Reset Form

CERTIFICATE OF APPROPRIATENESS APPLICATION FORM

Incomplete applications will not be processed for Commission review.
Please print legibly.

1. HISTORIC NAME OF PROPERTY OR HISTORIC DISTRICT: (if known)

Lake Park Bridge over East Ravine Road (Lake Park Historic District)

ADDRESS OF PROPERTY:

Lake Park, City of Milwaukee, Milwaukee County

2. NAME AND ADDRESS OF OWNER:

Name(s): Milwaukee County Department of Administrative Services & Milwaukee County Parks Department

Address: 9480 Watertown Plank Road

City: Wauwautosa State: WI ZIP: 53226

Email: Karl.Stave@milwaukeecounty.wi.gov

Telephone number (area code & number) Daytime: 414-278-4863 Evening: _____

3. APPLICANT, AGENT OR CONTRACTOR: (if different from owner)

Name(s): Emily Pettis, Mead & Hunt, Inc.

Address: 2440 Deming Way

City: Middleton State: WI ZIP Code: 53562

Email: Emily.pettis@meadhunt.com

Telephone number (area code & number) Daytime: (608) 443-0406 Evening: _____

4. ATTACHMENTS: (Because projects can vary in size and scope, please call the HPC Office at 414-286-5712 for submittal requirements)

A. REQUIRED FOR MAJOR PROJECTS:

X Photographs of affected areas & all sides of the building (annotated photos recommended)

X Sketches and Elevation Drawings (1 full size and 1 reduced to 11" x 17" or 8 ½" x 11")
A digital copy of the photos and drawings is also requested.

X Material and Design Specifications (see next page)

B. NEW CONSTRUCTION ALSO REQUIRES:

_____ Floor Plans (1 full size and 1 reduced to a maximum of 11" x 17")

_____ Site Plan showing location of project and adjoining structures and fences

PLEASE NOTE: ***YOUR APPLICATION CANNOT BE PROCESSED UNLESS BOTH PAGES OF THIS FORM ARE PROPERLY COMPLETED AND SIGNED.***

5. DESCRIPTION OF PROJECT:

Tell us what you want to do. Describe all proposed work including materials, design, and dimensions. Additional pages may be attached via email.

See attached continuation sheets.

6. SIGNATURE OF APPLICANT:

Signature

Emily Pettis

Please print or type name

7/29/2020

Date

This form and all supporting documentation MUST arrive by 4:00 pm (11:59 pm via email) on the deadline date established to be considered at the next Historic Preservation Commission Meeting. Any information not provided to staff in advance of the meeting will not be considered by the Commission during their deliberation. Please call if you have any questions and staff will assist you.

Mail or Email Form to:
Historic Preservation Commission
City Clerk's Office
841 N. Broadway, Rm. B1
Milwaukee, WI 53202

PHONE: (414) 286-5712 or 286-5722 hpc@milwaukee.gov **www.milwaukee.gov/hpc**

Or click the SUBMIT button to automatically email this form for submission.

SUBMIT

Description of the Project

The Lake Park Bridge, designed by the firm of Ferry & Clas to provide pedestrian access over East Ravine Road, was part of a larger project within Lake Park. The firm designed several elements located near each other at the center of the park, which became known as the “Ferry & Clas cluster.” Work on the cluster began in 1902, and elements included a pavilion (1903), the Lake Park Bridge (1905), a grand staircase (1908), and a promenade and bandstand (nonextant). The Lake Park Bridge was designed in tandem with the pavilion and staircase with Neoclassical stylistic detailing, which together form a grand procession from the bridge down towards the lake shore.

The Lake Park Bridge is an early example of a concrete arch bridge constructed with the Kahn reinforced concrete system. In this period, concrete construction was in its infancy and engineers experimented with reinforcement methods to increase load capacity while decreasing overall weight. In 1903 Julius Kahn patented the Kahn method of concrete reinforcement—a system of bars with angled elements—which revolutionized the construction industry. Constructed by the Newton Engineering Company in 1905, the Lake Park Bridge is 12 feet, 5 inches wide and 129 feet long, and is a pierced-spandrel, reinforced-concrete, deck arch structure. The deck rests on two parabolic ribs spaced 12 feet apart that are reinforced with the Kahn-patent trussed bars.

The bridge’s character-defining features (CDFs) include the Kahn system of reinforced concrete of the arch and deck; spandrel area with tear drop/circular architectural detailing; the design and massing of the abutments and wingwalls with the expanded deck area above the abutments, which create a refuge-bay design detail; and the overall visual characteristics and texture, such as the original board form surface pattern on the exposed concrete. In addition, the original railing had solid parapets over the abutments, wingwalls, and overlooks, and an open balustrade over the arch; the Neoclassical urn-shaped balusters have been replaced with solid precast panels. Overview photographs of the bridge are provided with this document.

The Lake Park Bridge is a contributing structure within the National Register of Historic Places (National Register)-listed Lake Park Historic District (listed in 1993) and is also a contributing structure within the National Register-eligible Lake Michigan Parkway (North) Historic District (determined eligible in 2011). Lake Park, including the bridge, is also designated as a City of Milwaukee Landmark within the North Point North Local Preservation District (designated in 1983, expanded 2018).

Condition

After 115 years, the Lake Park Bridge exhibits a range of condition issues. It is in an advanced stage of deterioration due to its age and erosion of supporting soils of the bridge approaches. In 2014 the bridge (and Ravine Road below) was closed to traffic because of concerns for its safe load carrying capability and deficient structural condition. Photographs of current conditions are provided with this document.

Abutments and wingwalls

The abutments and wingwalls have extensive deterioration. Water and soil erosion around the wingwalls have resulted in fractured and displaced concrete walls at both ends of the bridge. Cracks extending completely through the concrete sections are visible in the abutments.

Superstructure
The Kahn bars in the spandrel beam and other reinforcing members are corroded, and a lack of reinforcing steel compromises the structural capacity of the spandrel beam. Spalling is present at the corners of the arch ribs. Cracks extending completely through the concrete sections are visible in the spandrel walls. Overall, the surface of the bridge is a patchwork of earlier repairs, patches, staining, and more recent spalling. Earlier repairs show concrete surface deterioration.

Deck
The deck lacks adequate drainage and is not engineered to support a lightly loaded maintenance vehicle.

Railing
The original portions of the railing exhibit cracking and spalling, while the replacement panels are in good condition. Recent holes drilled in the top of the railing are likely to result in water infiltration and deterioration.

Bridge approaches
The pedestrian path approaches are in good condition; however, they lack adequate drainage. Currently, water runoff results in damaging soil erosion of the approaches, abutments, and wingwalls.

Embankments and setting
A large number of trees are located in the general vicinity of the bridge and the overgrown embankments are not part of a planned landscape within the park. A stone stairway located at the northwest quadrant of the bridge is overgrown with vegetation.

Proposed work

The project intent, as established by Milwaukee County, is for the rehabilitated bridge to provide at least 50 years of safe and functional service life. The proposed work will rehabilitate the bridge to near its original appearance and replace deteriorated elements in-kind. Proposed work will be completed in accordance with the Secretary of the Interior's *Standards for Treatment of Historic Properties*. See select plan sheets, available original plans, and rehabilitation depictions at the end of this document for additional details.

Abutments and wingwalls
The abutments and wingwalls will be reconstructed at each end of the bridge. The inner half of each abutment (towards the arch) will be retained in place and repaired. Existing narrow caulked cracks in the concrete will be routed and sealed. The outer half of the abutments (closest to each end of the bridge) and the wingwalls will be reconstructed in the same configuration. The new wingwalls will be founded on reinforced-concrete footings. New interior, cast-in-place, reinforced-concrete walls will be placed inside the inner half of the abutments. Form liners will be used for exterior surfaces to replicate the original wood plank formwork finish.

In their finished state the reconstructed wingwalls and abutments will replicate the size, massing, visual appearance, and texture of the original structures.

Superstructure
The spandrel beams and arches will be repaired. A supplemental concrete spandrel beam will be constructed inside the existing southeast spandrel beam and will not be visible except from directly beneath the bridge. Concrete surface repairs will be made to the arch ribs, spandrel walls, abutment walls, and diaphragm walls. Large structural cracks in the diaphragm walls will be stitched together with steel reinforcement and sealed with an elastomeric compound.

A TexCote surface coating will be applied to existing concrete surfaces to protect from moisture infiltration and provide a uniform color to the bridge. New concrete components, such as the abutments, wingwalls, and railings, will not be coated. The TexCote coating provides a uniform and lasting appearance that will be matched to the new concrete components.

Once repairs are completed, the original fabric of the superstructure will be retained, strengthened, and protected.

Deck
The existing concrete deck will be removed and replaced with precast concrete panels topped with cast-in-place concrete to the original dimensions. The existing concrete fascia will be replicated. New deck drains will be installed. When completed, the deck and related components will replicate the original structure.

Railing
The existing railing will be removed and replaced. Over the arch, the (non-historic) solid, precast-concrete, infill panels will be replaced with an open balustrade railing design based on the original 1905 plans. The new solid parapet over the reconstructed abutments and wingwalls, and extending to the overlooks, will also replicate the original design. The railing will meet current design criteria for height to accommodate pedestrians and bicyclists and balustrades will be spaced so that a 6-inch diameter sphere cannot pass between any portion of the railing. In addition, conduit and anchorages will be embedded in the concrete to allow for consideration of future light standards to be placed on the bridge. In its finished state, the railing will replicate the original balustrade.

Bridge approaches
The existing asphalt pedestrian path bridge approaches will be replaced in-kind for approximately 100 feet on each end of the bridge. Two small concrete bollards spaced with 8 feet clearance will be placed on either end of the bridge deck to limit vehicle access to a small pickup truck or maintenance vehicle. Two new drainage inlets with underground piping will be constructed in the reconstructed asphalt paths at each end of the bridge to capture and direct rainwater to stone riprap lined flumes down the embankment slopes and eliminate the existing drainage issues. Two existing streetlights on either end of the bridge will be removed and reinstalled upon construction completion. Once completed, the pedestrian bridge approaches will have improved function and a similar appearance to the current approaches.

Embankments and setting
The ravine slopes adjacent to the bridge will be graded to minimize the concentration of runoff adjacent to the bridge wingwalls and abutments. Geotextile fabric will be installed, and a seed mix spread to establish

low-maintenance vegetation to prevent soil erosion on the embankment slopes. Eight trees will be removed to allow for the drainage work: three at the north end of the bridge and five at the south end. Other trees will be protected and preserved, and some will be pruned by Milwaukee County. Once the work is completed, the embankments and immediate area under and near the bridge will initially appear more open; however, as the new vegetation matures, the embankments and setting will reflect the natural surroundings of the ravine.

The existing stone stairway with wood railing, located at the northwest quadrant of the bridge, will be reconstructed in-kind to its existing condition prior to the bridge rehabilitation project.

During the construction phase, East Ravine Road, from the intersection with North Lake Park Road to the bridge, will be utilized to access the bridge. It is anticipated that tower shoring will be placed in the road to support and stabilize the bridge during construction. Once the project is complete, the road will be returned to its pre-bridge-rehabilitation condition.

Conclusion

The proposed Lake Park Bridge rehabilitation activities are sympathetic to the historic character of the bridge and overall Lake Park. Where possible, original material will be retained and repaired. Where original components are too deteriorated to repair, or are missing, they will be replicated based on original plans and specifications. The rehabilitated bridge will reflect its near original appearance, and gain another 50 years of safe and functional service life.

Overview Images and Character-defining Features

Overview image of the Lake Park Arch Bridge, view facing east.

Overview of deck showing the alcove refuge over the abutment.

Photographs of Current Conditions

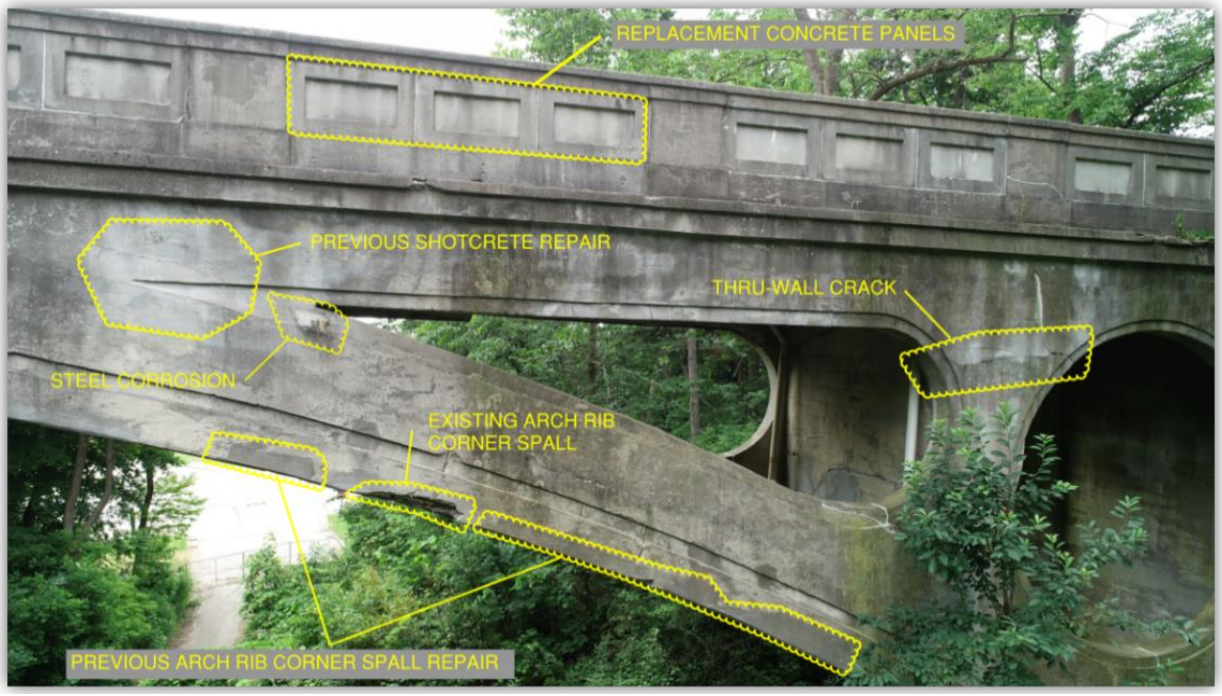
Abutments and wingwalls

North wingwall (exterior and interior) with fractured wall.

South wingwall with fractured wall exterior.

Superstructure

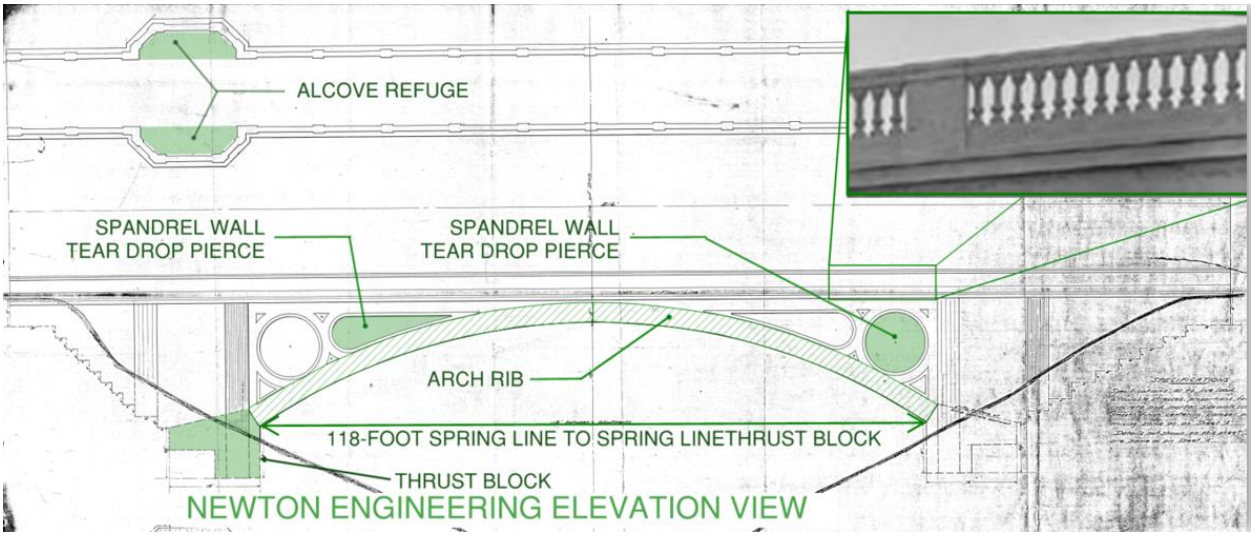
Corroded Kahn bars in the spandrel beam over the southeast tear drop piercing.

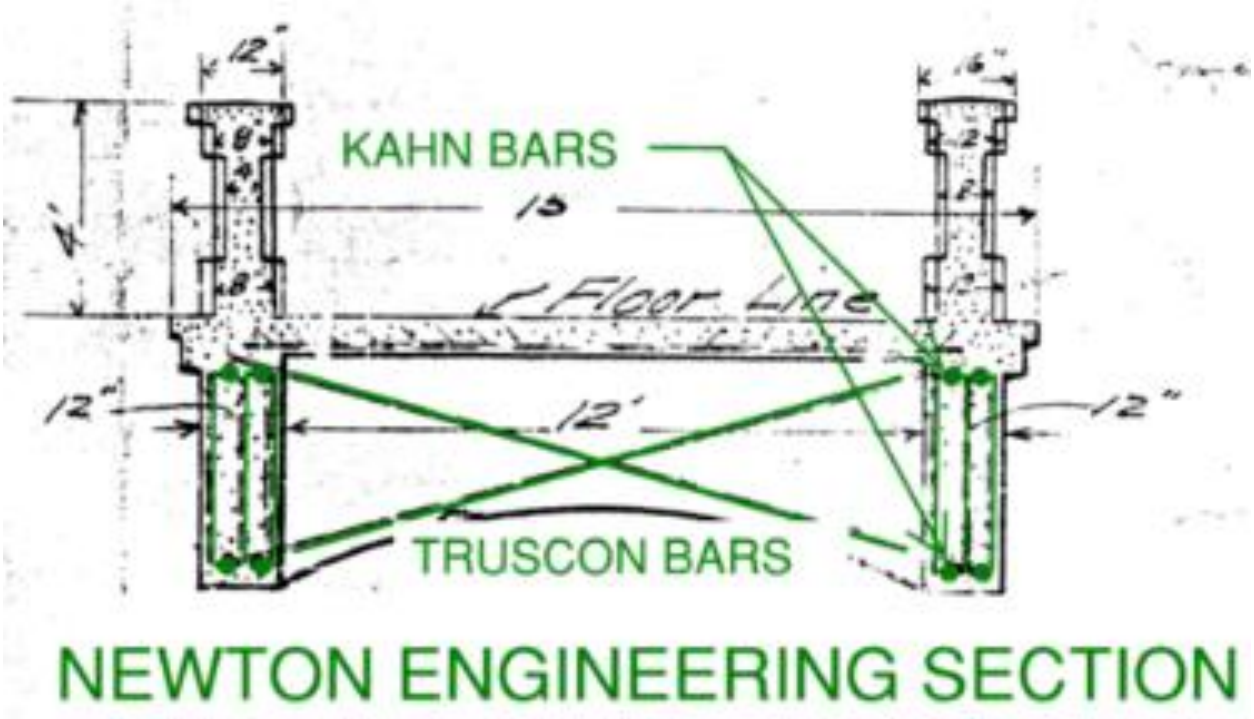


Non-historic parapet railing and areas of concrete surface deterioration.

