

2025 COAA PROJECT LEADERSHIP AWARD

Michigan State University
Farm Lane Bridge Replacement

GRANGER

COAA

**MICHIGAN STATE
UNIVERSITY**

AFFIRMATION AND RELEASE:

Nomination is submitted by: on behalf of MSU

Name: Lorraine Ross

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In submitting this application, I affirm to the best of my knowledge, that the information contained herein is accurate and correct. I also agree to grant permission for COAA® to use the nomination materials in their entirety (including photographs) for promotional purposes which may include, but not be limited to, the COAA® website and the *Owners Perspective* magazine.

SIGNATURE Lorraine D. Ross DATE 8-22-2025

TITLE : Proposals Manager

SECTION I - GENERAL PROJECT INFORMATION





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Name of Project:
Farm Lane Bridge Replacement

Location of Project:
East Lansing, MI

Name and Address of Owner:
Michigan State University
Infrastructure Planning and Facilities
1147 Chestnut Rd, East Lansing, MI 48824

Name and Address of Design Professional(s):
Fishbeck
5913 Executive Dr. #100, Lansing, MI 48911

Name and Address of Construction Professional(s):
Granger Construction Company
6267 Aurelius Road, Lansing, Michigan 48911

Other Consultants or Professionals:
C.A. Hull – Bridge Consultant
8177 Goldie St., Commerce Twp, MI 48390

Type of Project:
Institutional / Higher Education / Athletics

Delivery Method:
Design-Build

MSU REPLACES HISTORIC FARM LANE BRIDGE

The Farm Lane Bridge Replacement project at Michigan State University (MSU) involved the full demolition of the original 1936 bridge over the Red Cedar River and replacing it with two new structures—a single vehicular bridge and a separate pedestrian bridge—to enhance mobility, address deterioration, and accommodate future growth for over 16,000 on-campus students. The project also included road reconstruction, bike lane additions, and underground infrastructure upgrades.

The design build project team of MSU, Granger Construction and Fishbeck, along with numerous other key trades and consultants, was tasked with completely demolishing and replacing the existing bridge which served as a vital transportation link between North and South Campus for vehicles and pedestrians, and the only campus crossing above the 100-year floodplain. The original bridge was critically deteriorating, and if its load limits were further reduced, emergency vehicles would have been prohibited from using it.

As MSU's first major bridge project, the team navigated significant technical, logistical, and environmental challenges with strategic foresight and collaborative execution. The team was so successful in its endeavor that this project sets a new benchmark for infrastructure delivery in active university environments and reflects MSU's visionary leadership.

A few key factors that led to overwhelming success include:

Innovative Spirit. MSU's openness to innovation was a defining characteristic of this project. When the team proposed a bold phasing plan that would accelerate the project timeline by four months compared to traditional approaches, MSU could have dismissed it as too risky. Instead, their trust in the team's capabilities and their willingness to engage in early, strategic decision-making enabled the adoption of this phased approach that paid big dividends. This plan included early demolition, temporary utility relocation and thoughtful sequencing of the new pedestrian bridge and the replacement vehicular bridge—all carefully orchestrated to minimize disruption and maximize efficiency for the campus community and ensure final completion before the fall 2024 semester. MSU leadership also embraced the use of industry-leading technology to help advance the project in every area, from planning and execution to constructability, budget, schedule, and quality control. Detailed 3D modeling and 4D scheduling tools allowed for real-time visualization of construction progress and resource allocation while other tools such as OpenSpace, Drones equipped with LiDAR technology and 3D printers all played a role enhancing collaboration, enabling real-time site documentation and overcoming project challenges.

Proactive stakeholder engagement. Early stakeholder engagement of numerous campus groups during design resulted in better execution plans that thoughtfully considered detour routes and how to sequence work around the academic calendar and other special events to minimize impact to campus operations. This bridge also had significant historical implications, so key groups were engaged to help bring consensus around design elements and historical context that resulted in a truly iconic structure that reflects MSU's long and storied history. For example, masonry, limestone, concrete coating and other finishes tie in with those of neighboring buildings, while the black iron guardrails that line the bridge mirror those on the Farm Lane railroad underpass to the south. The bridge also features the iconic brass lanterns similar to those seen across campus, and were handcrafted in IPF's Metal Shop using a design that was reverse-engineered from existing fixtures. These small details played a huge role in the aesthetic look and feel of the bridge, turning what could've just been strictly a concrete and steel structure into a legacy for decades to come.

Environmental Stewardship. This project was constructed in and over an active river, which required close coordination with the Michigan Department of Natural Resources (DNR) and the EPA to protect the river, its banks as well as surrounding wildlife. Stringent restrictions to working in the river meant the team had to schedule work around these restrictions and implement a variety of protection measures. The team's deep commitment to and flawless execution of these strict protocols were critical to the project's success.

The result of this project is a visually stunning, historically respectful, and functionally superior bridge that enhances campus connectivity and safety for decades to come.

Project Duration:

496 days

Project Start Date:

4/4/2023

Project Completion Date:

Planned Substantial Completion Date: 6/30/2024

Actual Substantial Completion Date: 8/12/2024

Changes in Schedule:

A schedule adjustment was necessary to refine the design integration between the newly constructed steam vault and the bridge sidewalk. During site verification, a conflict in the design elevations was identified. Our project team collaborated to implement a revised grading plan, ensuring a seamless and fully compliant interface between the two new structures.

Initial Construction Cost (\$):

\$32,971,233

Final Construction Cost (\$):

\$37,598,500

Percent of Change Orders:

12% - this was mostly attributable to deferred scope. The team had a good bid day and managed the project well so they were able to spend contingency on additional project scope. This allowed MSU to re-direct contingency funds to additional preferred scope which included upgraded site utilities along Shaw Lane - the team designed and installed new UG Utilities and sidewalk valued at \$905,618.





SECTION II - OVERALL PROJECT MANAGEMENT

SECTION II - OVERALL PROJECT MANAGEMENT:

Project Management: (Provide two (2) examples which demonstrate project management excellence by the Owner's Project Manager.)

Situated in the heart of MSU's campus, the Farm Lane Bridge Replacement was a highly technical project with a compressed schedule that also required meticulous logistical planning to minimize disruptions, coordinate with adjacent buildings and another construction project and maintain campus accessibility. This project exemplified excellence in project management through strategic coordination, innovative scheduling, industry-leading technology and proactive problem-solving. Some specific examples include:

1. PROACTIVE RISK MANAGEMENT THROUGH:

- Excellent communication and coordination with nearby academic buildings and an adjacent construction project team to manage shared utilities and other logistics issues. Also provided excellent communications and wayfinding for pedestrian and vehicular detours and project progress with visible timelines and other frequently asked questions.
- The design-build team engaged numerous campus stakeholders early and often—including leadership, facilities staff, public safety, adjacent building users and the university's historical preservation representatives—to ensure alignment on project goals, minimize rework and build trust. Their input shaped design decisions that balanced aesthetics, functionality and long-term maintenance needs, while also addressing impacts to nearby buildings and pedestrian, bicycle and vehicular traffic in this high-traffic campus zone. For example, the team worked closely with the MSU Campus Archaeology Program and University Archives to incorporate design elements that honor the bridge's legacy on campus. Use of masonry, limestone, concrete coating and other finishes tie in with those of neighboring buildings, while the black iron guardrails that line the bridge mirror those on the Farm Lane railroad underpass to the south. The bridge also features the iconic brass lanterns that can be seen across campus. These small details played a huge role in the aesthetic look and feel of the bridge, turning what could've just been strictly a concrete and steel structure into a legacy for many more decades to come.
- Early scope definition and control, early procurement of long lead items, technology-driven cost oversight and collaborative budget monitoring. These actions reflect a commitment to fiscal stewardship and resulted in the project finishing within budget.



2. LEVERAGED INDUSTRY-LEADING TECHNOLOGY TO OVERCOME KEY CHALLENGES:

- The team developed a detailed 3D model in collaboration with partners, using it as a tool to develop site logistics, optimize the schedule and verify constructability, among other things.
- A 4D schedule in Synchro provided real-time construction updates, ensuring alignment with MSU and internal stakeholders, while adapting to delays.
- Use of tools such as OpenSpace helped streamline decision making, enhance collaboration and enable real-time site documentation.
- The team's innovative solution to use a 3D printer to make lamp post bases kept the project on track after learning the original bases would be significantly delayed.
- Utilized a drone to map a viable delivery route and truck staging plan within tight campus streets for the 123-foot bridge beams that resulted in flawless execution.



Scheduling: (Provide two (2) examples which demonstrate the owner's expertise in managing the schedule; that is, identify some steps taken by the Owner which contributed to the management of the schedule.)

1. UNIQUE PHASED APPROACH TO REDUCE CAMPUS IMPACT:

The project's success hinged on a carefully phased approach designed to meet an aggressive schedule while minimizing the impact on Michigan State University's operations. The development of the team's schedule was built to support the critical path constraints provided by MSU, and included: 1. Minimize the Fiber (Communications) interruption and maintain pedestrian access across Red Cedar. Below outlines how this was achieved.

