

**ACEC/Caltrans DES
Structures Liaison Committee
Meeting Minutes
November 19, 2021**

The meeting of the ACES/Caltrans DES Structures Liaison Committee was held by Microsoft TEAMS on November 19, 2021, from 10:00 AM to 12:00 PM.

I. Call to Order

A. Changes to the Agenda (0:00:00)

Garrett Dekker noted that there would not be a BIM update today and the joint ACEC/Caltrans DES BIM Webinar would be moved to the first or second quarter of 2022.

Ruth Fernandez informed the group that Tom Ostrom would be joining the meeting at 11 AM and would be providing the General DES update at that time. She also stated that she will be the new Deputy Division Chief for Structures and Engineering Services.

B. Review Previous Meeting Minutes

No changes or comments were made to the 08/20/2021 meeting minutes. The meeting minutes were finalized and approved.

II. DES/ACEC Updates (0:01:40)

A. General: Tom Ostrom/Shira Rajendra (1:30:26)

Tom Ostrom, Caltrans DES, reintroduced and welcomed Ruth Fernandez to the group who is now the new Deputy Division Chief for Structures and Engineering Services.

Tom stated that Caltrans is presently attempting to figure out what the Infrastructure Investment and Jobs Act means for funding in California; however, what they've been hearing is that it will bring approximately \$2 billion annually into the state. This amount of funding is about the same as SB1. This money is expected to be split, with roughly half the money going to local agencies and half going to Caltrans.

B. Technical: Structures Technical Policies, Technical Research: Kevin Keady (0:01:46)

Sudhakar Vatti, Caltrans OSFP/SLA, stated that Caltrans had drafted up language for Complex Bridges that once reviewed will be included in Caltrans OSFP Information and Procedures Guide. He also noted that temporary railing, MASH requirements, and the impact it will have on ongoing and future projects would be discussed later in the meeting.

Gudmund Setberg, Caltrans SD, informed the group that they are still moving Grade 80 reinforcement forward and he'd be happy to provide a more comprehensive update on this at the next meeting. He also stated that the Structure Policy Board is going to begin focusing on

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guidance to designers on all things temporary such as temporary supports and bridges in use during construction.

Jack Abcarius asked Gudmund whether it was Caltrans's intent to make temporary structures the designer's responsibility or if it would remain with the contractor? Gudmund responded stating that it was not Caltrans's intent to transfer this responsibility to the designer, however he feels it is not as simple as that and would like to discuss further at a future ACEC/Caltrans Meeting.

Jon Rohrer with HDR asked if we had a project where a bridge was designed using Grade 80 reinforcement and the contractor was able to get a great deal on Grade 60 reinforcement and requested a substitute, what changes would this mean for the structure, and should the CM team respond by simply rejecting the request? Gudmund replied stating that they've reached out to states already using Grade 80 reinforcement and what they have found is the prices for Grade 80 are generally 10 to 15 percent higher than Grade 60, but they use anywhere from 15 to 20 percent less steel so it's a wash for now. They're hoping over time that the cost of Grade 80 reinforcement will come down to be more in line with Grade 60. They are planning to address this type of question on a case-by-case basis. Rich Foley, Caltrans SC, stated that Caltrans would be amenable to rejecting the proposed change if there is language in the contract allowing them to do so. However, the proposed response is also time dependent as changing from Grade 80 to Grade 60 will require significant redesign. Rich stated he doesn't anticipate a contractor proposing to redesign the entire bridge to change from Grade 80 to Grade 60, but he could see a contractor requesting the change where they are asking Caltrans to perform the redesign. Gudmund stated that he doesn't see it as a complete straight forward swap. For example, if Grade 80 was used in a bent cap to address rebar congestion going back and stating it is then acceptable to accept Grade 60 reinforcement because it is 5 percent less expensive, cost may not be the only factor that is evaluated to facilitate the change. Gudmund stated that it is likely they would try to hold the line on using Grade 80 in this case.

Garrett asked if the cost data for Grade 80 reinforcement provided by other states was simply the difference in material costs or if it also included labor for placement? Gudmund stated he'd have to check with his estimating unit. He implied that it's complicated to address because in some cases the quantity of bars goes down, in others its simply the size of bars that is reduced when using Grade 80.

Jon asked if Grade 80 weighed more than Grade 60. Gudmund stated that he did not know for certain but suspected if there was a difference in weight its probably not substantial.

Rob Stott asked if there were any types of bars where Grade 80 reinforcement would not be allowed such as in pile/column hoops due to not being as ductile or as weldable? Gudmund stated that Caltrans is planning to roll out Grade 80 reinforcement in two phases. The first phase would be in anything other than seismically critical members, or those members where plastic action is anticipated, such as columns and piles. The second phase, based on the results of

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current research efforts, would look at allowing Grade 80 reinforcement to be used in certain ductile elements.

Lance Schrey, Caltrans OSFP/SLA, suggested that we have Gudmund provide a presentation on Grade 80 reinforcement at the next quarterly meeting. Garrett agreed and requested that we table the remaining questions on the subject until then.

C. Contracting Opportunities: Shira Rajendra (0:12:47)

Shira Rajendra, Caltrans PPM & OE, reported that presently Caltrans DES is at the height of procuring/advertising contracts. He stated that are structure construction contracts that were advertised and are in the process of being awarded, there design contracts that were advertised and Caltrans is now in the process of selection, there are current RFQ's out for design contracts, and there will also be the two METS source inspection contracts (the statewide source inspection contract will be divided into two, one for Norther California and one for Southern California). He recommended that everyone in the consultant community pay close attention to the lookahead reports in the next 3 to 6 months as they would like to see more participation by consultants in future procurements. Garrett asked Shira if there were any updates on the finite element modeling conversion contract that had previously been on the lookahead report and has since been removed? Shira replied stating there were no updates at this time but noted that if it will be advertised at some point in the future it will be added again to the lookahead report.

Shira also took the time to thank all the past consultant co-chairs that he served with in his 8 years acting as Caltrans's co-chair on the committee. Garrett thanked Shira for all his effort and energy put into the committee through the years.

D. Local Assistance: Robert Peterson (0:19:20)

Robert Peterson, Caltrans HQ/LA informed the group that this is the time of year when his staff goes through and determines the financial constraint on the program. This year, there was a total of \$637 million requested for funding while there is only\$289 million available. With the passing of the infrastructure bill, Caltrans anticipates additional funding that they hope will decrease the current log jam, but it remains to be seen how much money will be infused. He also noted that they are still accepting new applications, but bringing new projects into the program has been held up in recent years.

Robert also stated that they are going through a value analysis status with an outside consultant to look at the program and see where they can improve their customer service and communication. Their consultant will be synthesizing the information collected to put together action items that Caltrans can implement to improve the program. His team is also working on standard operating procedures with the districts and SLA. He also recommended that consultants look at recent changes documented in office bulletins and reforms related to how projects come into the program as they will no longer come in as automatic replacements, but will also start as rehabilitations.

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Sudhakar also added that they will also be making the Type Selection process mandatory. Garrett asked if Sudhakar if he meant Type Selection to determine if it should be a replacement versus a rehabilitation? Sudhakar replied that any bridge coming into the HBP will now require a Type Selection to be completed. He noted that it used to be optional for local agencies. However, now they want to determine project costs early in the process with costs increasing. Mark Reno with Quincy added that this requirement is applicable to any project that did not have environmental clearance by the end of September 2021.

