



Evaluation of Strengthening/Replacement Alternatives John G. Lewis Memorial Bridge on Route 673 (Featherbed Lane) over Catoctin Creek

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Link to the project webpage:

http://www.virginiadot.org/projects/northernvirginia/route_673_over_catocin_creek.asp

Alternative 1

Features

- Provide new 2-span continuous thru girders along the fascia of the existing bridge to support new floor beams, existing stringers and deck to restore 15 ton vehicular capacity with a new support structure
- Existing truss to remain: 160' span steel pin connected Pratt through truss with timber deck and asphalt overlay
 - One lane bridge (11'-2" clear width) with 2-way traffic
 - Functionally Obsolete bridge roadway width (12' min.) per Chapter 32 of the VDOT BDM Vol. V, Part 2
- New pier and abutment widening
- Estimated Cost \$1.6M to \$2.6M

Alternative 1 – View 1

Add Steel Thru Girders to Fascia of Existing Truss Bridge



Alternative 1 - View 2

Add Steel Thru Girders to Fascia of Existing Truss Bridge



Alternative 1 - View 3

Add Steel Thru Girders to Fascia of Existing Truss Bridge



Alternative 2

Features

- **Replace bridge with new two span continuous steel beam bridge (80'-80') spans with concrete deck**
 - Will carry two traffic lanes, one lane each direction
 - Meets minimum GS-4 criteria with two 10' lanes and 1' offsets to the railing on each side
 - Designed for AASHTO LRFD HL-93 loading plus weight of truss members
- **Attach truss members from existing bridge to the new bridge to maintain the appearance of a truss bridge**
- **New Pier and Abutments**
- **Estimated Cost \$3.0M to \$4.0M**

