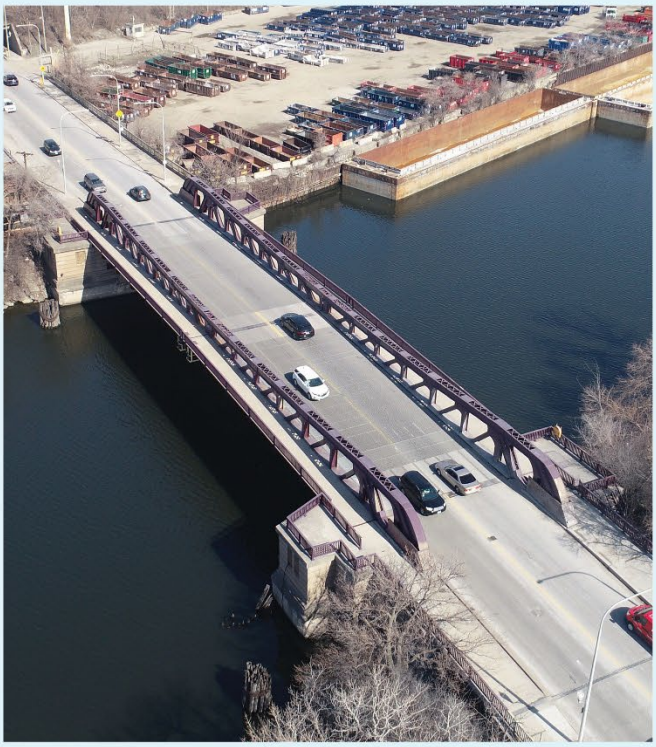
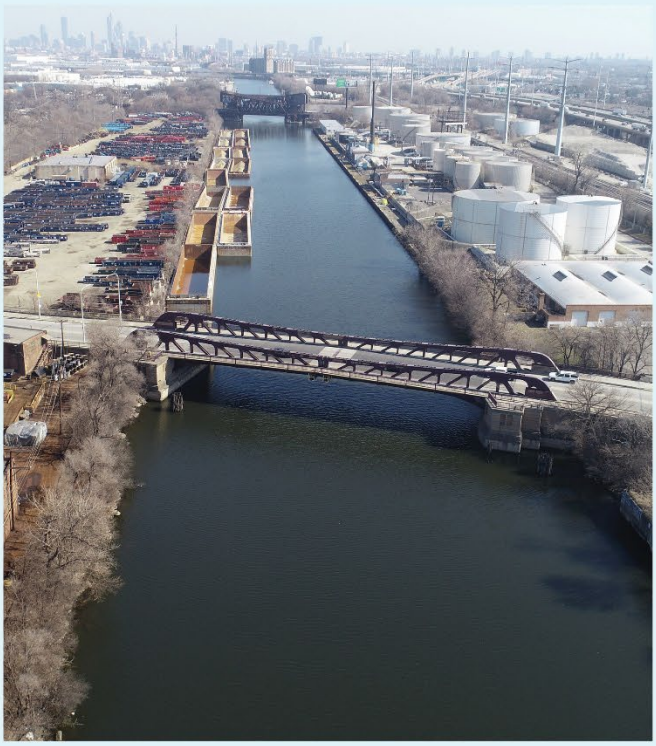
California Avenue Bridge Over the Chicago Sanitary and Ship Canal

Bridge Investment Program Grant Application 2024





CDOT
Chicago Department of Transportation

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Project Website: californiaavebridge.cnectchicago.com

Please refer to the Application Template for more details.

1. Basic Project Information

Project Description

The Chicago Department of Transportation (CDOT) is pleased to submit an application for 2024 Bridge Investment Program (BIP) funding for the California Avenue Bridge. The project will rehabilitate and preserve a 98-year old bascule bridge. The project will include the replacing of the bridge deck, and designated members of the roadway stingers, lateral and diagonal bracing members, various gusset plates, sidewalk brackets replacing the existing handrail, and replacing pedestrian lighting and other mechanical and electrical components. For this project, previously incurred design and pre-construction costs total $3.5 million.

The bridge is a non-operative double-leaf, trunnion-type bascule bridge, emblematic of Chicago's architectural history, and identified in the Chicago Movable Bridges Preservation Plan. The bridge deck is in satisfactory condition, the substructure is in fair condition, but the superstructure is in serious condition. Without this project, the bridge will be decommissioned in 2027.

The bridge is part of the Illinois Priority Freight Network and is a vital regional connector for freight traffic and for access to local jobs. The historic bridge carries two lanes of vehicular traffic and sidewalks along each side. As of 2022, the bridge carries a combined 15,900 vehicles of which 3,180 are heavy commercial vehicles across the Sanitary and Ship Canal.

This historic bridge is vital to the local community, region, and nation and meets the goal of BIP to "improve the safety, efficiency, and reliability of the movement of people and freight over bridges."

Project Location

The bridge is located in the Southwest Side of the City of Chicago within the Little Village Industrial Corridor, and is adjacent to the I-55 expressway and 2.75 miles south of the I-290 expressway (see ***Figure 1***). The bridge provides access to crucial industries and local jobs, supporting economic stability in Census Tract 8435, which falls within a larger Historically Disadvantaged Community and Area of Persistent Poverty.

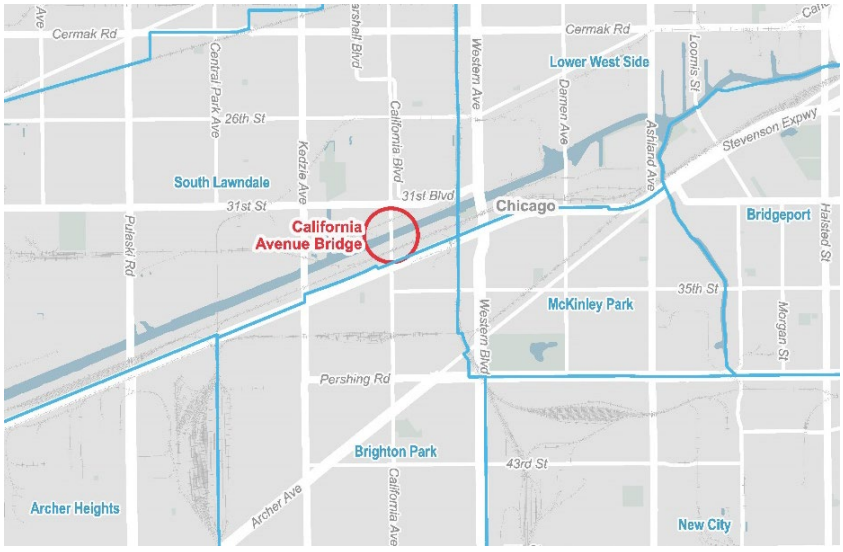
The California Avenue Bridge spans over a historic waterway, the Chicago Sanitary and Ship Canal, which was constructed by the Metropolitan Water Reclamation District of Greater Chicago in 1900 to reverse the flow of the Chicago River and bring wastewater away from Lake Michigan[1]. This successful effort protected drinking water and improved public health in the region. It also led to the building of more canals with similar goals in the area.

Today, the Chicago Sanitary and Ship Canal is an important link to industry in the area and the second most active segment of the Chicago Area Waterway System. According to the *Industrial Usage of Chicago Area Waterway System Study*, the Canal is most valuable for industries that transport raw materials including sand and gravel, scrap metal, and certain minerals. For these types of heavy materials, barges are far more efficient, and less expensive than trucking. A typical barge can carry approximately 1,500 tons of raw material, removing between 60 to 90 long-haul trucks from the roadway network, with associated congestion reduction and fuel savings.

The Canal is listed as one of the five major waterways used to transport Freight in Illinois, in the Illinois Department of Transportation *Long Range Transportation Plan*. It is on the international Marine Highway Trade Route (M-55), and it is part of the Chicago Area Waterway System and the greater Illinois Waterway, which provides a commercial link between Lake Michigan and the Gulf of Mexico (see ***Figure 2***).

