

April 4, 2023

PRE-INSPECTION REPORT

BRIDGE NO HAM-42-0000

PID No. 105476



CLAY WADE BAILEY APPROACH OVER
WEST MEHRING WAY, SMITH STREET, PARKING LOT

INSPECTION DETAILS:

Bridge Nos.:	HAM-42-0000
Features intersected:	Mehring Way, Smith Street, Local Parking Lot
Locations to Inspect:	HAM-42-0000: 3 steel pier caps (Piers 18, 19, 20)
No. of Inspection Days:	Anticipated 2 days
No. of Caps to Inspect:	3
Anticipated Inspection Dates:	Week of June 19, 2023 (tentative)
Inspection Hours:	9 am – 3 pm
Inspection Access Equipment:	Bucket Truck, Ladders

FRACTURE CRITICAL INSPECTION REQUIREMENTS:

The inspection will consist of an In-Depth “Arms-Reach” inspection, performed in accordance with the guidelines of the current Specifications for the National Bridge Inventory. To perform an effective Fracture Critical Inspection, the following tasks must be performed:

1. Determine Resource Requirements.
(Identify qualified inspection staff, use appropriate inspection access and inspection equipment).
2. Identify the Fracture Critical Members.
(Identified in Appendix C)
3. Develop the Inspection Procedure.
(Contained in this document)
4. Prepare Follow-up Procedure.
(Recommendations will be made as part of this current project)
5. Provide Quality Control/Quality Assurance for the inspection and report.
(Procedures outlined in this document)
6. Develop a Periodic Inspection Plan
(Already in place with the Ohio Department of Transportation, District 8)

BRIDGE DESCRIPTION:

The HAM-42-0000 Bridge is a twenty-three-span welded steel plate girder bridge serving as the Ohio approach spans of the Clay Wade Bailey Bridge. The bridge was built in 1974 to provide an additional link between Covington and Cincinnati as it carries US-25/US-42/US-127 across the Ohio River. The Ohio approach spans carry five lanes of traffic at the north end of the structure and taper down to three lanes as they near the main truss span. Two lanes of southbound traffic travel towards the main truss span, two lanes of northbound traffic travel from the main truss span, and turn lanes onto W 2nd Street/US-27 are present for both northbound and southbound traffic. Three lanes of traffic traverse the Ohio River on the main truss spans with traffic direction signals determining the number of lanes in each direction. The bridge numbering system follows the convention set in the design plans (from south to north). Access to the structure will be from ladders and a bucket truck.

FRACTURE CRITICAL MEMBER LOCATIONS:

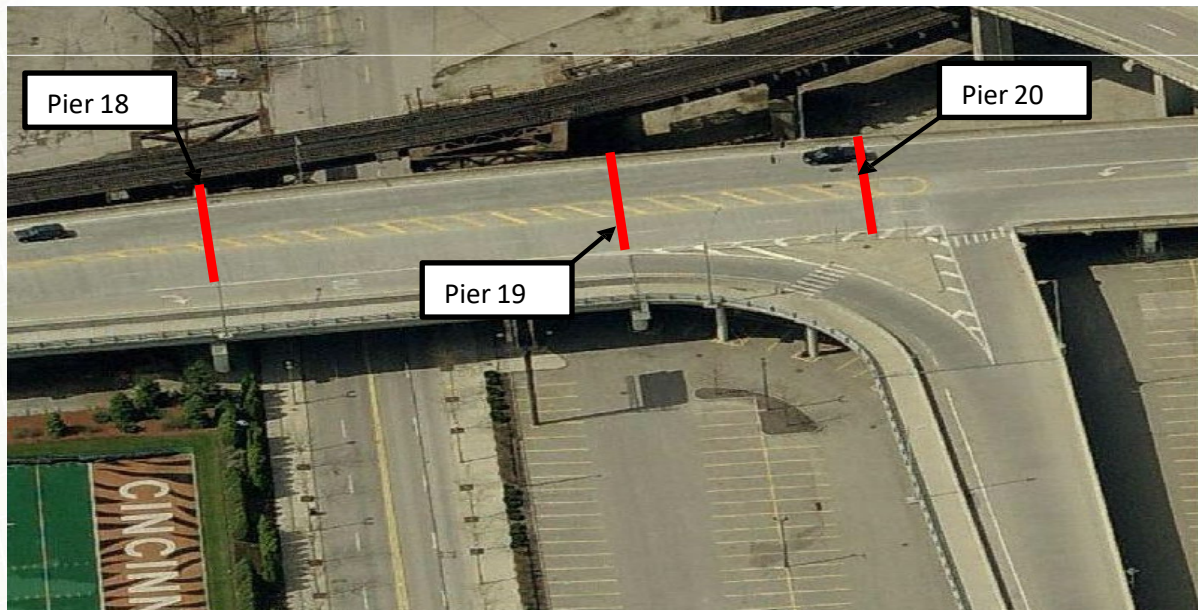
The structure has three fracture critical integral pier caps which are located at Piers 18-20. The pier cap at Pier 18 is a welded steel plate box girder while the other two pier caps are welded steel plate I-girders. Eight longitudinal girders are framed into the pier caps. Two rectangular holes were cut through each web plate of the pier caps to carry utility conduit through the caps.

