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September 12, 2022

Samuel Baumgardner-Kranz
 Senior Engineer
 County of Sonoma Department of Transportation
 & Public Works
 2300 County Center Drive, Suite B-100
 Santa Rosa, CA 95403

Subject: Historic American Engineering Record Report of Watmaugh Bridge, unincorporated
 Sonoma County, California.

Dear Mr. Baumgardner-Kranz:

LSA is pleased to provide an updated version of the Historic American Engineering Record (HAER) report for the Watmaugh Road Bridge Replacement Project revised to address Caltrans District 4 staff comments on the draft document. This document serves as a cover letter providing the County a mechanism to formally accept the HAER report (attached) as complete.

**THE WATMAUGH ROAD BRIDGE REPLACEMENT PROJECT HAER REPORT
 IS REVIEWED, APPROVED, AND HEREBY ACCEPTED**

CONSULTANT:
 LSA

CLIENT:
 Samuel Baumgardner-Kranz
 Senior Engineer
 County of Sonoma Department of
 Transportation & Public Works

Authorized Signature

Associate/Architectural Historian
 HAER Report Preparer

Title

September 12, 2022

Date

Authorized Signature

Senior Engineer
 Designated Representative

Title

September 21, 2022

Date

Thank you for selecting LSA for this work.

Sincerely,

LSA Associates, Inc.

A handwritten signature in black ink, appearing to read "Michael Hibma". The signature is fluid and cursive, with a horizontal line underneath the name.

Michael Hibma, M.A., AICP
Associate/Architectural Historian

Attachment: *Historic American Engineering Report for the Watmaugh Road Bridge Replacement Project* (LSA Associates, May 12, 2022, revised September 9, 2022).

HISTORIC AMERICAN ENGINEERING RECORD
WATMAUGH ROAD BRIDGE
California Department of Transportation Bridge #20C-0017
Sonoma County Landmark #103
a.k.a., “Hopke Bridge”
 Unincorporated Sonoma County, California¹

Location: Spanning Sonoma Creek at Watmaugh Road
 1.9 miles southwest of Sonoma Plaza and 0.3 mile west of State Route 12,
 Sonoma County, California

Universal Transverse Mercator (UTM) Coordinates
 Zone 10S; 546622mE / 4235439mN (eastern approach/abutment)
 Zone 10S; 546571mE / 4235427mN (western approach/abutment)

Latitude/Longitude: 38° 15' 56" N / 122° 28' 2" W

Township / Range: T 5 North / R 6 West, Mount Diablo Baseline and Meridian

United States Geological Survey Topographic Quadrangle
 SW¼, SW¼, Rancho Petaluma; *Sonoma, Calif.* (1980) 7.5-minute

Present Owner and Occupant: County of Sonoma, Development Services
 Department of Transportation & Public Works
 La Plaza B
 2300 County Center Drive
 Santa Rosa, California 95403

Present Use: Two lane, two-way vehicular bridge

Significance: According to information on file at the Sonoma County “Permit Sonoma,” the Sonoma County Board of Supervisors designated the Watmaugh Road Bridge a Sonoma County Landmark (#103) on July 28, 1981, under Resolution #69974. On January 28, 1998, the Sonoma County Board of Supervisors established the Sonoma County Historic Bridges Thematic District under Resolution #98-0046. The district includes the Watmaugh Road Bridge and 11 additional County-owned bridges. The district was created so to “afford long term protection of these bridges and ensure that modifications are not detrimental to the historic integrity.” The bridges “are associated with events that have made a significant contribution to the broad pattern of our history” ([i.e., the] development of a transportation system) [and] “they embody the distinctive characteristics of a type, period, method of construction, or possess high artistic values.”²

¹ This report generally utilizes official guidance as presented in the *Historic American Engineering Record – Guidelines for Historical Reports (2008, updated December 2017)* accessed electronically:

<https://www.nps.gov/hdp/standards/HAER/HAERHistoryGuidelines.pdf>

² Sonoma County Board of Supervisors, Resolution 98-0046. January 6, 1998. On file at the Sonoma County Department of Transportation & Public Works, Santa Rosa, California.

On December 13, 2016, California State Office of Historic Preservation staff assigned a California Historical Resource Status Code (Status Code)³ of “2S2” to the Watmaugh Road Bridge indicating it was, “Individually determined eligible for N[ational] R[egister of Historic Places] by consensus through Section 106 process [and the bridge was also] Listed in the C[alifornia] R[egister of Historical Resources].”⁴

Historian: Michael Hibma, M.A., AICP, prepared this report and completed the large-format photography of the Watmaugh Road Bridge. Mr. Hibma is an architectural historian in the Point Richmond, California, office of LSA. Mr. Hibma holds an M.A. in History from California State University, Sacramento; meets the Secretary of the Interior’s *Professional Qualifications Standards* as an architectural historian and historian (48 Code of Federal Regulations 44716); and is certified by the American Institute of Certified Planners (#32009). This report was completed May 6, 2022.

Project Information: The HAER documentation of the Watmaugh Road Bridge was prepared at the request of the Sonoma County Department of Transportation & Public Works (County) as partial fulfillment of an environmental review and project approval process for the proposed Watmaugh Road Bridge Replacement Project. The County owns and maintains the current bridge structure and sponsored the HAER recordation.

Part I. Historical Information

A. Physical History

- 1. Date(s) of construction:** Constructed at present location in 1929
- 2. Architect/Engineer:** Edward A. Peugh, Sonoma County Surveyor
- 3. Builder/Contractor:** Walter Lewis Proctor, Santa Rosa, California

Supplier⁵: Carnegie Steel Company, 434 Fifth Avenue, Pittsburg, Pennsylvania; United States Steel Products Company, Pacific Coast Department, Russ Building, 235 Montgomery Street, San Francisco, California. Plans drawn January 1929 by Edward A. Peugh, County Surveyor, noted the use of “Carnegie Beams” in the structural design, inferring steel supplied by Carnegie Steel and distributed by Pacific Coast Dept. of United States Steel was used to erect this bridge.

- 4. Original Plans and construction:** “Bridge Over Sonoma Creek At Hopke Ranch – January 1929” on file at the Sonoma County Department of Transportation & Public Works, Santa Rosa, California.

³ Office of Historic Preservation Status Code guidance: <http://ohp.parks.ca.gov/pages/1069/files/tab8.pdf>.

⁴ Office of Historic Preservation, Built Environment Resource Directory: https://ohp.parks.ca.gov/?page_id=30338; Sonoma County, Line 3.

⁵ Note: A field survey also noted steel beams embossed with “P.C.S. Co.,” indicating the South San Francisco-based Pacific Coast Steel Company cast one or more of the beams used to erect the Watmaugh Road Bridge. By 1952, Bethlehem Steel Company absorbed Pacific Coast Steel to form the Bethlehem Pacific Coast Steel Corporation.

5. **Alterations and additions:** Bridge concrete deck later surfaced in asphalt at an unknown date. Original riveted steel lattice guardrails as depicted on original plans (prepared January 1929) removed (date unknown) and replaced with modern galvanized steel “W-beam” guardrails. Several repairs for spalling concrete (based on review of Caltrans Bridge Inspection Reports on file with the Sonoma County Department of Transportation & Public Works).

