



I-394 Concrete Rehabilitation “Buried Treasure”

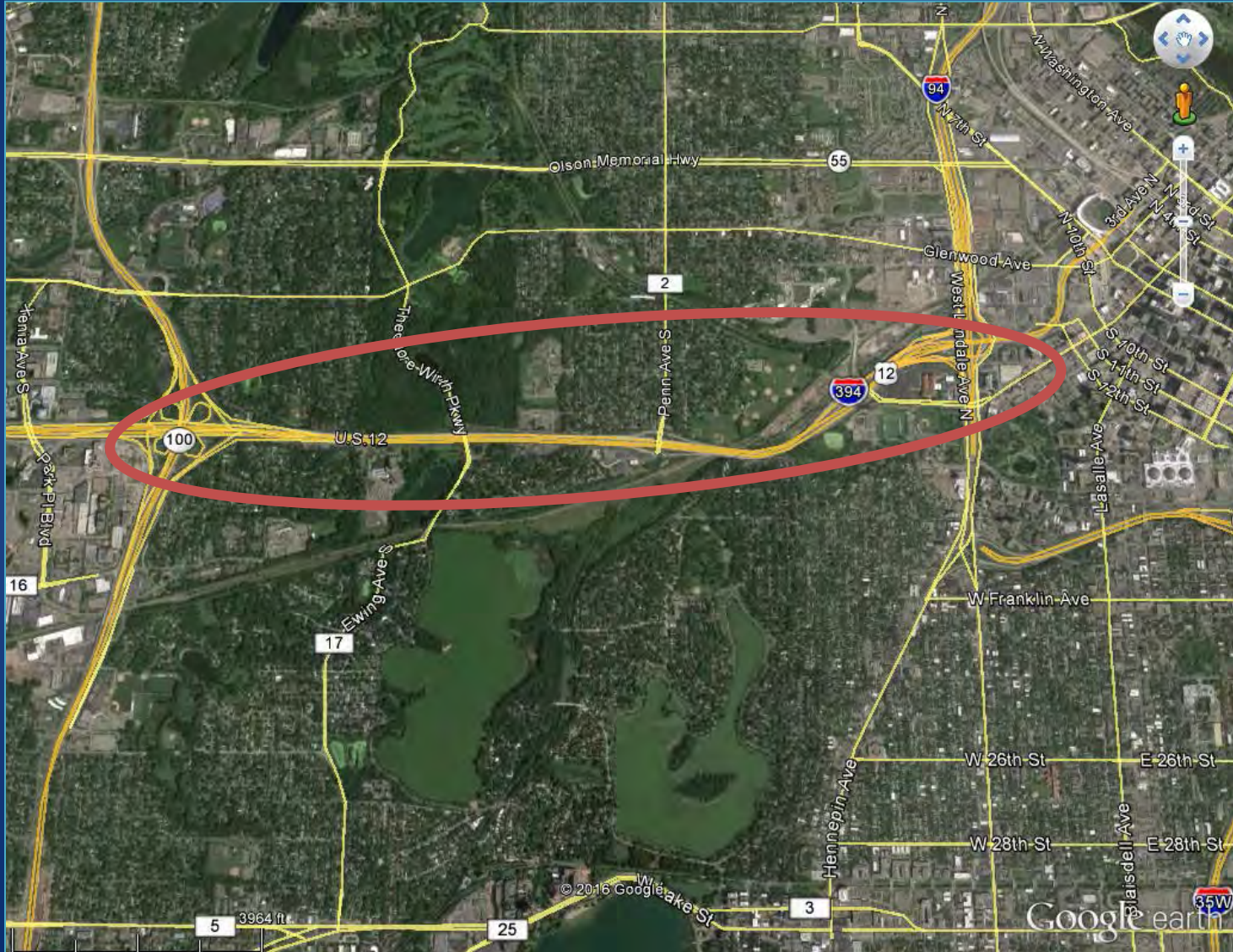
Nariman Vanaki, Metro Construction
Kevin Farraher, Metro Traffic Workzones

CPAM Conference
March 10-11, 2016

We all have a stake in **A**  **B**



PROJECT LOCATION



CONSTRUCTION HISTORY

- 1988 Original Construction:
 - 10” JRCF with 27’ panels. Transverse Tined.
- 1988 + 1 day: Noise Complaints
- 1995 Legislation Required Bituminous Surface
- 1996: First Bituminous Overlay: 1 ¾” HMA
- 2004: Mill and Overlay with 5/8” UTBWC
- 2015: Another M&O? Or a longer lasting fix...



