



CALIFORNIA BRIDGE ENGINEERS SEMINAR

ADVANCING BRIDGE ENGINEERING THROUGH INNOVATION



CABES 2026

Presentation 7 - CMGC - Lessons Learned From the Yankee Jims Bridge Project



California Bridge Engineers Seminar

CMGC - Lessons Learned from the Yankee Jims Bridge Project

Kevin Ordway, PE - Placer County Project Manager
Matt Vaggione, PE, SE - Consor Principal Engineer



Agenda

- Why The Project
- Why CMGC
- Examples of Collaboration
- Constructability Review
- Leason Learned
- Conclusions





Project Team

Design Team



Owner



CMGC



ICE



Project Sponsors



CM





Structural Capacity of Existing Bridge

- The existing bridge has a load limit of 3 tons
- Stiffening truss is fractured in multiple locations and has been deformed

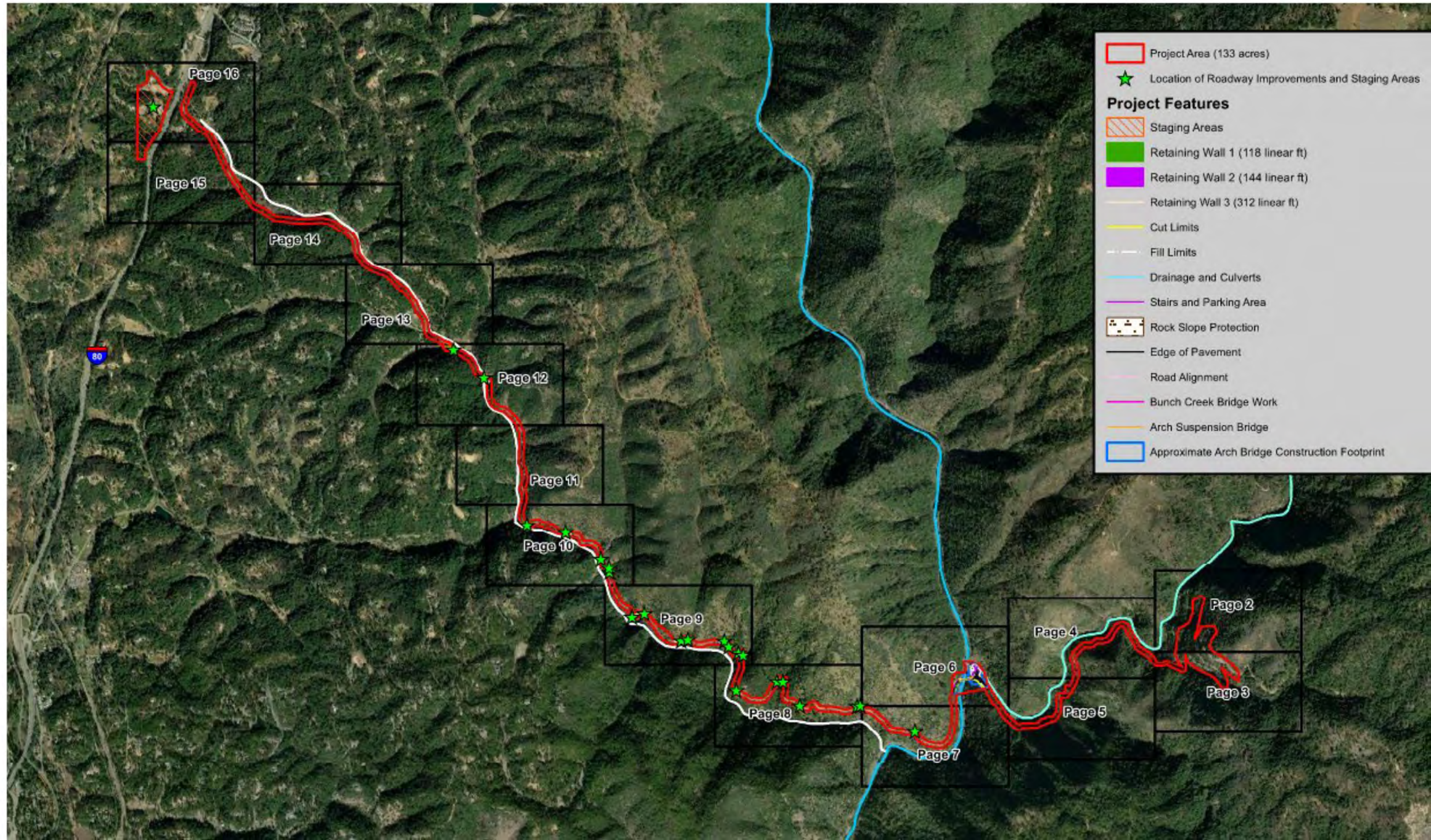






Access

- Limited Access
- 3 Mile Access Road





Access

- Primitive road from the 1800s
- Stacked rock walls
- Near vertical cliffs
- Numerous sharp curves





Environmentally Sensitive Area

Within the project area, the North Fork American River is eligible for consideration as Wild and Scenic



Sierra Nevada Foothill
Yellow Legged Frog
are present



Timing of Procurement

County brought CMGC contractor on board prior to the 30% design phase.

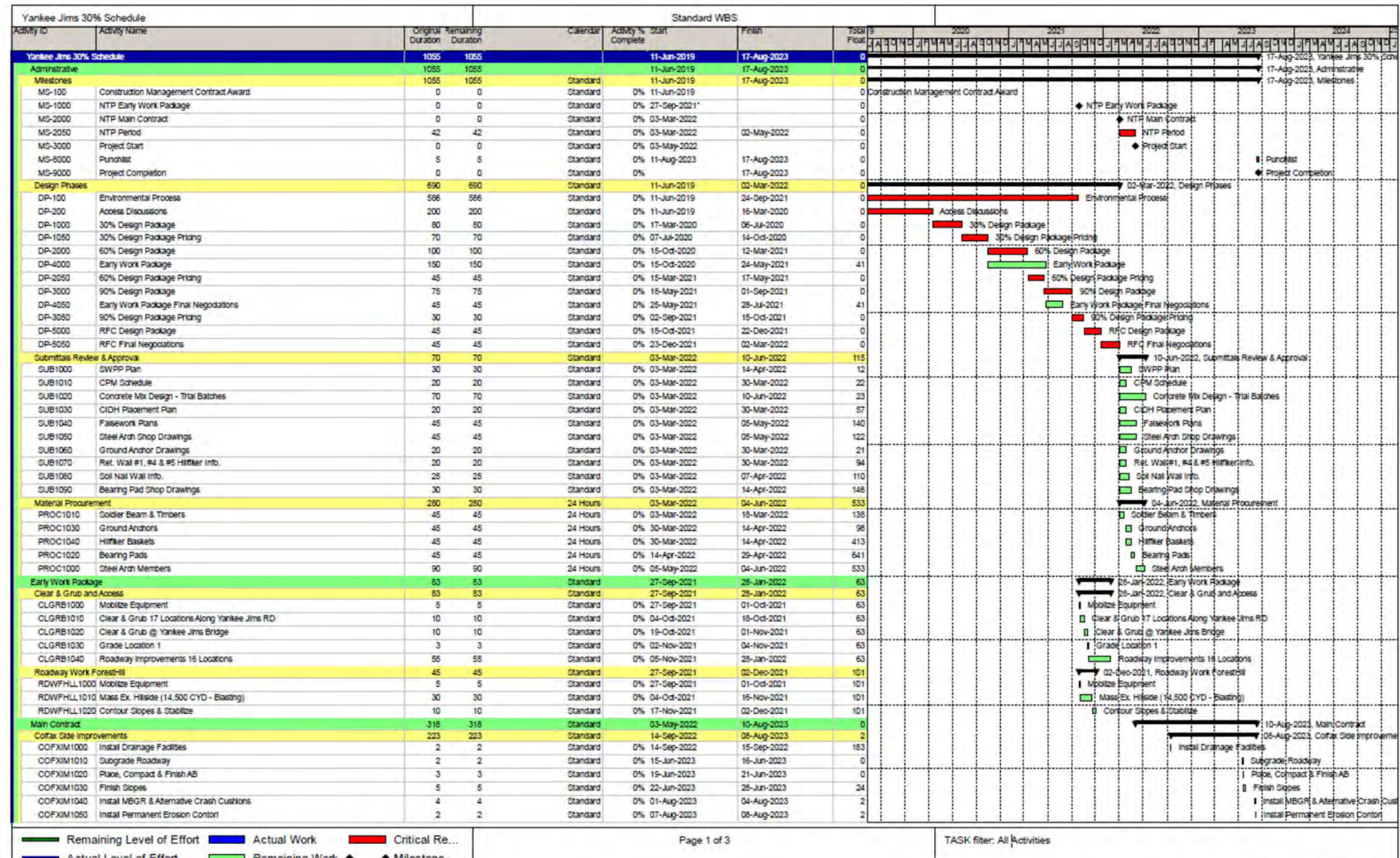
PROS

- CM helped to define and reduce environmental impacts
- Early constructability reviews as preliminary design was developed
- Open dialogue for entire design team with more time to develop relationships
- Provided construction equipment loads along with means and methods

CONS

- CM is waiting for long periods of time as the environmental process grinds on
- Due to length of contract, staff changes occur and staff costs increase
- When approach changes, need to avoid blame game and stay collaborative
- Price changes drastically between Preliminary and 65% Design as details are developed

Construction Schedule



Risk Register and Bid Assumptions

- Critical Documents for Assigning/Resolving Risk and Defining the Construction Contract

