

April 4, 2023

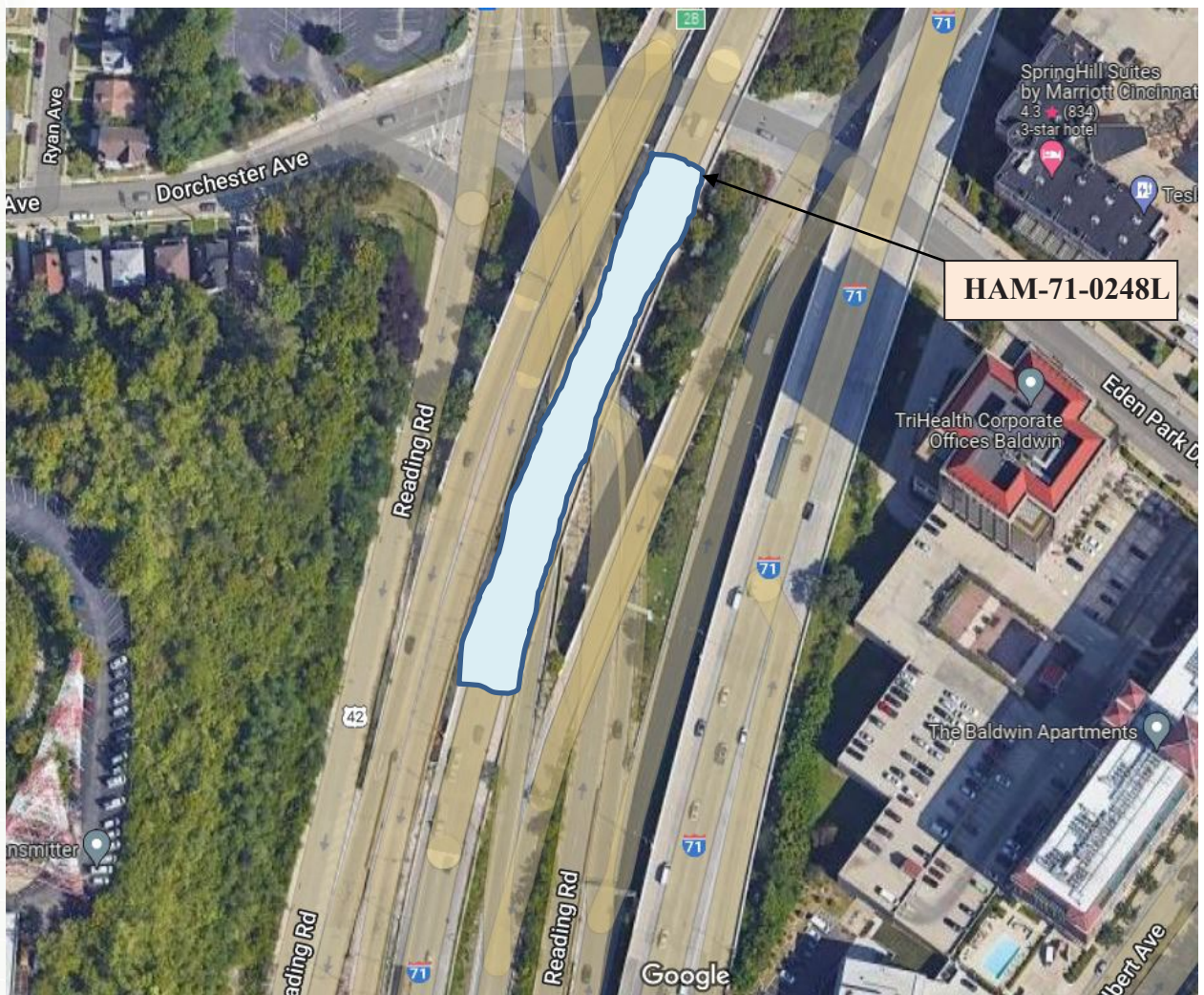
PRE-INSPECTION REPORT

BRIDGE NO HAM-71-0248L

**(IR 71 SB OVER US 42 NB, SB RAMP, AND EDEN PARK
DRIVE)**

PID No. 105476

**fROUTINE & FRACTURE CRITICAL PIER CAP INSPECTION OF 3 CAPS
AND ROUTINE INSPECTION OF BRIDGE**



INSPECTION DETAILS:

Bridge No.:	HAM-71-0248L
Features Intersected:	Northbound US 42, Southbound IR 71 Ramp, and Eden Park Drive
Locations to Inspect:	HAM-71-0248L Routine Inspection of Bridge & 3 Pier Caps
Number of Inspection Days:	3
No. of Caps to Inspect:	3
Inspection Dates:	June 2023
Inspection Hours:	8AM to 4PM on southbound IR 71 ramp 8AM to 4PM on northbound US 42 8AM to 4PM on Eden Park Drive
Inspection Equipment:	Bucket Truck; Ladders; Manlift

FRACTURE CRITICAL INSPECTION REQUIREMENTS:

The inspection will consist of an In-Depth “Arms-Reach” inspection, performed in accordance with the guidelines of the current FHWA National Bridge Inspection Standards for Fracture Critical Members.

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.
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:

Bridge HAM-71-0248L is a seven span bridge built in 1966. In spans 1 through 4 the superstructure is comprised of welded steel plate girders that frame directly into the steel pier caps. In spans 5, 6 and 7, continuous welded steel plate girders individually bear on the substructure units. The overall length of the bridge is 755’.

FRACTURE CRITICAL MEMBER LOCATIONS:

Three fracture critical pier caps are supported by concrete columns at Piers 1, 2 and 3. The caps are simply supported welded box members with cantilever ends up to 10'-6" in length. Six welded plate girders frame into the box sections. The girder webs are bolted by vertical double angles to the cap webs. At Piers 1, 2, and 3, the top flange splice plates are bolted to the top flanges of the pier caps and of the girders on each side of the cap. At Piers 1 and 2, the bottom flange splice plates are bolted to the bottom flanges of the pier caps and of the girders on each side of the cap. At Pier 3, the bottom flange splice plates pass through the web plates of the pier cap and are bolted to the bottom flanges of the girders on each side of the cap. Refer to Appendix A for existing pier cap plans and plans for the retrofit project.



A 2011 rehabilitation project, HAM-BH-VAR, performed the following repairs on this structure:

- Cleaning and painting portions of interiors of all caps
- Removal of interior diaphragm knee braces on the caps at Piers 1 and 2
- Bolted retrofit of welded drainage bracket and lateral bracing gusset connections to the web plates of all pier caps
- Grinding of intersecting fillet welds on the web stiffeners and the cap flanges at Piers 1 and 2
- Grinding of miscellaneous tack welds on the caps at Piers 1 and 2
- Drilling and sawcutting of pressure relief holes in the web plates of the cap at Pier 3

INSPECTION METHODS & PLAN:

The Collins Team will perform inspections of three fracture critical pier caps on HAM-71-0248L and one routine inspection of the full bridge, as defined by the Scope of Services. Two of the pier caps span over the ramp from Reading Road (US 42) to SB IR 71. The other cap spans over the northbound lanes of Reading Road. The inspection will be done during daylight hours according to closure limitations. We expect this work to take 3 days to complete. Traffic control on the IR 71 ramp and on Reading Road will be performed by A&A Safety. Traffic control details are included in Appendix B.

FIELD COORDINATION - The following staff 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 mseal@collinsengr.com	(614) 849-2277 (C)
Matt Rogers, P.E., CBI: Team Leader mrogers@collinsengr.com	(859) 630-2238 (C)
Kevin Mitchell, CBI, Asst. Team Leader, kmitchell@collinsengr.com	(606) 344-3000 (C)

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 Brandon.Collett@dot.state.oh.us	(513) 933-6643
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) – A right of entry permit is required through the City of Cincinnati. This permit will stipulate lane closure limitations and approve any proposed traffic control.

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@asafetyinc.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 northbound Reading Road (US 42) and to direct traffic around the work zones on Reading Road and the southbound IR 71 ramp. A brief description of the closures is as follows. Refer to Appendix B for sketches.

SB IR 71 RAMP – One shoulder of this one lane ramp will be closed from 8:00 AM to 4:00 PM to inspect the cap at Pier 2. We expect the closure on this ramp to last one day. See the MOT sketches in Appendix B.

NB READING ROAD (US 42) – Single lane closures from 8:00 AM to 4:00 PM will be necessary on NB Reading Road to inspect the cap at Pier 3. This work is expected to take one day. Closures will follow the MT-98 standards in the ODOT Standard Construction Drawings. See the MOT sketches in Appendix B.

EDEN PARK DRIVE – Single lane closures from 8:00AM to 4:00PM will be necessary to inspect at Pier 5. This work is expected to take less than one day. See the MOT sketches in Appendix B.

CONFINED SPACE ENTRY PROCEDURE: See below.

INSPECTION PLAN:

The condition inspection of the steel box girder pier caps on HAM-71-0248L will involve a 3-day field effort to completely inspect both the interior and exterior. The exterior will be inspected from a 46' bucket truck and ladders for access and the interiors will be inspected by entering the box girder per the procedures outlined below. A 2 to 3-person inspection team will perform the confined space inspection.

Collins will open the pier caps 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.

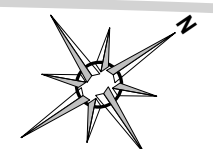
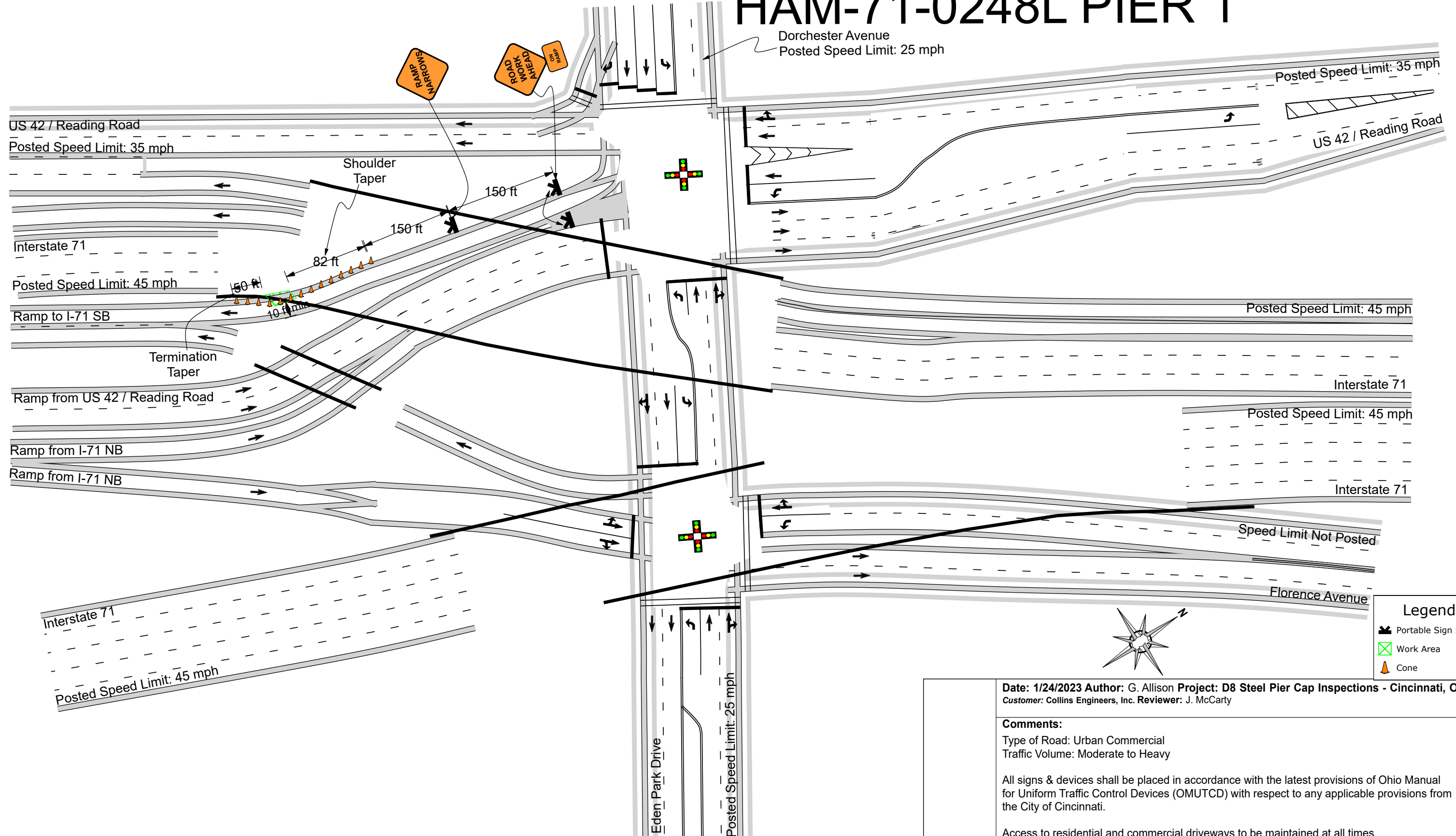
Quality Control/Quality Assurance

