RIVERSIDE COUNTY TRANSPORTATION COMMISSION

MEETING AGENDA

Western Riverside County Programs and Projects Committee

Time: 1:30 p.m.

Date: April 25, 2022

Location: This meeting is being conducted virtually in accordance with AB 361 due to state or local officials recommending measures to promote social distancing.

COMMITTEE MEMBERS

Ben J. Benoit, **Chair**/Joseph Morabito, City of Wildomar
Brian Berkson, **Vice Chair**/Guillermo Silva, City of Jurupa Valley
Wes Speake/Jim Steiner, City of Corona
Clint Lorimore/Todd Rigby, City of Eastvale
Linda Krupa/Malcolm Lilienthal, City of Hemet
Bill Zimmerman/Dean Deines, City of Menifee
Yxstian Gutierrez/Edward Delgado, City of Moreno Valley
Ted Hoffman/Katherine Aleman, City of Norco
Michael Vargas/Rita Rogers, City of Perris
Kevin Jeffries, County of Riverside, District I
Karen Spiegel, County of Riverside, District II
Jeff Hewitt, County of Riverside, District V

STAFF

Anne Mayer, Executive Director
John Standiford, Deputy Executive Director

AREAS OF RESPONSIBILITY

Air Quality, Capital Projects, Communications and Outreach Programs, Intermodal Programs, Motorist Services, New Corridors, Regional Agencies/Regional Planning, Regional Transportation Improvement Program (RTIP), Specific Transit Projects, State Transportation Improvement Program (STIP) Transportation Uniform Mitigation Fee (TUMF) Program, and Provide Policy Direction on Transportation Programs and Projects related to Western Riverside County and other areas as may be prescribed by the Commission.

RIVERSIDE COUNTY TRANSPORTATION COMMISSION
WESTERN RIVERSIDE COUNTY PROGRAMS AND PROJECTS COMMITTEE

www.rctc.org

AGENDA*

**Actions may be taken on any item listed on the agenda*

1:30 p.m.

Monday, April 25, 2022

This meeting is being conducted virtually in accordance with AB 361 due to state or local officials recommending measures to promote social distancing.

INSTRUCTIONS FOR ELECTRONIC PARTICIPATION

Join Zoom Meeting
https://rctc.zoom.us/j/86512115068

Meeting ID: 865 1211 5068
One tap mobile
+16699006833,,86512115068# US (San Jose)
Dial by your location
+1 669 900 6833 US (San Jose)

For members of the public wishing to submit comment in connection with the Western Riverside County Programs and Projects Committee Meeting please email written comments to the Clerk of the Board at lmobley@rctc.org and your comments will be made part of the official record of the proceedings as long as the comment is received before the end of the meeting's public comment period. Members of the public may also make public comments through their telephone or Zoom connection when recognized by the Chair.

In compliance with the Brown Act and Government Code Section 54957.5, agenda materials distributed 72 hours prior to the meeting, which are public records relating to open session agenda items, will be available for inspection by members of the public prior to the meeting on the Commission's website, www.rctc.org.

In compliance with the Americans with Disabilities Act, Government Code Section 54954.2, Executive Order N-29-20, and the Federal Transit Administration Title VI, please contact the Clerk of the Board at (951) 787-7141 if special assistance is needed to participate in a Committee meeting, including accessibility and translation services. Assistance is provided free of charge. Notification of at least 48 hours prior to the meeting time will assist staff in assuring reasonable arrangements can be made to provide assistance at the meeting.

1. CALL TO ORDER

2. ROLL CALL

3. PLEDGE OF ALLEGIANCE

4. **PUBLIC COMMENTS –** *Under the Brown Act, the Board should not take action on or discuss matters raised during public comment portion of the agenda which are not listed on the agenda. Board members may refer such matters to staff for factual information or to be placed on the subsequent agenda for consideration. Each individual speaker is limited to speak three (3) continuous minutes or less.*

5. **ADDITIONS/REVISIONS** *(The Committee may add an item to the Agenda after making a finding that there is a need to take immediate action on the item and that the item came to the attention of the Committee subsequent to the posting of the agenda. An action adding an item to the agenda requires 2/3 vote of the Committee. If there are less than 2/3 of the Committee members present, adding an item to the agenda requires a unanimous vote. Added items will be placed for discussion at the end of the agenda.)*

6. **CONSENT CALENDAR -** *All matters on the Consent Calendar will be approved in a single motion unless a Commissioner(s) requests separate action on specific item(s). Items pulled from the Consent Calendar will be placed for discussion at the end of the agenda.*

6A. APPROVAL OF MINUTES – MARCH 28, 2022

Page 1

7. 91 EASTBOUND CORRIDOR OPERATIONS PROJECT

Page 14

Overview

This item is for the Committee to:

1) Authorize staff to proceed with the Project Approval and Environmental Document (PA/ED) phase for the 91 Eastbound Corridor Operations Project; and
2) Forward to the Commission for final action.

8. SAN BERNARDINO COUNTY TRANSPORTATION AUTHORITY AMENDMENT FOR BI-COUNTY RIDESHARE PROGRAM SERVICES AND COMMUTER ASSISTANCE UPDATE

Page 189

Overview

This item is for the Committee to:

1) Approve Agreement No. 20-41-090-02, Amendment No. 2 to Agreement No. 20-41-090-00 with the San Bernardino County Transportation Authority (SBCTA) for a two-year term to reimburse the Commission for an additional amount of $2.4 million, and a total amount not to exceed of $4,800,000, for commuter/employer rideshare (IE Commuter) programs and vanpool program support administered by the Commission, on behalf of both agencies;
2) Authorize the Chair or Executive Director, pursuant to legal counsel review, to execute the agreement on behalf of the Commission; and
3) Forward to the Commission for final action.

9. MID COUNTY PARKWAY PROJECT STATUS AND REPROGRAMMING OF FUNDS

Page 194

Overview

This item is for the Committee to:

1) Receive and file an update on negotiations with the city of Perris (City) regarding Mid County Parkway (MCP) since the March 28, 2022 Western Riverside County Programs and Projects Committee meeting;
2) Direct staff to defer work on the Mid County Parkway Construction Package 2 from Redlands Avenue to Ramona Expressway (MCP2) as currently scoped within the city;
3) Direct staff to work with the county of Riverside (County) to scope a different construction package within County jurisdiction, along Ramona Expressway, to address ongoing safety issues and continue progress on the overall MCP project;
4) Direct staff to return to the Commission at a future date with recommendations to reprogram funds currently committed to MCP2 onto the newly scoped package, and;
5) Forward to the Commission for final action.

10. EXECUTIVE DIRECTOR REPORT

11. COMMISSIONER COMMENTS

Overview

This item provides the opportunity for brief announcements or comments on items or matters of general interest.

12. ADJOURNMENT

The next Western Riverside County Programs and Projects Committee meeting is scheduled to be held at **1:30 p.m., Monday, May 23, 2022**.

AGENDA ITEM 6A

MINUTES

RIVERSIDE COUNTY TRANSPORTATION COMMISSION

WESTERN RIVERSIDE COUNTY PROGRAMS AND PROJECTS COMMITTEE

Monday, March 28, 2022

MINUTES

1. CALL TO ORDER

The meeting of the Western Riverside County Programs and Projects Committee was called to order by Chair Ben J. Benoit at 1:30 p.m. via Zoom Meeting ID: 894 9531 4861. This meeting was conducted virtually in accordance with AB 361 due to state or local officials recommending measures to promote social distancing.

2. ROLL CALL

Members/Alternates Present	Members Absent
Ben Benoit	
Edward Delgado	
Jeff Hewitt	
Ted Hoffman	
Kevin Jeffries	
Linda Krupa	
Clint Lorimore	
Guillermo Silva	
Wes Speake	
Karen Spiegel	
Michael Vargas	
Bill Zimmerman	

3. PLEDGE OF ALLEGIANCE

Commissioner Clint Lorimore led the Western Riverside County Programs and Projects Committee in a flag salute.

4. PUBLIC COMMENTS

There were no requests to speak from the public.

5. ADDITIONS/REVISIONS

There were no additions or revisions to the agenda.

M/S/C (Hewitt/Lorimore) to approve the minutes as submitted.

6. APPROVAL OF MINUTES – FEBRUARY 28, 2022

7. FISCAL YEAR 2021/22 LOW CARBON TRANSIT OPERATIONS PROGRAM RESOLUTION

Beatris Megerdichian, Management Analyst, presented the FY 2021/22 Low Carbon Transit Operations Program (LCTOP) allocation application, highlighting the following:

- About LCTOP
  - ✓ Provide operating and capital assistance for transit agencies and regional entities.
  - ✓ Goal to reduce GHG emissions, with a priority on serving disadvantaged communities.
  - ✓ Funds are allocated by formula based on population and transit revenue.
  - ✓ Administered by Caltrans
- FY 2021/22 LCTOP allocation
  - ✓ FY 21-22 Allocation: $2,406,486
  - ✓ Program: Riverside County Free Rail Pass Program
  - ✓ Serves Disadvantaged Community, Low-Income Communities, and Low-Income communities within ½ mile of a Disadvantaged Community
- Program overview
  - ✓ Provide *FREE* Metrolink passes to residents and students in Riverside County (for up to three months)
  - ✓ Partnership with IE Commuter and SBCTA
    - ○ Both San Bernardino and Riverside County residents will be offered free passes
  - ✓ Expands current IE Commuter Rideshare Incentives
  - ✓ Program timeframe: Minimum of 2-years
  - ✓ Beginning in Fall 2022
- How will this work and Program marketing

In response to Vice Chair Brian Berkson's question about how to get involved in the program and about advertising for this program, Beatris Megerdichian replied they will go to the IE Commuter Website, iecommuter.org. This program expands the current incentives so just like how current incentives work they go to the IE Commuter Website sign up for an account and receive the current incentive, which is $2 per day. This will be promoted on the website they will use a portion of the funds for marketing and administering the program.

Vice Chair Berkson asked if the marketing will solely go through the IE Commuter Website, will there be any mailers, or any other types of billboard advertising. He is trying to gauge the depth of this program and the depth of how people will be notified of it.

Beatris Megerdichian replied those are certainly some options in terms of marketing to campaign the program. The details have not been worked out as they are collaborating with San Bernardino County Transportation Authority (SBCTA) and Metrolink to come up with the best marketing solutions. She asked if Sheldon Peterson, Rail Manager, had any more insight as to the marketing.

Sheldon Peterson expressed appreciation to Ms. Megerdichian for a good job. He stated they have not yet fully defined the marketing, but they had coordinated a call last week with Metrolink to give an update to the marketing team so they will collaborate and do some geofencing marketing just for Inland Empire to make sure their residents are aware of the program, and they need to get the word out as soon as possible. The plan is to start in the fall, so they will have a little bit of time to work through this.

Vice Chair Berkson asked about the dollar amount that they are looking to approve if that includes any money for advertising or is it solely for the discounted fares.

Sheldon Peterson replied it does include funding for advertising and administration so they will try to have some funds available to do that and they can supplement it with other funds they have in the program to make sure they get the word out.

Commissioner Linda Krupa expressed appreciation for a good presentation and asked if they are considering some joint marketing with the Riverside Transit Agency (RTA), because they have some discounted ride programs and free ride programs for students. She suggested cross marketing with RTA would be a good way to get this information out.

Sheldon Peterson replied they can coordinate with RTA they just want to make sure that they get the message out appropriately, these are for rail tickets they are not apparently for bus tickets to this point, but that could be something they could look at in the future.

M/S/C (Berkson/Krupa) to:

1) **Adopt Resolution No. 22-008 "*Authorization for the Execution of the Certifications and Assurances and Authorized Agent Forms for the Low Carbon Transit Operations Program for the Riverside County Free Rail Pass Program in the amount of $2,406,486*"; and**
2) **Forward to the Commission for final action.**

8. MID COUNTY PARKWAY PROJECT STATUS AND REPROGRAMMING OF FUNDS

Anne Mayer, Executive Director, expressed appreciation to Commissioner Michael Vargas and Clara Miramontes, City of Perris City Manager, for their assistance this past month as there were a whole series of conversations with RCTC staff, city of Perris staff, and the city council. She presented the Mid County Parkway (MCP) Project update, highlighting the following areas:

- Perris letter with concerns
- March 8 Perris City council meeting/presentation
- March 11 RCTC letter to Perris committing to:
    1. Bridge undercrossing at El Nido
    2. Maintain San Jacinto trail
    3. Direct truck traffic to the City's desired routes, mitigate impacts of traffic on Placentia
- March 23 Perris letter: prohibit trucks
- Project background
    - ✓ 1998 - Community Environmental Transportation Acceptability Process (CETAP) selected the corridor
    - ✓ EIR/EIS process started in 2003
    - ✓ Project Report and Environmental Document approved in 2015
    - ✓ Environmental mitigation lands & permits acquired
    - ✓ 2016 Strategic Assessment – staff directed to study fundable/buildable packages
    - ✓ First part: I-215 Placentia Ave Interchange under construction
    - ✓ City widening Placentia Avenue, Indian Avenue to Redlands Avenue
    - ✓ MCP part 2: new 3-mile roadway, Redlands Avenue to Ramona Expressway
    - ✓ Including a map of the alignment
- Project scope
    - ✓ Ultimate environmentally cleared MCP footprint in light blue
    - ✓ MCP part 2 in dark red: consistent with and allows for ultimate facility
    - ✓ Not connected to the State Highway System
    - ✓ 2 lanes Redlands Ave to Wilson; 4 lanes Wilson to Ramona Expressway (steeper section)
    - ✓ Preliminary construction cost estimate: $142 million (2022 prices)
    - ✓ A map of the general alignment between Ramona Expressway and Redlands Boulevard
- MCP funding planned and programmed total

Anne Mayer expressed this is a difficult recommendation for their staff to make, this is a project that many of them have been working on for nearly 20 years and significant resources for the Commission have been invested in the project. At this point she does not see a path forward given the city of Perris' requirements and issues related to truck traffic. It is a difficult recommendation and not one that they make lightly, but they do not believe that they should continue to expend funds on the project if there is not going to be support within the community for it.

Chair Benoit expressed appreciation to Anne Mayer for that update and stated he is sorry to hear that this is where they are at today.

Commissioner Kevin Jeffries stated this is a significant change and it sort of admits the defeat of an east west corridor going forward as an important corridor for the western

half of the County and shifts the burden to Ramona Expressway as the potential permanent solution, focusing all traffic to Ramona Expressway which pushes it to Cajalco Road, which is two lanes to Interstate 15. He stated the California Highway Patrol (CHP) designated that as one of their highest deadly roads from the Riverside CHP station in the unincorporated territories. Commissioner Jeffries noted to Anne Mayer that they are going to have to evaluate these new priorities and make sure they address the shifts that are going to come from this. He stated in District 1, which is Mead Valley through Lake Matthews down to Corona, they are already in dire straits with a two-lane road handling traffic it was never designed to handle, and this will raise the issue further up on the priority plate for 1st District.

Commissioner Jeff Hewitt expressed appreciation to Anne Mayer for being brutally honest on the situation they have here. He stated the MCP was going to certainly facilitate traffic in and out of Nuevo and Lake View, it was a critical link to San Jacinto Valley, which has been off kind of by itself for a long time. Commissioner Hewitt explained getting either west or north or south there has always been a lot of stop signs and a lot of one or two-lane roads. The Placentia Interchange is already 70 percent done and they cannot leave something undone, that is a big fancy interchange that was in this first plan, and it is a shame that it is getting built and they will not be able to finish the entire project. He expressed the critical nature of getting people in and out of San Jacinto Valley and the SR-79 Realignment does get to I-10 and down south to Winchester Road, but certainly they need to look into that. It is going to be a good robust conversation hopefully something will come in to be able to fix this, but they need to see what they can do.

Commissioner Karen Spiegel expressed frustration as there is so much needed in Riverside County and the fact that this began in 1998 and even the last six or seven years has been so much energy and money expended and they do not hear concerns till so late in the game. This now affects so many cities and how does San Jacinto feel about it, granted it goes through Perris, and she understands there is a large chunk of warehouses for their tax revenue for Perris and these are the trucks that they are not wanting to go through the city. She expressed if they are building warehouses where are those trucks supposed to be and then to push that onto Ramona Expressway, which eventually goes to Cajalco Road. The impact on this region is huge and it is really frustrating and particularly the dollars when talking about $153 million on Placentia Interchange has already been spent and is the city of Perris going to have to reimburse for a project that they have already expended money that they supported up until the very last minute. Commissioner Spiegel expressed concern this is a lot of money that is being given to an entity or a city and they should hold them accountable at some level. She stated they all know these projects take a long time as she went through it an awful lot with the city of Corona. She expressed it is very frustrating for a project that is not just for the city and she is aware the city gets hurt and harmed in some ways, but if there was not the warehouses, if there was not already the Ramona Expressway, and if there was not already $200 million spent, she understands, but it has been six or seven years just recently let alone the fact that this started in 1998.

Chair Benoit noted it is very frustrating.

Commissioner Clint Lorimore expressed appreciation to staff for working diligently on their previous direction to communicate with the city on this issue. He expressed frustration is an understatement as they need east west corridors in this county, they need to have planning, which they have been doing and they spent $160 million on this that now they are being asked to walk away from. He realizes these are sunken costs but this truck traffic they have in the Inland Empire is not going anywhere, and to not build what they have already spent this amount of money on is crazy. Those trucks are still going to be there, and that traffic is going to continue to grow, and they are going to be going onto less than adequate infrastructure. He expressed being beside himself and he is hoping that they do not have to take action today on staff's recommendations as he would like to see another attempt at working with city of Perris staff and elected officials with a deadline that they are going to come back next month and hopefully have a solution that is amenable to everybody involved. Commissioner Lorimore noted his motion is that they postpone making a decision until the April committee meeting and that they direct staff to continue to engage in further conversations, because this is so critical to Riverside County, and it is unconscionable to walk away from the investment of $150 million of taxpayer money.

Vice Chair Brian Berkson concurred with Commissioner Lorimore's comments and stated he would second his motion. He explained Perris, like every city in Riverside County has a representative that sits on this Commission and from his prospective it is his job to bring back comments to his council meetings about what is going on at RCTC and if there are questions or comments, he is hearing about it all the time and he can bring that stuff back. He expressed apparently this is the big punch in the eyeball to come back at this stage $150 million into it and decide now is the time to raise a bunch of issues. Vice Chair Berkson asked staff and legal counsel if they need approval by the city of Perris to move forward with this project, because it is not about the city of Perris it is about the east and west cities on both sides of that. He is uncertain if staff reached out to the city of San Jacinto and any other cities that are in that general area that would benefit from the MCP, but he would have hoped that staff had spoken to the other cities and found out if they also felt the same sort of issues. Obviously way down the pike here it is too late to say before they spent the money, that due diligence should have done a long time ago and any of those questions should have already been raised. If they could move forward without the city of Perris' permission that would be one option he would like to hear about, how would it work, and what would be the fruitful outcome of all the money that has been spent to date. Vice Chair Berkson noted as Commissioner Lorimore commented, he would prefer to see this maybe wait for another month presuming that does not cost RCTC a fortune of money for the next month. If things could be put on pause for 30 days and give staff a chance and the city of Perris. Maybe the city of Perris will have some time to think about it and settle down and say this is what they could really live with. He stated that is a question between city of Perris counsel and RCTC staff, but he would be interested to see it come back to the committee next month with something better than just eliminating all the money that was just spent. Vice Chair Berkson noted as

Commissioner Spiegel commented if this does become the case that this project is squashed because of the city of Perris' request that RCTC's legal team holds the city of Perris accountable in some fashion for the money that was spent.

Anne Mayer stated the question regarding repayment, they do not have any mechanisms for repayment, when RCTC proceeds with a project they do so in good faith with their member agencies and they do not have any agreements in place that would trigger a reimbursement. She is not aware of any opportunity to reclaim any of the funds and the phases that they have built have been in conjunction with the city of Perris resolution that was adopted in 2013 that gave RCTC the sequence of events within their city. Ms. Mayer explained this goes back to the question of can they move forward if the city of Perris is opposing the project, they probably could but would that be productive at some point. Eventually RCTC would need permits from the city of Perris to enter into their roadways or to connect to their intersection so at some point they would be in a situation where although they have an approved environmental document and building a phase that is a smaller footprint, they do need cooperation and partnership of their member agency because they need permits. Ms. Mayer stated from a practical standpoint with this level of opposition it would be very difficult to proceed without the city of Perris' support. She explained with respect to will they get anywhere in another month, the things that they have been asked to do so far related to trucks and truck traffic are not things that are within their control. She expressed not being aware the RCTC team has recommended to the Commissioners to abandon a project. She stated if this committee wants staff to try again, they will certainly do that, but she is not real optimistic.

Commissioner Linda Krupa stated everybody probably knows that anytime the SR-79 Realignment issue comes up she is 100 percent in favor of it, however the MCP is also extremely important to the San Jacinto Valley. Economically it would benefit San Jacinto probably more than Hemet, the safety of their residents who commute using the MCP or Ramona Expressway is also extremely important. She expressed this comes as a real shock, because moving forward they do need increased access and safer access traffic into the San Jacinto Valley, it affects all of them out there. They are growing and everything that is happening in Winchester, Menifee, Hemet, and San Jacinto all brings more traffic onto two-lane roads. She expressed anything they can do to get this going such as having more conversations, but absolutely the MCP is important to them.

Commissioner Ted Hoffman stated coming from a city in the 1970s and 1980s that fought I-15 and how it was going to take their town and cut it in half. All those years of fighting it, they lost an off ramp, and it was very costly to their city and the freeway got built, so no matter how much their local residents and people try to fight it, it did not happen. He explained progress was if that interstate did not exist today there would be a mess, which is important to bring up because it was done, it was engineered, the environmental impacts were done, it just needed to be built. Commissioner Hoffman explained being a retired sheriff's deputy that worked in San Jacinto/Hemet area, the Perris Station, and Southwest County and if there is an emergency to respond to it is tough making Ramona Expressway from one end of the County to the east to SR-79 and then going the other

way the roads are limited. He stated taking SR-60 or maybe going down Sanderson or going up those roads, they do not cut it when being in a hurry, or if there is a firetruck, or emergency vehicles to respond. Commissioner Hoffman stated what is going to happen is that traffic, which this is an impact that is going to be felt further down south is if there is no easy way all that traffic will end up going through Menifee down Newport Road that will be the cross over. If they do not continue the east west to I-15 to the western part of the County, there is either Bundy Canyon Road to go a crossed to hook up at Scott Road or take Newport to go in through Canyon Lake to Lake Elsinore. Those roads are impacted now, and they need to take some of that impact off and share it going all the way a crossed. Commissioner Hoffman stated those are his three points, they have to think about the traffic as this MCP was planned for a long time and it should have been looked at in all the building they have done. They learned that in Norco as they could not fight the state and the federal government when they want to put it through, they will put it through.

Chair Benoit concurred with Commissioner Hoffman's comments especially the part about Bundy Canyon Road as he can see that traffic coming right down this way especially through the city of Wildomar and they have a project that needs funding for that.

Commissioner Michael Vargas expressed appreciation for all the Commissioners comments and noted it is a tough place to be in right now. He supports the mission of the RCTC and understands what their mission is, what they are supposed to do here, it is a regional Commission, and they are improving traffic not just for a city, but for everybody's benefit. He expressed appreciation for the Commission's direction at the February 28 Western Riverside County Programs and Projects Committee meeting to direct staff to come back to the city of Perris to try to work things out. They were able to accomplish two of the three items, which he appreciates. Commissioner Vargas stated to Vice Chair Berkson that he always comes back and forth to his city and let them know what is going on. He explained this has been in the talks for a while, but it just came to this last final decision where they had to move forward, and this project did start a long time ago with three other council persons and a different mayor. He stated times have changed and there is a high school now in place, although they were able to mitigate that issue and they are basically stumped with the trucks. He reiterated expressing appreciation for everyone's comments and he fully supports Commissioner Lorimore's recommendation for staff to go back and have more discussions with the city of Perris and see if they can come to a compromise as this is an important project. Commissioner Vargas stated if they do vote today, he will respectfully abstain in an effort to support the consensus of the city of Perris. They work together as a team and just because no matter what the number of the vote is, they have to support the mission when it comes to the majority and would respectfully request another opportunity speaking to his council again. Commissioner Vargas expressed appreciation to Anne Mayer for all the hard work she has done and meeting with him, his city council, and staff.

Commissioner Bill Zimmerman expressed appreciation for Commissioner Vargas' willingness to continue the conversation, it is a good motion by this committee to see if

they could come to terms and that this Commission would encourage Commissioner Vargas to rally his council members to reconsider the truck requirement, as it seems like it is a deal breaker and should be reconsidered. He asked Anne Mayer about some of the money that has been spent already for the environmental on the MCP, the Sweeney parcel, and the San Timoteo parcel should this project end up being cancelled or moved away from if credits would be applied or has it already been paid for and purchased as far as the mitigation purchases Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) wise.

Anne Mayer replied they did not have to make any additional MSHCP purchases, because this was covered. There were very specific species issues that were not covered that had to do the Sweeney property, the restoration, and now they are in management and monitoring of that. She is not aware if that would count for any other project, they would have to check into that. There is very little overlap between the extra mitigation they needed to do for the MCP and that of SR-79, as an example SR-79 extra mitigation was related to fairy shrimp, and this was for a different coverage. Anne Mayer stated they would have to check but more than likely it just now become mitigation land in perpetuity, and they will have to figure out what they will do with that.

Commissioner Zimmerman asked if there was a way to apply credits or receive credits for a project not done in place be it given those credits for something else maybe for a proposed Scott Road to Bundy Canyon project. Anne Mayer replied staff will check on that.

Vice Chair Berkson stated if the motion that is on the table goes through and they hold this for another 30 days, it might be important if staff and Commissioner Vargas can at least provide to the city of Perris city council the information if this project would get pulled, the amount of money that has already been spent on it, the environmental that has already been done, and aside from RCTC and Caltrans that has worked on this for many years that this project has been in the works. He emphasized if this project gets its plug pulled it will be very difficult to get it re-energized.

Anne Mayer stated to Vice Chair Berkson's last comment, stopping all work on this project likely means it is stopped and not to be resurrected. The reason she noted that is they have an approved environmental document that survived both a state and federal court lawsuit. They are required to maintain progress on this project and if it goes dormant and they have done that with the Sweeney Mitigation project, and the Placentia Interchange is under construction, and they were going to be under construction with this phase of the MCP and they have to maintain progress to keep their environmental document alive. She explained if they let that environmental document lapse, she is uncertain where this Commission or any other governmental body would have enough money to start over again. In terms of consequences and why they have been trying to make sure they keep something moving because if they wait until they have all the money for the ultimate facility the environmental document will no longer be sufficient, and they will be in a different situation environmentally.

Commissioner Krupa stated regarding those last comments that were brought up, if it is possible to finish the Placentia Interchange and then do the construction on the east end of the MCP to make that into the four lanes that it is supposed ultimately be built out.

Anne Mayer replied when they were saying they would go back and evaluate what could be done instead of this segment, they would go back to the east end of MCP as well as SR-79 to look at what could be done. The original deal with the city of Perris was that they would start on the west end and move east and if it comes to pass, they can certainly look at the east end to see if they can do east end work and find a way to transition it back to maybe Ramona Expressway.

Chair Benoit recommended having some assurances when they do get back to the city of Perris to allow them to build there so he would be cautious as well.

Commissioner Vargas stated that Ramona Expressway is a no truck route, which are some of the issues they are dealing with in the city of Perris.

Commissioner Edward Delgado stated he concurred with the majority that they should certainly take it back to the city of Perris, because this is the 11th hour, and they have to try a little harder for Commissioner Vargas to allow the Commission to get back in there to have these discussions.

Commissioner Wes Speake stated as a city that suffered through the impacts for the greater good there is benefits and there are detractions, but in the end, they need to think regionally and he hoped to find a way to make this work and to continue because it is a huge impact for all of them. Being the city that is downstream in a lot of ways they suffer and benefit at the same time, and if for some reason this does not go forward to look at all the other impacts especially the ones that Commissioners Jeffries and Spiegel highlighted, because the ripple effect will be seen far and wide. Commissioner Speake noted hopefully they can work this out and he understands the trepidation as a city who has suffered through this that the greater good is something that they have to proceed with.

In response to Commissioner Spiegel clarification to Commissioner Vargas that the Ramona Expressway does not allow trucks right now, Commissioner Vargas replied yes, it is part of their no truck route. Commissioner Spiegel asked where trucks go in their city.

Commissioner Vargas replied he cannot take the time right now to lay it all out, but there are corridors that are east of Perris Boulevard and west of Perris Boulevard that does lead them up to Harley Knox and then Harley Knox over to the freeway. The trucks cross Ramona Expressway but they are not allowed to be on Ramona Expressway.

In response to Commissioner Spiegel's inquiry to Commissioner Vargas if they are still building warehouses, Commissioner Vargas replied there is about 15 percent left on the northern end and on the southern end they have about 35 percent of the land still

available. He explained all these projects were dormant way before he got here when the economy crashed and now that things are going great, they are all coming back to fruition now.

Commissioner Spiegel asked Commissioner Vargas where all those trucks are going to go if they are limiting access. Commissioner Vargas reiterated if they are on east or west of Ramona Expressway there are corridors that will take them up to Harley Knox, which is their main truck route.

Anne Mayer expressed this is such an important conversation and she was not aware of Ramona Expressway as also not a truck route. She does want this committee to be aware about the other extensive conversation they had with city staff, and she is not sure there is a map, but once the interim MCP hits Redlands Boulevard there was a request that they turn the trucks to the north. She explained they were asked to ensure the trucks made it to one of the city's trucks routes and the route from the MCP up Redlands Boulevard to Harley Knox is almost five miles. She was not able to commit RCTC to improvements along a five-mile stretch, as they are building a three-mile stretch and she could not commit RCTC's involvement in any capacity improvements along another five-mile stretch. She believes there was another potential truck route that was a couple of miles long, so they have had extensive conversations about how to route trucks through the city of Perris. Ms. Mayer stated from her perspective the routing throughout the city of trucks is not part of the MCP project, was not cleared environmentally, and would significantly increase the financial contribution of the Commission, which is why she did not agree to that.

Chair Benoit asked Anne Mayer about having trucks go that much further into the city with stop and go traffic would increase the environmental impacts, which would be significant as opposed to just going down and getting on an interchange that was just built. Anne Mayer replied yes.

Chair Benoit expressed appreciation for Commissioner Vargas' input, and he understands that the city made these decisions to send trucks north and from an air quality prospective he would wonder about those decisions especially the added impact the mileage and everything else. He stated when there is an investment like this being made by RCTC with dollars that could go to other cities respectfully it is hard to then take those dollars and say bring that investment but do not allow certain traffic on that investment and to send it a different way it is very difficult for all of them to muster. Chair Benoit concurred with Anne Mayer that making that further investment north does not make much sense.

Commissioner Vargas stated the concern with the council is the ultimate project was going to connect straight to the freeway and this interim project is not doing that. This interim is going to dump traffic onto Redlands and that was the concern that trucks coming through from the east west corridor they are going to all be coming into the city limits crossing through some residential areas. Commissioner Vargas stated basically when they get off at Redlands, they can make a left turn or a right turn off Placentia and

then take it across Ramona to get to the freeway. That is where a lot of the issues came about with truck traffic is that the ultimate project that would not have happened because it would have been a straight connect to the freeway, now it is being directed into the community itself so that is the challenges they have been dealing with.

Anne Mayer discussed an updated city of Perris truck route adopted in February and the east west truck routes are San Jacinto, Ellis, and Ethanac on the south end of the city. She wanted the committee to have a visual of what is being discussed and she will have Lisa Mobley, Administrative Services Manager/Clerk of the Board, send this out to the Committee Members after the meeting. Philip Kang, RCTC, then displayed the city of Perris Truck Routes map for Committee Members to view. The city is building Placentia and MCP comes in just north of Placentia on Redlands Boulevard and the requested rerouting is up Redlands Boulevard to Harley Knox or up Redlands Boulevard to Morgan Street heading west on Morgan to Indian, south on Indian past the high school to Placentia and then get on the freeway; those are the two requested routes.

Chair Benoit clarified the motion is to postpone for 30 days to have additional conversations and see if there is anything else that can be done.

M/S/C (Lorimore/Berkson) postpone this item until the April Western Riverside County Programs and Projects Committee meeting and that they direct staff continue to engage further conversations with the city of Perris.

9. EXECUTIVE DIRECTOR REPORT

There were no reports from the Executive Director.

10. COMMISSIONER COMMENTS

10A. Commissioner Vargas expressed appreciation for trying to work with the city of Perris and his city council and he hopes that they come to a resolution. Chair Benoit replied let them know where they can help.

10B. Commissioner Hoffman announced on March 29 is National Vietnam War Veterans Day and make sure to thank a Vietnam Vet or thank all Veterans.

- There was mention about surplus land, the city of Norco came across a group called Homeless for Families and they do low-cost Veterans' housing in their cities, and they take small parcels of land and develop them into homes for Veterans. Please contact him if anyone is interested as they are going to try to put one together in the city of Norco. He has met with a group in Los Angeles and spoke to one of the veterans that lives in one and it is a great program.

Commissioner Speake noted he would like to register an aye vote for Agenda Item 8.

10C. Commissioner Hewitt expressed appreciation for Commissioner Hoffman's comments and announced in the city of Menifee on March 30 at 4:00 p.m. at Paloma Valley High School they will be honoring the Vietnam Vets.

Commissioner Zimmerman expressed appreciation to Commissioner Hewitt for his comments and stated everyone is invited not just veterans. It will be in the performing arts room at Paloma Valley High School it is called Welcome Home Vietnam Vets.

11. ADJOURNMENT

There being no further business for consideration by the Western Riverside County Programs and Projects Committee, the meeting was adjourned at 2:41 p.m.

Respectfully submitted,

Lisa Mobley
Administrative Services Manager/
Clerk of the Board

AGENDA ITEM 7

RIVERSIDE COUNTY TRANSPORTATION COMMISSION	
DATE:	April 25, 2022
TO:	Western Riverside County Programs and Projects and Committee
FROM:	David Thomas, Toll Project Delivery Director
THROUGH:	Anne Mayer, Executive Director
SUBJECT:	91 Eastbound Corridor Operations Project

STAFF RECOMMENDATION:

This item is for the Committee to:

1) Authorize staff to proceed with the Project Approval and Environmental Document (PA/ED) phase for the 91 Eastbound Corridor Operations Project; and
2) Forward to the Commission for final action.

BACKGROUND INFORMATION:

The PA/ED for the State Route 91 Corridor Improvement Project (CIP), from SR-241 to Pierce Street, was completed in 2012. Due to funding constraints, a Project Phasing Plan was developed to allow an Initial Phase **(as identified below)** to move forward as scheduled, with the remaining ultimate improvements to be completed later. The approved project included the following scope:

- Fifth general purpose lane in each direction from SR-71 to I-15 **(Initial Phase)**
- Westbound operational lane from SR-241 to SR-71 **(partially completed with 91 Corridor Operations Project)**
- Eastbound operational lane from SR-241 to SR-71 **(subject of this staff report)**
- Auxiliary lanes at various locations **(Initial Phase)**
- Collector-distributor lanes at the Interstate 15/SR-91 interchange **(Initial Phase)**
- Extension of the 91 Express Lanes from the Orange County line to I-15 **(Initial Phase)**
- Express Lanes median direct connector to and from I-15 South **(Initial Phase)**
- Express Lanes median direct connector to and from I-15 North **(under construction with 15/91 Express Lanes Connector project)**
- One Express Lane and one operational lane in each direction from I-15 easterly to east of McKinley Street **(Future Phase)**

The segment of SR-91 in the eastbound direction between SR-241 and SR-71 continues to experience operational deficiencies, particularly in the afternoon hours. The 91 Eastbound Corridor Operations Project (the subject of this staff report) is a component of the SR-91 CIP that was not constructed with the Initial Phase (refer to Figure 1) and would help to improve traffic operations along eastbound SR-91 between SR-241 and SR-71.

Figure 1: 91 Eastbound Corridor Operations Project

Senate Bill 1316, signed into law in September 2008, authorized the Commission to extend the 91 Express Lanes into Riverside County and instituted systematic coordination of projects on the 91 corridor in Orange and Riverside counties. This was established through the development of the annual 91 Implementation Plan and the creation of the 91 Advisory Committee with specific responsibilities composed of board members from the Commission and the Orange County Transportation Authority (OCTA) as well as the Caltrans District 8 and 12 Directors. The 91 Advisory Committee has expressed concern with the delay of the 91 eastbound operational lane from SR-241 to SR-71, which has been included as a project in the 91 Implementation Plan since 2018.

In May 2020, OCTA, in coordination with RCTC, the Transportation Corridor Agencies (TCA), Caltrans, and the cities of Anaheim, Yorba Linda, and Corona initiated a 91 Eastbound Corridor Operations Project Alternative Analysis study. The purpose of the study was to identify feasible alternatives and range of cost for adding the 91 eastbound operational lane from SR-241 to SR-71 as identified with the SR-91 CIP PA/ED effort. The Alternative Analysis study report (attached) was completed on April 1, 2022 and recommends four feasible design variations that range in total cost from $49 million to $154 million.

DISCUSSION:

The Eastbound 91 Corridor Operations Project is a component of the SR-91 CIP Ultimate Project that was approved in the 2012 EIR/EIS. This component is not currently in the Commission's 10-year delivery plan, though it is a Measure A project. The Alternative Analysis study has identified new alternatives that will require environmental revalidation and an updated scoping document to identify the preferred alternative. As noted above, these alternatives would improve operations on eastbound SR-91 between SR-241 and SR-71. It is estimated that this effort will take approximately two to three years and cost approximately $5 million. Project coordination will be required with multiple agencies including Caltrans, OCTA, TCA, city of Corona, and environmental resource agencies. Caltrans District 8 concurs with moving forward in Fiscal Year 2022/23 with the PA/ED phase as the lead agency for the environmental revalidation. Procurement of an engineering and environmental consultant would occur in FY 2022/23.

RECOMMENDATION:

Staff recommends proceeding with the PA/ED phase for the 91 Eastbound Corridor Operations Project.

FISCAL IMPACT:

This item is to authorize staff to proceed with the PA/ED phase of the project. Staff time to be incurred for the PA/ED contract (Contract) procurement is estimated to be $100,000. Preliminarily, staff has identified Federal Formula Highway Infrastructure Program and Surface Transportation Block Grant funds as well as Measure A Western County Highways or 91 Surplus Toll Revenue (local match) as the funding sources for the Contract. Once an engineering and environmental consultant has been procured, staff will return to the Commission with a request for action to award the Contract. At that time, the fiscal impact will be known and the detailed funding sources will be provided.

Attachment: Final 91 Eastbound Corridor Operations Project Alternative Analysis Report

Final Alternative Analysis Report

State Route 91 Eastbound Corridor Operations Project from State Route 241 to State Route 71

Prepared for

Orange County Transportation Authority

April 2022

advanced civil technologies

6 Hutton Centre Drive, Suite 450
Santa Ana, CA 92707

Vicinity Map

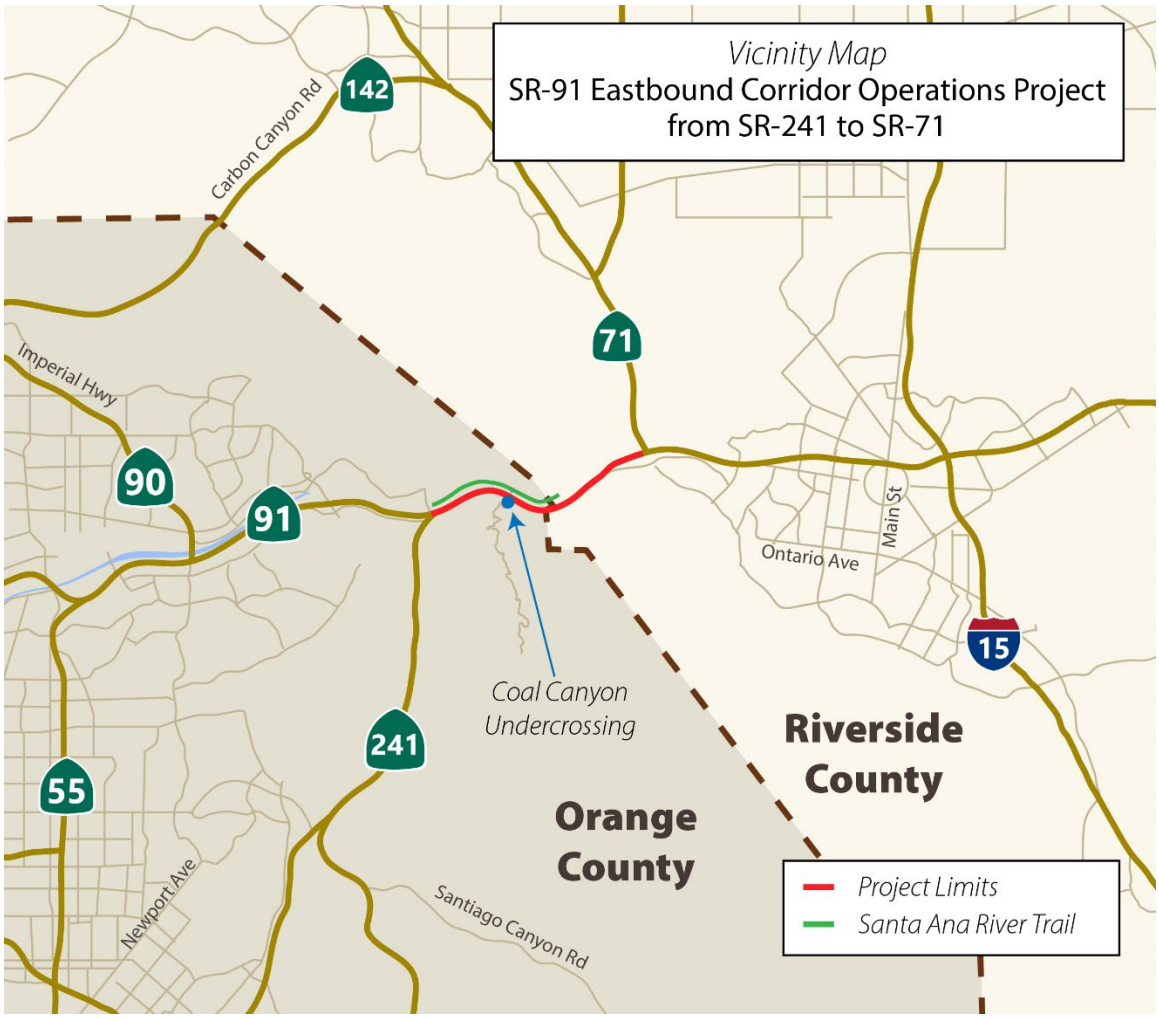


Table of Contents

1. INTRODUCTION

The State Route 91 Corridor Improvement Project (SR-91 CIP) (EA 0F540_) was approved in 2012. Consistent with the Environmental Impact Report/Environmental Impact Statement (EIR/EIS), implementation of the project will be phased over a 20-year period, beginning with an Initial Phase and culminating with completion of the Ultimate Project by 2035. Separate phases were anticipated to be identified and programmed to incorporate the components of the improvements on SR-91 and Interstate 15 (I-15) between the Initial Phase and completion of the Ultimate Project by 2035, as funding becomes available. This Alternative Analysis Report (AAR) analyzes a component of the Ultimate Project for the SR-91 CIP along eastbound SR-91 between State Route 241 (SR-241) and State Route 71 (SR-71).

This AAR analyzes options for the addition of a 6th general purpose (GP) lane in the eastbound (EB) direction from SR-241 to SR-71. The project improvements addressed in this AAR are entirely within the Ultimate SR-91 CIP footprint.

This AAR includes options for implementing the following components of the Ultimate SR-91 CIP:

- Adding a GP lane approximately 2 miles in length in the EB direction of SR-91 from the SR-91/SR-241 interchange to the SR-91/SR-71 interchange. This would involve adding approximately 10 to 20 feet of outside pavement widening to SR-91 at some locations and restriping in others.
- Widening Coal Canyon Undercrossing (UC).
- Widening County Line Creek UC.
- Constructing new retaining walls approximately 3,500 to 6,500 feet in length and approximately 6 to 40 feet in height on the south side of EB SR-91.
- Adding an auxiliary lane to the EB off-ramp at Green River Road.
- Replacing overhead signs.

2. BACKGROUND

2A. Existing Facility

The SR-91 freeway is a major east-west access-controlled corridor for commuters traversing between Northern Orange and Riverside Counties and is the only significant highway transportation facility connecting the two counties. In the project study area, which includes the SR-91/SR-241 and SR-91/SR-71 interchanges, the SR-91 corridor generally consists of five GP lanes in both the EB and westbound (WB) directions and is geographically constrained by the Santa Ana River to the north and the Mindeman Landslide complex to the south.

The 91 Express Lanes is a two-lane toll facility on SR-91 in each direction from State Route 55 (SR-55) to the Orange/Riverside County line (east of the SR-91/SR-241 interchange). This toll facility was extended under the Initial Phase of the SR-91 CIP to extend the two lanes to

McKinley Street and southbound (SB) I-15 in Riverside County. The 91 Express Lanes are owned and operated by the Orange County Transportation Authority (OCTA) and the Riverside County Transportation Commission (RCTC).

The 91 Express Lanes require all drivers to have a FasTrak transponder to pay for the toll. In the EB direction, an egress point exists for the Orange County segment of the express lanes near the County line (around Coal Canyon). Additionally, there is an ingress point serving the Riverside segment available to the west of the SR-91/Green River Road interchange. A toll station exists for the Orange County segment at the SR-91/Weir Canyon Road interchange, and a similar station exists in Riverside County just east of the SR-91/SR-71 interchange. Toll rates vary by day-of-week and time-of-day, are set in advance by OCTA and RCTC, and use historical traffic patterns. These rates remain the same for several months. The toll rates are analyzed and updated every 12 weeks using congestion management pricing, as described on OCTA and RCTC's toll policies (https://www.91expresslanes.com/toll-policies).

Vehicles with three or more persons can use the 3+ lane toll-free (although they still are required to have a transponder), except when traveling EB on Monday through Friday between the hours of 4:00 p.m. and 6:00 p.m. During that peak time, when traveling through the 3+ lane, drivers receive a 50% discount on the posted toll. The discount policy also applies to zero emission vehicles (ZEVs), motorcycles, vehicles with disabled plates and disabled veterans, though these vehicles are not allowed to travel in the 3+ lane. (The discounts are handled by the type of account, rather than using the 3+ lane.)

SR-241, the westerly boundary of the project vicinity, is a toll highway that connects southerly portions of Orange County with SR-91 near the west end of the Santa Ana River Canyon (commonly referred to as "Santa Ana Canyon"). SR-241 was constructed and is operated by the Foothill/Eastern Transportation Corridor Agency (F/ETCA) and is currently owned and maintained by the California Department of Transportation (Caltrans) as an element of the state highway system. F/ETCA is a public agency representing Orange County and 11 cities within the county and operates the toll system on SR-241.

SR-71 lies just east of the Orange/Riverside County Line. Primarily a four-lane freeway and expressway facility, SR-71 provides a connection between the eastern end of the Santa Ana Canyon and Eastern Los Angeles County/Western San Bernardino County and the cities of Chino, Chino Hills, Ontario, and Pomona.

2B. Stakeholder Input

Early in the project, interviews were held with representatives from corridor agencies to discuss issues along the corridor and their views on how best to incorporate the addition of the proposed 6th GP lane along the EB SR-91 mainline between the SR-241 and SR-71. The individuals listed in Table 1 were present for these virtual conference call meetings.

Table 1: Stakeholder Interview Summary

Entity	Representatives	Date of Interview
RCTC	Mark Firger Michael Blomquist Mark Lancaster David Thomas	June 9, 2020
Foothill/Eastern Transportation Corridor Agency (F/ETCA)	Juliet Su David Speirs Kelsie Anderson	June 15, 2020
City of Anaheim	David Kennedy	June 15, 2020
Caltrans District 12	Brian Santos	June 19, 2020
Caltrans District 8	Daniel Ciacchella Emad Makar Mindy Bui Karen Adame Manual Farias	July 6, 2020
City of Corona	Tom Koper	July 27, 2020
City of Yorba Linda	Tony Wang	July 28, 2020

Stakeholders were interviewed to solicit their opinions on the following discussion questions:

- Were you previously involved with RCTC's SR-91 CIP project development effort?
    - If so, how extensive was your involvement?
    - If not, how much do you know about this project?
- Are you aware of other SR-91 projects that are underway such as: the SR-91 Corridor Operations Project (COP); SR-241/SR-91 Tolled Express Lanes Connector; SR-71/SR-91 Interchange Improvements; and 15/91 Express Lanes Connector?
    - If so, are you aware there was consensus amongst OCTA, RCTC, Caltrans Districts 8 & 12, and F/ETCA to implement these projects in a sequential manner in order to minimize construction impacts to the SR-91 corridor?
- Are there other planned improvements that could affect the outcome of this study?
- Given the limited information we have on this project at this time, are there opportunities and challenges that you foresee with respect to implementing this project?
- What are the specific constraints (e.g., right-of-way, geotechnical, traffic, etc.) that must be considered for this project?

A summary of stakeholder feedback on the discussion questions is as follows:

- In general, the stakeholders interviewed agreed that improvements are warranted along this stretch of the SR-91 corridor. Some stakeholders were concerned about the impact to the Mindeman Landslide area. Another area of concern also includes impact to the existing retaining walls and potential geotechnical challenges. Suggestions were made to follow original SR-91 CIP layout and avoid widening to the south. Many of the stakeholders noted the potential conflict with the ongoing planning and design projects within the corridor and focused on the need for coordination.

- Stakeholders suggested a few environmental items that must be monitored during the development of the project alternatives. The most discussed environmental item was potential impacts to the Coal Canyon UC. Stakeholders identified this area as a critical environmental item that must be resolved in the early phases of the alternative developments. The other environmental consideration discussed was the need to monitor impacts to the Santa Ana River Trail, located on the northerly side of SR-91 within the project limits.
- Stakeholders identified a variety of critical issues in the corridor. In particular, there was general consensus that traffic operations at freeway and local interchanges was one of the most critical issues. Close coordination with on-going projects and determining a baseline for this study was identified as a concern.
- Many stakeholders wanted to make sure that the following planned projects be considered and coordinated with closely during this study:
    - The SR-91 COP.
    - The 15/91 Express Lanes Connector.
    - The SR-241/SR-91 Tolled Express Lanes Connector.
    - The SR-71/SR-91 Interchange Improvements.
- Stakeholders identified staging, traffic handling, and construction duration as potential challenges during the development of the project alternatives. It was also mentioned that coordination with overlapping projects must be ongoing to avoid construction waste and minimize potential throwaway. Construction fatigue was identified as a potential challenge. No major right-of-way issues were identified.
- Some stakeholders requested that design exceptions be avoided. If exceptions are required, the approval period would have a major impact on the schedule.
- In addition to the various criteria that were considered and presented to the stakeholders, an evaluation of construction impacts was added to the list.
- Opportunities suggested by stakeholders include the sequencing of overlapping projects to avoid construction waste and progress projects on schedule. Another opportunity presented was the utilization of approved project documents from the SR-91 CIP to support development of project alternatives.

Project Development Team

OCTA, RCTC, F/ETCA, Caltrans Districts 12 and 8, and the cities of Anaheim, Yorba Linda, and Corona are the major stakeholders in the development of this project. Each party has identified SR-91 as a major transportation route that must be consistently improved to meet forecasted growth in the region. All parties have attended Project Development Team (PDT) and geometric review meetings to develop and understand the alternative concepts (ACs).

3. PURPOSE AND NEED

Because the proposed EB 6th lane addition is a component of the Ultimate Phase of the SR-91 CIP, this section restates the purpose and need statement from the previously approved Project Report (PR).

The purpose of the project is to reduce congestion and improve mobility within the project segments of SR-91 (between the SR-241 interchange and Pierce Street) and I-15 (between

the Cajalco Road interchange and the Hidden Valley Parkway interchange). The proposed improvements would facilitate movement of people and goods along SR-91 in Riverside and Orange Counties by improving travel conditions for work, recreation, school, commerce, and other trip purposes. The proposed project will accomplish the following objectives:

- Improve the vehicle, person, and goods movement within the SR-91 corridor to more effectively serve existing and future travel demand between and within Riverside and Orange Counties.
- Provide improvements along the SR-91 and I-15 transportation corridors as well as to related local roads and to reduce diversion of regional traffic from the freeways into the surrounding communities.

Current average daily traffic on SR-91 is 280,000 vehicles (based on 2007 traffic data) at the Orange/Riverside County line with recurring congestion experienced on a daily basis during weekday peak periods and frequently on weekends. Anticipated continuing growth in commuter traffic and goods movement along the corridor indicates a projected traffic growth of 50% by the year 2035. The proposed Build Alternatives would implement a GP lane and other operational improvements to alleviate the congestion that exists now and is projected to increase in the future.

Average daily traffic on SR-241 is 51,000 (based on 2007 traffic data) vehicles at SR-91, slightly less than SR-71 which has an average daily traffic volume of 57,000 (based on 2007 traffic data) vehicles, but still 18% of the 280,000 daily vehicles at the Orange/Riverside County line. The similarity of volumes between SR-241 and SR-71 is notable in that SR-241 is entirely a toll facility while SR-71 is not. Additional traffic demand on SR-241 may exist due to the absence of free-flow conditions on SR-91.

4. CORRIDOR AND SYSTEM COORDINATION

4A. Federal and State Systems

SR-91 is part of the Freeway and Expressway System and the National Highway System (NHS). However, SR-91 is not within the Interregional Road System. Other designations that apply to SR-91 are the National Network for Surface Transportation Assistance Act (STAA) Trucks and the 12 Foot Wide Arterial System.

4B. State Planning

The Caltrans District 12 SR-91 Route Concept Report (RCR), prepared in 1999, classifies the segment of SR-91 from SR-241 to SR-71 as Other Freeway or Expressway throughout Orange County. The ultimate transportation concept for this segment of SR-91 calls for eight mixed flow lanes and two HOV lanes.