- **Phase 0:** This initial phase focused on boring for new communications duets under the river, a critical preparatory step.
- **Phase 1A:** Work began immediately after spring commencement to tackle the high-traffic intersections at Farm Lane, Auditorium, and North Shaw. By focusing on installing utilities and repaving these critical intersections first, the plan aimed to reopen them to traffic by mid-summer, thereby lessening the impact on campus circulation.
- **Phase 1B:** Running concurrently with Phase 1A, this phase concentrated on the areas north and south of the Farm Lane bridge itself. Key activities included installing a temporary pedestrian bridge, performing abatement on the existing bridge, and reconstructing parking lot 38. This work was scheduled for completion before students returned for the fall semester in mid-August.
- **Phase 2:** The final phase involved the construction of the permanent vehicular bridge. This major construction was scheduled to begin after the Fall 2023 commencement, again taking advantage of a quieter period on campus.

In addition to rerouting utilities, the Farm Lane Bridge project team needed to ensure continuity of campus operations while work was being done. The project timeline was designed to minimize disruption for Spartans as much as possible. We couldn't just build the bridge over two summers when campus was less congested; we knew there would be interruptions for at least a semester for pedestrian traffic and much longer for vehicular traffic. A study conducted by the team made it clear that rerouting pedestrian traffic to nearby river crossings would've had a significant impact in pedestrian travel time across the campus, so logistics and detours were a massive consideration when it came to phasing the project because students needed to be able to get to their classes on time. That's why the plan included building the pedestrian bridge in that first summer, allowing foot and bike traffic to cross the river while construction the remaining demolition and reconstruction of the main bridge was completed.

Project planners also had to consider the ecology of the Red Cedar River and work closely with the Michigan Department of Natural Resources (DNR) to protect the river and its banks. The team had to consider these types of restrictions first, then plan how to construct around them.

2. USE OF 4D SCHEDULING:

Granger's VDC team was able to create a 4D schedule by integrating the 3D model of the bridge and site with the construction timeline using Synchro software. The 4D schedule played a crucial role in the project's planning and execution, allowing the team to visualize sequencing in real-time. The team organized weekly coordination meetings with subcontractors and stakeholders to continuously update and refine the visual six-week look-ahead schedule, ensuring alignment with the evolving construction progress. This approach enabled the team to anticipate potential hold-ups, optimize workflows and adjust the project as needed. It was especially valuable in coordinating the installation of key components such as structural beams, temporary scaffolding and utilities, ensuring they were placed at the right time and in the correct order. By leveraging 4D scheduling, the team enhanced project efficiency, minimized delays and maintained strict adherence to the tight construction timeline.

This project was not only done with the utmost care and efficiency, but it was also completed in record time. With all of the unforeseen challenges and delays, the team was still able to complete the demolition and reconstruction in only 16 months. In comparison, similar size bridge construction projects around the state have taken up to 48 months to complete, not including demolition, with temporary bridges in use for years.

Cost Management: (Describe what action the owner took with the project team to manage the project costs.)

Throughout the Farm Lane Bridge Replacement project, Michigan State University demonstrated strong fiscal leadership by actively managing costs in collaboration with the design-build team. By prioritizing early scope definition, supporting innovative procurement and construction strategies, and leveraging advanced technology for real-time oversight, MSU ensured the project remained within budget despite its complexity. These actions, described in more detail below, reflect the university's commitment to responsible stewardship and its ability to deliver high-impact infrastructure improvements efficiently and economically.

Early Scope Definition and Control: MSU worked closely with stakeholders during the early planning stages to clearly define project scope and priorities. This helped prevent scope creep and ensured that all design decisions aligned with budget constraints and long-term campus infrastructure goals.

Material Procurement Strategy: Recognizing the potential for material cost escalation, MSU approved early procurement of long-lead items such as Bridge Beams, Site Utilities, and pre-cast concrete. This decision helped lock in pricing and avoid delays due to supply chain disruptions.

Value Engineering and Innovation: MSU encouraged the use of value engineering to identify cost-saving opportunities without compromising quality. One notable example was the use of 3D printing to fabricate lamp post bases when traditional components faced significant delays and cost increases. This innovative solution kept the project on schedule and within budget.

Technology-Driven Cost Oversight: The owner supported the use of advanced modeling and scheduling tools, including 4D scheduling and BIM coordination, which allowed for real-time visualization of construction progress and resource allocation. These tools helped identify potential inefficiencies early and enabled timely adjustments to avoid cost overruns. The use of weekly meetings to review sequencing of the bridge construction helped us pull ahead scope that was adjacent to the bridge.

Collaborative Budget Monitoring: MSU maintained regular budget review meetings with the project team, ensuring transparency and accountability. This collaborative approach allowed for quick decision-making when unexpected issues arose, such as utility rerouting or ecological constraints near the Red Cedar River.

Having a successful bid day early on and mitigating cost creep ultimately allowed MSU to redirect contingency funds for additional scope on the project. One example includes upgrading site utilities and new sidewalk (see below) along Shaw Lane Road near the bridge totaling almost \$1M.



Quality Management: (Provide a brief narrative describing the methods of quality control/quality assurance and the Owner's participation in this area.)

Utilized a Detailed 3D Model to Develop Logistics and Execution Plan: The team received two dimensional drawings for the structural and architectural elements of this project. While this is currently common practice to not provide 3D design models, MSU and the design-build team recognized that the complexity of this reconstruction demanded the need for an accurate and highly detailed 3D model of the bridge and the existing surroundings. This early decision to model the existing bridge and connection points provided the team with more insight into material staging, sequencing and ultimately would validate the constructability of the two-dimensional design documents. Autodesk Revit was primarily used to develop model elements, and Autodesk's Navisworks software was used to coordinate the placement and logistics of all the structure's components with the existing infrastructure (via LiDAR scans) and MEP systems. This ultimately provided the entire team with a clear visual of how the bridge would be demolished and reconstructed.

Bridge Consultant Input. Because MSU had never constructed a major bridge before, this project would be a learning curve for many parties involved. The foresight to include a true bridge expert – C.A. Hull – on the team proved invaluable in ensuring the project met the many stringent specifications for a vehicular bridge project. While MSU has its own set of quality control standards for construction projects, the main bridge portion of the project had to adhere to MDOT standards since MDOT is the governing body for transportation infrastructure in Michigan and must ensure that all bridge projects meet federal and state safety, design and inspection standards. C.A. Hull played a key role in helping the team balance MDOT and MSU standards and communicate these differences to ensure compliance for documentation, testing and inspections.

Bridge Construction within an Active Campus. In close coordination with Michigan State University's Infrastructure Planning and Facilities (IPF) and the MSU Department of Police and Public Safety, the team successfully managed the complex delivery and installation of 123-foot bridge beams during an active campus day. A meticulously developed logistics plan, which was created with assistance of a drone to help map the delivery route through campus, was central to this achievement. The operation involved staging eleven 150-foot-long trucks in the easternmost lane of Farm Lane and, starting at 8 a.m., moving them sequentially north through the heart of campus to the project site.

To guarantee the safety of all pedestrians and effectively manage campus traffic, a multi-layered safety protocol was implemented. MSU Police were positioned to stop and divert traffic at the main turn-around point on Wilson Road. Concurrently, numerous flaggers were stationed at every major intersection along the delivery route, and most critically, two dedicated flaggers escorted each individual truck as it navigated through campus. This team dynamically managed lane tapers and traffic barrels and ensured CATA bus stops remained clear and accessible for passengers. This detailed, collaborative approach allowed the crane to safely set each beam—a 45-minute process per piece—without incident, prioritizing the safety of the entire campus community.



By integrating cutting-edge technology, proactive risk management, strong stakeholder engagement and innovative solutions, the MSU project team not only met tight schedule constraints but also set a new standard for infrastructure projects in highly active environments.

SECTION III - OVERALL PROJECT SUCCESS



SECTION III - OVERALL PROJECT SUCCESS:

(Identify and briefly explain the factors that contributed to the success of the project such as the selection of the A/E, Prime Contractor and Subcontractors, approach to decision-making, handling end user requests, etc. Entire section should not exceed two (2) pages.)