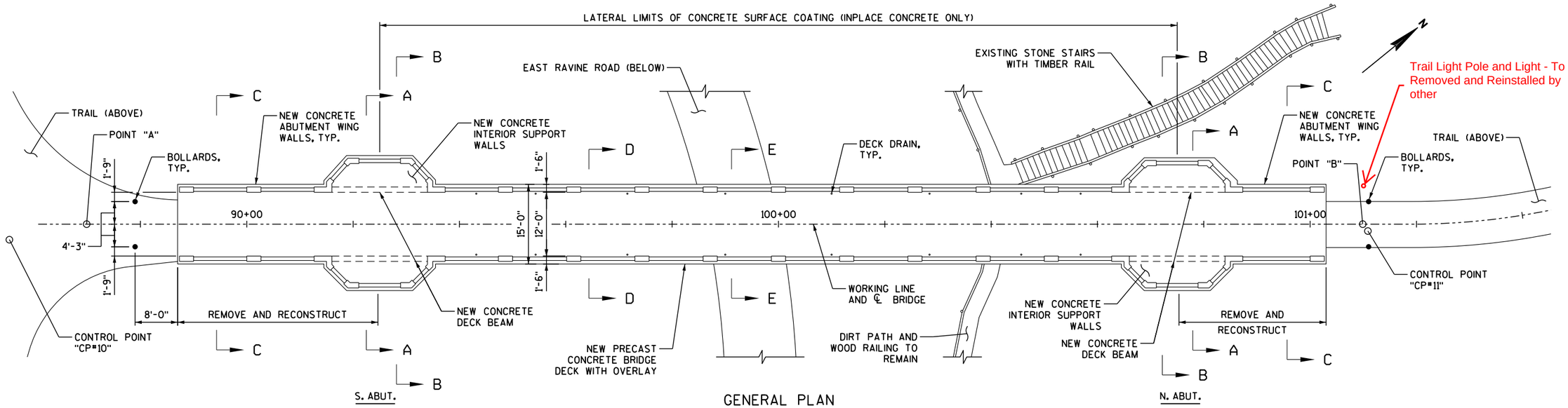
Character-defining features:

- Original open balustrade railing
- Alcove refuge abutment design
- Spandrel wall tear drop, circular piercing, and incised detailing
- Kahn Bars

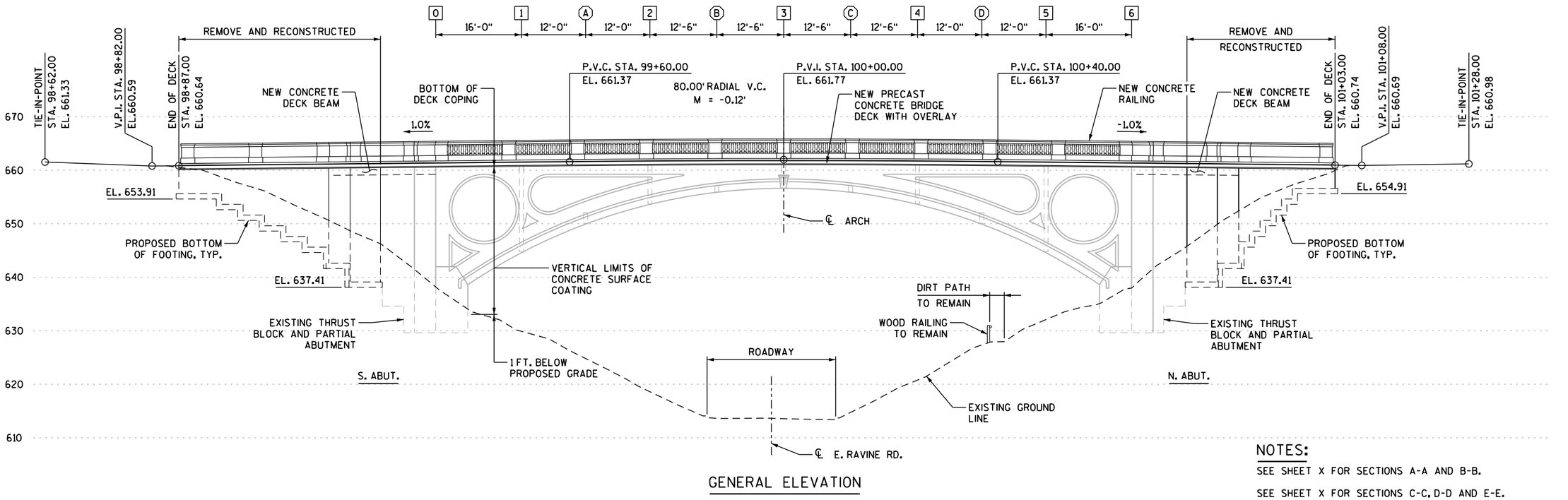




Select Plan Sheets



GENERAL PLAN



GENERAL ELEVATION

NOTES:

SEE SHEET X FOR SECTIONS A-A AND B-B.

SEE SHEET X FOR SECTIONS C-C, D-D AND E-E.

SEE SHEET S-2 FOR CONTROL POINT COORDINATES.

[X] DEPICTS PANEL POINTS AT FULL HEIGHT DIAPHRAGM WALLS.

(X) DEPICTS INTERMEDIATE PANEL POINTS AT TRANSVERSE BEAMS.

LAKE PARK ARCH BRIDGE REHABILITATION
LAKE PARK ON LAKE MICHIGAN IN MILWAUKEE
LAKE PARK ARCH BRIDGE OVER RAVINE ROAD

Olson & Nesvold Engineers, P.S.C.
8000 West 78th Street, Suite 410
Edina, MN 55439-2547

MILWAUKEE COUNTY DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
CITY CAMPUS 2711 W. WELLS ST - 2ND FLOOR MILWAUKEE, WI 53208

REVISIONS:

DATE: X/XX/2020

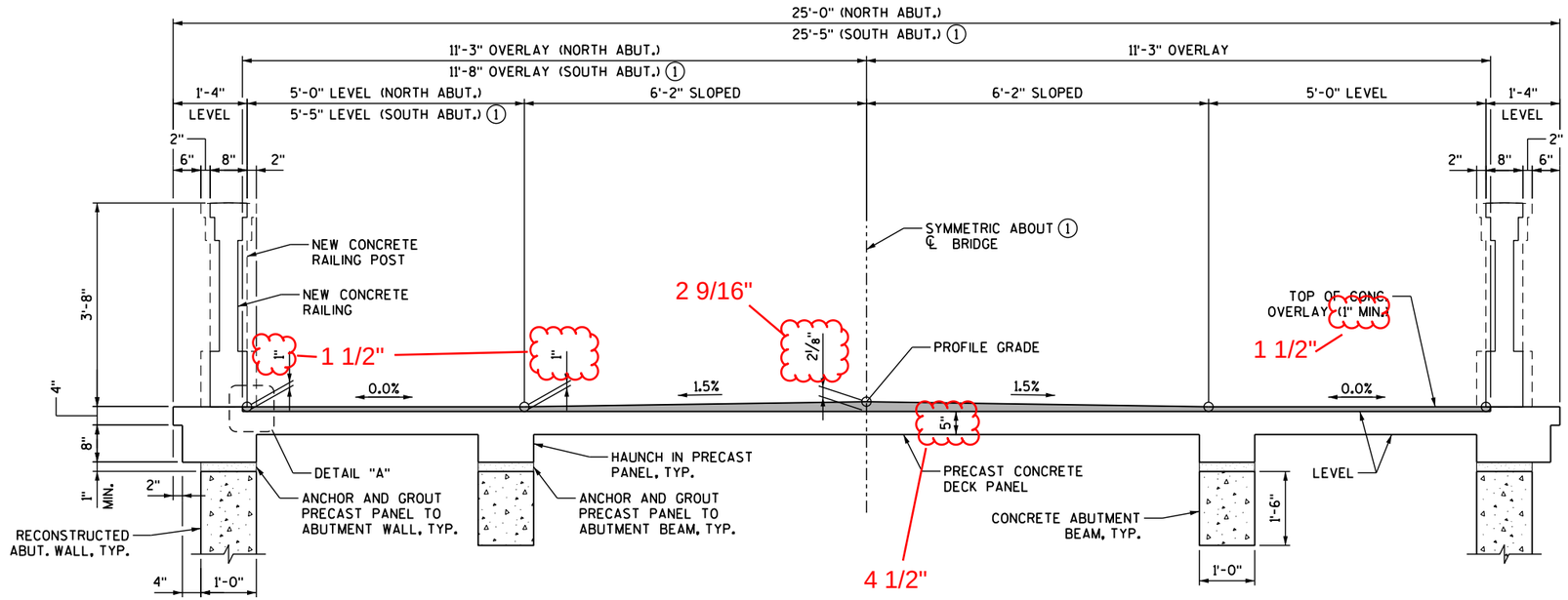
PROJECT: P484-15619
STATE ID 2967-01-03

SITE NO: 777

BUILDING NO: N/A

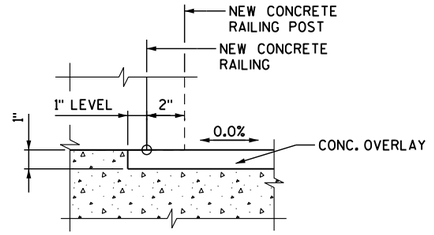
File path: \\oneserver\public\PROJECTS\1134-2 Milwaukee Lake Park\2 - Production\C - Work\CD\BR_P-40-576_GPE001.dgn

GENERAL PLAN AND ELEVATION S-4

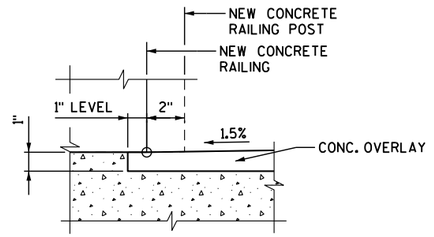


SECTION A-A

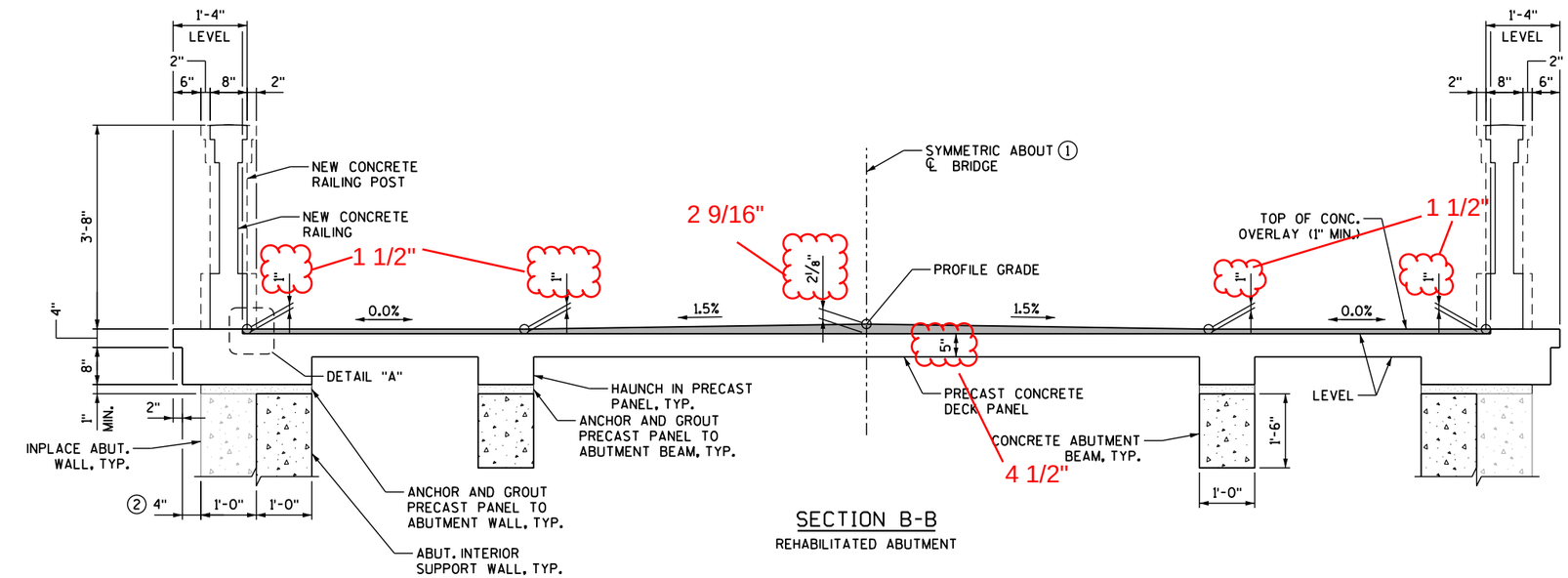
RECONSTRUCTED ABUTMENT



DETAIL "A"



DETAIL "B"



SECTION B-B

REHABILITATED ABUTMENT

NOTES:

(1) SOUTH ABUTMENT IS NOT SYMMETRIC. SLOPES, THICKNESSES AND EDGE DIMENSIONS ARE SYMMETRIC. DISTANCE FROM ℄ BRIDGE TO EDGE OF OVERLAY ARE GREATER ON THE WEST SIDE OF THE BRIDGE.

(2) THIS DIMENSION WILL VARY SLIGHTLY DUE TO ORIGINAL CONCRETE LOCATION.

LAKE PARK ARCH BRIDGE REHABILITATION

LAKE PARK ON LAKE MICHIGAN IN MILWAUKEE

LAKE PARK ARCH BRIDGE OVER RAVINE ROAD

Olson & Nesvold Engineers, P.S.C.
8000 West 78th Street, Suite 410
Edina, MN 55439-2547

MILWAUKEE COUNTY DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
CITY CAMPUS 2711 W. WELLS ST - 2ND FLOOR MILWAUKEE, WI 53208

REVISIONS:

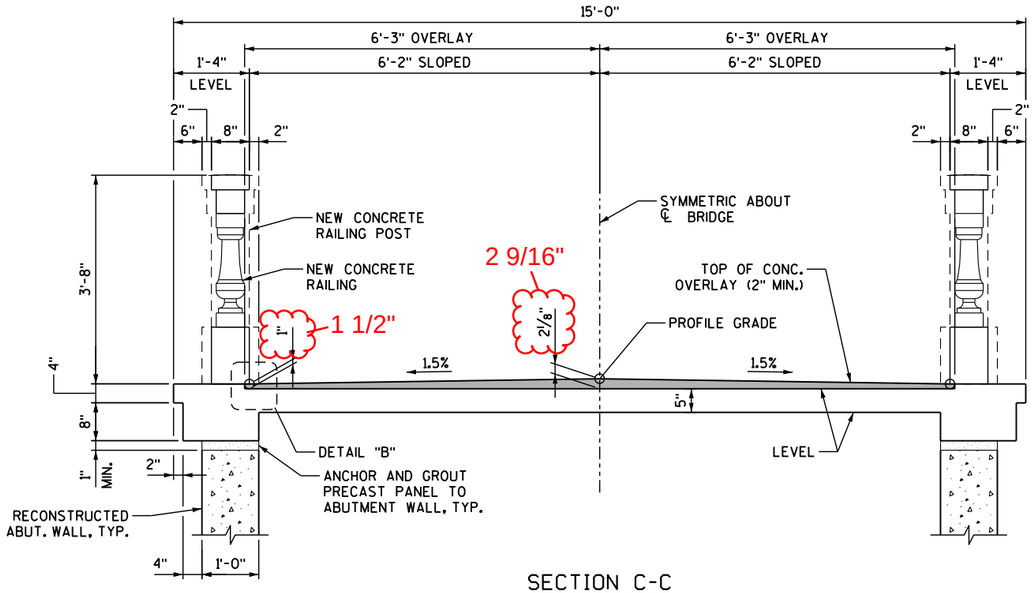
DATE: X/XX/2020

PROJECT: P484-15619
STATE ID 2967-01-03

SITE NO: 777

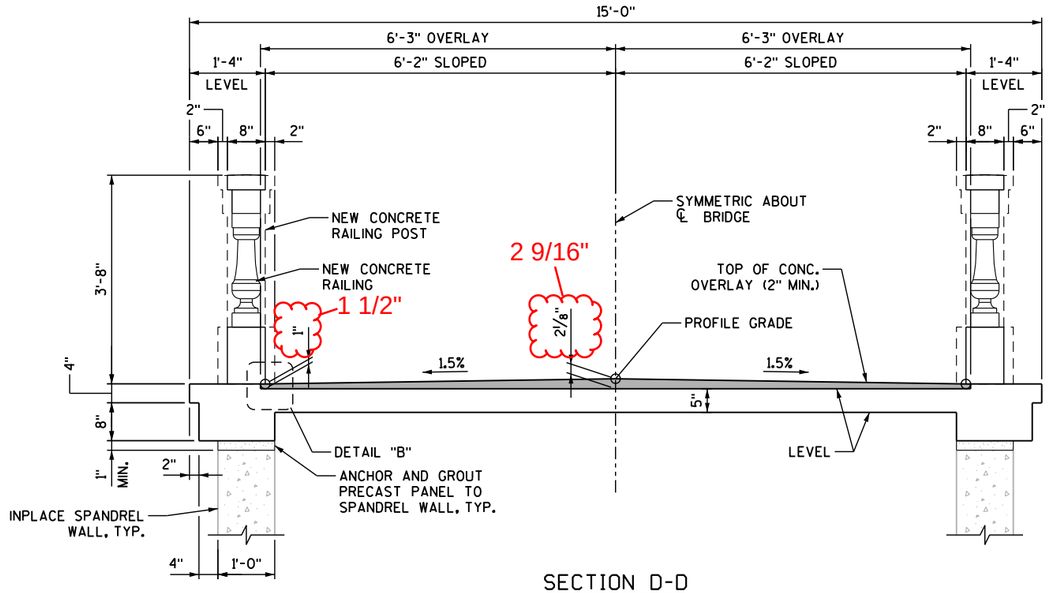
BUILDING NO: N/A

File path: \\oneserver\public\PROJECTS\1134-2 Milwaukee Lake Park\2 - Production\C - Work\CD\BR_P-40-576_SEC001.dgn



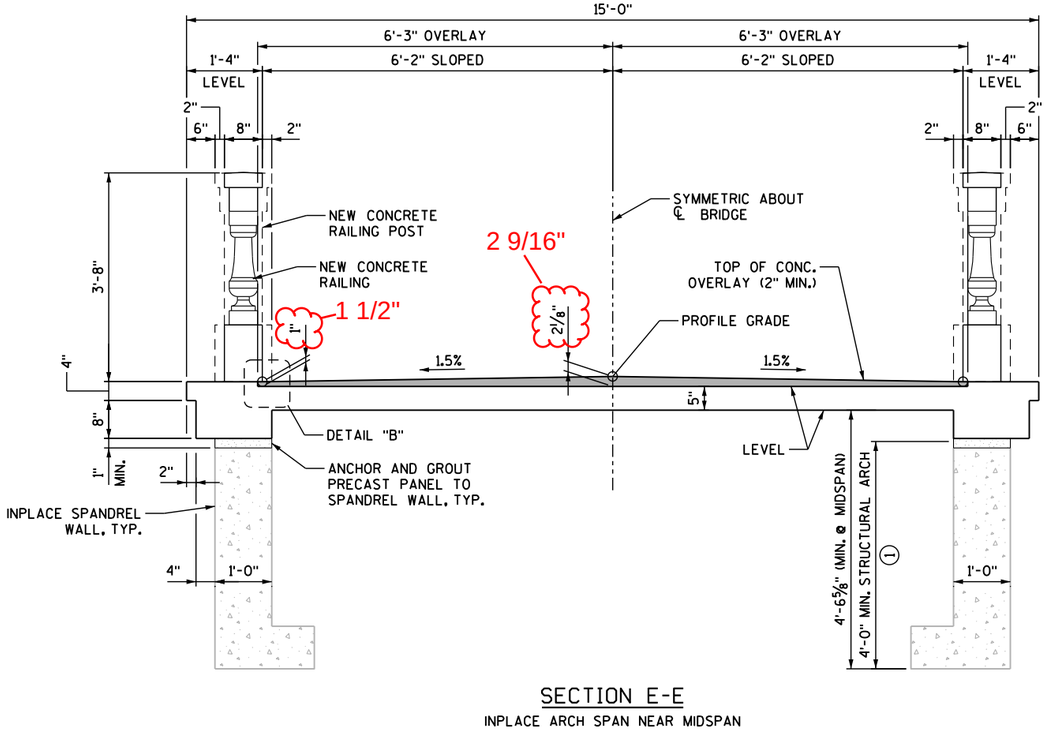
SECTION C-C

RECONSTRUCTED ABUTMENT



SECTION D-D

INPLACE ARCH SPAN



SECTION E-E

INPLACE ARCH SPAN NEAR MIDSPAN

NOTES:

SEE SHEET X FOR DETAIL "B".

① REMOVALS NEAR MIDSPAN NEED TO BE DONE WITH CARE TO AVOID CUTTING INTO EXISTING KAHN BARS IN CONCRETE.

LAKE PARK ARCH BRIDGE REHABILITATION

LAKE PARK ON LAKE MICHIGAN IN MILWAUKEE

LAKE PARK ARCH BRIDGE OVER RAVINE ROAD

Olson & Nesvold Engineers, P.S.C.
8000 West 78th Street, Suite 410
Edina, MN 55439-2547

MILWAUKEE COUNTY DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
CITY CAMPUS 2711 W. WELLS ST - 2ND FLOOR MILWAUKEE, WI 53208

REVISIONS:

DATE: X/XX/2020

PROJECT: P484-15619
STATE ID 2967-01-03

SITE NO: 777

BUILDING NO: N/A

TYPICAL SECTIONS (2 OF 2) S-6

GENERAL NOTES:

THE INTENT OF THIS CONTRACT IS TO:

REMOVE AND RECONSTRUCT IN-KIND THE APPROACH WING WALL STRUCTURES WITH CONTEMPORARY MATERIALS.

REMOVE AND RECONSTRUCT IN-KIND THE OUTER HALF OF THE VAULTED ABUTMENTS WITH CONTEMPORARY MATERIALS.

CONSTRUCT SUPPLEMENTAL STRUCTURAL CONCRETE WALL INSIDE OF THE FORWARD HALF OF THE VAULTED ABUTMENTS.

REMOVE THE EXISTING BRIDGE DECK AND REPLACE IT WITH PRECAST CONCRETE PANELS AND A DECK OVERLAY.

REMOVE AND RECONSTRUCT THE BRIDGE RAILING TO REPLICATE THE ORIGINAL RAILING WITH CONTEMPORARY MATERIALS.

REPAIR DAMAGED AREAS OF THE ORIGINAL CONCRETE SURFACES.

CLEAN THE SURFACE OF THE ORIGINAL AND REPAIRED CONCRETE SURFACES AND APPLY A CONCRETE SURFACE COATING.

1906 CONSTRUCTION PLANS AND 1946 DECK REPAIR PLANS ARE APPENDED TO THESE PLANS TO PROVIDE A GENERAL UNDERSTANDING OF THE EXISTING BRIDGE STRUCTURE.

