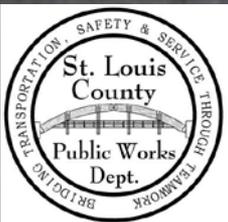


2013 MCEA PROJECT OF THE YEAR

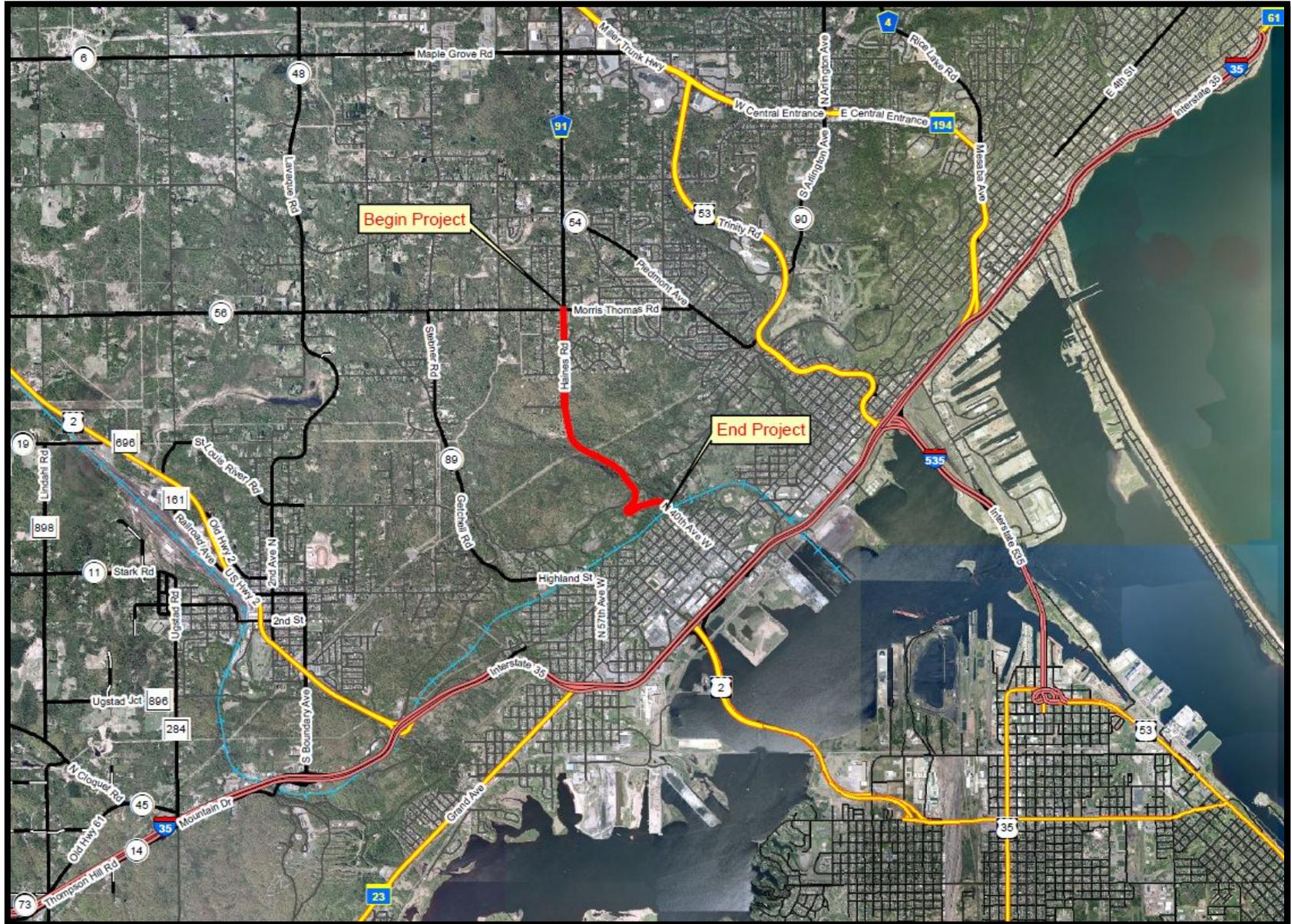
St. Louis County
Haines Road (CSAH 91) Reconstruction
SP 069-691-020