PRE-EXISTING CONDITION: 2013



PRE-EXISTING CONDITION: 2013



Legislation

- 1995 Legislation required a bituminous surface.
- 2004 project went UTBWC due to poor condition



Legislation

- 1996 Amendment:

(6) ensure that the highway ~~has a bituminous surface~~ and HOV lanes are **ground or milled** between June Avenue in Golden Valley and the highway's intersection with ~~marked interstate highway No. 94 in Minneapolis~~ the west end of the bridge approach to bridge No. 27770 **or has a bituminous surface** on the mixed use lanes within the same limits.



PROJECT DEVELOPMENT

- Several public meetings, and
- Commitments to noise studies, and
- Countless staging meetings later...

Concrete Pavement Repair and NGCS!



TRAFFIC



TH 394

Current Configuration

3 General Purpose Lanes Eastbound

TH 100 to TH 94

2 Reversible MN/Pass HOV Lanes

Centered protected by median barrier

AM peak- EB traffic

PM peak- WB traffic

Single lane entrances/exits

3 General Purpose Lanes Westbound

TH 94 to TH 100



EB TH 394

West of TH 100



TH 394

Reversible Lane MN/Pass HOV-West End



WB TH 394

From Mpls.



WB TH 394

From WB TH 94



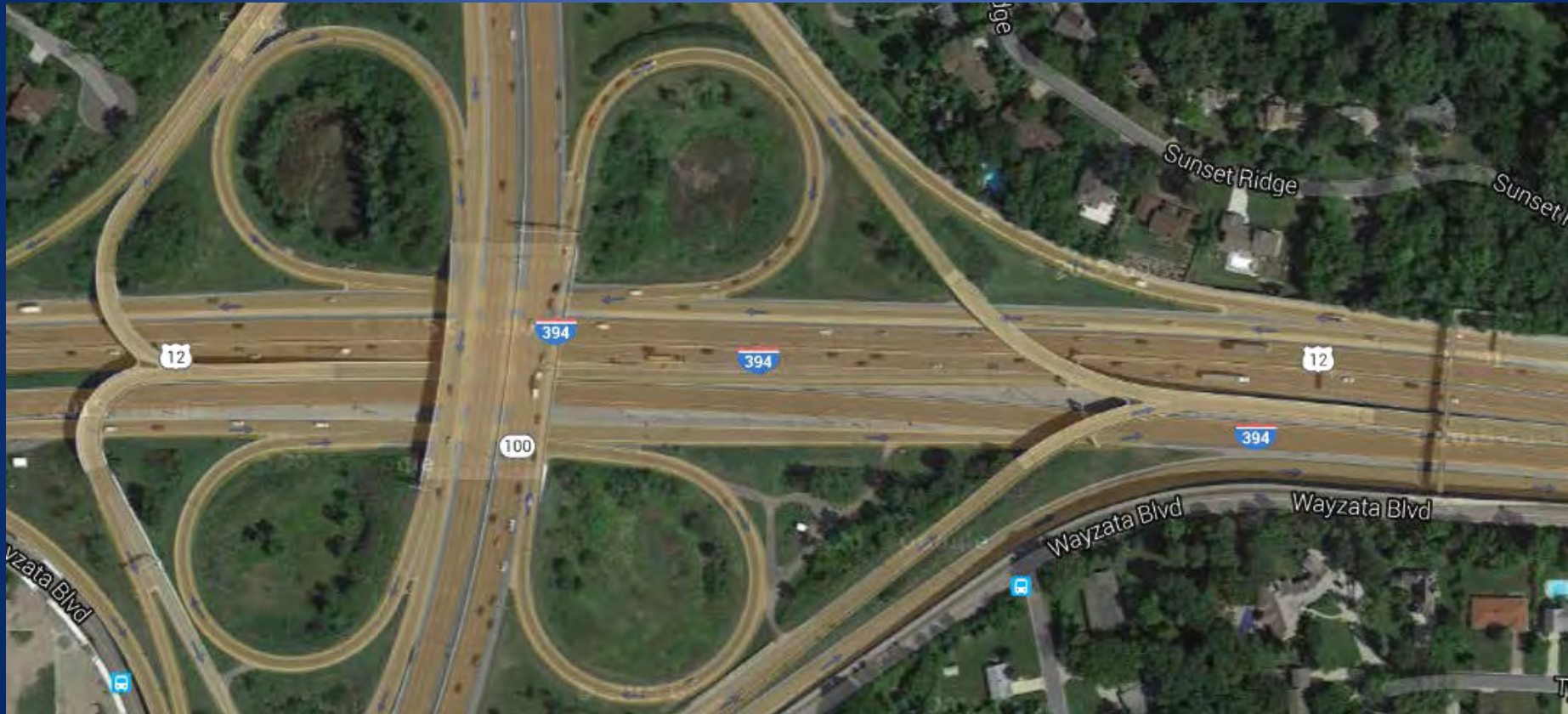
TH 394

Reversible Lane MN/Pass HOV-East End



TH 394

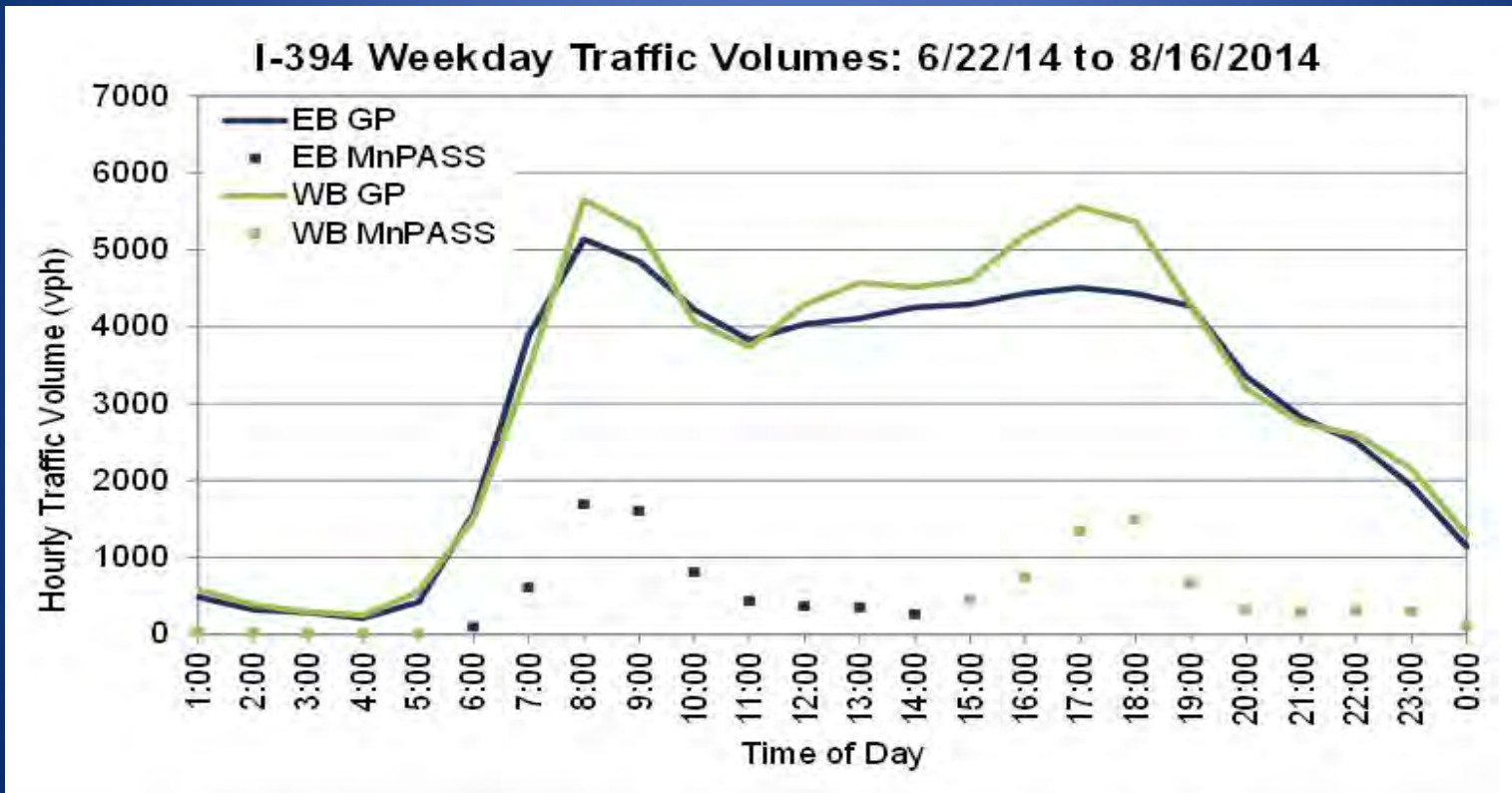
Reversible Lane MN/Pass HOV-at TH 100



TH 394 between TH 100 and TH 94

ADDT 134,000

Traffic Volume Report



Staging

Option #1-Long Term Lane Closures

- Pros
 - Past practice
