



# COOPER LANDING BYPASS WILDLIFE BRIDGE

*By Arkenstone Group*

## Alternatives

### PROJECT PERSONNEL:

**Course Instructor/Faculty Mentor:**  
Scott Hamel, PE, SE, PhD

**Co-Instructors:** Osama Abaza, PhD, Matt Calhoun, PhD; Aaron Dotson, PE, PhD; Joey Yang, PhD

**Professional Mentors:** Chris Post, PE, Kristina Busch, PE with The Department of Transportation

**Client:** Joe Taylor, PE, David Gamez, PE with Lounsbury & Associates

### Project Team Members

Korbyn Milani - Project Manager  
Jordan Clark - Project Engineer  
Danielle Perkins - Design Engineer  
Ryan Harris - Project Engineer

### Project Description:

The proposed wildlife overpass project includes: a buried arch structure overpass that will span 102 feet and a new Sterling Highway typical section consisting of three 12 foot lanes (2 East bound and 1 West bound) and 8 foot shoulders. Work also includes drainage on both sides of the bridge, and fencing to direct animals to the overpass.

The project is located near historical MP 54 of the Sterling Highway. The overpass will be located on the north side of the Kenai River and is roughly at 60.49898 latitude and -149.96843 longitude

### Purpose/Need:

The project purpose is to bring the Sterling Highway up to current rural principal arterial standards and mitigate the large number of wildlife collisions within the project corridor. The project need is to improve highway safety, reduce highway congestion, and meet current highway design standards. The designated area for the wildlife crossing bridge has been identified as a high density traffic area for wildlife through extensive wildlife tagging and tracking. This proposed overpass would provide a safe crossing for the wildlife and reduce vehicle-wildlife conflicts.



### First Alternative: Conventional Steel Bridge

Pros:

- Large overhead clearance potential
- Long span
- Readily sourced materials



Cons:

- Not aesthetically pleasing
- Higher cost
- Longer erection time
- Not seismically reliable
- Small load capacity

### Second Alternative: Under Truss Bridge

Pros:

- Pre-fabricated, quicker assembly
- No span restrictions
- Economical



Cons:

- Loads are large
- More maintenance
- Not aesthetically pleasing

### Third Alternative: Bulb-Tee Bridge

Pros:

- Economical for short and medium spans
- Commonly used statewide
- Readily available parts



Cons:

- Not aesthetically pleasing
- Split lanes, widening total length
- Long erection time