HAMMERLUND CONSTRUCTION



Project Location

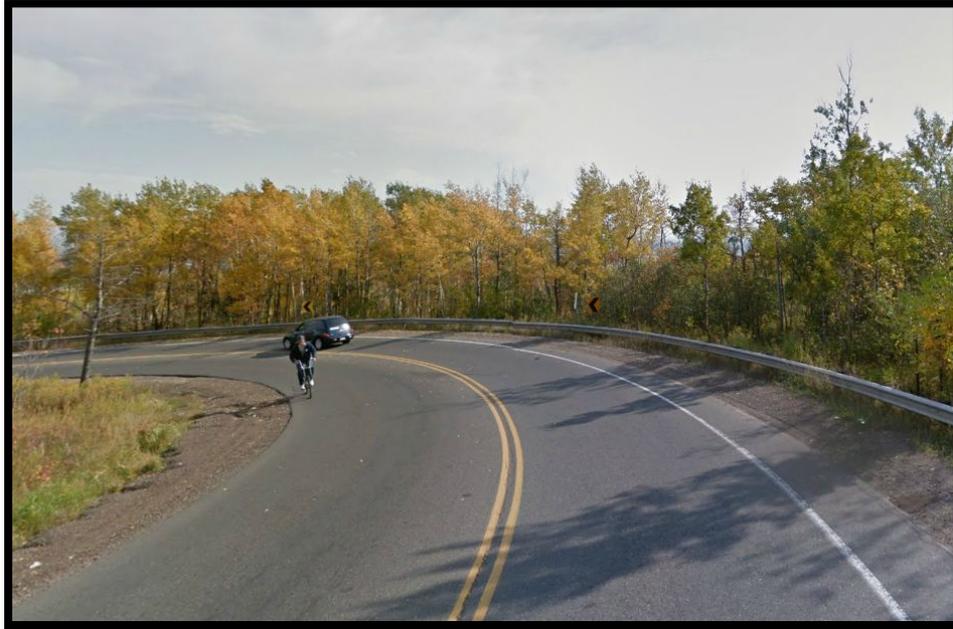


Project Overview

- Design started in 2005
- 2.25 miles
- ADT – 7,000
- Rugged and scenic terrain
- 620 feet elevation rise along project
- Connection between Interstate 35 and the Miller Hill commercial district and the airport
- Within the City of Duluth and City of Hermantown
- 2005 SAFETEA-LU bill as a High Priority Project (HPP)



