

Draft Memorandum

Date:	August 29, 2019
То:	Rob Burns – Dokken Engineering
From:	Chris Sewell – WRECO
Project:	State Route 99 Corridor Bikeway Facility Phase 5, 20th St Overcrossing
Subject:	Draft Floodplain Evaluation Summary Technical Memorandum

1. INTRODUCTION

The City of Chico (City), in cooperation with the California Department of Transportation (Caltrans), proposes to construct a Class I bikeway street overcrossing above 20th Street, while establishing a bikeway gap closure along the east side of State Route (SR) 99 corridor (Project). The Project is located in Township 22 North, Range 1 East in the City of Chico, within Butte County, California (Figure 1, Figure 2, and Figure 3). The completed Bikeway 99 Corridor will serve as a continuous alternative transportation and recreational route from Eaton Road to Skyway, spanning nearly 7 miles.

The current lack of a safe and direct pedestrian/bike path discourages residents from walking or biking to local schools, job centers, commercial areas, and public services. This Project will connect people to goods and services including the Chico Mall. The bikeway overcrossing would provide a link to both sides of 20th Street and Business Lane, offering access to local restaurants and businesses. The bikeway would enhance the safety of pedestrians and bicyclists by creating a route that is separate from traffic congestion on 20th Street. Additional safety features of the path include lighting, security cameras and the removal of thick vegetation in order to increase visibility on the bikeway. The design of the bridge is intended to incorporate the history, culture, and overall atmosphere of Chico.

The proposed Project is consistent with the Land Use, Transportation, and Parks, Public Facilities and Services Elements of the *City's 2030 General Plan* (adopted in 2011 and amended in 2017) as well as the City's *2012 Chico Urban Area Bicycle Plan* and forthcoming *2019 Chico Bike Plan*. The Project will be implemented in a manner that is consistent with the City's *Best Practices Technical Manual* and *Municipal Code*.

The Project is fully funded through the Active Transportation Program grant and the Congestion Mitigation and Air Quality Improvement Program and, therefore, requires compliance with both the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The lead agency for CEQA is anticipated to be the City, and the lead NEPA agency is Caltrans.







Figure 1. Project Location Map







Figure 2. Project Vicinity Map







Figure 3. Project Aerial Map





Existing Bikeway

There is not currently a bikeway Crossing at 20th Street at SR 99 creating a gap between Phase 2 and Phase 4 of the SR 99 Corridor Bikeway Facility Project. The intersection at 20th Street is congested with vehicular traffic and does not provide an ideal crossing for pedestrians or bicyclists.

Proposed Bikeway

The Project design offers a direct route following SR 99. The total length of the bikeway segment will be approximately 0.6 miles. The north and south ends of this Project (from PM R31.1 to R31.7) will tie into Phases 2 and 4 of the overall 7-mile bikeway corridor from Eaton Road to Skyway.

The Project will be a Class I multi-use trail that will consist of an approximately 8- to 10-foot-wide paved path with approximately 2-foot-wide shoulders. The Project will contain an overcrossing that runs parallel with SR 99 between the northbound 20th Street on- and off-ramps. The overcrossing would provide a link to both sides of 20th Street and Business Lane, offering access to local restaurants and businesses. A set of stairs will allow access on the north side of 20th Street, and a ramp will provide access to the south side of 20th Street. Bikeway users would be separated from congestion of vehicular traffic on 20th Street. The overcrossing bridge will have architectural features that will provide the City with a unique, context sensitive structure.

The Project will require vegetation and tree removal, utility relocations, sign relocations, right-of-way acquisition, and temporary construction easements. The Project will impact approximately nine parcels on the east side of SR 99 on/off ramps.

The total construction cost of the Project is estimated to be approximately \$11 million. Construction is anticipated to begin in Spring 2022.

Purpose

Purpose for the Project

- To build a Class I pedestrian/bike multiuse path that closes the gap between Phases 2 and 4 of the SR 99 Corridor Bikeway;
- To build a bikeway that is consistent with the goals outlined in the City's 2030 General Plan and Chico Bicycle Plan 2019 Update;
- To build a safe and more direct route for pedestrians and cyclists to cross 20th Street;
- To provide a bikeway that will improve pedestrian and bicycle access throughout the City and will help provide multi-modal connectivity to public services, employment centers, business districts, commercial centers, health facilities, adjacent neighborhoods, and local schools; and
- To design and construct a bikeway that meets Americans with Disabilities Act (ADA) requirements.