- Cons
 - High traffic impacts
 - Significant congestion/delays
 - Increased crashes
 - Impacts to other projects
 - Safety concerns
 - Worker exposure
 - Worksite access
 - Lengthen Project Schedule









Staging

Option #2-Full Directional Weekend Closures

- Pros
 - Reduced weekday traffic impact
 - No impacts to commuter traffic
 - Reduced traffic delays
 - Increase worker safety
- Cons
 - High weekend traffic impacts
 - Impacts to multiple local events (Twins, Basilica Block Party, Aquatennial, etc.)
 - Impacts to other projects
 - Constructability concerns
 - Extended Project Duration
 - Less time for concrete cure
 - Use of Ultra High early
 - Weather



Staging

Option #3-Extended Full Directional Weekend Closures

(Fri AM – Mon AM)

- Pros

- Reduce number of weekend closures
- Increase worker safety

- Cons

- High traffic impacts
 - Significant impacts to commuter traffic and local weekend events
 - Impacts to other projects
- Constructability concerns
 - Less time for concrete cure
 - Use of Ultra High early
 - Weather



Staging

Option #4 - Full Directional Closures

(Traffic utilizing Reversible Lane)

- Pros

- Reduce project duration
 - Increased efficiency
- Reduce impacts to traffic
 - Less crashes/delays
 - Less impacts to local events
- Increase worker safety
- Increase contractor equipment staging

- Cons

- Significant impacts to weekday commuter & weekend traffic
- Impacts to Transit & HOV users



SP 2734-33

(Red)

