Annotated Bibliography

Newspaper Articles:


Professor Farquharson describes his experience on the Tacoma Narrows Bridge while it was collapsing. He may have exaggerated some points out of excitement; nevertheless, every fact he states is a true fact because he was actually there, experiencing the event. The source is a powerful first-person account and it helps us understand what the people felt during the collapse.


This newspaper article is an original document from the time before the Tacoma Narrows Bridge’s collapse. It seems authentic and can be verified by other sources. It illustrates the public’s attitude towards the bridge at the time – clearly, the “ripple” was becoming a problem if it was discussed in a newspaper, but people were trying to act confident and assured that there was no real problem.


The actual clipping was copied for this newspaper article. It includes a helpful picture of the bridge’s opening day. The article gives unique information about the opening day that has not been found elsewhere. In general, it discusses one topic—the opening of the bridge—and gives detailed information about it. This source provides us with useful knowledge about the bridge’s beginning.

“May Rebuild Broken Span Within Year.” Britnall, B.W. Tacoma News Tribune. 9 Nov. 1940.

The reconstruction of the broken bridge within a year is predicted by a hopeful front-page newspaper article, written two days after the collapse. Newspaper archives yielded the article; it is undoubtedly authentic. It helps us understand how the public (and the media reflecting it) reacted to the disaster. We’re using it to demonstrate the hopes that Tacoma had for its broken span, hopes that faded as World War two took over.
“Bouncing Span Will Soon Be Quieted Down.” *Tacoma News Tribune.*

A promise of safety is made by an article written before the collapse. The article comes from newspaper archives and is an authentic document. It helps us understand what the public was told and informed of. We use this picture in our documentary to explain that almost no one expected the collapse.

“Narrows Bridge Collapses.” *Tacoma News Tribune* 8 Nov. 1940.

The front page of the Tacoma News Tribune on November 8, 1940, gives the main announcement of the collapse. It contains a large number of pictures and articles on the bridge’s failure. It shows us what the public saw first, the beginning reaction. We’re using this picture to demonstrate the excitement and disbelief generated by the Tacoma Narrows Bridge collapse.


A report issued by a board of engineers is the focus of this newspaper article. Parts of the bridge that need to be removed or dismantled are described and the cost estimation for reconstruction is given. The source is credible because it is an article in a newspaper that was published when the event occurred. The statistics are accurate because they were taken directly from the report of the board that examined the bridge. Although we do not directly use it in our project, it gives us a fair idea of what costs and problems engineers faced in the collapse’s aftermath.


A change in attitude of the public from when the bridge was in use to after the bridge’s collapse is clearly demonstrated by this newspaper article. It describes all the negative aspects of the bridge and its construction. The article is from a credible newspaper, and the author’s opinions seem to speak for the rest of the public’s opinions, according to several other reliable sources. We quote this article in our documentary for emphasis.

*Tacoma News Tribune* 2 July 1940, Tacoma Narrows Bridge ed.

The large illustration on this page presents an important viewpoint on the construction of the Tacoma Narrows Bridge. It depicts a larger-than-life soldier saluting the bridge while airplanes fly around him. This acknowledges the connection made between the Puget Sound Navy Shipyard and the McChord Airfield and represents an important reason for the Tacoma Narrows Bridge’s construction: the linking of these two military facilities. It is an authentic original document from the University of Washington newspaper collection. We show this and another article in our to demonstrate the military importance of the bridge’s construction.

Many specific examples of the benefits of the Narrows bridge are cited in this newspaper article. It is an authentic source that is reliable for finding the attitude of the people about the bridge in 1938. The author seems to exaggerate some points about the bright future of the Peninsula area as a result of the bridge. We do discuss some of the bridge’s benefits in our documentary, and the article aids us in this aspect.


The newspaper article is a helpful source in understanding the attitude of the public about the Tacoma Narrows Bridge before it was built. It is a credible source because it is from a newspaper that was distributed in the area and at the time of the event. However, the article includes several of the author’s personal opinions, which may not represent the opinions of the rest of the public. With this source, we have a better understanding of what the average person saw and thought of the bridge.

Reports:


Every aspect of the bridge’s failure is described in excellent detail through the report. Each problem is analyzed briefly but thoroughly in the summary of conclusions, which are explained further in other sections of the report. The report is credible because it is a copy of the actual Carmody Report—a report provided by an experienced Board of Engineers hired by the Federal Works Agency. We show this report in our documentary, focusing on the quotes which explain the cause of the collapse.