4C. Regional Planning

RCTC, OCTA, and F/ETCA commissioned the Riverside County-Orange County Major Investment Study (RC-OC MIS) in 2004, which was completed in 2005. The RC-OC MIS identified a Locally Preferred Strategy (LPS) for improvement to or development of major corridors to improve mobility between Orange County and Riverside County. The highest priority need identified in the RC-OC MIS was improvement of SR-91 to the maximum feasible cross-section of seven lanes in each direction.

The SR-91 Implementation Plan, required to be updated annually by OCTA, provides a framework for providing a range of freeway improvement projects and transit concepts for the SR-9 corridor. This implementation plan is required by Assembly Bill 1010 (AB 1010) as part of the legislation that enabled OCTA to purchase the ten-mile toll facility from a private, for-profit company and convert it to public ownership. The current plan divides improvements into the following groups: Planned Projects (further divided into Orange County Projects, Riverside County Projects, and Bi-County Projects), Concept Projects, and Completed Projects. Many of the highway projects and concepts identified in the plan are based on the RC-OC MIS.

The County of Riverside General Plan (last revised July 7, 2020) identifies SR-91 as a freeway.

The proposed improvements have taken into account planned regional projects, including the SR-91 COP, SR-241/SR-91 Tolled Express Lanes Connector Project, SR-71/SR-91 Interchange Improvements Project, 15/91 Express Lanes Connector, and the I-15 Express Lanes South Extension, which are summarized below.

4.C.1. SR-91 Corridor Operations Project

This project proposes to add a 6th lane to WB SR-91 between SR-241 and Green River Road. Similar to the 6th EB lane addition, this project was a component of the Ultimate Phase of the SR-91 CIP but also included extension to SR-71. The project sponsor is RCTC and it is currently under construction.

4.C.2. SR-241/SR-91 Tolled Express Lanes Connector Project

This project proposes to construct a tolled median-to-median connector from SR-241 to the 91 Express Lanes. The project sponsor is F/ETCA and it is currently in the PS&E (final design) phase.

4.C.3. SR-71/SR-91 Interchange Improvements Project

This project proposes to improve the SR-91/SR-71 interchange by adding a flyover connector ramp from EB SR-91 to northbound (NB) SR-71. The slip on-ramp to EB SR-91 from Green River Road would provide access to SR-71 by adding a third lane to the connector before merging back to a two-lane section. Access will also be provided to EB SR-91 from the Green River Road EB on-ramp. The project sponsor is RCTC and it is currently anticipated to begin construction in 2022.

4.C.4. 15/91 Express Lanes Connector

This project proposes to construct a tolled connector between the 91 Express Lanes and the 15 Express Lanes that will connect the EB 91 Express Lanes to the NB 15 Express Lanes and the SB 15 Express Lanes to the WB 91 Express Lanes. The project sponsor is RCTC and the project is currently under construction.

4.C.5. I-15 Express Lanes South Extension

This project proposes to extend the existing 15 Express Lanes from the current terminus at Cajalco Road by 14.5 miles to the south, extending the terminus to State Route 74 (SR-74) in Lake Elsinore. The project sponsor is RCTC and the project is currently in the PA/ED (environmental) phase.

4D. Local Planning

The City of Corona, in the Circulation Element of their General Plan for 2020-2040 (Updated 2020), identifies SR-91 as a freeway. The proposed improvements have taken into consideration local land development projects. These projects include several commercial and residential developments planned for the undeveloped land along the westernmost edge of SR-91 as well as transitioning areas including the southeast corner of SR-91/I-15 interchange, and north of SR-91.

The City of Anaheim categorizes SR-91 as a freeway in the Circulation Element of their General Plan published in 2020. The Circulation Element states that the number of trips made between the counties of Orange and Riverside are forecast to double over the next twenty years.

The City of Yorba Linda classifies SR-91 as a freeway in the Circulation Element of their General Plan, which was last updated in 2016.

5. SCREENING AND EVALUATION APPROACH

The goal of this study was to scope out the options for the addition of the 6th GP lane on EB SR-91 between SR-241 and SR-71 to improve mobility along the SR-91 corridor. This goal was accomplished through the development of several Alternative Concepts (ACs) for various locations along the corridor and identification of which can be carried forward into the next phase of the project development process. Evaluations of these ACs needed to be completed to ensure that they meet the needs of the stakeholders along the corridor.

5A. Evaluation Criteria

Based on input from the stakeholder interviews, a list of evaluation criteria was developed for application on the Alternative Analysis Report (AAR). These criteria were applied to individual ACs, as described in Section 8. These evaluation criteria include:

1. **Construction Impacts:** Does the AC increase or decrease traffic on arterials? Does the AC improve or degrade operations on the surface streets (including ramp terminal

intersections)? How will the AC create residual construction impacts affecting the adjacent tolled facilities? Does the AC reduce cut-through traffic? Will the proposed alternative result in a shorter or longer construction duration?

2. **SR-91 Corridor Impacts:** How will the AC impact the SR-91 GP lanes? How will the AC impact users of the 91 Express Lanes?
3. **Cost and Right-of-Way Constraints:** Is the cost of the AC consistent with available funding in the region? Cost includes the capital construction, right-of-way, utilities, and project development costs. Can the AC be built to avoid major right-of-way impacts including costly utility relocation? Can the alternative be constructed generally within the State right-of-way?
4. **Design Standards:** Can the AC be built to Caltrans standards with minimal exceptions?
5. **Environmental Impacts:** Will the AC result in potentially significant environmental impacts? How will the project AC impact the Santa Ana River Trail? Will the AC widen the Coal Canyon UC? How will the AC impact the Mindeman Landslide?
6. **Planned Projects:** Will the proposed AC be compatible with proposed projects along the SR-91 corridor in the short term (based on timing for implementation)? How will the proposed ACs integrate with the current and future corridor cross-section?
7. **Schedule:** How long would the AC take to implement, both during project delivery and construction?

5B. Measurement of Evaluation Criteria

Potential ACs will be assessed using the following scale for each evaluation criterion:

●●	Significant benefit (two solid green circles)
●	Measurable benefit (one solid green circle)
◉	Neutral (black bullseye)
○	Measurable disbenefit (one open orange circle)
○○	Significant disbenefit (two open orange circles)
✗	Fatal flaw (red “x”)

Note, that while the evaluation framework will use available data and engineering judgment, the application of the criteria will be both quantitative and qualitative. The evaluation will be performed by professionals with expertise in the applicable areas (e.g., traffic, environmental, geotechnical, cost estimates), but the final screening level evaluations will be based on professional judgment of the PDT.

Table 2 provides a listing of a generic interpretation of the assessments (benefits or disbenefits) for the evaluation criteria.

Table 2: Interpretation of Evaluation Criteria

	Assessment		
Evaluation Criterion	**Benefit**	**Disbenefit**	**Fatal Flaw**
Construction Impacts	Reduce construction staging impacts. Cut-through traffic will be minimal. Minimize construction throwaway costs and potential construction fatigue.	Extended construction impacts and duration. Additional delay on SR-91. Minor construction waste. Minor construction fatigue.	Add significant delay to construction time. Increase local impact from construction activities. Major construction waste. Major construction fatigue.
SR-91 Corridor Impacts	Alternative concept conforms with existing corridor with minimal to no impact. Only restriping impacts to the 91 Express Lanes.	Alternative concept conforms with existing corridor with minor impact. Minimal impact to the 91 Express Lanes.	Alternative concept does not conform with existing corridor. Major impact to the 91 Express Lanes.
Cost and Right-of-Way Constraints	Manageable cost and good cost-benefit ratio. Construct improvements within available public right-of-way and minimal utility impacts.	High cost or low cost-benefit ratio. Moderate right-of-way and utility impacts.	Very high cost. Cannot be built without significant right-of-way and utilities impact.
Design Standards	Can be built to Caltrans standards with a few nonstandard features.	Moderate to high number of nonstandard features will be needed.	Unobtainable nonstandard features will be needed.
Environmental Impacts	Minimal impacts or constraints related to physical and environmental elements. Minimal to no impact to Santa Ana River Trail. Minimal impact to Coal Canyon UC. Minor to no impact to Mindeman Landslide area.	Moderate physical and/or environmental constraints that require some mitigation. Minimal to major impact to Santa Ana River Trail. Minimal to major impact to Coal Canyon UC. Minor impact to Mindeman Landslide area.	Physical and/or environmental constraints that are unmitigable. Major impact to Santa Ana River Trail. Major impact to Coal Canyon UC. Significant impacts to Mindeman Landslide, reconstruct all existing retaining walls.
Planned Projects	Good compatibility with proposed projects. Alternative integrates to existing facility with minimal construction cost.	Compatibility with most proposed projects. Alternative concept requires moderate reconstruction of recently built facilities.	Not compatible with proposed and recently built projects. Alternative concept requires major reconstruction activities of recently built facilities.
Schedule	Minimal schedule/timeframe for completing environmental, design and construction phases, based on complexity of design features.	Moderate schedule/timeframe for completing environmental, design and construction phases.	Very lengthy schedule duration for completing environmental, design and construction phases.

5C. Evaluation Framework

A screening process was conducted to assess the relative performance of several ACs and to identify those alternatives that have sufficient merit to warrant further analyses. Once the ACs were developed, the criteria described above was used to conduct more detailed analysis. To conduct the evaluation, a matrix of ACs and the screening criteria was prepared. Table 3 shows a sample evaluation.

In this example, Alternative 4 would be screened out because of the fatal flaw in cost and significant disbenefit to SR-91 corridor operations. Note that Alternative 6 was evaluated highly for most of the criteria, but the fatal flaw for impact to the SR-91 corridor would rule it out. Alternative 1 would also likely be screened out, because of the large number of

significant construction-related disbenefit assessments. Alternatives 2, 3 and 5 would likely be considered for further evaluation.

Table 3: Sample Evaluation Framework

	Alternative Concepts					
Evaluation Criterion	**1**	**2**	**3**	**4**	**5**	**6**
Construction Impacts	○○	●	●●	●	●	●●
SR-91 Corridor Impacts	●	●	◉	○○	●	×
Cost & Right-of-Way Constraints	●	●	○	×	●	○
Design Standards	○	○	●●	●	○	●●
Environmental Impacts	◉	◉	●●	◉	●●	●●
Planned Projects	●	●●	●	○	○	◉

6. ALTERNATIVES

Upon development of the evaluation criteria, the technical team conducted a workshop to brainstorm and develop ACs for screening and evaluation. The team reviewed background information on the project, including previous and ongoing studies within the study area, and issues identified during the stakeholder interviews. The team also reviewed evaluation criteria to focus the development of concept on the key issues identified by the stakeholders and by the technical team. Based on this approach, the team identified four ACs, in addition to the no-build alternative, that best reflect the needs and input of the stakeholders and meet the goals of this study.

6A. No-Build Alternative

The No-Build Alternative would maintain the current configuration of SR-91 in the project area. Under this alternative, there would be no additional 6th GP lane. Continuing congestion with degraded levels of service would be expected under this alternative.

The No-Build Alternative provides a baseline for comparing the impacts associated with the Build Alternatives since environmental reviews must consider the effects of not implementing the proposed project.

6B. Build Alternatives

Four ACs are proposed, each of which implement a 6th EB GP lane on SR-91 between SR-241 and SR-71. When developing each AC, it should be noted that when the SR-91 alignment was shifted to avoid features such as the Mindeman Landslide or Santa Ana River Trail, this shift was maintained until the potential impact has been avoided. The westerly portion of the project (from the westerly project limit to Coal Canyon UC) is similar between all ACs because there were no features avoided in this area. Design variations were also identified in several of the ACs that can be incorporated in a future phase.

6.B.1. Alternative Concept 1: Constrained Cross-Section (4 variations)

AC 1 proposes to add the 6th EB GP lane utilizing nonstandard lane and shoulder widths, limiting the widening to the outside while avoiding impacts to the Mindeman Landslide. The existing centerline (and median barrier) for SR-91 is to remain at the existing location. Approximately 8-10 feet of pavement widening to the south will be required to accommodate the additional lane. Retaining walls anticipated to be 8-10 feet in height may need to be constructed at several locations. The EB bridge structure for the Coal Canyon Road UC would need to be widened to the inside. After the first ingress east of Coal Canyon UC, the buffer area will be reduced to 2 feet where possible, this occurs at the EB mainline between Sta 550+00 to Sta 575+00. Reducing this buffer width allows utilization of the existing pavement area to reduce outside widening. For all design variations under AC 1, the lane widths would be 11 feet for all express lanes, 11 feet for inside GP lanes, and 12 feet for the two outside GP lanes. The buffer width is set at 2 feet. Four different design variations will be considered for this alternative, a description of each variation is provided below:

- ***Design Variation A (Alternative Concept 1A):*** Existing median concrete barrier and left shoulder to remain mostly as-is with minimal widening to the south. Utilize nonstandard right shoulder widths.
- ***Design Variation B (Alternative Concept 1B):*** Widen right shoulder to standard 10-foot width at all locations.
- ***Design Variation C (Alternative Concept 1C):*** This design variation uses the same lane and shoulder widths proposed under Design Variation B and adds a two-lane exit at the Green River Road off-ramp along with a 1,300-foot auxiliary lane.
- ***Design Variation D (Alternative Concept 1D):*** This design variation uses the same lane and shoulder widths proposed under Design Variation B and moves the express lane ingress to the west. This design variation also adds a two-lane exit at the Green River Road off-ramp along with a 1,300-foot auxiliary lane.

6.B.2. Alternative Concept 2: Full-Standard Cross-Section, Widen South

AC 2 proposes to add the 6th EB GP lane utilizing standard lane and shoulder widths. The existing centerline (and median barrier) for SR-91 is to remain at the existing location. All pavement widening would take place to the south, which would result in impacts to the Mindeman Landslide. The ultimate cross-section includes standard lane widths, standard shoulders, and a 4-foot buffer for the 91 Express Lanes. Retaining walls on the south side of the freeway would require reconstruction while taking into consideration the stability of the Mindeman Landslide. The EB bridge structure for the Coal Canyon Road UC would need to be widened to the outside. At Green River Road, a two-lane exit would be provided along with a 1,300-foot auxiliary lane upstream of the off-ramp. This auxiliary lane would require a tie-back wall anticipated to be approximately 40 feet in height.

6.B.3. Alternative Concept 3: Full-Standard Cross-Section, Widen North (2 variations)

AC 3 proposes to add the 6th EB GP lane utilizing standard lane and shoulder widths, consistent with the proposed ultimate cross-section of the SR-91 CIP. The EB edge of shoulder would be held at the existing location and all pavement widening would take place to the north, resulting in impacts to the parking lot, cul-de-sac, and access points for the Santa Ana River Trail. Widening to the north would avoid impacts to the Mindeman Landslide and the retaining walls to the south of the freeway. Because the centerline would be shifted to the north, the WB SR-91 lanes would also be impacted under this alternative. For this reason, two design variations are considered:

- ***Design Variation A (Alternative Concept 3A):*** Provides the full standard cross-section for the WB lanes, consistent with the proposed ultimate cross-section in the SR-91 CIP.
- ***Design Variation B (Alternative Concept 3B):*** Provides the same cross-section for the WB lanes that would be in place following construction of the SR-91 COP.

The EB bridge structure for the Coal Canyon Road UC would be widened. At Green River Road, a two-lane exit would be provided along with a 1,300-foot auxiliary lane upstream of the off-ramp, consistent with the SR-91 CIP ultimate cross-section. This auxiliary lane would require a tie-back wall anticipated to be 40 feet in height.

6.B.4. Alternative Concept 4: Hybrid Cross-Section (Limited Widen South)

AC 4 proposes to add the 6th EB GP lane utilizing standard lanes and upgrading inside shoulder widths to standard where feasible, while minimizing impacts to the Mindeman Landslide area. This alternative maintains the existing median barrier and widens EB SR-91 to the south. The intent of this alternative is to limit nonstandard features to primarily shoulder reductions and, if needed, fewer lane width reductions. This alternative improves the stopping sight distance at two locations. Additional retaining walls may be required south of SR-91 to accommodate the pavement widening. The EB bridge structure for the Coal Canyon Road UC would need to be widened. At Green River Road, a two-lane exit would be provided along with a 1,300-foot auxiliary lane upstream of the off-ramp, consistent with the SR-91 CIP ultimate cross-section. This auxiliary lane would require a tie-back wall anticipated to be 40 feet in height.

6C. Alternative Concept Plan Development

Detailed roadway geometrics were developed for each of the ACs and associated design variations, referencing the Caltrans Highway Design Manual. Topographic mapping was available from recent project efforts and used as the base map. The plans in Attachment A show the proposed roadway alignments and associated improvements, including structures, right-of-way, retaining walls, barriers, and striping. Geometry for adjacent project efforts planned to be constructed ahead of the EB 6th lane addition are also included.

6D. Informal Value Analysis Workshop

Once the preliminary ACs for the EB 6th lane addition were developed, an informal Value Analysis (VA) workshop was conducted, generally using the principles of the Caltrans VA process that typically takes place during the PA/ED phase. The purpose of the workshop was to identify potential efficiencies that could be incorporated into the project to reduce cost and impacts in the alternatives developed. All stakeholder agencies and independent reviewers for multiple disciplines participated in the workshop. A technical memorandum (Informal Value Analysis Workshop Summary) was written to summarize the discussions of the workshop. This memo explores 10 ideas that originated from the workshop, all of which aim to reduce costs and impacts of the ACs developed for this project. These 10 ideas are briefly summarized in Table 4 below.

Table 4: Summary of VA Ideas

Idea No.	Description
Idea No. 1	Provide 4 lanes at terminus of Green River Road Off-Ramp
Idea No. 2	Use 2 foot buffer throughout between GP lanes and Express Lanes and 11 foot lanes
Idea No. 3	Shorten entrance merge for 91 Express Lane ingress area west of Green River Road
Idea No. 4	Avoid widening Coal Canyon UC by shifting the Express Lane egress west and utilizing existing reduced lane widths
Idea No. 5	Utilize median area (turnaround) to reduce widening around Coal Canyon UC
Idea No. 6	Move express lane ingress/egress to west side of project (Variation A, B, and C)
Idea No. 7	Build 6th lane addition at same time as SR-241/SR-91 Tolled Express Lane Connector
Idea No. 8	Reject all north side widening concepts
Idea No. 9	Maintain existing pavement structural section in median
Idea No. 10	Ensure that retaining walls are constructed to SR-91 CIP Ultimate to eliminate throwaway

Based on the evaluation of the VA alternatives, the following next steps were proposed to be taken:

- VA alternative idea 1 showed mostly neutral performance but could result in major cost savings. For this reason, this VA alternative is proposed to be further evaluated in a future phase to determine if traffic operations justify the incorporation of this concept.
- VA alternative ideas 2 and 4 both had improved performance over the baseline and require geometric changes to the ACs. For this reason, both were incorporated into all ACs moving forward. This includes 11 foot Express Lanes, 2 foot buffer, four 11 foot GP lanes, and two 12 foot GP lanes on the outside. Additionally, the existing Coal Canyon UC may be utilized and widening can be avoided dependent on the final design of the SR-241/SR-91 Tolled Express Lane Connector.

- VA alternative idea 3 showed mostly neutral performance, but was included in the baseline, so was incorporated across the ACs for consistency. Traffic microsimulation analysis would need to be conducted in a future phase to determine the validity of the concept.
- VA alternative idea 5 did not show an improved performance over the baseline, so has been included for documentation purposes but is not proposed to be evaluated any further.
- VA alternative idea 6A showed an improved performance over the baseline, however, it may impact work to be done by the SR-241/SR-91 Tolled Express Lanes Connector project. There is an opportunity to reduce throwaway cost where coordination with the SR-241/SR-91 Tolled Express Lanes Connector project might be feasible. A traffic analysis will be required in a future phase to determine if this idea may result in potential impacts to the express lanes (reducing speeds below the minimum operating speed of 55 mph) or general purpose lanes. The traffic analysis will also be required to analyze if this option will have a impacts to the OCTA 91 Express Lanes operations as it may reduce the value to the user by approximately 1 mile.
- VA alternative idea 6B showed an improved performance over the baseline, however, a traffic analysis will be required in a future phase to determine if this idea may result in potential impacts to the express lanes (reducing speeds below the minimum operating speed of 55 mph) or general purpose lanes.
- VA alternative idea 6C did not show an improved performance over the baseline, however, it does provide an opportunity for reduced cost. For this reason, it was incorporated as Design Variation D in Alternative Concept 1 and carried forward. A traffic microsimulation analysis would need to be conducted in a future phase to determine the validity of the concept.
- VA alternative idea 7 showed an improved performance over the baseline but has a fatal flaw in that it would result in delays to the SR-241/SR-91 Tolled Express Lanes Connector project, which is currently in the final design phase. For that reason, this idea has been included for documentation purposes but is not proposed to be evaluated any further.
- VA alternative idea 8 had the most positive performance change over the baseline. This concept proposes to reject the ACs that would widen SR-91 to the north. For this reason, Alternative Concepts 3A and 3B are not recommended to move forward, due to the extensive impacts associated with each.
- VA alternative idea 9 had some improved performance over the baseline and is recommended for further evaluation during a future phase to determine if the existing pavement section can be utilized. For this phase, it is proposed to assume that the existing pavement is acceptable. It should also be noted that by accepting VA alternative idea 8, there would be no more ACs that would shift the SR-91 centerline, so VA alternative idea 9 would no longer be applicable.
- VA alternative idea 10 had no change over the baseline since the baseline already included the SR-91 CIP ultimate cross-section. In all other ACs, this would affect the efficiency trying to be achieved to make them more cost effective, so this concept is

not proposed to be evaluated any further. It has been included for documentation purposes.

Full details on the ideas and evaluation criteria used during the workshop can be found in the VA Memo (Attachment B).

7. EVALUATION OF ALTERNATIVE CONCEPTS

After developing the preliminary plans for the four ACs, the next step was to complete a series of focused evaluations on each AC. Details of these evaluations are summarized in the following sections.

7A. Nonstandard Boldfaced and Underlined Design Features

As shown in Attachment C, the nonstandard design features for Segment 1 of the SR-91 CIP (included in the Project Report) cover the limits for the 6th EB lane addition. The 3rd Supplemental Design Standard Decision Document for the SR-91 CIP project was approved by Caltrans Districts 8 and 12 for design features within their jurisdictions. It is assumed that the nonstandard features that have already been approved will not require approval again (unless they are modified), since the lane addition is part of the Ultimate Phase of the SR-91 CIP. Additional nonstandard features associated with the ACs would require approval. Key additional or modified nonstandard features include horizontal stopping sight distance along the median barrier and reduced outside shoulders, all of which are introduced to minimize impacts to the Mindeman landslide area. (These nonstandard features are shown in magenta text on the exhibits in Attachment A.) The approach for approval of nonstandard design features will be coordinated with Caltrans during the next project development phase.

7B. Traffic Assessment

The Traffic Assessment provides a high-level assessment for each AC. The assumed horizon year is 2045. More detailed traffic modeling and analysis will be required as the project proceeds. OCTA provided forecasts for the SR-91 corridor using the Orange County Transportation Analysis Model (OCTAM), on the TransCAD software platform. Post-processing of the forecast data was used to compare the Build vs. No-Build alternatives at a high-level. The full traffic assessment is included as Attachment D.

Four ACs were explored, each of which include varied design features that allow for the addition of the 6th EB lane.

- AC#1 – Constrained Cross-Section (Design Variations A, B, C, and D)
- AC#2 – Full-Standard Cross-Section, Widen South
- AC#3 – Full-Standard Cross-Section, Widen North (Design Variations A and B)
- AC#4 – Hybrid Cross-Section (Limited Widening South)

The operational assessment focused on approximately 8 miles of EB SR-91. Because OCTAM does not provide tangible differentiation for cross-sectional widths or short auxiliary lanes, two basic model runs were completed: "Build" and "No-Build." The Build scenarios include the six GP lanes from SR-241 to SR-71 and represent ACs 1 to 4. Both scenarios include the SR-241/SR-91 Express Lane connector. Neither scenario includes the braided configuration for Green River Road/SR-71 that is part of the Ultimate CIP as the model would not be sensitive to those changes.

OCTAM was run for four periods in the 2045 horizon year; AM peak (6 to 9 AM), midday (9 AM to 3 PM), PM peak (3 to 7 PM) and overnight. Separate data summaries were created for the Orange County portion of the model capture area (subregion), plus a more focused assessment of the EB freeway (the Express Lanes, GP lanes, and ramps). For the EB SR-91 corridor, the OCTAM demonstrated reductions in delay by approximately 20% (mostly in the AM and PM peak periods), with a corresponding increase in average speed. While congestion on the corridor is forecasted in 2045, there will be clear improvements in the overall traffic flow and quality. Table 5 shows a summary comparison between the Build and No-Build scenarios from the lens of the EB SR-91 corridor in the horizon year of 2045. Data are reported on vehicle miles traveled (VMT), delay, vehicle hours traveled (VHT), and speed. For the subregion, effects on performance were modest because of the relatively large area. There is a negligible increase in daily VMT (0.003%), mostly associated with the AM and PM peak periods. There are also modest decreases in congested VMT (0.2%) and hours of delay (0.3%). Table 6 shows a summary comparison between the Build and No-Build scenarios effect on the surrounding subregion for the horizon year of 2045.

Table 5: EB SR-91 Model Summary – 2045 Horizon Year

Period	Scenario	VMT	Congested VMT	Hours of Delay
AM	Build	20,852,383	703,132	179,352
	No-Build	20,857,678	703,554	179,700
Midday	Build	21,474,931	536,553	24,858
	No-Build	21,476,699	536,708	24,941
PM	Build	27,358,503	868,580	176,996
	No-Build	27,348,495	870,549	179,162
Overnight	Build	15,452,354	356,991	2,701
	No-Build	15,452,743	357,018	2,709
Total	Build	85,138,171	4,058,831	1,977,482
	No-Build	85,135,614	4,065,695	1,984,378

Table 6: Subregion OCTAM Model Summary – 2045 Horizon Year

Period	Scenario	VMT	VHT	Hours of Delay	Average Speed (mph)
AM	Build	307,722	7,452	2,575	41
	No-Build	314,761	7,928	2,954	40
Midday	Build	333,985	5,664	364	59
	No-Build	334,299	5,781	478	58
PM	Build	531,427	21,323	12,967	25
	No-Build	529,508	24,841	16,533	21
Overnight	Build	317,708	5,044	34	63
	No-Build	317,858	5,060	48	63

Total	Build	1,490,842	39,482	15,940	38
	No-Build	1,496,427	43,610	20,013	34

A focused evaluation was conducted at the SR-241/SR-91 interchange. Table 7 is a summary of the volume changes on SR-91, immediately east of SR-241. The data indicate that while overall cross-section volumes on SR-91 increase, there is a much larger increase on the GP lanes, and a reduction on the Express Lanes, both from SR-91 and on the planned SR-241 Express Lanes connector.

Table 7: SR-91 Traffic Volumes (at SR-241)

Period	Scenario	GP Lanes east of SR-241	Express Lanes from SR-91	Express Lane Connector from SR-241	Total
AM Peak	No-Build	26,761	5805	3375	35,941
	Build	28,975	4442	2767	36,184
	Change	**8.3%**	**-23.5%**	**-18.0%**	**0.7%**
PM Peak	No-Build	46,623	10,565	4516	61,704
	Build	50,468	9443	3670	63,581
	Change	**8.2%**	**-10.6%**	**-18.7%**	**3.0%**
Daily	No-Build	154,876	17,846	7892	180,614
	Build	161,176	15,192	6438	182,806
	Change	**4.1%**	**-14.9%**	**-18.4%**	**1.2%**

Table 8 is a similar summary for SR-241, immediately south of SR-91. The overall cross-section volumes on SR-241 increase, by approximately 3.0% on a daily basis. There is a much larger increase on the GP connector to SR-91 (9% daily) and a reduction on the Express Lanes connector.

Table 8: SR-241 Traffic Volumes (at SR-91)

Period	Scenario	GP Connector to EB SR-91	GP Connector to WB SR-91	Express Lane Connector to SR-241	Total (south of SR-91)
AM Peak	No-Build	6754	824	3375	10,953
	Build	7466	823	2767	11,056
	Change	**10.5%**	**-0.1%**	**-18.0%**	**0.9%**
PM Peak	No-Build	11,396	1358	4516	17,270
	Build	13,269	1361	3670	18,300
	Change	**16.4%**	**0.2%**	**-18.7%**	**6.0%**
Daily	No-Build	28,967	2594	7892	39,453
	Build	31,585	2594	6438	40,617
	Change	**9.0%**	**0.0%**	**-18.4%**	**3.0%**

A preliminary assessment of traffic operations and safety was conducted, focusing on differences between the variations. The assessments were based on professional judgment, and not on specific data or modeling. All ACs are anticipated to reduce the VMT, Vehicle Hours Traveled, and Hours of Delay on the GP lanes, particularly at the NB SR-241/EB SR-91 connector merge, which is a major constraint in the existing operations. While the short auxiliary lane at the Green River Road off-ramp will be beneficial, the 6th lane is a larger

improvement, so the overall traffic operations benefit of adding the auxiliary lane at Green River Road is minor. All the ACs are expected to provide improved traffic operations.

7C. Right-of-Way

Right-of-Way Acquisition

Right-of-way acquisition along SR-91 is required to accommodate widening for the proposed 6th GP lane addition, either on the north side (AC 3) or the south side (AC 1, AC 2, and AC 4) of the freeway. Final right-of-way acquisition needs and property ownership will be determined in the next phase of the project.

Utilities

A list of existing utilities in and around the proposed project was created by review of Caltrans as-built plans. In the next phase of this project, a DigAlert search will be conducted to verify whether the utilities listed are within the project limits. Utility companies will also be contacted to provide facility maps. The potential utilities within the SR-91 corridor are shown in Table 9.

Table 9: Existing Utilities

Utility	Owner
Water	City of Corona
Electric	Southern California Edison
Telephone	AT&T (PT&T)
Gas	Southern California Gas
Oil	Four Corners Pipeline
Television	Time Warner Cable
Fiber Optic	Sprint
Sewer	City of Corona

It should also be noted that there is an existing Caltrans fiber optic line serving the 91 Express Lanes within the project limits.

Coordination with the identified utility companies and determination of which lines need to be relocated will take place during future project phases. Anticipated impacts are to be determined, pending continued coordination with utility owners.

7D. Geotechnical Analysis

The District Preliminary Geotechnical Report (DPGR) evaluates if conditions associated with the Mindeman Landslide complex have changed significantly since publication of the original SR-91 CIP Preliminary Geotechnical Information Report and Updated Preliminary Geotechnical Design Report.

Aside from the areas where walls are proposed in areas of existing landslides, the ACs are considered to be feasible from a geotechnical perspective. The design considerations for the ACs include debris flow hazards, constructability challenges, depth to groundwater level,

liquefaction and liquefaction induced settlement and lateral movement, depth to bedrock, etc.

All of the ACs include (either inside or outside) widening of the EB bridge for the Coal Canyon Road UC. This widening is considered geotechnically feasible. A foundation report will be required for the bridge widening as the project proceeds.

To evaluate the factor of safety of the Mindeman Landslide complex, an accurate model of the landslide mass is needed. A significant amount of additional subsurface data would be required to develop the model, including a plethora of borings drilled on the landslide mass (private property), in the Santa Ana River plain (including the SR-91 corridor), as well as on the Green River Golf Club property. Even if this thorough investigation were to be conducted, there is a possibility that an accurate model would not be able to be developed. Considering this uncertainty and the significant cost of a thorough investigation, the preliminary geotechnical report recommends that EB SR-91 widening encroaching on the Mindeman Landslide be avoided.

7.D.1. Future Exploration and Investigations:

Geologic

A significant effort would be required to develop the investigation plan needed to accurately model the Mindeman Landslide complex. In general, the investigation would include many rock core borings drilled to depths of 100 to 300 feet or more below ground surface. The borings would need to be drilled on the landslide mass (private property), in the Santa Ana River plain (including the SR-91 corridor) as well as on the Green River Golf Club property.

For cut retaining walls proposed in shallow slump areas and outside of the Mindeman Landslide complex limits along EB SR-91, further investigation would be required to verify the subsurface conditions. This should consist of detailed geologic mapping of the slide area and surrounding hillsides. Test pits and borings may be needed as well, dependent on the findings of the field mapping.

Geotechnical

Subsurface data will be required where new retaining walls and overhead sign structures and embankment fills are planned. Geotechnical borings should be drilled as needed for the proposed retaining walls and overhead sign structures. Laboratory tests may be required depending upon the nature of the soils and bedrock encountered during the investigation.

Geotechnical reports should be prepared in accordance with Caltrans guidelines. These reports will provide recommendations to address potential impacts due to the geologic conditions and potential hazards which may affect the project. Standalone Structure Preliminary Geotechnical Reports, Preliminary Foundation Reports, and Foundation Reports will need to be prepared for nonstandard walls and bridge structures.

7E. Structures Evaluation

There are several key factors that need to be considered early in the design process for the proposed retaining walls including right-of-way constraints, construction access, maintenance access to slopes, knowledge of obstructions, overhead utility constraints, landscaping, drainage facilities, and wall aesthetics to maintain a consistent feel with other aesthetic treatments along the SR-91 corridor. Choosing the right wall type for the various wall heights and configurations is a key consideration for this project.

The structures team reviewed all ACs to determine the retaining walls required for each. Based on cut/fill condition and referencing the DPGR, an initial wall type was selected for each wall segment.

Careful consideration was also taken for critical retaining walls that were determined to be in a landslide area. Furthermore, based on the DPGR, this corridor has high spectral accelerations anticipated approaching 0.73g. Accordingly, nonstandard retaining walls will be required. Standard retaining walls from the Caltrans Standard Plans cannot be utilized without full structural analysis and modification.

For the "fill condition" retaining walls, Type 1 Modified (both spread footing and on pile) and mechanically stabilized embankment retaining walls were recommended. For the "cut condition," Type 1 Modified on Pile and Soil Nail retention systems are ideal.

Within this corridor, there are two bridges which also would need to be widened depending on the build AC. Coal Canyon Road UC (Widen) is a single-span 127'-9" cast-in-place pre-stressed (CIP/PS) concrete box girder bridge which was widened in 2010 using precast pre-stressed (PC/PS) bulb-tee girders. A similar widening strategy will also be incorporated on this project to widen the current bridge by 24 feet depending on the alternative.

The other structure to be widened is County Line Creek Bridge (Extension). This is a reinforced concrete frame that was extended by about 40'-0" in 2010. Depending on the alternative, it will also be extended by 8 feet to 18 feet. At this preliminary project phase, widening is anticipated to match the existing reinforced concrete slab moment frame.

7F. Environmental Compliance

The EB SR-91 6th lane addition was included as part of the environmental documentation prepared for the SR-91 CIP. It is expected that an Environmental Re-Validation would be prepared for the SR-91 EB Corridor Operations Project to confirm the validity of the findings included in the previously adopted CEQA and NEPA documents for the SR-91 CIP. Caltrans will act as the CEQA and NEPA lead agency for all improvement projects on the State Highway System.

The final determination regarding the applicable CEQA and NEPA compliance documentation will be made by Caltrans in conjunction with completion of the required technical studies (see Attachment E, PEAR-E Environmental Studies Checklist) for this

proposed project. The required permits from resource agencies, construction window restrictions, biological or Native American monitoring, or compensatory mitigation, if necessary, will be determined during completion of the pertinent supplemental technical studies and memoranda. An Environmental Commitments Record will ensure implementation of all avoidance, minimization, and/or mitigation measures required to address impacts resulting from the proposed project.

The Environmental Re-Validation timeline could require approximately 14 to 20 months, from the start of the environmental studies to approval of the Environmental Re-Validation document (an additional 6 to 10 months should be assumed for obtaining regulatory permits). The schedule for the project is highly dependent on the findings of the supplemental technical studies and memoranda and the information in the SR-91 CIP adopted Final EIR/EIS. If a supplemental or subsequent EIR and/or supplemental EIS is determined to be necessary, then this would extend the duration identified for achieving CEQA and NEPA compliance.

7G. Cost Assessment

Preliminary project cost estimates were tabulated for each of the four ACs. Attachment F includes a detailed summary of the cost estimates. The cost estimates included earthwork, structural sections (pavement), drainage, specialty items (e.g., barriers, retaining walls, soundwalls, environmental mitigation, permits, etc.), traffic items, roadway mobilization, and other minor items.

Table 10 is a summary of the overall cost estimates for the four ACs. The ranges were determined using two different assumptions for contingencies for roadway and structures (35% and 60%).

Table 10: Cost Estimate Summary ($ millions)

AC	Roadway/Structures	Right-of-Way/Utilities	Design, Construction Management and Oversight	Total
AC#1A	$27.2 to $32.2	$3.1 to $3.6	$12.1 to $14.3	$42.3 to $50.2
AC#1B	$52.7 to $62.5	$5.9 to $7.0	$23.5 to $27.8	$82.1 to $97.3
AC#1C	$59.6 to $70.6	$6.7 to $8.0	$26.5 to $31.4	$92.8 to $110.0
AC#1D	$31.7 to $37.5	$3.6 to $4.2	$14.1 to $16.7	$49.3 to $58.4
AC#2	$74.6 to $88.4	$8.4 to $10.0	$33.2 to $39.4	$116.3 to $137.8
AC#3A	$292.5 to $346.6	$33.0 to $39.1	$130.2 to $154.3	$455.6 to $540.0
AC#3B	$136.2 to $161.4	$15.4 to $18.2	$60.6 to $71.8	$212.2 to $251.5
AC#4	$83.2 to $98.7	$9.4 to $11.1	$37.1 to $43.9	$129.7 to $153.7

8. SCREENING EVALUATION RESULTS

ACs and design variations were analyzed, discussed, and excluded from further consideration based on the screening and evaluation criteria defined in Section 5. In this screening process, the assessment was based on available data using engineering judgment.

Table 11 is a summary of the screening evaluation framework that was used for the various ACs developed. The assessment in Table 11 is based on input from the PDT, the experience of the project team, and project objectives. A detailed discussion of each concept and associated evaluation was conducted at a PDT meeting held on February 7th, 2022.

Table 11: Summary of Screening Evaluation Results

Evaluation Criterion	Alternative Concept 1A	Alternative Concept 1B	Alternative Concept 1C	Alternative Concept 1D	Alternative Concept 2	Alternative Concept 3A	Alternative Concept 3B	Alternative Concept 4
Construction Impacts	●●	●	●	●	○	✕	✕	●
SR-91 Corridor Impacts	●	●	●	○	○○	○○	○○	●
Cost & Right-of-Way Constraints	●●	●	●	●●	○○	✕	○○	●
Design Standards	✕	○	○	○	●●	●●	●	○
Environmental Impacts	●●	●	●	●	○	○○	○	●
Planned Projects	●	●	●	●	●	✕	✕	●
Schedule	●	●	●	●	○○	○○	○○	●

LEGEND

●● *Significant benefit*
● *Measurable benefit*
◉ *Neutral*
○ *Measurable disbenefit*
○○ *Significant disbenefit*
✕ *Fatal flaw*

Based on the screening evaluation in Table 11 and discussion with the stakeholders, the PDT agreed to carry forward AC#1 (including all design variations) and AC#4 for more detailed evaluation in a future phase.

9. SUMMARY AND RECOMMENDATIONS

Based on the assessment of the ACs (summarized in Table 12), AC#1 (including Design Variations B, C and D) and AC#4 address the objectives of the project and are feasible design alternatives. With these options, the next step in the project development process will be further evaluating the alternatives in the PA/ED phase. Because the improvements are a phase of the SR-91 CIP, it is assumed that a Project Initiation Document is not needed, but this is an alternate path that could be considered if needed. During the next phase, additional engineering of feasible alternatives should be explored.

AC#1 would allow for the addition of the EB 6th lane using limited nonstandard features to avoid impacts to the Mindeman Landslide area. Design variations are included for optional features that can be included as part of the alternative in a future phase if they are determined to be needed/feasible through traffic analysis. Detailed traffic analysis would be especially important for Alternative Concept 1D because it proposes to shift the existing ingress from the current location on the easterly project limit in Riverside County to the west and provide a combined ingress/egress in the area of the existing egress in Orange County. With the introduction of the SR-241/SR-91 connector merge in the same area, detailed weaving analysis will be conducted in a future phase to ensure adequate operations for the express lanes and general purpose lanes prior to moving the ingress location. Implementation of this Alternative Concept would also require concurrence from OCTA and RCTC tolling operations and management due to the access change for the express lanes and potential bond repayment/covenant implications.

As a result of the constrained cross-section, costs are lower with this AC and the physical and environmental impacts will be relatively minimal, especially with AC#1D. This AC is also compatible with other planned future improvements within and adjacent to the project limits.

AC#4 limits widening for the EB 6th lane to the south side of SR-91 but limits nonstandard features to shoulder reductions while providing improvements to stopping sight distance. While this requires additional widening over AC#1 and ultimately additional costs, it does allow for optimization of the EB SR-91 cross-section to meet the objectives of the Ultimate Phase of the SR-91 CIP for this area. This AC is also compatible with other planned future improvements within and adjacent to the project limits.

AC#2 proved to be infeasible. While this AC would provide a full standard cross-section for EB SR-91, extensive impacts to the Mindeman Landslide area would result in the need to construct several large retaining walls, increasing the cost for this option. It would also have more geotechnical issues and would impact the EB 91 Express Lanes during construction. Considering all the impacts associated with this AC, it is anticipated to result in more environmental concerns as well. For these reasons, it does not meet the project objectives and is considered infeasible.

AC#3 proved to be infeasible. While this AC would provide a full standard cross-section for both EB and WB SR-91 and avoid impacts to the Mindeman Landslide, the impacts on the

north side of SR-91 would be extensive, requiring right-of-way acquisition and reconstruction outside of the highway. Additionally, it is not compatible with the improvements currently being constructed under the SR-91 COP. The reconstruction associated with this AC results in high construction cost. For these reasons, it does not meet the project objectives and is considered infeasible.

Table 12: Summary Alternative Concept Assessment

AC	Summary of Assessment
AC#1	• ***Recommended for further evaluation*** • Includes design variations for optional features that can be included in a future phase • Lower cost • Minimal physical and environmental impacts • Compatible with planned future improvements
AC#2	• ***Infeasible, not recommended for further evaluation*** • Extensive impacts to Mindeman Landslide area • Large, costly retaining walls with geotechnical issues • Additional environmental concerns
AC#3	• ***Infeasible, not recommended for further evaluation*** • Extensive impacts to north side of SR-91 • Significant right-of-way acquisition and reconstruction outside of highway • Not compatible with SR-91 COP • High construction cost
AC#4	• ***Recommended for further evaluation*** • Limited nonstandard features • Improvements to stopping sight distance • Compatible with planned future improvements

Based on these assessments, it is recommended that AC#1 with the design variations and AC#4 be carried forward into a future phase for further study. During the next phase, variations on these alternatives can be evaluated in further detail with the additional analysis recommended in this report, with the goal of developing a viable alternative that will be consistent with the 91 CIP purpose and need, can be environmentally cleared, and ultimately constructed.

The study recommends not to carry forward AC#2 and AC#3 as both alternatives are anticipated to have extensive impacts on the Mindeman Landslide area and the Santa Ana River. Per the Project Development Procedures Manual (PDPM) Chapter 10 Section 4 (Criteria for Rejecting Alternatives), AC#2 and AC#3 are likely to be rejected per criteria listed below:

- Excessive construction cost
- Unacceptable adverse social, economic, or environmental impacts

An assessment is to be done in the next phase of the project to evaluate proposed alternative concepts to be carried forward and document rejected design alternatives in the environmental document per PDPM requirements.

10. PROJECT PERSONNEL

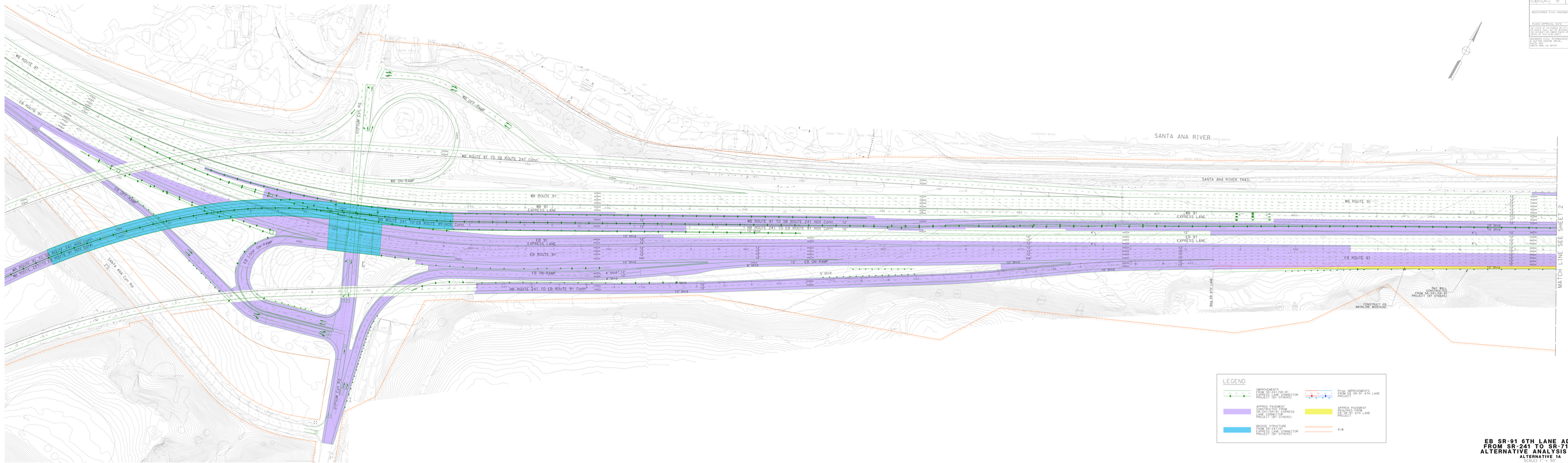
NAME	PHONE
Jamal Salman Project Manager Advanced Civil Technologies	(714) 662-2288
Ali Salman Project Personnel Advanced Civil Technologies	(714) 253-3565
Dan Phu Project Manager OCTA	(714) 560-5907
Alison Army Principal Transportation Analyst OCTA	(714) 560-5537
David Thomas Toll Project Delivery Director RCTC	(951) 787-7920
Brian Santos Project Manager Caltrans District 12	(949) 279-9363
Emad Makar Project Manager Caltrans District 8	(909) 383-4978

11. ATTACHMENTS

Attachment A	Alternative Concept Plans
Attachment B	Value Analysis Memorandum
Attachment C	Nonstandard Design Features for Developed Alternatives
Attachment D	Traffic Assessment
Attachment E	PEAR-E Environmental Studies Checklist
Attachment F	Preliminary Cost Estimates

Attachment A

Alternative Concept Plans



LEGEND

- IMPROVEMENTS FROM SR-241/SR-91 EXPRESS LANES CONNECTOR PROJECT (BY OTHERS)
- APPROX PAVEMENT CONSTRUCTED FOR SR-241/SR-91 EXPRESS LANE CONNECTOR PROJECT (BY OTHERS)
- BRIDGE STRUCTURE CONSTRUCTED FOR EXPRESS LANE CONNECTOR PROJECT (BY OTHERS)
- FROM IMPROVEMENTS TO SR-91 6TH LANE PROJECT
- APPROX PAVEMENT REQUIRED TO BE REMOVED FOR SR-91 6TH LANE PROJECT
- R/W

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO. ALL SHEETS
12	ORA/RIV	91	R14.2/R15.5	

REGISTERED CIVIL ENGINEER — DATE

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ADVANCED CIVIL TECHNOLOGIES
8 MUSEUM SEVEN DRIVE, SUITE 100
SANTA ANA, CA 92701

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 1A

SCALES 1" = 50'

SHEET 1 OF 5

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STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

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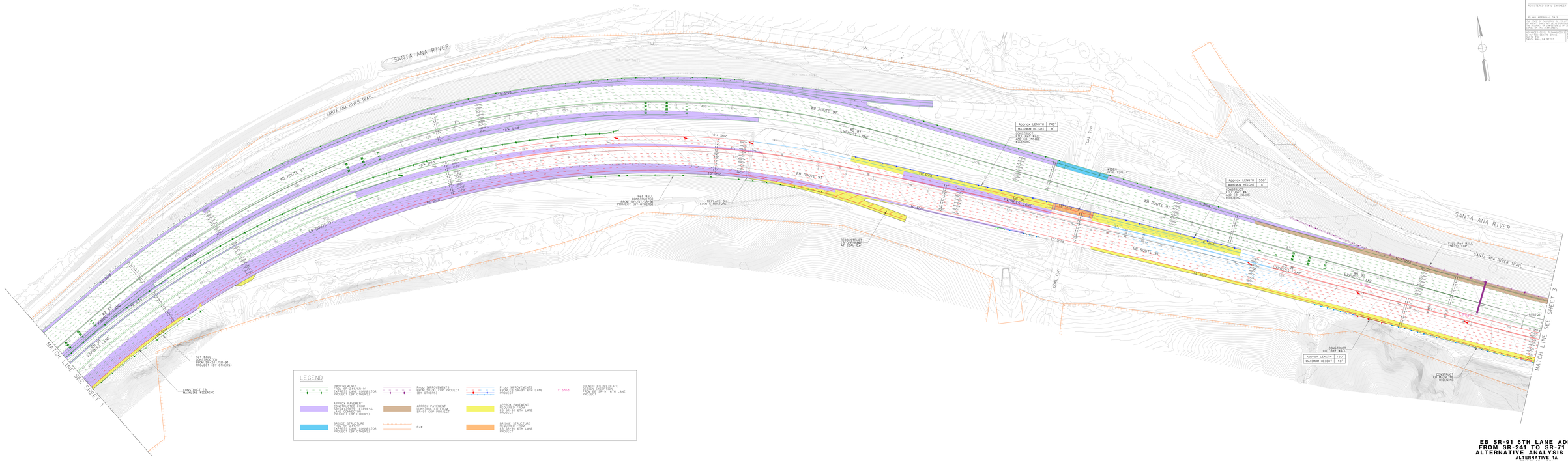
UNIT 2994 | PROJECT NUMBER & PHASE



DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. ALL SHEETS
12 | ORA/RIV/SBD | 91 | R24.4/R36.8 | |

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ADVANCED CIVIL TECHNOLOGIES
& MATTERN SEATEK GROUP
1 PARK PLAZA
SUITE 600, LA 92707

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN ST.
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 1A

SCALES 1" = 50'

SHEET 2 OF 5

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

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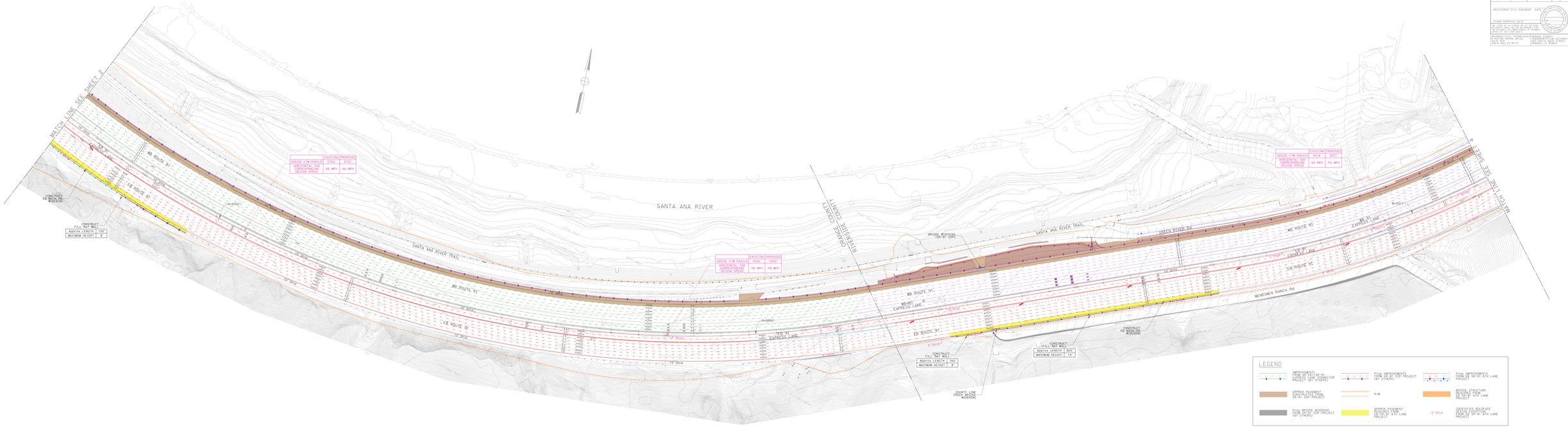

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12	ORA/RIV	91	R24.2/R29.5	TOTAL SHEETS

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ADVANCED CIVIL TECHNOLOGIES
& NATIVE EARTH GROUP
1920 MAIN ST.
SANTA ANA, CA 92701

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN STREET
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 1A

SCALES 1" = 50'