B. Historical Context⁶:

1. **Truss Bridges:** The essential difference among bridge types is how they support their own weight, known as “dead load,” and the weight of persons, things, or effects of weather (e.g., wind or snow), known as “live load.” Common bridge structure types include trusses, arches, or beams to support dead and live loads. “In the late eighteenth century, American bridge builders adopted, and adapted truss patterns commonly used in medieval and early modern Europe to frame roofs, and at least since the Renaissance, for the construction of bridges.”⁷ During the 19th century, American entrepreneurs began to develop and patent new bridge trusses. Technological advances in iron and steel manufacturing processes, corporate consolidation among fabricators and manufacturers, and increasing government preference for consistency in design and safety “led to the dominance of the Pratt, Parker, and Warren trusses, still common today.”⁸ A truss-style bridge is essentially a self-supporting structural system “composed of vertical compression and diagonal tension elements” geometrically arranged to support and transfer dead and live loads to the ground via support piers.⁹

The Watmaugh Road Bridge is a Warren pony truss bridge. In 1848, James Warren and Willoughby Monzani patented a bridge design configured as a repeating equilateral. This British-patented bridge was common within the United Kingdom, and prefabricated versions were used in its colonies. The Warren truss was a relatively light truss due to its configuration of longitudinal members joined by angled cross members that form alternating, inverted, equilateral triangles over the length of the truss. This configuration ensures that no individual strut, beam, or tie is subject to bending or straining forces, but only to tension or compression. Loads on the diagonals alternate between compression and tension (approaching the center), with no vertical elements, while elements near the center must support both tension and compression in response to live loads. This configuration combines strength with economy of materials and can therefore be relatively light.

The popularity of the automobile compelled local governments and later state governments to invest in infrastructure to “open up” and promote economic growth in areas far from railroad lines. The relatively economical and efficient truss bridges quickly found favor with road improvement groups, local and state transportation commissions, and city and county engineers.

⁶ Section B is from a California Department of Parks and Recreation Series 523 form record evaluation prepared in May 2012 by architectural historian Vicki R. Beard for the Watmaugh Road Bridge. Electronic document, <https://historicbridges.org/california/watmaugh/documentation.pdf>, pages 250-253. The text in this report was revised for clarity and readability.

⁷ Cleary, Richard, L. 2007. *Bridges. Library of Congress Visual Sourcebooks in Architecture, Design and Engineering*. Pages 127-130.

⁸ Ibid. Page 128.

⁹ National Park Service, 2004. *Recording Historic Structures*. Second Edition. Page 163.

Truss bridges would eventually give way to the reinforced concrete bridge, the first of which was constructed in San Francisco in 1889. By 1900, the concrete bridge was a dominant bridge form nationwide. Historically, concrete bridges were most often used for smaller spans that lacked the engineering challenges presented by larger ones. Ease of design and construction made the concrete bridge especially attractive to local governments, and concrete bridges were usually designed by county surveyors and state engineers. Caltrans cites them as “probably the most common bridge type built on California highways.”

During the City Beautiful movement of the early-20th century, architects, engineers, and planners regarded the “naked” truss rudimentary and visually ugly. More elegant and expensive bridges increasingly replaced truss bridges in urban or visually dramatic locations. Replacement spans were typically either reinforced concrete or cut stone, often with neoclassical decoration, or modern suspension bridges with a sophisticated machine aesthetic that reduced costs without sacrificing strength.¹⁰ However, in rural or less affluent areas, the practical, inexpensive, and straightforward engineering of the truss remained popular.

- 2. Sonoma County Truss Bridges:** Sonoma County bridges take many forms and represent a variety of construction techniques and materials. By far the largest subset is comprised of reinforced concrete bridges, while metal truss bridges are poorly represented in the county, numbering 17 in all. Sonoma County’s truss bridges reflect various phases of the county’s historical development and the development of its transportation network. They also reflect technological changes affecting transportation both statewide and nationwide during the early-20th century. The following table summarizes extant highway truss bridges in Sonoma County.

Time Frame	Era	Bridge Name	Truss Type
Pre-1900	Railroad	Haupt Creek***(LM)	Pratt through
		Big Sulphur Creek***(LM)	Pratt through
1900 to 1919	Railroad	Clarks Crossing***(LM)	Parker through
	Early Roads	Hacienda Bridge***(LM)	Parker through
		Lambert Bridge***(LM)	Parker through
1920 to 1933	County Plan	Healdsburg Bridge	PA Petit through
		Wohler Road***(LM)	Parker through
		Guerneville Bridge*/***(LM)	Parker through
		Austin Creek (LM)	Pratt through
		Watmaugh Road***(LM)	Warren pony
		Arnold Drive***(LM)	Parker through
1934 to 1950	State Support	D Street Bridge (basculer)**	Warren variation
		Monte Rio Bridge (LM)	Pratt pony
		Westside Road	Pratt pony
		Crocker Road	Warren pony

¹⁰ California Department of Transportation. 1990. *Historic Highway Bridges of California*. Sacramento, California, Pages 76, 98, 130-135.

Jimtown Bridge

Cantilever pony

- * State Highway Bridge
 - ** Funded by the City of Petaluma
 - *** Contributor to Sonoma County Historic Bridges Thematic District
- LM – Sonoma County Landmark

The earliest existing metal truss bridges in Sonoma County date to the late-19th century and were constructed as railroad bridges. The Haupt Creek Bridge (#20C-0224) and the Big Sulphur Creek Bridge (#20C-0005) both originated as parts of a Northwest Pacific Railroad (NPRR) bridge over the Russian River near Northwood. The NPRR bridge had three Pratt through-truss spans, each measuring 130 feet long. The Phoenix Bridge Company built the bridge using its patented Phoenix column in its construction. Caltrans' survey of state bridges found four extant Phoenix bridges, three of which are the reused spans of the Russian River NPRR bridge: the fourth crosses Burger Creek in neighboring Mendocino County.

Early-20th century railroad bridges also represent Sonoma County's remaining truss bridges. The current Hacienda Bridge over the Russian River (#20C-0037) was built in 1914, replacing a Pratt combination truss, itself having replaced a deteriorated, wooden Howe through-truss structure in 1891. The bridge over the Wheatfield Fork of the Gualala River at Clarks Crossing (#20C-0141) might also be a relocated railroad bridge. No records have been located regarding its construction. Caltrans estimated a construction date of 1909. As of this writing, there remains one metal truss bridge in Sonoma County dating to the early phase of county road development, and it crosses Dry Creek northwest of Healdsburg. Lambert Bridge (#20C-0248) was built by the American Bridge Company and was constructed at its present location in 1915. This Parker through-truss structure is the earliest non-railroad truss bridge remaining in Sonoma County.

Sonoma County voters passed the Highway Modernization Plan in 1919 to fund a series of road improvements. The improved roads linked the communities of Sonoma, Petaluma, Valley Ford, Bodega Bay, and north to the Mendocino County Line; Santa Rosa, Sebastopol, Freestone, and Valley Ford; Healdsburg, Forestville, Guerneville, and Jenner; Healdsburg to the Napa County Line; Cotati, Sebastopol, and Forestville; and Graton and Occidental. The bond provided for the construction of several new and replacement bridges. The bond funded the construction of six of the 18 existing truss bridges in Sonoma County. Four bridges were built in 1920 and 1929; the remaining two were built in the early 1930s. Following the Wall Street Crash of 1929, Sonoma County continued working on these road projects, but as the ensuing Great Depression took hold, the increasing challenges facing the County in selling the bonds needed to build roads made progress difficult. In response, the State took control of much of Sonoma County's road system in 1933, including portions of present-day State Highways 1, 12, 116, and 128. Four of the extant truss bridges were built after that date.

Through-truss bridges of the Parker style are the best represented of the extant truss bridges in Sonoma County. Pratt-style through-truss bridges are the second most frequent type, followed by Pratt pony trusses. In 1985, when the Caltrans bridge survey was completed, Sonoma County had four Warren truss bridges, in addition to the Warren variation bascule bridge in Petaluma. Two were through trusses, though since demolished. The two pony truss bridges have survived. Below is a summary of highway truss bridge types remaining in Sonoma County, as of 2012.