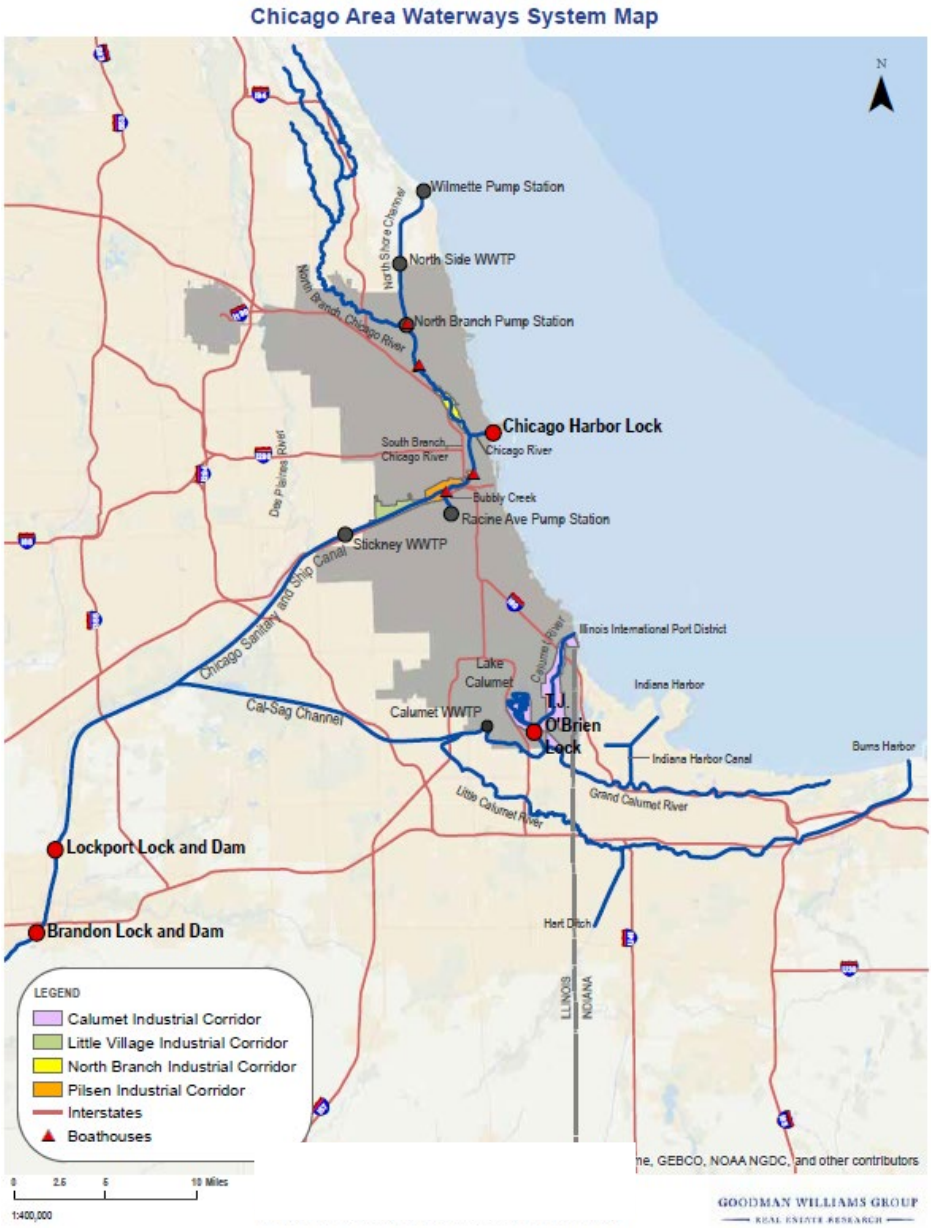
Two of the city's largest concrete suppliers maintain facilities along the Canal. They are able to receive raw materials via barges traveling up the Mississippi River System, helping to keep construction material costs comparably low in Chicago. After arriving by barge, the raw materials are delivered to local batch facilities for construction projects around the Chicago region. According to the

Figure 1. California Avenue Bridge Project Area



[1] Metropolitan Water Reclamation District of Greater Chicago History

Figure 2. Chicago Waterways (Industrials Usage of Chicago Area Waterway System Report, 2015)



[Industrial Usage of Chicago Area Waterway System Study], two of the City's largest concrete suppliers maintain barge facilities in the Little Village Industrial Corridor. ***Figure 3*** is a map showing the distribution of local delivery points from its facility on the Canal in 2014.

As a low cost system for shipping bulk goods without restrictive delivery windows, the Canal is a vital link in the local, regional and national economy. Canal bridges like the California Avenue Bridge are critical in connecting the national network with the regional network. Additionally, the Canal serves a flood prevention function in that the Metropolitan Water Reclamation District (MWRD) controls water levels on the Canal to prevent flooding in downtown Chicago.

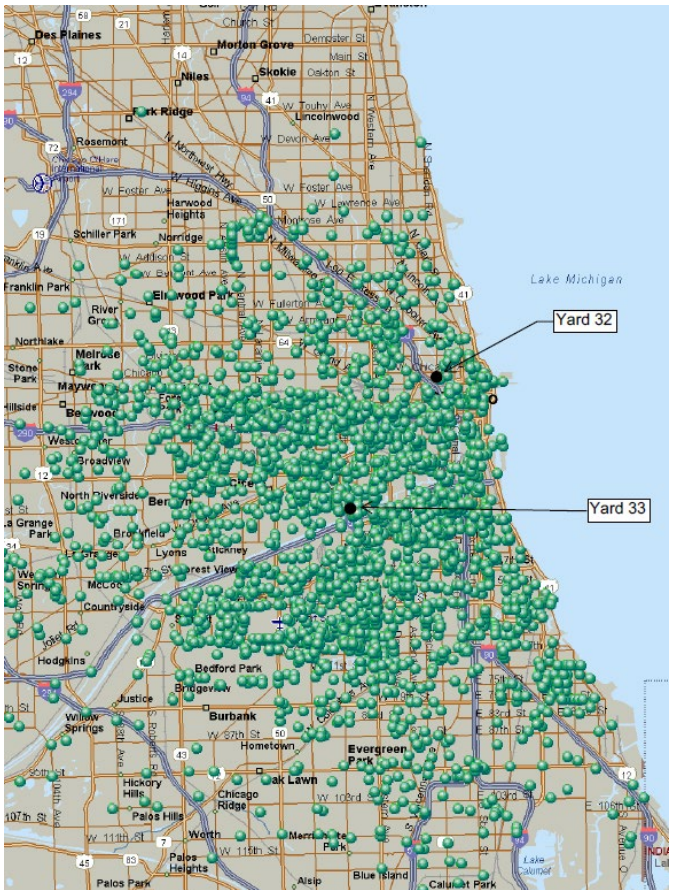
Historic Significance

The California Avenue Bridge represents a significant period in Chicago history. Developed at the turn of the last century (early 1900's) by the City's Bridge Division, the Chicago Type Bascule Bridge was the culmination of a study to determine the most suitable type of movable bridge based on the conditions and navigational needs of the Chicago River and its branches as well as cost and practicality. The main feature of the design was the bridge rotating around a fixed shaft or trunnion located at the design center of gravity of the movable span or leaf. In opening, the bridge rotates about this shaft and raises its leaves to a nearly vertical position, giving a clear, open passage for river vessels. There are 44 movable bridges in Chicago today, 41 of which are bascule bridges. Aesthetically, these bridges reflected the new focus on civic beauty for bridges, according to

City Beautiful ideas. The historic bascule bridges are an important part of Chicago heritage and connectivity. As such, Chicago has more movable bridges than any other city in the world.

This bridge is identified in *Chicago's Movable Bridge Preservation Plan*. CDOT developed the plan to provide historic and engineering documentation of the movable and fixed bridges, and to encourage the preservation of bridges that are eligible for, or listed in, the National Register of Historic Places (NRHP). Critical to the preservation of these movable bridges is the City of Chicago's commitment to maintenance of the bridge elements, prolonging the life and usefulness of these structures. The City is committed to the goals, objectives and recommendations for the management of this important group bridges. The California Avenue Bridge is a fixed bridge, but is required to open upon request of the US Coast Guard. The California Avenue Bridge project and BIP funding play a key role in furthering these goals.

Figure 3. Prairie Yard 33 Distribution of Delivery Points from Industrial Usage of Chicago Area Waterway System Barge Study, 2015



Project Parties

Currently, this BIP application exemplifies a coordinated effort, led by the Chicago Department of Transportation (CDOT) and supported by numerous agencies and local organizations, to ensure safe access to vital industrial corridors. CDOT will lead the California Ave Bridge Project.

CDOT is responsible for public way infrastructure in Chicago, including planning, design, construction, maintenance, and management. CDOT manages over 4,000 miles of streets within the City; and maintains and operates more than 300 bridge and viaduct structures.