A broad overview of the construction process of the first Tacoma Narrows Bridge is presented by this report. The report is a copy of the actual final report of the second Tacoma Narrows Bridge. Although it is about the second bridge, it provides background information about the first. Specific statistics such as lengths and costs are given. It also gives a detailed explanation of the parts that were lost, regained, or dismantled. It gives valuable specifics about the experience of the construction workers. The report is very credible because it was written by the principal consulting engineer of the Washington Toll Bridge Authority. It is an intriguing flashback on the first bridge after its time had passed and helps guide our research.

This is one of the numerous reports that followed the Tacoma Narrows Bridge collapse. It appears to be a later report, as it quotes ones from before, including the Carmody report. It helps us understand what followed the bridge’s collapse and how people attempted to explain it. Unfortunately, it involves some formulae and terms that are too technical for either us or an audience. We use the important primary source quotes from this article in our documentary.

Eldridge, Clark. Plan. 1941.

The plans, scanned from the original copies, for the first Tacoma Narrows Bridge (with no stiffening truss) give us an idea of how it was designed. We focus on the plan while we discuss the designing of the bridge in our documentary.


Farquharson wrote this article explaining the Tacoma Narrows Bridge collapse and giving some background information (other bridge collapses). The article shows the results of Farquharson’s own studies. It provides us with a primary source on the background and two theories about the collapse. Farquhason was a well-known and respected engineer with the Tacoma Narrows Bridge, but as human error may play a part, we cannot take all his statements for granted (especially any assumptions). The report also unfortunately contains a lot of formulae and mathematics that we are not familiar with, but it is useful in giving background knowledge of previous collapses.

Books:


Joe Gotchy, a worker on the 1940s Narrows Bridge wrote the detailed first-person account of the construction of the bridge’s construction. It helps us understand exactly what went into the building of the bridge, the challenges and the problems. Joe Gotchy is an experienced worker; his account is accurate and valuable with primary information. This book provides us with interesting details that are otherwise unavailable to us on what it was like to help build the bridge. We also used a picture from the book, showing workers striding on a broken cable.

- “Salvage of Cables WSA.” Bridging the Narrows. WSDOT.
Interviews/ Eyewitness Accounts:


Howard Clifford, who was on the bridge right before its collapse, was very helpful in providing a first person account of the bridge’s violent twisting motion. He described the reaction of the public—how they felt before and after the collapse. A 20 second clip of the interview was used in our documentary to help describe the motion of the bridge on the day of its collapse.


The accounts of several eyewitnesses of the bridge’s collapse are compiled here. The people involved include Clark Eldridge, who submitted the bridge’s original design, and Leonard Coatsworth, whose unfortunate dog was the only casualty of the collapse. It is composed of excerpts taken from official reports, newspapers, interviews, etc. The source helps us understand what the people felt and saw when the bridge went down. We use some of the pictures of the people in our documentary, and we likewise quote portions of the accounts to better show the emotional aspect of the tragedy.

Flyers:

Tacoma Narrows Bridge: A Proclamation by the Governor. John-Cox Company, 1940.

The governor gave this proclamation on the opening day of the first Tacoma Narrows Bridge. It is included in an authentic flyer describing the bridge that was saved at the Gig Harbor museum. Its content helps us understand what the public was told about the bridge. We do not directly quote this document, but it is an excellent example of the people’s confidence in the bridge.

Pictures:


One picture of the second Tacoma Narrows Bridge from the reliable Washington State Department of Transportation website is used in the documentary.

Models of the Tacoma Narrows Bridges – the 1950 one and the current 2007 one – stand side by side in a testing room. The image is clear and detailed. We utilize this image in our documentary as we describe wind tunnel testing.

Deanland.com. 12 Feb. 2007
<http://www.nvva.nl/renekrul/catalogs/newyork.george.washington.bridge.hr2225.jpg>.

The George Washington Bridge of 1931 is depicted in this picture. It appears genuine and can be verified by other sources. From this bridge, which is a forerunner of the Tacoma Narrows Bridge, we can understand how design and building trends developed and progressed, noting similarities and differences between it and the later Tacoma Narrows Bridge. Indeed, we use this picture as an example of what the 1920s and 1930s influence led to and what came before the Tacoma Narrows Bridge.

During the Great Depression... The Great Depression. 4 Apr. 2007

Poor unemployed men are portrayed waiting in soup kitchen lines here. The picture offers us a glimpse of the difficulty of life in the Great Depression. It is shown briefly as we describe how the harsh conditions of the Depression changed bridge designs.