Alternative 2 – View 1

New Two-Span Continuous Steel Beam Bridge with Existing Truss Members Attached



Alternative 2 – View 2

New Two-Span Continuous Steel Beam Bridge with Existing Truss Members Attached

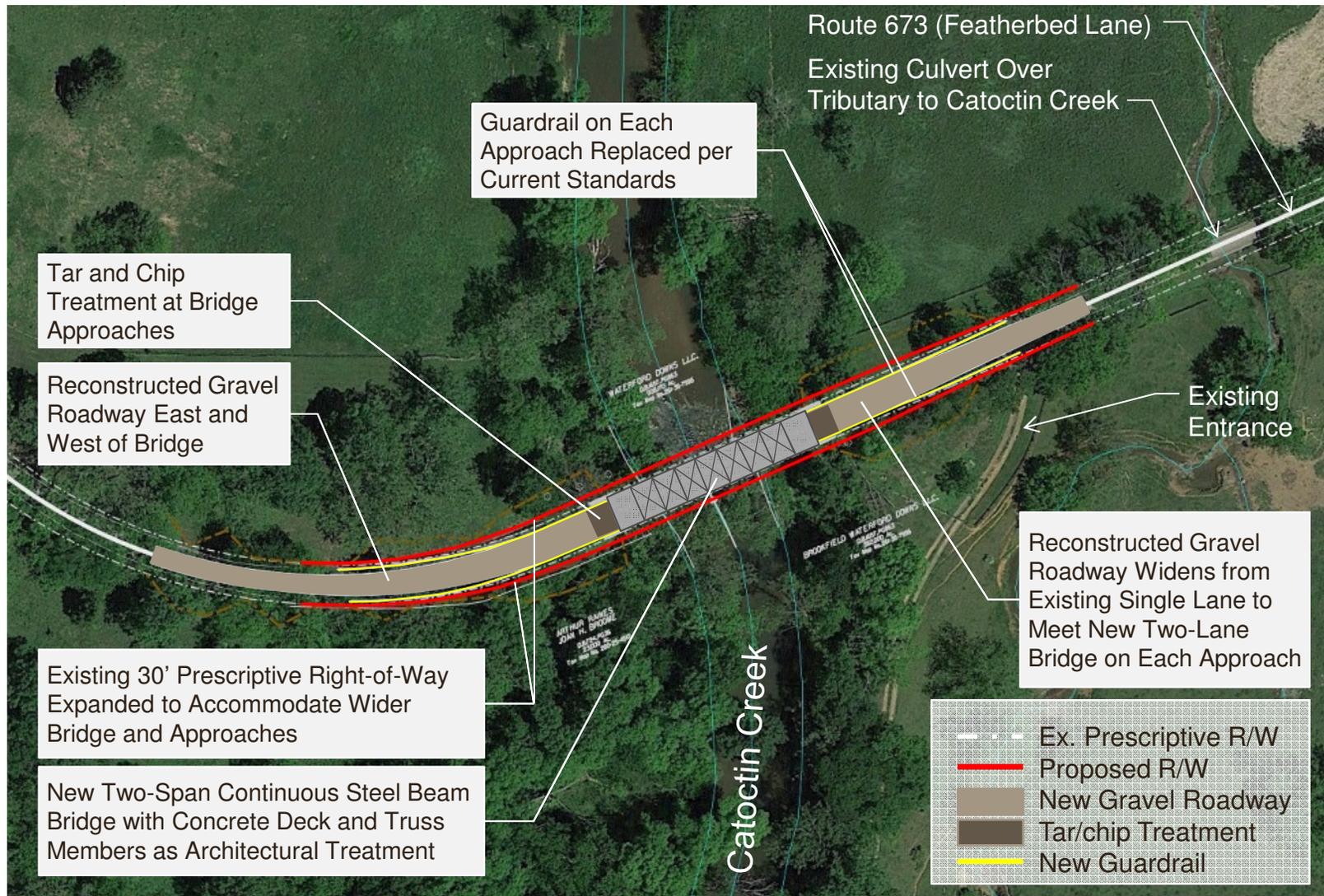


Alternative 2 – View 3

New Two-Span Continuous Steel Beam Bridge with Existing Truss Members Attached



Alternative 2 – Roadway Plan



Alternative 3

Features

- Provide internal arch around existing truss members to restore 15 ton vehicular capacity and add structural redundancy
- Existing truss to remain: 160' span steel pin connected Pratt thru truss with timber deck and asphalt overlay
 - One lane bridge (11'-2" clear width) with 2-way traffic
 - Functionally Obsolete bridge roadway width (12' min.) per Chapter 32 of the VDOT BDM Vol. V, Part 2
- Requires additional hangers and floor beams
- Abutment Widening
- Estimated Cost \$1.5M to \$2.5M

Alternative 3 – View 1

Add Steel Internal Arch to Existing Truss Bridge



Alternative 3 – View 2

Add Steel Internal Arch to Existing Truss Bridge



Alternative 3 – View 3

Add Steel Internal Arch to Existing Truss Bridge



Alternative 4

Features

- **Replace existing Pratt thru truss bridge with a new similar, wider Pratt through truss bridge**
 - Will carry two lanes, one lane each direction
 - Meets minimum GS-4 criteria with two 10' lanes and 1' offsets to the railing on each side
 - Designed for AASHTO LRFD HL-93 loading
- **New Abutments**
- **Estimated Cost \$3.0M to \$4.0M**

Alternative 4 – View 1

New Steel Thru Truss Bridge



Alternative 4 – View 2

New Steel Thru Truss Bridge



Alternative 4 – View 3

New Steel Thru Truss Bridge



Similar Historical Truss Bridge Replacement Milton Street Bridge Replacement, Warren County, NY

Technical Description:

- Width: 29' 7"
- Span: 155'
- Style: Freedom Series Thru Truss
- Finish: Weathering Steel
- Decking: Concrete

Installation Date: Fall 2011

- Provided by U.S. Bridge



Highlights:

The original 100 year old steel truss bridge was closed to traffic in 2008 for safety reasons.

The County decided to replace the narrow one-lane Bridge with a wider and safer two-lane bridge. The County wanted to keep the same “feel” of the old historic bridge and decided to go with a Thru Truss.

The new 155 ft long x 26 ft wide two-lane bridge is an all-bolted steel structure with a self-weathering finish and concrete deck. The bridge loading was rated HS25 and also carries utilities across the river.