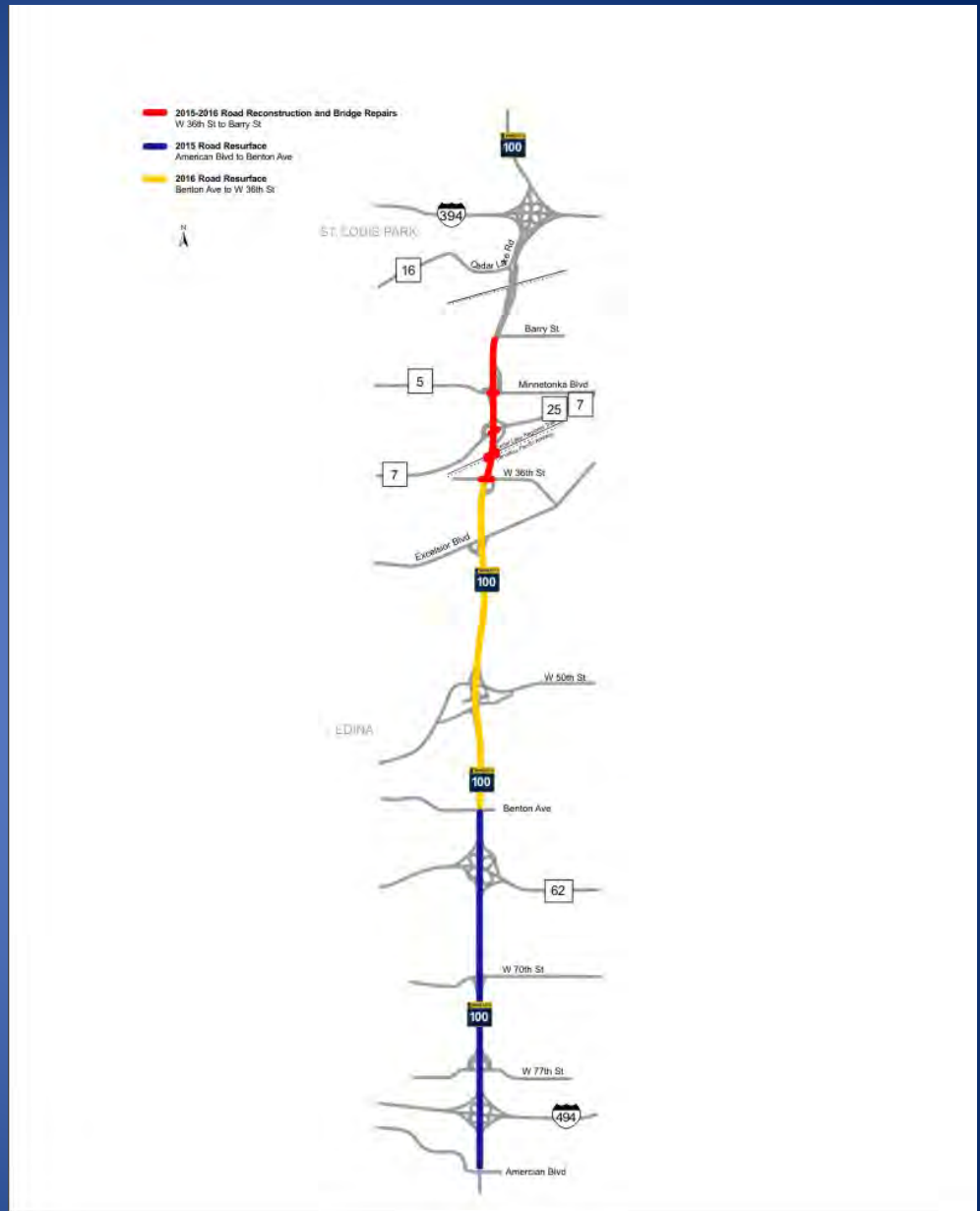
SP 2733-89

(Yellow & Blue)

TH 100

TH 394 to TH 494

- Full Reconstruct of TH 100
 - Additional lanes
 - Bridge replacements
 - Bridge Repair
 - Mill & Overlay
 - Center Median Barrier
 - Drainage
 - Noise walls
- Long term lane restrictions
 - 3 Lanes to 2
 - Ramp closures
 - Full weekend closures
 - Local road closures