SHEET 3 OF 5

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

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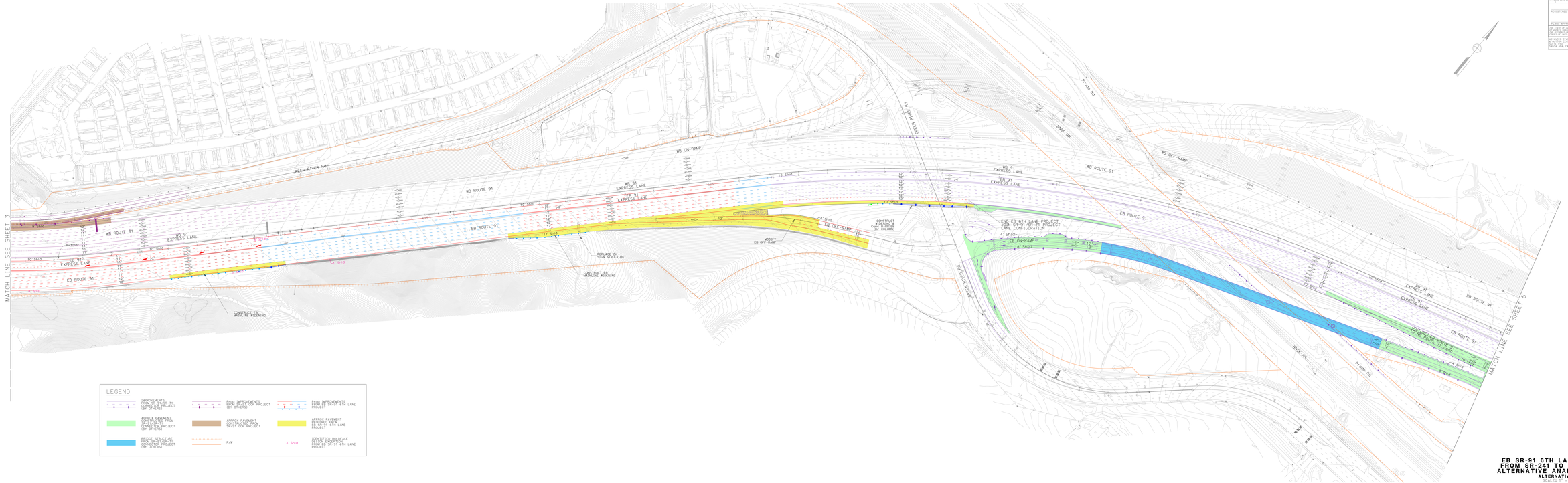
DGN FILE: 01SHLAY1.dgn

RELATIVE BORDER SCALE TO 1" UNLESS NOTED

UNIT 2994

PROJECT NUMBER & PHASE



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8 MASTEN SENTRY DRIVE, SUITE 200	550 SOUTH MAIN STREET
SANTA ANA, CA 92707	ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 1A

SCALES 1" = 50'

SHEET 4 OF 5

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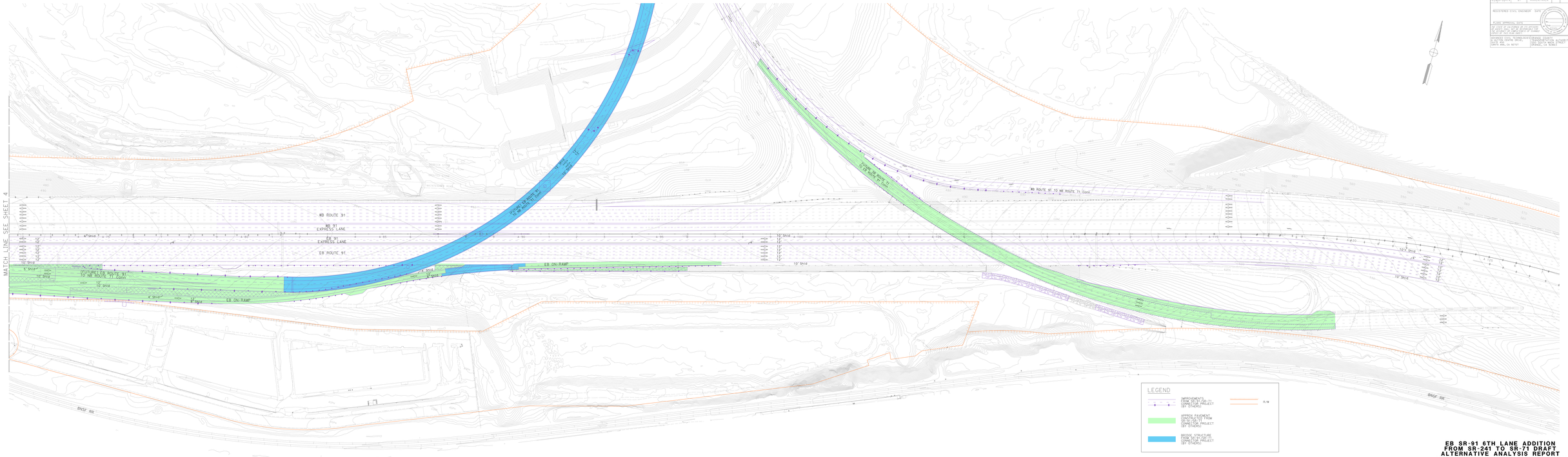

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ADVANCED CIVIL TECHNOLOGIES	ORANGE COUNTY TRANSPORTATION AUTHORITY
8 MUSEUM SOUTH DRIVE, SUITE 100 SANTA ANA, CA 92701	550 SOUTH MAIN STREET ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 1A - COMMON TO ALL ALTERNATIVES

SCALES 1" = 100'

SHEET 5 OF 5

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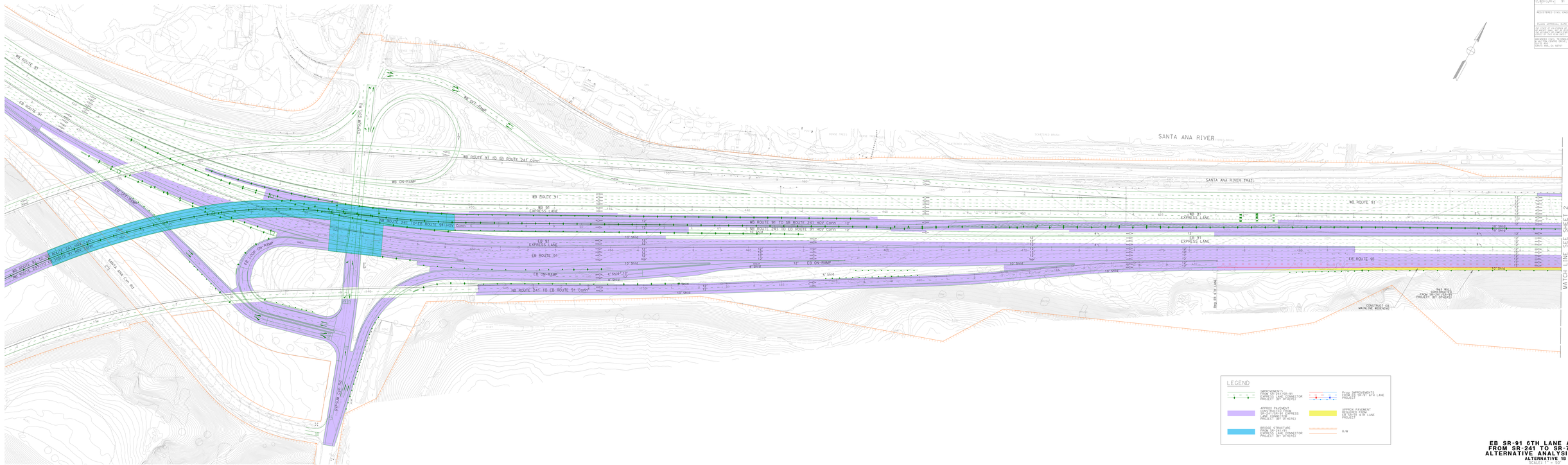
0 1in 2in

UNIT 2994

PROJECT NUMBER & PHASE



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO. ALL SHEETS
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8 MUSEUM SEVEN DRIVE, SUITE 100
SANTA ANA, CA 92701

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 1B

SCALES 1" = 80'

SHEET 1 OF 5

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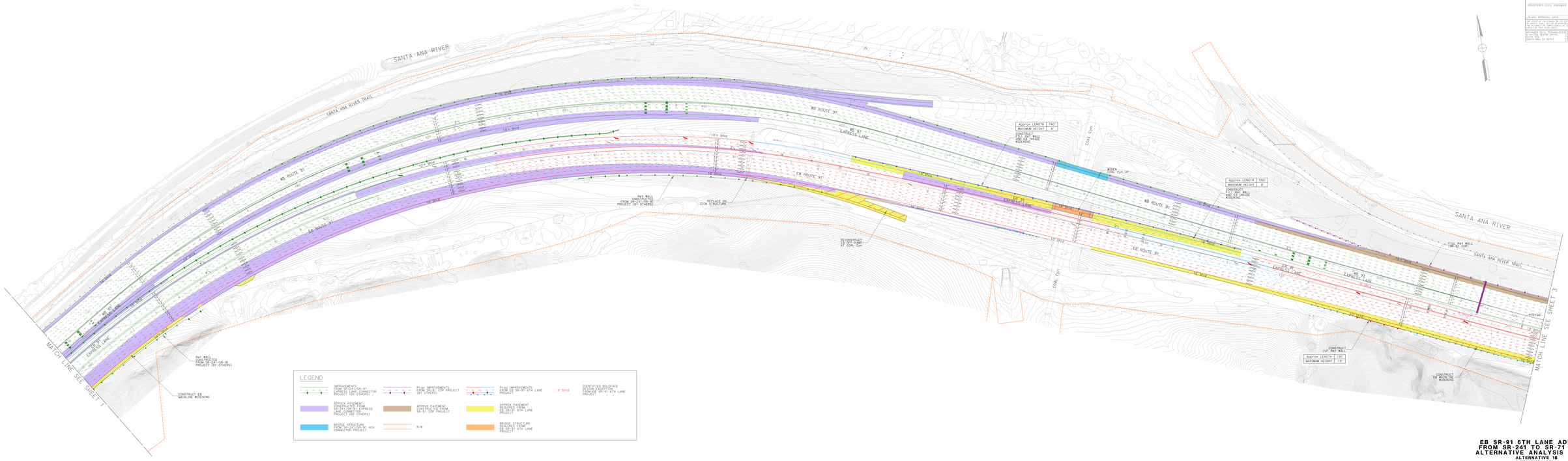

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ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN STREET
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 1B

SCALES 1" = 50'

SHEET 2 OF 5

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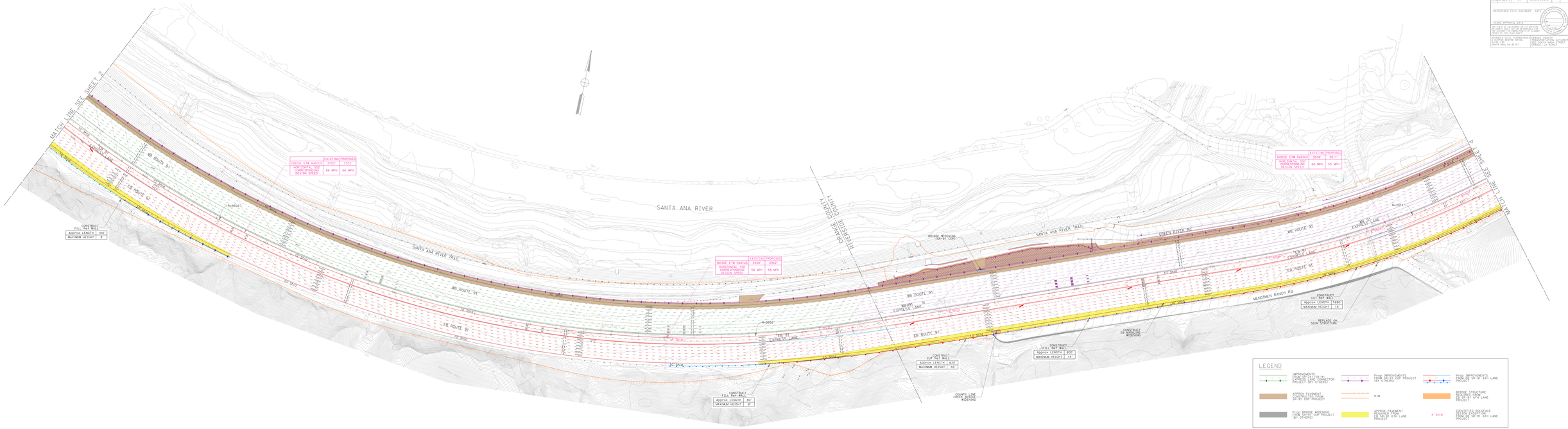
UNIT 2994

PROJECT NUMBER & PHASE



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PREPARED CIVIL TECHNOLOGY INC. 6 HUTTON CENTRE DRIVE, SUITE 1100 SANTA ANA, CA 92707

ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 1B

SCALES 1" = 500'

SHEET 3 OF 5

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UNIT 2994

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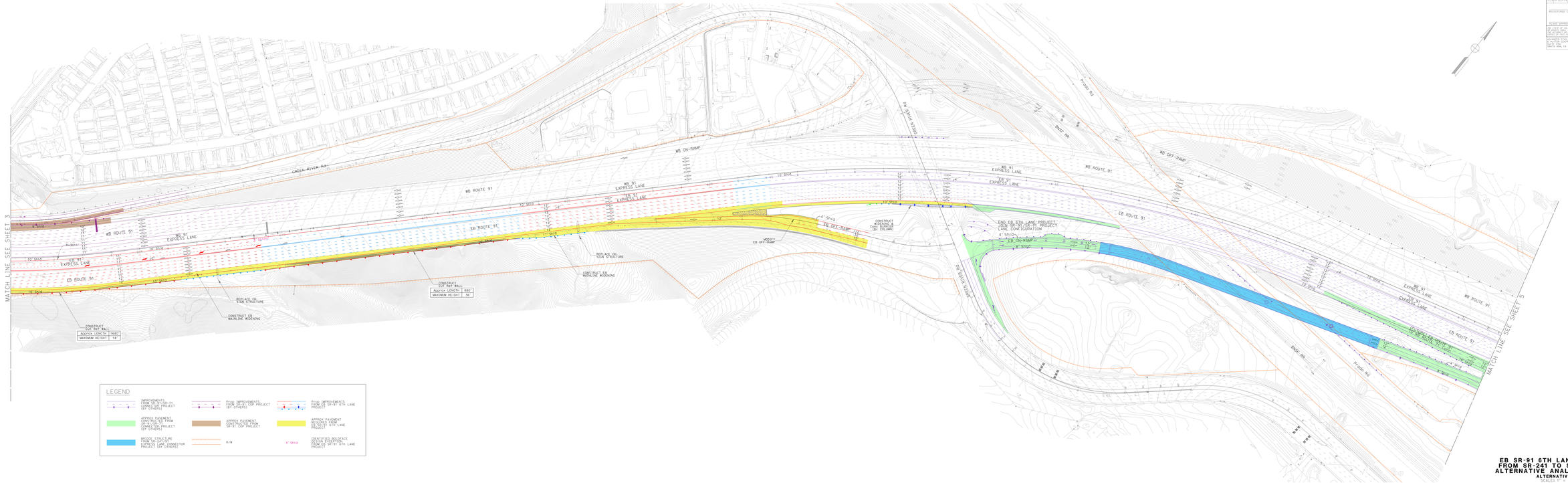

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			TOTAL PROJECT	ALL SHEETS
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ADVANCED CIVIL TECHNOLOGIES
6 HUTTON CENTRE DRIVE, SUITE 500
SANTA ANA, CA 92707

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 1B

SCALES 1" = 80'

SHEET 4 OF 5

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

BORDER LAST REVISED 7/2/2013

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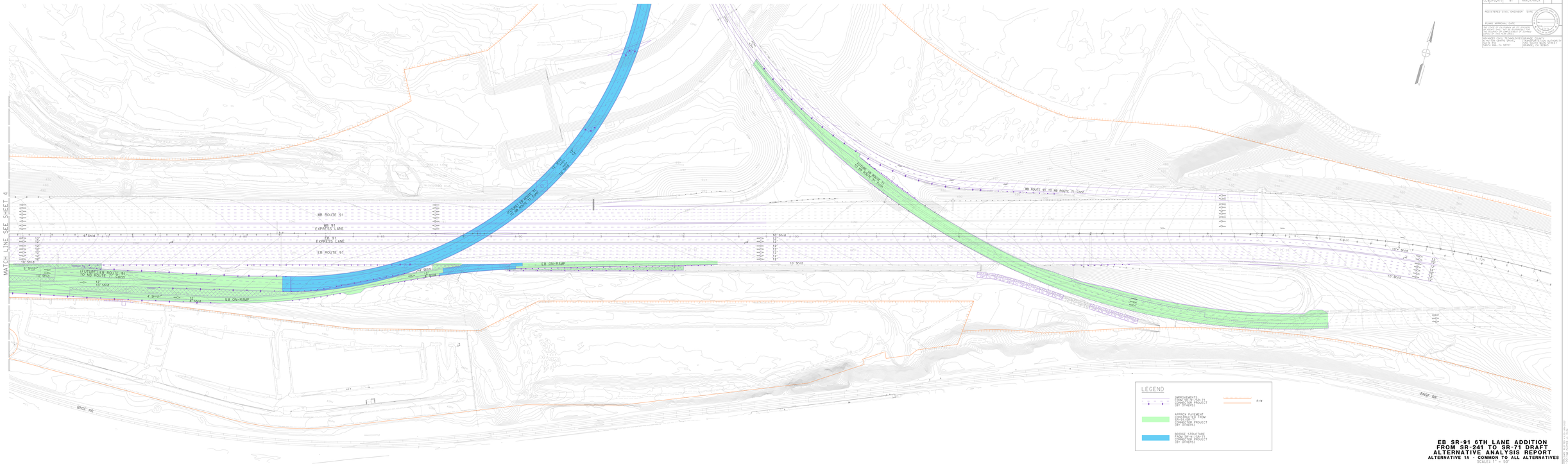
UNIT 2994

PROJECT NUMBER & PHASE



DIST	COUNTY	ROUTE	POST MILES	SHEET NO.
			TOTAL PROJECT	ALL SHEETS
12	RIVERSIDE	91	R24.2/R36.5	

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8 MUSTANG SEATIN DRIVE, SUITE 100
SANTA ANA, CA 92707

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN STREET
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 1A - COMMON TO ALL ALTERNATIVES

SCALES 1" = 100'

SHEET 5 OF 5

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

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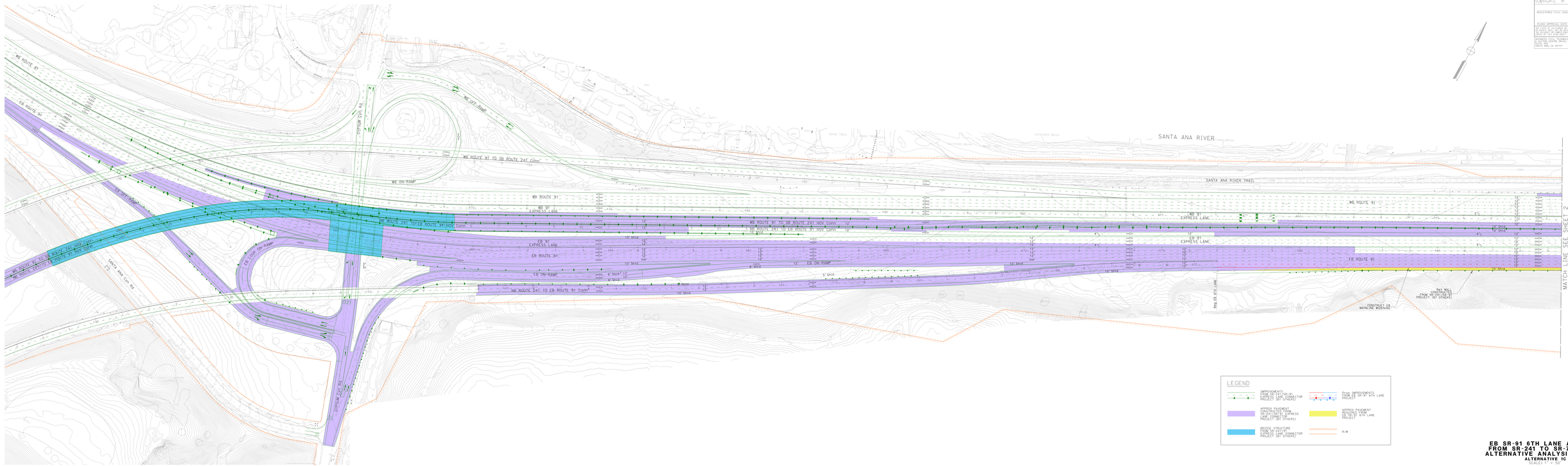
UNIT 2994 | PROJECT NUMBER & PHASE



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12	ORA/RIV	91	R24.2/R31.3	

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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ADVANCED CIVIL TECHNOLOGIES
8 MUSEUM SEVEN DRIVE, SUITE 100
SANTA ANA, CA 92701

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN STREET
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 1C

SCALES 1" = 50'

SHEET 1 OF 5

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

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RELATIVE BORDER SCALE
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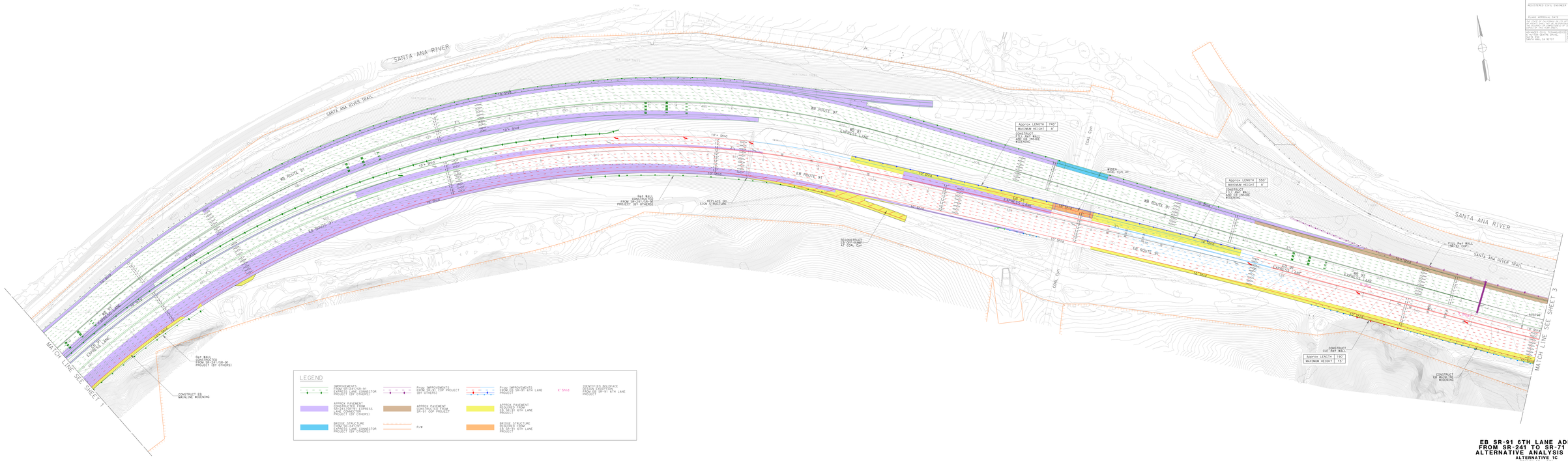
UNIT 2994

PROJECT NUMBER & PHASE



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO. ALL SHEETS
12	ORA/RIV	91	R24.4/R36.9	

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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ADVANCED CIVIL TECHNOLOGIES
& MATTERN SEATEN GROUP, A JOINT VENTURE
SANTA ANA, CA 92701

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 1C

SCALES 1" = 50'

SHEET 2 OF 5

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

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CHECK PLOT DATE (FOR CIVIL SURVEYOR)

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USERNAME = tcrawford
DGN FILE = 01-Exh-A1.dgn

RELATIVE BORDER SCALE
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UNIT 2994

PROJECT NUMBER & PHASE

DIST	COUNTY	ROUTE	POST MILES	SHEET NO.
12	ORA/RIV	91	R24.2/R36.9	

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE LICENSE ON RECORD AS OF THE DATE OF APPROVAL OF THE ACCURACY OR COMPLETENESS OF CHANGES

ADVANCED CIVIL TECHNOLOGIES
& NATIVE SEVEN GROUP,
SANTA ANA, CA 92701

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN STREET
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 1C

SCALES 1" = 50'

SHEET 3 OF 5

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

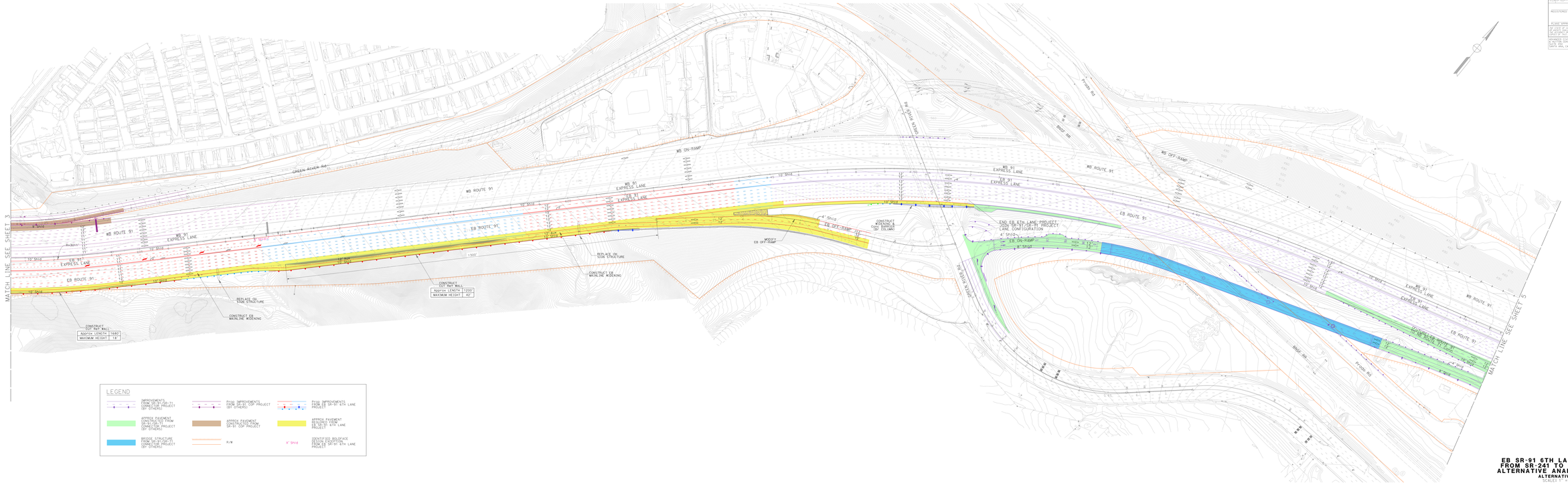
BORDER LAST REVISED 7/2/2013

USERNAME = tcisneros
DGN FILE = E12_ENG_ALT_1C.dgn

RELATIVE BORDER SCALE
0 1/2 1 INCHES

UNIT 2994

PROJECT NUMBER & PHASE



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO. ALL SHEETS
12	ORA/RIV	91	R14.2/R19.3	

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF CADD FILES.

ADVANCED CIVIL TECHNOLOGIES
8 MUSTANG SEATON DRIVE, SUITE 100
LAKE MISSION VIEJO, CA 92692

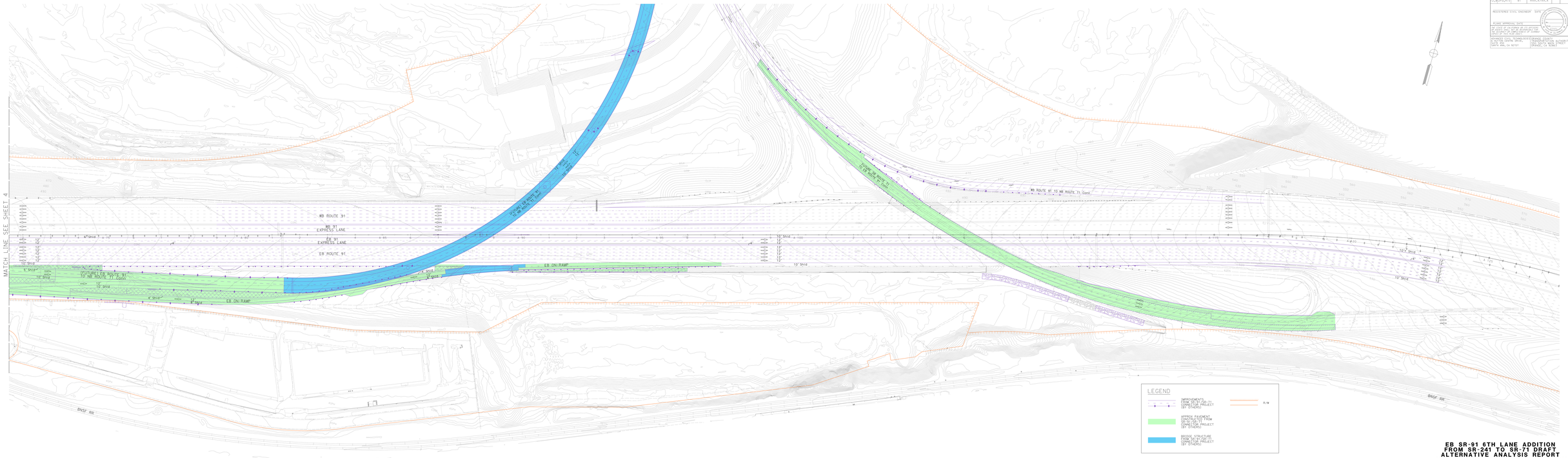
ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN STREET
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 1C

SCALES 1" = 50'

SHEET 4 OF 5



DIST	COUNTY	ROUTE	POST MILES	SHEET NO.
			TOTAL PROJECT	ALL SHEETS
12	ORA/RIV	91	R24.2/R36.5	

REGISTERED CIVIL ENGINEER — DATE

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SURVEY DATA SHOWN ON THESE PLANS.

ADVANCED CIVIL TECHNOLOGY/ 8 MASTEN TENTH DRIVE, SUITE 250 SANTA ANA, CA 92707

ORANGE COUNTY TRANSPORTATION AUTHORITY/ 550 SOUTH MAIN STREET ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 1A - COMMON TO ALL ALTERNATIVES

SCALES 1" = 200'

SHEET 5 OF 5

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

REVISED BY | DATE REVISED

CALCULATED BY | DRAWN BY | CHECKED BY

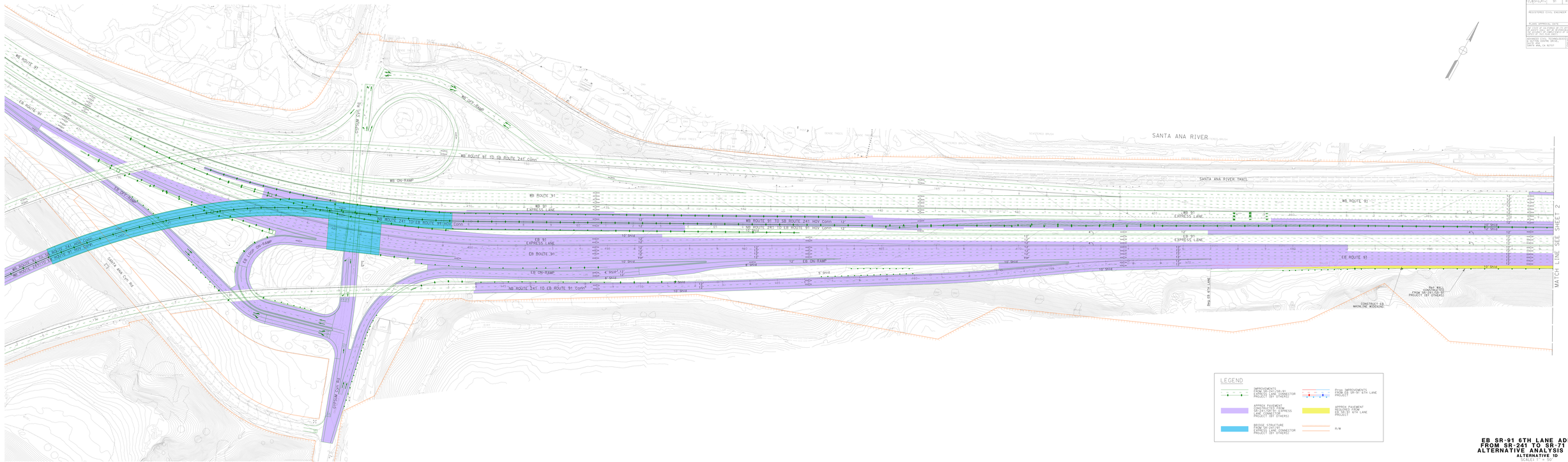
DISPLAY FOR FINAL SUBMISSION

BORDER LAST REVISED 7/22/2013

USERNAME = tcisneros
DGN FILE = 01SHL4+5.dgn

RELATIVE BORDER SCALE TO 1in. HORIZ.

UNIT 2994 | PROJECT NUMBER & PHASE



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO. ALL SHEETS
12	ORA/RIV	91	R24.2/R31.3	

REGISTERED CIVIL ENGINEER — DATE

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF CHANGES TO THIS PLAN THAT ARE NOT MADE BY THE STATE.

ADVANCED CIVIL TECHNOLOGIES
8 MUSEUM SEVEN SPORS, SUITE 100
SANTA ANA, CA 92701

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 1D

SCALES 1" = 50'

SHEET 1 OF 5

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

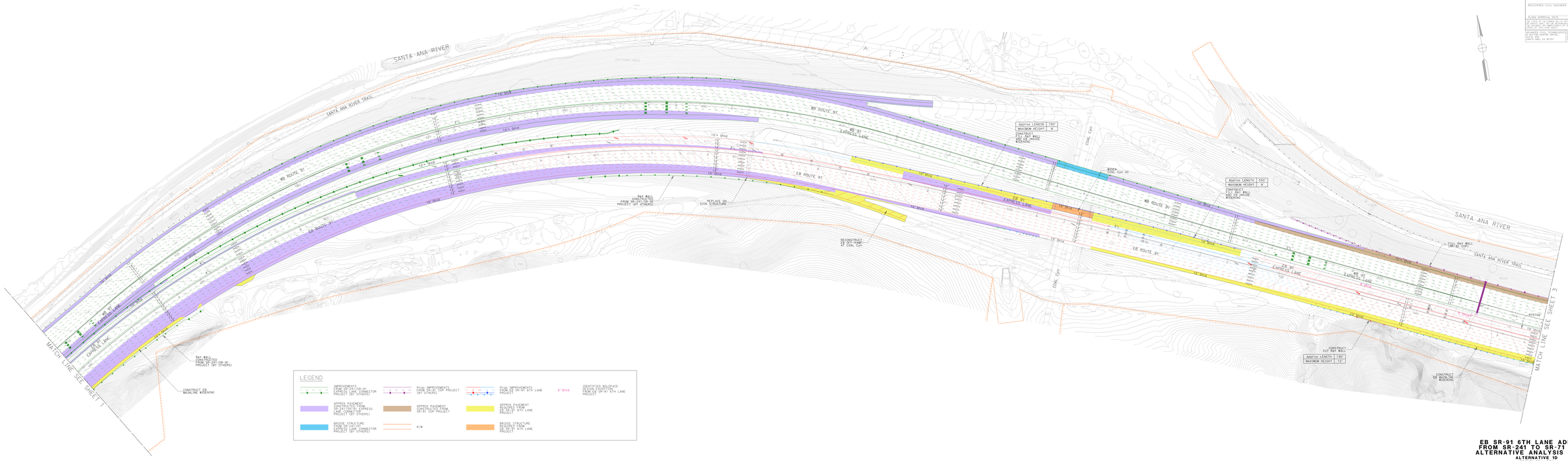
BORDER LAST REVISED 7/2/2013

USERNAME = tcisneros
DGN FILE = E1D-SHT-1.dgn

RELATIVE BORDER SCALE
0 1in. INCHES

UNIT 2994

PROJECT NUMBER & PHASE



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO. NO. SHEETS
12	ORA/RIV	91	R24.2/R36.9	

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA IS EXEMPT FROM THE REQUIREMENT OF OBTAINING AN ENCROACHMENT PERMIT

ADVANCED CIVIL TECHNOLOGIES
8 MUSTANG SEATIN DRIVE,
SUITE 100
SANTA ANA, CA 92707

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN STREET
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 1D

SCALES 1" = 50'

SHEET 2 OF 5

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

BORDER LAST REVISED 7/22/2013

USERNAME = tcrawford
DGN FILE = E1D-SHT-2.dgn

RELATIVE BORDER SCALE
1" = 1" WHEN PLOTTED

UNIT 2994

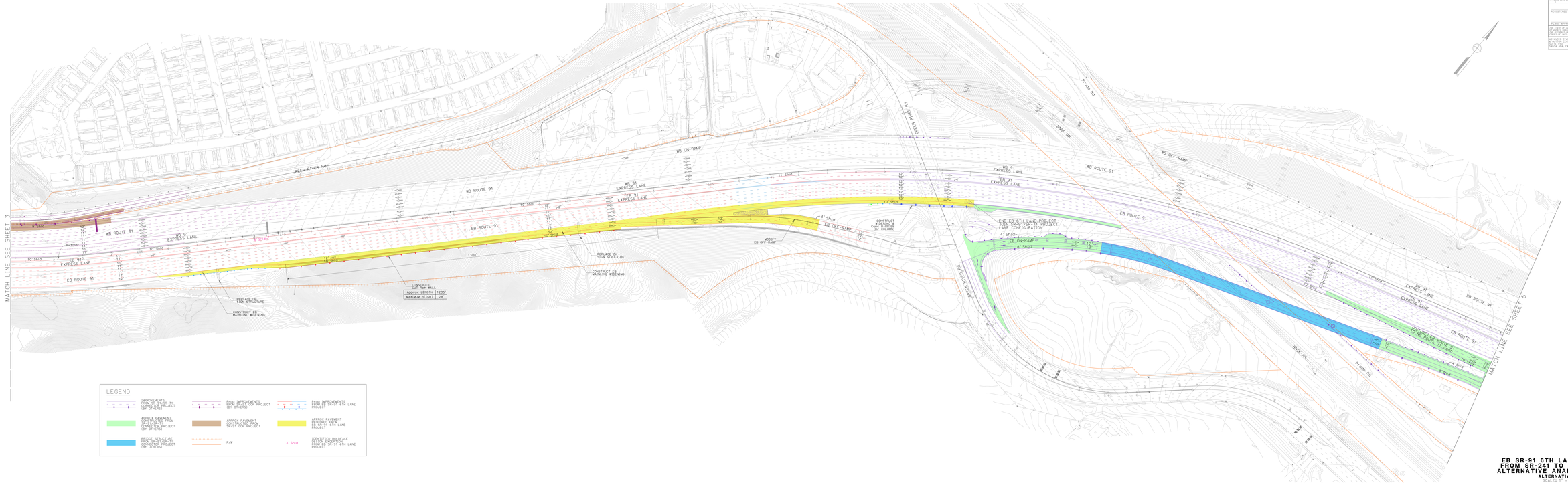
PROJECT NUMBER & PHASE

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 1D

SCALES 1" = 50'

SHEET 3 OF 5



DIST	COUNTY	ROUTE	POST MILES	SHEET NO.
			TOTAL PROJECT	ALL SHEETS
7	RIVERSIDE	91	R24.2/R31.3	

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE LICENSE OR LICENSES AUTHORIZING THE PRACTICE OF ENGINEERING BY THE ORGANIZATION OR COMPANY OF CHARGE EXPIRES ON

ADVANCED CIVIL TECHNOLOGIES
& MATTOX SEATON GROUP,
A JOINT VENTURE
SANTA ANA, CA 92701

ORANGE COUNTY TRANSPORTATION AUTHORITY
ORANGE, CA 92866

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 1D

SCALES 1" = 50'

SHEET 4 OF 5

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

BORDER LAST REVISED 7/2/2013

USERNAME = tcisneros
DGN FILE = E1-EXH_ALT_1D.dgn

RELATIVE BORDER SCALE
0 1in. (INCHES) 2

UNIT 2994

PROJECT NUMBER & PHASE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12,8	Ora,Riv	91	RXX.X/XX.X		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

ADVANCED CIVIL TECHNOLOGIES
6 HUTTON CENTRE DRIVE,
SUITE 450
SANTA ANA, CA 92707

ORANGE COUNTY
TRANSPORTATION AUTHORITY
550 SOUTH MAIN STREET
ORANGE, CA 92863

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 1A - COMMON TO ALL ALTERNATIVES

SCALE: 1" = 50'

SHEET 5 OF 5

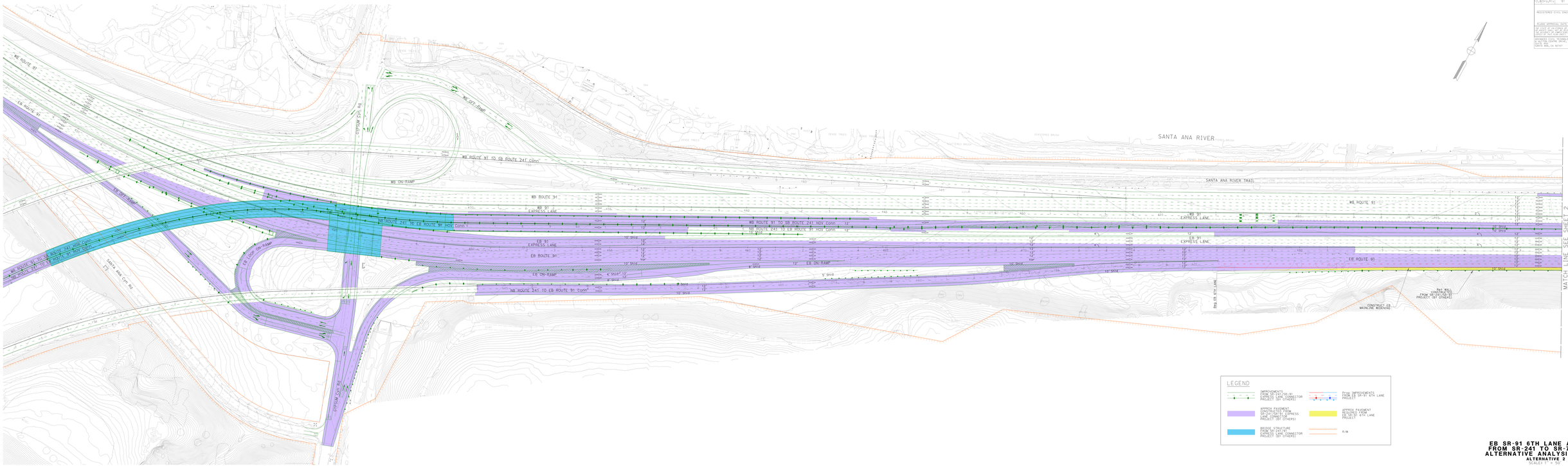
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR | CALCULATED-DESIGNED BY | CHECKED BY | REVISED BY | DATE REVISED

LAST REVISION 00-00-00 | DATE PLOTTED => 20-JAN-2022 | TIME PLOTTED => 13:36

BORDER LAST REVISED 7/2/2010 | USERNAME => ASalman | DGN FILE => Exh_Alt 1A.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 2994 | PROJECT NUMBER & PHASE



LEGEND

- IMPROVEMENTS FROM SR 241/SR-91 EXPRESS LANES CONNECTOR PROJECT (BY OTHERS)
- FLOW IMPROVEMENTS TO SR-91 6TH LANE PROJECT
- APPROX PAVEMENT OBSTRUCTED FROM SR 241/SR-91 EXPRESS LANE CONNECTOR PROJECT (BY OTHERS)
- APPROX PAVEMENT REQUIRED FOR SR-91 6TH LANE PROJECT
- BRIDGE STRUCTURE OBSTRUCTED FROM SR 241/SR-91 EXPRESS LANE CONNECTOR PROJECT (BY OTHERS)
- R/W

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO. ALL SHEETS
12	ORA/RIV	91	R24.2/R34.5	

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF CHANGES TO THIS PLAN MADE BY OTHERS.

ADVANCED CIVIL TECHNOLOGIES 8 MUSEUM SEVEN DRIVE, SUITE 100 SANTA ANA, CA 92701

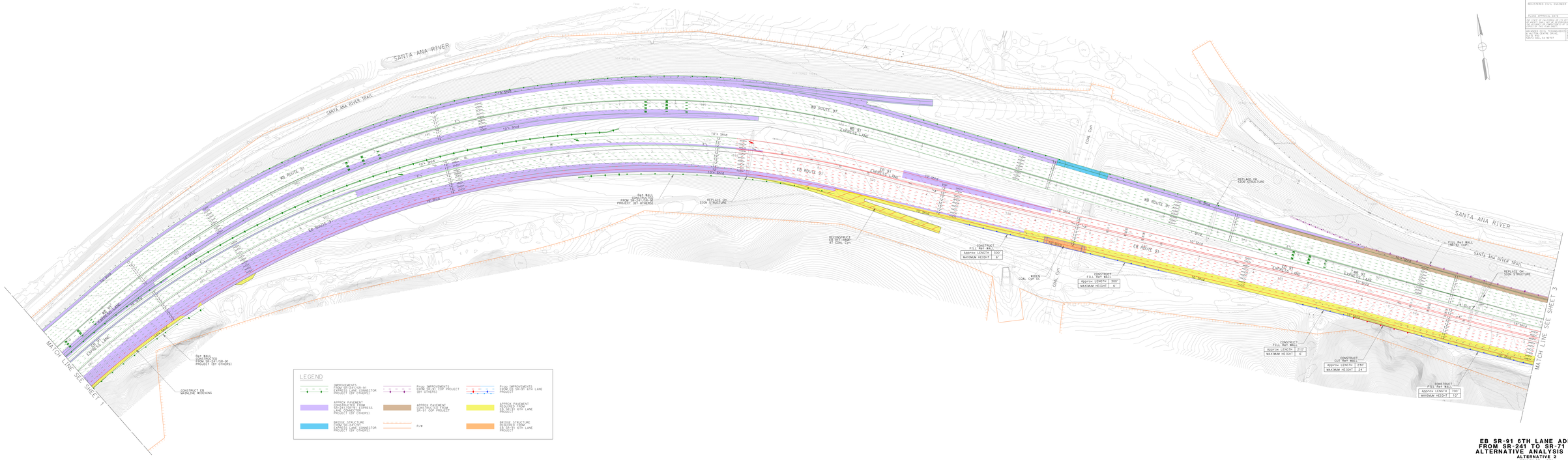
ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 2

SCALED 1" = 80'

SHEET 1 OF 5



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO. ALL SHEETS
7	ORA/RIV/LA	91	R24.4/R36.9	

REGISTERED CIVIL ENGINEER — DATE

PLANS APPROVAL DATE

THE LICENSE OF AN ENGINEER ATTESTS TO THE ACCURACY AND THE INTEGRITY OF ONLY THE ORIGINAL DOCUMENT.

ADVANCED CIVIL TECHNOLOGIES
8 MUSEUM SEVEN DRIVE, SUITE 100
SANTA ANA, CA 92701

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN STREET
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 2

SCALES 1" = 80' & 1" = 100'

SHEET 2 OF 5

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

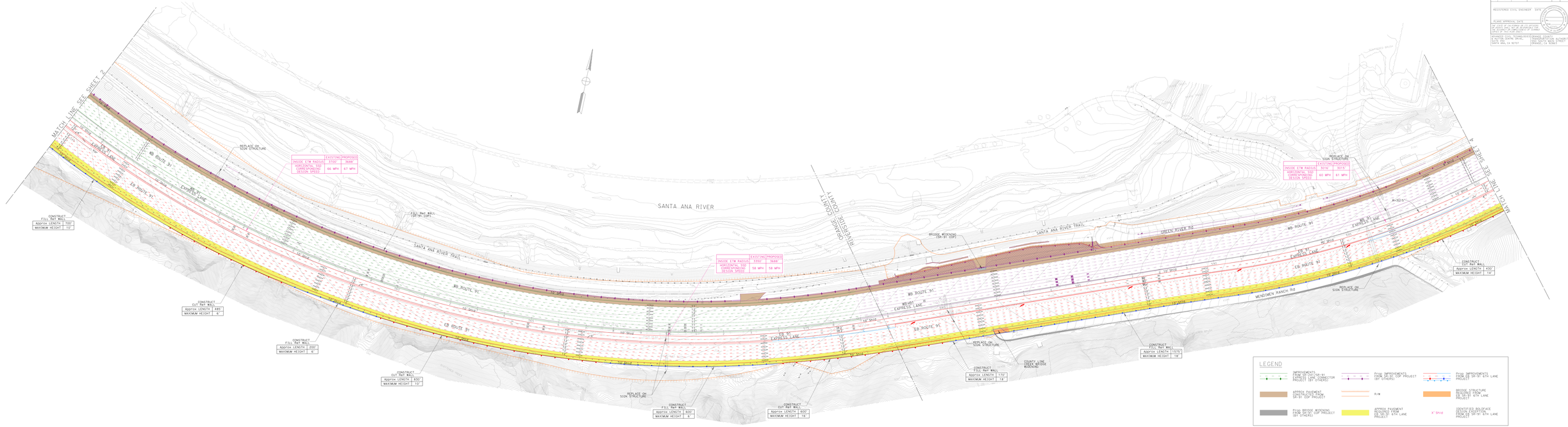
BORDER LAST REVISED 7/2/2013

USERNAME = tcisneros
DGN FILE = E1_ALT_2.dgn

RELATIVE BORDER SCALE
0 1" 2"
IF IT DOES NOT MEASURE 2" THEN SCALE ACCORDINGLY

UNIT 2994

PROJECT NUMBER & PHASE



DIST	COUNTY	ROUTE	POST MILES	SHEET NO.
12	ORA/RIV	91	R24.2/R34.5	
			TOTAL PROJECT	NO. SHEETS

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE LICENSE OR STAMP AS APPLIED TO THIS SHEET SHALL BE CONSTRUED AS ACCURACY OR COMPLETENESS OF CHANGES MADE BY OTHERS.

ADVANCED CIVIL TECHNOLOGIES
& MATTEN TENTH GROUP,
1 CIVIC PLAZA
SANTA ANA, CA 92701

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN STREET
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 2

SCALES 1" = 300'

SHEET 3 OF 5

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

BORDER LAST REVISED 7/22/2013

USERNAME = tcisnero
DGN FILE = EA_ALT_2.dgn

RELATIVE BORDER SCALE
FILL IN VALUES

UNIT 2994

PROJECT NUMBER & PHASE

DIST	COUNTY	ROUTE	POST MILES	SHEET NO.
			TOTAL PROJECT	ALL SHEETS
12	ORA/RIV	91	R14.2/R19.3	

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE LICENSE OR OTHER AUTHORITY IN RESPONSIBLE CHARGE OF THE ACCURACY OF COMPLETENESS OF SUMMARY REPORT

ADVANCED CIVIL TECHNOLOGIES	ORANGE COUNTY TRANSPORTATION AUTHORITY
8 MUSEUM SEVEN SPORL SANTA ANA, CA 92701	550 SOUTH MAIN ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 2

SCALES 1" = 300'

SHEET 4 OF 5

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

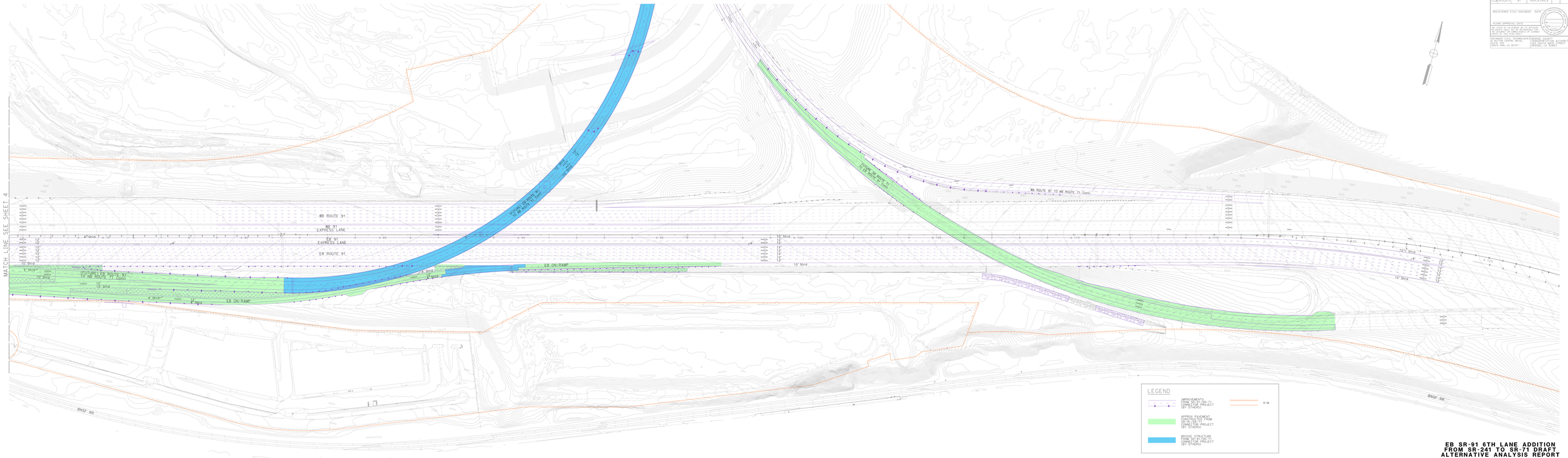
BORDER LAST REVISED 7/2/2013

USERNAME = tcisneros
DGN FILE = E:\DGN\ALT-2.dgn

RELATIVE BORDER SCALE
0 1/2 1 INCHES

UNIT 2994

PROJECT NUMBER & PHASE



DIST	COUNTY	ROUTE	POST MILES	SHEET NO.
			TOTAL PROJECT	ALL SHEETS
12	ORA/RIV	91	R24.2/R36.5	

REGISTERED CIVIL ENGINEER — DATE

PLANS APPROVAL DATE

THE STATE OF THE ENGINEER OF THE PROJECT AND THE DATE THE PROJECT WAS OPENED TO PUBLIC TRAFFIC.

