

Virtual Historian-Led Tour Transcript (September 2020)

A slide fills the screen. The top half features a photo of the Third Avenue Bridge in Minneapolis. A blue box with white text is in the middle of the photo. In the upper right corner is a video where Christina Nesse speaks to the camera. A blue banner with text divides the slide in half. Below it, on a white background, are the Minnesota Department of Transportation logo, the date of the presentation, and the presenters' information.

ON SCREEN TEXT: Welcome!
The presentation will begin shortly.

Please call 612.759.2110 if you are having issues hearing any audio or seeing the screen.

THE HISTORIC THIRD AVENUE BRIDGE

Katie Haun Schuring | Cultural Resources Historian
Chris Hoberg | Project Manager

9/29/2020

CHRISTINA: All right, good evening, everyone. Welcome. For those of you who just joined us in the last couple of minutes, my name is Kristina Nesse. I, like I mentioned a few minutes ago, am on the consultant team supporting the Minnesota Department of Transportation on this amazing Historic Third Avenue Bridge project, and we are so excited to share a wealth of historic knowledge and resources and a tour of sorts, a virtual tour of the bridge through Zoom tonight and are so happy that you are here. So I will be here in the background throughout the duration of the presentation and monitoring our chat and making sure that if you have questions about the history of the project or otherwise, that we are able to answer those. We'll be addressing most of the questions at the end, but I do also encourage you to share in the chat...

The blue box and its text in the top half of the slide disappears.

KRISTINA: ...which is a feature at the bottom of your screen labeled "chat."

The slide changes. Kristina remains visible in the corner. An illustration of an open laptop computer fills most of the slide. On the laptop screen are six boxes displaying six people's video feeds. Below them are buttons for video call settings, each labeled with three icons: a speaker with illustrated sound waves radiating out of it above the Audio Settings button, a speech bubble above the Chat button and Raise Hand button, and a door with an arrow pointing outward above the red Leave button. Black text is next to the laptop illustration. A replication of the chat box is below another speech bubble icon and the words "Chat Box." In the lower left corner, a small icon illustrates a portable projection screen.

ON SCREEN TEXT: USING
ZOOM

Chat Box

To: All panelists
Your text can only be seen by panelists.

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KRISTINA: I encourage you to share any thoughts, memories, laughter, jokes, antics--anything you wanna share with the full group, so the webinar attendees, and you're also able to send a note directly to myself or the rest of the panelists, including our two speakers this evening, and I believe you're also able to send a note individually to others that are on the webinar. So again, feel free to reach out and be in conversation. We want to hear from you and are looking forward to doing so. If you are having any technical difficulties right now, one of our members of our consultant team should be available for a few more minutes, and you can call the number on the screen. She will be happy to answer any of your questions as well as she can. And lastly, I want to introduce you, for the next hour as your tour guides, to two of our project team members at the Department of Transportation. Katie Haun Schuring and Chris Hoberg will be presenting tonight. Chris is our project manager, and Katie is the project historian and a wealth expertise in that.

The slide changes. Kristina is still visible in the corner. Black text heads a white slide. A dark blue box features a quote from the "Star Tribune" in white text. Below it are eight topic names, each with a corresponding line-drawing icon. An icon of a portable projection screen is next to the word "Introduction"; an icon of a cityscape is next to the phrase "an expanding Minneapolis"; an icon of two speech bubbles, one with a question mark and the next with an arrow, is next to the phrase "design challenges"; an icon of the bridge's arches is next to the word "design"; an icon of a train cart carrying materials is next to the phrase "initial construction"; an illustration of a party popper is next to the phrase "opening day"; an icon of a pocket watch is next to the phrase "bridge legacy"; and an icon of a clock is next to the phrase "future design."

ON SCREEN TEXT: THIRD AVENUE BRIDGE

"This bridge will answer the ever-recurring demand for more convenient communication between the two banks of the river. It was the lack of such communication that so long kept St. Anthony the town, and Minneapolis but a field of undeveloped opportunities." Star Tribune | July 18, 1915

KRISTINA: So with that, I will pass it to Chris, who'll give us an overview on the project, and then on to Katie. Thank you.

Kristina's video feed is replaced with Chris's video feed. He speaks to the camera.

CHRIS: Yeah, I just wanna say thanks, everyone, for joining us. Really excited about the turnout tonight. I'll just start out here--we've got a quote up on screen here, and I'm gonna read that 'cause I think it does a really good job of just framing our minds around when this bridge was being planned and developed for its initial construction, and obviously the history is a big part of this, so just kinda get our minds right. This comes from the "Star Tribune," back July 18th of 1915. It says, "The bridge will answer the ever-recurring demand "for more convenient communication between the two banks of the river.

It was the lack of such communication that so long kept St. Anthony the town and Minneapolis but a field of undeveloped opportunities." It's kind of a compelling thing to listen to, so... As far as what we have in store tonight, I'm gonna take a little bit of time and just kinda give a brief introduction to the project and kind of what's happening out there. And then we'll really dive into the history not only of the bridge but also of kind of the city a little bit and the historic district, and we'll close it out with some discussion about what you can expect with--when the project's complete. So...

The slide changes. Chris's video feed remains visible. Black text fills the left of the slide. A photo of the bridge fills the right of the screen. In the lower left corner, a small icon illustrates a portable projection screen.

ON SCREEN TEXT: INTRODUCTION

The Third Avenue Bridge over the Mississippi River opened in 1918 and needs significant repairs.

MnDOT began repairing the bridge in 2020.

Those repairs will:

- Provides smoother road surface
- Improves safety and accessibility
- Extends life of historic bridge (50 years)
- Enhance and preserve historic features

CHRIS: Yeah, there we go. Okay, so the big story here is, you know, the Third Avenue Bridge, or the Central Avenue Bridge opened in 1918. So here we are, 102 years later, out there working on the bridge to make sure that we can keep it carrying traffic and serving well into the future. With that being said, 102 years old, you know, steel and concrete, they don't last forever, so it's got some needs, some things that we need to address in order to keep it carrying traffic. So we started our project earlier this year, as I'm sure most of you are all aware, and really, the intent of this project is those four bullets that you see on the screen there: Providing a good, smooth ride for the road, improving safety and accessibility, extending the service life of the bridge, and we're-- the goal out of the design here is to get another 50 years out of the bridge. And then, of course, to really enhance and preserve those things about the bridge that are historically significant and are important to the history of the bridge.

The slide changes. Chris's video feed remains visible. Below the heading, four line-drawing icons accompany four list items: a traffic cone accompanies the item "Repair bridge and replace bridge deck," a bicycle with an arrow pointing upward accompanies "Improve bicycle and walking paths," a lightbulb accompanies "Update lighting," and an arched bridge accompanies "Maintain and enhance the bridge's historic and visual appeal."

ON SCREEN TEXT: SUMMARY OF WORK

- Repair bridge and replace bridge deck
- Improve bicycle and walking paths
- Update lighting

- Maintain and enhance the bridge's historic and visual appeal

CHRIS: What that means in terms of scope on a high level--we're gonna be replacing the bridge deck and replacing the columns as well, and that provides a good opportunity for us to make some changes on the deck to better accommodate the uses that we see today.

Chris's video feed is briefly replaced by a row of other participants' video feeds. Then just his video feed is displayed again.

CHRIS: That allows us to really improve those bicycle and pedestrian facilities. Additionally, we have the opportunity to update the lighting on the bridge, and one of the things we'll see as we get a little bit further on in the presentation here is the lighting is a great example of where we tried to draw on some of the historical features of the bridge, the historic design. And then, of course, as is, you know, kinda the theme of tonight's presentation, the bridge's historic appeal and the visual appeal, really doing what we can to make sure that we maintain that and enhance it and it continues to be able to serve well into the future.

The slide changes. Chris's video feed remains visible. A map of the area encompassing the Third Avenue Bridge, Hennepin Avenue Bridge, and Stone Arch Bridge fills the right side of the screen. Green, orange, purple, and yellow lines highlight the bridges. Color-coded bullet points are displayed to the left of the map.

ON SCREEN TEXT: CLOSURES and DETOURS

The first bullet point is black. It reads, "Single lane travel in each direction continues through December 2020."

The second bullet point is orange, corresponding to the Third Avenue Bridge. It reads, "Full closure of bridge from January 2021 to November 2022 (2 years)."

The third bullet point is green, corresponding to a detour along southbound Hennepin Avenue and a southeast-bound section of South Washington Avenue. It reads, "Vehicle and transit detour via Hennepin and First Avenue."

The fourth bullet point is purple, corresponding to Hennepin Avenue bridge. It reads, "Pedestrian detour via Hennepin Avenue bridge."

