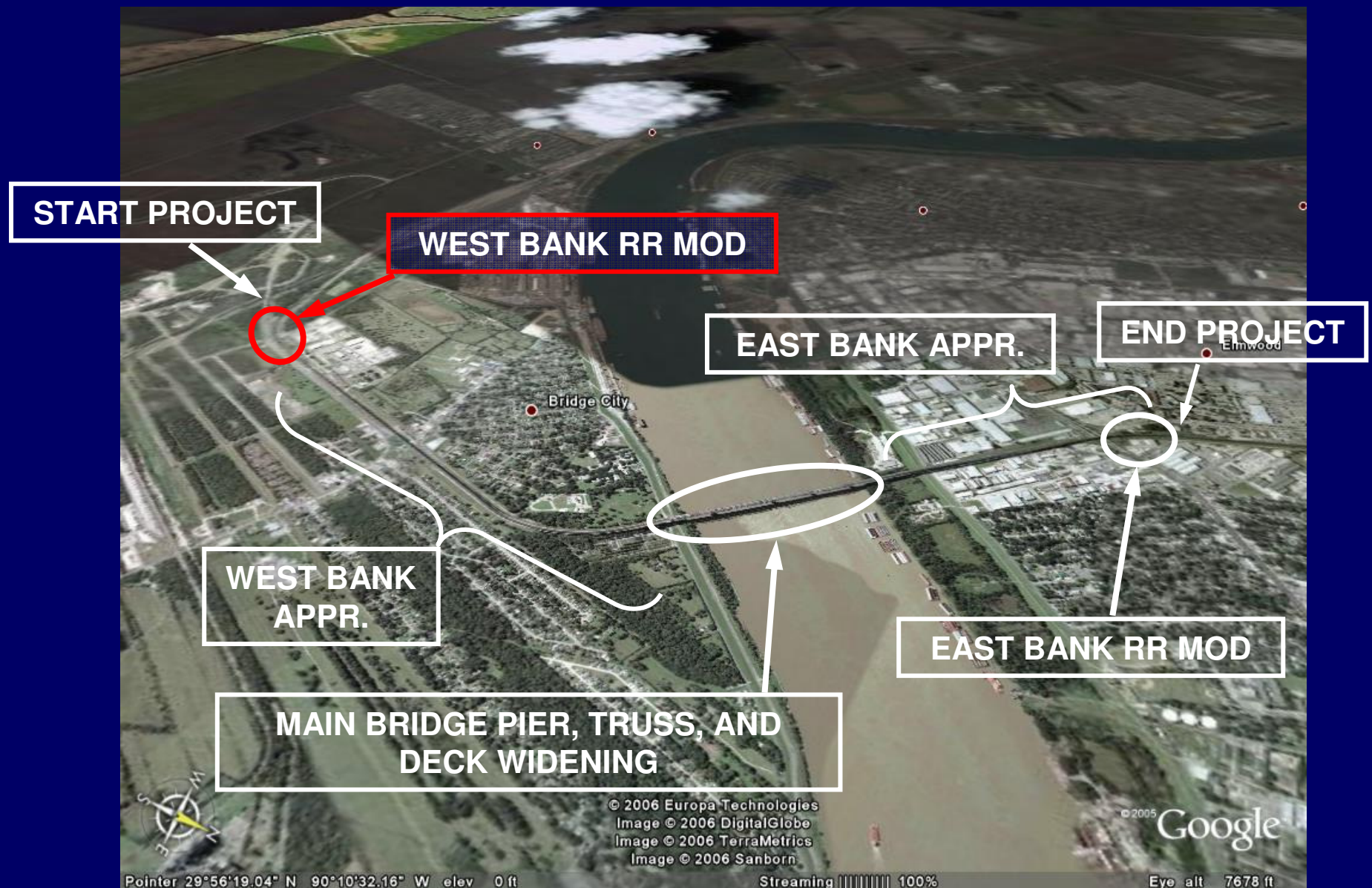
Main Bridge

Maintenance of Traffic



**WORK PERFORMED IN
TRUSS WIDENING
CONTRACT**

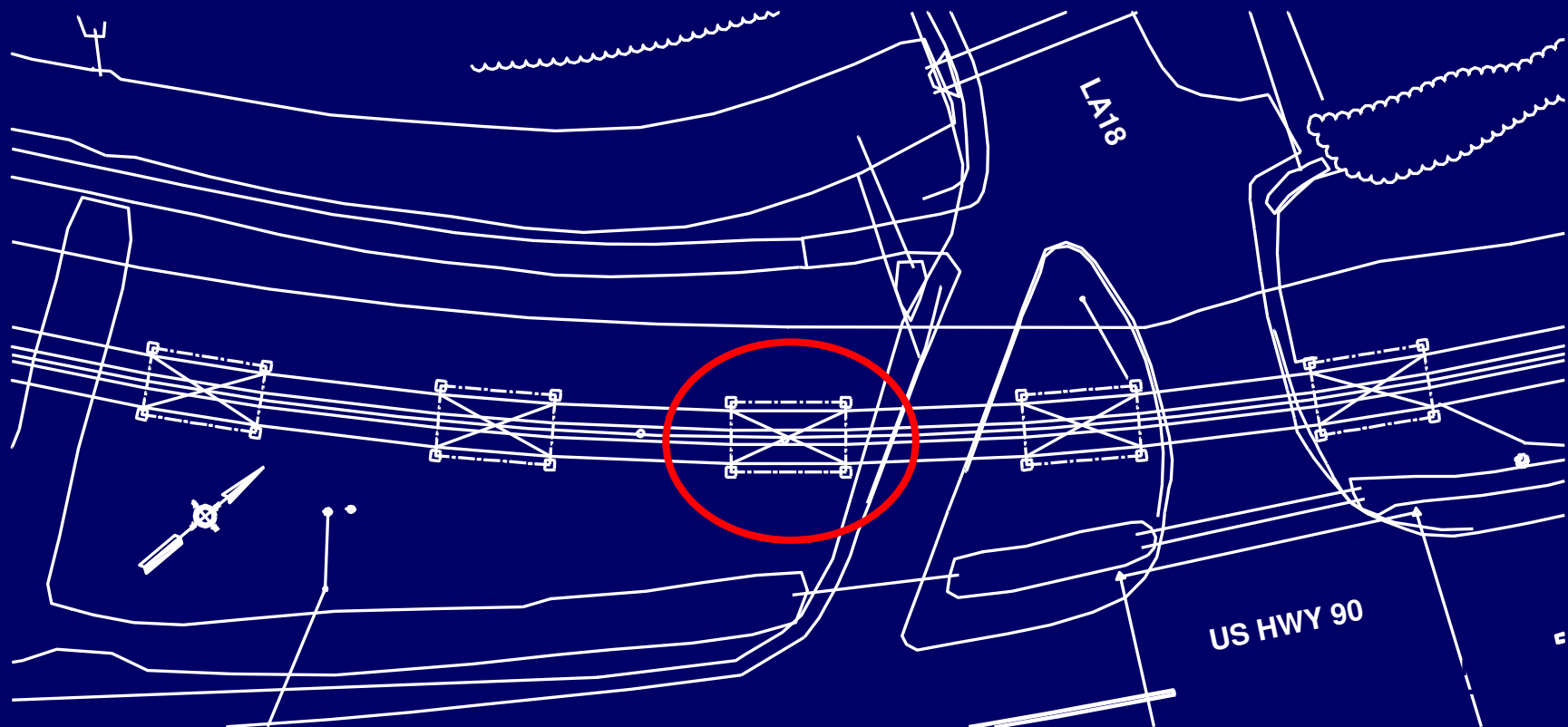
Railroad Modifications - Westbank



Railroad Modifications - Westbank

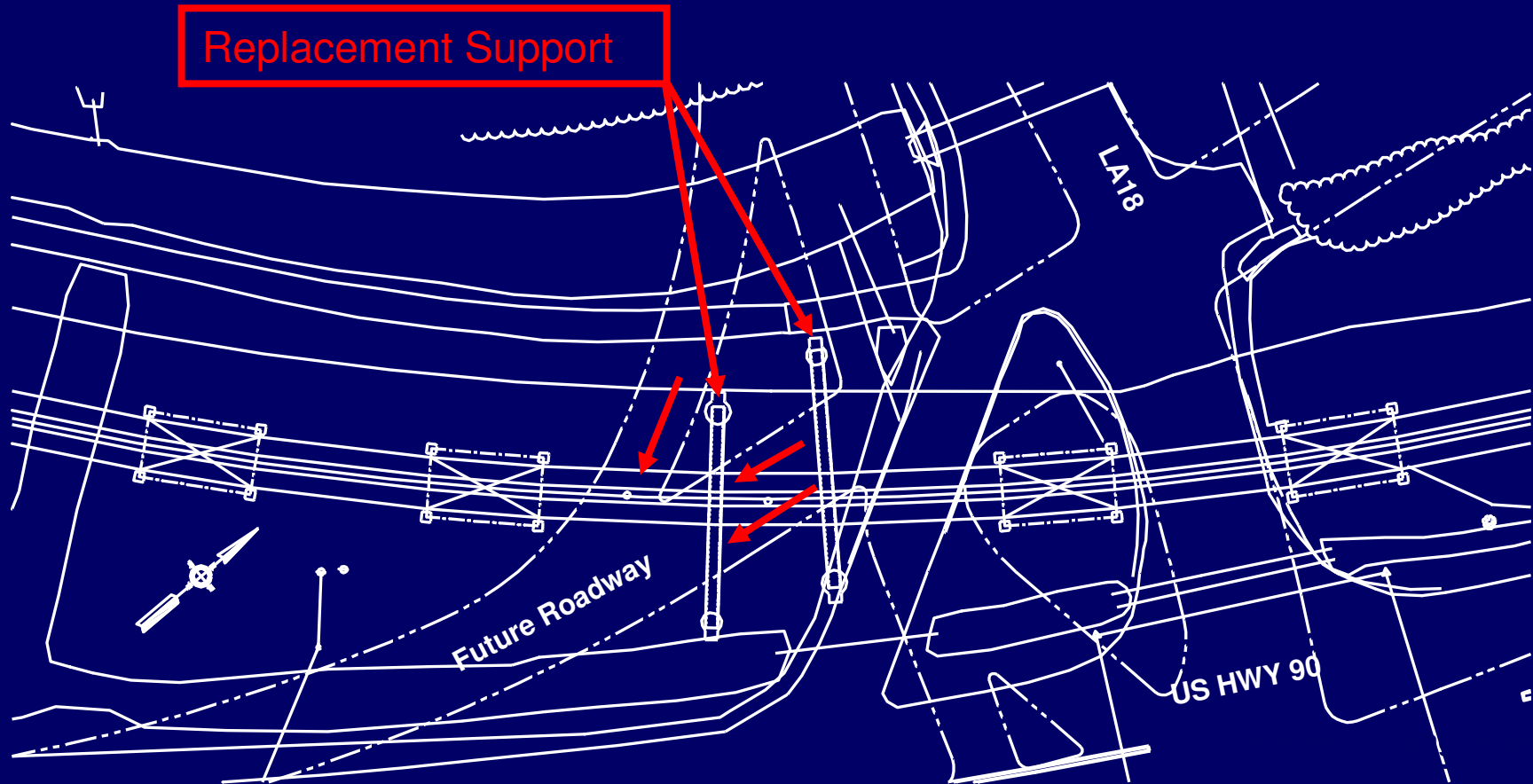


Huey P. Long Widening Project Westbank Railroad Modifications



Existing Site Conditions

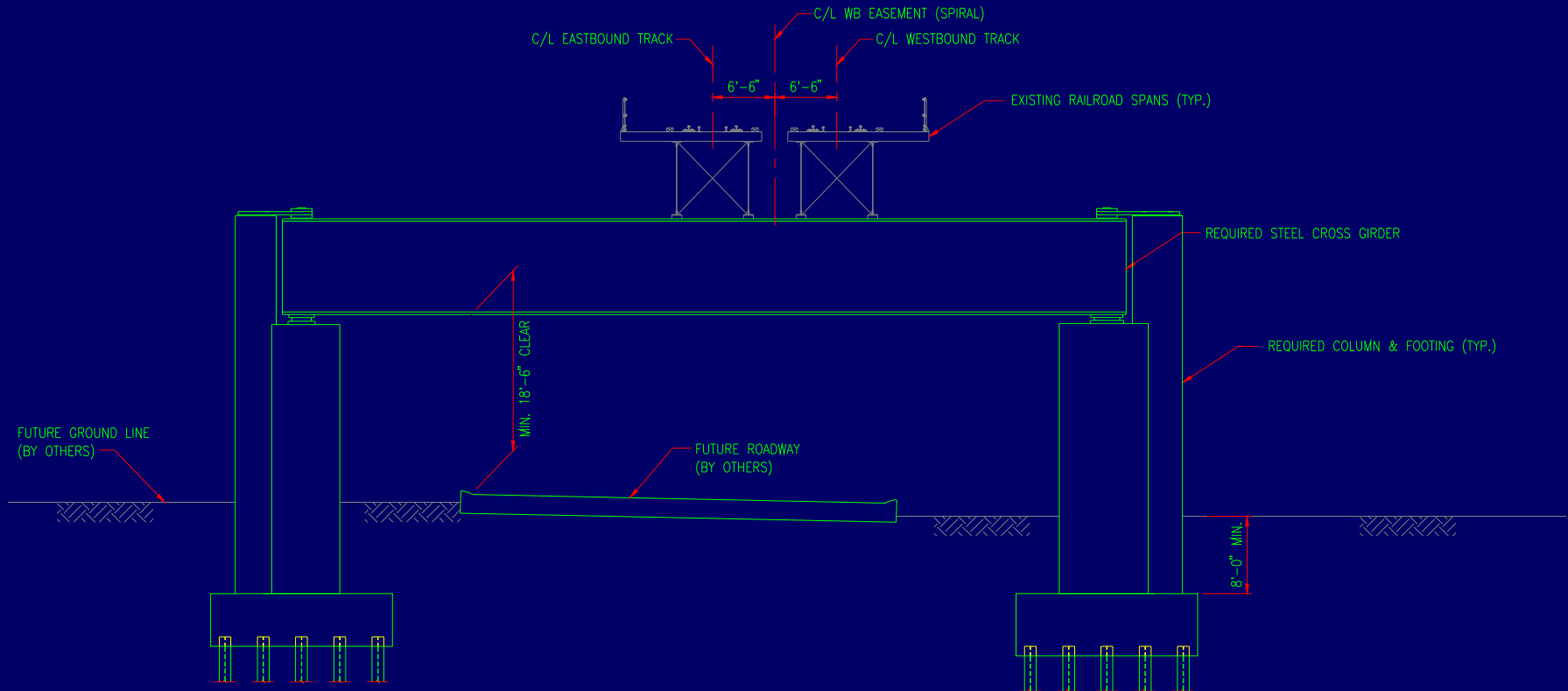
Huey P. Long Widening Project Westbank Railroad Modifications