### Preferred Alternative: Buried Arch Bridge

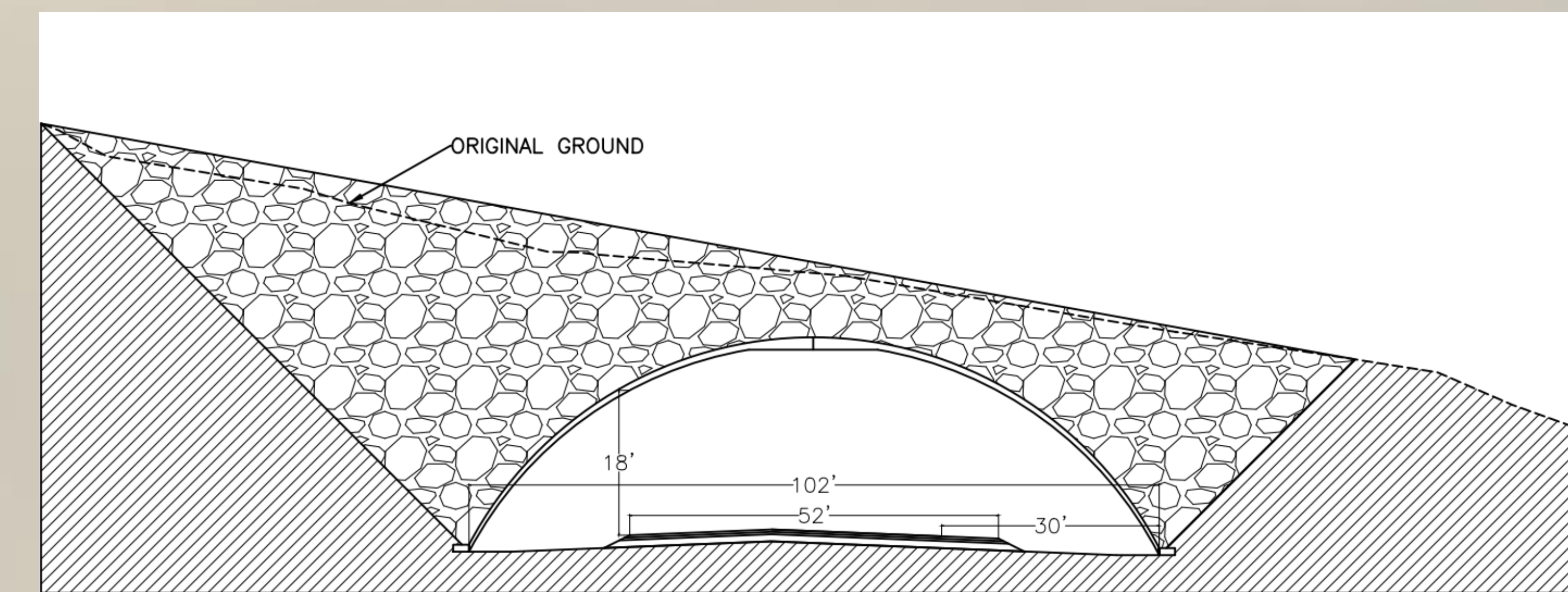
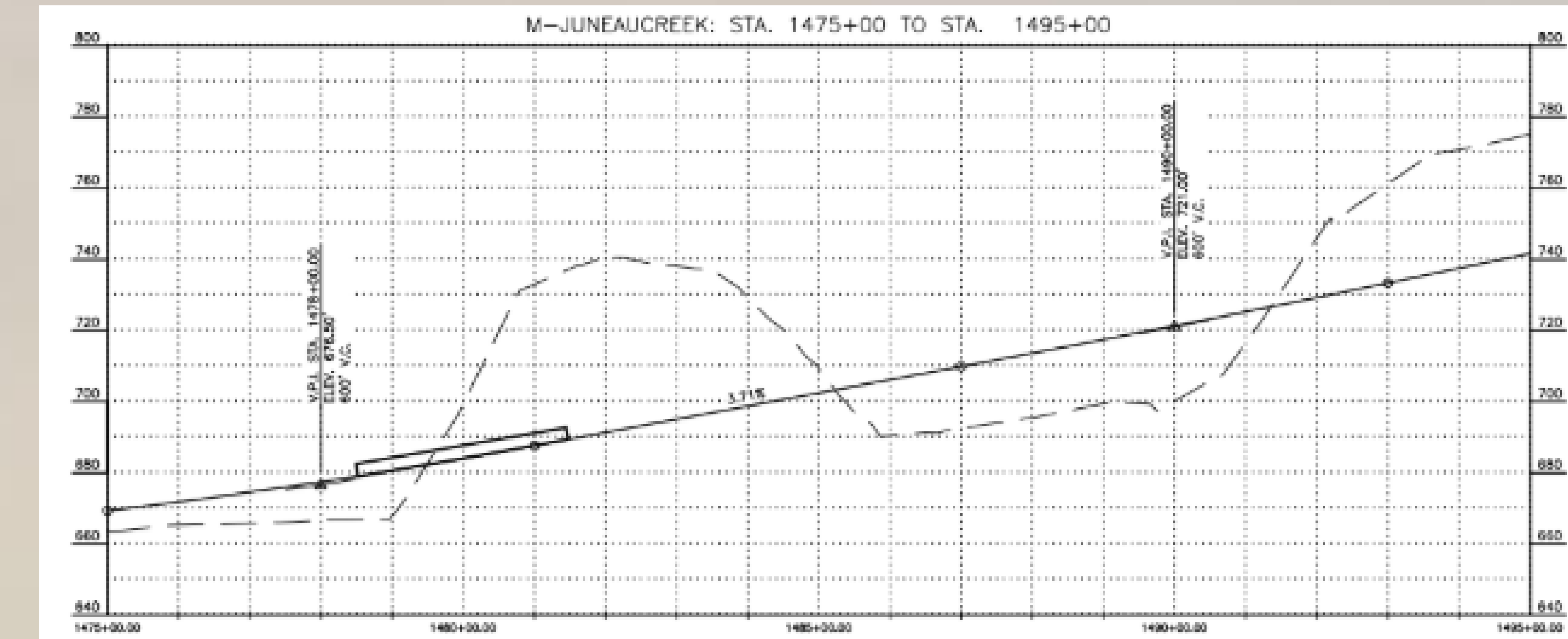
Pros:

- Increased Strength
- Aesthetically pleasing
- Low Maintenance Costs
- Surface treatments are minimal
- Good seismic response



Cons:

- Less flexible in span and vertical clearance
- High shipping costs
- Differential Fill



### Conclusion

Arkenstone Group submitted a Design Study Report to Lounsbury & Associates with a project scope up to 35%. This included a selected wildlife bridge in the form of a buried arch, just above MP 54 along the Sterling Highway. The buried arch has been utilized in other areas with great success as a wildlife crossing for the transportation of animals over busy roadways and highways. This style of overpass also met many of the criteria that it was evaluated against and provides the most viable option to meet all our design criteria, safety, and remain aesthetically pleasing.