E. Statewide ACEC Committee: Garrett Dekker (0:25:55)

Garrett informed the group that Caltrans is working on standard contracts for full-service construction contracts allowing the districts the option to hire CM firms to fill the RE position. He also noted that DPAC will standardize their contracts and increase trainings this year and next to go over the new procedures required by the new submittal requirements. DPAC will also be providing some leniency until they're comfortable that everyone is fully aware of the new procedures when determining that a submittal is non-responsive. Caltrans is also looking to bring the A&E industry onboard with the Clean California and new broadband requirements. A total of 8,100 miles have been identified in the state where Caltrans can build out the infrastructure network for this purpose and 16 projects have already been approved. Lastly, the statewide committee is still trying to digest the infrastructure bill and how it might affect funding in the state.

F. Construction Management and Inspection Updates: Rich Foley / Hank Doll /Jon Rohrer (0:28:12)

Rich Foley announced that they are preparing for Winter Training which will be on trenching and shoring and it will be done again virtually. He also announced that they are working with DPAC to make some amendments to their contracts with regard to experience levels of structure representative and assistant structure representatives due to a lack of experienced workforce.

Jon Rohrer added that the ACI Concrete Field-Testing Technician Certification requirement discussed in the last meeting which proved problematic as certification classes were not being held due to the pandemic has started to ease at least within the state of California. For new contracts in early 2022, he expects to be fully compliant. Hank Doll with TRC stated that they are still experiencing difficulties getting their staff certified and has heard the same from many smaller firms. They also noted that the cost burden on smaller businesses is quite high and suggested a relief from Caltrans.

Sudhakar asked Rich who the contact is for Winter Training this year. Rich stated that this year Jeff Abercrombie is the sponsor.

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III. Sub-committees

A. ABC (Accelerated Bridge Construction): Garrett Dekker (0:33:47)

Garrett stated that there was going to be a FHWA/Caltrans ABC exchange in person in Irvine on November 3rd and 4th, but it has since been postponed due to the stay-at-home orders and it has since been postponed until May 2022. He also noted that our yearly ABC Workshop with ACEC and Caltrans was postponed to next year. Lastly, the ABC Manual which has been out since July was presented at the Western Bridge Seminar back in September and will also be the topic for the keynote presentation at the 2021 National ABC Conference this December.

B. CMGC/Design-Build (Lessons Learned): Mark Reno/Sudhakar Vatti (0:35:23)

Mark Reno with Quincy reminded the group that a couple years ago in Southern California a design-build workshop was held between consultants and Caltrans presentations discussing best practices and lessons learned. There has since been a request to do this again, but this time focus on the CMGC side of things. At this time, the workshop is tentatively scheduled for the second quarter of 2022. It is unknown whether the event will be held in person or virtually. He requested that anyone with interesting CMGC projects or experiences reach out to he or Sudhakar. Mark to reach out to Elias Kurani, Dan Adams, Sudhakar, and Gudmund to setup an initial planning meeting with Caltrans in the next few weeks.

C. BIM (Building Information Model): Doug Dunrud/Bobby Zermeno

N/A

D. Technical Subcommittee: Jack Abcarius/Sudhakar Vatti (0:38:43)

1. Review of Draft STP 2.6 Hydraulic Design For Structures Over Waterways (to replace MTD 16-1) (0:39:25)

Jack Abcarius with NV5 stated that the review of STP 2.6 has been an ongoing item since October of 2019. Caltrans has issued Draft STP 2.6 and given us the opportunity to review. Jack stated that the current plan is for the previous Hydraulic Subcommittee to get together with Caltrans, likely virtually, to iron out a few items before the STP is officially issued.

No other technical questions have been received at this time. Jack reminded the group to reach out to him in the event that any questions arise.

Lance stated that Caltrans had previously submitted Draft STP 2.6 to ACEC for their review and to provide him comments that he would distribute to Caltrans Structures Hydraulics. Lance asked for the status of the compiled comments. Garrett stated that he was in the process of compiling and filtering the comments and would provide them to Lance early next week. Lance stated after receiving the comments he would setup the follow up meeting with Caltrans.

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Jack also asked the group when the 2021 Standard Plans and Specifications would be released. Shira stated the plan was to publish the documents in October 2022.

E. Education Training/Seminar/Webinar: Y. Nien Wang/ Lance Schrey (0:44:18)

1. CMGC Lessons Learned: Dan Adams (0:44:25)

Dan Adams with Caltrans covered some of the lessons learned from CMGC based on the 25 or so CMGC projects completed thus far. The following have been the primary takeaways:

- Bring on the CMGC contractor as early as possible much before Type Selection. This allows the contractor to build the project several times on paper before doing so in the field.
- The Caltrans team needs to be sure to include the contractor in the meetings and work as a team. They need to be open to innovative suggestions with a “yes, if” attitude instead of a “no, because” attitude.
- Avoid working in a bubble and simply sending out constructability reviews to the contractor.

Jack asked if the CMGC contracting method is limited to certain projects or agencies or can anyone do it? Dan stated that generally it’s reserved for larger projects because the effort required is significant. The smallest project he has seen it used on is roughly \$15 million, but it was technically challenging. He also didn’t think it was limited to certain agencies. Shira added that Caltrans has unlimited authority for CMGC. Therefore, the districts have the opportunity on Caltrans led projects to make a project a CMGC project. Mark added that local agencies have contract authority as of January of 2020 to use CMGC on projects as well.

2. Caltrans BIM Development Update Webinar: Y. Nien Wang (0:51:50)

Garrett stated that the only thing to report with respect to BIM, is Caltrans will be providing an update on their internal ongoing BIM efforts and how it will affect future design work at the next quarterly meeting. Nien corrected Garrett and stated that he is working with Elias and Nina who will be putting together an hour-long webinar to share with the industry in January or February of 2022. The webinar will be used by Caltrans to provide the industry an update on their internal BIM efforts. Nien encouraged the group to push themselves in 2022 to not let the trainings and webinars slip regardless of whether they are to be held in person or virtually and informed the group that 2021 would be his final year as a subcommittee chair. He suggested having the following training/workshop/webinar events in 2022: BIM Webinar in January or February; Winter Training in April; a Caltrans Structures Design led webinar on new technologies such as Grade 80 reinforcement; a Caltrans OSFP guideline updates webinar since some local agencies are using Caltrans guidelines; and finally the CMGC/Design Build workshop.

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Gudmund added that he agrees and supports Nien's suggested webinars and training events. He also suggested that the upcoming BIM webinar not be a one and done event but be turned into an annual or even biannual event since it will be a heavy lift over the next 3 to 5 years.

3. 2022 Winter Training Trenching and Shoring: Rich Foley (1:01:20)

Garrett asked Rich whether the 2022 Winter Training would follow the same format as the 2021 Winter Training. Rich stated that it wouldn't follow the same format entirely. He said there will be some take home modules but doesn't expect it to be as extensive as 2021. Garrett suggested we hold off until the first quarterly meeting of 2022 to discuss the format of the training further. Rich stated he would have a better idea for the format in a couple of weeks once they have had their first dry runs of the event.

IV. Discussion Items

1. Mash Compliant Temporary Rail Updates: Don Nguyen-Tan (1:03:04)

Don Nguyen-Tan, Caltrans DES Structure Design, and Kim Mori, Caltrans Acting Bridge Railing Specialist, presented Caltrans new temporary barrier rail standards which are to be immediately implemented.