Pier cap 18 is simply supported between two pot bearings that rest on circular reinforced concrete columns spaced 58'-9" center-to-center. There is a 9'-6" cantilevered portion of the pier cap that extends past the east bearing to accommodate the connection of Girder 8. Girders 1-7 are continuous over the pier cap by means of bottom flange tie plates that pass through slots in the web plates and top flange tie plates that extend across the top flange of the pier cap. The bottom flange tie plates are attached to the pier cap web plates by fillet welds. The top flange tie plates are bolted to the flange plates of the girders and the pier cap. The girder webs are connected to the pier cap webs using bolted clip angles, and knee braces are welded to the pier cap web plates below the bottom tie plates for additional rigidity. Girder 8 is connected to the east end of the pier cap web plates using bolted clip angles that attach to the girder web.

Pier cap 19 is simply supported between two pot bearings that rest on circular reinforced concrete columns spaced 51'-0" center-to-center. There are two 5'-9" cantilevered portions of the pier cap that extend past the west and east bearings to accommodate the connections of Girders 1 and 8 respectively. Girders 2-6 are continuous over the pier cap by means of bottom flange tie plates that are welded to both sides of the pier cap web and top flange tie plates that extend across the top flange of the pier cap. The top flange tie plates are bolted to the flange plates of the girders and pier cap. The girder webs are connected to the pier cap web using bolted clip angles, and knee braces are welded to the pier cap web below the bottom tie plates for additional rigidity. Girders 1 and 8 are connected to the ends of the pier cap web plate using bolted clip angles that attach to the girder webs.

Pier cap 20 is simply supported between two pot bearings that rest on circular reinforced concrete columns spaced 52'-6" center-to-center. There are two 7'-0" cantilevered portions of the pier cap that extend past the west and east bearings to accommodate the connections of Girders 1 and 8 respectively. All eight girders have fixed connections to the south face of the pier cap with 72" web plates, and all eight girders have expansion connections to the north face of the pier cap with 48" web plates. The expansion connection consists of a pin-and-hanger suspender system with a bent plate welded to the pier cap web below the hanger to serve as a guide plate.

The bridge was previously rehabilitated to address some fatigue prone details and areas of corrosion (See Appendix C for images of the fatigue prone details).



INSPECTION METHOD & PLAN:

The Collins Team will perform inspections on three fracture critical pier caps on HAM-42-0000, as defined by the Scope of Services. The caps span Smith Street and an adjacent local parking lot. The work will be performed over 2 days. The inspection will adhere to Confined Space Entry Procedures defined below and with Collins safety procedures. Traffic control will be provided by A&A Safety according to the standards shown in Appendix B.

FIELD COORDINATION - The following entities will be involved in coordinating and performing all field work associated with the inspection of these structures.

COLLINS – Field Team Contacts:

Michael Seal, P.E., CBI: Team Leader, Project Manager (614) 849-2277 (C)
mseal@collinsengr.com

Matt Rogers, P.E., CBI: Team Leader (859) 630-2238 (C)
mrogers@collinsengr.com

Kevin Mitchell, CBI, Asst. Team Leader (606) 344-3000 (C)
kmitchell@collinsengr.com

ODOT (Project and Permitting Contacts) – A right of entry permit is necessary through ODOT District 8. See Appendix A. The following ODOT personnel will be contacts.

