NPS Form 10-900-b
(Jan. 1987)

OMB No. 1024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Multiple Property Documentation Form

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NATIONAL REGISTER

This form is for use in documenting multiple property groups relating to one or several historic contexts. See instructions in *Guidelines for Completing National Register Forms* (National Register Bulletin 16). Complete each item by marking "x" in the appropriate box or by entering the requested information. For additional space use continuation sheets (Form 10-900-a). Type all entries.

A. Name of Multiple Property Listing

Vehicular Bridges in Arizona

B. Associated Historic Contexts

Vehicular Transportation in Arizona, 1863-1940

C. Geographical Data

The State of Arizona

☐ See continuation sheet

D. Certification

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this documentation form meets the National Register documentation standards and sets forth requirements for the listing of related properties consistent with the National Register criteria. This submission meets the procedural and professional requirements set forth in 36 CFR Part 60 and the Secretary of the Interior's Standards for Planning and Evaluation.

Shereen Lerner — Signature of certifying official

4-5-88 — Date

ARIZONA STATE HISTORIC PRESERVATION OFFICER — State or Federal agency and bureau

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[signature] — Signature of certifying official

5/4/88 — Date

BUREAU OF INDIAN AFFAIRS — State or Federal agency and bureau

I, hereby, certify that this multiple property documentation form has been approved by the National Register as a basis for evaluating related properties for listing in the National Register.

Patrick Andrus — Signature of the Keeper of the National Register

9/30/88 — Date

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Shereen Lerner — 4-5-88
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Evan I. DeBloois — 5-31-88
Signature of certifying official — Date

USDA Forest Service, Historic Preservation Officer
State or Federal agency and bureau

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Signature of the Keeper of the National Register — Date

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Shereen Lerner — 4-5-88

Signature of certifying official — Date

ARIZONA STATE HISTORIC PRESERVATION OFFICER

State or Federal agency and bureau

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Edwin C. Bearss — 5/10/88

Signature of certifying official — Date

National Park Service, Federal Preservation Officer

State or Federal agency and bureau

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Shereen Lerner — 4-5-88
Signature of certifying official — Date

ARIZONA STATE HISTORIC PRESERVATION OFFICER
State or Federal agency and bureau

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[signature] — 4/14/88
Signature of certifying official — Date

Assistant Area Director, Indian Programs
State or Federal agency and bureau

I, hereby, certify that this multiple property documentation form has been approved by the National Register as a basis for evaluating related properties for listing in the National Register.

Signature of the Keeper of the National Register — Date

E. Statement of Historic Contexts

Discuss each historic context listed in Section B.

Bridges, as integral elements of a developing transportation network, have played a pivotal part in the spanning of America. Generally the most sophisticated components of any overland transportation system, from the early primitive territorial roads to transcontinental highways, they are also the most prominent. Bridges serve not only as gauges of technological advancement in design and construction, but as singular indicators of the tenets, values and ambitions of the people who erected them. This is particularly true for Arizona, a state in which overland transportation forms a central historical theme. From the earliest wooden spans on the territorial toll roads to the later steel trusses and concrete arches, bridges have facilitated - and in some instances, created - settlement across the state.

Whether spanning rivers, creeks, draws, arroyos or canyons, bridges have functioned similarly since the first log was thrown across a stream, with differences only in dimensions and capacity. Beyond this, however, the idea soon unravels, as a variety of forms to achieve that function has sprung up through centuries of empirical usage. Bridge types are generally classified by material stone, timber, concrete, iron/steel. The inherent strengths and weaknesses of each tends to dictate its form and usage, as does availability of materials. By the time the country was undergoing initial settlement, most of the principal bridge types and materials had been used or at least experimented with. What remained over the last two centuries has been a process of refinement - a vast refinement to be sure - revolving principally around the introduction and proliferation of structural metals and concrete as building materials.

As recent as America is in terms of bridge development, Arizona is younger still. In the 1840s, when most of the major trusses were invented, Arizona was not even under United States control. When the rest of the country was experiencing what was probably the greatest period of roadway bridge construction in the 1880s and 1890s, Arizona was not a member of the union. When Daniel Luten patented his arch in 1900, Arizona Territory had built only a handful of permanent crossings. And by the time Arizona was admitted as a state in 1912, frankly little was left to develop in bridge technology. Despite this, a number of outstanding bridges have been constructed on Arizona's roads and highways. Fortunately, most of the best of them have survived.

Between 1848, when the Arizona territory was acquired from Mexico by the treaty of Guadalupe, to the Federal Organic Act of February 24, 1863, which designated the Territory after its separation from New Mexico, Arizona was crossed by only two main overland routes. Both traversed the state east-west. Known as the Gila Trail because it largely paralleled the Gila River, the southern route was popular for those rushing to California for gold. The northern route, known as Beale's Road, was used almost entirely by hunters and trappers and the military traveling to California. Other secondary routes - no more than trails, really - developed intermittently by usage, with maintenance, such as it was, performed by users as needed.

After formation in 1863, the Arizona Territorial Assembly immediately recognized the need for transportation routes to connect the widely scattered settlements and foster economic growth. Money for road construction was scarce, however. In 1864, the First Territorial Assembly did what government bodies have traditionally done when short of funds themselves: it authorized others to build roads. Privately held toll companies were given the authority and exclusive right to build and administer toll roads and collect fees based upon predetermined schedules. To raise capital for construction, they were allowed to issue stock, and to protect their sometimes considerable investments, the

[X] See continuation sheet

companies were granted franchises for definite periods of time. In return for these exclusive rights, the territorial auditor collected part of the gross proceeds from each road.

The acts of incorporation for the toll companies were similarly structured and contained the same general provisions: the roads were to be completed and a specified amount spent on their improvement within a designated period. Water wells were to be dug and maintained at intervals along the roads and facilities provided for use by both men and animals. The roads were to be kept safe and passable. And finally, exclusive rights to maintain the roads and collect tolls would be granted as long as they did not encroach on other existing toll roads. Toll rates were generally set on a per-mile basis, depending on the mode of transportation. As a free-market function, they varied from road to road, but usually reflected the road's use, location and difficulty of construction.

The law did little to encourage excellence in construction, and the toll road operators tried to avoid bridge construction as unnecessarily expensive. The few bridges that were built rarely lasted beyond the statutory limits of the franchise. Often poorly constructed and unevenly maintained, these crude structures typically washed out in floods or collapsed under load. Only two such toll road structures from the territorial period **[8150; 8151]** are known to exist still in Arizona. Both were built in 1907 in Graham (now Greenlee) County on the Clifton-Solomonville Road. They are unusual in that they were built as grade separations over railroads (the earliest datable overpasses in Arizona), they were constructed using substantial concrete arch construction, and they were built relatively late in the toll road milieu.

In a region in which government revenues were minimal, toll roads were regarded as a necessary evil: an expedient way to develop a much-needed roadway system. At the same time the First Territorial Assembly recognized the need for free highways to promote transportation and settlement. The assembly tried to legislate a balance between roads built by private capital and supported by tolls and those over which no tolls could be extracted. To prevent toll operators from monopolizing transportation by incorporating every road, the lawmakers designated several existing roads, developed solely by previous use, as free routes. This formed the basis for a free-highway network in Arizona, upon which subsequent legislatures would expand. Succeeding sessions of the territorial legislature incorporated toll road companies, while simultaneously declaring other existing roads as toll-free.

Road construction and administration were largely county-level functions in America at this time, and Arizona's territory-level management soon proved burdensome. The legislators began to transfer this responsibility to the counties in 1866 by authorizing the boards of supervisors to divide their counties into road districts and appoint overseers to supervise roads in each district. To fund road construction and maintenance, the counties were empowered to issue bonds and levy road taxes. In 1871 the Assembly further transferred road administration to the counties by giving them the right to incorporate toll road proprietors. The requirements for incorporation were generally the same as those for the territory, and the counties retained the option to purchase the privately built roads after five years, based upon the value established by five independent appraisers. With this, the county administrators possessed all the tools needed to pursue active road and bridge programs. They rarely used them well. Seldom following a premeditated plan, county supervisors would authorize the surveying and clearing of roads and construction of bridges as needed, usually in response to urgent local petitions. In the sparsely populated areas outside of the major cities, however, with minimal government revenues, relatively few vehicular bridges were erected before the turn of the century, and none is known to remain today.

Many of the earliest county bridges, like those on the toll roads, tended more to the flimsy than the substantial. Some consisted of little more than two parallel boards laid across a streambed to carry vehicles' tires. Often made up of timber stringer spans on timber or crude concrete abutments and piers, these questionable structures failed with distressing regularity. Only a handful proved more substantial. In 1885 Pinal County built what was perhaps the first vehicular truss in Arizona and probably the longest county bridge - over the Gila River at Florence. Completed in November, the bridge consisted of two 180' Pratt spans, with 719' of timber trestle over an island and slough. The bridge consumed 30 tons of iron, 174,375' of lumber and cost $14,280. Navajo County built a single-span Pratt through truss to carry the Winslow-Holbrook Highway over Chevelon Creek and another bridge to carry the road over Clear Creek. The county also built a truss over the Little Colorado River at Holbrook. Greenlee County built a four-span Pratt through truss over the Gila River at Duncan. One of these earliest county trusses is still known to remain: the Solomonville Bridge over the San Simon River in Graham County. Built in 1909 by the El Paso Bridge and Iron Company, it consisted of a single Pratt pony truss supported by steel cylinder piers.

The Territorial Legislature during this period made only minimal impact on vehicular transportation in Arizona other than to authorize toll road companies and enact laws passing the responsibility to the counties. The legislature issued road bonds totaling $70,000 between 1871 and 1881, and $15,000 in 1885. In 1905, the legislature appropriated funds for the repair of the Florence Bridge. But other than these tentative steps, the territory contributed little to road and bridge construction. Indeed, no territorial organization or staff had even been established to administer roads.

After the turn of the century it had become apparent that many major road and bridge projects were beyond the capacity of the counties. Further, the county supervisors were building roads on an individual basis, without regard to the roads in adjacent counties. This tended to create an uneven patchwork of dissimilar routes, making travel difficult for all but a few destinations. To take a more active role in the development of intrastate highways, the Territorial Assembly on March 18, 1909, established a road tax and created the office of the Territorial Engineer. A political appointment made by the governor, the position carried a two year term and functioned under the supervision of the Board of Control. J.B. Girand was the first and only Territorial Engineer. His entire staff consisted of a clerk and a draftsman.

Immediately after his appointment, Girand began to plan and build several territorial highways in Arizona. The strategy was to link the county seats and more populous towns through a network of graded, but unpaved, roads that varied in width from 16' to 24' according to terrain and projected traffic loads. In connection with this highway work, Girand supervised the construction of a handful of important bridges over key crossings on the territorial network. Curiously, none of these bridges resembled each other even remotely.

One of the first bridges that Girand undertook was a replacement structure for the truss at Florence. In September 1909 Girand designed a 700' multiple-span concrete girder structure. He submitted the plans and specifications to the Board of Control in November, and advertised for competitive bids. Five contractors responded, but Girand rejected all bids and recommended to the board that the Florence Bridge be built using prison labor. With a territorial prison nearby in Florence, the idea had merit. The board agreed. In March 1910 a prison force of 14 men began the preliminary excavation for the foundations. The crew averaged 55 men as full-scale construction proceeded through the year; the Florence Bridge was completed in December.

What was perhaps the most unusual territorial bridge was not located on a territorial highway at all, but was built on a remote military road to Fort Apache. Since its construction by the army in 1899, the Rice-Fort Apache road road forded the Black River southwest of the fort. In 1911, however, the Arizona Territorial Legislature funded the construction of a wagon bridge over the Black. Designed by Girand in December, the 214' Black River Bridge **[3128]** featured two timber/iron Howe deck trusses, carried high above the river by tapered concrete piers. (The trusses were replaced in 1929, but the original piers carry the new superstructure.) Girand built three other major structures - a three-span, pin-connected truss over the Verde River at Camp Verde, and 60' concrete arch between Bisbee and Douglas and a 100' timber trestle over Forest Wash - and numerous 10'-16'-span concrete slabs built from standard plans.

Without question, the most spectacular, expensive and important of the territorial bridges was the multi-span concrete structure over the Salt River in Tempe. For this, Girand originally delineated a nine-span, filled spandrel concrete arch structure with a total length of 1225', estimating its cost at $80,000. He later changed the design to eleven spans of two-rib open-spandrel arches, and in February 1911 the plans were submitted to the Board of Control for approval. To build the immense structure, Girand recruited laborers from the territorial prison at Florence - 25 men when construction began in June and up to 57 men during the course of the project. A total of 250 prisoners worked on the bridge between 1911 and 1913. In September 1913, the Tempe Bridge was opened and immediately carried the heaviest traffic of Arizona's highway spans. Total cost: $118,919.

By the time Arizona was admitted to the Union on February 14, 1912, the territory had constructed over 243 miles of highway at an average cost of $2500 per mile. Additionally, 1812 linear feet of bridges over 100' in length had been built, totaling $144,000 in value. Girand estimated that an additional 740 miles of trails and county roads would soon be improved to form highways, "completing the great east and west and the north and south roads." Thus, preliminary surveys and construction had been undertaken on over 1000 miles of highways, broken down as follows (asterisks indicate completed projects):

*Prescott - Phoenix . .	131.5 miles	*Bisbee - Tombstone . .	24.0 miles
*Globe - Roosevelt. . .	90.0 miles	*Glendale - Mesa. . . .	24.0 miles
Phoenix - Yuma	201.6 miles	*Flagstaff - Camp Verde	75.0 miles
Globe - San Carlos . .	32.0 miles	Dewey - Camp Verde . .	45.0 miles
San Carlos - Clifton .	114.3 miles	*Florence - Tucson. . .	66.0 miles
San Carlos - Douglas .	170.8 miles	Bisbee - Tucson. . . .	106.2 miles
*Bisbee - Douglas . . .	23.3 miles		

On June 20, 1912, the new state legislature passed enabling legislation for the state engineer's office. Like the territorial law, the state act authorized property taxes, sufficient to raise $250,000 annually, to fund the road and bridge programs. To augment these revenues, the legislature passed the first of a series of acts providing for the licensing and governing of motor vehicles the following year. Road and bridge construction continued as before using the same administrative process. In fact, several road and bridge projects begun under Girand's administration - including the Tempe Bridge - were taken over by State Engineer Lamar Cobb without interruption. The major difference lay in the level of activity. Less than $200,000 were spent on road and bridge construction through the territory in the year that Girand took office. Six years later in 1915 over $500,000 were spent by the counties alone.

Under direction of Cobb and his successors, B.M. Atwood, Thomas Maddock and W.C. Lefebvre, the state engineer's office pursued an aggressive policy of road and bridge construction during the 1910s and 1920s. This corresponded with the dramatic increase of instate vehicular traffic, and was especially spurred by the rapid influx of overland tourist trade. The 1910s marked the initiation of a number of transcontinental highways across the country and several regional highways in the West, spawned by the nationwide Good Roads movement. Arizona was traversed east-west by two such routes, as Beale's Road in the northern part of the state evolved into the Old Trails Highway and the Gila Trail through the southern part became the Ocean-to-Ocean Highway.

As the workload and bureaucracy grew, the state engineers themselves became less often involved directly with bridge design and construction. Instead, they depended on bridge engineers and the growing staff of the bridge department. Arizona's first bridge engineer, R.V. Leeson, was retained on a consulting basis in 1917. In addition to his design responsibilities in Arizona, Leeson functioned as the Assistant Chief Engineer for the Topeka Bridge and Iron Company and even consulted independently on at least two county bridges **[8441; 8442]** in the state. Leeson's most noteworthy commission as consulting engineer for Arizona was the Gila River Bridge **[8152]** in Greenlee County. By 1920, the state had hired Merrill Butler as the first permanent staff bridge engineer. Butler was later succeeded by Ralph Hoffman, who served with distinction for several years. When the design responsibilities proved too much for a single engineer in the mid-1920s, Hoffman in turn hired ex-bridge contractor L.C. Lashmet as his designing engineer.

Several of Arizona's most important vehicular bridges date from this early state period. The Chevelon Creek Bridge **[8158]** and the Jack's Canyon Bridge were two of the earliest state-built structures, built in Navajo County on the Santa Fe Highway. The Santa Cruz Bridge **[8166]** was an outstanding multiple-span concrete girder completed in 1917 on the Nogales-Patagonia Highway. Built in 1923, the Allentown **[3073]** and Sanders **[3074]** bridges formed important crossings of the Rio Puerco on the Santa Fe Highway, and the Hell Canyon and Little Hell Canyon bridges carried the Prescott-Ash Fork Highway. The Antelope Hill Bridge, completed in 1915 using prison labor, carried the Ocean-to-Ocean Highway over the Gila River in Yuma County.

The State of Arizona during the 1910s and 1920s had taken a far more active role in road and bridge construction than the territory had ever done. But the amount of work still needed to complete Arizona's highway network was staggering. Using their 75% of the State Road Fund and adding considerable amounts from county road funds, the counties were still doing the lion's share of road work. Many of the bridges in use today on secondary roads in Arizona were funded and contracted for by the individual counties as part of their bridge construction programs. Unlike the state engineer, the counties rarely had the in-house facilities to design major bridges and could not tap the sizable labor pool in the state's prisons. Counties, therefore, had to hire bridge contractors for all but the smallest of roadway spans.

For a county contemplating construction of a major vehicular bridge, the decision was a serious one. Strapped for funds, as most perennially were, counties could usually afford no more than a handful - and often only one - major span per fiscal year. Costing several thousand dollars each, the bridges soon depleted road and bridge budgets. Counties frequently issued bonds of indebtedness when they lacked the cash. Or they simply delayed bridge projects because all of the available funds for the year had been expended.

The decision to build a bridge usually would be made in the late spring or summer, after flooded rivers and creeks washed away existing spans, or in late fall, when riverbeds were dry and foundations and falsework could be constructed economically. Usually, for all but the shortest spans, the supervisors would direct the county clerk or surveyor to advertise for competitive bids, often giving only the location and span length of the proposed bridge, and require the contractors to submit their own designs. For those counties with a population base to support a staff engineer, the designs were produced in-house - often by copying those of others - and full plans and specifications issued to competing bridge firms. After solicitation and receipt of proposals, the construction contract was then awarded to the "lowest and best" bidder.

A typical solicitation for bids in the local newspapers and engineering journals would be answered by a few local or regional bridge contractors. Steel for trusses and girders was produced typically in the major foundries - Carnegie, Lackawanna, Cambria, Inland - of the Pennsylvania and Illinois mill towns. The foundries supplied rolled steel parts to bridge fabricators such as Hansell-Elcock or the American Bridge Company of Chicago, the Omaha Structural Steel Works of Nebraska, Minneapolis Steel and Machinery Company of Minnesota, the Midwest Steel and Iron Works of Denver or the Phoenix-based Allison Steel Company. These companies in turn marketed complete, prefabricated trusses to bridge firms that would build the superstructures and assemble them on-site.

Because the government entities of Arizona contracted for so few steel bridges, no indigenous steel bridge company of note ever developed. Those few local firms such as S.T. Clark of Bisbee that occasionally built steel trusses were far more dependent on other forms of contracting. The counties relied heavily upon out-of-state contractors for both design and construction, and virtually all of the major contracted steel bridges in the state were erected by out-of-state firms. Among the out-of-state bridge companies active in Arizona were: the El Paso Bridge and Iron Company (Walnut Grove Bridge **[8227]**, Solomonville Bridge); Midland Bridge Company (Allentown Bridge **[3073]**, Desert Wash Bridge **[8116]**, Hereford Bridge **[9214]**, Cameron Bridge); Monarch Engineering Company of Denver (Sanders Bridge **[3074]**, Little Hell Canyon Bridge); Missouri Valley Bridge and Iron Company (Chevelon Creek Bridge **[8158]**, Fish Creek Bridge **[0027]**, Lewis and Pranty Creek Bridge **[0028]**); James J. Burke of Salt Lake City (Sand Hollow Wash Bridge **[8662]**); Levy Construction Company of Denver (Holbrook Bridge **[0048]**, Dome Bridge); Kansas City Structural Steel Company (Navajo Bridge **[0051]**, Topock Bridge); and the Omaha Structural Steel Works of Nebraska (Saint Joseph Bridge **[8157]**, Yuma Bridge **[8533]**).

