

The Environmental Process: An Engineer's Perspective

Jenna Frye, P.E.
Project Manager
Project Development North I

Agenda

- ▶ History of SR 1
- ▶ Purpose and Need
- ▶ The Environmental Process
- ▶ Project Challenges
- ▶ Lessons Learned, Advice, Recommendations



SR 1: A Brief History

- ▶ 51-mile limited access highway from I-95 to the beach
- ▶ Originally planned as an extension of the Delaware Turnpike in the **1970's**
- ▶ New proposal in the **1980's**, called the “US 13 Relief Route”
- ▶ Environmental Impact Statement (EIS) approved **1987**
- ▶ Construction began in **1988**
- ▶ First section opened in **1991**
- ▶ The new C&D Canal Bridge (Roth Bridge) opened in **1995**
- ▶ Last section opened in **2003**







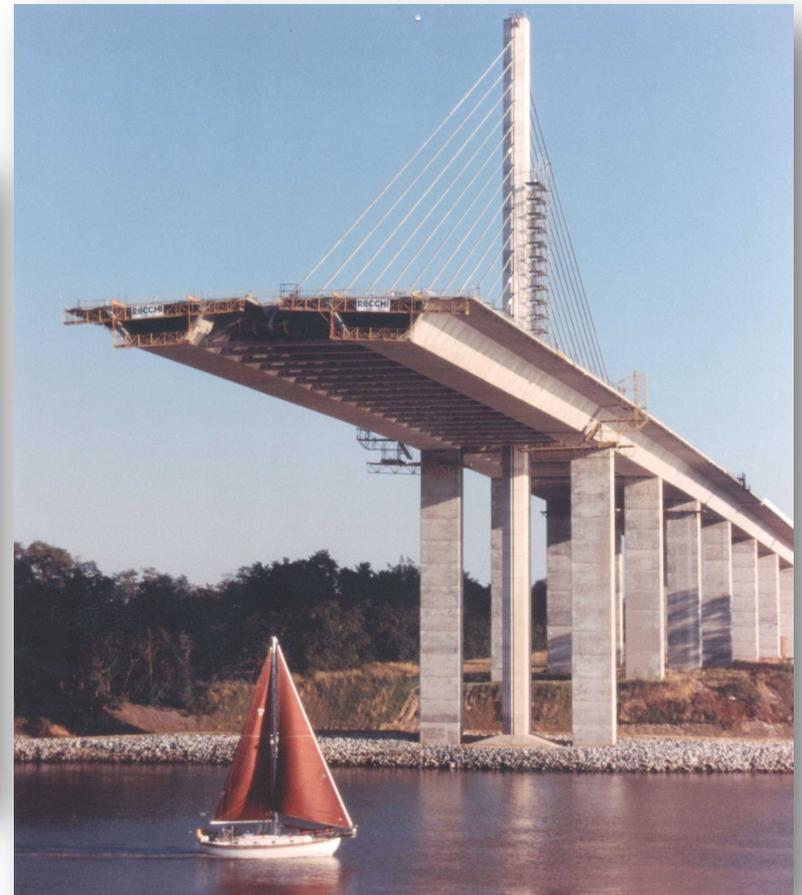




12-9-95

Fun Facts About SR 1

- ▶ The Roth Bridge was designed to support four lanes in each direction in the future



Fun Facts About SR 1

- ▶ Most of the bridges along SR 1 were built to support future widening to the inside median
- ▶ Unfortunately, in much of the northern sections, widening to the inside does not meet today's design standards



SR 1 Bridge over Christina River





Fun Facts About SR 1 (ASR 1)

- ▶ Much of the northern section of SR 1 was constructed with ASR concrete :(
- ▶ Road, barrier, and bridges
- ▶ “Band-aid” was done in 2006 with much success
- ▶ No plans to reconstruct ASR pavement section



Purpose and Need

Why do we need to widen SR 1 already?

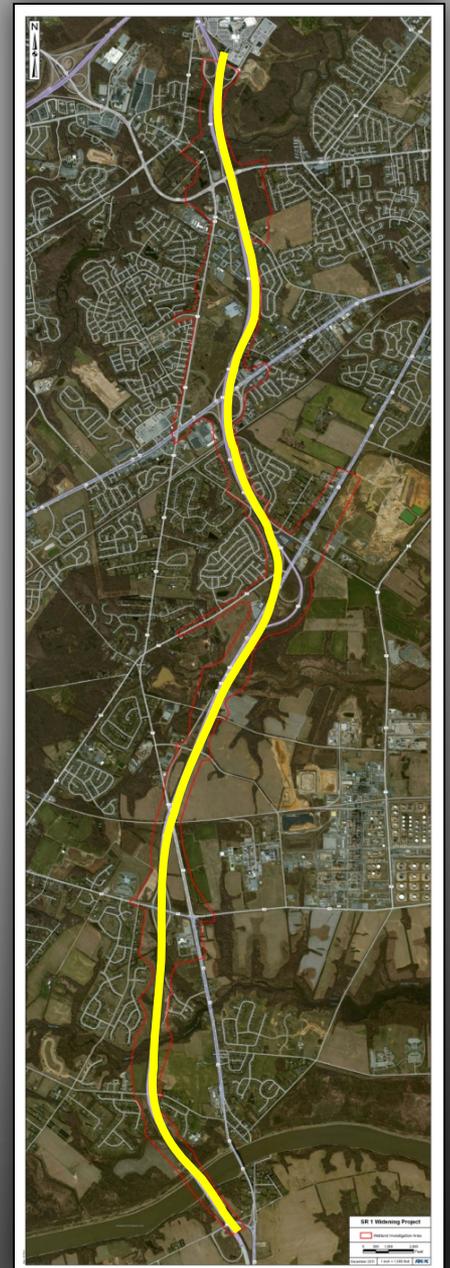
SR 1 Widening Project Background

▶ Project limits:

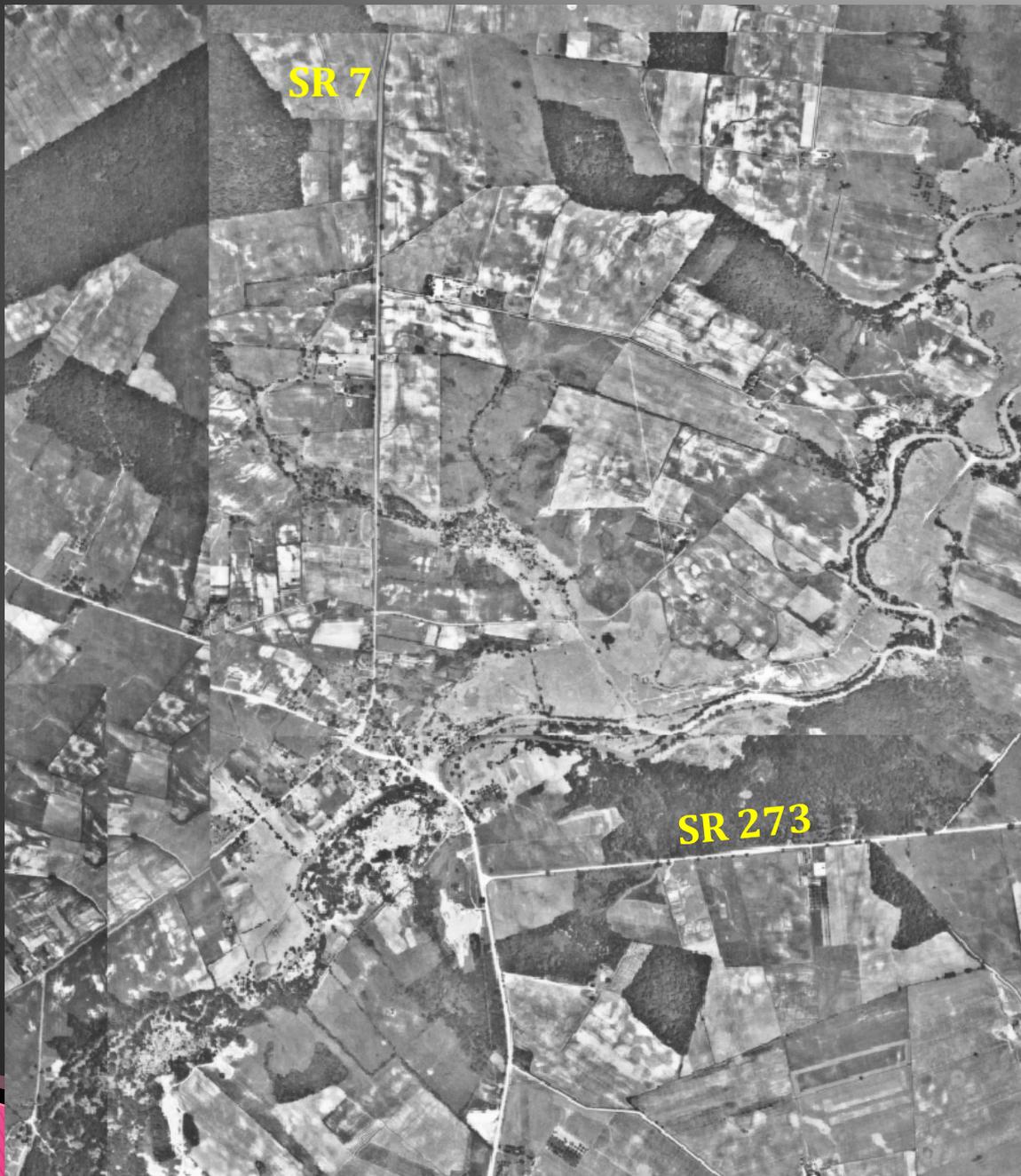
- North of SR 273 to Roth Bridge

▶ Purpose and Need

- Address congestion
- Improve safety
- Improve system connectivity
- Improve local access to SR 1
- Ensure emergency access & evacuation routes