A view of the Tacoma Narrows Bridge before its collapse is presented in this picture. It appears to be fairly credible and accurate, although it is difficult to verify. We use this picture in the beginning of our documentary as an introductory picture.


The scientist Theodore Von Karman is portrayed. The picture of him is reliable and matches the results of other sources. We display this image as we explain Karman’s theory of harmonic resonance.


Skyscrapers tower above in this photograph. It emphasizes the elegance and power seen in these structures. We use this picture as we explain how this image also transferred to bridges, how bridges were perceived as “graceful and slender works of art.”

In the conclusion of the documentary, this picture of the second Tacoma Narrows Bridge is used. The picture is an actual photograph, so it is credible.

**Humber Bridge.** 23 Mar. 2007

The Humber bridge, an English suspension bridge, is shown in this photograph. European engineers came to study and learn from the Tacoma Narrows Bridge. The picture of it helps us understand how later suspension bridges were modeled after the Tacoma Narrows Bridge and how it affected architectural styles worldwide. We will be using this picture to introduce the quote of an English engineer referring to benefits of the Tacoma Narrows Bridge collapse.

**Leon Moisseiff.** San Francisco Public Library.

Leon Moisseiff, a designer of the Tacoma Narrows Bridge, features in this picture. The portrait is accurate and can be verified by other sources. It appears in our documentary as we introduce Leon Moisseiff.

**Mackinac Bridge.** Scheduled Programs. 28 Apr. 2007

The modern-day Mackinac Strait Bridge is shown in this picture. Other sources verify its appearance. It is an excellent example of how bridge architecture profited from the Narrows Bridge collapse and the state-of-the-art technology brought about by its reconstruction. The picture helps us see the connections between the Tacoma Narrows Bridge and future bridges. It appears as we describe in our documentary what bridges followed and benefited directly from the Tacoma Narrows Bridge.

**Montgomery, A J.** Tacoma Narrows Bridge - Mount Rainier. Northwest Photographers.

To enhance the triumph of the second Tacoma Narrows Bridge, this picture is used. It is taken from a dependable photographers’ forum.
National Research Council Canada. 18 Feb. 2007

An engineer, presumably, bends over a modern bridge model, which may even be of the Tacoma Narrows Bridge. The image is clear and accurate in its details. We use the picture in our documentary as we discuss how Gertie revolutionized architecture and science.

Smith, Dexter R. "1950 Tacoma Narrows." Bridgemeister.

Five pictures of the second Tacoma Narrows Bridge from this website are used in the conclusion of the documentary. The snapshots are genuine and the website’s references are dependable.

- Deneberg, David and Alison. Bridgemeister.

- Deneberg, David and Alison. Bridgemeister.
<http://www.bridgemeister.com/imagged/2dwatercola2.jpg>.

- O’Donnell, Patrick S. Bridgemeister.

- O’Donnell, Patrick S. Bridgemeister.

- O’Donnell, Patrick S. Bridgemeister.

<http://www.wsdot.wa.gov/tnbhistory/>.

The Washington Department of Transportation created this site to give the history of the past and current Tacoma Narrows Bridge. The information comes from a large and well-known organization and is credible and accurately detailed. The site provides us with essential primary source photographs of the first bridge. Eight of these pictures are shown in various sections of our documentary as we explain the bridge’s beginning, collapse, and reconstruction.

- Clark Eldridge, Bridge Engineer. 1940. People of the 1940 Narrows Bridge. WSDOT. 21 Feb. 2007 <http://www.wsdot.wa.gov/tnbhistory/People/photos/P1-1_Clark_Eldridge.jpg>.


The University of Washington provides this excellent online collection of primary-source photographs and newspaper clippings. The pictures really give us a firsthand look at the events. We use these pictures to support our words as we narrate our documentary. 21 pictures taken from the site are used throughout the documentary. The website is credible because it is run by the University of Washington.


Secondary Sources

Websites:


Washington State Department of Transportation dedicated this site to the Tacoma Narrows Bridge, and this article is the first of four parts of it. The page focuses mainly on questions such as “Why were the Tacoma Narrows Bridges built?” and “What makes them significant?” It helps us understand the bridge’s beginning; the reasons for its construction and what went into it. This as credible as possible; it was by the Washington State Department of Transportation and has very accurate and detailed information. It efficiently organizes many of the key facts which we are using in our documentary.


Although this Internet article is written anonymously, its basic information is confirmed by primary source documents and several other sources. Besides the basic information, the article provides a very detailed description of the bridge’s collapse, including dates, times, distances, speed, etc. It also includes a useful picture of the collapse, with a helpful caption. It gives us a lot of the main facts we are using in our documentary.