Design	Roadway	Number
Parker	Through	6
Pratt	Through	4
Pratt	Pony	3
Warren polygonal	Pony	2
Warren (bascule)	Pony	1
Pennsylvania Petit	Through	1
Cantilever	Pony	1

3. **Watmaugh Road Bridge:** The creek crossing at Watmaugh Road was a ford until the 1890s when, at the behest of local residents, the County financed construction of a wooden bridge. The Watmaugh Road crossing provided a more direct link to the south end of Sonoma and the lower Broadway area. The King Iron Bridge Manufacturing Company was awarded a \$2,730 contract in 1891 to build the bridge. Under the 1919 Highway Modernization Plan, the County opted to replace the original bridge over Sonoma Creek as part of a series of improvements to what was then known as the Petaluma-Sonoma Highway. County Surveyor Edward A. Peugh drew up the plans for the replacement steel truss bridge in 1927, and on March 12, 1929, the Sonoma County Board of Supervisors awarded a contract of \$14,783 to Walter Lewis Proctor to build it.¹¹

The bridge designer, Edward A. Peugh, grew up on a farm in western Sonoma County. During the early 1900s, Peugh married Georgia Guerne of the Russian River lumbering family. He and Georgia stayed in western Sonoma County, and Edward worked as a grocery clerk in the Guerneville area. By 1918, the Peugh family moved to Santa Rosa, where Edward got a job working as a surveyor for the County. In 1922, he ran unopposed for the position of County Surveyor. He was to become the last elected County Surveyor when the office became an appointed position. Peugh served as County Surveyor until he died in 1937.

The contractor who built the Watmaugh Road Bridge was Walter Lewis Proctor. He was born on February 11, 1870 in River Falls, Wisconsin. Like Peugh, Walter worked on the family farm. A review of voter registration shows that, upon his arrival in California (c.1890), Proctor worked as a telegrapher operator in Bodega in 1892 and was a merchant in Marin County and San Francisco in 1896 and 1898, respectively. He seems to have settled in Sonoma County by 1900 and over the next 30 years lived in Bodega and Santa Rosa. By 1906, Proctor was known as a general contractor who moved and raised houses.¹² He also built several bridge construction projects near Santa Rosa as early as 1914.¹³ He died October 26, 1949, in Santa Rosa.

Statewide, Caltrans found Warren truss bridges to be numerous; however, in Sonoma County the Watmaugh Road Bridge is one of only two remaining fixed Warren trusses. Moreover, it was one of the last bridges constructed under the County's road improvement plan of 1919. The other extant Warren truss, the Crocker Road Bridge in Cloverdale, was built in

¹¹ “Supervisors Award Contract. *Petaluma Argus-Courier*, 12 March 1929. Page 12. Note: when adjusted for inflation, \$14,783 is equivalent to \$233,461 in 2021 dollars. Federal Reserve Bank of Minneapolis, 2020.

¹² “Occidental Story Told” *Santa Rosa Republican*, 23 October 1906. Page 2. Newspapers.com.

¹³ “Walter Proctor Was Injured” *Petaluma Argus Courier*, 26 March 1914. Page 5. Newspapers.com.

1938. Writing in their request for a determination of eligibility for historic truss bridges, Caltrans personnel note that 1920s truss bridges are underrepresented in the nomination as it was “a slow period in the construction of truss bridges in California.”

According to Peugh’s plans drawn up in January 1929, the bridge deck and piers were to be constructed of concrete using reinforced Portland cement. The spread of reinforced concrete construction in the United States was generally in response to the need for improved resistance to fire and earthquake damage. As a building medium, reinforced concrete was relatively simple to work with and required minimal skilled labor (in comparison to professional masons). Roughly beginning in 1890, the spread of reinforced concrete structural systems “including walls, columns, slabs and beams” along with steel-frame building was at the forefront of American construction by 1910.¹⁴

According to historian Betsy Hunter Bradley, the motivation in spreading the use of reinforced concrete was (1) the refinement of the preparation of Portland cement through a process of grinding and heating to make a material that would be uniform in composition and strength, and (2) the use of steel reinforcing bars, pioneered by San Francisco-based engineer Ernest Leslie Ransome. By 1900, Ransome’s method of steel reinforcement allowed concrete structural systems to adopt a more skeletal form, which allowed for more windows providing more interior lighting for manufacturing and other industrial uses.¹⁵

The term “Portland cement,” according to essayist Brian Hayes, dates to the 1820s when concrete was rediscovered by builders in the English Midlands. The term Portland cement “refers to the Isle of Portland, of the Dorset Coast of England, which was the source of the white limestone that architect Christopher Wren chose for St. Paul’s Cathedral in London. Portland cement does not come from the Isle of Portland, but the name was thought to suggest quality.”¹⁶

- 4. United States Steel – Related Companies:** United States Steel (U.S. Steel) was organized in 1901 as a result of several mergers of large steel manufacturers, as well as the American Bridge Company, which itself was a collection of 27 other independent steel fabrication firms merged together during the 1880s and 1890s by financier J. Pierpont Morgan. In 1901, Morgan made American Bridge a subsidiary of U.S. Steel, a corporate trust that virtually controlled steel manufacturing in the United States. The Carnegie Steel Company as well as the Pacific Steel Corporation were subsidiaries of U.S. Steel by 1901.

According to the original plans for the Watmaugh Road Bridge drawn by Edward A. Peugh in January 1929, the use of “Carnegie beams” was noted in the bridge’s superstructure. Field observations noted steel beams embossed with “P.C.S Co.” By 1929, when the Watmaugh Road Bridge was built, Pittsburg, Pennsylvania-based Carnegie Steel Company and South San Francisco-based Pacific Coast Steel Company had been subsidiaries of U.S. Steel for at least 18

¹⁴ Friedman, David. 2010. *Historical Building Construction: Design, Materials & Technology*. Second Edition. W.W. Norton & Company, New York. Page 131.

¹⁵ Bradley, Betsy Hunter. 1999. *The Works: The Industrial Architecture of the United States*. Oxford University Press, New York. Pages 156-157; Stephen Tobriner, 2006. *Bracing for Disaster: Earthquake-Resistant Architecture and Engineering in San Francisco, 1838-1933*. Heyday Books, Berkeley, California. Page 204.

¹⁶ Hayes, Brian. 2005. *Infrastructure: The Book of Everything for the Industrial Landscape*. W.W. Norton & Company, New York. Page 42.

years. Actual steel fabrication was farmed out to various U.S. Steel plants, including its major plants in Gary, Indiana, and Ambridge, Pennsylvania. By the early 1930s, U.S. Steel so dominated American steel-making that many of the major bridge superstructure contracts in the United States, such as the San Francisco Oakland Bay Bridge, came to it.¹⁷

For the Watmaugh Road Bridge, the prime contractor was Walter Lewis Proctor, then a Santa Rosa-based contractor. The steel, it is presumed but not clearly established in background research, was specified by the County and purchased or supplied by Proctor. A copy of the executed contract between Sonoma County and Proctor was not located.

Part II. Structural/Design Information

A. General Statement:

- 1. Character:** The Watmaugh Road Bridge is an open, steel framed bridge resting on two tapered, reinforced concrete piers that carries Watmaugh Road over Sonoma Creek. The bridge deck is cast in place Portland cement with an asphalt paved wearing surface that was applied at an unknown time. The bridge retains its original structural configuration and orientation and most of its materiality, and it represents a typical example of a two-lane bridge from the early-20th century located in rural areas statewide.
- 2. Condition of fabric:** This bridge structure has sustained alterations and repairs over the last 91 years. Moreover, lack of use and periodic maintenance over the last 40 years have resulted in deterioration. See Part 1.A.5, above.