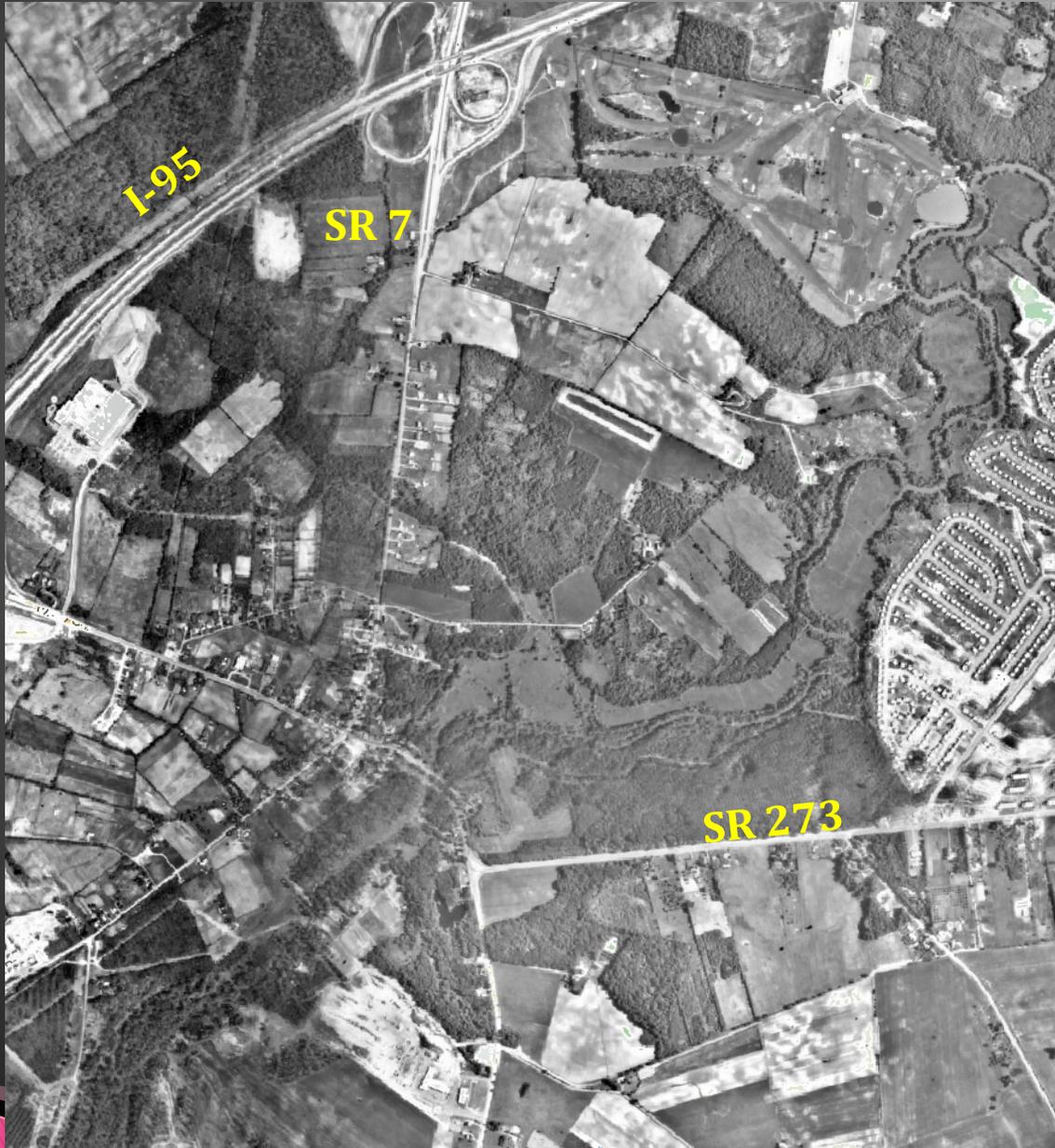
1937



1961



1968



1992



2013



1992

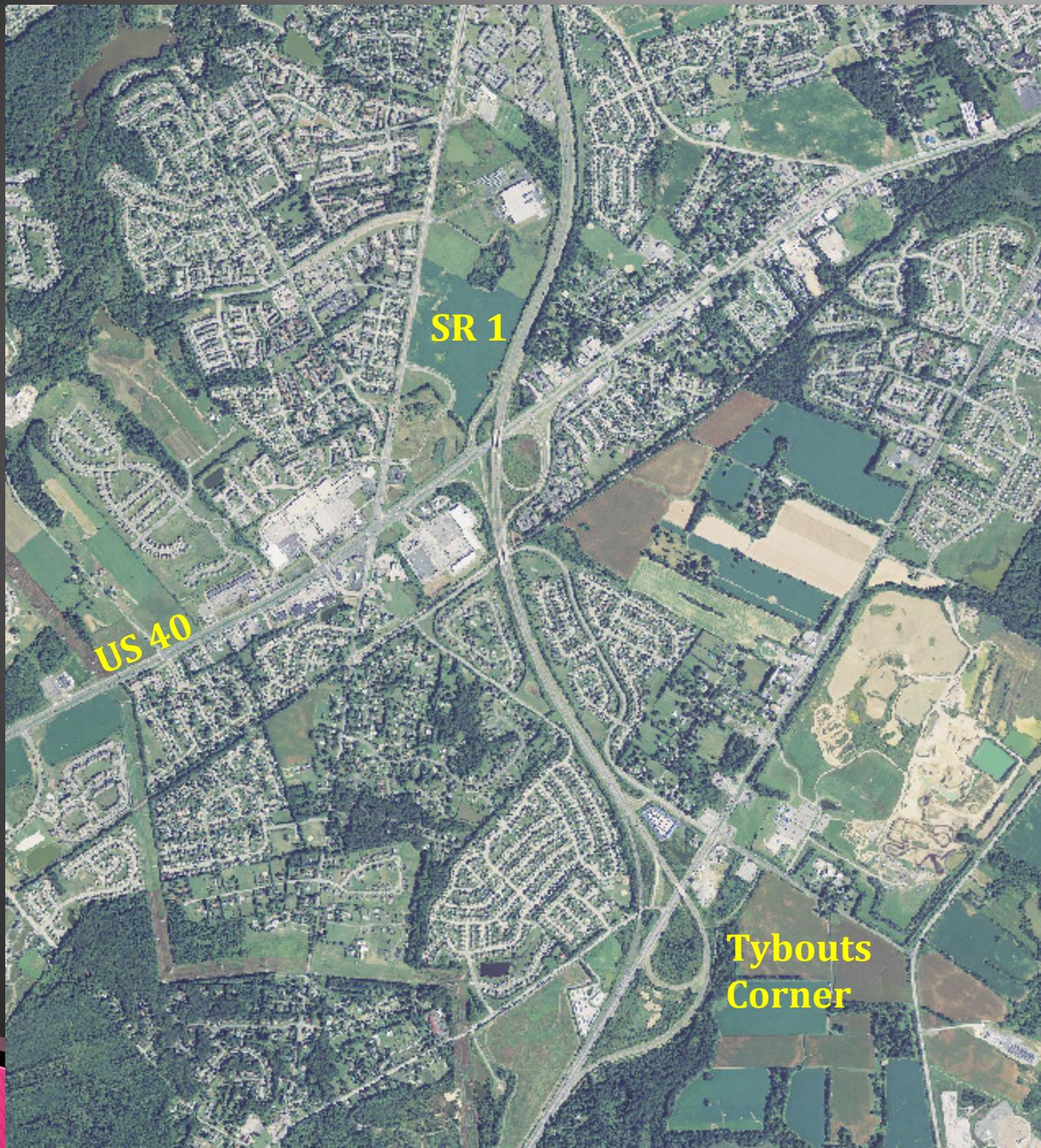


SR 1

US 40

Tybouts
Corner

2013



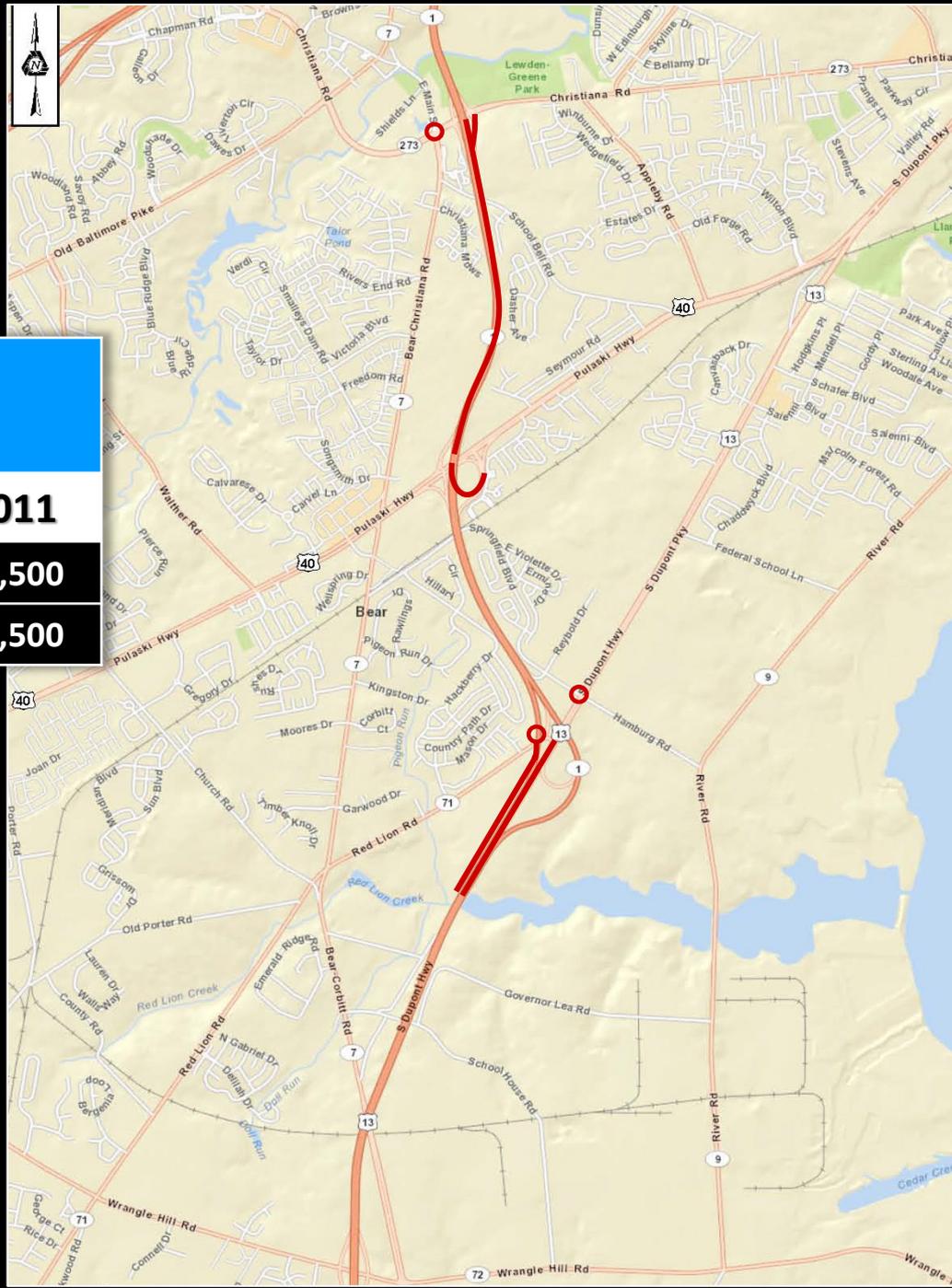
SR 1

US 40

Tybouts
Corner

Purpose & Need

Existing Conditions (2011)