RISK REGISTER			Project Name:			Yankee Jim's Road Bridge Replacement Project			Owner	Placer County	Project Manager	Kevin Orway													
Risk Identification									Risk Assessment													Risk Response			
Status	ID #	Category	Title	Risk Statement	Current status/assumptions	Probability		Cost Impact (\$)				Time Impact (days)				Rationale	Strategy	Response Actions	Risk Owner	Updated					
						Low	High	Low	Most likely	High	Probable	Low	Most likely	High	Probable										
Active	PC-1	Construction	Caltrans Rejects Good Faith Effort (GFE) for DBE participation requirement.	Penalties or Fees assessed by Caltrans/PHVA because GFE is determined inadequate by Caltrans. DBE commitment of 4.91% or \$2,343,640.07 do not meet the 10% contract goal and relying on Good Faith Effort.	Keep Cost Model. If any penalties or fees are assessed based upon the Good Faith Effort Submitted by Contractor, County will cover with supplemental funds. Contractor responsible for complying with 4.91% DBE Commitment and Good Faith Effort submitted including any proposed subcontractor / supplier substitutions that may arise. GFE Evaluation response is currently with Caltrans for approval/acceptance. Contractor and County believe all reasonable and necessary steps were taken to achieve the DBE goal. Contractor will meet Good Faith Effort and DBE commitment of 4.91%.	X		\$	-	\$	-	0	0	0	0		Mitigate / County Owned Risk	No specific supplemental funds included. Risk is low.	County	5/1/2025					
Active	PC-2	Construction	Increased Costs from Subcontractors and Suppliers due to Late Issuance of Construction Contract and NTP.	The Contract amount along with all Subcontractor and Supplier pricing are based on receiving a Construction Contract by April 1, 2025 with all price proposals expiring on April 15, 2025. Subcontractors and Suppliers may have increase/decrease their pricing from prior quotes. To reduce the risk of having all Subcontractors and Suppliers re-price the Project, the Contractor will issue Contracts to previously low bidders.	Keep Cost Model. Additional Contingency will be paid with a County-held contingency. Contractor to have all subcontractors under contract within 30 calendar days of receiving executed contract from the County. If Subcontractor or Suppliers have minor costs increases/decreases that are identified within 30 days of Contractor receiving an executed contract, the cost increases can be validated by the project team, then any legitimate changes between what was contemplated in 100% OPCC and updated pricing will be a CCO. See attached "Yankee Jim Selected Vendor Report" for pricing held to April 15, 2025.	X		\$	-	\$	-	0	0	0	0		Mitigate / County Owned Risk	No specific supplemental funds included. Risk is low.	County	5/1/2025					
Active	60	Construction	Weather Days > 25ea per calendar year. Resulting in potential late finish or pushing weather sensitive work into winter season over the project duration	Work OT (Saturdays) to overcome any weather impacts	TRO will be adjusted at end of each year and at the end of the project based on delta between actual weather days and assumed 29 weather days per year. TRO paid for extra weather days will be added via Standard Specifications in Section 9-1.11. Weather day under-runs will be credited toward the total number of weather days allocated for the project but will not reduce the contract TRO LS term. A true-up of weather days will occur at the end of the project based upon a cumulative total.			\$	-	\$	200,000	\$	400,000	Medium	0	10 days	20 days	15 days	Weather is unknown and we may have extreme years or really mild years. Also, if weather does or does not effect controlling operation of work.	Average weather days for the area are 29 per year. Contractor included 29 weather days in their overall estimate, so that 29 weather days per year will not result in an increase in TRO. Also, at the end of the project, the total weather days will be true-up based upon the total weather days originally included in the schedule. Unused weather days will be counted as credit toward any years with weather day overruns at end of project.	County				
Active	61	Construction	Production Impacts due to inclement weather - Working in Winter Weather conditions. May result in delays to ALL activities in schedule, mass excavations, substructure & retaining wall work. Project delays over three (3) winter seasons.	The Winter Shutdown (12/15 - 3/15) was removed from the 65%/OPCC P6 CPM schedule. Long periods of inclement weather will delay large portions of Civil work. All Bridge work is 12-months working calendar.	Will be addressed via changed conditions. PI to add language in list of assumptions to address this risk.												County Owned Risk	If a prolonged weather period is forecast that could negatively impact the project, the County and Contractor can agree to a winter shutdown that will be negotiated by CCO. Actual costs will be negotiated via TRO straight application. No specific funds include.	County						
Active	63	Construction	All BRIDGE related bid items are lump sum & Fixed Price (F)	Measurement & Payment terms need to be reviewed regarding Structure Excavation	Keep Cost Model. PI to review final item and layed back quantities for excavation and bridge. Reconcile quantities and costs with ICE.												Mitigate / Shared Risk	County included clause of block slope failures greater than 5CV at RW 1 to mitigation contractors risk of Final Pay. Otherwise Contractor Risk.	Contractor						
Active	68	Construction	2022 Construction General Permit Risk of permit non-compliance during construction related to water quality during construction. NTE + 6 at site.	Stop Work Direction due to water not within NTE. Incur delay costs.	Mitigated with SWPPP prior to construction. Need to determine how to mitigate risk during construction. Stop Work Direction due to water not within NTE. Incur delay costs.												Mitigate / County Owned Risk	County reached out to RWQCB regarding CDP 2022. In addition, we have taken pre project water samples to have a baseline and will try to take one more set of water quality samples ahead of the project.	County	Sept, 2024					

BRLO 5919(099) YANKEE JIMS BRIDGE BID ASSUMPTIONS CONTRACT NO. 001360

No.	AREA OF WORK	LISTED ASSUMPTION
GENERAL & SCHEDULE RELATED		
G-1	General	DBE commitment of 4.91% or \$2,343,640.07 did not meet the 10% contract goal. No additional Costs are included in Cost Model. If any penalties or fees are assessed based upon the Good Faith Effort Submitted by Contractor, County will cover with supplemental funds. Contractor responsible for complying with 4.91% DBE Commitment and Good Faith Effort submitted including any proposed subcontractor / supplier substitutions that may arise.
G-2	General	The Contract amount along with all Subcontractor and Supplier pricing are based on receiving a Construction Contract by April 1, 2025 with all price proposals expiring on April 15, 2025. Subcontractors and Suppliers may have increase/decrease their pricing from prior quotes. To reduce the risk of having all Subcontractors and Suppliers re-price the Project, the Contractor will issue Contracts to previously low bidders. Contractor to have all subcontractors under contract within 30 calendar days of receiving executed contract from the County. If Subcontractor or Suppliers have minor costs increases/decreases that are identified within 30 days of Contractor receiving an executed contract, the cost increases can be validated by the project team, then any legitimate changes between what was contemplated in 100% OPCC and updated pricing will be a CCO. See "Yankee Jim Selected Vendor Report" submitted by Contractor for pricing held to April 15, 2025.
G-5	General	No hazardous material has been identified on site. All material is suitable for export and disposal at Class II or Class III landfills or other County property. See Special Provisions for requirements addressing and handling Aerial Deposited Lead. (ADL). No costs have been included in pricing or time in schedule for encountering unanticipated naturally occurring asbestos or hazardous materials per Section 19-4.05. All added costs will be paid by County-held contingency.
G-6	General	All equipment operating work scopes are performed and wages paid per Contract wages requirements and/or Union Master Agreements. Pricing for changes to Federal Prevailing Wage Determination after 08/23/2024 are not included in pricing



Examples of Collaboration

Access Road Investigation



- Simulated 40-ft trailer for material & equipment delivery
- Identified potential problem locations
- Coordinated with Geotech and Surveyor
- Finalized recommendations for improvements



Examples of Collaboration

- Access improvements
- CMGC requested excavation testing
- Huge cost savings (limited blasting)
- Minimized risk





Examples of Collaboration

Access Road Reinforcement During Construction



Initial Excavation

Figure 1



Repair

Figure 8



Repair

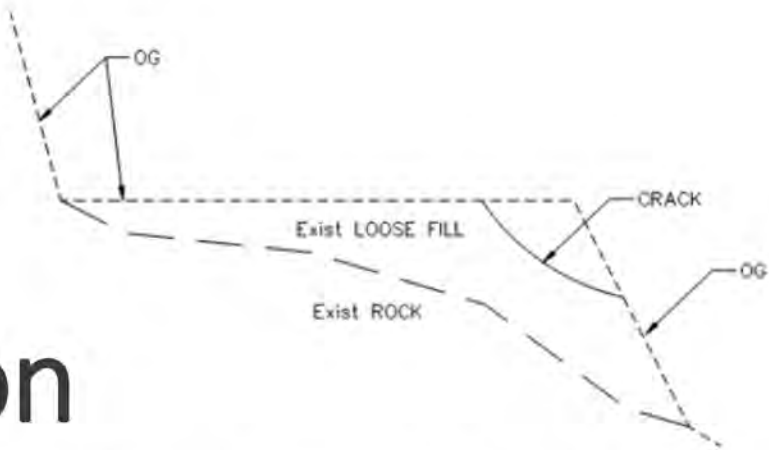
Figure 9

- Existing road, edge failure
- Act fast
- Keep construction moving
- Field fit designs

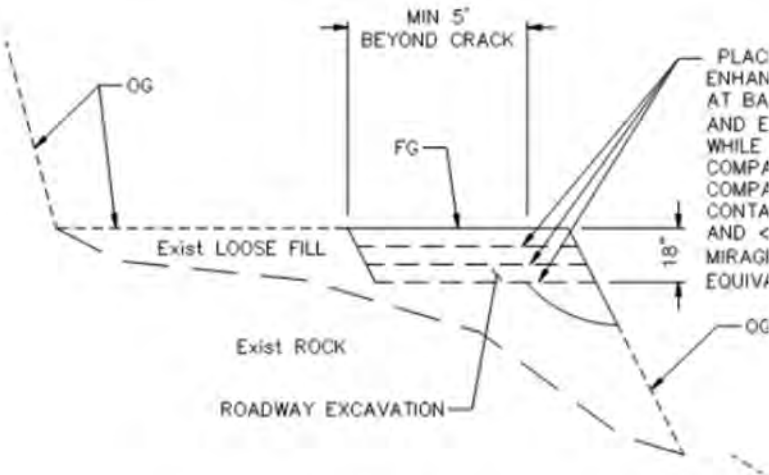


Examples of Collaboration

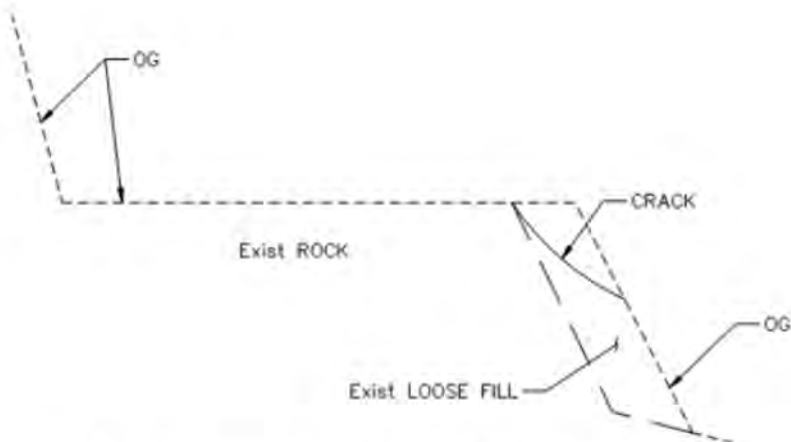
Access Road Reinforcement During Construction