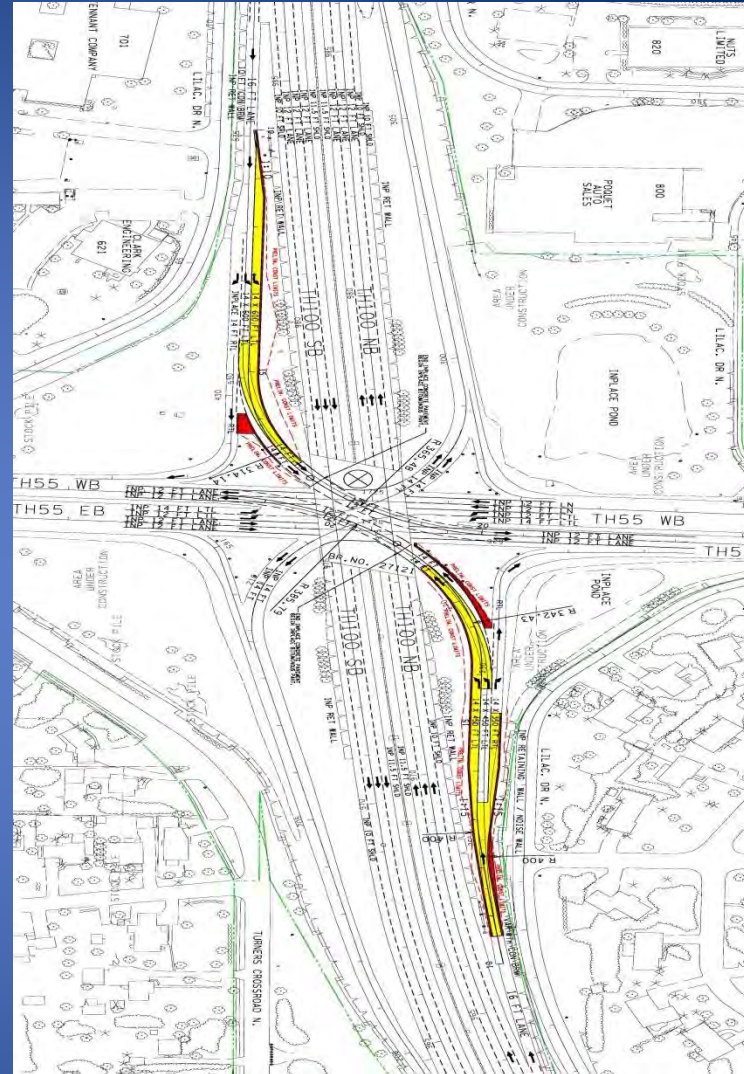


SP 2735-198 TH

100

TH 55 RAMPS

- Ramp reconstruction
 - Reconfigure NB 100 exit ramp
 - Reconfigure SB 100 exit ramp
- Signal Revisions
- Lighting Revisions
- Long term ramp closures
 - Sept 8th to Oct 15th



Internal Discussions

- Discussion meetings with Area Management, Construction, Traffic, RTMC, Public Affairs, etc.
 - Evaluate project impacts to Traffic, Transit, MN/ Pass, Local Municipalities, Events, etc.



Outcome

- Option #4- Full Directional closures of TH 394 utilizing the Reversible Lane

Get in and get out philosophy

Reduce overall impacts (394 traffic –weekday & weekend, impacts to events, impacts with other projects (detours), etc.)

Good communication with partners -Get the word out early and heavy



CONTRACT

MINNESOTA DEPARTMENT OF TRANSPORTATION
393 JOHN IRELAND BOULEVARD MS 650 ST. PAUL, MINNESOTA 55155-1800
***** P R O P O S A L *****
FOR HIGHWAY CONSTRUCTION AND MAINTENANCE PROJECTS WITH
BIDS RECEIVED UNTIL 9:30 O'CLOCK A.M. ON

April 24, 2015

Proposal of _____
PCI ROADS, LLC
14123 - 42ND ST NE
ST. MICHAEL, MN 55376
763.497.6100

(AREA CODE TELEPHONE NUMBER)

TO FURNISH AND DELIVER ALL MATERIALS AND TO PERFORM ALL WORK IN ACCORDANCE WITH THE CONTRACT, THE PLANS AND THE APPROVED DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION, 2014 EDITION" (USING ENGLISH UNITS), ON FILE IN THE OFFICE OF THE COMMISSIONER OF TRANSPORTATION EXCEPT AS STATED OTHERWISE IN THE SPECIAL PROVISIONS, WHICH ARE PART OF THIS PROPOSAL, FOR:

PRIME SP: 2789-136 CONTRACT ID: 150085

STATE PROJECT NO.: 2789-136 (T.H.394-104), 2781-448 (T.H. 94-104)

FHWA PROJECT NO.: NHD11394 (001)