Existing Traffic

(based on actual traffic data collected)

Location	2011
SR 1 between US 40 and SR 273	76,500
SR 1 between the Roth Bridge and US 13	79,500

Purpose & Need

Future Conditions (2040)

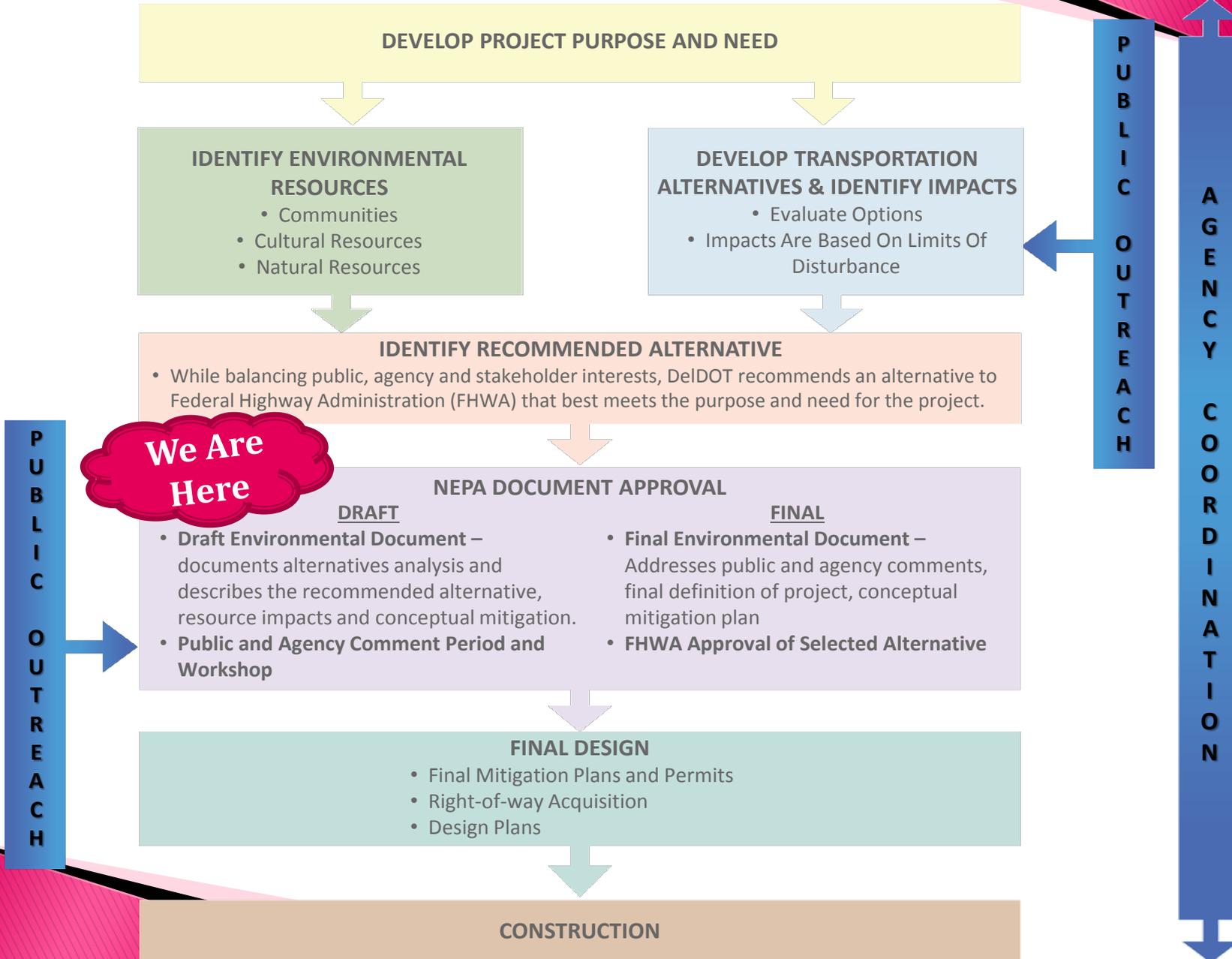
Projected Traffic (based on WILMAPCO, NCC approved model)			
Location	2011	2040	Increase
SR 1 between US 40 and SR 273	76,500	125,000	63%
SR 1 between the Roth Bridge and US 13	79,500	140,000	76%



The Environmental Process

... A long and winding road.

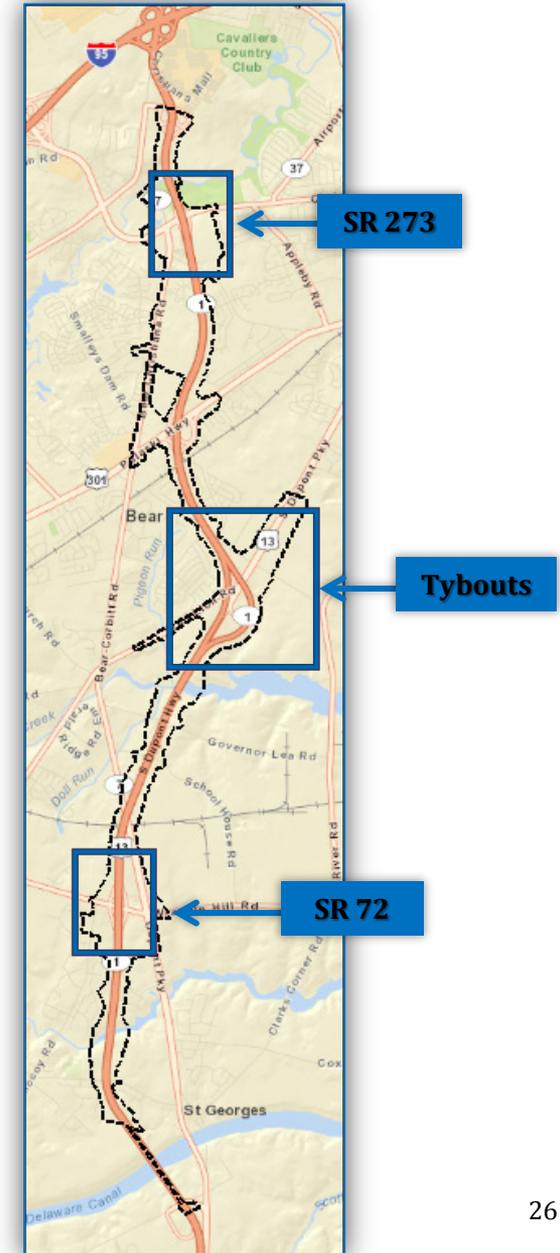
Environmental (NEPA) Process

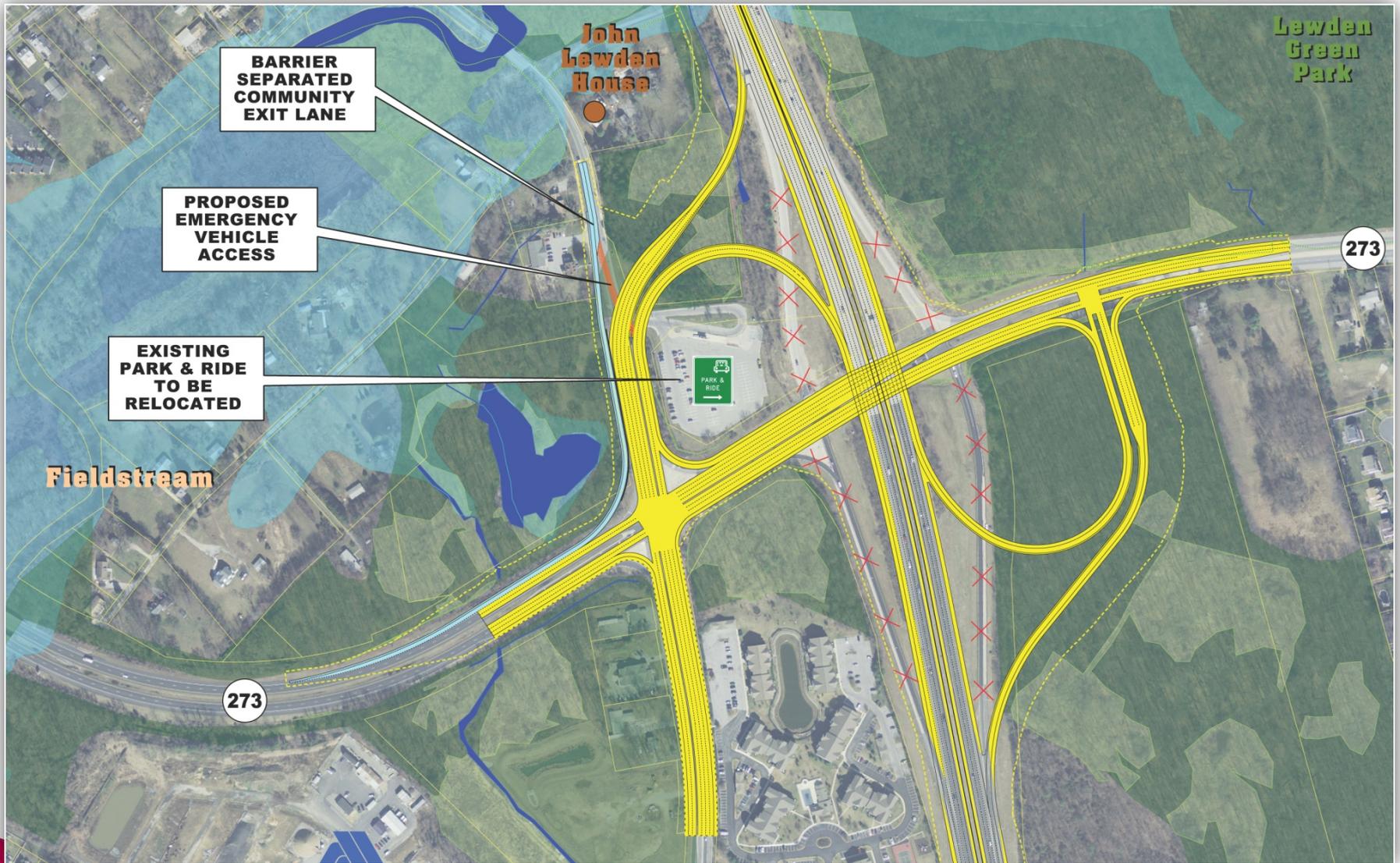


Transportation Alternatives

▶ Proposed Alternatives

- Interchange Improvements Alternatives
 - SR 273
 - Tybouts
 - US 40 interchange – minor traffic flow improvements
 - SR 72
- Mainline Widening – additional lane alternatives
 - Work within existing corridor
 - Meet current FHWA design requirements