Alternative 5

Features

- **Construct new two span continuous steel beam bridge (80'-80') spans with concrete deck parallel to the existing truss bridge**
 - Will carry two lanes, one lane each direction
 - Meets minimum GS-4 criteria with two 10' lanes and 1' offsets to the railing on each side
 - Designed for AASHTO LRFD HL-93 loading
- **Retain existing truss bridge as-is to carry only pedestrian and bicycle traffic**
- **New Pier and Abutments**
- **Estimated Cost \$3.0M to \$4.0M**

Alternative 5 – View 1

New Two-Span Continuous Steel Beam Bridge and Existing Truss Bridge for Pedestrians

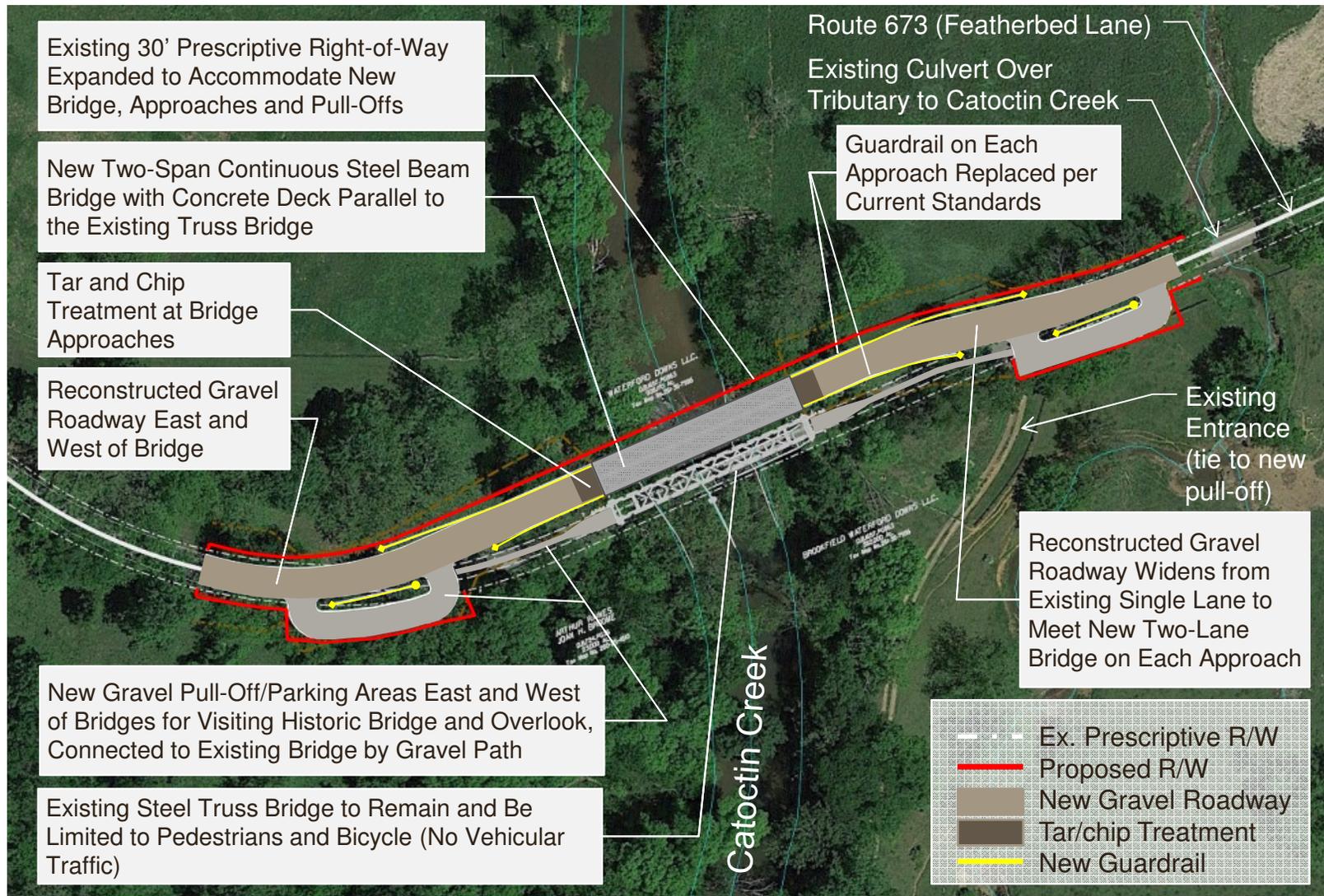


Alternative 5 – View 3

New Two-Span Continuous Steel Beam Bridge and Existing Truss Bridge for Pedestrians



