



# Rural Trail

Volga, Iowa



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Project Manager  
Culvert Design



**Sarah Ritchie**

Cost Estimates



**Justin Thiemann**

Trail Design  
Outlook Points  
Detail Drawings



**Taylor Garcia**

Trail Design  
Bridge Abutments

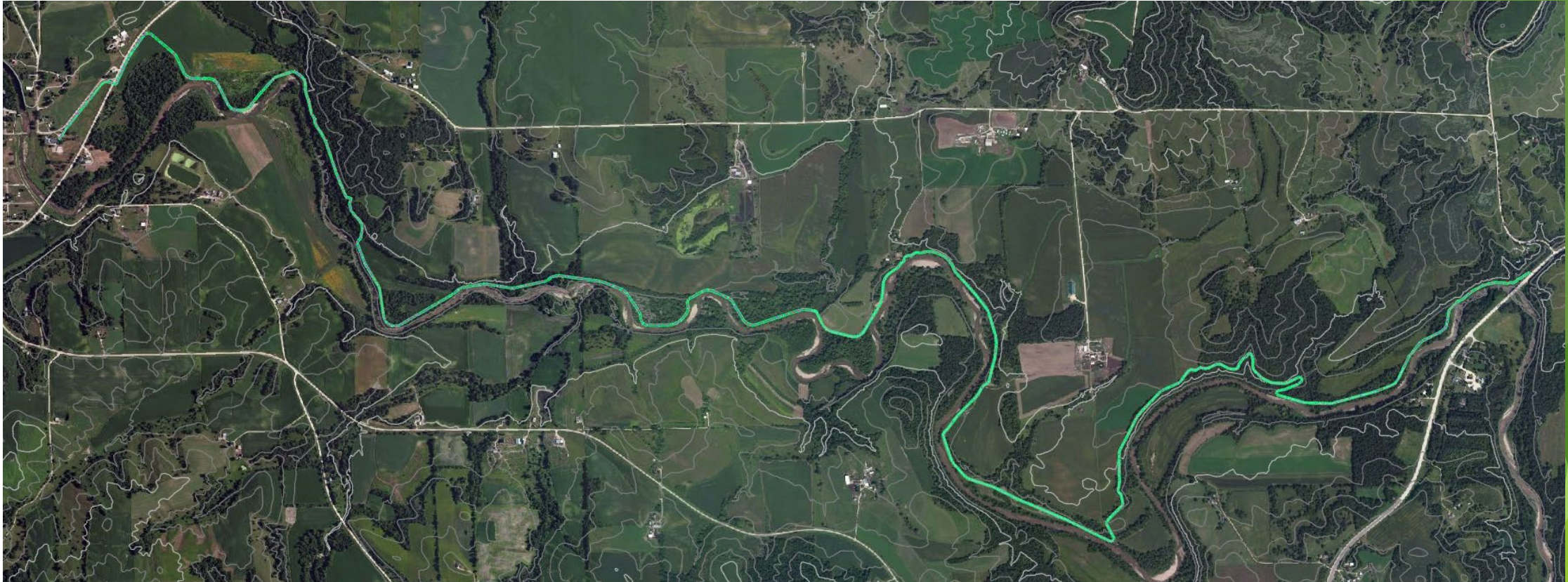
# Project Statement

- A rural trail traveling along the Volga River Connecting the community of Volga and Clayton County Conservation Center.
- Multi-use trail that accommodates biking, walking, and ATV's
- Outlook points with benches