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-71-0248L PIER 1



Legend	
	Portable Sign Stand
	Work Area
	Cone

Notes:

- Sign spacing adjusted to fit field conditions.
- Buffer space modified 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.

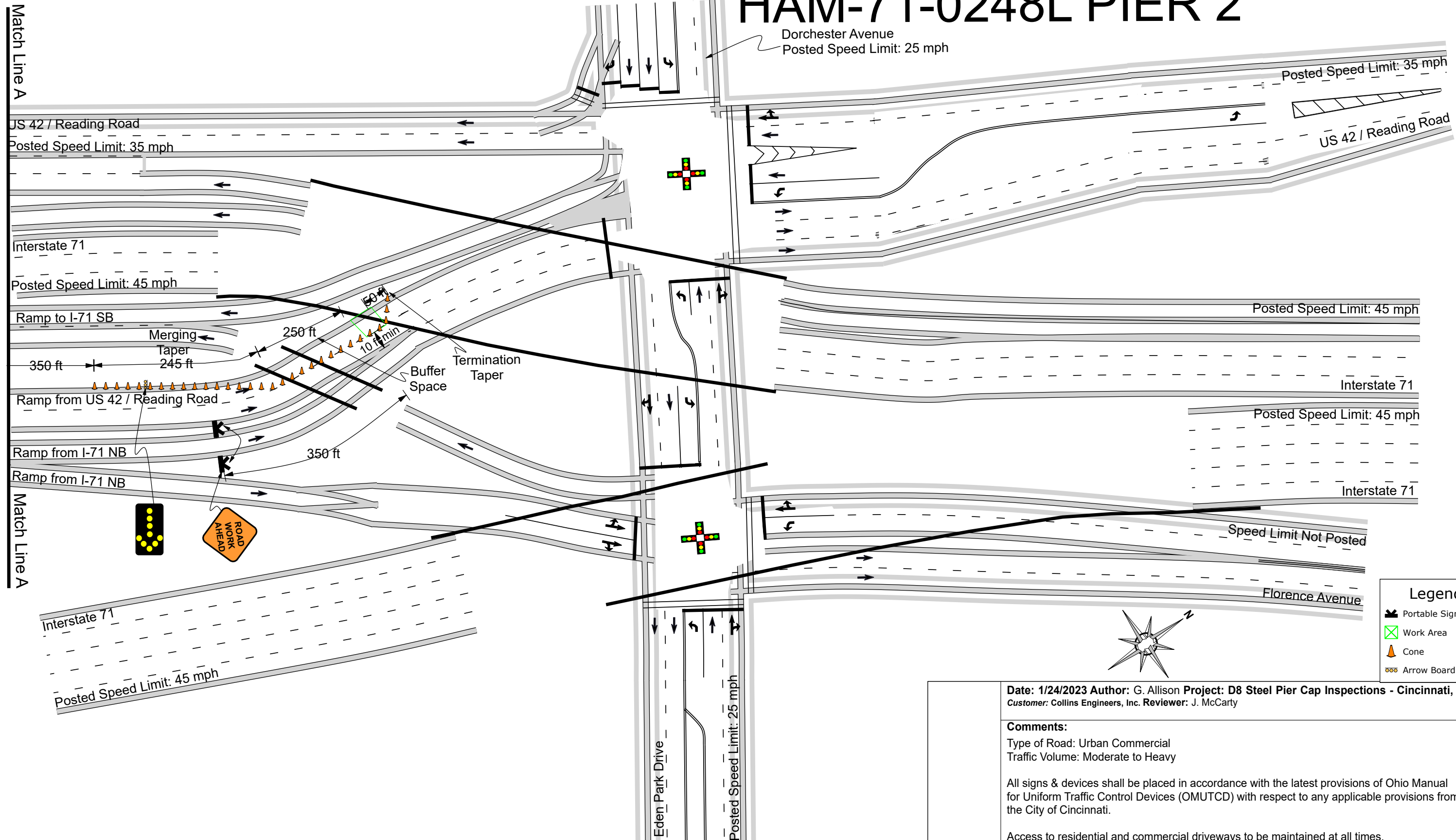
Date: 1/24/2023 **Author:** G. Allison **Project:** D8 Steel Pier Cap Inspections - Cincinnati, OH
Customer: Collins Engineers, Inc. **Reviewer:** J. McCarty

Comments:
 Type of Road: Urban Commercial
 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-71-0248L PIER 2



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.

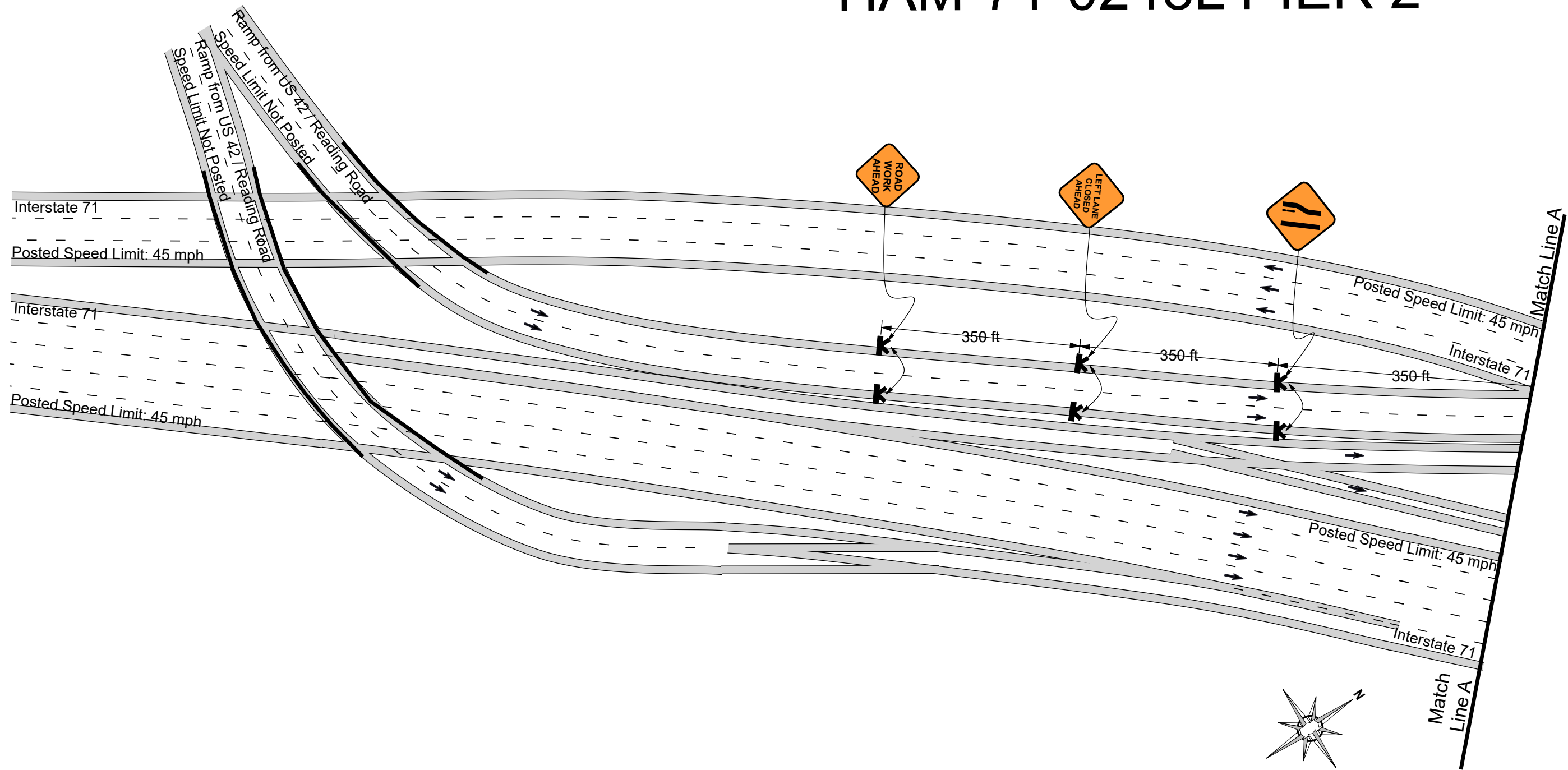
Date: 1/24/2023 **Author:** G. Allison **Project:** D8 Steel Pier Cap Inspections - Cincinnati, OH
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HAM-71-0248L PIER 2