CDOT has extensive experience in managing Federal-aid highway program funds. In a typical year, CDOT manages a federal program valued at approximately $100 million but which can exceed $300 million. This includes/has included STP, CMAQ, TAP, Major Bridge, HPP, NHFP, and INFRA. Projects range from resurfacing of arterial streets to major structure reconstructions such as Wacker Drive, the Canal Street Viaduct, and the Wells Street Bridge. In addition to its federal program, CDOT also manages a state funded program of over $100 million per year and a local program in excess of $200 million. The department works closely with its partners at the Illinois Department of Transportation (IDOT) and the Federal Highway Administration (FHWA) to ensure projects are delivered on time and within budget.

Additional Eligibility Requirements

Under current conditions, annual maintenance and emergency repair costs for the bridge average approximately $250,000 per year. This is anticipated to decrease to $75,000 per year in preventative maintenance costs after rehabilitation of the bridge. While maintenance costs will decrease, in large part through prevention of unavoidable emergency repairs and bridge outages due to the advanced age of the bridge, CDOT is committed to continue providing proactive maintenance on this complex structure once rehabilitated. All structure, inspection, and other related information is maintained in the City's bridge management system, Atom.

Every infrastructure project is viewed as an opportunity to improve safety and accessibility for pedestrians and cyclists, even projects where that is not the original focus, and the California Ave Bridge project is no exception. The project will incorporate the following improvements:

- **Pedestrian Improvements.** Under existing conditions, the bridge has sidewalks on both sides across the bridge. However, the sidewalks are deteriorated and have vertical deflections. Sidewalks will be replaced to meet all ADA requirements. Pedestrian lighting within the project limits will be evaluated to meet current standards.
- **Cycling Improvements.** The City is investing in building the City's Bike Lane Network, as evidenced by the Chicago Cycling Strategy released in 2023, which recommends a bike lane on California Ave just north of the California Ave Bridge. There are currently no bike lanes planned across the California Ave Bridge. However, the rehabilitation designs will be forward compatible with bike lanes. If bike lanes were to be considered on the California Ave Bridge in the future, this will not only be feasible, but can be implemented efficiently.

2. National Bridge Inventory Data

Please see ***Appendix C*** for the National Bridge Inventory data for the California Avenue Bridge.

3. Project Costs (Grant Funds, Sources and Uses of Project Funds)

Table 1. Project Costs

1	**Total Project Cost (Items 1.1 + 1.2)** *Sum of "Previously Incurred" and "Future Eligible*	**$78,000,000**
1.1	Previously Incurred Project Costs (if applicable)	$3,500,000
1.2	Future Eligible Project Cost (Items 1.2.1 + 1.2.2 + 1.2.3) (Sum of BIP request, Other Federal Funds, and Non-Federal Funds)	$74,500,000
1.2.1	*BIP Funding Request Amount (exact)*	*$59,600,000*
1.2.2	*Estimated Other Federal Funding (excluding BIP request)*	*$0*
1.2.3	*Estimated Total of Non-Federal Funding*	*$14,900,000*

The total project cost for the California Avenue Bridge project is $78 million, including previously incurred design and pre-construction costs.

The total future eligible project cost for the California Avenue Bridge BIP grant project is $74.5 million, consisting entirely of construction and construction-related expenses. CDOT is requesting $59.6 million in BIP grant funding to complete the California Avenue Bridge project. This represents 80 percent of the future eligible project cost (See Table 2).

California Avenue Bridge is programmed in the Chicago Metropolitan Agency for Planning's (CMAP) Transportation Improvement Program. TIP ID: 01-23-0004. CDOT's program and TIP record will be adjusted if awarded.

The City of Chicago is committed to funding the remainder of construction costs, as detailed in the Letter of Funding and Maintenance Commitment (***Appendix B***). Table 3 presents a breakdown of the total project costs by design and construction items, along with the source of each line item. The City of Chicago will be responsible for any costs that exceed the estimated total shown in these tables.

Table 2. Project Budget

Phase	Cost Item	Cost	Funding Source	
		Total	Fed-BIP	Non-Federal
Design	Phase I Engineering	$1,500,000	-----	$1,500,000
	Phase II Engineering	$2,000,000	-----	$2,000,000
	Design Subtotal	**$3,500,000**	**0%**	**$3,500,000 (100%)**
Construction (Future Eligible Costs)	Arch and engr fees	$7,000,000	$5,600,000	$1,400,0000
	Other arch and engr fees	$1,000,000	$800,000	$200,000
	Project inspection fees	$500,000	$400,000	$100,000
	Demolition and removal	$4,000,000	$3,200,000	$800,000
	Construction	$47,500,000	$38,000,000	$9,500,000
	Equipment	$3,500,000	$2,800,000	$700,000
	Miscellaneous	$3,000,000	$2,400,000	$600,000
	Contingencies	$8,000,000	$6,400,000	$1,600,000
	Construction Subtotal	**$74,500,000**	**$59,600,000 (80%)**	**$14,900,00 (20%)**
Total Project Costs		**$78,000,000**	**$59,600,000 (76.4%)**	**$18,400,000 (23.6%)**

3. Merit Criteria

a. State of Good Repair

Bridge Condition

Ensuring that the transportation system is operating in a state of good repair is a primary driver of the California Avenue Bridge project. Constructed in 1926, this bridge has carried Chicagoans and their goods since before the Great Depression.

It is only through the dedicated, long-term maintenance efforts of the City of Chicago that this bridge has continued to serve its function well past its intended 50-year design life. However, the California Avenue Bridge is reaching a point where maintenance and repairs alone will not be sufficient to keep it in service. With an overall condition rating of serious, improvements to this bridge are critical to reducing the total person miles travelled over bridges in poor condition in Chicago. It is anticipated that without substantial rehabilitation, annual partial lane closures will occur for emergency repairs, and that the bridge will be decommissioned in 2027.

The bridge is in need of substantial rehabilitation. Rehabilitation will ensure that this bridge can continue to serve as a vital connector for the surrounding disadvantaged communities, the Little Village Industrial Corridor, and the national maritime trade network that runs beneath it.

The California Avenue Bridge was last rehabilitated in 1991, and although it has since received minor repairs to extend its overall service life, the impact of these rehabilitations is near its end. At this stage, minor rehabilitation will no longer be sufficient to keep the bridge in safe operating condition. A substantial rehabilitation is required to restore the bridge and provide a new 30-year service life.

Table 4, below, shows the bridge condition based upon the latest round of inspections in 2022. The inspection report is included in ***Appendix G***. In addition to these biennial routine inspections, the bridge undergoes a Fracture Critical inspection every year and an underwater inspection every 5 years.

Table 3. California Avenue Bridge Condition (2022)

Bridge	Year Built	Sufficiency Rating	Condition Rating			Overall Condition
			Deck	Superstructure	Substructure	
California Avenue Bridge	1926	77.8	6	3	5	Serious

Below is an accounting of emergency repairs that involved partial lane bridge closures in the last 5 years:

- 2019: Roadway grating replacement and localized floorbeam repairs (3 months)
- 2021: Localized floorbeam repairs (3 months)
- 2023: Localized floorbeam repairs and stringer replacement at rear break at each leaf (3 months)

Maintenance Costs

Bridge rehabilitation will be conducted in accordance with Chicago's Movable Bridge Preservation Plan and the associated multi-agency Programmatic Agreement. The plan and agreement were undertaken to provide guidance on the rehabilitation of these historic structures. The plan involved significant outreach in its development and signatories to the agreement include CDOT, IDOT, FHWA, US Army Corps of Engineers, US Coast Guard, Illinois State Historic Preservation Officer, Landmarks Illinois, Historic Bridges.org, and the Advisory Council on Historic Preservation. Given the historic significance of this bridge, the bridge reconstruction is designed as a rehabilitation rather than full replacement to maintain the historic integrity of the structure, although modern materials and methods are employed. An example of modern materials is the use of stronger steel than was available at the time of the original construction (e.g. newer 50 ksi vs original 33 ksi steel). The stronger steel will increase the durability of the bridge and structural elements. This, in turn, will extend the functionality of this bridge.

As detailed earlier in the Project Description section, by virtue of its location on an international Marine Highway trade route (M-55), and its role as a connector in a multimodal trade area, the bridge plays an outsized role in the region's operations. Given its importance, CDOT makes every effort to avoid any full bridge closures. Instead, partial closures occur frequently for emergency repairs. The partial closures impact adjacent communities as well as last-mile freight movement. In the end, the reliable functioning of this bridge is of regional and national importance.