ADVANCED CIVIL TECHNOLOGIES
8 MUSTANG SEATIN DRIVE, SUITE 500
SANTA ANA, CA 92707

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN STREET
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 1A - COMMON TO ALL ALTERNATIVES

SCALES 1" = 100'

SHEET 5 OF 5

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

REVISED BY | DATE REVISED

DESIGNED BY | DRAWN BY | CHECKED BY

DETAILS NOT APPROVED FOR CONSTRUCTION

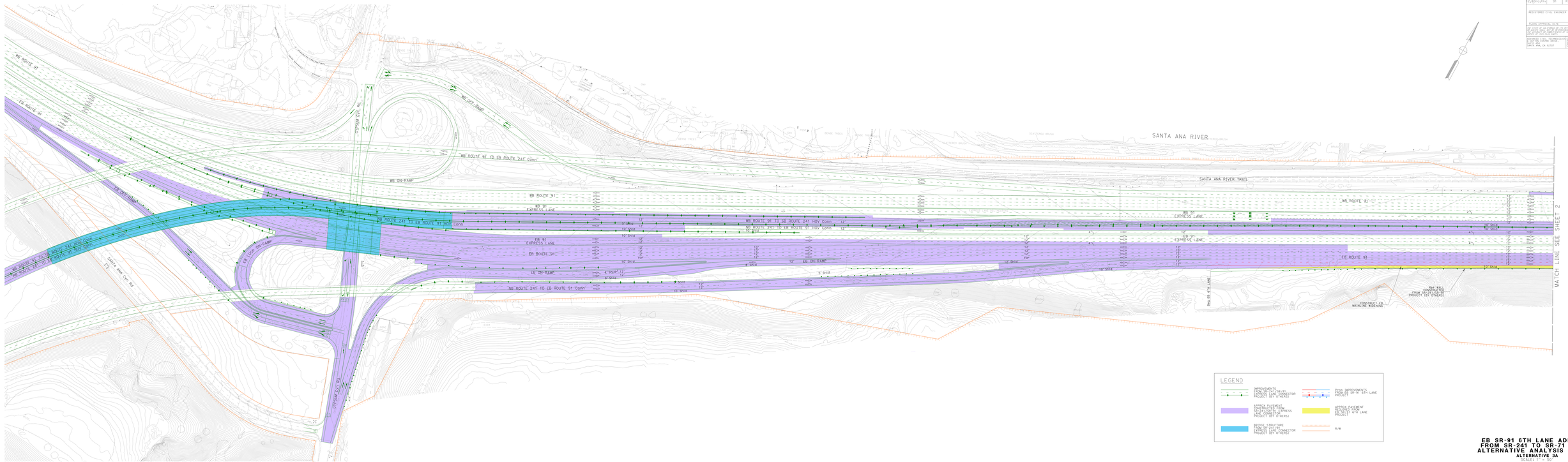
BORDER LAST REVISED 7/22/2013

USERNAME = tcisneros
DGN FILE = 01_Exh_A1-5 - 1A.dgn

RELATIVE BORDER SCALE
1" = 1" INCHES

UNIT 2994

PROJECT NUMBER & PHASE



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO. NO. SHEETS
12	ORA/RIV	91	R24.2/R31.3	

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF CHANGES TO THIS PLAN THAT ARE NOT MADE BY THE STATE.

ADVANCED CIVIL TECHNOLOGIES
8 MUSTANG SALLY DRIVE, SUITE 100
LADERA RANCH, CA 92694

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN STREET
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 3A

SCALE: 1" = 500'

SHEET 1 OF 5

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

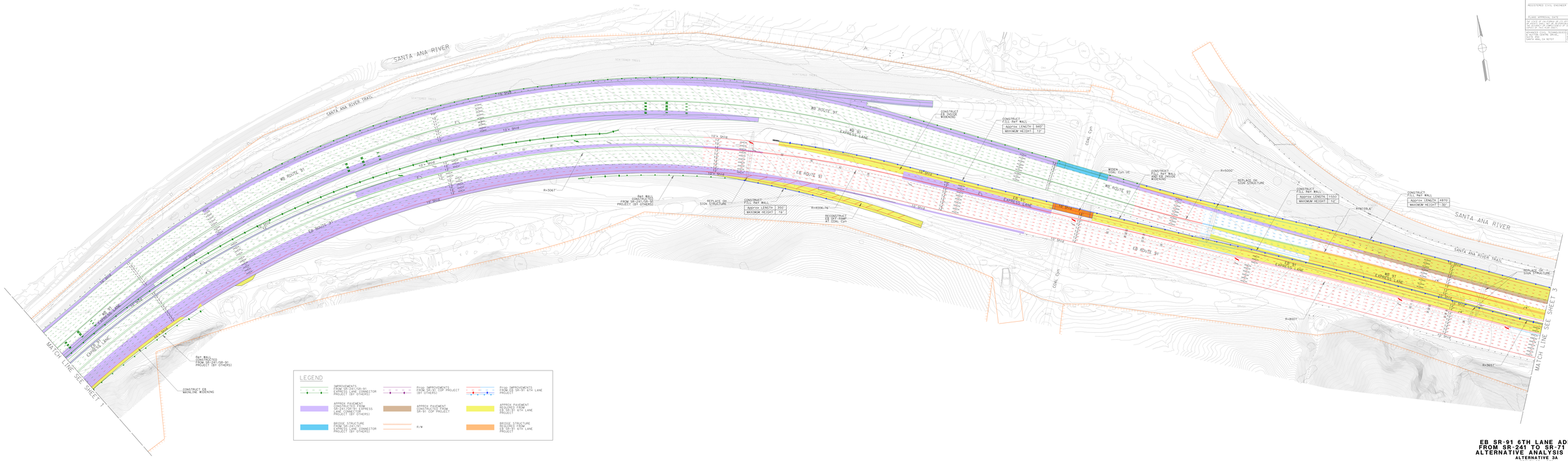
BORDER LAST REVISED 7/2/2013

USERNAME = tr.bonner
DGN FILE = 91241to71 3a.dgn

RELATIVE BORDER SCALE
0 1/2 1 INCHES

UNIT 2994

PROJECT NUMBER & PHASE



DIST	COUNTY	ROUTE	POST MILE TOTAL PROJECT	SHEET NO. TOTAL SHEETS
7	ORA/RIV	91	R24.4/R36.8	

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE LICENSE OR LICENSE AUTHORIZATION EXPIRATION DATE IS NOT AN INDICATION OF CURRENT OR FUTURE EMPLOYMENT.

ADVANCED CIVIL TECHNOLOGIES 8 MUSEUM SEVEN DRIVE, SUITE 100 SANTA ANA, CA 92701

ORANGE COUNTY TRANSPORTATION AUTHORITY 550 SOUTH MAIN ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 3A

SCALE: 1" = 500'

SHEET 2 OF 5

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

BORDER LAST REVISED 7/2/2013

USERNAME = tcrawford
DGN FILE = E:\Civil\ALT 3A.dgn

RELATIVE BORDER SCALE IS TO INCHES

UNIT 2994

PROJECT NUMBER & PHASE

DIST	COUNTY	ROUTE	POST MILE	SHEET NO.
			TOTAL PROJECT	NO. SHEETS
12	ORA/RIV	91	R24.2/R36.5	

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE LICENSE OR OTHER AUTHORITY FOR ACCURACY OR COMPLIANCE OF CHANGED STANDARDS

ADVANCED CIVIL TECHNOLOGIES
& MATTOS SEATH GROUP
SANTA ANA, CA 92701

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN ST.
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 3A

SCALE: 1" = 500'

SHEET 3 OF 5

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

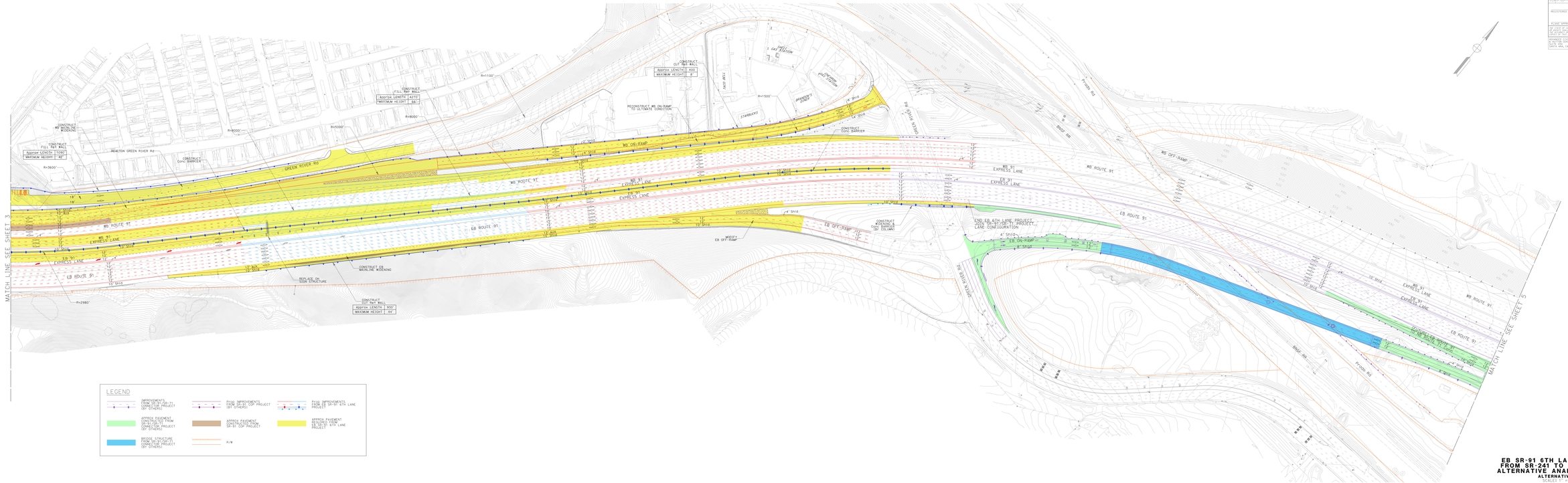
BORDER LAST REVISED 7/22/2013

USERNAME = tcrawford
DGN FILE = 3-DRAFT.dgn

RELATIVE BORDER SCALE TO 1" = 500'-0"

UNIT 2994

PROJECT NUMBER & PHASE



DIST | COUNTY | ROUTE | POST MILES | SHEET NO. | TOTAL PROJECT | NO. SHEETS
RIV | RIV/ORA | 91 | R24.7/R29.5 | | |

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE LICENSE OR LICENSES AUTHORIZING THE PRACTICE OF ENGINEERING BY THE DEPARTMENT OF CALIFORNIA

ADVANCED CIVIL TECHNOLOGIES
8 MILTON CENTER DRIVE, SUITE 200
SANTA ANA, CA 92707

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN STREET
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 3A

SCALES 1" = 50'

SHEET 4 OF 5

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

REVISED BY | DATE REVISED | DESIGNED BY | DRAWN BY | CHECKED BY | QUANTITY CALCULATED BY | QUANTITY CHECKED BY

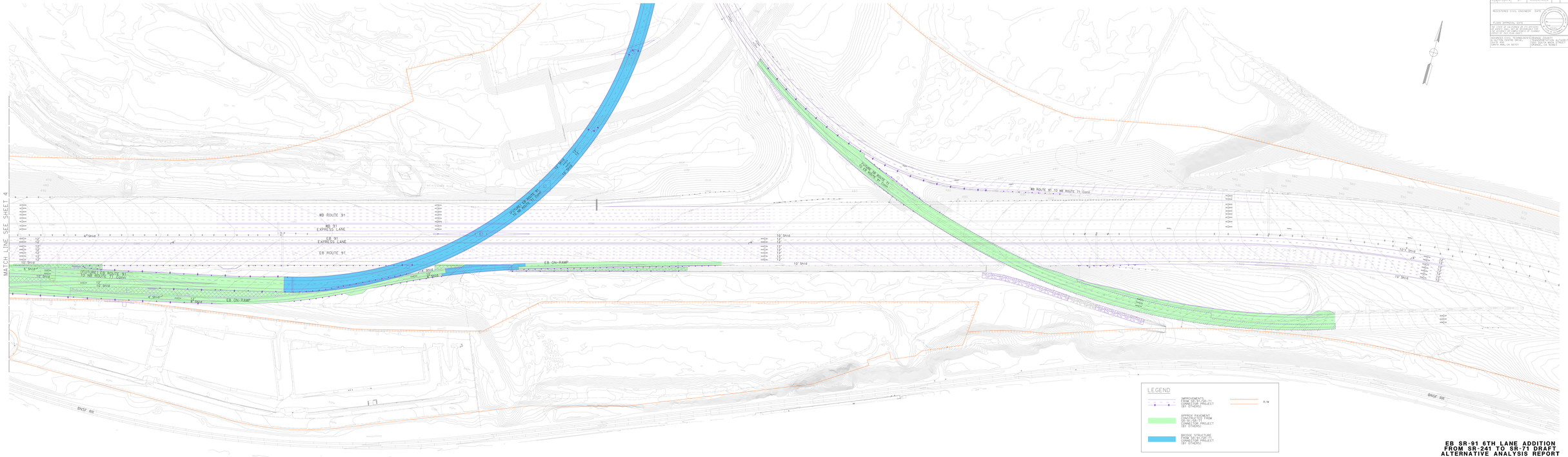
BORDER LAST REVISED 7/22/2013

USERNAME = tnguyen
DGN FILE = C:\Projects\Alt 3A.dgn

RELATIVE BORDER SCALE
0 1/2 1 INCHES

UNIT 2994

PROJECT NUMBER & PHASE



DIST	COUNTY	ROUTE	POST MILES	SHEET NO.
			TOTAL PROJECT	ALL SHEETS
12	ORA/RIV	91	R24.2/R36.3	

REGISTERED CIVIL ENGINEER — DATE

PLANS APPROVAL DATE

THE STATE OF THE ENGINEER OF RECORD IS RESPONSIBLE FOR THE ACCURACY OF COMPLETENESS OF CHANGES MADE BY OTHERS.

ADVANCED CIVIL TECHNOLOGIES
8 MUSTANG SEATIN DRIVE, SUITE 100
LAKE ARIA, CA 92701

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN STREET
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 3A

SCALES 1" = 50'

SHEET 5 OF 5

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

REVISED BY | DATE REVISED

CALCULATED BY | DRAWN BY

CHECKED BY | DATE OF LAST PLAN SUBMITTAL

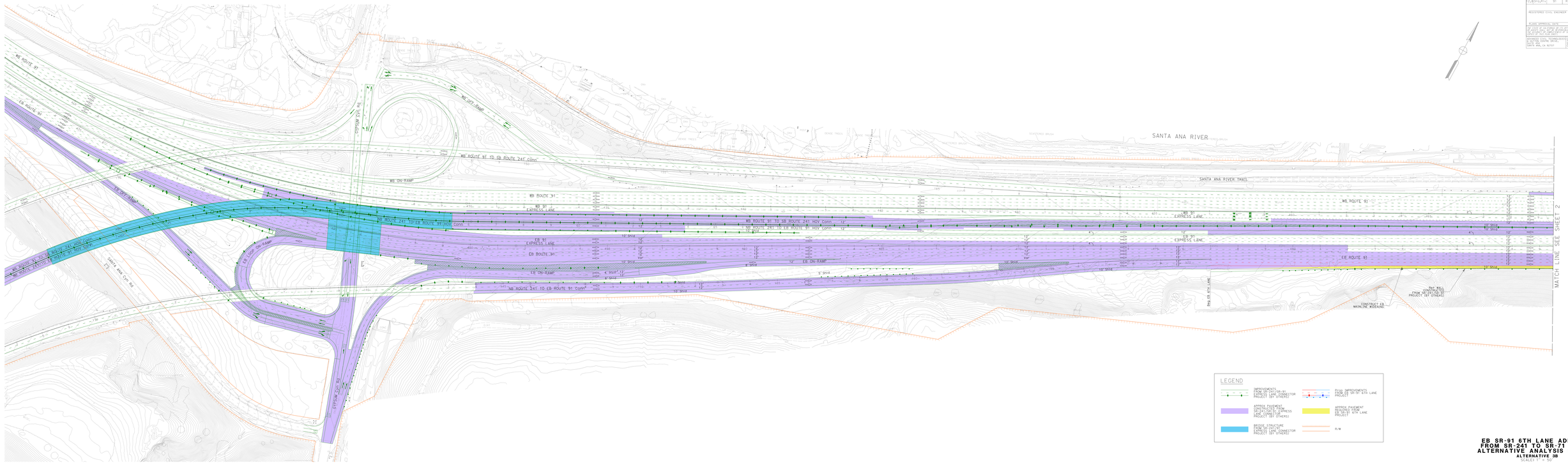
BORDER LAST REVISED 7/22/2013

USERNAME = tcisneros
DGN FILE = C:\Users\tcisneros\Desktop\SR-91 EB 6th Lane Addition\Alternative 3A\Sheet 5\Sheet 5.dgn

RELATIVE BORDER SCALE
0 1in. INCHES

UNIT 2994

PROJECT NUMBER & PHASE



DIST	COUNTY	ROUTE	POST MILES	SHEET NO.
			TOTAL PROJECT	ALL SHEETS
12	ORA/RIV	91	R24.2/R31.5	

REGISTERED CIVIL ENGINEER — DATE

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF CHANGES TO THIS PLAN THAT ARE NOT MADE BY THE STATE.

ADVANCED CIVIL TECHNOLOGY
3 MACARTHUR PLACE, SUITE 1100
SANTA ANA, CA 92707

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 3B

SCALES 1" = 50'

SHEET 1 OF 5

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

BORDER LAST REVISED 7/2/2013

USERNAME = tcrockett
DGN FILE = c12_Exh_Alt_3B.dgn

RELATIVE BORDER SCALE
0 1in. INCHES

UNIT 2994

PROJECT NUMBER & PHASE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12,8	Ora,Riv	91	RXX.X/XX.X		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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ADVANCED CIVIL TECHNOLOGIES
6 HUTTON CENTRE DRIVE, SUITE 450
SANTA ANA, CA 92707

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN STREET
ORANGE, CA 92863

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 3B

SCALE: 1" = 50'

SHEET 2 OF 5

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR | CALCULATED-DESIGNED BY | CHECKED BY | REVISED BY | DATE REVISED

LAST REVISION 00-00-00 | DATE PLOTTED => 20-JAN-2022 | TIME PLOTTED => 13:38

DIST	COUNTY	ROUTE	POST MILES	SHEET NO.
7	ORA/RIV	91	R24.2/R26.5	

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE LICENSE OR REGISTRATION EXPIRATION DATE OF THE REGISTERED ENGINEER IS NOT REQUIRED ON PLANS APPROVED BEFORE THE END OF THE FISCAL YEAR OF THE EXPIRATION DATE.

ADVANCED CIVIL TECHNOLOGIES
8 MUTUAL TENTH DRIVE,
SANTA ANA, CA 92707

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN ST.
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 3B

SCALES 1" = 50'

SHEET 3 OF 5

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

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BORDER LAST REVISED 7/22/2013

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DGN FILE = 01SHLAY1.dgn

RELATIVE BORDER SCALE
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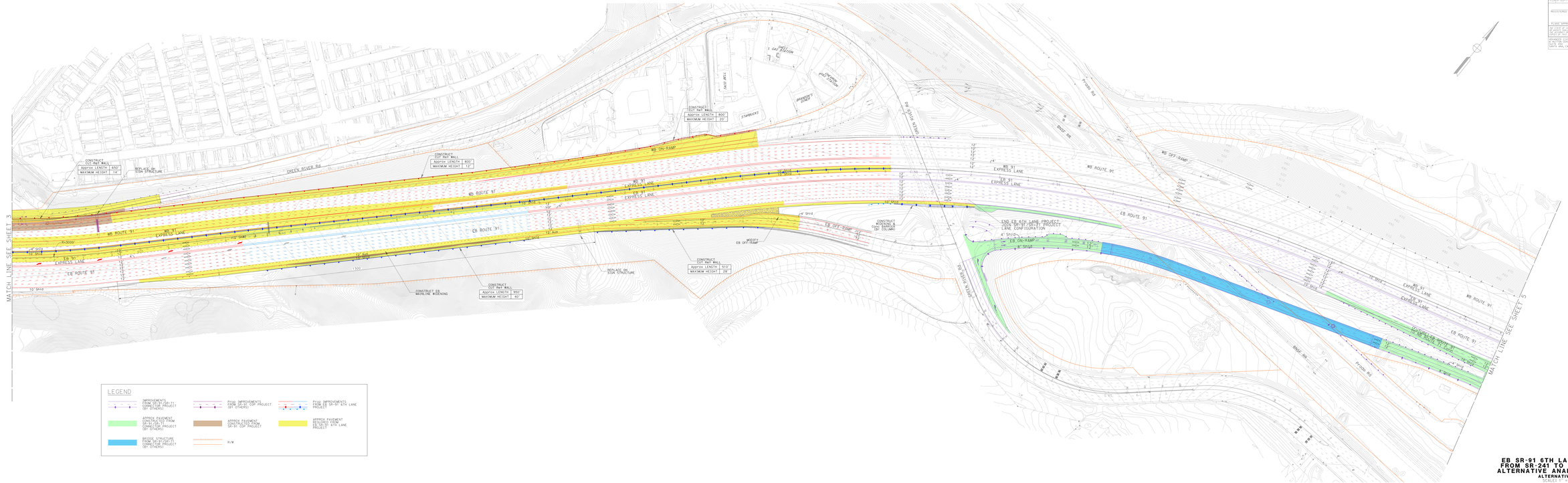
UNIT 2994 | PROJECT NUMBER & PHASE



DIST	COUNTY	ROUTE	POST MILES	SHEET NO.
			TOTAL PROJECT	ALL SHEETS
12	ORA	91	R24.2/R34.5	

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE LICENSE OR STAMP AUTHORIZATION EXPIRES ON THE LAST DAY OF THE REGISTERED ENGINEER'S BIRTH MONTH.

ADVANCED CIVIL TECHNOLOGIES
8 MUSTANG SEATON DRIVE, SUITE 100
LAGUNA HILLS, CA 92701

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN STREET
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 3B

SCALES 1" = 500'

SHEET 4 OF 5

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

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RELATIVE BORDER SCALE
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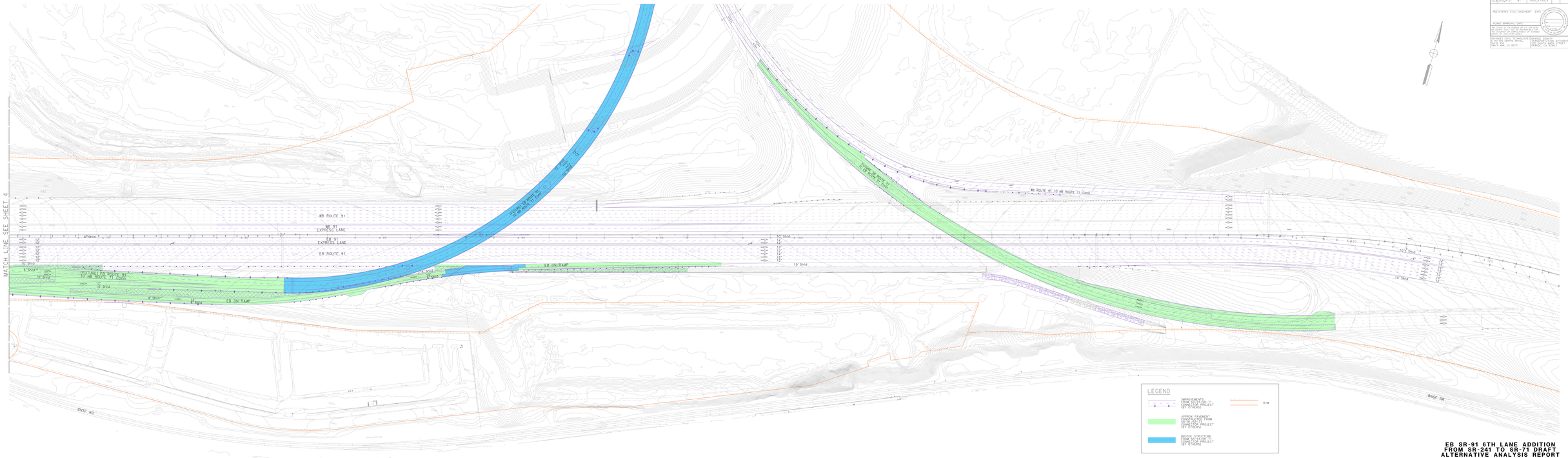
UNIT 2994

PROJECT NUMBER & PHASE



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			TOTAL PROJECT	ALL SHEETS
12	ORA/RIV	91	R24.2/R36.5	

REGISTERED CIVIL ENGINEER — DATE

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8 MUSTANG SEATIN DRIVE, SUITE 100
SANTA ANA, CA 92707

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN STREET
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 1A - COMMON TO ALL ALTERNATIVES

SCALES 1" = 200'

SHEET 5 OF 5

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

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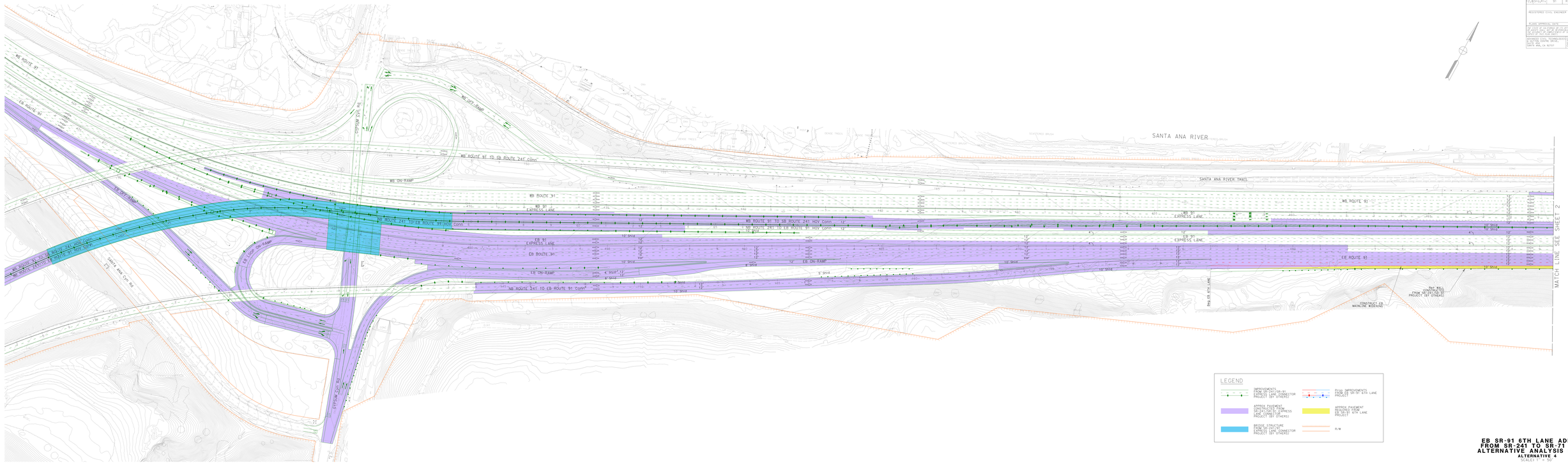
BORDER LAST REVISED 7/22/2013

USERNAME = tchinchuk
DGN FILE = 01_Exh_A1-5_12.dgn

RELATIVE BORDER SCALE
1" = 1" INCHES

UNIT 2994 | PROJECT NUMBER & PHASE



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			TOTAL PROJECT	ALL SHEETS
12	ORA/RIV	91	R14.2/R19.3	

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SANTA ANA, CA 92707

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 4

SCALED 1" = 80'-0"

SHEET 1 OF 5

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

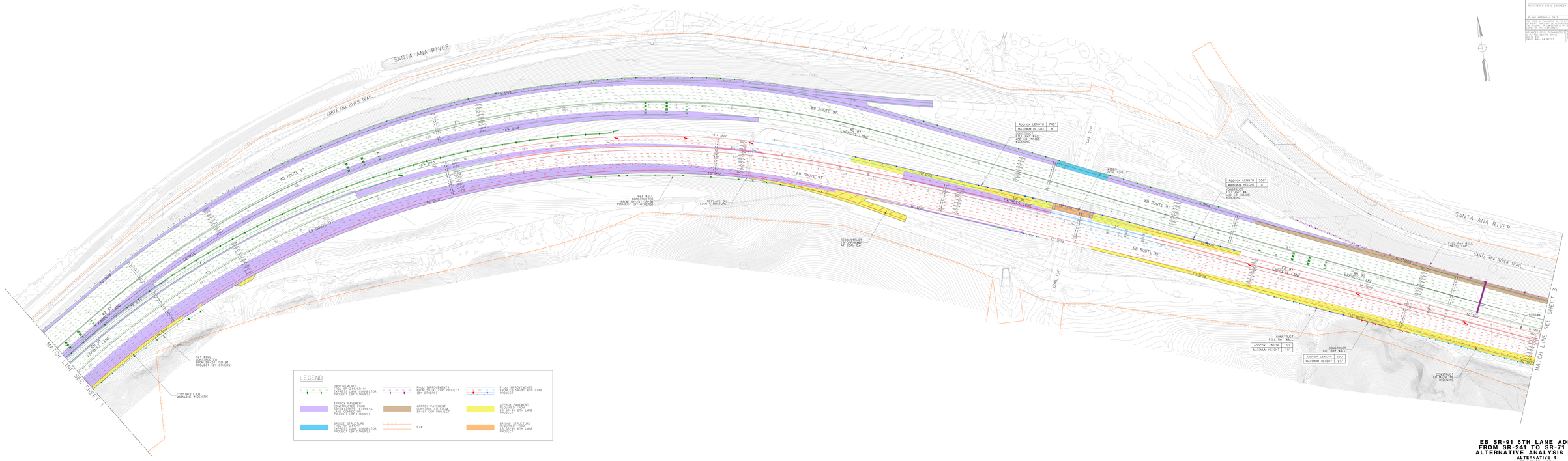
BORDER LAST REVISED 7/22/2013

USERNAME = tcrockett
DGN FILE = c12_Exh_Alt 4.dgn

RELATIVE BORDER SCALE
FILL IN VALUES

UNIT 2994

PROJECT NUMBER & PHASE



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7	ORA/RIV	91	R24.4/R34.9	

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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ADVANCED CIVIL TECHNOLOGIES	ORANGE COUNTY TRANSPORTATION AUTHORITY
8 MASTEN TENTH DRIVE, SUITE 250 SANTA ANA, CA 92707	550 SOUTH MAIN STREET ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 4

SCALES 1" = 80' & 1" = 100'

SHEET 2 OF 5

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

REVISED BY | DATE REVISED

DESIGNED BY | DRAWN BY | CHECKED BY

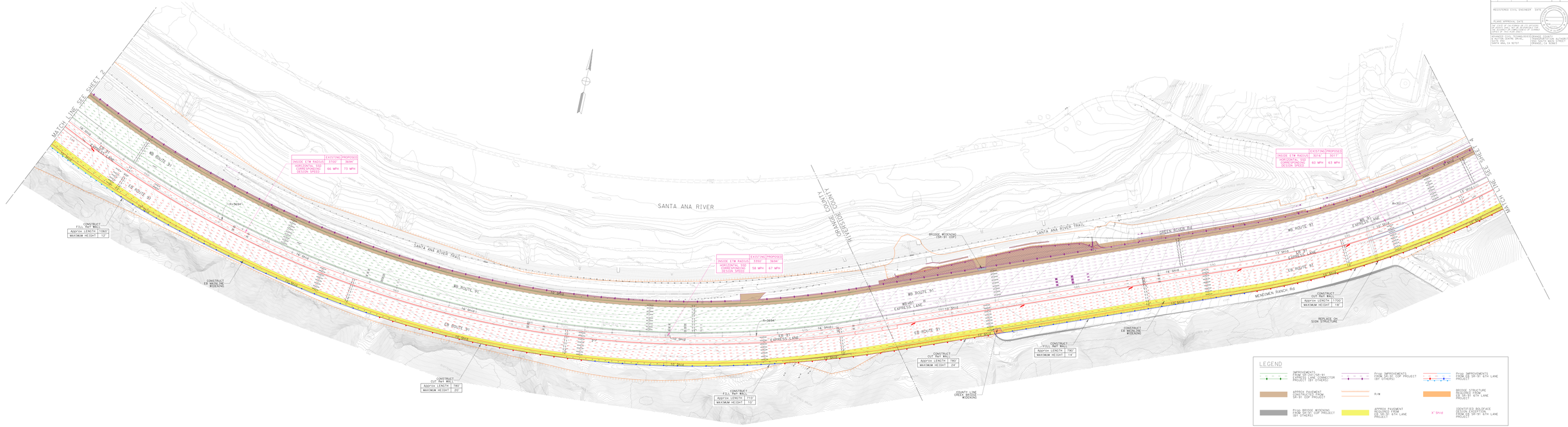
DISPLAY FOR FINAL SUBMITTAL

BORDER LAST REVISED 7/2/2013

USERNAME: YSHIOMI
DGN FILE: H:\EXHIBITS\E4.DGN

RELATIVE BORDER SCALE TO 1" HORIZ

UNIT 2994 | PROJECT NUMBER & PHASE



DIST	COUNTY	ROUTE	POST MILES	SHEET NO.
12	ORA/RIV	91	TOTAL PROJECT	XX SHEETS
			R14.2/R16.5	

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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ADVANCED CIVIL TECHNOLOGIES
& NATIVE TENTH GROUP, LLC
1920 E. 17TH ST.
SANTA ANA, CA 92701

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN STREET
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 4

SCALES 1" = 300'

SHEET 3 OF 5

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

REVISED BY | DATE REVISED

DESIGNED BY | DRAWN BY | CHECKED BY

CHECK PLAN APPROVAL SUBMITTAL

BORDER LAST REVISED 7/22/2013

USERNAME = XXXXXXXX
DGN FILE = XXXXXX.dgn

RELATIVE BORDER SCALE
FT. to INCHES

UNIT 2994

PROJECT NUMBER & PHASE

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO. ALL SHEETS
12	ORA/RIV	91	R24.2/R31.3	

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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& MATERIAL TESTING SERVICES, INC.
SANTA ANA, CA 92701

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN STREET
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 4

SCALES 1" = 100'

SHEET 4 OF 5

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

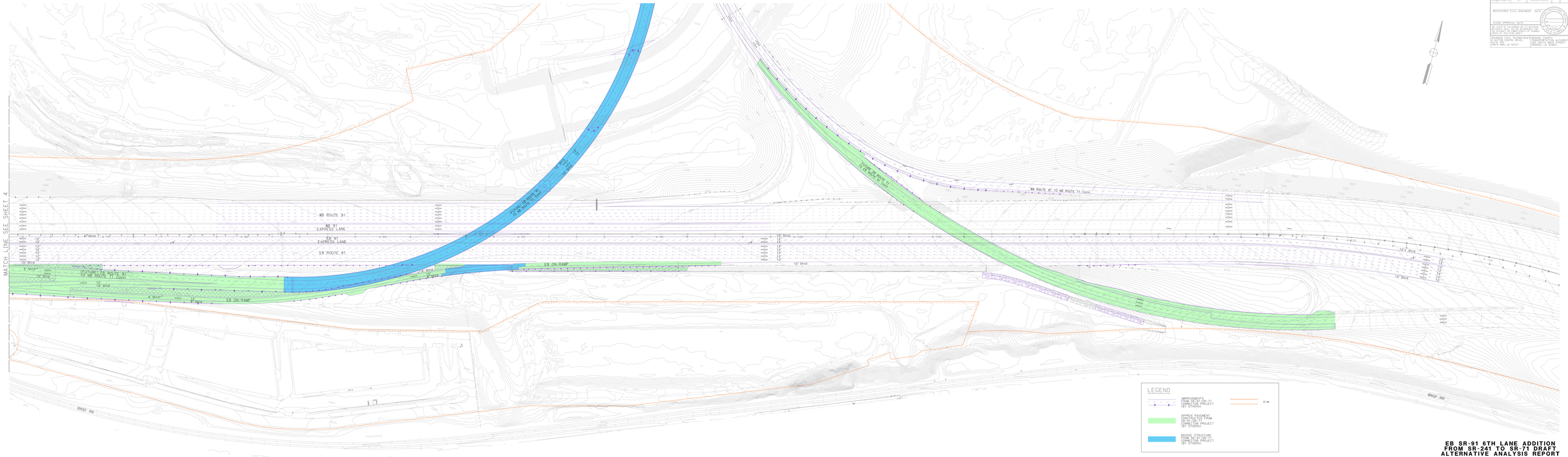
BORDER LAST REVISED 7/2/2013

USERNAME = tnguyen
DGN FILE = E12EA0.dgn

RELATIVE BORDER SCALE
0 1in. PLOTTED

UNIT 2994

PROJECT NUMBER & PHASE



DIST	COUNTY	ROUTE	POST MILES	SHEET NO.
			TOTAL PROJECT	ALL SHEETS
12	ORA/RIV	91	R24.2/R36.5	

REGISTERED CIVIL ENGINEER — DATE

PLANS APPROVAL DATE

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ADVANCED CIVIL TECHNOLOGIES
8 MUSEUM SEVEN DRIVE, SUITE 100
SANTA ANA, CA 92701

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 SOUTH MAIN STREET
ORANGE, CA 92868

EB SR-91 6TH LANE ADDITION FROM SR-241 TO SR-71 DRAFT ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE 1A - COMMON TO ALL ALTERNATIVES

SCALES 1" = 100'

SHEET 5 OF 5

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

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CALCULATED BY | DRAWN BY

CHECKED BY | DESIGN SUPERVISOR

BORDER LAST REVISED 7/22/2013

USERNAME = tcrockett
DGN FILE = 91241ALT1-C4.dgn

RELATIVE BORDER SCALE
0 1in. 2inches

UNIT 2994 | PROJECT NUMBER & PHASE

Attachment B

Value Analysis Memorandum

91 Alternative Analysis from SR-241 to SR-71 Interchange Area

Technical Memorandum
Informal Value Analysis Workshop Summary

March 3, 2021

Introduction

This technical memorandum summarizes the discussion of the informal Value Analysis (VA) workshop that was conducted for the SR-91 Alternative Analysis Project, generally using the principles of the Caltrans VA process. The purpose of this informal VA workshop was to identify potential efficiencies that could be incorporated into the project to reduce cost and impacts in the alternatives developed.

Project Scope

The project is considering alternatives to add a sixth eastbound (EB) general purpose lane to SR-91 from SR-241 to SR-71. The sixth lane was originally included as part of the ultimate SR-91 Capital Improvement Project (CIP) cross-section and is intended to fulfill the commitment made as part of that project. The CIP project is currently in the feasibility study/alternative analysis phase.

The 91 Alternative Analysis is coordinating with other ongoing projects within this segment of the SR-91 corridor that include:

- **SR-241/SR-91 Median-to-Median Connector:** This project will construct a tolled median-to-median connector from SR-241 to the 91 Express Lanes. It includes modifications to SR-91 from SR-241 to the Coal Canyon undercrossing (UC). The project is being led by TCA and is currently in the PS&E phase.
- **SR-91 Corridor Operations Project (COP):** This project will construct a sixth westbound (WB) general purpose lane on SR-91 from Green River Road to SR-241. The scope is very similar in nature to what is proposed under the SR-91 Alternative Analysis Project, as this lane addition was also part of the ultimate SR-91 CIP cross-section. The project is being led by RCTC and PS&E has been completed. Construction is anticipated to be complete in late 2021.
- **SR-91/SR-71 Interchange Improvements:** This project will construct a new connector at the SR-91/SR-71 interchange. The project is being led by RCTC and is currently in the PS&E phase.

Four preliminary alternative concepts (ACs) have been developed for the addition of the sixth EB lane. These ACs have been developed to meet the original intent of the ultimate SR-91 CIP cross-section while avoiding impacts to existing constraints. Existing constraints include the Mindeman landslide to the south and the Santa Ana River and trail to the north. The four ACs presented to the VA team are:

- **Alternative Concept 1:** This AC has the most constrained cross-section in order to minimize impacts as much as possible. This would require the use of nonstandard lane and shoulder widths to minimize impacts to existing retaining walls and the Mindeman landslide. Under this AC, the SR-91 centerline would remain the same and minimal outside widening would be required.

  Three design variations are being considered under AC 1. Design Variation A would keep the inside shoulder width nonstandard as-is and use a nonstandard outside shoulder. Design Variation B would be the same, except that the outside shoulder would be widened to 10' throughout the project limits. Design Variation C would be the same as Design Variation B, except it would add a two-lane exit at the Green River off-ramp along with a 1,300' auxiliary lane.

- **Alternative Concept 2:** This AC proposes a full-standard cross-section for EB SR-91 by widening to the south into the Mindeman landslide area. This would require construction of several retaining walls along the south side of the freeway. This AC also includes a two-lane exit and a 1,300' auxiliary lane at the Green River off-ramp.

- **Alternative Concept 3:** This AC proposes a standard cross-section for EB SR-91 but would shift the SR-91 centerline and widen to the north. This avoids impacts to the Mindeman landslide but includes impacts to the Santa Ana River Trail. It also results in impacts to the SR-91 WB lanes.

  Two design variations are being considered under AC 3. Design Variation A provides a standard cross-section for the WB lanes, while Design Variation B provides the same cross-section for the WB lanes that is proposed with the SR-91 COP.

- **Alternative Concept 4:** This AC proposes to maintain the existing SR-91 centerline, like AC 1, but widens the inside shoulder wherever possible while minimizing impacts to the Mindeman landslide. This will limit the nonstandard features that would require approval.

Workshop Schedule

The informal VA workshop was held over a two-day period from Monday, November 9 to Tuesday, November 10, 2020. All sessions took place virtually using Zoom. The workshop was a condensed version of the Caltrans VA process that typically takes place during the Project Approval/Environmental Documentation (PA/ED) phase. The schedule for the workshop over the two days was as follows:

Time	Topic
Day 1 – Monday, November 9	
1:00PM to 2:00PM	Introductions/Process Overview/Project Overview/Stakeholder Concerns
2:00PM to 2:30PM	Break
2:30PM to 4:00PM	Brainstorming of Qualitative Cost-Saving Ideas
4:00PM to 4:30PM	Summarize Ideas
Day 2 – Tuesday, November 10	
1:00PM to 2:00PM	Evaluation of Ideas/VA Alternative Development
2:00PM to 2:15PM	Break
2:15PM to 3:15PM	Prepare Summary of VA Alternatives
3:15PM to 3:30PM	Break
3:30PM to 4:30PM	Presentation of VA Alternatives/Group Review and Ranking of VA Alternatives

Participants

All stakeholder agencies, including OCTA, RCTC, TCA, Caltrans District 8, Caltrans District 12, and the Cities of Anaheim, Corona, and Yorba Linda, were invited to the workshop. Additionally, independent reviewers for multiple disciplines were included to participate in the brainstorming and development of VA alternatives. The participants that attended each session are listed in the table below:

Name	Agency	Day 1 – Introductions/ Overview	Day 1 – Brainstorming Session	Day 2 - Evaluation of VA Alternatives	Day 2 - Presentation/ Ranking of VA Alternatives
Dan Phu	OCTA	X	X		X
Alison Army	OCTA	X	X		X
Sam Sharvini	OCTA	X	X	X	X
Archie Tan	OCTA				X
Josue Vaglienty	OCTA	X			X
Rose Casey	OCTA				X
David Thomas	RCTC	X	X	X	X
Mark Firger	RCTC/Parsons	X	X	X	X
Michael Blomquist	RCTC				X

Name	Agency	Day 1 – Introductions/ Overview	Day 1 – Brainstorming Session	Day 2 - Evaluation of VA Alternatives	Day 2 - Presentation/ Ranking of VA Alternatives
Juliet Su	TCA	X			X
Kelsie Anderson	TCA	X	X	X	X
David Speirs	TCA	X			X
Valarie McFall	TCA	X			X
Brian Santos	Caltrans District 12 – PM	X	X		X
Ali Jassim	Caltrans District 12 – Traffic	X	X		
Gamini Weeratunga	Caltrans District DES	X	X		
Emad Makar	Caltrans District 8 – PM	X			
David Kennedy	City of Anaheim	X	X	X	X
Tom Koper	City of Corona	X			
Tony Wang	City of Yorba Linda	X			
Jamie Lai	City of Yorba Linda	X			
Karen Cohoe	Advanced Civil Technologies	X	X	X	X
Jamal Salman	Advanced Civil Technologies	X	X	X	X
Alex Sanchez	Advanced Civil Technologies	X	X	X	X
Haoyuan (Tim) Liu	Advanced Civil Technologies	X	X	X	X
Ayman Salama	TranSystems	X	X	X	X
Andre Issa	TranSystems	X	X	X	X
Jesus Paez	Advanced Civil Technologies	X	X	X	X
David Shen	Advanced Civil Technologies	X	X	X	X
Emily Czaban	ICF	X	X	X	X
Joe Sawtelle	TranSystems	X	X	X	X
Isaac Alonso Rice	Advanced Civil Technologies	X	X	X	X
Ali Salman	Advanced Civil Technologies	X	X	X	X

Stakeholder Concerns/Evaluation Criteria

Traditionally, the VA study includes a session with the project stakeholders to identify their concerns related to the project, which are in turn used as criteria to evaluate the performance of the VA alternatives developed. Because the informal VA workshop was conducted within a short timeframe, the VA team utilized the stakeholder concerns and evaluation criteria developed as a result of interviews held with the stakeholders in June and July 2020. The final criteria included:

- Construction impacts

  Does the alternative concept increase or decrease traffic on arterials? Does the alternative concept improve or degrade operations on the surface streets (including ramp terminal intersections)? How will the alternative concept create residual construction impacts

affecting the adjacent tolled facilities? Does the alternative concept reduce cut-through traffic? Will proposed alternative result in a shorter or longer construction duration?

- SR-91 corridor impacts

  How will the alternative concept impact the SR-91 general-purpose lanes? How will the alternative concept impact users of the 91 Express Lanes?

- Cost and right-of-way (R/W) constraints

  Is the cost of the alternative concept consistent with available funding in the region? Cost includes the capital construction, R/W, utilities, and project development costs. Can the alternative concept be built to avoid major R/W impacts, including costly utility relocation? Can the alternative be constructed generally within the State R/W?

- Design standards

  Can the alternative concept be built to Caltrans standards with minimal exceptions?

- Environmental impacts

  Will the alternative concept result in potentially significant environmental impacts? How will the project alternative concept impact the Santa Ana River Trail? Will the alternative concept widen the Coal Canyon undercrossing? How will the alternative concept impact the Mindeman Landslide?

- Planned projects

  Will proposed alternative concept be compatible with proposed projects along the SR-91 corridor in the short term (based on timing for implementation)? How will proposed alternative concepts integrate with current and future corridor cross-section?

- Schedule

  How long would the alternative concept take to implement, both during project delivery and construction?

Brainstorming Session for VA Alternatives

A brainstorming session was held to review the alternative concepts already developed and to look for opportunities to refine them and to reduce impacts. The core VA team included a diverse group of disciplines, including roadway, traffic, structures, constructability, drainage, environmental, R/W and utilities, and geotechnical. Additional attendees were also present from OCTA, RCTC, TCA, and Caltrans District 12. Participants were split into two breakout rooms to review the alternative concepts. A facilitator in each breakout room reviewed the geometry for the alternative concepts and filled out a VA Alternative Form to capture the ideas generated. The two groups reconvened at the end of the brainstorming session to review the ideas and consolidate any similar concepts.

Between the two groups, a total of 10 ideas were generated, including three variations for Idea No. 6. The VA Alternative Forms documenting these ideas are included on the following pages, which include a discussion of the revised concept, advantages and

disadvantages, and justification for the idea. A sketch of the proposed refinement is also included for each idea (where applicable).

VALUE ANALYSIS ALTERNATIVE *SR-91 Alternative Analysis Study*		OCTA	
Function:	Increase capacity at Green River EB off-ramp	**Idea No. 1**	**Alternative No. 1C, 2, 3A, 3B, 4**
Title:	Provide 4 lanes at terminus of Green River Road Off-Ramp (in lieu of auxiliary lane)		

Original Concept:

The original concept for listed alternatives proposes to add an auxiliary lane at the Green River EB off-ramp. This would potentially increase the ramp capacity and reduce future traffic queuing back onto the SR-91 mainline.

Revised Concept:

The revised concept would build a fourth lane at the EB ramp termini at Green River. By increasing intersection capacity and adjusting the signal timing, more cars can be moved through the intersection to also avoid traffic queuing back onto the SR-91 mainline.

Advantages:	**Disadvantages:**
- Avoids building 40′ retaining wall - Avoids additional pavement required for auxiliary lane	- Green River EB off-ramp and Green River Rd intersection geometry may be altered - May not provide the same capacity as the auxiliary lane - Additional traffic analysis will needed - Traffic currently exceeds the required minimum for an auxiliary lane, for that reason this idea may not solve the existing problem

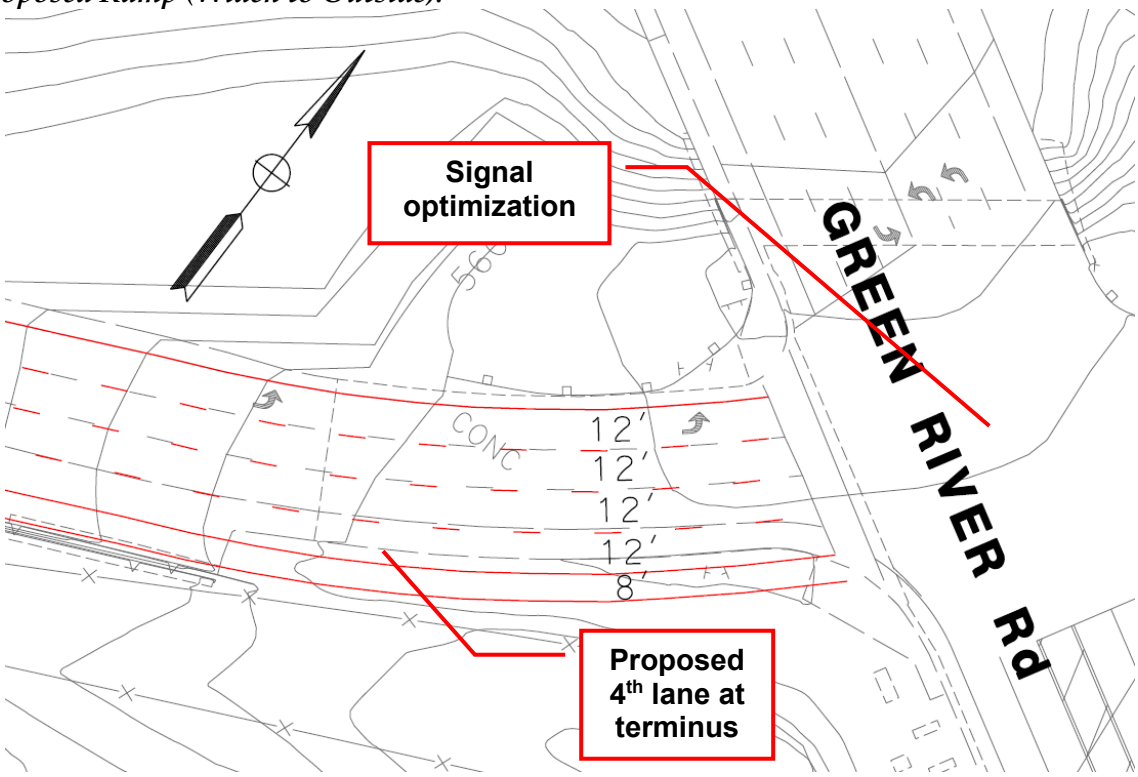
Discussion/Justification:

By eliminating the proposed auxiliary lane for alternatives listed, the existing retaining wall will be saved, and construction of the new taller retaining wall can be avoided. This would likely be more applicable if the SR-91 ultimate cross-section is not constructed under this project, but a more limited cross-section. However, additional traffic analysis will be needed to confirm that this concept will operate sufficiently through the project horizon year.

SKETCHES *SR-91 Alternative Analysis Study*		OCTA	
Title:	Provide 4 lanes at terminus of Green River Road Off-Ramp (in lieu of auxiliary lane)	**Idea No. 1**	**Alternative No. 1C, 2, 3A, 3B, 4**

Existing Ramp:

Proposed Ramp (Widen to Outside):



VALUE ANALYSIS ALTERNATIVE *SR-91 Alternative Analysis Study*		OCTA	
Function:	Adopt an acceptable cross-section for this project	**Idea No. 2**	**Alternative No. 2, 3A, 3B, 4**
Title:	Use 2′ buffer throughout between GP lanes and ELs and 11' lanes (except for outside two lanes)		

Original Concept:

Alternatives 2, 3A, 3B and 4 utilize standard design features, including 12′ lanes and a minimum 4′ buffer between the GP and ELs.

Revised Concept:

The revised concept proposes to gain consensus on an acceptable nonstandard cross-section to avoid additional widening required to the south and north and expedite project implementation. Additionally, it proposes to minimize the buffer to 2′ in order to further reduce widening.

Advantages:	**Disadvantages:**
- Avoids additional widening needed for standard design features - Avoids build out of additional retaining walls	- Nonstandard design features will be included in the project and will require approval from Caltrans Districts 8 and 12

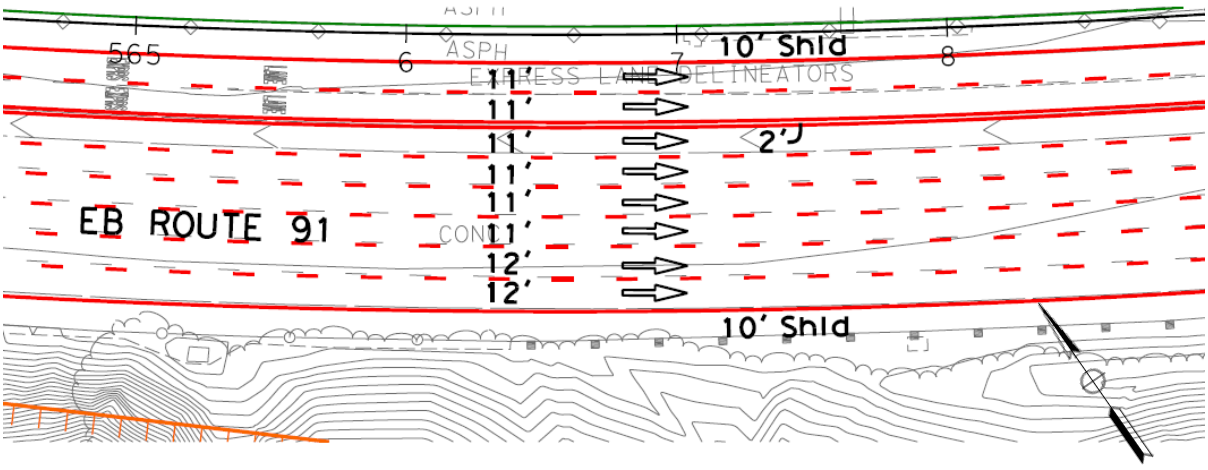
Discussion/Justification:

This concept proposes to adopt the cross-section currently being used in Alternative 1C for the project to facilitate the implementation of the project. The cross-section would include two 11′ ELs, 2′ buffer, four 11′ GP lanes and two 12′ GP lanes. This cross-section is the least intrusive and is similar to what is being used for the SR-91 COP project except that the existing inside shoulder would remain. The lane widths are also consistent with the existing cross-section on SR-91 in this region.

