

MICHIGAN BRIDGE INVENTORY: THE SURVEY SAMPLE

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MICHIGAN BRIDGE INVENTORY: THE SURVEY SAMPLE

Bridge inventory is, simply stated, a winnowing process in which the significant bridges are eventually identified and documented. For budgetary and logistical reasons, it is desirable to exclude the clearly nonsignificant bridges at the outset to reduce the inventory's scope to a more manageable and meaningful number. Given the sizable quantity of bridges in Michigan, this initial reduction of the number of inventoried structures allows the study to concentrate on the truly important structures without carrying all the baggage of the unimportant bridges. The first winnowing cut is thus intended to identify the field survey sample: those bridges which for historical or technological reasons merit further research and field documentation. The selection of the field survey sample is the most crucial phase of the inventory. As the first step in identifying those bridges that will eventually be determined eligible for the National Register, it points the direction for the entire project. From an administrative standpoint, the selection process is equally important for what it excludes, for this latter group of bridges is far larger than the included structures. It is also more vulnerable. Unlike the field survey sample, which will remain the center of attention throughout the inventory, the excluded bridges immediately pass from the study. To ensure that no significant bridges are overlooked at this important juncture, the selection criteria should be crafted so that they are generous to the resource, responsive to budgetary concerns and consistent with sound scholarship.

The following pages discuss survey sample selection based on National Register Criteria A and C. As engineering structures, bridges can most easily be evaluated under Criterion C. Establishing significance under Criterion A is a more difficult process which must often be pursued on a bridge-by-bridge basis. It is virtually impossible to anticipate which bridges will be important under Criterion B before local archival research is completed during field survey. Even then, a case can rarely be made for a bridge to merit National Register status under this criterion.

The contexts developed to delineate the survey sample will serve as the basis for subsequent National Register nominations. These contexts will be modified in light of findings from the survey. As a result, the contexts remain a work in progress.

Discussions of Criteria A and C contain lists of bridges to be included in the survey based on specific contexts. Appendix A consists of a composite list of bridges, arranged by county, which will be included in the survey sample. The criteria which qualify the bridge for inclusion in the survey are identified. Appendix B is a complementary list of bridges excluded from the survey. These structures were eliminated for one, or both, or the following reasons: (1) the bridge did not fall within the standards established for Criteria A or C, or (2) the bridge exhibited poor physical integrity. Assessment of the latter quality was determined by an examination of photographs of the state's pre-1956 bridges. During this assessment, some bridges were added because they possessed aesthetic merit, even if they were a common structural type of standard dimensions. In order to ensure that no bridge was arbitrarily

removed from the survey sample, bridges have been included in the survey if no photograph was available for analysis.

Since the numbering system for Michigan bridges is rather complex, each pre-1956 bridge has been assigned an alphanumeric identification (e.g. HOUG001) to facilitate field work and evaluation.

Research was completed at the Michigan Department of Transportation, Michigan Bureau of History, Michigan State Library, Michigan State Archives, Michigan State University libraries, and the city engineer's office in Lansing; the University of Michigan libraries (including the Bentley Historical Library) and city engineer's office in Ann Arbor; the Eastern Michigan University Library and city engineer's office in Ypsilanti; the Detroit Public Library (Burton Historical Collection), Wayne County Public Department of Public Services and Wayne State University Library in Detroit; the Bayliss Library in Sault Ste. Marie; Northern Michigan University, the Marquette County Historical Society, the Marquette Public Library, and the county courthouse in Marquette; Michigan Technological University in Houghton; Western Michigan University, Kalamazoo College and the city archives in Kalamazoo; the city engineer's office in Battle Creek; the city engineer's office and county courthouse in Grand Rapids; Central Michigan University Library (Clarke Historical Library) in Mount Pleasant; and the University of Minnesota libraries and the Minneapolis Public Library in Minneapolis.

Charlene Roise of Hess, Roise and Company was primarily responsible for developing the Criterion A contexts and sample selection. She received research and other assistance from Jeffrey A. Hess, Cynthia deMiranda, Ann Gaasch, Chad Perkins, and Shawn Rounds. Clay Fraser of Fraserdesign established Criterion C guidelines, with help from Karla Ogilvie.

MICHIGAN BRIDGE INVENTORY: CRITERION A EVALUATION

An extensive literature search revealed a number of themes which appear to be appropriate measures of significance under Criterion A. The overall context for these themes is discussed in the introductory section entitled "The Evolution of Michigan's Roads and Bridges." This is supplemented by more detailed "sub-contexts" which have been used to select bridges for the survey sample:

1. Wayne County: An Exemplary Road Commission
2. Early Highway Department Bridges
3. Tourism's Influence on Roads and Bridges
4. Bridges of the Depression
5. Bombers Away: Road and Bridge Projects related to Defense Industries
6. Michigan's Innovative Expressways

While there is inevitably some overlap between these themes, each subject appears to be of sufficient interest to merit separate discussion.

Since bridges of interest under Criterion A have been identified by archival research, copies of appropriate archival information have been sorted into county files that will be used during field work and National Register evaluation.

THE EVOLUTION OF MICHIGAN'S ROADS AND BRIDGES: AN INTRODUCTION

An excellent historical overview of the development of Michigan's roads and bridges is provided by Charles K. Hyde in *Historic Highway Bridges of Michigan*, published in 1993.¹ The following narrative provides some background information useful when considering Criteria A and C subcontexts.

The area that became the state of Michigan was criss-crossed by trails long before the nineteenth century. Some of these paths were adopted by the settlers who swarmed into the region after 1805, when Michigan Territory was established. By the 1820s, the federal government was surveying and improving military roads, designed for long-distance travel, while the territory's new inhabitants were establishing dozens of local roads to serve their nascent communities. A number of nineteenth-century routes are echoed in the alignment of today's highways, such as U.S. 12 (the "Detroit-Chicago Road"), Interstate 94 (the "Territorial Road"), and Interstate 96 (the "Grand River Road").²

While little is known of the bridges built during this era, they presumably were as primitive as the rutted trails that carried scores of pioneers to the area and points further west. Travellers were forced to ford small streams or trust simple timber spans. Ferries provided passage over broader waterways.

In the late 1830s, just as Michigan achieved statehood, railroads arrived on the scene. The Erie and Kalamazoo Railroad connected Adrian and Toledo in 1836; by 1849, tracks spanned the state from Detroit to Lake Michigan. The trains' speed and efficiency were far superior to other overland options. In response, ever short of funds to meet the growing demands of its population, the young state abdicated responsibility for its road system. Under Chapters 22 and 27 of the state code, bridges were put under the care of township road commissions. Townships were required to repair or replace a bridge when petitioned by twelve or more property owners. Road commissions could press local property owners into service to build and maintain structures, but were constrained by a mandate limiting their budget to \$250. Communities could seek assistance from the county board if "unreasonably burdened" by the construction. In 1867, townships were granted the authority to issue bonds to fund bridge construction and repair. The sum raised in a given year could not exceed one percent of the township's assessed property value for the proceeding year; total indebtedness could not be

¹ Charles K. Hyde, *Historic Highway Bridges of Michigan* (Detroit: Wayne State University Press, 1993).

² Frank F. Rogers, "Notes on Some Early Michigan Roads," *Michigan Roads and Pavements* 22 (December 1925): 7, 8; Roger L. Morrison, "The History and Development of Michigan Highways," *University of Michigan Official Publication* 39 (6 April 1938): 1-16.

greater than three percent of that amount.³

To stretch limited funds as far as possible, road commissioners turned to readily available materials. Stone was found in many areas in the state, but required skill and energy to utilize. Timber from Michigan's abundant forests produced simple stringer spans which served adequately, albeit temporarily, for many minor crossings. Timber was also used alone, or in combination with iron members, for truss bridges. These combination structures, as well as completely iron structures, were prefabricated by companies that specialized in designing and erecting bridges. The companies boomed in the late nineteenth century when innovative milling technology facilitated the economical production of steel on a large scale, and new ore mines in northern Michigan and Minnesota provided an abundance of raw materials. Steel proved extremely versatile and durable for structural use, and quickly supplanted wrought or cast iron for bridge construction. Many bridge companies also offered concrete designs when Portland cement became a common commodity in the early twentieth century.

The bridge companies filled an important need as America's frontier galloped westward. They did not, however, always do it in the most efficient or ethical manner. Problems were fostered by the process local governments typically used to procure bridges. Road commissions advertised the letting of a contract for one or more bridges, often providing only the bare minimum of specifications, such as span length and structural type. Since county commissioners were rarely competent to judge the structural merits of proposals, bridge companies sometimes supplied inappropriate or inadequate designs to win the contract as the cheapest bidder. Even when good plans were submitted, unscrupulous contractors insisted on provisions allowing substitution of "like-kind" structural members. According to a 1910 article by John J. Cox, an engineer from Sturgis who was soon to organize the University of Michigan's engineering department, "what is familiarly known as 'skinning the bridge' is the result. That is, the plans appear attractive to the board and may call for a strong, heavy structure; but the contractor, taking advantage of the substitution clause in the contract and the lack of training of the board, actually builds a much lighter, weaker and consequently cheaper bridge." Remarking on typical bridge-letting practices, Cox concluded that "this loose method of contracting for bridges makes it practically impossible for even honest officials to procure a satisfactory structure, and opens up a way for dishonest officials and contractors to arrange a deal whereby the public comes out second best." Bridge companies also formed pools to fix bids, splitting high profits by eliminating real competition.⁴

Frustration with corruption, and with the growing inadequacy of the state's roads, led to reform efforts by the turn of the century. The movement was spearheaded by Horatio Earle

³ Morrison, "The History and Development," 6-7; *Laws of the State of Michigan, relative to Highways and Bridges, and the Duties of Highway Commissioners and Overseers of Highways* (Lansing: Hosmer and Fitch, 1855), 3-4, 23-24; *Laws of the State of Michigan, relative to Highways and Bridges, and the Duties of Highway Commissioners and Overseers of Highways* (Lansing: W.S. George and Co., 1871), 48-49.

⁴ John J. Cox, "Highway Bridges and Culverts," *Michigan Roads and Forests* 5 (March 1910): 7-8.

who, like many other promoters of road improvements, was an ardent bicyclist. Seeking better routes for their sport, cyclists organized "Good Roads" groups that lobbied for the creation of a state agency to oversee Michigan's roads. In 1900, Earle was elected to represent Detroit in the state Senate on a good-roads platform. His reform efforts were slowed by opposition from farmers, who feared both higher taxes and the incipient invasion of the automobile into rural areas. It was not until 1903 that Michigan lawmakers established the State Highway Department and authorized incentives for road improvements. The attorney general almost immediately declared the legislation unconstitutional, however, because the state's charter prohibited the funding of internal improvements. In the brief time that the law was in force, Governor Bliss appointed Earle state highway commissioner, a position he maintained without pay even after the law was annulled. His tireless crusade to revise the state's constitution paid off in 1905, when a referendum allowed the state to fund road work. The law required the highway commissioner to "furnish outline plans and specifications for the improvement of public wagon roads, and, when requested . . . give expert advice of how to best build or improve public roads or bridges."⁵

The new department had an operating budget of \$10,000, plus \$20,000 for "reward" roads in the first year and \$50,000 in the second. "Rewards" were actually subsidies to counties and townships for road construction that met state specifications. The size of the reward ranged from \$250 per mile for a basic gravel road to \$1,000 for a mile of macadam. Frank Rogers, the first deputy highway commissioner and later the commissioner, noted that initially "it was impossible to induce the people to build enough roads to take the money available." Only a few progressive counties -- Bay, Kalkaska, Manistee and Mason -- created road commissions and adopted state construction standards early on. Also, Alpena and Chippewa counties each committed \$100,000 to improve roads.⁶

The department's inaugural biennial report, covering 1905 and 1906, discussed culverts and bridges in great detail. It included a chart outlining the minimum I-beam specifications to carry a ten-ton load for spans of 3.5 to 29.5 feet, and strongly encouraged the use of concrete floors and abutments. Concrete was also enthusiastically recommended by township road commissioners, whose comments were included in a "gabfest" at the end of the report. The commissioners' main complaints focused on property owners who paid road taxes with labor, a problem solved with passage of the Cash Road Tax Law in 1907.⁷

The 1907-1908 biennial report included basic plans for I-beam, riveted Warren pony truss,

⁵ The establishment and early years of the State Highway Department are discussed in detail in Frank F. Rogers, *History of the Michigan State Highway Department, 1905-1933* (Lansing: n.p., 1933). The "State Reward Road Law" is reprinted in the Michigan State Highway Department's *First Biennial Report, 1905-1906*, 13-19. Subsequent references to these biennial reports will be abbreviated SHDBR, with the appropriate number and years.

⁶ Frank F. Rogers, "Twenty Years Work by the State Highway Department," *Michigan Roads and Pavements* (January 1925): 5.

⁷ 1 SHDBR (1905-1906).

through plate-girder, and concrete slab spans. All featured concrete floors. The report also included general specifications. These restricted pin-connected trusses to spans 100 feet or more. Riveted Warren pony trusses were preferred for 60 to 100 foot spans; plate girders for 30 to 60 feet; and steel stringers for spans of less than 30 feet.⁸

While the department worked to improve bridge quality, quantity remained a pressing issue as well. In 1908, Deputy Highway Commissioner Frank Rogers reported: "A bridge company that claims to sell more than one-half of the bridges in Michigan sold only \$300,000 worth last season." Even if that sum represented only twenty to thirty percent of the bridges built in Michigan in 1907, bridge production clearly fell far short of demand. Faster and heavier loads made older bridges obsolete, while ever-increasing traffic levels required new routes to be opened. In an effort to ensure the longevity of the new bridges that were being built, a 1909 law required bridges to carry at least a ten-ton load and set minimum roadway width at sixteen feet.⁹

Improvement of the state's highway system took a major leap forward in 1913, when the legislature authorized designation of a trunk-line network totaling nearly 3,000 miles. Projects to upgrade these roads to state standards were eligible for twice the usual reward reimbursement. The legislation also required the state to design all trunk-line bridges, and to erect and maintain trunk-line bridges spanning 30 feet or more, if the county or local government improved three miles of adjacent road. The highway department let contracts and supervised construction for the trunk-line bridge projects. All were in rural areas, since the law prohibited the state from bridge work in towns with over 6,000 inhabitants. In the first year that the system was established, the department invested \$75,000 in eighteen bridges. Within four years, the state spent almost \$900,000 on trunk-line reward payments, and nearly \$400,000 on bridges. By 1918, the state could take credit for 113 new trunk-line bridges.¹⁰

Creation of the trunk-line system significantly enlarged the highway department's purview, requiring a substantial increase in staff. Within a few years, it became one of the largest state agencies. During the 1913 reorganization, a bridge department was established with Clement V. Dewart as its director. Dewart was trained as a civil engineer, and had earlier designed bridges for the Pere Marquette Railroad. Under his direction, copies of standard bridge and culvert plans were drafted and made available to township and county road commissions at no charge. Revisions were required after the 1915 legislature raised moving load requirements for new bridges from ten to fifteen tons, and increased minimum roadway width to sixteen feet. Within a few years, steel shortages precipitated by World War I increased the popularity

⁸ 2 SHDBR (1907-1908), 201-207.

⁹ Speech by Frank F. Rogers at State Round-Up Farmers' Institute, 25 February 1908, published as "Defects in Michigan Roads and How to Improve Them," *Michigan Roads and Forests* 5 (March 1908): 5.

¹⁰ Rogers, "Twenty Years Work," 5-6; 5 SHDBR (1913-1914), 8-9, 42-46, 113; 7 SHDBR (1917-1918), 1, 72; Frank F. Rogers, "Roads Built with the Fifty Million Dollar Bond Issue," *Michigan Roads and Pavements* 22 (19 February 1925): 3.

of concrete through-girder bridges for 30- to 50-foot spans. Also to conserve steel, older truss bridges on trunk-line routes were renovated with new stringers and floors when the structure maintained sufficient strength to justify the effort.¹¹

To lower construction costs and control quality, the state began to purchase standard materials in quantity. In 1914, for example, the department let a contract for all the plain rolled I-beams needed for state bridge construction in that season, saving an estimated 50 percent over the typical cost of buying on a bridge-by-bridge basis. The popularity of concrete construction led the department to purchase cement in volume and supply it to contractors for state road and bridge projects beginning in 1922. To further control prices, the state leased the Michigan Portland Cement Company in Chelsea late in 1923 and operated it with prison labor.¹²

Also during this period, the state began pushing to eliminate busy railroad-highway crossings, which had become a significant source of traffic accidents. Often, streets could be rerouted to avoid tracks. When it was necessary to erect a bridge to separate grades, the state could pay up to 25 percent of the cost. Typically, the department designed grade separations where the highway passed over the railroad tracks; when the roadway went below, the railroad produced the bridge plans. The first crossings to be considered under this law were in Washtenaw County, where the Michigan Central Railroad intersected the Ann Arbor-Whitmore Lake Road, and in Houghton County, where the Mineral Range Railroad traversed a county road. During the next eight years, 146 grade crossings were eliminated on trunk highways, nearly all by route realignment. Only five bridges over rail lines and four underpasses were built. The problem was particularly acute in densely populated areas, where heavy development made realignment impossible. In Wayne County, for example, the county road commission took on its first grade separation project in 1922, and had completed 49 by 1931.¹³

The Covert Act, passed by the 1915 legislature, required that the state, upon request of the appropriate locality, build all trunk-line roads as well as inter-county non-system roads. Adjacent land owners were assessed for half the cost; road commissions could issue bonds for the remainder. While this act ultimately played a significant part in improving road quality in the state, legalities tangled bond sales to fund the program until 1917. By that time, the federal government had enacted the Federal Aid Road Act of 1916 to subsidize state road construction on designated federal routes. Five years later, Congress began to shape federal-aid routes into a national highway system. Michigan Senator Charles E. Townsend was encouraged by Roy Chapin and other leaders of the state's burgeoning automobile industry to

¹¹ 5 SHDBR (1913-1914), 9; 6 SHDBR (1915-1916), 14, 126; 7 SHDBR (1917-1918), 32-33; 10 SHDBR (1923-1924), 31; "Michigan State Highway Department in New Quarters," *Good Roads* 13 (3 March 1917): 148; Rogers, "Roads Built," 3.

¹² 5 SHDBR (1913-1914), 9; 10 SHDBR (1923-1924), 31.

¹³ 6 SHDBR (1915-1916), 14, 17; 13 SHDBR (1929-1930), 55-56; "Many Dangerous R.R. Crossings Eliminated by Highway Dept.," *Michigan Roads and Pavements* 21 (10 April 1924): 3; H.A. Shuptrine, "Grade Separations," *The Michigan Engineer* 40 (March 1931): 16.

author the Federal Highway Act of 1921. He was also supported by State Highway Commissioner Rogers, Wayne County Road Commissioner Edward N. Hines, and other good roads activists from around the country.¹⁴

Soon after the initial federal-aid bill passed, Michigan authorized \$225,000 a year to match the federal contribution. The stakes increased significantly in 1919, when a public referendum approved a \$50 million bond issue for highway construction. About 4,000 miles of trunk-line roads were improved before the proceeds were depleted in 1924. This funding also helped the department meet its obligations under the Aldrich Bill, passed during the 1919 legislative session, which gave the state the responsibility of building and maintaining all trunk-line bridges. The state was also authorized to pay half the cost of bridges spanning 30 feet or more on state reward roads, if the cooperating county, good road district, or township built at least three miles of adjacent road. The department immediately began hiring workers to carry out this substantial mandate, more than doubling staff size within a year. Investment in bridges rose at an even faster rate, with expenditures in 1919 totalling over \$800,000 — almost as much as had been spent in the years from 1913 through 1918 combined. The work included erection of 49 trunk-line bridges, repair of 27 older bridges, and planning for 34 bridges for the following construction season.¹⁵

With an eye to its ever increasing workload, the department took steps to ensure that a steady supply of engineers would be available. In the mid-1910s, the University of Michigan had begun to develop an engineering curriculum, directed by John J. Cox. The university and the highway department hosted a "Short Course in Highway Engineering" in Ann Arbor in February 1915; this subsequently became an annual conference. Published proceedings from the first meeting included two papers on highway bridges, one by highway department bridge engineer C.V. Dewart and the other by O.L. Grover, chief bridge engineer of the U.S. Office of Public Roads. Most of the following conferences also included one or more speakers on bridge-related subjects. Professor Cox left for the private sector in 1919, and the university recruited Arthur H. Blanchard from Columbia University to create a graduate program. He was joined on the faculty by John Bateman, a University of Michigan graduate who had gained four years of engineering experience with the Michigan State Highway Department. Rather than setting up an independent facility, the highway department leased the university's testing laboratory, which was operated under Bateman's direction. The department also began using student interns for summer field work from both the University of Michigan and Michigan

¹⁴ "Mr. Rogers Suggests Changes in Townsend Bill," *Michigan Roads and Forests* 16 (December 1919): 8; Willis F. Dunbar and George S. May, *Michigan: A History of the Wolverine State* (Grand Rapids, MI: William B. Eerdmans Publishing Company, 1965, rev. ed. 1980), 496, 572.

¹⁵ Frank F. Rogers, "Work of State Highway Department in 1919," *Michigan Roads and Forests* 16 (December 1919): 8; Rogers, "Twenty Years Work," 6; Willis F. Dunbar, *Michigan Through the Centuries*, vol. 2 (New York: Lewis Historical Publishing Company, 1955), 567-568.

State College, which also had an active engineering program.¹⁶

The highway department struggled to keep pace as the demand for new bridges mushroomed. In 1922, C.A. Melick, who had taken over as the department's chief bridge engineer, complained that "the arteries of design become clogged quite easily because of the fact that with a small working force of some eight or nine men, just one special structure such as a movable bridge or a particularly complicated grade separation will tie up about half of the force for a whole season."¹⁷

Oversight of bridge construction was also time-consuming. By 1924, in an effort to make the process more efficient, the department formed a special in-house construction group which built five or six bridges a year. The state was following the lead of a number of counties, such as Wayne, which had long maintained construction crews. To support this new venture, the department acquired an array of equipment, including mixers, concrete buggies, hoists, and a pile driver. In the winter, with a portable war-surplus sawmill, workers cut lumber for bridge floors and concrete forms.¹⁸

Legislation passed during the 1925 session required all new bridges in the state meet the highway department's specifications. Perhaps in response, the department updated its bridge specifications in 1926. By this time, the department acknowledged that traffic levels would continue to increase -- the state's registered motor vehicles doubled between 1922 and 1927 -- and engineers began to design bridges accordingly. The new standard roadway width for bridges on trunk-line and federal-aid routes was increased from twenty-four to thirty feet. To accommodate later expansion to forty feet, substructures were routinely built wider than initially required. The concrete through-girder bridge fell from favor, since this design became cumbersome in widths greater than 24 feet. In addition, it was almost impossible to widen existing structures. Steel trusses could be widened, but not easily, so the department adopted deck stringer and plate girder spans as standard, issuing plans for 30- to 75-foot spans with concrete floors and railings. Advances in manufacturing during this period also influenced the transition. Steel mills developed techniques to produce girders with deeper webs, which permitted rolled beams to span up to 60 feet. Previously, designers had to settle for built-up sections for spans greater than 45 feet. The highway department did not completely abandon concrete, however, as it began experimenting with cantilevered deck arch designs. The department's efforts earned it a favorable review in 1928 from the U.S. Bureau of Public Roads, which noted that Michigan's federal-aid bridges "are suitable for and properly

¹⁶ *Proceedings of the Short Course in Highway Engineering* (Ann Arbor, MI: University of Michigan, 1915); "Road Building Course at the University of Michigan," *Good Roads* 56/18 (3 September 1919): 125; "Graduate Courses in Highway Engineering at the University of Michigan," *Good Roads* 56/18 (8 October 1919): 176; 8 SHDBR (1919-1920), 12, 28.

¹⁷ Paper by C.A. Melick given at 1922 Highway Engineering Conference, published as "Standard Bridge Practice of the Michigan State Highway Department," *Michigan Roads and Pavements* 20 (29 March 1923): 9.

¹⁸ 10 SHDBR (1923-1924), 29.

fitted to their locations. The designs are adequate as to strength and liberal as to width of roadway. . . . Due attention has been paid to esthetic features."¹⁹

The seemingly limitless growth of the 1920s was brought to a halt by the economic downturn of the Depression. Faced with rapidly declining revenues, townships and counties defaulted on bonds issued for road improvements. The inefficiencies of road construction by 1,269 townships and the overlap of township and county road authorities could no longer be justified. Consolidation was forced by the McNitt Act of 1931, which merged all township roads into county systems over a five-year period. Counties received state funding from gasoline and vehicle weight tax revenue. Allocations were based on each county's existing mileage. In the same year, the Dykstra Act permitted the state to pay the full cost of urban trunk-line construction in cities under 20,000, and up to fifty percent for cities with over 50,000 inhabitants. The Horton Act, passed the next year, again modified the allocations, giving counties all income from the weight tax plus over \$6.5 million a year from gas taxes. With some modification, this law ruled the state's highway funding for about two decades.²⁰

Michigan became involved with road-related relief programs in the early 1930s. The state implemented a special program in the fall of 1931 that poured \$12 million into highway construction projects, including about \$2.25 million for bridges. Although scattered throughout the state, the largest projects and the greatest number of projects were in urban areas, where the concentration of unemployment was the highest. Up to 24,000 men were on the payroll at one time.²¹

In the following year, the federal government began providing direct grants for relief-related highway work. The Federal Emergency Relief and Construction Act gave the state \$3.8 million; another \$12.7 million came from the National Industrial Recovery Act in June 1933. The success of these programs paved the way for passage of the Hayden-Cartwright Act in June 1934, which Michigan's highway department heralded as "the most outstanding piece of highway legislation since the Federal Aid Act of 1916." The act allowed, for the first time, the use of federal dollars for highway improvements in municipalities, and also permitted funding of highway planning surveys. Federal funds provided \$26 million of the \$30 million expended on highway projects between 1934 and 1936. The Hayden-Cartwright Act of 1936 initiated federal funding for secondary roads. Michigan's first allocation was \$1.56 million for

¹⁹ Dunbar, *Michigan Through the Centuries*, vol. 2, 369; 13 SHDBR (1929-1930), 52-53; 15 SHDBR 1933-1934, 13; 16 SHDBR (1935-1936), 58; "Bridge Construction in Michigan during 1925," *Michigan Roads and Pavements* (December 1925): 22; "Bridge over Cheboyganing Creek on River Road," *Michigan Roads and Pavements* 24 (20 October 1927): 5; "Michigan Bridges Commended by U.S. Bureau of Public Roads," *Michigan Roads and Pavements* 25 (28 June 1928): 6.

²⁰ Dunbar, *Michigan Through the Centuries*, vol. 2, 569-570.

²¹ 14 SHDBR (1931-1932), 49-50.

1938-1939.²²

The highest priority of federal relief efforts was employment. As a result, most funding was dedicated to labor, rather than materials. Road work, which became particularly labor intensive when the use of heavy equipment was discouraged, claimed the highest number of projects during the eight-year existence of the W.P.A., a major federal work-relief program. Between 1935 and 1943, the W.P.A. built or maintained over 570,000 miles of rural roads, erected 78,000 new bridges and viaducts, and improved an additional 46,000 bridges throughout the United States. A contemporary report explained that "many of the bridges were small, replacing structures that were dilapidated or inadequate, or taking the place of fords; and many were two-lane bridges built to replace one-lane bridges."²³

While W.P.A. bridges were sometimes carefully crafted and picturesque, the economic constraints of the Depression often forced Michigan's highway department to adopt utilitarian designs with minimal ornamentation. Bridge construction was concentrated, as much as possible, in winter months, when other road work was curtailed. Bridge design, construction and maintenance responsibilities, which had been scattered among district offices, were centralized in Lansing in 1934. At the same time, the department adopted new bridge specifications, the first major modification since 1926. Revisions were issued in 1936, 1942, and 1950.²⁴

By the late 1930s, Michigan's economy was showing significant signs of recovery. Changes in federal relief program guidelines and, ironically, labor shortages, decreased the number of projects that were undertaken. Also, counties became disenchanted with the abilities of W.P.A. work crews. Concurrently, the amount of federal relief funding dropped dramatically: in 1938, emergency grants were reduced by 97 percent. The state was once again forced to bear more of the burden of highway maintenance and improvement.²⁵

One of Michigan's last efforts to secure W.P.A. funding occurred in 1941, when the department sought \$3 million to improve sections of the state's highway network "to minimum War Department standards." With war lurking on the horizon, attention quickly shifted from soup kitchens to armaments, ushering in a new era of highway construction in Michigan.²⁶

²² 15 SHDBR (1933-1934), 9-12; 16 SHDBR (1935-1936), 17; Dunbar, *Michigan Through the Centuries*, vol. 2, 570; 17 SHDBR (1937-38).

²³ U.S. Federal Works Agency, *Final Report on the W.P.A. Program, 1935-43* (Washington, D.C.: Government Printing Office, 1943), 53.

²⁴ 15 SHDBR (1933-1934), 13, 59-60; 16 SHDBR (1935-1936), 57-58; "New Standard Specifications for State Road Work Out April 15," *Michigan Roads and Construction* 47 (13 April 1950): 2.

²⁵ 17 SHDBR (1937-1938), 23, 27.

²⁶ "\$3,000,000 State Highway-WPA Program Sought," *Michigan Roads and Construction* 38 (17 April 1941): 3.

Speaking at a convention of the American Road Builders Association in New York City in January 1941, Michigan Governor Murray Van Wagoner remarked that "in an era of national defense, the country must be considered as a factory of which the streets and highways are the moving belts of the assembly lines." He observed, however, that "the roadways are both badly overcrowded and highly inefficient. . . . The channels over which defense dollars must flow must be dredged immediately by elevated structures, limited ways, and the blocking off of all important streets to speed production." As the department's 1941-1942 biennial report noted, "From Pearl Harbor on, the full energies of the Department were thrown into the war effort." This effort was challenged, however, by shortages of materials, decreases in gas tax and other revenues, and loss of personnel to military service.²⁷

As head of Michigan's highway department in 1940, Van Wagoner had overseen the designation of a 2,400-mile strategic road network, to which about 40 percent of the state's highway construction funds were immediately dedicated. Michigan's importance to the war effort was highlighted in September 1940, when the state was awarded the county's first military road project under the new national defense program. This project, which improved access to Fort Custer, was quickly dwarfed by other war-related road construction, particularly the Willow Run Expressway and the Detroit Industrial Expressway. The Wayne County Road Commission played an important role in developing these expressways, partly because the routes passed through Wayne and neighboring Washtenaw counties. More significant, however, was Wayne County's experience with this novel type of road. In 1941-1942, the county had built the state's first limited-access, high-speed freeway, the Davison Expressway in Highland Park.²⁸

Long before victory was in sight, planning began for post-World War II highway development. The need to employ decommissioned military personnel raised some of the same problems that the nation had faced during the Depression. At the annual Michigan Highway Conference in 1942, Charles Upham, head of the American Road Builders' Association, noted that "in the last depression the collapse occurred in the group of durable goods producers . . . which is in reality the construction industry. If this group can be kept in full production, unemployment would be held to a minimum and there will be an economic balance." Instead of looking to the "make work" emergency programs of the 1930s, planners sought to improve the country's infrastructure to catalyze the growth of private industry.²⁹

Since the mid-1930s, the highway department had been committed to developing routes by-

²⁷ "Michigan Represented in ARBA Convention Program," *Michigan Roads and Construction* 39 (30 January 1941): 2; 19 SHDBR (1941-1942), 3.

²⁸ "Progress in All Fields Reported by Highway Department," *Michigan Roads and Construction* 38 (2 January 1941): 2; "Fort Custer Highway to be First U.S. Military Road," *Michigan Roads and Construction* 37 (19 September 1940): 3; 19 SHDBR (1941-1942), 80.

²⁹ "Post-War Plans Discussed at Highway Conference," *Michigan Roads and Construction* 39 (19 February 1942): 2.

passing congested urban areas. Cities initially targeted for circumferential roadways included Battle Creek, Benton Harbor, Detroit, Flint, Grand Rapids, Monroe, Muskegon, Pontiac and Port Huron. At the same time, roads leading into these beltways were being upgraded. The purpose of these bypasses was undermined, however, by commercial and residential development attracted to the new corridors. Traffic jams quickly followed. The problem had grown so pervasive by 1941 that the state passed legislation allowing construction of controlled-access roads. Almost immediately thereafter, work began on the Davison Expressway in metropolitan Detroit.³⁰

Michigan's leadership in freeway development was acknowledged in April 1941, when President Roosevelt appointed G. Donald Kennedy, then a candidate for head of Michigan's highway department, to the seven-member federal Interregional Highway Committee. Over the next several years, the committee developed a plan for the nation's post-war road construction, focusing on creation of a 32,000-mile interstate highway system. In addition to improving transportation, the planners also sought to provide jobs for decommissioned servicemen, to revitalize deteriorating inner cities, and to control suburban growth.³¹

Highway planning proceeded concurrently in Michigan. In a paper presented to the annual meeting of the American Society of Civil Engineers in January 1942, Commissioner Kennedy outlined the twenty-year master plan for highway development in the state. This was complemented by a separate plan that addressed the unique issues presented by the Detroit metropolitan area. The state plan was based on information from a highway planning survey conducted as a 1930s relief project, which considered the social and economic implications of highway development in addition to standard statistics and technical analyses. The plan established three roadway designs for rural trunk highways, and designated which routes should be improved or maintained to meet these standards. Within two decades, according to projections, the state would have 2,624 miles of major multilane freeways, 3,764 miles of major two-lane roads, and 3,059 miles of minor two-lane highways. Work to upgrade the system was already pressing:

Of the mileage of existing trunk line listed for multilane construction, 32 per cent has pavement more than 15 years old with accompanying narrow width and faulty roadway alignment. It also includes 42 bridge structures which are too narrow, too low, or not strong enough for modern loads.³²

³⁰ Murray D. Van Wagoner, "The Michigan Highway Program and the Tourist Industry," *Michigan Roads and Construction* 32 (17 October 1935): 10; Michigan State Highway Department, *Highway Needs in Michigan: An Engineering Analysis*, a report prepared for the Michigan Good Roads Federation and the Highway Study Committee (N.p., 1948), 45.

³¹ Mark H. Rose, *Interstate: Express Highway Politics, 1939-1989* (Lawrence, KS: University Press of Kansas, 1979; revised edition, University of Tennessee Press, 1990; page numbers refer to revised edition), 19-21.

³² 19 SHDBR (1941-1942), 40-43.

The John C. Lodge and Edsel Ford expressways, both in Detroit, were the state's first post-war freeway projects. Again, the state and Wayne County teamed up to tackle the design and construction. In 1950, completion of the Michigan Avenue overpass at the Detroit-Dearborn border linked these roads with the Detroit Industrial Expressway, which had already attracted widespread attention. An article in *Motor News* in 1948 reported that "highway engineers from all over the country make pilgrimages to Detroit to inspect and admire this great improvement which is a demonstrated success and is building up a very impressive safety record. More and more motorists are learning its advantages from day to day and are acquiring the habit of using it whenever possible."³³

The department's ambitious plans to complete the expressways, as well as road and bridge projects throughout the state, were slowed by materials shortages well into the 1950s. All types of civilian construction projects clamored for raw materials, which became even scarcer when military production resumed for the Korean War. Steel deliveries took months, or were stopped altogether at whim of the National Production Authority. Cement supplies were low, particularly when a strike crippled one of the state's largest plants in 1948. Even aggregates were not always readily available. Limited supplies resulted in high prices: "The purchasing value of the Department's construction funds shrank about 40 per cent below prewar levels," according to the 1947-1948 biennial report. The department's initial response was to delay awarding contracts for less urgent projects. When this strategy appeared futile, in light of sustained higher prices, bridge engineers modified designs to reduce the use of more expensive materials, particularly steel.³⁴

Despite these roadblocks, however, the number of projects that had been initiated during World War II gave Michigan a running start. From mid-1942, when Charles Ziegler took over as commissioner, through the end of 1948, the department built 146 new bridges and grade separations. Over one-third were completed during the 1948 construction season. During the following biennium, contracts were awarded for 46 trunk-line highway bridges and 24 grade separations.³⁵

Try as they might, though, state, county and local efforts could not keep up with growing traffic demands. A 1948 study found that 471 rural trunk-line bridges were deficient, and estimated that repairing and replacing these structures would cost over \$46 million. Urban trunk-line bridges required an additional \$23.6 million, plus over \$35 million for primary and local county bridges. In an effort to address this pressing problem, the legislature made the first substantial changes in highway funding since the McNitt and Horton acts of the early 1930s. Gasoline and weight taxes were increased, raising revenues by one-third. Forty-four

³³ 23 SHDBR (1949-1950), 27; "Progress Report, Chicago-Detroit Expressway," *Motor News*, March 1948, 15.

³⁴ "Highway Steel Shortages Delay to Current Michigan Road Program," *Michigan Roads and Construction* 48 (23 August 1951): 2; 22 SHDBR (1947-1948), 14, 53-54.

³⁵ "State Near End of First Post-war Highway Program," *Michigan Roads and Construction* 45 (30 December 1948): 2; 23 SHDBR (1949-1950), 23.

percent of the net income was earmarked for the state highway department, while 37 percent was allocated to counties and the remaining 19 percent went to cities and incorporated villages.³⁶

An unfortunate set-back to highway planning occurred in 1951, when fire ravaged the drafting and file rooms of the highway department's offices in Lansing. Some plans in storage cabinets survived, but most survey notes and blueprints for projects under development were destroyed. The periodical *Michigan Roads and Construction* reported that "road plans are in somewhat better position than bridge plans, which suffered heavy damage as the fire slowly ate its way through the south wing of the building."³⁷

Michigan's Historic Bridge Inventory ends with the passage of the federal Interstate Highway Act of 1956. This legislation differed from previous highway acts by offering federal subsidies to cover 90 percent of interstate construction costs. Aided by this financial incentive, highway developers rushed to make decade-old plans a reality. Soon, a grid of high-speed, limited-access freeways connected the country. True to tradition, Michigan was once again a national leader. The Detroit Industrial and Ford expressways provided a head start for its interstate program. By the time the Interstate Highway Act passed, Michigan had made significant progress on I-94 and I-75. Interstate freeway development represents a watershed in the evolution of the transportation system in both Michigan and the United States.

³⁶ *Highway Needs in Michigan*, 124-126; Dunbar, *Michigan Through the Centuries*, vol. 2, 571.

³⁷ "Highway Department Plans Letting Despite Heavy Fire Losses," *Michigan Roads and Construction* 48 (15 February 1951): 2.

WAYNE COUNTY: AN EXEMPLARY ROAD COMMISSION

A study of bridge construction in Wayne County serves several purposes. The county's history reflects the evolution of laws, economics and technology related to road and bridge construction in the twentieth century, and offers a well-documented example of how these changes affected counties in Michigan. At the same time, the Wayne County Road Commission was internationally renowned for innovative ideas, sometimes breaking ground well in advance of the Michigan State Highway Department. The county's leadership is not surprising in light of its unique relationship to the automobile industry, and its status as by far the largest population center in the state and, historically, one of the largest metropolitan areas in the nation.

Wayne County encompasses approximately 623 square miles in southeastern Michigan. The city of Detroit claims the county seat. In the early twentieth century, the region became firmly established as the hub of the country's automobile manufacturing industry. Area residents were also significant consumers of this production: in 1935, 38 percent of the state's automobile registrations were concentrated in Wayne County. This totaled "more registrations than in the entire States of Delaware, Nevada, New Mexico, Utah, Vermont, and Wyoming, combined, and more than in any one of 26 additional states and the District of Columbia."³⁸

Early roads set the pattern for later development. The area's first long-distance road, which extended from Detroit to Fort Meigs (now Toledo), is still traced by West Jefferson Avenue. Michigan, Gratiot, Woodward and Grand River avenues, some of the major arteries radiating from downtown Detroit, were laid out as early nineteenth-century military roads.³⁹

Wayne County has a tradition of innovation. It claims credit for building the world's first mile of concrete pavement, the first divided highway, the first cloverleaf grade separation, and one of the first modern, limited-access freeways. The center line painted between lanes of opposing traffic was another Wayne County invention. The county's leadership role can be credited to the Wayne County Road Commission, which was created by a referendum in September 1906. When about 50,000 Wayne County voters cast their ballots, four-fifths favored adoption of a county road system. The first annual report of the Board of County Road Commissioners recalled that "every precinct in the City of Detroit gave the proposition a handsome majority, and every township, with the exception of four, did likewise." By the first of October, a three-man road commission had been appointed, consisting of Edward N. Hines, Cassius R. Benton, and world-famous automobile manufacturer, Henry Ford. The commissioners promptly proceeded with plans to survey and improve roads, and to levy a half-

³⁸ Michigan State Highway Department, *Street Traffic, City of Detroit, 1936-1937* (N.p.: Michigan State Highway Department, 1937), 251.

³⁹ Wayne County Board of Road Commissioners, *Forty-first Annual Report to the Board of Supervisors of Wayne County, 1946-1947*, 4. Annual reports of the Board of Road Commissioners will be referenced hereafter as WCAR.

mill tax to support this work. Opponents of the county road system, however, unwilling to rest even after passage of the referendum, waged a persistent and litigious war against the commission, particularly against its right to assess taxes. In the following April, Michigan's supreme court found the commission unconstitutional, and Benton and Ford retired from the battle. Hines persisted, and within a year the board was reorganized, reauthorized, and hard at work. Hines remained as a guiding light on the board for decades thereafter.⁴⁰

The commission quickly established priorities to direct its efforts, concentrating first on building or upgrading ten primary routes radiating from Detroit. Next, they improved roads extending from smaller communities. Finally, to link this network, the commission planned to ring Detroit with an inner, middle and outer beltway. This systematic approach became a model for other communities. As early as 1911, the commission felt confident in asserting that "Wayne County is coming to be known as a leader in the good roads movement, and the Mecca of those upon whose shoulders devolves the duty of solving traffic problems." Within a few years, the county hosted delegations of engineers from around the United States, as well as from a number of other countries, including Britain, Japan, Australia, and Borneo.⁴¹ The commission's international prominence was enhanced by its advocacy of concrete as a road material. It claimed credit for constructing the country's first mile of concrete-paved rural highway, a section of Woodward Avenue just beyond the Detroit city limits.⁴²

From the beginning, the commission took on bridge projects as well as road work. Bridges were required for new routes that the county developed. In addition, nearly every structure on the existing roads that the county adopted for its system was deficient. The road commission's third annual report, issued in 1909, included a photograph of "a flat-top I-beam, concrete floor bridge on Fort road" which it had built. The same report also described the improvement of River Road at Wyandotte, including construction of a 30-foot span for \$1,237.07.⁴³ In its first dozen years of existence, the commission averaged erection of one bridge a year. Then, the pace of construction significantly increased. Between 1918 and 1925, the county built 47 bridges at a cost of nearly \$5 million. Thirty-two of the bridges were of concrete; fifteen were

⁴⁰ 1 WCAR (1906-1907), 1; 34 WCAR (1939-1940), 6.

⁴¹ 5 WCAR (1910-1911), 10; 9 WCAR (1914-1915), 6; 16 WCAR (1921-1922), 23.

⁴² The concrete road was on Woodward Avenue immediately north of Highland Park, between Six Mile Road and Seven Mile Road, an area annexed by the city of Detroit after the pavement had been laid. The Wayne County Road Commissioners' 1921-1922 annual report notes "the passing of Woodward Avenue Road. . . . Barring the objection to its narrow width, this old concrete road has satisfactorily carried the heaviest traffic of any county road in America during its more than 13 years of existence and has justified in every particular what its developers and proponents . . . had hoped for it." The concrete was "broken up and torn out by the Department of Public Works to permit the extension of Detroit's standard city streets, the right of way being increased from 66 to 100 feet in width." (16 WCAR (1921-1922), 21; 50 WCAR (1955-1956), 5.)

⁴³ 3 WCAR (1908-1909), 18-19.

steel, including three bascules over the Rouge River.⁴⁴

The county quickly recognized the merits of standardization. In a 1910 article on "Michigan Bridges and Culverts," Commissioner Hines took the state's highway department to task for not producing adequate standard plans and specifications, and not overseeing local bridge construction. He noted, with some condescension, that the department "is small, and the force is pretty well overworked" and lacked an experienced bridge engineer.⁴⁵ The fourth annual report of the Wayne County Road Commission, in contrast, included plans and specifications for four- to sixteen-foot concrete culverts apparently prepared by staff bridge engineers George A. Dingman and George A. Burley. The county adopted 24 feet as the standard width for culverts and bridges, generously exceeding the state mandate of 18 feet. By the mid-1920s, they increased the minimum width for bridges on major roads to 40 feet.⁴⁶ Concrete slab construction was used for culverts spanning up to 18 feet. Concrete was also the preferred material for bridges. The specific design was determined by site considerations: "Where the banks to streams are low and maximum water way is desirable, we build the girder type of bridge with heavy steel reinforcement imbedded in concrete. Where the banks to a stream are high and the waterway will not be cut down by a reinforced arch type of concrete bridge, we believe it is the best."⁴⁷ When the county began to anticipate future roadway widening, however, through girders fell from favor. Deck girders became the design of choice by the early to mid-1920s, at a time when the state highway department still embraced arched through-girder spans. Steel stringer bridges became more common in Wayne County by the end of that decade.⁴⁸

Solid concrete railings modestly ornamented with recessed panels were typical in the 1910s. Concrete spindle rails were sometimes employed, becoming more popular in the 1920s. By 1922-1923, all new bridges included sidewalks. The county typically constructed simple concrete and steel structures in-house, using day labor crews.⁴⁹

In an urbanized region riddled by rivers, standard plans for simple concrete structures could not meet every need. For longer bridges, when site conditions precluded the use of multiple short spans, the commission hired outside contractors to erect steel pony trusses and, occasionally, deck plate girders. Bascule bridges sometimes served as a compromise between

⁴⁴ 19 WCAR (1924-1925), 39.

⁴⁵ 4 WCAR (1909-1910), 57-60.

⁴⁶ 4 WCAR (1909-1910), 20-24; 5 WCAR (1910-1911), 12; Edward N. Hines, *20 Years of Road Construction in Wayne County, Mich.* (Detroit: Detroit Automobile Club, [1926]), 10.

⁴⁷ 7 WCAR (1912-1913), 10; 12 WCAR (1917-1918), 13.

⁴⁸ 21 WCAR (1926-1927), 21.

⁴⁹ 14 WCAR (1919-1920), 69; 16 WCAR (1921-1922), 54; 25 WCAR (1930-1931) 50; 27WCAR (1932-1933), 39.

Wayne County's vehicular traffic and its manufacturing and shipping interests, which depended on unimpeded river transport. The commission's first bascule, initiated in 1912, was the Dix Road Bridge over the Rouge River. The need to deepen and widen the river in the late 1910s, however, required a reconstruction of the Dix Road Bridge and erection of two new bascules, including the Jefferson Avenue Bridge.⁵⁰

The Rouge improvement project accommodated factories upstream, particularly Ford's new Dearborn plant. The discussion of this project in the road commission's 1924-1925 annual report gives a picture of the rapid metamorphosis of the Detroit area during this era, largely stimulated by the automobile industry:

The inconspicuous Rouge River of the years prior to 1919, winding its way drowsily through useless, mosquito-infested marshes, has disappeared forever, and in its place . . . has appeared a straight, deep waterway, which during the past year has borne commerce to the extent of 1,400,000 tons. . . .

In these few short years, the clatter of a few hundreds of horse-drawn vehicles, the crash of street cars operating at regular and short intervals, and the buzz of a few hundred automobiles crossing the old drawbridges, have all been replaced by the steady hum of many thousands of automobiles with an undertone occasioned by hundreds of busses, quietly rolling over commodious bascule bridges. Quiet as is this new and dense traffic, the very volume and insistence of its hum completely engulfs any sound from the occasional street car and the handful of horse-drawn vehicles.⁵¹

Because of the constant pressure of growth, the county frequently faced problems and experimented with solutions well in advance of the rest of the state. Often, Michigan's highway department hired the road commission as a contractor for trunk-line projects in Wayne County, thereby tapping into the county's previous experience. Such was the case for a major highway project on the Wayne-Oakland county line initiated in 1930 which included a roadway grade separation, three river bridges, and reconstruction of the Rouge River channel. This was the state's first attempt at a highway grade separation; it was Wayne County's fourth. Two five-span, reinforced-concrete tee-beam bridges, each with a 40-foot-wide roadway and an eight-foot sidewalk, carried Base Line Superhighway (M-102) over Telegraph Superhighway (US-24). The bridges were separated by 84 feet "for future development."⁵²

The county's work with grade separations began in the 1910s with railroad-street intersections. Collisions between cars and trains multiplied as the county's cohort of automobiles rose from

⁵⁰ 6 WCAR (1911-1912), 15; 15 WCAR (1920-1921), 62-67.

⁵¹ 19 WCAR (1924-1925), 71.

⁵² 24 WCAR (1929-1930), 119-121.

under 12,000 in 1909 to 35,000 six years later. Of the grade crossings within the commission's jurisdiction, only one (Northville Road over the Pere Marquette Railway) had a bridge to separate traffic. At other busy intersections, the county posted flagman or installed warning bells. It was not until 1921, however, that the county began a concentrated effort to separate grades.⁵³ The additional work of negotiating with railroads and property owners, realigning streets, rerouting utilities, and moving rail tracks meant that a grade separation typically took longer to build and was more costly than a river bridge of comparable span. Soon, the commission reported that "we are continuously expending a large part of the energy of our organization and of the funds made available to us for this part of the work." Despite the high cost, the commission remained committed to this effort. In 1930, Commissioner Hines asserted that "hand in hand with the widening and building of new concrete roads and with the reconstruction of the entire bridge system of Wayne County goest the program of railroad grade separations."⁵⁴

The county's first railroad-street separation project was a subway for Telegraph Road under the Michigan Central tracks just south of Michigan Avenue. Bridges typically carried rail tracks, with the street passing below. Because rail overpasses are not highway structures, they are not included in the Michigan Historic Bridge Inventory. Occasionally the terrain, magnitude of traffic and other factors argued for a street overpass. Where the Fort Superhighway intersected with the Michigan Central, Pennsylvania and Wabash railroads, for example, it was found to be easier to elevate the street than to tunnel under the broad swath of railroad tracks.⁵⁵

The city of Detroit was also dedicated to separating railroad and street grades. In contrast to the county's approach, the city often employed viaducts to carry streets over rail tracks. A particularly large effort involved the Grand Trunk Line, which bisected the city just to the east of Woodward Avenue. In January 1923, the city and the railroad agreed to a grade separation involving 22 crossings. Later reconstruction of some of the early examples of this program (Jefferson, Lafayette and Larned Street) have destroyed the physical integrity of these structures; Chestnut, Adelaide and Antietam, which date from a particularly intensive period of construction for the Grand Trunk project (1929-1930), appear to be very well preserved.⁵⁶

In the meantime, the county's diligent efforts with the many railroads crossing its jurisdiction resulted in construction of 47 railroad-street grade separations by the mid-1930s. Then, however, the economic toll of the Depression curtailed the railroads' ability to initiate new projects. The companies were also less willing to commit their own funds once the federal

⁵³ 9 WCAR (1914-1915), 9-10, 70; 15 WCAR (1920-1921), 45; 22 WCAR (1927-1928), 121, 123.

⁵⁴ 22 WCAR (1927-1928), 117; "All Grade Crossings must Go," *Detroit Free Press*, 6 July 1930.

⁵⁵ 22 WCAR (1927-1928), 124-125.

⁵⁶ *Report of Engineers Committee on Grade Separations, Milwaukee Junction Manufactures Association; Presented to Cities of Detroit, Highland Park and Hamtramck* (Detroit: Rapid Transit Commission, 1930), 30.

government began subsidizing grade separations through state highway allocations and direct grants. After the federal program was established, Wayne County's grade separation initiative experienced a brief hiatus, since federal grants could not be used to acquire rights-of-way and the state and railroad companies could not, or would not, ante up the necessary dollars. The county soon took on responsibility for these costs to keep the program going.⁵⁷

While it concentrated on eliminating railroad-street grade crossings, the county also explored road grade separations. The commission's first example, built in 1926-1927, carried Outer Drive over Bonaparte Road. Outer Drive, one of the circumferential beltways around Detroit, featured ornamental light posts, attractive landscaping, and handsome reinforced concrete arch bridges. Eliminating an intersection with Bonaparte Road enhanced the experience of driving on this scenic parkway. The commission's next project, a major interchange between Michigan and Southfield superhighways, was far more ambitious and served a strictly pragmatic purpose. In addition to the two bridges for the Michigan overpass, new structures were required for the Michigan Central Railroad, which crossed over Southfield, and for the Southfield crossing of the Rouge River. Henry Ford donated all of the land needed for the primitive cloverleaf design of the Michigan-Southfield intersection. Despite its strictly functional role, the diamond-shaped interchange was landscaped like a park. Since all directional changes were accomplished by right-hand turns, dangerous cross traffic was eliminated. The commission proudly pronounced the project "one of the most complete grade separation projects, particularly between Superhighways, to be found anywhere in this Country."⁵⁸

The commission subsequently completed a number of road grade separations. Many of these were related to parkway construction following the precedent of the Outer Drive bridge. The commission's work on parkways complemented its dual role as Board of County Park Trustees, which it had taken on in the late 1910s.⁵⁹ It was a logical combination. The road commission planted trees along many of the streets it developed both for aesthetic purposes and to control erosion. Likewise, the commission was concerned about attractive landscaping around bridges. "A structure is not considered as complete," the 1923-1924 annual report noted, "until it is cleaned up and the banks sodded and all raw construction marks erased."⁶⁰ Also, by the 1920s, the county began completing the most urgently needed traffic arteries and could devote time to creating a master plan for park and parkway development.

The Wayne County Board of Supervisors appropriated funds for acquisition of additional park

⁵⁷ 28 WCAR (1933-1934), 39; 29 WCAR (1934-1935), 36-37.

⁵⁸ 22 WCAR (1927-1928), 59; schematic sketch of "traffic routing" on page 92; artist's conception 94; 23 WCAR (1928-1929), 129.

⁵⁹ The board gained control of airport operations in the late 1920s. A decade later, it took on responsibility for the county's water supply and sewage disposal. (43 WCAR (1948-1949), 67)

⁶⁰ 18 WCAR (1923-1924), 73.

land in 1929. Within four years, the road commission had purchased about 775 acres along eight miles of the Middle Rouge River between Newburgh and Northville roads. The county constructed a concrete-paved parkway, as well as tennis courts, bridle paths, foot bridges and baseball fields, with the assistance of federal work-relief labor.⁶¹

The onset of the Depression changed the dynamics of highway stewardship. Townships found it difficult, if not impossible, to maintain their roads, so in 1931, the Michigan legislature passed legislation requiring counties to take over all township roads within five years. This law, known as the McNitt-Smith-Holbeck Act, more than doubled the Wayne County Road Commission's purview from 479 to 1,143 square miles. In the sixth year, the county gained responsibility for subdivision streets beyond incorporated cities and villages, adding another 772 miles of streets and 372 miles of alleys to the system. Many of the bridges on these roads were substandard. As a result, a substantial part of the board's work in the 1930s involved upgrading these crossings. It was aided somewhat by another piece of legislation dating from 1931, the Dykstra Act, which authorized the state highway department to subsidize maintenance and construction of state trunk-line roads in urban areas.⁶²

The Horton Act of 1932 distributed a greater percentage of gas and weight tax proceeds to the counties, which were required, in turn, to allocate some of the funds to local governments. User taxes thus effectively replaced property taxes as the primary funding source of revenue for road work. The new paradigm was welcomed by the Wayne County Road Commissioners, who rarely authorized work which could not be funded out of annual tax proceeds. The considerable income from the county's sizable tax base allowed the board to accomplish a good deal even with this conservative fiscal policy. When the economy turned sour in the 1930s, Wayne County avoided the insolvency that plagued towns and counties which had leveraged bonds for capital improvements. As a result, during at least the first years of the Depression, the county found itself able "to carry on and to aid Cities and other communities of our County in these dark days." Detroit was the recipient of the most substantial assistance. In 1930, the city and state had agreed to split the cost of widening major streets in Detroit. When the city could not live up to its end of the deal, the county stepped in and took over the obligation, eventually contributing about \$11 million to the effort.⁶³

Federal Depression-era grants were primarily restricted to labor costs. Since communities were often unable to purchase construction materials, they assigned federally funded workers to the Wayne County Road Commission. The county, in return, provided materials and supervision. The county also received direct support from the early federal Civil Works Administration and subsequent relief programs. As a result, the road commission's labor force

⁶¹ 26 WCAR (1931-1932), 81; 27 WCAR (1932-1933), 64.

⁶² Michigan State Highway Department, "Preliminary Report on Michigan's Plan for Highways," typed report, 1934.

⁶³ 27 WCAR (1932-1933), 9; 38 WCAR (1943-1944), 7.

jumped from about 1,600 in the late 1920s to around 5,000 by 1933. The scope of federal assistance broadened during this period as well. The National Industrial Recovery Act of 1933 permitted, for the first time, the use of federal funds for road work within municipalities, a significant reversal of previous federal-aid policy. In the following year, the Hayden-Cartwright Act formally authorized the use of federal aid on designated urban roads.⁶⁴

In the following decade, with the onset of World War II, Detroit-area industries became crucial to the nation's defense, as did the roads that served these factories. "In the Wayne County region," the road commission observed, "highways and streets are actually part of the assembly lines." Improving access to the Willow Run bomber plant was a particularly critical project, and one in which the county played an important role, according to Harry Shuptrine, the road commission's chief bridge engineer:

The Wayne County Road Commission aided materially in expediting the early program by building some 7 miles of the Willow Run Expressway to the plant area. In addition its organization prepared the detail plans for several of the intricate grade separations of the Detroit Industrial Expressway.⁶⁵

To create the Willow Run Expressway, Wayne County transformed rural, gravel-covered Chase Road into a concrete-paved, multi-lane divided highway. Within two years, the commission had upgraded six miles of the route from the county line east to Hannan Road, and had supervised paving of the road in Washtenaw County. Southfield Superhighway, Eckles Road, Jefferson (near Grosse Ile), and Gallagher Avenue in Hamtramck were among the other roads improved to transport labor, materials and products for the war effort.⁶⁶

Although faced with a labor drain as engineers joined the military forces, the county looked ahead to the end of the war almost from the beginning of the hostilities. By 1942, the commission was surveying routes and planning right-of-way purchases to both improve the region's transportation network and put discharged soldiers to work. Work focused on the "Sixth-Hamilton" route (later christened the John C. Lodge Expressway) and on a riverfront drive. The state, in the meantime, pursued development of the Harper-McGraw cross-town route, soon renamed in honor of Edsel Ford.⁶⁷

By the time the war ended, the state, Wayne County and Detroit had reached an agreement authorizing the county to draft plans and specifications for the Lodge Expressway. Beginning

⁶⁴ 27 WCAR (1932-1933), 12; Bruce E. Seely, *Building the American Highway System: Engineers as Policy Makers* (Philadelphia: Temple University Press, 1987), 154-155.

⁶⁵ 35 WCAR (1940-1941), 5; Harry A. Shuptrine, "The Progress of Development of Limited Expressways in Detroit Metropolitan District," *The Foundation* 9 (January 1945): 3-4.

⁶⁶ 36 WCAR (1941-1942), 7-10.

⁶⁷ 36 WCAR (1941-1942), 6.

in 1946, the county supervised construction of the road as an agent for the state highway department, which was responsible for letting contracts on the new state routes. These roads would add to the 245 miles of trunk-line system that the state already maintained within Wayne County, 81 miles of which was in Detroit.⁶⁸

The board also continued to develop parkways, the non-commercial counterpart to the expressways. It initiated a major park expansion in 1945 with acquisition of 125 acres between Warren Avenue and the Outer Drive, thereby connecting the Middle Rouge Parkway with Detroit's Rouge Park. At the same time, Edward N. Hines Drive was extended east from Newburgh to Warren Avenue, and plans were advanced for the Lower Rouge Parkway. Since parkway grades were typically separated from other traffic, parkway development meant a good deal of work for the county bridge engineers. The E.N. Hines Drive extension alone called for construction of eleven structures.⁶⁹

Both the expressways and the parkways expanded the distance commuters could travel in a given time, opening up rural areas to suburban development. This coincided with a period of intense demand for new housing from the returning military forces. Housing construction had ground to a halt in the 1930s because of the Depression, and remained minimal in the early 1940s when materials were dedicated to the war effort. Personal automobile use had been restricted during the same period by lack of money and, later, by rationing of gas, rubber, and other materials. With the end of World War II, Americans demanded payback for their sacrifices. FHA and VA loans helped spur a construction boom of unprecedented dimension as both urban and rural families were drawn to the suburbs. During the 1940s, the population of Wayne County jumped from two million to over 2.4 million, while the greater metropolitan region including Wayne, Oakland and Macomb counties grew from 2.4 to over three million. The fastest rate of growth was outside the city limits of Detroit. Suburban sprawl transformed cars from a luxury into a necessity: the three metropolitan counties accounted for almost 50 percent of the state's automobile registrations.⁷⁰

Eventually, during the latter half of the twentieth century, the responsibilities of the Wayne County Road Commission were absorbed by the Wayne County Department of Public Services. As Wayne County evolved, a number of roads and bridges were widened. Aging structures have undergone renovation, often losing original railings and light standards. Such damage to historical integrity has caused a number of bridges to be excluded from the Michigan Historic Bridge Inventory. The following lists provide a representative sample of bridges in Wayne County. The majority of the structures were built by the county; some examples of local and state construction are included as well.