EXISTING DIMENSIONS SHOWN IN THE PLANS ARE APPROXIMATE. THE CONTRACTOR MAKE FIELD MEASUREMENTS AS NECESSARY PRIOR TO CONSTRUCTION TO ESTABLISH DIMENSIONS AND ELEVATIONS OF EXISTING ELEMENTS TO ENSURE THE POSITION OF THE FINAL WORK.

THESE PLANS HAVE NOT BEEN COMPREHENSIVELY INTEGRATED. WHAT IS REQUIRED BY ONE SHEET SHALL BE CONSIDERED REQUIRED BY ALL.

ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE WISCONSIN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION UNLESS NOTED OTHERWISE.

PROVIDE 2-INCH CLEAR TO STEEL REINFORCEMENT BARS WITHIN RECONSTRUCTED CONCRETE ELEMENTS UNLESS NOTED OTHERWISE IN THE PLANS.

PROVIDE TEMPORARY WORKS, SHORING, FALSEWORK AND SCAFFOLDING PLANS SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF WISCONSIN.

ALL DISTURBED AREAS, NOT SURFACED, SHALL BE FERTILIZED, SEEDED AND MULCHED UNLESS OTHERWISE NOTED ON THE PLANS.

NO TREES OR SHRUBS SHALL BE REMOVED UNLESS IDENTIFIED IN THE PLANS AND CONFIRMED BY THE ENGINEER.

THE LOCATION OF EXISTING AND PROPOSED UTILITY INSTALLATIONS AS SHOWN ON THE PLAN IS APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITH THE PROJECT AREA WHICH ARE NOT SHOWN.

THE CONTRACTOR IS SOLELY RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE CITY OF MILWAUKEE, MILWAUKEE COUNTY, AND THE STATE OF WISCONSIN.

INSTALL INLET PROTECTION TYPE D PRIOR TO WORK.

PARK LIGHTING IS MAINTAINED AND OPERATED BY THE CITY OF MILWAUKEE. THE CONTRACTOR SHALL CONTACT THE CITY AND COORDINATE LIGHT OPERATION, TEMPORARY LIGHT REQUIREMENTS AND EXISTING FACILITIES.

THE CONTRACTOR SHALL COORDINATE A SITE WITH MILWAUKEE BEFORE BIDDING TO BECOME FAMILIAR WITH THE PRESENT CONDITIONS AND TO JUDGE THE EXTENT AND NATURE OF THE WORK TO BE DONE UNDER THIS CONTRACT. NO EXTRA COMPENSATION WILL BE ALLOWED BECAUSE OF FAILURE TO INCLUDE IN THE BID ALL ITEMS AND MATERIALS WHICH ARE REQUIRED TO BE FURNISHED.

THE CONTRACTOR SHALL PREFORM ALL WORK WITH CASE SO THAT ANY MATERIALS THAT ARE TO REMAIN IN PLACE WILL NOT BE DAMAGED. IF THE CONTRACTOR DAMAGES MATERIALS THAT ARE TO REMAIN, THE DAMAGE SHALL BE REPAIRED OR REPLACED IN A MANNER SATISFACTORY TO THE ENGINEER AT THE EXPENSE OF THE CONTRACTOR.

THE LAKE PARK IS LISTED ON THE NATIONAL REGISTER OF HISTORIC PLACES AND A LOCALLY DESIGNATED SITE. THE LAKE PARK ARCH BRIDGE IS CITED AS A CONTRIBUTING ARCHITECTURAL ELEMENT IN THE NATIONAL REGISTER LISTING OF LAKE PARK. WORK CONDUCTED FOR THE PROJECT SHALL BE COMPLETED IN ACCORDANCE WITH "THE SECRETARY OF THE INTERIOR'S STANDARDS FOR REHABILITATION".

PROVIDE POSITIVE MECHANICAL VENTILATION TO THE INTERIOR OF THE VAULTED ABUTMENTS AND WING WALLS WHILE PERSONNEL ARE WORKING WITHIN THE STRUCTURES.

DIGGERS HOTLINE®

Toll Free (800) 242-8511
Milwaukee Area (414) 259-1181
Hearing Impaired TDD (800) 542-2289
www.DiggersHotline.com

TOTAL ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	ITEM	Unit	TOTAL EST. QUANTITY
203.0200	Removing Old Structure (Station 100+00)	LS	1
206.1000	Excavation for Bridges (P-40-0576)	LS	1
502.0100	Concrete Mansonry Bridges	CY	165
505.0600	Bar Steel Reinforcement HS Coated Structures	LB	17,780
509.2500	Concrete Masonry Overlay Deck	CY	19
619.1000	Mobilization	Each	1
SPV.0060.01	Anchorages Post-Installed #3 Galv. Baluster Bars	Each	260
SPV.0060.02	Concrete Surface Repair Type Spandrel Beam	Each	1
SPV.0060.03	Concrete Staples - #4	Each	35
SPV.0060.04	Anchor Assemblies Light Poles on Structures	Each	4
SPV.0090.01	Concrete Railing - Pilasters and Panels	LF	197
SPV.0090.02	Concrete Railing - Pilasters and Balustrades	LF	258
SPV.0090.03	Expansion Device B-67-147	LF	28
SPV.0090.04	Crack Repair - Type A	LF	50
SPV.0090.05	Crack Repair - Type B	LF	430
SPV.0090.06	Crack Repair - Type C	LF	645
SPV.0090.07	Vertical Expansion Joint Repair	LF	165
SPV.0105.01	Mock Ups Concrete Surface Repairs	LS	1
SPV.0105.02	Mock Ups Crack Repairs A, B and C	LS	1
SPV.0105.03	Mock Ups Concrete Surface Coating	LS	1
SPV.0105.04	Mock Ups Historic Railing Reconstruction	LS	1
SPV.0105.05	Mock Ups Board Form Concrete - Reconstructed	LS	1
SPV.0105.06	Shoring (P-40-0576)	LS	1
SPV.0105.07	Deck Drainage System (P-40-0576)	LS	1
SPV.0105.08	Sound and Mark Concrete Surface Repairs	LS	1
SPV.0105.09	Electrical Conduit System	LS	1
SPV.0165.01	Precast Concrete Deck Panels	Sq. Ft.	3,645
SPV.0165.02	Concrete Surface Coating	Sq. Ft.	12,050
SPV.0165.03	Concrete Surface Repair Type 0	Sq. Ft.	38
SPV.0165.04	Concrete Surface Repair Type F	Sq. Ft.	82
SPV.0165.05	Concrete Surface Repair Type ES	Sq. Ft.	21
SPV.0165.06	Concrete Surface Repair Type AC	Sq. Ft.	260
SPV.0165.07	Concrete Surface Repair Type NAC	Sq. Ft.	56
SPV.0165.08	Concrete Surface Repair Type TD1	Sq. Ft.	18
SPV.0165.09	Concrete Surface Repair Type G	Sq. Ft.	57
SPV.0165.10	Concrete Surface Repair Type TB1	Sq. Ft.	50
SPV.0165.11	Arch Conc Texture Recontructed (Board Form)	Sq. Ft.	1,935
SPV.0165.12	Remove Non-Adhering Coatings and Surface Treatments	Sq. Ft.	10,230

LAKE PARK ARCH BRIDGE REHABILITATION
LAKE PARK ON LAKE MICHIGAN
IN MILWAUKEE
LAKE PARK ARCH BRIDGE OVER RAVINE ROAD

Olson & Nesvold Engineers, P.S.C.
8000 West 78th Street, Suite 410
Edina, MN 55439-2547

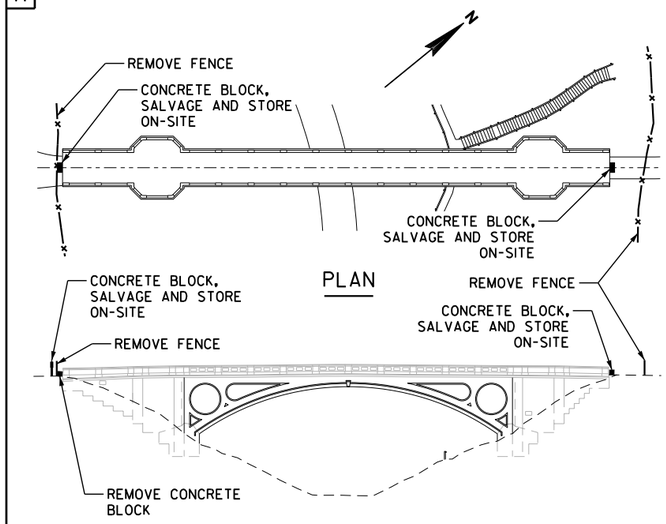
MILWAUKEE COUNTY DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
CITY CAMPUS 2711 W. WELLS ST - 2ND FLOOR MILWAUKEE, WI 53208

REVISIONS:

DATE: X/XX/2020
PROJECT: P484-15619
STATE ID 2967-01-03
SITE NO: 777
BUILDING NO: N/A

File path: \\oneserver\public\PROJECTS\1134-2 Milwaukee Lake Park\2 - Production\C - Work\CD\BR_P-40-576_QTY001.dgn

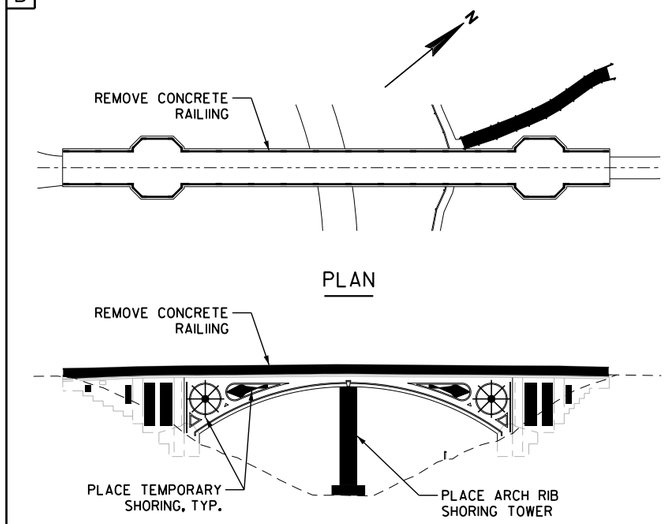
A



ELEVATION

1. REMOVE FENCE.
2. SALVAGE AND STORE CONCRETE BLOCKS ON-SITE.

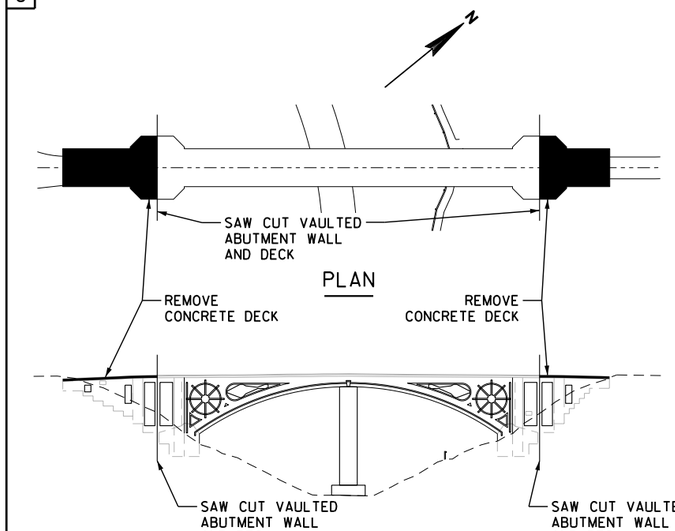
B



ELEVATION

1. SALVAGE AND STORE STONE STAIRS AND RAILING ON-SITE.
2. STABILIZE ARCH SPANDREL WALLS, WING WALLS, VAULTED ABUTMENT WALLS AND ARCH RIBS.
3. REMOVE CONCRETE RAILING. PRESERVE AND PROTECT ⅝" TRUSCAN BAR AT EVERY RAILING POST.

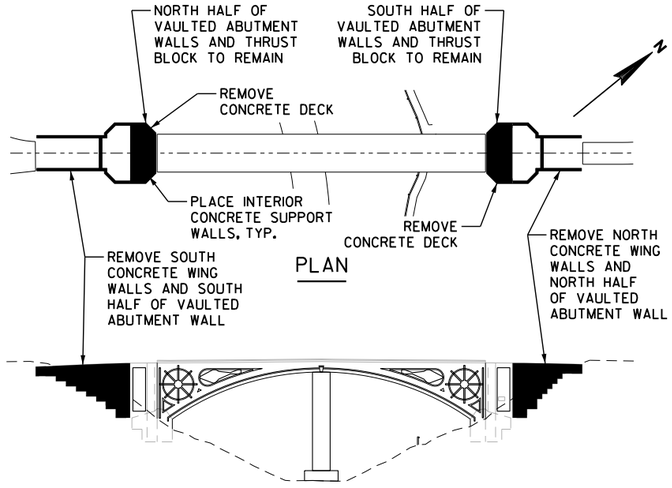
C



ELEVATION

1. SAW CUT VAULTED ABUTMENT WALLS AND BRIDGE DECK. SEE SHEET X FOR 1946 SUPPLEMENTAL DECK STRENGTHENING.
2. REMOVE CONCRETE BRIDGE DECK AT WING WALLS AND OUTWARD HALF OF VAULTED ABUTMENT.
3. EXCAVATE FOR APPROACH STRUCTURES.

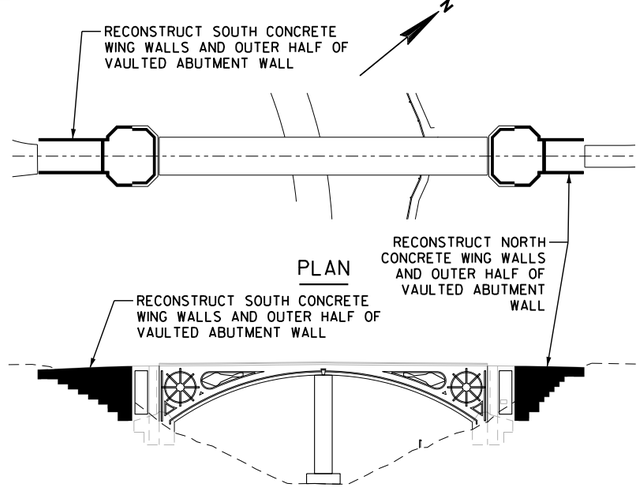
D



ELEVATION

1. REMOVE CONCRETE WING WALLS AND HALF OF VAULTED ABUTMENT WALLS.
2. PLACE LOWER PORTION OF INTERIOR CONCRETE SUPPORT WALLS IN FORWARD HALF OF VAULTED ABUTMENTS.
3. REMOVE DECK OVER FORWARD HALF OF VAULTED ABUTMENT.
4. PLACE UPPER PORTION OF INTERIOR CONCRETE SUPPORT WALLS IN FORWARD HALF OF VAULTED ABUTMENTS.

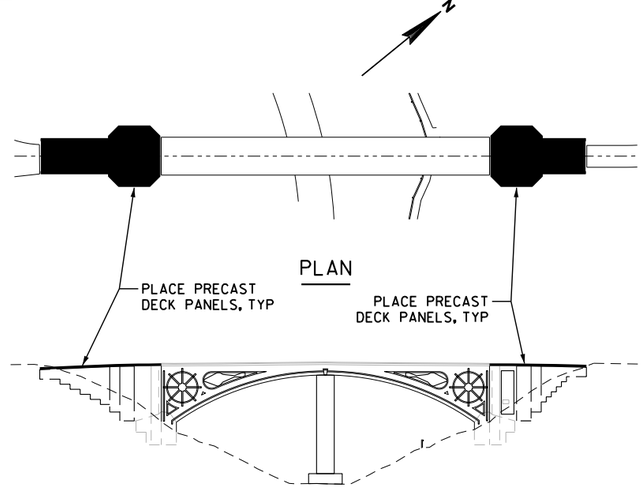
E



ELEVATION

1. RECONSTRUCT WING WALLS AND OUTER HALF OF VAULTED ABUTMENTS.

F



ELEVATION

1. PLACE AND SECURE PRECAST DECK PANELS AT WING WALLS AND VAULTED ABUTMENTS.
2. REMOVE VAULTED ABUTMENT SHORING.
3. REPAIR CONCRETE SURFACES OF ABUTMENTS, ARCH RIBS, SPANDREL WALLS AND DIAPHRAGM WALLS.

LAKE PARK ARCH BRIDGE REHABILITATION
LAKE PARK ON LAKE MICHIGAN IN MILWAUKEE
LAKE PARK ARCH BRIDGE OVER RAVINE ROAD

Olson & Nesvold Engineers, P.S.C.
8000 West 78th Street, Suite 410
Edina, MN 55439-2547

MILWAUKEE COUNTY DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
CITY CAMPUS 2711 W. WELLS ST - 2ND FLOOR MILWAUKEE, WI 53208

REVISIONS:

DATE: X/XX/2020

PROJECT: P484-15619
STATE ID 2967-01-03

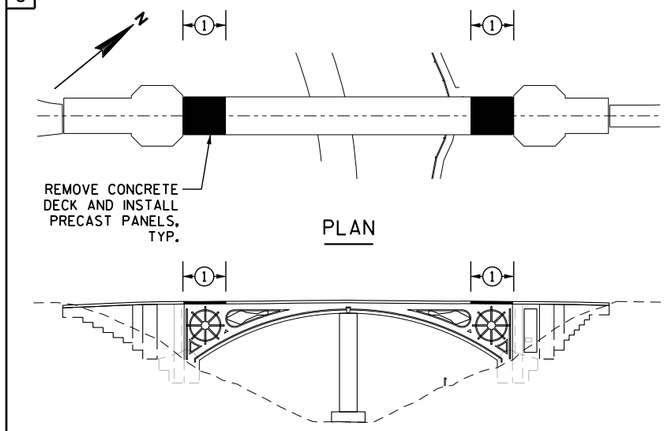
SITE NO: 777

BUILDING NO: N/A

File path: \\oneserver\public\PROJECTS\1134-2 Milwaukee Lake Park\2 - Production\C - Work\CD\BR_P-40-576_STG001.dgn

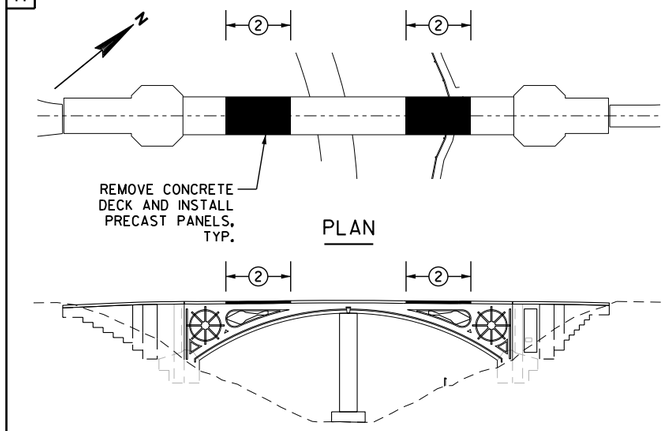
SHORING CONCEPTS AND CONSTRUCTION SEQUENCE (1 OF 2) S-8

G



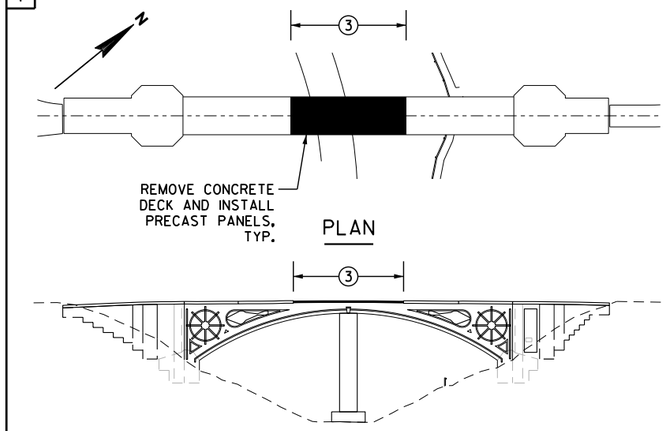
1. SAW CUT AND REMOVE DECK FROM EXPANSION JOINT TO PP1 PLUS 2'-0" AND PP5 MINUS 2'-0". SEE SHEET X FOR SAW CUT DETAIL.
2. HAMMER DRILL HOLES FOR SPANDREL BEAM VERTICAL GALVANIZED #3 BARS FROM EXPANSION JOINT TO PP1 PLUS 2'-0" AND PP5 MINUS 2'-0".
3. SET AND ADJUST ELEVATION OF DECK PANELS 7, 8, 24 AND 25.
4. PLACE HAUNCH DAMS.
5. PLACE AND CEMENT GROUT VERTICAL GALVANIZED #3 BARS.
6. GROUT DECK PANEL HAUNCHES.
7. CONSTRUCT CLOSURE 7-8 AND 24-25 CLOSURE JOINTS.