Given Arizona's proximity to southern California, it is surprising that almost all of the contract work went to companies from the South and Midwest. Although California firms occasionally submitted proposals, only one major bridge - the Winslow Bridge **[8156]**, built in 1915-16 by Los Angeles-based Mesmer and Rice - was built by a California company. And it was composed of trusses manufactured by the American Bridge Company.

But what Arizona lacked in steel bridges, it more than compensated for in concrete structures. Concrete technology was generally more rudimentary than steel. Material distribution was more decentralized, and the designs were almost all supplied by the counties. As a result, the state supported a large number of small-scale concrete bridge contractors.

On July 11, 1916, Congress passed the Federal Aid Road Act, also known as the Bankhead Act, which would radically alter the complexion of road and bridge construction in Arizona. The law directed the Secretary of Agriculture to distribute highway construction funds and cooperate with the various state highway departments in the planning, construction and maintenance of rural post roads in each state. To administer the provisions of the Act and disburse the funds, the U.S. Bureau of Public Roads [BPR] was formed as an agency under the Department of Agriculture.

On March 8, 1917, the Arizona State Legislature assented to the provisions of the Bankhead Act. The State Engineer, with the approval of the State Board of Control, was empowered to enter into agreements with the BPR. Arizona's share of the federal aid fund amounted to $3.7 million - or about 1.4% of the $75 million total - distributed over a five-year period. Despite promises by the state legislature and state engineer, the highway department soon encountered difficulties in matching the increasing federal allotments. The infusion of such large amounts of capital funds was welcome, but federal aid created a number of logistical problems. Immediately before passage of the Act, the agency had been organized to handle $1 million of construction and maintenance work annually, under the direction of the State Engineer. Federal Aid quadrupled this capacity and added several new layers of bureaucracy to the process. The paperwork increased accordingly. The Bureau of Public Roads established more stringent bridge and highway guidelines and required more detailed planning, surveying and engineering for federal aid projects.

State Engineer Thomas Maddock was further stymied by the $10,000 per mile limitation on highway funding. Arizona's rugged terrain, especially in the mountains east of Superior where a major highway had been planned, would require far more expensive construction for roadbuilding. To help alleviate the problem, he sought considerable cooperation of the county supervisors in planning and funding projects. He even urged them to issue bonds of indebtedness to commit money for future projects. Subsequently, twelve of Arizona's fourteen counties voted bond issues, totaling $15 million (Maricopa issued $8.5 million; Graham and Gila counties were the holdouts).

For better or worse, the changes brought by federal aid transformed the state's road and bridge construction mechanism, as the state engineer's office grew into the Arizona Highway Department. By the end of 1920, AHD employed more personnel than all other state agencies combined. The department's total allocation of funds that year exceeded the total expenditures of every state, county, city, school and road district in the state combined for 1914. AHD was the largest employer of engineers in the state. The department's maintenance and construction vehicles constituted Arizona's largest truck fleet. It purchased more supplies for its various construction camps than all other state institutions combined. The department was Arizona's largest consumer of explosives. And following a change in state law in January 1919 that allowed the highway department to contract for road construction, AHD constituted the largest contracting entity in the state.

Federal Aid Project No. 1, appropriately enough, involved construction on the Florence Bridge. One of the earliest county bridges and one of the first bridges built by Arizona Territory, it needed extensive repairs in 1917. Unlike the Florence Bridge, most of the bridges built on the state highway system were small-scale concrete drainage structures, laid over dry washes or intermittent streams. For these, the bridge department of AHD used standard designs taken from BPR specifications. Most of the drainage structures were contracted for under the umbrella contracts of the adjacent road construction. A few of the bridges, however, were of sufficient scale to warrant individual contracts.

The Arizona Highway Department and the individual counties and municipalities accounted for the overwhelming majority of bridges in the state, but a third entity (or group of entities, actually) was active in bridge work as well. The federal government, through its various agencies, has built several spans associated with highway programs. Coming from a variety of bureaucratic sources and circumstances, these bridges display a wide technological range, some of which were as esoteric as they were dramatic. The bridges themselves are remarkable enough, but what was perhaps even more remarkable was the fact that they were built at all. Virtually every major bridge built by the federal government in Arizona required individual Congressional approval.

Three of the state's oldest bridges were built by the government in connection with one of the Bureau of Reclamation's (BOR) first projects. In passing the Newlands Act in 1902, Congress authorized the construction of the Tonto Dam on the Salt River northeast of Phoenix. Before work could begin, though, an access road had to be graded from the railhead at Mesa to the damsite. BOR engineers routed the road alongside the ancient Apache Trail on its serpentine route through the rugged mountains. Grading began in 1903. The road, including the Alchesay Canyon Bridge **[1532]**, a small concrete arch, was completed in March 1905. Construction on the dam began immediately, proceeding despite several setbacks between 1906 and 1910 under Hill's supervision. A 16' roadway crossed the dam crest, and over the giant spillways that flanked the dam on both sides, BOR engineers designed medium-span, segmental concrete arches. Arch centering for the North and South Spillway bridges **[3000; 3001]** was built as one of the last pieces of the work completed before the structure's dedication on March 18, 1911, as the Theodore Roosevelt Dam.

With much of Arizona set aside for Indian reservations, the Indian agencies were active in bridge construction in the state. Earliest of these structures was the Cameron Bridge over the Little Colorado River. Built in 1911 to provide access to Flagstaff from the Navajo and Hopi Reservations, the 680' suspension bridge is both historically and technologically significant. Two years after completion of the Cameron Bridge, Congress approved legislation for a wagon bridge across the Gila River on the San Carlos Reservation. Completed in 1913, the multi-span San Carlos Bridge **[9474; 3228]** carried traffic until the south approach washed away in a 1915 flood, rendering it impassable. Never known for an expeditious manner, the U.S. Indian Service waited until February 1921 to reopen the bridge by erecting four new through trusses.

Two of Arizona's most significant spans were initiated by the Indian Office and funded in tripartite agreements with Arizona and California. Congress in 1913 approved a steel bridge over the Colorado River at Yuma. Ostensibly to provide a crossing for the Yuma Indian Reservation across the river, the bridge also carried the Ocean-to-Ocean Highway as the only bridged crossing of the Colorado for some 600 miles. The Yuma bridge was completed in March 1915. As the contractors were building the Yuma Bridge in 1914, the Indian Office solicited help from Arizona and California to erect another major span over the Colorado at Topock. This bridge would carry the Old Trails Highway, Arizona's other transcontinental route. An extraordinarily graceful span, the Topock Bridge was at the time of its completion in 1916, the lightest and longest three-hinged steel arch in America.

Another outstanding bridge built by the Indian Office was notable for its multiplicity of spans rather than its technological daring. Congress in May 1916 authorized the San Carlos Irrigation Project in Pinal County. A major component of the project involved construction of a diversion dam on the Gila River near the Indian village of Sacaton. A multi-span concrete bridge would carry vehicular traffic over the dam. Exceeded in total length by only Antelope Hill Bridge and the Tempe Bridge, the 25-span Sacaton Dam Bridge **[3165]** was completed using largely Indian labor in 1925.

These major bridges were all special projects, steered through Congress by Arizona Congressman Carl Hayden and Senator Marcus Smith and built under atypical circumstances. To build the hundreds of smaller scale drainage structures on federal roads, the Bureau of Public Roads was a more suitable agency. The Bureau was active directly in Arizona in building numerous roads and bridges through the Indian reservations, national forests and national parks and monuments. Functioning much like AHD in bridge design and contracting, BPR developed minor drainage structures from standard designs and contracted for them as parts of overall road grading and drainage projects. Larger and more technologically ambitious bridges were designed individually (but still often using standard designs) by engineers in the BPR's San Francisco, Denver or Phoenix offices and contracted for on an individual basis. Several important BPR bridges can still be found in Arizona: the Salt River Bridge **[0037]**, a long-span steel truss built in 1919-20 in the Tonto and Crook National Forest; the Rio Puerco Bridge **[3010]**, a handsomely arched steel deck girder built in 1931-32 in the Petrified Forest National Monument; the Dead Indian Canyon Bridge **[0032]**, a deck-truss trestle built in 1933-34 on the NavaHopi Highway to Grand Canyon National Park; the Pumphouse Wash **[0079]**, Oak Creek **[0128]** and Midgley **[0232]** bridges on the Oak Creek Canyon Road through the Coconino National Forest; and the Walnut Canyon Bridge **[9225]** in the Prescott National Forest.

Each government entity had structural configurations that it relied upon principally. Counties tended to erect steel trusses because they could obtain the engineering free or at nominal cost as part of the bridge solicitation. The federal agencies built bridges of all types, reflective of their non-central administration and individual policies. And the state engineer depended heavily on reinforced concrete for a wide range of bridge applications. Concrete had a number of advantages in Arizona. First, a properly constructed concrete bridge was rightly considered more substantial than a steel or wood structure. Concrete was more flood-resistant and more stable under load. Short concrete spans could be built using standard plans, allowing a minimal staff of engineers to design a disproportionately large number of structures. Unlike steel, which had a centralized system of manufacturing and marketing, concrete could be manufactured locally, using local materials. Finally, concrete technology was more rudimentary than steel, allowing the state to bid bridge projects to local contractors or build bridges using unskilled crews of convicts or day laborers.

The earliest concrete structures featured relatively modest spans - either simple slab or slab-and-girder - used singly or in multiples. These served well for minor dry wash crossings or for crossings of rivers with exceedingly wide flood plains. When the state engineer began planning bridges for intermediate watercourses and rugged canyons, however, it became immediately evident that long-span structures were needed. Long spans in concrete at that time meant arches. For these earliest structures, State Engineer Lamar Cobb turned to the engineering of America's pre-eminent arch builder, Daniel Luten.

Arizona's first association with Luten occurred in 1913. That year, Cobb surveyed a bridge site over Canyon Padre, a rock-walled chasm on the Santa Fe Trail. Cobb's office in July advertised for competitive proposals and designs for a 136' span. The Topeka Bridge and Iron Company, western representative of Luten's National Bridge Company, was awarded the construction contract for $7900. For the crossing, Luten designed a 140' Luten, or horseshoe, arch with a cantilevered roadway. Construction began in September and was completed in April 1914.

A few months after the Canyon Padre Bridge was completed, Cobb contacted with Topeka for another long-span Luten arch on the Old Trails Highway. This bridge would span rugged Canyon Diablo just west of Two Guns, some eleven miles east of Canyon Padre. In 1914, Cobb selected and surveyed the site over the canyon and purchased plans and specifications from Topeka for $500. Although the drawings were submitted by Topeka, Luten himself engineered the 128' arch from his office in Indiana. Like the Canyon Padre Bridge, the Canyon Diablo arch featured a cantilevered roadway with reinforced concrete brackets and parapet walls. Late in 1914, Cobb's office let the construction contract to the lowest bidder, Thomas Maddock of Williams, Arizona, for $9000. Using concrete and reinforcing steel supplied by the state, Maddock built the Canyon Diablo Bridge that winter. It was opened to traffic in March 1915. This was soon followed by a third Luten arch: over the Little Colorado River near Holbrook. Completed in March 1916 for a cost of almost $19,000, the Holbrook Bridge was the state's longest concrete arch.

Thomas Maddock, contractor for the Canyon Diablo Bridge, succeeded Lamar Cobb as State Engineer in 1917. Like Cobb, Maddock soon enlisted the help of the Topeka Bridge and Iron Company for a major highway span: the Gila River Bridge **[8152]** near Clifton. First designed in 1917 as a single-span steel arch, then a concrete arch, the bridge was built by convict labor the next year as a two-span Luten arch. Succeeding state engineers contracted for a handful of other Luten arches around the state, but almost all have since been razed. One Topeka-built arch that remains is the Queen Creek Bridge **[8440]**, completed in May 1919 as part of the Mesa-Superior Highway in Pinal County.

Because Luten arches used proprietary designs, which were protected vigorously by Daniel Luten and his staff of attorneys, they were perceived as more expensive than other highway bridge types. For this reason, they were rarely built by Arizona's individual counties or municipalities. Two notable exceptions were the Kelvin **[8441]** and Winkelman **[8442]** bridges, constructed in 1916-17 under a single contract between Topeka Bridge and Iron Company and Pinal County. Actually, given their scale and technology, the Winkelman and Kelvin structures proved to be bargains, compared with other similar spans. Costing almost $22,000, the 419' four-span Winkelman Bridge cost almost a third of the 288' two-span Gila River Luten arch **[8152]** and only slightly more than the 190' one-span Holbrook arch, completed earlier that same year. These figures are even more remarkable given that the Winkelman Bridge was founded on driven timber piles, a more expensive construction technique than the spread footings of the Holbrook Bridge. The Winkelman and Kelvin bridges cost about as much as the four-span through truss built near Winslow by Navajo County in 1916-17 **[8156]** and almost half as much as the Santa Cruz Bridge #1 **[8166]**, a 457' concrete girder built in 1916 near Nogales.

No government entities in Arizona pinched pennies more than the cities and towns, and the only municipality in the state to use Luten's design was the Town of Miami. In December 1919, Town Engineer Thomas ordered a set of plans and specifications from the Topeka Bridge and Iron Company for a shallow 50' arch to span Bloody Tanks Wash in the center of town. The following May, the town purchased 3500 barrels of cement and began construction of the Keystone Avenue Bridge **[8588]** with force-account labor, using Luten's design. The project proceeded so successfully that Thomas soon began a bridge on Cordova Avenue **[8586]** using the same design. In 1921, identical bridges were completed over the channel on Reppy **[8585]**, Inspiration **[8587]** and Miami **[8589]** Avenues. The Miami bridges marked the only short-span application of the Luten arch design in the state.

In an experimental move to provide an alternative to the Luten arch for long-span applications, the AHD bridge department in 1919-20 designed three almost identical open-spandrel concrete arches. The Cienega Bridge **[8293]** - a long-span arch with a concrete girder viaduct over a branch of the Southern Pacific Railroad - was to be built on the Borderland Highway in Pima County. The other bridges were located over Queen Creek in Pinal County and Hell Canyon in Yavapai County. The design of the Hell Canyon Bridge was later changed to a multi-span concrete girder, but the other two structures were constructed as drawn in 1920-21. The bridges proved expensive and difficult to erect, however, and AHD shelved the design. The Mill Avenue Bridge in Tempe **[0083]** would be the only other open-spandrel arch designed by AHD.

The Arizona state engineer's office used Luten and open-spandrel arches for long spans, but for short- to medium-span concrete arches the bridge engineers developed another standard design. This arch featured a filled spandrel, with cantilevered roadway and reinforcing clustered in a manner noticeably similar to Luten's patent. The major difference between the Luten arch and what AHD termed as its "common arch" was the arch profile. Luten's bridges were distinguished by the hallmark horseshoe shape. AHD's common arches were more truly elliptical. The oldest AHD common arch remaining in the state is the Devil's Canyon Bridge, a 65' span located on the Miami-Superior Highway in Pinal County. Built in 1921-22, this handsomely proportioned bridge featured a moderate barrel rise, a roadway which cantilevered over the arches on both sides, a corbeled arch ring and paneled parapets with steel pipe guardrails. The Devil's Canyon Bridge was followed soon by other AHD single-span common arches, including the Lynx Creek Bridge **[8256]** (built 1922; 91' span), the Verde River Bridge **[8236]** (built 1922-23; 100' span) and the Fossil Creek Bridge **[3215]** (built 1924-25; 70' span).

Although the concrete bridges built by the state engineer's office were demonstrably stronger and more durable and stable under load than their steel truss counterparts, many soon displayed a dangerous and expensive weakness. The superstructures could carry traffic well enough. The piers in the multi-span bridges, however, were often founded on spread footings poorly placed on alluvial sand or shallow bedrock. To exacerbate this, the engineers made little or no provision to prevent scouring at the piers' bases. For rivers which dwindled to a trickle in most seasons, this type of substructure served adequately. But during flash floods, the water quickly undermined the piers and approaches. As a result, the bridges collapsed in whole or part when the piers toppled over.

One of the most notorious of these early structures was the Antelope Hill Bridge over the Gila River. Ceremoniously opened to traffic on August 18, 1915, after several construction delays, this starcrossed structure began to fail almost immediately. In January 1916, floodwaters quickly washed away almost two miles of approach grading and widened the river's channel at the north end of the bridge by approximately 300'. To correct this, the Arizona State Legislature in March 1917 appropriated $50,000 to build an extension onto the north end. The new construction consisted of five additional 65' concrete girder spans and an extensive timber trestle approach. Completed in autumn 1918, the bridge carried traffic more-or-less as intended until a flood a week after Thanksgiving, 1919, destroyed some 500' of the north approach and shifted some of the concrete piers on the extension.

Further flooding three months later dropped about 300' more of trestle, the north abutment and the northernmost girder. Worse, the flood caused several of the piers on the extension, already damaged by the previous flood, to sink further and shift downstream. Within two years, the highway department had rerouted the road to bypass the Antelope Hill crossing entirely; the bridge was replaced in 1929 with the Dome suspension bridge. Virtually all of the other multi-span concrete crossings built in the state in the 1910s proved problematical. The Florence Bridge over the Gila River required extensive repairs to its approaches after almost every major flood. Similarly, the San Carlos Bridge over the Gila, built by the U.S. Indian Service in 1913, was impassable for five of its first seven years until the erection of four through trusses on one end. AHD bridge engineers were forced to post a 2-ton restriction and undertake major repairs on the Tempe Bridge after it experienced pier settlement and superstructural cracking after flooding in 1919-20.

Significantly, most of these bridges spanned the Gila River. Outlet for several other rivers and subject to extremely violent fluctuations in stream flow at any time of the year, the Gila proved almost as difficult for bridge engineers in Arizona as did the larger Colorado. In fact, among the early multiple-span concrete bridges over the Gila, only the Sacaton Dam Bridge **[3165]** managed to survive without major damage. This was due in large part because the bridge was situated over a diversion dam, which blunted the force of the river at this point.

Ironically, when the Arizona Highway Department sought to bridge the Gila River for the Ocean-to-Ocean Highway in the early 1920s, the bridge engineers opted for a steel truss instead of a multi-span concrete bridge. But even this enlightenment came relatively late in the design process. AHD began planning for a bridge for the highway in western Maricopa County even before Oklahoman Frank Gillespie built his dam over the Gila in 1921. Despite the problems with other multi-span concrete bridges over the Gila, AHD bridge engineers initially planned a series of concrete girders for this crossing, too. After reconsideration in 1925, they hired a consulting engineer to help design and locate the structure. At the consultant's advice, AHD scrapped the girder design in favor of a series of steel through trusses with a concrete deck. The trusses were supported by solid concrete piers, set as deep as 45' below the riverbed on the compact caliche hardpan. The Gillespie Dam Bridge **[8021]**, completed in July 1927, did not experience the pier and approach failures of its predecessors.

