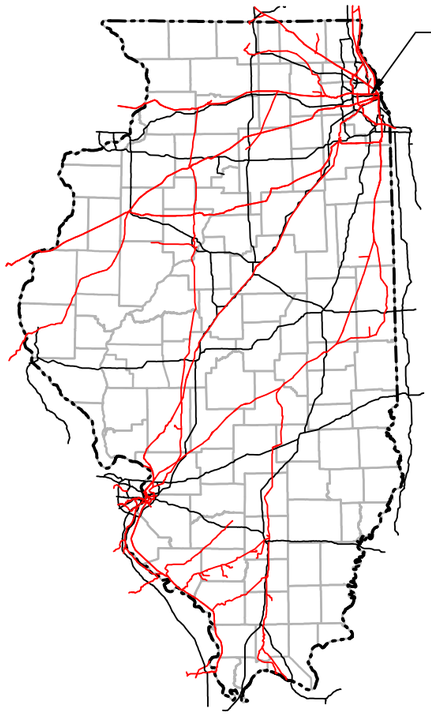
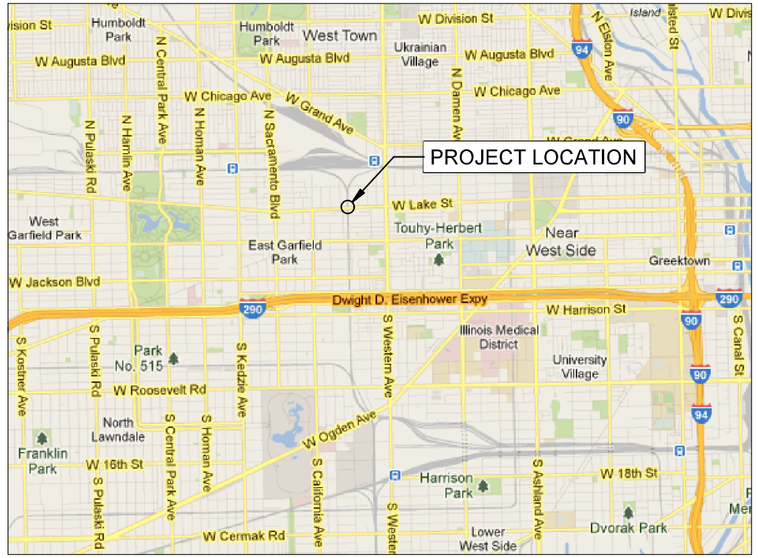
ENGINEERING
DESIGN & CONSTRUCTION





2556 WEST LAKE STREET
CHICAGO, IL

Project Location Map

benesch
engineers · scientists · planners
Alfred Benesch & Company
35 W. Wacker Drive, Suite 3300
Chicago, IL 60601
312-565-0450

BRIDGE 0.82 ROCKWELL SUBDIVISION
UNION PACIFIC RAILROAD
LAKE ST BRIDGE REPLACEMENT

FINAL PLANS

CREATE PROJECT#:
WA1–UP–XXB–003–B–FE

WORK ORDER: 31876
PROJECT NUMBER: N/A
BUDGET REFERENCE: N/A

LAST REVISED
May 28, 2021

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G-003	GENERAL NOTES & PROJECT CONTACTS
G-004	ABBREVIATIONS & LEGEND
G-005	CONTROL POINTS & ROADWAY GEOMETRY
R-001	ROADWAY EX. CONDITIONS & REMOVAL PLAN
R-002	ROADWAY RESTORATION PLAN
R-003	WATERMAIN RELOCATION PLAN
R-004	WATERMAIN DETAILS
R-005	WATERMAIN DETAILS
R-006	WATERMAIN DETAILS
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R-008	ROADWAY DETAILS
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R-018	IDOT HIGHWAY STANDARD
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UPRR 531100 Sht. T2	UPRR H-PILE FOUNDATION DETAILS
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ROADWAY RESTORATION	R-002, R-003
TRAFFIC CONTROL	R-008
LIGHTING	L-002
STRUCTURES	C4

TRAVIS KLUEGEL
062-059481
LICENSED PROFFESSIONAL ENGINEER OF ILLINOIS

EXPIRATION DATE: 11-30-2021
DATE: 05-28-2021
(CIVIL SHEETS)

GEOFFREY H. THIESSE
062-060445
LICENSED PROFESSIONAL ENGINEER OF ILLINOIS

EXPIRATION DATE: 11-30-2021
DATE: 05-28-2021
(ELECTRICAL SHEETS)

MATTHEW F. BECKER
081-007755
LICENSED STRUCTURAL ENGINEER OF ILLINOIS

EXPIRATION DATE: 11-30-2022
DATE: 05-28-2021
(STRUCTURAL SHEETS)

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ISSUED FOR CONSTRUCTION

REVISION	BY	DATE	DESCRIPTION

benesch
Alfred Benesch & Company
35 W. Wacker Drive Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 210070.11

UNION PACIFIC

DRAWN BY: KP	WORK ORDER: 31876
CHECKED BY: TK	PID:
DATE: 05/28/21	BUDGET REF:
SCALE: N.T.S.	SHEET NUMBER: G-002

UNION PACIFIC RAILROAD — Director Structures Design

LOCATION & DESCRIPTION:
MP 0.82 ROCKWELL SUBDIVISION
LAKE STREET BRIDGE REPLACEMENT

SHEET TITLE:
PROJECT INDEX & REVISION SHEET

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5/25/2021

GENERAL NOTES

1. UPRR forces will perform all track work, with the exception of removal of existing tracks. UPRR will cut the existing rails and the contractor shall remove and dispose of all track material with the bridge removal work. The Contractor will be responsible for constructing proposed track bed up to the top of the sub-ballast layer. UPRR will furnish & install all ballast, ties, rail, and other track materials.
2. Existing and new track within the project limits will be surfaced and lined by UPRR forces once all other work is complete.
3. Contractors shall notify Service Alert, (800) 642-2444, UPRR Fiber Optics Hotline (800) 336-9193, and the Chicago Utility Alert Network (312) 744-7000 48 hours prior to any excavation. The USA Authorization Numbers shall be kept at the job site.
4. No work whatsoever shall be commenced without first notifying the UPRR Engineer.
5. The Contractor shall comply with all Federal, State, County, and City Laws and Ordinances and Regulations of the Department of Industrial Relations, OSHA, NPDES and Industrial Accident Commission related to the safety and character of the work, equipment and labor personnel.
6. Contractor shall be responsible for coordinating with all Utility agencies.
7. Contractor shall protect in place (by any means necessary) all existing utilities to remain unless otherwise specified herein, contractor shall be responsible for the complete repair at his expense, for any damage to existing utilities, structures, or other site features, as a result of his work.
8. Prior to placing curbs, pavements, base, subbase, track, etc., all underground utilities shall be installed, backfill completed, and the Engineer notified by each of the utility companies having facilities within the work area, that the utility installation has satisfactorily passed acceptance tests.
9. All existing underground utilities within the UPRR ROW, that are not to be re-used shall be abandoned in place. All existing pipelines to be abandoned in place shall be cement slurry filled and capped at least 3'-0" below top of proposed subgrade.
10. Contractor shall verify locations and elevations of existing utilities whether known or unknown prior to beginning construction.
11. Any underground structures such as cesspools, cisterns, mining shafts, tunnels, septic tanks, wells, and pipelines not located prior to construction shall be brought to the attention of the engineer for determiniation of appropriate action such as removal or treatment in a manner judged suitable to the engineer.
12. Contractor shall coordinate location of all proposed utilities with UPRR to assure accuracy of utility connections and compliance with local codes.
13. Any existing conditions found to be a variance with these drawings must be immediately reported to the Engineer.
14. Contractor shall maintain and clean to the satisfaction of the Engineer, all access and service roads used during construction.
15. Contractor shall perform all construction in such a manner as to protect adjacent existing buildings, and other site elements which are to remain in service.
16. Contractor shall provide As-built Drawings for all improvements.
17. No field changes will be permitted without direct written authorization from the UPRR Engineer or his representative.
18. Contractor shall coordinate work which affects adjacent property owners. Any questions or agreements between adjacent property owners and contractor shall be made in writing. A copy of such agreement shall be provided to the UPRR Engineer or his representative.
19. The contractor is responsible for preparing a Stormwater Pollution Prevention Plan (SWPPP) to comply with State regulations.
20. Right-of-way lines shown on the plans were taken from existing UPRR right-of-way map and are approximate.
21. Match lines for sheets are based on the existing Main Line stationing unless otherwise specified.
22. Track laying, ballasting, and installation of road crossing panels will be done by UPRR unless otherwise stated.
23. The contractor is responsible for the removal of all pavement markings that will be in conflict with the proposed work.
24. Contractor shall comply with all IDOT specifications for construction of public improvements requirements.
25. Contractor shall maintain at least one access to all affected business. If necessary, multiphase construction shall be utilized.
26. All work must be coordinated with the UPRR to minimize track outage time and disruption of train service. The contractor shall submit for approval his proposed sequence of operations prior to the start of construction.
27. Removal of existing viaduct lighting equipment will be performed by the City of Chicago, Department of Streets and Sanitation, Bureau of Electric. The contractor must schedule and coordinate this work with the city. All expenses or charges by the city related to this work will be incidental to this contract.
28. The contractor shall take special care to avoid damage to the existing utilities under the public streets from excessive surface loads during construction activities. Video inspection of the existing sewer shall be performed before and after construction in accordance with the requirements of the City of Chicago Department of Water Management. Any damage to the existing utilities caused by work under this contract must be repaired or replaced at the contractor's expense.
29. All frames and lids removed from abandoned sewers and appurtenances must be returned to the Chicago Department of Water Management, Sewer Section.
30. In case of damage to the City of Chicago sewers, private and public drains,sewer structures and/or bench monuments, the contractor shall immediately contact the Department of Water Management at (312) 747-7892 or (312) 747-7893.
31. Stockpiling of removed materials and/or construction debris on the job site will not be permitted and shall be removed from the job site each and every day and disposed of in accordance with article 202.03 of the Standard Specifications. Failure to comply with this requirement shall be considered a traffic control deficiency and will be subject to charges in accordance with the item Traffic Control Complete.
32. The contractor must notify the Department of Streets and Sanitation at 312-746-4524 72 hours prior to the need for towing/relocation of vehicles. The City of Chicago will be responsible for removing parked vehicles located in the scheduled work area. Signs preventing parking will be posted by the commissioner or his staff 72 hours before the work is scheduled. Prior to posting signs the commissioner shall notify the Alderman's office of the resurfacing schedule. The police are to be present to issue tickets and supervise towing prior to the relocation of vehicles.
33. In the event that the work to be performed on a street segment where parking has been prohibited will be postponed for 5 working days or more, the contractor must notify the commissioner to remove the "No Parking" signs and advise the commissioner when the work will resume for the commissioner or his staff to re-post the "No Parking" signs 48 hours prior to resumption of work.
34. The contractor will not be allowed to set up a yard or field office on city or state property without written permission from IDOT or the City of Chicago.
35. The contractor is to restore all unpaved areas damaged during construction operations to their original condition at no additional cost to the city or railroad.
36. The contractor shall provide access to abutting property at all times during the construction of this project, except for periods of short duration.
37. Dimensions: it shall be the contractor's responsibility to verify all dimensions and conditions existing in the field prior to ordering materials and beginning of construction.
38. Station and offsets given for proposed catch basins are to the center of the lid. Adjust the base as necessary to connect to existing sewer.
39. The Contractor is responsible for obtaining all permits (including payment of permit fees), bonds and insurance for permits required by the City of Chicago for construction of the project. This includes permits issued by the Department of Transportation, Department of Water Management, and others.
40. The Contractor is responsible to coordinate work for the project. CDOT will complete water main replacement, lighting removal and some roadway work before Contractor begins. CDOT will also complete work after Contractor work is completed. Any new CDOT roadway work shall be protected by Contractor, Any damage of this new CDOT work must be repaired at the expense of the Contractor.
41. Due to the proximity of the work to the CTA in this location, prior to construction, the Contractor must coordinate the schedule of work with the CTA.
42. The Contractor shall install posted clearance sign for proposed bridge. Contractor shall coordinate with the City of Chicago regarding the clearance to be posted, sign type and sign location. The furnishing and installation of vertical clearance signs is considered incidental to the project work.

PROJECT CONTACTS

CONTACT	PHONE NUMBER	UPRR
Curt Nystron	(515) 298-1131	Construction Field Manager
Adam Studts	(402) 544-3541	Structures Design Sr. Manager
Paul Pino	(402) 544-3582	Information Technology - Fiber
Stan Dulinski	(402) 544-0353	Real Estate - Utilities

PHONE NUMBER	GENERAL
(800) 336-9193	CALL UPRR BEFORE YOU DIG
(888) 258-0808	CALL BEFORE YOU DIG (NATIONAL DIRECTORY)
(888) 877-7267	UPRR Response Management Communications Center (RMCC)

DESIGN CRITERIA

1. UPRR Standard Plans and Specifications
2. Illinois Department of Transportation (IDOT) Standard Specifications for Road and Bridge Construction
3. Chicago Department of Transportation (CDOT) Regulations for Openings, Construction and Repair in the Public Way

SURVEY NOTES

1. Railroad stationing for project profiles and alignments is based on stations established for chord definition spiraled curves at the centerline of the existing UPRR Main Line unless otherwise noted.
2. The contractor is responsible for the preservation of all survey control monuments. In the event monuments are damaged or destroyed by the contractor, the Engineer will replace the monument solely at the contractor's expense.

TRAFFIC NOTES

1. All barricades, warning signs, lights, devices, etc. for the guidance of vehicle traffic and pedestrians must conform to the Manual on Uniform Traffic Control Devices (MUTCD), current edition, IDOT and CDOT standards.
2. The contractor will ensure that all barricades, signs, lights, and other devices installed by him are operational every day, including Sundays and holidays. The contractor shall make twice daily inspections of barricades, signs, lights and other devices installed by him to ensure proper placement and functioning of warning devices. In the event of severe weather conditions, the contractor must furnish any additional personnel required to properly maintain all traffic control devices. The contractor shall provide a manned 24-hour / 7 day a week contact number to respond to requestrequests and emergencies related to the placement and maintenance of the traffic control devices throughout the project duration.
3. The contractor is responsible for the prompt replacement and/or repair of all traffic control devices and appurtenances damaged or disturbed due to construction.

BENCHMARKS

City of Chicago Benchmark: BM #276
6.4 feet north of south line of W Congress Parkway and 47.1 feet east of east line of S Washtenaw Avenue. Elev. = 14.66 (CCD)

	DATUM
HORIZONTAL	Illinois East State Plane (1201) North American Datum of 1983 (NAD83)
VERTICAL	Chicago City Datum (CCD)

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REVISION	BY	DATE	DESCRIPTION

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Alfred Benesch & Company
35 W. Wacker Drive Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 210070.11

DRAWN BY: KP	WORK ORDER: 31876
CHECKED BY: TK	PID:
DATE: 05/28/21	BUDGET REF:
SCALE: N.T.S.	SHEET NUMBER: G-003

UNION PACIFIC RAILROAD — Director Structures Design

LOCATION & DESCRIPTION:
MP 0.82 ROCKWELL SUBDIVISION
LAKE STREET BRIDGE REPLACEMENT

SHEET TITLE:
GENERAL NOTES & PROJECT CONTACTS

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5/25/2021

ABBREVIATIONS

MISCELLANEOUS

Ac.	Acres
Ave.	Avenue
Blvd.	Boulevard
Bldg.	Building
BNSF	BNSF Railway
C.Y.	Cubic Yards
Conc.	Concrete
Const.	Construct
°	Degree (s)
Dia.	Diameter
Dr.	Drive
Dwg.	Drawing
E	East
Elev.	Elevation
Exist.	Existing
'	Foot, Feet or Minute (s)
F.S.	Finished Surface
Horiz.	Horizontal
"	Inch, Inches or Second (s)
Inst.	Install
Inv.	Invert
Lt.	Left
L	Length
L.F.	Lineal Feet
Max.	Maximum
Min.	Minimum
N	North
NTS	Not to Scale
No.	Number
OH	Overhead
OHP	Overhead Power Line
PGL	Profile Grade Line
Prop.	Proposed
RR	Railroad
Rwy	Railway
R/W	Right of Way
Rt.	Right
S	South
S.F.	Square Feet
Sta.	Station
Std.	Standard
St.	Street
TT	Timetable
Twp.	Township
Typ.	Typical
UG	Underground
UPRR	Union Pacific Railroad
V	Velocity
Wt.	Weight
W	West
X-ing	Crossing

SIGNAL

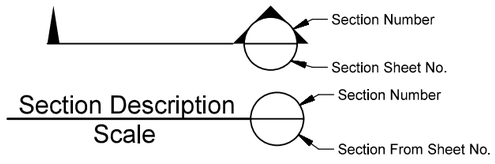
ABS	Automatic Block Signal
ATC	Automatic Train Control
CTC	Centralized Traffic Control
DED	Dragging Equipment Detector
DTC	Direct Traffic Control
ELTO	Electric Lock Turnout
HBD	Hot Box Detector
HTTO	Hand Throw Turnout
HWD	High Wide Dectector
POTO	Power Operated Turnout
TWC	Track Warrant Control
WILD	Wheel Impact Load Dectector

STRUCTURES

Bldg.	Building
Br.	Bridge
CB	Catch Basin
CPT	Concrete Pile Trestle - Ballast Deck
CIP	Cast Iron Pipe
CMP	Corrugated Metal Pipe
CMPA	Corrugated Metal Pipe Arch
CSP	Corrugated Steel Pipe
Culv.	Culvert
DI	Drop Inlet
DPGBD	Deck Plate Girder - Ballast Deck
DPGOD	Deck Plate Girder - Open Deck
EBW	East Backwall
F.L.	Flowline
F.F.	Finished Floor
GIP	Galvanized Iron Pipe
Hdwl	Headwall
NBW	North Backwall
PSCT	Prestressed Concrete Trestle
RCA	Reinforced Concrete Arch
RCB	Reinforced Concrete Box
RCP	Reinforced Concrete Pipe
SBW	South Backwall
SSP	Smooth Steel Pipe
SPTBD	Steel Pile Trestle - Ballast Deck
SPTOD	Steel Pile Trestle - Open Deck
SPP	Structural Plate Pipe
TPGBD	Through Plate Girder - Ballast Deck
TPGOD	Through Plate Girder - Open Deck
TPTBD	Timber Pile Trestle - Ballast Deck
TPTOD	Timber Pile Trestle - Open Deck
TTBD	Through Truss - Ballast Deck
TTOD	Through Truss - Open Deck
TWB	Treated Wood Box
VCP	Vitrified Clay Pipe
Viad.	Viaduct
WBW	West Backwall
WIP	Wrought Iron Pipe

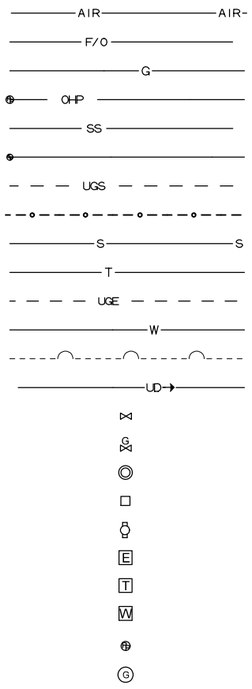
TRACK

ATR	Above Top of Rail
Align.	Alignment
BBR	Below Base of Rail
Cntrs.	Centers
CWR	Continuous Welded Rail
DSPD	Double Switch Point Derail
EOT	End of Track
HH	Head Hardened
Jtd.	Jointed Rail
LH	Left Hand
ML	Main Line
MM	Mile Marker
MP	Mile Post
NSC	Not Sufficient Clearance
OTM	Other Track Material
PCC	Point of Compound Curve
PC	Point of Curve
PCS	Point of Curve to Spiral
POC	Point on Curve
PF	1/2" Point of Frog
PI	Point of Intersection
PITO	Point of Intersection of Turnout
PS	Point of Spiral
PSC	Point of Spiral to Curve
POS	Point on Spiral
PT	Point of Tangent
POT	Point on Tangent
Pt. Sw.	Point of Switch
PVC	Point of Vertical Curve
PVI	Point of Vertical Intersection
PVT	Point of Vertical Tangent
RH	Right Hand
SH	Second Hand
SSPD	Single Switch Point Derail
TC	Track Centers
T.F.	Track Feet
Trk.	Track
UXO	Universal Cross-Over
X-Over	Cross-Over

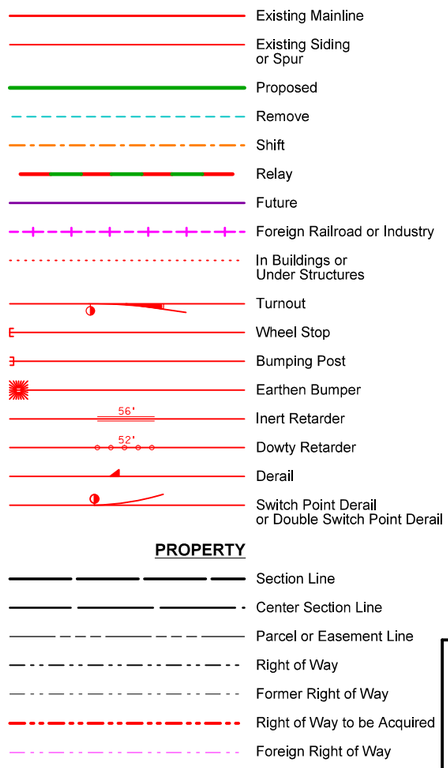


SYMBOLS

UTILITIES

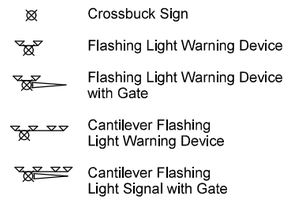


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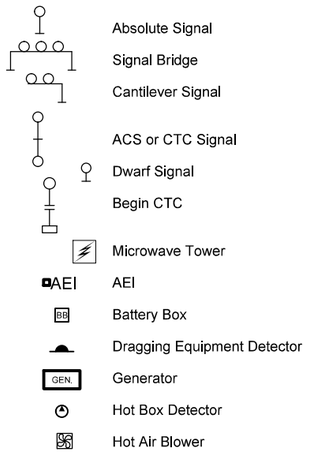


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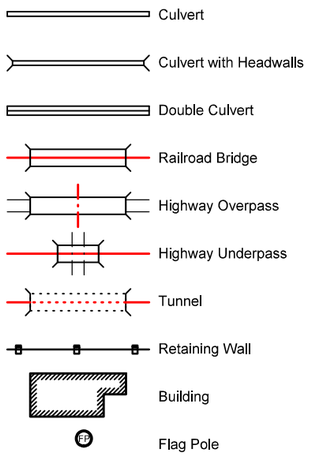
ROAD CROSSING WARNING DEVICES



SIGNAL



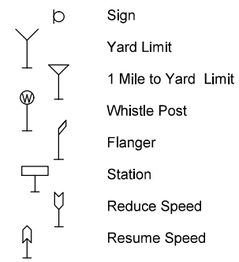
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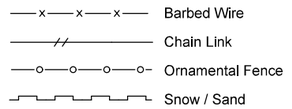
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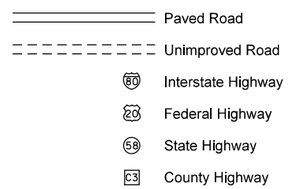
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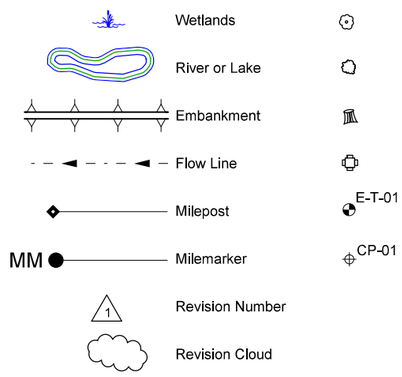
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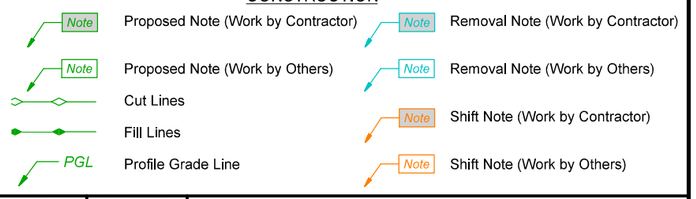
ROADS



OTHER



CONSTRUCTION



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35 W. Wacker Drive Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 210070.11

UNION PACIFIC

DRAWN BY: KP	WORK ORDER: 31876	UNION PACIFIC RAILROAD	Director Structures Design
CHECKED BY: TK	PID:	LOCATION & DESCRIPTION: MP 0.82 ROCKWELL SUBDIVISION LAKE STREET BRIDGE REPLACEMENT	
DATE: 05/28/21	BUDGET REF:		
SCALE: N.T.S.	SHEET NUMBER G-004	SHEET TITLE: ABBREVIATIONS & LEGEND	

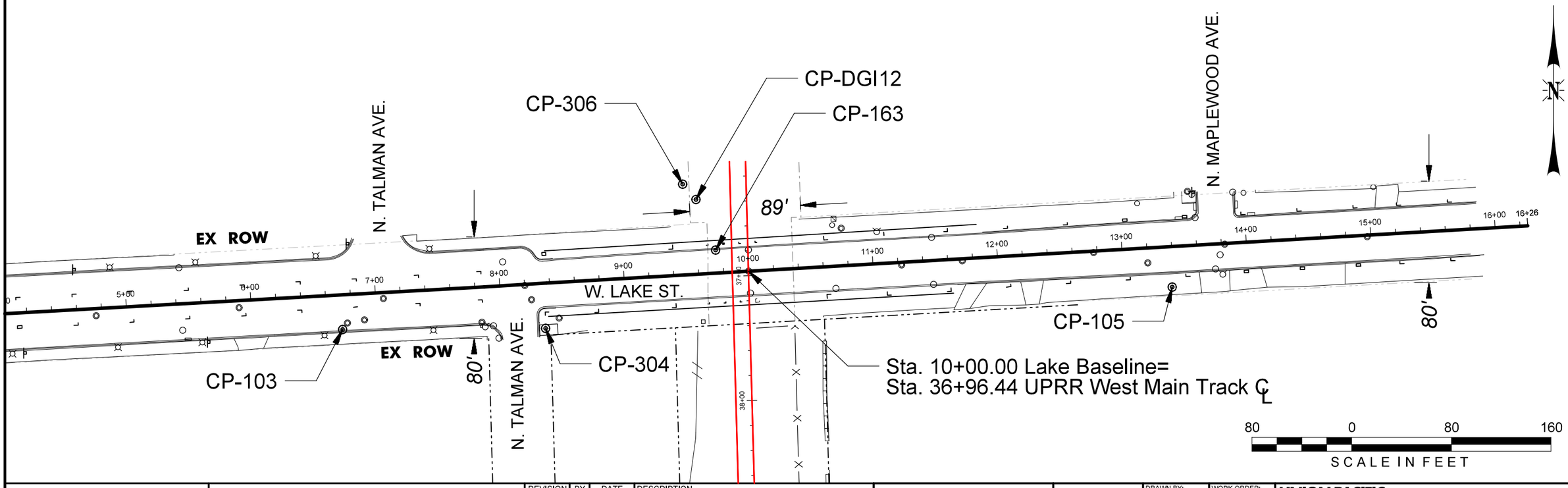
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5/25/2021

Control Points

Control Point No.	Northing	Easting	Elevation	Description
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105	1901116.48	1159340.36	18.17	103-X
163	1901146.17	1158974.03	29.30	103
304	1901083.37	1158837.65	18.11	103
306	1901198.98	1158947.58	34.26	103
DGI12	1901186.70	1158958.28	27.78	103

EXISTING LAKE BASELINE

STATION	Northing	Easting
4+00	1901095.07	1158401.39
16+00	1901164.06	1159599.40



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Chicago, Illinois 60601
312-565-0450 Job No. 210070.11

DRAWN BY: KP	WORK ORDER: 31876	UNION PACIFIC RAILROAD	Director Structures Design
CHECKED BY: TK	PID:	LOCATION & DESCRIPTION: MP 0.82 ROCKWELL SUBDIVISION LAKE STREET BRIDGE REPLACEMENT	
DATE: 05/28/21	BUDGET REF:		
SCALE: 1"=80'	SHEET NUMBER G-005	SHEET TITLE: CONTROL POINTS & ROADWAY GEOMETRY	

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Default
5/25/2021

DESCRIPTION	UNIT	QUANTITY
PAVEMENT REMOVAL	SQ YD	52
HOT-MIX ASPHALT SURFACE REMOVAL, 2"	SQ YD	443
SIDEWALK REMOVAL	SQ FT	4282
SAWCUT AND SEAL NEW JOINTS	FOOT	244
HANDRAIL REMOVAL	FOOT	673
CONCRETE RETAINING WALL REMOVAL	FOOT	235

UPRR MAIN TRACK NO. 2

UPRR MAIN TRACK NO. 1

Sidewalk Removal and Replacement Sta. 9+40 to Sta. 10+43. See Restoration Plan For Details

Retaining Wall & Gutter Removal As Needed Sta. 9+40 to Sta. 10+58. See Restoration Plan For Details

Handrail Removal Sta. 8+38 to Sta. 11+84 See Restoration Plan For Details

Pavement Milling Sta. 9+40 to Sta. 10+58

Ex. ROW

UGE

F/A

8+00

9+00

10+00

11+00

12+00

13+00

City Electric

24" Sewer

W. LAKE ST.

AT&T 18 MTD

AT&T 4" B PLAS

8" WATER

12" WATER

Lake St. Baseline

Ex. ROW

UG

W

G

S

OHP

18.5 '

2 '

37.8 '

38.8 '

19 '

14.6 '

96.0 '

8.5 '

N. TALMAN AVE.

Abandon Existing 12" Watermain

Handrail Removal Sta. 8+38 to Sta. 11+64 See Restoration Plan For Details

2' Full Depth Pavement Removal Sta. 9+40 to Sta. 10+58. See Restoration Plan For Details

Retaining Wall & Gutter Removal As Needed Sta. 9+40 to Sta. 10+58. See Restoration Plan For Details

Sidewalk Removal and Replacement Sta. 9+40 to Sta. 10+58. See Restoration Plan For Details

LEGEND

- Pavement Removal
- Pavement Milling
- Sidewalk Removal
- Handrail Removal

40 0 40 80

SCALE IN FEET

NOTES:

1. *Limits of removal should be aligned with existing sidewalk joints.*
2. *The limit of all sidewalk removals shall be sealed per section 442 of the Standard Specifications*

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CHECKED BY: TK	PID:	LOCATION & DESCRIPTION: MP 0.82 ROCKWELL SUBDIVISION LAKE STREET BRIDGE REPLACEMENT	
DATE: 05/28/21	BUDGET REF:		
SCALE: 1"=40'	SHEET NUMBER R-001	SHEET TITLE: ROADWAY EX. CONDITIONS & REMOVAL PLAN	

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Default
5/25/2021

LINE ITEM	DESCRIPTION	UNIT	QUANTITY
31101400	SUBBASE GRANULAR MATERIAL, TYPE B 6"	SQ YD	78
35300200	PORTLAND CEMENT CONCRETE BASE COURSE 7"	SQ YD	52
40603080	HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N50	TON	6.6
40604060	HOT-MIX ASPHALT SURFACE COURSE, IL-9.5, MIX "D", N50	TON	5.1
40604062	HOT-MIX ASPHALT SURFACE COURSE, IL-9.5, MIX "D", N70	TON	43.4
40800025	BITUMINOUS MATERIALS (PRIME COAT)	POUND	1191
42400200	PORTLAND CEMENT CONCRETE SIDEWALK 5 INCH	SQ FT	4282
50901760	PIPE HANDRAIL	FOOT	675
52200900	CONCRETE STRUCTURES (RETAINING WALL)	CU YD	27

UPRR MAIN TRACK NO. 2

UPRR MAIN TRACK NO. 1

N. TALMAN AVE.

W. LAKE ST.

EX. ROW

Lake St. Baseline

PCC Sidewalk, 5"
Sta. 9+40 to Sta. 10+43

Retaining Wall & Gutter
Replace As Needed If Damaged
Sta. 9+40 to Sta. 10+58

Proposed Handrail
Sta. 8+38 to Sta. 11+84

For Trench Drain Details
See R-009 and R-010

For Pr. Lighting
See Sheet L-002

PCC Sidewalk, 5"
Cross Slope Not to Exceed
1.5% for 6' From Wall ADA
Standards (TYP.)
Sta. 9+40 to Sta. 10+58

Retaining Wall & Gutter
Replace As Needed
Sta. 9+40 to Sta. 10+58

Proposed Handrail
Sta. 8+38 to Sta. 11+64

7+00 8+00 9+00 10+00 11+00 12+00

61' 41' 19.6' 18.5' 2'-6" 37.8' 38.8' 96' 14' 60' 57' 19' 6' 12" 8"

SCALE IN FEET
40 0 40 80

LEGEND
- 2" Pavement Resurfacing
- Full Depth Pavement
- PCC Sidewalk, 5"

NOTES:

1. Limits of proposed improvements should be aligned with existing sidewalk joints.

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SCALE: 1"=40'	SHEET NUMBER R-002

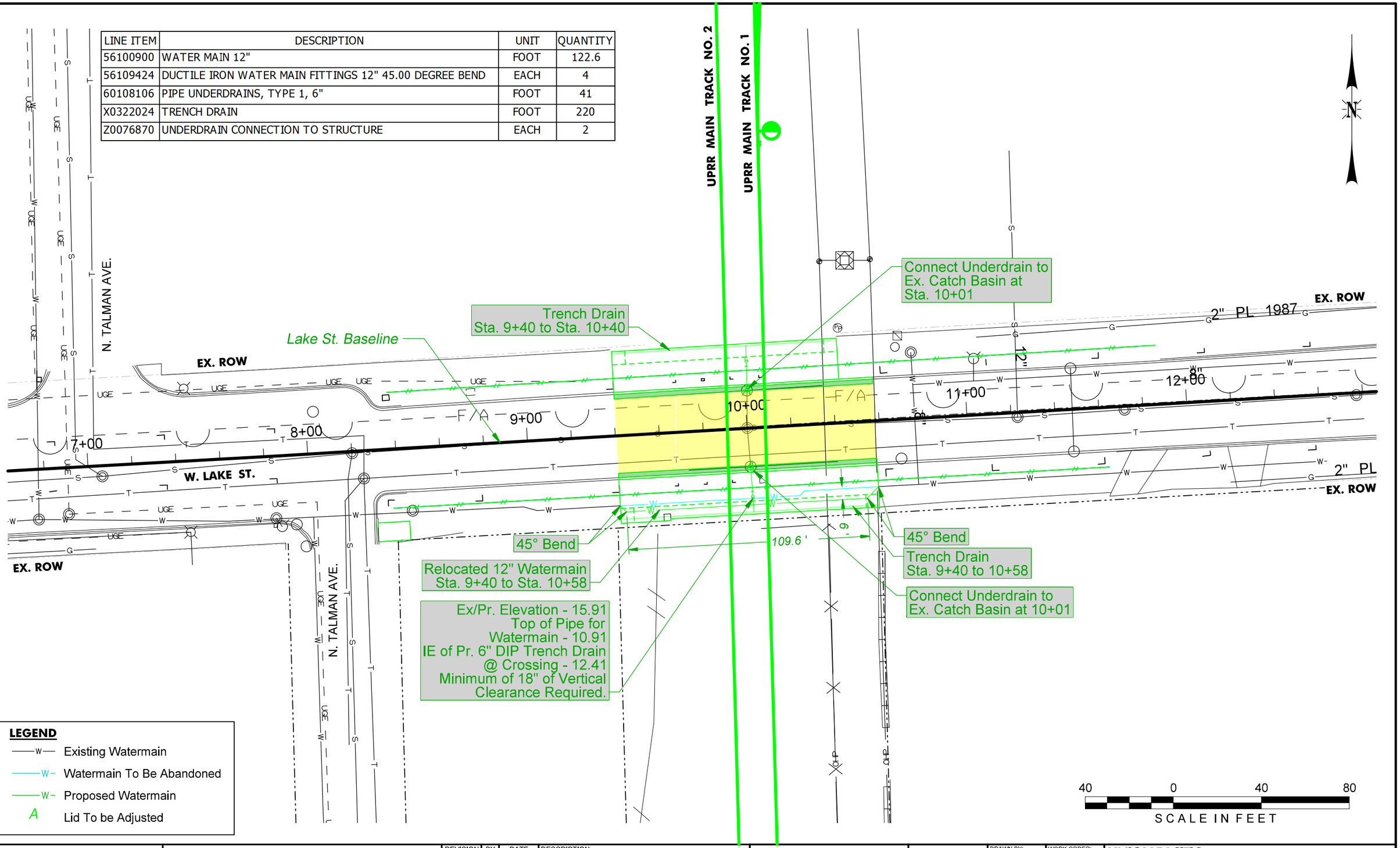
UNION PACIFIC RAILROAD — Director Structures Design

LOCATION & DESCRIPTION:
MP 0.82 ROCKWELL SUBDIVISION
LAKE STREET BRIDGE REPLACEMENT

SHEET TITLE:
ROADWAY RESTORATION PLAN

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5/25/2021

LINE ITEM	DESCRIPTION	UNIT	QUANTITY
56100900	WATER MAIN 12"	FOOT	122.6
56109424	DUCTILE IRON WATER MAIN FITTINGS 12" 45.00 DEGREE BEND	EACH	4
60108106	PIPE UNDERDRAINS, TYPE 1, 6"	FOOT	41
X0322024	TRENCH DRAIN	FOOT	220
Z0076870	UNDERDRAIN CONNECTION TO STRUCTURE	EACH	2



LEGEND

- Existing Watermain
- Watermain To Be Abandoned
- Proposed Watermain
- A — Lid To be Adjusted

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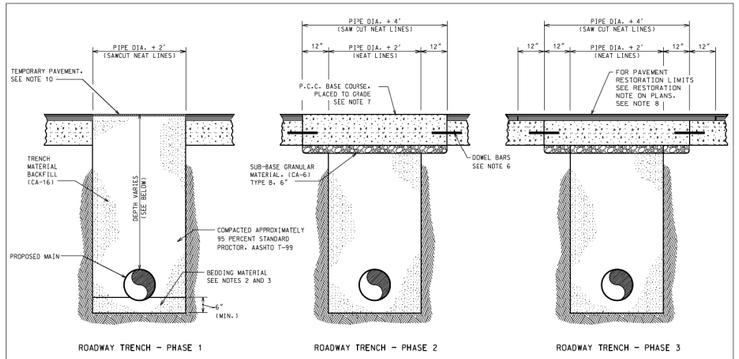
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CHECKED BY: TK	PID:	LOCATION & DESCRIPTION: MP 0.82 ROCKWELL SUBDIVISION LAKE STREET BRIDGE REPLACEMENT	
DATE: 05/28/21	BUDGET REF:		
SCALE: 1"=40'	SHEET NUMBER R-003	SHEET TITLE: WATERMAIN RELOCATION PLAN	

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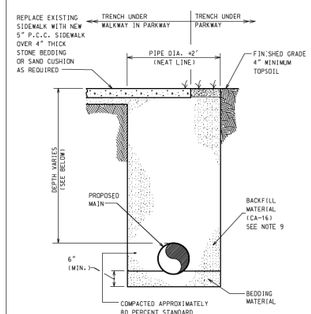
ROADWAY TRENCH - PHASE 1 | ROADWAY TRENCH - PHASE 2 | ROADWAY TRENCH - PHASE 3

PIPE DEPTH REQUIREMENTS	
MINIMUM DEPTH OF COVER FOR WATER MAINS	
SIZE OF PIPE	DEPTH OF COVER
¾" TO 3"	5'-6" ± 3"
4"	5'-6" ± 3"
6"	5'-6" ± 3"
8"	5'-3" ± 3"
12"	5'-0" ± 2"
16"	5'-0" ± 2"
24"	4'-6" ± 2"
30" TO 42"	3'-6" MIN.(SEE PLAN)
48" & LARGER	3' MIN.(SEE PLAN)

PHASE 1: BACKFILL CA-16 TO GRADE FOLLOWING THE INSTALLATION OF PROPOSED WATER MAIN.

PHASE 2: P.C.C. BASE COURSE TO GRADE FOLLOWING THE APPROVAL OF PROPOSED MAIN AND SUCCESSFUL COMPLETION OF SERVICE TRANSFERS AND CONNECTIONS.

PHASE 3: FINAL PAVEMENT RESTORATION. LIMITS AS INDICATED ON PLANS.



PARKWAY TRENCH

GENERAL NOTES:

1. PROVIDE PIPE BEDDING TO A DEPTH OF $^1/_8$ OF PIPE DIAMETER OR 6" MINIMUM OF COMPACTED GRANULAR MATERIAL, GRAVEL, OR CRUSHED STONE.
2. USE CA-16 BEDDING MATERIAL FOR PIPE SIZES UP TO 16-INCH DIAMETER.
3. USE CA-11 BEDDING MATERIAL FOR PIPE SIZES LARGER THAN 16-INCH DIAMETER.
4. ALL EXCAVATIONS MUST BE PROPERLY SHORED, SHEETED AND BRACED TO PROVIDE SAFE WORKING CONDITIONS. ALL IN COMPLIANCE WITH THE U.S. DEPARTMENT OF LABOR SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION STIPULATED UNDER THE OCCUPATIONAL SAFETY AND HEALTH ACT. (O.S.H.A.).
5. PLATE ALL UNATTENDED EXCAVATIONS IN PAVEMENT AREAS AND SECURE PLATES TO PAVEMENT AND PROVIDE BARRIERS IN PARKWAY AREAS.
6. DOWEL BARS SHALL BE #5 EPOXY COATED BARS, 18" LONG DRILLED, WITH 9" EMBEDDMENT AND GROUTED AT 30" CENTERS. DOWEL BARS MAY BE OMITTED ON C.D.O.T. STREETS WHERE CLSM USED AS TRENCH BACKFILL.
7. FOLLOWING THE APPROVAL OF PROPOSED MAIN AND SUCCESSFUL COMPLETION OF SERVICE TRANSFERS AND CONNECTIONS, PLACE CONCRETE BASE COURSE FLUSH TO GRADE. THE ADDITIONAL THICKNESS IS TO BE REMOVED DURING PAVEMENT RESTORATION WORK. FINAL CONCRETE BASE THICKNESS MUST BE PER C.D.O.T. AND I.D.O.T. REQUIREMENTS. WHEN THE THICKNESS OF THE EXISTING ROADWAY BASE MATERIAL IS LESS THAN THE MINIMUM THICKNESS INDICATED IN THE PLANS, THE BOTTOM OF BASE MATERIAL WILL EXTEND BELOW THE BOTTOM OF THE BASE MATERIAL OF THE EXISTING PAVEMENT.
8. FINAL PAVEMENT RESTORATION SHALL BE COMPLETED AS INDICATED IN THE RESTORATION NOTE ON THE PLANS AND IN COMPLIANCE WITH C.D.O.T. AND STANDARDS. THE C.D.O.T. STREET PAVEMENT RESTORATION DETAIL HAS BEEN INCLUDED IN THESE DETAILS FOR REFERENCE.
9. EXCAVATED MATERIAL MAY BE USED IN PLACE OF (CA-16) IN PARKWAY TRENCHES. THE MATERIAL MUST BE PULVERIZED AND APPROVED BY THE COMMISSIONER.
10. ALL ACTIVE TRENCH CUTS OR EXCAVATIONS OPEN TO TRAFFIC INCLUDING VEHICLES, PEDESTRIANS, BICYCLES, ETC., MUST HAVE TEMPORARY PAVEMENT WHICH CONSISTS OF HMA OR ASPHALT COLD PATCH TO PROVIDE A SMOOTH AND LEVEL SURFACE. COMPACTED CRUSHED STONE FILL WILL BE ALLOWED AS TEMPORARY PAVEMENT IN ACTIVE TRENCH CUTS OR EXCAVATIONS LOCATED IN PERMITTED CLOSED WORK ZONES TO ALLOW FOR TEMPORARY PARKING RELIEF AS DIRECTED BY THE COMMISSIONER AND MUST MEET THE REQUIREMENTS OF SECTION 351 OF THE SSRBC.

REV:12.18

WATER MAIN TRENCH PHASE DETAILS

D-8

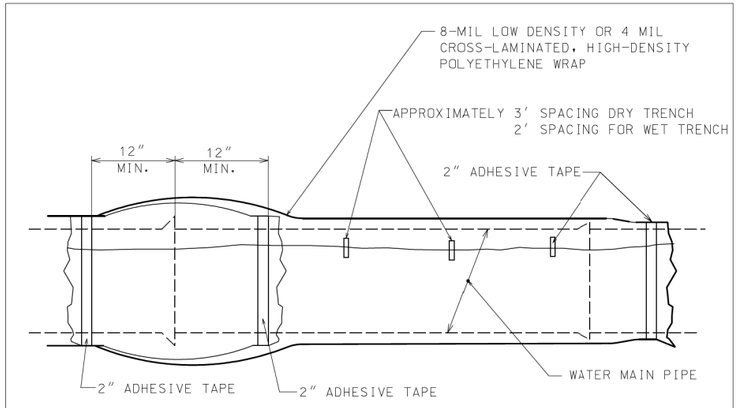


CHART "A" POLYWRAP FLAT TUBE WIDTHS		
PIPE DIAMETER (IN.)	D.I.P. WITH PUSH-ON JOINTS (IN.)	D.I.P. WITH MECHANICAL JOINTS (IN.)
4	14	16
6	17	20
8	21	24
12	29	30
16	37	37
24	53	53

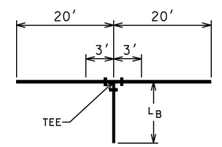
NOTES:

1. USE ONE LENGTH OF POLYETHYLENE TUBE WRAP FOR EACH LENGTH OF PIPE, OVERLAPPED AT PIPE JOINTS AND FOLD EXCESS OVER TOP OF TUBE FOR SLACK REDUCTION.
2. USE CHART "A" TO SELECT SIZE OF WRAP.

REV:06.10

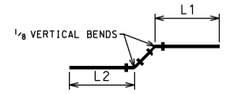
WATER MAIN POLYETHYLENE WRAP DETAIL

D-10



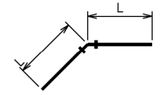
TEE SIZE	L_B
8" x 8" :(8", 12", 16" OR 24") x 12"	0
16" x 16"	42'
36" x 24"	277'

HORIZONTAL TEES - LENGTH OF RESTRAINED JOINTS



PIPE SIZE	L1	L2
8"	26'	26'
12"	37'	11'
16"	67'	20'
24"	67'	20'

$^1/_8$ VERTICAL BENDS - LENGTH OF RESTRAINED JOINTS



PIPE SIZE	DISTANCE OF RESTRAINED JOINTS REQUIRED EITHER SIDE OF BENDS L			
	BEND SIZES			
	$^1/_{32}$	$^1/_{16}$	$^1/_8$	$^1/_4$
8"	3'	6'	12'	29'
12"	4'	8'	17'	41'
16"	7'	15'	30'	73'
24"	7'	15'	30'	73'

HORIZONTAL BENDS - LENGTH OF RESTRAINED JOINTS

NOTE:
1. MINIMUM LENGTHS OF PIPE REQUIRED TO RESTRAIN FITTINGS SHOWN.
2. LENGTHS BASED ON POLY-WRAPPED PIPE.

REV:04.07

THRUST RESTRAINT RESTRAINED JOINT PIPE DETAILS

D-12

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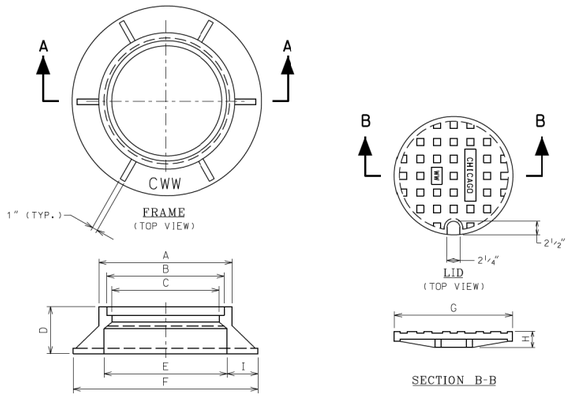
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CHECKED BY: TK	PID:	LOCATION & DESCRIPTION: MP 0.82 ROCKWELL SUBDIVISION LAKE STREET BRIDGE REPLACEMENT	
DATE: 05/28/21	BUDGET REF:		
SCALE: N.T.S.	SHEET NUMBER R-004	SHEET TITLE: WATERMAIN DETAILS	

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NOTES:

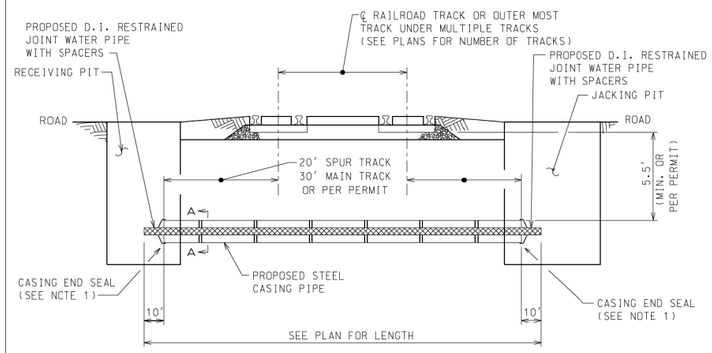
ALL FRAMES AND LIDS SHALL BE OF HEAVY DUTY TYPE DESIGN AND MEET AASHTO M105 AND M306 REQUIREMENTS FOR A 40,000 LB PROOF LOAD.

LETTERING FOR CHICAGO W.W. ON THE LID SHALL BE 2" SHARP FACE GOTHIC LETTERS, 3/16" WIDE AND RAISED 1/8" FROM 1/8" RECESS AS MEASURED FROM THE TOP SURFACE OF THE LID.

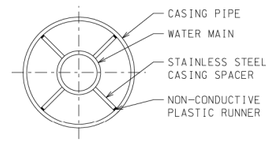
LETTERING FOR C.W.W. ON THE FRAME SHALL BE LOCATED ON THE TOP SURFACE OF THE HORIZONTAL FLANGE AND SHALL BE 1" SHARP FACE GOTHIC, 3/16" WIDE AND RAISED 1/8" AS MEASURED FROM THE FLANGE SURFACE. LOCATION OF LETTERING SHALL BE AS INDICATED ON DRAWING.

FRAME AND LID DIMENSIONS		
	FRAME AND LID TYPES	
	STANDARD	36" SPECIAL F&L
DIMENSION	INCHES	INCHES
A	24	–
B	22 7/8 – 23	36
C	21	34
D	9	8 1/2
E	24 1/2 – 2 13/16	36
F	34	45
G	22 3/4	36
H	3	1 1/2
I	4 5/8 – 4 3/4	4 1/2

REV:11.15 FRAME & LID D-15



PROFILE
N.T.S.



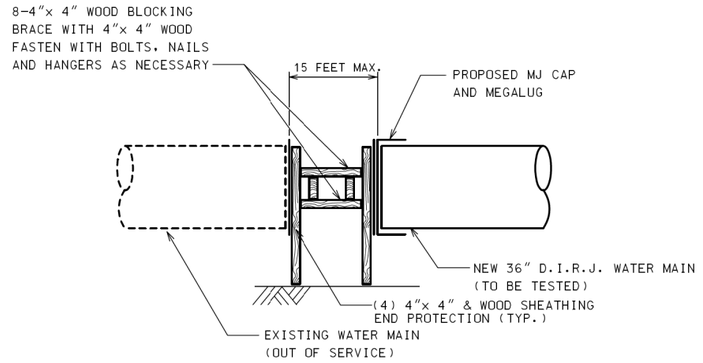
SECTION A-A

NOTES:

1. END SEAL – BRICK AND MORTAR OR SELF CURING RUBBER SEAL.
2. LENGTH OF CASING PIPES UNDER RAILROAD TRACKS SHALL BE EXTENDED TO RAILROAD R.O.W. LINES AND JACKING AND RECEIVING PITS ARE NOT TO BE LOCATED WITHIN TRACK R.O.W.

THIS DETAIL IS PROVIDED FOR REFERENCE PURPOSES ONLY

REV:02.14 CASING PIPE UNDER RAILROAD TRACK DETAIL D-18



THIS DETAIL IS PROVIDED FOR REFERENCE PURPOSES ONLY AND IS NOT A C.D.W.M. WATER MAIN STANDARD

REV:06.10 BRACING AT CAP FOR PRESSURE TEST FM-17

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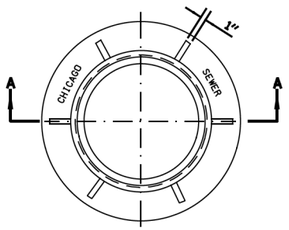
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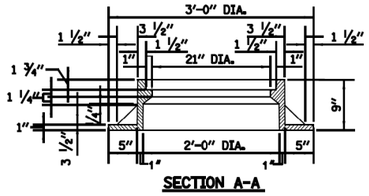
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MP 0.82 ROCKWELL SUBDIVISION
LAKE STREET BRIDGE REPLACEMENT

SHEET TITLE:
WATERMAIN DETAILS

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5/25/2021



PLAN

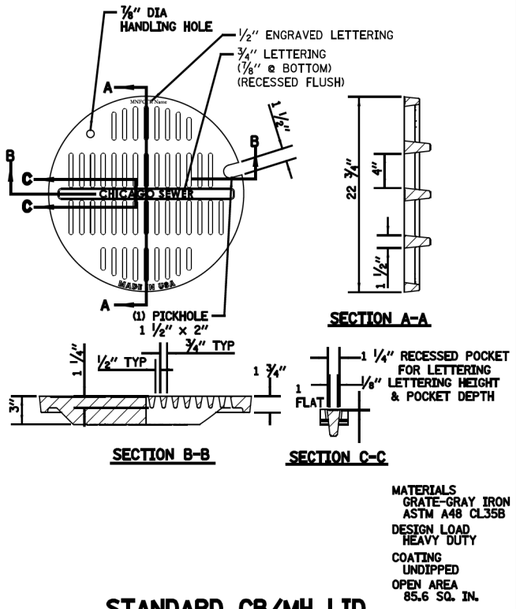


SECTION A-A

NOTE: METAL PLATES MUST BE FURNISHED FOR PERFORATED LIDS ON MANHOLES.

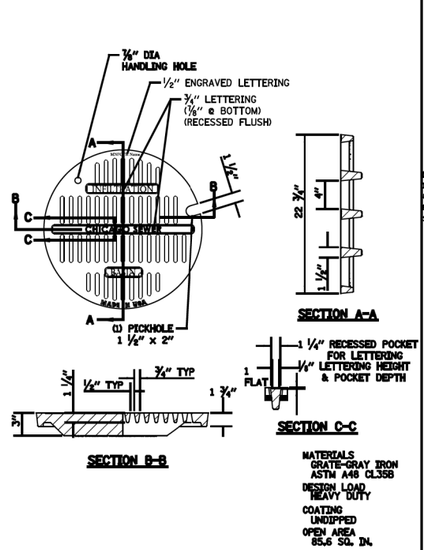
HEAVYWEIGHT MANHOLE FRAME

MATERIAL: CAST IRON



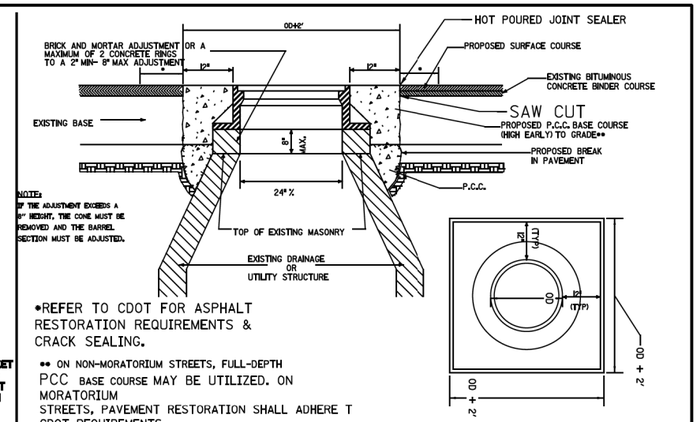
MATERIALS
GRATE-GRAY IRON
ASTM A48 CL35B
DESIGN LOAD
HEAVY DUTY
COATING
UNDIPPED
OPEN AREA
85.6 SQ. IN.

STANDARD CB/MH LID



MATERIALS
GRATE-GRAY IRON
ASTM A48 CL35B
DESIGN LOAD
HEAVY DUTY
COATING
UNDIPPED
OPEN AREA
85.6 SQ. IN.

STANDARD LID FOR INFILTRATION SYSTEMS



PLAN VIEW (BASE TO GRADE)

*REFER TO CDOT FOR ASPHALT RESTORATION REQUIREMENTS & CRACK SEALING.

** ON NON-MORATORIUM STREETS, FULL-DEPTH PCC BASE COURSE MAY BE UTILIZED. ON MORATORIUM STREETS, PAVEMENT RESTORATION SHALL ADHERE T CDOT REQUIREMENTS.

NOTES:

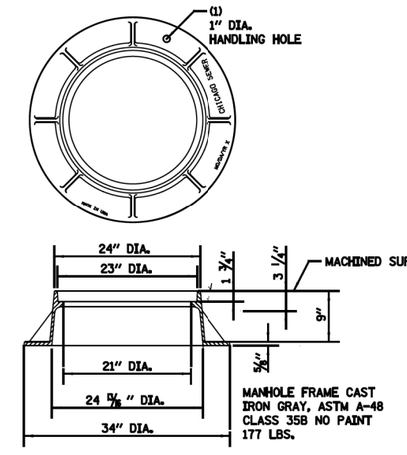
IF THE ADJUSTMENT EXCEEDS AN 8" HEIGHT, THE CONE MUST BE REMOVED AND THE BARREL SECTION MUST BE ADJUSTED.

THE CONTRACTOR IS REQUIRED TO REPLACE ANY BROKEN FRAMES AND LIDS OF SEWER STRUCTURES WITH STANDARD FRAMES AND LIDS OF THE DWM. IN ADJUSTMENT OR RECONSTRUCTION OF SEWER STRUCTURES, ANY NON-STANDARD FRAMES AND LIDS MUST BE REPLACED WITH STANDARD FRAMES AND LIDS. IN ADJUSTMENT OR RECONSTRUCTION OF INLETS, ANY NON-STANDARD INLETS (GUTTER BOXES) MUST BE REPLACED WITH DWM STANDARD INLETS.

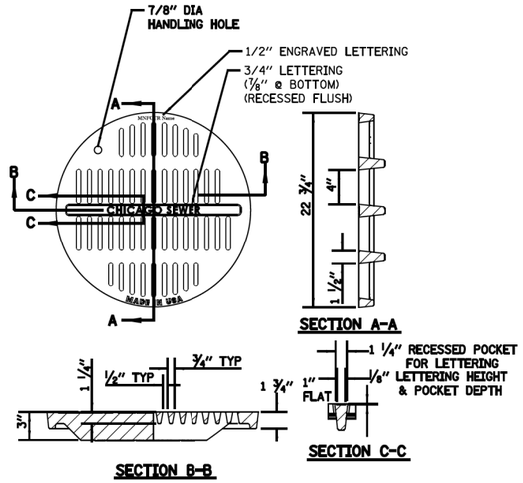
THE FRAMES AND LIDS OF SEWER STRUCTURES TO BE ABANDONED, REMOVED, OR FILLED MUST BE SALVAGED AND THE DWM NOTIFIED FOR PICK UP.

MANHOLES, CATCH BASINS AND INLETS MUST BE PROTECTED FROM THE ENTRY OF ASPHALT/DEBRIS INTO THE SEWER SYSTEM DURING CONSTRUCTION. THE CONTRACTOR MUST MARK LOCATIONS OF ALL SEWER STRUCTURES ON THE SIDEWALK BEFORE STARTING PAVEMENT REMOVAL/REPLACEMENT. ADJUSTMENT OF FRAMES AND LIDS OF SEWER STRUCTURES MUST BE COMPLETED PRIOR TO STREET RESURFACING.

DETAIL OF FRAME ADJUSTMENT



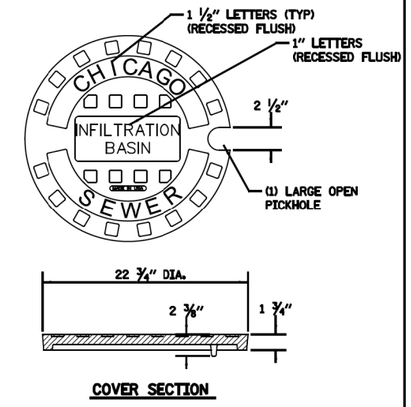
LIGHTWEIGHT MANHOLE FRAME



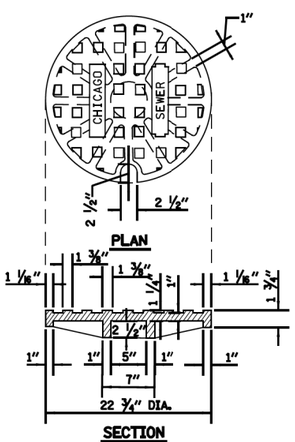
ADA COMPLIANT CATCH BASIN/MANHOLE LID

NOTE:
NOT TO BE USED WITHOUT PRIOR APPROVAL OF CDWM

MATERIALS
GRATE-GRAY IRON
ASTM A48 CL35B
DESIGN LOAD
HEAVY DUTY
COATING
UNDIPPED
OPEN AREA
85.6 SQ. IN.



INFILTRATION SOLID LID FOR CATCH BASIN



SOLID LID FOR MANHOLES

STANDARD REVISIONS	
DATE	DESCRIPTION
9/19/17	Approved

PERCENT COMPLETE	DATE
30	
60	
75	
90	
100	
BULLETIN	

CITY OF CHICAGO
DEPARTMENT OF WATER MANAGEMENT
BUREAU OF ENGINEERING SERVICES

MANHOLE
LIDS AND FRAMES

DRAWN: JMK
DESIGNED:
CHECKED: KP, TK, SO
REVIEWED:

A.3

___ OF ___

PN ____

$FILE$
$DATE$

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ISSUED FOR CONSTRUCTION

REVISION	BY	DATE	DESCRIPTION

benesch
Alfred Benesch & Company
35 W. Wacker Drive Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 210070.11

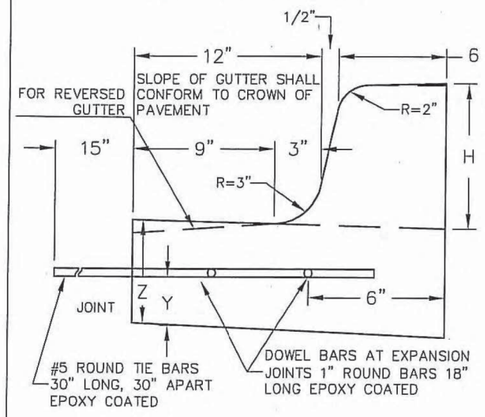
DRAWN BY: KP	WORK ORDER: 31876	UNION PACIFIC RAILROAD	Director Structures Design
CHECKED BY: TK	PID:	LOCATION & DESCRIPTION: MP 0.82 ROCKWELL SUBDIVISION LAKE STREET BRIDGE REPLACEMENT	
DATE: 05/28/21	BUDGET REF:		
SCALE: N.T.S.	SHEET NUMBER R-006	SHEET TITLE: WATERMAIN DETAILS	

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5/25/2021

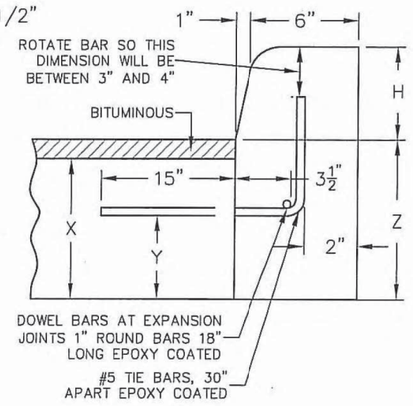
P.C. CONCRETE CURB & GUTTER

NOTE: H = VARIABLE 3" TO 9"
X = THICKNESS OF PAVEMENT
Y = ONE HALF THE THICKNESS OF CONCRETE PAVEMENT OR CONCRETE BASE.
Z = 10" OR THICKNESS OF PAVEMENT – WHICHEVER IS GREATER

TYPE BV. 12 OR TYPE 3 CURB & GUTTER



TYPE B OR TYPE 4 CURB BARRIER CURB



JOINTS IN CURB, COMBINED CURB & GUTTER

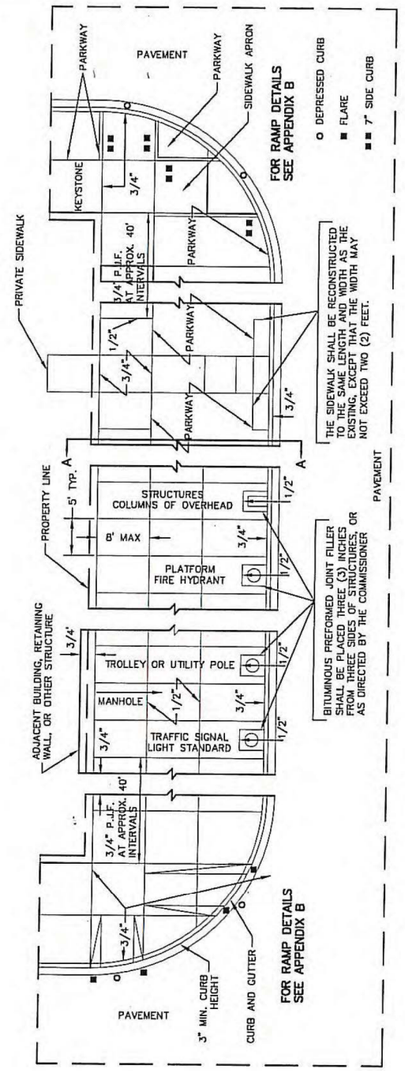
TRANSVERSE JOINTS OF A TYPE SIMILAR TO THAT USED IN THE ADJACENT PAVEMENT SHALL BE INSTALLED IN THE CURB, GUTTER AND COMBINED CURB & GUTTER IN PROLONGATION WITH THE JOINTS IN THE PAVEMENT. THE DETAILS OF THE TRANSVERSE JOINTS IN THE CURB, GUTTER AND COMBINED CURB & GUTTER SHALL BE APPROVED BY THE COMMISSIONER. CURB, GUTTER OR COMBINED CURB & GUTTER IS CONSTRUCTED ADJACENT TO A FLEXIBLE BASE PAVEMENT, 1" THICK EXPANSION JOINTS COMPOSED OF BITUMINOUS PERFORMED JOINT FILLER SHALL BE INSTALLED IN THE CURB AND/OR GUTTER AT POINTS OF CURVATURE AND AT CONSTRUCTION JOINTS. CONTRACTION JOINTS SHALL ALSO BE PLACED BETWEEN THESE EXPANSION JOINTS AT DISTANCES NOT EXCEEDING 20 FEET. ALL TIE BARS SHALL BE DEFORMED–ALL DOWEL BARS SHALL BE SMOOTH.

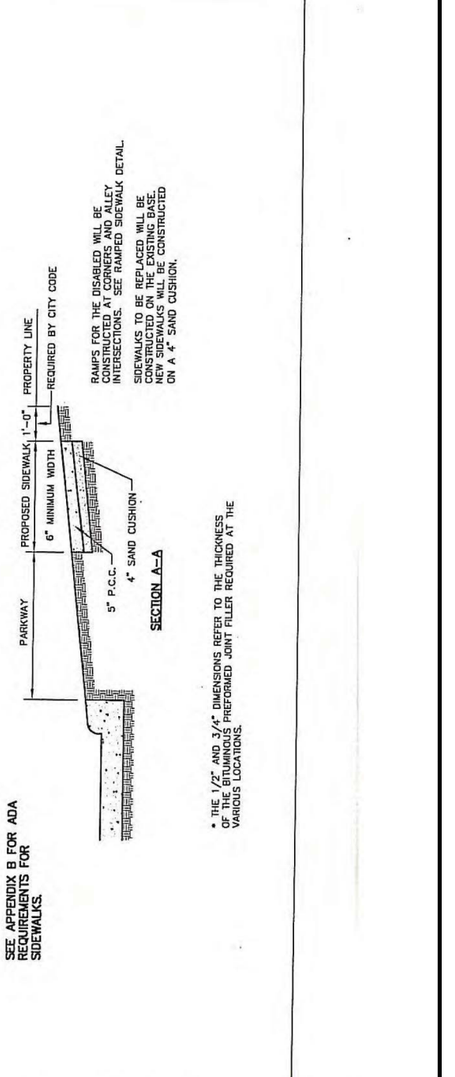
NOTE: ALL TIE BARS AND DOWEL BARS TO BE EPOXY COATED.

*AT LOCATIONS REQUIRING DEPRESSED CURBS SEE THE ADA STANDARDS FOR CONSTRUCTION DETAILS

CDOT CHICAGO DEPARTMENT OF TRANSPORTATION	DATE	REVISION	CITY OF CHICAGO
	–	–	P.C.C. CURB & GUTTER
			DATE: 12/12/06 · SHEET: A-2-6 · DRAWN BY: CDOT

DETAILS OF PORTLAND CEMENT CONCRETE SIDEWALK CONSTRUCTION





CDOT CHICAGO DEPARTMENT OF TRANSPORTATION	DATE	REVISION	CITY OF CHICAGO
	–	–	P.C. CONCRETE SIDEWALK JOINT DETAILS
			DATE: 12/22/06 · SHEET: A-3-2 · DRAWN BY: CDOT

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ISSUED FOR CONSTRUCTION

REVISION	BY	DATE	DESCRIPTION

benesch
Alfred Benesch & Company
35 W. Wacker Drive Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 210070.11

UNION PACIFIC

DRAWN BY: KP	WORK ORDER: 31876
CHECKED BY: TK	PID:
DATE: 05/28/21	BUDGET REF:
SCALE: N.T.S.	SHEET NUMBER: R-007

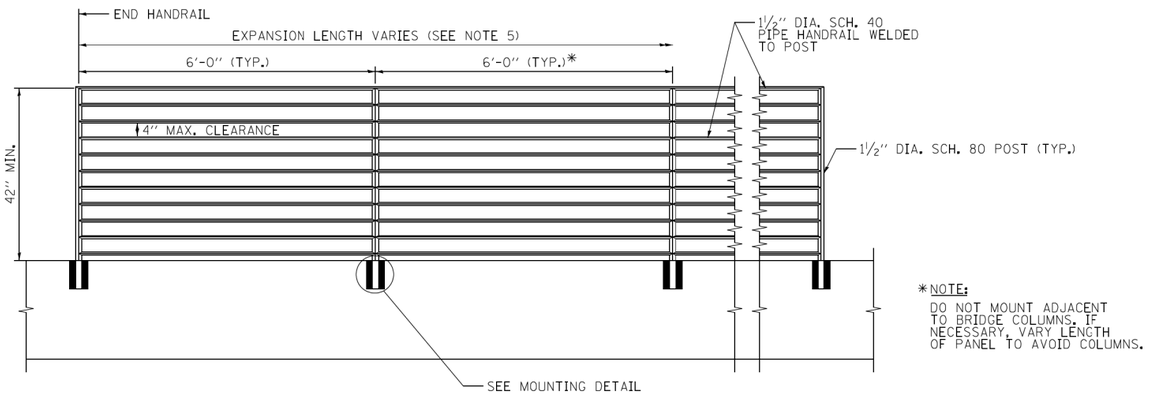
UNION PACIFIC RAILROAD — Director Structures Design

LOCATION & DESCRIPTION:
MP 0.82 ROCKWELL SUBDIVISION
LAKE STREET BRIDGE REPLACEMENT

SHEET TITLE:
ROADWAY DETAILS

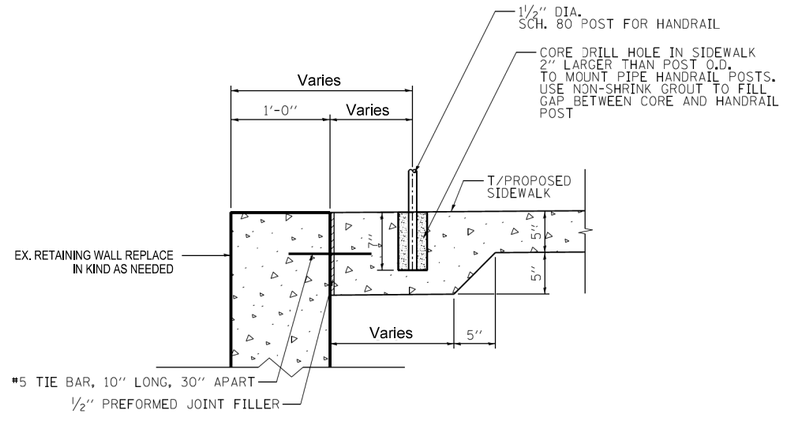
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5/25/2021

PIPE HANDRAIL, SPECIAL

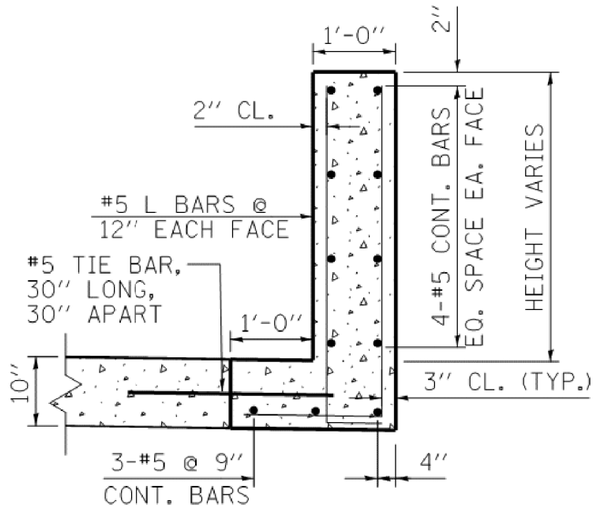


*NOTE:
DO NOT MOUNT ADJACENT TO BRIDGE COLUMNS. IF NECESSARY, VARY LENGTH OF PANEL TO AVOID COLUMNS.

PIPE HANDRAIL ELEVATION

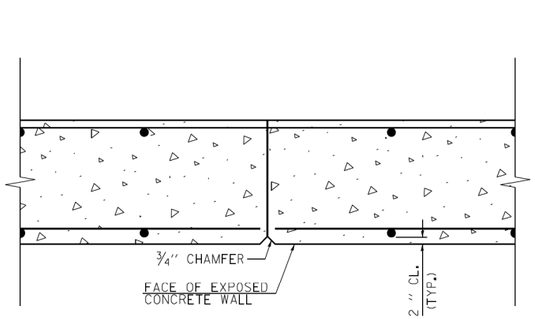


PIPE HANDRAIL MOUNTING DETAIL

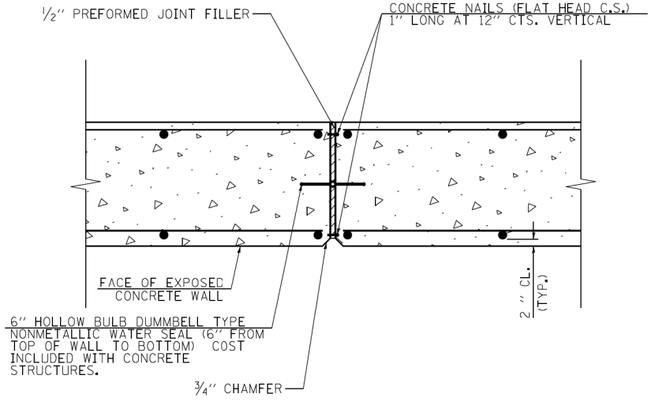


CONCRETE RETAINING WALL DETAIL

NOTES:
1. CUT HORIZONTAL AND VERTICAL BARS TO FIT IN FIELD
2. LAP CONTINUOUS #5 HORIZONTAL BARS MIN. 2'-2"



CONSTRUCTION JOINT DETAIL



EXPANSION JOINT DETAIL

NOTES:
1. HANDRAIL REQUIRED WHERE OCCUPIED SPACES DIFFER AT A HEIGHT OF MORE THAN 2' (24") ABOVE GROUND SURFACE.
2. HANDRAIL MUST BE 3'-6" MIN. (42") ABOVE SIDEWALK SURFACE.
3. MEMBERS MUST BE SITUATED SO THAT A 4" DIA. SPHERE CAN NOT PASS THRU UP TO HEIGHT OF 34".
4. ALL POST SHALL BE SET PLUM TO THE SURFACE OF THE SIDEWALK.
5. PROVIDE HORIZONTAL EXPANSION JOINTS IN THE HANDRAIL AS REQUIRED.

WARNING !
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ISSUED FOR CONSTRUCTION

REVISION	BY	DATE	DESCRIPTION

benesch
Alfred Benesch & Company
35 W. Wacker Drive Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 210070.11

DRAWN BY: KP	WORK ORDER: 31876
CHECKED BY: TK	PID:
DATE: 05/28/21	BUDGET REF:
SCALE: N.T.S.	SHEET NUMBER: R-008

UNION PACIFIC RAILROAD — Director Structures Design

LOCATION & DESCRIPTION:
MP 0.82 ROCKWELL SUBDIVISION
LAKE STREET BRIDGE REPLACEMENT

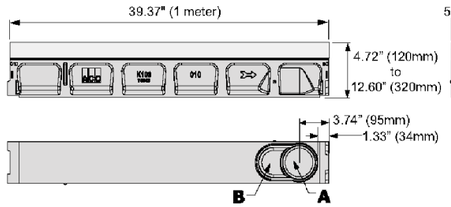
SHEET TITLE:
ROADWAY DETAILS

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Default
5/25/2021

ACO DRAIN

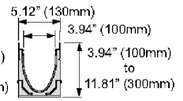
KlassikDrain - K100 Galvanized steel edge rail channel system

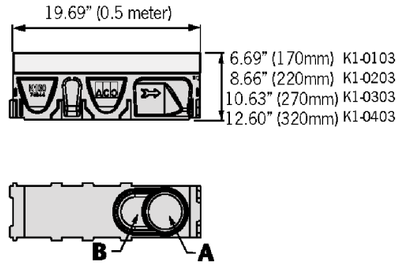
One meter channel



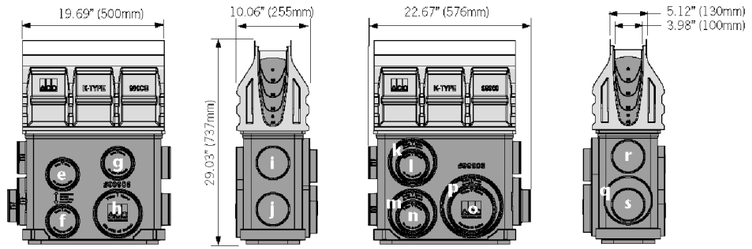
Knock-outs included on every 5th channel

Half meter channel





Type K901G In-line catch basin



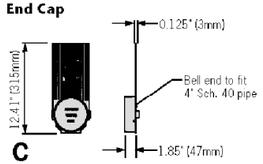
Total capacity =
10.49 gallons

Outlet flow rates

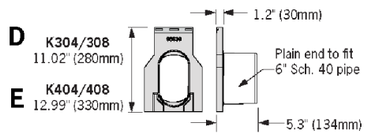
Outlet	Product	Outlet size (Sch. 40)	Invert Depth	GPM	CFS
a	Bottom outlet - K00	4" round	3.94"	108	0.24
a	Bottom outlet - K40	4" round	11.81"	187	0.42
b	Bottom outlet - K00	6" oval	3.94"	177	0.39
b	Bottom outlet - K40	6" oval	11.81"	306	0.68
c	End outlet - K20	4" round	7.87"	132	0.29
c	End outlet - K40	4" round	11.81"	171	0.38
d	K1-308-6 6" outlet cap	6" oval	9.84"	233	0.52
e	K1-408-6 6" outlet cap	6" oval	11.81"	264	0.59
f	Type K1-901G	4" round	19.30"	226	0.50
g	Type K1-901G	4" round	25.67"	265	0.59
h	Type K1-901G	4" round	25.30"	263	0.59
i	Type K1-901G	4" round	18.56"	222	0.49
j	Type K1-901G	6" round	25.85"	586	1.30
k	Type K1-901G	4" round	26.43"	269	0.60
l	Type K1-901G	4" round	19.36"	227	0.51
m	Type K1-901G	6" round	27.30"	604	1.35
n	Type K1-901G	6" round	19.99"	505	1.12
o	Type K1-901G	6" round	26.43"	593	1.32
p	Type K1-901G	8" round	27.30"	1051	2.34
q	Type K1-901G	4" round	27.17"	273	0.61
r	Type K1-901G	4" round	20.68"	235	0.52
s	Type K1-901G	4" round	18.99"	224	0.50
t	Type K1-901G	6" round	27.17"	6.02	1.34

Note: These are the pipe flow rates at the specified outlet, **NOT** channel flow rates. Catch basin flow rates are without trash bucket - using trash bucket reduces flow.

End Cap



6" Oval inlet cap



6" Oval outlet cap



April 2018

www.ACODrain.us

ACO Specification Information

ACO DRAIN

KlassikDrain - K100 Galvanized steel edge rail channel system

Description	Part No.	Invert Inches[2]	Invert mm[2]	Weight Lbs.
K1-00 Neutral channel - 39.37" (1m)[1]	**74041**	**3.94**	**100**	**28.1**
K1-1 Sloped channel - 39.37" (1m)	**74001**	4.13	105	28.1
K1-2 Sloped channel - 39.37" (1m)	**74002**	4.33	110	28.9
K1-3 Sloped channel - 39.37" (1m)	**74003**	4.53	115	29.7
K1-4 Sloped channel - 39.37" (1m)	**74004**	4.72	120	30.5
K1-5 Sloped channel - 39.37" (1m)[1]	**74005**	4.92	125	31.3
K1-6 Sloped channel - 39.37" (1m)	**74006**	5.12	130	32.1
K1-7 Sloped channel - 39.37" (1m)	**74007**	5.31	135	32.9
K1-8 Sloped channel - 39.37" (1m)	**74008**	5.51	140	33.7
K1-9 Sloped channel - 39.37" (1m)	**74009**	5.71	145	34.5
K1-10 Sloped channel - 39.37" (1m)[1]	**74010**	5.91	150	35.3
K1-010 Neutral channel - 39.37" (1m)[1]	**74043**	**5.91**	**150**	**35.3**
K1-0103 Neutral channel - 19.69" (0.5m)[1]	**74044**	**5.91**	**150**	**17.0**
K1-11 Sloped channel - 39.37" (1m)	**74011**	6.10	155	36.1
K1-12 Sloped channel - 39.37" (1m)	**74012**	6.30	160	36.9
K1-13 Sloped channel - 39.37" (1m)	**74013**	6.50	165	37.7
K1-14 Sloped channel - 39.37" (1m)	**74014**	6.69	170	38.5
K1-15 Sloped channel - 39.37" (1m)[1]	**74015**	6.89	175	39.3
K1-16 Sloped channel - 39.37" (1m)	**74016**	7.09	180	40.1
K1-17 Sloped channel - 39.37" (1m)	**74017**	7.28	185	40.9
K1-18 Sloped channel - 39.37" (1m)	**74018**	7.48	190	41.7
K1-19 Sloped channel - 39.37" (1m)	**74019**	7.68	195	42.5
K1-20 Sloped channel - 39.37" (1m)[1]	**74020**	7.87	200	43.4
K1-020 Neutral channel - 39.37" (1m)[1]	**74045**	**7.87**	**200**	**43.4**
K1-0203 Neutral channel - 19.69" (0.5m)[1]	**74046**	**7.87**	**200**	**20.5**
K1-21 Sloped channel - 39.37" (1m)	**74021**	8.07	205	44.2
K1-22 Sloped channel - 39.37" (1m)	**74022**	8.27	210	45.0
K1-23 Sloped channel - 39.37" (1m)	**74023**	8.46	215	45.8
K1-24 Sloped channel - 39.37" (1m)	**74024**	8.66	220	46.6
K1-25 Sloped channel - 39.37" (1m)[1]	**74025**	8.86	225	47.4
K1-26 Sloped channel - 39.37" (1m)	**74026**	9.06	230	48.2
K1-27 Sloped channel - 39.37" (1m)	**74027**	9.25	235	49.0

Description	Part No.	Invert Inches[2]	Invert mm[2]	Weight Lbs.
K1-28 Sloped channel - 39.37" (1m)	**74028**	9.45	240	49.8
K1-29 Sloped channel - 39.37" (1m)	**74029**	9.65	245	50.6
K1-30 Sloped channel - 39.37" (1m)[1]	**74030**	9.84	250	51.4
K1-030 Neutral channel - 39.37" (1m)[1]	**74047**	**9.84**	**250**	**51.4**
K1-0303 Neutral channel - 19.69" (0.5m)[1]	**74048**	**9.84**	**250**	**24.0**
K1-31 Sloped channel - 39.37" (1m)	**74031**	10.04	255	52.2
K1-32 Sloped channel - 39.37" (1m)	**74032**	10.24	260	53.0
K1-33 Sloped channel - 39.37" (1m)	**74033**	10.43	265	53.8
K1-34 Sloped channel - 39.37" (1m)	**74034**	10.63	270	54.6
K1-35 Sloped channel - 39.37" (1m)[1]	**74035**	10.83	275	55.4
K1-36 Sloped channel - 39.37" (1m)	**74036**	11.02	280	56.2
K1-37 Sloped channel - 39.37" (1m)	**74037**	11.22	285	57.0
K1-38 Sloped channel - 39.37" (1m)	**74038**	11.42	290	57.9
K1-39 Sloped channel - 39.37" (1m)	**74039**	11.61	295	58.7
K1-40 Sloped channel - 39.37" (1m)[1]	**74040**	11.81	300	59.5
K1-040 Neutral channel - 39.37" (1m)[1]	**74049**	**11.81**	**300**	**59.5**
K1-0403 Neutral channel - 19.69" (0.5m)[1]	**74050**	**11.81**	**300**	**27.5**
K1-901G Inline catch basin - 19.69" (0.5m)[3]	**94608**	28.81	701.9	52.6
K1-621G catch basin - 19.69" (0.5m)[3]	**94617**	28.84	732.5	55.8
K1-631G catch basin - 19.69" (0.5m)[3]	**94631**	40.84	1037.4	65.8
K1-Series 600 Optional plastic riser	**99902**	-	-	10.0
Foul air trap - fits both 900 & 600 series basins	**90854**	-	-	1.2
K1-304-6 6" Inlet Cap	**96839**	9.84	250	5.2
K1-308-6 6" Outlet Cap	**96840**	9.84	250	5.0
K1-404-6 6" Inlet Cap	**96834**	11.81	300	6.0
K1-408-6 6" Outlet Cap	**96836**	11.81	300	5.8
Universal end cap	**96822**	11.81	300	0.4
Debris strainer for 4" bottom knockout	**93488**	-	-	0.2
4" Oval to 6" round outlet adapter	**95140**	-	-	1.1
K1-Installation device	**97477**	-	-	2.8
Grate removal tool	**01318**	-	-	0.3
K1-QuickLok locking bar	**02899**	-	-	0.1

Notes:
1. This channel offers a bottom knockout feature; 4" round/6" oval.
2. Inverts shown are for the male end; for female invert depth subtract 5mm (≈0.2") from the male invert (except for neutral channels, where it will be same as male invert). To calculate the overall channel depth add 20mm (≈0.8") to invert depth.
3. This catch basin kit includes a polymer concrete top, removable Quicklok locking bar, trash bucket and plastic base. Select an appropriate grate.
4. This catch basin kit includes a polymer concrete top, removable Quicklok locking bar, deep trash bucket, plastic riser and plastic base. Select an appropriate grate.

Specifications

General
The surface drainage system shall be ACO Drain K100 complete with gratings secured with 'QuickLok' locking as manufactured by ACO, Inc. or approved equal.

Materials
The trench system bodies shall be manufactured from polyester polymer concrete with the minimum properties as follows:

Compressive strength:	14,000 psi
Flexural strength:	4,000 psi
Water absorption	0.07%
Frost proof	YES
Salt proof	YES
Dilute acid and alkali resistant	YES

The nominal clear opening shall be 4" (100mm) with overall width of 5.12" (130mm). Pre-cast units shall be manufactured with either an invert slope of 0.5% or with neutral invert and have a wall thickness of at least 0.50" (13mm). Each unit will feature a partial radius in the trench bottom and a male to female interconnecting and profile. Units shall have horizontal cast in anchoring keys on the outside wall to ensure maximum mechanical bond to the surrounding bedding material and pavement surface. The galvanized steel edge rail will be integrally cast in by the manufacturer to ensure maximum homogeneity between polymer concrete body and edge rail. Each edge rail shall be at least 3/32" (2.5mm) thick.

Grates
Grates shall be specified. See separate ACO Spec Info grate sheets for details. After removal of grates and 'QuickLok' bar there shall be uninterrupted access to the trench to aid maintenance.

Installation
The trench drain system shall be installed in accordance with the manufacturer's installation instructions and recommendations.