H



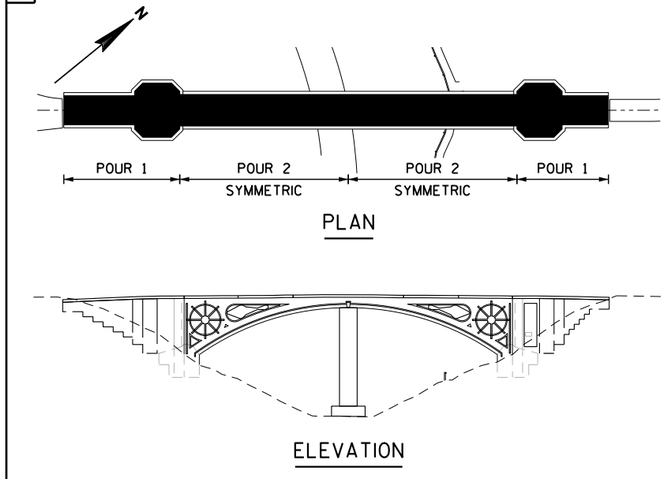
1. SAW CUT AND REMOVE REMAINING DECK TO PP2 PLUS 3'-4". SEE SHEET X FOR SAW CUT DETAIL.
2. HAMMER DRILL HOLES FOR SPANDREL BEAM VERTICAL GALVANIZED #3 AND #4 BARS.
3. CONSTRUCT SOUTHEAST TEAR DROP OPENING SUPPLEMENTAL SPANDREL BEAM.
4. SET AND ADJUST ELEVATION OF DECK PANELS 9, 10, 11, 12, 20, 21, 22 AND 23.
4. PLACE HAUNCH DAMS.
5. CEMENT GROUT VERTICAL GALVANIZED #3 BARS.
6. PRESSURE GROUT GALVANIZED #3 BARS IN SOUTHEAST TEAR DROP OPENING SUPPLEMENTAL SPANDREL BEAM.
7. GROUT DECK PANEL HAUNCHES.
8. CONSTRUCT CLOSURE 8-9, 10-11, 11-12, 23-24, 22-23, 21-22.

I



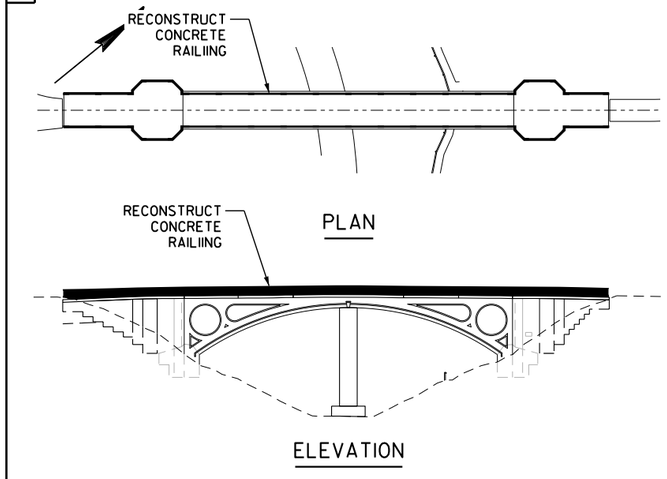
1. SAW CUT AND REMOVE REMAINDER OF DECK.
2. HAMMER DRILL HOLES FOR SPANDREL BEAM VERTICAL GALVANIZED #3 BARS.
3. SET AND ADJUST ELEVATION OF DECK PANELS 13, 14, 15, 16, 17, 18 AND 19.
4. SET HAUNCH DAMS.
5. CEMENT GROUT VERTICAL GALVANIZED #3 BARS.
6. GROUT DECK PANEL HAUNCHES.
7. CONSTRUCT CLOSURE 12-13, 13-14, 14-15, 16-17, 17-18, 18-19 AND 19-20.

J



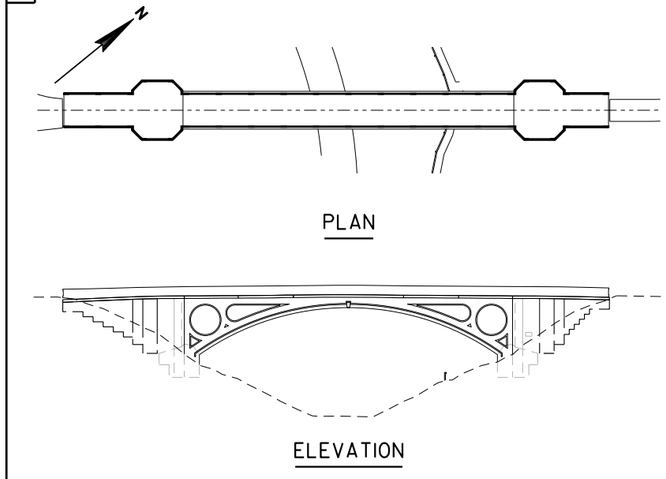
1. PLACE CONCRETE OVERLAY AT ABUTMENTS.
2. PLACE CONCRETE OVERLAY FROM CENTER OF BRIDGE WORKING SYMMETRICALLY TOWARDS EACH ABUTMENT OR OPPOSITE DIRECTION.
3. INSTALL EXPANSION JOINT SEALS.

K



1. RECONSTRUCT WING WALL AND VAULTED ABUTMENT RAILINGS.
2. RECONSTRUCT ARCH SPAN RAILINGS SYMMETRICALLY ABOUT THE ℄ OF BRIDGE.
3. REMOVE SPANDREL OPENING AND SPANDREL WALL SHORING.
4. FINISH REPAIR CONCRETE SURFACES ON INPLACE VAULTED ABUTMENT WALLS, THRUST BLOCKS, SPANDREL WALLS, DIAPHRAGM WALLS, STRUTS AND ARCH RIBS.

L



1. REMOVE ARCH RIB SHORING TOWER.
2. COMPLETE CONCRETE SURFACE REPAIRS IN AREAS AROUND ARCH RIB SHORING TOWER.
3. APPLY CONCRETE SURFACE COATING ON EXPOSED SURFACE OF ALL HISTORICAL CONCRETE.
4. INSTALL DRAINAGE DOWNSPOUTS.
5. REMOVE PERIMETER FENCE, COMPLETE SITE RESTORATION AND DEMOBILIZE.
6. RETURN POSSESSIONS TO MILWAUKEE COUNTY.

LAKE PARK ARCH BRIDGE REHABILITATION
LAKE PARK ON LAKE MICHIGAN
IN MILWAUKEE
LAKE PARK ARCH BRIDGE OVER RAVINE ROAD

Olson & Nesvold Engineers, P.S.C.
8000 West 78th Street, Suite 410
Edina, MN 55439-2547

MILWAUKEE COUNTY DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
CITY CAMPUS 2711 W. WELLS ST - 2ND FLOOR MILWAUKEE, WI 53208

REVISIONS:

DATE: X/XX/2020

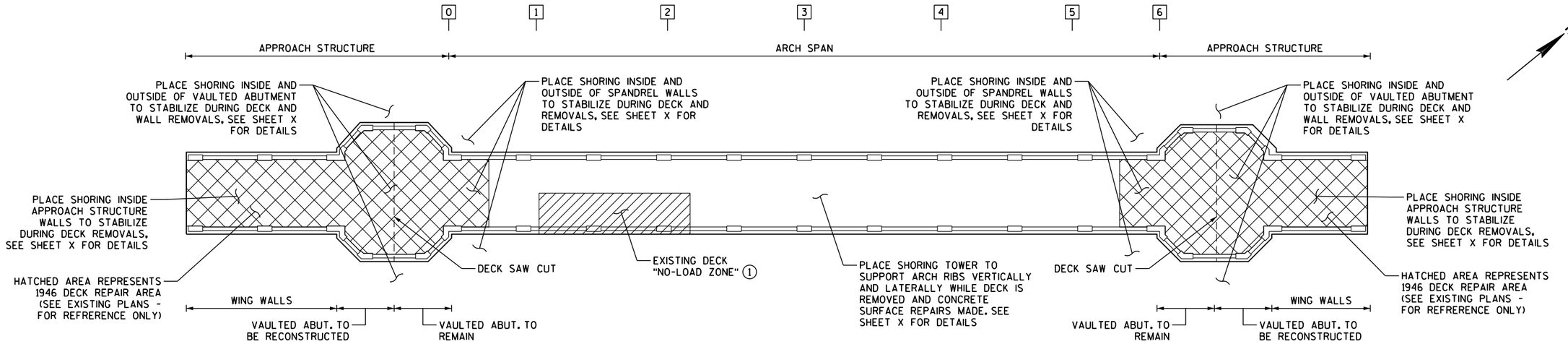
PROJECT: P484-15619
STATE ID 2967-01-03

SITE NO: 777

BUILDING NO: N/A

File path: \\oneserver\public\PROJECTS\1134-2 Milwaukee Lake Park\2 - Production\C - Work\CD\BR_P-40-576_STG002.dgn

SHORING CONCEPTS AND CONSTRUCTION SEQUENCE (2 OF 2) S-9



SHORING PLAN LAYOUT

SHORING AND SEQUENCE NOTES:

PREPARATION:

INSTALL BARRICADES FOR "NO-LOAD ZONE".

INSTALL PERIMETER FENCE.

DECK AND RAILING TO REMAIN IN PLACE UNTIL IDENTIFIED TO BE REMOVED.

CLEAR AND GRUB VEGETATION ADJACENT TO APPROACH STRUCTURES.

INSTALL EXTERIOR SHORING - VAULTED ABUTMENT TO REMAIN.

INSTALL EXTERIOR SHORING - VAULTED ABUTMENT TO BE RECONSTRUCTED.

CUT ACCESS OPENING IN APPROACH DECKS (OPTIONAL).

INSTALL INTERIOR SHORING - VAULTED ABUTMENT TO BE RECONSTRUCTED.

INSTALL SAW TRACK.

INSTALL SHORING - SPANDREL WALLS.

INSTALL SPANDREL WALL OPENING SHORING.

REMOVE BARRICADES FROM "NO-LOAD ZONE".

INSTALL INTERIOR SHORING - WING WALLS.

EXCAVATE TO TOP OF THRUST BLOCKS.

INSTALL METAL STRAPS - VAULTED ABUTMENTS TO REMAIN.

INSTALL UPPER AND LOWER INTERIOR SHORING - VAULTED ABUTMENT TO REMAIN.

INSTALL ARCH RIB SHORING TOWER.

DEMOLISH APPROACHES:

SAW CUT - VAULTED ABUTMENT WALLS AND RAILING.

SAW CUT - VAULTED ABUTMENT DECK.

SAW CUT - APPROACH RAILING - WING WALLS TO VAULTED ABUTMENT LOCATION.

SAW CUT - APPROACH DECK - WING WALL TO VAULTED ABUTMENT LOCATION.

DEMOLISH - WING WALLS AND WING WALL DECK.

REMOVE INTERIOR SHORING - WING WALLS.

SAW CUT AND PICK - VAULTED ABUTMENT RAILING.

SAW CUT AND PICK - VAULTED ABUTMENT DECK.

DEMOLISH APPROACHES (CONTINUED):

REMOVE INTERIOR SHORING - UPPER VAULTED ABUTMENT TO BE RECONSTRUCTED.

DEMOLISH - UPPER VAULTED ABUTMENT TO BE RECONSTRUCTED.

REMOVE INTERIOR SHORING - LOWER VAULTED ABUTMENT TO BE RECONSTRUCTED.

DEMOLISH - MIDDLE VAULTED ABUTMENT TO BE RECONSTRUCTED.

DEMOLISH - LOWER VAULTED ABUTMENT TO BE RECONSTRUCTED.

REMOVE EXTERIOR SHORING - VAULTED ABUTMENT TO BE RECONSTRUCTED.

REMOVE EXTERIOR SHORING - VAULTED ABUTMENT TO BE RECONSTRUCTED.

RECONSTRUCT APPROACH STRUCTURES:

EXCAVATE - WING WALL AND VAULTED ABUTMENT FOOTINGS.

CONSTRUCT - WING WALL AND VAULTED ABUTMENT FOOTINGS.

CONSTRUCT AND SHORE - WING WALL AND VAULTED ABUTMENT WALLS.

BACKFILL - RECONSTRUCTED WALLS.

CONSTRUCT - FLOOR SLAB.

REMOVE INTERIOR SHORING - LOWER VAULTED ABUTMENT TO REMAIN.

CONSTRUCT - LOWER VAULTED ABUTMENT INTERIOR WALLS.

REMOVE INTERIOR SHORING - LOWER VAULTED ABUTMENT TO REMAIN.

CONSTRUCT - MIDDLE VAULTED ABUTMENT INTERIOR WALLS.

SAW CUT - INTERIOR AND EXTERIOR OF EXISTING VAULTED ABUTMENT WALLS.

SAW CUT AND PICK - REMAINING VAULTED ABUTMENT RAILING.

SAW CUT AND PICK - REMAINING VAULTED ABUTMENT SLAB.

CONSTRUCT - UPPER INTERIOR VAULTED ABUTMENT WALLS.

PLACE - APPROACH STRUCTURE DECK PANELS AND CLOSURE JOINTS.

DEMOLISH AND CONSTRUCT ARCH DECK:

STAGE 1:

REMOVE DRAINAGE DOWNSPOUTS FROM PP0 TO PP6.

INSTALL CONCRETE REPAIR TYPE F IN PLAN SPECIFIED LOCATIONS IN DIAPHRAGM WALLS AT PP1 AND PP6.

DEMOLISH - RAILINGS - PP0 TO PP1 (SOUTH), PP5 TO PP6 (NORTH).

STAGE 1 (CONTINUED):

SAW CUT - HORIZONTAL CUTS IN SPANDREL WALLS AND DIAPHRAGM WALLS PP0 TO PP1 (SOUTH), PP5 TO PP6 (NORTH).

SAW CUT AND REMOVE DECK - PP0 TO PP1 (SOUTH), PP5 TO PP6 (NORTH).

PREPARE SPANDREL WALLS TO RECEIVE DECK PANELS - PP0 TO PP1 (SOUTH), PP5 TO PP6 (NORTH).

PLACE DECK PANELS AND CLOSURE JOINTS - PP0 TO PP1 (SOUTH), PP5 TO PP6 (NORTH).

STAGE 2:

INSTALL CONCRETE REPAIR TYPE F IN PLAN SPECIFIED LOCATIONS IN DIAPHRAGM WALLS AT PP2 AND PP4.

DEMOLISH - RAILINGS - PP1 TO PP2 (SOUTH), PP4 TO PP5 (NORTH).

SAW CUT - HORIZONTAL CUTS IN SPANDREL WALLS AND DIAPHRAGM WALLS PP1 TO PP2 (SOUTH), PP4 TO PP5 (NORTH).

SAW CUT AND REMOVE DECK - PP1 TO PP2 (SOUTH), PP4 TO PP5 (NORTH).

PREPARE SPANDREL WALLS TO RECEIVE DECK PANELS - PP1 TO PP2 (SOUTH), PP4 TO PP5 (NORTH).

PLACE DECK PANELS AND CLOSURE JOINTS - PP1 TO PP2 (SOUTH), PP4 TO PP5 (NORTH).

STAGE 3:

DEMOLISH - RAILINGS - PP2 TO PP4.

SAW CUT - HORIZONTAL CUTS IN SPANDREL WALLS AND DIAPHRAGM WALLS PP2 TO PP4.

SAW CUT AND REMOVE DECK - PP2 TO PP4.

PREPARE SPANDREL WALLS TO RECEIVE DECK PANELS - PP2 TO PP4.

PLACE DECK PANELS AND CLOSURE JOINTS - PP1 TO PP4.

INSTALL DRAINAGE DOWNSPOUT SUPPORTS AND DOWNSPOUTS FROM PP0 TO PP6.

REPAIR EXISTING CONCRETE:

REPAIR EXISTING CONCRETE AND CRACKS.

PLACE CONCRETE OVERLAY - SYMMETRICAL ABOUT CENTERLINE.

INSTALL ARCH SPAN RAILING - SYMMETRICAL ABOUT CENTERLINE.

INSTALL APPROACH STRUCTURE RAILING.

REPAIR EXISTING CONCRETE (CONTINUED):

RELEASE ARCH SPAN SHORING.

CLEAN CONCRETE SURFACES.

APPLY SPECIAL SURFACE FINISH.

TEMPORARY SHORING NOTES:

THESE DRAWINGS SHOW MINIMUM LEVEL SHORING REQUIRED TO STABILIZE STRUCTURES DURING REMOVALS AND RECONSTRUCTION.

CONTRACTOR TO DESIGN FINAL SHORING LAYOUT AND DETAILS.

VENTILATE VAULTED ABUTMENTS AND WING WALL INTERIOR SPACES ANY TIME WHILE OCCUPIED BY PERSONNEL.

[X] DEPICTS PANEL POINTS AT FULL HEIGHT DIAPHRAGM WALLS.

(1) THE STRUCTURAL CAPACITY OF THE SPANDREL BEAM OVER THE SOUTHEAST TEAR DROP OPENING IS COMPROMISED DUE TO CORROSION OF THE TENSION REINFORCEMENT. THE EASTERLY 8 FEET OF THE EXISTING CONCRETE DECK FROM PANEL POINT 1 TO PANEL POINT 2 IS STRUCTURALLY UNCERTAIN. PLACE NO PERSONNEL, MATERIALS OR EQUIPMENT LOADS ON THIS PORTION OF THE BRIDGE DECK UNTIL SHORING HAS BEEN PLACED WITH THE TEAR DROP OPENING TO PROVIDE VERTICAL SUPPORT OF THE SOUTHEASTERN SPANDREL BEAM.

LAKE PARK ARCH BRIDGE REHABILITATION
LAKE PARK ON LAKE MICHIGAN
IN MILWAUKEE
LAKE PARK ARCH BRIDGE OVER RAVINE ROAD

Olson & Nesvold Engineers, P.S.C.
8000 West 78th Street, Suite 410
Edina, MN 55439-2547

MILWAUKEE COUNTY DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
CITY CAMPUS 2711 W. WELLS ST - 2ND FLOOR MILWAUKEE, WI 53208

REVISIONS:

DATE: X/XX/2020

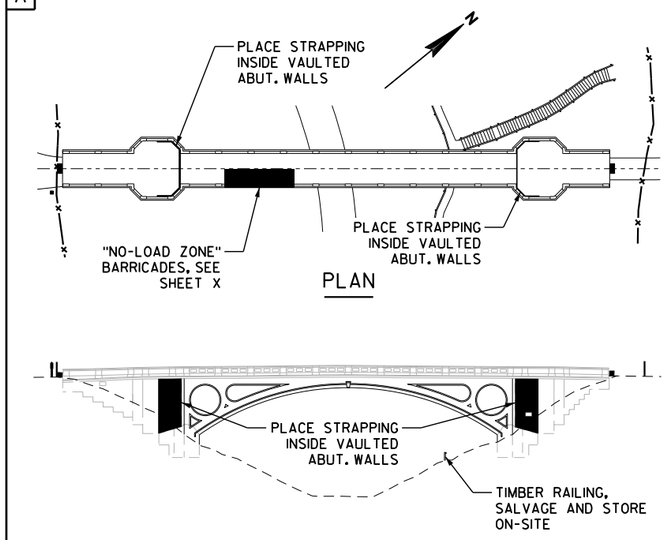
PROJECT: P484-15619
STATE ID 2967-01-03

SITE NO: 777

BUILDING NO: N/A

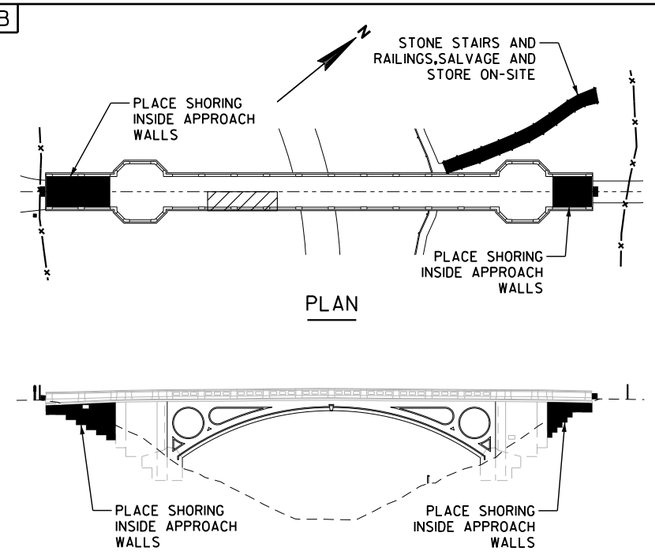
SHORING CONCEPTS AND CONSTRUCTION SEQUENCE - NOTES AND LAYOUT S-10

A



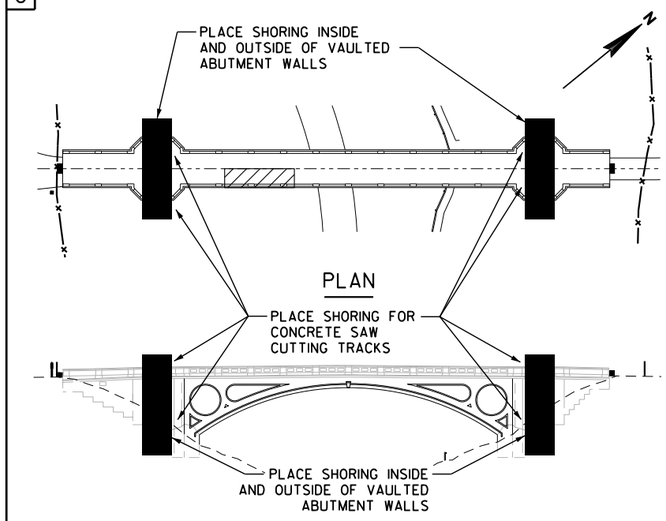
1. BARRICADE "NO-LOAD ZONE".
2. EXCAVATE TO TOP OF VAULTED ABUTMENT.
3. PLACE STRAPPING ON INSIDE OF VAULTED ABUTMENT WALLS THAT WILL REMAIN.