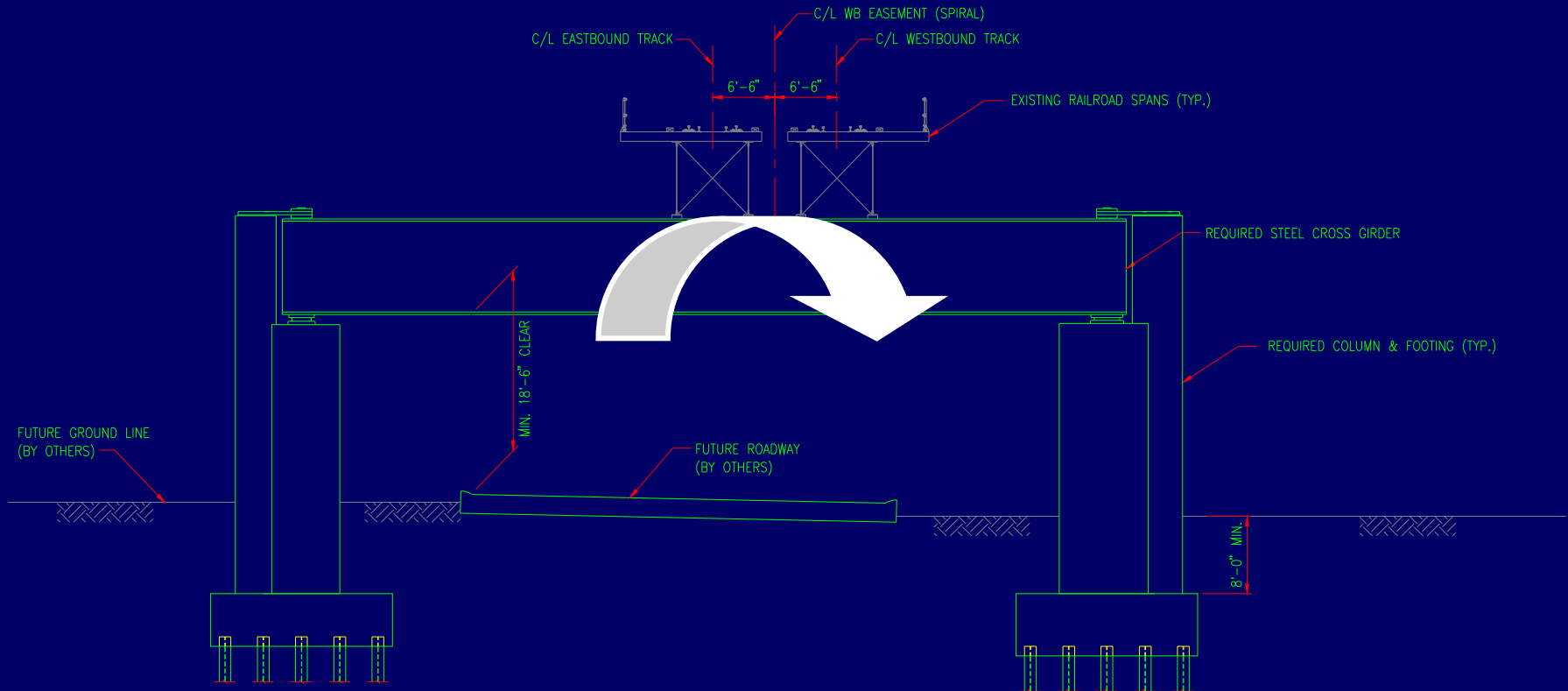
Final Site Conditions

Huey P. Long Widening Project

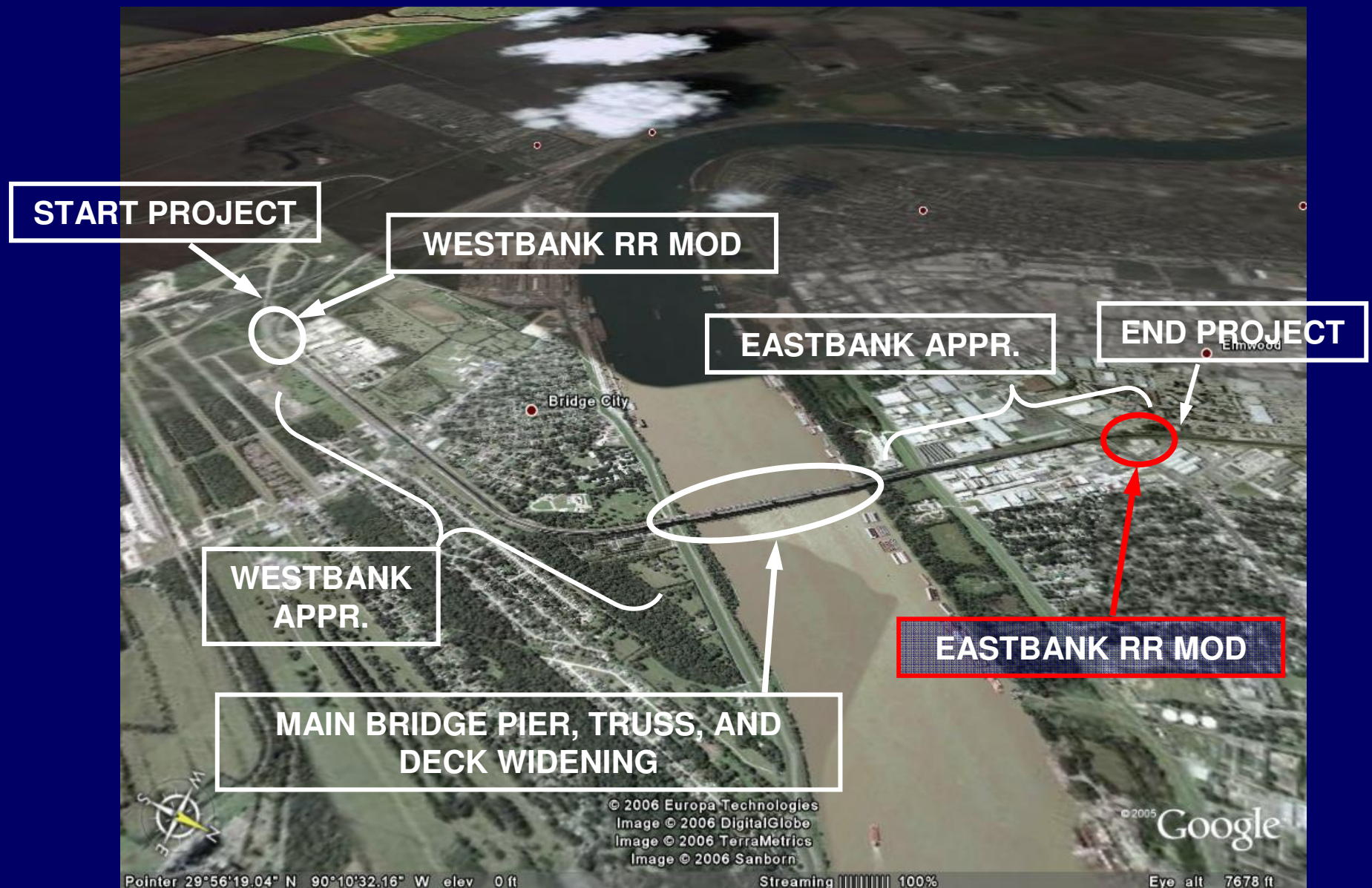
Westbank Railroad Modifications



Huey P. Long Widening Project Westbank Railroad Modifications



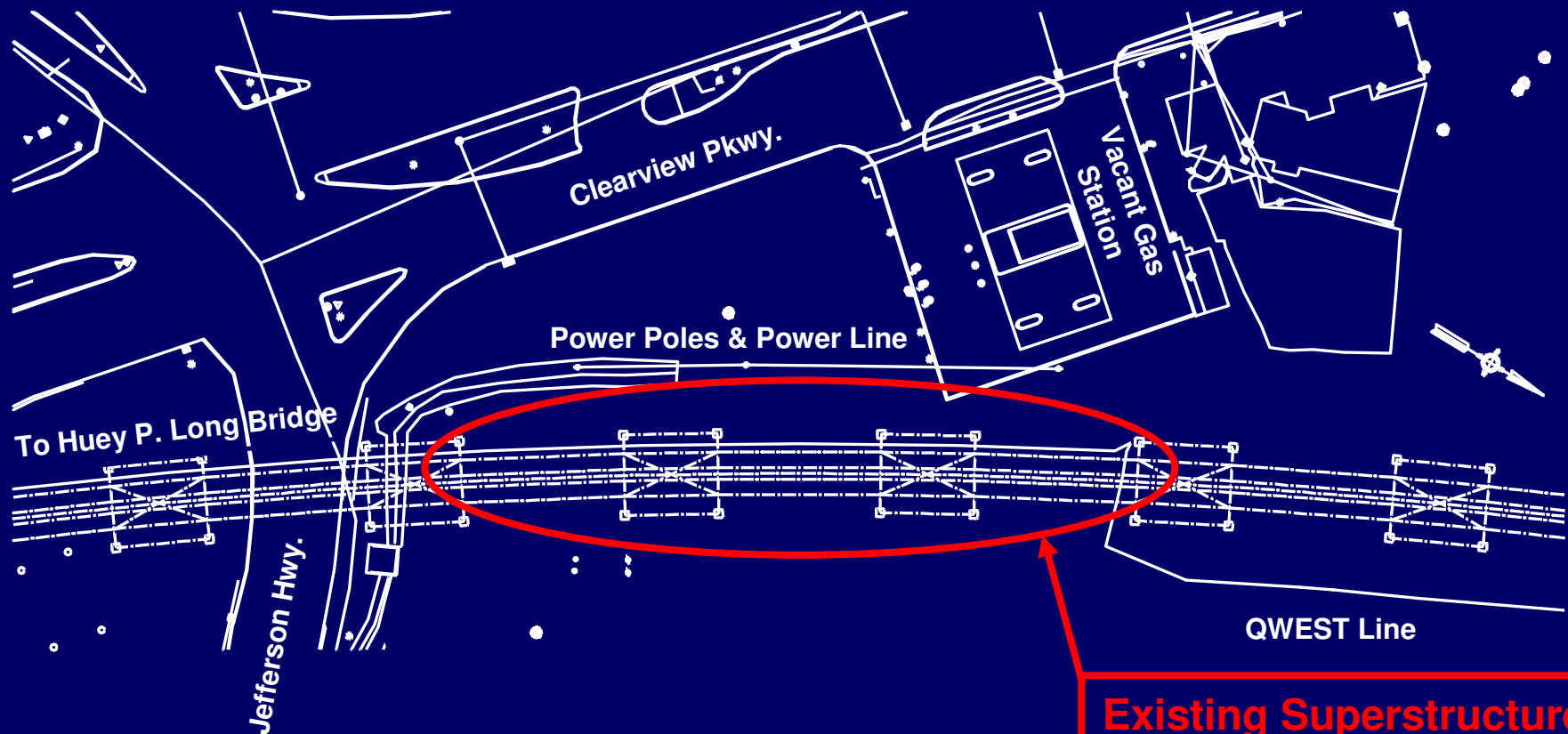
Railroad Modifications - Eastbank



Railroad Modifications - Eastbank



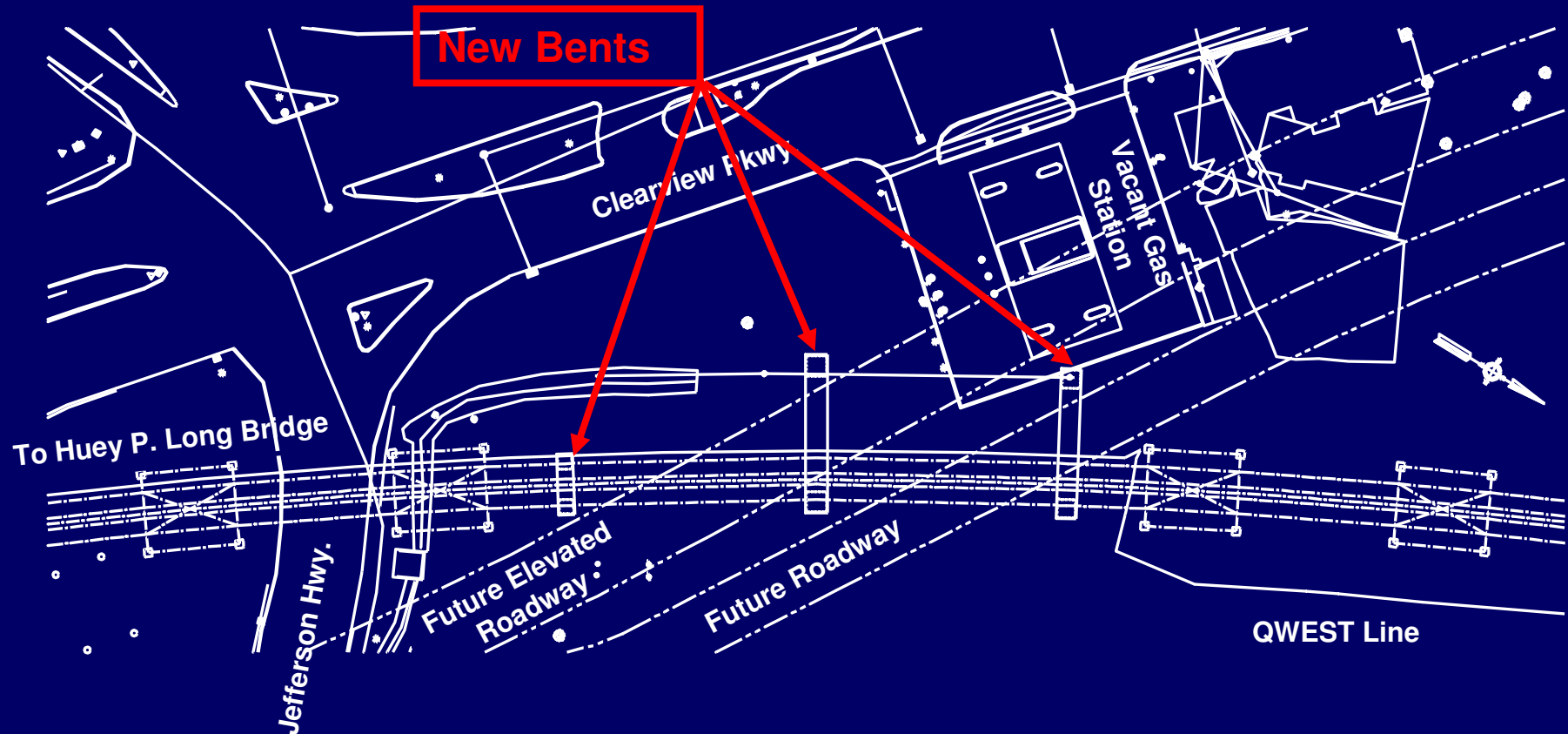
Huey P. Long Widening Project Eastbank Railroad Modifications



Existing Site Conditions

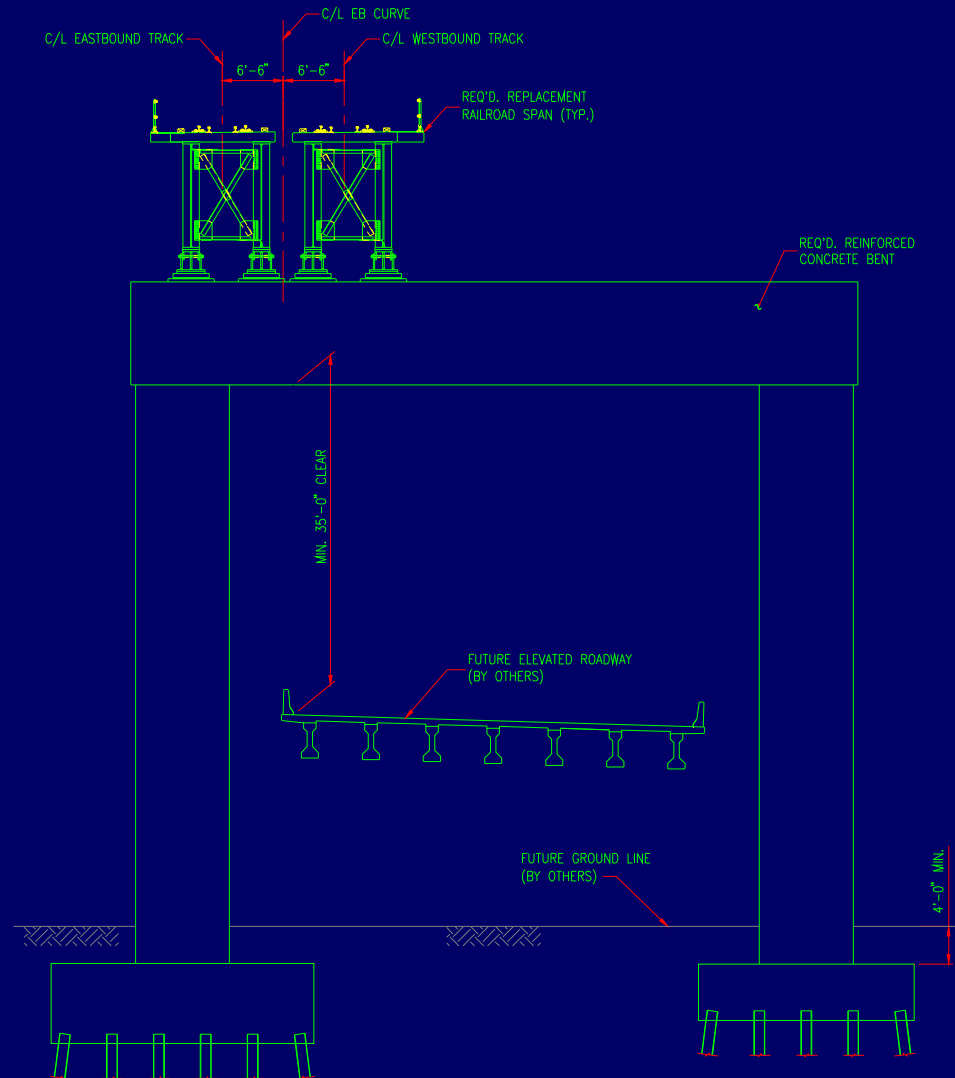
**Existing Superstructure
and Towers to be
Replaced**

