

Slide Correction Case Study: SR 105 in Huntington County

Presented by:

John Langmaid, INDOT

Jennifer Goins, P.E., HNTB

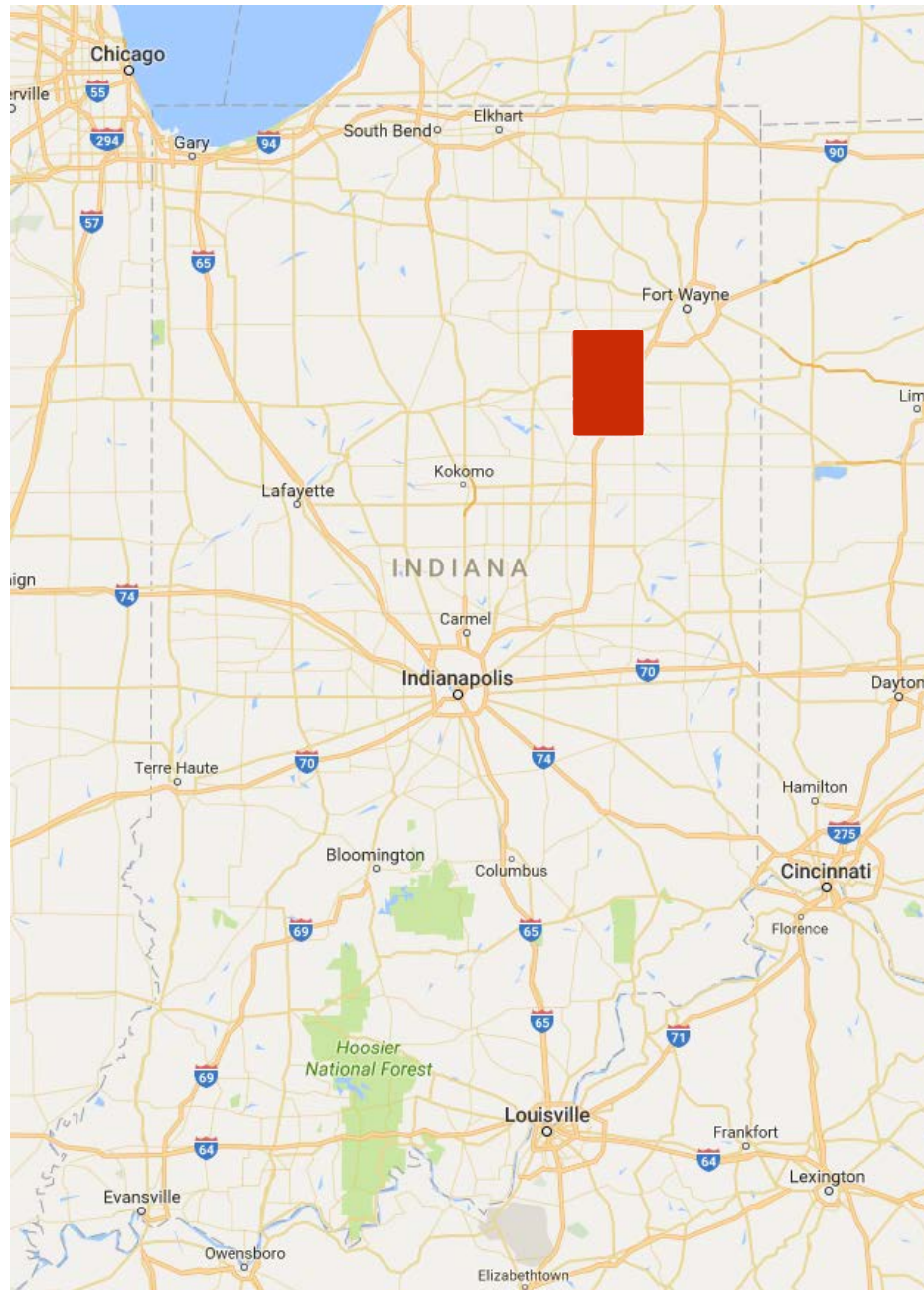


Outline

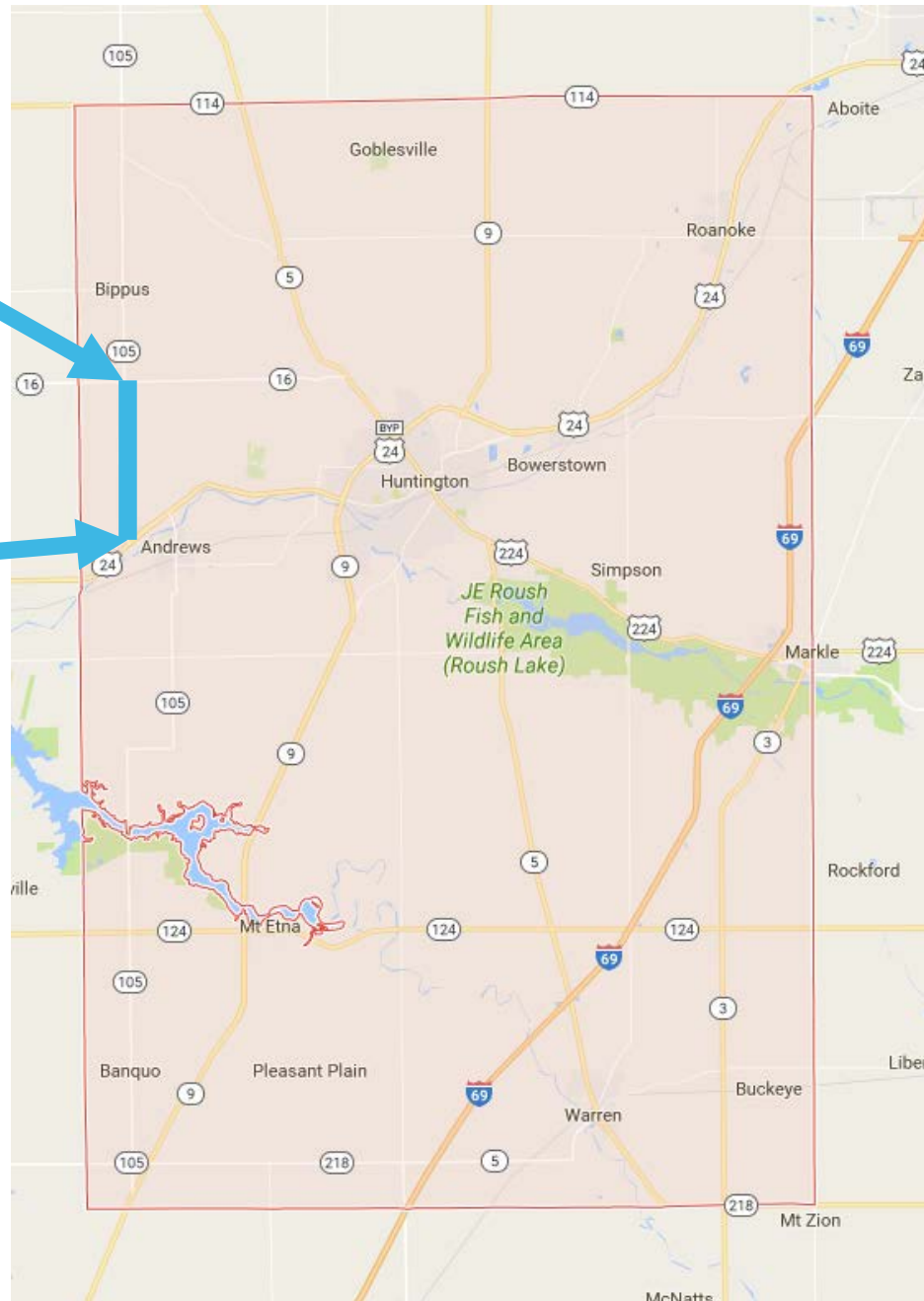
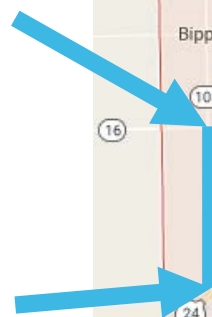
- Project Location & Background
- Design Topics
- Construction Topics
- Cost
- Successes & Lessons Learned
- Accolades
- Q&A

Project
Location:

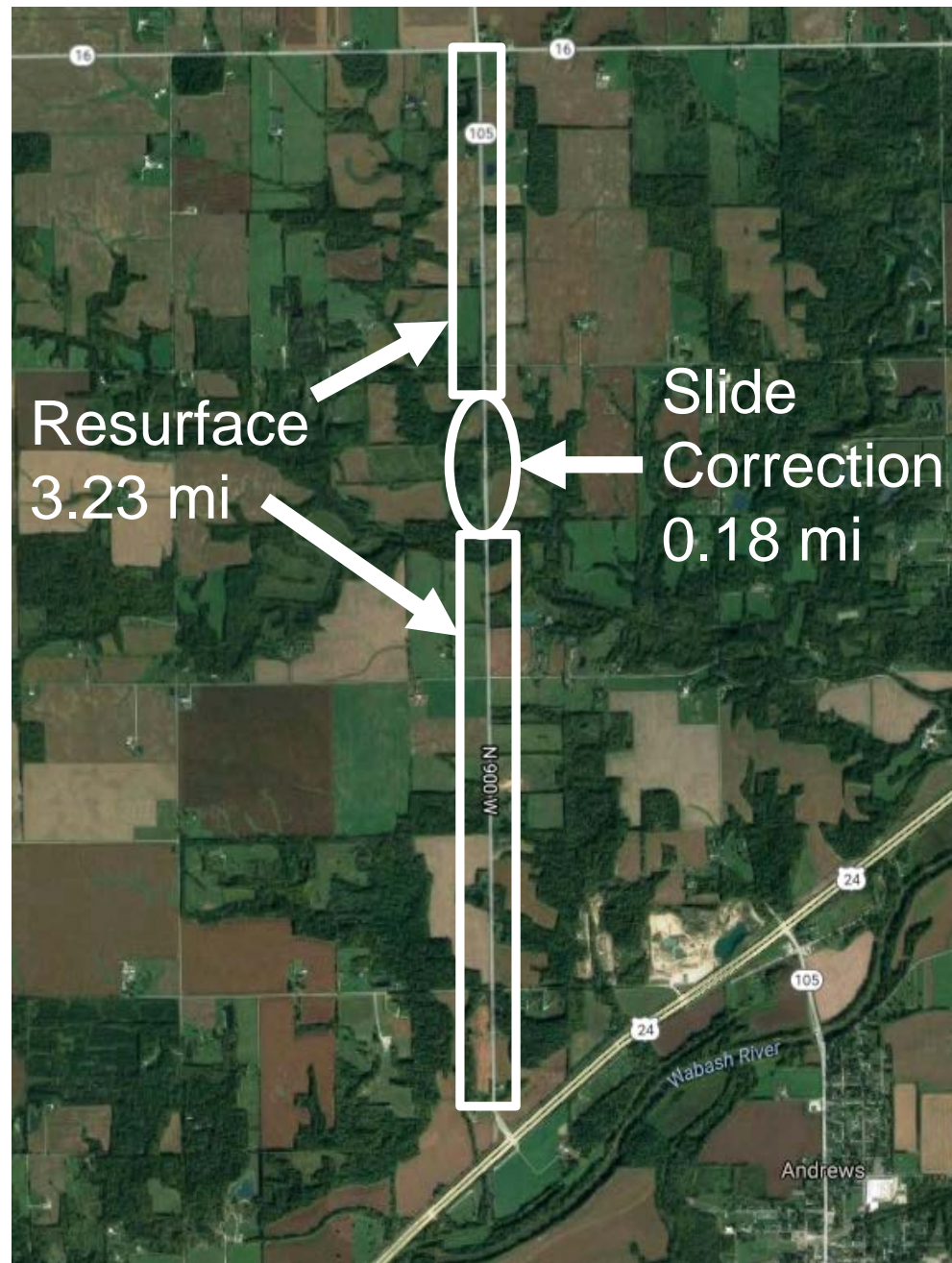
Huntington
County, IN



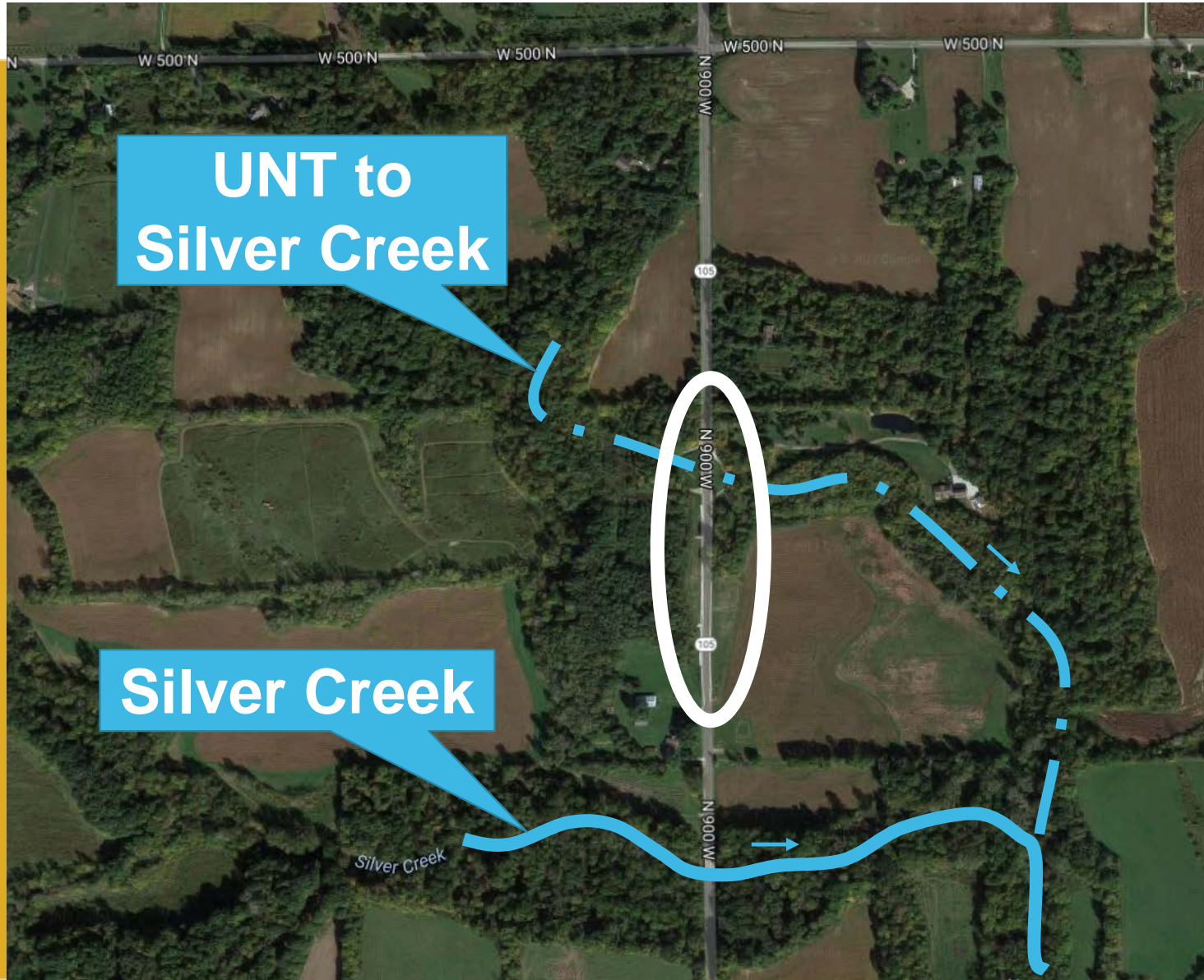
Project
Location:
SR 105



Project Scope



Slide Area Geography



December
2014



May 2015

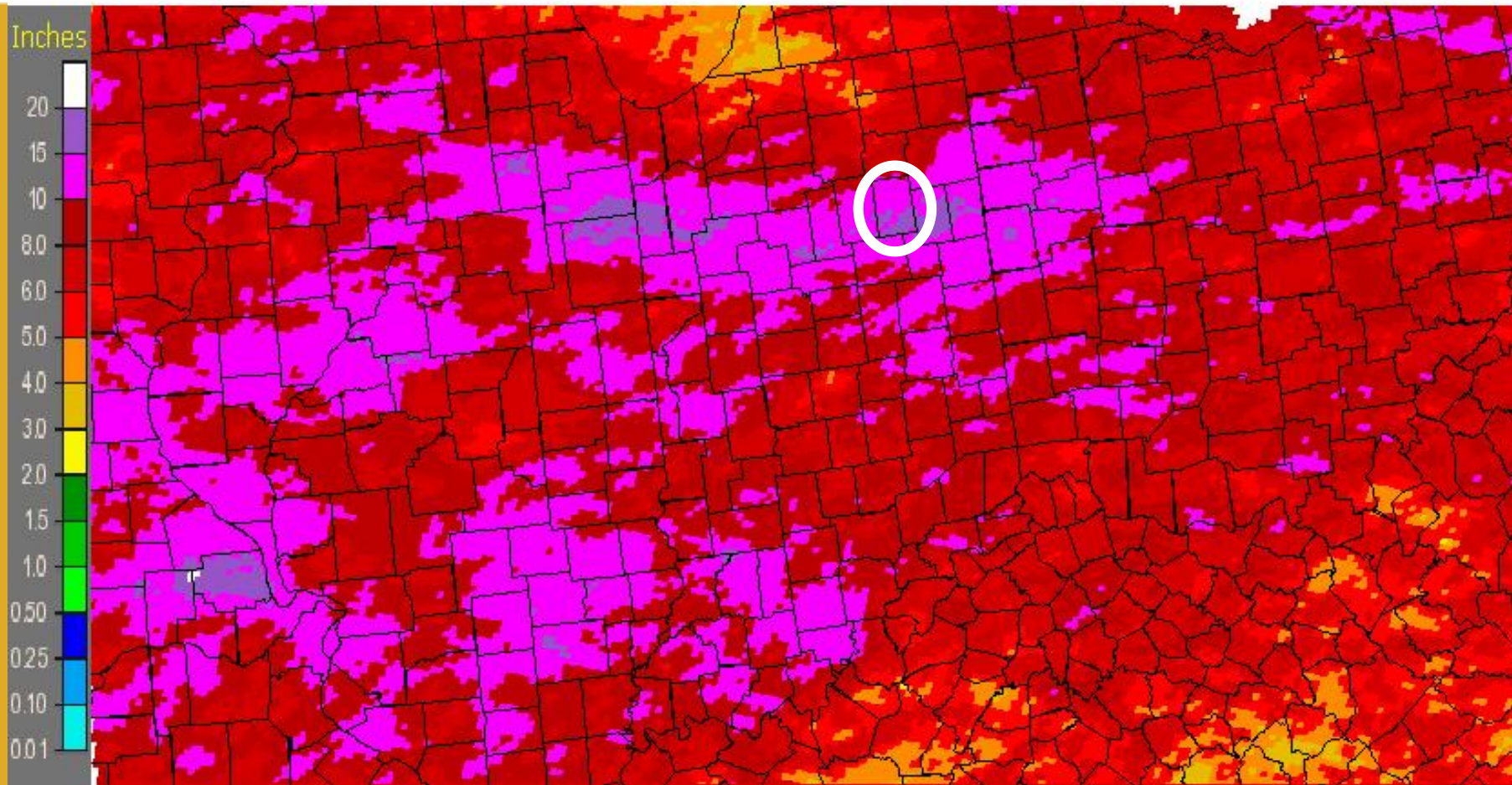


05/27/2015

HNTB



Indiana: Current 30-Day Observed Precipitation
Valid at 7/1/2015 1200 UTC- Created 7/1/15 22:13 UTC