The fifth bullet point is yellow, corresponding to the Stone Arch Bridge. It reads, "Bicycle detour via Stone Arch Bridge."

CHRIS: So just the high-level overview here of our closures and detours. As many of you are probably aware, we've had the bridge down to a single lane in each direction throughout the summer here, and that'll continue right around to the end of the year, at which point we're gonna need to close the bridge completely to traffic in order for us to get that bridge deck off and replace it, and there's a whole lot of concrete and steel that needs to be moved around and removed and replaced and

repaired, so it is a pretty significant timeframe here in terms of closure. It'll go from right around the first of the year, 2021, through to November of 2022. That's almost two years. Now, during that time, we've got vehicles detoured to First and Hennepin. That's a good, convenient crossing nearby. We have pedestrians also detoured by that via the Hennepin Avenue Bridge, and then we've detoured bicycles to the Stone Arch Bridge. There's a couple reasons for that, one of which is, you know, it's a little bit of an easier move to make. If you were to take University to First to try and cross at Hennepin, you know, you gotta make a crossing of two pretty busy streets, whereas Stone Arch is a bicycle and pedestrian-dedicated facility, so that was just a good opportunity there, but it should be noted that just because that's the sign detour doesn't mean if you wanna take Hennepin or First, you can't do that. That's still a viable option and open for people to use.

The slide changes. Chris's video feed remains visible. An icon featuring a line drawing of a cityscape appears in the lower left corner. Two images appear alongside black text. The first is a black-and-white photo of Minneapolis from 1915. Two major avenues occupy either side of the photo, eventually converging. In the center is a small green space with an American flag leading to a building with columns and archways. The second is a section of an old hand-drawn map encompassing the area around the Third Avenue Bridge, Hennepin Avenue Bridge, and Stone Arch Bridge. Small text next to it reads "1885 Crams Map, Hennepin County Library."

ON SCREEN TEXT: AN EXPANDING
 MINNEAPOLIS

- Connecting the city
- Political challenges

CHRIS: So that kinda wraps up that brief intro to the project that we've got going right now, but I'm gonna hand it off to Katie Haun Schuring here. She was our project historian through the development of this project and really played a key role in making sure that the decision-making-- what decisions we made about the repairs on this bridge were not gonna be damaging to the historic legacy of the bridge. So with that, Katie, feel free to take it away.

Katie's video feed replaces Chris's. She speaks to the camera.

KATIE: Thanks, Chris. Hi, everybody. Again, Katie--I'm a historian with the cultural resources unit, and I did have the distinct pleasure to work with Chris and the entire project team on, you know, developing these rehabilitation plans to meet the Secretary of the Interior's standards, really trying to, you know, make it the best it could be, really, you know, highlighting the spirit of the bridge but making it safe too, so a lot of collaboration, a lot of really great work, and I was pleased to do that. I'm gonna turn off my video as I'm going through this presentation. It's largely so you guys can focus on that and won't be distracted by my cats, which are very, very likely to be walking across my lap here soon. They're both sitting in the sunshine and sleeping right now, but I guarantee you it will not last for long, so I'm gonna turn off my video and start the presentation.

Her video feed disappears.

KATIE: All right, so "An Expanding Minneapolis." In the late 19th century, I think we all know that Minneapolis was this growing community that was fueled by commerce and industry. Within the urban

core itself, the direct connections between the east and west banks were scarce. One took a steel arch bridge at Hennepin Avenue, or they took the 10th Avenue Bridge, which is actually...

A red dot appears on the screen. It moves around the map and circles an area in the southmost quadrant of the map a few blocks away from the current bridge location, connecting 6th Avenue Southeast to 10th Avenue South. A label on the area "Lower Bridge."

KATIE: Yup, which is not where the 10th Avenue Bridge is today. It was a different location. It looks like we're--you can see that on the map here. Streetcar lines further spurred connections and the spread of the city and movement of people, but this mode of transportation was really limited to the Hennepin Avenue Bridge because the 10th Avenue Bridge was not able to carry streetcar loads, but the growth of the community was really critical, this connection between the east and west banks. The east bank retained this commercial core and milling industry, and the west bank was starting to flourish as the economic center of the community, and as early as 1905, boosters on both sides of the river began publicly campaigning for an erection of a new bridge over the Mississippi River, and they were proponents of it at Third Avenue. Feelings over the effort were mixed, with business owners on Hennepin, Nicollet, and East Hennepin Avenues fearing a loss of customer, and over the next five years, from 1905 to 1910, the city explored many options, including widening the Hennepin Avenue Bridge and rebuilding the 10th Avenue Bridge, but the options were ultimately rejected due to cost.

The slide changes. A bar graph occupies the left of the screen. It features five bars with accompanying line art icons and text labels: pedestrians (a walking person), bicycles/motorcycles (a bike), wagons (a covered wagon), autos (an old car), and carriages (a horse-drawn carriage). It has three levels to represent the traffic of three bridges: Hennepin Avenue Bridge, Plymouth Avenue Bridge, and Old 10th Avenue Bridge. The bar for pedestrian traffic on Hennepin Avenue is labeled with 6,574; for Plymouth Avenue, 1,116; for Old 10th Avenue, 1,394. Bicycle/motorcycle traffic for Hennepin Avenue is labeled 1,268; for Plymouth Avenue, 177; for Old 10th Avenue, 249. Wagon traffic for Hennepin Avenue is labeled with 3,120; for Plymouth Avenue, 670; for Old 10th Avenue, 569. Automobile traffic for Hennepin Avenue bridge is labeled with 950; Plymouth Avenue, 115; Old 10th Avenue, 97. Carriage traffic for Hennepin Avenue Bridge is labeled with 640; Plymouth Avenue, 95; and Old 10th Avenue, 100. A quote and a small text box sit to the right of the graph.

ON SCREEN TEXT: "The people of the East Side are also entitled to a direct approach to such important centers as the Chamber of Commerce, the new union station, our great milling district, and the court house and city hall building."
- William Henry Eustis, former mayor

ON SCREEN TEXT: Notes:
- Counted over a 12-hour period.
- The 10th Avenue bridge from this count is for the former bridge, located west of modern day I-35W, connecting 10th Avenue and Sixth Avenue SE.
- A streetcar line served the Hennepin Avenue Bridge (not captured in traffic count).

KATIE: By 1910, the need to reduce congestion, especially on the Hennepin Avenue Bridge, was really apparent. The city actually was conducting traffic counts at this time, so we're doing it today. They did it 100 years ago. So they conducted traffic counts over a 12-hour period, and on the Hennepin Avenue Bridge, we saw about 6,500 pedestrians, 3,100 wagons, and almost 1,000 automobiles, which I think, for me, is pretty outstanding. You know, it's 1910. The automobile is really just becoming popular within the United States, and you've got almost 1,000 people traveling over the bridge in a 12-hour period, but the Plymouth Avenue Bridge and the 10th Avenue Bridge, you know, didn't have even a fraction of that same number, about 1,000 pedestrians each. So slowly this idea of erecting a new bridge at Third Avenue rather than replacing or widening the existing bridges really took hold within the community. Supporters are arguing that this new bridge would help expand the downtown core and to the new municipal buildings that were being constructed on the west bank and a new federal post office that was being constructed at the southwest corner of South and Third. William Henry Eustis--I think this is a really great quote. He was a former mayor who stated, "The people on the East Side are also entitled to a direct approach to such important centers as the chamber of commerce, the new union station, our great milling district, and the courthouse and city hall building." He also continued to say, "The people on the East Side have the right to demand that they shall be given the most immediate access possible to the federal building instead of reaching it by the present roundabout medium of the Steel Arch Bridge and Hennepin Avenue." So by the end of 1912, commercial organizations, including the Minneapolis Civic and Commerce Association and the St. Anthony Commercial Club--so both sides of the river, passed a resolution and lobbied the city council to build a new bridge.

The slide changes. In the lower left corner is an icon of two speech bubbles, one with a question mark and the next with an arrow. Three photos border a short list of bullet points. They each show the bridge over the Mississippi River. The first is an aerial view captioned, "Undated, Hennepin County Library." The second shows the bridge over Saint Anthony Falls, captioned, "1990's, Hennepin County Library." The third shows it connecting the two banks. Cars drive along it. It is captioned, "1977, Hennepin County Library."

ON SCREEN TEXT:

DESIGN
CHALLENGES

- Frederick Cappelen, designer
- Designed around weak spots in riverbed
- Reverse s-curve shape

KATIE: So now that, generally, the community was behind construction of this new bridge, the city council had to look to the design. Placement of a bridge to connect Third and Central Avenues was no easy feat because it's right over the Falls of St. Anthony. So the falls, which had originally been located near what was downtown St. Paul about 12,000 years ago, had slowly worked its way northwest, and it's largely due to the geology beneath the Mississippi River. There's this top layer of limestone that rests on the fragile shale and limestone beds beneath it. Backwash from the falls would erode the lower layers, creating these ledges that would collapse from the force of pounding waters above, and it would cause the falls to move upstream. The limestone ledge ended near where the new bridge was proposed, so if that ledge was lost, the falls would be lost, leaving this rocky rapids, and the loss of the

falls would have just been a devastating effect leading to loss of industry for Minneapolis and, obviously, commerce for Minnesota.