SKETCHES *SR-91 Alternative Analysis Study*		OCTA	
Title:	Use 2′ buffer throughout between GP lanes and ELs and 11' lanes (except for outside two lanes)	**Idea No. 2**	**Alternative No. 2, 3A, 3B, 4**

Existing condition:

Proposed lane configuration:



VALUE ANALYSIS ALTERNATIVE *SR-91 Alternative Analysis Study*		OCTA	
Function:	Reduce number/height of retaining walls needed	**Idea No. 3**	**Alternative No. 1C, 3A, 3B, 4**
Title:	Shorten entrance merge for 91 EL ingress area west of Green River		

Original Concept:

Current alternative concepts reflect maintaining the existing conditions for the ingress lane between station 577+00 and station 610+00.

Revised Concept:

The revised concept would reduce the length of the ingress lane to be similar in length to an off- or on-ramp configuration. This would reduce the current ingress lane from approximately 3,000′ to approximately 1,300′.

Advantages:	**Disadvantages:**
- Avoids build out of additional retaining walls	- Traffic study has not been complete to determine how reducing ingress lane width will affect EL operation

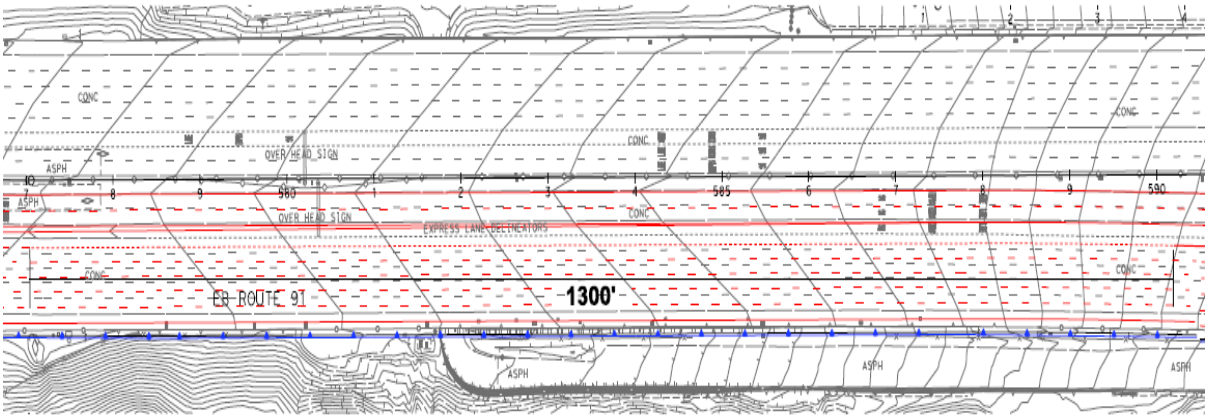
Discussion/Justification:

This concept proposes to reduce the existing ingress lane in length, allowing the extra width to accommodate the 6th lane thereby eliminating retaining walls in some areas and reducing the height of retaining walls near the Green River EB off-ramp. This ingress area has a fairly low volume entering the ELs, but traffic will need to be analyzed to confirm if this would affect operations.

SKETCHES *SR-91 Alternative Analysis Study*		OCTA	
Title:	Shorten entrance merge for 91 EL ingress area west of Green River	**Idea No. 3**	**Alternative No. 1C, 3A, 3B, 4**

Existing condition:

Proposed condition:



VALUE ANALYSIS ALTERNATIVE *SR-91 Alternative Analysis Study*		OCTA	
Function:	Avoid Coal Canyon bridge widening	**Idea No. 4**	**Alternative No. 1A, 1B, 1C, 2, 3A, 3B, 4**
Title:	Avoid widening Coal Canyon by shifting the Express Lane egress west and utilizing existing reduced lane widths		

Original Concept:

The original alternative concepts require the widening of the Coal Canyon bridge.

Revised Concept:

The revised concept would avoid widening of the Coal Canyon bridge by utilizing the current structure width and dropping the Express Lane egress lane prior to the bridge.

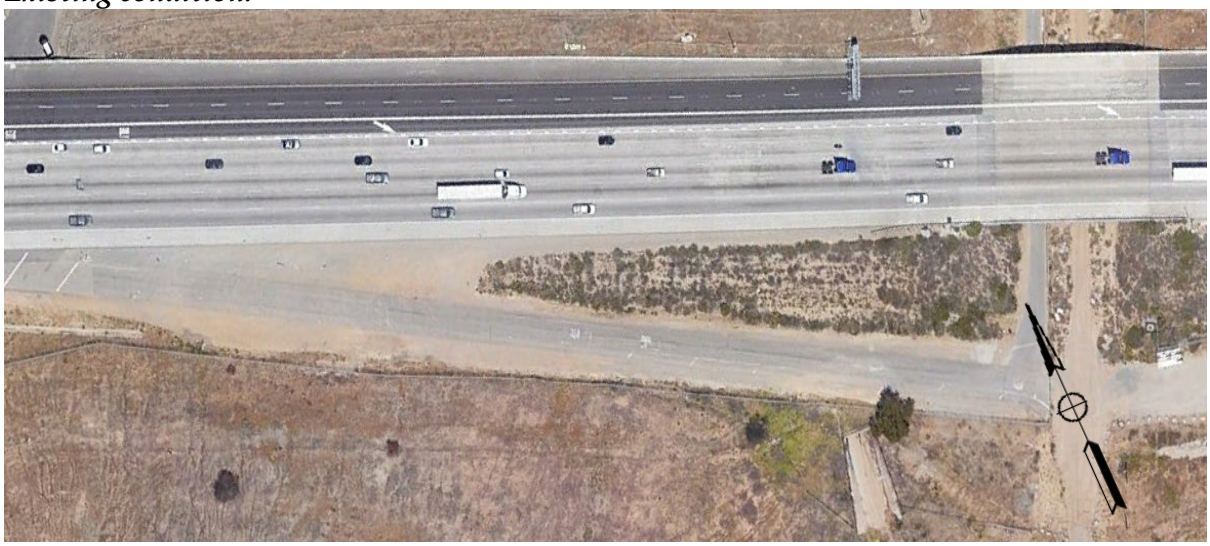
Advantages:	**Disadvantages:**
- Avoids widening of Coal Canyon Bridge	- Pavement delineation to be completed by the SR-241/SR-91 connector project may be impacted - Transitions will be shortened, which could require design exceptions and/or traffic analysis

Discussion/Justification:

This concept proposes to utilize the existing Coal Canyon bridge and avoid widening by dropping the Express Lane egress lane into six general purpose lanes earlier and utilizing existing reduced lane widths. The existing EB bridge is approximately 114' wide, including barriers. Coordination will be required with the SR-241/91 connector project to determine proposed limits of egress lane beginning and ending. Furthermore, a traffic analysis will be required to determine traffic impacts for moving the egress or ingress points.

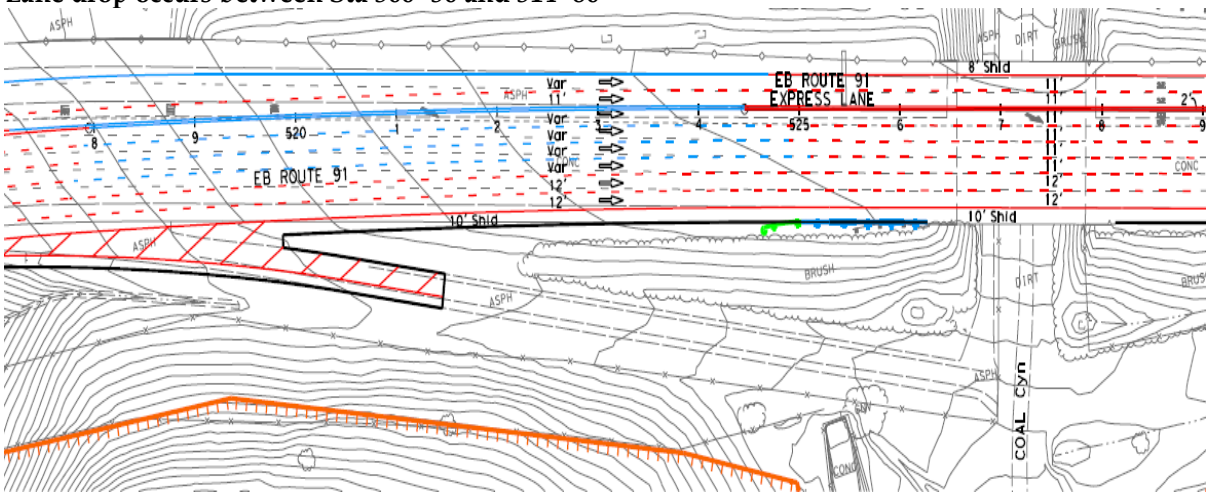
SKETCHES *SR-91 Alternative Analysis Study*		OCTA	
Title:	Avoid widening Coal Canyon by shifting the Express Lane egress west and utilizing existing reduced lane widths	**Idea No. 4**	**Alternative No. 1A, 1B, 1C, 2, 3A, 3B, 4**

Existing condition:



Proposed condition:

Lane drop occurs between Sta 506+50 and 514+80



VALUE ANALYSIS ALTERNATIVE *SR-91 Alternative Analysis Study*		OCTA	
Function:	Avoid Coal Canyon bridge vicinity outside widening	**Idea No. 5**	**Alternative No. 1A, 1B, 1C, 2, 3A, 3B, 4**
Title:	Utilize median area (turnaround) to reduce widening around Coal Canyon		

Original Concept:

The original alternative concepts require the outside widening of the Coal Canyon bridge and retaining walls to be built at the Coal Canyon EB off-ramp.

Revised Concept:

The revised concept would utilize the median used for the CHP turnaround near the Coal Canyon Bridge.

Advantages:	**Disadvantages:**
- Avoids outside widening of Coal Canyon Bridge - Avoids build out of retaining walls near Coal Canyon EB off-ramp	- Requires inside widening of Coal Canyon Bridge - CHP turnaround will need to be relocated - Retaining walls will need to be built in the median - Impacts new installation of 91 EL Gantry facing WB traffic - May reduce radius curvature of EB 91 traveled way.

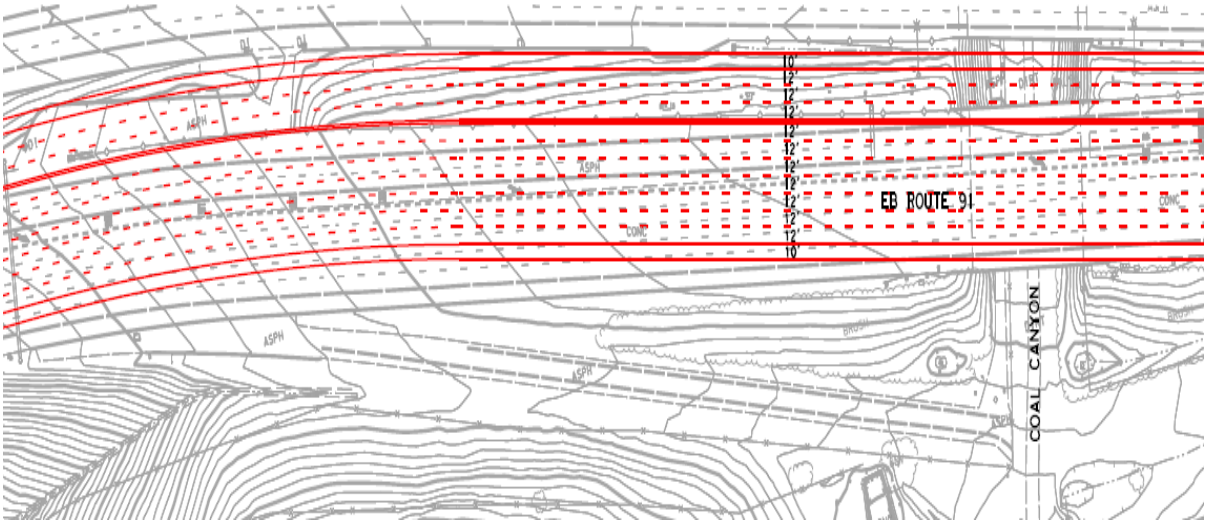
Discussion/Justification:

This concept proposes to utilize the median used for the CHP turnaround near the Coal Canyon Bridge. This would also avoid the need to construct retaining walls near the Coal Canyon EB off-ramp but retaining walls would be required in the median. The Coal Canyon Bridge would not require outside widening but inside widening would be required. Based on the experience from the SR-241/SR-91 project, relocating the CHP turnaround will be a challenge.

SKETCHES *SR-91 Alternative Analysis Study*		OCTA	
Title:	Utilize median area (turnaround) to reduce widening around Coal Canyon	**Idea No.** **5**	**Alternative No.** **1A, 1B, 1C, 2, 3A, 3B, 4**

Existing condition:

Proposed condition:



<table>
<tr><td colspan="2">VALUE ANALYSIS ALTERNATIVE
SR-91 Alternative Analysis Study</td><td colspan="2">OCTA</td></tr>
<tr><td>Function:</td><td>Move ingress to the west</td><td>Idea No. 6</td><td>Alternative No. 1A, 1B, 1C, 2, 3A, 3B, 4</td></tr>
<tr><td>Title:</td><td colspan="3">Move ingress/egress to west side of project</td></tr>
<tr><td colspan="4">Original Concept:</td></tr>
<tr><td colspan="4">The original alternative concepts require mimicking the existing ingress and egress locations.</td></tr>
<tr><td colspan="4">Revised Concept:</td></tr>
<tr><td colspan="4">Three different options were considered for the relocation of the ingress:

• Option A: The revised concept would move the ingress location west of the egress location around the SR-241/SR-91 interchange and remove the existing ingress location near the Green River EB off-ramp. This would require some additional outside widening in the vicinity of Gypsum Canyon. This can be done by utilizing the proposed auxiliary lane developed by the SR-241 project near station 475+00 to create an ingress.
• Option B: The revised concept would move the ingress location to after the existing egress and in the same vicinity as the SR-241 GP lanes entering. This would require restriping only. The concept would include a weaving lane that would combine egress and ingress movements.
• Option C: The revised concept would move the ingress location to after the existing egress and prior to the Mindeman landslide.</td></tr>
<tr><td colspan="2">Advantages:</td><td colspan="2">Disadvantages:</td></tr>
<tr><td colspan="2">- Avoids the majority of the build out of retaining walls near Green River interchange
- Allows for utilization of existing ingress pavement</td><td colspan="2">- For Option A, some work to be completed by the SR-241 project will be impacted
- Microsimulation would need to be conducted to confirm reconfiguration of the ingress/egress would function adequately
- For Option A, access would not be provided to the SR-91 ELs for GP users of SR-241 other than using the ELC</td></tr>
</table>

Discussion/Justification:
This concept proposes to move the ingress location to allow for the existing ingress pavement from STA 597+00 to STA 610+00 to be utilized as a lane. This reduces the need for outside widening and reduces size of potential retaining walls. Option A would begin the ingress/egress lane at station 440+10 and end at 545+50. This option would impact the Gypsum Canyon Bridge, Gypsum Canyon on-ramp, and SR-241 general purpose connector. There is an opportunity to reduce throwaway cost where coordination with the 241/91 ELC project might be feasible. A traffic analysis will be required to determine if this idea may deteriorate the required minimum operating speed of 55-mph in the express lanes and the resulting impacts to the GP lanes. This alternative would not allow access to the SR-91 ELs for GP users of SR-241 other than using the Express Connector. Finally, this option may also have a negative impact to the OCTA SR-91 ELs users as it adds demand to the ELs for approximately one mile. An early entrance into the Express Lanes could also benefit the GP lanes through this congested segment. Option B would not change where the ingress/egress lane begin, at station 470+50. The lanes would end at 545+00 or further east as needed to meet operational requirements. A traffic analysis will be required to determine if this idea may deteriorate the required minimum operating speed of 55-mph in the express lanes and the resulting impacts to the GP lanes. Option C would maintain the beginning of the egress lane at station 470+50. The ingress location would move to after the existing egress and prior to the Mindeman landslide. This option will also require additional retaining walls to tie into existing retaining walls prior to the Mindeman Landslide.

SKETCHES *SR-91 Alternative Analysis Study*		OCTA	
Title:	Move ingress/egress to west side of project	**Idea No. 6**	**Alternative No. 1A, 1B, 1C, 2, 3A, 3B, 4**

Existing condition (Includes build out of SR-241/91 Express Lane Connector):

The existing egress begins at Sta 470+50 and ends at Sta 545+50

The existing ingress begins at Sta 579+50 and ends at Sta 610+66

Proposed condition:
For Sketches of Option 6 see Attachment A

Option 6A: This option begins at Sta 440+10 and ends at Sta 545+50

Option 6B: This option begins at Sta 470+50 and ends as needed

Option 6C: This option begins at Sta 470+50 and ends at Sta 563+50

VALUE ANALYSIS ALTERNATIVE *SR-91 Alternative Analysis Study*		OCTA	
Function:	Project Planning	**Idea No. 7**	**Alternative No. 1A, 1B, 1C, 2, 3A, 3B, 4**
Title:	Build 6th lane addition at same time as 241/91 connector		

Original Concept:

The original project scope is separate from the SR-241/SR-91 Express Lane Connector project.

Revised Concept:

The revised concept proposes to closely coordinate and overlap the construction of the SR-91 GP project and SR-241/SR-91 Express Lane Connector project.

Advantages:	**Disadvantages:**
- Avoids construction waste and construction fatigue - Traffic impacts would be reduced over time	- The SR-241/SR-91 Express Lane Connector project is currently in the PS&E phase, meaning the SR-91 6th GP Lane project will have to be fast-tracked to be built at the same time.

Discussion/Justification:

This Alternative Idea would build the SR-91 6th GP Lane project concurrent with the SR-241/SR-91 Express Lane Connector project to avoid construction waste and reduce construction fatigue. The 6th GP Lane project could potentially be combined into one construction contract for maximum economy of scale or be a separate concurrent construction contract. Traffic benefits would be realized sooner by implementing the 6th GP Lane project sooner.

SKETCHES *SR-91 Alternative Analysis Study*		OCTA	
Title:	Build 6th lane addition at same time as 241/91 connector	**Idea No. 7**	**Alternative No. 1A, 1B, 1C, 2, 3A, 3B, 4**

Since this is a planning idea, no sketch required.

VALUE ANALYSIS ALTERNATIVE *SR-91 Alternative Analysis Study*		OCTA	
Function:	Avoid widening to the north	**Idea No. 8**	**Alternative No. 3A, 3B**
Title:	Reject all north side widening concepts		

Original Concept:

The original project scope allows for shifting the freeway centerline and widening to the north through the Mindeman Landslide area.

Revised Concept:

The revised concept would eliminate the alternatives that shift the freeway centerline and widen to the north to accommodate the 6th GP Lane project.

Advantages:	**Disadvantages:**
- Avoids major construction to be performed to the north. - Avoids impacts to the Santa Ana River Trail	- Eliminates design alternatives that include widening to the north from being considered - May require impacts to the Mindeman Landslide area

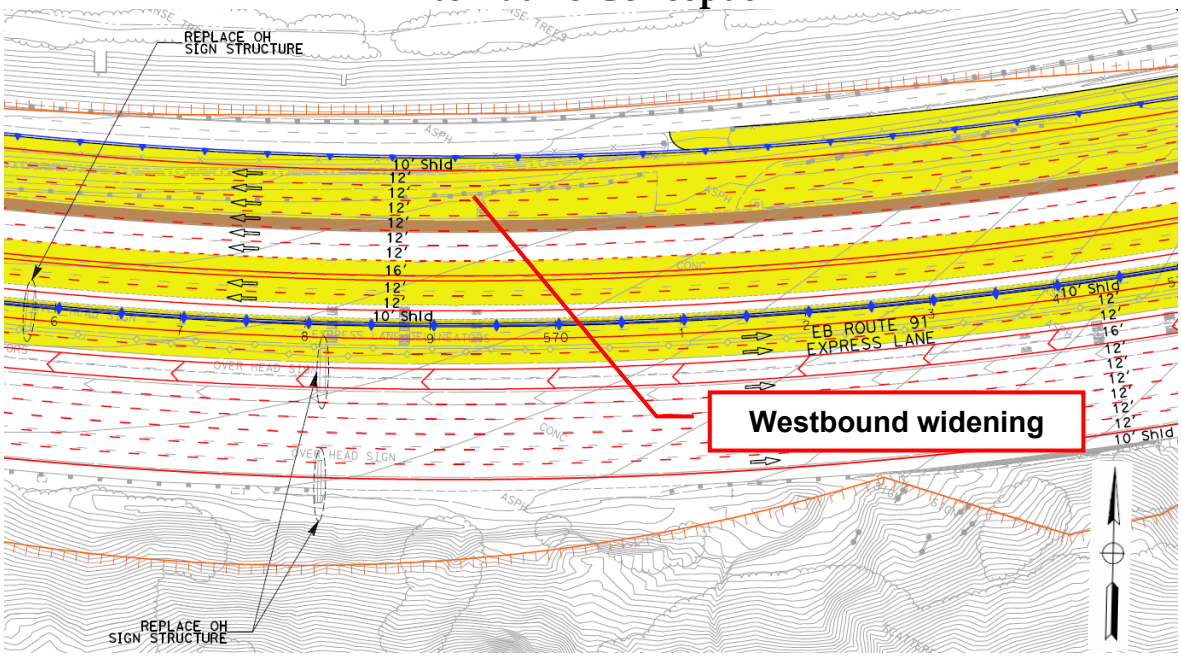
Discussion/Justification:

This concept would reject all alternative concepts that propose widening to the north. Widening to the north involves realigning and reconstructing the median and impacting the Express Lanes during construction. It also increases the ROW impacts on the north side of SR-91. If north side widening is going to be considered then consideration should be given to incorporating the ultimate WB improvements in the project. Sufficient alternatives have been developed that do require widening to the north. Rejecting all north side widening alternatives would help focus future project development activities.

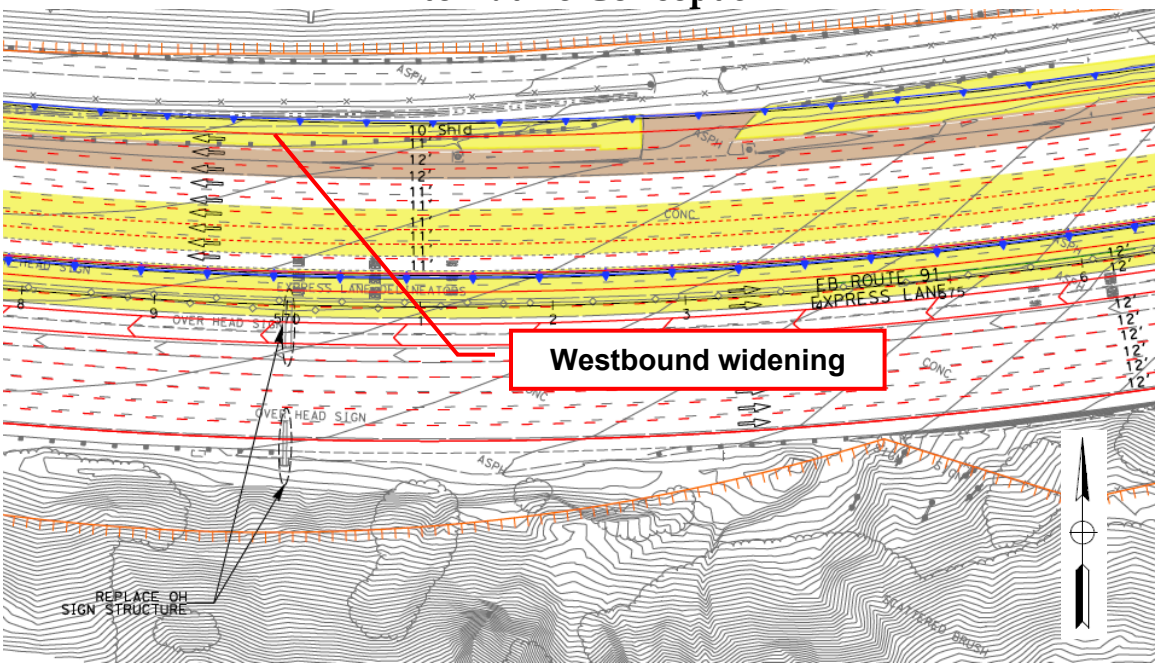
SKETCHES *SR-91 Alternative Analysis Study*		OCTA	
Title:	Reject all north side widening concepts	**Idea No. 8**	**Alternative No. 3A, 3B**

Proposed north side widening concepts:

Alternative Concept 3A



Alternative Concept 3B



VALUE ANALYSIS ALTERNATIVE *SR-91 Alternative Analysis Study*		OCTA	
Function:	Eliminate Replacement of ELs Pavement Section	**Idea No. 9**	**Alternative No. 2, 3A, 3B, 4**
Title:	Remove replacement of pavement structural section in median		

Original Concept:

The original project scope proposes to reconstruct the median pavement to include a different structural section for the ELs versus the GP lanes. This is proposed for the alternative concepts that propose to shift the SR-91 centerline.

Revised Concept:

The revised concept would utilize the existing pavement structural section regardless of the type of lane that is proposed in that location.

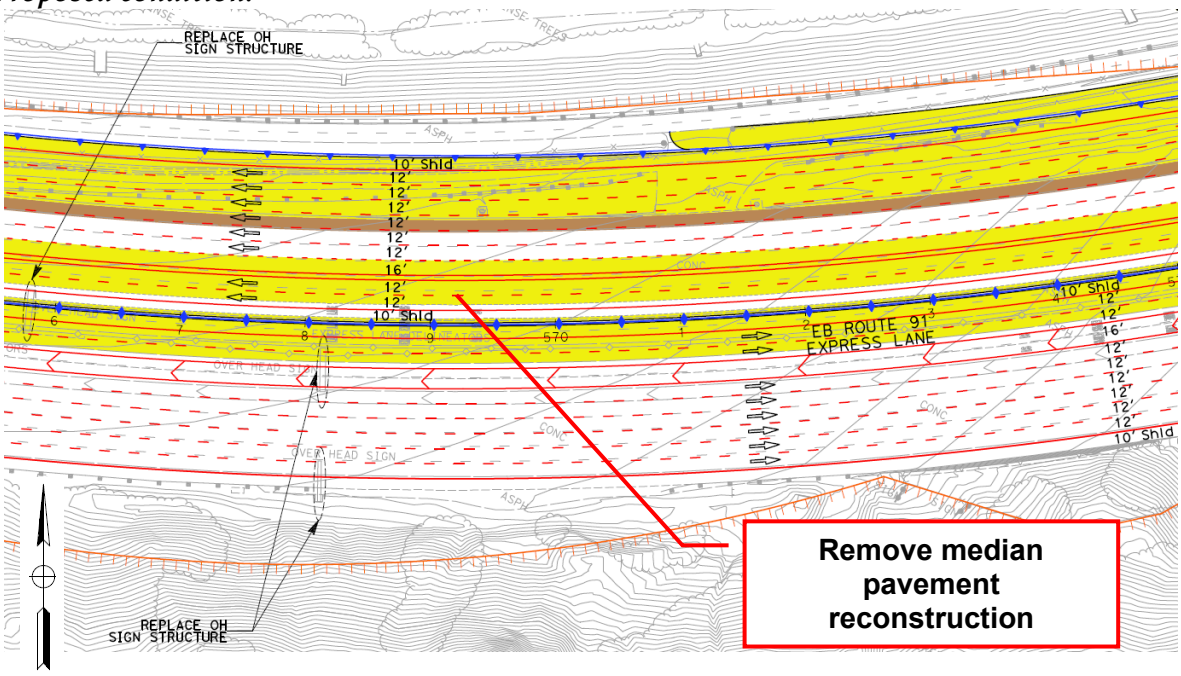
Advantages:	**Disadvantages:**
- Simplifies construction staging - Reduces construction waste - Reduces cost	- Inconsistent with existing condition, which may cause problems with pavement tie-ins at beginning and end of project. - Replacing pavement section will require complex staging and traffic handling effort. In addition to major impacts to the express lanes operation

Discussion/Justification:

This concept would eliminate the need to do pavement reconstruction in the median associated with the centerline shift. Reconstructing this pavement would require complex construction staging due to the outside widening and median reconstruction.

SKETCHES *SR-91 Alternative Analysis Study*		OCTA	
Title:	Remove replacement of pavement structural section in median	**Idea No. 9**	**Alternative No. 2, 3A, 3B, 4**

Proposed condition:



VALUE ANALYSIS ALTERNATIVE *SR-91 Alternative Analysis Study*		OCTA	
Function:	Project Planning	**Idea No. 10**	**Alternative No. 1A, 1B, 1C, 4**
Title:	Ensure that retaining walls are constructed to SR-91 CIP Ultimate to eliminate throwaway		

Original Concept:

The original project scope proposes to construct retaining walls at the proposed edge of shoulder.

Revised Concept:

The revised concept would construct retaining walls to accommodate the SR-91 CIP ultimate cross section in the future.

Advantages:	**Disadvantages:**
- Reduces construction waste and construction fatigue	- Higher cost option - Requires consensus on ultimate cross section - Design standards may change prior to Ultimate SR-91 CIP

Discussion/Justification:

This concept would build the retaining walls at their ultimate location to accommodate the SR-91 cross-section. However, this would increase cost and may reduce the efficiency of the more constrained alternative concepts.

SKETCHES *SR-91 Alternative Analysis Study*		OCTA	
Title:	Ensure that retaining walls are constructed to SR-91 CIP Ultimate to eliminate throwaway	**Idea No. 10**	**Alternative No. 1A, 1B, 1C, 4**

Since this is a planning idea, no sketch required.

Evaluation of VA Alternatives

Upon completion of the brainstorming session and finalizing the VA alternative ideas, the team moved forward with evaluating the ideas by using a qualitative comparison to a baseline option. The team utilized Alternative Concept 2 as the baseline since this alternative concept was consistent with the SR-91 CIP ultimate cross-section and proposes more traditional widening to the outside. All VA alternatives were compared to Alternative Concept 2 to determine how their performance would change compared to the baseline for each of the evaluation criteria previously established. If the VA alternative was anticipated to improve the performance over the baseline, a "+" was noted. No change or neutral is denoted with a "o" and a negative change is noted with a "-". The team evaluated each idea collaboratively and agreed upon how the performance would change. The results of this evaluation are included in the table on the following page.

The performance evaluation was also shared with the stakeholders during the final presentation meeting held at the end of Day 2. The stakeholder team was asked to provide their input on the alternatives considered and the performance evaluation. The following comments were provided as part of the discussion:

- For evaluation criteria 2, further breakdown of this criteria may be required in a future phase to distinguish between the general-purpose lanes and express lanes, as well as the operations and revenue.
- Additional traffic modeling would be needed for evaluation of several of the concepts that would affect operations.
- Rough order of magnitude cost for this project would be needed to establish the viability of several of the ideas.
- The timing for implementation of this 6th GP lane project is dependent on the cost range that is developed as an outcome of the alternative analysis phase.
- Coal Canyon UC has not officially been designated as a wildlife crossing. It is classified as a decommissioned interchange.
- Moving the SR-91 Express Lanes egress/ingress locations (Idea No. 6 – Options 6A and 6B) would require a larger study, mainly because it is a significant change that could affect corridor operations. This would be beyond the scope of the SR-241/SR-91 connector project, which is moving forward with final design, so would need to be studied in the future by another team. These options should be discussed among the stakeholder agencies.

Summary of VA Ideas			
Idea No. 1	Provide 4 lanes at terminus of Green River Road Off-Ramp	**Idea No. 6**	Move ingress/egress to west side of project
Idea No. 2	Use 2' buffer throughout between GP lanes and ELs and 11' lanes	**Idea No. 7**	Build 6th lane addition at same time as 241/91 connector
Idea No. 3	Shorten entrance merge for 91 EL ingress area west of Green River	**Idea No. 8**	Reject all north side widening concepts
Idea No. 4	Avoid widening Coal Canyon by shifting the Express Lane egress west and utilizing existing reduced lane widths	**Idea No. 9**	Remove replacement of pavement structural section in median
Idea No. 5	Utilize median area (turnaround) to reduce widening around Coal Canyon	**Idea No. 10**	Ensure that retaining walls are constructed to SR-91 CIP Ultimate to eliminate throwaway

ID	Evaluation Criteria	Idea No. 1	Idea No. 2	Idea No. 3	Idea No. 4	Idea No. 5	Idea No. 6A	Idea No. 6B	Idea No. 6C	Idea No. 7	Idea No. 8	Idea No. 9	Idea No. 10
1	Construction Impacts	+	+	o	+	o	+	+	o	+	+	+	o
2	SR-91 Corridor Impacts	o	o	o	o	o	o	o	o	+	+	+	o
3	Cost and R/W Constraints	+	+	+	+	o	+	+	o	+	+	+	o
4	Design Standards	-	-	o	-	o	o	o	o	o	o	o	o
5	Environmental Impacts	o	+	o	+	o	+	+	o	o	+	o	o
6	Planned Projects	o	o	o	o	-	-	o	o	o	+	o	o
7	Schedule	o	+	o	+	o	+	+	o	+	+	o	o
Summary of Performance		+ 2 o 4 - 1	+ 4 o 2 - 1	+ 1 o 6 - 0	+ 4 o 2 - 1	+ 0 o 6 - 1	+ 4 o 2 - 1	+ 4 o 3 - 0	+ 0 o 7 - 0	+ 4 o 3 - 0	+ 6 o 1 - 0	+ 3 o 4 - 0	+ 0 o 7 - 0
Ranking: + = positive change over baseline, o = no change/neutral, - = negative change over baseline													

Next Steps

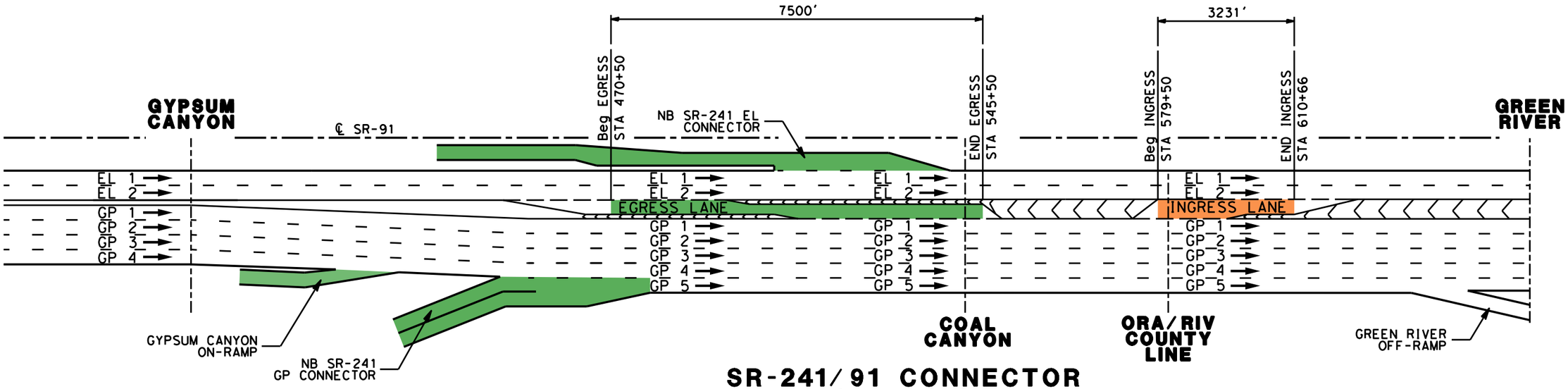
Based on the evaluation of the VA alternatives, the following next steps are proposed to be taken:

- VA alternative idea 1 showed mostly neutral performance but could result in major cost savings. For this reason, this VA alternative is proposed to be further evaluated to determine if traffic operations justify the incorporation of this concept.
- VA alternative ideas 2 and 4 both had improved performance over the baseline and require geometric changes to the alternative concepts. For this reason, both are proposed to be incorporated into all alternative concepts moving forward. This includes 11′ ELs, 2′ buffer, four 11′ GP lanes, and two 12′ GP lanes on the outside. Additionally, the existing Coal Canyon UC may be utilized and widening will be avoided dependent on the final design of the SR-241/91 connector project.
- VA alternative idea 3 showed mostly neutral performance, but was included in the baseline, so is proposed to be incorporated across the alternative concepts for consistency. Traffic microsimulation analysis would need to be conducted to determine the validity of the concept.
- VA alternative idea 5 did not show an improved performance over the baseline, so has been included for documentation purposes but is not proposed to be evaluated any further.
- VA alternative idea 6A showed an improved performance over the baseline, however, it may impact work to be done by the 241/91 ELC project. There is an opportunity to reduce throwaway cost where coordination with the 241/91 ELC project might be feasible. A traffic analysis will be required to determine if this idea may deteriorate the required minimum operating speed of 55-mph in the express lanes and the resulting impacts to the GP lanes. The traffic analysis will also be required to analyze if this option will have a negative impact to the OCTA SR-91 ELs users as it may reduce the value to the user by approximately one mile.
- VA alternative idea 6B showed an improved performance over the baseline, however, a traffic analysis will be required to determine if this idea may deteriorate the required minimum operating speed of 55-mph in the express lanes and the resulting impacts to the GP lanes.
- VA alternative idea 6C did not show an improved performance over the baseline, however, it does provide an opportunity for reduced cost. For this reason, it is proposed to be included as an Alternative Concept and carried forward. A traffic microsimulation analysis would need to be conducted to determine the validity of the concept. This would be beyond the scope of the traffic analysis being conducted during this phase.
- VA alternative idea 7 showed an improved performance over the baseline but has a fatal flaw in that it would result in delays to the SR-241/SR-91 connector project, which is currently in the final design phase. For that reason, this idea has been

included for documentation purposes but is not proposed to be evaluated any further.

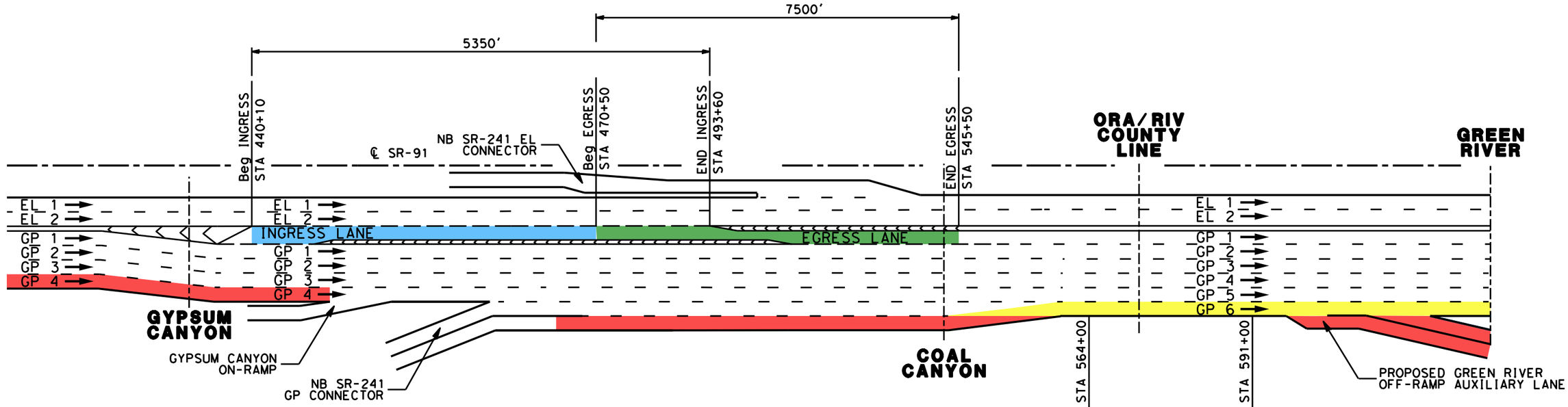
- VA alternative idea 8 had the most positive performance change over the baseline. This concept proposes to reject the alternative concepts that would widen SR-91 to the north. For this reason, Alternative Concept 3A and 3B are not recommended to move forward, due to the extensive impacts associated with each.
- VA alternative idea 9 had some improved performance over the baseline and is recommended for further evaluation during a future phase to determine if the existing pavement section can be utilized. For this phase, it is proposed to assume that the existing pavement is acceptable. It should also be noted that by accepting VA alternative idea 8, there would be no more alternative concepts that would shift the SR-91 centerline, so VA alternative idea 9 would no longer be applicable.
- VA alternative idea 10 had no change over the baseline since the baseline already included the SR-91 CIP ultimate cross-section. In all other alternative concepts, this would affect the efficiency trying to be achieved to make them more cost effective, so this concept is not proposed to be evaluated any further. It has been included for documentation purposes.

ATTACHMENT A
Option 6 Sketches



SR-241/91 CONNECTOR 60% DESIGN

MARCH 2021 - NOT TO SCALE



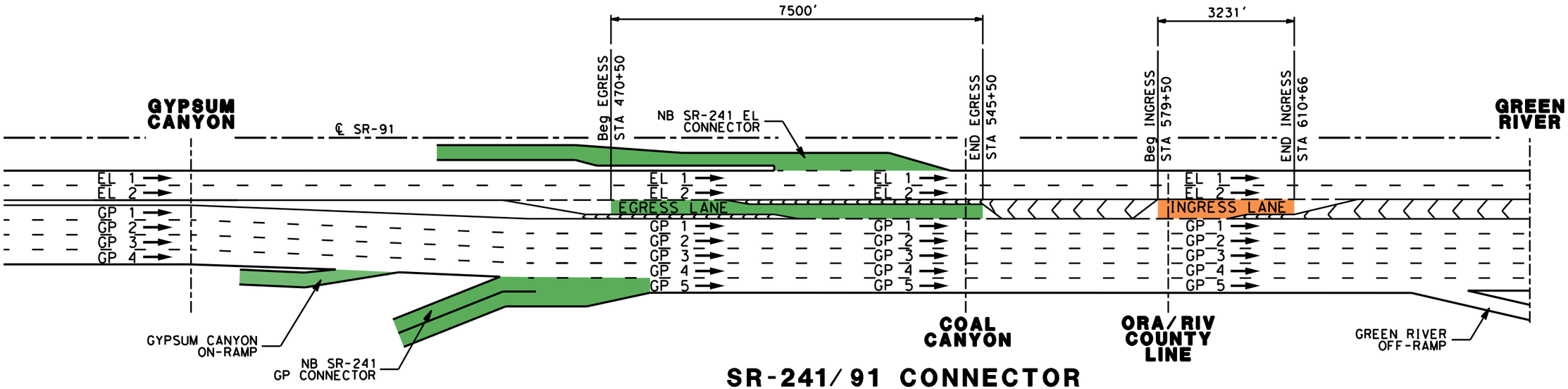
EB ROUTE 91 6TH LANE ADDITION

NOT TO SCALE

LEGEND

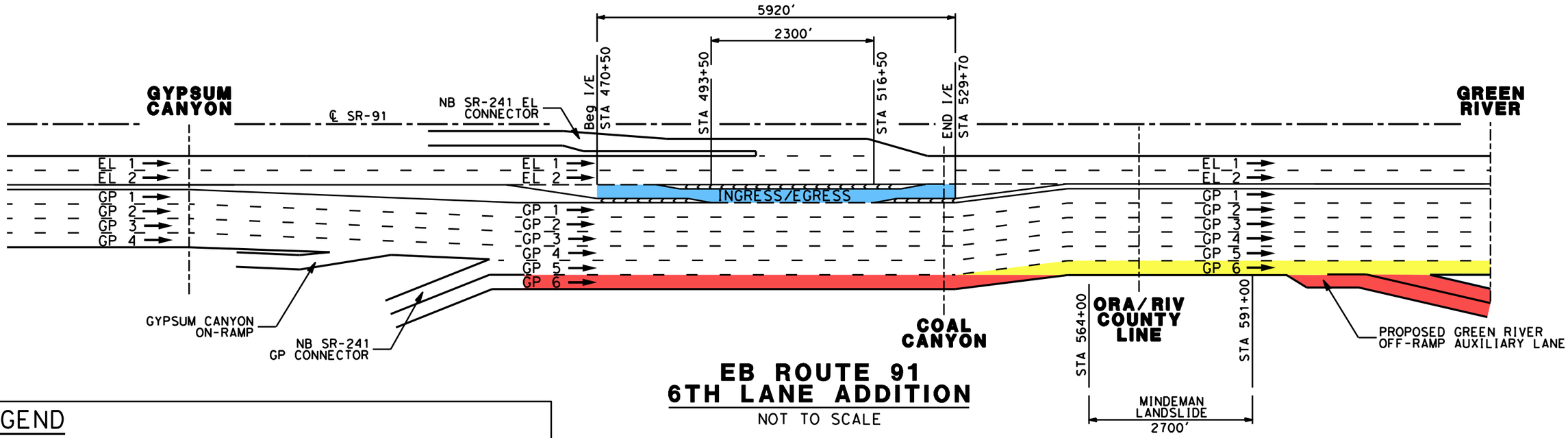
- SR-241/91 CONNECTOR PROJECT
- EXISTING INGRESS AND EGRESS
- PROPOSED INGRESS AND EGRESS
- EB SR-91 6TH LANE ADDITION (WIDENING)
- EB SR-91 6TH LANE ADDITION (STRIPING)

INGRESS/EGRESS EXHIBIT 6A



SR-241/91 CONNECTOR
60% DESIGN

MARCH 2021 - NOT TO SCALE



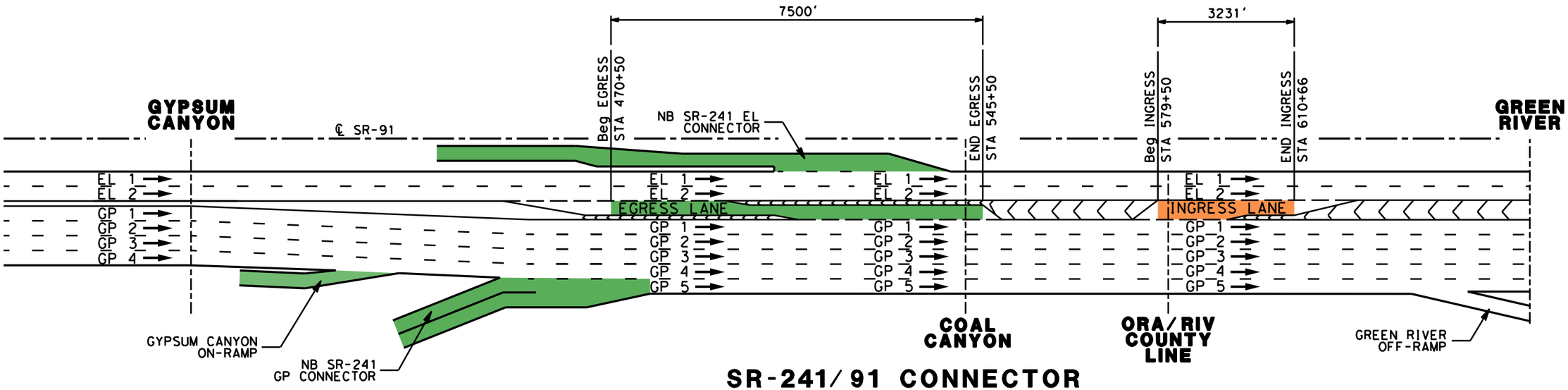
EB ROUTE 91
6TH LANE ADDITION

NOT TO SCALE

LEGEND

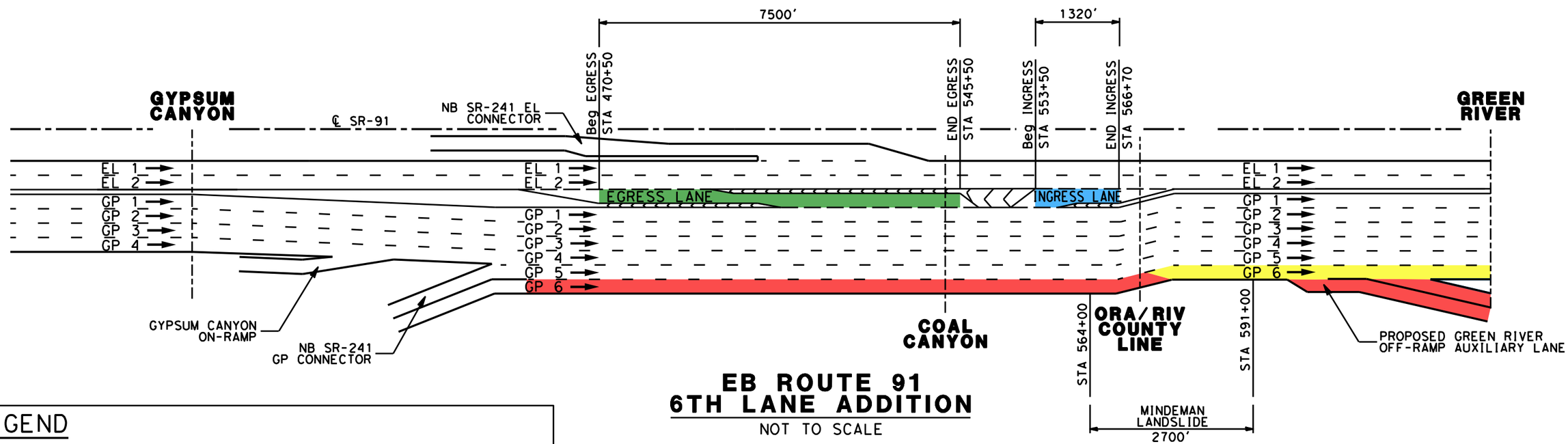
- SR-241/91 CONNECTOR PROJECT
- EXISTING INGRESS AND EGRESS
- PROPOSED INGRESS AND EGRESS
- EB SR-91 6TH LANE ADDITION (WIDENING)
- EB SR-91 6TH LANE ADDITION (STRIPING)

INGRESS/EGRESS EXHIBIT 6B



SR-241/91 CONNECTOR 60% DESIGN

MARCH 2021 - NOT TO SCALE



EB ROUTE 91 6TH LANE ADDITION

NOT TO SCALE

LEGEND

- SR-241/91 CONNECTOR PROJECT
- EXISTING INGRESS AND EGRESS
- PROPOSED INGRESS AND EGRESS
- EB SR-91 6TH LANE ADDITION (WIDENING)
- EB SR-91 6TH LANE ADDITION (STRIPING)

INGRESS/EGRESS EXHIBIT 6C

Attachment C

Nonstandard Design Features

Attachment 4

Non-Standard Design Features for the Preferred Alternative 2F

Non-Standard Design Features for Initial Phase of Alternative 2F

Non-Standard Design Features for Initial Phase of Alternative 2F

The Initial Phase of Preferred Alternative 2F Ultimate Project is separated into four sections for the purpose of Geometric Approval Drawing (GAD) and non-standard design features approval as follows:

GAD 1 Combination of SR-91 from Main Street to McKinley Interchange including all connectors to I-15; and I-15 from Cajalco Road to Hidden Valley Parkway including proposed median connectors from the north and south to SR-91.

GAD 2 OC- West GAD: SR-91 from SR-241 to County line

GAD 2 RIV- West GAD SR-91 County line to Prado Overhead

GAD 3 - East GAD: SR-91 from McKinley Interchange to Pierce Street

GAD 4 - Corona GAD: Prado Overhead to Main Street.