- B. Description:** The Watmaugh Road Bridge over Sonoma Creek (Bridge Number 20C-0017) is a three-span, pony truss bridge measuring 170 feet long and 24 feet wide. The main span is 102 feet long, crosses Sonoma Creek approximately at right angles, and is supported by two concrete piers. The bridge is a steel pony truss with an underlying concrete deck later repaved in asphalt at a later time. The superstructure is comprised of a Warren polygonal truss. Presently, the main span has galvanized steel W-beam guardrails and is flanked by reinforced concrete approach spans with precast concrete rails. The approaches measure 38 feet on the west and 29 feet on the east. Concrete abutments and two concrete piers support the bridge. There is no walkway or lighting.

There is a yellow “NARROW BRIDGE” warning sign with an accompanying yellow curve directorial warning sign, followed by a white “WEIGHT LIMIT” regulatory sign, which is in turn followed by a green “SONOMA CREEK” guide sign at each approach. There is no posted speed limit. The upper chord of the upstream steel pony truss has affixed to it a rectangular bronze plaque. The plaque notes it is an “AWARD OF MERIT” that was “Presented by the Sonoma League for Historic Preservation to the Committee to Save Watmaugh Bridge for their efforts in preserving this historic structure. Nov. 18, 1981.”

¹⁷ *San Francisco Oakland Bay Bridge, Spanning San Francisco Bay, San Francisco, San Francisco County, CA.* Historic American Engineering Survey HAER CAL,38-SANFRA,141. 1999. Page 169. Electronic document, <https://tile.loc.gov/storage-services/master/pnp/habshaer/ca/ca1300/ca1352/data/ca1352data.pdf>, accessed various.

- C. Site Description:** The Watmaugh Road Bridge is in a rural setting in southeastern Sonoma County. The surrounding area is generally flat, with low-lying foothills to the southwest with areas of flat land close to Sonoma Creek. Surrounding land uses include ranches, vineyards, and livestock grazing.

Part III. Sources of Information

A. Primary Sources:

California Department of Transportation (Caltrans)

- 1986 Historic Bridge Inventory – Local Agency Bridges (updated 2011 and 2015). Electronic document, <https://dot.ca.gov/-/media/dot-media/programs/maintenance/documents/f0009165-hs-local-a11y.pdf>, accessed various.

Petaluma Argus-Courier (Petaluma, California)

- 1914 Walter Proctor Was Injured. 26 March 1914. Page 5. Electronic document, newspapers.com, accessed various.

- 1929 Supervisors Award Contract. March 12, 1929. Page 12. Electronic document, newspapers.com, accessed various.

Santa Rosa Republican (Santa Rosa, California)

- 1906 Occidental Story Told. October 23 1906. Page 2. Electronic document, newspapers.com, accessed various.

Sonoma County

- 1929 *Sonoma Creek Cal. Bridge Over Sonoma Creek at Hopke Ranch*. Bridge design plans drawn by E.A. Peugh, County Surveyor. On file at Department of Transportation & Public Works, Santa Rosa, California.

B. Secondary Sources:

Beard, Vicki R.

- 2001 *Bridge Evaluation Report for the Watmaugh Road at Sonoma Creek Bridge Seismic Retrofit Project, Sonoma County, California*. Tom Origer & Associates, Rohnert Park, California.

- 2012 California Department of Parks and Recreation Series 523 form record evaluation of P-49-0002867/Watmaugh Road Bridge. Tom Origer & Associates, Rohnert Park, California. Electronic document, <https://historicbridges.org/california/watmaugh/documentation.pdf>.

Bradley, Betsy Hunter

- 1999 *The Works: the Industrial Architecture of the United States*. Oxford University Press, New York.

Bridgehunter.com

- 2010 Watmaugh Road Bridge. Electronic document, <https://bridgehunter.com/ca/sonoma/20C0017/>, accessed various.

BridgeReports.com

- 2012 Watmaugh Road over Sonoma Creek. National Bridge Inventory Data. Electronic document, <https://bridgereports.com/1042489>, accessed various.

California Department of Transportation (Caltrans)

- 1990 *Historic Highway Bridges of California*. Caltrans, Graphic Services, Sacramento.
- 2004 *Caltrans Historic Bridges Inventory Update. Metal Truss, Movable, and Steel Arch Bridges. Volume 1*. California Department of Transportation and JRP Historical Consulting, Sacramento and Davis, California. Electronic document, <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/metal-truss-steel-arch-bridges-2004-a11y.pdf>, accessed various.

Cleary, Richard L.

- 2007 *Bridges*. Norton/Library of Congress Visual Sourcebooks in Architecture, Design, and Engineering. W.W. Norton & Company, New York, Library of Congress, Washington, D.C.

Hayes, Brian

- 2005 *Infrastructure: The Book of Everything for the Industrial Landscape*. W.W. Norton & Company, New York.

HistoricBridges.org

- 2013 Watmaugh Road Bridge. Electronic document, <https://historicbridges.org/bridges/browser/?bridgebrowser=california/watmaugh/>, accessed various.

National Park Service (NPS)

- 2004 *Recording Historic Structures – Second Edition*. John A. Burns, Ed. National Park Service, U.S. Department of the Interior, Washington, D.C. John Wiley & Sons, Inc., New Jersey.
- 2017 *Historic American Engineering Record – Guidelines for Historical Reports*. 2008, updated December 2017. NPS, U.S. Department of the Interior, Washington, D.C. Electronic document, <https://www.nps.gov/HDP/standards/HAER/HAERHistoryGuidelines.pdf>, accessed various.

Parsons Brinckerhoff (with) Engineering and Industrial Heritage

- 2005 *A Context for Common Historic Bridge Types; NCHRP Project 25-25, Task 15*. Electronic document, [http://onlinepubs.trb.org/onlinepubs/archive/NotesDocs/25-25\(15\)_FR.pdf](http://onlinepubs.trb.org/onlinepubs/archive/NotesDocs/25-25(15)_FR.pdf), accessed various.

United States Geological Survey (USGS)

- 1902 *Napa, Calif.* 60-minute topographic quadrangle. USGS, Washington, D.C.
- 1942 *Sonoma, Calif.* 15-minute topographic quadrangle. USGS, Washington, D.C.
- 1951a *Sonoma, Calif.* 15-minute topographic quadrangle. USGS, Washington, D.C.
- 1951b *Sonoma, California.* 7.5-minute topographic quadrangle. USGS, Washington, D.C.
- 1968 *Sonoma, Calif.* 15-minute topographic quadrangle. USGS, Washington, D.C.
- 1980 *Sonoma, Calif.* 7.5-minute topographic quadrangle. USGS, Washington, D.C.

WATMAUGH ROAD BRIDGE

PHOTOGRAPHIC DOCUMENTATION

Watmaugh Road Bridge (a.k.a., "Hopke Bridge")
California Department of Transportation Bridge #20C-0017; Sonoma County Landmark #103
Spanning Sonoma Creek at Watmaugh Road
1.9 miles southwest of Sonoma Plaza and 0.3 mile west of State Route 12,
Sonoma County, California

Other Locational Information

Universal Transverse Mercator (UTM) Coordinates

Zone 10S; 546622mE / 4235439mN (eastern approach/abutment)

Zone 10S; 546571mE / 4235427mN (western approach/abutment)

Latitude/Longitude: 38° 15' 56" N / 122° 28' 2" W

Township / Range: T 5 North / R 6 West, Mount Diablo Baseline and Meridian

United States Geological Survey Topographic Quadrangle

SW¼, SW¼, Rancho Petaluma; *Sonoma, Calif.* (1980) 7.5-minute

June 2022

Michael Hibma, M.A., AICP
Architectural Photographer and Architectural Historian
LSA
157 Park Place
Point Richmond, California 94801

Note: These photographs were taken in partial fulfillment of environmental mitigation required under the California Environmental Quality Act. The photographs were taken June 7-8, 2020. The camera used was a Sinar F2, with 150- and 210-mm lenses. The negatives and contact prints were processed for archival permanence at Brooks Photography in Alturas, California. Negatives were washed in water for two hours to ensure archival permanence.