B



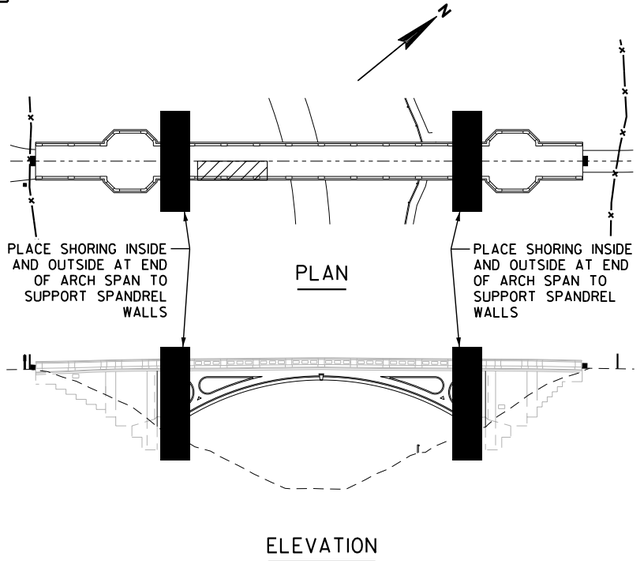
1. SALVAGE AND STORE STONE STAIRS AND RAILINGS ON-SITE.
2. PLACE SHORING INSIDE WING WALLS.

C



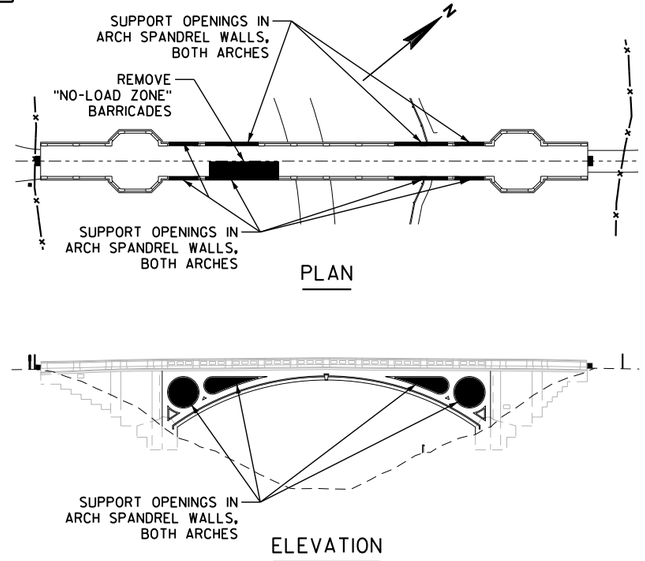
1. PLACE SHORING INSIDE AND OUTSIDE OF VAULTED ABUTMENT WALLS AT BOTH ABUTMENTS.
2. PLACE SHORING FOR CONCRETE SAW CUTTING TRACKS.

D



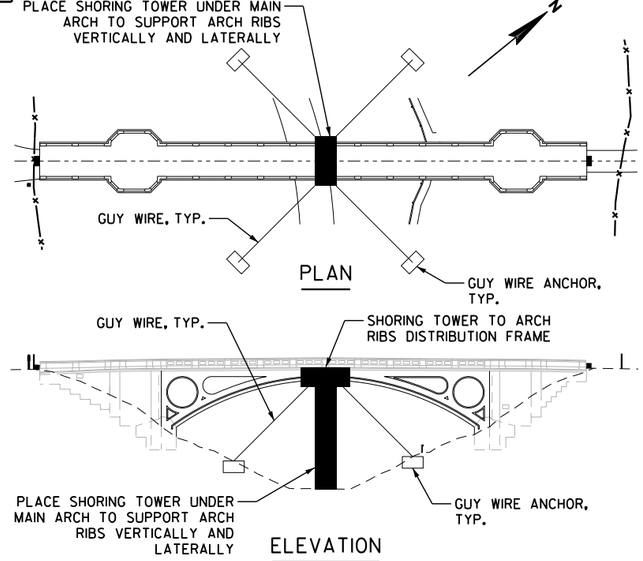
1. PLACE SHORING INSIDE AND OUTSIDE AT END OF ARCH SPAN TO SUPPORT SPANDREL WALLS.

E



1. SUPPORT OPENINGS IN ARCH SPANDREL WALLS, BOTH ARCHES.
2. REMOVE "NO-LOAD ZONE" BARRICADES.

F



1. SUPPORT ARCH RIBS VERTICALLY AND LATERALLY WITH SHORING TOWER.

LAKE PARK ARCH BRIDGE REHABILITATION
LAKE PARK ON LAKE MICHIGAN
IN MILWAUKEE
LAKE PARK ARCH BRIDGE OVER RAVINE ROAD

Olson & Nesvold Engineers, P.S.C.
8000 West 78th Street, Suite 410
Edina, MN 55439-2547

MILWAUKEE COUNTY DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
CITY CAMPUS 2711 W. WELLS ST - 2ND FLOOR MILWAUKEE, WI 53208

REVISIONS:

DATE: X/XX/2020

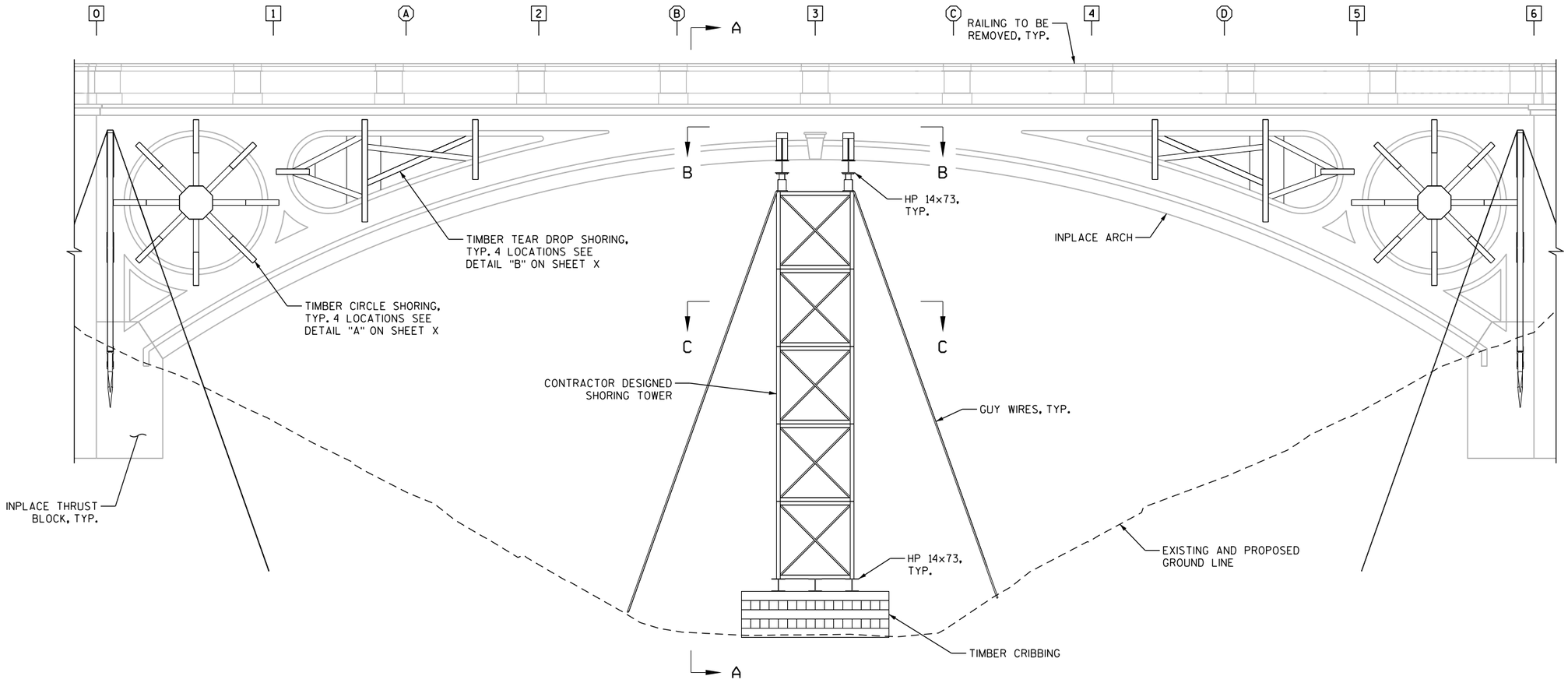
PROJECT: P484-15619
STATE ID 2967-01-03

SITE NO: 777

BUILDING NO: N/A

File path: \\oneserver\public\PROJECTS\1134-2 Milwaukee Lake Park\2 - Production\C - Work\CD\BR_P-40-576_SHG007.dgn

SHORING CONCEPTS AND CONSTRUCTION SEQUENCE - INSTALLATION | S-11



ARCH ELEVATION

NOTES:

SEE SHEET X FOR SECTIONS A-A, B-B AND C-C.

SEE SHEET X FOR DETAILS "A" AND "B".

ALL TEMPORARY SHORING DETAILS SHOWN ARE CONCEPTUAL. CONTRACTOR TO PROVIDE DEISGN OF TEMPORARY SHORING FOR ENGINEERS APPROVAL PRIOR TO ANY REMOVALS.

[X] DEPICTS PANEL POINTS AT FULL HEIGHT DIAPHRAGM WALLS.

(X) DEPICTS INTERMEDIATE PANEL POINTS AT TRANSVERSE BEAMS.

LAKE PARK ARCH BRIDGE REHABILITATION

LAKE PARK ON LAKE MICHIGAN IN MILWAUKEE

LAKE PARK ARCH BRIDGE OVER RAVINE ROAD

Olson & Nesvold Engineers, P.S.C.
8000 West 78th Street, Suite 410
Edina, MN 55439-2547

MILWAUKEE COUNTY DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
CITY CAMPUS 2711 W. WELLS ST - 2ND FLOOR MILWAUKEE, WI 53208

REVISIONS:

DATE: X/XX/2020

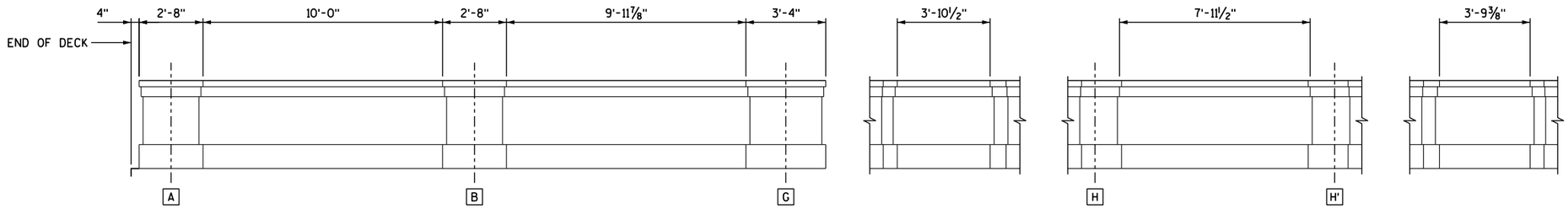
PROJECT: P484-15619
STATE ID 2967-01-03

SITE NO: 777

BUILDING NO: N/A

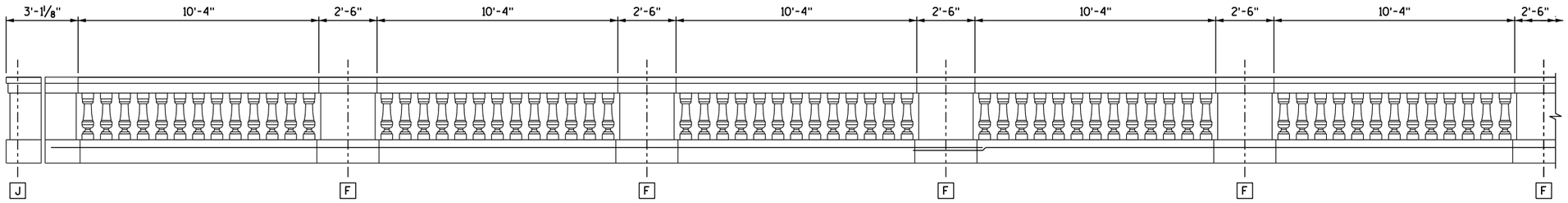
File path: \\oneserver\public\PROJECTS\1134-2 Milwaukee Lake Park\2 - Production\C - Work\CD\BR_P-40-576_SHG004.dgn

CONCEPTUAL SHORING FEATURES (4 OF 5) | S-15

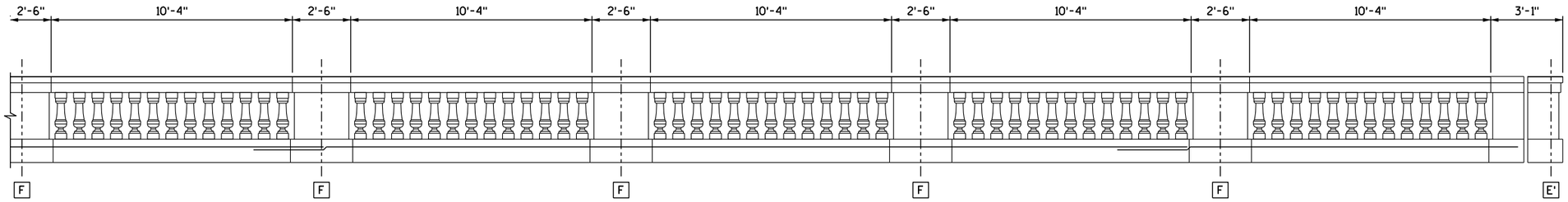


S. ABUT.

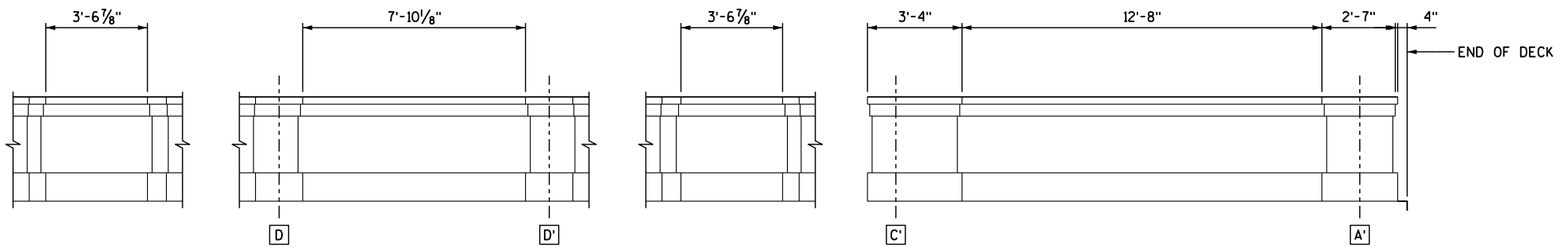
WEST RAILING INSIDE ELEVATION



WEST RAILING INSIDE ELEVATION



WEST RAILING INSIDE ELEVATION



N. ABUT.

WEST RAILING INSIDE ELEVATION

LAKE PARK ARCH BRIDGE REHABILITATION
LAKE PARK ON LAKE MICHIGAN
IN MILWAUKEE
LAKE PARK ARCH BRIDGE OVER RAVINE ROAD

Olson & Nesvold Engineers, P.S.C.
8000 West 78th Street, Suite 410
Edina, MN 55439-2547

MILWAUKEE COUNTY DEPARTMENT OF
TRANSPORTATION AND PUBLIC WORKS
CITY CAMPUS 2711 W. WELLS ST - 2ND FLOOR MILWAUKEE, WI 53208

REVISIONS:

DATE: X/XX/2020

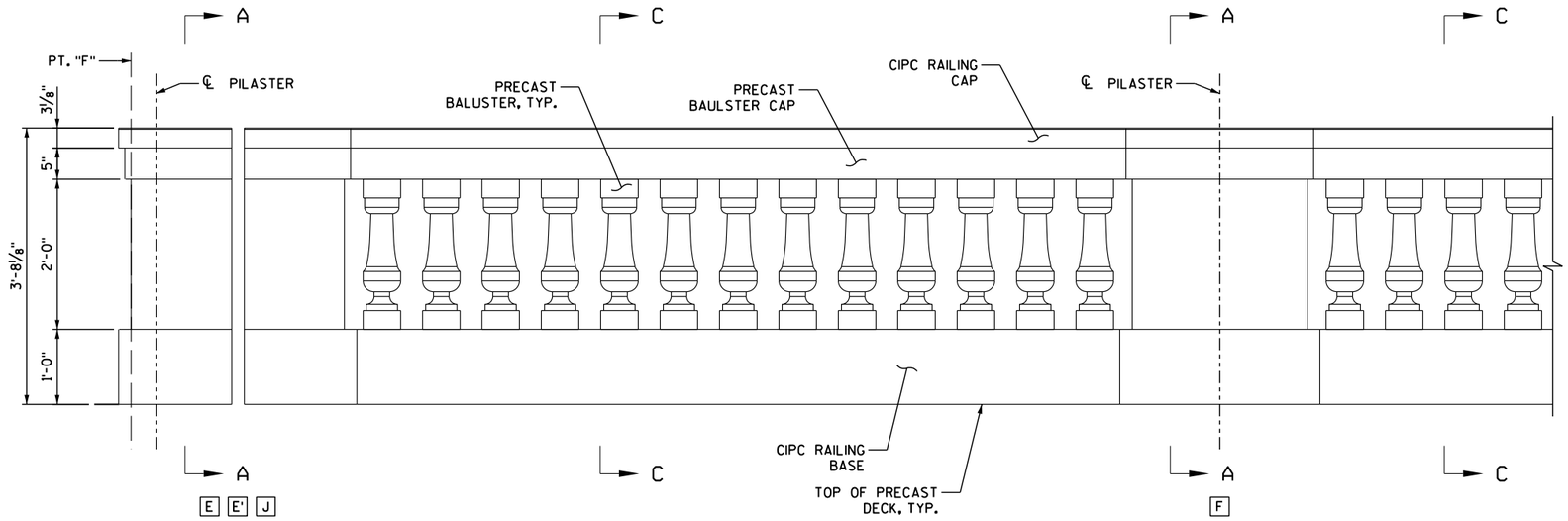
PROJECT: P484-15619
STATE ID 2967-01-03

SITE NO: 777

BUILDING NO: N/A

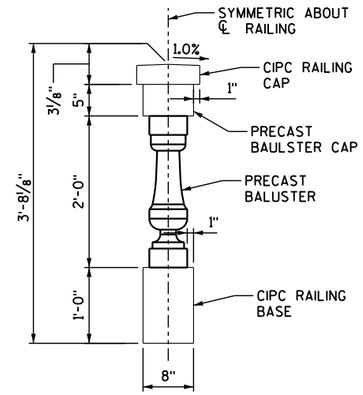
File path: \\oneserver\public\PROJECTS\1134-2 Milwaukee Lake Park\2 - Production\C - Work\CD\BR_P-40-576_RAL002.dgn

WEST RAILING ELEVATION S-121



INSIDE ELEVATION OF RAILING - ARCH SPAN

WEST SIDE SHOWN, EAST SIDE SIMILAR



SECTION C-C

NOTES:

SEE SHEET X FOR SECTION A-A.

(1) SOUTH ABUTMENT ONLY.

[-] DENOTES PILASTER TYPE, SEE SHEET X FOR DETAILS.

