

OPTION 1 STEEL GIRDER BRIDGE

A steel girder bridge with intermediate supports on either side of Stevens Creek Boulevard allows for shorter spans and a relatively shallow deck.



Rendering of a Steel Girder Bridge over Stevens Creek Boulevard



Looking South on Carmen Road



Looking North on Carmen Road

About this design

Construction duration/impact

- Bridge structure is made of three steel girders that can be delivered and erected individually without the need for falsework in Stevens Creek Blvd
- Main foundation construction from Stevens Creek Blvd over 7-10 days per side; maintaining one traffic lane in each direction at all times. Similar periods and impacts for column construction
- Deck construction will require 20 days of light equipment access through the cul-de-sacs on each end of Carmen Road
- There will be 3 nights of individual lane closures in Stevens Creek Blvd for deck construction

Aesthetics

- Shallowest profile and overall height compared to all other design options provides an unassuming, yet elegant bridge that provides opportunities for aesthetic enhancements of the railings and screens

Cost

- \$1.25M – \$1.5M in 2019 dollars (excluding right-of-way acquisition, utility relocations and other improvements which are expected to be similar for all options)

Design considerations

Construction duration/impact



Aesthetics



Cost



OPTION 2 STEEL PRATT TRUSS BRIDGE

A steel truss that clear spans Stevens Creek Boulevard. A Pratt truss has a general square look to the panels and the diagonals are lighter members.



Rendering of a Steel Pratt Truss Bridge over Stevens Creek Boulevard



Looking South on Carmen Road



Looking North on Carmen Road

About this design

Construction duration/impact

- Trusses can be assembled on falsework over Stevens Creek Blvd from individual members or three pre-assembled pieces
- Foundation construction in each cul-de-sac will take 10-15 days
- Truss erection will impact traffic for 10-15 nights in Stevens Creek Blvd
- Deck construction will require 20 days of light equipment access through the cul-de-sacs
- There will be 3 nights of individual lane closures in Stevens Creek Blvd for deck construction

Aesthetics

- A commonly used structure type for medium span pedestrian bridges which has significant presence while providing a feeling of enclosure and safety

Cost

- \$1.5M - \$1.85M in 2019 dollars and excluding right-of-way acquisition, utility relocations and other improvements which are expected to be similar for all options

Design considerations

Construction duration/impact



Aesthetics



Cost



OPTION 3 STEEL HOWE TRUSS BRIDGE

A steel truss that clear spans Stevens Creek Boulevard. A Howe truss has a general triangular look to the panels.



Rendering of a Steel Howe Truss Bridge over Stevens Creek Boulevard



Looking South on Carmen Road



Looking North on Carmen Road

About this design

Construction duration/impact

- Trusses can be assembled on falsework over Stevens Creek Blvd from individual members or three pre-assembled pieces
- Foundation construction in each cul-de-sac will take 10-15 days
- Truss erection will impact traffic for 10-15 nights in Stevens Creek Blvd
- Deck construction will require 20 days of light equipment access through the cul-de-sacs
- There will be 3 nights of individual lane closures in Stevens Creek Blvd for deck construction

Aesthetics

- A robust looking structure which is often seen on railway bridges, also provides a feeling of enclosure and safety

Cost

- \$1.5M - \$1.85M in 2019 dollars and excluding right-of-way acquisition, utility relocations and other improvements which are expected to be similar for all options

Design considerations

Construction duration/impact



Aesthetics



Cost



OPTION 4 STEEL TIED ARCH BRIDGE

A tied arch bridge that clear spans Stevens Creek Boulevard. Arches provide a classic look for the bridge.



Rendering of a steel tied arch bridge over Stevens Creek Boulevard



Looking South on Carmen Road



Looking North on Carmen Road

About this design

Construction duration/impact

- Tied arches with hangers to support main deck elements can be fully pre-assembled and erected in one overnight operation.
- Pre-assembly will require 7-10 days of lane closures in Stevens Creek Blvd, leaving one lane open in each direction
- Foundation construction in each cul-de-sac will take 10-15 days
- Deck construction will require 20 days of light equipment access through the cul-de-sacs on each end of Carmen Road
- There will be 3 nights of individual lane closures in Stevens Creek Blvd for deck construction

Aesthetics

- Classic arches with some presence but an elegant shape provide an inherent support for the fence and screen

Cost

- \$1.6M - \$1.95M in 2019 dollars and excluding right-of-way acquisition, utility relocations and other improvements which are expected to be similar for all options

Design considerations

Construction duration/impact



Aesthetics



Cost



OPTION 5 STEEL INCLINED ARCH BRIDGE

Inclined arches configured to provide intermediate supports. Elegant arches with a lower profile above the bridge deck.