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Toll Free: (888) 490-9552
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Southeast Sales Office
4211 Pleasant Road
Fort Mill, SC 29708
Toll free: (800) 543-4764
Fax: (803) 802-1063

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www.ACODrain.us

SPEC INFO

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April 2018

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35 W. Wacker Drive Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 210070.11

UNION PACIFIC

DRAWN BY: KP	WORK ORDER: 31876
CHECKED BY: TK	PID:
DATE: 05/28/21	BUDGET REF:
SCALE: N.T.S.	SHEET NUMBER R-009

UNION PACIFIC RAILROAD — Director Structures Design

LOCATION & DESCRIPTION:
MP 0.82 ROCKWELL SUBDIVISION
LAKE STREET BRIDGE REPLACEMENT

SHEET TITLE:
ROADWAY DETAILS

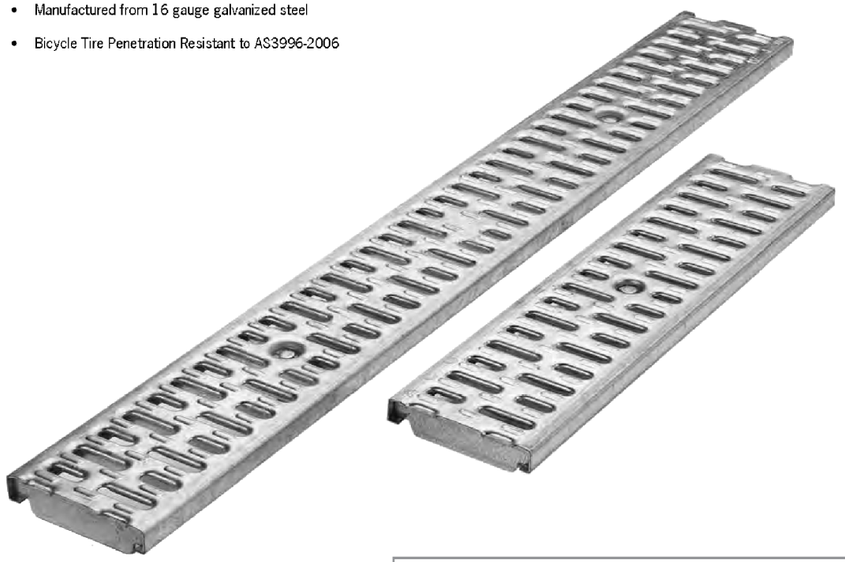
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5/25/2021

ACO DRAIN

Type 435Q/436Q Slotted galvanized steel grate

Product Features

- Certified to EN 1433 Load Class E - 135,000 lbs - 2,788 psi
- Uses 'QuickLok' boltless locking system
- Suitable for use with K100, KS100, H100-8, H100-10, and H100K-8 channels
- Manufactured from 16 gauge galvanized steel
- Bicycle Tire Penetration Resistant to AS3996-2006



Specifications

General
The surface drainage system shall be ACO Drain K100, KS100, H100-8, H100-10, H100K-8 and H100KS-8 channels * complete with ACO Type 435Q/436Q Slotted galvanized steel grate with 'QuickLok' locking as manufactured by ACO, Inc. or similar approved.

Materials
The covers shall be manufactured from galvanized steel and have ***minimum*** properties as follows:

- ***Independently certified to meet Load Class E to EN 1433 - 135,000 lbs - 2,788 psi***
- ***16 gauge galvanized steel***
- ***Intake area of 17.6 sq. in. (113.5 cm²) per half meter of grate***

The overall width of 4.84" (123mm) and overall length of 39.37" (1000mm) (Type 435) and 19.69" (500mm) (Type 436). Slots measure 1.75" (45mm) by 0.38" (10mm) and 1.17" (30mm) by 0.38" (10mm).

Installation
The trench drain system and grates shall be installed in accordance with the manufacturer's installation instructions and recommendations.

* delete as appropriate

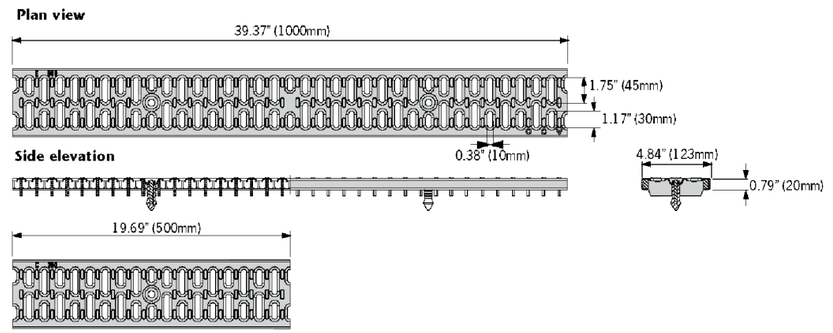
ACO Specification Information

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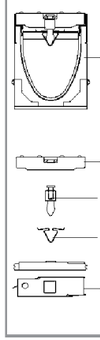
ACO DRAIN

Type 435Q/436Q Slotted galvanized steel grate



Description	Part No.	Length inches (*mm*)	Width inches (*mm*)	Weight lbs.
QuickLok grates				
Type 435Q Slotted galvanized grate	**31550**	39.37 (*1000*)	4.84 (*123*)	13.4
Type 436Q Slotted galvanized grate	**31551**	19.69 (*500*)	4.84 (*123*)	6.8
QuickLok locking bar	**02899**	-	-	0.2
QuickLok grate removal hook	**01318**	-	-	0.6

'QuickLok' locking mechanism



ACO 'QuickLok' is a patented boltless locking system, grates are removed and replaced with the minimum time and effort for ease of maintenance. The unique design provides a positive 'snap down' fit into the locking bar. A stud is fixed to the grate which 'locks' into the spring clip in the locking bar.

The 'QuickLok' stud is made from stainless steel and high density nylon, the locking bar and clip are stainless steel, for use in both general purpose and corrosive environments.

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Chicago, Illinois 60601
312-565-0450 Job No. 210070.11

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CHECKED BY: TK	PID:
DATE: 05/28/21	BUDGET REF:
SCALE: N.T.S.	SHEET NUMBER R-010

UNION PACIFIC RAILROAD — Director Structures Design

LOCATION & DESCRIPTION:
MP 0.82 ROCKWELL SUBDIVISION
LAKE STREET BRIDGE REPLACEMENT

SHEET TITLE:
ROADWAY DETAILS

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5/25/2021

TRAFFIC CONTROL GENERAL NOTES:

1. All signing must be in accordance with the latest applicable provisions of the State of Illinois "Standard Specifications for Road and Bridge Construction", the details in these plans must be in accordance with the latest edition of the IDOT Bureau of Design and Environment highway standards and the latest edition of the "Manual on Uniform Traffic Control Devices", in effect on the date of invitation for bids.

2. Longitudinal dimensions shown on these plans may be adjusted to fit field conditions as directed by the commissioner.

3. The Contractor must be responsible for ensuring that all barricades, signs, lights and other devices installed by him/her are in place and operating 24 hours each day including Sundays and holidays during the time this construction is in effect.

4. All existing signing that is not applicable while the construction is in effect must be completely covered by the Contractor.

5. The sizes of all signs not specified in these plans must be as required by the Manual on Uniform Traffic Control Devices.

6. As a minimum, all amber flashing lights that are required must meet the requirements for Type A - low intensity flashing lights in article 702.04 of the standard specifications. All lights shall operate during hours of darkness. Only lights that have been approved by the Illinois Department of Transportation must be used.

7. The Contractor must maintain access to all private and commercial driveways during construction.

8. Sidewalk access must be maintained on one side of the street during all stages, except when there is a full closure. Any closed sidewalks must be appropriately barricaded. Use Standard 701801.

9. All walkways must be clearly identified and adequately protected from motor vehicle traffic and free of any obstructions and hazards such as holes, debris, mud, construction equipment, stored materials, etc.

10. Proposed maintenance of traffic signing must be covered or removed when not required during a specific stage of construction.

11. Changeable message signs to be provided at locations shown on plans or determined by the commissioner.

12. The Contractor must conduct his/her work in such a manner that emergency vehicles will have access to the work area at all times.

13. The Contractor will be responsible for the proper location, installation, maintenance, relocation, and removal of all traffic control devices.

14. The Contractor is responsible for recording the existing pavement marking patterns and limits prior to existing striping removal.

15. All existing pavement markings removed or impacted within the project limits must be replaced in-kind and to CDOT rules and regulations.

16. Unwanted temporary pavement markings must be removed by the contractor as ordered by the Commissioner.

17. The Contractor must notify CDOT 72 hours before commencing construction.

18. The Contractor is responsisble for all no parking notifications required by traffic shifts.

TRAFFIC CONTROL SUMMARY OF QUANTITIES:

LINE ITEM	DESCRIPTION	UNIT	QUANTITY	
70300220	TEMPORARY PAVEMENT MARKING - LINE 4"	FOOT	1122.70	✳
70400100	TEMPORARY CONCRETE BARRIER	FOOT	187.5	
70400200	RELOCATE TEMPORARY CONCRETE BARRIER	FOOT	175	
70600240	IMPACT ATTENUATORS, TEMPORARY (NON- REDIRECTIVE), TEST LEVEL 2	EACH	1	
70600340	IMPACT ATTENUATORS, RELOCATE (NON- REDIRECTIVE), TEST LEVEL 2	EACH	1	
X0327626	BARRICADES, TYPE III WITH WARNING LIGHT	EACH	4	
X0327627	BARRICADES, TYPE III WITH WARNING LIGHT AND ROAD CLOSED SIGN	EACH	3	
X0327629 or X0327625	DRUM WITH WARNING LIGHT or BARRICADES, TYPE I WITH EXTENDED LEGS AND WARNING LIGHT	EACH	7	
X0327980	PAVEMENT MARKING REMOVAL - WATER BLASTING	SQ FT	374.2	✳
X7010216	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	L SUM	1	
Z0002750	BARRICADES, TYPE III	EACH	3	

✳ Nominal Quantity to be used as needed and approved by the Commissioner.

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35 W. Wacker Drive Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 210070.11

UNION PACIFIC

DRAWN BY: KP	WORK ORDER: 31876
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DATE: 05/28/21	BUDGET REF:
SCALE: N.T.S.	SHEET NUMBER: R-011

UNION PACIFIC RAILROAD — Director Structures Design

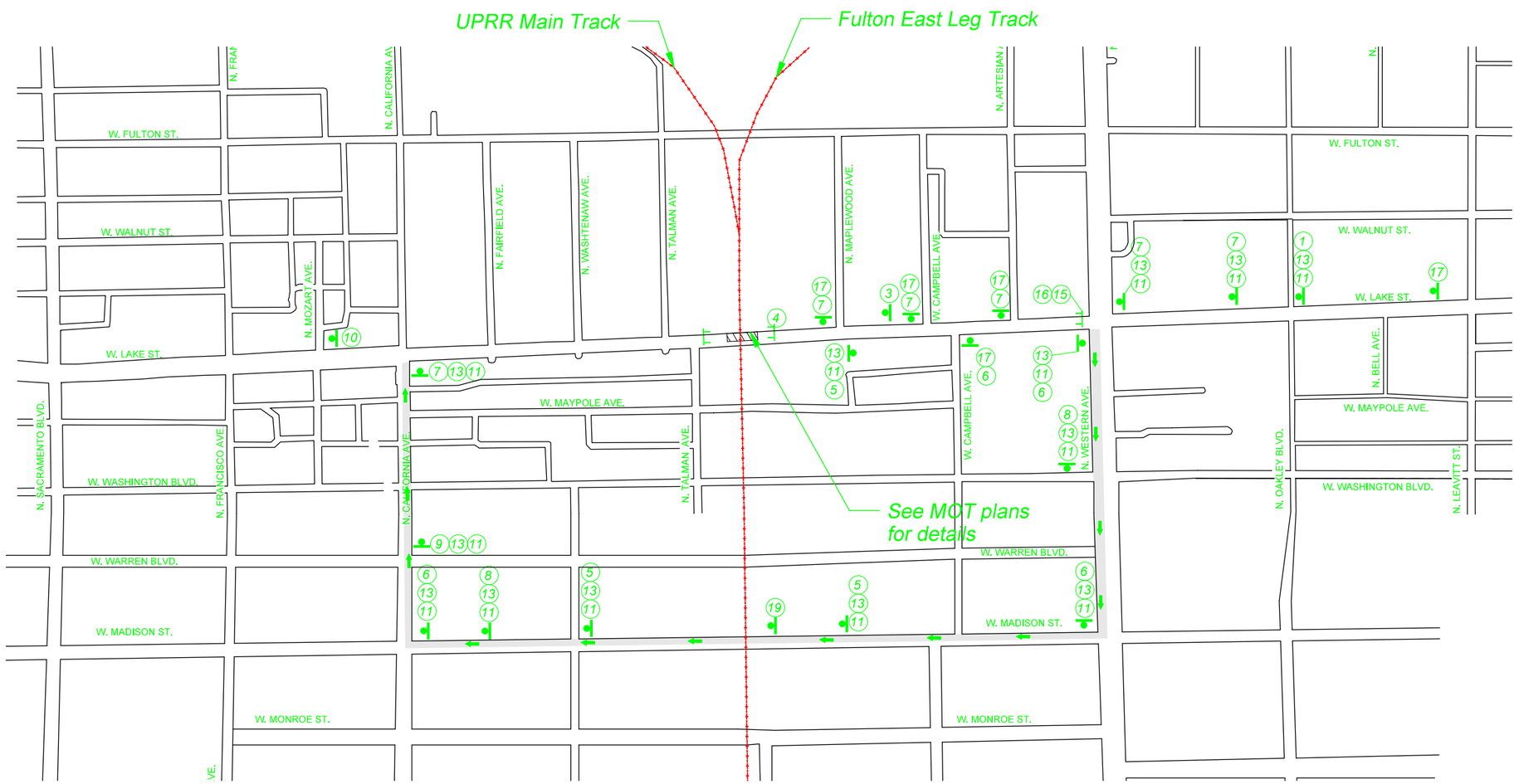
LOCATION & DESCRIPTION:
MP 0.82 ROCKWELL SUBDIVISION
LAKE STREET BRIDGE REPLACEMENT

SHEET TITLE:
TRAFFIC CONTROL GENERAL NOTES

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5/25/2021

DETOUR NOTES:

1. The detour shown on this plan sheet will apply when westbound Lake St is closed. Closure periods shall be coordinated with the Commissioner.



SIGN LEGEND

1	DETOUR AHEAD	W20-2 (48x48)	5	DETOUR	M4-9 (24x30)	9	DETOUR	M4-9L (24x30)	13	WEST	M3-4 (24x12)	17	WESTBOUND W LAKE ST ROAD CLOSED TO THRU TRAFFIC	SPECIAL (72x36)
2	ROAD CLOSED AHEAD	W20-3 (48x48)	6	DETOUR	M4-9R (24x30)	10	END DETOUR	M4-8A (24x18)	14	DETOUR	M4-10L (48x18)	18	EASTBOUND W LAKE ST ROAD CLOSED TO THRU TRAFFIC	SPECIAL (72x36)
3	ROAD CLOSED 500 FT	W20-3 (48x48)	7	DETOUR	M4-9L (24X30)	11	W LAKE ST	SPECIAL (42x10)	15	DETOUR	M4-10R (48X18)	19	13'-8"	W12-2 (48x48)
4	ROAD CLOSED	R11-2 (48x30)	8	DETOUR	M4-9 R (24x30)	12	EAST	M3-2 (24x12)	16	ROAD CLOSED TO THRU TRAFFIC	R11-4 (60x30)			

TYPICAL LAYOUT OF SIGNS



LEGEND

- Work Area
- Detour Route
- 1 6 13 Traffic Sign Key (Combination Of Signs)
- Type III Barricade With Amber Flashing Lights
- Sign On Portable Or Permanent Support
- 48"x48" Construction Warning Sign, With Amber Flashing Light
- Detoured Traffic Direction

Scale: None

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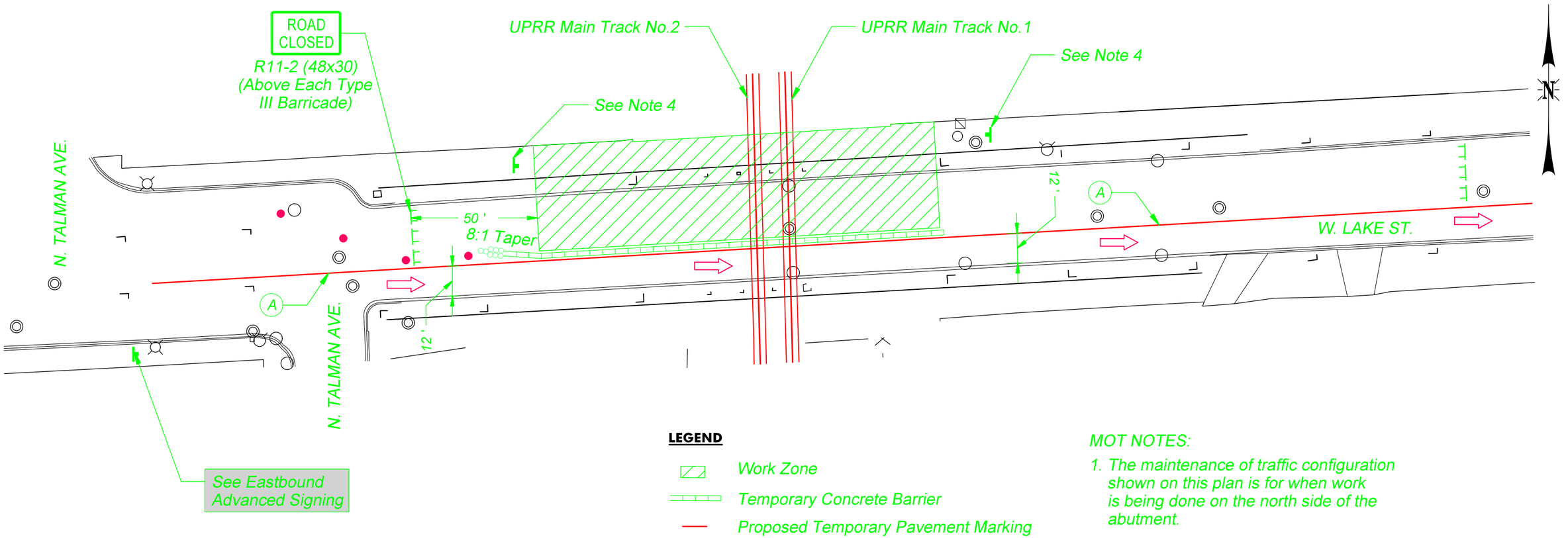
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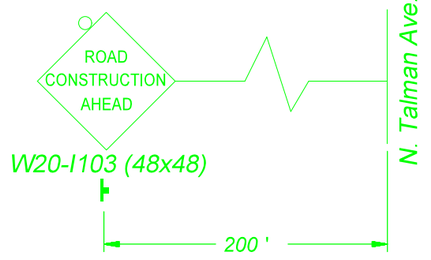
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Chicago, Illinois 60601
312-565-0450 Job No. 210070.11

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CHECKED BY: TK	PID:	LOCATION & DESCRIPTION: MP 0.82 ROCKWELL SUBDIVISION LAKE STREET BRIDGE REPLACEMENT	
DATE: 05/28/21	BUDGET REF:		
SCALE: N.T.S.	SHEET NUMBER R-012	SHEET TITLE: WESTBOUND DETOUR - W LAKE ST	

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5/25/2021



EASTBOUND ADVANCED SIGNING



LEGEND

- Work Zone
- Temporary Concrete Barrier
- Proposed Temporary Pavement Marking
- Drum Or Type I Barricade W/ Flashing Amber Light @ 25' C-C
- Type III Barricade
- Impact Attentuator Test Level 2
- Traffic Direction
- Temporary Traffic Sign
- (A) Temporary Pavement Marking, 4" Yellow Line

MOT NOTES:

1. The maintenance of traffic configuration shown on this plan is for when work is being done on the north side of the abutment.
2. The westbound Lake St. detour shall be in place when this maintenance of traffic configuration is in place.
3. Contractor to maintain all crosswalks opened at the intersection of Talman Ave and Lake St. during this stage.
4. Contractor shall close north sidewalk within the work zone limits. Contractor shall place local and advance signing to inform pedestrians of sidewalk closure. Use IDOT Highway Standard 701801 for proper signing.

40 0 40 80

SCALE IN FEET

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312-565-0450 Job No. 210070.11

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DATE: 05/28/21	BUDGET REF:
SCALE: 1"=40'	SHEET NUMBER R-013

UNION PACIFIC RAILROAD — Director Structures Design

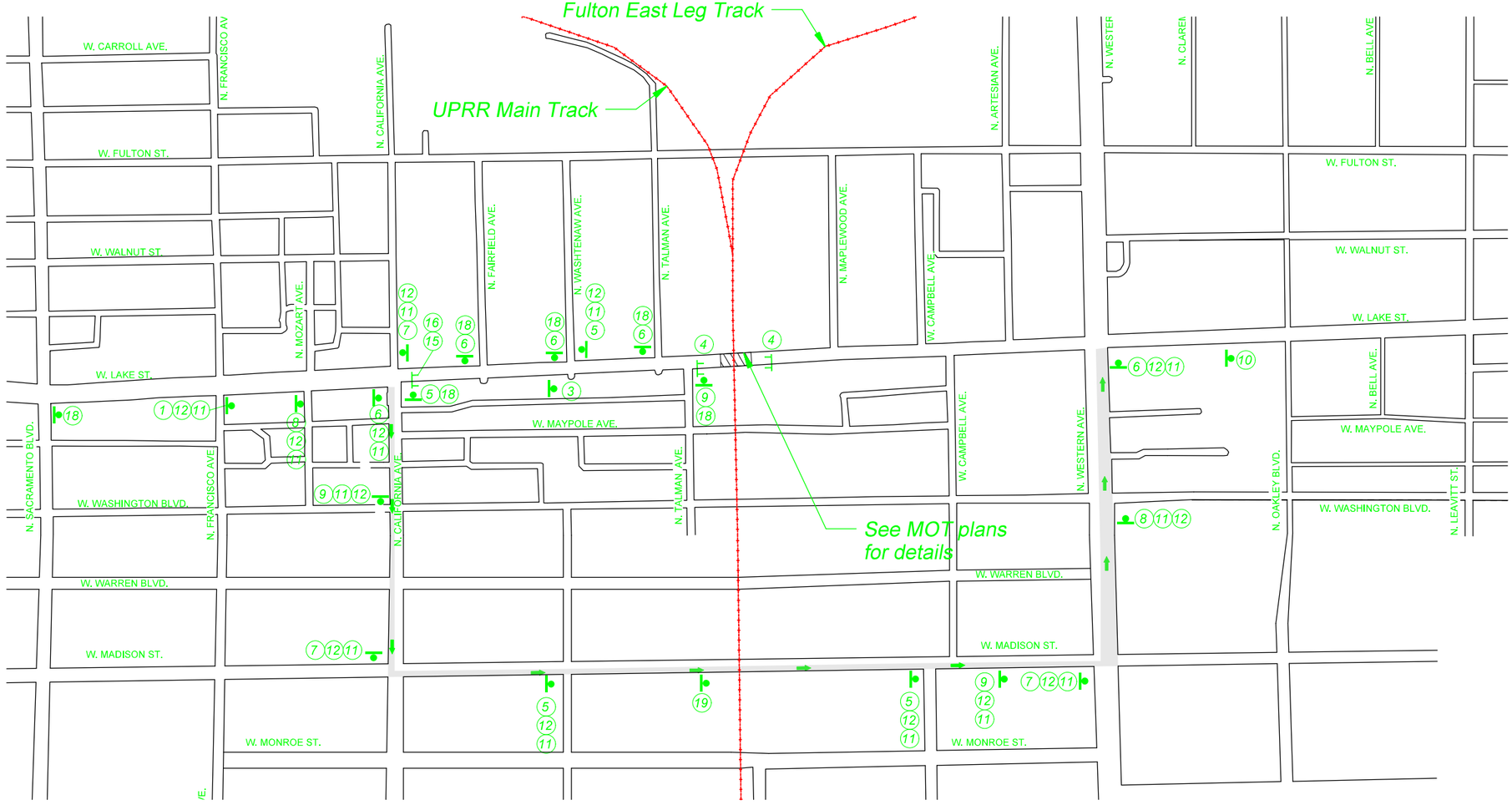
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MP 0.82 ROCKWELL SUBDIVISION
LAKE STREET BRIDGE REPLACEMENT

SHEET TITLE:
MOT- EASTBOUND W LAKE ST

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5/25/2021

DETOUR NOTES:

1. The detour shown on this plan sheet will apply when eastbound Lake St is closed. Closure periods shall be coordinated with the Commissioner.



SIGN LEGEND

1	DETOUR AHEAD	W20-2 (48x48)	5	DETOUR	M4-9 (24x30)	9	DETOUR	M4-9L (24x30)	13	WEST	M3-4 (24x12)	17	WESTBOUND W LAKE ST ROAD CLOSED TO THRU TRAFFIC	SPECIAL (72x36)
2	ROAD CLOSED AHEAD	W20-3 (48x48)	6	DETOUR	M4-9R (24x30)	10	END DETOUR	M4-8A (24x18)	14	DETOUR	M4-10L (48x18)	18	EASTBOUND W LAKE ST ROAD CLOSED TO THRU TRAFFIC	SPECIAL (72x36)
3	ROAD CLOSED 500 FT	W20-3 (48x48)	7	DETOUR	M4-9L (24X30)	11	W LAKE ST	SPECIAL (42x10)	15	DETOUR	M4-10R (48X18)	19	13'-8"	W12-2 (48x48)
4	ROAD CLOSED	R11-2 (48x30)	8	DETOUR	M4-9 R (24x30)	12	EAST	M3-2 (24x12)	16	ROAD CLOSED TO THRU TRAFFIC	R11-4 (60x30)			

TYPICAL LAYOUT OF SIGNS

DETOUR
EAST
W LAKE ST

LEGEND

- Work Area
- Detour Route
- 1 6 13 Traffic Sign Key (Combination Of Signs)
- Type III Barricade With Amber Flashing Lights
- Sign On Portable Or Permanent Support
- 48"x48" Construction Warning Sign, With Amber Flashing Light
- Detoured Traffic Direction

Scale: None

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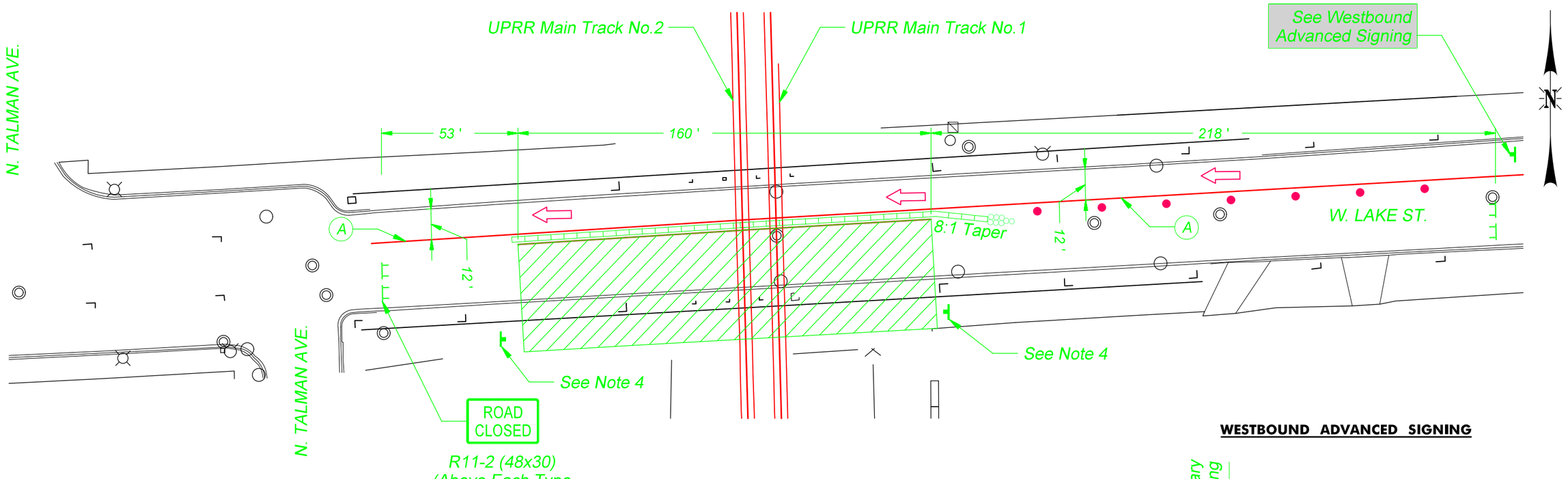
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35 W. Wacker Drive Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 210070.11

DRAWN BY: KP	WORK ORDER: 31876	UNION PACIFIC RAILROAD	Director Structures Design
CHECKED BY: TK	PID:	LOCATION & DESCRIPTION: MP 0.82 ROCKWELL SUBDIVISION LAKE STREET BRIDGE REPLACEMENT	
DATE: 05/28/21	BUDGET REF:		
SCALE: N.T.S.	SHEET NUMBER: R-014	SHEET TITLE: EASTBOUND DETOUR - W LAKE ST	

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5/25/2021



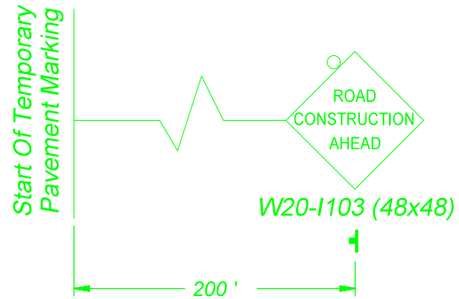
LEGEND

- Work Zone
- Temporary Concrete Barrier
- Proposed Temporary Pavement Marking
- Drum Or Type I Barricade W/ Flashing Amber Light @ 25' C-C
- Type III Barricade
- Impact Attentuator Test Level 2
- Traffic Direction
- Temporary Traffic Sign
- (A) Temporary Pavement Marking, 4" Yellow Line

MOT NOTES:

1. The maintenance of traffic configuration shown on this plan is for when work is being done on the south side of the abutment.
2. The eastbound Lake St detour shall be in place when this maintenance of traffic configuration is in place.
3. Contractor to maintain all crosswalks opened at the intersection of Talman Ave and Lake St. during this stage.
4. Contractor shall close south sidewalk within the work zone limits. Contractor shall place local and advance signing to inform pedestrians of sidewalk closure. Use IDOT Highway Standard 701801 for proper signing.

WESTBOUND ADVANCED SIGNING



40 0 40 80

SCALE IN FEET

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ON RAILROAD R-O-W
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ISSUED FOR CONSTRUCTION

REVISION	BY	DATE	DESCRIPTION

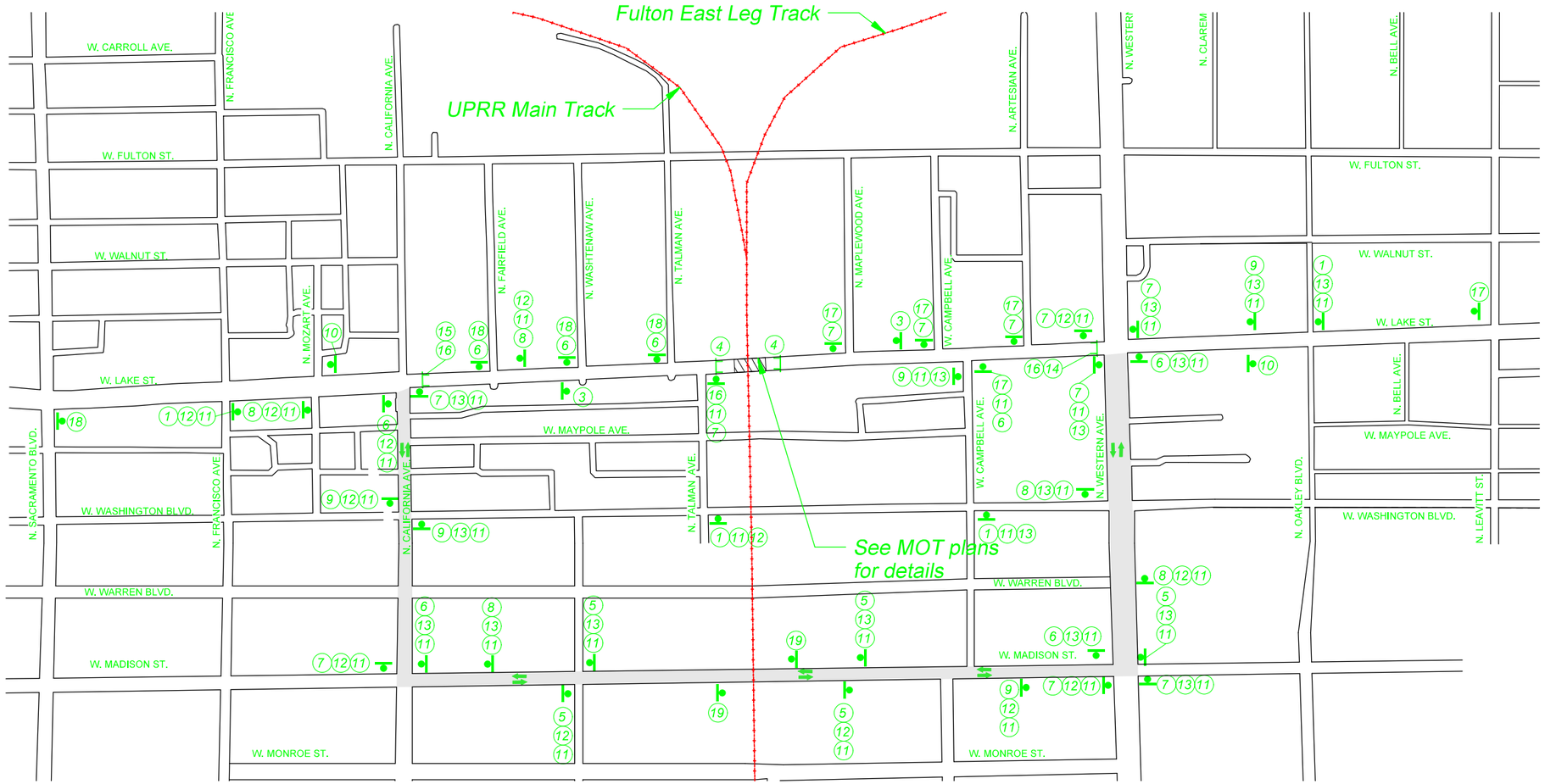
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35 W. Wacker Drive Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 210070.11

DRAWN BY: KP	WORK ORDER: 31876	UNION PACIFIC RAILROAD	Director Structures Design
CHECKED BY: TK	PID:	LOCATION & DESCRIPTION: MP 0.82 ROCKWELL SUBDIVISION LAKE STREET BRIDGE REPLACEMENT	
DATE: 05/28/21	BUDGET REF:		
SCALE: 1"=40'	SHEET NUMBER R-015	SHEET TITLE: MOT - WESTBOUND W LAKE ST	

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Default
5/25/2021

DETOUR NOTES:

1. Full closure of Lake St will take place when the railroad superstructure will be erected. Closure shall take place between the hours of 7 PM to 5 AM. Closure periods shall be coordinated with the Commissioner.



SIGN LEGEND

1	DETOUR AHEAD	W20-2 (48x48)	5	DETOUR	M4-9 (24x30)	9	DETOUR	M4-9L (24x30)	13	WEST	M3-4 (24x12)	17	WESTBOUND W LAKE ST ROAD CLOSED TO THRU TRAFFIC	SPECIAL (72x36)
2	ROAD CLOSED AHEAD	W20-3 (48x48)	6	DETOUR	M4-9R (24x30)	10	END DETOUR	M4-8A (24x18)	14	DETOUR	M4-10L (48x18)	18	EASTBOUND W LAKE ST ROAD CLOSED TO THRU TRAFFIC	SPECIAL (72x36)
3	ROAD CLOSED 500 FT	W20-3 (48x48)	7	DETOUR	M4-9L (24X30)	11	W LAKE ST	SPECIAL (42x10)	15	DETOUR	M4-10R (48X18)	19	13'-8"	W12-2 (48x48)
4	ROAD CLOSED	R11-2 (48x30)	8	DETOUR	M4-9 R (24x30)	12	EAST	M3-2 (24x12)	16	ROAD CLOSED TO THRU TRAFFIC	R11-4 (60x30)			

LEGEND

- Work Area
- Detour Route
- 1 6 13 Traffic Sign Key (Combination Of Signs)
- Type III Barricade With Amber Flashing Lights
- Sign On Portable Or Permanent Support
- 48"x48" Construction Warning Sign, With Amber Flashing Light
- Detoured Traffic Direction

TYPICAL LAYOUT OF SIGNS



Scale: None

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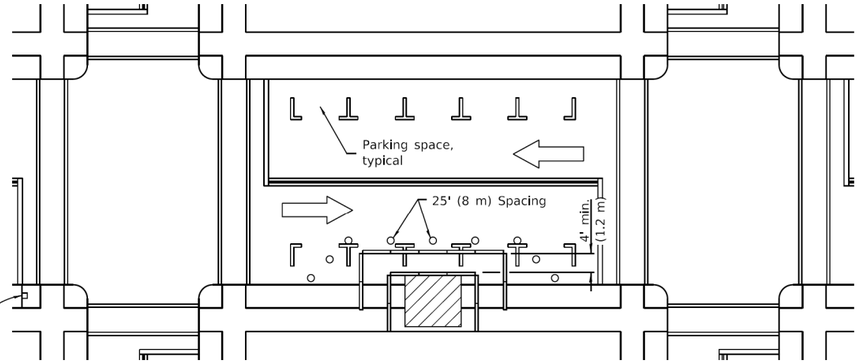
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REVISION	BY	DATE	DESCRIPTION

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Chicago, Illinois 60601
312-565-0450 Job No. 210070.11

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CHECKED BY: TK	PID:	LOCATION & DESCRIPTION: MP 0.82 ROCKWELL SUBDIVISION LAKE STREET BRIDGE REPLACEMENT	
DATE: 05/28/21	BUDGET REF:		
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5/25/2021



① ROAD CONSTRUCTION AHEAD — W20-I103(0)-48 for contract construction projects

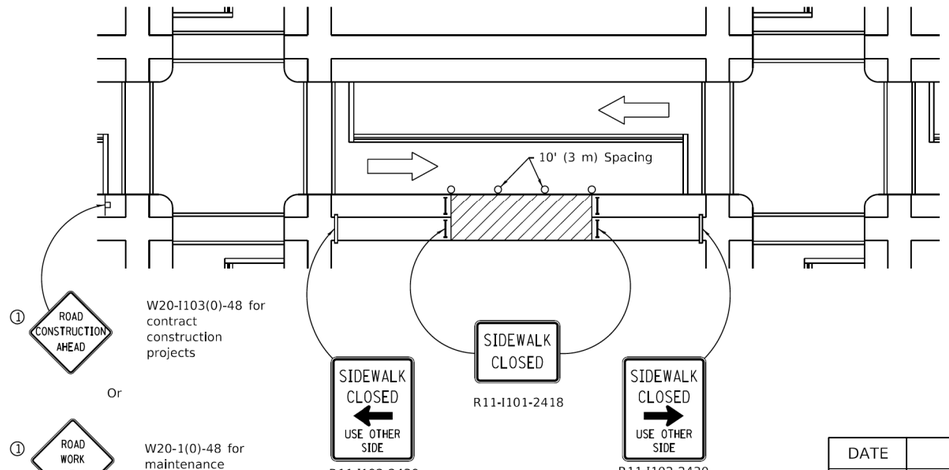
Or

① ROAD WORK AHEAD — W20-1(0)-48 for maintenance and utility projects

SIDEWALK DIVERSION

SYMBOLS

- Work area
- Sign on portable or permanent support
- Barricade or drum
- Cone, drum or barricade
- Type III barricade
- Detectable pedestrian channelizing barricade



① ROAD CONSTRUCTION AHEAD — W20-I103(0)-48 for contract construction projects

Or

① ROAD WORK AHEAD — W20-1(0)-48 for maintenance and utility projects

SIDEWALK CLOSURE

① Omit whenever duplicated by road work traffic control.

GENERAL NOTES

This Standard is used where, at any time, pedestrian traffic must be rerouted due to work being performed.

This Standard must be used in conjunction with other Traffic Control & Protection Standards when roadway traffic is affected.

Temporary facilities shall be detectable and accessible.

The temporary pedestrian facilities shall be provided on the same side of the closed facilities whenever possible.

The SIDEWALK CLOSED / USE OTHER SIDE sign shall be placed at the nearest crosswalk or intersection to each end of the closure. Where the closure occurs at a corner, the signs shall be erected on the corners across the street from the closure. The SIDEWALK CLOSED signs shall be used at the ends of the actual closures.

Type III barricades and R11-2-4830 signs shall be positioned as shown in "ROAD CLOSED TO ALL TRAFFIC" detail on Standard 701901.

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation

PASSED April 1, 2016
ENGINEER OF SAFETY ENGINEERING
APPROVED April 1, 2016
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

DATE	REVISIONS
4-1-16	Omitted orange safety fence
	from standard as this is
	covered in the std. spec.
1-1-12	Added SIDEWALK DIVERSION.
	Modified appearance of
	plan views. Renamed Std.

SIDEWALK, CORNER OR CROSSWALK CLOSURE

(Sheet 1 of 2)

STANDARD 701801-06

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REVISION	BY	DATE	DESCRIPTION

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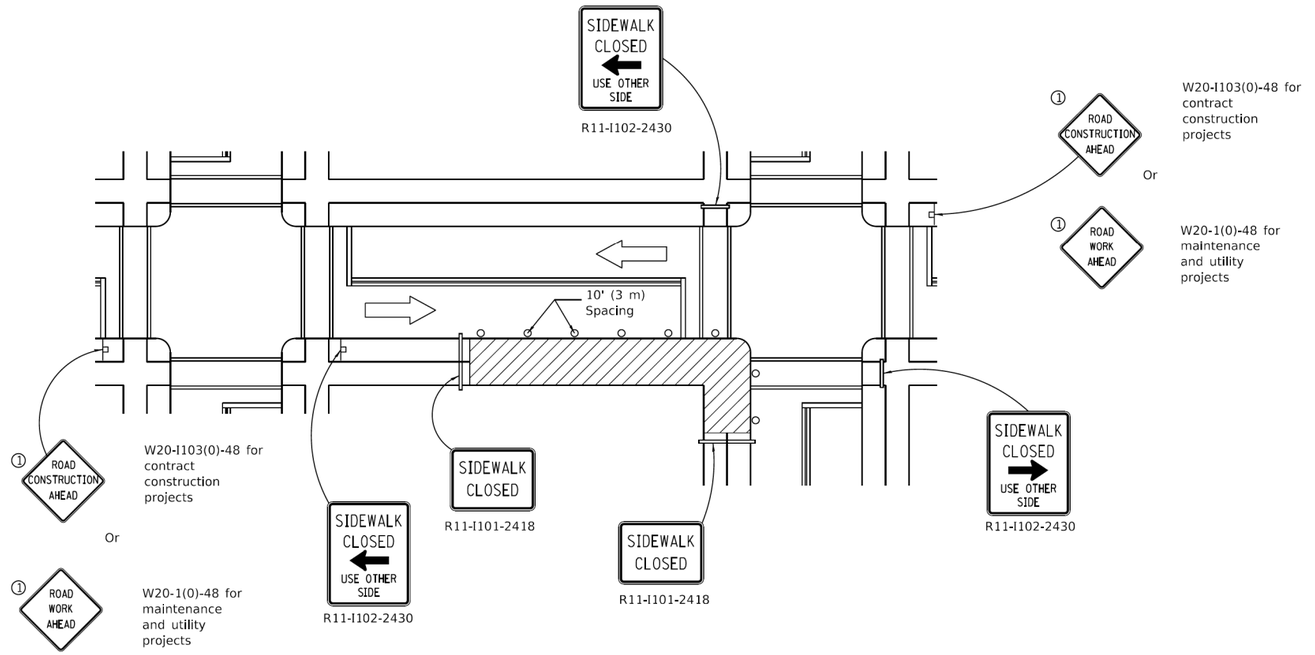
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SCALE: N.T.S.	SHEET NUMBER R-017

UNION PACIFIC RAILROAD — Director Structures Design

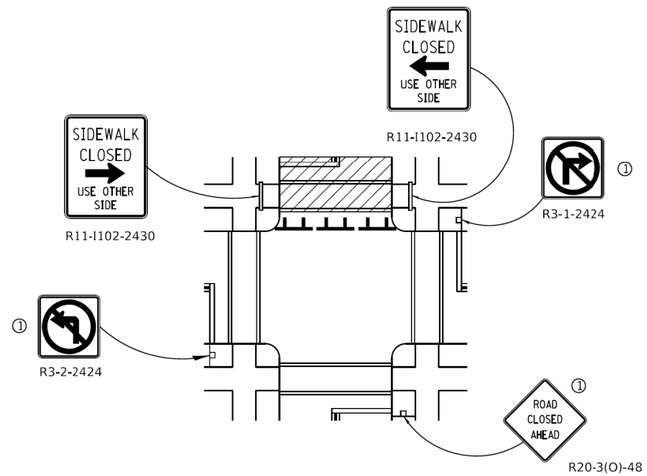
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LAKE STREET BRIDGE REPLACEMENT

SHEET TITLE:
IDOT HIGHWAY STANDARD

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5/25/2021



CORNER CLOSURE



CROSSWALK CLOSURE

Illinois Department of Transportation

PASSED April 1, 2016
ENGINEER OF SAFETY ENGINEERING

APPROVED April 1, 2016
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

SIDEWALK, CORNER OR CROSSWALK CLOSURE

(Sheet 2 of 2)

STANDARD 701801-06

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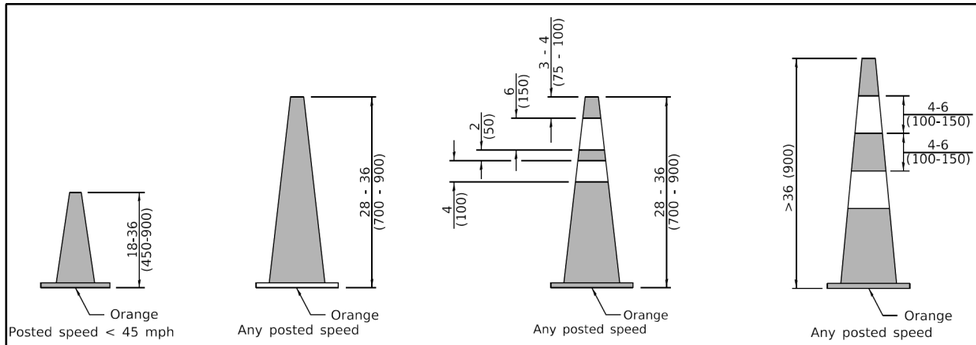
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UNION PACIFIC RAILROAD — Director Structures Design

LOCATION & DESCRIPTION:
MP 0.82 ROCKWELL SUBDIVISION
LAKE STREET BRIDGE REPLACEMENT

SHEET TITLE:
IDOT HIGHWAY STANDARD

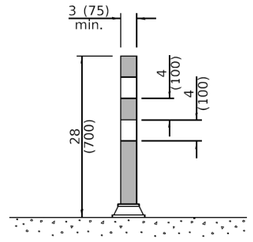
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5/25/2021



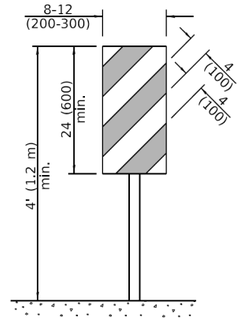
DAYTIME USE

DAY OR NIGHTTIME USE

CONES

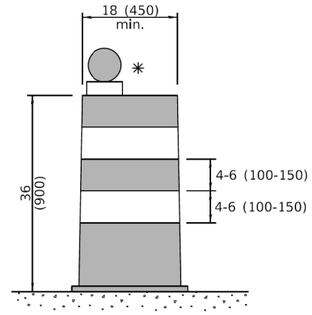


TUBULAR MARKER

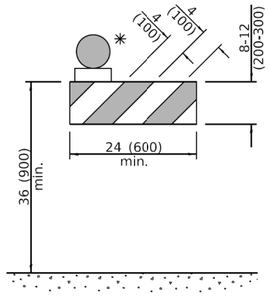


VERTICAL PANEL

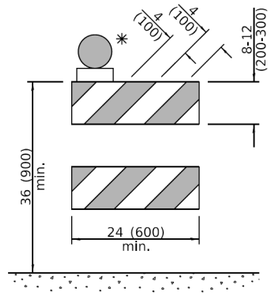
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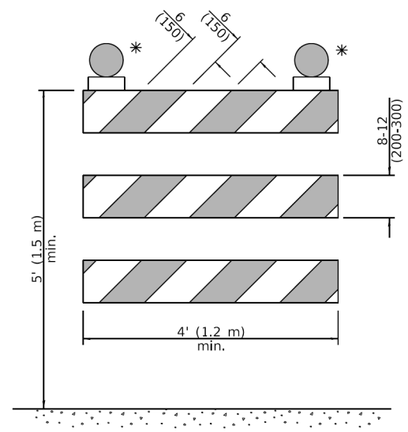
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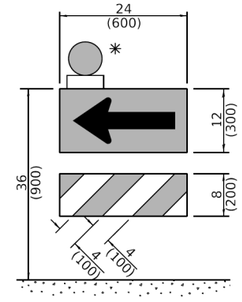
TYPE I BARRICADE



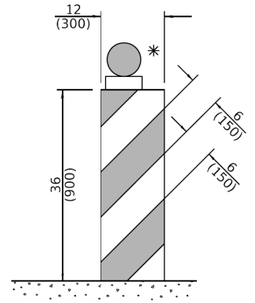
TYPE II BARRICADE



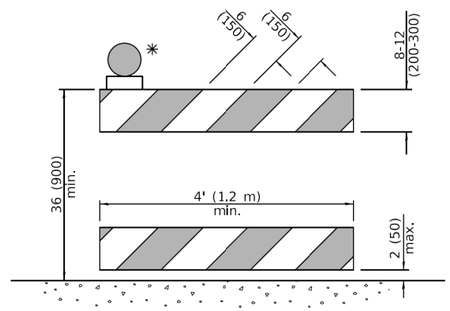
TYPE III BARRICADE



DIRECTION INDICATOR BARRICADE



VERTICAL BARRICADE



DETECTABLE PEDESTRIAN CHANNELIZING BARRICADE

✳ Warning lights (if required)

GENERAL NOTES

All heights shown shall be measured above the pavement surface.

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation

APPROVED January 1, 2019
ENGINEER OF SAFETY PROG. AND ENGINEERING

APPROVED January 1, 2019
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-19

DATE	REVISIONS
1-1-19	Revised cone usage and
	added cones >36" (900 m) height.
1-1-18	Revised END WORK ZONE
	SPEED LIMIT sign from
	orange to white background.

TRAFFIC CONTROL DEVICES

(Sheet 1 of 3)

STANDARD 701901-08

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Alfred Benesch & Company
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312-565-0450 Job No. 210070.11

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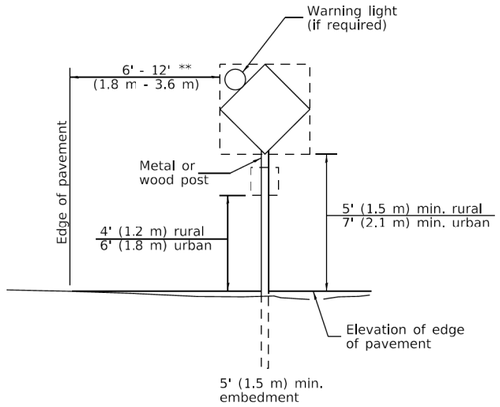
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UNION PACIFIC RAILROAD — Director Structures Design

LOCATION & DESCRIPTION:
MP 0.82 ROCKWELL SUBDIVISION
LAKE STREET BRIDGE REPLACEMENT

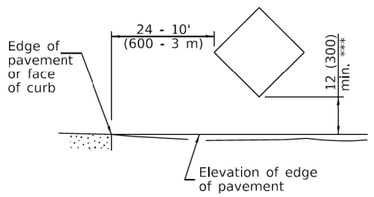
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IDOT HIGHWAY STANDARD

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5/25/2021



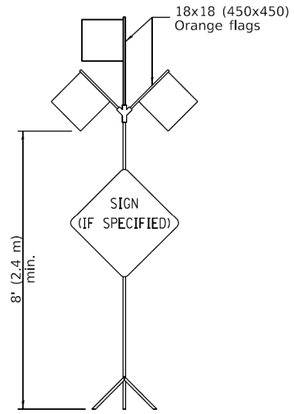
POST MOUNTED SIGNS

** When curb or paved shoulder are present this dimension shall be 24 (600) to the face of curb or 6' (1.8 m) to the outside edge of the paved shoulder.

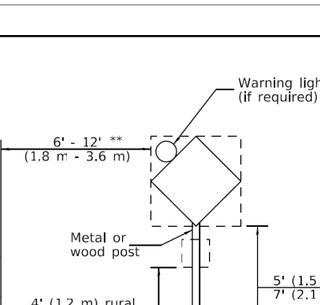


SIGNS ON TEMPORARY SUPPORTS

*** When work operations exceed four days, this dimension shall be 5' (1.5 m) min. If located behind other devices, the height shall be sufficient to be seen completely above the devices.



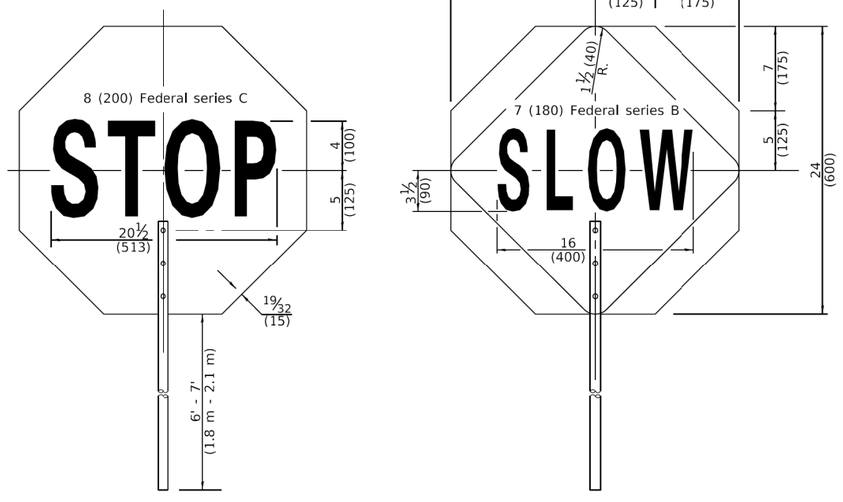
HIGH LEVEL WARNING DEVICE



W12-I103-4848

WIDTH RESTRICTION SIGN

XX'-XX" width and X miles are variable.



FRONT SIDE

REVERSE SIDE

FLAGGER TRAFFIC CONTROL SIGN

ROAD CONSTRUCTION NEXT X MILES

G20-I104(0)-6036

END CONSTRUCTION

G20-I105(0)-6024

This signing is required for all projects 2 miles (3200 m) or more in length.

ROAD CONSTRUCTION NEXT X MILES sign shall be placed 500' (150 m) in advance of project limits.

END CONSTRUCTION sign shall be erected at the end of the job unless another job is within 2 miles (3200 m).

Dual sign displays shall be utilized on multi-lane highways.

WORK LIMIT SIGNING

WORK ZONE	W21-III5(0)-3618
SPEED LIMIT XX	R2-I106p-3618
PHOTO ENFORCED	R10-I108p-3618 ****
$XXX FINE MINIMUM	R2-I106p-3618

Sign assembly as shown on Standards or as allowed by District Operations.

END WORK ZONE SPEED LIMIT — G20-I103-6036

This sign shall be used when the above sign assembly is used.

HIGHWAY CONSTRUCTION SPEED ZONE SIGNS

**** R10-I108p shall only be used along roadways under the juristiction of the State.

Illinois Department of Transportation

APPROVED January 1, 2019
ENGINEER OF SAFETY PROG. AND ENGINEERING

APPROVED January 1, 2019
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-13

TRAFFIC CONTROL DEVICES

(Sheet 2 of 3)

STANDARD 701901-08

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ISSUED FOR CONSTRUCTION

REVISION	BY	DATE	DESCRIPTION

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Alfred Benesch & Company
35 W. Wacker Drive Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 210070.11

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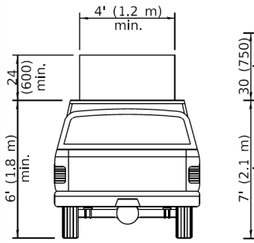
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UNION PACIFIC RAILROAD — Director Structures Design

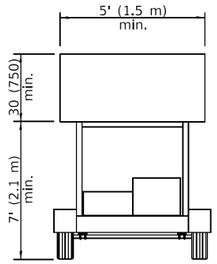
LOCATION & DESCRIPTION:
MP 0.82 ROCKWELL SUBDIVISION
LAKE STREET BRIDGE REPLACEMENT

SHEET TITLE:
IDOT HIGHWAY STANDARD

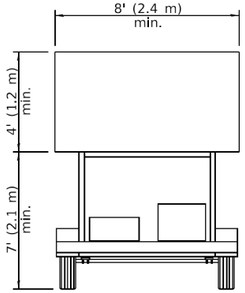
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5/25/2021



TYPE A
ROOF
MOUNTED

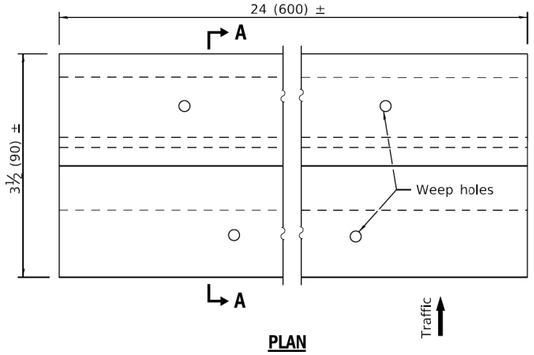


TYPE B
ROOF OR TRAILER
MOUNTED

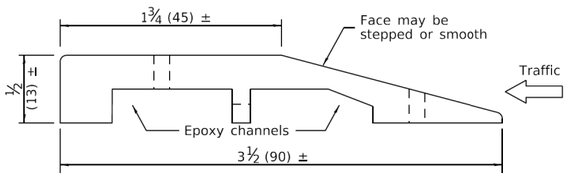


TYPE C
TRAILER
MOUNTED

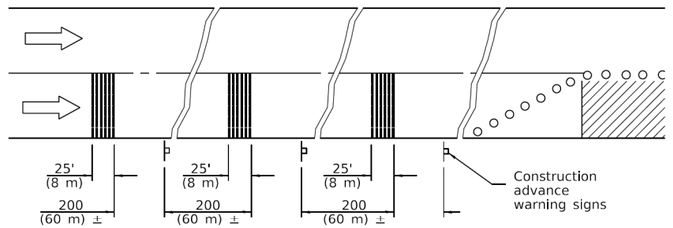
ARROW BOARDS

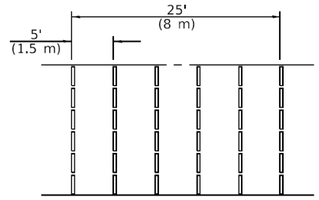


PLAN



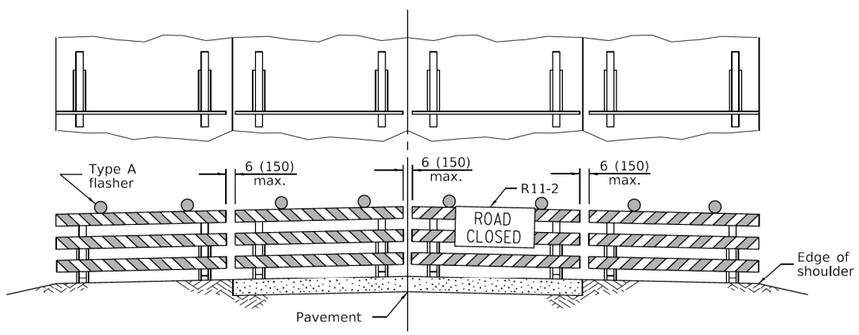
SECTION A-A





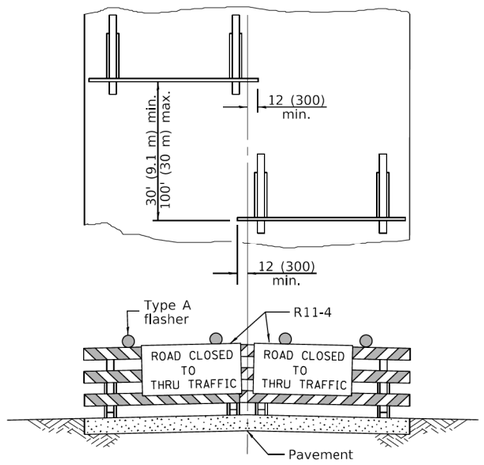
TYPICAL INSTALLATION

TEMPORARY RUMBLE STRIPS



ROAD CLOSED TO ALL TRAFFIC

Reflectorized striping may be omitted on the back side of the barricades. If a Type III barricade with an attached sign panel which meets NCHRP 350 is not available, the sign may be mounted on an NCHRP 350 temporary sign support directly in front of the barricade.



ROAD CLOSED TO THRU TRAFFIC

Reflectorized striping shall appear on both sides of the barricades. If a Type III barricade with an attached sign panel which meets NCHRP 350 is not available, the signs may be mounted on NCHRP 350 temporary sign supports directly in front of the barricade.

TYPICAL APPLICATIONS OF TYPE III BARRICADES CLOSING A ROAD

Illinois Department of Transportation

APPROVED January 1, 2019
ENGINEER OF SAFETY PROG. AND ENGINEERING

APPROVED January 1, 2019
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-13

TRAFFIC CONTROL DEVICES

(Sheet 3 of 3)

STANDARD 701901-08

WARNING !
FIBER OPTIC CABLE
ON RAILROAD R-O-W
CALL BEFORE YOU DIG
1-800-336-9193

ISSUED FOR CONSTRUCTION

REVISION	BY	DATE	DESCRIPTION

benesch
Alfred Benesch & Company
35 W. Wacker Drive Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 210070.11

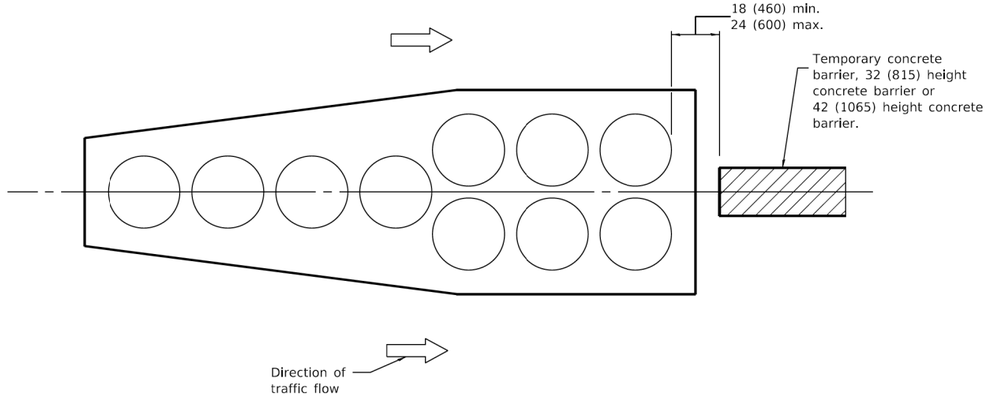
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CHECKED BY: TK	PID:
DATE: 05/28/21	BUDGET REF:
SCALE: N.T.S.	SHEET NUMBER R-021

UNION PACIFIC RAILROAD — Director Structures Design

LOCATION & DESCRIPTION:
MP 0.82 ROCKWELL SUBDIVISION
LAKE STREET BRIDGE REPLACEMENT

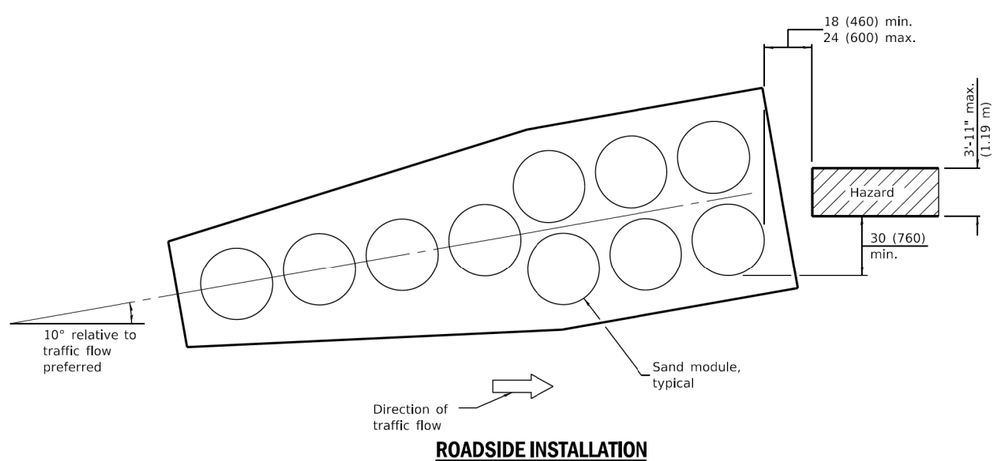
SHEET TITLE:
IDOT HIGHWAY STANDARD

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5/25/2021



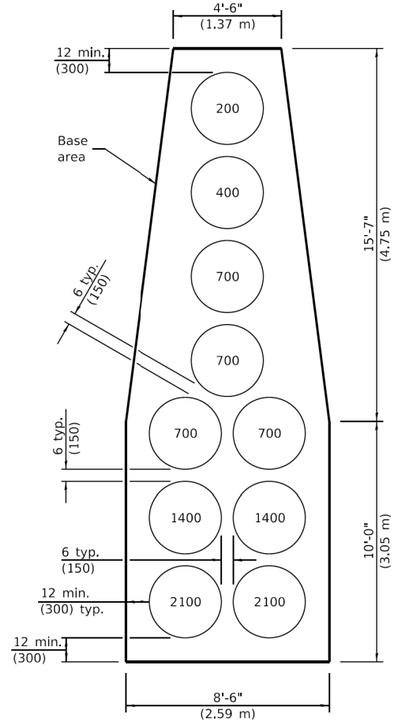
GORE INSTALLATION

(Traffic approaches on both sides)
(Test Level 2 array shown)



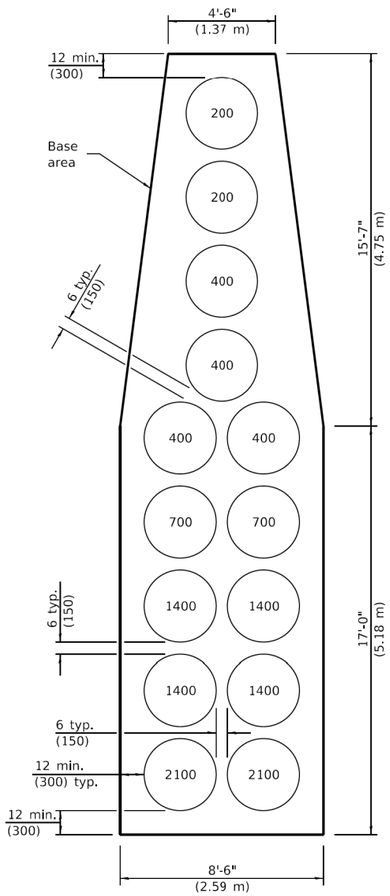
ROADSIDE INSTALLATION

(Traffic approaches on one side)
(Test Level 2 array shown)



TEST LEVEL 2 ARRAY

(For design speed less than or equal to 45 mph.)
(Numbers inside sand modules indicate sand weight in pounds.)



TEST LEVEL 3 ARRAY

(For design speed greater than 45 mph.)
(Numbers inside sand modules indicate sand weight in pounds.)

GENERAL NOTES

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation

PASSED January 1, 2014
Michael Brand
ENGINEER OF POLICY AND PROCEDURES
APPROVED January 1, 2014
ENGINEER OF DESIGN AND ENVIRONMENT
ISSUED 1-1-97

DATE	REVISIONS
1-1-14	Revised distance from
	barrels to hazard.
1-1-13	Changed 'posted speed' to
	'design speed'.

SAND MODULE IMPACT ATTENUATORS

STANDARD 643001-02

WARNING !
FIBER OPTIC CABLE
ON RAILROAD R-O-W
CALL BEFORE YOU DIG
1-800-336-9193

ISSUED FOR CONSTRUCTION

REVISION	BY	DATE	DESCRIPTION

benesch
Alfred Benesch & Company
35 W. Wacker Drive Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 210070.11

UNION PACIFIC

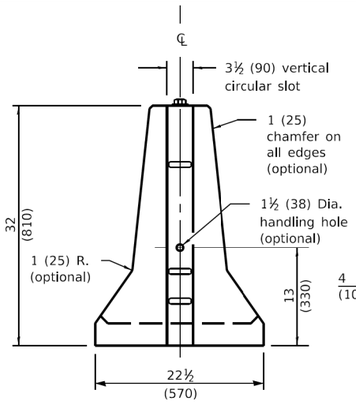
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DATE: 05/28/21	BUDGET REF:
SCALE: N.T.S.	SHEET NUMBER R-022

UNION PACIFIC RAILROAD — Director Structures Design

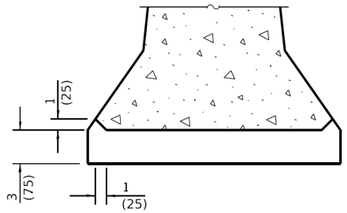
LOCATION & DESCRIPTION:
MP 0.82 ROCKWELL SUBDIVISION
LAKE STREET BRIDGE REPLACEMENT

SHEET TITLE:
IDOT HIGHWAY STANDARD

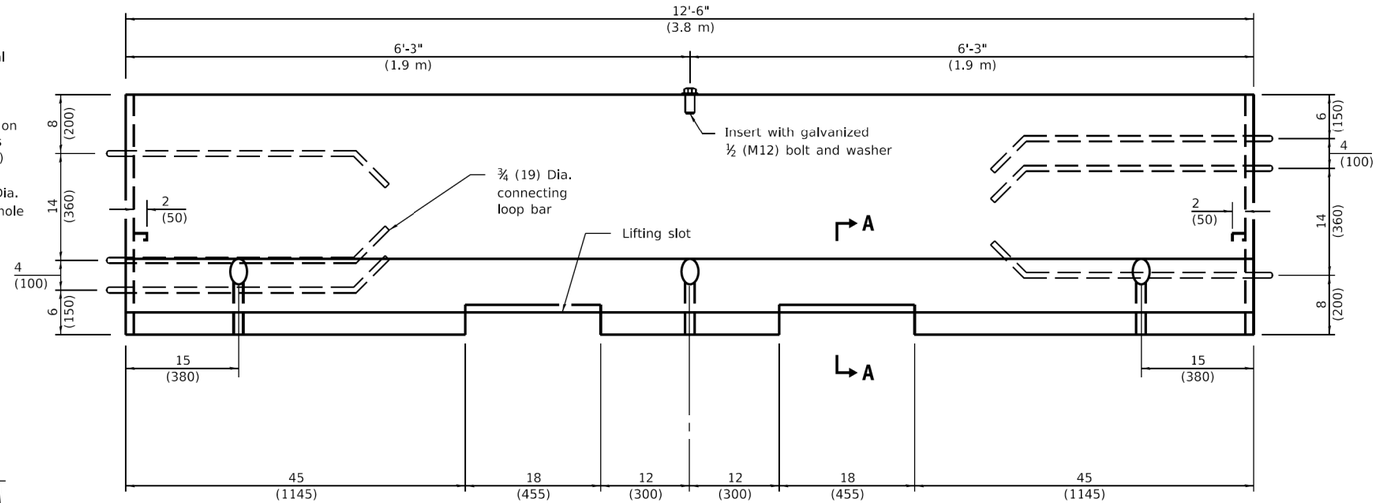
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5/25/2021



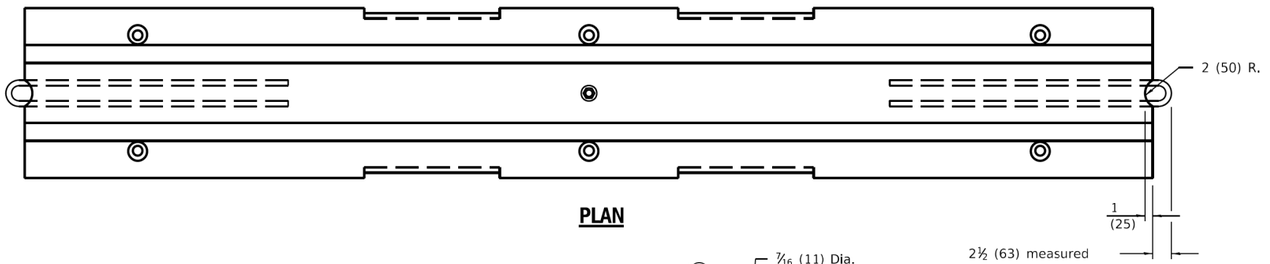
END VIEW
(Showing lifting slot)



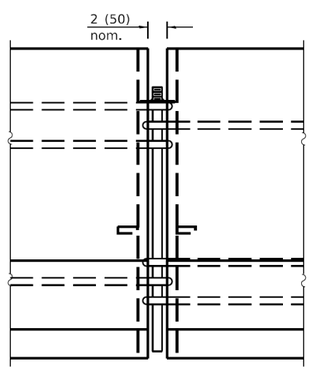
SECTION A-A
LIFTING SLOT



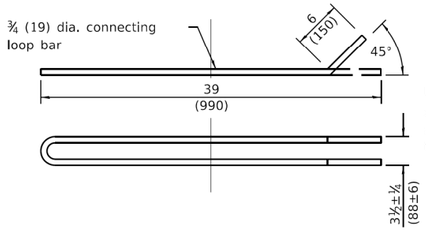
ELEVATION
(Showing connecting loop bars and vertical panel bolt/insert)



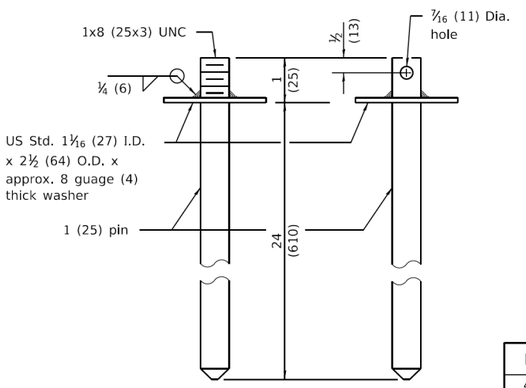
PLAN



CONNECTING DETAIL



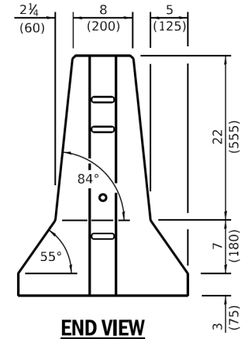
CONNECTING LOOP BAR



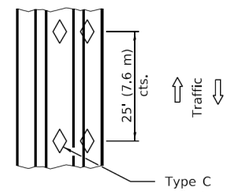
CONNECTING AND ANCHOR PINS
(End may be beveled ¼ (6) max.)

2½ (63) measured from face of barrier to end of loop bar

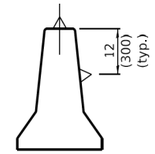
F SHAPE DESIGN



END VIEW



TOP VIEW



BARRIER WALL REFLECTORS

GENERAL NOTES

Each F shape barrier shall be clearly marked with "ILLINOIS F SHAPE", the Producer's mark and the date of manufacture. The markings shall be indented on the barrier or painted thereon with waterproof paint/ink.

The insert for the ½ (M12) bolt shall be capable of 3,000 lb (13 kN) pull-out strength.

When barrier separates opposing flows of traffic markers shall be on both sides of barrier.

See Standard 782006 for dimensions of Type C reflector.

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation

PASSED April 1, 2016
Michael Brand
ENGINEER OF POLICY AND PROCEDURES
APPROVED April 1, 2016
ENGINEER OF DESIGN AND ENVIRONMENT
ISSUED 10-1-02

DATE	REVISIONS
4-1-16	Rev. opt. chamfer on all
	edges to 1 (25). Reference
	to Std. 635011 now 782006.
1-1-12	Omitted 'ALTERNATE' from
	connecting and anchoring
	pins detail.

TEMPORARY CONCRETE BARRIER

(Sheet 1 of 2)

STANDARD 704001-08

WARNING !
FIBER OPTIC CABLE
ON RAILROAD R-O-W
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1-800-336-9193

ISSUED FOR CONSTRUCTION

REVISION	BY	DATE	DESCRIPTION

benesch
Alfred Benesch & Company
35 W. Wacker Drive Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 210070.11

UNION PACIFIC

DRAWN BY: KP	WORK ORDER: 31876
CHECKED BY: TK	PID:
DATE: 05/28/21	BUDGET REF:
SCALE: N.T.S.	SHEET NUMBER R-023

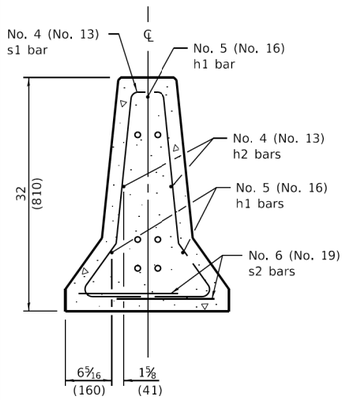
UNION PACIFIC RAILROAD — Director Structures Design

LOCATION & DESCRIPTION:
MP 0.82 ROCKWELL SUBDIVISION
LAKE STREET BRIDGE REPLACEMENT

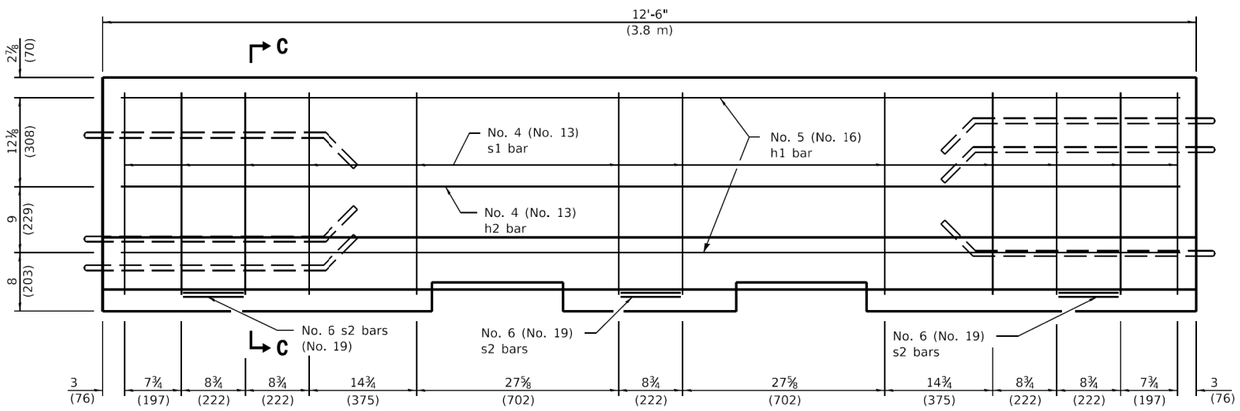
SHEET TITLE:
IDOT HIGHWAY STANDARD

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5/25/2021

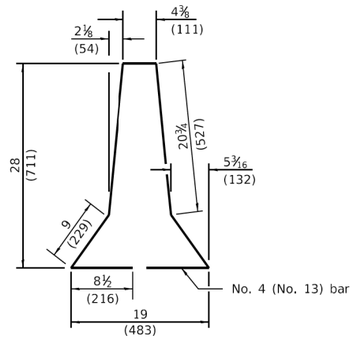
F SHAPE DESIGN



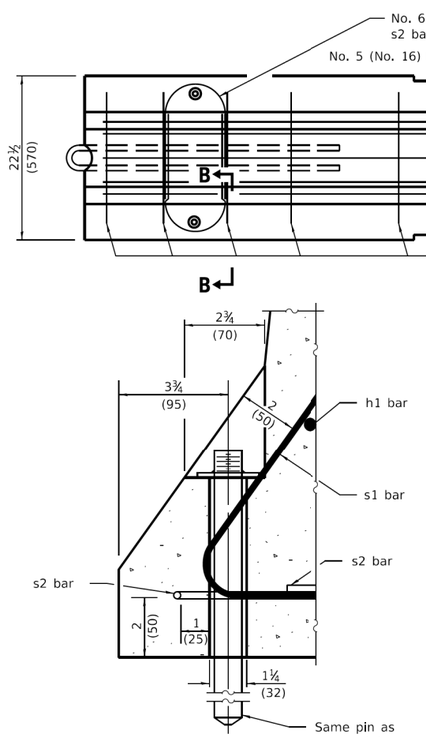
SECTION C-C



ELEVATION
(Reinforcement)

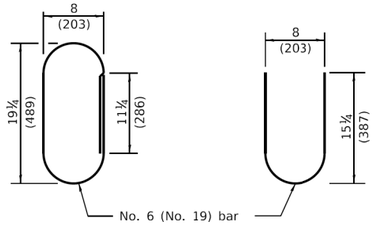


s1 BAR

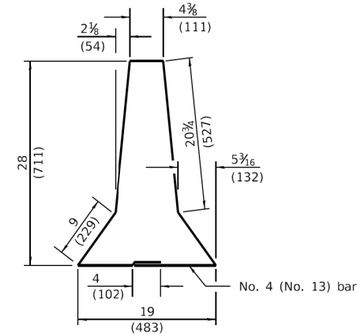


PLAN

SECTION B-B
ANCHORING DETAIL



ALTERNATE s2 BARS



ALTERNATE s1 BAR

Illinois Department of Transportation

PASSED April 1, 2016
Michael Brand
ENGINEER OF POLICY AND PROCEDURES
APPROVED April 1, 2016
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 10-1-02

TEMPORARY CONCRETE BARRIER

(Sheet 2 of 2)

STANDARD 704001-08

WARNING !
FIBER OPTIC CABLE
ON RAILROAD R-O-W
CALL BEFORE YOU DIG
1-800-336-9193

ISSUED FOR CONSTRUCTION

REVISION	BY	DATE	DESCRIPTION

benesch
Alfred Benesch & Company
35 W. Wacker Drive Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 210070.11

DRAWN BY: KP	WORK ORDER: 31876	UNION PACIFIC RAILROAD	Director Structures Design
CHECKED BY: TK	PID:	LOCATION & DESCRIPTION: MP 0.82 ROCKWELL SUBDIVISION LAKE STREET BRIDGE REPLACEMENT	
DATE: 05/28/21	BUDGET REF:		
SCALE: N.T.S.	SHEET NUMBER R-024	SHEET TITLE: IDOT HIGHWAY STANDARD	

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Default
5/25/2021

GENERAL UTILITY NOTES :

COMED :
USE EXTREME CAUTION NEAR ComEd FACILITIES. HAND DIG WHILE CROSSING 69/138/345 kv TRANSMISSION LINE. ComEd TRANSMISSION SHALL BE NOTIFIED 2 BUSINESS DAYS PRIOR TO THE START OF THE WORK. TO SCHEDULE AN ON SITE INSPECTOR DURING CONSTRUCTION, CONTACT LESLIE PASCHAL AT (630) 437-4767.

NO DIRECTIONAL BORING WITHIN 5 FEET OF COMED CONDUITS. CITY CONTRACTORS ARE REQUESTED TO TAKE EXTRA PRECAUTIONS WHEN WORKING NEAR COMED OVERHEAD WIRES. THESE WIRES ARE NOT INSULATED. COMED REQUESTS THAT THE CITY DIRECTIONAL BORE CONTRACTORS PROTECT ALL EXISTING COMED MANHOLES & CONDUITS WHEN CROSSING, ADJACENT TO OR IN THE NEAR VICINITY, BY DIGGING TEST HOLES TO ASSURE COMED FACILITIES ARE NOT DAMAGED, DURING THE DIRECTIONAL BORE PROCESS, & HAND DIG WHEN WITHIN 5 FT OR CROSSING FACILITIES. IF NEEDED CONTACT MICHELLE HO, 331-481-9108 WITH A 6-WEEK NOTICE.

CHICAGO DEPARTMENT OF WATER MANAGEMENT :
WATER MAINS AND SERVICES:

THE MINIMUM VERTICAL CLEARANCE (EDGE-TO-EDGE) FROM WATER MAINS AND SERVICES IS 18-INCHES. FOR GRID MAINS (WATER MAINS LESS THAN 16-INCHES) AND WATER STRUCTURES (VALVE BASINS, SERVICE CONTROL VALVES, ETC.) THE MINIMUM HORIZONTAL CLEARANCE (EDGE-TO-EDGE) IS THREE (3) FEET. FOR FEEDER MAINS (WATER MAINS 16-INCHES AND LARGER), THE MINIMUM HORIZONTAL CLEARANCE (EDGE-TO-EDGE) IS FIVE (5) FEET. ALL LIGHT POLE FOUNDATIONS MUST MAINTAIN A MINIMUM OF FIVE (5) FEET HORIZONTAL CLEARANCE (EDGE-TO-EDGE) TO ALL EXISTING WATER FACILITES.

FIRE HYDRANTS :

IN NO CASE SHALL THE INSTALLATION OF ANY PROPOSED FACILITY BE CLOSER THAN FIVE (5) FEET FROM A FIRE HYDRANT OR FIRE HYDRANT LEAD. EXTREME CAUTION IS TO BE TAKEN TO ENSURE THAT NO FACILITY OWNED AND MAINTAINED BY THIS DEPARTMENT (DWM) IS DAMAGED DURING CONSTRUCTION. IF DAMAGE OCCURS TO ANY FACILITIES, THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE COST OF REPAIRING OR REPLACING THE FACILITIES.

DEPARTMENT OF WATER MANAGEMENT (DWM) SEWER REQUIREMENTS FOR EXISTING FACILITIES PROTECTION.
AUGUST 2016.
FOR ALL GENERAL CLEARANCE REQUIREMENTS (NON-WATER):
UPON PROJECT COMPLETION, RESIDENT ENGINEERS MUST CONTACT THE DWM SEWER EVALUATION SECTION AT 312-747-4680 TO SCHEDULE A FIELD MEETING FOR PROJECT ACCEPTANCE.
DWM REQUIRES A MINIMUM HORIZONTAL CLEARANCE OF ID (INNER DIAMETER OF THE SEWER) + 4' CENTER-TO-CENTER OR 4 FEET EDGE-TO-EDGE, WHICHEVER IS LARGER, AND A MINIMUM VERTICAL CLEARANCE OF 18" EDGE-TO-EDGE. IF EITHER OF THESE CONDITIONS ARE NOT MET, THE SEWER MUST BE REPLACED OR LINED.

ONLY FOR PARALLEL UTILITY INSTALLATIONS IN THE PARKWAY:
UPON PROJECT COMPLETION, RESIDENT ENGINEERS MUST CONTACT THE DWM SEWER EVALUATION SECTION AT 312-747-4680 TO SCHEDULE A FIELD MEETING FOR PROJECT ACCEPTANCE.
PRIVATE SEWER DRAINS (W/BASEMENTS) TYPICALLY HAVE APPROXIMATELY 5 FEET OF COVER. DUE TO POTENTIAL VERTICAL CONFLICTS IN THE PARKWAY, THE CONTRACTOR MUST TELEVISE ALL PRIVATE DRAINS AFTER CONSTRUCTION. A COPY OF THE DVD MUST BE PRESENTED TO THE DWM SEWER INSPECTOR FOR PROJECT ACCEPTANCE.

THE FOLLOWING NOTE MUST BE DISPLAYED ON THE CONSTRUCTION PLANS:
THE PROPOSED WORK ENCROACHES UPON MINIMUM CITY SEWER CLEARANCE REQUIREMENTS. EXTREME CAUTION IS REQUIRED DURING CONSTRUCTION. THE CITY SEWER MUST BE TELEVISED BEFORE AND AFTER CONSTRUCTION TO ASSESS ITS CONDITION. CONTACT THE DWM SEWER EVALUATION SECTION TWO BUSINESS DAYS PRIOR TO CONSTRUCTION AT (312) 747-4680 TO COORDINATE THE WORK.
IF SEWER DAMAGE OCCURS, THE CONTRACTOR AND/OR OWNER WILL BE RESPONSIBLE FOR THE COST OF REPAIRING, LINING OR REPLACING THE DAMAGED FACILITIES.

PEOPLES GAS :
PEOPLES GAS FACILITIES ARE PRESENT WITHIN CONSTRUCTION. USE EXTREME CAUTION NEAR ALL GAS FACILITIES DURING CONSTRUCTION AND RELATED EXCAVATION ACTIVITIES. HAND EXCAVATION IS REQUIRED TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF GAS MAIN(S) PRIOR TO CROSSING AND WORKING WITHIN 3' OF ALL GAS FACILITIES. A MINIMUM OF 3' HORIZONTAL EDGE-TO-EDGE CLEARANCE IS REQUIRED FOR GAS MAINS WITH DIAMETERS OF 16" OR SMALLER, & 5' EDGE-TO-EDGE CLEARANCE FOR GAS MAINS WITH DIAMETERS 18" AND LARGER. MAINTAIN A MINIMUM OF 1.5' EDGE-TO-EDGE VERTICAL CLEARANCE ON GAS MAINS 16" OR LESS IN DIAMETER, AND 2' EDGE-TO-EDGE VERTICAL CLEARANCE ON 18" AND LARGER DIAMETER GAS MAINS. CONTACT DIGGER 312-744-7000 FOR LOCATES 48 HOURS PRIOR TO START OF CONSTRUCTION.