An example of the modern construction methods is the use of accelerated bridge construction (ABC) techniques as promoted by the FHWA through the Every Day Counts program. In this case, CDOT intends for the steel superstructure elements to be pre-fabricated in the shop and brought to the site to reduce overall construction time. ABC will be evaluated for the bridge rehabilitation during the final design preparation. Components of the bridge that can remain while still contributing to a renewed 60-year life span are salvaged. This not only honors the historical nature of the bridge, it also reduces the overall cost and energy footprint of the bridge rehabilitation project.

Under current conditions, annual maintenance and emergency repair costs for the bridge average approximately $250,000 per year. This is anticipated to decrease to $75,000 per year in preventative maintenance costs after rehabilitation of the bridge. All maintenance costs are covered by local funds. While maintenance costs will decrease, in large part through prevention of unavoidable emergency repairs and bridge outages due to the advanced age of the bridge, CDOT is committed to continue providing proactive maintenance on this complex structure once rehabilitated. All structure, inspection, and other related information is maintained in the City's bridge management system, Atom.

b. Safety and Mobility

Administration Priorities and Departmental Strategic Plan Goals: Workforce Development

- The California Avenue Bridge project is an opportunity to improve safety. Among the improvements to be incorporated in the project are pedestrian improvements, motor vehicle travel lane surface improvements, lighting improvements, impact attenuators.
- The existing sidewalks on the bridge have deteriorated and are no up to current safety standards. Sidewalks will be replaced to meet all ADA requirements. Pedestrian lighting within the project limits will be evaluated to improve accessibility and safety.
- The existing bridge surface is open metal grating, which provides adequate slip resistance. This project will improve slip resistance with concrete infill of the metal grate.
- All lighting on the bridge will be evaluated and potentially replaced, improving visibility and safety for everyone using the bridge.
- Impact attenuators will be evaluated on the bridge to reduce the severity of crashes. Currently there are no impact attenuators on the bridge. Of the 23 crashes experienced on the bridge from 2018-2022, six involved drivers colliding with fixed objects.

Safety

The California Avenue Bridge project is centered on the critical major rehabilitation of a historically significant bridge. There is an opportunity to improve safety while restoring full functionality of the bridge and avoid critical failures and continued deterioration that would necessitate full closure of the bridge.

As of 2022, the bridge carries on average a combined 15,900 vehicles of which 3,180 are heavy commercial vehicles across the Sanitary and Ship Canal per day, this amounts to around 1,569 total person miles traveled (PMT) over the bridge on average every day. Crash data was obtained from the Illinois Department of Transportation (IDOT) for the most recent complete five-year period available, which at the time of the report was 2018-2022. The crash study area extended from 260 feet beyond the north end of the bridge railing to 220 feet beyond the south end of the railing, as shown in ***Figure 4***. Review of the historical crash data reveals a relatively low crash rate overall on the bridge. Fixed object and nighttime crashes accounted for a significant percentage of these crashes.

Figure 4. Crashes by Severity (2018-2022)

On average fewer than five crashes occurred per year. In sum there were 23 total crashes. Of these, 17 were property-damage-only crashes, five were B-injury crashes, and one was an A-injury crash. Over a quarter of these (6 crashes) involved collisions with fixed objects, and two of these resulted in injuries. Nine crashes occurred during darkness or dusk, including two resulting in injuries. These were the same injury crashes mentioned above, involving fixed objects. There were no fatalities reported over the five-year period. No pedestrian or bicycle related crashes were reported. Crash maps by Severity, Type, and Lighting are in ***Appendix F***.

The collision data and police crash reports will be fully analyzed as part of the design and countermeasures incorporated based upon the analysis. Implementing clearer roadway traffic markings and improved lighting is anticipated to help to hinder the presence of crashes within the study area. The BCA analysis shows that this project will provide almost $25M in safety crash cost savings.

Although there is not a significant crash history in the area, the absence of recorded crashes does not mean a bridge is a safe facility to cross on foot or by bike. Furthermore, crash history does not necessarily capture the true safety and the perception of safety of a location. Near misses can be common without resulting in actual crashes. The perception of an unsafe environment can motivate drivers, bicyclists, and pedestrians to avoid a location, which can

have particularly dire consequences in further limiting connectivity in disadvantaged communities where transportation options may already be limited.

Safety in the transportation system is, and has been a top priority for the City of Chicago. This is evidenced through its many planning and policy initiatives over the past decade which include: *Chicago Pedestrian Plan*, *Complete Streets Design Guidelines*, *Make Way for People Initiative*, *Make Way for Play Guide*, *High Crash Corridors Framework Plan*, *Vision Zero Chicago Action Plan;* and most recently updated *Chicago Cycling Strategy Plan* and Strategic Plan with a major focus on safety and equity in the transportation system.

Implementation of these diverse planning efforts has been at the forefront. In 2023, the City completed an unprecedented number of projects to improve safety for people who walk and ride bikes, including 400 pedestrian safety projects and more than 55 miles of new and upgraded bike lanes, 90% of those were either protected bike lanes of neighborhood greenways.

In short, every infrastructure project is viewed as an opportunity to improve safety, even projects where that is not the original focus, and the California Avenue Bridge project is no exception. Among the improvements to be incorporated in the project are the following:

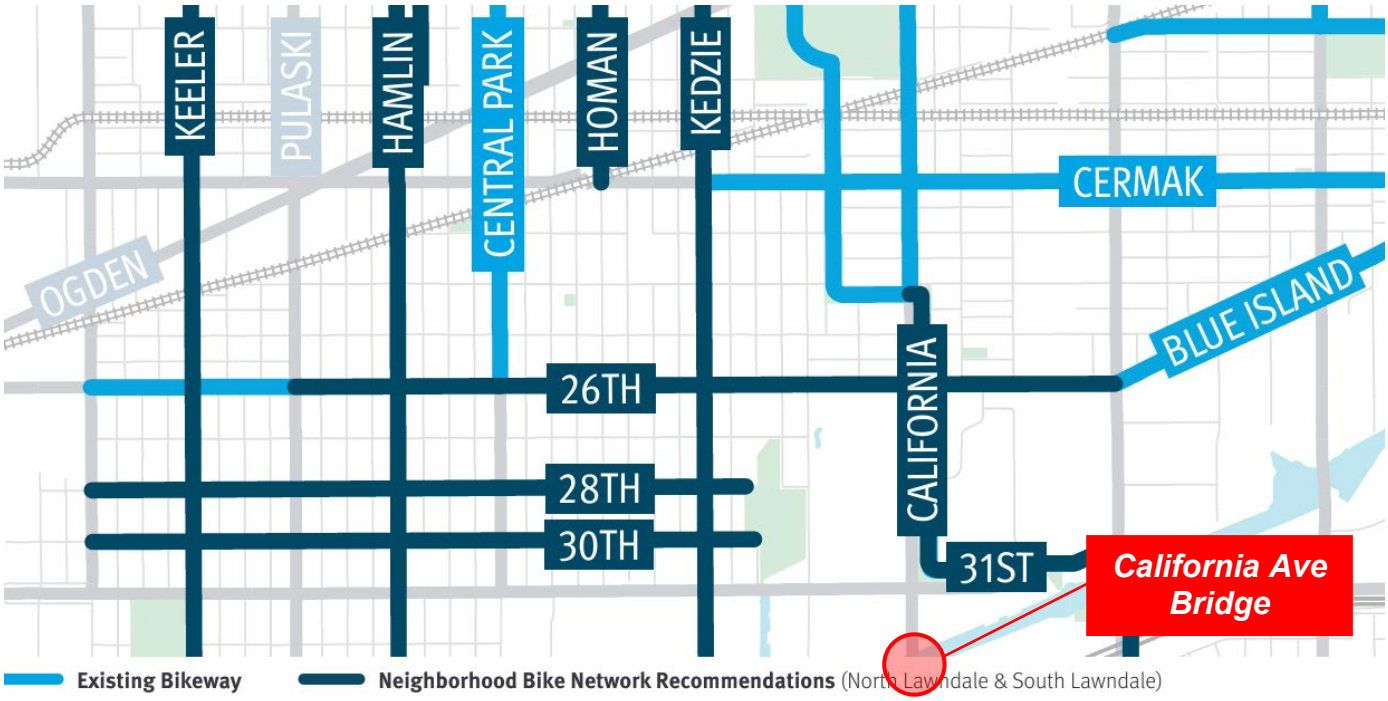
- **Pedestrian Improvements.** Under existing conditions, sidewalks are present on both sides of the bridge. However, the sidewalks are deteriorated and have vertical deflections. Sidewalks will be replaced to meet all ADA requirements. Pedestrian lighting along the bridge will be evaluated to improve accessibility and safety.
- **Motor Vehicle Travel Lane Surface Improvements.** Under existing conditions most of the bridge decking consists of open metal grating. While the metal grating provides adequate skid resistance for motor vehicles, concrete infill of the metal grating represents an improvement over the metal grating alone. Full concrete infill through the motor vehicle travel lanes is often not possible due to the weight involved and the delicate balance required with bascule bridges. However, there are strategies, such as alternating bands of concrete infill that can be utilized. This will be investigated as part of the final bridge design.
- **Lighting Improvements**. Nine of the 23 crashes experienced on the bridge from 2018-2022 occurred during darkness or dusk, and two of these crashes resulted in injuries with one being incapacitating. The existing lighting on the bridge trusses and along the approaches will be assessed to add LED lighting that is able to be directed in a manner that provides desirable light levels along the bridge while at the same time minimizes light pollution. This will improve visibility and safety for pedestrians and motorists. The navigational lighting on the bridge will also be evaluated.
- **Impact Attenuators.** Impact attenuator guardrail terminals will be evaluated on the bridge to reduce the severity of crashes. These could be installed in advance of the outside trusses to reduce the severity of crashes with the vertical steel elements. Of the 23 crashes experienced on the bridge from 2018-2022, six involved drivers colliding with fixed objects. Two of these resulted in injuries, one of which was an incapacitating injury. Attenuators will reduce the number and severity of injuries to motorists in these types of crashes. Safety improvements, such as improved lighting and impacts attenuators, will benefit all modes of travel, including transit.