The following tables show the list of mandatory, advisory, ramp meter policy and HOV guideline design exceptions for the initial phase of preferred Alternative 2F from the west end to the east end of the project with approval date for respective section:

SR-91 CIP Initial Phase: Summary of Mandatory Design Exception

SR-91 GAD 2 Orange County (OC) Approved on May 17, 2012					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
G2IM1	201.1/ 203.1	Stopping Sight Distance/ General Control (Horizontal only)	A.-K. V=80 mph, SSD = 930'.	A. Vertical SSD = 828.2', V=74.35 mph B. Vertical SSD = 711.4', V=67.86 mph C. Horizontal SSD = 676.04', V=65.89 mph D. Horizontal SSD = 725.40', V=68.63 mph E. Horizontal SSD = 664.80', V=65.26 mph	A. SR-91 WB 516+81.79 BVC to 545+31.79 EVC B. SR-91 EB 516+29.99 BVC to 538+79.99 EVC C. SR-91 EB 547+81.85 BC to 577+06.20 EC D. SR-91 WB 491+98.96 BC to 494+00.00 E. SR-91 EB 489+92.43 BC to 518+53.07 EC

SR-91 GAD 2 Orange County (OC) Approved on May 17, 2012					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
G2IM2	203.2	Standards for Curvature	A. R=3900' B. R=3900' C. R=3900' D. R=3900' E. R=3900'	A. R=3000' B. R=3000' C. R=3677' D. R=3654' E. R=3700'	A. SR-91 WB 491+98.96 BC to 522+04.48 EC B. SR-91 EB 489+92.43 BC to 518+53.07 EC C. SR-91 547+81.85 BC to 577+06.20 EC D. SR-91 WB 544+47.93 BC to 547+58.56 EC E. SR-91 EB 544+44.30 BC to 545+80.12 EC
G2IM3	301.1	Traveled Way Width	A.-B. 12' lanes	A. 11' lanes for 5,900' B. 11' lanes for 5,700'	A. SR-91 WB 519+10.0 to 577+88.80 B. SR-91 EB 521+09.20 to 577+88.82
G2IM4	302.1	Shoulder Width	A. 10' inside (left) shoulder.	A. 2' inside (left) shoulder.	A. SR-91 WB Ingress/ Egress

SR-91 GAD 2 Riverside County (RIV) Approved on May 2, 2012					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
G2IM1	201.1	Stopping Sight Distance	C. V = 45mph, SSD = 360'. D.-I. V=80 mph, SSD = 930'.	C. Vertical SSD = 280', V=37mph D. Vertical SSD = 721.2', V=68.4 mph E. Horizontal SSD = 712.1', V=67.9mph F. Vertical SSD = 784.3',	C. Green River Bridge D. SR-91 11+86.04 BVC to 23+36.04 EVC E. SR-91 EB 13+36.18 BC to 26+18.48 EC F. SR-91 36+63.48 BVC to

SR-91 GAD 2 Riverside County (RIV) Approved on May 2, 2012					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
				V=71.9mph	62+63.48 EVC
				G. Horizontal SSD = 717.2', V=68.2mph	G. SR-91 WB 44+29.07 BC to 65+32.45 EC
				H. Horizontal SSD = 674.7', V=66.9mph	H. SR-91 WB 120+80.00 to 143+65.37 EC
				I. Vertical SSD = 708.3', V=67.7mph	I. SR-91 138+94.92 BVC to 146+94.92 EVC
G2IM2	202.2	Superelevation Rate	A. R=4000', e=3%	A. e=2%	A. SR-91 44+29.07 BC to 65+32.45 EC
			B. R=1738.69', e=7%	B. e=4%	B. Green River EB-Off Ramp 7+13.63 BC to 13+04.84 PRC
			C. R=492.14', e=12%	C. e=-4%	C. Green River EB-Off Ramp 13+04.84 PRC to 15+08.09 EC
			D. R=900', e=10%	D. e=4%	D. Green River EB-On Ramp 6+37.70 BC to 10+58.56 PCC
			E. R=2439.86', e=5%	E. e=3%	E. Green River EB-On Ramp 10+58.56 PCC to 14+09.27 PCC
			F. R=1248.41', e=9%	F. e=2.5%	F. SR-91 EB/SR-71 NB 17+50.49 BC to 17+87.18 EC
			G. R=4000', e=3%	G. e=2.5%	G. SR-91 116+82.70 BC to 143+65.37 EC
			H. R=700', e=11%	H. e=10%	H. Green River WB-Off Ramp 49+31.55 BC to 51+64.19 EC

SR-91 GAD 2 Riverside County (RIV) Approved on May 2, 2012					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
G2IM3	203.2	Standards for Curvature	D. R=3900' E. R=850' F. R=850'	D. R=3000' E. R=87' F. R=215'	D. SR-91 13+36.18 BC to 26+18.48 EC E. SR-91 EB/SR-71 NB 22+16.89 BC to 24+80.79 PCC F. SR-71 SB/SR-91 WB 97+80.09 PCC to 102+11.29 EC
G2IM4	301.1	Traveled Way Width	A.-B. 12' lanes	A. 11' lanes for 16,900' B. 11' lanes for 22,400'	A. SR-91 WB 486+23.85 to 44+29.07 B. SR-91 EB 484+17.43 to 122+80.00
G2IM5	302.1	Shoulder Width	A. 10' inside (left) shoulder. B. 10' inside (left) shoulder. C. 8' outside (right) shoulder. D. 4' inside (left) shoulder E. 10' inside (left) shoulder F. 10' inside (left) shoulder G. 10' inside (left) shoulder	A. 8' inside (left) shoulder. B. 2' inside (left) shoulder. C. 2' outside (right) shoulder. D. 2' inside (left) shoulder. E. 9' inside (left) shoulder. F. 6' inside (left) shoulder. G. 2' inside (left) shoulder.	A. SR-91 EB Green River to SR-71 B. SR-91 WB Ingress/ Egress C. Green River WB On Ramp D. Green River WB On Ramp E. SR-91 WB F. SR-91 EB G. SR-91 WB
G2IM6	309.1(3)a	Minimum Horizontal Clearances	A. 10'	A. 3'	A. Green River Bridge
G2IM7	501.3	Interchange Spacing	A. 2 miles	A. 5585' = 1.06mi.	A. Green River & SR-71
G2IM8	504.2(2)	Freeway Exit-Deceleration Length	A. 570'	A. 302'	A. SR-71S/SR-91W

SR-91 GAD 4 (Same design exceptions Initial phase and Ultimate Project) Approved on October 18, 2011					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
G4UM1	201.1	Stopping Sight Distance	A. 930'	A. 506.6'	A. SR-91 (Horizontal). BC 159+69.76 to EC 169+08.24
			B. 930'	B. 616.0'	B. SR-91 (Vertical). BVC 09+08.76 to EVC 15+08.76
			C. 930'	C. 717.2'	C. SR-91 (Horizontal). BC 7+34.09 to EC 221+18.79
			D. 930'	D. 625.4'	D. SR-91 (Vertical). BVC 224+79.55 to EVC 233+79.55
			E. 930'	E. 802'	E. WB SR-91 "A" line Horizontal Curve BC 258+31.72/EC 274+31.72
			F. 250'	F. 225'	F. Vertical Curve on Lincoln Avenue OC Bridge, Sta 283+50.24 to Sta 289+00.24
G4UM2	202.2	Superelevation Rate	A. 3%	A. 2.5%	A. SR-91. Sta 161+45.68 to Sta 167+32.16
			B. 2%	B. -2%	B. Maple WB-On. Sta 95+13.13 to Sta 98+37.86
			C. 2%	C. -2%	C. Auto Center EB-On. Sta 35+32.62 to Sta 36+99.72
G4UM3	301.1	Traveled Way Width	A.12'	A. 11'	A. Auto Center Undercrossing, Thru Lanes.
G4UM4	302.1	Standard width of paved shoulder	Freeway / Expressway Paved Shoulder width (6 or more lanes) = 10'	A. 2'-10'	A. EB SR-91 Sta 149+25 to Sta 167+75
				B. 2'-10'	B. WB SR-91 Sta 166+25 to Sta 184+25
				C. 4'-10'	C. EB SR-91 Sta 283+86.00 to Sta 288+46.00
				D. 8'-10'	D. WB SR-91. Sta 283+86.62 to

SR-91 GAD 4 (Same design exceptions Initial phase and Ultimate Project) Approved on October 18, 2011					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
					Sta 288+46.00
				E. 7.5'-10'	E. EB SR-91. Sta 20+37.79 to Sta 21+37.79
				F. 7.5'-10'	F. WB SR-91 Sta 20+37.79 to Sta 21+37.79
				G. 6'-10'	G. EB SR-91. Sta 14+33.60 to Sta 15+93.60
				H. 6'-10'	H. WB SR-91. Sta 14+33.60 to Sta 15+93.60
				I. 3'-10'	I. EB SR-91. Sta 250+35.25 to Sta 251+85.25
G4UM5	309.1(3)(b)	Horizontal clearance to fixed object	Minimum horizontal clearance to fixed object shall not be less than 10'	A. 4'-10'	A. EB SR-91. Sta 283+86.62 to Sta 288+46.00
				B. 8'-10'	B. WB SR-91. Sta 283+86.62 to Sta 288+46.00
				C. 7.5'-10'	C. EB SR-91. Sta 20+37.79 to Sta 21+37.79
				D. 7.5'-10'	D. WB SR-91. Sta 20+37.79 to Sta 21+37.79
				E. 6'-10'	E. EB SR-91. Sta 14+33.60 to Sta 15+93.60
				F. 6'-10'	F. EB SR-91. Sta 14+33.60 to Sta 15+93.60
				G. 3'-10'	G. EB SR-91. Sta 250+35.25 to Sta 251+85.25

SR-91 GAD 4 (Same design exceptions Initial phase and Ultimate Project) Approved on October 18, 2011					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
				H. 2'-10' I. 2'-10'	H. EB SR-91. Sta 149+25 to Sta 167+75 I. WB SR-91. Sta 166+25 to Sta 184+25
G4UM6	405.2(2)(a)	Left-Turn Channelization Lane Width	A.12'	A. 11'	A. Auto Center Undercrossing, Left Turn Lanes, UL-01M/UX-01M.
G4UM7	501.3	Interchange Spacing	A. 10,560' B. 5,280' C. 5,280'	A. 8,565' B. 2,925' C. 5,159'	A. SR-91 from SR-71 to Auto Center B. SR-91from Auto Center to Maple C. SR-91 from Main Street to Lincoln Avenue.
G4UM8	504.3(3)	Proposed Ramps Intersection on the Crossroads	Spacing Between Intersections = 400'	A. 147' B. 375'	A. Auto Center Drive Westbound Ramps to Wardlow Road. B. Lincoln Avenue ramps Intersection to Pomona Road intersection to the north.
G4UM9	204.3	Grade on Lincoln Avenue	Maximum 6%	A. Existing maximum grade on Lincoln Avenue is 8.91%'	A. Lincoln Avenue

GAD 1 SR-91 Approved on May 23, 2011					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
G1IM1	201.1 Table 201.1	Stopping Sight Distance	SSD = 930' (Design Speed = 80 mph)	A. SSD = 620.53'. Corresponding Speed = 63 mph. B. SSD = 613.89'. Corresponding Speed = 62 mph. C. SSD = 576.44'. Corresponding Speed = 59 mph. D. SSD = 646.35'. Corresponding Speed = 64 mph. E. SSD = 900.93'. Corresponding Speed = 78 mph.	A. EB SR-91 Mainline ("AE" Line) Horizontal Curve BC 357+38.65/EC 371+20.50 B. WB SR-91 Mainline ("CDW" Line) Horizontal Curve BC 358+18.48/EC 372+03.35 C. SR-91 Mainline ("A" Line) Vertical Curve PVC 373+75.00/PVT 381+75.00 D. SR-91 Mainline ("A" Line) Vertical Curve PVC 383+25.00/PVT 389+25.00 E. SR-91 Mainline ("A" Line) Vertical Curve PVC 426+25.00/PVT 430+25.00
G1IM2	203.2	Horizontal Alignment: Standards for Curvature	A. Min. Radius = 3900', Design Speed = 80 mph B. Min. Radius = 850', Design Speed = 50 mph	A. Radius = 3000', Corresponding Speed = 75 mph B. Radius = 800', Corresponding Speed = 48.33 mph	A. SR-91 Mainline, "A" Line Horizontal Curve (BC 357+78.83/EC 371+79.44) B. I-15S to SR-91W Connector, "SW" Line Horizontal Curve (BC 384+16.09/EC 392+16.13)

GAD 1 SR-91 Approved on May 23, 2011					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
G1IM3	302.1	Standard width of paved shoulder	A. & D. Freeway / Expressway Paved Shoulder width (6 or more lanes) = 10' B. & C. Freeway-to-freeway connections (Single and two-lane connections) = 10’	A. Freeway / Expressway Paved Shoulder width = 8' – 10’ B. Freeway-to-freeway connector Paved Shoulder width = 8’ C. Freeway-to-freeway connector Paved Shoulder width = 5’ D. Freeway / Expressway Paved Shoulder width = 5' – 10’	A. WB SR-91, Sta 387+70 to Sta 394+00 B. I-15S to SR-91E Connector C. SR-91W to I-15S Connector D. WB SR-91, Sta 305+00 to Sta 307+50
G1IM5	501.3	Interchange Spacing	Spacing Between Interchanges = 2 miles	A. Spacing Between Interchanges = 1.1 miles	A. Main St. Interchange to I-15 Interchange
G1IM6	504.3(1)(b)	Ramps: Lane Width	Lane Width = 16’	A. 12’	A. I-15S to SR-91E Connector
G1IM7	504.3(3)	Ramps: Location and Design of Ramp Intersection on the Crossroads	Spacing Between Intersections = 400'	A. Spacing Between Intersection = 233' B. Spacing Between Intersection = 215'	A. WB Main St. Ramps to Grand Blvd B. EB Main St. Ramps to 3rd St

GAD 1 I-15 Approved on May 23, 2011					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
G1IM11	302.1 309.1(3)(b)	Standard width of paved shoulder. Horizontal clearance to wall.	Freeway / Expressway paved shoulder width shall (6 or more lanes) = 10' Minimum horizontal clearance to wall shall not be less than 10’	Left paved shoulder width and horizontal clearance = 4.66' beside connector retaining walls and 5.33’ until vertical clearance is achieved under the connector bridges.	A. I-15 NB & SB Sta. 2148+50 to Sta. 2155+06.75
G1IM12	302.1 309.1(3)(a)	Standard width of paved shoulder. Clear width to bridges rails	Freeway / Expressway Paved Shoulder width shall (6 or more lanes) = 10' Shoulder width shall be equal to the standard width of highway.	A. to C. Existing bridge shoulder width= 8’. A. to C. Existing clear width to bridge rail= 8’.	A. NB and SB direction E. 6th Street Bridge shoulder on I-15 B. NB and SB direction Rail Road Bridge C. I-15/SR-91 Grade Separator Bridge shoulder
G1IM13	201.1	Stopping Sight Distance	SSD = 930' (Design Speed = 80 mph)	A. & B. NB, SSD =841'. Corresponding Speed = 75 mph. C. SB, SSD =841'. Corresponding speed = 75 mp D. SB, SSD =841'. Corresponding Speed = 75 mph, SSD varies from 625' (V=63 mph min.) to 841’ for shoulder width varies from 5’ to 16’ from 2148+50 to 2134+56.26	I-15 Mainline Horizontal Curve A. NB (BC2055+58.66 /EC2071+78.29) B. NB (BC2087+76.49/ EC2115+36.07) C. SB (BC2076+24.07/ EC2083+79.66) D. SB (BC2124+37.24/ EC2147+21.26)

GAD 1 I-15 Approved on May 23, 2011					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
G1IM14	201.1	Stopping Sight Distance	SSD = 430' (Design Speed = 50 mph)	A. SSD =365' for E91-S15. Corresponding Speed = 45 mph., B. SSD=377' for N15-W91, Corresponding Speed = 46 mph.	Connector Horizontal Curve: A. E91-S15 (BC1363+84.64/ EC 1371+24.90) B. N15-W91 (BC1377+19.74/EC 1405+32.27)
G1IM16	501.3	Interchange Spacing	Interchange spacing between two local interchanges shall be 1 mile in urban area	Existing Interchange spacing between El Cerrito Road interchange and the Ontario Avenue interchanges is 4600'	A. El Cerrito Road interchange and the Ontario Avenue interchanges
G1IM17	501.3	Interchange Spacing	Interchange spacing between freeway to freeway interchange and local interchange shall be 2 miles in urban area	Existing Interchange spacing between a) I-15/SR-91 Interchange and Magnolia Avenue interchange is 1.1 mile;	A. I-15/SR-91 Interchange and Magnolia Avenue

SR-91 GAD-3 Approved on September 14, 2011					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
G3IM1	201.1 Table 201.1	Stopping Sight Distance	SSD = 930' (Design Speed = 80 mph)	A. SSD = 566' (Corresponding Speed = 59 mph) B. SSD = 901' (Corresponding Speed = 78 mph) C. SSD = 592' (Corresponding Speed = 61 mph) D. SSD = 768' (Corresponding Speed = 71 mph)	A. EB SR-91 Mainline ("A" Line) Horizontal Curve BC 460+00.43/EC 482+75.40 B. EB SR-91 Mainline ("A" Line) Horizontal Curve BC 558+27.34/EC 574+70.25 C. SR-91 Mainline ("A" Line) Vertical Crest Curve PVC 442+00.00/PVC 454+00.00 D. SR-91 Mainline ("A" Line) Vertical Sag Curve PVC 459+50.00/PVT 465+50.00

SR-91 GAD-3 Approved on September 14, 2011					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
				E. SSD = 580' (Corresponding Speed = 60 mph) F. SSD = 661' (Corresponding Speed = 65 mph) G. SSD = 584' (Corresponding Speed = 60 mph) H. SSD = 578' (Corresponding Speed = 60 mph) I. SSD = 672' (Corresponding Speed = 66 mph) J. N/A for Initial Project K. SSD = 634' (Corresponding Speed = 63 mph) L. SSD = 920' (Corresponding Speed = 79 mph)	E. SR-91 Mainline (“A” Line) Vertical Crest Curve PVC 498+00.00/PVT 503+50.00 F. SR-91 Mainline (“A” Line) Vertical Crest Curve PVC 511+00.00/PVT 515+00.00 G. SR-91 Mainline (“A” Line) Vertical Sag Curve PVC 559+75.00/PVC 565+75.00 H. SR-91 Mainline (“A” Line) Vertical Crest Curve PVC 565+75.00/PVT 573+75.00 I. WB SR-91 Mainline ("A" Line) Horizontal Curve BC 558+27.34/EC 574+70.25 J. N/A for Initial Project K.WB SR-91 Mainline ("A" Line) Horizontal Curve BC 574+70.25/EC 584+71.70 L. SR-91 Mainline ("A" Line) Vertical Sag Curve PVC 579+12.12/PVT 583+12.12
G3IM2	501.3	Interchange Spacing	A. Spacing Between Interchanges = 2 miles B. Spacing Between Interchanges = 1 mile	A. Spacing Between Interchanges = 1.75 miles B. Spacing Between Interchanges = 0.32 miles	A. I-15 Interchange to McKinley St Interchange B. Pierce St Interchange to Magnolia Avenue Interchange
G3IM3	301.1	Lane Width	Minimum Lane Width = 12’	C.HOV/GP Lanes Width = 11’	C. EB SR-91 from Sta 438+25.00 to Sta 584+73.95
G3IM4	N/A for Initial Project				
G3IM5	203.2 Table 203.2	Horizontal Alignment: Standards for Curvature	A. Min. Radius = 3,900', Design Speed = 80 mph	A. Radius = 3,700', Design Speed = 79 mph	A. SR-91 Mainline, “A” Line Horizontal Curve (BC 574+70.25/EC 584+71.70)

SR-91 GAD-3 Approved on September 14, 2011					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
G3IM6	302.1	Paved Shoulder Width	A-D: N/A for Initial Project E. Left Paved Shoulder Width = 10' F. Right Paved Shoulder Width = 10' G. Left Paved Shoulder Width = 10' H. Right Paved Shoulder Width = 10'	A-D: N/A for Initial Project E. Left Paved Shoulder width = 1.6' to 10' F. Right Paved Shoulder Width = 8' to 9' G. Left Paved Shoulder Width = 2' to 8' H. Right Paved Shoulder Width = 8' to 9'	A-D: N/A for Initial Project E. EB SR-91 from Sta 435+25.00 to Sta 584+73.95 F. EB SR-91 from Sta 478+35.00 to Sta 545+00.00 G. WB SR-91 from Sta 430+00.00 to Sta 584+71.70 H. WB SR-91 from Sta 478+00.00 to Sta 582+16.00
G3IM7	405.1(2)(b)	Corner Sight Distance	Corner Sight Distance = 250' (Design Speed = 35 mph)	A. Corner Sight Distance = 200' (Design Speed = 30 mph)	A. EB SR-91 at the intersection of Pierce St. and EB off-ramp
G3IM8	Not Used				
G3IM9	309.1(3)(a), (b) & (c)	Horizontal Clearances	A. Minimum clearance = 10' B. Minimum clearance = 10'	A. Left Paved Shoulder Width = 1.6' to 3' B. Left Paved Shoulder Width = 2' to 8'	A. EB SR-91 Mainline, "A" Line from Sta 438+25 to Sta 584+71.70 B. WB SR-91 Mainline, "A" Line from Sta 430+00.00 to Sta 584+71.70
G3IM10	308.1	Cross Sections	Lane Width = 12' & Shoulder Width = 4'	A. Lane Width = varies from 10' - 11.5' & Shoulder Width = 2' B. Lane Width = varies from 10' – to 11'	A. McKinley St B. Pierce St

SR-91 GAD 2 Orange County (OC) Approved on May 17, 2012					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
G2IA1	202.5(1)	Superelevation Transition	A. 454.5’ B. 510’ (maximum allowable) C. 510’ (maximum allowable) D. 510’ (maximum allowable)	A. 420’ B. 624’ C. 624’ D. 540’	A. SR-91 EC 577+06.20 B. EB SR-91 BC 489+92.43 C. EB SR-91 EC 518+53.07 D. WB SR-91 BC 544+47.93
G2IA2	202.5(2)	Superelevation Runoff	A. L = 624’ Tangent = 416’ Curve = 208’ B. L = 400’ Tangent =266.67’ Curve = 133.33’ C. L = 624’ Tangent = 416’ Curve = 208’ D. L = 400’ Tangent = 266.67’ Curve = 133.33’ E. L = 266.67’ Tangent = 177.78’ Curve = 88.89’ F. L = 420’ Tangent = 280’ Curve = 140’	A. L = 624’ Tangent = 496.43’ Curve = 127.57’ B. L = 400’ Tangent = 248.96’ Curve = 151.04’ C. L = 624’ Tangent = 510.93’ Curve = 113.07’ D. L = 400’ Tangent = 195.52’ Curve = 204.48’ E. L = 266.67’ Tangent = 160.97’ Curve = 105.74’ F. L = 420’ Tangent = 180’ Curve = 240’	A. EB SR-91 BC 489+92.43 B. WB SR-91 BC 491+98.96 C. EB SR-91 EC 518+53.07 D. WB SR-91 EC 522+04.48 E. EB SR-91 BC 544+44.30 F. SR-91 EC 577+06.20

SR-91 GAD 2 Orange County (OC) Approved on May 17, 2012					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
			G. L = 540' Tangent = 360' Curve = 180'	G. L = 540' Tangent = 447.93' Curve = 92.07'	G. WB SR-91 BC 544+47.93

SR-91 GAD 2 Riverside County (RIV) Approved on May 2, 2012					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
G2IA1	202.5(1)	Superelevation Transition	B. 510'	B. 420'	B. SR-91 BC 13+36.18
			C. 510'	C. 420'	C. SR-91 EC 26+18.48
			D. 240'	D. 166.67'	D. Green River WB-Off Ramp BC 49+31.55
			E. 300'	E. 200'	E. SR-71S/SR-91W EC 102+11.29 III.
			F. 150'	F. No Transition	F. SR-91E/SR-71N EC 17+87.18
			G. 371.25'	G. 360'	G. SR-91 BC 116+82.70
			H. 416.25'	H. 360'	H. SR-91 EC 143+65.37
G2IA2	202.5(2)	Superelevation Runoff	G. L = 66.67' Tangent = 111.11' Curve = 55.56'	G. Runoff does not exist.	G. Green River WB Off BC 49+31.55
			H. L = 200' Tangent = 133.33' Curve = 66.67'	H. L = 200' Tangent = 66.67' Curve = 133.33'	H. SR-71S/SR-91W EC 102+11.29
			I. No transition used out of this curve.	I. No transition used out of this curve.	I. SR-91E/SR-71N EC 17+87.18
			K. L = 360' Tangent = 240' Curve	K. L = 360' Tangent = 160' Curve = 200'	K. SR-91 BC 44+29.07

SR-91 GAD 2 Riverside County (RIV) Approved on May 2, 2012					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
			= 120' L. L = 360' Tangent = 240' Curve = 120' M. L = 360' Tangent = 240' Curve = 120' N. L = 360' Tangent = 240' Curve = 120'	 L. L = 360' Tangent = 160' Curve = 200' M. L = 360' Tangent = 200' Curve = 160' N. L = 360' Tangent = 200' Curve = 160'	 L. SR-91 EC 65+32.45 M. SR-91 BC 116+82.70 N. SR-91 EC 143+65.37
G2IA3	202.6	Superelevation of Compound Curves	A. R=1394.04', e=8%	A. e=2.5%	A. SR-91E/SR-71N PCC 24+80.79
G2IA6	504.2(2)	Divergence Angle	A. 4º52'08"	A. 5º24'51"	A. Green River EB Off-Ramp
G2IA7	504.4(6)	Diverging Branch Connections	A. Diverging branch connections should be designed as shown in Figure 504.4	A. No 2500' Aux Lane.	A. SR-71S/SR-91W
G2IA8	504.4(6)	Merging Branch Connections	A. Merging branch connections should be designed as shown in Figure 504.4.	A. Lane drop occurs in at ramp meter bar	A. SR-71S/SR-91W
G2IA10	504.3(5)	Through Lane Drop	A. 50:1 Taper @ 12' = 600'.	A. 35:1 Taper @ 12' = 430'.	A. Green River EB On
G2IA11	504.3(6)	Two-Lane exit ramp	A. If >1500 vph, two lane exit.	A. 2330 vph, single lane exit.	A. Green River EB Off
G2IA12	504.3(5)	Connector Design Speed	A.-B. 50 mph	A. Design speed = 25 mph B. Design speed = 20mph in the loop	A. SR-71 S/SR-91 W B. SR-91E/SR-71N
G2IA13	504.4(5)	Single Lane Connections	B.-D. If single lane connector	B. 2200', single lane connector. C. 1600', single lane	B. SR-71S/SR-91E C. SR-91W/SR-71N

SR-91 GAD 2 Riverside County (RIV) Approved on May 2, 2012					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
			>1000'; two lane connector.	connector. D. 1245', single lane connector	D. SR-91E/SR-71N
G2IA14	504.4(6)	Branch Connections (vph)	A - C. If single lane connector >1500 vph; two lane connector.	B. 2040 vph, single lane connector C. 1750 vph, single lane connector	B. SR-71S/SR-91E C. SR-91W/SR-71N
G2IA15	504.4(7)	Lane Drops Freeway–to-Freeway	A-B. 50:1 Taper @ 12' = 600'.	A. 32:1 Taper @ 12' = 387'. B. 40:1 Taper @ 12' = 480'.	A. SR-91E/SR-71N B. SR-71S/SR-91W
G2IA16	204.4	Vertical Curve Length	A. 800'	A. 600'	A. SR-91 PVI = 26+43.84

SR-91 GAD 4 (Same design exception for Initial Phase and Ultimate Project) Approved on October 18, 2011					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
G4UA1	202.5(1)	Superelevation Transition	A. 510'	A. 330'	A. SR-91. BC 159+69.76
					B. Not Used
			C. 445'	C. 375'	C. SR-91. BC 7+34.09
			D. 445'	D. 375'	D. SR-91. EC 221+18.79
			E. 210'	E. 135'	E. Maple WB-On EC 114+58.74
			F. 240'	F. 160.93'	F. Maple WB-On BC 116+59.67
			G. 300'	G. 200'	G. Maple EB-On BC 26+71.43
			H. 510'	H. 396'	H. SR-91. EC 169+08.24
			I. 300'	I. 226.41'	I. Lincoln Ave EB hook On ramp BC 2289+26.29
			J. 300'	J. 270.96'	J. Lincoln Ave EB Hook Off ramp

SR-91 GAD 4 (Same design exception for Initial Phase and Ultimate Project) Approved on October 18, 2011					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
			K. 150' L. 150'	K. 133.1' L. 87.54'	EC 3291+52.98 K. Lincoln Ave WB-Off BC 1290+90.41 L. Lincoln Ave WB-Off EC 1294+72.97
G4UA2	202.5(2)	Superelevation Runoff Length (L) – Two thirds of L on Tangent, one third of Lon curve.	C. L = 200' Tangent = 133' Curve = 66' E. L = 300' Tangent = 200' Curve = 100'	C. L = 200' Tangent = 60' Curve = 140' E. L = 194.71 Tangent = 90.95 Curve = 103.76	A. Not Used. B. Not Used. C. Maple EB-On. BC 26+71.43 D. Not Used. E. Lincoln Ave EB hook On ramp. BC 2289+26.29
G4UA3	203.6	Reversing Curves	Follow Figure 202.5	A. Does Not Follow B. Does Not Follow	A. Maple WB-On. PRC 95+13.13 B. Auto Center EB-On PRC 36+99.72
G4UA4	204.4	Vertical Curve Length = 10V	A. 800' B. 800' C. 800'	A. 500' B. 600' C. 500'	A. SR-91 PVI=178+63.37 B.SR-91 PVI=12+08.76 C. SR-91 PVI=221+74.55
G4UA5	105.4(2)	Curb Ramp	Dual Curb Ramps	Single Curb Ramps	A. Auto Center Drive/ SR-91 EB on and off Ramp Intersection B. Maple Street/ SR-91 WB off Ramp Intersection C. Maple Street/ SR-91 EB off and WB off Ramp Intersection D. Lincoln Ave/ SR-91 WB off and on Ramp Intersection E. D Street/ SR-91 EB

SR-91 GAD 4 (Same design exception for Initial Phase and Ultimate Project) Approved on October 18, 2011					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
					off and on Ramp Intersection
G4UA6	305.1	Median Widths	Min. Median Width = 36’	A. 22’	A. SR-91, “A” line Sta 157+50 to 305+00
G4UA7	310.2	Frontage Roads: Outer Separation	Min. Outer Separation = 26'	A. 24’ B. 17’ C. 18’ D. 14' E. 19’	A. SR-91 and Wardlow Road B. SR-91 and Pomona Road C. SR-91 and Pomona Road D. SR-91 and C Street E. EB SR-91 and 2nd Street
G4UA8	504.2(2)	Freeway Entrances and Exits: Standard Designs	Follow Figure 504.2A	A. Full R=3000’ is not provided. B. Proposed R=4500’ before convergence at Freeway Entrance C. Proposed exit divergence angle is 3°52'04" and gore width 18.25’.	A. Maple WB-On. BC 94+00.00. B. Lincoln EB hook On C Lincoln EB hook Off Ramp
G4UA9	504.2(3)	Cut slope Decision Sight Distance and Provision of Auxiliary Lane	A 600 feet auxiliary lane required, 1,000 feet preferred.	A. No auxiliary lane provided.	A. Auto Center Dr. WB-Off ramp
G4UA10	Not Used				
G4UA11	504.3(3)	Grade of Local Road at Ramp Connection	Grade should be 4% or less	A. 5.87% B. 5.58%	A. Maple intersection with WB-Off. B. Lincoln Avenue intersection with WB Off and On ramp
G4UA12	504.3(3)	Distance Between Ramp	Minimum distance should be 500’	A. 400’	A. Auto Center Dr. Between eastbound ramps and Frontage Rd

SR-91 GAD 4 (Same design exception for Initial Phase and Ultimate Project) Approved on October 18, 2011					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
		Intersection and Local Road Intersection		B. 425'	B. Maple St. Between westbound off-ramp and Pomona Road
G4UA13	504.6	Main line Lane Drop at interchange	A. Main line lane should not be dropped at local service interchange.	A. Main line lane is dropped at Lincoln Avenue interchange.	A. SR-91 WB Lane is dropped after 1245' west of WB exit ramp before entrance ramp
G4UA14	504.8	Access Control	No local road access opposite of ramp intersection	A. Through movement from Paseo Grande. B. Through movement from private driveway.	A. Maple EB-On B. Maple WB-Off

SR-91 GAD 1 Approved on August 31, 2011					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
G1IA1	203.5	Compound Curves	On one-way roads, the larger radius curve should follow the smaller radius.	A. - C. Larger radius does not follow shorter radius.	A. I-15N/SR-91W Connector ("NW" Line) B. SR-91E/I-15S Connector ("ES" Line) C. I-15S/SR-91W Connector ("SW" Line)
G1IA2	203.6	Reversing Curves	A. Minimum Superelevation transition = 350' and tangent=233.33' B. and C. Minimum Superelevation transition = 175' and tangent=116.66' D. Minimum Superelevation transition=150'	A. Superelevation Transition length = 319.54 and tangent=213.03' B. Superelevation Transition Length 116.69' and tangent=65.74' C. Superelevation Transition Length 136.65' and tangent=91.1' D. Superelevation Transition Length 100.05'' and	A. EB SR-91 Main St Braid On-Ramp ("M3" Line), 1000' & 3000' Radius Curves B. EB SR-91 Main St Braid On-Ramp ("M3" Line), (3000' & 3500' Radius Curves C. EB SR-91 Main St Braid On-Ramp ("M3" Line), 3500' & 3000' Radius Curves D. WB SR-91 Main St On-Ramp ("M5" Line), 7000' & 3000' Radius

SR-91 GAD 1 Approved on August 31, 2011					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
			and tangent=100' E. Minimum Superelevation transition=325' and tangent=216.67'	tangent=62.22' E. Superelevation Length = 312' and tangent=0.0'	Curves E. SR-91E/I-15N Connector ("CDE" Line), 3524' & 900' Radius Curves
G1IA3	204.4	Vertical Curve Length	A.-B. Minimum Vertical Curve Length = 800' (Design Speed = 80 mph)	A. Vertical Curve Length = 600' B. Vertical Curve Length = 500'	A. SR-91 Mainline ("A" Line) Vertical Curve PVC 383+25.00/PVT 389+25.00 B. SR-91 Mainline ("A" Line) Vertical Curve PVC 399+00.00/PVT 404+00.00
G1IA5	305.1	Median Standards: Width	Min. Median Width = 36'	A. Median Width: 26 – 35' B. Median Width: 17'-22'	A. SR-91, West of Main St. Interchange B. SR-91, East of I-15 Interchange
G1IA6	310.2	Frontage Roads: Outer Separation	Min. Outer Separation = 26'	A. Outer Separation = 19.5' B. Outer Separation = 9'	A. WB SR-91 & Bollero Place B. EB SR-91 & 2nd Street
G1IA7	504.2(2)	Freeway Entrances and Exits: Standard Designs	A. Figure 504.2A, For entrance ramp R=3000' B. & C. Figure 504.4	A. Used R=5000'at Freeway Entrance B. & C. Gore position moved more than 400' for Branch Connection	A. EB Main St. On-Ramp ("M2" Line) B. EB CD Road ("CDE" Line) Exit C. EB CD Road ("CDE" Line) to EN & ES Connectors
G1IA8	504.4(5)	Freeway-to-Freeway Connections: Single-lane Connections	2-lane connector where length exceeds 1000' 2 lane connector when volume exceeds 1500 equivalent passenger car per hour.	Existing single lane connector	A. NE Connector B. SW Connector C. SE Connector D. WN Connector
G1IA9	202.6	Compound curves superelevation Transition	Figure 202.6) superelevation transition	Not maintained	A. SR-91E-15S (ES line) connector

SR-91 GAD 1 Approved on August 31, 2011					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
G1IA10	204.3	Standards for Grade	Minimum Grade = 0.3%	A. - 0.13% B. 0.25% to 0.29% C. 0.25% D. 0.26% E. 0.29% F. - 0.16%	A. WB SR-91 “A” Line Sta 323+37.50 to 324+00.00, 11.0 Lt B. EB SR-91 “A” Line Sta 335+25.00 to 344+00.00, 11.0’ Rt C. WB SR-91 “A” Line Sta 336+25.00 to 337+84.38, 11.0’ Lt D. WB SR-91 “A” Line Sta 342+00.00 to 346+00.00, 11.0’ Lt E. EB SR-91 “A” Line Sta 352+25.00 to 354+50.00, 11.0 Rt F. WB SR-91 “A” Line Sta 363+00.00 to 367+32.00, 11.0’ Lt
G1IA13	202.5(1) 202.5(2)	Superelevation Transition	Figure 202.5(1) superelevation transition length 2/3 of the superelevation runoff should be on the tangent and 1/3 within the curve	Superelevation transition distance is not maintained. Two-third/one-third distribution not achieved	A. Main St EB Braid On-Ramp (“M3” Line), Superelevation transition B. Main St EB Braid On-Ramp (“M3” Line), Superelevation transition and EC 3374+70.39 C. Main St EB Braid On-Ramp (“M3” Line), Superelevation transition D. East CD Connector (“CDE” Line), superelevation transition before PRC 387+55.48 E. Main St WB On-Ramp (“M5” Line), Superelevation transition and EC 5324+17.16

I-15 GAD 1Approved on August 31, 2011					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
G1IA21	504.6	Mainline lane reduction at interchanges	Preferably at least one-half mile from nearest exit or inlet nose.	After 850' from exit nose.	C. SB Ontario Avenue off ramp
G1IA22	504.4(5)	Length of single lane connectors is more than 1000'.	Single lane connectors in excess of 1000' in length should be widened to two lanes to provide for passing maneuvers.	A. E91-S15=6952' B. N15-W91=5362'	A. E91-S15=6952'.From Sta.1358+09.64 to Sta.1427+61.95 B. N15-W91=5362'. From Sta.1374+00.00 to Sta.1427+61.95
G1IA23	202.5(1) 202.5(2)	Superelevation transition and runoff.	A superelevation transition should be designed in accordance with the diagram and tabular data shown in Figure 202.5A to satisfy the requirements of safety, comfort and pleasing appearance.	A. The transition distance is modified to keep the same rate and adjusted superelevation runoff length. B. Not used.	A. Gore area of E91-S15 / E91-N15 connectors B. Not Used
G1IA24	504.2	Existing entrance and exit nose geometry on I-15	Design of freeway entrances and exits should conform to the standard designs illustrated in Figure 504.2A-B (single lane), and Figure 504.3L (two lane entrances and exits).	A. Not Used B. Ramp convergence ratio=30:1	A. Not Used. B. SB Ontario Ave. on ramp
G1IA25	504.5	Existing auxiliary lane between two successive on and off ramp.	Auxiliary lane = 2000'	Auxiliary lane = 1575'	A. Between NB El Cerrito Rd on ramp and NB Ontario Ave. off ramp

SR-91 GAD 3 Approved on September 14, 2011					
Feature No.	Index	Description	Standard	Proposed Exception	Location
G3IA1	N/A for Initial Project				
G3IA2	305.1	Median Standards:	Min. Median Width = 36'	A. Median Width: 12' to 14'	A. SR-91 ("A" Line), Sta 430+00.00 to 584+71.70

SR-91 GAD 3 Approved on September 14, 2011					
Feature No.	Index	Description	Standard	Proposed Exception	Location
		Width			
G3IA3	N/A for Initial Project				
G3IA4	N/A for Initial Project				
G3IA5	N/A for Initial Project				
G3IA6	204.4	Vertical Curve Length	A.-D. Minimum Vertical Curve Length = 800' (Design Speed = 80 mph)	A. Vertical Curve Length = 600' B. Vertical Curve Length = 400' C. Vertical Curve Length = 550' D. Vertical Curve Length = 600'	A. SR-91 Mainline ("A" Line) Vertical Curve PVC 459+50.00/PVT 465+50.00 B. SR-91 Mainline ("A" Line) Vertical Curve PVC 477+50.00/PVT 481+50.00 C. SR-91 Mainline ("A" Line) Vertical Curve PVC 498+00.00/PVT 503+50.00 D. SR-91 Mainline ("A" Line) Vertical Curve PVC 559+75.00/PVT 565+75.00
G3IA7	N/A for Initial Project				
G3IA8	N/A for Initial Project				
G3IA9	Not Used				
G3IA10	203.3	Alignment Consistency	Maximum difference in Design Speed between successive curves = 10 mph	A. Maximum difference = 14 mph B. Maximum difference = 22 mph C. Maximum	A. WB SR-91 Mainline ("A" Line) between horizontal curves BC 460+00.43/EC 482+75.40 and BC 558+27.34/EC 574+70.25 B. EB SR-91 Mainline ("A" Line) between horizontal curves BC 398+74.93/EC 419+47.41 and BC 460+00.43/EC 482+75.40 C. EB SR-91 Mainline ("A"

SR-91 GAD 3 Approved on September 14, 2011					
Feature No.	Index	Description	Standard	Proposed Exception	Location
				difference = 22 mph	Line) between horizontal curves BC 460+00.43/EC 482+75.40 and BC 558+27.34/EC 574+70.25
G3IA11	Not Used				
G3IA12	502.2	Partial Interchanges	Full Access	A. Partial Interchange	A. Pierce St. EB Off-Ramp & WB On-Ramp
G3IA13	Not Used				
G3IA14	504.3(5)	Passing Lane on Single Lane Ramps.	Additional passing lane for ramp length > 1000'	A. Length = 1557.86’	A. McKinley St WB Off-Ramp , Sta 1493+25.01 to Sta 1501+50.00
G3IA15	Not Used				
G3IA16	504.3(9)	Distance Between Successive On-Ramps.	Minimum Distance = 1000'	A. Distance = 882.5'	A. Between McKinley St SB to SR-91 Mainline EB On-Ramp and McKinley St NB to SR-91 Mainline EB On-Ramp
G3IA17	N/A for Initial Project				
G3IA18	201.7	Decision Sight Distance (DSD)	DSD = 1260’ (V=80mph)	A. DSD = 699’ B. DSD = 858’ C. DSD = 697’	A. McKinley WB Off-Ramp, Sta 498+56.88 to Sta 506+03.03 B. Pierce St EB Off-Ramp, Sta 552+50.00 to Sta 562+00.00 C. Magnolia Ave EB Off-Ramp, Sta 575+58.58 to Sta 582+34.17

SR-91 CIP Initial Phase: Summary of Ramp Metering Policy Design Exception

GAD 2 SR-91 Orange County No exception proposed

GAD 2 SR-91 Riverside County (RIV) Approved on May2, 2012					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
G2IRM1A G2IRM1B	Ramp Meter Policy	Ramp Meter	Provision of ramp metering shall be included in any project that proposes additional capacity, modification of an existing interchange, or construction of a new interchange.	Ramp Metering is not proposed.	A. SR-91W/SR-71N B. SR-91E/SR-71N

GAD 4 SR-91(Same Initial phase and Ultimate Project) Approved on January 05, 2012.					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
G4URM1A	Ramp Meter Design Manual Index I-H and I-J	HOV Preference Lane	An HOV preference lane shall be provided at all ramp meter locations.	An on ramp HOV Preference Lane is not proposed.	Maple Street westbound proposed on-ramp

GAD 1 SR-91/I-15 Approved on October 13, 2011					
Feature No.	Index	Feature	Standard	Proposed Exception	Location
G1IRM2A	Ramp Meter Design Manual Index I-H and I-J	HOV Preference Lane	An HOV preference lane shall be provided at all ramp meter locations.	An on ramp HOV Preference Lane is not proposed.	SR-91 Eastbound on ramp at the Main Street interchange
G1IRM2B	Ramp Meter Design Manual Index I-H and I-J	HOV Preference Lane	An HOV preference lane shall be provided at all ramp meter locations.	An on ramp HOV Preference Lane is not proposed.	15S-91W and 15N-91W westbound proposed combined CD Road Connector on ramp
GAD 3 SR-91 No exception proposed					

Attachment D

Traffic Assessment

State Route 91 Geometric and Design Alternatives Analysis

SR-91 Corridor Between SR-241 and SR-71

Traffic Assessment (Preliminary Draft)

April 29, 2021

Prepared for

Orange County Transportation Authority (OCTA)

and

Riverside County Transportation Authority (RCTC)

Contents

Tables and Figures

1. Introduction

1.1 Project Overview

In accordance with Contract Agreement No. C-9-1685, the Orange County Transportation Authority has retained the Advanced Civil Technologies (ACT) team to provide conceptual engineering services for the State Route (SR) 91 Geometric and Design Alternative Analysis study (Project). As part of the ACT team, Jacobs has prepared this Preliminary Traffic Assessment in support of the alternative analysis.

The purpose of the Project is to develop geometric design alternatives that improve the eastbound (EB) SR-91 corridor between SR-241 and SR-71 by adding one general purpose (GP) lane. The various alternatives are discussed in Section 2.2, and the Alternative plan sets are included in Appendix A. The site vicinity map is shown on Figure 1-1.

1.2 Scope of Work

The primary purpose of this report is to provide a high-level assessment of traffic performance of the design alternatives. OCTA provided forecasts for the SR-91 corridor using the Orange County Transportation Analysis Model (OCTAM), using the TransCAD software. Post-processing of the forecast data was used to compare the Build vs. No-build alternatives at a high-level (Section 3). A preliminary qualitative assessment of traffic operations and safety was also conducted, with a closer look at the variations (Section 4).

1.3 Limitations

This report has been prepared for the exclusive use of project team members for specific application to the project alternative analysis. This report should be used for planning only, not for preliminary or final design. More detailed traffic modeling and analysis will be required as the project proceeds.

Figure 1-1. Site Vicinity Map

2. Project Description

2.1 Existing Condition

The SR-91 freeway is a major east-west access-controlled corridor for commuters traversing between northern Orange and Riverside counties. In the project study area, which includes the SR-91/SR-241 and SR-91/SR-71 interchanges, the SR-91 corridor generally consists of five GP lanes in both the EB and westbound (WB) directions. RCTC is currently sponsoring a project to improve operations of the SR-91 WB lanes (SR-91 Corridor Operations Project, EA 0F544) through the addition of a sixth general purpose lane between Green River Road and SR-241. This project is anticipated to be completed by late 2021. The 91 Express Lanes, which is comprised of two express lanes in each direction, spans approximately 18 miles between Orange and Riverside counties. Approximately 10 miles of the 91 Express Lanes are in Orange County and the Riverside County portion makes up the remaining eight miles. The Express Lanes in Orange County begins at the SR-55/SR-91 interchange and ends at the Orange/Riverside county line. The Express Lanes in Riverside County starts from the Orange/Riverside county line and ends at Interstate 15 (I-15) in Riverside County. Ingress and egress points occur at both ends of the facility and another entry/exit point occurs in the vicinity of the Orange/Riverside county line.

2.2 Purpose and Proposed Improvements

The purpose of this Project is to develop geometric design alternatives that improve the EB SR-91 corridor between SR-241 and SR-71 by adding one general purpose lane. All of the project alternatives include varied design features that allow for the addition of this sixth EB lane.

Four Build alternatives have been developed:

- Alternative 1 – Constrained Cross-Section (Design Variations A, B and C)
- Alternative 2 – Full-Standard Cross-Section, Widen South
- Alternative 3 – Full-Standard Cross-Section, Widen North (Design Variations A and B)
- Alternative 4 – Hybrid Cross-Section (Limited Widen South)

All four of the alternatives will provide a sixth GP lane between the SR-91/SR-241 interchange and the SR-71 interchange. The details of the alternatives and the more refined alternative concepts, summarized in Table 1, vary mostly in the cross-section: outside shoulder, lane, and buffer widths. In Concepts 2 to 4, there is a short parallel (seventh) auxiliary lane in advance of the Green River Road interchange. The auxiliary lane allows for approximately 1,000 feet of additional diverge distance and provides for a two-lane (trap/choice) off-ramp.

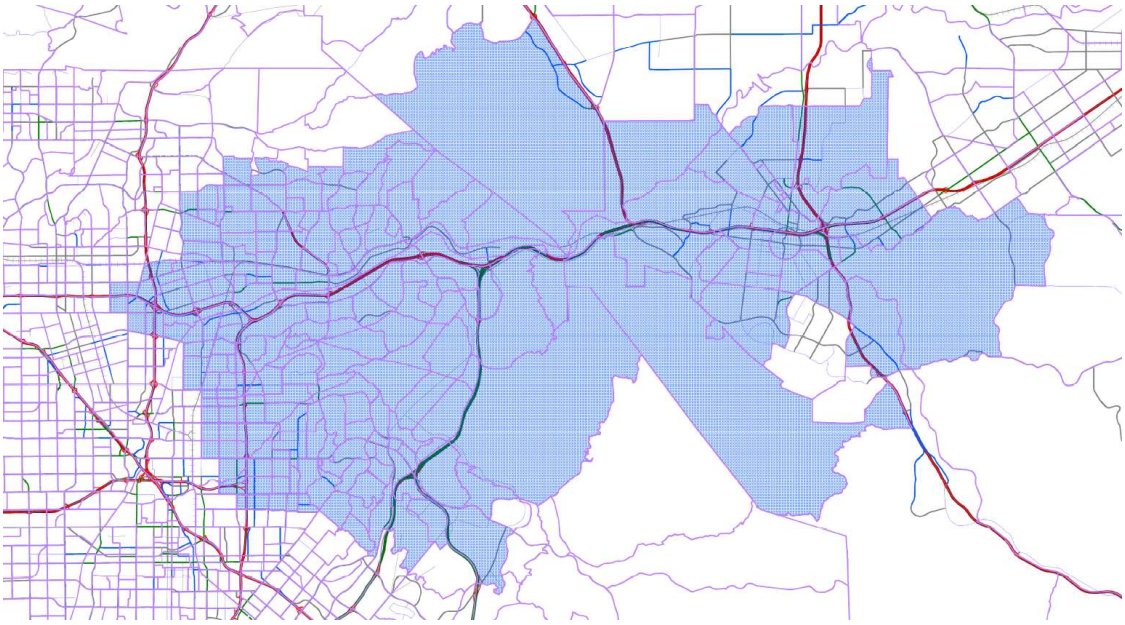
Table 1. *Alternative Concept Comparison*

		GP lanes	Outside Shoulder	Lane Widths	Buffer Width	Auxiliary Lane to Green River Road Off
Alternative Concept	**No-Build**	**5**	10'	11/11/11/12/12	13' (to allow for ingress/egress with no transition)	None
	1A	**6**	4' to 10', but mostly 6'	11/11/11/11/12/12	Generally 2' (transitions to 13' to allow for ingress lane)	None
	1B	**6**	10'			None
	1C	**6**	10'			Yes
	2	**6**	10'	12/12/12/12/12/12	Generally 4' (transitions to 16' to allow for ingress lane)	Yes
	3A	**6**	10'	12/12/12/12/12/12		Yes
	3B	**6**	10'	12/12/12/12/12/12		Yes
	4	**6**	10'	11/11/11/11/12/12	Generally 2' (transitions to 13' to allow for ingress lane)	Yes

3. Travel Forecasting Investigation

OCTA provided forecasts for the SR-91 corridor using the OCTAM model. To balance the need to understand the regional vs. corridor-specific effects, the model capture area was developed as illustrated in Figure 2.

Figure 2. *OCTAM Model Capture Area*



The operational assessment focused on approximately eight miles of EB SR-91. OCTAM does not provide any tangible differentiation for cross-sectional widths or short auxiliary lanes, so two basic models runs were completed: "Build" and "No-Build". The Build scenarios included the six GP lanes from SR-241 to SR-71, and represent Alternative Concepts 1 to 4. Both scenarios include the SR-241/SR-91 Express Lane connectors. Neither scenario includes the braided configuration for Green River Road/SR-71 that is in the Ultimate CIP as the model would not be sensitive to those changes.

OCTAM was run for four periods for the 2045 horizon years; AM peak (6 to 9 AM), midday (9 AM to 3 PM), PM peak (3 to 7 PM) and overnight. Separate data summaries were created for the Orange County portion of the model capture area (subregion), illustrated in Figure 2, plus a more focused assessment of the EB freeway (the Express Lanes, GP lanes, and ramps).

Tables 2 and 3 are summaries of the comparison between the Build and No-Build scenarios for the subregion and EB freeway corridor. Data are reported on vehicle miles traveled (VMT), delay, vehicle hours traveled (VHT), and speed.

Figures 3 to 6 are graphic summaries of selected data, comparing the Build vs. No-Build.

The changes to the subregion are modest, because of the relatively large area. There is a negligible increase in daily VMT (0.003%), mostly associated with the AM and PM peak periods. There are also modest decreases in congested VMT (0.2%) and hours of delay (0.3%).

For the SR-91 corridor, the OCTAM results illustrate the benefits of the sixth lane addition more clearly. Delay is reduced by approximately 20% (mostly in the AM and PM peak periods), with a corresponding increase in average speed. While there will still be congestion in the corridor in 2045, there will be clear improvements in overall traffic flow and quality.