THE USE OF CONCRETE, FLOW FILL, OR THE LIKE IS PROHIBITED WITHIN 24" OF ALL GAS FACILITIES, NOR SHALL IT ENCASE ANY GAS FACILITY. A BUFFER OF 24" SAND IS TO USED BETWEEN FLOW FILL AND ALL GAS FACILITIES. A MINIMUM OF 6" FA-02 OR FM-02 SAND SHALL BE USED WHEN BACKFILLING OTHER MATERIALS AROUND ANY EXPOSED GAS FACILITY. CONTRACTOR EXPOSING GAS FACILITY IS RESPONSIBLE FOR PROVIDING THE SAND. ANY DAMAGES TO PEOPLES GAS FACILITIES SHALL BE THE RESPONSIBILITY OF THE INSTALLING UTILITY AND THEIR CONTRACTOR(S).

SERVICE MAY BE EFFECTED. USE EXTREME CAUTION NEAR ALL GAS FACILITIES HAND EXCAVATION IS REQUIRED TO LOCATE AND EXPOSE GAS FACILITIES PRIOR TO CROSSING AND WORKING WITHIN 3' OF ALL GAS FACILITIES. CONTACT DIGGER FOR LOCATES 48 HOURS PRIOR TO START OF CONSTRUCTION. PEOPLES GAS FACILITIES ARE PRESENT WITHIN AREA OF CONSTRUCTION. DIRECTIONAL DRILLING IS CONSIDERED A HIGH RISK EXCAVATION AS DETERMINED BY PHMSA AND NTSB; AS SUCH SPECIAL CONSIDERATIONS SHALL TAKE PLACE NEAR NATURAL GAS DISTRIBUTION LINES. USE EXTREME CAUTION NEAR ALL GAS FACILITIES DURING CONSTRUCTION AND RELATED EXCAVATION ACTIVITIES. HAND DIG OR NON-INVASIVE EXCAVATION IS REQUIRED TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF GAS FACILITIES PRIOR TO CROSSING AND WORKING WITHIN 3' OF ALL GAS FACILITIES. A MINIMUM OF 3' HORIZONTAL EDGE-TO-EDGE CLEARANCE IS REQUIRED FOR GAS MAINS WITH DIAMETERS OF 16" OR SMALLER, & 5FT EDGE-TO-EDGE CLEARANCE FOR GAS MAINS WITH DIAMETERS 18" AND LARGER.MAINTAIN A MINIMUM OF 1.5' EDGE-TO-EDGE VERTICAL CLEARANCE ON GAS MAINS 16" OR LESS IN DIAMETER, AND 2' EDGE-TO-EDGE VERTICAL CLEARANCE ON 18" AND LARGER DIAMETER GAS MAINS. CONTRACTOR MUST OBSERVE BORE HEAD WHILE CROSSING GAS FACILITIES AND VERIFY THAT MINIMUM VERTICAL CLEARANCE IS OBTAINED. LOCATIONS OF EXISTING GAS FACILITIES MUST BE VERIFIED AT SUFFICIENT INTERVALS, OR A MAX OF DISTANCE OF 50', WHEN PARALLELING TO ENSURE SEPARATION IS MAINTAINED. CONTACT SYSTEM INTEGRITY OPERATIONS SUPERVISOR, A MINIMUM OF 5 BUSINESS DAYS PRIOR TO EXCAVATION TO SET UP ON-SITE INSPECTION.CONTACT DIGGER 312-744-7000 FOR LOCATES 48 HOURS PRIOR TO START OF CONSTRUCTION AND SPECIFY EXCAVATION TYPE.

North Shop: North of Chicago Ave/Ashland Ave /North Ave
Robert Goral, 773 647-0537
Central Shop: South of Chicago Ave/ Ashland Ave / North Ave to North of 87th St / Ashland Ave / Chicago River / Cermak Rd
Dave Marquez, 773-858-1825
South Shop: South of 87th St / Ashland Ave / Chicago River / Cermak Rd
Jacob Weber, 312-806-0559

THE USE OF CONCRETE, FLOW FILL, OR THE LIKE IS PROHIBITED WITHIN 24" OF ALL GAS FACILITIES, NOR SHALL IT ENCASE ANY GAS FACILITY. A BUFFER OF 24" SAND IS TO USED BETWEEN FLOW FILL AND ALL GAS FACILITIES. A MINIMUM OF 6" FA-02 OR FM-02 SAND SHALL BE USED WHEN BACKFILLING OTHER MATERIALS AROUND ANY EXPOSED GAS FACILITY. CONTRACTOR EXPOSING GAS FACILITY IS RESPONSIBLE FOR PROVIDING THE SAND. ANY DAMAGES TO PEOPLES GAS FACILITIES SHALL BE THE RESPONSIBILITY OF THE INSTALLING UTILITY AND THEIR CONTRACTOR(S). CALL 866-556-6002 IMMEDIATELY FOR ANY DAMAGES TO THE GAS FACILITIES. ALL GAS FACILITIES ARE TO BE MAINTAINED. THIS PROJECT WILL BE PLACED ON PEOPLES GAS WATCH & PROTECT.

BUREAU OF FORESTRY :
TREE PROTECTION MEASURES:
AT A MINIMUM, NEED TO INCLUDE ORANGE SNOW FENCE TO BE INSTALLED ALONG BACK OF THE CURB-LINE, 10 FEET FROM THE BACK OF THE CURB-LINE AND AT A DISTANCE OF 5 FEET FROM EITHER SIDE OF THE TREE. IF TRIMMING IS REQUIRED FOR LINE INSTALLATION, IT WILL BE DONE BY AN INSURED TREE SERVICE COMPANY. TRIMMING WILL BE DONE IN ACCORDANCE TO AMERICAN NATIONAL STANDARDS INSTITUTE GUIDELINES, LEAVING THE FORM AND STRUCTURE OF THE TREES INTACT.

TUNNELING SPECIFICATIONS (EACH SIDE OF TREE)

TREE SIZE*	TUNNEL/TRENCH DISTANCE
< 10"	5 FEET
10" TO 19"	10 FEET
> 19"	15 FEET

* DBH - DIAMETER AT BREAST HEIGHT (4.5')

. STAY OUT OF THE DRIP LINE
. STOP TRENCHING WHEN ROOTS OF (2) INCHES OR LARGER ARE ENCOUNTERED.

CTA BUS ROUTES :
PLEASE NOTIFY CTA AT LEAST (2) TWO WEEKS PRIOR TO ANY SIDEWALK, LANE, OR STREET CLOSURES, OR THE REMOVAL OF ANY BUS STOP SIGNS SO THAT CTA CAN FACILITATE ANY NECESSARY DETOURS OR BUS STOP RELOCATIONS.

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ON RAILROAD R-O-W
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1-800-336-9193

ISSUED FOR CONSTRUCTION

REVISION	BY	DATE	DESCRIPTION

benesch
Alfred Benesch & Company
35 W. Wacker Drive Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 210070.11

UNION PACIFIC

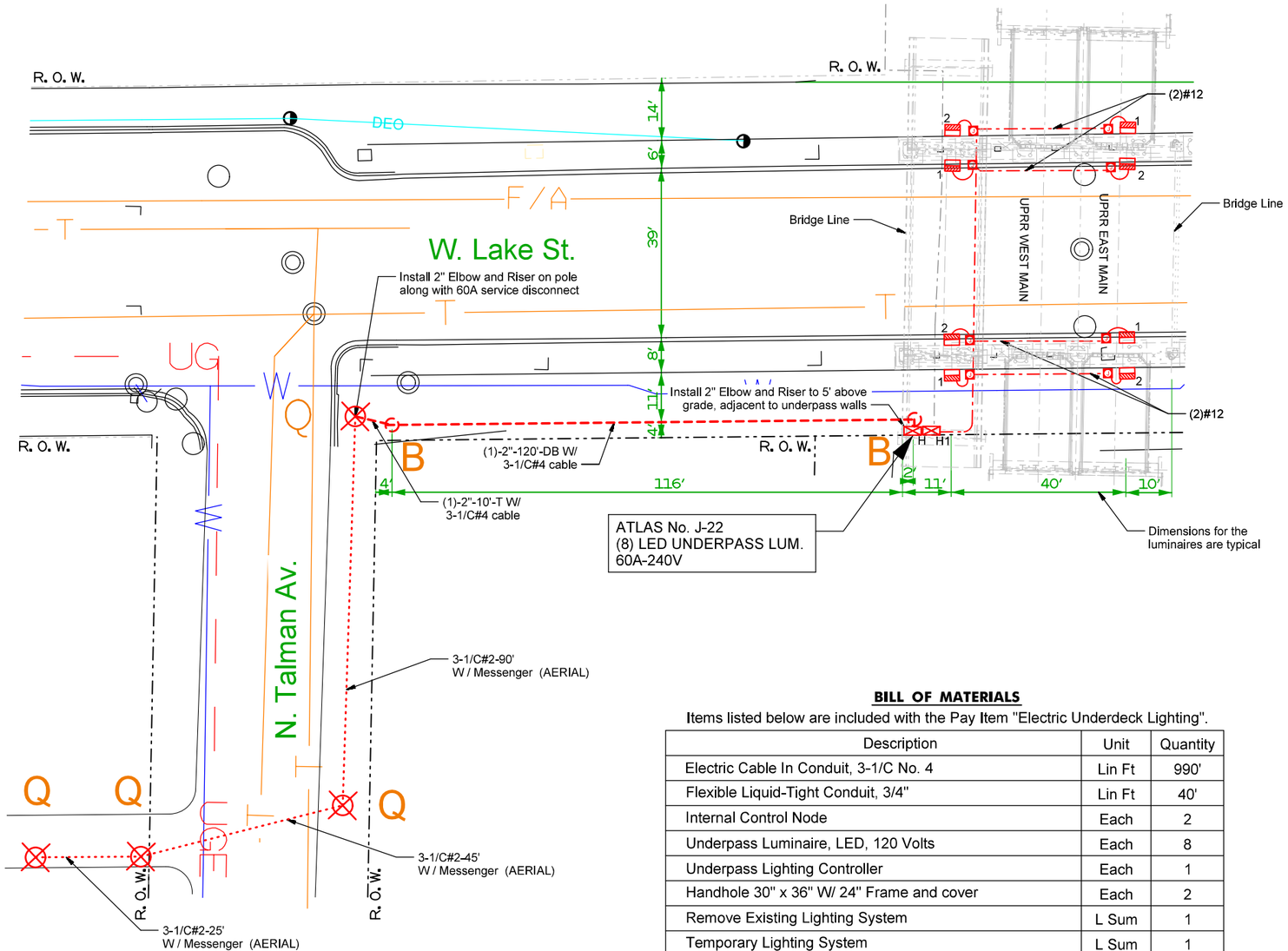
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DATE: 05/28/21	BUDGET REF:
SCALE: N.T.S.	SHEET NUMBER: L-001

UNION PACIFIC RAILROAD — Director Structures Design

LOCATION & DESCRIPTION:
MP 0.82 ROCKWELL SUBDIVISION
LAKE STREET BRIDGE REPLACEMENT

SHEET TITLE:
ELECTRICAL GENERAL NOTES

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Default
5/25/2021



Size of Conduit — Length in Feet
Number of Conduits — DB = Directional Bored, T = Trench
(X)-X"-X'-DB

PROPOSED CONDUIT CALLOUT

LEGEND

- Proposed junction box attached to structure, stainless steel, 6"x6"x4" unless otherwise noted
- Proposed underpass luminaire, LED, 120 volts New Star Lighting Model ADLLP-WLR-C-MIC-W8-PCR-CHI
- Proposed 3/4" liquid tight conduit, with (2)#12 cable
- Proposed (3)#12 cable to be installed in 3/4" conduit, unless otherwise noted
- H — Proposed underpass lighting controller, 120V/240V
- H1 — Proposed underpass node cabinet with 2 nodes
- Existing Comed pole
- B — Install 30" Handhole as per Dwg. No. 867 with 24" Frame and Cover
- Q — Install 3W rack, secondary, aerial
- Proposed DEO Conduit (SCH 80)

Electrical Notes:

1. All electrical work shall conform with all national, state, and local codes.
2. No luminaires, conduit, junction boxes, or any appurtanances shall be mounted to the bridge superstructure without prior approval from Union Pacific Railroad.
3. Contractor shall field verify exact locations, quantities, and type of utilities in the area prior to commencement of any work.
4. Coordinate all electrical installation work with civil, structural drawings, construction phases schedule and City of Chicago Department of Transportation, Division Electrical Operations.
5. Coordinate installation and connection of new electrical service and underpass lighting controller with ComEd and City of Chicago Department of Transportation, Division Electrical Operations. The Underpass Controller and Cabinet shall be grounded with #8 wire on 1/2" GRS conduit.
6. See electrical detail drawings for typical standard underpass lighting details and underpass lighting controller.
7. Luminaires shall be mounted by expansion anchors to the face of the pier cap as high as possible.
8. All conduits to be fastened securely at 5' intervals with beam clamps
9. Luminaires mounted over roadway to be pivoted at an angle of 45 deg from vertical and luminaires mounted over sidewalk to be pivoted at an angle of 35 deg from vertical.
10. Refer to civil plans for pavement removal / replacement quantities.

BILL OF MATERIALS

Items listed below are included with the Pay Item "Electric Underdeck Lighting".

Description	Unit	Quantity
Electric Cable In Conduit, 3-1/C No. 4	Lin Ft	990'
Flexible Liquid-Tight Conduit, 3/4"	Lin Ft	40'
Internal Control Node	Each	2
Underpass Luminaire, LED, 120 Volts	Each	8
Underpass Lighting Controller	Each	1
Handhole 30" x 36" W/ 24" Frame and cover	Each	2
Remove Existing Lighting System	L Sum	1
Temporary Lighting System	L Sum	1
Duct / DRBR, 2", SCH 80	Lin Ft	120'
PVC Conduit in Trench, 2", SCH 80	Lin Ft	10'
Service Disconnect Cabinet	Each	1
Elbow and Riser, 2"	Each	2
Rack, Secondary 3 Wire (Aerial)	Each	4
3-1/C#2 W / Messenger cable (Aerial)	Lin Ft	160
Attached conduit, 3/4". galvanized rigid steel	Lin Ft	210'
Cable in conduit, 1C#12	Lin Ft	480'
Underpass Lighting Node Cabinet	Each	1
Junction Box, 6"x6"x4"	Each	8

Electrical Demolition Notes:

1. Removal and maintenance of underdeck lighting shall be incidental to the pay item "Electric Underdeck Lighting".
2. Temporary lighting design shall be submitted and approved to the engineer prior to construction. The approved design shall then be installed prior to stage construction.

Controller 1:
Circuit 1 - (4) Underpass LED Luminaire
Circuit 2 - (4) Underpass LED Luminaire

30 0 30 60
SCALE IN FEET

CDOT DWG. NO. 26288

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ISSUED FOR CONSTRUCTION

REVISION	BY	DATE	DESCRIPTION

benesch
Alfred Benesch & Company
35 W. Wacker Drive Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 210070.11

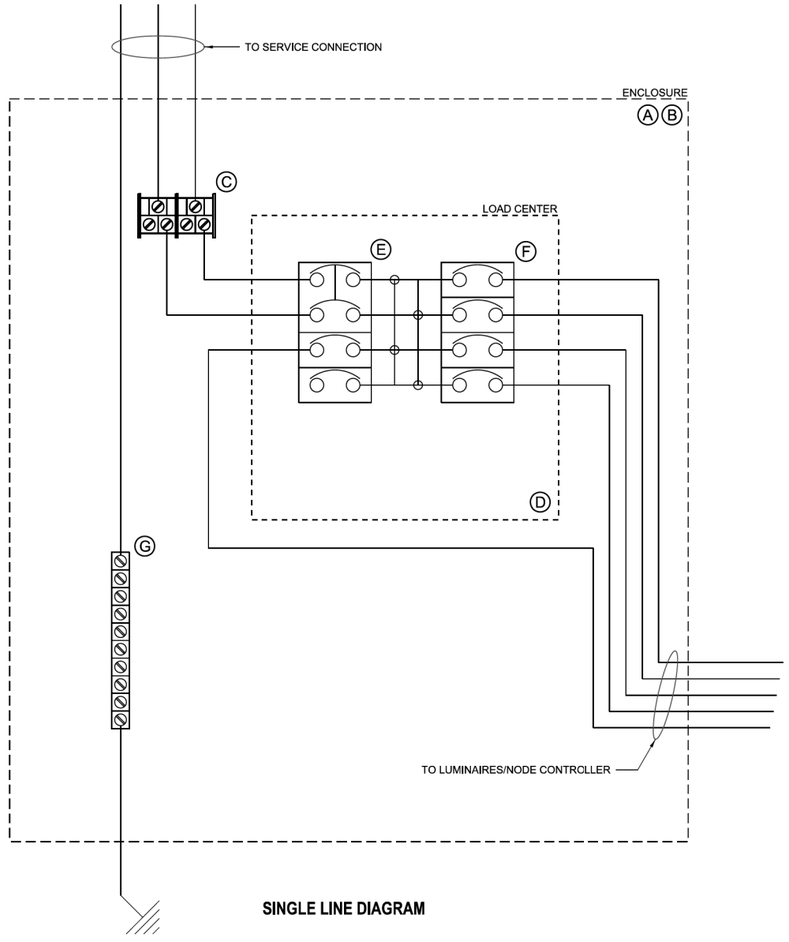
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CHECKED BY: GT	PID:
DATE: 05/28/21	BUDGET REF:
SCALE: 1"=30'	SHEET NUMBER L-002

UNION PACIFIC RAILROAD
Director Structures Design

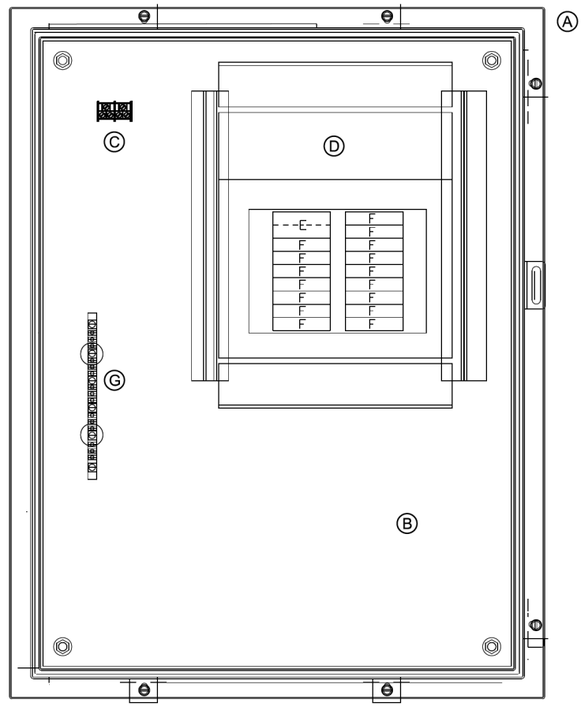
LOCATION & DESCRIPTION:
MP 0.82 ROCKWELL SUBDIVISION
LAKE STREET BRIDGE REPLACEMENT

SHEET TITLE:
PROPOSED UNDERDECK LIGHTING

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Default
5/25/2021



SINGLE LINE DIAGRAM



UNDERPASS CONTROLLER
DEVICE LAYOUT

NOTES:

1.) ENCLOSURE SHALL HAVE A PIANO HINGE, DOOR CLAMPS AND HASP/STAPLE FOR PADLOCK.

2.) TERMINAL BLOCK SHALL HAVE A MINIMUM CURRENT RATING OF 200A. LINE SIDE SHALL ACCEPT #2 THROUGH #3/0 CABLE. LOAD SIDE SHALL ACCEPT (1) #2 AND (1) #2/0 CABLE.

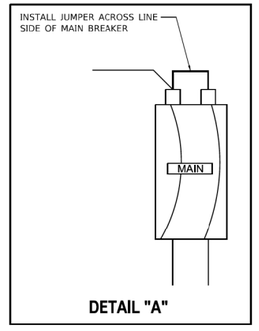
3.) LOAD CENTER SHALL INCLUDE PROVISIONS FOR MAIN AND BRANCH BREAKERS. LIVE BUS SHALL BE PROTECTED IN A MANNER WHICH ALLOWS FUTURE INSTALLATION OF INDIVIDUAL CIRCUIT BREAKERS WITHOUT AFFECTING PROTECTION OF REMAINING BUS.

4.) MAIN BREAKER SHALL BE SIZED AS NOTED ON THE PLANS.

5.) THE NUMBER OF 15A SINGLE POLE CIRCUIT BREAKERS SHALL BE AS NOTED ON THE PLANS. A MINIMUM OF 4 BREAKERS SHALL BE PROVIDED.

6.) FOR 2-WIRE 120V APPLICATION, SEE DETAIL "A".

DEVICE SCHEDULE		
ITEM	QUANTITY	DESCRIPTION
A	1	ENCLOSURE, NEMA 4X, TYPE 304 STAINLESS STEEL, 30" X 24" X 8" (SEE NOTE 1)
B	1	BACK PANEL, PAINTED STEEL, REMOVABLE
C	2	TERMINAL BLOCK, 600V (SEE NOTE 2)
D	1	18-SPACE LOAD CENTER, 120/240V, 1 PHASE, 3 WIRE, 100A, 10K AIC FULLY RATED (SEE NOTE 3)
E	1	CIRCUIT BREAKER, 60A OR 100A, 2PST, THERMAL MAGNETIC, 10KAIC@240V (SEE NOTE 4)
F	NOTE 5	CIRCUIT BREAKER, 15A, SPST, THERMAL MAGNETIC, 10KAIC@240V
G	1	NEUTRAL BUS TERMINAL LUGS



DETAIL "A"

REV	DATE	DESCRIPTION
A		

UNDERPASS LIGHTING CONTROLLER, CONSTANT POWER, 120/240 VOLT

CITY OF CHICAGO
DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING

DRAFTSMAN:	M. STANGEL	DWG. NO.
ENGINEER:	J. VONDRA	861A
ENGINEER OF ELECTRICITY:		
DEPUTY COMMISSIONER:		
SIZE: 22" | 34"	SCALE: NONE	DATE: 10/30/2019

DATE PLOTTED: 19/2020
FILE NAME: N:\PROJ\2020231.0000\2020231.0100\New Specs & Standards\XXX-Underpass Lighting Controller\Underpass Lighting Controller Detail.dgn

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benesch
Alfred Benesch & Company
35 W. Wacker Drive Suite 3300
Chicago, Illinois 60601
312-565-0450 Job No. 210070.11

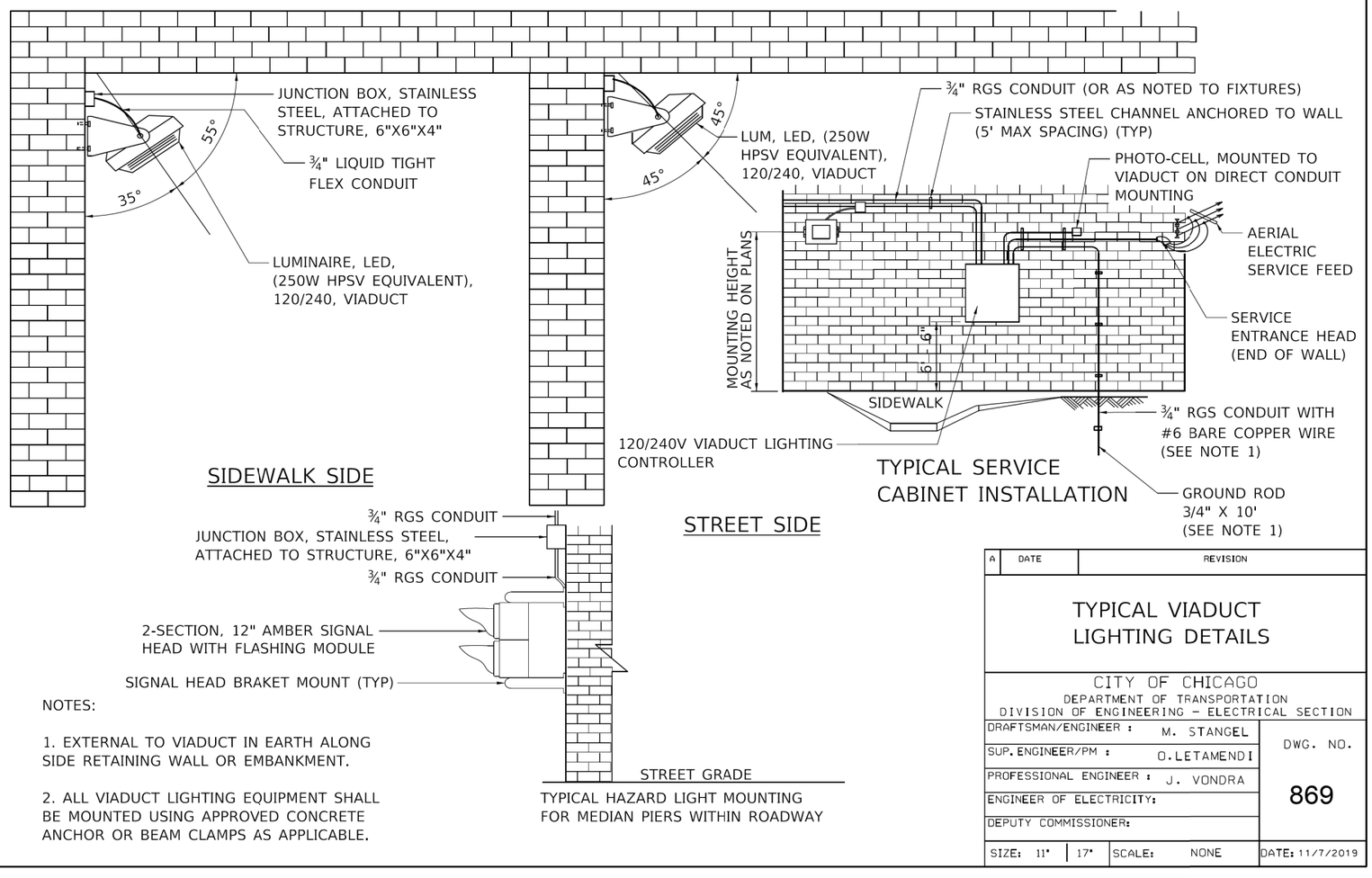
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DATE: 05/28/21	BUDGET REF:
SCALE: N.T.S.	SHEET NUMBER L-003

UNION PACIFIC RAILROAD — Director Structures Design

LOCATION & DESCRIPTION:
MP 0.82 ROCKWELL SUBDIVISION
LAKE STREET BRIDGE REPLACEMENT

SHEET TITLE:
LIGHTING DETAILS

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Default
5/25/2021



TYPICAL SERVICE CABINET INSTALLATION

TYPICAL HAZARD LIGHT MOUNTING FOR MEDIAN PIERS WITHIN ROADWAY

NOTES:

1. EXTERNAL TO VIADUCT IN EARTH ALONG SIDE RETAINING WALL OR EMBANKMENT.

2. ALL VIADUCT LIGHTING EQUIPMENT SHALL BE MOUNTED USING APPROVED CONCRETE ANCHOR OR BEAM CLAMPS AS APPLICABLE.

A	DATE	REVISION

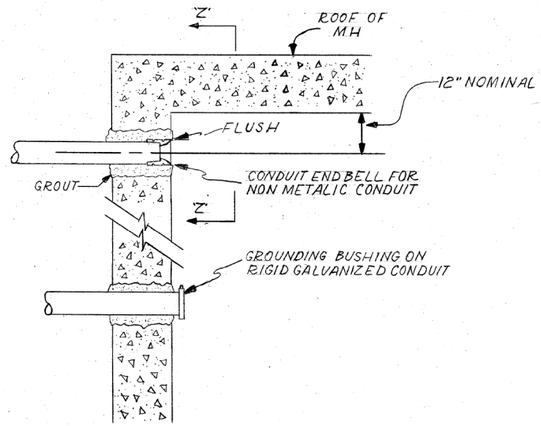
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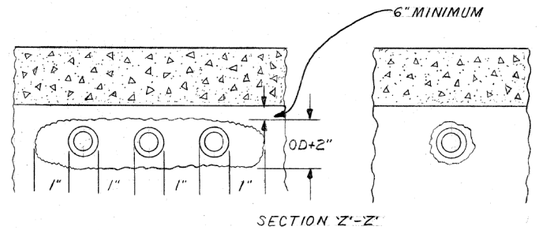
CITY OF CHICAGO
DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING – ELECTRICAL SECTION

DRAFTSMAN/ENGINEER :	M. STANGEL	DWG. NO.
SUP. ENGINEER/PM :	O.LETAMENDI	
PROFESSIONAL ENGINEER :	J. VONDRA	869
ENGINEER OF ELECTRICITY:		
DEPUTY COMMISSIONER:		
SIZE: 11" | 17"	SCALE: NONE	DATE: 11/7/2019

DATE: 11/7/2019
FILE: \\172.16.1.67\Public\PROJ\002823\L001\002823L001-New Specs & Standards\869-Underpass Lighting Typical Details\869 - Underpass Lighting Typical Details.dgn

CONDUIT INSTALLATION THROUGH EXISTING MANHOLE OR HANDHOLE WALL





SECTION 'Z'-'Z'

OPENING THROUGH WALL TO BE KEPT TO MINIMUM SIZE TO ADMIT CONDUIT AND SUFFICIENT GROUT TO ASSURE SEALING WALL.

INSTALLATION METHOD OF INSTALLING CONDUIT THRU MANHOLE WALL

CITY OF CHICAGO
DEPT. OF STREETS AND SANITATION
BUREAU OF ELECTRICITY
DIVISION OF ELECTRICAL ENGINEERING

DRAWN	CHECKED	ENGINEER
A.M. JOHNSON	R. SYCKOWSKI	R.L. MARTIN

ENGINEER OF ELECTRICITY

DEPT. OF CONST. DEPUTY CHIEF

DRG. NO. 814

SIZE 8½"X14" | SCALE N.T.S. | DATE 3-13-61

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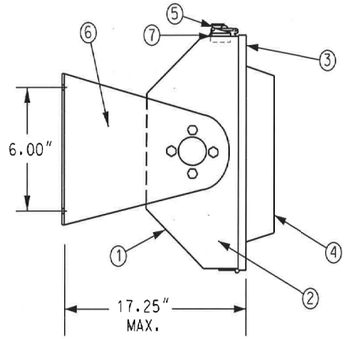
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SCALE: N.T.S.	SHEET NUMBER L-004

UNION PACIFIC RAILROAD — Director Structures Design

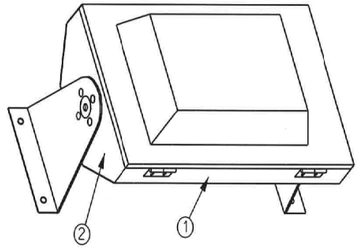
LOCATION & DESCRIPTION:
MP 0.82 ROCKWELL SUBDIVISION
LAKE STREET BRIDGE REPLACEMENT

SHEET TITLE:
LIGHTING DETAILS

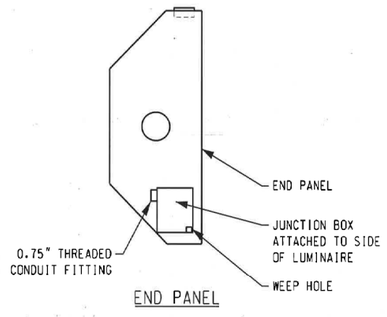
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Default
5/25/2021



SIDE VIEW



BACK VIEW



END PANEL

1) HOUSING
2) END PANEL
3) LENS DOOR/COVER ASSEMBLY
4) LENS
5) LATCHES
6) END MOUNT TRUNNION BRACKET
7) 7 PIN NEMA RECEPTACLE

DATE	REVISION
8/15/18	ADD 7PIN NEMA RECEPTACLE

VIADUCT / EL STRUCTURE LUMINAIRE

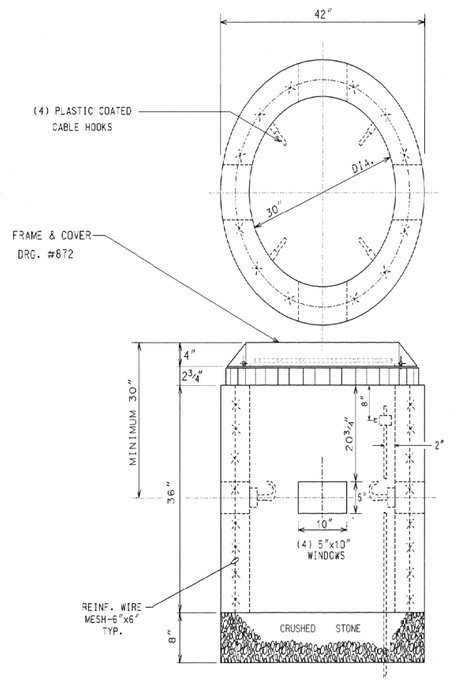
CITY OF CHICAGO
DEPT. OF STREETS AND SANITATION
BUREAU OF ELECTRICITY
DIVISION OF ELECTRICAL ENGINEERING

DRAFTSMAN:	CHIEF DRAFTSMAN	ENGINEER
	B. CARTER	F. KARAGIANES
SUPERVISING ENGINEER	ELEC. DESIGN ENGINEER	DWG. NO
ENGINEER OF ELECTRICITY		981
GEN'L SUPT. OF ELECTRICITY		
DEPUTY COMMISSIONER		
SCALE: NONE	DATE: 4/18/04	MAT. SPEC: 1532

DATE: #DATE#
FILE: #FILE#

PLAN

FRAME & COVER REMOVED



COMPLETE COMMODITY CODE NO. 05-6610-5310M			
CODE NO.	MATERIALS	SIZE	QUAN.
(1) 05-6610-5310	PRE-CAST HANDHOLE	30"X36"	1
(2) 05-9075-5470	STONE ¾" CRUSHED	BAG	5
(2) 05-5082-5330	SONO TUBE	30"	1
(2) 05-5082-5342	SONO TUBE	42"	1
(2) 05-3267-2940	CONC. REDI-MIX	CU. YD.	½
(2) 57-0770-0000	6" X 6" MESH	36"X10'	1
05-1452-9720	BRICK		24
02-4299-5524	FRAME MANHOLE	24"	1
02-4574-5040	COVER, MANHOLE	24"	1
09-7796-9312	GROUND ROD	¾"X12'	1
09-2630-3240	GROUND CLAMP		1

(1) PRE-CAST HANDHOLE SHALL INCLUDE CABLE HOOKS AND CONDUIT KNOCKOUTS.
(2) THESE ITEMS ARE FOR POURED-IN-PLACE HANDHOLES ONLY.

CONSTRUCTION NOTES:

1. 8" BED OF STONE FOR DRAINAGE.
2. ALL METALLIC CONDUITS ENTERING HANDHOLE SHALL EXTEND MINIMUM 1" & MAXIMUM 3" INSIDE INNER WALL AND BE EQUIPPED WITH AN APPROVED TYPE OF THREADED GROUNDING BUSHING.

REVISION	BY	DATE	DESCRIPTION
B		01-23-98	ADDED CABLE HOOKS PER COMMISSIONER HARPIN
A		1-8-95	REDRAW (CAD)

30" DIA. CONCRETE HANDHOLE

CITY OF CHICAGO
DEPT. OF STREETS AND SANITATION
BUREAU OF ELECTRICITY
DIVISION OF ELECTRICAL ENGINEERING

DRAFTSMAN:	CHIEF DRAFTSMAN	ENGINEER	"DONE"
M. PATTON	B. CARTER		DEBARTOLO
SUPERVISING ENGINEER, ELEC. DESIGN			
ENGINEER OF ELECTRICITY			DWG. NO.
DEPUTY COMMISSIONER			867
SCALE: 1"	1/2"	SCALE: NONE	DATE: 12-8-95

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35 W. Wacker Drive Suite 3300
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312-565-0450 Job No. 210070.11

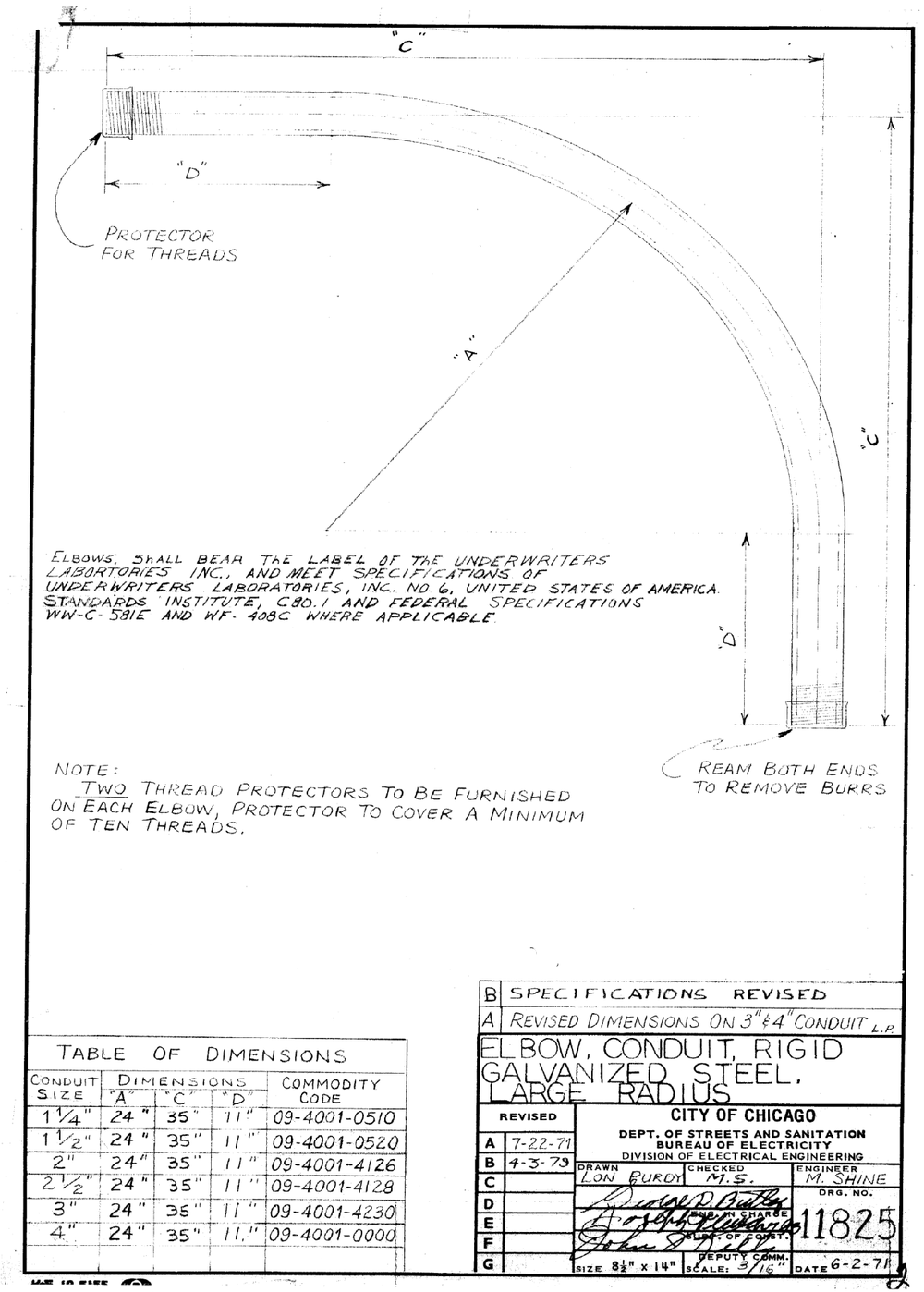
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CHECKED BY: GT	PID:
DATE: 05/28/21	BUDGET REF:
SCALE: N.T.S.	SHEET NUMBER L-005

UNION PACIFIC RAILROAD — Director Structures Design

LOCATION & DESCRIPTION:
MP 0.82 ROCKWELL SUBDIVISION
LAKE STREET BRIDGE REPLACEMENT

SHEET TITLE:
LIGHTING DETAILS

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Default
5/25/2021



ELBOWS SHALL BEAR THE LABEL OF THE UNDERWRITERS LABORTORIES INC., AND MEET SPECIFICATIONS OF UNDERWRITERS LABORATORIES, INC. NO 6, UNITED STATES OF AMERICA STANDARDS INSTITUTE, C80.1 AND FEDERAL SPECIFICATIONS WW-C-581E AND WF-408C WHERE APPLICABLE.

NOTE:
TWO THREAD PROTECTORS TO BE FURNISHED ON EACH ELBOW, PROTECTOR TO COVER A MINIMUM OF TEN THREADS.

TABLE OF DIMENSIONS

CONDUIT SIZE	DIMENSIONS "A"	"C"	"D"	COMMODITY CODE
1¼"	24"	35"	11"	09-4001-0510
1½"	24"	35"	11"	09-4001-0520
2"	24"	35"	11"	09-4001-4126
2½"	24"	35"	11"	09-4001-4128
3"	24"	35"	11"	09-4001-4230
4"	24"	35"	11"	09-4001-0000

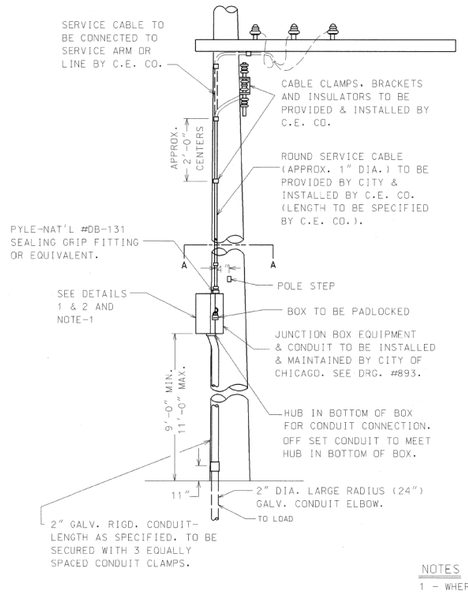
REVISED	
B	SPECIFICATIONS REVISED
A	REVISED DIMENSIONS ON 3" & 4" CONDUIT L.P.

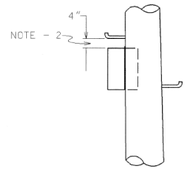
ELBOW, CONDUIT, RIGID GALVANIZED STEEL, LARGE RADIUS

REVISED	
A	7-22-71
B	4-3-79
C	
D	
E	
F	
G	

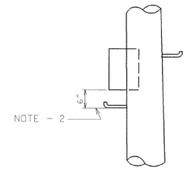
CITY OF CHICAGO
DEPT. OF STREETS AND SANITATION
BUREAU OF ELECTRICITY
DIVISION OF ELECTRICAL ENGINEERING

DRAWN: LON BURDY | CHECKED: M.S. | ENGINEER: M. SHINE
ENG. IN CHARGE: Joseph Williams
SUPT. OF CONSTR.: John J. Mills
DEPUTY COMM.: Brian J. Murphy
DRG. NO. 11825
SIZE 8½" x 14" | SCALE: 3/16" | DATE 6-2-71

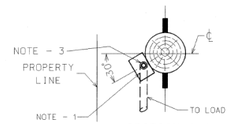




DETAIL-1
BOTTOM POLE STEP ON SIDE OF POLE OPPOSITE JUNCTION BOX.

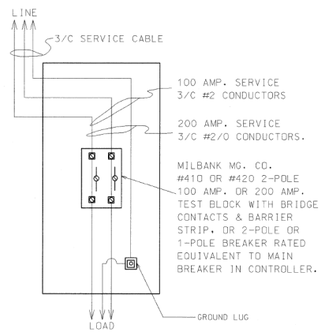


DETAIL-2
BOTTOM POLE STEP ON JUNCTION BOX SIDE OF POLE.



SECTION A-A

NOTES
1 - WHERE POSSIBLE THE JUNCTION BOX SHALL BE LOCATED FACING THE PROPERTY LINE.
2 - BOX SHALL HAVE A MINIMUM CLEARANCE OF 4" BELOW POLE STEP, DETAIL-1, OR 6" ABOVE STEP, DETAIL-2.
3 - SERVICE CABLE TO ENTER BOX THROUGH SEALING GRIP FITTING IN TOP.



WIRING DIAGRAM OF JUNCTION BOX MOUNTED ON C.E.Co. POLE.

DATE	REVISION
A 9-3-96	REDRAW MP.

INSTALLATION OF SERVICE EQUIPMENT ON C.E. CO. WOOD POLES

CITY OF CHICAGO
DEPT. OF STREETS AND SANITATION
BUREAU OF ELECTRICITY
DIVISION OF ELECTRICAL ENGINEERING

DRAFTSMAN: E. LEMASTER	CHIEF DRAFTSMAN: J. BORE	ENGINEER: J. BORE
SUPERVISING ENGINEER: S.W. BERTRAM	ELEC. DESIGN ENGR.	DWG. NO. 11925
ENGINEER OF ELECTRICITY:		
CEN'L. SUPT. OF ELECTRICITY:		
DEPUTY COMMISSIONER: Brian J. Murphy		
SIZE:	SCALE:	DATE: 12-26-56

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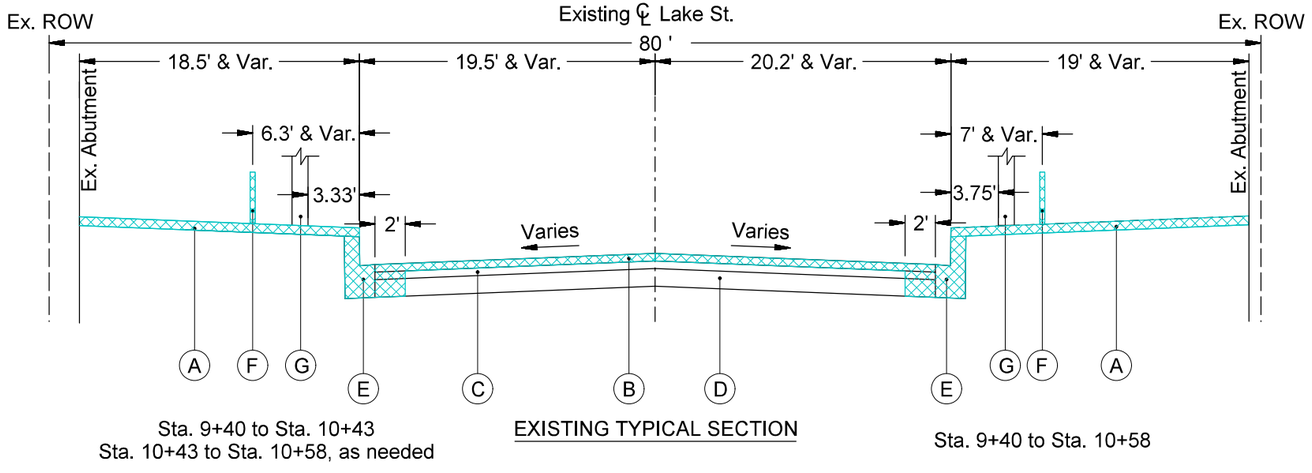
REVISION	BY	DATE	DESCRIPTION

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Chicago, Illinois 60601
312-565-0450 Job No. 210070.11

UNION PACIFIC

DRAWN BY: RS	WORK ORDER: 31876	UNION PACIFIC RAILROAD	Director Structures Design
CHECKED BY: GT	PID:	LOCATION & DESCRIPTION: MP 0.82 ROCKWELL SUBDIVISION LAKE STREET BRIDGE REPLACEMENT	
DATE: 05/28/21	BUDGET REF:		
SCALE: N.T.S.	SHEET NUMBER L-006	SHEET TITLE: LIGHTING DETAILS	

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Default
5/25/2021



Sta. 9+40 to Sta. 10+43
Sta. 10+43 to Sta. 10+58, as needed

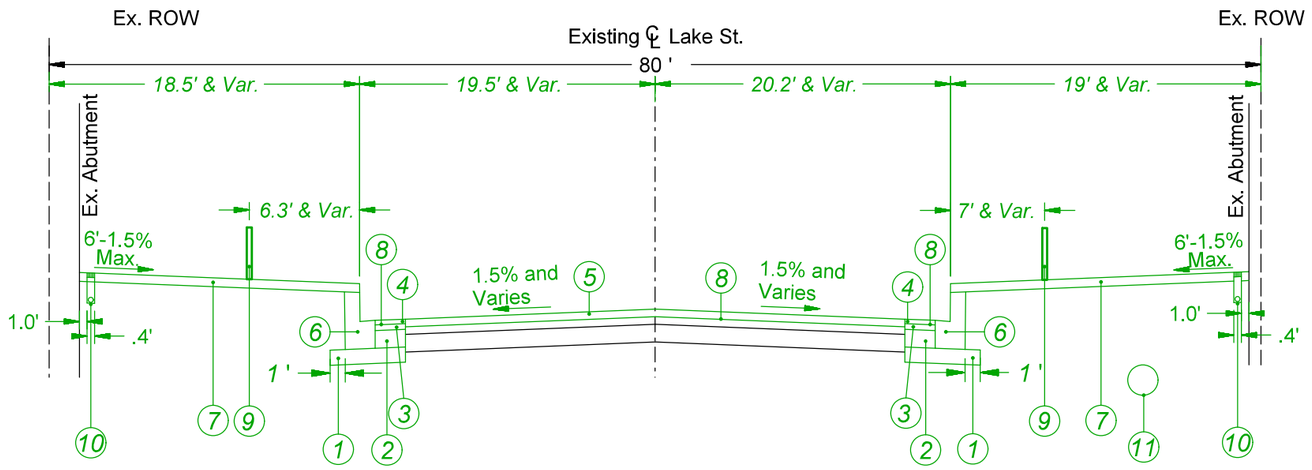
EXISTING TYPICAL SECTION

Sta. 9+40 to Sta. 10+58

Existing Legend

A. P.C. Concrete Sidewalk, as needed
B. HMA Surface Course
C. HMA Binder Course
D. P.C. Concrete Base Course
E. Retaining Wall & Gutter
F. Handrail
G. Bent

Removal



PROPOSED TYPICAL SECTION

Sta. 9+40 to Sta. 10+43
Sta. 10+43 to Sta. 10+58, as needed

Sta. 9+40 to Sta. 10+58

Proposed Legend

1. 6" Sub-base Granular Material, Ty. B
2. 7" P.C. Concrete Base Course
3. 2 1/4" Hot-Mix-Asphalt Binder Course, IL-19.0, N50
4. 1 3/4" Hot-Mix-Asphalt Surface Course, Mix "D", N50
5. 2" Hot-Mix-Asphalt Surface Course, Mix "D", N70
6. Retaining Wall & Gutter
7. P.C. Concrete Sidewalk,5" as needed
8. Bituminous Material (Prime Coat)
9. Handrail
10. Trench Drain
11. Proposed 12" WM Relocation

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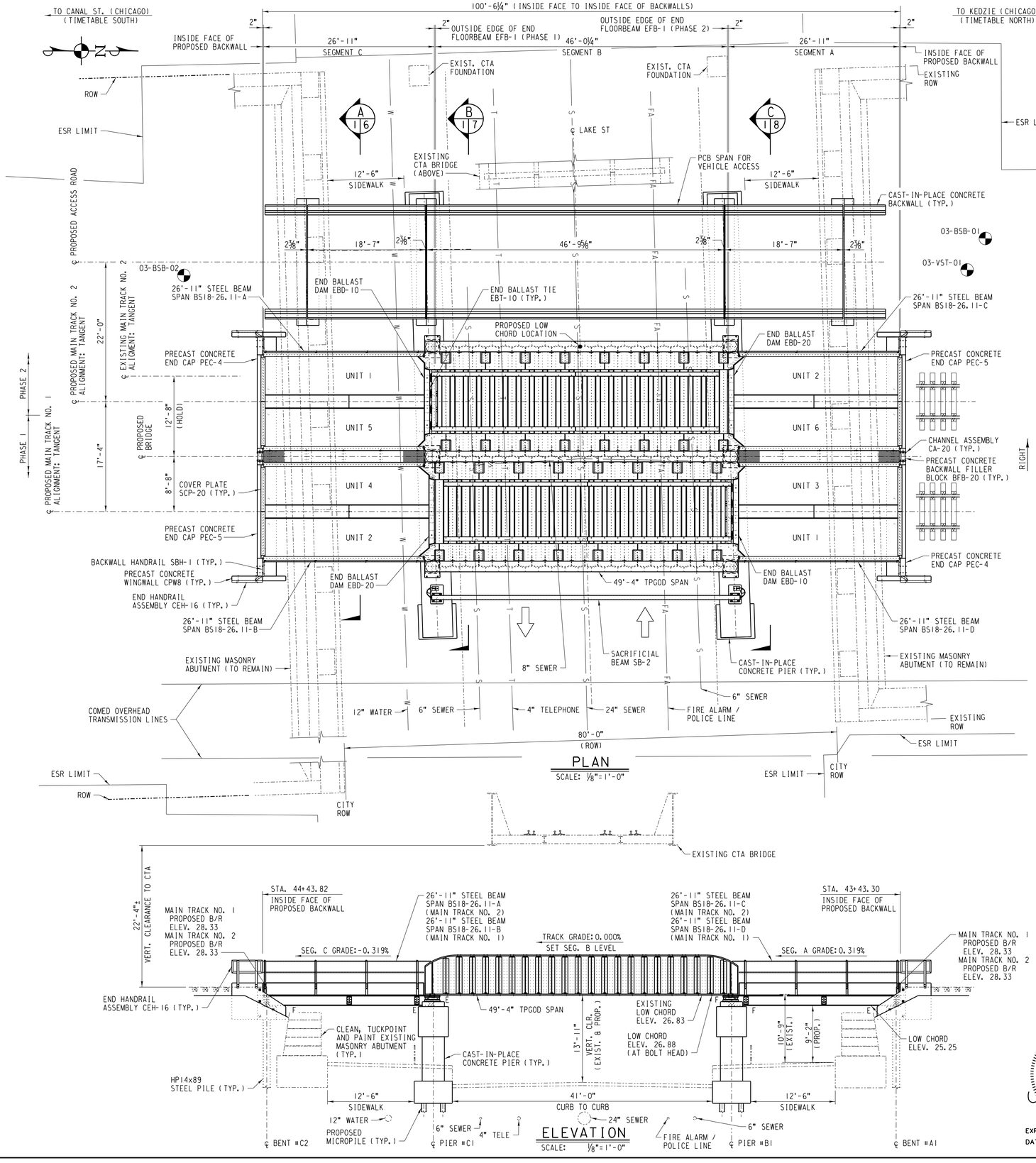
ISSUED FOR CONSTRUCTION

REVISION	BY	DATE	DESCRIPTION

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Chicago, Illinois 60601
312-565-0450 Job No. 210070.11

DRAWN BY: $B1T001	WORK ORDER: 31876	UNION PACIFIC RAILROAD	Director Structures Design
CHECKED BY: TK	PID:	LOCATION & DESCRIPTION:	MP 0.82 ROCKWELL SUBDIVISION LAKE STREET BRIDGE REPLACEMENT
DATE: 05/28/21	BUDGET REF:		
SCALE: N.T.S.	SHEET NUMBER T-001	SHEET TITLE:	ROADWAY TYPICAL SECTION

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Default
5/25/2021



PLAN
SCALE: ⅛"=1'-0"

ELEVATION
SCALE: ⅛"=1'-0"

NOTES:
1. FOR PILE LAYOUT AND PILE DRIVING DIAGRAM, SEE SHEET NO. 2.
2. LOCATION OF KNOWN UTILITIES IS APPROXIMATE. LOCATION SHALL BE VERIFIED PRIOR TO CONSTRUCTION. NOTIFY DIGGER/811 CHICAGO AT 312-744-7000 TO HAVE THE LOCATION OF EXISTING UTILITIES STAKED TWO WORKING DAYS, 48 HOURS, BEFORE STARTING EXCAVATION.
3. E = EXPANSION
   F = FIXED

EST. WT. OF STEEL TPG SPAN

49'-4" TPGOD (PHASE 1, ASSEMBLED SPAN) = 154,700 LB. (77.4 TON)
49'-4" SINGLE COMMON GIRDER = 39,495 LB. EA. (19.7 TON)
49'-4" SINGLE SIDE GIRDER = 39,615 LB. EA. (19.8 TON)

EST. WT. OF STEEL BEAM SPAN

26'-11" BS18-26.11-D (PHASE 1, ASSEMBLED) = 35,120 LB. EA. (17.6 TON)
26'-11" BS18-26.11-B (PHASE 1, ASSEMBLED) = 35,120 LB. EA. (17.6 TON)
26'-11" BS18-26.11-C (PHASE 2, ASSEMBLED) = 35,440 LB. EA. (17.7 TON)
26'-11" BS18-26.11-A (PHASE 2, ASSEMBLED) = 35,440 LB. EA. (17.7 TON)

EST. WT. OF PRECAST CONCRETE

END CAP PEC-4 = 21,990 LB. EA. (11.0 TON)
END CAP PEC-5 = 21,990 LB. EA. (11.0 TON)
FILLER BLOCK BFB-20 = 800 LB. EA. (0.4 TON)
WINGWALL CPW8 = 4,400 LB. EA. (2.2 TON)

EST. WT. OF EXISTING SPAN

84'-0" TPG = 385,000 LB. (192.5 TON) (STEEL ONLY, INCLUDING COLUMNS)

THIS SET

DRAWING SCHEDULE

SHEET NO.	DESCRIPTION
C1	GENERAL ARRANGEMENT
C2	PILE LAYOUT AND PILE DRIVING DIAGRAM
C3	SUBSTRUCTURE LAYOUT
C4	GENERAL NOTES AND BILL OF MATERIAL
C5	REMOVAL DETAILS
C6	TYPICAL SECTIONS (SHEET 1 OF 3)
C7	TYPICAL SECTIONS (SHEET 2 OF 3)
C8	TYPICAL SECTIONS (SHEET 3 OF 3)
C9	BEAM SPAN WATERPROOFING DETAILS
C10	MICROPILE NOTES AND DETAILS (SHEET 1 OF 2)
C11	MICROPILE NOTES AND DETAILS (SHEET 2 OF 2)
C12	SACRIFICIAL BEAM AND MISCELLANEOUS DETAILS
C13	CAST-IN-PLACE CONCRETE PIER DETAILS - PHASE 1
C14	CAST-IN-PLACE CONCRETE PIER DETAILS - PHASE 2
C15	CAST-IN-PLACE CONCRETE PEDESTAL DETAILS
C16	PIER #B1 BEARING LAYOUT
C17	PIER #C1 BEARING LAYOUT
C18	TPG SPAN DECK PLAN
C19	TPG SPAN DECK DETAILS AND TIE CHART
C20	BORING LOGS
C21	PRECAST CONCRETE END CAP PEC-4 DETAILS
C22	PRECAST CONCRETE END CAP PEC-5 DETAILS
C23	PRECAST CONCRETE WINGWALL AND FILLER BLOCK DETAILS
C24	ACCESS BRIDGE CAST-IN-PLACE ABUTMENTS
C25	ACCESS BRIDGE PLAN AND CROSS SECTIONS
C26	ACCESS BRIDGE PARAPET DETAILS
C27	ACCESS BRIDGE EXPANSION JOINT DETAILS
C28	ACCESS BRIDGE REINFORCEMENT DETAILS (SHEET 1 OF 3)
C29	ACCESS BRIDGE REINFORCEMENT DETAILS (SHEET 2 OF 3)
C30	ACCESS BRIDGE REINFORCEMENT DETAILS (SHEET 3 OF 3)
C31	ACCESS BRIDGE MISCELLANEOUS DETAILS
C32	BEAM SPAN PLAN
C33	BEAM SPAN FRAMING PLAN AND ELEVATION
C34	BEAM SPAN SECTIONS (SHEET 1 OF 2)
C35	BEAM SPAN SECTIONS (SHEET 2 OF 2)
C36	BEAM SPAN ASSEMBLY DETAILS (SHEET 1 OF 2)
C37	BEAM SPAN ASSEMBLY DETAILS (SHEET 2 OF 2)
C38	BEAM SPAN PIECE MARK DETAILS (SHEET 1 OF 2)
C39	BEAM SPAN PIECE MARK DETAILS (SHEET 2 OF 2)
C40	BEAM SPAN MATERIALS LIST AND LIFTING WEIGHT TABLES
C41	TPG FRAMING PLAN
C42	TPG GRATING PLAN
C43	TPG GIRDER ELEVATIONS AND DETAILS
C44	TPG TYPICAL SECTIONS
C45	TPG NOTES
C46	TPG ASSEMBLY DETAILS
C47	TPG KNEE BRACE DETAILS
C48	TPG FLOORBEAM CONNECTION DETAILS AND GRATING PANEL DETAILS
C49	TPG FLOORBEAM DETAILS
C50	TPG STIFFENER ANGLE DETAILS (SHEET 1 OF 2)
C51	TPG STIFFENER ANGLE DETAILS (SHEET 2 OF 2)
C52	TPG STRESS, MATERIAL LIST AND LIFTING WEIGHT TABLES
C53	TPG BEARING LAYOUT
C54	TPG BEARING DETAILS -TYPE A
C55	TPG BEARING DETAILS -TYPE B
C56	TPG BEARING DETAILS -TYPE C
C57	TPG BEARING DETAILS -TYPE D
C58	END BALLAST DAM DETAILS AND COVER PLATE DETAIL
C59	WINGWALL AND BACKWALL HANDRAIL DETAILS

REF.

NO.	DWG. NO.	SHEET NO.	REV. NO.	DESCRIPTION
1	531100	T2 & T3	-	GENERAL NOTES AND PIECE FABRICATION NOTES
2	531110	H1	-	PILE INSTALLATION DETAILS AND NOTES
3	580000	G1	-	STANDARD BEAM SPANS - GENERAL NOTES

LETTER SERIES
SHEET NO. CUT ON — SHEET NO. SHOWN ON

SECTION DESIGNATION

POSTCONSTRUCTION COMPLIANCE

Contractor or UPRR Manager in charge of construction to provide to the office of the Director Structures Design as-built drawings confirming that the project was constructed in compliance with the plans and indicating any construction variances.

IN CHARGE OF CONSTRUCTION — DATE

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION — LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

MATTHEW F. BECKER 081-007755 LICENSED STRUCTURAL ENGINEER

EXPIRATION DATE: 11-30-2022
DATE: 02-12-2021

UNION PACIFIC

DSN/CHK BY: MTS/MFB
DRAWN/CHK BY: ACB/MFB
UPRR ENGINEER: DEH/ADS
SHT NO.: C1 of C59

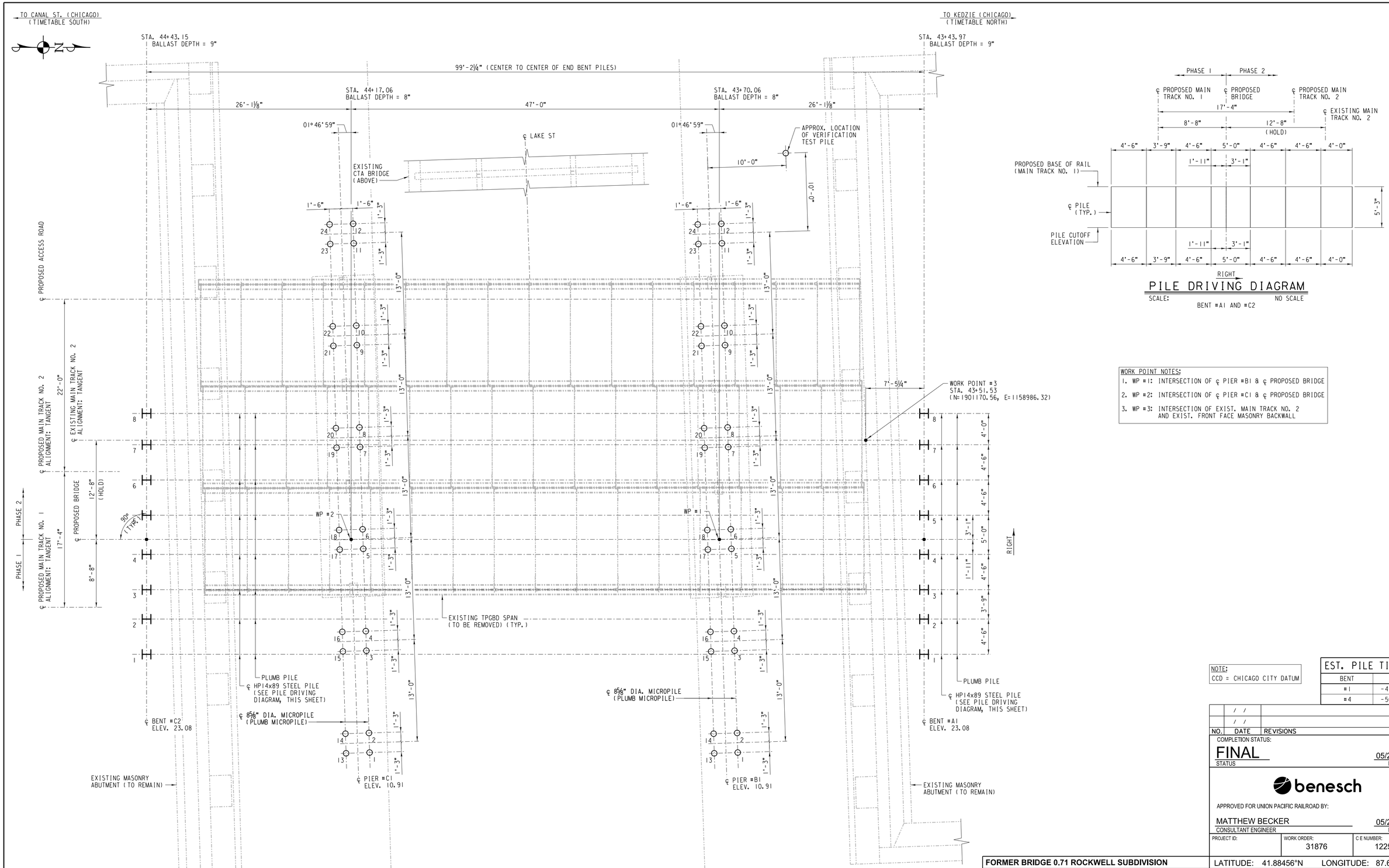
UNION PACIFIC RAILROAD
Office of Director Structures Design

LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE: GENERAL ARRANGEMENT

FILE NAME: C:\Users\mfrenzel\Desktop\rac00082_b11.dgn

PLOTTED: 5/27/2021 11:13:05 AM



PILE DRIVING DIAGRAM

SCALE: NO SCALE

BENT #A1 AND #C2

PILE LAYOUT

SCALE: 3/16"=1'-0"

HP14x89 STEEL PILE SPACING AND ELEVATION IS AT PILE CUTOFF

8⅝" DIA. MICROPILE SPACING AND ELEVATION IS AT MICROPILE CUTOFF

WORK POINT NOTES:

1. WP #1: INTERSECTION OF ℄ PIER #B1 & ℄ PROPOSED BRIDGE
2. WP #2: INTERSECTION OF ℄ PIER #C1 & ℄ PROPOSED BRIDGE
3. WP #3: INTERSECTION OF EXIST. MAIN TRACK NO. 2 AND EXIST. FRONT FACE MASONRY BACKWALL

NOTE:
CCD = CHICAGO CITY DATUM

EST. PILE TIP DATA

BENT	ELEV.
#1	-47.50 CCD
#4	-50.10 CCD

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS
05/28/2021 — DATE

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APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER
05/28/2021 — DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB
DRAWN/CHK BY: ACB/MFB
UPRR ENGINEER: DEH/ADS
SHT NO.: C2 of C59

UNION PACIFIC RAILROAD

Office of Director Structures Design

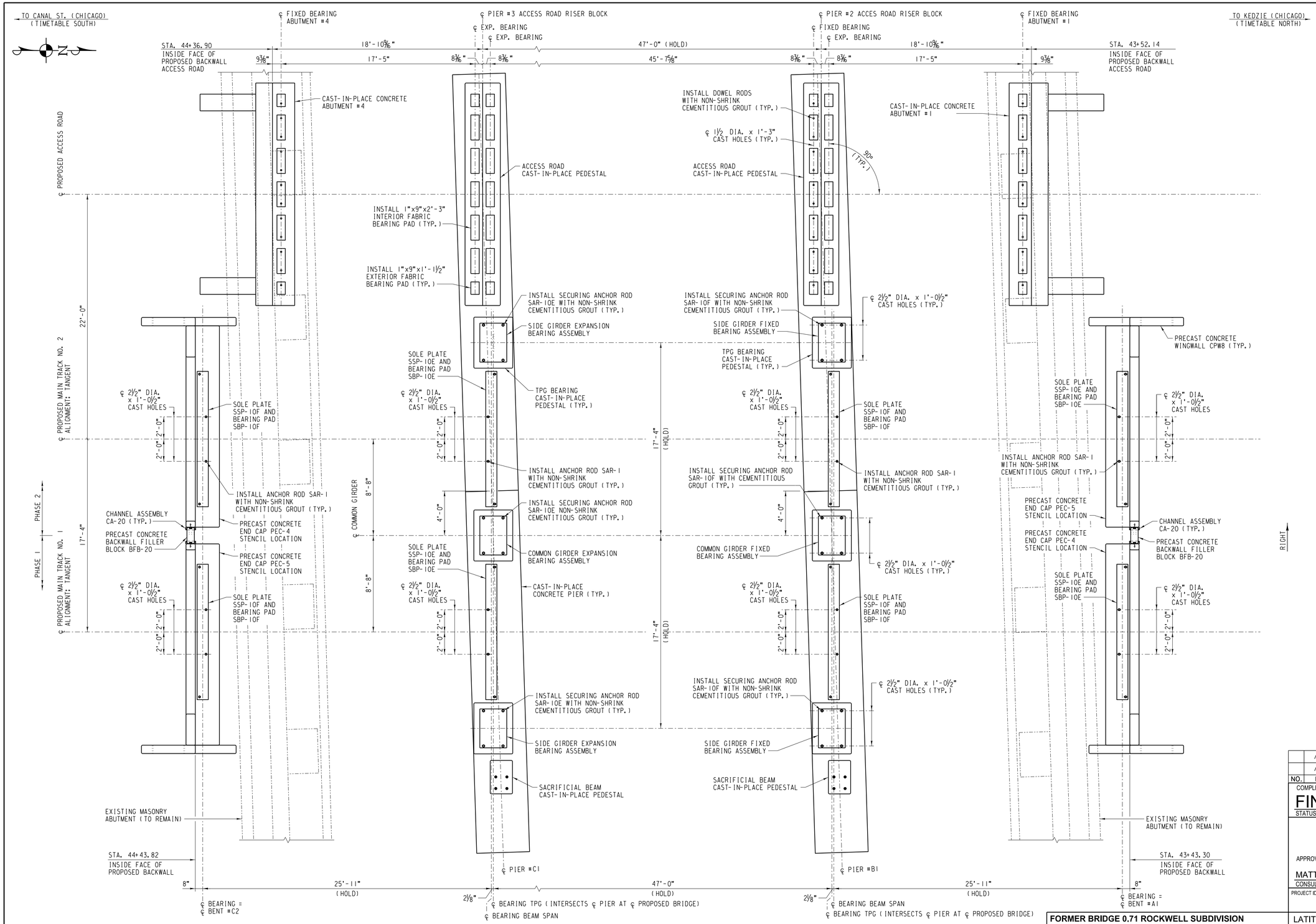
LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION

1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) &
1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE: PILE LAYOUT AND PILE DRIVING DIAGRAM

FILE NAME: C:\Users\rcontreraz\Desktop\rco00082_bii.dgn

PLOTTED: 5/27/2021 11:13:06 AM



SUBSTRUCTURE LAYOUT

SCALE: 1/4"=1'-0"

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS: FINAL — STATUS — 05/28/2021 DATE

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APPROVED FOR UNION PACIFIC RAILROAD BY:

MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION | LATITUDE: 41.88456°N | LONGITUDE: 87.69160°W

UNION PACIFIC

DSN/CHK BY: MTS/MFB	**UNION PACIFIC RAILROAD**
DRAWN/CHK BY: ACB/MFB	Office of Director Structures Design
UPRR ENGINEER: DEH/ADS	LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION
SHT NO.: C3 of C59	1 SPAN BMBD x 27', 1 SPAN TPGOD x 46', 1 SPAN BMBD x 27' REPLACING 3 SPAN TPGBD x 84'
	SHEET TITLE: SUBSTRUCTURE LAYOUT

FILE NAME: C:\Users\mrcruz\Desktop\roc00082_bli.dgn

PLOTTED: 5/27/2021 11:13:06 AM

DESIGN NOTES

1. In the event of a conflict between the design plans and the standards, the design plans shall control.
2. Location of known utilities is approximate. Location shall be verified prior to construction. Notify DIGGER/811 CHICAGO, 1-312-744-7000, at least 48 hours prior to construction.

RIGHT-OF-WAY

1. Approx. 43'-0" east of existing Main Track No. 1 centerline.
2. Approx. 47'-0" west of existing Main Track No. 2 centerline.

LAYOUT

1. Stationing: Sta. 43+51.53, south face of north abutment backwall at intersection of centerline existing Main Track No. 2, of existing Bridge No. 0.82.
2. Elevation Datum: Chicago City Datum (CCD)
3. Benchmark: BM #276, Elev. 14.66 (CCD), 6.4 feet north of south line of W Congress Parkway and 47.1 feet east of east line of S Washtenaw Avenue.
4. Profile: No increase in rail elevation.
   Rail Size: 136# (Main Track No. 1), 136# (Main Track No. 2)
5. Alignment: Tangent.
6. Information used to prepare this drawing in addition to reference drawings:

   Survey conducted by AMERICAN SURVEYING & ENGINEERING, from 2012 to 2017.

   Geotechnical Design Report prepared by WANG ENGINEERING, INC., dated 01/08/2021.

H-PILE DRIVING

1. All piles shall be driven to 85 ton service capacity.
2. Constructor shall assume one pile load test will be required in accordance with City of Chicago Department of Buildings. If pile load test is required, Constructor shall perform in accordance with ASTM D1143 using Procedure A.

DESIGN

1. The proposed superstructure and substructure have been designed in accordance with the AREMA Manual for Railway Engineering, Chapter 8: Concrete Structures and Foundations and Chapter 15: Steel Structures, except longitudinal load, which is designed per the 1996 AREA Manual for Railway Engineering.
2. The superstructure was designed for Cooper E80 Live Load or alternate loading, where applicable, plus impact with a 30" maximum total depth of ballast. The substructure was similarly designed, but without impact (AREMA Chapter 8: Article 2.2.3.d.3).
3. This drawing was prepared using 0" (min.) of ballast under timber ties for the TPG00 span and 8" (min.) of ballast under timber ties for the steel beam spans.

EXISTING MASONRY ABUTMENT RESTORATION NOTES

1. Existing Masonry Abutment Restoration consists of tuckpointing the joints and cleaning and painting the exposed surface of the existing masonry abutments. Limits include the width of railroad ROW, both abutments. All surfaces exposed to the roadway below should receive restoration treatment.

CLEANING

1. Constructor shall use water cleaning to clean the existing abutment masonry surfaces of paint, heavy soiling, staining, organic and inorganic contaminants, and all loose, foreign material to the satisfaction of the Engineer. Cleaning operations shall consist of pressure spraying, hand scrubbing and rinsing. Cleaning operations shall be performed after all tuckpointing repairs are performed to the existing abutments.
2. Constructor shall provide water cleaning equipment including a trailer-mounted water tank, pumps, high-pressure hose, wand with safety release cutoff control, nozzle, and auxiliary water re-supply equipment. Water used for cleaning shall be potable and obtained from a local source. Water shall also be filtered to remove minerals resulting in a neutral pH prior to its use.
3. Hand scrubbing of masonry shall be performed with natural- or nylon-bristled, hand held brushes. Wire brushes shall not be used.
4. Protective covers and barriers shall be provided as required to prevent over-spray onto adjacent surfaces or new steel superstructure and bearings.

TUCKPOINTING

1. Loose, unsound or disintegrated mortar pointing between the masonry joints shall be removed and the joints cleaned and washed before pointing with new mortar. The exposed beds and joints shall be thoroughly cleaned by chipping with chisels or similar tools, scraping and brushing out the mortar to a minimum depth of 1-1/2 inches, and washing thoroughly with clean water.
2. Areas to be tuckpointed should be wet thoroughly to prevent absorption of water from the mortar.
3. Mortar shall be tucked into the joints and finished with a smooth face struck flush with masonry face. All excess material shall be removed and the joint tooled to a neat workmanlike finish.
4. Tuckpointing mortar shall be FX 262 Repair Mortar as manufactured by Fox Industries or Commercial Grade FastSet Repair Mortar as manufactured Quikrete, or an approved equal. The mortar shall be applied according to the manufacturer's specifications.
5. Pressure spraying and rinsing equipment shall be capable of a discharge capacity of 55 to 400 psi and 2.5 to 3.0 gallons per minute for general surface cleaning operations. The water tank and auxiliary re-supply equipment shall be of sufficient capacity to permit continuous operations. Equipment shall not be operated at a pressure which will cause etching or other damage to the masonry surface or mortar joints.
6. Cleaning operations shall commence when the air temperature is above, and expected to remain above, 40 degrees F for not less than 7 consecutive days.
7. Adjust cleaning operations as required to ensure masonry and mortar joints are not damaged and an acceptable process is obtained.

PAINTING

1. Apply paint to all existing and new abutment surfaces in accordance with paint manufacturer's specifications.
2. Constructor shall coordinate paint system type, color and sheen with the CDOT - Division of Engineering.

PROPOSED CONSTRUCTION SEQUENCE

1. All work to be performed by Contractor, except where noted in parentheses. Both tracks shall remain in service except for natural windows and/or prearranged work blocks. Contractor and Railroad shall define Existing Main Track No. 1 and No. 2 extended work block date and duration. Extended work block shall be prearranged during one weekend in each construction phase. Work shall generally include, but is not limited to:

PHASE 1

1. Existing Main Track No. 1 and No. 2 to remain in service except during extended work block.
2. Install temporary shoring for existing structure and remove portion of existing substructure in conflict with Phase 1 cast-in-place concrete piers.
3. Install Phase 1 micropiles and construct Phase 1 cast-in-place concrete piers with appropriate traffic control.
4. During work windows, install temporary shoring between Phase 1 and Phase 2 and drive pile for Phase 1 construction (immediately remove pile to B/R).
5. Close traffic service on Existing Main Track No. 1 for extended work block (Railroad).
6. Remove Existing Main Track No. 1 existing rail, ties, ballast and OTM (Railroad).
7. Remove existing steel span (eastern girder with floor system), bearings, riser blocks and excavate as required to remove existing backwall on both abutments for installation of new bridge for Proposed Main Track No. 1.
8. Excavate as required and remove driven pile to final cutoff elevations.
9. Install precast concrete end caps and wingwalls.
10. Install Phase 1 portion of TPG span and beam spans.
11. Install portion of abutment backfill and subballast.
12. Place ballast, ties, rail and OTM (Railroad).
13. Place Main Track No. 1 back in service on proposed alignment (Railroad).
14. Install sacrificial beam.

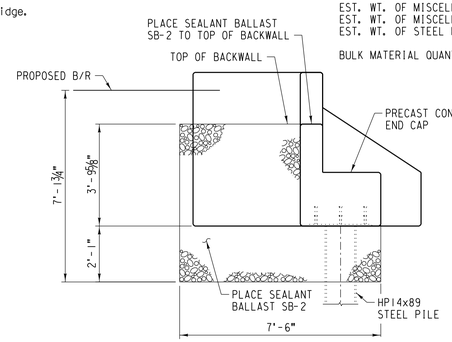
PHASE 2

1. Proposed Main Track No. 1 and Existing Main Track No. 2 to remain in service except during extended work block.
2. Install temporary shoring for existing structure and remove portion of existing substructure in conflict with Phase 2 cast-in-place concrete piers.
3. Construct Phase 2 cast-in-place concrete piers with appropriate traffic control.
4. During work windows, drive pile for Phase 2 construction (immediately remove pile to B/R).
5. Close traffic service on Existing Main Track No. 2 for extended work block (Railroad).
6. Remove Existing Main Track No. 2 existing rail, ties, ballast and OTM (Railroad).
7. Remove remaining existing steel spans, bearings, riser block and excavate to remove existing backwall on both abutments as required for installation of new bridge for Proposed Main Track No. 2.
8. Excavate as required and remove driven pile to final cutoff elevations.
9. Install remaining precast concrete end caps and wingwalls.
10. Install Phase 2 portion of TPG span and beam spans for Proposed Main Track No. 2.
11. Install remaining portion of abutment backfill and subballast.
12. Remove temporary shoring.
13. Place ballast, ties, rail and OTM (Railroad).
14. Place Main Track No. 2 back in service on proposed alignment (Railroad).
15. Remove remaining existing riser blocks and backwall on both abutments and excavate as required for installation of new bridge for Access Road.
16. Construct cast-in-place concrete bridge seat for proposed Access Road Bridge.
17. Install 17" x 36" PPC Deck Beams and 21" x 36 PPC Deck Beams.
18. Construct cast-in-place backwalls and wingwalls for proposed Access Road Bridge.
19. Install remaining portion of abutment backfill as required.
20. Install cast-in-place concrete parapet on Access Road Bridge.
21. Install waterproofing and aggregate surface course on Access Road Bridge.
22. Restore area to original condition or better.

CAST-IN-PLACE CONCRETE NOTES

(Use with notes on Standard Drawing 531100, Sheet No. T3)

1. DCI, as manufactured by W. R. Grace, MasterLife CI 30, as manufactured by BASF, or approved alternate shall be added at a quantity of 5 gallons per cubic yard. Calcium nitrate solution shall contain 30% solids and shall provide 15.0 lbs. per cubic yard chloride protection. Mix shall also include 7%, by weight of cement, force 10,000 microsilica slurry by W. R. Grace or BASF, or approved addendum shall be used.
2. Proposed admixture alternates shall be approved by the Railroad. Any proposed substitution shall include documentation as to the corrosion protection mechanism, test data documenting the stated level of protection offered, and documentation that the proposed alternate meets a service life of 100 years as calculated using Flick's Second Law of Physics. All models shall use a reference diffusion coefficient of 2.81. Only system as noted on drawings or approved addendum shall be used.



END BENT BACKFILL DETAIL

SCALE: 3/8"=1'-0"

END HANDRAIL ASSEMBLY AND BEAM SPAN NOT SHOWN FOR CLARITY

BILL OF MATERIAL

TOTAL	PHASE 1	PHASE 2	UNIT	DESCRIPTION	STORE ITEM NO.	ORDERED BY
1	1	-	EA.	STRUCTURAL STEEL AND FASTENERS, INCLUDING BEARING MATERIAL, FOR ONE 49'-4" TPG STEEL SPAN, COMPLETE (PER NOTES, SHEET NO. C45, DETAILS, SHEET NOS. C41 THRU C51, BEARINGS, SHEET NOS. C53 THRU C57 AND MATERIAL LISTS, SHEET NO. C52)	122523-1	MANAGER TRACK PROJECTS
1	-	1	EA.	STRUCTURAL STEEL AND FASTENERS, INCLUDING BEARING MATERIAL, FOR ONE 26'-11" STEEL BEAM SPAN BS18-26.11-A, COMPLETE (PER NOTES, STD. DWG. 580000 SHT. G1, DETAILS SHEET NOS. C32 THRU C39 AND MATERIAL LISTS, SHEET NO. C40)	122523-2	
1	1	-	EA.	STRUCTURAL STEEL AND FASTENERS, INCLUDING BEARING MATERIAL, FOR ONE 26'-11" STEEL BEAM SPAN BS18-26.11-B, COMPLETE (PER NOTES, STD. DWG. 580000 SHT. G1, DETAILS SHEET NOS. C32 THRU C39 AND MATERIAL LISTS, SHEET NO. C40)	122523-3	
1	-	1	EA.	STRUCTURAL STEEL AND FASTENERS, INCLUDING BEARING MATERIAL, FOR ONE 26'-11" STEEL BEAM SPAN BS18-26.11-C, COMPLETE (PER NOTES, STD. DWG. 580000 SHT. G1, DETAILS SHEET NOS. C32 THRU C39 AND MATERIAL LISTS, SHEET NO. C40)	122523-4	
1	1	-	EA.	STRUCTURAL STEEL AND FASTENERS, INCLUDING BEARING MATERIAL, FOR ONE 26'-11" STEEL BEAM SPAN BS18-26.11-D, COMPLETE (PER NOTES, STD. DWG. 580000 SHT. G1, DETAILS SHEET NOS. C32 THRU C39 AND MATERIAL LISTS, SHEET NO. C40)	122523-5	
2	1	1	EA.	PRECAST END CAP PEC-4 (PER NOTES, STD. DWG. 531100 SHT. T3 AND DETAILS, SHEET NO. C21)	122523-6	
2	1	1	EA.	PRECAST END CAP PEC-5 (PER NOTES, STD. DWG. 531100 SHT. T3 AND DETAILS, SHEET NO. C22)	122523-7	
4	2	2	EA.	CHANNEL ASSEMBLY CA-20 (PER NOTES, STD. DWG. 531100 SHT. T3 AND DETAILS, SHEET NO. C22)	122523-8	
4	2	2	EA.	PRECAST WINGWALL CPW8 (PER NOTES, STD. DWG. 531100 SHT. T3, DETAILS AND MATERIAL SCHEDULE, SHEET NO. C23)	122523-9	
2	-	2	EA.	PRECAST CONCRETE BACKWALL FILLER BLOCK BFB-20 (PER NOTES, STD. DWG. 531100 SHT. T3, DETAILS AND MATERIAL SCHDULE, SHEET NO. C23)	122523-10	
4	2	2	EA.	END HANDRAIL ASSEMBLY CEH-16 (PER NOTES, STD. DWG. 531100 SHT. T3 AND DETAILS SHEET NO. C59)	122523-11	
4	2	2	EA.	BACKWALL HANDRAIL SBH-1 (PER NOTES, STD. DWG. 531100 SHT. T3 AND DETAILS, SHEET NO. C59)	122523-12	
2	1	1	LOT	TIMBER DECK FOR TPG SPAN (PER NOTES AND SCHEDULE, SHEET NO. C19, DETAILS, SHEET NOS. C18 & C19, AND TIE CHART, SHEET NO. C19)	122523-13	
2	1	1	EA.	END BALLAST DAM EBD-10 (PER NOTES, STD. DWG. 531100 SHT. T3 AND DETAILS, SHEET NO. C58)	122523-14	
2	1	1	EA.	END BALLAST DAM EBD-20 (PER NOTES, STD. DWG. 531100 SHT. T3 AND DETAILS, SHEET NO. C58)	122523-15	
4	2	2	EA.	END BALLAST TIE EBT-10 (PER NOTES AND DETAILS, SHEET NO. C8)	122523-16	
14	7	7	EA.	7/8" DIA. x 0'-10" HEAVY HEX BOLT WITH HEAVY HEX ELASTIC LOCKNUT (MIL-N-25027) AND TWO FLAT CIRCULAR WASHERS (F436), EACH COMPONENT HOT DIP OR MECHANICALLY ZINC COATED	-	
8	4	4	EA.	COVER PLATE SCP-20 (PER NOTES, STD. DWG. 531100 SHT. T3 AND DETAILS, SHEET NO. C58)	122523-17	
1	1	-	EA.	SACRIFICIAL BEAM SB-2, INCLUDING RELATED NON-STANDARD MISCELLANEOUS STEEL (PER NOTES, STD. DWG. 531100 SHT. T3 AND DETAILS AND MATERIAL SCHEDULE, SHEET NO. C12)	122523-18	
32	16	16	EA.	HP14x89x 40'-0" STEEL PILE (ASTM A572 GRADE 50, PLAIN)	510-7557	
16	8	8	EA.	HP14 x 89 PILE POINTS (PER NOTES & DETAIL, STD. DWG. 531110 SHT. H1)	510-8063	
16	8	8	EA.	HP14 x 89 PILE SPLICER (PER NOTES & DETAIL, STD. DWG. 531110 SHT. H1)	510-8065	
2	1	1	QT.	ZRC COLD GALVANIZING COMPOUND OR APPROVED ALTERNATE	513-3960	
1	-	1	EA.	BRIDGE MARKER AND NO TRESPASSING SIGNS, MOUNTING POST AND MOUNTING HARDWARE (PER STD. DWG. 0502, 0507, 0538 AND 0599)	P00-2616	
2	1	1	LOT	CAST-IN-PLACE CONCRETE PIER #B1 & #C1 (PER NOTES, STD. DWG. 531100 SHT. T3 AND SHEET NO. C4, DETAILS, SHEETS NOS. C13 THRU C15 AND MATERIAL SCHEDULES SHEET NO. C13 AND C14)	-	CONSTRUCTOR
60.5	-	60.5	CU. YD.	4,000 PSI CONCRETE, 27.9 CU. YD. FOR ACCESS BRIDGE ABUTMENTS, 30.9 CU. YD. FOR ACCESS BRIDGE PARAPETS AND 1.7 CU. YD. FOR ACCESS BRIDGE EXPANSION JOINT (PER PROJECT SPECIFICATIONS AND PER DETAILS, SHEET NOS. C24, C26 AND C27)	-	
1	-	1	LOT	REINFORCING STEEL FOR ACCESS BRIDGE ABUTMENTS, ACCESS BRIDGE PARAPETS AND ACCESS BRIDGE EXPANSION JOINTS (PER PROJECT SPECIFICATIONS AND PER NOTES AND SCHEDULES, SHEET NOS. C24, C26 AND C27)	-	
1	-	1	LOT	DRILL AND EPOXY GROUT BARS FOR ACCESS BRIDGE ABUTMENTS (PER PROJECT SPECIFICATIONS AND PER NOTES AND DETAILS, SHEET NO. C24)	-	
1	-	1	LOT	LIQUID SPRAY-ON-WATERPROOFING FOR ACCESS BRIDGE SPANS (PER PROJECT SPECIFICATIONS AND PER NOTES AND SCHEDULE, SHEET NO. C25)	-	
1	-	1	LOT	AGGREGATE SURFACE COURSE FOR ACCESS BRIDGE SPANS (PER PROJECT SPECIFICATIONS AND PER NOTES AND SCHEDULE, SHEET NO. C25)	-	
1	-	1	LOT	PREFORMED JOINT STRIP SEAL FOR ACCESS BRIDGE SPAN (PER PROJECT SPECIFICATIONS AND PER NOTES AND SCHEDULE, SHEET NO. C27)	-	
1	-	1	LOT	17x36 PRECAST PRESTRESSED CONCRETE DECK BEAMS FOR ACCESS BRIDGE SPANS (PER PROJECT SPECIFICATIONS AND PER NOTES, DETAILS AND SCHEDULE SHEET NOS. C28 AND C30)	-	
1	-	1	LOT	21x36 PRECAST PRESTRESSED CONCRETE DECK BEAMS FOR ACCESS BRIDGE SPANS (PER PROJECT SPECIFICATIONS AND PER NOTES, DETAILS AND SCHEDULE SHEET NOS. C29 AND C30)	-	
1	-	1	LOT	STRUCTURAL STEEL FOR APRON PLATES, STEEL PLATES AND SIDE PLATES FOR ACCESS BRIDGE SPANS (PER PROJECT SPECIFICATIONS AND PER NOTES, DETAILS AND SCHEDULE SHEET NO. C31)	-	
48	24	24	EA.	MICROPILE (PER NOTES, SCHEDULE AND DETAILS, SHEET NO. C10 AND C11)	-	
2	1	1	LOT	MICROPILE LOAD TEST (PER NOTES AND DETAILS, SHEET NO. C11)	-	
1	-	1	LOT	EXISTING MASONRY ABUTMENT RESTORATION (PER NOTES, THIS SHEET)	-	
10	5	5	GAL	CARLISLE CCW-201 POLYURETHANE SEALANT (PER NOTES, SHEET NO. C34)	-	
2	1	1	LOT	NON-SHRINK CEMENTITIOUS GROUT FOR TPG BEARING ANCHOR RODS, SACRIFICIAL BEAM ANCHOR RODS AND ACCESS BRIDGE DOWEL RODS AND ANCHOR RODS	-	
1	1	-	LOT	TEMPORARY SHORING AS REQUIRED (PER NOTES, STD. DWG. 531100 SHT. T2)	-	
2	1	1	LOT	BEAM SPAN WATERPROOFING (PER NOTES, DETAILS AND MATERIAL SCHEDULE, SHEET NO. C9)	-	
199	72	127	TON	SEALANT BALLAST (PER NOTES, STD. DWG. 001OE AND DETAILS, SHEET NOS. C4 AND C24)	-	

EST. WT. OF STRUCTURAL STEEL - TPG SPAN (NOT INCL. BOLTS) = 282,500 LB.
EST. WT. OF STRUCTURAL STEEL - BEAM SPANS (NOT INCL. BOLTS) = 144,950 LB.
EST. WT. OF MISCELLANEOUS STEEL - SACRIFICIAL BEAM = 5,582 LB.
EST. WT. OF MISCELLANEOUS STEEL - END BALLAST DAMS = 3,294 LB.
EST. WT. OF MISCELLANEOUS STEEL - HANDRAILS = 1,036 LB.
EST. WT. OF STEEL PILING = 113,920 LB.