Brandon Collett: Project Manager (513) 933-6643
Brandon.Collett@dot.state.oh.us

Jeff Meyer: Assistant Structures Engineer

(513) 933-6630

Scott Kraus: District Work Zone Traffic Manager
Scott.Kraus@dot.state.oh.us

(513) 933-6519

Chris Bass: Right-of-Way Use Permits
Christopher.Bass@dot.state.oh.us

(513) 933-6575

CITY OF CINCINNATI (Permitting) – Inspection of the piers will require access to the parking lots below the bridge ramps between Mehring Way and the Ohio River. The various Parking lot management companies and building owners have been notified of the upcoming fieldwork.

DOTe Permit and License Center

(513) 352-3463

Anthony Bennett: ROW Permitting
Anthony.bennett@cincinnati-oh.gov

(513) 352-3405

Tom Klumb: Real Estate
Tom.klumb@cincinnati-oh.gov

(513) 352-1571

A&A Safety – A&A Safety will be the traffic control subcontractor for this inspection. Refer to Appendix A for proposed maintenance of traffic schemes. Contacts are:

Don Beagle/Keith Gilbert: A&A Safety
donb@aaasafetyinc.com

(513) 276-2153

Approved right of entry permits from ODOT and City of Cincinnati will be kept on the job site throughout the inspection period.

TRAFFIC CONTROL – A&A Safety will be responsible for installation of traffic control devices to close lanes of Smith Street and some parking spaces in adjacent local parking lots. A brief description of the anticipated closures is as follows. Refer to Appendix A.

Smith Street (Local City Street) – Rotating right lanes of Smith Street will be closed on the far side of the intersection during daytime work. The lanes will be closed from daily from 9 am – 3 pm.

Local Parking Lot – Parking spaces in the parking lot adjacent to West Pete Rose Way will have to be closed off to inspect Piers 19 & 20. The daytime work will be from 9 am – 3 pm. Work will be coordinated with the parking lot owner.

PARKING LOT INFORMATION: Inspection of multiple pier caps will take place from parking lots at the adjacent to West Pete Rose Way beneath Smith Street. The leasee is Procter and Gamble. During the inspection at least four spaces will be occupied and closed off with cones. To ensure allowance of closure within the lot, Tom Klumb (contact for City of Cincinnati Real Estate Services) will be contacted at least one week prior to inspection to coordinate.

CONFINED SPACE ENTRY PROCEDURE: See below.

INSPECTION PLAN:

The condition inspection of the steel box girder pier caps on HAM-42-0000 will involve a 2-day field effort to completely inspect both the interior and exterior. The exterior will be inspected from 46' bucket truck and ladders for access and the interior will be inspected by entering the box girder per the procedures outlined below. A 3-man inspection team will perform the confined space inspection. Collins will open the pier caps 1 hour prior to entering to ventilate the piers. Prior to the start of the inspection, the inspection team shall meet at the site for a safety meeting and review the details of this inspection plan.

Entry will be performed in accordance with permit-required confined space entry procedures. This includes the use of an entry permit system, pre-entry and continuous air monitoring, and designating qualified entrants, attendants, and supervisor(s). The Project Work Plan will outline safety procedures for confined space work and contain contact information for local EMS services and for the local Hospital.

Prior to the inspection, initial air monitoring for O₂, %LEL, CO, and H₂S will be performed by one designated certified entrant climbing the length of the steel box girder pier caps and the certified attendant documenting the readings every 25 feet. Radios will be used for team communications during the inspection. At the conclusion of the initial entry and air monitoring, the confined space air readings will be evaluated and if no hazards exist, the space will be designated a non-permit required confined space. Members of the inspection team entering the confined space will continuously monitor the air, and the attendant will document readings in the box every 30 minutes for the duration of the work inside of the confined space.

If the monitor alarms go off during the initial entrance indicating that unsafe atmospheric conditions exist, the entrant will immediately exit the steel box girder (using a 10-minute escape pack if needed). If unsafe atmospheric conditions continue to exist, further ventilation will continue and the initial air monitoring performed again at a later time after proper ventilation. A blower and generator will be used to provide proper ventilation to the box girder, if necessary. If the atmospheric hazards cannot be removed from the confined space, the box girder will NOT be entered and the District's Project Manager will be contacted to notify and to receive further instructions.