Datum

The vertical datum for the Project is North American Vertical Datum of 1988 (NAVD88).

Traffic

The Project is a Class I bikeway street overcrossing above 20th Street. The Project does not affect vehicular traffic.

2. REGULATORY SETTING

Executive Order 11988 (Floodplain Management, 1977)

Executive Order 11988 (Floodplain Management) (1977) directs all federal agencies to avoid, to the extent possible, long- and short-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. Requirements for compliance are outlined in Title 23, Code of Federal Regulations, Part 650, Subpart A (23 CFR 650A) titled "Location and Hydraulic Design of Encroachment on Floodplains" (2015).

If the preferred alternative involves significant encroachment onto the floodplain, the final environmental document (final Environmental Impact Statement or finding of no significant impact) must include:

- The reasons why the proposed action must be located in the floodplain,
- The alternatives considered and why they were not practicable, and
- A statement indicating whether the action conforms to applicable state or local floodplain protection standards.

California's National Flood Insurance Program

The Federal Emergency Management Agency (FEMA) is the nationwide administrator of the National Flood Insurance Program (NFIP), which is a program that was established by the National Flood Insurance Act of 1968 to protect lives and property, and to reduce the financial burden of providing disaster assistance. Under the NFIP, FEMA has the lead responsibility for flood hazard assessment and mitigation, and it offers federally-backed flood insurance to homeowners, renters, and business owners in communities that choose to participate in the program. FEMA has adopted the 100-year floodplain as the base flood standard for the NFIP. FEMA is also concerned with construction that would be within a 500-year floodplain for proposed projects that are considered "critical actions," which are defined as any activities where even a slight chance of flooding is too great. FEMA issues the Flood Insurance Rate Maps (FIRM) for communities that participate in the NFIP. These FIRMs present delineations of flood hazard zones.





In California, nearly all of the state's flood-prone communities participate in the NFIP, which is locally administered by the California Department of Water Resources' (DWR) Division of Flood Management. Under California's NFIP, communities have a mutual agreement with the state and federal governments to regulate floodplain development according to certain criteria and standards, which are further detailed in the NFIP.

Butte County Floodplain Data

As part of the NFIP, typically, each county (or community) has a Flood Insurance Study (FIS), which is used to locally develop FIRMs and Base Flood Elevations (BFE). The effective FIS for Butte County is 06007CV000A (FEMA, 2011b). The Project is located in FIRM Panel 06007C0506E (FEMA, 2011a). There are no Letter of Map Revisions or Letter of Map Amendments that affect the Project area since the effective date of the FIRM panel. There are no preliminary or pending updates to the FIS or FIRM (FEMA, 2019). The FIRMette is available in Appendix A.

3. DESIGN STANDARDS

FEMA Standards

The FEMA standards are employed for design, construction, and regulation to reduce flood loss and to protect resources. Two types of standards are often employed: design criteria and performance standards.

A design criterion or specified standard dictates that a provision, practice, requirement, or limit be met; e.g., using the 1%-annual-chance flood and establishing floodway boundaries so as not to cause more than a 1-ft increase in flood stages.

A performance standard dictates that a goal is to be achieved, leaving it to the individual application as to how to achieve the goal; e.g., providing protection to the regulatory flood, keeping postdevelopment stormwater runoff the same as pre-development, or maintaining the present quantity and quality of water in a wetland.

The 1% annual chance flood and floodplain have been adopted as a common design and regulatory standard in the United States. The NFIP adopted it in the early 1970s, and it was adopted as a standard for use by all federal agencies with the issuance of Executive Order 11988. States or local agencies are free to impose a more stringent standard within their jurisdiction.

