



City of Arts & Innovation

Transportation Board

TO: TRANSPORTATION BOARD **DATE: MARCH 4, 2020**
FROM: PUBLIC WORKS DEPARTMENT **WARDS: 4 AND 5**
SUBJECT: SR-91 / ADAMS STREET – INTERCHANGE RECONFIGURATION

ISSUE:

Review of the preliminary findings of the recently completed Value Analysis Study examining alternatives and design options for a potential future SR-91 / Adams Street interchange reconfiguration project.

RECOMMENDATIONS:

That the Transportation Board:

1. Review, receive, and file this report outlining the preliminary findings of the Value Analysis Study related to a potential future reconfiguration project at the SR-91 / Adams Street interchange; and
2. Recommend that the Transportation Committee and City Council continue supporting the interchange project; and
3. Provide feedback on the Oval Roundabout concept design, Alternative 1.1

BACKGROUND:

Heavy traffic volumes and close intersection spacing along Adams Street near the SR-91 Interchange area has resulted in considerable traffic congestion throughout the interchange area and within the neighboring City streets particularly during peak hours. To address current traffic congestion issues and anticipated increased future traffic demands at the SR-91 / Adams Street Interchange, promote Active Transportation, accommodate future SR-91 widening, and provide a minimum bridge vertical clearance of 16 feet 6 inches, the City's Public Works Department began exploring and formulating strategies for a future project to reconstruct and reconfigure the overcrossing and interchange to achieve these objectives and improved operational performance.

On November 28, 2017, the City Council approved the appropriation of \$4.1 million in Transportation Uniform Mitigation Fee (TUMF) fees to fund the project approval, environmental

documents, plans, specifications, and estimates phases of the planned future SR-91 / Adams Street Interchange reconfiguration project.

In April 2018, Public Works Department staff submitted the City funded Project Study Report – Project Development Support (PSR-PDS) to Caltrans requesting approval to proceed to the Project Approval and Environmental Document Phase (PA&ED) for a locally funded project. The proposed project components included: 1) the reconstruction of the Adams Street overcrossing bridge to accommodate a minimum of 2 through lanes in each travel direction and provide Caltrans required vertical clearance for overcrossing structures; 2) the reconfiguration of the on/off ramps at Adams Street to resolve traffic congestions on SR-91 and local city streets; and 3) the reconfiguration of the intersections at Adams Street and Diana Avenue and Adams Street and Indiana Avenue to accommodate the interchange widening and ramp reconfigurations. The PSR-PDS included two recommended project design alternatives out of the ten options originally evaluated, plus a third “no-build” option. The District Director of Caltrans approved the PSR-PDS on May 10, 2018 authorizing the project to proceed to the PA&ED phase discussed below.

DISCUSSION:

Moving into the partially funded PA&ED phase of the SR-91 / Adams Street Interchange project, the City engaged the services of outside consultant TYLIN and worked in collaboration with Caltrans to collectively review project scope, recommended alternatives, and develop any additional design concepts which may warrant consideration. In November 2019, Public Works Department staff and TYLIN team members attended a five day workshop with objectives focused on further assessing the viability and effectiveness of alternative methods of reconfiguring the interchange to optimize performance and reduce current and increased forecasted future traffic delays in the project vicinity, minimizing right-of-way impacts, reviewing the project impacts specifically north of the westbound ramps, and improving project value.

Following culmination of the workshop, TYLIN prepared a Value Analysis Study which proposed four new additional design alternatives, identified key project factors, constraints, and issues for each design alternative, provided ideas for several potential minor modifications to the two originally recommended alternatives (Alternative 3 and Alternative 7), and comparative analysis of estimated project cost, performance change, and value change for all six design alternatives to enable further consideration of each option and allow for selection of the most suitable design concept. Proposed potential minor modifications to Alternative 3 and 7 design schemes presented in the Value Analysis Study would not result in any significant project changes and were shown to improve traffic operations. Project scope for all design alternatives under consideration include improvements which would bring the bridge height / clearance to standard. The two originally recommended and four new additional proposed design alternatives are briefly outlined below.

Recommended Alternative 3

Alternative 3 entails an offset intersection design model located on the north side of the freeway with displaced eastbound ramp structures landing near the westbound ramps. Advantages of this design scheme include: 1) requires less right-of-way to implement; 2) increases the queuing distance between the freeway ramps and Indiana Avenue; and 3) allows for improved signal timing operations on Adams Street. Challenges of this design include: 1)

long-term maintenance & viability of overcrossing structures; 2) consolidation of several high-demand movements into a single small-footprint intersection; and 3) minimal capacity gains.