Huey P. Long Widening Project Eastbank Railroad Modifications

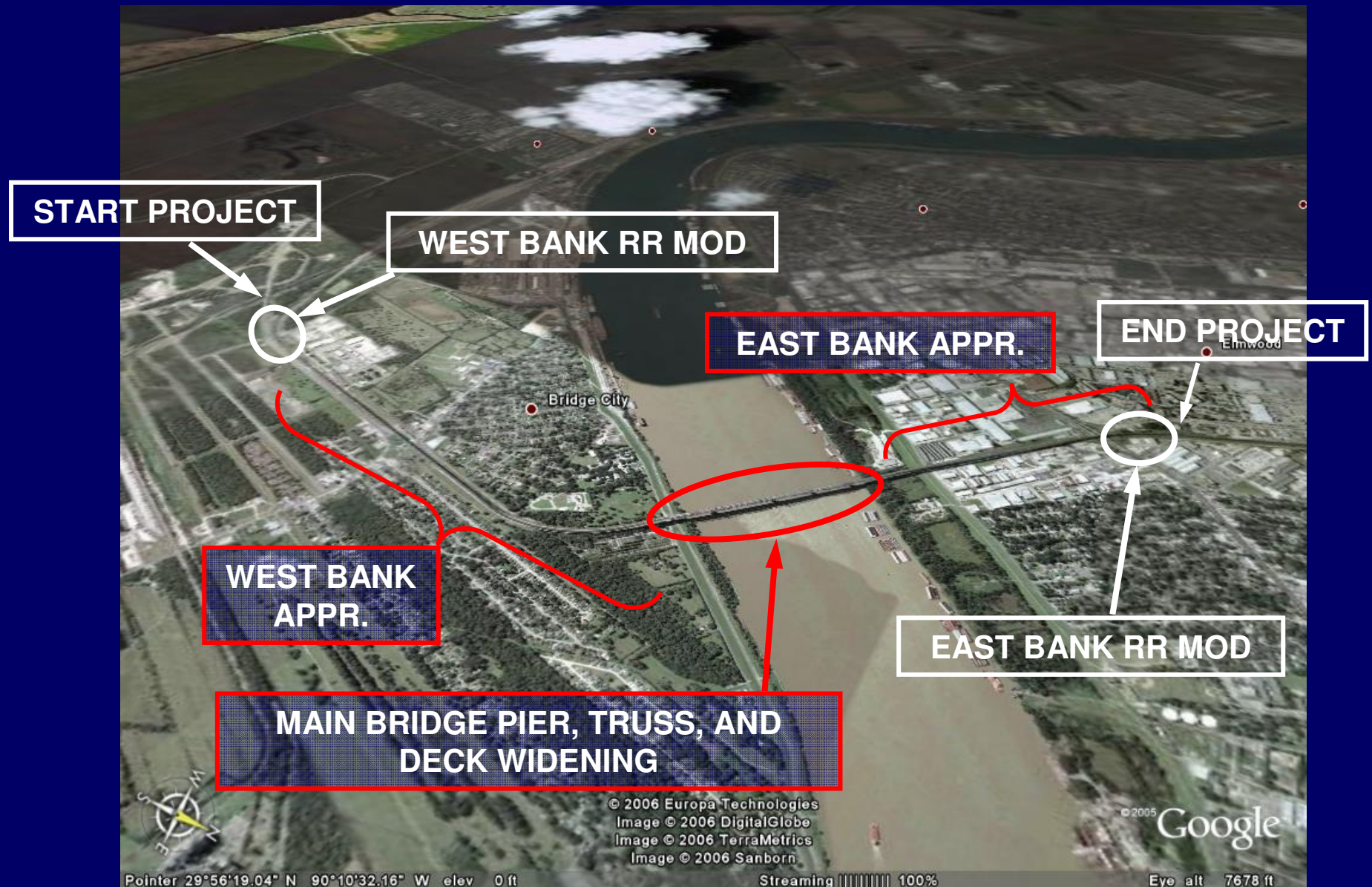


Final Site Conditions

Huey P. Long Widening Project Eastbank Railroad Modifications



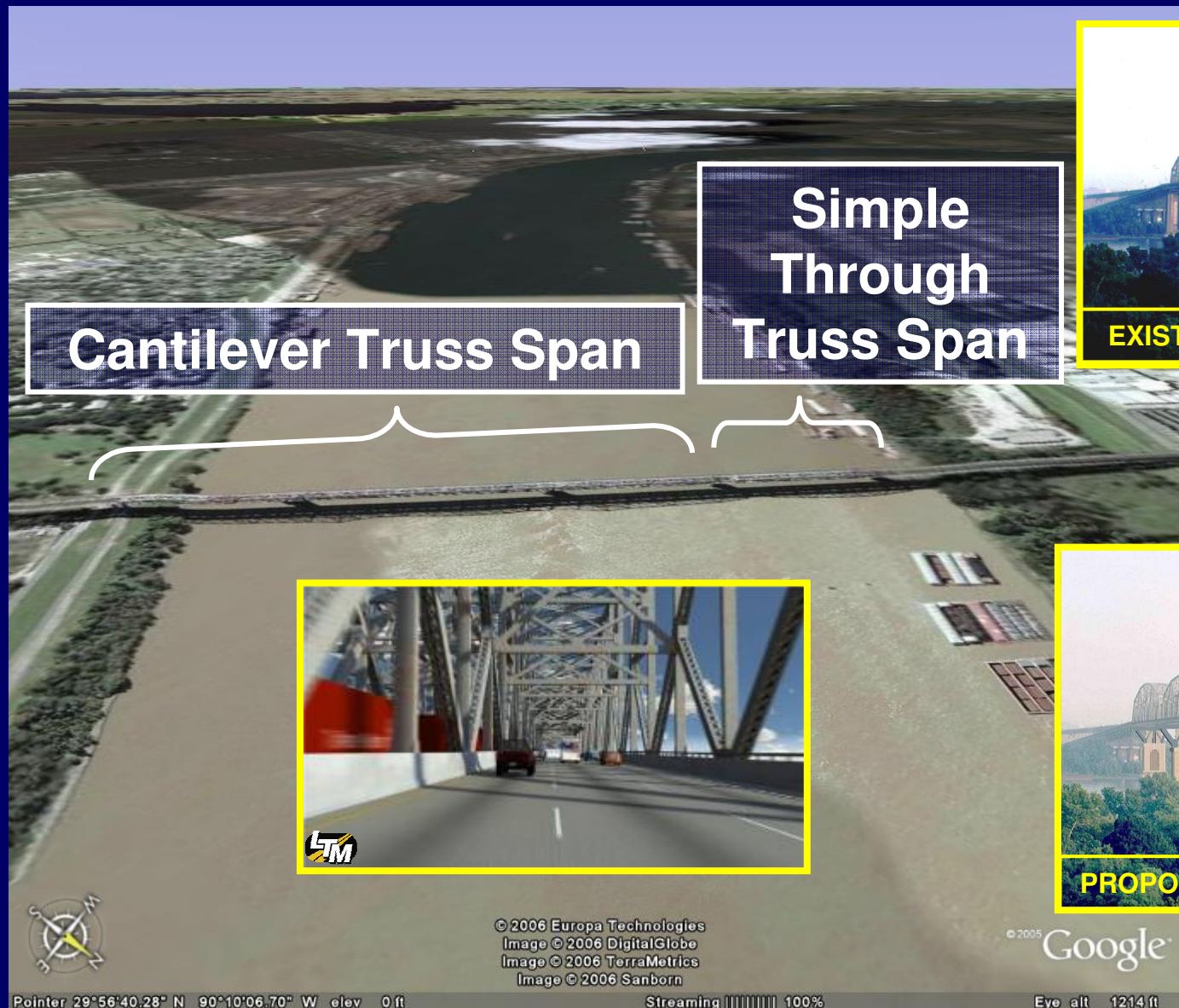
Approaches & Deck Widening



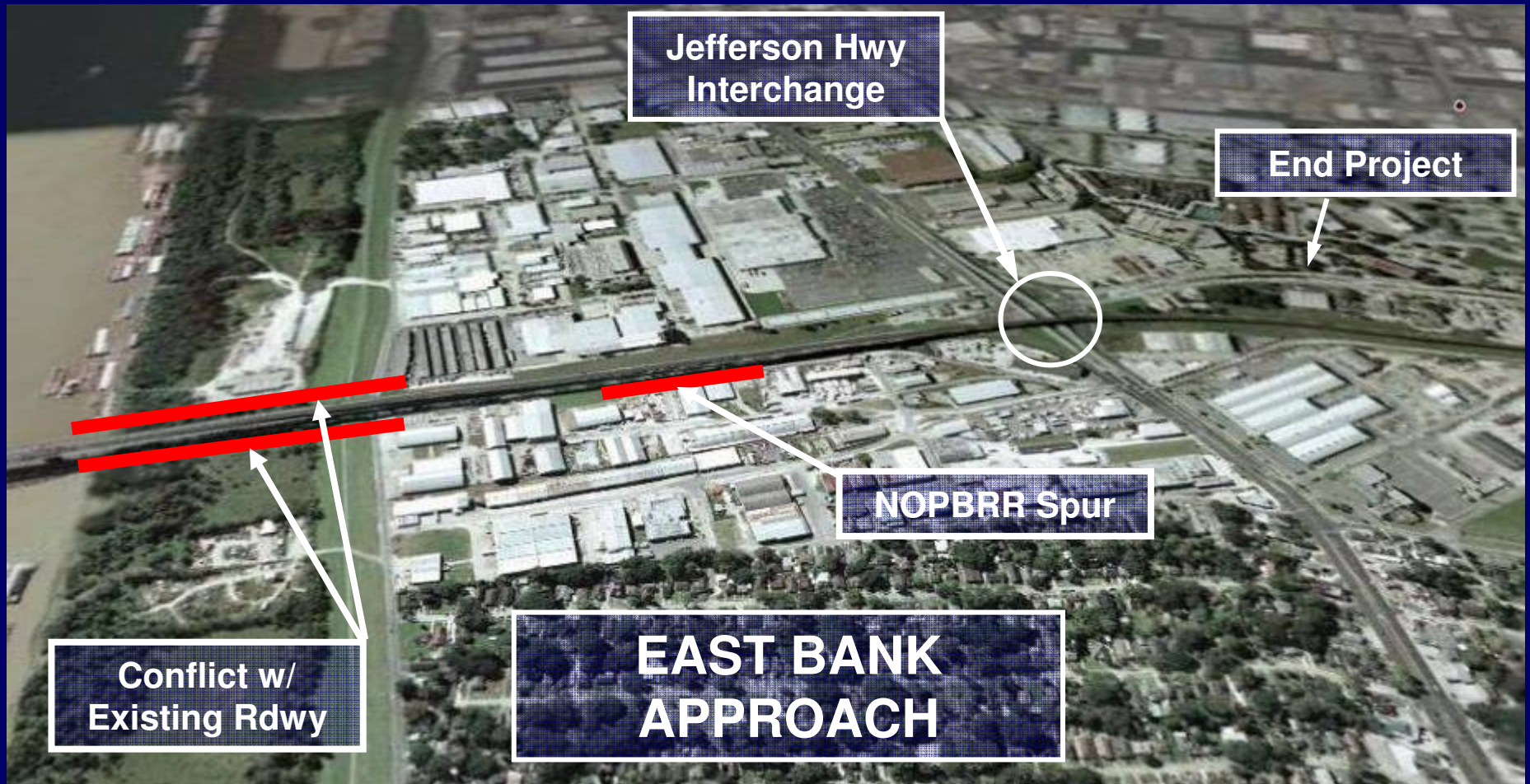
Approaches & Deck Widening



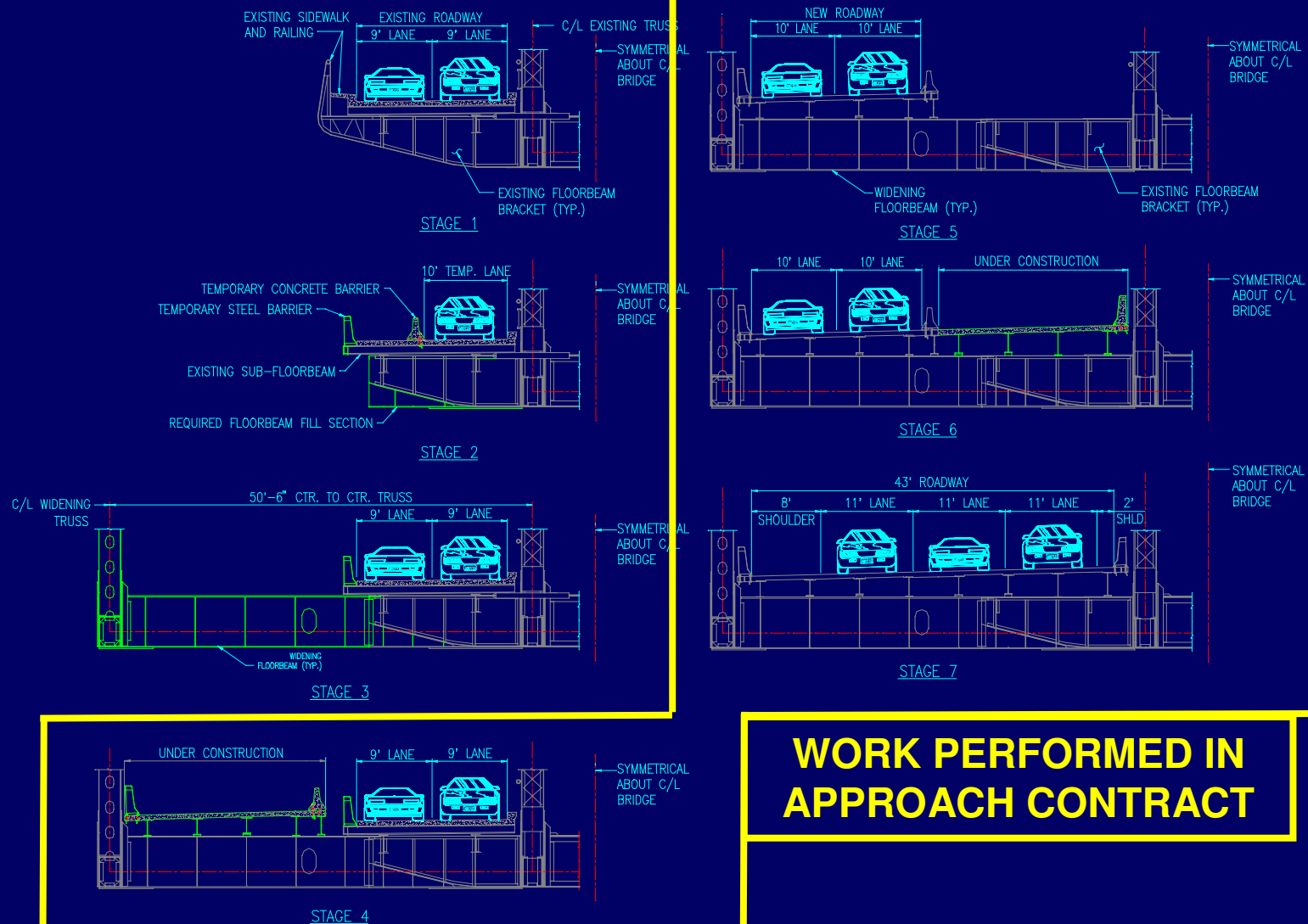
Approaches & Deck Widening



Approaches & Deck Widening