LOCATION: In Hennepin County on T.H. 394 from 2100 Feet East of T.H. 100 in Golden Valley to T.H. 94 in Minneapolis and on T.H. 94 (Lyndale Avenue) from South End of Bridge No. 27799L to North End of Bridge No. 27799L in Minneapolis

TYPE OF WORK: Grading, Bituminous and Concrete Milling, Concrete Pavement Repair, Concrete Grinding, Bituminous Surfacing, ADA Improvements, TMS, Lighting, and Bridge No. 27799L.

LENGTH: 1.682 Miles

STARTING DATE: June 08, 2015 COMPLETION DATE: September 18, 2015

NOTICE TO BIDDERS: If you are submitting a bid via "Two Way Electronic" bidding, you need not return the hard copy proposal (all other requirements shall remain in effect). If you are utilizing ANY OTHER ACCEPTED METHOD OF BID SUBMITTAL, YOU MUST RETURN THE DOCUMENTS INDICATED IN 1209. You must initial changes made in the "Bid Schedule" and acknowledge addenda on Form 2112GD, which is attached to the back of this proposal.

I certify that this Proposal was prepared by me or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

SAFO


Paul C. Marchlewicz, Special Provision Engineer JMS
Lic. No.: 41239 Date: March 25, 2015

BID RIGGING IS A SERIOUS CRIME. IF YOU HAVE ANY INFORMATION CONCERNING COLLUSIVE BIDDING, EVEN A REQUEST TO SUBMIT A COMPLIMENTARY BID, PLEASE CALL THE MINNESOTA ATTORNEY GENERAL'S OFFICE AT TELEPHONE NO. 651-296-1796

To request this document in an alternative format, please contact the Affirmative Action Office at 651-366-4718 or 1-800-657-3771 (Greater Minnesota); 711 or 1-800-627-3529 (Minnesota Relay). You may also send an e-mail to ADArequest.dot@stcrum.us (Please request at least one week in advance).