The slide changes. An old map and architectural drawing fill the screen. It appears to be handmade. It represents the Saint Anthony Falls area of the river and the city blocks immediately surrounding either bank alongside them. Locations for a concrete mixing plant, sand bins, steel ribs, head tower, concrete anchors, and barge and tender are labeled on the east riverbank. An outline of the bridge covers the middle of the river. Below it, a schematic-like drawing of the bridge seen from the side labels major architectural points. Two smaller drawings show the mixing plant and steel ribs in greater detail.

ON SCREEN TEXT: FIG. 2. PLAN AND ELEVATION OF THE THIRD AVE. REINFORCED-CONCRETE ARCH BRIDGE OVER THE MISSISSIPPI RIVER AT MINNEAPOLIS, MINN.

Figure 42. 1915 Engineering News

KATIE: The first design for a new reinforced concrete bridge came from the Concrete-Steel Engineering Company of New York. This company was unaware of the fragile nature of this location, and it proposed a bridge with a reinforced concrete arch, spans that were gently curving between the banks.

A red dot appears. It follows a line on the map representing a proposed concrete arch location, which passes over Nicollet Island as well as the falls.

KATIE: The design required a pier to be placed on the limestone break at the tip of Nicollet Island, which was a problem. Recognizing and understanding the geology of the river, city engineer Frederick Cappelen noted this flaw and raised the concern to the city council, and the Concrete-Steel Engineering Company's plan was rejected. So now Cappelen is tasked with providing a suitable design to cross the river. He proposes a single parabolic through-truss that spanned 435 feet over the river.

A red dot appears. It moves across a straighter line just below the proposed steel arch's curved line, labeled "Proposed Steel Bridge Location."

KATIE: While this design had less of an impact on the riverbed and was approved by the council, its simple and, I think, some would argue at the time, antiquated aesthetics were unpopular with the public, which really wanted this more refined and graceful concrete arch design that was reminiscent of bridges found in Europe. So Cappelen turned to plan number three.

A red dot appears. It follows the outline of the actual bridge, which curves south of both aforementioned lines.

KATIE: He worked with the Concrete-Steel Engineering Company to modify their original design, and rather than this simple arch curve, he placed the piers where the river bottom was most stable and avoided those limestone--excuse me, limestone breaks. He connected each pier with a 134-foot and a 211-foot arch spans, and the result, as we know it, the graceful S curve design we see today.

The slide changes. A black and white portrait of a man with a trim mustache and beard occupies the right of the screen. Its label reads "F. W. Cappelen." A second caption reads "1921, Star Tribune." In the lower left corner is an icon of two speech bubbles, one with a question mark and the next with an arrow.

ON SCREEN TEXT: CAPPELEN

KATIE: For his work on the bridge's design and placement of the piers, Cappelen is actually cited as the chief designer of the Third Avenue Bridge. Cappelen--just a little bit of background on him--was a Norwegian engineer. He was educated in Sweden and Germany. He immigrated to the United States in 1880 and actually initially worked for the Northern Pacific Railway, where he designed steel truss railroad bridges downriver from the falls. In 1886, the city of Minneapolis hired him as the bridge engineer, and he designed, actually, the Steel Arch Hennepin Avenue Bridge, and that bridge was completed between 1888 and 1891. In 1893, Cappelen was elected as a city engineer, and he held the position until 1898, and then he was reelected as a city engineer in 1913, and he continued in that role until his untimely death in 1921.

The slide changes. A computer-rendered image of the bridge sits alongside a short bullet-pointed list. Six architectural features of the bridge are highlighted and labeled: the railing, spandrel, deck, overlook, arch rib, and pier. An icon of the bridge's arches appears in the lower-left corner of the slide.

ON SCREEN TEXT: BRIDGE
 DESIGN

- City Beautiful Movement
- Melan Reinforced-Concrete

KATIE: So the choice and public interest--let's talk about this, about this reinforced concrete bridge. It really kind of was not unexpected at this time. The Minneapolis Civic and Commerce Association called for this bridge to be, "The first monumental structure of the Minneapolis civic plan." They advocated for a design that referenced the seven stone bridges of Paris as inspiration, and it challenged, "The new bridge should be something more than a utilitarian thing, a mere necessity erected staunchly and carefully."

The slide changes. A postcard-like drawing labeled "ST. ANTHONY FALLS BRIDGE, MINNEAPOLIS, MINN." fills the screen. It shows an elegant arched bridge over the river. Early 20th-century automobiles drive down the bridge. Short buildings and greenery form the cityscape. Its caption reads, "Undated, Hennepin County Library."

KATIE: So the association's call on the city to create a beautiful bridge reflected this growing trend in the United States for city governments to be responsible not just for the economic development of the community, but also the betterment of society through thoughtful planning and beautiful civic buildings. The philosophy largely became known as the City Beautiful Movement, and it was inspired by the 1893 Columbian World Exposition in Chicago, which promoted this idea of urban planning and highlighted classically designed buildings. So in its design, the Third Avenue Bridge reflects many of the principles of the City Beautiful Movement. Its classical revival aesthetics are reflected in the original railing, incised details found on the piers, and curved spandrel caps. Could you go forward one slide, please?

The slide changes. Three black and white photos fill the slide. An icon of the bridge's arches is in the lower-left corner. The first photo shows a row of cross-shaped street lamps on the bridge, captioned "1918, City of Minneapolis." The second shows a train and train tracks alongside the river underneath a bridge, captioned "1917, City of Minneapolis." The third shows the bridge's railing, which sports curved decorative pillars supporting it. A building with arches and spires occupies the horizon. It is captioned "1920, Minnesota Historical Society."

KATIE: It also has these concrete cruciform-shape-like fixtures that would eventually also carry wiring for streetcars. Excuse me. The ornamental overlooks in particular serve not just as a beautiful flourish, you know, to the curved design but also a civic one. It's here that citizens could stop and admire the Falls of St. Anthony which gave birth to this industrial and commercial prosperity of the community. It also served as a place that you could get a really good view of both banks of the Mississippi. It's tying together St. Anthony and Minneapolis. It's this--ultimately the bridge is not just beautiful, but it's a civic statement about the prosperity of Minneapolis, its promise for community planning, its connection of two cities, and its place as an industrial leader in the Midwest.

The slide changes. On a white background, technical drawings detail concrete curves and a mechanical fixture made of crossed bars or planks. Many lines serve to label a dozen points on each structure. The inventors' signatures appear at the bottom. An icon of the bridge's arches occupies the slide's lower left corner.

ON SCREEN TEXT: REINFORCED-
 CONCRETE
 SYSTEM

KATIE: The design for Third Avenue Bridge utilized the Melan system of reinforcing in all of its concrete arches. The Melan concrete arch system was first introduced in the United States in 1894 by an Austrian engineer named Friedrich von Emperger. He presented it through a public--at the public presentation, and he used Josef Melan's--this new, novel approach that marries concrete and steel together. Emperger actually patents a version of Melan's approach and designed the first Melan concrete arch bridge in 1894 in Rock Rapids, Iowa. I believe that bridge is still around. So if you get to Rock Rapids, go take a look. By the early 1900s, students of Emperger's firm established the Concrete-Steel Engineering Company, which became the leading designer of Melan arch bridges in the United States. I hope everybody sort of caught that name 'cause that Concrete-Steel Engineering Company, they were the ones that helped design the Third Avenue Bridge.

The slide changes. A quote fills most of the slide. An icon of the bridge's arches occupies the lower-left corner.

ON SCREEN TEXT: "Stone arch construction would have been
 impossible or exceedingly expensive; steel bridge
 construction would have been awkward, kinky, and
 crude, but with reinforced concrete no trouble was
 encountered in making the gentle curves and in
 creates a pleasing appearance."

- William Mueser, 1925

KATIE: In the end, the design of the Third Avenue Bridge reflected this burgeoning social aesthetic and engineering advancements at the turn of the 20th century. The system allowed for strength and durability of a steel truss but marrying the classical revival aesthetic the public desired in civic structures. In 1925, William Mueser, a bridge engineer and student of Emperger, wrote in the "Cornell Civic Engineer"--sorry, "Civil Engineer" that the Third Avenue Bridge demonstrated, "The applicability of reinforced concrete as a monolithic building material." He went on to say, "Stone arch construction would have been impossible or exceedingly expensive. Steel bridge construction would have been awkward, kinky, and crude, but with reinforced concrete, no trouble was encountered in making the gentle curves and in creating a pleasant appearance."