4. FLOODPLAIN ANALYSIS

Floodplains were defined using FEMA FIRMs, which categorize these floodplains into different Special Flood Hazard Areas. The Project is located in Zone X, which is outside the 1%-annual exceedance floodplain and represents an area of minimal flood hazard (see Figure 4). Approximately 3% of the total Project area or 1.2 acres at the northern end of the bike path is at the edge of a





floodplain identified as Zone AE, which represent area with a 1% annual chance of flooding with Base Flood Elevation (BFE) derived from detailed hydraulic analyses. The FIRM identifies the BFE at this location to be at 222 ft. The remaining 97% of the Project area is located in Zone X. There is no cut/fill proposed within Zone AE.







Figure 4. FEMA Flood Zones for the Project Area

Source: FEMA





5. ENVIRONMENTAL CONSEQUENCES AND PROJECT IMPACTS

Summary of Potential Encroachments

Potential Traffic Interruptions

The proposed Project is a bikeway overpass. The Project will have no impact on traffic interruptions for the base flood.

Potential Impacts on Natural and Beneficial Floodplain Values

Natural and beneficial floodplain values include, but are not limited to: fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, forestry, natural moderation of floods, water quality maintenance, and ground water recharge (FHWA 1994).

The Project site is urbanized with ornamental trees, shrubs, grass, and pavement. The Project will have no significant impact to the natural and beneficial floodplain values associated with the base floodplain at the Project site.

Support of Probable Incompatible Floodplain Development

As defined by the FHWA, the support of incompatible base floodplain development will encourage, allow, serve, or otherwise facilitate incompatible base floodplain development, such as commercial development or urban growth (1994).

The proposed Project is in an urbanized area that is adjacent to existing roadway and developed commercial land. The Project will have no significant impact on development within the base floodplain.

Longitudinal Encroachments

As defined by the FHWA, a longitudinal encroachment is an action within the limits of the base floodplain that is longitudinal to the normal direction of the floodplain (1994). A longitudinal encroachment is "[a]n encroachment that is parallel to the direction of flow. Example: A highway that runs along the edge of a river is, usually considered a longitudinal encroachment." The requirement for consideration of avoidance alternatives must be included in a Location Hydraulic Study by including an evaluation and a discussion of the practicability of alternatives to any significant encroachment or any support of incompatible floodplain development.

The Project does not extend into the limits of the base floodplain and therefore does not constitute a longitudinal encroachment of the base floodplain.



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Risk Associated with Implementation of the Action

As defined by the FHWA, risk shall mean the consequences associated with the probability of flooding attributable to an encroachment. It shall include the potential for property loss and hazard to life during the service life of the bridge and roadway. The potential risk associated with the implementation of the proposed action includes, but is not limited to, the following: 1) change in land use, 2) change in impervious surface area, 3) fill inside the floodplain, or 4) change in the 100-year water surface elevation (WSE).

- 1. Change in land use Surrounding land uses consist of residential, commercial, industrial, and other uses common to an urban environment. The proposed Project includes the addition of a bikeway parallel to an existing road, and there would be no changes to land use.
- 2. Change in impervious surface area There is no change to the impervious surface area within the floodplain as a result of the Project.
- 3. Fill inside the floodplain There is no fill in the floodplain as a result of the Project.
- 4. Change in the 100-year WSE There would be no change in the WSEs, because the bikeway does not encroach into the 1% annual chance of exceedance floodplain.

6. AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

Measures to Minimize Floodplain Impacts Associated with the Action

- 1. Change in land use The Project would have no impact to the land use. Therefore, no special mitigation measures would be required.
- 2. Change in impervious surface area The Project would have no impact to impervious surface within the floodplain. Therefore, no special mitigation measures would be required.
- 3. Fill inside the floodplain The Project will not add fill within the floodplain boundary. Therefore, no special mitigation measures would be required.
- 4. Change in the 100-year WSE The Project would have no impact to the 1%-annual-chance flood elevation. Therefore, no special mitigation measures would be required.

Measures to Restore and Preserve the Natural and Beneficial Floodplain Values Impacted by this Action

The proposed Project would have insignificant impact to fill in the floodplain, and there are no impacts to natural and beneficial floodplain values. No special mitigation measures would be required.

Practicability of Alternatives to any Significant Encroachments

The Project would not modify the extent and elevation of the 1%-annual-chance floodplain within the Project. Therefore, no mitigation measures would be required.