⁶⁸ 40 WCAR (1945-1946), 29-31.

⁶⁹ 39 WCAR (1944-1945), 33, 80.

⁷⁰ Oakland County Planning Commission, *Wagon Roads to Expressways* (N.p.: Oakland County Planning Commission, 1955), 13.

Representative Examples of Wayne County Bridges

East River Road	N. Hickory Canal	Grosse Ile S/Groh	1945	201
Gibraltar Road	Frank & Poet Drain	E/Jefferson	1933	104
Graham Road	Upper Rouge River	Redford W/Telegrph	1947	201
Haggerty Road	Middle Rouge River	Plymouth Township	1949	302
Harbin Drive	Silver Creek Canal	Brownstown W/Jeff	1930	111
Henry Ruff Road	Lower Rouge River	In Westland	1947	201
Horse Mill Road	Thorofare Canal	Grosse Ile E/Meridn	1937	402
Jefferson Avenue	Rouge River	Detroit/Rouge River	1922	316
Jefferson Avenue	Silver Creek	Brownstown S/Cam	1927	302
Jefferson Avenue	Monguagon Creek	Riverview N/Sibley	1927	104
Jefferson Avenue	Huron Creek	Brownstown Cty Ln	1930	302
Jefferson Avenue	Ecorse River	Ecorse/Wyandotte	1931	104
Korte Avenue	Fox Creek	Betw. Alter/Ashland	1922	111
Lilley Road	Lower Rouge River	Canton N/Michigan	1933	344
M-102 (Base Line)	Rouge River	0.1 m. W/US-24	1931	532
M-102 (Base Line)	Plum Creek	.5 m E/US-24	1931	111
Newburgh Road	Lower Rouge River	Wayne N/Michigan	1951	101
Northville Road	Middle Rouge River	Plymouth Twنش	1921/1953	201
US-24	Rouge River	In Dearborn	1937	302
Venoy Road	Lower Rouge River.	Wayne N/Michigan	1937	302
Waltz Road	Huron River	S/Hines(New Bost)	1924	344

Grade Separations

Adelaide	Grand Trunk RR	Orleans-St. Aubin	1929	342
Antietam	Grand Trunk RR	Orleans-St. Aubin	1929	342
Chestnut	Grand Trunk RR	Orleans-St. Aubin	1930	342
Division	Grand Trunk RR	Orleans-St. Aubin	1929	342
Fort Street	Pleasant and N&W	Conrail	1928	302
M-3 (Gratiot Ave.)	GTW Railroad	Detroit	1929	342
Industrial Road	Dix Road	Dearborn N/Miller	1930	342
US-24	Conrail	4.5 miles N/Flat Rk	1935	332
Ecorse Road	N & W RR	Taylor E/Telegraph	1936	302
Miller Road	M-153 (Ford Road)		1940	402

Parkways / Parks

Old M-14 (Plymouth)	Middle Rouge River	Livonia	1925	111
Wilcox & Hines	Middle Rouge River	Plymouth T N/Plym	1933	219
Six Mile Road	Middle Rouge River	Northville T W/Nort	1933	107
E.N. Hines Drive	Middle Rouge River	Westland W/Merrim	1948	201
E.N. Hines Drive	Middle Rouge River	Westland E/Merrim	1952	201

E.N. Hines Drive	Beech/Daly Road	Dearborn Heights	1953	332
Six Mile Road	E.N. Hines Drive	Northville T N/Nor	1933	107
Wayne Road	E.N. Hines Drive	Livonia N/Ann Arb	1947	207
Merriman Road	E.N. Hines Drive	Westland N/Warren	1951	107
Inkster Road	E.N. Hines Drive	Dearborn Ht/Westld	1953	107
Middle Belt Road	E.N. Hines/Middle Rouge	Westland S/Ann Arb	1953	207
Spinoza Drive	Rouge River	Rouge Park	1930	342
Tireman Avenue	Rouge River	Rouge Park	1930	342
John Daly Road	Rouge River	N/Michigan Ave.	1935	101
Outer Drive	Upper Rouge River	Detroit S/I-94	1927	104
Outer Drive	Lower Rouge River	Dearborn N/Mich	1930	111
Grosse Ile Parkway	West River Road	Grosse Ile E/Trent	1932	104
Parke Lane Road	Thorofare Channel	Grosse Ile	1930	104
West River Road	Thorofare Canal	Grosse Ile N/GIP	1935	352
S. Pointe Drive	Swan Island Canal	Grosse Ile	1939	104
Gibraltar Road	Waterway Canal	Gibraltar	1932	104
Casino Way	Canoe Stream	Belle Isle	1947	107
Central	Canoe Stream	Belle Isle	1947	302
Inselruhe	Canoe Stream	Belle Isle	1901	342
Oakway	Canoe Stream	Belle Isle	1913	107

EARLY HIGHWAY DEPARTMENT BRIDGES

A more detailed description of early Michigan State Highway Department history is contained in the preceding narrative overview on the evolution of Michigan's roads and bridges. Counties known to have an early commitment to good roads include Alpena, Bay, Chippewa, Kalkaska, Manistee, and Mason.⁷¹ These counties are the most likely to reveal early examples of standard state design, which is of interest from an historical, as well as an engineering, perspective. Bridges with the default date of 1900, and those dating from 1905 through 1913, will be included from these counties⁷²:

Kalkaska	Glade Valley Road	Rapid River	1 m. E/Rapid City	1910	372
Kalkaska	Kniss Road	NB Manistee	2 m. E/Sigma	1910	372
Kalkaska	Aarwood Road	Rapid River	1.5 m. NW/Rapid City	1913	505
Manistee	Psutka Road	Betsie River	5 m. NW/Copemish	1900	302
Manistee	Leffew Road	Big Bear Cr	5 m. SW/Copemish	1910	362
Mason	Stephens Road	S Br Lincoln	2.5 m. N, 1 m. E/Custer	1900	302
Mason	Reek Road	NB P.M. Riv	2 m. E, 1.5 m. S/Custer	1900	302
Mason	Cabana Road	NB Pentwatr	9 m. S, 1 m. W/Scottville	1900	372
Mason	Darr Road	Big Sable R	11 m. N, 1 m. E/Scottville	1900	303
Mason	Stephens Road	Big Sable R	1 m. E, 1 m. N/Freesoil	1900	302
Mason	LaSalle Road	Big Sable R	10.5 m N, 1 m W/Scottville	1900	310
Mason	Hawley Road	SB P.M. Riv	5 m. S, 2 m. W/Branch	1900	303
Mason	Hawley Road	Carr Creek	5 m. S, 2 m. W/Branch	1900	302
Mason	Tyndall Road	Little Sable	7 m. E/Fountain	1900	302
Mason	Decker Road	S Br Lincoln	2.5 m. N, 1 m. E/Custer	1900	302
Mason	Darr Road	S Br Lincoln	4 m. N, 1 m. E/Scottville	1900	310
Mason	Darr Road	N Br Lincoln	4 m. W/Fountain	1900	310
Mason	Tuttle Road	N Br Lincoln	3 m. W, .5 m. N/Fountain	1900	362
Mason	Fisher Road	Lincoln Riv	4 m. W, 4.5 m. N/Scottville	1900	303
Mason	Victory Corner Rd	N Br Lincoln	4 m. W, 4.5 m. N/Scottville	1900	302

⁷¹ Rogers, "Twenty Years Work," 5.

⁷² No bridges from this period survive in Alpena, Bay, or Chippewa counties.

TOURISM'S INFLUENCE ON ROADS AND BRIDGES

Michigan's varied and dramatic landscape has long attracted visitors. The economic impact of tourists was evident to the state's energetic entrepreneurs from the outset. In the nineteenth century, boats and trains gave relatively easy access to some remote areas. It was not until the advent of the automobile age, though, that the true scale of tourism began to be realized. J. Carl McMonagle, a planning and traffic engineer for Michigan's highway department, wrote in 1948 that "the motor car and the highway have transformed the character of recreation and have given a tremendous impetus to the tourist business. Reciprocally, the tourist business has had a strong influence in shaping important aspects of highway development in this state."⁷³

In the late 1910s and early 1920s, as car ownership burgeoned, organizations formed to promote the state's attractions. The Michigan Tourist and Resort Association, with headquarters in Grand Rapids, focused on western and northern Michigan. It was joined by the Flint-based East Michigan Travel and Resort Association, which promoted eastern and northeastern sites accessible from the Dixie Highway and the East Michigan Pike. Other good-roads groups, like the Detroit Automobile Club, also encouraged tourist travel. By 1925, a representative of the East Michigan group claimed that tourism was the third-largest industry in the state, surpassed only by manufacturing and agriculture. In the Upper Peninsula, tourism increased from a handful of visitors in the mid-1910s to nearly 150,000 in the summer of 1924. In that same year, the Michigan Tourist and Resort Association reported a 50-percent jump in activity, despite bad weather. In 1925, to further advance the area, the group dedicated \$100,000 to advertising. The industry's inherent boosterism must be viewed with some skepticism. A report on the annual meeting of the American Automobile Association in 1927, for example, asserted that "delegates brought news of the greatest flow and counter-flow of humanity the world has ever known." Regardless of the reliability of some of the industry's claims, however, tourism was clearly a significant factor in the state's economy, and had a major influence on highway department planning.⁷⁴

The West Michigan Pike (originally M-11, later US-21), which followed Lake Michigan north, enticed "the millions who swelter in Chicago's heat in the summer time and are [also] looking for winter sports." The East Michigan Pike, another scenic route leading to the Straits of Mackinaw, drew travellers from Detroit and points beyond. M-14 (US-27), on a north-south alignment through Lansing, traversed the middle of the state to reach Mackinaw City. By the

⁷³ J. Carl McMonagle, "Effects of the Tourist Business on the Michigan Highway System," *Michigan Roads and Construction* 45 (1 April 1948): 24.

⁷⁴ "Promoting Tourist Travel," *Michigan Roads and Forests* 16 (May 1920): 2-3; "No Mean Business' Flint Men Told of Tourist Trade," *Michigan Roads and Pavements* 22 (5 February 1925): 3; "Forty Million Tourists to Spend Three and One-third Billions [in] 1927," *Michigan Roads and Pavements* 24 (31 March 1927): 4; E.D. Tucker, "Good Roads have Opened the Way to Upper Peninsula's Splendid Attractions," *Michigan Roads and Pavements* 22 (January 1925): 70; "Sees Michigan on Verge of Boom because of its Roads," *Michigan Roads and Pavements* 21 (9 October 1924): 3.

mid-1930s, one of the highway department's highest priorities was improving these three routes to encourage greater tourism. For the shoreline roads, designers aimed to have the Great Lakes within view at least half of the time.⁷⁵

Intrastate routes developed, at least in part, with the tourist in mind, include the Cloverland Trail (now US-2 and US-41) across the Upper Peninsula, most of which had been at least somewhat improved by the late 1910s. The same was true for the "Wolverine Paved Way," which essentially followed the nineteenth-century Grand River Road from Detroit to Grand Rapids. Not wanting to be left out of the boom, commercial interests from Muskegon to Saginaw created the Rainbow Trail Association in the late 1920s to promote a direct east-west route between the two cities. While these and other routes played an important role for ordinary commercial traffic, one of their primary legacies was to stimulate tourism throughout the state.⁷⁶

Many of these roads connected with cross-country routes. One of the earliest was the Dixie Highway, which appropriated the East and West Michigan pikes as a scenic loop. The Theodore Roosevelt Highway linked St. Ignace to Duluth, Minnesota, and, ultimately, Portland, Oregon. The Taft Memorial Highway, created in the 1930s, stretched from Fort Meyers, Florida, to Sault Ste. Marie. Michigan's highway department continually upgraded the roads and bridges along these important visitor routes. It issued state maps annually, and sometimes even more often during the summer to provide up-to-date information on road conditions. One of the department's major innovations in the early 1930s was the accordion-fold map, which was easier to use in the confines of an automobile. In addition, the department opened the country's first tourist information station on US-12 near New Buffalo, the state's southwestern entry point, in the 1930s. The experiment proved so successful that plans were immediately drafted to open new stations at Menominee, Monroe, and Sault Ste. Marie by the following summer. The department also focused on roadside beautification, planting trees and creating picnic areas.⁷⁷

As the twentieth century progressed, intrusions from lumbering, mining, and other developments began to threaten the natural beauty that lured visitors to the state. Ironically, the increase in tourism significantly depleted fish and wildlife, and damaged sensitive natural

⁷⁵ Article from *Traverse City Record Eagle*, 15 December 1939, reprinted with the title "Asks Public Support for State Highways" in *Michigan Roads and Construction* 36 (21 December 1939): 2; Van Wagoner, "The Michigan Highway Program," 10; 16 SHDBR (1935-1936), 15.

⁷⁶ D.A. Thomas, "Michigan's Trunk Line System," *Good Roads* 51/13 (16 June 1917): 350-351; D.A. Thomas, "Large Mileage to be Added this Year to Michigan's Improved Roads," *Good Roads* 51/13 (31 March 1917): 199-200; "Wolverine Paved Way Across State," *Michigan Roads and Forests* 16 (July 1920): 9-10; "'Rainbow Trail Association' to Boost Muskegon-Saginaw Highway," *Michigan Roads and Pavements* 25 (28 June 1928).

⁷⁷ "Handicap to Touring in Upper Peninsula," *Michigan Roads and Forests* 17 (June 1921): 8; "Pave M-14 to the Straits," *Michigan Roads and Pavements* (January 1925): 11; "New Highway Booms Resort Area in Berrien County," *Michigan Roads and Pavements* 25 (26 April 1928): 10; Van Wagoner, "The Michigan Highway Program," 10; 16 SHDBR (1935-1936), 15.

areas. By the 1920s, conservation efforts were advancing. Governor Fred Green joined the cause in 1927 by declaring that "a live deer, as far as advertising is concerned, is worth a truck load of dead bucks."⁷⁸

State parks were established to protect attractive areas and make them accessible to state residents and tourists. By the early 1930s, the state system included 71 parks, of which 54 were improved for public use. Access became a priority with the aid of state legislation passed in 1929, which authorized the Highway Department to create trunk highways to and through state parks. Connections to Bay City, Hartwick Pines, Walter J. Hayes, Interlochen and Orchard Beach parks were among the first to be improved. In the Upper Peninsula, routes were upgraded from Silver City to the Porcupine Mountains and from Manistique to Big Spring. The parks proved extremely popular. In 1931, for example, the state system boasted ten million visitors, "a figure almost three times greater than the number that visited or utilized all the National Parks in the entire country during that period."⁷⁹

Prior to World War II, tourism was estimated to gross about \$400 million. That sum jumped to over \$500 million after the war, when the state's income from tourism was reportedly second only to the automotive industry. Tourists logged 1.5 billion miles in Michigan in 1946, accounting for one-tenth of the state's highway traffic in that year. Despite the highway department's industrious efforts to meet the demand, a survey of vacationers conducted by the Michigan Tourist Council found road deficiencies the third-highest source of complaints: "They even received more brickbats than the disappointing fishing conditions."⁸⁰

Documentary evidence ties each of the following bridges to growth of the tourism industry.

Dixie Highway

Monroe	M-125	Raisin River	In Monroe	1928	532
Saginaw	Dixie Highway	Cass River	1 m. N/Nott Road	1931	303

Huron Shore Road (US-23)

Alpena	US-23	Long Lake Cr	4.4 m. S/Presque Isl	1939	104
Cheboygan	US-23	Cheboygan R	Cheboygan (State S)	1940	316
Iosco	US-23	Private RR	2 m. N/Arneac Co	1931	302
Iosco	US-23	Private RR	2.2 m. N/Arneac C	1931	302
Monroe	US-23 SB	Saline River	Milan	1948	302

⁷⁸ "Governor says Tourist Industry is One of State's Greatest," *Michigan Roads and Pavements* 24 (24 November 1927): 10.

⁷⁹ 14 SHDBR (1931-1932); McMonagle, "Effects of the Tourist Business," 24.

⁸⁰ McMonagle, "Effects of the Tourist Business," 25; Walter O. Dow, "Effect of the Tourist Business on the County Road System," *Michigan Roads and Construction* 45 (1 April 1948): 28.

Presque Isle	US-23	Swan River	1.8 m. NW/M-65	1939	532
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M-14/US-27

Eaton	US-27 BR	Battle Creek	Charlotte	1921	111
Gratiot	US-27BR(Superior)	Pine River	Alma	1928	204
Roscommon	Old US-27	Muskegon R	S10/T23N/R4W	1947	332

Cloverland Trail (US-2/US-41)

Baraga	US-41	Sturgeon Riv	1.4 m. S/Alberta	1947	322
Gogibec	Old US-2	MB Ontonagon	Sec 21 Watersmeet	1919	121
Gogibec	Old US-2	Cisco B Ontonagon	Sec 15 Watersmeet	1927	352
Gogibec	Old US-2	Tenderfoot Creek	Sec 31 Marinesco	1927	302
Mackinac	US-2	Brevort River	SE/Brevort	1935	302
Mackinac	US-2	WCL Railroad	5 m. W/M-117	1938	302
Mackinac	US-2	Cut River	4.3 mi. NW/Brevort	1947	309
Keeweenaw	US-41	Fanny Hooe Cr	1 m. E/M-26	1928	111
Menominee	US-41	Menominee River	Menominee/WI line	1929	352
Menominee	US-41	C&NW/E&LS RR	Menominee/WI line	1929	104

Taft Memorial Highway

Lenawee	M-156	Silver Creek	Morenci	1935	302
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Associated with Parks, Forests, or Recreational Areas

Allegan	M-40	Rabbit River	In Hamilton	1935	332
Antrim	M-88	Intermediate River	In Bellaire	1932	302
Bay	State Park Road	Kawkawlin River	2 m. N/Bay City	1929	352
Berrien	N. Watervliet Road	Paw Paw Lake Outlt	1 m. N/Watervliet	1916	111
Chippewa	M-123	Tahquamenon River	4.8 m. S/Paradise	1952	332
Chippewa	M-134	Albany Creek	.8 m. W/M-48	1947	302
Crawford	M-72	Manistee River	7.4 m. W/Grayling	1932	332
Crawford	I-75BL/M-72	Au Sable River	Grayling	1934	302
Gogebic	M-64	W Br Presque Isle R	S/Marenisco	1928	121
Gogebic	US-2	Little Black River	Wakefield	1947	302
Gogebic	US-2	Black River	2 m. E/Bessemer	1947	302
Gogebic	US-2	Sunday Lake Outlet	Wakefield	1947	302
Gogebic	US-2	Diversion Ditch	W/Wakefield	1946	104
Gogebic	US-45	Ontonagon River	N/Watersmeet	1953	104
Gogebic	US-45	Duck Creek	S/Watersmeet	1948	302
Gr.Traverse	US-31	Cedar Hedge Creek	1.6 m. E/Benzie Co	1927	505

Gr.Traverse	US-31	Tonawanda Creek	.9 m. E/M-137	1927	505
Gr.Traverse	US-31	Boardman River	Traverse City	1951	382
Gr.Traverse	Union Street South	Boardman River	Traverse City	1931	352
Huron	M-25	Rock Falls Creek	S/Harbor Beach	1935	302
Huron	M-25	Elm Creek	N/White Rock	1935	302
Huron	M-25	Ocha Creek	5.3 m. N/M-142	1953	104
Huron	M-25	Harbor Beach Creek	3.4 m. N/M-142	1953	104
Iosco	M-55	Br Au Gres River	4 m. E/M-65	1954	332
Iosco	M-65	Br Hale Creek	S/Hale	1952	302
Iosco	M-65	Johnson Creek	2.8 m. N/Arneac Co	1950	302
Iosco	M-65	Au Gres River	1 m. S/M-55	1951	402
Iosco	M-55	Au Gres River	.8 m. E/County line	1929	302
Iosco	M-55	Au Gres River	1 m. E/County line	1929	302
Iron	FR-157	Tamarack River	3.5m NW/Elmwood	1918	101
Iron	Old US-141	Hemlock River	.2 mi s Amasa	1924	121
Jackson	Denton Rd	Sparks Fdn Park Pd	Nr Cascades(Jacksn)	1931	302
Lake	US-10	Baldwin Creek	.9 m. E/Baldwin	1931	332
Leelanau	M-204	Lk Leelanau Narrows	Lake Leeaneau	1939	302
Macomb	Jefferson Avenue	Salt River	.3 m. N/SugarBush	1928	302
Manistee	M-55	Pine River	4.2m W/Wexford ln	1934	309
Mecosta	M-20	E Br Little Muskegn	Mecosta	1926	121
Misaukee	M-66	Clam River	3.6 m. N/McBain	1929	302
Misaukee	M-55	Muskegon River	1.8m W/Roscommn	1935	332
Monroe	US-24	Swan Creek	4 m. SW/Wayne Co	1922	303
Monroe	US-24	Little Swan Cr	4.2 m. SW/Wayne	1922	303
Monroe	US-24	Plum Creek	1 m. SW/M-50	1924	104
Monroe	US-24	Otter Creek	4.1 m. SW/M-50	1924	111
Oakland	I-96	Huron Riv	.5 m. E/Livingston	1948	332
Ottawa	Fruitport Rd	Petty's Bayou	.6 m. N/State	1948	302

BRIDGES OF THE DEPRESSION

Depression-era relief projects focused on employment. As a result, a large percentage of the funding for these programs was earmarked for labor, with little money provided for acquisition of materials. Project administrators were forced to use readily available raw materials, such as timber and stone, that could be obtained by work crews. About two-thirds of the 124,000 bridges throughout the country that were built or improved by W.P.A. forces between 1935 and 1943 were made of timber. Timber and masonry structures typically spanned about 30 feet; steel bridges averaged 50 feet in length.⁸¹

One characteristic of the relief programs was their geographical focus. A government strategy concentrated projects where unemployment was highest, namely near intensely industrial areas such as Detroit and Grand Rapids, and the mining region in the Upper Peninsula. Another tactic was to disperse the unemployed to rural areas. Here, they could enjoy healthier surroundings than the congested inner city. They would, at the same time, be less likely to disrupt the uneasy social balance of the era. In Michigan, shoreline roads were one of the larger beneficiaries of relief funding, receiving \$6 million of the \$20.6 million dedicated to highway improvements in 1935. About \$3.58 million of this sum went to projects in the Lower Peninsula and \$2.76 million to the Upper Peninsula. Most of the money financed trunk-line realignments, paving, and grading.⁸²

Houghton County offers an example of the tremendous impact of federal relief programs on road improvements. In the fiscal year ending in August 1936, the W.P.A. produced nine bridges, in addition to a substantial amount of road construction and repair. The county's annual report claimed "that there is hardly a section in all of Houghton County's one thousand square miles of area that has not appreciably and permanently benefited[sic] from these improved highways." In the same year, St. Clair County received support from the P.W.A. for three bridges, one over Mill Creek in Clyde Township and two over Belle River in Chica Township. In addition, with assistance from the W.P.A., the county installed "448 culverts, built four new bridges and extended two bridges."⁸³

Iosco County provides another illustration of the scope of work completed during this period. Between 1933 and 1935, the county "had a bridge crew rebuilding all bridges that were unsafe as rapidly as funds would permit," according to J.N. Sloan, the county engineer. Thanks to this highly focused effort, "about 80 per cent of all of our structures have been rebuilt of

⁸¹ U.S. Federal Works Agency, *Report on the Progress of the W.P.A. Program* (Washington, D.C.: Government Printing Office, 1941), 67; U.S. Federal Works Agency, *Final Report*, 53.

⁸² "Six Million Being Spent on Shoreline Roads," *Michigan Roads Construction* 32 (17 October 1935): 44.

⁸³ "Houghton Co. Benefits from WPA Road Program," *Michigan Roads and Construction* 33 (12 November 1936): 46; "St. Clair County to Build Three PWA Bridges," *Michigan Roads and Construction* 33 (12 November 1936): 42.

concrete and steel." While it is unclear if this work was funded by a relief program, the rapid progress was undoubtedly catalyzed by the abundance of cheap labor.⁸⁴

The Baldwin Street Bridge in Big Rapids, while apparently no longer extant, reflects the type of renovation project undertaken by the W.P.A. Consisting of a 76-foot pony truss and two through trusses, one 108 feet long and the other 96 feet, this 1888 bridge was "reconditioned, strengthened, and painted" as a W.P.A. project in 1938.⁸⁵

The period of significance for bridges evaluated under this context begins in 1931, since Michigan initiated a relief program in that year, prior to federal action. The period continues through 1942. By this time, the economy was improving, fueled by preparations for war, and most federal relief efforts were winding down.

Several approaches are used to evaluate bridges of this era. The first examines possible surviving examples of timber construction. Secondly, representative shoreline road bridges from the period will be examined. Individual bridges identified by archival research will also be included. Finally, bridges will be reviewed in selected counties where federal-relief programs are well documented.

Timber Bridges

Berrien	Private	Unknown	Unknown	1932	710 ?
Gogebic	Kusisto Road	Black River	Sec 34 Bessemer Twp	1940	702
Iosco	Curtis Road	Smith Creek	.1 m. W of Allen Road	1931	771
Montcalm	Vickeryville	S Br Pine Riv	Co. Rd. 575(.02 m S Edga)	1934	700
Presque Isle	Old State Rd	Thompson Creek	24 m. E of Millersburg	1940	702
Sanilac	Hoadley Rd	N Br Cass R Dm	Sec 16-17 Greenleaf Twp	1940	771
St. Clair	Long Island	unnamed canal	Sec 22 Ira Twp	1938	771
Tuscola	Ringle Road	Wiscoggin Drain	Sec 15-16 N Akron Twp	1942	702

Shoreline Bridges

Bay	M-13/M-38	E Channel Saginaw	Bay City (Lafayette Ave.)	1938	316
Bay	M-13/M-38	W Channel Saginaw	Bay City (Lafayette Ave.)	1938	482
Cheboygan	US-23	Cheboygan River	Cheboygan(State St.)	1940	316
Huron	M-25	Rock Falls Cr	S of Harbor Beach	1935	302
Huron	M-25	Elm Creek	N of White Rock	1935	302

⁸⁴ "WPA Surfacing Program is sought by Iosco County," *Michigan Roads and Construction* 32 (17 October 1935): 44.

⁸⁵ Advertisement for F. Yeager Bridge and Culvert Works in *Michigan Roads and Construction* (29 February 1940): 8.

Iosco	US-23	Private RR	2 m. N Arneac Co line	1931	302
Iosco	US-23	Private RR	2.2 m. N Arneac Co line	1931	302
Mackinac	US-2	Brevort Riv	SE of Brevort	1935	302
Mackinac	US-2	WCL RR	5 m. W of M-117	1938	302

WPA and Other Relief Program Bridges

Chippewa	Easterday Ave.	Ashmun Cr	Sault Ste. Marie	1935	342
Chippewa	Riverside Dr	Mission Cr	Sault Ste. Marie	1935	332
Crawford	M-72	Manistee Rv	7.4 m. W of Grayling	1932	332
Gratiot	N State St	Pine Riv	Alma	1938	402*
Isabella	Millbrook Rd	Pony Cr	.4 m. W SE cor S35 T14	1939	302*
Isabella	Shepherd Rd	Potter Cr	.02 m. S NE cor S32 T14	1939	302*
Isabella	Shepherd Rd	Onion CrDm	.1 m. S NE cor S20 T14	1939	362*
Isabella	Vendecar Rd	Thatcher Cr	S26-27 Freemont Twp	1939	362*
Ionia	Cleveland St	Grand R	South limit Ionia	1931	104
Kalkaska	US-131	Boardman R	S limits Kalkaska	1940	104
Manistee	M-55	Pine River	4.2 m. W of Wexford line	1934	309*

* Indicates possible WPA involvement.

Selected Counties

Houghton	M-38	Sturgeon WB	2.7 m. W/Baraga Col.	1934	302
Houghton	M-38	Silver River	.7 m. W/Baraga Col.	1934	402
Houghton	US-41	Snake R Bur	3.7 m. SE/ Chassel	1934	104
Houghton	Township Park Rd	Traprock Riv	2 m. S/1 m. E Copper City	1938	302
Iosco	US-23	Private RR	2 m. N/Arenac Co. Line	1931	302
Iosco	US-23	Private RR	2.2 m. N/Arenac Co. Line	1931	302
Iosco	Swan Rd (Davison)	Silver Creek	1625 ft. E/Brooks Road	1935	302
Iosco	Brooks Road	Silver Creek	600 ft. S/Curtis Road	1935	342

Note: In 1939, the St. Clair County highway engineer observed that "experience over the past few years indicate[s] that we should confine [federal relief] projects to fence moving, brushing, grubbing, ditching, some types of culvert work, and trimming grades."⁶⁶ As a result, the appropriate period of significance for analysis of this context in St. Clair County ends in 1939.

St. Clair	M-19	Belle River	.3 m. N/Macomb Co. Line	1932	352
St. Clair	M-19	Cowhey Cr	1.8 m. S/M-21	1936	104
St. Clair	M-25	Black R Spl	In Port Huron	1932	302

⁶⁶ "St. Clair County Road and Bridge Program Summarized," *Michigan Roads and Construction* (28 December 1939): 22.

St. Clair	Gratiot Road	Richmd-Col	Sec 32, Columbus Twnship	1931	104
St. Clair	Gratiot Road	Belle River	Sec 32, Columbus Twnship	1932	302
St. Clair	Gratiot Road	Unnamed Cr	Sec 24, Columbus Twnship	1931	104
St. Clair	Gratiot Road	Unnamed Cr	Sec 18, St. Clair Township	1931	104
St. Clair	Gratiot Road	Rattle Run C	Sec 18, St. Clair Township	1931	104
St. Clair	Gratiot Road	Pine River	Sec 9, St. Clair Township	1932	302
St. Clair	Rattle Run Road	Pine River	Pvt Clm #307, St. Clair T	1931	302
St. Clair	Masters Road	Belle River	Sec 17/20, Riley Township	1935	302
St. Clair	Keewahdin Road	Howe Drain	Sec 17/20, Ft. Gratiot Twn	1935	105
St. Clair	Norman Road	Black River	Sec 29/32, Grant Township	1935	302
St. Clair	Capac Road	S Br Mill C	Sec 33/34, Lynn Township	1938	303
St. Clair	Capac Road	N Br Mill C	Sec 15/16, Lynn Township	1938	101
St. Clair	Riley Center Road	Belle River	Sec 17/18, Riley Township	1935	302
St. Clair	Palms Road	Casco Drain	Sec 23/24, Casco Township	1937	302
St. Clair	Cribbins Road	Pine River	Sec 30, Clyde Township	1935	302
St. Clair	Lakeshore Dr	Carrigan Dm	Sec 15, Ft. Gratiot Townsh	1936	104
St. Clair	Jeddo Road	S Br Mill Cr	Sec 4/9, Brockway Townsh	1939	302
St. Clair	Fisher Road	Burtch Creek	Sec 6, Burtchville Townsh	1931	302
St. Clair	Hessen Road	Jerome Cr	Sec 2/3, Casco Township	1937	372
St. Clair	Phelps Road	Swartout Dr	PC 198-309, Clay Townsh	1935	302
St. Clair	Genaw Road	Beaverdam D	Sec 21, Cottrellville Twn	1935	362
St. Clair	Pointe Dr	Unnamed Cn	Sec 24, East China Twn	1938	101
St. Clair	Krafft Road	Howe Drain	Sec 22/27, Ft. Gratiot Twn	1935	362
St. Clair	Comstock Road	Eves Drain	Sec 12, Greenwood Twn	1939	302
St. Clair	Vernier Street	Swan Creek	Sec 15, Ira Township	1938	103
St. Clair	Long Island Ct	Unnamed Cn	Sec 22, Ira Township	1938	771
St. Clair	Palms Road	Smiths Creek	Sec 25/26, Wales Township	1932	302
St. Clair	7th Street	Black River	In Port Huron	1933	316

BOMBERS AWAY: BRIDGE PROJECTS RELATED TO DEFENSE INDUSTRIES

The First World War prompted improvements to roads, rivers, and the concomitant bridges. The state dedicated \$5 million to fund war-related projects. One of the major benefactors was Monroe County, where the state spent \$80,000 to upgrade ten miles of a road "which many of the motor vehicles manufactured for the Government will have to use when they are taken to the seaboard under their own power." The Rouge River was straightened, widened, and deepened to permit large supply ships to reach Ford's new industrial complex in Dearborn, which produced Eagle boats for the war effort.⁸⁷

This was relatively insignificant, however, when compared to the activity generated by the onset of World War II. The country's first military road project under the new national defense program was at Fort Custer, a military training center, where a 2.6-mile, four-lane concrete highway replaced a World War I-vintage access road. New paving and grading, and construction of a railroad grade separation, improved the fort's link to Kellogg Airport and Battle Creek. The first phase of the project, which totalled \$200,000, gave only a slight indication of things to come. By 1942, defense-related road work proposed for Michigan totalled over \$36 million, of which the federal government had authorized \$12.7 million, funded in large part by the Defense Highway Act of 1941.⁸⁸

Strategic highway projects served industrial plants as well as military bases. Michigan's heavy industries made the state vital to the war effort. The most prominent industrial development was the Willow Run bomber plant near Ypsilanti. Designed to produce the massive B-24 bombers, the \$47 million complex included "its own airport, hangars, assembly building nearly a mile long, machine shop, power plant and offices." When the Ford Motor Company unveiled plans for the facility in February 1941, Michigan's highway department was confronted with a significant problem: "Here was the world's largest plant under one roof located more than 20 miles from its main source of labor." The Willow Run work force was projected to reach 100,000, mostly to be drawn from Detroit. Employee transportation was not the only logistical quandary confronting planners. A highway department survey in 1941 found that thirteen percent of Michigan's factories received all production materials by truck; over half relied on trucks to ship their finished product.⁸⁹

Almost three-quarters of the highway department's engineering staff focused on the problems of circulation around the plant and associated access roads, a road system christened the

⁸⁷ "The Construction of 10 mi. of Improved Roadway in Monroe County, Michigan," *Good Roads* 53/15 (13 April 1918): 205; Charles K. Hyde, *Detroit: An Industrial History Guide* (Detroit: Detroit Historical Society, 1980), 21.

⁸⁸ "Progress in All Fields," 2; "Fort Custer Highway," 3; 19 SHDBR (1941-1942), 80.

⁸⁹ George A. Harding, "World's Largest Bomber Plant under Construction by Ford Motor Company," *Michigan Engineer* 60 (Summer 1941): 8; 19 SHDBR (1941-1942), 59, 82.

Willow Run Expressway. As many staff left for military service, the department increasingly relied upon consulting engineers and the Wayne County Road Commission. In addition, the railroads assisted with developing track-highway grade separations. Together, these engineers responded quickly and creatively, designing a highway that reflected the unusual needs of the factory, such as the massive traffic movement at shift changes. Among the most innovative features of the expressway were two three-level, steel-girder grade separations. The only other structure of this type in the country was under construction at the same time on a highway serving the Pentagon in Washington, D.C.⁹⁰

In addition, the highway included seven three-span, continuous-concrete T-beam structures, and an underpass for the Michigan Central Railroad consisting of two timber stringer and two steel girder spans. The bridges were designed with an eye to both speed of construction and economy of critical materials. Engineers were also concerned about the appearance of the bridges and especially the railings, the feature most visible to the motoring public. Concrete was used whenever possible to conserve precious steel. Lester Millard, Michigan highway department bridge engineer, observed that "this group of bridges represents one of the most complex problems in design and detailing ever completed by the Bridge Division."⁹¹

Working closely with the road commissions in Wayne and Washtenaw counties, and with the federal Public Roads Administration, the highway department began awarding contracts for the roadway improvements in October 1941. Construction started immediately, even though the regular season for concrete work had ended two weeks earlier. Contractors improvised and innovated to keep the ground and materials from freezing. Later that winter, contracts were awarded for the remainder of the project, including construction of the final six grade separations. The speed with which one of the Willow Run tri-level grade separations was erected illustrates the urgency of the defense build-up: construction began the day after the contract was let on 11 February 1942, and the structure was completed by 1 August of that year.⁹²

The Detroit Industrial Expressway linked the urban labor market with the bomber plant. The unique traffic problems of the Detroit metropolitan area had long challenged transportation planners. By the late 1930s, it was clear that increasing traffic levels could not be adequately handled by widening surface streets, so Michigan's highway department began planning the Detroit Industrial Expressway. Construction was accelerated by the war. By mid-1942, most of the route had been surveyed, and contracts for 5.7 miles of road work and four grade

⁹⁰ 19 SHDBR (1941-1942), 52, 82; Lester W. Millard, "Design Features of Willow Run Structures," *Michigan Roads and Construction* 39 (15 October 1942): 8, 10.

⁹¹ 19 SHDBR (1941-1942), 52, 82; Millard, "Design Features," 8, 10.

⁹² 19 SHDBR (1941-1942), 82; G. Donald Kennedy, "The Access Highway System at Willow Run," *Michigan Roads and Construction* 39 (15 October 1942): 3-4; Speech by G. Donald Kennedy at dedication Willow Run access roads, 12 September 1942, carbon of typed copy in Box 1, G. Donald Kennedy Collection, Bentley Historical Library, University of Michigan, Ann Arbor.

separations had been awarded. Ultimately, this section required twelve highway grade separations, six highway-railroad separations, and two river crossings. Together, the Willow Run and Detroit Industrial expressways included two river crossings, 43 road grade separations, and eleven highway-railroad grade separations.⁹³

Although construction was rushed, the designers had long-term plans for the expressway, which was to connect with the proposed cross-town expressway in Detroit and, ultimately, with the Detroit to Chicago expressway. The highway was also tied to a beltway that provided a bypass south of Ypsilanti for travellers to Ann Arbor on US-112. In 1942, even as the fast-track design and construction for the Willow Run route was underway, State Highway Commissioner G. Donald Kennedy sought advice regarding the design from New York planner Robert Moses, who was particularly famous for work on parkways and other limited-access highways. Moses suggested that bridges be built four feet wider than specified in existing plans to accommodate future development of a third traffic lane. Although the Detroit Industrial Expressway was primarily on grade level, Moses recommended that the road be depressed when it was extended east through Detroit. He argued that this design would have a less detrimental effect on surrounding properties. The commission had considered single- and two-tier roadways, but ultimately elected a depressed design.⁹⁴

The road was opened from Hannan to Southfield roads in July 1943, and to Greenfield Road in November 1944. Ribbon-cutting ceremonies for the completed expressway, which stretched about 21 miles from the Willow Run Expressway to the intersection of Michigan and Wyoming avenues at the boundary between Dearborn and Detroit, were held 9 March 1945. Charles Ziegler, who had become head of the Highway Department in 1943, pronounced it "one of the finest highways in the nation – certainly Michigan's greatest contribution to highway construction." G. Donald Kennedy, who had become vice president of the Automotive Safety Foundation, observed that "today . . . Detroit's highway past meets Detroit's highway future." He accurately predicted that "once the people of Detroit drive over this new expressway, and industrial freight rolls over it on trucks, the demand for more of these roads will be irresistible."⁹⁵

While not on as large a scale, highways were also improved around a number of other important industrial facilities, including Eaton Manufacturing Company in Battle Creek; the Dashed Carter Factory in Benton Harbor; the Hudson Naval Arsenal and Chrysler Tank Plant

⁹³ 19 SHDBR (1941-1942), 84; 21 SHDBR (1945-1946), 57.

⁹⁴ Robert Moses to G. Donald Kennedy, typed report, 4 April 1942, Box 3, Sidney D. Waldon Papers, Burton Historical Collection, Detroit Public Library; Leroy C. Smith, "Wayne County Road Commission Activities, Plans," *Michigan Roads and Construction* (15 March 1945): 8.

⁹⁵ "Highways to War Plants Feature 1942 Program," *Michigan Roads and Construction* 39 (31 December 1942): 6; "Colorful Ceremonies Mark Expressway Opening," *Michigan Roads and Construction* 42 (15 March 1945): 3; "Michigan's Greatest Road System Cost \$26,000,000," *Michigan Roads and Construction* (15 March 1945): 4; Kennedy speech at opening of Detroit Industrial Expressway, 9 March 1945.

in Macomb County, immediately north of Detroit; the Dodge truck factory in Detroit; the Grand Blanc Tank factory and the Palace Coach Company near Flint; the Extruded Metals Corporation in Grand Rapids; Continental Motors in Muskegon; the Yellow Truck and Coach Company in Pontiac; and, in Saginaw, the General Motors plant.⁹⁶

Shortages of materials challenged the design skills of bridge engineers. Steel was particularly scarce, a problem that affected not only beam and girder bridges but reinforced concrete as well. Continuous concrete T-beam superstructures substituted for the more standard steel on larger bridges. H-piles used in semi-rigid frame structures were replaced by concrete-filled tubes in the M-29 bridge in Algonac. Timber, usually reserved for small-span bridges on lightly travelled routes, was called into service for more substantial structures. These included a bridge in Allegan carrying M-89 over the Kalamazoo River, and others south of Milan on US-23, near Negaunee on US-2/US-41, and at West Branch over the Rifle River. On the Allegan bridge, the 45-foot steel beam spans called for in the pre-war design were replaced by 15-foot timber stringer spans, supported by additional wood-pile bents.⁹⁷

Fort Custer

Calhoun	M-66	Wanondager Creek	3.2 m. SW/Barry C	1940	302
Calhoun	Col Avenue	Kalamazoo River	Emmett Twn, Sec 18	1940	302
Calhoun	Col Avenue	Raymond Road	Emmett Twn, Sec 8	1940	302
Calhoun	29-1/2 Mile	Kalamazoo River	Albion Twn, Sec 1	1940	319
Kalamazoo	S Avenue	Portage River	.8 m. N/Findian Lk	1940	302
Kalamazoo	E Michigan	Comstock Creek	In Comstock	1940	302

Willow Run Expressway / Detroit Industrial Expressway

Washtenaw	US-12 EB	Conrail	.9 m. W/Wayne Co	1944	204
Washtenaw	US-12 WB	Conrail	.9 m. W/Wayne Co	1944	204
Washtenaw	Wiard NB (UP)	US-12	1.4 m. W/Wayne C	1942	382
Washtenaw	US-12	Wiard Road SB	1.4 m. W/Co. line	1942	332
Washtenaw	Ford Ext D NB(UP)	US-12	.5 m. W/Wayne Co	1942	382
Washtenaw	US-12 (MID)	Ford Exit Dr SB	.5 m. W/Co. line	1942	332
Washtenaw	Tyler Road	Willow Run	Ypsilanti T, Sec 12	1942	201
Washtenaw	Lima Center	Mill Creek	Lima T, Sec 27/34	1941	302

⁹⁶ "Highways to War Plants," 6; Michigan State Highway Department, "Military Access Roads in Michigan: Notes and Data Concerning Immediate and Tentative Future Needs," June 1941, in Box 3, G. Donald Kennedy Collection, Bentley Historical Library, University of Michigan, Ann Arbor; G. Donald Kennedy, "Military Highways of Michigan," *Proceedings of the 27th Annual Highway Conference, February 19 - 21, 1941* (Ann Arbor: University of Michigan, [1941]): 49.

⁹⁷ 19 SHDBR (1941-1942), 53-54; "Highways to War Plants," 6.

Washtenaw	Guenther Rd	Mill Creek	Lima T, Sec 34	1944	302
Wayne	I-94 EB	Ecorse Creek	In Allen Park	1943	219
Wayne	I-94 WB	Ecorse Creek	In Allen Park	1943	219
Wayne	I-94 EB	Rouge River	S Lts/Dearborn	1943	332
Wayne	I-94 WB	Rouge River	S Lts/Dearborn	1943	332
Wayne	I-94 EB	Outer Dr	In Allen Park	1943	332
Wayne	I-94 WB	Outer Dr	In Allen Park	1943	332
Wayne	I-94 EB	Oakwood Blvd	In Allen Park	1943	204
Wayne	I-94 WB	Oakwood Blvd	In Allen Park	1943	332
Wayne	US-12(Michigan)	I-94 Ramp	In Dearborn	1944	332
Wayne	Ramp from US12EB	I-94	In Dearborn	1948	302
Wayne	US-12(Michigan)	I-94	In Dearborn	1948	352
Wayne	Ramp to US-12	I-94	In Dearborn	1948	302
Wayne	Ann Arbor Tr	N Branch Rouge R	In Dearborn Heigts	1943	402

Modified Materials

Allegan	M-89	Kalamazoo River	In Allegan	1943	302
St. Clair	M-29	Marine City Drain	In Algonac	1942	302

Other Bridges Potentially Related to the World War II Defense Industry

Since road and bridge construction virtually stopped during World War II, except for projects related to defense industry transportation, bridges built between 1942 and 1945 have the potential for Criterion A significance under this context. Few from this era, however, could be linked by archival research to the defense built-up.

Muskegon	US-31 BR EB	Muskegon River	In Muskegon	1944	201
St. Joseph	M-60/US-131	Rock River Race	In Three Rivers	1942	104
Van Buren	I-196BL	Black River	.2 m. S/Allegan Co	1941	302

MICHIGAN'S INNOVATIVE EXPRESSWAYS

One of the precursors of the modern freeway was the "superhighway," a term apparently coined in the 1920s. The concept was popularized in Detroit in 1923-1924 when the Rapid Transit Commission distributed a master plan for the metropolitan area's road system. Rights-of-way for superhighway routes were set at 204 feet; 120 feet was considered adequate for other section line roads, and 86 feet for quarter-section roads. The Wayne County Road Commission adopted the plan in 1925, and began developing the road network of superhighways in conjunction with Detroit and other local communities, as well as neighboring Oakland and Macomb counties. The 165-mile system adopted the existing diagonal roads radiating from Detroit, as well as circumferential routes which Wayne County had started to establish. Originally, superhighway improvements stopped about six miles from the center of downtown Detroit. By 1930, planners recognized the wisdom of continuing into the city, and the county board had given the road commission authorization to proceed. Detroit, however, was unable to fund its share of planned state road improvements within the city, and the county was forced to take on that responsibility. As a result, the logical extension of the superhighway system in Detroit was delayed.⁹⁸

Soon the inadequacy of even the superhighways became evident. As early as 1934, the U.S. Congress passed legislation to initiate state highway surveys to aid long-term planning. By the late 1930s, the Wayne County Road Commissioners were voicing alarm about the repercussions of traffic congestion: "A city which pioneered motor transportation and which depends upon the automobile industry for its existence, is lagging behind other metropolitan centers, and the lack of highway facilities is rapidly becoming an economic barrier to Detroit's progress."⁹⁹ A more poetic -- and even more dire -- warning was sounded in a study issued by Michigan's highway department:

Detroit has a definite rhythmic movement, like the beating of a giant heart. Its streets are arteries, and its traffic is its life blood. In the morning the blood rushes into the heart, in the evening it is pumped out again into the body and limbs of the city. When the arteries harden the heartbeat weakens. Without its strong, replenishing pulse, Detroit will die.¹⁰⁰

The Wayne County Road Commission called for a network of limited-access "express" superhighways to accommodate the ever-increasing commercial and passenger traffic. Better roads could help revive Detroit's Depression-plagued economy by convincing companies to expand existing manufacturing facilities rather than move to other locations, and by attracting

⁹⁸ Shuptrine, "The Progress": 3; 34 WCAR (1939-1940), 10-11.

⁹⁹ 33 WCAR (1938-1939), 5-6; Michigan State Highway Department, *Highway Needs in Michigan*, 45.

¹⁰⁰ Michigan State Highway Department, *A Comprehensive Plan of Motorways for Detroit* (N.p., 1941).

new industry. Furthermore, in considering route layout, "there are numerous slum areas which could be cleared, thereby right-of-way costs would be reduced to a fraction of what they would ordinarily be."¹⁰¹

Michigan engineers received ideas regarding the new generation of highways from a number of sources. Murray Van Wagoner, Michigan's highway commissioner from 1933 to 1940 and governor from 1941 to 1942, toured the German Autobahn while attending the International Road Congress in The Hague in 1938. Upon his return, Van Wagoner observed that "Germany has the roads while we have the traffic. It seems to me that if Germany can build roads of this type, the United States, home of the world's automobile industry, can do the same." In the same year, he led a delegation from the state to New York City "to study the metropolitan method of grade separation to speed through traffic across congested areas." Michigan engineers were undoubtedly familiar with Long Island's Meadowbrook Causeway, the world's first limited-access, high-speed parkway, which had opened just a few months ahead of the Autobahn in 1934.¹⁰² Meadowbrook was among the many innovative developments undertaken during the reign of Robert Moses, an influential planner who transformed the face of New York in the first half of the twentieth century. In addition to New York, Van Wagoner visited the construction underway on the Pennsylvania Turnpike, the nation's first long distance, limited-access highway which opened in 1940.¹⁰³

In Detroit, three routes were under study. The state highway department was most interested in a route near Harper and McGraw avenues, since this alignment provided a logical link to the statewide highway system. Improvements to this route, in fact, had been advocated by the 1925 master plan. The Wayne County Road Commission preferred the "Mack-Myrtle Route," which was closer to downtown. Midway between these alternatives, another option appropriated the path of Warren Avenue. A pair of north-south routes would be intersected by another east-west highway near the river, thus completely encircling the city's center. The Detroit Common Council organized a committee with representatives from the city, county and state to recommend a plan of action.¹⁰⁴

Ironically, none of these alternatives were the first to come to fruition. Instead, by 1941, plans were laid to make a 1.3-mile stretch of Davison Avenue the state's first modern freeway. The route traversed Highland Park, a city completely surrounded by Detroit. It was probably

¹⁰¹ 32 WCAR (1937-1938), 7.

¹⁰² Parkways, unlike other limited-access roads, do not allow commercial traffic.

¹⁰³ "State Officials Eye N.Y. Road System," *Detroit Free Press*, 23 August 1938; J.D. Cruise to J. Carl McMonagle, Michigan State Highway Department, memo, 21 July 1942, in Record Group 58-5-A, Box 4, Michigan DOT Collection, Michigan State Archives, Lansing; photographs, Box 2, Murray Delos Van Wagoner Papers, Bentley Historical Library, University of Michigan, Ann Arbor; Seely, *Building the American Highway System*, 148, 152.

¹⁰⁴ 33 WCAR (1938-1939), 7-8; "Carrying Out the Master Plan," report by Advisory Committee to Detroit Common Council, submitted 2 October 1925.

no coincidence that the Ford Motor Company, long a promoter of road improvement, had significant property holdings in Highland Park. Upgrading Davison promised significant relief of the congestion around Ford's massive plant on Woodward Avenue. Heavily travelled Davison Avenue, the only east-west artery across Highland Park, also caused a bottleneck for a number of important north-south roads leading into downtown Detroit. By separating the grades of crossing traffic, planners hoped to eliminate daily traffic snarls.¹⁰⁵

The city and county signed a development agreement for the expressway in April 1941. The construction schedule was accelerated following the nation's entry into World War II, and the road was opened to traffic in November of the following year. The Davison Expressway consisted of six eleven-foot lanes, three for each direction, divided in the center by a six-foot median strip. Seven rigid-frame concrete bridges, erected at a total cost of \$607,000, carried local streets over the below-grade highway. The rigid-frame style was chosen, in part, because it used a relatively small amount of steel, a critical war material. Four of the bridges featured single spans of up to 77 feet in length. Two-span bridges, with spans of up to 42.5 feet, were used for the three roads with street-car lines. Single lanes between the sidewalk and the railing permitted U-turns for traffic on the grade-level surface roads that flanked the expressway. The \$3.6 million project was financed entirely with funds generated by county gas and other taxes. The *Detroit News* heralded the Davison as the "first depressed highway in the United States outside the New York area." In addition to ranking as one of the first modern freeways in the nation, the Davison was noteworthy for its development in a densely developed urban neighborhood.¹⁰⁶

At the same time, the Ford Motor Company caused a stir in rural western Wayne County by announcing plans to develop the Willow Run bomber plant. The massive facility, which straddled the border of Wayne and Washtenaw counties, was estimated to require 50,000 to 100,000 workers. Most would have to come from central Detroit, some 25 miles to the east. The round-the-clock construction of the bomber factory was matched by a similar effort for access roads. By late August 1941, the U.S. Public Roads Administration had approved the state highway department's design plans for access roads to the Willow Run plant. The first contract for construction was awarded in October. Federal aid funded three-quarters of the cost of the two road projects that connected Detroit to Willow Run. A seventeen-mile section, known as the Detroit Industrial Expressway, extended west and south from the Detroit city limits across a mostly rural landscape. Another sixteen miles of highway, the Willow Run Expressway, linked the Detroit Industrial Expressway to the factory. Part of the western end of the road near the bomber plant was opened to traffic in September 1942; by July 1943, a

¹⁰⁵ 34 WCAR (1939-1940), 6-7; 35 WCAR (1940-1941), 25-28; 36 WCAR (1941-1942), 4, 11-14; 38 WCAR (1943-1944), 7; Hyde, *Detroit*.

¹⁰⁶ The single-span bridges were erected at Third, Second, John R and Brush; two-span structures are at Hamilton, Woodward and Oakland. Good overviews of the expressway are provided by Shuptrine, "The Progress": 3-4; Board of Wayne County Road Commissioners, *Davison Limited Highway* (N.p., 1951 reprint); other details are in 34 WCAR (1939-1940), 6-7; 35 WCAR (1940-1941), 25-28; 36 WCAR (1941-1942), 4, 11-14; 38 WCAR (1943-1944), 7; *Detroit News*, 25 November 1942.

critical section extended east to Southfield Road, near the Ford plant in Dearborn. Development of these roads is described in more detail in the "World War II" contextual narrative.¹⁰⁷

While serving an immediate military need, the Willow Run and Detroit Industrial expressways were envisioned as part of a larger transportation system connecting Chicago and Toledo. The link to Detroit was the previously identified Harper-McGraw cross-town route. Later named in honor of Edsel B. Ford, this freeway was to stretch fourteen miles across Detroit from Dearborn northeast to the Macomb County line at Harper Woods. In combination with the Detroit Industrial Expressway and the Willow Run Expressway, this route ultimately became part of Interstate 94, connecting Chicago with the Canadian border at Port Huron, Michigan.

One of the proposed north-south expressways edging downtown Detroit also became a priority during this period. Initially known as the Sixth-Hamilton route after the roads it followed, it was subsequently named in honor of former Detroit mayor John C. Lodge. In January 1944, the Wayne County Road Commission, led by engineer Leroy C. Smith, made public a \$50 million plan for this route. With interchanges tying this route to the Ford and Davison expressways, and with the route flowing into the existing James Couzens superhighway, the beginnings of a modern freeway system emerged.¹⁰⁸

This activity was paralleled by national trends. The 1944 Federal Aid Highway Act called for creation of a National System of Interstate Highways connecting principal metropolitan areas. The law also included provisions for funding highway development and, for the first time, dedicated federal funds for urban highway construction. To match the federal allocation, the state agreed to pay 50 percent of the \$6 million annual budget, with Wayne County and the city of Detroit each shouldering 25 percent. When construction costs came in at about \$8 million a mile, much higher than anticipated, the inadequacy of the original funding level was soon recognized. By 1951, with the promise of more federal aid and pledges of revenue from gasoline and vehicle taxes, the state, county and city backed a bond sale grossing \$80 million to accelerate construction.¹⁰⁹

The state designed and supervised construction of the Ford Expressway, hiring the Wayne County Road Commission to oversee development of the Lodge Expressway. Both used the design of the Davison as a prototype, although some dimensions were slightly more generous. Like the Davison, the later roads consisted of a depressed roadway with three traffic lanes in each direction. The Davison's six lanes were eleven feet wide, with a central median of six feet. The Lodge and the Ford featured three twelve-foot lanes in each direction separated by

¹⁰⁷ Shuptrine, "The Progress": 4; report on "Detroit-Willow Expressway," n.a., n.d., Box 3, Record Group 58-5-A, MDOT Collection, Michigan State Archives, Lansing; Kennedy, speech, 9 March 1945.

¹⁰⁸ Shuptrine, "The Progress": 4; 38 WCAR (1943-1944), 9, 18-19.

¹⁰⁹ 46 WCAR (1951-1952), 37; 47 WCAR (1952-1953), 37; Michigan State Highway Department, *Detroit Expressways* (N.p., 1953); Michigan State Highway Department, *Detroit Expressways* (N.p., 1954).

a central median of twelve to fourteen feet, plus eight- to ten-foot "refuge" shoulders along the outer edges of the pavement. Grade-level planning again following the Davison's pattern: one-way service streets paralleled the expressways, and bridges traversed the eighteen-foot-deep depression at regular intervals for crossing traffic. These continuous steel-beam bridges accommodated two sidewalks and roadways as wide as the approaching streets and many, in addition, carried U-turn lanes. The Lodge ultimately required 36 structures and the Ford 70 structures, plus a total of 45 pedestrian overpasses. The Ford-Lodge interchange alone called for fourteen structures.¹¹⁰

The state began acquiring rights-of-way for the Ford Expressway after receiving the first federal allocation for the project in October 1945. Actual construction began in January 1947. Work on the first phase of the Ford Expressway extended about 5.3 miles east from its juncture with the Detroit Industrial Expressway at Wyoming Avenue, on the Dearborn-Detroit border, to John R, one block beyond Woodward. The section from Wyoming to Livernois avenues, which included bridges carrying those roads as well as Saxon Avenue and Lonyo Road, was the initial priority. It reached John R by 1955. Within a year, the average daily traffic count on this expressway had grown to 90,000 vehicles.¹¹¹

The first phase of the nine-mile-long Lodge Expressway extended north from First Street, near the Detroit River, to Pallister Avenue, just north of the Grand Boulevard beltline, a distance of about 3.4 miles. A bridge carrying Milwaukee Avenue, apparently the earliest highway structure surviving from the Lodge Expressway, opened to traffic in November 1948. Each of the two spans of this steel-beam structure measure approximately 55 feet. The concrete deck provides a 44-foot-wide roadway for Milwaukee Avenue flanked by 10-foot sidewalks. The construction contract, which was let in February 1948, included about a block of excavation for the nascent expressway. In the following September, a contract was awarded for building a similar two-span structure for Forest Avenue. The roadway was wider, however, to include a 15-foot lane beyond each sidewalk to permit U-turns from the grade-level service roads paralleling the expressway. The West Grand Boulevard Bridge and a pedestrian overpass near Holden Avenue were also completed by 1950 for the first phase of the expressway. Only after work was well advanced on these structures, as well as on necessary utility and railroad relocations, were contracts awarded for grading and paving the expressway itself. The first section completed, running from Holden to Pallister and passing beneath the Grand Boulevard Boulevard and Milwaukee bridges, opened in 1950. Immediately to the south, work on bridges required at the interchange with the Ford Expressway was stopped for eight months by delays in obtaining structural steel. Traffic began passing on the Lodge axis of the interchange in January 1953. Some of the ramps connecting the Lodge and Ford expressways opened in

¹¹⁰ Shuptrine, "The Progress," 4; 40 WCAR (1945-1946), 31; Michigan State Highway Department, *Detroit Expressways* (1954).

¹¹¹ 42 WCAR (1947-1948), 34-35; 49 WCAR (1954-1955), 48; Michigan State Highway Department, *Detroit Expressways* (1953) and *Detroit Expressways* (1954).

January 1955; the entire interchange officially opened in October of that year.¹¹²

While the Detroit area's freeways attracted the most attention, congestion problems also appeared in other communities. They developed by-pass routes to keep through-traffic from blocking downtown streets. Soon, however, the by-passes spawned adjacent development, generating traffic that clogged the by-passes. A crucial state law adopted in 1941 permitted government agencies to restrict roadside development, since uncontrolled growth reduced the public's investment in road improvements.¹¹³

These local by-passes and existing intercity routes were often adopted by interstate planners, who laid out a network consisting of 978 miles in Michigan in 1947. In August of that year, the U.S. Public Works Administration announced a 37,681-mile interstate system, including the following routes in Michigan (current interstate routes are given in parenthesis):

1. Detroit-Lansing-Grand Rapids-Benton Harbor (I-96/I-196)
2. Grand Rapids-Muskegon (I-96)
3. Detroit-Dearborn-Kalamazoo-Benton Harbor (I-94)
4. Kalamazoo-South Bend
5. Detroit-Toledo (I-75)
6. Detroit-Port Huron (I-94)
7. Detroit-Highland Park-Pontiac-Flint-Saginaw-Mackinaw City-Sault Ste. Marie (I-75)

For the most part, these routes followed the general course of trails first developed by Native Americans and subsequently appropriated by explorers, the military, pioneers, and government highway departments. The initial interstate proposal was essentially carried out in the following decades, with only two significant changes. The Kalamazoo-South Bend route was abandoned, and was apparently replaced by I-69 connecting Port Huron, Flint, and Lansing with a major east-west artery, I-80/I-90, in Indiana.¹¹⁴

The following bridges will be surveyed for an overview of expressway development in Michigan.

The Davison Expressway

This includes all of the bridges originally constructed for the Davison with the exception of Oakland Avenue, which has apparently been replaced.

¹¹² 42 WCAR (1947-1948), 30-31, 33-34; 44 WCAR (1949-1950), 42-44; 45 WCAR (1950-1951), 43-44; 47 WCAR (1952-1953), 38-44; 48 WCAR (1953-1954), 35-39; 49 WCAR (1954-1955), 41.

¹¹³ Michigan State Highway Department, *Highway Needs in Michigan*, 44.

¹¹⁴ "Federal Highway Plans are Drawn," *Battle Creek Enquirer News*, 3 August 1947; Michigan State Highway Department, "Preliminary Reports," 1934.