The slide changes. An icon of a train cart carrying materials occupies the lower-left corner. A photo of the bridge under construction covers half the slide. At this stage, it is a line made up of large concrete half-circles in the river. Its caption reads, "1914, Hennepin County Library."

ON SCREEN TEXT: CONSTRUCTION

Construction began in
August 1914.

KATIE: So now that the city has its design, it starts construction of the bridge. Construction starts in August of 1914.

The slide changes. An icon of a train cart carrying materials occupies the lower left corner of the screen. A modern technical drawing of an arched bridge fills the slide. Each piece of the bridge is labeled and captioned. In the corner, a separate square shows a drawing of the concrete plant. At each end are timber towers. One is labeled and captioned with, "These towers provided the structure to hoist the cableway." Above the bridge are thin lines labeled "Cableway" and captioned: "A large metal cable stretched between towers that allowed for the cable bucket to move across the site." At the bottom of the bridge, near the base of the arches, are six oblong shapes labeled "Bridge pier" and captioned: "Bridge piers were the earliest features to be built during construction and are the foundation of the structure." One bridge pier is surrounded by a fence labeled "Cofferdam" and captioned: "A sheet metal enclosure set up to create a dry working area in the river to create the piers." At the south end of the bridge are two curved lines labeled "Railroad tracks" and captioned: "Carried materials from the concrete plant to the base of the timber towers." In the corner, the drawing of the concrete plant is labeled as such and captioned, "A concrete plant was located on the shore to efficiently transport wet concrete to different parts of the site."

KATIE: The topography of the bridge site is complicated. I think I mentioned this before. To clear the falls and railway operations on the west bank and accommodate these steep banks on the river, temporary timber towers measuring 165 feet in height were built on both sides of the river. Steel cables ran between the towers, and on these steel cables they would put buckets of concrete and other building materials, and they would, like, winch them across the cables to the other abutments on the other side, the other piers, anywhere that they were using construction or that they needed to do some construction.

The slide changes. An old map and architectural drawing fill the screen. It appears to be handmade. It represents the Saint Anthony Falls area of the river and the city blocks immediately surrounding either bank alongside them. Locations for a concrete mixing plant, sand bins, steel ribs, head tower, concrete anchors, and barge and tender are labeled on the east riverbank.

KATIE: Here, this, I think, drawing is really, really incredible. It comes from a 1915 engineering news article. You can see here where the tower structures and mixing plants were placed. So on this map, the tower structures are noted as short boxes on the left side. You can see it says "tall tower."

In the side-view drawing of the bridge, a tall, thin, pointed like tower rises up on either end of the bridge.

KATIE: And the letter E to the far, far left, mm-hmm...

A red dot appears on the screen. It moves to the map and locates the points marked E, which is one block to the west of the bridge's actual end.

KATIE: That's where those anchors were. So over a block away they were anchoring these towers in order to put the cables on these towers. The cables would stretch across the river, and they would pass over the concrete mixing plant.

A red dot appears on screen. It moves across the river on the map, to the opposite side of the anchors.

KATIE: The mixing plant--you can see this on the bottom left-hand corner of this image--was really quite great. It's located where Main Street is today, along the banks where the trail system is located and a lot of those buildings are today, but you can see that there's a mixing plant. You've got sand storage. You've got rock storage. Everything that you need to make concrete was made onsite.

The red dot circles the east bank's assortment of structures.

KATIE: And it was then shuttled down a railroad trestle. All of the steel that they needed was picked up from the blacksmith shop, and then it was sent to these towers, hoisted up into these buckets, and then sent across the river. I just think this is a really great drawing to show, like, just the sheer capacity of what they needed to do, and I think it also sort of shows an interesting juxtaposition of maybe how we build bridges today. Sometimes we have mixing plants onsite, but oftentimes just because of--especially in urban environments, we'll do a lot of the prep work offsite in a different location and then truck the materials into this--or, in the case of the project that's coming up, we'll be barging them down the river in order to get to the construction site.

The slide changes. An icon of a train cart carrying materials occupies the lower-left corner. Three black and white pictures take up the slide. The first is labeled "Cofferdam." In it, men stand by a steel structure in the winter. It is captioned "1915, Hennepin County Library." The second is labeled "Timber towers" and shows two tall supporting towers stretching above the powerlines. It is captioned "1914, Hennepin County Library." The third is labeled "Dewatering cofferdam" and shows a square tower structure. It is also captioned "1914, Hennepin County Library."

KATIE: So just really, really great to see what they did here. So construction first began with pouring the footings for the piers in the river. In order to do this, they constructed steel sheet cofferdams

around the site for each pier. The sheeting ended up being watertight, and they put sandbags at the bottom, and this is when workers began pumping the water out of the river, creating a dry cofferdam, and in that dry cofferdam they could start pouring concrete for the footings and pier bases.

The slide changes. An icon of a train cart carrying materials occupies the lower-left corner. Three more photos fill the slide. The first is labeled "Bridge falsework" and shows overlapping, bent wooden planks on the construction site. It is captioned "1913-1918, Minnesota Historical Society." The second is labeled "Concrete plant." In it, three men stand in front of large outdoor concrete mixers. It is also captioned "1913-1918, Minnesota Historical Society." The last photo is labeled "Arch ribs." In it, the thin arches of the unfinished bridge sit across the water. The tall tower is next to them. It is captioned "1910s, Hennepin County Library."

KATIE: Falsework for the arches started in April 1915. In order to do this, wood cribs were constructed and anchored to the riverbed with sandbags. On top of these beams, timber falsework was constructed in seven sections. Crews then assembled the steel arches on those sections, and those arches are built up by 4-, 3-, and 2-inch steel angles, bars, and cross-bracing. They're creating that internal truss, and on that form, then they're pouring the concrete. So they're taking concrete from the mixing plant. You can see the mixing plant in that center building--or center photograph, and taking and pouring it into these molds, and then once those molds were set, they'd remove the ribs and move the mold. Each of the five rib arch spans, they have three ribs each, and those ribs rise 36 feet from the spring line.

The slide changes. An icon of a train cart carrying materials occupies the lower-left corner. A black and white photo fills the slide. It shows the steel form placed between two concrete curves of an unfinished arch rib. Its caption reads, "1915, City of Minneapolis."

KATIE: The very first upstream rib was poured in July 1915, and the last upstream rib was poured in August. The falsework for the first rib was moved section by section into place under the center rib. You can see in this picture that first rib is being construc--or has been poured. They've moved the form into the center to build the second rib. Initially, it took the crews one day to move the whole falsework, but by the last downstream rib on the project, the very far one on the Minneapolis downtown side, it took them only 2 hours and 40 minutes to move, so they became very quick at this. Over the next three years, concrete for the arches, spandrel columns, and cat beams, and the deck was poured. The work continued over the winter, where engineers took precautions to keep the concrete from freezing, and this included not pouring the concrete when the air temperature was below zero, covering the forms with tarps, heating them with coke stoves. The sand and rock bins, we saw those in the drawing before, those bins were actually heated so that the sand could then be properly mixed, and the large buckets carrying all this concrete were dipped in hot water. So they took a lot of effort to build this over the winter months.

The slide changes. An icon of a party popper occupies the lower-left corner. A bankside photo of the completed bridge and railroad tracks beneath it fills half the slide. Its caption reads, "1918, Hennepin County Library."

ON SCREEN TEXT: OPENING
 DAY
 June 14, 1918

KATIE: Ultimately, the bridge was opened on Flag Day. That was June 14, 1918. It was a relatively simple ceremony, but the city council requested that every citizen cross the bridge during Flag Day as a way of observing the holiday and the opening of the bridge.

The slide changes. An icon of a pocket watch occupies the lower-left corner of the screen. Two rows of three photos each fill the slide. Each bridge has similar concrete arches. Between the two rows, a time line labels each bridge. The Nicollet Avenue Bridge over Minnehaha Creek and the Franklin Avenue/Cappelen Memorial Bridge is labeled "1923." The Fort Snelling-Mendota bridge is labeled "1926." The Intercity/Ford Parkway Bridge is labeled "1927." The Anoka-Champlin Mississippi River Bridge and the Tenth Avenue Southeast/Cedar Avenue bridge are labeled "1929."