- Legend**
- ROADWAY IMPROVEMENTS
 - LIMITS OF DISTURBANCE
 - 100 YR. FLOODPLAIN
 - FIELD DELINEATED WETLANDS
 - LAND USE WETLANDS
 - WATERS OF THE U.S.
 - FOREST
 - SCHOOLS
 - PARKS & RECREATION AREA
 - EPA ENVIRONMENTAL HISTORIC/PREHISTORIC SITE
 - LISTED ON NATIONAL REGISTER OF HISTORIC PLACES



Delaware Department of Transportation

**SR 1 WIDENING
SOUTH OF I-95 TO ROTH BRIDGE**

**ROUTE 273 INTERCHANGE OPTION 1
WITH NEWTOWN RAMP**

RKK RUMMEL, KLEPPER & KAHN, LLP
CONSULTING ENGINEERS

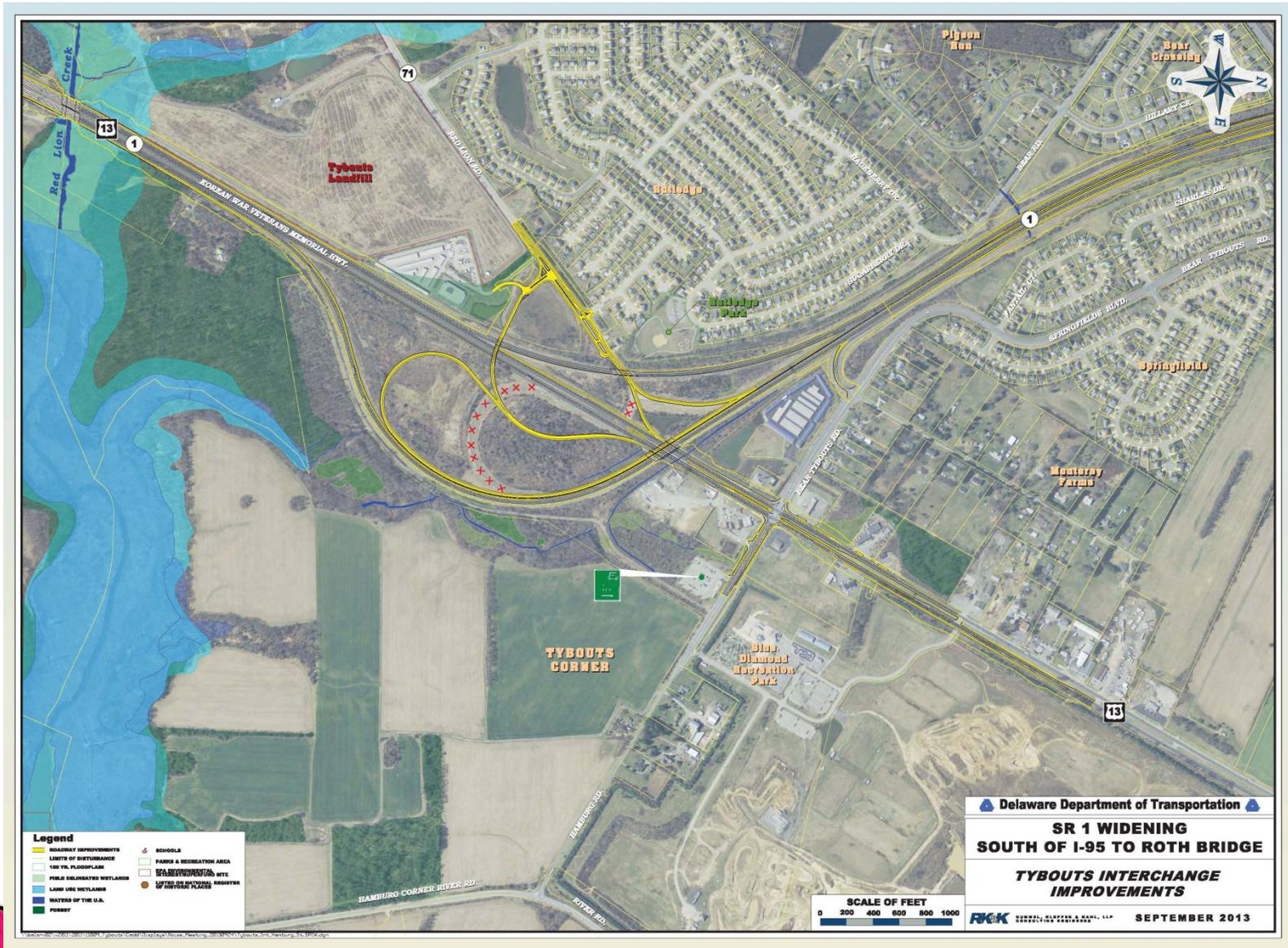
SEPTEMBER 2013

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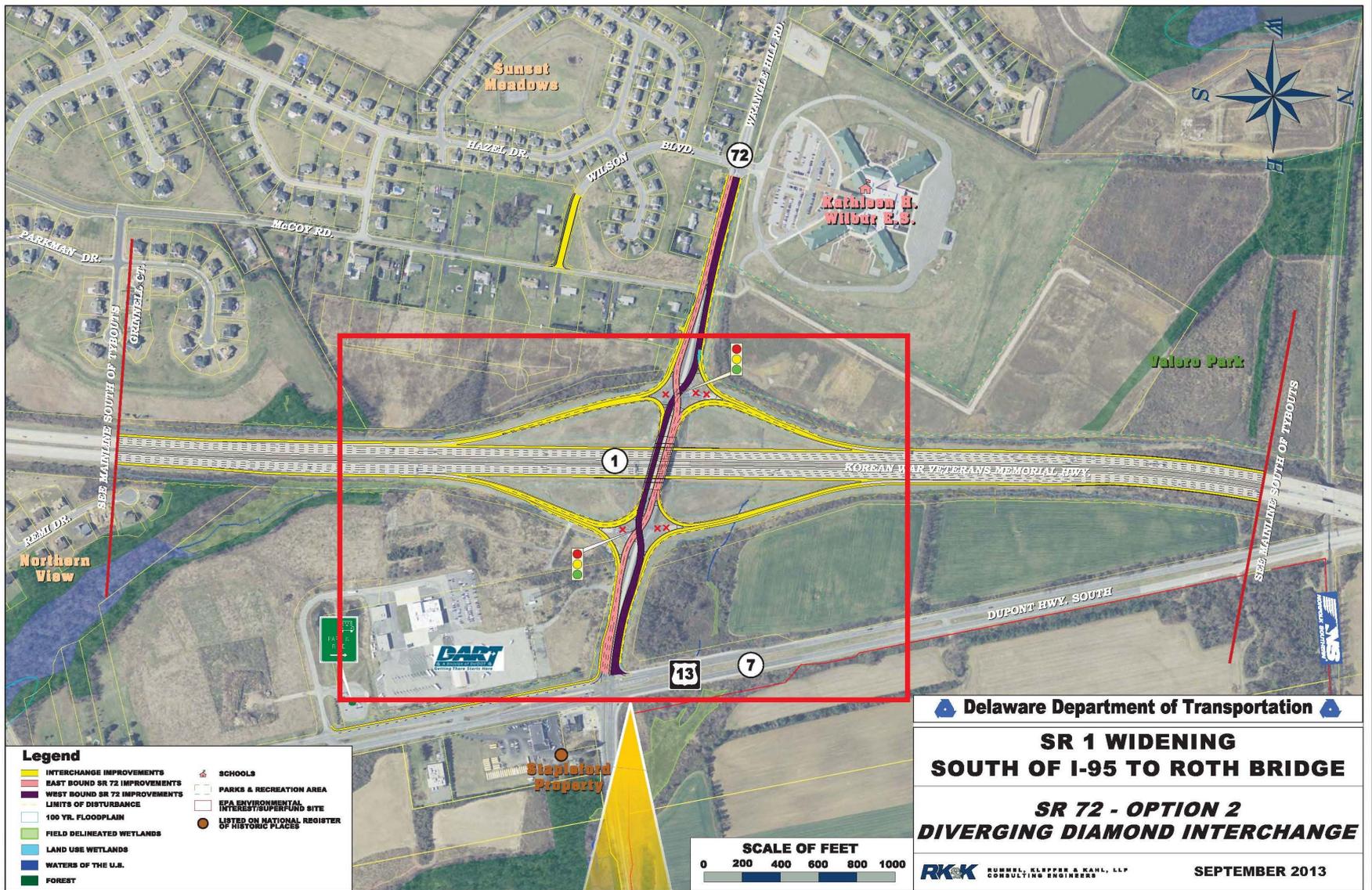
US 40 Interchange – Minor Improvements