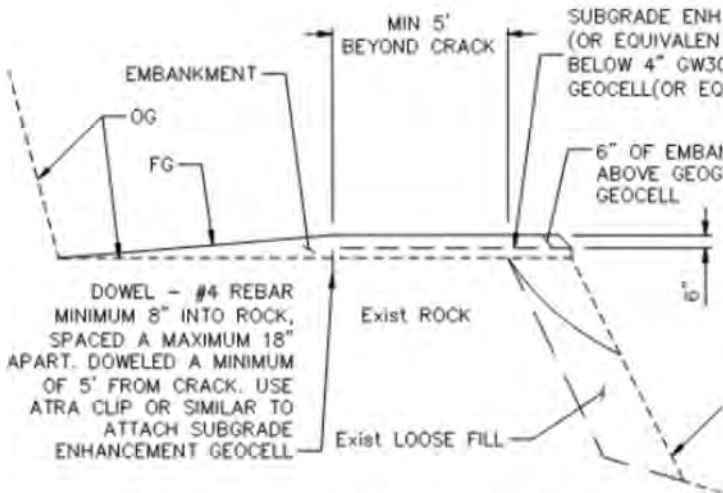
TYPICAL SECTION: TYPE 1 - FILL ACROSS ENTIRE ROAD
NO SCALE



TYPICAL SECTION: TYPE 1 - EDGE STRENGTHENING DETAIL
NO SCALE



TYPICAL SECTION: TYPE 2 - CRACK AT EXIST ROCK / EXIST LOOSE FILL TRANSITION
NO SCALE

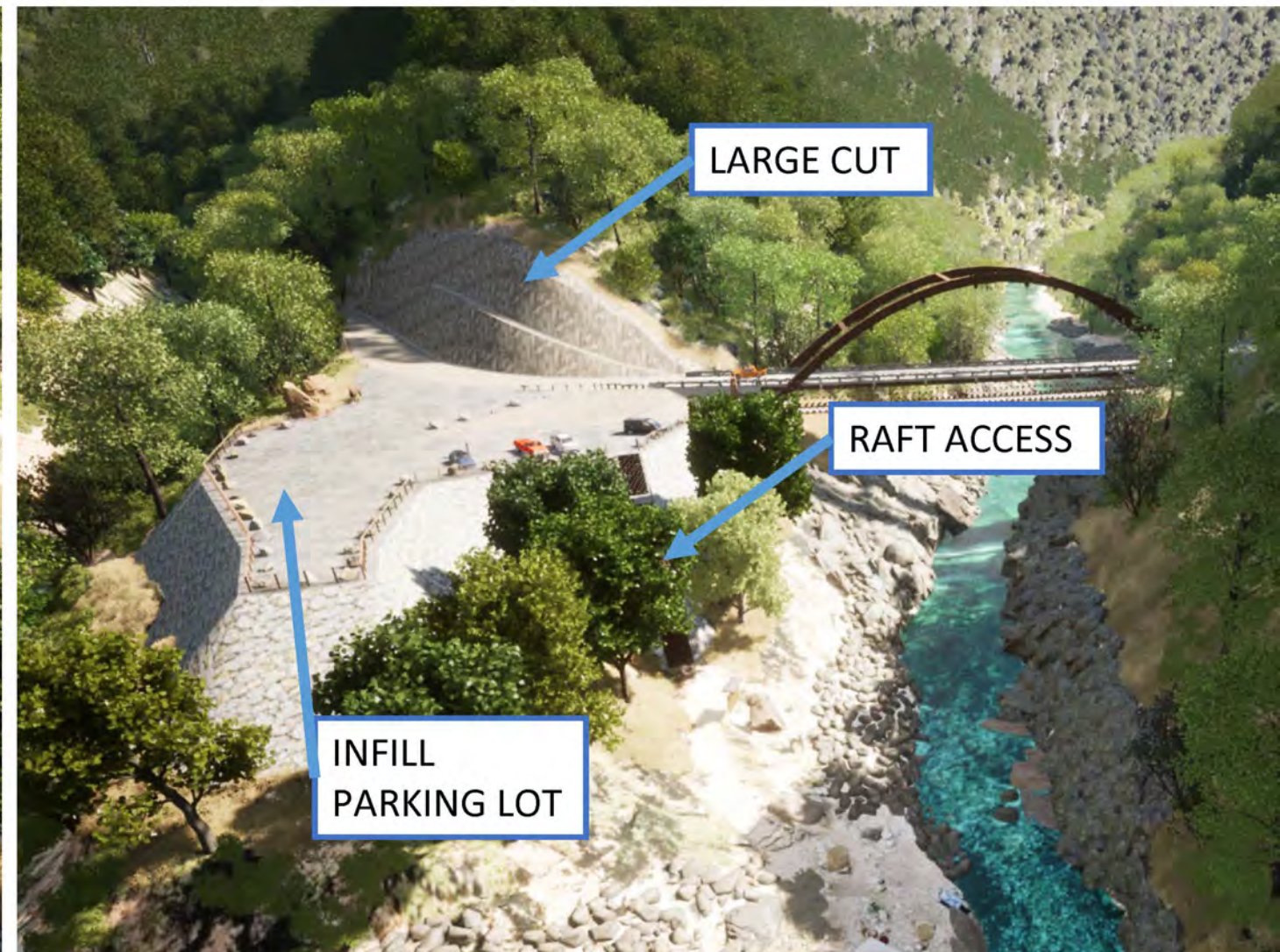
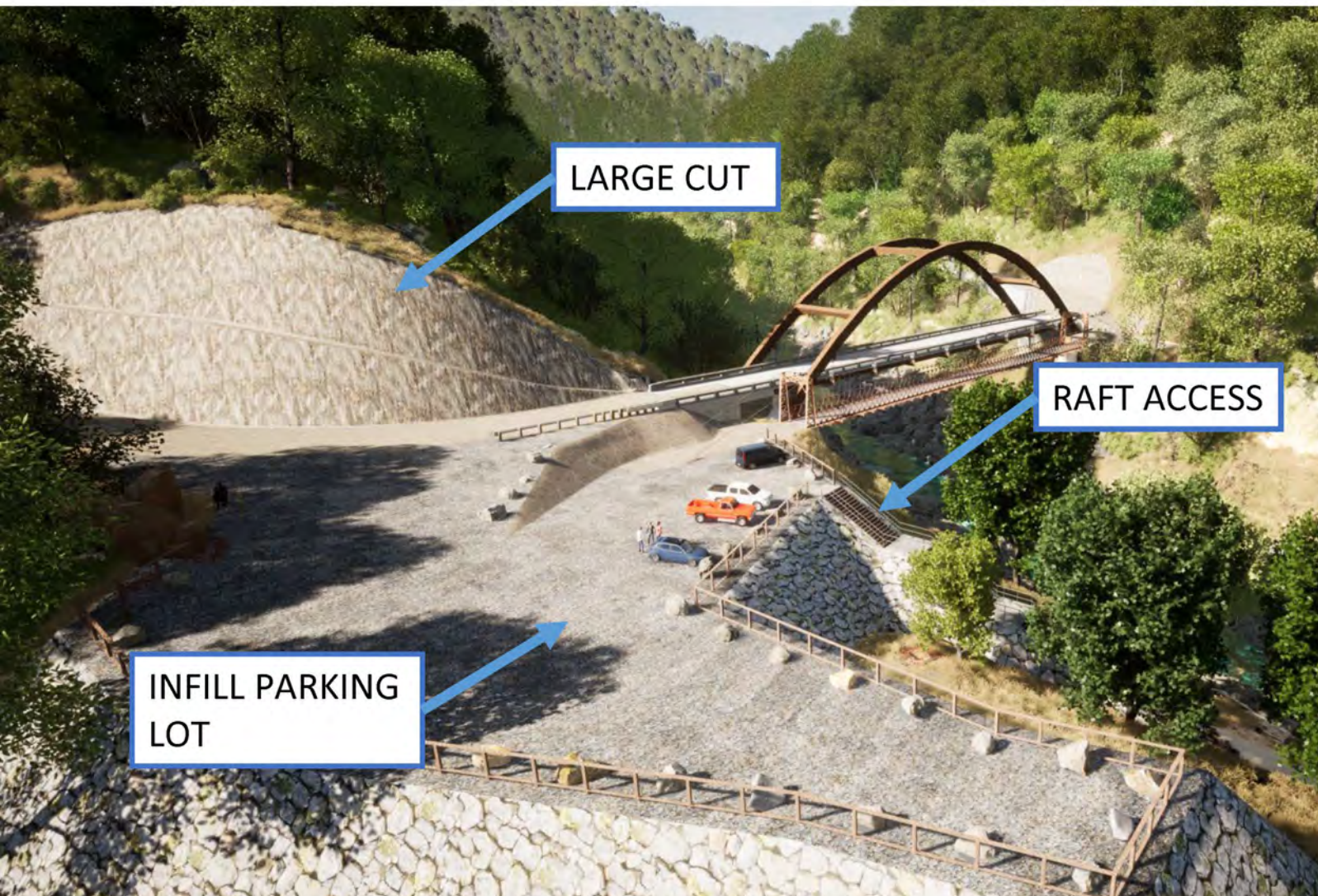


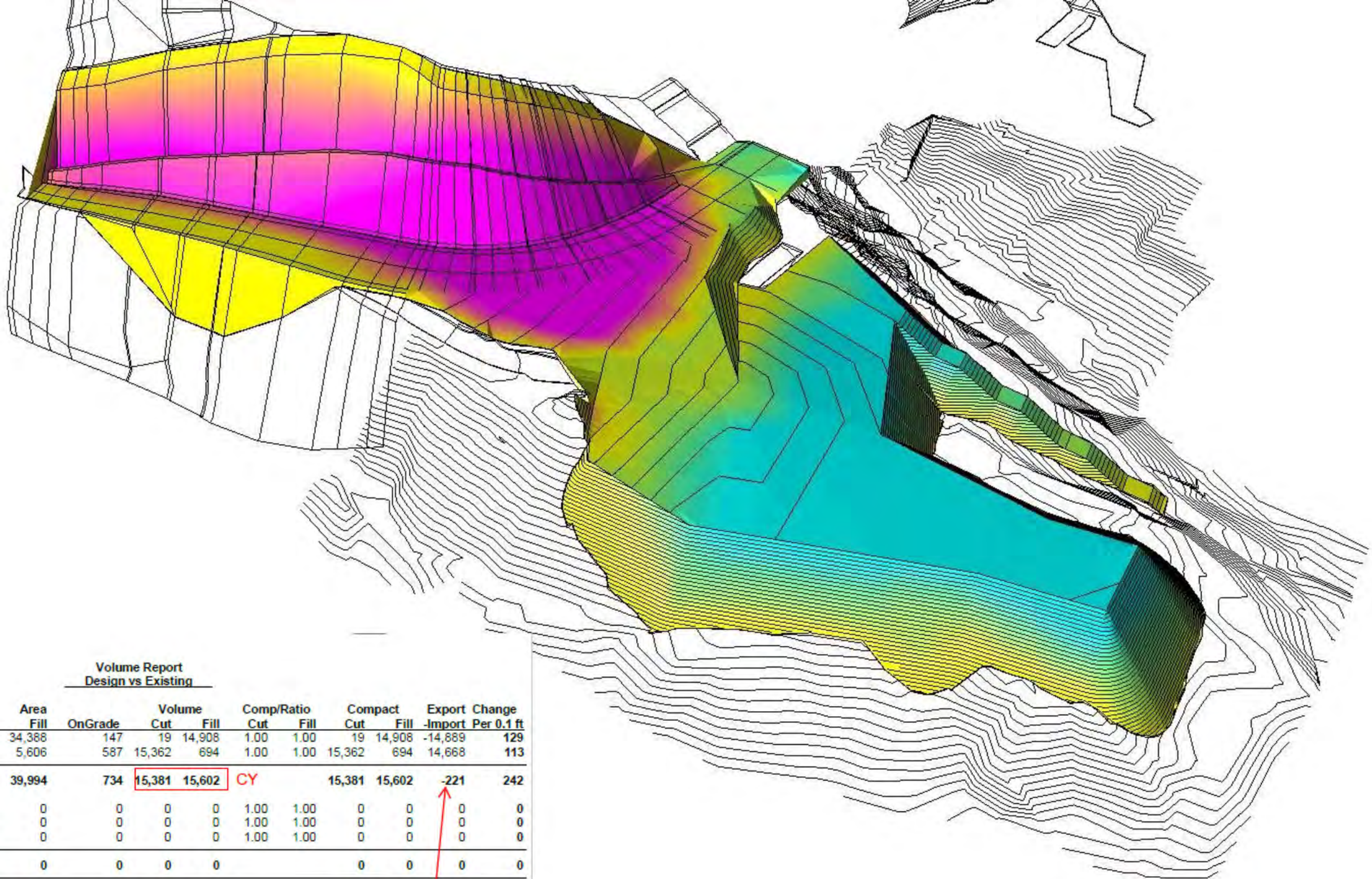
TYPICAL SECTION: TYPE 2 - EDGE STRENGTHENING DETAIL
NO SCALE



Examples of Collaboration

Evaluation of Material Handling





Volume Report
Design vs Existing

	Total	Cut	Area Fill	OnGrade	Volume		Comp/Ratio		Compact		Export	Change
					Cut	Fill	Cut	Fill	Cut	Fill	-Import	Per 0.1 ft
EAST FILL SITE	34,829	294	34,388	147	19	14,908	1.00	1.00	19	14,908	-14,889	129
EAST ROADWAY	30,480	24,287	5,606	587	15,362	694	1.00	1.00	15,362	694	14,668	113
EAST Sub:	65,309	24,581	39,994	734	15,381	15,602	CY		15,381	15,602	-221	242
WEST NORTH SLOPE	0	0	0	0	0	0	1.00	1.00	0	0	0	0
WEST ROADWAY	0	0	0	0	0	0	1.00	1.00	0	0	0	0
WEST SOUTH SLOPE	0	0	0	0	0	0	1.00	1.00	0	0	0	0
WEST Sub:	0	0	0	0	0	0			0	0	0	0
Regions Total	65,309	24,581	39,994	734	15,381	15,602			15,381	15,602	-221	242