Cumulative Rainfall Map for June 2015
From weather.gov



Huntington Reservoir – on an average day



Huntington Reservoir – June 22, 2015

View of Slide

June 2015



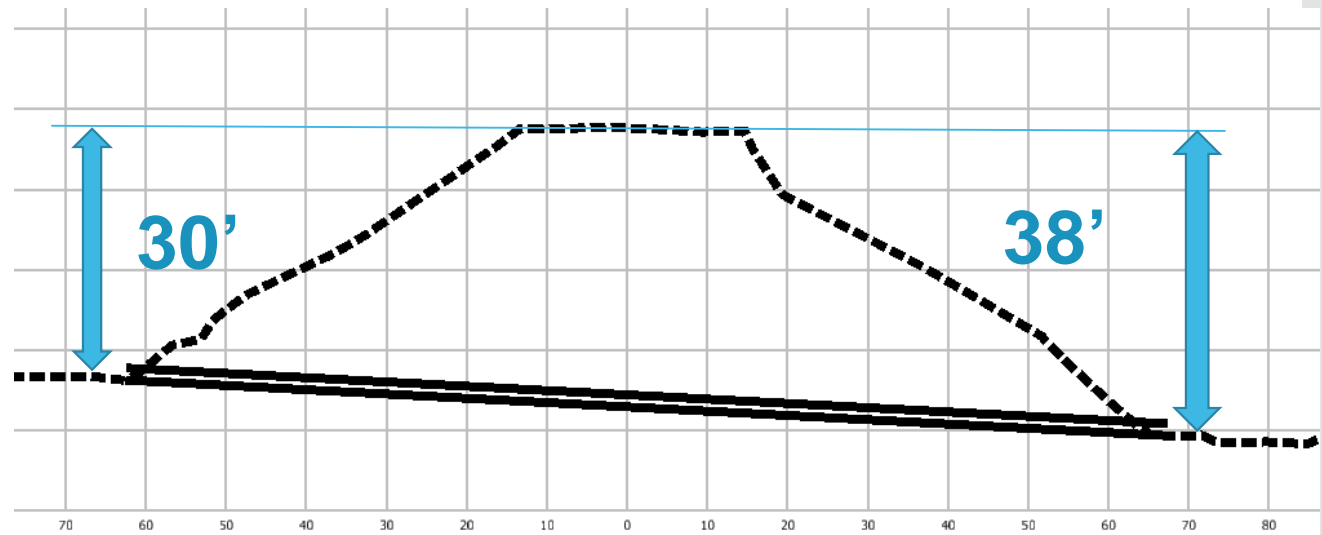
Pavement Step Down

June 2015





Height of Embankment



Skewed Cross Section at Existing Pipe



12/29/2014





12/29/2014



Outfall of Existing Pipe

June 2015





Outfall of Existing Pipe

June 2015

Downstream
m of Pipe
June 2015



Inlet of Existing Pipe

May 2015

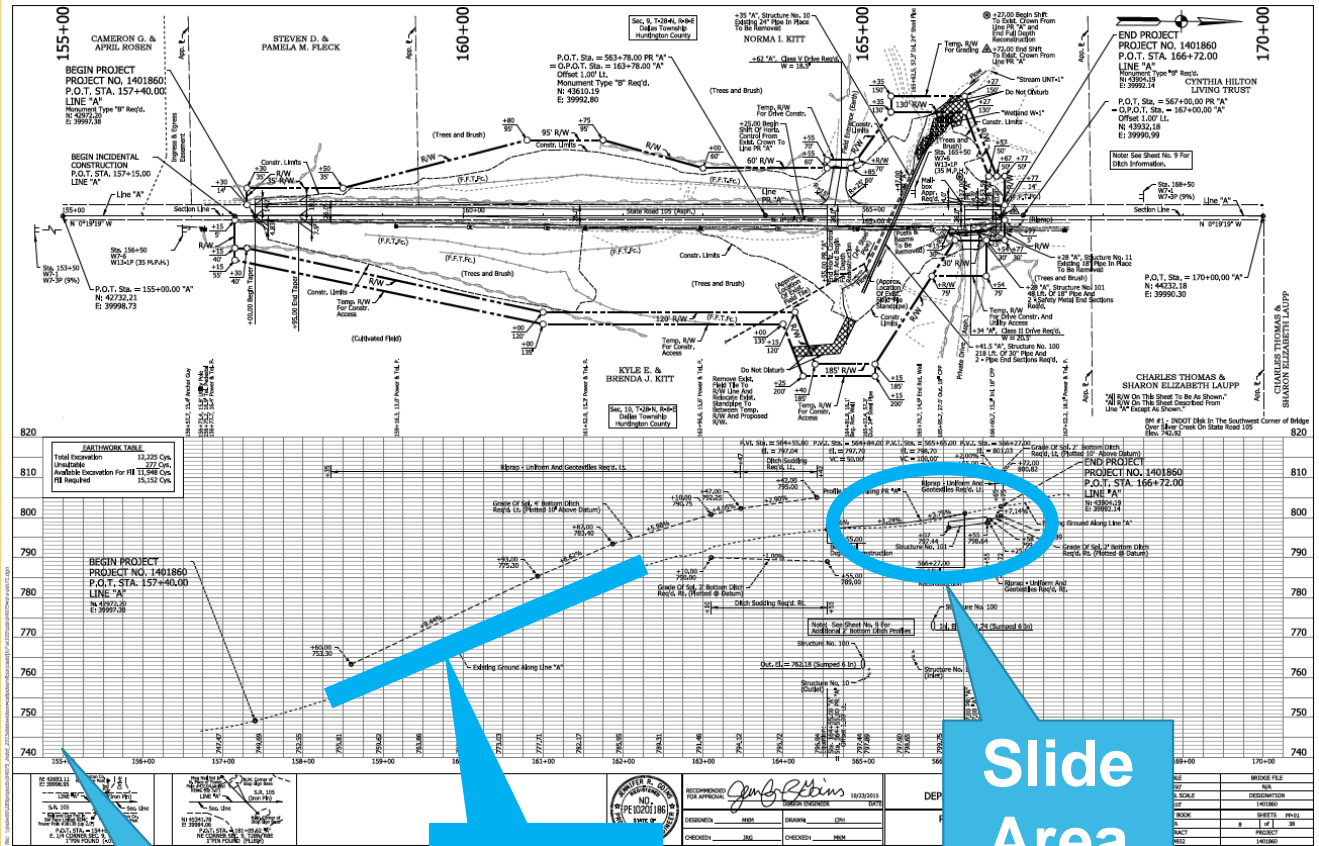


Inlet of Existing Pipe

June 2015



Project Layout



Preventing A Future Slide



Picture looking South – Crack along EOPs

Timeline

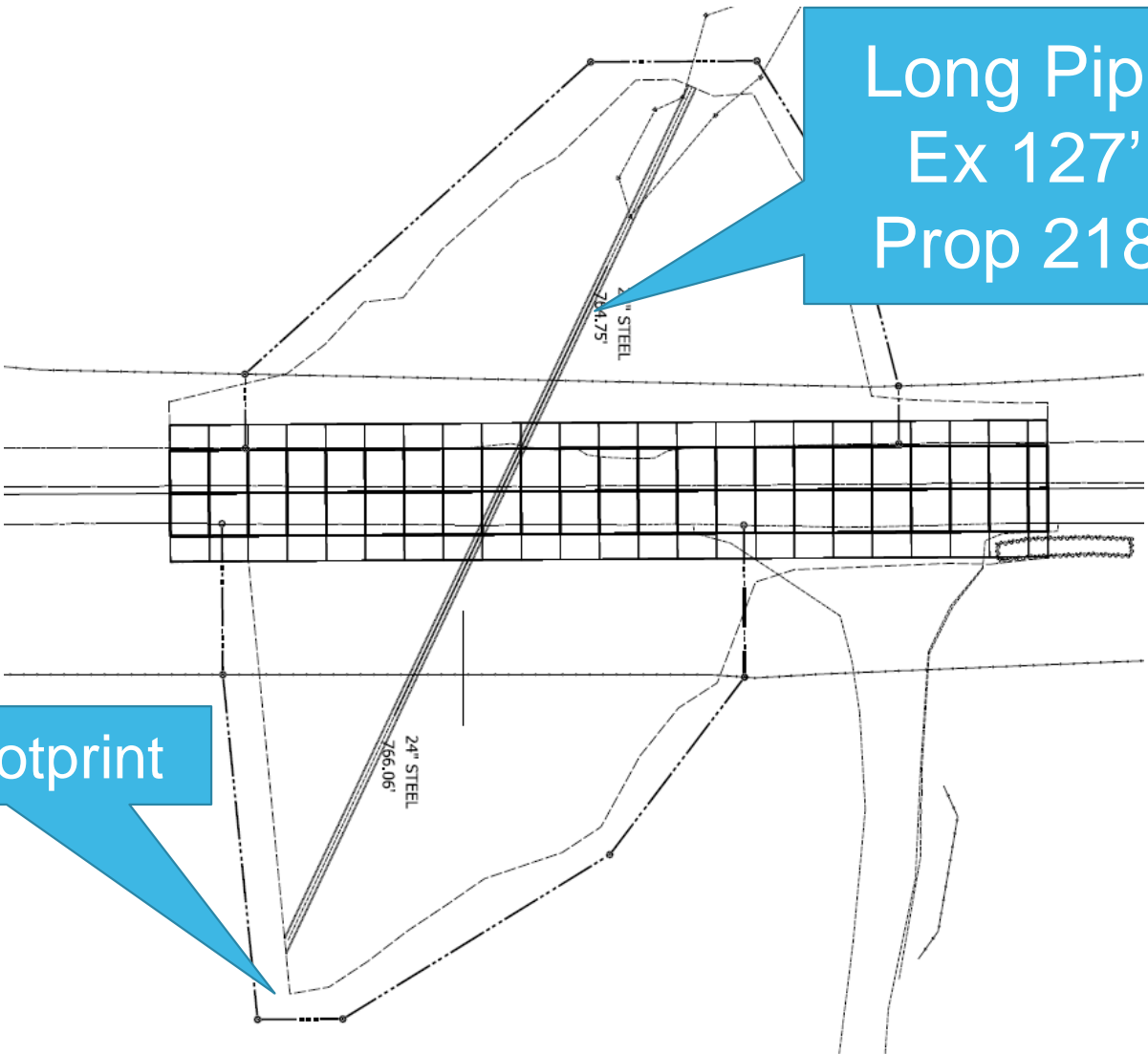
Month	Event or Goal
June 2015	Slide occurs. Road closed.
November 2016	Environmental Approval
January 2016	Project Letting
March 31, 2016	Tree clearing complete
August 2016	Road open when school starts.

Alternative Comparison

Option	Description	Cost Estimate of Select Items	Notes
1	3:1 fill slopes		
2	Retaining walls halfway down and then 3:1 fill slopes		
3	Retaining walls with no bench		
4	Bridge		
5	Retaining walls with 15' bench		

Option 1 – 3:1 Fill Slopes

Alternative Comparison

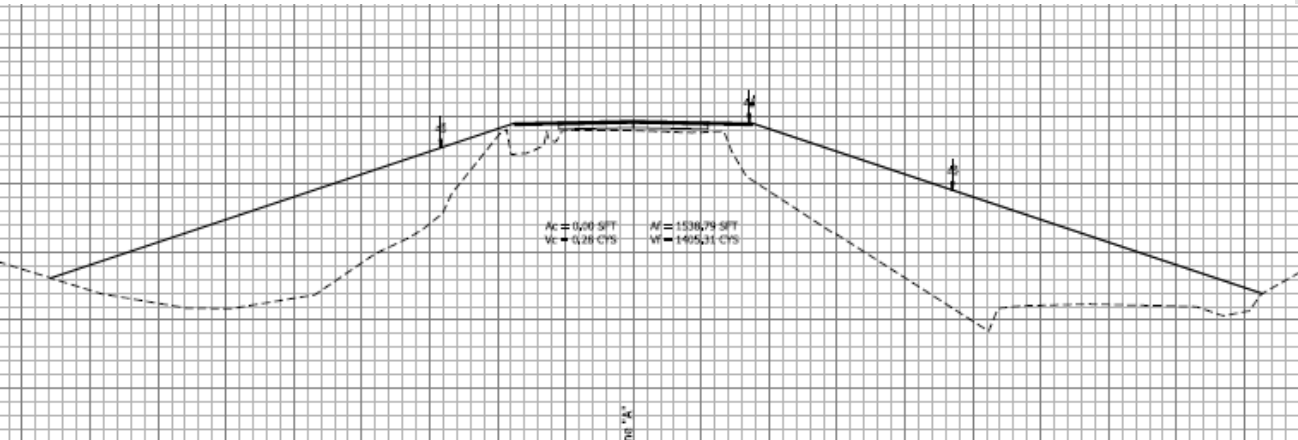


Long Pipe
Ex 127'
Prop 218'