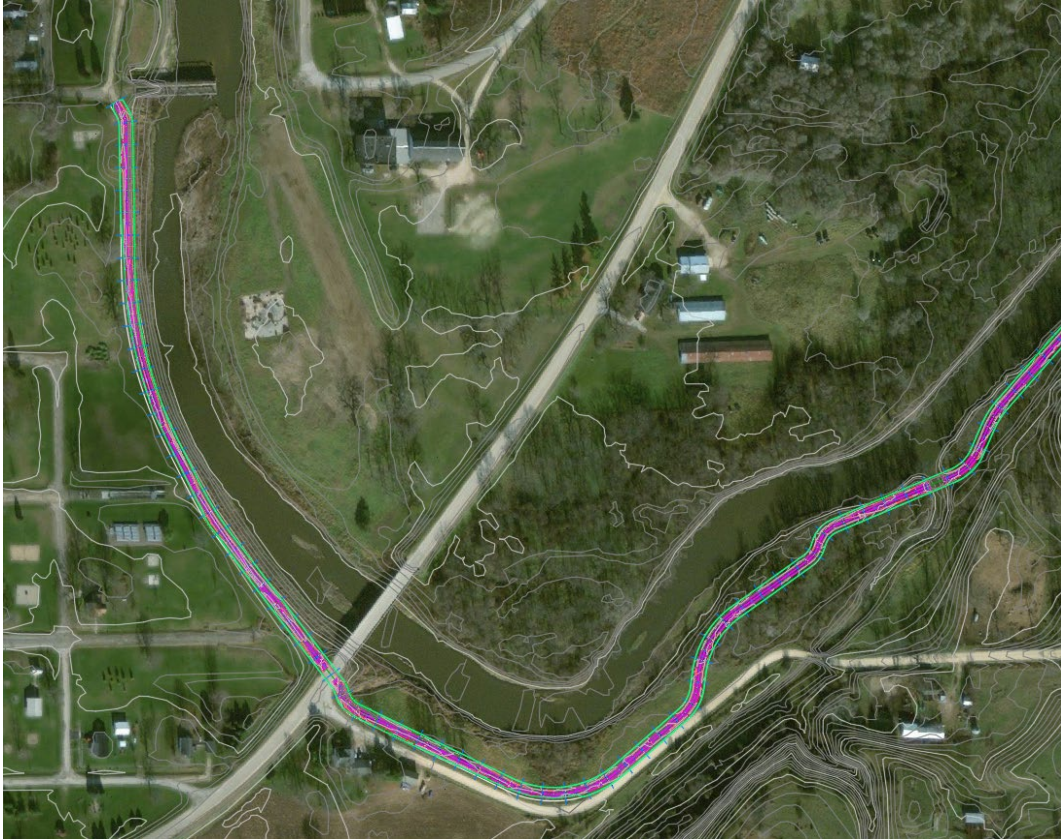
# North Trail Trailhead Locations



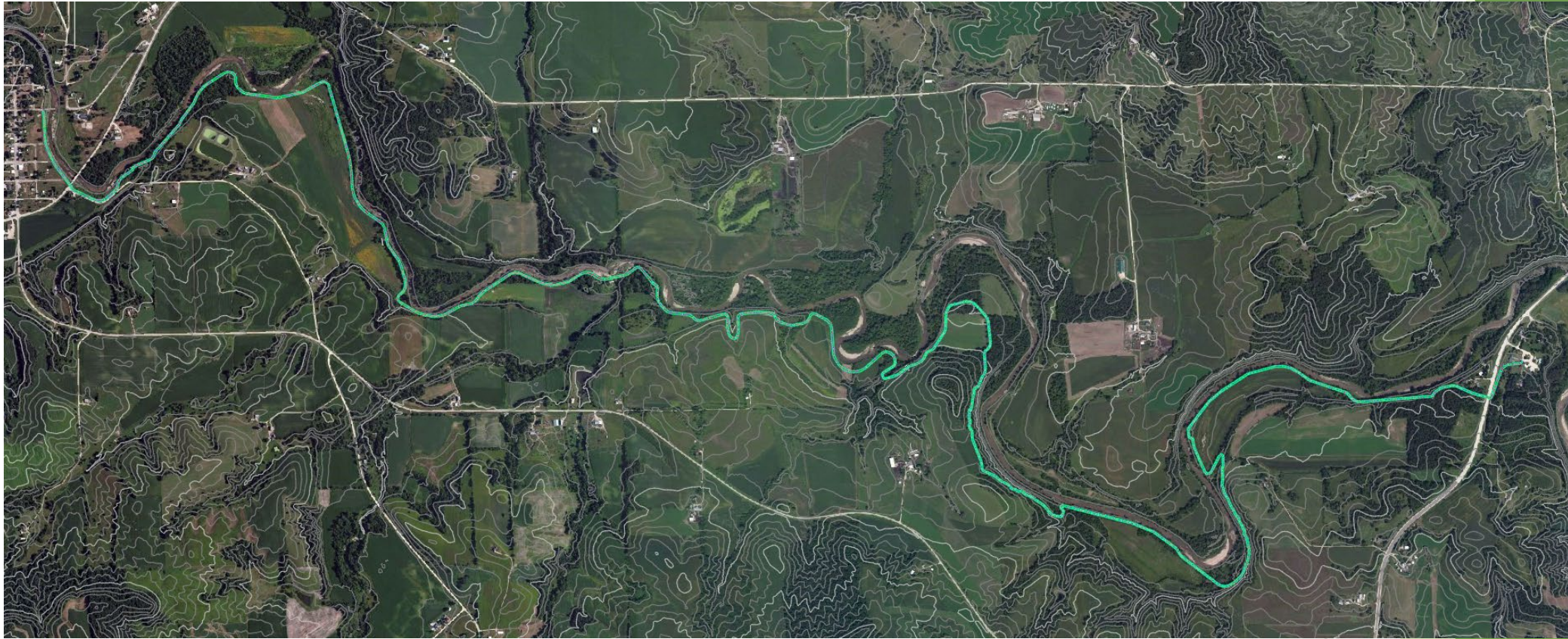
# North Trail Site Plan



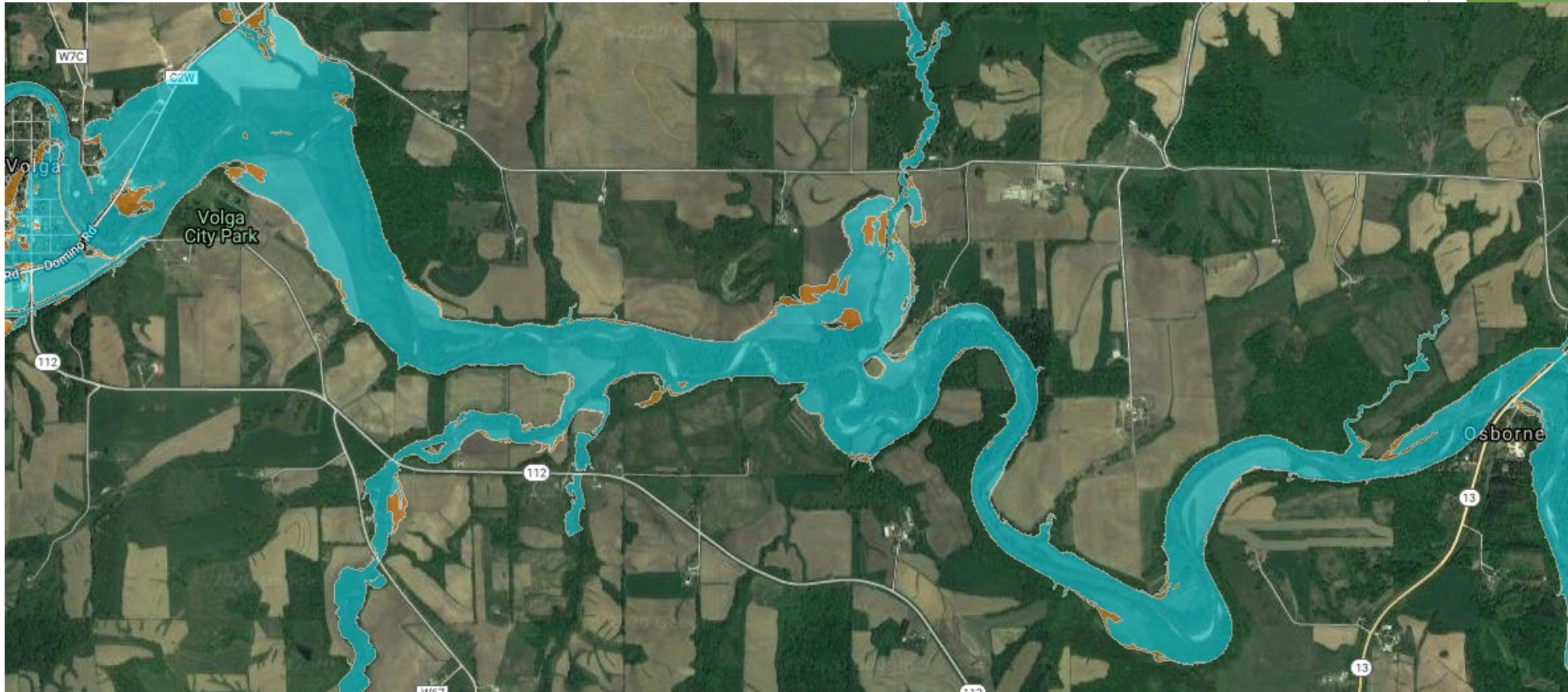
# South Trail Trailhead Locations



# South Trail Site Plan



# 100-year & 500-year floodplain



100-year floodplain

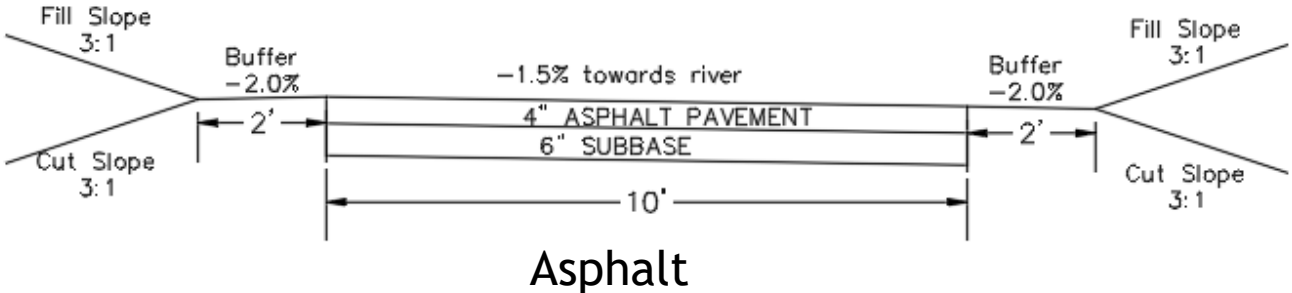
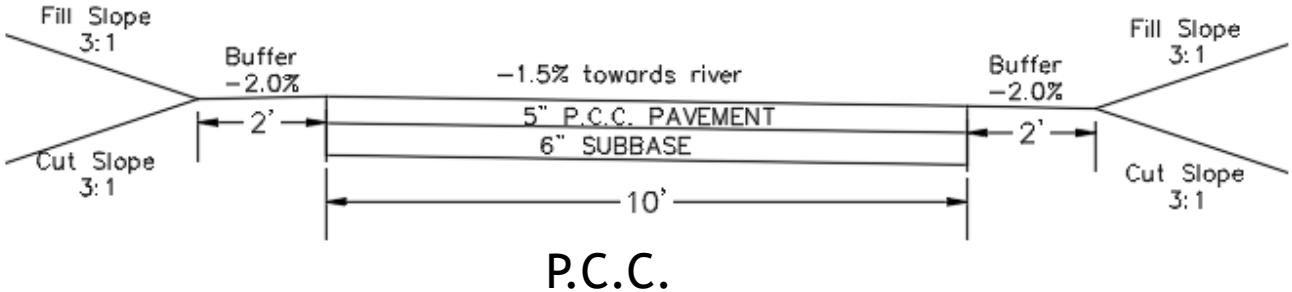
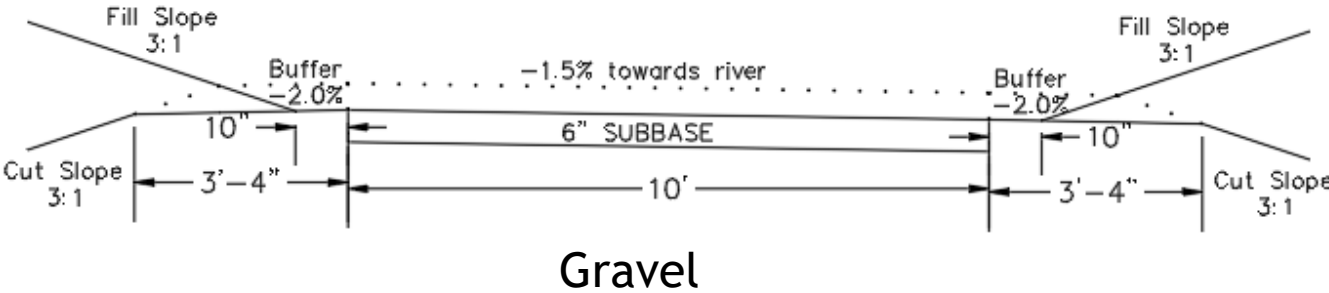
500-year floodplain



# Tabulation of Design, Elevation, and Design Data

Trail	North		South	
Length	Feet	Miles	Feet	Miles
Length	42,585	8.07	44,020	8.34
Elevation	Feet		Feet	
Start Elevation	790.0		794.1	
End Elevation	759.9		782.0	
Maximum Elevation	837.0		845.5	
Minimum Elevation	746.3		746.4	
Design Data	North & South			
Minimum Radius of Curvature	30 ft			
Maximum Grade	5.00%			
Minimum K-Value (Sag Curve)	10			
Minimum K-Value (Crest Curve)	3			
Maximum Design Speed	15 mph			
Right of Way Width	30 ft			

# Final Design - Cross Section



# Erosion Control Plan

- ▶ Turf reinforcement mats are proposed in the trail where there is risk of scouring in flooding situations
- ▶ Applied directly on top of seeded soil, 4 feet past both edges of pavement
- ▶ North Trail: 16,000 feet / 3.03 miles
- ▶ South Trail: 7,800 feet / 1.48 miles