The Farm Lane Bridge Replacement project at Michigan State University (MSU) stands as a benchmark for infrastructure excellence. Driven by strategic planning, collaborative execution, and a commitment to innovation and environmental and fiscal stewardship, the project overcame complex challenges to deliver a transformative outcome for the campus community. The following factors contributed to its resounding success:

A Collaborative Design-Build Approach with a Proven and Trusted Team. MSU project leaders demonstrated exceptional foresight and sophistication in selecting the Design-Build (D-B) delivery model for this schedule-critical infrastructure project. Their decision was rooted in a deep understanding of the benefits of D-B—namely streamlined communication, accelerated timelines and unified accountability. Recognizing the complexity and campus impact of this first-of-its-kind bridge replacement, MSU strategically partnered with a proven D-B team with a long-standing record of success on large-scale MSU infrastructure projects. Additionally, since the core team – MSU, Granger and Fishbeck – had never constructed a major vehicular bridge and recognized there would be a significant learning curve, they team included a bridge consultant to help shepherd them through the technical specifications and MDOT standards that would need to be incorporated for state and federal compliance. This alignment of delivery model and team expertise was foundational to the project’s success.

Proactive Stakeholder Engagement. Early stakeholder engagement of numerous campus groups during design resulted in better execution plans that thoughtfully considered detour routes and how to sequence work around the academic calendar and other special events to minimize impact to campus operations. Since this bridge also had significant historical implications, so key groups were engaged to help bring consensus around design elements and historical context. The bridge was an iconic structure that reflects MSU’s long and storied history. The team worked with the MSU Campus Archaeology Program and University Archives to incorporate design elements that honor this legacy. For example, masonry, limestone, concrete coating and other finishes tie in with those of neighboring buildings, while the black iron guardrails that line the bridge mirror those on the Farm Lane railroad underpass to the south. The bridge also features the iconic brass lanterns that can be seen across campus, and were handcrafted in IPF’s Metal Shop using a design that was reverse-engineered from existing fixtures, and feature more sustainable, upgraded LED lighting. These small details played a huge role in the aesthetic look and feel of the bridge, turning what could’ve just been strictly a concrete and steel structure into a legacy for decades to come.

Early Completion of Pedestrian Bridge. To allow students a safe and efficient way to cross the Red Cedar River during construction, it was originally discussed to provide a temporary pedestrian bridge adjacent to the existing structure. As meetings with the team progressed, MSU’s final decision was to provide a permanent pedestrian structure in addition to the replacement of the vehicular structure. As part of the rapid design and construction schedule, the team developed plans and a layout for the pedestrian bridge, which was ultimately completed ahead of schedule, just in time for the start of the fall 2023 semester. This bridge had a unique feature of incorporating LED lighting into the hand railing in order to provide students with extra safety at night.

Environmental Stewardship. Since the project was constructed in and over an active river, project planners had to consider the ecology of the Red Cedar River which required close coordination with the Michigan Department of Natural Resources (DNR) and the EPA to protect the river, its banks as well as surrounding wildlife. There were numerous restrictions to working in the river which meant the team had to schedule work around these restrictions and implemented a variety of



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In CAH’s 70+ years of contracting, it is rare to find such an effective ownership team that excelled in so many areas, including but not limited to: selection of contract delivery method, stakeholder coordination, effective project-wide communication, and experienced leadership through unexpected job conditions and changes.”

Clay Malloure, C.A. Hull (Bridge Consultant)

protection measures. The team's deep commitment to and flawless execution of these strict protocols were critical to the project's success.

Commitment to Fiscal Stewardship. Michigan State University demonstrated strong fiscal leadership by actively managing costs in collaboration with the design-build team. By prioritizing early scope definition, supporting innovative procurement and construction strategies, and leveraging advanced technology for real-time oversight, MSU ensured the project remained within budget despite its complexity. These actions reflect the university's commitment to responsible stewardship and its ability to deliver high-impact infrastructure improvements efficiently and economically. One early example of this involved changing the substructure units for both the pedestrian and vehicular bridges from piles to support the abutments, which the team determined would be costly and difficult to drive with the shallow bedrock and numerous cofferdams required for construction, to the use of lightweight backfill behind the abutments along with spread footings, which resulted in major cost savings to the university and met all quality standards since the spread footings at this river crossing would not be susceptible to scour due to the depths of the footings and the protection provided by the stay-in-place cofferdams.

Hypervigilant Focus on Safety and Campus Operations. Throughout construction, MSU maintained an unwavering focus on safety and operational continuity. Early on, the team worked closely to determine a phasing and sequencing schedule that would meet the required completion date while ensuring a safe project site, minimizing campus detours and maintaining all operations of the existing occupied buildings. One particularly complex piece of the project involving the delivery and placement of 123-foot beams required its own separate multi-faceted safety and logistics plan to guarantee the safety of all pedestrians and effectively manage campus traffic. During the deliveries, which were scheduled during early morning hours for minimal traffic impact, MSU Police were positioned to stop and divert traffic at the main turn-around point on Wilson Road. Concurrently, numerous flaggers were stationed at every major intersection along the delivery route, and most critically, two dedicated flaggers escorted each individual truck as it navigated through campus. This team dynamically managed lane tapers and traffic barrels and ensured CATA bus stops remained clear and accessible for passengers. This detailed, collaborative approach allowed the crane to safely set each beam—a 45-minute process per piece—without incident, prioritizing the safety of the entire campus community.

Innovative Spirit. MSU's openness to innovation was a defining characteristic of this project. When Granger Construction proposed a bold phasing plan that would accelerate the project timeline by four months compared to traditional approaches, MSU could have dismissed it as too risky. Instead, their trust in the team's capabilities and their willingness to engage in early, strategic decision-making enabled the adoption of this phased approach that paid big dividends. This plan included early demolition, temporary utility relocation and thoughtful sequencing of the new pedestrian bridge and the replacement vehicular bridge—all carefully orchestrated to minimize disruption and maximize efficiency for the campus community.

MSU leadership also embraced the use of industry-leading technology to help overcome challenges and advance the project in every area, from planning and execution to constructability, budget, schedule and quality control. For example, advanced modeling and scheduling tools, including 4D scheduling and BIM coordination, allowed for real-time visualization of construction progress and resource allocation. These tools helped identify potential inefficiencies early and enabled timely adjustments to avoid cost overruns. Use of tools such as OpenSpace helped streamline decision making, enhance collaboration and enable real-time site documentation. The team's innovative solution to use a 3D printer to make lamp post bases kept the project on track after learning the original bases would be significantly delayed. And the use of a drone to map a viable delivery route and truck staging plan within the tight campus streets for the 123-foot bridge beams that resulted in flawless execution.

The Farm Lane Bridge was successfully opened before the fall 2024 semester, providing students with a new structure to help them traverse across campus while also giving visitors an aesthetically unique bridge. This new bridge serves as more than just a crossing, but rather a visually stunning campus feature, incorporating campus architecture and the natural beauty of the Red Cedar River. Most importantly, this new bridge is designed and constructed to today's standards and will provide safe passage for Spartans for decades to come.

The Farm Lane Bridge Replacement project exemplifies how visionary leadership, collaborative execution, and a commitment to innovation can redefine infrastructure delivery in complex environments. MSU's ability to integrate stakeholder needs, environmental stewardship, fiscal discipline, and cutting-edge technology resulted in a project that not only met but exceeded expectations—setting a new standard for campus infrastructure projects.

SECTION IV - PROJECT COMPLEXITY



SECTION IV - PROJECT COMPLEXITY:

(Provide a brief narrative (i) in bullet form and (ii) maximum of one page; describing the complexity of the project including challenges, constraints and the solutions.)

MSU's project management team demonstrated exceptional leadership on this complex design-build project, which involved the full reconstruction of the 1936-era Farm Lane Bridge and the addition of a new adjacent pedestrian bridge. As MSU's first major bridge project, the team navigated significant technical, logistical, and environmental challenges with strategic foresight and collaborative execution.

Key Complexities and Solutions:

Bridge Movement and Utility Coordination. The bridge's structural movement posed a major challenge, particularly for utility connections. The team led a collaborative effort with Granger, design consultants, and subcontractors to develop a flexible utility design. Utilities were intentionally left short on both ends to accommodate expansion and contraction, with final connections made only after the bridge deck was fully poured and loaded—ensuring precise alignment and long-term reliability.

Coordination of Historical and Aesthetic Features. One of the unique feature of the bridge is the use of real brick and limestone blocks at pilasters. Typical bridge projects feature painted stamped concrete to replicate brick patterns. MSU requested real brick be featured in the light pole pilasters. This required extensive coordination between MSU and the design-build team as well as the MEP subcontractors. Providing the reinforcement and conduits to allow for the construction of these features was challenging, but the coordination efforts from all parties led to the pilasters at the abutments and on the bridge railing to be a successful feature of this replacement, allowing the bridge to stand out while also exemplifying the architectural theme realized across the campus.

Campus-Centered Site Logistics. Located in the heart of MSU's campus, the bridge is a vital artery for 16,000+ on-campus students. The team minimized disruption by:

- Constructing a temporary pedestrian bridge to maintain foot traffic.
- Developing a detailed detour plan for vehicle and bus routes.
- Installing vibration monitoring in three adjacent buildings to protect structural integrity and avoid classroom disruptions.
- Coordinating with the academic calendar and campus events, including building temporary sidewalks for the Izzo Legacy 5K to ensure accessibility for thousands of participants.