Mobility

The California Avenue Bridge is also important to multimodal mobility for the neighboring communities. The CTA bus route 94, which crosses the California Avenue Bridge, carries 8,195 riders on an average weekday. A Cook County courthouse is located 0.6 miles north of the bridge on California Avenue, and Route 94 bus stops at the courthouse are a critical access point for jurors, litigants, and employees traveling from all parts of Cook County. Route 94 stops at stations on the CTA's Orange, Pink, and Green lines, as well as Sinai Hospital and two high schools, and it provides access to neighborhoods throughout Chicago's south, west, and north sides during both daytime and overnight hours. Bridge rehabilitation will prevent increasingly frequent closures for repairs, and eventual closure of the bridge entirely, from reducing access for all of these riders.

The City is also investing in building the City's Bike Lane Network, as evidenced by the *Chicago Cycling Strategy* released in 2023, which recommends a bike lane on California Avenue just north of the California Avenue Bridge as shown in ***Figure 5***. There are currently no bike lanes planned across the California Avenue Bridge. However, the rehabilitation designs will be forward compatible with bike lanes. In the case that bike lanes are considered for the California Avenue Bridge in the future, this will not only be feasible, but can be implemented efficiently.

Figure 5. Neighborhood Bike Network Recommendations, Chicago Cycling Strategy (2023)



c. Economic Competitiveness

Administration Priorities and Departmental Strategic Plan Goals: Workforce Development

- The California Avenue Bridge provides connectivity to the Little Village Industrial Corridor, which is a job center for the surrounding areas. In Chicago, 23 percent of jobs added between 2010 and 2017 were located within a quarter-mile of Industrial Corridors. The Little Village Industrial Corridor also boasts a Job Corps Center and trade school where the next generation of workforce gain valuable training. Without this project, access to a significant job center in the City will be limited.
- In the past, to further enhance local project benefits, the City of Chicago has used local hiring agreements when permitted by the funding agency. Typically, these efforts prioritize employing People of Color (POC) community members and building an inclusive project team.
- The benefit-cost analysis (BCA) for this project found that avoiding a detour would save over $409M (discounted) in travel-time savings and vehicle operations costs from avoiding a detour. The efficient movement of truck traffic is important to maintain in this area as the bridge is located within and connecting to significant freight-generating land uses, such as industrial areas, transportation facilities, commercial areas and intermodals.

Jobs

The California Avenue Bridge carries a combined average of 15,900 vehicles, of which 3,180 are heavy commercial vehicles across the Sanitary and Ship Canal. Average daily pedestrian and bicycle counts are not available at this time. However, given that the bridge is located in the Little Village Industrial Corridor, in a Historically Disadvantaged Community and Areas of Persistent Poverty, and that over 96,000 jobs were located within 3 miles of the bridge, per the 2021 US Census Bureau On the Map data, this bridge is of significant importance to the surrounding communities.

Chicago Department of Planning and Development analysis shows that 23 percent of jobs added in Chicago between 2010 and 2017 were located within a quarter-mile of Industrial Corridors, and account for nearly 20 percent of all jobs in Chicago. The Little Village Industrial Corridor also boasts a Job Corps Center and trade school where the next generation of workforce gain valuable training. Without this project, the bridge would be decommissioned in 2027, limiting access to a significant job center in the City.

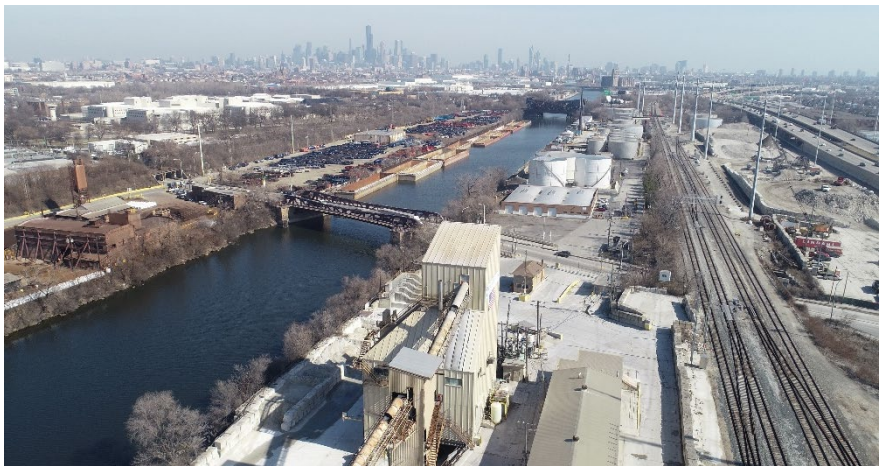
The project itself will also have future economic benefits for the community with additional jobs. In the past, to further enhance local project benefits, the City of Chicago has used local hiring agreements when permitted by the funding agency. They have also required contractors to maximize use of U.S. Department of Labor-registered apprenticeship programs and have negotiated labor agreements that work to ensure that graduates of Chicago Public Schools (CPS) and City Colleges of Chicago have access to apprenticeships for these good-paying

jobs. This apprenticeship program benefits low-income students of color; 25% of CPS students are bilingual and nearly 71% qualified for free or reduced lunch in the 2021-2022 school year. At the City Colleges of Chicago, 75% of students identify as students of color.

Supply Chain

The California Avenue Bridge is also significant for the continued strength of Little Village Industrial Corridor, which economic impacts extend beyond the surrounding communities. Approximately 25 percent of all freight trains and 50 percent of all intermodal trains in America roll through the Chicagoland region. The Chicago Sanitary and Ship Canal is listed as one of the five major waterways used to transport Freight in Illinois, in the Illinois Department of Transportation *Long Range Transportation Plan*. It is on the international Marine Highway Trade Route (M-55), and it is part of the Chicago Area Waterway System and the greater Illinois Waterway, which provides a commercial link between Lake Michigan and the Gulf of Mexico.

Given the regional and national economic importance of the area, including the surrounding industrial corridors, the bridge's proximity to I-55, and the Chicago Sanitary and Ship Canal providing a connection from the Gulf of Mexico to Lake Michigan, the significance of this bridge exceeds the raw numbers.



With relation to the economic importance, the California Avenue Bridge carries 24 percent truck traffic as an overall percentage of the bridge traffic volumes. Therefore, rehabilitating the bridges will continue to support the improvement of system operations and travel time reliability for freight, as well as support the regional and national supply chain. Additionally, the Cook County Freight Plan found that 27 percent of jobs in Cook County are in freight-dependent industries such as agriculture, natural resources, manufacturing, trade and transportation; these same industries produce more than 56 percent of the County's economic output.