M-1 (Woodward Ave.)	Davison Expressway	Highland Park	1943	207
Brush Street	Davison Expressway	Highland Park	1942	107
Hamilton Avenue	Davison Expressway	Highland Park	1942	207
John R Street	Davison Expressway	Highland Park	1942	107
Second Avenue	Davison Expressway	Highland Park	1942	107
Third Avenue	Davison Expressway	Highland Park	1942	107

The John C. Lodge Expressway (M-10)

Road and pedestrian bridges will be examined from the first phase of the expressway's development, which originally extended about 3.4 miles from First Street to Pallister Avenue. Development of the Detroit Civic Center and adjacent property delayed construction of the southernmost end of the Lodge Expressway, so the survey area runs north from Lafayette Boulevard. The section, which is entirely within Wayne County, includes the intersection of the Lodge and Ford expressways.

Porter Street Walkover	M-10	In Detroit	1954	303
Elizabeth Street Walkover	M-10	In Detroit	1954	382
Spruce Street Walkover	M-10	In Detroit	1953	303
Selden Avenue Walkover	M-10	In Detroit	1953	303
Canfield Avenue Walkover	M-10	In Detroit	1953	303
Merrick Avenue Walkover	M-10	In Detroit	1953	303
Lafayette Boulevard	M-10	In Detroit	1952	432
Howard Street	M-10	In Detroit	1953	432
US-12	M-10 NB	In Detroit	1954	332
US-12	M-10 SB	In Detroit	1954	332
Bagley Avenue Ramps	M-10	In Detroit	1954	332
Grand River Avenue	M-10	In Detroit	1953	432
M.L. King (Stimson)	M-10	In Detroit	1952	432
Forest Avenue	M-10	In Detroit	1950	432
Warren Avenue	M-10	In Detroit	1950	432
Holden Avenue Walkover	M-10	In Detroit	1950	303
Milwaukee Avenue	M-10	In Detroit	1949	432
West Grand Boulevard	M-10	In Detroit	1950	432
Pallister Avenue	M-10	In Detroit	1954	432
M-10 SB	I-94 Ramp	In Detroit	1953	352
M-10 SB	I-94	In Detroit	1953	332
M-10 NB	I-94	In Detroit	1953	332
M-10 NB	I-94 Ramp from M-10	In Det over Rp HE	1953	352

The Edsel Ford Expressway (I-94)

The survey will evaluate the road and pedestrian bridges built as part of the expressway's first section. This consists of a 5.3-mile section between Wyoming Avenue and John R, including

the route's intersection with the Lodge Expressway. The entire route is within Wayne County.

M-153, Wyoming Ave.	I-94	W. limits of Detroit	1949	302
Trenton Ave. Walkover	I-94	In Detroit	1951	303
Lumley Ave. Walkover	I-94	In Detroit	1952	303
Tarnow Ave. Walkover	I-94	In Detroit	1952	303
Roosevelt Ave. Walkover	I-94	In Detroit	1952	303
Brooklyn Ave. Walkover	I-94	In Detroit	1955	332
Weir Road	I-94	In Detroit	1950	302
Addison Road	I-94	In Detroit	1949	302
Lonyo Avenue	I-94	In Detroit	1949	332
Central Avenue	I-94	In Detroit	1950	302
Cecil Avenue	I-94	In Detroit	1950	332
Martin Avenue	I-94	In Detroit	1949	302
Livernois Avenue	I-94	In Detroit	1950	332
Wesson Street	I-94	In Detroit	1951	302
Junction Street	I-94	In Detroit	1950	332
30th Street	I-94	In Detroit	1951	302
Warren Avenue	I-94	In Detroit	1953	332
Scotten Avenue	I-94	In Detroit	1953	332
SB West Grand Boulevard	I-94	In Detroit	1953	352
I-94 to W. Grand Blvd.	Open Area	In Detroit	1953	332
NB West Grand Boulevard	I-94	In Detroit	1953	352
Grand River Avenue	I-94	In Detroit	1954	302
Linwood Avenue	I-94	In Detroit	1953	332
14th Street	I-94	In Detroit	1953	332
12th Street	I-94	In Detroit	1953	432
Trumbull Avenue	I-94	In Detroit	1954	332
I-94 EB	I-94 Ramp to M-10	In Det ovr Rp D-A	1955	352
I-94 EB Ramp to M-10	M-10 SB and I-94 WB	In Detrt Ramp B-G	1953	352
I-94 WB Ramp to M-10	M-10 NB and I-94 EB	In Detrt Ramp F-C	1953	352
I-94 WB	I-94 Ramp from M-10	In Det ovr Rp HE,S	1955	352
Third Street	I-94	In Detroit	1955	352
Second Boulevard	I-94	In Detroit	1954	332
Cass Avenue	I-94	In Detroit	1955	332
M-1 (Woodward Avenue)	I-94	In Detroit	1955	332
John R Street	I-94	In Detroit	1955	332

Other Early Interstate Freeway Routes

By the mid-twentieth century, standard plan bridges were typical for highway bridge construction. This was presumably true for early interstate construction in Michigan. By the end of 1955, three major interstate routes were under development: I-75, connecting Toledo, Detroit and, ultimately, Sault Ste. Marie; I-94, extending across the state from Port Huron in

the east to Berrien County in the west; and I-96, between Detroit and Muskegon. Of these, I-75 in Monroe County and I-94 in Kalamazoo and Jackson counties were the most advanced by the mid-1950s. The following structures have been selected to provide a representative sample.

Interstate 75

A good example of intensive interstate development is provided by I-75 in Monroe County, between Toledo and Detroit. A significant portion of this route was completed by the end of 1955. The MDOT database lists 27 pre-1956 bridges related to this route. Five are overpasses for crossing roads; the remainder carry I-75 traffic. All of the structures were built between 1953 and 1955. In terms of design, the database classifies ten of the bridges as steel multi-stringer, W or I-Beam, composite (332); six as steel continuous multi-stringer, W or I-Beam, non-composite (402); five as concrete tee beam or inverted channel (104); and five as continuous concrete tee beam or inverted channel (204). There is a single example of a steel deck girder (303). Representative examples were selected based on the following criteria:

104: these 35- to 40-foot structures each contain a single span. A pair of the 40' spans is included in the survey.

204: all carry roads over I-75; all consist of four spans, with the maximum span ranging from 56 to 81 feet. The structures with the shortest and longest maximum span have been selected for the survey.

303: the only example is included.

332: this group includes of structures ranging from one to four spans, with maximum span length between 43 and 77 feet. The sample contains two bridges of this design: (1) the bridge with both the greatest number of spans and the shortest maximum span; and (2) the bridge with the longest span.

402: the maximum span of these three-span structure ranges from 40 to 45 feet. A pair of the 45-foot bridges has been added to the survey.

Monroe	I-75	Conrail, Raisin River	Monroe (over Front)	1955	303
Monroe	I-75 NB	Bay Creek	4.2 m. NE Ohio	1955	104
Monroe	I-75 SB	Bay Creek	4.2 m. NE Ohio	1955	104
Monroe	I-75	Industrial Tracks	Monroe	1954	332
Monroe	I-75	Conrail	.9 m. N of M-50	1955	332
Monroe	S Huron R D	I-75	In S Rockwood	1954	204
Monroe	Newport Rd.	I-75	6.2 m. NE of M-50	1955	204

Interstate 94

The earliest sections of I-94 have been discussed above as part of the Willow Run, Detroit Industrial, and Edsel Ford expressways. The remaining 27 bridges built prior to 1956 are located in Berrien, Kalamazoo, Jackson, Washtenaw, Wayne, Macomb and St. Clair counties. The largest concentration of these structures is in Kalamazoo and Jackson counties, each of which have seven. These fourteen bridges offer a range of vintages (1947 to 1955) and bridge types, and their construction is well documented. As a result, they are included in the survey sample as representative examples of post-war bridges outside of Wayne County.

Jackson	M-106	I-94	@ M-106 (Cooper)	1948	332
Jackson	Lansing Rd	I-94	.6 m. E of M-50	1951	332
Jackson	Elm Rd	I-94	1 m. E of M-106	1949	402
Jackson	I-94	I-94 BL SB	@ I-94 BL WB	1949	302
Jackson	I-94	Sandstone River	3 m. W of M-60	1953	402
Jackson	I-94	Conrail & Grand River	.4 m. W of M-106	1949	452
Jackson	I-94	Parma Road	6.3 m. W of M-60	1954	204
Jackson	I-94	US-127 & M-50	@ US-127 & M-50	1953	332
Kalamazoo	I-94	Conrail	Kalamazoo	1954	332
Kalamazoo	Miller Rd	I-94	.6 m. W I-94BL	1955	332
Kalamazoo	I-94 BL EB	I-94	@ I-94	1955	332
Kalamazoo	I-94	E Michigan Avenue	6.6 m. E I-94 BL	1952	402
Kalamazoo	I-94 BL	Portage Creek	Kalamazoo	1947	302
Kalamazoo	Scott (38th)	I-94	5.7 m. E I-94 BL	1951	302
Kalamazoo	Shafter(35th)	I-94	4.2 m. E I-94 BL	1951	302

MICHIGAN BRIDGE INVENTORY: CRITERION C EVALUATION

Comprehensive inventory of historic bridges is, by definition, weighted heavily toward National Register Criterion C. In this process, groups of similarly configured structures are evaluated and compared for relative significance from engineering and construction standpoints. With sometimes hundreds of similarly built bridges in a structural category, a premium is placed on "superlative" features of the bridges (e.g., the oldest, longest, first, best preserved) to differentiate between those that are historic and those that are merely old.

Based on an amalgam of research in the literature and analysis of computer-generated data, the consultants have arrived at the following guidelines, both general and categorical, that will be employed to produce a list of structures that will be included in the field survey sample:

GENERAL GUIDELINES

- ☉ Include all bridges through 1955 in the general inventory. The year 1955 was determined by MDOT and SHPO prior to the inception of this project. Historically, the date is appropriate because it marks the beginning of the U.S. interstate highway system. Administratively, it is appropriate because it will give both MDOT and SHPO adequate coverage of bridges that will continue to come within the National Register's 50-year scope of eligibility.
- ☉ Include all structures with greater than 20 feet of total length in the general inventory. A minimum overall structure length of 20 feet constitutes the federal definition of "bridge". Except in circumstances of extremely early construction or unusual structural type, the federal bridge definition will capture eligible bridges.
- ☉ Include all structurally intact structures through 1915, 1920 or 1925 (depending upon type) in the field survey sample. State standard bridge plans were available for some bridge types as early as 1906, with the passage of the State Reward Road Law. The Michigan State Highway Department issued standards for additional structural types in subsequent years (e.g., Warren pony trusses and plate girders in 1907-1908, straight concrete through girders in 1913-1914, arched concrete through girders in 1921-1922). In the 1913-1914 the state legislature passed the Trunk Line Highway Act, requiring MSHD to design and build all bridges with greater than 30-foot spans on trunk line routes. Since state plans required higher quality components and were engineered for heavier loads than many earlier township bridges, their construction cost was greater. For this reason, the counties and townships embraced the state standards inconsistently. By selecting all structures built before set dates, the field survey sample includes both the earliest examples of MSHD design and noteworthy pre-MSHD bridges built from independently derived designs.

CATEGORICAL GUIDELINES

- ◎ In some cases, selection of the survey sample after the early set periods requires additional winnowing to include the significant later bridges. Span length can indicate potentially significant structures. Given the number of bridges similar in design but with various maximum spans, the longest spans are closer to the outer extremes of engineering or economic feasibility and, as such, are more likely to be technologically significant. Changes in maximum span over time also reflect technological evolution, such as the impact of deeper and longer I-beams. Numbers of spans can likewise relate to design development and financial considerations. Multiple spans often mark major crossings as well, frequently giving these bridges historical as well as engineering significance. Furthermore, it is important to recognize the influence of the American Association of State Highway Officials, established in 1914, and the oversight of the U.S. Bureau of Roads, which reviewed any federally funded projects after such funding became available in 1916. Technological benchmarks and changes in state standard plans have been merged with an analysis of span length and number of extant bridges to create the categorical guidelines outlined in the discussions of structural types.
- ◎ Some bridges are sufficiently rare or significant that all structurally intact examples of their number, regardless of date or size, should be included in the field survey sample. Concrete rigid frame bridges, for example, evolved relatively late in the milieu of bridge design and have never been common in Michigan. Despite their recent development, they are technologically important and historically significant for their role in the early freeway/parkway movement, and all should therefore be included in the field survey sample. Concrete arches and steel trusses rank among the most significant -- both historically and technologically -- among Michigan's bridge types. All that have retained their structural integrity should be included from these groups as well.

Although Michigan's bridges display a remarkable diversity of type and scale, they can be grouped into a series of broad categories, as defined by the Structure Inventory and Appraisal lists maintained by the DOT. Following is a discussion of these structural types, with brief profiles of Michigan examples of each, and discussions regarding their disposition in the field survey sample.

CONCRETE GIRDER (103, 203, 104, 204, 104, 205, 121, 221)

The first reinforced concrete girder bridge was built in France in 1893. Spans of up to 85 feet appeared by 1904 in Europe, the leader in this design. The earliest documented concrete girder bridge in Michigan was the Ottawa Street Bridge over the Muskegon River in Muskegon

County, a single-span structure built in 1900. Concrete bridges -- and particularly concrete girder spans -- were just beginning to find favor among Michigan county engineers in the early 1910s when the Michigan State Highway Department developed its first standard designs for concrete girders. MSHD designed standards for concrete through girders in the 1913-1914 biennium, delineating simple, straight-sided structures in five-foot increments between 30 and 50 feet.¹¹⁵ The first MSHD concrete girder was a 50-foot span over the Paint River in Iron County. The oldest remaining girders -- both built in 1916 -- are located on county roads in Delta and Mecosta counties.¹¹⁶

Citing the advantages of their maximum under-bridge clearance, MSHD favored through girders for bridges up to 50 feet in span through the late 1910s and early 1920s. The Department had in 1913-1914 engineered a short-span concrete deck girder, which it distinguished from its through girder configuration by calling a T-beam, but it was used sparingly in the late 1910s. "The opportunities for using this economical type of structure are few," MSHD stated in its 1917-1918 Biennial Report, "due to the lack of headroom prevalent on Michigan stream crossings."¹¹⁷ The first MSHD deck girder bridge was built during the 1921-1922 biennium, the same year that MSHD developed its standard for the curved-chord through girder. "These designs have curved top chords and bottom chord brackets," MSHD stated, making them suitable for relatively long-span applications.¹¹⁸ The first curved chord girder was a 90-foot span built in 1922 over the Raisin River at Tecumseh.¹¹⁹ This was followed in the 1920s by a series of curved girders used in single-span or multiple-span configurations.

The drawback of through girders was their inflexibility. With the structural beams above the roadway, they could not be practically widened to accommodate increased traffic. As a result, through girders were superseded by deck girders and stringers when MSHD issued its new standards in 1929-1930. They fell rapidly from favor among the counties after that. Concrete deck girders were built routinely through the 1930s, but these too were overshadowed by steel superstructures in the 1940s. It was not until the development of the interstate highway system in the 1950s and 1960s that concrete girders -- this time in curved, prestressed deck configurations -- found renewed favor with MSHD.

Concrete through girder (121, 221) MSHD developed its first standard through girder designs in the 1913-1914 biennium. All pre-1920 through girders that have

¹¹⁵ 5 SHDBR (1913-1914), 100-101.

¹¹⁶ C.A. Melick, "Summary of the Work of the Bridge Department," *Michigan Roads and Pavements* 22 (1 January 1925): 30-31.

¹¹⁷ 17 SHDBR (1917-1918), 30-31.

¹¹⁸ 9 SHDBR (1921-1922), 13-14.

¹¹⁹ *Ibid.*, 14; Melick, "Summary of the Work," 30.

girder designs in the 1913-1914 biennium. All pre-1920 through girders that have retained integrity should therefore be included for their representation either of pre-MSHD construction or of formative MSHD design. After this, through girders with spans in excess of 50 feet almost all featured arched beams; long-span straight girders were a relative rarity. Moreover, arched through girders -- an uncommon structural type indigenous to Michigan -- are considered sufficiently rare on a national scale that all should be included in the field survey sample. Multiple-span examples of through girders of either type are also rare.

All pre-1955 through girders:	88
Date range: 1900 - 1936	
Span range: 25 feet - 90 feet	
All arched through girders:	40
All pre-1920 straight through girders:	9
Straight girders - 3+ spans or 50-foot span 1920 - 1930:	4
Straight girders - 3+ spans or 50-foot span 1931 - 1940:	0
Straight girders - 3+ spans or 50-foot span 1941 - 1955:	0
Anomalous through girders:	1
TOTAL RECOMMENDED FOR SURVEY	54

Concrete deck girder / T-beam (103, 203, 104, 204, 105, 205): MSHD developed its first standard through girder designs in the 1913-1914 biennium, and in the 1910s built a small number of prototypical girder spans. All pre-1920 bridges that have retained integrity should therefore be included for their representation either of pre-MSHD construction or of formative MSHD design. After this, deck girders with spans in excess of 50 feet were a relative rarity, as were multiple-span examples.

All pre-1955 deck girders and T-beams:	430
Date range: 1900 - 1955	
Span range: 16 feet - 81 feet	
All pre-1920 deck girders and T-beams:	25
Deck girders - 3+ spans or 50-foot span 1920 - 1930:	8
Deck girders - 3+ spans or 50-foot span 1931 - 1940:	3
Deck girders - 3+ spans or 50-foot span 1941 - 1955:	19
Anomalous deck girders:	1
TOTAL RECOMMENDED FOR SURVEY	56

Concrete Through Girders

Struct No	County	Type	Superstructure	Year	Main spans	Span length
ALLE012	ALLEGAN	121	concrete through girder, arched	1924	1	48.00
ALLE019	ALLEGAN	121	concrete through girder, arched	1926	1	48.00
ALLE020	ALLEGAN	121	concrete through girder, arched	1926	1	48.00
AREN035	ARENAC	121	concrete through girder, arched	1925	1	90.00
BERR030	BERRIEN	121	concrete through girder, arched	1928	1	57.00
CALH011	CALHOUN	121	concrete through girder, arched	1923	1	50.00
CALH020	CALHOUN	121	concrete through girder, arched	1925	1	60.00
CHEB010	CHEBOYGAN	121	concrete through girder, arched	1924	1	85.00
DELT020	DELTA	121	concrete through girder, straight	1919	1	28.00
DICK009	DICKINSON	121	concrete through girder, arched	1927	1	58.00
EATO015	EATON	121	concrete through girder, straight	1916	1	50.00
EMME004	EMMET	121	concrete through girder, arched	1923	1	50.00
GLAD006	GLADWIN	121	concrete through girder, arched	1924	1	60.00
GOGE012	GOGEBIC	121	concrete through girder, arched	1928	1	60.00
GOGE017	GOGEBIC	121	concrete through girder, straight	1922	3	50.00
GOGE043	GOGEBIC	121	concrete through girder, straight	1919	1	33.00
GOGE046	GOGEBIC	121	concrete through girder, arched	1930	1	38.00
GRAT011	GRATIOT	121	concrete through girder, arched	1927	1	55.00
GRAT014	GRATIOT	121	concrete through girder, arched	1925	1	85.00
GRAT015	GRATIOT	121	concrete through girder, arched	1925	1	88.00
GRAT034	GRATIOT	121	concrete through girder, straight (non	1930	1	40.00
HURO037	HURON	121	concrete through girder, straight	1915	1	39.00
INGH031	INGHAM	121	concrete through girder, arched	1935	1	33.00
IONI018	IONIA	121	concrete through girder, arched	1928	1	36.00
IONI020	IONIA	121	concrete through girder, arched	1927	1	36.00
IRON012	IRON	121	concrete through girder, straight	1918	1	50.00
IRON018	IRON	121	concrete through girder, arched	1924	1	60.00
JACK023	JACKSON	121	concrete through girder, arched	1923	1	48.00
LAKE007	LAKE	121	concrete through girder, straight	1900	1	39.00
LAPE014	LAPEER	121	concrete through girder, arched	1928	1	70.00
MASO005	MASON	121	concrete through girder, arched	1924	1	75.00
MASO006	MASON	121	concrete through girder, arched	1925	1	75.00
MENO045	MENOMINEE	121	concrete through girder, arched	1928	1	58.00
MENO049	MENOMINEE	121	concrete through girder, arched	1935	1	88.00
MIDL016	MIDLAND	121	concrete through girder, arched	1927	1	90.00
MIDL037	MIDLAND	121	concrete through girder, arched	1927	1	90.00
MONR068	MONROE	121	concrete through girder	1900	1	30.00
NEWA028	NEWAYGO	121	concrete through girder, arched	1928	1	48.00
OCEA016	OCEANA	121	concrete through girder, straight	1919	1	46.00
OTTA027	OTTAWA	121	concrete through girder, arched	1923	1	58.00
OTTA035	OTTAWA	121	concrete through girder, arched	1923	1	88.00
PRES017	PRESQUE ISL	121	concrete through girder, arched	1935	1	46.00
SAGI028	SAGINAW	121	concrete through girder, straight	1920	3	45.00

Concrete Through Girders

Struct No	County	Type	Superstructure	Year	Main spans	Span length
SAGI029	SAGINAW	121	concrete through girder, straight	1920	3	45.00
SAGI105	SAGINAW	121	concrete through girder, straight	1920	3	45.00
SANI008	SANILAC	121	concrete through girder, arched	1924	1	75.00
SCHO016	SCHOOLCRA	121	concrete through girder, arched	1928	1	90.00
SCHO017	SCHOOLCRA	121	concrete through girder, arched	1929	1	58.00
SHIA007	SHIAWASSEE	121	concrete through girder, arched	1925	1	37.00
STCL039	ST. CLAIR	121	concrete through girder, arched	1925	1	84.00
STCL049	ST. CLAIR	121	concrete through girder	1916	1	32.00
STCL055	ST. CLAIR	121	concrete through girder, arched	1928	2	70.00
STJO004	ST. JOSEPH	121	concrete through girder, arched	1922	3	90.00
WASH024	WASHTENA	121	concrete through girder, arched	1936	1	35.00

Concrete Deck Girder / T-beams

Struct No	County	Type	Superstructure	Year	Main spans	Span length
AREN030	ARENAC	104	concrete T-beam	1917	1	26.00
BARR007	BARRY	104	concrete T-beam	1918	1	23.00
BAY003	BAY	204	concrete cantilevered T-beam	1927	3	90.00
BENZ003	BENZIE	104	concrete T-beam	1929	1	70.00
BERR029	BERRIEN	104	concrete T-beam	1928	3	45.00
BRAN031	BRANCH	104	concrete T-beam	1900	1	26.00
CASS015	CASS	104	concrete T-beam	1919	5	35.00
DELT018	DELTA	104	concrete T-beam, with arched girders	1941	3	34.00
EATO014	EATON	104	concrete T-beam	1910	1	30.00
EATO016	EATON	104	concrete T-beam	1915	1	19.00
EATO048	EATON	204	concrete continuous T-beam	1948	3	68.00
GENE111	GENESEE	204	concrete continuous T-beam	1928	3	27.00
HILL026	HILLSDALE	104	concrete T-beam	1910	1	30.00
HOUG008	HOUGHTON	103	concrete deck girder	1900	1	49.00
INGH001	INGHAM	104	concrete T-beam	1918	1	29.00
INGH013	INGHAM	104	concrete arched cantilever	1952	3	54.00
INGH062	INGHAM	105	concrete girder	1918	1	20.00
IRON015	IRON	205	concrete continuous girder	1955	3	23.00
IRON016	IRON	205	concrete continuous box beam	1955	3	23.00
JACK014	JACKSON	204	concrete cantilevered T-beam	1954	3	58.00
JACK065	JACKSON	204	concrete continuous T-beam	1915	2	31.00
KENT027	KENT	104	concrete T-beam	1910	1	30.00
KENT047	KENT	105	concrete girder	1915	4	25.00
LENA008	LENAWEE	204	concrete continuous T-beam	1953	3	60.00
LENA023	LENAWEE	204	concrete continuous T-beam	1955	3	49.00
LENA042	LENAWEE	104	concrete T-beam	1910	1	28.00
LENA043	LENAWEE	104	concrete T-beam	1910	1	26.00
LIVI024	LIVINGSTON	104	concrete T-beam	1919	1	23.00
MENO002	MENOMINEE	104	concrete T-beam	1929	4	38.00
MENO015	MENOMINEE	104	concrete T-beam	1900	6	54.00
MONR029	MONROE	204	concrete continuous T-beam	1920	3	79.00
MONR053	MONROE	204	concrete continuous T-beam	1955	4	70.00
MONR062	MONROE	204	concrete continuous T-beam	1954	4	78.00
MONR063	MONROE	204	concrete continuous T-beam	1955	4	81.00
MONR064	MONROE	204	concrete continuous T-beam	1954	4	78.00
MONR065	MONROE	204	concrete continuous T-beam	1954	4	56.00
MUSK011	MUSKEGON	103	concrete deck girder	1900	1	31.00
MUSK036	MUSKEGON	103	concrete deck girder	1900	1	31.00
OAKL012	OAKLAND	204	concrete continuous T-beam	1931	7	33.00
OAKL032	OAKLAND	104	concrete T-beam	1930	5	32.00
OSCE019	OSCEOLA	104	concrete T-beam	1929	3	55.00
OSCE021	OSCEOLA	104	concrete T-beam	1900	1	16.00
OSCE022	OSCEOLA	104	concrete T-beam	1900	1	23.00

Concrete Deck Girder / T-beams

Struct No	County	Type	Superstructure	Year	Main spans	Span length
OSCE042	OSCEOLA	105	concrete girder	1900	1	40.00
SAGI036	SAGINAW	104	concrete T-beam	1916	1	22.00
STCL035	ST. CLAIR	104	concrete T-beam	1916	1	38.00
WASH006	WASHTENA	104	concrete T-beam	1954	3	43.00
WASH007	WASHTENA	204	concrete continuous T-beam	1954	4	49.00
WASH008	WASHTENA	204	concrete continuous T-beam	1955	4	65.00
WASH009	WASHTENA	204	concrete continuous T-beam, arched	1944	3	56.00
WASH010	WASHTENA	204	concrete continuous T-beam	1944	3	63.00
WAYN007	WAYNE	204	concrete continuous T-beam	1943	3	58.00
WAYN039	WAYNE	104	concrete T-beam	1932	3	52.00
WAYN112	WAYNE	104	concrete T-beam	1931	3	41.00
WAYN117	WAYNE	104	concrete arched cantilever	1930	3	51.00
WAYN228	WAYNE	104	concrete T-beam	1920	1	28.00

CONCRETE SLAB (101, 201)

With its deck and superstructure poured integrally in a single flat sheet over steel reinforcing, the simple slab was the most rudimentary of the concrete bridge types. A few concrete slabs were built in Michigan by the counties or by railroads and larger cities after the turn of the century, but their use was not widespread. The Michigan State Highway Department similarly eschewed slab construction when it developed its early bridge standards, preferring concrete box and arch culverts for the shortest spans and concrete through girders for spans in excess of 30 feet. Beginning in the early 1920s, the Highway Department had begun to build slab bridges on a limited basis. Outside of urban areas, however, they were used sparingly in Michigan until the development of new standards in the 1930s.

Concrete slab (101, 201): MSHD developed its first standard slab design around 1920. All pre-1925 bridges that have retained integrity should therefore be included for their representation either of pre-MSHD construction or of formative MSHD design. After this, slabs with spans in excess of 50 feet were relatively rare, as were those with four or more spans.

All pre-1955 slabs:	138
Date range: 1900 - 1955	
Span range: 13 feet - 54 feet	
All pre-1925 slabs:	19
Slabs - 4+ spans or 45-foot span 1926 - 1940:	3
Slabs - 4+ spans or 45-foot span 1941 - 1955:	3
Slabs - noteworthy architectural treatment	1
TOTAL RECOMMENDED FOR SURVEY	26

Concrete Slabs

Struct No	County	Type	Superstructure	Year	Main spans	Span length
CLAR031	CLARE	101	concrete slab	1922	1	20.00
GENE007	GENESEE	101	concrete slab	1941	4	38.00
GRAT050	GRATIOT	101	concrete slab	1930	1	50.00
IRON019	IRON	101	concrete slab	1900	1	25.00
IRON020	IRON	101	concrete slab	1900	1	25.00
KENT032	KENT	201	concrete continuous slab	1900	2	20.00
LENA028	LENAWEE	101	concrete slab	1924	1	30.00
LIVI018	LIVINGSTON	101	concrete slab	1922	1	20.00
MONR087	MONROE	101	concrete slab	1900	1	24.00
MONT020	MONTCALM	101	concrete slab	1910	1	32.00
MUSK031	MUSKEGON	101	concrete slab	1900	1	16.00
MUSK033	MUSKEGON	101	concrete slab	1900	1	24.00
MUSK038	MUSKEGON	101	concrete slab	1920	1	24.00
MUSK046	MUSKEGON	101	concrete slab	1900	1	30.00
OAKL034	OAKLAND	101	concrete slab, with architectural treat	1940	1	24.00
OSCE041	OSCEOLA	101	concrete slab	1900	1	17.00
STCL044	ST. CLAIR	101	concrete slab	1919	1	16.00
STCL058	ST. CLAIR	101	concrete slab	1920	1	20.00
STCL096	ST. CLAIR	101	concrete slab	1920	1	37.00
STCL097	ST. CLAIR	101	concrete slab	1920	1	27.00
STCL101	ST. CLAIR	101	concrete slab	1955	1	54.00
VANB027	VAN BUREN	101	concrete slab	1910	1	26.00
WAYN084	WAYNE	201	concrete continuous slab	1921	2	32.00
WAYN131	WAYNE	201	concrete continuous slab	1947	4	26.00
WAYN178	WAYNE	101	concrete slab	1935	1	52.00
WAYN186	WAYNE	201	concrete continuous slab	1947	3	28.00

CONCRETE RIGID FRAME (107, 207)

Developed by Westchester County, New York, in the early 1920s, the concrete rigid frame bridge became especially popular for federal relief projects during the 1930s. Both picturesque and practical, the flat or elliptically arched designs appealed to proponents of urban beautification. The Michigan State Highway Department referred to the rigid frame it had developed as a "new type of concrete structure" in its 1935-1936 Biennial Report. "While one of the most modern developments in bridge design, this type has passed the experimental stage and in some locations offers marked advantages over the simple span type."¹²⁰ Built in 1935, the first MSHD-designed rigid frame bridge was a two-span structure over Otter Creek south of Monroe. The Highway Department used concrete rigid frame bridges on an occasional basis through the 1930s and early 1940s, particularly at urban grade separations. (All but four of the concrete rigid frame bridges from the general inventory are located within Wayne County.) After World War II, the concrete rigid frame was superseded by prestressed concrete beams for use on most bridges and overpasses.

Concrete rigid frame (107, 207): Because of their relative rarity and because some were the product of federal relief programs in the 1930s, all concrete rigid frame bridges that have retained integrity should be surveyed.

All pre-1955 concrete rigid frames:	21
Date range: 1913 - 1953	
Span range: 28 feet - 77 feet	
TOTAL RECOMMENDED FOR SURVEY	20

¹²⁰ 15 SHDBR (1935-1936), 57.

Concrete Rigid Frames

Struct No	County	Type	Superstructure	Year	Main spans	Span length
ALGE008	ALGER	107	concrete rigid frame	1939	1	66.00
DICK001	DICKINSON	107	concrete rigid frame	1935	1	36.00
OAKL038	OAKLAND	107	concrete rigid frame	1936	1	33.00
OAKL042	OAKLAND	107	concrete rigid frame	1938	1	30.00
WAYN027	WAYNE	207	concrete rigid frame	1943	2	47.00
WAYN067	WAYNE	207	concrete rigid frame	1942	2	38.00
WAYN068	WAYNE	107	concrete rigid frame	1942	1	77.00
WAYN069	WAYNE	107	concrete rigid frame	1942	1	77.00
WAYN070	WAYNE	107	concrete rigid frame	1942	1	77.00
WAYN071	WAYNE	107	concrete rigid frame	1942	1	77.00
WAYN073	WAYNE	107	concrete rigid frame	1933	1	54.00
WAYN074	WAYNE	107	concrete rigid frame	1933	1	60.00
WAYN079	WAYNE	107	concrete rigid frame	1946	1	29.00
WAYN091	WAYNE	207	concrete rigid frame	1947	2	66.00
WAYN095	WAYNE	107	concrete rigid frame	1951	1	66.00
WAYN096	WAYNE	207	concrete rigid frame	1953	2	67.00
WAYN098	WAYNE	107	concrete rigid frame	1953	1	67.00
WAYN164	WAYNE	107	concrete rigid frame	1947	1	40.00
WAYN173	WAYNE	107	concrete rigid frame	1913	1	28.00
WAYN232	WAYNE	107	concrete rigid frame	1948	1	73.00

CONCRETE ARCH (111, 211)

America's earliest reinforced concrete bridge, the Alvord Lake Bridge in San Francisco (1889), employed a filled spandrel arch configuration. Designed by early engineers as a durable and aesthetic alternative to steel truss construction, concrete arches were used primarily in major urban street crossings in Michigan before 1905. Two of the most earliest and notable examples of this were the West Michigan Avenue Bridge (1903) and the McCamly Street Bridge (1904), both in Battle Creek. Designed by city engineers and bridge contractors such as the Illinois Bridge Company, these medium-span structures typically featured elliptical, relatively low, arch profiles with solid sidewalls, earthen fill and architectural embellishment of the guardrails and spandrels.

Engineers for the Michigan State Highway Department began designing concrete arches as early as 1908, but, unlike its practice on other structural types, the agency did not develop a standard concrete arch design. The bearing and superstructural conditions were too site-specific, MSHD rationalized, making standardization of concrete arches impractical. Instead, the Highway Department used special-design concrete arches up to 80 feet in length "wherever it is possible to secure sufficiently hard foundations, and also where there is clearance enough for the water to flow freely without the arch choking the stream too much," according to its 1917-1918 Biennial Report.¹²¹ MSHD first designed medium-length filled spandrel arches for county and township road crossings around 1910; it built its first state arch -- a 50-foot span over Paint Creek in Kent County -- in 1914.¹²² With steel scarce and expensive during World War I, the Highway Department used filled spandrel arches extensively in the late 1910s, sometimes combining them to form multiple-span bridges.

In the 1921-1922 biennium, MSHD began using open spandrel arches for relatively short-span (100-foot) crossings. These aesthetically appealing structures were soon being employed for such monumental urban spans as the Belle Isle Bridge (1923) in Detroit and the Fulton Street Bridge (1928) in Grand Rapids. Whether reinforced or unreinforced, concrete arches consume a prodigious amount of materials and labor in their construction. Eventually, they were displaced as a structural type in Michigan by more efficient concrete and steel beam bridge configurations, and their use dwindled rapidly in the late 1920s.

Concrete arch (111, 211): Because of their relative rarity, because some were the product of federal relief programs in the 1930s, because they represent the longest-span concrete bridges and because many are monumental urban structures with architectural treatment, all concrete arch bridges that have retained integrity should be included in the survey.

¹²¹ 7 SHDBR (1917-1918), 32.

¹²² Melick, "Summary of the Work," 30-31.

All pre-1955 concrete arches:
 Date range: 1900 - 1955
 Span range: 6 feet - 32 feet

89

TOTAL RECOMMENDED FOR SURVEY

72

Concrete Arch

Struct No	County	Type	Superstructure	Year	Main spans	Span length
BERR003	BERRIEN	111	concrete filled spandrel arch	1899	1	28.00
BERR033	BERRIEN	111	concrete filled spandrel arch	1916	1	40.00
CALH012	CALHOUN	111	concrete filled spandrel arch	1925	2	58.00
CALH042	CALHOUN	111	concrete filled spandrel arch	1916	1	82.00
CHEB022	CHEBOYGAN	111	concrete filled spandrel arch	1915	1	24.00
EATO004	EATON	111	concrete filled spandrel arch	1921	1	45.00
EATO013	EATON	111	concrete filled spandrel arch	1894	1	36.00
GDTR009	GD. TRAVER	111	concrete filled spandrel arch	1930	1	68.00
GENE009	GENESEE	111	concrete filled spandrel arch	1926	3	72.00
GENE100	GENESEE	111	concrete filled spandrel arch	1919	1	70.00
GENE103	GENESEE	111	concrete filled spandrel arch	1917	2	74.00
GENE104	GENESEE	111	concrete filled spandrel arch	1924	1	60.00
GENE106	GENESEE	111	concrete filled spandrel arch	1921	2	86.00
GENE108	GENESEE	111	concrete filled spandrel arch	1920	1	30.00
GENE109	GENESEE	111	concrete filled spandrel arch	1920	1	26.00
GENE112	GENESEE	111	concrete filled spandrel arch	1924	1	60.00
GENE113	GENESEE	111	concrete filled spandrel arch	1922	3	66.00
GLAD003	GLADWIN	111	concrete filled spandrel arch	1919	2	50.00
HILL033	HILLSDALE	111	concrete filled spandrel arch	1918	1	31.00
HOUG007	HOUGHTON	111	concrete filled spandrel arch	1916	1	54.00
INGH059	INGHAM	111	concrete filled spandrel arch	1924	3	73.00
IONI048	IONIA	111	concrete filled spandrel arch	1952	2	91.00
IRON003	IRON	111	concrete filled spandrel arch	1918	1	90.00
IRON010	IRON	111	concrete filled spandrel arch	1914	1	98.00
ISAB031	ISABELLA	111	concrete filled spandrel arch	1920	1	50.00
ISAB053	ISABELLA	111	concrete filled spandrel arch	1910	1	88.00
ISAB054	ISABELLA	111	concrete filled spandrel arch	1910	1	70.00
JACK060	JACKSON	111	concrete arch with stone veneer	1925	3	8.00
JACK066	JACKSON	111	concrete filled spandrel arch	1903	1	39.00
KALK002	KALKASKA	111	concrete filled spandrel arch	1913	4	29.00
KENT005	KENT	111	concrete filled spandrel arch	1916	1	60.00
KENT055	KENT	111	concrete filled spandrel arch	1920	1	30.00
KEWE003	KEWEENAW	111	concrete filled spandrel arch	1928	1	31.00
LENA006	LENAWEE	111	concrete filled spandrel arch	1919	1	74.00
MACK014	MACKINAC	111	concrete filled spandrel arch	1919	1	60.00
MACO015	MACOMB	111	concrete filled spandrel arch	1935	1	72.00
MACO016	MACOMB	111	concrete filled spandrel arch	1935	2	60.00
MACO050	MACOMB	111	concrete filled spandrel arch	1910	1	21.00
MACO052	MACOMB	111	concrete filled spandrel arch	1909	2	57.00
MACO054	MACOMB	111	concrete filled spandrel arch	1910	1	40.00
MACO055	MACOMB	111	concrete filled spandrel arch	1910	1	25.00
MENO022	MENOMINEE	111	concrete filled spandrel arch	1930	1	24.00
MENO027	MENOMINEE	111	concrete filled spandrel arch	1920	1	50.00

Concrete Arch

Struct No	County	Type	Superstructure	Year	Main spans	Span length
MIDL044	MIDLAND	111	concrete filled spandrel arch	1900	1	28.00
MIDL047	MIDLAND	111	concrete filled spandrel arch	1951	1	45.00
MONR011	MONROE	111	concrete filled spandrel arch	1910	1	16.00
MONR012	MONROE	111	concrete filled spandrel arch	1910	1	16.00
MONR013	MONROE	111	concrete filled spandrel arch	1920	1	67.00
MONR014	MONROE	111	concrete filled spandrel arch	1910	1	16.00
MONR098	MONROE	111	concrete filled spandrel arch	1930	1	20.00
OAKL024	OAKLAND	111	concrete filled spandrel arch	1930	1	28.00
OAKL052	OAKLAND	111	concrete filled spandrel arch	1900	1	28.00
OSCE016	OSCEOLA	111	concrete filled spandrel arch	1939	1	39.00
PRES009	PRESQUE ISL	111	concrete filled spandrel arch	1920	1	50.00
STCL043	ST. CLAIR	211	concrete filled spandrel arch	1919	2	71.00
STCL088	ST. CLAIR	111	concrete filled spandrel arch	1920	1	20.00
STCL091	ST. CLAIR	111	concrete filled spandrel arch	1920	1	20.00
STJO006	ST. JOSEPH	211	concrete filled spandrel arch	1925	2	28.00
STJO010	ST. JOSEPH	211	concrete filled spandrel arch	1920	5	41.00
STJO042	ST. JOSEPH	111	concrete filled spandrel arch			
WASH004	WASHTENA	111	concrete filled spandrel arch	1912	1	105.00
WASH050	WASHTENA	111	concrete filled spandrel arch	1916	2	106.00
WAYN029	WAYNE	111	concrete filled spandrel arch	1931	1	31.00
WAYN085	WAYNE	111	concrete filled spandrel arch	1919	1	60.00
WAYN101	WAYNE	111	concrete filled spandrel arch	1930	1	63.00
WAYN122	WAYNE	111	concrete filled spandrel arch	1930	1	40.00
WAYN156	WAYNE	111	concrete filled spandrel arch	1922	1	35.00
WAYN163	WAYNE	111	concrete filled spandrel arch	1917	1	35.00
WAYN166	WAYNE	111	concrete filled spandrel arch	1913	1	23.00
WAYN168	WAYNE	111	concrete filled spandrel arch	1909	1	40.00
WAYN231	WAYNE	111	concrete filled spandrel arch	1925	1	77.00
WEXF019	WEXFORD	111	concrete filled spandrel arch	1900	1	24.00

CONCRETE BOX CULVERT (119, 219)

Concrete culverts were built by the tens of thousands throughout Michigan in the first two decades of the twentieth century. Featuring box, arch and pipe configurations, they were used at the myriad drainage ditch crossings on the state's county and township road systems. Concrete arch culverts were among the first standards developed by the Michigan State Highway Department in 1905-1906. "The concrete arch culvert is, to a very great extent, replacing the old form of timber structure," MSHD stated in 1908. "While somewhat more costly in the first instance, yet it is, if rightly constructed, a permanent work, and as such, will in a few years, effect a considerable saving in road expenditure."¹²³

Updated periodically, the box culvert design was a MSHD staple for decades. Culverts received extensive use throughout the state during the 1920s and 1930s. The overwhelming majority of these small-scale structures employed single-barrel configurations, with spans less than ten feet. Few of these culverts have the requisite 20-foot overall length to be considered bridges by today's definition, though. As a result, only a few culverts are classified as bridges in the state's Structure Inventory and Appraisal. In reality, they constitute only a minute sampling of Michigan's most common drainage structure.

Concrete box culvert (119, 219): None of Michigan's extant box culverts display features (e.g., early construction, span length, span number, architectural detailing) that elevate them from their peers either historically or technologically. Therefore none of these intrinsically undistinguished structures should be included in the survey.

All pre-1955 concrete box culverts:	78
Date range: 1900 - 1955	
Span range: 6 feet - 32 feet	

TOTAL RECOMMENDED FOR SURVEY	0
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¹²³ 2 SHDBR (1907-1908), 210.

PRESTRESSED CONCRETE BEAM

The first prestressed concrete bridge in the United States was 160-foot span erected in Philadelphia in 1948. MDOT Structure Inventory and Appraisal files report several examples of prestressed stringers and box beams as early as 1900 (the default value in the construction date field), but the early construction date for these structures is the result of data entry error rather than accurate reporting. The erroneous figures are typically the result of one of two errors: (1) mis-classification of structure type; or (2) replacement of original, early superstructure with a more recent span. Correction of these errors has resulted in the elimination of virtually all of the prestressed beam bridges from the field survey sample. If, during the course of field research, some extant pre-1955 examples of prestressed concrete beams are revealed, they will be included in the field survey sample.

Steel stringer bridges are the most rudimentary type of all-metal spans. Comprised of parallel rows of relatively shallow I-beams, steel stringer bridges began to replace short-span trusses for county roadway use in the late 1890s. Although built in abundance, few of these earliest I-beam spans remain in place in Michigan. After the turn of the century, small-scale steel stringer bridges were built in profusion throughout the state. A steel stringer span with an integrally poured concrete floor (called a "jack arch" deck) was among the earliest standard bridge types delineated by the Michigan State Highway Department in 1905-1906.¹²⁴ During the next biennium, the department developed a standard steel stringer design for bridges under 30 feet in length.¹²⁵ Since that time, the Highway Department has maintained the steel stringer as a standard design, updating the drawings and extending the spans lengths periodically to reflect changes in the industry.

Steel beam bridges have enjoyed inconstant popularity with Highway Department engineers, depending largely on the price of steel at the time. "The use of steel beams should be discontinued altogether during war time," the department complained after World War I.¹²⁶ As prices fell, MSHD resumed its reliance on rolled steel beams for bridge construction in the 1920s. Perhaps more than other bridge types, steel stringer technology has depended closely on the capacity of rolling mills that provided the steel. Limited by the mills' output, early MSHD standards for I-beam bridges ranged from 8 feet to 45 feet. "When this type of structure was first put in use," MSHD stated in 1930, "rolled sections of sufficient strength were not available for spans greater than about forty-five feet. It was necessary, therefore, to use relatively shallow fabricated deck girders for spans greater than forty-five feet. Rather recently, however, steel mills have improved their methods and are able to furnish rolled sections which, on proper spacing, are suitable for spans up to sixty feet."¹²⁷ MSHD was able to increase these span lengths to 75 feet when the mills began to roll 33- to 36-inch deep beams in 1928. This longer span made steel bridges more economical than concrete, hence greatly increasing the number of long-span steel beam bridges built in Michigan in the 1930s. The trend has continued to the present. Today steel stringers represent by far the most populous structural type among Michigan's highway bridges.

Steel stringer (302, 402, 332, 432, 342, 442, 372, 472): Since MSHD developed its first standard stringer designs in the 1905-1906 biennium, this structural type has enjoyed widespread use. All pre-1915 stringers that have retained integrity should be

¹²⁴ 1 SHDBR (1905-1906), 105.

¹²⁵ 2 SHDBR (1907-1908), 208.

¹²⁶ 7 SHDBR (1917-1918), Appendix C.

¹²⁷ 13 SHDBR (1929-1930), 53.

included for their representation either of pre-MSHD construction or of formative MSHD design. Between 1915 and 1928, steel stringer bridges were limited in their span lengths by the comparably shallow rolled beams produced by American steel mills. After 1928, the mills began rolling deeper I- and WF-section beams, permitting progressively longer spans for steel beam bridges. The longest examples of these should be included in the field survey sample. Multiple-span examples of steel stringer bridges are relatively rare and should also be included.

All pre-1955 steel stringers: 1,658
 Date range: 1882 - 1954
 Span range: 11 feet - 142 feet

All pre-1915 steel stringers: 69
 Steel stringers - 5+ spans or 45-foot span 1916 - 1928: 26
 Steel stringers - 5+ spans or 75-foot span 1929 - 1940: 14
 Steel stringers - 5+ spans or 75-foot span 1941 - 1955: 34

TOTAL RECOMMENDED FOR SURVEY 143

Steel stringer with jack-arch deck (362, 462): MSHD developed its first standard stringer designs with jack-arch concrete decks in the 1905-1906 biennium. As a subtype of the venerable steel stringer bridge, its utility was relatively short-lived. All pre-1915 examples of this intrinsically short-span structural type that have retained integrity should be included for their representation either of pre-MSHD construction or of formative MSHD design.

All pre-1955 steel stringers with jack-arch decks: 200
 Date range: 1900 - 1954
 Span range: 16 feet - 44 feet

All pre-1915 steel stringers with jack-arch decks: 45

TOTAL RECOMMENDED FOR SURVEY 45

Steel Stringers

Struct No	County	Type	Superstructure	Year	Main spans	Span length
ALLE002	ALLEGAN	302	steel I-beam stringer	1950	6	60.00
ALLE003	ALLEGAN	302	steel I-beam stringer	1943	6	45.00
ALLE041	ALLEGAN	302	steel I-beam stringer	1938	5	42.00
AREN028	ARENAC	372	steel I-beam stringer	1907	1	25.00
BARA012	BARAGA	332	steel composite stringer	1928	1	67.00
BARR015	BARRY	372	steel I-beam stringer	1900	1	23.00
BENZ005	BENZIE	302	steel I-beam stringer	1900	2	30.00
BENZ006	BENZIE	302	steel I-beam stringer	1906	2	30.00
BERR005	BERRIEN	302	steel I-beam stringer	1949	8	50.00
BERR016	BERRIEN	332	steel composite stringer	1955	3	79.00
BERR017	BERRIEN	332	steel composite stringer	1955	3	79.00
BERR046	BERRIEN	302	steel I-beam stringer	1954	6	66.00
BERR052	BERRIEN	302	steel I-beam stringer	1947	5	60.00
BRAN022	BRANCH	302	steel I-beam stringer	1900	1	34.00
BRAN037	BRANCH	302	steel I-beam stringer	1920	1	50.00
CHEB024	CHEBOYGAN	372	steel I-beam stringer	1900	3	14.00
CHIP018	CHIPPEWA	402	steel continuous I-beam stringer	1931	7	60.00
CLAR007	CLARE	332	steel composite stringer	1951	3	86.00
CLAR008	CLARE	302	steel I-beam stringer	1920	1	47.00
DELT017	DELTA	302	steel I-beam stringer	1900	1	23.00
DELT026	DELTA	372	steel I-beam stringer	1900	2	15.00
EATO033	EATON	302	steel I-beam stringer	1908	1	26.00
EATO044	EATON	302	steel I-beam stringer	1913	1	29.00
GENE004	GENESEE	332	steel composite stringer	1954	6	64.00
GENE098	GENESEE	302	steel I-beam stringer	1900	1	46.00
GLAD001	GLADWIN	302	steel I-beam stringer	1939	6	50.00
GLAD009	GLADWIN	332	steel composite stringer	1928	1	60.00
GOGEO11	GOGEBIC	302	steel I-beam stringer	1939	5	45.00
GOGEO22	GOGEBIC	302	steel I-beam stringer	1928	2	49.00
GRAT048	GRATIOT	372	steel I-beam stringer	1900	1	19.00
HILL017	HILLSDALE	302	steel I-beam stringer	1900	1	35.00
HILL027	HILLSDALE	302	steel I-beam stringer	1898	1	24.00
HILL028	HILLSDALE	302	steel I-beam stringer	1896	1	24.00
HILL032	HILLSDALE	302	steel I-beam stringer	1910	1	20.00
HOUG012	HOUGHTON	302	steel I-beam stringer	1914	1	37.00
HOUG016	HOUGHTON	302	steel I-beam stringer	1900	1	34.00
HOUG018	HOUGHTON	302	steel I-beam stringer	1900	1	34.00
HURO045	HURON	302	steel I-beam stringer	1910	1	44.00
HURO052	HURON	302	steel I-beam stringer	1910	1	38.00
HURO056	HURON	302	steel I-beam stringer	1910	1	19.00
HURO057	HURON	302	steel I-beam stringer	1910	1	19.00
HURO077	HURON	302	steel I-beam stringer	1925	1	52.00
HURO084	HURON	302	steel I-beam stringer	1925	1	57.00

Steel Stringers

Struct No	County	Type	Superstructure	Year	Main spans	Span length
INGH002	INGHAM	332	steel composite stringer	1952	15	85.00
INGH003	INGHAM	332	steel composite stringer	1950	9	92.00
INGH020	INGHAM	302	steel I-beam stringer	1941	5	56.00
INGH060	INGHAM	302	steel I-beam stringer	1946	6	81.00
IONI036	IONIA	302	steel I-beam stringer	1900	1	52.00
JACK008	JACKSON	302	steel I-beam stringer	1926	1	50.00
JACK018	JACKSON	402	steel continuous I-beam stringer	1949	3	81.00
JACK024	JACKSON	342	steel I-beam stringer, concrete encase	1927	4	54.00
JACK048	JACKSON	372	steel I-beam stringer	1910	1	34.00
JACK049	JACKSON	342	steel I-beam stringer, concrete encase	1908	1	22.00
JACK050	JACKSON	302	steel I-beam stringer	1900	1	38.00
KALA004	KALAMAZOO	302	steel I-beam stringer	1951	3	83.00
KALK004	KALKASKA	372	steel I-beam stringer	1910	1	25.00
KENT013	KENT	342	steel I-beam stringer, concrete encase	1925	1	50.00
KENT040	KENT	302	steel I-beam stringer	1932	2	75.00
LAKE010	LAKE	302	steel I-beam stringer	1904	1	25.00
LAKE015	LAKE	302	steel I-beam stringer	1909	1	28.00
LAKE017	LAKE	302	steel I-beam stringer	1909	1	36.00
LAPE039	LAPEER	302	steel I-beam stringer	1900	1	25.00
LENA032	LENAWEE	342	steel I-beam stringer, concrete encase	1940	5	23.00
LENA034	LENAWEE	302	steel I-beam stringer	1910	1	35.00
LIVI017	LIVINGSTON	302	steel I-beam stringer	1910	1	29.00
LIVI025	LIVINGSTON	302	steel I-beam stringer	1900	1	21.00
LUCE002	LUCE	402	steel continuous I-beam stringer	1900	3	12.00
LUCE007	LUCE	302	steel I-beam stringer	1900	1	27.00
MACK001	MACKINAC	302	steel I-beam stringer	1938	5	56.00
MACO004	MACOMB	302	steel I-beam stringer	1939	5	50.00
MACO013	MACOMB	332	steel composite stringer	1950	5	69.00
MACO031	MACOMB	332	steel composite stringer	1951	5	73.00
MACO042	MACOMB	302	steel I-beam stringer	1928	1	48.00
MACO070	MACOMB	332	steel composite stringer	1953	3	87.00
MARQ001	MARQUETTE	302	steel I-beam stringer	1938	3	75.00
MARQ013	MARQUETTE	302	steel I-beam stringer	1928	1	72.00
MARQ030	MARQUETTE	302	steel I-beam stringer	1926	1	57.00
MARQ031	MARQUETTE	302	steel I-beam stringer	1927	1	67.00
MASO001	MASON	302	steel I-beam stringer	1934	5	31.00
MASO019	MASON	302	steel I-beam stringer	1900	1	30.00
MECO006	MECOSTA	302	steel I-beam stringer with concrete sp	1927	1	50.00
MECO012	MECOSTA	302	steel I-beam stringer	1900	1	30.00
MECO014	MECOSTA	302	steel I-beam stringer	1896	1	29.00
MENO010	MENOMINEE	332	steel composite stringer	1952	5	70.00
MIDL004	MIDLAND	302	steel I-beam stringer	1947	6	60.00
MIDL006	MIDLAND	302	steel I-beam stringer	1910	1	28.00

Steel Stringers

Struct No	County	Type	Superstructure	Year	Main spans	Span length
MONR021	MONROE	402	steel continuous I-beam stringer	1925	3	46.00
MONR026	MONROE	302	steel I-beam stringer	1900	1	16.00
MONR028	MONROE	332	steel composite stringer	1927	1	48.00
MONR038	MONROE	332	steel composite stringer	1938	7	54.00
MONR067	MONROE	302	steel I-beam stringer	1900	1	29.00
MONR076	MONROE	302	steel I-beam stringer	1927	1	49.00
MONT017	MONTCALM	302	steel I-beam stringer	1910	1	24.00
MONT024	MONTCALM	342	steel I-beam stringer, concrete encase	1914	2	32.00
MUSK007	MUSKEGON	302	steel I-beam stringer	1927	6	40.00
OAKL026	OAKLAND	302	steel I-beam stringer	1900	1	30.00
OAKL027	OAKLAND	302	steel I-beam stringer	1900	1	30.00
OAKL033	OAKLAND	342	steel I-beam stringer, concrete encase	1929	5	57.00
OGEM007	OGEMAW	302	steel I-beam stringer	1953	3	82.00
OSCE036	OSCEOLA	372	steel I beam stringer	1902	3	24.00
OSCE037	OSCEOLA	372	steel I-beam stringer	1902	3	24.00
OTTA003	OTTAWA	302	steel I-beam stringer	1949	5	52.00
OTTA021	OTTAWA	302	steel I-beam stringer	1932	2	88.00
OTTA031	OTTAWA	302	steel I-beam stringer	1912	4	16.00
OTTA032	OTTAWA	302	steel I-beam stringer	1912	3	16.00
OTTA033	OTTAWA	302	steel I-beam stringer	1948	9	54.00
OTTA042	OTTAWA	302	steel I-beam stringer	1930	12	11.00
SAGI015	SAGINAW	332	steel composite stringer	1927	3	142.00
SAGI027	SAGINAW	302	steel I-beam stringer	1913	1	30.00
SAGI045	SAGINAW	302	steel I-beam stringer	1927	5	65.00
SAGI049	SAGINAW	302	steel I-beam stringer	1912	1	28.00
SAGI054	SAGINAW	302	steel I-beam stringer	1926	2	47.00
SAGI063	SAGINAW	302	steel I-beam stringer	1910	2	13.00
SAGI070	SAGINAW	302	steel I-beam stringer	1895	1	48.00
SAGI084	SAGINAW	302	steel I-beam stringer	1890	1	24.00
SHIA008	SHIAWASSEE	332	steel composite stringer	1900	1	27.00
SHIA029	SHIAWASSEE	302	steel I-beam stringer	1901	1	28.00
STCL071	ST. CLAIR	302	steel I-beam stringer	1920	1	47.00
STCL072	ST. CLAIR	302	steel I-beam stringer	1928	2	57.00
STCL074	ST. CLAIR	372	steel I-beam stringer, timber floor	1912	1	23.00
STCL084	ST. CLAIR	302	steel I-beam stringer	1914		
STJO020	ST. JOSEPH	302	steel I-beam stringer	1911	1	42.00
STJO034	ST. JOSEPH	302	steel I-beam stringer	1901	1	21.00
STJO036	ST. JOSEPH	302	steel I-beam stringer	1909	1	30.00
STJO038	ST. JOSEPH	302	steel I-beam stringer	1910	1	27.00
TUSC009	TUSCOLA	302	steel I-beam stringer	1941	7	60.00
VANB014	VAN BUREN	302	steel I-beam stringer	1928	1	55.00
VANB030	VAN BUREN	302	steel I-beam stringer	1882	1	50.00
WASH051	WASHTENA	342	steel I-beam stringer, concrete encase	1928	10	44.00

Steel Stringers

Struct No	County	Type	Superstructure	Year	Main spans	Span length
WAYN003	WAYNE	332	steel composite stringer	1943	7	79.00
WAYN004	WAYNE	332	steel composite stringer	1943	7	80.00
WAYN009	WAYNE	302	steel I-beam stringer	1948	5	64.00
WAYN024	WAYNE	432	steel continuous composite stringer	1955	5	62.00
WAYN125	WAYNE	302	steel I-beam stringer	1900	1	22.00
WAYN152	WAYNE	402	steel continuous I-beam stringer	1917	2	19.00
WAYN153	WAYNE	302	steel I-beam stringer	1928	7	52.00
WAYN167	WAYNE	342	steel I-beam stringer, concrete encase	1901	1	34.00
WAYN190	WAYNE	332	steel composite stringer	1953	5	92.00
WAYN191	WAYNE	332	steel composite stringer	1953	6	70.00
WAYN195	WAYNE	302	steel I-beam stringer	1954	4	83.00
WAYN202	WAYNE	332	steel composite stringer	1953	6	57.00
WAYN205	WAYNE	332	steel composite stringer	1953	6	57.00
WAYN238	WAYNE	432	steel continuous composite stringer	1953	2	81.00

Steel Stringers with jack-arch decks

Struct No	County	Type	Superstructure	Year	Main spans	Span length
AREN032	ARENAC	362	steel I-beam stringer	1913	2	30.00
BERR035	BERRIEN	362	steel I-beam stringer	1906	1	23.00
CALH028	CALHOUN	362	steel I-beam stringer	1900	1	26.00
CALH034	CALHOUN	362	steel I-beam stringer	1905	1	23.00
DELTO21	DELTA	362	steel I-beam stringer	1900	1	35.00
EATO023	EATON	362	steel I-beam stringer	1910	1	18.00
EATO024	EATON	362	steel I-beam stringer	1913	1	23.00
EATO030	EATON	362	steel I-beam stringer	1914	1	44.00
EATO039	EATON	362	steel I-beam stringer	1903	1	25.00
EATO041	EATON	362	steel I-beam stringer	1903	1	19.00
EATO042	EATON	362	steel I-beam stringer	1913	1	28.00
EATO043	EATON	362	steel I-beam stringer	1900	1	23.00
GRAT010	GRATIOT	362	steel I-beam stringer	1900	1	21.00
HURO034	HURON	362	steel I-beam stringer	1910	1	36.00
HURO089	HURON	362	steel I-beam stringer	1910	1	26.00
IONI028	IONIA	362	steel I-beam stringer	1900	1	20.00
IONI035	IONIA	362	steel I-beam stringer	1900	1	28.00
IONI040	IONIA	362	steel I-beam stringer	1907	1	19.00
JACK058	JACKSON	362	steel I-beam stringer	1910	1	31.00
LENA041	LENAWEE	362	steel I-beam stringer	1905	1	24.00
LIVI029	LIVINGSTON	362	steel I-beam stringer	1914	1	25.00
LIVI031	LIVINGSTON	362	steel I-beam stringer	1914	1	26.00
MACO040	MACOMB	362	steel I-beam stringer	1910	1	16.00
MANI008	MANISTEE	362	steel I-beam stringer	1910	1	22.00
MASO023	MASON	362	steel I-beam stringer	1900	1	25.00
MECO019	MECOSTA	362	steel I-beam stringer	1900	1	24.00
MECO107	MECOSTA	362	steel I-beam stringer	1896	1	29.00
MIDL040	MIDLAND	362	steel I-beam stringer	1903	1	18.00
MONR112	MONROE	362	steel I-beam stringer	1900	1	17.00
OCEA014	OCEANA	362	steel I-beam stringer	1900	1	20.00
OCEA017	OCEANA	362	steel I-beam stringer	1910	2	14.00
OCEA019	OCEANA	362	steel I-beam stringer	1910	1	35.00
OSCE023	OSCEOLA	362	steel I-beam stringer	1900	1	17.00
OSCE025	OSCEOLA	362	steel I-beam stringer	1900	1	18.00
OSCE027	OSCEOLA	362	steel I-beam stringer	1900	1	28.00
OSCE028	OSCEOLA	362	steel I-beam stringer	1900	1	19.00
OSCE029	OSCEOLA	362	steel I-beam stringer	1900	1	18.00
OSCE032	OSCEOLA	362	steel I-beam stringer	1900	1	30.00
OSCE035	OSCEOLA	362	steel I-beam stringer	1900	2	16.00
OSCE039	OSCEOLA	362	steel I-beam stringer	1900	1	28.00
STCL075	ST. CLAIR	362	steel I-beam stringer	1913	1	23.00
STCL092	ST. CLAIR	362	steel I-beam stringer	1917	1	23.00
STJO014	ST. JOSEPH	362	steel I-beam stringer	1912	1	21.00

Steel Stringers with jack-arch decks

Struct No	County	Type	Superstructure	Year	Main spans	Span length
STJO032	ST. JOSEPH	362	steel I-beam stringer	1910	1	27.00
STJO033	ST. JOSEPH	362	steel I-beam stringer	1912	1	20.00

STEEL GIRDER (303, 403, 321, 421, 333, 433, 352, 452, 382, 482, 392, 492)

Steel girders employ a technology similar to that of stringers, substituting two or more deep-profile beams for the row of relatively shallow stringers. With their more complicated bearing condition, beam arrangement and floor system connections, steel girder bridges mark a step up the technological scale from stringers. It was this increased complexity -- along with relatively heavy superstructural weight and the physical limitation of transporting heavy, factory-fabricated girders -- that limited the application of steel girders for highway use in America in the early twentieth century. The Michigan State Highway Department first delineated plans for a steel plate through girder bridge among its first standards in 1907-1908.¹²⁸ Intended for spans between 30 and 60 feet, girders were used with moderate frequency in the state between 1908 and about 1915.