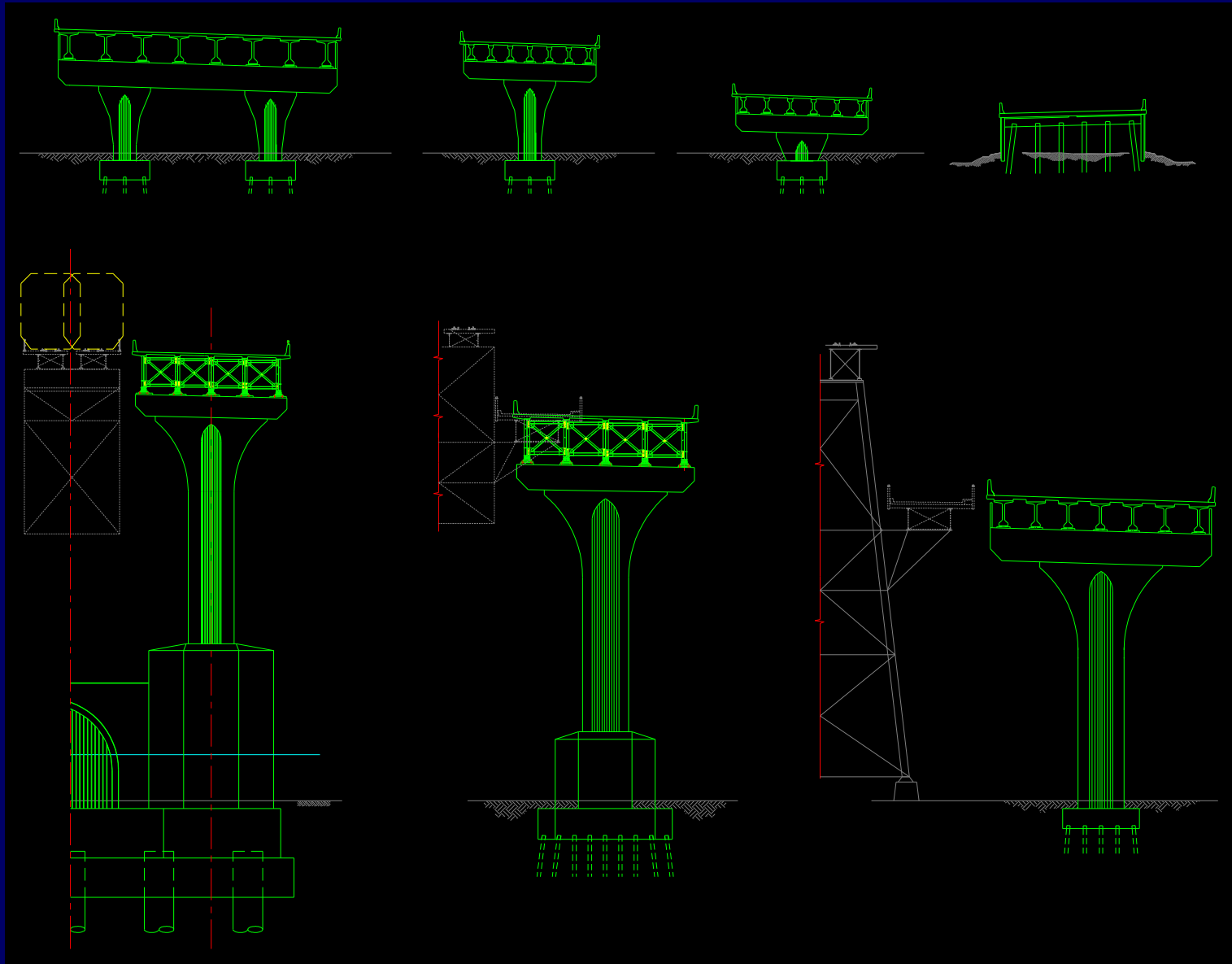


Main Bridge Deck Widening

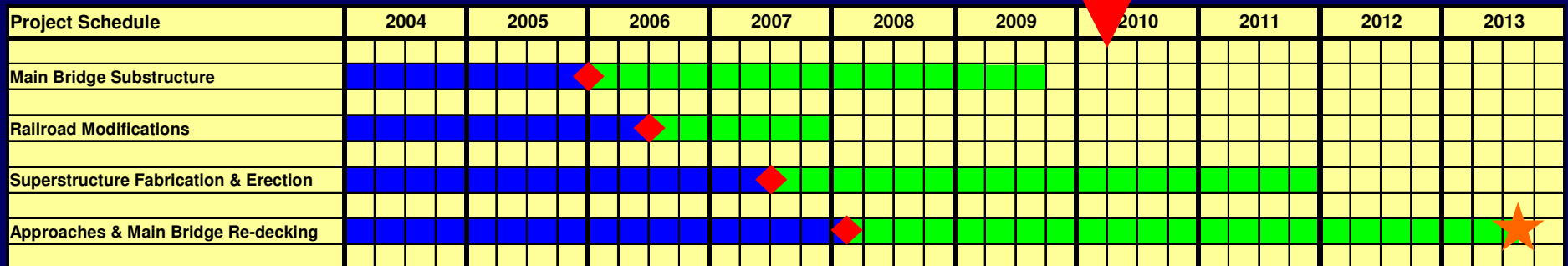


**WORK PERFORMED IN
APPROACH CONTRACT**

Approaches & Deck Widening



Project Timeline



- Work Completed

- Railroad Modifications
- Main Bridge Pier Widening

- Work Under Construction

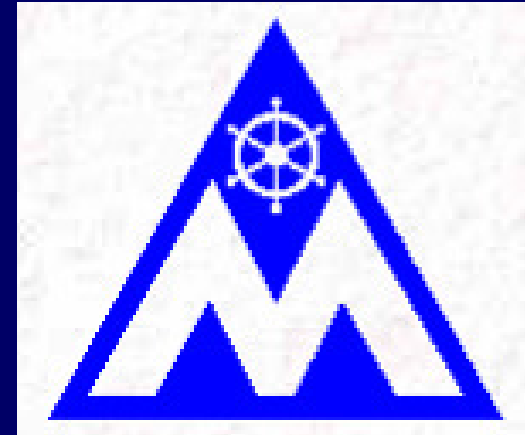
- Main Bridge Truss Widening
- West Bank Approach, Main Bridge Deck Widening, East Bank Approach