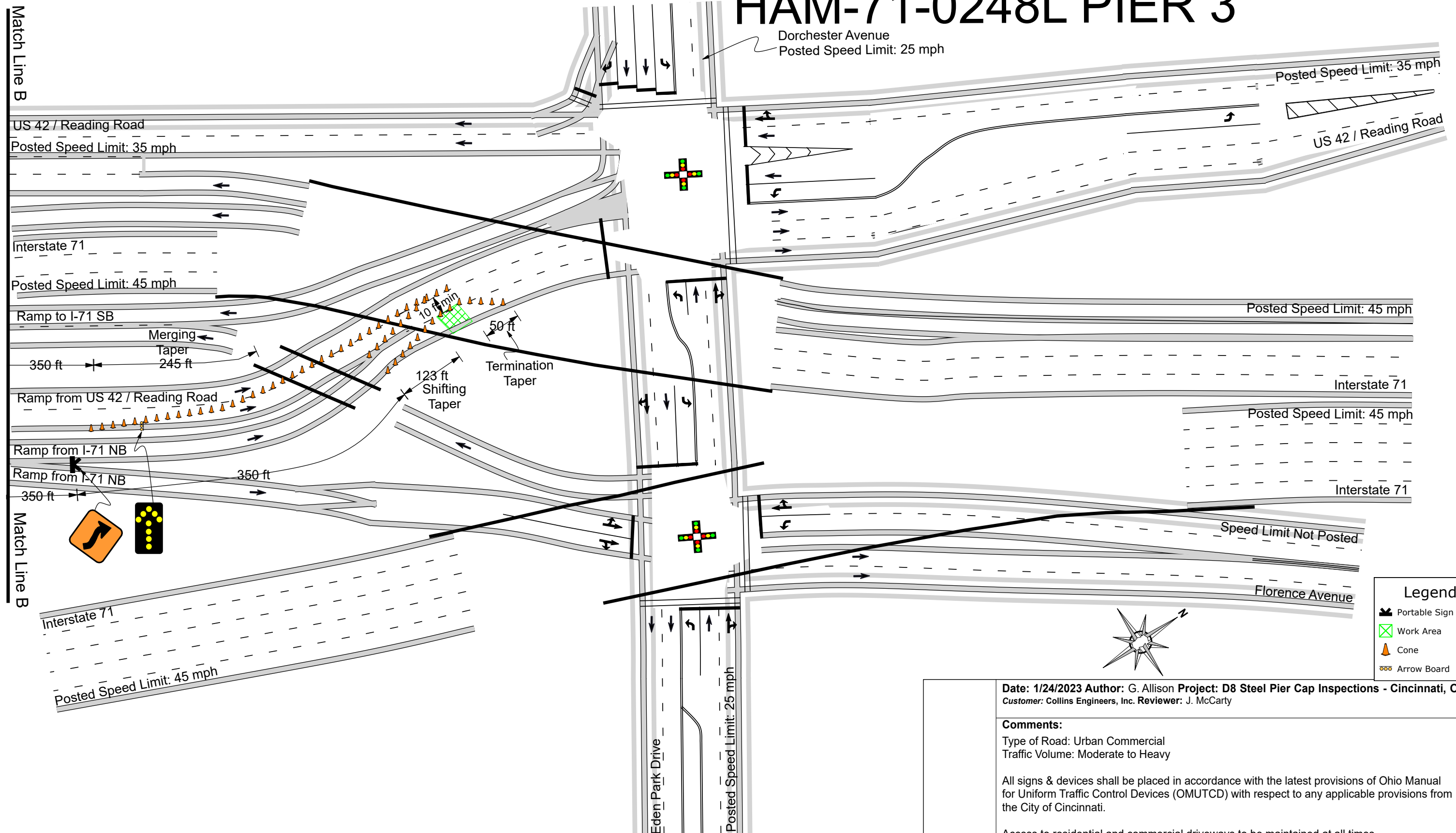
Legend
 K Portable Sign Stand

Date: 1/24/2023 **Author:** G. Allison **Project:** D8 Steel Pier Cap Inspections - Cincinnati, OH
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 Parking ban shall be coordinated with the Cincinnati Police Department.
 PLANS ARE NOT TO SCALE

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.

HAM-71-0248L PIER 3



Legend	
	Portable Sign Stand
	Work Area
	Cone
	Arrow Board

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Customer: Collins Engineers, Inc. **Reviewer:** J. McCarty

Comments:
 Type of Road: Urban Commercial
 Traffic Volume: Moderate to Heavy

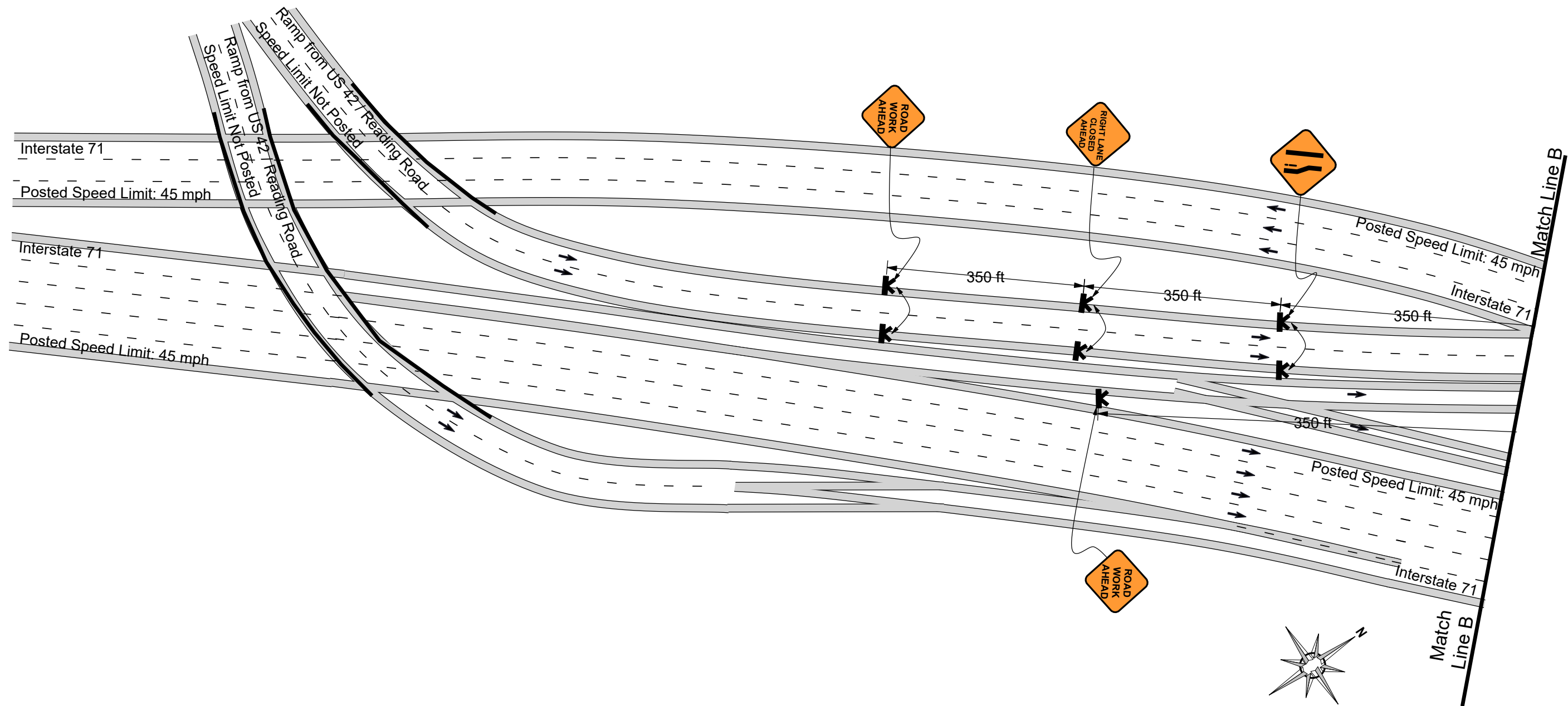
All signs & devices shall be placed in accordance with the latest provisions of Ohio Manual for Uniform Traffic Control Devices (OMUTCD) with respect to any applicable provisions from the City of Cincinnati.

Access to residential and commercial driveways to be maintained at all times.
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 Parking ban shall be coordinated with the Cincinnati Police Department.

Notes:

- Buffer space omitted to fit field conditions.
- Sign spacing 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.

HAM-71-0248L PIER 3



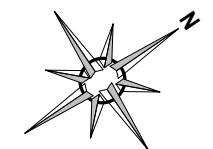
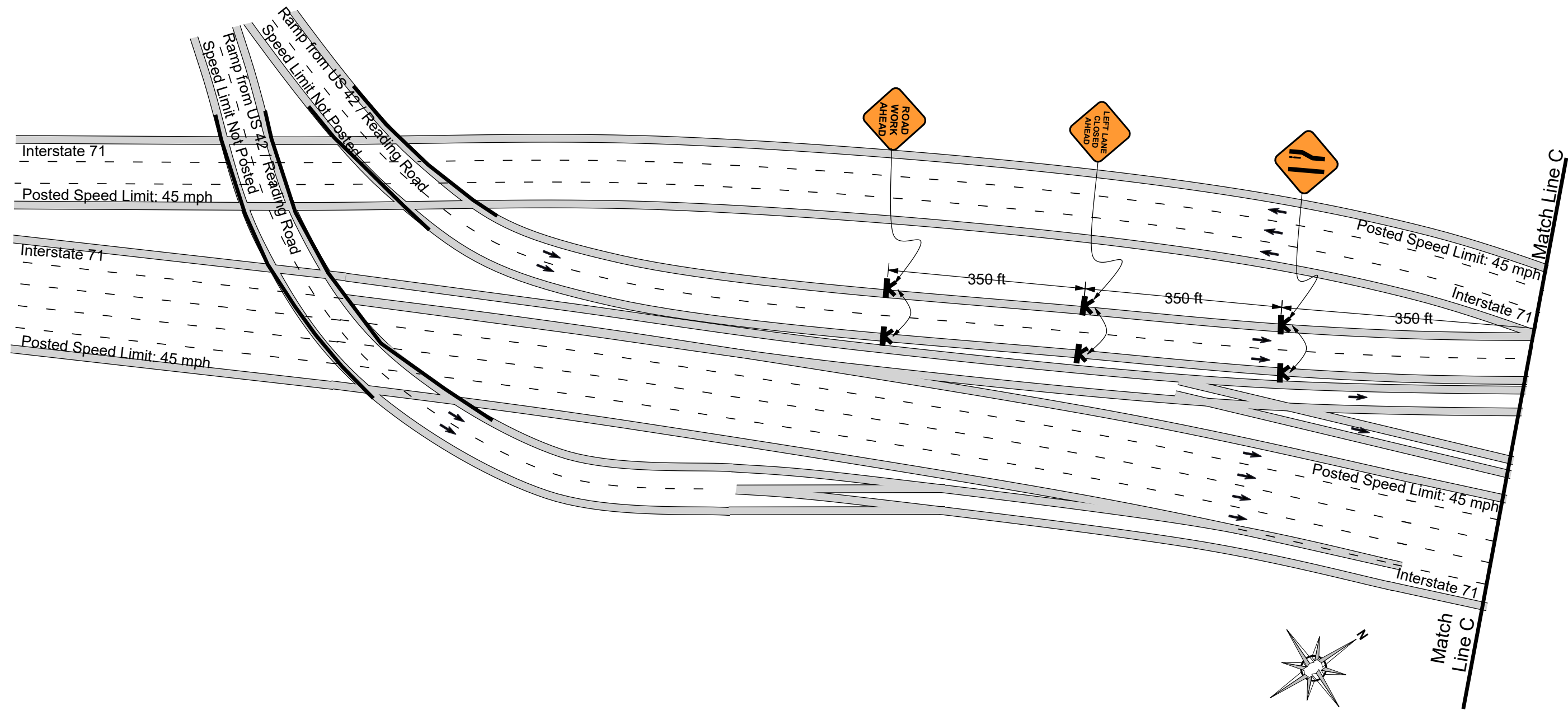
Legend
 Portable Sign Stand

Date: 1/24/2023 **Author:** G. Allison **Project:** D8 Steel Pier Cap Inspections - Cincinnati, OH
Customer: Collins Engineers, Inc. **Reviewer:** J. McCarty

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 PLANS ARE NOT TO SCALE

Notes:
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HAM-71-0248L PIER 3 & 4



Legend
 Portable Sign Stand

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.