Utility Infrastructure Overhaul. The bridge also served as a critical utility corridor. The team oversaw the relocation and installation of:

- New electrical and communication lines for increased capacity.
- A ductile iron watermain to replace aging infrastructure.
- New steam distribution mains to enhance service to North Campus.
- Simultaneously, the adjacent Multicultural Center project required shared utility coordination. MSU's team maintained open communication and joint planning to keep both projects on track without delays.

Beam Install and Crane Logistics. Installing 123-foot-long pre-stressed concrete beams with a 900-ton crane over an active river and delivering them on 150-foot trucks through tight campus streets required precision. The team developed a detailed crane operation plan and leveraged Granger's in-house drone team to map a viable delivery route—demonstrating innovation and meticulous planning.

Environmental Stewardship. Working over the Red Cedar River required close coordination with the EPA and DNR. The team:

- Installed a turbidity curtain to prevent debris from entering the river.
- Scheduled work to avoid disrupting the fall salmon run.
- Followed strict protocols to protect local wildlife, including birds, owls, snakes, and mussels.
- Utilized a temporary dam in the river in to give workers a dry space to work on pier installation and foundation work from below the bridge. Water elevation data from the U.S. Geological Survey was used to analyze historical water levels to ensure the dam system could withstand fluctuations in river height and maintain a safe workspace. The damming had to be carefully planned around wildlife protection regulations, ensuring that fish, such as salmon, and other aquatic species were not harmed in the process.

Despite the project's complexity, MSU's leadership ensured on-time delivery with minimal disruption to campus life. The project enhanced infrastructure reliability, improved pedestrian safety and demonstrated a model for sustainable, collaborative construction on an active university campus.

SECTION V - SUSTAINABILITY ELEMENTS/EFFORTS



SECTION V - SUSTAINABILITY ELEMENTS/EFFORTS:

(Provide a brief narrative (i) in bullet form and (ii) maximum of one page; describing sustainability elements/efforts, if any.)

The Farm Lane Bridge for years was in poor condition and was a sore spot on the MSU campus. The condition was not a true representation of the historic beauty that surrounded the students. Once it was decided to finally replace the bridge, it required a tremendous amount of coordination and effort not only to design and construct this bridge to the vision of the MSU staff but to do so in an environmentally friendly manner. The bridge has tremendous social, economic and environmental impacts on the MSU campus, and the new structure was designed and constructed to minimize environmental impacts in the following ways:

River and Wildlife Protection Measures. Working over the Red Cedar River required close coordination with the EPA and DNR and involved numerous protection measures including:

- Installing a turbidity curtain—a weighted net that prevented construction debris from contaminating the river, during demolition and construction activities. Other protection measures included bagging storm structures, dewatering filter bags and stone to further filtration.
- Scheduling work to avoid disrupting the fall salmon run.
- Following strict protocols for erosion control and local wildlife protections including:
 - *Wildlife relocation: Mussels in the riverbed were relocated to a safe area.
 - *Erosion control: To prevent sediment from entering the water, strict soil erosion controls were implemented including erosion eels and sediment fencing.
 - *Spawning season restrictions: Construction work within the waterway was prohibited during the northern pike's spawning season from March to June.
- Utilizing a temporary damming system in the river in to give workers a dry space to work on pier installation and foundation work from below the bridge. Water elevation data from the U.S. Geological Survey was used to analyze historical water levels to ensure the dam system could withstand fluctuations in river height and maintain a safe workspace. The damming had to be carefully planned around wildlife protection regulations, ensuring that fish, such as salmon, and other aquatic species were not harmed in the process.

Safeguarding a Red Cedar Tree that was within the Excavation Limits of the New Bridge. MSU's desire to minimize impacts provided the team with a unique opportunity to review the design and construction methods. Standard excavation and construction methods posed a significant threat to the tree's delicate root system and the stability of the riverbank itself. Removing the tree was not an option; instead, the team designed a temporary retaining wall using interlocking steel sheet piles. This innovative application created a robust, subterranean cofferdam encircling the tree's root zone.

Use of Local Materials and Suppliers to Reduce Transportation Emissions. A comprehensive sourcing strategy ensured that the majority of construction materials were procured from suppliers within a short distance of the East Lansing project site. Everything from the prestressed beams to landscaping was intentionally thought through. By utilizing these strategies and other local suppliers for the bulk of our materials, we drastically cut down on fuel consumption and the carbon footprint associated with long-haul transportation.

3D Printed Lamp Post Bases Using Sustainable TPU Filament. When the team faced difficulties procuring lamp post covers for the bridge, they turned to 3D printing technology to create custom bases. Not only did this keep the project on schedule and budget but actually improved the overall product. The material used was an improvement to the original casted elastomeric urethane that maintained the same impact resistance (Shore 60D on a durometer scale) but was a sustainable TPU based filament readily available and made right here in Michigan. Granger partnered with 3DXTech out of Grand Rapids, MI to fulfill a custom filament order of FibreX TPU+GF30 elastomer which is an engineering-grade material that is reinforced with glass fiber.

SECTION VI - CONFLICT RESOLUTION



SECTION VI - CONFLICT RESOLUTION:

(Provide a brief narrative (i) in bullet form and (ii) maximum of one page, describing the owner's role in minimizing and resolving conflicts.)

Michigan State University's primary role in minimizing and resolving conflicts was to establish a project environment rooted in clear communication, collaboration, and proactive problem-solving. For the MSU Farm Lane Bridge project, a highly visible and critical campus artery, MSU's involvement was crucial for navigating the complexities of construction, traffic management, and stakeholder expectations. Below are a few examples of how the MSU project management team worked to minimize and resolve conflicts on this project:

Fostered a Partnering Environment from the Outset:

- Initiated a formal partnering workshop before construction began. The goal of this workshop is to align all parties on project goals, establish open lines of communication, and collaboratively develop a charter for issue resolution, moving the focus from a purely contractual relationship to a collaborative one.

Established a Proactive and Transparent Communication Plan:

- Developed and implemented a multi-faceted communication strategy to keep all stakeholders informed. This included regular, scheduled project meetings (e.g., weekly progress meetings) with mandatory attendance from key decision-makers.
- Created a clear communication hierarchy, so the contractor knows who to contact for specific issues, ensuring timely responses.

Empowered On-Site Representatives to Ensure Timely Decision-Making:

- MSU's on-site representative was empowered with the authority to make timely decisions on routine matters, preventing small issues from delaying the project and escalating into larger conflicts.
- For larger issues requiring higher-level approval, MSU has an established internal process to ensure swift review and decision-making, respecting the project's critical path.

Maintained Fair and Punctual Administrative Processes:

- Ensured that the processes for reviewing and approving monthly progress payments, change orders, and submittals were efficient and fair. Slow payment is a primary source of friction and conflict in construction, so this measure goes a long way in proactively managing potential conflicts before they arise.

Provided Comprehensive and Clear Contract Documents:

- Prior to bidding, MSU conducts a thorough review of all plans and specifications to eliminate ambiguities, contradictions, and errors that commonly lead to disputes. Getting the team aligned with the internal SME's helped reduce conflict in the field.

MSU didn't just manage conflict—they prevented it. A prime example of their commitment to proactive project management was its strategy for mitigating conflict between the Farm Lane Bridge project, managed by Granger Construction, and the adjacent Multicultural Center project, managed by Clark Construction. Recognizing the potential for logistical and safety conflicts between these two major construction sites in such close proximity, MSU established and mandated weekly coordination meetings between both project teams. This dedicated forum allowed the team to transparently discuss and align our schedules, site logistics, crane operations, utility shutdowns, and public safety measures. Rather than reacting to problems as they emerged, this foresight transformed a potentially contentious environment into a collaborative partnership, effectively preventing disputes before they could arise.

Through empowered decision-making, transparent communication, and a culture of collaboration, MSU ensured that challenges were addressed before they could escalate.”

SECTION VII - THE COAA WAY



SECTION VII - THE COAA WAY:

(Provide a brief narrative (i) in bullet form and (ii) maximum one page, describing how the project team embodies The COAA Way.) The COAA Way is a mindset for completing projects successfully, a desire to continuously improve, and a belief that working collaboratively will lead to greater success.