Wide Footprint

Option 1 – 3:1 Fill Slopes

Alternative Comparison

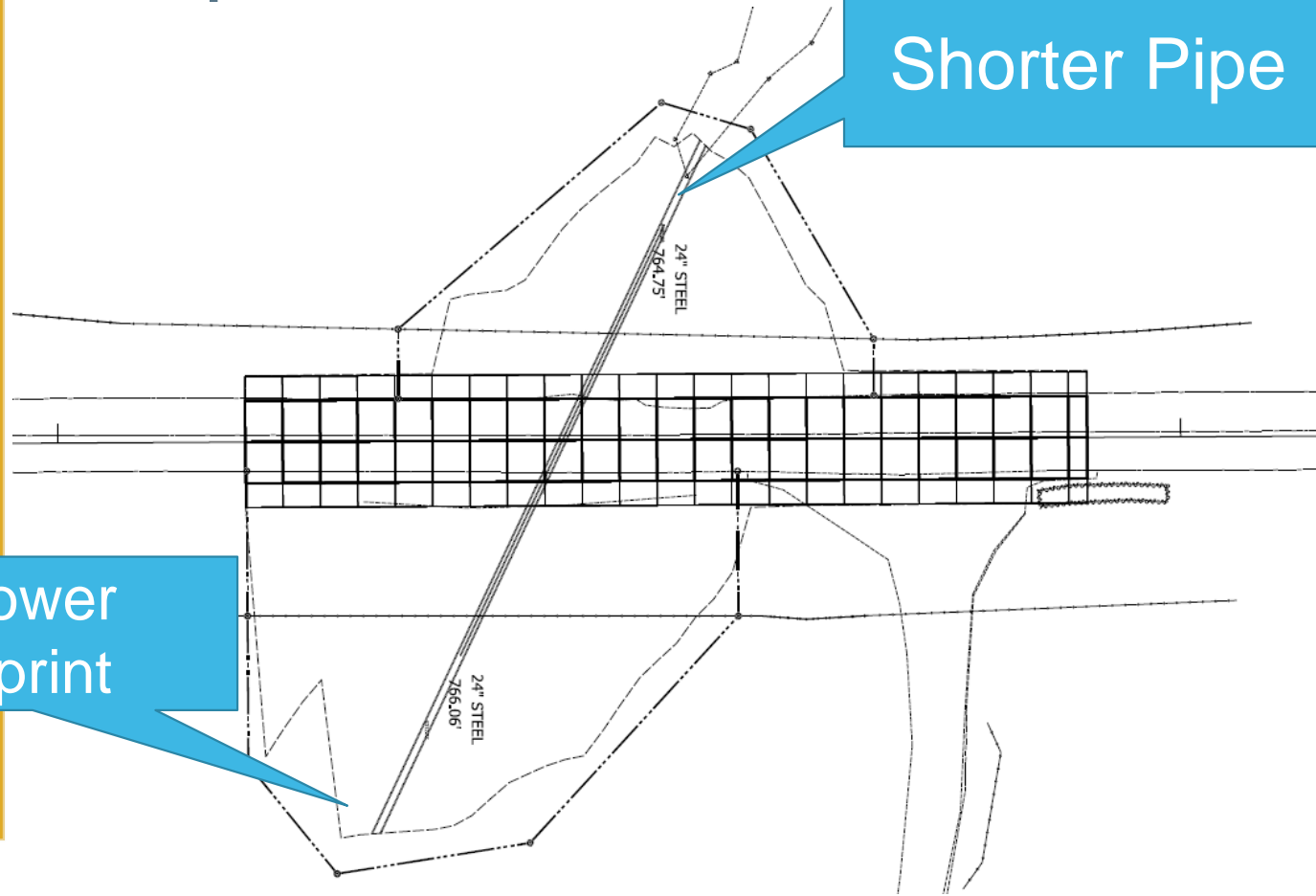


Option 2 – Retaining walls halfway down & then 3:1 slopes

Alternative
Comparison

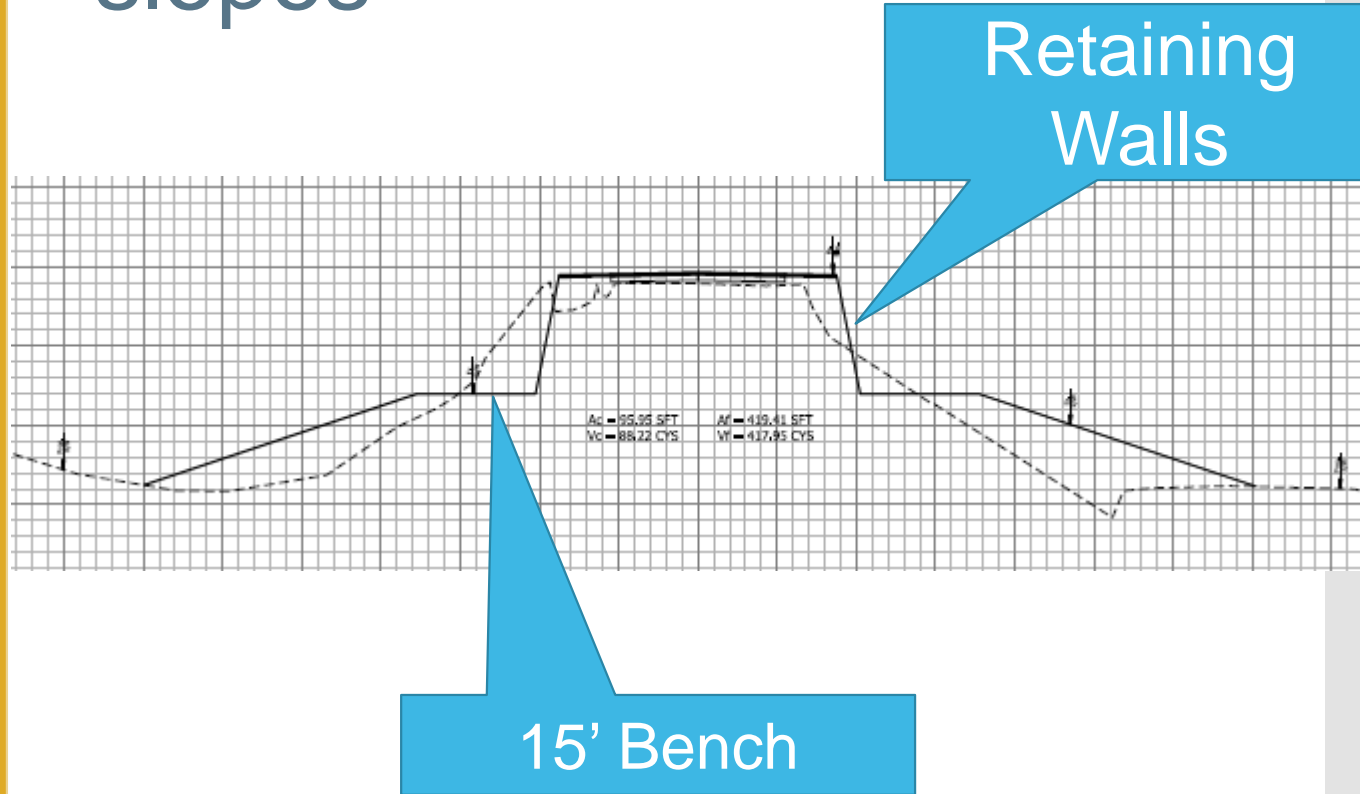
Shorter Pipe

Narrower
Footprint



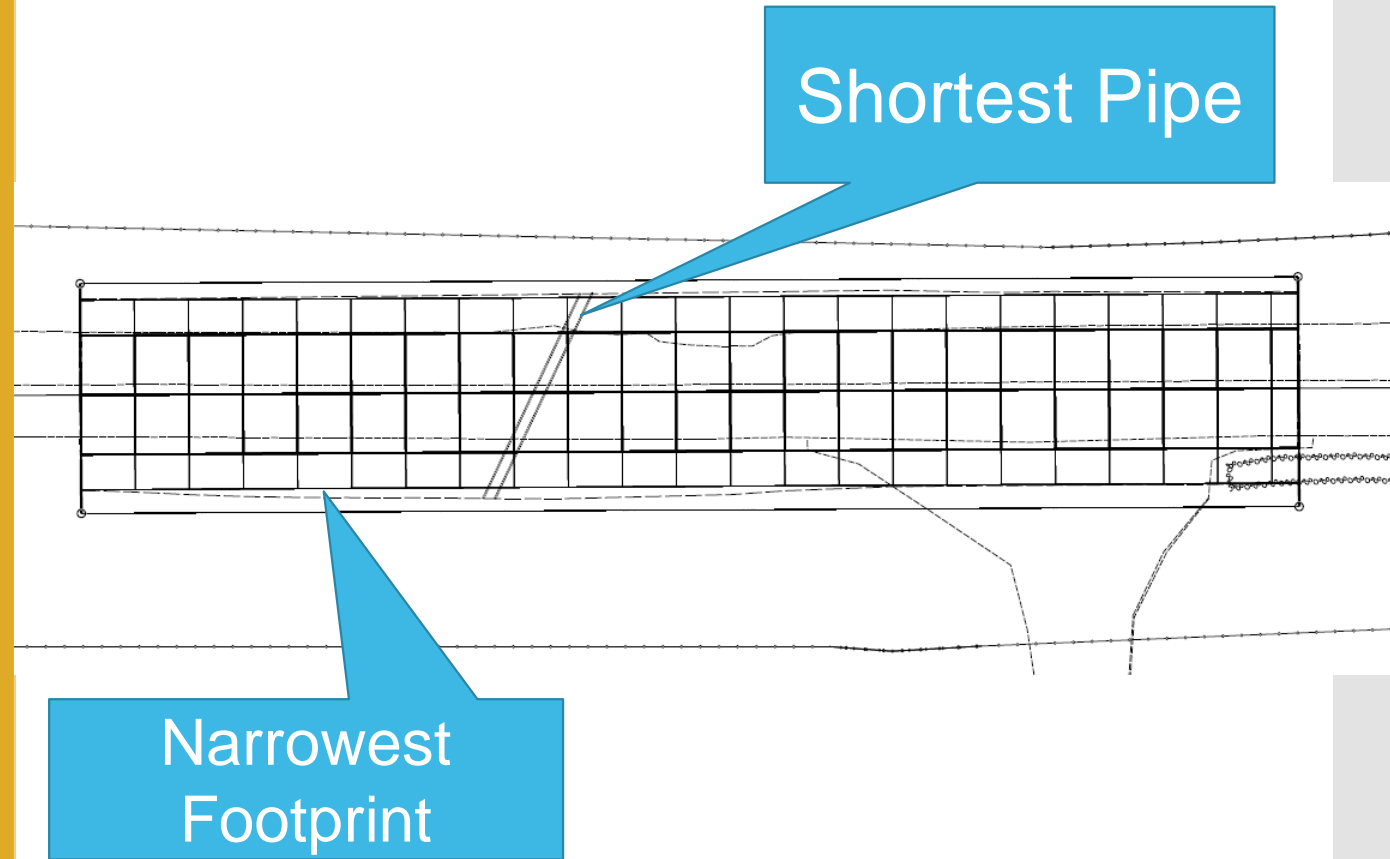
Option 2 – Retaining walls halfway down & then 3:1 slopes