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 PLANS ARE NOT TO SCALE
 Sheet 9 of 12

Notes for Figure 6H-22—Typical Application 22
Right-Hand Lane Closure on the Far Side of an Intersection

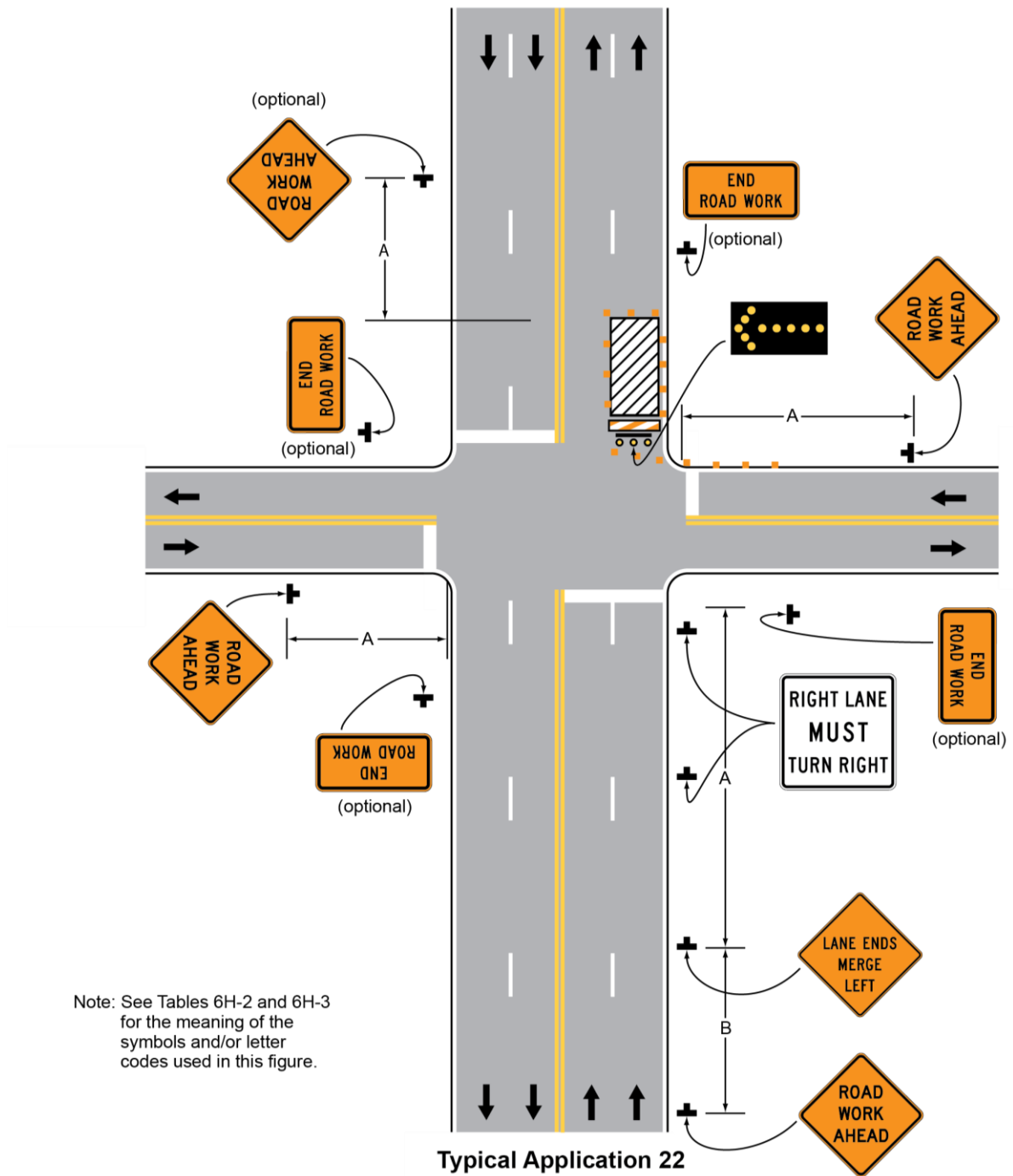
Guidance:

1. *If the work space extends across a crosswalk, the crosswalk should be closed using the information and devices shown in Figure 6H-29.*

Option:

2. The normal procedure is to close on the near side of the intersection any lane that is not carried through the intersection. However, when this results in the closure of a right-hand lane having significant right turning movements, then the right-hand lane may be restricted to right turns only, as shown. This procedure increases the through capacity by eliminating right turns from the open through lane.
3. For intersection approaches reduced to a single lane, left-turning movements may be prohibited to maintain capacity for through vehicular traffic.
4. Flashing warning lights and/or flags may be used to call attention to the advance warning signs.
5. Where the turning radius is large, it may be possible to create a right-turn island using channelizing devices or pavement markings.

Figure 6H-22. Right-Hand Lane Closure on the Far Side of an Intersection (TA-22)



Notes for Figure 6H-29—Typical Application 29

Crosswalk Closures and Pedestrian Detours

Standard:

1. When crosswalks or other pedestrian facilities are closed or relocated, temporary facilities shall be detectable and shall include accessibility features consistent with the features present in the existing pedestrian facility.
2. Curb parking shall be prohibited for at least 50 feet in advance of the midblock crosswalk.

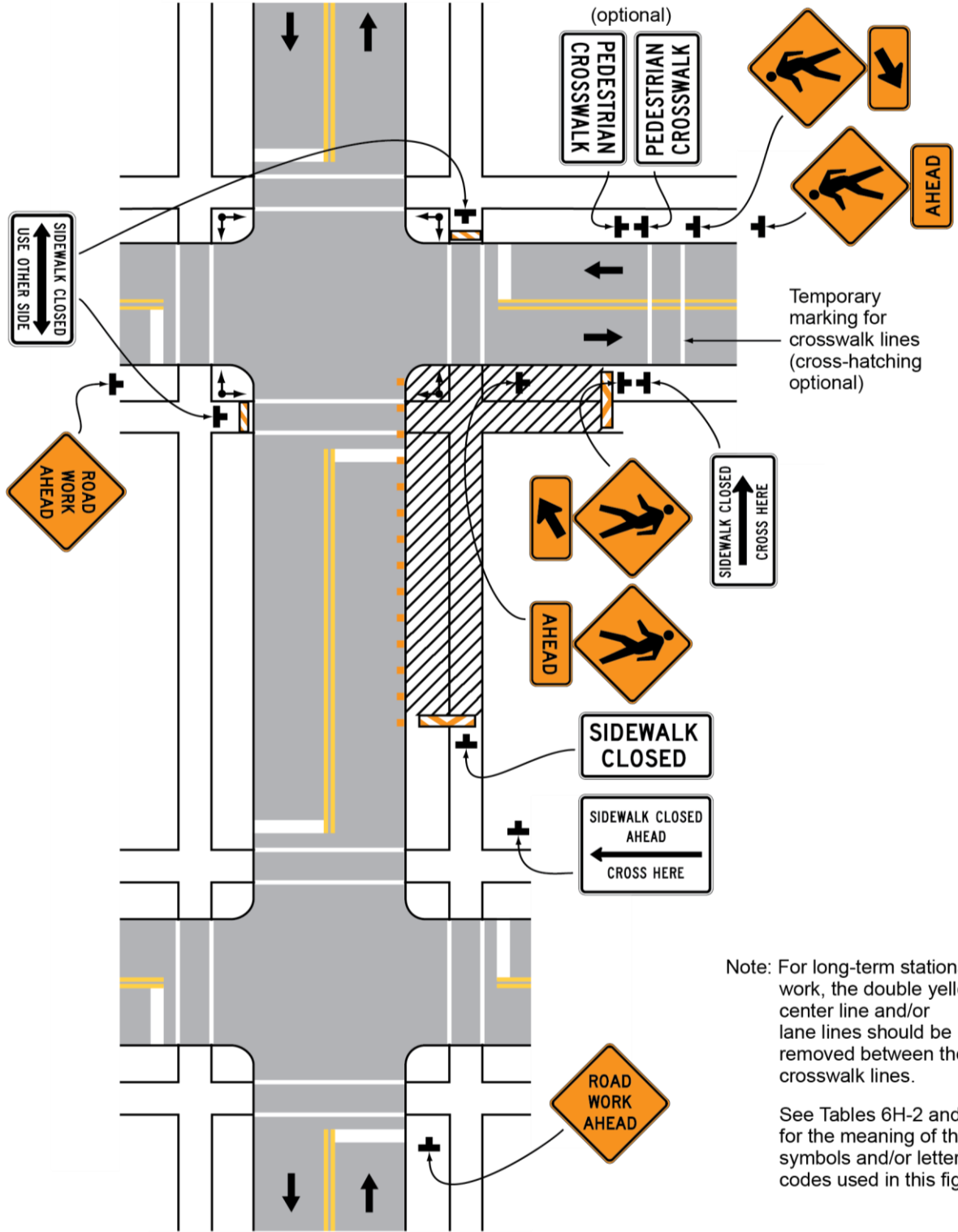
Guidance:

3. Audible information devices should be considered where midblock closings and changed crosswalk areas cause inadequate communication to be provided to pedestrians who have visual disabilities.
4. Pedestrian traffic signal displays controlling closed crosswalks should be covered or deactivated.

Option:

5. Street lighting may be considered.
6. Only the TTC devices related to pedestrians are shown. Other devices, such as lane closure signing or ROAD NARROWS signs, may be used to control vehicular traffic.
7. For nighttime closures, Type A Flashing warning lights may be used on barricades supporting signs and closing sidewalks.
8. Type C Steady-Burn or Type D 360-degree Steady-Burn warning lights may be used on channelizing devices separating the work space from vehicular traffic.
9. In order to maintain the systematic use of the fluorescent yellow-green background for pedestrian, bicycle, and school warning signs in a jurisdiction, the fluorescent yellow-green background for pedestrian, bicycle, and school warning signs may be used in TTC zones.