ON SCREEN TEXT: BRIDGE LEGACY

KATIE: So with the success of the Third Avenue Bridge, a new era of concrete arch highway bridges in Minneapolis and St. Paul was initiated. Within the next decade alone, the Nicollet Avenue Bridge over Minnehaha Creek and the Franklin Avenue, or the Cappelen Memorial Bridge, were constructed. Those were both constructed in 1923. The Fort Snelling-Mendota Bridge was constructed in 1926, the Intercity/Ford Parkway Bridge in 1927, and the Anoka-Champlin Mississippi River Bridge and the Tenth Avenue Bridge, or the Cedar Avenue Bridge, were constructed in 1929. The Tenth Avenue Bridge actually replaced that former deck truss and was moved to a slightly different location further downstream. All of these bridges were constructed within about ten years of the Third Avenue Bridge's opening. The Third Avenue Bridge holds the distinction of being the first spandrel--excuse me, open-spandrel reinforced concrete arch bridge over the Mississippi River in Minnesota. It also played a significant role in the growth of Minneapolis' transportation network. It succeeded in connecting the city on both sides of the river where new businesses were established along Central Avenue, along Main Street, and industry continued to flourish.

The slide changes. An icon of a pocket watch occupies the lower-left corner of the screen. Three photos fill the slide. The first is a black and white photo of streetcars and old automobiles and trucks on the bridge, which still has cross-shaped light fixtures. It is labeled "Streetcar" and captioned "1951, Minnesota Historical Society." The second picture, labeled "WPA work in 1930s," shows wooden barriers and concrete debris on the bridge. It is captioned "1930s, Hennepin County Library." The last picture is a color illustration labeled "Updated railing design." The geometric Art Deco metal railings sit between rectangular columns. The Minneapolis skyline glows behind them. It is captioned "1960s, Hennepin County Library."

KATIE: Just two years after it opened, the bridge became an integral part of the streetcar system, which at the time was the primary form of public transportation. Streetcar ridership expanded rapidly, jumping from about 87 million passengers in 1910 to nearly 120 million by 1917. That's only seven years. In 1920, ridership was up to 138 million people. At that time, the city council directed the Minneapolis Street Railway Company to route streetcars over the Third Avenue Bridge. Soon, the bridge carried the Bloomington-Columbia Heights line, the Grand and Monroe lines, and the Bryant and Johnson lines. It was really considered this key note to this larger transportation plan that served the city. This bridge, together with an expansion of the streetcar network through downtown Minneapolis, really provided better service, helped relieve traffic congestion, and really ultimately helped grow the community. In 1933, the bridge became part of Highway 8 and Trunk Highway 65 in 1934. The inclusion of the bridge in the federal highway system brought it under control of the

Minnesota Department of Highways, and Minnesota Department of Highways would be later renamed the Minnesota Department of Transportation. The Minnesota Department of Highways maintained the federal highway routes throughout the state, and by the 1930s, the bridge was showing some signs of early aging. Concrete sidewalks, concrete railings were deteriorating. So using funds from the Highway Department and the Public Works administration, the city rehabbed the bridge. Concrete railings, the original concrete railings which were classically re--a classical revival style were removed, and new Art Deco aluminum panels with concrete posts were installed. So that's that last picture here. You can see them working in the 1930s in the center photo and what that railing ultimately looked like in the photo on the right. The "Minneapolis: Tribune" reported that these new railings allowed, "The opportunity for motorists and pedestrians alike to view the waters of the Mississippi far below." The original concrete light streetcar poles were repaired, and they were rewired at that time.

The slide changes. An icon of a pocket watch occupies the lower left corner. Two images fill the slide. The first is a color photo labeled "New light fixtures." Someone walks along the bridge, nearing a block full of buildings and cars. The cross-shaped light fixtures are to his right. It is captioned "1958, Hennepin County Library." The second image is a hand-drawn map of most of Downtown Minneapolis and the University and St. Anthony Main areas. Thick lines mark I-35W and its looping exit ramps. It is labeled "I-35W built" and captioned "1974 Map, Hennepin County Library."

ON SCREEN TEXT: 1950s REPAIRS

KATIE: The Third Avenue Bridge was the most traveled road in downtown by 1946, so buses are now the primary public transportation method. They've replaced streetcars, and by 1954, the streetcar tracks are being removed throughout the city, and not so long after that on the Third Avenue Bridge. Vehicular traffic on the bridge continued to increase, with daily counts between 27,000 and 31,000 vehicles in 1955. That made it the most-traveled bridge in all of Minneapolis. This may actually sound familiar. The city engineer at the time described the bridge as, "Saturated with cars, particularly at rush hours." I think we may have all experienced that even today on Third Avenue. So now the bridge is nearly 40 years old. It's continuing to deteriorate. Between 1958 and 1965, the original concrete light poles were replaced with metal poles with--excuse me, mercury vapor lights, and by the end of the 1960s, the bridge's role as a main transportation artery was actually changed. So the construction of the Interstate 35 Mississippi River Bridge was completed in 1969, and it really took a lot of the traffic off of the bridge. So you can see that in that 1974 map, you've got the Third Avenue Bridge, which is the curving bridge in the upper left, and the new Interstate Bridge, which is that bolded, heavy dashed line or heavy-handed line in the middle of the picture. The Tenth Avenue Bridge is the one that's signed as Number 36. With traffic pressures lessened now, the Minnesota Department of Transportation began really planning for a rehabilitation of the bridge.

The slide changes. An icon of a pocket watch occupies the lower left of the screen. In a realistic illustration, the Mississippi River flows under the bridge's arches. Greenery and the skyline fill the background. The image is labeled "Modifications to railings, spandrel caps, pilasters" and captioned "1986, Hennepin County Library."

ON SCREEN TEXT: 1979-1980 REPAIRS

KATIE: And it's in 1979 through 1980 that the bridge went through a major overhaul. Some things that happened: The deck was replaced. It was actually replaced with a slightly narrower deck. They didn't

need quite--they changed some of the configuration, so it's a little bit narrow. It remains that way today. They removed all the spandrel caps and about 60% of the spandrel columns, which are the tall up-and-down pieces of the bridge that are coming out of the arch rib and hold up the bridge deck. There were some repairs to piers and arches. They actually replaced all of the east and west approaches, including bents, abutments, and parts of wing walls. They constructed new sidewalks, new traffic barriers, and new light standards were installed. I don't know if anybody has been over to the east bank side of it, but that staircase was actually installed in the 1979 rehabilitation. It replaced an original sort of spiral staircase that quite literally spiraled like a noodle up from Main Street. They did preserve the 1938 Deco railings and panels, but they replaced all of the concrete posts and pilasters between them with a modified design. And finally, they coated the entire bridge with a cementitious mixture that would give the bridge a uniform appearance and protect the concrete from moisture. And you might also notice now, based on review of some of the pictures that we've shown and just generally your knowledge today of this area, that the area around the bridge has really changed substantially over time. So when the bridge was first built, there were railroad tracks along both sides of the river that ran underneath the approach spans, and while the vestiges of the industrial paths kind of, you know, they remain, there's some there, the character of the area's been transformed. There's more residential housing, more commercial uses, and obviously we've got that nice trail system that runs under and along both sides of the bridge.

The slide changes. An icon of a clock occupies the lower left corner. Three technical drawings fill the slide. The first shows a rectangular bridge pier separated from the bridge. Its base is marked with hatch marks. There are small notes on the drawing. It is labeled "pier aesthetic detailing." Next there is a span of railing bordered by two columnar pilasters. The railing's metal is arranged in a geometric pattern similar to the current one. It is labeled "Railings and Pilasters." The last drawing is a cross-shaped light fixture with conic bulbs. It is labeled "Lighting."

ON SCREEN TEXT: FUTURE
 DESIGN
 Rehabilitating
 historic features

KATIE: And that leads us to today. So in the early 2000s, substantial damage of the piers and spandrels were noted in MnDOT inspections, and the Department of Transportation determined that another major rehab was really needed to extend the lifespan of this bridge, and that's where Chris and I sort of come into the picture. I'm gonna actually have Chris jump in on the conversation now to talk a little bit about, you know, what was the condition of the bridge here and what are the changes that are gonna be made, and how we worked together, both the cultural resources unit and the district and the bridge office to really guide the design and some of the choices that were made. So Chris, would you be willing to jump in?