According to CMAP, the California Avenue Bridge is a 'Truck Bottleneck', as are portions of the detour required if the bridge is decommissioned in 2027. On the California Avenue Bridge, trucks typically experience congestion over 10 hours per day accessing I-55. These conditions are true for roadways connecting the Little Village Industrial Corridor to the surrounding neighborhoods. Without this project, the overall truck traffic and congestion in the nearby street network would increase. This includes adjacent north-south corridors like Western Avenue, Kedzie Avenue, and east-west corridors like 31st Street, and 35th Street. Each experience similar heavy truck traffic patterns like the California Avenue Bridge, some with congestion between 6-10 hours per day. The detour if this bridge closes is around 1.6 miles.

The BCA for this project found that avoiding a detour would save over $409M (discounted) in travel-time savings and vehicle operations costs from avoiding a detour. The efficient movement of truck traffic is important to maintain in this area as the bridge is located within and connecting to significant freight-generating land uses, such as industrial areas, transportation facilities, commercial areas and intermodals.

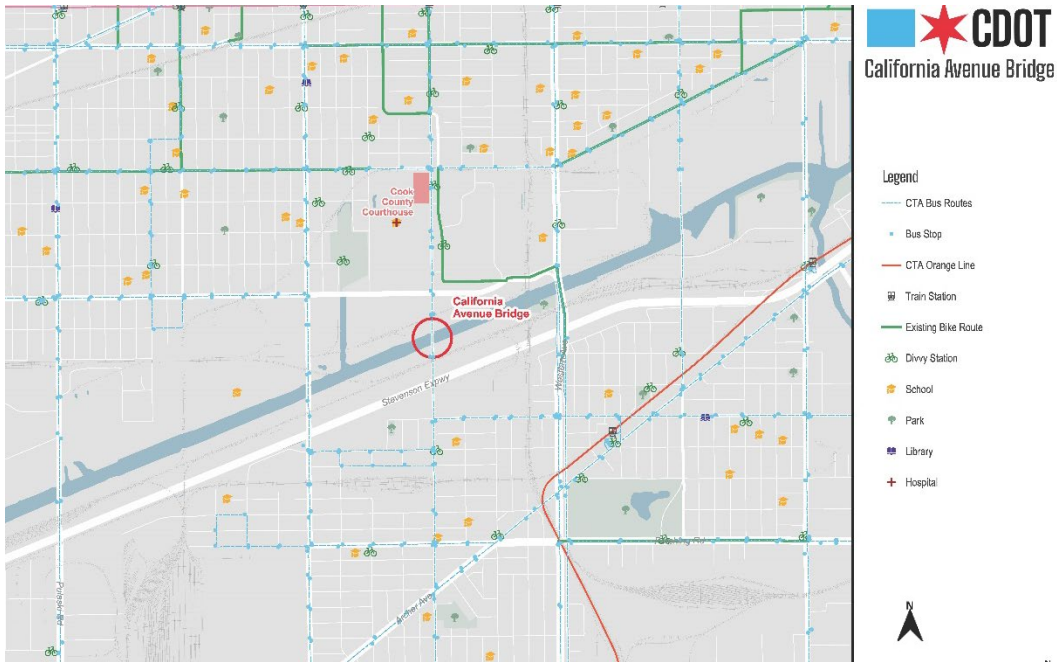
Mobility

The bridge updates will improve access to job opportunities, as the adjacent industrial areas are also major employers. Improving multimodal connectivity better connects workers to job opportunities on either side of the bridge.

The multimodal improvements are also important in providing increased connectivity for community members, as there are schools, parks, healthcare, and commercial corridors within a mile of the bridge. Therefore, improving pedestrian access and providing transit connectivity over the bridge is crucial. As part of the bridge rehabilitation, pedestrian improvements will be made to adjacent sidewalks and on the bridge. These will meet the requirements of AASHTO, ADA, IDOT, and the City of Chicago. These include new precast sidewalk panels and railings for the span over the waterway, and repair of the approach span sidewalks. As mentioned in Safety and Mobility Criteria, the bridge rehabilitation will be forward compatible with bike lanes to make bike connectivity across the bridge feasible in the future.

The Chicago Transit Authority bus route #94 South California travels over the bridge. The route operates 7 days a week from approximately 4:30 a.m. to 10:30 p.m. providing connectivity to multiple train stations, schools, parks, County Courthouse, County jail, and nearby commercial corridors. The average weekday ridership on this route in 2023 is approximately 8,195 passengers and is consistent with pre-pandemic ridership. Any disruptions to this bridge will affect bus riders all along this route, as a re-route will be necessary, increasing travel times in the already truck congested area. Additionally, five other bus routes operate within a mile of the bridge. ***Figure 6*** shows the transportation network in the vicinity of the bridge.

Figure 7. Transportation Network



d. Climate Change, Sustainability, Resiliency, and the Environment

Administration Priorities and Departmental Strategic Plan Goals: Climate Change and Sustainability

- Due to the visibility of the California Avenue Bridge and its historic nature, implementation of sustainable features is especially important. Among the features that will analyzed as part of this project are LEDs and other efficient lighting. The bridge will also be prefabricated in the shop to reduce expected greenhouse emissions associated with on-site construction.
- The environmental permitting process will begin concurrent with preliminary engineering in Q3 2024. Based on past experience with similar projects, it is anticipated the project will be processed as a Federally Approved Categorical Exclusion. A Preliminary Environmental Site Assessment (PESA) will be completed for this project in Phase I. The results of the PESA will indicate any further investigation studies that should be conducted in the event that the project requires land acquisition or linear excavation due to the presence of Recognized Environmental Conditions (RECs) along the project route. Special Waste studies will be completed for Phase I.
- The BCA analysis shows that the CO2 Emissions Costs Reductions amount to over $40M in cost savings, in addition to over $12M in cost savings for other emissions and environmental benefits. These improvements will directly impact an underserved community, that when compared nationally this population, ranks in the 79th percentile or above in all of the EJSCREEN's Environmental Justice Indices.

CDOT has a deep commitment to designing and developing projects that consider climate change impacts. CDOT has integrated climate change mitigation measures into the anticipated design and construction of the California Avenue Bridge project.

In July 2013, CDOT released its *Sustainable Urban Infrastructure Guidelines (SUIG)*, which established an agency and citywide approach with 80 requirements, standards, and policies for integrating environmental performance goals into infrastructure design. SUIG recognizes that the design of the city's infrastructure can help reinforce our health and the health of our environment, that climate resilience embedded in design philosophy reduces maintenance costs and liability over the lifetime of the infrastructure improvement, and ultimately that sustainable infrastructure is not only good for the environment, but is also a good investment.

The environmental permitting process will begin concurrent with preliminary engineering in Q3 2024. Based on past experience with similar projects, it is anticipated the project will be processed as a Federally Approved Categorical Exclusion. Due to the visibility of the California Avenue Bridge and its historic nature, implementation of sustainable features is especially important. Among the features anticipated to be included are:

- Use of LEDs and other energy efficient lighting: As indicated in Criterion #2: Safety and Mobility, LED lights may be installed on the bridge and at the bridge approaches. This will improve visibility for pedestrians and also enhance visibility of pedestrians to motor vehicle drivers.
- Reduce emissions from construction equipment: Steel superstructure elements will be pre-fabricated in the shop and brought to the site to reduce overall construction time. Accelerated bridge construction (ABC) will also be evaluated for the bridge rehabilitation during the final design preparation.

The City of Chicago released the 2022 *Chicago Climate Action Plan (CAP)*. The CAP provides a strategic framework to "reduce Chicago's contribution to global climate change, prepare our communities for the effects of a changing climate, and support a just transition to a thriving green economy."

Within the CAP, one strategy is to make walking, biking, or transit viable options for all trips. It is recommended to "prioritize sidewalk and road maintenance by using an equity lens along with condition assessments to address historic imbalances in the upkeep of City infrastructure". Improving pedestrian infrastructure on the California Avenue Bridge and roadway infrastructure on this transit route, as detailed in Criterion #2: Safety and Mobility, aligns with this recommendation.

Additionally, the California Avenue Bridge project will reduce emissions compared to a No-Build scenario, as outlined in ***Appendix E*** Benefit-Cost Analysis. If the project were not to take place and the bridge was to close, significant diversions and rerouting would occur, causing increased Vehicle Miles Traveled (VMT) and emissions. The BCA analysis shows that the CO2 Emissions Costs Reductions amount to over $40M in cost savings, in addition to over $12M in cost savings for other emissions and environmental benefits. Bridge rehabilitation will prevent increasingly frequent closures for repairs and eventual closure of the bridge entirely, from reducing access for all of these riders. Preserving a direct route and limiting detours will maintain efficient bus service along Route 94 so that using public transit remains a desirable mobility option.