LAKE PARK ARCH BRIDGE REHABILITATION
LAKE PARK ON LAKE MICHIGAN IN MILWAUKEE

LAKE PARK ARCH BRIDGE OVER RAVINE ROAD

Olson & Nesvold Engineers, P.S.C.
8000 West 78th Street, Suite 410
Edina, MN 55439-2547

MILWAUKEE COUNTY DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
CITY CAMPUS 2711 W. WELLS ST - 2ND FLOOR MILWAUKEE, WI 53208

REVISIONS:

DATE: X/XX/2020

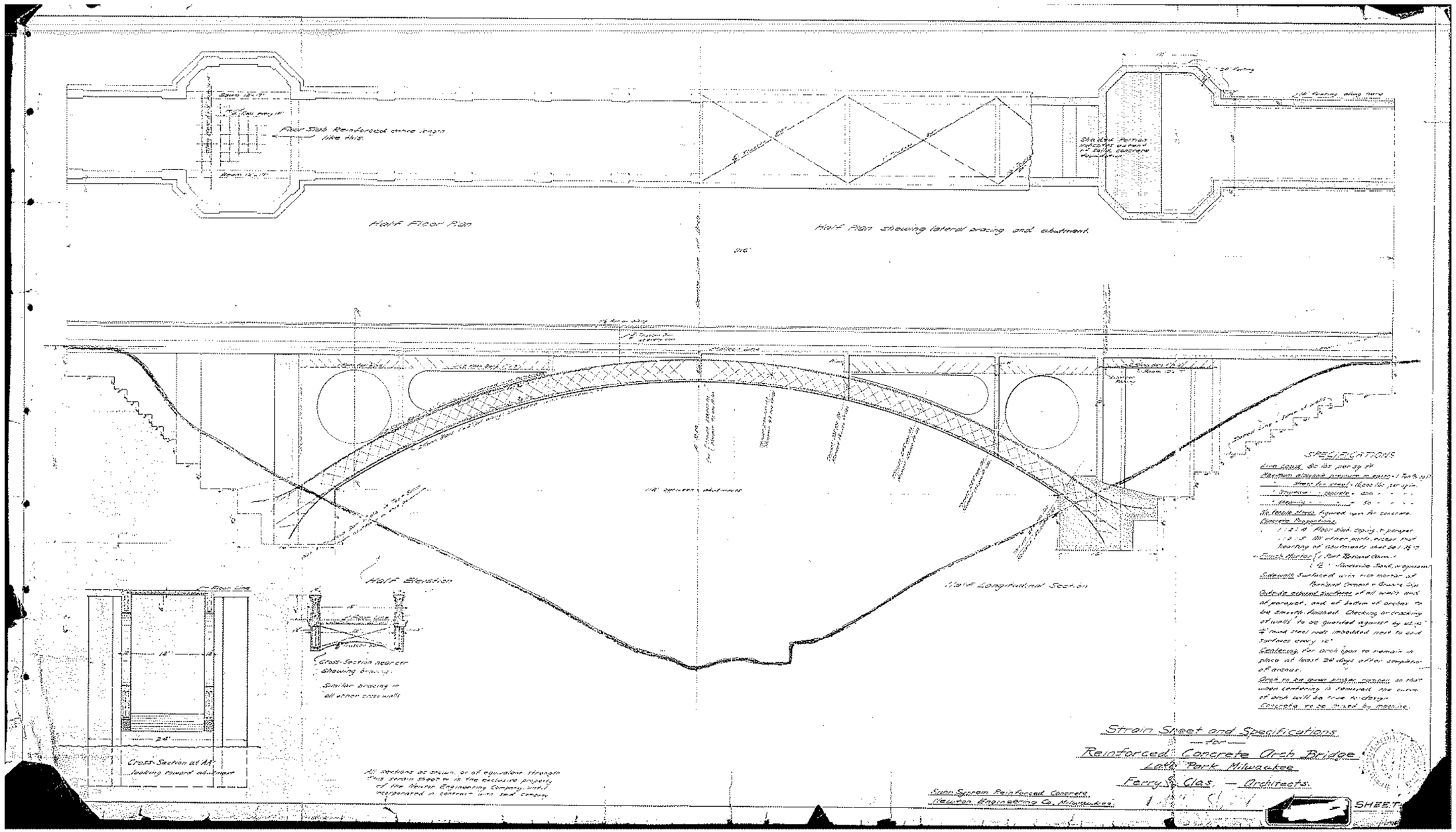
PROJECT: P484-15619
STATE ID 2967-01-03

SITE NO: 777

BUILDING NO: N/A

File path: \\oneserver\public\PROJECTS\1134-2 Milwaukee Lake Park\2 - Production\C - Work\CD\BR_P-40-576_RAL009.dgn

Available Original Plans



LAKE PARK ARCH BRIDGE REHABILITATION

LAKE PARK ON LAKE MICHIGAN IN MILWAUKEE

LAKE PARK ARCH BRIDGE OVER RAVINE ROAD

Olson & Nesvold Engineers, P.S.C.
8000 West 78th Street, Suite 410
Edina, MN 55439-2547

MILWAUKEE COUNTY DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
CITY CAMPUS 2711 W. WELLS ST - 2ND FLOOR MILWAUKEE, WI 53208

REVISIONS:

DATE: X/XX/2020

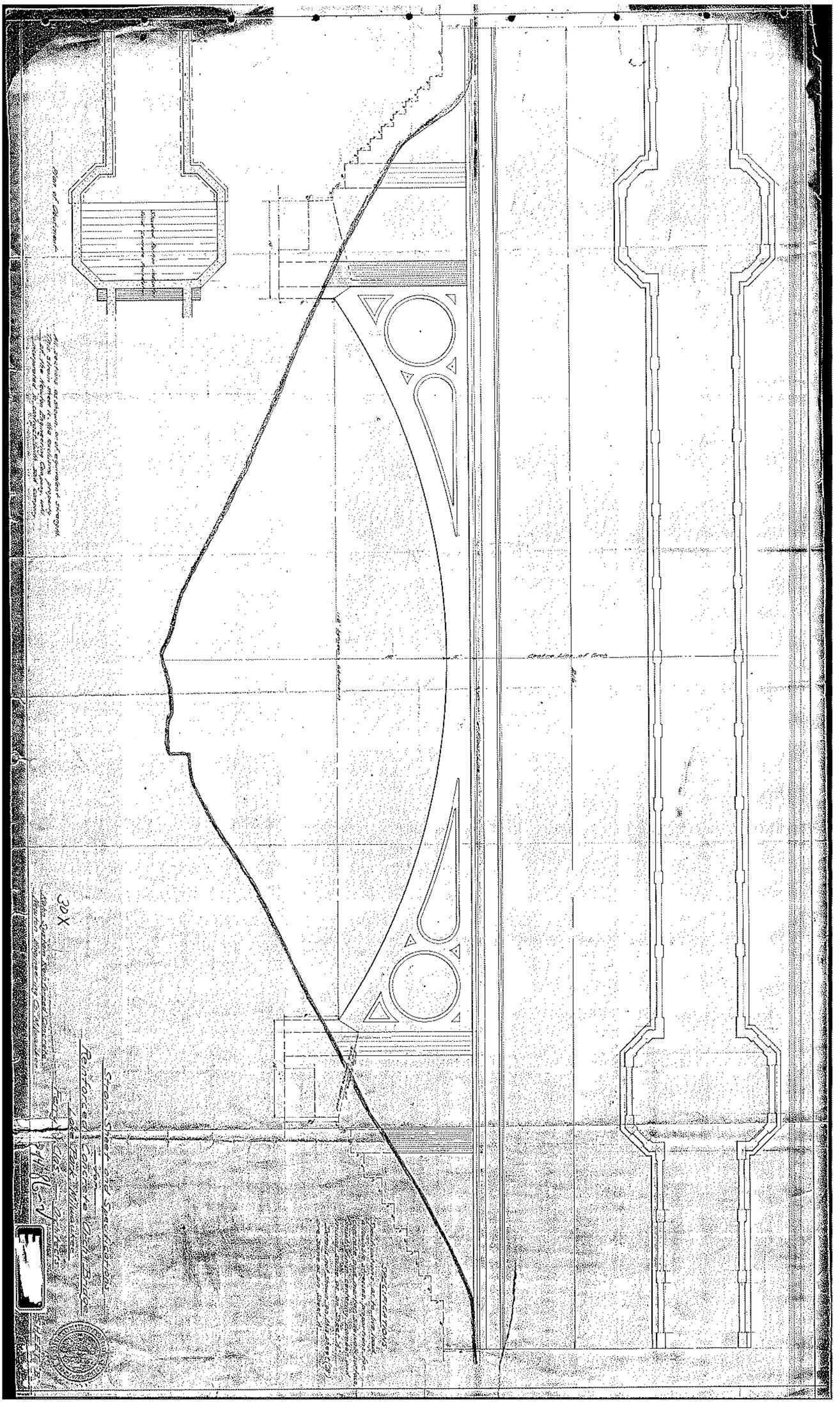
PROJECT: P484-15619
STATE ID 2967-01-03

SITE NO: 777

BUILDING NO: N/A

File path: \\oneserver\public\PROJECTS\1134-2 Milwaukee Lake Park\2 - Production\C - Work\CD\BR_P-40-576_EXS001.dgn

File path: \\oneserver\public\PROJECTS\1134-2 Milwaukee Lake Park\2 - Production\C - Work\CD\BR_P-40-576_EXS002.dgn



EXISTING PLANS - FOR REFERENCE ONLY (2 OF 6)

S-136

DATE: X/XX/2020
PROJECT: P484-15619
STATE ID 2967-01-03
SITE NO: 777
BUILDING NO: N/A

REVISIONS:

MILWAUKEE COUNTY DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
CITY CAMPUS 2711 W. WELLS ST - 2ND FLOOR MILWAUKEE, WI 53208

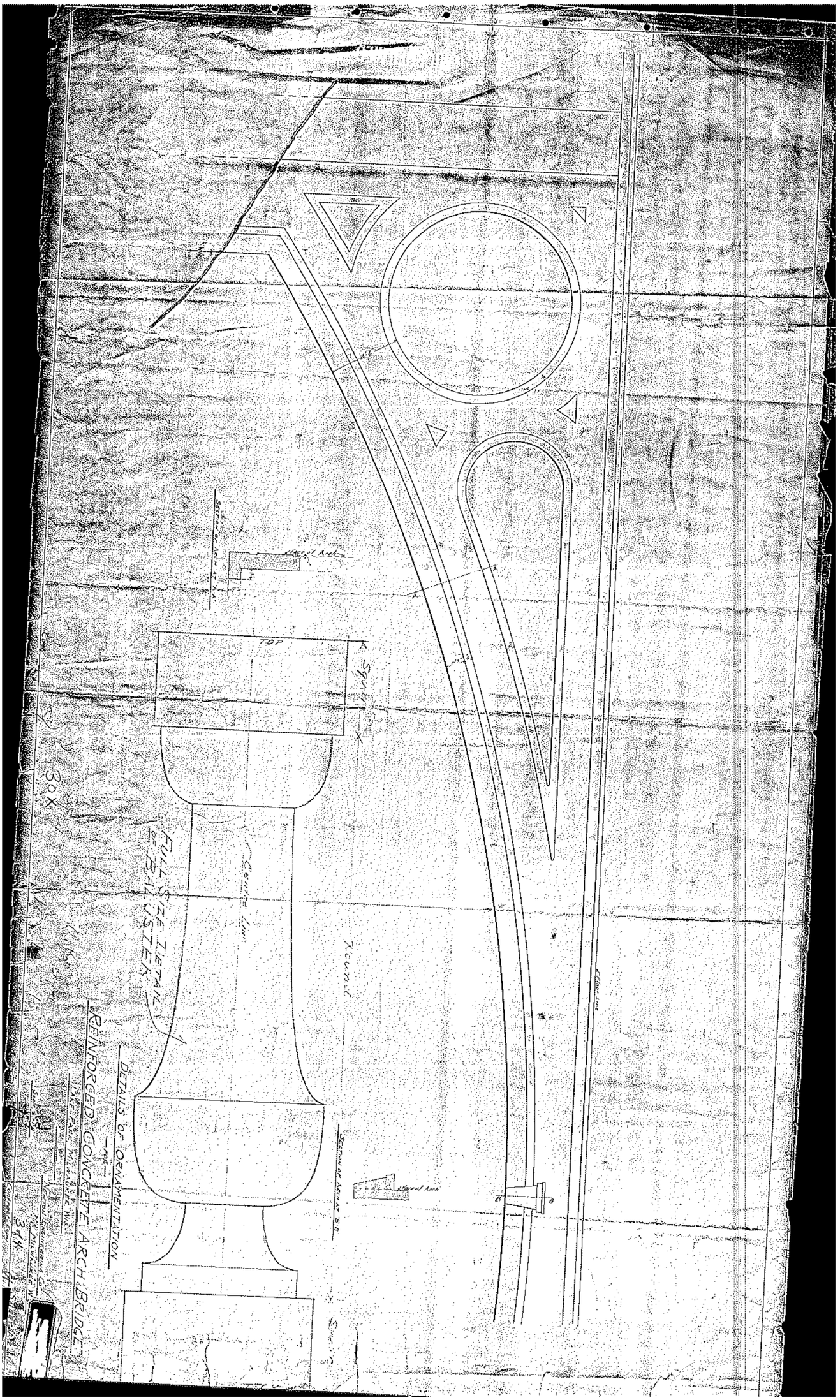
Olson & Nesvold Engineers, P.S.C.
8000 West 78th Street, Suite 410
Edina, MN 55439-2547

LAKE PARK ARCH BRIDGE REHABILITATION

LAKE PARK ON LAKE MICHIGAN IN MILWAUKEE

LAKE PARK ARCH BRIDGE OVER RAVINE ROAD

File path: \\oneserver\public\PROJECTS\1134-2 Milwaukee Lake Park\2 - Production\C - Work\CD\BR_P-40-576_EXS003.dgn



EXISTING PLANS - FOR REFERENCE ONLY (3 OF 6)

S-137

DATE: X/XX/2020

PROJECT: P484-15619
STATE ID 2967-01-03

SITE NO: 777

BUILDING NO: N/A

REVISIONS:

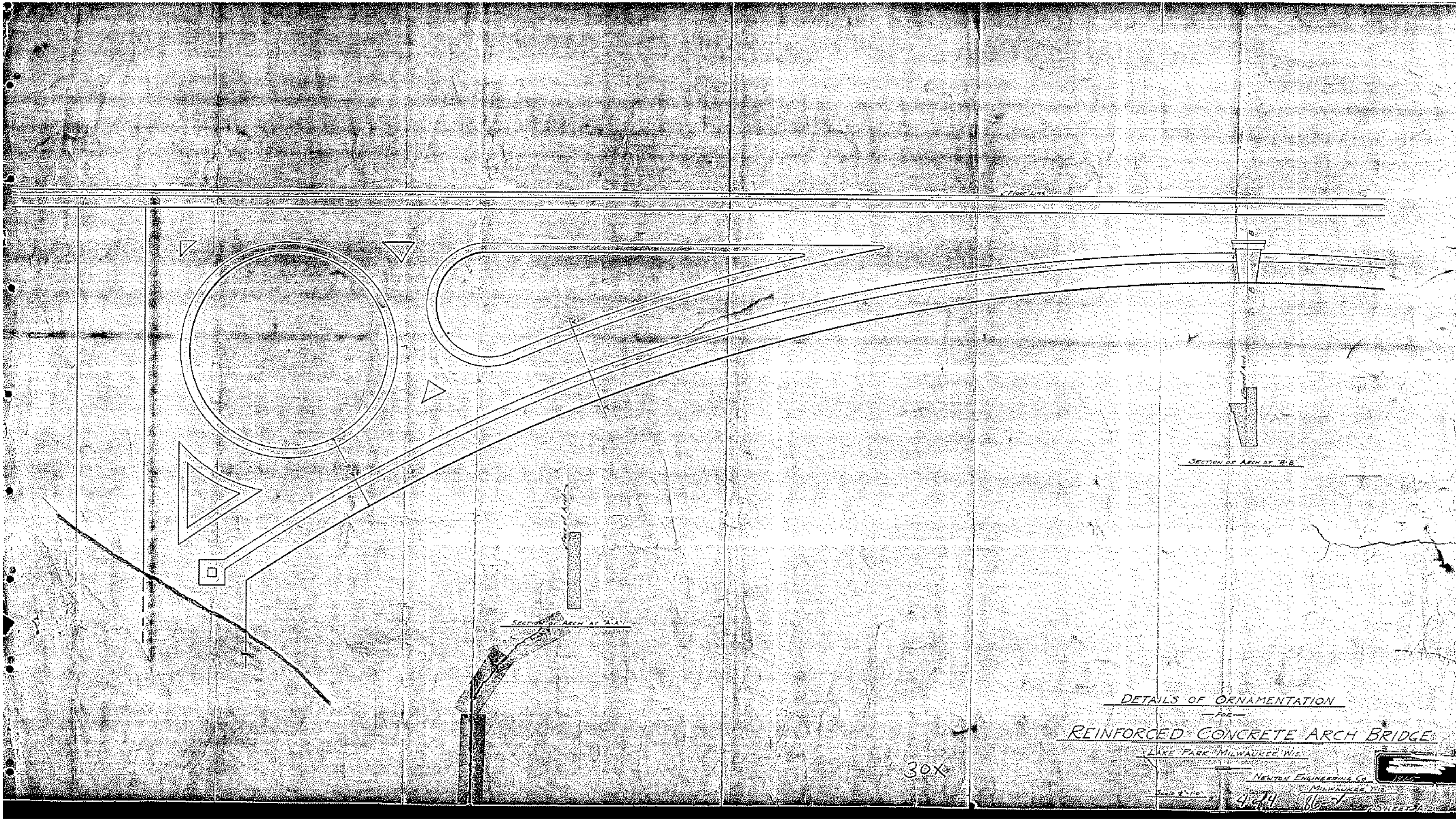
MILWAUKEE COUNTY DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
CITY CAMPUS 2711 W. WELLS ST - 2ND FLOOR MILWAUKEE, WI 53208

Olson & Nesvold Engineers, P.S.C.
8000 West 78th Street, Suite 410
Edina, MN 55439-2547

LAKE PARK ARCH BRIDGE REHABILITATION

LAKE PARK ON LAKE MICHIGAN IN MILWAUKEE

LAKE PARK ARCH BRIDGE OVER RAVINE ROAD



LAKE PARK ARCH BRIDGE REHABILITATION

LAKE PARK ON LAKE MICHIGAN IN MILWAUKEE

LAKE PARK ARCH BRIDGE OVER RAVINE ROAD

Olson & Nesvold Engineers, P.S.C.
8000 West 78th Street, Suite 410
Edina, MN 55439-2547

MILWAUKEE COUNTY DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
CITY CAMPUS 2711 W. WELLS ST - 2ND FLOOR MILWAUKEE, WI 53208

REVISIONS:

DATE: X/XX/2020

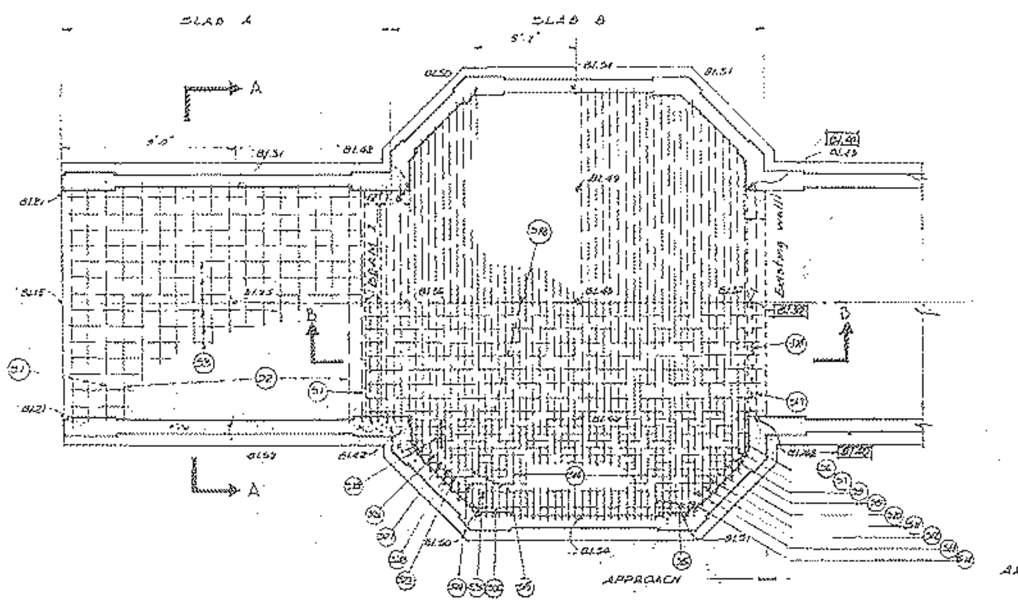
PROJECT: P484-15619
STATE ID 2967-01-03

SITE NO: 777

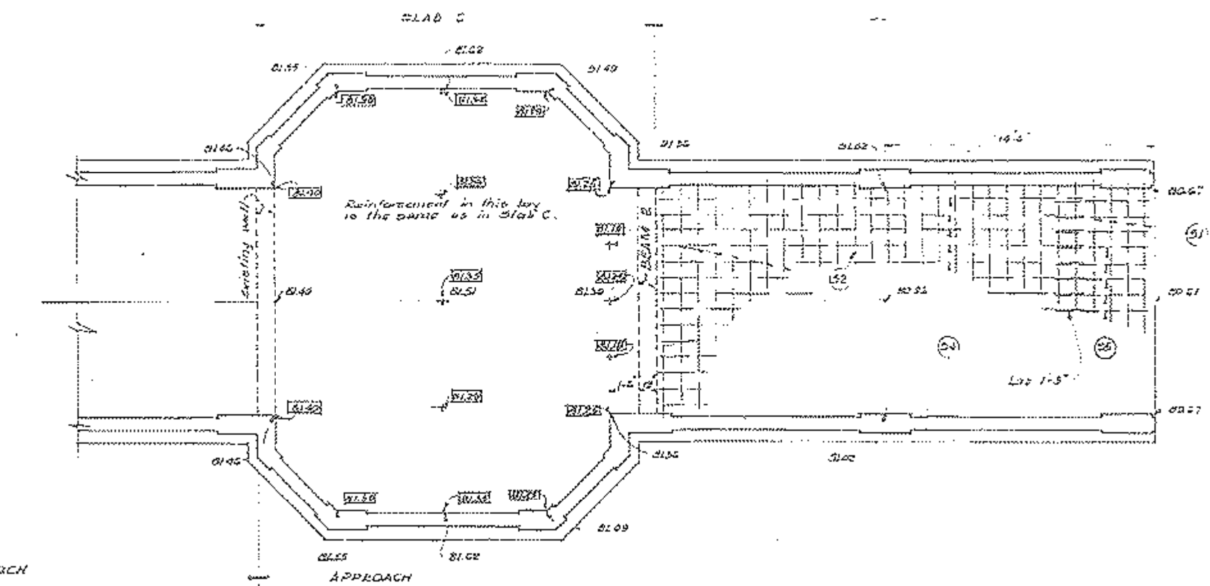
BUILDING NO: N/A

EXISTING PLANS - FOR REFERENCE ONLY (4 OF 6)