CHRIS: Yeah, absolutely. So, you know, the bridge, I think the big thing about the condition of the bridge as (inaudible) started down this path was, you know, your most recent repair was 40 years ago now, in the year of construction here, 2020. And so a lot of the repairs that had been done on the bridge were starting to kind of fall apart, and, you know, the current bridge deck, for instance, has a whole lot of bridge joints in it, and that's to allow expansion and contraction. Thermally, the bridge wants to move when it gets warm. It gets bigger. When it gets cold, it gets smaller. And over time, those joints had locked up, and that was leading to a lot of deterioration, and then, you know, joints

kind of have a way of, you know, when you build them, they're watertight, and by the time they need to be replaced, they're not really stopping the water anymore, so now we've got a lot of (inaudible)-- and salt from deicing salts that are now washing down elements of the bridge underneath the deck, and that's driving the deterioration. So really, the two primary things, I think, that were really driving deterioration of the bridge was the thermal action and the management of water on the bridge deck, and so one of the beauties of this slope work that we've got is we're able to actually address both of those. We're able to correct that thermal behavior and allow the bridge to expand and contract without damaging itself, but we're also able to better manage the water. And so that was a big thing from an engineering standpoint that we were able to accomplish with our project that we're undergoing now, but, you know--I think one of the interesting things, Katie, and I'd love to hear your take on this--you know, there were times where, from an engineering perspective, we wanted to accomplish something, and we have ways that we might do that on a more contemporary bridge, and, you know, that was gonna be problematic from a historic standpoint. It was gonna damage the fabric of the bridge in some fashion, and so that's where we kinda worked together as a team to come up with, okay, what are we trying to accomplish, and what are ways that we-- what are other ways that we can do that and not have such an impact on the structure itself?

KATIE: Yeah, that's so true, Chris. I think one of the really great things about the way MnDOT does some of these bridge rehabs is that really, from the outset, a historian is really working really collaboratively and very closely on the project with the project engineers and the project proponent, and it's always important for us to understand the perspective, the engineering perspective, what needs to happen, what's happening, and what are some options to make that happen. Because you guys are--engineers are, you know, ultimately concerned with safety and making sure that things are safe for the public and are guided by a set of, you know, ethical principles but also, you know, guidelines and rulebooks and different books and things to--standards is what I'm trying to say, all sorts of standards. And then I think it was really helpful to hear all of that, because then we can come up with some solutions to some of those problems that would not necessarily work for a historic bridge that would work for a contemporary, brand-new structure. And I think the flipside of that is, from the engineering perspective, is to see the historic perspective when we're also guided by a set of guidelines and standards and ethics that we're staying very true to...

The slide changes. An icon of a clock occupies the lower-left corner of the slide. An illustration of the repaired bridge fills most of the slide.

ON SCREEN TEXT: Future Repaired Bridge

KATIE: And coming to the middle and talking about some of these things. So for example, if we go back to the previous slide...

The slide changes back to the previous slide. An icon of a clock occupies the lower left corner. The same three technical drawings are back on screen, labeled "pier aesthetic detailing," "railings and pilasters," and "lighting."

ON SCREEN TEXT: FUTURE
DESIGN
Rehabilitating
historic features

KATIE: You know, you can see that pier aesthetic detailing. So a lot of concrete repairs, you're gonna see a lot of concrete removed in this upcoming rehabilitation, and I think, to Chris's point, that's because of the thermal movement. It's because of just the deterioration, because some of this concrete is over 100 years old, and it doesn't really necessarily--is not really necessarily suited very well for getting wet all of the time, which it does right here at the Falls of St. Anthony. It's constantly getting wet, and it's constantly drying out. It's a lot of freeze spots, a lot of salt from above. So you'll see that there's gonna be a lot of concrete removals, and one of the things that will be happening in this rehab is you can see all of that dark gray hatching on that top middle picture. That's concrete removal, but when we're putting it back, we're gonna put it back in a way that looks very much so or almost exactly like it was when it was--was originally constructed. So we're taking a--yeah, go ahead.

CHRIS: I would say... dimensionally correct, is kind of the...

KATIE: Oh, yes.

CHRIS: The engineering way I would say that, that all of the dimensions from the existing bridge and its original design are really kind of what we're putting back. We have to remove that defective material because it poses a deterioration--it's gonna deteriorate more quickly as it's, you know, damaged or defective, but we put it back, and we put it back with those same dimensions and the same detailing as was present originally.

KATIE: Yeah, and other things that we're paying really close attention to, making sure that incised detailing, some of those classical revival features that sort of speak to the era of this City Beautiful Movement are being done properly and going back properly. Some other things that are gonna happen to the bridge--all of those spandrel columns, those are those uprights that run between the arch and the deck. Those--a lot of those spandrel columns, I think I mentioned this earlier, were replaced in the 1979 rehabilitation, and those remaining little pieces that were left that were 1918 concrete are gonna now be removed, so there's gonna be no original spandrel columns, but what we're putting back is basically the same column, and we're gonna be able to put the cap, so the structural piece that runs perpendicular to the deck. Those pieces are going to then now have some of the original detailing on them that were lost in the 1970s. Some other things that we're doing--the railings, the Art Deco panels, are still in really, really great shape. There are very few repairs that need to be made to those, but those pilasters, those posts between the columns, between those panels, we're putting back, and we're gonna be adding those details back that were lost in the 1970 rehab. One other thing that we worked really closely with our consulting parties and the State: Historic Preservation Office on...

The slide changes. An icon of a pocket watch occupies the lower left of the screen. In a realistic illustration, the Mississippi River flows under the bridge's arches. Greenery and the skyline fill the background. The image is labeled "Modifications to railings, spandrel caps, pilasters" and captioned "1986, Hennepin County Library."

ON SCREEN TEXT: 1979-1980 REPAIRS

KATIE: Was the lighting for this bridge.

The slide changes. An icon of a clock occupies the lower left corner. The three technical drawings of the pier, railings and pilasters, and lighting fills the screen again.

ON SCREEN TEXT: FUTURE
 DESIGN
 Rehabilitating
 historic features

KATIE: So one of the things we're doing, you can see this is the plan drawing of what the lighting's gonna look like, is we're going back to a very similar lighting design that was on the bridge historically. Unfortunately, we can't build these in concrete. It's just--concrete light posts are expensive, but they also just don't withstand the test of time. Obviously we saw that they were removed in the '50s. So we're gonna be putting metal versions of them back that are really just speaking to that spirit of the original bridge, and if you go forward a slide, you'll sort of see a rendering of...

The slide changes. An icon of a clock occupies the lower left corner of the slide. A modern painting-like illustration fills the slide. In it, two people and a bus cross over the updated bridge. Simple rectangular prisms in the background represent the skyline.

ON SCREEN TEXT: Future Repaired Bridge

KATIE: What this bridge is gonna generally look like. So you'll see that those spandrel cap columns, they've got some, you know, detailing returned to them. We're gonna have some really beautiful lights. We're gonna have a really beautiful railing put back on the bridge. And then other things--the concrete repairs are gonna be done really well, and using some really interesting techniques and some new methods to make sure that they're safe and that those patches and repairs are done well. Chris, I don't know if you wanna talk a little bit about that deep anchorage testing method that you guys did which I think is just really novel, and it's gonna be real--it's gonna work really well here, at all, or any of the other design features that we worked with each other and the project team together to make happen.

CHRIS: Sure, so I'll try and keep it out of the weeds. My engineering brain kind of loves to dive in deep, but basically... So in order to get these columns to properly be anchored into the arch and to meet our current design requirements, we were looking at what we call chemical anchorages. We basically drill into the arch and put a piece of reinforcing steel in there and pour an epoxy around it. But traditional chemical anchorages within the design codes, you start to lose capacity when you group them together, and we were--with the standard method of chemical anchorages, we were not gonna be able to make that capacity. And so the consequence of that was we were looking at different ways of achieving that, one of which was we were potentially gonna have to drill through the arches and bolt on the backside of that arch in order to get those reinforcing bars to achieve their design, and that was gonna be problematic from the historic standpoint. That was what we would call an adverse effect to the historic property. So we ended up working with our consulting contractor to build a mock-up of a Melan arch in their construction yard and do some testing using what's known as this deep anchorage theory, and essentially, what it boils down to is you just--you drill your anchorages deeper than the traditional code, and then we tested these. We tested them individually. We tested them in groups. We had a whole testing regiment on how to pull on these things with hydraulic jacks to ensure that the

bond and the anchorage wasn't failing, that the rebar would yield before those anchorages yielded, and so in doing so, we were able to avoid having to drill through those arches, and we were able to validate that we can design this in such a way that that is accommodated, and we could meet our codes.

KATIE: Yeah, I think there's just so much we could talk about, Chris, and I could go on and on, I think, all day...

The slide changes. A translucent blue covers a present-day photo of the bridge and the city. White text overlays the image.

ON SCREEN TEXT: MORE BRIDGE HISTORY

Third Avenue Bridge Project Website:
mndot.gov/metro/projects/hwy65andthirdavebridge

Hennepin County Library (photos):
digitalcollections.hclib.org

Minnesota Historical Society (photos):
mnhs.org/research

KATIE: About, you know, what it took to get us to this point, but I think we're both really excited to see this rehab and to see the bridge come to life again. If you're looking for more history on the bridge, we obviously had some sources within the presentation. A lot of the text that--a lot of what I talked about came from a couple of different resources, and largely the draft National Register nomination that the Minnesota Department of Transportation is preparing right now to individually list the Third Avenue Bridge. Right now it is a contributing element to the listed St. Anthony Falls Historic District, but we're working to list it individually for its exceptionalness and its history, and that nomination was drafted by Hess, Roise and Company, so a lot of the text came from there. Also, you know, check out the websites. Check out Hennepin County's library for different photos, and the Minnesota Historical Society. I think we're gonna move to Q&A, and Kristina's gonna be helping...

