Guide to the Records of the

Office of the Secretary of State
Division of Archives and Records Management
Olympia, Washington
April 2004
Guide to the Records of the

Washington State
Toll Bridge Authority
1937 - 1977

Compiled by
Kathleen Waugh

Office of the Secretary of State
Division of Archives and Records Management
Olympia, Washington

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TOLL BRIDGE AUTHORITY

The Toll Bridge Authority was created by the Legislature in 1937. The state wanted to improve transportation routes by building bridges but had been hampered by restrictions regarding bonding in Article VIII of the state constitution. Therefore the Toll Bridge Authority was given the power to issue revenue bonds which were not limited by Article VIII. It was to select, fund, build and operate bridges which would probably not win approval in a statewide levy. The revenues from the operation of the bridges would pay off the bonds.

The membership of the Authority originally consisted of the Governor, the State Auditor, the Director of the Public Service Commission, the Director of Highways, and the Director of the Department of Finance, Budget and Business. By the time the Authority was dissolved in 1977, the membership consisted of the Governor, two members of the State Highway Commission appointed by the Commission, and two other members appointed by the Governor. The Director of the Highways Department was an ex officio, nonvoting member.

The first two major projects were the Lake Washington Bridge and the Tacoma Narrows Bridge. A bridge across Lake Washington Bridge, from the eastern shore to Mercer Island and beyond to Seattle, had been proposed and debated for at least twenty years. Various citizens’ groups, private companies, and King County had all planned bridges but been unable to obtain financing. The newly-created Washington State Toll Bridge Authority was able to get federal Public Works Administration funds to begin the bridge. Both a suspension bridge and a girder bridge were dismissed as too expensive, so the bridge consisted of twenty-five concrete pontoons, 350 feet long, 60 feet wide, and 14.5 feet deep. Each was divided into many watertight cells. They were bolted together end-to-end and attached to anchors on the lakebed with steel cables. The Lake Washington Bridge was the longest floating span in the world at 6,620 feet, and the first ever floating drawspan. More than 3,000 workers had been employed on the bridge by the time it was opened on July 2, 1940, by Governor Martin. Tolls paid were sufficient to retire the $5,500,000 bonds, and render the bridge toll-free, exactly nine years later.

The Lake Washington Bridge was renamed the Lacey V. Murrow Bridge in 1967 in honor of the former Director of the Department of Highways. In 1981, the “bulge” of the drawspan, which opened to allow ships to pass but which had proved a traffic hazard, was removed and replaced by fixed pontoon sections. On November 25, 1990, the bridge broke apart in a storm and eight of the pontoons sank. Work on a new Lacey V. Murrow Bridge began almost immediately, incorporating lessons learned from the previous fifty years.

The Tacoma Narrows Bridge was built simultaneously with the Lake Washington Bridge, financed by bonds totaling $3,520,000, and opened to the public on July 1, 1940. It was the third-longest suspension bridge ever built, and the slimmest ever in relation to its length. Partly because of the latter characteristic, the bridge ripped apart in a high wind and crashed into Puget Sound after only four months of service. More than ten years
passed before the new Tacoma Narrows Bridge rose on the same site. For more detailed information on this bridge, see pages 36-58.

In 1947, the state bought and rehabilitated the seventeen-year-old toll bridge crossing the Columbia River at Longview, having sold bonds for the purpose totaling $3,650,000. The bonds were retired in 1965 and tolls removed from the bridge as Washington Governor Dan Evans and Oregon Governor Mark Hatfield held a brief bond-burning ceremony.

The Agate Pass Bridge connecting the north end of Bainbridge Island to the Kitsap Peninsula was built with a $1,650,000 bond issue in 1950. This bridge became toll-free only a year later when highway bonds were sold and the revenues applied to retiring the bridge bonds.

In 1951, Washington State bought the Puget Sound Transportation Company’s fleet of “Black Ball Line” ferries, and the Toll Bridge Authority took on the responsibility of running and funding the ferry system. Many considered ferries to be only a stopgap measure to transport people until bridges were built across Puget Sound, which would replace all ferries. Much work went into planning as many as five cross-sound bridges, as well as bridges between the various San Juan Islands, before the idea was finally dropped. The only one of the cross-Sound bridges to be built was the Hood Canal Bridge (see page 7).