BULK MATERIAL QUANTITIES ARE ESTIMATED.

NOTE:
CONSTRUCTOR DESIGNATES MANAGER BRIDGE CONSTRUCTION IF CONSTRUCTION BY UPRR AND CONTRACTOR IF CONSTRUCTION BY CONTRACTOR.

NOTE:
ALL NOTES NOT PROVIDED IN THESE PLANS SHALL BE PER STD. DWG. 531100 SHT. T2.

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB	
DRAWN/CHK BY: ACB/MFB	
UPRR ENGINEER: DEH/ADS	
SHT NO.: C4 of C59	

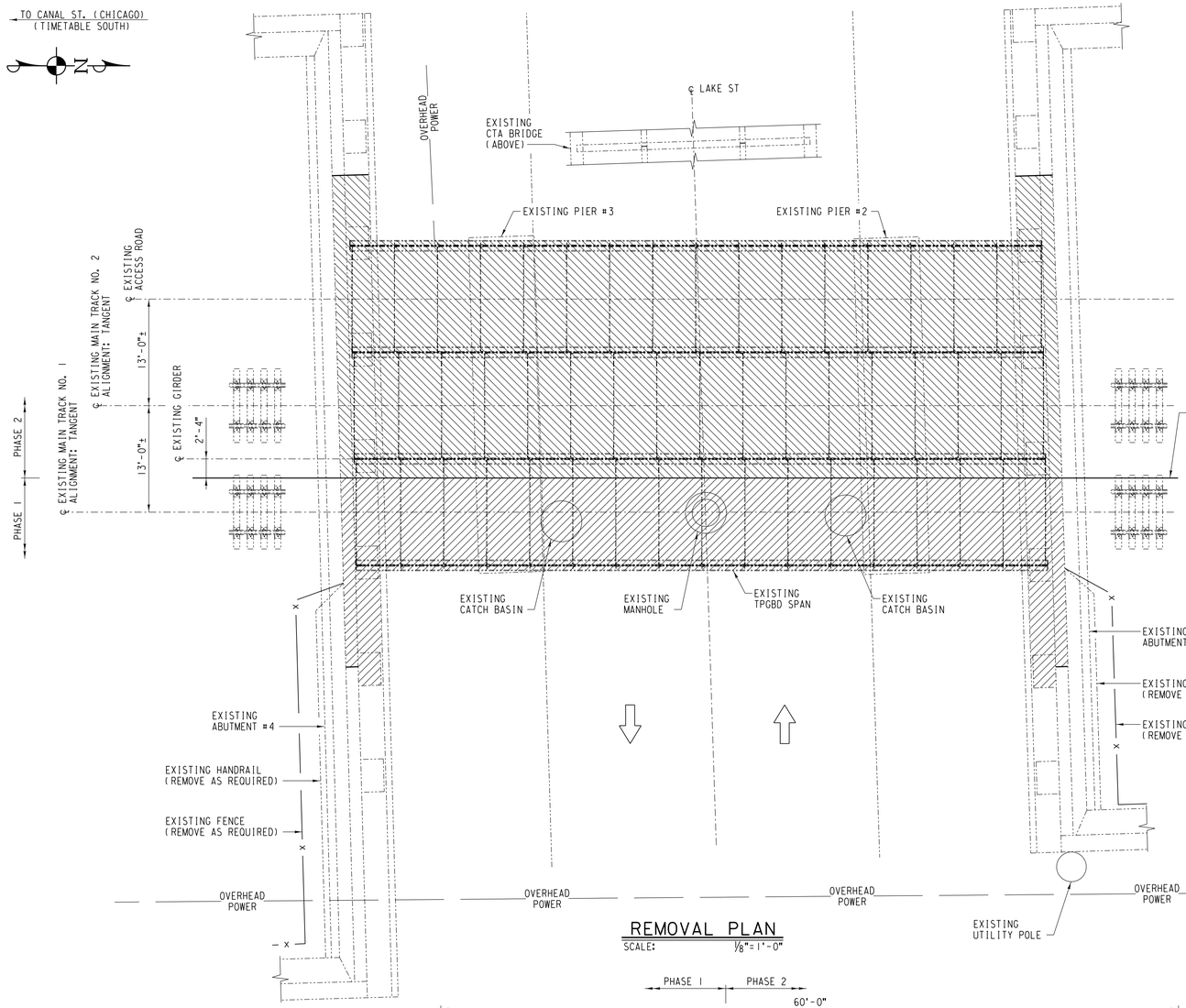
UNION PACIFIC RAILROAD
Office of Director Structures Design

LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE: GENERAL NOTES AND BILL OF MATERIAL

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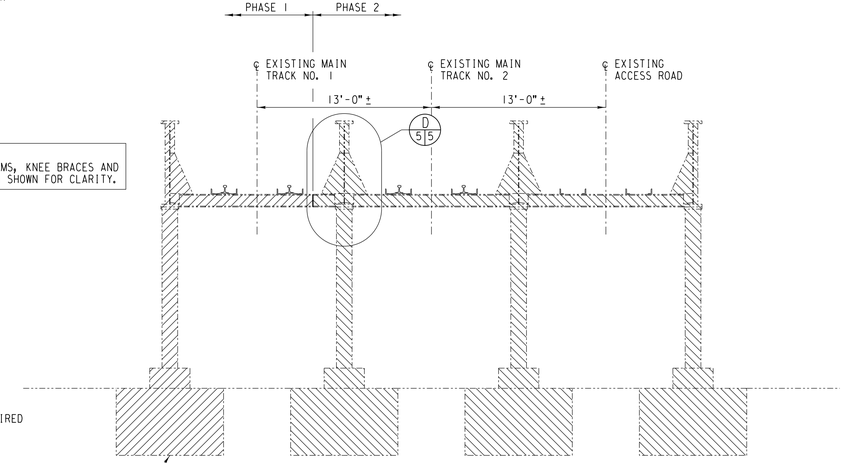


REMOVAL PLAN

SCALE: 1/8"=1'-0"

TO KEDZIE (CHICAGO)
(TIMETABLE NORTH)

NOTE:
EXISTING FLOORBEAMS, KNEE BRACES AND DECK MATERIAL NOT SHOWN FOR CLARITY.

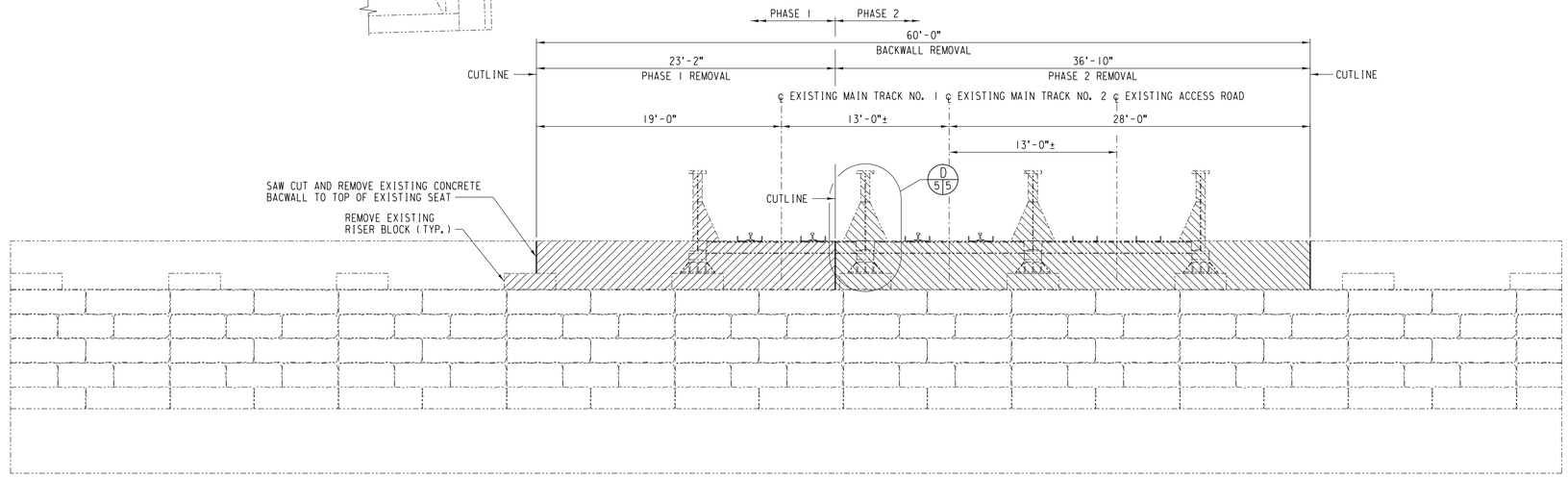


REMOVAL SECTION

SCALE: 3/16"=1'-0"
EXISTING PIER #2 SHOWN, EXISTING PIER #3 SIMILAR

DETAIL D 5|5

SCALE: 3/8"=1'-0"



REMOVAL SECTION

SCALE: 3/16"=1'-0"
EXISTING ABUTMENT #2 SHOWN, EXISTING ABUTMENT #1 SIMILAR

PHASE 1 REMOVAL
PHASE 2 REMOVAL

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

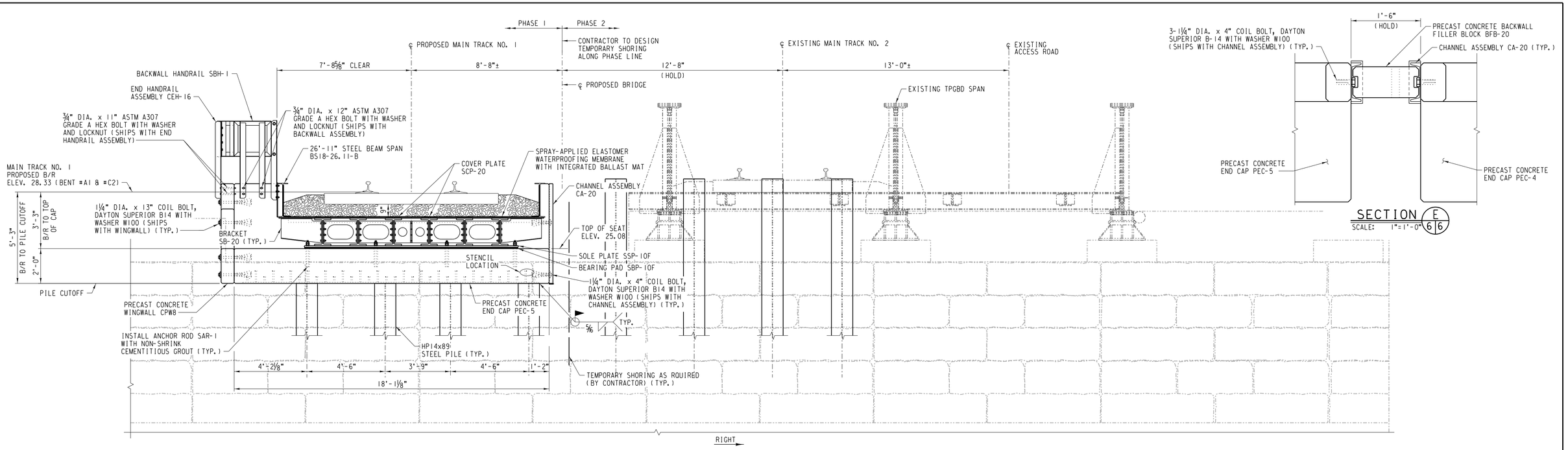
FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB	**UNION PACIFIC RAILROAD**
DRAWN/CHK BY: ACB/MFB	Office of Director Structures Design
UPRR ENGINEER: DEH/ADS	LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION 1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'
SHT NO.: C5 of C59	SHEET TITLE: REMOVAL DETAILS

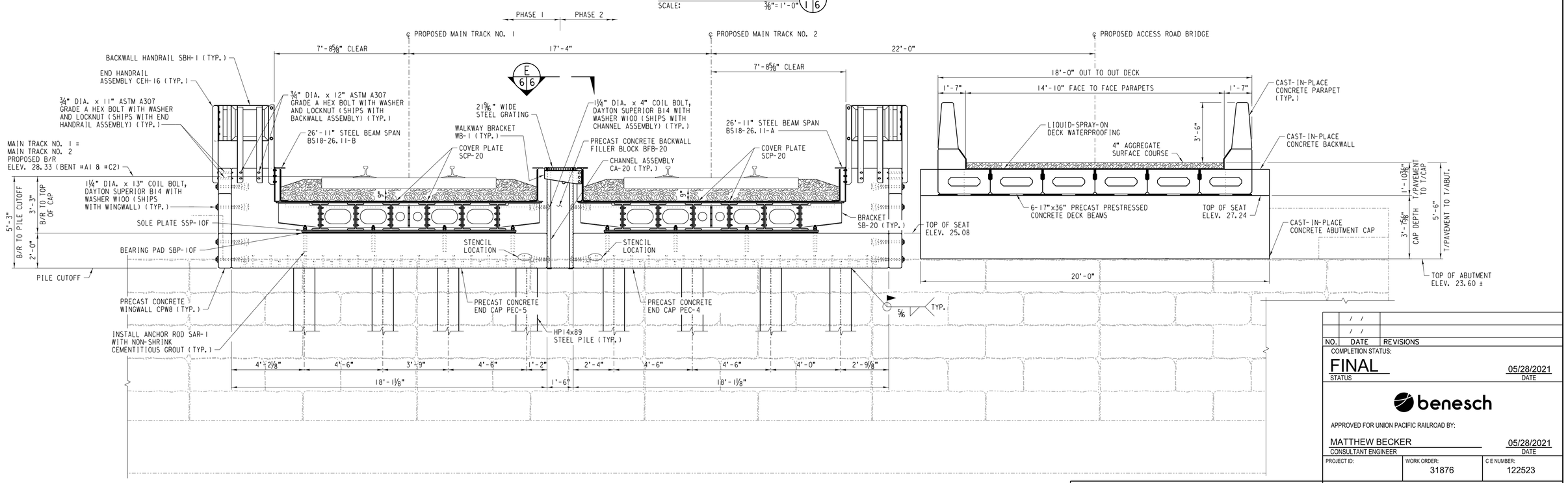
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PHASE 1 SECTION (A 1|6)
SCALE: ⅜"=1'-0"

SECTION (E 6|6)
SCALE: 1"=1'-0"



PHASE 2 SECTION (A 1|6)
SCALE: ⅜"=1'-0"

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL (STATUS) 05/28/2021 (DATE)

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER (CONSULTANT ENGINEER) 05/28/2021 (DATE)

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

UNION PACIFIC

DSN/CHK BY:	MTS/MFB
DRAWN/CHK BY:	ACB/MFB
UPRR ENGINEER:	DEH/ADS
SHT NO.:	C6 of C59

UNION PACIFIC RAILROAD

Office of Director Structures Design

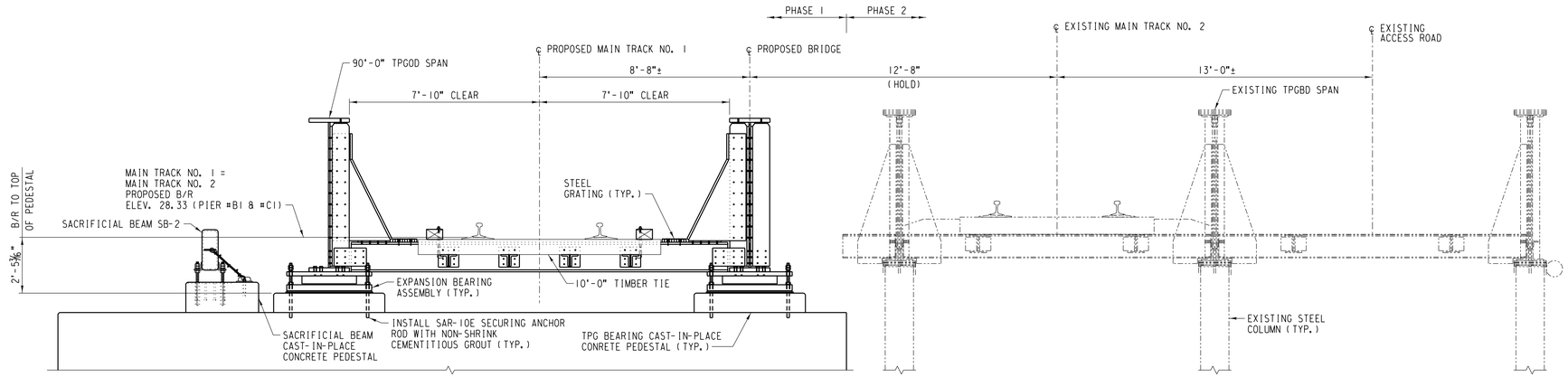
LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION

1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE: TYPICAL SECTIONS (SHEET 1 OF 3)

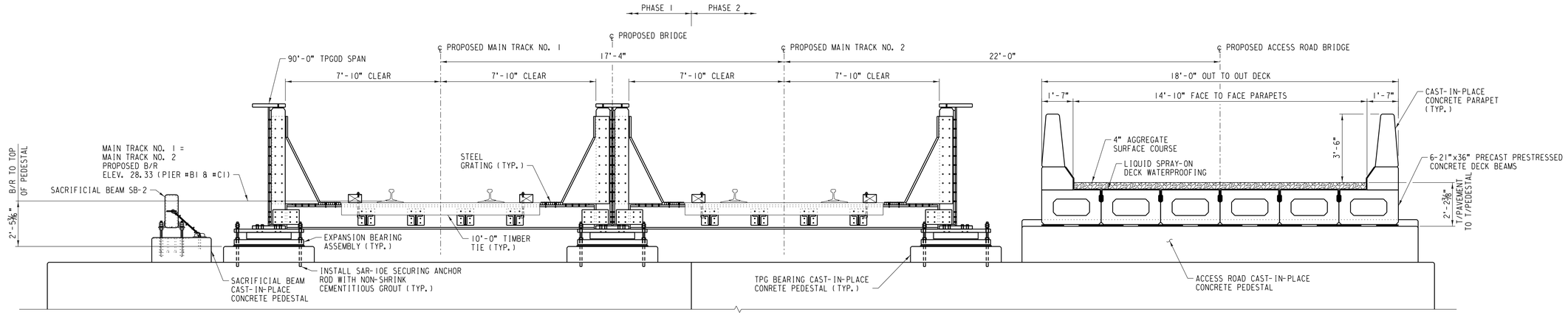
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PHASE 1 SECTION B

SCALE: ⅜"=1'-0" 1 | 7



PHASE 2 SECTION B

SCALE: ⅜"=1'-0" 1 | 7

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:

FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:

MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION — LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY:	MTS/MFB
DRAWN/CHK BY:	ACB/MFB
UPRR ENGINEER:	DEH/ADS
SHT NO.:	C7 of C59

UNION PACIFIC RAILROAD

Office of Director Structures Design

LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION

1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

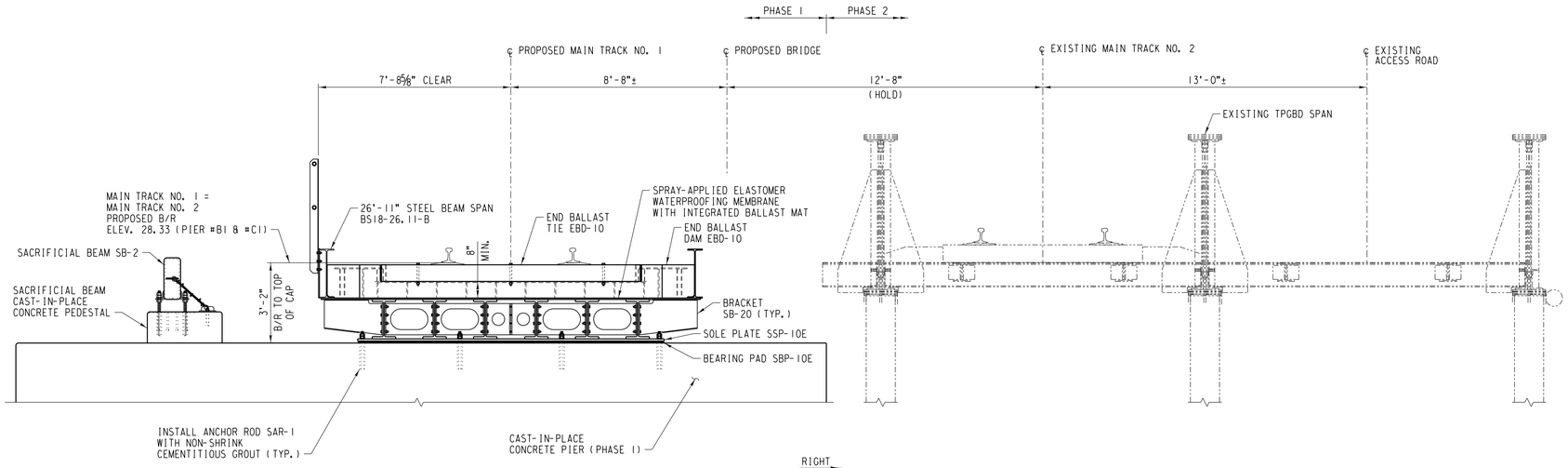
SHEET TITLE: TYPICAL SECTIONS (SHEET 2 OF 3)

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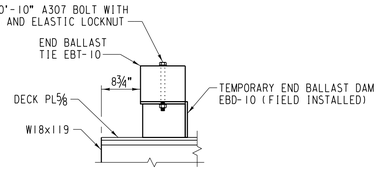
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BALLAST TIE NOTES

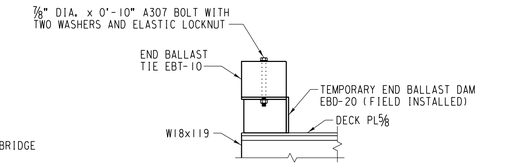
1. Ballast tie shall be Douglas Fir, Grade Dense #1 or Select Structural, or Souther Yellow Pine, Grade #1 or #1 Dense SR. They shall be graded and marked to show conformance to WCLIB or SPIB grading rules and standards.
2. Timber to be well seasoned, conditioned and pressure treated with creosote and oil after fabrication.
3. Field holes, abrasions, and cuts made in treated timber shall be coated with copper naphthenate (in an oil solution).
4. Ballast tie shall have anti-checking devices installed on each end.



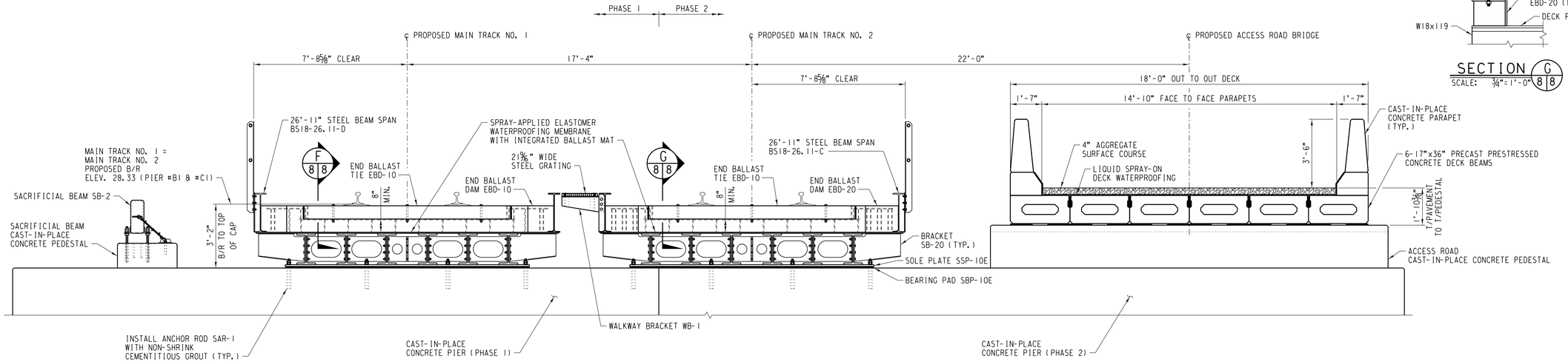
PHASE 1 SECTION C
SCALE: ⅜"=1'-0" (1 | 8)



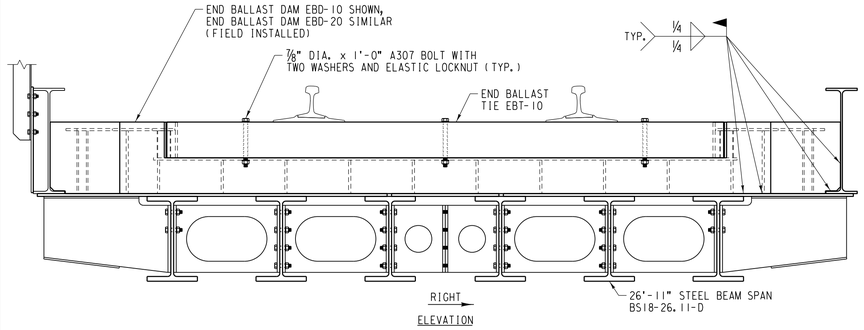
SECTION F
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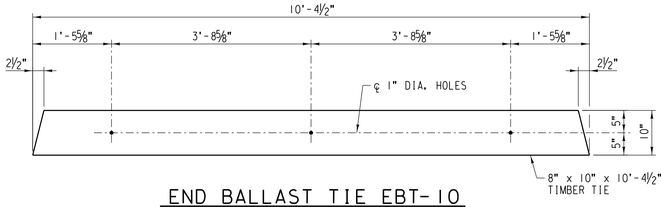
SECTION G
SCALE: ¾"=1'-0" (8 | 8)



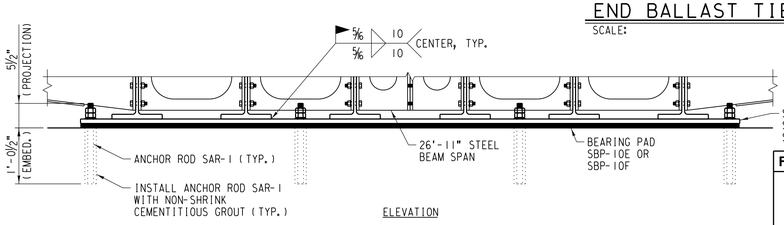
PHASE 2 SECTION C
SCALE: ⅜"=1'-0" (1 | 8)



END BALLAST DAM INSTALLATION DETAIL
SCALE: ¾"=1'-0"
SPAN BS18-26.11-D SHOWN,
SPAN BS18-26.11-A, BS18-26.11-B & BS18-26.11-C SIMILAR



END BALLAST TIE EBT-10
SCALE: ¾"=1'-0"



BEARING ASSEMBLY DETAIL
SCALE: ¾"=1'-0"

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS: FINAL (STATUS) 05/28/2021 (DATE)

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER (CONSULTANT ENGINEER) 05/28/2021 (DATE)

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

UNION PACIFIC

DSN/CHK BY:	MTS/MFB
DRAWN/CHK BY:	ACB/MFB
UPRR ENGINEER:	DEH/ADS
SHT NO.:	C8 of C59

UNION PACIFIC RAILROAD
Office of Director Structures Design

LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) &
1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

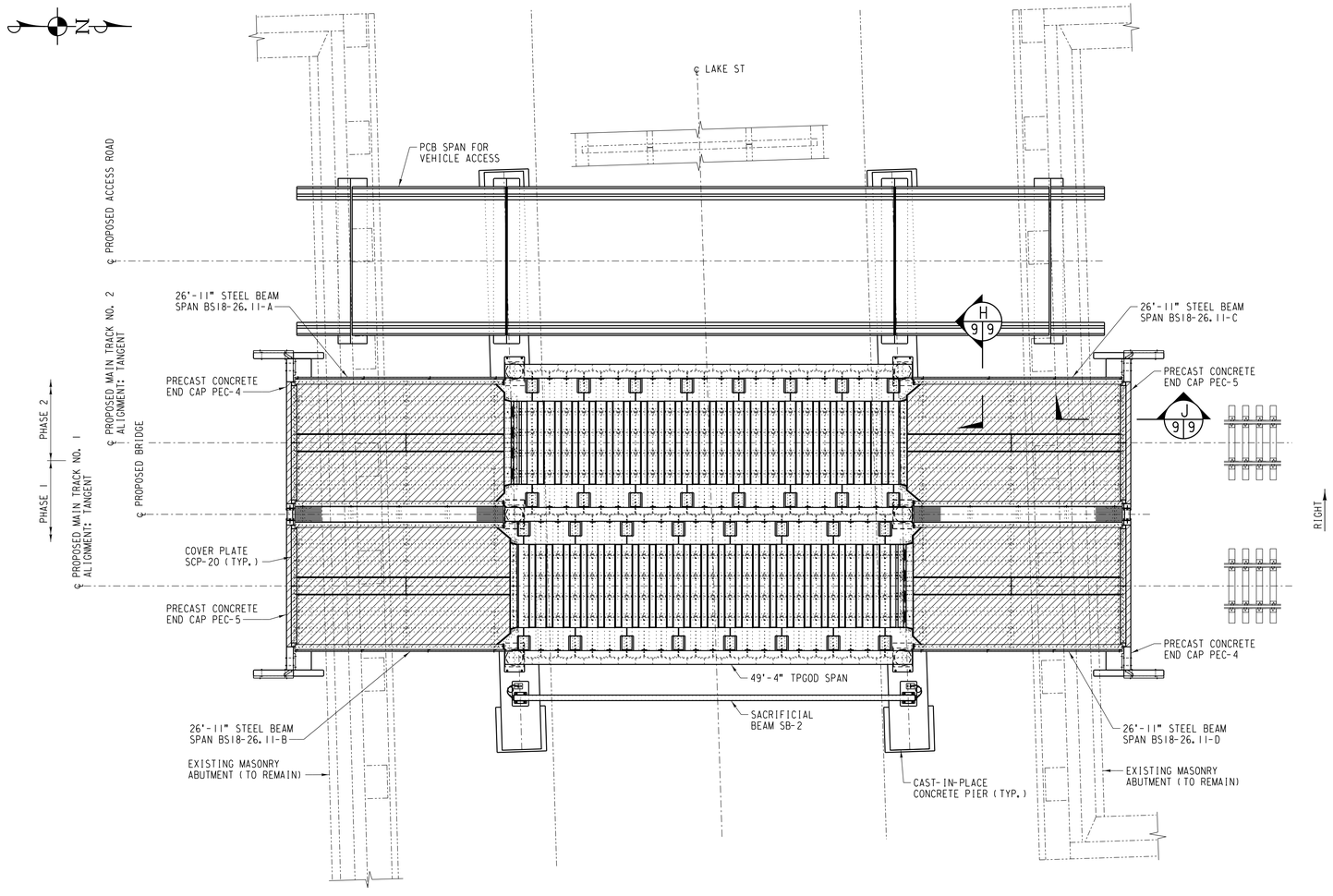
SHEET TITLE: TYPICAL SECTIONS (SHEET 3 OF 3)

FILE NAME: C:\Users\mcarriere\Desktop\rc0C0082_bii.dgn

PLOTTED: 5/27/2021 11:13:07 AM

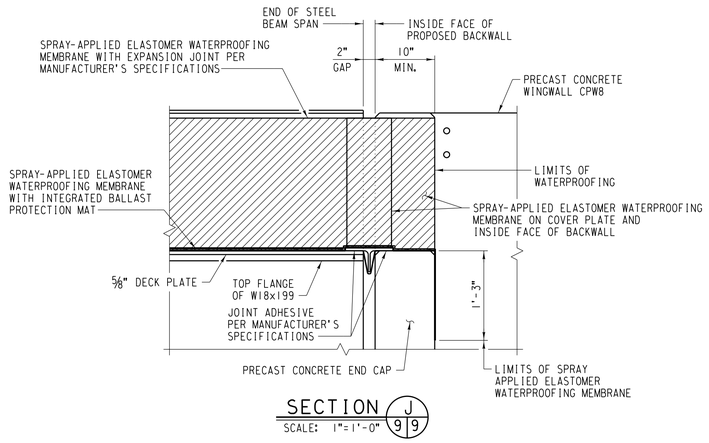
TO CANAL ST. (CHICAGO)
(TIMETABLE SOUTH)

TO KEDZIE (CHICAGO)
(TIMETABLE NORTH)



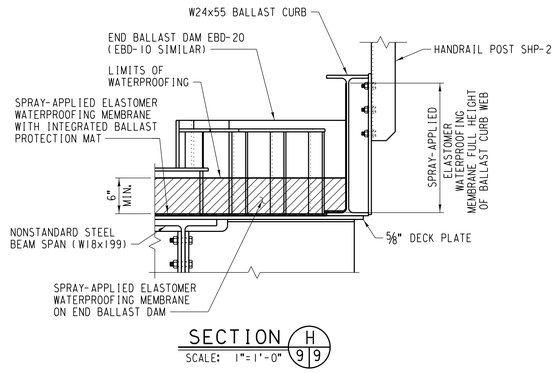
WATERPROOFING PLAN

SCALE: 1/8"=1'-0"



SECTION J 9 9

SCALE: 1"=1'-0"



SECTION H 9 9

SCALE: 1"=1'-0"

WATERPROOFING MATERIAL SCHEDULE

TOTAL	PHASE 1	PHASE 2	UNIT	DESCRIPTION
2,160	1,080	1,080	SQ. FT.	BRIDGE PRESERVATION 80 MIL ELASTOMERIC WATERPROOFING MEMBRANE OR APPROVED EQUAL
1,600	800	800	SQ. FT.	BRIDGE PRESERVATION 250 MIL INTEGRATED BALLAST PROTECTION MAT OR APPROVED EQUAL
120	60	60	LIN. FT.	BRIDGE PRESERVATION EXPANSION JOINT MATERIAL OR APPROVED EQUAL

WATERPROOFING NOTES

1. Spray-applied elastomer waterproofing membrane and integrated ballast protection mat shall be field applied to the proposed bridge as specified on this sheet.
2. Spray-applied elastomer waterproofing membrane and integrated ballast protection mat shall be furnished by Bridge Preservation L.L.C., or approved equal. Prepare surfaces and apply in accordance with the manufacturers recommendations.

   Contact:

   Bridge Preservation L.L.C.
   Customer and Sales Support
   Jonathan Haydu
   951-732-8692
3. Contractor to submit material specifications and installation procedures per project specifications to UPRR Office of Director Structures Design at least two weeks prior to beginning waterproofing installation.
4. After installation of waterproofing is complete, obtain acceptance from the UPRR Project Manager and immediately cover the surface with ballast.

NOTE:
FOR ACCESS ROAD BRIDGE WATERPROOFING DETAILS AND QUANTITIES, SEE SHEET NO. 25.

SPRAY-APPLIED ELASTOMER WATERPROOFING

NOTE:
TYPICAL JOINT DETAIL SHOWN FOR INFORMATION ONLY. WATERPROOFING INSTALLER SHALL DETERMINE FINAL DETAILS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY:	MTS/MFB
DRAWN/CHK BY:	ACB/MFB
UPRR ENGINEER:	DEH/ADS
SHT NO.:	C9 of C59

UNION PACIFIC RAILROAD
Office of Director Structures Design

LOCATION & DESCRIPTION:
BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) &
1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE:
BEAM SPAN WATERPROOFING DETAILS

FILE NAME: C:\Users\wrcomrey\Desktop\rock00082_b11.dgn

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MICROPILE NOTES

GENERAL

1. The Contractor shall submit proposed micropile installation methods with the bid. Installation methods must be accepted by the Railroad prior to construction. Proposed methods shall include equipment and procedures for excavation and installation and testing of micropiles and pile top attachments.

2. The Contractor shall be qualified in all aspects of micropile design and construction. The Contractor shall have successfully completed at least five transportation/railroad projects involving load testing in the previous last five years of similar capacity scope and size to those required in these plans and notes.

3. The Contractor shall have previous micropile drilling and grouting experience in soil/rock similar to project conditions. The Contractor shall submit construction details, structural details, and load test results for at least three previous successful micropile load tests from different projects of similar capacity to this project.

4. The Contractor may propose alternate micropile sizes, number and spacing. Complete drawings and calculations verifying the proposed alternate micropile arrangement meets design requirements shall be submitted to the Structures Design Group in the UPRR Office of Director, Structures Design for review and acceptance at least 21 days prior to ordering materials and before mobilizing to the site.

5. Drawing and calculations shall be signed and sealed by a Professional Engineer, or where required a Structural Engineer, and licensed in the State of Illinois.

6. Perform all drilling and grout placement work in the presence of the Railroad.

7. Submit the following to the Railroad at least 14 days before the start of the work, if applicable:

   a. Experience record of supervisory and micropile installation personnel
   b. Quality control program
   c. List of equipment and operating procedures
   d. Information on headroom and space requirements for installation equipment that verify the proposed equipment can perform installation at the site
   e. Plan describing how surface water, drill flush, and excess waste grout will be controlled and disposed of in a proper and legal manner
   f. Welding procedures for permanent casing and AWS welder certification
   g. Proposed sequence and installation schedule of micropiles

8. The Contractor shall obtain and review a complete copy of the Subsurface Exploration and Recommendations Form prior to the start of construction. Prior to bid, the Contractor should consider visiting the site to assess the site geometry, equipment access conditions, and location of existing structures and utilities.

9. Micropile installation, verification testing and proof testing shall be performed in accordance with FHWA NHI-05-039, Micropile Design and Construction (2005).

10. The Railroad reserves the right and the Contractor shall recognize such right to direct the installation of the micropiles in any sequence the Railroad deems necessary for the satisfactory completion of the work.

11. Contact the Union Pacific Call Before You Dig (CYBD) number 90 days (not less than 60 days) prior to proposed construction start date. Prior to construction, confirm that all necessary relocations have been completed. The CBYD number is: 1-800-336-9193.

DESIGN

1. Micropiles have been designed in accordance with FHWA NHI-05-039, Micropile Design and Construction (2005) and AREMA Manual for Railway Engineering, Chapter 8: Concrete Structures and Foundations. Longitudinal loads have been designed per the 1996 edition of the AREA Manual for Railway Engineering, Chapter 8.

2. The Contractor shall submit working drawings to the Railroad for approval at least 21 days prior to start of construction verifying the type, size and location of pre-production and production micropiles. Working drawings shall indicate micropile diameters and lengths.

3. Micropiles shall derive their support from side friction resistance within the pile bond zone.

4. Micropile service design loads at top of micropile for single micropile shall be as indicated on design plans.

5. The anticipated micropile tip elevation, as indicated on design plans, is based on assumed ultimate grout bond strengths and micropile minimum embedment into bedrock recommendations as denoted in the Geotechnical Design Report prepared by Wang Engineering. If higher grout bond strengths are utilized by the Contractor and testing shows micropile tips can be set at a higher elevation, in no case shall micropile tip elevations be above minimum tip elevation as indicated on design plans.

6. Lengths of casing and reinforcing bars to be spliced shall be secured in proper alignment and in a manner to avoid eccentricity or angle between the axes of the two lengths to be spliced. Splices and threaded joints shall meet the requirements of this specification. Threaded pipe casing joints shall be located at least two casing diameters (OD) from a splice in any reinforcing bar.

CONSTRUCTION

1. The Contractor shall furnish equipment and accessories capable of safely, speedily, and efficiently installing the micropiles to the design requirements of the project site.

2. The Contractor shall select the drilling methods, the grouting procedure, and the grouting pressure used for the installation of the micropiles.

3. The micropile installation method shall be consistent with the geotechnical, logistical, environmental and load carrying conditions of the project. The existing tracks shall remain in service during and after micropile construction.

4. Reinforcement surface shall be free of deleterious substances such as soil, mud, grease or oil that may contaminate the grout or coat the reinforcement and impair bond.

5. Grouting shall occur on the same day that the micropile is drilled. The grout shall be free of lumps and undispersed cement. The grouting equipment shall be capable to grout each micropile in a single continuous operation.

6. The drilling equipment and methods shall be suitable for drilling through the conditions encountered with minimal disturbance to nearby structures and utilities. The borehole must be open to the defined nominal diameter, full length, prior to placing grout and reinforcement.

7. Micropile installation shall be by non-vibratory and non-displacement methods. Drilling shall be performed by rotating or oscillating a casing and applying a percussive load at the tip. Drilling and excavation shall be performed in such a manner to minimize collapse of the hole.

CONSTRUCTION (CONTINUED)

8. The Contractor shall monitor the ground surface in the vicinity of the micropile installation for ground heave or subsidence. The Contractor shall immediately notify the Railroad if signs of movements are observed. The Contractor shall immediately suspend or modify drilling or grouting operations if heave or subsidence is observed, or if adjacent structures are damaged from the drilling or grouting.

9. The Contractor shall contain his micropile, rebar, grout products, drill cuttings, drilling fluid and dust from his operation in such fashion as to not interfere with Railroad operations.

10. The Contractor shall select the drilling method, the grouting procedure and the grouting pressure used for the installation of the micropiles to achieve the require micropile design load times a factor of safety of 2.0, as verified through the successful completion of the Verification Micropile Testing, including the use of pressure grouting or postgrouting of bond zone, as necessary.

11. The Contractor shall verify the final casing size, final drill hole diameter, bond length and central reinforcing steel sizing necessary to develop the specified load capacities and load testing requirements. Prior to construction, the contractor shall provide a submittal detailing the proposed drilling methodology, equipment, grout placement techniques and load testing procedure to UPRR Office of the Director Structures Design.

12. Allowable construction tolerances:

   a. Centerline of micropile shall not be more than 1.0 inch from indicated plan location, unless approved by the Railroad.
   b. Cutoff elevation of the micropile casing shall be within +/- 1" of the elevation shown on the plans.
   c. Maximum variation from vertical for plumb micropiles: 1 in 48
   d. Maximum variation from the batter slope for battered micropiles: 1 in 60
   e. Maximum variation between threadbar center and casing center: 0.5 inches

13. The Contractor shall prepare and submit installation records to the Railroad within one working day after the micropile installation is complete. The records shall include the following minimum information:

   a. Micropile drilling duration and observations
   b. Information of soil and rock encountered, including description of strata, water, etc.
   c. Approximate final tip elevation
   d. Deviation from the intended design
   e. Grout pressure attained
   f. Grout quantities pumped

14. The Contractor shall coordinate the work and the excavation so the micropile structures are safely constructed. Perform the micropile construction and related excavation in accordance with the plans and approved submittals. Excavations shall conform to OSHA requirements.

GROUT

1. Micropile grout shall consist of Type I, Type II or Type III Portland cement in accordance with AASHTO M85/ASTM C150 specifications and water.

2. Water used for grout production shall be potable, clean and free of injurious quantities of substances known to be harmful to Portland cement or steel.

3. Grout shall be neat cement or cement/sand mixture with a minimum 3-day compressive strength of 2,000 psi and 28-day unconfined compressive strength of 5,000 psi or as indicated in the plans, per ASHTO T106/ASTM C109. If sand-cement grout is used, sand shall conform to AASHTO M45/ASTM C144.

4. Fine aggregate shall be natural siliceous sand consisting of hard, clean, strong, durable and uncoated particles, conforming to ASTM C144, Aggregate for Masonry Mortar. The fine aggregate shall have fines content (percent passing No. 200 Sieve) of not less than 10 percent and not more than 30 percent, or as approved by the Railroad. All gradation reports must be submitted to the Railroad for approval.

5. Admixtures may be used in the grout subject to the approval of the Railroad. Accelerators, expansive admixtures and admixtures containing chlorides are not permitted.

6. The Contractor shall submit the grout mix design to the Railroad for review and approval.

7. Grout shall be tested in accordance with ASTM C109 at a frequency of no less than 2 sets of three 2x2-inch cubes, 2x4-inch cylinders or 3x6-inch cylinders, from each grout plant each day of operation or per every 10 micropiles, whichever occurs more frequently. Compressive strength tests shall be performed by an approved independent testing laboratory. The compressive strength shall be the average of the three cubes or cylinders tested. Test results shall be submitted to the Railroad within 24 hours of testing.

8. Grout shall be kept in agitation continuously during mixing and shall be placed within one hour.

9. The grouting equipment used shall produce a grout free of lumps and undispersed cement and shall be sized to enable each micropile to be grouted in one continuous operation.

10. The Contractor shall be responsible for estimating the grout take. No extra payment will be awarded for grout overruns. Quantities provided in these plans are estimates only.

11. Upon completion of daily grout operations, excess grout in the hoses, mixer, and group pump shall be contained and immediately removed off-site and disposed of in a proper and legal manner.

12. The Contractor shall furnish all such pumps that may be necessary to care for wastewater and grout from his operations, clean up all waste resulting from his operations, and restore any damage or defaced structures to original condition.

13. The Contractor shall have means and methods of measuring the grout quantity in each pile during the grouting operations.

14. When applicable, the Contractor shall also have the means and methods of measuring the grout pumping pressure during the grouting operations. The grout pump shall be equipped with a pressure gauge to monitor grout pressures. A second pressure gauge shall be placed at the point of injection into the micropile top. The pressure gauges shall be capable of measuring pressures of at least 100 psi or twice the actual grout pressures used, whichever is greater.

15. The grout shall be placed starting from the lowest point of the drilled hole. The grout may be pumped through grout tubes, casing, hollow-stem-augers or drill rods. The quantity of the grout volume and the grout pressures shall be recorded. The grout pressures and grout takes shall be controlled to prevent excessive heave in cohesive soils or fracturing of rock formations. The entire micropile shall be filled with grout.

GROUT (CONTINUED)

16. Grout consistency as measured by grout density shall be determined by the Contractor per ASTM C 188/AASHTO T 133 or API RP-13B-1 at a frequency of at least one test per pile, conducted just prior to start of pile grouting. The Barold Mud Balance used in accordance with API RP-13B-1 is an approved device for determining the grout density of neat cement grout.

17. Grout samples shall be taken directly from the grout plant. Provide grout cube or cylinder compressive strength and grout density test results to the Railroad within 24 hours of testing.

STEEL

1. The steel threadbar shall conform to ASTM A615 Grade 75 as indicated on the plans. The threadbar shall be manufactured by Williams or Dywidag-System International, or approved equal, and shall be furnished with anchorage devices or couplers as required. Physical properties shall be determined by coupon tests of random samples. A letter shall be provided by the supplier verifying the lot-coupon relationship.

2. Threadbars shall be fusion-bonded epoxy powder coated to a minimum thickness of 12 mils. Threadbars shall be inspected in the field for damage in shipment prior to installation. Damage shall be assessed per AASHTO M282/ASTM A775, and patched as required with a product approved by the epoxy coating manufacturer and be inert in cement grout. The verification test threadbar need not be epoxy coated.

3. The threadbar surface shall be free of deleterious substances such as soil, mud, grease, or oil that may contaminate the grout or coat the reinforcement and impair bond.

4. If couplers and nuts are necessary, they shall have strength of at least equal to the strength of the threadbar.

5. Centralizers shall be regularly spaced along the full length of the micropile and shall permit the free flow of grout without misalignment of the reinforcement. Centralizers for the threadbar shall be provided at a maximum spacing of 10'-0" on center in bond zone. The uppermost centralizer shall be located a maximum of 5'-0" from the top of the micropile.

6. Centralizers and spacers shall be fabricated from schedule 40 PVC pipe or tube, steel or material non-detrimental to the threadbar. Wood shall not be used. Centralizers and spacers shall be securely attached to the threadbar; sized to position the threadbar within ½" of the center of micropile; sized to allow grout tremie pipe insertion to the bottom of the drilled hole; and sized to allow grout to freely flow in the casing.

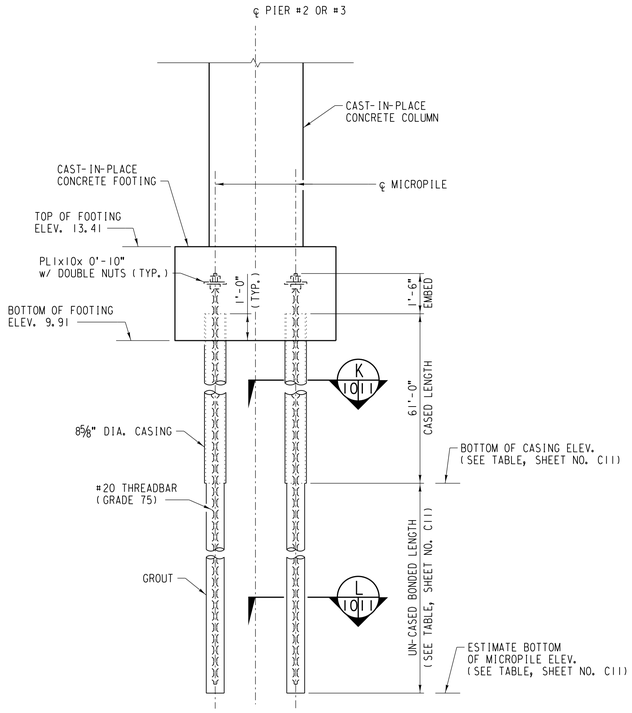
7. Top steel bearing plate shall conform to ASTM 709 Gr. 50 specifications.

8. Permanent steel casing shall have the diameter and at least the minimum wall thickness shown on the plans or otherwise approved working drawings.

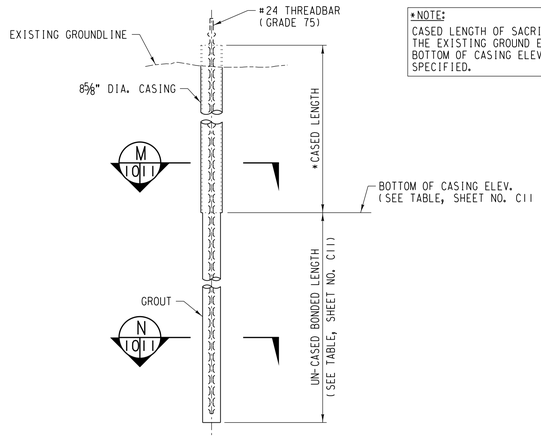
9. The steel casing shall conform to ASTM A252, Grade 3 with minimum yield strength of 80 ksi.

10. Steel casing splices shall be made by using an integral threaded coupling system.

11. Steel casing may be new "Structural Grade" (a.k.a. Mill Secondary) steel pipe meeting the above criteria but without Mill Certification, free from defects and with two coupon tests per truckload delivered to the fabricator.



SECTION AT PIER
SCALE: ⅜"=1'-0"



*NOTE:
CASED LENGTH OF SACRIFICIAL MICROPILE WILL BE BASED UPON THE EXISTING GROUND ELEVATION AT THE TEST LOCATION. THE BOTTOM OF CASING ELEVATION SHALL BE MAINTAINED AS SPECIFIED.

SACRIFICIAL MICROPILE DETAIL
SCALE: ½"=1'-0"

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
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UPRR ENGINEER:	DEH/ADS
SHT NO.:	C10 of C59

UNION PACIFIC RAILROAD
Office of Director Structures Design

LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION
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SHEET TITLE: MICROPILE NOTES AND DETAILS (SHEET 1 OF 2)

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MICROPILE NOTES (CONTINUED)

VERIFICATION LOAD TESTING

1. The Contractor shall perform sacrificial verification micropile load test(s) to verify the design of the micropile system and construction methods proposed prior to installing any production micropiles.

2. Pre-production, sacrificial, verification load tests shall be performed to verify the design of the pile system, design assumptions and the construction methods proposed and approved prior to installing any production pile. The verification load test results shall be reviewed and accepted by the Railroad prior to beginning installation of production micropiles. If the Railroad's review rejects the verification test, the Contractor shall revise the micropile foundation design as necessary to meet the Railroad's approval.

3. One or more verification test micropiles shall be installed at the location(s) indicated in the plans, Sheet No. 2.

4. Detailed installation logs of the advancement rate of drilling during installation of the verification-tested micropiles should be recorded. The log should include information on hole depth, hole alignment, use and type of casing, grout mix, grout volume, grout pressure, and other applicable information that may impact micropile performance.

5. The verification load test shall be performed after the grout has attained 100% of the required compressive strength.

6. The maximum verification test load applied to the micropile shall not exceed 80% of the ultimate structural capacity of the micropile structural elements, to include steel yield in tension.

7. The Contractor shall submit the proposed load testing procedures to the Railroad for approval at least 14 days prior to starting the load testing. The proposed load testing procedure shall be in general conformance with ASTM D1143 and/or D3689 and shall indicate the following minimum information:

   a. Type and accuracy of apparatus for measuring load
   b. Type and accuracy of apparatus applying load
   c. Type and accuracy of apparatus for measuring the micropile deformation
   d. Type and capacity of reaction load system, including sealed design drawings
   e. Hydraulic jack calibration report
   f. Testing Procedures
   g. Qualifications of Personnel

8. The load test procedures, acceptance criteria, and test reports shall be in accordance with the Verification Test procedures outlined in FHWA NHI-05-039, Micropile Design and Construction (2005).

9. Verification test reports using the Railroad s Micropile Load Test Record Form shall be submitted to the Railroad.

10. Drilling and grouting method, casing length and outside diameter, reinforcing bar lengths and depth of embedment for the verification test micropiles shall be identical to those specified for the production micropiles at the given locations.

11. The tested micropiles shall be loaded to 200% of the design load (DL). The load tested micropile must be of the same design and installed with the same means and methods as the production micropiles to ensure meaningful results, with the exception of the size of the threadbar. If tension testing (ASTM D3689) is performed, the size of the threadbar shall be as shown on in the plans for the verification test micropile. The verification test micropile structural steel elements shall be sized to safely resist the maximum test load.

12. The jack shall be positioned at the beginning of the test such that the unloading and repositioning of the jack during the test will not be required. An alignment load (AL), if required, may be applied to the micropile prior to setting the movement recording devices. The alignment load shall not exceed 10% DL. Dial gauges shall be zeroed at the first setting of AL.

13. The following cyclic load schedule shall be followed for verification micropile testing:

LOADING	LOAD	HOLD TIME (MINUTES)
ALIGNMENT	AL	2.5
CYCLE 1	0.15 DL	2.5
	0.30 DL	2.5
	0.45 DL	2.5
	AL	1
CYCLE 2	0.15 DL	1
	0.45 DL	1
	0.60 DL	2.5
	0.75 DL	2.5
	0.90 DL	2.5
	1.00 DL	2.5
	AL	1
CYCLE 3	0.15 DL	1
	1.00 DL	1
	1.15 DL	2.5
	1.30 DL	60*
	1.45 DL	2.5
	AL	1
CYCLE 4	0.15 DL	1
	1.45 DL	1
	1.60 DL	1
	1.75 DL	2.5
	1.90 DL	2.5
	2.00 DL	10
	1.50 DL	5
	1.00 DL	5
	0.50 DL	5
	AL	5

*Record movement at 1, 2, 3, 4, 5, 6, 10, 20, 30, 50 and 60 minutes.

VERIFICATION LOAD TESTING (CONTINUED)

14. The Railroad must be present during the testing of each verification load test.

15. The acceptance criteria for micropile verification load tests are:

   a. The micropile shall sustain the design load (1.0 DL) with no more than total vertical movement at the top of the micropile as measure relative to the top of the micropile prior to starting the testing. If an alignment load is used, then the allowable movement will be reduced by multiplying by a factor of (DL-AL)/DL.
   b. Test micropiles shall have a creep rate at the end of the 1.30 DL increment which is not greater than 0.040 inches from 1 to 10 minutes and 0.080 inches from 6 to 60 minutes and has a linear or decreasing creep rate.
   c. Failure does not occur at the 2.0 times maximum design load. Failure is defined as the slope of the load versus deflection curve exceeding 0.000025 inches/pound.

16. It is preferred that load tests be carried to failure to determine the true factor of safety for the proposed design. If, due to very high loads, test to failure are not practical, testing should be carried to not less than twice the required compression design capacity. Test loads shall not exceed the ultimate capacity of the micropile as a structural member, or the capacity of the jack frame.

17. Contractor will provide written confirmation of the micropile construction within 3 working days of the completion of the verification load tests. This written confirmation will either confirm the capacities and bond lengths specified in the plans for the micropiles or reject the micropiles based upon the verification test results.

18. If a verification-tested micropile fails to meet the acceptance criteria, the Contractor shall modify the design and/or construction procedures and perform another verification test that meets the acceptance criteria, at the Contractor s expense.

19. Any required increase in strength of the verification test pile elements above the strength required for the production piles shall be provided for in the Contractor's bid price.

20. At completion of the micropile verification testing, the test micropile shall be removed down to the existing groundline or an elevation specified by the Railroad.

21. Actual micropile lengths shall be determined after performing the verification load test(s) at the site. However, all micropile tips shall extend to the minimum tip elevation shown in the micropile detail.

PRODUCTION/PROOF TESTING

1. The Contractor shall perform proof load tests on micropiles installed at each designated substructure unit at locations indicated on the plans prior to the installation of the remaining production micropiles in that unit.

2. The production micropiles used for proof testing shall be the same design as all other micropiles, and installed with the same means and methods as all other production piles, except for the size of the threadbar.

3. The production micropile(s) used for proof testing shall be installed with a #24 threadbar that conform to ASTM A615, Grade 75.

4. The Contractor shall perform proof load tests on a minimum of 5% of the production micropiles, and no less than one proof load test per substructure unit.

5. If the installation logs for the production micropiles show that one or more production micropiles could be bearing in significantly weaker materials than that encountered at the verification test micropile location, with the consent of the Railroad, additional proof tests shall be performed.

6. The Contractor shall submit the proposed micropile load testing procedure to the Railroad for approval at least 14 days prior to starting the load testing. The proposed micropile load testing procedure shall be in general conformance with ASTM D-1143 and/or D-3689 and shall indicate the following minimum information:

   a. Type and accuracy of apparatus for measuring load
   b. Type and accuracy of apparatus applying load
   c. Type and accuracy of apparatus for measuring the micropile deformation
   d. Type and capacity of reaction load system, including sealed design drawings
   e. Hydraulic jack calibration report (calibrated within the last year)

7. The following cyclic loading schedule shall be followed for production micropile testing:

LOADING	LOAD	HOLD TIME (MINUTES)
ALIGNMENT	AL	2.5
LOAD CYCLE	0.15 DL	2.5
	0.30 DL	2.5
	0.45 DL	2.5
	0.60 DL	2.5
	0.75 DL	2.5
	0.90 DL	2.5
	1.00 DL	2.5
	1.15 DL	2.5
	1.30 DL	60*
	1.45 DL	2.5
	1.60 DL	2.5
UNLOAD CYCLE	1.30 DL	4
	1.00 DL	4
	0.75 DL	4
	0.50 DL	4
	0.25 DL	4
	AL	4

*Hold load for at least 10 minutes while recording movement at 1, 2, 3, 4, 5, 6 and 10 minutes. If the total movement measured from 1 to 10 minutes exceeds 0.04 inches, the hold shall be extended to a total of 60 minutes, recording movement at 20, 30, 50 and 60 minutes.

PRODUCTION/PROOF TESTING (CONTINUED)

6. The acceptance criteria for micropile production load tests are:

   a. The micropile shall sustain the design load (1.0 DL) with no more than ½" total vertical movement at the top of the micropile as measured relative to the top of the micropile prior to starting the testing. If an alignment load is used, then the allowable movement will be reduced by multiplying by a factor of (DL-AL)/DL.
   b. Test micropiles shall have a creep rate at the end of the 1.30 DL increment which is not greater than 0.040 inches from 1 to 10 minutes or 0.080 inches from 6 to 60 minutes and has a linear or decreasing creep rate.
   c. Failure does not occur at the 1.60 times maximum design load. Failure is defined as the slope of the load versus deflection curve exceeding 0.000025 inches/pound.

7. If a proof-tested micropile fails to meet the acceptance criteria, the Contractor shall immediately proof test another micropile within the substructure unit. For failed micropiles and further construction of other micropiles, the Contractor shall modify the construction procedure. These modifications may include installing replacement micropiles, incorporating micropiles at not more than 50% of the maximum load attained, post grouting, modifying installation methods, increasing the un-cased bond length, or changing the micropile type. Any modification that necessitates changes to the structure design shall require the Railroad's prior review and acceptance. Any modifications of design or construction procedures, or cost of additional verification test micropiles and verification and/or proof load testing, or replacement production micropiles shall be at the Contractor's expense.

8. Detailed installation logs of the advancement rate of drilling during installation of the production micropiles should be recorded and submitted to the Railroad. The log should include information on hole depth, hole alignment, use and type of casing, grout mix, grout volume, grout pressure, and other applicable information that may impact micropile performance. In addition, the grout volumes and pressures for the test piles shall be compared with the production pile values.

9. The proof load test shall be performed after the grout has attained 100% of the required compressive strength

10. The maximum proof test load applied to the micropile shall not exceed 80% of the ultimate structural capacity of the micropile structural elements, to include steel yield in tension.

REQUIRED MICROPILE CAPACITY

PIER #	REQ'D. COMPRESSION CAPACITY	REQ'D. TENSION CAPACITY	REQ'D. SHEAR CAPACITY
B1 & C1	175 kips	15 kips	3.0 kips

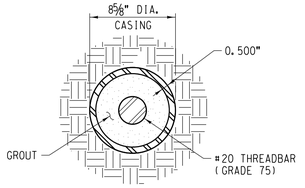
REQUIRED MICROPILE UNCASED LENGTH

PIER #	MICROPILE TYPE	BOTTOM OF CASING ELEV.	ESTIMATE BOTTOM OF MICROPILE ELEV.	ESTIMATE UNCASED BONDED LENGTH
B1	TYPE A	-50.25	-62.25	12.0
C1	TYPE A	-50.25	-62.25	12.0

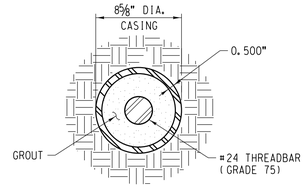
MICROPILE MATERIAL SCHEDULE

	REQ'D.	UNIT	DESCRIPTION
TYPE A	39.3	CU. YD.	5000 PSI NON-SHRINK CEMENT GROUT (PER NOTES, SHEET NO. 10)
	3,554	LIN. FT.	#20 THREADBAR (PER NOTES, SHEET NO. C10)
	2,928	LIN. FT.	8⅝" DIA. PERMANENT STEEL CASING 0.500" WALL THICKNESS (PER NOTES AND DETAILS, SHEET NO. C10 AND C11)
	48	EA.	PL1x10x 0'-10" w/ DOUBLE NUTS

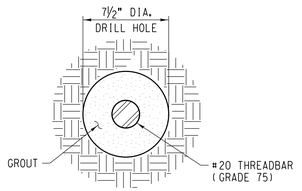
NOTES:
1. QUANTITIES FOR ESTIMATING PURPOSES ONLY. CONTRACTOR TO VERIFY ALL QUANTITIES AND FURNISH ALL INCIDENTAL MATERIAL REQUIRED FOR CONSTRUCTION OF MICROPILES.
2. QUANTITIES DO NOT INCLUDE MATERIAL FOR THE VERIFICATION TEST PILE.



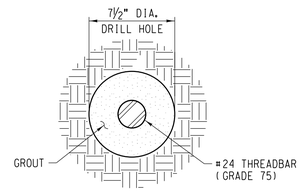
SECTION K
SCALE: NO SCALE



SECTION M
SCALE: NO SCALE



SECTION L
SCALE: NO SCALE



SECTION N
SCALE: NO SCALE

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS
05/28/2021 — DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER
05/28/2021 — DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION — LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

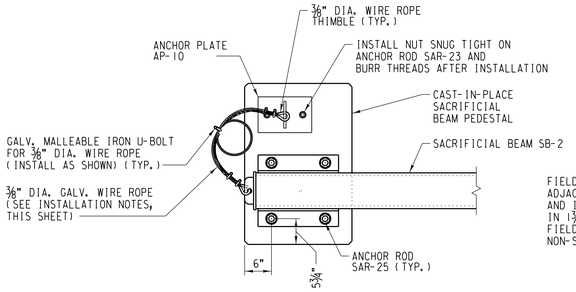
DSN/CHK BY: MTS/MFB	**UNION PACIFIC RAILROAD**
DRAWN/CHK BY: ACB/MFB	Office of Director Structures Design
UPRR ENGINEER: DEH/ADS	LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION 1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'
SHT NO.: C11 of C59	SHEET TITLE: MICROPILE NOTES AND DETAILS (SHEET 2 OF 2)

FILE NAME: C:\Users\ramirez\Desktop\roc00082_b11.dgn

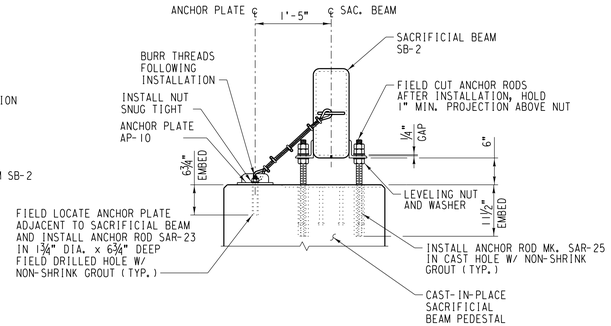
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SACRIFICIAL BEAM INSTALLATION NOTES

1. Contractor is responsible for field verifying minimum vertical clearance from low chord to roadway at proposed bridge and match vertical clearance at sacrificial beam locations.
2. Sacrifical beams shall be set level using leveling nuts as neccessary.
3. Field adjust location of anchor plate as required for installation. Maintain 6" clear from anchor rod to edge of sacrificial beam pedestal.



PLAN



SIDE VIEW

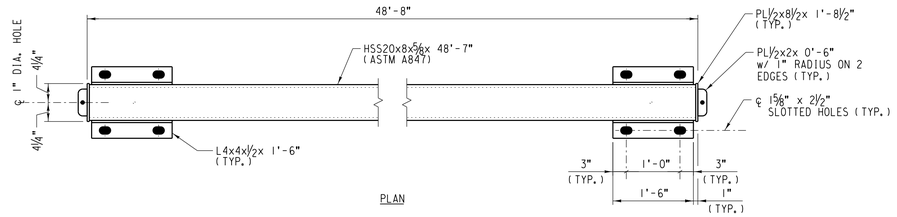
SACRIFICIAL BEAM INSTALLATION DETAIL

SCALE: ¾"=1'-0"

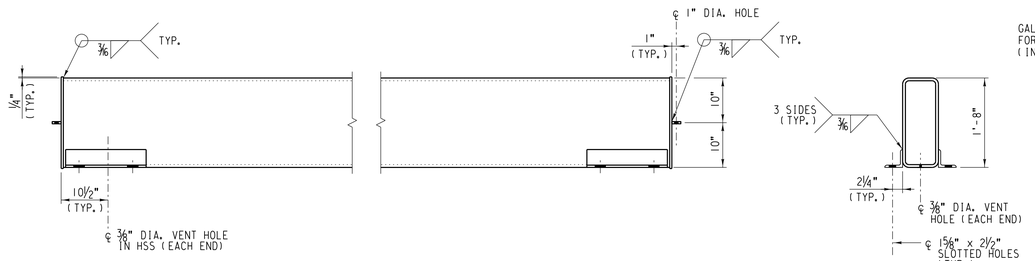
NON-STANDARD MISCELLANEOUS STEEL SCHEDULE

REQ'D.	UNIT	DESCRIPTION
2	EA.	ANCHOR PLATE AP-10 (PER NOTES, STD. DWG 531100 SHT. T3 AND DETAIL, THIS SHEET)
8	EA.	ANCHOR ROD SAR-25 (PER NOTES & DETAILS, THIS SHEET)
4	EA.	HEAVY PATTERN-HEAVY DUTY GALVANIZED CARBON STEEL WIRE ROPE THIMBLE FOR ⅜" DIA. WIRE ROPE, ZINC PLATED
1	EA.	SACRIFICIAL BEAM SB-2 (PER NOTES, STD. DWG 531100 SHT. T3 AND DETAIL, THIS SHEET)
4	EA.	ANCHOR ROD SAR-23 (PER NOTES & DETAILS, THIS SHEET)
20	LIN.FT.	⅜" NOMINAL DIAMETER WIRE ROPE, 7 WIRE, GALV. STEEL STRAND, SIEMENS MARTINS GRADE, A-COATING
10	EA.	GALV. MALLEABLE IRON U-BOLT w/ 2 ELASTIC LOCKNUTS (MIL-DTL-32258), ZINC PLATED, FOR ⅜" DIA. WIRE ROPE

EST. WT. OF NON-STANDARD MISCELLANEOUS STEEL = 5,582 LB.



PLAN

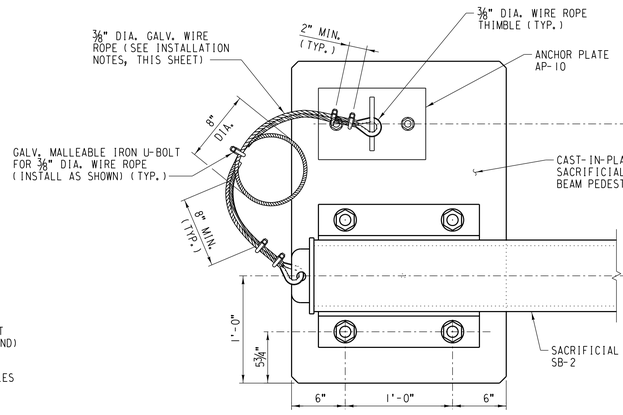


ELEVATION SECTION

SACRIFICIAL BEAM SB-2

SCALE: ¾"=1'-0"

EST. WT. = 5,475 LB. EA.

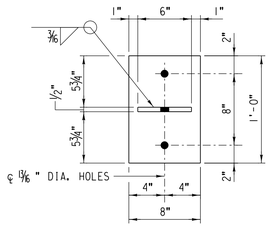


WIRE ROPE INSTALLATION DETAIL

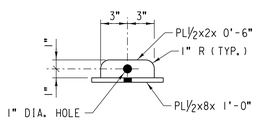
SCALE: 1½"=1'-0"

WIRE ROPE INSTALLATION INSTRUCTIONS FOR SACRIFICIAL BEAMS:

1. THREAD WIRE ROPE THROUGH PL½x2x 0'-6" ON SACRIFICIAL BEAM AND FASTEN WITH U-BOLTS.
2. CREATE 8" DIA. LOOP IN WIRE ROPE, STRETCH WIRE ROPE, THREAD THROUGH HOLE IN ANCHOR PLATE, AND FASTEN. LEAVE CLIP LOOSE.
3. REMOVE ALL SAG BETWEEN CONNECTION POINTS TO 4-6 INCHES. TIGHTEN ALL U-BOLTS.



PLAN

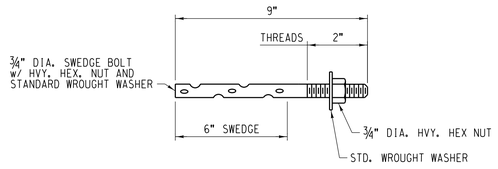


ELEVATION

ANCHOR PLATE AP-10

SCALE: 1½"=1'-0"

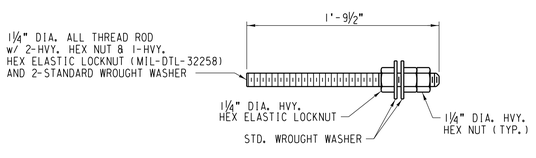
EST. WT. = 15.3 LB. EA.



ANCHOR ROD SAR-23

SCALE: NONE

EST. WT. = 1.4 LB. EA.
ASTM F1554 GR. 36



ANCHOR ROD SAR-25

SCALE: NONE

EST. WT. = 8.8 LB. EA.
ASTM F1554 GR. 36

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS: FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:

MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION — LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB	**UNION PACIFIC RAILROAD** — Office of Director Structures Design
DRAWN/CHK BY: ACB/MFB	LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION — 1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'
UPRR ENGINEER: DEH/ADS	
SHT NO.: C12 of C59	SHEET TITLE: SACRIFICIAL BEAM AND MISCELLANEOUS DETAILS

FILE NAME: C:\Users\acrowe\Desktop\rac00082_bii.dgn

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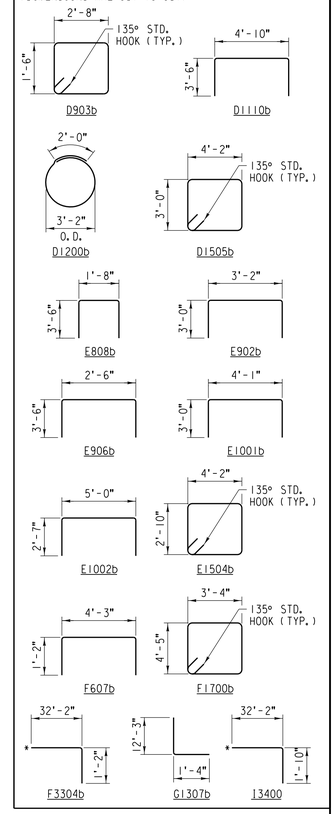
MATERIAL SCHEDULE
(QUANTITY PER PIER PHASE I CONSTRUCTION)

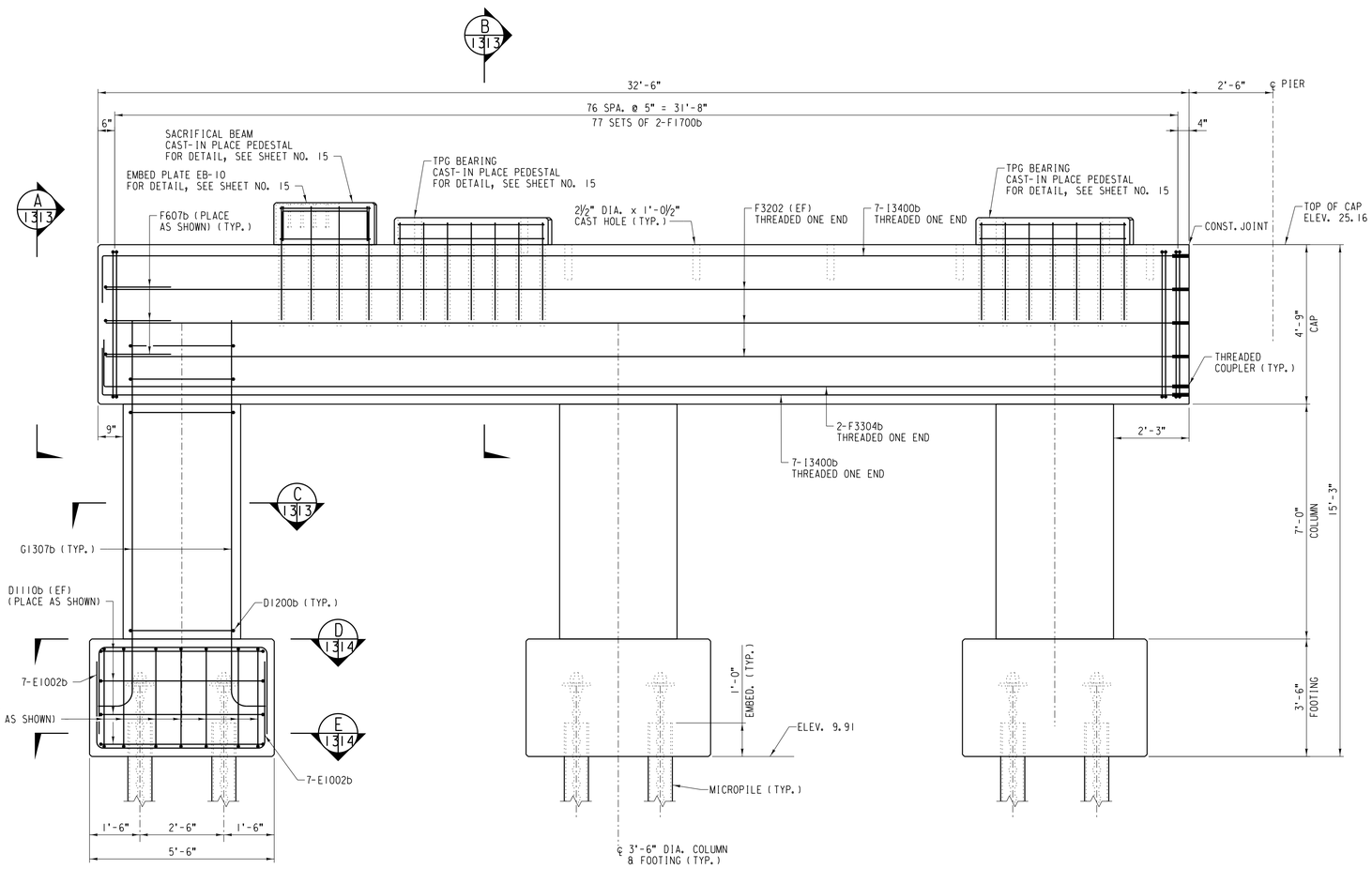
REQ'D.	UNIT	DESCRIPTION
48.8	CU. YD.	5000 PSI CONCRETE, 28.4 CU. YD. FOR CAP, 7.5 CU. YD. FOR COLUMNS, 12.9 CU. YD FOR FOOTINGS (PER NOTES, STD. DWG. 531100 SHT. T3 AND SHEET NO. C4)
1	LOT	EPOXY-COATED REINFORCING STEEL (PER NOTES, STD. DWG. 531100 SHT. T3 AND SCHEDULE, THIS SHEET)
1	EA.	EMBED PLATE EB-10 (PER NOTES, STD. DWG 531100 SHT. T3 AND DETAILS, SHEET NO. 15)
8	EA.	#7 THREADED COUPLERS
14	EA.	#10 THREADED COUPLERS

EPOXY-COATED REINFORCING SCHEDULE
(QUANTITY PER PIER PHASE I CONSTRUCTION)

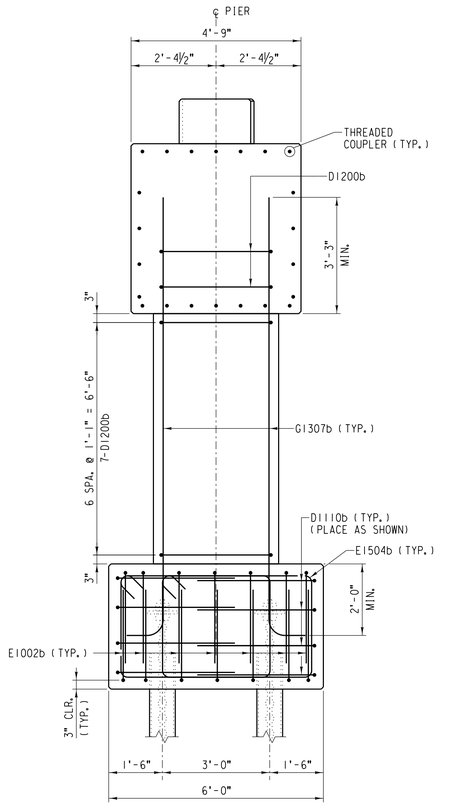
TOTAL	MARK	SIZE	LENGTH	SHAPE
2	D903b	#5	9'-3"	
24	D1110b	#5	11'-10"	
27	D1200b	#5	12'-0"	
4	D1505b	#5	15'-5"	
4	E808b	#8	8'-8"	
14	E902b	#6	9'-2"	
1	E906b	#6	9'-6"	
4	E1001b	#6	10'-1"	
42	E1002b	#6	10'-2"	
42	E1504b	#6	15'-4"	
3	F607b	#7	6'-7"	
154	F1700b	#7	17'-0"	
6	F3202	#7	32'-2"	*
2	F3304b	#7	33'-4"	*
60	G1307b	#8	13'-7"	
14	J3400b	#10	34'-0"	*

BENDING DIAGRAM
* THREADED ONE END
(DIMENSIONS ARE OUT TO OUT)





REINFORCING ELEVATION

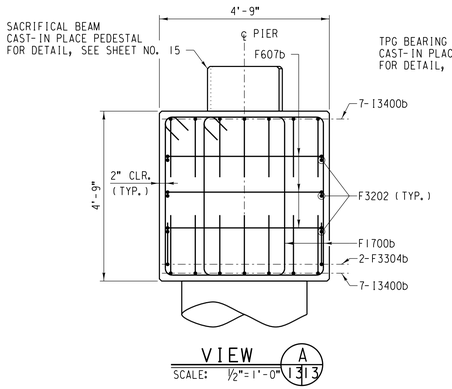


END VIEW

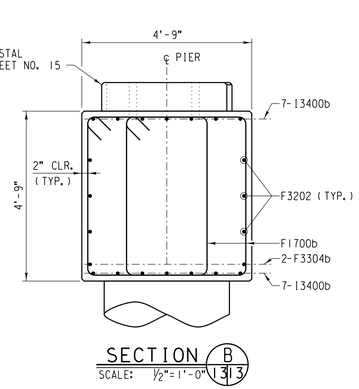
CAST-IN-PLACE CONCRETE PIER DETAILS PHASE I

SCALE: ½"=1'-0"

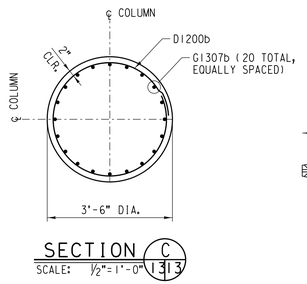
(PIER B1 LOOKING SOUTH, PIER C1 SIMILAR)



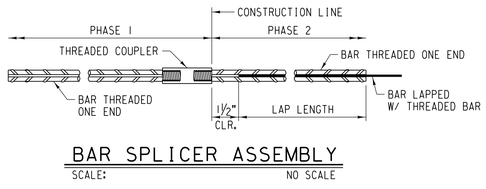
VIEW A
SCALE: ½"=1'-0"



SECTION B
SCALE: ½"=1'-0"



SECTION C
SCALE: ½"=1'-0"



BAR SPLICER ASSEMBLY

SCALE: NO SCALE

ADJUST BAR LENGTHS AS NECESSARY BASED ON MECHANICAL SPLICER SELECTED

NOTE:
BAR DESIGNATIONS CONSIST OF BAR SIZE & LENGTH FOLLOWED BY THE LETTER "b" IF BENT. BAR SIZES ARE REPRESENTED BY THE LETTERS A THROUGH L CORRESPONDING TO BAR SIZE #2 THROUGH #18. BAR LENGTHS ARE GIVEN IN FEET AND INCHES; THE LAST TWO DIGITS ARE INCHES.