Surplus Import CY

Description	Report	El from	EL to	Fill SF	Fill CY
East Fill Site	Fill 10' Lift	950	960	6278	891



- Hilfiker stepped wall
- Intricate design with access stairs
- Field fit





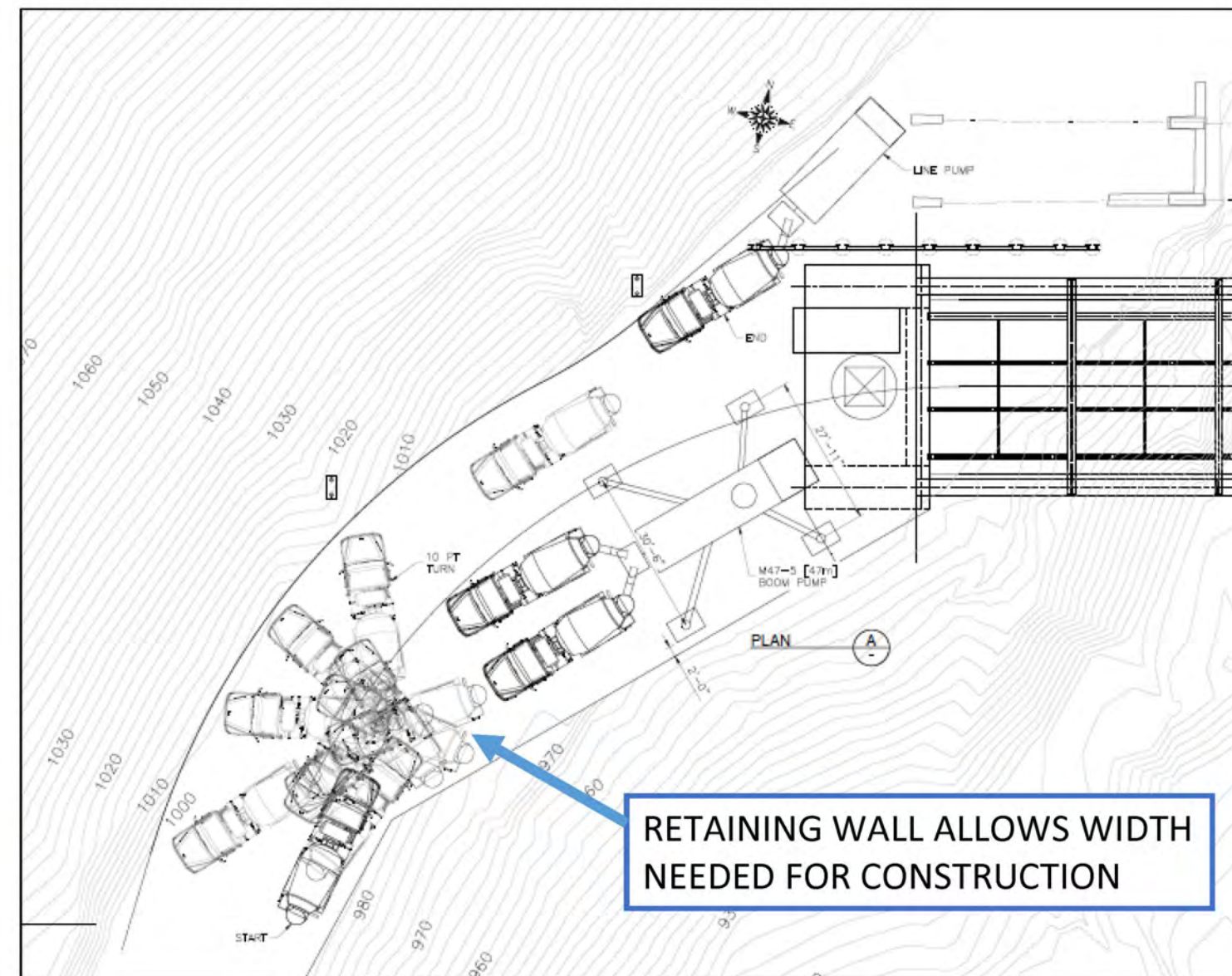
Blasting





Examples of Collaboration

Construction Access



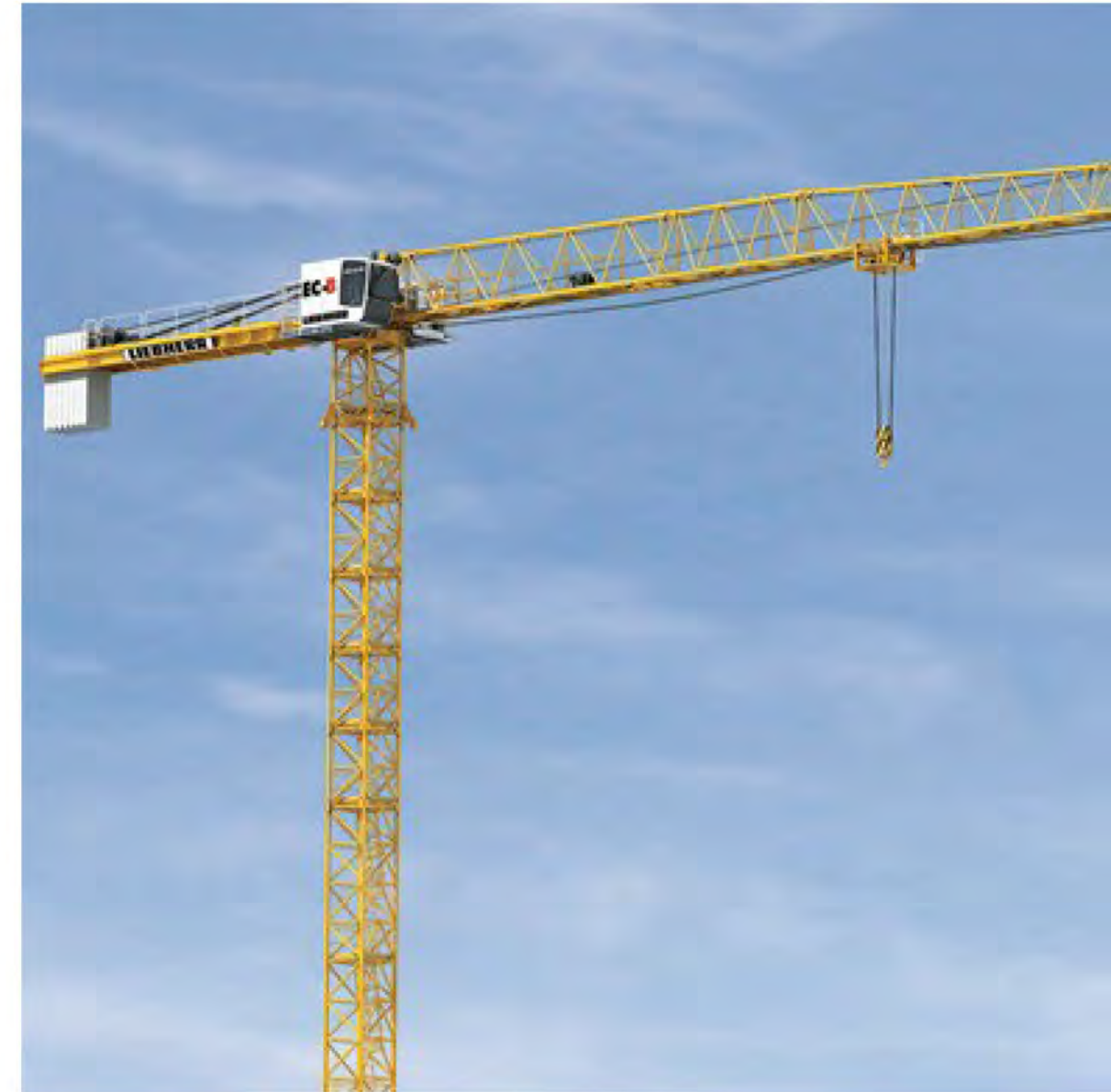
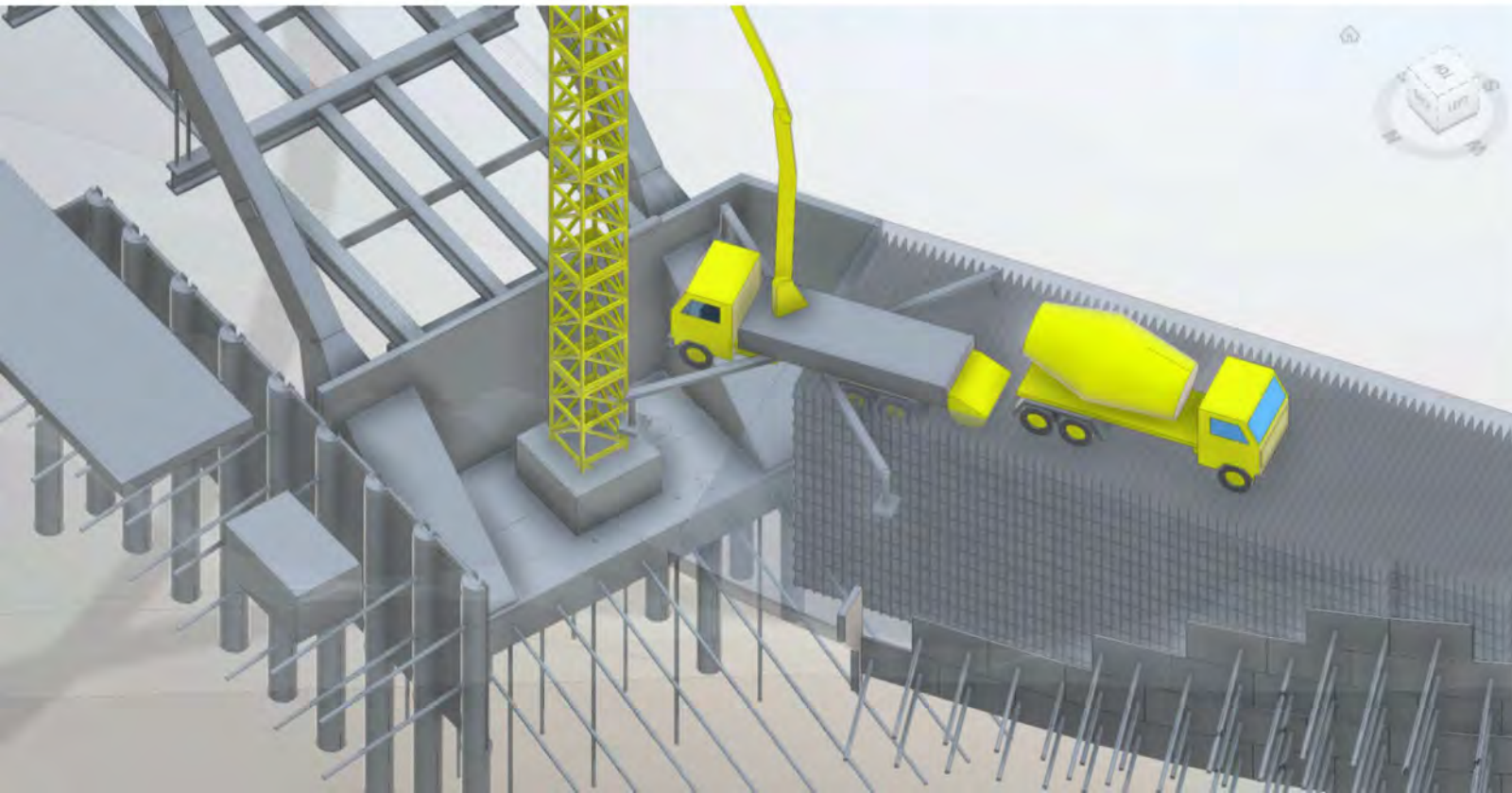