WATMAUGH ROAD BRIDGE

PHOTOGRAPHIC DOCUMENTATION

Photograph Index¹

Photograph No.

1. View of bridge and context from Watmaugh Road, view to the East
2. View of bridge and truss superstructure from bluff overlooking Sonoma Creek, view to the Northeast
3. View of iron span anchorage, downstream side, view to the Northeast
4. View of bridge and context from Watmaugh Road, view to the West
5. View of bridge deck, spans, and concrete guard rails, view to the West
6. View of bridge and truss superstructure from bluff overlooking Sonoma Creek, view to the Northeast
7. View of iron span anchorage, downstream side, view to the Northwest
8. View of bridge span, western portion showing superstructure, deck, western concrete pier support, and Sonoma Creek, View upstream to the Northwest
9. View of underside of bridge deck and steel beam supports. Eastern concrete support pier in distance, view to the East
10. View of underside of bridge deck, western abutment pier and wingwalls, view to the West.
11. Detail view of iron span anchorage and concrete support pier junction, downstream side, view to the Northeast
12. View of underside of bridge deck and steel beam supports. Western concrete support pier and abutment in distance, Sonoma Creek at bottom, stream flow from right to left, view to the West

¹ Note: In accordance with NPS guidance, a five-foot-long black-and-white scale stick is visible in most views.

13. View of underside of bridge deck, steel beam supports, and eastern concrete support pier, view to the East; note bend in alignment that corresponds to the Watmaugh Road alignment
14. View of underside of bridge deck, east bank abutment pier and wingwalls, view to the East
15. *Bridge Over Sonoma Creek at Hopke Ranch* – original construction drawings, prepared January 1929; Sheet 1
16. *Bridge Over Sonoma Creek at Hopke Ranch* – original construction drawings, prepared January 1929; Sheet 2
17. *Bridge Over Sonoma Creek at Hopke Ranch* – original construction drawings, prepared January 1929; Sheet 3
18. *Bridge Over Sonoma Creek at Hopke Ranch* – original construction drawings, prepared January 1929; Sheet 4
19. *Bridge Over Sonoma Creek at Hopke Ranch* – original construction drawings, prepared January 1929; Sheet 5
20. *Bridge Over Sonoma Creek at Hopke Ranch* – original construction drawings, prepared January 1929; Sheet 6
21. *Bridge Over Sonoma Creek at Hopke Ranch* – original construction drawings, prepared January 1929; Sheet 7
22. *Bridge Over Sonoma Creek at Hopke Ranch* – original construction drawings, prepared January 1929; Sheet 8