EST. WT. OF REINFORCING STEEL = 12,800 LB. (PER PIER PHASE I)

NOTES:
1. MINIMALLY ADJUST REINFORCING AS REQUIRED TO CLEAR EMBEDDED ITEMS AND CAST HOLES.
2. INSIDE SURFACE OF CAST HOLES SHALL BE EXPOSED UNCOATED CONCRETE. ALTERNATIVELY, CORRUGATED GALVANIZED STEEL DUCT WITH 2½" INSIDE DIAMETER MAY BE USED AS A STAY-IN-PLACE FORM.
3. COVER OR FILL CAST HOLES WITH APPROVED MATERIAL TO PREVENT MOISTURE OR DEBRIS FROM ENTERING DURING CONSTRUCTION.
4. EF = EACH FACE

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID: 31876 | WORK ORDER: | C E NUMBER: 122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION | LATITUDE: 41.88456°N | LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB
DRAWN/CHK BY: ACB/MFB
UPRR ENGINEER: DEH/ADS
SHT NO.: C13 of C59

UNION PACIFIC RAILROAD
Office of Director Structures Design

LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE: CAST-IN-PLACE CONCRETE PIER DETAILS - PHASE 1

FILE NAME: C:\Users\mcronin\Desktop\roc00082_b11.dgn

PLOTTED: 5/27/2021 11:13:09 AM

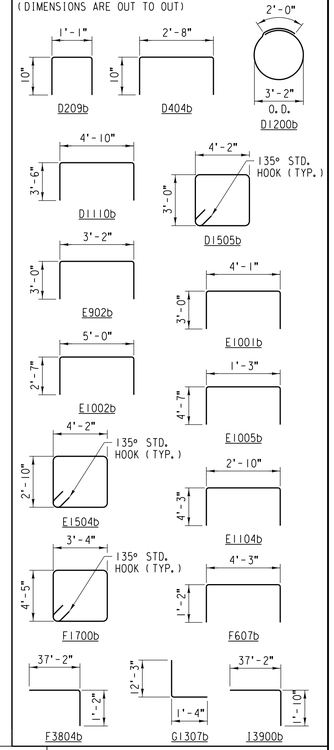
MATERIAL SCHEDULE
(QUANTITY PER PIER PHASE 2 CONSTRUCTION)

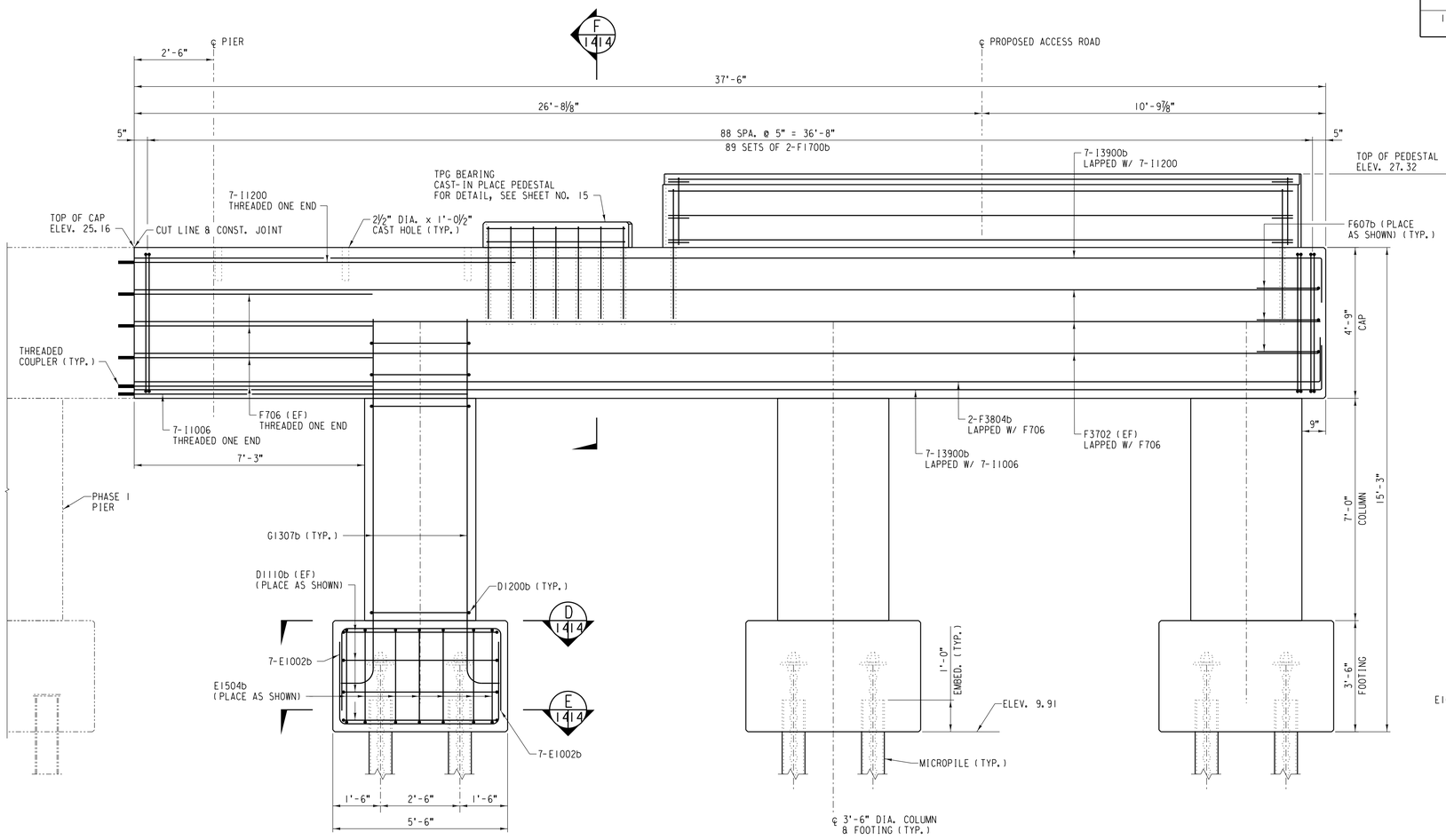
REQ'D.	UNIT	DESCRIPTION
56.9	CU. YD.	5000 PSI CONCRETE, 36.5 CU. YD. FOR CAP, 7.5 CU. YD. FOR COLUMNS, 12.9 CU. YD FOR FOOTINGS (PER NOTES, STD. DWG. 531100 SHT. T3 AND SHEET NO. C4)
1	LOT	EPOXY-COATED REINFORCING STEEL (PER NOTES, STD. DWG. 531100 SHT. T3 AND SCHEDULE, THIS SHEET

EPOXY-COATED REINFORCING SCHEDULE
(QUANTITY PER PIER PHASE 2 CONSTRUCTION)

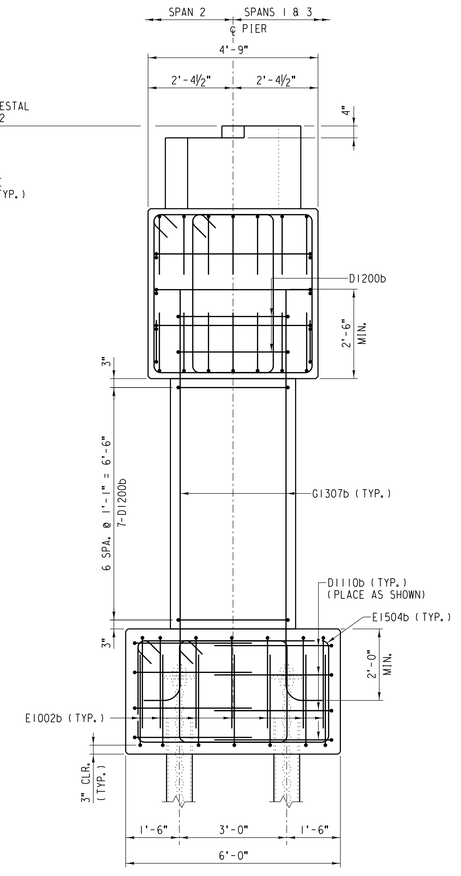
TOTAL	MARK	SIZE	LENGTH	SHAPE
2	D209b	#5	2'-9"	
4	D404b	#5	4'-4"	
24	D1110b	#5	11'-10"	
27	D1200b	#5	12'-0"	
2	D1505b	#5	15'-5"	
9	D1908	#5	19'-8"	
7	E902b	#6	9'-2"	
2	E1001b	#6	10'-1"	
42	E1002b	#6	10'-2"	
30	E1005b	#6	10'-5"	
30	E1104b	#6	11'-4"	
42	E1504b	#6	15'-4"	
3	F607b	#7	6'-7"	
8	F706	#7	7'-6"	*
178	F1700b	#7	17'-0"	
6	F3702	#7	37'-2"	
2	F3804b	#7	38'-4"	
60	G1307b	#8	13'-7"	
7	I1006	#10	10'-6"	*
7	I1200	#10	12'-0"	*
14	I3900b	#10	39'-0"	

BENDING DIAGRAM
* THREADED ONE END
(DIMENSIONS ARE OUT TO OUT)





REINFORCING ELEVATION

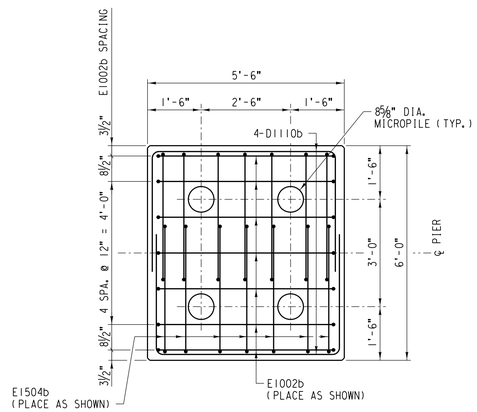


END VIEW

CAST-IN-PLACE CONCRETE PIER DETAILS PHASE 2

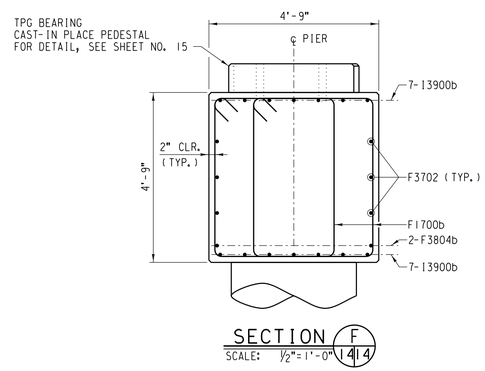
½"=1'-0"

(PIER B1 LOOKING SOUTH, PIER C1 SIMILAR)

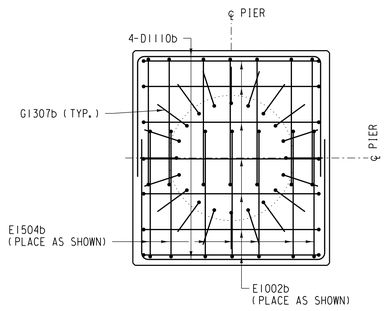


SECTION E|E 14|14
SCALE: ½"=1'-0"

NOTE:
PLATE ON TOP OF MICROPILE NOT SHOWN FOR CLARITY.



SECTION F 14|14
SCALE: ½"=1'-0"



SECTION D|D 14|14
SCALE: ½"=1'-0"

NOTE:
BAR DESIGNATIONS CONSIST OF BAR SIZE & LENGTH FOLLOWED BY THE LETTER "b" IF BENT. BAR SIZES ARE REPRESENTED BY THE LETTERS A THROUGH L CORRESPONDING TO BAR SIZE #2 THROUGH #18. BAR LENGTHS ARE GIVEN IN FEET AND INCHES; THE LAST TWO DIGITS ARE INCHES.

EST. WT. OF REINFORCING STEEL = 15,760 LB. (PER PIER PHASE 2)

NOTES:
1. MINIMALLY ADJUST REINFORCING AS REQUIRED TO CLEAR EMBEDDED ITEMS AND CAST HOLES.
2. INSIDE SURFACE OF CAST HOLES SHALL BE EXPOSED UNCOATED CONCRETE. ALTERNATIVELY, CORRUGATED GALVANIZED STEEL DUCT WITH 2½" INSIDE DIAMETER MAY BE USED AS A STAY-IN-PLACE FORM.
3. COVER OR FILL CAST HOLES WITH APPROVED MATERIAL TO PREVENT MOISTURE OR DEBRIS FROM ENTERING DURING CONSTRUCTION.
4. EF = EACH FACE

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID: | WORK ORDER: 31876 | C E NUMBER: 122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION — LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB
DRAWN/CHK BY: ACB/MFB
UPRR ENGINEER: DEH/ADS
SHT NO.: C14 of C59

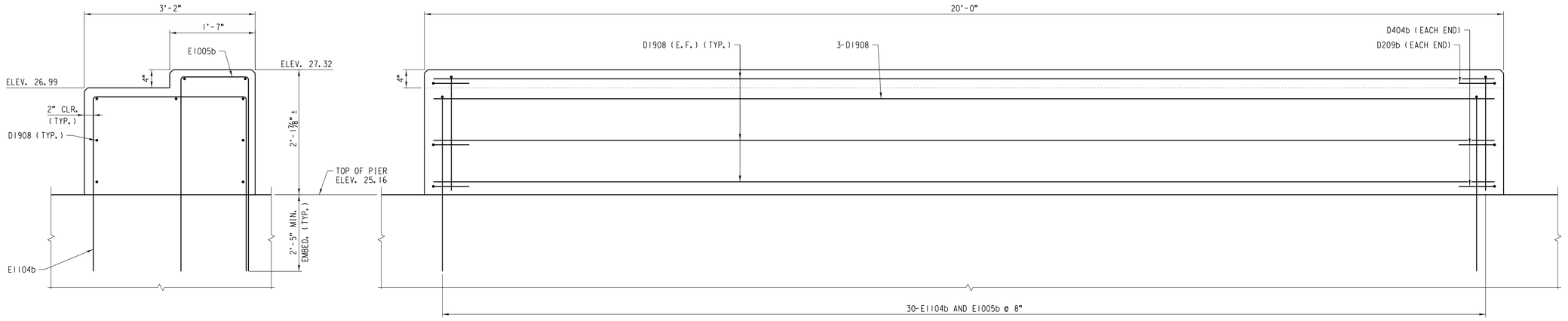
UNION PACIFIC RAILROAD
Office of Director Structures Design

LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE: CAST-IN-PLACE CONCRETE PIER DETAILS - PHASE 2

FILE NAME: C:\Users\mromriez\Desktop\roc00082_bii.dgn

PLOTTED: 5/27/2021 11:13:09 AM

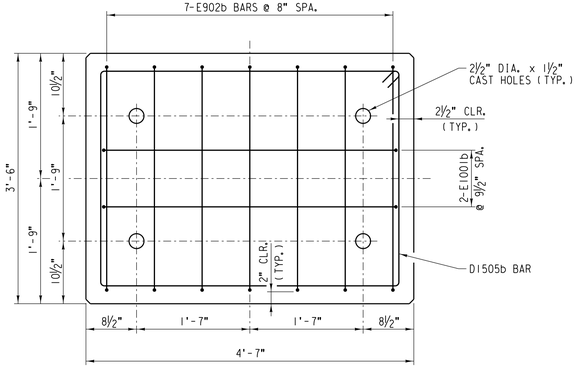


SECTION

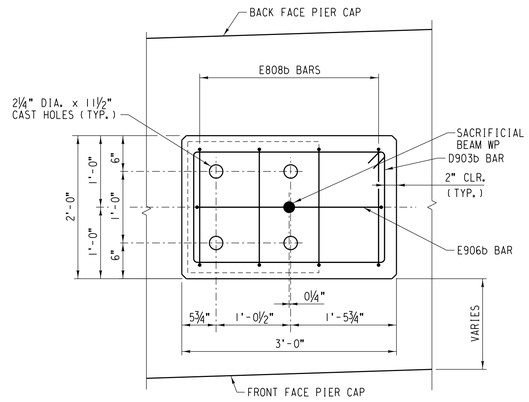
ELEVATION

ACCESS ROAD CAST-IN-PLACE PEDESTAL

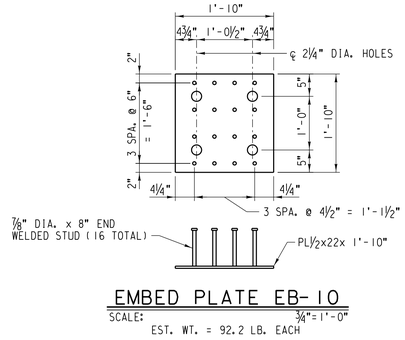
SCALE: 1"=1'-0"



PLAN



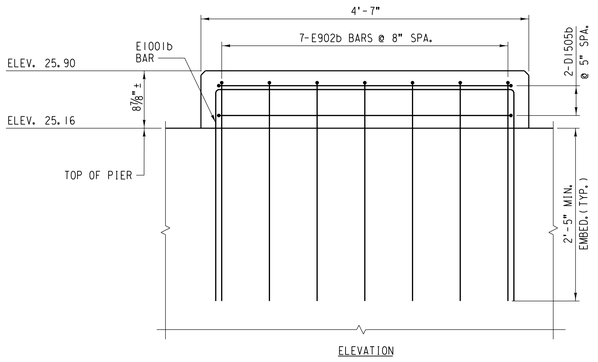
PLAN



EMBED PLATE EB-10

SCALE: ¾"=1'-0"

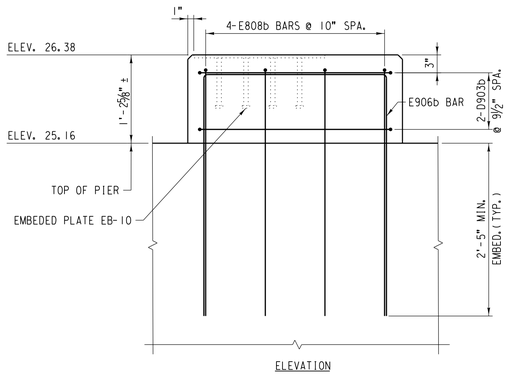
EST. WT. = 92.2 LB. EACH



ELEVATION

TPG BEARING CAST-IN-PLACE PEDESTAL

SCALE: 1"=1'-0"



ELEVATION

SACRIFICIAL BEAM CAST-IN-PLACE PEDESTAL

SCALE: 1"=1'-0"

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:

FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:

MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION — LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB

DRAWN/CHK BY: ACB/MFB

UPRR ENGINEER: DEH/ADS

SHT NO.: C15 of C59

UNION PACIFIC RAILROAD

Office of Director Structures Design

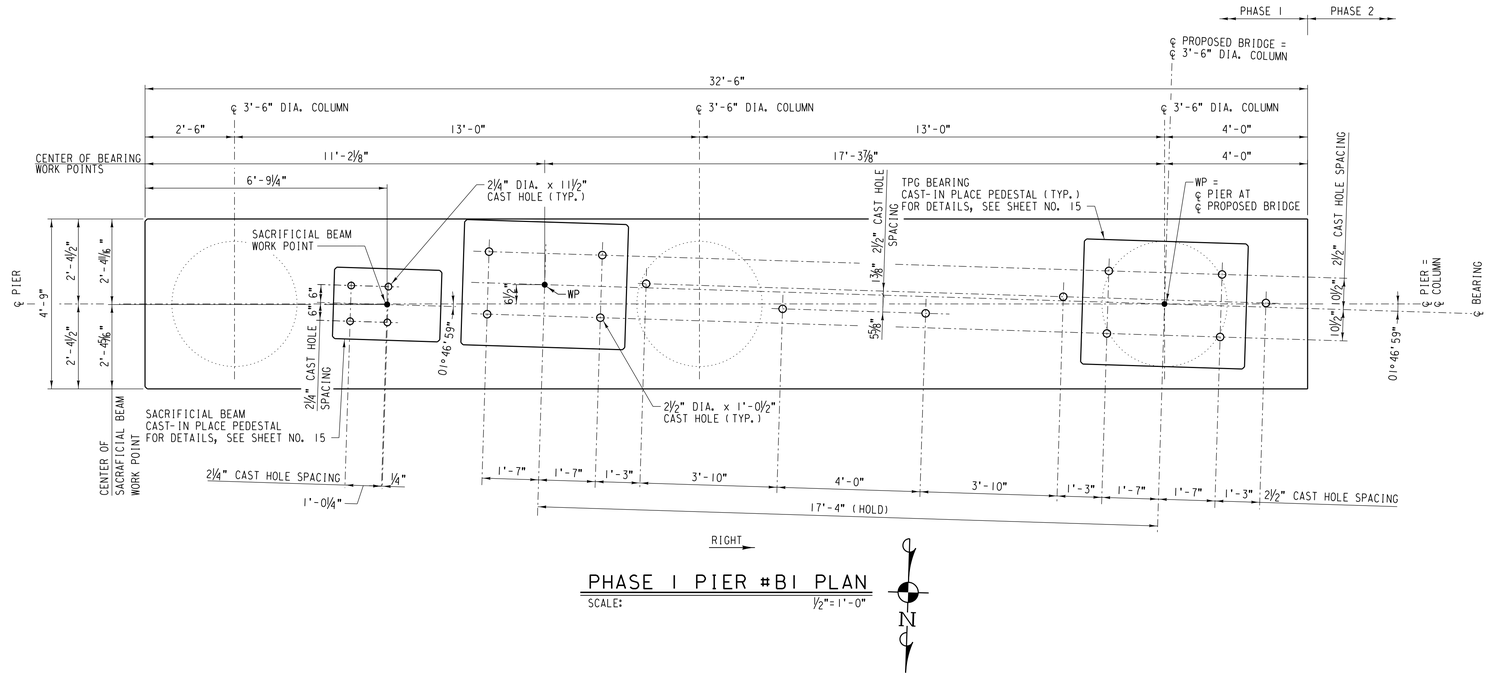
LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION

1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) &
1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE: CAST-IN-PLACE CONCRETE PEDESTAL DETAILS

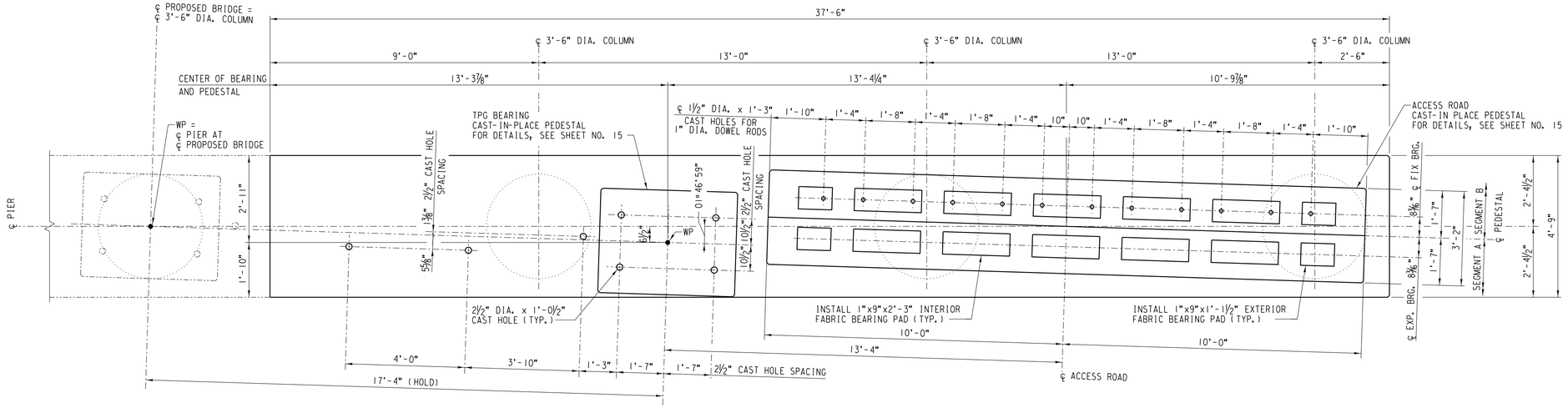
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PHASE 1 PIER #B1 PLAN

SCALE: ½"=1'-0"



PHASE 2 PIER #B1 PLAN

SCALE: ½"=1'-0"

NOTES:

1. SACRIFICIAL BEAM WORK POINT = CENTER OF SACRIFICIAL BEAM CAST-IN-PLACE CONCRETE PEDESTAL.
2. TPG BEARING WORK POINT = CENTER OF TPG BEARING CAST-IN-PLACE CONCRETE PEDSTAL.
3. ACCESS ROAD WORK POINT = CENTER OF ACCESS ROAD CAST-IN-PLACE CONCRETE PEDESTAL.

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS: FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:

MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION — LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY:	MTS/MFB
DRAWN/CHK BY:	ACB/MFB
UPRR ENGINEER:	DEH/ADS
SHT NO.:	C16 of C59

UNION PACIFIC RAILROAD

Office of Director Structures Design

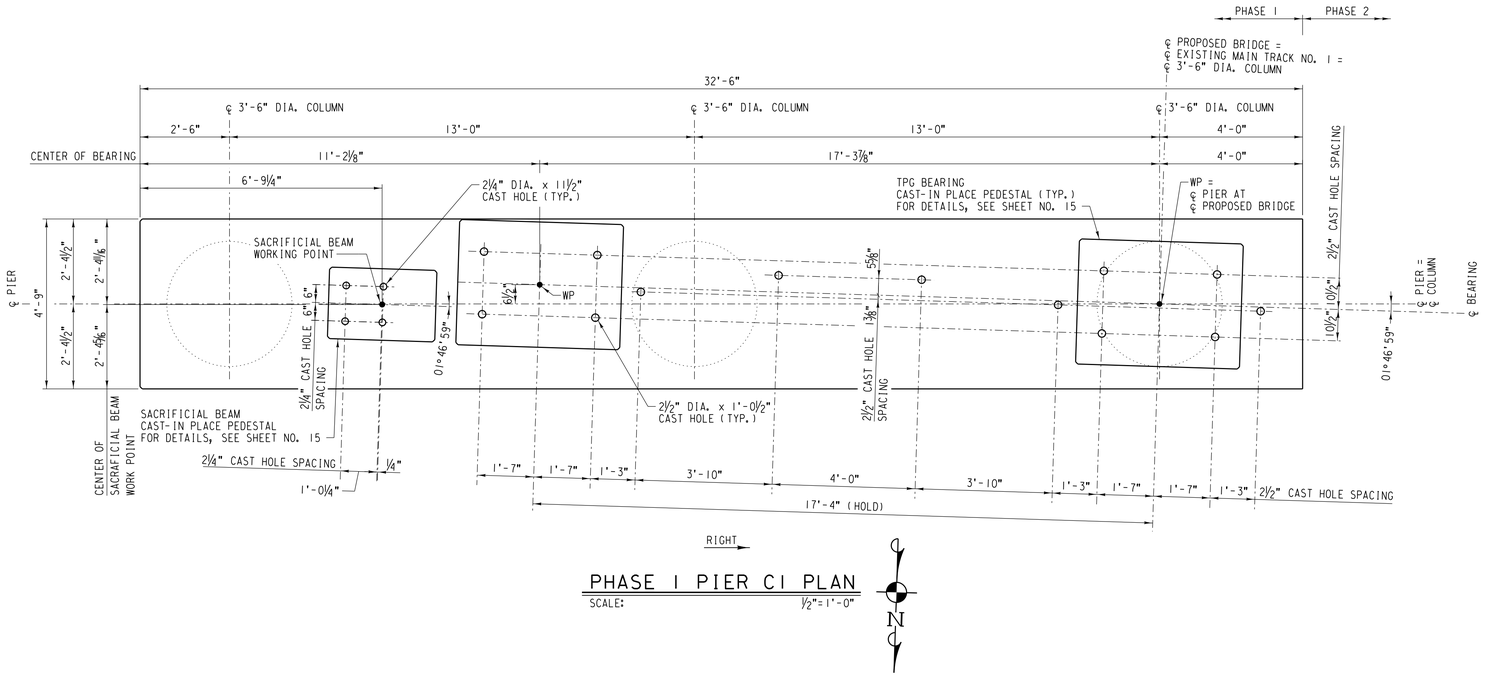
LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION

1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE: PIER #B1 BEARING LAYOUT

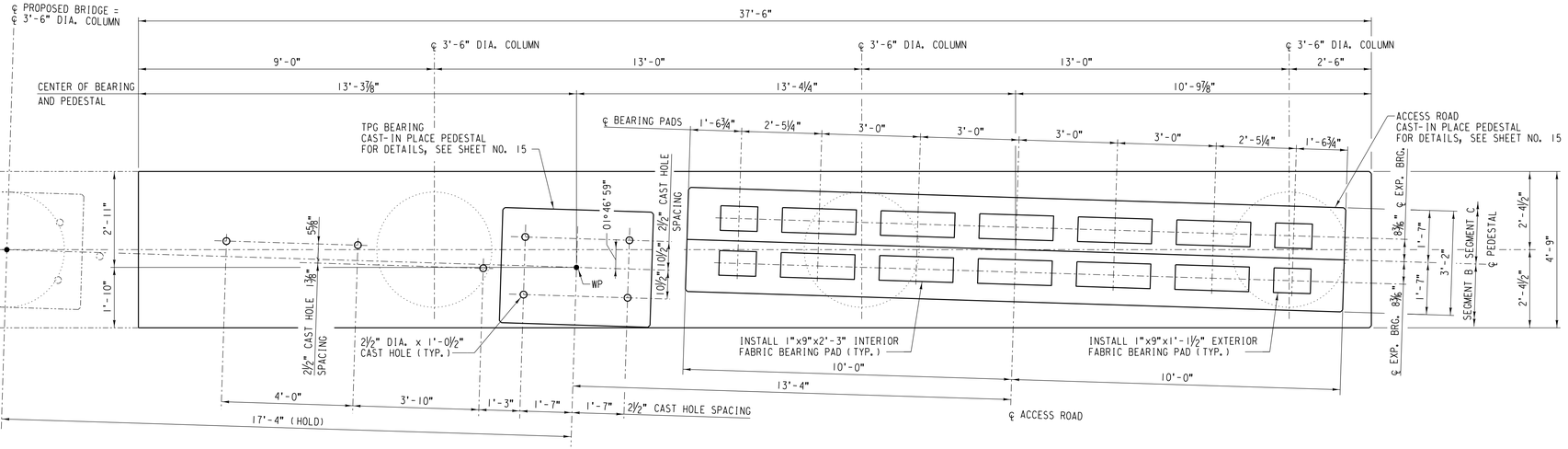
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PLOTTED: 5/27/2021 11:13:09 AM



PHASE 1 PIER C1 PLAN

SCALE: ½"=1'-0"



PHASE 2 PIER #C1 PLAN

SCALE: ½"=1'-0"

NOTES:

1. SACRIFICIAL BEAM WORK POINT = CENTER OF SACRIFICIAL BEAM CAST-IN-PLACE CONCRETE PEDESTAL.
2. TPG BEARING WORK POINT = CENTER OF TPG BEARING CAST-IN-PLACE CONCRETE PEDSTAL.
3. ACCESS ROAD WORK POINT = CENTER OF ACCESS ROAD CAST-IN-PLACE CONCRETE PEDESTAL.

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS: FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:

MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION — LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

UNION PACIFIC

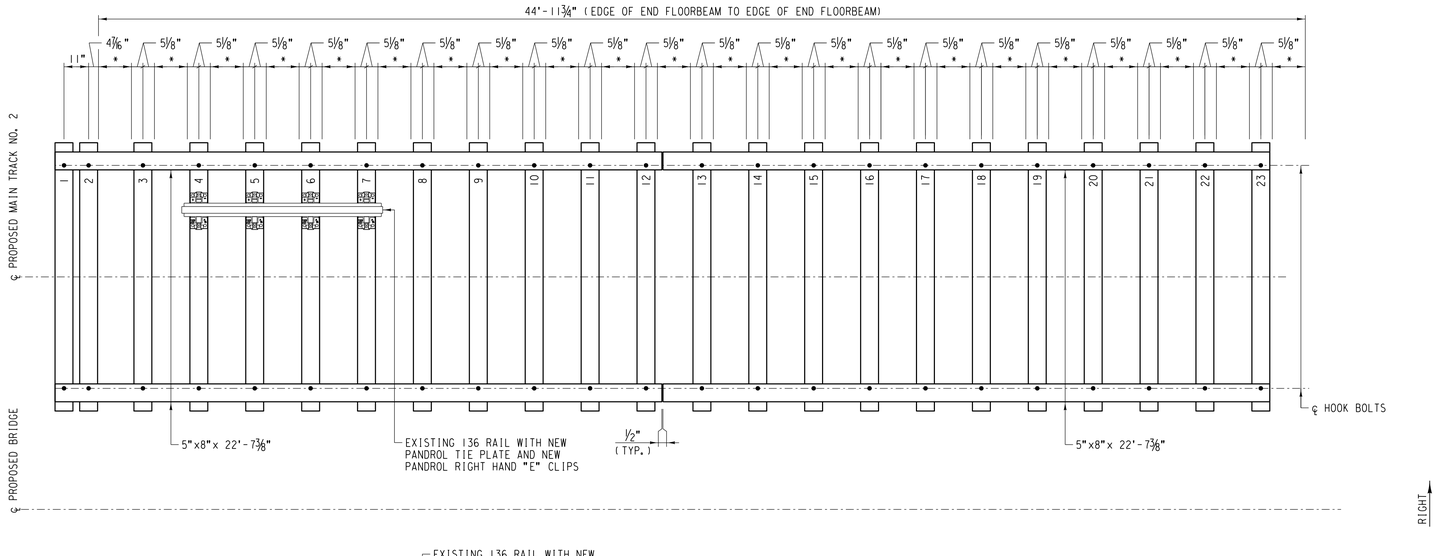
DSN/CHK BY: MTS/MFB	**UNION PACIFIC RAILROAD**
DRAWN/CHK BY: ACB/MFB	Office of Director Structures Design
UPRR ENGINEER: DEH/ADS	LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION — 1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'
SHT NO.: C17 of C59	SHEET TITLE: PIER #C1 BEARING LAYOUT

FILE NAME: C:\Users\mmorriza\Desktop\roc00082_bil.dgn

PLOTTED: 5/27/2021 11:13:10 AM

TO CANAL ST. (CHICAGO)
(TIMETABLE SOUTH)

TO KEDZIE (CHICAGO)
(TIMETABLE NORTH)



DECK PLAN
SCALE: ⅜"=1'-0"

NOTE:
* 1'-2¾" FLOORBEAM

NOTE:
FOR TIE CHART, TIMBER DECK NOTES AND TIMBER TIE DETAIL, SEE SHEET NO. 19.

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL (STATUS) 05/28/2021 (DATE)

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER (CONSULTANT ENGINEER) 05/28/2021 (DATE)

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY:	MTS/MFB
DRAWN/CHK BY:	ACB/MFB
UPRR ENGINEER:	DEH/ADS
SHT NO.:	C18 of C59

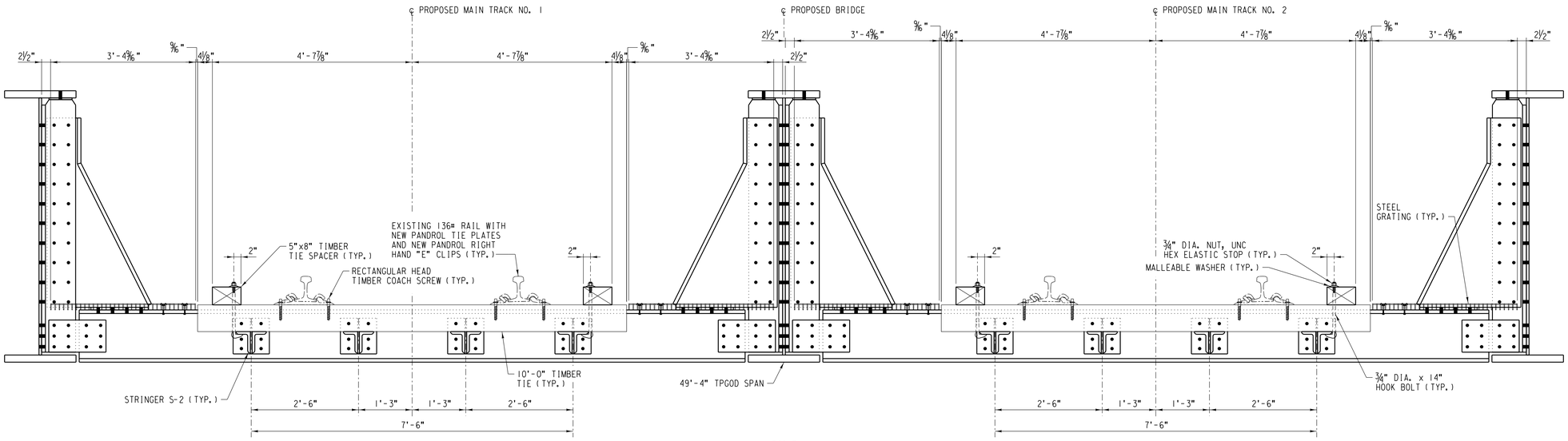
UNION PACIFIC RAILROAD
Office of Director Structures Design

LOCATION & DESCRIPTION:
BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) &
1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE:
TPG SPAN DECK PLAN

FILE NAME: C:\Users\mromirez\Desktop\rc00082_bii.dgn

PLOTTED: 5/27/2021 11:13:10 AM



RIGHT

TYPICAL SECTION

SCALE: ¾"=1'-0"

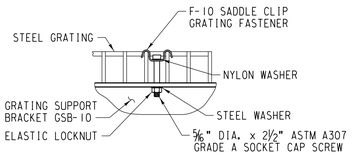
TYPICAL SECTION AT STRINGER S-2 SHOWN,
TYPICAL SECTION AT END STRINGER ES-1 SIMILAR

TIMBER DECK NOTES

1. Glulam bridge ties, timber tie spacers and timber blocking to be produced from Southern Pine or softwood species West Coast Douglas Fir Select Structural.
2. Timber to be well seasoned and conditioned. Timber to be pressure treated per supply department specifications.
3. All bridge ties shall have anti-checking devices installed at each end.
4. All ties shall be clearly marked on the right and top end of each tie with the marking remaining clearly visible after preservative treatment.
5. All holes for hook bolts to be field drilled.
6. All ties to be bundled in groups of no more than 16 ties. Ties within each group shall be in sequential order before shipment to avoid unnecessary sorting at the job site.
7. Field holes, abrasions and cuts shall be treated with an approved timber preservative.
8. Additional material required and not listed in the Bill of Material to be provided by Manager of Bridge Construction.
9. Glulam ties, 10¾"x7½"x 10'-10", shall be cut to 9"x7½"x 10'-10"

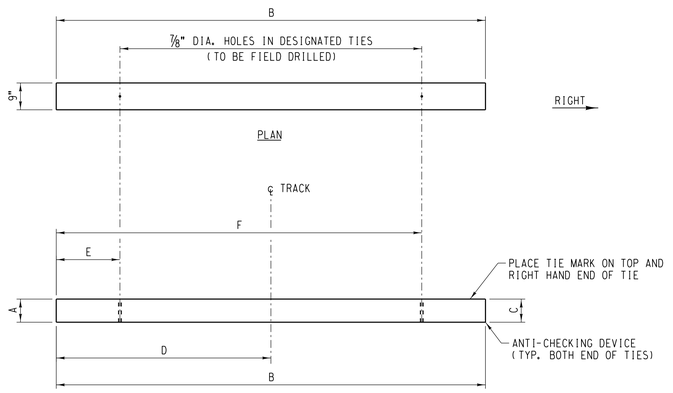
TIE CHART

TIE	A	B	C	D	E	F	HOOK BOLT LENGTH	
							LEFT	RIGHT
1	7½"	10'-0"	7½"	5'-0"	10⅛"	9'-1⅞"	14"	14"
2	7½"	10'-0"	7½"	5'-0"	10⅛"	9'-1⅞"	14"	14"
3	7½"	10'-0"	7½"	5'-0"	10⅛"	9'-1⅞"	14"	14"
4	7½"	10'-0"	7½"	5'-0"	10⅛"	9'-1⅞"	14"	14"
5	7½"	10'-0"	7½"	5'-0"	10⅛"	9'-1⅞"	14"	14"
6	7½"	10'-0"	7½"	5'-0"	10⅛"	9'-1⅞"	14"	14"
7	7½"	10'-0"	7½"	5'-0"	10⅛"	9'-1⅞"	14"	14"
8	7½"	10'-0"	7½"	5'-0"	10⅛"	9'-1⅞"	14"	14"
9	7½"	10'-0"	7½"	5'-0"	10⅛"	9'-1⅞"	14"	14"
10	7½"	10'-0"	7½"	5'-0"	10⅛"	9'-1⅞"	14"	14"
11	7½"	10'-0"	7½"	5'-0"	10⅛"	9'-1⅞"	14"	14"
12	7½"	10'-0"	7½"	5'-0"	10⅛"	9'-1⅞"	14"	14"
13	7½"	10'-0"	7½"	5'-0"	10⅛"	9'-1⅞"	14"	14"
14	7½"	10'-0"	7½"	5'-0"	10⅛"	9'-1⅞"	14"	14"
15	7½"	10'-0"	7½"	5'-0"	10⅛"	9'-1⅞"	14"	14"
16	7½"	10'-0"	7½"	5'-0"	10⅛"	9'-1⅞"	14"	14"
17	7½"	10'-0"	7½"	5'-0"	10⅛"	9'-1⅞"	14"	14"
18	7½"	10'-0"	7½"	5'-0"	10⅛"	9'-1⅞"	14"	14"
19	7½"	10'-0"	7½"	5'-0"	10⅛"	9'-1⅞"	14"	14"
20	7½"	10'-0"	7½"	5'-0"	10⅛"	9'-1⅞"	14"	14"
21	7½"	10'-0"	7½"	5'-0"	10⅛"	9'-1⅞"	14"	14"
22	7½"	10'-0"	7½"	5'-0"	10⅛"	9'-1⅞"	14"	14"
23	7½"	10'-0"	7½"	5'-0"	10⅛"	9'-1⅞"	14"	14"



GRATING CONNECTION DETAIL

SCALE: 3"=1'-0"



TIE DETAIL

SCALE: ½"=1'-0"

TPG SPAN TIMBER DECK SCHEDULE

TOTAL	PHASE 1	PHASE 2	UNIT	DESCRIPTION	STORE ITEM NO.
46	23	23	EA.	10¾"x7½" 10'-0" GLULAM TIE (PER NOTES, DETAIL AND TIE CHART, THIS SHEET)	-
8	4	4	EA.	5"x8"x 24'-0" TIMBER TIE SPACER	505-2267
92	46	46	EA.	¾" DIA. x 15" HOOK BOLT WITH 3" THREAD	134-6638
92	46	46	EA.	¾" DIA. NUT, UNC HEX ELASTIC STOP, HEAVY ESNA 49NU-1120, GRADE 8	130-3738
92	46	46	EA.	#10 MALLEABLE WASHER FOR ¾" DIA. BOLT	130-7202
100	50	50	EA.	PANDROL E-CLIP CAST TIE PLATE FOR USE ON BRIDGES	503-6215
200	100	100	EA.	RIGHT HAND "E" CLIP	503-6100
400	200	200	EA.	RECTANGULAR HEAD TIMBER COACH SCREW	503-8621

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID: | WORK ORDER: 31876 | C E NUMBER: 122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB
DRAWN/CHK BY: ACB/MFB
UPRR ENGINEER: DEH/ADS
SHT NO.: C19 of C59

UNION PACIFIC RAILROAD

Office of Director Structures Design

LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION

1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) &
1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE: TPG SPAN DECK DETAILS AND TIE CHART

FILE NAME: C:\Bridges\Rockford\Desktop\rock00082_bill.dgn

PLOTTED: 5/27/2021 11:13:10 AM

Wang Engineering
wangeng@wangeng.com
1145 North Main Street
Lombard, IL 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG 03-BSB-01

WEI Job No.: 815-13-01

Client: Alfred Benesch & Company
Project: CREATE WA-1
Location: Chicago, IL

Datum: CCD
Elevation: 27.75 ft
North: 1901187.71 ft
East: 1158961.15 ft
Station: 43+33.67
Offset: 37.66 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blws/6 in)	Qu (tsf)	Moisture Content (%)
	27.5	3-inch thick, brown, well-graded GRAVEL (GW); dry --FILL--						
		Very loose to loose, brown and black, poorly-graded SAND with SILT (SP), little gravel; dry --FILL--	5		1	5 5 4	NP	18
					2	2 1 1	NP	18
					3	1 1 1	NP	17
			10		4	3 2 2	NP	18
	17.3	Stiff to very stiff, gray LEAN CLAY (CL)			5	3 4 5	2.21 B	21
			15		6	3 4 4	2.71 B	22
					7	3 4 5	2.71 B	22
			20		8	3 3 4	1.64 B	22
	7.3	Medium stiff, gray LEAN CLAY with sand (CL)			9	0 0 0	0.82 B	25
	3.8	Very stiff, gray LEAN CLAY (CL)	25		10	1 4 5	2.54 B	15

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blws/6 in)	Qu (tsf)	Moisture Content (%)
	2.3	Dense, gray SILT (ML); dry			11	11 17 18	NP	10
	-0.3	Dense, gray, well-graded SAND with SILT (SW-SM); moist	30		12	11 17 25	NP	16
		--saturated--	35		13	18 18 23	NP	14
		--L_L(%)=NP, P_I(%)=NP-- --%Gravel=3.8-- --%Sand=84.4--40 --%Silt=09.2-- --%Clay=2.6--			14	10 16 16	NP	16
			45		15	5 13 21	NP	15
			50		16	10 18 31	NP	17

GENERAL NOTES

Begin Drilling: 01-11-2016 Complete Drilling: 01-11-2017
Drilling Contractor: Wang Testing Services Drill Rig: D50 ATV [88%]
Driller: K&J Logger: J. Foote Checked by: J. Rowells
Drilling Method: 3.25" IDA HSA; autohammer; backfilled with lean grout and bentonite chips upon completion

WATER LEVEL DATA

While Drilling: ▽ 32.00 ft
At Completion of Drilling: ▼ 70.00 ft
Time After Drilling: NA
Depth to Water: ▽ NA

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

WANGENG 815130.GPJ WANGENG.GDT 1/7/21

Wang Engineering
wangeng@wangeng.com
1145 North Main Street
Lombard, IL 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG 03-BSB-02

WEI Job No.: 815-13-01

Client: Alfred Benesch & Company
Project: CREATE WA-1
Location: Chicago, IL

Datum: CCD
Elevation: 28.30 ft
North: 1901063.85 ft
East: 1158968.48 ft
Station: 44+57.69
Offset: 33.68 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blws/6 in)	Qu (tsf)	Moisture Content (%)
	27.5	3-inch thick, brown, well-graded GRAVEL with SAND (GW); dry --FILL--						
	26.9	14-inch thick, black, well-graded SAND with GRAVEL (SW); dry --FILL--			1	5 3 2	NP	5
		Loose, brown, poorly-graded SAND (SP); dry --FILL--	5		2	3 3 3	NP	5
	22.8	Stiff, brown and gray LEAN CLAY (CL) --FILL--			3	3 3 3	1.15 B	28
			10		4	3 3 2	1.07 B	25
	17.8	Stiff, dark gray LEAN CLAY (CL) --TOPSOIL--			5	2 2 4	1.48 B	31
	15.3	Medium stiff to very stiff, gray LEAN CLAY with SAND (CL)	15		6	2 2 2	0.90 B	30
					7	2 3 4	2.21 B	24
			20		8	3 3 4	1.97 B	25
	7.8	Medium stiff, gray LEAN CLAY with SAND (CL)			9	2 2 4	0.66 B	24
	5.3	Very stiff, gray LEAN CLAY (CL)	25		10	3 3 5	3.28 B	16

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blws/6 in)	Qu (tsf)	Moisture Content (%)
	-0.7	Dense, gray SILT (ML); dry --few, poorly-graded sand seams--	30		11	5 7 12	3.85 B	19
	-3.5	Dense to very dense, gray, well-graded SAND with SILT (SW-SM); moist			12	5 16 28	NP	13
		--saturated--	35		13	12 15 28	NP	18
			40		14	5 22 31	NP	10
			45		15	5 15 21	NP	22
			50		16	8 10 21	NP	19

GENERAL NOTES

Begin Drilling: 01-10-2017 Complete Drilling: 01-10-2017
Drilling Contractor: Wang Testing Services Drill Rig: D50 ATV [88%]
Driller: K&J Logger: J. Foote Checked by: J. Rowells
Drilling Method: 3.25" IDA HSA; autohammer; backfilled with lean grout and bentonite chips upon completion

WATER LEVEL DATA

While Drilling: ▽ 38.00 ft
At Completion of Drilling: ▼ 75.00 ft
Time After Drilling: NA
Depth to Water: ▽ NA

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

WANGENG 815130.GPJ WANGENG.GDT 1/7/21

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wangeng@wangeng.com
1145 North Main Street
Lombard, IL 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG 03-VST-01

WEI Job No.: 815-13-01

Client: Alfred Benesch & Company
Project: CREATE WA-1
Location: Chicago, IL

Datum: CCD
Elevation: 28.26 ft
North: 1901185.22 ft
East: 1158966.19 ft
Station: 43+36.30
Offset: 32.69 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blws/6 in)	Qu (tsf)	Moisture Content (%)
	9.8	--VST#1: 18.5 feet-- --$S_{u\ undis}$ = 2,542.5 psf-- --$S_{u\ remold}$= 991.1 psf--	20	V A N E	1	VST		
		--VST#2: 21.0 feet-- --$S_{u\ undis}$ = 1,422.1 psf-- --$S_{u\ remold}$= 775.7 psf--		V A N E	2	VST		
	3.3	--VST#3: 23.5 feet-- --equipment maximized out--	25	V A N	3	VST		
		Boring terminated at 25.00 ft						

GENERAL NOTES

Begin Drilling: 02-08-2017 Complete Drilling: 02-08-2017
Drilling Contractor: Wang Testing Services Drill Rig: D50 TMR [78%]
Driller: RH&NC Logger: F. Bozga Checked by: J. Bensen
Drilling Method: 3.25" IDA HSA; boring backfilled upon completion

WATER LEVEL DATA

While Drilling: ▽ NA
At Completion of Drilling: ▼ NA
Time After Drilling: NA
Depth to Water: ▽ NA

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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1145 North Main Street
Lombard, IL 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG 03-BSB-01

WEI Job No.: 815-13-01

Client: Alfred Benesch & Company
Project: CREATE WA-1
Location: Chicago, IL

Datum: CCD
Elevation: 27.75 ft
North: 1901187.71 ft
East: 1158961.15 ft
Station: 43+33.67
Offset: 37.66 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blws/6 in)	Qu (tsf)	Moisture Content (%)
	26.0	Hard, gray LEAN CLAY with SAND (CL)	55		17	7 13 17	4.76 B	17
			60		18	7 10 12	4.02 B	22
	37.8	Possible, well-graded SAND with GRAVEL (SW) --3-feet thick, blow-in sand and gravel into augers--	65		19	8 14 19	4.35 B	22
	40.3	Very dense, gray SILT (ML); wet --2-inch thick, lean clay lenses--	70		20	14 28 29	NP	10
	44.0	Very dense, gray, well-graded GRAVEL with SAND (GW); saturated --WEATHERED BEDROCK-- --DRILLING REFUSAL--	75		21	33 50/5"	NP	10
	46.8							

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blws/6 in)	Qu (tsf)	Moisture Content (%)
	-59.8	Very poor to poor, gray DOLOSTONE --BEDROCK-- Run 1: 74.5 to 80.0 feet RECOVERY= 86% RQD = 15% --Q_c= 7,630 psi-- Run 2: 80.0 to 87.5 feet RECOVERY= 92% RQD = 29% Boring terminated at 87.50 ft	80		22	m 2 O C		
			85		23	m 2 O C		
			90					
			95					
			100					

GENERAL NOTES

Begin Drilling: 01-11-2016 Complete Drilling: 01-11-2017
Drilling Contractor: Wang Testing Services Drill Rig: D50 ATV [88%]
Driller: K&J Logger: J. Foote Checked by: J. Rowells
Drilling Method: 3.25" IDA HSA; autohammer; backfilled with lean grout and bentonite chips upon completion

WATER LEVEL DATA

While Drilling: ▽ 32.00 ft
At Completion of Drilling: ▼ 70.00 ft
Time After Drilling: NA
Depth to Water: ▽ NA

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

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Lombard, IL 60148
Telephone: 630-953-9928
Fax: 630-953-9938

BORING LOG 03-BSB-02

WEI Job No.: 815-13-01

Client: Alfred Benesch & Company
Project: CREATE WA-1
Location: Chicago, IL

Datum: CCD
Elevation: 28.30 ft
North: 1901063.85 ft
East: 1158968.48 ft
Station: 44+57.69
Offset: 33.68 RT

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blws/6 in)	Qu (tsf)	Moisture Content (%)
	30.5	Very stiff to hard, gray LEAN CLAY with SAND (CL) --few, well-graded sand seams--	60		17	12 43 32	NP	18
					18	17 25 25	> 4.50 P	10
	38.5	Very dense, gray SILT (ML); saturated	65		19	8 10 13	3.69 B	23
		--L_L(%)=NP, P_I(%)=NP-- --%Gravel=0.6-- --%Sand=14.0--70 --%Silt=81.3-- --%Clay=4.0--	70		20	31 28 30	NP	21
	43.5	Hard, gray SILTY CLAY (CL), little gravel --hard drilling-- --light chatter--	75		21	40 50/4"	> 8.20 B	11

Profile	Elevation (ft)	SOIL AND ROCK DESCRIPTION	Depth (ft)	Sample Type / recovery	Sample No.	SPT Values (blws/6 in)	Qu (tsf)	Moisture Content (%)
	-48.7	--slow advancement-- --DRILLING REFUSAL-- Very poor to poor, gray DOLOSTONE --BEDROCK-- Run 1: 77.5 to 82.5 feet RECOVERY= 85% RQD = 7% Run 2: 82.5 to 89.5 feet RECOVERY= 98% RQD = 41%	80		22	m 2 O C		
			85		23	m 2 O C		
	-61.2	Boring terminated at 89.50 ft	90					
			95					
			100					

GENERAL NOTES

Begin Drilling: 01-10-2017 Complete Drilling: 01-10-2017
Drilling Contractor: Wang Testing Services Drill Rig: D50 ATV [88%]
Driller: K&J Logger: J. Foote Checked by: J. Rowells
Drilling Method: 3.25" IDA HSA; autohammer; backfilled with lean grout and bentonite chips upon completion

WATER LEVEL DATA

While Drilling: ▽ 38.00 ft
At Completion of Drilling: ▼ 75.00 ft
Time After Drilling: NA
Depth to Water: ▽ NA

The stratification lines represent the approximate boundary between soil types; the actual transition may be gradual.

WANGENG 815130.GPJ WANGENG.GDT 1/7/21

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

UNION PACIFIC

DSN/CHK BY: MTS/MFB
DRAWN/CHK BY: ACB/MFB
UPRR ENGINEER: DEH/ADS
SHT NO.: C20 of C59

UNION PACIFIC RAILROAD

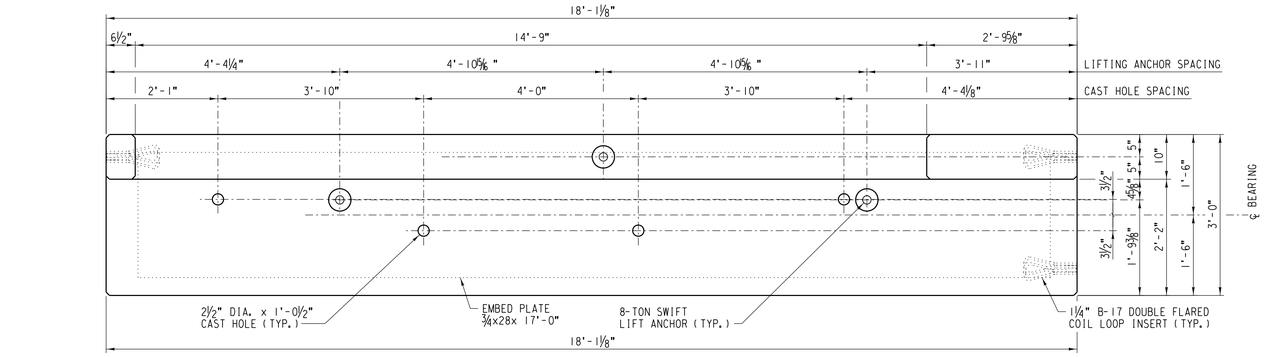
Office of Director Structures Design

LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) &
1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

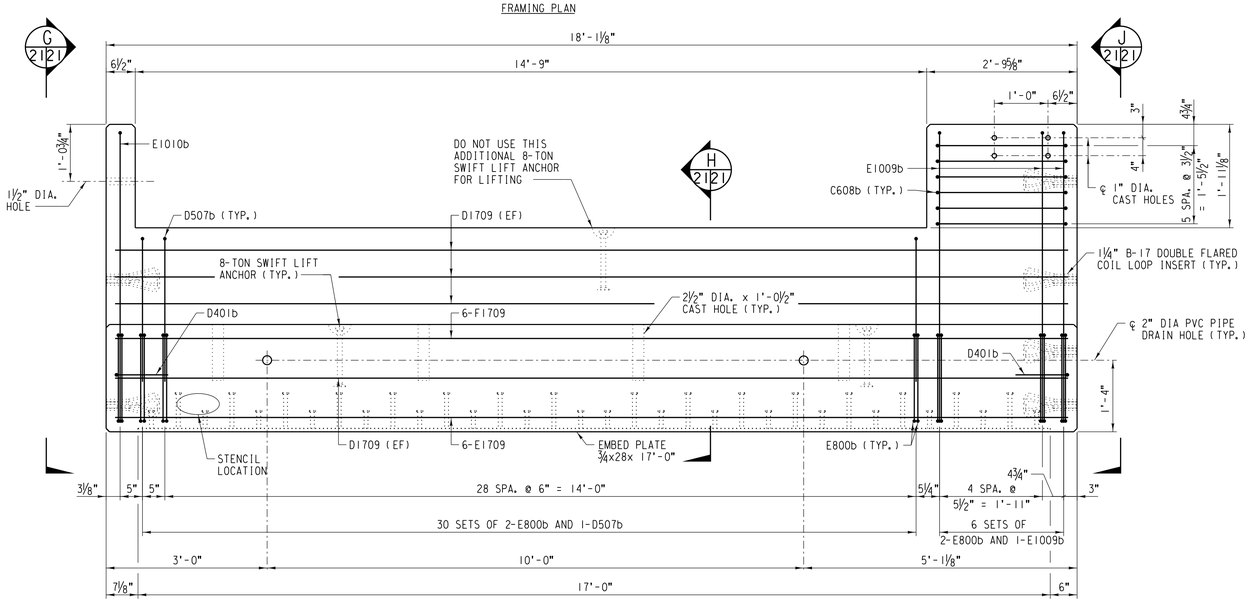
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FILE NAME: C:\Users\mcrmir\Desktop\rcb00082.bil.dgn

PLOTTED: 5/27/2021 11:13:12 AM



FRAMING PLAN



REINFORCING ELEVATION

PRECAST CONCRETE END CAP PEC-4

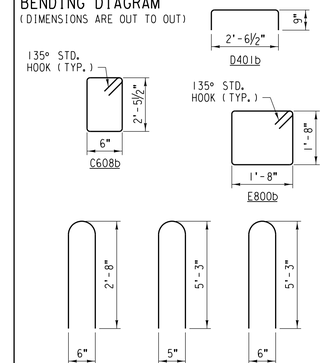
SCALE: ¾"=1'-0"

MATERIAL SCHEDULE		
REQ'D.	UNIT	DESCRIPTION
5.2	CU. YD.	4000 PSI CONCRETE (PER NOTES, STD. DWG. 531100 SHT. T3)
1	LOT	REINFORCING STEEL (PER NOTES, STD. DWG. 531100 SHT. T3 AND SCHEDULE, THIS SHEET)
1	EA.	EMBED PLATE ¾x28x 17'-0" (PER NOTES, STD. DWG. 531100 SHT. T3 AND DETAIL, THIS SHEET)
6	EA.	1¼" B-17 DOUBLE FLARED COIL LOOP INSERT
1	EA.	CHANNEL ASSEMBLY CA-20 (PER NOTES, STD. DWG. 531100 SHT. T3 AND DETAIL, SHEET NO. 22)
3	EA.	8-TON SWIFT LIFT ANCHOR
2	EA.	4" SQUARE ALUMINUM #4 MESH HARDWARE CLOTH
6	LIN. FT.	2" DIA. PVC PIPE, SCHEDULE 40

REINFORCING SCHEDULE				
TOTAL	MARK	SIZE	LENGTH	SHAPE
6	C608b	#4	6'-8"	
2	D401b	#5	4'-1"	
30	D507b	#5	5'-7"	
8	D1709	#5	17'-9"	
74	E800b	#6	8'-0"	
6	E1009b	#6	10'-9"	
1	E1010b	#6	10'-10"	
6	E1709	#6	17'-9"	
6	F1709	#7	17'-9"	

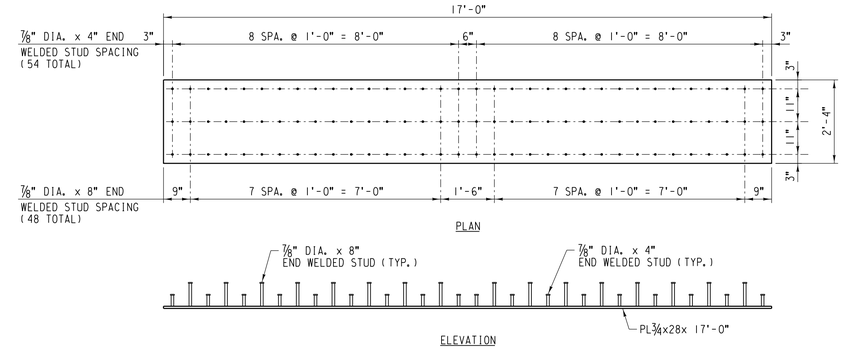
BENDING DIAGRAM

(DIMENSIONS ARE OUT TO OUT)



NOTE:
BAR DESIGNATIONS CONSIST OF BAR SIZE & LENGTH FOLLOWED BY THE LETTER "b" IF PIER. BAR SIZES ARE REPRESENTED BY THE LETTERS A THROUGH L CORRESPONDING TO BAR SIZE #2 THROUGH #18. BAR LENGTHS ARE GIVEN IN FEET AND INCHES; THE LAST TWO DIGITS ARE INCHES.

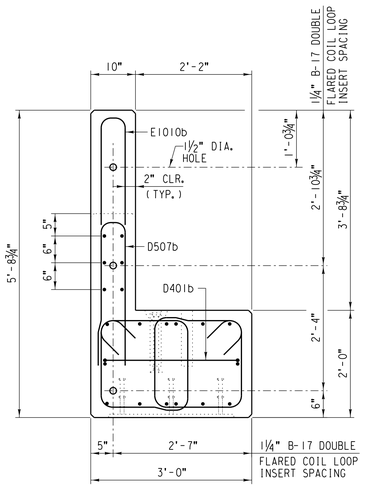
EST. WT. OF REINFORCING STEEL = 1,740 LB.



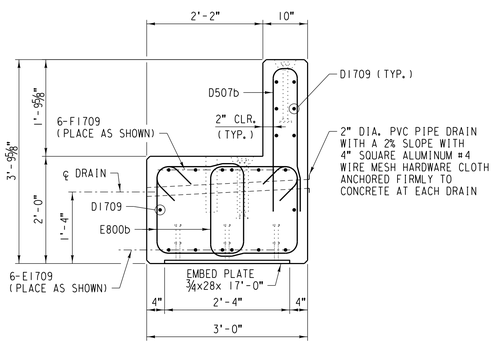
EMBED PLATE ¾x28x 17'-0"

SCALE: ½"=1'-0"

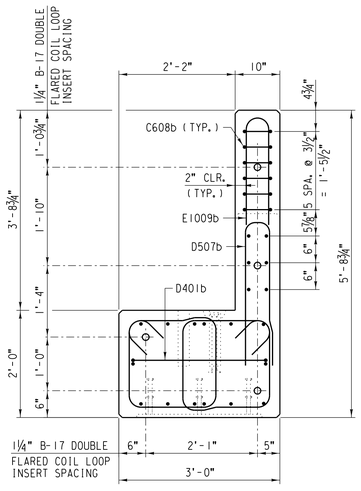
EST. WT. = 1,329 LB. EA.



VIEW G 2121
SCALE: ¾"=1'-0"



SECTION H 2121
SCALE: ¾"=1'-0"



VIEW J 2121
SCALE: ¾"=1'-0"

NOTES:
1. END CAP PEC-4 AND WINGWALL CPW8 SHALL BE FIT UP AT THE FABRICATION PLANT PRIOR TO SHIPMENT TO ENSURE ACCURACY OF CONNECTIONS.
2. INSIDE SURFACE OF CAST HOLES SHALL BE EXPOSED UNCOATED CONCRETE. ALTERNATIVELY, CORRUGATED GALVANIZED STEEL DUCT WITH 2½" INSIDE DIAMETER MAY BE USED AS A STAY-IN-PLACE FORM.
3. COVER OR FILL CAST HOLES WITH APPROVED MATERIAL TO PREVENT MOISTURE OR DEBRIS FROM ENTERING DURING STORAGE AND TRANSPORT.
4. MINIMALLY ADJUST REINFORCING AS REQUIRED TO CLEAR CAST HOLES AND EMBEDDED ITEMS.
5. EF = EACH FACE
   FF = FAR FACE
   NF = NEAR FACE

EST. WT. OF PRECAST CONCRETE
END CAP PEC-4 = 21,990 LB. (11.0 TON)

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY:	MTS/MFB
DRAWN/CHK BY:	ACB/MFB
UPRR ENGINEER:	DEH/ADS
SHT NO.:	C21 of C59

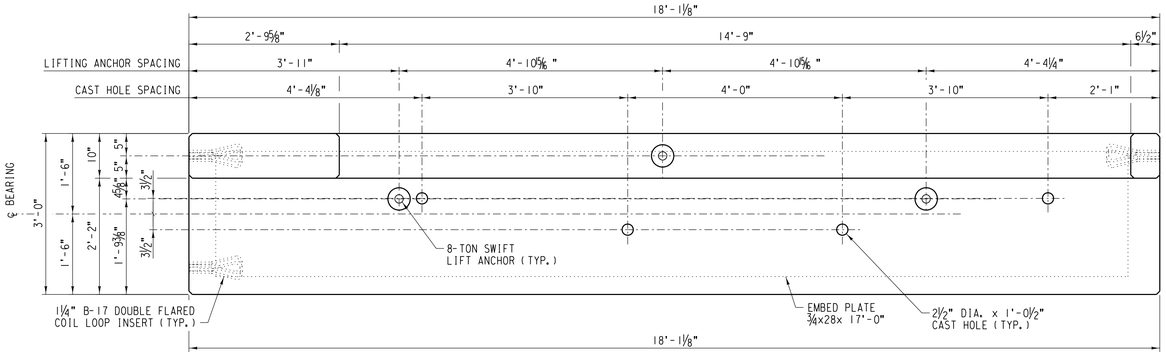
UNION PACIFIC RAILROAD
Office of Director Structures Design

LOCATION & DESCRIPTION:
BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) &
1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

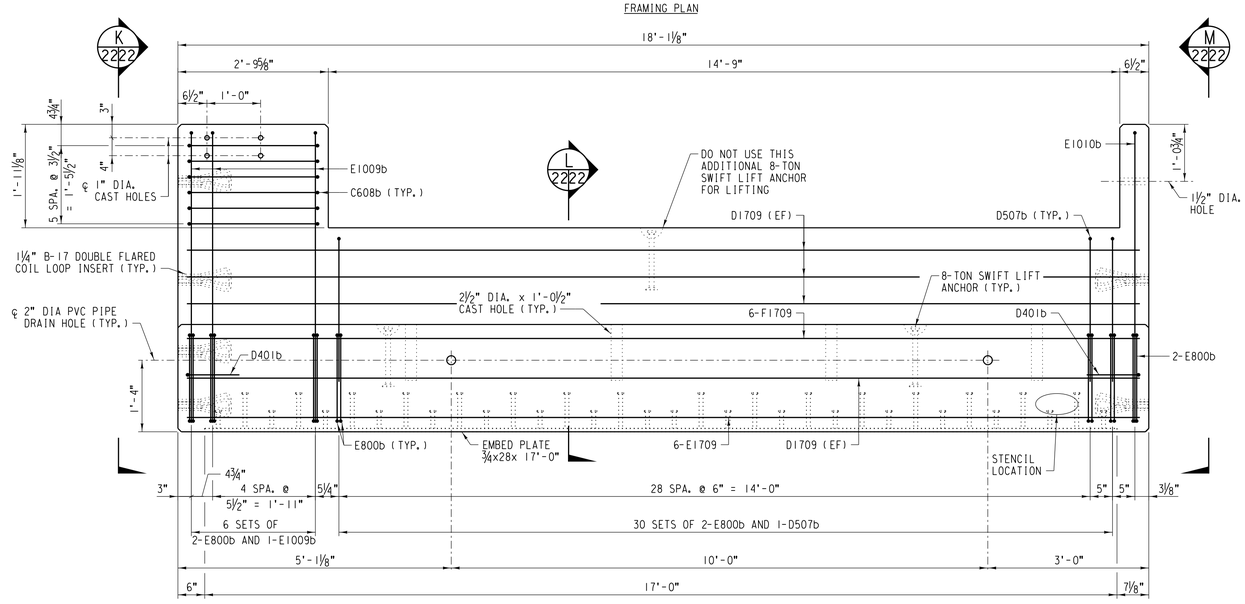
SHEET TITLE:
PRECAST CONCRETE END CAP PEC-4 DETAILS

FILE NAME: C:\Users\wrcmirez\Desktop\rc000182.bil.dgn

PLOTTED: 5/27/2021 11:13:30 AM



FRAMING PLAN



REINFORCING ELEVATION

PRECAST CONCRETE END CAP PEC-5

SCALE: ¾"=1'-0"

MATERIAL SCHEDULE

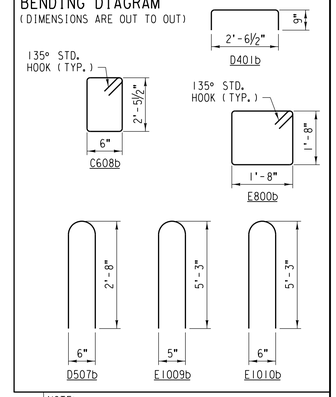
REQ'D.	UNIT	DESCRIPTION
5.2	CU. YD.	4000 PSI CONCRETE (PER NOTES, STD. DWG. 531100 SHT. T3)
1	LOT	REINFORCING STEEL (PER NOTES, STD. DWG. 531100 SHT. T3 AND SCHEDULE, THIS SHEET)
1	EA.	EMBED PLATE ¾x28x 17'-0" (PER NOTES, STD. DWG. 531100 SHT. T3 AND DETAIL, SHEET NO. 21)
6	EA.	1¼" B-17 DOUBLE FLARED COIL LOOP INSERT
1	EA.	CHANNEL ASSEMBLY CA-20 (PER NOTES, STD. DWG. 531100 SHT. T3 AND DETAIL, THIS SHEET)
3	EA.	8-TON SWIFT LIFT ANCHOR
2	EA.	4" SQUARE ALUMINUM #4 MESH HARDWARE CLOTH
6	LIN. FT.	2" DIA. PVC PIPE, SCHEDULE 40

REINFORCING SCHEDULE

TOTAL	MARK	SIZE	LENGTH	SHAPE
6	C608b	#4	6'-8"	
2	D401b	#5	4'-1"	
30	D507b	#5	5'-7"	
8	D1709	#5	17'-9"	
74	E800b	#6	8'-0"	
6	E1009b	#6	10'-9"	
1	E1010b	#6	10'-10"	
6	E1709	#6	17'-9"	
6	F1709	#7	17'-9"	

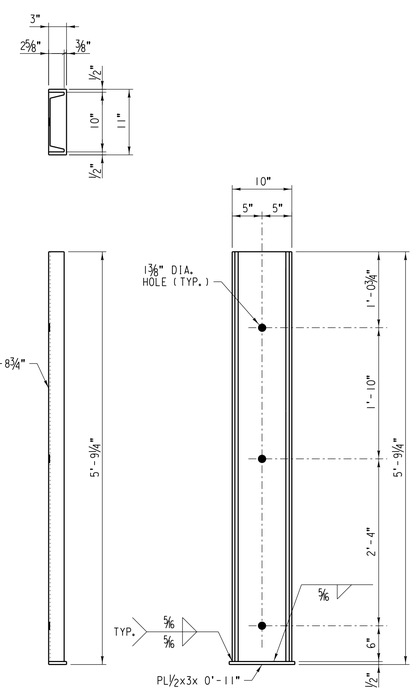
BENDING DIAGRAM

(DIMENSIONS ARE OUT TO OUT)



NOTE:
BAR DESIGNATIONS CONSIST OF BAR SIZE & LENGTH FOLLOWED BY THE LETTER "b" IF PIER. BAR SIZES ARE REPRESENTED BY THE LETTERS A THROUGH L CORRESPONDING TO BAR SIZE #2 THROUGH #18. BAR LENGTHS ARE GIVEN IN FEET AND INCHES; THE LAST TWO DIGITS ARE INCHES.

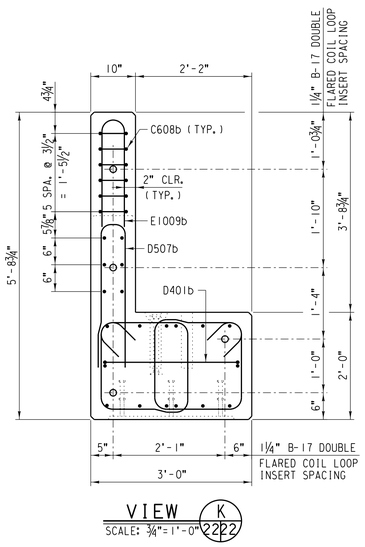
EST. WT. OF REINFORCING STEEL = 1,740 LB.



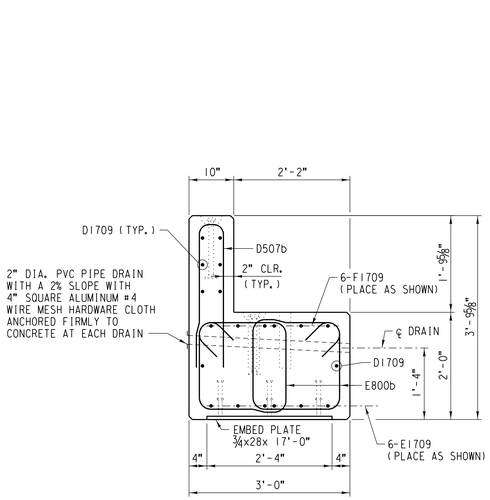
CHANNEL ASSEMBLY CA-20

SCALE: 1"=1'-0"

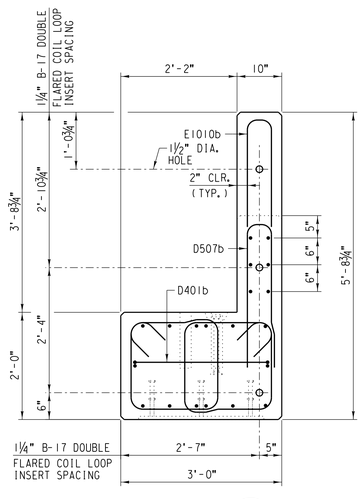
EST. WT. = 92.4 LB. EA.
SHIP WITH 3-1⅛" DIA. x 4" COIL BOLT,
DAYTON SUPERIOR B-14 OR APPROVED EQUAL



VIEW K
SCALE: ¾"=1'-0"



SECTION L
SCALE: ¾"=1'-0"



VIEW M
SCALE: ¾"=1'-0"

NOTES:
1. END CAP PEC-5 AND WINGWALL CPW8 SHALL BE FIT UP AT THE FABRICATION PLANT PRIOR TO SHIPMENT TO ENSURE ACCURACY OF CONNECTIONS.
2. INSIDE SURFACE OF CAST HOLES SHALL BE EXPOSED UNCOATED CONCRETE. ALTERNATIVELY, CORRUGATED GALVANIZED STEEL DUCT WITH 2½" INSIDE DIAMETER MAY BE USED AS A STAY-IN-PLACE FORM.
3. COVER OR FILL CAST HOLES WITH APPROVED MATERIAL TO PREVENT MOISTURE OR DEBRIS FROM ENTERING DURING STORAGE AND TRANSPORT.
4. MINIMALLY ADJUST REINFORCING AS REQUIRED TO CLEAR CAST HOLES AND EMBEDDED ITEMS.
5. EF = EACH FACE
FF = FAR FACE
NF = NEAR FACE

EST. WT. OF PRECAST CONCRETE

END CAP PEC-5 = 21,990 LB. (11.0 TON)

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS
05/28/2021 — DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER
05/28/2021 — DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY:	MTS/MFB
DRAWN/CHK BY:	ACB/MFB
UPRR ENGINEER:	DEH/ADS
SHT NO.:	C22 of C59

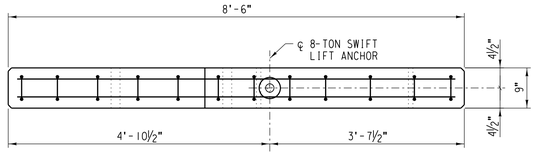
UNION PACIFIC RAILROAD
Office of Director Structures Design

LOCATION & DESCRIPTION:
BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) &
1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

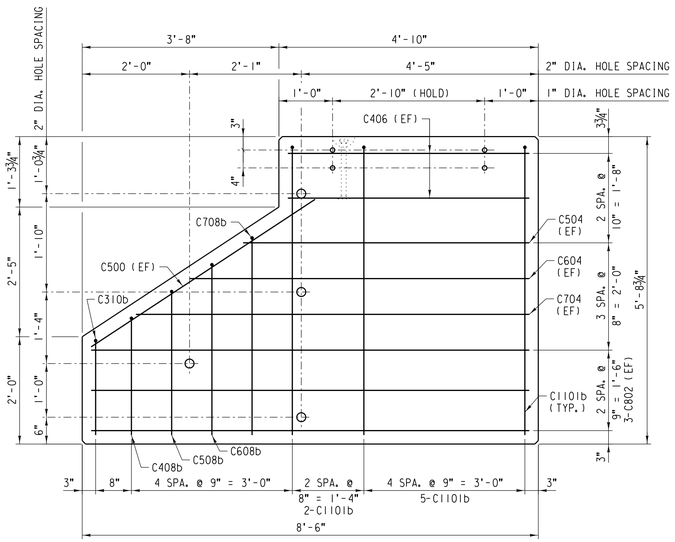
SHEET TITLE:
PRECAST CONCRETE END CAP PEC-5 DETAILS

FILE NAME: C:\Users\mcontreras\Desktop\rco00082.bil.dgn

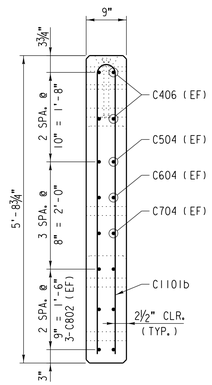
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PLAN



ELEVATION



SECTION

PRECAST CONCRETE WINGWALL CPW8

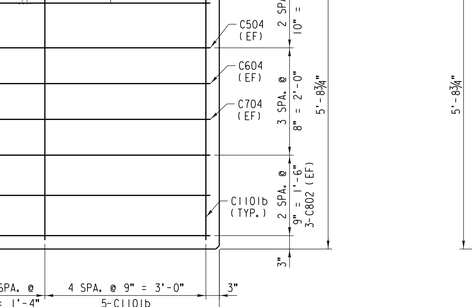
SCALE: ¾"=1'-0"

NOTES:
1. END CAP PEC-4, PEC-5 AND WINGWALL CPW8 SHALL BE FIT UP AT THE FABRICATION PLANT PRIOR TO SHIPMENT TO ENSURE ACCURACY OF CONNECTIONS.
2. MINIMALLY ADJUST REINFORCING AS REQUIRED TO CLEAR CAST HOLES AND EMBEDDED ITEMS.
3. EF = EACH FACE

EMBED PLATE EP-1

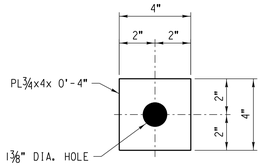
SCALE: 1"=1'-0"

EST. WT. = 21.0 LB. EA.



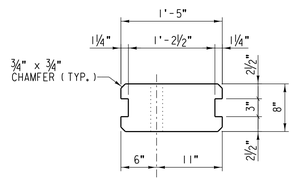
LIFTING LOOP DETAIL

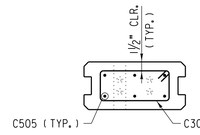
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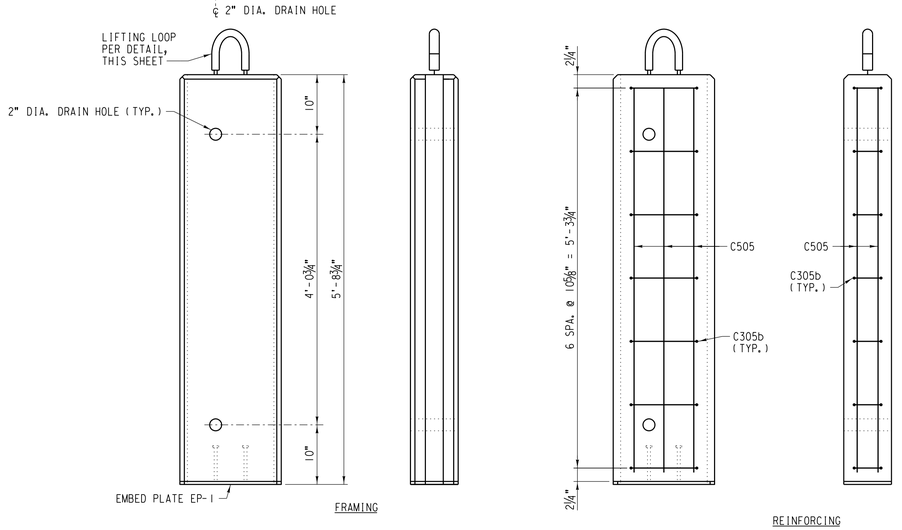


WASHER W100

SCALE: 3"=1'-0"
EST. WT. = 3.4 LB. EA.
GALVANIZE AFTER FABRICATION







PRECAST CONCRETE BACKWALL FILLER BLOCK BFB-20

SCALE: 1"=1'-0"

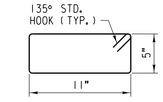
MATERIAL SCHEDULE
(QUANTITY PER BACKWALL FILLER BLOCK BFB-20)

REQ'D.	UNIT	DESCRIPTION
0.2	CU. YD.	4000 PSI CONCRETE (PER NOTES, STD. DWG. 531100 SHT. T3)
1	LOT	REINFORCING STEEL (PER NOTES, STD. DWG. 531100 SHT. T3 AND SCHEDULE, THIS SHEET)
1	EA.	EMBED PLATE EP-1 (PER NOTES, STD. DWG. 531100 SHT. T3 AND DETAIL, THIS SHEET)
1	EA.	LIFTING LOOP (PER NOTES, STD. DWG. 531100 SHT. T3 AND DETAIL, THIS SHEET)

REINFORCING SCHEDULE
(QUANTITY PER BACKWALL FILLER BLOCK BFB-20)

TOTAL	MARK	SIZE	LENGTH	SHAPE
7	C305b	#4	3'-5"	□
6	C505	#4	5'-5"	—

BENDING DIAGRAM
(DIMENSIONS ARE OUT TO OUT)



C305b

NOTE:
BAR DESIGNATIONS CONSIST OF BAR SIZE & LENGTH FOLLOWED BY THE LETTER "b" IF PIER. BAR SIZES ARE REPRESENTED BY THE LETTERS A THROUGH L CORRESPONDING TO BAR SIZE #2 THROUGH #18. BAR LENGTHS ARE GIVEN IN FEET AND INCHES; THE LAST TWO DIGITS ARE INCHES.

EST. WT. OF REINFORCING STEEL = 38 LB.

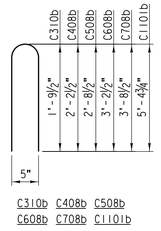
MATERIAL SCHEDULE
(QUANTITY PER WINGWALL CPW8)

REQ'D.	UNIT	DESCRIPTION
1.0	CU. YD.	4000 PSI CONCRETE (PER NOTES, STD. DWG. 531100 SHT. T3)
1	LOT	REINFORCING STEEL (PER NOTES, STD. DWG. 531100 SHT. T3 AND SCHEDULE, THIS SHEET)
1	EA.	8-TON SWIFT LIFT ANCHOR
5	EA.	WASHER W100 (PER NOTES, STD. DWG. 531100 SHT. T3 AND DETAIL, THIS SHEET)
5	EA.	1¼" DIA. x 13" COIL BOLT, DAYTON-RICHMOND B-14, GALVANIZED

REINFORCING SCHEDULE
(QUANTITY PER WINGWALL CPW8)

TOTAL	MARK	SIZE	LENGTH	SHAPE
1	C310b	#4	3'-10"	∩
4	C406	#4	4'-6"	—
1	C408b	#4	4'-8"	∩
2	C500	#4	5'-0"	—
2	C504	#4	5'-4"	—
1	C508b	#4	5'-8"	∩
2	C604	#4	6'-4"	—
1	C608b	#4	6'-8"	∩
2	C704	#4	7'-4"	—
1	C708b	#4	7'-8"	∩
6	C802	#4	8'-2"	—
7	C1101b	#4	11'-1"	∩

BENDING DIAGRAM
(DIMENSIONS ARE OUT TO OUT)



C310b C408b C508b C608b C708b C1101b

BAR DESIGNATIONS CONSIST OF BAR SIZE & LENGTH FOLLOWED BY THE LETTER "b" IF BENT. BAR SIZES ARE REPRESENTED BY THE LETTERS A THROUGH L CORRESPONDING TO BAR SIZE #2 THROUGH #18. BAR LENGTHS ARE GIVEN IN FEET AND INCHES; THE LAST TWO DIGITS ARE INCHES.

EST. WT. OF REINFORCING STEEL = 150 LB.

EST. WT. OF PRECAST CONCRETE

FILLER BLOCK BFB-20 = 800 LB. EA. (0.4 TON)
WINGWALL CPW8 = 4,440 LB. EA. (2.2 TON)

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

UNION PACIFIC

DSN/CHK BY:	MTS/MFB
DRAWN/CHK BY:	ACB/MFB
UPRR ENGINEER:	DEH/ADS
SHT NO.:	C23 of C59

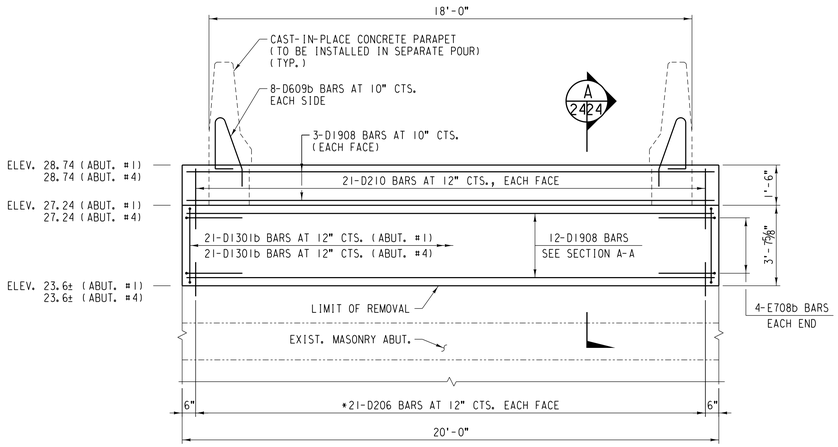
UNION PACIFIC RAILROAD
Office of Director Structures Design

LOCATION & DESCRIPTION:
BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE:
PRECAST CONCRETE WINGWALL AND FILLER BLOCK DETAILS

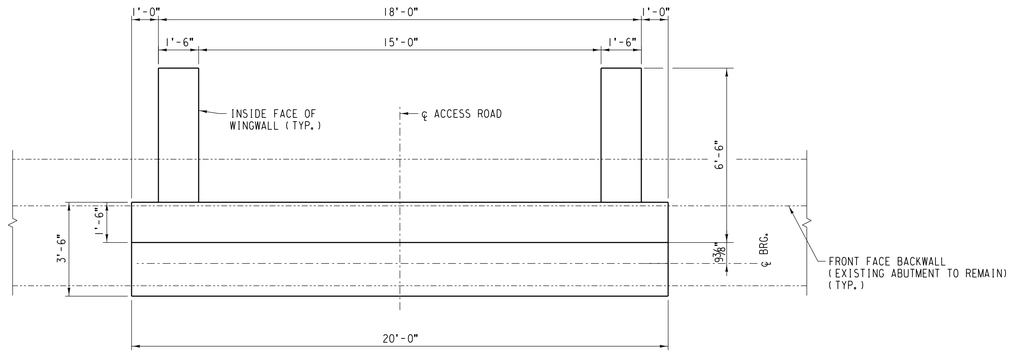
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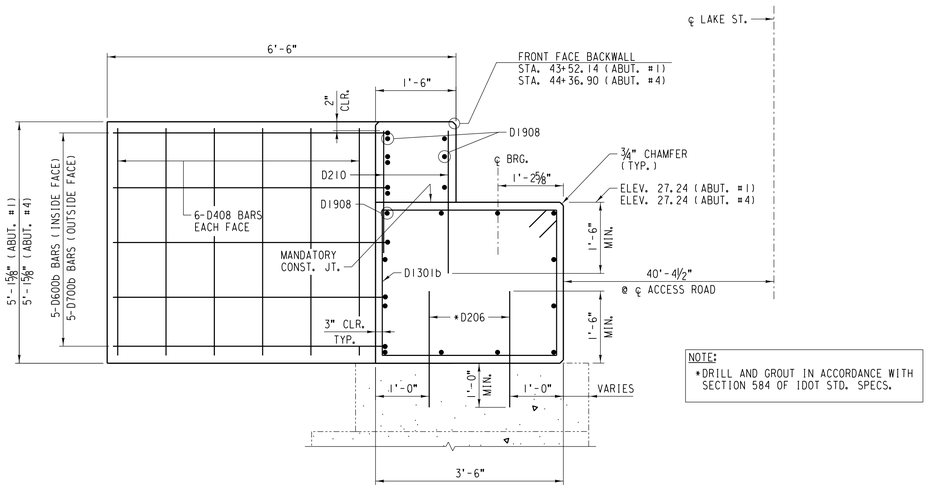
PROPOSED BACKWALL ELEVATION

SCALE: NO SCALE



PROPOSED BACKWALL PLAN

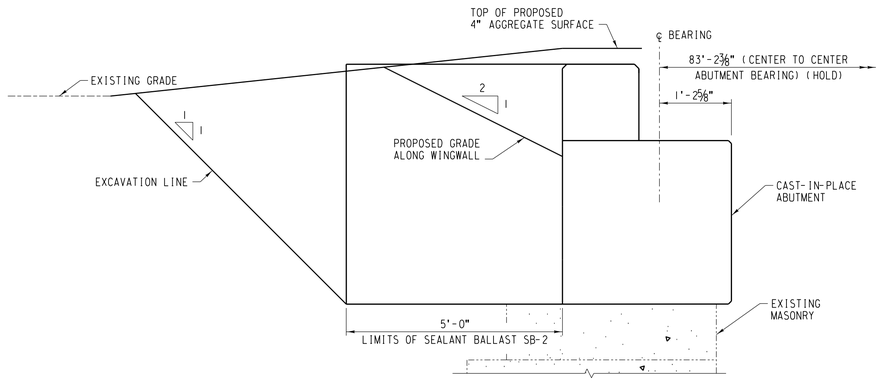
SCALE: NO SCALE



NOTE:
*DRILL AND GROUT IN ACCORDANCE WITH SECTION 584 OF IDOT STD. SPECS.

SECTION A 24 24

SCALE: NO SCALE



EXCAVATION DETAIL

SCALE: NO SCALE

MATERIAL SCHEDULE
(INCLUDES BOTH ABUTMENTS)

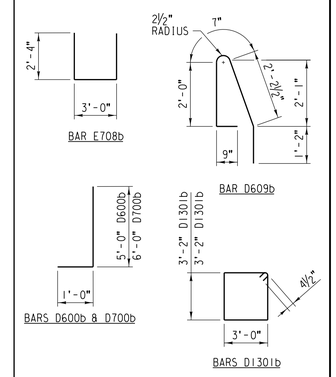
REQ'D.	UNIT	DESCRIPTION
27.9	CU. YD.	CAST-IN-PLACE CONCRETE
1	LOT	REINFORCING STEEL
84	EA.	EPOXY GROUTING OF REIN. BARS

QUANTITIES SHOWN FOR INFORMATION ONLY.