Examples of Collaboration

CMGC Investigated Crane Alternatives

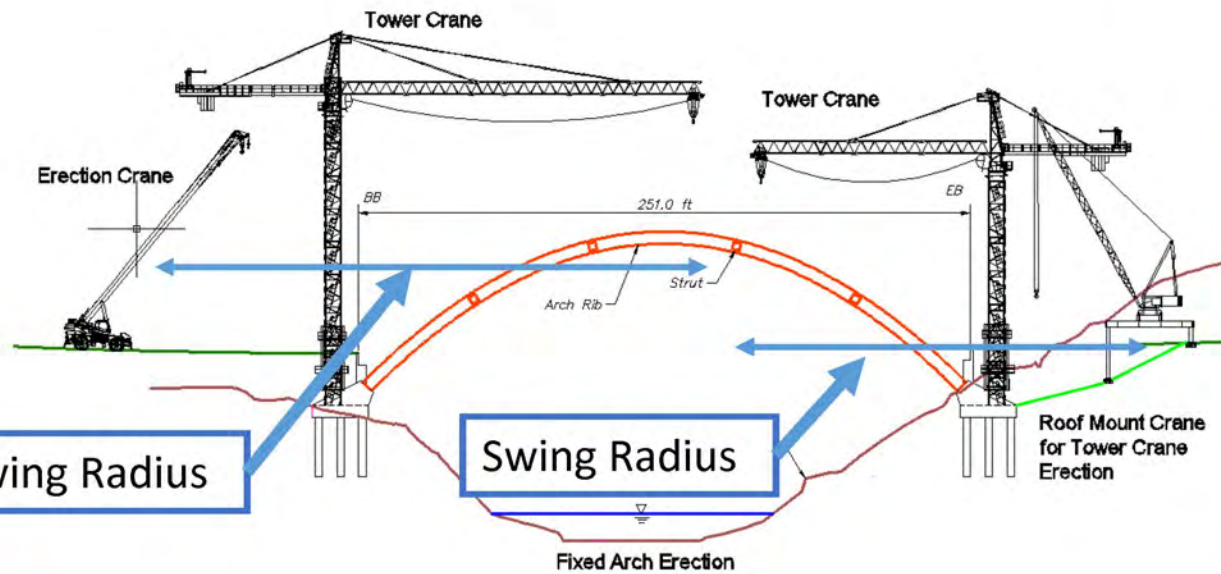
- Maximum crane pick weights determined:
 - arch rib splice locations & resulting piece lengths
- Crane will be supported on abutment foundations
- Abutments Designed for Crane Foundation Reactions
- Crane Anchorage Dictated Abutment Footing Thickness



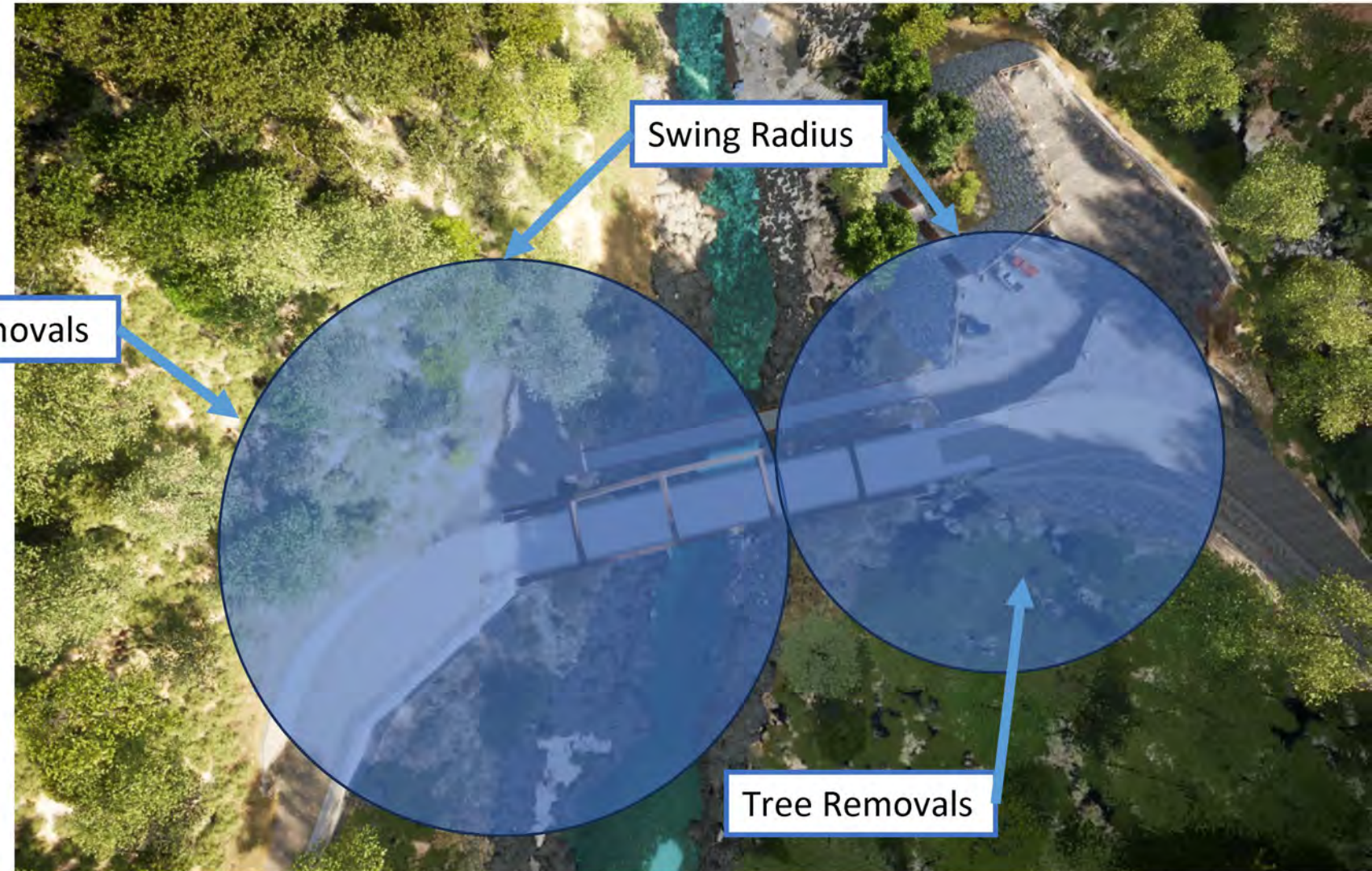


Examples of Collaboration

- Tree Removals From Tower Crane Boom Swing



Tree Removals





Examples of Collaboration

Existing Suspension Bridge Retrofit

Bridge was retrofitted to permit passage of materials from the Colfax Abutment to the Foresthill Abutment and included the following:

- Cable Anchorage Strengthening
- New Steel Deck and Timber Planks
- Tower Anchorage Modifications
- Displacement Monitoring of Towers