Table 2. *Subregion OCTAM Model Summary – 2045 Horizon Year*

Period	Scenario	VMT	Congested VMT	Hours of Delay
AM	Build	20,852,383	703,132	179,352
	No-Build	20,857,678	703,554	179,700
Midday	Build	21,474,931	536,553	24,858
	No-Build	21,476,699	536,708	24,941
PM	Build	27,358,503	868,580	176,996
	No-Build	27,348,495	870,549	179,162
Overnight	Build	15,452,354	356,991	2,701
	No-Build	15,452,743	357,018	2,709
Total	**Build**	85,138,171	4,058,831	1,977,482
	No-Build	85,135,614	4,065,695	1,984,378

Table 3. *EB SR-91 Model Summary – 2045 Horizon Year*

Period	Scenario	VMT	VHT	Hours of Delay	Average Speed (mph)
AM	Build	307,722	7,452	2,575	41
	No-Build	314,761	7,928	2,954	40
Midday	Build	333,985	5,664	364	59
	No-Build	334,299	5,781	478	58
PM	Build	531,427	21,323	12,967	25
	No-Build	529,508	24,841	16,533	21
Overnight	Build	317,708	5,044	34	63
	No-Build	317,858	5,060	48	63
Total	**Build**	1,490,842	39,482	15,940	38
	No-Build	1,496,427	43,610	20,013	34

Figure 3. *Subregion VMT Comparison – 2045 Horizon Year*

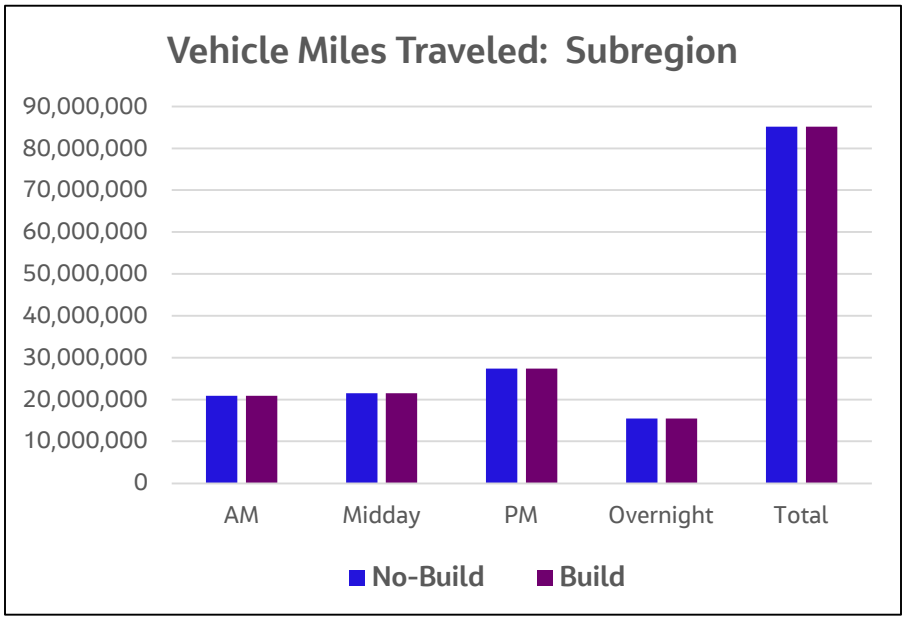


Figure 4. *Subregion Delay Comparison – 2045 Horizon Year*

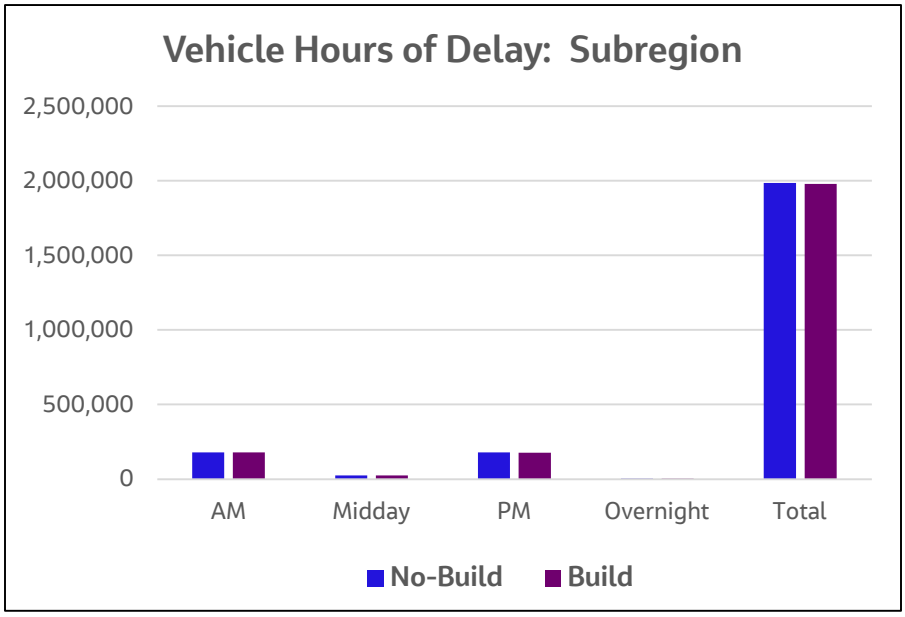


Figure 5. *Eastbound SR-91 Delay Comparison – 2045 Horizon Year*

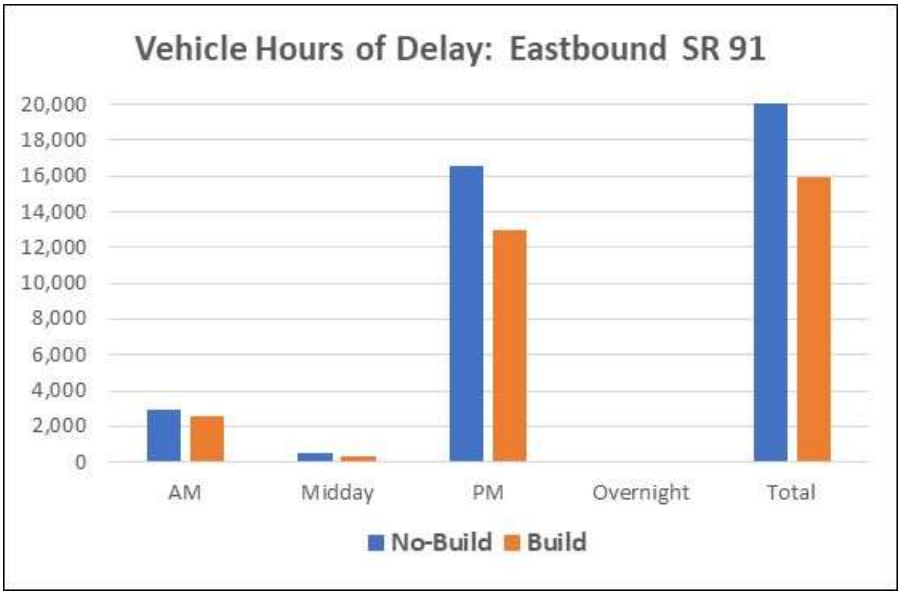
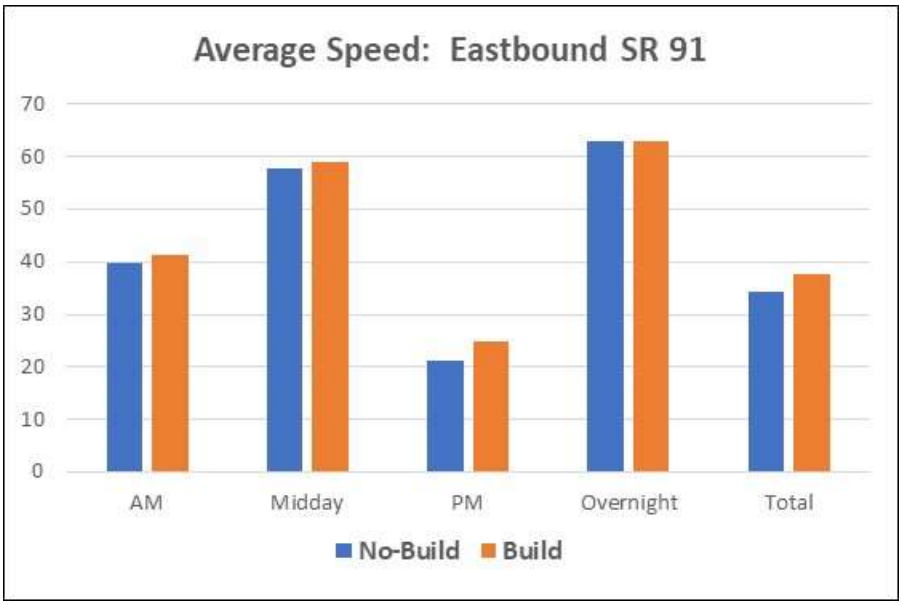


Figure 6. *Eastbound SR-91 Speed Comparison – 2045 Horizon Year*



A focused evaluation was conducted at the SR-241/SR-91 interchange. Table 4 is a summary of the volume changes on SR-91, immediately east of SR-241. The data indicate that while overall cross-section volumes on SR-91 increase, there is a much larger increase on the GP lanes, and a reduction on the Express Lanes, both from SR-91 and on the planned SR-241 Express Lanes connector.

Table 4. *SR-91 Traffic Volumes (at SR-241)*

Period	Scenario	GP Lanes east of SR-241	Express Lanes from SR-91	Express Lane Connector from SR-241	Total
AM Peak	No-Build	26,761	5805	3375	35,941
	Build	28,975	4442	2767	36,184
	Change	**8.3%**	**-23.5%**	**-18.0%**	**0.7%**
PM Peak	No-Build	46,623	10,565	4516	61,704
	Build	50,468	9443	3670	63,581
	Change	**8.2%**	**-10.6%**	**-18.7%**	**3.0%**
Daily	No-Build	154,876	17,846	7892	180,614
	Build	161,176	15,192	6438	182,806
	Change	**4.1%**	**-14.9%**	**-18.4%**	**1.2%**

Table 5 is a similar summary for SR-241, immediately south of SR-91. The overall cross-section volumes on SR-241 increase, by approximately 3.0% on a daily basis. There is a much larger increase on the GP connector to SR-91 (9% daily) and a reduction on the Express Lanes connector.

Table 5. *SR-241 Traffic Volumes (at SR-91)*

Period	Scenario	GP Connector to EB SR-91	GP Connector to WB SR-91	Express Lane Connector to SR-241	Total (south of SR-91)
AM Peak	No-Build	6754	824	3375	10,953
	Build	7466	823	2767	11,056
	Change	**10.5%**	**-0.1%**	**-18.0%**	**0.9%**
PM Peak	No-Build	11,396	1358	4516	17,270
	Build	13,269	1361	3670	18,300
	Change	**16.4%**	**0.2%**	**-18.7%**	**6.0%**
Daily	No-Build	28,967	2594	7892	39,453
	Build	31,585	2594	6438	40,617
	Change	**9.0%**	**0.0%**	**-18.4%**	**3.0%**

4. Traffic Operations and Safety Assessment

A preliminary assessment of traffic operations and safety was conducted, focusing on differences between the variations. The assessments were conducted separately for traffic operations and safety, in Tables 4 and 5.

The alternative concepts were compared to the No-Build scenario (i.e., No-Build wasn't assessed on its own). The assessments were based on professional judgment, and not on specific data or modeling. A color scale was employed:

- likely worse than No-Build
- likely about the same as No-Build
- likely somewhat better than No-Build
- likely much better than No-Build

For traffic operations, the following assessments were made:

- Overall capacity/throughput: the ability to serve more GP traffic, reduce congestion, and relieve traffic on alternate routes
- SR-241 connector: operations and queuing on the connector before it joins SR-91
- SR-241 connector ramp merge: conflicts at the merge and the weave up to the Express Lanes ingress/egress
- Express Lanes ingress/egress: ease of movements to and from the Express Lanes
- Green River Road diverge: speed differentials and lane changes upstream of the off-ramp
- Composite assessment: brings together the five measures above

In Table 6, the results for traffic operations show there are no clear differences between the alternative concepts. All provide for much better operations on the GP lanes, particularly at the SR-241 connector merge, which is a major constraint in the existing operations. While the short auxiliary lane at the Green River Road off-ramp will be beneficial, the sixth lane is a much larger improvement, so the overall traffic operations benefit is minor. All of the alternative concepts will provide much improved traffic operations.

Table 6. *Traffic Operations Concept Assessment*

Concept	Overall Capacity	SR-241 Connector	SR-241 Connector Merge	Express Lane Ingress/Egress	Green River Road Diverge	Composite
1A	🟢	🟢	🟢	🔵	🔵	🟢
1B	🟢	🟢	🟢	🔵	🔵	🟢
1C	🟢	🟢	🟢	🔵	🟢	🟢
2	🟢	🟢	🟢	🔵	🟢	🟢
3A	🟢	🟢	🟢	🔵	🟢	🟢
3B	🟢	🟢	🟢	🔵	🟢	🟢
4	🟢	🟢	🟢	🔵	🟢	🟢

For safety, summarized in Table 7, the following assessments were made:

- Congestion-related crashes (typically rear-ends) on the mainline and SR-241 connector
- Sideswipe crashes, which are affected by lane widths
- Express Lanes and conflicts during transitions
- Green River Road interchange crashes
- Composite assessment: brings together the four measures above

Table 7. *Safety Concept Assessment*

Concept	Congestion-Related	Sideswipe	Express Lanes	Green River Road	Composite
1A	🟢	🟡	🟡	🔵	🔵
1B	🟢	🟡	🟡	🔵	🔵
1C	🟢	🟡	🟡	🟢	🔵
2	🟢	🔵	🔵	🟢	🟢
3A	🟢	🔵	🔵	🟢	🟢
3B	🟢	🔵	🔵	🟢	🟢
4	🟢	🟡	🔵	🟢	🔵

There is slightly more delineation between the alternative concepts for safety, but they are still largely similar. Alternative Concepts 2 and 3A/3B provide the best combination of design characteristics, but the primary benefit of reducing congestion-related crashes is provided by all the alternatives. However, additional safety benefits are expected with Alternatives 2 and 3A/3B due to the improved cross-section geometry. Similarly, these Alternative Concepts will help to reduce conflict between mainline through traffic and exiting vehicles at Green River Road because of the auxiliary lane.

Attachment E

PEAR-E Environmental Studies Checklist

Attachment F: PEAR Environmental Studies Checklist

Environmental Study	Not anticipated	Memo to file	Report required	Risk	Comments
Land Use	☐	☒	☐	L	CIA Memo
Wild and Scenic River Consistency	☒	☐	☐	L	
Coastal Management Plan	☒	☐	☐	L	
Growth	☒	☐	☐	L	
Farmlands/Timberlands	☒	☐	☐	L	
Community Impacts	☐	☒	☐	L	CIA Memo
Community Character and Cohesion	☐	☒	☐	L	CIA Memo
Relocations	☐	☒	☐	L	CIA Memo
Environmental Justice	☐	☒	☐	M	CIA Memo
Utilities/Emergency Services	☐	☒	☐	L	CIA Memo
Traffic/Transportation	☐	☐	☒	M	Traffic Report
SB743/Induced Travel	☐	☐	☒	M	Traffic Report
Visual/Aesthetics	☐	☐	☒	L	VIA
Cultural Resources:	☐	☐	☒	L	Supplemental HPSR
Archaeological Survey Report	☐	☐	☒	L	Supplemental ASR
Historic Resources Evaluation Report	☐	☐	☒	L	Potential for Supplemental HRER
Historic Property Survey Report	☐	☐	☒	L	Supplemental HPSR
Historic Resource Compliance Report	☐	☐	☒	L	Supplemental HPSR
Section 106 / PRC 5024 & 5024.5	☐	☐	☒	L	Supplemental HPSR
Native American Coordination	☐	☐	☒	L	Supplemental HPSR
Finding of Effect	☒	☐	☐	L	
Data Recovery Plan	☒	☐	☐	L	
Memorandum of Agreement	☒	☐	☐	L	
Other: Enter other study	☒	☐	☐	L	
Hydrology and Floodplain	☐	☐	☒	L	Supplemental LHS/FER
Water Quality and Stormwater Runoff	☐	☐	☒	L	Supplemental WQAR
Geology, Soils, Seismic and Topography	☐	☒	☐	L	Geotechnical Memo
Paleontology	☐	☒	☐	L	PIR/PER Memo
PER	☐	☒	☐	L	PIR/PER Memo
PMP	☐	☐	☒	L	Depending on results of the PIR/PER
Hazardous Waste/Materials:	☐	☐	☒	L	Supplemental Phase I ISA
ISA (Additional)	☐	☐	☒	L	Supplemental Phase I ISA
PSI	☒	☐	☐	L	

Environmental Study	Not anticipated	Memo to file	Report required	Risk	Comments
Other: ADL	☐	☐	☒	L	ADL, LBP
Air Quality	☐	☐	☒	L	Supplemental Air Quality Report
Noise and Vibration	☐	☐	☒	M	Supplemental NSR; Supplemental NADR dependent on results of SNSR
Energy	☐	☐	☒	L	Energy Analysis Report
Climate Change and Sea Level Rise	☐	☒	☐	L	Climate Change Memorandum
Biological Environment	☐	☐	☒	L	Supplemental NES/MI
Fish Passage	☒	☐	☐	L	
Wildlife Connectivity	☐	☐	☒	L	Supplemental NES/MI
Natural Environment Study	☐	☐	☒	M	Supplemental NES/MI
Biological Assessment Section 7:	☐	☐	☒	M	Biological Assessment
Formal	☐	☐	☒	M	Biological Assessment
Informal	☒	☐	☐	L	
No effect	☒	☐	☐	L	
Section 10	☒	☐	☐	L	
USFWS Consultation	☐	☐	☒	M	Supplemental NES/MI and Biological Assessment
NMFS Consultation	☒	☐	☐	L	
Species of Concern (CNPS, USFS, BLM, S, F)	☐	☐	☒	L	Supplemental NES/MI
Wetlands & Other Waters/Delineation	☐	☐	☒	M	Supplemental JD
404(b)(1) Alternatives Analysis	☒	☐	☐	L	
Invasive Species	☐	☐	☒	L	Supplemental NES/MI
HMMP	☐	☐	☒	L	Depending on results of the NES/MI, USFWS and RCA consultation. Preparation anticipated following environmental approvals.
CDFW Consistency Determination	☒	☐	☐	L	
2081	☒	☐	☐	L	
Other: Enter other study	☒	☐	☐	L	
Cumulative Impacts	☐	☐	☒	L	Addressed in Environmental Re-Validation
Context Sensitive Solutions	☒	☐	☐	L	Addressed in Environmental Re-Validation
Section 4(f) Evaluation	☐	☐	☒	L	Section 4(f) De minimis Report and Notice
Permits:	☐	☐	☐	L	

Environmental Study	Not anticipated	Memo to file	Report required	Risk	Comments
401 Certification Coordination	☐	☐	☒	L	
404 Permit Coordination, IP, NWP, or LOP	☐	☐	☒	L	
1602 Agreement Coordination	☐	☐	☒	L	
Local Coastal Development Permit Coordination	☒	☐	☐	L	
State Coastal Development Permit Coordination	☒	☐	☐	L	
NPDES Coordination	☐	☐	☒	L	
TRPA	☒	☐	☐	L	
BCDC	☒	☐	☐	L	

Attachment F

Preliminary Cost Estimates

SR-91 EASTBOUND SIXTH LANE ADDITION ALTERNATIVE ANALYSIS
Between SR-241 and SR-71
ALTERNATIVE CONCEPT 1A (CONSTRAINED SECTION)
PRELIMINARY COST ESTIMATE

Revised 2/8/2022

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	PRICE	AMOUNT
1	JOINT PLANE CONCRETE PAVEMENT	SQ YD	19,060	$ 375	$ 7,148,000
2	CONCRETE BARRIER	LF	4,800	$ 150	$ 720,000
3	RETAINING WALLS (SEE ATTACHED)	SF	18,310	Varies	$ 2,770,000
4	BRIDGE WIDENING (SEE ATTACHED)	SF	3,194	Varies	$ 1,330,000
5	EARTH WORK	CY	31,560	$ 100	$ 3,156,000
					$ 15,130,000

6	DRAINAGE AND STORMWATER FACILITIES	LS	1	$ 1,513,000	$ 1,513,000
7	PAVEMENT DELINEATION, SIGNING AND ELECTRICAL	LS	1	$ 1,513,000	$ 1,513,000
8	STAGE CONSTRUCTION AND TRAFFIC HANDLING	LS	1	$ 1,513,000	$ 1,513,000
9	ENVIRONMENTAL MITIGATION	LS	1	$ 454,000	$ 454,000
10	UTILITIES AND RIGHT-OF-WAY	LS	1	$ 2,270,000	$ 2,270,000
					$ 7,263,000

SUBTOTAL ALL ITEMS:		$ 22,393,000
CONTINGENCY (LOW):	**35%**	$ 7,838,000
CONTINGENCY (HIGH):	**60%**	$ 13,436,000
TOTAL CONSTRUCTION COST RANGE:		**$ 30,230,000 TO $ 35,830,000**

SUPPORT COST (DESIGN, PM & CM)	**40%**	**$ 12,092,000 TO $ 14,332,000**

TOTAL PROJECT COST RANGE:	**$ 42,322,000 TO $ 50,162,000**

SR-91 EASTBOUND SIXTH LANE ADDITION ALTERNATIVE ANALYSIS
Between SR-241 and SR-71
ALTERNATIVE CONCEPT 1A (CONSTRAINED SECTION)
PRELIMINARY STRUCTURES ESTIMATE

Revised 2/8/2022

No.	Name	Direction	Cut/Fill/Bridge	Struct Type	Length (ft)	Avg Ht/Width (ft)	Max Ht/Width (ft)	Area (ft2)	$/SF	Subtotal
RETAINING WALLS										
1	Retaining Wall No. 519	EB	Fill	Type 1	740.00	6.0	8.0	4,440	$120	$ 532,800
2	Retaining Wall No. 528	EB	Fill	Type 1	550.00	6.0	8.0	3,300	$120	$ 396,000
3	Retaining Wall No. 538 (LS)	EB	Cut	Type 1 Pile	120.00	8.0	10.0	960	$200	$ 192,000
4	Retaining Wall No. 550	EB	Fill	Type 1	100.00	6.0	8.0	600	$120	$ 72,000
5	Retaining Wall No. 580	EB	Fill	Type 1	160.00	6.0	8.0	960	$120	$ 115,200
6	Retaining Wall No. 582	EB	Fill	Type 1 Pile	805.00	10.0	14.0	8,050	$150	$ 1,207,500
									Subtotal	**$ 2,520,000**
									Subtotal (with mobilization)	**$ 2,770,000**
BRIDGES										
7	Coal Canyon UC (Widen)	EB	Bridge	PC/PS Bulb Tee	127.75	24.0	24.0	3,066	$375	$ 1,149,750
8	County Line Creek UC (Widen)	EB	Bridge	R/C Slab	17.00	7.5	7.5	128	$450	$ 57,375
									Subtotal	**$ 1,210,000**
									Subtotal (with mobilization)	**$ 1,330,000**

SR-91 EASTBOUND SIXTH LANE ADDITION ALTERNATIVE ANALYSIS
Between SR-241 and SR-71
ALTERNATIVE CONCEPT 1B (STANDARD RIGHT SHOULDER)
PRELIMINARY COST ESTIMATE

Revised 2/8/2022

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	PRICE	AMOUNT
1	JOINT PLANE CONCRETE PAVEMENT	SQ YD	27,850	$ 375	$ 10,444,000
2	CONCRETE BARRIER	LF	8,630	$ 150	$ 1,295,000
3	RETAINING WALLS (SEE ATTACHED)	SF	57,560	Varies	$ 9,960,000
4	BRIDGE WIDENING (SEE ATTACHED)	SF	3,304	Varies	$ 1,390,000
5	EARTH WORK	CY	62,630	$ 100	$ 6,263,000
					$ 29,360,000

6	DRAINAGE AND STORMWATER FACILITIES	LS	1	$ 2,936,000	$ 2,936,000
7	PAVEMENT DELINEATION, SIGNING AND ELECTRICAL	LS	1	$ 2,936,000	$ 2,936,000
8	STAGE CONSTRUCTION AND TRAFFIC HANDLING	LS	1	$ 2,936,000	$ 2,936,000
9	ENVIRONMENTAL MITIGATION	LS	1	$ 881,000	$ 881,000
10	UTILITIES AND RIGHT-OF-WAY	LS	1	$ 4,404,000	$ 4,404,000
					$ 14,093,000

SUBTOTAL ALL ITEMS:		$ 43,453,000
CONTINGENCY (LOW):	**35%**	$ 15,209,000
CONTINGENCY (HIGH):	**60%**	$ 26,072,000
TOTAL CONSTRUCTION COST RANGE:		**$ 58,660,000 TO $ 69,530,000**

SUPPORT COST (DESIGN, PM & CM)	**40%**	**$ 23,464,000 TO $ 27,812,000**

TOTAL PROJECT COST RANGE:	**$ 82,124,000 TO $ 97,342,000**

SR-91 EASTBOUND SIXTH LANE ADDITION ALTERNATIVE ANALYSIS
Between SR-241 and SR-71
ALTERNATIVE CONCEPT 1B (STANDARD RIGHT SHOULDER)
PRELIMINARY STRUCTURES ESTIMATE

Revised 2/8/2022

No.	Name	Direction	Cut/Fill/Bridge	Struct Type	Length (ft)	Avg Ht/Width (ft)	Max Ht/Width (ft)	Area (ft2)	$/SF	Subtotal
RETAINING WALLS										
1	Retaining Wall No. 519	EB	Fill	Type 1	740.00	6.0	8.0	4,440	$120	$ 532,800
2	Retaining Wall No. 528	EB	Fill	Type 1	550.00	6.0	8.0	3,300	$120	$ 396,000
3	Retaining Wall No. 538 (LS)	EB	Cut	Type 1 Pile	190.00	10.0	15.0	1,900	$225	$ 427,500
4	Retaining Wall No. 550	EB	Fill	Type 1	100.00	6.0	8.0	600	$120	$ 72,000
5	Retaining Wall No. 573	EB	Fill	Type 1	80.00	6.0	8.0	480	$120	$ 57,600
6	Retaining Wall No. 574 (LS)	EB	Cut	Type 1 Pile	620.00	10.0	16.0	6,200	$240	$ 1,488,000
7	Retaining Wall No. 582	EB	Fill	Type 1 Pile	800.00	10.0	14.0	8,000	$150	$ 1,200,000
8	Retaining Wall No. 590	EB	Cut	Soil Nail	1,680.00	10.0	18.0	16,800	$125	$ 2,100,000
9	Retaining Wall No. 609	EB	Cut	Soil Nail	880.00	18.0	36.0	15,840	$175	$ 2,772,000
									Subtotal	**$ 9,050,000**
									Subtotal (with mobilization)	**$ 9,960,000**
BRIDGES										
10	Coal Canyon UC (Widen)	EB	Bridge	PC/PS Bulb Tee	127.75	24.0	24.0	3,066	$375	$ 1,149,750
11	County Line Creek UC (Widen)	EB	Bridge	R/C Slab	17.00	14.0	14.0	238	$450	$ 107,100
									Subtotal	**$ 1,260,000**
									Subtotal (with mobilization)	**$ 1,390,000**

SR-91 EASTBOUND SIXTH LANE ADDITION ALTERNATIVE ANALYSIS
Between SR-241 and SR-71
ALTERNATIVE CONCEPT 1C (STANDARD RIGHT SHOULDER, 1300' AUX LANE AT GREEN RIVER EB OFF-RAMP)
PRELIMINARY COST ESTIMATE

Revised 2/8/2022

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	PRICE	AMOUNT
1	JOINT PLANE CONCRETE PAVEMENT	SQ YD	29,250	$ 375	$ 10,969,000
2	CONCRETE BARRIER	LF	8,890	$ 150	$ 1,334,000
3	RETAINING WALLS (SEE ATTACHED)	SF	68,120	Varies	$ 12,420,000
4	BRIDGE WIDENING (SEE ATTACHED)	SF	3,304	Varies	$ 1,390,000
5	EARTH WORK	CY	70,520	$ 100	$ 7,052,000
					$ 33,170,000

6	DRAINAGE AND STORMWATER FACILITIES	LS	1	$ 3,317,000	$ 3,317,000
7	PAVEMENT DELINEATION, SIGNING AND ELECTRICAL	LS	1	$ 3,317,000	$ 3,317,000
8	STAGE CONSTRUCTION AND TRAFFIC HANDLING	LS	1	$ 3,317,000	$ 3,317,000
9	ENVIRONMENTAL MITIGATION	LS	1	$ 995,000	$ 995,000
10	UTILITIES AND RIGHT-OF-WAY	LS	1	$ 4,976,000	$ 4,976,000
					$ 15,922,000

SUBTOTAL ALL ITEMS:		$ 49,092,000
CONTINGENCY (LOW):	**35%**	$ 17,182,000
CONTINGENCY (HIGH):	**60%**	$ 29,455,000
TOTAL CONSTRUCTION COST RANGE:		**$ 66,270,000 TO $ 78,550,000**

SUPPORT COST (DESIGN, PM & CM)	**40%**	**$ 26,508,000 TO $ 31,420,000**

TOTAL PROJECT COST RANGE:	**$ 92,778,000 TO $ 109,970,000**

SR-91 EASTBOUND SIXTH LANE ADDITION ALTERNATIVE ANALYSIS

Between SR-241 and SR-71

ALTERNATIVE CONCEPT 1C (STANDARD RIGHT SHOULDER, 1300' AUX LANE AT GREEN RIVER EB OFF-RAMP)

PRELIMINARY STRUCTURES ESTIMATE

Revised 2/8/2022

No.	Name	Direction	Cut/Fill/Bridge	Struct Type	Length (ft)	Avg Ht/Width (ft)	Max Ht/Width (ft)	Area (ft2)	$/SF	Subtotal
RETAINING WALLS										
1	Retaining Wall No. 519	EB	Fill	Type 1	740.00	6.0	8.0	4,440	$120	$ 532,800
2	Retaining Wall No. 528	EB	Fill	Type 1	550.00	6.0	8.0	3,300	$120	$ 396,000
3	Retaining Wall No. 538 (LS)	EB	Cut	Type 1 Pile	190.00	10.0	15.0	1,900	$225	$ 427,500
4	Retaining Wall No. 550	EB	Fill	Type 1	100.00	6.0	8.0	600	$120	$ 72,000
5	Retaining Wall No. 573	EB	Fill	Type 1	80.00	6.0	8.0	480	$120	$ 57,600
6	Retaining Wall No. 574 (LS)	EB	Cut	Type 1 Pile	620.00	10.0	16.0	6,200	$240	$ 1,488,000
7	Retaining Wall No. 582	EB	Fill	Type 1 Pile	800.00	10.0	14.0	8,000	$150	$ 1,200,000
8	Retaining Wall No. 590	EB	Cut	Soil Nail	1,680.00	10.0	18.0	16,800	$125	$ 2,100,000
9	Retaining Wall No. 609	EB	Cut	Soil Nail	1,200.00	22.0	42.0	26,400	$190	$ 5,016,000
									Subtotal	**$ 11,290,000**
									Subtotal (with mobilization)	**$ 12,420,000**
BRIDGES										
10	Coal Canyon UC (Widen)	EB	Bridge	PC/PS Bulb Tee	127.75	24.0	24.0	3,066	$375	$ 1,149,750
11	County Line Creek UC (Widen)	EB	Bridge	R/C Slab	17.00	14.0	14.0	238	$450	$ 107,100
									Subtotal	**$ 1,260,000**
									Subtotal (with mobilization)	**$ 1,390,000**

SR-91 EASTBOUND SIXTH LANE ADDITION ALTERNATIVE ANALYSIS
Between SR-241 and SR-71
ALTERNATIVE CONCEPT 1D (IDEA 6C FROM VALUE ANALYSIS WORKSHOP)
PRELIMINARY COST ESTIMATE

Revised 2/8/2022

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	PRICE	AMOUNT
1	JOINT PLANE CONCRETE PAVEMENT	SQ YD	22,900	$ 375	$ 8,588,000
2	CONCRETE BARRIER	LF	3,000	$ 150	$ 450,000
3	RETAINING WALLS (SEE ATTACHED)	SF	32,220	Varies	$ 4,990,000
4	BRIDGE WIDENING (SEE ATTACHED)	SF	3,066	Varies	$ 1,270,000
5	EARTH WORK	CY	23,300	$ 100	$ 2,330,000
					$ 17,630,000

6	DRAINAGE AND STORMWATER FACILITIES	LS	1	$ 1,763,000	$ 1,763,000
7	PAVEMENT DELINEATION, SIGNING AND ELECTRICAL	LS	1	$ 1,763,000	$ 1,763,000
8	STAGE CONSTRUCTION AND TRAFFIC HANDLING	LS	1	$ 1,763,000	$ 1,763,000
9	ENVIRONMENTAL MITIGATION	LS	1	$ 529,000	$ 529,000
10	UTILITIES AND RIGHT-OF-WAY	LS	1	$ 2,645,000	$ 2,645,000
					$ 8,463,000

SUBTOTAL ALL ITEMS:		$ 26,093,000
CONTINGENCY (LOW):	**35%**	$ 9,133,000
CONTINGENCY (HIGH):	**60%**	$ 15,656,000
TOTAL CONSTRUCTION COST RANGE:		**$ 35,230,000 TO $ 41,750,000**

SUPPORT COST (DESIGN, PM & CM)	**40%**	**$ 14,092,000 TO $ 16,700,000**

TOTAL PROJECT COST RANGE:	**$ 49,322,000 TO $ 58,450,000**

SR-91 EASTBOUND SIXTH LANE ADDITION ALTERNATIVE ANALYSIS
Between SR-241 and SR-71
ALTERNATIVE CONCEPT 1D (IDEA 6C FROM VALUE ANALYSIS WORKSHOP)
PRELIMINARY STRUCTURES ESTIMATE

Revised 2/8/2022

No.	Name	Direction	Cut/Fill/Bridge	Struct Type	Length (ft)	Avg Ht/Width (ft)	Max Ht/Width (ft)	Area (ft2)	$/SF	Subtotal
RETAINING WALLS										
1	Retaining Wall No. 519	EB	Fill	Type 1	740.00	6.0	8.0	4,440	$120	$ 532,800
2	Retaining Wall No. 528	EB	Fill	Type 1	550.00	6.0	8.0	3,300	$120	$ 396,000
3	Retaining Wall No. 538 (LS)	EB	Cut	Type 1 Pile	190.00	12.0	12.0	2,280	$200	$ 456,000
4	Retaining Wall No. 550	EB	Fill	Type 1	1,060.00	4.0	6.0	4,240	$120	$ 508,800
5	Retaining Wall No. 560	EB	Cut	Type 1	800.00	6.0	8.0	4,800	$150	$ 720,000
6	Retaining Wall No. 568	EB	Fill	Type 1	170.00	4.0	6.0	680	$120	$ 81,600
7	Retaining Wall No. 574	EB	Fill	Type 1	100.00	10.0	10.0	1,000	$120	$ 120,000
8	Retaining Wall No. 609	EB	Cut	Soil Nail	820.00	14.0	28.0	11,480	$150	$ 1,722,000
									Subtotal	**$ 4,540,000**
									Subtotal (with mobilization)	**$ 4,990,000**
BRIDGES										
10	Coal Canyon UC (Widen)	EB	Bridge	PC/PS Bulb Tee	127.75	24.0	24.0	3,066	$375	$ 1,149,750
									Subtotal	**$ 1,150,000**
									Subtotal (with mobilization)	**$ 1,270,000**

SR-91 EASTBOUND SIXTH LANE ADDITION ALTERNATIVE ANALYSIS
Between SR-241 and SR-71
ALTERNATIVE CONCEPT 2 (FULL STANDARD CROSS-SECTION, WIDEN SOUTH)
PRELIMINARY COST ESTIMATE

Revised 2/8/2022

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	PRICE	AMOUNT
1	JOINT PLANE CONCRETE PAVEMENT	SQ YD	37,200	$ 375	$ 13,950,000
2	CONCRETE BARRIER	LF	300	$ 150	$ 45,000
3	RETAINING WALLS (SEE ATTACHED)	SF	99,610	Varies	$ 18,410,000
4	BRIDGE WIDENING (SEE ATTACHED)	SF	3,822	Varies	$ 1,640,000
5	EARTH WORK	CY	75,100	$ 100	$ 7,510,000
					$ 41,560,000

6	DRAINAGE AND STORMWATER FACILITIES	LS	1	$ 4,156,000	$ 4,156,000
7	PAVEMENT DELINEATION, SIGNING AND ELECTRICAL	LS	1	$ 4,156,000	$ 4,156,000
8	STAGE CONSTRUCTION AND TRAFFIC HANDLING	LS	1	$ 4,156,000	$ 4,156,000
9	ENVIRONMENTAL MITIGATION	LS	1	$ 1,247,000	$ 1,247,000
10	UTILITIES AND RIGHT-OF-WAY	LS	1	$ 6,234,000	$ 6,234,000
					$ 19,949,000

SUBTOTAL ALL ITEMS:		$ 61,509,000
CONTINGENCY (LOW):	**35%**	$ 21,528,000
CONTINGENCY (HIGH):	**60%**	$ 36,905,000
TOTAL CONSTRUCTION COST RANGE:		**$ 83,040,000 TO $ 98,410,000**

SUPPORT COST (DESIGN, PM & CM)	**40%**	**$ 33,216,000 TO $ 39,364,000**

TOTAL PROJECT COST RANGE:	**$ 116,256,000 TO $ 137,774,000**

SR-91 EASTBOUND SIXTH LANE ADDITION ALTERNATIVE ANALYSIS
Between SR-241 and SR-71
ALTERNATIVE CONCEPT 2 (FULL STANDARD CROSS-SECTION, WIDEN SOUTH)
PRELIMINARY STRUCTURES ESTIMATE

Revised 2/8/2022

No.	Name	Direction	Cut/Fill/Bridge	Struct Type	Length (ft)	Avg Ht/Width (ft)	Max Ht/Width (ft)	Area (ft2)	$/SF	Subtotal
RETAINING WALLS										
1	Retaining Wall No. 524	EB	Fill	Type 1	300.00	4.0	6.0	1,200	$120	$ 144,000
2	Retaining Wall No. 528	EB	Fill	Type 1	300.00	4.0	6.0	1,200	$120	$ 144,000
3	Retaining Wall No. 536	EB	Fill	Type 1	210.00	4.0	6.0	840	$120	$ 100,800
4	Retaining Wall No. 538 (LS)	EB	Cut	Type 1 Pile	230.00	24.0	24.0	5,520	$300	$ 1,656,000
5	Retaining Wall No. 540	EB	Fill	Type 1	700.00	10.0	10.0	7,000	$120	$ 840,000
6	Retaining Wall No. 552	EB	Cut	Type 1	485.00	4.0	6.0	1,940	$150	$ 291,000
7	Retaining Wall No. 556	EB	Fill	Type 1	200.00	4.0	6.0	800	$120	$ 96,000
8	Retaining Wall No. 560 (LS)	EB	Cut	Type 1 Pile	830.00	10.0	10.0	8,300	$200	$ 1,660,000
9	Retaining Wall No. 568	EB	Fill	Type 1	600.00	4.0	6.0	2,400	$120	$ 288,000
10	Retaining Wall No. 574 (LS)	EB	Cut	Type 1 Pile	600.00	16.0	16.0	9,600	$240	$ 2,304,000
11	Retaining Wall No. 580	EB	Fill	Type 1 Pile	170.00	10.0	18.0	1,700	$175	$ 297,500
12	Retaining Wall No. 582	EB	Fill	Type 1 Pile	1,575.00	10.0	18.0	15,750	$175	$ 2,756,250
13	Retaining Wall No. 598	EB	Cut	Soil Nail	430.00	10.0	14.0	4,300	$125	$ 537,500
14	Retaining Wall No. 602	EB	Cut	Soil Nail	430.00	10.0	14.0	4,300	$125	$ 537,500
15	Retaining Wall No. 606	EB	Cut	Type 1	370.00	6.0	8.0	2,220	$150	$ 333,000
16	Retaining Wall No. 610	EB	Cut	Soil Nail	950.00	26.0	52.0	24,700	$150	$ 3,705,000
17	Retaining Wall No. 619	EB	Cut	Type 1	440.00	6.0	8.0	2,640	$150	$ 396,000
18	Retaining Wall No. 622	EB	Cut	Soil Nail	520.00	10.0	18.0	5,200	$125	$ 650,000
									Subtotal	**$ 16,740,000**
									Subtotal (with mobilization)	**$ 18,410,000**
BRIDGES										
19	Coal Canyon UC (Widen)	EB	Bridge	PC/PS Bulb Tee	127.75	24.0	24.0	3,066	$375	$ 1,149,750
20	County Line Creek UC (Widen)	EB	Bridge	R/C Slab	42.00	18.0	18.0	756	$450	$ 340,200
									Subtotal	**$ 1,490,000**
									Subtotal (with mobilization)	**$ 1,640,000**

SR-91 EASTBOUND SIXTH LANE ADDITION ALTERNATIVE ANALYSIS
Between SR-241 and SR-71
ALTERNATIVE CONCEPT 3A (FULL STANDARD CROSS-SECTION, WIDEN NORTH)
PRELIMINARY COST ESTIMATE

Revised 2/8/2022

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	PRICE	AMOUNT
1	JOINT PLANE CONCRETE PAVEMENT	SQ YD	141,810	$ 375	$ 53,179,000
2	CONCRETE BARRIER	LF	9,920	$ 150	$ 1,488,000
3	RETAINING WALLS (SEE ATTACHED)	SF	457,460	Varies	$ 53,450,000
4	BRIDGE WIDENING (SEE ATTACHED)	SF	4,624	Varies	$ 2,040,000
5	EARTH WORK	CY	527,250	$ 100	$ 52,725,000
					$ 162,890,000

6	DRAINAGE AND STORMWATER FACILITIES	LS	1	$ 16,289,000	$ 16,289,000
7	PAVEMENT DELINEATION, SIGNING AND ELECTRICAL	LS	1	$ 16,289,000	$ 16,289,000
8	STAGE CONSTRUCTION AND TRAFFIC HANDLING	LS	1	$ 16,289,000	$ 16,289,000
9	ENVIRONMENTAL MITIGATION	LS	1	$ 4,887,000	$ 4,887,000
10	UTILITIES AND RIGHT-OF-WAY	LS	1	$ 24,434,000	$ 24,434,000
					$ 78,188,000

SUBTOTAL ALL ITEMS:		$ 241,078,000
CONTINGENCY (LOW):	**35%**	$ 84,377,000
CONTINGENCY (HIGH):	**60%**	$ 144,647,000
TOTAL CONSTRUCTION COST RANGE:		**$ 325,460,000 TO $ 385,730,000**

SUPPORT COST (DESIGN, PM & CM)	**40%**	**$ 130,184,000 TO $ 154,292,000**

TOTAL PROJECT COST RANGE:	**$ 455,644,000 TO $ 540,022,000**

SR-91 EASTBOUND SIXTH LANE ADDITION ALTERNATIVE ANALYSIS
Between SR-241 and SR-71
ALTERNATIVE CONCEPT 3A (FULL STANDARD CROSS-SECTION, WIDEN NORTH)
PRELIMINARY STRUCTURES ESTIMATE

Revised 2/8/2022

No.	Name	Direction	Cut/Fill/Bridge	Struct Type	Length (ft)	Avg Ht/Width (ft)	Max Ht/Width (ft)	Area (ft2)	$/SF	Subtotal
RETAINING WALLS										
1	Retaining Wall No. 515	EB	Fill	Type 1 Pile	350.00	10.0	16.0	3,500	$150	$ 525,000
2	Retaining Wall No. 517	EB	Fill	Type 1	940.00	10.0	12.0	9,400	$120	$ 1,128,000
3	Retaining Wall No. 528	EB	Fill	Type 1	1,550.00	10.0	12.0	15,500	$120	$ 1,860,000
4	Retaining Wall No. 511	WB	Fill	MSE	4,870.00	16.0	30.0	77,920	$100	$ 7,792,000
5	Retaining Wall No. 580	WB	Fill	MSE	4,680.00	34.0	66.0	159,120	$100	$ 15,912,000
6	Retaining Wall No. 597	WB	Fill	MSE	1,090.00	22.0	42.0	23,980	$100	$ 2,398,000
7	Retaining Wall No. 581	WB	Fill	MSE	4,270.00	34.0	66.0	145,180	$100	$ 14,518,000
8	Retaining Wall No. 625	WB	Cut	Type 1	400.00	6.0	8.0	2,400	$150	$ 360,000
9	Retaining Wall No. 609	EB	Cut	Soil Nail	930.00	22.0	44.0	20,460	$200	$ 4,092,000
									Subtotal	**$ 48,590,000**
									Subtotal (with mobilization)	**$ 53,450,000**
BRIDGES										
10	Coal Canyon UC (Widen)	EB	Bridge	PC/PS Bulb Tee	127.75	24.0	24.0	3,066	$375	$ 1,149,750
11	County Line Creek UC (Widen)	EB	Bridge	R/C Slab	41.00	38.0	38.0	1,558	$450	$ 701,100
									Subtotal	**$ 1,850,000**
									Subtotal (with mobilization)	**$ 2,040,000**

SR-91 EASTBOUND SIXTH LANE ADDITION ALTERNATIVE ANALYSIS
Between SR-241 and SR-71
ALTERNATIVE CONCEPT 3B (FULL STANDARD CROSS-SECTION, WIDEN NORTH, MAINTAIN COP SECTION)
PRELIMINARY COST ESTIMATE

Revised 2/8/2022

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	PRICE	AMOUNT
1	JOINT PLANE CONCRETE PAVEMENT	SQ YD	106,000	$ 375	$ 39,750,000
2	CONCRETE BARRIER	LF	9,920	$ 150	$ 1,488,000
3	RETAINING WALLS (SEE ATTACHED)	SF	152,040	Varies	$ 21,340,000
4	BRIDGE WIDENING (SEE ATTACHED)	SF	3,066	Varies	$ 1,270,000
5	EARTH WORK	CY	120,000	$ 100	$ 12,000,000
					$ 75,850,000

6	DRAINAGE AND STORMWATER FACILITIES	LS	1	$ 7,585,000	$ 7,585,000
7	PAVEMENT DELINEATION, SIGNING AND ELECTRICAL	LS	1	$ 7,585,000	$ 7,585,000
8	STAGE CONSTRUCTION AND TRAFFIC HANDLING	LS	1	$ 7,585,000	$ 7,585,000
9	ENVIRONMENTAL MITIGATION	LS	1	$ 2,276,000	$ 2,276,000
10	UTILITIES AND RIGHT-OF-WAY	LS	1	$ 11,378,000	$ 11,378,000
					$ 36,409,000

SUBTOTAL ALL ITEMS:		$ 112,259,000
CONTINGENCY (LOW):	**35%**	$ 39,291,000
CONTINGENCY (HIGH):	**60%**	$ 67,355,000
TOTAL CONSTRUCTION COST RANGE:		**$ 151,550,000 TO $ 179,610,000**

SUPPORT COST (DESIGN, PM & CM)	**40%**	**$ 60,620,000 TO $ 71,844,000**

TOTAL PROJECT COST RANGE:	**$ 212,170,000 TO $ 251,454,000**

SR-91 EASTBOUND SIXTH LANE ADDITION ALTERNATIVE ANALYSIS

Between SR-241 and SR-71

ALTERNATIVE CONCEPT 3B (FULL STANDARD CROSS-SECTION, WIDEN NORTH, MAINTAIN COP SECTION)

PRELIMINARY STRUCTURES ESTIMATE

Revised 2/8/2022

No.	Name	Direction	Cut/Fill/Bridge	Struct Type	Length (ft)	Avg Ht/Width (ft)	Max Ht/Width (ft)	Area (ft2)	$/SF	Subtotal
RETAINING WALLS										
1	Retaining Wall No. 498	EB	Fill	Type 1	950.00	4.0	6.0	3,800	$120	$ 456,000
2	Retaining Wall No. 528	EB	Fill	Type 1	1,550.00	4.0	6.0	6,200	$120	$ 744,000
3	Retaining Wall No. 511	WB	Fill	MSE	4,330.00	10.0	28.0	43,300	$100	$ 4,330,000
4	Retaining Wall No. 587	WB	Cut	Soil Nail	680.00	10.0	22.0	6,800	$140	$ 952,000
5	Retaining Wall No. 586	WB	Cut	Soil Nail	4,330.00	10.0	14.0	43,300	$125	$ 5,412,500
6	Retaining Wall No. 601	WB	Cut	Soil Nail	650.00	10.0	14.0	6,500	$125	$ 812,500
7	Retaining Wall No. 614	WB	Cut	Type 1	800.00	10.0	12.0	8,000	$150	$ 1,200,000
8	Retaining Wall No. 609	EB	Cut	Soil Nail	950.00	20.0	40.0	19,000	$180	$ 3,420,000
9	Retaining Wall No. 605	WB	Cut	Soil Nail	800.00	10.0	20.0	8,000	$125	$ 1,000,000
10	Retaining Wall No. 621	EB	Cut	Soil Nail	510.00	14.0	28.0	7,140	$150	$ 1,071,000
									Subtotal	**$ 19,400,000**
									Subtotal (with mobilization)	**$ 21,340,000**
BRIDGES										
11	Coal Canyon UC (Widen)	EB	Bridge	PC/PS Bulb Tee	127.75	24.0	24.0	3,066	$375	$ 1,149,750
									Subtotal	**$ 1,150,000**
									Subtotal (with mobilization)	**$ 1,270,000**

SR-91 EASTBOUND SIXTH LANE ADDITION ALTERNATIVE ANALYSIS
Between SR-241 and SR-71
ALTERNATIVE CONCEPT 4 (HYBRID CROSS SECTION, LIMITED WIDEN SOUTH)
PRELIMINARY COST ESTIMATE

Revised 2/8/2022

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	PRICE	AMOUNT
1	JOINT PLANE CONCRETE PAVEMENT	SQ YD	36,610	$ 375	$ 13,729,000
2	CONCRETE BARRIER	LF	9,990	$ 150	$ 1,499,000
3	RETAINING WALLS (SEE ATTACHED)	SF	99,650	Varies	$ 19,650,000
4	BRIDGE WIDENING (SEE ATTACHED)	SF	3,304	Varies	$ 1,390,000
5	EARTH WORK	CY	100,870	$ 100	$ 10,087,000
					$ 46,360,000

6	DRAINAGE AND STORMWATER FACILITIES	LS	1	$ 4,636,000	$ 4,636,000
7	PAVEMENT DELINEATION, SIGNING AND ELECTRICAL	LS	1	$ 4,636,000	$ 4,636,000
8	STAGE CONSTRUCTION AND TRAFFIC HANDLING	LS	1	$ 4,636,000	$ 4,636,000
9	ENVIRONMENTAL MITIGATION	LS	1	$ 1,391,000	$ 1,391,000
10	UTILITIES AND RIGHT-OF-WAY	LS	1	$ 6,954,000	$ 6,954,000
					$ 22,253,000

SUBTOTAL ALL ITEMS:		$ 68,613,000
CONTINGENCY (LOW):	**35%**	$ 24,015,000
CONTINGENCY (HIGH):	**60%**	$ 41,168,000
TOTAL CONSTRUCTION COST RANGE:		**$ 92,630,000 TO $ 109,780,000**

SUPPORT COST (DESIGN, PM & CM)	**40%**	**$ 37,052,000 TO $ 43,912,000**

TOTAL PROJECT COST RANGE:	**$ 129,682,000 TO $ 153,692,000**

SR-91 EASTBOUND SIXTH LANE ADDITION ALTERNATIVE ANALYSIS
Between SR-241 and SR-71
ALTERNATIVE CONCEPT 4 (HYBRID CROSS SECTION, LIMITED WIDEN SOUTH)
PRELIMINARY STRUCTURES ESTIMATE

Revised 2/8/2022

No.	Name	Direction	Cut/Fill/Bridge	Struct Type	Length (ft)	Avg Ht/Width (ft)	Max Ht/Width (ft)	Area (ft2)	$/SF	Subtotal
RETAINING WALLS										
1	Retaining Wall No. 519	EB	Fill	Type 1	740.00	6.0	8.0	4,440	$120	$ 532,800
2	Retaining Wall No. 528	EB	Fill	Type 1	550.00	6.0	8.0	3,300	$120	$ 396,000
3	Retaining Wall No. 536	EB	Fill	Type 1	150.00	8.0	10.0	1,200	$120	$ 144,000
4	Retaining Wall No. 538 (LS)	EB	Cut	Type 1 Pile	220.00	11.0	23.0	2,420	$300	$ 726,000
5	Retaining Wall No. 550	EB	Fill	Type 1	1,060.00	11.0	12.0	11,660	$120	$ 1,399,200
6	Retaining Wall No. 560 (LS)	EB	Cut	Type 1 Pile	780.00	11.0	20.0	8,580	$280	$ 2,402,400
7	Retaining Wall No. 568	EB	Fill	Type 1	710.00	8.0	10.0	5,680	$120	$ 681,600
8	Retaining Wall No. 574 (LS)	EB	Cut	Type 1 Pile	780.00	11.0	24.0	8,580	$310	$ 2,659,800
9	Retaining Wall No. 582	EB	Fill	Type 1 Pile	790.00	11.0	14.0	8,690	$150	$ 1,303,500
10	Retaining Wall No. 590	EB	Cut	Soil Nail	1,700.00	11.0	18.0	18,700	$125	$ 2,337,500
11	Retaining Wall No. 609	EB	Cut	Soil Nail	1,200.00	22.0	44.0	26,400	$200	$ 5,280,000
									Subtotal	**$ 17,860,000**
									Subtotal (with mobilization)	**$ 19,650,000**
BRIDGES										
12	Coal Canyon UC (Widen)	EB	Bridge	PC/PS Bulb Tee	127.75	24.0	24.0	3,066	$375	$ 1,149,750
13	County Line Creek UC (Widen)	EB	Bridge	R/C Slab	17.00	14.0	14.0	238	$450	$ 107,100
									Subtotal	**$ 1,260,000**
									Subtotal (with mobilization)	**$ 1,390,000**

AGENDA ITEM 8

RIVERSIDE COUNTY TRANSPORTATION COMMISSION	
DATE:	April 25, 2022
TO:	Western Riverside County Programs and Projects Committee
FROM:	Brian Cunanan, Commuter & Motorist Assistance Manager
THROUGH:	David Knudsen, Interim External Affairs Director
SUBJECT:	San Bernardino County Transportation Authority Amendment for Bi-County Rideshare Program Services and Commuter Assistance Update

STAFF RECOMMENDATION:

This item is for the Committee to:

1) Approve Agreement No. 20-41-090-02, Amendment No. 2 to Agreement No. 20-41-090-00 with the San Bernardino County Transportation Authority (SBCTA) for a two-year term to reimburse the Commission for an additional amount of $2.4 million, and a total amount not to exceed of $4,800,000, for commuter/employer rideshare (IE Commuter) programs and vanpool program support administered by the Commission, on behalf of both agencies;
2) Authorize the Chair or Executive Director, pursuant to legal counsel review, to execute the agreement on behalf of the Commission; and
3) Forward to the Commission for final action.

BACKGROUND INFORMATION:

The Commission's Commuter Assistance Program (CAP) works to increase the awareness and consideration of all commute options and incentives available to commuter constituents in Riverside County. CAP fosters to increase the utilization of alternative modes of transportation such as riding a bus or train, carpooling, vanpooling, walking, bicycling, and telework. As such, the Commission implemented the CAP as a specific requirement under the original and 2009 Measure A Western County Public Transit program to address congestion mitigation. In addition to improving mobility overall, commuter assistance or ridesharing helps reduce commuter stress for employees, helps employers lower costs and increase employee productivity, and has a positive impact on the environment and quality of living in the region.

Since 1993, SBCTA has contracted with the Commission to develop, implement, and manage a CAP for San Bernardino County commuters. The program consists of several projects:

- *Program Outreach* – Branded as IE Commuter, engage commuters and employers to establish rideshare programs at worksites throughout western Riverside and San Bernardino counties. Marketing campaigns are provided to employer partners and

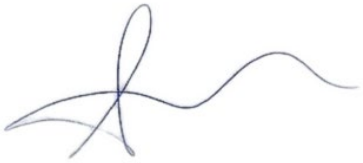
distributed to their respective employee base. Online advertising, social media, events, and regional promotions such as Rideshare Week engage commuters directly.