The high cost of steel during and after World War I dampened the use of steel through and deck girders, however. By 1922 MSHD had dropped its through girder altogether and reduced the span range of its deck girder standard to only ten feet between 55 and 65 feet. After the Highway Department redesigned its girder standard and began encasing the steel beams in concrete in 1927-1928, this structural type experienced a resurgence in the state for long-span crossings. Girders -- both encased and open, deck and through -- were used frequently for long-span bridges and grade separations in the 1930s. They continued to be used in the 1940s and 1950s but have gradually been overshadowed by prestressed concrete beam bridges.

Steel deck girder (303, 403, 333, 433, 352, 452, 382, 482): MSHD developed its first standard deck girder designs around 1910, and this structural type enjoyed modest success through the 1910s. All pre-1920 girders that have retained integrity should therefore be included for their representation either of pre-MSHD construction or of formative MSHD design. In subsequent years, girder spans increased incrementally; by the 1940s, they represented as a group the longest beam bridges in the state. The longest examples of these should be included in the field survey sample. Multiple-span examples of steel stringer bridges are relatively rare and should also be included.

All pre-1955 steel deck girders:	110
Date range: 1900 - 1955	
Span range: 20 feet - 158 feet	
All pre-1920 steel deck girders:	4
Deck girders - 5+ spans or 85-foot span 1920 - 1930:	7
Deck girders - 5+ spans or 85-foot span 1931 - 1940:	5
Deck girders - 5+ spans or 100-foot span 1941 - 1955:	20

¹²⁸ 2 SHDBR (1907-1908), 204.

TOTAL RECOMMENDED FOR SURVEY 36

Steel through girder (321, 421): Steel through girder bridges are today sufficiently rare that all pre-1955 examples should be included in the field survey sample.

All pre-1955 steel through girders: 7
Date range: 1900 - 1934
Span range: 47 feet - 95 feet

TOTAL RECOMMENDED FOR SURVEY 7

Concrete-encased steel deck girder (392, 492): Concrete-encased, steel deck girder bridges are today sufficiently rare that both pre-1955 examples should be included in the field survey sample.

All pre-1955 concrete-encased steel deck girders: 2
Date range: 1926 - 1927
Span range: 55 feet - 65 feet

TOTAL RECOMMENDED FOR SURVEY 2

Steel Deck Girders

Struct No	County	Type	Superstructure	Year	Main spans	Span length
BAY005	BAY	482	steel plate deck girder, arched	1938	6	98.00
BERR008	BERRIEN	303	steel deck girder	1950	3	121.00
BERR015	BERRIEN	303	steel plate deck girder, variable depth	1954	5	101.00
DICK004	DICKINSON	303	steel deck girder	1929	6	79.00
HURO053	HURON	303	steel deck girder	1915	1	59.00
HURO054	HURON	303	steel deck girder	1915	1	59.00
INGH010	INGHAM	352	steel plate girder	1930	1	88.00
IONI004	IONIA	352	steel plate deck girder	1948	5	75.00
IONI012	IONIA	403	steel plate deck girder, variable depth	1950	4	130.00
KENT001	KENT	382	steel plate deck girder, variable depth	1929	6	80.00
KENT009	KENT	352	steel deck girder	1936	4	87.00
KENT016	KENT	382	steel deck girder	1930	8	75.00
MASO024	MASON	303	steel girder	1900	1	52.00
MENO001	MENOMINEE	352	steel plate deck girder, arched	1929	13	79.00
MIDL003	MIDLAND	303	steel deck girder	1955	3	110.00
MIDL008	MIDLAND	352	steel plate girder	1933	1	85.00
MONR051	MONROE	303	steel plate deck girder, variable depth	1955	3	158.00
MONT007	MONTCALM	382	steel deck girder	1932	3	87.00
MUSK043	MUSKEGON	303	steel plate girder	1900	5	29.00
OCEA001	OCEANA	303	steel plate deck girder	1954	3	102.00
ONTO015	ONTONAGON	303	steel plate cantilevered deck girder	1952	3	102.00
ONTO016	ONTONAGON	303	steel plate cantilevered deck girder	1952	3	90.00
STCL013	ST. CLAIR	352	steel deck girder	1928	2	75.00
STCL018	ST. CLAIR	303	steel plate deck girder, variable depth	1950	3	146.00
WASH011	WASHTENA	382	steel plate deck girder	1942	5	88.00
WASH013	WASHTENA	382	steel plate deck girder	1942	5	88.00
WASH048	WASHTENA	382	steel plate girder, composite	1928	1	84.00
WAYN013	WAYNE	382	steel plate girder	1954	4	108.00
WAYN021	WAYNE	352	steel plate deck girder	1948	2	119.00
WAYN031	WAYNE	382	steel plate girder	1953	2	118.00
WAYN192	WAYNE	352	steel plate girder	1953	5	77.00
WAYN194	WAYNE	352	steel plate girder	1953	5	67.00
WAYN203	WAYNE	352	steel plate girder	1953	11	134.00
WAYN204	WAYNE	352	steel plate girder	1953	11	130.00
WAYN208	WAYNE	352	steel plate girder	1955	4	121.00
WEXF001	WEXFORD	303	steel deck girder	1948	3	122.00

Steel Through Girders

Struct No	County	Type	Superstructure	Year	Main spans	Span length
ALGE024	ALGER	321	steel plate through girder	1910	1	61.00
BERR039	BERRIEN	321	steel through girder	1900	1	47.00
GOGEO38	GOGEBIC	321	steel through girder	1923	1	49.00
MONR114	MONROE	321	steel through girder	1900	1	60.00
OTTA015	OTTAWA	321	steel plate through girder, variable de	1928	7	95.00
STCL008	ST. CLAIR	321	steel plate through girder	1906	1	70.00
WASH005	WASHTENA	321	steel plate through girder	1934	3	81.00

... They were fabricated by such regional firms as the Clark Iron Works Company, the Wrought Iron Bridge Company, the American Bridge Company and the Wash Bridge Company, all of them, and in-state firms such as the Michigan Bridge Company, and the Great Bridge and Iron Company.

The earliest bridges featured girder and rolled construction in heavy vertical bracing that was usually supported by all-wooden Trestle-type spans in the 1870s. The advent of their relatively quick erection and easy fabrication, and subsequent success in building such positive working machines became widely available by the late 1880s. The use of steel began to supersede wood around 1910. Their use was encouraged by the Michigan State Highway Department, which published in 1910 their design manual - a first - containing various girders that ranged in span from 50 to full length - in the 1907-1910 documents.

MICHIGAN updated its policy from standard practice by providing a heavy traffic load and heavy roadway, but the agency continued to reference the American configuration for many years and span girders through the 1920s and 1930s. For long span girders, MICHIGAN developed its design for a rigid-connected Foster span in the 1911-1912 documents. This rigidly-connected span was used in the 1910s and 1920s as the standard for main structure and was 12 feet. For longer spans or spans that required overlaid decking, MICHIGAN designers typically employed rigid-connected Trestle design spans. The agency never designed a through truss structure, however, showing the same self-reliance of design and construction that it used for covered spans.

Steel Through and Trestle spans (310, 310, 343, 471, 344, 344) throughout the span and truss were included in Michigan's initial bridge inventory as well as, of course, the most thoroughly studied of the state's bridge types. To gain a better understanding of their development, particularly among the early and more obvious pony truss standards, all through and pony truss and trestle structures that have retained integrity should be included.

Concrete-encased Steel Deck Girders

Struct No	County	Type	Superstructure	Year	Main spans	Span length
CHIP009	CHIPPEWA	392	steel plate deck girder, concrete encas	1926	1	55.00
JACK010	JACKSON	392	steel plate girder, concrete encased	1927	1	65.00

Beginning in the late 1870s, the pin-connected wrought iron truss was the roadway bridge of choice for medium- and long-span crossings in America. The bridge companies that proliferated through the Midwest and Ohio River Valley competed enthusiastically for county and township bridge business, marketing an ever-changing array of truss types through networks of regional sales representatives. Both patented in the 1840s, the Pratt and Warren web configurations – with their variations and subtypes – formed the basis for the overwhelming majority of all-metal trusses built in Michigan in the late nineteenth and early twentieth centuries. They were fabricated by such regional firms as the King Iron Bridge Company, the Wrought Iron Bridge Company, the Massillon Bridge Company and the Smith Bridge Company, all of Ohio, and in-state firms such as the Michigan Bridge Company and the Detroit Bridge and Iron Company.

The earliest bridges featured pinned and bolted connections in some combinations; these were largely superseded by all-pinned Pratt-type trusses in the 1880s. Because of their relatively quick erection and easy fabrication, pin-connected trusses dominated the market until portable riveting machines became widely available after the turn of the century. Riveted trusses began to overshadow pinned around 1910. Their use was encouraged by the Michigan State Highway Department, which published its first truss standard – a rigid-connected Warren pony that ranged in span from 60 to 100 feet – in the 1907-1908 biennium.¹²⁹

MShD updated its pony truss standards periodically to accommodate heavier traffic loads and wider roadways, but the agency maintained its reliance on the Warren configuration for short- and medium-span ponies through the 1930s and 1940s. For long-span pony trusses, MShD developed the design for a rigid-connected Parker truss in the 1921-1922 biennium.¹³⁰ This atypically configured truss was used in the 1920s and 1930s as the standard for spans between 100 and 130 feet. For longer spans or trusses that required overhead bracing, MShD engineers typically employed rigid-connected Pratt through trusses. The agency never developed a through truss standard, however, stating the same individualized-circumstances rationale that it used for concrete arches.

Steel through and pony truss (310, 410, 343, 443, 344, 444): Numerous iron and steel trusses were included in Michigan's initial historic bridge inventory; as a result, trusses are the most thoroughly studied of the state's historic bridge types. To gain a better understanding of truss development, particularly among the later and more common pony truss standards, all through and pony trusses not previously surveyed that have retained integrity should be included.

¹²⁹ 2 SHDBR (1907-1908), 204.

¹³⁰ 9 SHDBR (1921-1922), 13.

All pre-1955 pony trusses: 118
Date range: 1900 - 1955
Span range: 6 feet - 32 feet

All pre-1955 through trusses: 14
Date range: 1900 - 1955
Span range: 6 feet - 32 feet

All pre-1955 trusses, configuration unknown: 14
Date range: 1900 - 1955
Span range: 6 feet - 32 feet

TOTAL RECOMMENDED FOR SURVEY 146

Steel through and pony trusses

Struct No	County	Type	Superstructure	Year	Main spans	Span length
ALGE017	ALGER	344	rigid-connected Pratt half-hip pony tr	1906	1	26.00
ALGE025	ALGER	344	rigid-connected Pratt half-hip pony tr	1910	1	40.00
ALGE028	ALGER	344	rigid-connected Warren pony truss	1921	1	47.00
ALLE025	ALLEGAN	344	pin-connected Pratt half-hip pony trus	1910	1	50.00
ALLE026	ALLEGAN	344	pin-connected Pratt half-hip pony trus	1915	1	47.00
ALLE027	ALLEGAN	344	pin-connected Pratt half-hip pony trus	1916	1	64.00
ALLE028	ALLEGAN	344	pin-connected Pratt half-hip pony trus	1918	1	41.00
ALLE030	ALLEGAN	344	rigid-connected Pratt half-hip pony tr	1916	1	27.00
ALLE036	ALLEGAN	344	rigid-connected Warren pony truss	1920	1	42.00
ALPE013	ALPENA	344	pin-connected Pratt half-hip pony trus	1921	1	39.00
BENZ007	BENZIE	344	rigid-connected Pratt pony truss	1900	1	55.00
BERR036	BERRIEN	344	rigid-connected Warren pony truss	1928	1	49.00
BRAN027	BRANCH	344	rigid-connected Warren pony truss	1920	2	26.00
BRAN028	BRANCH	344	rigid-connected Pratt half-hip pony tr	1905	1	39.00
BRAN029	BRANCH	344	pin-connected Pratt pony truss	1905	1	60.00
BRAN032	BRANCH	344	pin-connected Pratt half-hip pony trus	1917	1	39.00
BRAN033	BRANCH	344	rigid-connected Warren pony truss	1903	1	60.00
BRAN038	BRANCH	343	pin-connected Pratt through truss	1905	1	88.00
BRAN039	BRANCH	344	pin-connected Pratt pony truss	1900	1	78.00
BRAN042	BRANCH	344	rigid-connected Pratt pony truss	1920	1	64.00
CALH033	CALHOUN	343	pin-connected Pratt through truss	1914	1	80.00
CALH037	CALHOUN	344	rigid-connected polygonal Warren po	1906	1	100.00
CHAR004	CHARLEVOI	344	pin-connected Pratt half-hip pony trus	1900	1	40.00
CHEB013	CHEBOYGAN	344	steel truss	1935	1	32.00
CHIP022	CHIPPEWA	344	rigid-connected Warren pony truss	1920	1	33.00
CHIP023	CHIPPEWA	344	rigid-connected Warren pony truss	1935	1	33.00
CHIP024	CHIPPEWA	344	rigid-connected Warren pony truss	1914	1	51.00
CLAR020	CLARE	344	rigid-connected Pratt pony truss	1915	1	37.00
CLAR023	CLARE	344	rigid-connected Pratt pony truss	1934	1	41.00
CLAR027	CLARE	343	pin-connected Pratt through truss	1929	1	100.00
CLAR028	CLARE	310	steel truss	1929	1	43.00
CLIN001	CLINTON	344	pin-connected Pratt pony truss	1900		
CLIN027	CLINTON	343	pin-connected Pratt through truss	1907	1	99.00
CLIN029	CLINTON	344	rigid-connected Warren ony truss	1906	1	56.00
CLIN033	CLINTON	344	steel I-beam stringer	1920	1	56.00
EATO027	EATON	344	rigid-connected lattice pony truss	1910	1	25.00
EATO049	EATON	344	steel truss			
GLAD011	GLADWIN	344	rigid-connected Warren pony truss	1917	1	65.00
GLAD022	GLADWIN	344	rigid-connected Warren pony truss	1920	1	48.00
GOGE023	GOGEBIC	344	rigid-connected Warren pony truss	1916	1	68.00
GOGE029	GOGEBIC	344	rigid-connected Pratt pony truss	1906	1	68.00
GOGE040	GOGEBIC	344	rigid-connected Warren pony truss	1920	1	64.00
GRAT042	GRATIOT	344	pin-conected Pratt half-hip pony truss	1908	1	34.00

Steel through and pony trusses

Struct No	County	Type	Superstructure	Year	Main spans	Span length
GRAT043	GRATIOT	310	steel truss	1910	1	69.00
GRAT047	GRATIOT	344	rigid-connected Warren pony truss	1920	1	65.00
HOUG017	HOUGHTON	344	rigid-connected Pratt half-hip pony tr	1900	1	40.00
HURO036	HURON	344	rigid-connected two-angle Warren po	1915	1	37.00
HURO041	HURON	344	rigid-connected two-angle Warren po	1915	1	40.00
HURO043	HURON	344	steel truss	1912	1	40.00
HURO050	HURON	344	rigid-connected two-angle Warren po	1915	1	83.00
HURO075	HURON	344	pin-connected Pratt half-hip pony trus	1925	1	47.00
IONI032	IONIA	344	pin-connected Pratt half-hip pony trus	1900	1	28.00
IONI038	IONIA	343	pin-connected Pratt through truss	1906	1	79.00
IONI039	IONIA	344	pin-connected Pratt half-hip pony trus	1900	1	49.00
IRON017	IRON	344	rigid-connected Warren pony truss	1924	2	60.00
IRON023	IRON	410	steel continuous truss	1906	1	101.00
KALA026	KALAMAZOO	344	rigid-connected Warren pony truss	1907	1	28.00
KALK003	KALKASKA	344	pin-connected Pratt half-hip pony trus	1910	2	15.00
KENT038	KENT	344	pin-connected Pratt pony truss	1892	1	60.00
LAPE023	LAPEER	344	rigid-connected Warren pony truss	1889	1	42.00
LENA035	LENAWEE	344	steel truss	1908	1	35.00
LENA036	LENAWEE	344	steel truss	1907	1	39.00
LENA038	LENAWEE	344	steel truss	1910	1	63.00
LENA040	LENAWEE	344	steel truss	1920	1	41.00
LENA045	LENAWEE	344	steel truss	1910	1	39.00
LENA047	LENAWEE	344	steel truss	1897	1	39.00
LENA048	LENAWEE	344	steel truss	1900	1	33.00
LENA060	LENAWEE	344	steel truss	1870		
LIVI033	LIVINGSTON	310	steel truss	1905	1	33.00
LUCE003	LUCE	344	rigid-connected Warren pony truss	1913	1	40.00
MACO049	MACOMB	344	rigid-connected Warren pony truss	1910	1	77.00
MACO056	MACOMB	344	pin-connected Pratt half-hip pony trus	1910	1	58.00
MACO061	MACOMB	344	rigid-connected Pratt pony truss	1928	1	63.00
MACO065	MACOMB	344	pin-connected Pratt pony truss	1920	1	49.00
MARQ075	MARQUETTE	310	steel truss	1909	1	22.00
MASO012	MASON	344	steel truss	1900	1	62.00
MASO016	MASON	344	steel truss	1900	1	45.00
MASO021	MASON	344	steel truss	1900	1	26.00
MASO022	MASON	344	steel truss	1900	1	36.00
MECO016	MECOSTA	344	rigid-connected Warren pony truss	1897	1	61.00
MENO031	MENOMINEE	344	rigid-connected Warren pony truss	1924	1	51.00
MENO046	MENOMINEE	344	steel truss	1926	1	39.00
MIDL007	MIDLAND	344	rigid-connected Parker pony truss	1932	1	109.00
MIDL011	MIDLAND	343	rigid-connected Pratt through truss	1928	1	128.00
MIDL020	MIDLAND	344	rigid-connected Warren pony truss	1930	1	89.00
MIDL021	MIDLAND	344	rigid-connected Pratt pony truss	1906	1	60.00

Steel through and pony trusses

Struct No	County	Type	Superstructure	Year	Main spans	Span length
MIDL022	MIDLAND	310	steel truss	1930	1	30.00
MIDL033	MIDLAND	344	rigid-connected Warren pony truss	1910	1	48.00
MIDL034	MIDLAND	344	pin-connected Pratt half-hip pony trus	1905	1	39.00
MIDL035	MIDLAND	344	rigid-connected Pratt pony truss	1911	1	48.00
MIDL046	MIDLAND	343	steel truss	1900	1	141.00
MISS011	MISSAUKEE	344	pin-connected Pratt pony truss	1920	1	80.00
MISS013	MISSAUKEE	344	pin-connected Pratt pony truss	1908	1	73.00
MONR019	MONROE	344	pin-connected Pratt half-hip pony trus	1910	1	37.00
MONR020	MONROE	344	pin-connected Pratt half-hip pony trus	1899	1	48.00
MONR025	MONROE	344	pin-connected Pratt half-hip pony trus	1910	1	26.00
MONR106	MONROE	344	pin-connected Pratt half-hip pony trus	1900	1	39.00
MONR107	MONROE	344	pin-connected Pratt half-hip pony trus	1900	1	35.00
MONR111	MONROE	344	pin-connected Pratt half-hip pony trus	1900	1	33.00
MORE005	MONTMORE	344	rigid-connected Pratt half-hip pony tr	1930	1	40.00
MUSK037	MUSKEGON	310	steel truss	1910	3	40.00
NEWA017	NEWAYGO	310	steel truss	1920	1	60.00
OSCE031	OSCEOLA	344	pin-connected Pratt half-hip pony trus	1900	1	48.00
OSCE040	OSCEOLA	344	pin-connected Pratt half-hip pony trus	1900	1	42.00
SAGI020	SAGINAW	343	pin-connected Pratt through truss	1913	1	98.00
SAGI055	SAGINAW	344	rigid-connected Warren pony truss	1923	1	60.00
SAGI069	SAGINAW	344	pin-connected Pratt half-hip pony trus	1898	1	43.00
SAGI073	SAGINAW	344	rigid-connected Pratt half-hip pony tr	1907	1	40.00
SAGI076	SAGINAW	344	pin-connected Pratt pony truss	1906	1	69.00
SAGI077	SAGINAW	310	steel truss	1906	1	96.00
SAGI081	SAGINAW	344	rigid-connected Warren pony truss	1885	1	49.00
SAGI082	SAGINAW	344	rigid-connected Pratt pony truss	1887	1	39.00
SAGI083	SAGINAW	344	rigid-connected Warren pony truss	1904	1	67.00
SAGI111	SAGINAW	343	pin-connected Pratt through truss	1885	1	139.00
SANI040	SANILAC	344	steel truss	1905	1	66.00
SANI049	SANILAC	343	steel through truss	1907	1	148.00
SANI064	SANILAC	343	steel through truss	1900	1	96.00
SANI067	SANILAC	344	steel truss	1910	1	70.00
SHIA037	SHIAWASSEE	310	steel truss	1927	1	30.00
SHIA039	SHIAWASSEE	343	pin-connected Pratt through truss	1892	1	89.00
STCL062	ST. CLAIR	310	steel truss	1927	1	61.00
STCL067	ST. CLAIR	310	steel truss	1900	1	98.00
STCL079	ST. CLAIR	344	steel truss	1937		
STCL080	ST. CLAIR	344	steel truss	1910		
STCL081	ST. CLAIR	344	steel truss	1908		
STCL082	ST. CLAIR	343	steel through truss	1914		
STJO012	ST. JOSEPH	310	steel truss	1923	1	90.00
STJO022	ST. JOSEPH	344	pin-connected Pratt half-hip pony trus	1910	1	43.00
STJO024	ST. JOSEPH	344	pin-connected Pratt half-hip pony trus	1915	1	42.00

Steel through and pony trusses

Struct No	County	Type	Superstructure	Year	Main spans	Span length
STJO025	ST. JOSEPH	344	rigid-connected Warren pony truss	1915	1	45.00
STJO026	ST. JOSEPH	344	pin-connected Pratt half-hip pony truss	1912	1	54.00
STJO029	ST. JOSEPH	344	pin-connected Pratt half-hip pony truss	1934	1	50.00
STJO030	ST. JOSEPH	344	pin-connected Pratt pony truss	1914	1	79.00
STJO031	ST. JOSEPH	344	rigid-connected Warren pony truss	1923	1	54.00
STJO035	ST. JOSEPH	344	pin-connected Pratt half-hip pony truss	1909	1	29.00
TUSC027	TUSCOLA	344	rigid-connected Warren pony truss	1910	1	60.00
TUSC042	TUSCOLA	344	rigid-connected Warren pony truss	1930	1	78.00
TUSC053	TUSCOLA	344	pin-connected pony truss	1910	1	37.00
WASH040	WASHTENA	343	pin-connected Pratt through truss	1900	1	109.00
WASH042	WASHTENA	344	rigid-connected Bailey truss	1953	1	100.00
WASH047	WASHTENA	344	pin-connected Pratt half-hip pony truss	1911	1	66.00
WASH054	WASHTENA	344	pin-connected Pratt half-hip pony truss	1900	1	65.00
WAYN090	WAYNE	344	steel truss	1924	2	100.00
WAYN121	WAYNE	310	steel truss	1900	1	158.00
WAYN128	WAYNE	344	steel truss	1933	1	84.00
WEXF011	WEXFORD	344	pin-connected Pratt pony truss	1906	1	80.00

STEEL DECK TRUSS AND DECK ARCH (309, 409, 322)

Like their through and pony truss counterparts, deck trusses employed a variety of web configurations and connection types. Steel or iron deck trusses were rarely used in Michigan by either the local administrations or the State Highway Department. Typically erected over deep ravines or railroad underpasses, deck trusses are uncommon in the United States; this trend holds especially true in Michigan, a state in which the numerous low crossings place a premium on under-bridge clearance.

Steel deck truss and deck arch (309, 409, 322): The one remaining deck truss and three steel deck arches should be included in the field survey sample.

All pre-1955 deck trusses and arches: 4

 Date range: 1900 - 1947

 Span range: 38 feet - 300 feet

TOTAL RECOMMENDED FOR SURVEY 4

Steel Deck Truss and Deck Arch

Struct No	County	Type	Superstructure	Year	Main spans	Span length
BARA002	BARAGA	322	steel plate deck arch	1947	1	128.00
MACK006	MACKINAC	322	steel rigid-connected deck arch	1947	3	300.00
MANI002	MANISTEE	322	steel rigid-connected deck arch	1934	3	300.00
OSCE033	OSCEOLA	309	steel deck truss	1900	1	38.00

STEEL RIGID FRAME (307, 407)

Steel rigid-frame bridges were developed in the late nineteenth century and marketed extensively by the bridge fabricators as the bedstead truss. Due primarily to their structural shortcomings, bedsteads largely fell from favor soon after the turn of the century. Rigid-frame girder bridges were erected in the early twentieth century, but their use was limited essentially to urban viaducts and grade separations. The structural type experienced a brief resurgence of use in the 1930s -- along with the concrete rigid frame -- for use in federal relief highway projects, and more recently on the interstate highway system. Through its various permutations, the steel rigid frame bridge was never commonly built; the Michigan State Highway Department employed it only occasionally and did not adopt it as a standard design.

Steel rigid frame (307, 407): The six rigid-frame bedsteads in the general inventory should be included in the field survey sample.

All pre-1955 steel rigid frames: 6
Date range: 1901 - 1910
Span range: 29 feet - 59 feet

TOTAL RECOMMENDED FOR SURVEY 6

Steel Rigid Frames

Struct No	County	Type	Superstructure	Year	Main spans	Span length
MIDL031	MIDLAND	307	rigid-connected bedstead	1904	1	29.00
MIDL032	MIDLAND	307	pin-connected bedstead	1901	1	41.00
OCEA022	OCEANA	307	pin-connected Pratt bedstead	1912	1	48.00
OCEA023	OCEANA	307	pin-connected Pratt bedstead	1910	1	29.00
OCEA024	OCEANA	307	pin-connected Pratt bedstead	1910	1	51.00
OCEA025	OCEANA	307	pin-connected Pratt bedstead	1910	1	59.00

STEEL MOVABLE SPAN (316, 417)

With a large number of low-level roads intersecting with heavily trafficked rivers, Michigan has housed several movable span steel bridges. Small-scale swing-span structures were built on a township level early in the twentieth century. In 1917-1918 the State Highway Department designed and erected its first bascule bridge over the Spring Lake Outlet in Ottawa County.¹³¹ Other swing and bascule bridges were built in the 1920s, 1930s and 1940s. Most of these were included in the initial historic bridge inventory; six bascules and two swing-span bridges are included in the general inventory for this study.

Steel movable span (316, 417): All eight movable span bridges in the general inventory should be included in the field survey sample.

All pre-1955 steel movable span bridges: 8

 Date range: 1886 - 1949

 Span range: 70 feet - 194 feet

TOTAL RECOMMENDED FOR SURVEY 8

¹³¹ Melick, "Summary of the Work," 30.

Steel Movable Spans

Struct No	County	Type	Superstructure	Year	Main spans	Span length
BAY004	BAY	316	steel plate deck girder bascule bridge	1938	1	185.00
BERR007	BERRIEN	316	steel plate deck girder bascule bridge	1949	1	164.00
CHAR001	CHARLEVOI	316	steel bascule bridge	1949	1	111.00
CHEB008	CHEBOYGAN	316	steel plate deck girder bascule	1940	1	70.00
ONTO009	ONTONAGON	417	steel plate deck girder swing span	1939	2	99.00
SAGI114	SAGINAW	417	pin-connected Pratt through truss swi	1886	2	194.00
STCL100	ST. CLAIR	316	steel bascule bridge	1933	1	114.00
WAYN118	WAYNE	316	steel bascule bridge	1922	2	91.00

STEEL PIPE CULVERT (319)

Small-diameter cast iron pipe culverts were used commonly for minor drainages in the nineteenth and early twentieth centuries in Michigan. The pipes were later made of corrugated steel, and large-diameter pipes were fabricated by riveting corrugated plate steel into round or ovaloid shapes. Although the steel culvert was used extensively in Michigan, the overwhelming majority of these small-scale structures employed single-barrel configurations, with spans less than ten feet. Few of these culverts have the requisite 20-foot overall length to be considered bridges by today's definition. And most of those few that have been cataloged in the Structure Inventory and Appraisal lists are erroneously dated replacements of earlier bridges. Those that actually pre-date 1955 are nondescript structures.

Steel pipe culvert (319): None of Michigan's extant pipe culverts display features (e.g., early construction, span length, span number, architectural detailing) that elevate them from their peers either historically or technologically. Therefore none of these intrinsically undistinguished structures should be included in the survey.

All pre-1955 steel pipe culverts:	55
Date range: 1900 - 1955	
Span range: 6 feet - 29 feet	

TOTAL RECOMMENDED FOR SURVEY	0
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TIMBER BRIDGES (702, 710, 771)

Small-scale timber pile bridges were the staple of township road work in Michigan in the nineteenth and early twentieth centuries. Though inexpensive to erect, most of these early spans tended to be structurally suspect and required frequent maintenance to prevent their collapse. Moreover, they were limited to short-span crossings. Timber and timber/iron combination trusses were built frequently in the state in the 1850s, 1860s and 1870s, but these were eventually superseded by all-metal bowstring and truss spans in the 1880s. Due to the impermanence of wood as a bridge superstructural material, only a small number of timber bridges remains in place in Michigan today, most of which are of relatively recent vintage.

Timber stringer (702): Timber stringer bridges (with integrity) built before 1920 and those with spans in excess of 30 feet should be included as the oldest and longest of this intrinsically undistinguished structural type.

All pre-1955 timber stringers: 48
Date range: 1900 - 1955
Span range: 13 feet - 61 feet

All pre-1925 timber stringers: 3
Timber stringers - 5+ spans or 40-foot span 1941 - 1955: 2

TOTAL RECOMMENDED FOR SURVEY 5

Timber truss (710): All but one of Michigan's few timber truss bridges were included in the initial historic bridge inventory. The one remaining, privately owned, bridge should be included in the field survey sample for this study.

All pre-1955 timber trusses: 1
Date range: 1932
Span range: 37 feet

TOTAL RECOMMENDED FOR SURVEY 1

Timber composite slab (771): Several oddly configured timber composite slab bridges are listed in the general inventory, most of which are located in Mecosta County. Because of their relative rarity, all of these should be included in the field survey sample.

All pre-1955 timber composite slabs: 8
Date range: 1898 - 1946
Span range: 17 feet - 30 feet

TOTAL RECOMMENDED FOR SURVEY 8

Timber Stringers

Struct No	County	Type	Superstructure	Year	Main spans	Span length
BERR053	BERRIEN	702	timber stringer	1900	3	26.00
EATO031	EATON	702	timber stringer	1953	1	49.00
HILL031	HILLSDALE	702	timber stringer	1910	1	26.00
LUCE008	LUCE	702	timber stringer	1929	1	61.00
OSCE038	OSCEOLA	702	timber stringer	1902	5	21.00

Timber Truss

Struct No	County	Type	Superstructure	Year	Main spans	Span length
BERR054	BERRIEN	710	timber truss	1932	1	37.00

Timber truss (710): Timber truss bridges with integral built bridges 1932 and those with spans in excess of 30 feet should be included in the right end segment of the historically reclassified survey sample.

All pre-1932 timber trusses: 2
 Date range: 1930 - 1931
 Span range: 17 feet - 61 feet

All 1932 timber trusses: 2
 Timber trusses - 31 spans to 40 feet from 1941 - 1951 2

TOTAL RECOMMENDED FOR SURVEY 2

Timber truss (710): All pre-1932 of Michigan's few timber truss bridges were included in the initial historic bridge inventory. The one remaining, privately owned, bridge should be included in the field survey sample for this study.

All pre-1932 timber trusses: 2
 Date range: 1932
 Span range: 27 feet

TOTAL RECOMMENDED FOR SURVEY 2

Timber truss (710): Several early cast-iron and steel bridges are listed in the general inventory, two of which are located in Berrien County. Because of their relative rarity, all of these should be included in the field survey sample.

All pre-1932 timber trusses: 2
 Date range: 1894 - 1946
 Span range: 17 feet - 30 feet

TOTAL RECOMMENDED FOR SURVEY 2

Timber Composite Slabs

Struct No	County	Type	Superstructure	Year	Main spans	Span length
MARQ062	MARQUETTE	771	timber composite slab	1946	3	17.00
MECO010	MECOSTA	771	timber composite slab	1904	1	29.00
MECO011	MECOSTA	771	timber composite slab	1900	3	26.00
MECO013	MECOSTA	771	timber composite slab	1898	1	29.00
OCEA015	OCEANA	771	timber composite slab	1910	1	20.00
SANI059	SANILAC	771	timber composite slab	1940	3	30.00
STCL087	ST. CLAIR	771	timber composite slab	1938	2	19.00
STJO040	ST. JOSEPH	771	timber slab	1906	1	22.00

STONE MASONRY ARCH (811)

Despite an abundance of stone in various forms throughout the state and an indigenous tradition of masonry construction, stone bridges were never built in abundance in Michigan. As a result, only a handful of stone masonry spans remain in place today, all of which employ short-span arches that spring from stone sidewalls.

Stone masonry arch (811): Because of their relative rarity and because some were the product of federal relief programs in the 1930s, all stone masonry arch bridges should be included in the field survey sample.

All pre-1955 stone arches:	4
TOTAL RECOMMENDED FOR SURVEY	4

Stone Masonry Arches

Struct No	County	Type	Superstructure	Year	Main spans	Span length
CALH043	CALHOUN	811	stone masonry arch	1891	1	28.00
CALH045	CALHOUN	811	stone masonry arch	1899	3	25.00
CLAR014	CLARE	811	stone masonry arch	1915	1	17.00
GENE005	GENESEE	811	stone masonry arch	1906	1	30.00

Applying these general and categorical guidelines to the general inventory of bridges produces a list of 658 structures included in the field survey sample. Although the guidelines will remain consistent throughout the course of the study, the list of included bridges will evolve, as fieldwork and additional research turns up bridges that should be added to the list and those that should be deleted. Our experience in other states is that the bridges added and bridges deleted tend to balance each other, so that the overall number of included bridges at the end of the project is similar to this preliminary listing. Following is a summary listing of the bridges included in the field survey sample, delineated by structural type.

BRIDGES INCLUDED IN THE FIELD SURVEY SAMPLE UNDER NRHP CRITERION C

Concrete through girder	pre-1955:	88	included:	54
Concrete deck girder / T-beam	pre-1955:	430	included:	56
Concrete slab	pre-1955:	138	included:	26
Concrete rigid frame	pre-1955:	21	included:	20
Concrete arch	pre-1955:	89	included:	72
Concrete box culvert	pre-1955:	78	included:	0
Prestressed concrete beam	pre-1955:	0	included:	0
Steel stringer	pre-1955:	1,658	included:	143
Steel stringer with jack-arch deck	pre-1955:	200	included:	45
Steel deck girder	pre-1955:	110	included:	36
Steel deck girder, concrete encased	pre-1955:	2	included:	2
Steel through girder	pre-1955:	7	included:	7
Steel pony truss	pre-1955:	122	included:	118
Steel through truss	pre-1955:	14	included:	14
Steel truss, configuration unknown	pre-1955:	14	included:	14
Steel deck truss	pre-1955:	1	included:	1
Steel deck arch	pre-1955:	3	included:	3
Steel rigid frame	pre-1955:	6	included:	6
Steel movable span	pre-1955:	8	included:	8
Steel pipe culvert	pre-1955:	55	included:	0
Timber stringer	pre-1955:	48	included:	5
Timber truss	pre-1955:	1	included:	1
Timber composite slab	pre-1955:	8	included:	8
Stone masonry arch (replaced)	pre-1955:	4	included:	4
	pre-1955:	118		0
Total		3,223		643

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SUMMARY OF THE SURVEY SAMPLE

Total bridges in survey sample: 1,005

Total selected under Criterion A: 315

Wayne County: 56
Early Highway Department Bridges: 20
Tourism's Influence: 65
Bridges of the Depression: 55
Defense-related Bridges: 33
Expressways: 86

Total selected under Criterion C: 649

Total selected because no photograph was available: 213

Some bridges are included under both Criterion A and Criterion C; some are included under several categories within Criterion C.

Most of the bridges for which photographs are not available are presumably undistinguished, or have been demolished. Discussions with local and county engineers and/or a quick visual inspection will probably eliminate the need to inventory many of these structures.

APPENDIX A

County	Route	Feature intersected	Year	Type	Crit A	Crit C	NP
ALGER	ALEC JOHNSON	WHITEFISH RIVER	1910	344		C	
ALGER	DIFFIN ROAD	WERNERS CREEK	1906	344		C	
ALGER	M-28	SAND RIVER	1939	107		C	
ALGER	MINERS RIVER	MINERS RIVER	1953	302			X
ALGER	ONOTA-AU TRAI	ROCK RIVER	1921	344		C	
ALGER	WOLKOFF ROA	AU TRAIN RIVER	1910	321		C	
ALLEGAN	102ND. AVENUE	M.BR. BLACK RIVER	1916	344		C	
ALLEGAN	118TH AVENUE	SWAN CREEK	1924	121		C	
ALLEGAN	132ND AVENUE	RABBIT RIVER	1915	344		C	
ALLEGAN	132ND. AVENUE	RABBIT RIVER	1910	344		C	
ALLEGAN	133RD AVENUE	RABBIT RIVER	1916	344		C	
ALLEGAN	139TH AVENUE	BLACK CREEK DRAIN EX	1920	344		C	
ALLEGAN	14TH STREET	RABBIT RIVER	1918	344		C	
ALLEGAN	2ND STREET	GUN RIVER	1926	121		C	
ALLEGAN	2ND STREET	GUN RIVER	1926	121		C	
ALLEGAN	M-40	RABBOT RIVER	1935	332	3		
ALLEGAN	M-89	KALAMAZOO RIVER	1950	302		C	
ALLEGAN	M-89	KALAMAZOO RIVER	1943	302	5	C	
ALLEGAN	N FARMER STRE	KALAMAZOO RIVER	1938	302		C	
ALPENA	US-23	LONG LAKE CREEK	1939	104	3		
ALPENA	WIKARYASZ RO	N. BR. THUNDER BAY RI	1921	344		C	
ANTRIM	M-88	INTERMEDIATE RIVER	1932	302	3		
ARENAC	ARENAC STATE	PINE RIVER	1940	302			X
ARENAC	COURT STREET	AUGRES RIVER	1925	121		C	
ARENAC	HESLOP ROAD	N BR PINE RIVER	1907	372		C	X
ARENAC	LENTNER ROAD	CEDAR CREEK	1920	362			X
ARENAC	MELITA ROAD	S BR PINE RIVER	1942	332			X
ARENAC	NORTH ROAD	SAGANING CREEK	1913	362		C	
ARENAC	OSTRANDER RO	BIG CREEK A DRAIN	1917	104		C	
BARAGA	SKANEE ROAD	SILVER RIVER	1928	332		C	
BARAGA	US-41	HICKEY CREEK	1947	104			X
BARAGA	US-41	STURGEON RIVER	1947	322	3	C	
BARRY	ICKES ROAD	HIGH BANK CREEK	1900	372		C	
BARRY	M-66	MUD CREEK	1918	104		C	X
BAY	M-13	CHEBOYGANING CREEK	1927	204		C	
BAY	M-13 & M-84	E CHANNEL SAGINAW R	1938	316	4	C	
BAY	M-13 & M-84	W CHANNEL SAGINAW R	1938	482	4	C	
BAY	STATE PARK RO	KAWKAWLIN RIVER	1929	352	3		
BENZIE	HAZE ROAD	BETSIE RIVER	1900	344		C	
BENZIE	NOSTWICK ROA	BETSIE RIVER	1900	302		C	
BENZIE	REYNOLDS ROA	BETSIE RIVER	1906	302		C	
BENZIE	US-31	AA RAILROAD	1929	104		C	
BERRIEN	AVERY ROAD	GALIEN RIVER	1928	121		C	
BERRIEN	BOYLE LAKE RO	WEAVER & HARROFF DR	1906	362		C	

APPENDIX A

County	Route	Feature intersected	Year	Type	Crit A	Crit C	NP
BERRIEN	BRITAIN AVENU	VALLEY DR C&O RR OX	1954	302		C	
BERRIEN	BROADWAY STR	ST. JOSEPH RIVER	1947	302		C	X
BERRIEN	FLYNN ROAD	GALIEN RIVER	1928	344		C	
BERRIEN	HIGH VIEW DRI	C & O RAILROAD	1900	702		C	
BERRIEN	M-63	CSX RAILROAD	1950	303		C	
BERRIEN	M-63	ST JOSEPH R/WHRLPLRR(	1949	316		C	
BERRIEN	N WATERVLIET	PAW PAW LAKE OUTLET	1916	111	3	C	
BERRIEN	PRIVATE	UNKNOWN	1932	710	4	C	X
BERRIEN	RED ARROW HI	NAT RAIL PASS CO AMTR	1928	104		C	
BERRIEN	US-12	ST JOSEPH RIVER	1954	303		C	
BERRIEN	US-12 EB	US-31 & US-33	1955	332		C	
BERRIEN	US-12 WB	US-31 & US-33	1955	332		C	
BERRIEN	US-31	YELLOW CREEK	1899	111		C	
BERRIEN	US-31,US-33	ST. JOSEPH RIVER	1949	302		C	
BERRIEN	WEISER ROAD	AMTRAK RAILROAD	1900	321		C	
BRANCH	BRINK RD	PRAIRIE RIVER	1905	344		C	
BRANCH	CADY ROAD	HOG CREEK	1903	344		C	
BRANCH	ELY ROAD	SOAP CREEK	1917	344		C	
BRANCH	GOWER ROAD	N COLDWATER RIVER	1900	344		C	
BRANCH	KLINK ROAD	TEKONSHA CREEK	1900	104		C	
BRANCH	OLD U S H 27 S	S COLDWATER RIVER	1900	302		C	
BRANCH	OLD US-12	COLDWATER RIVER	1920	344		C	
BRANCH	PRAIRIE RIVER	SWAN CREEK	1905	344		C	
BRANCH	QUIMBY ROAD	WRIGHT LAKE CHANNEL	1920	302		C	
BRANCH	STANCER ROAD	N COLDWATER RIVER	1905	343		C	
BRANCH	TAGGART RD	SWAN CREEK	1920	344		C	
CALHOUN	1/2 MILE ROAD	NOTTAWASSEPEE RIVER	1914	343		C	
CALHOUN	12 MILE ROAD	KALAMAZOO RIVER	1925	111		C	
CALHOUN	14 MILE ROAD	ST JOSEPH RIVER	1906	344		C	
CALHOUN	23 MILE ROAD	KALAMAZOO RIVER	1925	121		C	
CALHOUN	291/2 MILE ROA	KALAMAZOO RIVER	1940	319	5		
CALHOUN	6 1/2 MILE ROA	HARPER CREEK	1905	362		C	X
CALHOUN	COLLEGE AVEN	KALAMAZOO RIVER	1940	302	5		
CALHOUN	COLLEGE AVEN	RAYMOND RIVER	1940	302	5		
CALHOUN	KALAMAZOO A	KALAMAZOO RIVER	1916	111		C	
CALHOUN	M-66	WANONDAGER CREEK	1940	302	5		
CALHOUN	MARSHALL AVE	RICE CREEK	1899	811		C	
CALHOUN	MICHIGAN AVE	RICE CREEK	1923	121		C	
CALHOUN	MONROE STREE	RICE CREEK	1891	811		C	
CALHOUN	SO COUNTY LIN	TEKONSHA CREEK	1900	362		C	
CASS	THOMSON ROA	ABANDONED RR RIGHT O	1919	104		C	
CHARLEVO	IRON BRIDGE R	STURGEON RIVER	1900	344		C	
CHARLEVO	US-31	ISLAND LAKE OUTLET	1949	316		C	
CHEBOYGA	MCEACHRON R	W BR STURGEON RIVER	1930	372			X

APPENDIX A

County	Route	Feature intersected	Year	Type	Crit A	Crit C	NP
CHEBOYGA	NEW NATURE A	STURGEON RIVER	1900	372		C	
CHEBOYGA	OLD 27	INDIAN RIVER	1924	121		C	
CHEBOYGA	OLD STURGEON	W BR STURGEON RIVER	1915	362			X
CHEBOYGA	PIGEON RIVER R	PIGEON RIVER	1935	344		C	
CHEBOYGA	SHIRE ROAD	W BR STURGEON RIVER	1915	111		C	
CHEBOYGA	US-23	CHEBOYGAN RIVER	1940	316	34	C	X
CHEBOYGA	WILDERNESS R	W BR STURGEON RIVER	1915	372			X
CHIPPEWA	EAST-WEST ROA	ROXBURY CREEK	1947	702			X
CHIPPEWA	EASTERDAY AV	ASHMUN CREEK	1935	342	4		X
CHIPPEWA	M-123	TAHQUAMENON RIVER	1952	332	3		
CHIPPEWA	M-134	ALBANY CREEK	1947	302	3		
CHIPPEWA	M-28	E BR TAHQUEMENON RIV	1926	392		C	
CHIPPEWA	N MITCHELL RO	CHARLOTTE RIVER	1935	344		C	
CHIPPEWA	OLD MACKINAC	PINE RIVER	1931	402		C	
CHIPPEWA	PARKER ROAD	CHARLOTTE RIVER	1914	344		C	
CHIPPEWA	PIERCE ROAD	SOUTH BR CHARLOTTE R	1920	344		C	
CHIPPEWA	RIVERSIDE DRIV	MISSION CREEK	1935	332	4		X
CHIPPEWA	SULLIVAN CREE	BLACK CREEK	1950	402			X
CLARE	BAILEY LAKE A	CEDAR RIVER	1934	344		C	
CLARE	CLAREOLA ROA	DOC & TOM CREEK	1920	362			X
CLARE	COLONVILLE R	S. BR. TOBACCO RIVER	1920	302		C	
CLARE	EAST FOURTH S	LITTLE TOBACCO DRAIN	1922	101		C	
CLARE	GRANT AVENUE	S. BR. TOBACCO RIVER	1915	344		C	
CLARE	HASKEL LAKE R	WEST BRANCH CLAM RIV	1929	310		C	X
CLARE	JONESVILLE DRI	MUSKEGON RIVER	1929	343		C	
CLARE	KIRBY AVENUE	WEST BRANCH CLAM RIV	1920	362			X
CLARE	LAKE STATION	GREEN CREEK	1920	362			X
CLARE	M-61	MUSKEGON ROAD	1951	332		C	
CLARE	POPLAR ROAD	M. BR. TOBACCO RIVER	1915	811		C	
CLARE	WILSON ROAD	WEST BRANCH CLAM RIV	1930	372			X
CLINTON	BAUER ROAD	COX DRAIN	1906	344		C	
CLINTON	BY-PASS DEWIT	STONY CREEK	1900	344		C	
CLINTON	HARMON ROAD	MAPLE RIVER	1920	344		C	
CLINTON	I-96 BL	CSX RAILROAD	1938	352			X
CLINTON	ISLAND ROAD	HAYWORTH CREEK	1924				X
CLINTON	JONES ROAD	WIEBER CREEK	1924				X
CLINTON	MEAD ROAD	MAPLE RIVER	1907	343		C	
CLINTON	PARKS ROAD	SPAULDING EXTENSION	1924				X
CRAWFORD	I-75BL M-72	AU SABLE RIVER	1934	302	3		
CRAWFORD	M-72	MANISTEE RIVER	1932	332	4		
CRAWFORD	SMITH BRIDGE	SOUTH BRANCH AU SABL	1920	362			X
DELTA	COUNTY ROAD	TEN MILE CREEK	1900	362		C	
DELTA	COUNTY ROAD	TACOOSH RIVER	1919	121		C	
DELTA	COUNTY ROAD I	HAYMEADOW CREEK	1900	372		C	X

APPENDIX A

County	Route	Feature intersected	Year	Type	Crit A	Crit C	NP
DELTA	FED FOREST HW	STURGEON RIVER	1941	104		C	
DELTA	ROUTE 523	HUNTERS BROOK	1900	302		C	
DELTA	US FOREST RTE	FISHDAM RIVER	1952	702			X
DELTA	US FOREST RTE	STURGEON RIVER	1948	302			X
DICKINSON	COUNTY HWY 5	FORD RIVER	1927	121		C	
DICKINSON	M-95	W BR STURGEON RIVER	1935	107		C	
DICKINSON	US-141	MENOMINEE RIVER	1929	303		C	X
EATON	BASE LINE HIGH	INDIAN CREEK	1913	362		C	
EATON	BELLEVUE HIGH	SPRING BROOK	1910	104		C	
EATON	BRIDGE STREET	GRAND RIVER	1932	332			X
EATON	GRESHAM HIGH	THORNAPPLE RIVER	1953	702		C	X
EATON	GRIFFIN HIGHW	TRIBUTARY TO BATTLE C	1900	362		C	
EATON	KALAMO HIGH	GAYTON AND POWERS E	1915	104		C	
EATON	KINSEL HIGHW	LACEY CREEK	1908	302		C	
EATON	KINSEL HIGHW	THORNAPPLE DRAIN	1913	302		C	
EATON	LAMIE HIGHWA	LACEY CREEK	1903	362		C	
EATON	LAMIE HIGHWA	LITTLE THORNAPPLE RIV	1914	362		C	
EATON	M-78	BATTLE CREEK RIVER	1929	332			X
EATON	M-99 & M-50	MILL RACE	1894	111		C	X
EATON	PINCH HIGHWA	SHRONTA DRAIN	1910	362		C	
EATON	PINCH HIGHWA	THORNAPPLE DRAIN	1913	362		C	
EATON	POWERS HIGHW	BATTLE CREEK	1910	344		C	
EATON	RESIDENTIAL D	TOWNLINE BROOK		344		C	X
EATON	ROYSTON	BIG THORNAPPLE DRAIN	1952	505			X
EATON	SAUBEE LAKE R	MUD CREEK	1920	362			X
EATON	SHAYTOWN RO	THORNAPPLE CREEK	1903	362		C	X
EATON	SPICERVILLE HI	SPRING BROOK	1916	121		C	
EATON	ST JOSEPH HIGH	SEBEWA CREEK	1947	302			X
EATON	STATE STREET	GRAND RIVER	1948	204		C	
EATON	US-27 BR	BATTLE CREEK RIVER	1921	111	3	C	
EMMET	STANDISH STRE	BEAR RIVER	1923	121		C	
EMMET	US-31	CARP LAKE R	1933	104			X
GD. TRAVE	SOUTH CASS ST	BOARDMAN RIVER	1930	111		C	
GD. TRAVE	UNION STREET-	BOARDMAN RIVER	1931	352	3		
GD. TRAVE	US-31	BOARDMAN RIVER	1951	382	3		
GD. TRAVE	US-31	CEDAR HEDGE CREEK	1927	505	3		
GD. TRAVE	US-31	TONAWANDA CR	1927	505	3		
GENESEE	14TH ST	M-54BR (SAGINAW ST)	1941	101		C	
GENESEE	BEACH GARLAN	FLINT RIVER	1921	111		C	
GENESEE	CHEVROLET AV	FLINT RIVER	1917	111		C	
GENESEE	EAST BOULEVA	GILKEY CREEK	1920	111		C	
GENESEE	FENTON ROAD	THREAD CREEK	1924	111		C	
GENESEE	KEARSLEY PAR	GILKEY CREEK	1920	111		C	
GENESEE	M-15	KEARSLEY CREEK	1930	104			X

APPENDIX A

County	Route	Feature intersected	Year	Type	Crit A	Crit C	NP
GENESEE	M-54	FLINT RIVER	1926	111		C	
GENESEE	MAIN STREET	FLINT RIVER	1922	111		C	
GENESEE	MILLER ROAD	I-75	1954	332		C	
GENESEE	OLD CAMBRIDG	SWARTZ CREEK	1924	111		C	
GENESEE	TERM STREET	THREAD CREEK	1900	302		C	
GENESEE	US-23BR	SHIAWASSEE RIVER	1906	811		C	X
GENESEE	W SECOND STRE	SWARTZ CREEK	1919	111		C	
GENESEE	WESTERN ROAD	KEARSLEY CREEK	1928	204		C	
GLADWIN	GROUT ROAD	S BRANCH OF TOBACCO	1917	344		C	
GLADWIN	M-18	CEDAR CREEK	1919	111		C	
GLADWIN	M-18	FARM DRAIN	1937	104			X
GLADWIN	M-18	TOBACCO ROAD	1939	302		C	
GLADWIN	M-30	TITTABAWASSEE RIVER	1928	332		C	
GLADWIN	M-30	TOBACCO RIVER	1924	121		C	
GLADWIN	PORTER STREET	TOBACCO RIVER	1917				X
GLADWIN	WIRTZ ROAD	SUGAR RIVER	1920	344		C	
GOGEBIC	COPPS MINE RO	PRESQUE ISLE RIVER	1906	344		C	
GOGEBIC	JOHNSON ROAD	BLACK RIVER	1916	344		C	
GOGEBIC	KUSISTO ROAD	BLACK RIVER	1940	702	4		
GOGEBIC	LAKE ROAD	MONTREAL RIVER	1928	302		C	
GOGEBIC	LAKE SHORE DR	LITTLE BLACK RIVER	1930	121		C	
GOGEBIC	M-64	WBR BIG PRESQUE IS R	1928	121	3	C	
GOGEBIC	NORTH THAYER	CISCO BR ONTONAGON R	1954	104			X
GOGEBIC	OLD COUNTY R	BLACK RIVER	1922	121		C	
GOGEBIC	OLD M12 HWY.	CISCO BR ONTONAGON R	1920	344		C	
GOGEBIC	OLD U.S. 2 HWY	CISCO BR ONTONAGON R	1927	352	3		
GOGEBIC	OLD U.S. 2 HWY	MIDDLE BR. ONTONAGO	1927	104	3		
GOGEBIC	OLD U.S. 2 HWY	TENDERFOOT CREEK	1927	302	3		
GOGEBIC	OLD U.S. 45 HW	MIDDLE BR. ONTONAGO	1919	121		C	
GOGEBIC	PLANTER ROAD	JACKSON CREEK	1923	321		C	
GOGEBIC	US-2	BLACK RIVER	1947	302	3		
GOGEBIC	US-2	C&NW RR & DUCK CR. (	1939	302		C	
GOGEBIC	US-2	DIVERSION DITCH	1946	104	3		
GOGEBIC	US-2	LITTLE BLACK RIVER	1947	302	3		
GOGEBIC	US-2	SUNDAY LAKE OUTLET	1947	302	3		
GOGEBIC	US-45	BR ONTONAGON RIVER	1953	104	3		
GOGEBIC	US-45	DUCK CREEK	1948	302	3		
GRATIOT	ADAMS ROAD	BUSH CREEK DRAIN	1930	121		C	
GRATIOT	BALDWIN ROAD	BAD RIVER	1952	100			X
GRATIOT	GRANT ROAD	PINE CREEK	1927	121		C	
GRATIOT	JOHNSON ROAD	RIVER STYX DRAIN	1900				X
GRATIOT	LINCOLN ROAD	PINE RIVER	1925	121		C	
GRATIOT	LUMBER JACK R	PINE RIVER	1947	302			X
GRATIOT	LUMBER JACK R	PINE RIVER	1949	302			X

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County	Route	Feature intersected	Year	Type	Crit A	Crit C	NP
GRATIOT	MASON ROAD	POTATO CREEK DRAIN	1930	362			X
GRATIOT	MICHIGAN AVE	HORSE CREEK	1930	101		C	
GRATIOT	NORTH STATE S	PINE RIVER	1938	402	4		
GRATIOT	PIERCE ROAD	BAD RIVER DRAIN	1903				X
GRATIOT	POLK ROAD	SHAD CREEK DRAIN	1936				X
GRATIOT	ROOSEVELT RO	DRAIN #142	1920	302			X
GRATIOT	ST CHARLES RO	PINE RIVER	1925	121		C	
GRATIOT	TAFT ROAD	BOVEE DRAIN	1900	372		C	X
GRATIOT	US-27BR	PINE RIVER	1928	204	3		
GRATIOT	VAN BUREN RO	PINE RIVER	1920	344		C	
GRATIOT	WHEELER ROAD	BEAVER CREEK DRAIN	1908	344		C	
GRATIOT	WILSON ROAD	CORDRAY DRAIN	1900	362		C	
GRATIOT	WOODBIDGE R	BAD RIVER	1910	310		C	X
HILLSDALE	BURT ROAD	SILVER CREEK	1918	111		C	
HILLSDALE	CONCORD ROA	S BR KALAMAZOO RIVER	1910	104		C	
HILLSDALE	ELM ROAD	MALLORY LAKE DRAIN	1910	302		C	
HILLSDALE	HADLEY ROAD	SOAP CREEK	1898	302		C	
HILLSDALE	LILAC ROAD	W BR ST JOSEPH OF MAU	1900	302		C	
HILLSDALE	MCLAIN ROAD	SOAP CREEK	1896	302		C	
HILLSDALE	TUTTLE ROAD	E.BR.ST.JOSEPH OF MAU	1910	702		C	
HOUGHTON	COUNTY ROAD	PIKE RIVER	1914	302		C	
HOUGHTON	COUNTY ROAD	TRAPROCK RIVER	1900	344		C	
HOUGHTON	COUNTY ROAD	TRAPROCK RIVER	1900	302		C	
HOUGHTON	COUNTY ROAD	TRAPROCK RIVER	1900	302		C	
HOUGHTON	M-38	SILVER RIVER	1934	402	4		
HOUGHTON	M-38	W BR STURGEON RIVER	1934	302	4		
HOUGHTON	SUPERIOR RD P6	PILGRIM RIVER	1900	103		C	
HOUGHTON	TOWNSHIP PAR	TRAPROCK RIVER	1938	302	4		
HOUGHTON	US-41	PILGRIM RIVER	1916	111		C	
HOUGHTON	US-41	SNAKE RIVER BURIED	1934	104	4		
HURON	BACH ROAD	STATE DRAIN	1925	344		C	
HURON	CAMPBELL ROA	PINNEBOG RIVER	1910	302		C	
HURON	CANBORO ROAD	E BR PIGEON RIVER	1910	302		C	
HURON	FARVER ROAD	E BR PIGEON RIVER	1910	302		C	
HURON	FARVER ROAD	E BR PIGEON RIVER	1910	302		C	
HURON	GAGETOWN RO	PIGEON RIVER	1915	303		C	
HURON	GETTEL ROAD	STATE DRAIN	1925	302		C	
HURON	GRASSMERE RO	E BR PIGEON RIVER	1910	362		C	
HURON	HAIST ROAD	SHEBEON DRAIN	1915	344		C	
HURON	HURON CITY RO	E BR WILLOW RIVER	1915	121		C	
HURON	M-25	ELM CREEK	1935	302	34		
HURON	M-25	HARBOR BEACH CREEK	1953	104	3		
HURON	M-25	OCHA CREEK	1953	104	3		
HURON	M-25	ROCK FALLS CREEK	1935	302	34		