Figure 6H-29. Crosswalk Closures and Pedestrian Detours (TA-29)



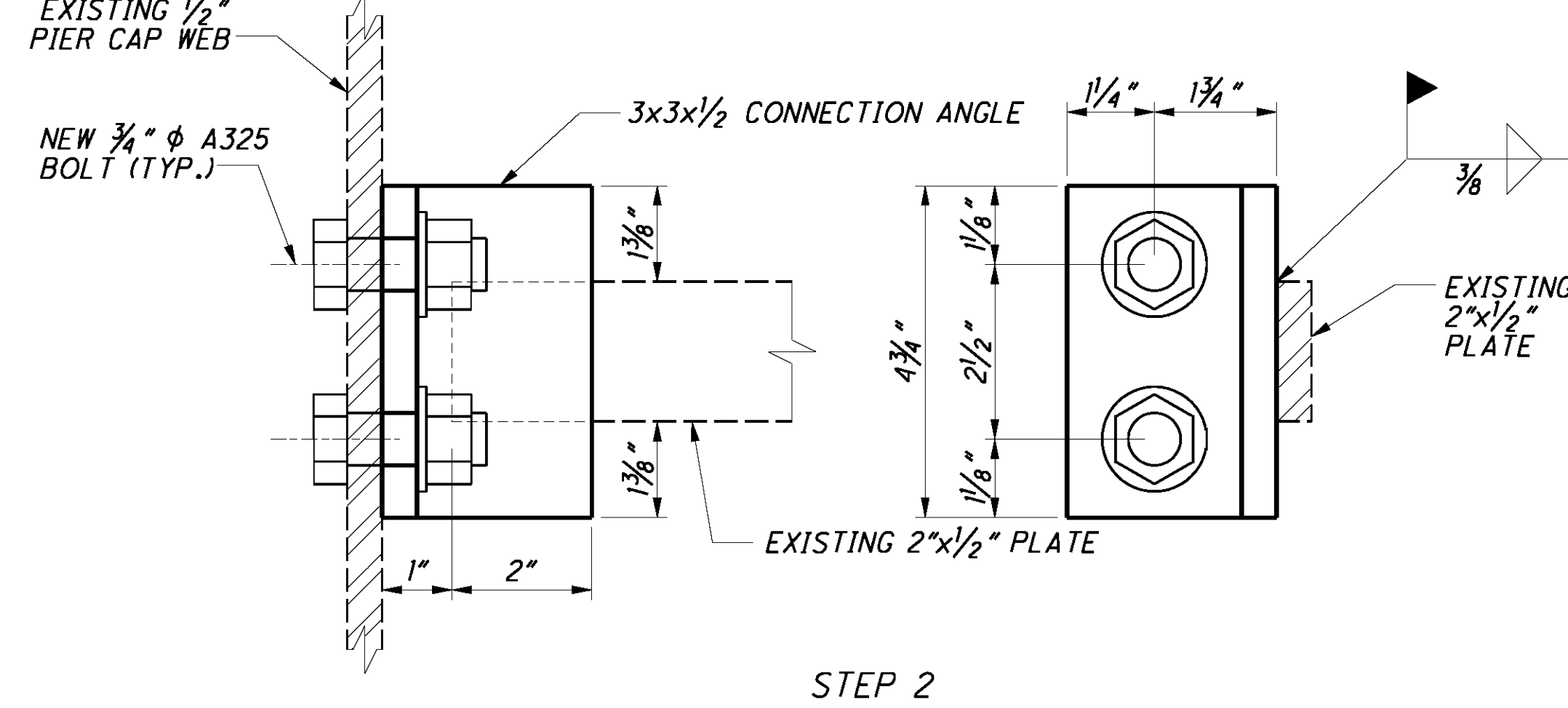
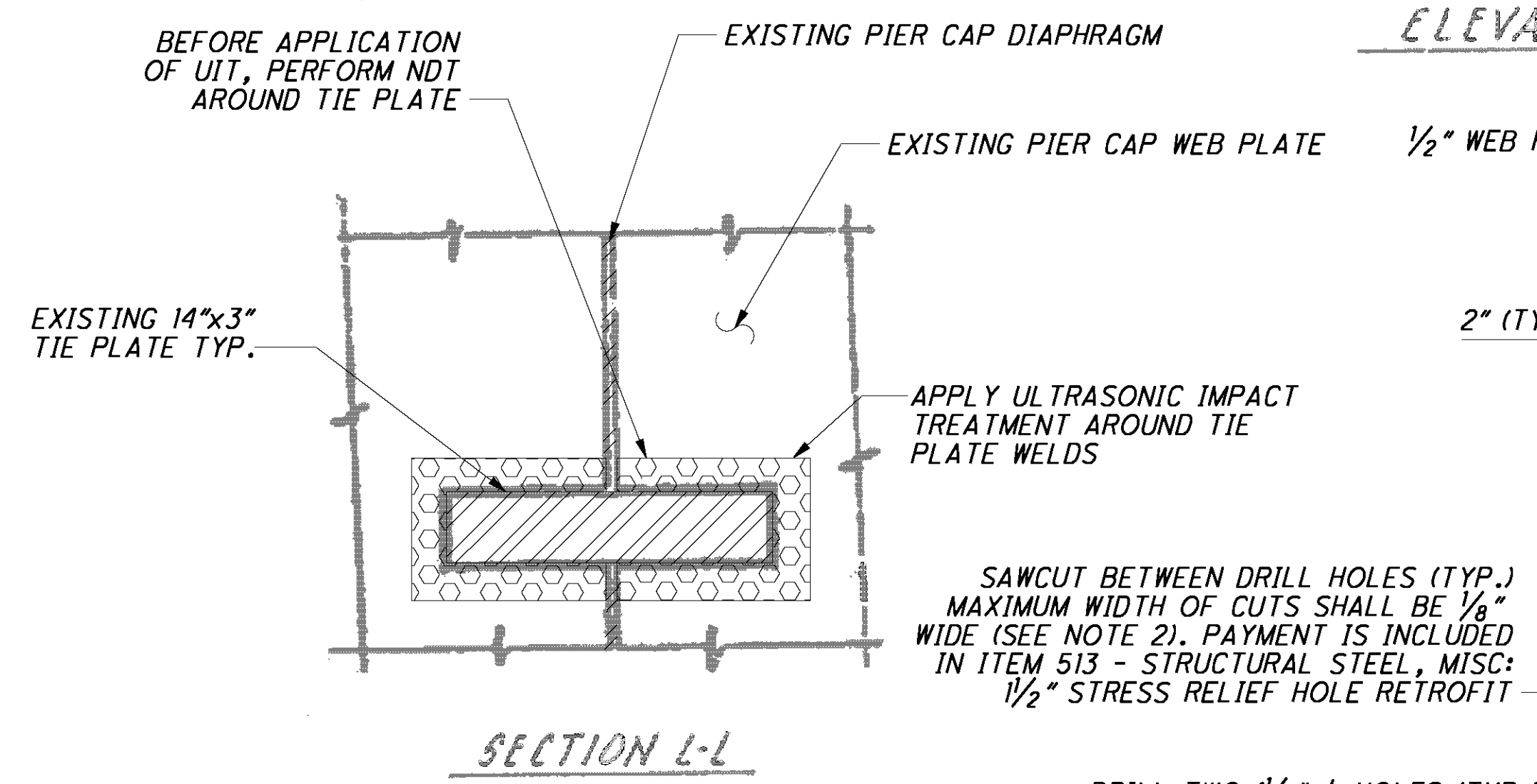