Kim began the presentation by reminding the group that Caltrans is currently updating everything to comply with MASH standards and this includes temporary barrier railing. Temporary barrier railing is being updated to comply with MASH TL-3 requirements. The primary change associated with this is every temporary barrier rail system to come on board will have a minimum clear area width requirement. Minimum clear area width is the distance required behind (non-traffic face) of temporary barrier rail that must be maintained without obstructions; however, it can be occupied during contractor working hours. This requirement is intended to take into account dynamic deflection of the new barrier rail systems during vehicular impacts. Furthermore, the requirement is intended to take into account the zone of intrusion which is an offset behind the barrier to fixed vertical objects intended to prevent snagging on objects as vehicles lean upon impact. Currently there are two proprietary systems on the AML for temporary barrier, J-J Hooks and Zoneguard. There are also a couple in Caltrans queue awaiting approval. Lastly, there is a non-proprietary F-shaped barrier that will be coming in the future, but it was estimated to be over a year out.

Kim stated that the new Revised Standard Specification for temporary railing came into implementation on October 15th, 2021. She highlighted the Minimum Clear Area Width table in Section 12-3.20C(1) which provides requirements for four different barriers. She also informed the group that the original four bolt system previously used in combination with 20-foot segments of Type K temporary railing used along edges of deck was never crash tested. She also stated that while Caltrans will allow Type K temporary railing to continue to be used on projects advertised prior to December 31st, 2026, it will require a minimum clear area width of anywhere from 1 to 8 feet depending upon the height differential and its location relative

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to edges of deck and fixed objects such as falsework or other temporary supports. It was also pointed out that the option to install unanchored temporary railings adjacent to falsework members in Section 48-2.02B(4) was removed.

Kim stated the Revised Standard Specifications discussed above are intended to be implemented on all projects advertised after January 1st, 2022. However, there is an exception process for projects currently beyond environmental clearance that was developed based on the previous assumptions for the standard Type K temporary railing. The non-proprietary Type F-shape barrier will also become the replacement for Type K temporary railing, and it will be incorporated in future Caltrans Standard Plans. She also informed the group that each of the new systems will only be allowed to be staked in AC pavement or anchored in PCC. They will no longer be allowed to be on compacted soil.

Lastly, Kim reiterated that the biggest change is that temporary railing will no longer be allowed to be pinned right along an edge of deck as depicted on Caltrans Standard Plan T3A. The tightest temporary railing will be allowed to be pinned to an edge of deck is 2 feet when using an anchored J-J Hooks temporary rail. J-J Hooks also informed Caltrans that they will be manufacturing 450,000 feet of barrier each year. Zoneguard has not yet produced any of the temporary railing due to the steel shortage resulting from the pandemic.

Don presented the minimum clear area width table to the group and pointed out that the minimum distance between the barrier and an edge of deck is 2 feet if using J-J Hooks system. He presented the impacts resulting from these new requirements on a Caltrans project requiring staged construction and noted that it is now a “no go” in its current configuration which was designed using the previous Type K railing standards. He did note that there will be an exception process that will go through each of the districts. He also pointed out that two new systems have been added to the AML in the time since Caltrans had last given the presentation.

Garrett asked whether a reduced minimum clear width would be allowed for temporary railing used on roadways where the design speed did not necessitate a TL-3 barrier system? Kim stated that they will not be testing to any requirements lower than TL-3. She also noted that TL-2 systems are currently tested to TL-3 anyway.

Jack asked how long design exceptions will continue to be accepted since there are likely numerous projects that have been developed using the previous criteria and may not go into construction for years due to environmental, permitting, funding and other factors? Sudhakar stated that they are looking into this, and they counted approximately 200 bridges in their queue that would be affected. Mark noted that there are a lot of HBP projects sitting on the shelf without funding for construction that will be affected as well. Both Sudhakar and Don stated they understood and are experiencing the same issue.

Syed Kazmi with AECOM asked whether design exceptions will be considered for projects currently in the planning phase? Sudhakar recommended accommodating exceptions now

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if in the planning phase since exceptions will not be permitted after 2026. Gudmund added that he anticipates it will be very difficult to obtain exceptions for projects in the planning phase and encouraged everyone to use innovative techniques to maintain traffic such as temporary bridges and slide-ins.

Matt Burgard with Dewberry asked since the minimum clear area width requirement seems to depend on the lean of an impacting vehicle, what would the purposed clear width be to maintain a given distance along an edge of deck where there is nothing that the vehicle could snag? Kim responded that the clear width is also considering the dynamic deflection laterally as observed during crash testing.

Garrett asked whether the temporary barrier rail presentation would be provided to ACEC for distribution following this meeting? Both Sudhakar and Don confirmed that it would be provided.

2. Western Bridge Updates: Tom Ostrom (1:33:44)

Tom stated that the Western Bridge Seminar held back in September was very successful. He started off by thanking the consultant community for all the help and support in putting on the event. He also specifically thanked the sponsorship committee that was made up of ACEC members. The last Western Bridge Seminar held in Boise Idaho in 2019 had 433 participants while this year we had 610 participants. In fact, the number of DOT participants doubled relative to those in attendance in 2019. The number of consultant participants this year also saw an increase of approximately 15 percent over the 2019 level.

Tom stated they were able to determine that the conference was very successful based on the analytics that were gathered. For instance, 20 seminars had over 200 participants and some were over 500 participants. He also noted that they were able to add an additional day on the agenda to accommodate more speakers. The feedback received from post event surveying was very positive and the primary theme was the quality of the presentations was outstanding. Some of the areas for improvement included some of the virtual events were a little haphazard and difficult to navigate. The 2023 Western Bridge Seminar will be in Arizona, likely in the Phoenix metro area.

Nien asked if there was a way to share the knowledge disseminated during Western Bridge Seminar with the community? Tom responded stating that registered participants were able to download the sessions. He also noted that all sessions will be posted online in the near future.

Lastly, Garrett stated that Bobby Zermeno will be taking over as the consultant co-chair in 2022 and Hank Doll will be taking over as recording secretary. Sudhakar stated that the first quarterly meeting will be held on February 4th, and it will be held virtually.

Meeting adjourned 1:46:40

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V. 2021 Meeting Schedule

February 4, 2022(1st Friday)
May 13, 2022 (2nd Friday)

August 19, 2022 (3rd Friday)
November 18, 2022 (3rd Friday)

VI. Distribution:

A. Caltrans:

Tom Ostrom	Caltrans DES	Erol Kaslan	Caltrans SMI
Ruth Fernandes	Caltrans S&ES	Shira Rajendra	Caltrans PPM & OE
Rich Foley	Caltrans SC	Sudhakar Vatti	Caltrans OSFP/SLA
Douglas Brittsan	Caltrans GS	Sid Pedaballi	Caltrans OPD & SCM
Tim Greutert	Caltrans METS	Robert Peterson	Caltrans HQ/LA
Gudmund Setberg	Caltrans SD	John Lammers	Caltrans SC

B. ACEC Regular Committee Members:

Member 1: Districts 1,2,3,9,10:	Mark Reno	Quincy Engineering
Member 2: District 11:	Jack Abcarius	NV5
Member 3: District 4:	Garrett Dekker	Moffatt & Nichol
Member 4: Districts 7,8,12:	Y. Nien Wang	HNTB
Member 5: Districts 5,6:	Bobby Zermeno	Cornerstone Structural Engineering
Member 6 (CM&I): Districts 1-6 and 9-10	Hank Doll, TRC	
Member 7 (CM&I): Districts 7-8 and 11-12	Jon Rohrer, HDR	