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County	Route	Feature intersected	Year	Type	Crit A	Crit C	NP
HURON	MAXWELL ROA	PIGEON RIVER	1915	303		C	
HURON	MCALPIN ROAD	STATE DRAIN	1925	302		C	
HURON	MINNICK ROAD	W BR WILLOW RIVER	1910	362		C	
HURON	OESCHGER ROA	SHEBEON DRAIN	1915	344		C	
HURON	RISKEY ROAD	SHEBEON DRAIN	1912	344		C	
HURON	SWAZYE ROAD	E BR WILLOW RIVER	1915	344		C	
INGHAM	BROWN ROAD	DEER CREEK	1920	505			X
INGHAM	HARPER ROAD	MUD CREEK DRAIN	1935	121		C	
INGHAM	HOWELL ROAD	DEER CREEK	1949	319			X
INGHAM	I-496 EB	CONRAIL & RIVER ST (AB	1950	332		C	
INGHAM	I-96 BL	GTW, CR RR & RED CEDA	1952	332		C	
INGHAM	KINNEVILLE RO	GRAND RIVER	1952	104		C	
INGHAM	KIPP ROAD	WILLOW CREEK	1920	505			X
INGHAM	KIRBY ROAD	HUNTOON LAKE DRAIN	1930	505			X
INGHAM	M-36	SYCAMORE CREEK	1918	104		C	
INGHAM	M-43 EB	GRAND RIVER	1928	352			X
INGHAM	M-43 WB	GTW RAILROAD	1930	352		C	X
INGHAM	MILL STREET	HUNTOON CREEK	1918	105		C	
INGHAM	N. GRAND RIVE	GRAND RIVER	1924	111		C	
INGHAM	NOBLE ROAD	DEER CREEK	1925	302			X
INGHAM	NOBLE ROAD	DOAN CREEK	1930	372			X
INGHAM	PENNSYLVANIA	N. Y. C. RAILROAD	1946	302		C	
INGHAM	WALDO ROAD	DEER CREEK DRAIN	1920	302			X
INGHAM	WAVERLY ROA	GRAND RIVER	1941	302		C	X
INGHAM	ZIMMER ROAD	DEER CREEK	1920	302			X
IONIA	BENNETT ROAD	SESSIONS CREEK	1900	362		C	
IONIA	BORDEN ROAD	PRAIRIE CREEK	1927	121		C	
IONIA	BORDEN ROAD	STOUGHTON CREEK	1927	302			X
IONIA	CAMPBELL ROA	DUCK CREEK	1900	319			X
IONIA	CLEVELAND ST	GRAND RIVER	1931	104	4		
IONIA	COWMAN ROAD	CONNER DRAIN	1907	362		C	
IONIA	COWMAN ROAD	STOUGHTON CREEK	1900	344		C	
IONIA	DAVID HIGHWA	LIBHART CREEK	1928	121		C	
IONIA	DILDINE ROAD	BELLAMY CREEK	1900	362		C	
IONIA	M-44, M-91	MID MICH RR	1950	403		C	
IONIA	M-50	DUCK CREEK	1923	121		P	X
IONIA	M-66	GRAND RIVER	1948	352		C	
IONIA	PRAIRIE CREEK	PRAIRIE CREEK	1900	302		C	
IONIA	PRAIRIE STREET	MAPLE RIVER	1952	111		C	
IONIA	SHUMAN ROAD	SEBEWA CREEK	1900	344		C	
IONIA	SPAULDING RO	STONEY CREEK	1906	343		C	
IOSCO	BROOKS ROAD	SILVER CREEK	1935	342	4		
IOSCO	M-55	AU GRES R	1929	302	3		
IOSCO	M-55	AU GRES R	1929	302	3		

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County	Route	Feature intersected	Year	Type	Crit A	Crit C	NP
IOSCO	M-55	E BR AU GRES R	1954	332	3		
IOSCO	M-65	AU GRES RIVER	1951	402	3		
IOSCO	M-65	BR HALE CR	1952	302	3		
IOSCO	M-65	JOHNSON CR	1950	302	3		
IOSCO	SWAN RD (DAVI	SILVER CREEK	1935	302	4		
IOSCO	US-23	PRIVATE RR	1931	302	34		
IOSCO	US-23	PRIVATE RR	1931	302	34		
IRON	CHICAGON MIN	CHICAGON CREEK	1900	101		C	
IRON	FH 16	NO BRANCH PAINT RIVER	1955	205		C	
IRON	FH 16	SO BRANCH PAINT RIVER	1955	205		C	
IRON	FR 157	TAMARACK RIVER	1918	121	3	C	
IRON	MANSFIELD RD	MICHIGAMME RIVER	1914	111		C	
IRON	OLD BEECHWO	SO BRANCH IRON RIVER	1900	101		C	
IRON	OLD US 141	HEMLOCK RIVER	1924	121	3	C	
IRON	PAINT POND RO	BRULE RIVER	1906	410		C	X
IRON	PENTOGA ROAD	BRULE RIVER	1924	344		C	
IRON	US FOREST RTE	BUSH CREEK	1955	104			X
IRON	US FOREST RTE	BUSH CREEK	1954	702			X
IRON	US FOREST RTE	S BRANCH PAINT RIVER	1952	302			X
IRON	US-2	IRON RIVER BURIED	1918	111		C	X
ISABELLA	BROADWAY ST	CHIPPEWA RIVER	1910	111		C	
ISABELLA	BROOMFIELD R	SO. BR. CHIPPEWA RIVER	1920	111		C	
ISABELLA	LINCOLN ST	CHIPPEWA RIVER CHANN	1910	111		C	
ISABELLA	MILLBROOK RO	PONY CREEK	1939	302	4		
ISABELLA	PICKARD ROAD	N BR. CHIPPEWA RIVER	1938	302			X
ISABELLA	SHEPHERD ROA	ONION CREEK DRAIN	1939	362	4		X
ISABELLA	SHEPHERD ROA	POTTER CREEK	1939	302	4		
ISABELLA	VANDECAR ROA	THATCHER CREEK	1939	362	4		
JACKSON	BRIDGE STREET	GRAND RIVER	1936	505			X
JACKSON	DENTON ROAD	SPARKS FND. PARK POND	1931	302	3		
JACKSON	ELM RD	I-94	1949	402	6	C	
JACKSON	FOLKS ROAD	S BRANCH KALAMAZOO	1923	121		C	
JACKSON	FRANCIS STREE	GRAND RIVER	1903	111		C	X
JACKSON	GATES ROAD	GRAND RIVER	1908	342		C	
JACKSON	I-94	CONRAIL & GRAND RIVE	1949	452	6		
JACKSON	I-94	I-94BL SB	1949	302	6		
JACKSON	I-94	PARMA ROAD	1954	204	6	C	
JACKSON	I-94	SANDSTONE CREEK	1953	402	6		
JACKSON	I-94	US-127 & M-50	1953	332	6		
JACKSON	LANSING ROAD	I-94	1951	332	6	C	
JACKSON	LOOMIS ROAD	GRAND RIVER	1910	372		C	
JACKSON	M-106	I-94	1948	332	6	C	
JACKSON	M-50	SANDSTONE CREEK	1927	392		C	
JACKSON	M-50, US-127 BR	GRAND RIVER	1926	302		C	

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County	Route	Feature intersected	Year	Type	Crit A	Crit C	NP
JACKSON	MECHANIC STR	GRAND RIVER	1915	204		C	X
JACKSON	MICHIGAN AVE	CONSOLIDATED RAIL CO	1927	342		C	
JACKSON	MILL STREET	SO BRANCH RAISIN RIVE	1925	111		C	
JACKSON	MOECKEL ROAD	PORTAGE CREEK	1910	362		C	
JACKSON	PIERCE ROAD	RAISIN RIVER	1900	302		C	
JACKSON	SEWAGE PLANT	GRAND RIVER	1934	302			X
KALAMAZO	E MICHIGAN AV	COMSTOCK CREEK	1940	302	5		
KALAMAZO	I-94	CONRAIL	1954	332	6		
KALAMAZO	I-94	E MICHIGAN AVENUE	1952	402	6		
KALAMAZO	I-94 BL	PORTAGE CREEK	1947	302	6		
KALAMAZO	I-94 BL EB	I-94	1955	332	6		
KALAMAZO	MILLER ROAD	I-94	1955	332	6		
KALAMAZO	S AVENUE	PORTAGE RIVER	1940	302	5		
KALAMAZO	SCOTT ROAD (38	I-94	1951	302	6		
KALAMAZO	SHAFTER ROAD	I-94	1951	302	6	C	
KALAMAZO	VAN BUREN STR	CANAL(OFF AUGUSTA CR	1907	344		C	
KALKASKA	AARWOOD ROA	RAPID RIVER	1913	111	2	C	
KALKASKA	GLADE VALLEY	RAPID RIVER	1910	344	2	C	
KALKASKA	KNISS ROAD	N. BR. MANISTEE RIVER	1910	372	2	C	
KALKASKA	US-131	N BR BOARDMAN RIVER	1940	104	4		
KENT	108TH STREET	THORNAPPLE RIVER	1932	302		C	
KENT	3 MILE ROAD	INDIAN MILL CREEK	1920	111		C	
KENT	COLDWATER A	COLDWATER RIVER	1892	344		C	
KENT	COLLEGE AVEN	GRAND TRUNK RR	1915	105		C	X
KENT	KIRTLAND STRE	PLASTER CREEK	1923	104			X
KENT	M-11	CSX RR & M-21BR	1936	352		C	
KENT	M-11	GRAND RIVER	1930	382		C	
KENT	M-21 BRIDGE	PLASTER CREEK	1916	111		C	
KENT	M-44	GRAND RIVER	1929	382		C	
KENT	M-46	ROGUE RIVER	1925	342		C	
KENT	NORTHLAND DR	STEGMAN CREEK	1900	201		C	
KENT	WEST RIVER DR	INDIAN MILL CREEK	1910	104		C	
KEWEENA	US-41	FANNY HOOE CREEK	1928	111	3	C	
LAKE	64TH STREET	M BR PERE MARQUETTE	1909	302		C	X
LAKE	JAMES ROAD	M BR PERE MARQUETTE	1909	302		C	
LAKE	OLD M-63	LITTLE MANISTEE RIVER	1900	121		C	
LAKE	SADDLER ROAD	M BR PERE MARQUETTE	1904	302		C	
LAKE	US-10	BALDWIN CREEK	1931	332	3		
LAPEER	M-24	CR RAILROAD (ABN)	1948	302			X
LAPEER	M-24	RAYMPH DRAIN	1940	101			X
LAPEER	MASON STREET	FARMERS CREEK	1900	302		C	
LAPEER	SILVERWOOD R	N BR FLINT RIVER	1928	121		C	
LAPEER	WHEELING ROA	N BR MILL CREEK DRAIN	1889	344		C	
LEELANAU	M-204	LK LEELANAU NARROWS	1939	302	3		

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County	Route	Feature intersected	Year	Type	Crit A	Crit C	NP
LEELANAU	M-22	CRYSTAL RIVER	1924	121			X
LENAWEE	ARNOLD HIGHW	NILE DRAIN	1908	344		C	
LENAWEE	BRAMBLE HIGH	EVANS CREEK	1907	344		C	
LENAWEE	BRUCE HIGHWA	BLACK CREEK	1910	344		C	
LENAWEE	BUCHOLTZ HIG	SCHENK BEN KELLY DRA	1910	344		C	
LENAWEE	COLE ROAD	FITTS CREEK	1897	344		C	
LENAWEE	DEERFIELD ROA	RAISIN RIVER	1955	204		C	
LENAWEE	DOWNING HIGH	LITTLE RIVER RAISIN	1910	104		C	
LENAWEE	HOAGLAND HIG	LITTLE RIVER RAISIN	1910	104		C	
LENAWEE	HOAGLAND HIG	SWAMP RAISIN DRAIN	1910	302		C	
LENAWEE	HOAGLAND HIG	SCHENK BEN KELLY DRA	1905	362		C	
LENAWEE	M-156	SILVER CREEK	1935	302	3		
LENAWEE	PARR HIGHWAY	PENN-CENTRAL RAILROA	1940	342		C	
LENAWEE	RAYMOND ROA	FITTS CREEK	1900	344		C	
LENAWEE	RODESLIER HIG	DRAPER DRAIN	1924	101		C	
LENAWEE	SUTTON ROAD	SCHENK BEN KELLY DRA	1920	344		C	
LENAWEE	UNKNOWN	UNKNOWN	1870	344		C	X
LENAWEE	US-223	MDOT RAILROAD & M34	1954	332		C	
LENAWEE	US-223	SOUTH BR. RAISIN RIVER	1953	204		C	
LENAWEE	US-223 BR NB	S BR RAISIN RIVER	1919	111		C	
LIVINGSTO	ANTCLIFF ROA	STONER CREEK	1922	101		C	
LIVINGSTO	BETTERLY ROA	STONER CREEK	1900	302		C	
LIVINGSTO	DEAN ROAD	YELLOW RIVER DRAIN	1914	362		C	
LIVINGSTO	FOWLerville	CONWAY COHOCTAH DR	1910	302		C	
LIVINGSTO	LATSON ROAD	YELLOW RIVER DRAIN	1914	362		C	
LIVINGSTO	OWOSSO ROAD	STONER CREEK	1919	104		C	
LIVINGSTO	SARGENT ROAD	RED CEDAR RIVER IMP.	1905	310		C	
LUCE	COUNTY RD.412	E.BR.TWO HEARTED RIVE	1929	702		C	X
LUCE	COUNTY ROAD	HELMER CREEK	1900	302		C	X
LUCE	COUNTY ROAD	LITTLE TWO HEARTED RI	1913	344		C	
LUCE	COUNTY ROUTE	DAWSON CREEK	1900	402		C	
MACKINAC	MACKINAC TRL	CARP RIVER	1919	111		C	
MACKINAC	US-2	BREVORT RIVER	1935	302	34		
MACKINAC	US-2	CUT RIVER	1947	322	3	C	
MACKINAC	US-2	WCL RAILROAD	1938	302	34	C	
MACOMB	23 MILE RD	MID BR CLINTON RIVER	1935	111		C	
MACOMB	23 MILE ROAD	N BR CLINTON RIVER	1935	111		C	
MACOMB	24 MILE ROAD	NORTH BR CLINTON RIVE	1909	111		C	
MACOMB	25 MILE ROAD	DEER CREEK	1910	111		C	
MACOMB	27 MILE ROAD	N BRANCH CLINTON RIV	1910	344		C	
MACOMB	28 MILE ROAD	NORTH BRANCH CLINTO	1928	344		C	
MACOMB	28 MILE ROAD	OVERFLOW N B CLINTON	1928	302			X
MACOMB	28 MILE ROAD	OVERFLOW N B CLINTON	1928	342			X
MACOMB	30 MILE ROAD	NORTH BRANCH CLINTO	1920	344		C	

APPENDIX A

County	Route	Feature intersected	Year	Type	Crit A	Crit C	NP
MACOMB	30 MILE ROAD	OVERFLOW N B CLINTON	1920	362			X
MACOMB	30 MILE ROAD	OVERFLOW N B CLINTON	1920	362			X
MACOMB	30 MILE ROAD	OVERFLOW N B CLINTON	1920	302			X
MACOMB	CARD ROAD	NORTH BR CLINTON RIVE	1910	344		C	
MACOMB	CHAPMAN ROA	DEER CREEK	1910	111		C	
MACOMB	DICKINSON STR	CLINTON RIVER	1953	332		C	X
MACOMB	EB METRO PARK	CLINTON RIVER SPILLWA	1950	332		C	
MACOMB	ELDRED ROAD	EAST MILL LAKE OUTLET	1910	362		C	
MACOMB	FAIRCHILD ROA	DEER CREEK	1910	111		C	
MACOMB	HARPER AVENU	CLINTON RIVER SPILLWA	1951	332		C	
MACOMB	JEFFERSON AVE	MILK RIVER	1931	302			X
MACOMB	JEFFERSON AVE	SALT RIVER	1928	302	3		
MACOMB	KLEINO ROAD	CLINTON RIVER	1951	402			X
MACOMB	M-59	N BR CLINTON RIVER	1939	302		C	
MACOMB	MCKAY ROAD	N B CLINTON RIVER	1928	302		C	
MANISTEE	LEFFEW ROAD	BIG BEAR CREEK	1910	362	2	C	
MANISTEE	M-55	PINE CREEK	1934	322	34	C	
MANISTEE	PSUTKA ROAD	BETSIE RIVER	1900	302	2		
MARQUETT	COUNTY HWY 6	PESHEKEE RIVER	1926	302		C	
MARQUETT	COUNTY HWY 6	PESHEKEE RIVER	1927	302		C	
MARQUETT	COUNTY RD 557	BIG WEST RIVER	1928	302		C	
MARQUETT	HD ROAD	BISMARCK CREEK	1928	372			X
MARQUETT	JAD ROAD (OLD	CARP RIVER	1946	771		C	
MARQUETT	LAKESHORE DRI	CARP CREEK	1920	119			X
MARQUETT	M-95	MICHIGAMME RIVER	1938	302		C	
MARQUETT	OG ROAD	NELSON CREEK	1909	310		C	
MARQUETT	US-41	CARP BRANCH BURIED	1947	104			X
MARQUETT	US-41	CHERRY CREEK BURIED	1952	104			X
MASON	CABANA ROAD	N BR PENTWATER RIVER	1900	372	2		
MASON	DARR ROAD	BIG SABLE RIVER	1900	303	2		
MASON	DARR ROAD	NO BR LINCOLN RIVER	1900	344	2	C	
MASON	DARR ROAD	SO BR LINCOLN RIVER	1900	344	2	C	
MASON	DECKER ROAD	SO BR LINCOLN RIVER	1900	302	2		
MASON	FISHER ROAD	LINCOLN RIVER	1900	303	2	C	
MASON	HAWLEY ROAD	CARR CREEK	1900	302	2		
MASON	HAWLEY ROAD	S BR PERE MARQUETTE R	1900	303	2		
MASON	LASALLE ROAD	BIG SAUBLE RIVER	1900	344	2	C	
MASON	M-116	LINCOLN RIVER	1934	302		C	
MASON	REEK ROAD	N BR PERE MARQUETTE	1900	344	2	C	
MASON	STEPHENS ROA	BIG SABLE RIVER	1900	302	2		
MASON	STEPHENS ROA	S BRANCH LINCOLN RIVE	1900	302	2		
MASON	TUTTLE ROAD	NO BR LINCOLN RIVER	1900	362	2	C	
MASON	TYNDALL ROAD	LITTLE SABLE RIVER	1900	302	2	C	X
MASON	US-31	PERE MARQUETTE RIVER	1924	121		C	

APPENDIX A

County	Route	Feature intersected	Year	Type	Crit A	Crit C	NP
MASON	US-31	PERE MARQUETTE RIVER	1925	121		C	
MASON	VICTORY CORN	NO BR LINCOLN RIVER	1900	302	2		
MECOSTA	120TH AVENUE	LITTLE MUSKEGON RIVE	1897	344		C	
MECOSTA	19 MILE ROAD	CHIPPEWA RIVER	1900	771		C	
MECOSTA	19 MILE ROAD	S BRANCH CHIPPEWA RIV	1904	771		C	
MECOSTA	22 MILE ROAD	N BR CHIPPEWA RIVER	1898	771		C	
MECOSTA	BUCHANAN RO	E BR LITTLE MUSKEGON	1896	362		C	
MECOSTA	EVERGREEN RO	N BR CHIPPEWA RIVER	1896	302		C	
MECOSTA	HOOVER ROAD	N BR CHIPPEWA RIVER	1900	302		C	
MECOSTA	JEFFERSON STR	BIG CREEK	1920	103			X
MECOSTA	M-20	E BR LITTLE MUSKEGON	1926	121	3		
MECOSTA	M-66	WEST BRANCH CHIPPEW	1927	302		C	
MECOSTA	WASHINGTON	E BR LITTLE MUSKEGON	1900	362		C	X
MENOMINE	29 MILE ROAD	DEVILS CREEK	1930	111		C	
MENOMINE	32 MI ROAD	BIG CEDAR RIVER	1920	111		C	
MENOMINE	41 MILE ROAD	BIG CEDAR RIVER	1928	121		C	
MENOMINE	A-1 ROAD	BIG CEDAR	1926	344		C	
MENOMINE	CHALK HILLS R	MENOMINEE RIVER	1900	104		C	
MENOMINE	F-4 ROAD	BIG CEDAR RIVER	1924	344		C	
MENOMINE	M-35	BIG CEDAR RIVER	1952	332		C	
MENOMINE	MENOMINEE ST	LITTLE CEDAR RIVER	1935	121		C	
MENOMINE	US-41	C&NW & E&LS RR	1929	104	3	C	
MENOMINE	US-41 IN MENO	MENOMINEE RIVER	1929	352	3	C	
MIDLAND	7 MILE ROAD	SALT RIVER	1927	121		C	
MIDLAND	9 MILE ROAD	PINE RIVER	1928	343		C	
MIDLAND	ALAMANDO RO	LITTLE SALT CREEK	1905	344		C	
MIDLAND	ALAMANDO RO	LITTLE SALT RIVER	1906	344		C	
MIDLAND	BALL ROAD	LITTLE SALT CREEK	1901	307		C	
MIDLAND	CURRIE PARKW	TITTABAWASSEE RIVER	1900	343		C	
MIDLAND	EMERSON PARK	STURGEON CREEK	1951	111		C	
MIDLAND	FREELAND ROA	JO DRAIN	1910	302		C	X
MIDLAND	GENEVA ROAD	CHIPPEWA RIVER	1930	344		C	
MIDLAND	HUEY ROAD	FLEMING DRAIN	1935				X
MIDLAND	IRISH STREET	SALT RIVER	1927	121		C	
MIDLAND	LAPORTE ROAD	LITTLE SALT CREEK	1904	307		C	
MIDLAND	LEWIS ROAD	HOWE JOINT DRAIN	1919	362			X
MIDLAND	LEWIS ROAD	LITTLE SALT CREEK	1910	344		C	
MIDLAND	M-20	CSX/TITABAWASSEE RV (	1955	303		C	X
MIDLAND	M-30	TITTABAWASSEE RIVER	1947	302		C	X
MIDLAND	MAGRUDDER R	BUSH CREEK	1911	344		C	
MIDLAND	MIDLAND-GLAD	HERNER DRAIN	1903	362		C	X
MIDLAND	N SAGINAW RO	SALT RIVER	1932	344		C	
MIDLAND	N SAGINAW RO	SALT RIVER	1933	352		C	
MIDLAND	N SAGINAW RO	STATE DRAIN	1931	119			X

APPENDIX A

County	Route	Feature intersected	Year	Type	Crit A	Crit C	NP
MIDLAND	SMITHS CROSSI	WEEKS DRAIN	1936	302			X
MIDLAND	W MAIN STREET	SNAKE CREEK	1900	111		C	
MIDLAND	WHEELER ROAD	CARROLL CREEK	1930	310		C	X
MISSAUKEE	DOLPH ROAD	MUSKEGON RIVER	1908	344		C	
MISSAUKEE	KELLY ROAD	MUSKEGON RIVER	1920	344		C	
MISSAUKEE	M-55	MUSKEGON RIVER	1935	332	3		
MISSAUKEE	M-66	CLAM RIVER	1929	302	3		
MONROE	BACON ROAD	LABADIE DRAIN	1900	302		C	
MONROE	BREWER ROAD	SWAMP RAISIN CREEK	1947	402			X
MONROE	CARLETON WES	SWAN CREEK	1935	101			X
MONROE	CONE ROAD	MILAN-MACON DRAIN	1900	119			X
MONROE	DEAN ROAD	LAVOY DRAIN	1900	362		C	
MONROE	DENNISON ROA	N DR MID BR MACON RIV	1927	302		C	
MONROE	DUNBAR ROAD	I-75	1955	204		C	
MONROE	E ELM AVENUE	MASON RUN DRAIN	1927	332		C	
MONROE	HALF ROAD	NORTH MACON CREEK	1910	344		C	
MONROE	HEAD-O-LAKE R	OTTAWA LAKE OUTLET	1900	302		C	
MONROE	HISER ROAD	NORTH MACON DRAIN	1900	344		C	
MONROE	I-75	CONRAIL	1955	332	6		
MONROE	I-75	CONRAIL & RAISIN RIVER	1955	303	6	C	
MONROE	I-75	INDUSTRIAL TRACKS	1954	332	6		
MONROE	I-75 CONN	CONRAIL & GTW RAILRO	1938	332		C	
MONROE	I-75 NB	BAY CREEK	1955	104	6		
MONROE	I-75 SB	BAY CREEK	1955	104	6		
MONROE	JAMES ROAD	STONY CREEK	1920	111		C	
MONROE	KIMPTON ROAD	SOUTH BRANCH MACON	1900	344		C	
MONROE	MACOMB STREE	RAISIN RIVER	1920	204		C	X
MONROE	MARTINSVILLE	BEAVER SWALE DRAIN	1910	111		C	
MONROE	MONK ROAD	MIDDLE BRANCH MACON	1900	344		C	
MONROE	N STONY CREEK	STONY CREEK OVERFLO	1930	111		C	
MONROE	NADEUX ROAD	I-75	1954	204		C	
MONROE	NEWPORT ROAD	I-75	1955	204	6	C	
MONROE	NORTH CUSTER	WILLOW RUN	1900	101		C	
MONROE	O'HARA ROAD	BEAVER SWALE DRAIN	1910	111		C	
MONROE	OELKE ROAD	NORTH MACON CREEK	1899	344		C	
MONROE	OTTAWA LAKE	OTTAWA LAKE DRAIN	1900	121		C	
MONROE	PETERSBURG R	BEAR SWAMP CREEK	1925	372			X
MONROE	RAISINVILLE RO	PLUM CREEK	1920	302			X
MONROE	REA ROAD	MIDDLE BRANCH MACON	1910	119			X
MONROE	S HURON RIVER	I-75	1954	204	6	C	
MONROE	SIGLER ROAD	I-75	1954	204		C	
MONROE	SUDER ROAD	HALFWAY CREEK	1900	321		C	
MONROE	TIMBERS ROAD	SWAN CREEK	1910	111		C	
MONROE	US-23 SB	SALINE RIVER	1948	302	3		

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County	Route	Feature intersected	Year	Type	Crit A	Crit C	NP
MONROE	US-24	CSX RAILROAD	1925	402		C	
MONROE	US-24	LITTLE SWAN CREEK	1922	303	3		
MONROE	US-24	OTTER CREEK	1924	111	3		
MONROE	US-24	PLUM CREEK	1924	104	3		
MONROE	US-24	SWAN CREEK	1922	303	3		
MONROE	WADSWORTH R	OTTAWA LAKE OUTLET	1910	344		C	
MONTCAL	FRANKLIN STRE	FLAT RIVER	1914	342		C	
MONTCAL	M-82	TAMARACK CREEK	1932	382		C	X
MONTCAL	NELSON ROAD	DICKERSON CREEK	1910	302		C	
MONTCAL	REED ROAD	HANDY CREEK	1910	101		C	
MONTCAL	VICKERLAND R	S. BRANCH PINE RIVER	1934	702	4		X
MONTMOR	ULSHAFFER RO	THUNDER BAY RIVER	1930	344		C	
MUSKEGON	AMITY STREET	C O RAILROAD	1900	303		C	
MUSKEGON	BLACK CREEK R	BLACK CREEK	1924				X
MUSKEGON	BRICK YARD RO	LITTLE CEDAR CREEK	1900	101		C	
MUSKEGON	LIFE GUARD RO	SADONY BAYOU	1900	103		C	
MUSKEGON	M-120	MUSKEGON RIVER	1927	302		C	
MUSKEGON	ORSHAL ROAD	DUCK CREEK	1900	101		C	
MUSKEGON	ROLLENHAGEN	CROCKERY CREEK	1910	310		C	X
MUSKEGON	ROLLENHAGEN	DRAIN	1920	101		C	
MUSKEGON	STERNBERG RO	NORRIS CREEK	1900	103		C	
MUSKEGON	US-31 BR EB	MUSKEGON RIVER	1944	201	5		
MUSKEGON	WOOD ROAD	YONKERS DRAIN	1900	101		C	
NEWAYGO	FROST STREET	BUCKS HOLLOW DRAIN	1925	302			X
NEWAYGO	GREEN AVENUE	BEAVER CREEK	1925	362			X
NEWAYGO	OLD M-20	WHITE RIVER	1923	121		P	X
NEWAYGO	PINE HILL AVEN	WHITE RIVER	1928	121		C	
NEWAYGO	WARNER AVEN	SO BR PERE MARQUETTE	1920	362			X
NEWAYGO	WARNER AVEN	WHITE RIVER	1920	310		C	X
OAKLAND	ADAMS ROAD	GRAND TRUNK RAILROA	1929	342		C	X
OAKLAND	BEECH RD	ROUGE RIVER	1946	302			X
OAKLAND	BEECH RD	ROUGE RIVER	1952	332			X
OAKLAND	DERBY STREET	GRAND TRUNK WESTERN	1930	104		C	X
OAKLAND	E (M.L.King) BL	CLINTON RIVER	1938	107		C	X
OAKLAND	ELEVEN MILE R	PERNICK DRAIN	1930	302			X
OAKLAND	ELEVEN MILE R	RIVER ROUGE	1929	302			X
OAKLAND	GILLESPIE AVE	CLINTON RIVER	1936	107		C	X
OAKLAND	GREEN SPRUCE	NORTH CREEK	1925	302			X
OAKLAND	HICKORY LEAF	NORTH CREEK	1925	302			X
OAKLAND	I-96	HURON RIVER	1948	332	3		
OAKLAND	INKSTER RD	RAVINES BRANCH ROUG	1900	319			X
OAKLAND	JOSLYN ROAD	GRANDTRUNKWESTERN	1932	402			X
OAKLAND	KIRKWAY ROAD	LOWER LONG LAKE	1930	111		C	
OAKLAND	LAKE GROVE D	WHITE LAKE CANAL	1900	302		C	

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County	Route	Feature intersected	Year	Type	Crit A	Crit C	NP
OAKLAND	LINCOLN DRIVE	ROUGE RIVER	1920	104			X
OAKLAND	NAVARRA COU	WHITE LAKE CANAL	1900	302		C	
OAKLAND	NINE MILE RD	EVANS BRANCH OF ROU	1930	332			X
OAKLAND	NINE MILE RD	RIVER ROUGE	1930	302			X
OAKLAND	OLD NOVI ROA	NORTH BRANCH ROUGE	1927	303			X
OAKLAND	PADDOCK STRE	CLINTON RIVER	1954	302			X
OAKLAND	PONTIAC RD	SYLVAN LAKE	1900	111		C	X
OAKLAND	POWER ROAD	UPPER ROUGE RIVER	1940	101		C	X
OAKLAND	SANDERSON AV	AUGUSTA DRAIN	1900	119			X
OAKLAND	TROWBRIDGE R	GTW RAILROAD	1931	204		C	
OAKLAND	W MAPLE DRIV	ROUGE RIVER	1950	302			X
OCEANA	136TH AVENUE	S.BRANCH PENTWATER R	1900	362		C	
OCEANA	140TH AVENUE	S.BRANCH PENTWATER R	1910	771		C	
OCEANA	184TH AVENUE	CUSHMAN CREEK	1910	362		C	X
OCEANA	88TH AVENUE	NO BR. PENTWATER RIVE	1912	307		C	
OCEANA	96TH AVENUE	CEDAR CREEK	1910	307		C	
OCEANA	96TH AVENUE	NO BR PENTWATER RIVE	1910	307		C	
OCEANA	96TH AVENUE	SO BR PENTWATER RIV	1910	307		C	
OCEANA	LOOP ROAD	NO BRANCH WHITE RIVE	1919	121		C	
OCEANA	US-31	PENTWATER RIVER	1954	303		C	
OCEANA	YALE ROAD	N BRANCH WHITE RIVER	1910	362		C	
OGEMAW	GREENWOOD R	RIFLE RIVER	1953	302		C	
ONTONAGO	KITZMAN ROAD	DIAMOND CREEK	1926	362			X
ONTONAGO	M-26	E BR FIRESTEEL RIVER	1952	303		C	X
ONTONAGO	M-26	W BR FIRESTEEL RIVER	1952	303		C	X
ONTONAGO	M-64	ONTONAGON RIVER	1939	417		C	
OSCEOLA	16 MILE ROAD	BIG BEAVER CREEK	1900	362		C	
OSCEOLA	19 MILE ROAD	PINE RIVER	1900	362		C	X
OSCEOLA	21 MILE ROAD	EAST BRANCH PINE RIVE	1900	362		C	
OSCEOLA	210TH AVENUE	BIG BEAVER CREEK	1900	362		C	
OSCEOLA	220TH AVENUE	BIG BEAVER CREEK	1900	362		C	
OSCEOLA	220TH AVENUE	HERSEY RIVER	1900				X
OSCEOLA	3 MILE ROAD	HERSEY RIVER	1900	344		C	
OSCEOLA	4 MILE ROAD	JOHNSON CREEK	1900	101		C	
OSCEOLA	40TH AVENUE	CSX RAILROAD	1902	372		C	
OSCEOLA	5 MILE ROAD	JOHNSON CREEK	1900	362		C	X
OSCEOLA	60TH AVENUE	MIDDLE BRANCH RIVER	1900	344		C	
OSCEOLA	65TH AVENUE	CSX RAILROAD	1902	702		C	
OSCEOLA	70TH AVENUE	CSX RAILROAD	1902	372		C	
OSCEOLA	85TH AVENUE	MUSKEGON RIVER	1940	302			X
OSCEOLA	HIMBA ROAD	W BRANCH CLAM RIVER	1900	362		C	X
OSCEOLA	M-61	MIDDLE BRANCH RIVER	1939	111		C	
OSCEOLA	MACKINAW TR	HERSEY CREEK	1900	104		C	
OSCEOLA	MACKINAW TR	LINCOLN CREEK	1900	104		C	

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County	Route	Feature intersected	Year	Type	Crit A	Crit C	NP
OSCEOLA	MACKINAW TR	PENN CENTRAL RAILROA	1929	104		C	X
OSCEOLA	MAIN STREET	HERSEY RIVER	1900	105		C	X
OSCEOLA	ONE MILE ROAD	CHIPPEWA RIVER	1900	362		C	
OSCEOLA	TWIN LAKE ROA	MIDDLE BRANCH RIVER	1900	309		C	X
OTTAWA	3RD STREET	S CHANNEL GRAND RIVE	1930	302		C	
OTTAWA	BERLIN FAIR DR	SAND CREEK	1923	121		C	
OTTAWA	CLEVELAND ST	CROCKERY CREEK	1923	121		C	
OTTAWA	FRUITPORT ROA	PETTYS BAYOU	1948	302	3	C	
OTTAWA	LEONARD STRE	CROCKERY CREEK	1912	302		C	X
OTTAWA	LEONARD STRE	CROCKERY CREEK	1912	302		C	X
OTTAWA	M-45	GRAND RIVER	1928	321		C	
OTTAWA	RIVER AVENUE	BLACK RIVER	1932	302		C	
OTTAWA	US-31 NB	CSX RAILROAD	1949	302		C	
PRESQUE IS	638 HWY	BLACK RIVER	1930	302			X
PRESQUE IS	MILLERSBURG R	OCQUEOC RIVER	1935	121		C	
PRESQUE IS	OCQUEOC FALL	OCQUEOC RIVER	1920	111		C	
PRESQUE IS	OLD STATE ROA	THOMPSON CREEK	1940	702	4		
PRESQUE IS	ORCUTT HWY	OCQUEOC RIVER	1920	372			X
PRESQUE IS	QUINN CREEK H	QUINN CREEK	1925	362			X
PRESQUE IS	US-23	SWAN R	1939	532	3		
ROSCOMM	OLD US 27	MUSKEGON RIVER	1947	332	3		
SAGINAW	BIRCH RUN ROA	MISTEGUAY CREEK	1926	302		C	
SAGINAW	BRENNAN ROAD	BEAVER CREEK	1906	344		C	
SAGINAW	BRENNAN ROAD	NORTH BRANCH BAD RIV	1924	302			X
SAGINAW	BRENNAN ROAD	NORTH BRANCH BAD RIV	1895	302		C	X
SAGINAW	BRENNAN ROAD	SOUTH BRANCH BAD RIV	1898	344		C	
SAGINAW	BURT ROAD	FLINT RIVER	1885	343		C	
SAGINAW	BUSCH ROAD	FLINT RIVER OVERFLOW	1913	302		C	X
SAGINAW	CENTER ROAD	TITTABAWASSEE RIVER	1927	302		C	
SAGINAW	CHAPIN ROAD	LAMB CREEK	1916	104		C	
SAGINAW	CURTIS ROAD	BIRCH RUN CREEK	1920	121		C	
SAGINAW	CURTIS ROAD	BIRCH RUN CREEK OVER	1920	121		C	
SAGINAW	DITCH ROAD	NORTHWOOD CREEK	1890	302		C	
SAGINAW	DIXIE HIGHWAY	CASS RIVER	1931	303	3		
SAGINAW	FREELAND ROA	TITTABAWASSEE RIV OFL	1931				X
SAGINAW	GARY ROAD	MISTEGUAY CREEK	1913	343		C	
SAGINAW	I-675	SAGIN R GTW C&O RR &	1927	332		C	
SAGINAW	MERIDIAN ROA	NORTH BRANCH BAD RIV	1904	344		C	
SAGINAW	MOORISH ROAD	HUTCHINSON & YOUNG	1912	302		C	
SAGINAW	MOWER ROAD	COLE DRAIN	1920	121		C	
SAGINAW	RAUCHOLZ ROA	BEAVER CREEK	1906	310		C	X
SAGINAW	RING ROAD	BIG POTATO CREEK	1910	302		C	
SAGINAW	SIXTH STREET	SAGINAW RIVER	1886	417		C	
SAGINAW	STEEL ROAD	BIG POTATO CREEK	1920	302			X

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County	Route	Feature intersected	Year	Type	Crit A	Crit C	NP
SAGINAW	SWAN CREEK R	BEAVER CREEK	1885	344		C	
SAGINAW	SWAN CREEK R	BEAVER CREEK	1887	344		C	
SAGINAW	VERNE ROAD	MILLER DRAIN	1923	344		C	
SAGINAW	WARNICK ROAD	DEAD CREEK	1907	344		C	
SANILAC	CASH ROAD	ELK CREEK DRAIN	1910	344		C	
SANILAC	CHURCH ROAD	BLACK RIVER	1900	343		C	
SANILAC	HOADLEY ROAD	N. BR. CASS RIVER DRAI	1940	771	4	C	
SANILAC	HOADLEY ROAD	S BRANCH CASS RIVER	1907	343		C	
SANILAC	M-19	BRANCH OF ELK CREEK	1930	101			X
SANILAC	M-19	ELK CREEK	1924	121		C	
SANILAC	M-53	GREEMAN CR	1927	104			X
SANILAC	NICOL ROAD	BLACK RIVER DRAIN	1905	344		C	
SCHOOLCR	TEN CURVES RD	MANISTIQUE RIVER	1928	121		C	
SCHOOLCR	TEN CURVES RD	MANISTIQUE RIVER	1929	121		C	
SCHOOLCR	US FOREST RTE	NORTH BRANCH STUTTS	1951	101			X
SCHOOLCR	US FOREST RTE	BIG INDIAN RIVER	1953	104			X
SCHOOLCR	US FOREST RTE	BIG INDIAN RIVER	1953	104			X
SHIAWASSE	BATH ROAD	ROWLEY CREEK	1900	332		C	X
SHIAWASSE	BATH ROAD	S.BR.LOOKINGGLASS RIV	1925	121		C	
SHIAWASSE	COPAS ROAD	RUSHBED CREEK	1927	310		C	
SHIAWASSE	HENDERSON RO	MISTEGUAY CREEK	1934	303			X
SHIAWASSE	LANSING ROAD	WEBB CREEK DRAIN	1930	302			X
SHIAWASSE	M-21	LEWIS DRAIN	1929	104			X
SHIAWASSE	NEWBURG ROA	THREE MILE CREEK	1935	302			X
SHIAWASSE	PARMENTER RO	SHIAWASSEE RIVER	1892	343		C	
SHIAWASSE	SHAFTSBURG R	S BR LOOKINGGLASS RIV	1925	302			X
SHIAWASSE	SIX MILE CREEK	PORTER CREEK	1901	302		C	
ST. CLAIR	7TH STREET	BLACK RIVER	1933	316	4	C	
ST. CLAIR	ARENDT ROAD	S. BR. MILL CREEK DRAI	1927	310		C	
ST. CLAIR	BRICKER ROAD	SULLIVAN DRAIN	1914	302		C	
ST. CLAIR	BURTCH ROAD	MILWAUKEE CREEK	1919	101		C	
ST. CLAIR	CAPAC ROAD	N. BR. MILL CREEK DRAI	1938	101	4		
ST. CLAIR	CAPAC ROAD	S. BR. MILL CREEK DRAI	1938	303	4		X
ST. CLAIR	COMSTOCK ROA	BLACK RIVER	1919	211		C	
ST. CLAIR	COMSTOCK ROA	EVES DRAIN	1939	302	4		
ST. CLAIR	CRIBBINS ROAD	PINE RIVER	1935	302	4		
ST. CLAIR	FARGO ROAD	OLOUGHLIN DRAIN	1920	111		C	
ST. CLAIR	FISHER ROAD	BLACK RIVER	1928	302		C	
ST. CLAIR	FISHER ROAD	BURTCH CREEK	1931	302	4		
ST. CLAIR	FORD ROAD	MILL CREEK	1900	310		C	
ST. CLAIR	FRITH ROAD	PINE RIVER	1914	343		C	
ST. CLAIR	GENAW ROAD	BEAVERDAM DRAIN	1935	362	4		X
ST. CLAIR	GOODELLS ROA	MOORE CREEK	1920	101		C	
ST. CLAIR	GOODELLS ROA	SOUTH BR. PINE RIVER	1916	121		C	
ST. CLAIR	GOODELLS ROA	UNNAMED CREEK	1920	101		C	

APPENDIX A

County	Route	Feature intersected	Year	Type	Crit A	Crit C	NP
ST. CLAIR	GRAHAM ROAD	PLUM CREEK	1912	372		C	
ST. CLAIR	GRATIOT	CANAL	1955	101		C	X
ST. CLAIR	GRATIOT ROAD	BELLE RIVER	1932	302	4		
ST. CLAIR	GRATIOT ROAD	PINE RIVER	1932	302	4		
ST. CLAIR	GRATIOT ROAD	RATTLE RUN CREEK	1931	104	4		
ST. CLAIR	GRATIOT ROAD	RICHMOND-COLUMBUS D	1931	104	4		
ST. CLAIR	GRATIOT ROAD	UNNAMED CREEK	1931	104	4		
ST. CLAIR	GRATIOT ROAD	UNNAMED CREEK	1931	104	4		
ST. CLAIR	GRISWOLD ROA	PINE RIVER	1925	121		C	
ST. CLAIR	HESSEN ROAD	JEROME CREEK	1937	372	4		
ST. CLAIR	HEWITT ROAD	PLUM CREEK DRAIN	1913	362		C	
ST. CLAIR	I-94	BLACK R	1950	303		C	
ST. CLAIR	INDIAN TRAIL R	BELLE RIVER	1937	344		C	
ST. CLAIR	JEDDO ROAD	S. BR. MILL CREEK DRAI	1939	302	4		
ST. CLAIR	JEDDO ROAD	SILVER CREEK	1920	302		C	
ST. CLAIR	KEEWAHDIN RO	HOWE DRAIN	1935	105	4		
ST. CLAIR	KRAFFT ROAD	HOWE DRAIN	1935	362	4		
ST. CLAIR	LAKESHORE DRI	CARRIGAN DRAIN	1936	104	4		
ST. CLAIR	LONG ISLAND C	UNNAMED CANAL	1938	771	4	C	
ST. CLAIR	M-136	BLACK R	1928	352		C	
ST. CLAIR	M-19	BELLE R	1932	352	4		
ST. CLAIR	M-19	COWHEY CR	1936	104	4		
ST. CLAIR	M-25	BLACK R SPILLWAY	1932	302	4		
ST. CLAIR	M-25	CSX & GTW RR:S	1906	321		C	
ST. CLAIR	M-29	MARINE CITY DRAIN	1942	302	5		
ST. CLAIR	MASTERS ROAD	BELLE RIVER	1935	302	4		
ST. CLAIR	NORMAN ROAD	BLACK RIVER	1935	302	4		
ST. CLAIR	PALMS ROAD	CASCO DRAIN	1937	302	4		
ST. CLAIR	PALMS ROAD	SMITHS CREEK	1932	302	4		
ST. CLAIR	PARK AVENUE	MILL CREEK	1940	302			X
ST. CLAIR	PHELPS ROAD	SWARTOUT DRAIN	1935	302	4		X
ST. CLAIR	POINTE DRIVE	UNNAMED CANAL	1938	101	4		X
ST. CLAIR	RATTLE RUN RO	PINE RIVER	1931	302	4		
ST. CLAIR	RILEY CENTER	BELLE RIVER	1935	302	4		
ST. CLAIR	RYNN ROAD	OLOUGHLIN DRAIN	1920	111		C	
ST. CLAIR	SMITHS CREEK	SMITHS CREEK	1916	104		C	
ST. CLAIR	SPEAKER ROAD	S. BR. MILL CREEK DRAI	1908	344		C	
ST. CLAIR	SPERRY ROAD	GRAHAM DRAIN	1920	101		C	
ST. CLAIR	TERRY ROAD	BELLE RIVER	1910	344		C	
ST. CLAIR	VERNIER STREE	SWAN CREEK	1938	103	4		
ST. CLAIR	WADHAMS ROA	BLACK RIVER	1940	303			X
ST. CLAIR	WADHAMS ROA	PINE RIVER	1928	121		C	
ST. CLAIR	YAGER ROAD	SMITHS CREEK	1917	362		C	
ST. JOSEPH	BUCKNELL ROA	SPRING CREEK	1912	362		C	

APPENDIX A

County	Route	Feature intersected	Year	Type	Crit A	Crit C	NP
ST. JOSEPH	CUSTER ROAD	WASHBURN CREEK	1909	302		C	
ST. JOSEPH	FAWN RIVER RO	FAWN RIVER	1911	302		C	
ST. JOSEPH	HAGELGANS RO	WASHBURN CREEK	1909	344		C	
ST. JOSEPH	HALSEY ROAD	FAWN RIVER	1915	344		C	
ST. JOSEPH	HAYBRIDGE RO	FAWN RIVER	1912	344		C	
ST. JOSEPH	KINGS MILL RO	MILL RACE	1906	771		C	X
ST. JOSEPH	LAWRENCE ROA	BEAR CREEK	1920	362			X
ST. JOSEPH	LONGNECKER	LITTLE PORTAGE CREEK	1910	302		C	
ST. JOSEPH	M-60	PORTAGE RIVER	1925	211		C	
ST. JOSEPH	M-60 & US-131	ROCKY RIVER RACE	1942	104	5		
ST. JOSEPH	M-86	PRAIRIE RIVER	1923	310		C	
ST. JOSEPH	M-86	ST JOSEPH RIVER	1920	211		C	
ST. JOSEPH	NEAMAN ROAD	PRAIRIE RIVER	1914	344		C	
ST. JOSEPH	NEEDHAM ROA	BIG SWAN CREEK	1934	344		C	
ST. JOSEPH	NORTH RIVER R	BLACK RUN RIVER	1912	362		C	X
ST. JOSEPH	RAMBADT ROA	SPRING CREEK	1910	362		C	
ST. JOSEPH	STUBEY ROAD	FAWN RIVER	1910	344		C	
ST. JOSEPH	TRUCKENMILLE	PRAIRIE RIVER	1923	344		C	
ST. JOSEPH	US-12	ST JOSEPH RIVER	1922	121		C	
ST. JOSEPH	US-131	ST JOSEPH RIVER	1947	302		C	
ST. JOSEPH	WALTERSPAUG	SPRING CREEK	1901	302		C	
ST. JOSEPH	WATT ROAD	FAWN RIVER	1915	344		C	
ST. JOSEPH	UNKNOWN	ROCKY RIVER		111		C	X
TUSCOLA	DIVISION STREE	HURON & EASTERN RWY.	1934	302			X
TUSCOLA	KINDLER ROAD	WISCOGGIN & BRANCHES	1910	344		C	
TUSCOLA	M-24	CASS RIVER	1941	302		C	
TUSCOLA	M-46	HOUGHTON CREEK	1939	104			X
TUSCOLA	MC ARTHUR RO	N BR WHITE CREEK	1910	344		C	
TUSCOLA	REED ROAD	N BR CASS RIVER	1930	344		C	
TUSCOLA	RINGLE ROAD	WISCOGGIN DRAIN	1942	702	4		
VAN BURE	13TH AVENUE	DEERLICK CREEK	1910	101		C	
VAN BURE	44TH AVENUE	PAW PAW RIVER	1882	302		C	
VAN BURE	CR 687	S BR BLACK RIVER	1928	302		C	
VAN BURE	I-196BL	BLACK RIVER	1941	302	5		
WASHTENA	BROADWAY STR	DEPOT ST & PCRR	1928	342		C	
WASHTENA	BROADWAY STR	HURON RIVER	1916	111		C	
WASHTENA	EAST DELHI RO	HURON RIVER	1900	343		C	
WASHTENA	FORD EXIT DR	US-12	1942	382	5	C	
WASHTENA	FURNANCE STR	RIVER RAISIN	1900	344		C	
WASHTENA	GUENTHER ROA	MILL CREEK	1944	302	5		
WASHTENA	I-94	AA RAILROAD	1954	104		C	
WASHTENA	JACKSON AVEN	HONEY CREEK	1936	121		C	
WASHTENA	LIMA CENTER R	MILL CREEK	1941	302	5		
WASHTENA	PLATT ROAD	I-94	1955	204		C	

APPENDIX A

County	Route	Feature intersected	Year	Type	Crit A	Crit C	NP
WASHTENA	STADIUM BOUL	ANN ARBOR RAILROAD	1928	382		C	
WASHTENA	STONE SCHOOL	I-94	1954	204		C	
WASHTENA	TUTTLE HILL R	PAINT CREEK	1911	344		C	
WASHTENA	TYLER ROAD	WILLOW RUN	1942	219	5		
WASHTENA	US-12	WIARD RD SB	1942	332	5		
WASHTENA	US-12 (MID	FORD EXIT DR SB	1942	332	5		
WASHTENA	US-12 BR	CONRAIL	1934	321		C	
WASHTENA	US-12 EB	CONRAIL	1944	204	5	C	
WASHTENA	US-12 WB	CONRAIL	1944	204	5	C	
WASHTENA	US-12BR, M-17	HURON RIVER	1912	111		C	X
WASHTENA	WIARD RD NB	US-12	1942	382	5	C	
WASHTENA	WILBUR ROAD	RAISIN RIVER	1953	344		C	
WAYNE	12TH ST	I-94	1953	432	6		
WAYNE	14TH ST	I-94	1953	332	6		
WAYNE	30TH ST	I-94	1951	302	6		
WAYNE	ADDISON RD	I-94	1949	302	6		
WAYNE	ADELAIDE	GRAND TRUNK RR	1929	342	1		
WAYNE	ANN ARBOR TR	NORTH BRANCH ROUGE	1943	402	5		
WAYNE	ANTIETAM	GRAND TRUNK RR	1930	342	1		
WAYNE	ASHLAND AVE	FOX CREEK	1917	111		C	
WAYNE	BAGLEY AV RA	M-10	1954	332	6		
WAYNE	BEAL AVE	NO BRANCH ROUGE RIVE	1937	119			X
WAYNE	BROOKLYN AV	I-94	1955	303	6		
WAYNE	BRUSH STREET	DAVISON FWY	1942	107	6	C	
WAYNE	CANFIELD AV	M-10	1953	303	6		
WAYNE	CASINO WAY	CANOE STREAM	1947	107	1	C	X
WAYNE	CASS AVE	I-94	1955	332	6		
WAYNE	CECIL AVE	I-94	1950	332	6		
WAYNE	CENTRAL	CANOE STREAM	1913	111		C	
WAYNE	CENTRAL	CANOE STREAM	1947	302	1		
WAYNE	CENTRAL AVE	I-94	1950	302	6		
WAYNE	CHESTNUT	GRAND TRUNK RR	1929	342	1		
WAYNE	D. E. CO. CONV	W.JEFFERSON AVENUE	1900	310		C	X
WAYNE	DIVISION	GRAND TRUNK RR	1929	342	1		
WAYNE	E. N. HINES DRI	MIDDLE ROUGE RIVER	1948	201	1		
WAYNE	E. N. HINES DRI	MIDDLE ROUGE RIVER	1952	201	1		
WAYNE	E.N.HINES DR/A	BEECH-DALY ROAD	1953	332	1		
WAYNE	EAST RIVER RO	N. HICKORY CANAL	1936	201	1		
WAYNE	ECORSE ROAD	N. & W. R.R.	1936	302	1		
WAYNE	ELIZABETH ST	M-10	1954	382	6		
WAYNE	FERRY STREET	THOROFARE CANAL	1947	201		C	
WAYNE	FOREST AVE	M-10	1950	432	6		
WAYNE	FORT ST	PLEASANT ST & N&W RR	1928	302	1	C	
WAYNE	GIBRALTAR RO	FRANK & POET DRAIN	1932	104	1		

APPENDIX A

County	Route	Feature intersected	Year	Type	Crit A	Crit C	NP
WAYNE	GIBRALTAR RO	WATERWAY CANAL	1932	104	1	C	
WAYNE	GRAHAM ROAD	UPPER ROUGE RIVER	1947	201	1		
WAYNE	GRAND RIVER A	I-94	1954	302	6	C	
WAYNE	GRAND RIVER A	M-10	1953	432	6	C	
WAYNE	GROSSE ILE PAR	WEST RIVER ROAD	1932	104	1		
WAYNE	HAGGERTY ROA	MIDDLE ROUGE RIVER	1949	302	1		
WAYNE	HAMILTON AVE	DAVISON FWY	1942	207	6	C	
WAYNE	HAMILTON AVE	M-10	1954	382		C	
WAYNE	HARBIN DRIVE	SILVER CREEK CANAL	1930	111	1	C	
WAYNE	HARBOR AVE	CANAL	1921				X
WAYNE	HENRY RUFF R	LOWER RIVER ROUGE	1947	201	1	C	X
WAYNE	HINES DRIVE	OLD M-14 (PLYMOUTH R	1948	107		C	
WAYNE	HOLDEN AVE W	M-10	1950	303	6		
WAYNE	HORSE MILL RO	THOROFARE CANAL	1937	402	1		
WAYNE	HOWARD ST	M-10	1953	432	6		
WAYNE	I-75 SB	M-10	1953	382		C	
WAYNE	I-94 EB	ECORSE CR	1943	219	5		
WAYNE	I-94 EB	I-94 RAMP TO M-10	1955	352	6		
WAYNE	I-94 EB	OAKWOOD BLVD	1943	204	5	C	
WAYNE	I-94 EB	OUTER DR	1943	332	5		
WAYNE	I-94 EB	ROUGE R	1943	332	5	C	
WAYNE	I-94 TO W GR BL	OPEN AREA	1953	332	6		
WAYNE	I-94 WB	ECORSE CR	1943	219	5		
WAYNE	I-94 WB	I-94 RAMP FROM M-10	1955	352	6		
WAYNE	I-94 WB	OAKWOOD BLVD	1943	332	5		
WAYNE	I-94 WB	OUTER DR	1943	332	5		
WAYNE	I-94 WB	ROUGE R	1943	332	5	C	
WAYNE	I-94EB RAMP TO	M-10SB & I-94WB	1953	352	6	C	
WAYNE	I-94WB RAMP T	M-10NB & I-94EB	1953	352	6	C	
WAYNE	INDUSTRIAL RO	DIX ROAD	1930	342	1		
WAYNE	INKSTER ROAD	E. N. HINES DRIVE	1953	107	1	C	
WAYNE	INSELRUHE	CANOE STREAM	1901	342	1	C	
WAYNE	JANET ST	ECORSE CREEK	1948	103			X
WAYNE	JEFFERSON AVE	CONRAIL	1917	402		C	
WAYNE	JEFFERSON AVE	ECORSE RIVER	1931	104	1	C	
WAYNE	JEFFERSON AVE	HURON RIVER	1930	302	1		
WAYNE	JEFFERSON AVE	MONGUAGON CREEK	1927	104	1		
WAYNE	JEFFERSON AVE	ROUGE RIVER	1922	316	1	C	
WAYNE	JEFFERSON AVE	SILVER CREEK	1927	302	1		
WAYNE	JOHN DALY	ROUGE RIVER	1935	101	1	C	X
WAYNE	JOHN HIX RD	TONQUISH CREEK	1937	104			X
WAYNE	JOHN R ST	I-94	1955	332	6		
WAYNE	JOHN R STREET	DAVISON FWY	1942	107	6	C	
WAYNE	JUNCTION ST	I-94	1950	332	6		

APPENDIX A

County	Route	Feature intersected	Year	Type	Crit A	Crit C	NP
WAYNE	KORTE AVE	FOX CREEK	1922	111	1	C	
WAYNE	LAFAYETTE	N BR ECORSE RIVER	1948	104			X
WAYNE	LAFAYETTE BL	M-10	1952	432	6		
WAYNE	LILLEY ROAD	LOWER ROUGE RIVER	1933	344	1	C	
WAYNE	LINWOOD AVE	I-94	1953	332	6		
WAYNE	LIVERNOIS AVE	I-94	1950	332	6		
WAYNE	LONYO AVE	I-94	1949	332	6		
WAYNE	LUMLEY AVE W	I-94	1952	303	6		
WAYNE	M L KING (STIM	M-10	1952	432	6		
WAYNE	M-1	DAVISON (FUT M-14)	1943	207	6	C	
WAYNE	M-1 WOODWAR	I-94	1955	332	6		
WAYNE	M-10 NB	I-94	1953	332	6	C	
WAYNE	M-10 SB	I-94	1953	332	6	C	
WAYNE	M-10 SB	I-94 RAMP	1953	352	6		
WAYNE	M-102	PLUM CR	1931	111	1	C	
WAYNE	M-102 EB	ROUGE R	1931		1		
WAYNE	M-10NB	I-94 RAMP FROM M-10	1953	352	6		
WAYNE	M-153	FELLOWS CR	1920	104		C	
WAYNE	M-153, WYOMIN	I-94	1949	302	6		
WAYNE	M-3 (GRATIOT A	GTW RR	1929	342	1		
WAYNE	MARTIN AVE	I-94	1949	302	6		
WAYNE	MERRICK AVE	M-10	1953	303	6		
WAYNE	MERRIMAN ROA	E. N. HINES DRIVE	1951	107	1	C	
WAYNE	MIDDLE BELT R	E.N.HINES & MID.ROUGE	1953	207	1	C	
WAYNE	MILLER RD	M-153	1940	402	1		
WAYNE	MILWAUKEE AV	M-10	1949	432	6		
WAYNE	MORTON-TAYL	LOWER ROUGE RIVER	1935	302			X
WAYNE	MORTONVIEW	SEXTON KILFOIL DRAIN	1934	119			X
WAYNE	NB W GRAND BL	I-94	1953	352	6	C	
WAYNE	NEWBURGH RO	LOWER ROUGE RIVER	1951	101	1		X
WAYNE	NORTHVILLE R	MIDDLE ROUGE RIVER	1919	111		C	
WAYNE	NORTHVILLE R	MIDDLE ROUGE RIVER	1921	201	1	C	
WAYNE	OAKWAY	CANOE STREAM	1913	107	1	C	
WAYNE	OLD M14(PLYM	MIDDLE ROUGE RIVER	1925	111	1	C	
WAYNE	OUTER DRIVE	LOWER ROUGE RIVER	1930	111	1	C	
WAYNE	OUTER DRIVE	MIDDLE ROUGE RIVER	1928	104	1		
WAYNE	OUTER DRIVE	MT OLIVET CEMETERY D	1946	107		C	
WAYNE	PALLISTER AVE	M-10	1954	432	6		
WAYNE	PALMER ROAD	FELLOWS CREEK	1900	302		C	X
WAYNE	PARKE LANE RO	THOROFARE CH(GROSSE	1930	104	1	C	
WAYNE	PORTER ST WAL	M-10	1954	303	6		
WAYNE	RAMP FROM US-	I-94	1948	302	5	C	
WAYNE	RAMP TO US-12	I-94	1948	302	5		
WAYNE	RIVERSIDE AVE	CANAL	1909	111		C	X

APPENDIX A

County	Route	Feature intersected	Year	Type	Crit A	Crit C	NP
WAYNE	ROOSEVELT AV	I-94	1952	303	6		
WAYNE	S. POINTE DRIV	SWAN ISLAND CANAL	1939	104	1		
WAYNE	SB W GRAND BL	I-94	1953	352	6	C	
WAYNE	SCOTTEN AVE	I-94	1953	332	6	C	
WAYNE	SECOND AVENU	DAVISON FWY	1942	107	6	C	
WAYNE	SECOND BLVD	I-94	1954	332	6		
WAYNE	SELDEN AVE W	M-10	1953	303	6		
WAYNE	SIX MILE ROAD	HINES DRIVE	1933	107	1	C	
WAYNE	SIX MILE ROAD	MIDDLE ROUGE RIVER	1933	107	1	C	
WAYNE	SPINOZA DRIVE	ROUGE RIVER	1930	342	1		
WAYNE	SPRUCE ST WAL	M-10	1953	303	6		
WAYNE	TARNOW AVE W	I-94	1952	303	6		
WAYNE	THIRD AVENUE	DAVISON FWY	1942	107	6	C	
WAYNE	THIRD ST	I-94	1955	352	6	C	
WAYNE	TIREMAN AVE	ROUGE RIVER	1930	342	1		
WAYNE	TRENTON AVE	I-94	1951	303	6		
WAYNE	TRUMBULL AVE	I-94	1954	332	6		
WAYNE	US-12	M-10 NB	1954	332	6		
WAYNE	US-12	M-10 SB	1954	332	6		
WAYNE	US-12 (MICHIGA	I-94	1948	352	5	C	
WAYNE	US-12 (MICHIGA	I-94 RAMP	1944	332	5		
WAYNE	US-24	CONRAIL	1935	332	1		
WAYNE	US-24	ROUGE R	1937	302	1		
WAYNE	VENOY ROAD	LOWER ROUGE RIVER	1937	302	1		
WAYNE	W GRAND BOUL	M-10	1950	432	6		
WAYNE	WALTZ ROAD	HURON RIVER	1924	344	1	C	
WAYNE	WARREN AV	M-10	1950	432	6		
WAYNE	WARREN AVE	I-94	1953	332	6	C	
WAYNE	WAYNE ROAD	E. N. HINES DRIVE	1947	207	1	C	
WAYNE	WEIR RD	I-94	1950	302	6		
WAYNE	WESSON ST	I-94	1951	302	6		
WAYNE	WEST RIVER RO	THOROFARE CANAL	1935	352	1		
WAYNE	WILCOX & HINE	MIDDLE ROUGE RIVER	1933	219	1		
WAYNE	WYOMING AVE	M-10	1955	432		C	
WEXFORD	M-37	PINE RIVER	1948	303		C	
WEXFORD	NO 19 ROAD	MANISTEE RIVER	1906	344		C	
WEXFORD	POWERS STREE	CLAM RIVER	1900	111		C	

APPENDIX B: BRIDGES ELIMINATED FROM THE SURVEY SAMPLE

The bridges listed in this appendix have been eliminated from the survey. These structures appear not to qualify for listing in the National Register of Historic Places, unless new information gathered during field work indicates that any bridge should be reassessed.