Purpose and Need

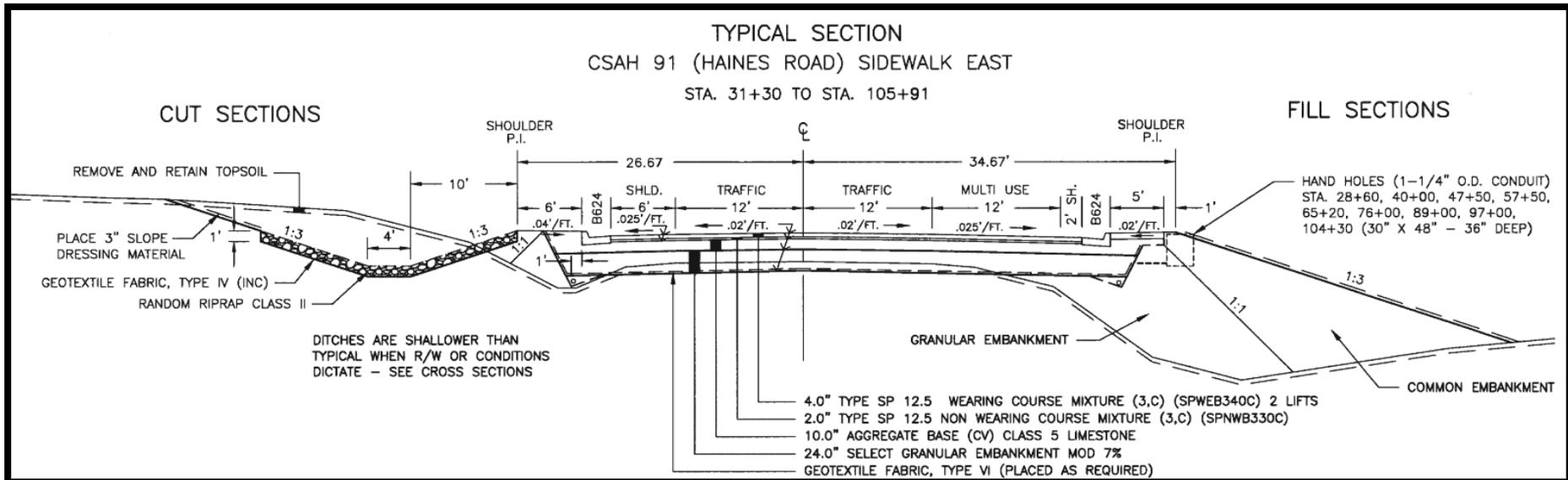


- Failing roadway in-slopes
- Poor geometrics
- Uphill lane congestion
- Limited intersection sight distance
- Failing retaining walls
- Uncontrolled storm water
- Narrow shoulders
- No multimodal accommodations



Proposed Design

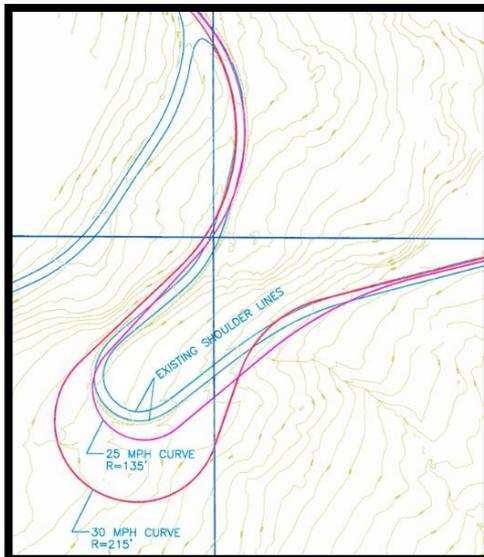
- Urban typical section
- Multi use lane for slow moving vehicles
- Improved alignment
- Wide shoulders
- Concrete sidewalk
- Retaining walls
- Storm water ponds
- Rip rap lined ditches



Horse Shoe Bend



- Existing 20 mph design speed
- Reviewed 3 alternatives
 - Eliminate curve by increasing grade
 - New alignment
 - Same general alignment
 - 30 mph design
 - Design variance for 25 mph saved \$1.4 million
 - Dynamic chevrons



Environmental Regulations

- Joint State EAW and Federal EA approved in 2009
- Section 106 MOA required for impacts to historic walls and Skyline Parkway
- US Army Corps Section 404 permit for impacts to wetlands and Merritt Creek
- DNR permit for Merritt Creek, a designated trout stream
- Two NPDES permits
- All work on the EA, EAW, DNR permitting, and Design Memorandum were completed by St. Louis County staff