REINFORCING SCHEDULE
(INCLUDES BOTH ABUTMENTS)

TOTAL	MARK	SIZE	LENGTH	SHAPE
84	D206	#5	2'-6"	
84	D210	#5	2'-10"	
48	D408	#5	4'-8"	
20	D600b	#5	6'-0"	
32	D609b	#5	6'-9"	
20	D700b	#5	7'-0"	
42	D1301b	#5	13'-1"	
36	D1908	#5	19'-8"	
16	E708b	#6	7'-8"	

BENDING DIAGRAM
(DIMENSIONS ARE OUT TO OUT)



NOTE:
BAR DESIGNATIONS CONSIST OF BAR SIZE & LENGTH FOLLOWED BY THE LETTER "b" IF BENT. BAR SIZES ARE REPRESENTED BY THE LETTERS A THROUGH L CORRESPONDING TO BAR SIZE #2 THROUGH #18. BAR LENGTHS ARE GIVEN IN FEET AND INCHES; THE LAST TWO DIGITS ARE INCHES.

EST. WT. OF REINFORCING STEEL = 2,695 LB.

NOTES:
1. CAST BACKWALL AFTER BEAMS HAVE BEEN ERECTED.
2. D609b BARS SHALL BE INSTALLED WITH BACKWALL AND WINGWALLS.
3. CAST BACKWALL AND WINGWALL PARAPETS ON BACKWALL AFTER BACKWALL AND WINGWALLS HAVE BEEN ERECTED ALONG WITH BRIDGE PARAPETS.
4. EXISTING MASONRY SURFACE AT REMOVAL LINE SHALL BE CLEANED PRIOR TO POURING NEW ABUTMENT.
5. PARAPET REINFORCEMENT AND DIMENSIONS SHOWN ON SHEET NO. 26
6. ALL BAR DIMENSIONS ARE OUT TO OUT.
7. COST OF DRILLING D206 BARS SHALL BE INCLUDED WITH EPOXY GROUTING OF REINFORCEMENT BARS.
8. D210 BARS CAST WITH ABUTMENT SEAT.

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL (STATUS) 05/28/2021 (DATE)

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER (CONSULTANT ENGINEER) 05/28/2021 (DATE)

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

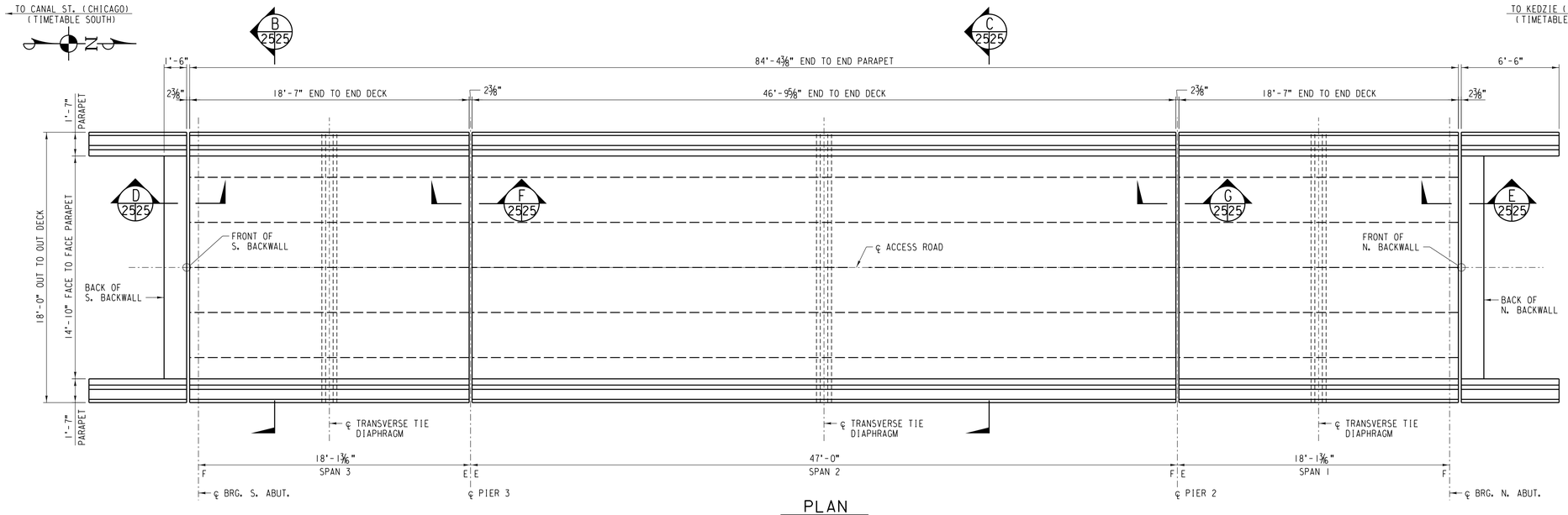
FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB	UNION PACIFIC RAILROAD Office of Director Structures Design
DRAWN/CHK BY: ACB/MFB	LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION
UPRR ENGINEER: DEH/ADS	1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'
SHT NO.: C24 of C59	SHEET TITLE: ACCESS BRIDGE CAST-IN-PLACE ABUTMENTS

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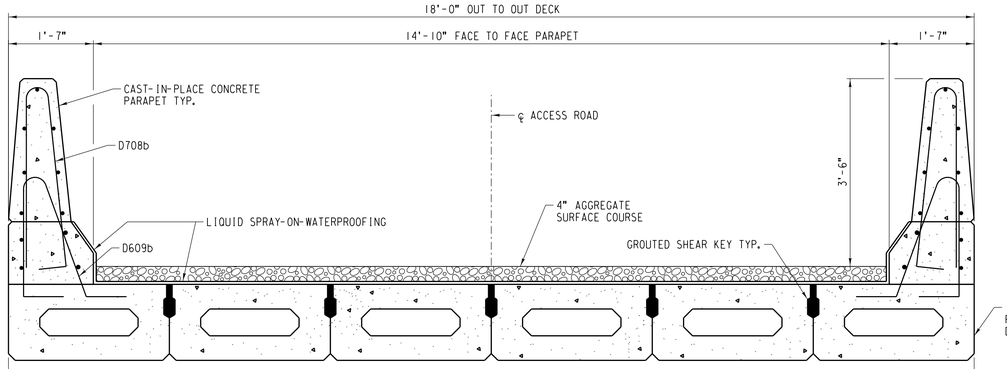
PLAN
SCALE: NO SCALE

ESTIMATED QUANTITIES		
REQ'D.	UNIT	DESCRIPTION
1,520	S.F.	LIQUID SPRAY-ON-WATERPROOFING
18.3	CU. YD.	AGGREGATE SURFACE COURSE

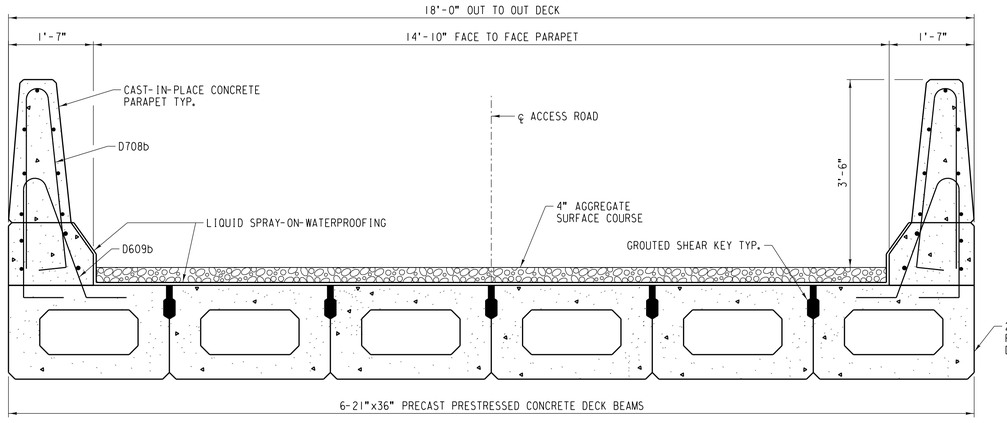
QUANTITIES SHOWN FOR INFORMATION ONLY.

NOTES:

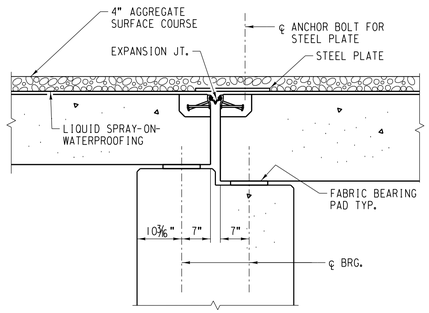
1. FOR PARAPET DETAILS AND BILL OF MATERIALS SEE SHEET NO. 26.
2. FOR FABRIC BEARING PAD DETAILS SEE SHEET NO. 30.
3. AFTER BEAMS HAVE BEEN ERECTED, HOLES SHALL BE DRILLED INTO SUBSTRUCTURE AND ANCHOR DOWELS PLACED.
4. ALL HORIZONTAL DIMENSIONS ARE AT RIGHT ANGLES TO BEAM ENDS.
5. LIQUID SPRAY-ON-WATERPROOFING SHALL BE APPLIED TO DECK, PARAPETS, TOP FACE OF BACKWALL AND BACK FACE OF ABUTMENTS AND BACKWALLS.
6. LIQUID SPRAY-ON-WATERPROOFING SHALL BE APPLIED TO THE LOWEST TWO INSIDE FACES OF THE PARAPETS AS SHOWN ON THE CROSS SECTION.
7. LIQUID SPRAY-ON-WATERPROOFING APPLIED TO THE DECK SHALL END AT THE WELDED RAIL JOINTS. SEE SECTION THRU STRIP SEAL JOINT ON SHEET NO. 27.
8. AGGREGATE SURFACE COURSE MATERIAL SHALL BE PER SECTION 402 OF THE ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
9. AGGREGATE SURFACE COURSE SHALL BE PLACED ON THE DECK AND APPROACHES. AGGREGATE SURFACE COURSE TO BE PLACED ON APPROACHES SHALL BE ADEQUATE TO TRANSITION FROM DECK TO EXISTING GRADE AT A 8% MAXIMUM GRADE. LIMITS EXTEND TO A MINIMUM OF 1'-0" BEYOND WINGWALL BARRIERS.
10. COST OF GROUT FOR GROUTED SHEAR KEY INCLUDED WITH COST OF PRECAST PRESTRESSED CONCRETE DECK BEAMS.



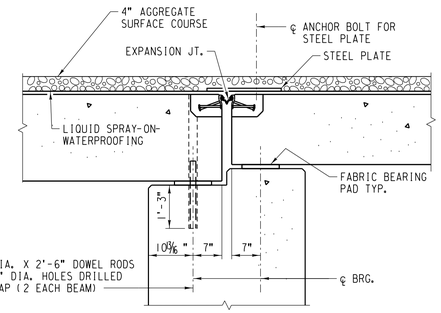
SECTION B
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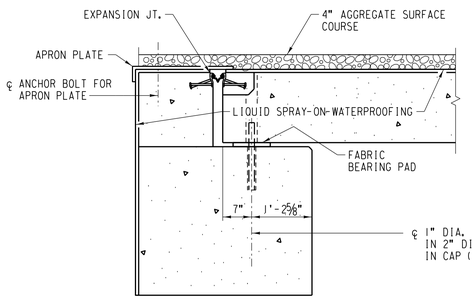
SECTION C
SCALE: NO SCALE



SECTION F
SCALE: NO SCALE

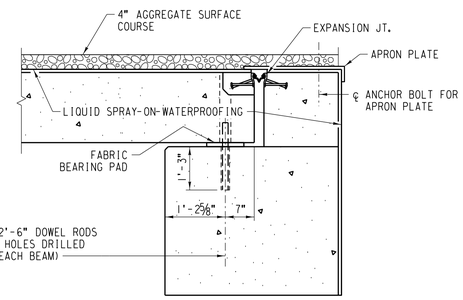


SECTION G
SCALE: NO SCALE



SECTION D
SCALE: NO SCALE

EXPANSION END WITH EXPANSION JOINT DIMENSIONS ARE AT RIGHT ANGLES



SECTION E
SCALE: NO SCALE

FIXED END WITH EXPANSION JOINT DIMENSIONS ARE AT RIGHT ANGLES

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL (STATUS) 05/28/2021 (DATE)

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER (CONSULTANT ENGINEER) 05/28/2021 (DATE)

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY:	MTS/MFB
DRAWN/CHK BY:	ACB/MFB
UPRR ENGINEER:	DEH/ADS
SHT NO.:	C25 of C59

UNION PACIFIC RAILROAD
Office of Director Structures Design

LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) &
1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE: ACCESS BRIDGE PLAN AND CROSS SECTIONS

FILE NAME: C:\Users\mcrom\rez\Desktop\rco00082_bii.dgn

PLOTTED: 5/27/2021 11:13:31 AM

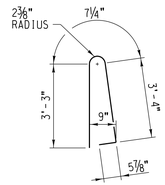
MATERIAL SCHEDULE
(QUANTITIES SHOWN ARE FOR BOTH PARAPETS)

REQ'D.	UNIT	DESCRIPTION
29.4	CU. YD.	CAST-IN-PLACE CONCRETE
1	LOT	REINFORCING STEEL

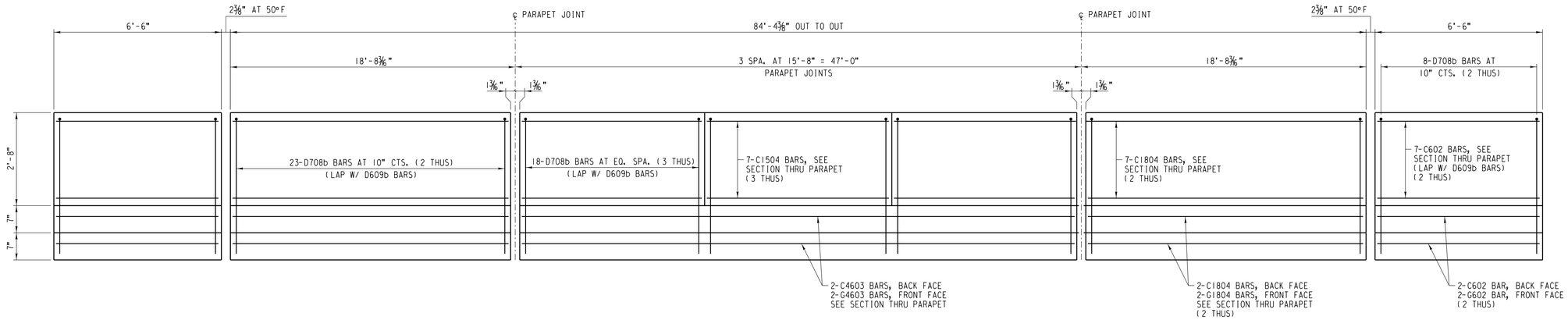
REINFORCING SCHEDULE
(QUANTITIES SHOWN ARE FOR BOTH PARAPETS)

TOTAL	MARK	SIZE	LENGTH	SHAPE
36	C602	#4	6'-2"	———
42	C1504	#4	15'-4"	———
36	C1804	#4	18'-4"	———
4	C4603	#4	46'-3"	———
232	D708b	#5	7'-8"	⌊⌋
8	G602	#8	6'-2"	———
8	G1804	#8	18'-4"	———
4	G4603	#8	46'-3"	———

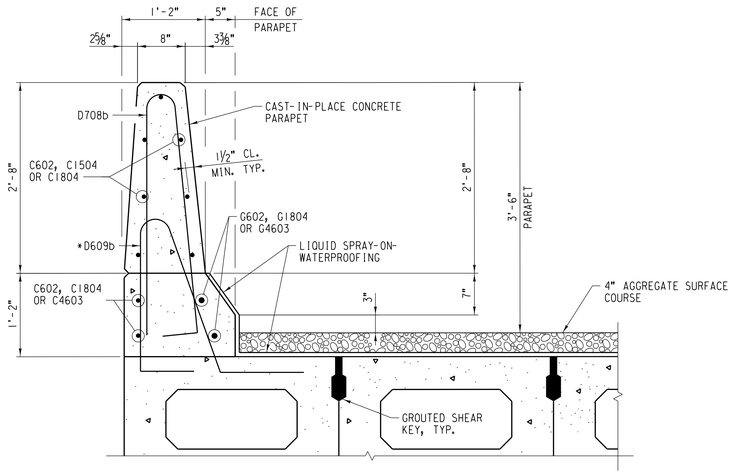
BENDING DIAGRAM
(DIMENSIONS ARE OUT TO OUT)



BAR D708b

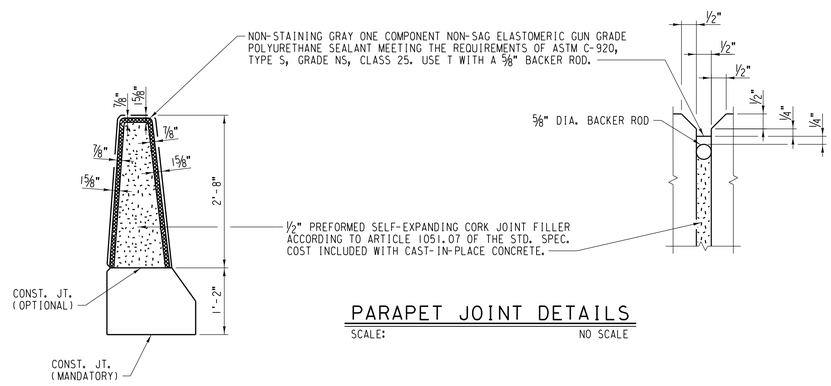


INSIDE ELEVATION OF PARAPET
SCALE: NO SCALE



SECTION THRU PARAPET
SCALE: NO SCALE

*AT BEAM (17x36PCB), PLACE D609B BARS AT 10" CTS. IN FASCIA BEAM AT BEAM (21x36PCB), PLACE D609B BARS AT 11" CTS. IN FASCIA BEAM D609B BARS INCLUDED IN COST OF BEAM
*AT WINGWALL, PLACE D609b BARS AT 10" CTS. IN WINGWALL. D609b BAR INCLUDED IN COST OF REINFORCEMENT BARS.



PARAPET JOINT DETAILS
SCALE: NO SCALE

NOTE:
BAR DESIGNATIONS CONSIST OF BAR SIZE & LENGTH FOLLOWED BY THE LETTER "b" IF BENT. BAR SIZES ARE REPRESENTED BY THE LETTERS A THROUGH L CORRESPONDING TO BAR SIZE #2 THROUGH #18. BAR LENGTHS ARE GIVEN IN FEET AND INCHES; THE LAST TWO DIGITS ARE INCHES.

EST. WT. OF REINFORCING STEEL = 4,020 LB.

NOTE:
BARS INDICATED THUS 20x2-#4 ETC. INDICATES 20 LINES OF BARS WITH 2 LENGTHS PER LINE.

NOTE:
MINIMUM BAR LAP: #4 BAR = 2'-0"
#8 BAR = 5'-2"

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS
05/28/2021 — DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER
05/28/2021 — DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY:	MTS/MFB
DRAWN/CHK BY:	ACB/MFB
UPRR ENGINEER:	DEH/ADS
SHT NO.:	C26 of C59

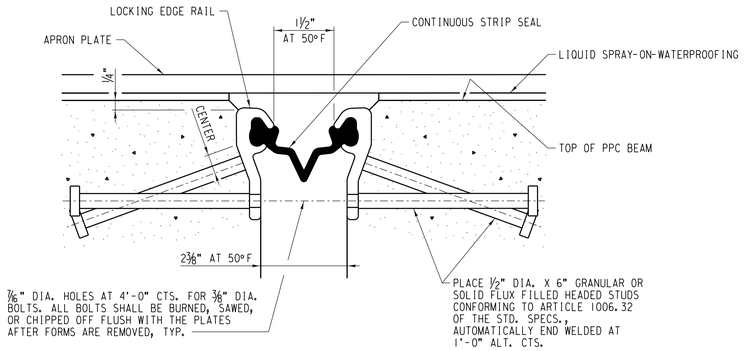
UNION PACIFIC RAILROAD
Office of Director Structures Design

LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE: ACCESS BRIDGE PARAPET DETAILS

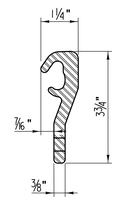
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SECTION THRU STRIP SEAL JOINT

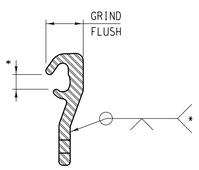
SCALE: NO SCALE



LOCKING EDGE RAIL

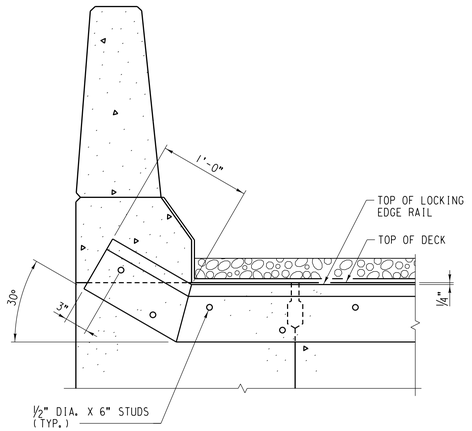
SCALE: NO SCALE

NOTE:
*OMIT WELD AT SEAL OPENING.



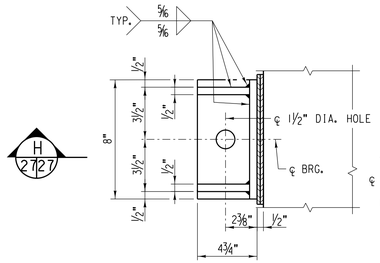
LOCKING EDGE RAIL SPLICE

SCALE: NO SCALE

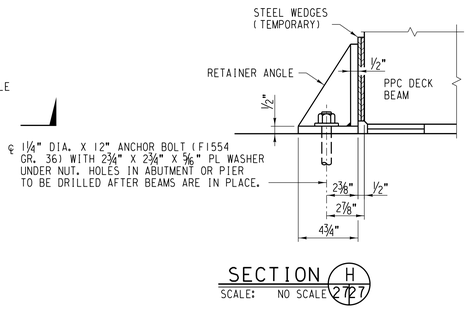


TYPICAL SEAL JOINT END TREATMENTS AT PARAPET

SCALE: NO SCALE



PLAN

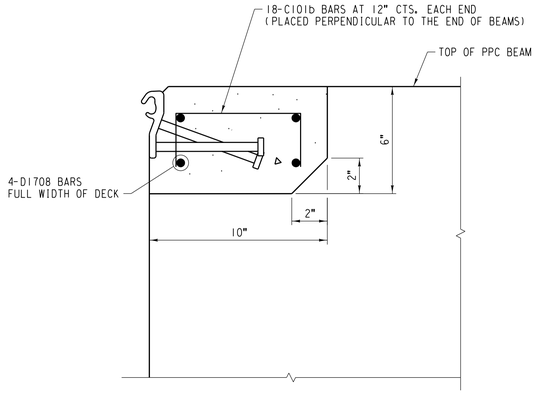


SECTION H 27 27

SCALE: NO SCALE

SIDE RETAINER ANGLE

SCALE: NO SCALE



SECTION THRU EXPANSION END BLOCK

SCALE: NO SCALE

INSERTS AND COIL RODS NOT SHOWN FOR CLARITY.

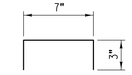
MATERIAL SCHEDULE
(QUANTITIES SHOWN ARE FOR ALL FOUR END TREATMENTS)

REQ'D.	UNIT	DESCRIPTION
1.7	CU. YD.	CAST-IN-PLACE CONCRETE
1	LOT	REINFORCING STEEL
68	L.F.	PREFORMED JOINT STRIP SEAL

REINFORCING SCHEDULE
(QUANTITIES SHOWN ARE FOR ALL FOUR END TREATMENTS)

TOTAL	MARK	SIZE	LENGTH	SHAPE
108	C101b	#4	1'-1"	⊓
24	D1708	#5	17'-8"	—

BENDING DIAGRAM
(DIMENSIONS ARE OUT TO OUT)



BAR C101b

NOTE:
BAR DESIGNATIONS CONSIST OF BAR SIZE & LENGTH FOLLOWED BY THE LETTER "b" IF BENT. BAR SIZES ARE REPRESENTED BY THE LETTERS A THROUGH L CORRESPONDING TO BAR SIZE #2 THROUGH #18. BAR LENGTHS ARE GIVEN IN FEET AND INCHES; THE LAST TWO DIGITS ARE INCHES.

EST. WT. OF REINFORCING STEEL = 525 LB.

NOTES:

1. THE STRIP SEAL SHALL BE MADE CONTINUOUS AND SHALL HAVE A MINIMUM THICKNESS OF ¼". THE CONFIGURATION OF THE STRIP SEAL SHALL MATCH THE CONFIGURATION OF THE LOCKING EDGE RAILS. OPEN OR "WEBBED" STRIP SEAL GLAND CONFIGURATIONS ARE NOT PERMITTED. THE GLAND SHALL BE SIZED FOR A MAXIMUM RATED MOVEMENT OF 4 INCHES.
2. THE LOCKING EDGE RAILS DEPICTED ARE CONCEPTUAL ONLY, EXCEPT FOR THE MINIMUM DIMENSIONS SHOWN. THE ACTUAL CONFIGURATION OF THE LOCKING EDGE RAILS AND MATCHING STRIP SEAL MAY VARY FROM MANUFACTURER TO MANUFACTURER. FLANGED EDGE RAILS WILL NOT BE ALLOWED. THE INSIDE OF THE LOCKING EDGE RAIL GROOVE SHALL BE FREE OF WELD RESIDUE. LOCKING EDGE RAILS MAY BE SPLICED AT SLOPE DISCONTINUITIES.
3. THE MANUFACTURER'S RECOMMENDED INSTALLATION METHODS SHALL BE FOLLOWED.
4. THE JOINT OPENING AND DECK DIMENSIONS DETAILED ON THE SUPERSTRUCTURE ARE BASED ON A ROLLED RAIL EXPANSION JOINT. IF THE CONTRACTOR ELECTS TO USE THE WELDED RAIL EXPANSION JOINT, THE OPENING AND DECK DIMENSIONS SHALL BE MODIFIED ACCORDINGLY. REQUIRED MODIFICATIONS SHALL BE MADE AT NO ADDITIONAL COST TO UPRR.
5. ALL STRIP SEAL EXPANSION JOINT STEEL COMPONENTS SHALL BE GALVANIZED AFTER FABRICATION ACCORDING TO ARTICLE 520.03 OF THE STANDARD SPECIFICATIONS.
6. COST OF SIDE RETAINERS AND ACCESSORIES ARE INCLUDED WITH PRECAST PRESTRESSED CONCRETE DECK BEAMS.
7. EQUIVALENT ROLLED ANGLE WITH STIFFENERS WILL BE ALLOWED IN LIEU OF WELDED PLATES.
8. THE SIDE RETAINERS SHALL BE GALVANIZED AFTER SHOP FABRICATION ACCORDING TO AASHTO M 111 AND ASTM 385.
9. ANCHOR BOLTS SHALL BE ASTM F1554 ALL-THREAD (OR AN ENGINEER-APPROVED ALTERNATE MATERIAL) OF THE GRADE AND DIAMETER SPECIFIED. ASTM A307 GRADE C ANCHOR BOLTS MAY BE USED IN LIEU OF ASTM F1554 GRADE 36 (Fy = 36 KSI). THE CORRESPONDING SPECIFIED GRADE OF AASHTO M314 ANCHOR BOLTS MAY BE USED IN LIEU OF ASTM F1554. ANCHOR BOLTS AND PLATE WASHERS SHALL BE GALVANIZED ACCORDING TO AASHTO M 232.
10. DRILLED AND SET ANCHOR BOLTS FOR SIDE RETAINERS SHALL BE INSTALLED ACCORDING TO ARTICLE 521.06 OF THE STANDARD SPECIFICATIONS.
11. AFTER THE OVERLAY IS PLACED AND THE DECK PARAPETS ARE POURED AND CURED, THE STEEL WEDGES SHALL BE REMOVED.

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS
05/28/2021 — DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER
05/28/2021 — DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY:	MTS/MFB
DRAWN/CHK BY:	ACB/MFB
UPRR ENGINEER:	DEH/ADS
SHT NO.:	C27 of C59

UNION PACIFIC RAILROAD
Office of Director Structures Design

LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE: ACCESS BRIDGE EXPANSION JOINT DETAILS

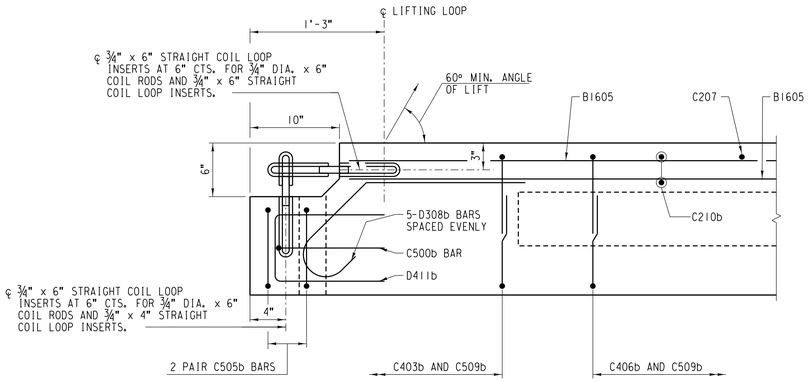
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ESTIMATED QUANTITIES

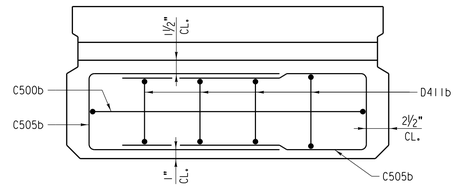
ITEM	UNIT	TOTAL
17X36 PRECAST PRESTRESSED CONCRETE DECK BEAMS	S.F.	669

NOTE:
FOR ADDITIONAL DETAILS AND BILL OF MATERIAL SEE SHEET NO. 30.



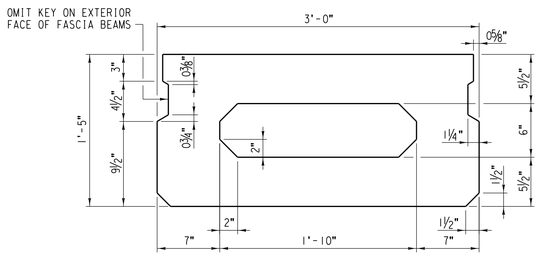
SECTION L
SCALE: NO SCALE (2828)

NOTES:
1. 1½" CL. FOR REINFORCEMENT BARS UNLESS OTHERWISE NOTED.
2. COST OF INSERTS AND COIL RODS INCLUDED WITH PRECAST PRESTRESSED CONCRETE DECK BEAMS.

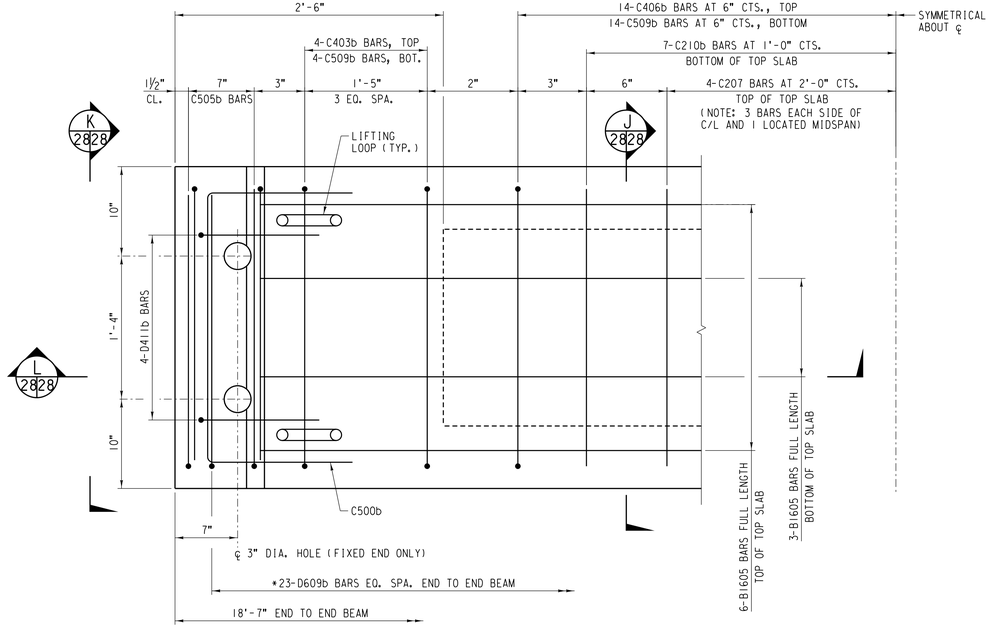


VIEW K
SCALE: NO SCALE (2828)

NOTE:
INSERTS AND COIL RODS NOT SHOWN FOR CLARITY. SEE SECTION L.



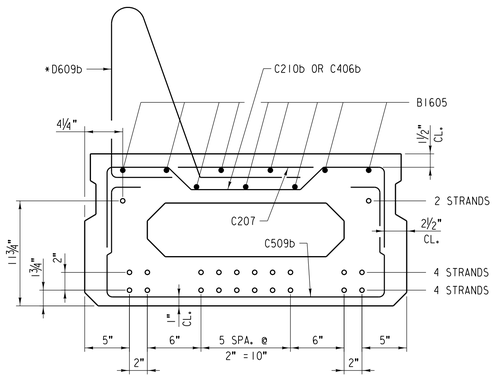
SECTION J
SCALE: NO SCALE (2828)
SHOWING DIMENSIONS



PLAN VIEW
SCALE: NO SCALE

NOTES:
1. SPACING OF C406b AND C509b BARS MAY BE ADJUSTED UP TO 4" IN THE IMMEDIATE AREA OF THE TRANSVERSE TIE DIAPHRAGMS TO MISS THE BLOCK OUTS FOR THE TRANSVERSE TIES.
2. INSERTS AND COIL RODS NOT SHOWN FOR CLARITY. SEE SECTION L.

NOTE:
*EXTERIOR FACE OF FASCIA BEAMS ONLY



SECTION J
SCALE: NO SCALE (2828)
INCLUDES 10 - ½" DIA. 270 KSI STRANDS PER BEAM
SHOWING REINFORCEMENT AND PERMISSIBLE STRAND LOCATIONS

NOTE:
*EXTERIOR FACE OF FASCIA BEAMS ONLY

NOTE:
THIS SHEET APPLIES TO SPAN 1 AND 3 OF ACCESS BRIDGE.

NOTE:
MINIMUM BAR LAP: #3 BAR = 1'-6"
#4 BAR = 2'-0"
#5 BAR = 2'-6"

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION — LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB	**UNION PACIFIC RAILROAD**
DRAWN/CHK BY: ACB/MFB	Office of Director Structures Design
UPRR ENGINEER: DEH/ADS	LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION 1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'
SHT NO.: C28 of C59	SHEET TITLE: ACCESS BRIDGE REINFORCEMENT DETAILS (SHEET 1 OF 3)

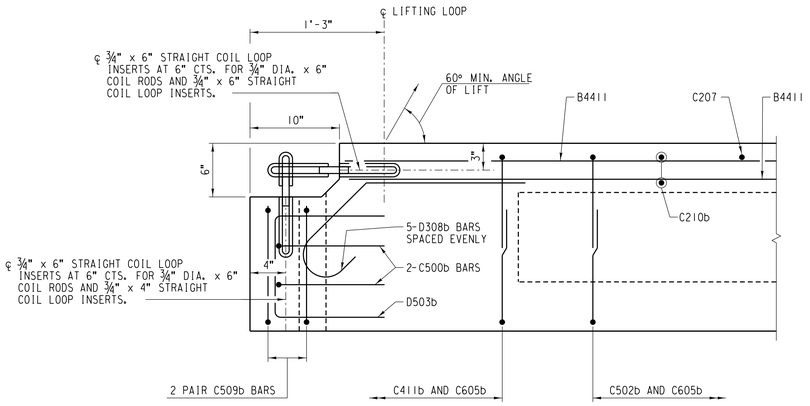
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ESTIMATED QUANTITIES

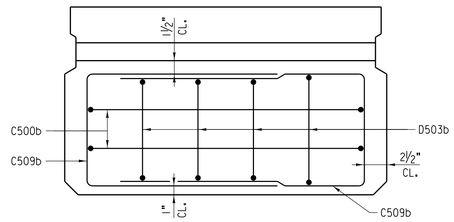
ITEM	UNIT	TOTAL
21X36 PRECAST PRESTRESSED CONCRETE DECK BEAMS	S.F.	842.5

NOTE:
FOR ADDITIONAL DETAILS AND BILL OF MATERIAL SEE SHEET NO. 30.



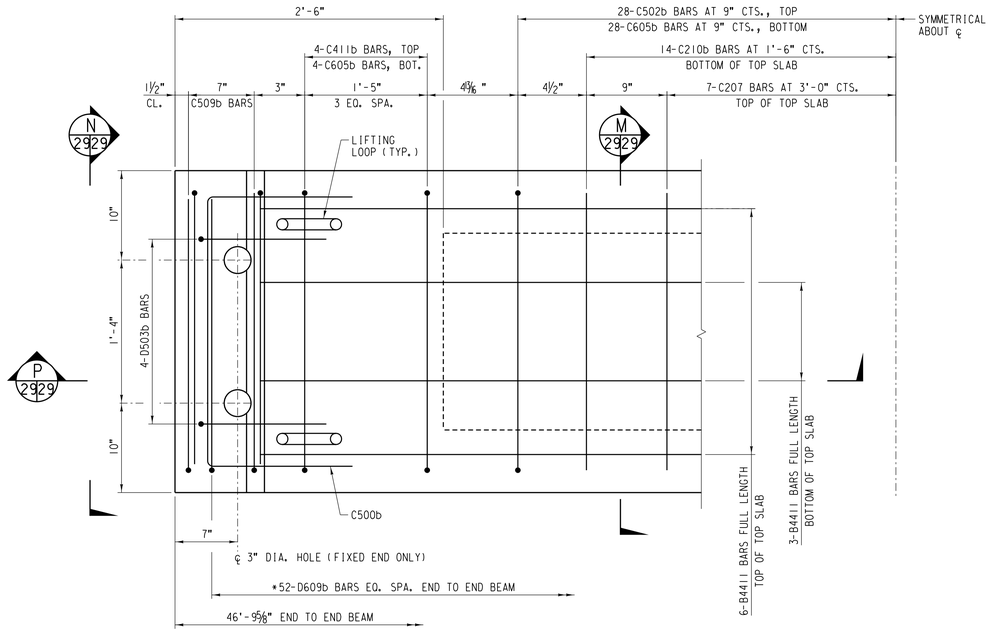
SECTION P
SCALE: NO SCALE 2929

NOTES:
1. 1½" CL. FOR REINFORCEMENT BARS UNLESS OTHERWISE NOTED.
2. COST OF INSERTS AND COIL RODS INCLUDED WITH PRECAST PRESTRESSED CONCRETE DECK BEAMS.



VIEW N
SCALE: NO SCALE 2929

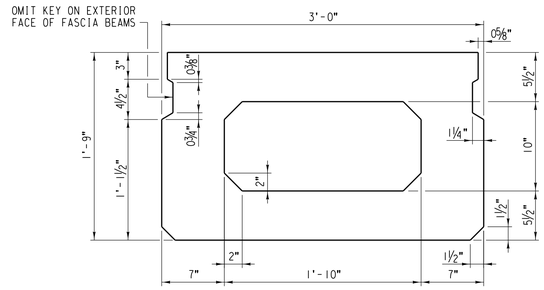
NOTE:
INSERTS AND COIL RODS NOT SHOWN FOR CLARITY. SEE SECTION P.



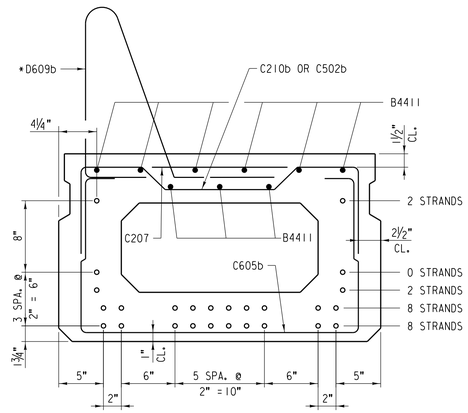
PLAN VIEW
SCALE: NO SCALE

NOTES:
1. SPACING OF C502b AND C605b BARS MAY BE ADJUSTED UP TO 4" IN THE IMMEDIATE AREA OF THE TRANSVERSE TIE DIAPHRAGMS TO MISS THE BLOCK OUTS FOR THE TRANSVERSE TIES.
2. INSERTS AND COIL RODS NOT SHOWN FOR CLARITY. SEE SECTION P.

NOTE:
*EXTERIOR FACE OF FASCIA BEAMS ONLY



SECTION M
SCALE: NO SCALE 2929
SHOWING DIMENSIONS



SECTION M
SCALE: NO SCALE 2929
INCLUDES 20 - ½" DIA. 270 KSI STRANDS PER BEAM
SHOWING REINFORCEMENT AND PERMISSIBLE STRAND LOCATIONS

NOTE:
*EXTERIOR FACE OF FASCIA BEAMS ONLY

NOTE:
THIS SHEET APPLIES TO SPAN 2 OF ACCESS BRIDGE.

NOTE:
MINIMUM BAR LAP: #3 BAR = 1'-6"
#4 BAR = 2'-0"
#5 BAR = 2'-6"

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB
DRAWN/CHK BY: ACB/MFB
UPRR ENGINEER: DEH/ADS
SHT NO.: C29 of C59

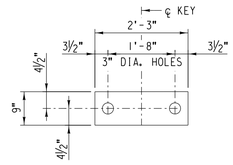
UNION PACIFIC RAILROAD
Office of Director Structures Design

LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) &
1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE: ACCESS BRIDGE REINFORCEMENT DETAILS (SHEET 2 OF 3)

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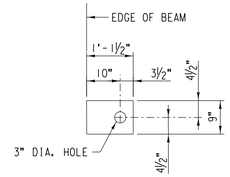
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FABRIC BEARING PAD

SCALE: NO SCALE

INTERIOR



FABRIC BEARING PAD

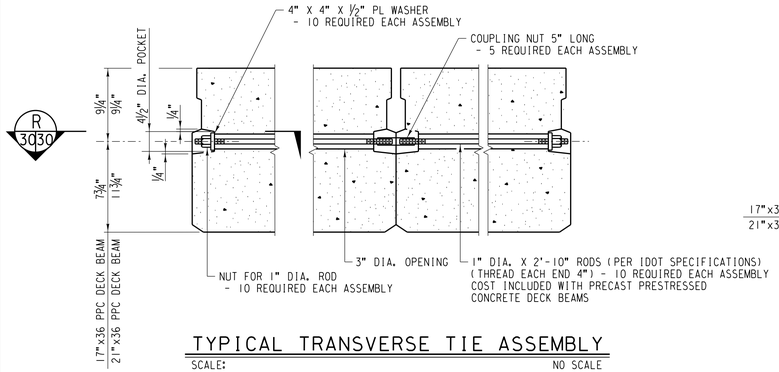
SCALE: NO SCALE

EXTERIOR

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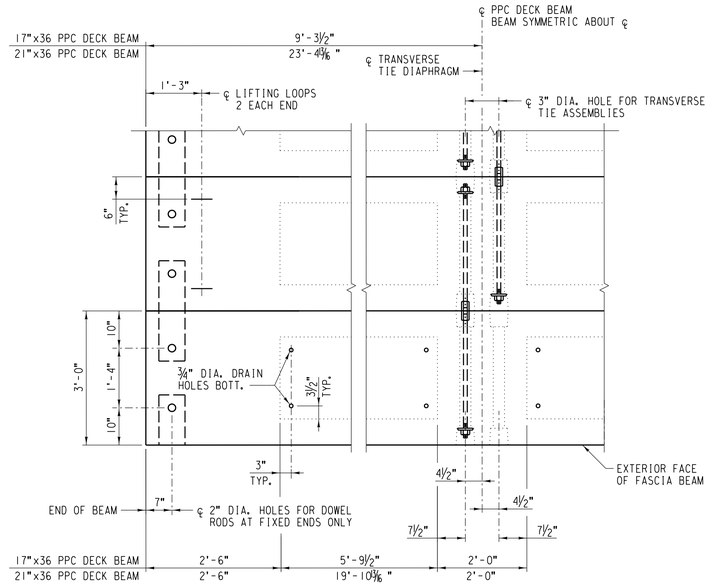
SCALE: NO SCALE

NOTE:
ALL BEARING PADS SHALL BE 1" THICK.
OMIT HOLES WHEN USING EXPANSION BEARINGS.
EXPANSION BEARING PAD SHALL BE BONDED TO THE SUBSTRUCTURE.



TYPICAL TRANSVERSE TIE ASSEMBLY

SCALE: NO SCALE

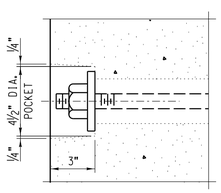


PLAN VIEW

SCALE: NO SCALE

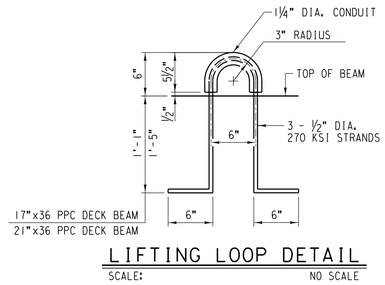
NOTE:
CONNECT BEAMS IN PAIRS WITH THE TRANSVERSE TIE CONFIGURATION SHOWN.

NOTE:
*EXTERIOR FACE OF FASCIA BEAMS ONLY



SECTION R3030

SCALE: NO SCALE



LIFTING LOOP DETAIL

SCALE: NO SCALE

NOTES:

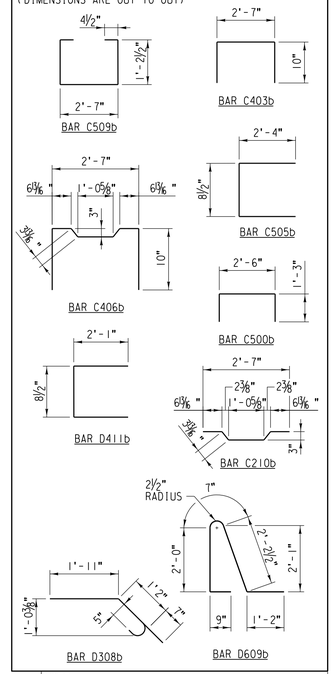
1. PRESTRESSING STEEL SHALL BE UNCOATED HIGH STRENGTH, LOW RELAXATION 7-WIRE STRAND, GRADE 270. THE NOMINAL DIAMETER SHALL BE ½" AND THE NOMINAL CROSS-SECTIONAL AREA SHALL BE 0.153 SQ. IN.
2. THE 1" DIA. RODS IN THE TRANSVERSE TIE ASSEMBLY SHALL BE TIGHTENED TO A SNUG FIT AND THE THREADS SET. POCKETS ON EXTERIOR FACES OF BRIDGE SHALL BE FILLED WITH GROUT AFTER TRANSVERSE TIE ASSEMBLY IS IN PLACE.
3. REINFORCEMENT BARS SHALL CONFORM TO ASTM A 706, GRADE 60.
4. TWO ⅛" FABRIC ADJUSTING SHIMS OF THE DIMENSIONS OF THE EXTERIOR BEARING PAD SHALL BE PROVIDED FOR EACH BEARING PAD LOCATION.
5. FABRIC BEARING PADS SHALL CONFORM TO IDOT STANDARD SPECIFICATION 1082.01.
6. EACH BEAM SHALL HAVE FOUR LIFTING LOOPS, TWO CAST IN EACH END. LOOPS SHALL BE BURNED OFF AFTER BEAMS HAVE BEEN ERECTED.
7. A MINIMUM 2½" DIA. LIFTING PIN SHALL BE USED TO ENGAGE THE LIFTING LOOPS DURING HANDLING.
8. CORROSION INHIBITOR, PER ARTICLE 1020.05(B)(12) AND 1021.07 OF THE STANDARD SPECIFICATIONS, SHALL BE USED IN THE CONCRETE FOR PRECAST PRESTRESSED CONCRETE DECK BEAMS.
9. COMPRESSIVE STRENGTH OF PRESTRESSED CONCRETE, f'c, SHALL BE 6000 PSI.
10. COMPRESSIVE STRENGTH OF PRESTRESSED CONCRETE AT RELEASE, f'ci, SHALL BE 5000 PSI.
11. KEYWAY SURFACES SHALL BE CLEANED TO REMOVE FORM OIL OR OTHER BOND BREAKING MATERIAL PRIOR TO SHIPMENT OF THE BEAMS. CLEANING SHALL BE DONE BY SANDBLASTING INTO THE KEYWAY AREAS BETWEEN TOP OF THE BEAM AND THE BOTTOM EDGE OF THE BEAM.
12. ALL BAR DIMENSIONS ARE OUT TO OUT.

REINFORCING SCHEDULE
(QUANTITY FOR ONE 17x36 BEAM ONLY)

TOTAL	MARK	SIZE	LENGTH	SHAPE
9	B1605	#3	16'-5"	——
7	C207	#4	2'-7"	——
14	C210b	#4	2'-10"	~~
8	C403b	#4	4'-3"	⌐¬
28	C406b	#4	4'-6"	⌐¬
2	C500b	#4	5'-0"	⊏
8	C505b	#4	5'-5"	⊏
36	C509b	#4	5'-9"	⊔
10	D308b	#5	3'-8"	⌐
8	D411b	#5	4'-11"	⊏
23	*D609b	#5	6'-9"	L

COST OF REINFORCEMENT BARS INCLUDED IN PRECAST PRESTRESSED CONCRETE DECK BEAMS.

BENDING DIAGRAM
(DIMENSIONS ARE OUT TO OUT)



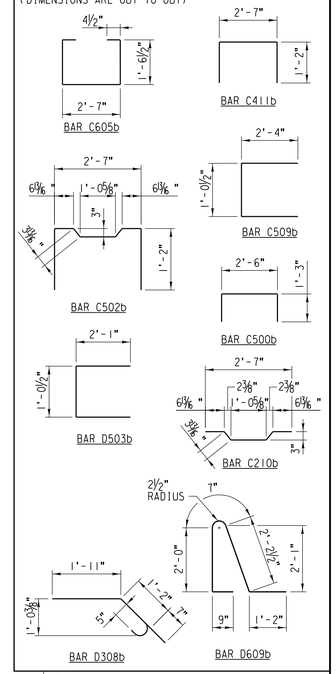
NOTE:
BAR DESIGNATIONS CONSIST OF BAR SIZE & LENGTH FOLLOWED BY THE LETTER "b" IF BENT. BAR SIZES ARE REPRESENTED BY THE LETTERS A THROUGH L CORRESPONDING TO BAR SIZE #2 THROUGH #18. BAR LENGTHS ARE GIVEN IN FEET AND INCHES; THE LAST TWO DIGITS ARE INCHES.

REINFORCING SCHEDULE
(QUANTITY FOR ONE 21x36 BEAM ONLY)

TOTAL	MARK	SIZE	LENGTH	SHAPE
9	B4411	#3	44'-11"	——
14	C207	#4	2'-7"	——
28	C210b	#4	2'-10"	~~
8	C411b	#4	4'-11"	⌐¬
4	C500b	#4	5'-0"	⊏
56	C502b	#4	5'-2"	⌐¬
8	C509b	#4	5'-9"	⊏
64	C605b	#4	6'-5"	⊔
10	D308b	#5	3'-8"	⌐
8	D503b	#5	5'-3"	⊏
52	*D609b	#5	6'-9"	L

COST OF REINFORCEMENT BARS INCLUDED IN PRECAST PRESTRESSED CONCRETE DECK BEAMS.

BENDING DIAGRAM
(DIMENSIONS ARE OUT TO OUT)



NOTE:
BAR DESIGNATIONS CONSIST OF BAR SIZE & LENGTH FOLLOWED BY THE LETTER "b" IF BENT. BAR SIZES ARE REPRESENTED BY THE LETTERS A THROUGH L CORRESPONDING TO BAR SIZE #2 THROUGH #18. BAR LENGTHS ARE GIVEN IN FEET AND INCHES; THE LAST TWO DIGITS ARE INCHES.

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS
05/28/2021 — DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER
05/28/2021 — DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

UNION PACIFIC

DSN/CHK BY: MTS/MFB
DRAWN/CHK BY: ACB/MFB
UPRR ENGINEER: DEH/ADS
SHT NO.: C30 of C59

UNION PACIFIC RAILROAD

Office of Director Structures Design

LOCATION & DESCRIPTION:
BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

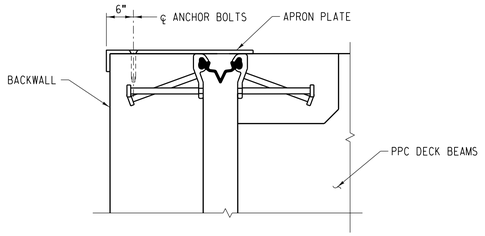
SHEET TITLE:
ACCESS BRIDGE REINFORCEMENT DETAILS (SHEET 3 OF 3)

FILE NAME: C:\Users\mrcmirez\Desktop\rc00082_bill.dgn

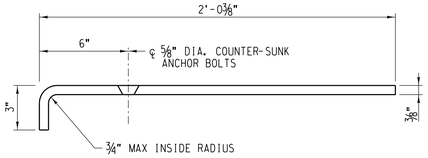
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MATERIAL SCHEDULE

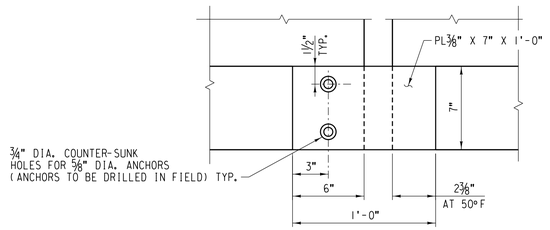
REQ'D.	UNIT	DESCRIPTION
1,770	LB.	STRUCTURAL STEEL FOR APRON PLATES, STEEL PLATES AND SIDE PLATES
60	EA.	5/8" DIA. x 5" COUNTER-SUNK BOLTS



SECTION S (3|31)
SCALE: NO SCALE



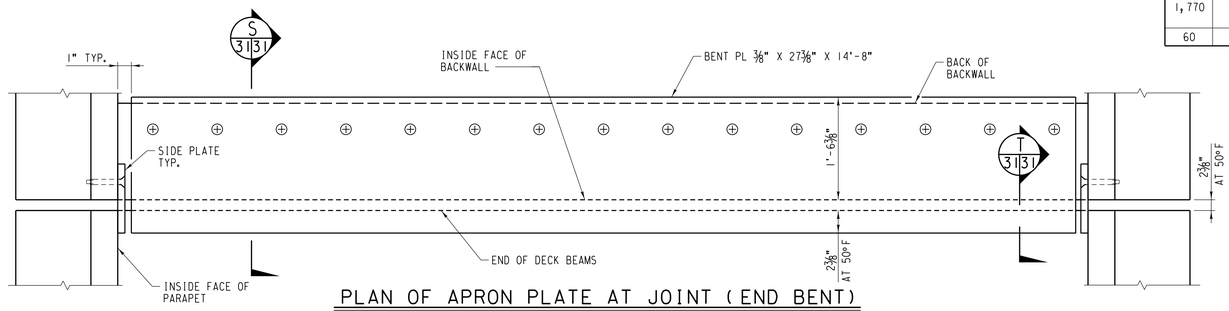
SECTION V (3|31)
SCALE: NO SCALE



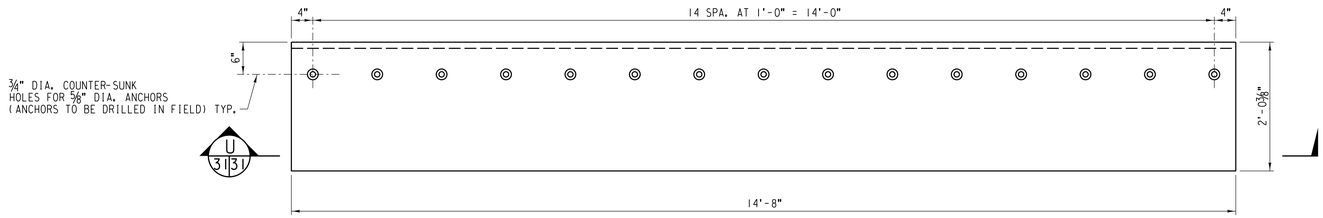
VIEW T (3|31)
SCALE: NO SCALE

NOTES:

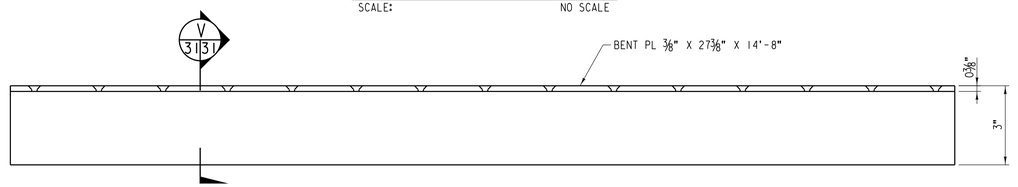
1. STEEL PLATES TO BE ASTM A36 STEEL, GALVANIZED PER ASTM 123.
2. APRON PLATES WILL BE CONNECTED TO ABUTMENT BACKWALL BY ANCHOR BOLTS PLACED IN THE FIELD AT LOCATIONS SHOWN ON THIS SHEET. PLACE APRON PLATES SUCH THAT SHORT LEG OF PLATE IS TIGHT AGAINST BACK OF BACKWALL AS SHOWN ON THIS SHEET.
3. COST OF DRILLING & INSTALLING ANCHORS IS INCLUDED IN THE COST OF CAST-IN-PLACE CONCRETE.
4. LIQUID SPRAY-ON DECK WATERPROOFING SHALL BE APPLIED TO DECK, PARAPETS AND TOP FACE OF BACKWALL PRIOR TO INSTALLATION OF BENT PLATES AND SIDE PLATES.



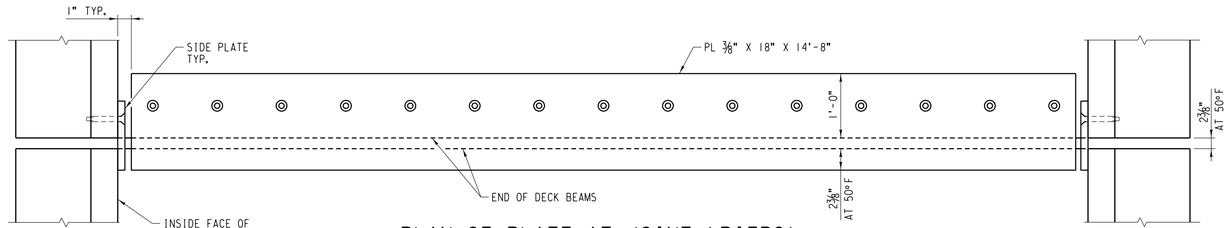
PLAN OF APRON PLATE AT JOINT (END BENT)
SCALE: NO SCALE



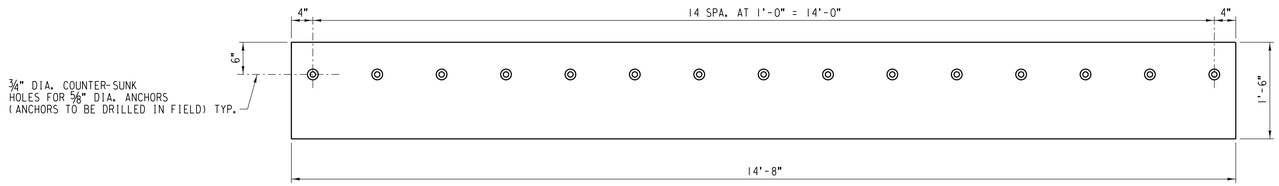
PLAN OF APRON PLATE
SCALE: NO SCALE



SECTION U (3|31)
SCALE: NO SCALE



PLAN OF PLATE AT JOINT (PIERS)
SCALE: NO SCALE



PLAN OF STEEL PLATE
SCALE: NO SCALE

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS
05/28/2021 — DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER
05/28/2021 — DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB
DRAWN/CHK BY: ACB/MFB
UPRR ENGINEER: DEH/ADS
SHT NO.: C31 of C59

UNION PACIFIC RAILROAD

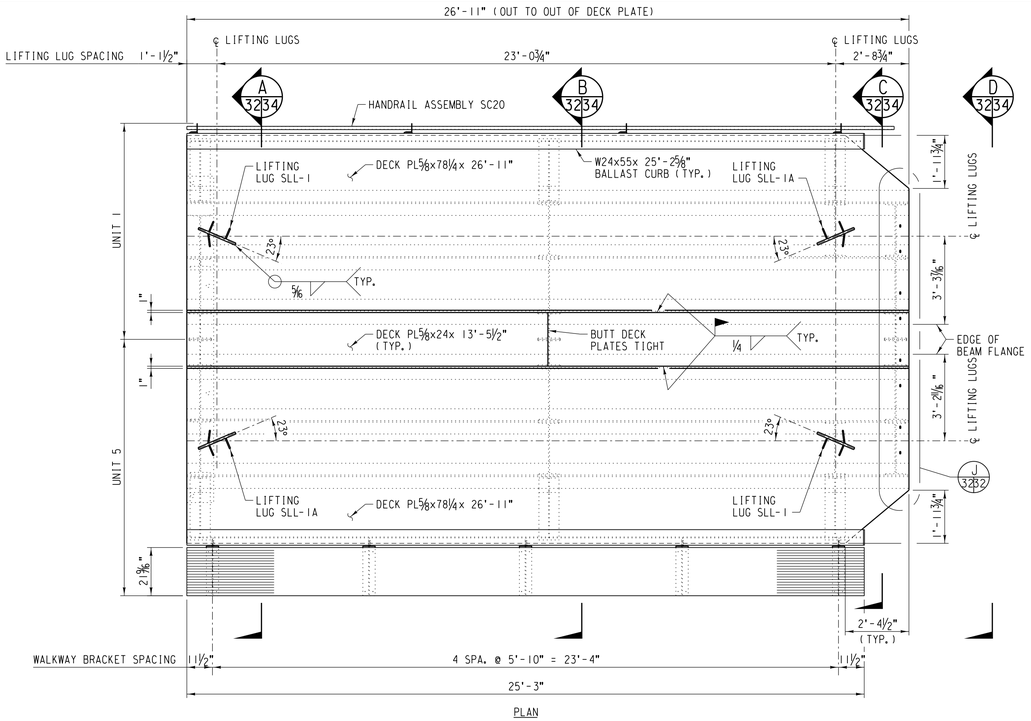
Office of Director Structures Design

LOCATION & DESCRIPTION:
BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) &
1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE:
ACCESS BRIDGE MISCELLANEOUS DETAILS

FILE NAME: C:\Users\mrorr\Desktop\rocD0082_bii.dgn

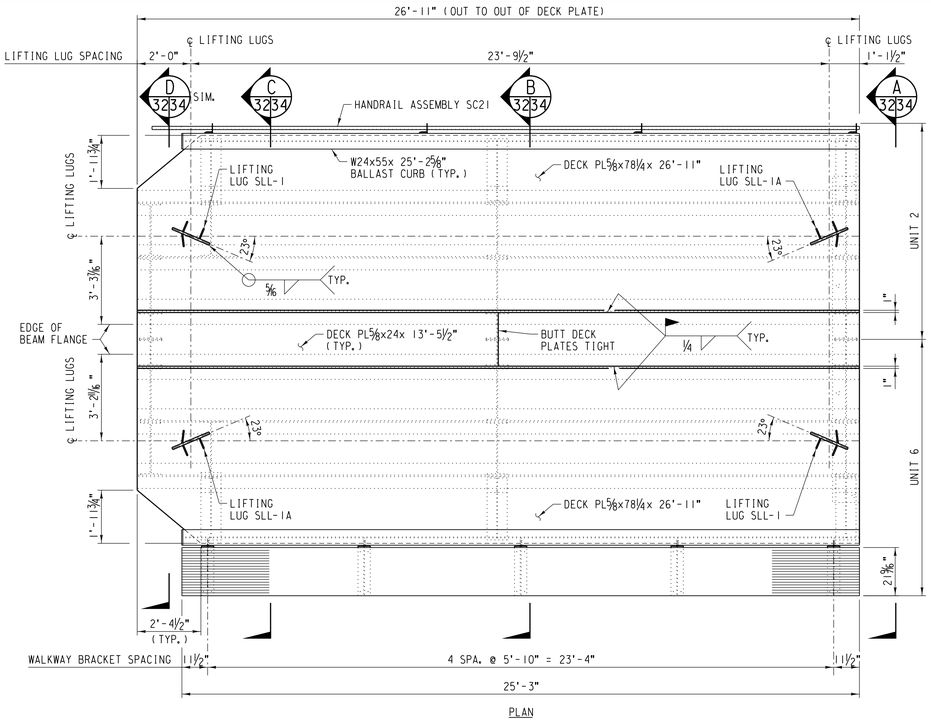
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PLAN

26'-11" STEEL BEAM SPAN BS18-26.11-A DETAILS

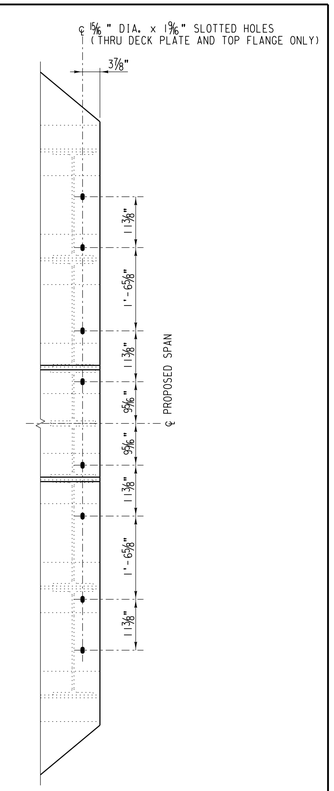
SCALE: ⅜"=1'-0"



PLAN

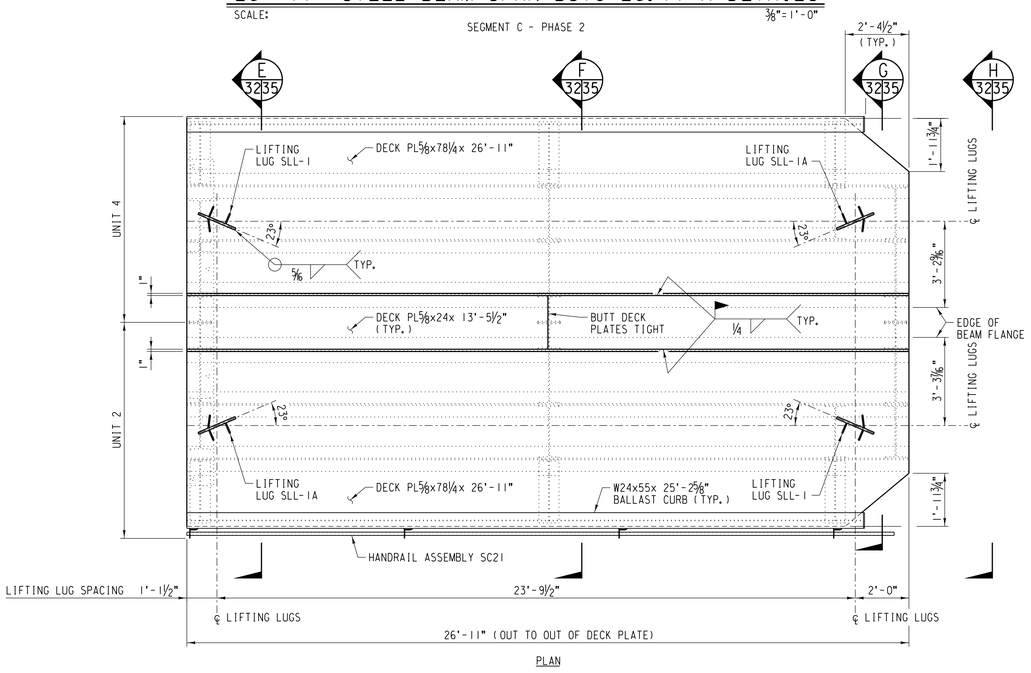
26'-11" STEEL BEAM SPAN BS18-26.11-C DETAILS

SCALE: ⅜"=1'-0"



DETAIL J 3232

SCALE: ¾"=1'-0"

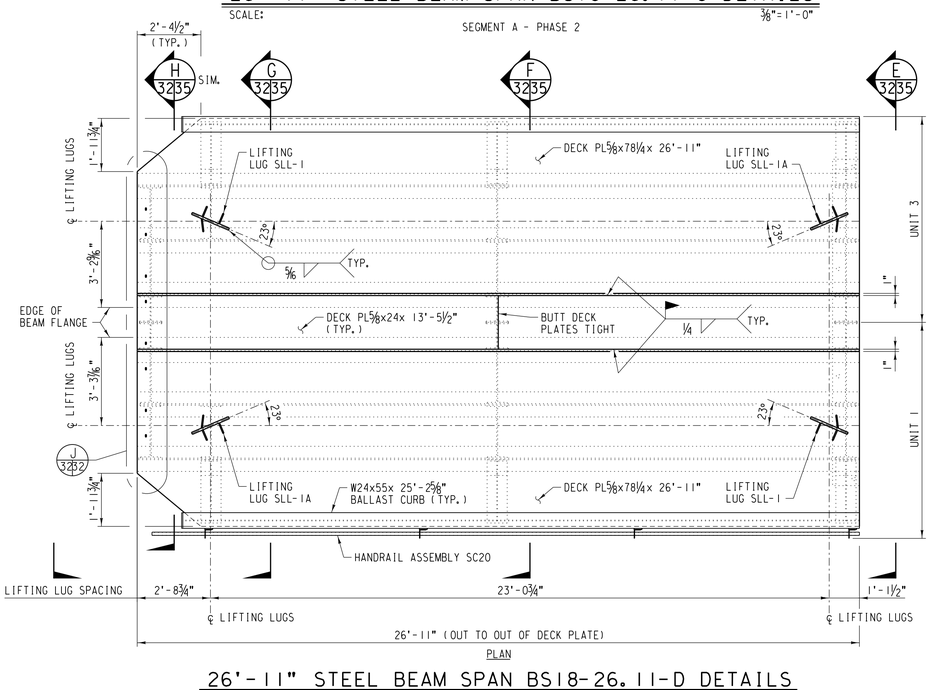


PLAN

26'-11" STEEL BEAM SPAN BS18-26.11-B DETAILS

SCALE: ⅜"=1'-0"

SEGMENT C - PHASE 1



PLAN

26'-11" STEEL BEAM SPAN BS18-26.11-D DETAILS

SCALE: ⅜"=1'-0"

SEGMENT A - PHASE 1

NOTE:
FOR STRUCTURAL STEEL NOTES, SEE STD. DWG. 580000 SHT. G1.

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:

FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:

MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION — LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY:	MTS/MFB
DRAWN/CHK BY:	ACB/MFB
UPRR ENGINEER:	DEH/ADS
SHT NO.:	C32 of C59

UNION PACIFIC RAILROAD

Office of Director Structures Design

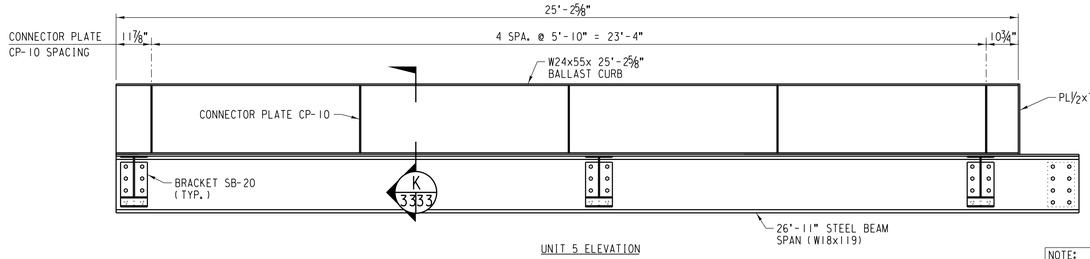
LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION

1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE: BEAM SPAN PLAN

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PLOTTED: 5/27/2021 11:13:33 AM

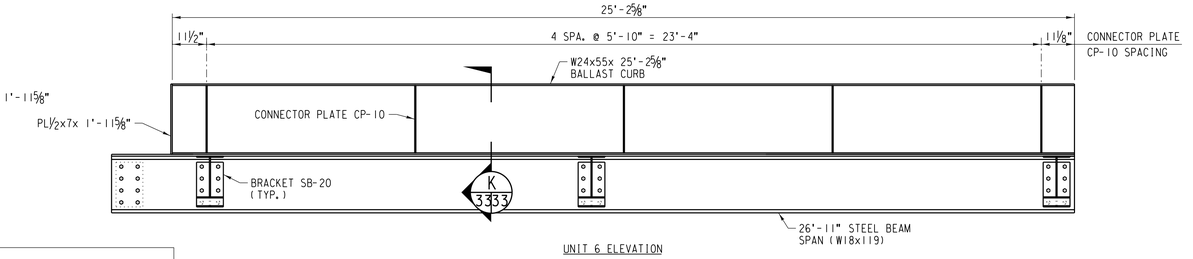


UNIT 5 ELEVATION

26'-11" STEEL BEAM SPAN BS18-26.11-A DETAILS

SCALE: ½"=1'-0"

NOTE:
STEEL GRATING AND WALKWAY SUPPORT IN ELEVATION NOT SHOWN FOR CLARITY.



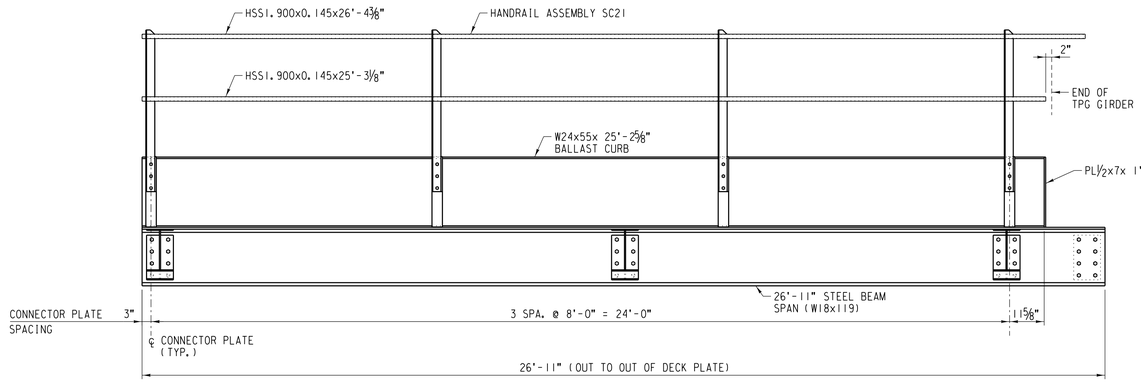
UNIT 6 ELEVATION

26'-11" STEEL BEAM SPAN BS18-26.11-C DETAILS

SCALE: ½"=1'-0"

26'-11" STEEL BEAM SPAN BS18-26.11-D UNIT 3 SIMILAR EXCEPT UNIT 3 WILL NOT HAVE CONNECTOR PLATE CP-10

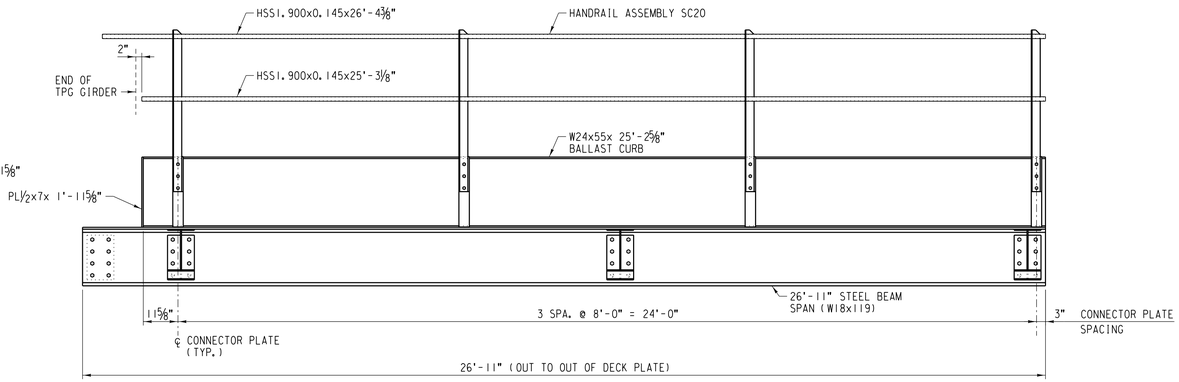
26'-11" STEEL BEAM SPAN BS18-26.11-B UNIT 4 SIMILAR EXCEPT UNIT 4 WILL NOT HAVE CONNECTOR PLATE CP-10



UNIT 2 ELEVATION

26'-11" STEEL BEAM SPAN BS18-26.11-B & C DETAILS

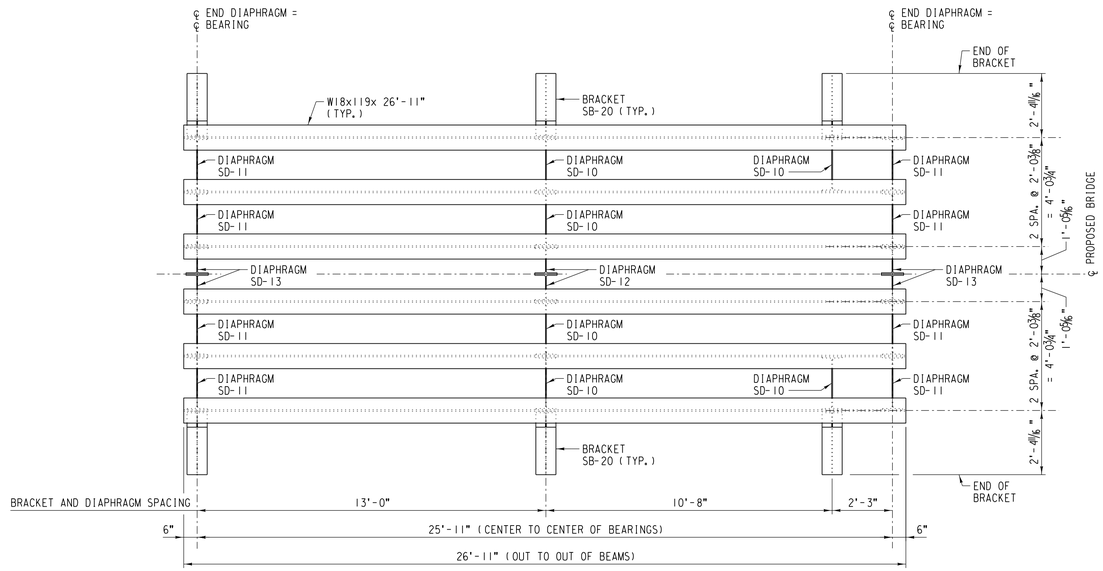
SCALE: ½"=1'-0"



UNIT 1 ELEVATION

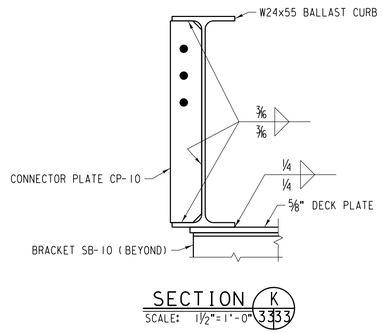
26'-11" STEEL BEAM SPAN BS18-26.11-A & D DETAILS

SCALE: ½"=1'-0"



26'-11" STEEL BEAM SPAN BS18-26.11-A, B, C & D FRAMING PLAN

SCALE: ⅜"=1'-0"



SECTION K 3333

SCALE: 1½"=1'-0"

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:

FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:

MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION — LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

UNION PACIFIC

DSN/CHK BY: MTS/MFB

DRAWN/CHK BY: ACB/MFB

UPRR ENGINEER: DEH/ADS

SHT NO.: C33 of C59

UNION PACIFIC RAILROAD

Office of Director Structures Design

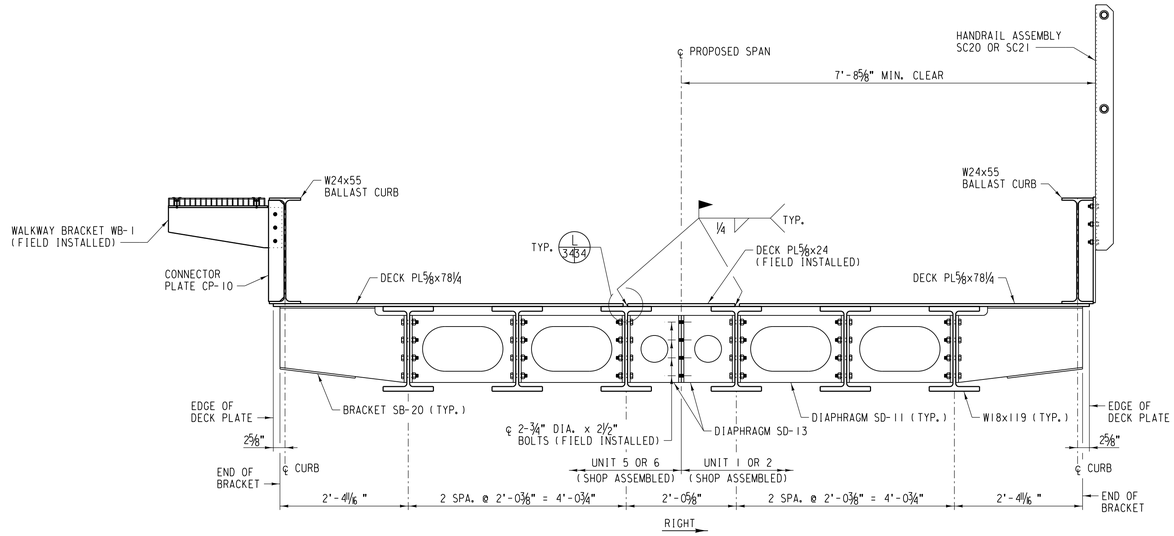
LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION

1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

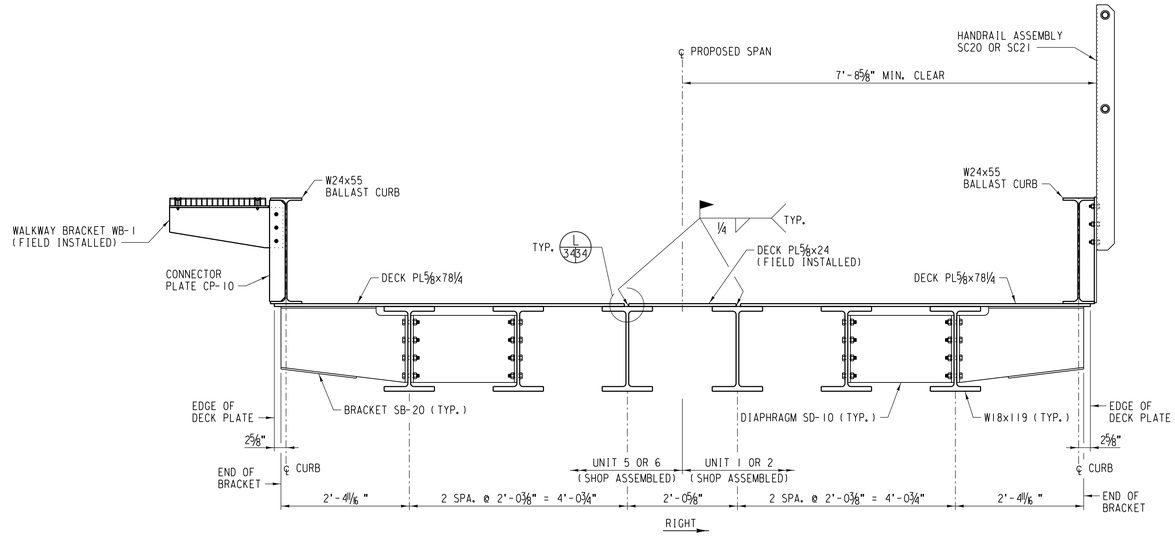
SHEET TITLE: BEAM SPAN FRAMING PLAN AND ELEVATION

FILE NAME: C:\Users\mromirez\Desktop\roc00082_bi1.dgn

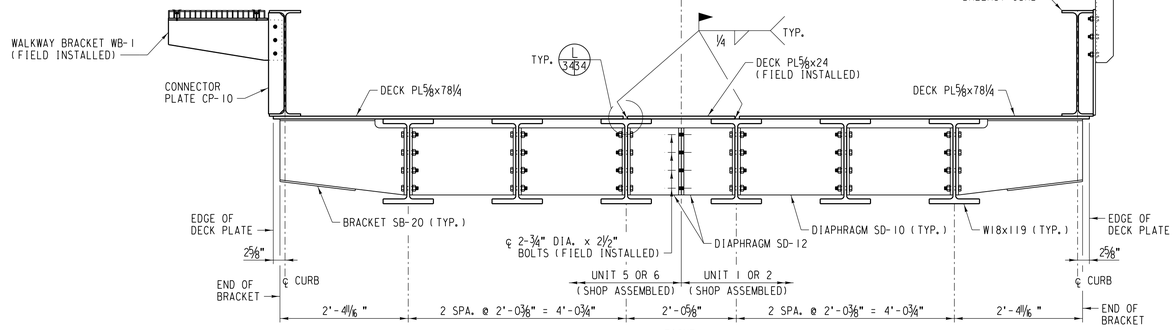
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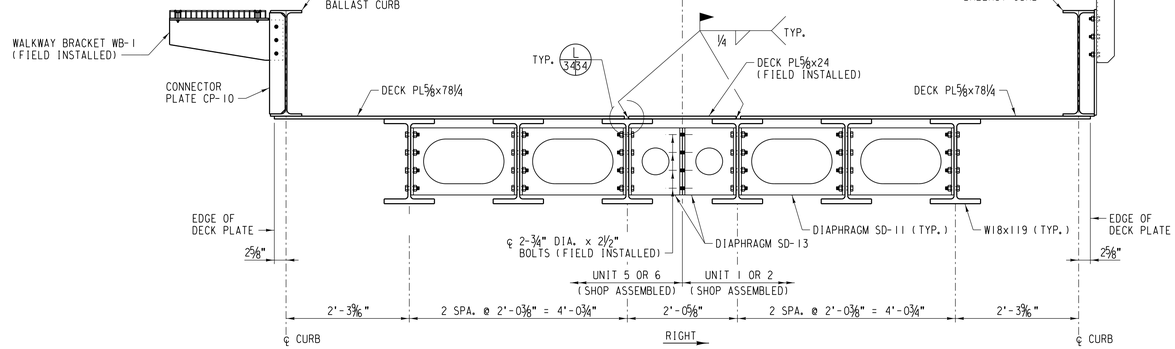
SECTION A (3234)
SCALE: ¾"=1'-0"



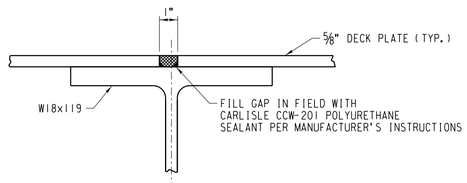
SECTION C (3234)
SCALE: ¾"=1'-0"



SECTION B (3234)
SCALE: ¾"=1'-0"



SECTION D (3234)
SCALE: ¾"=1'-0"



DETAIL L L L (3434 3534)
SCALE: 3"=1'-0"

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION
LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

UNION PACIFIC

DSN/CHK BY: MTS/MFB
DRAWN/CHK BY: ACB/MFB
UPRR ENGINEER: DEH/ADS
SHT NO.: C34 of C59

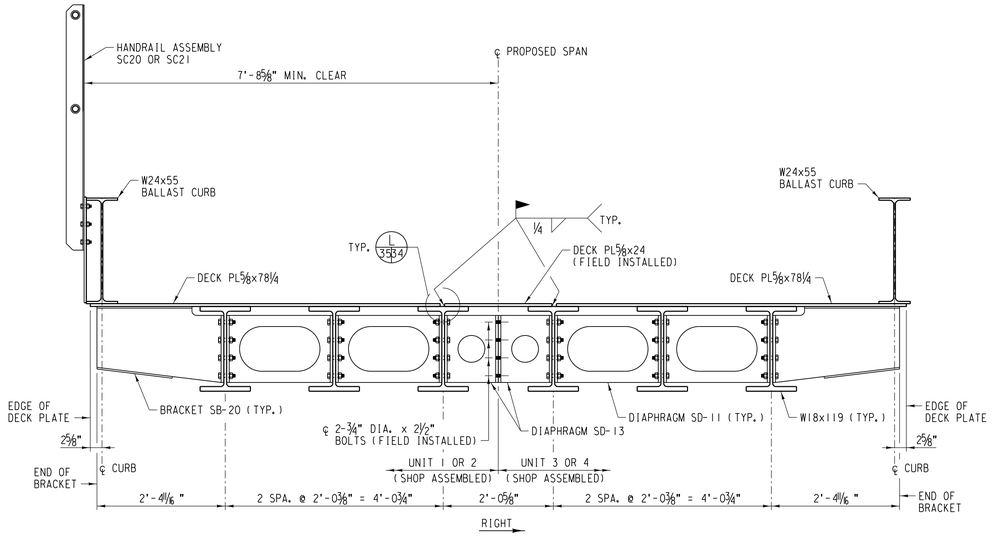
UNION PACIFIC RAILROAD
Office of Director Structures Design

LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

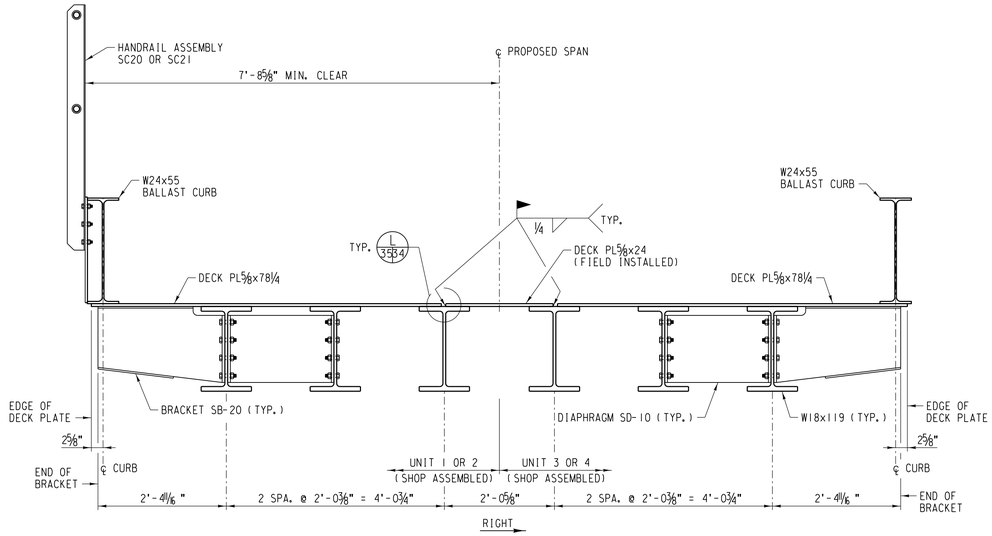
SHEET TITLE: BEAM SPAN SECTIONS (SHEET 1 OF 2)

FILE NAME: C:\Users\mromirez\Desktop\rocD0082_bii.dgn

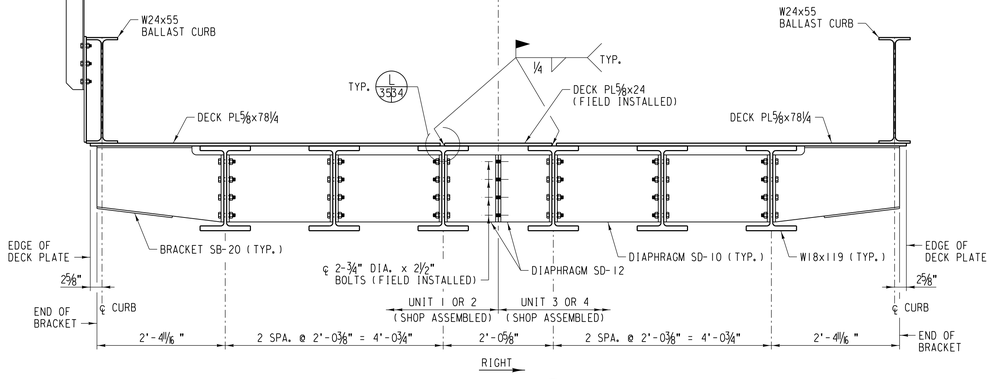
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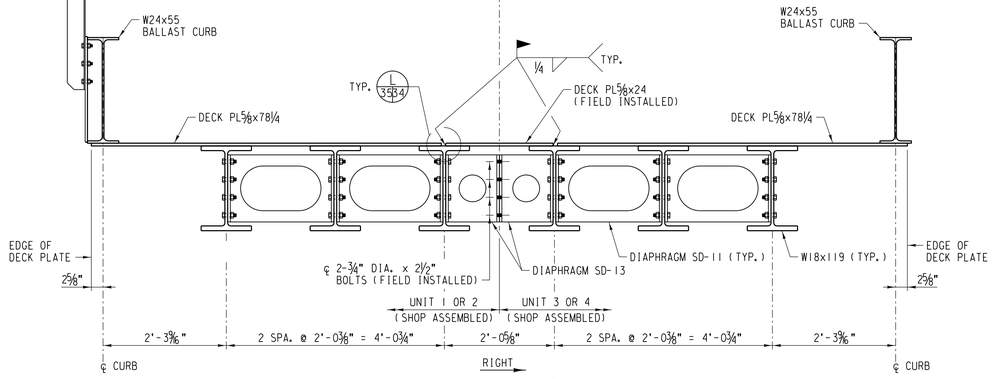
SECTION E (3235)
SCALE: ¾"=1'-0"



SECTION G (3235)
SCALE: ¾"=1'-0"



SECTION F (3235)
SCALE: ¾"=1'-0"



SECTION H (3235)
SCALE: ¾"=1'-0"

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL (STATUS) — 05/28/2021 (DATE)

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER (CONSULTANT ENGINEER) — 05/28/2021 (DATE)

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

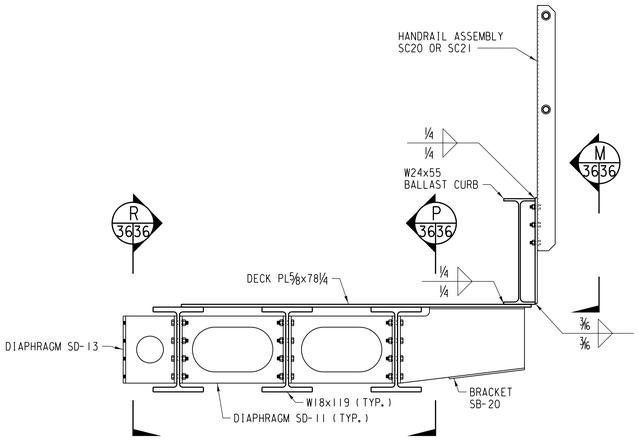
LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

UNION PACIFIC

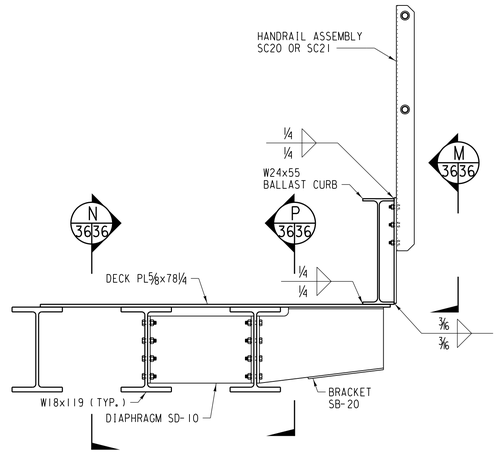
DSN/CHK BY: MTS/MFB	**UNION PACIFIC RAILROAD** — Office of Director Structures Design
DRAWN/CHK BY: ACB/MFB	LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION
UPRR ENGINEER: DEH/ADS	1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'
SHT NO.: C35 of C59	SHEET TITLE: BEAM SPAN SECTIONS (SHEET 2 OF 2)

FILE NAME: C:\Users\mromirez\Desktop\rocD0082_bil.dgn

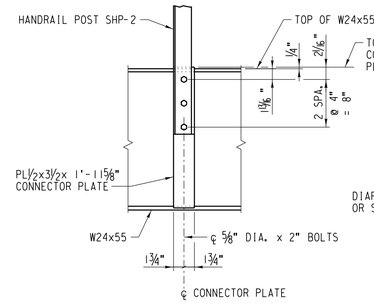
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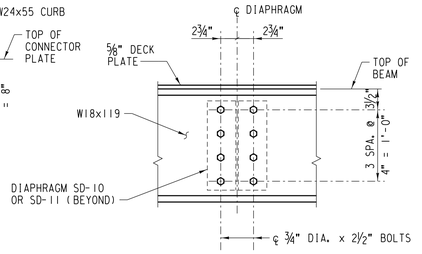
AT SECTION A END DIAPHRAGM



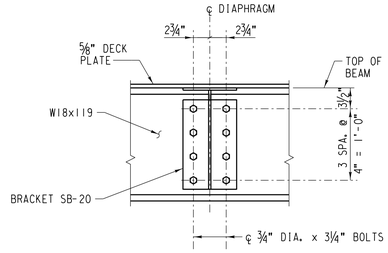
AT SECTION C INTERIOR DIAPHRAGM



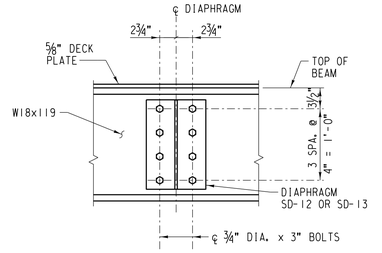
VIEW M
SCALE: 1"=1'-0" 36 36



SECTION N N
SCALE: 1"=1'-0" 36 36 37 36



SECTION P P
SCALE: 1"=1'-0" 36 36 37 36



SECTION R R
SCALE: 1"=1'-0" 36 36 37 36

AT SECTION B INTERIOR DIAPHRAGM

AT SECTION D END DIAPHRAGM

SECTION - UNIT 1 AND UNIT 2

SCALE: ¾"=1'-0"

NOTE:
FOR SECTION DESIGNATION LOCATIONS, SEE ASSOCIATED SECTION CUTS ON SHEET NO. C32.