VII. Virtual Attendees

Rajendra, Shira	Caltrans - PPM & OE
Keady, Kevin	Caltrans - SP&I
Vatti, Sudhakar	Caltrans - OSFP/SLA
Schrey, Lance	Caltrans - OSFP/SLA
Pedaballi, Siddareddy	Caltrans – PPM
Francis, Mike	Caltrans – SC
Setberg, Gudmund	Caltrans - SD
Kaslan, Erol	Caltrans - SM
Chou, Andy	Caltrans – HQ/LA
Greuter, Timothy	Caltrans – METS
Seifert, Steven	Caltrans - METS
Han, Seungwoon	Caltrans
Burlaza, Chris	Caltrans – Transportation
Wang, Y. Nien	HNTB
Amini, Moe	HNTB
Van Duyn, Michael	HNTB
Zermeno, Bobby	Cornerstone Engineering
Dekker, Garrett	Moffatt & Nichol

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Chu, Wellington	HDR
Rohrer, Jon	HDR
Wang, Jackie	HDR
Antonucci, Gary	Moffatt & Nichol
Rende, Gregory	Rende Consulting Group, Inc.
Thurairajah, Alaheswaran	Earth Mechanics, Inc.
Reno, Mark	Quincy Engineering
Cambell, Richard	Stantec
Ashley, Mark	T.Y. Lin International
Fish, Bob	T.Y. Lin International
Avila, Cathy	Avila & Associates
Consolacion, Benjamin	WSP
Dunrud, Doug	WSP
Newton, Barton	WSP
Seyedmadani, Ali	WSP
Griggs, Rosa	Dokken Engineering
Hickey, Jason	Mark Thomas & Co.
Kitzmann, David	WRECO
Koo, Wei	WKE, Inc.
Moran, Eric	Biggs Cardoso
Osterkamp, Tim	Dokken Engineering
Stott, Robert	Caltrop- a TRC Company
Thakare, Jay	Prescience USA
Thomure, Jeff	Jacobs
Yu, Ming-Chen (M.C.)	AMC Consulting Engineers
Guerra, Santiago	
Greg, Lyn	

TEMPORARY BARRIER UPDATE

NOVEMBER 19, 2021

- Based on MASH TL-3 Crash Test 3-11 Results and modeling
- Each system will have its own Minimum Clear Area Width Requirements
- 2 proprietary systems currently approved and on the Authorized Material List
- One concrete barrier system and one steel barrier system in the que for the HSFNPC for approval
- Non-proprietary F-shape temporary concrete barrier coming in the future

1

New Terminology

clear area: Minimum width through the length of the barrier system that must be maintained clear of obstructions, objects, and work resources during non-working hours. The width is measured perpendicular from the non-traffic side toe.

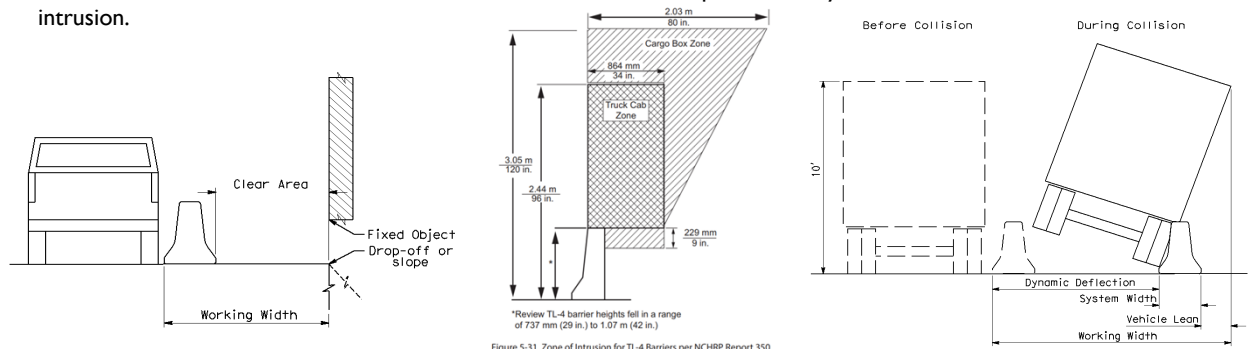
dynamic deflection: Maximum lateral dynamic displacement of any point of the traffic face of the barrier system.

working width: The distance between the traffic face of the barrier system before the impact and the maximum lateral position of any major part of the system or vehicle after the impact.

zone of intrusion: The region measured above and behind the face of a barrier system where an impacting vehicle or any major part of the system may extend during an impact.

SW: System Width.

vehicle roll allowance/vehicle lean: the lateral distance a vehicle protrudes beyond the deflected barrier into zone of intrusion.



2

Updates to Temporary Railing

- Temporary Type K Rail
 - Allowed until December 31, 2026
 - With revised Clear Area Widths
 - Original 4 bolt/per segment on bridge deck never crash tested (MTD 14-19 & Std Pln T3A, Note 3)
- **Revised Standard Specifications (RSS)**
- 12-3.20 TEMPORARY BARRIER SYSTEMS**
 - Implemented on October 15, 2021
 - Clear Area Widths for 2 approved temporary rail systems and revised widths for Type K
 - Falsework footings can be 2' less than the fixed object, falsework member or temporary supports
 - No vehicle lean considered for falsework footings below top of the temporary barrier

Barrier	Configuration	Minimum Clear Area Width			
		Height differentials 3 feet or less (ft)	Height differentials greater than 3 ft up to 8 feet (ft)	Edge of deck or height differentials greater than 8 feet (ft)	Fixed objects, falsework members or temporary supports* (ft)
12'-6" temporary concrete barrier with "J" hooks	Freestanding	3	4	8	7
	3 stakes per segment traffic side	1	1	2	3
	2 anchor bolts per segment traffic side	1	1	2	3
20-foot temporary concrete barrier with "J" hooks	Freestanding	3	4	8	7
	4 stakes per segment traffic side	1	1	2	3
	3 anchor bolts per segment traffic side	1	1	2	3
50-foot temporary steel barrier	Staked or anchored at both ends only	6	7	9	10
	Staked or anchored every 250 feet	5	6	8	9
	Staked or anchored every 33 feet	1	1	3	4
20-foot Type K temporary railing	Freestanding	2	3	8	7
	2 stakes or 2 anchor bolts per segment traffic side	1	1	3	4
	4 stakes or 4 anchor bolts per segment	N/A	N/A	3	3

*The minimum clear area width to a falsework or temporary support footing can be 2 feet less than the clear area width shown. Measure clear area width to the footing edge closest to traffic.