Alternative
Comparison



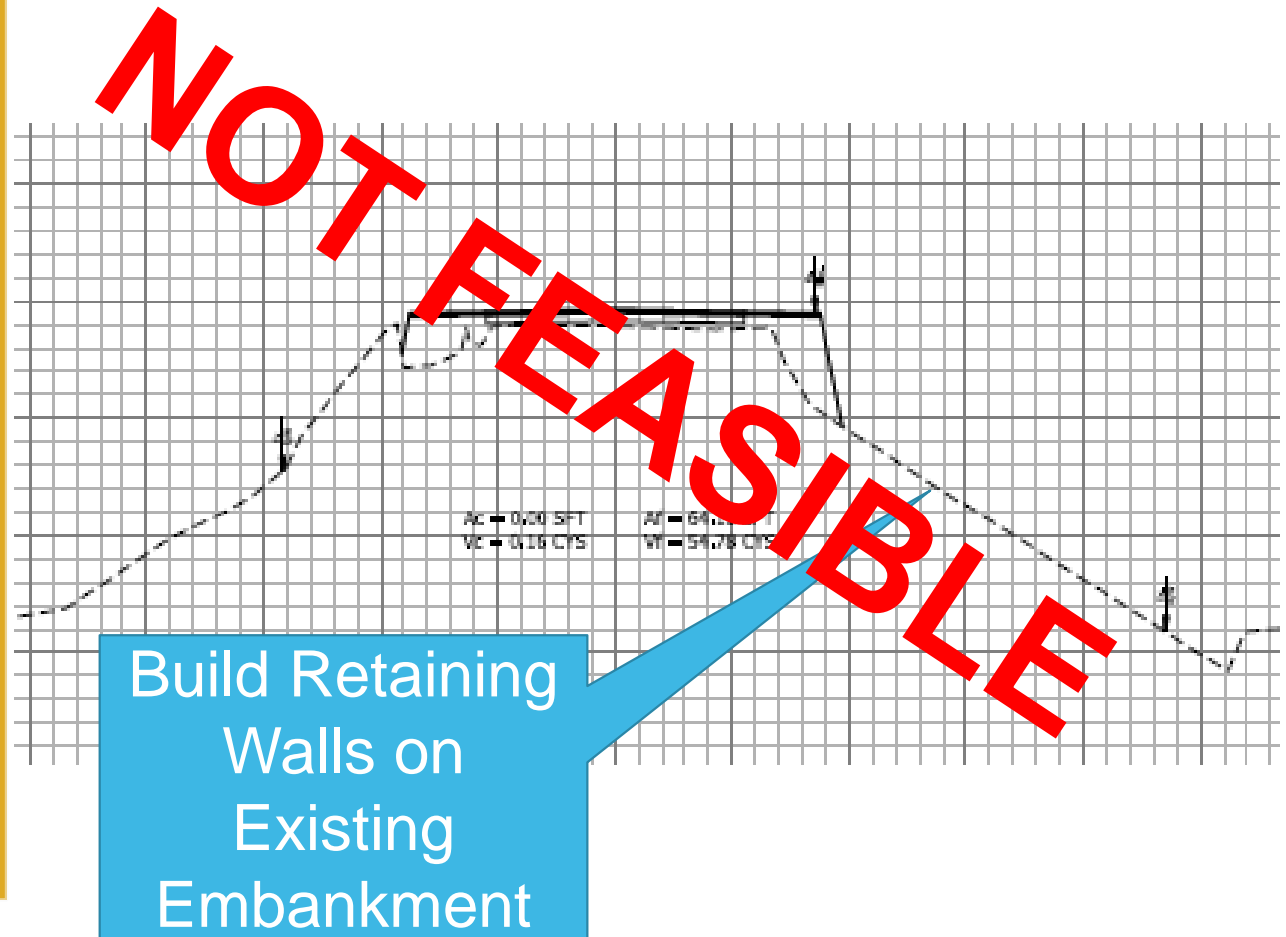
Option 3 – Retaining walls with no bench

Alternative Comparison



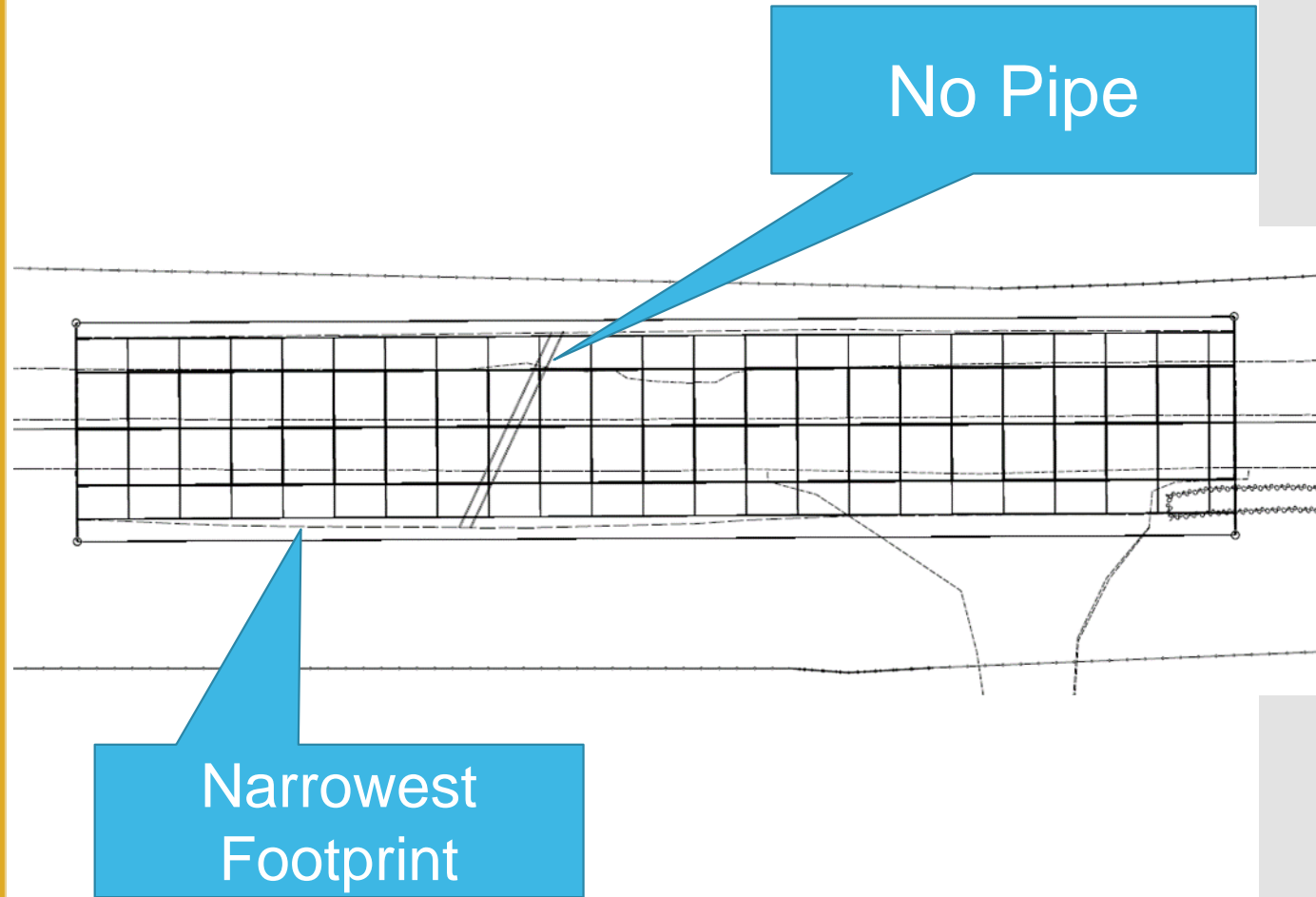
Option 3 – Retaining walls with no bench