Tybouts Corner Interchange

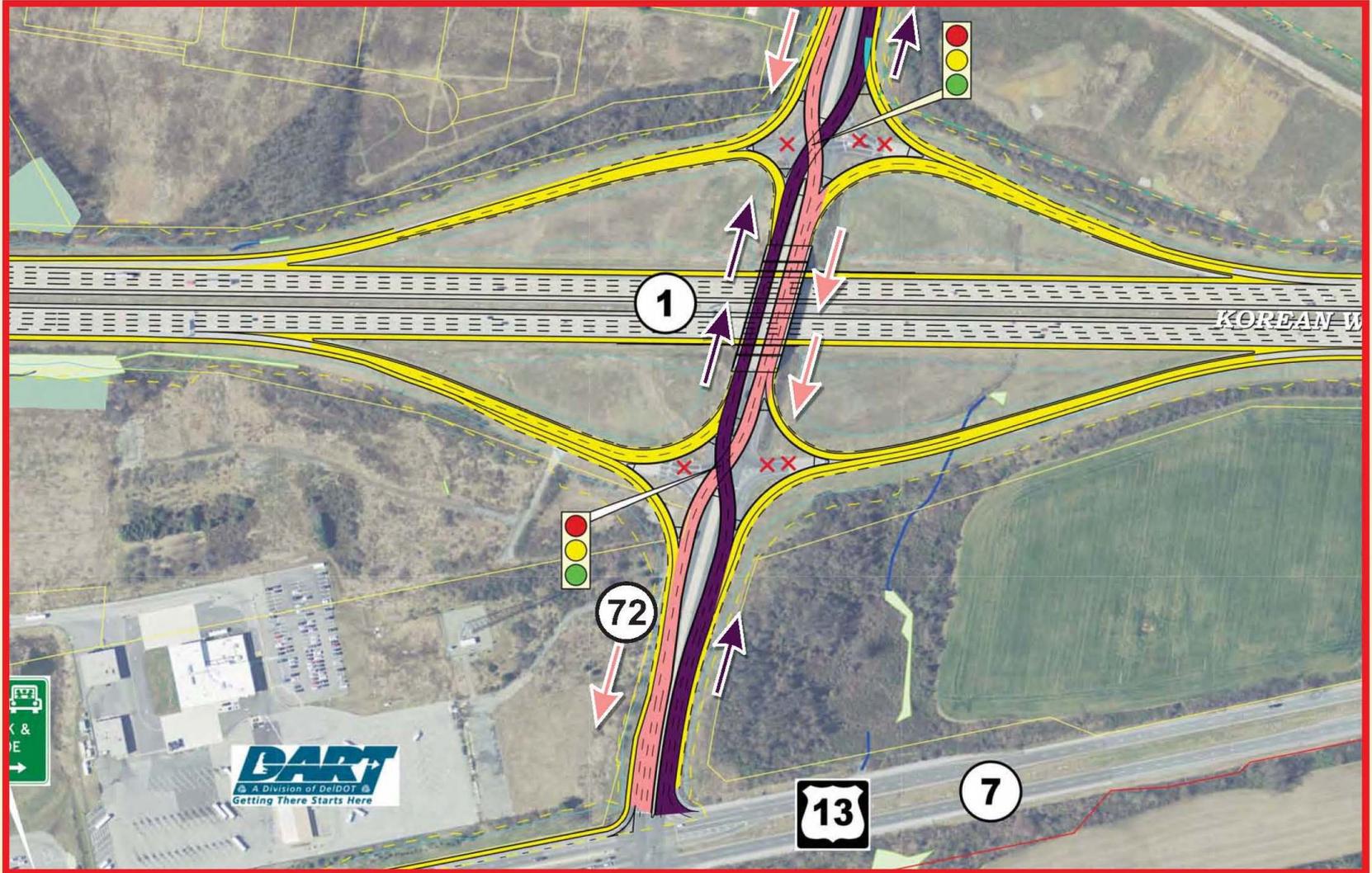


SR 72 Interchange – Preferred Alternative



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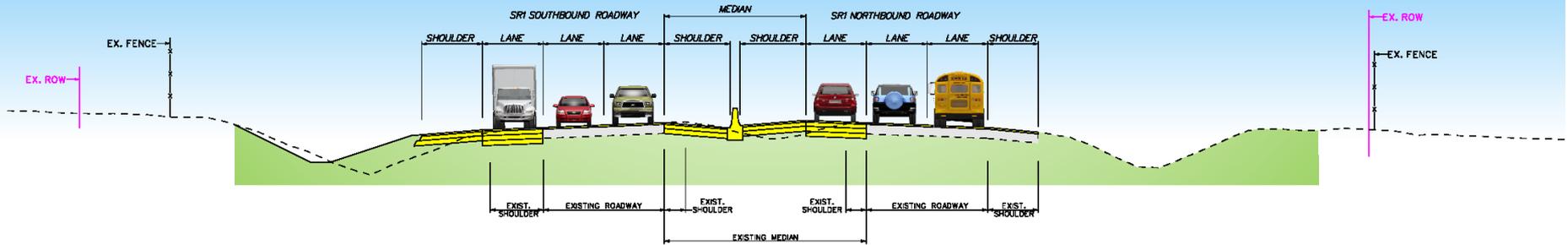
SR 72 Interchange – Diverging Diamond Interchange (DDI)



Real Life Example: I-44 in Springfield, Missouri (First in the US)

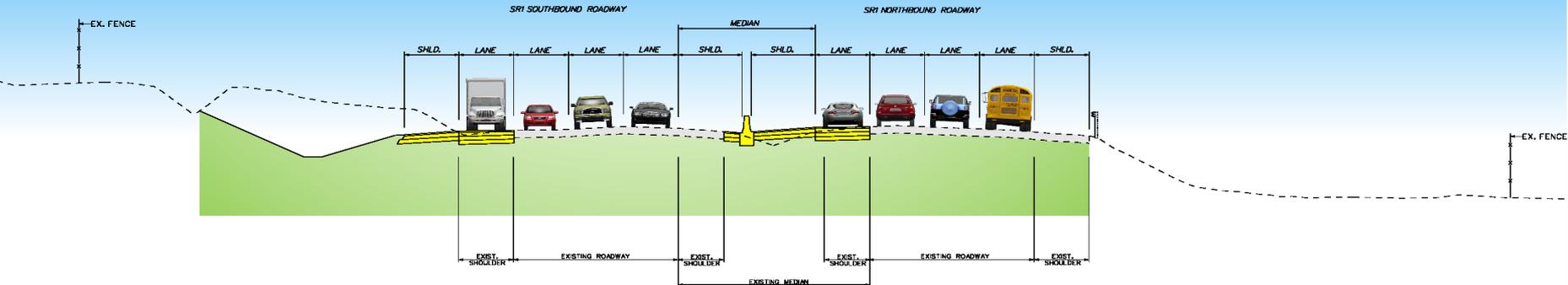


Mainline Widening – West Side Widening Alternative



SR 273 TO TYBOUTS

WEST SIDE WIDENING



TYBOUTS TO ROTH BRIDGE

WEST SIDE WIDENING

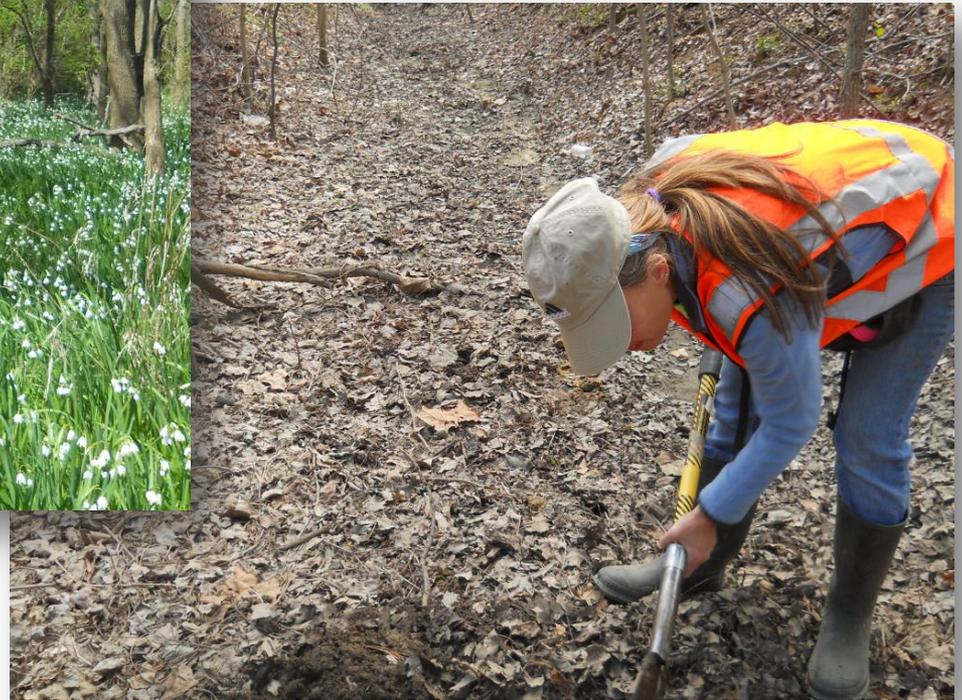


Environmental Studies

What are we required to look at?

Wetland Evaluation

- ▶ Wetland survey completed in 2012



Bog Turtles

Are they mythological creatures?

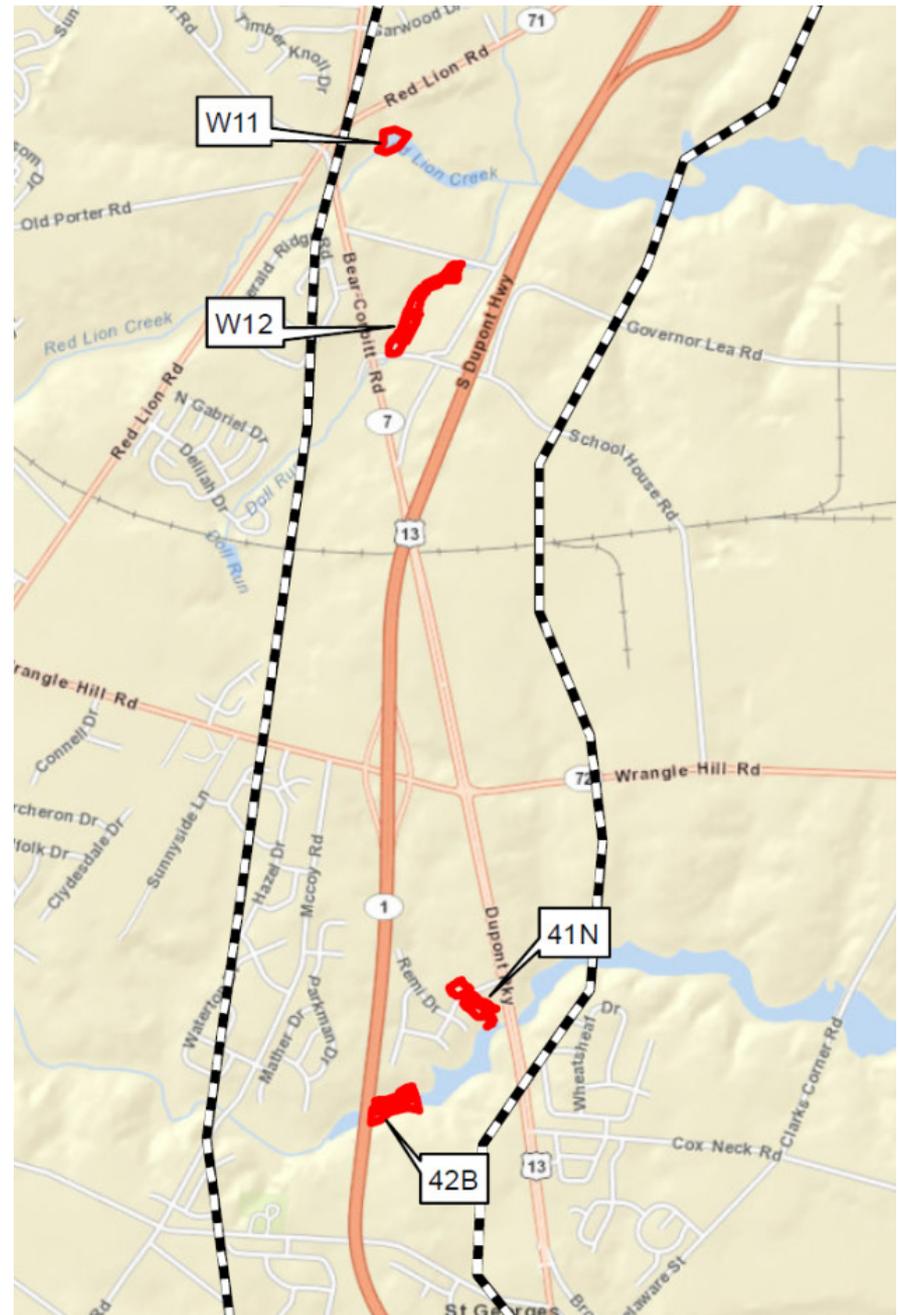


Bog Turtles

- ▶ DNREC and US Fish & Wildlife say they exist, but haven't seen one in Delaware in a long time
- ▶ Four wetland locations along SR 1 were identified as “potential bog turtle habitat”
- ▶ Phase 2 Bog Turtle Study completed