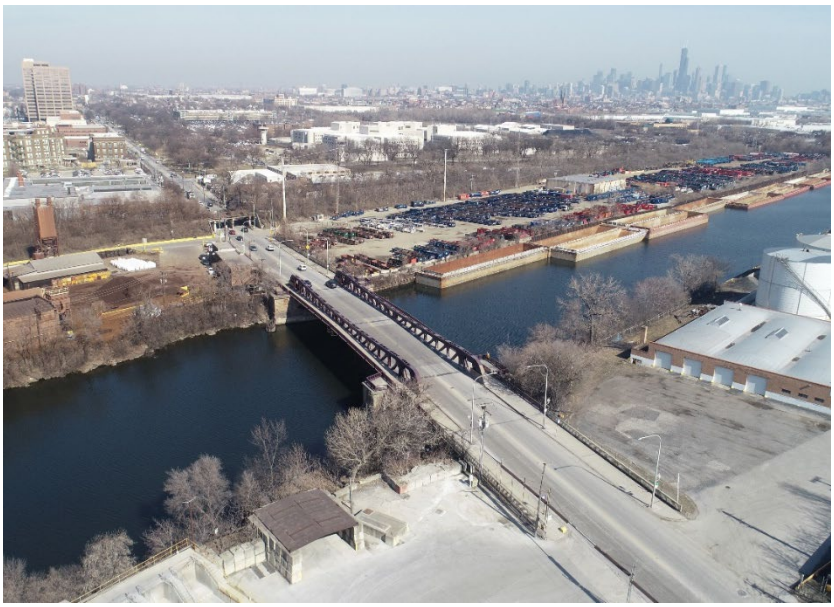
These improvements will directly affect an underserved community. According to the Environmental Protection Agency's EJScreen, the population within three miles of the project location is in the 89th percentile on the Demographic Index when compared to the national population, meaning it is in an area with a disproportionately large population of low-income and minority populations. In addition, when compared nationally this population ranks in the 79th percentile or above in all of the EJSCREEN's Environmental Justice Indices. See ***Appendix H*** for more details. This project will preserve the California Avenue Bridge, and avoid the added environmental costs associated with a detour, which ensures that the local environmental burden is not exacerbated.

e. Equity and Quality of Life

Administration Priorities and Departmental Strategic Plan Goals: Equity

- The California Avenue Bridge project will incorporate public feedback, with public engagement expected to start in Q3 2024. As part of the project, CDOT will adhere to NEPA requirements for public engagement. This includes holding public meetings, conducting outreach to local communities for input on the final designs, and reviewing the construction schedule. The communities surrounding the California Avenue Bridge are majority POC, with a high percentage speaking a language other than English. The public engagement efforts will prioritize making information about the project easily accessible to these communities.
- The California Avenue Bridge provides direct connectivity to the Little Village Industrial Corridor and the Little Village Commercial Corridor. The California Avenue Bridge is within greater Areas of Persistent Poverty and Historically Disadvantaged Communities (Census Tract 8435) and, when compared nationally, ranks in the 79th percentile or above in all of the EJSCREEN's Environmental Justice Indices. This project will connect this community to a crucial job center and essential services, avoid additional environmental burden from detours, and correct historical inequalities.

The California Avenue Bridge is within greater Areas of Persistent Poverty and Historically Disadvantaged Communities (Census Tract 8435). As described in the Criterion #3: Economic Competitiveness and Opportunity, the Little Village is a significant employer for surrounding communities and the City as a whole. The multimodal improvements to the bridges as described in Criterion #2: Safety and Mobility will improve affordable transportation options by making it easier for people who live on either side of the Chicago Sanitary and Ship Canal to connect by foot, public bus, or car. Improvements that benefit people using different modes, including driving trucks and walking across the bridge, is one of the action items in the *Chicago Metropolitan Agency for Planning ON TO 2050* comprehensive plan to balance quality of life concerns with economic impacts when investing in freight development and infrastructure. Furthermore, the comprehensive plan stresses that investing in infrastructure in Areas of Persistent Poverty and Historically Disadvantaged Communities is crucial in correcting inequalities in the City.



The California Avenue Bridge provides direct connectivity to the Little Village Industrial Corridor. Other important community resources within a mile of the bridge include La Villita Park and McKinley Park, a courthouse, and several elementary schools. The California Avenue Bridge is also within a mile of the Little Village Commercial Corridor, which provides essential services to the surrounding communities including a library, grocery stores, banks, and health clinics.

The *Little Village Commercial Corridor Study* notes that the Little Village Commercial Corridor is the largest center of Mexican commerce and culture in the City and provides crucial services to the Spanish-speaking community in the Chicagoland region. It is celebrated as the second highest grossing commercial corridor in Chicago. The California Avenue Bridge carries CTA bus route #94 South California, which offers an important North-South connection to the Little Village Commercial Corridor and its amenities. This project ensures that California Avenue remains a viable access route to such an important commercial and cultural hub for a Historically Disadvantaged Community.

Community Engagement

The California Avenue Bridge project will incorporate public feedback, with public engagement expected to start in Q3 2024. As part of the project, CDOT will adhere to NEPA requirements for public engagement. This includes holding public meetings, conducting outreach to local communities for input on the final designs, and reviewing the construction schedule. The communities surrounding the California Avenue Bridge are majority POC, with a high percentage speaking a language other than English. The public engagement efforts will prioritize making information about the project easily accessible to these communities.

The surrounding communities are active in multiple revitalization plans, and this project aligns with the goals from recent plans developed in partnership with the Little Village community. The *Little Village Commercial Corridor Study* and the *Little Village Framework (2018)* identify the area as a key job center and access to this area important to neighboring communities. Several community organizations active in previous planning efforts were contacted in regard to this project and have provided a Letter of Support. See ***Appendix A***.

f. Innovation

The project will prioritize keeping access open for local and regional connectivity during construction through closure of only one leaf of the bridge at a time. The use of twin mono-truss structures in the bridge design not only allows the structure to maintain its historical integrity, but it also allows CDOT to execute an innovative approach to project delivery that will minimize construction impacts on roadway congestion and will improve worker safety.

California Avenue is very important to the overall transportation network, including transit and freight movements, and the improvements need to be completed in stages. A two-stage construction is anticipated with one-half of the bridge (sidewalk and roadway) closed at a time maintaining one direction of traffic and detouring the other. Traffic staging with then be switching to allow work to be completed on the other side of the bridge.

Additionally, accelerated bridge construction (ABC) will be evaluated for the bridge rehabilitation during the final design preparation. The innovative approach of accelerated bridge construction (ABC) provides numerous local and regional benefits. ABC is defined by the FHWA as, “bridge construction techniques that use innovative planning, design, materials or construction methods in a manner to specifically reduce the onsite construction time and mobility impacts that occur when building or replacing bridges.” While innovative, this approach is familiar to CDOT, which has recently executed similar build-and-move work on the Wells Street Bridge over the Chicago River and the 4.3 million-pound Torrence Avenue rail bridge built as part of the CREATE project.

Other innovations in the design include the use of LED lighting at the bridge approaches to be more energy efficient, and placement of lighting to minimize light pollution.

4. Benefit-Cost Analysis

This BCA was conducted for the development of the California Avenue Bridge project for submission to the U.S. Department of Transportation (USDOT) as a requirement of a discretionary grant application for the BIP. The analysis was conducted in accordance with the benefit-cost methodology as outlined by USDOT in the Benefit-Cost Analysis Guidance for Discretionary Grant Programs, released in December 2023. The period of analysis corresponds to 30 years and includes 2 years of construction and 30 years of benefits after operations (replacement bridge) begin in 2028.

CDOT is seeking grant funding for the rehabilitation of the California Avenue Bridge, located over the Chicago Sanitary and Ship Canal in Cook County, Illinois. This application seeks funding to rehabilitate and preserve this bridge, which is currently in poor condition and would need to be decommissioned by 2027 without intervention. The California Avenue Bridge project will improve the structural integrity, mobility, and safety of the California Avenue Bridge, bringing it to current design standards.

The capital cost for this Project (2024-dollar estimate) is expected to be **$78 million** or $73.6 million in 2022-dollars). At a 3.1 percent discount rate, the discounted capital costs are **$64.1 million** in 2022 dollars. With a service life of 60 years, at the end of 30 years, the assets will retain 50 percent of their original value with a residual value of **$44.1 million** in undiscounted dollars and **$15.1 million** in 2022 discounted dollars. The residual value is added to the total benefits of the project as per USDOT guidance.