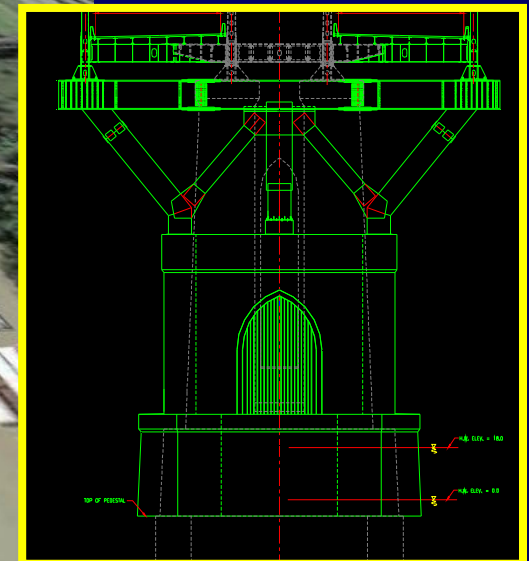
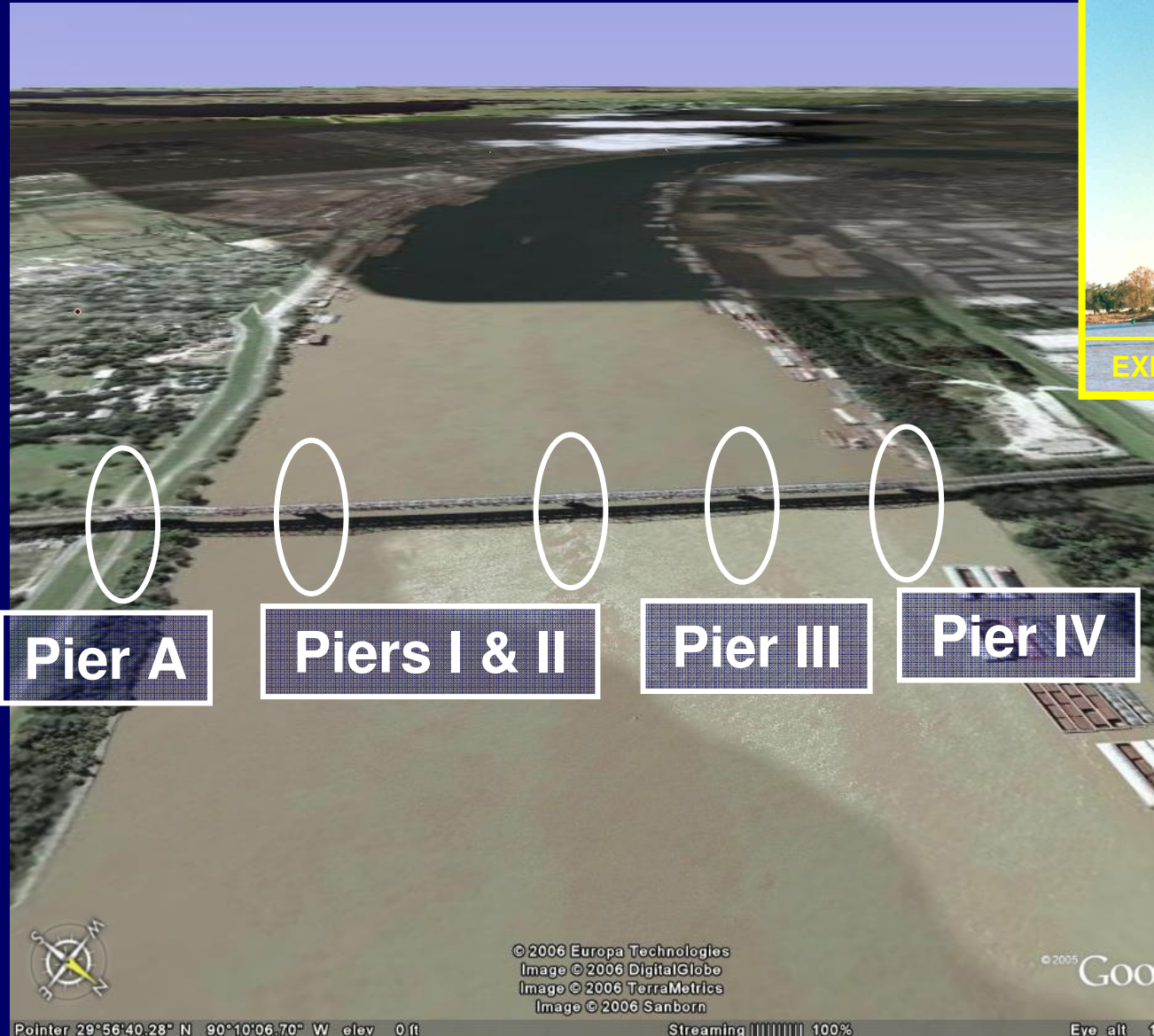
Project Status – Completed

Main Bridge Pier Widening

- Letting Date:
 - December 14, 2005
- Notice To Proceed Date:
 - April 10, 2006
- Construction Bid:
 - \$ 98,826,907
- Contractor:
 - Massman Construction Co.



Main Bridge Pier Widening



PROPOSED WIDENING

Main Bridge Pier Widening



Main Bridge Pier Widening



Main Bridge Pier Widening



Main Bridge Pier Widening



Main Bridge Pier Widening



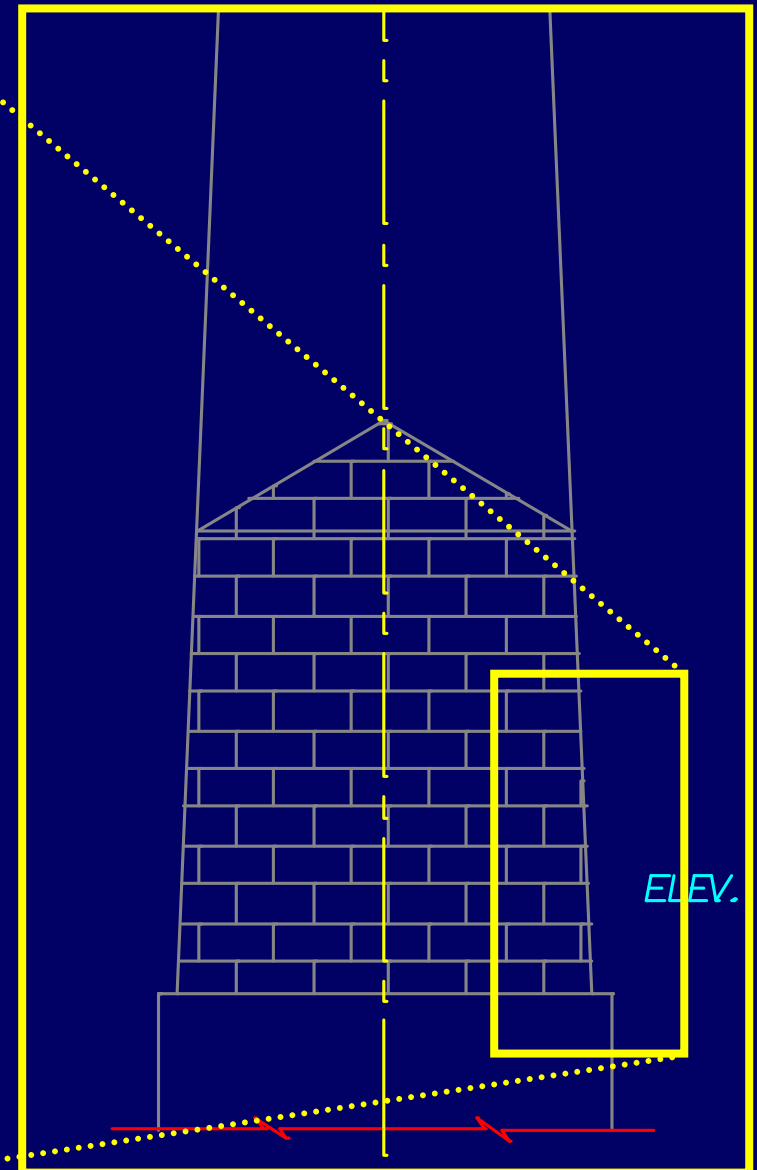
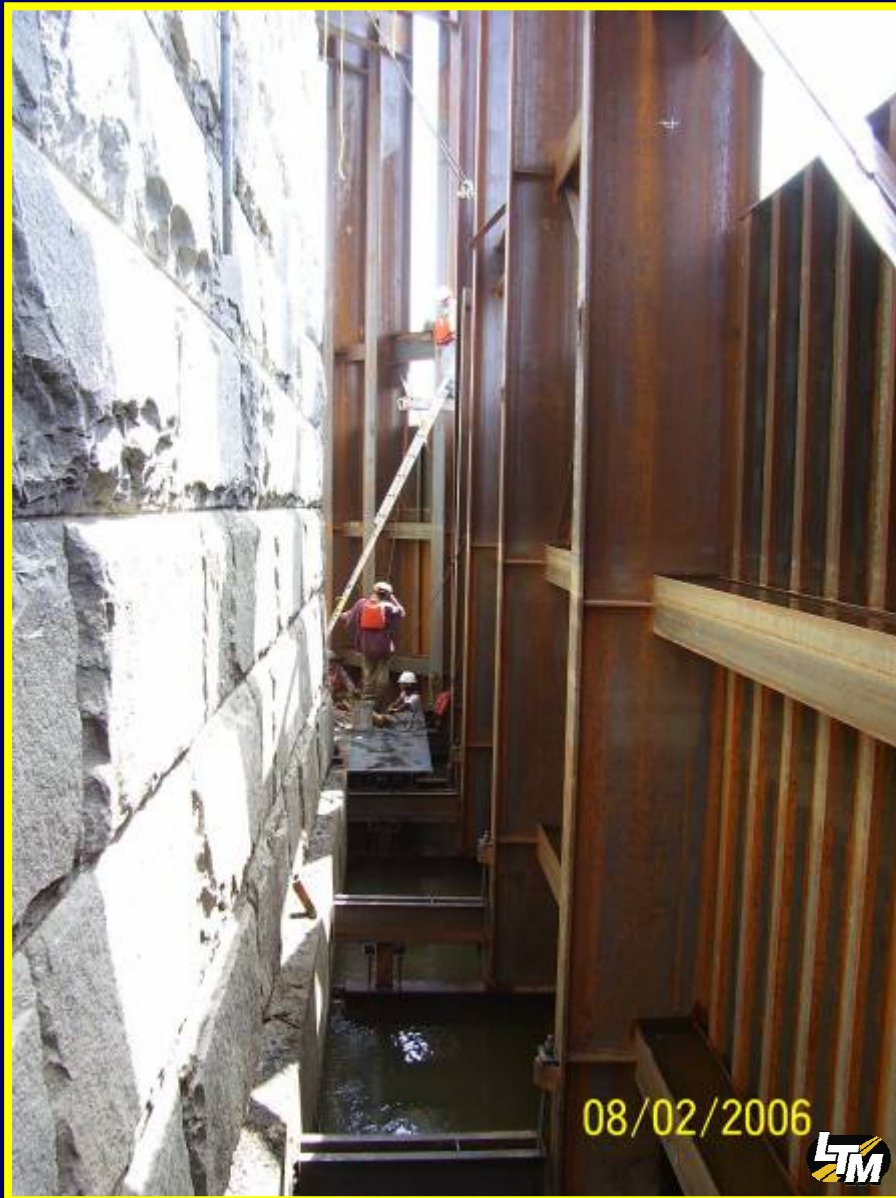
Main Bridge Pier Widening