The MSU Farm Lane Bridge Replacement project team exemplifies The COAA Way—a mindset focused on successful project delivery, continuous improvement and collaborative teamwork—in the following ways:

1. Embraced collaboration through a design-build delivery model and active stakeholder engagement, fostering transparency and shared ownership throughout the project lifecycle. The design-build team engaged campus stakeholders early and often—including leadership, facilities staff, public safety, adjacent building users and the university’s historical preservation representatives—to ensure alignment on project goals, minimize rework and build trust. Their input shaped design decisions that balanced aesthetics, functionality and long-term maintenance needs, while also addressing impacts to nearby buildings and pedestrian, bicycle and vehicular traffic in this high-traffic campus zone. Early engagement allowed the team to:
 - Identify and resolve potential concerns before they became costly issues. Example: Early coordination with MSU IT and Infrastructure Planning and Facilities helped reroute underground utilities, avoiding delays and unexpected costs.
 - Build consensus around design elements and historical context, reducing approval delays and change orders. The 88 year old bridge was an iconic Red Cedar River crossing that reflects MSU’s long and storied history. The team worked closely with the MSU Campus Archaeology Program and University Archives to incorporate design elements that honor this legacy. For example, masonry, limestone, concrete coating and other finishes tie in with those of neighboring buildings, while the black iron guardrails that line the bridge mirror those on the Farm Lane railroad underpass to the south, all of which required deep coordination with stakeholders, designers and subcontractors. The bridge also features the iconic brass lanterns that can be seen across campus, and were were handcrafted in IPF’s Metal Shop using a design that was reverse-engineered from existing fixtures, and feature more sustainable, upgraded LED lighting.
 - Phase construction to minimize disruption. Original plans called for a temporary pedestrian bridge, but after much discussion, the team chose to incorporate a permanent pedestrian bridge instead, which would ultimately alleviate pedestrian and bike traffic on the vehicular bridge as a long-term solution to increased student safety. This was built 30 yards west of the main bridge during the first summer to allow uninterrupted foot and bike traffic during demolition and reconstruction rather than rerouting them to other river crossings much further away.
2. Demonstrated continuous improvement as evidenced by the following:
 - Leveraging 3D/4D modeling and real-time documentation to enhance coordination, reduce rework, and streamline decision-making. Recognizing the complexity of the reconstruction, the team developed a highly detailed 3D model using Autodesk Revit and coordinated logistics with Navisworks. Existing conditions were captured via drone-based LiDAR scanning, enabling precise planning for material staging, sequencing and constructability validation. This approach helped validate the constructability of the two-dimensional design documents and gave all stakeholders a clear visual roadmap of the demolition and rebuild process.
 - Amidst the fast-paced demands and constant coordination required by this complex project, MSU never lost sight of its broader mission to inspire future leaders. Despite juggling tight deadlines and complex decisions, the MSU project team made time to engage civil engineering students, offering them a rare opportunity to visit the construction site and observe the bridge’s unique design features firsthand. These site visits provided invaluable insight into how multiple disciplines — engineering, design, construction, and project management — come together to deliver a successful infrastructure project. This initiative was made possible by the MSU project staff’s thoughtful awareness and their ability to draw on both their engineering expertise and academic mindset, bridging the gap between education and real-world application and building excitement for future industry professionals.
3. Prioritized teamwork, innovation, and adaptability to overcome unforeseen challenges with creative, cost-effective solutions. A standout example occurred when the team faced a delay in procuring lamp post covers, threatening project completion before the 2024–2025 school year. Instead of accepting the delay, the project team collaborated with Granger’s VDC team to 3D print custom lamp post bases. Using FDM technology and a design based on existing campus fixtures, they produced improved, maintenance-friendly bases using FibreX TPU+GF30—a sustainable, glass fiber-reinforced material sourced from 3DXTech in Grand Rapids, MI.

SECTION VIII - CUSTOMER SATISFACTION



SECTION VIII - CUSTOMER SATISFACTION:

MICHIGAN STATE UNIVERSITY

August 27, 2025

COAA Project Leadership Award Committee

RE: Roads – Farm Lane Bridge/Road Reconstruction and Infrastructure Improvements
Recommendation for 2025 COAA Project Leadership Award

RE: Nomination for the 2025 COAA Project Leadership Award: Roads – Farm Lane Bridge/Road Reconstruction and Infrastructure Improvements

To the Committee,

It is with immense pride that I nominate the Michigan State University (MSU) Roads – Farm Lane Bridge/Road Reconstruction and Infrastructure Improvements project for the 2025 COAA Project Leadership Award. This project stands as a testament to the power of a shared vision, deep collaboration, and innovative partnership, and we believe it exemplifies the very principles this award celebrates.

The success of replacing an iconic, multi-functional bridge in the heart of our bustling campus was fundamentally rooted in the strength of our entire project team. We are especially grateful for our partnership with Granger Construction & Fishbeck, who served as the Design-Build team.

Our leadership approach on this complex project was defined by several key principles:

- **Strategic Team & Delivery Selection:** Recognizing the critical timeline and campus impact, we intentionally chose the Design-Build (D-B) delivery model. This approach streamlined communication and unified accountability from the outset. We knew this model's success depended on the right partner, which is why we selected Granger Construction & Fishbeck, a proven D-B team with a deep understanding of large-scale infrastructure projects at MSU. This foundational decision created an environment of shared ownership from day one.
- **Trust and Innovation:** We believe that true project leadership involves empowering partners to innovate. When Granger Construction proposed a bold phasing plan to accelerate the project by four months, we embraced it. Our role as the owner was to trust our team's expertise and facilitate the early, strategic decisions needed to make this ambitious plan a reality. This involved a carefully orchestrated sequence of early demolition, temporary utility



Infrastructure Planning and Facilities

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MSU is an affirmative-action,
equal-opportunity employer.

relocation, and construction of both a new pedestrian and vehicular bridge, ultimately minimizing disruption for our campus community.

- **Integrated Coordination and Communication:** We fostered a culture of transparency and proactive problem-solving that we believe was essential to navigating the project's complexities. The entire team worked as a single, cohesive unit to manage numerous challenges, including:
 - **Shared Utilities:** Coordinating seamlessly with an adjacent major construction project to ensure zero downtime for either effort.
 - **Environmental Stewardship:** Collaborating proactively with the EGLE and MDNR to protect the river and its wildlife during construction.
 - **Protecting our Academic Mission:** Installing vibration monitoring systems in nearby research facilities to safeguard sensitive academic work.
 - **Regulatory Excellence:** Skillfully balancing the standards of both MDOT and the university to ensure full compliance and quality.

Throughout the project, our unwavering focus remained on the safety of our community and the continuity of campus operations. By ensuring frequent communication and coordinated planning among all stakeholders, we successfully managed significant traffic detours and a complex construction site, all while navigating the demands of the academic calendar.

The Roads – Farm Lane Bridge/Road Reconstruction and Infrastructure Improvements project is a powerful example of what can be achieved when an owner, a design-builder, and the community work together with vision and trust. We believe this project serves as a model for collaborative leadership and is a deserving candidate for the COAA Project Leadership Award.

Sincerely,



Andrew Linebaugh, Senior Project Manager
Planning, Design & Construction
Infrastructure, Planning and Facilities
Michigan State University



August 27, 2025

Mr. Andy Linebaugh
Michigan State University
Planning Design & Construction
1147 Chestnut Road
East Lansing, MI 48824

RE: MSU Farm Lane Bridge Replacement
Recommendation for 2025 COAA Project Leadership Award



HEADQUARTERS
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Lansing, MI 48911
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WEST MICHIGAN
940 Monroe Ave NW, Ste 112
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METRO DETROIT
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Detroit, MI 48226
248.724.2950
248.489.5753

OHIO
400 Lazelle Rd, Ste 18A
Columbus, OH 43240
614.705.2280

www.grangerconstruction.com

Dear Andy,

It is with great enthusiasm that we recommend Michigan State University (MSU) for the COAA Project Leadership Award in recognition of their exemplary leadership and collaboration on the Farm Lane Bridge Replacement project. Granger Construction was the Design-Build for this project and we are beyond thankful to have contributed to this iconic multi-functional bridge in the heart of campus. Michigan State University played a pivotal role in the team's success on this complex project in the following ways:

Delivery Model and Team Selection: MSU project leaders demonstrated exceptional foresight and sophistication in selecting the Design-Build (D-B) delivery model for this schedule-critical infrastructure project. Their decision was rooted in a deep understanding of the benefits of D-B—namely, streamlined communication, accelerated timelines and unified accountability. Recognizing the complexity and campus impact of this first-of-its-kind bridge replacement, MSU strategically partnered with a proven D-B team with a long-standing record of success on large-scale MSU infrastructure projects. This alignment of delivery model and team expertise was foundational to the project's success.

Innovative Spirit: MSU's openness to innovation was a defining characteristic of this project. When Granger Construction proposed a bold phasing plan that would accelerate the project timeline by four months compared to traditional approaches, MSU could have dismissed it as too risky. Instead, their trust in the team's capabilities and their willingness to engage in early, strategic decision-making enabled the adoption of this phased approach that paid big dividends. This plan included early demolition, temporary utility relocation and thoughtful sequencing of the new pedestrian bridge and the replacement vehicular bridge—all carefully orchestrated to minimize disruption and maximize efficiency for the campus community.