EnkaMat 7010

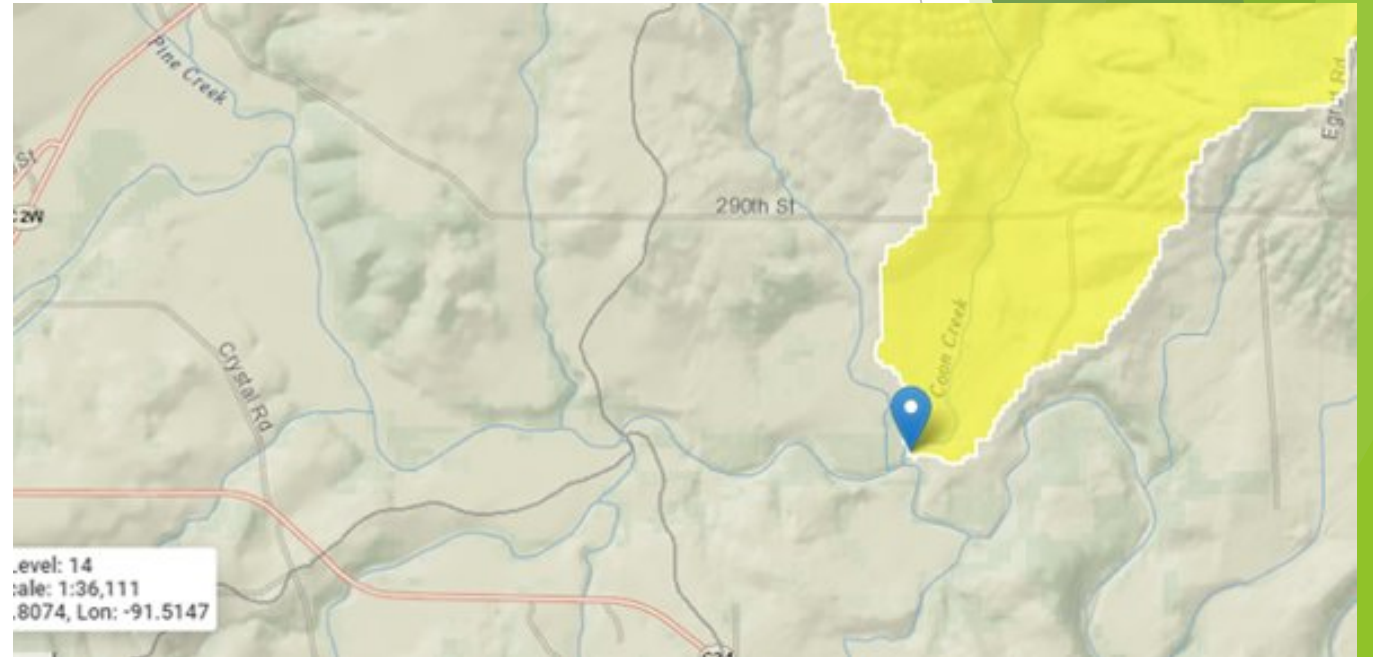


# Stream Crossings

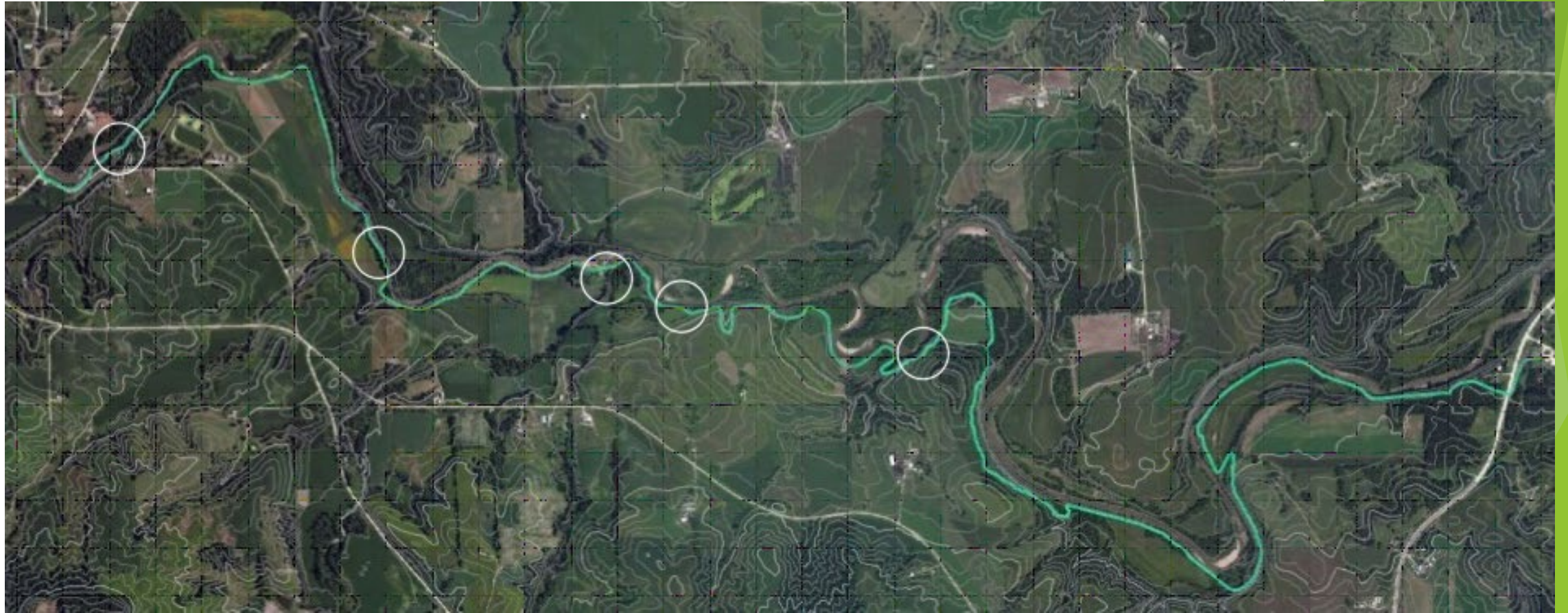


# Stream Crossings

- ▶ USGS Stream Stats
- ▶ Coon Creek Watershed
- ▶ North Trail
  - ▶ 7 total
- ▶ South Trail
  - ▶ 5 total