Alternative Comparison



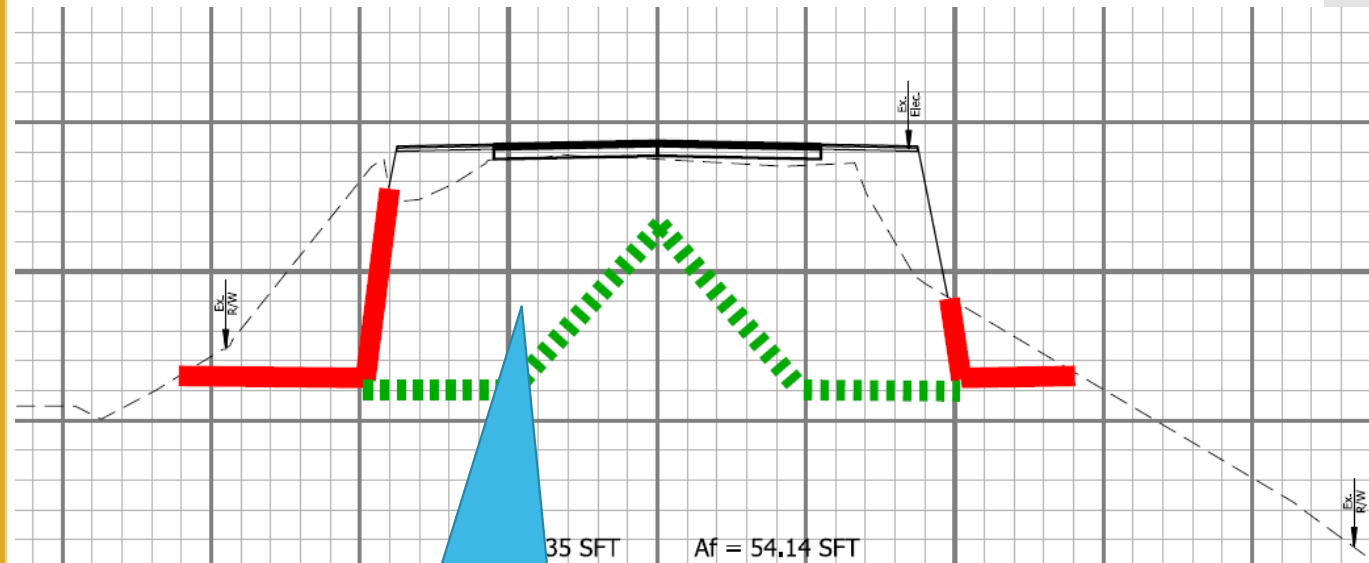
Option 4 – Bridge

Alternative
Comparison



Option 5 – Retaining walls with 15' bench

Alternative Comparison



Excavate for Straps

Selected

Alternative Comparison

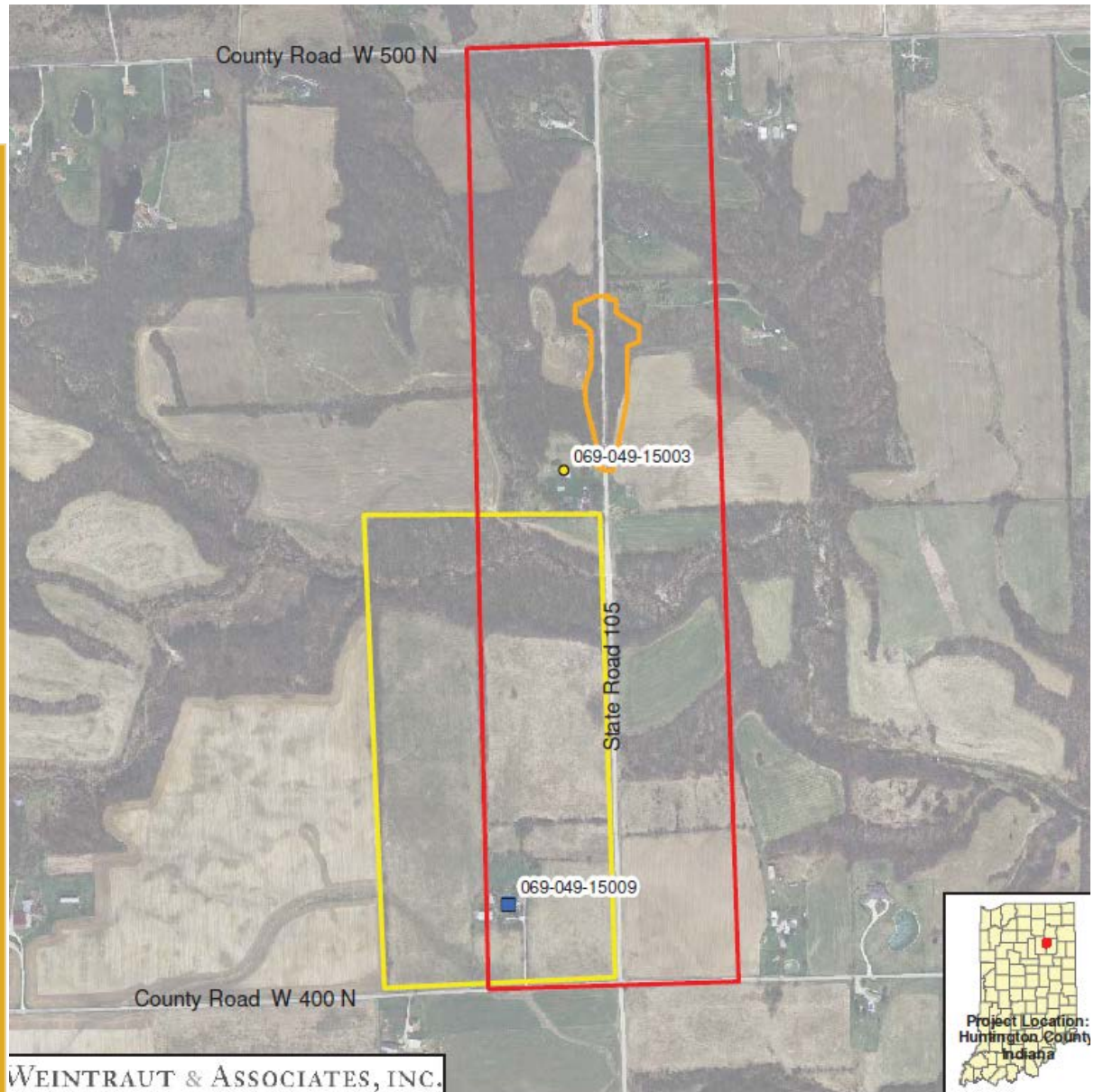
Option	Description	Cost Estimate of Select Items	Notes
1	3:1 fill slopes	\$229k	
2	Retaining walls halfway down and then 3:1 fill slopes	\$380k	
3	Retaining walls with no bench	\$183k	Dismissed as not feasible
4	Bridge	\$800k	
5	Retaining walls with 15' bench	\$347k	

Categorical Exclusion Level Thresholds

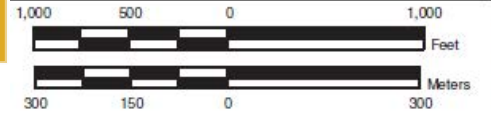
	Level 1	Level 2	Level 3	Level 4
Relocations	None	≤ 2	> 2	> 10
Right-of-Way ¹	< 0.5 acre	< 10 acres	≥ 10 acres	≥ 10 acres
Length of Added Through Lane	None	None	Any	Any
Permanent Traffic Pattern Alteration	None	None	Yes	Yes
New Alignment	None	None	< 1 mile	≥ 1 mile ²
Wetlands	< 0.1 acre	< 1 acre	< 1 acre	≥ 1 acre
Stream Impacts*	≤ 300 linear feet of stream impacts, no work beyond 75 feet from pavement	> 300 linear feet impacts, or work beyond 75 feet from pavement	N/A	N/A
Section 4(f)	None	None	None	Any impacts
Section 6(f)	None	None	Any impacts	Any impacts
Section 106*	"No Historic Properties Affected" or falls within guidelines of Minor Projects PA	"No Adverse Effect" or "Adverse Effect"	N/A	If ACHP involved Or Historic Bridge Involvement ⁷
Noise Analysis Required	No	No	Yes ³	Yes ³
Threatened/Endangered Species	"Not likely to Adversely Affect", or Falls within Guidelines of USFWS 9/8/93 Programmatic Response	N/A	N/A	"Likely to Adversely Affect" ⁴
Sole Source Aquifer Groundwater Assessment	Detailed Assessment Not Required	Detailed Assessment Not Required	Detailed Assessment Not Required	Detailed Assessment Required
Approval Level • ESM ⁵ • ES ⁶ • FHWA	Yes	Yes	Yes Yes	Yes Yes Yes

CE Level 2

Section 106



WEINTRAUT & ASSOCIATES, INC.



- Project Location
- APE
- NRHP Property Boundary
- Contributing Property
- NRHP-Listed Property



Endangered
Species:

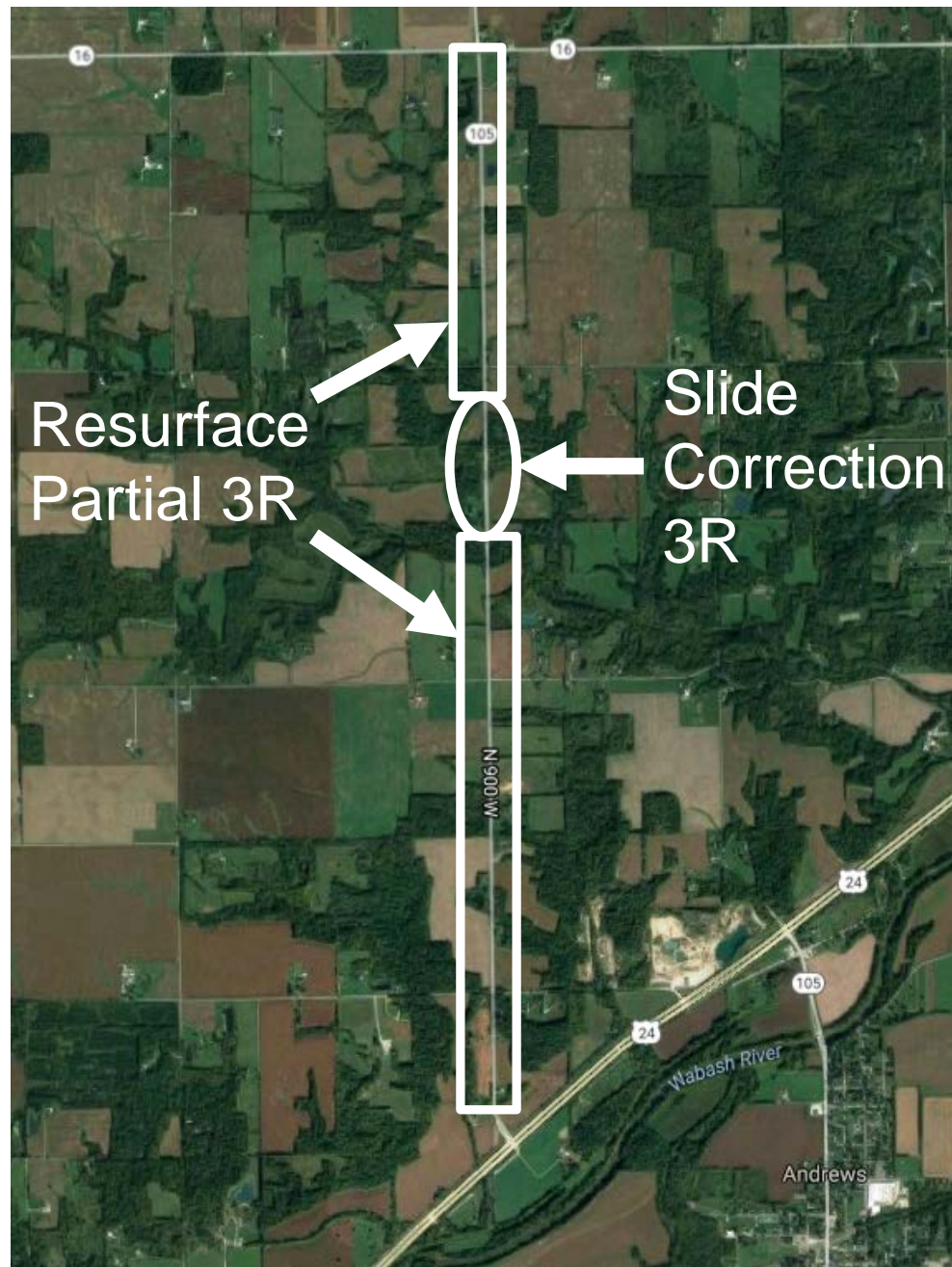
Bats



Indiana Bat & Northern Long-eared Range

No tree clearing between April 1 to September 30
due to bat roosting season.