Contract Provisions

- I-394 Directional Closures
 - Westbound: 13 Calendar Days
 - Eastbound: 11 Calendar Days
 - 3 Full Weekend Closures of Reversible Lane
- Specific Dates in Contract for Closures
 - Westbound: 10:00 PM Friday June 19th
 - Eastbound: 10:00 PM Friday July 10th
 - Allowed for notification, coordination, maximum control for owner



Contract Provisions

- Incentive/Disincentive: \$30,000/day
 - Road User Cost suggested value much higher
 - Reasonable but meaningful



Contract Award

- One Bidder – PCI Roads
- Engineers Estimate - \$10.6 Million
- PCI Bid Amount - \$12.9 Million (22% over)



STAGING



Stage 1

EB TH 394

- Close EB 394 left lane (HOV) west of Park Pl. Blvd
- EB 394 right lane – Exit only to TH 100
- Shift EB 394 two GP lanes into restriped Reversible Lane
- Close NB TH 100 ramp to EB 394
 - Reducing volumes entering EB 394
- Close Penn Ave ramp to EB 394
- Close WB 394 & WB 94 entrance to Reversible Lane



EB TH 394

West of TH 100



EB TH 394

West of TH 100



Stage 2

WB TH 394

- Close WB 394 from Mpls. left lane & shift into Reversible Lane
- WB 94 to WB 394 single lane shifted into Reversible Lane
 - Restripe WB 94 west of tunnel (eliminate center “either/or” lane)
- Close EB 94 ramp to WB 394
- Close Penn Ave ramp to WB 394
- Shift WB 394 two lanes from restriped Reversible Lane back into GP lanes west of 100



WB TH 394

From Mpls.



WB TH 394

From WB TH 94



WB TH 394

East of Penn Ave



WB TH 394 at TH 100



Stage 1 Impacts

- **EB GP Lane Closure**
- **Traffic impact from Louisiana Ave to 12th St in downtown Minneapolis:**
 - AM peak: average travel time was 9 to 16 minutes (normal travel time average was 5-6 minutes).
 - ***Additional delay of 4 to 10 minutes*** compared to pre-construction condition.
 - PM peak: average travel time was 8 to 16 minutes (normal travel time average was 6-9 minutes).
 - ***Additional delay of 2 to 7 minutes*** compared to pre-construction condition



Stage 2 Impacts

- **WB GP Lane Closure**
 - **Traffic impact from N 5th St in downtown Minneapolis to Xenia Ave S**
 - PM peak: average travel time was 16 to 23 minutes (normal travel time was 4 to 5 minutes)
 - ***Additional delay of 12 to 18 minutes*** compared to pre-construction condition
 - AM peak: average travel time was 5 to 8 minutes (normal travel time was 3 to 4 minutes)
 - ***Additional delay was only 2 to 4 minutes*** compared to pre-construction condition.



CONSTRUCTION



Construction

- Concrete Pavement Rehabilitation
 - Remove Existing Bituminous Overlay
 - Full Depth Joint Repairs
 - Partial Depth Repairs
- Concrete Grinding
 - Next Generation Concrete Surfacing (NGCS)



Construction

- Bituminous Overlay Removal
 - 5/8" Ultra Thin Bonded Wear Course (UTBWC)
 - Contract required use of Micro-Milling
 - 0.20 inch teeth spacing
 - Complete Removal of UTBWC required upon contract completion











Construction

- Inplace pavement condition
 - Surface Condition
 - Joint Condition
 - Concrete Pavement Integrity









Construction

- Concrete Pavement Repair
 - Full Depth vs Partial Depth
 - MnDOT Repair Selection Process
 - Inspection
 - Issues
 - Dust
 - Drilled & Grouted Dowel Bars