Alternative 5 – Roadway Plan



Alternative 6

Features

- **Construct new single span steel pony truss bridge (160') with concrete deck**
 - Will carry two lanes, one lane each direction
 - Meets minimum GS-4 criteria with two 10' lanes and 1' offsets to the railing on each side
 - Designed for AASHTO LRFD HL-93 loading
- **New Abutments**
- **Estimated Cost \$2.5M to \$3.5M**



Alternative 6 – View 1

New Steel Pony Truss Bridge



Alternative 6 – View 2

New Steel Pony Truss Bridge



Alternative 6 – View 3

New Steel Pony Truss Bridge



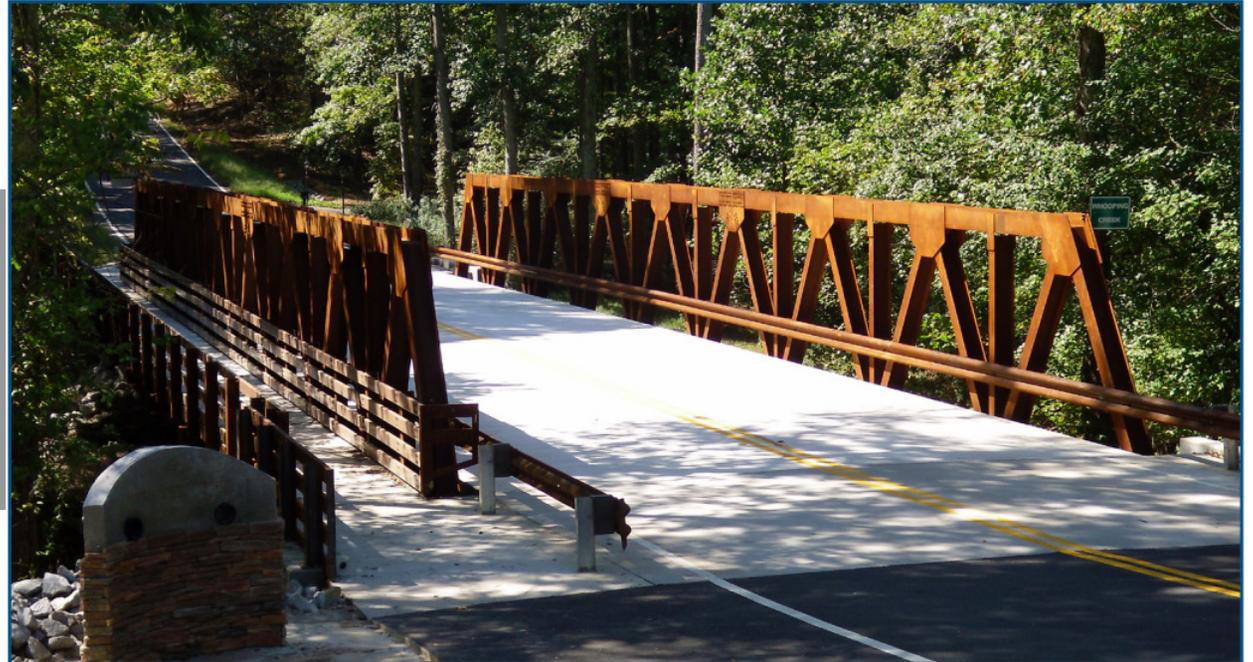
Similar Historical Truss Bridge Replacement Clem Lowell Road Bridge, Carroll County, Georgia

Technical Description:

- Width: 28 -ft.
- Span: 130 -ft.
- Style: Cambridge Flat
- Finish: Weathering Steel
- Decking: Concrete