Coordination and Communication Excellence: MSU's leadership fostered a culture of transparency, collaboration and proactive problem-solving. The Farm Lane Bridge team exemplified these values through exceptional coordination efforts, including:

- **Shared Utilities Management:** Seamless coordination with a neighboring construction project ensured uninterrupted progress for both efforts.
- **Environmental Stewardship:** Collaboration with the EPA and DNR led to comprehensive plans for water and wildlife protection during construction over an active river.
- **Academic Impact Mitigation:** Installation of vibration monitoring systems in nearby academic buildings prevented disruption and safeguarded sensitive research environments.
- **Regulatory Compliance:** Recognizing MDOT's jurisdiction over major bridge construction, MSU skillfully balanced MDOT and university standards to ensure both quality and compliance.



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Safety, Quality and Campus Operations: Throughout construction, MSU maintained an unwavering focus on safety and operational continuity. The project site was adjacent to another major building project managed by a separate CM firm, and the area experienced significant detours for vehicular, pedestrian and bicycle traffic that had to take into consideration the academic calendar. MSU's leadership ensured that all stakeholders were aligned through frequent communication and coordinated planning, resulting in a safe and efficient work environment that minimized disruption to campus life.

The MSU Farm Lane Bridge Replacement project is a testament to what can be achieved when an owner leads with vision, trust and collaboration. MSU's commitment to innovation, coordination and excellence makes them a deserving candidate for the 2025 COAA Project Leadership Award.

Sincerely,

Bill Bofysil, Project Director
Granger Construction Company

August 27, 2025

Andy Linebaugh
Planning Design & Construction
Michigan State University
1147 Chestnut Road
East Lansing, MI 48824

**Michigan State University Farm Lane Bridge Replacement
Recommendation for 2025 COAA Project Leadership Award**

It is with great pride we recommend Michigan State University (MSU) for the COAA Project Leadership Award. Working with Granger Construction, the general contractor, we are grateful to have been a part of this important bridge project the middle of the campus. With a project of this size, scale, and importance to the community, it was imperative that the University be heavily involved in the project. MSU's responsiveness to recommendations and their ability to make timely, informed decisions enabled the project team to maintain momentum and adapt quickly to challenges.

When proposed with the design-build approach, MSU took considerable consideration and really listened to the recommendations proposed by Granger. They understood how this approach could help streamline communication, speed up the schedule, and keep accountability clear for this time-sensitive infrastructure project. Knowing how complex and impactful this bridge replacement would be, they teamed up with a design-build team that had a solid record with MSU projects. That decision set the stage for a smooth process. All parties were actively engaged and worked together to solve the many challenges related to such a large and potentially disruptive project.

To avoid challenges or setbacks, MSU dove into early planning and communication to stage appropriate demolition of the previous structure, temporary utility moves, and carefully-timed construction of both the pedestrian and vehicle bridges – all designed to meet critical deadlines and keep campus disruption to a minimum.

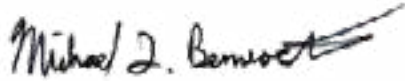
Amidst the fast-paced demands and constant coordination required by the Farm Lane Bridge Replacement Project, MSU never lost sight of its broader mission to inspire future leaders. Despite juggling tight deadlines and complex decisions, the MSU project team was available to engage civil engineering students, offering them a rare opportunity to visit the construction site and observe the bridge's unique design features firsthand. These site visits provided invaluable insight into how multiple disciplines — engineering, design, construction, and project management came together to deliver a successful infrastructure project. This initiative was made possible by the MSU project staff's thoughtful awareness and their ability to draw on both their engineering expertise and academic mindset, bridging the gap between education and real-world application.

The University's role as an engaged and forward-thinking owner was evident throughout every phase of the Farm Lane Bridge Replacement Project. Their leadership was critical to the project's success. Their collaborative approach enabled seamless coordination across utilities, environmental agencies, and academic stakeholders. By balancing regulatory requirements with campus needs and maintaining safety and traffic flow during nearby construction, MSU ensured the project stayed on track and aligned with the University's values.

Their commitment to partnership, innovation, and excellence exemplifies the spirit of the COAA Project Leadership Award. We strongly recommend Michigan State University for this recognition and believe their contributions set a high standard for owner involvement in complex capital projects.

If you have any questions or require additional information, please contact me at 616.464.3927 or mberrevoets@fishbeck.com.

Sincerely,



Michael L. Berrevoets, PE

Vice President/Senior Civil Engineer



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Mr. Andy Linebaugh
 Michigan State University
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 1147 Chestnut Road
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Mr. Bill Bofysil
 Granger Construction Company
 6267 Aurelius Rd
 Lansing, MI 48911

RE: MSU Farm Lane Bridge Replacement
 Recommendation for the 2025 COAA Project Leadership Award

Dear Andy and Bill,

C.A. Hull Co., Inc. (CAH) has learned of the recommendation of the Farm Lane Bridge Replacement project for the COAA Project Leadership Award, an award that recognizes an Owner's leadership and involvement in outstanding project delivery. CAH is proud to offer a letter of recommendation in pursuit of this award, as CAH's experience in working with Granger, and specifically Michigan State University (MSU), was truly noteworthy.

CAH has had the opportunity to partner with many Owners, utilizing various delivery methods, on contracts of varying size and scope. Even in CAH's 70+ years of contracting, it is rare to find such an effective ownership team that excelled in so many areas, including, but not limited to: selection of contract delivery method, stakeholder coordination, effective project-wide communication, and experienced leadership through unexpected job conditions and changes.

The Farm Lane Bridge Replacement did not lack for technical challenges. In C.A. Hull's scope, the project included saw & slab demolition of the existing bridge over the Red Cedar River, deep foundation pile installation and cofferdam construction, intricate concrete pours, and many critical lifts requiring the use of 300 and 900 ton hydraulic cranes. All of this, meanwhile, occurring in the heart of one of the country's leading public universities.

Through all of the challenges associated with the job, both known and unexpected, CAH appreciated MSU's spirit of partnership and focus on the larger project goals of a safe, successful, and on-time delivery.

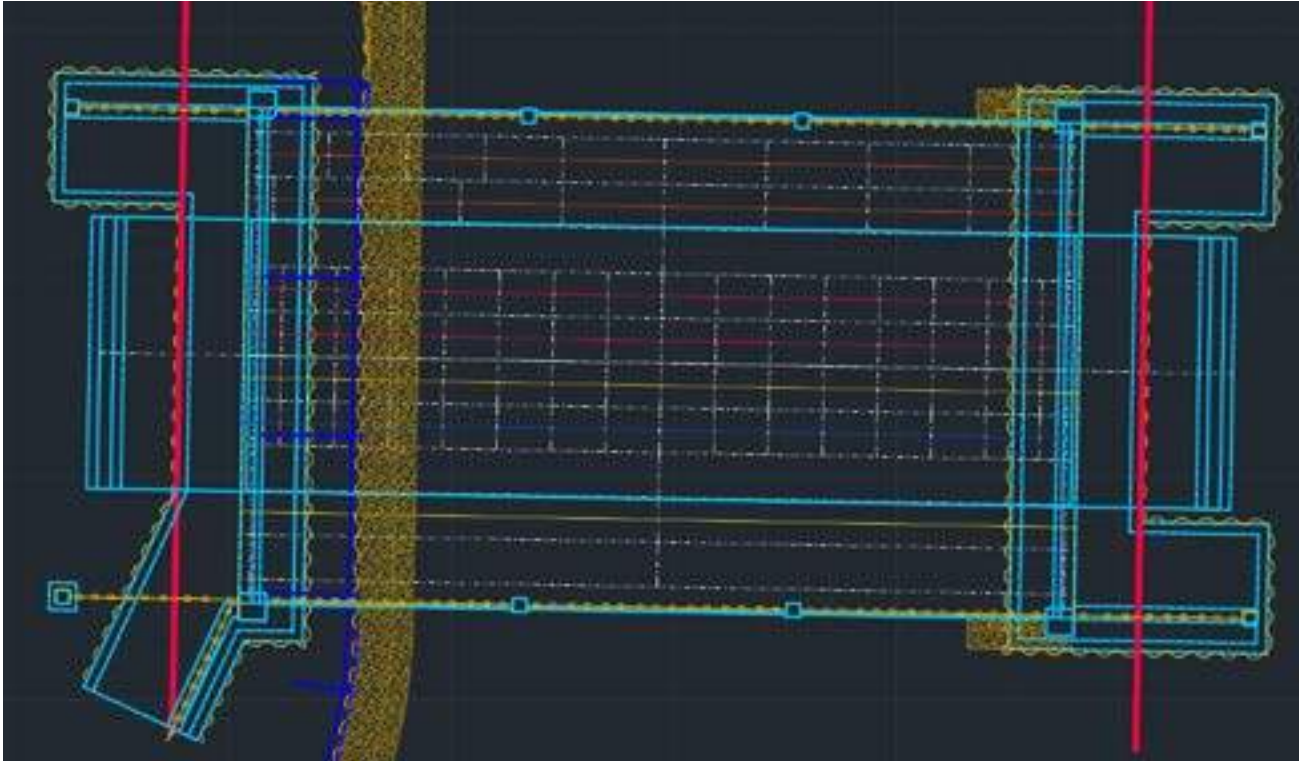
MSU was not just an Owner on the project, but a true partner to CAH, Granger, and the rest of the construction team, and a partner that I hope CAH has the opportunity to work with again.