FOLLOW-UP PROCEDURES FOR INSPECTION FINDINGS:

Fracture critical inspection findings shall be documented in the final inspection report.

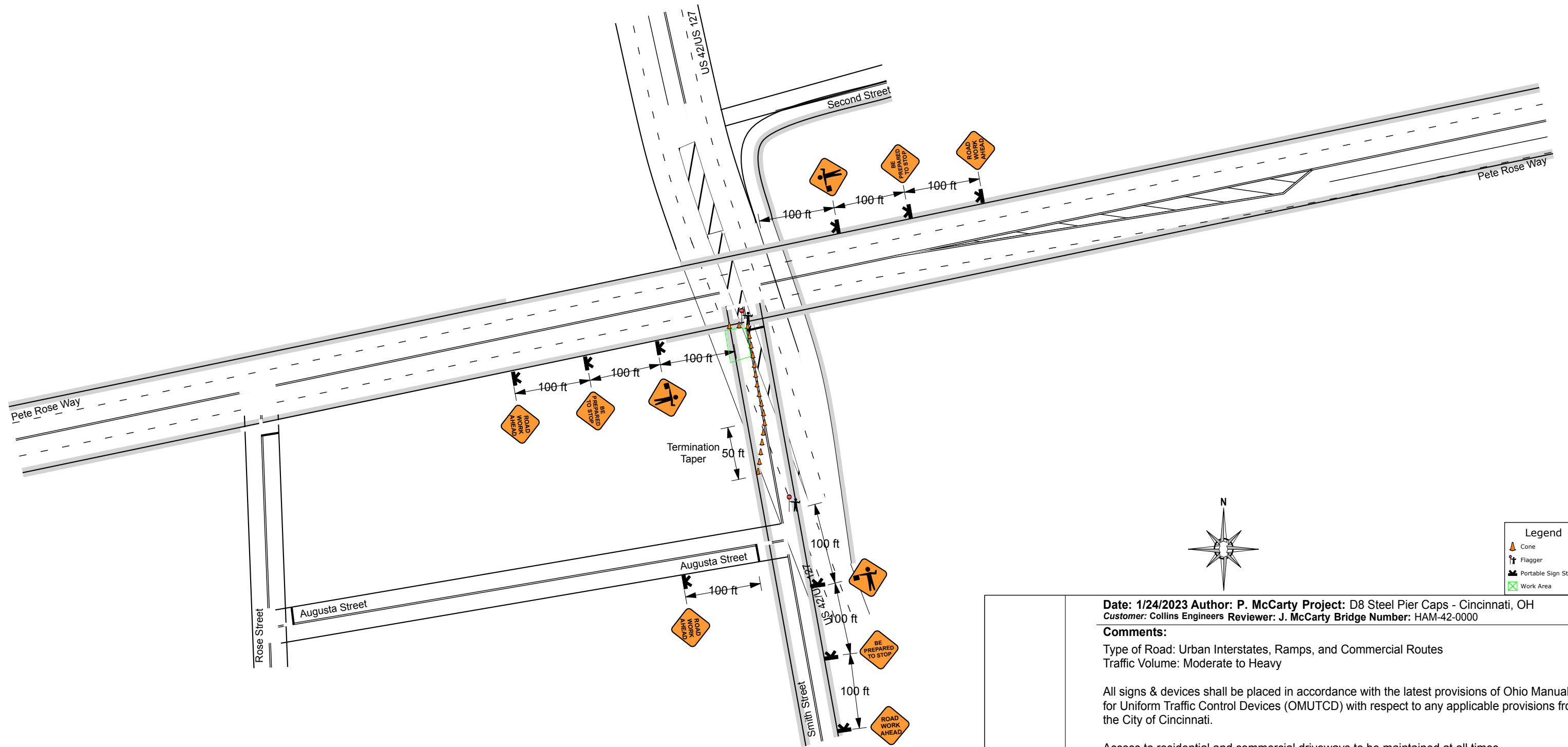
Quality Control/Quality Assurance

The standard Collins Quality Control Plan will be utilized. Such steps include: completion of field task checklist prior to leaving site, team leader review of all field notes and photographs before leaving the site, either the report originator or checker will be part of the field team, the report checker will be an NBI Team Leader, the report corrector cannot be the checker, the backchecker cannot be the corrector, and the field team leader will be involved for at least one phase of the reporting process.