In August 1954 the Fox Island Bridge, connecting Fox Island with western Pierce County not far from Gig Harbor, was opened at a cost of $1,500,000 and operated as a toll bridge until 1965.

In Spokane, the Maple Street Bridge over the Spokane River was opened on August 8, 1958 at a cost of $6,000,000, and operated at a deficit for years, probably because of competition from two free bridges nearby.

In Bremerton, the state built a new bridge over Port Washington Narrows at Warren Avenue in 1958 and took over the twenty-eight-year-old Manette Bridge, for a combined cost of $5,375,000, which was paid off by 1973.

In 1929 the states of Washington and Oregon bought the bridge which crossed the Columbia River between Vancouver and Portland. The bridge had been built in 1917 by Clark County, Washington, and Multnomah County, Oregon. It was 23,000 feet long, including the approaches, and stood 150 feet above high water. In 1956 the states began building a new bridge over the Columbia River between Vancouver and Portland, and rebuilding and modernizing the existing older bridge on the site. The new bridge was opened in January 1960. The work was financed with a $14,500,000 bond which was retired in 1965, in a ceremony attended by two women who had cut the ribbon to open the bridge in 1917.
In eastern Washington, the Biggs Rapids Bridge (Sam Hill Memorial Bridge) between Maryhill, Washington, and Biggs, Oregon, opened on November 1, 1962, replacing a ferry that had operated in the area for many years. The bridge cost $3,500,000 and was paid off in June 1975.

In 1961, the Highways Department’s newly-established Toll Facilities Division took over building, maintaining and operating toll bridges and ferries, but the TBA continued to handle financing, bonds, leases and toll rates.

1961 saw the opening of the Hood Canal Bridge, stretching from the northern Kitsap Peninsula near Port Gamble to Shine on the Olympic Peninsula, about twenty-five miles from Port Townsend. This bridge replaced the Lofall-Southpoint ferry, three miles to the south, and was originally conceived as one of five cross-Sound bridges which would render the state ferry system obsolete. It was the first pontoon bridge anywhere to be built over an arm of the sea, subjecting it to waves, wind, and eighteen-foot fluctuations in the water level, and was 6,520 feet long. Two pontoons sank during construction; then joints between pontoons were damaged in storms. The design was altered and a new contractor hired.

The Hood Canal Bridge was opened fifteen months behind schedule and immediately began to suffer minor damage from waves and storms. In February, 1979, the entire western part of the bridge sank during a severe storm which had apparently shifted three of the bridge’s anchors. The drawspan floated 3,000 feet north before sinking. Ferry service was reinstituted until the western end of the bridge was rebuilt at great expense. The new bridge was designed to be much stronger. The anchors weighed three times as much as their predecessors and were filled with slag from the ASARCO copper smelter in Tacoma.

In 1963, the Second Lake Washington Bridge, or Evergreen Point Bridge, was opened, after fifteen years of pressure and debate over its exact location. The area east of Lake Washington had experienced tremendous population growth and needed more access to Seattle. Like the first Lake Washington Bridge, the second bridge was built of concrete pontoons, but was even longer, at 7,578 feet. It was later renamed after former Governor Albert D. Rosellini. It cost $35,000,000 and was paid off in June 1979, many years ahead of schedule.

The Vernita Bridge, 45 miles east of Yakima near the boundary of the United States Atomic Energy Reservation, was opened in October 1956, replacing a free ferry run by the Department of Highways. It cost $3,050,000 and was paid off by June 1977.

The 4-mile-long Astoria Bridge across the mouth of the Columbia River was opened in August 1966, replacing ferry service, and cost about $24,000,000. It is part of U. S. Highway 101 and was built by the Oregon Highway Department after being designed by Washington and Oregon engineers. It is the longest continuous three-span through-truss bridge in the world. It has successfully withstood floods and impressive Pacific storms. Tolls were removed in 1993.
The Department of Transportation was created September 21, 1977, and the Toll Bridge Authority held its last meeting two days earlier. The members reminisced about the many projects the Authority had overseen over the decades and Governor Dixy Lee Ray “then brought the meeting to an end by commenting that she felt the TBA has had a remarkable 40-year history . . . and it was with a sense of sadness that this was to be the last meeting.”