Practicability of Alternatives to any Longitudinal Encroachments

The Project would not cause a longitudinal encroachment. Therefore, no mitigation measures would be required.

Coordination with Local, State, and Federal Water Resources and Floodplain Management Agencies

No coordination with floodplain management agencies is required because the impacts to the base floodplain are insignificant.





7. REFERENCES

- Federal Emergency Management Agency. (2019). FEMA Flood Map Service Center | Search All Products. Retrieved August 28, 2019, from FEMA website: <u>https://msc.fema.gov/portal/advanceSearch#searchresultsanchor</u>
- Federal Emergency Management Agency. (2015). Guidelines for Implementing Executive Order 11988, Floodplain Management, and Executive Order 13690, Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input. <<u>http://www.fhwa.dot.gov/engineering/hydraulics/policymemo/order56502.pdf</u>> (Last accessed: July 15, 2016)
- Federal Emergency Management Agency. (2011). *Flood Insurance Rate Map* for Butte County, California and Incorporated Areas. Map Number 06007C0506E. Panel 506 of 1200.
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- Chico Municipal Code. (2019, July). Retrieved from <u>http://library.amlegal.com/nxt/gateway.dll/California/chico_ca/chicomunicipalcode?f=temp_lates\$fn=default.htm\$3.0\$vid=amlegal:chico_ca</u>
- Chico 2030 General Plan. (2017, March). Retrieved from <u>http://www.chico.ca.us/document_library/general_plan/documents/2030GeneralPlanUpdat</u> <u>ed2017FullDocument.pdf</u>
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- City of Chico Bike Plan. (2019, April). Retrieved from <u>http://www.chico.ca.us/building_development_services/traffic/documents/2019CityofChico_BikePlan.pdf</u>
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U.S. Government Publishing Office. (April 1, 2015). Code of Federal Regulations Title 23 Highways. Chapter I - Federal Highway Administration, Department of Transportation. Subchapter G -Engineering and Traffic Operations. Part 650 - Bridges, Structures, and Hydraulics. <<u>https://www.gpo.gov/fdsys/pkg/CFR-2015-title23-vol1/pdf/CFR-2015-title23-vol1part650.pdf</u>> (Last accessed: May 31, 2016)





Appendix A. FEMA FIRMette



National Flood Hazard Layer FIRMette



Legend





Appendix B. LHS Forms



FLOODPLAIN EVALUATION REPORT SUMMARY

Dist. 3 Co. Butte	Rte. SR99 Bikeway	K.P.
Federal-Aid Project Number (Local Assistance)	CML-5037(027)	
Project No.:	Bridge No. N/A	
Limits: N/A	-	

Floodplain Description: According to FIRM 06007C0506E the Project area is located within Zone X, which represents areas of minimal flood hazard.

		No	Yes
1.	Is the proposed action a longitudinal encroachment of the base floodplain?	\checkmark	
2.	Are the risks associated with the implementation of the proposed action significant?	\checkmark	
3.	Will the proposed action support probable incompatible floodplain development?	\checkmark	
4.	Are there any significant impacts on natural and beneficial floodplain values?	\checkmark	
5.	Routine construction procedures are required to minimize impacts on the		
	floodplain. Are there any special mitigation measures necessary to minimize		
	impacts or restore and preserve natural and beneficial floodplain values? If yes,		
	explain.	\checkmark	
6.	Does the proposed action constitute a significant floodplain encroachment as		
	defined in 23 CFR, Section 650.105(q).	\checkmark	
7.	Are Location Hydraulic Studies that document the above answers on file? If not		
	explain.		\checkmark

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PREPARED BY:

	Date
District Project Engineer (capital and 'on' system projects)	
	Date
Local Agency/Consulting Hydraulic Engineer (local as	ssistance projects)
CONCURRED BY:	
	Date
District Project Manager (capital and 'on' system projects)	
	_ Date
District Local Assistance Engineer (Local Assistance project	cts)
I concur that impacts to natural and beneficial floodplain values are con	sistent with the results of other studies prepared pursuant to 23 CFR 771, and that the NEPA
document or determination includes environmental mitigation consistent	with the Floodplain analysis.
	_ Date
District Senior Environmental Planner (or Designee)	

Note: If a significant floodplain encroachment is identified as a result of floodplains studies, FHWA will need to approve the encroachment and concur in the Only Practicable Alternative Finding.