APPENDIX A – RIGHT OF ENTRY PERMIT APPLICATIONS

APPENDIX B – TRAFFIC CONTROL DETAILS

HAM-42-0000



Notes:

- Sign spacing and buffer space may be adjusted to fit field conditions.
- "Road Work Ahead" signs shall be placed on all cross streets intersecting within the work area. The signs should be placed a minimum of 100 feet in advance of the intersection.

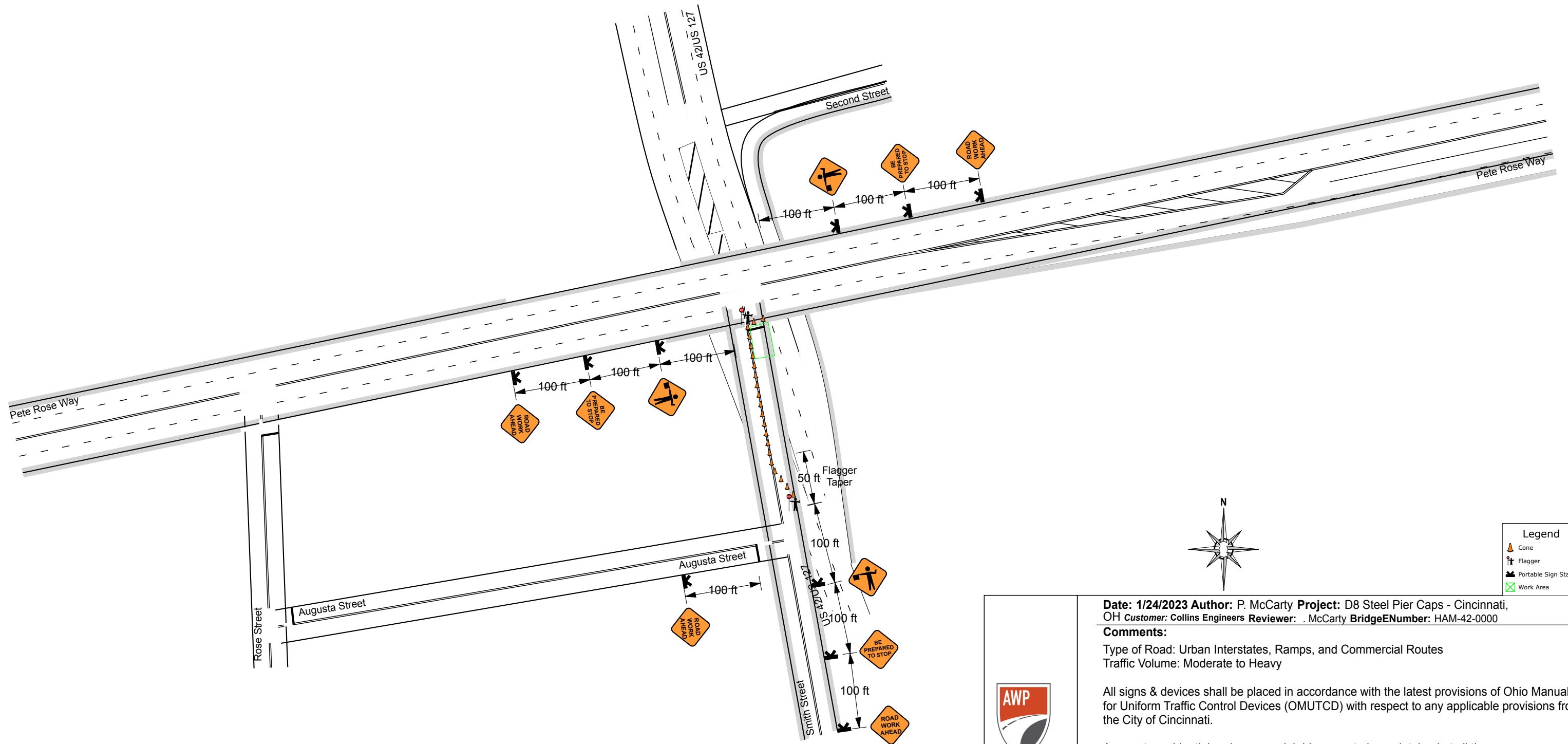
Date: 1/24/2023 **Author:** P. McCarty **Project:** D8 Steel Pier Caps - Cincinnati, OH
Customer: Collins Engineers **Reviewer:** J. McCarty **Bridge Number:** HAM-42-0000