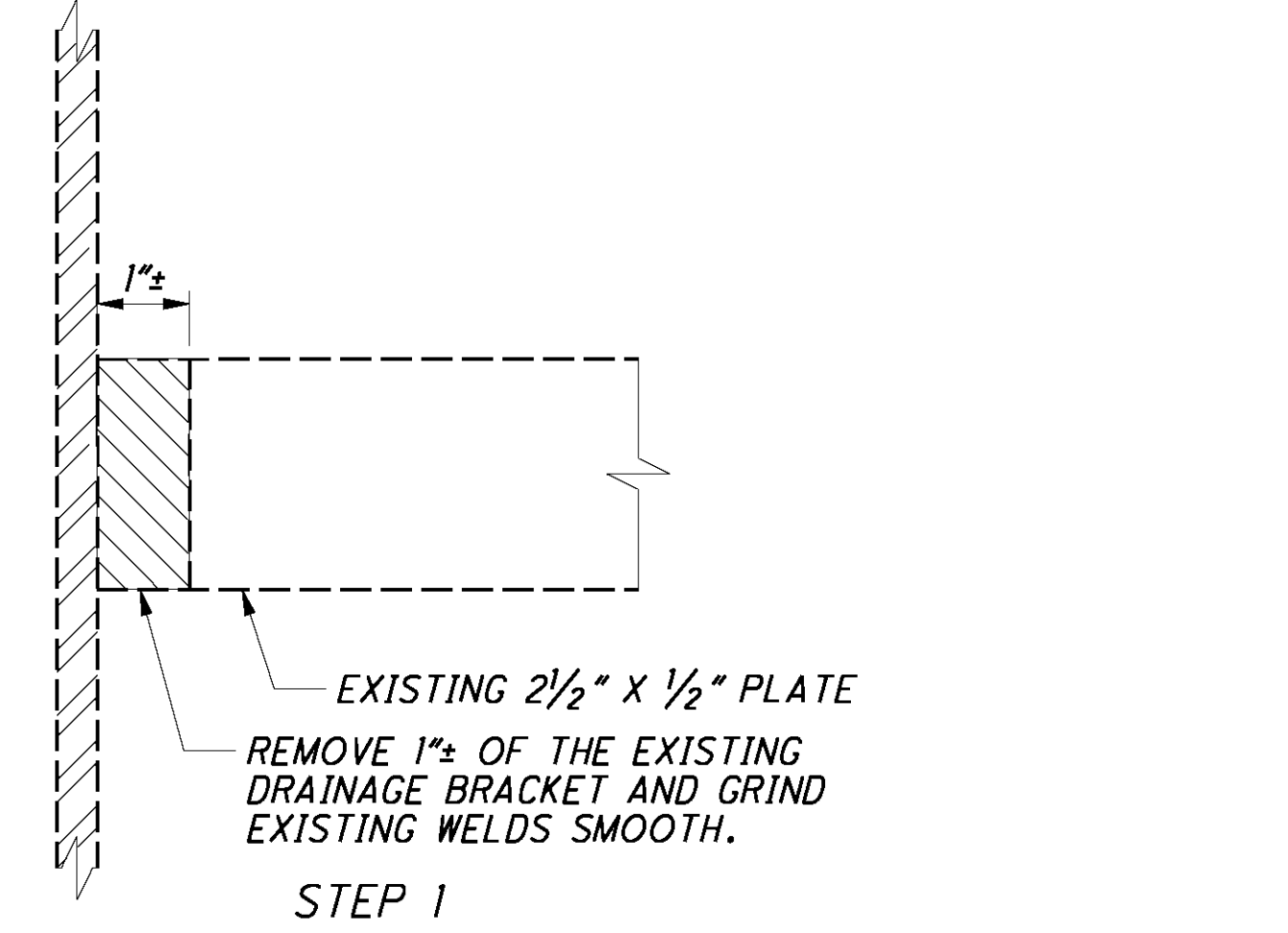
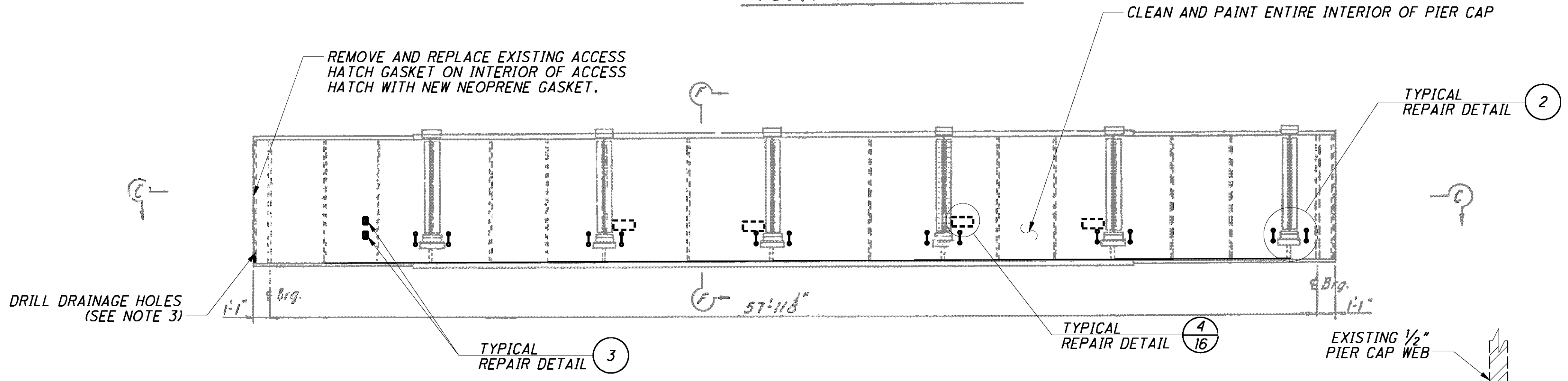
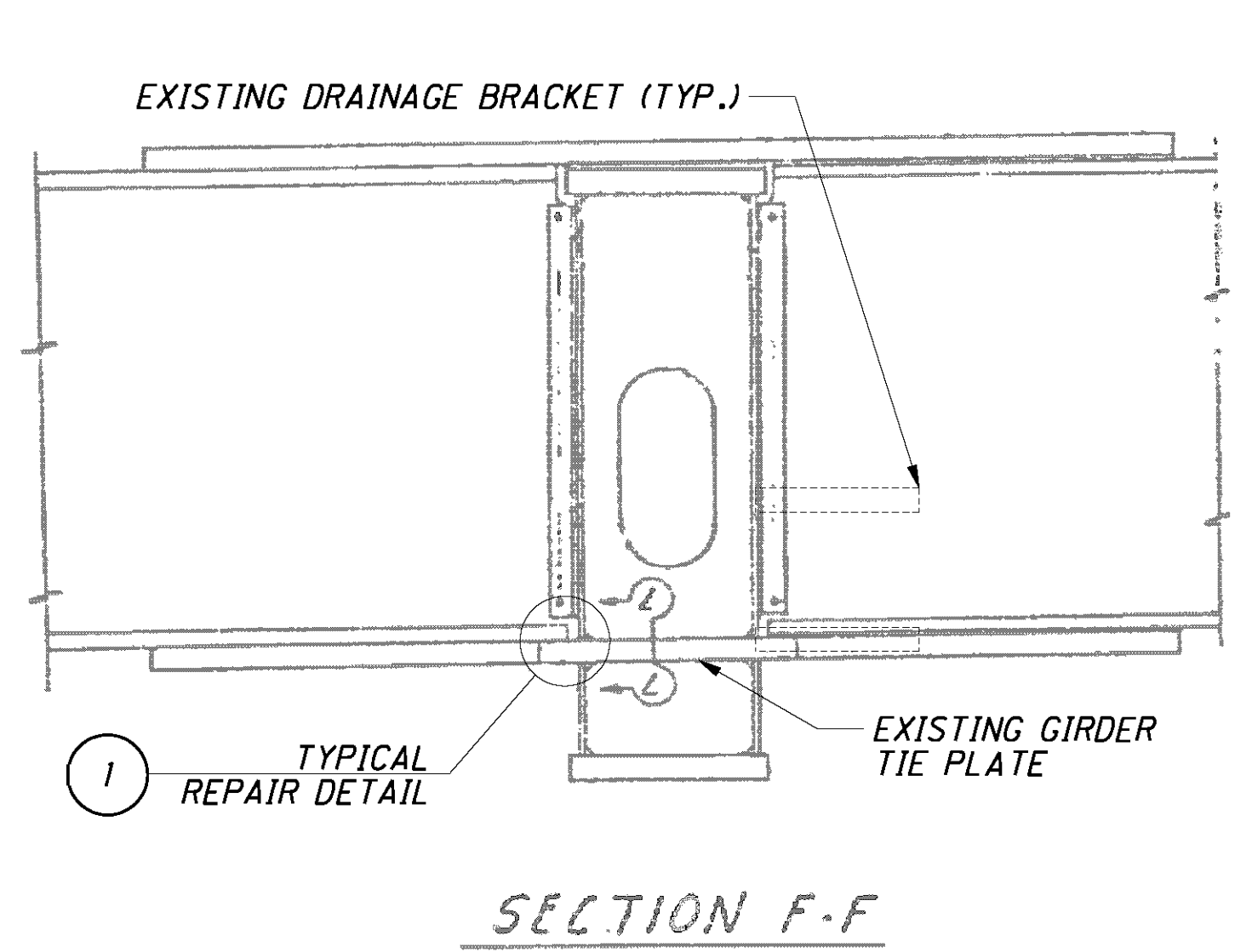
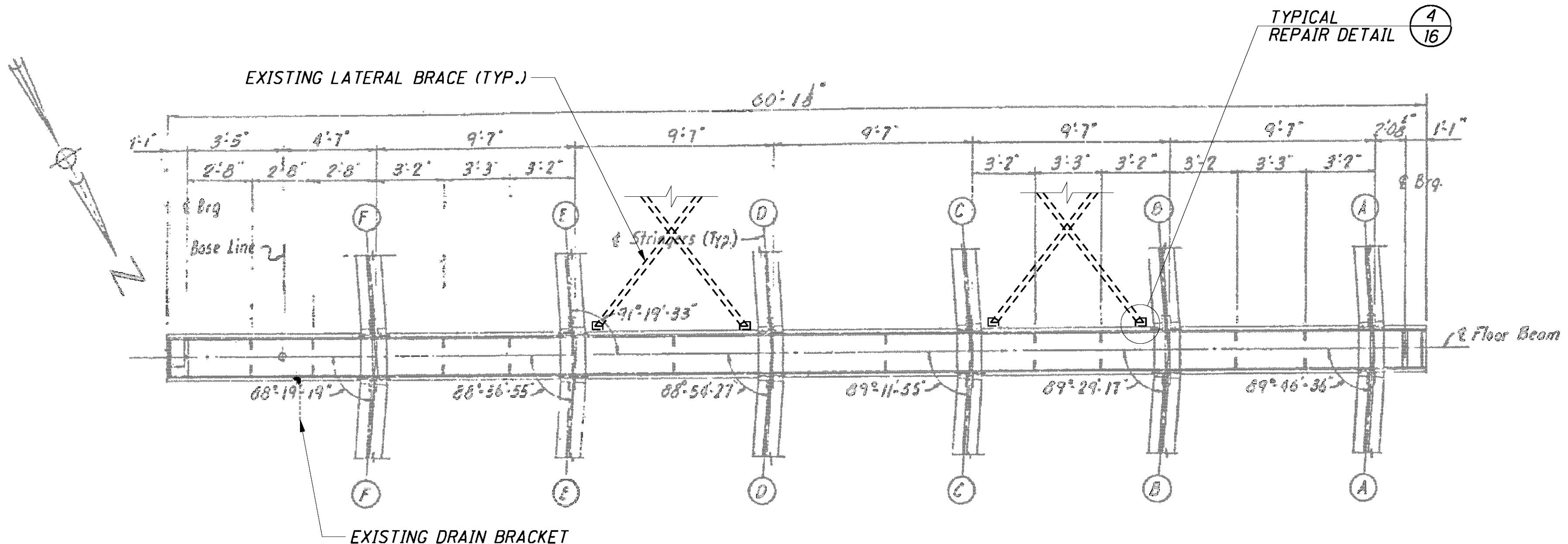
Typical Application 29