Upon its completion in July 1927, the Gillespie Dam Bridge was notable as the longest steel highway bridge in Arizona. A list of the five longest vehicular structures in the state in 1926 indicates the tremendous impact that the Gila River had on bridge construction. Four of the five spanned the Gila, and the fifth - the Tempe Bridge over the Salt River - spanned a tributary of the Gila near the two rivers' confluence. The bridges are:

Antelope Hill Bridge	1765'	(extant; abandoned and deteriorated)
Gillespie Dam Bridge	1660'	(extant; in off-system service)
Tempe Bridge	1508'	(extant; abandoned)
Sacaton Bridge	1486'	(extant; in off-system service)
Florence Bridge	1430'	(demolished)

The Gila prompted long bridges, but it was the Colorado that historically has presented the most formidable barrier to bridge construction. The Yuma and Topock bridges, completed in 1915 and 1916, had proved exceedingly expensive and difficult to erect, even on relatively flat sites. This was due to the unpredictable nature of the Colorado River, and its propensity to flood at odd times. When the Arizona Highway Department sought to bridge the river a third time in the 1920s, the problem of flooding on the river was eclipsed by the bridge site's great height and remoteness. In 1923, AHD began planning for a bridge over the Grand Canyon near Lee's Ferry. AHD engineers originally considered a suspension bridge like the Cameron Bridge, then a through arch like the Topock Bridge, but eventually AHD Bridge Engineer R.A. Hoffman designed a long-span steel deck arch. With funding provided by the State of Arizona and the Navajo Tribal Fund, AHD contracted with the Kansas City Structural Steel Company in June 1927 to fabricate and erect the arch. The contractors combated severe logistical problems to build the immense structure and by the following April had set the concrete foundations into the sheer canyon walls. The first steel was swung on April 16, 1928, the main span completed on June 14, 1929.

Completion of the Navajo Bridge **[0051]** marked a culmination of sorts for highway bridge engineering in Arizona. The Arizona Highway Department would design a few other exotic bridges - most notable of which was the Dome Bridge, a 798'-span suspension bridge over the Gila River in Yuma County - but by and large the experimentation with different structural types that had marked the 1910s and early 1920s had given way to design standardization. The only structural type of note with which AHD continued to experiment was the steel arch. The Navajo Bridge was the only spandrel-braced arch undertaken by AHD. (The Bureau of Public Roads did erect one spandrel-braced arch: the Midgley Bridge **[0232]** in Coconino County). But the bridge department soon turned to another arch configuration: the girder-ribbed deck arch, made up of five or more riveted plate girders. Completed in 1934, the Salt River Canyon Bridge **[0129]** in Gila County was AHD's first girder-ribbed arch. It was soon followed by three other such arches: the Cedar Canyon **[0215]**, Corduroy Creek **[0216]** and Canyon Padre bridges. The end of the 1930s generally meant the end of truss construction in Arizona. Although a few trusses and arches have been built since, more modern concrete and steel beam designs, well illustrated by the multi-span Winslow Bridge **[0229]**, have received greater use. As county roads have been widened and paved and state roads superseded by interstate highways, the make-up of Arizona's road systems have changed. But enough significant bridges have survived to form a tangible record of history.

F. Associated Property Types

I. Name of Property Type Concrete Arch Bridges

II. Description

The arch is an ancient bridge type, used first for masonry bridges and later for concrete structures. Like trusses, concrete arches carry the roadway in either a through or deck configuration, depending on whether the road is carried above or below the primary arches. No concrete through arches are known to have been constructed in Arizona, however, and all the concrete arches in this nomination are deck arches. Deck arches are generally classified as open spandrel and filled spandrel. Open spandrel arches have pierced spandrel walls, made up typically of the arch ribs and columns, upon which the roadway rests. The arch ring of an open-spandrel arch can be a single unit which extends continuously across the width of the bridge, or it can be comprised of two or more separate, parallel ribs. Filled spandrel arches have solid side (cont. to F.1; 2)

III. Significance

As indicated in Section E, concrete as a material has had tremendous impact on the development of overland transportation in Arizona. The most sophisticated configuration among the pre-1945 concrete bridges, arches are among the most technologically significant vehicular bridge types in the state. Whether designed by outside consultants like Daniel Luten [Luten arches] or in-house by Arizona Highway Department engineers [open spandrel and filled spandrel arches], reinforced concrete deck arches have provided important engineering solutions for medium- to long-span crossings. Concrete arches were generally more expensive than other bridge configurations, but were far more durable and therefore were used for more heavily trafficked crossings on the state's major early highways. Beginning with the Ash Avenue Bridge in Tempe, they have provided strategically pivotal vehicular crossings from the very development of Arizona's highway system after 1910, contributing significantly to vehicular transportation in the state.

IV. Registration Requirements

The numerical rating system used to evaluate NRHP eligibility is explained fully in Section G. The criteria pertinent to bridge evaluation define properties that are NRHP eligible as:

Criterion A: resources that are associated with events that have made a significant contribution to the broad patterns of our history.
Criterion C: resources that embody the distinctive characteristics of a type, period or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

Criterion B could conceivably be applied to some of the bridges in this nomination, but NRHP documentation procedures make its application impractical.

Applied liberally, Criterion A could be used to encompass virtually every bridge in Arizona from the historical period as potentially eligible for NRHP, because almost every bridge is associated with the broad pattern of transportation. This is in turn integrally linked with the themes of development, commerce and settlement. Transportation has unquestionably made "a significant (cont. to F.1; 7)

[X] See continuation sheet

[X] See continuation sheet for additional property types

walls and continuous arch barrels. The barrel carries earth fill and the spandrels act as retaining walls; the roadway rests on the fill. A specific type of filled spandrel arch found in Arizona is the Luten, or horseshoe arch, patented by Daniel B. Luten in 1900. Concrete arches can be built either as mass arches, in which the concrete alone carries the load, or they may be reinforced with steel rods, to withstand the tensile forces. All of the arches in this nomination are reinforced. Because of the plasticity of concrete, architectural designs and surface textures can be incorporated into the bridges, and Arizona's arches present a variety of parapet and spandrel treatments. Twenty-eight concrete arches have been included in this nomination: five open-spandrel arches, ten filled spandrel arches and thirteen Luten arches. These are listed below. (Note: see HAER Inventory Card for each individual bridge for historic and other names, location, county, ownership, historic and current functions, description, level of significance, statement of significance, previous documentation, and major bibliographic references.) Verbal boundary description: This nomination consists of a series of noncontiguous sites. The boundary for each site is defined as the bridge itself, including approach spans, and any property on which it rests. The dimensions for each are given on the HAER Inventory Cards.

Open Spandrel Concrete Arches:

0083 Tempe Bridge (Mill Avenue Bridge)
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1931 - present
Acreage: 1.30 acres
USGS Quad: Tempe (1952; 7.5')
UTM Refer. : 12.412535.3699515

3003 Boulder Dam Arizona Spillway Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1935 - present
Acreage: 0.10 acres
USGS Quad: Hoover Dam (1953; 15')
UTM Refer. : 11.704140.3987670

8293 Cienega Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1921 - present
Acreage: 0.13 acres
USGS Quad: Rincon Valley (1968; 15')
UTM Refer. : 12.533490.3542500

Tempe Bridge (Ash Avenue Bridge)
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1911 - 1931
Acreage: 0.62 acres
USGS Quad: Tempe (1952; 7.5')
UTM Refer. : 12.412420.3699480

Queen Creek Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1921 - 1949
Acreage: 0.09 acres
USGS Quad: Superior (1948; 7.5')
UTM Refer. : 12.491750.3683960

Filled Spandrel Concrete Arches:

0031 Pine Creek Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1925 - present
Acreage: 0.05 acres
USGS Quad: Pinyon Mountain (1964; 7.5')
UTM Refer. : 12.481240.3717460

1532 Alchesay Canyon Bridge
Significance: TRANSPORTATION (Criterion A)
Period: 1905 - present
Acreage: 0.01 acres
USGS Quad: Theodore Roosevelt Dam (1964; 7.5')
UTM Refer. : 12.485315.3725155

3000 Roosevelt Dam South Spillway Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1910 - present
Acreage: 0.17 acres
USGS Quad: Theodore Roosevelt Dam (1964; 7.5')
UTM Refer. : 12.485020.3725490

3001 Roosevelt Dam North Spillway Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1910 - present
Acreage: 0.17 acres
USGS Quad: Theodore Roosevelt Dam (1964; 7.5')
UTM Refer. : 12.485160.3725640

3215 Fossil Creek Bridge
Significance: ENGINEERING (Criterion C)
Period: 1925 - present
Acreage: 0.04 acres
USGS Quad: Hackberry Mountain (1967; 7.5')
UTM Refer. : 12.442160.3805855

8150 Solomonville Road Overpass
Significance: TRANSPORTATION (Criterion A)
Period: 1907 - 1950
Acreage: 0.02 acres
USGS Quad: Guthrie (1960; 15')
UTM Refer. : 12.659940.3651805

8151 Solomonville Road Overpass
Significance: TRANSPORTATION (Criterion A)
Period: 1907 - 1950
Acreage: 0.02 acres
USGS Quad: Guthrie (1960; 15')
UTM Refer. : 12.659500.3651110

8236 Verde River Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1923 - 1967
Acreage: 0.06 acres
USGS Quad: Chino Valley North (1979; 7.5')
UTM Refer. : 12.366595.3858720

8256 Lynx Creek Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1922 - 1967
Acreage: 0.04 acres
USGS Quad: Prescott Valley South (1973; 7.5')
UTM Refer. : 12.374065.3824055

Devil's Canyon Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1922 - 1941
Acreage: 0.05 acres
USGS Quad: Superior (1948; 7.5')
UTM Refer. : 12.497060.3687410

Luten Arches:

8152 Gila River Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1918 - 1950
Acreage: 0.11 acres
USGS Quad: Guthrie (1960; 15')
UTM Refer. : 12.658080.3648500

8440 Queen Creek Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1919 - 1947
Acreage: 0.06 acres
USGS Quad: Florence Junction (1966; 7.5')
UTM Refer. : 12.469415.3683045

8441 Kelvin Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1917 - present
Acreage: 0.15 acres
USGS Quad: Kearny (1964; 7.5')
UTM Refer. : 12.502435.3662500

8442 Winkelman Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1916 - present
Acreage: 0.17 acres
USGS Quad: Winkelman (1949; 7.5')
UTM Refer. : 12.521320.3549460

8585 Reppy Avenue Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1921 - present
Acreage: 0.04 acres
USGS Quad: Inspiration (1945; 15')
UTM Refer. : 12.511520.3694885

8586 Cordova Avenue Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1921 - present
Acreage: 0.04 acres
USGS Quad: Inspiration (1945; 15')
UTM Refer. : 12.511580.3694945

8587 Inspiration Avenue Bridge

Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1921 - present
Acreage: 0.04 acres
USGS Quad: Inspiration (1945; 15')
UTM Refer. : 12.511640.3695005

8588 Keystone Avenue Bridge

Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1921 - present
Acreage: 0.04 acres
USGS Quad: Inspiration (1945; 15')
UTM Refer. : 12.511700.3695065

8589 Miami Avenue Bridge

Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1921 - present
Acreage: 0.04 acres
USGS Quad: Inspiration (1945; 15')
UTM Refer. : 12.511760.3694125

Canyon Padre Bridge

Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1914 - 1937
Acreage: 0.05 acres
USGS Quad: Angell (1968; 7.5')
UTM Refer. : 12.473885.3890880

Canyon Diablo Bridge

Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1915 - c.1930
Acreage: 0.05 acres
USGS Quad: Meteor Crater (1968; 7.5')
UTM Refer. : 12.491360.3885665

Holbrook Bridge

Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1916 - 1961
Acreage: 0.07 acres
USGS Quad: Holbrook (1955; 15')
UTM Refer. : 12.581350.3860440

Mineral Creek Bridge
Significance: ENGINEERING (Criterion C)
Period: c.1923 - 1962
Acreage: 0.06 acres
USGS Quad: Kearny (1964; 7.5')
UTM Refer.: 12.581350.3860440

contribution to the broad patterns of our history." And as elements of a statewide roadway network, bridges are representative resources important to the people that cross them, at least on a local level. All bridges are thus significant to the transportation theme on at least a local level. To insert a degree of discrimination, Criterion A has been interpreted here to mean structures which have been at least regionally important. The questions asked with regard to Criterion A are: has the bridge contributed in a meaningful way to the settlement and development of a geographically definable area? Has the bridge facilitated major passage to or through a region, or has the access it has allowed created settlement and development of any sizeable district, region or portion of land? The bridges included here under Criterion A meet this test.

Most Arizona bridges meet NRHP eligibility under Criterion C. Like Criterion A, bridges evaluated by liberal use of Criterion C may all be considered significant, either as representative examples of relatively common structural types or as rare examples of unusual or anachronistic bridge forms. It can be said that all bridges "embody the distinctive characteristics of a type, period or method of construction." As a pragmatic matter, therefore, Criterion C has been employed more restrictively to winnow the group of similar resources to a meaningful list. Rather than look simply to typicality or uniqueness as indicators of significance, evaluation under this criterion also depends on identifying aspects of the bridges which make them stand out among their groups (i.e., earliest or oldest examples of type, longest span, longest total length, unusual structural or architectural detailing, etc.). By selecting the superlative examples from the major structural categories, a list of truly important bridges can be gleaned from a large number of similar resources.

All of the bridges included here maintain an absolute integrity of design, workmanship and materials. Structural alterations are minimal, architectural features remain largely intact, and with a few exceptions, the bridges still carry traffic. Since most are located in their original positions in sparsely settled rural areas that have undergone minimal changes over time, these bridges retain a high degree of integrity of location, association and feeling. The only exception to this are the handful of steel trusses which have been moved, as identified on the HAER Inventory Cards. Trusses are by definition moveable structures, however, and such moves constitute an integral part of the design and erection process. The trusses in this nomination have been moved from one rural crossing to another - often on the same watercourse - and so these bridges retain integrity of feeling and association, if not location.

I. Name of Property Type: Concrete Slab and Girder Bridges

II. Description

Concrete slabs and girders are relatively simply configured bridge types, which combine the compressive and plastic strengths of concrete and the tensile strength of steel. Concrete slabs are short-span structures, in which the steel-reinforced roadway slab carries the bridge load without stiffening members. An unusual structural subtype found in Arizona is the rail-top slab, a bridge which uses railroad rails for reinforcing. Concrete girders generally feature longer spans than simple slabs and employ series of parallel concrete beams, or girders, cast integrally beneath the roadway slab. Both bridge types usually incorporate nonbearing concrete parapet walls at the roadway edges, and these, like the parapets of concrete arches, may be embellished with a variety of architectural forms and treatments.

Seven concrete slabs and seven concrete girders have been included in this nomination. These are listed below. (Note: see HAER Inventory Card for each individual bridge for historic and other names, location, county, ownership, historic and current functions, description, level of significance, statement of significance, previous documentation, and major bibliographic references.) Verbal boundary description: This nomination consists of a series of noncontiguous sites. The boundary for each site is defined as the bridge itself, including approach spans, and any property on which it rests. The dimensions for each are given on the HAER Inventory Cards.

Concrete Slabs:

0168 Douglas Underpass

Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1936 - present
Acreage: 0.12 acres
USGS Quad: Douglas (1978; 7.5')
UTM Refer.: 12.637480.3469140

0169 Stone Avenue Underpass

Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1936 - present
Acreage: 0.09 acres
USGS Quad: Tucson (1974; 7.5')
UTM Refer.: 12.502730.3565410

0194 Winslow Underpass
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1936 - present
Acreage: 0.11 acres
USGS Quad: Winslow (1954; 15')
UTM Refer. : 12.531490.3875280

1580 Sixth Avenue Underpass
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1930 - present
Acreage: 0.08 acres
USGS Quad: Tucson (1974; 7.5')
UTM Refer. : 12.503020.3565180

8488 Broadway Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1917 - present
Acreage: 0.05 acres
USGS Quad: Clarkdale (1973; 7.5')
UTM Refer. : 12.403425.3848320

8534 Black Gap Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1921 - 1950
Acreage: 0.01 acres
USGS Quad: Guthrie (1960; 15')
UTM Refer. : 12.657170.3646400

Jack's Canyon Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1913 - 1968
Acreage: 0.01 acres
USGS Quad: Clear Creek Reservoir (1970; 7.5')
UTM Refer. : 12.531665.3870175

Concrete Girders:

3164 San Tan Canal Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1926 - present
Acreage: 0.01 acres
USGS Quad: Sacaton (1966; 7.5')
UTM Refer. : 12.435955.3661470

3165 Sacaton Dam Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1925 - present
Acreage: 0.64 acres
USGS Quad: Sacaton (1966; 7.5')
UTM Refer.: 12.435955.3661135

8166 Santa Cruz Bridge Number 1
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1917 - 1927
Acreage: 0.19 acres
USGS Quad: Nogales (1958; 15')
UTM Refer.: 12.512010.3472500

8453 Fourth Avenue Underpass
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1916 - present
Acreage: 0.15 acres
USGS Quad: Tucson (1974; 7.5')
UTM Refer.: 12.503290.3564950

9152 Hassayampa River Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1929 - 1974
Acreage: 0.18 acres
USGS Quad: Hassayampa (1958; 7.5')
UTM Refer.: 12.339820.3691040

Antelope Hill Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1915 - 1929
Acreage: 0.36 acres
USGS Quad: Wellton Mesa (1965; 7.5')
UTM Refer.: 12.779980.3623345

Hell Canyon Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1923 - 1954
Acreage: 0.10 acres
USGS Quad: Paulden (1979; 7.5')
UTM Refer.: 12.373890.3871410

III. Significance

As indicated in Section E, concrete as a material has had tremendous impact on the development of overland transportation in Arizona. Though not as technologically sophisticated as arch bridges, concrete slabs and girders represent a far more populous group. Soon after its formation, the Arizona Highway Department developed standard designs for single- and multiple-span slabs and girders and used these extensively across the state. Concrete slabs and girders are generally considered marginally significant technologically. A few of each type of bridge are included in this nomination for their representational value. These bridges usually possess additional significance for their size, early construction date, role on an important early route or association with other construction trends (such as the use of prison labor). Some of Arizona's longest and most significant vehicular bridges - especially those which spanned the Gila River - are made up of series of concrete girders. Beginning with the Florence Bridge (since razed) and the Antelope Hill Bridge and including the Sacaton Dam and Santa Cruz bridges, they have provided strategically pivotal vehicular crossings from the very development of Arizona's highway system after 1910, contributing significantly to vehicular transportation in the state.

IV. Registration Requirements

See Section F for concrete arch bridges.

I. Name of Property Type Steel Trusses

II. Description

Steel trusses are web-like structures made up of comparatively short pieces of metal joined together in a series of triangles. These structural triangles interconnect with one another to withstand tensile and compressive loads and form the complete bridge. Trusses may be termed through, pony or deck, depending on whether the deck is carried between [through, pony] or above [deck] the main structural members. Trusses are further categorized by their connection types. On older bridges, the steel members are joined by means of cylindrical steel pins. Later bridges employed riveted connections, using steel gusset plates. Trusses have evolved into dozens of forms, which employ different combinations of compression and tension members to distribute the vehicles' weight to the supports at the end of the span. All of the vehicular steel trusses found in Arizona feature either Pratt or Warren variations.

Twenty-six steel trusses have been included in this nomination: twelve through trusses, eight pony trusses and six deck trusses. These are listed below. (Note: see HAER Inventory Card for each individual bridge for historic and other names, location, county, ownership, historic and current functions, description, level of significance, statement of significance, previous documentation, and major bibliographic references.) Verbal boundary description: This nomination consists of a series of noncontiguous sites. The boundary for each site is defined as the bridge itself, including approach spans, and any property on which it rests. The dimensions for each are given on the HAER Inventory Cards.