Main Bridge Pier Widening



Main Bridge Pier Widening



Main Bridge Pier Widening



Main Bridge Pier Widening



Main Bridge Pier Widening



08/25/2006



Main Bridge Pier Widening



Main Bridge Pier Widening



09/26/2006



Main Bridge Pier Widening



Main Bridge Pier Widening



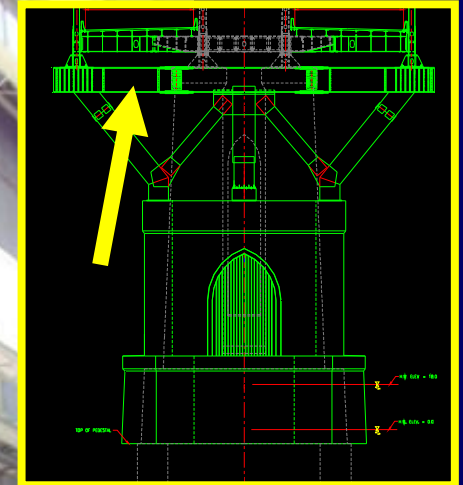
Main Bridge Pier Widening



Main Bridge Pier Widening



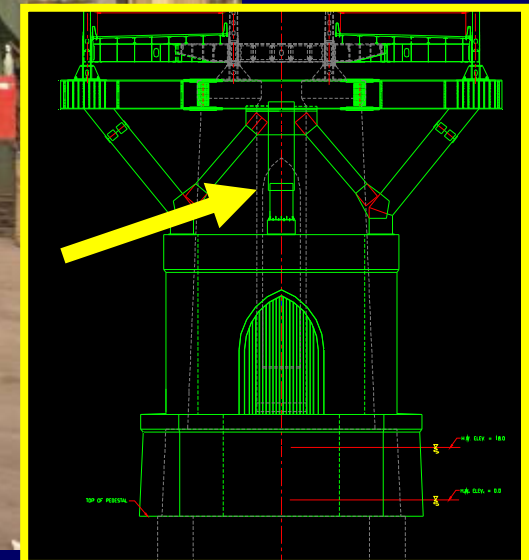
Main Bridge Pier Widening



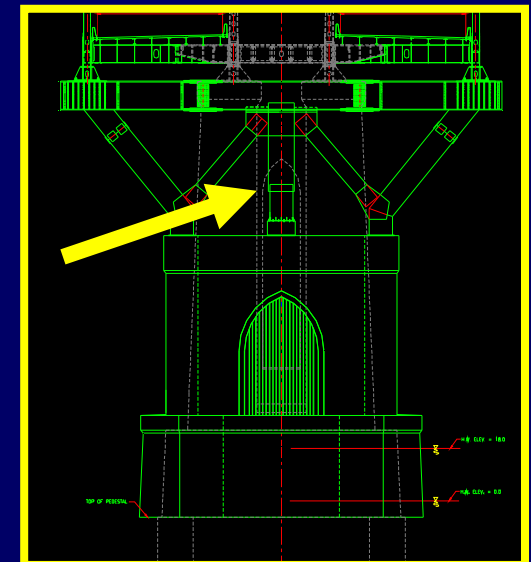
05/07/2007



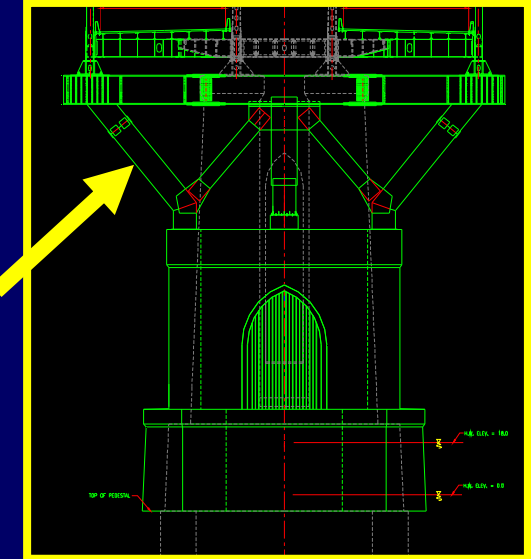
Main Bridge Pier Widening



Main Bridge Pier Widening



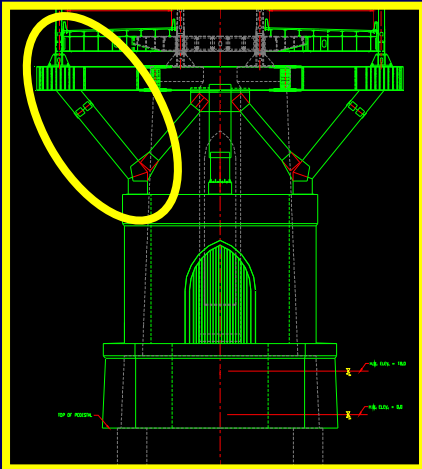
Main Bridge Pier Widening



Main Bridge Pier Widening



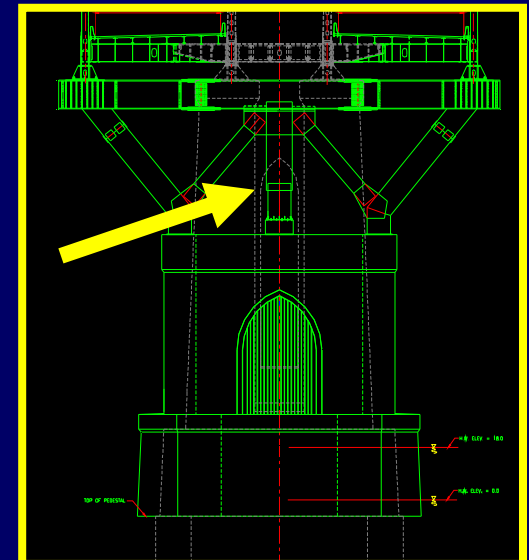
Main Bridge Pier Widening



Main Bridge Pier Widening



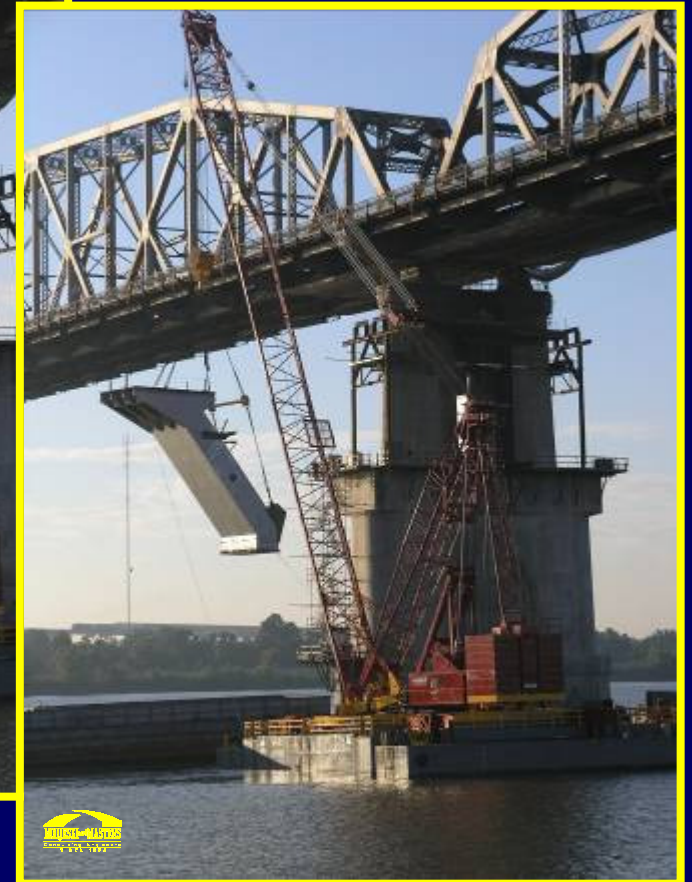
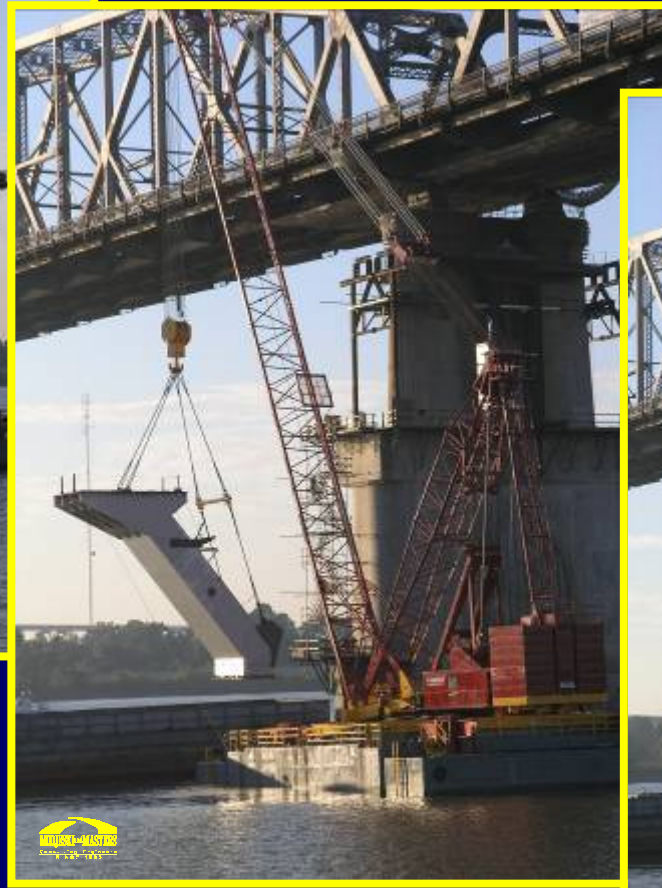
Main Bridge Pier Widening



Main Bridge Pier Widening



Main Bridge Pier Widening



Main Bridge Pier Widening



Main Bridge Pier Widening



Main Bridge Pier Widening



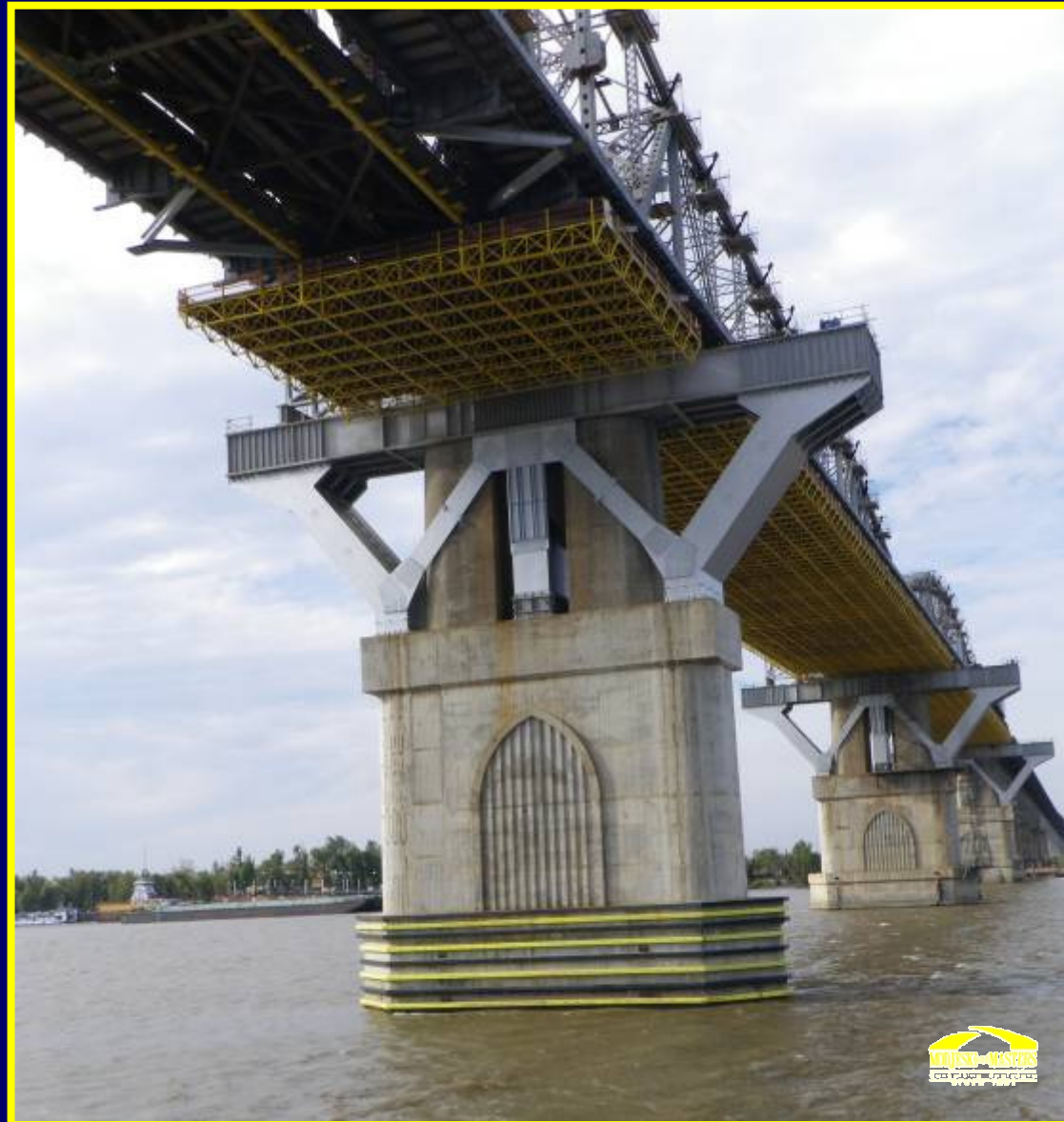
Main Bridge Pier Widening



Main Bridge Pier Widening



Main Bridge Pier Widening



Project Status - Completed

Railroad Modifications

- Letting Date:
 - May 10, 2006
- Notice To Proceed Date:
 - August 28, 2006
- Construction Bid:
 - \$ 13,782,713
- Contractor:
 - Boh Bros. Construction Co.