The list is arranged in alphabetical order by county. For each bridge, the following information is included:

- the road carried;
- the feature crossed;
- the construction year; and
- the structural type (see Appendix C for key).

Problems of physical integrity are also noted ("X" in "INT" column), if this caused a bridge to be eliminated from the survey sample.

County	Road	Feature	Year	Structural Type	INT
WAYNE	SMITH AVE	WYANDOTT RIVER	1920	1	
WAYNE	US 10	WYANDOTT RIVER	1920	1	
WAYNE	1500 N. MICHIGAN	WYANDOTT RIVER	1920	1	
WAYNE	U.S. 10 (MICHIGAN)	WYANDOTT RIVER	1920	1	
WAYNE	U.S. 10	WYANDOTT RIVER	1920	1	
WAYNE	U.S. 10	WYANDOTT RIVER	1920	1	
WAYNE	WINDY ROAD	WYANDOTT RIVER	1920	1	
WAYNE	W. GRAND AVE	WYANDOTT RIVER	1920	1	
WAYNE	WALTER ROAD	WYANDOTT RIVER	1924	1	
WAYNE	W. JENNY AV	WYANDOTT RIVER	1925	1	
WAYNE	WARREN AVE	WYANDOTT RIVER	1925	1	
WAYNE	WAYNE ROAD	WYANDOTT RIVER	1927	1	
WAYNE	WEST RD	WYANDOTT RIVER	1928	1	
WAYNE	WISSON ST	WYANDOTT RIVER	1928	1	
WAYNE	WEST RIVERS RD	WYANDOTT RIVER	1928	1	
WAYNE	WILSON & HURD	WYANDOTT RIVER	1928	1	
WAYNE	WYCKING AVE	WYANDOTT RIVER	1928	1	
WEXFORD	W-17	WYANDOTT RIVER	1928	1	
WEXFORD	W-19 ROAD	WYANDOTT RIVER	1928	1	
WEXFORD	POWERS STREET	WYANDOTT RIVER	1928	1	

APPENDIX B

County	Route	Feature intersected	Year	Type	Int
ALCONA	BARLOW ROAD	VAN ETTEN CREEK	1915	362	
ALCONA	BARLOW ROAD	VANETTEN CREEK	1930	362	X
ALCONA	CRUZEN ROAD	PINE RIVER	1940	302	
ALCONA	CRUZEN ROAD	ROY CREEK	1930	362	X
ALCONA	HUBBARD LAKE	SUCKER CREEK	1936	101	
ALCONA	HURBERT ROAD	THUNDER BAY RIVER	1955	319	X
ALCONA	MCCONNELL RO	EAST BRANCH PINE RIVE	1935	302	
ALCONA	MIKADO GLENN	PINE RIVER	1940	302	
ALCONA	MIKADO ROAD	VAN ETTEN	1940	302	
ALCONA	SHAW ROAD	BLACK RIVER	1930	362	X
ALCONA	US-23	BLACK RIVER	1935	104	
ALGER	DEERTON-SD.LK	LAUGHING WHITEFISH RI	1915	302	
ALGER	FOREST HY 13(H	BIG INDIAN RIVER	1942	302	
ALGER	H-13 FEDERAL H	LITTLE INDIAN RIVER	1947	104	
ALGER	M-28	ANNA RIVER	1949	302	
ALGER	M-28	AU TRAIN RIVER	1932	332	X
ALGER	M-28	HICKEY CREEK	1947	302	
ALGER	M-28	LAUGHING WHITEFISH RI	1939	302	
ALGER	M-28	PRAIRIE CREEK	1947	302	
ALGER	M-28	ROCK RIVER	1932	332	X
ALGER	M-28	STAR CREEK	1947	302	
ALGER	M-67	BLACK RIVER	1929	104	
ALGER	M-67	DEXTER CREEK	1929	104	
ALGER	M-67	SCOTTS CREEK	1914	111	X
ALGER	M-77	W BR SUCKER RIVER	1928	104	
ALGER	M-94	AU TRAIN RIVER	1919	111	X
ALGER	M-94	WCL RAILROAD	1945	302	
ALGER	OLD 41 ROAD-KI	WHITEFISH RIVER	1910	121	
ALGER	PAULSON ROAD	DEXTER CREEK	1920	302	
ALGER	PETER WHITE R	LAUGHING WHITEFISH RI	1947	302	
ALGER	RISKU ROAD	LAUGHING WHITEFISH RI	1936	302	
ALGER	ROUND LAKE R	WEST BRANCH CREEK	1949	702	X
ALGER	ROUND LAKE R	STURGEON RIVER	1949	702	X
ALGER	SAND LAKE RO	SAND RIVER	1915	302	
ALGER	US-41	W BRANCH WHITEFISH RI	1936	302	
ALGER	US-41	W BRANCH WHITEFISH RI	1936	302	
ALGER	USFS RTE-COLE	AU TRAIN RIVER	1954	702	
ALLEGAN	10TH STREET	CONSOLIDATED RAIL CO	1939	302	
ALLEGAN	10TH STREET	GUN RIVER	1927	302	
ALLEGAN	10TH STREET	RABBIT RIVER DRAIN	1920	103	
ALLEGAN	110TH AVENUE	SWAN CREEK	1930	302	
ALLEGAN	112TH AVENUE	MINER CREEK	1930	302	X
ALLEGAN	113TH AVENUE	N BR OF BLACK RIVER	1940	303	
ALLEGAN	114TH AVENUE	GUN RIVER DRAIN	1940	372	X
ALLEGAN	120TH AVENUE	GUN RIVER DRAIN EXT.	1935	319	X
ALLEGAN	18TH STREET TR	RABBIT RIVER	1929	302	
ALLEGAN	22ND STREET	SCHNABLE BROOK	1935	302	
ALLEGAN	22ND STREET	SCHNABLE BROOK	1940	372	X
ALLEGAN	23RD STREET	LITTLE RABBIT RIVER DN	1918	372	X
ALLEGAN	30TH STREET TR	LITTLE RABBIT RIVER	1947	302	
ALLEGAN	30TH STREET TR	RABBIT RIVER	1947	302	
ALLEGAN	32ND STREET	LITTLE RABBIT RIVER	1915	302	
ALLEGAN	47TH STREET	SOUTH BR. BLACK RIVER	1926	362	
ALLEGAN	54TH STREET	BRUSH CREEK DRAIN	1920	362	
ALLEGAN	56TH STREET	S BR OF BLACK RIVER	1931	302	

APPENDIX B

County	Route	Feature intersected	Year	Type	Int
ALLEGAN	66TH STREET TR	S BR OF BLACK RIVER	1949	302	
ALLEGAN	DIVISION ST TR	RABBIT RIVER	1940	104	
ALLEGAN	FULTON STREET	KALAMAZOO RIVER PO	1920	303	
ALLEGAN	M-222	KALAMAZOO RIVER	1955	332	
ALLEGAN	M-40	N BRANCH CREEK	1935	302	
ALLEGAN	M-40	S BRANCH CREEK	1935	302	
ALLEGAN	M-89	KALAMAZOO RIVER	1930		X
ALLEGAN	M-89	KALAMAZOO RIVER	1947	302	
ALLEGAN	M-89	KALAMAZOO RIVER OVE	1952	104	
ALLEGAN	M-89	MILL RACE (KALAMAZO	1928		X
ALPENA	HUBBARD LAKE	LO SO BR THUNDER BAY	1948	302	
ALPENA	HUBBARD LAKE	WOLF CREEK	1940	319	X
ALPENA	M-32	BEAN CREEK	1934	302	
ALPENA	M-32	S BR THUNDER BAY R	1931	332	
ALPENA	M-32	S. BRANCH THUNDER BA	1932	302	
ALPENA	M-65	THUNDER BAY RIVER	1953	104	
ALPENA	NICHOLSON HIL	S. BR. DEVILS RIVER	1938	302	
ALPENA	SCOTT ROAD	S BR THUNDER BAY RR	1952	302	
ALPENA	US-23	N BR DEVIL CR	1933	104	
ALPENA	US-23	S BR DEVIL CR	1936	104	
ALPENA	US-23	THUNDER BAY CREEK	1932	302	
ALPENA	WERTH ROAD	MUD CREEK <i>river</i>	1928	104	
ANTRIM	NO NAME	SOUTH END ELLSWORTH	1925	302	
ANTRIM	US-31	ELK RIVER	1953	432	
ARENAC	ARENAC STATE	RIFLE RIVER	1941	302	
ARENAC	BLACK ROAD	BIG CREEK A DRAIN	1917	362	
ARENAC	CONRAD ROAD	SAVERINE CREEK	1935	104	
ARENAC	CRAWFORD RO	BIG CREEK A DRAIN	1917	302	
ARENAC	KRAUSHAAR RO	PINE RIVER	1906		X
ARENAC	LENTNER ROAD	BIG CREEK A DRAIN	1917	372	
ARENAC	M-13	S BRANCH PINE RIVER	1935	302	X
ARENAC	M-13	SAGANING CREEK	1937	402	X
ARENAC	M-61	N BRANCH PINE RIVER	1952	101	
ARENAC	M-61	N BRANCH PINE RIVER	1952	101	
ARENAC	M-65	BIG CREEK	1936	302	
ARENAC	MANOR ROAD	BIG CREEK A DRAIN	1920	362	
ARENAC	MELITA ROAD (	RIFLE RIVER	1934	302	
ARENAC	NINE MILE ROA	NORTH BRANCH PINE RI	1925	302	X
ARENAC	NOBLE ROAD	WHITNEY DRAIN	1940	302	
ARENAC	NOGGLE ROAD	BIG CREEK A DRAIN	1920	362	
ARENAC	OLD M-76	NORTH BR. PINE RIVER	1932	104	
ARENAC	OLD M-76	WELLS CREEK	1933	104	
ARENAC	PINE RIVER ROA	PINE RIVER	1952	402	
ARENAC	TWINING ROAD	COUNTY DRAIN	1920	119	
ARENAC	TWINING ROAD	COUNTY DRAIN	1920	362	X
ARENAC	US-23	AU GRES RIVER	1930	302	X
ARENAC	US-23	BIG CREEK	1931	104	
ARENAC	US-23	DRAIN	1932	104	X
ARENAC	US-23	MIDDLE BR PINE RIVER	1925	119	
ARENAC	US-23	SAVERINE CREEK	1929	104	
ARENAC	US-23 (WDN MA	M BRANCH PINE RIVER	1930	302	X
ARENAC	WALKER ROAD	BIG CREEK	1925	362	
ARENAC	WORTH ROAD	SAGANING CREEK	1942	302	
BARAGA	ARVON RD	SILVER RIVER	1936	333	
BARAGA	M-28	PERCH RIVER	1928	302	

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County	Route	Feature intersected	Year	Type	Int
BARAGA	MURPHY ROAD	MURPHY RIVER	1920	372	
BARAGA	OLD M-28	HICKEY CREEK	1920	103	
BARAGA	PELKIE ROAD	OTTER RIVER	1948	302	
BARAGA	PELKIE ROAD	SILVER RIVER	1950	402	
BARAGA	SILVER RIVER R	SILVER RIVER	1936	302	X
BARAGA	SKANEE ROAD	RAVINE RIVER	1929	302	
BARAGA	SKANEE ROAD	SLATE RIVER	1929	302	
BARAGA	US FOREST RTE	STURGEON RIVER	1949	402	X
BARAGA	US-141 M 28	ROCK RIVER	1955	332	
BARAGA	US-41	BAYOU & BLK WATER CR	1933	119	
BARAGA	US-41	LAKE RUTH	1939	302	
BARAGA	US-41	LITTLE CARP RIVER	1937	111	X
BARAGA	US-41	PELKIE CREEK	1947	302	
BARAGA	US-41	TAYLOR CREEK	1951	302	
BARAGA	US-41	TIOGA R BURIED	1947	104	
BARAGA	US-41	WCL RAILROAD	1940	302	
BARRY	BIVENS ROAD	HIGHBANK CREEK	1900	302	X
BARRY	BROWN ROAD	N BRANCH THORNAPPLE	1949	352	
BARRY	CHARLTON PAR	LITTLE THORNAPPLE RIV	1952	319	X
BARRY	CHERRY VALLE	DUNCAN CREEK	1935	101	
BARRY	CLOVERDALE R	HIGH BANK CREEK	1900	302	X
BARRY	COATS GROVE R	MUD CREEK	1949	302	
BARRY	M-66	HAGER CREEK	1955	104	
BARRY	M-66	QUAKER BROOK	1953	104	
BARRY	M-66	QUAKER BROOK	1940	302	
BARRY	M-66	THORNAPPLE CREEK	1934	302	
BARRY	M-66	WANONDAGER CREEK	1933	332	X
BARRY	M-79	QUAKER BROOK	1930		X
BARRY	MAIN STREET	THORNAPPLE RIVER	1929	302	
BARRY	MC CANN ROAD	THORNAPPLE RACEWAY	1948	319	
BARRY	MICHIGAN AVE	3044 THORNAPPLE RIVER	1949	302	
BARRY	NORTH AVENUE	WABASCON CREEK	1939	104	X
BARRY	PIFER ROAD	HIGH BANK CREEK	1900	219	
BARRY	SCOTT ROAD	HIGH BANKS CREEK	1938	104	
BARRY	STIMPSON ROA	DUNCAN CREEK	1900	302	X
BAY	AUSABLE STATE	TEBO DRAIN	1948	302	
BAY	AVALON ROAD	PRIVATE CHANNEL	1955	319	
BAY	BEAVER ROAD	KAWKAWLIN RIVER	1928	121	X
BAY	BEAVER ROAD	WALDO DRAIN	1932	101	
BAY	BROWN RD	CONSTANT-DU RUSSELL	1948	302	
BAY	CHIP ROAD	KAWKAWLIN RIVER	1948	302	
BAY	CHIP ROAD	N BR KAWKAWLIN RIVER	1930	702	X
BAY	COTTAGE GROV	N BR KAWKAWLIN RIVER	1925		X
BAY	EIGHT MILE RO	KAWKAWLIN RIVER	1934	302	
BAY	EIGHT MILE RO	KOSSICK DRAIN	1940	302	
BAY	EIGHT MILE RO	WHITE FEATHER CREEK	1938	101	
BAY	ELEVEN MILE R	WALDO DRAIN	1938	302	
BAY	ERICKSON ROA	N BR KAWKAWLIN R	1942	302	
BAY	ERICKSON ROA	TEBO DRAIN	1937	302	
BAY	FLAJOLE ROAD	N BR KAWKAWLIN RIVER	1950	302	
BAY	FRASER ROAD	PINCONNING RIVER	1935	302	
BAY	FRASER ROAD	RAILROAD DRAIN	1937	302	
BAY	GARFIELD ROA	S BR PINCONNING RIVER	1938	302	
BAY	GARFIELD ROA	WALDO DRAIN	1931	101	
BAY	HUNTER ROAD	PINCONNING RIVER	1945	302	

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County	Route	Feature intersected	Year	Type	Int
BAY	KAISER-TOWER	FRASER-GARFIELD DRAI	1936	302	
BAY	KINNEY ROAD	CONSTANT-DURUSSELL	1925	302	
BAY	LINWOOD ROAD	N BR KAWKAWLIN RIVER	1936	302	
BAY	M-13	JOHNSONS CREEK	1938	104	
BAY	M-13	KAWKAWLIN RIVER	1931	332	
BAY	M-13	PINCONNING RIVER	1934	104	
BAY	M-13	RYAN DRAIN	1937	219	
BAY	M-13	TEBO DRAIN	1937	104	
BAY	M-13	WHITE FEATHER CREEK	1938	104	
BAY	M-247	KAWKAWLIN R	1935	302	
BAY	M-84	DUTCH CREEK	1927	302	
BAY	MACKINAW RO	JOHNSON DRAIN	1938	302	
BAY	MACKINAW RO	PINCONNING RIVER	1925	101	
BAY	MACKINAW RO	WHITEFEATHER DRAIN	1937	302	
BAY	MERKEL ROAD	CONSTANT-DU RUSSELL	1940		X
BAY	MIDLAND ROAD	CULVER CREEK	1933	302	
BAY	NINE MILE ROA	PINCONNING RIVER	1930	302	
BAY	NOLET ROAD	QUANICASSEE RIVER	1924	302	
BAY	NORTH UNION R	CULVER CREEK	1940	302	
BAY	OLD BEAVER RO	N BR KAWKAWLIN RIVER	1930	702	X
BAY	RUSSELL ROAD	CONSTANT-DU RUSSELL	1930	302	X
BAY	SAGANING ROA	SAGANING CREEK	1938	302	
BAY	SEVEN MILE RO	N BR KAWKAWLIN RIVER	1930	702	X
BAY	SEVEN MILE RO	TEBO DRAIN	1938	302	
BAY	SHORE ROAD	WHITE FEATHER CREEK	1931	302	
BAY	WATER STREET	PINCONNING RIVER	1933	302	
BENZIE	M-115	BETSIE RIVER	1940	302	
BENZIE	US-31	PLATTE RIVER	1926	302	X
BENZIE	US-31	PLATTE RIVER	1927	302	X
BERRIEN	BAILEY ROAD	PIPESTONE CREEK	1924	302	
BERRIEN	BERTRAND ROA	ST. JOSEPH RIVER	1930		X
BERRIEN	CARMODY ROA	MILL CREEK	1927	302	
BERRIEN	COPP ROAD	MEI LI CREEK	1934	319	
BERRIEN	EB JEAN KLOCK	M-63	1954	332	
BERRIEN	FERNDAL STR	BRANDYWINE CREEK	1950	319	
BERRIEN	GLENDORA ROA	E BR GALIEN RIVER	1941	302	
BERRIEN	GLENDORA ROA	E BR GALIEN RIVER	1941	302	
BERRIEN	GLENDORA ROA	E BR GALIEN RIVER	1954	319	
BERRIEN	HESS ROAD	GALIEN RIVER	1920	362	
BERRIEN	HIGHLAND AVE	OX CREEK	1953	219	
BERRIEN	HOCHBERGER R	PIPESTONE CREEK	1938	302	
BERRIEN	HOLDEN ROAD	GALIEN RIVER	1918	362	
BERRIEN	HOLLYWOOD R	BIG FEATHER DRAIN	1921	302	
BERRIEN	I-94 BL	OX CREEK	1950	219	
BERRIEN	M-140	PIPESTONE CREEK	1953	104	
BERRIEN	M-51	KENZIE CREEK	1950	402	
BERRIEN	M-63	CSX RAILROAD SPUR (AB	1951	302	
BERRIEN	M-63	YELLOW CREEK	1949	104	
BERRIEN	N SHORE DRIVE	OX CREEK	1939	219	
BERRIEN	N SHORE DRIVE	PAW PAW RIVER	1939	302	
BERRIEN	NORTH MAPLE	PAW PAW LAKE CHANNE	1951	302	
BERRIEN	PIPESTONE ROA	PIPESTONE CREEK	1940	101	X
BERRIEN	RIVER ROAD	PIPESTONE CREEK	1947	302	
BERRIEN	SHAWNEE ROA	FOWLER DRAIN	1927	302	
BERRIEN	SHAWNEE ROA	HICKORY CREEK	1927	302	

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County	Route	Feature intersected	Year	Type	Int
BERRIEN	SNOW ROAD	FOWLER DRAIN	1925	302	
BERRIEN	SNOW ROAD	HICKORY CREEK	1924	372	
BERRIEN	TERRITORIAL R	BLUE CREEK	1923	302	
BERRIEN	TERRRITORIAL	OX CREEK	1949	219	
BERRIEN	US-12	GALIEN RIVER	1953	302	
BERRIEN	US-31 BR	PAW PAW RIVER	1955	332	
BERRIEN	US-31,US-33	DOWAGIAC CREEK	1948	302	
BERRIEN	WATER STREET	OX CREEK	1949	219	
BERRIEN	WATSON ROAD	PIPESTONE CREEK	1926	372	
BERRIEN	WB JEAN KLOC	M-63	1954	332	
BERRIEN	WIL-O-PAW ROA	PAW PAW LAKE CHANNE	1951	302	
BRANCH	CEMETARY ROA	BETHEL # 15 CO. DRAIN	1904		X
BRANCH	CENTRAL ROAD	CHANNEL	1931	352	X
BRANCH	CLAY STREET	SAUK (COLDWATER) RIV	1951	104	
BRANCH	COUNTY LINE R	FISHER CREEK	1902	302	X
BRANCH	CRANSON ROAD	PRAIRIE RIVER	1941	302	
BRANCH	FREMONT ROAD	CHANNEL	1931	352	
BRANCH	FREMONT ROAD	TALLAHASSEE CREEK	1925	121	
BRANCH	GARFIELD ROA	S COLDWATER RIVER	1947	302	
BRANCH	GIRARD ROAD	S HOG CREEK	1930	302	
BRANCH	HAYNER ROAD	UNION & TEKONSHA DRA	1920	362	
BRANCH	I-69 BL	NO NAME CREEK	1929	104	
BRANCH	JAY STREET	SAUK (COLDWATER) RIV	1951	104	
BRANCH	JEFFERSON STR	SAUK (COLDWATER) RIV	1951	104	
BRANCH	LINDLEY ROAD	LITTLE SWAN CREEK	1915	302	
BRANCH	M-86	MATTESON CREEK	1928	302	
BRANCH	MATTESON LAK	SWAN CREEK	1927	101	
BRANCH	NARROWS ROA	N COLDWATER RIVER	1939	302	
BRANCH	OLD M-78	SPENCER CREEK	1954	104	
BRANCH	OLD M-78	ST JOSEPH RIVER	1953	104	
BRANCH	OLD M-78	ST JOSEPH RIVER	1951	302	X
BRANCH	OLD U S H 27	COLD CREEK	1930	101	
BRANCH	OLD US H 27 N	N HOG CREEK	1930	104	
BRANCH	ORLAND ROAD	PRAIRIE RIVER	1928	302	X
BRANCH	OTIS ROAD	COLDWATER RIVER	1910	302	X
BRANCH	RACE STREET	SAUK(COLDWATER) RIVE	1950	319	
BRANCH	SNOW PRAIRIE	PRAIRIE RIVER	1940		X
BRANCH	SPRAGUE STREE	COLDWATER RIVER	1951	104	
BRANCH	UNION CITY RO	COLD CREEK	1935	302	X
BRANCH	UNION CITY RO	COLDWATER RIVER	1955	402	
BRANCH	US-12	COLDWATER RIVER	1939	352	
BRANCH	US-12	HOG CREEK	1934		X
BRANCH	US-12	MISOUTH	1936	302	
BRANCH	US-12	PRAIRIE RIVER	1933	442	
BRANCH	US-12	SWAN CREEK	1922	302	X
BRANCH	WARREN ROAD	TALLAHASSEE CREEK	1950	319	
CALHOUN	12 MILE ROAD	NOTTAWASSEPEE RIVER	1919	342	X
CALHOUN	13 MILE ROAD	NOTTAWASSEPEE RIVER	1920	342	X
CALHOUN	22 MILE ROAD	ST JOSEPH RIVER	1921	121	
CALHOUN	25.5 MILE ROAD	KALAMAZOO RIVER	1948	302	
CALHOUN	26 MILE ROAD	RICE CREEK	1928	302	X
CALHOUN	27 MILE ROAD	RICE CREEK	1920	362	X
CALHOUN	28.5 MILE ROAD	SO BRANCH KALAMAZOO	1905	342	X
CALHOUN	30 MILE ROAD	RICE CREEK	1900	362	X
CALHOUN	5 MILE ROAD	NOTTAWASSEPE RIVER	1922	342	

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County	Route	Feature intersected	Year	Type	Int
CALHOUN	BYRON STREET	S BRANCH KALAMAZOO	1920	101	X
CALHOUN	H DRIVE SOUTH	NOTTAWASSEPEE RIVER	1918	342	
CALHOUN	H DRIVE SOUTH	NOTTAWASSEPEE RIVER	1920	702	X
CALHOUN	I-94 BL	CONRAIL	1937	302	
CALHOUN	J DRIVE SOUTH	NOTTAWASSEPEE RIVER	1919	342	
CALHOUN	J DRIVE SOUTH	NOTTAWASSEPEE RIVER	1920	342	X
CALHOUN	M DRIVE SOUTH	NOTTAWASSEPEE CREEK	1920	302	X
CALHOUN	M-66	NOTTAWASSEPEE R	1929	302	
CALHOUN	M-66	PINE CREEK	1947	219	
CALHOUN	M-89	WABASCON RIVER	1947	302	
CALHOUN	M-99	KALAMAZOO RIVER	1938	302	
CALHOUN	MARSHALL AVE	MILL RACE	1900		X
CALHOUN	MARVIN STREE	WABASCON CREEK	1900	372	X
CALHOUN	N ALBION STRE	KALAMAZOO RIVER	1935	302	
CALHOUN	N EATN STREET	KALAMAZOO RIVER	1926	302	
CALHOUN	OLD 27	NOTTAWASSEPEE RIVER	1930	104	
CALHOUN	OLD 27	ST JOSEPH RIVER	1930	302	
CALHOUN	OLD 27	TEKONSHA CREEK	1930	104	
CALHOUN	OLD-27	INDIAN CREEK	1931	104	X
CALHOUN	OLD-27	STATE DRAIN	1931	104	X
CALHOUN	Q DRIVE SOUTH	NOTTAWASSEPEE	1920	342	
CALHOUN	S DRIVE NORTH	INDIAN CREEK	1910	372	X
CASS	CHAIN LAKE ST	CHRISTIANN CREEK	1900	402	X
CASS	CHANNEL PARK	JUNO LAKE CHANNEL	1932	302	
CASS	FROST STREET	DOWAGIAC RIVER	1930	302	X
CASS	KNIGHT STREET	SHELDON CREEK	1930	302	X
CASS	LOWE STREET	DOWAGIAC CREEK	1951	319	
CASS	M-51	DOWAGIAC CREEK	1949	332	
CASS	M-51	DOWAGIAC CREEK	1952	332	
CASS	M-51	POKAGON CREEK	1931	201	
CASS	M-62	DOWAGIAC CREEK	1941	104	
CASS	M-62	DOWAGIAC CREEK	1941	119	
CASS	M-62	DOWAGIAC CREEK	1950	302	
CASS	M-62	DOWAGIAC CREEK	1952	302	
CASS	M-62	DOWAGIAC CREEK	1953	332	
CASS	M-62	DOWAGIAC CREEK	1954	332	
CASS	M-62	DOWAGIAC CREEK MILL	1941	119	
CASS	NORTH SHORE	CHRISTIANN CREEK	1930	302	X
CASS	O'KEEFE ROAD	DOWAGIAC CREEK	1930	302	X
CASS	RUDY ROAD	DOWAGIAC RIVER	1930	302	
CASS	SOUTH FRONT S	DOWAGIAC CREEK	1924	101	X
CASS	US-12	VALLEY CREEK	1948	332	
CASS	YAW STREET	DOWAGIAC RIVER	1930	302	
CHARLEVO	M-32	DEER CREEK	1949	302	
CHARLEVO	US-131	BOYNE CREEK	1947	302	
CHEBOYGA	BLACK RIVER R	BLACK RIVER	1935	302	
CHEBOYGA	COFFRON STRE	W BR STURGEON RIVER	1949	302	
CHEBOYGA	KISSER ROAD	MILLIGAN CREEK	1925	362	
CHEBOYGA	M-27	MULLETT CREEK	1922	104	
CHEBOYGA	M-68	PIGEON RIVER	1939	302	X
CHEBOYGA	M-68	STURGEON RIVER	1927		X
CHEBOYGA	M-68, M-33	BLACK RIVER	1934	302	
CHEBOYGA	ORCHARD BEAC	BLACK RIVER	1909		X
CHEBOYGA	SCOTT ROAD	STURGEON RIVER	1920	362	X
CHEBOYGA	TIN BRIDGE RO	PIGEON RIVER	1905	372	X

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County	Route	Feature intersected	Year	Type	Int
CHEBOYGA	US-23	ELLIOT CREEK	1937	101	
CHEBOYGA	US-23	GREENE CREEK	1935	219	
CHEBOYGA	US-23	LITTLE BLACK RIVER	1941	101	
CHEBOYGA	WEBB ROAD	LITTLE PIGEON RIVER	1900	372	X
CHEBOYGA	WEBB ROAD	PIGEON RIVER	1920	372	X
CHEBOYGA	WOIDERSKI ROA	NO NAME CREEK	1915	342	
CHIPPEWA	12 MILE ROAD	S. BRANCH CHARLOTTE	1950	119	X
CHIPPEWA	23 MILE ROAD	EAST BR MUNUSCONG RI	1940	302	X
CHIPPEWA	ALDRICH ROAD	EAST BR MUNUSCONG RI	1950	702	
CHIPPEWA	EAST-WEST RD	NAOMIKONG CREEK	1947	702	
CHIPPEWA	EAST-WEST ROA	ANKODOSH CREEK	1948	702	
CHIPPEWA	M-129	BRANCH CHARLOTTE CR	1930	219	
CHIPPEWA	M-129	BRANCH CHARLOTTE CR	1930	219	
CHIPPEWA	M-129	CHARLOTTE RIVER	1929	302	
CHIPPEWA	M-129	FLETCHER CREEK	1929	104	
CHIPPEWA	M-129	S BRANCH CHARLOTTE C	1929	302	
CHIPPEWA	M-134	PRENTISS CREEK	1939	104	
CHIPPEWA	M-134	TROUT CREEK	1939	104	
CHIPPEWA	M-28	E BR WAIKA RIVER	1941	219	
CHIPPEWA	M-28	MCLEOD DITCH	1936	104	
CHIPPEWA	M-48	BIG MUNUSCONG RIVER	1955	332	
CHIPPEWA	M-48	E BRANCH MUNUSCONG	1930	219	
CHIPPEWA	M-48	E BRANCH MUNUSCONG	1929	302	
CHIPPEWA	MACKINAC TRA	CHARLOTTE RIVER	1930	104	
CHIPPEWA	MACKINAC TRA	CHUB CREEK	1933	119	X
CHIPPEWA	MACKINAC TRA	MUNUSCONG RIVER	1933	119	
CHIPPEWA	O'BRIEN ROAD	EAST BR MUNUSCONG RI	1941	302	
CHIPPEWA	SULLIVAN ROA	PINE RIVER	1955	319	
CLARE	ATHEY AVENUE	W. BR. CEDAR RIVER	1930	362	
CLARE	ATHEY ROAD	W. BR. CEDAR RIVER	1930	362	
CLARE	BEAVER ROAD	S. BR. TOBACCO RIVER	1924	121	
CLARE	BRAND AVENUE	M. BR. TOBACCO RIVER	1930	362	
CLARE	BRAND AVENUE	N. BR. TOBACCO RIVER	1939	302	X
CLARE	DOVER ROAD	MCCURAN CREEK	1935	302	
CLARE	HATTON ROAD	M. BR. TOBACCO RIVER	1939	302	X
CLARE	HOOVER ROAD	M. BR. TOBACCO RIVER	1930	302	
CLARE	M-115	DOC & TOM CREEK	1938	104	X
CLARE	M-115	NORWAY CREEK	1938	104	X
CLARE	MAPLE STREET	LITTLE TOBACCO DRAIN	1909	119	
CLARE	MOSTETLER RO	MOSTETLER CREEK	1930	302	X
CLARE	MUSKEGON RO	MUSKEGON RIVER	1936	302	
CLARE	NORTH CLARE	TOWN LINE CREEK	1924	103	
CLARE	RODGERS AVEN	M. BR. TOBACCO RIVER	1935	302	X
CLARE	TROUT AVENUE	M. BR. CEDAR RIVER	1938	302	
CLARE	US-10	CHIPPEWA CREEK	1938	104	
CLARE	US-10	S BR TOBACCO RIVER	1935	104	
CLARE	US-10	S BR TOBACCO RIVER	1935	302	
CLARE	US-27 BRANCH	S BR TOBACCO RIVER	1931	505	X
CLINTON	ANDERSON ROA	HAYWORTH CREEK	1930	372	X
CLINTON	CHANDLER ROA	STONY CREEK	1940	104	
CLINTON	COLONY ROAD	PEET CREEK	1935	302	
CLINTON	COUNTY FARM	SPAULDING EXTENSION	1928	372	X
CLINTON	DEWITT ROAD	STONY CREEK	1928		X
CLINTON	DEWITT ROAD	STONY CREEK	1928	104	
CLINTON	DEXTER TRAIL	FULLER CREEK	1912	372	X

APPENDIX B

County	Route	Feature intersected	Year	Type	Int
CLINTON	ESSEX CENTER	S FORK OF HAYWORTH C	1920		X
CLINTON	FRANCIS ROAD	STONY CREEK	1947	302	
CLINTON	HERBISON ROA	LOOKING GLASS RIVER	1948	302	
CLINTON	HOLLISTER ROA	MAPLE RIVER	1948	302	
CLINTON	KREPPS ROAD	STONY CREEK	1924	372	X
CLINTON	M-21	ALDER CREEK	1949	332	X
CLINTON	M-21	LITTLE MAPLE RIVER	1929	302	
CLINTON	M-21	LOST CREEK	1925	104	
CLINTON	M-21	MAPLE CREEK	1926	352	
CLINTON	MAIN STREET	MAPLE RIVER	1929	302	
CLINTON	PRATT ROAD	MORRIS DRAINAGE	1928	104	
CLINTON	SCOTT ROAD	HAYWORTH CREEK	1930	372	X
CLINTON	SHEPARDSVILL	MAPLE RIVER	1928		X
CLINTON	TALLMAN ROA	MORRIS DRAIN	1924	372	X
CLINTON	TALLMAN ROA	MORRIS DRAIN	1924	372	X
CLINTON	US-27	CM RAILROAD	1936	302	
CLINTON	US-27	HOLDENS CREEK	1923	104	
CLINTON	US-27	LOOKING GLASS RIVER	1941	302	
CLINTON	US-27 NB	BAD CREEK	1940	302	
CLINTON	US-27 SB	BAD CREEK	1949	302	
CLINTON	WACOUSTA RO	COX DRAIN	1936	104	
CLINTON	WACOUSTA RO	LOOKING GLASS RIVER	1955	302	
CRAWFORD	COUNTY RD 612	AU SABLE RIVER	1930		X
CRAWFORD	COUNTY RD 612	MANISTEE RIVER	1920		X
CRAWFORD	MAY LAKE ROA	AU SABLE RIVER	1920	362	X
CRAWFORD	N DOWN RIVER	BIG CREEK	1948	302	
CRAWFORD	N DOWN RIVER	E BR AU SABLE RIVER	1948	302	
CRAWFORD	STEPHAN BRIDG	AU SABLE RIVER	1900	302	X
CRAWFORD	WILCOX BRIDGE	EAST BRANCH OF AU SAB	1920	302	X
DELTA	COUNTY ROAD	BARK RIVER	1925	362	
DELTA	COUNTY ROAD	FORD RIVER	1940	302	
DELTA	COUNTY ROAD	SQUAW CREEK	1940	302	
DELTA	COUNTY ROAD I	RAPID RIVER	1940	101	
DELTA	M-35	BARK RIVER	1948	352	
DELTA	M-35	FORD RIVER	1932	302	X
DELTA	M-35	PORTAGE CREEK	1932	104	
DELTA	ROUTE 410	TEN MILE CREEK	1939	302	
DELTA	ROUTE 432	RAPID RIVER	1939	302	
DELTA	ROUTE 442 FH	STURGEON RIVER	1945	302	
DELTA	ROUTE 515	DAY S RIVER	1940	101	
DELTA	US-2	BIG FISHDAM RIVER	1936	332	
DELTA	US-2	BULL RUN CREEK	1936		X
DELTA	US-2	LITTLE FISHDAM RIVER	1936	332	
DELTA	US-2	OGONTZ RIVER	1935	302	
DELTA	US-2	WHITEFISH RIVER	1936	332	X
DELTA	US-2 US-41	BARK RIVER	1931	104	X
DELTA	US-2 US-41	FORD RIVER	1941	302	
DELTA	US-2 US-41	PORTAGE CREEK	1928		X
DELTA	US-2, US-41	ESCANABA RIVER	1929	302	
DELTA	US-41	RAPID RIVER	1937	302	
DICKINSON	COUNTY HWY 4	FORD RIVER	1928	104	
DICKINSON	COUNTY HWY 5	E BR STURGEON RIVER	1945	332	
DICKINSON	COUNTY HWY 5	STURGEON RIVER	1900	111	X
DICKINSON	COUNTY HWY 5	STURGEON RIVER	1945	302	
DICKINSON	COUNTY HWY 5	E BR STURGEON RIVER	1927	121	

APPENDIX B

County	Route	Feature intersected	Year	Type	Int
DICKINSON	M-69	E BR STURGEON RIVER	1931	302	
DICKINSON	M-95	FORD RIVER	1928	302	
DICKINSON	RIDEOUT ROAD	E BRANCH STURGEON RI	1945	302	
DICKINSON	SERVIA ROAD	PINE CREEK	1940	321	
DICKINSON	US-2, US-141	E&LS RAILROAD	1932	332	
EATON	BISMARCK HIGH	SEBEWA CREEK	1921	302	
EATON	BUNKER HIGHW	DRAIN TO GRAND RIVER	1918	302	
EATON	COATS ROAD	BATTLE CREEK RIVER	1923	362	
EATON	DOW ROAD	CREEK	1920	302	
EATON	EAST KNIGHT S	GRAND RIVER	1955	402	
EATON	ISLAND HIGHW	THORNAPPLE RIVER	1920	104	
EATON	JOHNSON ROAD	THORNAPPLE DRAIN	1920	302	
EATON	LAMIE HIGHWA	LACEY CREEK	1924	362	
EATON	M-100	COUNTY DRAIN	1940	101	
EATON	M-100	GTW RAILROAD	1940	302	X
EATON	M-43	MUD CREEK	1949	302	
EATON	M-43	SEBEWA DRAIN	1949	302	
EATON	M-50	LITTLE THRONEAPPLE RI	1931	302	
EATON	M-50	MUD CREEK	1927	104	
EATON	M-50	SEBEWA DRAIN	1934	104	
EATON	M-50	THORNAPPLE RIVER	1931	302	
EATON	M-78	BATTLE CREEK RIVER	1928	382	
EATON	MAHAN HIGHW	BATTLE CREEK RIVER	1919	362	
EATON	MT. HOPE	SEBEWA CREEK	1920	302	
EATON	OLD US-27	BIG CREEK	1936	332	
EATON	SAGINAW HIGH	SEBEWA CREEK	1928	302	
EATON	SANDBORN ROA	MUD CREEK	1920	362	
EATON	US-27 SB	THORNAPPLE RIVER	1940	302	
EATON	US-27, M-78 SB	OLD MAID DRAIN	1926	101	
EATON	VERMONTVILLE	LITTLE THORNAPPLE RIV	1942	302	
EMMET	M-68	CROOKED R	1937	352	
EMMET	US-31	MAPLE R	1941	101	
GD. TRAVE	BROOMHEAD R	S. BR. BOARDMAN RIVER	1954	319	
GD. TRAVE	BROWN BRIDGE	BOARDMAN RIVER	1949	702	
GD. TRAVE	CO RD 611	BOARDMAN RIVER	1947	302	
GD. TRAVE	NORTH UNION S	BOARDMAN RIVER	1955	332	
GD. TRAVE	SUPPLY ROAD	BOARDMAN RIVER	1954	319	
GD. TRAVE	US-31	ACME CREEK	1928	101	X
GENESEE	ATHERTON ROA	CARMAN CREEK	1900		X
GENESEE	ATHERTON ROA	KEARSLEY CREEK	1930	302	
GENESEE	ATHERTON ROA	THREAD RIVER	1928	302	
GENESEE	ATLAS ROAD	KEARSLEY CREEK	1928	302	
GENESEE	ATLAS ROAD	KEARSLEY CREEK	1929	302	
GENESEE	BALDWIN ROAD	C & O RR (PERE MARQUE	1953	302	
GENESEE	BALDWIN ROAD	SWARTZ CREEK	1938	104	
GENESEE	BALDWIN ROAD	THREAD RIVER	1928	104	
GENESEE	BALLENGER HI	FLINT RIVER	1933	352	
GENESEE	BALLENGER HI	SWARTZ CREEK	1928	302	X
GENESEE	BARTON ROAD	THREAD CREEK	1940	302	
GENESEE	BEECHER ROAD	MISTEGUAY CREEK	1928	302	
GENESEE	BELSAY ROAD	KEARSLEY CREEK	1929	302	
GENESEE	BELSAY ROAD	THREAD RIVER	1928	104	
GENESEE	BIRD ROAD	SHIAWASSEE RIVER	1936	302	
GENESEE	BRISTOL ROAD	KEARSLEY CREEK	1938	302	X
GENESEE	BRISTOL ROAD	SWARTZ CREEK	1940	302	X

APPENDIX B

County	Route	Feature intersected	Year	Type	Int
GENESEE	BURPEE ROAD	THREAD RIVER	1938	302	
GENESEE	CALKINS ROAD	MISTEGUAY CREEK	1938	302	
GENESEE	CARPENTER RO	FLINT RIVER	1948	302	
GENESEE	CENTER ROAD	THREAD RIVER	1928	302	
GENESEE	COLE ROAD	SHIAWASSEE RIVER	1937	302	
GENESEE	COOK ROAD	JONES CREEK	1937	104	
GENESEE	COOK ROAD	SWARTZ CREEK	1930	104	
GENESEE	DAVISON ROAD	KEARSLEY CREEK	1928	302	
GENESEE	DODGE ROAD	BRENT RUN	1926	104	
GENESEE	DUFFIELD ROA	JONES CREEK	1925	104	
GENESEE	DUFFIELD ROA	MISTEGUAY CREEK	1939	302	
GENESEE	DUFFIELD ROA	SHIAWASSEE RIVER	1924	121	
GENESEE	DUTCH ROAD	KEARSLEY CREEK	1930	302	
GENESEE	DYE ROAD	PIRNIE CREEK	1930	119	
GENESEE	DYE ROAD	SWARTZ CREEK	1938	302	
GENESEE	EAST COURT ST	KEARSLEY CREEK	1937	302	
GENESEE	ELMS ROAD	BRENT RUN	1929	104	
GENESEE	ELMS ROAD	PINE RUN	1929	104	
GENESEE	ELMS ROAD	SWARTZ CREEK	1937	302	
GENESEE	FARRAND ROAD	PINE RUN	1938	302	
GENESEE	FRANCES ROAD	ARMSTRONG DRAIN	1925	104	
GENESEE	FRANCES ROAD	BRENT RUN	1925	104	
GENESEE	FRANCES ROAD	BUTTERNUT CREEK	1937	302	
GENESEE	GRAND BLANC	CARGILL CREEK	1928	104	
GENESEE	GRAND BLANC	JONES CREEK	1928	104	
GENESEE	GRAND BLANC	SWARTZ CREEK	1936	302	
GENESEE	GRAND TRAVER	FLINT RIVER	1954	332	
GENESEE	GREEN ROAD	KEARSLEY CREEK	1938	302	
GENESEE	HARRISON	FLINT RIVER	1953	402	
GENESEE	HEGEL ROAD	KEARSLEY CREEK	1927	104	
GENESEE	HENDERSON RO	KEARSLEY CREEK	1937	332	
GENESEE	HOGAN ROAD	SHIAWASSEE RIVER	1937	302	
GENESEE	I-75	SWARTZ CREEK	1954	332	
GENESEE	IRISH ROAD	FLINT RIVER	1928	302	
GENESEE	IRISH ROAD	KEARSLEY CREEK	1928	302	
GENESEE	JENNINGS ROAD	PINE RUN	1937	104	
GENESEE	JORDAN ROAD	KEARSLEY CREEK	1934	302	
GENESEE	KIPP ROAD	KEARSLEY CREEK	1938	104	
GENESEE	LAKE ROAD	PINE RUN	1938	302	
GENESEE	LILLIE ROAD	YELLOW RIVER	1937	302	
GENESEE	LINDEN ROAD	BRENT RUN	1931	104	
GENESEE	LINDEN ROAD	PINE RUN	1929	104	
GENESEE	LINDEN ROAD	SWARTZ CREEK	1935	302	X
GENESEE	LIPPENCOTT BO	KEARSLEY CREEK	1939	302	
GENESEE	LOVEJOY ROAD	YELLOW RIVER	1937	302	
GENESEE	M-121	COLL DRAIN	1941	101	
GENESEE	M-13	MISTEQUAY CREEK	1932	302	
GENESEE	M-15	FLINT RIVER	1928	332	X
GENESEE	M-54BR	THREAD CREEK	1941	302	
GENESEE	M-56	CSX RAILROAD	1918	532	X
GENESEE	M-56	MISTEQUAY CREEK	1949	302	
GENESEE	M-56	MISTEQUAY CREEK	1949	302	
GENESEE	M-56	SWARTZ CREEK	1918	111	X
GENESEE	M-57	FLINT RIVER	1926		X
GENESEE	M-57	PINE RUN CREEK	1915	111	X

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County	Route	Feature intersected	Year	Type	Int
GENESEE	MAPLE AVENUE	SWARTZ CREEK	1937	302	
GENESEE	MAPLE AVENUE	THREAD RIVER	1929	302	
GENESEE	MCCANDLISH R	THREAD RIVER	1934	104	
GENESEE	MCCASLIN ROA	SHIAWASSEE RIVER	1932	302	X
GENESEE	MCKINLEY ROA	BRENT RUN	1929	302	
GENESEE	MORRISH ROAD	ALGER CREEK	1928	104	
GENESEE	MORRISH ROAD	ARMSTRONG DRAIN	1938	302	
GENESEE	MORRISH ROAD	BRENT RUN	1930	104	
GENESEE	MT MORRIS RO	BRENT RUN	1928	104	
GENESEE	MT MORRIS RO	BRENT RUN	1929	104	
GENESEE	MT MORRIS RO	BUTTERNUT CREEK	1927	104	
GENESEE	NICHOLS ROAD	BRENT CREEK	1926	104	
GENESEE	NICHOLS ROAD	JONES CREEK	1938	104	
GENESEE	NICHOLS ROAD	MISTEGUAY CREEK	1930	302	
GENESEE	NORTH ROAD	SHIAWASSEE RIVER	1928	302	
GENESEE	OAK ROAD	FLINT RIVER	1953	302	
GENESEE	PERRY ROAD	THREAD RIVER	1928	302	
GENESEE	RAUBINGER RO	SWARTZ CREEK	1937	302	
GENESEE	REID ROAD	ALGER CREEK	1930	104	
GENESEE	REID ROAD	SWARTZ CREEK	1929	302	
GENESEE	ROBERT T LONG	FLINT RIVER	1952	332	X
GENESEE	ROBERT T LONG	GILKEY CREEK	1954	519	X
GENESEE	SEYMOUR ROA	SHIAWASSEE RIVER	1930	104	
GENESEE	SILVER LAKE R	LOBDELL LAKE DAM	1929	104	
GENESEE	TORREY ROAD	SWARTZ CREEK	1928	302	
GENESEE	US-23 BR	SHIAWASSEE RIVER	1928	104	
GENESEE	VASSAR ROAD	BUTTERNUT CREEK	1930	104	
GENESEE	WILLARD ROAD	PINE RUN	1924	302	
GENESEE	WILSON ROAD	BENJAMIN RUN	1937	302	
GENESEE	WILSON ROAD	BRENT RUN	1938	302	
GLADWIN	DASSEY ROAD	S BR LITTLE SUGAR RIVE	1925	372	
GLADWIN	GRASS LAKE RO	TITTABAWASSEE RIVER	1919	372	X
GLADWIN	HOCKADAY RO	SUGAR RIVER	1931	362	
GLADWIN	KLENDER ROAD	WATSON DRAIN	1919	362	X
GLADWIN	M-18	S BR LITTLE SUGAR RIVE	1923	104	
GLADWIN	M-30	SUGAR RIVER	1954	402	
GLADWIN	M-30	W BR TITTABAWASSEE R	1954	104	
GLADWIN	M-61	MOLASSES RIVER	1931	302	
GLADWIN	MCNAMARA RO	N BR OF TOBACCO RIVER	1920	362	
GLADWIN	NETTLETON RO	LITTLE TOBACCO RIVER	1921	362	
GLADWIN	NICKLESS ROAD	S BR LITTLE SUGAR RIVE	1925	362	
GLADWIN	PETERSON ROA	BEAR DRAIN	1921	362	
GLADWIN	POLEGATE ROA	MOLASSES RIVER	1918	372	X
GLADWIN	SHAFFER ROAD	LITTLE CEDAR RIVER	1915	362	
GLADWIN	SWINSON NEUM	WATSON DRAIN	1921	362	
GLADWIN	YOUNGS ROAD	LITTLE TOBACCO RIVER	1930	362	
GOGEBIC	BLACK RIVER R	POWDERMILL CREEK	1928	352	X
GOGEBIC	BLACKJACK RO	LITTLE BLACK RIVER	1900	302	X
GOGEBIC	CHANEY LAKE	LITTLE BLACK RIVER	1934	302	
GOGEBIC	CISCO DAM ROA	CISCO BR. ONTONAGON	1930	472	X
GOGEBIC	IRONWOOD VIA	WCL RR AND C&NW RR	1921		X
GOGEBIC	KORPELA ROAD	JACKSON CREEK	1922	302	
GOGEBIC	LAKE ROAD	MUD CREEK	1932	302	
GOGEBIC	LAKE ROAD	OMAN CREEK	1928	302	
GOGEBIC	LAKE ROAD	SPRING CREEK	1936	104	

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County	Route	Feature intersected	Year	Type	Int
GOGEBIC	M-28	JACKSON CREEK	1932	302	
GOGEBIC	M-28	PRESQUE ISLE RIVER	1934	302	X
GOGEBIC	MAZANEC ROA	EAST BR. PRESQUE ISLE	1944	702	
GOGEBIC	OLD COUNTY R	POWDER MILL CREEK	1930	104	
GOGEBIC	OLD U.S. 2 HWY	GROSBECK CREEK	1927	104	
GOGEBIC	OLD U.S. 2 HWY	MORRISON CREEK	1930	362	
GOGEBIC	ORMES LANGFO	TENDERFOOT CREEK	1953	104	
GOGEBIC	SAMPSON ROAD	MCVICHIE CREEK	1925	372	X
GOGEBIC	SOUTH BOUNDA	PRESQUE ISLE RIVER	1920	433	X
GOGEBIC	US FOREST RTE	TAMARACK RIVER	1955	104	
GOGEBIC	US FOREST RTE	TAMARACK RIVER	1955	702	
GOGEBIC	US-2	BIG PRESQUE ISLE RIVER	1936	302	
GOGEBIC	US-2	CEDAR CREEK BURIED	1938	219	
GOGEBIC	US-2	JACKSON CREEK BURIED	1936	219	
GOGEBIC	US-2	LITTLE PRESQUE ISLE	1936	104	
GOGEBIC	US-2	S BRANCH PAINT RIVER	1939	302	
GOGEBIC	US-2	SLATE RIVER BURIED	1936	104	
GOGEBIC	VANDERHAGEN	SPRING CREEK	1921	302	X
GOGEBIC	WITTANEN ROA	JACKSON CREEK	1940	372	X
GRATIOT	BARRY ROAD	BAD RIVER	1925	302	X
GRATIOT	BARRY ROAD	BEAVER CREEK	1949	302	
GRATIOT	BENNETT ROAD	DRAIN #131	1925	302	
GRATIOT	BLAIR ROAD	BUSH CREEK DRAIN	1925	101	
GRATIOT	BLAIR ROAD	BUSH CREEK DRAIN	1925	101	
GRATIOT	BUCHANAN RO	DRAIN NO. 294	1952	104	
GRATIOT	ELY HIGHWAY	NORTH SHADE DRAIN	1950	302	
GRATIOT	GRANT ROAD	DRAIN #135	1900	302	X
GRATIOT	JACKSON ROAD	BUSH CREEK DRAIN	1936	302	X
GRATIOT	JEFFERSON ROA	BUSH CREEK DRAIN	1925	101	
GRATIOT	LINCOLN ROAD	DRAIN #73	1930	302	
GRATIOT	LINCOLN ROAD	DRAIN #96	1930	104	
GRATIOT	LUMBER JACK R	PINE RIVER	1947	302	
GRATIOT	M-46	LITTLE SALT CREEK	1930	104	
GRATIOT	M-46	PINE RIVER	1930	302	
GRATIOT	M-46	PINE RIVER	1936	302	
GRATIOT	M-46	WBR PINE RIVER	1937	104	
GRATIOT	M-57	BEAR CREEK	1941	302	
GRATIOT	M-57	COUNTY DRAIN	1939	302	
GRATIOT	M-57	PINE CREEK	1939	302	
GRATIOT	MAIN STREET	PINE RIVER	1955	302	
GRATIOT	MCCLELLAND R	BEAVER CREEK DRAIN	1941	302	
GRATIOT	OLIVE ROAD	BUSH CREEK DRAIN	1936	302	X
GRATIOT	STATE ROAD	DRAIN #473	1925	104	
GRATIOT	TAFT ROAD	DRAIN #49	1922	342	X
GRATIOT	US-27SB	MAPLE RIVER	1955	332	
GRATIOT	WASHINGTON R	BAD RIVER	1955	332	
GRATIOT	WASHINGTON R	SHAD CREEK DRAIN EXT.	1955	332	
GRATIOT	WINANS ROAD	W. BR. PINE RIVER	1953		X
GRATIOT	WISNER ROAD	BEAVER CREEK	1950	302	
GRATIOT	WOODBRIAGE R	POTATO CREEK	1900	362	X
HILLSDALE	BROTT ROAD	PROUTY DRAIN	1948	319	
HILLSDALE	CAMDEN ROAD	BIRD CREEK	1945	319	
HILLSDALE	CAMDEN ROAD	LAIRD CREEK	1945	319	
HILLSDALE	CAMDEN ROAD	W BR ST JOSEPH OF MAU	1955	302	
HILLSDALE	CARD ROAD	E FORK W BR ST. JOSEPH	1940	302	

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County	Route	Feature intersected	Year	Type	Int
HILLSDALE	CARNCROSS RO	E.BR.ST.JOSEPH OF MAU	1930	302	
HILLSDALE	COMAN ROAD	BLANCHARD DRAIN	1920	302	
HILLSDALE	GENESEE ROAD	ST. JOSEPH RIVER	1940	302	
HILLSDALE	HARTLEY ROAD	E.BR.ST.JOSEPH OF MAU	1947	302	
HILLSDALE	HOG CREEK RO	LITTLE HOG CREEK	1925	372	
HILLSDALE	HUMPHREY RO	LONG LAKE INLET	1915	302	
HILLSDALE	LICKLEY ROAD	NEWTON DRAIN	1920	302	
HILLSDALE	LITCHFIELD RO	COBB LAKE OUTLET	1955	319	
HILLSDALE	LITCHFIELD RO	SAND CREEK	1948	302	
HILLSDALE	M-49	ST JOSEPH RIVER	1949	332	
HILLSDALE	MILNES ROAD	BEEBE CREEK	1930	104	
HILLSDALE	MONTGOMERY	SILVER CREEK	1950	101	
HILLSDALE	MOSHERVILLE	S. BR. KALAMAZOO RIVE	1947	302	
HILLSDALE	NORTH ADAMS	WILLIAMS DRAIN	1920	104	
HILLSDALE	PITTSFORD ROA	BIRD CREEK	1951	302	
HILLSDALE	POPE ROAD	S. BR. KALAMAZOO RIVE	1915	302	
HILLSDALE	PRATTVILLE RO	E BR ST JOSEPH OF MAU	1952	302	
HILLSDALE	READING ROAD	E BR ST JOSEPH OF MAU	1935	104	
HILLSDALE	SAND LAKE RO	SAND CREEK	1950	302	
HILLSDALE	SEELY ROAD	BLANCHARD DRAIN	1915	302	
HILLSDALE	SQUIRES ROAD	SOAP CREEK	1924	319	
HILLSDALE	ST. JOSEPH STR	NO. BR. ST. JOSEPH RIVE	1935	332	
HILLSDALE	TERRITORIAL R	E BR ST JOSEPH OF MAU	1928	302	
HILLSDALE	TERRITORIAL R	SILVER CREEK	1929	302	
HILLSDALE	TERRITORIAL R	SMITH BRANCH DRAIN	1950	101	
HILLSDALE	TERRITORIAL R	W BR ST JOSEPH OF MAU	1928	302	
HILLSDALE	TERRITORIAL R	W BR ST JOSEPH OF MAU	1928	302	
HILLSDALE	TERRITORIAL R	WOOLACE MARTIN WALT	1936	104	
HILLSDALE	TRIPP ROAD	LAIRD CREEK	1920	702	
HILLSDALE	US-127	BEAN CREEK	1947	302	
HILLSDALE	US-127	BEAN CREEK	1947	302	
HILLSDALE	US-127	BLANCHARD DRAIN	1948	302	
HILLSDALE	US-127	LIME CREEK	1946	101	
HILLSDALE	WALDRON ROA	E BR ST JOSEPH OF MAU	1948	302	
HILLSDALE	WALDRON ROA	E BR ST JOSEPH OF MAU	1954	302	
HILLSDALE	WAY ROAD	E.BR.ST.JOSEPH OF MAU	1920	302	
HOUGHTON	COUNTY ROAD	N BRANCH OF OTTER RIV	1949	302	X
HOUGHTON	COUNTY ROAD	STONY RIVER	1954	702	
HOUGHTON	COUNTY ROAD	DEAD STREAM	1954	702	
HOUGHTON	LINCOLN SCHO	TRAPROCK RIVER	1900	303	X
HOUGHTON	M-28	JUMBO CREEK	1949	302	
HOUGHTON	US FOREST RTE	BEAVER CREEK	1954	702	
HOUGHTON	US FOREST RTE	ONION CREEK	1950	702	
HOUGHTON	US FOREST RTE	STURGEON RIVER	1954	402	
HOUGHTON	US FOREST RTE	SILVER RIVER	1954	104	X
HOUGHTON	US FOREST RTE	E BR ONTONAGON RIVER	1950	702	
HOUGHTON	US-41	BACKWATER PORTAGE R	1929	119	
HOUGHTON	US-41	PIKE RIVER	1954	332	
HOUGHTON	WOOD BUSH RO	TRAPROCK RIVER	1900	101	X
HURON	BACH ROAD	BROOKFIELD DRAIN	1925	302	X
HURON	BACH ROAD	DOUGLAS-DUCOLON DRA	1927	302	X
HURON	BACH ROAD	KEMP DRAIN	1931	302	
HURON	BARRIE ROAD	BAD AXE DRAIN	1915	362	X
HURON	BAYPORT ROAD	COLUMBIA DRAIN	1925		X
HURON	BERNE ROAD	PIGEON RIVER	1910		X