Potential Habitat

- ▶ Red Lion Creek & Dragon Creek



Eastern Box Turtle



Eastern Snapping Turtle



Snakes



Salamanders



Baby Voles



Suspected Bog Turtle Siting

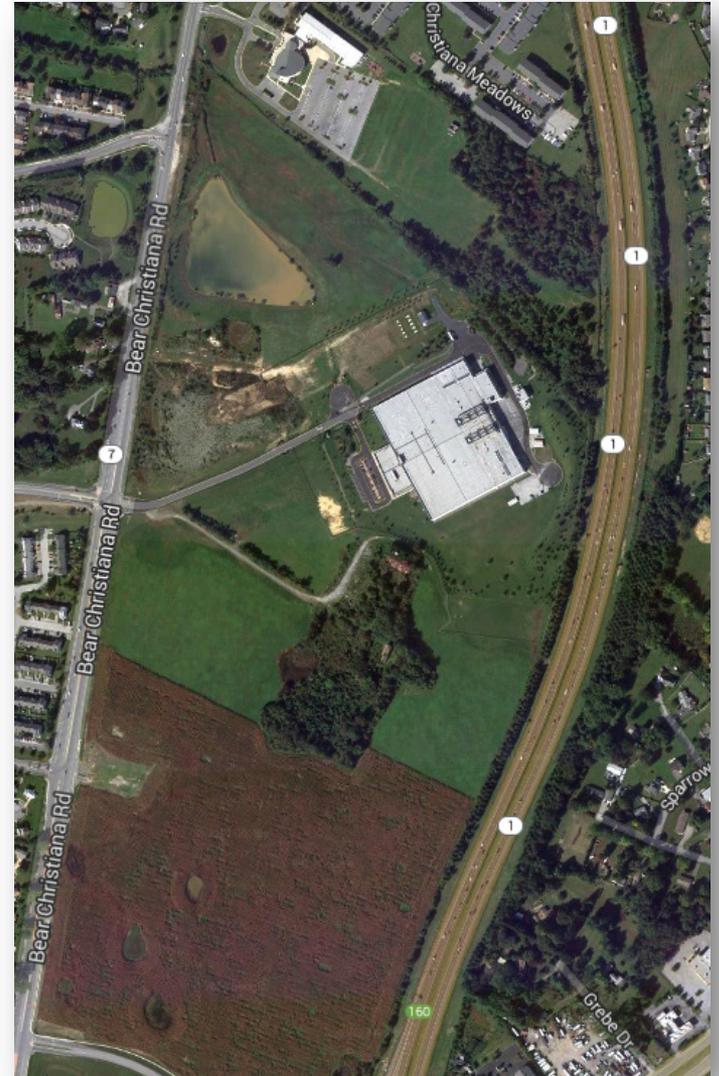


Historic Property Evaluation

▶ Simmons Farmstead

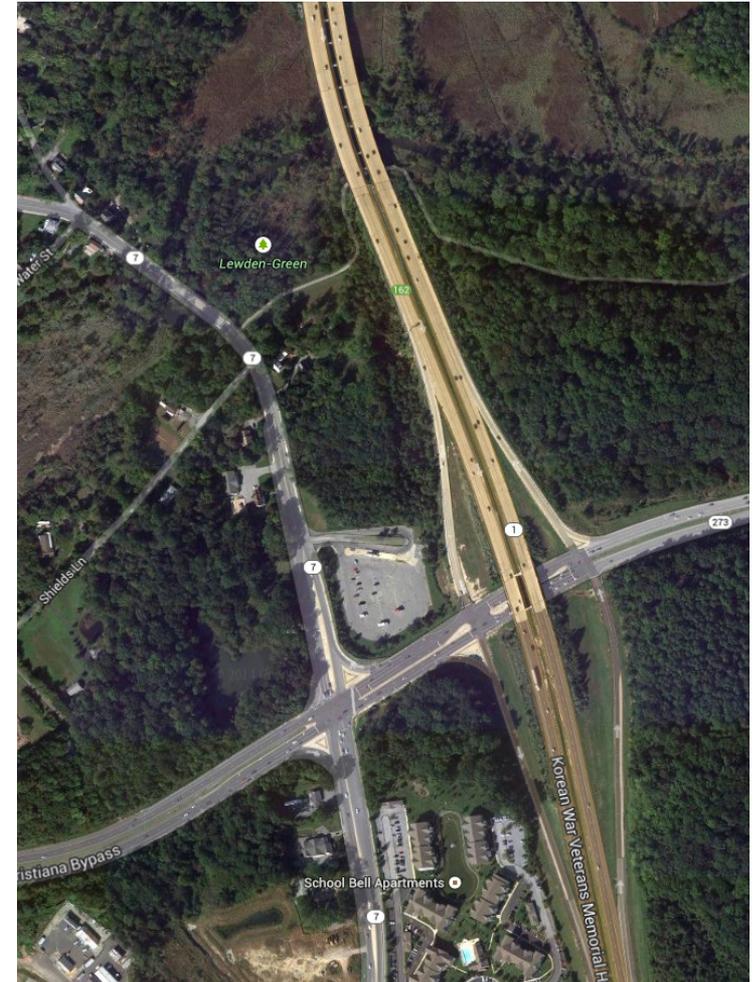


PLATE 11. John T. Simmons House, View to Northeast



Historic Property Evaluation

▶ John Lewden House



Archaeology

- ▶ Most of the existing SR 1 alignment has already been studied
- ▶ Additional study areas needed for new alignments
 - SR 273
 - Newtown Ramp
 - SR 72
 - Waterways
- ▶ Possible Burial Site?

Burial Site – Partridge Family

- ▶ Cemetery used between 1776 and 1813
- ▶ 10 adults and 3 infants
- ▶ James Partridge – Officer in Revolutionary War
- ▶ Bodies are said to have been exhumed and sent to Dover, the Smithsonian (?)

Table 3: Burials at the Partridge Cemetery

FIELD NO.	SEX	AGE	RACE	HEIGHT (ft)	NOTE
1	F	17-22	Caucasian	5.2	
2/17	M	30-34		5.5	
19		Infant			
4/5					Previously exhumed
6	M	35-45			
7	F	20-25		4.8	
8	F	40-50	Caucasian	4.8	Fancy coffin; likely Mary Partridge, died in 1787 at 45 years
9	M	45-49	Caucasian	5.7	
15	F	15-17		5.5	
16	M	30-40		5.7	Musket ball in neck
18		Infant			
21		Infant			
24	M	50-60			In brick vault; probably James Partridge, died in 1793 at 60 years

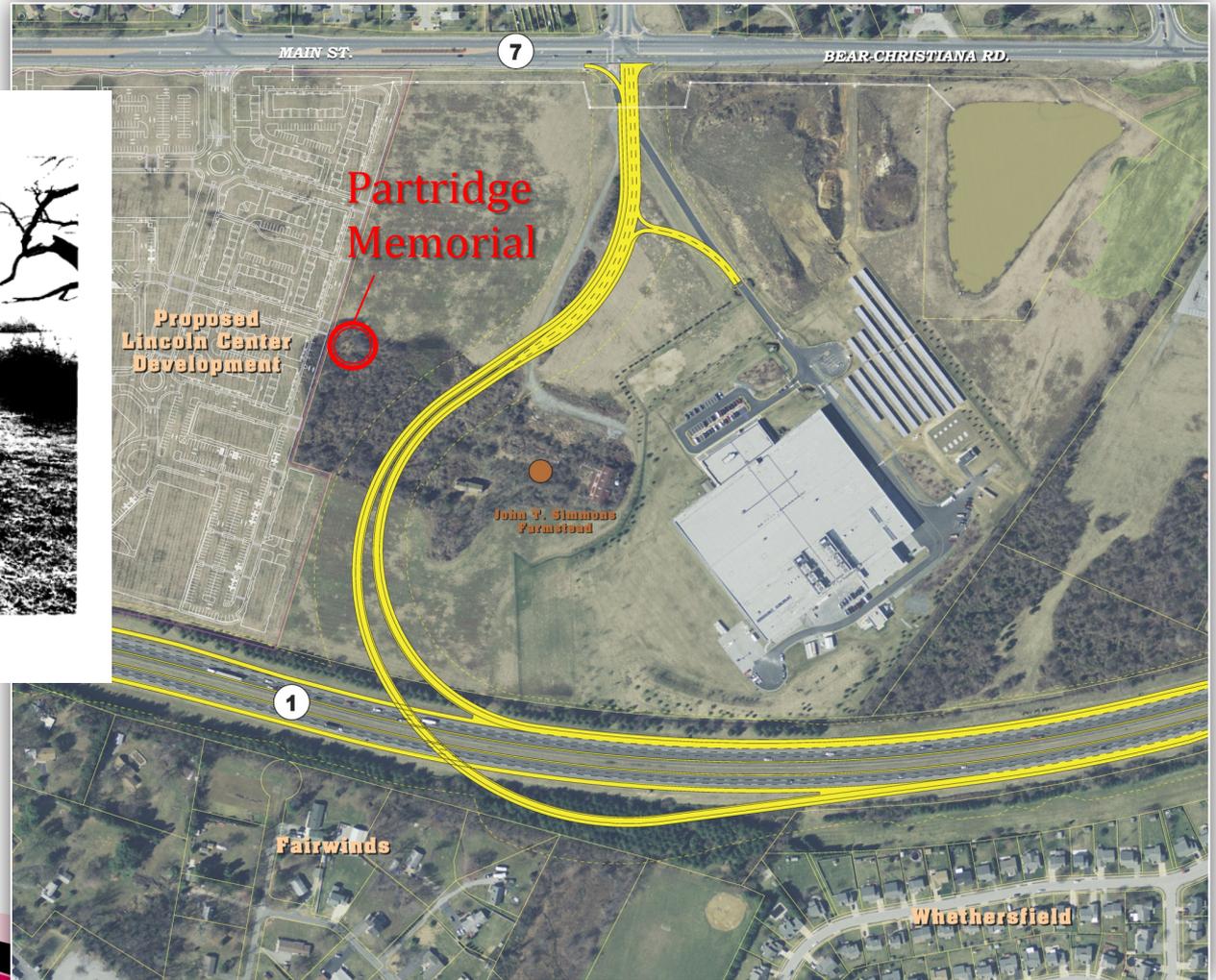
Source: Traver (2000)

Burial Site – Partridge Family

Could someone else be out here?