Through Trusses:

0026 Mormon Flat Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1925 - present
Acreage: 0.06 acres
USGS Quad: Mormon Flat Dam (1964; 7.5')
UTM Refer.: 12.458900.3710915

0037 Salt River Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1920 - present
Acreage: 0.09 acres
USGS Quad: Rockinstraw Mountain (1949; 15')
UTM Refer.: 12.507340.3719750

0193 Boulder Creek Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1920 - present
Acreage: 0.17 acres
USGS Quad: Mormon Flat Dam (1964; 7.5')
UTM Refer.: 12.460720.3710335

3228 Walnut Creek Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1921 - 1936
Acreage: 0.05 acres
USGS Quad: Camp Wood (1947; 15')
UTM Refer.: 12.334200.3866480

8021 Gillespie Dam Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1927 - 1956
Acreage: 0.72 acres
USGS Quad: Spring Mountain (1973; 7.5')
UTM Refer.: 12.335195.3677670

8116 Desert Wash Bridge
Significance: ENGINEERING (Criterion C)
Period: 1920 - 1955
Acreage: 0.04 acres
USGS Quad: Benson (1973; 7.5')
UTM Refer.: 12.596500.3535800

8156 Woodruff Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1917 - 1939
Acreage: 0.04 acres
USGS Quad: Ten Mile Cedars (1970; 7.5')
UTM Refer.: 12.588190.3844380

8227 Walnut Grove Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1924 - present
Acreage: 0.07 acres
USGS Quad: Walnut Grove (1969; 7.5')
UTM Refer.: 12.355720.3797475

8533 Yuma Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1914 - present
Acreage: 0.18 acres
USGS Quad: Yuma East (1965; 7.5')
UTM Refer. : 11.723540.3623510

9225 Walnut Canyon Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1924 - present
Acreage: 0.05 acres
USGS Quad: Winona (1968; 7.5')
UTM Refer. : 12.461725.3896400

9474 Perkinsville Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1921 - 1936
Acreage: 0.11 acres
USGS Quad: Perkinsville (1973; 7.5')
UTM Refer. : 12.389900.3861900

9633 Park Avenue Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1918 - present
Acreage: 0.09 acres
USGS Quad: Clifton (1962; 15')
UTM Refer. : 12.658850.3658610

Pony Trusses:

0027 Fish Creek Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1923 - present
Acreage: 0.02 acres
USGS Quad: Horse Mesa Dam (1964; 7.5')
UTM Refer. : 12.471525.3709340

0028 Lewis and Pranty Creek Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1923 - present
Acreage: 0.02 acres
USGS Quad: Horse Mesa Dam (1964; 7.5')
UTM Refer. : 12.472500.3710695

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0048 Holbrook Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1928 - present
Acreage: 0.15 acres
USGS Quad: Holbrook (1955; 15')
UTM Refer. : 12.576570.3861820

3074 Sanders Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1923 - 1931
Acreage: 0.06 acres
USGS Quad: Sanders (1971; 7.5')
UTM Refer. : 12.652040.3897730

8157 St. Joseph Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1917 - present
Acreage: 0.14 acres
USGS Quad: Joseph City (1955; 7.5')
UTM Refer. : 12.561810.3866520

8158 Chevelon Creek Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1913 - 1934
Acreage: 0.03 acres
USGS Quad: Hibbard (1970; 7.5')
UTM Refer. : 12.543065.3864435

9214 Hereford Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1912 - present
Acreage: 0.10 acres
USGS Quad: Hereford (1952; 7.5')
UTM Refer. : 12.584845.3478335

Solomonville Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1909 - 1924
Acreage: 0.03 acres
USGS Quad: Safford (1985; 7.5')
UTM Refer. : 12.627470.3629910

Deck Trusses:

0032 Dead Indian Canyon Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1933 - c.1965
Acreage: 0.17 acres
USGS Quad: Coconino Point (1962; 15')
UTM Refer. : 12.442180.3976470

3073 Allentown Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1923 - 1931
Acreage: 0.07 acres
USGS Quad: Houck (1971; 7.5')
UTM Refer. : 12.667840.3905550

3128 Black River Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1929 - present
Acreage: 0.11 acres
USGS Quad: Forks Butte (1978; 7.5')
UTM Refer. : 12.573095.3730390

8071 Querino Canyon Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1930 - c. 1965
Acreage: 0.12 acres
USGS Quad: Burntwater Wash (1971; 7.5')
UTM Refer. : 12.658460.3905305

8662 Sand Hollow Wash Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1930 - c. 1970
Acreage: 0.17 acres
USGS Quad: Littlefield (1954; 15')
UTM Refer. : 12.232460.4079780

Little Hell Canyon Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1923 - 1951
Acreage: 0.07 acres
USGS Quad: Meath Spring (1979; 7.5')
UTM Refer. : 12.371820.3882610

III. Significance

As indicated in Section E, steel trusses have had a substantial impact on the development of overland transportation in Arizona. The most sophisticated configuration among the pre-1945 steel bridges, trusses are among the most technologically significant vehicular bridge types in the state. Whether designed by regional bridge companies or in-house by Arizona Highway Department engineers, steel trusses have provided important engineering solutions for medium- to long-span crossings. Trusses have played an especially important role in county bridge construction, because the counties could secure engineering service as part of the bridge bidding process. They were later used by the state engineer's office in many of the early highway crossings on important state and regional routes. The trusses included here represent all phases and circumstances of construction - including bridge moving - and all technological configurations found in Arizona.

IV. Registration Requirements

See Section F for concrete arch bridges.

I. Name of Property Type Other Steel Bridges

II. Description

Among the non-truss steel bridges in Arizona are steel girders, stringers, arches and suspension bridges. Girders and stringers are relatively simple, short-span structures which depend on steel beams to span between abutments and piers. Steel arches, like their concrete counterparts, consist of a pair of primary arches which bear steel columns, which in turn carry the roadway. Like trusses, steel arches may be termed through or deck, depending on whether the deck is carried between [through] or above [deck] the main structural members. Steel arches are further categorized as girder or spandrel braced arches, reflective of their arch configuration. Suspension bridges utilize steel cables, from which the roadway is suspended by means of suspenders. Inherently unsteady bridges, they are stiffened with steel trusses and sway cables.

Four steel girder/stringers, six steel arches and two steel suspension bridges have been included in this nomination. These are listed below. (Note: see HAER Inventory Card for each individual bridge for historic and other names, location, county, ownership, historic and current functions, description, level of significance, statement of significance, previous documentation, and major bibliographic references.) Verbal boundary description: This nomination consists of a series of noncontiguous sites. The boundary for each site is defined as the bridge itself, including approach spans, and any property on which it rests. The dimensions for each are given on the HAER Inventory Cards.

Girders and stringers:

0079 Pumphouse Wash Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1931 - present
Acreage: 0.10 acres
USGS Quad: Mountainaire (1962; 7.5')
UTM Refer. : 12.432960.3875870

0118 Gila Bend Overpass
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1934 - present
Acreage: 0.08 acres
USGS Quad: Gila Bend (1973; 7.5')
UTM Refer. : 12.341455.3646770

0229 Winslow Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1939 - present
Acreage: 0.48 acres
USGS Quad: Winslow (1954; 15')
UTM Refer. : 12.531490.3873630

3010 Petrified Forest Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1932 - present
Acreage: 0.31 acres
USGS Quad: Little Lithodendron Park (1972; 7.5')
UTM Refer. : not available

Arches:

0051 Navajo Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1929 - present
Acreage: 0.34 acres
USGS Quad: Lee's Ferry (1954; 15')
UTM Refer. : 12.443710.4074660

0129 Salt River Canyon Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1934 - present
Acreage: 0.23 acres
USGS Quad: Blue Horse Mountain (1946; 15')
UTM Refer. : 12.545000.3738640

0215 Cedar Canyon Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1937 - present
Acreage: 0.16 acres
USGS Quad: Long Tom Canyon (1976; 7.5')
UTM Refer. : 12.572975.3768760

0216 Corduroy Creek Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1937 - present
Acreage: 0.17 acres
USGS Quad: Long Tom Canyon (1976; 7.5')
UTM Refer. : 12.578135.3774110

0232 W.W. Midgley Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1939 - present
Acreage: 0.21 acres
USGS Quad: Munds Park (1965; 7.5')
UTM Refer.: 12.432220.3860385

Old Trails Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1916 - 1948
Acreage: 0.32 acres
USGS Quad: Topock (1970; 7.5')
UTM Refer.: 11.730265.3844180

Suspension Bridges:

Dome Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1929 - 1968
Acreage: 0.40 acres
USGS Quad: Laguna Dam (1955; 7.5')
UTM Refer.: 12.741640.3627345

Cameron Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1911 - 1959
Acreage: 0.22 acres
USGS Quad: Cameron (1955; 15')
UTM Refer.: 12.462880.3970210

III. Significance

As indicated in Section E, Arizona's non-truss steel bridges range from the common to the exotic. Nevertheless, they have had a substantial impact on the development of overland transportation in Arizona. Among the most sophisticated configurations among the pre-1945 steel bridges, the long-span steel arches and suspension bridges are the most technologically significant vehicular bridge types in the state. Whether designed by regional bridge companies, consulting engineers or in-house by Arizona Highway Department engineers, steel stringers, girders, arches and suspension bridges have provided important engineering solutions for medium- to long-span crossings. They have been used to span the most problematic highway crossings on important state and regional routes. The structures included here represent all phases and circumstances of construction and all pre-1945 technological configurations found in Arizona.

IV. Registration Requirements

See Section F for concrete arch bridges.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

I. Name of Property Type Timber Stringers

II. Description

Timber stringer bridges are among the most rudimentary bridge types used for vehicular traffic. They consist of rows of timber stringers, supported by timber pile bents and, typically, timber abutments. Two timber stringers have been included in this nomination. These are listed below. (Note: see HAER Inventory Card for each individual bridge for historic and other names, location, county, ownership, historic and current functions, description, level of significance, statement of significance, previous documentation, and major bibliographic references.) Verbal boundary description: This nomination consists of a series of noncontiguous sites. The boundary for each site is defined as the bridge itself, including approach spans, and any property on which it rests. The dimensions for each are given on the HAER Inventory Cards.

Lithodendron Wash Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1932 - c. 1960
Acreage: 0.22 acres
USGS Quad: Little Lithodendron Park (1972; 7.5')
UTM Refer. : not available

Little Lithodendron Wash Bridge
Significance: TRANSPORTATION (Criterion A); ENGINEERING (Criterion C)
Period: 1932 - c. 1960
Acreage: 0.18 acres
USGS Quad: Little Lithodendron Park (1972; 7.5')
UTM Refer. : not available

III. Significance

Timber bridges have generally not played a major role in the development of Arizona vehicular transportation. The Arizona Highway Department eschewed timber as far less durable in comparison with concrete bridges. Nevertheless, AHD and the various counties did erect a number of small-scale timber structures around the state in the 1920s and 1930s, and many of these still survive. These two bridges are both representative in their construction details and unusual in their multiple-span scale. They are additionally significant as part of U.S. 66, one of two transcontinental routes which crossed the state.

IV. Registration Requirements

See Section F for concrete arch bridges.

G. Summary of Identification and Evaluation Methods

Discuss the methods used in developing the multiple property listing.

This multiple property listing for vehicular bridges in Arizona is based upon the Arizona Bridge Inventory, conducted by Fraserdesign in 1986-87. Undertaken for the Arizona Department of Transportation (ADOT) with the cooperation of the Arizona State Historic Preservation Office (ASHPO) and the Historic American Engineering Record (HAER), this comprehensive study presents a historical inventory and evaluation of pre-1945 vehicular bridges currently in use on the state, county and city road systems of Arizona.

The inventory covers 610 bridges and grade separations in three basic administrative classifications: on the Federal Aid primary system (on-system), on the Federal Aid secondary system (off-system - owned by counties and municipalities) and federally owned bridges. Generally not included are railroad bridges, bridges in private ownership and those that have been dismantled or permanently closed to vehicular traffic. There are exceptions, however, and several abandoned and privately owned structures of special importance have been included.

The typology of significant property types has been based on superstructural type, which itself is categorized by material and configuration. The inventory includes every pre-1945 structural type represented in the state -

[X] See continuation sheet

H. Major Bibliographical References

BOOKS AND BOOKLETS

Adams, Kramer. *Covered Bridges of the West: A History and Illustrated Guide.* Berkeley, California: Howell-North, 1963.

American Society of Civil Engineers. *American Wood Bridges.* New York: American Society of Civil Engineers, 1976.

Arizona Good Roads Association. *Road Maps and Tour Book.* Prescott: Arizona Good Roads Association, 1913; reprint ed., Phoenix: Arizona Highways, 1987.

Arizona State Highway Department. *History of the Arizona State Highway Department.* n.p., 1939.

[X] See continuation sheet

Primary location of additional documentation:

- [X] State historic preservation office
- [X] Other State agency (ADOT)
- [ ] Federal agency
- [ ] Local government
- [ ] University
- [ ] Other

Specify repository: ______

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concrete slab, concrete slab-and-girder, concrete box girder, concrete arch, timber stringer, steel stringer, steel girder, steel truss, steel arch and steel suspension. This nomination includes all but two of these: concrete box culvert and timber stringer. These two have been excluded as intrinsically non-significant. The four property types identified are associated with the single context of Transportation and Bridge Construction in Arizona State/ Territory from Early Settlement to 1945 and were selected for their close association with the theme and their illustration of structural types and functions.

The Arizona Bridge Inventory is comprised of three components - inventory, documentation and evaluation. The inventory began with a compilation of a master list of bridges taken from ADOT's Structure Inventory and Appraisal (SIA) listing of all state and local structures. The computerized SIA file contains data relating to location, ownership and structural configuration but does not contain historical information beyond date of construction. Using records from the SIA and general bridge files at ADOT, the inventory list was assembled, and individual structures were evaluated preliminarily for significance by structural type and date of construction. In addition, several significant abandoned and privately owned bridges were identified at this time using research material and oral interviews.

The second component of the study involved archival research and on-site documentation of individual structures. This fieldwork was conducted for each bridge identified as potentially eligible for NRHP from the preliminary assessment. The research methodology involved collection of primary and secondary source material to determine construction dates, designers, fabricators, contractors and the circumstances around the bridges' construction. The research entailed the use of ADOT and ASHPO archival and inventory material, biennial reports of the State Engineers, *Arizona Highways*, records of the county boards of supervisors, newspaper and magazine articles, original drawings, contracts, agreements and legislation, records from other government and archival sources and oral interviews.

The data from the inventory and documentation has been compiled in three data groups: structural, historical and locational. Information recorded included ADOT structure number; bridge name(s); county; city or vicinity; highway engineering district; highway route; feature intersected; cadastral references; present owner; super- and substructure type; span and overall length; roadway width; sufficiency rating; date of erection; designer; fabricator; contractor; alterations; representation in prior surveys; numerical rating for historical significance; research references; and comments. This base data was compiled for every bridge in the inventory. For each of the more important structures, a HAER inventory card was prepared, which gave a more extensive description and statement of significance. In addition to this site-specific information, primary and secondary sources were consulted to produce an overview of bridge and transportation trends in Arizona. The overview relates Arizona's important bridges to territorial and state bridge construction trends.

The final component of the study is evaluation. Using the inventory data, the bridges have been evaluated separately within the context of the overview and compared for relative historical and/or technological importance, using a numerical rating system developed for this inventory. The rating assigns numerical values to the different aspects of significance as defined by the National Register and divides into three essentially equal categories: level of documentation, technological significance and general significance.

The first is documentation. With a maximum of 30 points assigned, it is considered to be an important quality, allowing the structure to be traced to a specific time, builder and place of origin. Documentation requires hard evidence in the form of primary source references to the bridge's construction or physical evidence - the most obvious form of which would be a builder's plate on the bridge itself. Construction dates for bridges not documented definitively have been estimated from ADOT files or comparison with similar documentable spans. Bridgebuilders have not been guessed at on the basis of construction style or technique; only those known from the records have been listed. The components of documentation are construction date and builder, and assessment is biased toward older bridges and those erected by in-state contractors. When the construction date has been estimated, one-half value is given. No points are assigned to bridges for which the builder is unknown. Compilation of a list of documented structures forms a bridge chronology in the state, from which individual bridges may be evaluated and, if undocumented in this inventory, perhaps documented with future research. Because of this, a premium is placed on traceability of the bridges' origins, and no untraceable spans are included among the potentially eligible. Following is the value assignment for the documentation category:

DOCUMENTATION (maximum 30 points)

Date of Construction	
Pre -1913	15
1913-1920	12
1921-1930	8
1931-1940	4
Post-1940	0
Builder	
Known, significant Arizona builder	10
Known, significant out-of-state builder	8
Known, Arizona builder	6
Known, out-of-state builder	4
Builder unknown	0

The second category is technological significance, with a maximum of 35 points assigned. In this, rarity of structural type, dimensions and detailing are considered. Multiple spans are given points as unusual applications of engineering achievement and community investment. Similarly, span length is considered, with the longest spans of like bridges given points as usually the most important investments from the communities which they serve and as indicators of higher technology. The longest span example of each structural type is assigned an additional 5 points.

One of the most important considerations for evaluation is the number of surviving examples of type in the state. On the assumption that rarity equates with significance, more points are assigned for unique or uncommon bridge configurations, less to commonly represented types. This bias helps to insure that examples from all of the engineering types in Arizona be noted for preservation. Finally, special structural or architectural features are given consideration for technological or aesthetic notability. Following is the value assignment for technological significance:

TECHNOLOGICAL SIGNIFICANCE (maximum 35 points)

Number of Spans (point for each when 2 or more)	10 (max)
Length of individual spans	
Steel through truss 150′ or greater	3
Steel through truss 200′ or greater	5
Steel pony truss 80′ or greater	3
Steel pony truss 100′ or greater	5
Steel stringer 40′ or greater	3
Steel stringer 50′ or greater	5
Steel arch 500′ or greater	5
Concrete arch 50′ or greater	3
Concrete arch 80′ of greater	5
Concrete slab 30′ or greater	5
Concrete girder 40′ or greater	3
Concrete girder 50′ or greater	5
Geometry/configuration	
1-2 surviving examples of type in Arizona	15
3-4 surviving examples of type in Arizona	10
5-10 surviving examples of type in Arizona	6
11-20 surviving examples of type in Arizona	4
Greater than 20 examples of type in Arizona	0
Special Features	
Patented features	2
Decorative or distinctive elements	2
Builder's or dedication plate	2

The third category - general significance - is weighted equally with technological significance, with a maximum total of 35 points. This category takes into consideration the aesthetics of the structure's setting, its historical significance and structural and locational integrity. Historical significance relates the bridge to broader settlement, government and transportation themes and rates something apart from its engineering merits. Structural integrity questions whether the bridge functions as originally intended or has been significantly altered through subsequent construction. Deck replacement is considered a maintenance procedure and not a structural alteration. Locational integrity looks at whether the bridge remains in its original setting or has been moved. Because some bridge superstructures are by nature moveable and relocation is a significant aspect of bridge history, moved spans are not heavily penalized in this rating. Following is the value assignment for the general significance category:

GENERAL SIGNIFICANCE (maximum 35 points)

Aesthetics of Setting	
Excellent	5
Good	3
Fair	1
Poor or unknown	0
Historical Significance	
National significance	20
State significance	15
Regional significance	10
Significance minimal or undetermined	0
Structural Integrity	
Original super- and substructure intact	5
Superstructure intact and substructure altered	3
Superstructure altered or braced	1
Bridge substantially altered, damaged, widened or unknown	0
Locational Integrity	
Original location	5
New location, moved pre -1945	3
New location, moved post-1945 or unknown	0

After the winnowing process through application of the numerical criteria, several bridges emerged with similar - but not outstanding - significance. To address this, a three-tier system was employed to describe the bridges' potential for NRHP eligibility. The categories were:

Category 1 (eligible): bridges which are unique or rare examples of technologically important types or have exceptional historical or representational value from larger bridge groups.

Category 2 (possible eligible): bridges which are good early examples of their types or are notable variations from classical configurations; bridges which have some historical yet limited technological significance.

Category 3 (not eligible): bridges which are typical later examples of common structural types and which have minimal historical significance; bridges which have been substantially altered.