Comments:
 Type of Road: Urban Interstates, Ramps, and Commercial Routes
 Traffic Volume: Moderate to Heavy

All signs & devices shall be placed in accordance with the latest provisions of Ohio Manual for Uniform Traffic Control Devices (OMUTCD) with respect to any applicable provisions from the City of Cincinnati.

Access to residential and commercial driveways to be maintained at all times.
 Flaggers shall be trained in safe temporary traffic control practices.
 Flaggers shall remain in constant communications, via two-way radio, at all times.
 Parking ban shall be coordinated with the Cincinnati Police Department.

HAM-42-0000



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PLANS ARE NOT TO SCALE

Sheet 2 of 2

**APPENDIX C – FATIGUE PRONE DETAILS FOR
HAM-42-0000**

PIER CAP 18: FATIGUE PRONE DETAILS

Fatigue Prone Detail 1

Fillet welds between diaphragms or stiffeners and web or flange plates.

Category: C'

Location: All girder diaphragms and web stiffeners.

Fatigue Prone Detail 2

Full penetration groove weld of flange splice.

Category: B

Location: Two bottom flange splices.

Fatigue Prone Detail 8

Intersection of fillet welds.

Category: E

Location:

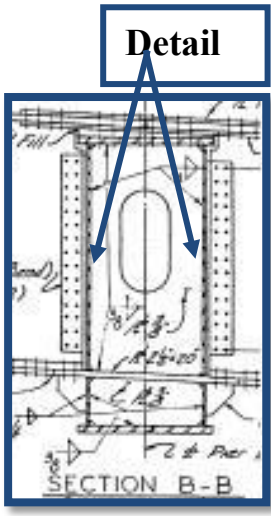
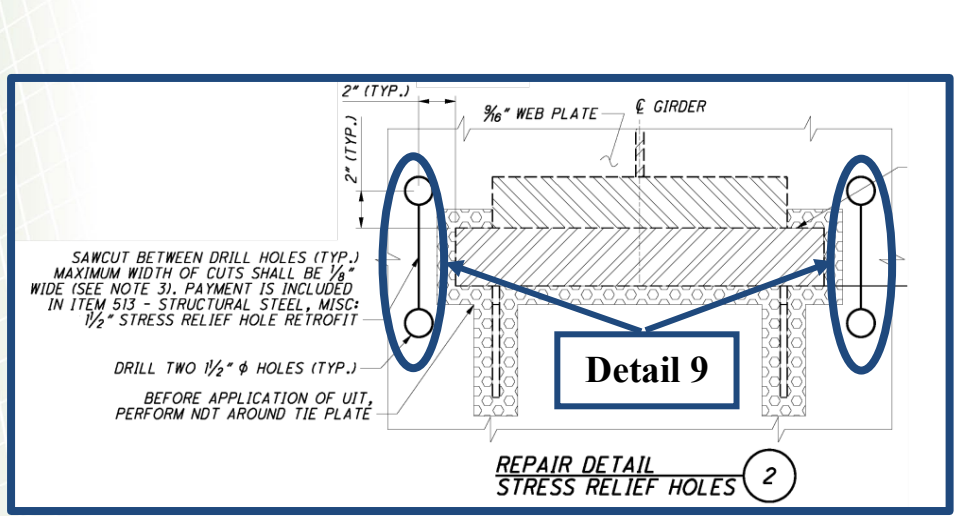
- Fillet welds of bottom flange and both web plates intersecting fillet welds of both web plates and diaphragms of girders 1 through 6.
- Fillet welds of the girder bottom flange tie plates and both web plates intersecting fillet welds between knee braces and both web and tie plates.
- Fillet weld of bottom flange and north web plate intersecting fillet welds of web and knee braces below girders 4, 5, and 7.
- Intersection of the horizontal and vertical fillet welds between the north web and the edges of the bottom flange tie plates of girders 1 through 6.