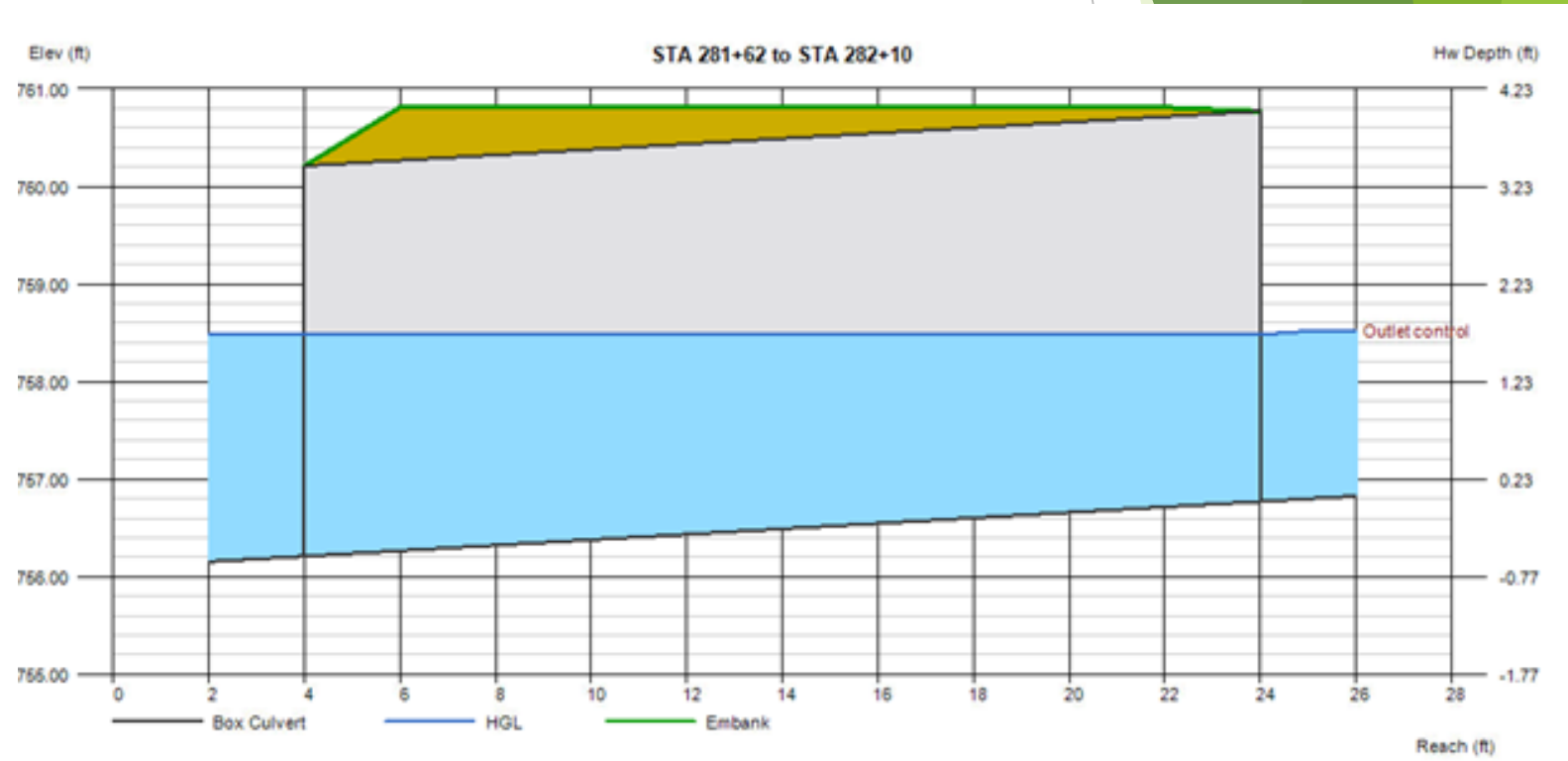


# Location of South Side Streams

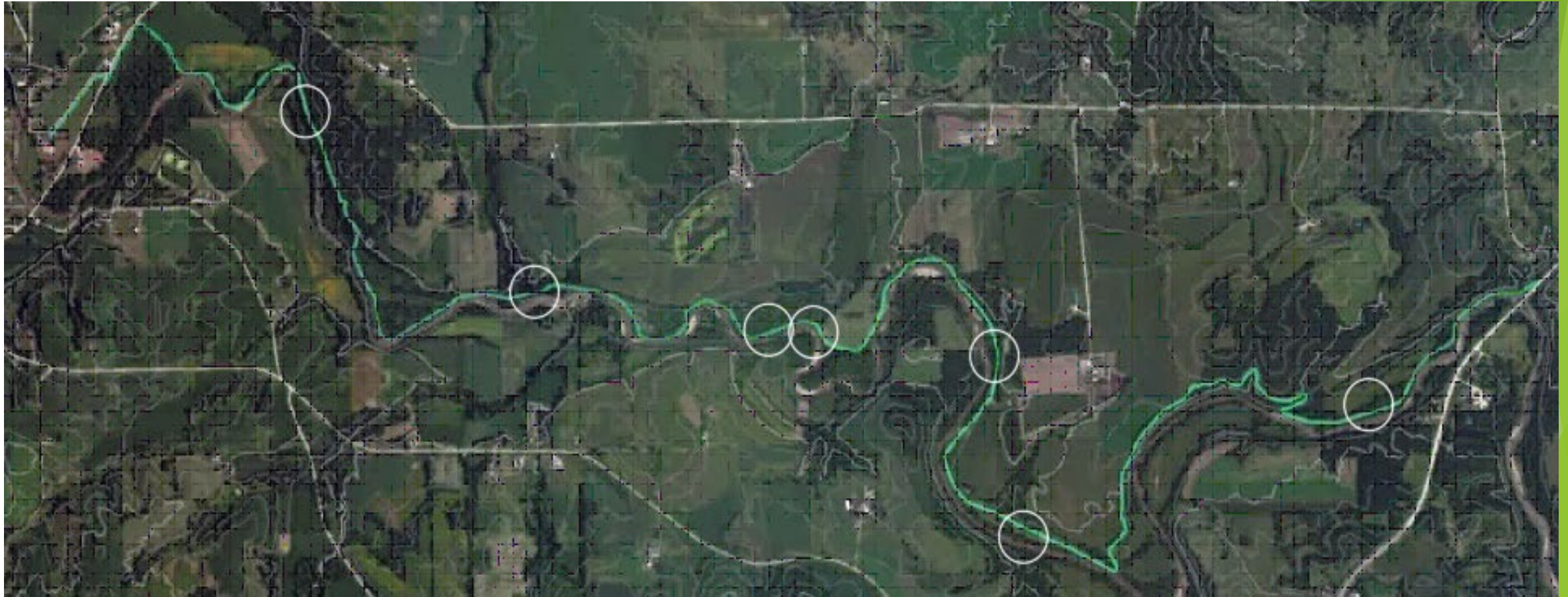


# Ex. of 12 x 4 ft Culvert

- ▶ North Trail:
  - ▶ Reinforced Concrete Box Structure (RCB)
  - ▶ Three locations
  - ▶ 12 total
- ▶ South Trail:
  - ▶ None



# Location of North Side Streams





# Bridge #1

T21672A

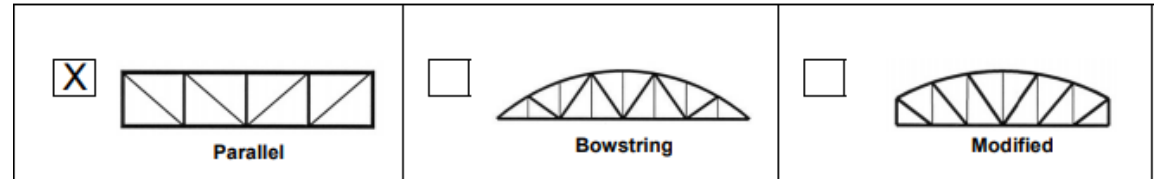
Customer: University of Iowa  
 Jack Crothers  
 ph#847-337-5046 / jack-crothers@uiowa.edu



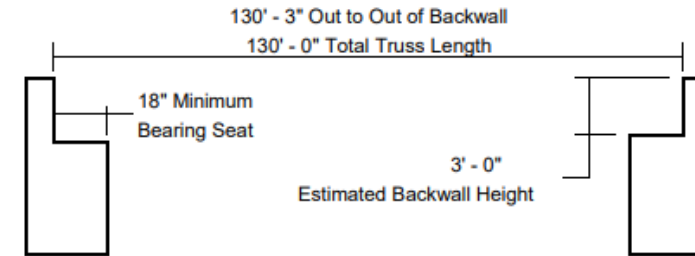
Wheeler Lumber LLC | PH 952-929-7854  
 9531 West 78th Street | Eden Prairie, MN 55344

Project: Pedestrian Bridge  
 Volga Trail  
 Volga, IA

#N/A  
 #N/A



**Bridge Geometry:**



Bridge Geometry is for estimating purposes only and may not represent final bridge configuration.

<b>Bridge Span:</b> 130' - 0"	<b>Live Load:</b> 90#	<b>Field Splices:</b> 1
<b>Bridge Width:</b> 10' - 0"	<b>Vehicle Load:</b> AASHTO - H5	<b>Number of Pieces:</b> 2
<b>Truss Type:</b> Parallel	<b>Finish:</b> Weathering	<b>Lifting Weight:</b> 64,350 lbs
<b>Diagonal:</b> Pratt	<b>Railing Config:</b> Horizontal - 54" w/ Ipe Rubrail	<b>Opening:</b> 4" Max
<b>Decking Type:</b> Treated Timber		

**Total Bridge Price: \$125,000.00**

**Notes:**

[Redacted notes area]

**Delivery:** Prices are estimated as F.O.B. trucks delivered to jobsite. Trucks only deliver on a good haul road suitable for normal over the road trucks. A formal quote and more detailed estimate of shipping must be completed before ordering. Unloading is not included. Delivery of materials can typically be offered in 10-12 weeks after approval of plan/shop drawings.

**Terms:** Subject to credit approval, terms are 25% payment upon approval of shop drawings, net 30 days on balance, 1 1/2% per month service charge on past due invoices. Above items are subject to sales tax.

- ▶ 1 total for North Trail
- ▶ 130 ft long
- ▶ Estimate from Wheeler
- ▶ Field Splicing