3

- Affects Standard Specifications Section 48-2.02B(4) Falsework: Special Locations table:

Falsework member	Clearance	
	To railing members, barriers, and anchored temporary railings	To unanchored temporary railings
Footings	0'-3"	2'-0"
Piles	1'-0"	2'-9"
Other members	2'-0"	2'-9"

Current

Minimum Clear Area Width	
Falsework member	To permanent railing members and barriers
Footings	0'-3"
Piles	2'-6"
Other members	2'-6"

New

- Temporary railings clearance will be in section 12-3.20
- Other RSS related to temporary barrier implemented October 15, 2021
 - RSS 1-1.01 General
 - RSS 12-4.03C(2) Falsework Openings: Temporary Railing
 - RSS 48-2.03E Temporary Structures: Falsework Lighting
 - RSS 48-6.03A Temporary Structures: Construction: General
 - RSS 83-3 Concrete Barriers

4

- Project exceptions
 - Will be given to constricted locations where there is limited space available for falsework or temporary supports
 - Based on crash test data at 3” increments (vs. one-foot increments in white paper and RSS 12-3.20C)
 - Per email the Div. of Safety Programs/Office Safety Systems and Devices/Traffic Safety Devices Branch currently has draft plans to make implementation of the RSS mandatory for any project advertising after **1/1/2022**.
 - Exception process that will impact current projects is currently being developed by Division of Safety Programs
- Future Temporary Railing
 - A couple of barriers are coming in the near future for the Highway Safety Features New Products Committee (HSFNPC) to be voted on. If they are approved, they will be put on the Authorized Material List (AML) and will be added to the RSS Section 12-3.20.
 - Caltrans is working with a research facility to crash test a non-proprietary F-shape concrete temporary rail to replace the Type K rail.
 - The F-shape test schedule is TBD
- New Bid Items
 - 120320 Temporary Barrier System
 - 120325 Temporary Barrier System (Staked)
 - 120340 Temporary Barrier System (Anchored)

5

MINIMUM CLEAR AREA WIDTH - TEMPORARY BARRIER ON BRIDGE/NEAR FALSEWORK				
Barrier	Anchorage	Edge of Deck	Falsework	
			Footings	Fixed objects, falsework members or temporary supports
JJ Hooks 12.5' segments SW = 24"	Freestanding	8'	5'	7'
	2 bolts to concrete on traffic side	2'	1'	3'
	3 stakes to AC on traffic side	2'	1'	3'
JJ Hooks 20' segments SW = 24"	Freestanding	8'	5'	7'
	3 bolts to concrete on traffic side	2'	1'	3'
	4 stakes to AC on traffic side	2'	1'	3'
Zoneguard 50' segments SW = 28"	Staked or anchored at both ends only	9'	8'	10'
	Anchored Every 250 feet	8'	7'	9'
	Anchored Every 33.33 feet	3'	2'	4'
20' Type K SW = 24" (RSS 12-3.20)	Freestanding	8'	5'	7'
	2 stakes or 2 anchor bolts per segment on traffic side	3'	2'	4'
	4 stakes or 4 anchor bolts per segment	3'	1'	3'
20' Type K SW = 24" (OLD – being replaced)	Freestanding	2'	2'	2'-9"
	2 bolts to concrete on traffic side		0'-3"	Piles 1'-0"/Other 2'-0"
	2 Threaded Rods each side (total 4)	< 2'	0'-3"	
	2 stakes on traffic side		0'-3"	Piles 1'-0"/Other 2'-0"

6

Dist	COUNTY	ROUTE	POST MILE
04	Ala	84	17.2±

ASSUMPTIONS:

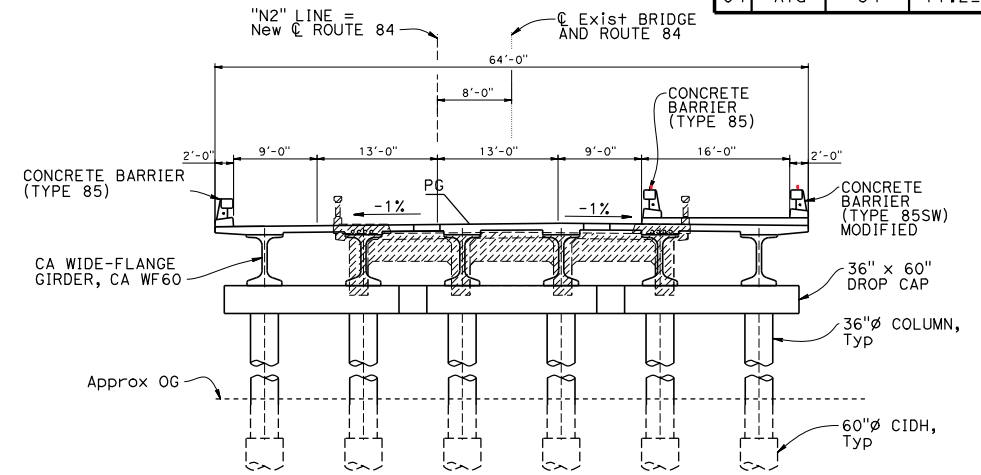
- Two 11'-0" lanes provided during construction. See "SHEET 2" and "SHEET 3" for details.
- Sidewalk will not be provided during Stage 1 Construction.
- One sidewalk provided during Stage 2 Construction.
- Two sidewalks provided during Stage 3 Construction.
- Utilities under the existing sidewalk need to be relocated temporarily by District prior to new bridge construction.
- Required temporary water diversion to be determined by the District.
- Temporary platforms are require to access the creek bed.

NOTE:

For Construction Staging, see "SHEET 2" and "SHEET 3"

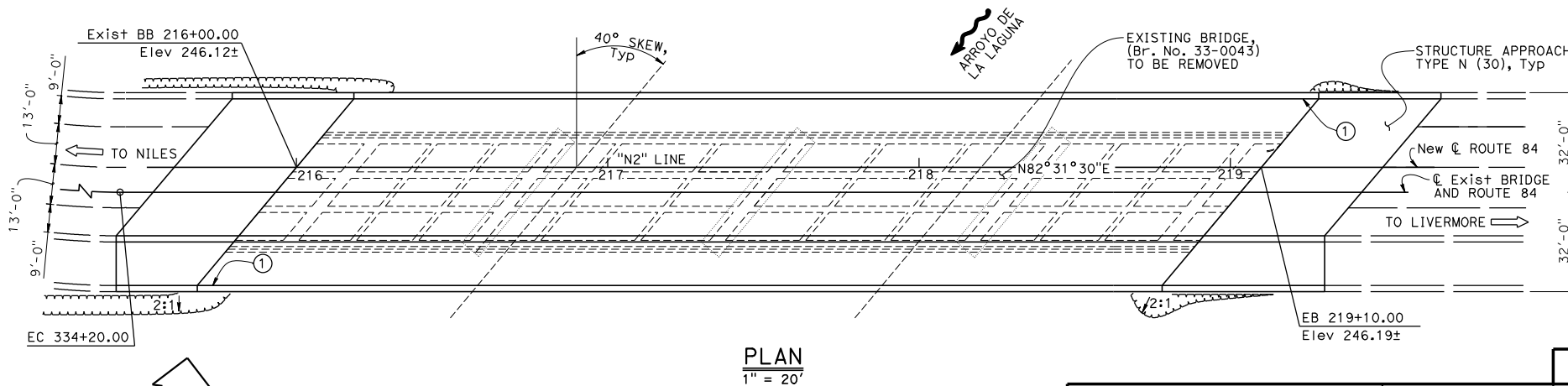
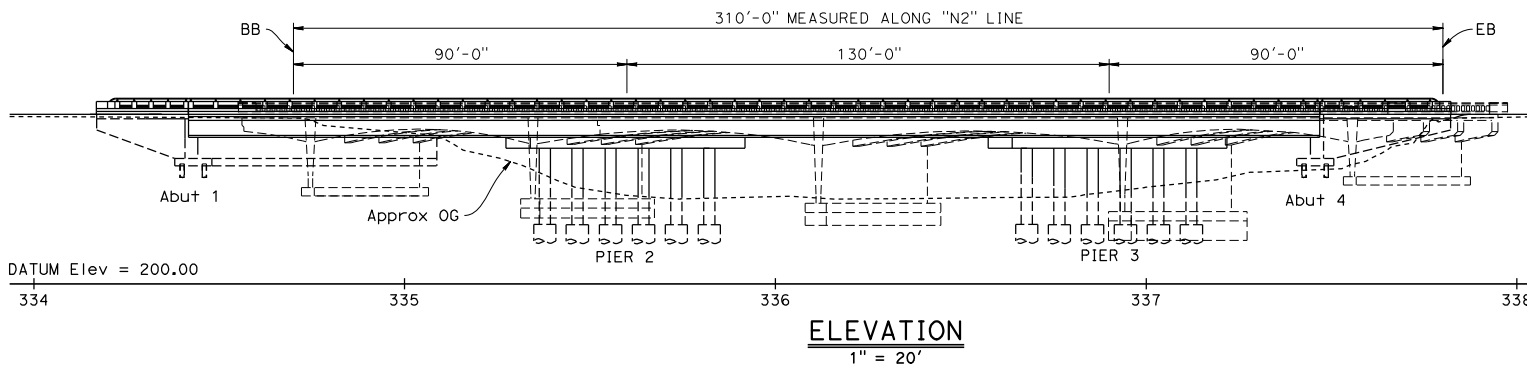
LEGEND:

- Existing structure
- ▨ Limits of Bridge removal
- ① Paint "ARROYO DE LA LAGUNA BRIDGE Br. No. 33-0043" Year Constructed



TYPICAL SECTION
1/8" = 1'-0"

DATE OF ESTIMATE	_____
BRIDGE REMOVAL	= _____
STRUCTURE DEPTH	= _____
LENGTH	= _____
WIDTH	= _____
AREA	= _____
COST /ft ² INCLUDING TRO, MOBILIZATION & 25% CONTINGENCY	= _____
TOTAL COST	= _____



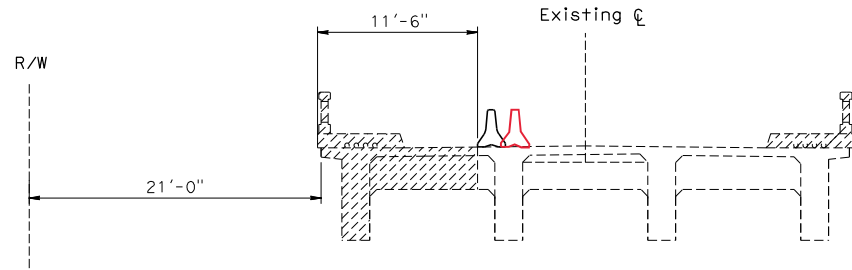
ALTERNATIVE 17		SHEET	OF
PLANNING STUDY		1	3
ARROYO DE LA LAGUNA BRIDGE			
UNIT:	BRIDGE No.:		
CONTRACT No.:	PROJECT No. & PHASE:		

DESIGNED BY	DATE
DRAWN BY	DATE
CHECKED BY	DATE
APPROVED	DATE

STRUCTURE DESIGN
DESIGN BRANCH

Dist	COUNTY	ROUTE	POST MILE
04	Ala	84	17.2±

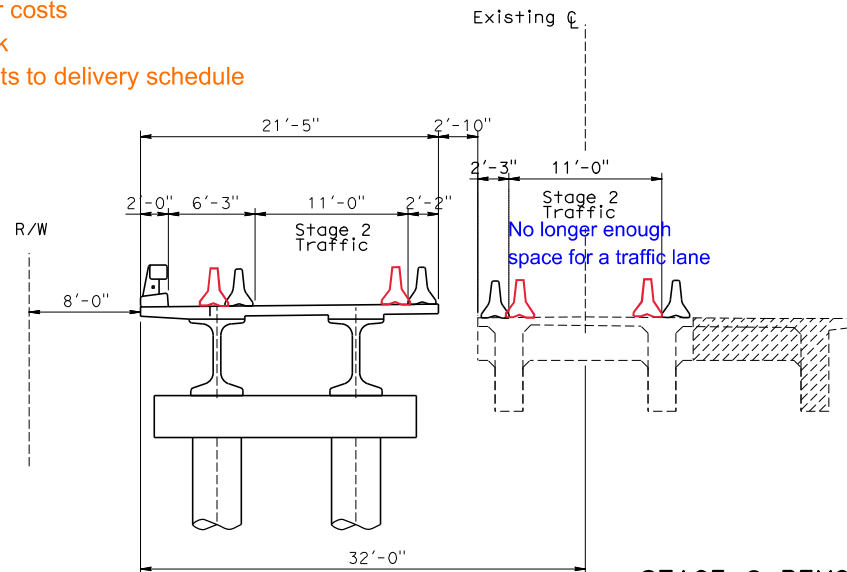
LEGEND:
 - - - - Existing structure
 ▨ Limits of Bridge removal



Issues with revisions:

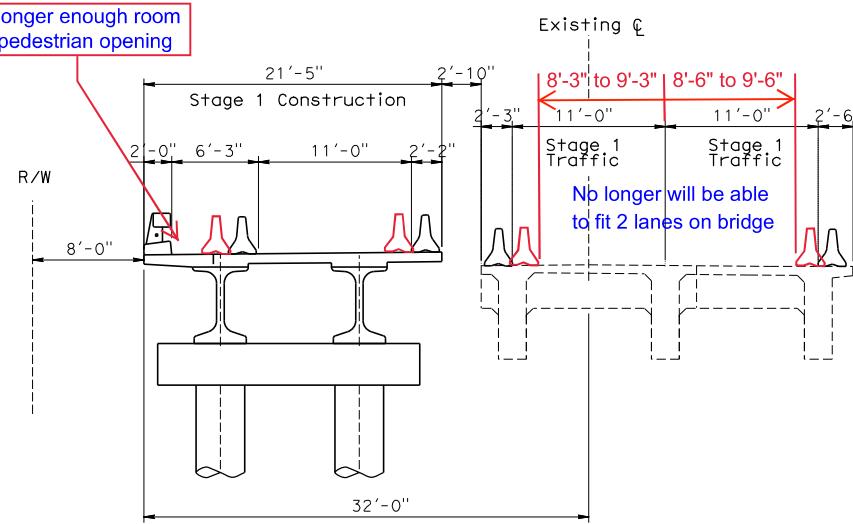
- staging plan will no longer work
- environmental document locked in footprint
- potentially extend staging, push to 2 season
- not allowed to go wider on either side
- higher costs
- rework
- impacts to delivery schedule