Fatigue Prone Detail 9

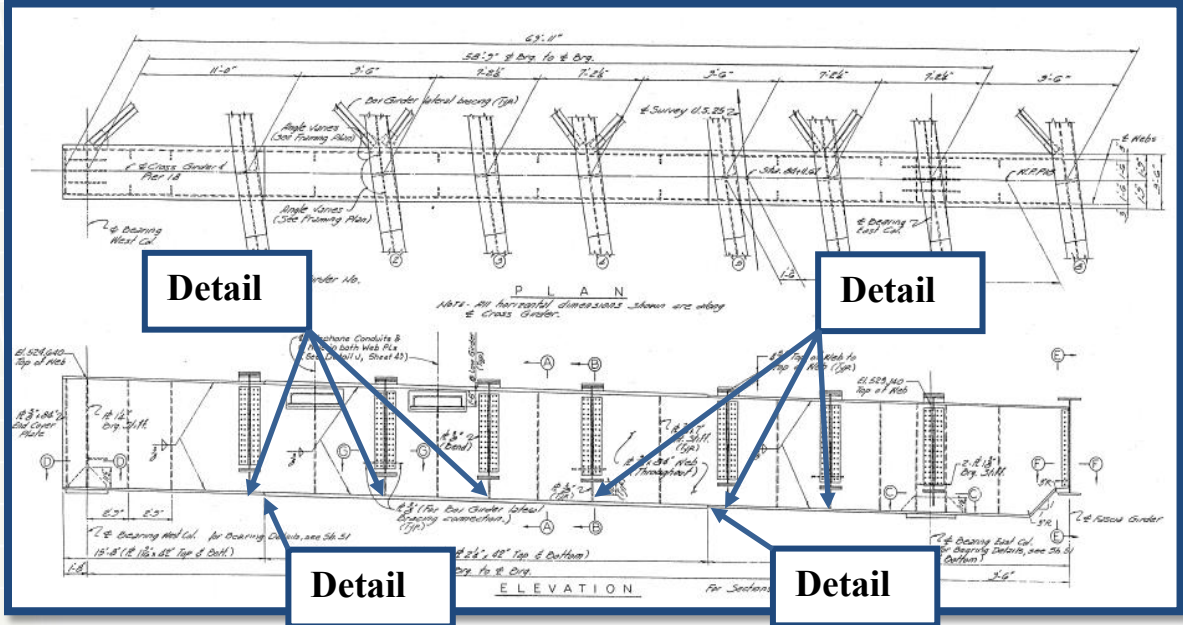
Drilled hole stress relief retrofit in web plates.

Category: B

Location: South web plate on each side of all girder connections.



Section of Pier Cap 18



Plan and elevation of Pier Cap 18

PIER CAP 19: FATIGUE PRONE DETAILS

Fatigue Prone Detail 1

Fillet welds between stiffeners and web plates.

Category: C'

Location: All girder web stiffeners.

Fatigue Prone Detail 2

Full penetration groove weld of flange splice.

Category: B

Location: Four bottom flange splices

Fatigue Prone Detail 5

Fillet weld greater than 4" or 12 times the connection thickness, with a connection thickness less than 1" on the web plate.