Installation Date: 2008

- Provided by U.S. Bridge



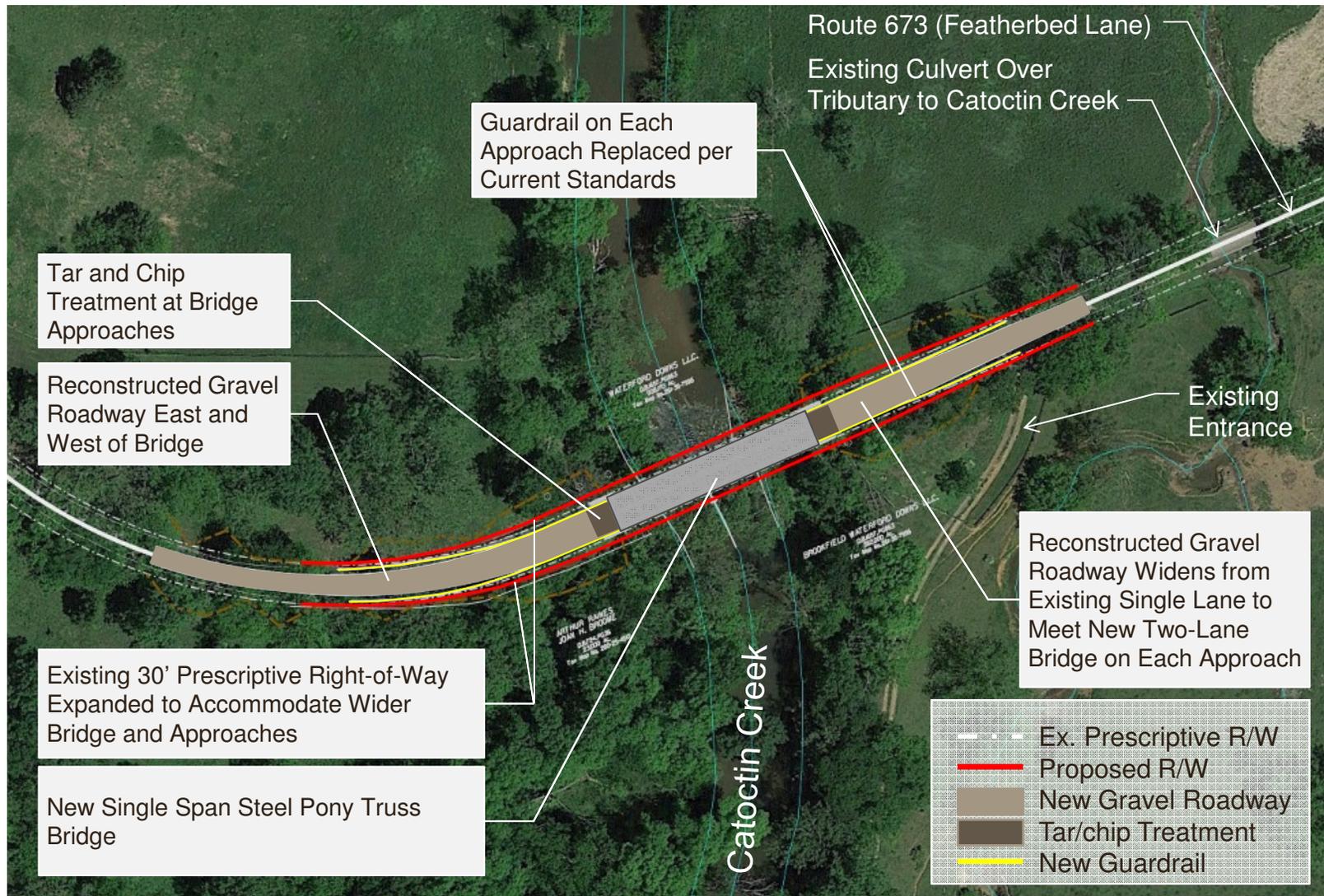
Highlights:

After providing maintenance and repair for the original 70 year old steel truss bridge for many years and lowering the load limit on the bridge to 3 tons, the County closed the bridge to traffic in 2008 after a heavy truck cracked members supporting the deck.