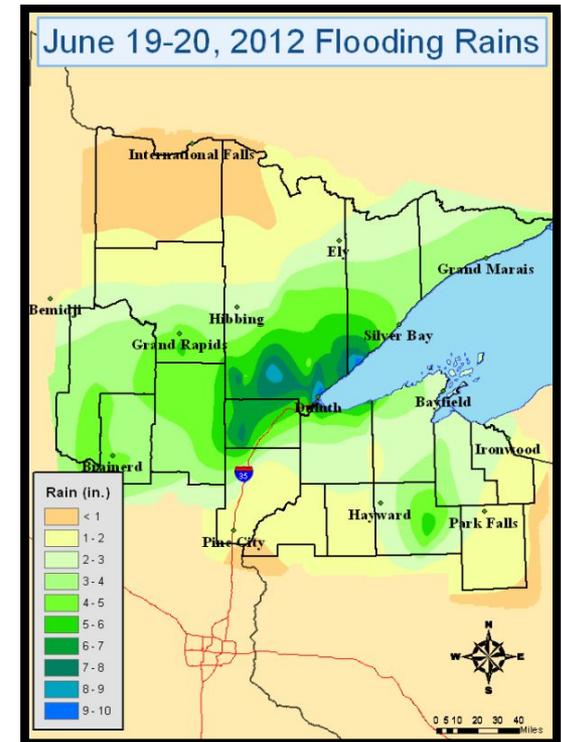


June 2012 Flood Event



Effects of the Flood on St. Louis County

- 500 year event
- Affected 1,430 miles of St. Louis County Roads
- 1,150 individual damage sites
- At peak, 94 roads closed along with 74 bridges
- FEMA and FHWA Emergency Relief funding
- Total flood recovery value of \$40 million for St. Louis County



June 2012 Flood Event



Effects of the Flood on Haines Road

- Severe washouts made road impassible
- Road closed June 2012 through October 2013
- 5 mile detour



June 2012 Flood Event



June 2012 Flood Event



Flood recovery planning on Haines Road

- Prepared cost estimates for varying scopes of temporary and permanent repairs
- Temporary repairs that would get obliterated in 6 months with the proposed reconstruction did not seem like money well spent
- Worked with FHWA and MnDOT to allow \$5.3 million, which would have been allocated to an in-kind rural reconstruction, to be used on the urban reconstruction project St. Louis County was proposing prior to the flood

June 2012 Flood Event



Project Funding

\$10.8 million total project cost

\$3.6 million: Original HPPH

\$1.3 million: HPPH from the Air National Guard, transferred from unused dollars on Duluth Air National Guard project

\$4.3 million: Federal Emergency Relief

\$1.1 million: Flood bonds

\$1.1 million: State aid

*Does not include 2012 Merritt Creek culvert replacement or clearing contract

Accelerated 2012 Construction



- Originally a 2 year project
- Public pressure made completion in 2013 a top priority
- 2 critical path items
 - 296 foot long, 8 foot by 8 foot concrete box culvert on Merritt Creek, a designated trout stream
 - Utility relocation prior to construction operations



Accelerated 2012 Construction



Culvert Construction on Merritt Creek

- Work restriction dates September 15 – June 30
- Critical area with walls and rock excavation in the middle of the project
- Removed from reconstruction plan and created a separate plan for 2012
- County procured the materials, \$163,000
- 9 day advertising
- FHWA – ER Funding
- \$853,000 – RJS, Superior, WI



Accelerated 2012 Construction

Clearing to facilitate utility relocations

- Minnesota Power, Century Link, and Charter Communications
- Separate plan for clearing the north 1/3 of the project in the fall of 2012
- Utilities began relocation in January
- \$52,000, Rick's Tree Service, Duluth



2013 Construction

- Project awarded to Hammerlund Construction of Grand Rapids in December 2012
- 8 contractors submitted bids
- Low bid: \$10.8 million
- Median bid: \$12.2 million
- High bid: \$13.9 million
- Construction began February 2013



2013 Construction

Excavation began to expose rock for blasting in March



2013 Construction

- Anticipated 42,000 cubic yards of rock removal
- Geotechnical work was constrained due to steep terrain



2013 Construction

Large boulders and highly variable rock formations lead to the discovery that only 12,000 cubic yards needed to be removed as part of the project