TECHNICAL INFORMATION FOR LOCATION HYDRAULIC STUDY

Dist.	3	Co. Butt	e		Rte.	SR99 H	Bikewav			Proiec	rt ID	0319000145
Federa	l-Aid l	Project Nu	mber:	CML-5	5037(0)	27	Bridge No	р. <u>N</u> А				
Floodp <u>Accore</u> <u>The rer</u>	blain D ling to ling	escription: FIRM 0600 3% of the l	7C0506E Project ar	<u>, 97% of</u> ea is with	the Pro	ject area AE, th	a is located le Special F	<u>within 2</u> lood Ha	Zone X, v zard Are	which repr a with a 1	resents %-ann	areas of minimal flood hazard. ual chance flood.
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2. AD	Г:	Current	t <u>NA</u>			Proje	ected N	А				
3. Hyd	raulic	Data:	Base Fl WSE10 Q= Overtop	ood Q10 0= <u>NA</u> pping flo	00= <u>222 ft-</u> <u>CFS</u> ood Q=	<u>NA</u> NAVI <u>NA</u>	CFS 088 CFS	_The flood WSE= WSE=	d of record	l, if greater t <u>NA</u> NA	han Q10	0:
Are N	FIP ma	ps and stu	dies avai	lable?				NO		_YES_	Х	
4. Is th	e high	way locati	on altern	ative wit	thin a r	egulato	ory floodw	ay? NO	X	_YES_		
5. Atta	ich maj	o with floo	d limits	outlined	showii	ng all b	ouildings o	r other	improve	ements w	ithin tl	he base floodplain.
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			Moder	ate
			High_	

9.

For High Risk projects, during design phase, additional Design Study Risk Analysis may be necessary to determine design alternative.

TECHNICAL INFORMATION FOR LOCATION HYDRAULIC STUDY cont.

Dist. <u>3</u> Co. <u>Butte</u>	Rte. SR99 Bikeway	Project ID 0319000145
Federal-Aid Project Number: _	CML-5037(027)	Bridge No. NA
PREPARED BY:		
Signature		
I certify that I have conducted a Location I form is accurate.	<i>Hydraulic Study consistent with 23 CFR 650 and that the</i>	information summarized in items numbers 3, 4, 5, 7, and 9 of this
District Hydraulic Engineer (cap	ital and 'on' system projects)	
	Date	
Local Agency/Consulting Hydr	aulic Engineer (local assistance projects)	
Is there any longitudinal encroad development?	chment, significant encroachment, or any NO <u>X</u> YES	y support of incompatible Floodplain
If yes, provide evaluation and c	iscussion of practicability of alternatives	in accordance with 23 CFR 650.113
Information developed to comp project files.	ly with the Federal requirement for the L	ocation Hydraulic Study shall be retained in the
I certify that item numbers 1, 2, 6 and 8 of recommendations of said report:	this Location Hydraulic Study Form are accurate and w	vill ensure that Final PS&E reflects the information and
District Project Engineer (capital	and 'on' system projects)	
	Date	
Local Agency Project Engineer	(local assistance projects)	
CONCURRED BY: <i>I have reviewed the quality and adequacy of</i>	of the floodplain submittal consistent with the attached c	hecklist and concur that the submittal is adequate to meet the
mandates of 23 CFR 650.	, ,	······································
	Date	
District Project Manager (capital	and 'on' system projects)	
Local Agency Project Manager	Date	
Local Agency Project Manager	(Local Assistance projects)	
District Local Assistance Engir	Date	
Hydraulic Branch review of local assistance	e projects shall be based on reasonableness and concur	rence with the information provided).
I concur that the natural and beneficial flo document or determination includes enviro	odplain values are consistent with the results of other stu nmental mitigation consistent with the Floodplain analy	udies prepared pursuant to 23 CFR 771, and that the NEPA sis.
District Series Environment 11	Depror (D i)	
District Senior Environmental	Tallier (or Designee)	

Note: If a significant floodplain encroachment is identified as a result of floodplains studies, FHWA will need to approve the encroachment and concur in the Only Practicable Alternative Finding.