APPENDIX B

County	Route	Feature intersected	Year	Type	Int
HURON	BLAKELY ROAD	E BR PIGEON RIVER	1915	302	
HURON	CARO ROAD	KEMP DRAIN	1931	302	X
HURON	CARO ROAD	SEBEWAING RIVER	1925	302	
HURON	CASEVILLE ROA	PIGEON RIVER	1923		X
HURON	CENTER STREET	SEBEWAING RIVER	1941	352	
HURON	CROWN ROAD	PINNEBOG RIVER	1920	332	X
HURON	ELKTON ROAD	E BR PIGEON RIVER	1920		X
HURON	ELKTON ROAD	W BR PIGEON RIVER	1920		X
HURON	ETZLER ROAD	MOORE CREEK	1915	362	
HURON	FARVER ROAD	W BR PIGEON RIVER	1920	362	
HURON	FILION ROAD	BAD AXE DRAIN	1923	104	X
HURON	FILION ROAD	EAST BR. WILLOW RIVER	1925	321	
HURON	GAETH ROAD	COLUMBIA DRAIN	1927	302	
HURON	GETTEL ROAD	COLUMBIA DRAIN	1927	302	
HURON	GLASSBURNER	PINNEBOG RIVER	1920	362	
HURON	GRASSMERE RO	BAD AXE DRAIN	1925	362	
HURON	GRASSMERE RO	PINNEBOG RIVER	1910	344	X
HURON	HARTSELL ROA	E BR PIGEON RIVER	1947	302	
HURON	HUNTER ROAD	NEW RIVER	1915	302	
HURON	HURON CITY RO	TINSEY DRAIN	1940	362	X
HURON	HURON LINE RO	BROOKFIELD DRAIN	1915	362	
HURON	HURON LINE RO	STATE DRAIN	1925	302	
HURON	ISELER ROAD	NEW RIVER	1915	362	
HURON	KINDE ROAD	MOORE CREEK	1921	104	X
HURON	KINDE ROAD	NEW RIVER	1926	104	X
HURON	KINDE ROAD	TAFT DRAIN	1921	104	X
HURON	KINDE ROAD	WILLOW RIVER	1928	302	
HURON	KLUG ROAD	ELM CREEK	1918	302	X
HURON	LACKIE ROAD	MOORE CREEK	1920	302	
HURON	LANGE ROAD	COLUMBIA DRAIN	1927	302	
HURON	LANGE ROAD	STATE DRAIN	1925	302	
HURON	LEARMAN ROA	E BR WILLOW RIVER	1915		X
HURON	M-142	PINNEBOG RIVER	1946	104	
HURON	M-25	MUD CREEK	1931	101	
HURON	M-25	PIGEON RIVER	1930	302	
HURON	M-25	SEBEWAING RIVER	1949	402	
HURON	M-25	SHEBEON DRAIN	1949	302	
HURON	M-25	WHITE CREEK	1952	104	
HURON	M-53	E BR PIGEON RIVER	1940	104	
HURON	MCALPIN ROAD	E BR PIGEON RIVER	1945	302	X
HURON	MCALPIN ROAD	KEMP DRAIN	1925	302	
HURON	MCMILLAN ROA	MOORE CREEK	1920		X
HURON	MINDEN ROAD	ALLEN DRAIN	1948	302	X
HURON	MINNICK ROAD	E BR WILLOW RIVER	1915	362	
HURON	MOELLER ROAD	NEW RIVER	1938	302	
HURON	MOORE ROAD	E BR PIGEON RIVER	1925	302	
HURON	OAK BEACH RO	TAFT DRAIN	1922	104	X
HURON	PARISVILLE RO	ALLEN DRAIN	1948	302	X
HURON	PIONEER DRIVE	WILLOW RIVER	1920	302	
HURON	POBANZ ROAD	COLUMBIA DRAIN	1927	302	
HURON	PUWALOWSKI R	ALLEN DRAIN	1915	362	
HURON	RAPSON ROAD	E BR WILLOW RIVER	1945	302	X
HURON	RESCUE ROAD	COLUMBIA DRAIN	1927	302	
HURON	RESCUE ROAD	E BR PIGEON RIVER	1915	302	
HURON	RESCUE ROAD	STATE DRAIN	1925	302	

APPENDIX B

County	Route	Feature intersected	Year	Type	Int
HURON	RICHARDSON R	W BR WILLOW RIVER	1939	302	X
HURON	RISKEY ROAD	COLUMBIA DRAIN	1927	302	
HURON	RUPPEL ROAD	OCHA CREEK	1919	121	X
HURON	RUTH ROAD	ELM CREEK DRAIN	1925	104	X
HURON	RUTH ROAD	ROCK FALLS CREEK	1925	101	
HURON	RUTH ROAD	SMITH DRAIN	1930	101	X
HURON	SCHOCK ROAD	ELM CREEK	1932	302	X
HURON	SEBEWAING RO	E BR PIGEON RIVER	1918	104	X
HURON	SEBEWAING RO	SHEBEON DRAIN	1925		X
HURON	SOULETOWN RO	BAD AXE DRAIN	1921	302	X
HURON	STODDARD ROA	TINSEY DRAIN	1940	362	X
HURON	UNION STREET	N BR CASS RIVER	1940	302	
HURON	VERONA ROAD	NEW RIVER	1926	104	X
HURON	VERONA ROAD	PHILIP DRAIN	1925		X
HURON	VOLZ ROAD	COLUMBIA DRAIN	1927	302	
HURON	WALKER ROAD	NEW RIVER	1938	302	
INGHAM	BASE LINE ROA	PORTAGE RIVER	1944	104	
INGHAM	BEECH STREET	RED CEDAR RIVER	1951	302	
INGHAM	CLARK ROAD	DEER CREEK	1941	302	
INGHAM	COLLEGE ROAD	SYCAMORE CREEK	1938	302	
INGHAM	COLUMBIA RD	DOAN CREEK	1945	302	
INGHAM	COLUMBIA ROA	DEER CREEK	1922	302	
INGHAM	COLUMBIA ROA	GRAND RIVER	1950	402	
INGHAM	COLUMBIA ROA	MUD CREEK	1948	302	
INGHAM	DENNIS ROAD	DOAN CREEK	1945	302	
INGHAM	DENNIS ROAD	WEST CEDAR DRAIN	1920	505	X
INGHAM	DIETZ ROAD	RED CEDAR RIVER	1934	302	
INGHAM	DOBIE ROAD	RED CEDAR RIVER	1930	302	
INGHAM	E. GRAND RIVE	GRAND RIVER	1929	352	
INGHAM	ELM AVENUE	GRAND RIVER	1921		X
INGHAM	ELM STREET	SYCAMORE CREEK	1947	319	
INGHAM	FITCHBURG RO	BATTEESE CREEK	1931	101	
INGHAM	FROST ROAD	DEER CREEK	1921	302	
INGHAM	GALE ROAD	WILLOW CREEK	1935	302	
INGHAM	GRAMER ROAD	RED CEDAR RIVER	1954	402	
INGHAM	GREEN ROAD	LOWE LAKE DRAIN	1941	302	
INGHAM	HAGADORN RO	MUD CREEK	1937	302	
INGHAM	HAGADORN RO	RED CEDAR RIVER	1930	302	
INGHAM	HARPER ROAD	SYCAMORE CREEK	1953	302	
INGHAM	HOLT ROAD	DEER CREEK	1920	302	
INGHAM	HOWELL ROAD	DOAN CREEK	1947	302	
INGHAM	HOWELL ROAD	MUD CREEK	1948	302	
INGHAM	HULL ROAD	SYCAMORE CREEK	1925	302	
INGHAM	KANE ROAD	WEST CEDAR DRAIN	1920	302	
INGHAM	M-43	DEER CREEK	1933	101	
INGHAM	M-43	DOAN CREEK	1933	101	
INGHAM	M-43	LAKE LANSING OUTLET	1931	104	
INGHAM	M-43	RED CEDAR RIVER	1924	303	
INGHAM	M-52	RED CEDAR RIVER	1952	332	
INGHAM	MEECH ROAD	DOAN CREEK	1945	302	
INGHAM	OKEMOS ROAD	MUD CREEK	1953	104	
INGHAM	OLD PLANK RO	GRAND RIVER	1937	303	
INGHAM	OLDS ROAD	HUNTOON LAKE EXT. DR	1947	302	
INGHAM	OLDS ROAD	PERRY CREEK	1947	302	
INGHAM	ONONDAGA RO	GRAND RIVER	1942	302	

APPENDIX B

County	Route	Feature intersected	Year	Type	Int
INGHAM	PINE TREE ROA	SYCAMORE CREEK	1940	302	
INGHAM	PUTNAM STREE	RED CEDAR RIVER	1931	302	
INGHAM	SMALL ACRES L	PINE LAKE OUTLET DRAI	1925	302	
INGHAM	VANATTA ROAD	RED CEDAR RIVER	1935	302	
INGHAM	W. WALLACE	DEER CREEK	1945	302	
INGHAM	WEBBERVILLE R	RED CEDAR RIVER	1955	402	
INGHAM	WILLOUGHBY R	SYCAMORE CREEK	1939	302	
IONIA	AINSWORTH RO	TUPPER CREEK	1900	362	X
IONIA	BIPPLEY ROAD	SEBEWA CREEK	1900	344	X
IONIA	BLISS ROAD	GEORGE CATT DRAIN	1900	342	X
IONIA	BRIDGE STREET	FLAT RIVER	1940	302	
IONIA	CLINTON TRAIL	DUCK CREEK	1928	104	
IONIA	DAVID HIGHWA	SESSIONS CREEK	1930	104	
IONIA	DEXTER TRAIL	COOKS DRAIN	1907	362	X
IONIA	GRAND RIVER A	LAKE CREEK	1926	104	
IONIA	GRAND RIVER A	LIBHART CREEK	1936	104	
IONIA	HARWOOD ROA	SESSIONS CREEK	1900	372	X
IONIA	HARWOOD ROA	TUPPER CREEK	1900	302	X
IONIA	HASTINGS ROA	BEAR CREEK	1900	302	X
IONIA	HASTINGS ROA	DUCK CREEK	1923	121	
IONIA	HUBBARDSTON	MAPLE RIVER	1936	302	
IONIA	HUDDLE ROAD	TUPPER CREEK	1923	121	
IONIA	JACKSON ROAD	UNNAMED CREEK	1900	362	X
IONIA	KELSEY ROAD	LIBHART CREEK	1900	302	X
IONIA	LONG LAKE RO	DICKERSON CREEK	1950	302	
IONIA	LYLE ROAD	BELLAMY CREEK	1900	302	X
IONIA	M-21	BELLANY CREEK	1930	219	
IONIA	M-21	MAPLE CREEK	1929	302	
IONIA	M-21	PRAIRIE CREEK	1929	302	
IONIA	M-21	RED CREEK	1929	219	
IONIA	M-21	SPIRES CREEK	1932	219	
IONIA	M-21	STONEY CREEK	1929	302	
IONIA	M-21	TOLES CREEK	1929	219	
IONIA	M-50	MESSER BROOK	1900	119	
IONIA	M-50	TUPPER RIVER	1934	104	
IONIA	MUSGROVE HIG	TUPPER CREEK	1909	302	X
IONIA	NICKLE PLATE	PRAIRIE CREEK	1949	302	
IONIA	PECK LAKE ROA	SESSIONS CREEK	1900	362	X
IONIA	PORTLAND ROA	LIBHART CREEK	1900	302	X
IONIA	SANDERS ROAD	MUD CREEK	1900	302	X
IOSCO	ALABASTER RD	WHITNEY CREEK	1915	302	X
IOSCO	CURTIS ROAD	SMITH CREEK	1931		X
IOSCO	KOBS ROAD	DEAD CREEK	1946	302	X
IOSCO	M-55	HOPE CR	1928	332	
IOSCO	M-55	TAWAS RIVER	1950	302	
IOSCO	SHELLENBARGE	SMITH CREEK	1950	302	X
IOSCO	SHERMAN RD	SILVER CREEK	1915	104	X
IOSCO	TOWERLINE RO	HALE CREEK	1952	342	
IOSCO	TURTLE ROAD	E. BRANCH AUGRES RIVE	1935	302	
IOSCO	WHITTEMORE R	E BR OF AU GRES RIVER	1948	302	
IOSCO	WICKERT RD	S BR OF AU SABLE RIVER	1948	302	
IRON	5 TH. AVENUE	IRON RIVER	1900		X
IRON	BRANDY AVEN	IRON RIVER	1929	101	
IRON	FAIRBANKS RO	PAINT RIVER	1936	302	
IRON	FAS 303	FORTUNE CREEK	1921	302	

APPENDIX B

County	Route	Feature intersected	Year	Type	Int
IRON	FR 146	NO BRANCH PAINT RIVER	1952	302	X
IRON	FR 153	COOKS RUN RIVER	1922	302	
IRON	LINCOLN AVEN	ABANDONED RAILROAD	1939	302	
IRON	M-69	MICHIGAMME RIVER	1931	302	
IRON	MCNUTT ROAD	IRON RIVER	1900	702	X
IRON	NINETEENTH ST	IRON RIVER	1930	302	
IRON	ROSETTI ROAD	SUNSET CREEK	1900	702	X
IRON	US FOREST RTE	S BRANCH PAINT RIVER	1952	302	X
IRON	US FOREST RTE	E BRANCH JUMBO RIVER	1950	702	
IRON	US-2	CHICAGOAN CREEK	1929	104	
IRON	US-2	COOKS RUN RIVER	1937	302	
IRON	US-2	FORTUNE LAKE OUTLET	1942	201	
IRON	US-2	S BRANCH IRON RIVER	1934	332	X
IRON	US-2, US-141	BRULE RIVER	1940	302	
IRON	US-2, US-141	DUNN CREEK	1936		X
IRON	USFS 146	WINSLOW CREEK	1954	101	
ISABELLA	BASELINE ROAD	COLDWATER RIVER	1903	302	X
ISABELLA	BASELINE ROAD	JOHN NEFF DRAIN	1920	362	
ISABELLA	BATTLE ROAD	N BR CHIPPEWA RIVER	1937	362	
ISABELLA	BEAL CITY ROA	N BR CHIPPEWA RIVER	1935	372	X
ISABELLA	BEAL CITY ROA	S BRANCH SALT RIVER	1903		X
ISABELLA	BEAL CITY ROA	S BRANCH SALT RIVER	1903		X
ISABELLA	BEAL CITY ROA	S BRANCH SALT RIVER	1912	302	X
ISABELLA	BLANCHARD RO	BACHELDER DRAIN	1925	104	
ISABELLA	BLANCHARD RO	SO BR PINE RIVER	1937	302	X
ISABELLA	CHIPPEWA ROA	LITTLE SALT RIVER	1937	302	X
ISABELLA	COLEMAN ROA	MCDONALD DRAIN	1938	302	
ISABELLA	DENVER ROAD	N BR CHIPPEWA RIVER	1937	302	
ISABELLA	DENVER ROAD	N BRANCH SALT RIVER	1937	362	
ISABELLA	EVART ROAD	THATCHER CREEK	1920	362	
ISABELLA	ISABELLA ROAD	LITTLE SALT RIVER	1938	302	
ISABELLA	ISABELLA ROAD	S BRANCH SALT RIVER	1937	302	
ISABELLA	JORDAN ROAD	COLDWATER RIVER	1940	302	
ISABELLA	LEATON ROAD	BRANCH SALT RIVER	1940	302	
ISABELLA	LOOMIS ROAD	LOOMIS DRAIN	1938	302	
ISABELLA	M-20	CHIPPEWA RIVER	1934	332	X
ISABELLA	M-20	N BR CHIPPEWA RIVER	1934	332	X
ISABELLA	MERIDIAN ROA	N BR CHIPPEWA RIVER	1934	319	X
ISABELLA	MERIDIAN ROA	N BR CHIPPEWA RIVER	1937	362	
ISABELLA	MISSION ROAD	ANN ARBOR RAILROAD	1936	302	
ISABELLA	MISSION ROAD	LEWIS DRAIN	1930	104	
ISABELLA	MISSION ROAD	N BR CHIPPEWA RIVER	1929	302	
ISABELLA	MISSION ROAD	SPRING CREEK	1948	104	X
ISABELLA	NOTTAWA RD.	NO. BR. CHIPPEWA RIVER	1937	362	
ISABELLA	RIVER ROAD	N BR CHIPPEWA RIVER	1940	302	X
ISABELLA	ROLLAND ROAD	CHIPPEWA RIVER	1940	302	X
ISABELLA	ROLLAND ROAD	S BR PINE RIVER	1940	302	
ISABELLA	ROLLAND ROAD	SQUAW CREEK	1938	362	
ISABELLA	ROSEBUSH ROA	N BR CHIPPEWA RIVER	1937	302	
ISABELLA	ROSEBUSH ROA	SPRING CREEK	1937	362	
ISABELLA	SHEPHERD ROA	LITTLE SALT RIVER	1926	362	X
ISABELLA	SOUTH COUNTY	CEDAR DRAIN	1920	362	
ISABELLA	SUMMERTON R	CONTR. S. BR. SALT RIVE	1937	302	
ISABELLA	SUMMERTON R	JORDAN CREEK	1937	344	X
ISABELLA	VERNON ROAD	WALKER CREEK	1932	362	

APPENDIX B

County	Route	Feature intersected	Year	Type	Int
ISABELLA	WEIDMAN ROA	N BR CHIPPEWA RIVER	1924	121	
ISABELLA	WINN ROAD	CEDAR CREEK	1938	302	
ISABELLA	WINN ROAD	S BR CHIPPEWA RIVER	1941	302	
ISABELLA	WISE ROAD	LITTLE SALT RIVER	1901	303	X
ISABELLA	WOODRUFF RO	COLDWATER RIVER	1926	121	
ISABELLA	WOODRUFF RO	COLDWATER RIVER	1926	121	
ISABELLA	WYMAN ROAD	S BR CHIPPEWA RIVER	1941	302	
JACKSON	ALBION ROAD	N BRANCH KALAMAZOO	1929	302	
JACKSON	BATH MILLS RO	N BRANCH KALAMAZOO	1932	302	
JACKSON	BENN ROAD	SANDSTONE CREEK	1939	302	
JACKSON	BERRY ROAD	GRAND RIVER	1932	352	
JACKSON	BOWERMAN RO	N BR OF KALAMAZOO RI	1940	302	
JACKSON	CEMENT CITY R	GOOSE CREEK	1938	302	
JACKSON	CHURCHILL RO	GRAND RIVER	1929	302	
JACKSON	CORNELL ROAD	N BRANCH KALAMAZOO	1933	302	
JACKSON	CROSS ROAD	N BRANCH KALAMAZOO	1934	302	
JACKSON	DRAPER ROAD	GRAND RIVER	1934	302	
JACKSON	FITCHBURG RO	PORTAGE RIVER DRAIN	1930	302	
JACKSON	HAGUE ROAD	GRAND RIVER	1926	101	
JACKSON	HANOVER ROA	S BRANCH KALAMAZOO	1938	302	
JACKSON	I-94BL,US127BR,	GRAND RIVER	1915	211	X
JACKSON	KENNEDY ROAD	BATTEESE CREEK	1934	302	
JACKSON	LANSING AVEN	GRAND RIVER	1935	302	
JACKSON	LEWIS STREET	GRAND RIVER	1936	302	
JACKSON	LOSEY AVENUE	GRAND RIVER	1936	302	
JACKSON	M-106	PORTAGE RIVER DRAIN	1939	302	
JACKSON	M-124	LAGOON RIVER	1931	101	
JACKSON	M-124	RAISIN RIVER	1925	302	
JACKSON	M-50	GOOSE CREEK	1927	104	
JACKSON	M-50,US-127BR	CONRAIL	1923	303	X
JACKSON	M-60	N BR KALAMAZOO RIVER	1932	104	
JACKSON	M-60	SANDSTONE RIVER	1928	104	
JACKSON	M-99	SPRING BROOK	1939	104	
JACKSON	MAIN STREET	N BR KALAMAZOO RIVER	1925	119	
JACKSON	MICHIGAN AVE	SANDSTONE CREEK	1926	104	
JACKSON	MONROE STREE	GRAND RIVER	1919	111	X
JACKSON	MOON LAKE RO	DOLLAR LAKE CHANNEL	1934	302	
JACKSON	MT HOPE ROAD	PORTAGE RIVER N BRAN	1938	302	
JACKSON	OBRIEN ROAD	SANDSTONE CREEK	1935	302	
JACKSON	PALMER & WOL	RAISIN RIVER	1942	302	
JACKSON	PARK DRIVE	GRAND RIVER	1938	302	
JACKSON	PARSON ROAD	N BR OF KALAMAZOO RI	1935	302	
JACKSON	PROBERT ROAD	GRAND RIVER	1938	302	
JACKSON	ROBBINS ROAD	SPRING BROOK	1942	302	
JACKSON	S JACKSON ROA	GRAND RIVER	1923	104	
JACKSON	SPRINGPORT RO	SANDSTONE CREEK	1944	302	
JACKSON	TERRITORIAL R	PERRY CREEK	1938	302	
JACKSON	TERRITORIAL R	PORTAGE RIVER DRAIN	1920	302	
JACKSON	TRIST ROAD	PORTAGE RIVER S. BRAN	1939	302	
JACKSON	US-127	GRAND RIVER	1955	104	
JACKSON	US-127 SB & NB	GRAND RIVER	1953	104	
JACKSON	VAN WERT ROA	S BRANCH KALAMAZOO	1934	302	
JACKSON	WARNER ROAD	N BRANCH KALAMAZOO	1932	302	
JACKSON	WATERLOO MU	PORTAGE RIVER N BRAN	1937	302	
KALAMAZO	33RD STREET	DORRANCE CREEK	1948	319	

APPENDIX B

County	Route	Feature intersected	Year	Type	Int
KALAMAZO	36TH STREET	DORRANCE CREEK	1953		X
KALAMAZO	40TH STREET	LITTLE PORTAGE CREEK	1914	362	X
KALAMAZO	5TH STREET	SAND CREEK	1915	101	X
KALAMAZO	AUGUSTA DRIV	AUGUSTA CREEK	1930	104	
KALAMAZO	D AVENUE	KALAMAZOO RIVER	1949	302	
KALAMAZO	DE AVENUE	GULL LAKE OUTLET	1937	319	X
KALAMAZO	GIBSON STREET	PORTAGE CREEK	1915	362	
KALAMAZO	M-89	GULL LAKE	1949	302	
KALAMAZO	M-96	KALAMAZOO RIVER	1930	382	X
KALAMAZO	M-96	MILL RACE	1922	219	
KALAMAZO	MILHAM PARK	PORTAGE CREEK	1935	101	
KALAMAZO	MILHAM PARK	PORTAGE CREEK	1935	101	
KALAMAZO	PORTAGE ROAD	GOURDNECK CREEK	1922	104	
KALAMAZO	RIVER STREET	KALAMAZOO RIVER	1939	302	
KALAMAZO	TS AVENUE	PORTAGE RIVER	1933	302	X
KALAMAZO	TWENTY-FOURT	PORTAGE CREEK	1949	302	
KALAMAZO	V AVENUE	LITTLE PORTAGE CREEK	1920	362	
KALAMAZO	WASHINGTON S	CANAL(OFF AUGUSTA CR	1921	302	
KALAMAZO	X AVENUE	LITTLE PORTAGE CREEK	1914	362	X
KENT	13 MILE ROAD	STEGMAN CREEK	1940	302	X
KENT	18 MILE ROAD	ROGUE RIVER	1937	362	X
KENT	20 MILE ROAD	WALTER CREEK DRAIN	1930	302	X
KENT	32ND STREET	M-37	1948	302	
KENT	4 MILE ROAD	INDIAN MILL CREEK	1918	302	X
KENT	48TH STREET	THORNAPPLE RIVER	1932	352	
KENT	68TH STREET	BUCK CREEK	1940	302	X
KENT	76TH STREET	BUCK CREEK	1954	362	X
KENT	84TH STREET	TYLER CREEK	1927	101	
KENT	ALGOMA AVEN	CEDAR CREEK	1935	319	
KENT	ALGOMA AVEN	CEDAR CREEK	1935	319	X
KENT	ALGOMA AVEN	DUKE CREEK	1953	362	X
KENT	BALL CREEK R	BALL CREEK	1922	104	
KENT	BALL CREEK RO	BALL CREEK	1922	104	
KENT	BALL CREEK RO	BALL CREEK	1922	104	
KENT	BRISTOL AVENU	INDIAN MILL CREEK	1930	302	X
KENT	CASCADE ROAD	C&O RAILROAD	1926	103	
KENT	CHICAGO DRIVE	BUCK CREEK	1933	302	
KENT	CLYDE PARK A	PLASTER CREEK	1938	302	
KENT	DIVISION AVEN	PLASTER CREEK	1914	111	X
KENT	FREEPORT AVE	COLDWATER RIVER	1948	302	
KENT	FREEPORT AVE	DUCK CREEK	1948	302	
KENT	FRUIT RIDGE A	NASH CREEK	1940	104	
KENT	HAMMOND AVE	SCHOOLEY DRAIN	1937	362	
KENT	M-11	CONRAIL	1937	302	
KENT	M-11	PLASTER CREEK	1937	302	
KENT	M-11	US-131	1955	332	
KENT	M-21	FLAT R HEADRACE	1934	104	
KENT	M-21	FLAT RIVER	1940	104	
KENT	M-21	FLAT RIVER	1941	104	
KENT	M-37	MILL CREEK	1948		X
KENT	M-37	WHISKEY CREEK	1946	219	
KENT	M-46	DUKE CREEK	1925	342	
KENT	M-50	TYLER CREEK	1940	302	
KENT	MAIN STREET	CEDAR CREEK	1935	101	
KENT	PINE LAKE AVE	ALDER CREEK	1928	104	X

APPENDIX B

County	Route	Feature intersected	Year	Type	Int
KENT	TOWNSEND PAR	BEAR CREEK	1927	101	
KENT	TOWNSEND PAR	BEAR CREEK	1927	101	
KENT	TYRONE AVENU	WALTER CREEK DRAIN	1925	104	
KENT	UNION ST.	NASH CREEK	1937	302	
KENT	WEST BRIDGE S	ROGUE RIVER	1928	352	
KENT	WEST RIVER DR	ROGUE RIVER	1929	302	
KENT	WHITNEYVILLE	NO NAME CREEK	1926	104	X
KENT	WING AVENUE	PLASTER CREEK	1928	119	
KENT	WUSTMEN AVE	DORR & BYRON DRAIN	1900	372	X
KEWEENA	CLIFF DRIVE	GRATIOT RIVER	1935	302	
KEWEENA	M-26	OWLS CREEK BURIED	1948	119	
KEWEENA	US-41	CENTRAL CREEK	1932	104	
KEWEENA	US-41 M-26	GRATIOT RIVER	1953	104	
LAKE	10 MILE ROAD	LITTLE MANISTEE RIVER	1954	702	
LAKE	40TH STREET	BALDWIN RIVER	1924	302	X
LAKE	56 TH STREET F	PERE MARQUETTE RIVER	1936	302	
LAKE	56TH STREET	BAKER CREEK	1929	302	X
LAKE	8TH ST	BALDWIN RIVER	1940		X
LAKE	BASS LAKE RD	LITTLE MANISTEE RIVER	1939	302	
LAKE	DEPOT STREET	M BR PERE MARQUETTE	1929	302	X
LAKE	FRANK SMITH R	M BR PERE MARQUETTE	1929	302	X
LAKE	JAMES ROAD	S BR PERE MARQUETTE R	1909		X
LAKE	M-37	BALDWIN CREEK	1929		X
LAKE	M-37	LITTLE MANISTEE RIVER	1939	302	
LAKE	M-37	PERE MARQUETTE RIVER	1922	352	
LAKE	PEACOCK ROAD	LITTLE MANISTEE RIVER	1929	302	X
LAKE	QUEENS HIGHW	M BR PERE MARQUETTE	1904	302	X
LAKE	US-10	SANBORN CREEK	1934	101	
LAPEER	ARMSTRONG RO	N BR MILL CREEK DRAIN	1931	302	
LAPEER	BARBER ROAD	S BR FLINT RIVER	1928	302	X
LAPEER	BOHMS ROAD	MADISON DRAIN	1930	302	X
LAPEER	BROCKER ROAD	S BR FLINT RIVER	1924	302	
LAPEER	CASEY ROAD	WHIGVILLE CREEK	1930	372	X
LAPEER	CASTLE ROAD	N BR FLINT RIVER	1940	302	
LAPEER	CHERRY STREE	N BR CLINTON RIVER	1922	103	X
LAPEER	COLUMBIAVILL	S BR FLINT RIVER	1940	302	
LAPEER	COURT STREET	FARMERS CREEK	1951	302	
LAPEER	DAVISON LAKE	S BR FLINT RIVER	1930	302	
LAPEER	GENESEE ROAD	HASLER CREEK	1948	302	
LAPEER	GENESEE STREE	FARMERS CREEK	1933	104	X
LAPEER	HANMANN ROA	HENRY DRAIN	1920	362	X
LAPEER	HUTCHINSON R	GRAVEL CREEK	1920	302	
LAPEER	LAKE PLEASAN	NEGUS DRAIN	1925	302	X
LAPEER	M-21	BELLE RIVER	1926	104	
LAPEER	M-21	S BR FLINT RIVER	1932	104	
LAPEER	M-24	PLUM CREEK	1931	332	X
LAPEER	M-24	S BR FLINT RIVER	1948	302	X
LAPEER	M-53	CLINTON RIVER	1925	104	
LAPEER	M-53	PETERS DRAIN	1920	104	
LAPEER	M-90	FLINT RIVER	1948	332	
LAPEER	MARSH ROAD	ELM CREEK DRAIN	1932	302	X
LAPEER	MCTAGGART R	N BR FLINT RIVER	1931	302	X
LAPEER	MCTAGGART R	N. BR. FLINT RIVER OVE	1931	302	X
LAPEER	MERRILL ROAD	INDIAN CREEK DRAIN	1930	302	X
LAPEER	MT. MORRIS RO	FLINT RIVER	1953	302	

APPENDIX B

County	Route	Feature intersected	Year	Type	Int
LAPEER	NEWARK ROAD	S BR FLINT RIVER	1924	121	
LAPEER	OLD STATE ROA	BOTTOM CREEK	1925	302	X
LAPEER	PECK ROAD	INDIAN CREEK DRAIN	1940	302	
LAPEER	PEPPERMILL RO	S BR FLINT RIVER	1920		X
LAPEER	SAGINAW ROAD	S BR FLINT RIVER	1935	302	
LAPEER	SECOND STREET	FLINT RIVER	1934		X
LAPEER	SLATTERY ROA	CEDAR CREEK	1941	302	
LAPEER	WILDER ROAD	S BR FLINT RIVER	1938	302	
LAPEER	WILLITS ROAD	EVERGREEN CREEK	1920	362	X
LAPEER	WINSLOW ROAD	UNNAMED CREEK	1945	302	
LEELANAU	CO RD 651	VICTORIA CREEK	1900	302	X
LEELANAU	M-22	CEDAR CREEK	1936	302	
LEELANAU	M-22	GLEN LAKE NARROWS	1929	302	
LEELANAU	M-22	OUTLET LAKE LEELANA	1929	302	
LENAWEE	BENNER HIGHW	HAZEN CREEK	1930	302	
LENAWEE	BENNER HIGHW	S BR RAISIN RIVER	1920	302	
LENAWEE	BENNER HIGHW	STONEY CREEK	1950	104	
LENAWEE	BENTOAK AVEN	S BRANCH RAISIN RIVER	1952	302	
LENAWEE	BENTOAK AVEN	WOLF CREEK	1952	302	
LENAWEE	BUCHOLTZ HIG	RAISIN RIVER	1953	332	
LENAWEE	COLLEGE AVEN	SO. BRANCH RAISIN RIVE	1947	302	
LENAWEE	E MAIN STREET	SILVER CREEK	1941	302	
LENAWEE	GILBERT HIGHW	WOLF CREEK	1930	302	
LENAWEE	GROSVENOR HI	SWAMP RAISIN DRAIN	1925	302	
LENAWEE	HACK ROAD	N MACON CREEK	1930	302	
LENAWEE	LIME CREEK RO	BEAN CREEK	1930	372	
LENAWEE	LIME CREEK RO	BEAN CREEK (OVERFLOW)	1930	702	
LENAWEE	LIPP HIGHWAY	DRAPER DRAIN	1925	362	
LENAWEE	M-156	BEAN CREEK	1925	104	
LENAWEE	M-34	BEAN CREEK	1930	352	
LENAWEE	M-34	S BR RAISIN RIVER	1932	302	
LENAWEE	M-50	RAISIN RIVER	1953	332	
LENAWEE	M-50	SCHREEDER BROOK	1918	104	X
LENAWEE	M-50	WILSON CREEK	1916	104	X
LENAWEE	M-52	BEAVER CREEK	1919	111	X
LENAWEE	M-52	BLACK CREEK	1947	302	
LENAWEE	M-52	S BR RAISIN RIVER	1948	302	
LENAWEE	MAPLE AVENUE	SO. BRANCH RAISIN RIVE	1947	302	
LENAWEE	MEDINA ROAD	BEAN CREEK	1950	302	
LENAWEE	MICHIGAN AVE	SO. BRANCH RIVER RAISI	1949	302	
LENAWEE	MORENCI ROAD	RANGER CREEK	1950	101	
LENAWEE	MUNSON HIGH	BLANCHARD JT COUNTY	1924	302	
LENAWEE	N ADRAIN HIGH	EVANS CREEK	1921	302	
LENAWEE	N EVANS STREE	EVANS CREEK	1953	302	
LENAWEE	N UNION STREE	EVANS CREEK	1934	506	X
LENAWEE	PACKARD ROAD	BAKER & MAY DRAIN	1932	302	
LENAWEE	RIDGE HIGHWA	MACON RIVER	1944	302	
LENAWEE	RIXOM HIGHWA	LITTLE RAISIN RIVER	1946	302	
LENAWEE	STAIB ROAD	N BR RAISIN RIVER	1950	402	
LENAWEE	US-127	BEAN CREEK	1925	342	
LENAWEE	US-223	NS RAILROAD	1941	332	X
LENAWEE	US-223	RAISIN RIVER	1940	302	X
LENAWEE	US-223	RAISIN RIVER <i>Palmyra</i>	1933	382	
LENAWEE	W.MAIN STREET	TIFFIN RIVER	1949	352	
LIVINGSTO	BOWDISH ROAD	UNNAMED CREEK	1937	302	

APPENDIX B

County	Route	Feature intersected	Year	Type	Int
LIVINGSTO	BYRON ROAD	SHIAWASSEE RIVER	1947	302	
LIVINGSTO	BYRON ROAD	STONER CREEK	1947	302	
LIVINGSTO	CENTER ROAD	CRANBERRY CREEK	1935	302	
LIVINGSTO	CLYDE ROAD	N. ORE CREEK	1946	101	
LIVINGSTO	COHOCTAH ROA	COHOCTAH-DEERFIELD	1955	302	
LIVINGSTO	COHOCTAH ROA	CRANBERRY CREEK	1955	101	
LIVINGSTO	COHOCTAH ROA	YELLOW RIVER DRAIN	1955	101	
LIVINGSTO	COON LAKE RO	WEST BR. RED CEDAR RI	1938	302	
LIVINGSTO	CROFOOT ROAD	MID BR RED CEDAR RIVE	1928	362	
LIVINGSTO	DUNHAM ROAD	ORE CREEK	1923	302	
LIVINGSTO	ELLIS ROAD	CONWAY-COHOCTAH UN	1953	319	
LIVINGSTO	FAUSSETT ROA	BOGUE CREEK	1925	302	
LIVINGSTO	FAUSSETT ROA	ORE CREEK	1939	302	
LIVINGSTO	FAUSSETT ROA	YELLOW RIVER DRAIN	1938	302	
LIVINGSTO	FISHER ROAD	HOWELL-OSCEOLA DRAI	1921	121	
LIVINGSTO	FISK ROAD	UNNAMED CREEK	1943	302	
LIVINGSTO	FLEMING ROAD	CONWAY-COHOCTAH UN	1953	319	
LIVINGSTO	GRAND RIVER R	W. BR. RED CEDAR RIVE	1934	302	
LIVINGSTO	GRAND RIVER S	RED CEDAR RIVER	1934	302	
LIVINGSTO	HARTLAND ROA	ORE CREEK	1920	121	
LIVINGSTO	I-96 BL	S BR SHIAWASSEE RIVER	1918	302	X
LIVINGSTO	IOSCO ROAD	W. BR. RED CEDAR RIVE	1948	302	
LIVINGSTO	JEWELL ROAD	MARION DRAIN #2	1934	302	
LIVINGSTO	JONES ROAD	BOGUE CREEK	1941	302	
LIVINGSTO	LANGE ROAD	MID BR RED CEDAR RIVE	1922	302	
LIVINGSTO	LAYTON ROAD	E. BR. RED CEDAR RIVER	1928	372	
LIVINGSTO	M-155	S BR SHIAWASSEE RIVER	1932	104	
LIVINGSTO	M-59	BOGUE CREEK	1949	402	
LIVINGSTO	M-59	SHIAWASSEE RIVER	1955	119	
LIVINGSTO	MARR ROAD	S. BR. SHIAWASSEE RIVE	1937	302	
LIVINGSTO	MASON ROAD	WEST BR. RED CEDAR RI	1940	302	
LIVINGSTO	MCCABE ROAD	HURON RIVER	1930	321	
LIVINGSTO	MILLET ROAD	RED CEDAR RIVER	1933	302	
LIVINGSTO	MUNSELL ROAD	RED CEDAR RIVER IMP.	1937	302	
LIVINGSTO	PARSHALLVILL	N. ORE CREEK	1938		X
LIVINGSTO	PEAVY ROAD	MARION-GENOA DRAIN	1948	302	
LIVINGSTO	ROEPKE ROAD	PORTAGE RIVER	1924	302	
LIVINGSTO	STOW ROAD	RED CEDAR RIVER	1950	505	X
LIVINGSTO	TIPLADY ROAD	PORTAGE CREEK	1938	302	
LIVINGSTO	UNADILLA ROA	PORTAGE RIVER	1926	104	
LIVINGSTO	US-23 SB	ORE CREEK	1940	302	
LIVINGSTO	WHITMORE LAK	HURON RIVER	1930	352	
LUCE	COUNTY ROAD	HELMER CREEK	1950	702	
LUCE	COUNTY ROAD	TAHOQUAMENON RIVER	1940	302	
LUCE	DOLLARVILLE R	TEASPOON CREEK	1951	302	
LUCE	M-28	W BR SAGE RIVER	1935	302	
MACKINAC	CARL WORTH R	LITTLE BREVORT RIVER	1922	121	
MACKINAC	HIAWATHA TRA	ROCK RIVER	1930	104	
MACKINAC	KENNETH ROAD	N. BRANCH CARP RIVER	1949	702	X
MACKINAC	M-117	DOE CREEK	1954	101	
MACKINAC	M-134	NUNNS CREEK	1953	332	
MACKINAC	MACKINAC TRL	CLEAR CREEK	1930	104	
MACKINAC	MACKINAC TRL	RABBITS BACK CREEK	1930	101	
MACKINAC	MANISTIQUE LA	PORTAGE CREEK	1940	302	
MACKINAC	ROUND LAKE R	POINT AUX CHENES CRE	1951	702	

APPENDIX B

County	Route	Feature intersected	Year	Type	Int
MACKINAC	US FOREST RTE	CARP RIVER	1951	702	
MACKINAC	US FOREST RTE	CARP RIVER	1955	702	
MACKINAC	US-2	BLACK RIVER	1939	302	
MACKINAC	US-2	DAVENPORT CREEK	1939	104	
MACKINAC	US-2	HOG ISLAND CREEK	1939	104	
MACKINAC	US-2	MILLECOQUIN RIVER	1940	302	
MACOMB	12 MILE ROAD	BEAR CREEK	1955	319	
MACOMB	18.5 MILE ROAD	PLUM BROOK DRAIN	1927	504	X
MACOMB	22 MILE ROAD	SALT SLANG GLOEDE DR	1948	302	
MACOMB	23 MILE ROAD	MCBRIDE DRAIN	1950	319	
MACOMB	24 MILE ROAD	FISH CREEK	1920	362	
MACOMB	24 MILE ROAD	MCBRIDE DRAIN	1955	319	
MACOMB	25 MILE ROAD	MIDDLE BRANCH CLINTO	1950	319	
MACOMB	26 MILE ROAD	BRANCH OF KIRKHAM D	1952	342	
MACOMB	26 MILE ROAD	DEER CREEK	1948	302	
MACOMB	26 MILE ROAD	KIRKHAM DRAIN	1952	342	
MACOMB	27 MILE ROAD	HEALY BROOK DRAIN	1953	319	
MACOMB	27 MILE ROAD	TUPPER BROOK DRAIN	1921	362	
MACOMB	29 MILE ROAD	CAMP BROOK DRAIN	1928	104	
MACOMB	29 MILE ROAD	HEALY BROOK DRAIN	1928	104	
MACOMB	30 MILE ROAD	HEALY BROOK DRAIN	1925	302	
MACOMB	33 MILE ROAD	N B CLINTON RIVER	1955	302	
MACOMB	34 MILE ROAD	CEMETERY CREEK	1927	302	
MACOMB	ARMADA CENT	COON CREEK	1927	104	
MACOMB	ARMADA CENT	EAST BRANCH COON CRE	1953	302	
MACOMB	ARMADA RIDGE	HIGHBANK CREEK	1950	119	
MACOMB	ASHLEY STREET	CRAPEAU CREEK	1900	319	
MACOMB	BASE STREET	CRAPEAU CREEK	1900	319	
MACOMB	BELLMAN ROAD	MIDDLE BRANCH CLINTO	1950	319	
MACOMB	BORDMAN ROA	EAST BRANCH COON CRE	1930	302	
MACOMB	EARL MEM HIG	M B CLINTON RIVER	1929	104	
MACOMB	EAST ARCHER D	CHANNEL TO LAKE ST CL	1950	302	
MACOMB	EB METRO PARK	HARRINGTON DRAIN	1952	104	
MACOMB	HAGEN ROAD	DEER CREEK	1930	302	
MACOMB	HARRINGTON R	HARRINGTON DRAIN	1949	332	
MACOMB	I-94 EB	CLINTON RIVER & N&S R	1947	302	X
MACOMB	JEFFERSON AVE	CLINTON RIVER SPILLWA	1950	332	
MACOMB	JEFFERSON AVE	VENTRE DE BEUF	1923	121	
MACOMB	LAKESHORE DRI	CHANNEL TO LAKE ST CL	1950	302	
MACOMB	M-19	ASHERY CREEK	1928	302	
MACOMB	M-29	MARSAC CREEK	1952	104	
MACOMB	M-53	E POND OF CLINTON RIV	1926	104	X
MACOMB	M-59	MID BR CLINTON RIVER	1939	302	
MACOMB	M-59	SALT CREEK	1951	402	
MACOMB	M-97	CLINTON RIVER	1948	352	
MACOMB	MAIN STREET	CRAPEAU CREEK	1925	133	
MACOMB	MC FADDEN RO	NEWLAND DRAIN	1953	319	
MACOMB	MCVICAR ROAD	EAST POND CREEK	1955	319	
MACOMB	MORAVIAN DR.	CLINTON RIVER	1930	302	
MACOMB	MOUND ROAD	SHARKEY DRAIN	1955	319	
MACOMB	NB MOUND RD	BIG BEAVER CREEK	1929	302	
MACOMB	NEW HAVEN RD	E B COON CREEK	1954	332	
MACOMB	PARDEE ROAD	CHANNEL TO LAKE ST CL	1934	302	
MACOMB	PRATT ROAD	EAST BRANCH COON CRE	1953	319	
MACOMB	ROMEO PLANK	GLOEDE DRAIN	1948	302	

APPENDIX B

County	Route	Feature intersected	Year	Type	Int
MACOMB	RYAN ROAD	PLUM BROOK DRAIN	1927		X
MACOMB	SB MOUND RD	RED RUN DRAIN	1941	302	
MACOMB	WB METRO PAR	HARRINGTON DRAIN	1952	104	
MACOMB	WOLCOTT ROA	N BRANCH CLINTON RIV	1953	332	
MANISTEE	HUFF ROAD	PINE CREEK	1940	302	
MANISTEE	LOW BRIDGE RO	PINE RIVER	1932	372	X
MANISTEE	M-115	BEAR CREEK	1937	104	
MANISTEE	M-115	BETSIE RIVER	1940	302	
MANISTEE	M-115	CSX RAILROAD (ABN)	1940	302	
MANISTEE	M-55	PINE CREEK	1932	104	
MANISTEE	SIX MILE ROAD	LITTLE MANISTEE RIVER	1948	302	
MARQUETT	AAO ROAD	BIG DEAD RIVER	1944	332	X
MARQUETT	AAT ROAD	BIG DEAD RIVER	1930	372	X
MARQUETT	AAT ROAD	MULLIGAN CREEK	1935	372	X
MARQUETT	BAA ROAD	SAND RIVER	1932	372	
MARQUETT	BAE ROAD	CHOCOLAY RIVER	1910		X
MARQUETT	BAE ROAD	MUD CREEK	1930	302	
MARQUETT	BAE ROAD	SAND RIVER	1930	302	
MARQUETT	BH ROAD	CHOCOLAY RIVER	1938	372	X
MARQUETT	BI ROAD	MUD CREEK	1936	372	X
MARQUETT	CAA ROAD	FLAT ROCK CREEK	1936	372	X
MARQUETT	CARSON (DEPOT	CARP RIVER	1915	302	
MARQUETT	CG ROAD	ESCANABA RIVER	1943		X
MARQUETT	COUNTY HWY 6	PESHEKEE RIVER	1926	302	
MARQUETT	COUNTY HWY 6	PESHEKEE RIVER	1931	302	
MARQUETT	COUNTY HWY 6	PESHEKEE RIVER	1927	332	
MARQUETT	COUNTY RD 438	N BR W BR ESCANABA RI	1928	332	X
MARQUETT	COUNTY RD 456	CHOCOLAY RIVER	1940	302	
MARQUETT	COUNTY RD 565	BEAR CREEK	1936	372	X
MARQUETT	COUNTY RD 565	ESCANABA RIVER OVERF	1932	372	X
MARQUETT	COUNTY RD 565	SCHWEITZER CREEK	1930	372	
MARQUETT	COUNTY RD 581	MDL BRANCH OF ESCAN	1929	302	X
MARQUETT	COUNTY RD. 47	BLACK RIVER	1925	302	
MARQUETT	COUNTY RD. 53	HUBER CREEK	1925	302	
MARQUETT	COUNTY RD. 55	LITTLE GARLIC RIVER	1951	302	X
MARQUETT	COUNTY RD. 55	LITTLE WEST RIVER	1928	104	
MARQUETT	COUNTY RD. 58	ROCKY CREEK	1940	302	
MARQUETT	COUNTY RD. 58	WEST BR. ESCANABA RIV	1928	302	
MARQUETT	COUNTY ROAD	CARP RIVER	1932	302	
MARQUETT	COUNTY ROAD	WERNERS CREEK	1925	302	
MARQUETT	COUNTY ROAD	E BR CHOCOLAY RIVER	1939		X
MARQUETT	COUNTY ROAD	ALDER CREEK	1920	302	
MARQUETT	COUNTY ROAD	BIG GARLIC RIVER	1928	302	
MARQUETT	COUNTY ROAD	COMPEAU CREEK	1947	302	X
MARQUETT	COUNTY ROAD	HARLOW CREEK	1930	302	
MARQUETT	COUNTY ROAD	ESCANABA RIVER	1930	372	X
MARQUETT	COUNTY ROAD	MICHIGAMME RIVER	1911		X
MARQUETT	COUNTY ROAD	PESHEKEE RIVER	1931	332	X
MARQUETT	CP ROAD	MIDDLE BR OF ESCANAB	1932	372	X
MARQUETT	EM ROAD	MEHL AND LITTLE LK OV	1930	372	X
MARQUETT	FFK ROAD	BLACK RIVER	1935	372	
MARQUETT	FW ROAD	BLACK RIVER	1934	372	
MARQUETT	GGT ROAD	BOISE CREEK	1935	372	X
MARQUETT	GGT ROAD	DEER CREEK	1936	372	
MARQUETT	HD ROAD	BISMARCK CREEK	1928	372	X

APPENDIX B

County	Route	Feature intersected	Year	Type	Int
MARQUETT	HD ROAD	HARLOW CREEK	1928	372	X
MARQUETT	HL ROAD	REANY CREEK	1950	302	X
MARQUETT	HW ROAD	INLET TO HARLOW LAKE	1930	372	X
MARQUETT	IDA ROAD	PESHEKEE RIVER	1940	372	
MARQUETT	JA ROAD	CARP RIVER	1934	302	
MARQUETT	KB ROAD	WILSON CREEK	1934	372	X
MARQUETT	KCI ROAD	WILSON CREEK	1935	302	
MARQUETT	KE ROAD	BIG GARLIC RIVER	1938	372	X
MARQUETT	KO ROAD	LITTLE GARLIC RIVER	1936	372	X
MARQUETT	LE ROAD	TROUT FALLS CREEK	1938	302	
MARQUETT	LI ROAD	MICHIGAMME RIVER	1930	372	
MARQUETT	LLL ROAD	TROUT FALLS CREEK	1935	119	
MARQUETT	LLL ROAD (OLD	MICHIGAMME RIVER	1934	302	
MARQUETT	M-28	CHOCOLAY RIVER	1938	302	
MARQUETT	M-35	EAST BR ESCANABA RIVE	1940	352	
MARQUETT	M-94	NELSON CREEK	1953	104	
MARQUETT	M-95	BLACK RIVER	1942	104	
MARQUETT	MMC ROAD	SCHWEITZERS CREEK	1935	372	X
MARQUETT	MMF ROAD	ESCANABA RIVER OVERF	1930	372	
MARQUETT	NP ROAD	CARP RIVER	1934	332	X
MARQUETT	OC ROAD (OLD	NELSON CREEK	1935	104	
MARQUETT	PPO ROAD	N BRANCH BIG WEST RIV	1930	372	
MARQUETT	PS ROAD	SCHWEITZERS CREEK	1933	372	
MARQUETT	SI ROAD	HUNTERS BROOK	1930	372	X
MARQUETT	TH (BECKMAN R	NELSON CREEK	1930	302	
MARQUETT	TH (BECKMAN R	W BRANCH CHOCOLAY R	1929	302	
MARQUETT	US-41	BIG CREEK	1952	402	
MARQUETT	US-41	CHOCOLAY RIVER	1954	332	
MARQUETT	US-41	NELSON CR BURIED	1939	219	
MARQUETT	US-41 NB	CARP RIVER	1955	302	
MASON	CUSTER ROAD	PERE MARQUETTE RIVER	1953	302	
MASON	M-116	BIG SABLE RIVER	1934		X
MASON	MASTEN	CARR CREEK	1915	302	
MASON	OLD US-31	CSX RAILROAD	1935		X
MASON	SCOTTVILLE RO	PERE MARQUETTE RIVER	1940	302	
MASON	US-10	WELDON CREEK	1938	219	
MASON	US-31	DURHAM CREEK	1925	101	
MECOSTA	18 MILE ROAD	S. BR. CHIPPEWA RIVER	1910	302	X
MECOSTA	20TH AVENUE	CHIPPEWA RIVER	1902	344	X
MECOSTA	HARDIN	S BR CHIPPEWA RIVER	1909	372	X
MECOSTA	M-20	RYAN CREEK	1920	101	X
MECOSTA	M-66	NORTH BRACH CHIPPEW	1927	302	
MECOSTA	M-66	NORTH BRANCH CHIPPE	1927	302	
MECOSTA	OLD US-131	MUSKEGON ROAD	1931	352	
MECOSTA	US-131	MITCHELL CREEK	1948	302	
MECOSTA	US-131	PARIS CREEK	1929	302	
MENOMINE	10 MILE ROAD	LITTLE RIVER	1928	302	
MENOMINE	19 MILE ROAD	BIG BAIRD CREEK	1944	302	X
MENOMINE	22.5 MILE ROAD	LITTLE CEDAR RIVER	1935	302	X
MENOMINE	26 MILE ROAD	LITTLE CEDAR RIVER	1924	302	X
MENOMINE	30 MILE ROAD	LITTLE CEDAR RIVER	1934	119	
MENOMINE	31 MILE ROAD	LITTLE CEDAR RIVER	1934	119	
MENOMINE	34 MILE ROAD	LITTLE CEDAR RIVER	1936	302	X
MENOMINE	38.5 MI ROAD	BIG CEDAR RIVER	1928		X
MENOMINE	40.75 MILE ROA	FOURTY SEVEN CREEK	1928	119	X

APPENDIX B

County	Route	Feature intersected	Year	Type	Int
MENOMINE	40.75 MILE ROA	WILSON CREEK	1932	119	
MENOMINE	47 MILE ROAD	TEN MILE CREEK	1924	362	X
MENOMINE	5 MILE ROAD	LITTLE RIVER	1928	302	X
MENOMINE	6.25 ROAD	LITTLE RIVER	1928	302	X
MENOMINE	B-2 ROAD	TEN MILE CREEK	1940	302	X
MENOMINE	C-1 ROAD	TEN MILE CREEK	1934	402	X
MENOMINE	CHALKHILLS RO	LITTLE CEDAR CREEK	1950	319	
MENOMINE	COUNTY ROAD	LONG LAKE	1927	319	X
MENOMINE	D-1 ROAD	TEN MILE CREEK	1927	362	X
MENOMINE	DEERPARK DRI	LITTLE RIVER	1928	302	X
MENOMINE	F-1 ROAD	TEN MILE CREEK	1927	342	X
MENOMINE	KOSS ROAD	MENOMINEE RIVER	1900		X
MENOMINE	LINSMIER RD	LITTLE RIVER	1930	302	X
MENOMINE	M-2 ROAD	HAYS RIVER	1934	362	
MENOMINE	M-35	DEER CREEK	1933	104	
MENOMINE	M-69	TEN MILE CREEK	1954	104	
MENOMINE	M-69	TEN MILE CREEK	1954	302	
MENOMINE	MILL STREET	LITTLE CEDAR RIVER	1948	302	
MENOMINE	NORTH N3 LANE	LITTLE RIVER	1944	119	
MENOMINE	O-3 ROAD	LITTLE CEDAR RIVER	1920	302	X
MENOMINE	ROUTE 557	BIG CEDAR RIVER	1950	402	
MENOMINE	ROUTE 577	LITTLE RIVER	1920	119	
MENOMINE	US-2	47 CREEK	1931	104	
MENOMINE	US-2	BIG CEDAR RIVER	1933	302	
MENOMINE	US-2	BIG CEDAR RIVER	1937	302	
MENOMINE	US-2	WCL RR	1936	302	X
MENOMINE	US-2	WILSON CREEK	1931	104	
MENOMINE	US-2 US-41	BIG CEDAR RIVER	1932		X
MENOMINE	US-41	HAYS CREEK	1934	104	
MENOMINE	WESTMAN DAM	WALTON CREEK	1950	702	
MIDLAND	4.75 MILE ROAD	PINE RIVER	1903	310	
MIDLAND	BROOKS ROAD	JO DRAIN	1938	302	X
MIDLAND	CASTOR ROAD	LITTLE SALT CREEK	1927	302	
MIDLAND	CASTOR ROAD	N BR CARROLL CREEK	1904	302	X
MIDLAND	KENT ROAD	SUCKER CREEK	1914	302	X
MIDLAND	LAPORTE ROAD	FLEMMING DRAIN	1947	302	
MIDLAND	LEVELY ROAD	HERNER DRAIN	1900	302	X
MIDLAND	M-18	BUFF CREEK	1941	302	
MIDLAND	M-20	CHIPPEWA CREEK	1940	302	
MIDLAND	MAGRUDDER R	LITTLE SALT CREEK	1936	302	
MIDLAND	MERIDIAN ROA	BULLOCK CREEK	1935	104	
MIDLAND	MERIDIAN ROA	CARROLL CREEK	1937	302	X
MIDLAND	MERIDIAN ROA	PINE RIVER	1952	302	
MIDLAND	MERIDIAN ROA	PRAIRIE CREEK	1949	302	
MIDLAND	ORR ROAD	WEEKS DRAIN	1920	302	
MIDLAND	POSEYVILLE RO	BULLOCK CREEK	1951	319	X
MIDLAND	POSEYVILLE RO	FLEMMING DRAIN	1929	302	X
MIDLAND	POSEYVILLE RO	WRIGHT DRAIN	1929	302	
MIDLAND	SASSE ROAD	FLEMMING DRAIN	1946	302	
MIDLAND	SCHREIBER ROA	JO DRAIN	1938	302	X
MIDLAND	SCHREIBER ROA	WEEKS DRAIN	1930	302	X
MIDLAND	SEVEN MILE RO	BULLOCK CREEK	1925	302	
MIDLAND	SHAFFER ROAD	BLUFF CREEK	1930	302	
MIDLAND	TITABAWASSE	WHITMORE DRAIN	1932	104	
MISSAUKEE	7 MILE ROAD	W BR MUSKEGON RIVER	1927	104	

APPENDIX B

County	Route	Feature intersected	Year	Type	Int
MUSKEGON	BAILEY ROAD	CROCKERY CREEK	1930	103	
MUSKEGON	BLACK LAKE RO	LITTLE BLACK CREEK	1920	101	X
MUSKEGON	BROADWAY BRI	I-96 BS	1955	332	
MUSKEGON	CHICAGO ROAD	FLOWER CREEK	1920	104	
MUSKEGON	ELLIS ROAD	CROCKERY CREEK	1953	103	
MUSKEGON	FRUITVALE RO	CARLETON CREEK	1937	302	
MUSKEGON	FRUITVALE RO	WHITE RIVER	1948	302	
MUSKEGON	GILES ROAD	BEAR CREEK	1932	103	
MUSKEGON	GILES ROAD	GREEN CREEK	1940	103	
MUSKEGON	HOLTON DUCK	SKEELS CREEK	1941	103	
MUSKEGON	I-96 BS,US-31 BR	LITTLE BLACK CREEK	1953	101	
MUSKEGON	M-120	CEDAR CREEK	1929	104	
MUSKEGON	M-120	CEDAR CREEK	1935	104	
MUSKEGON	M-120	CEDAR CREEK	1935	104	
MUSKEGON	M-120	MARKLE DRAIN	1929	104	
MUSKEGON	MAPLE ISLAND	BLACK CREEK	1952	302	
MUSKEGON	MILLIRON ROA	BLACK CREEK	1931	103	
MUSKEGON	MOORLAND RO	CROCKERY CREEK	1950	302	
MUSKEGON	OLD CHANNEL	SADONY BAYOU	1948	302	
MUSKEGON	PATTERSON PA	RIO GRANDE CREEK	1932	103	
MUSKEGON	PATTERSON PA	RIO GRANDE CREEK	1932	103	
MUSKEGON	RAVENNA ROA	RIO GRANDE CREEK	1935	103	
MUSKEGON	RIVER ROAD	CEDAR CREEK	1939	103	
MUSKEGON	RYERSON ROAD	CEDAR CREEK	1940	103	
MUSKEGON	SCENIC DRIVE	DUCK LAKE CHANNEL	1926	103	
MUSKEGON	SCHOW ROAD	SKEELS CREEK	1939	101	
MUSKEGON	SCHOW ROAD	SKEELS CREEK	1939	101	
MUSKEGON	SOUTH MAIN ST	CROCKERY CREEK	1940	302	
MUSKEGON	STERNBERG RO	NORRIS CREEK	1934	103	
MUSKEGON	SULLIVAN ROA	JTB & S DRAIN	1900	302	X
MUSKEGON	SWEETER ROAD	CEDAR CREEK	1900	702	X
MUSKEGON	TRENT ROAD	CROCKERY CREEK	1942	103	
MUSKEGON	US-31 SB	BLACK ROAD	1949	302	
MUSKEGON	US-31BR	CSX RAILROAD	1933	302	
NEWAYGO	10 MILE ROAD	BEAVER CREEK	1925	362	
NEWAYGO	10 MILE ROAD	S BR PERE MARQUETTE R	1925	362	X
NEWAYGO	13 MI RD FH3	62 MCDUFFEE CREEK	1934	101	
NEWAYGO	14 MI RD FH3	62 LSBR PERE MARQTE	1934	101	
NEWAYGO	14 MILE ROAD	MCDUFFEE CREEK	1925	362	
NEWAYGO	17 MILE ROAD	LSBR PERE MARQUETTE	1931	302	
NEWAYGO	17 MILE ROAD	PEACE CREEK	1941	342	
NEWAYGO	2 MILE ROAD	DRAIN BTWN SECT 23 & 2	1925	302	
NEWAYGO	3 MILE ROAD	WHITE RIVER	1920	372	X
NEWAYGO	80 TH STREET	BUTLER CREEK	1930	319	
NEWAYGO	BINGHAM AVEN	TANK CREEK	1920	104	
NEWAYGO	CROSSWELL AV	BIG SO BR PERE MARQUE	1952	702	X
NEWAYGO	HESS LAKE AV	WHEELER DRAIN	1942	302	
NEWAYGO	LUCE AVENUE	WHITE RIVER	1925	302	
NEWAYGO	M-37	WHITE RIVER	1928	332	
NEWAYGO	M-82	BRATON CREEK	1935	104	
NEWAYGO	MONROE STREE	MARTIN CREEK	1920	362	X
NEWAYGO	SPRUCE AVENU	62 5 MI CREEK	1954	104	
NEWAYGO	TRUMAN DRIVE	CEDAR CREEK	1925	372	
NEWAYGO	VAN WAGONER	MARTIN CREEK	1931		X
NEWAYGO	WARNER AVEN	BLACK CREEK	1930	342	