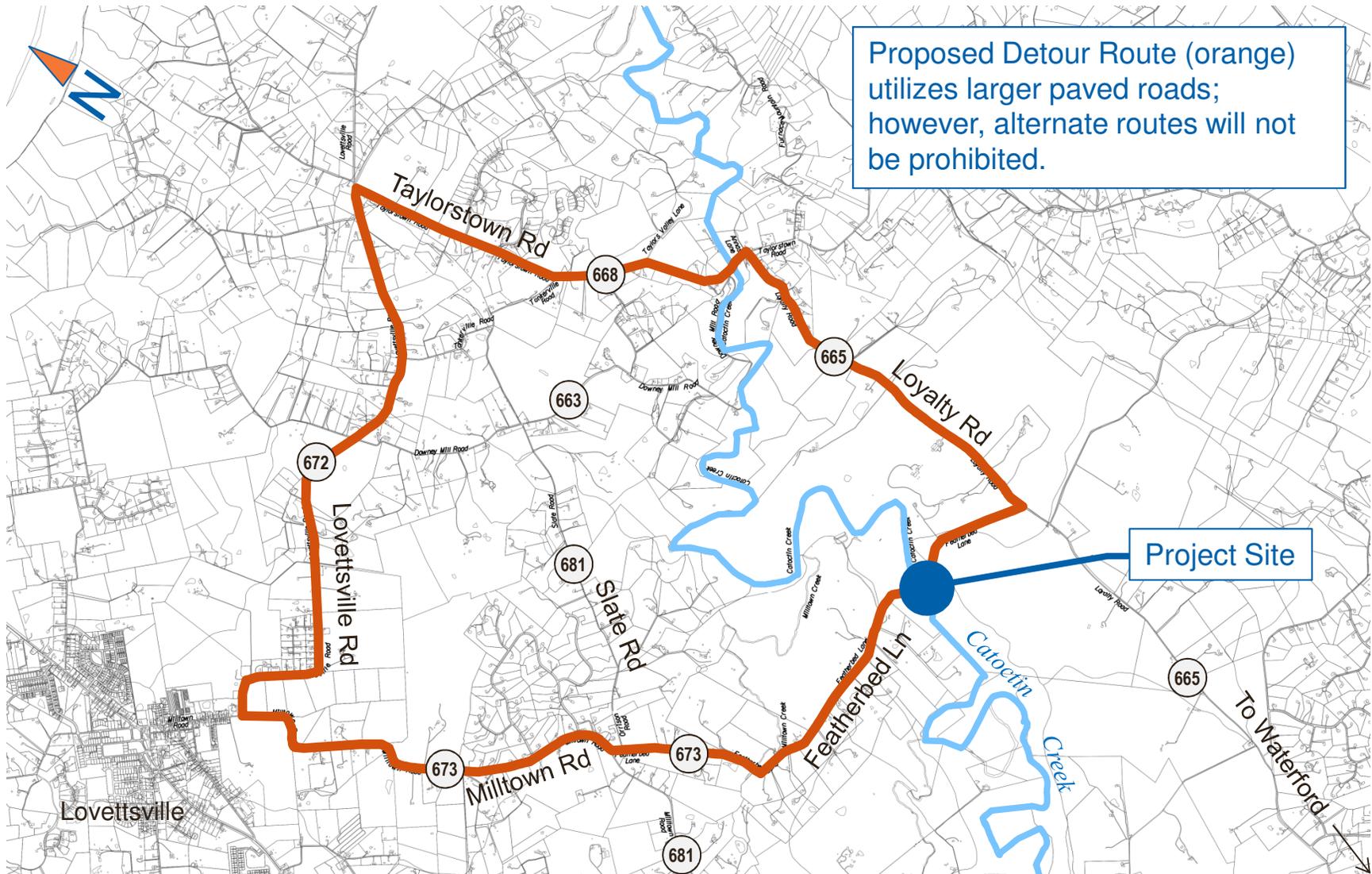
Recognizing the shortfalls of the now compromised bridge, Carroll County officials determined that instead of facing the prospect of continued repairs, it was best to replace the entire structure and install new abutments.

The County wanted the new structure to resemble the original structure. The new 130 ft long x 28 ft wide Pony Truss Bridge was selected as the structure that best replicated the old Clem Lowell Road Bridge while also providing the current load rating standards and structural integrity.

Alternative 6 – Roadway Plan



Detour Route (All Alternatives)





QUESTIONS & COMMENTS

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