Note: For long-term stationary work, the double yellow center line and/or lane lines should be removed between the crosswalk lines.

See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

**APPENDIX C – FATIGUE PRONE DETAILS FOR
HAM-71-0248L**

4/17/2008
 P:\2426.03-ODOT 8 Pier Cap\2007 PID25374 DRAWINGS\(#5) HAM-71-0248L\HAM-71-0248L_P3.dwg



REPAIR DETAIL 1
 INTERIOR TIE PLATE TREATMENT

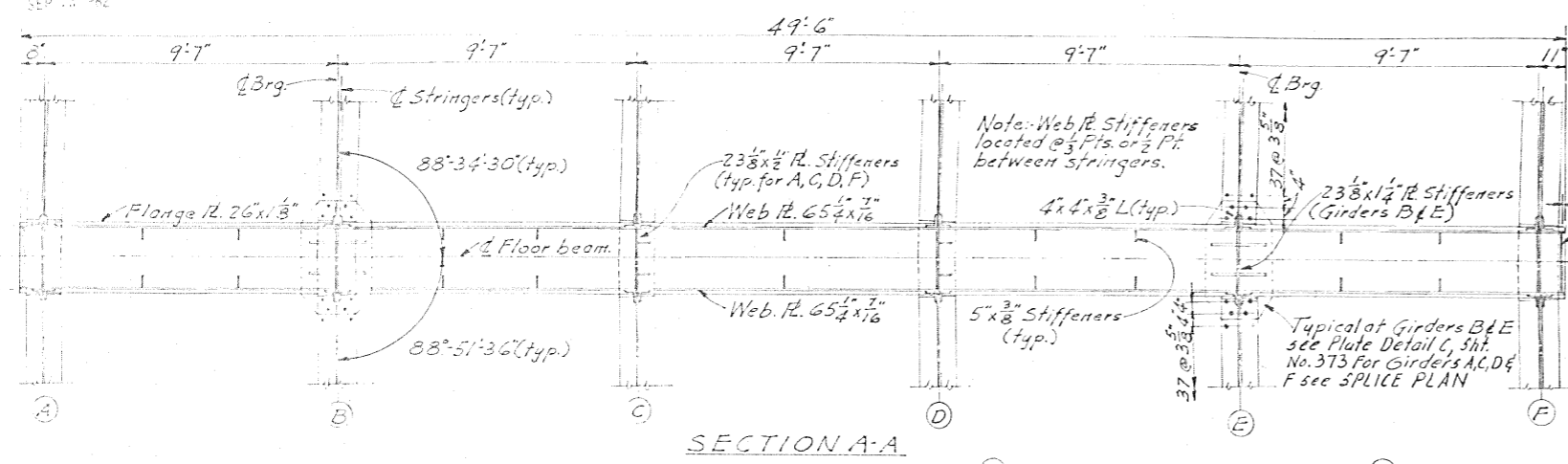
REPAIR DETAIL 2
 STRESS RELIEF HOLES

REPAIR DETAIL 3
 DRAIN BRACKET RETROFIT

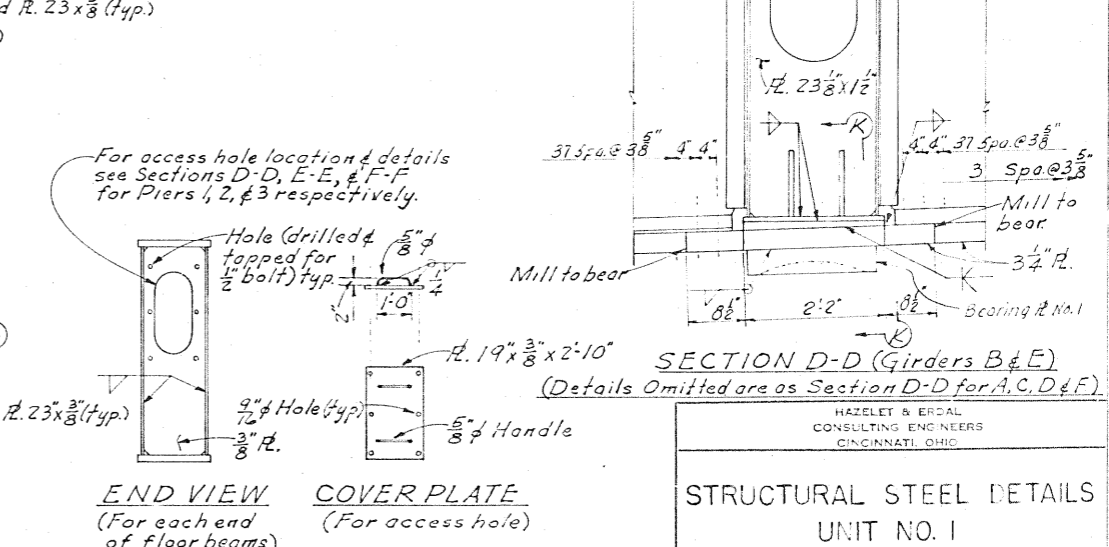
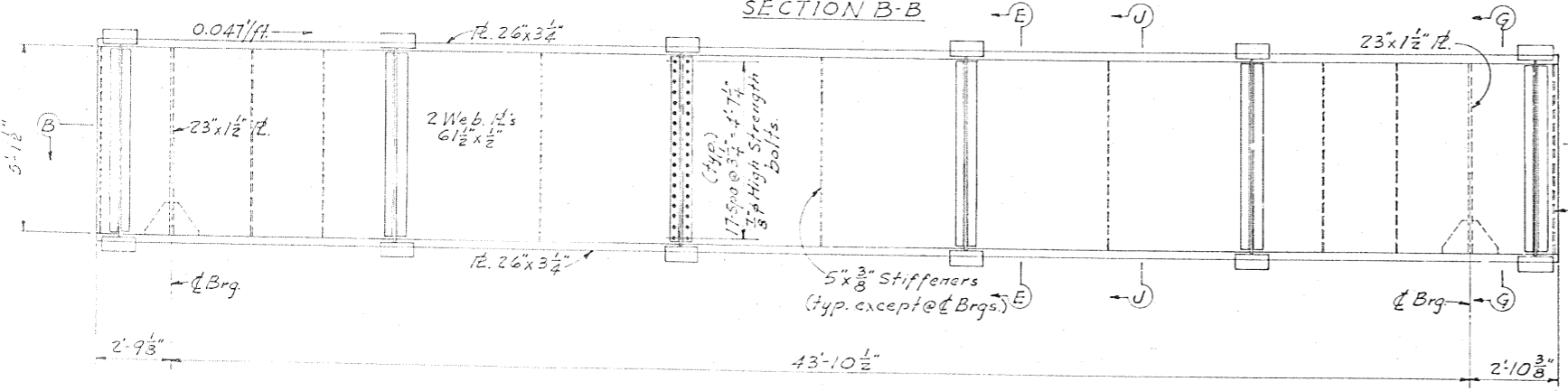
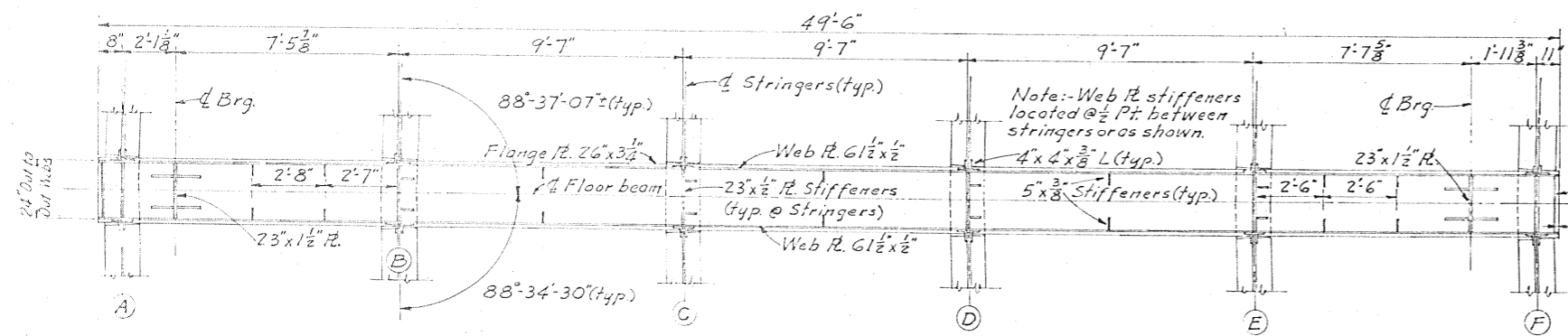
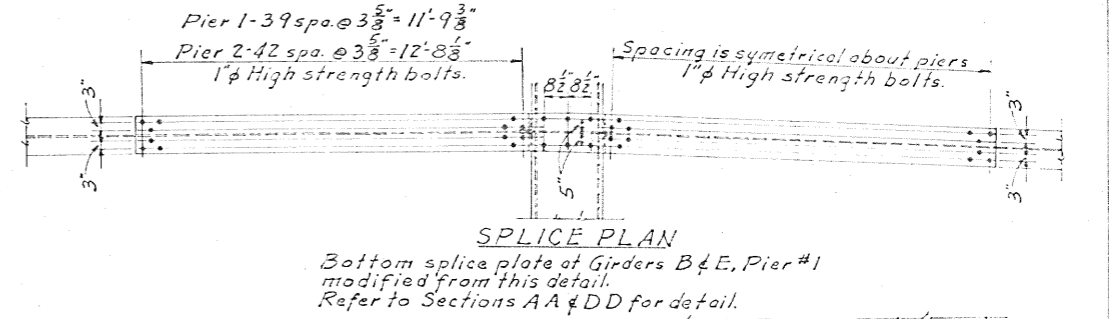
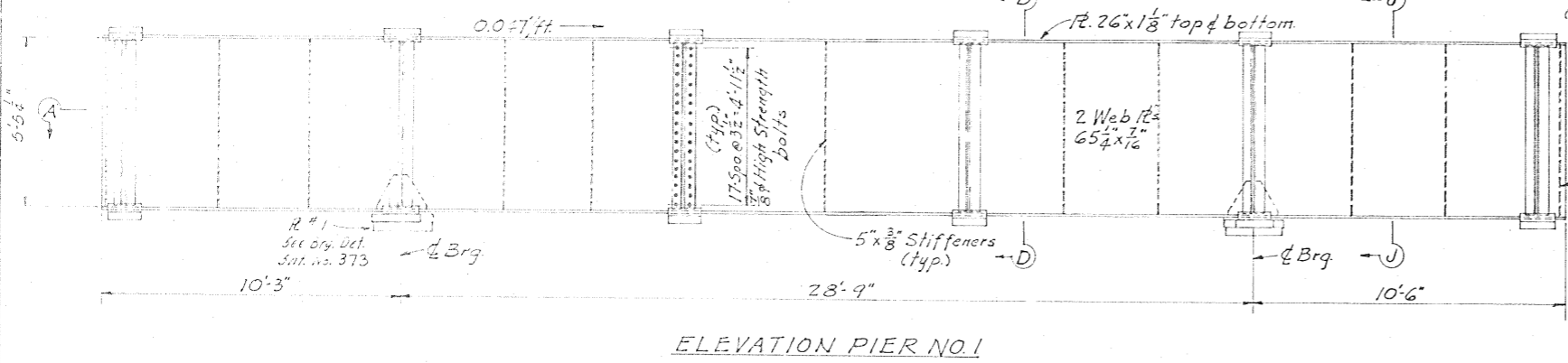
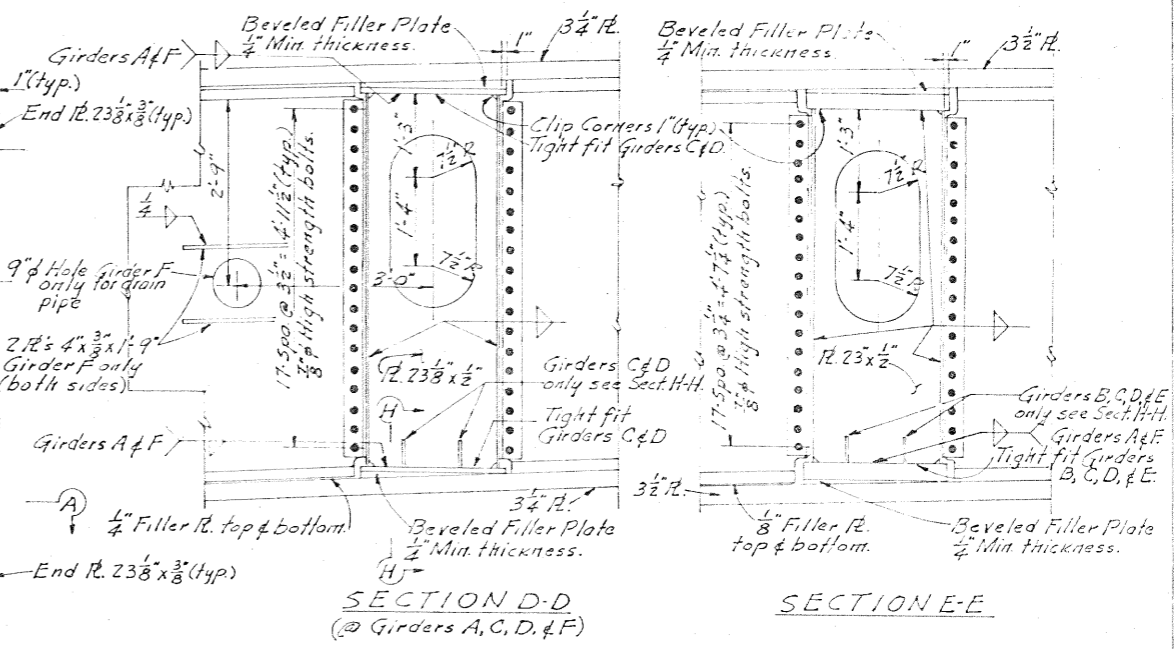
- LIMITS OF 1/2" WIDE ULTRASONIC IMPACT TREATMENT (UIT)

(FOR GIRDERS A THROUGH F AT NORTH AND SOUTH WEB PLATES)

- NOTES:**
- PIER ELEVATION AND SECTIONS C-C, F-F, AND L-L ARE TAKEN FROM THE ORIGINAL PLANS.
 - CARE SHALL BE TAKEN NOT TO OVERCUT SAWCUT BEYOND DRILLED HOLES. FLAME CUTTING IS NOT PERMITTED.
 - DRILL TWO 1/2" φ HOLES THROUGH THE EAST END PLATE. THE BOTTOM OF THE HOLES SHALL BE FLUSH WITH THE PIER CAP BOTTOM FLANGE. HOLES SHALL NOT PENETRATE OR GOUGE PIER CAP WEB PLATES OR FLANGE PLATE.