Design Criteria



SR 105 Stats

- AADT (2016): 660 VPD
- AADT (2036): 850 VPD
- Trucks: 10.63% A.A.D.T.

- Design Speed: 55 mph
- Rural
- Major Collector

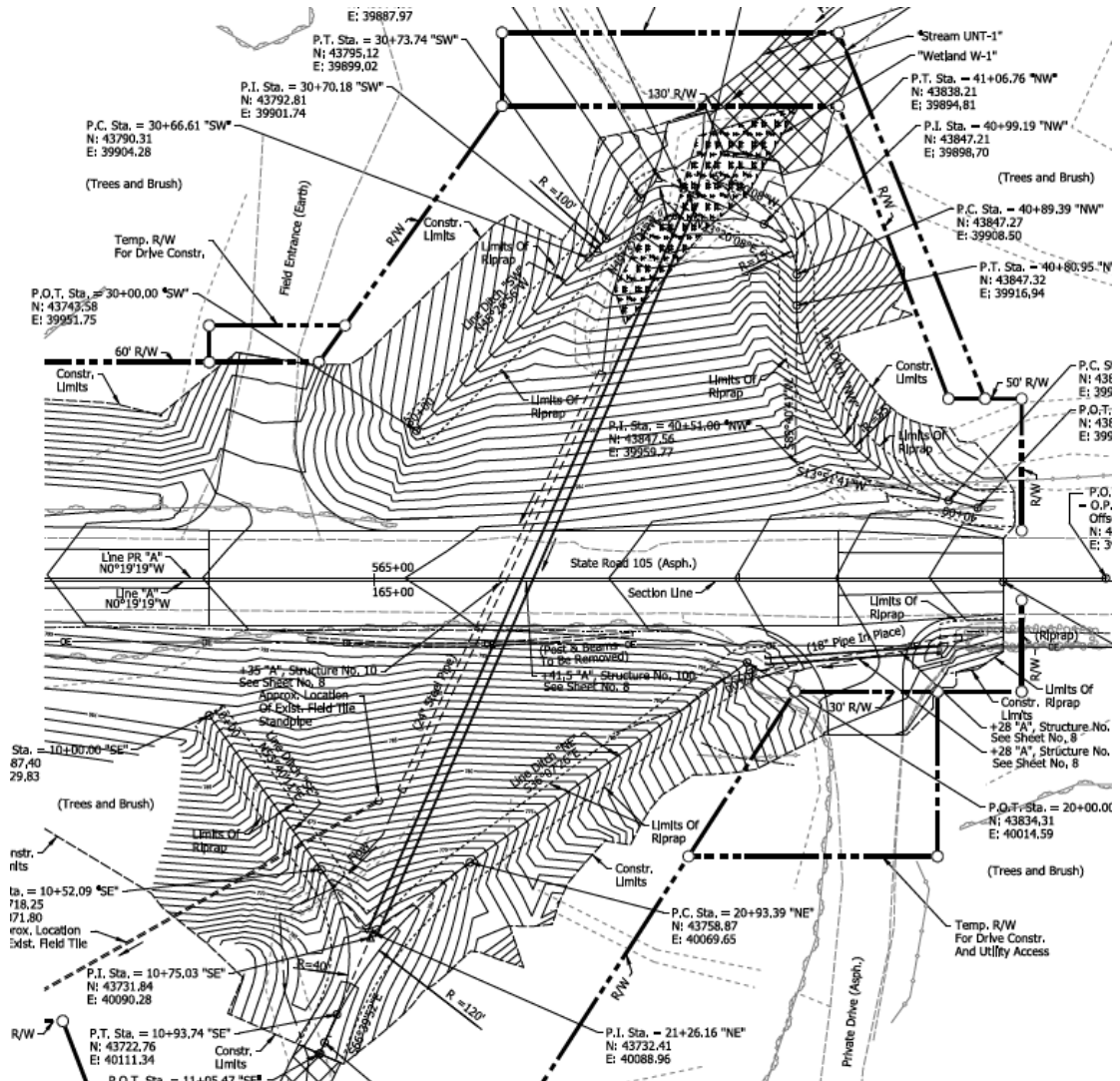
Design Exceptions

Two Design Exceptions Approved

1. Maximum Grade
 - Required: 7.5% Max (per IDM 55-3B)
 - Proposed: 9.1% (retain existing)
2. Vertical Stopping Sight Distance
 - Required: 495'
 - Proposed: 296' (retain existing)