The distinction between Categories 1 and 2 became exceedingly fine at times when no clearcut examples emerged from a particular structural grouping. The cutoff between the possibly eligible bridges and those determined not eligible was more sharply defined. The numerical system ranges from 1 to 100, and the general cutoff guidelines have been set at:

60-100 points	Category 1 (eligible)
35- 59 points	Category 2 (possibly eligible)
1- 34 points	Category 3 (not eligible)

The rating system was not intended to be a hardline arbiter of importance, but rather a means to quantify an array of factors which contribute to relative significance. Some bridges have been up- or down-graded in categories, deviating from their numerical scores, based upon the consultant's judgment. Others have been included under Category 1 because they have previously been enrolled on or determined eligible for NRHP. The inventory findings were synthesized into a draft report, and the Category 1 and 2 bridges presented in June 1987 to an Advisory Committee. Made up of representatives from ADOT, ASHPO, HAER and the Federal Highway Administration, the Advisory Committee selected bridges as potentially eligible for NRHP on the basis of historical and/or technological significance. Thus, Category 2 (possibly eligible) has been eliminated, definitively classing all the bridges in the inventory into Category 1 (eligible) and Category 3 (not eligible). On the following page is a list of the bridges listed in Category 1 as eligible for the National Register of Historic Places, as determined by the Advisory Committee (asterisks indicate bridges which have already been individually listed or have been informally determined eligible by ASHPO):

NOMINATED BRIDGES

No.	Bridge Name	Rtg.
0026	Mormon Flat Bridge	52
0027	Fish Creek Bridge	48
0028	Lewis Pranty Creek Bridge	48
0031	Pine Creek Bridge	44
0032	Dead Indian Canyon Bridge	58
0037	Salt River Bridge	52
0048	*Holbrook Bridge (truss)	51
0051	*Navajo Bridge	83
0079	*Pumphouse Wash Bridge	47
0083	*Tempe Bridge (Mill Ave.)	65
0118	Gila Bend Overpass	29
0129	*Salt River Canyon Bridge	56
0168	Douglas Underpass	31
0169	*Stone Avenue Underpass	41
0193	Boulder Creek Bridge	51
0194	Winslow Underpass	31
0215	Cedar Canyon Bridge	42
0216	Corduroy Creek Bridge	42
0229	Winslow Bridge	50
0232	Midgley Bridge	57
1532	Alchesay Canyon Bridge	54
1580	*Sixth Avenue Underpass	45
3000	*South Spillway Bridge	69
3001	*North Spillway Bridge	69
3003	*Arizona Spillway Bridge	59
3010	Petrified Forest Bridge	43
3073	Allentown Bridge	60
3074	Sanders Bridge	49
3128	Black River Bridge	61
3164	San Tan Canal Bridge	35
3165	Sacaton Dam Bridge	65
3215	Fossil Creek Bridge	31
3228	Walnut Creek Bridge	33
8021	*Gillespie Dam Bridge	51
8071	Querino Canyon Bridge	60
8116	Desert Wash Bridge	51
8150	Solomonville Rd. Overpass	33
8151	Solomonville Rd. Overpass	33
8152	Gila River Bridge	61
8156	Woodruff Bridge	59
8157	St. Joseph Bridge	57

No.	Bridge Name	Rtg.	
8158	*Chevelon Creek Bridge	78	
8166	*Santa Cruz River Bridge #1	77	
8227	Walnut Grove Bridge	61	
8236	Verde River Bridge	51	
8256	Lynx Creek Bridge	35	
8293	Cienega Bridge	55	
8440	Queen Creek Bridge	57	
8441	Kelvin Bridge	49	
8442	Winkelman Bridge	51	
8453	*Fourth Avenue Underpass	36	
8488	Broadway Bridge	45	
8533	*Yuma Bridge(Ocean-to-Ocean)	83	
8534	Black Gap Bridge	49	
8585	Reppy Avenue Bridge	41	
8586	Cordova Avenue Bridge	41	
8587	Inspiration Avenue Bridge	41	(Miami
8588	Keystone Avenue Bridge	41	Bridges)
8589	Miami Avenue Bridge	41	
8662	Sand Hollow Wash Bridge	58	
9152	Hassayampa River Bridge	35	
9214	Hereford Bridge	58	
9225	*Walnut Canyon Bridge	36	
9474	Perkinsville Bridge	35	
9633	Park Avenue Bridge	65	
	Mineral Creek Bridge	25	
	Canyon Diablo Bridge	53	
	Canyon Padre Bridge	67	
	Solomonville Bridge	56	
	*Tempe Bridge (Ash Avenue)	75	
	Old Trails Bridge	82	
	Holbrook Bridge (arch)	62	
	Jack's Canyon Bridge	66	
	Lithodendron Wash Bridge	36	(Carrizo
	*L. Lithodendron Wash Br.	43	Bridges)
	Devil's Canyon Bridge	47	
	Queen Creek Bridge	59	
	Hell Canyon Bridge	45	
	Little Hell Canyon Bridge	61	
	Antelope Hill Bridge	72	
	*Dome Bridge	65	
	*Cameron Bridge	77	

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Proceedings of the Board of Supervisors of Greenlee County, Greenlee County Courthouse, Clifton, Arizona.

Proceedings of the Board of Supervisors of Navajo County, Navajo County Courthouse, Holbrook, Arizona.

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U.S. Congress. House. *A Bill to Authorize the Secretary of the Interior to Construct Bridges across the San Carlos and Gila Rivers on the White Mountain or San Carlos Indian Reservation, in the Territory of Arizona, and for Other Purposes.* H.R. 18979, 62nd Congress, 2nd session, 29 January 1912.

U.S. Congress. Senate. *A Bill Authorizing the Construction of the San Carlos Irrigation Project on the Gila River in Arizona, and for Other Purposes.* S. 5078, 63rd Congress, 2nd session, 27 March 1914.

U.S. Congress. Senate. *A Bill Granting Lands to the State of Arizona for Construction and Maintenance of Roads, Highways and Bridges.* S. 529, 63rd Congress, 1st session, 8 April 1913.

U.S. Congress. Senate. *A Bill to Provide for the Construction of a Bridge across the Colorado River at or near Topock, Arizona.* S. 4304. 63rd Congress, 2nd session, 2 February 1914.

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U.S. Congress. House. *A Bill to Authorize a Report upon the Necessity for the Construction of a Diversion Dam with a Bridge Superstructure across the Gila River on the Gila Bend Indian Reservation, Arizona.* H.R. 19240, 64th Congress, 2nd session, 20 December 1916.

U.S. Congress. House. *A Bill to Authorize a Report upon the Necessity for the Construction of a Bridge across the Salt River on the Salt River Indian Reservation, Arizona.* H.R. 20843, 64th Congress, 2nd session, 9 February 1917.

National Register of Historic Places Continuation Sheet

All photographs made by Clayton B. Fraser, Fraserdesign; negatives located at Fraserdesign, Loveland Colorado.

1) 0026 **Boulder Creek Bridge**
Maricopa County, Arizona
20 February 1987
Overall view of bridge, looking northwest.

2) 0027 **Fish Creek Bridge**
Maricopa County, Arizona
20 February 1987
Overall view of bridge, looking southeast.

3) 0028 **Lewis and Pranty Creek Bridge**
Maricopa County, Arizona
20 February 1987
Overall view of bridge, looking northeast.

4) 0031 **Pine Creek Bridge**
Maricopa County, Arizona
20 February 1987
Overall view of bridge, looking southwest.

5) 0032 **Dead Indian Canyon Bridge**
Coconino County, Arizona
4 December 1986
Overall view of bridge, looking northeast.

6) 0037 **Salt River Bridge**
Gila County, Arizona
20 February 1987
Overall view of bridge, looking north.

7) 0051 **Navajo Bridge**
Coconino County, Arizona
3 December 1986
Overall view of bridge, looking south.

8) 0079 **Pumphouse Wash Bridge**
Coconino County, Arizona
6 October 1986
Overall view of bridge, looking east.

9) 0083 **Tempe (Mill Avenue) Bridge**
Maricopa County, Arizona
25 March 1987
Overall view of bridge, looking southeast.

10) 0118 **Gila Bend Overpass**
Maricopa County, Arizona
11 December 1986
Overall view of bridge, looking east.

11) 0129 **Salt River Canyon Bridge**
Gila County, Arizona
27 February 1987
Overall view of bridge, looking northwest.

12) 0168 **Douglas Underpass**
Cochise County, Arizona
25 February 1987
Overall view of bridge, looking northwest.

13) 0193 **Boulder Creek Bridge**
Maricopa County, Arizona
20 February 1987
Overall view of bridge, looking northwest.

14) 0194 **Winslow Underpass**
Navajo County, Arizona
8 October 1986
Overall view of bridge, looking north.

15) 0215 **Cedar Canyon Bridge**
Navajo County, Arizona
18 February 1987
Overall view of bridge, looking northwest.

16) 0216 **Corduroy Creek Bridge**
Navajo County, Arizona
18 February 1987
Overall view of bridge, looking north.

17) 0229 **Winslow Bridge**
Navajo County, Arizona
8 October 1986
Overall view of bridge, looking northeast.

18) **0232 W.W. Midgley Bridge**
Coconino County, Arizona
6 October 1986
Overall view of bridge, looking northwest.

19) **1532 Alchesay Canyon Bridge**
Maricopa County, Arizona
20 February 1987
Overall view of bridge, looking east.

20) **3000 Roosevelt Dam South Spillway Bridge**
Gila County, Arizona
20 February 1987
Overall view of bridge, looking south.

21) **3001 Roosevelt Dam North Spillway Bridge**
Gila County, Arizona
20 February 1987
Overall view of bridge, looking north.

22) **3003 Boulder Dam Arizona Spillway Bridge**
Mohave County, Arizona
8 December 1986
Overall view of bridge, looking north.

23) **3010 Petrified Forest Bridge**
Apache County, Arizona
5 October 1986
Overall view of bridge, looking southeast.

24) **3073 Allentown Bridge**
Apache County, Arizona
9 October 1986
Overall view of bridge, looking south.

25) **3074 Sanders Bridge**
Apache County, Arizona
9 October 1986
Overall view of bridge, looking north.

26) **3128 Black River Bridge**
Gila River Bridge
17 February 1987
Overall view of bridge, looking northeast.

27) **3164 San Tan Canal Bridge**
Pinal County, Arizona
22 February 1987
Overall view of bridge, looking northeast.

28) **3165 Sacaton Dam Bridge**
Pinal County, Arizona
22 February 1987
Overall view of bridge, looking north.

29) **3215 Fossil Creek Bridge**
Gila County, Arizona
7 October 1986
Overall view of bridge, looking north.

30) **3228 Walnut Creek Bridge**
Yavapai County, Arizona
5 December 1986
Overall view of bridge, looking east.

31) **8021 Gillespie Dam Bridge**
Maricopa County, Arizona
2 August 1987
Overall view of bridge, looking southeast.

32) **8071 Querino Canyon Bridge**
Apache County, Arizona
10 October 1986
Overall view of bridge, looking north.

33) **8116 Desert Wash Bridge**
Cochise County, Arizona
25 February 1987
Overall view of bridge, looking southwest.

34) **8150 Solomonville Road Overpass**
Greenlee County, Arizona
26 February 1987
Overall view of bridge, looking west.

35) **8151 Solomonville Road Overpass**
Greenlee County, Arizona
26 February 1987
Overall view of bridge, looking southwest.

36) **8152 Gila River Bridge**
Greenlee County, Arizona
26 February 1987
Overall view of bridge, looking south.

37) **8156 Woodruff Bridge**
Navajo County, Arizona
9 October 1986
Overall view of bridge, looking south.

38) **8157 St. Joseph Bridge**
Navajo County, Arizona
8 October 1986
Overall view of bridge, looking southwest.

39) **8158 Chevelon Creek Bridge**
Navajo County, Arizona
8 October 1986
Overall view of bridge, looking southeast.

40) **8166 Santa Cruz Bridge Number 1**
Santa Cruz County, Arizona
23 February 1987
Overall view of bridge, looking northeast.

41) **8227 Walnut Grove Bridge**
Yavapai County, Arizona
12 December 1986
Overall view of bridge, looking north.

42) **8236 Verde River Bridge**
Yavapai County, Arizona
5 December 1986
Overall view of bridge, looking southeast.

43) **8256 Lynx Creek Bridge**
Yavapai County, Arizona
5 December 1986
Overall view of bridge, looking northeast.

44) **8293 Cienega Bridge**
Pima County, Arizona
22 February 1987
Overall view of bridge, looking northwest.

45) **8440 Queen Creek Bridge**
Pinal County, Arizona
21 February 1987
Overall view of bridge, looking northeast.

46) **8441 Kelvin Bridge**
Pinal County, Arizona
22 February 1987
Overall view of bridge, looking northeast.

47) **8442 Winkelman Bridge**
Pinal County, Arizona
22 February 1987
Overall view of bridge, looking northeast.

48) **8453 Fourth Avenue Underpass**
Pima County, Arizona
22 February 1987
Overall view of bridge, looking west.

49) **1580 Sixth Avenue Underpass**
Pima County, Arizona
22 February 1987
Overall view of bridge, looking north.

50) **0169 Stone Avenue Underpass**
Pima County, Arizona
22 February 1987
Overall view of bridge, looking north.

51) **8488 Broadway Bridge**
Yavapai County, Arizona
11 December 1986
Overall view of bridge, looking west.

52) **8533 Ocean-to-Ocean Bridge**
Yuma County, Arizona
10 December 1986
Overall view of bridge, looking east.

53) **8534 Black Gap Bridge**
Greenlee County, Arizona
26 February 1987
Overall view of bridge, looking north.

54) **8585 Reppy Avenue Bridge**
Gila County, Arizona
18 February 1986
Overall view of bridge, looking east.

55) **8662 Sand Hollow Wash Bridge**
Mohave County, Arizona
7 December 1986
Overall view of bridge, looking northeast.

56) **9152 Hassayampa River Bridge**
Maricopa County, Arizona
11 December 1986
Overall view of bridge, looking northeast.

57) **9214 Hereford Bridge**
Cochise County, Arizona
24 February 1987
Overall view of bridge, looking north.

58) **9225 Walnut Canyon Bridge**
Coconino County, Arizona
7 October 1986
Overall view of bridge, looking southeast.

59) **9474 Perkinsville Bridge**
Yavapai County, Arizona
5 December 1986
Overall view of bridge, looking northeast.

60) **9633 Park Avenue Bridge**
Greenlee County, Arizona
25 February 1987
Overall view of bridge, looking northwest.

61) **Mineral Creek Bridge**
Pinal County, Arizona
22 February 1987
Overall view of bridge, looking north.

62) **Canyon Diablo Bridge**
Coconino County, Arizona
7 October 1986
Overall view of bridge, looking south.

63) **Canyon Padre Bridge**
Coconino County, Arizona
7 October 1986
Overall view of bridge, looking south.

64) **Solomonville Bridge**
Graham County, Arizona
25 February 1987
Overall view of bridge, looking south.

65) **Tempe (Ash Avenue) Bridge**
Maricopa County, Arizona
25 March 1987
Overall view of bridge, looking southeast.

66) **Old Trails Bridge**
Mohave County, Arizona
9 December 1986
Overall view of bridge, looking south.

67) **Holbrook Bridge**
Navajo County, Arizona
17 February 1987
Overall view of bridge, looking east.

68) **Jack's Canyon Bridge**
Navajo County, Arizona
7 October 1986
Overall view of bridge, looking west.

69) **Lithodendron Wash Bridge**
Navajo County, Arizona
8 October 1986
Overall view of bridge, looking southeast.

70) **Little Lithodendron Wash Bridge**
Navajo County, Arizona
8 October 1986
Overall view of bridge, looking southeast.

71) **Devil's Canyon Bridge**
Pinal County, Arizona
26 February 1987
Overall view of bridge, looking north.

72) **Queen Creek Bridge**
Pinal County, Arizona
21 February 1987
Overall view of bridge, looking north.

73) **Hell Canyon Bridge**
Yavapai County, Arizona
5 December 1986
Overall view of bridge, looking northwest.

74) **Little Hell Canyon Bridge**
Yavapai County, Arizona
5 December 1986
Overall view of bridge, looking northwest.

75) **Antelope Hill Bridge**
Yuma County, Arizona
11 December 1986
Overall view of bridge, looking north.

76) **Dome Bridge**
Yuma County, Arizona
10 December 1986
Overall view of bridge, looking southeast.

77) **Cameron Bridge**
Coconino County, Arizona
7 December 1986
Overall view of bridge, looking north.

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(8-86)

OMB Approval No. 1024-0018

8/17/86

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National Register of Historic Places Continuation Sheet

Section number ______ Page ______

Multiple Resource Area
Thematic Group

Name Vehicular Bridges in Arizona MPS
State Apache County and others, ARIZONA

Nomination/Type of Review			Date/Signature
Cover		for Keeper	Patrick Andrus 9/30/88
Apache County			
1. Allentown Bridge	Entered in the National Register	Keeper	Helena Byers 9/30/88
		Attest	
S 2. Petrified Forest Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88 SCR
		Attest	
3. Querino Canyon Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88 SCR
		Attest	
S 4. Sanders Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88
	Substantive Review	Attest	
Cochise County			
5. Desert Wash Bridge	Substantive Review	Keeper	Return
		Attest	
S 6. Douglas Underpass	Substantive Review	for Keeper	Patrick Andrus 9/30/88 SCR
		Attest	
7. Hereford Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88 SCR
		Attest	
Coconino County			
S 8. Canyon Diablo Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88
		Attest	
9. Canyon Padre Bridge	Entered in the National Register	Keeper	Helena Byers 9/30/88
		Attest	
S 10. Dead Indian Canyon Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88 SCR
		Attest	

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National Park Service

National Register of Historic Places Continuation Sheet

Section number ______ Page ______

Multiple Resource Area
Thematic Group

Name Vehicular Bridges in Arizona MPS
State Apache County and others, ARIZONA

Nomination/Type of Review			Date/Signature
11. Midgley, W.W. Bridge	Substantive Review	for Keeper	Bruce J. Noble, Jr. 3/31/89
		Attest	
12. Pumphouse Wash Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88
		Attest	
13. Walnut Canyon Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88
		Attest	
Gila County 14. Black River Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88
		Attest	
15. Cordova Avenue Bridge	Substantive Review	for Keeper	Bruce J. Noble, Jr. 3/31/89
		Attest	
16. Fossile Creek Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88
		Attest	
17. Inspiration Avenue Bridge	Substantive Review	for Keeper	Bruce J. Noble, Jr. 3/31/89
		Attest	
18. Keystone Avenue Bridge	Substantive Review	for Keeper	Bruce J. Noble, Jr. 3/31/89
		Attest	
19. Miami Avenue Bridge	Substantive Review	for Keeper	Bruce J. Noble, Jr. 3/31/89
		Attest	
20. Reppy Avenue Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88
		Attest	

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National Register of Historic Places Continuation Sheet

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Multiple Resource Area
Thematic Group

Name Vehicular Bridges in Ardżona MPS
State Apache County and others, ARIZONA

Nomination/Type of Review			Date/Signature
21. Salt River Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88 SCR
		Attest	
22. Salt River Cányon Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88 SCR
		Attest	
Graham County 23. Solomonville Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88
		Attest	
Greenlee County 24. Black Gap Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88 SCR
		Attest	
25. Gila River Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88 SCR
		Attest	
26. Park Avenue Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88 SCR
		Attest	
27. Solomonville Road Overpass Safford vic.	Substantive Review	for Keeper	Patrick Andrus 9/30/88 SCR
		Attest	
28. Solomonville Road Overpass Clifton vic.	Substantive Review	for Keeper	Patrick Andrus 9/30/88 SCR
		Attest	
Maricopa County 29. Alchesay Canyon Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88 SCR
		Attest	
30. Boulder Creek Bridge	Substantive Review	for Keeper	Bruce J. Noble, Jr. 3/31/89
		Attest	

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National Register of Historic Places Continuation Sheet

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Multiple Resource Area
Thematic Group

Name Vehicular Bridges in Arizona MPS
State Apache County and others, ARIZONA

Nomination/Type of Review Date/Signature

50
31. Fish Creek Bridge Substantive Review for Keeper Patrick Andrus 9/30/88 SCR

Attest

S 32. Gila Bend Overpass Substantive Review for Keeper Patrick Andrus 9/30/88 SCR

Attest

33. Hassayampa River Bridge Substantive Review for Keeper Patrick Andrus 9/30/88 SCR

Attest

S 34. Lewis and Pranty Creek Bridge Substantive Review for Keeper Patrick Andrus 9/30/88 SCR

Attest

35. Mormon Flat Bridge Substantive Review for Keeper Patrick Andrus 9/30/88 SCR

Attest

S 36. Pine Creek Bridge Substantive Review for Keeper Patrick Andrus 9/30/88 SCR

Attest

37. Tempe Bridge Substantive Review for Keeper Patrick Andrus 9/30/88

Attest

Mohave County
S 38. Old Trails Bridge Substantive Review for Keeper Patrick Andrus 9/30/88 SCR