Watmaugh Road Bridge
Unincorporated Sonoma County, California

Photograph #1



Watmaugh Road Bridge

Unincorporated Sonoma County, California

Photograph #2



Watmaugh Road Bridge

Unincorporated Sonoma County, California

Photograph #3



Watmaugh Road Bridge
Unincorporated Sonoma County, California

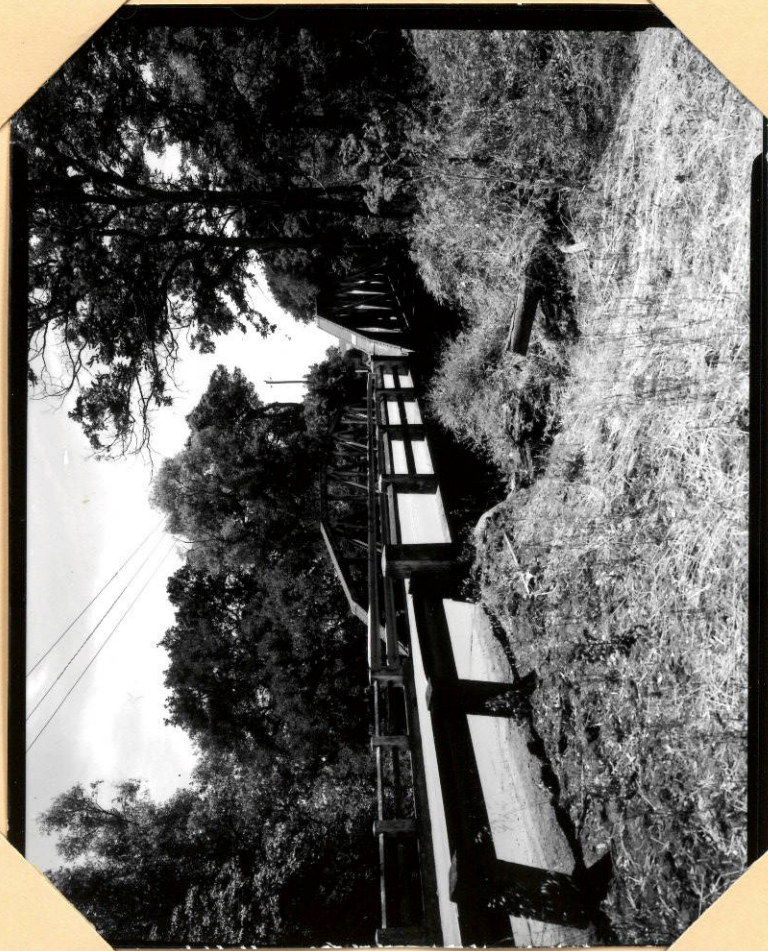
Photograph #4



Watmaugh Road Bridge

Unincorporated Sonoma County, California

Photograph #5



Watmaugh Road Bridge
Unincorporated Sonoma County, California

Photograph #6



Watmaugh Road Bridge

Unincorporated Sonoma County, California

Photograph #7



Watmaugh Road Bridge
Unincorporated Sonoma County, California

Photograph #8



Watmaugh Road Bridge

Unincorporated Sonoma County, California

Photograph #9



Watmaugh Road Bridge

Unincorporated Sonoma County, California

Photograph #10



Watmaugh Road Bridge

Unincorporated Sonoma County, California

Photograph #11



Watmaugh Road Bridge

Unincorporated Sonoma County, California

Photograph #12



Watmaugh Road Bridge
Unincorporated Sonoma County, California

Photograph #13



Watmaugh Road Bridge
Unincorporated Sonoma County, California

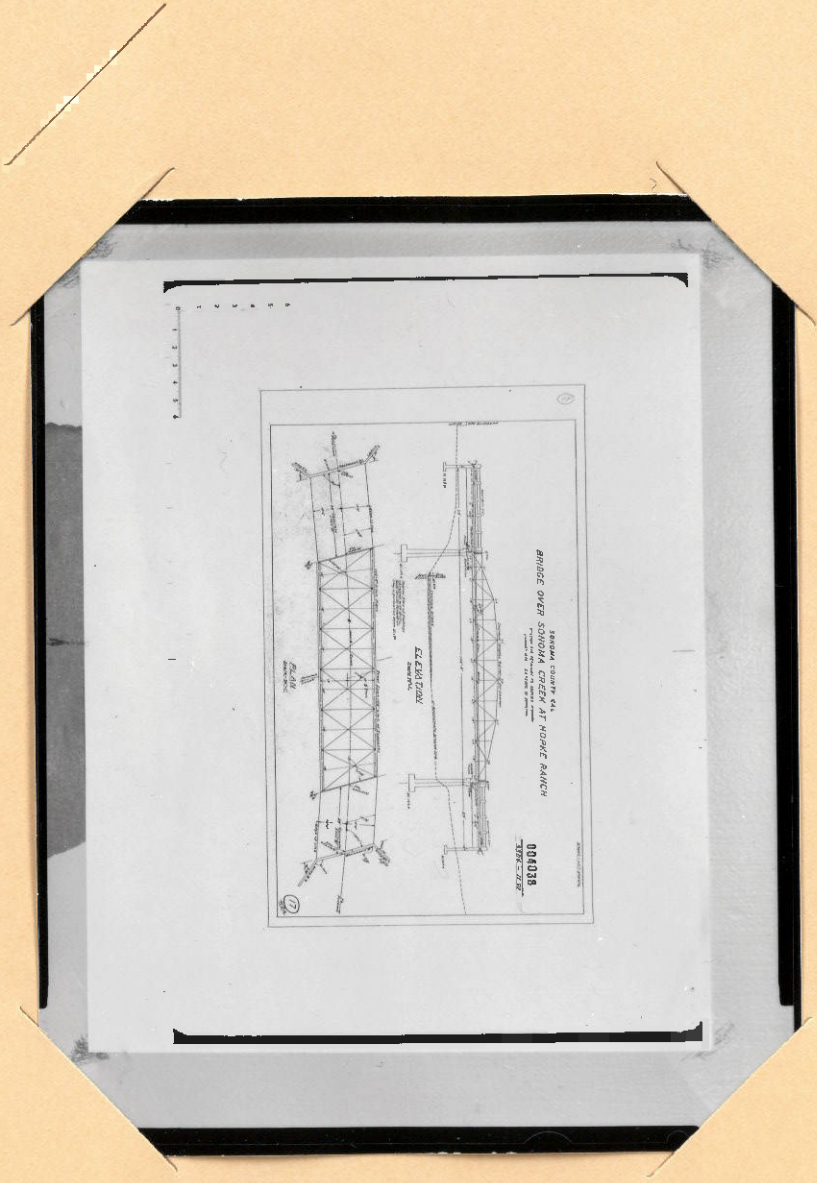
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Watmaugh Road Bridge

Unincorporated Sonoma County, California

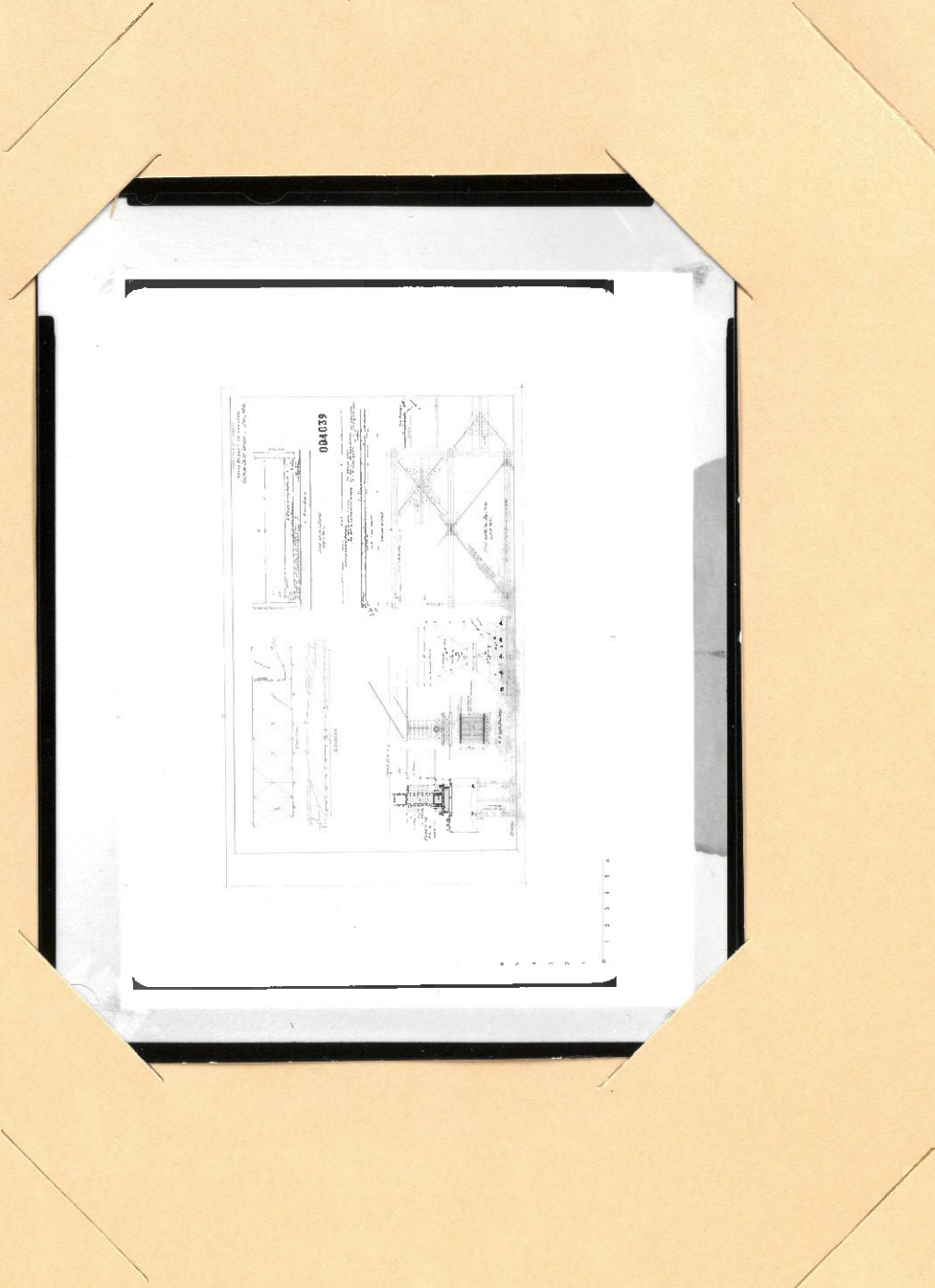
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Watmaugh Road Bridge