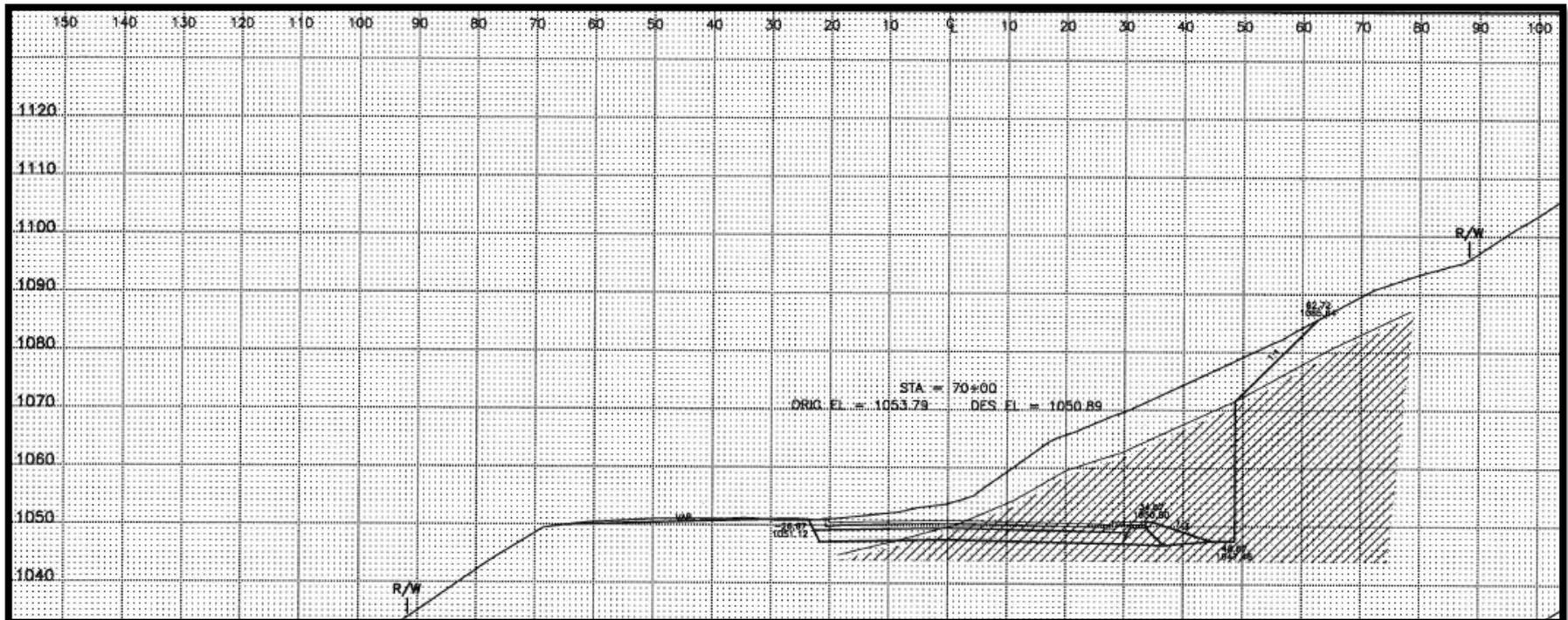
2013 Construction

Less rock created design issues!

- Planned to have up to 40 foot high vertical rock faces
- Additional right of way acquisition to construct a 1:2 slope
- Additional permitting with SHPO