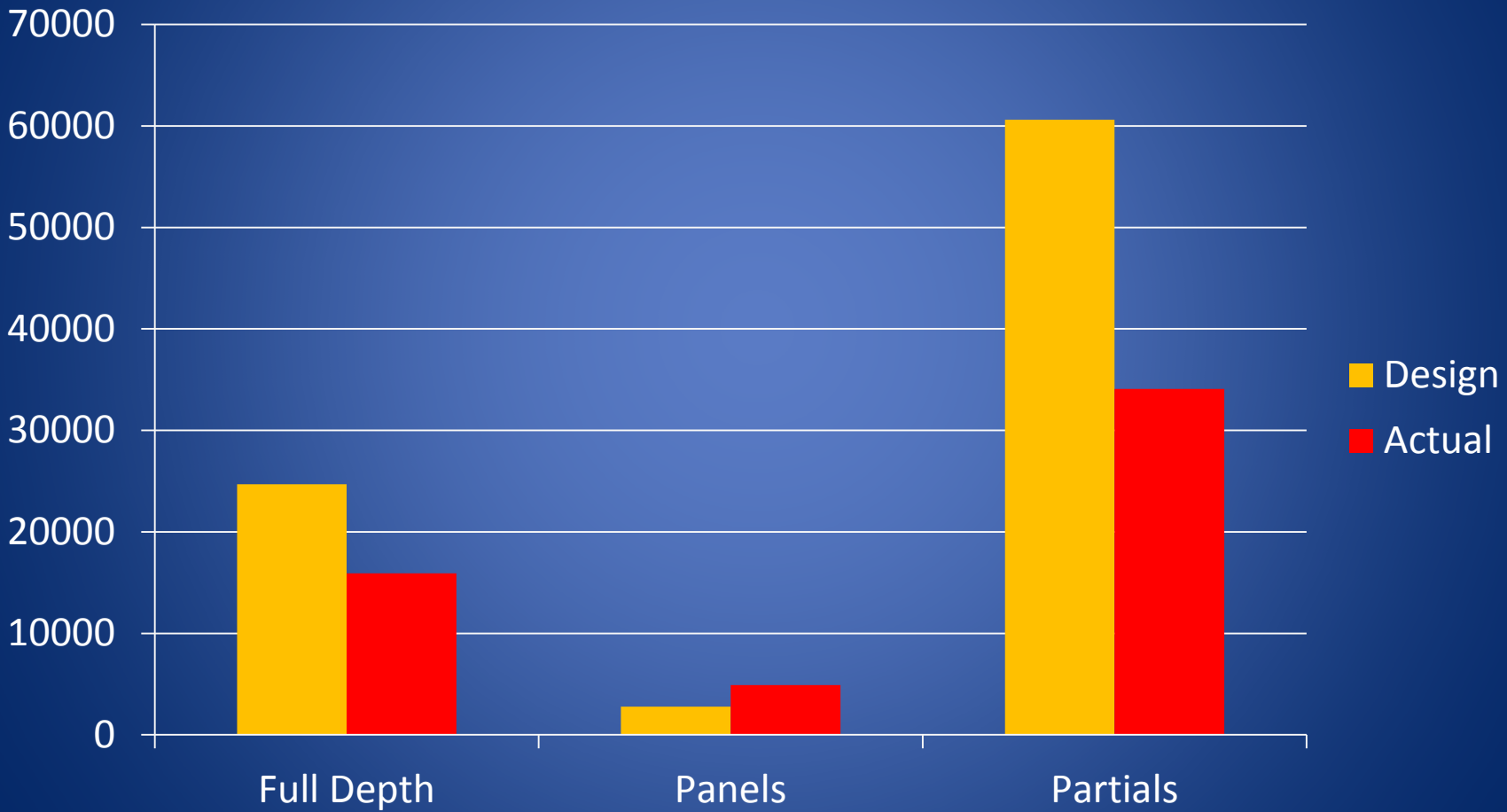








CPR Quantities



Construction

- Next Generation Concrete Surfacing (NGCS)
 - Grinding, Texturing, and Grooving
 - Conventional Grind (1st Pass)
 - Flush Grind (2nd Pass)
 - NGCS Grooving (3rd Pass)
 - Multiple Grinding and Texturing Passes Needed
 - *Bidders are advised that the mainline concrete pavement has received a prior bituminous mill and overlay. The Engineer may require multiple passes to correct surface damage from a prior cold milling of the bituminous overlay in accordance with 2302.3.A.1*













Project Summary

- Overall Traffic Impacts Minimized
- Provided Safer Work Zone
- Increased Constructability
- Significant Ride Improvement
- Reduced Pavement Noise
- Extended Pavement Life



Questions?