Attest

39. Sand Hollow Wash Bridge Substantive Review for Keeper Patrick Andrus 9/30/88 SCR

Attest

Navajo County
S 40. Cedar Canyon Bridge Substantive Review for Keeper Patrick Andrus 9/30/88 SCR

Attest

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Multiple Resource Area
Thematic Group

Name Vehicular Bridges in Arizona MPS
State Apache County and others, ARIZONA

Nomination/Type of Review | Date/Signature

Nomination	Type of Review	Date/Signature
PD 41. Corduroy Creek Bridge	Substantive Review	for Keeper Patrick Andrus 9/30/88 scr Attest
S 42. Holbrook Bridge Holbrook	Substantive Review	for Keeper Patrick Andrus 9/30/88 scr Attest
43. Holbrook Bridge Holbrook vic.	Substantive Review	for Keeper Bruce J. Noble, Jr. 3/31/89 Attest
S 44. Jack's Canyon Bridge	Substantive Review	for Keeper Patrick Andrus 9/30/88 scr Attest
45. Lithodendron Wash Bridge	Substantive Review	for Keeper Patrick Andrus 9/30/88 scr Attest
S 46. Little Lithodendron Wash Bridge	Substantive Review	for Keeper Patrick Andrus 9/30/88 scr Attest
47. St. Joseph Bridge	Substantive Review	for Keeper Patrick Andrus 9/30/88 scr Attest
S 48. Winslow ~~Underpass~~ BRIDGE	Substantive Review	for Keeper Bruce J. Noble, Jr. 3/31/89 Attest
49. Winslow Underpass	Substantive Review	for Keeper Patrick Andrus 9/30/88 Attest
S 50. Woodruff Bridge	Substantive Review	for Keeper Patrick Andrus 9/30/88 scr Attest

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Multiple Resource Area
Thematic Group

Name Vehicular Bridges in Arizona MPS
State Apache County and others, ARIZONA

Nomination/Type of Review			Date/Signature
Pima County			
51.	Cienega Bridge	Substantive Review	for Keeper Patrick Andrus 9/30/88
			Attest
52.	Fourth Avenue Underpass	Substantive Review	for Keeper Patrick Andrus 9/30/88
			Attest
53.	Sixth Avenue Underpass	Substantive Review	for Keeper Patrick Andrus 9/30/88
			Attest
54.	Stone Avenue Underpass	Substantive Review	for Keeper Patrick Andrus 9/30/88
			Attest
Pinal County			
55.	Devil's Canyon Bridge	Substantive Review	for Keeper Patrick Andrus 9/30/88
			Attest
56.	Kelvin Bridge	Substantive Review	for Keeper Patrick Andrus 9/30/88
			Attest
57.	Mineral Creek Bridge	Substantive Review	for Keeper Patrick Andrus 9/30/88
			Attest
58.	Queen Creek Bridge (Florence Junction vic)	Substantive Review	for Keeper Patrick Andrus 9/30/88
			Attest
59.	Queen Creek Bridge (Superior vic.)	Substantive Review	for Keeper Patrick Andrus 9/30/88
			Attest
60.	Sacaton Dam Bridge	Substantive Review	for Keeper Patrick Andrus 9/30/88
			Attest

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Multiple Resource Area
Thematic Group

Name Vehicular Bridges in Arizona MPS
State APache County and others, ARIZONA

Nomination/Type of Review			Date/Signature
61. San Tan Canal Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88
		Attest	
62. Winkelman Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88
		Attest	
Santa Cruz County 63. Santa Cruz Bridge No. 1	Substantive Review	for Keeper	Patrick Andrus 9/30/88
		Attest	
Yavapai County 64. Broadway Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88
		Attest	
65. Hell Canyon Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88
		Attest	
66. Little Hell Canyon Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88
		Attest	
67. Lynx Creek Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88
		Attest	
68. Perkinsville Bridge	Substantive Review	for Keeper	Bruce J. Noble, Jr. 3/31/89
		Attest	
69. Verde River Bridge	Substantive Review	for Keeper	Patrick Andrus 9/30/88
		Attest	
70. Walnut Creek Bridge (Simmons vic.)	Substantive Review	for Keeper	Bruce J. Noble, Jr. 3/31/89
		Attest	

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Multiple Resource Area
Thematic Group

Name Vehicular Bridges in Arizona MPS
State Apache County and others, ARIZONA

Nomination/Type of Review

Date/Signature

100
71. Walnut Grove Bridge Substantive Review for Keeper Patrick Andrus 9/30/88

Attest ____________

Keeper ____________

Attest ____________

Keeper ____________

Attest ____________

Keeper ____________

Attest ____________

Keeper ____________

Attest ____________

Keeper ____________

Attest ____________

Keeper ____________

Attest ____________

Keeper ____________

Attest ____________

Keeper ____________

Attest ____________

Keeper ____________

Attest ____________

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National Park Service

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Section number ______ Page ______

SUPPLEMENTARY LISTING RECORD

NRIS Reference Number: Various Date Listed: 9/30/88

Various	Various	Arizona
Property Name	**County**	**State**

Vehicular Bridges in Arizona
Multiple Name

This property is listed in the National Register of Historic Places in accordance with the attached nomination documentation subject to the following exceptions, exclusions, or amendments, notwithstanding the National Park Service certification included in the nomination documentation.

for Patrick Andrus 9/30/88
Signature of the Keeper **Date of Action**

Amended Items in Nomination:

There were several nominations included with this multiple property submission which defined and justified periods of significance extending into the less than fifty year old range to correspond with criterion A significance although the resources' dates of construction actually occurred well over fifty years ago. For all of these bridges, the period of significance should be concluded in 1938 to conform with National Register requirements. The following bridges are included in this category:

Petrified Forest, Querino, Hereford, Douglas Underpass, Dead Indian Canyon, Pumphouse Wash, Walnut Canyon, Fossil Creek, Black River, Salt River, Salt River Canyon, Reppy Avenue, Black Gap, Gila River, Park Avenue, Solomonville Road Overpass, Solomonville Road Overpass (Clifton), Gila Bend Overpass, Hassayampa River, Lewis and Pranty Creek, Mormon Flat, Fish Creek, Pine Creek, Sand Hollow Wash, Old Trails, Corduroy, Cedar Canyon, Holbrook, Jack's Canyon, Little Lithodendron Wash, Lithodendron Wash, St. Joseph, Woodruff, Cienega, Fourth Avenue Underpass, Sixth Avenue Underpass, Stone Avenue Underpass, Alchesay Canyon, Devil's Canyon, Queen Creek (Florence Junction vicinity), Queen Creek (Superior vicinity), Kelvin, Mineral Creek, Sacaton Dam, San Tan Canal, Winkelman, Santa Cruz No. 1, Broadway, Hell Canyon, Little Hell Canyon, Lynx Creek, Verde River, and Walnut Grove. (Period of significance issues discussed with Pat Stein of the AZ SHPO.)

DISTRIBUTION:
National Register property file
Nominating Authority (without nomination attachment)

WASO Form - 177
("R" June 1984)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
EVALUATION/RETURN SHEET

Substantive Review

Vehicular Bridges in Arizona MPS
Apache County and others
ARIZONA

COVER

Working No. 8/17/88
Fed. Reg. Date:
Date Due: 9/15/88 - 10/1/88
Action: ✓ ACCEPT 9/30/88
___ RETURN
___ REJECT
Federal Agency:

☐ resubmission
☐ nomination by person or local government
☐ owner objection
☐ appeal

Substantive Review: ☐ sample ☐ request ☐ appeal ☐ NR decision

Reviewer's comments: Context statement provides an adequate historical and architectural context to allow for an evaluation of all nominated bridges, although the documentation focused rather narrowly on bridge construction rather than providing a broader framework for evaluation. Also discussion of 1930's was somewhat brief, but, overall, the cover form was acceptable. The sections on registration requirements and methodology were both excellent — probably model quality. SLR form completed to address period of significance issues. Discussed SLR with Kathy McKoy of AZ-SHPO on 9/30/88

Recom./Criteria Accept - A, C
Reviewer Noble
Discipline Historian
Date 9/30/88
_____ see continuation sheet

Nomination returned for: _____ technical corrections cited below
_____ substantive reasons discussed below

1. Name

2. Location

3. Classification

Category	Ownership	Status	Present Use
	Public Acquisition	Accessible	

4. Owner of Property

5. Location of Legal Description

6. Representation in Existing Surveys

Has this property been determined eligible? ☐ yes ☐ no

7. Description

Condition
☐ excellent ☐ deteriorated
☐ good ☐ ruins
☐ fair ☐ unexposed

Check one
☐ unaltered
☐ altered

Check one
☐ original site
☐ moved date ______

Describe the present and original (if known) physical appearance

☐ summary paragraph
☐ completeness
☐ clarity
☐ alterations/integrity
☐ dates
☐ boundary selection

8. Significance

Period Areas of Significance—Check and justify below

Specific dates Builder/Architect

Statement of Significance *(in one paragraph)*

- ☐ summary paragraph
- ☐ completeness
- ☐ clarity
- ☐ applicable criteria
- ☐ justification of areas checked
- ☐ relating significance to the resource
- ☐ context
- ☐ relationship of integrity to significance
- ☐ justification of exception
- ☐ other

9. Major Bibliographical References

10. Geographical Data

Acreage of nominated property ______________

Quadrangle name ______________

UTM References

Verbal boundary description and justification

11. Form Prepared By

12. State Historic Preservation Officer Certification

The evaluated significance of this property within the state is:

____ national ____ state ____ local

State Historic Preservation Officer signature

title date

13. Other

- ☐ Maps
- ☐ Photographs
- ☐ Other

Questions concerning this nomination may be directed to ______________

Signed ______________ Date ______________ Phone: ______________

GPO 918-450

Comments for any item may be continued on an attached sheet

NPS Form 10-900-a
(8-86)

OMB Approval No. 1024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number ______ **Page** ______

ADDITIONAL INFORMATION FOR PREVIOUSLY LISTED PROPERTIES

1. Chevelon Creek Bridge — for Keeper Patrick Andrus 9/30/88
2. Roosevelt Dam South and North Spillway Bridges — for Keeper Patrick Andrus 9/30/88
3. Antelope Hill Bridge — for Keeper Patrick Andrus 9/30/88
4. Ocean-to-Ocean Bridge — for Keeper Patrick Andrus 9/30/88
5. Dome Bridge — for Keeper Patrick Andrus 9/30/88
6. Boulder Dam Arizona Spillway Bridge — for Keeper Patrick Andrus 9/30/88
7. Na — for Keeper Patrick Andrus 9/30/88
8. Ca — for Keeper Patrick Andrus 9/30/88
9. Gi — for Keeper Patrick Andrus 9/30/88
10. Te — for Keeper Patrick Andrus 9/30/88

Previously listed

Need copy of E.R.

Bruce

should these be treated as additional info?

let me know

DB

9/30

Yes – I think calling all this additional documentation would be the best plan. Bruce

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

Section number ______ Page ______

ADDITIONAL INFORMATION FOR PREVIOUSLY LISTED PROPERTIES

1.	Chevelon Creek Bridge	for Keeper Patrick Andrus 9/30/88
2.	Roosevelt Dam South and North Spillway Bridges	for Keeper Patrick Andrus 9/30/88
3.	Antelope Hill Bridge	for Keeper Patrick Andrus 9/30/88
4.	Ocean-to-Ocean Bridge	for Keeper Patrick Andrus 9/30/88
5.	Dome Bridge	for Keeper Patrick Andrus 9/30/88
6.	Boulder Dam Arizona Spillway Bridge	for Keeper Patrick Andrus 9/30/88
7.	Navajo Bridge	for Keeper Patrick Andrus 9/30/88
8.	Cameron Bridge	for Keeper Patrick Andrus 9/30/88
9.	Gillespie Dam Bridge	for Keeper Patrick Andrus 9/30/88
10.	Tempe Bridge	for Keeper Patrick Andrus 9/30/88

WASO Form - 177
("R" June 1984)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
EVALUATION/RETURN SHEET

Vehicular Bridges in Arizona MPS
ARIZONA

Additional information for previously
listed properties

Working No. 8/17/88
Fed. Reg. Date:
Date Due: 10/?/88
Action: ✓ ACCEPT 9/30/88
___RETURN
___REJECT
Federal Agency:

☐ resubmission
☐ nomination by person or local government
☐ owner objection
☐ appeal

Substantive Review: ☐ sample ☐ request ☐ appeal ☐ NR decision

Reviewer's comments:

Recom./Criteria
Reviewer
Discipline
Date
_____ see continuation sheet

Nomination returned for: _____technical corrections cited below
_____substantive reasons discussed below

1. Name

2. Location

3. Classification

Category	Ownership Public Acquisition	Status Accessible	Present Use

4. Owner of Property

5. Location of Legal Description

6. Representation in Existing Surveys

Has this property been determined eligible? ☐ yes ☐ no

7. Description

Condition
☐ excellent
☐ good
☐ fair
☐ deteriorated
☐ ruins
☐ unexposed

Check one
☐ unaltered
☐ altered

Check one
☐ original site
☐ moved date

Describe the present and original (if known) physical appearance

☐ summary paragraph
☐ completeness
☐ clarity
☐ alterations/integrity
☐ dates
☐ boundary selection

8. Significance

Period   Areas of Significance—Check and justify below

Specific dates   Builder/Architect

Statement of Significance *(in one paragraph)*

- [ ] summary paragraph
- [ ] completeness
- [ ] clarity
- [ ] applicable criteria
- [ ] justification of areas checked
- [ ] relating significance to the resource
- [ ] context
- [ ] relationship of integrity to significance
- [ ] justification of exception
- [ ] other

9. Major Bibliographical References

10. Geographical Data

Acreage of nominated property ________

Quadrangle name ________

UTM References

Verbal boundary description and justification

11. Form Prepared By

12. State Historic Preservation Officer Certification

The evaluated significance of this property within the state is:

____ national   ____ state   ____ local

State Historic Preservation Officer signature

title   date

13. Other

- [ ] Maps
- [ ] Photographs
- [ ] Other

Questions concerning this nomination may be directed to ________

Signed ________ Date ________ Phone: ________

GPO 918-450

Comments for any item may be continued on an attached sheet

United States Department of the Interior

NATIONAL PARK SERVICE
1849 C Street, N.W.
Washington, D.C. 20240

Hoover Dam, reference number 81000382, Clark County, NV. This property was listed in the National Register of Historic Places in 1981. In 1985 the property was designated as an NHL.

In the Vehicular Bridges in Arizona MPS, there is the Boulder Dam Arizona Spillway Bridge which is connected to Boulder Dam. The documentation on the Arizona Spillway Bridge is included in the NR documentation for Hoover Dam.

Archivist of the National Register of Historic Places	11/10/09 **Date**

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SACATON QUADRANGLE
ARIZONA—PINAL CO
7.5 MINUTE SERIES (TOPOGRAPHIC)

Mapped, edited and published by the Geological Survey

Control by USGS, NOS/NOAA and USCE

Topography by photogrammetric methods from aerial photographs taken 1963. Field checked 1966

Polyconic projection. 10,000-foot grid ticks based on Arizona coordinate system, central zone
1000-meter Universal Transverse Mercator grid ticks, zone 12, shown in blue. 1927 North American Datum
To place on the predicted North American Datum 1983 move the projection lines 2 meters south and 64 meters east as shown by dashed corner ticks

There may be private inholdings within the boundaries of the National or State reservations shown on this map

UTM GRID AND 1981 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

GN MN 0°23' 7 MILS 13° 231 MILS

SCALE 1:24 000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET
DOTTED LINES REPRESENT 5-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ROAD CLASSIFICATION

Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
Interstate Route — State Route

ARIZONA
QUADRANGLE LOCATION

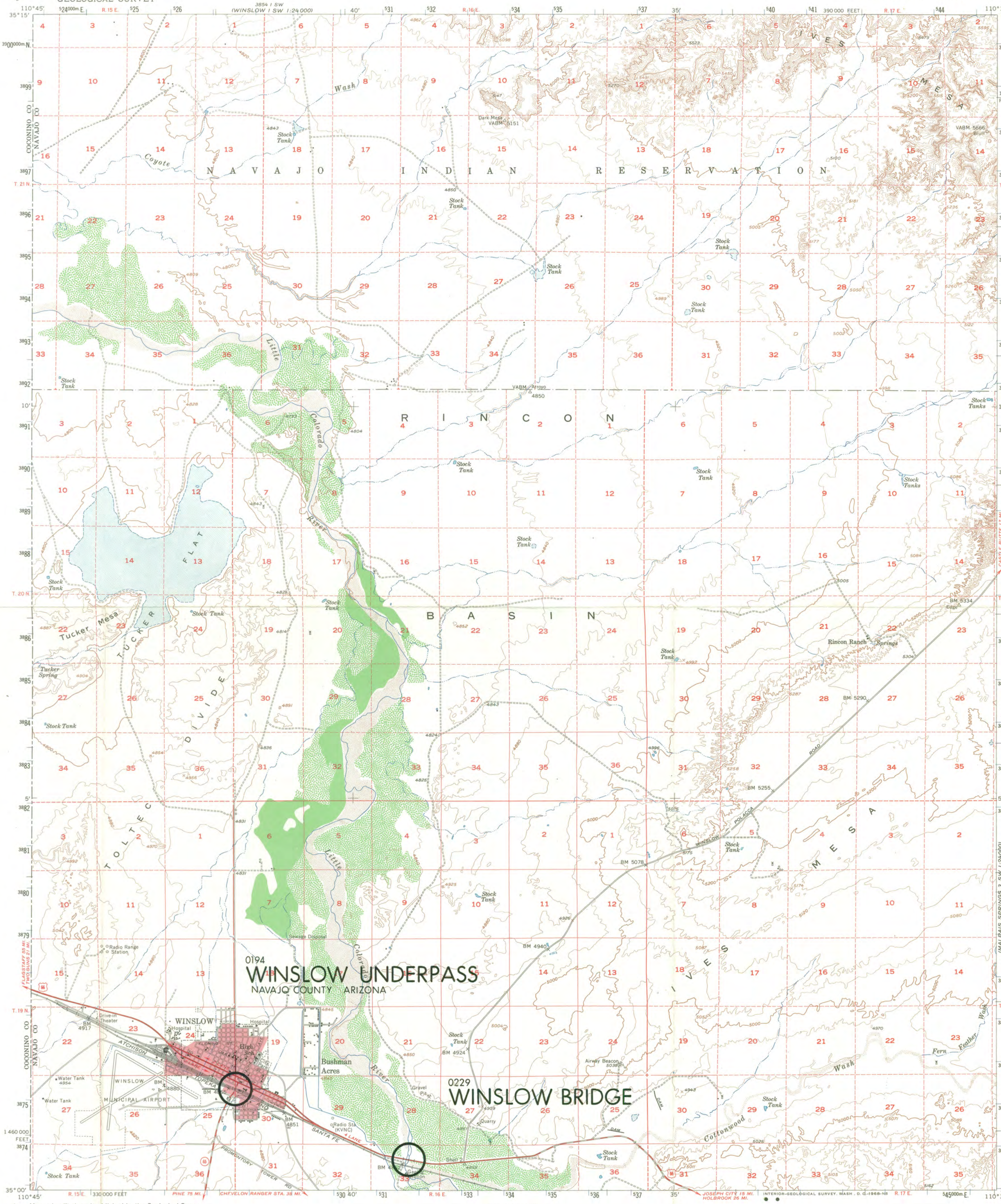
Revisions shown in purple and woodland compiled from aerial photographs taken 1978 and other sources. This information not field checked. Map edited 1981

SACATON, ARIZ.
N3300—W11137.5/7.5

1966
PHOTOREVISED 1981
DMA 3650 II SW—SERIES V898

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WINSLOW QUADRANGLE
ARIZONA
15 MINUTE SERIES (TOPOGRAPHIC)



Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography from aerial photographs by photogrammetric methods
Aerial photographs taken 1953. Advance field check 1954

Polyconic projection. 1927 North American datum
10,000-foot grids based on Arizona coordinate system, east zone
1000-meter Universal Transverse Mercator grid ticks, zone 12, shown in blue

Red tint indicates areas in which only landmark buildings are shown

Dashed land lines indicate approximate locations

Unchecked elevations are shown in brown

UTM GRID AND 1954 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:62500

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

QUADRANGLE LOCATION

ROAD CLASSIFICATION

Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
U. S. Route — State Route

This area also covered by 1:24 000 scale maps available in black and white edition only of Winslow 4 NE, Winslow 4 NW, Winslow 4 SW, and Winslow 4 SE 7.5 minute quadrangles, surveyed 1954

WINSLOW, ARIZ.
N3500—W11030/15

1954

AMS 3854 II—SERIES V798

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225 OR WASHINGTON, D. C. 20242
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

INSPIRATION QUADRANGLE
ARIZONA
7.5 MINUTE SERIES (TOPOGRAPHIC)

8585 - 8589
MIAMI BRIDGES
GILA COUNTY ARIZONA
(CORDOVA AVENUE BRIDGE; INSPIRATION AVENUE BRIDGE; KEYSTONE AVENUE BRIDGE, MIAMI AVENUE BRIDGE)

Mapped, edited, and published by the Geological Survey

Control by USGS and NOS/NOAA

Topography by planetable surveys 1945

Projection and 10,000-foot grid ticks: Arizona coordinate system, east zone (transverse Mercator)
1000-meter Universal Transverse Mercator grid, zone
1927 North American Datum
To place on the predicted North American Datum 1983 move the projection lines 2 meters south and 62 meters east as shown by dashed corner ticks

There may be private inholdings within the boundaries of the National or State reservations shown on this map

UTM GRID AND 1982 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24000

CONTOUR INTERVAL 25 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ARIZONA
QUADRANGLE LOCATION

Revisions shown in purple compiled from aerial photographs taken 1978 and other source data. This information not field checked. Map edited 1982

ROAD CLASSIFICATION

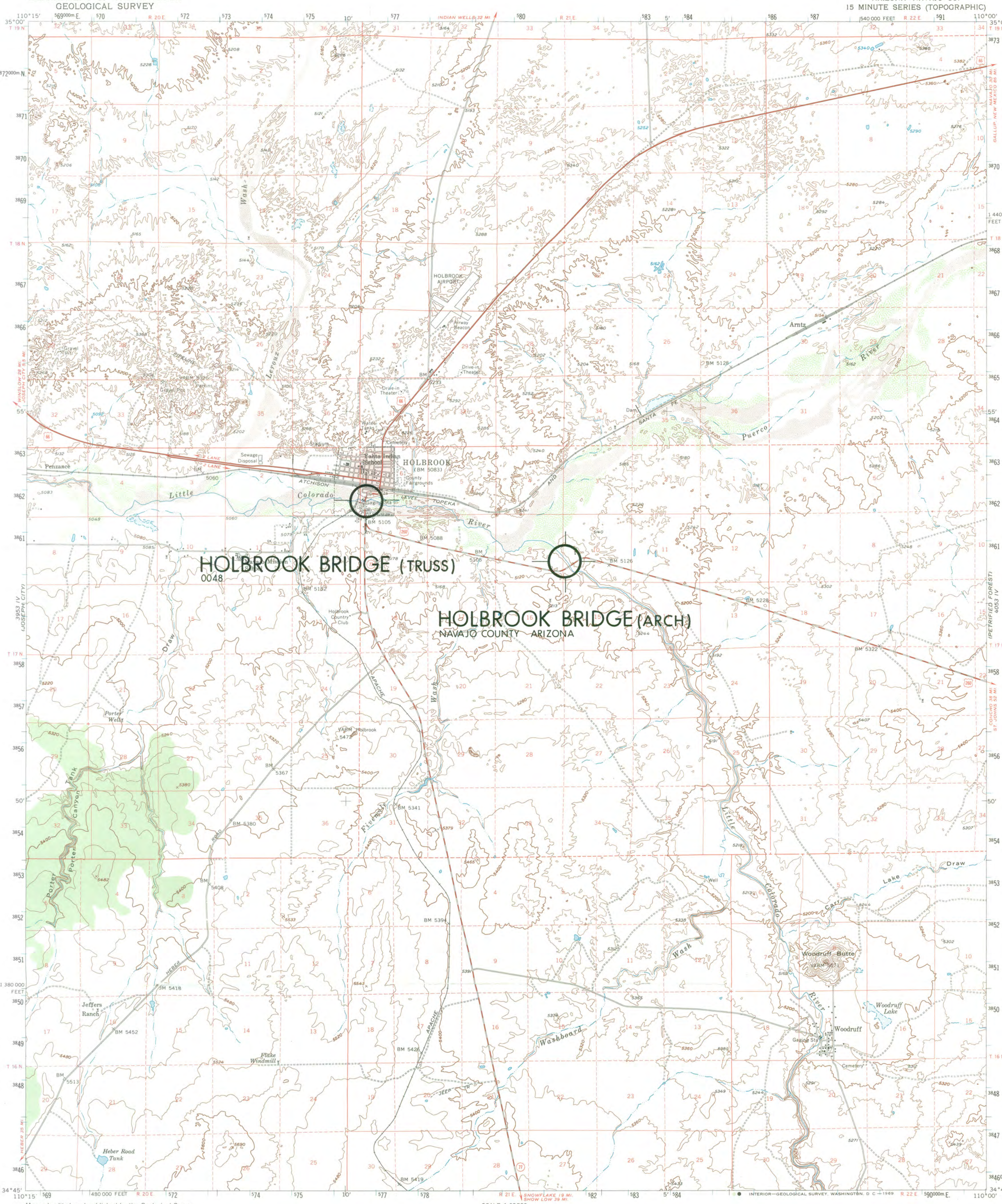
Primary highway, hard surface — Light-duty road, hard or improved surface
Secondary highway, hard surface — Unimproved road
Interstate Route — U. S. Route — State Route

INSPIRATION, ARIZ.
N3322.5—W11052.5/7.5

1945
PHOTOREVISED 1982
DMA 3850 IV NW–SERIES V898

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

HOLBROOK QUADRANGLE
ARIZONA–NAVAJO CO.
15 MINUTE SERIES (TOPOGRAPHIC)



Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography from aerial photographs by multiplex methods
Aerial photographs taken 1953. Advance field check 1955

Polyconic projection. 1927 North American datum
10,000-foot grid based on Arizona coordinate system, east zone
1000-meter Universal Transverse Mercator grid ticks,
zone 12, shown in blue

Red tint indicates area in which only
landmark buildings are shown

Dashed land lines indicate approximate locations

Unchecked elevations are shown in brown

UTM GRID AND 1955 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

SCALE 1:62500

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225 OR WASHINGTON, D. C. 20242
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ROAD CLASSIFICATION

Heavy-duty | Light-duty
Medium-duty | Unimproved dirt
U. S. Route | State Route

QUADRANGLE LOCATION

HOLBROOK, ARIZ.
N3445—W11000/15

1955

AMS 3953 I—SERIES V798

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

GUTHRIE QUADRANGLE
ARIZONA
15 MINUTE SERIES (TOPOGRAPHIC)

Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography from aerial photographs by photogrammetric methods
Aerial photographs taken 1957. Field check 1960

Polyconic projection. 1927 North American datum
10,000-foot grid based on Arizona coordinate system, east zone
1000-meter Universal Transverse Mercator grid ticks,
zone 12, shown in blue

Dashed land lines indicate approximate locations
Land lines unsurveyed in parts of Ts. 5 and 6 S., R. 28 E.

UTM GRID AND 1960 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

SCALE 1:62500

CONTOUR INTERVAL 80 FEET
DOTTED LINES REPRESENT 40-FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225 OR WASHINGTON, D. C. 20242
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ROAD CLASSIFICATION
Heavy-duty / Light-duty
Medium-duty / Unimproved dirt
U. S. Route

ARIZONA
QUADRANGLE LOCATION

GUTHRIE, ARIZ.
N3245—W10915/15

1960

AMS 4149 IV—SERIES V798

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

THEODORE ROOSEVELT DAM QUADRANGLE
ARIZONA
7.5 MINUTE SERIES (TOPOGRAPHIC)

111°15' 33°45' 477000m E. 478 710 000 FEET (CENTRAL) 480 12'30" 481 482 3751 I SW (GREENBACK CREEK) 10' 485 200 000 FEET (EAST) 487 488 111°07'30" 33°45'

22 MI. TO ARIZ. 87
TONTO BASIN 10 MI.

1 000 000 FEET (CENTRAL)

1 000 000 FEET (EAST)

960 000 FEET (EAST)

960 000 FEET (CENTRAL)

33°37'30" 111°15' 477 478 479 180 000 FEET (EAST) 12'30" 481 482 (PINYON MTN.) 3751 II SW 483 484 10' 485 730 000 FEET (CENTRAL) 486 487 488 111°07'30" 33°37'30"

TORTILLA FLAT 22 MI.
APACHE JUNCTION 30 MI.

3751 IV SE (TONTO BASIN)

3751 I SE (ARMER MOUNTAIN)

3751 III NE (FOUR PEAKS)

3751 I SE (WINDY HILL)

3751 III SE (HORSE MESA DAM)

3751 II SE (TWO BAR MTN.)

Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1962. Field checked 1964

Polyconic projection. 1927 North American datum
10,000-foot grids based on Arizona coordinate system, east and central zones
1000-meter Universal Transverse Mercator grid ticks, zone 12, shown in blue

Fine red dashed lines indicate selected fence lines

Where omitted, land lines have not been established

Areas covered by dashed light-blue pattern are subject to controlled inundation

UTM GRID AND 1964 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 40 FEET
DOTTED LINES REPRESENT 20-FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Medium-duty — Light-duty
Unimproved dirt
State Route

QUADRANGLE LOCATION

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225 OR WASHINGTON, D. C. 20242
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

THEODORE ROOSEVELT DAM, ARIZ.
N3337.5—W11107.5/7.5

1964

AMS 3751 II NW—SERIES V898

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

HORSE MESA DAM QUADRANGLE
ARIZONA
7.5 MINUTE SERIES (TOPOGRAPHIC)

Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1962. Field checked 1964

Polyconic projection. 1927 North American datum
10,000-foot grid based on Arizona coordinate system, central zone
1000-meter Universal Transverse Mercator grid ticks, zone 12, shown in blue

To place on the predicted North American Datum 1983 move the projection lines 2 meters south and 63 meters east as shown by dashed corner ticks

Where omitted, land lines have not been established

There may be private inholdings within the boundaries of the National or State reservations shown on this map

UTM GRID AND 1964 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUADRANGLE LOCATION

Map photoinspected 1978
No major culture or drainage changes observed

ROAD CLASSIFICATION
Medium-duty — Light-duty
Unimproved dirt
State Route

HORSE MESA DAM, ARIZ.
33111-E3-TF-024
1964
PHOTOINSPECTED 1978
DMA 3751 III SE–SERIES V898

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

MORMON FLAT DAM QUADRANGLE
ARIZONA–MARICOPA CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1962. Field checked 1964

Polyconic projection. 1927 North American datum
10,000-foot grid based on Arizona coordinate system, central zone
1000-meter Universal Transverse Mercator grid ticks, zone 12, shown in blue

To place on the predicted North American Datum 1983 move the projection lines 2 meters south and 63 meters east as shown by dashed corner ticks

Areas covered by dashed light blue pattern are subject to controlled inundation

There may be private inholdings within the boundaries of the National or State reservations shown on this map

UTM GRID AND 1964 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUADRANGLE LOCATION

ROAD CLASSIFICATION
Medium-duty — Light-duty
Unimproved dirt
State Route

Map photoinspected 1978
No major culture or drainage changes observed

MORMON FLAT DAM, ARIZ.
N3330—W11122.5/7.5
1964
PHOTOINSPECTED 1978
DMA 3751 III SW—SERIES V898

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LONG TOM CANYON QUADRANGLE
ARIZONA—NAVAJO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
SW/4 SHOW LOW 15' QUADRANGLE

NOTE: CEDAR CANYON BRIDGE (0215) ON UNDERSIDE OF FOLD

Mapped, edited, and published by the Geological Survey

Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial photographs taken 1958. Field checked 1961
Revised by the Bureau of Indian Affairs 1976

Projection and 10,000-foot grid ticks: Arizona coordinate system, east zone (transverse Mercator)
1000-meter Universal Transverse Mercator grid ticks, zone 12, shown in blue. 1927 North American datum

Land lines have not been established in this area

Fine red dashed lines indicate selected fence lines

UTM GRID AND 1977 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 40 FEET
DOTTED LINES REPRESENT 20-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUADRANGLE LOCATION

ROAD CLASSIFICATION
Primary highway, hard surface
Light-duty road, hard or improved surface
Secondary highway, hard surface
Unimproved road
Interstate Route | U. S. Route | State Route

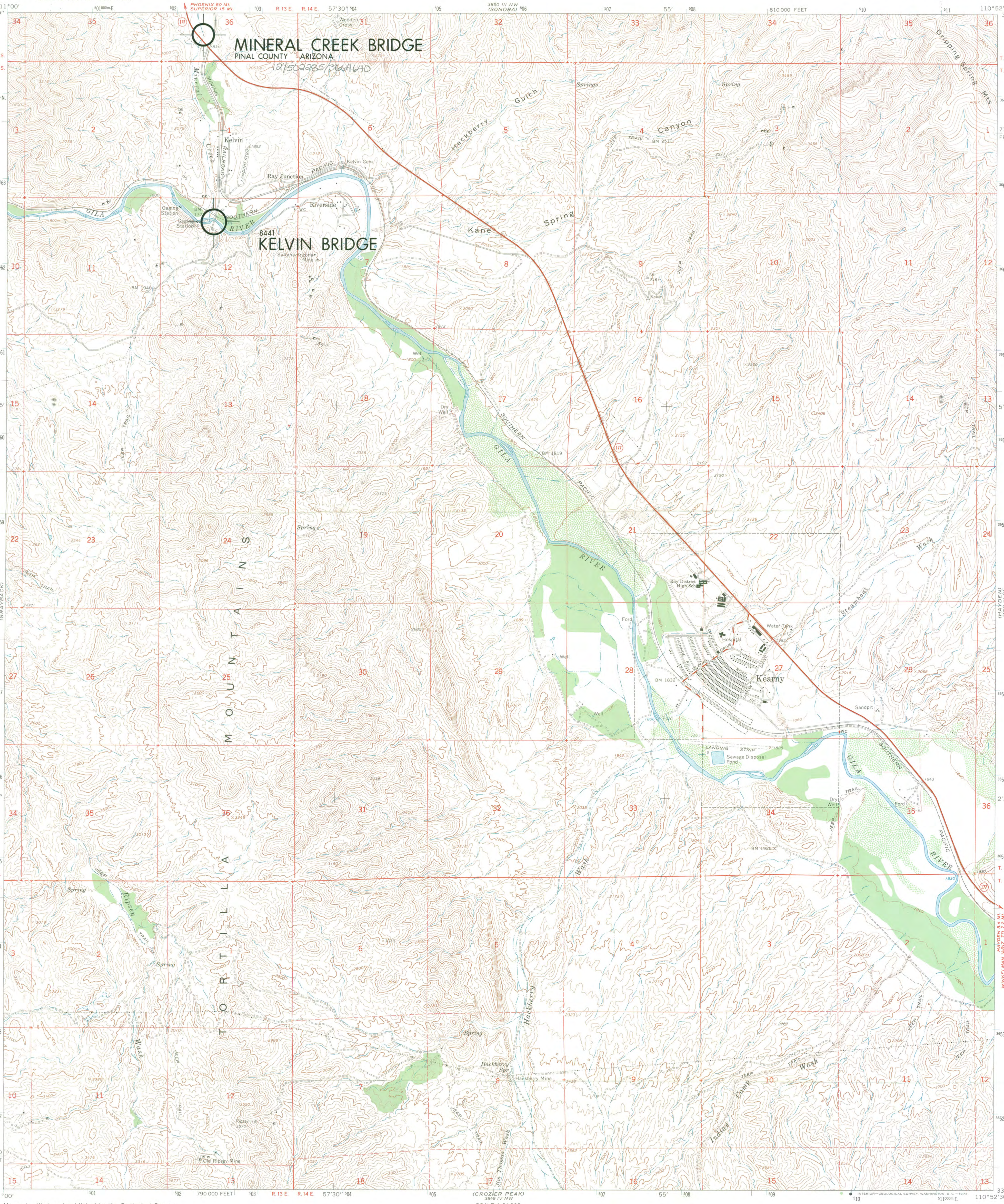
LONG TOM CANYON, ARIZ.
SW/4 SHOW LOW 15' QUADRANGLE
N3400—W11007.5/7.5

1977

AMS 3952 II SW—SERIES V898

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

KEARNY QUADRANGLE
ARIZONA—PINAL CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1962. Field checked 1964

Polyconic projection. 1927 North American datum
10,000-foot grid based on Arizona coordinate system, central zone
1000-meter Universal Transverse Mercator grid ticks, zone 12, shown in blue

Fine red dashed lines indicate selected fence lines

UTM GRID AND 1964 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 40 FEET
DOTTED LINES REPRESENT 20-FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR WASHINGTON, D.C. 20242
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
State Route

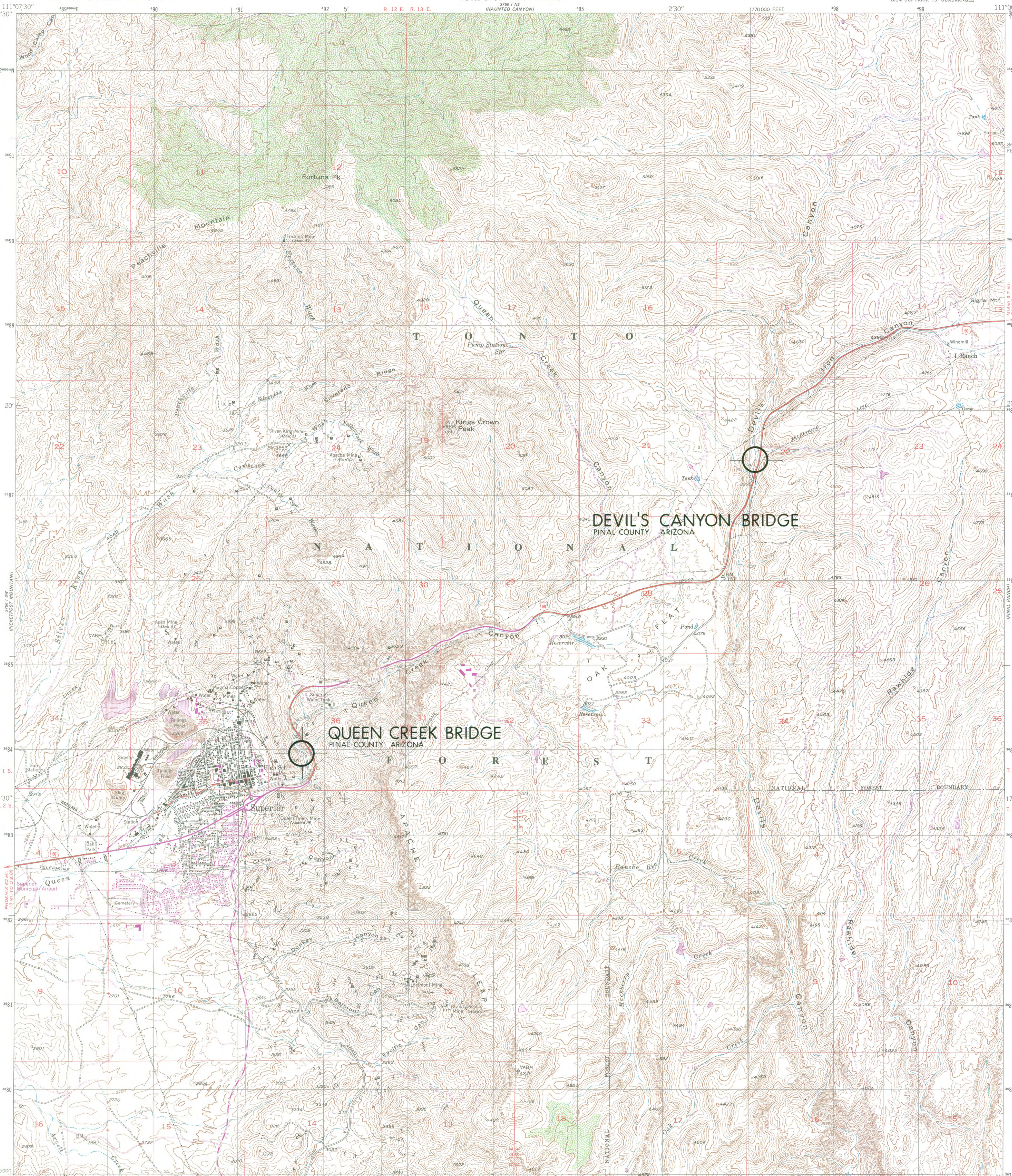
ARIZONA
QUADRANGLE LOCATION

KEARNY, ARIZ.
N3300—W11052.5/7.5
1964
AMS 3850 III SW—SERIES V898

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

UNITED STATES
DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS

SUPERIOR QUADRANGLE
ARIZONA–PINAL COUNTY
7.5 MINUTE SERIES (TOPOGRAPHIC)
SE/4 SUPERIOR 15' QUADRANGLE



Mapped, edited, and published by the Geological Survey

Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial photographs taken 1945. Field checked 1948