Planned cross section at Station 70+00

- Construction limit 63 feet from centerline



2013 Construction

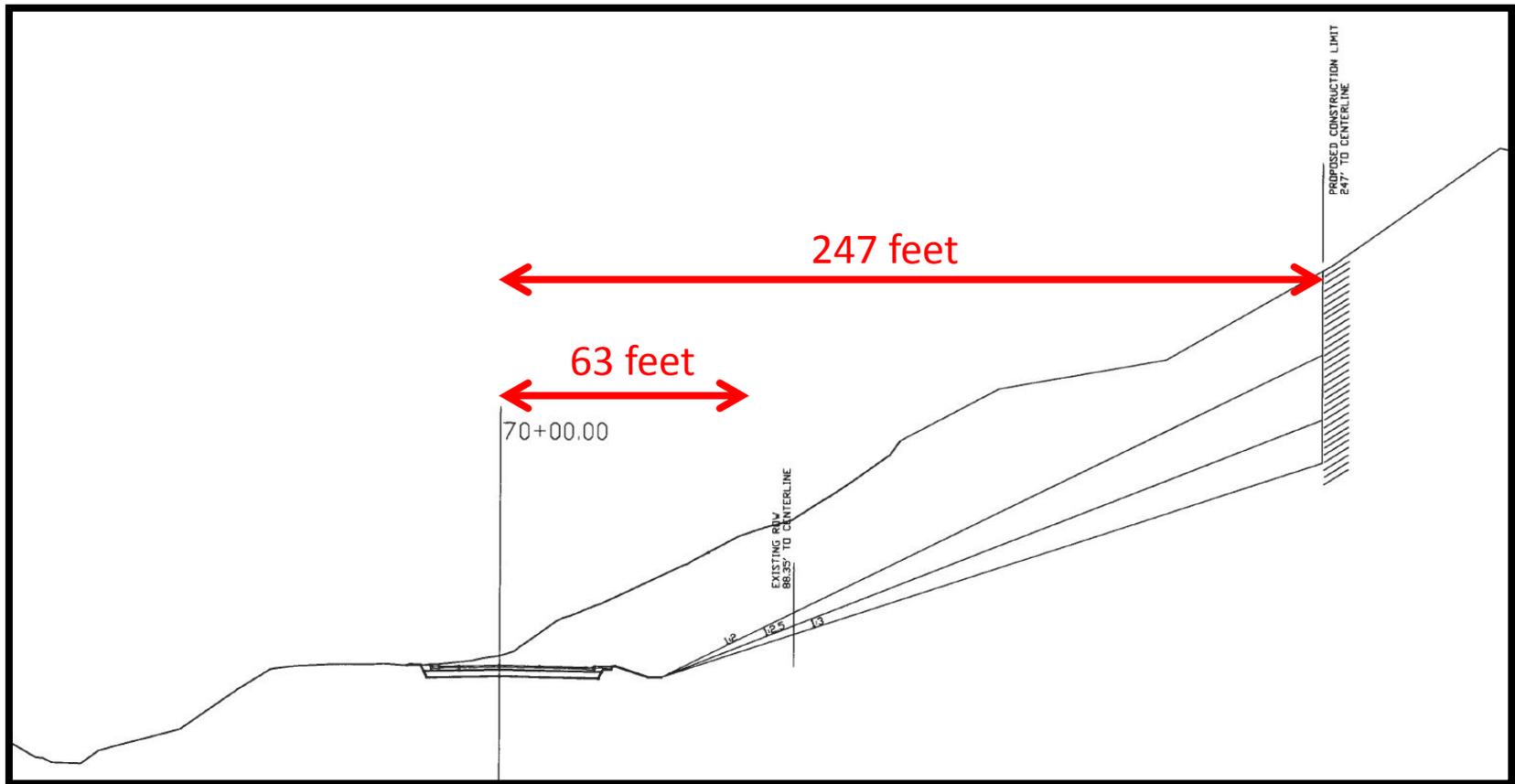
Vertical exposed face 250 feet from the road centerline



2013 Construction

Revised cross section at Station 70+00

- Construction limit 247 feet from centerline (184 feet further than planned)



2013 Construction



2013 Construction



2013 Construction

Where to put the extra dirt?

- 26,000 cubic yards was placed strategically in project limits
- 70,000 cubic yards needed to be removed from the project corridor

Disposal options

- Tax forfeit lands adjacent to project
- Tax forfeit lands within 2 miles of the project
- Within a MN Power high voltage line right of way crossing the project
- Private disposal site
- **St. Louis County gravel pit**
 - Longest haul but immediately availability
 - Amount of material was unknown
 - No permitting required
 - No negative impacts to wooded environments
 - \$15 / cubic yard (\$1.05 million)



2013 Construction

Less rock created issues for the contractor

- Hammerlund planned to create all class 5, rip rap, and granular embankment mod 7% from on-site rock
- Located rock within the right of way beyond original construction limits and were able to obtain an additional 13,000 cubic yards of rock
- All class 5 and rip rap was created from on-site rock



2013 Construction

Blasting

- Due to the variability in the rock, more individual blasts and explosive material was required
- 140,000 pounds of explosives
- 160 blasts
- 5 months of blasting
- Cool air off Lake Superior with hot air above made the blasts able to be felt from over a mile away