Steep Ditches in the Slide Area

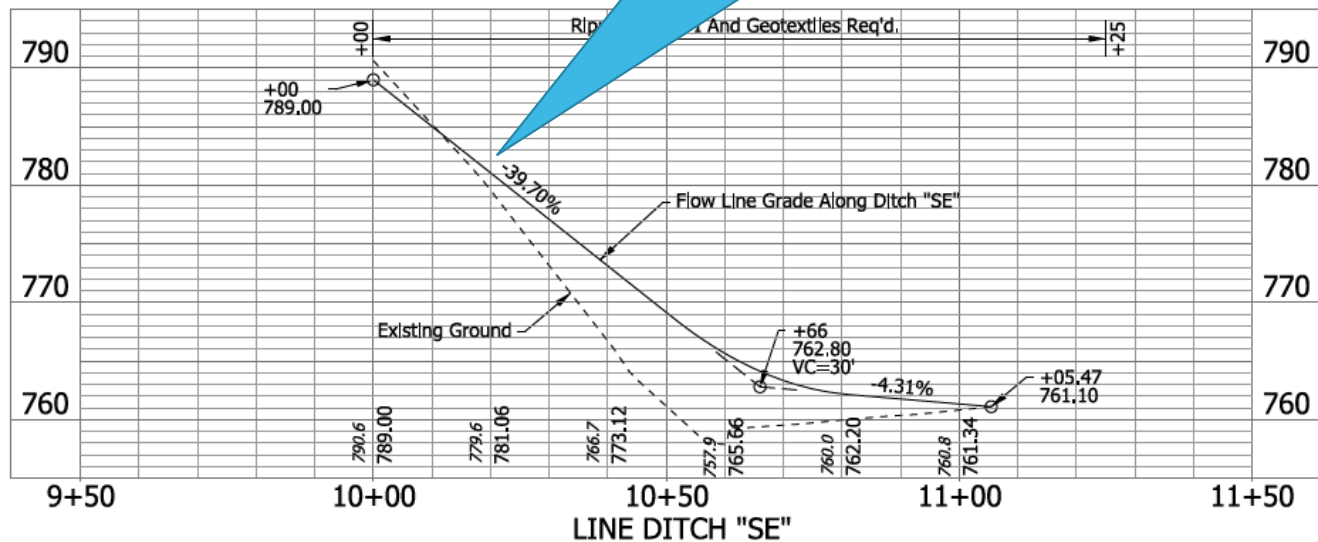
Ditch Geometry



Steep Ditches in the Slide Area

Ditch Geometry

40% GRADE

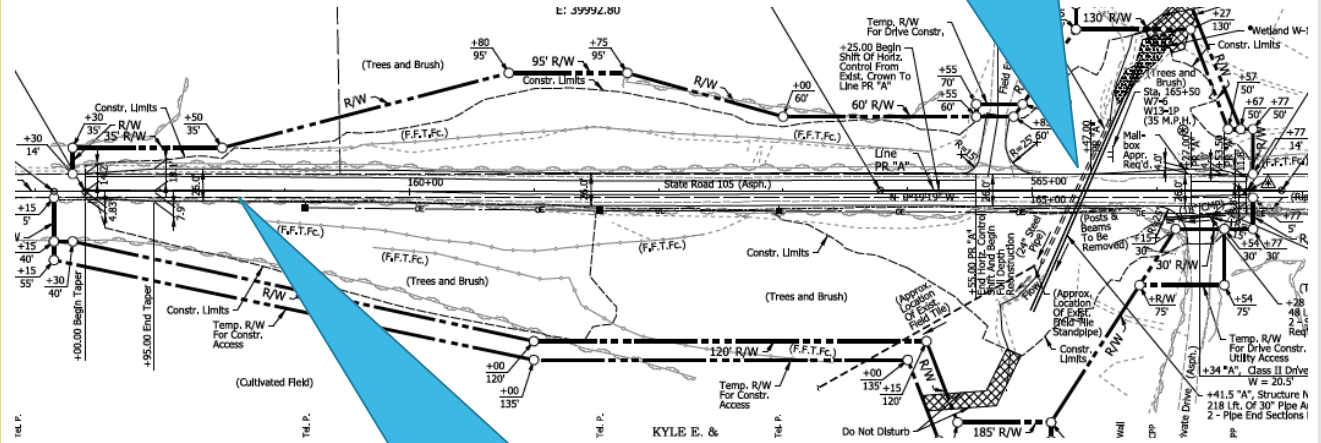


Preventing A Future Slide

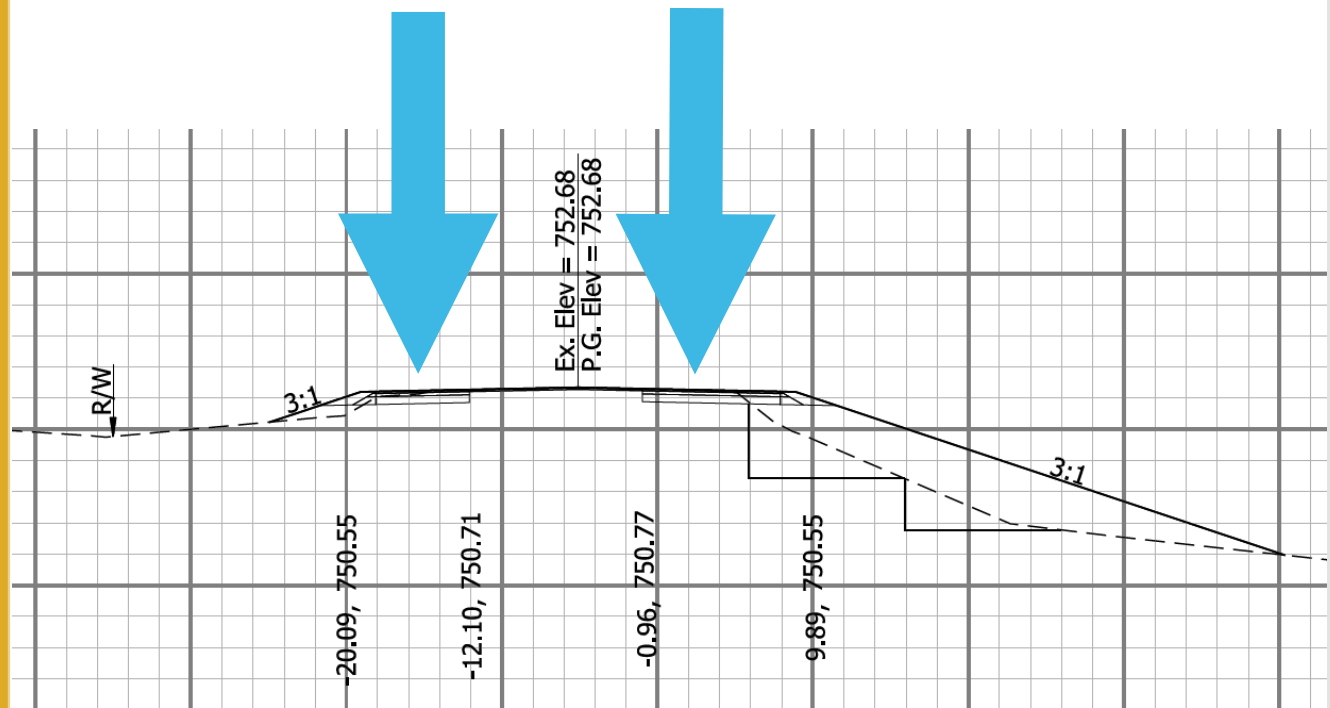


Picture looking South – Crack along EOPs

Preventing A Future Slide

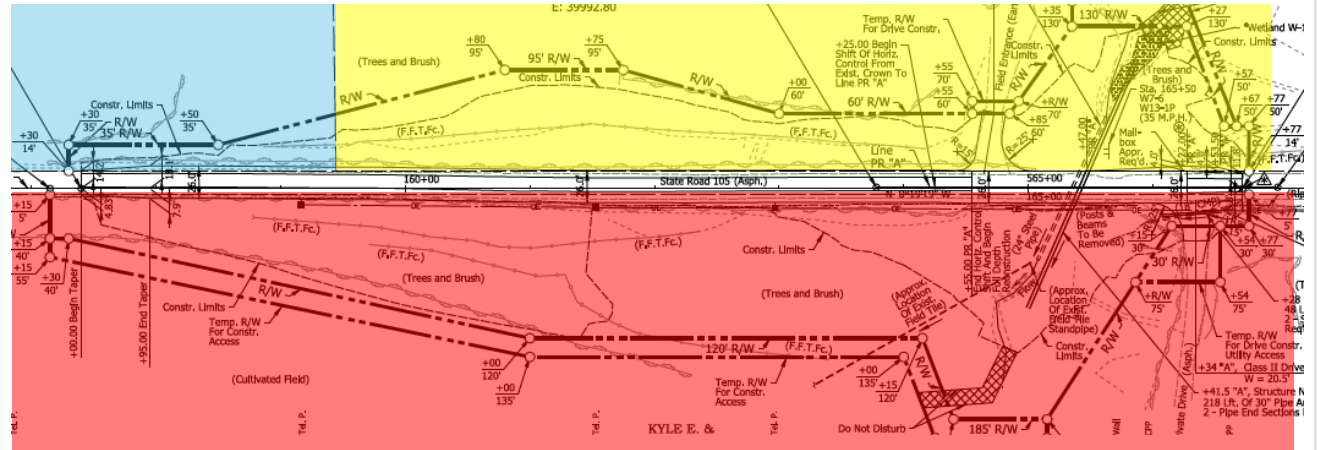


Preventing A Future Slide



Cross Section looking North
Longitudinal Cracks along
Both EOP

Proposed R/W 3 Parcels



Right of Way

SR 105 Customer Survey

Parcel Number: _____

Date: _____

KTM Interviewers: _____

Property Owner Information / Tenant Information

Secondary Contact?

Name: _____

Name: _____

Address: _____

Address: _____

Home phone: _____

Home phone: _____

Cell phone: _____

Cell phone: _____

Email: _____

Email: _____

Preferred Method: _____

Preferred Method: _____

1. What time of day do you prefer we contact you? Or not contact you?
2. How do you access your property?

R/W Timeline

S	M	T	W	T	F	S
Nov 15	16	17	18	19 CE Approval	20 Appraisals Complete	21
22	23	24	25	26 	27	28
29	30 Review Appraisals Complete	Dec 1	2	3	4 Desk Reviews Complete	5 Buying Begins
6	7	8	9	10	11 RoEs Signed / R/W Certified	12

Slide Area Construction Photos

January
2016



MOT



MOT







Begin Clearing March 8, 2016













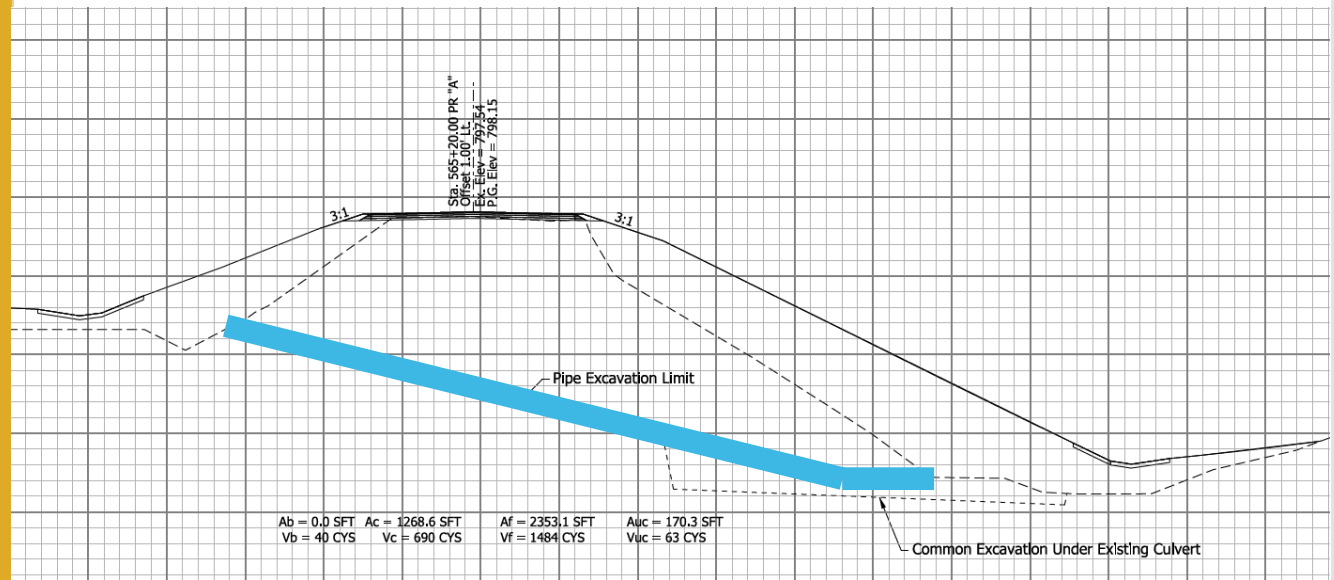








Excavation of Slide Area





Drying On-site Borrow with Lime = Major Reduction in Downtime

































Expect the
unexpected...

Dealing with shelf of
trapped water























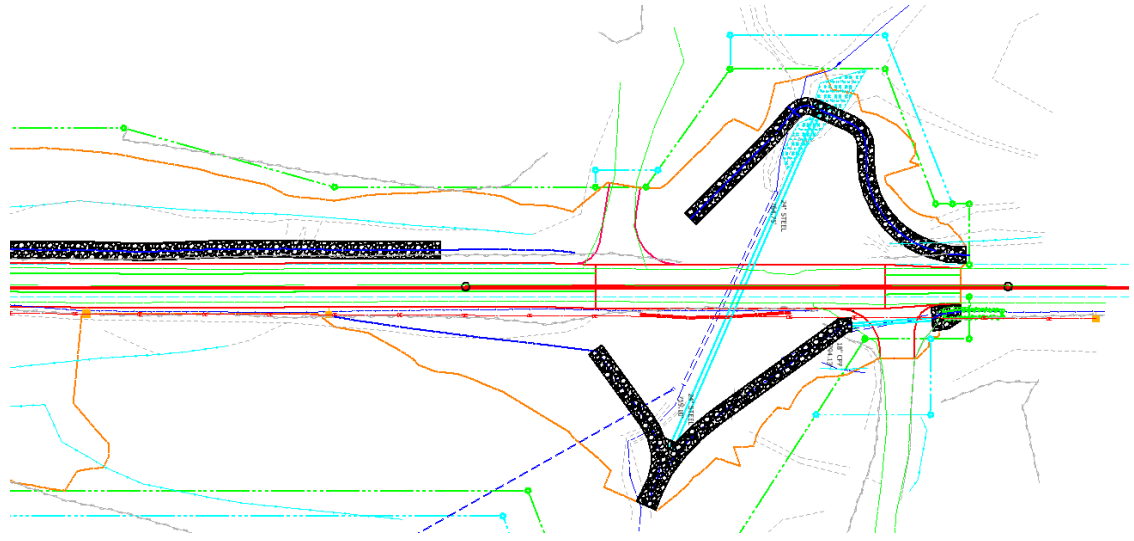




Road Open July 24, 2016



Plans Vs. Google Map Aerial of Completed Project



Financials

- Original SPMS Budget
\$2,741,250
- Engineer's Estimate
\$1,785,000
- Low Bid – E&B Paving, Inc.
\$1,191,339.07
- Final Close-Out Cost
\$1,165,420.48

Lessons Learned

- Emergency Project Designation
- Challenge with permits

Successes

- Property Owner Meetings
- Kickoff meeting with R/W Appraiser, Review Appraiser, & Buyer
- Right of entries
- Addition of lime to help dry soil
- Change Orders
 - One on resurface project
 - Zero on slide project
- Partnership & Cooperation of the Entire Agency

Design Accolades

- INDOT Ft. Wayne District
- INDOT Geotechnical Services
- INDOT Hydraulics
- INDOT Environmental Services
- INDOT Cultural Resources
- INDOT R/W
- HNTB Design, Environmental, Survey, R/W Engineering
- Weintraut & Associates – Section 106
- Atlas Appraisals - Appraisals
- Will L. Stump & Associates – APA & Appraisal Reviews
- CPS Acquisitions – Buying

Construction Accolades

- INDOT Contracts
- E&B Paving, Inc., Prime Contractor
- Fox Contractors Corp., Earthwork Contractor
- Curtis Reimer, Project Supervisor
- Brad Taylor, Area Engineer

Thank you / Questions

John Langmaid

INDOT Ft. Wayne District

jlangmaid@indot.in.gov

(260) 969-8318

Jennifer Goins, P.E.

HNTB

jgoins@hntb.com

(317) 989-8514