Polyconic projection. 10,000-foot grid based on Arizona coordinate system, central zone. 1000-meter Universal Transverse Mercator grid, zone 12. 1927 North American Datum. To place on the predicted North American Datum 1983 move the projection lines 2 meters south and 62 meters east as shown by the dashed corner ticks

Unchecked elevations are shown in brown

There may be private inholdings within the boundaries of the National or State reservations shown on this map

Revisions shown in purple compiled from aerial photographs taken 1978 and other source data. This information not field checked
Map edited 1981

UTM GRID AND 1981 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ARIZONA
QUADRANGLE LOCATION

ROAD CLASSIFICATION

Primary highway, hard surface
Light-duty road, hard or improved surface
Secondary highway, hard surface
Unimproved road
Interstate Route
U. S. Route
State Route

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1981

SUPERIOR, ARIZ.
SE/4 SUPERIOR 15' QUADRANGLE
N3315–W11100/7.5

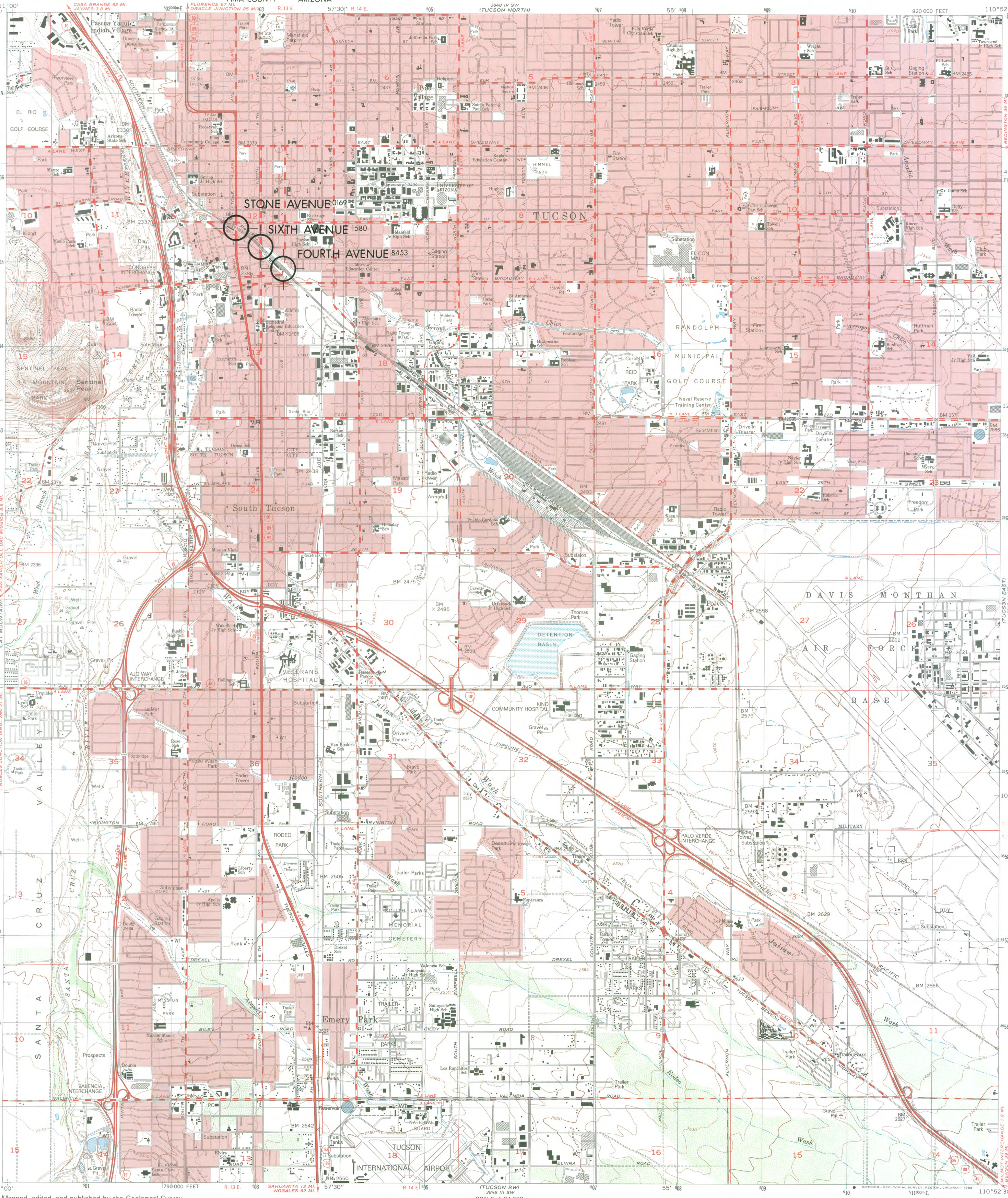
1948
PHOTOREVISED 1981
DMA 3750 I SE–SERIES V898

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

TUCSON UNDERPASSES

PIMA COUNTY ARIZONA

TUCSON QUADRANGLE
ARIZONA—PIMA CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



SCALE 1:24 000

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

UTM GRID AND 1983 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

Mapped, edited, and published by the Geological Survey

Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial photography taken 1954. Field checked 1957
Revised from aerial photographs taken 1980
Limited field check 1981. Map edited 1983

Projection and 10,000-foot grid ticks: Arizona coordinate system, central zone (transverse Mercator)
1000-meter Universal Transverse Mercator grid, zone 12
1927 North American Datum
To place on the predicted North American Datum 1983 move the projection lines 6 meters south and 62 meters east as shown by dashed corner ticks

Red tint indicates area in which only landmark buildings are shown

There may be private inholdings within the boundaries of the National or State Reservations shown on this map

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ARIZONA
QUADRANGLE LOCATION

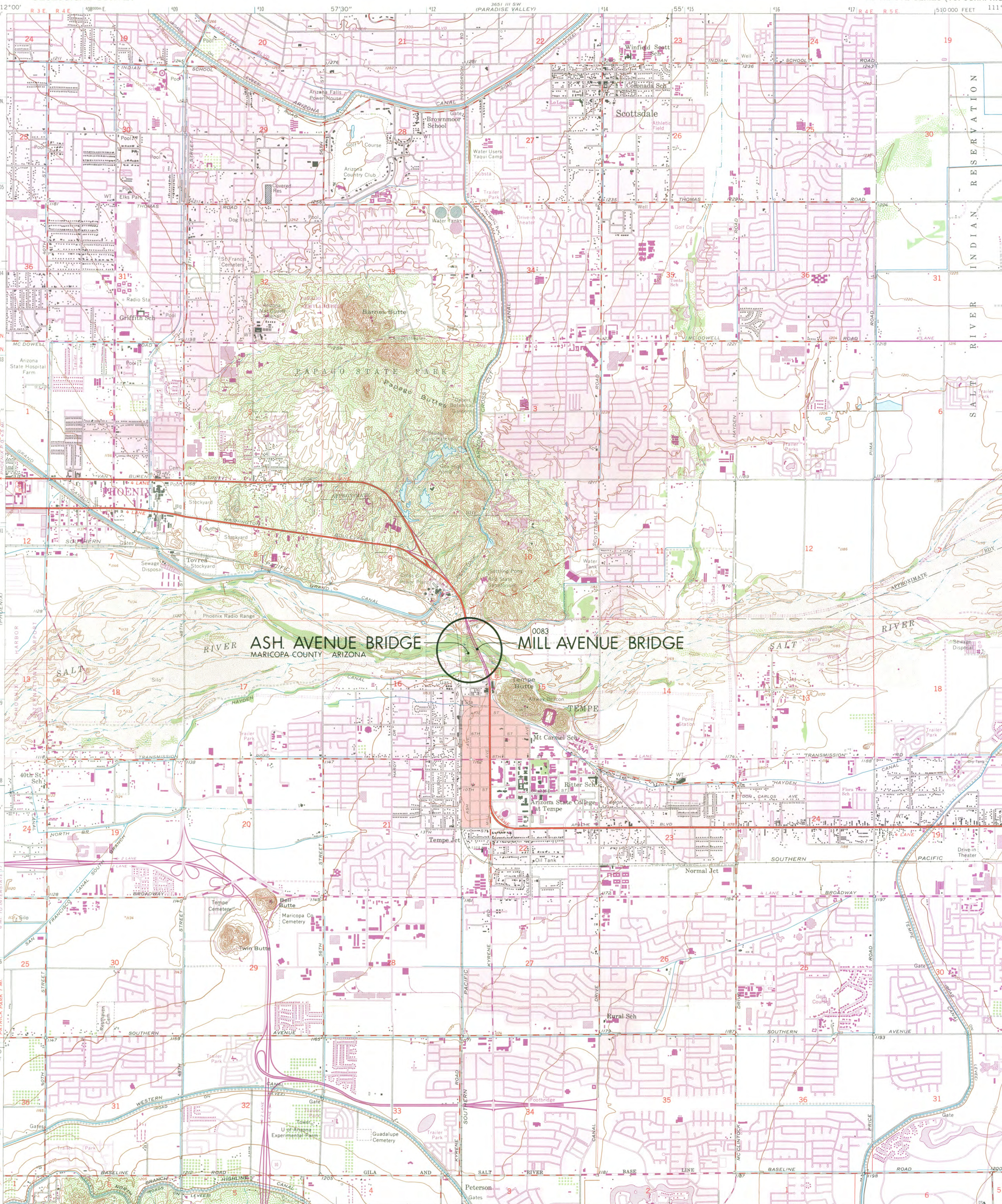
ROAD CLASSIFICATION

Heavy-duty .... Light-duty ....
Medium-duty .... Unimproved dirt
Interstate Route U. S. Route State Route

TUCSON, ARIZ.
N3207.5—W11052.5/7.5
1983
DMA 3848 III NW—SERIES V898

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

TEMPE QUADRANGLE
ARIZONA—MARICOPA CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Mapped by the Army Map Service
Published for civil use by the Geological Survey
Control by USGS, USC&GS and USCE
Topography from aerial photographs by photogrammetric methods
Aerial photographs taken 1951. Field check 1952
Polyconic projection. 1927 North American datum
10,000-foot grid based on Arizona coordinate system, central zone
1000-meter Universal Transverse Mercator grid ticks, zone 12, shown in blue
Red tint indicates areas in which only landmark buildings are shown
Revisions shown in purple compiled by the Geological Survey from aerial photographs taken 1967 and 1973. This information not field checked
Purple tint indicates extension of urban areas

UTM GRID AND 1973 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24000

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUADRANGLE LOCATION

ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
Interstate Route — U. S. Route

TEMPE, ARIZ.
N3322.5—W11152.5/7.5
1952
PHOTOREVISED 1967 AND 1973
AMS 3650 IV NW—SERIES V898

Fraser DESIGN
1269 CLEVELAND AVE. LOVELAND COLORADO 80537 303-669-7969

10 September 1987

Mr. Patrick Andress
National Register of
Historic Places
USDI, NPS
P.O. Box 37127
Washington, D.C. 20013

Dear Mr. Andress:

This letter is to confirm our telephone conversation earlier today regarding the format for the Arizona Vehicular Bridge thematic nomination that Fraserdesign is now preparing. We will prepare the nomination using the National Register Multiple Property Documentation Form to present the overview information and describe the appropriate property types. Rather than prepare an individual Registration Form for each nominated property, however, we will submit a completed HAER Inventory Card. To supplement the statement of significance on each card, we will include a brief discussion for each bridge under the Statement of Historic Contexts.

Thank you for your help with this nomination. I look forward to working with you further in the future.

Clayton B. Fraser
Principal, Fraserdesign

cc: Bettina Rosenberg, Staff Historian, Arizona Department of Transportation
Roger Brevoort, Architectural Historian, Arizona State Historic Presevation Office

CF:kw

PREV. LISTED
8-4-3-81

HABS/HAER INVENTORY

See "HABS/HAER Inventory Guidelines" before filling out this card.

1. NAME(S) OF STRUCTURE

Tempe Bridge (Mill Avenue Bridge; Salt River Bridge) ADOT: 0083

2. LOCATION

U.S. Highway 60 over Salt River; milepost 172.0
Tempe; NW1/4 S15 T1N R4E
Maricopa County, Arizona

3. DATE(S) OF CONSTRUCTION

1930-31

4. USE (ORIGINAL/CURRENT)

highway bridge / highway bridge

5. RATING

individually listed, NRHP: state significance

6. CONDITION

good; sufficiency rating: 76.5 owner: City of Tempe, Arizona

7. DESCRIPTION

span number :	16	superstructure:	reinforced concrete, two-rib open spandrel deck arch
span length :	149.8'	substructure :	concrete abutments and spill-through piers on spread footings
total length:	1577.0'	floor/decking :	asphalt over concrete deck
roadway wdt.:	36.0'	other features:	moulded concrete guardrails w/ pierced parapet walls and paneled bulkheads; decorative concrete vestibules beside roadway; cantilevered deck w/ moulded cantilever brackets

8. HISTORICAL DATA

In May 1928, a delegation of Tempe businessmen appeared before the Arizona Highway Commission with a request to replace the Ash Avenue Bridge (1913) over the Salt River. As the only bridge over the Salt in the area, the 18' wide structure carried highway traffic for U.S. 60, 80 and 89, as well as local traffic, and had become a serious bottleneck. The Commission, which had previously considered the matter, quickly concurred. Later that year, AHD bridge engineer Ralph Hoffman designed a multi-span open-spandrel concrete arch along the same lines as the earlier structure. The bridge was later realigned slightly to place the footings on a granite dike which extended beneath the river. On January 20, 1930, a contract was awarded to the Lynch-Canon Engineering Company to build the immense structure under Federal Aid Project 2B for $397,608. The Los Angeles contractors began the work on the abutments and piers immediately and progressed through the rest of the year. Completed and dedicated formally in July 1931, the Mill Avenue Bridge has carried heavy traffic since with only minor alteration.

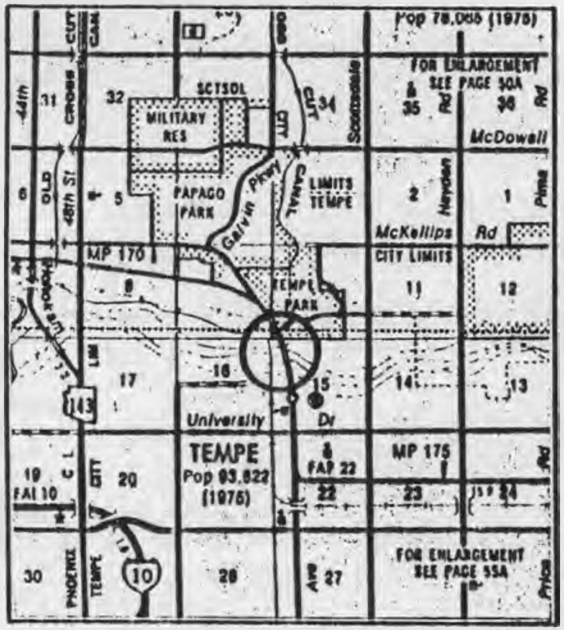
9. SIGNIFICANCE

As the crossroads for three of Arizona's major highways, located as the sole all-weather crossing over the Salt River in the state's largest metropolitan area, both the 1913 and 1931 Tempe bridges have provided a pivotal link in the state's transportational system. Their importance to vehicular traffic in Arizona can hardly be overstated. The Mill Avenue Bridge is technologically important as having the longest total and span lengths among the five open-spandrel vehicular arches in Arizona and, at the time of its completion, was the longest highway bridge in the state. Individually listed on NRHP in 1981, the Mill Avenue Bridge is one of Arizona's most historically and techologically significant vehicular structures.

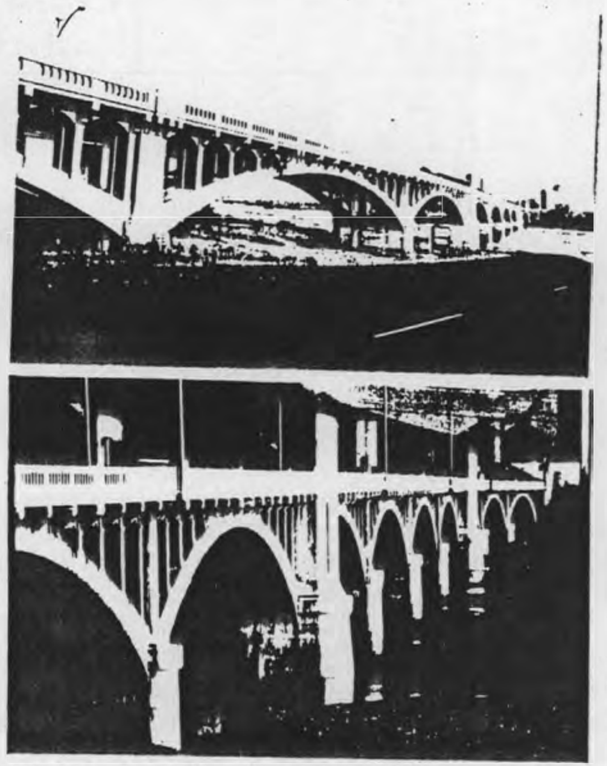
10. NAME(S) OF STRUCTURE

Tempe Bridge (Mill Avenue Bridge; Salt River Bridge)

11. PHOTOS (W/ FILM ROLL & FRAME NO.) AND SKETCH MAP OF LOCATION



LOCATION MAP
TAKEN FROM DEPARTMENT OF TRANSPORTATION GENERAL HIGHWAY MAP



12. SOURCES

Arizona Republican: 8:12:1926; 8:27:1927; 10:27:1927; 12:19:1929; 1:21:1939; 1:23:1930; 2:20:1930; 7:28:1930; 8:6:1930; 9:29:1930; 6:2:1931; 6:14:1931; 7:24:1931; 8:28:1931; Arizona Highways: 12:1929:25; 6:1931:5-7; 6:1933:4; "The Reinforced Concrete Bridge at Tempe, Arizona," Engineering News, 28 March 1912; original construction drawings, Structures Section, Arizona Department of Transportation, Phoenix AZ.

Field inspection by Clayton Fraser, 25 March 1987.

13. INVENTORIED BY: Clayton B. Fraser

AFFILIATION Fraserdesign Loveland Colorado

DATE 1 April 1987