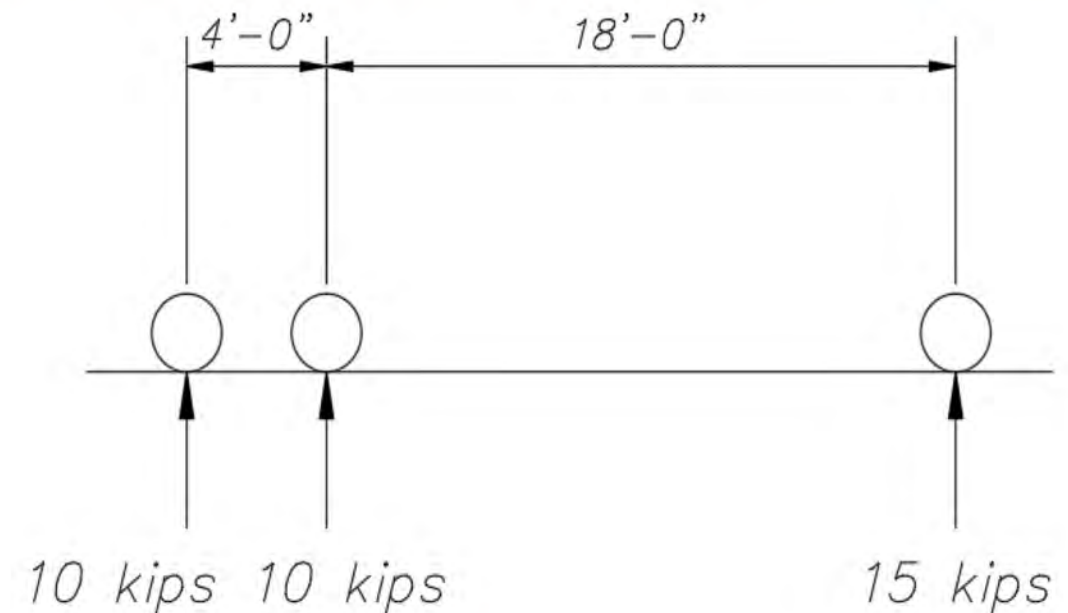


Existing Bridge Retrofit

Hay Wagon

Contractor purchased a Hay Wagon to move materials across the bridge

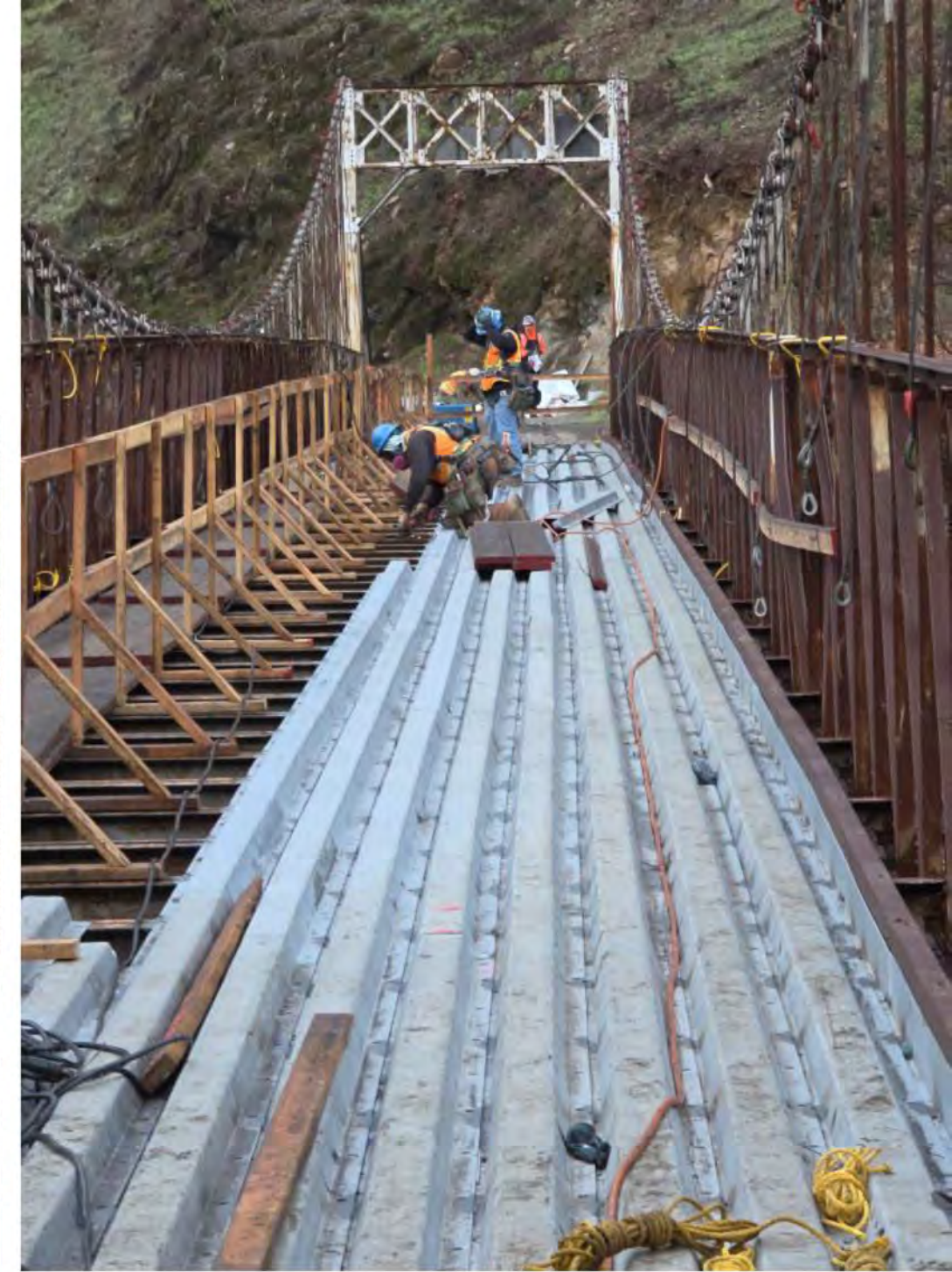
- Hay Wagon will be moved across bridge with cables and winches attached to deadmen off the bridge
- Consor collaborated with the Contractor to develop a method to limit the payload so that the bridge cables, anchorages, decking and floor beams are not overloaded
- The bridge was evaluated for a new water line and a concrete pump line





Existing Bridge

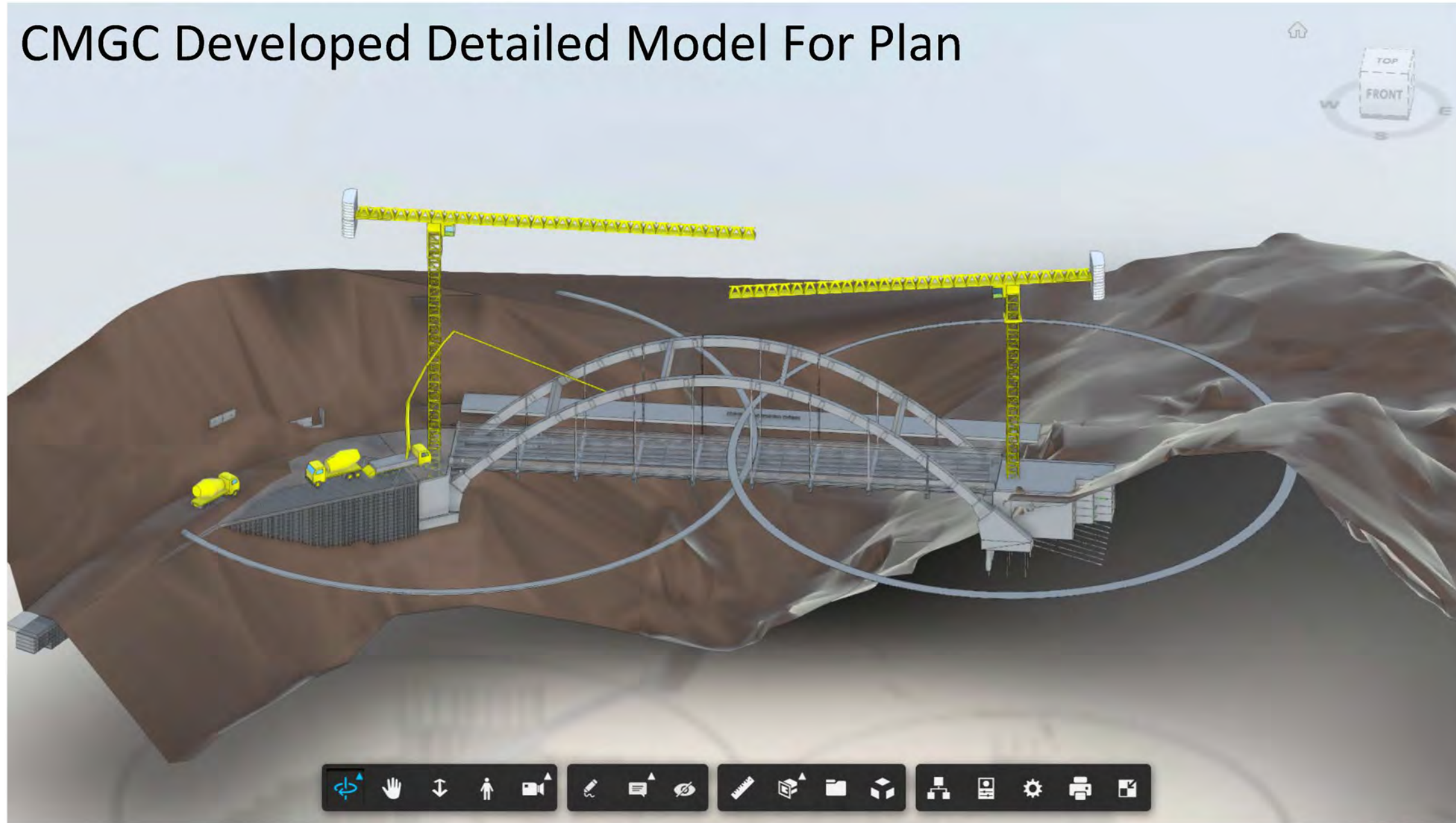
Anchorage Strengthening and New Decking





Constructability Review

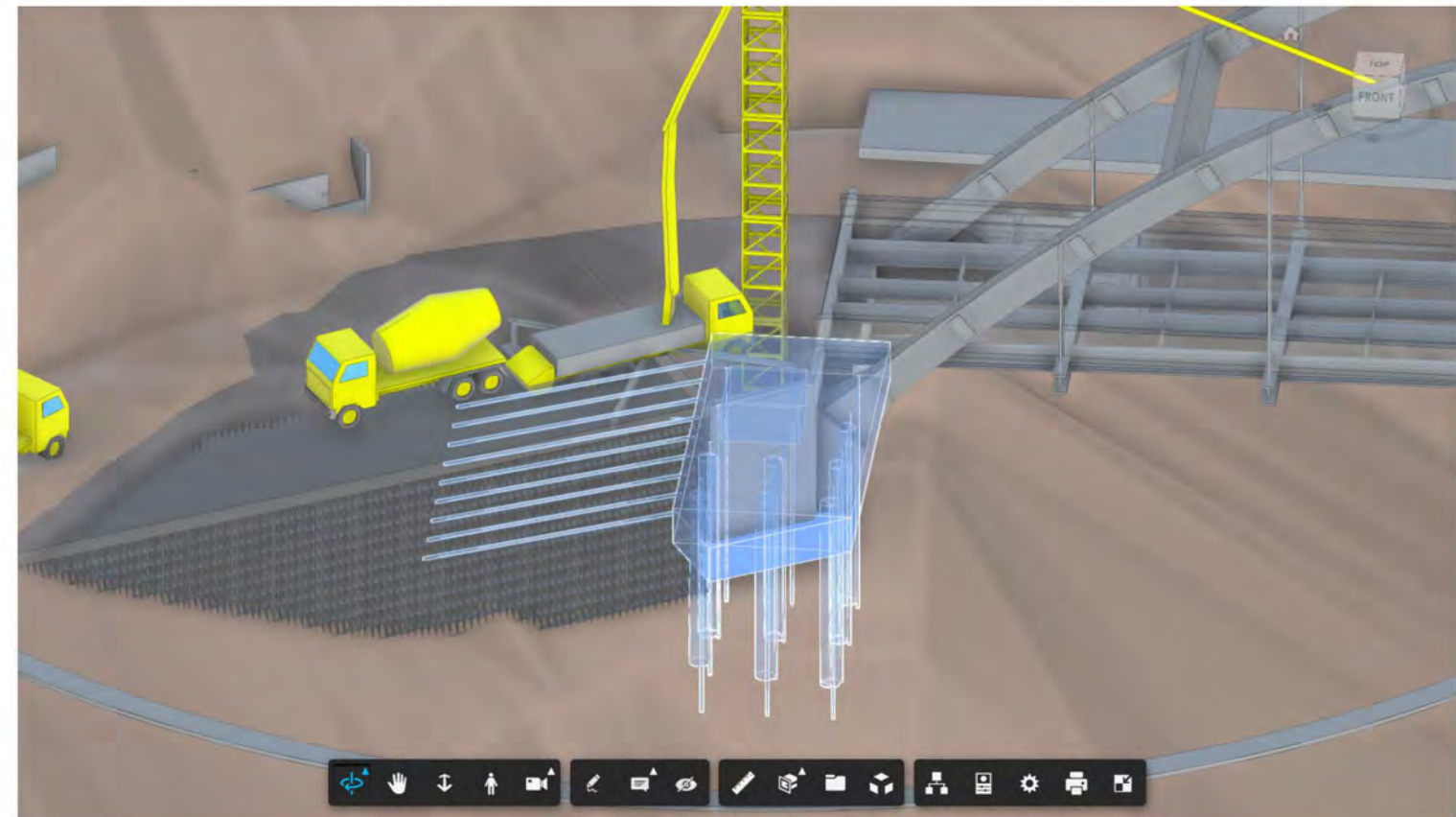
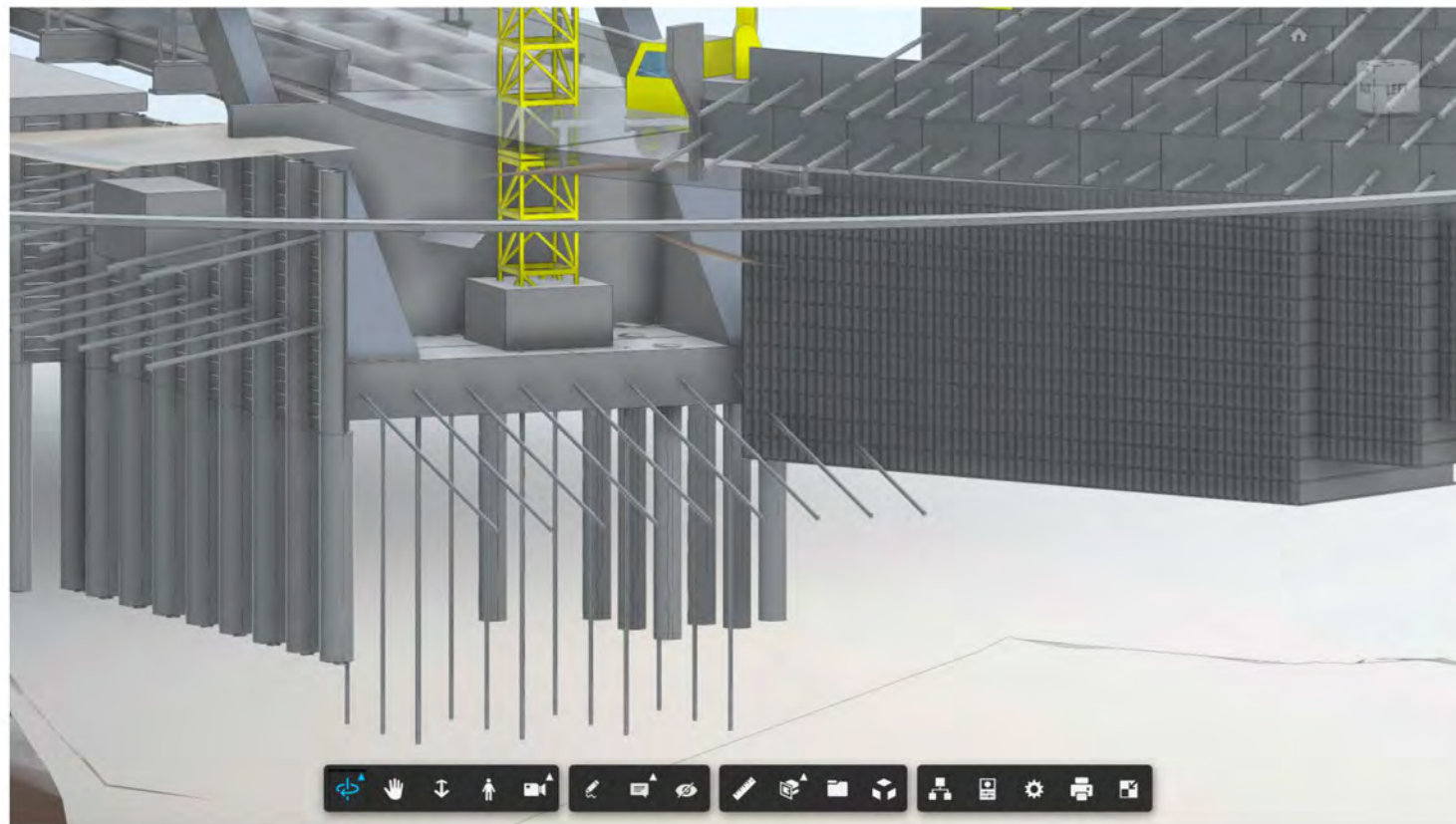
CMGC Developed Detailed Model For Plan