Railroad Modifications - Westbank



Railroad Modifications - Westbank



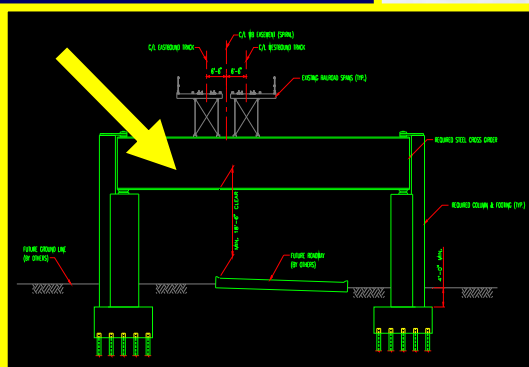
Railroad Modifications - Westbank



Railroad Modifications - Westbank



Railroad Modifications - Westbank



Railroad Modifications - Westbank



05/30/2018



Railroad Modifications - Westbank



Railroad Modifications - Westbank



Railroad Modifications - Westbank



Railroad Modifications - Westbank



Railroad Modifications - Westbank



State of Louisiana
Department of Transportation and Development
State Project No. 006-01-0022 Route U.S. 90
Huey P. Long Widening (Railroad Modifications)
Boh Bros LLC Completion Photo No. 8 26Jul2008

Railroad Modifications - Eastbank



Railroad Modifications - Eastbank



Railroad Modifications - Eastbank



Huey P. Long Widening Project Eastbank Railroad Modifications



Railroad Modifications - Eastbank



Railroad Modifications - Eastbank



Railroad Modifications - Eastbank



Railroad Modifications - Eastbank



Railroad Modifications - Eastbank



Railroad Modifications - Eastbank



Railroad Modifications - Eastbank



Railroad Modifications - Eastbank



Railroad Modifications - Eastbank



State of Louisiana
Department of Transportation and Development
State Project No. 006-01-0022 Route U.S. 90
Huey P. Long Widening (Railroad Modifications)
Boh Bros LLC Completion Photo No. 3 26/1/2008



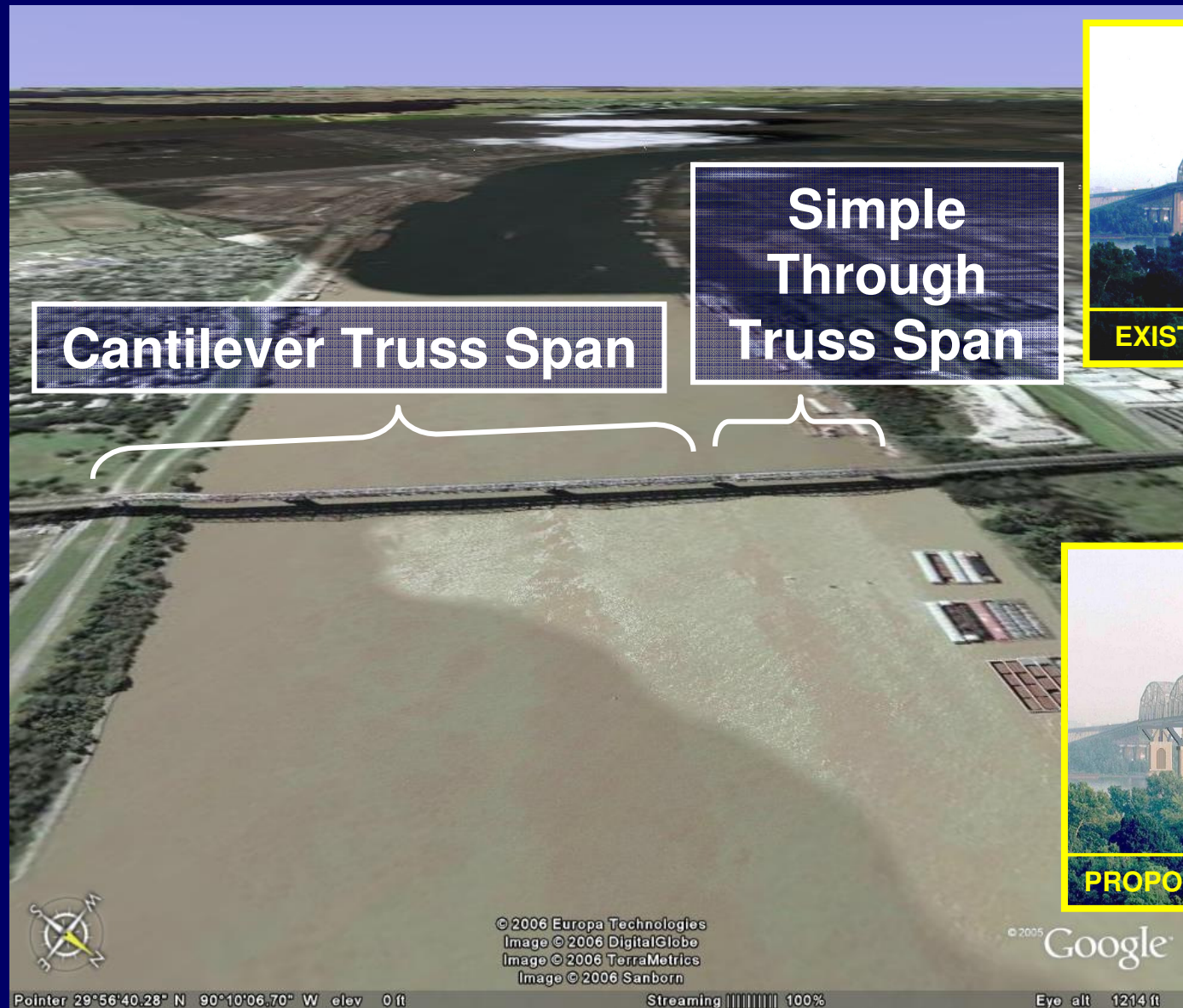
Project Status – Under Construction

Main Bridge Truss Widening

- Letting Date:
 - March 28, 2007
- Notice to Proceed Date:
 - November 5, 2007
- Construction Bid:
 - \$ 452,605,568
- Contractor:
 - Massman Construction Co., Traylor Brothers Inc., and IHI, Inc.



Main Bridge Truss Widening



Main Bridge Truss Widening



Main Bridge Truss Widening

Truss Monitoring



STATIC MONITORING SYSTEM

- 433 Members (777 Vibrating Wire Strain Gages)
- 5 Piers (10 Vibrating Wire Tilt Meters)
- Wind Speed/Direction

DYNAMIC (LIVE LOAD) MONITORING SYSTEM

- 31 Members (50 Electrical Resistance Strain Gages)

Main Bridge Truss Widening Work Platform

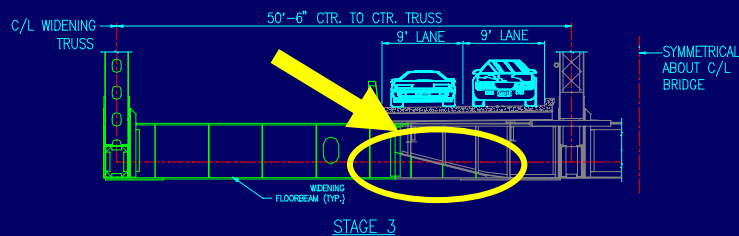


Main Bridge Truss Widening Work Platform



Main Bridge Truss Widening

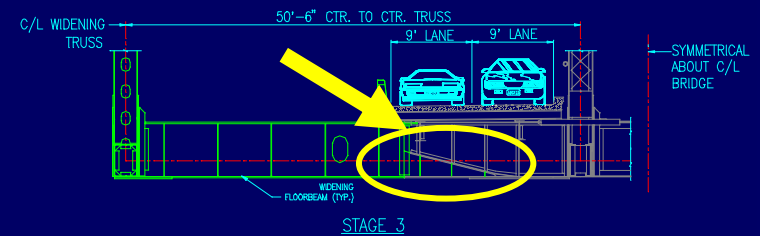
Floorbeam Modifications



Template Fit Up Check

Main Bridge Truss Widening

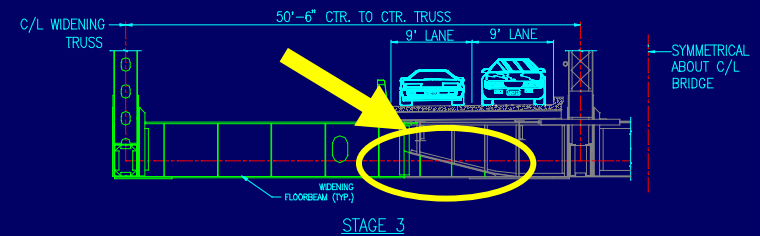
Floorbeam Modifications



Installation of Wedge Fill

Main Bridge Truss Widening

Floorbeam Modifications



Installation of Wedge Fill



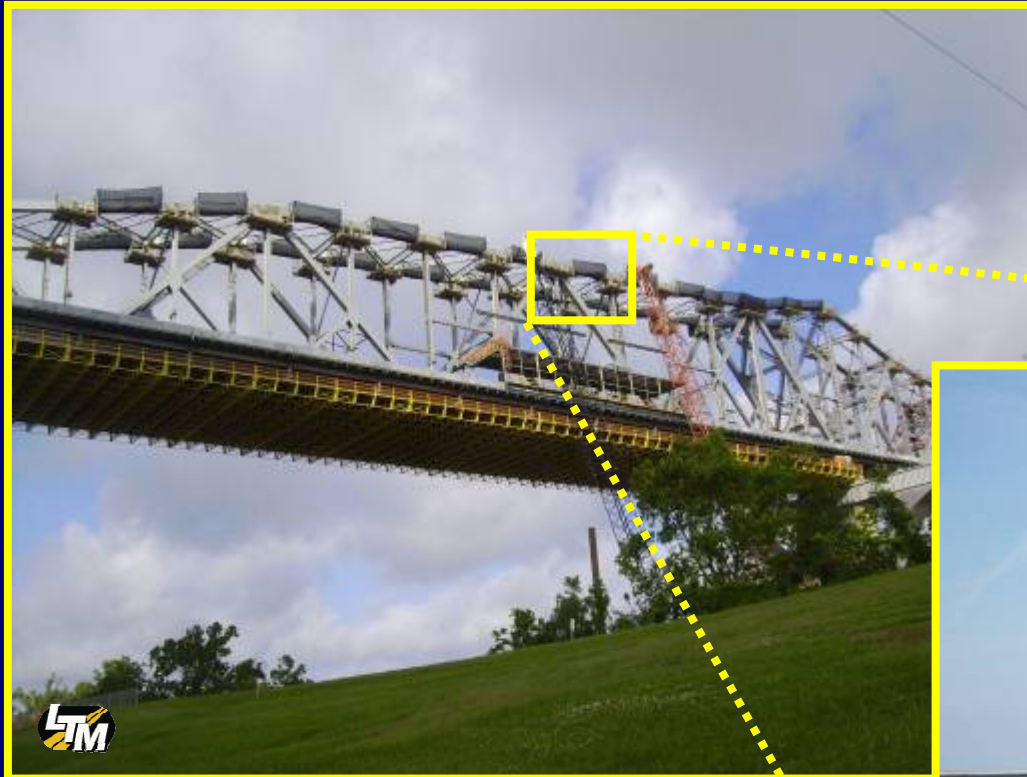
Main Bridge Truss Widening

Work on Existing Structure – Bottom Chord



Main Bridge Truss Widening

Work on Existing Structure – Top Chord



Main Bridge Truss Widening

Widening Truss Bottom Laterals



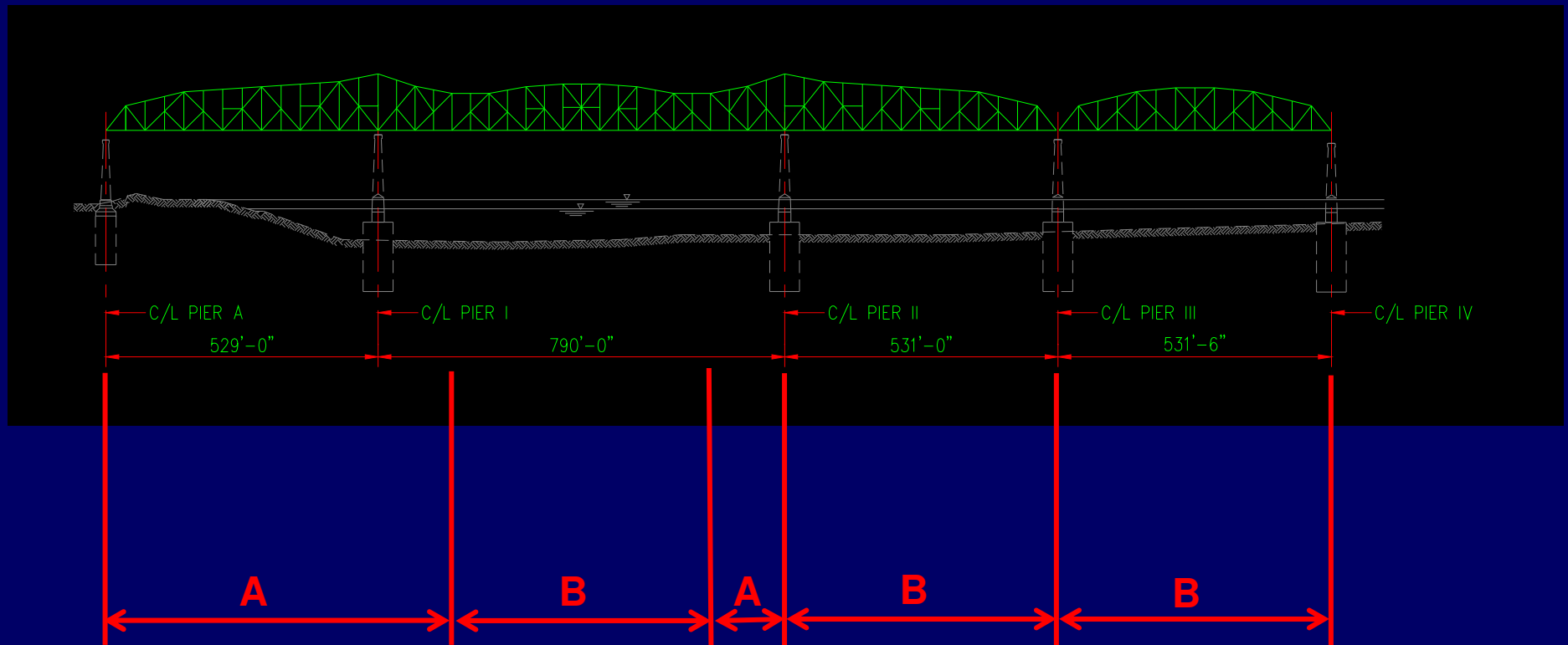
Main Bridge Truss Widening

Remove Existing Sidewalk – Install Temporary Steel Barrier



Main Bridge Truss Widening

Main Bridge Erection - Methods



A = "Stick Build"