STAGE 1 REMOVAL
 $\frac{3}{16}'' = 1'-0''$



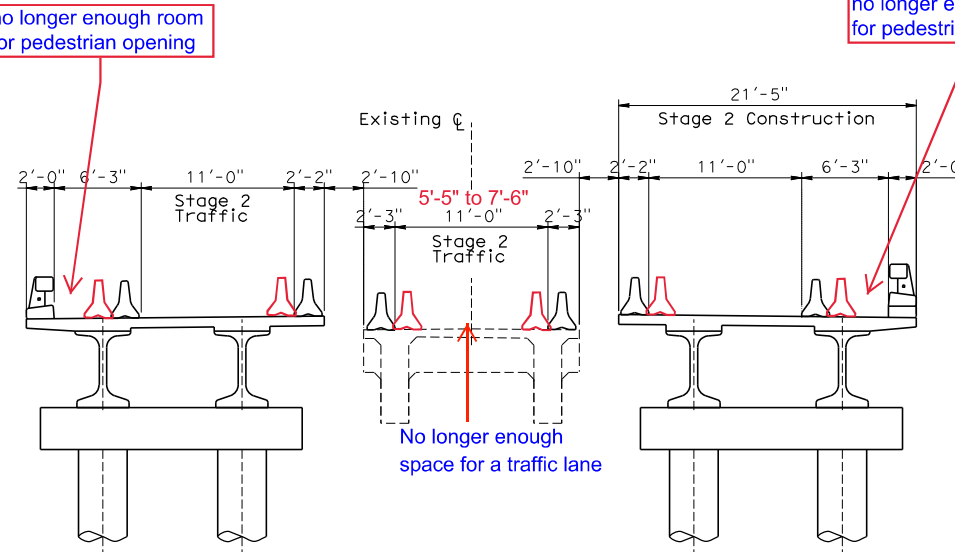
STAGE 2 REMOVAL
 $\frac{3}{16}'' = 1'-0''$

no longer enough room for pedestrian opening



STAGE 1 CONSTRUCTION
 $\frac{3}{16}'' = 1'-0''$

no longer enough room for pedestrian opening



STAGE 2 CONSTRUCTION
 $\frac{3}{16}'' = 1'-0''$

no longer enough room for pedestrian opening

ALTERNATIVE 17		SHEET	OF
		2	3
PLANNING STUDY			
ARROYO DE LA LAGUNA BRIDGE			
UNIT:	BRIDGE No.:		
CONTRACT No.:	PROJECT No. & PHASE:		

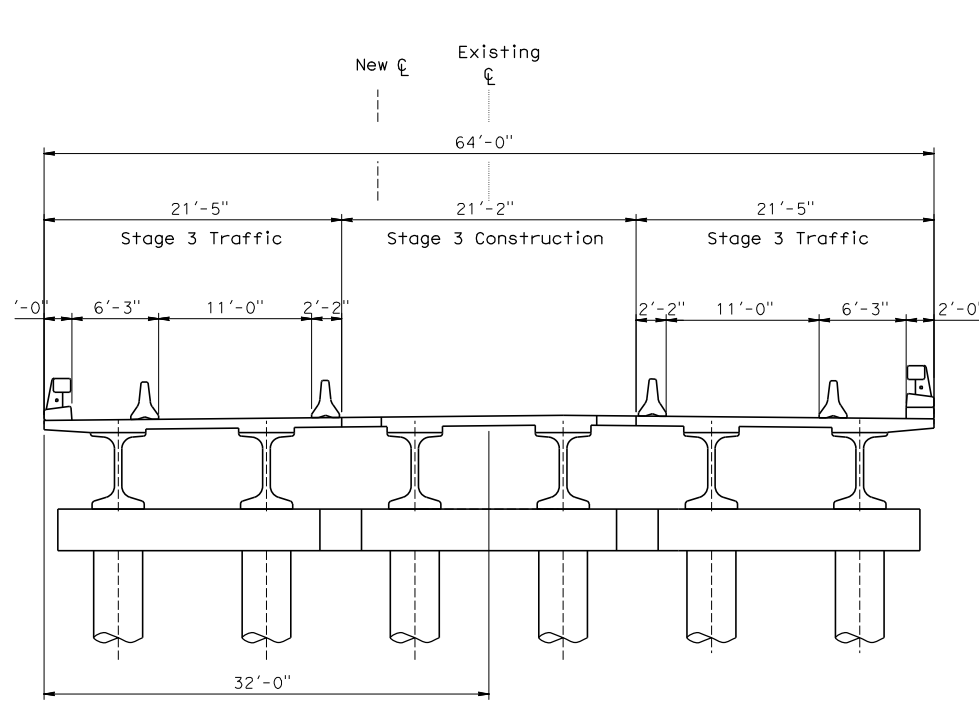
DESIGNED BY	DATE
DRAWN BY	DATE
CHECKED BY	DATE
APPROVED	DATE

STRUCTURE DESIGN
DESIGN BRANCH

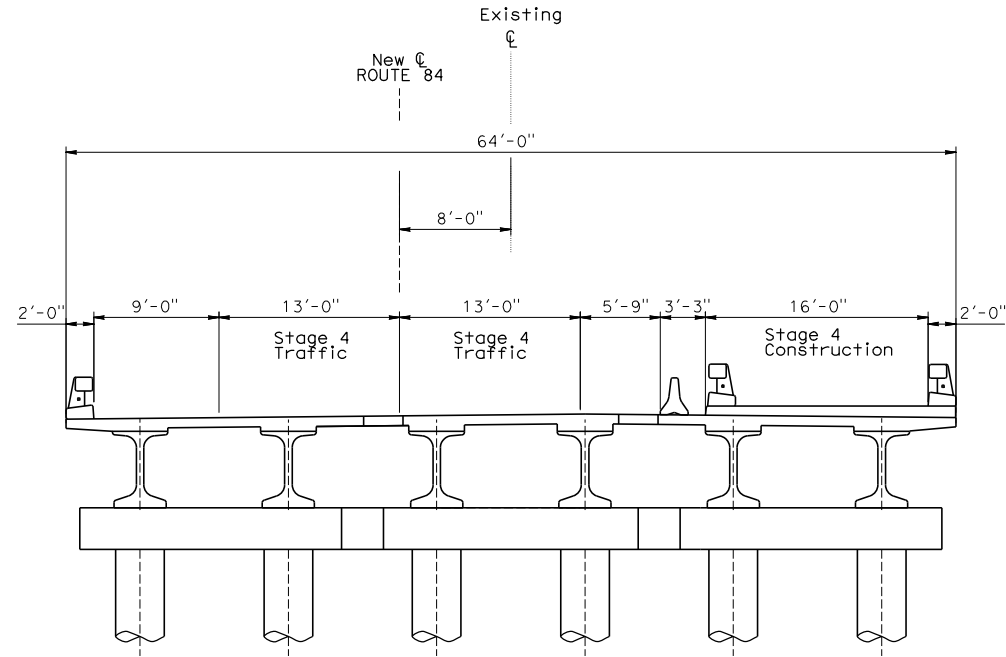
Dist	COUNTY	ROUTE	POST MILE
04	Ala	84	17.2±

LEGEND:

- Existing structure
- ▨▨▨▨ Limits of Bridge removal



STAGE 3 CONSTRUCTION
 $\frac{3}{16}'' = 1'-0''$



STAGE 4 CONSTRUCTION
 $\frac{3}{16}'' = 1'-0''$

DESIGNED BY	DATE
DRAWN BY	DATE
CHECKED BY	DATE
APPROVED	DATE

STRUCTURE DESIGN
DESIGN BRANCH

ALTERNATIVE 17		SHEET	OF
		3	3
PLANNING STUDY			
ARROYO DE LA LAGUNA BRIDGE			
UNIT:	BRIDGE No.:		
CONTRACT No.:	PROJECT No. & PHASE:		