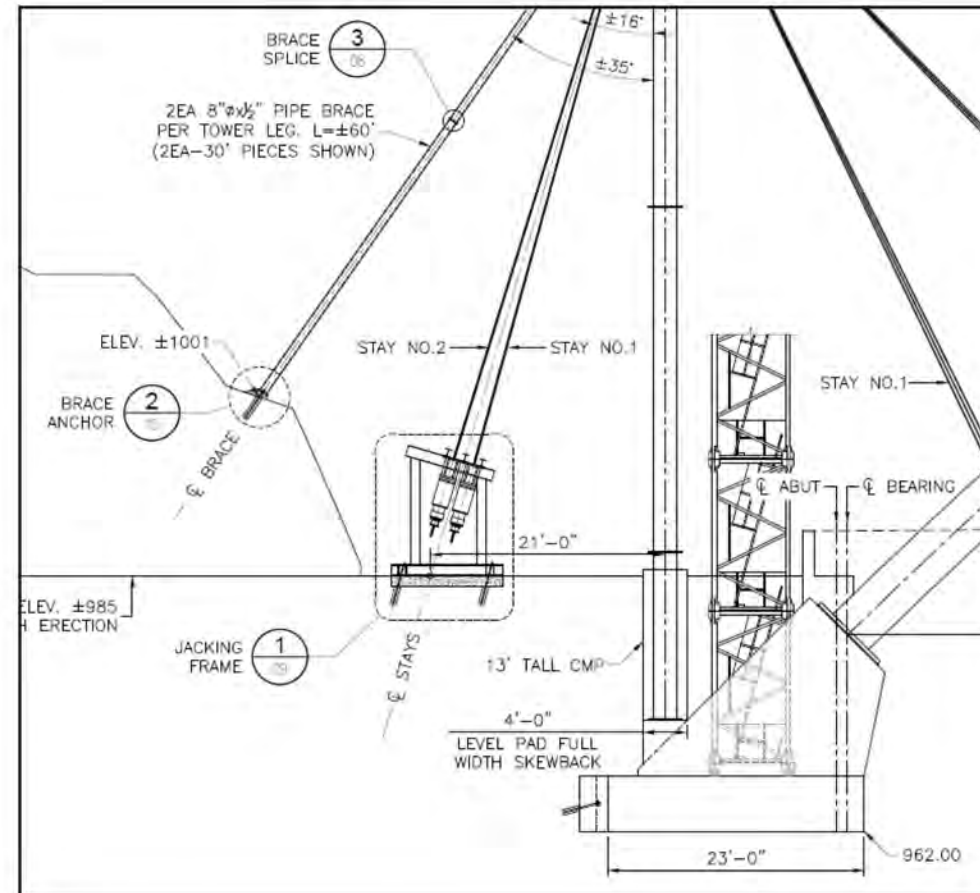
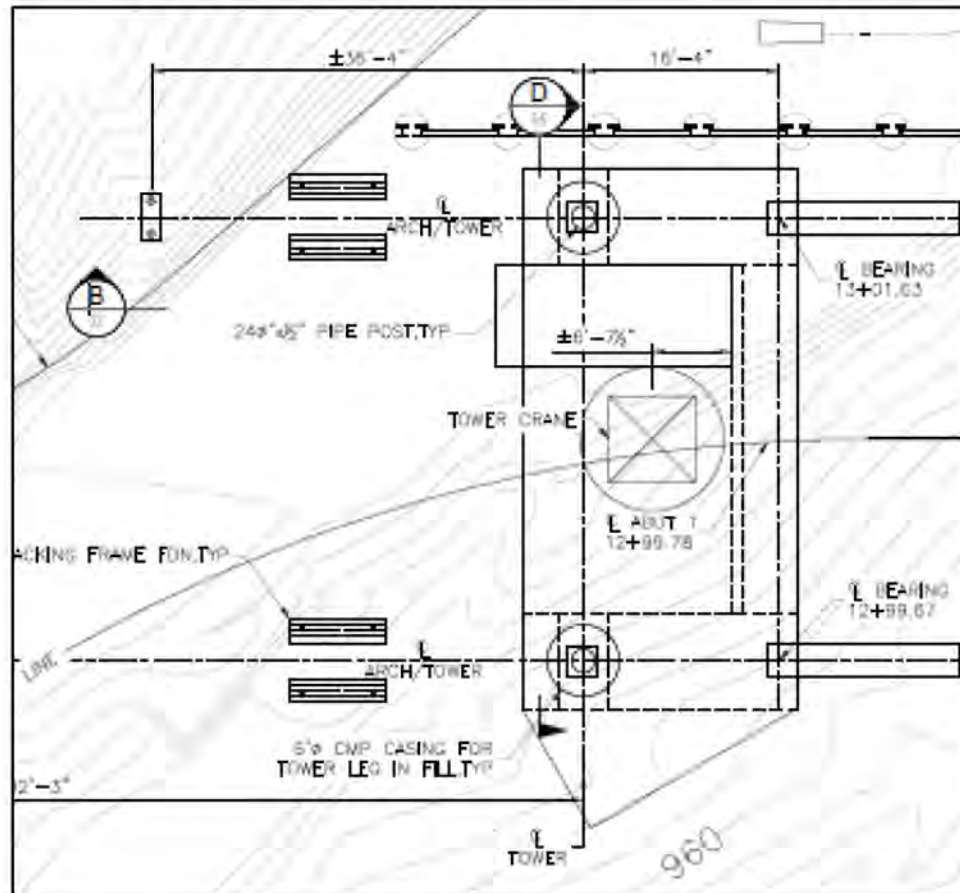
Constructability Review

