West Corridor Elected Officials Briefing

September 15, 2006

Bridges

Evaluation Criteria

- Aesthetics
- Structure Type
- Constructability
- Ease of Erection
- Impacts to adjacent facilities and properties
- Maintenance
- Inspection
- Budget
- Schedule

Wadsworth Alternative #1

- EIS/PE Design – Haunched Plate Girder
- Three spans
- MSE Walls
- 400 foot opening
- See Rendering

Wadsworth Alternative #2

Station off center

- Citizens requested other bridge types be examined to lower the height of the bridge and shorten the approach ramps.

- Design Team prepared a different concept
  - –Moved Wadsworth light rail station to east side of structure
  - –Lowered height of overall structure
  - –Shortened approach ramps

- Process
  - –Brought concept to City of Lakewood staff prior to release to the public
  - –Lakewood staff did not approve this alternative because station wasn't in the center, concerned about limiting TOD potential on the west side.

- **Eliminated due to Lakewood Concerns**

Wadsworth Alternative #3

- Alternative bridge type (Bulb Tee) was reviewed by design team
- This bridge type makes the bridge higher and the approaches longer than Alternatives 1 and 2

- **Eliminated due to height and length issues**

Wadsworth Alternative #4

- Original design but with 5 spans
- Looked at five spans instead of three at request from community to lessen the MSE walls.
- Increases opening from 400 to 650 feet
- See Rendering

Pros & Cons of Alternative #4

Pros:

- Lessens visual impact of MSE walls
- Improves access across 13th Avenue*
- Lessens opportunities for graffiti/vandalism on walls (various wall treatments can also deter graffiti)

Cons:

- $1.8 million cost differential
- Trash/Maintenance issues under viaduct
- Noise impacts are greater
- Visual impact of walls is lessened due to future development at site as proposed by Lakewood.
- Homeless issues under viaduct
- Safety issues under viaduct

*Access can be provided through a tunnel in the MSE wall if that is preferred

Wadsworth Bridge Recommendation

1. Alternative Bridge Designs Evaluated
2. Alternatives presented to Elected Officials and UDC
3. Technical Recommendation is:
    1. Alternative #1
    2. Three spans
    3. 400’ opening
    4. MSE walls on approach
    5. Potential ped tunnel through wall

6th Ave. Bridge Alternative #1

EIS/PE Bridge Structure

- Piers between highway and frontage road
- Three spans
- CDOT won't allow due to constraining future widening

•Eliminated due to CDOT Concerns

Alternative #2

- Center Pier
- Two spans
- CDOT concerned about narrowed center shoulder width.
  - –Would require RTD to upgrade 6th Avenue for 1/2 mile in each direction.
  - –Would include rebuilding the Simms/Union Interchange.

- **Eliminated due to cost constraints of rebuilding highway.**

Alternative #3

Span Entire Highway – 280 feet

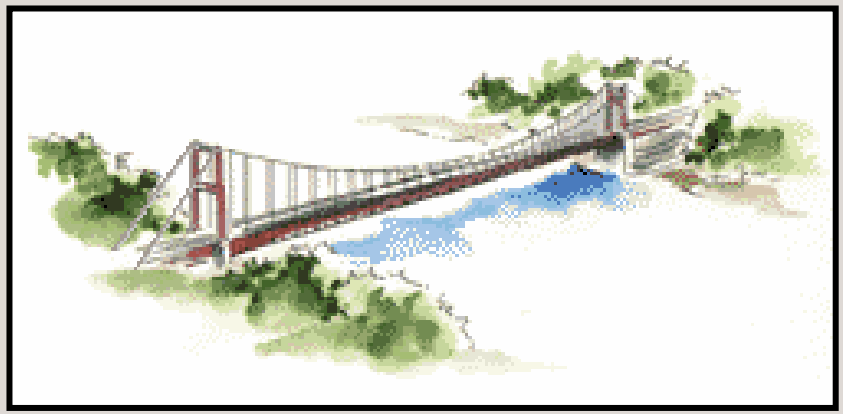
Limited structure types that can clear that span length.