Unincorporated Sonoma County, California

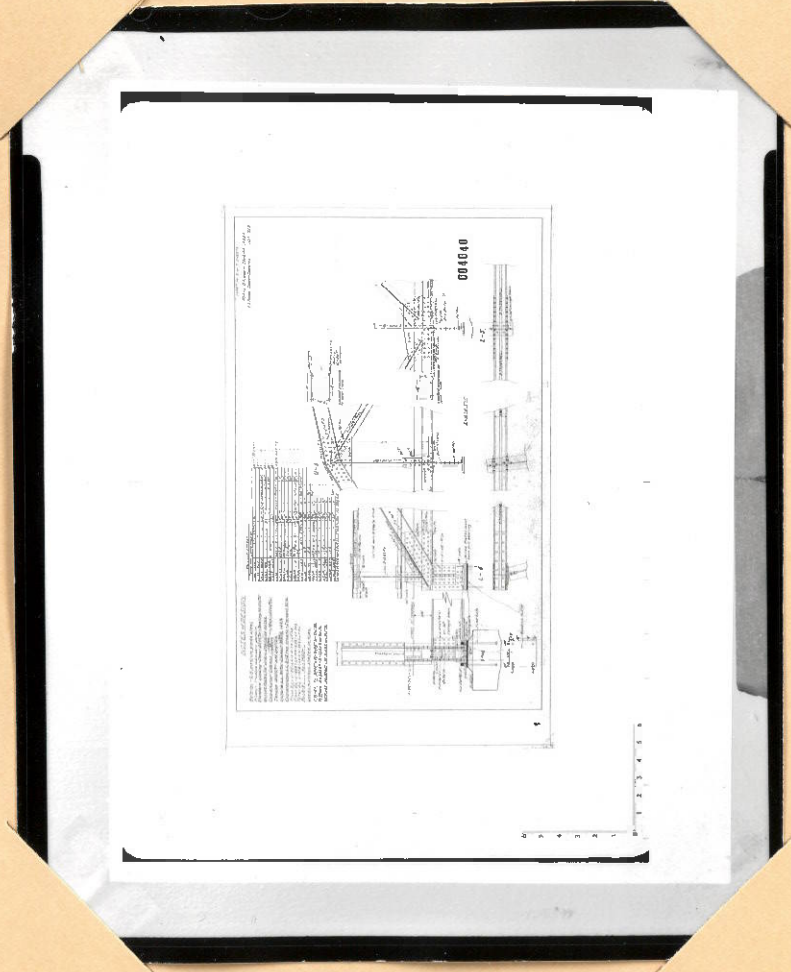
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Watmaugh Road Bridge

Unincorporated Sonoma County, California

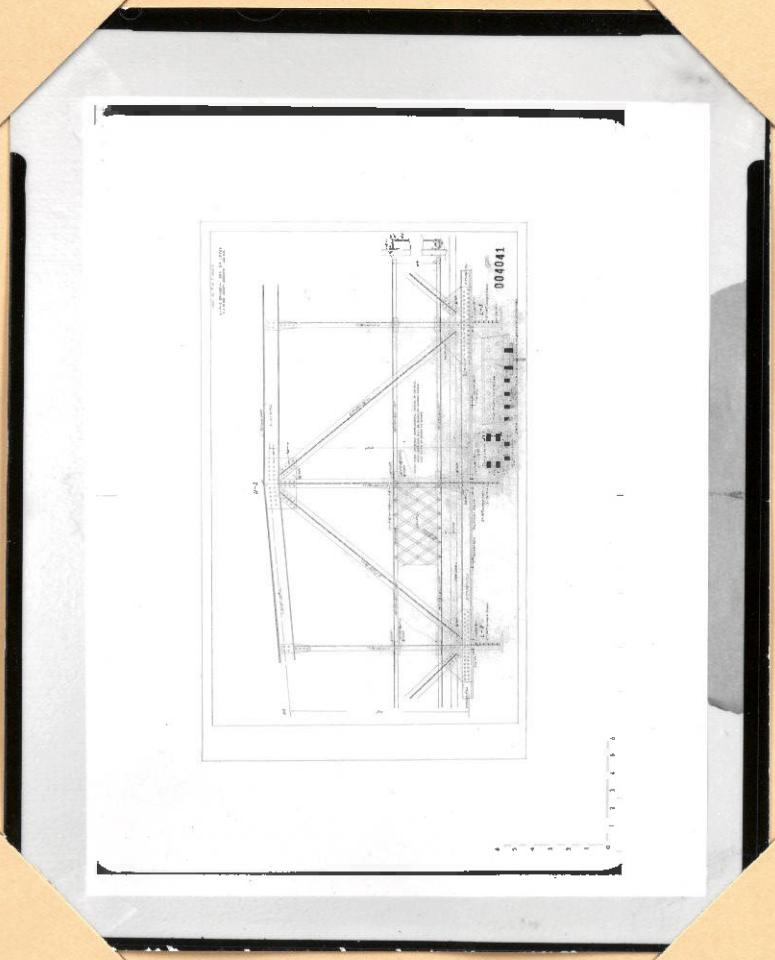
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Watmaugh Road Bridge

Unincorporated Sonoma County, California

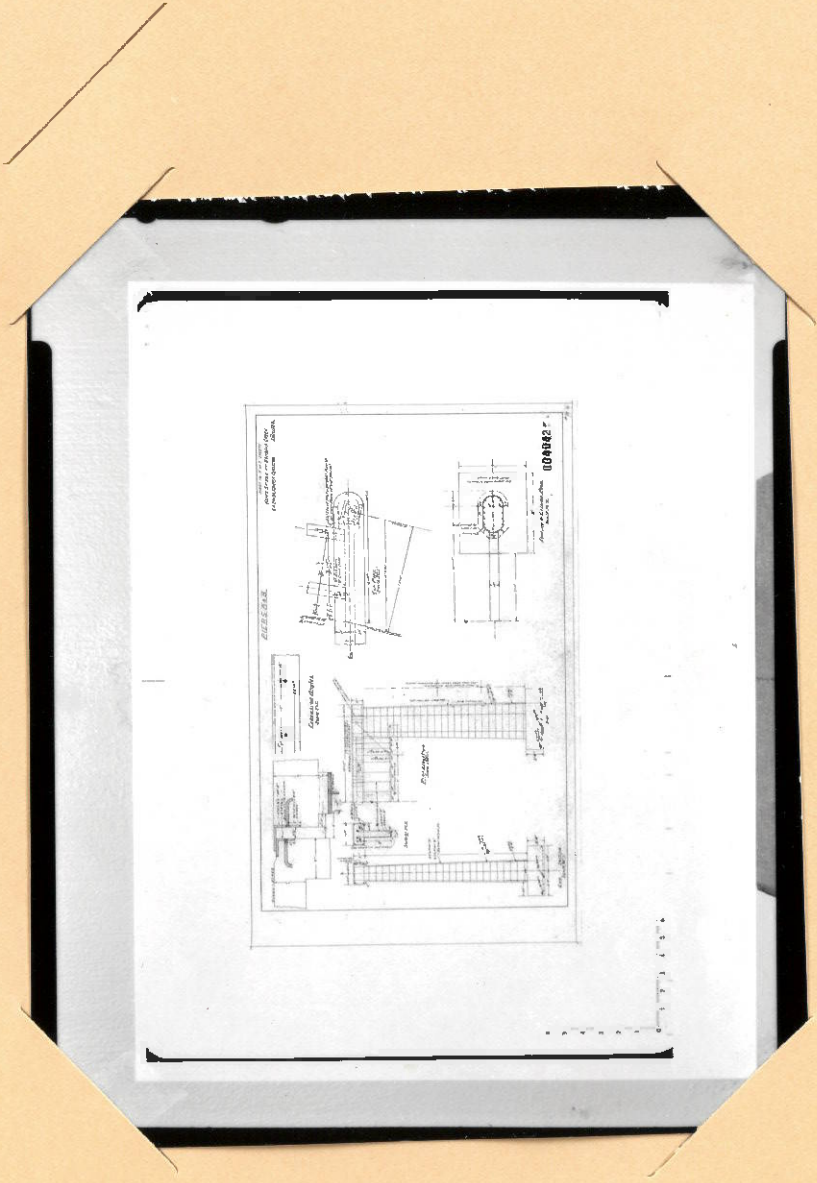
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Watmaugh Road Bridge