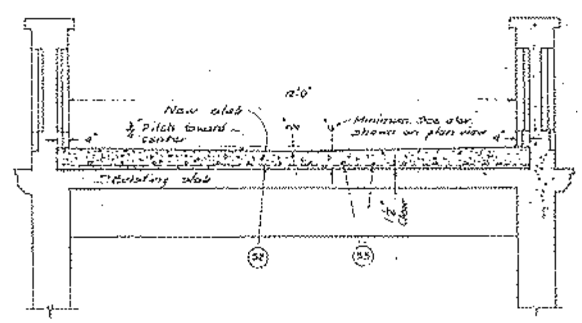
S-138



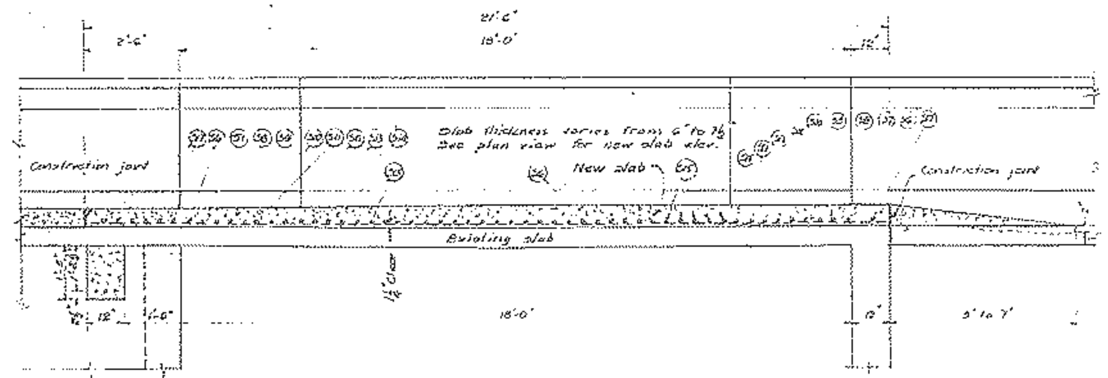
PLAN - NORTH ABUTMENT
Scale 1/4" = 1'-0"



PLAN - SOUTH ABUTMENT
Scale 1/4" = 1'-0"



SECTION A-A
Scale 1/2" = 1'-0"



SECTION B-B
Scale 1/2" = 1'-0"

TYPE A

REINFORCEMENT														FABRICATION INSTRUCTIONS			
Mark	No	Size	Length	Spacing	Location	Type	L	A	B	C	D	E	H	No.	Size	Stock length	Remarks. Rods made from stock ends
S1	11	5/8"φ	12'-9"	11"	Slab A and B East and West	Straight								5	5/8"φ	33'-0"	
S2	36	"	18'-9"	11"	Slab A and B East and West	Straight								18	5/8"φ	32'-0"	
S3	14	5/8"φ	15'-0"	10"	Slab A North and South	Straight								14	5/8"φ	25'-5"	14-22'-6" ends used for S4
S4	14	"	22'-6"	11"	Slab B North and South	Straight											14-22'-6" pieces from S3.
S5	14	"	5'-0"	11"	Slab C North and South	Straight								4	5/8"φ	21'-0"	
S6	6	5/8"φ	17'-1"	4½"	Slab B and C East and West	A	15-9	3"	7"	15-5"	7"	3"	3"				6 ends from S19 Hook 1 end each rod. 1 splice.
S7	4	"	18'-5"	4½"	"	A	17-2	3"	7"	16-10"	7"	3"	3"	4	5/8"φ	30'-0"	4 ends used for S8
S8	4	"	19'-5"	4½"	"	A	17-11	3"	7"	17-7"	7"	3"	3"				4 ends from S7, 1 splice. Hook 1 end each rod. 4 ends from S20, 1 splice. Hook 1 end each rod. 4 ends from S21, hook 1 end only. 4 ends from S7, 1 splice.
S9	4	"	20'-0"	4½"	"	A	18-6	3"	7"	18-6"	7"	3"	3"				
S10	4	"	20'-8"	4½"	"	A	19-4	3"	7"	19-0"	7"	3"	3"	4	5/8"φ	30'-0"	9-9'-4" ends for S11
S11	4	"	22'-0"	4½"	"	A	20-2	3"	7"	19-10"	7"	3"	3"				[illegible]
S12	4	"	22'-8"	4½"	"	A	20-6	3"	7"	20-6"	7"	3"	3"	4	5/8"φ	30'-0"	4-13'-1" ends from S23. 1 splice, Hook 1 end of each rod
S13	4	"	23'-0"	4½"	"	A	21-8	3"	7"	21-4"	7"	3"	3"	4	5/8"φ	30'-0"	
S14	4	"	23'-8"	4½"	"	A	22-1	3"	7"	21-7"	7"	3"	3"				6-10'-3" ends from S19. 2 splices. Hook 1 end of 6 rods
S15	20	"	25'-3"	4½"	"	A	22-5	3"	7"	21-11"	7"	3"	3"	20	5/8"φ	30'-0"	Return 17 to stockpile.
S16	40	"	25'-10"	4½"	"	A	22-7	3"	7"	22-3"	7"	3"	3"	40	5/8"φ	30'-0"	Return 1 end to stockpile.
S17	14	"	13'-5"	5"	"	A	12-5	3"	7"	12-1"	7"	3"	3"				[illegible]
S18	34	5/8"	21'-2"	8½"	Slab B and C North and South	Straight								34	5/8"φ	32'-0"	Return 34-10'-10" ends to stockpile.
S19	20	5/8"	19'-3"	4½"	"	A	15-5	3"	7"	18-11"	7"	3"	3"	20	5/8"φ	30'-0"	8-10'-3" ends to S6. 12 10'-3" end used for S14
S20	4	"	13'-0"	4½"	"	A	11-9	3"	7"	11-2"	7"	3"	3"	4	5/8"φ	30'-0"	4-11'-0" ends used for S8
S21	4	"	18'-6"	4½"	"	A	17-2	3"	7"	16-10"	7"	3"	3"	4	5/8"φ	30'-0"	4-11'-6" ends used for S9
S22	4	"	17'-9"	4½"	"	A	16-5	3"	7"	16-1"	7"	3"	3"	4	5/8"φ	30'-0"	4-12'-3" ends used for S12
S23	4	"	16'-11"	4½"	"	A	15-7	3"	7"	15-3"	7"	3"	3"	4	5/8"φ	30'-0"	4-13'-1" ends used for S13
S24	4	"	16'-1"	4½"	"	A	14-9	3"	7"	14-5"	7"	3"	3"				4-15'-8" ends from S26.
S25	4	"	15'-4"	4½"	"	A	14-0	3"	7"	13-8"	7"	3"	3"				[illegible]
S26	4	"	13'-4"	5"	"	A	12-0	3"	7"	11-8"	7"	3"	3"	4	5/8"φ	30'-0"	4-15'-8" ends used for S24. Cut excess length in distances A and E.
B1, B2	6	5/8"φ	15'-2"	3 per beam Beams 1 and 2		B	15-3	4"	11"	12-8	11"	4"	3"	6	5/8"φ	32'-0"	

Reinforcing steel weight 2,483.3 lbs

24X

Sept. 30, 1946

MILWAUKEE COUNTY REGIONAL PLANNING DEPARTMENT
LAKE PARK
CONCRETE ARCH FOOTBRIDGE
FLOOR SLAB RECONSTRUCTION - ABUTMENT VENTILATOR
Scale - As shown September 1946

LANDSCAPE DESIGN SECTION	ENGINEERING DESIGN SECTION
Landscape Architect	Principal Assistant Engineer
Survey ... Notes ... Plan ... Tracing ... Checked ...	Approved: Supervising Engineer & Planning Director ... Date ... Approved: Highway Commissioner & Planning Engineer ... Date ...

SHEET ... OF ... SHEETS FILE 13 Tracing 1

26-D-38

LAKE PARK ARCH BRIDGE REHABILITATION
LAKE PARK ON LAKE MICHIGAN
IN MILWAUKEE
LAKE PARK ARCH BRIDGE OVER RAVINE ROAD

Olson & Nesvold Engineers, P.S.C.
8000 West 78th Street, Suite 410
Edina, MN 55439-2547

MILWAUKEE COUNTY DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
CITY CAMPUS 2711 W. WELLS ST - 2ND FLOOR MILWAUKEE, WI 53208

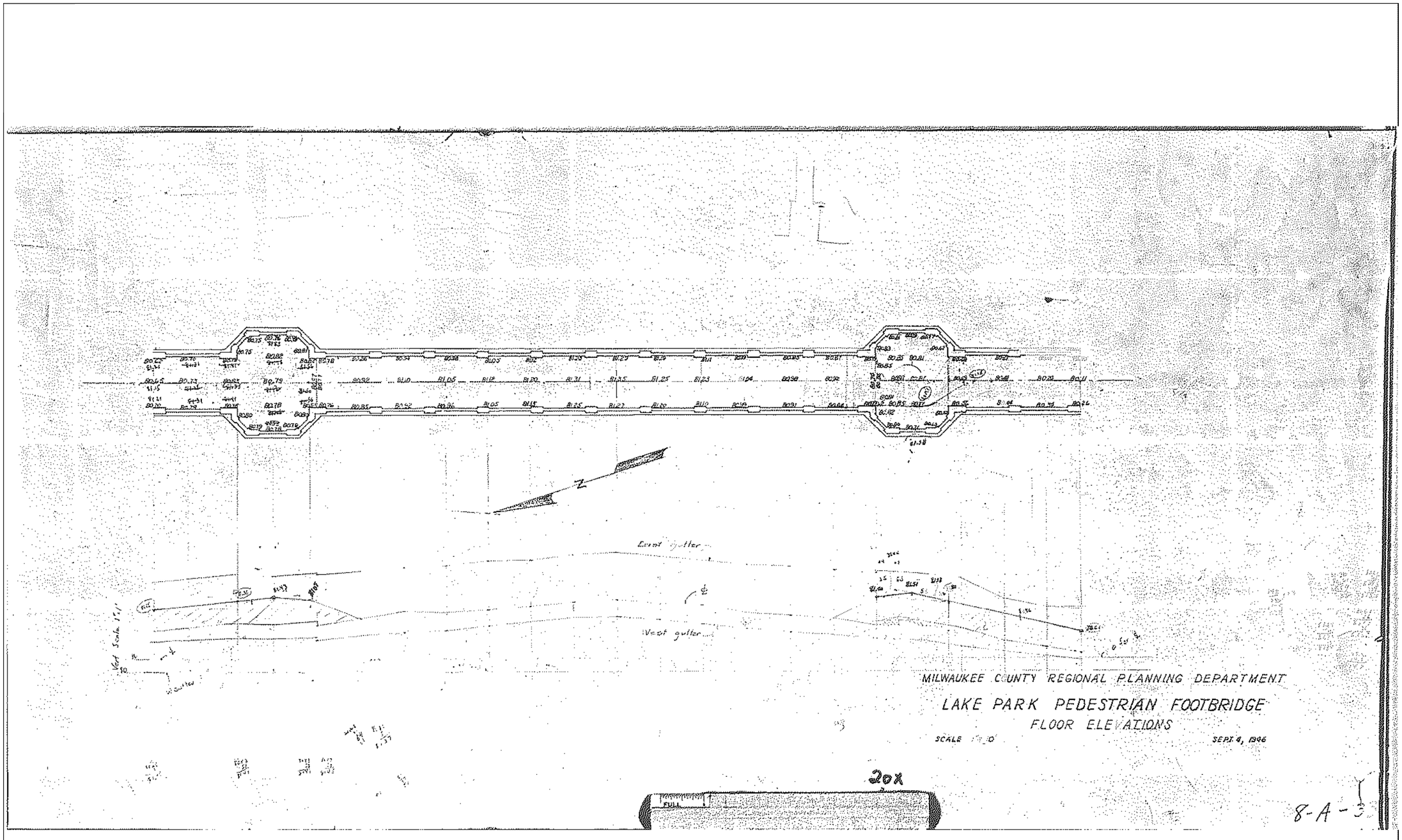
REVISIONS:

DATE: X/XX/2020
PROJECT: P484-15619
STATE ID 2967-01-03
SITE NO: 777
BUILDING NO: N/A

EXISTING PLANS - FOR REFERENCE ONLY (5 OF 6)

S-139

File path: \\oneserver\public\PROJECTS\1134-2 Milwaukee Lake Park\2 - Production\C - Work\CD\BR_P-40-576_EXS005.dgn



EXISTING PLANS - FOR REFERENCE ONLY (6 OF 6)

S-140

LAKE PARK ARCH BRIDGE REHABILITATION

LAKE PARK ON LAKE MICHIGAN
IN MILWAUKEE

LAKE PARK ARCH BRIDGE OVER RAVINE ROAD

Olson & Nesvold Engineers, P.S.C.
8000 West 78th Street, Suite 410
Edina, MN 55439-2547

MILWAUKEE COUNTY DEPARTMENT OF
TRANSPORTATION AND PUBLIC WORKS
CITY CAMPUS 2711 W. WELLS ST - 2ND FLOOR MILWAUKEE, WI 53208

REVISIONS:

DATE: X/XX/2020

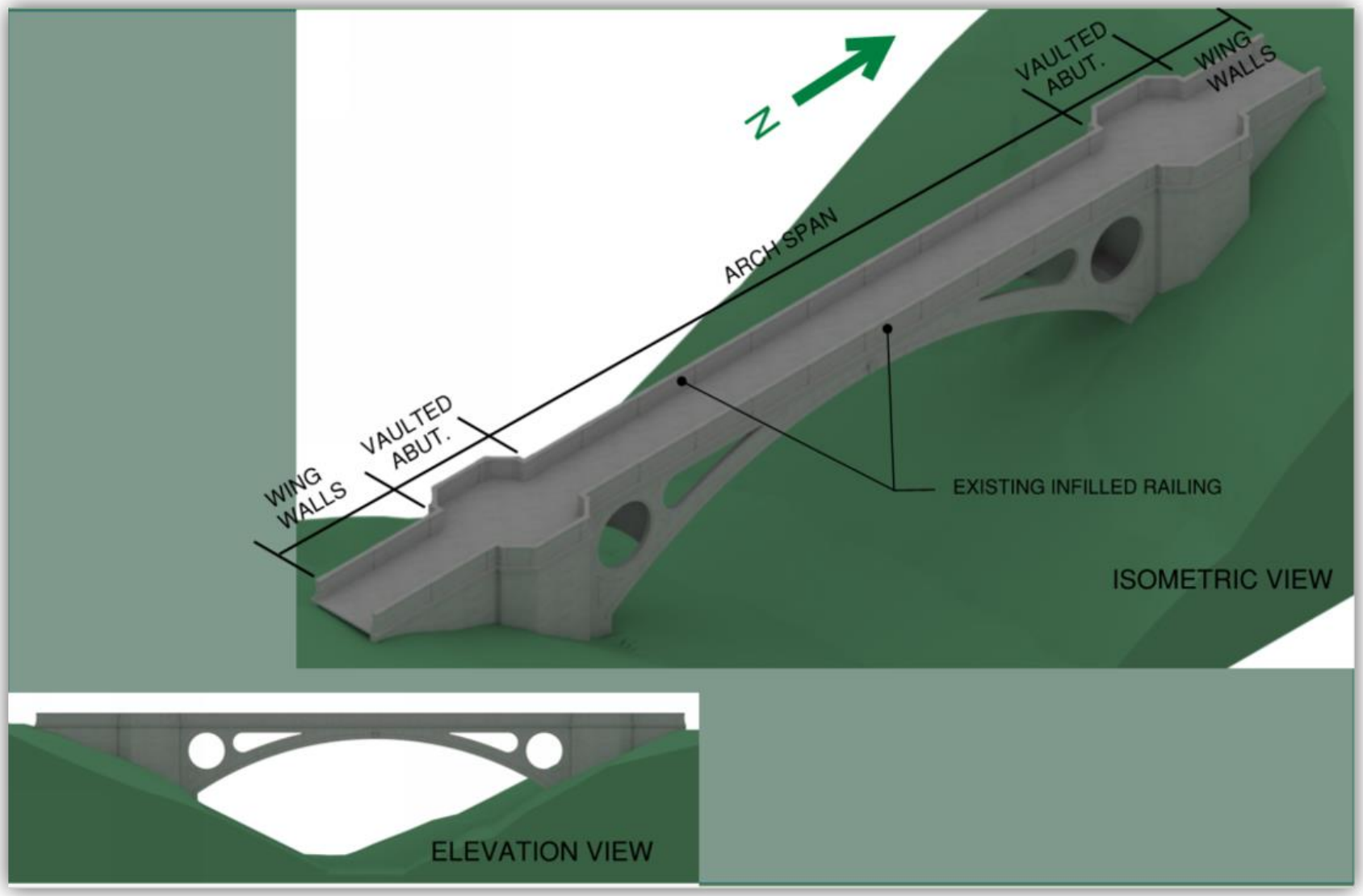
PROJECT: P484-15619
STATE ID 2967-01-03

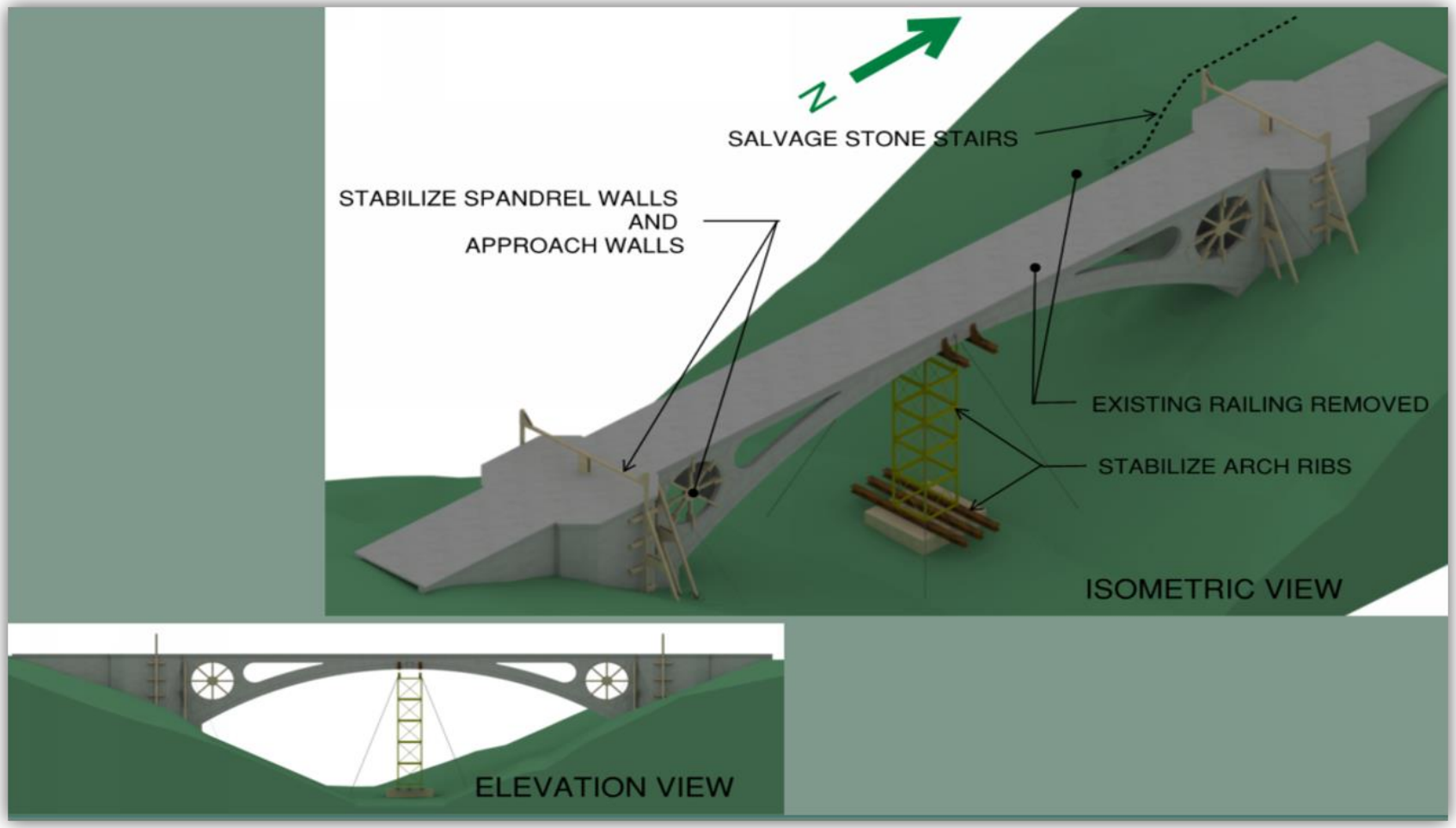
SITE NO: 777

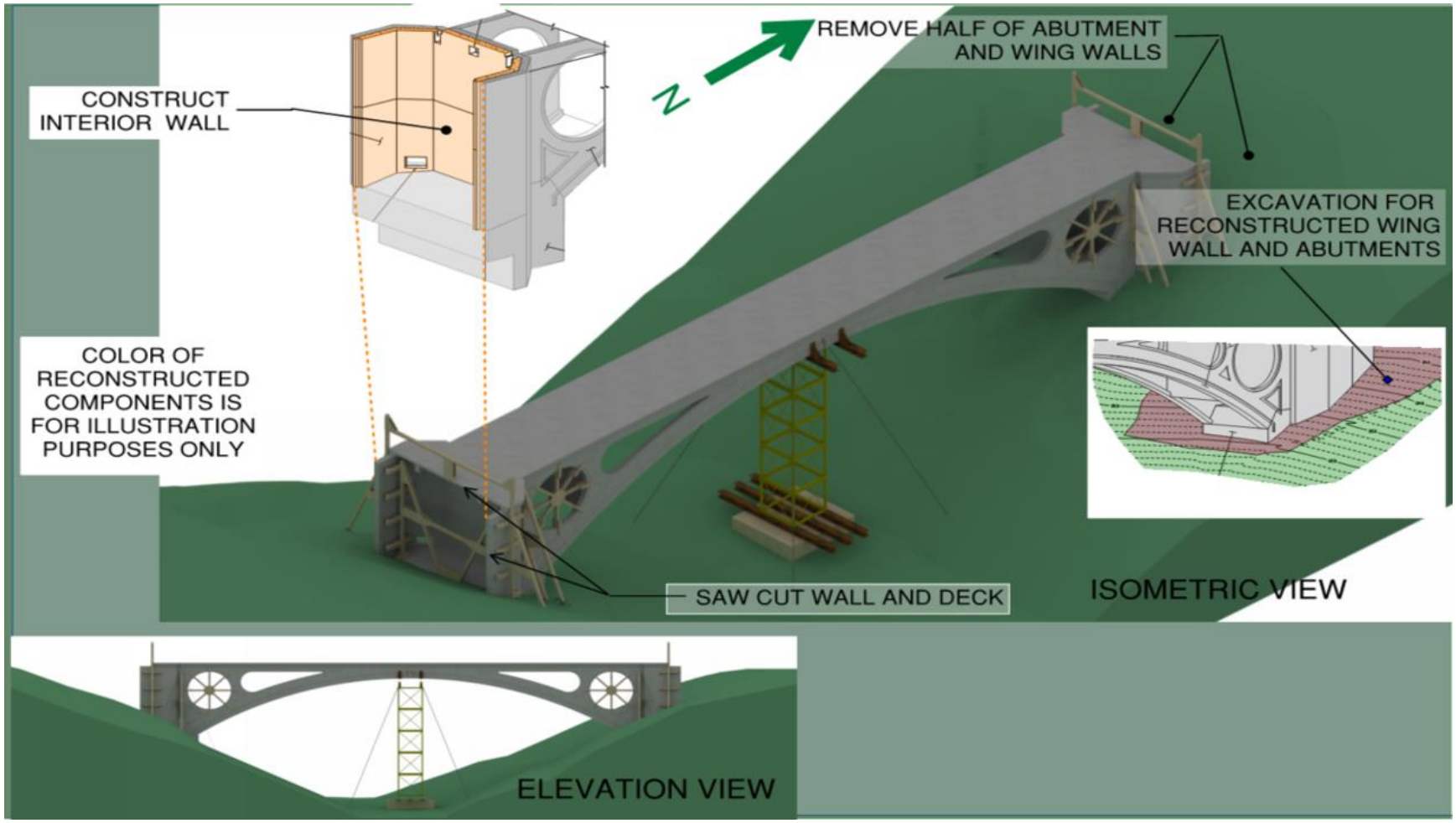
BUILDING NO: N/A

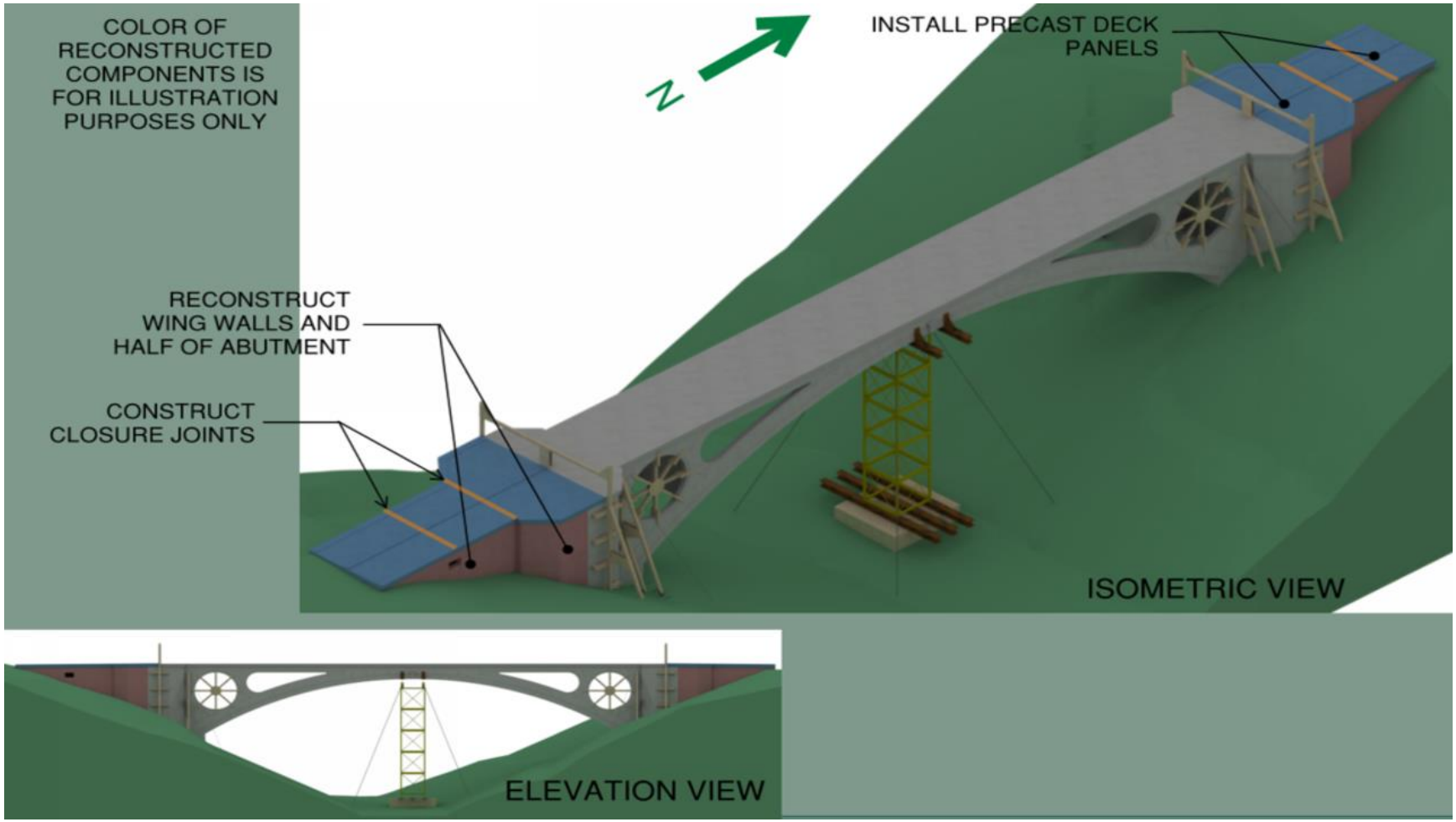
File path: \\oneserver\public\PROJECTS\1134-2 Milwaukee Lake Park\2 - Production\C - Work\CD\BR_P-40-576_EXS006.dgn

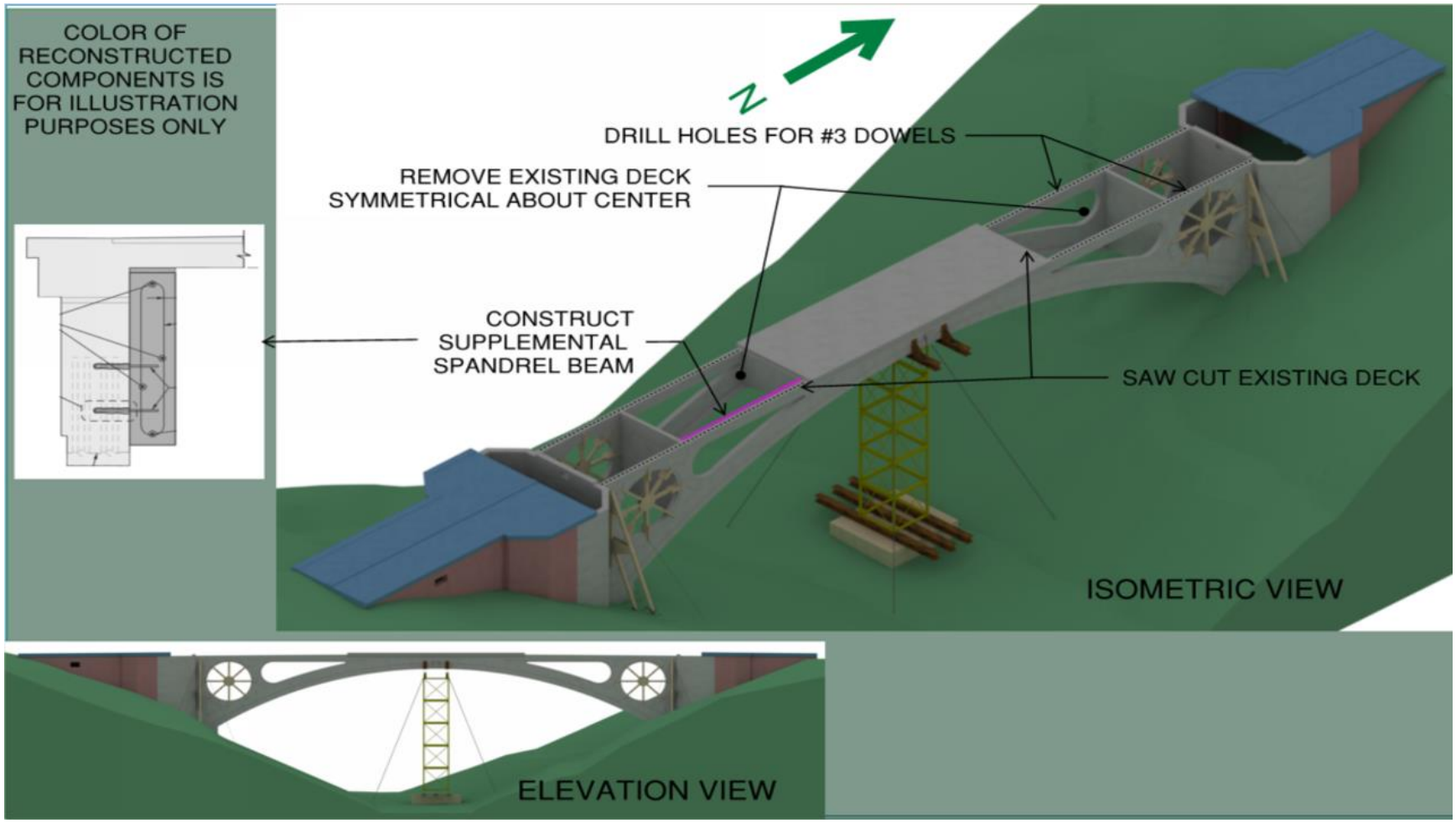
Rehabilitation Depictions

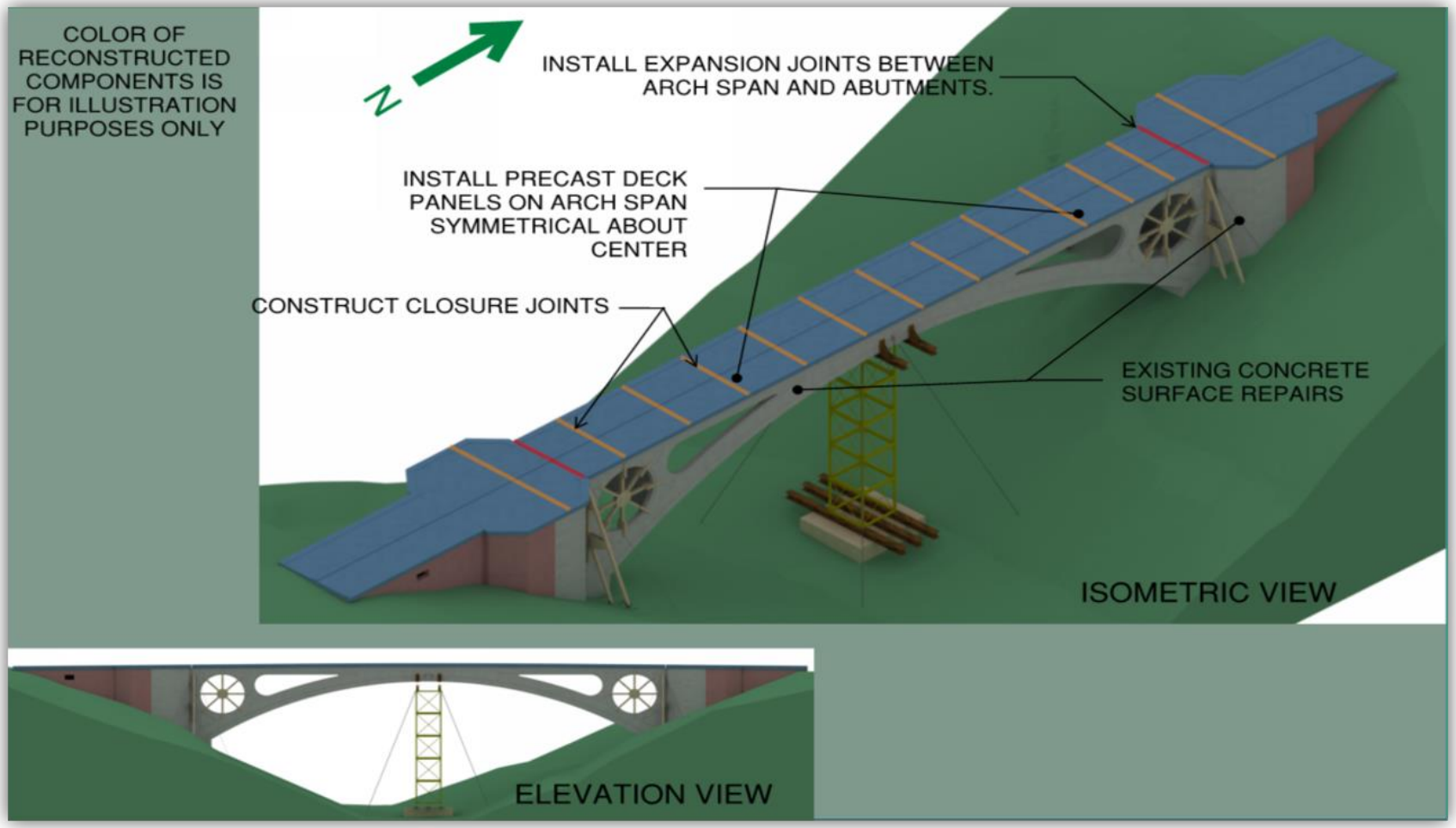

N
VAULTED ABUT.
WING WALLS
ARCH SPAN
VAULTED ABUT.
WING WALLS
EXISTING INFILLED RAILING
ISOMETRIC VIEW
ELEVATION VIEW

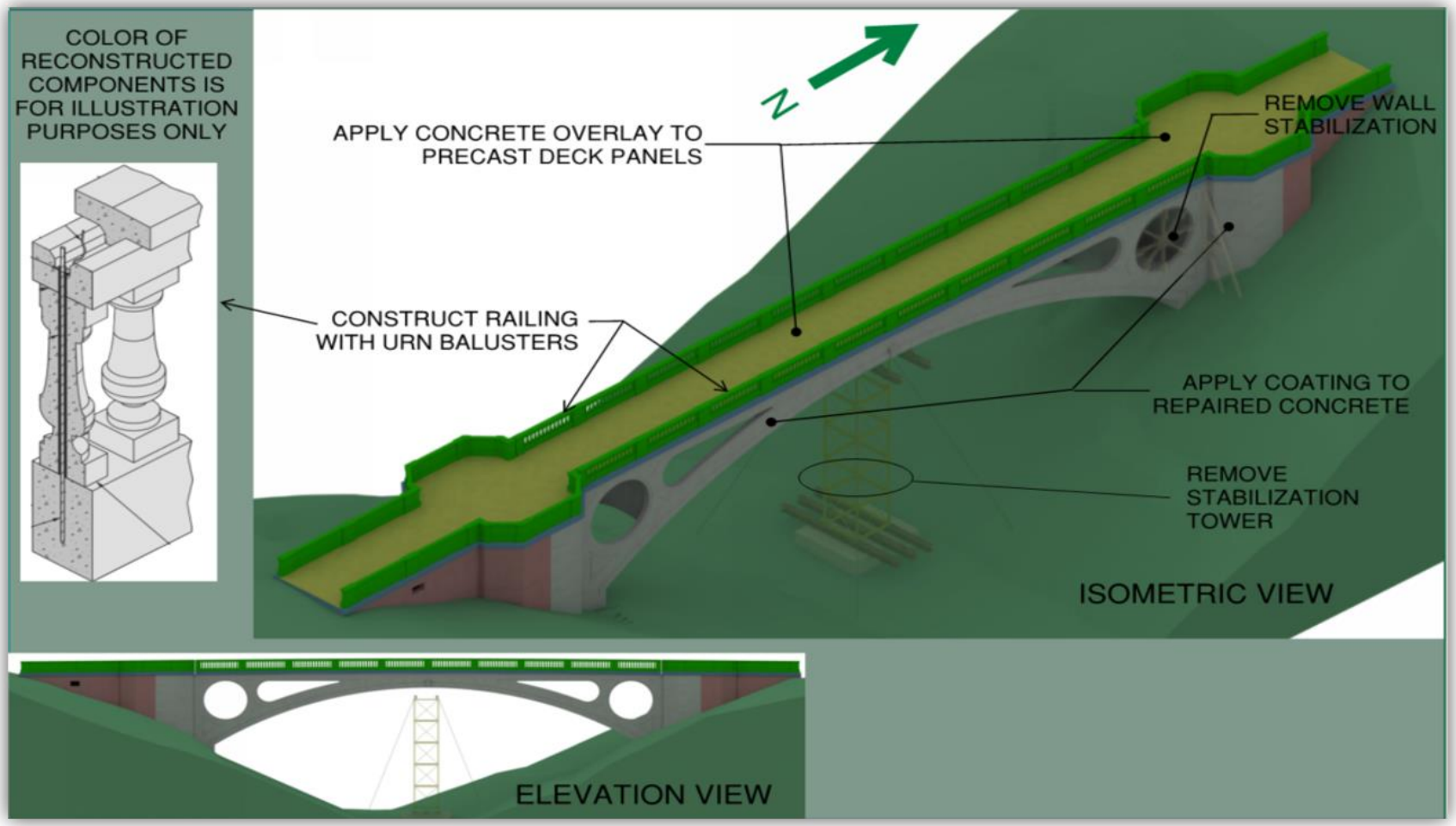

N
SALVAGE STONE STAIRS
STABILIZE SPANDREL WALLS
AND
APPROACH WALLS
EXISTING RAILING REMOVED
STABILIZE ARCH RIBS
ISOMETRIC VIEW
ELEVATION VIEW


CONSTRUCT INTERIOR WALL
N
REMOVE HALF OF ABUTMENT AND WING WALLS
EXCAVATION FOR RECONSTRUCTED WING WALL AND ABUTMENTS
COLOR OF RECONSTRUCTED COMPONENTS IS FOR ILLUSTRATION PURPOSES ONLY
SAW CUT WALL AND DECK
ISOMETRIC VIEW
ELEVATION VIEW


COLOR OF RECONSTRUCTED COMPONENTS IS FOR ILLUSTRATION PURPOSES ONLY
N
INSTALL PRECAST DECK PANELS
RECONSTRUCT WING WALLS AND HALF OF ABUTMENT
CONSTRUCT CLOSURE JOINTS
ISOMETRIC VIEW
ELEVATION VIEW


COLOR OF RECONSTRUCTED COMPONENTS IS FOR ILLUSTRATION PURPOSES ONLY
N
DRILL HOLES FOR #3 DOWELS
REMOVE EXISTING DECK SYMMETRICAL ABOUT CENTER
CONSTRUCT SUPPLEMENTAL SPANDREL BEAM
SAW CUT EXISTING DECK
ISOMETRIC VIEW
ELEVATION VIEW


COLOR OF RECONSTRUCTED COMPONENTS IS FOR ILLUSTRATION PURPOSES ONLY
N
INSTALL EXPANSION JOINTS BETWEEN ARCH SPAN AND ABUTMENTS.
INSTALL PRECAST DECK PANELS ON ARCH SPAN SYMMETRICAL ABOUT CENTER
CONSTRUCT CLOSURE JOINTS
EXISTING CONCRETE SURFACE REPAIRS
ISOMETRIC VIEW
ELEVATION VIEW


COLOR OF RECONSTRUCTED COMPONENTS IS FOR ILLUSTRATION PURPOSES ONLY
N
APPLY CONCRETE OVERLAY TO PRECAST DECK PANELS
REMOVE WALL STABILIZATION
CONSTRUCT RAILING WITH URN BALUSTERS
APPLY COATING TO REPAIRED CONCRETE
REMOVE STABILIZATION TOWER
ISOMETRIC VIEW
ELEVATION VIEW