PLATE 17: John T. Simmons Farmstead, Partridge Memorial, View to East



Today



Noise

- ▶ Could we be building the first Noise Mitigation Wall in Delaware?



What is Noise?

- ▶ Noise, as associated with roadways, is a function of traffic volume, speed & location relative to user (distance & height).



DelDOT's Noise Policy

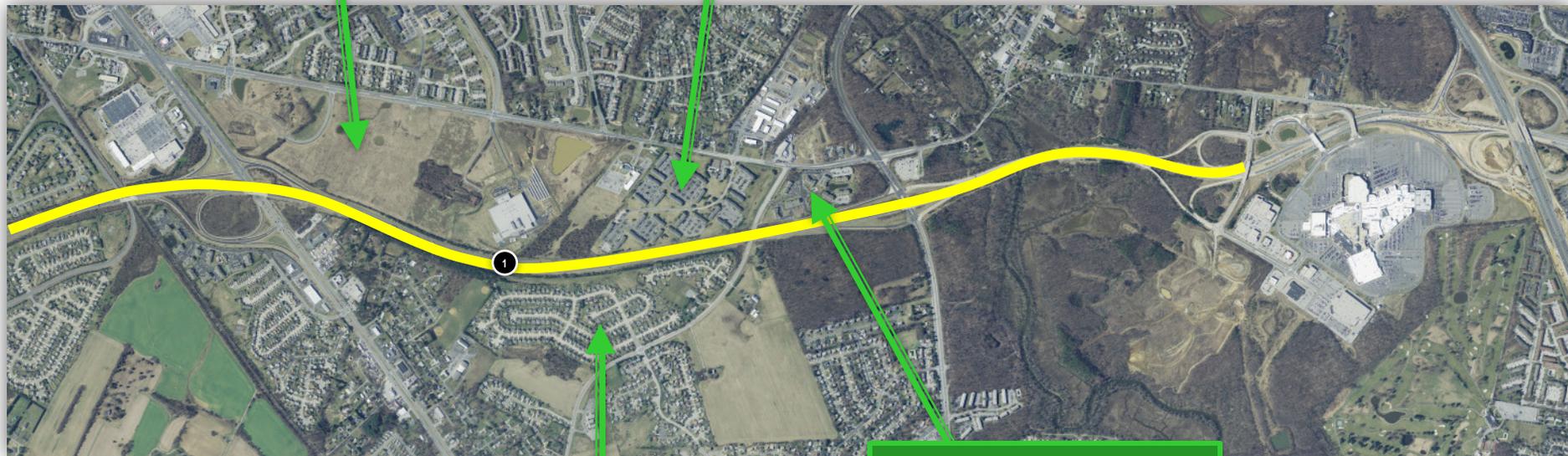
▶ Noise Analysis Process

- Identify Noise-Sensitive Land Uses
- Collect Existing Ambient Noise Data
- Develop Existing Condition Noise Model using FHWA Traffic Noise Model (TNM)
- Calibrate Model (i.e., Compare Computed to Ambient Noise Levels)
- Analyze Transportation Alternatives
- Predict Design-Year Noise Levels
- Identify Noise Impacts
- **Assess Mitigation Options for Feasibility / Reasonableness**

Who Qualifies for Noise Mitigation?

Proposed Lincoln
Center Community

Christiana Meadows
Apartments



Whethersfield/Christiana
Meadows Community

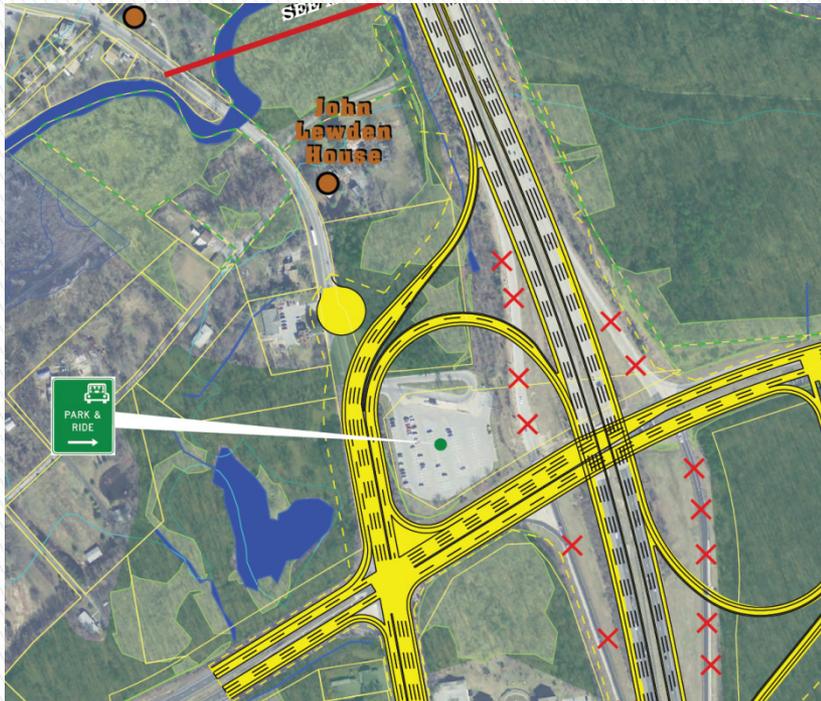
School Bell
Apartments

Project Challenges

Perception vs. Reality

Public Perception

We don't always see things the way the public does



WE SEE

THEY SEE

Public Perception

COMMENT FORM

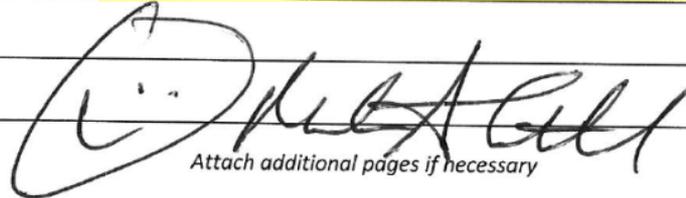
Name:

Address:

Email:

Telephone:

I LIVE IN CHRISTIANA. I'M CONCERNED W/ THE IDEA OF DEAD-ENDING EAST MAIN STREET. AFTER GIVING THE IDEA A GREAT AMOUNT OF THOUGHT, I COULDN'T COME UP W/ ONE REASON THIS MAKES SENSE. I FEEL THAT IT'S STUPID TO MAKE SUCH A DRASTIC IMPACT ON SUCH AN IMPORTANT HISTORIC LANDMARK AS THE 'CITY' OF CHRISTIANA. FIRE WHAT EVER BENIGNS CAME UP THE IDEA!



Attach additional pages if necessary



PLEASE RETURN TO:
Delaware Department of Transportation
(Route 1 Widening Project)
P.O. Box 778
Dover DE 19903
1-800-652-5600 or (302) 760-2080



Comments can also be submitted via e-mail: dotpr@state.de.us or faxed to 302-739-2092

Public Perception



Public Workshop

April 8, 2013
5:00-8:00 PM

COMMENT FORM

Name:

Address:

Email:

Telephone:

Handwritten signature: *W. A. ...*

Handwritten comment: *NO*

Attach additional pages if necessary



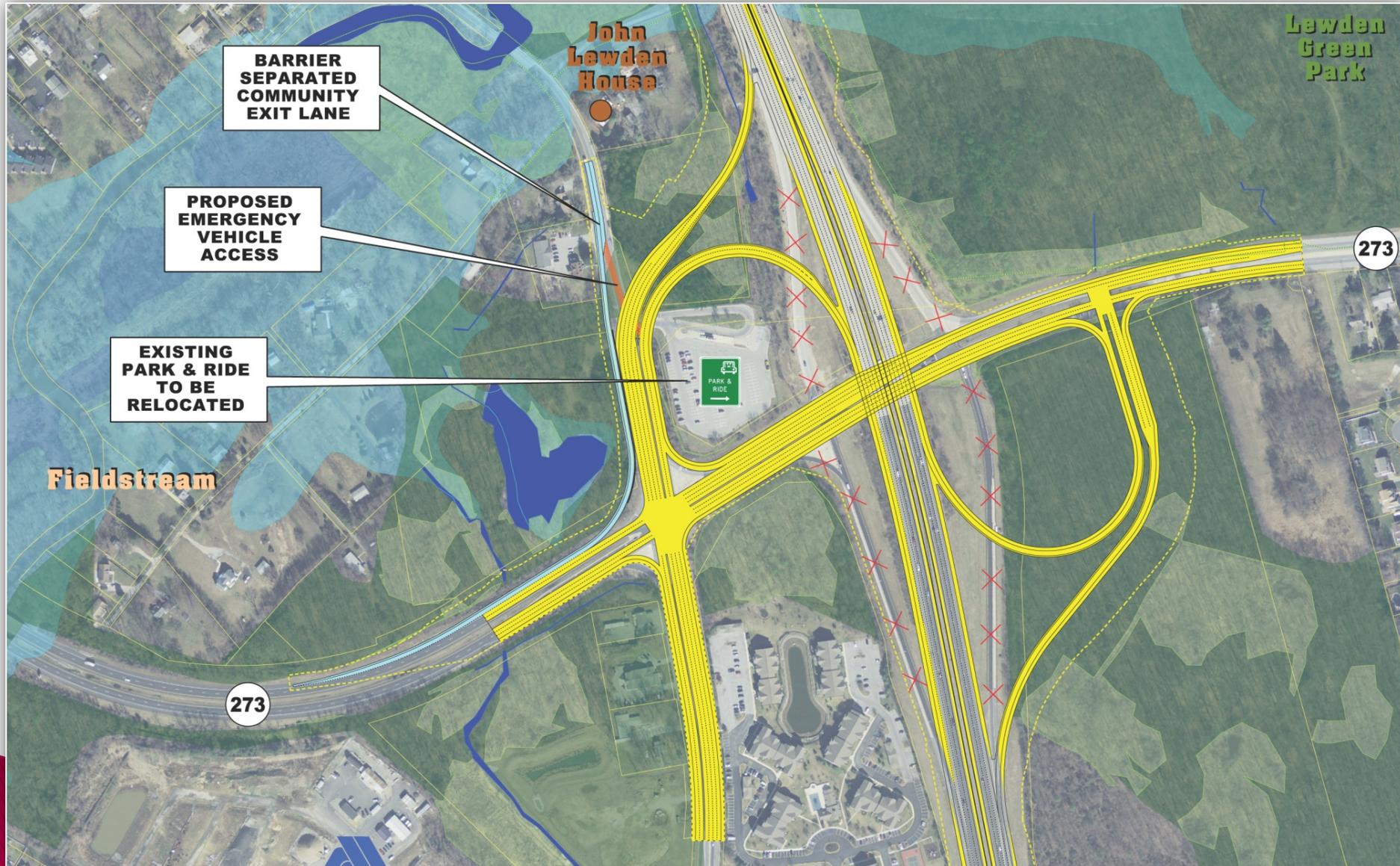
PLEASE RETURN TO:
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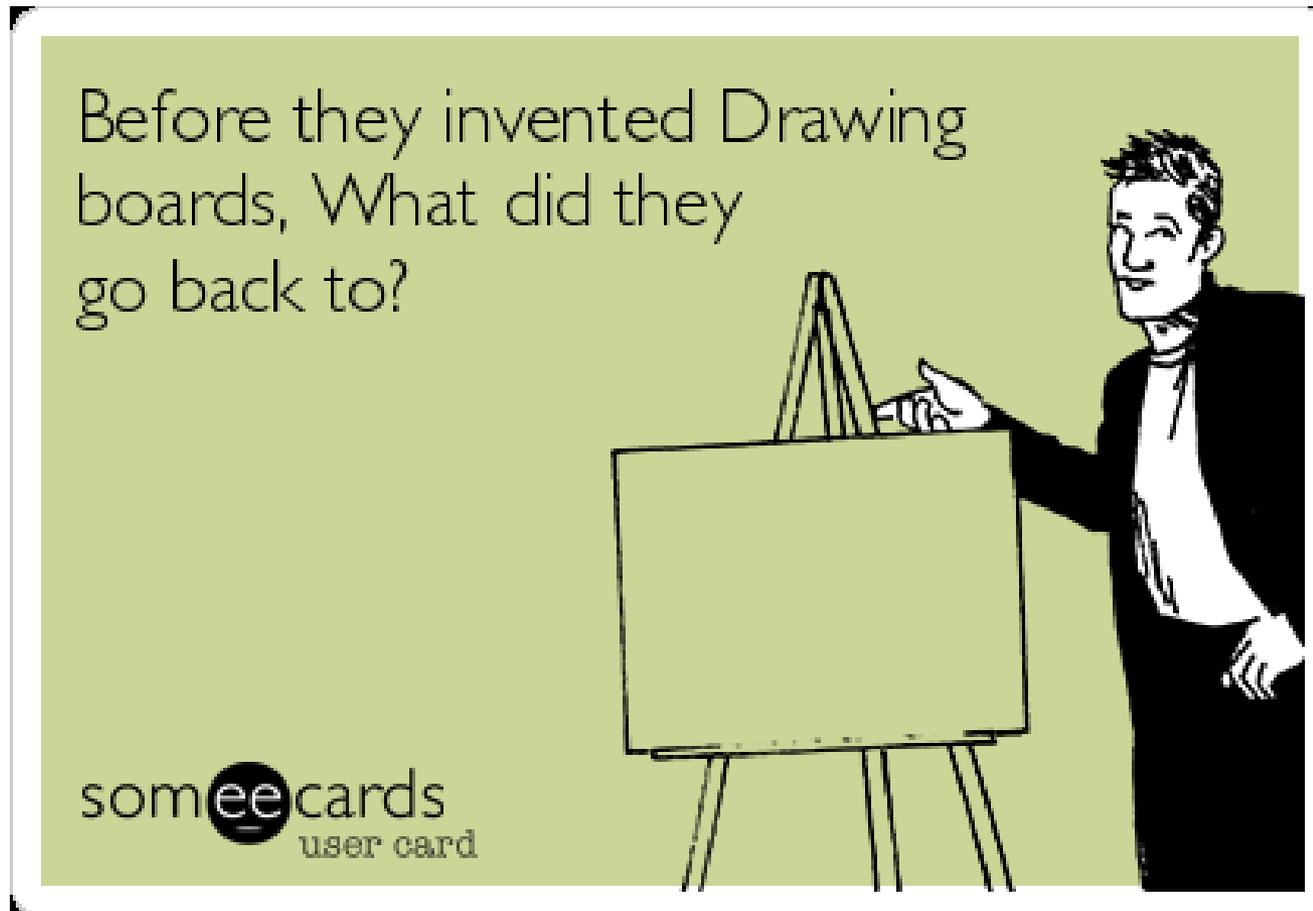
Comments can also be submitted via e-mail: dotpr@state.de.us or faxed to 302-739-2092

Your comments and opinions are very important. All information you provide on this form will be carefully reviewed by the Department of Transportation. Under State law this survey form is public domain, and if requested, a copy of it must be provided to the public or media. Thank you for your participation and contribution to this important transportation project in Delaware.

Trial and Error



“...Go Back to the Drawing Board.”



Lessons Learned, Advice, and Recommendations

Lessons Learned

- ▶ Lay out a schedule early, and do your best to stick to it
- ▶ Coordinate with Environmental section early and often
- ▶ Understand the culture of sensitive areas

Advice & Recommendations



- ▶ First in Delaware? **Yeah!**
- ▶ New Innovation? **Okay!**
- ▶ Is it Risky? **Evaluate the risks!**
- ▶ Did someone shoot you down? **Ask why!**

Advice & Recommendations

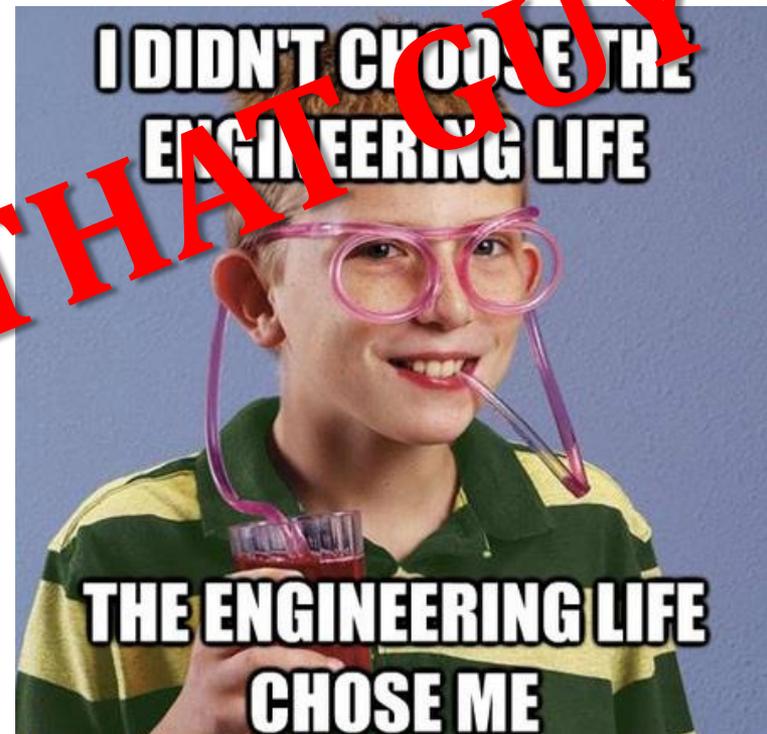
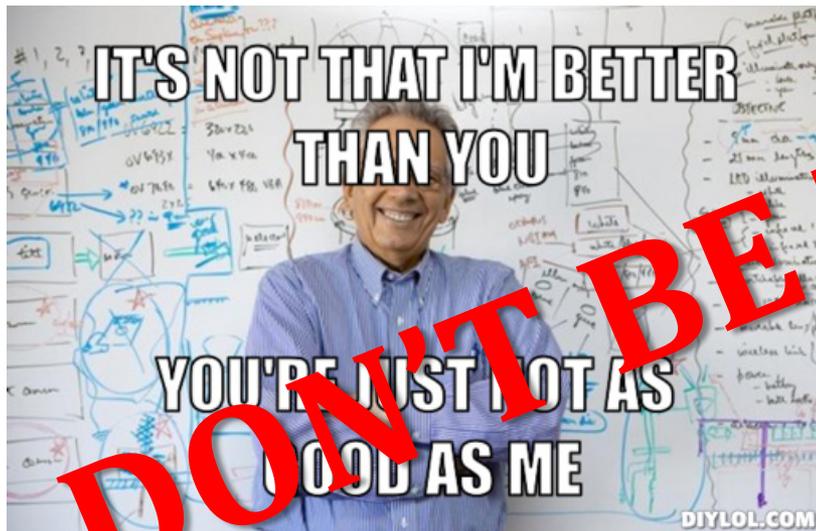


- ▶ Work with your environmental project team to discuss any issues or hurdles
- ▶ When speaking with anyone, especially the public, be truthful
- ▶ Document everything and anything, and be prepared for a FOIA request

Advice & Recommendations

Communication with Public:

LISTEN & SPEAK NON-TECHNICAL



DON'T BE THAT GUY

Advice & Recommendations

- ▶ Build trust and confidence in your project team
- ▶ Don't get discouraged by project hurdles
- ▶ Everyone has the same goal: **Project Success**



Thank You!

Special Thanks to:
RK&K

Jenna Frye, P.E.

jenna.frye@state.de.us

(302) 760-4824

Visit sr1.deldot.gov



ENGINEERS



What my friends think I do



What my parents think I do



What society thinks I do



What girls think I do



What my boss thinks I do



What kids think I do



What I want to do



What I think I do



What I really do