Recommended Alternative 7

Alternative 7 is comprised of a hybrid interchange configuration including eastbound hook ramps connecting to Indiana Avenue and westbound ramps tying into Adams Street near their existing position. The design is similar to the Van Buren & SR 91 interchange improvements. Advantages of this design plan include: 1) eliminates the issue of lack of storage on Adams Street due to the current close proximity of the eastbound off-ramp to Indiana Avenue; 2) adds additional queuing spaces on Adams Street; and 3) requires less costly structures to maintain. Challenges of this design include: 1) significant right of way requirements; and 2) lengthened path of travel for motorists heading to and from the north.

Additional Proposed Alternative 1.1

Alternative 1.1 would utilize a large single oval roundabout with existing interchange movements. Advantages identified for this type of roundabout vs. other roundabout designs included: 1) offers the flexibility to spread out the closely spaced legs at the southerly end of the roundabout; 2) enables improved stage construction consisting of “off-line” bridge construction and reduced impacts to the westbound ramps with associated construction schedule reduction; and 3) performs 2nd highest in terms of reduced right-of-way impacts with the least impacts at the north end of the project parameters. Estimated initial construction and right-of-way costs for this alternative are \$32,991,000. Challenges of this design include: 1) high density of exit and entry points at the southern portion of the intersection; 2) resultant entry and exit angle design challenges; and 3) a high volume of motorists in the circulating roadway.

Additional Proposed Alternative 1.2

Alternative 1.2 would include a semi-dog bone roundabout configuration with existing interchange movements. This design excels in allowing for independent navigation around the north roundabout. Estimated initial construction and right-of-way costs for this alternative are \$37,453,000. Challenges of this design include: 1) a high volume of motorists in the circulating roadway; 2) longer ‘straightaway’ portion can increase speeds within the intersection.

Additional Proposed Alternative 1.3

Alternative 1.3 consists of both a north roundabout and a south “peanutbout” (an elongated series of two connected, undivided roundabouts – see concept sketch included in PowerPoint presentation) with existing interchange movements. Advantages noted for this conceptual design included: 1) allows for independent navigation of the north roundabout; 2) yields similar construction and right-of-way impacts to Alternative 1.2; and 3) the south “peanutbout” extends the distance between successive legs and favors the westbound Indiana Avenue traffic across Adams Streets with a reduced path. Estimated initial construction and right-of-way costs for this alternative are \$37,453,000. Challenges of this alternative include; 1) need for additional wayfinding and may not meet driver expectation.

Additional Proposed Alternative 1.4

Alternative 1.4 entails a north roundabout which provides continuous traffic flow, onsite storage and eliminates the left turns at the north terminal with a south median U-turn (MUT) which displaces the Adams Street / Indiana Avenue left turns approximately 450 feet to the south MUT and retains existing interchange movements. Advantages associated with this model included: 1) generates the most minimal impacts to right-of-way particularly at the Indiana Avenue / Adams Street intersection; 2) produces the best condition for the westbound Indiana Avenue / Eastbound 91 on-ramp weaving segment persistent in the other options; and 3) creates the greatest degree of separation of interchange movements when compared to the other alternatives. Estimated initial construction and right-of-way costs for this alternative are \$32,591,000. Challenges of this design include: 1) U-turn may be a challenging movement for auto trailers; and 2) requires additional wayfinding and may not meet driver expectation.

The Public Works Department and Caltrans will continue to work together in examining the results of the Value Analysis Study and considering the viability of all identified design alternatives. Upon securing the remaining funding required to complete the Plan Specifications & Engineering (PS&E) phase of the project, the design selection process will occur and project plans be prepared and approved. The final phase of the project which includes right-of-way acquisition and construction is currently unfunded and will require identification and allocation of necessary funding prior to proceeding. Once project funding for the selected design alternative is identified and secured, right-of-way acquisition and construction are anticipated occur over an approximate two year period.

FISCAL IMPACT:

Estimated project costs for each of the two originally recommended project design alternatives based on 2018 data are outlined in the table below. At this time project right-of-way acquisition and construction funding for the ultimately selected design alternative has not yet been identified.

Project Element	<u>Alternative 3</u> Offset Intersection	<u>Alternative 7</u> Hook Ramps-East
Roadway Construction	\$27,500,000	\$29,500,000
Structures Construction	\$25,300,000	\$9,900,000
SUBTOTAL Construction	\$52,800,000	\$39,400,000
Right-of-Way Acquisition	\$8,500,000	\$18,600,000
TOTAL Capital Outlay	\$61,300,000	\$58,000,000

Support—all PD phases	\$10,600,000	\$11,600,000
TOTAL Project Cost	\$71,900,000	\$69,600,000

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Approved by: Kris Martinez, Public Works Director

Attachments:

1. Alternative 3 Map Exhibit
2. Alternative 7 Map Exhibit
3. PowerPoint Presentation