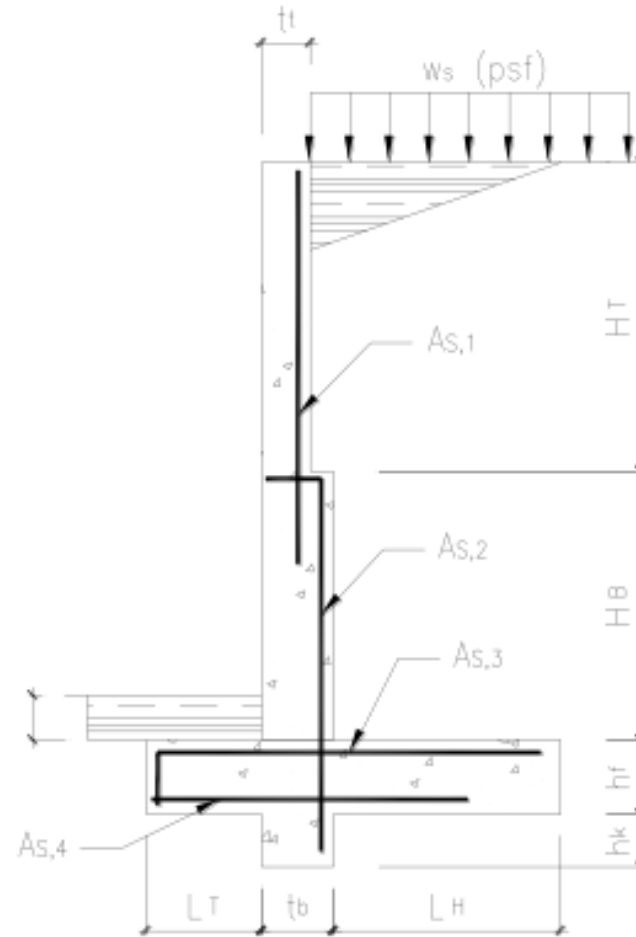
# Field Splicing

- ▶ Splice Plate
- ▶ Splice Block



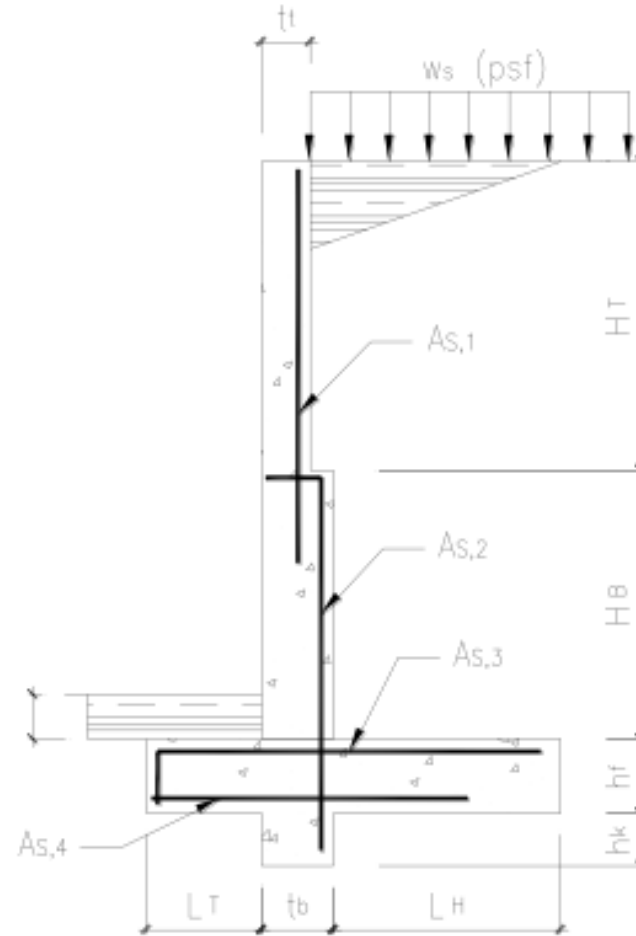
# Bridge Abutments

- ▶ Bridge #1 (130 ft):
  - ▶ Reinforced concrete retaining wall
  - ▶ Base length of 10 ft
  - ▶ Toe length of 1 ft, Heel length of 3 ft
  - ▶ Thickness of 8 inches
  - ▶ Height of 6 ft



# Bridge Abutments

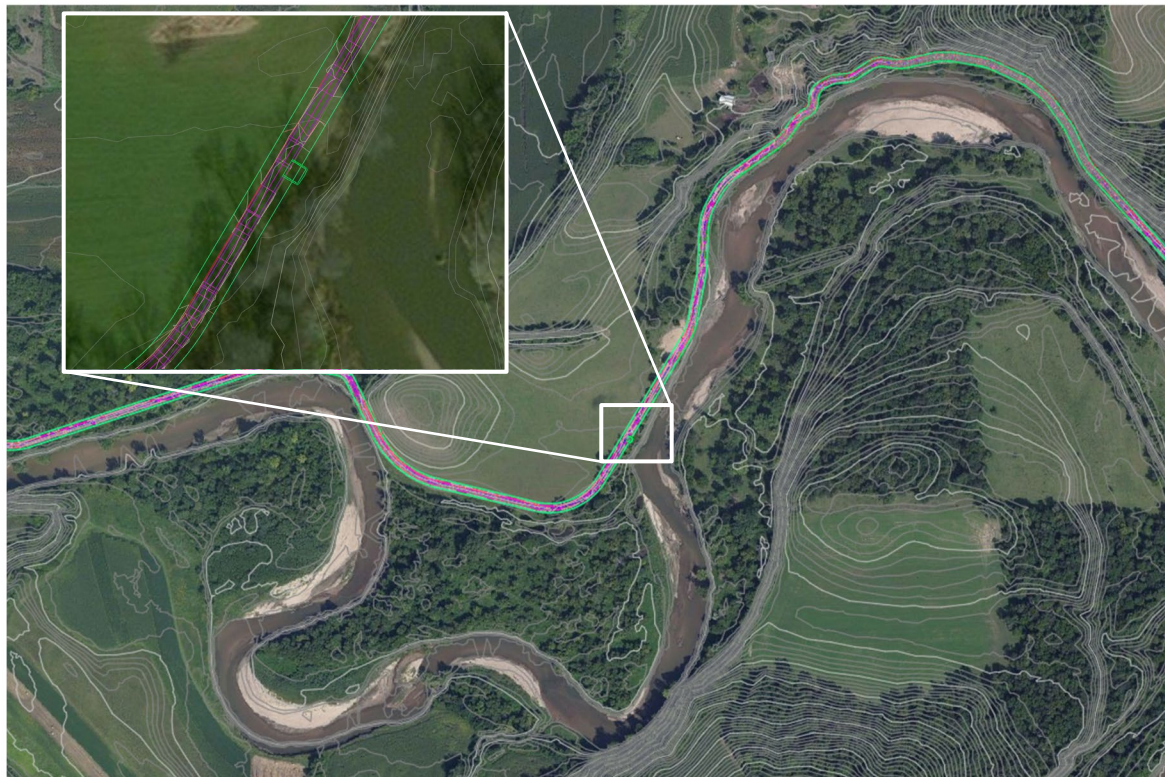
- ▶ Bridge #2 (50 ft):
  - ▶ Reinforced concrete retaining wall
  - ▶ Base length of 10 ft
  - ▶ Toe length of 1 ft, Heel length of 2 ft
  - ▶ Thickness of 8 inches
  - ▶ Height of 4 ft