SCOPE AND CONTENT

The records in this collection document the operations of the Washington State Toll Bridge Authority. The Authority’s subject files include meeting minutes, correspondence, resolutions, and much information on bonds issued. There are files on each individual bridge which include agreements, audits, bonds, correspondence, engineering records, financial records, insurance information, investigations, maintenance records, plans, progress reports, publicity, studies, and traffic and revenue reports. Files on proposed tunnels include maps, plans and proposals. Files on the proposed Tacoma-Seattle-Everett Toll Road include correspondence, engineers’ reports, and right-of-way records.

NOTE ON THE ARRANGEMENT

These records were transferred to the State Archives from the Toll Bridge Authority, the Department of Highways, and the Department of Transportation, on many occasions over the past thirty-five years. They were in no particular order.

The records have been separated into four sections: subject files, files on individual bridges, files on tunnels, and files on the proposed Tacoma-Seattle-Everett Toll Road. They have been put into alphabetical order and placed in acid-free folders and acid-free boxes.
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History of the Tacoma Narrows Bridge

The city of Tacoma in Pierce County, Washington, is bordered on the west by Puget Sound, almost a mile wide even in the “Narrows” and characterized in this region by formidably deep swift currents. Across the water lies the Kitsap Peninsula, containing the city of Bremerton, the Puget Sound Naval Shipyard, towns, farms, hundreds of miles of beautiful coast line, and access to the Olympic Peninsula. For decades, it was easy for people to look at a map of southern Puget Sound, or to look out across the waters of the Sound itself, and envision the advantages of a bridge connecting the two areas. As early as 1889, a railroad bridge was proposed, but fifty years later there were still only two ways to get from the Tacoma area to the Kitsap and Olympic Peninsulas, or vice versa: driving south through Olympia and Shelton and then north again, or taking a ferry. The Skansonia, the Crosline and the City of Tacoma carried cars and passengers across the Tacoma Narrows for more than twenty years, but were a slow method of travel involving frequent delays.

The proposed bridge would provide many benefits. It would be in the interests of national defense to link the Shipyard with Fort Lewis, McChord Air Force Base, on which construction began in 1938, and Camp Murray. More tourists would visit the Olympic Mountains, Forest and Park if it were easier to get to them. “Development”-minded businesspeople wanted to sell shorefront and other property on the Peninsulas to homebuyers. Farm products and other raw materials could be transported more easily, and all sort of businesses wanted to attract more shoppers. During the Great Depression, construction projects such as a Tacoma Narrows bridge (and a floating bridge across Lake Washington) were ways to alleviate unemployment.

For years, private interests such as businessmen’s clubs and Chambers of Commerce tried to promote the idea of building a bridge to replace the ferry system. In 1932, Elbert Chandler, a civil engineer, envisioned a bridge somewhat south of the present site, organized a Tacoma Narrows Bridge Company and asked the federal Reconstruction Finance Commission for funds, which were denied. Two years later, the Legislature passed a bill permitting counties to build and operate toll bridges. Pierce County asked the federal Public Works Administration for funds, which were also denied, even though Governor Clarence Martin had set aside $700,000 of state money to meet federal requirements. Legislators continued to lobby the PWA.

As the urging of Governor Martin, the 1937 Legislature created the Washington State Toll Bridge Authority, which had the power to finance, construct and operate toll bridges. Immediately, the Pierce County Commissioners requested the Authority to study the feasibility of a bridge across the Narrows. The Legislature appropriated $25,000 for the study, which was completed in May 1938 with a request from the state to the Public Works Administration for money to design and build the Bridge. Plans and designs were drawn up by the Washington State Department of Highways, which also selected the site.

The PWA approved a grant of 45% of the costs with the Reconstruction Finance Commission loaning the rest, provided that independent consultants checked the plans.
Engineer Leon Moisseiff and the New York firm of Moran and Proctor made substantial changes in the design of the superstructure and the foundation, respectively, and the amended plans were approved by the PWA. When bidding was opened on the construction of the bridge on 2 September 1938, only one bid was received and it subsequently proved to be about $700,000 higher than the available funds. The consulting board for the Lake Washington Bridge (Charles E. Andrew, Chairman) was asked to modify the plans in order to reduce the costs. The new plans restored the original foundation, changed the floor system and deck, and lowered the costs to an acceptable figure. There was no time left to redesign the superstructure before bidding was reopened on 27 September, since the PWA required that the bid be let by 31 December.