TYPICAL STIFFENER LOCATION-ALL STRINGERS



For Sections G-G, H-H, J-J, & K-K. See Sheet No. 371
For Fillet Weld Sizes See "Table of Fillet Weld Sizes," Sheet No. 427

STRUCTURAL STEEL DETAILS
UNIT NO. 1
BRIDGE No. HAM-71-0226
H&E BRIDGE No. 17

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REV. NO.
CRK	RBS	LMH	ELW	JHO	Rev. 5

SFN 3106780

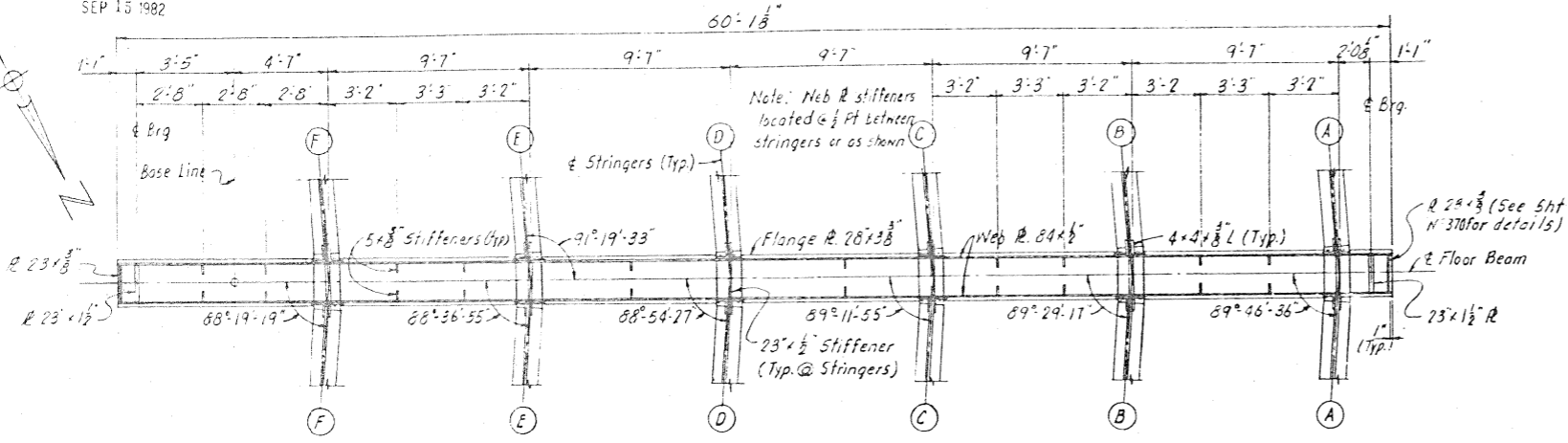
11
11
5'8
8.5"
11"
17"
22"

MICROFILMED
SEP 15 1982

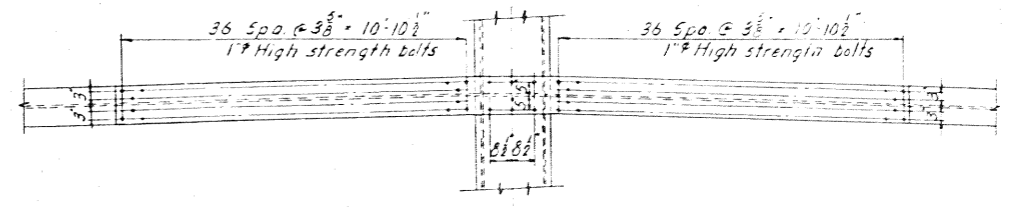
FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

371
460

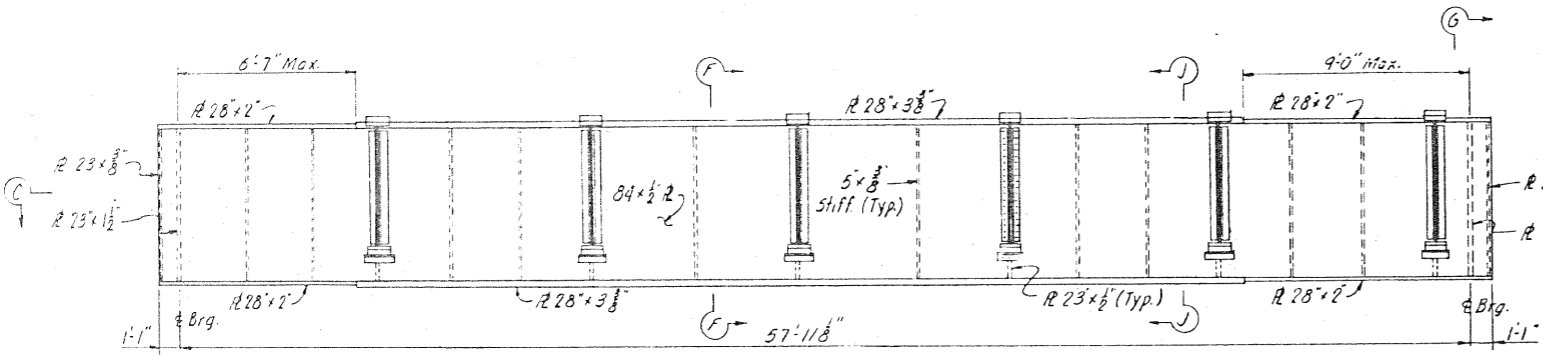
HAMILTON COUNTY
HAM-71-2.C8



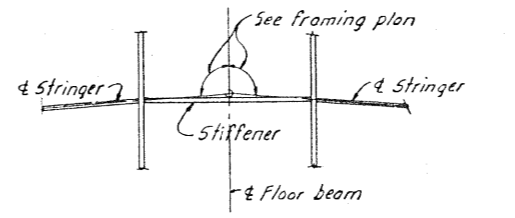
SECTION C-C-PIER N° 3



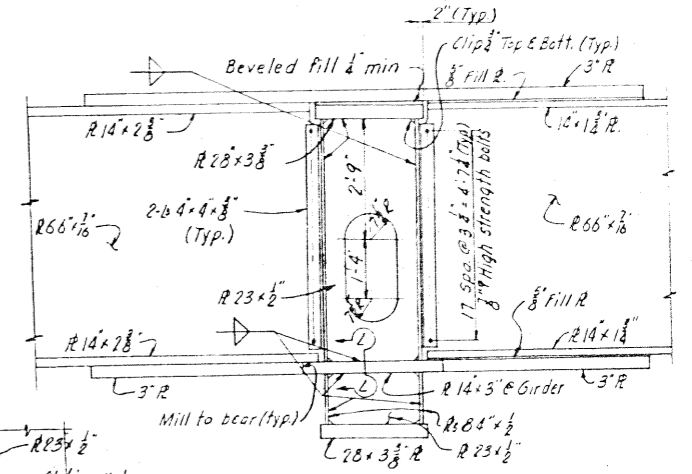
TOP SPLICE PLAN-PIER-3



ELEVATION

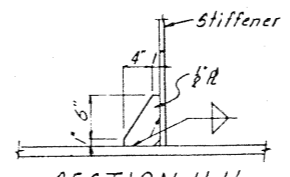


TYPICAL STIFFENER LOCATION

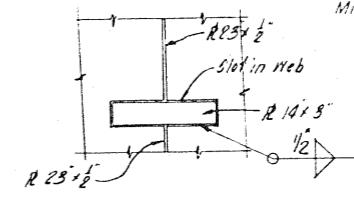


SECTION F-F

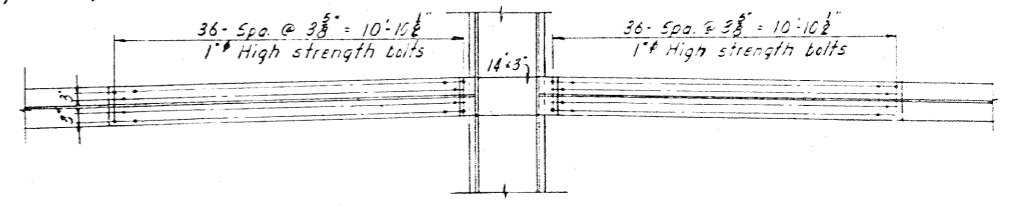
Note: Milled ends of compression splice on bottom flanges of girders shall be brought to full bearing against milled ends of pier girder brackets before bolts are tightened



SECTION H-H
(Typ. Top & Bott.)



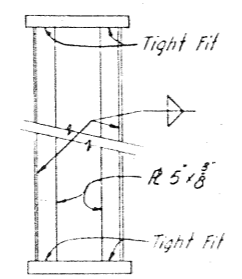
SECTION L-L



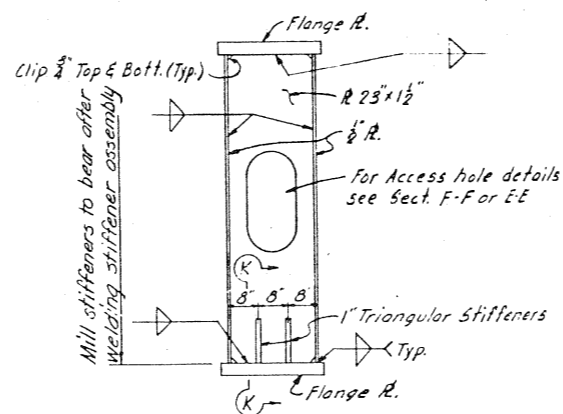
BOTTOM SPLICE PLAN-PIER 3

notes:
Convexity includes variations due to vertical curvature, superelevation and horizontal curvature.
Girder web plates shall be cut to a parabolic crown.
Pier N° 1 has no meaningful deflections.

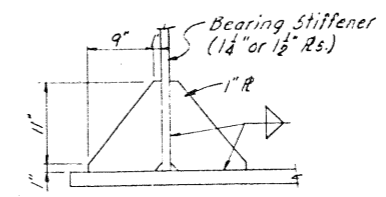
Beam	DEFLECTION and CAMBER for UNIT N° 1													
	Span 1		Span 2		Span 3		Span 4		Pier 2		Pier 3		Pier 3	
	1/4	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2
Deflection due to weight of steel	1/2	1/4	1/8	1/16	1/32	1/64	1/128	1/256	1/512	1/1024	1/2048	1/4096	1/8192	1/16384
Deflection due to remaining dead load	1/16	1/8	1/4	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3
Convexity required for vertical curve	1/8	1/16	1/32	1/64	1/128	1/256	1/512	1/1024	1/2048	1/4096	1/8192	1/16384	1/32768	1/65536
Sum of deflections & convexity	2/16	2/16	1/8	1/16	1/32	1/64	1/128	1/256	1/512	1/1024	1/2048	1/4096	1/8192	1/16384
Required Camber	2/16	2/16	1/8	1/16	1/32	1/64	1/128	1/256	1/512	1/1024	1/2048	1/4096	1/8192	1/16384



SECTION J-J
(Typ. all intermediate stiffeners)



SECTION G-G
(Showing Bearing Stiffener)



SECTION K-K

For end view of floor beam see Sht. N° 370
For fillet weld sizes see TABLE OF FILLET WELD SIZE
Sht. N° 427

HAZELET & ERDAL CONSULTING ENGINEERS CINCINNATI, OHIO					
STRUCTURAL STEEL DETAILS UNIT NO. 1 BRIDGE No. HAM-71-0226					
H&E BRIDGE No. 17					
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISION
CRK	RL MIF		ELW	JH 4 8/14/65	

SFN 3106780