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS
05/28/2021 — DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER
05/28/2021 — DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

UNION PACIFIC

DSN/CHK BY: MTS/MFB
DRAWN/CHK BY: ACB/MFB
UPRR ENGINEER: DEH/ADS
SHT NO.: C36 of C59

UNION PACIFIC RAILROAD

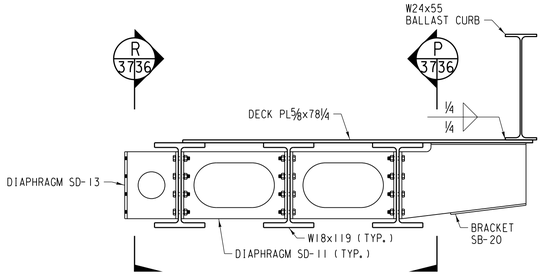
Office of Director Structures Design

LOCATION & DESCRIPTION:
BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) &
1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

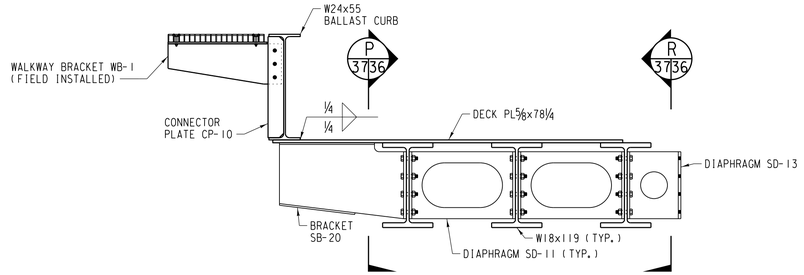
SHEET TITLE:
BEAM SPAN ASSEMBLY DETAILS (SHEET 1 OF 2)

FILE NAME: C:\Users\kramirez\Desktop\roc00082.bil.dgn

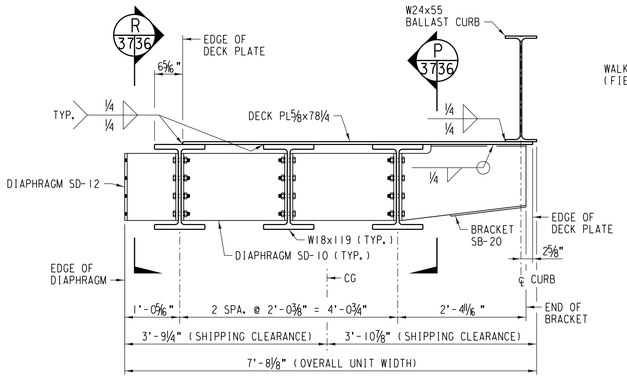
PLOTTED: 5/27/2021 11:13:34 AM



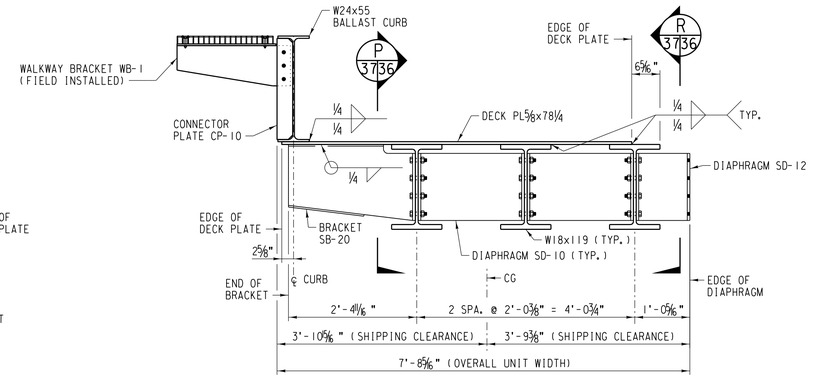
AT SECTION E END DIAPHRAGM



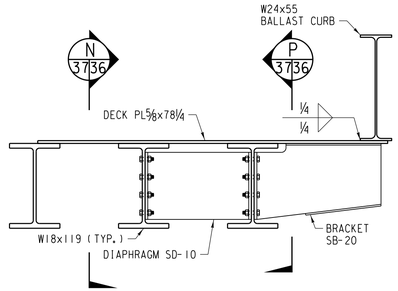
AT SECTION A END DIAPHRAGM



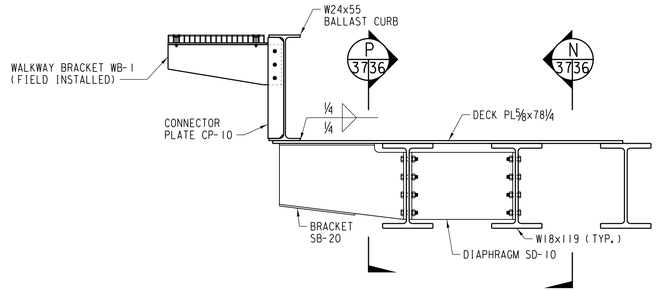
AT SECTION F INTERIOR DIAPHRAGM



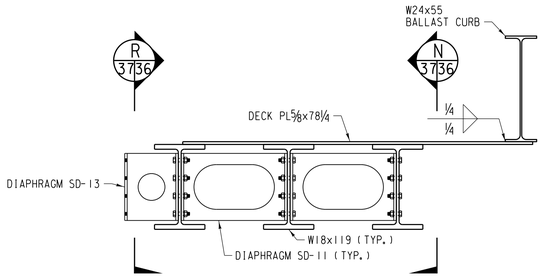
AT SECTION B INTERIOR DIAPHRAGM



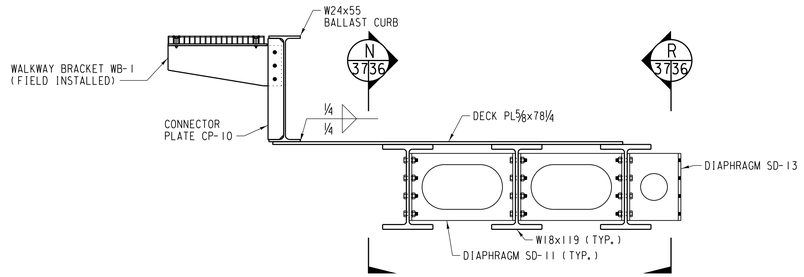
AT SECTION G INTERIOR DIAPHRAGM



AT SECTION C INTERIOR DIAPHRAGM



AT SECTION H END DIAPHRAGM



AT SECTION D END DIAPHRAGM

SECTION - UNIT 3 AND UNIT 4

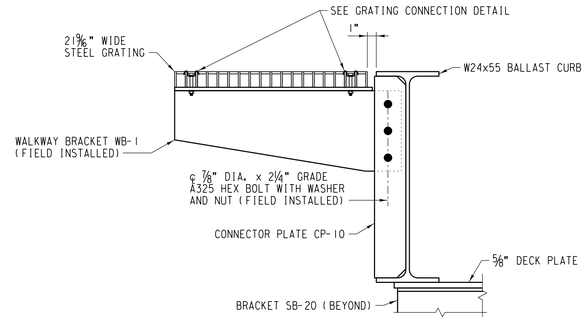
SCALE: 3/4"=1'-0"

NOTE:
FOR SECTION DESIGNATION LOCATIONS, SEE ASSOCIATED SECTION CUTS ON SHEET NO. C32.

SECTION - UNIT 5 AND UNIT 6

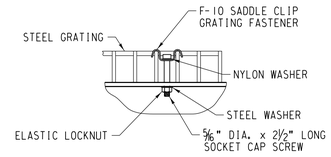
SCALE: 3/4"=1'-0"

NOTE:
FOR SECTION DESIGNATION LOCATIONS, SEE ASSOCIATED SECTION CUTS ON SHEET NO. C32.



WALKWAY BRACKET INSTALLATION DETAIL

SCALE: 1 1/2"=1'-0"



GRATING CONNECTION DETAIL

SCALE: 3"=1'-0"

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS
05/28/2021 — DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER
05/28/2021 — DATE

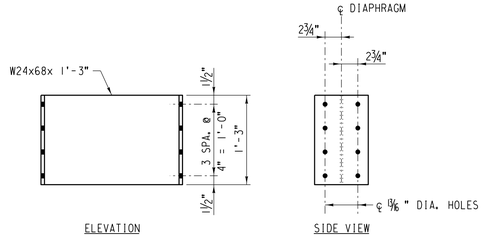
PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION — LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB	**UNION PACIFIC RAILROAD**
DRAWN/CHK BY: ACB/MFB	Office of Director Structures Design
UPRR ENGINEER: DEH/ADS	LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION 1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'
SHT NO.: C37 of C59	SHEET TITLE: BEAM SPAN ASSEMBLY DETAILS (SHEET 2 OF 2)

FILE NAME: c:\Users\mcmirza\Desktop\roc00082.bil.dgn

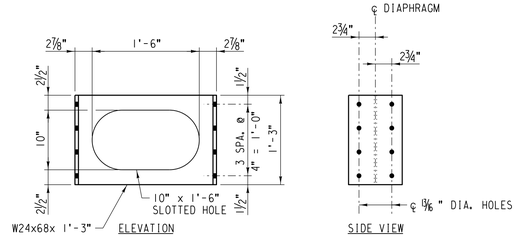
PLOTTED: 5/27/2021 11:13:34 AM



DIAPHRAGM SD-10

SCALE: 1"=1'-0"

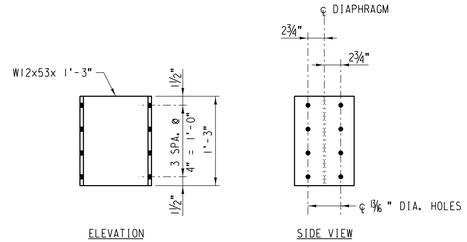
EST. WT. = 85.0 LB. EA.



DIAPHRAGM SD-11

SCALE: 1"=1'-0"

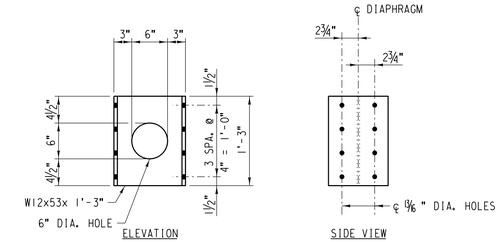
EST. WT. = 85.0 LB. EA.



DIAPHRAGM SD-12

SCALE: 1"=1'-0"

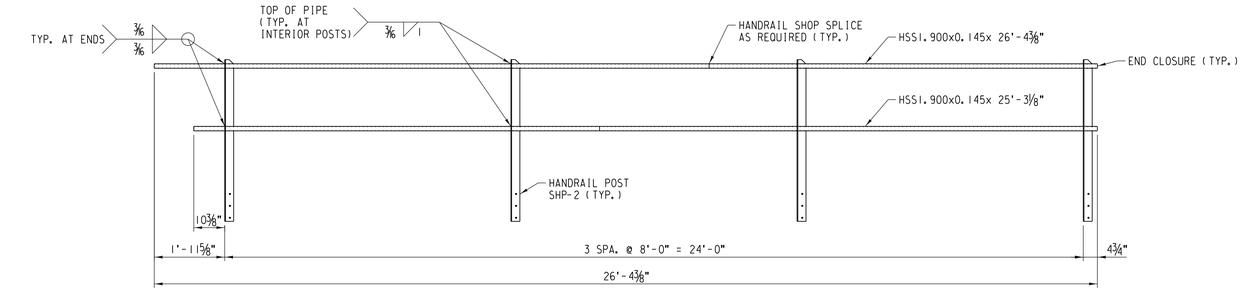
EST. WT. = 66.3 LB. EA.



DIAPHRAGM SD-13

SCALE: 1"=1'-0"

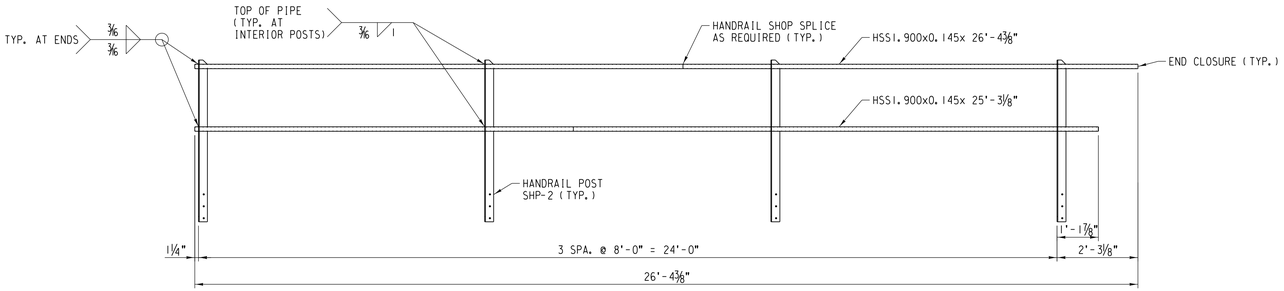
EST. WT. = 66.3 LB. EA.



HANDRAIL ASSEMBLY SC20

SCALE: ½"=1'-0"

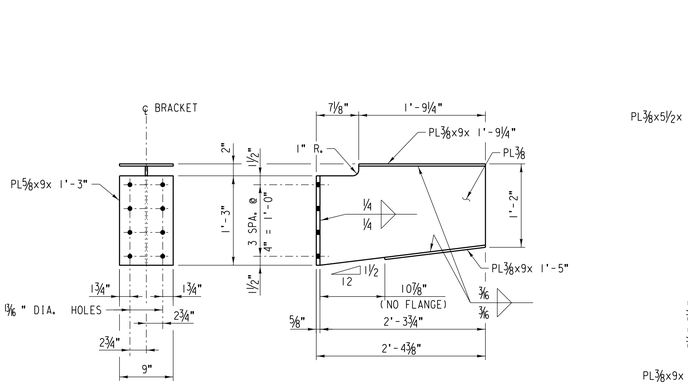
EST. WT. = 246 LB. EA.



HANDRAIL ASSEMBLY SC21

SCALE: ½"=1'-0"

EST. WT. = 246 LB. EA.



BRACKET SB-20

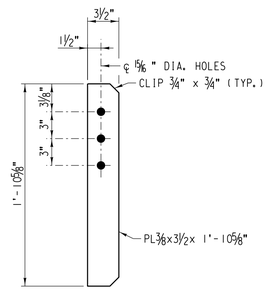
SCALE: 1"=1'-0"

EST. WT. = 99.6 LB. EA.

WALKWAY BRACKET WB-1

SCALE: 1"=1'-0"

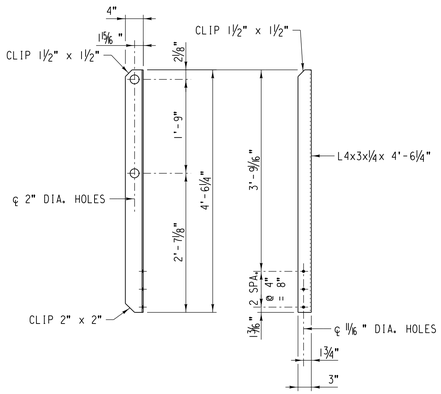
EST. WT. = 37.2 LB. EA.
ASTM A588



CONNECTOR PLATE CP-10

SCALE: 1½"=1'-0"

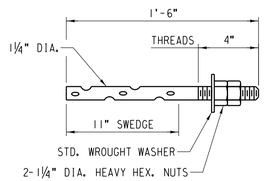
EST. WT. 8.4 LB. EA.
ASTM A588



HANDRAIL POST SHP-2

SCALE: ¾"=1'-0"

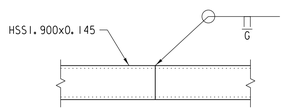
EST. WT. = 26.2 LB. EA.



ANCHOR ROD SAR-1

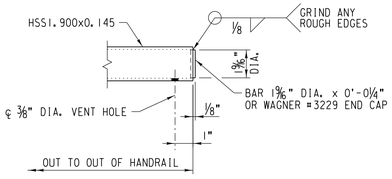
SCALE: NONE

EST. WT. = 8.1 LB. EA.



HANDRAIL SHOP SPLICE

SCALE: 3"=1'-0"



END CLOSURE DETAIL

SCALE: 3"=1'-0"

NOTE:
FOR STRUCTURAL STEEL NOTES, SEE STD. DWG. 580000 SHT. G1.

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS
05/28/2021 — DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER
05/28/2021 — DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION — LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB
DRAWN/CHK BY: ACB/MFB
UPRR ENGINEER: DEH/ADS
SHT NO.: C38 of C59

UNION PACIFIC RAILROAD

Office of Director Structures Design

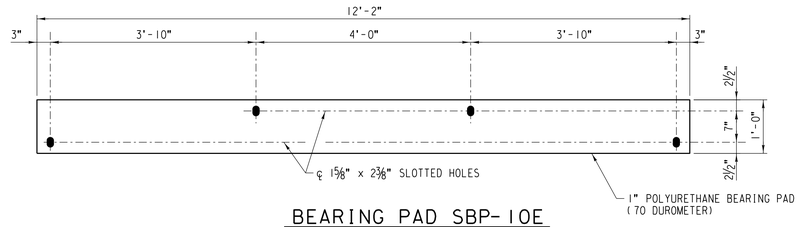
LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION

1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE: BEAM SPAN PIECE MARK DETAILS (SHEET 1 OF 2)

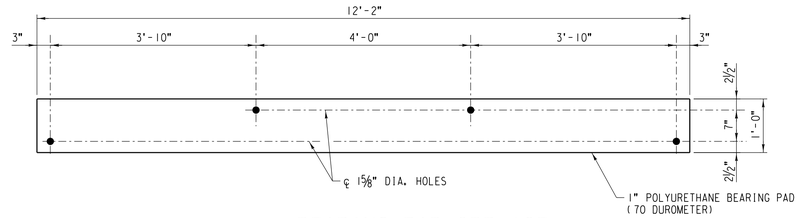
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PLOTTED: 5/27/2021 11:13:34 AM



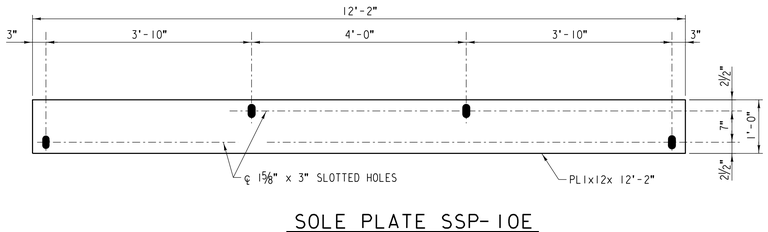
BEARING PAD SBP-10E

SCALE: ¾"=1'-0"



BEARING PAD SBP-10F

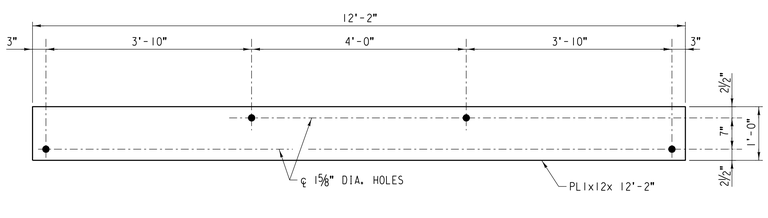
SCALE: ¾"=1'-0"



SOLE PLATE SSP-10E

SCALE: ¾"=1'-0"

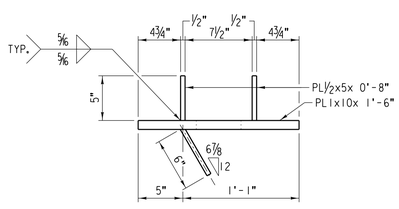
EST. WT. = 497 LB. EA.



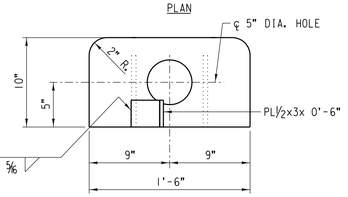
SOLE PLATE SSP-10F

SCALE: ¾"=1'-0"

EST. WT. = 497 LB. EA.



PLAN

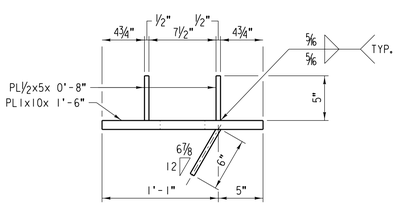


ELEVATION

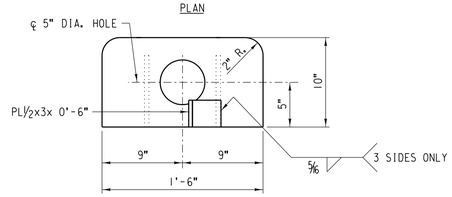
LIFTING LUG SLL-1

SCALE: 1½"=1'-0"

EST. WT. = 65.0 LB. EA.



PLAN



ELEVATION

LIFTING LUG SLL-1A

SCALE: 1½"=1'-0"

EST. WT. = 65.0 LB. EA.

NOTES:
1. FOR STRUCTURAL STEEL NOTES, SEE STD. DWG. 580000 SHT. G1.
2. BEARING PADS SHALL BE SHIPPED FLAT.

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:

FINAL — STATUS — 05/28/2021 — DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:

MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 — DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB	**UNION PACIFIC RAILROAD**
DRAWN/CHK BY: ACB/MFB	Office of Director Structures Design
UPRR ENGINEER: DEH/ADS	LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION 1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'
SHT NO.: C39 of C59	SHEET TITLE: BEAM SPAN PIECE MARK DETAILS (SHEET 2 OF 2)

FILE NAME: C:\Users\mramirez\Desktop\roc00082_bil.dgn

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STEEL BEAM SPAN MATERIAL LIST - SHOP ASSEMBLY

UNIT	W18x119 26'-11" BEAM (EA.)	DIAPHRAGM SD-10 (EA.)	DIAPHRAGM SD-11 (EA.)	DIAPHRAGM SD-12 (EA.)	DIAPHRAGM SD-13 (EA.)	BRACKET SB-20 (EA.)	CONNECTOR PLATE CP-10 (EA.)	PL½x7x 1'-11⅝" (EA.)	I-W24x55 CURB LENGTH	I-5⅛" DECK PLATE WIDTH	I-5⅛" DECK PLATE LENGTH	HANDRAIL HSS 1.900x0.145 LENGTH (EA.)	HANDRAIL HSS 1.900x0.145 LENGTH	HANDRAIL BAR 1⅜" DIA. x 0'-0¼"	HANDRAIL POST SHP-2 (EA.)	HANDRAIL PL½x3½x 1'-11⅝" (EA.)	LIFTING LUG SLL-1 (EA.)	LIFTING LUG SLL-1A (EA.)	ASTM F3125 GRADE A325 BOLT ¾" DIA. x 3¼" BOLT (EA.)	¾" DIA. x 3" BOLT (EA.)	¾" DIA. x 2½" BOLT (EA.)	⅝" DIA. x 2" BOLT (EA.)
1	3	3	4	1	2	3	-	1	25'-2⅝"	78¼"	26'-11"	25'-3⅛"	26'-4⅜"	4	4	4	1	1	24	48	16	12
2	3	3	4	1	2	3	-	1	25'-2⅝"	78¼"	26'-11"	25'-3⅛"	26'-4⅜"	4	4	4	1	1	24	48	16	12
3	3	3	4	1	2	3	-	1	25'-2⅝"	78¼"	26'-11"	-	-	-	-	-	1	1	24	48	16	-
4	3	3	4	1	2	3	-	1	25'-2⅝"	78¼"	26'-11"	-	-	-	-	-	1	1	24	48	16	-
5	3	3	4	1	2	3	5	1	25'-2⅝"	78¼"	26'-11"	-	-	-	-	-	1	1	24	48	16	-
6	3	3	4	1	2	3	5	1	25'-2⅝"	78¼"	26'-11"	-	-	-	-	-	1	1	24	48	16	-

STEEL BEAM SPAN MATERIAL LIST - FIELD ASSEMBLY

UNITS	DECK PLATE PL⅝x24x 13'-5½" (EA.)	WALKWAY BRACKET WB-1 (EA.)	⅞" DIA. x 2¼" GRADE A325 BOLT (EA.)	¾" DIA. x 2½" GRADE A325 BOLT (EA.)	ANCHOR ROD SAR-1 (EA.)	BEARING PAD SBP-10E (EA.)	BEARING PAD SBP-10F (EA.)	SOLE PLATE SSP-10E (EA.)	SOLE PLATE SSP-10F (EA.)	WALKWAY GRATING 21⅜" W. x 25'-3" L. (Eq.)	⅞" DIA. ASTM A307 GRADE A HEX BOLT x 1'-0" (NOTE 3) (Eq.)	⅝" DIA. ASTM A307 GRADE A HEX BOLT x 2½" (Eq.)	F-10 FASTENER (Eq.)
1 AND 3 (PHASE 1)	2	-	-	24	8	1	1	1	1	-	3	-	-
2 AND 4 (PHASE 1)	2	-	-	24	8	1	1	1	1	-	3	-	-
2 AND 6 (PHASE 2)	2	5	15	24	8	1	1	1	1	1	3	10	10
1 AND 5 (PHASE 2)	2	5	15	24	8	1	1	1	1	1	3	10	10

STEEL BEAM SPAN - SHIPPING DATA

UNIT	OVERALL WIDTH	SHIPPING CLEARANCE LEFT	SHIPPING CLEARANCE RIGHT	SHIPPING WEIGHT (LB.)	SHIPPING WEIGHT (TON)
1	8'-0⅝"	3'-10⅛"	4'-2½"	17,020	8.5
2	8'-0⅝"	3'-10⅛"	4'-2½"	17,020	8.5
3	7'-8⅛"	3'-9¼"	3'-10⅞"	16,730	8.4
4	7'-8⅛"	3'-9¼"	3'-10⅞"	16,730	8.4
5	7'-8⅝"	3'-10⅝"	3'-9⅜"	16,770	8.4
6	7'-8⅝"	3'-10⅝"	3'-9⅜"	16,770	8.4

NOTES:
1. UNIT 1 AND UNIT 2 ARE SHIPPED WITH HANDRAIL ATTACHED.
2. SHIPPING CLEARANCE LEFT AND RIGHT ARE FROM CENTER OF GRAVITY RELATIVE TO THE SECTIONS ON SHEET NOS. C36 AND C37.
3. ⅞" DIA. x 1'-0" A307 BOLTS SHALL BE USED TO SECURE TIE TO END BALLAST DAM EBD-10 AND EBD-20. EACH BOLT FOR END BALLAST DAM SHALL INCLUDE TWO WASHERS AND ELASTIC LOCKNUT.

LIFTING WEIGHT - ASSEMBLED SPAN

SPAN	PHASE	LIFTING WEIGHT (LB.)	LIFTING WEIGHT (TON)
BS18-26.11-D	1	35,120	17.6
BS18-26.11-B	1	35,120	17.6
BS18-26.11-C	2	35,440	17.7
BS18-26.11-A	2	35,440	17.7

NOTE:
ASSEMBLED SPAN WEIGHTS INCLUDE UNITS, FIELD INSTALLED DECK PLATES AND WALKWAY GRATING.

NOTES:
1. FOR STRUCTURAL STEEL NOTES, SEE STD. DWG. 580000 SHT. G1.
2. BEARING PADS SHALL BE SHIPPED FLAT.

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL (STATUS) 05/28/2021 (DATE)

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER (CONSULTANT ENGINEER) 05/28/2021 (DATE)

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB
DRAWN/CHK BY: ACB/MFB
UPRR ENGINEER: DEH/ADS
SHT NO.: C40 of C59

UNION PACIFIC RAILROAD

Office of Director Structures Design

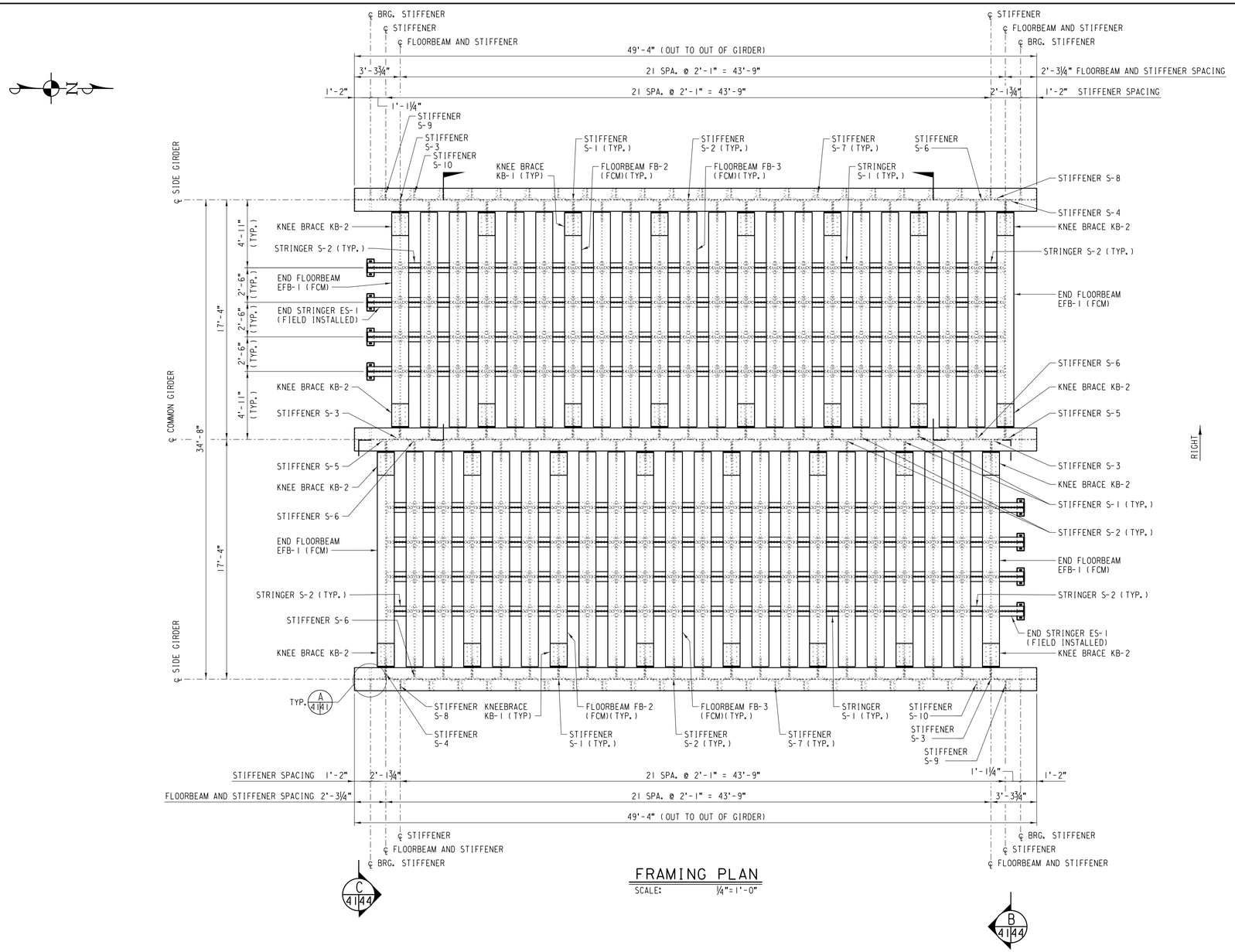
LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION

1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE: BEAM SPAN MATERIALS LIST AND LIFTING WEIGHT TABLES

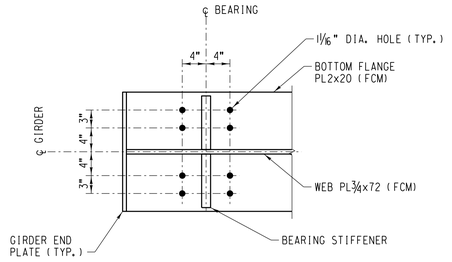
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FRAMING PLAN

SCALE: ¼"=1'-0"



PARTIAL PLAN

DETAIL A

SCALE: 1"=1'-0" 41 41

BOTTOM FLANGE OF SIDE GIRDER SHOWN, BOTTOM FLANGE OF COMMON GIRDER SIMILAR

NOTES:

1. FOR TPG STRUCTURAL STEEL NOTES, SEE SHEET NO. 45.
2. FCM = FRACTURE CRITICAL MEMBER

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:

FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:

MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

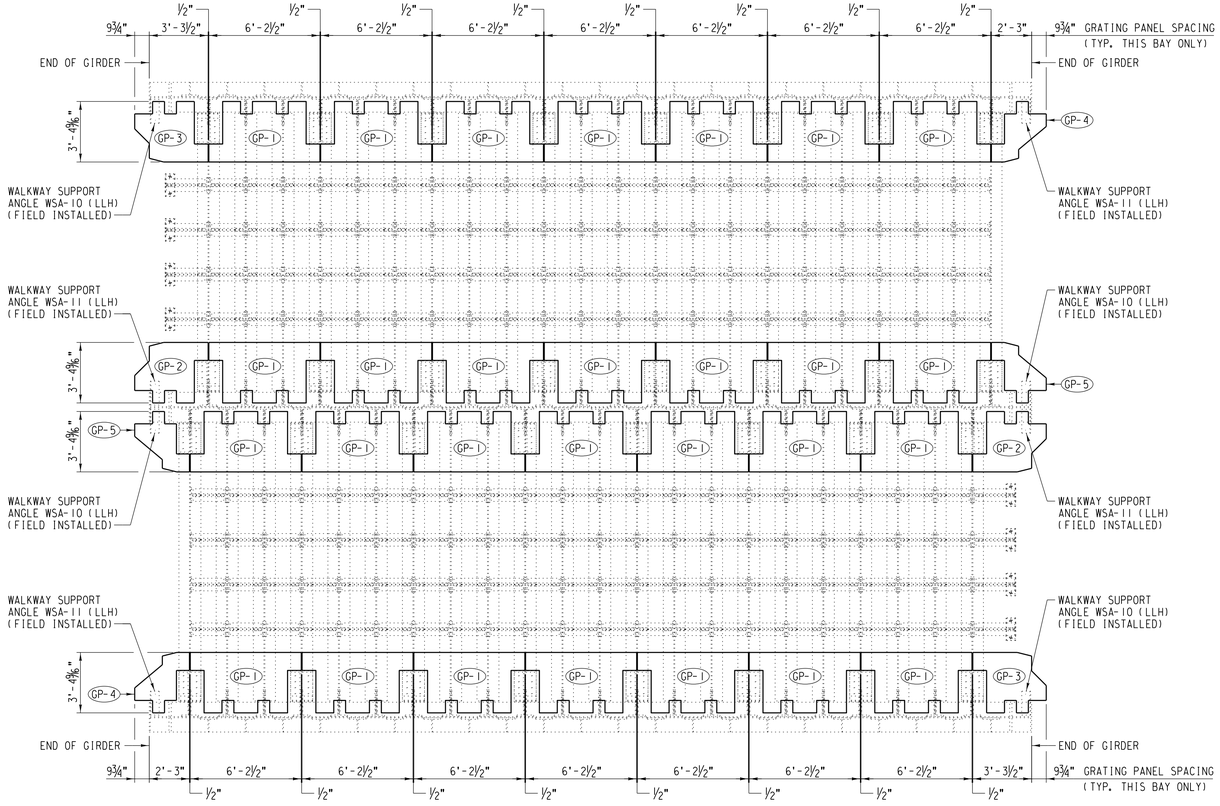
PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION — LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB	**UNION PACIFIC RAILROAD** — Office of Director Structures Design
DRAWN/CHK BY: ACB/MFB	LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION
UPRR ENGINEER: DEH/ADS	1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'
SHT NO.: C41 of C59	SHEET TITLE: TPG FRAMING PLAN

FILE NAME: C:\Users\mcamirez\Desktop\rac00082_bil.dgn

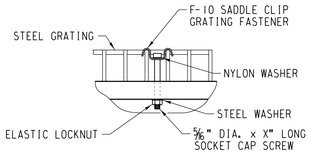
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GRATING PLAN

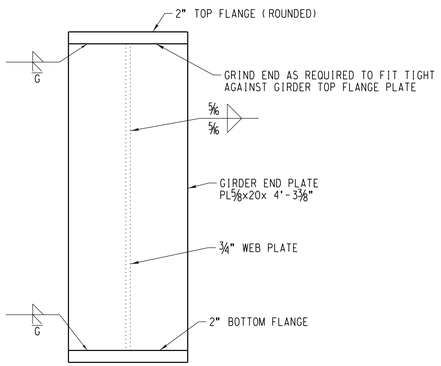
SCALE: ¼"=1'-0"

NOTE:
TOP FLANGES OF GIRDERS AND FLANGES OF KNEE BRACES NOT SHOWN FOR CLARITY.



GRATING CONNECTION DETAIL

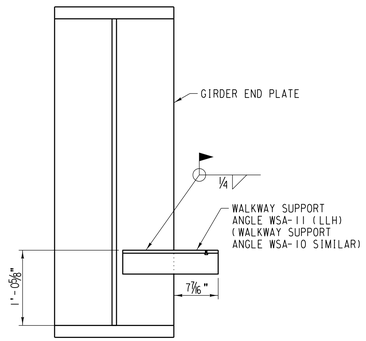
SCALE: 3"=1'-0"



GIRDER END PLATE INSTALLATION DETAIL

SCALE: 1"=1'-0"

END VIEW OF GIRDER AT END PLATE, TYP. FOR SIDE AND COMMON GIRDER



WALKWAY SUPPORT ANGLE INSTALLATION DETAIL

SCALE: 1"=1'-0"

SECTION THRU GIRDER AT END PLATE, TYP. FOR SIDE AND COMMON GIRDER

NOTES:
1. FOR TPG STRUCTURAL STEEL NOTES, SEE SHEET NO. 45.
2. LLH = LONG LEG HORIZONTAL

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

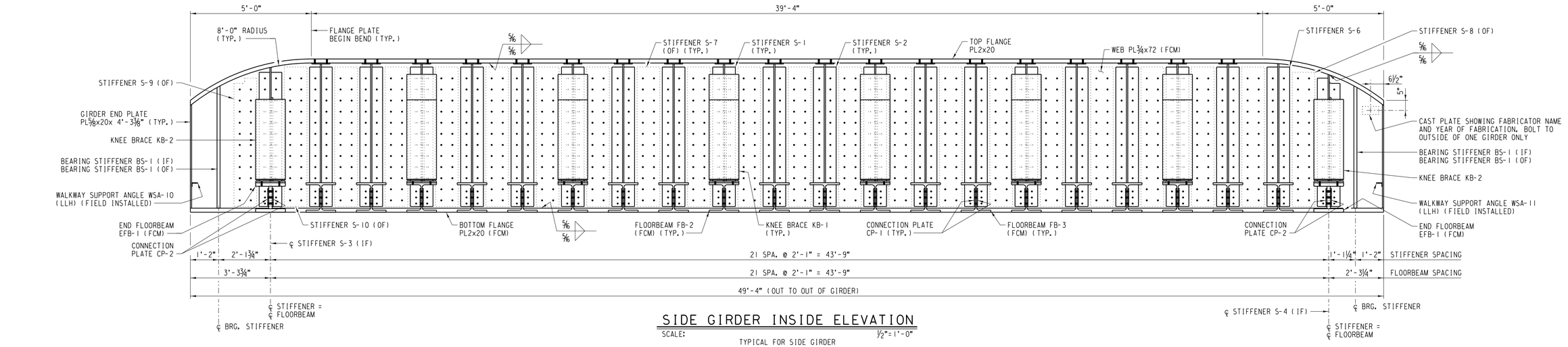
LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

UNION PACIFIC

DSN/CHK BY: MTS/MFB	**UNION PACIFIC RAILROAD**
DRAWN/CHK BY: ACB/MFB	Office of Director Structures Design
UPRR ENGINEER: DEH/ADS	LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION
SHT NO.: C42 of C59	1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'
	SHEET TITLE: TPG GRATING PLAN

FILE NAME: C:\Users\ermorinez\Desktop\rac00082_bli.dgn

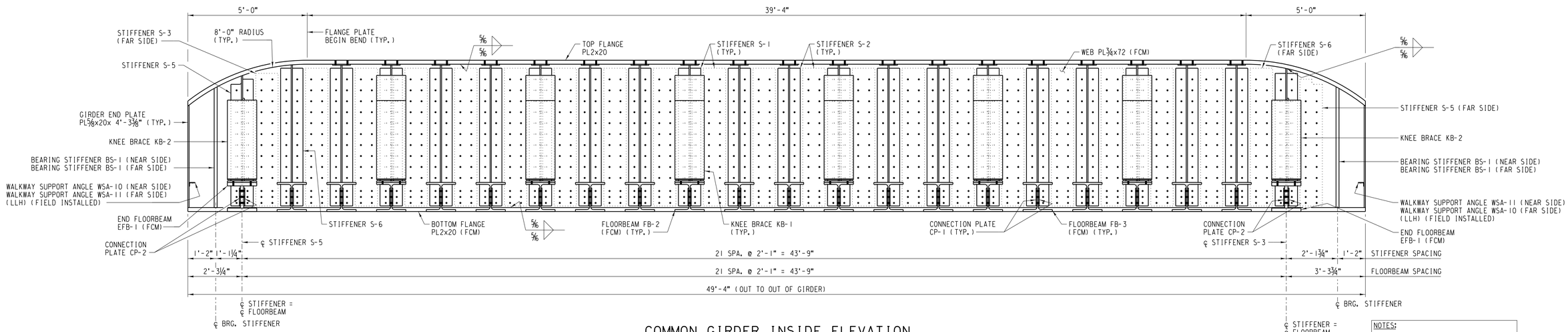
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SIDE GIRDER INSIDE ELEVATION

SCALE: 1/2"= 1'-0"

TYPICAL FOR SIDE GIRDER

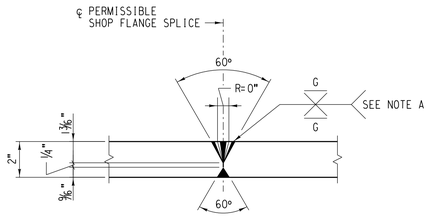


COMMON GIRDER INSIDE ELEVATION

SCALE: 1/2"= 1'-0"

NOTES:

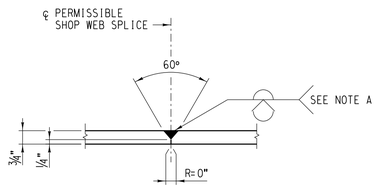
1. FOR TPG STRUCTURAL STEEL NOTES, SEE SHEET NO. 45.
2. FCM = FRACTURE CRITICAL MEMBER
   IF = INSIDE FACE
   LLH = LONG LEG HORIZONTAL
   OF = OUTSIDE FACE
3. GIRDER CAMBER NOT REQUIRED



PERMISSIBLE 2" FLANGE SPLICE B-U3c-S

SCALE: 3"= 1'-0"

NOTE A: BACK GOUGE TO SOUND METAL PRIOR TO WELDING OTHER SIDE



PERMISSIBLE 3/4" WEB SPLICE B-L2c-S

SCALE: 3"= 1'-0"

NOTE A: BACK GOUGE TO SOUND METAL PRIOR TO WELDING OTHER SIDE

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS: FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:

MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

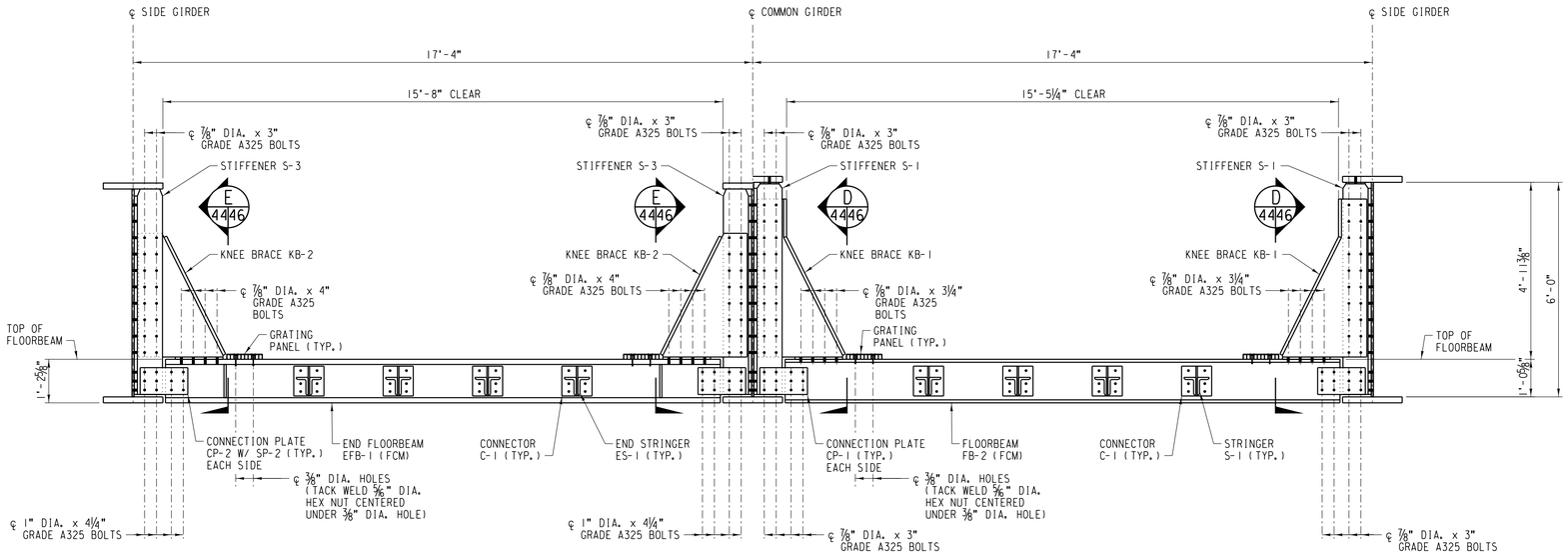
PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION — LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB	**UNION PACIFIC RAILROAD**
DRAWN/CHK BY: ACB/MFB	Office of Director Structures Design
UPRR ENGINEER: DEH/ADS	LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION 1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'
SHT NO.: C43 of C59	SHEET TITLE: TPG GIRDER ELEVATIONS AND DETAILS

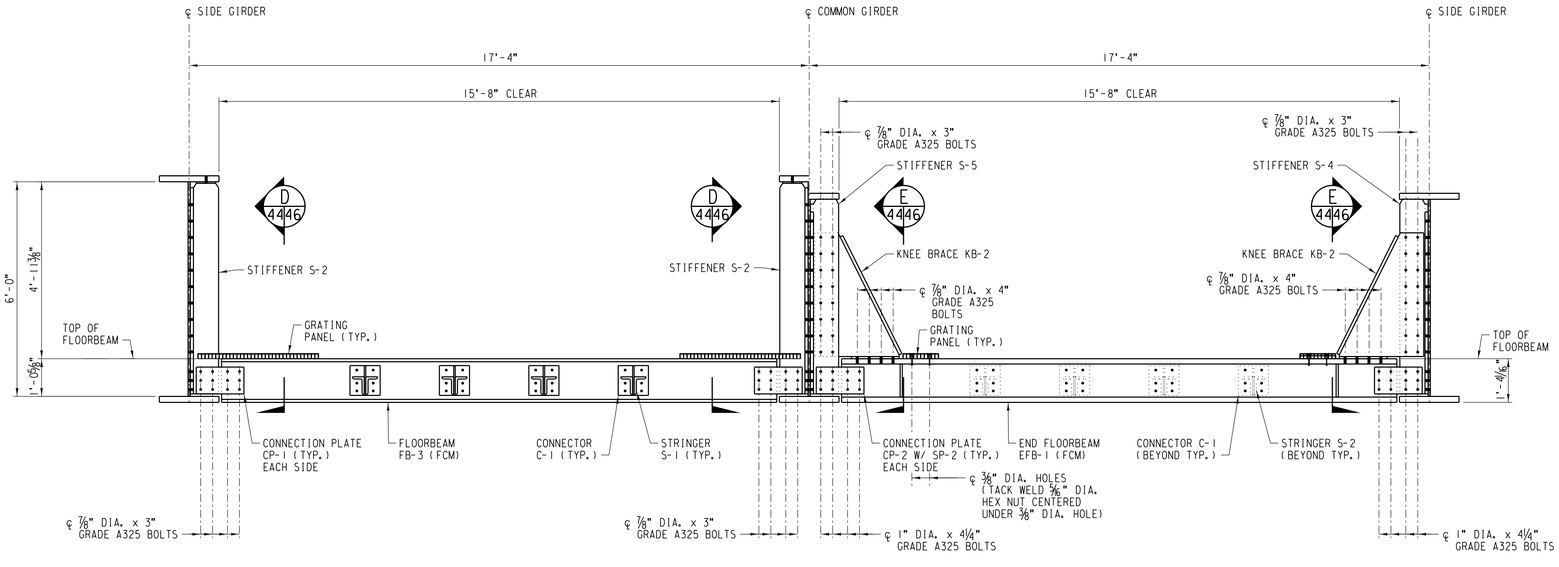
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PARTIAL SECTION B 4144

SCALE: ½"=1'-0"



PARTIAL SECTION C 4144

SCALE: ½"=1'-0"

NOTES:

1. FOR TPG STRUCTURAL STEEL NOTES, SEE SHEET NO. 45.
2. FCM = FRACTURE CRITICAL MEMBER

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:

FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:

MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION — LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

UNION PACIFIC

DSN/CHK BY: MTS/MFB

DRAWN/CHK BY: ACB/MFB

UPRR ENGINEER: DEH/ADS

SHT NO.: C44 of C59

UNION PACIFIC RAILROAD

Office of Director Structures Design

LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION

1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE: TPG TYPICAL SECTIONS

FILE NAME: C:\Users\mcramirez\Desktop\rx00082_bil.dgn

PLOTTED: 5/27/2021 11:13:35 AM

TPG STRUCTURAL STEEL NOTES

1. Materials, fabrication and erection shall be in accordance with Chapter 15: Steel Structures of the AREMA Manual for Railway Engineering.

2. Fabrication of structural steel shall be performed by a Fabricator certified under AISC Quality Certification Program for Major Steel Bridges (CBR) and Fracture Critical Endorsement (FCE).

3. Material shall conform to the following requirements:

Girder Web, Bottom Flange and Floorbeams and Stringers	ASTM A709 Grade 50W F2
Girder Top Flanges and Bearing Stiffeners	ASTM A709 Grade 50W T2
All Other Structural Steel	ASTM A588
Anchor Rods	ASTM F1554 Grade 105
TPG Bearings	Per notes, Sheet Nos. 54 thru 57

4. Girders shall be fabricated with no camber. Floorbeams shall not be cambered, but shall be fabricated with natural camber up.

5. Steel designated as fracture critical (FCM) shall comply with the requirements of AREMA Chapter 15, Section 1.4. Testing shall be performed for a minimum service temperature corresponding to Zone 2. Killed fine grain practice shall be used in the manufacture of FCM steel. Supplementary requirements S84 and S93 of ASTM A709 shall be mandatory.

6. Structural steel shall be of the type and quality as designated on the drawings. Material supplied shall meet the longitudinal Charpy V-notch requirements for Zone 2 as specified in the AREMA Manual for Railway Engineering.

7. All shop and field bolted connections shall use ⅞" dia. high strength bolts with nut and hardened steel washer. High strength bolts shall conform to ASTM F3125 Grade A325, type 3. Nuts shall conform to ASTM A563, lubricated. Washers shall conform to ASTM F436 and shall be placed under the element to be turned. Diameter of bolt holes shall be 1/16" larger than the nominal bolt diameter, unless noted otherwise.

8. High strength steel bolts shall be installed in accordance with the "Turn of the Nut Method". The procedure for installation is as specified by the Research Council on Structural Connections. Alternative bolt installation methods are subject to approval by the UPRR Office of AVP Engineering Design with verification performed in accordance with AREMA Chapter 15, Articles 3.2.2.h and 3.2.2.k.

9. Bolts shall be installed so that the bolt heads are on the outside (exposed) surface of the member unless shown otherwise on the drawings. Threads shall be excluded from the shear plane in all connections.

10. Any machine bolts required for shipment shall be ASTM A307.

11. All welding shall be in accordance with the Bridge Welding Code, AWS D1.5. Welding of fracture critical members shall also conform to the applicable provisions of AREMA Manual for Railway Engineering, Chapter 15: Steel Structures. Welding to be allowed only as shown on the drawings and approved shop drawings. Weld metal material properties shall match structural steel.

12. Welded joints are to be AWS prequalified. Alternate joint details are subject to approval by the UPRR Office of Director Structures Design. All welding shall be done to minimize distortion. The welding sequence and procedures to be used shall be submitted for approval to the UPRR Office of Director Structures Design.

13. Fully automatic submerged arc welding shall be required for this project. Manual shielded arc welding or semi-automatic submerged arc welding shall be allowed only if fully automatic submerged arc welding is not practical. Alternate welding methods are subject to approval by the UPRR Office of Director Structures Design.

14. When welding ASTM A709 Grade 50W or ASTM A588 steel, weld metal shall be equivalent to ASTM A709, Grade 50W or ASTM A588 steel in corrosion resistance and weathered appearance.

15. The Fabricator shall submit copies of welders' certificates for all welding processes. Welders shall possess valid qualifications.

16. Permissible Shop Splice - Steel fabricator may provide complete penetration double v-groove welded, shop flange and web splices where required in accordance with the following:

    a. Splices shall be located 1'-0" minimum clear from all bolted and/or welded attachments to the girders.
    b. Splices shall not be located within the middle third of the girder span, nor any location where weld metal may be subject to drilling.
    c. One shop splice shall be permitted in the bottom flange plate at a minimum distance of 3'-0" from nearest top flange splice.
    d. Web plate splices shall be located a minimum of 1'-0" from back face of nearest intermediate web stiffener angle and a minimum of 2'-0" from centerline of nearest flange splice.
    e. All shop splice welds shall be ground smooth in the direction of stress.
    f. Plates shall be provided in maximum lengths as practical to minimize the number of splices required.
    g. Final locations of shop splices in flanges to be approved by the UPRR Office of Director Structures Design.
    h. Electroslag and electrogas welding process shall not be used.

17. Nondestructive testing of welds shall be performed in accordance with the AREMA Manual for Railway Engineering Chapter 15: Steel Structures, the Bridge Welding Code, AWS D1.5, Sections 6.7 and 12.16 and as follows:

    a. 100% RT inspection of full penetration welds in girder webs and bottom flanges.
    b. 100% UT inspection of full penetration groove welds in top flanges.
    c. 100% MP inspection of all flange to web welds.
    d. 100% MP inspection of fillet welds on bearing stiffeners.
    e. 25% MP inspection of all other welds. If any defects are found, then 100% MP inspection shall be required.

    Test results shall be furnished to the UPRR Office of AVP Engineering Design.

18. All bearing stiffeners shall be vertical under final dead loads. All intermediate stiffeners shall be placed normal to the girder bottom flange. All stiffeners and girder end plates shall be placed perpendicular to the web.

TPG STRUCTURAL STEEL NOTES - CONT.

19. Flame cutting of girder webs and flanges shall be performed in accordance with the AREMA Manual for Railway Engineering Chapter 15, Article 3.1.6: Thermal Cutting, Copes and Access Holes. Preheating is required. Preheating shall be in accordance with the following:

Thickness	Minimum Preheat Temperature
Up to 1"	50° F
Over 1" to 2"	100° F
Over 2"	200° F

    The piece shall be preheated in such a manner that it is heated through its thickness and that both surfaces are above the minimum temperature for a distance equal to the thickness of the part being cut, but not less than 3", both laterally and in advance of the cut. The Fabricator shall furnish a calibrated electrical contact pyrometer to verify compliance with the preheat requirements during fabrication.

20. For welds designated to be ground flush, grinding shall be in the direction of applied stress.

21. All joints and edge preparation, removal of unacceptable weld or base metal, and backgauging shall be completed by machining. Rough removals may be completed by non-mechanical means.

22. The Fabricator shall submit three copies of detailed shop drawings prior to beginning fabrication. Fabrication shall not begin until shop drawings are approved.

23. All Fabricator questions and correspondence shall be addressed to Adam Studts:

    Union Pacific Railroad
    1400 Douglas St., STOP 0910
    Omaha, NE 68179
    (402) 544-3541
    adstudts@up.com

24. The Fabricator shall shop assemble the entire span prior to shipping. During assembly and reaming, all bolts shall be placed in holes as work progresses to assure proper fit.

25. Shop assembled span shall be made available for inspection by the Railroad at the Fabricator's plant before the steel is disassembled and shipped to the erection site at the Railroad's discretion. Pieces shall be match-marked as required.

26. Reaming of holes during field erection is not allowed, unless approved by the Railroad.

27. All structural steel shall be blast cleaned prior to shipment as follows, unless noted otherwise. All ASTM A709 steel, other surfaces visible from sides and all faying surfaces regardless of location: Minimum SSPC-SP6, Commercial Blast Cleaning. All remaining steel surfaces: SSPC-SP1, Solvent Cleaning. All steel members shall be clearly marked after blast cleaning has been completed.

28. All steel components shall be inspected before shipment. Photographs of Fabricator's progress shall be submitted to the UPRR Office of the AVP Engineering Design.

29. Bearing pads shall be shipped flat.

30. All material certifications and quality control test results shall be submitted to Union Pacific Railroad at project completion.

31. Walkway grating shall be type WB as manufactured by IKG Borden with 1¾"x⅜" serrated bearing bars (galvanized). Any cuts made to grating after galvanizing process shall be treated with ZRC Cold-Galvanizing compound.

TPG DESIGN NOTES

1. The TPG span has been designed in accordance with the AREMA Manual for Railway Engineering, Chapter 15: Steel Structures.

2. The TPG span has been designed for Cooper E80 Live Load (or Alternate Live Load where applicable) plus impact with a 30" maximum total depth of ballast.

NOTE:
FCM = FRACTURE CRITICAL MEMBER

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS
05/28/2021 — DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER
05/28/2021 — DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION — LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY:	MTS/MFB
DRAWN/CHK BY:	ACB/MFB
UPRR ENGINEER:	DEH/ADS
SHT NO.:	C45 of C59

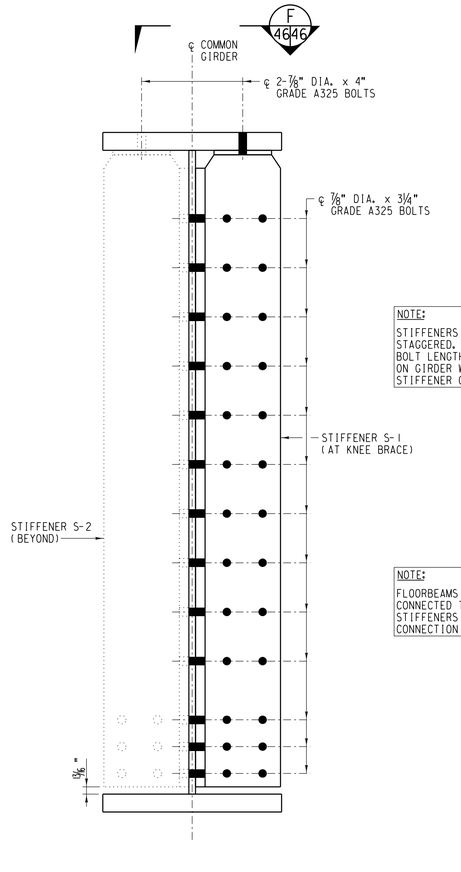
UNION PACIFIC RAILROAD
Office of Director Structures Design

LOCATION & DESCRIPTION:
BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) &
1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE:
TPG NOTES

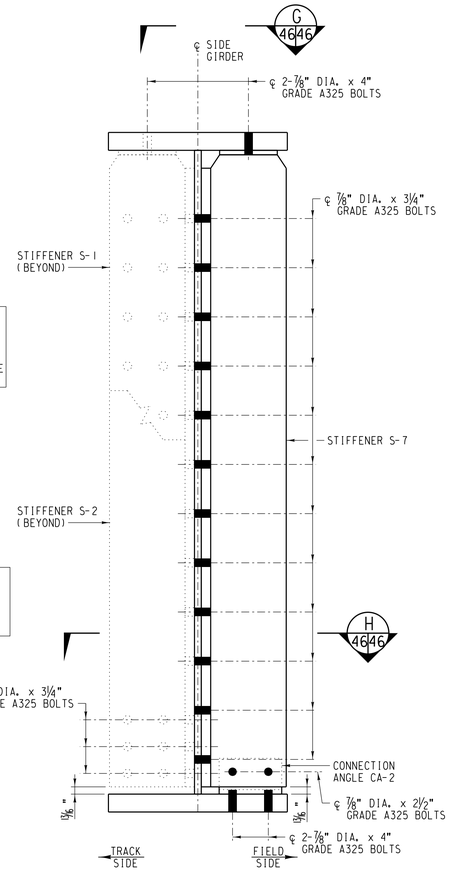
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COMMON GIRDER INTERMEDIATE STIFFENER

SCALE: 1½"=1'-0"

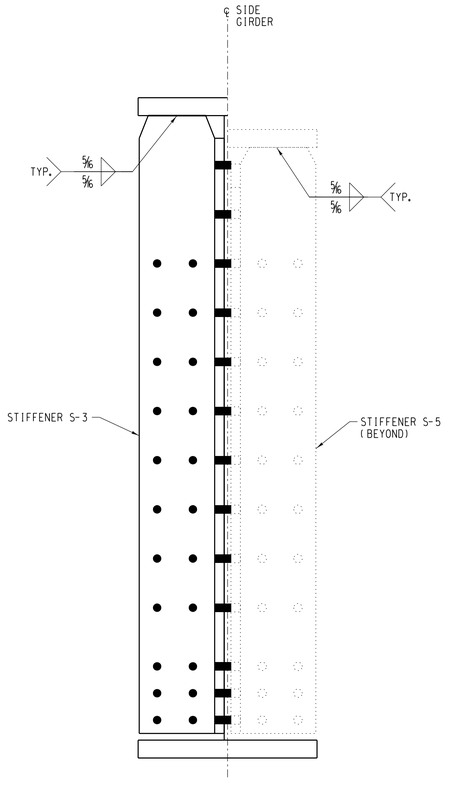


SIDE GIRDER INTERMEDIATE STIFFENER

SCALE: 1½"=1'-0"

NOTE:
STIFFENERS ARE STAGGERED. BOLT LENGTH IS BASED ON GIRDER WEB AND ONE STIFFENER ONLY.

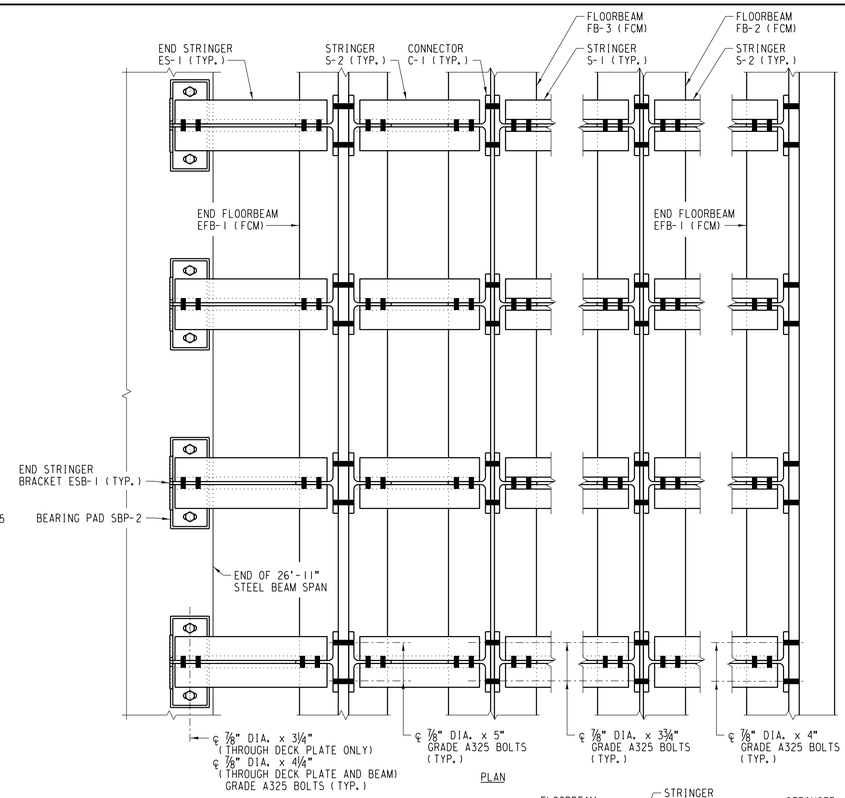
NOTE:
FLOORBEAMS ARE CONNECTED TO STIFFENERS BY CONNECTION PLATES



COMMON GIRDER END STIFFENER

SCALE: 1½"=1'-0"

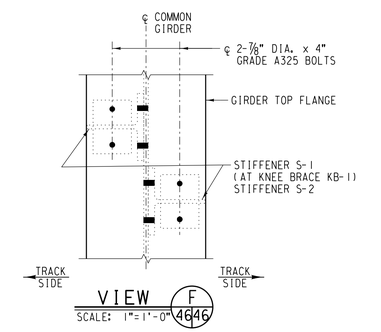
STIFFENER S-6 SIMILAR



STRINGER CONNECTION

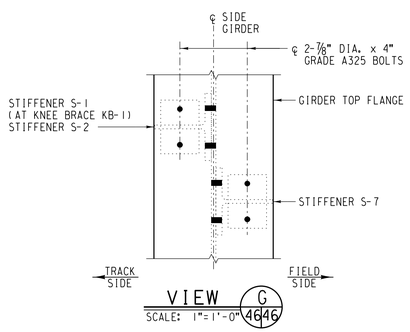
SCALE: 1"=1'-0"

TOP FLANGES OF FLOORBEAMS AND STRINGERS IN PLAN NOT SHOWN FOR CLARITY.



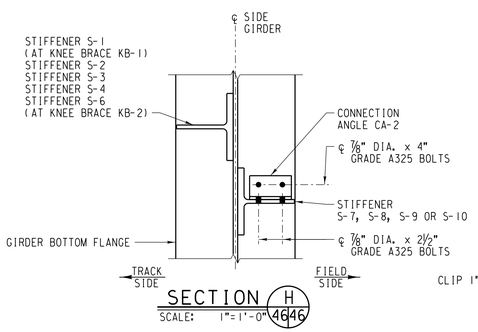
VIEW F

SCALE: 1"=1'-0" (4646)



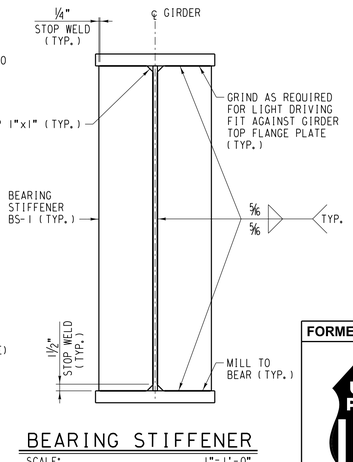
VIEW G

SCALE: 1"=1'-0" (4646)



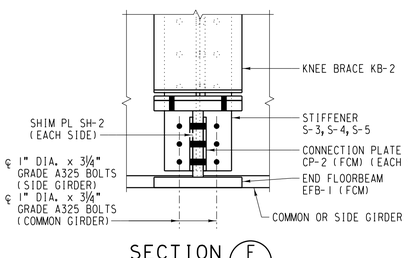
SECTION H

SCALE: 1"=1'-0" (4646)



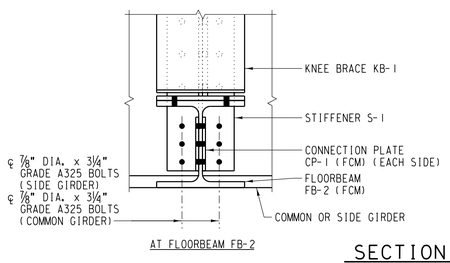
BEARING STIFFENER

SCALE: 1"=1'-0"



SECTION E

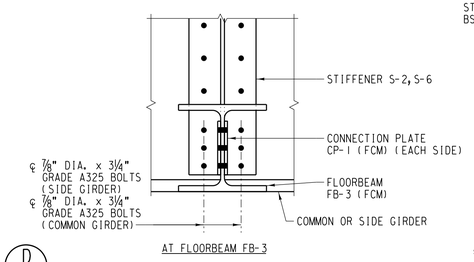
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AT FLOORBEAM FB-2

SECTION D

SCALE: 1"=1'-0" (4446)



AT FLOORBEAM FB-3

NOTES:
1. FOR TPG STRUCTURAL STEEL NOTES, SEE SHEET NO. 45.
2. FCM = FRACTURE CRITICAL MEMBER

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS: FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:

MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

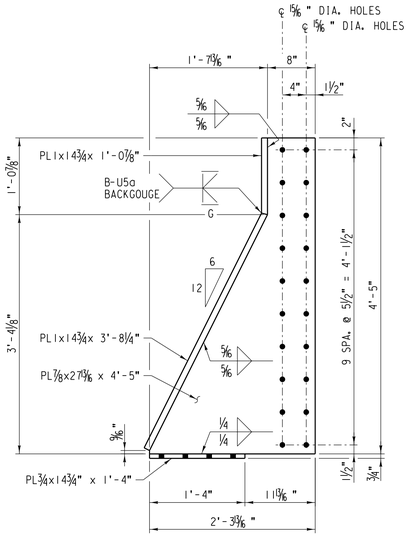
LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

UNION PACIFIC

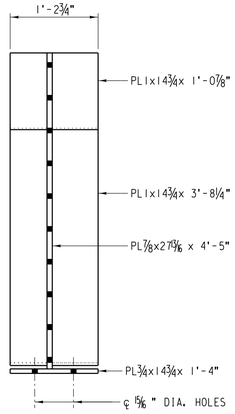
DSN/CHK BY:	UNION PACIFIC RAILROAD
MTS/MFB	Office of Director Structures Design
DRAWN/CHK BY: ACB/MFB	LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION
UPRR ENGINEER: DEH/ADS	1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'
SHT NO.: C46 of C59	SHEET TITLE: TPG ASSEMBLY DETAILS

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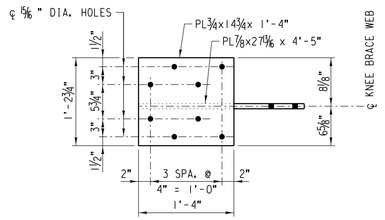
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ELEVATION



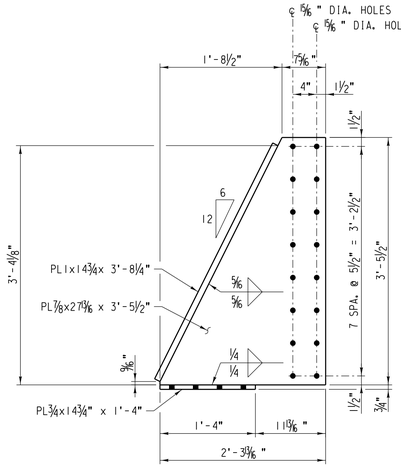
SIDE VIEW



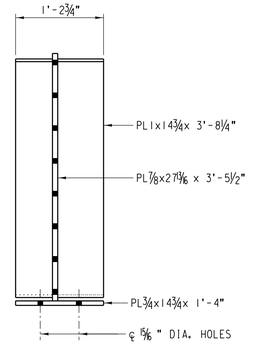
BOTTOM PLAN

KNEE BRACE KB-1

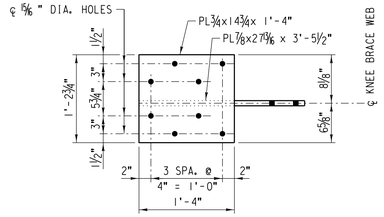
SCALE: 1"=1'-0"
EST. WT. = 495 LB. EA.



ELEVATION



SIDE VIEW



BOTTOM PLAN

KNEE BRACE KB-2

SCALE: 1"=1'-0"
EST. WT. = 418 LB. EA.

NOTES:

1. FOR TPG STRUCTURAL STEEL NOTES, SEE SHEET NO. 45.
2. LLH = LONG LEG HORIZONTAL

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:

FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:

MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

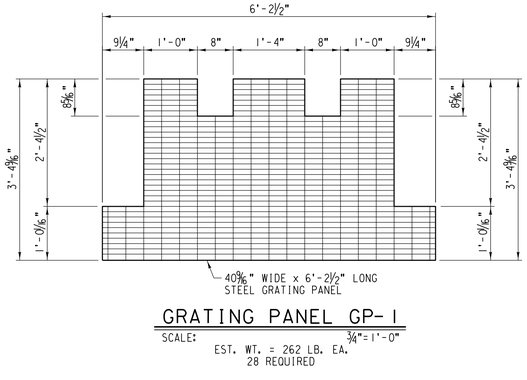
PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION — LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB	**UNION PACIFIC RAILROAD** — Office of Director Structures Design
DRAWN/CHK BY: ACB/MFB	LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION — 1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'
UPRR ENGINEER: DEH/ADS	
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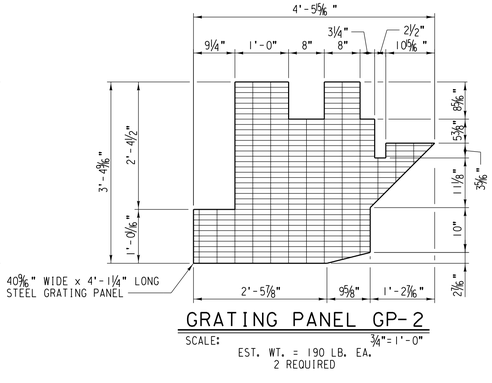
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GRATING PANEL GP-1

SCALE: ¾"=1'-0"

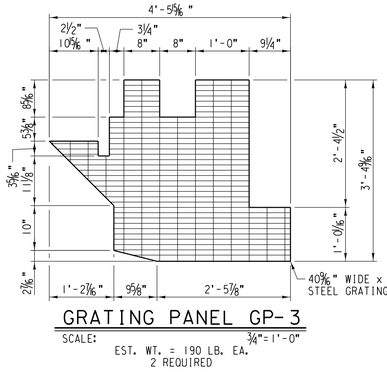
EST. WT. = 262 LB. EA.
28 REQUIRED



GRATING PANEL GP-2

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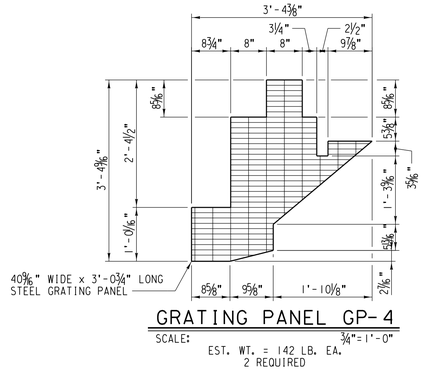
EST. WT. = 190 LB. EA.
2 REQUIRED



GRATING PANEL GP-3

SCALE: ¾"=1'-0"

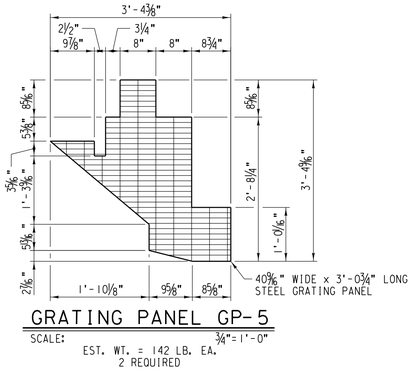
EST. WT. = 190 LB. EA.
2 REQUIRED



GRATING PANEL GP-4

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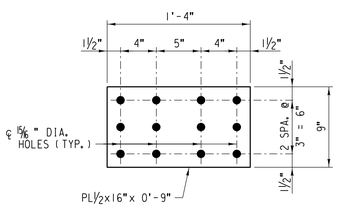
EST. WT. = 142 LB. EA.
2 REQUIRED



GRATING PANEL GP-5

SCALE: ¾"=1'-0"

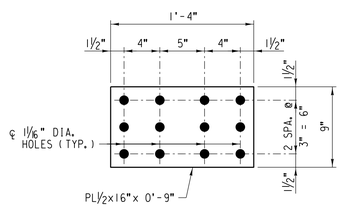
EST. WT. = 142 LB. EA.
2 REQUIRED



CONNECTION PLATE CP-1

SCALE: 1½"=1'-0"

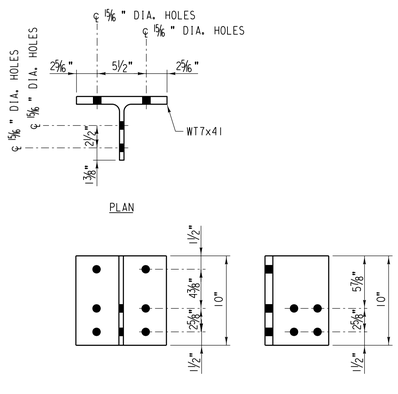
EST. WT. = 20.4 LB. EA.



CONNECTION PLATE CP-2

SCALE: 1½"=1'-0"

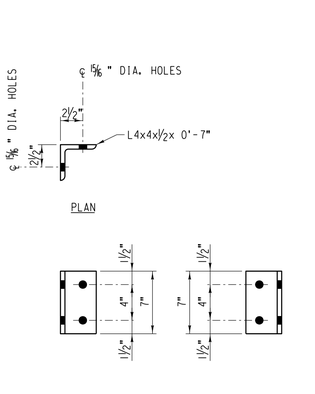
EST. WT. = 20.4 LB. EA.



CONNECTOR C-1

SCALE: 1½"=1'-0"

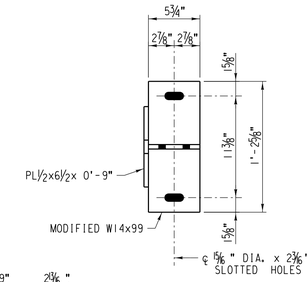
EST. WT. = 34.2 LB. EA.

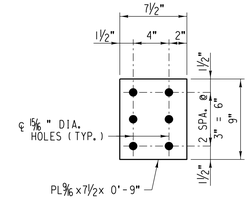


CONNECTION ANGLE CA-2

SCALE: 1½"=1'-0"

EST. WT. = 7.5 LB. EA.





SHIM PLATE SP-1

SCALE: 1½"=1'-0"

EST. WT. = 10.8 LB. EA.

STRINGER S-1

SCALE: 1½"=1'-0"

EST. WT. = 40.6 LB. EA.

STRINGER S-2

SCALE: 1½"=1'-0"

EST. WT. = 39.5 LB. EA.

END STRINGER ES-1

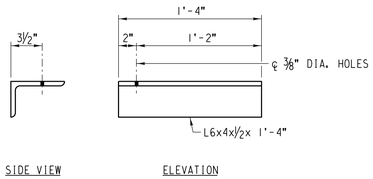
SCALE: 1½"=1'-0"

EST. WT. = 49.7 LB. EA.

END STRINGER BRACKET ESB-1

SCALE: 1½"=1'-0"

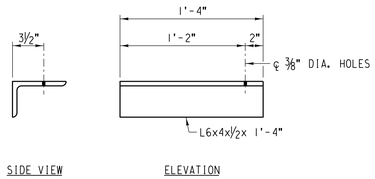
EST. WT. = 16.3 LB. EA.



WALKWAY SUPPORT ANGLE WSA-10

SCALE: 1½"=1'-0"

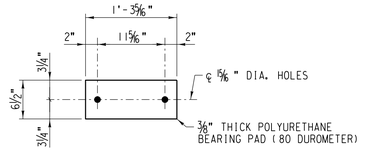
EST. WT. = 21.6 LB. EA.
HEAVY HEX NUT (ASTM A563)



WALKWAY SUPPORT ANGLE WSA-11

SCALE: 1½"=1'-0"

EST. WT. = 21.6 LB. EA.
HEAVY HEX NUT (ASTM A563)



BEARING PAD SBP-2

SCALE: 1"=1'-0"

NOTES:
1. FOR TPG STRUCTURAL STEEL NOTES, SEE SHEET NO. 45.