The project benefits are derived from the avoided detour in the "Build" scenario. Table 5 presents a summary of the Project impacts, benefits and costs. The discounted benefits include safety benefits (**$24.9 million** discounted), Travel Time Savings (**$284.9 million** discounted) Vehicle Operating Costs Savings (**$125 million** discounted) reduced CO2 emissions costs (**$40.4 million** discounted), non-CO2 emissions costs (**$11.8 million** discounted), and other environmental benefits (**$1.9 million** discounted), and Operations and Maintenance (O&M) cost savings ($1.2 million).

Using a 3.1 percent discount rate (2 percent for Carbon emissions), this leads to an overall discounted Net Present Value (including residual value of assets) of **$438.7 million** and a Benefit Cost Ratio (BCR) of **7.84.**

Table 4. Chicago South California Avenue Bridge Project Impacts and Benefits & Costs Summary

Benefits and Costs	Discounted Value (2022$)
Safety Crash Cost Savings (Avoided Crashes)	24,865,518
Travel Time Savings (Avoided Detours)	284,931,663
Vehicle Operating Cost Savings (Avoided Detours)	125,031,485
CO2 Emissions Cost Reduction	$ 40,371,972
Non- CO2 Emissions Cost Reduction	11,832,941
Other Environmental Benefits	1,886,489
Residual Asset Value	15,166,547
O&M Cost Savings	$(1,245,769)
Total Benefits	**502,840,846**
Capital Costs	$64,146,851
Benefit/Cost Ratio	**7.84**
Net Present Value	**$438,693,995**

Source: Cambridge Systematics

6. Project Readiness and Environmental Risk

Technical Feasibility and Technical Competency

CDOT has extensive experience in managing Federal-aid highway program funds. In a typical year, CDOT manages a federal program valued at approximately $100 million but which can exceed $300 million. This includes/has included STP, CMAQ, TAP, Major Bridge, HPP, NHFP, and INFRA. Projects range from resurfacing of arterial streets to major structure reconstructions such as Wacker Drive, the Canal Street Viaduct, and the Wells Street Bridge. In addition to its federal program, CDOT also manages a state funded program of over $100 million per year and a local program in excess of $200 million. The department works closely with its partners at IDOT and the FHWA to deliver projects on time and within budget.

The total project cost for the California Avenue Bridge project is $78 million, $74.5M of which will be for construction. The budget accounts for a 10.7 percent contingency, which totals $8M. Contingencies will be updated as design work progresses. The City of Chicago is committed to funding the remainder of construction costs, as detailed in the Letter of Funding and Maintenance Commitment (**Appendix B**).

State Highway Transportation Officials (AASHTO) design provisions including LRFD Bridge Design Specifications and LRFD Movable Bridge Design Specifications. It will also comply with CDOT's Design Standards for Chicago Bascule Bridges (Rev. 2019). Illinois Department of Transportation Bureau of Design and Environment Manual13 – 3R Guidelines – will also be followed. The project scope encompasses preliminary engineering, environmental assessment, engineering design, and construction. It includes preparation and approval of all engineering documents required by FHWA, the IDOT, and CDOT. No permanent right-of-way acquisition is expected. Temporary right-of-way for construction will be evaluated and pursued if necessary by Q4 2025. The project scope includes the following:

- Complete, in-kind replacement of the steel floor system including the floor beams, roadway stringers, lateral bracing, and sidewalk brackets
- Repairs to the bascule truss members where required
- New precast sidewalk panels and railings for the span over the waterway, repair of the fixed span sidewalks
- Repairs of the existing substructure
- Cleaning and painting of the existing structural steel
- Repair and replacement where necessary of access catwalks
- Repair of the existing dolphins and fender system as required
- Repair of the bridge house slabs and walls, with new paint added on the exterior surfaces
- Repair of existing retaining walls where cracking has been identified
- Replacement of existing sidewalks within project limits. All sidewalks will be ADA compliant
- Evaluation of all lighting to meet current standards.
- Evaluation of potential addition of guardrail and/or barriers within the existing project limits including impact attenuators

Project Readiness

Construction on the California Avenue Bridge is scheduled to begin in Q1 2026. The hallmark of this BIP proposal is its urgency and priority for Chicago, the metropolitan region, and State of Illinois, as seen in the Letters of Support from US Congressman Jesus Garcia, Cook County, the CMAP, Alderperson Julia Ramirez, Alderperson Byron Sigcho-Lopez, and the Lawndale Business Renaissance Association. CDOT recognizes that the bridge is at the end of its useful life and is in need of substantial rehabilitation. CDOT has moved as quickly as possible to prioritize funding, review all of the viable options from a BCA perspective, and is ready to proceed with engineering design. CDOT is committed to obligating BIP funds and putting that money to work with the same urgency and priority. The schedule for project milestones are presented in ***Table 5***.

Table 5. Project Schedule

Milestone	Timeframe
Identified in Chicago's Movable Bridges Preservation Plan	Q1 2020
Programmed in TIP	Q1 2023
Phase I/II Start	Q3 2024
Phase I Approval	Q3 2025
Phase II Approval / Letting	Q4 2025
Construction Start	Q1 2026
Construction Complete	Q1 2028

Required Approvals

The California Avenue Bridge is part of the multi-agency Programmatic Agreement associated with Chicago's Movable Bridge Preservation Plan (2020). Signatories to the agreement include CDOT, IDOT, FHWA, US Army Corps of Engineers, US Coast Guard, Illinois State Historic Preservation Officer, Landmarks Illinois, Historic Bridges.org, and Advisory Council on Historic Preservation. Given the historic nature of the movable bridges, the biggest obstacle to major repair and reconstruction of the bridges had been the State Historic Preservation Office (SHPO) review and determination of acceptable actions for these historic bridges.

The multi-agency Programmatic Agreement resolved the unknowns and delay associated with historic and other reviews, thus reducing the risk to successful completion of rehabilitation projects on these bridges. The scope of the proposed bridge project will consist of a rehabilitation within the parameters of the Agreement, rather than a full bridge replacement. Therefore, the scope is pre-defined and the bridge plans and specifications will be developed to meet the Secretary of the Interior's "Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings". The Technical Feasibility and Technical Competency Section provides further detail on the scope of the bridge design work.

All federal, state, and local approvals listed below will be pursued throughout the project design process which will start in Q3 2024 and are expected to be received by Q4 2025. Construction is expected to start in Q1 2026 and be completed in Q1 2028.

The environmental permitting process will begin concurrent with preliminary engineering in Q3 2024. Based on past experience with similar projects, it is anticipated the project will be processed as a Federally Approved Categorical Exclusion. Additional environmental coordination is outlined below.

- A Preliminary Environmental Site Assessment (PESA) will be completed for this project in Phase I. The results of the PESA will indicate any further investigation studies that should be conducted in the event that the project requires land acquisition or linear excavation due to the presence of Recognized Environmental Conditions **(**RECs) along the project route. Special Waste studies will be completed for Phase I.
- Detailed design engineering during Phase II will determine whether the proposed work will impact any sites identified in Phase I, and whether any right-of-way acquisition will be required.
- The Chicago Sanitary and Ship Canal was listed on the National Register of Historic Places in 2011. The project is expected to receive a conditional No Adverse Effect finding with the following stipulation: The Phase II (90%) plans and specifications must be submitted to the SHPO for review and approval to assure that the work adheres to the Secretary of the Interior's Standards for Rehabilitation.
- If necessary, Section 4(f) Lands, Air Quality and Noise impacts will be assessed. Approvals will be provided by IDOT, IDNR and FHWA, as applicable.
- Coordination meetings will be held and documented with FHWA, IDOT, and CDOT throughout the project.
- Additional Coordination will take place as necessary with other entities, such as CMAP, U.S. Coast Guard (USCG) and U.S. Army Corps of Engineers (USACE).
- Public engagement is planned for during the preliminary and detailed design phases of this project.

CMAP programmed the California Avenue bridge project in the Transportation Improvement Plan on February 28, 2023, and the bridge is identified in Chicago's Movable Bridges Preservation Plan.

CDOT operates its programs without regard to race, color, and national origin in accordance with Title VI of the Civil Rights Act. CDOT assures that no person shall, as provided by Federal and State civil rights laws, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity. CDOT further ensures every effort will be made to ensure non-discrimination in all programs and activities, whether those programs and activities are federally funded or not.