APPENDIX B

County	Route	Feature intersected	Year	Type	Int
NEWAYGO	WARNER AVEN	MARTIN CREEK	1925	372	
OAKLAND	13 MILE ROAD	ROUGE RIVER	1928	302	
OAKLAND	ADAMS ROAD	ROUGE RIVER	1929	302	
OAKLAND	BALL STREET	KEARSLEY CREEK	1920		X
OAKLAND	CASS LAKE ROA	CLINTON RIVER	1924	302	
OAKLAND	DEQUINDRE RO	GIBSON DRAIN	1927	104	
OAKLAND	GARDEN	NORTON DRAIN	1918	362	
OAKLAND	I-75BL SB	GTW RAILROAD	1932	302	
OAKLAND	I-96	KENT LAKE RIVER	1948	332	
OAKLAND	I-96 BL	ROUGE RIVER	1920	111	X
OAKLAND	M-10 NB	ROUGE RIVER	1929	302	X
OAKLAND	NAKOMIS	INDIANWOOD LAKE CAN	1930	362	
OAKLAND	OLD M-59	CLINTON RIVER	1947	302	
OAKLAND	OLD M-59(AUBU	CLINTON RIVER	1952	302	
OAKLAND	ORION ROAD	PAINT CREEK	1922		
OAKLAND	ORION ROAD	PAINT CREEK	1922	302	
OAKLAND	PARKDALE ROA	STONY CREEK	1952	302	
OAKLAND	SASHABAW ROA	CLINTON RIVER	1928	104	
OAKLAND	SEYMORE LAKE	PAINT CREEK	1920	302	
OAKLAND	SOUTH STREET	KEARSLEY CREEK	1943	303	
OAKLAND	THIRTEEN MILE	ROUGE RIVER	1926	104	
OAKLAND	TIENKEN ROAD	PAINT CREEK	1947	303	
OAKLAND	TIENKEN ROAD	STONEY CREEK	1940	302	
OAKLAND	US-24	CLINTON RIVER	1929		X
OAKLAND	US-24	CLINTON RIVER	1925	101	
OAKLAND	US-24 & US-10	FRANKLIN RIVER	1931		X
OAKLAND	US-24 NB	ROUGE RIVER	1953	302	
OCEANA	104TH AVENUE	S BRANCH PENTWATER R	1950	319	X
OCEANA	120TH AVENUE	S BRANCH PENTWATER R	1955	719	
OCEANA	126TH AVENUE	NBR PENTWATER RIVER	1953	104	
OCEANA	194TH AVENUE	64 BRATON CREEK	1931	302	X
OCEANA	196TH AVENUE	BEAVER DRAIN	1954	104	
OCEANA	48TH AVENUE	FLOWER CREEK	1920	402	
OCEANA	76TH AVENUE O	DORRANCE CREEK	1922	104	
OCEANA	88TH AVENUE	CEDAR CREEK	1910	372	X
OCEANA	FILMORE ROAD	HUFFTILE CREEK	1938	302	
OCEANA	GARFIELD ROA	SOUTH BRANCH WHITE R	1950	302	
OCEANA	MICHIGAN STRE	WHITE RIVER	1920	121	
OCEANA	SHELBY ROAD	64 STONY CREEK	1936	302	
OCEANA	US-31	CEDAR CREEK	1953	104	
OCEANA	US-31	N BRANCH PENTWATER	1953	302	
OCEANA	US-31 BR	BASS LAKE CRK	1925	104	
OCEANA	US-31BR	N BR PENTWATER RIVER	1949	302	
OGEMAW	E ROSE CITY RD	HOUGHTON CREEK	1930	302	X
OGEMAW	FOURTH STREE	WEST BRANCH RIFLE RIV	1940	319	
OGEMAW	GREENWOOD R	TITTABAWASSEE RIVER	1932		X
OGEMAW	I-75 BL	WIDEMAN CREEK	1932	104	
OGEMAW	M-33	KLACKING CR	1936	104	
OGEMAW	M-55	AU GRES RIVER	1929		X
OGEMAW	M-55	BR OF RIFLE R	1938	104	
OGEMAW	M-55	RIFLE R	1937		X
OGEMAW	PEACH LAKE RD	W BR RIFLE RIVER	1948	302	
OGEMAW	SEVENTH STREE	WEST BRANCH RIFLE RIV	1920	362	X
ONTONAGO	BOND FALLS RO	MID BR ONTONAGON RIV	1940	302	
ONTONAGO	GARDNER ROAD	E.BRANCH ONTONOGON	1954	402	

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County	Route	Feature intersected	Year	Type	Int
MISSAUKEE	BURKETT ROAD	MOSQUITO CREEK	1915	362	
MISSAUKEE	FALMOUTH RO	MARKS CREEK	1945	104	
MISSAUKEE	LA CHANCE RO	CLAM RIVER	1935	302	
MISSAUKEE	LUCAS ROAD	HOPKINS CREEK	1945	104	
MISSAUKEE	M-55	W BR MUSKEGON RIVER	1931		X
MISSAUKEE	M-66	N BR CLAM RIVER	1933		X
MISSAUKEE	NCVETY ROAD	BUTTERFIELD CREEK	1924	302	X
MISSAUKEE	NELSON ROAD	HAYMARSH CREEK	1945	104	
MISSAUKEE	STAR CITY ROA	W BR MUSKEGON RIVER	1935	302	
MISSAUKEE	VANDERMEULE	NORTH BRANCH CLAM RI	1930	362	
MONROE	ALBAIN ROAD	LAPLAISANCE CREEK	1955	104	
MONROE	ANN ARBOR RO	BEAR SWAMP CREEK	1947	302	
MONROE	ANN ARBOR RO	NORTH MACON CREEK	1947	302	
MONROE	BAY CREEK RO	FLAT CREEK	1950	119	
MONROE	BAY CREEK RO	LITTLE LAKE CREEK	1950	119	
MONROE	BRAGG ROAD	LITTLE RIVER RAISIN	1920	362	
MONROE	BRAGG ROAD	SWAMP RAISIN CREEK	1930	302	
MONROE	BREWER ROAD	SWAMP RAISIN ROAD	1927	302	
MONROE	CAKE ROAD	LITTLE RIVER RAISIN	1950	302	
MONROE	CARLETON WES	DISBROW DRAIN	1935	101	
MONROE	CONE ROAD	MILAN CENTER DRAIN	1930	104	
MONROE	CONE ROAD	NORTH MACON CREEK	1950	302	
MONROE	CONE ROAD	WARREN LEWIS DRAIN	1930	104	
MONROE	DAY ROAD	SALINE RIVER	1950	302	
MONROE	DENNISON ROA	BEAR SWAMP CREEK	1927	302	
MONROE	DENNISON ROA	LITTLE RIVER RAISIN	1950	302	
MONROE	DENNISON ROA	NORTH MACON CREEK	1940	104	
MONROE	DENNISON ROA	SWAMP RAISIN CREEK	1930	103	
MONROE	EXETER ROAD	SWAN CREEK	1920	372	
MONROE	FINZEL ROAD	STONY CREEK OVERFLO	1950	362	
MONROE	GRAFTON ROAD	LITTLE SWAN CREEK	1930	101	
MONROE	GRUBER ROAD	SANDY CREEK	1920	362	
MONROE	I-75	CONRAIL & INDUSTRIAL	1955	332	
MONROE	I-75	HURON RIVER	1954	332	
MONROE	I-75	PAPER CO WATER MAINS	1955	332	X
MONROE	I-75	SANDY CREEK	1954	104	
MONROE	I-75	SANDY CREEK RIVER	1955	332	
MONROE	I-75 NB	LAPLAISANCE CREEK	1954	104	X
MONROE	I-75 NB	MUDDY CREEK	1954	332	X
MONROE	I-75 NB	OTTER CREEK	1955	402	X
MONROE	I-75 NB	PLUM CREEK	1955	332	X
MONROE	I-75 NB	STONY CREEK	1954	402	
MONROE	I-75 NB	SWAN CREEK & HURON	1954	402	
MONROE	I-75 SB	LAPLAISANCE CREEK	1954	104	X
MONROE	I-75 SB	MUDDY CREEK	1954	332	X
MONROE	I-75 SB	OTTER CREEK	1955	402	X
MONROE	I-75 SB	PLUM CREEK	1955	332	X
MONROE	I-75 SB	STONY CREEK	1954	402	
MONROE	I-75 SB	SWAN CREEK	1954	402	
MONROE	LABO ROAD	COLBURN DRAIN	1935	101	
MONROE	LAPLAISANCE R	PLUM CREEK	1928	302	
MONROE	LAPLAISANCE R	WOODCHUCK CREEK	1928	302	
MONROE	LENAWEE CO LI	MILAN-MACON DRAIN	1930	104	
MONROE	LEWIS AVENUE	LOCKWOOD DRAIN	1900	319	
MONROE	M-125	BR SANDY CREEK	1932	104	

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County	Route	Feature intersected	Year	Type	Int
MONROE	M-125	INDIAN CREEK	1934	302	
MONROE	M-125	RAISIN RIVER	1928		X
MONROE	M-125	SPUD CREEK	1932	104	
MONROE	M-50	RAISIN RIVER	1937	302	
MONROE	M-50	S BR MACON CREEK	1953	332	
MONROE	N COUNTY LINE	NORTH MACON CREEK	1930	301	
MONROE	NEWBURG ROA	N BRANCH SWAN CREEK	1920	372	
MONROE	OAKVILLE WAL	STONY CREEK	1930	302	
MONROE	OAKVILLE WAL	STONY CREEK OVERFLO	1930	104	
MONROE	OSTRANDER RO	MACON DRAIN	1950	332	
MONROE	RAISINVILLE RO	LITTLE SANDY CREEK	1930	302	
MONROE	SECOR ROAD	LOCKWOOD DRAIN	1900	319	
MONROE	STERNS ROAD	OTTAWA LAKE OUTLET	1920	302	
MONROE	STRASBURG RO	LOCKWOOD DRAIN	1935	302	
MONROE	STRASBURG RO	MID. BR. OTTER CREEK	1930	302	
MONROE	STRASBURG RO	OTTER CREEK	1935	302	
MONROE	SUB STATION R	LITTLE LAKE CREEK	1950	119	
MONROE	SWETZGER ROA	LITTLE SWAN CREEK	1930	302	
MONROE	TURK ROAD	OTTAWA LAKE OUTLET	1930	302	
MONROE	US TURNPIKE	MOUILLEE CREEK	1927	302	
MONROE	US-223	BELLE DRAIN	1922	121	
MONROE	US-24	ANN ARBOR RAILROAD	1938		X
MONROE	US-24	HURON RIVER	1933	352	
MONROE	US-24	INDIAN CREEK	1925	219	
MONROE	US-24	SANDY CREEK	1924	104	X
MONROE	US-24	STONY CREEK	1931	302	
MONROE	WABASH ROAD	NORTH MACON CREEK	1948	302	
MONROE	WABASH STREE	SALINE RIVER	1937	302	
MONTCAL	BAILEY ROAD	HANDY CREEK	1920	332	X
MONTCAL	COUNTY ROAD	RICE CREEK	1930	302	X
MONTCAL	CUTLER ROAD	BLACK CREEK	1920	104	
MONTCAL	DERBY ROAD	DICKERSON CREEK	1922	302	X
MONTCAL	DERBY ROAD	DICKERSON CREEK	1900	372	X
MONTCAL	M-46, M-66	FLAT RIVER	1937	302	
MONTCAL	M-57	BUTTERNUT CREEK	1940	104	
MONTCAL	M-57	DICKINSON RIVER	1953	104	
MONTCAL	M-57	FISH CREEK	1931	332	
MONTCAL	M-57	FLAT RIVER	1948	302	
MONTCAL	M-57	PRAIRIE RIVER	1953	104	
MONTCAL	M-91	FLAT RIVER	1923	303	
MONTCAL	OLD US-131	RICE CREEK	1927	104	
MONTCAL	OLD US-131	TAMARACK CREEK	1928	332	X
MONTCAL	ORTON ROAD	TAMARACK CREEK	1930	472	X
MONTCAL	PINE GROVE RO	S. BRANCH PINE RIVER	1920	302	X
MONTCAL	SIDNEY RD. CO	FISH CREEK W BRANCH	1924	104	
MONTCAL	SIDNEY RD. CO.	FLAT RIVER	1931	302	
MONTCAL	STANTON ROAD	FISH CREEK	1920	104	
MONTCAL	TAMARACK RO	TAMARACK CREEK	1900	372	X
MONTCAL	TOW ROAD	FISH CREEK	1922	302	X
MONTMOR	CO ROAD 451	N BR THUNDER BAY RIVE	1948	302	
MONTMOR	M-32	THUNDER BAY R	1927		X
MONTMOR	M-33	GILCHRIST CR	1951	332	
MONTMOR	MORROW ROAD	THUNDER BAY RIVER N B	1940		X
MUSKEGON	3RD AVENUE	NORRIS CREEK	1931	302	
MUSKEGON	AIRLINE ROAD	BLACK CREEK	1931	442	

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County	Route	Feature intersected	Year	Type	Int
ONTONAGO	LARSON ROAD	MILE & ONE HALF CREEK	1940	362	X
ONTONAGO	M-107	BIG IRON RIVER	1938	302	
ONTONAGO	M-28	MATCH CREEK BURIED	1936	101	
ONTONAGO	M-28, M-64	MERRYWEATHER CR	1932		X
ONTONAGO	M-28, M-64	WAPATO CREEK	1938	104	
ONTONAGO	M-64	CRANBERRY RIVER	1948	302	
ONTONAGO	M-64	DREISS CREEK	1945	302	
ONTONAGO	M-64	LITTLE CRANBERRY RIVE	1948	352	
ONTONAGO	M-64	MINERAL RIVER	1939	302	
ONTONAGO	M-64	MINERAL RIVER	1941	302	
ONTONAGO	M-64	MINERAL RIVER	1954	332	
ONTONAGO	M-64	POTATO RIVER	1952	402	
ONTONAGO	M-64	WEIGELS CREEK	1945	302	
ONTONAGO	OLD M-28	TEN MILE CREEK	1937	302	X
ONTONAGO	OLD M-28	TROUT CREEK	1936	104	
ONTONAGO	US FOREST RTE	MIDDLE BRANCH ONTON	1954	702	
ONTONAGO	US FOREST RTE	CISCO BR ONTONAGON R	1951	104	X
ONTONAGO	US-45	BALTIMORE RIVER	1934	302	
ONTONAGO	US-45	CLEAR CREEK	1931	104	
OSCEOLA	10TH AVENUE	CHIPPEWA RIVER	1900	302	X
OSCEOLA	20 MILE ROAD	PINE RIVER	1900	302	X
OSCEOLA	220TH AVENUE	EAST BRANCH PINE RIVE	1900	119	
OSCEOLA	3 MILE ROAD	NORTH BR CHIPPEWA RI	1920	121	Y
OSCEOLA	7 MILE ROAD	HERSEY CREEK	1937	362	Y
OSCEOLA	M-115	CROCKER CREEK	1937	104	
OSCEOLA	M-115	MIDDLE BRANCH RIVER	1937	104	
OSCEOLA	M-115	MIDDLE BRANCH RIVER	1938	302	
OSCEOLA	M-115	MUSKEGON RIVER	1939		X
OSCEOLA	M-115	WEST BRANCH RIVER	1937	104	
OSCEOLA	M-61	MIDDLE BRANCH RIVER	1938	101	
OSCEOLA	M-66	COYLE CREEK	1940	101	
OSCEOLA	M-66	DOC & TOM CREEK	1924	104	
OSCEOLA	M-66	MIDDLE BRANCH RIVER	1939	302	
OSCEOLA	M-66	MIDDLE BRANCH RIVER	1939	302	
OSCEOLA	M-66	MUSKEGON RIVER	1940	302	
OSCEOLA	US-10	JOHNSON CREEK	1947	332	X
OSCEOLA	US-10	MUSKEGON RIVER	1934		X
OSCEOLA	US-10	TWIN CREEK	1933	101	X
OSCEOLA	US-131	HERSEY RIVER	1954	332	
OSCODA	DEETER ROAD	WEST BRANCH BIG CR.	1920	362	X
OSCODA	PARK ROAD F	EAST BRANCH BIG CR	1927	121	
OTSEGO	OLD 27	DETROIT & MACKINAW R	1934	302	
OTSEGO	STURGEON VAL	PIGEON RIVER	1935	302	
OTTAWA	120TH AVENUE	PIGEON CREEK	1912	302	X
OTTAWA	32ND AVENUE	RIO GRANDE CREEK	1938	362	X
OTTAWA	36TH AVENUE	N BRANCH OF CROCKER	1936	362	X
OTTAWA	48TH AVENUE	DEER CREEK TRIBUTARY	1935	302	X
OTTAWA	56TH AVENUE	BEAVER CREEK	1938	362	X
OTTAWA	96TH AVENUE	BLACK RIVER TRIBUTAR	1955	302	X
OTTAWA	ADAMS STREET	BLACK RIVER	1951	302	X
OTTAWA	CENTER STREET	DEER CREEK	1940		X
OTTAWA	CLEVELAND ST	CROCKERY C TRIBUTARY	1923	104	
OTTAWA	HAYES STREET	BRANCH OF SAND CREEK	1923	302	
OTTAWA	I-196BL EB	BLACK RIVER	1955	332	
OTTAWA	I-196BL EB	BRANCH OF BLACK RIVE	1955	332	

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County	Route	Feature intersected	Year	Type	Int
OTTAWA	I-196BL WB	BLACK RIVER	1930	302	
OTTAWA	I-96 WB	CROCKERY CREEK	1953	302	
OTTAWA	LAKESHORE AV	PIGEON CREEK	1934	302	
OTTAWA	LEONARD STRE	CROCKERY CREEK	1940	302	
OTTAWA	LEONARD STRE	DEER CREEK	1927	302	
OTTAWA	LEONARD STRE	SAND CREEK	1935	302	
OTTAWA	M-21 WB	BRANCH OF BLACK RIVE	1955	332	
OTTAWA	M-45	BASS RIVER	1929	302	
OTTAWA	M-45	SAND CREEK	1929	302	
OTTAWA	MAIN STREET	DEER CREEK	1920	332	X
OTTAWA	MERCURY DRIV	MILLHOUSE BAYOU	1928	302	X
OTTAWA	OAK STREET	BUTTERMILK CREEK	1900		X
OTTAWA	OLD M-21	RUSH CREEK	1949	302	
OTTAWA	OLD M-21	RUSH CREEK	1933	332	
OTTAWA	OLD M-21 EB	BLACK CREEK	1955	302	
OTTAWA	OLD M-21 EB	RUSH CREEK	1941	302	
OTTAWA	OLD M-21 WB	BLACK CREEK	1928	403	
OTTAWA	SOUTH SHORE D	MONTELLO PARK DRAIN	1900	119	X
OTTAWA	STATE ROAD	BRANCH OF CROCKERY C	1890	101	X
OTTAWA	US-31 NB	BLACK RIVER	1949	452	X
OTTAWA	US-31 NB	PIGEON RIVER	1949	332	
OTTAWA	US-31 NB	S CHANNEL GRAND RIVE	1931	332	
OTTAWA	WASHINGTON A	NORTH BRANCH BLACK	1928	104	
PRESQUE IS	441 ROAD	SWAN RIVER	1939	302	
PRESQUE IS	638 HWY	TROUT RIVER	1930	362	
PRESQUE IS	FINLEY ROAD	QUINN CREEK	1930	362	X
PRESQUE IS	HEYTHALER H	TROUT RIVER	1930	362	X
PRESQUE IS	HWY. 489	RAINY RIVER	1939	302	
PRESQUE IS	M-68	OCQUEOC R	1954	332	
PRESQUE IS	M-68	RAINY R	1954	302	
PRESQUE IS	MILLERBURG R	OCQUEOC RIVER	1948	302	
PRESQUE IS	NORTH ALLIS H	RAINY RIVER	1948	302	
PRESQUE IS	ONE MILE ROAD	BRANCH OF RAINY RIVE	1930	362	
PRESQUE IS	US-23	TROUT R	1939	302	X
PRESQUE IS	W. 634 HWY.	QUINN CREEK	1931	362	
ROSCOMM	M-18	S BR AU SABLE R	1935	302	
ROSCOMM	OLD M-76	AU SABLE R	1949	302	
ROSCOMM	OLD M-76	CEDAR CR	1949	104	
ROSCOMM	OLD US 27	WOLF CREEK	1935	302	
SAGINAW	BALDWIN ROAD	GRIFFUS CREEK	1919	302	X
SAGINAW	BELL ROAD	BIRCH RUN CREEK	1936	302	
SAGINAW	BEYER ROAD	HALF MOON DRAIN	1915	362	X
SAGINAW	BIRCH RUN ROA	BRIGGS DRAIN	1926	302	X
SAGINAW	BIRCH RUN ROA	HORTON AND GRAHAM D	1954	302	
SAGINAW	BISHOP ROAD	ALBERTS DRAIN	1910	302	X
SAGINAW	BRANT ROAD	SOUTH BRANCH BAD RIV	1949	302	
SAGINAW	BRENNAN ROAD	SOUTH BRANCH BAD RIV	1916	362	X
SAGINAW	BRENNAN ROAD	WEEKS DRAIN	1912	302	X
SAGINAW	BUECHE ROAD	NORTHWOOD DRAIN	1926	362	X
SAGINAW	BURT ROAD	PICKEREL CREEK	1925	302	
SAGINAW	BUSCH ROAD	BIRCH RUN CREEK	1930	302	X
SAGINAW	CANADA ROAD	SILVER CREEK	1910	342	X
SAGINAW	CHAPIN ROAD	BIG POTATO CREEK	1920	302	X
SAGINAW	CHAPIN ROAD	WEEKS DRAIN	1920	302	X
SAGINAW	CHESANING RO	NORTHWOOD DRAIN	1946	302	X

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APPENDIX B

County	Route	Feature intersected	Year	Type	Int
SAGINAW	COLE ROAD	BIRCH RUN CREEK	1910	302	X
SAGINAW	CUPP ROAD	SOUTH BRANCH BAD RIV	1928	302	X
SAGINAW	DAVIS ROAD	KOCHVILLE DRAIN	1930	302	
SAGINAW	DICE ROAD	WHITMORE DRAIN	1908	372	X
SAGINAW	DIXIE HIGHWAY	HALF MOON DRAIN	1931	101	
SAGINAW	ELMS ROAD	ELM CREEK	1908	302	X
SAGINAW	FEHN ROAD	WHITMORE DRAIN	1926	362	X
SAGINAW	FENMORE ROAD	BIG POTATO CREEK	1920	302	X
SAGINAW	FERGUS ROAD	FAIRCHILD CREEK	1928	121	
SAGINAW	FERGUS ROAD	MISTEGUAY CREEK	1947	302	
SAGINAW	FORDNEY ROAD	BEAVER CREEK	1954	402	
SAGINAW	FORDNEY ROAD	MARSH CREEK	1926	302	X
SAGINAW	FORDNEY ROAD	MC CLELLAN RUN DRAIN	1912	302	X
SAGINAW	FORDNEY ROAD	SHORT DITCH	1925	302	X
SAGINAW	FORDNEY ROAD	WHITMORE DRAIN	1912	302	X
SAGINAW	FOWLER ROAD	LAMB CREEK	1926	362	
SAGINAW	FOWLER ROAD	LIMBOCKER DRAIN	1925	362	X
SAGINAW	FROST ROAD	SWAN CREEK	1952	302	
SAGINAW	FRY ROAD	PATTIE CRK	1924	302	
SAGINAW	GARY ROAD	LAMB CREEK	1926	302	
SAGINAW	GARY ROAD	LIMBOCKER DRAIN	1925	302	X
SAGINAW	GARY ROAD	MITCHELL CREEK	1924	302	X
SAGINAW	GEDDES ROAD	MCCLELLAN RUN DRAIN	1926	302	
SAGINAW	GLEANER ROAD	MCCLELLAN RUN DRAIN	1921	302	X
SAGINAW	GRABOWSKI RO	DRAIN NO 137	1920		X
SAGINAW	HEMLOCK ROA	BEAVER CREEK	1950	302	
SAGINAW	HEMLOCK ROA	SOUTH BRANCH BAD RIV	1954	432	
SAGINAW	IVA ROAD	WEEKS DRAIN	1912		X
SAGINAW	KOCHVILLE RO	KOCHVILLE DRAIN	1938	402	X
SAGINAW	LUNNEY ROAD	WHITMORE DRAIN	1912	302	X
SAGINAW	M-13	BIRCH RUN OUTLET DRAI	1941	302	
SAGINAW	M-13	COLE DRAIN	1941	332	X
SAGINAW	M-13	FLINT RIVER	1941	302	
SAGINAW	M-13	KOEPKE DRAIN	1930	332	X
SAGINAW	M-13	MILKS DRAIN	1930	104	X
SAGINAW	M-13	NO NAME DRAIN	1929	104	
SAGINAW	M-13	SAVAGE DRAIN	1939	104	
SAGINAW	M-52	N BR BAD CREEK	1929	302	
SAGINAW	M-52	PICKEREL CREEK	1950	302	
SAGINAW	M-57	BEAR CREEK	1938	302	X
SAGINAW	M-57	MISTEQUAY CREEK	1940	302	
SAGINAW	M-57	SHIAWASSEE RIVER	1930	352	
SAGINAW	M-81	BLUMFIELD CREEK	1929		X
SAGINAW	M-81	CHEBOYGANING CREEK	1939		X
SAGINAW	M-83	CASS RIVER	1943	302	
SAGINAW	M-83	CHEBOYGANING CREEK	1941	332	
SAGINAW	M-83	DEAD CREEK	1938	302	
SAGINAW	MAIN STREET	DEAD CREEK	1902		X
SAGINAW	MAPLE ROAD	BIRCH RUN CREEK	1920	104	
SAGINAW	MAPLE ROAD	SILVER CREEK DRAIN	1932	101	
SAGINAW	MARION ROAD	CARSON DRAIN	1924	302	
SAGINAW	MERRILL ROAD	SOUTH BRANCH BAD RIV	1910	302	X
SAGINAW	MOORE ROAD	COLE DRAIN	1924	302	X
SAGINAW	MOORISH ROAD	PINE RUN CREEK	1931	302	
SAGINAW	MOORISH ROAD	SILVER CREEK	1927	302	X

APPENDIX B

County	Route	Feature intersected	Year	Type	Int
SAGINAW	MORSEVILLE R	RAVINE DRAIN	1921	101	X
SAGINAW	MORSEVILLE R	SILVER CREEK	1926	302	X
SAGINAW	PETTIT ROAD	SILVER CREEK	1910	362	X
SAGINAW	PRUESS ROAD	MCCLELLAN RUN DRAIN	1927	302	
SAGINAW	ROOSEVELT RO	SHORT DITCH	1921	302	X
SAGINAW	RYAN ROAD	PICKERAL CREEK	1920	362	
SAGINAW	SCHROEDER RO	BIG POTATO CREEK	1916	362	X
SAGINAW	SCHULTZ ROAD	WHITMORE DRAIN	1910	302	X
SAGINAW	STEEL ROAD	LIMBOCKER DRAIN	1925	302	X
SAGINAW	STEVENS ROAD	BIG POTATO CREEK	1920	302	X
SAGINAW	STUART ROAD	BEAR CREEK	1920	362	X
SAGINAW	SWAN CREEK R	MARSH CREEK	1929	302	X
SAGINAW	SWAN CREEK R	SWAN CREEK	1937		X
SAGINAW	TOM CRESSWEL	FLINT RIVER	1936	302	X
SAGINAW	VERNE ROAD	BEAR CREEK	1922	302	
SAGINAW	WADSWORTH R	UNCLE HENRY DRAIN	1934	302	
SANILAC	AITKEN ROAD	BLACK RIVER	1950	302	
SANILAC	AITKEN ROAD	POTTS DRAIN	1930	302	X
SANILAC	APPLEGATE RO	BEALS & FRIZZLE DRAIN	1930	302	X
SANILAC	BERKSHIRE ROA	BERRY DRAIN	1945	302	X
SANILAC	BROOKS ROAD	ELK CREEK DRAIN	1930	302	
SANILAC	BURNS LINE RO	MILL CREEK	1935	302	X
SANILAC	BURNS LINE RO	MILL CREEK	1950	302	X
SANILAC	BURNS LINE RO	SEYMOUR CREEK DRAIN	1930	362	X
SANILAC	COOPER ROAD	S BRANCH CASS RIVER	1920	303	
SANILAC	CUSTER ROAD	FYE DRAIN	1920	319	
SANILAC	DECKERVILLE R	S BRANCH CASS RIVER D	1930	302	
SANILAC	DOWNINGTON R	CHERRY CREEK	1930	302	
SANILAC	FISHER ROAD	JACKSON CREEK DRAIN	1935	121	
SANILAC	FRENCH LINE R	BEALS & FRIZZLE DRAIN	1930	302	
SANILAC	FRENCH LINE R	DUFF CREEK DRAIN	1930	332	
SANILAC	FRENCH LINE R	SMALLDON DRAIN	1930	302	
SANILAC	GALBRAITH LIN	BLACK CREEK DRAIN	1930	302	
SANILAC	GARDNER LINE	SEYMOUR CREEK DRAIN	1925	302	X
SANILAC	GARDNER LINE	SEYMOUR CREEK DRAIN	1920	362	X
SANILAC	GERMANIA ROA	DUFF CREEK DRAIN	1930	121	
SANILAC	GOETZE ROAD	BENHKE CREEK	1930	302	X
SANILAC	HARRINGTON R	BLACK RIVER	1929	352	
SANILAC	HOLLISTER ROA	BURTCH CREEK	1920	362	
SANILAC	ISLES ROAD	ELK CREEK DRAIN	1920	302	X
SANILAC	KILGORE ROAD	BLACK CREEK DRAIN	1920	302	
SANILAC	LAMTON ROAD	GREENMAN DRAIN	1933	302	X
SANILAC	LESLIE ROAD	MID BRANCH CASS RIVER	1905		X
SANILAC	M-19	BRANCH CASS RIVER	1952	104	
SANILAC	M-19	BRANCH OF CASS CREEK	1939	302	
SANILAC	M-19	MID BRANCH CASS RIVER	1952	104	
SANILAC	M-25	(NO NAME) CREEK	1948	219	
SANILAC	M-25	BIG CREEK	1934		X
SANILAC	M-25	CARMODY CREEK	1942	219	
SANILAC	M-25	CHERRY CREEK	1934		X
SANILAC	M-25	FORESTER CREEK	1934		X
SANILAC	M-25	INDIAN CREEK	1949	302	
SANILAC	M-25	MILL CREEK	1930		X
SANILAC	M-25	SHERMAN CREEK	1939	104	
SANILAC	M-46	BLACK RIVER	1947	332	

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County	Route	Feature intersected	Year	Type	Int
SANILAC	M-46	S BRANCH CASS RIVER	1930	302	X
SANILAC	M-46	WHITE CREEK	1932	104	X
SANILAC	M-53	WHITE CREEK	1926	302	X
SANILAC	M-90	BLACK RIVER	1948	302	
SANILAC	M-90	EAST BRANCH MILLS CR	1922	302	
SANILAC	M-90	MILLS CREEK	1940	101	
SANILAC	M-90	SPRING CREEK	1922	302	
SANILAC	M-90	WEST BRANCH MILLS CR	1922	302	
SANILAC	MARLETTE ROA	POTTS DRAIN	1930	302	
SANILAC	MARLETTE ROA	S.BRANCH OF CASS RIVE	1950	302	X
SANILAC	MELVIN ROAD	ELK CREEK DRAIN	1930	302	
SANILAC	MILLAN ROAD	SETTER DRAIN	1930	302	
SANILAC	MILLS ROAD	BLACK RIVER DRAIN	1930	302	
SANILAC	MORRIS ROAD	BEALS & FRIZZLE DRAIN	1910	302	X
SANILAC	PALDI ROAD	ELK CREEK DRAIN	1950	302	
SANILAC	RIDGE ROAD	BISHOP DRAIN	1920	302	X
SANILAC	RUTH ROAD	BLACK RIVER DRAIN	1952	302	
SANILAC	SHABBONA ROA	S BRANCH CASS RIVER	1950	302	X
SANILAC	SHELDON ROAD	DONALDSON DRAIN	1930	332	
SANILAC	SHERIDAN LINE	SPEAKER-MAPLE VALLE	1910	302	X
SANILAC	SNOVER ROAD	MID BRANCH CASS RIVER	1930	302	
SANILAC	STILSON ROAD	ARNOT DRAIN	1930	362	
SANILAC	STILSON ROAD	MCDONALD DRAIN	1950	302	
SANILAC	STINSON ROAD	ELK CREEK DRAIN	1920	302	
SANILAC	WHEELER ROAD	S FORK OF N BRANCH CA	1950	302	
SANILAC	WILDCAT ROAD	BURTCH CREEK	1930	101	
SCHOOLCR	CO. RD(P-440)	INDIAN RIVER	1950	302	
SCHOOLCR	COUNTY ROAD	BEAR CREEK	1925	352	
SCHOOLCR	FOX RIVER RD P	FOX RIVER	1938	302	
SCHOOLCR	M-28	CLARKS DRAIN	1953	104	
SCHOOLCR	M-28	COMMENCEMENT CREEK	1954	302	
SCHOOLCR	M-28	CREIGHTON CREEK	1952	302	
SCHOOLCR	M-28	DRIGGS RIVER	1953	332	
SCHOOLCR	M-28	HOLLAND CREEK	1954	104	
SCHOOLCR	M-28	WALSH CREEK	1953	104	
SCHOOLCR	M-28 M-77	FOX RIVER	1953	302	
SCHOOLCR	M-77	E BRANCH FOX RIVER	1953	332	
SCHOOLCR	M-77	HOLLAND CREEK	1928	302	
SCHOOLCR	M-77	MANISTIQUE RIVER	1955	302	
SCHOOLCR	M-94	INDIAN RIVER	1954	332	
SCHOOLCR	PORT INLAND R	BULLDOG CREEK	1932	104	
SCHOOLCR	PORT INLAND R	MILAKOKIA RIVER	1931	302	
SHIAWASSE	ALLAN ROAD	PORTER CREEK	1925	302	
SHIAWASSE	AUSTIN ROAD	MAPLE RIVER	1908	372	X
SHIAWASSE	BENNINGTON R	BEAR CREEK	1925	302	
SHIAWASSE	BINGHAM ROAD	NORTH STATE DRAIN	1948	302	
SHIAWASSE	BRADEN ROAD	S BR LOOKINGGLASS RIV	1950	302	
SHIAWASSE	BRITTON ROAD	LOOKINGGLASS RIVER	1930	302	
SHIAWASSE	COUNTY LINE R	WEBB CREEK	1927	302	
SHIAWASSE	DURAND ROAD	NORTHWOOD CREEK	1930	302	X
SHIAWASSE	GENESEE STREE	MISTEGUAY CREEK	1947	302	
SHIAWASSE	HENDERSON RO	PORTER CREEK	1934	302	
SHIAWASSE	HIBBARD ROAD	ALDER CREEK	1928	302	
SHIAWASSE	HIBBARD ROAD	BEAR CREEK	1927	121	
SHIAWASSE	JUDDVILLE ROA	MISTEGUAY CREEK	1944	302	

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County	Route	Feature intersected	Year	Type	Int
SHIAWASSE	JUDDVILLE ROA	PORTER CREEK	1935	302	X
SHIAWASSE	LANSING ROAD	LOOKINGGLASS RIVER	1931	302	
SHIAWASSE	M-21	THOMPSON DRAIN	1924	104	
SHIAWASSE	M-52	LOOKING GLASS RIVER	1928	352	X
SHIAWASSE	M-52	SHIAWASSEE RIVER	1939	302	X
SHIAWASSE	M-71	SHIAWASSEE RIVER	1931	302	
SHIAWASSE	MASON ROAD	MIDDLEBURY COUNTY D	1938	302	X
SHIAWASSE	MORRICE ROAD	LOOKINGGLASS RIVER	1952	332	
SHIAWASSE	NEW LOTHROP	ONION CREEK	1937	302	
SHIAWASSE	NEW LOTHROP	SHIAWASSEE RIVER	1955	332	
SHIAWASSE	NEWBURG ROA	SHIAWASSEE RIVER	1931	352	
SHIAWASSE	OLIVER STREET	SHIAWASSEE RIVER	1952	332	
SHIAWASSE	SAGINAW STRE	PORTER CREEK	1925	302	
SHIAWASSE	SEYMOUR ROA	SIX MILE CREEK	1925	104	
SHIAWASSE	SHIPMAN ROAD	RUSHBED CREEK	1930	302	
SHIAWASSE	STATE ROAD	LOOKINGGLASS RIVER	1938	302	
SHIAWASSE	STATE ROAD	SIX MILE CREEK	1940	302	
SHIAWASSE	TEMP I-69	S BR LOOKING GLASS R	1931	302	
SHIAWASSE	VERNON ROAD	PORTER CREEK	1938	302	
SHIAWASSE	WARREN ROAD	MIDDLEBURY COUNTY D	1940	302	X
SHIAWASSE	WOODBURY RO	LOOKINGGLASS RIVER	1945	303	
ST. CLAIR	BRAIDWOOD RO	BELLE RIVER	1940	302	
ST. CLAIR	BRICKER ROAD	MILL CREEK	1940	302	
ST. CLAIR	BRYCE ROAD	PINE RIVER	1923	302	
ST. CLAIR	CASTOR ROAD	NEATON DRAIN	1940	302	
ST. CLAIR	CHARTIER ROA	MARINE CITY DREDGE C	1922	119	
ST. CLAIR	COVE ROAD	UNNAMED CREEK	1921	104	
ST. CLAIR	CRIBBINS ROAD	UNNAMED CREEK	1940	302	X
ST. CLAIR	DIVISION ROAD	BELLE RIVER	1941	302	
ST. CLAIR	DUCE ROAD	JACKSON DRAIN	1922	302	
ST. CLAIR	I-94	M-25 & CSX RR (ABN)	1953	352	
ST. CLAIR	JEDDO ROAD	MILL CREEK	1940	302	
ST. CLAIR	KILBURN ROAD	PLUM CREEK	1922	302	
ST. CLAIR	LAMBS ROAD	SPENCER DRAIN	1922	104	
ST. CLAIR	LAMBS ROAD	SPENCER DRAIN	1930	362	X
ST. CLAIR	M-19	MILL CR	1928	382	
ST. CLAIR	M-19	PINE R	1947	302	X
ST. CLAIR	M-21	BR PINE R	1947	302	
ST. CLAIR	M-21	COWHEY CR	1953	104	
ST. CLAIR	M-21	COWHEY CR	1953	104	
ST. CLAIR	M-25	BURTCH CR	1948	302	
ST. CLAIR	M-25	DOE CREEK	1948	302	X
ST. CLAIR	M-29	BELLE RV	1938		X
ST. CLAIR	M-29	COX:S CR	1952	302	
ST. CLAIR	MAIN STREET	SMITHS CREEK	1922	121	
ST. CLAIR	MARINE CITY H	BEAUBIEN CREEK DRAIN	1946	302	
ST. CLAIR	MARINE CITY H	MARSAC CREEK DRAIN	1946	302	X
ST. CLAIR	MARINE CITY H	MELDRUM DRAIN	1946	302	
ST. CLAIR	MARINE CITY H	SWAN CREEK	1943	302	
ST. CLAIR	MARINE CITY H	UNNAMED CREEK	1946	302	
ST. CLAIR	NORMAN ROAD	GALLEY DRAIN	1930	362	
ST. CLAIR	ONEIL ROAD	S. BR. PINE RIVER	1930	302	X
ST. CLAIR	PARKER ROAD	HOWE DRAIN	1930	362	
ST. CLAIR	SHORT CUT ROA	SWAN CREEK	1950	303	
ST. CLAIR	SOUTH MAIN ST	MILL CREEK	1946	302	

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County	Route	Feature intersected	Year	Type	Int
ST. CLAIR	SPERRY ROAD	BELLE RIVER	1948	302	
ST. CLAIR	ST. CLAIR HWY.	BELLE RIVER	1947	302	
ST. CLAIR	STARVILLE ROA	BEAUBIEN CREEK	1945	302	
ST. CLAIR	WATER ST	I-94	1953	332	
ST. CLAIR	WEBB ROAD	RILEY-WALES DRAIN	1930	362	
ST. CLAIR	YALE ROAD	EVES DRAIN	1922	121	
ST. JOSEPH	COWLES ROAD	PRAIRIE BROOK	1935	302	
ST. JOSEPH	DELONG ROAD	ROCKY RIVER	1927	362	
ST. JOSEPH	FLOATING BRID	ROCKY RIVER	1920	302	X
ST. JOSEPH	FLOWERFIELD	FLOWERFIELD CREEK	1920	302	
ST. JOSEPH	HALLUMM	CREEK	1925	362	
ST. JOSEPH	KIME ROAD	FAWN RIVER	1930	302	
ST. JOSEPH	KLINGER LAKE	SHERMAN MILL CREEK	1920	302	
ST. JOSEPH	LUTZ RD-OLD 1	PRAIRIE RIVER	1933	302	X
ST. JOSEPH	M-103	WHITE PIGEON CREEK	1931	302	
ST. JOSEPH	M-60	WOODLAKE DRAIN	1929	104	
ST. JOSEPH	M-60 & M-66	NOTTAWA CREEK	1931	302	
ST. JOSEPH	M-66	PRAIRIE RIVER	1931	332	X
ST. JOSEPH	M-86	PRAIRIE RIVER	1932	302	
ST. JOSEPH	M-86	SWAN CREEK	1932	302	
ST. JOSEPH	SHERMAN MILL	SHERMAN MILL CREEK	1924	362	
ST. JOSEPH	STOWELL ROAD	ST JOSEPH RIVER	1950	302	
ST. JOSEPH	US-131 NB	ROCKY RIVER	1951	302	X
ST. JOSEPH	WATTLES ROAD	CREEK	1950	302	
TUSCOLA	ARTHUR ROAD	SOUTH BR. WHITE CREEK	1940	302	
TUSCOLA	BAY CITY-FORE	BRKFLD EXT-COLUMBIA-	1930	302	
TUSCOLA	BOY SCOUT RO	SUCKER CREEK	1935	302	X
TUSCOLA	BUELL ROAD	MILLINGTON CREEK	1930	302	X
TUSCOLA	CASS CITY ROA	ALLEN DRAIN	1930	302	X
TUSCOLA	CASS CITY ROA	BACH DRAIN	1930	332	
TUSCOLA	CASS CITY ROA	LATIMER OR ALLEN RELI	1940	302	
TUSCOLA	CASS CITY ROA	SOUTHGATE DRAIN	1945	302	X
TUSCOLA	CASS CITY ROA	STATE & COLLING DRAIN	1925	302	X
TUSCOLA	CEMETERY ROA	WHITE CREEK DRAIN #2	1940	302	
TUSCOLA	CHAMBERS ROA	CASS RIVER	1947	302	
TUSCOLA	COLWOOD ROA	CARLTON INTER-CO. DR	1930	302	
TUSCOLA	DECKERVILLE R	N BR WHITE CREEK DRAI	1930	302	
TUSCOLA	DICKERSON RO	LATIMER OR ALLEN RELI	1940	332	X
TUSCOLA	ELMWOOD ROA	ALLEN DRAIN	1935	302	
TUSCOLA	ELMWOOD ROA	BELDEN CREEK DRAIN	1936	332	
TUSCOLA	ELMWOOD ROA	N BR CASS CREEK	1910	302	X
TUSCOLA	ELMWOOD ROA	WISCOGGIN & BRANCHES	1936	332	
TUSCOLA	GARNER ROAD	NORTHWEST DRAIN OUT	1932	302	X
TUSCOLA	GOTHAM ROAD	TUTTLEVILLE DRAIN	1945	302	
TUSCOLA	HARMON LAKE	S. O. DRAIN	1917	302	
TUSCOLA	HOBART ROAD	KING DRAIN	1940	302	X
TUSCOLA	LEE HILL ROAD	SUCKER CREEK DRAIN	1930	302	X
TUSCOLA	LEGG ROAD	WHITE CREEK DRAIN #2	1942	332	
TUSCOLA	LOOMIS ROAD	AKRON CENTERLINE DRA	1922	302	X
TUSCOLA	LOOMIS ROAD	ALLEN DRAIN	1930	362	
TUSCOLA	LOOMIS ROAD	WISCOGGIN & BRANCHES	1930	302	X
TUSCOLA	LOREN ROAD	PERRY CREEK	1925	302	X
TUSCOLA	M-15	CASS RIVER	1938	302	
TUSCOLA	M-15	CHEBOYGANING CREEK	1929	104	
TUSCOLA	M-15	CHEBOYGANING CREEK	1929	104	X

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County	Route	Feature intersected	Year	Type	Int
TUSCOLA	M-15	GOODINGS CREEK	1931	104	
TUSCOLA	M-25	(NO NAME) DRAIN	1932	104	
TUSCOLA	M-25	QUANICASSEE RIVER	1931	332	
TUSCOLA	M-25	WISCOGGIN DRAIN	1941	302	
TUSCOLA	M-46	CASS RIVER	1934	332	X
TUSCOLA	M-46	SUCKER CREEK	1931	104	X
TUSCOLA	M-46	SUCKER CREEK	1931	201	X
TUSCOLA	M-81	MARSH DRAIN	1939	104	
TUSCOLA	OLD STATE ROA	NORTHWEST DRAIN OUT	1926	362	X
TUSCOLA	ORMES ROAD	MILLINGTON CREEK	1940	332	X
TUSCOLA	RINGLE ROAD	ALLEN DRAIN EXTENSIO	1953	302	
TUSCOLA	SHERIDAN ROA	GOODING CREEK	1925	101	X
TUSCOLA	SNOVER ROAD	BEACH DRAIN	1935	302	X
TUSCOLA	THOMAS ROAD	ALLEN DRAIN EXTENSIO	1940	302	
TUSCOLA	THOMAS ROAD	LUTHER DRAIN	1950	319	
TUSCOLA	TURNER ROAD	SUCKER CREEK DRAIN	1935		X
TUSCOLA	VAN BUREN RO	SHEBOYGAN DRAIN	1940	302	
TUSCOLA	VAN GEISEN RO	NORTHWEST DRAIN	1930	362	X
TUSCOLA	VASSAR ROAD	MILLINGTON CREEK	1930	332	
TUSCOLA	WATERMAN RO	EVERGREEN CREEK	1930		X
TUSCOLA	WHITE CREEK R	WHITE CREEK DRAIN #2	1936	332	X
VAN BURE	16TH AVENUE	BLACK RIVER	1900	700	X
VAN BURE	16TH AVENUE	CEDAR CREEK	1925	362	X
VAN BURE	18TH AVENUE	MENTHA DRAIN	1920	702	
VAN BURE	18TH AVENUE	TRIB TO S BR OF BLACK R	1903	372	X
VAN BURE	24TH AVENUE	S BR BLACK RIVER	1925	101	
VAN BURE	28TH AVENUE	S BR BLACK RIVER	1940		X
VAN BURE	2ND AVENUE	MENTHA DRAIN	1950	302	Y
VAN BURE	3750TH STREET	BRANDYWINE CREEK	1920	362	X
VAN BURE	38TH AVENUE	BRANDYWINE CREEK	1920	702	
VAN BURE	46TH STREET	E BR OF DOWAGIAC CRE	1930	302	
VAN BURE	48TH AVENUE	PAW PAW RIVER	1930	302	
VAN BURE	5TH AVENUE	MENTHA DRAIN	1928	342	X
VAN BURE	61ST STREE	BLACK RIVER	1900	700	X
VAN BURE	BLUE STAR ME	ROGERS CREEK	1931	119	
VAN BURE	BLUE STAR ME	BRANDYWINE CREEK	1931	119	
VAN BURE	CR 380 , 20TH A	S BR BLACK RIVER	1931	302	
VAN BURE	CR 681	PAW PAW RIVER	1931	302	
VAN BURE	M-140	DEERLICK CREEK	1948	219	
VAN BURE	M-40	PAW PAW RIVER	1925	121	
VAN BURE	M-43	BRANDYWINE CREEK	1948	402	
VAN BURE	M-43	CEDAR CREEK	1941	219	
VAN BURE	M-43	MAPLE BROOK	1939	219	
VAN BURE	M-51	DOWAGIAC CREEK	1953	104	
VAN BURE	N PAW PAW STR	MILL RACE	1940	302	X
VAN BURE	RED ARROW HI	PINE RIVER	1940	104	X
VAN BURE	RED ARROW HI	TRIB TO PAW PAW RIVER	1940	104	
VAN BURE	RUGGLES ROAD	DRAIN TO LAKE MICHIG	1955	119	
VAN BURE	SOUTH HAVEN	MAPLE BROOK	1935	302	X
VAN BURE	ST JOSEPH ST	BRUSH CREEK	1949	302	
WASHTENA	8-MILE ROAD	TOBIN DRAIN	1927	362	
WASHTENA	ARKONA ROAD	SUGAR CREEK	1926	505	X
WASHTENA	AUSTIN ROAD	BAVER DRAIN	1932	104	
WASHTENA	AUSTIN ROAD	SALINE RIVER	1939	302	
WASHTENA	CHALMERS ROA	PITTSFIELD ANN ARBOR	1951	101	

APPENDIX B

County	Route	Feature intersected	Year	Type	Int
WASHTENA	DANCER ROAD	MILL CREEK	1928	302	
WASHTENA	DEXTER MAIN S	MILL CREEK	1932	302	
WASHTENA	DEXTER-PINCK	PORTAGE LAKE CANEL	1920	121	
WASHTENA	FORD BOULEVA	NYC RAILROAD	1943	505	X
WASHTENA	GEDDES ROAD	FOWLER CREEK	1925	104	
WASHTENA	HITCHINGHAM	STONY CREEK	1927	302	
WASHTENA	HURON RIVER D	HURON RIVER	1931	302	
WASHTENA	JACKSON AVEN	MILL CREEK	1937	104	
WASHTENA	JACKSON AVEN	MILL CREEK	1936	302	
WASHTENA	KLINGER ROAD	MILL CREEK	1929	302	
WASHTENA	LIBERTY ROAD	MILL CREEK	1932	302	
WASHTENA	M-52	LETTS DRAIN	1951	104	
WASHTENA	M-52	RAISIN RIVER	1939	302	
WASHTENA	MAIN ST-WHIT	HORSESHOE LAKE OUTL	1920	104	
WASHTENA	MAIN STREET	RIVER RAISIN	1908	505	X
WASHTENA	MCGREGOR RO	PORTAGE LAKE OUTLET	1947	302	
WASHTENA	MILLER ROAD	HONEY CREEK	1947	302	
WASHTENA	PARKER ROAD	MILL CREEK	1936	303	
WASHTENA	RIDGE ROAD	MACON CREEK	1948	302	
WASHTENA	ROSBOLT ROAD	PAINT CREEK	1928	302	
WASHTENA	STADIUM BOUL	SOUTH STATE STREET	1928	505	X
WASHTENA	TEXTILE ROAD	PAINT CREEK	1930	101	
WASHTENA	TORREY ROAD	BIG MARSH DRAIN	1929	302	
WASHTENA	TREATMENT PL	HURON R.	1934	302	
WASHTENA	US-12	AA RAILROAD	1924		X
WASHTENA	WHITTAKER RO	PAINT CREEK	1932	302	
WASHTENA	WILLIS ROAD	PAINT CREEK	1926	101	
WAYNE	ALFRED	GRAND TRUNK RR	1929	342	
WAYNE	ALLEN ROAD	BROWNSTOWN CREEK	1925	101	X
WAYNE	BEAUBIEN ST	I-94	1955	332	
WAYNE	BEECH-DALY R	MIDDLE ROUGE RIVER	1953	201	
WAYNE	BELL ROAD	SWAN CREEK	1952	432	
WAYNE	BRUSH ST	I-94	1955	332	
WAYNE	BURNS AVE	I-94	1955	332	
WAYNE	CALVERT AVE	M-10	1955	432	
WAYNE	CHICAGO BLVD	M-10	1955	432	
WAYNE	CHURCH ROAD	THOROFARE CANAL	1939	303	
WAYNE	CLAIRMOUNT A	M-10	1954	432	
WAYNE	DENTON ROAD	BELLEVILLE LK HURON R	1947	432	
WAYNE	DENTON ROAD	FOWLER CREEK	1900	332	X
WAYNE	DEXTER-BELDE	M-10	1955	432	
WAYNE	E. N. HINES DRI	MIDDLE ROUGE RIVER	1932	104	X
WAYNE	E. N. HINES DRI	MIDDLE ROUGE RIVER	1932	204	X
WAYNE	E. N. HINES DRI	MIDDLE ROUGE RIVER	1932	204	X
WAYNE	E. N. HINES DRI	MIDDLE ROUGE RIVER	1932	204	X
WAYNE	E. N. HINES DRI	MIDDLE ROUGE RIVER	1932	204	X
WAYNE	ELBA DRIVE	ELBA CANAL	1934	201	X
WAYNE	EUCLID AVENU	M-10	1954	432	
WAYNE	FIVE MILE ROA	BELL CREEK	1925	104	X
WAYNE	FRANK ST	N BR ECORSE RIVER	1948	104	
WAYNE	FRONTENAC AV	I-94	1955	332	
WAYNE	GARFIELD STRE	UPPER ROUGE RIVER	1948	402	
WAYNE	GEDDES ROAD	FOWLER DRAIN	1925	342	X
WAYNE	GEDDES ROAD	SINES DRAIN	1925	342	X
WAYNE	GLENDALE AVE	M-10	1955	432	

APPENDIX B

County	Route	Feature intersected	Year	Type	Int
WAYNE	GREENLAWN A	M-10	1955	432	
WAYNE	GRISWOLD STRE	MIDDLE ROUGE RIVER	1928	219	
WAYNE	GRIX ROAD	SILVER CREEK	1935	302	X
WAYNE	GROSSE ILE PAR	ELIZABETH PARK CANAL	1931	111	X
WAYNE	GULLEY RD	LOW BRANCH ROUGE RIV	1935	302	X
WAYNE	HAGGERTY ROA	LOWER ROUGE RIVER	1931	332	X
WAYNE	HANFORD ROA	FELLOWS CREEK	1944	101	X
WAYNE	HANNAN ROAD	LOWER ROUGE RIVER	1955	201	
WAYNE	HAWTHORNE D	MIDDLE ROUGE RIVER	1950	302	X
WAYNE	I-75	NORTH HURON RIVER DR	1954	332	
WAYNE	INKSTER ROAD	MIDDLE ROUGE RIVER	1930	104	X
WAYNE	INKSTER ROAD	UPPER ROUGE RIVER	1935	104	X
WAYNE	ISLAND DRIVE	MIDDLE ROUGE RIVER	1940	402	X
WAYNE	JEFFERSON AVE	GRAND TRUNK RR	1923	342	
WAYNE	JEFFERSON AVE	BLAKELY DRAIN	1924	104	X
WAYNE	JEFFERSON AVE	FRANK & POET DRAIN	1936	101	
WAYNE	JOHNSON DR/SH	MIDDLE ROUGE RIVER	1933	119	X
WAYNE	JOY ROAD	TONQUISH CREEK	1928	101	X
WAYNE	JOY ROAD	UPPER ROUGE RIVER	1927	104	X
WAYNE	KING ROAD	BLAKELY DRAIN	1933	104	
WAYNE	KING ROAD	BROWNSTOWN CREEK	1933	101	
WAYNE	KINLOCH STREE	UPPER ROUGE RIVER	1934	104	X
WAYNE	LAFAYETTE STR	GRAND TRUNK W RR	1924	402	
WAYNE	LARNED STREE	GRAND TRUNK W RR	1923	402	
WAYNE	LELAND DRIVE	SILVER CREEK CANAL	1930	101	
WAYNE	LILLEY ROAD	TONQUISH CREEK	1946	101	X
WAYNE	LINWOOD AVE	M-10	1955	432	
WAYNE	LIVERNOIS AVE	M-10	1955	432	
WAYNE	LOTZ ROAD	LOWER ROUGE RIVER	1952	201	
WAYNE	M-14	WILLOW CR	1926	101	
WAYNE	M-3	CONRAIL	1924	332	
WAYNE	M-5 EB	ROUGE R	1914	104	
WAYNE	M-5 WB	ROUGE R	1925	104	
WAYNE	MARLEY DRIVE	CANAL (EAST)	1949	402	
WAYNE	MARLEY DRIVE	CANAL (MIDDLE)	1946	302	
WAYNE	MARLEY DRIVE	CANAL (WEST)	1946	302	
WAYNE	MERIDIAN ROA	THOROFARE CH(GROSSE	1929	342	X
WAYNE	MERRIMAN ROA	LOWER ROUGE RIVER	1929	104	X
WAYNE	MERRIMAN ROA	MIDDLE ROUGE RIVER	1929	104	X
WAYNE	MT ELLIOT ST	I-94	1955	332	
WAYNE	NORTHVILLE PA	MIDDLE ROUGE RIVER	1945	302	
WAYNE	NORTHVILLE R	MIDDLE ROUGE RIVER	1928	219	
WAYNE	OAKMAN BLVD	M-10	1955	432	
WAYNE	OAKVILLE-WAL	SWAN CREEK	1927	332	X
WAYNE	OUTER DRIVE	JOY ROAD	1927	111	X
WAYNE	OUTER DRIVE	UPPER ROUGE RIVER	1927	104	
WAYNE	PICNIC	CANOE STREAM	1901	342	
WAYNE	PLYMOUTH RO	HINES DRIVE	1934	107	X
WAYNE	PLYMOUTH RO	MIDDLE ROUGE RIVER	1900	111	X
WAYNE	PORTER ST	N BR ECORSE RIVER	1948	104	
WAYNE	PROCTOR ROAD	LOWER ROUGE RIVER	1955	201	
WAYNE	RIDGE ROAD	MIDDLE ROUGE JOHN SO	1938	302	X
WAYNE	SCOTTEN AVE	US-12	1941	321	
WAYNE	SEVEN MILE RO	MIDDLE ROUGE RIVER	1954	201	
WAYNE	SEVEN MILE RO	N/BRANCH JOHNSON DR	1934	111	X

APPENDIX B

County	Route	Feature intersected	Year	Type	Int
WAYNE	SEVEN MILE RO	TARABUSI DRAIN	1935	104	X
WAYNE	SEVEN MILE RO	UPPER ROUGE RIVER	1928	104	X
WAYNE	SEWARD AVEN	M-10	1954	432	
WAYNE	SIBLEY ROAD	FRANK & POET DRAIN	1938	101	X
WAYNE	SIX MILE ROAD	JOHNSON DRAIN	1900	342	X
WAYNE	SOUTHERN AVE	WYOMING AVENUE	1925	442	
WAYNE	SOUTHFIELD RO	ECORSE CREEK	1924	432	X
WAYNE	US-12 EB	APPLE RUN DRAIN	1929	119	
WAYNE	US-12 EB	US-24	1937	332	
WAYNE	US-12 WB	APPLE RUN DRAIN	1929	119	
WAYNE	US-12 WB	US-24	1937	332	
WAYNE	US-24	SILVER CREEK	1922	104	
WAYNE	VAN HORN ROA	BLAKELY DRAIN	1934	104	X
WAYNE	VISTA	CANOE STREAM	1913	505	X
WAYNE	WARREN AVEN	UPPER ROUGE RIVER	1930	104	X
WAYNE	WARREN ROAD	MIDDLE ROUGE RIVER	1929	104	X
WAYNE	WEBB AVE	M-10	1955	432	
WAYNE	WEST ROAD	SILVER CREEK		101	
WAYNE	WILKINS	GRAND TRUNK RR	1930	342	
WAYNE	WILLOW ROAD	HURON RIVER	1922	211	X
WAYNE	WOODSIDE	CANOE STREAM	1901	342	X
WEXFORD	AYER STREET	CLAM RIVER	1900	319	
WEXFORD	HAYNES STREE	CLAM RIVER	1952	101	
WEXFORD	LAKE STREET	CLAM RIVER	1940	232	
WEXFORD	M-115	MANISTEE RIVER	1949	302	
WEXFORD	M-37	MANISTEE RIVER	1934	302	
WEXFORD	M-37	SLAGLE CREEK	1954	104	
WEXFORD	M-37 M-115	MDOT RAILROAD	1935	302	
WEXFORD	M-42	CEDAR CREEK	1925	104	
WEXFORD	NO 1 ROAD	SLAGLE CREEK	1940	702	
WEXFORD	NO 10 ROAD	MANTON CREEK	1934	362	X
WEXFORD	NO 12 ROAD	MANTON CREEK	1900	462	X
WEXFORD	NO 12.5 ROAD	SILVER CREEK	1920	362	X
WEXFORD	NO 14 ROAD	MANTON CREEK	1900	402	X
WEXFORD	NO 41 ROAD	MANTON CREEK	1900	462	X
WEXFORD	NO 7.5 ROAD	SLAGLE CREEK	1900	402	X
WEXFORD	RIVER STREET	CLAM RIVER	1940	204	
WEXFORD	US-131	CLAM RIVER	1935	302	

APPENDIX C: MAIN STRUCTURE TYPE CODES

Year	Type	Code
1950
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MICHIGAN STRUCTURE INVENTORY CODING INSTRUCTIONS

Coded on
Card: 3

INVENTORY ITEM 43 - Main Structure Type

3 digits
Col. 49-51

The codes are for the main spans. The first digit of the three-digit code indicates type of design and kind of material of the main supporting members and the second and third digits indicate type of design and/or construction.

Special Michigan sub-types shown indented with "*" convert to Federal code immediately above it and are for optional use by local governments.

1	Concrete	00	Other
2	Concrete continuous	01	Slab
3	Steel, simple or Cant.		(71 Slab Timber - Composite
4	Steel continuous	02	Multi-Stringer, W or I-Beam, Non-composite
5	Prestress concrete		(32 Multi-Stringer, W or I-Beam, Composite
6	Prestress concrete continuous		(42 Multi-Stringer, W or I-Beam, Encased
7	Timber		(52 Multi-Stringer, Plate Girder, Non-composite
8	Masonry		(62 Multi-Stringer, I-Beam, Jack Arch Floor
9	Aluminum, W.I. or C.I.		(72 Multi-Stringer, W or I-Beam, Timber Floor
0	Other		(82 Multi-Stringer, Plate Girder, Composite
			(92 Multi-Stringer, Plate Girder, Encased
		03	Girder & Floorbeam - Deck, Non-composite
			(33 Girder & Floorbeam - Composite Girder
			(21 Girder - Thru (Include conc. Camelbacks)
		04	Tee Beam or inverted channel
		05	Box Beam or Girders - Multiple
		06	Box Beam or Girders - Single or spread (segmental)
		07	Frame - Rigid or other (culvert)
		08	Orthotopic
		09	Truss - Deck
		10	Truss - Thru & Pony (343-Thru; 344-Pony)
		11	Arch - Deck, Filled Spandrel
			(22 Arch - Deck, Open Spandrel
		12	Arch - Thru
		13	Suspension
		14	Stayed Girder
		15	Movable - Lift
		16	Movable - Bascule
		17	Movable - Swing
		18	Tunnel
		19	Culvert (Box, Pipe or Pipe Arch)
		20	Mixed types (Note: applicable only to approach span - Item 44)
		21	Segmental Box Girder

Example:

Timber Through Truss	Code
Masonry Culvert	710
Steel Suspension	819
Continuous Concrete Multiple	313
Box Girders	205
Simple Span Concrete Slab	101
Tunnel in rock	018