1. Suspension Bridge
2. Truss
3. Arch

Suspension Bridge

Alternative 3 - Option #1

- Specialized Uses
- Impacts are greater for community and the highway
- Constructability Challenging
- Too expensive

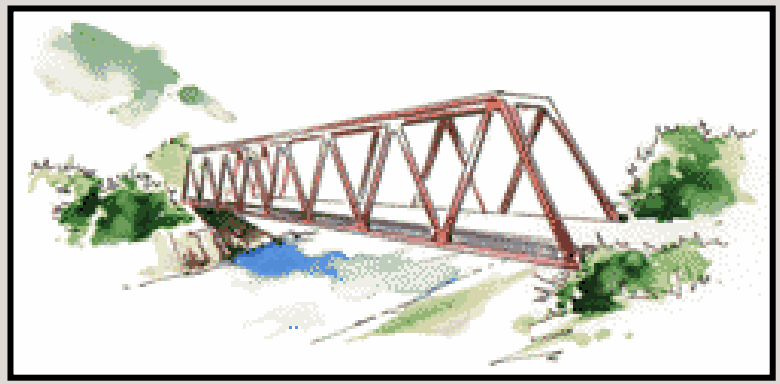


- **Eliminated for above reasons**

Warren Truss

Alternative 3 - Option #2

- Historical Railroad Bridge
- Lower cost
- Easier to erect, maintain and inspect
- RTD's original preference
- See Rendering



Basket Handle Tied Arch

Alternative 3 - Option #3

- Signature bridge for Lakewood and GSA
- Highlights the city to the east, mountains to the west
- Preference of Lakewood and GSA
- See Rendering

6th Ave. Bridge Recommendation

1. Alternative Bridge Designs Evaluated by Design Team, Lakewood, GSA and CDOT technical group

2. Alternatives presented to Elected Officials (today) and UDC (Sept 27,28)

3. Recommendation from Technical Group
    1. Alternative 3, Option 3
    2. Basket Handled Tied Arch
    3. Signature bridge
    4. Preferred by Lakewood and GSA
    5. Cost differential is minimal

Kipling Bridge Alternatives

Alternative #1

- From the EIS/PE – Bulb Tee structure type
- Two span – 170 foot opening (to fit sub-station)
- MSE walls
- **Eliminated since sub-station was relocated**

Alternative #2

- Single Span – 100 foot opening (moved sub station location)
- MSE walls
- **Eliminated since Lakewood & CDOT needed wider opening**

Alternative #3

- Single span – 120’ Wider opening at request of Lakewood/CDOT to accommodate future widening
- Bulb Tee structure
- MSE walls/Potential for earthen structure on Southwest side

Kipling Bridge example of span

***Aesthetic details to be determined through UDC and other community input**

Kipling Bridge Recommendation

Technical Recommendation

1. Alternative #3
2. One span
3. 120’ opening
4. MSE/Earthen structure on approach
5. Bulb Tee structure type

Eldridge Bridge Alternatives

- Bridge added during Final Design
- EIS/PE had tunnel
- Part of the cost containment measures/EA currently underway
- Curvature and length of this bridge create challenges

Alternative #1

- Single span - Warren Truss w/o verticals
- 420 foot span is very long
- The skew is too much
- Cost is higher than Alternative #3
- Difficult to stage

Alternative #2

- Two span
- Steel Plate Girder structure type
- Curvature presents issues
- Bridge structure is very deep, causing a greater visual impact and higher cost than Alt. 3
- Height and mass of approach walls much higher, causing a greater visual impact and higher cost than Alt. 3
- **Eliminated due to above concerns**

Alternative #3

- Four span – three pier
- Steel Plate Girder structure type
- Most feasible configuration for this challenging site
- Adding the two short spans on the ends would balance the bridge visually and reduce the depth of the structure and the height and mass of the approach walls.

Eldridge Bridge Rendering

Eldridge Bridge Recommendation

Recommendation

1. Alternative #3
2. 4 span
3. Steel Plate Girder structure type
4. MSE Approach ramps

Bridge Recommendation Next Steps

- Gather input on Bridge recommendations from Elected Officials contingent on public comment
- Gather input on Lakewood Bridges from TLC neighborhood group.
- Gather input on Bridge recommendations from UDC on September 27,28
- Final decision on bridge structure types based on recommendations and additional input by October 1
- Aesthetic treatments to be incorporated from September through December 2006, based on stakeholder and public input

MSE Wall Alternatives