The Pacific Bridge Company, as the lowest bidder, won the contract with a bid of almost $6,000,000. The company was a combination of the Pacific Bridge Company of San Francisco, the General Construction Company of Seattle, and the Columbia Construction Company of Bonneville, Oregon. The Bethlehem Steel Company was to provide and erect the steel and wire. Subcontractors handled concrete, lighting, elevators, painting, and the construction of the administration buildings and toll booths. Pierce County provided some funds for exploratory drilling and for the east approach which would link the bridge with the city streets, and also bought the ferry system across the Narrows for $300,000. Regular highway funds were to provide for the west approach, which would link the bridge with the highways of the Peninsulas. Construction began on 25 November 1938.

The Tacoma Narrows Bridge was the third-longest suspension bridge in the world. The central span was 2800 feet long, each side span was 1100 feet long, and the shore approaches totaled 939 feet. The two towers rose up out of piers sunk deeply into the compacted sand and gravel under the waters of Puget Sound. The piers were 66 feet wide and 120 feet long and were made of reinforced concrete with steel frames. They were each supported by more than 14,000 tons of caisson anchors, concrete blocks which were towed into place by barges and dumped. Working on the piers involved much hazardous work by “hard hat” divers wearing heavy awkward equipment, weighed down by extra lead weights, and working in murky water 120 feet deep with currents of over eight miles per hour. Work went on around the clock, seven days a week.

The two steel towers stood 425 feet above the water and had saddles at the tops to hold the huge suspension cables, which were more than 17 inches in diameter and held up a total weight of more than 11,250 tons. The cables contained more than 19,000 miles of wire. Each of the shore anchorages, to which the cables were connected by eye bars, were made of more than 40,000 tons of concrete.

The roadway was about 200 feet above the water, to allow ships to pass underneath. To save money and because traffic was expected to be light, the roadway was only two lanes wide. Its length and slimness made the bridge the narrowest ever constructed in terms of width to span ratio.
All in all, the Tacoma Narrows Bridge was considered to be an engineering marvel and was written up in many engineering journals including Pacific Builder and Engineer, Western Construction News, Roads and Streets, and Compressed Air Magazine, as well as in the popular press.

The bridge was officially opened on 1 July 1940, with great pride and fanfare. It had been built in only nineteen months and with no fatalities. The floating bridge across Lake Washington, the world’s first concrete pontoon bridge, was opened the next day, and it seemed that there was little that modern technology could not accomplish.

However, doubts had already begun to arise. The lightness and slimness that made the Tacoma Narrows Bridge so attractive also made it extremely vulnerable to the gusty winds in the Narrows. Even before the bridge was finished, it began to vibrate vertically in even light winds. After the roadway was finished and open to traffic, it would ripple up and down as much as forty or fifty inches, so that motorists could see the cars in front of them disappearing and reappearing. The bridge quickly acquired the nickname “Galloping Gertie” and people who were not thrill-seekers began to avoid it on windy days.

Professor F. B. Fraquharson of the University of Washington, who had been commissioned to study the bridge’s behavior, built a model of the bridge and tested it in a wind tunnel. New diagonal stays were installed at the middle of the bridge’s center span, but before many modifications could be accomplished, there was no Galloping Gertie left to modify.

On the morning of 7 November 1940, the wind was blowing through the Narrows at 42 miles an hour, and one of the bridge’s new diagonal stays broke. The bridge began not only to ripple up and down, but also to twist from side to side in a torsional or corkscrew motion so violent that the bridge was closed. Leonard Coatsworth, a copy editor for the Tacoma News Tribune who was on his way to his summer place southwest of Gig Harbor, was the last motorist permitted on the bridge; in the car with him was his daughter’s black spaniel. When Coatsworth was about halfway across, the roadway tilted sideways so violently that he lost control of the car, which slammed sideways into a guardrail and seemed about to topple off the bridge. Coatsworth decided to abandon the car. The terrified dog bit Coatsworth and refused to leave the car, so Coatsworth ran off the bucking bridge alone and arrived shaking and bleeding on the eastern shore, where Professor Farquharson was filming the bridge’s gyrations. Farquharson crawled out on the tossing, pitching bridge to attempt to save the dog, but was no more successful than Coatsworth had been. Coatsworth called the News Tribune, which sent out reporters Bert Brintnall and Howard Clifford. They also ventured out on the bridge to try to save the dog, but before they reached the car, the bridge began to whip up and down so violently that they gave up and began to retreat, Clifford taking photographs as he went. The roadway was now rising and falling as much as 28 feet, and was tilting up to 45 degrees sideways. Suddenly the vertical cables that held up the roadway began to snap, their ends whipping through the air, and the roadway along the 2800-foot-long center span began to break up. Huge chunks of concrete broke off and crashed into the water 200 feet below,
from Bridges by Scott Corbett
taking along Coatsworth’s car and dog. Workmen under the bridge’s west end, who had been attempting to stabilize the bridge by driving anchors for storm lines, had to avoid the falling pieces of roadway. The remainder of the bridge deck, relieved of the weight of the center span, was then free to bounce crazily, and Clifford fell repeatedly as he ran to shore along a roadway which one minute would drop out from under him and the next minute would rise up to meet him.