Unincorporated Sonoma County, California

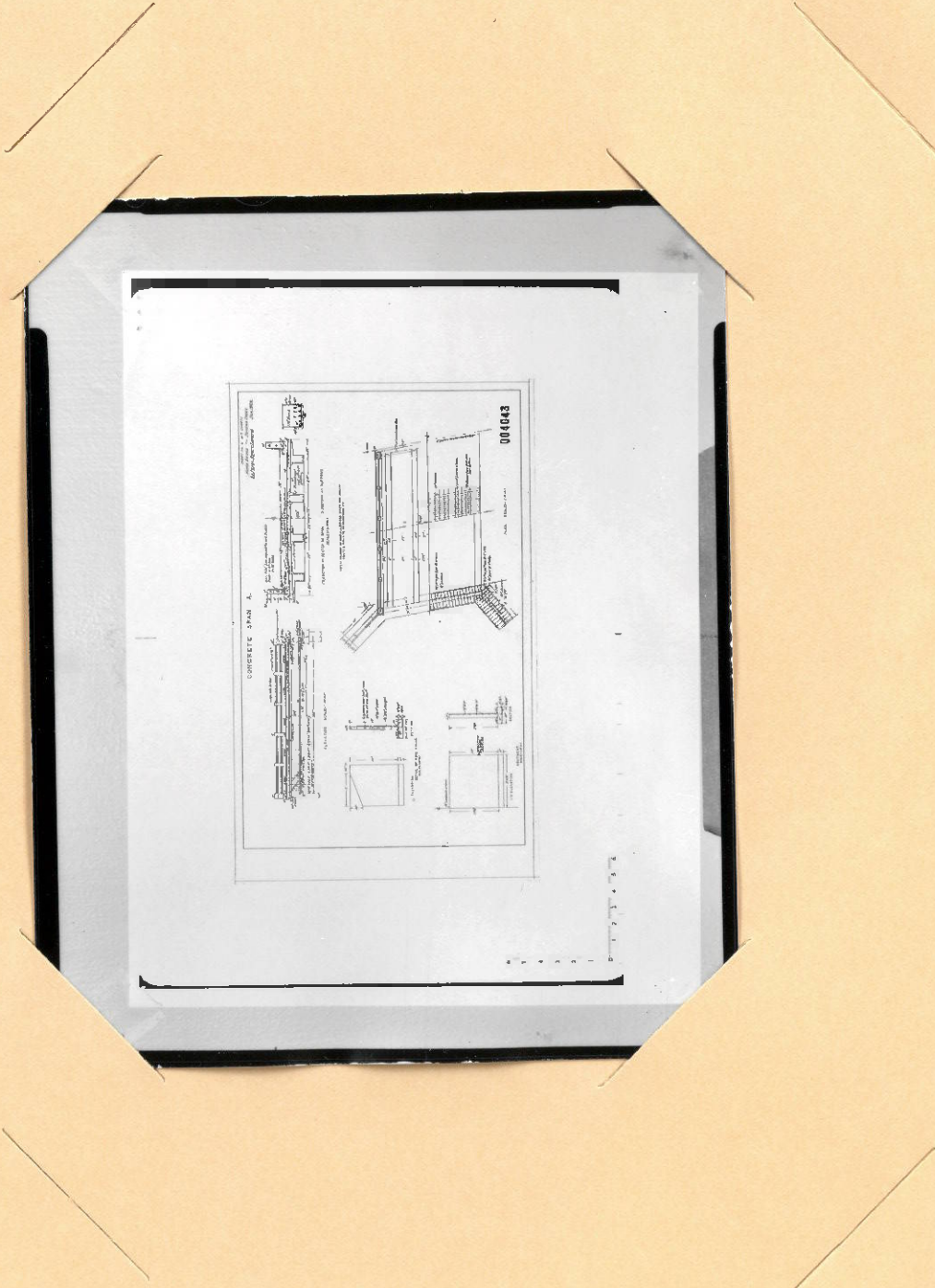
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Watmaugh Road Bridge

Unincorporated Sonoma County, California

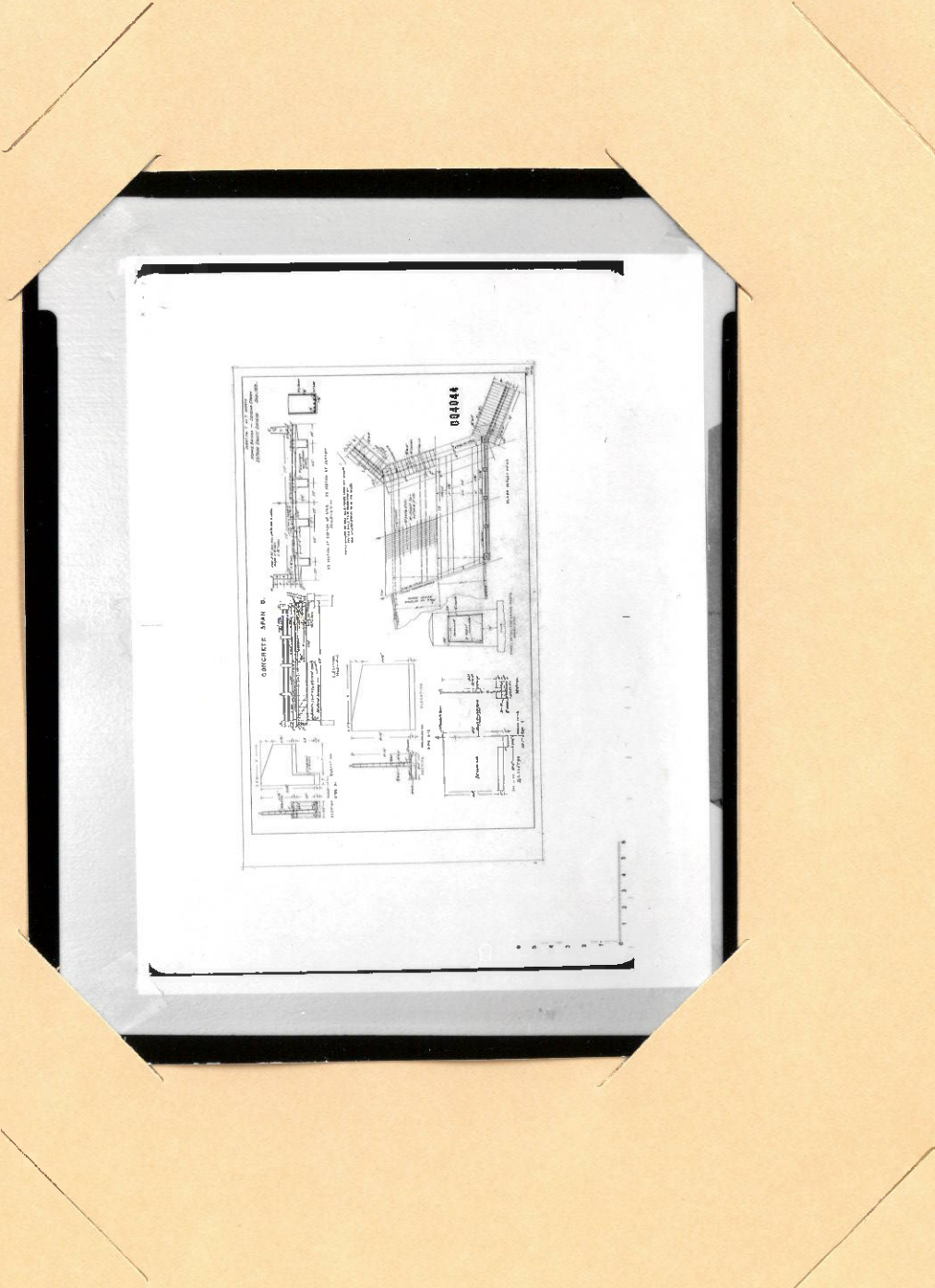
Photograph #20



Watmaugh Road Bridge

Unincorporated Sonoma County, California

Photograph #21



Watmaugh Road Bridge

Unincorporated Sonoma County, California

Photograph #22