Category: E

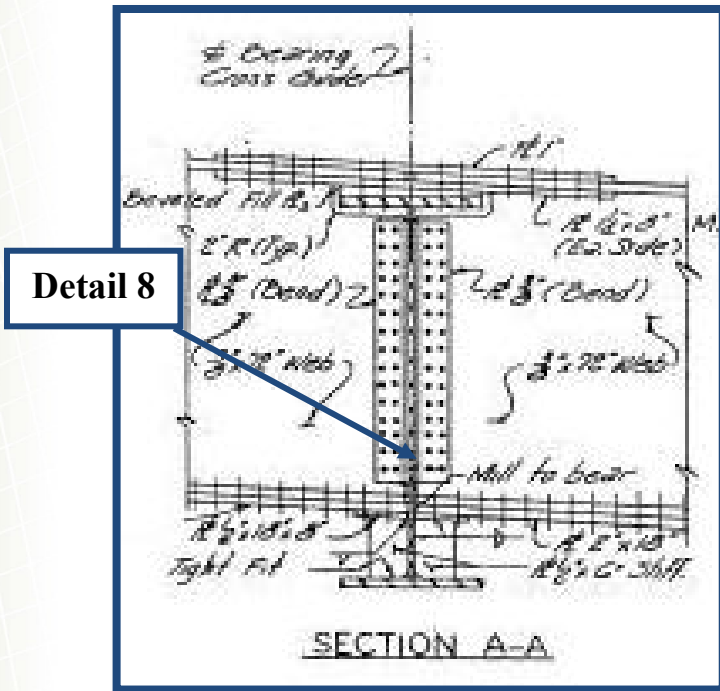
Location: Top of web plate between girder 1 and west bearing.

Fatigue Prone Detail 8

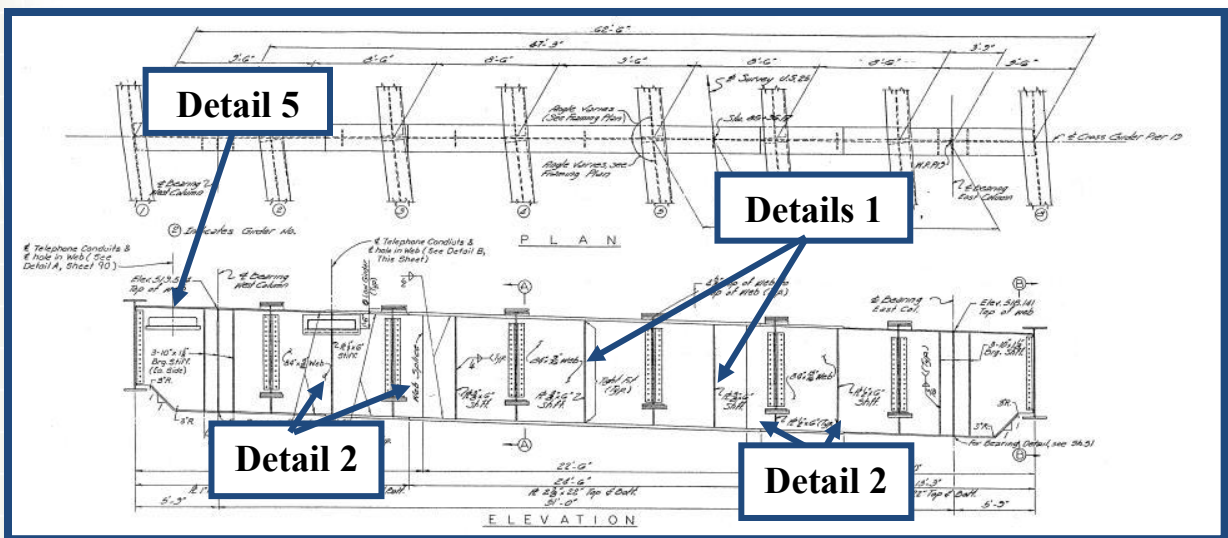
Intersection of fillet welds.

Category: E

Location: Fillet welds between girder seat plates and web intersecting fillet welds between the stiffeners and both the web and seat plates.



Section of Pier Cap 19, figure 5



Plan and elevation of Pier Cap 19

PIER CAP 20: FATIGUE PRONE DETAILS

Fatigue Prone Detail 1

Fillet welds between stiffeners and web plates.

Category: C'

Location: All web stiffeners.

Fatigue Prone Detail 2

Full penetration groove weld of flange splice.

Category: B

Location: Two bottom flange splices.

Fatigue Prone Detail 5

Fillet weld greater than 4" or 12 times the connection thickness, with a connection thickness less than 1" on the web plate.

Category: E

Location: Top of web plate between girder 1 and west bearing.

Fatigue Prone Detail 8

Intersection of fillet welds.

Category: E

Location: Fillet welds of stiffeners and web intersecting fillet welds of web and conduit hole reinforcement plate between girder 1 and the west bearing.