This is a scientific study for software engineers. It makes many connections between the Tacoma Narrows Bridge, the Challenger disaster, and software systems. The details about the bridge disaster are most helpful, but the list of lessons learned from the failure is also useful and unique, added in the project as interesting facts. The source is fairly credible because it is written by a software engineer from the NASA Langley Research Center, but most of the bridge information is from secondary sources. This source provides with some new and interesting connections and comparisons for our research.

A large amount of information is covered by this website because it is broken up into sections which answer specific questions like “Whose idea was it and why did people want it?” The site gives several new and helpful points such as information about the lesser known people who were involved in the project like James Bashford and Joe Gotchy. The source is credible because it is on the Gig Harbor Peninsula Historical Society and Museum website. This society even owns the original photographs of the Tacoma Narrows Bridge Collapse by James Bashford. The names and details can help guide our research further, and we utilize the important main facts in our documentary.


A detailed description of the engineering mechanisms involved in the construction of the bridge is provided by the article. It goes in depth but is not overly technical, so that an inexperienced reader could understand it. The information it gives helps us comprehend part of the technical element behind the collapse. The report, coming from the Washington State Department, should be very reliable and accurate. Its contents are crucial to explaining the collapse in our documentary.

<http://www.wsdot.wa.gov/TNBhistory/Art/entry.htm>.

The Washington Department of Transportation (WSDOT) dedicated a site to explaining the Tacoma Narrows Bridge, of which this is the third part. It describes the artistic style of the Tacoma Narrows Bridge and general bridges of its time. It helps us understand the background of the bridge – what styles and trends led up to its construction. The research from the Washington Department of Transportation comes across as very reliable and detailed. We’re using to information to explain the history before the bridge, what influenced it to be built the way it was.

<http://www.wsdot.wa.gov/TNBhistory/People/entry.htm>.

This web article is the final part of a site dedicated to the Tacoma Narrows Bridge by the Washington Department of Transportation (WSDOT). It focuses on the people involved in the bridges’ construction – engineers, workers, reporters, etc. This source helps us really understand the individuals on the project, their background, their contribution to the bride, and the reasons for their actions. The names given are also useful in directing our research.

A full report of the significant proposals that were submitted to the building of the first Tacoma Narrows Bridge is given by the list. The stages the idea went through as it matured, until it finally emerged as one bridge are shown. It is a reliable resource from the WSDOT. Not all of this source will be necessary, but the main proposal (Clark Eldridge’s draft) is mentioned in the documentary, and this source also provides helpful background knowledge on the fledgling attempts to create the bridge.


A reliable science television program created this page on the bridge. It gave a succinct overview of the Tacoma Narrows Bridge’s history, including helpful background information about suspension bridges in general. It also has film of the Tacoma Narrows Bridge’s oscillations. The film helps show us what happened on that day, and it is useful for us to understand suspension bridge basics. This site helps streamline our research.

Books:


The story of the Tacoma Narrows Bridge, from its beginning location in the Puget Sound to the construction of its sequel, “Sturdy Gertie,” is followed by this very detailed, thoroughly researched book. The book gives us little bits of specific information we did not have otherwise on events. The historian who did this research, Richard Hobbs, went to many places and took sources from reliable locations (University of Washington, Engineering News), and therefore there should be no misinformation or bias. This source is a solid formation of facts and an excellent reference for us to look at while creating our project.

Films:


A large amount of general information about the history of the bridge is given in this film, including the reasons for its failure, the aftermath, and how it benefited the future. Its producer is Tacoma Municipal Television, so the film is a credible source. It has also won an award for cable excellence. This film provides us with interesting and unique facts on aspects of the issue we had not yet considered; for example, the current conditions of Gertie’s underwater remains.

The phenomenon harmonic resonance is the main focus of this film. Harmonic resonance is an essential part of the tragedy in our topic. It provides a detailed explanation which helps us in our own short explanation of the mechanics behind the collapse. It is credible because it is created by the California Institute of Technology, and it is unbiased because it presents only facts.

**Tacoma Narrows Bridge and Hindenburgh.** DVD. 2005.

This is a 3:43 minute DVD with film of various parts of the collapse, starting from the early winds and ending with the limp, broken bridge. It helps us see exactly what happened on that day firsthand. We acquired this video through reliable means (amazon.com), and the images it shows can be confirmed on other sites, so its content is easily proven accurate. Almost the entire film is shown in our documentary as we describe the collapse.