Sincerely,

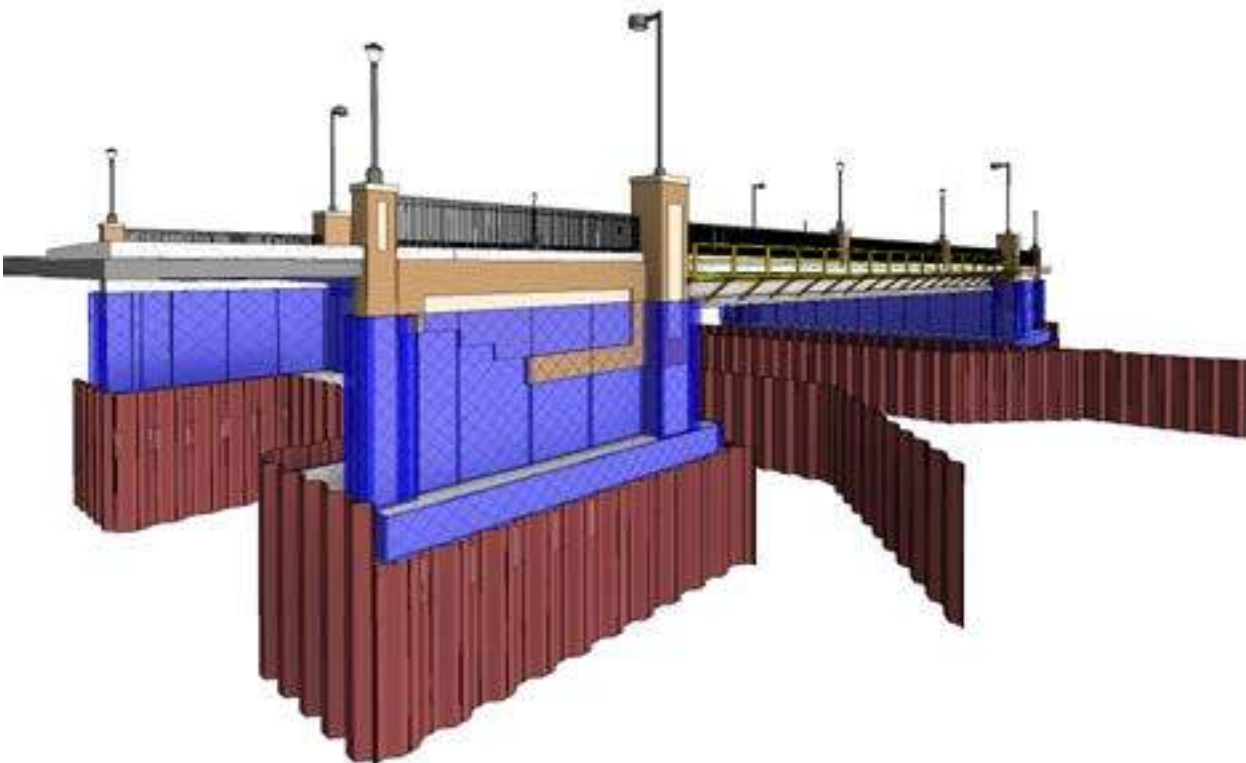
Clay Malloure
 Director of Project Management
 C.A. Hull Co., Inc.

AN EQUAL OPPORTUNITY EMPLOYER

Detailed 3D Modeling of the Project

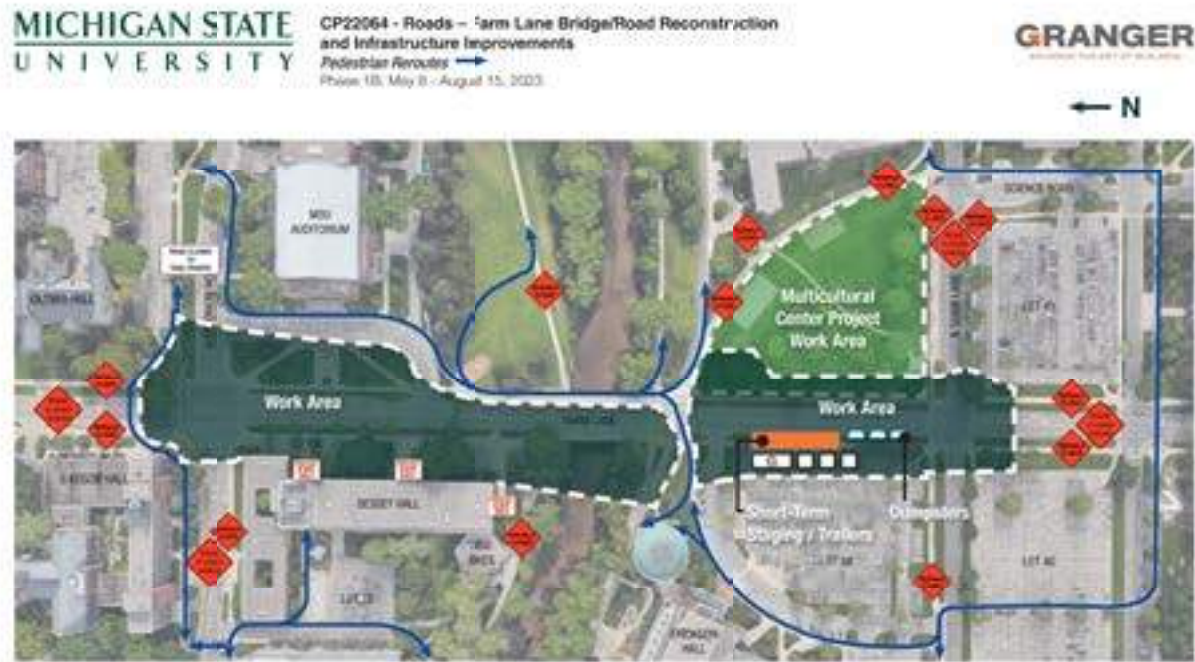


2D Design File Provided



Final 3D model of reconstruction bridge elements and temporary formwork

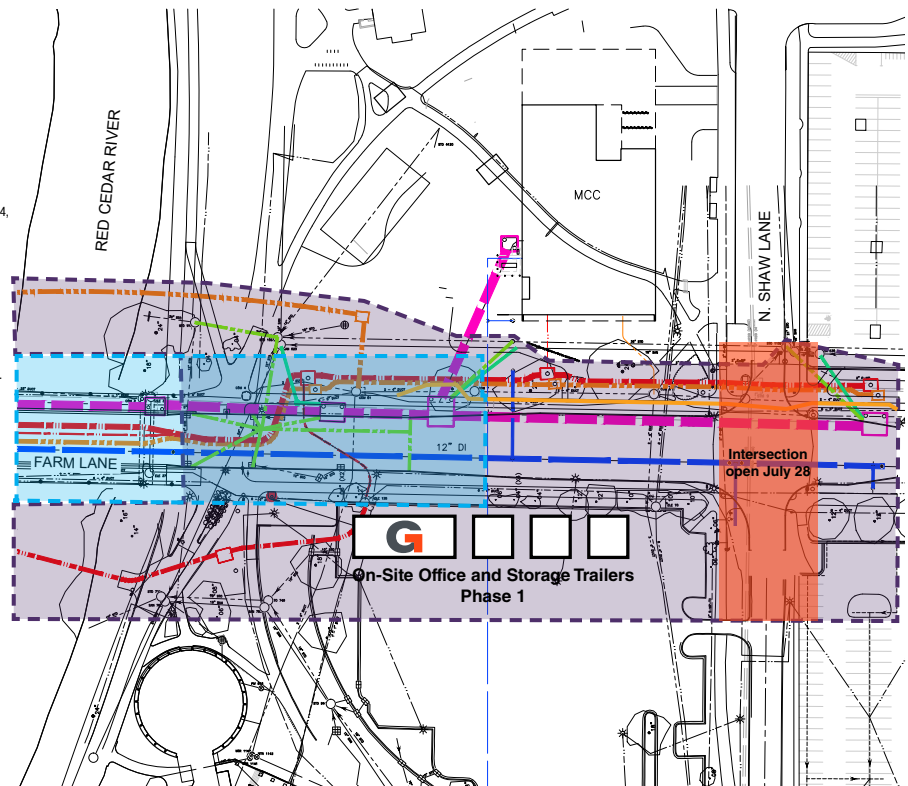
Phasing and Logistics Plans



MICHIGAN STATE UNIVERSITY

Farm Lane Bridge Replacement Phasing Plan

- Phase 1**
3/15/23 - 8/15/23
Early work to encompass steam vaults 404, 405 and 406 (with connecting tunnels), ERS, sanitary and storm structures and associated piping, communications, electrical vaults and duct banks. Construction of pedestrian bridge.
- Phase 2**
12/18/23 - 6/2/24
Bridge construction, all associated steam crossings, steam vault 403 and utilities. Crane pad, storage and laydown south of Farm Lane vehicular bridge on Farm Lane.
- ERS**
Earth retention system encroachment on MCC site



Demolition Plan



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DEMOLITION, FALL PREVENTION and PROTECTION PLAN C.A. HULL CO., INC. JOB #1241 Ingham County / MSU Farm Lane

Structure Demolition of: Farm Lane over the Red Cedar River

This plan addresses the structure demolition of Farm Lane over Red Cedar, intended to examine the fall hazards that Hull employees may be exposed to during the demolition work.