The slide changes. The top half of the slide is a present-day photo of the Third Avenue Bridge in Minneapolis. A blue banner with text divides the slide in half. The lower half is a plain white background with text and the Minnesota Department of Transportation Logo.

ON SCREEN TEXT: Q&A

Katie Haun Schuring | Cultural Resources Historian
Chris Hoberg | Project Manager

mn DEPARTMENT OF
TRANSPORTATION
9/29/2020

KATIE: Facilitate that with Chris and I, so if you have questions, and it looks like there's some here, we're happy to take them.

Five boxes appear on the right-hand side. Two show Kristina and Chris's video feeds. The other three show default user icons.

KATIE: And I'll turn my video on...

Katie's video feed appears in place of one box's default user icon.

KATIE: So you guys are lucky. The cats didn't move, so maybe they will now, now that they know they can be on video.

KRISTINA: Thank you, Katie. Yes, her cats are ones to be seen. They're very cute, so cross your fingers, and we got a lot of great questions, about six to eight of them, and a couple of ideas and memories shared as well. So kinda grouping some together--Chris, who's on the webinar as an attendee, shared in the comments--or in the chat box, he shared an article about the founder of Forecast Public Art and a National Art Award he won around a piece he did with the last rehab of the Tenth Avenue Bridge, so check that out, and he also shared a memory about seeing a part of a railing missing on the Third Avenue Bridge, I believe, and getting the city's quick response on that, so we appreciate that, and thank you. And Dennis, I believe, also shared right away at the beginning that, in case you didn't see this, he is in a historic building, the Barrel House office building, looking over the bridge as we are here right now, so hello to you, Dennis. Thanks for joining us, and, you know, let us know if anything weird's going on, or, more importantly, fun, exciting. So I'll start us off with a fun one, and I think Dave, who's on the MnDOT team as well, might have had a chance to look into this, but do we know when the fireworks on the Third Avenue Bridge began? Fun historic messa--or fun historic question.

DAVE: I wasn't able to find that one. I know that the Aquatennial started in 1940, but it has not--I have not been able to figure out how long it's been on the bridge.

KRISTINA: Okay.

DAVE: It's a good question, and we'll figure that one out, and we'll find a way to get the word to everyone.

KRISTINA: Wonderful, thank you, Dave. Thanks for your onsite research, and yeah, cross your fingers that we can get more specifics, but 1940 for the start of the Aquatennial. TBD on the start of the fireworks. So some questions perhaps for you, Chris Hoberg, design-related questions. So Dick, who is on the webinar right now, asked if there are new special qualities of concrete for different elements of the bridge.

CHRIS: Ooh.

KRISTINA: And in addition, there's another question from Tom: "Will the concrete in the arches be replaced?"

CHRIS: So Tom, your question's a little easier to answer, so I'll start with that one. The arches are largely staying--the arches are largely in pretty good condition. We certainly have some surface repairs

that we're gonna be taking on, but the vast majority of the concrete in the arches is remaining, so see some repairs being made. Certainly along the edges there's quite a bit, but there's a lot of concrete within the arches themselves, and the vast majority of our repairs on the arches are on the surface or near-surface repairs. As far as the special qualities of concrete, I don't believe there's anything really noteworthy about the concrete that we're gonna be putting back, but I'm gonna take a rain check on that one, and I gotta get back with our design team and just make sure that I'm clear on the specifications for the concrete.

KRISTINA: Thanks, Chris. A couple more design questions, design and construction questions for you. "The bronze that was shown, I believe on the lights, was that--will that be the same color of bronze used for the bridge?"

KATIE: I can take that one, Chris.

CHRIS: Maybe we can--maybe we can jump back to that rendering real quick, and I'll take a look.

The slide changes. An icon of a clock occupies the lower left of the slide. A modern painting-like illustration fills the slide. In it, two people and a bus cross over the updated bridge. Simple rectangular prisms in the background represent the skyline.

KATIE: Yeah, the light standards are intended to be sort of a darker finish. The color of the bridge--so the bridge was coated in the 1970s, so it's getting coated again. To remove all of that coating would be very, very challenging. And the way that the coating is applied, it really scarifies the surface of the original concrete, so if we took it off, the bridge would just have this very mottled, kind of beat-up look, so the bridge is getting recoated, and the color of that that's gonna be chosen--my guess is that this rendering is sort of a sunset picture, sort of putting in its--at its best light, but the color for the bridge, that coating color, is going to be determined, actually, through a mockup process. So we've started with a very specific starting point that's based on the original color of the concrete, and that was determined--actually, I crawled inside of the bridge and went with an engineer, and we took some analysis, some light analysis of some different areas. And so we're starting at a starting point for the color of the bridge, but then we're gonna take a look at a bunch of different colors sort of within that spectrum to find what's the right color for this bridge. So it's not gonna look like that in the rendering, but the light standards will be sort of a darker finish.

CHRIS: Yeah, I would say I think, too, as I'm looking at this, the bronze color maybe is referring to what we're seeing on the railings there, and I think that's more a reflection of just kind of the light in the rendering and where the light's coming from. The color of those railings is, you know, pretty much what the coloring of the railings is today. You know, we treat them very carefully because they're a part of the character-defining features of the bridge.

The slide changes. A translucent blue covers a present-day photo of the bridge and the city. White text overlays the image.

ON SCREEN TEXT: MORE BRIDGE HISTORY

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mnhs.org/research

The slide changes. The top half of the slide is a present-day photo of the Third Avenue Bridge in Minneapolis. A blue banner with text divides the slide in half. The lower half is a plain white background with text and the Minnesota Department of Transportation Logo.

ON SCREEN TEXT: Q&A

Katie Haun Schuring | Cultural Resources Historian

Chris Hoberg | Project Manager

CHRIS: So it's a very light touch on those railings. They're in great condition, and, you know, we wanna remove any, you know, graffiti or litanes that are--that might be on the surface, but we don't really wanna damage that patina either, so the color of the railing itself would be very much the same as what you would see out there today or before construction.

KATIE: Yeah.

KRISTINA: Katie, I think the next time you introduce what you do professionally at MnDOT, you should include, "I crawl inside bridges."

KATIE: (laughs) Yeah, I like it. I'll do that.

KRISTINA: Okay. So we've got a couple more lighting questions, a few questions about the Stone Arch Bridge, and one about the naming of the bridge. We--for all of you that are here, we hope to be able to tackle all of these, and we will stay on for a few extra minutes past 6:30 to see if we can fit these in. We're closing the Q&A in just a couple minutes, so if you'd like, you can try to get your question in, and we'll do our best to answer. And so going back to the lighting questions, for perhaps Chris and Katie--just scrolling up here. So two questions and another construction question I didn't get to the last time. So starting with that--did--or rather, "Will the construction continue on nights and weekends?" And I'll pause there and then group those lighting questions together in a moment. Chris?

CHRIS: Sure, yeah, so generally speaking, we're working pretty hard to minimize night and weekend work, I'd say. We do have a few planned--like, there's a weekend coming up where--Dave, correct me if I'm wrong here. We've got a weekend planned where we're gonna be doing some traffic shift? Is that right, or is that already past?

DAVE: That has been canceled, so we're good there.

CHRIS: Okay.

DAVE: But when they do close the bridge, I imagine there'll be a--I imagine there'll be 24 hours work going on right when they do it then.

CHRIS: Yup, I think the hope is, is that we can keep that to a minimum and really use it as a way to--we have--if we're running into schedule issues, we can catch up, but I'll validate that with the construction team as well.

KRISTINA: All right, thank you. Back to lighting, a couple questions. "Will there be any lighting--fancy lighting--similar to the I-35 W Bridge, so the LED lighting that's placed on that bridge?" And then Karen also asked--and thanked us for the presentation. She asked if there's been any discussion of using lamps that are of the dark sky standard, so dark sky cities and wilderness areas throughout the country, so as to avoid emitting light outward.

CHRIS: So yeah, I can answer both of those. There's not a plan for any under-deck lighting as part of this project. That would be kinda like what you see with the 35 W and the LEDs. And as far as the lighting fixtures themselves--so what this gets to is--in the engineering world we have a rating. It's called a BUG rating; it stands for backlight, uplight, and glare, and the lighting--the lighting units that we picked have--the actual light-emitting element is recessed within the housing, so it only directs light downward, and then when it hits the globe, there'll be some dispersal, but really, we were looking to make sure that we kept as much uplight and glare down as much as we could, so that--to your question, the light should be really focused down on the bridge deck.