Detailed Plan Review & Consideration of Scheduling



Constructability Review

Consideration of Temporary Works

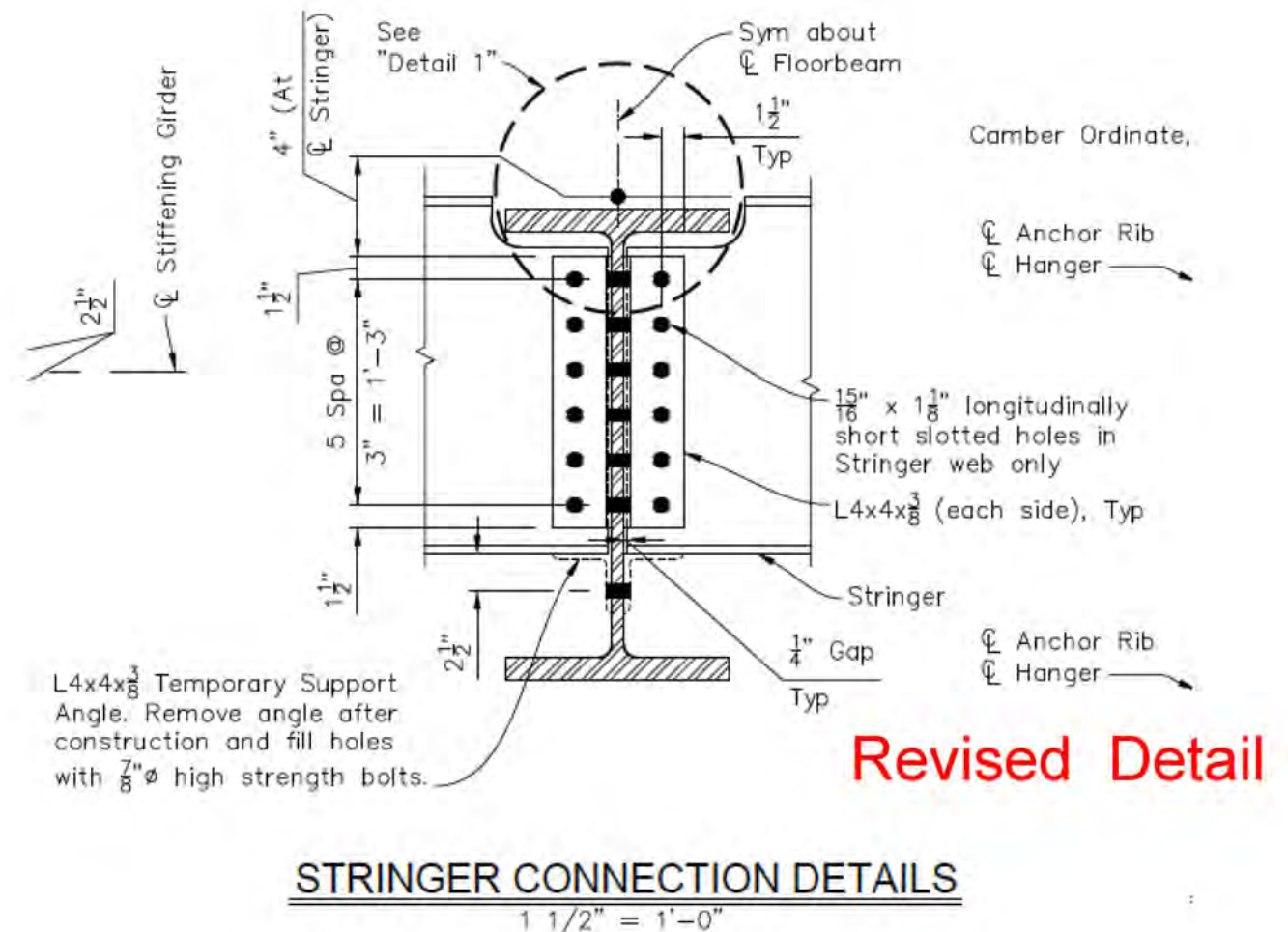
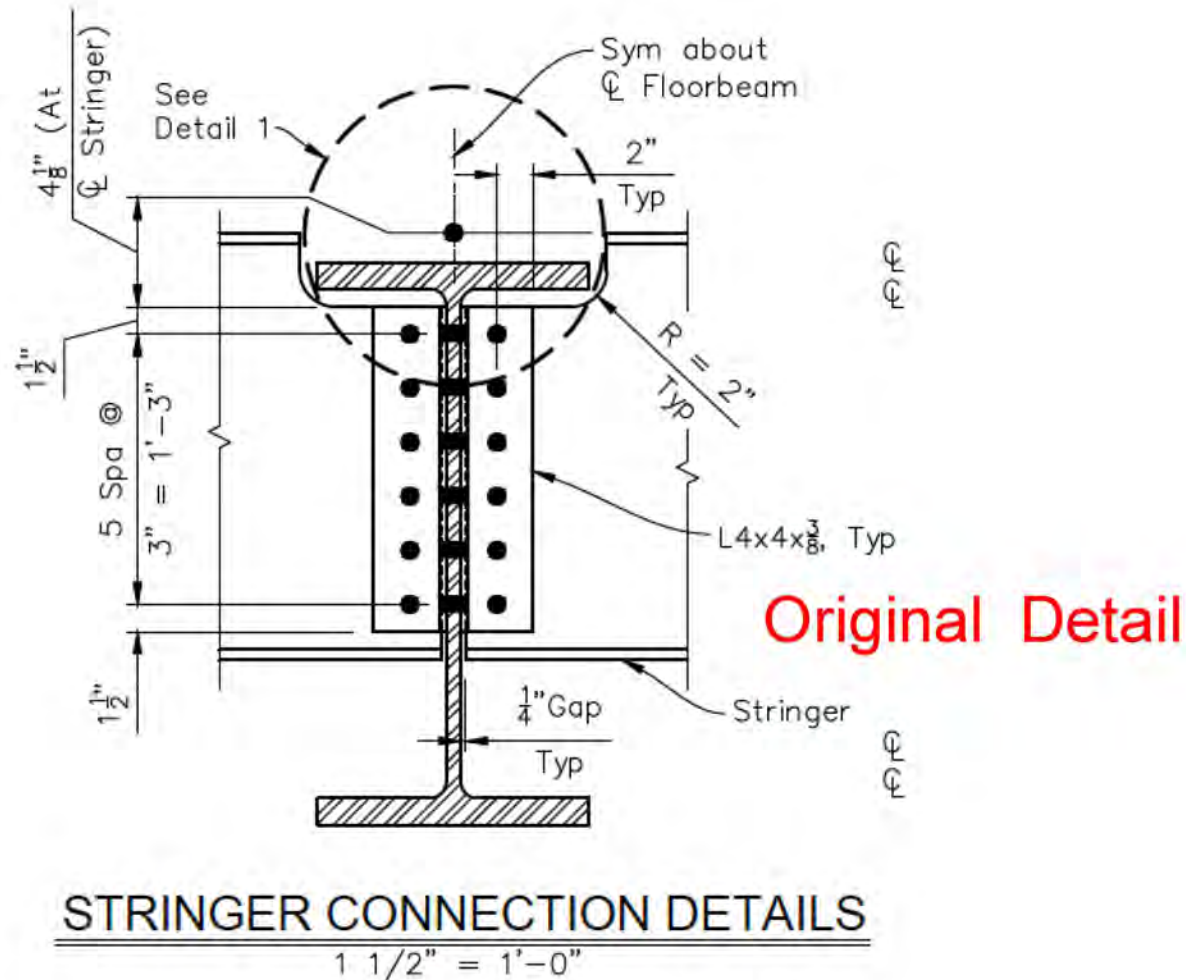


- Contractor provided layout of King post backstay anchorage
- Design team could evaluate ground anchors to avoid conflicts

Constructability Review

Stringer Design & Detailing

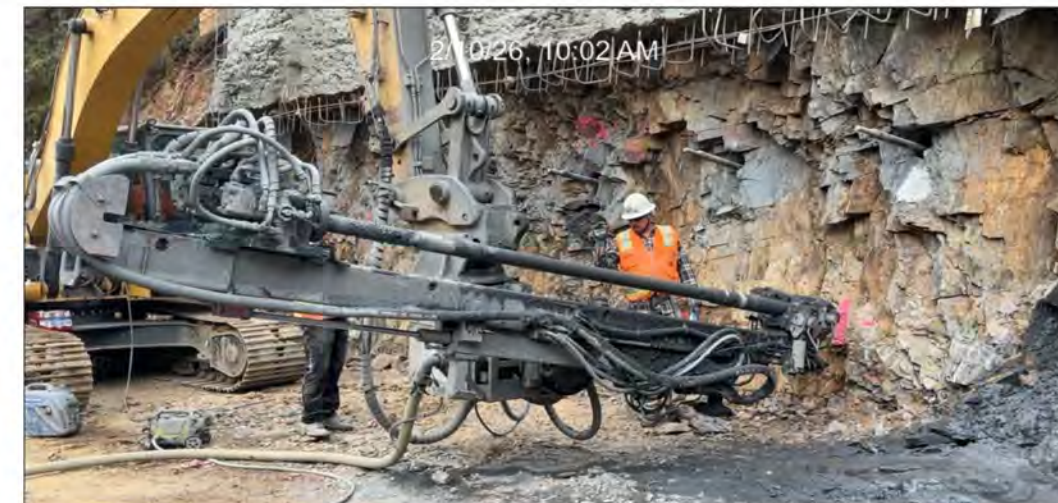
- Support stringer during erection
- Temporary seat angle provided





Lessons Learned

- Procurement Timing has Impacts
- CMGC is a tool for complex projects, not every project
- Project Manager plays a key role in the success
- Make sure to fully document all Bid Assumptions and Risk Register items
- Integrating Construction Management team earlier could be helpful
- Construction Team may be different than Design Team
- Be prepared for changes during construction
- Relationships and Team approach is important





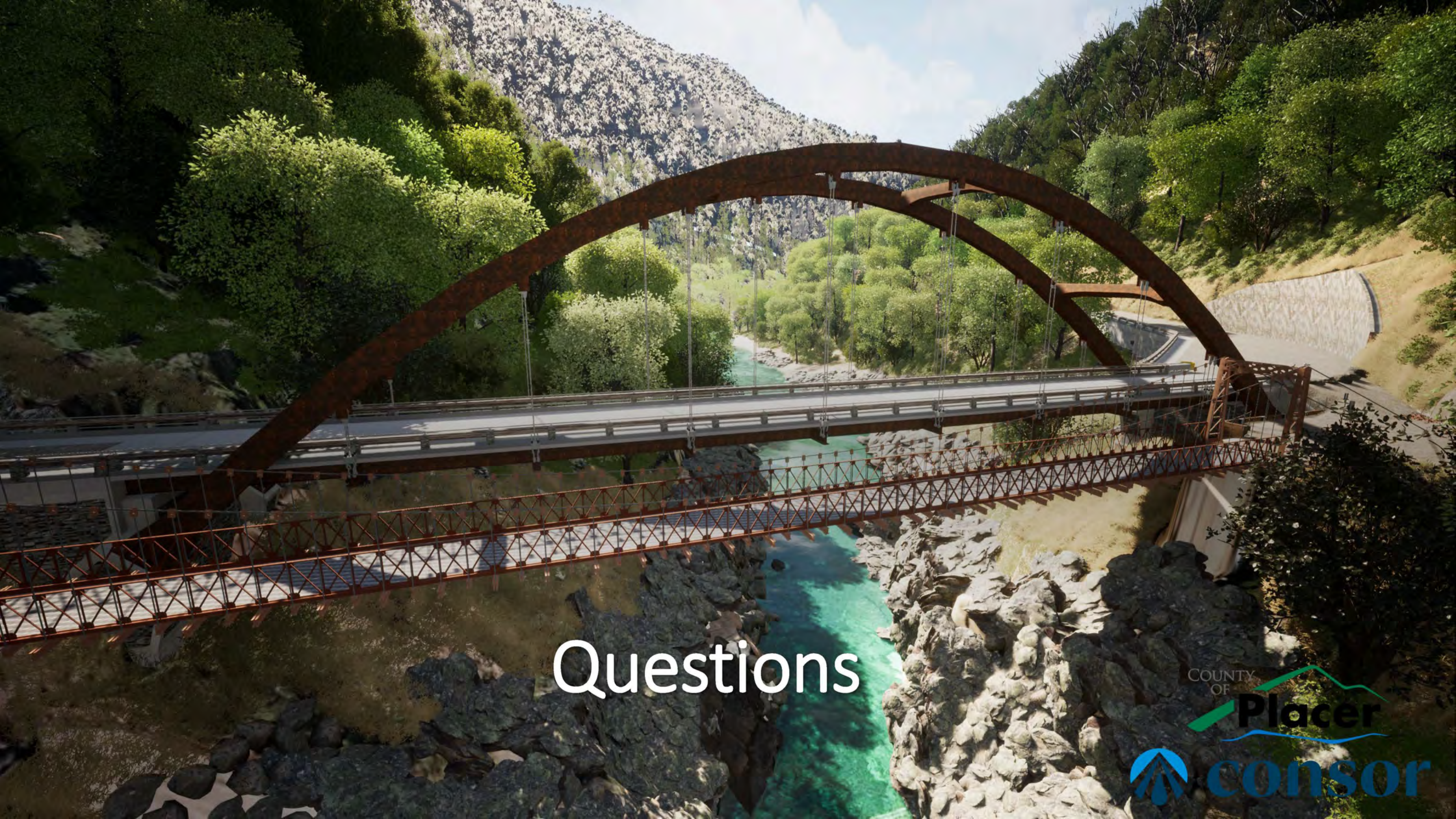
Conclusion

Success dependent on:

- ✓ Commitment of CMGC
- ✓ Openness to innovate
- ✓ Willingness to collaborate
- ✓ Discussions on risk
- ✓ Stability of teams

CMGC has provided a lot of value on this project. Still learning how best to implement efficiently.



An aerial photograph of a bridge spanning a river in a lush, green valley. The bridge features a large, rusted steel arch structure supported by vertical cables. Below the main bridge deck, there is a secondary truss bridge. The river flows through a rocky bed, and the surrounding hills are covered in dense green trees. The sky is blue with some clouds.

Questions

THANK YOU