B = "Span by Span"

Main Bridge Truss Widening

Main Bridge Erection



Main Bridge Truss Widening

Main Bridge Erection



Main Bridge Truss Widening

Main Bridge Erection



Main Bridge Truss Widening

Main Bridge Erection



Main Bridge Truss Widening

Main Bridge Erection



Main Bridge Truss Widening

Main Bridge Erection



Main Bridge Truss Widening

Main Bridge Erection



Main Bridge Truss Widening

Main Bridge Erection



Main Bridge Truss Widening

Main Bridge Erection



December 2009



Main Bridge Truss Widening

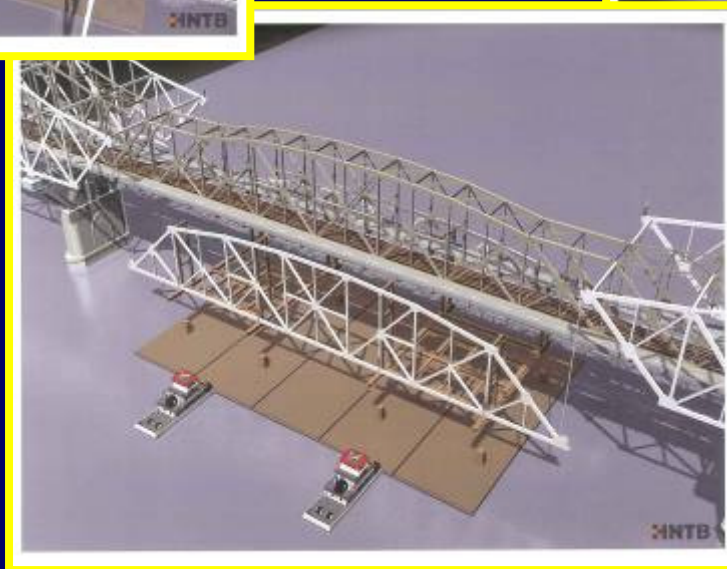
Main Bridge Erection



December 2009

Main Bridge Truss Widening

Contractor's Erection Scheme – “Span by Span” Erection



- East Anchor Arm
- Suspended Span
- Through Truss Span



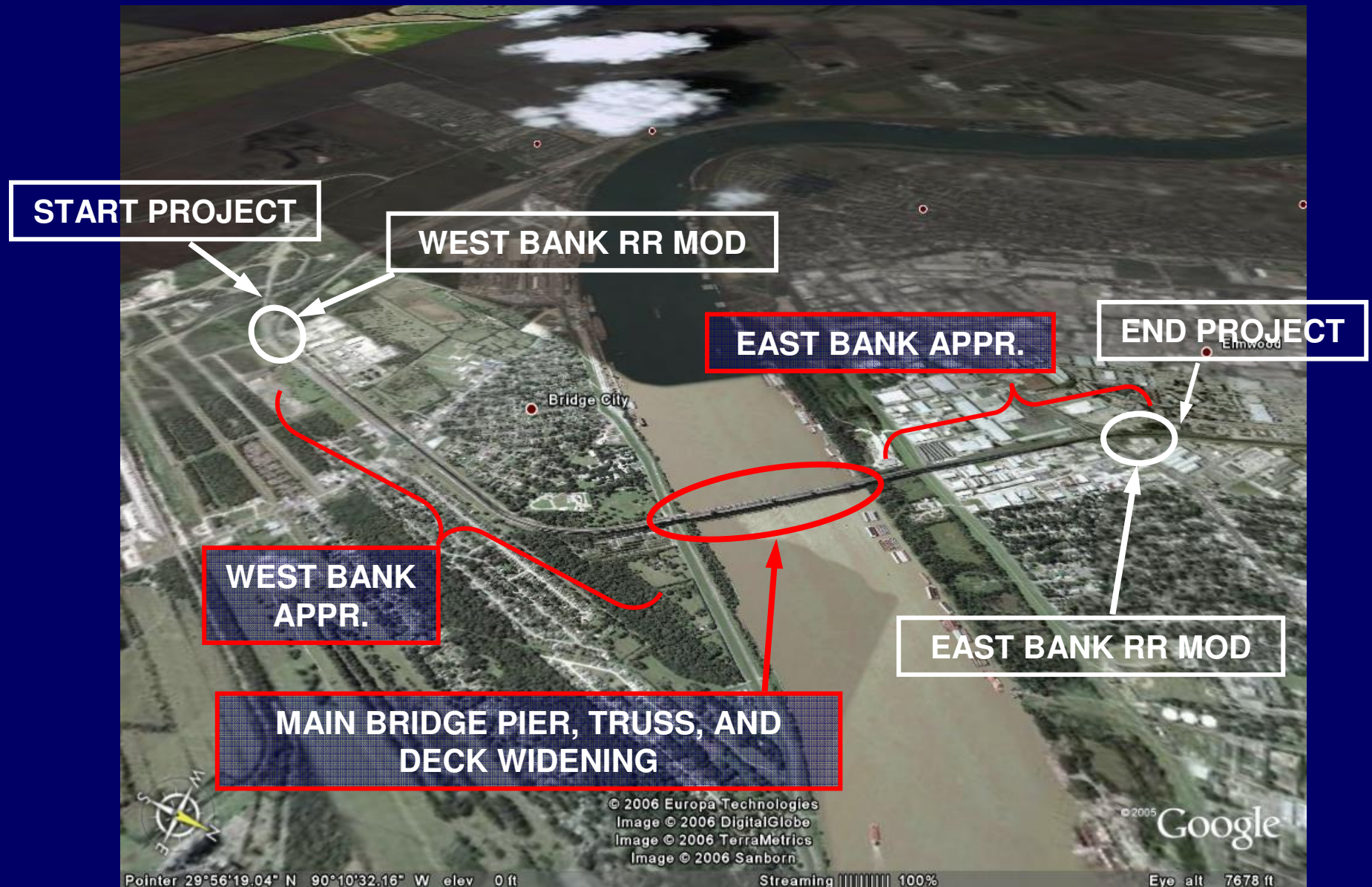
Project Status – Under Construction

West Bank Approach, Main Bridge Deck Widening, East Bank Approach

- Letting Date:
 - March 19, 2008
- Notice to Proceed Date:
 - May 5, 2008
- Construction Bid:
 - \$ 433,950,000
- Contractor:
 - Kiewit Massman Traylor Constructors



Approaches & Deck Widening



Approaches & Deck Widening

Box Culverts



Approaches & Deck Widening

At Grade Roadways – West Bank



Approaches & Deck Widening

Foundations - Westbank



Approaches & Deck Widening

Foundations - Westbank



Approaches & Deck Widening

Substructure - Westbank



Approaches & Deck Widening



**Substructure -
Westbank**



Approaches & Deck Widening



**Substructure -
Westbank**



Approaches & Deck Widening



**Substructure -
Westbank**

Approaches & Deck Widening

Substructure - Westbank



Approaches & Deck Widening

Substructure - Westbank



Approaches & Deck Widening



**Superstructure
- Westbank**



Approaches & Deck Widening

Superstructure - Westbank



Approaches & Deck Widening

Superstructure - Westbank



Approaches & Deck Widening

Superstructure - Westbank



Approaches & Deck Widening

Superstructure - Westbank



Approaches & Deck Widening

Superstructure - Westbank



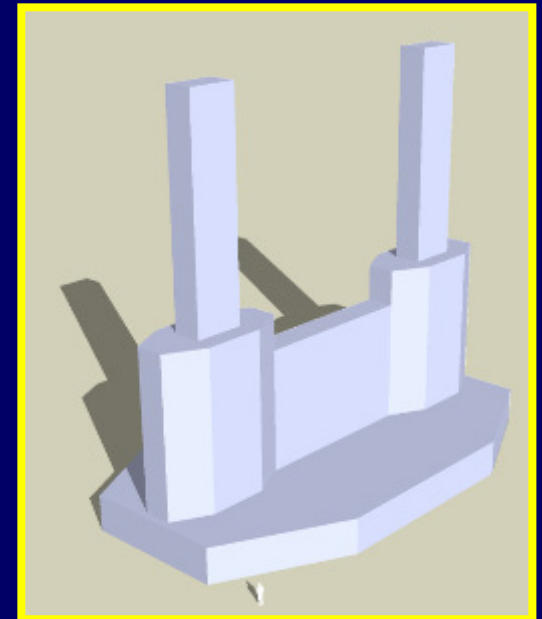
Approaches & Deck Widening

Superstructure - Westbank



Approaches & Deck Widening

Substructure – Pier IVA



Created using
Google SketchUp

Approaches & Deck Widening

Substructure – Pier IVA



Approaches & Deck Widening

Substructure – Pier IVA



Approaches & Deck Widening

Substructure – Pier IVA



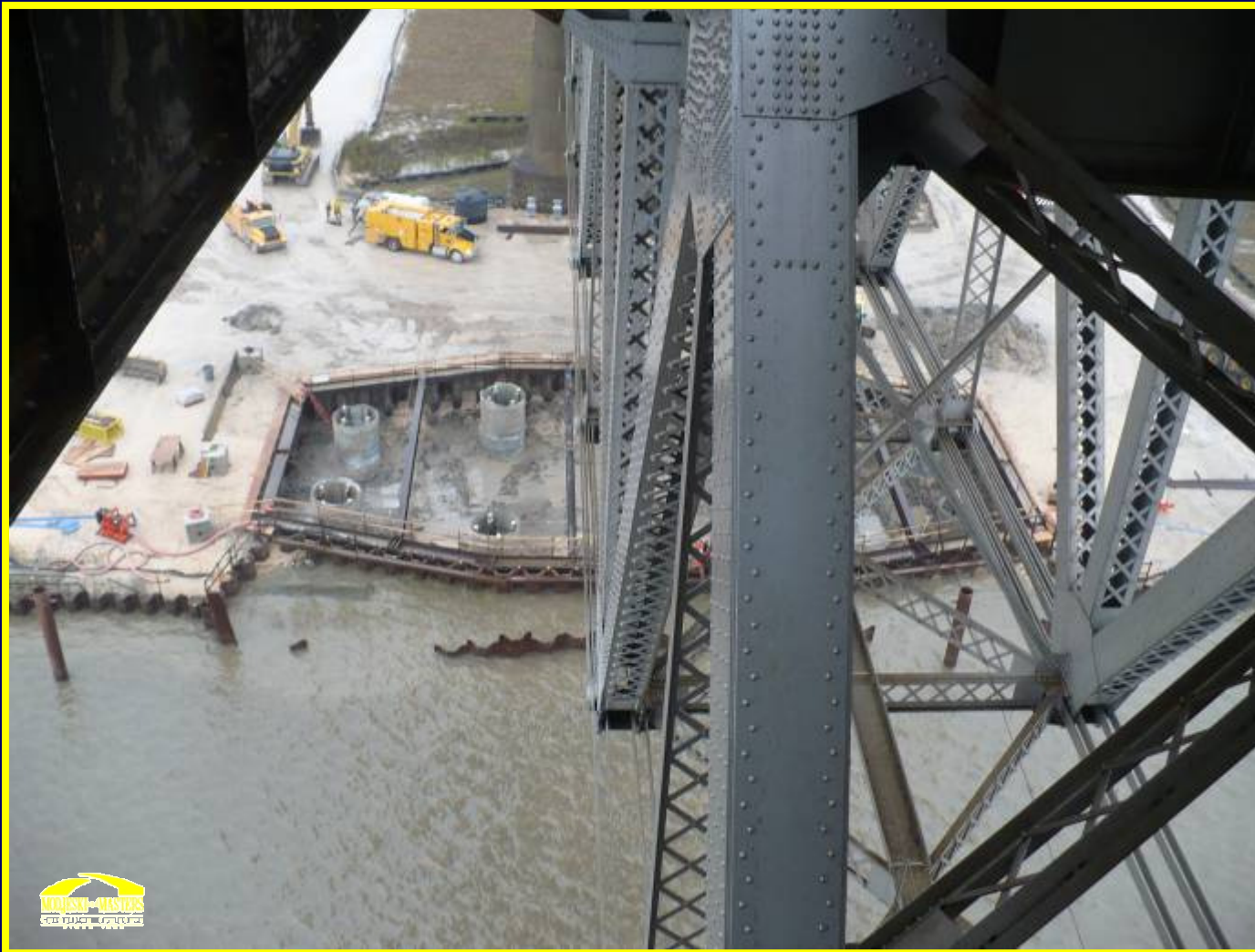
Approaches & Deck Widening

Substructure – Pier IVA



Approaches & Deck Widening

Substructure – Pier IVA



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**Tulane Engineering
Forum - 2010**