KRISTINA: Thank you. Let's see. So Ben, I think, meant this question in jest a little bit. I know he works in downtown Minneapolis and represents downtown design as well, and he asked, "For a bridge with a legacy of linking St. Anthony with Minneapolis, it's ironic that the two streets adjoined still have different names," which are, of course, Third Avenue and Central Avenue. So a question for the panelists, and, you know, not serious, "Would any of us support renaming the downtown street and the bridge itself to Central?" He promised to keep anything that we share safe with him as a secret. What do you think, Chris or Katie?

CHRIS: That's not--that's out of my wheelhouse.

KATIE: Yeah, me too.

KRISTINA: Yeah. Do you know if that's ever been discussed, you know, shifting the naming or kind of, like...

KATIE: Oh, I'm sure.

KRISTINA: Yeah.

DAVE: There's actually a third name, Highway 65 too.

KATIE: Yeah, it's interesting. My husband works on the St. Anthony Falls side, and I've known this bridge as the Third Avenue Bridge, and so whenever I say, "Yeah, yeah, you know, the Third Avenue Bridge," he's like, "You mean the Central Avenue Bridge?" So it's just--there's so many names for all of these bridges. It's a lot of fun, and I actually kinda like that it's got multiple names, and for sure in the National Register nomination, all will be noted, so it will go in the historic record that it has multiple

names, but I don't know of anybody trying to rename it. I'm sure there were some boosters back in, you know, 19--the early 1900s trying to rename it for sure.

KRISTINA: Wasn't it--Katie, wasn't it ori--in a lot of those early publications, wasn't it named the St. Anthony Falls Bridge?

KATIE: It might have been. Gosh, I'd have to go back and look.

CHRIS: So, you know, it--102 years, you get a variety of names, I guess.

KATIE: Yeah, and you're allowed to, I think, when you're that old.

KRISTINA: Yeah. Thank you. I was gonna make a joke about the downtown improvement district, which is where Ben comes from, but we'll just keep it to three names. How about that? All right, so we're just past our time at 6:30. We'll stay on for just a few more minutes, but I did wanna let you know, if you need to leave now, you're welcome to visit...

The slide changes. A translucent blue covers a present-day photo of the bridge and the city. White text overlays the image, along with three icons: a web search bar icon next to the mndot.gov URL, an envelope with a letter bearing the "@" symbol sticking out of it next to an email address, and a telephone receiver next to the construction hotline number.

ON SCREEN TEXT: STAY CONNECTED

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KATIE: The MnDOT project website, which is listed here if you have any more questions and wanna dig into more about the construction or the project history. And you can also email the project email or call the construction hotline. Project email for these types of questions or anything that you would like support or answers on, and then the construction hotline to--those are--that's a great resource for more real-time information, of course, about the construction of the project. So for a few more questions, our finales, "What is the total cost of the bridge rehab?"

CHRIS: Just about \$129 million.

KRISTINA: All right, great. And this one is tackling a question that we got before the--before the webinar started and for Katie or Chris, "But can you speak to any of the consultants that worked on the project in the past?" I know we had a specific question about whether HNTB, which a friend of our questioner worked at, so did HNTB work on the bridge, and any others that you know of, any other firms or organizations?

CHRIS: Oh, the list is long. There's a lot of different teams involved in this project. HNTB was our design engineer for the bridge and the roadway work on this project. We also had Barr Engineering helping us with some of the design work around access into the river. We had a number of different teams helping us with estimating. It included Armeni Engineering and the HDR. City of Minneapolis had a consultant that was working with the water main that was suspended from the bridge, Olson & Nesvold Engineers. There's a number of different firms that were involved in this project. It was a pretty--obviously it's a pretty substantial project, and there was a lot of disciplines involved, so...

KATIE: Yeah, Wiss, Janney--WJE.

CHRIS: (inaudible), they were--WJE, yup, as a...

KATIE: And Hess Roise was our--part of our historical consultant team that helped with the project too.

CHRIS: Yup.

KATIE: Lots of people involved, a lot of good minds on this.

KRISTINA: Yeah, absolutely. Thank you. So a couple more questions. We have to, unfortunately, skip a few, but jumping to kind of the larger context of the area and the work upstream and changes upstream and downstream. So the first question is: "What is--was the impact, rather, of the construction of the Upper St. Anthony Falls Lock and Dam on the Third Avenue Bridge? And since that lock and dam is closed at this point, does that state affect anything within the current rehab project on the Third Avenue Bridge?"

KATIE: Yeah, that's a good question. You know, when the locks and dams were put in in the '50s, '60s, the Third Avenue Bridge actually didn't have, really, any alterations, unlike the Stone Arch Bridge, which we had the whole span be taken out and a truss put in. So no, there wasn't a lot that happened. Obviously, water gets diverted slightly differently, but overall there was no, you know, structural impact to the bridge that I'm aware of, and the fact that it's closed now hasn't really affected our project, I think, too much, aside from maybe the ability to get supplies into this area. But, you know, you've got the falls there too, so there's a lot of different site constraints and things happening anyway with that aspect of delivery of supplies for the rehab project.

CHRIS: Yeah, I'd say the lock and dam being closed to navigation primarily impacted our ability, like you said, Katie, to get materials to the bridge and access, but, you know, the--as far as the scope of work that we are undertaking, it didn't necessarily play into that too terribly much. Obviously, you know, we've got a pier very--a couple of piers really close to the walls that kind of denote the entrance to that upstream end of the lock, and so we had to be careful about how we were working around those so we didn't damage them and that sort of thing, but other than that, you know, it was really more about not being able to get materials up from downstream.

KRISTINA: Sure. Yeah, that's really fascinating. Thanks for that great question. Last one, speaking of downstream again, "What is the status of the Stone Arch Bridge?" And so I'm guessing that the individual who asked that is maybe wanting to know if there are rehab plans for that bridge in the future and anything else that you're able to share from that perspective.

CHRIS: Sure.

KATIE: Yeah, sure.

CHRIS: So we do have a project that we're working on, we're developing for the Stone Arch Bridge. It's a preservation project really just intended to, you know, address the portions of that bridge that are deteriorating. You know, replacing mortar and particularly, you know, if there's a--if there's some stones that are falling apart, either putting a facing on them or potentially replacing them, but I'd say the timeframe of that is a little bit up in the air right now. We're just kinda getting underway with our consultant, and you may have noticed they're out there doing some inspection. We have a great opportunity coming up here in the next week. The Corps of Engineers will be drawing down the pool where that bridge passes through, so we're gonna take advantage of that and jump down and take a look at our foundations. It's not an opportunity we get very often. But, you know, the timing of that is a little bit unclear at this point, but we're gathering the information to really help develop the scope and figure out what it is we need to do, and that's where we are right now.

KATIE: Yeah, and from the historic perspective, our team is also working with the district and the engineers on that project, so we're really closely involved with monitoring the work and the recommendations there, and then Chris, I'm just assuming that, you know, any potential work on the Stone Arch Bridge won't happen or won't really start until Third Avenue Bridge is mostly wrapped up and opened again so we can get bikes and peds back on that bridge.

CHRIS: I'd say that, you know, we'll be closely coordinating, obviously. And as their scope of work and their schedule becomes a little bit clearer, that will drive some conversations where we have a better understanding of what it's gonna take to do what they need to do and when they need to do it and how that interacts with our project, so--a little premature to speak too much on that, but we are working on a project, and we're hopeful that we'll be able to align that well with Third Avenue.

KRISTINA: Awesome. Thank you all so much. That wraps it up for our questions, and of course, we were not able to get to all of them but want to be mindful of your time, so if your question got--was not answered, rather, please feel free to reach out to us at the email on the screen, connect@thridavebridgeclosure.com. And we are also hosting this webinar one more time, hopefully in early December. The date has not been solidified yet but will be shortly in the near future. So if you enjoyed this, please share with your colleagues, peers, friends, enemies, friends...

KATIE: Friends.

KRISTINA: And we'd love to have them here, yes. Yeah, we really appreciate your time and carving out this time on this beautiful fall evening...

The slideshow disappears. In its place is a grid view showing Kristina, Katie, and Chris's video feeds, as well as two default user icons.

KRISTINA: To learn about this project and appreciate you, so thanks for coming, and have a great rest of your evening, and thanks so much to Chris and Katie for their time and sharing their wealth of wisdom on this project and the history behind it.

KATIE: Absolutely, you're welcome.

KRISTINA: Take care, everyone.

KATIE: Have a good night, everyone.