Retaining Walls

Existing Walls

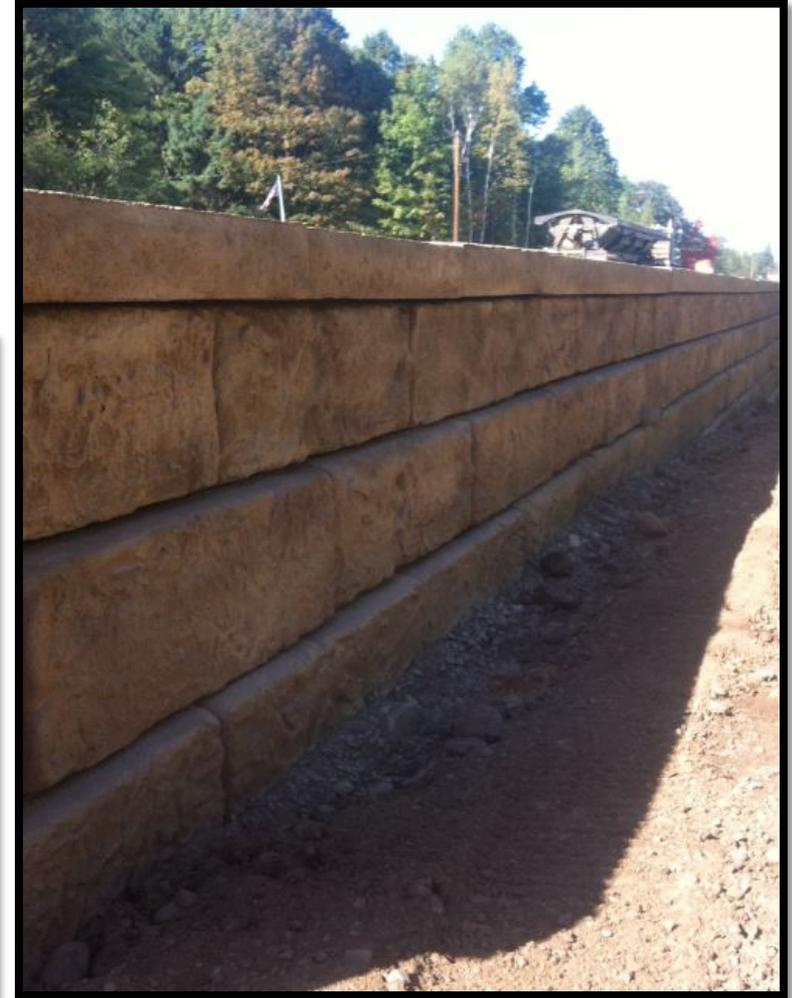
- Constructed in 1930's by the WPA
- Eligible to be listed on the National Historic Register, required MOA for removal
- Stones were salvaged and delivered to Duluth for future walls or repair of existing walls in the area



Retaining Walls

Concrete Block Walls

- 1,500 Square Yards
- 1,450 feet long
- 14 feet max height
- \$340 / Square Yard



Retaining Walls

Cast in Place Concrete Walls

- 1,100 linear feet of walls
- 22 feet max height
- 193,000 pounds of reinforcement
- Approximately \$600 / Square Yard



Trail Underpass

Existing At-Grade Trail Crossing

- Superior Hiking Trail
- Cyclists of Gitchee Gumees Shores
- Over the Hill Night Riders Snowmobile Club



Trail Underpass

Proposed Trail Crossing

- Underpass
- 180 feet long
- 12 foot X 11 foot concrete box culvert
- Retaining walls on both ends
- Lighting inside the culvert



Trail Underpass



A Busy Fall



Paving in Late September



Skyline Parkway Intersection



Rock Faces Between the Skyline Parkways



Skyline Parkway Intersection



Skyline Parkway Intersection



Dynamic Chevrons



Horse Shoe Bend



Horse Shoe Bend



Filtration Ponds



Filtration Ponds



Filtration Ponds



Open to traffic October 29, 2013



Project Summary

- Pulled everyone at St. Louis County together to fast-track the largest project in St. Louis County history while also completing the regular \$36 million program plus the \$10 million in other flood repair projects
- Overcame field changes, redesign, and additional work and still completed the project in 2013



Questions?