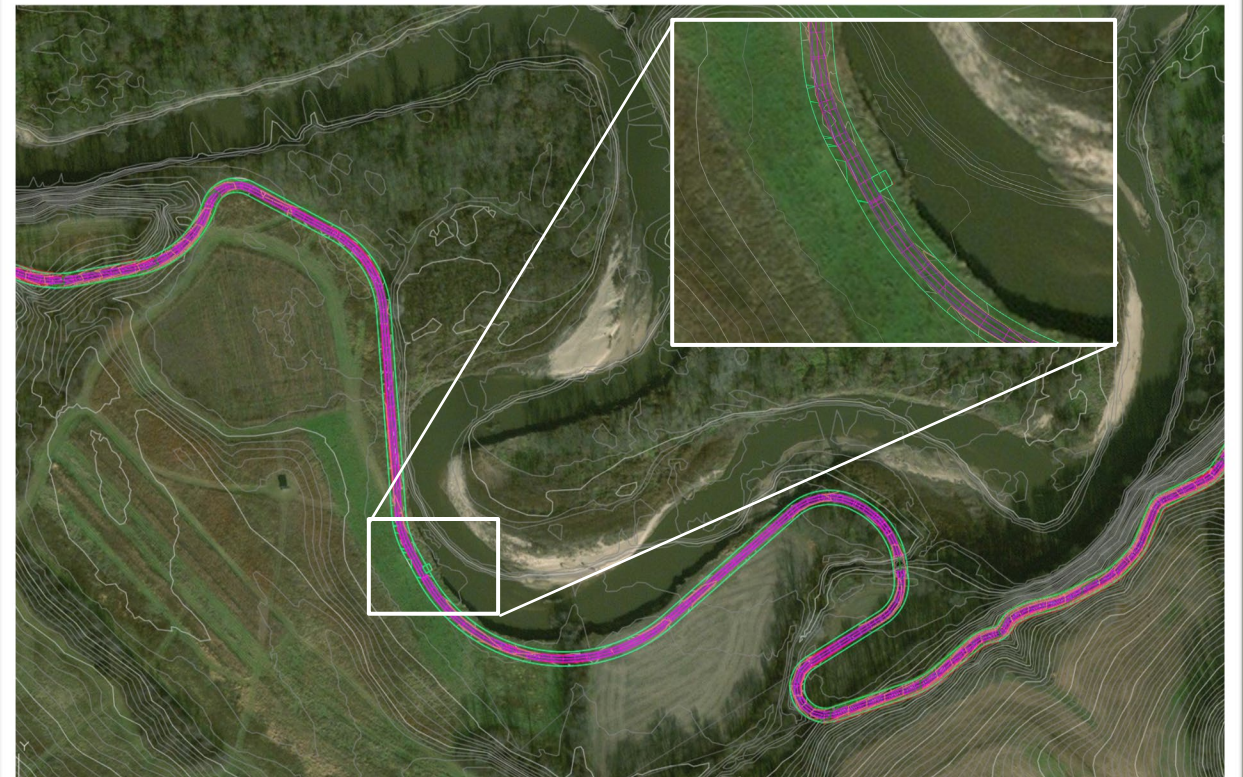
# Outlook Points

- ▶ Provide shading and seating to the trail's users
- ▶ Great views of Volga River and the surrounding environment

North Route

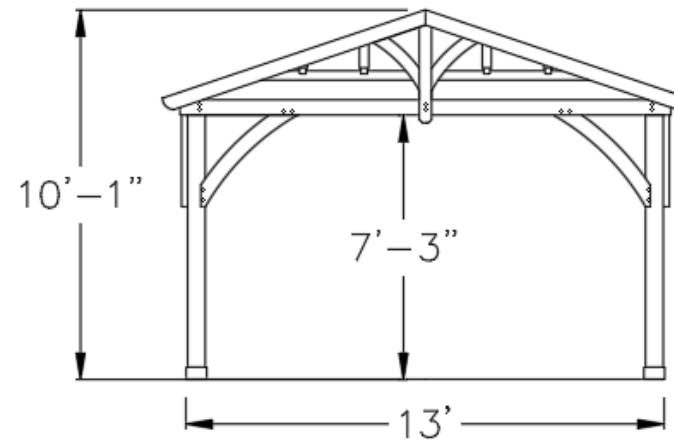
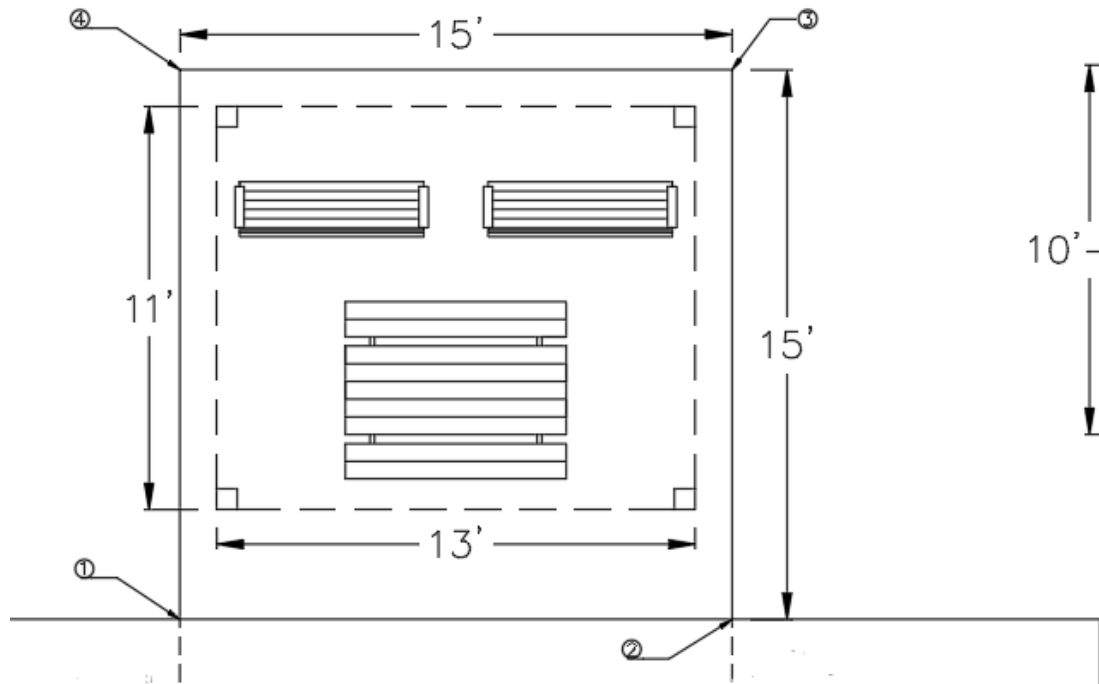


South Route



# Outlook Points

- ▶ 15' x 15' concrete slab
- ▶ 11' x 13' Yardistry Carolina Pavilion
- ▶ 2 benches and 1 picnic table