The bridge continued to writhe and shatter and by the time the wind had subsided, about 90% of the center span was lying in pieces on the bottom of Puget Sound, the rest was hanging down limply in the air, and the side spans had sagged 60 to 70 feet. The steel towers, though still standing and still holding up the huge cables, were bent back towards the shores and were damaged beyond repair. The Tacoma Narrows Bridge had indeed, in the dry words of Principle Engineer Charles E. Andrew, “been rendered useless as a traffic carrying unit.”

The demise of the Tacoma Narrows Bridge only four months after its opening was a sad blow to the area’s citizens who had had such high hopes. Immediate clamor arose for a new bridge, but plans for reconstruction were shelved as money, materials and manpower were redirected to the fighting of World War II. Ferry service was reinstated the day after the bridge’s collapse. At least, the bridge had been well-insured. Twenty-two different insurance companies were involved, to spread out the risk, for a total of more than $5 million. (One of the insurance agents had simply kept the premium for his own use. His company paid off anyway, and the agent was sentenced to fifteen years in prison.) After the bridge’s collapse, the insurance agencies appointed a board of engineers to study the damage. Another board of engineers was appointed by the state for the same reason. The first board proposed a payment of $1.8 million, the second, $4 million. After much negotiation, it was finally agreed that the state would receive $4 million plus whatever it could salvage from the wreckage.

Salvage began immediately, as the ruins of the bridge were a hazard to navigation and the railroad on the eastern shore. The towers and cables were carefully removed and sold for scrap for almost $300,000, the price of steel being favorable due to the war. The dismantling of the cables was extremely hazardous work but was nevertheless accomplished without fatalities. The midchannel piers and the shore anchorages were carefully studied and found to have sustained no damage. Since the piers were worth $3 million dollars, they were left in place to be used for the next bridge.

There was no doubt that there would be a new bridge once the war was over. In the four months of the bridge’s existence, traffic over it had been 145% more than the previous use of the ferry system and had brought in $222,705 in tolls, more than twice what had been estimated. The population of Tacoma rose by a third during the war, and Bremerton more than tripled in size. Tourism, housing starts, and industry were all expected to increase as soon as the war was over.

Therefore, a prompt start was made on investigations into causes of the collapse and ways to prevent a recurrence.
from Wind in Architectural and Environmental Design by Michele Melaragno
Why did Galloping Gertie collapse? The Tacoma Narrows Bridge has become a sort of classic engineering failure and its causes have been intently studied and discussed ever since.

The superstructure which broke so spectacularly was designed by Leon Moisseiff, the world’s leading authority on suspension bridges, and met all conventional requirements. However, the factors of wind and narrow proportions had not been taken sufficiently into consideration, even though suspension ridges had undulated and broken up due to wind in Britain and in Ohio in the nineteenth century, and as the Tacoma Narrows bridge was being built there were reports of oscillations of the Bronx-Whitestone Bridge in New York and several other recently-completed bridges (these bridges were hastily reinforced after Galloping Gertie collapsed).

The slimness that made Galloping Gertie such a graceful sight was her fatal flaw. Because the bridge was only two lanes wide and almost a mile long, it was 72 times longer than it was wide; its nearest competitor for narrowness, the Golden Gate Bridge, had a ratio of only 45. The design of the bridge’s superstructure was not calculated to compensate for this frailty.