Supervisory personnel:

Ben Stachnik: Project Manager
Joe Wesley: Superintendent
Paul Louzecky: Safety Director

Farm Lane over Red Cedar River

Traffic Control

- Farm Lane Bridge will be closed to vehicular traffic starting December 18, 2023. Vehicular Traffic will be detoured via campus roads and Pedestrian traffic will be detoured over farm lane pedestrian bridge.

Hours of Operation

- Monday – Sunday: 7am-7pm

Deck

- The existing deck will be removed using the saw and slab operation. Longitudinal cuts through the existing deck will be made over each beam bay. Transverse cuts will be made through the deck approximately every 5'. The slabs will be removed using a Kenco Slab Crab attached to a Cat 210 Excavator.
- Removal limits are the entire structure.

Beams

- The beam removal operations will consist of a single crane pick for middle span beams, and then single crane picks for tail span beams.

Substructure

- The substructure removal work will utilize excavators with hydraulic demolition hammers.

Silica

- One Bosstek DB-60's will be utilized for silica suppression. The misting machines will be placed adjacent to the bridge.
- During demolition, operators will stay within cabs of their machines; other employees will utilize PPE if necessary.

Safety

- The bridge deck and area below the structure is considered a controlled access zone and this area will be danger taped off so that no one may enter while demolition operations occur.
- Falling debris signs will be installed below the structure to increase awareness.
- Once the barrier wall is removed, the bridge deck becomes a leading edge, and no one may walk or stand within 6' from the leading edge of the bridge deck.
- All employees entering the controlled access zone must be 100% tied off.
- Handrails will be installed where a leading edge with an elevation change of 6' or greater is present.
- See below Figures for demolition limits.
- Work Ahead signs placed up stream, River to be closed for recreational use.

AN EQUAL OPPORTUNITY EMPLOYER

Steel Beam Delivery Plan

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Farm Lane Bridge Replacement
Pre-stressed Concrete Beam Delivery

GRANGER



- The crane and 11 trucks will mobilize Tuesday, April 16. Beam setting is scheduled for Wednesday, April 17.
- On Tuesday, April 16, each truck, approximately 150' in length, will be staged in the easternmost lane of Farm Lane between Service Road and Mt. Hope Road, keeping the area below the railroad tracks clear. Starting at 8 a.m. on Wednesday, April 17, C.A. Hull will begin to hoist and set beams for the bridge. All 11 beams will be set on Tuesday. **Shown at right** is the starting position and direction of each truck north of the staging area at 8 a.m. on Wednesday, April 17. The remaining 6 trucks will be held in the staging area.
- Each truck will proceed from the staging area, north through campus, through the turn-around point and to the site. Once they are parked at the project site, it will take approximately 45 minutes for the crane to pick the beam off the dolly and set in place before the next pick can occur.
- Flaggers, provided by C.A. Hull, will be staged at each of the following points:
 - Farm Lane north of Mt. Hope
 - Farm Lane south of Service Road
 - Wilson Road west of Farm Lane
 - Wilson Road east of Farm Lane
 - Farm Lane and South Shaw Lane
 - Farm Lane and North Shaw Lane
- In addition, there will be two flaggers allocated to each moving truck as it proceeds through campus north to the project site.
- There are 3 CATA bus stops along the planned truck route on the eastern side Farm Lane, as shown at left. These bus stops will be clear of barrels and will be available for CATA to approach and pick up/drop off pedestrians.
- MSU Department of Police and Public Safety will be assisting on Wilson Road, both west and east of Farm Lane, to stop/divert traffic at the turn-around point.
- **Shown in the inset** are typical lane tapers that will occur north and south of each intersection along the delivery path. Barrels will be moved and replaced along the route by flaggers as the trucks proceed north through campus.



Utilized Granger's in-house drone capabilities to help develop plan.



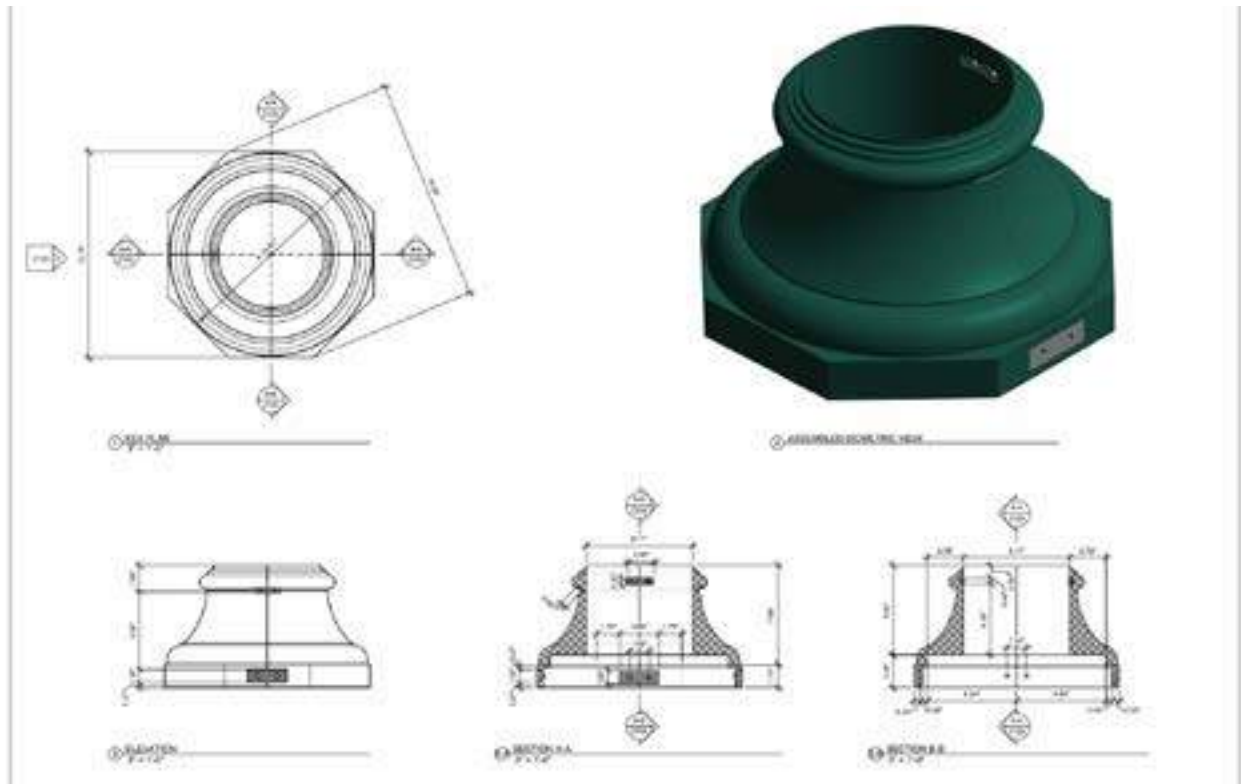
123-foot steel beams being delivered to campus



Steel beams being installed



3D Printer Helps Overcome Procurement Delay



3D model of lamp post



3D printed lamp post

Environmental Protection Measures



Barge used during demo for worker safety and in-river turbidity curtain for water protection



Erosion eels near pedestrian bridge



Silt Fence



The team designed a temporary retaining wall using interlocking steel sheet piles to protect a Red Cedar tree on the bank of the river that was within the excavation zone. This innovative application created a robust, subterranean cofferdam encircling the tree's root zone.



Bridge Has Historical Significance to MSU Campus



Original Farm Lane Bridge in 1911



Rebuilt 1936-Era Bridge from 1951

Progress Photos



Setting Pedestrian Bridge



Setting Steam and Condensate

Completion Photos



The bridge combines a sleek modern look with classic finishes and nods to historic design like these brass lanterns, handcrafted by MSU's own IPF Metal Shop and the use of masonry, limestone, concrete coating and other finishes that tie in with those of neighboring buildings (above). The black iron guardrails that line the bridge mirror those on the Farm Lane railroad underpass to the south (below).





MSU and design-build partners celebrate completion with the first drive/walk across the new vehicular bridge.





The new vehicular bridge also served as a critical utility corridor.