- *Employer Services* – Various services to employers in the bi-county area including the provision of marketing promotions, rideshare survey processing, employer network meetings, and event support. The program administrator also assists employers with average vehicle ridership calculations related to the South Coast Air Quality Management District Rule 2202 requirements for employers with 250 or more employees.
- *Rideshare Incentives* – Incentives focused on increasing consideration for alternative commute modes and include: (a) the new $5/Day Rideshare Incentive for rideshare participants that try ridesharing to work for a three-month trial period; (b) Monthly Rideshare Spotlight or Monthly Telework Spotlight program for chances towards winning monthly prize drawings to encourage commuters to continue ridesharing and log their rideshare activity; (c) Annual California Rideshare Week sweepstakes, an annual opportunity to encourage ridesharing for opportunities to win premium prizes sponsored by IE Commuter employer partners, local businesses, and organizations.
- *Guaranteed Ride Home* – A guaranteed ride home is available at no cost to employees who rideshare to work in the event of an emergency or unexpected overtime by them or the driver of their rideshare arrangement (max two per year).
- *Ridematching* and *Information Services* – Commuter and employer access to online tools and resources and a call center (866-RIDESHARE) during business hours for those interested in personal assistance with ridematching or transit options and to address general rideshare questions.
- *Vanpool Support* – Vanpool program administration staffing and support services such as providing employer and commuters with information and support, coordination with vanpool vendors, and program reporting and ensuring compliance with transit reporting requirements.

Staff recommends approval of an additional two-year (FYs 2022/23 – 2023/24) term with SBCTA for a total agreement amount not to exceed $4.8 million. It is anticipated that minimum SBCTA reimbursements will total $1.2 million during FY 2022/23 and $1.2 million during FY 2023/24 for the provision of core rideshare program and vanpool program support in San Bernardino County. The proposed agreement between SBCTA and the Commission was approved by SBCTA's Board of Directors during its April 6th meeting.

FISCAL IMPACT

Reimbursement funding anticipated to be received from SBCTA is included in the proposed FY 2022/23 budget as follows: – $1.2 million for core rideshare and vanpool services and an estimated $470,500 for potential special projects (rail recovery project, incentives, etc.).

Financial Information						
In Fiscal Year Budget:	Yes N/A	Year:	FY 2022/23 FY 2023/24	Amount:	$1,200,000 revenues $1,200,000 revenues	
Source of Funds:	SBCTA reimbursements and 2009 Measure A Western County Public Transit-CAP funds			Budget Adjustment:		No N/A
GL/Project Accounting No.:	002111/002112/002127/002139/002182/002188/002191/632113 416 41605 263 41 41203					
Fiscal Procedures Approved:				Date:	04/18/2022	

Attachment: Draft FY 2022/23 – FY2023/24 SBCTA Funding Agreement

AMENDMENT NO. 2 TO COOPERATIVE AGREEMENT NO. 20-1002371
BY AND BETWEEN
SAN BERNARDINO COUNTY TRANSPORTATION AUTHORITY
AND RIVERSIDE COUNTY TRANSPORTATION COMMISSION
FOR
THE PROVISION OF RIDESHARE
PROGRAM IMPLEMENTATION

This Amendment No. 2 to Cooperative Agreement ("Amendment No. 2") is made and entered into as of July 1, 2022 by and between the San Bernardino County Transportation Authority ("SBCTA"), whose address is 1170 W. 3rd Street, 2nd Floor, San Bernardino, California 92410-1715, and Riverside County Transportation Commission ("RCTC"), located at 4080 Lemon St, Riverside, California 92501. SBCTA and RCTC are each a "Party" and collectively the "Parties".

RECITALS:

A. **WHEREAS,** The Parties entered into a Cooperative Agreement dated July 1, 2020 for the Provision of Rideshare and Vanpool Program Implementation and Software ("Cooperative Agreement"); and

B. **WHEREAS,** The Parties amended the Cooperative Agreement on September 21, 2021 to remove the provision of rideshare and vanpool software and related confidentiality provisions, which were transferred to a new five (5)-county regional rideshare software agreement with Los Angeles County Metropolitan Transportation Authority, Orange County Transportation Authority, RCTC, SBCTA and Ventura County Transportation Commission; and

C. **WHEREAS,** The Parties desire to amend the Cooperative Agreement to extend the Term through June 30, 2024 and adjust SBCTA's total obligation to RCTC; and

D. **WHEREAS,** The Parties have operated a bi-county Rideshare program which provides services and support for each Party's respective Transit and/or Multi-modal programs; and

E. **WHEREAS,** RCTC will engage and has the necessary resources to manage contractors providing miscellaneous rideshare and multi-modal services.

NOW THEREFORE, in consideration of the above recitals, and the terms and conditions contained herein, SBCTA and RCTC agree to amend the Cooperative Agreement as follows:

1. ARTICLE 3. TERM. Section 3.1 is deleted in its entirety and replaced with the following:

   "3.1 This Agreement shall commence on July 1, 2020 and terminate on June 30, 2024, unless it is extended by a written amendment approved by the Parties."

2. ARTICLE 2. COMPENSATION, Subsection 2.3.1 is deleted in its entirety and replaced with the following:

   "That SBCTA's total obligation to RCTC shall not exceed Four Million Eight Hundred Thousand

Dollars ($4,800,000), for the services rendered through the SERVICES CONTRACTOR."

3. The Recitals set forth above are incorporated herein by this reference.

4. Except as amended by this Amendment No. 2, all other provisions of the Agreement as previously amended shall remain in full force and effect.

5. This Amendment No. 2 is effective upon execution by the Parties.

6. A manually signed copy of this Amendment No. 2 which is transmitted by facsimile, email or other means of electronic transmission shall be deemed to have the same legal effect as delivery of an original executed copy of this Amendment No. 2 for all purposes. This Amendment No. 2 may be signed using an electronic signature. This Amendment No. 2 may be signed in counterparts, each of which shall constitute an original.
7.

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement below.

SAN BERNARDINO COUNTY TRANSPORTATION AUTHORITY	**RIVERSIDE COUNTY TRANSPORTATION COMMISSION**
By: _____	By: _____
Curt Hagman President, Board of Directors	Anne Mayer, Executive Officer
Date: _____	Date: _____
APPROVED AS TO FORM	**APPROVED AS TO FORM**
By: _____	By: _____
Julianna K. Tillquist General Counsel	Best, Best & Krieger, LLP, General Counsel
Date: _____	Date: _____

AGENDA ITEM 9

RIVERSIDE COUNTY TRANSPORTATION COMMISSION	
DATE:	April 25, 2022
TO:	Western Riverside County Programs and Projects Committee
FROM:	Marlin Feenstra, Project Delivery Director
THROUGH:	Anne Mayer, Executive Director
SUBJECT:	Mid County Parkway Project Status and Reprogramming of Funds

STAFF RECOMMENDATION:

This item is for the Committee to:

1) Receive and file an update on negotiations with the city of Perris (City) regarding Mid County Parkway (MCP) since the March 28, 2022 Western Riverside County Programs and Projects Committee meeting;
2) Direct staff to defer work on the Mid County Parkway Construction Package 2 from Redlands Avenue to Ramona Expressway (MCP2) as currently scoped within the city;
3) Direct staff to work with the county of Riverside (County) to scope a different construction package within County jurisdiction, along Ramona Expressway, to address ongoing safety issues and continue progress on the overall MCP project;
4) Direct staff to return to the Commission at a future date with recommendations to reprogram funds currently committed to MCP2 onto the newly scoped package, and;
5) Forward to the Commission for final action.

Update Since Previous Committee Meeting

At its March 28, 2022 meeting, the Western Riverside County Programs and Projects Committee (Committee) received an update on this item, presenting the decision of the City at its March 22 meeting, not to support the MCP2 project unless certain conditions were met. Staff explained that these conditions could not be accepted because they are inconsistent with the need and purpose of the project. Therefore, the Committee directed staff to make another attempt to reconcile the differences with the city and report back to the Committee at its April meeting.

The Executive Director met individually with the City Council members who expressed opposition to the project, presenting information about the MCP and answering questions. The City Council then considered the item in closed session at their April 12 meeting. A letter summarizing the City's position was received by RCTC, dated April 14, 2022, stating a majority of the City Council supported the project subject to certain conditions being met (see attachment 5). A clarification letter was received April 18, 2022 (attachment 6), which clarified conditions pertaining to the

potential Redlands Avenue/Morgan Avenue/Indian Avenue route for trucks, which is reflected in this staff report. The following is a summary of the conditions.

In addition to the two conditions previously agreed to (construct a bridge undercrossing at El Nido and maintain the San Jacinto trail), the City is requiring improvements to Placentia Avenue as their preferred option, or as an alternative the Redlands Ave./Morgan Ave./Indian Ave. option, which would reroute trucks on other City streets with associated improvements if the Placentia improvements are not feasible.

Placentia Avenue (City preferred option)

1. Acquire and remove 12 homes along the south side of Placentia Avenue between Redlands Avenue and Perris Blvd. Consider a parkway with sound walls where the homes currently stand, to mitigate noise impacts to the next row of houses to the south.
2. Conduct a noise study using the City's noise ordinance and mitigate any noise impacts to residences along Placentia Avenue, including installation of sound walls and landscaping.
3. Install a traffic signal on Placentia Avenue at Fire Station 90.
4. Install traffic signal at Placentia Avenue at Spokane Street and modify access points to Paragon Park.
5. Modify existing signals along Placentia Avenue as needed.
6. Install traffic signals at Redlands Avenue at the new MCP2 and at Redlands Avenue/Placentia Avenue.
7. Evaluate the conditions and width of pavement on Placentia Avenue and upgrade as needed to accommodate MCP2 traffic.

Redlands Avenue/Morgan Avenue/Indian Avenue (City alternative option)

1. This option is desired if the Placentia Avenue option is not feasible due to reasons other than cost.
2. Design the Redlands Avenue/MCP2 intersection so that trucks are directed north to Morgan Avenue.
3. Evaluate the condition and width of existing pavement along the route and install additional improvements as needed. The City offered to be the lead agency for the environmental/design and construction of necessary improvements and right of way acquisitions subject to a contribution/reimbursement by the Commission.
4. Include Placentia Avenue mitigation items 2-7 above.

The City also requested that an agreement be executed between the Commission and the City to acknowledge these conditions.

Evaluation of City Conditions

Commission staff appreciates the recent discussions with City of Perris staff and Council Members. The conditional majority support for the interim project, although a step forward, still results in a significant impact to the project viability. Key concerns are as follows:

- Conditions result in a significant cost increase estimated to range from $25 to $40 million
- 12 residential parcels would have to be acquired from willing sellers. It is unlikely that the Commission could legally or would willingly condemn these parcels since the required finding that the properties are required to build the project is not satisfied.
- The City's alternative option would divert truck traffic to a city preferred route requiring Commission contribution or reimbursement and could result in Commission project efforts outside of the approved environmental footprint, potentially necessitating supplemental environmental review and permitting. In addition to contributing financially to these off-site improvements, the Commission would also be funding similar improvements on Placentia Avenue although truck traffic would be diverted.
- Although a Cooperative Agreement between the Commission and the City would provide greater assurance of continued support, funds could still be expended at risk to the Commission.

Due to the increased project cost and risks to the Commission's successful and timely delivery of this interim MCP phase, it is recommended that this segment be deferred until such time that the project is financially and technically feasible. Continuing with this phase given the financial and conditional uncertainty could jeopardize the overall corridor progress. As a reminder, the Commission must maintain timely progress on this corridor to meet FHWA Major Project Guidelines.

Addressing Current Safety Needs and Advancing the MCP – An Alternative Approach

Commission staff has preliminarily evaluated other possible MCP construction packages along the 16-mile corridor to determine if a less complex, less controversial, and less expensive option is feasible. Recent news reports have highlighted safety concerns regarding a portion of Ramona Expressway within the footprint of the future MCP project. In addition, we have received correspondence and detailed information from the County regarding severe injury and fatality accidents along Ramona Expressway from Dawson Road to Warren Road. It is the consensus of Commission and County staff that a project could be scoped in this area, consistent with MCP, that provides improvements to increase safety on Ramona Expressway, especially for accidents involving vehicles crossing over the centerline of the roadway (see attachment 7).

Maintaining MCP progress is essential to preserving the benefits of the investments made by the Commission over the past 20 years in addition to the commitments made to communities along this corridor. This includes the eventual completion of the portion in Perris as well as the entire corridor. Staff's recommendation to address Ramona Expressway will advance the corridor while addressing a current safety need.

Improving east/west mobility and safety is critical and includes not only MCP improvements but also investments in other corridors such as Cajalco Road. Continued coordination and investment in these corridors are also essential as the County completes the environmental processes for improvements to those corridors. Although Cajalco Road is not part of MCP, the Commission did make a commitment to invest in the corridor in conjunction with MCP improvements. Future Commission investments in additional east/west corridors will be discussed after the environmental document approvals for those projects.

FISCAL IMPACT:

There is no fiscal impact currently. However, staff will return to the Commission through the Committee seeking approval for both scope and a contract related to the safety concerns raised along Ramona Expressway and reprogramming of funds from MCP2 towards other eligible projects, if applicable.

Attachments:

1) Letter from city of Perris dated February 28, 2022
2) Presentation to the city of Perris City Council March 8, 2022
3) Letter responding to city of Perris March 11, 2022
4) Letter from city of Perris dated March 23, 2022
5) Letter from city of Perris dated April 14, 2022
6) Letter from city of Perris dated April 18, 2022
7) Email from County of Riverside dated April 20, 2022, and Exhibits
8) Exhibit Map – MCP2, Redlands Avenue to Ramona Expressway

CITY OF PERRIS

Office of the City Manager

101 NORTH "D" STREET
PERRIS, CALIFORNIA 92570
TEL: (951) 943-6100

February 28, 2022

Riverside Count Transportation Commission
Western Riverside County Programs and Projects Committee
4080 Lemon Street, 3rd Floor
Riverside, CA 92501

RE: Agenda Item No. 7 of the February 28, 2022 RCTC Meeting – Mid County Parkway Project Construction Package No. 2 from Redlands Avenue to Ramona Expressway

Dear Commissioners,

The City of Perris appreciates the opportunity to comment on this item (Mid County Parkway Project Construction Package). The city has been involved for many years with RCTC in this major transportation facility to serve the current and future transportation needs of Western Riverside County. While we understand that there is an opportunity for interim improvements to be constructed at this time, the city has the following concerns that will result from constructing the proposed interim realignment:

1) The I-215/Placentia Avenue Interchange is currently under construction and was originally designed to connect directly with an interchange at Redlands Avenue. The proposed interim alignment proposes to stop construction at Redlands Avenue, thereby directing traffic to travel south to Placenta Avenue, and then westerly through a residential area in order to get to the I-215 freeway. The section between Redlands Avenue and Perris Blvd. is not a truck route and impacts/mitigation to this residential area were not evaluated under the EIR for this project. Impacts to traffic and noise were not considered in the EIR for this change to the original alignment.

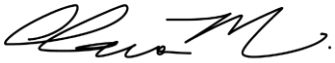
2) The proposed interim alignment removes the Evans Road interchange. This is a significant change to the original design of the MCP alignment. Traffic impacts under the EIR for this change have not been assessed.

3) The proposed interim alignment does not take into account that a new high school been constructed since the approval of the EIR for the project. The proposed interim alignment cuts access across El Nido Avenue for students attending Orange Vista High School. These are impacts that were not evaluated in the EIR and circumstances have significantly changed since the project design approval that warrants additional review and mitigation.

Under the Final Project Report, it states that if a decision is made after project approval to construct the MCP project in phases, then RCTC would identify the impacts and needed mitigation measures of a first phase and would compare these to the impacts and mitigation measures addressed and committed to in the Final EIR/EIS through an Environmental Revalidation, which would determine whether an EIR Addendum, Supplemental EIR, or Subsequent EIR would be required under CEQA, and whether a Supplemental EIS would be required under NEPA. If new adverse impacts or mitigation are identified for the first phase or a subsequent phase, then RCTC would prepare supplemental environmental documentation for approval of that project phase. The proposed interim alignment and improvements will result in long term impacts to the City of Perris that were not evaluated under the original EIR.

The city would like to take this opportunity to request that the proposed interim Mid County Parkway alignment not move forward at this time until there is funding available to move forward with the ultimate design within the City of Perris. The proposed interim improvements have not been reviewed for impacts on Perris residents and traffic.

Sincerely,

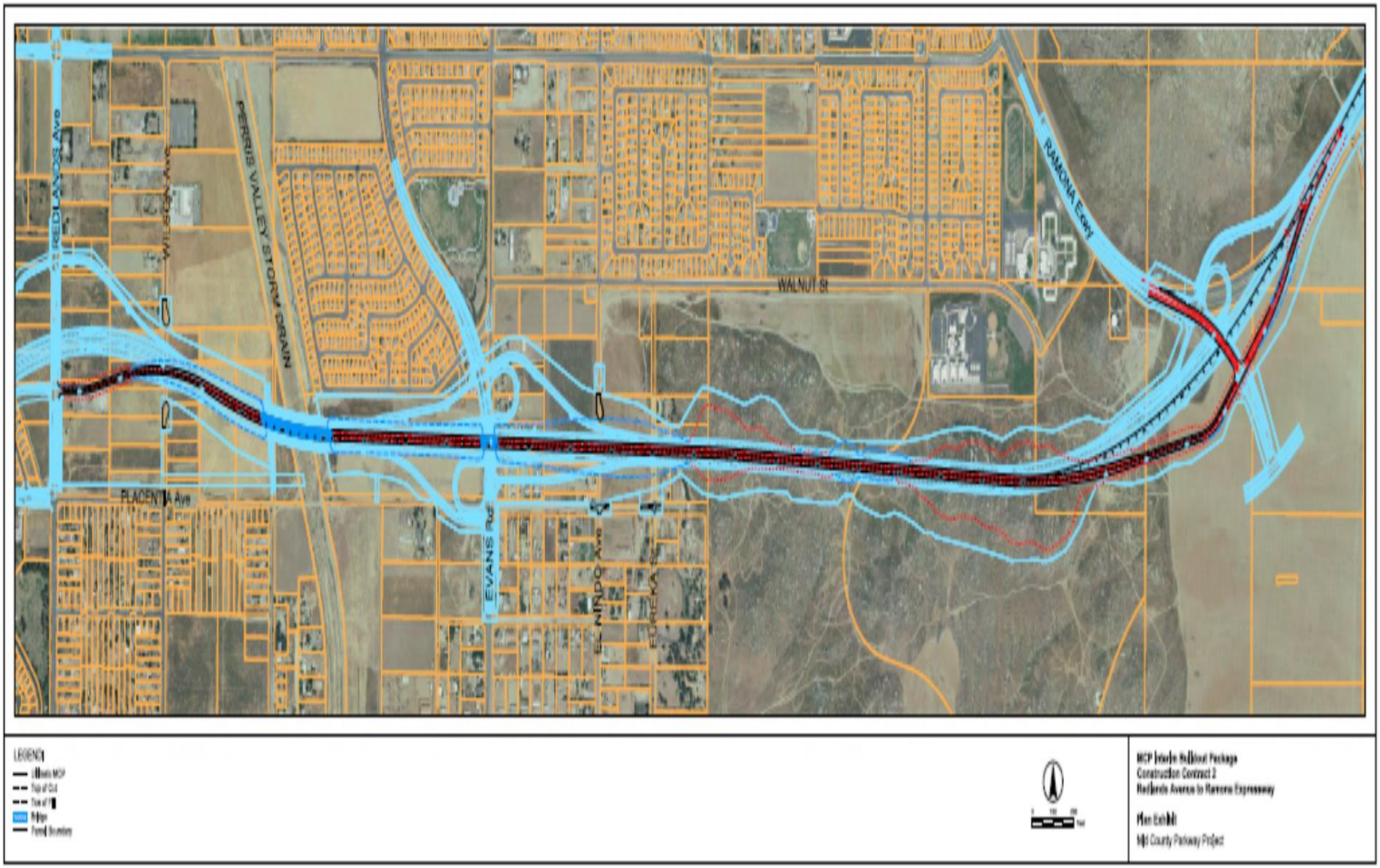


City Manager
City of Perris

CC:

Anne Mayer, Executive Director
John Standiford, Deputy Executive Director
Marlin Feenstra, Capital Delivery Director
Mayor Michael Vargas, City of Perris
Rita Rogers, Perris Councilmember
Eric Dunn, City Attorney
Stuart McKibbin, City Engineer
Kenneth Phung, Director of Development Services

Attachments:


REDLANDS Ave
PERRIS VALLEY STORM DRAIN
WALNUT St
RAMONA Expwy
PLACENTIA Ave
EVANS Rd
EL NIDO Ave
EUREKA St
LEGEND
MCP Bridge Rollout Package
Construction Contract 2
Redlands Avenue to Ramona Expressway
Plan Exhibit
Mid County Parkway Project


Evans Rd
Coshawk Way
Plover Way
Clapper St
Galway Ln
Sinclair St
E Rider St
Murrieta Rd
Wilson Ave
Redlands Ave
Placentia Ave
Lisbon St
© 2020 Google
Spectacular Bid St
Jubilee Ct
Lake View Dr
Holiday Ln
Sparkler Ln
Spokane St
Banner Pl
Galileo Ln
Magellan Ln
Sunny Halo Ct
Count Turf Ct
Chant St
Riva Ridge St
Genuine Risk St
Pinta Ct
Discovery Dr
Commerce Dr
Lakeview Dr
San Felipe Dr
Ensenada Dr
San Luis Dr
Punta Prieta Dr
Rosario Dr
Santo Tomas Ave
N Perris Blvd
Walnut Ave
Google Earth
33°49'32.44" N 117°13'00.68" W elev 1447 ft eye alt 7287 ft
2002

MID COUNTY PARKWAY PROJECT

City of Perris Council Meeting

March 8, 2022

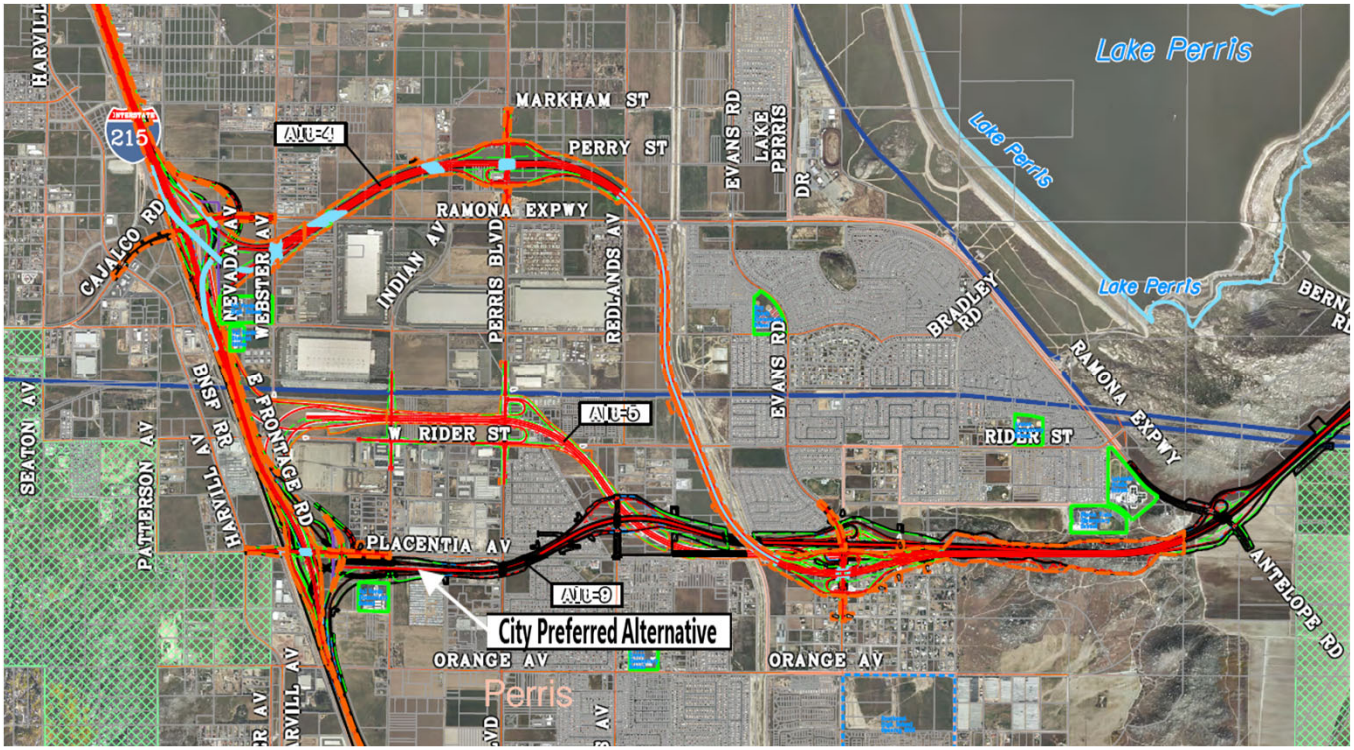
Anne Mayer, RCTC Executive Director

MID COUNTY PARKWAY HISTORY

- Riverside County Integrated Plan (RCIP) initiated in 1998
  - Integrated land use, transportation, and conservation
  - Model for nation
- Transportation (CETAP) & Conservation (MSHCP) - adopted 2003
- Mid-County Parkway (MCP) from CETAP, began studies 2003
- EIR/EIS approved 2015

Mid County PARKWAY

MCP ALIGNMENTS CONSIDERED



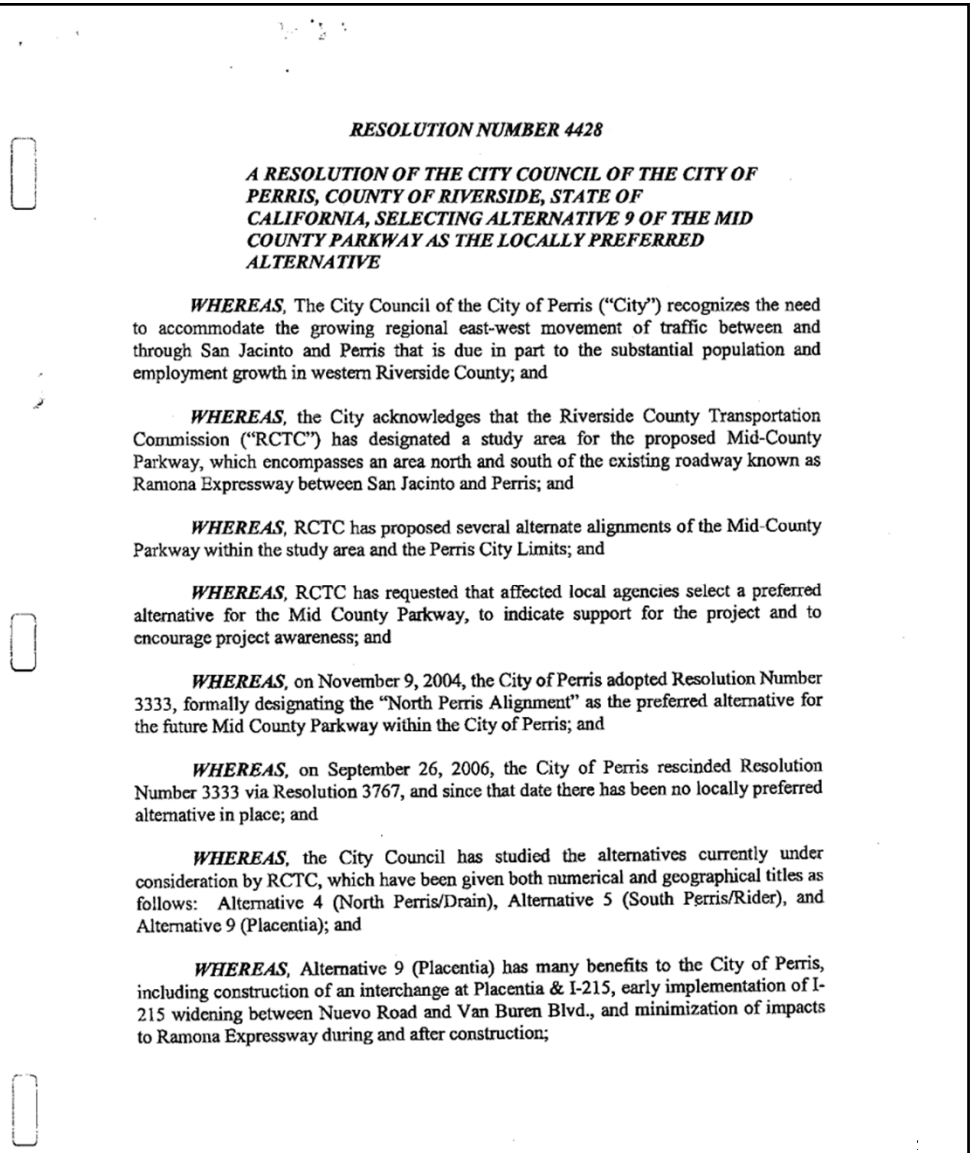
CITY OF PERRIS
RESOLUTION NO. 4428

- City project approvals June 2011
  - City selected the alignment (Alternative 9) that was then adopted by Commission
  - Required Placentia IC to be part of MCP, first phase
  - Construction to start at west end of MCP, recognizing entire facility would not be built at once
  - Ethanac corridor investigated

✓ Placentia interchange construction is 70% complete

✓ Ethanac studies proceeding

✓ MCP2 design – using Alt 9



RESOLUTION NUMBER 4428

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF PERRIS, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, SELECTING ALTERNATIVE 9 OF THE MID COUNTY PARKWAY AS THE LOCALLY PREFERRED ALTERNATIVE

WHEREAS, The City Council of the City of Perris ("City") recognizes the need to accommodate the growing regional east-west movement of traffic between and through San Jacinto and Perris that is due in part to the substantial population and employment growth in western Riverside County; and

WHEREAS, the City acknowledges that the Riverside County Transportation Commission ("RCTC") has designated a study area for the proposed Mid-County Parkway, which encompasses an area north and south of the existing roadway known as Ramona Expressway between San Jacinto and Perris; and

WHEREAS, RCTC has proposed several alternate alignments of the Mid-County Parkway within the study area and the Perris City Limits; and

WHEREAS, RCTC has requested that affected local agencies select a preferred alternative for the Mid County Parkway, to indicate support for the project and to encourage project awareness; and

WHEREAS, on November 9, 2004, the City of Perris adopted Resolution Number 3333, formally designating the "North Perris Alignment" as the preferred alternative for the future Mid County Parkway within the City of Perris; and

WHEREAS, on September 26, 2006, the City of Perris rescinded Resolution Number 3333 via Resolution 3767, and since that date there has been no locally preferred alternative in place; and

WHEREAS, the City Council has studied the alternatives currently under consideration by RCTC, which have been given both numerical and geographical titles as follows: Alternative 4 (North Perris/Drain), Alternative 5 (South Perris/Rider), and Alternative 9 (Placentia); and

WHEREAS, Alternative 9 (Placentia) has many benefits to the City of Perris, including construction of an interchange at Placentia & I-215, early implementation of I-215 widening between Nuevo Road and Van Buren Blvd., and minimization of impacts to Ramona Expressway during and after construction;

Mid County PARKWAY

COMMISSION ACTIONS SINCE 2011

- Acquired right of way, mitigation land, permits
- 2016 Strategic Assessment – due to funding realities, staff directed to develop fundable/buildable packages
- Placentia Interchange
- Placentia Avenue improvements with City
- Spent $163+ million (since inception)
- Programmed $58 million for future work

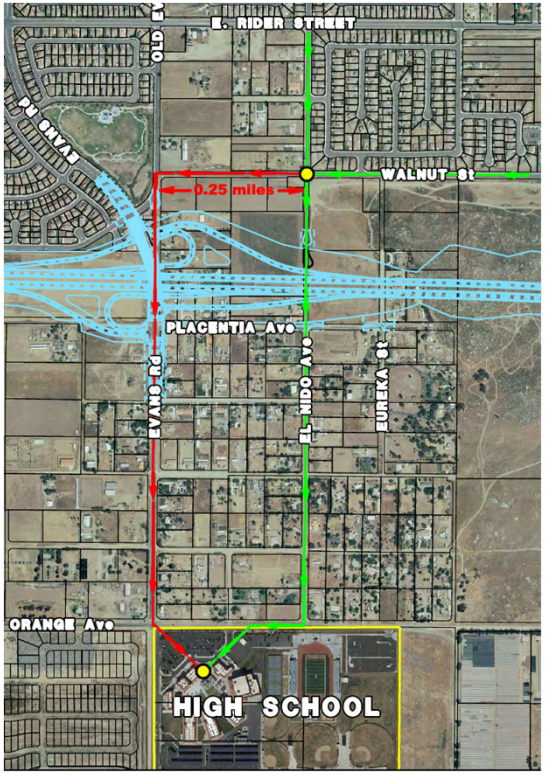
MCP CONSTRUCTION COST

- Entire MCP: $2.8 billion
- Ultimate MCP in City of Perris: $1.4 billion (displaces 92 dwellings)
- MCP2 (proposed interim): $231 million (displaces 1 dwelling)

CITY OF PERRIS CONCERNS

- Traffic/air/noise impacts of interim condition
  - Revalidation will be done with design, analyzing impacts
  - Reduction/mitigation of impacts will be developed with City
  - E.g. soundwall along Placentia, etc.

- New high school built after the MCP approved
  - 0.6 miles away from project
  - El Nido is cul-de-sac in EIR; MCP is 40' higher
  - Evans Road provides similar length path



Mid County PARKWAY

RCTC NEXT STEPS

- EIR has limited shelf life, requires progress
- Commission funds have time constraints
- City Council support essential for interim project
- March 28 RCTC Committee project reconsideration
- April 13 RCTC Board action

RIVERSIDE COUNTY TRANSPORTATION COMMISSION

QUESTIONS

RIVERSIDE COUNTY TRANSPORTATION COMMISSION

4080 Lemon St. 3rd Fl. Riverside, CA 92501
Mailing Address: P.O. Box 12008 Riverside, CA 92502-2208
951.787.7141 • rctc.org

March 11, 2022

Ms. Clara Miramontes, City Manager
City of Perris
101 North "D" Street
Perris, CA 92570

SUBJECT: **Response to the City of Perris' Concerns regarding the Mid-County Parkway Project Construction Contract 2 (MCP2)**

Dear Ms. Miramontes:

Thank you for communicating your interest in the Mid-County Parkway Project Construction Contract 2 (MCP2) and for discussing your concerns with the Riverside County Transportation Commission (RCTC). RCTC is in receipt of City of Perris' (City) letter dated February 28, 2022, which requested that RCTC not move forward with design of MCP2 at this time, due to impacts of the interim project. On March 8, 2022, RCTC presented information about the project at the Perris City Council meeting. At this meeting, the council expressed its concerns with the MCP2 Project. In response, RCTC would like to express its commitment to resolve these concerns in cooperation with the City, by agreeing to the following:

1. Provide a safe bridge-type undercrossing at El Nido Avenue to maintain continuous vehicle and pedestrian access to schools.

2. Maintain the San Jacinto trail under proposed MCP2.

3. Analyze expected truck traffic on MCP2 and develop a strategy to restrict truck traffic to the City's desired routes. Study the impacts of vehicular traffic expected to use Placentia Avenue and its impact on residential areas and Paragon Park, including noise, air quality, and speed, and provide appropriate mitigation measures.

These measures are subject to technical feasibility and environmental analysis to ensure that none of them results in a greater environmental impact than the previously approved EIR/EIS for Mid-County Parkway. RCTC understands the City's concerns and anticipates we will be able to incorporate these features as we proceed with design.

The City's involvement and participation during the design phase is crucial to the MCP2 project's success. With the commitments outlined above, we hope to garner the City's support of the MCP2. We look forward to your response on this regionally important project. As stated at the council meeting on March 8, we anticipate discussion of this issue at the March 28 Western County Programs and Projects committee meeting.

Should you have any questions or need additional clarification, please contact me at (951) 787-7141 or AMayer@RCTC.org.

Sincerely,

Anne E Mayer

Anne Mayer
Executive Director

CITY OF PERRIS

Office of the City Manager

101 NORTH "D" STREET
PERRIS, CALIFORNIA 92570
TEL: (951) 943-6100

March 23, 2022

Anne Mayer, Executive Director
Riverside County Transportation Commission
4080 Lemon Street, 3rd Floor
Riverside, CA 92501

RE: Mid County Parkway Project Construction Package No. 2 (MCP2) from Redlands Avenue to Ramona Expressway (Interim Improvements)

Dear Ms. Mayer,

The City of Perris appreciates RCTC's collaboration in working with the city to address concerns related to the MCP2 improvements and thanks you for your presentation at the May 8, 2022, City Council meeting. The City Council has carefully considered the impacts that the MCP2 project may create on the city, such as traffic, air quality, and noise impacts to residential areas, city streets, and a local park. For these reasons, the City Council majority can only support the MCP2 project provided that there is "no truck traffic" allowed, thereby prohibiting truck traffic along the MCP2 corridor entering or traveling through the City of Perris.

Please do not hesitate to contact me if you have any questions or would like to discuss further.

Sincerely,

City Manager
City of Perris

CC: Mayor Michael Vargas, City of Perris
Rita Rogers, Perris Councilmember
Eric Dunn, City Attorney
Stuart McKibbin, City Engineer
Kenneth Phung, Director of Development Services
John Standiford, Deputy Executive Director
Marlin Feenstra, Capital Delivery Director

CITY OF PERRIS

Office of the City Manager

101 NORTH "D" STREET
PERRIS, CALIFORNIA 92570
TEL: (951) 943-6100

April 14, 2022

Anne Mayer, Executive Director
Riverside County Transportation Commission
4080 Lemon Street, 3rd Floor
Riverside, CA 92501

RE: Mid County Parkway Project Construction Package No. 2 (MCP2) from Redlands Avenue to Ramona Expressway (Interim Improvements)

Dear Ms. Mayer,

The City of Perris appreciates RCTC's collaboration in working with the City to address concerns related to the MCP2 improvements. The concerns related to traffic, air quality, and noise impacts on nearby residential areas, city streets, a fire station, and a local park, remain of great concern for us. The City has reviewed the potential impacts and, along with your assistance, explored possible mitigation measures that need to be considered in order to support the MCP2 project. For these reasons, the City Council majority supports the MCP2 project, provided that the following items be included as part of the MCP2 project:

1. **Placentia Ave Route (preferred):** The proposed MCP2 improvements propose that all traffic travel southbound from Redlands Avenue to Placentia Avenue for access to the future Placentia Avenue interchange. The City agrees that the desired route is along Placentia Avenue, provided the following items are included in the MCP2 project design:

    a) Acquire and remove the twelve homes on the south side of Placentia Avenue, between Redlands Ave. and Perris Blvd. This area should then be considered for a parkway with walls to mitigate noise for residences further south of Placentia Ave.
    b) A noise study shall be completed to assess necessary noise mitigation for the residences along Placentia Avenue and shall meet the City's Noise Ordinance. This should include the installation of sound walls and additional landscaping on both sides of Placentia Ave, adjacent to existing residential units.
    c) Install signal at Fire Station 90 North Perris.
    d) Install signals at the intersection of Placentia and Spokane Street and modify access points to the park, including a crosswalk.
    e) Modify the existing traffic signals along Placentia Avenue, as needed.

f) Install traffic signals at Redlands/MCP2 and Redlands Ave/Placentia Ave.
g) Evaluate the conditions and width of existing pavement and upgrade as needed to accommodate additional MCP traffic along Placentia Ave.

2. **Redlands Ave/Morgan Ave/Indian Ave Route (alternative):** Should the Placentia Avenue route not be feasible due to reasons other than cost, truck traffic shall be diverted northbound at Redlands Ave., continuing westbound on Morgan Ave., southbound on Indian Ave., and connecting back to Placentia Avenue westbound onto the interchange. Trucks traveling eastbound, exiting the I-215 freeway, shall also be required to follow the same truck route to access the corridor at Redlands Ave. The following items shall be included in the MCP2 project design:

    a) Provide physical design features for the routing of trucks northbound on Redlands Avenue.
    b) Provide additional sound mitigation to comply with the City Noise Ordinance along residential the areas including Placentia Avenue.
    c) Evaluate the condition and width of existing pavement along the route and install additional improvements as needed. The City can be the lead agency for the environmental/design and construction of this work subject to a contribution/reimbursement by RCTC.
    d) Placentia Avenue mitigation shall be similar to items 1.b through 1.g, as necessary.

3. **El Nido Avenue:** Provide a safe bridge-type undercrossing at El Nido Avenue to maintain continuous vehicle and pedestrian access to schools.

4. **San Jacinto Trail:** Maintain the San Jacinto trail under the proposed MCP2.

In order to acknowledge these conditions, the City requests that an agreement be executed between the City and RCTC. The City of Perris values and appreciates our partnership with RCTC. Thank you for your collaboration and we look forward to continuing to work together on this project. Please do not hesitate to contact me if you have any questions or would like to discuss further.

Sincerely,

City Manager
City of Perris

CC: Mayor Michael Vargas, City of Perris
Habib Motlagh, Perris Special Projects
Eric Dunn, City Attorney
Stuart McKibbin, City Engineer
Kenneth Phung, Director of Development Services
John Standiford, Deputy Executive Director
Marlin Feenstra, Capital Delivery Director

CITY OF PERRIS

Office of the City Manager

101 NORTH "D" STREET
PERRIS, CALIFORNIA 92570
TEL: (951) 943-6100

April 18, 2022

Anne Mayer, Executive Director
Riverside County Transportation Commission
4080 Lemon Street, 3rd Floor
Riverside, CA 92501

RE: Mid County Parkway Project Construction Package No. 2 (MCP2) from Redlands Avenue to Ramona Expressway (Interim Improvements)

Dear Ms. Mayer,

The City of Perris appreciates RCTC's collaboration in working with the City to address concerns related to the MCP2 improvements. The concerns related to traffic, air quality, and noise impacts on nearby residential areas, city streets, a fire station, and a local park, remain of great concern for us. The City has reviewed the potential impacts and, along with your assistance, explored possible mitigation measures that need to be considered in order to support the MCP2 project. For these reasons, the City Council majority supports the MCP2 project, provided that the following items be included as part of the MCP2 project:

1. **Placentia Ave Route (preferred):** The proposed MCP2 improvements propose that all traffic travel southbound from Redlands Avenue to Placentia Avenue for access to the future Placentia Avenue interchange. The City agrees that the desired route is along Placentia Avenue, provided the following items are included in the MCP2 project design:

    a) Acquire and remove the twelve homes on the south side of Placentia Avenue, between Redlands Ave. and Perris Blvd. This area should then be considered for a parkway with walls to mitigate noise for residences further south of Placentia Ave.
    b) A noise study shall be completed to assess necessary noise mitigation for the residences along Placentia Avenue and shall meet the City's Noise Ordinance. This should include the installation of sound walls and additional landscaping on both sides of Placentia Ave, adjacent to existing residential units.
    c) Install signal at Fire Station 90 North Perris.
    d) Install signals at the intersection of Placentia and Spokane Street and modify access points to the park, including a crosswalk.
    e) Modify the existing traffic signals along Placentia Avenue, as needed.

f) Install traffic signals at Redlands/MCP2 and Redlands Ave/Placentia Ave.
g) Evaluate the conditions and width of existing pavement and upgrade as needed to accommodate MCP traffic along Placentia Ave.

2. **Redlands Ave/Morgan Ave/Indian Ave Route (alternative):** Should the Placentia Avenue route not be feasible due to reasons other than cost, truck traffic shall be diverted northbound at Redlands Ave., continuing westbound on Morgan Ave., southbound on Indian Ave., and connecting back to Placentia Avenue westbound onto the interchange. Trucks traveling eastbound, exiting the I-215 freeway, shall also be required to follow the same truck route to access the corridor at Redlands Ave. The following items shall be included in the MCP2 project design:

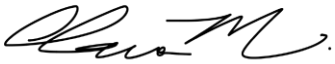
    a) Provide physical design features for the routing of trucks northbound on Redlands Avenue.
    b) Provide additional sound mitigation to comply with the City Noise Ordinance for the residential areas along Placentia Avenue.
    c) The City can be the lead agency for the environmental/design and construction of necessary right-of-way improvements and right-of-way acquisition along the truck route, subject to a contribution/reimbursement by RCTC.
    d) Placentia Avenue mitigation shall be similar to items 1.b through 1.g, as necessary.

3. **El Nido Avenue:** Provide a safe bridge-type undercrossing at El Nido Avenue to maintain continuous vehicle and pedestrian access to schools.

4. **San Jacinto Trail:** Maintain the San Jacinto trail under the proposed MCP2.

In order to acknowledge these conditions, the City requests that an agreement be executed between the City and RCTC. The City of Perris values and appreciates our partnership with RCTC. Thank you for your collaboration and we look forward to continuing to work together on this project. Please do not hesitate to contact me if you have any questions or would like to discuss further.

Sincerely,



City Manager
City of Perris

CC: Mayor Michael Vargas, City of Perris
Habib Motlagh, Perris Special Projects
Eric Dunn, City Attorney
Stuart McKibbin, City Engineer
Marlin Feenstra, Capital Delivery Director

From: Perez, Juan <JCPEREZ@RIVCO.ORG>
Sent: Wednesday, April 20, 2022 8:50 AM
To: Anne Mayer <AMayer@RCTC.org>
Cc: Leach, Charissa <cleach@rivco.org>; Lancaster, Mark <MLancaster@Rivco.org>; Marlin Feenstra <mfeenstra@rctc.org>
Subject: [EXTERNAL] MCP, Ramona Expressway and Cajalco Expressway

Good morning Anne,

I am writing to request that RCTC engage with the County on a conversation about how we can collectively pursue major safety improvements on Ramona Expressway. Over the years, the County has worked to implement various safety strategies on Ramona Expressway including installing passing lanes, signals and intersection improvements, and striping and pavement management measures. Tragically, as you can see by the attached collision diagrams, we continue to experience a high number of fatalities and severe injury collisions on this road.

RCTC's adoption of the Mid County Parkway environmental document provides a pathway for improvements on Ramona Expressway over time as a critical part of the overall MCP project. We now have an opportunity to implement the more significant improvements, such as incremental segment widenings, that are truly needed to address immediate safety needs, while being complimentary to a gradual approach to deliver the overall MCP project over time.

Similarly, as you are aware the County has completed public circulation of the EIR for Cajalco Expressway, and we anticipate bringing the document before our Board for certification in the near future. Cajalco experiences a similar significant collision history as Ramona Expressway. While the County has also over the years implemented many spot safety measures, more must be done in order to achieve major safety benefits, and the nearing completion of the Cajalco environmental document provides an opportunity to do so.

We stand at a moment of opportunity to see plans that were put into motion many years ago to make improvements to the Cajalco Expwy/MCP/Ramona Expwy Corridor advance to the next stage of implementation. This implementation needs to be done in an incremental and balanced way that will allow the overall system to function properly, without putting any additional strain on any one roadway component. The improvements of these corridors, to address both immediate safety needs and also plan for our continued growth, are of the highest priority for our Board of Supervisors and County staff.

We look forward to working together with the RCTC team to develop an overall corridor phasing and delivery plan that can be presented to our Board and the RCTC Commission for consideration.

Regards,

Juan

Juan C. Perez
Chief Operating Officer
County of Riverside
JCPerez@RIVCO.org
951-955-1147

www.rivco.org

Date	Time	Location	Type	No. Killed	PCF
8/10/2019	410	923 Feet E/of Bridge Street	VEH	1	23152A
9/18/2019	603	600 Feet E/of 5th Street	VEH	1	21460A
9/28/2019	530	534 Feet E/of Martin Street	VEH	1	23152A
12/10/2019	2132	1810 Feet W/of Lakeview	VEH	1	21650
3/4/2020	1922	472 Feet E/of Lakeview	PED	1	22350
3/24/2020	1330	1329 Feet E/of Hansen Ave.	VEH	1	22107
4/16/2020	2140	1270 Feet E/of Bridge St.	PED	1	22107
5/20/2020	427	748 Feet E/of 6th Street	VEH	1	21460A
9/13/2020	250	60 Feet E/of I-215	VEH	1	21658A
9/25/2020	1950	3 Feet W/of Bridge St.	PED	1	21964A
2/8/2021	1605	2919 Feet W/of Lakeview Ave.	VEH	1	22350
2/11/2021	434	2428 Feet E/Day Street	PED	1	21954A
3/17/2022	539	Intersection at Hansen Ave	VEH	1	incomplete
4/4/2022	630	1103 Feet E/First St.	VEH	1	incomplete

RAMONA EXPRESSWAY - FATAL/SEVERE INJURY COLLISION PIN MAP
SEGMENT 1 OF 2
(01/01/2017 - 04/14/2022)

Feet
0 800 1,600 3,200
1 inch = 1,751 feet
Orthophotos Flown 2016
Printed by dagunia on 4/14/2022

N

2/1/2020 - Sideswipe (DUI)
(Crossed into Opposing Lane - Unplanned)

9/28/2019 - Head-On (DUI)
(Crossed into Opposing Lane - Unplanned)

4/23/2018 - Hit Object (DUI)

6/6/2019 - Hit Object

7/23/2020 - Head-On
(Improper Passing)

4/18/2018 - Head-On
(Passing Other Vehicle)

3/28/2019 - Hit Object

6/12/2018 - Vehicle - Ped (Ped Under the Influence)
(Ped in Roadway)

2/8/2021 - Rear-End
(Unsafe Speed)

5/25/2018 - Head-On (DUI)
(Traveling Wrong Way - Not Passing)

12/10/2019 - Head-On (DUI)
(Crossed into Opposing Lane - Unplanned)

9/15/2018 - Vehicle - Ped
(Pedestrian Violation)

3/4/2020 - Vehicle - Ped
(Unsafe Speed - Ped in Roadway)

11/9/2019 - Head-On (DUI)
(Ran Red Light)

12/3/2020 - Head-On
(Ran Red Light)

6/25/2020 - Head-On
(Ran Red Light)

3/24/2020 - Broadside
(Unsafe Speed)

6/5/2018 - Head-On (DUI)
(Passing Other Vehicle)

12/23/2021 - Head-On
(Ran Red Light)

3/17/2022 - Hit Object
(PROVISIONAL)

BERNASCONI RD
MARTIN ST
RAMONA EXPY
POZOS RD
DAWSON RD
RIDER ST
WALNUT AVE
ANTELOPE RD
PICO AVE
PALOMAR RD
WATER AVE
C AVE
B AVE
11TH ST
12TH ST
CHASE AVE
RESERVOIR AVE
WALKER ST
NORTH DR
NORMAN RD
DAVIS RD
MARVIN RD
FERN AVE
PALM AVE
LAKEVIEW AVE E
EUCALYPTUS ST
5TH ST
PHILIP RD
JACK CIR
LAKEVIEW AVE
ARMANDO DR
DEBBIE LN
WILDFIRE CIR
YUCCA AVE
BELL AVE
MAGNOLIA AVE
HANSEN AVE
6TH ST
LAURENA ST
WOLFSKILL AVE
MEADOW BLOSSOM RD
BROWN AVE
SIXTH ST
ORANGE AVE
SUNSET AVE

Legend

- Fatal Collision
- Severe Injury Collision
- *2021 & 2021 Collisions are Provisional

RAMONA EXPRESSWAY FATAL/SEVERE INJURY COLLISION PIN MAP
SEGMENT 2 OF 2
(01/01/2017 - 04/14/2022)

0 900 1,800 3,600 Feet
1 inch = 1,920 feet
Orthophotos Flown 2016
Printed by dacuna on 4/14/2022

N

6/11/2018 - Head-On
(Right-of-Way Violation)

5/20/2020 - Head-On
(Improper Passing)

6/11/2018 - Head-On (DUI)
(Crossed into Opposing Lane - Unplanned)

4/4/2022 - Broadside
(PROVISIONAL)

9/25/2020 - Vehicle - Ped
(Ped in Roadway)

3/16/2018 - Rear-End (DUI)

9/18/2019 - Head-On
(Improper Passing)

9/25/2018 - Vehicle - Ped
(Ped in Roadway; Ped Under the Influence)

9/8/2017 - Sideswipe
(Improper Passing)

6/17/2021 - Head-On
(Crossed into Opposing Lane - Unplanned)

8/10/2019 - Head-On (DUI)
(Crossed into Opposing Lane - Unplanned)

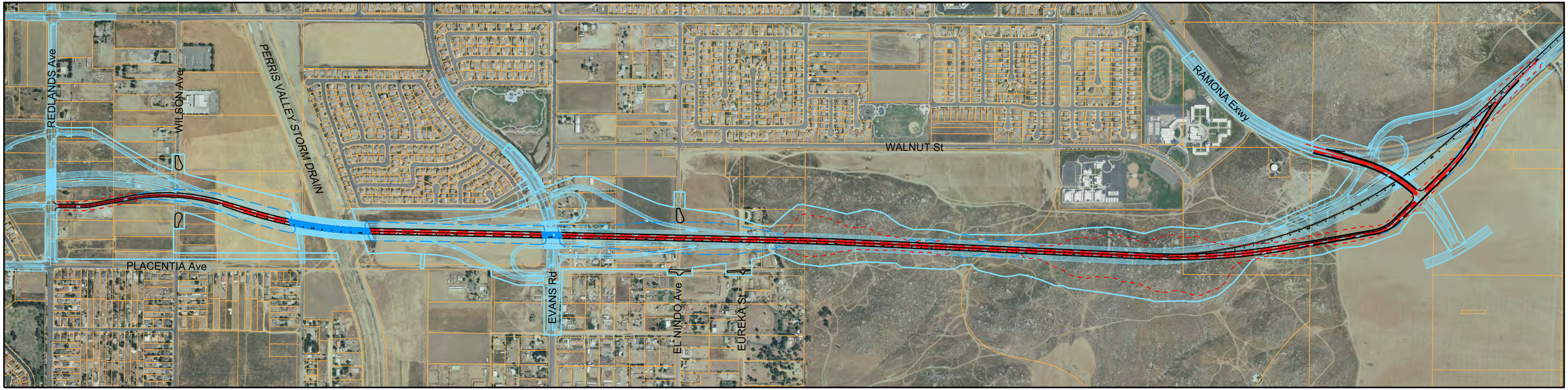
4/16/2020 - Vehicle - Ped
(Ped Hit while within Shoulder)

11/16/2017 - Head-On
(Crossed into Opposing Lane - Unplanned)

Legend

- Fatal Collision
- Severe Injury Collision

*2021 & 2022 Collisions are Provisional



LEGEND:
- Ultimate MCP
- Top of Cut
- Toe of Fill
- Bridge
- Parcel Boundary

0 100 200 Feet

MCP Interim Buildout Package
Construction Contract 2
Redlands Avenue to Ramona Expressway

Plan Exhibit
Mid County Parkway Project