The Washington State Department of Highways’ original plans had called for open, 25-feet-deep stiffening trusses. Moisseiff’s revamping of the design substituted a plate girder stiffening system only 8 feet deep. This made the ratio of depth to span length only 1:350, as compared to the 1:40 which had been conventional earlier in the century. Combined with the roadway’s narrowness and light weight, this made the bridge exceptionally flexible.

All suspension bridges are subject to flexural and torsional oscillation due to variation in air flow, but the Tacoma Narrows Bridge’s thin solid girders both created pulsating wind eddies and were not braced sufficiently to dampen the resulting flexing. The particular wind velocity of November 7, and the breaking of the stabilizing cable, allowed the torsional or side-to-side rippling to become greater and greater in a process called “self-excited oscillation” until the bridge broke.

To conduct investigations into suspension bridge behavior and to design a new bridge, a Board of Consulting Engineers and a Design Department had been appointed by mid-1941 with Charles E. Andrew as Chairman. The members of the Board quickly found that little original research had been done on the aerodynamics of suspension bridges, so they would have to do the research themselves. Under the guidance of Professor Farquharson a new wind tunnel was built at the University of Washington, large enough to hold a 1:50 scale model 100 feet long and simulate winds of over 100 miles per hour. New designs were tested in the wind tunnel, altered, and tested again, and a large amount of data compiled. Wind-tunnel testing subsequently became routine in the development of new bridges.

The findings of the Board were incorporated into the new bridge designs which were completed in 1947. Bidding was opened in October and contracts were awarded in
March and April, 1948, to Woodward and Company of Tacoma for work on piers, anchorages, towers, trusses and decks; and to John A. Roebling’s Sons Company of California for cables and hangers.

Work began at once. The shore anchorages, though undamaged by the old bridge’s fall, had to be greatly modified and enlarged to support the new bridge’s greater weight and width. The old piers were provided with new pedestals to hold up the new towers, which were made wider at the bottom than the old towers to allow for a four-lane roadway rather than the previous two lanes. The pedestals were also made higher than the old ones to that saltwater spray would not corrode the bases of the new towers as it had the old ones. The erection of the towers was made more dramatic by the 7.1-magnitude earthquake of 13 April 1949. A 21-ton cable saddle had just been lifted to the top of the eastern tower when the earthquake struck. The tower vibrated sufficiently to dislodge the saddle, which fell 500 feet into the water below, crashing into and sinking a contractor’s barge. The saddle was recovered and put back in place.

The superstructure was of course redesigned with great care to avoid the mistakes of the past. The stiffening trusses were made 33 feet deep, were open to allow the wind to pass through, and were very strongly braced horizontally. The new trusses were 58 times stiffer than in the old system. All parts of the superstructure including the floor beams were designed to catch the wind as little as possible. The designers felt that it was necessary to reduce noticeable motion to zero as nearly as possible in order to give the public faith in the new bridge and in bridge-building in general.

The new suspension cables were even larger than the old ones, being more than twenty inches in diameter. Weeks of rain and snow delayed work on the cables during the winter of 1949-50.

The new Tacoma Narrows Bridge was built in about thirty months and cost about $14 million, plus the lives of four workmen who were killed during its construction. It was opened officially on 14 October 1950 and was found to be very stable even in winds of over 70 miles per hour. The volume of traffic that crossed the new bridge was much greater than had been anticipated, and in May 1965, thirteen years ahead of schedule, the tolls collected had paid off the $14 million cost of the bridge. The last half-dollar was collected on May 14 and about 2,000 watched as Governor Dan Evans signed into law a bill which removed the tolls. All the arguments for the necessity of a bridge across the Tacoma Narrows had been vindicated. The second Tacoma Narrows Bridge is a lovely sight and an engineering triumph, although never destined, it is hoped, to be as exciting as her predecessor.
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Piers were constructed of steel and concrete, with heavy timber fenders at water level. This drawing by Gilmour shows the 20-foot concrete seal, top and bottom, and the pedestal atop to receive the tower. From Chas. E. Andrew report.

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U.S. HIGHWAY 99
SEC. 34 T. 2N., R. 18 W.M.
APPLICATION BY OREGON STATE HIGHWAY COMMISSION WASHINGTON STATE DEPARTMENT OF HIGHWAYS
JULY 19, 1954
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       Toll Road, Civil Engineering Report  1955
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       Toll Road, Damman, H. H.  1955-57
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**TACOMA-SEATTLE-EVERETT TOLL ROAD FILES**

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