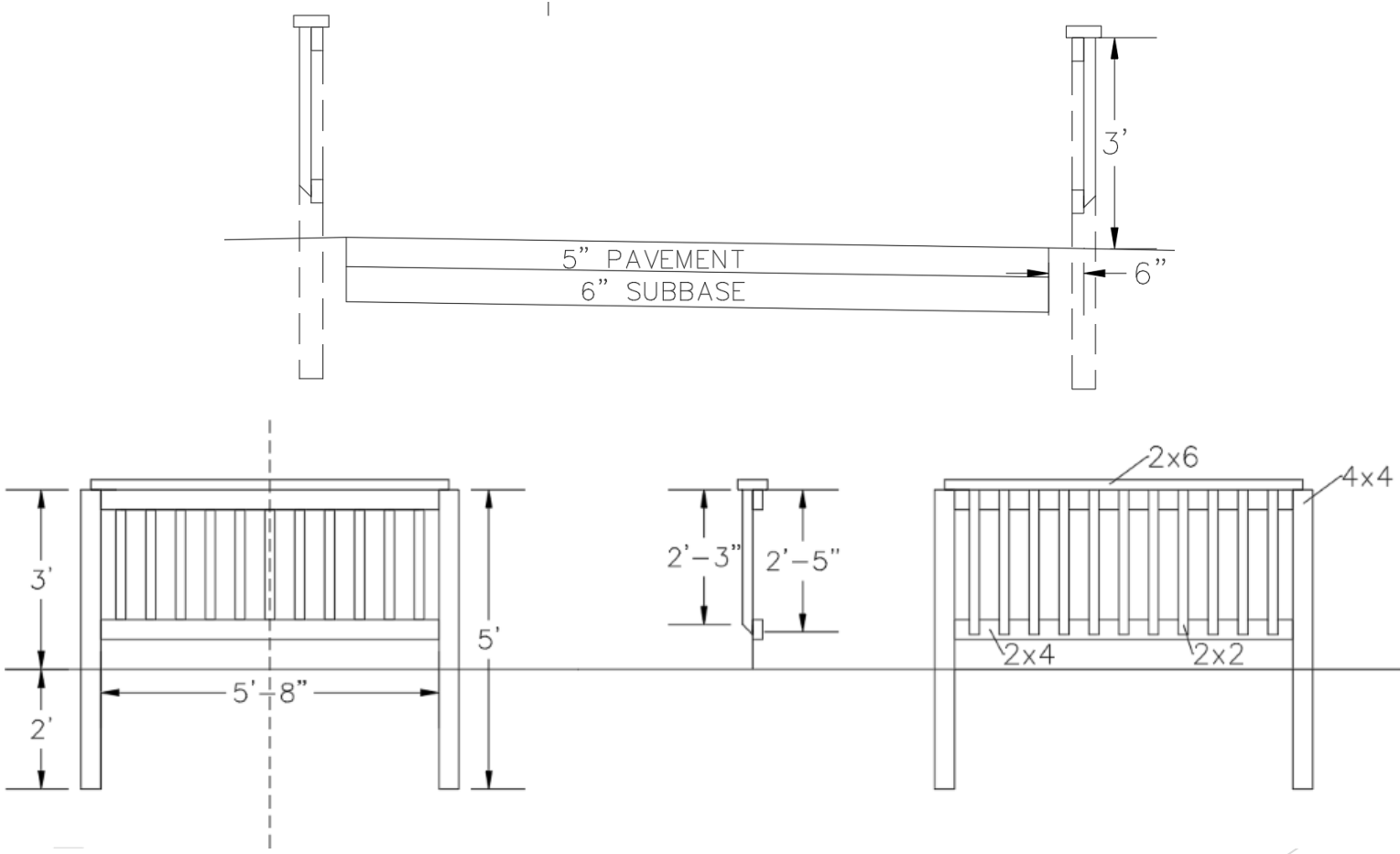


# Handrails

- ▶ Placed along trail where there are steep transverse slopes to provide additional safety to the trail users
- ▶ Pressure-treated pine
- ▶ North Trail: 13,050 feet / 2.47 miles
- ▶ South Trail: 10,824 feet / 2.05 miles



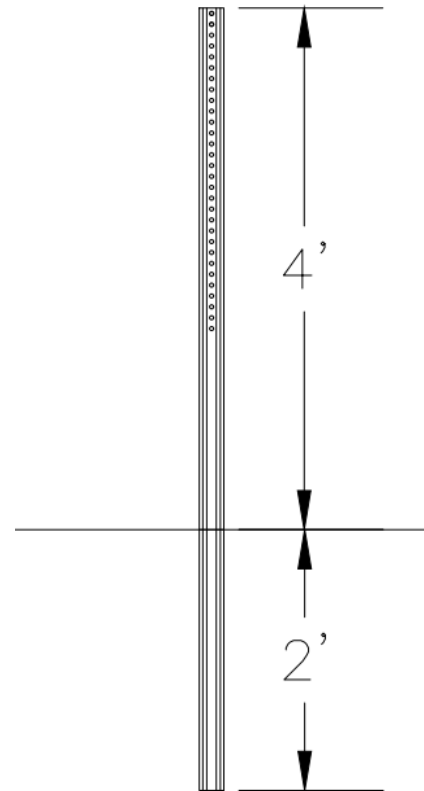
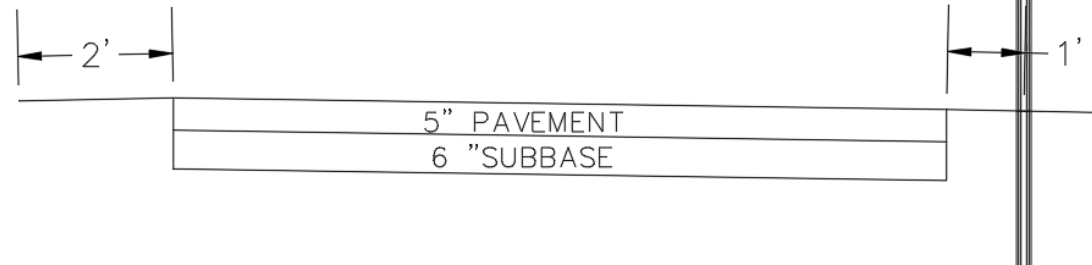
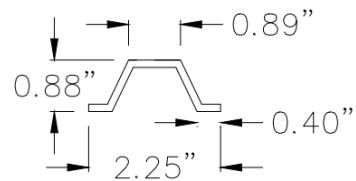
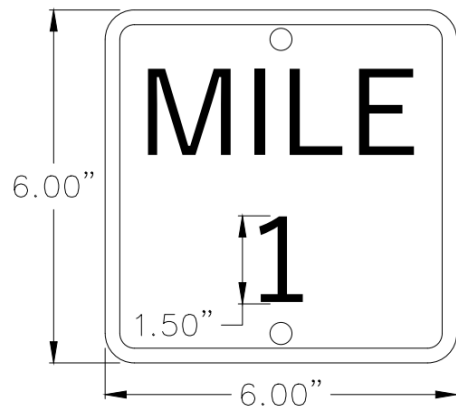
# Handrails





# Mile Markers

- ▶ 16 mile markers for each route
  - ▶ 8 for west travel
  - ▶ 8 for east travel



# Cost Estimate Summary North Trail

ITEM	PRICE
EARTHWORK	\$315,600
TRAFFIC CONTROL	\$3,745
SITE WORK AND LANDSCAPING	\$145,153
CULVERTS AND BRIDGES	\$454,600
MISCELLANEOUS	\$193,000
<b>CONSTRUCTION SUBTOTAL:</b>	<b>\$1,112,098</b>
<b>10% CONTINGENCY:</b>	<b>\$111,210</b>
<b>ADMINISTRATIVE COST:</b>	<b>\$33,363</b>
<b>TOTAL PROJECT COST:</b>	<b>\$1,256,500</b>

# Cost Estimate Summary South Trail

ITEM	PRICE
EARTHWORK	\$390,600
TRAFFIC CONTROL	\$3,745
SITE WORK AND LANDSCAPING	\$90,822
CULVERTS AND BRIDGES	\$171,500
MISCELLANEOUS	\$199,500
<b>CONSTRUCTION SUBTOTAL:</b>	<b>\$856,167</b>
<b>10% CONTINGENCY:</b>	<b>\$85,617</b>
<b>ADMINISTRATIVE COST:</b>	<b>\$25,686</b>
<b>TOTAL PROJECT COST:</b>	<b>\$967,500</b>

# Additional Cost Estimates

## North Trail

ITEM	PRICE
5" PCC PAVEMENT	\$293,500
4" ASPHALT PAVEMENT	\$150,000
TRAFFIC CONTROL	\$660
MISCELLANEOUS	\$2,825

## South Trail

ITEM	PRICE
5" PCC PAVEMENT	\$305,500
4" ASPHALT PAVEMENT	\$156,000
TRAFFIC CONTROL	\$660
MISCELLANEOUS	\$2,825

# Phasing

- ▶ Start construction in Volga
- ▶ Trim vegetation and do earthwork until they get to a stream
- ▶ Culvert or bridge construction
- ▶ Continue vegetation and earthwork until next stream
- ▶ Finish trail

Questions?