Rendering of a steel inclined arch bridge over Stevens Creek Boulevard



Looking South on Carmen Road



Looking North on Carmen Road

About this design

Construction duration/impact

- Inclined arches and elements of the deck will be assembled in-place
- In-place assembly will require 5-7 night closures
- Main foundation construction from Stevens Creek Blvd will require 10-14 days of lane closures per side; maintaining one traffic lane in each direction at all times
- Deck construction will require 20 days of light equipment access through the cul-de-sacs on each end of Carmen Road
- There will be 3 nights of individual lane closures in Stevens Creek Blvd for deck construction

Aesthetics

- Arched shape of principal bridge elements is aesthetically pleasing with a height above deck that is well proportioned for this type of structure. Inclined arches add a signature statement that also creates a more 'open' feel to the structure

Cost

- \$1.4M - \$1.75M in 2019 dollars and excluding right-of-way acquisition, utility relocations and other improvements which are expected to be similar for all options

Design considerations

Construction duration/impact



Aesthetics



Cost



OPTION 6 CLEAR SPAN GIRDER BRIDGE - NOT FEASIBLE



Sample photo of a clear span girder bridge.

Option 6 is a girder bridge with a clear span of 120 feet over Stevens Creek Boulevard, similar to the image depicted above. This type of bridge can be built using a conventional cast-in-place box girder, steel or pre-cast concrete girders with a cast-in-place deck. This bridge type has been removed from further consideration since it does not meet three essential functional requirements as described under Design Challenges.

About this design

The required 17.5 ft clearance over Stevens Creek Boulevard combined with the maximum 5% slope on the bridge deck results in the bridge landing 2.2 ft above ground, which results in the following challenges:

- ✗ Maintenance vehicles would be unable to access the bridge
- ✗ Requires a ramp which is not feasible due to permanent interference with the cul-de-sac
- ✗ Since a ramp cannot be accommodated, the design is not compliant with the American Disability Act (ADA)

Due to these limitations, Option 6 is not a feasible design option.

Design considerations

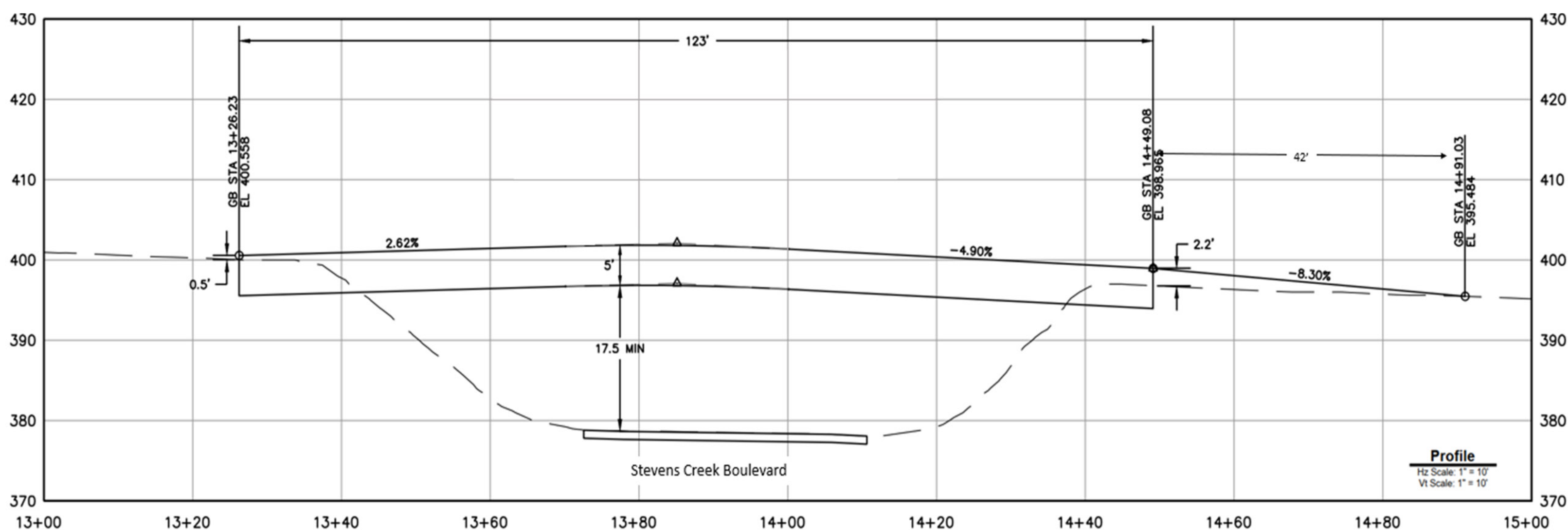
Construction duration/impact



Aesthetics



Cost



Elevation view of bridge from Stevens Creek Boulevard