Activity ID	Activity Name	Original	Planned	Start	Finish	2024												2025												2026												2027											
						Jun	Jul	Aug	S	Oct	N	Dec	Jan	F	Mar	Apr	M	Jun	Jul	Aug	S	Oct	N	D	Jan	F	Mar	Apr	M	Jun	Jul	A	S	Oct	N	Dec	Jan	F	Mar	Apr	M	Jun	Jul	Aug	S								
04-0J550-2	04-1400-0012 Arroyo De La Laguna Bridg	648	648	20-May-24	11-Nov-26	09-Sep-24, 04-0J550-2.1 Preconstruction																																															
04-0J550-2.1 Preconstruction		81	81	20-May-24	09-Sep-24	09-Sep-24, 04-0J550-2.1 Preconstruction																																															
1000	Contract Approval - 5/19/2024	1	1	20-May-24	20-May-24	Contract Approval - 5/19/2024																																															
1010	Submittal Review	20	20	21-May-24	17-Jun-24	Submittal Review																																															
1020	Procurement	60	60	18-Jun-24	09-Sep-24	Procurement																																															
1030	Mobilization	5	5	18-Jun-24	24-Jun-24	Mobilization																																															
04-0J550-2.2 Construction		638	638	03-Jun-24	11-Nov-26	11-Nov-26, 04-0J550-2.2 Construction																																															
1440	Channel Work Window (6/1-10/15)	97	97	03-Jun-24	15-Oct-24	Channel Work Window (6/1-10/15)																																															
1450	Channel Work Window (6/1-10/15)	98	98	02-Jun-24	15-Oct-24	Channel Work Window (6/1-10/15)																																															
1460	Channel Work Window (6/1-10/15)	99	99	01-Jun-24	15-Oct-24	Channel Work Window (6/1-10/15)																																															
04-0J550-2.2.1 Stage 1 (21'-5")		117	117	25-Jun-24	04-Dec-24	04-Dec-24, 04-0J550-2.2.1 Stage 1 (21'-5")																																															
1040	K-Rail and construct Access (gravel pad)	3	3	25-Jun-24	27-Jun-24	K-Rail and construct Access (gravel pad)																																															
A1050	Install Creek Diversion (see Roadway)	5	5	28-Jun-24	04-Jul-24	Install Creek Diversion (see Roadway)																																															
1060	Install Protective cover over channel	3	3	05-Jul-24	09-Jul-24	Install Protective cover over channel																																															
1065	Remove Existing Bridge and Shoring @ Abuts	15	15	10-Jul-24	30-Jul-24	Remove Existing Bridge and Shoring @ Abuts																																															
A1068	Abut Excavation	2	2	31-Jul-24	01-Aug-24	Abut Excavation																																															
1070	but 1 - 24" CIDH Piles (4 piles @ 80 ft each)	4	4	02-Aug-24	07-Aug-24	Abut 1 - 24" CIDH Piles (4 piles @ 80 ft each)																																															
1075	Gamma-Gamma Testing-Pile Acceptance Delay	15	15	08-Aug-24	28-Aug-24	Gamma-Gamma Testing-Pile Acceptance Delay																																															
1080	but 1 - Footing and Stem FRP	7	7	29-Aug-24	06-Sep-24	Abut 1 - Footing and Stem FRP																																															
1090	but 4- 24" CIDH Piles @ Abut 1 (4 piles @ 80 ft each)	4	4	08-Aug-24	13-Aug-24	Abut 4 - 24" CIDH Piles @ Abut 1 (4 piles @ 80 ft each)																																															
1095	Gamma-Gamma Testing - Pile Acceptance Delay	15	15	14-Aug-24	03-Sep-24	Gamma-Gamma Testing - Pile Acceptance Delay																																															
1100	but 4 - Footing and Stem FRP	7	7	04-Sep-24	12-Sep-24	Abut 4 - Footing and Stem FRP																																															
1110	Pier 2, 3- 60" CIDH Piles (4 @ 80 ft)	10	10	14-Aug-24	27-Aug-24	Pier 2, 3- 60" CIDH Piles (4 @ 80 ft)																																															
1115	Gamma-Gamma Testing - Pile Acceptance Delay	15	15	28-Aug-24	17-Sep-24	Gamma-Gamma Testing - Pile Acceptance Delay																																															
1120	Pier 2, 3 - Columns (4 cols) / Drop Cap	15	15	18-Sep-24	08-Oct-24	Pier 2, 3 - Columns (4 cols) / Drop Cap																																															
1130	Erect Girders (total 4)	1	1	09-Oct-24	09-Oct-24	Erect Girders (total 4)																																															
1135	Structure Backfill	3	3	09-Oct-24	11-Oct-24	Structure Backfill																																															
A1140	Deck FRP + Cure (Deck Area 6700 SQFT)	34	34	10-Oct-24	26-Nov-24	Deck FRP + Cure (Deck Area 6700 SQFT)																																															
1150	Concrete Barrier (Type 85) (310 LF)	3	3	27-Nov-24	29-Nov-24	Concrete Barrier (Type 85) (310 LF)																																															
1160	pproach Slab/ Joint Seal	2	2	02-Dec-24	03-Dec-24	Approach Slab/ Joint Seal																																															
A1170	Remove protective cover over channel by Oct 1st	2	2	14-Oct-24	15-Oct-24	Remove protective cover over channel by Oct 1st																																															
1180	Switch K-rail and Traffic for Stage 2	1	1	04-Dec-24	04-Dec-24	Switch K-rail and Traffic for Stage 2																																															
04-0J550-2.2.2 Stage 2 (21'-5")		110	110	02-Jun-25	31-Oct-25	31-Oct-25, 04-0J550-2.2.2 Stage 2 (21'-5")																																															
1470	K-Rail	1	1	02-Jun-25	02-Jun-25	K-Rail																																															
1800	Install Protective cover over channel	3	3	03-Jun-25	05-Jun-25	Install Protective cover over channel																																															
1810	Remove Existing Bridge and Shoring @ Abuts	15	15	06-Jun-25	26-Jun-25	Remove Existing Bridge and Shoring @ Abuts																																															
1820	but Excavation	2	2	27-Jun-25	30-Jun-25	Abut Excavation																																															
1830	but 1 - 24" CIDH Piles (4 piles @ 80 ft each)	4	4	01-Jul-25	04-Jul-25	Abut 1 - 24" CIDH Piles (4 piles @ 80 ft each)																																															
1840	Gamma-Gamma Testing-Pile Acceptance Delay	15	15	07-Jul-25	25-Jul-25	Gamma-Gamma Testing-Pile Acceptance Delay																																															
1850	but 1 - Footing and Stem FRP	7	7	28-Jul-25	05-Aug-25	Abut 1 - Footing and Stem FRP																																															
1860	but 4- 24" CIDH Piles @ Abut 1 (4 piles @ 80 ft each)	4	4	07-Jul-25	10-Jul-25	Abut 4 - 24" CIDH Piles @ Abut 1 (4 piles @ 80 ft each)																																															
1870	Gamma-Gamma Testing - Pile Acceptance Delay	15	15	11-Jul-25	31-Jul-25	Gamma-Gamma Testing - Pile Acceptance Delay																																															
1880	but 4 - Footing and Stem FRP	7	7	01-Aug-25	11-Aug-25	Abut 4 - Footing and Stem FRP																																															
1890	Pier 2, 3- 60" CIDH Piles (4 @ 80 ft)	10	10	11-Jul-25	24-Jul-25	Pier 2, 3- 60" CIDH Piles (4 @ 80 ft)																																															
1900	Gamma-Gamma Testing - Pile Acceptance Delay	15	15	25-Jul-25	14-Aug-25	Gamma-Gamma Testing - Pile Acceptance Delay																																															
1910	Pier 2, 3 - Columns (4 cols) / Drop Cap	15	15	15-Aug-25	04-Sep-25	Pier 2, 3 - Columns (4 cols) / Drop Cap																																															

█ Actual Level of Effort
 █ Remaining Work
 █ Critical Remaining Work
 ◆ Milestone
 ▶ summary