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS: FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:

MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY:	MTS/MFB
DRAWN/CHK BY:	ACB/MFB
UPRR ENGINEER:	DEH/ADS
SHT NO.:	C48 of C59

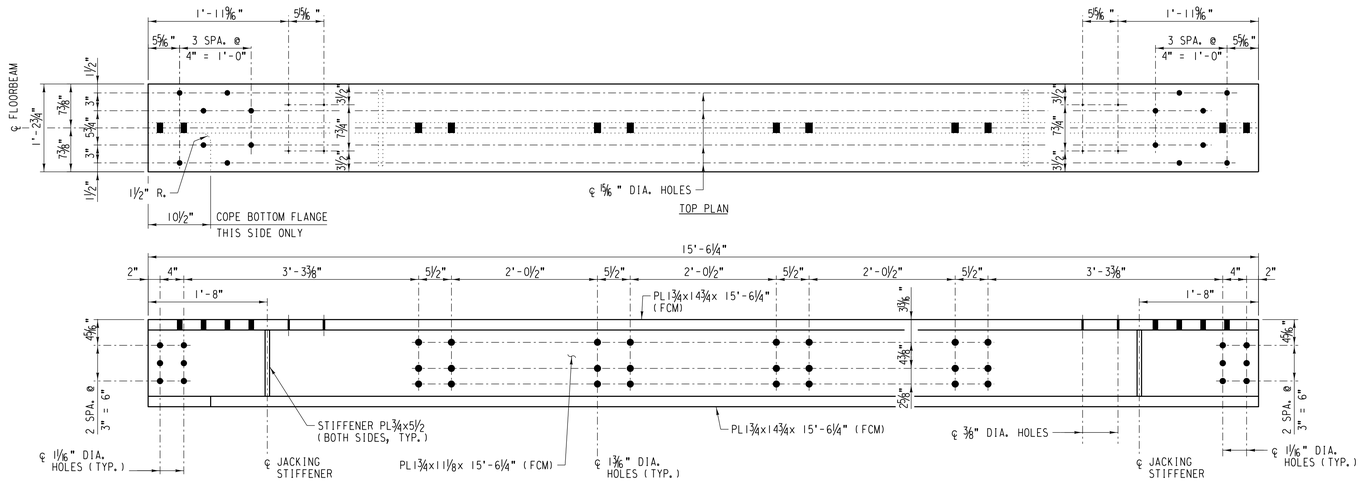
UNION PACIFIC RAILROAD
Office of Director Structures Design

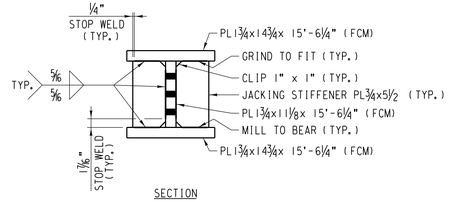
LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) &
1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE: TPG FLOORBEAM CONNECTION DETAILS AND GRATING PANEL DETAILS

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PLOTTED: 5/27/2021 11:13:36 AM

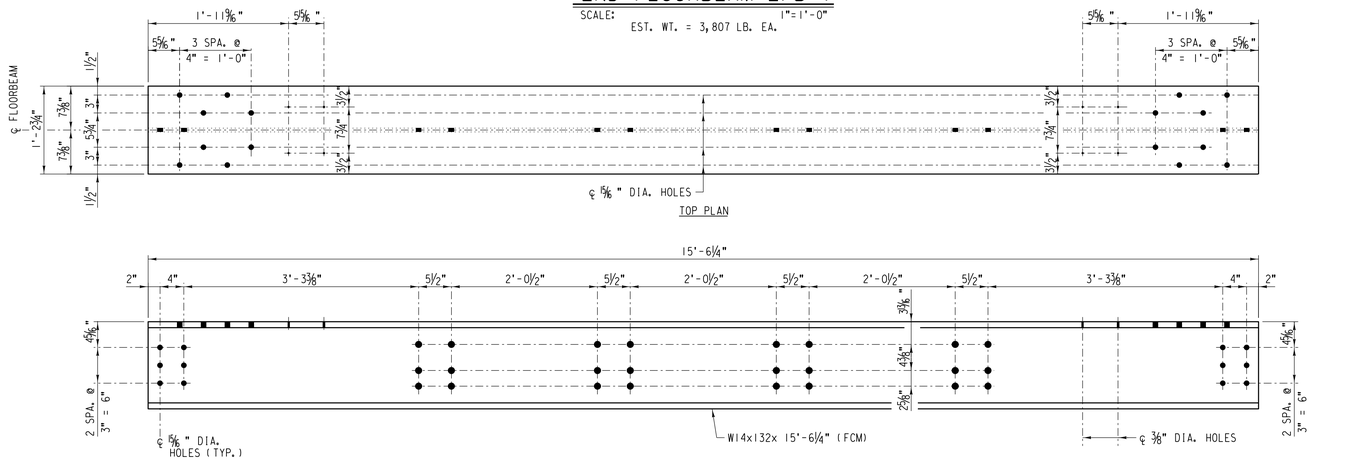




END FLOORBEAM EFB-1

SCALE: 1"=1'-0"

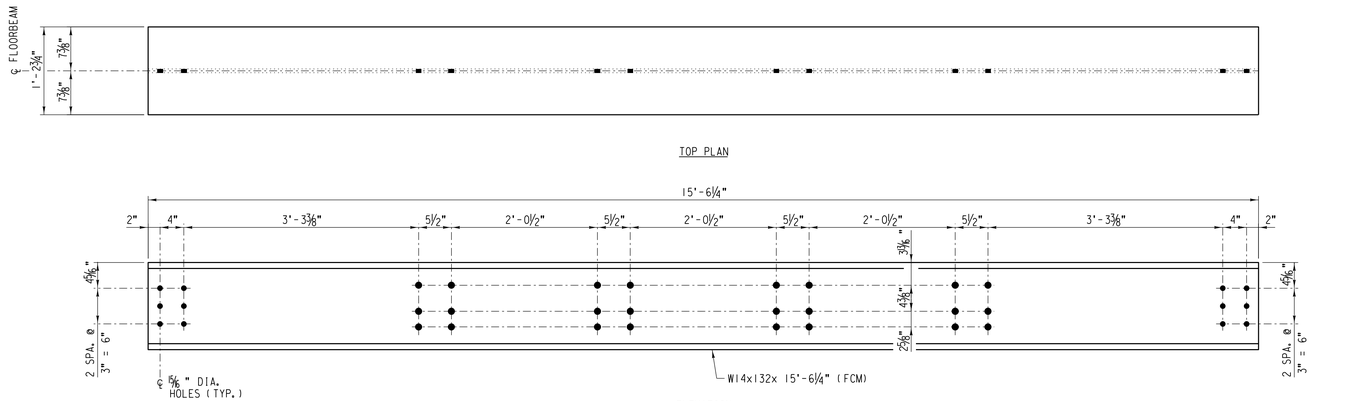
EST. WT. = 3,807 LB. EA.



FLOORBEAM FB-2

SCALE: 1"=1'-0"

EST. WT. = 2,049 LB. EA.



FLOORBEAM FB-3

SCALE: 1"=1'-0"

EST. WT. = 2,049 LB. EA.

NOTES:

1. FOR TPG STRUCTURAL STEEL NOTES, SEE SHEET NO. 45.
2. FCM = FRACTURE CRITICAL MEMBER

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:

FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:

MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

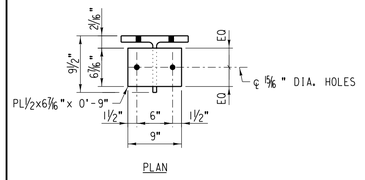
FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

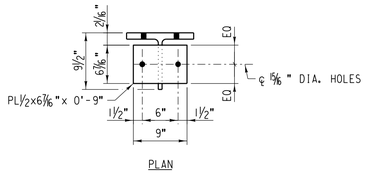
DSN/CHK BY: MTS/MFB	**UNION PACIFIC RAILROAD**
DRAWN/CHK BY: ACB/MFB	Office of Director Structures Design
UPRR ENGINEER: DEH/ADS	LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION
SHT NO.: C49 of C59	1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'
	SHEET TITLE: TPG FLOORBEAM DETAILS

FILE NAME: C:\Users\mromirez\Desktop\roc00082_bii.dgn

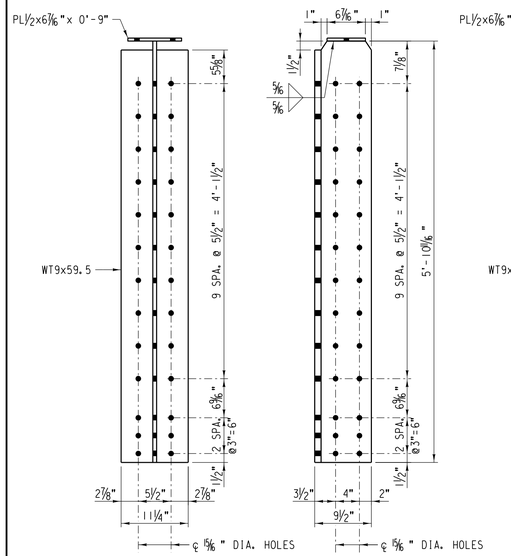
PLOTTED: 5/27/2021 11:13:36 AM



PLAN



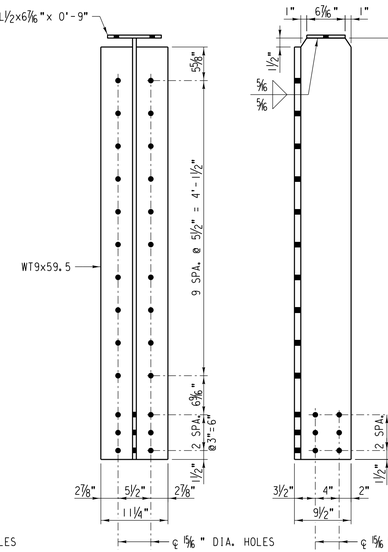
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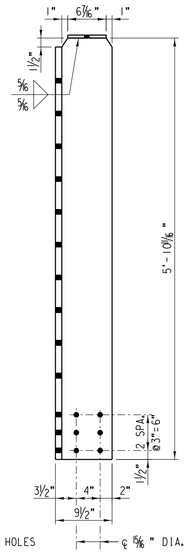


ELEVATION SIDE VIEW

STIFFENER S-1

SCALE: 1"=1'-0"
EST. WT. = 359 LB. EA.
24 REQ'D

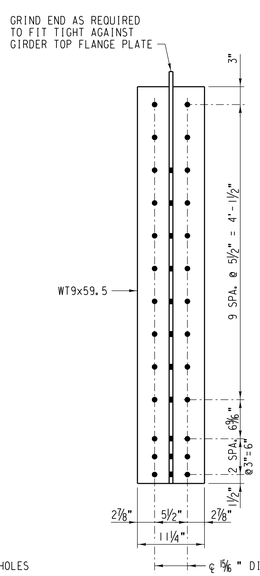


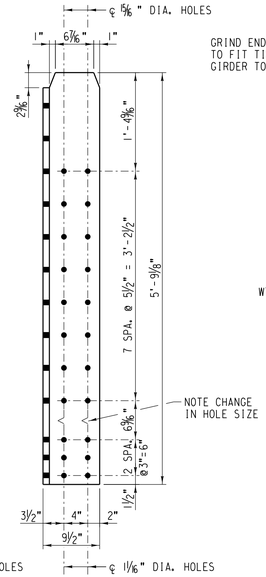


ELEVATION SIDE VIEW

STIFFENER S-2

SCALE: 1"=1'-0"
EST. WT. = 359 LB. EA.
52 REQ'D

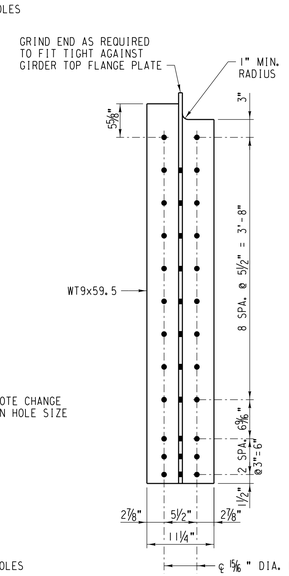


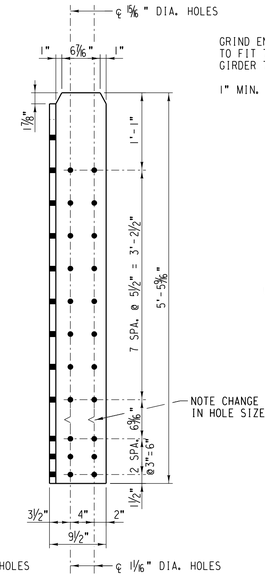


ELEVATION SIDE VIEW

STIFFENER S-3

SCALE: 1"=1'-0"
EST. WT. = 343 LB. EA.
4 REQ'D

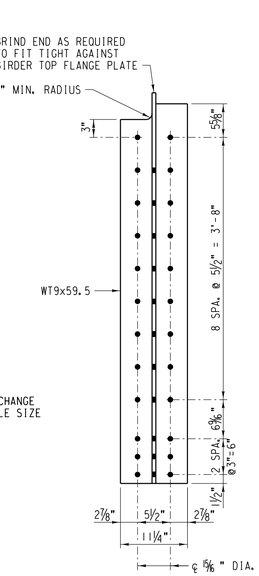


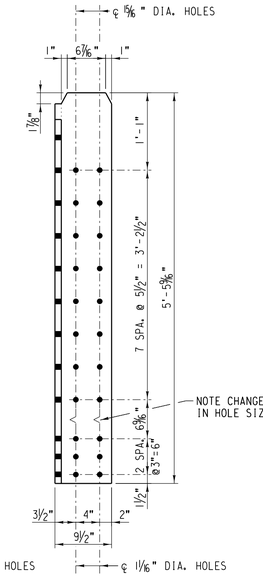


ELEVATION SIDE VIEW

STIFFENER S-4

SCALE: 1"=1'-0"
EST. WT. = 326 LB. EA.
2 REQ'D





ELEVATION SIDE VIEW

STIFFENER S-5

SCALE: 1"=1'-0"
EST. WT. = 326 LB. EA.
2 REQ'D

NOTE:
FOR TPG STRUCTURAL STEEL NOTES, SEE SHEET NO. 45.

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS
05/28/2021 — DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER
05/28/2021 — DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

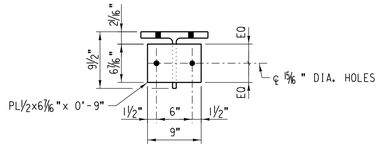
LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

UNION PACIFIC

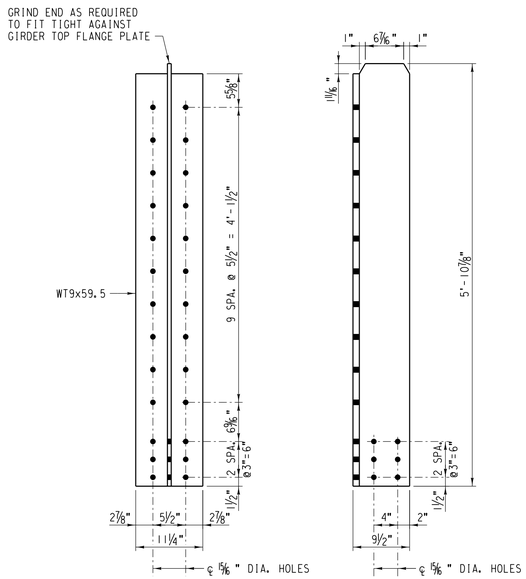
DSN/CHK BY: MTS/MFB	**UNION PACIFIC RAILROAD**
DRAWN/CHK BY: ACB/MFB	Office of Director Structures Design
UPRR ENGINEER: DEH/ADS	LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION 1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'
SHT NO.: C50 of C59	SHEET TITLE: TPG STIFFENER ANGLE DETAILS (SHEET 1 OF 2)

FILE NAME: C:\Users\mromero2\Desktop\roc00082_bii.dgn

PLOTTED: 5/27/2021 11:13:37 AM



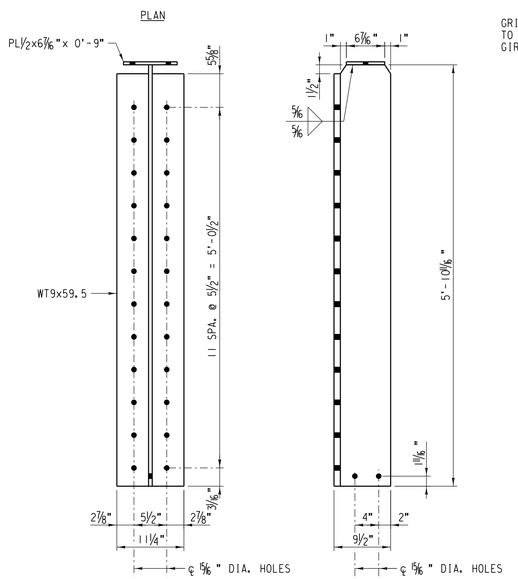
PLAN



ELEVATION SIDE VIEW

STIFFENER S-6

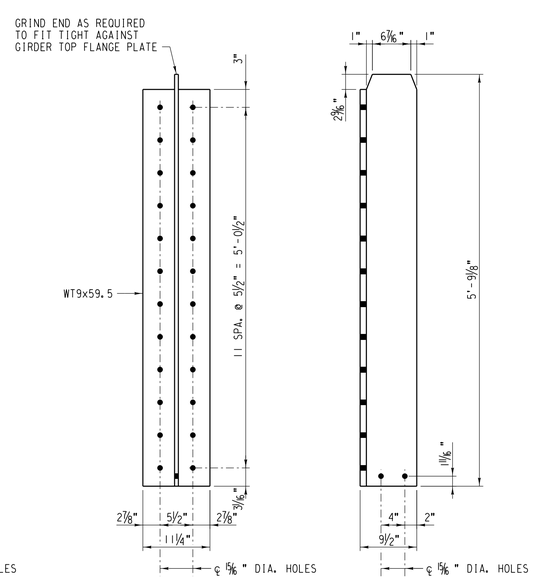
SCALE: 1"=1'-0"
EST. WT. = 352 LB. EA.
4 REQ'D



ELEVATION SIDE VIEW

STIFFENER S-7

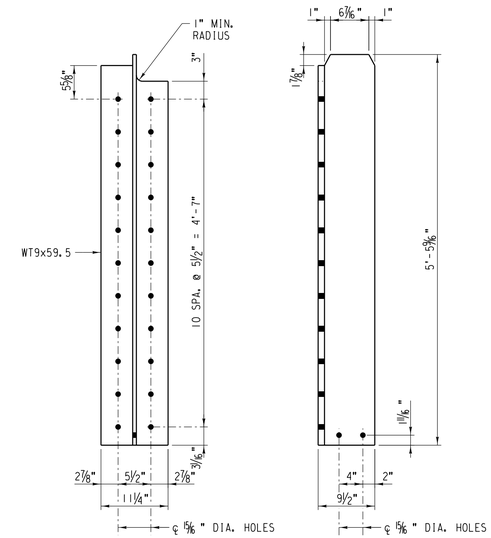
SCALE: 1"=1'-0"
EST. WT. = 359 LB. EA.
38 REQ'D



ELEVATION SIDE VIEW

STIFFENER S-8

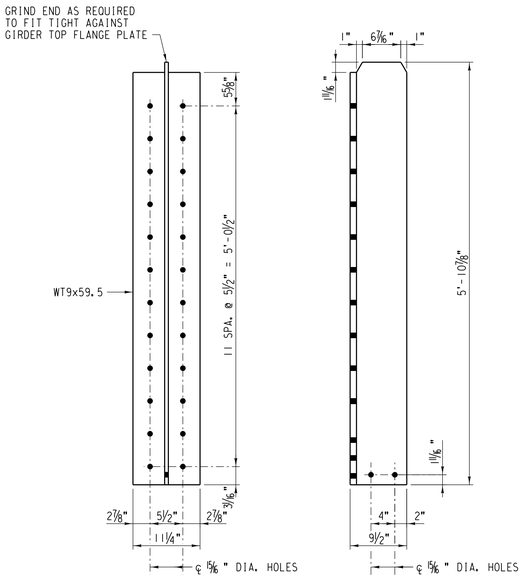
SCALE: 1"=1'-0"
EST. WT. = 343 LB. EA.
2 REQ'D



ELEVATION SIDE VIEW

STIFFENER S-9

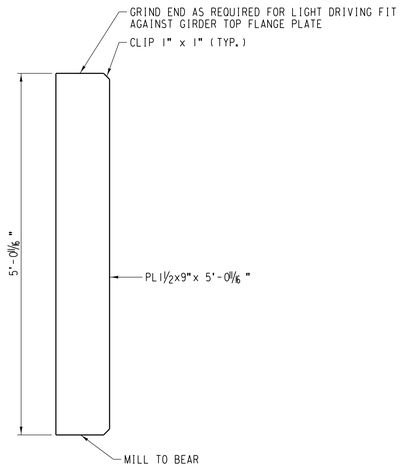
SCALE: 1"=1'-0"
EST. WT. = 326 LB. EA.
2 REQ'D



ELEVATION SIDE VIEW

STIFFENER S-10

SCALE: 1"=1'-0"
EST. WT. = 352 LB. EA.
2 REQ'D



BEARING STIFFENER BS-1

SCALE: 1"=1'-0"
EST. WT. = 233 LB. EA.
12 REQ'D

NOTE:
FOR TPG STRUCTURAL STEEL NOTES, SEE SHEET NO. 45.

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION — LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB
DRAWN/CHK BY: ACB/MFB
UPRR ENGINEER: DEH/ADS
SHT NO.: C51 of C59

UNION PACIFIC RAILROAD
Office of Director Structures Design

LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) &
1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE: TPG STIFFENER ANGLE DETAILS (SHEET 2 OF 2)

FILE NAME: C:\Users\mercmir\a2w\Desktop\rac00082_bil.dgn

PLOTTED: 5/27/2021 11:13:37 AM

GIRDER STRESS TABLE

SPAN LENGTH (L)	GIRDER LOCATION	TOP FLANGE SIZE	BOTTOM FLANGE SIZE	WEB SIZE	WEB SIZE	SHEAR							MOMENT							LIVE LOAD + IMPACT DEFLECTION		
							LIVE LOAD				WEB AREA (Aw)			LIVE LOAD				SECTION MODULUS (S)			MOMENT OF INERTIA (I)	
						DEAD LOAD (k)	E 80 (k)	ALTERNATE (k)	IMPACT (k)	TOTAL (k)	REQUIRED (in^2)	PROVIDED, GROSS (in^2)	DEAD LOAD (k-ft)	E 80 (k-ft)	ALTERNATE (k-ft)	IMPACT (k-ft)	TOTAL (k-ft)	REQUIRED (in^3)	PROVIDED, NET (in^3)	ALLOWABLE (in)	REQUIRED (in^4)	PROVIDED, GROSS (in^4)
49'-4"	COMMON	2" x 20"	2" x 20"	*¾" x 60"	**¾" x 72"	168.2	345.3	-	143.7	657.2	37.6	45.0	1,976	3,542	-	1,475	6,993	3,051	3,062	0.88	78,053	132,875
49'-4"	SIDE	2" x 20"	2" x 20"	*¾" x 60"	**¾" x 72"	93.2	172.6	-	71.9	337.7	19.3	45.0	1,095	1,771	-	737	3,603	1,572	3,062	0.88	39,027	132,875

NOTES:
L = LONGITUDINAL DIMENSION, OUT TO OUT OF GIRDERS
* WEB SIZE AT LOCATION OF MAXIMUM SHEAR (℄ BEARING)
** WEB SIZE AT LOCATION OF MAXIMUM MOMENT (MIDSPAN)

FLOORBEAM STRESS TABLE

LENGTH (Lf)	FLOORBEAM LOCATION	BEAM SIZE OR FLANGE SIZE	BEAM SIZE OR WEB SIZE	SHEAR							MOMENT							LIVE LOAD + IMPACT DEFLECTION		
					LIVE LOAD				WEB AREA (Aw)			LIVE LOAD				SECTION MODULUS (S)			MOMENT OF INERTIA (I)	
				DEAD LOAD (k)	E 80 (k)	ALTERNATE (k)	IMPACT (k)	TOTAL (k)	REQUIRED (in^2)	PROVIDED, GROSS (in^2)	DEAD LOAD (k-ft)	E 80 (k-ft)	ALTERNATE (k-ft)	IMPACT (k-ft)	TOTAL (k-ft)	REQUIRED (in^3)	PROVIDED, NET (in^3)	ALLOWABLE (in)	REQUIRED (in^4)	PROVIDED, GROSS (in^4)
17'-4"	INTERIOR	W14x132	W14x132	2.5	-	28.0	17.9	48.4	2.8	9.5	13	-	173	111	296	129	206	0.33	1,136	1,530
17'-4"	END	1¾" x 14¾"	1¾" x 11⅛"	2.8	-	28.0	17.9	48.7	2.8	25.6	14	-	173	110	297	129	316	0.33	1,136	2,353
17'-4"	**END	1¾" x 14¾"	1¾" x 11⅛"	93.2	-	-	-	93.2	6.0	25.6	240	-	-	-	240	70	316	-	-	-

NOTES:
1. **END FLOORBEAM DESIGN STRESSES ARE BASED ON JACKING LOAD, UTILIZING 150% ALLOWABLE OVERSTRESS.
2. Lf = LENGTH OF FLOORBEAM, ℄ TO ℄ OF GIRDERS

ONE GIRDER MATERIAL LIST

SPAN LENGTH (L)	GIRDER LOCATION	TOP FLANGE PL2x20x 39'-4" (Ea.)	TOP FLANGE PL2x20x 5'-4⅜" (Ea.)	BOTTOM FLANGE PL2x20 49'-4" (Ea.)	WEB PL¾x72 (Lw)	BEARING STIFFENER BS-1 (Ea.)	STIFFENER ANGLE										CONNECTION ANGLE CA-2 (Ea.)	GIRDER END PLATE ⅝"x20"x4'-3⅜" (Ea.)	GRADE A325 BOLTS		
							S-1 (Ea.)	S-2 (Ea.)	S-3 (Ea.)	S-4 (Ea.)	S-5 (Ea.)	S-6 (Ea.)	S-7 (Ea.)	S-8 (Ea.)	S-9 (Ea.)	S-10 (Ea.)			⅞" DIA. x 4" (Ea.)	⅞" DIA. x 3¼" (Ea.)	⅞" DIA. x 2½" (Ea.)
49'-4"	COMMON	1	2	1	49'-2¾"	4	12	26	2	-	2	2	-	-	-	-	-	2	76	1,140	-
49'-4"	SIDE	1	2	1	49'-2¾"	4	6	13	1	1	-	1	19	1	1	1	22	2	120	1,096	44

NOTE:
L = LONGITUDINAL DIMENSION, OUT TO OUT OF GIRDER
Lw = LENGTH OF GIRDER WEB

TOTAL MATERIAL LIST

SPAN LENGTH (L)	COMMON GIRDER (Ea.)	SIDE GIRDER (Ea.)	END FLOORBEAM EFB-1 (Ea.)	FLOORBEAM		STRINGER			END STRINGER BRACKET ESB-1 (Ea.)	KNEE BRACE		WALKWAY SUPPORT ANGLE		CONNECTION PLATE CP-1 (Ea.)	END FLOORBEAM CONNECTION		STRINGER CONNECTION C-1 (Ea.)	BEARING TYPE A (Ea.)	BEARING TYPE B (Ea.)	BEARING TYPE C (Ea.)	BEARING TYPE D (Ea.)	ANCHOR ROD		1" DIA. GRADE A325 BOLTS x 5¼" (Ea.)	GRATING PANEL				
				FB-2 (Ea.)	FB-3 (Ea.)	S-1 (Ea.)	S-2 (Ea.)	ES-1 (Ea.)		KB-1 (Ea.)	KB-2 (Ea.)	WSA-10 (Ea.)	WSA-11 (Ea.)		CP-2 (Ea.)	FILL PLATE SP-1 (Ea.)						SAR-10E (Ea.)	SAR-10F (Ea.)		GP-1 (Ea.)	GP-2 (Ea.)	GP-3 (Ea.)	GP-4 (Ea.)	GP-5 (Ea.)
49'-4"	1	2	4	12	28	304	32	16	8	24	8	4	4	160	16	16	344	1	2	1	2	12	12	48	28	2	2	2	2

TOTAL MATERIAL LIST (CON'T.)

SPAN LENGTH (L)	⅝" DIA. ASTM A307 GRADE A HEX BOLT x 2½" (Ea.)	F-10 FASTENER (Ea.)	GRADE A325 BOLTS							
			⅞" DIA. x 5" (Ea.)	⅞" DIA. x 4¼" (Ea.)	⅞" DIA. x 4" (Ea.)	⅞" DIA. x 3¾" (Ea.)	⅞" DIA. x 3½" (Ea.)	⅞" DIA. x 3¼" (Ea.)	⅞" DIA. x 3" (Ea.)	1" DIA. x 4¼" (Ea.)
49'-4"	136	136	48	8	112	960	1,408	200	1,568	96

NOTE:
L = LONGITUDINAL DIMENSION, OUT TO OUT OF GIRDERS

LIFTING WEIGHT OF TPG SPAN

SPAN LENGTH	COMMON GIRDER		SIDE GIRDER		PHASE I ASSEMBLED SPAN	
	(LB.)	(TON)	(LB.)	(TON)	(LB.)	(TON)
49'-4"	39,495	19.7	39,615	19.8	154,700	77.4

NOTES:
1. ASSEMBLED SPAN WEIGHT SHOWN IS FOR STEEL ONLY (INCLUDING GRATING, NOT INCLUDING BEARINGS).
2. ASSEMBLED SPAN WEIGHT INCLUDES ONE COMMON GIRDER, ONE SIDE GIRDER AND FLOOR SYSTEM FOR ONE BAY ONLY.
3. TOTAL WEIGHT OF STRUCTURAL STEEL FOR TPG SPAN = 261,200 LB.

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL — STATUS
05/28/2021 — DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER — CONSULTANT ENGINEER
05/28/2021 — DATE

PROJECT ID:
WORK ORDER: 31876
C E NUMBER: 122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION
LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB
DRAWN/CHK BY: ACB/MFB
UPRR ENGINEER: DEH/ADS
SHT NO.: C52 of C59

UNION PACIFIC RAILROAD
Office of Director Structures Design

LOCATION & DESCRIPTION:
BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) &
1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE:
TPG STRESS, MATERIAL LIST AND LIFTING WEIGHT TABLES

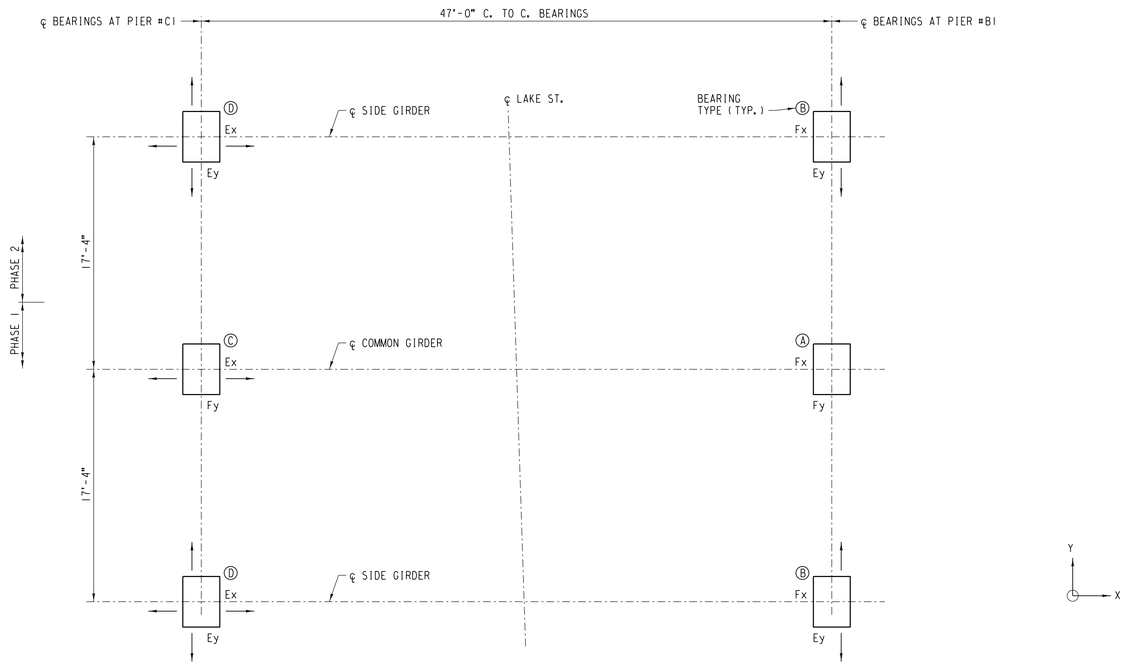
FILE NAME: C:\Users\mmirza\Desktop\rac00082.bll.dgn

PLOTTED: 5/27/2021 11:13:37 AM

TO CANAL ST. (CHICAGO)
(TIMETABLE SOUTH)

TO KEDZIE (CHICAGO)
(TIMETABLE NORTH)





BEARING KEY PLAN
SCALE: 3/16"=1'-0"

NOTE:
WORK THIS SHEET WITH SHEETS NO. 54-57.

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:
FINAL (STATUS) 05/28/2021 (DATE)

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:
MATTHEW BECKER (CONSULTANT ENGINEER) 05/28/2021 (DATE)

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB
DRAWN/CHK BY: ACB/MFB
UPRR ENGINEER: DEH/ADS
SHT NO.: C53 of C59

UNION PACIFIC RAILROAD

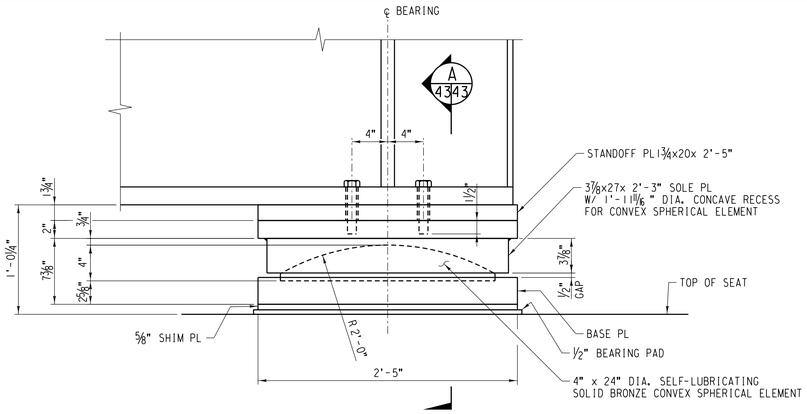
Office of Director Structures Design

LOCATION & DESCRIPTION:
BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) &
1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE:
TPG BEARING LAYOUT

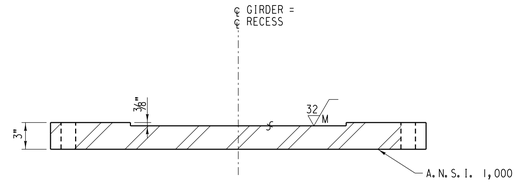
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PLOTTED: 5/27/2021 11:13:37 AM



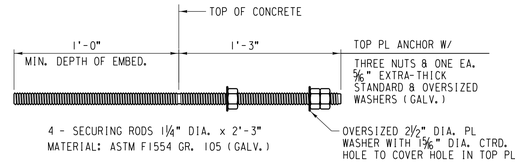
BEARING TYPE A ELEVATION

SCALE: 1½"=1'-0"
(SECURING RODS AND FLOORBEAMS NOT SHOWN FOR CLARITY)



SECTION C
4343

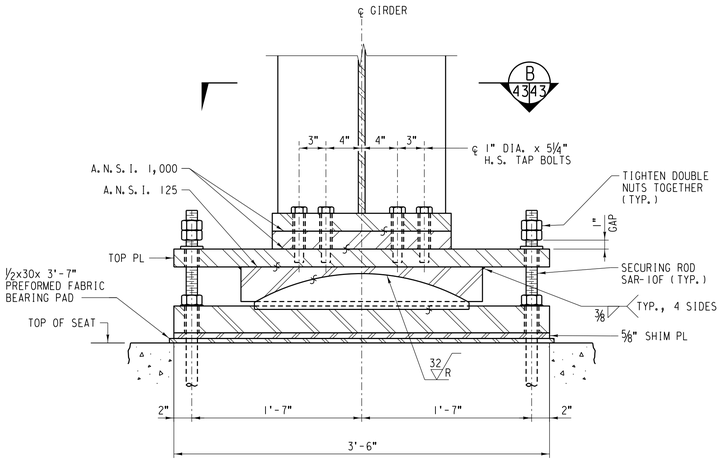
SCALE: 1½"=1'-0"



SECURING ANCHOR ROD SAR-10F

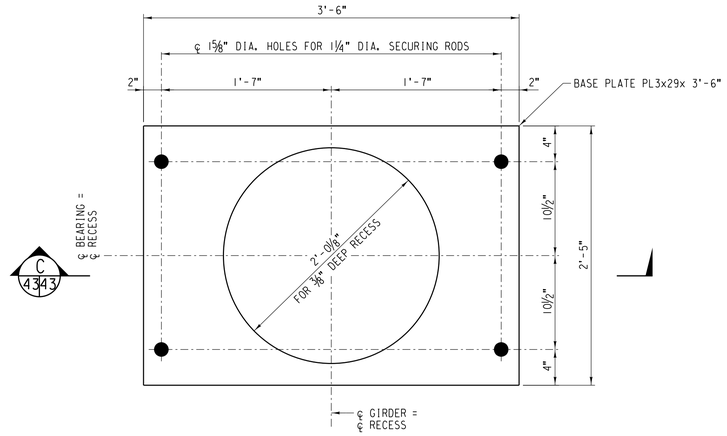
SCALE: NONE

NOTES:
1. SECURING RODS SHALL BE MADE FROM HIGH-STRENGTH MATERIAL MEETING THE REQUIREMENTS OF ASTM F1554, GRADE 105. THE RODS SHALL BE SUPPLIED WITH HEAVY HEX NUTS MEETING THE REQUIREMENTS OF ASTM A194 GRADE 2H OR ASTM A563 GRADE DH AND HARDENED WASHERS MEETING THE REQUIREMENTS OF ASTM F436. SECURING RODS AND HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM F2329.
2. THE CONTRACTOR SHALL INSTALL THE SECURING RODS INTO THE CONCRETE ABUTMENTS USING NON-SHRINK CEMENTITIOUS GROUT.



SECTION A
4343

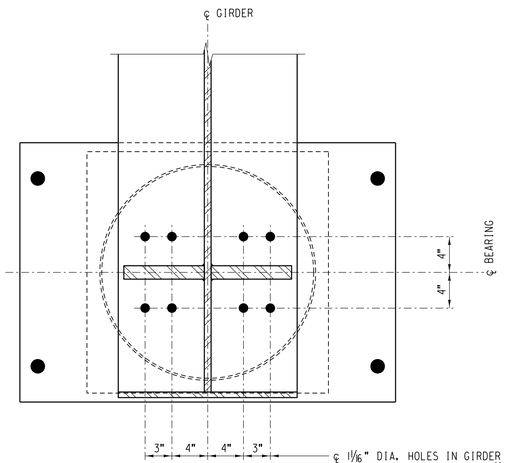
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BASE PLATE DETAIL

SCALE: 1½"=1'-0"

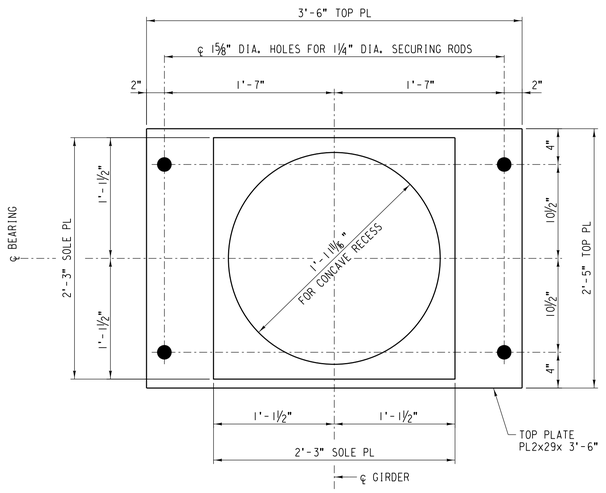
NOTES:
1. ALL SURFACES MARKED "32" SHALL BE MACHINE FINISHED BY AN AUTOMATIC PROCESS.
2. BEARING ASSEMBLIES SHALL BE STRESS RELIEVED AFTER WELDING.
3. BEARINGS SHALL BE ASSEMBLED COMPLETE IN THE SHOP AND CHECKED FOR FIT AND BEARING OF ALL CONTACT SURFACES, THEN MATCH MARKED FOR INSTALLATION IN THE FIELD.
4. STRUCTURAL STEEL PLATE FOR THE BEARINGS SHALL CONFORM TO ASTM A709 GR. 36 OR ASTM A36 SPECIFICATIONS.
5. BRONZE ELEMENTS SHALL CONFORM TO ASTM B22, COPPER ALLOY C91100.
6. TAP BOLTS SHALL BE 1" DIAMETER HIGH STRENGTH BOLTS CONFORMING WITH ASTM F3125 GRADE A325, TYPE 3.
7. END FLOORBEAMS NEAR BEARINGS SHALL HAVE THEIR BOTTOM FLANGES COPED TO AVOID CONFLICT WITH SECURING ANCHOR RODS.



SECTION B
4343

SCALE: 1½"=1'-0"

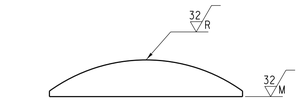
(END FLOORBEAM NOT SHOWN FOR CLARITY)



TOP & SOLE PLATE DETAILS

SCALE: 1½"=1'-0"

(UNDERSIDE SHOWN)



SPHERICAL ELEMENT SURFACE FINISH DETAIL

SCALE: N.T.S.

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS: FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:

MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION — LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY:	MTS/MFB
DRAWN/CHK BY:	ACB/MFB
UPRR ENGINEER:	DEH/ADS
SHT NO.:	C54 of C59

UNION PACIFIC RAILROAD

Office of Director Structures Design

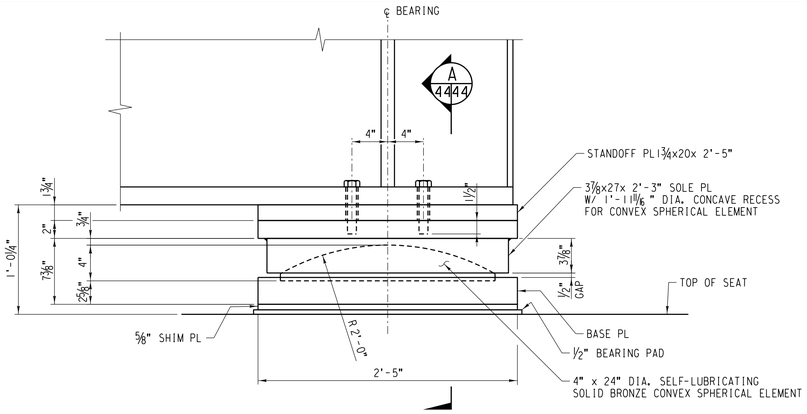
LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION

1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) &
1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE: TPG BEARING DETAILS - TYPE A

FILE NAME: C:\Users\wrcmirez\Desktop\rc00082_bil.dgn

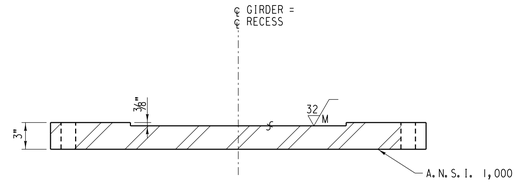
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BEARING TYPE B ELEVATION

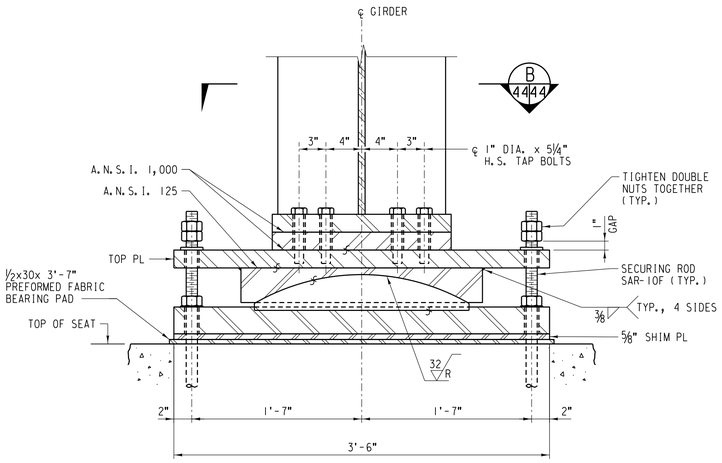
SCALE: 1½"=1'-0"

(SECURING RODS AND FLOORBEAMS NOT SHOWN FOR CLARITY)



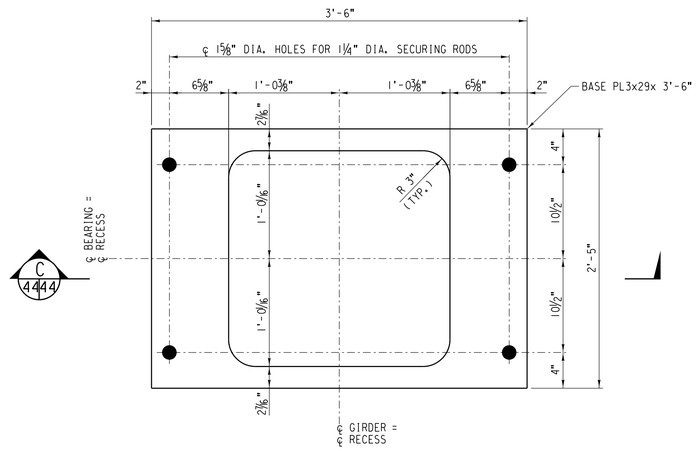
SECTION C

SCALE: 1½"=1'-0"



SECTION A

SCALE: 1½"=1'-0"

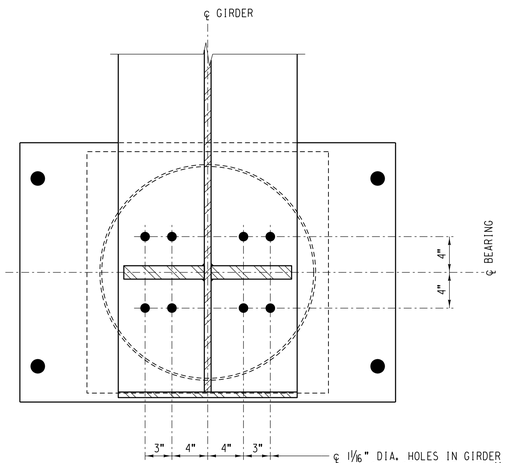


BASE PLATE DETAIL

SCALE: 1½"=1'-0"

NOTES:

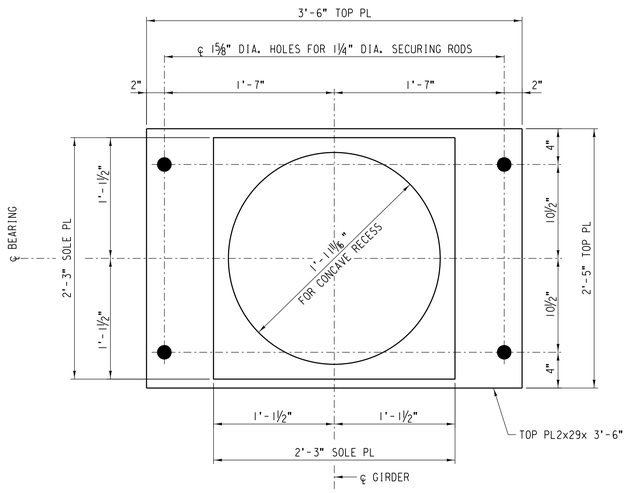
1. ALL SURFACES MARKED "32" SHALL BE MACHINE FINISHED BY AN AUTOMATIC PROCESS.
2. BEARING ASSEMBLIES SHALL BE STRESS RELIEVED AFTER WELDING.
3. BEARINGS SHALL BE ASSEMBLED COMPLETE IN THE SHOP AND CHECKED FOR FIT AND BEARING OF ALL CONTACT SURFACES, THEN MATCH MARKED FOR INSTALLATION IN THE FIELD.
4. STRUCTURAL STEEL PLATE FOR THE BEARINGS SHALL CONFORM TO ASTM A709 GR. 36 OR ASTM A36 SPECIFICATIONS.
5. BRONZE ELEMENTS SHALL CONFORM TO ASTM B22, COPPER ALLOY C91100.
6. TAP BOLTS SHALL BE 1" DIAMETER HIGH STRENGTH BOLTS CONFORMING WITH ASTM F3125 GRADE A325, TYPE 3.
7. END FLOORBEAMS NEAR BEARINGS SHALL HAVE THEIR BOTTOM FLANGES COPED TO AVOID CONFLICT WITH SECURING ANCHOR RODS.



SECTION B

SCALE: 1½"=1'-0"

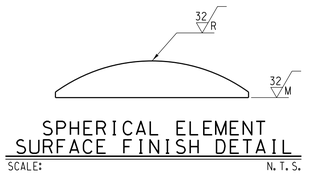
(END FLOORBEAM NOT SHOWN FOR CLARITY)



TOP & SOLE PLATE DETAILS

SCALE: 1½"=1'-0"

(UNDERSIDE SHOWN)



SPHERICAL ELEMENT SURFACE FINISH DETAIL

SCALE: N.T.S.

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS: FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:

MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION — LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY:	MTS/MFB
DRAWN/CHK BY:	ACB/MFB
UPRR ENGINEER:	DEH/ADS
SHT NO.:	C55 of C59

UNION PACIFIC RAILROAD

Office of Director Structures Design

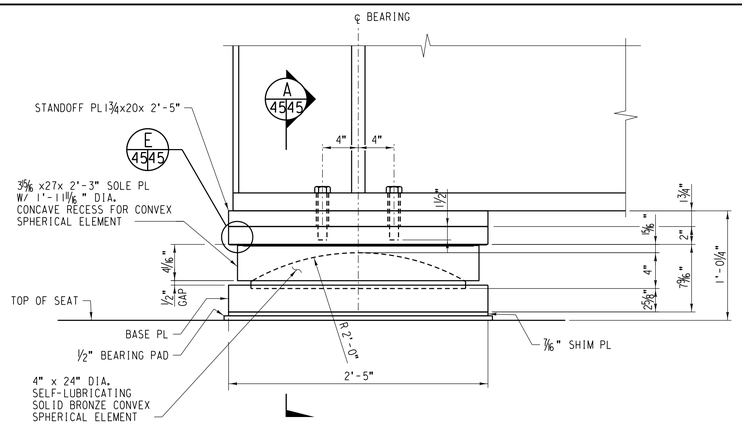
LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION

1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE: TPG BEARING DETAILS - TYPE B

FILE NAME: C:\Users\wcrom\rez\Desktop\rc00082_bil.dgn

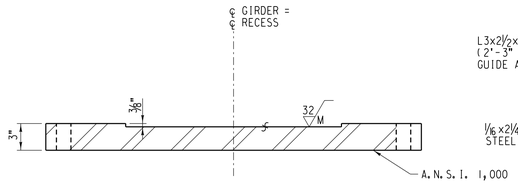
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BEARING TYPE C ELEVATION

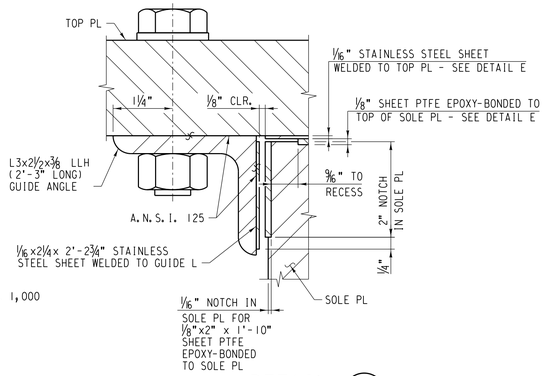
SCALE: 1½"=1'-0"

(SECURING RODS AND FLOORBEAMS NOT SHOWN FOR CLARITY)



SECTION C 4545

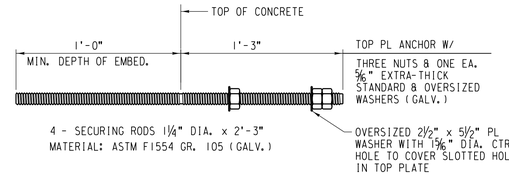
SCALE: 1½"=1'-0"



DETAIL D 4545

SCALE: NONE

(SHOWN IN SECTION NEAR ℄ OF BEARING)

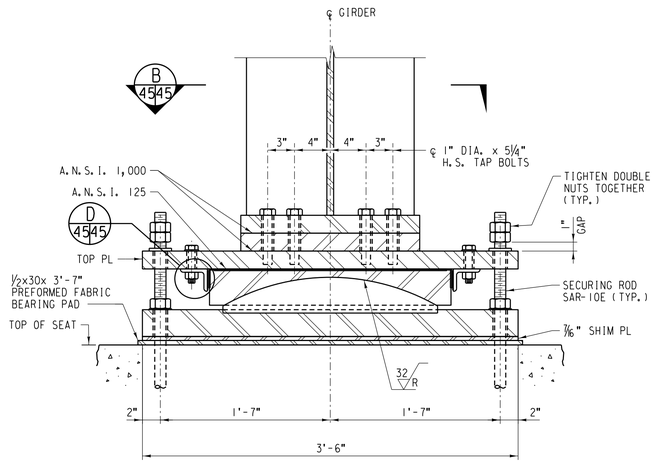


SECURING ANCHOR ROD SAR-10E

SCALE: NONE

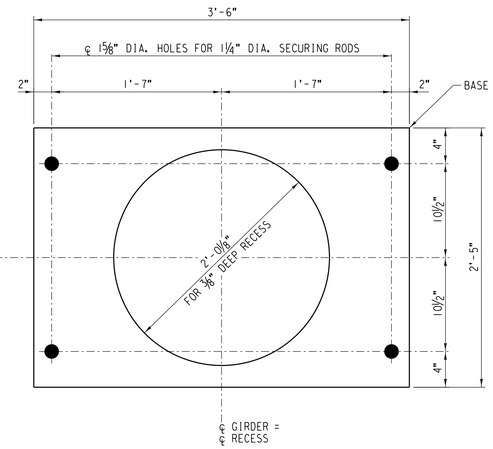
NOTES:

1. SECURING RODS SHALL BE MADE FROM HIGH-STRENGTH MATERIAL MEETING THE REQUIREMENTS OF ASTM F1554, GRADE 105. THE RODS SHALL BE SUPPLIED WITH HEAVY HEX NUTS MEETING THE REQUIREMENTS OF ASTM A194 GRADE 2H OR ASTM A563 GRADE DH AND HARDENED WASHERS MEETING THE REQUIREMENTS OF ASTM F436. SECURING RODS AND HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM F2329.
2. THE CONTRACTOR SHALL INSTALL THE SECURING RODS INTO THE CONCRETE ABUTMENTS USING NON-SHRINK CEMENTITIOUS GROUT.



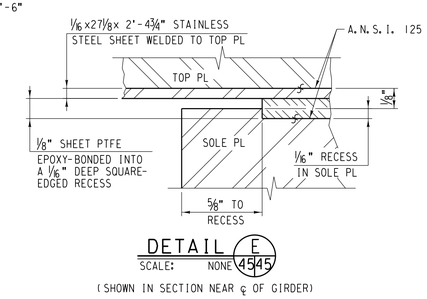
SECTION A 4545

SCALE: 1½"=1'-0"



BASE PLATE DETAIL

SCALE: 1½"=1'-0"



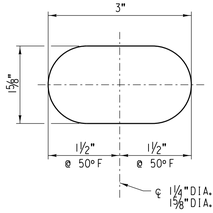
DETAIL E 4545

SCALE: NONE

(SHOWN IN SECTION NEAR ℄ OF GIRDER)

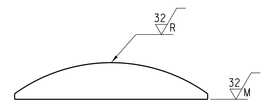
NOTES:

1. ALL SURFACES MARKED "5" SHALL BE MACHINE FINISHED BY AN AUTOMATIC PROCESS.
2. BEARINGS SHALL BE ASSEMBLED COMPLETE IN THE SHOP AND CHECKED FOR FIT AND BEARING OF ALL CONTACT SURFACES, THEN MATCH MARKED FOR INSTALLATION IN THE FIELD.
3. STAINLESS STEEL SHEETS SHALL CONFORM TO ASTM A167 OR ASTM A240 TYPE 304.
4. TYPE 309L ELECTRODES SHALL BE USED TO WELD THE STAINLESS STEEL SHEETS TO THE TOP PL & GUIDE Ls.
5. STRUCTURAL STEEL PLATES AND Ls FOR THE BEARINGS SHALL CONFORM TO ASTM A709 GR. 36 OR ASTM A36 SPECIFICATIONS.
6. BRONZE ELEMENTS SHALL CONFORM TO ASTM B22, COPPER ALLOY C91100.
7. TAP BOLTS SHALL BE 1" DIAMETER HIGH STRENGTH BOLTS CONFORMING WITH ASTM F3125 GRADE A325, TYPE 3.
8. BOLTS FOR GUIDE ANGLES SHALL BE " DIAMETER HIGH STRENGTH BOLTS CONFORMING WITH ASTM F3125 GRADE A325. TYPE 1.
9. END FLOORBEAMS NEAR BEARINGS SHALL HAVE THEIR BOTTOM FLANGES COPED TO AVOID CONFLICT WITH SECURING ANCHOR RODS.
10. POLYTETRAFLUOROETHYLENE (PTFE) SHEET SHALL BE MANUFACTURED FROM PURE VIRGIN (NOT REPROCESSED) PTFE RESIN. PTFE SHEET SHALL MEET THE APPLICABLE MATERIAL REQUIREMENTS OF AREMA CHAPTER 15, SECTION 5.11. FINISHED PTFE SHEET SHALL BE RESISTANT TO ALL ACIDS, ALKALIS, AND PETROLEUM PRODUCTS, BE NON-FLAMMABLE, AND NON-ABSORBING OF WATER.



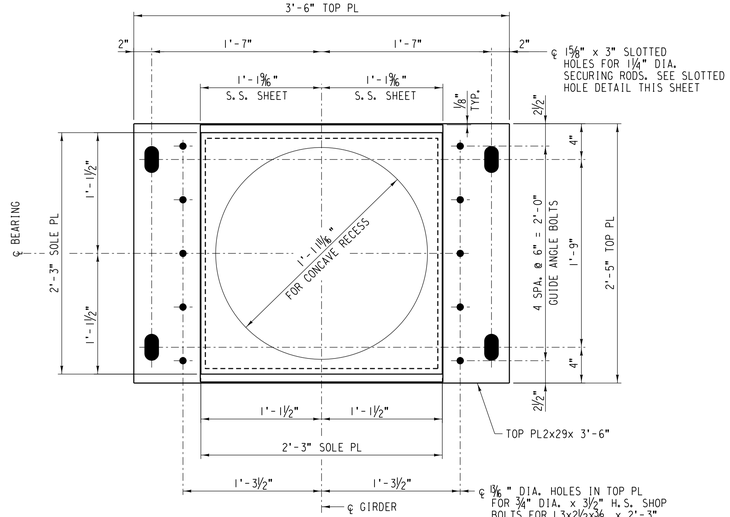
SLOTTED HOLE DETAIL

SCALE: NONE



SPHERICAL ELEMENT SURFACE FINISH DETAIL

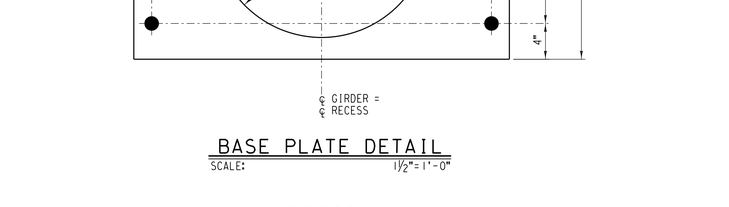
SCALE: N.T.S.



TOP & SOLE PLATE DETAILS

SCALE: 1½"=1'-0"

(UNDERSIDE SHOWN)



SECTION B 4545

SCALE: 1½"=1'-0"

(END FLOORBEAM NOT SHOWN FOR CLARITY)

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS: FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:

MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

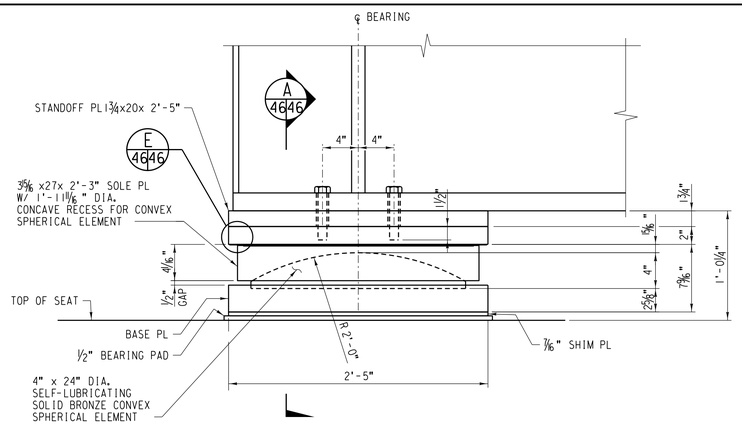
PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION — LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB	**UNION PACIFIC RAILROAD**
DRAWN/CHK BY: ACB/MFB	Office of Director Structures Design
UPRR ENGINEER: DEH/ADS	LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION
SHT NO.: C56 of C59	1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'
	SHEET TITLE: TPG BEARING DETAILS - TYPE C

FILE NAME: C:\Users\wmorinez\Desktop\roc00082_bii.dgn

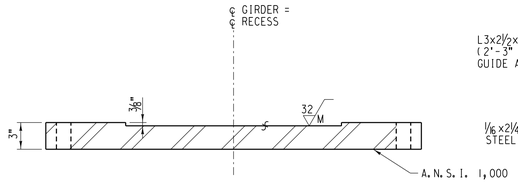
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BEARING TYPE D ELEVATION

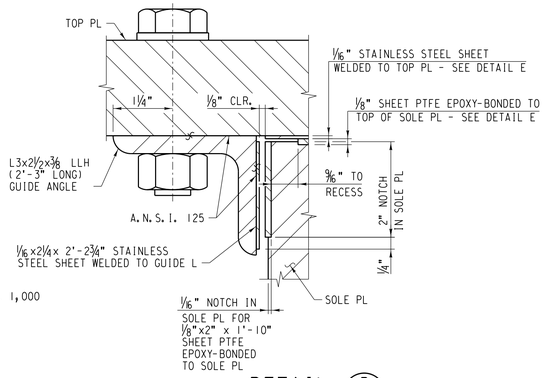
SCALE: 1½"=1'-0"

(SECURING RODS AND FLOORBEAMS NOT SHOWN FOR CLARITY)



SECTION C 4646

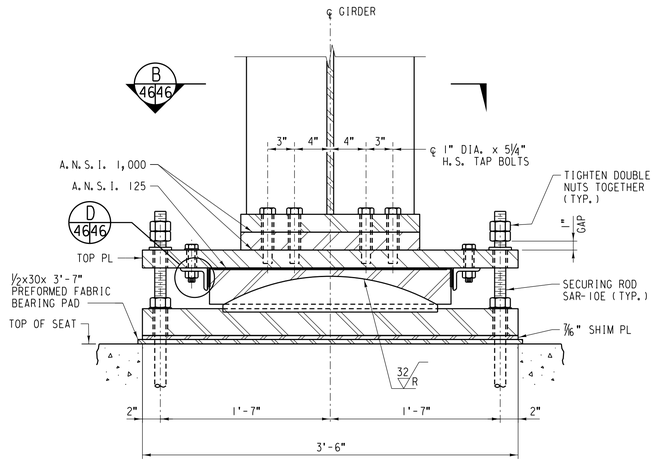
SCALE: 1½"=1'-0"



DETAIL D 4646

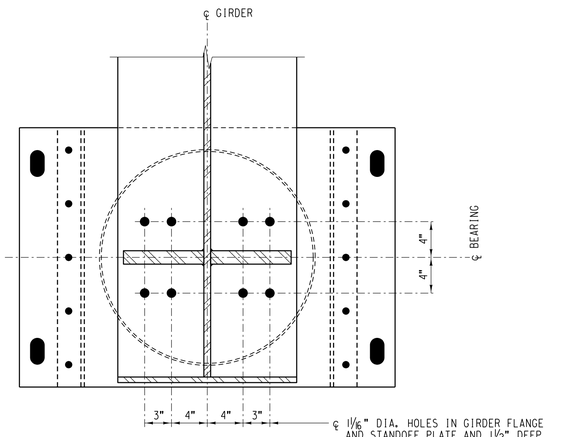
SCALE: NONE

(SHOWN IN SECTION NEAR ℄ OF BEARING)



SECTION A 4646

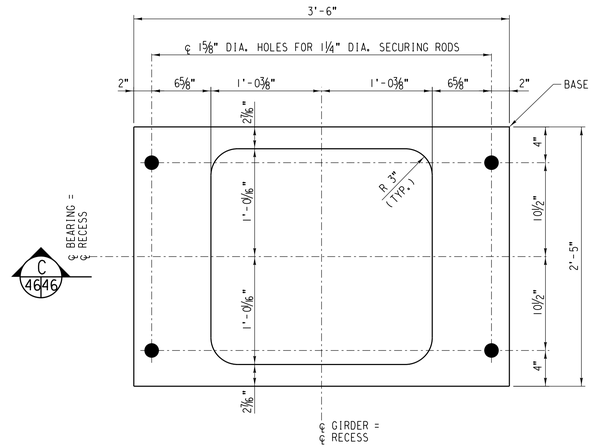
SCALE: 1½"=1'-0"



SECTION B 4646

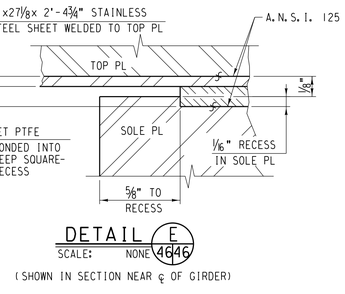
SCALE: 1½"=1'-0"

(END FLOORBEAM NOT SHOWN FOR CLARITY)



BASE PLATE DETAIL

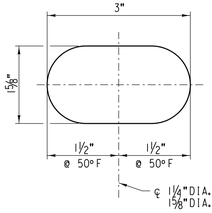
SCALE: 1½"=1'-0"



DETAIL E 4646

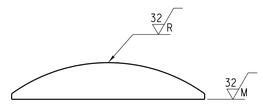
SCALE: NONE

(SHOWN IN SECTION NEAR ℄ OF GIRDER)



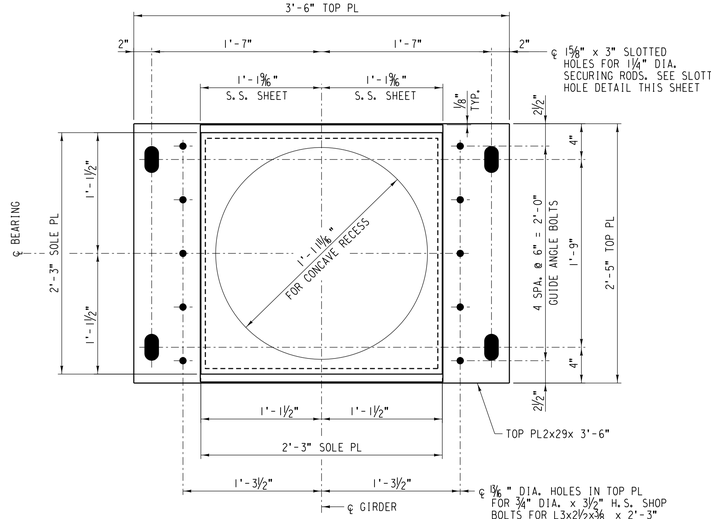
SLOTTED HOLE DETAIL

SCALE: NONE



SPHERICAL ELEMENT SURFACE FINISH DETAIL

SCALE: N.T.S.



TOP & SOLE PLATE DETAILS

SCALE: 1½"=1'-0"

(UNDERSIDE SHOWN)

NOTES:

1. ALL SURFACES MARKED "⅋" SHALL BE MACHINE FINISHED BY AN AUTOMATIC PROCESS.
2. BEARINGS SHALL BE ASSEMBLED COMPLETE IN THE SHOP AND CHECKED FOR FIT AND BEARING OF ALL CONTACT SURFACES, THEN MATCH MARKED FOR INSTALLATION IN THE FIELD.
3. STAINLESS STEEL SHEETS SHALL CONFORM TO ASTM A167 OR ASTM A240 TYPE 304.
4. TYPE 309L ELECTRODES SHALL BE USED TO WELD THE STAINLESS STEEL SHEETS TO THE TOP PL & GUIDE Ls.
5. STRUCTURAL STEEL PLATES AND Ls FOR THE BEARINGS SHALL CONFORM TO ASTM A709 GR. 36 OR ASTM A36 SPECIFICATIONS.
6. BRONZE ELEMENTS SHALL CONFORM TO ASTM B22, COPPER ALLOY C91100.
7. TAP BOLTS SHALL BE 1" DIAMETER HIGH STRENGTH BOLTS CONFORMING WITH ASTM F3125 GRADE A325, TYPE 3.
8. BOLTS FOR GUIDE ANGLES SHALL BE " DIAMETER HIGH STRENGTH BOLTS CONFORMING WITH ASTM F3125 GRADE A325. TYPE 1.
9. END FLOORBEAMS NEAR BEARINGS SHALL HAVE THEIR BOTTOM FLANGES COPED TO AVOID CONFLICT WITH SECURING ANCHOR RODS.
10. POLYTETRAFLUOROETHYLENE (PTFE) SHEET SHALL BE MANUFACTURED FROM PURE VIRGIN (NOT REPROCESSED) PTFE RESIN. PTFE SHEET SHALL MEET THE APPLICABLE MATERIAL REQUIREMENTS OF AREMA CHAPTER 15, SECTION 5.11. FINISHED PTFE SHEET SHALL BE RESISTANT TO ALL ACIDS, ALKALIS, AND PETROLEUM PRODUCTS, BE NON-FLAMMABLE, AND NON-ABSORBING OF WATER.

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS: FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:

MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

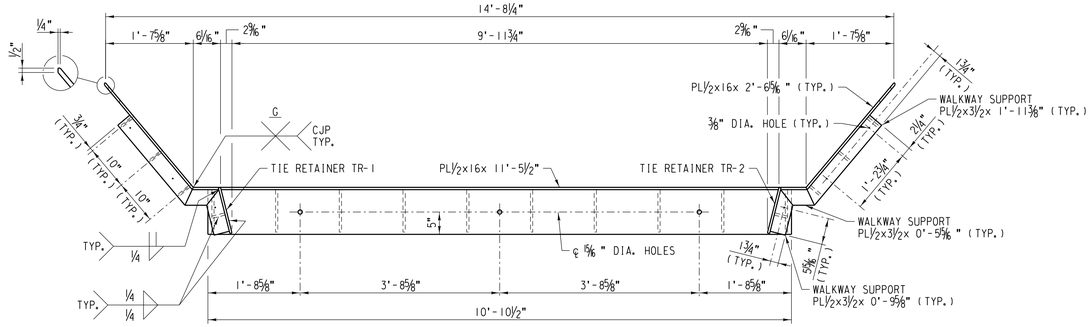
FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION — LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

UNION PACIFIC

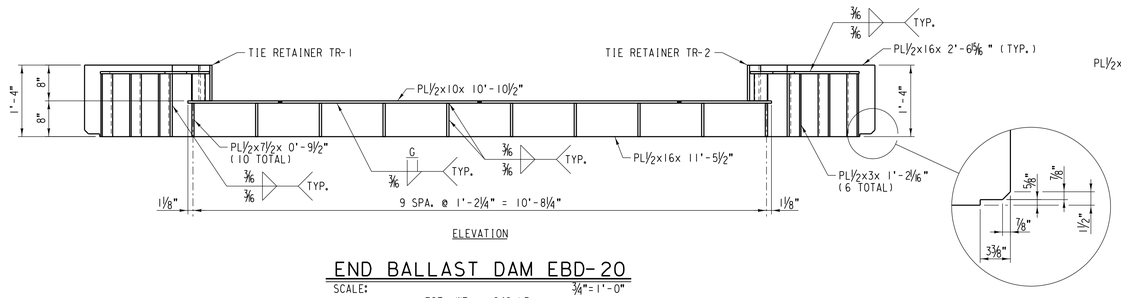
DSN/CHK BY: MTS/MFB	**UNION PACIFIC RAILROAD**
DRAWN/CHK BY: ACB/MFB	Office of Director Structures Design
UPRR ENGINEER: DEH/ADS	LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION
SHT NO.: C57 of C59	1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'
	SHEET TITLE: TPG BEARING DETAILS - TYPE D

FILE NAME: C:\Users\wermirez\Desktop\roc00082_bii.dgn

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PLAN

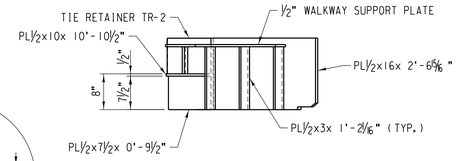


ELEVATION

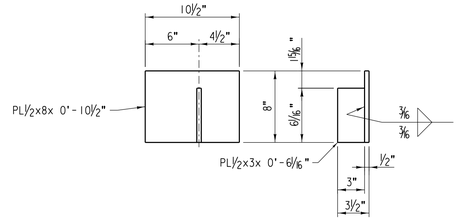
END BALLAST DAM EBD-20

SCALE: ¾"=1'-0"

EST. WT. = 842 LB.



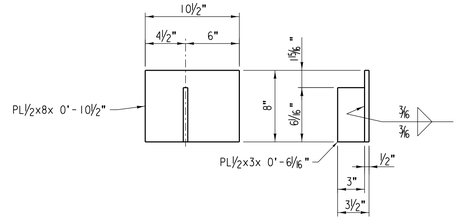
SECTION



TIE RETAINER TR-1

SCALE: ½"=1'-0"

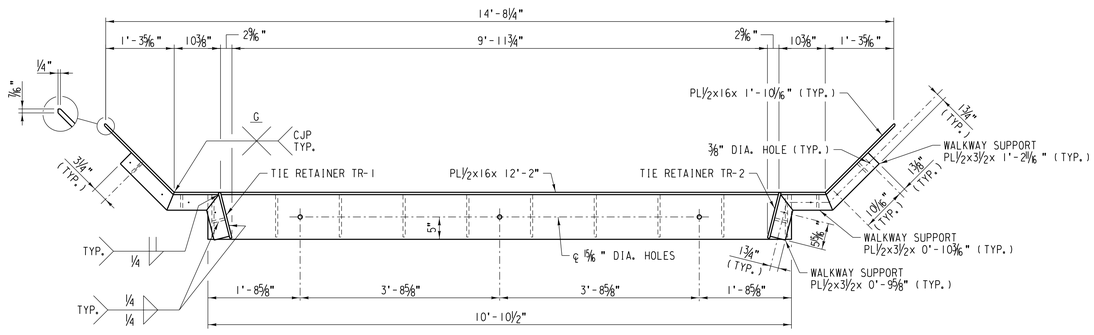
EST. WT. = 14.5 LB. EA.



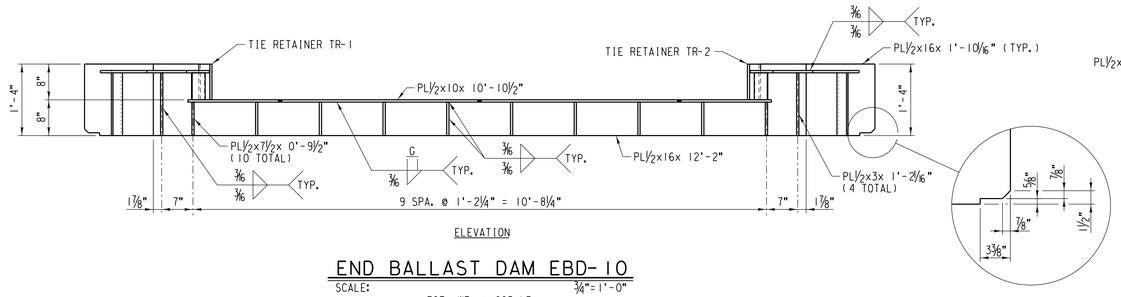
TIE RETAINER TR-2

SCALE: ½"=1'-0"

EST. WT. = 14.5 LB. EA.



PLAN

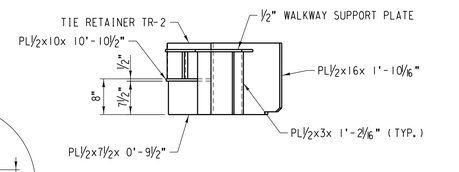


ELEVATION

END BALLAST DAM EBD-10

SCALE: ¾"=1'-0"

EST. WT. = 805 LB.



SECTION

COVER PLATE SCP-20

SCALE: ¾"=1'-0"

EST. WT. = 146 LB. EA.

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS:

FINAL — STATUS — 05/28/2021 DATE

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:

MATTHEW BECKER — CONSULTANT ENGINEER — 05/28/2021 DATE

PROJECT ID:	WORK ORDER:	C E NUMBER:
	31876	122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION

LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB

DRAWN/CHK BY: ACB/MFB

UPRR ENGINEER: DEH/ADS

SHT NO.: C58 of C59

UNION PACIFIC RAILROAD

Office of Director Structures Design

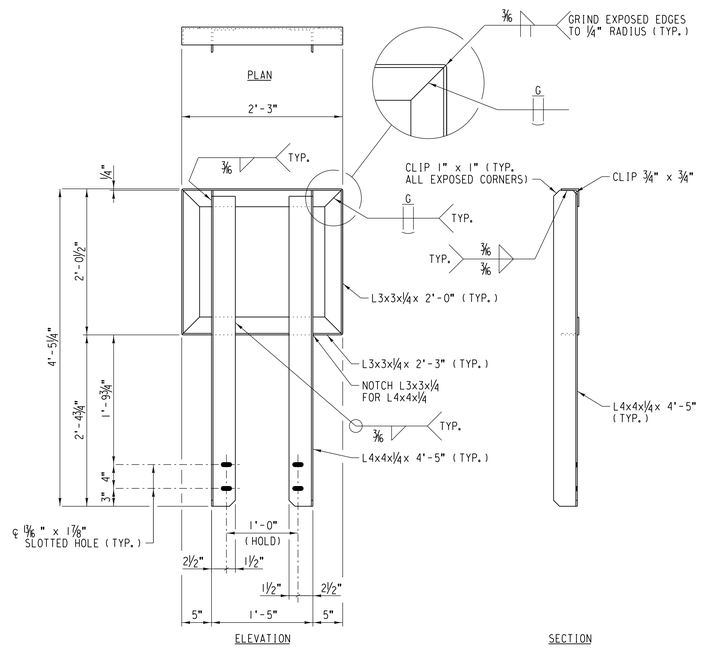
LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION

1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) & 1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE: END BALLAST DAM DETAILS AND COVER PLATE DETAIL

FILE NAME: C:\Users\mrami\Desktop\rc00082.bil.dgn

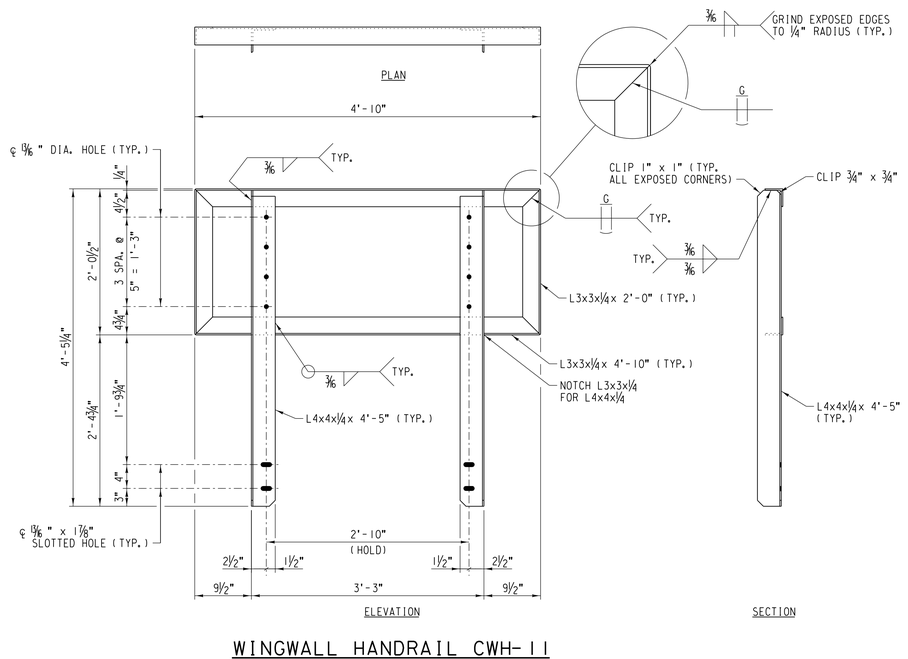
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BACKWALL HANDRAIL SBH-1

SCALE: 1"=1'-0"

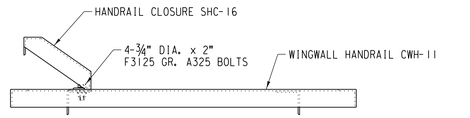
EST. WT. = 99.2 LB. EA.
SHIPS WITH 3/4" DIA. x 12" ASTM A307 GRADE A HEX BOLT WITH HEX ELASTIC LOCKNUT (MIL-DTL-32258) AND FLAT CIRCULAR WASHER (ASTM F436), EACH COMPONENT HOT DIPPED OR MECHANICALLY ZINC COATED



WINGWALL HANDRAIL CWH-11

SCALE: 1"=1'-0"

EST. WT. = 126 LB. EA.
GALVANIZE AFTER FABRICATION



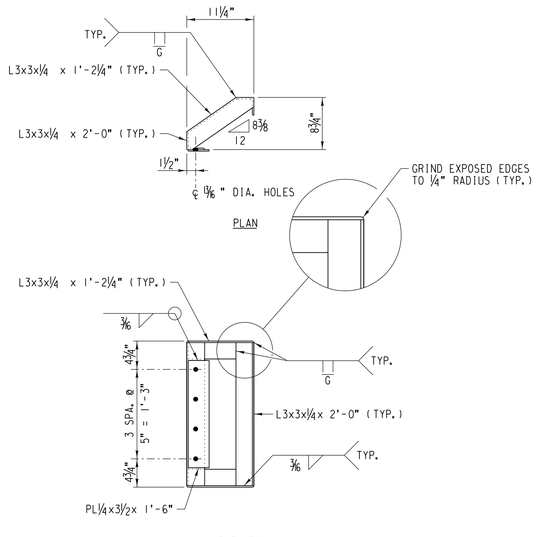
NOTE:
LEFT ASSEMBLY SHOWN, CONNECT SHC-16 TO OTHER LEG OF CWH-11 FOR RIGHT ASSEMBLY.

END HANDRAIL ASSEMBLY CEH-16

SCALE: 1"=1'-0"

EST. WT. = 162 LB. EA.
(SHOP ASSEMBLED)
SHIP WITH 3/4" DIA. x 11" BOLTS WITH LOCKNUT AND WASHER PER SCHEDULE, THIS SHEET

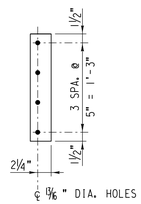
MATERIAL SCHEDULE (QUANTITY PER END HANDRAIL ASSEMBLY CEH-16)		
REQ'D.	UNIT	DESCRIPTION
1	EA.	WINGWALL HANDRAIL CWH-11 (PER NOTES, STD. DWG. 531100 SHT. T3 AND DETAILS, THIS SHEET)
1	EA.	HANDRAIL CLOSURE SHC-16 (PER NOTES, STD. DWG. 531100 SHT. T3 AND DETAILS, THIS SHEET)
4	EA.	3/4" DIA. x 2" F3125 GR. A325 HVY. HEX BOLT, TYPE 1 w/ HVY. HEX NUT (A563, LUBRICATED) AND FLAT CIRCULAR WASHER (F436), EACH COMPONENT HOT DIP OR MECHANICALLY ZINC COATED
5	EA.	3/4" DIA. x 11" A307 GRADE A HVY. HEX BOLT w/ HVY. HEX ELASTIC LOCKNUT (MIL-DTL-32258) & FLAT CIRCULAR WASHER (F436), GALVANIZED



HANDRAIL CLOSURE SHC-16

SCALE: 1"=1'-0"

EST. WT. = 35.8 LB. EA.
GALVANIZE AFTER FABRICATION



PL1/4x3 1/2x 1'-6"

SCALE: 1"=1'-0"

NO.	DATE	REVISIONS
	/ /	
	/ /	

COMPLETION STATUS: FINAL (STATUS) 05/28/2021 (DATE)

benesch

APPROVED FOR UNION PACIFIC RAILROAD BY:

MATTHEW BECKER (CONSULTANT ENGINEER) 05/28/2021 (DATE)

PROJECT ID: | WORK ORDER: 31876 | C E NUMBER: 122523

FORMER BRIDGE 0.71 ROCKWELL SUBDIVISION LATITUDE: 41.88456°N LONGITUDE: 87.69160°W

DSN/CHK BY: MTS/MFB
DRAWN/CHK BY: ACB/MFB
UPRR ENGINEER: DEH/ADS
SHT NO.: C59 of C59

UNION PACIFIC RAILROAD

Office of Director Structures Design

LOCATION & DESCRIPTION: BRIDGE 0.82 ROCKWELL SUBDIVISION
1 SPAN BMBD x 26'-11" (SEG. A), 1 SPAN TPGOD x 46' (SEG. B) &
1 SPAN BMBD x 26'-11" (SEG. C) REPLACING 3 SPAN TPGBD x 84'

SHEET TITLE: WINGWALL AND BACKWALL HANDRAIL DETAILS

FILE NAME: C:\Users\cmcmire2\Desktop\r\sc00082_bil.dgn

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GENERAL NOTES

GENERAL

1. All work requirements shown on the design and not otherwise detailed shall be accomplished as specified in Union Pacific Railroad (UPRR) Specifications and the American Railway Engineering and Maintenance-of-Way Association (AREMA) Manual for Railway Engineering. In the event of conflicts between specifications, the more restrictive shall apply.

2. Construction means and methods shall comply with the All Permits Issued (API) package.

3. Field verify all dimensions, stations and elevations prior to start of construction.

4. Beams shall be supported by blocking within 1'-6" of ends during storage and transport. Store beams in level position. Beams shall be stacked no more than 3 high.

5. Contact the Union Pacific "Call Before You Dig" number 90 days (not less than 60 days) prior to proposed construction start date. Prior to construction, confirm that all necessary relocations have been completed. The CBYD number is: 1-800-336-9193.

6. Location of known utilities is approximate. Location shall be verified prior to construction. Notify Call Bll "Call Before you Dig" number at least 48 hours prior to construction.

PILE DRIVING

1. All piles shall be driven to capacity shown in design plan set.

2. If any numbered pile cannot be driven to these capacities, the UPRR Office of Structures Design shall be notified.

3. Estimated capacity of driven piles shall be calculated using the Modified ENR formula, with Factor of Safety of 5. Direct questions to the UPRR Office of Structures Design. Pile driving records and estimated capacities shall be submitted to the UPRR Office of Structures Design.

4. Vibratory hammers shall not be permitted to drive any portion of any bearing piles.

5. Splice pile per standard drawing Plan No. 531110, Sheet No. H1 for H-Piles or Plan No. 531120, Sheet No. 1 for pipe piles. Pile splices shall be located a minimum of 10' below the proposed or existing ground surface, whichever is lower.

6. Mark every pile with a dimension indicating the pile depth from cutoff to point of pile. The dimension shall be rounded to the nearest foot. The mark shall be welded on the outside face, low mile post side on the pile flange, approximately 1'-0" below the bottom of the cap, and in numbers of approximately 3" in height. If a pile is not exposed, no mark is required.

7. After pile driving is complete, provide pile driving logs to:

UPRR Senior Manager Structures Design
1400 Douglas St., Stop 0910
Omaha, NE 68179

FIELD WELDING

1. Welding shall be accomplished with the SMAW or FCAW Process.

2. Welding shall be in compliance with the requirements specified in AWS D1.5, except ⅜" fillet welds may be made with a single pass.

3. Welding electrodes shall be E7018 for SMAW or E71T-7 for FCAW. For other acceptable electrodes, refer to AWS D1.5.

4. Union Pacific Railroad Employees engaged in welding on structures shall have valid certification through Course ES20, Advanced Welding.

5. Contract welders shall possess valid AWS qualifications. Welders shall submit a Procedure Qualification Report (PQR) and Weld Procedure Specification (WPS) for each weld type to be performed. Welders shall be able to present documentation verifying that they have performed the specific weld(s) within the prior six months upon request.

GRADING

1. Provide and place all fill and subballast material per UPRR Grading Specifications. Perform grading as required to drain and match existing embankments and upstream and downstream channel flowline.

2. Perform grading as required for construction of the new structure and replace areas removed and disturbed in the course of construction to a condition equal to or better than existing.

WELL-COMPACTED FILL

1. Well-compacted fill shall be well-graded granular soil free of any organic material, stones larger than 3 inches, frozen lumps, debris or excessive moisture. All compaction shall be determined using ASTM D1556 for field test and ASTM D1557 for moisture and density. Fill shall be compacted to 95% of maximum dry density as defined in ASTM D1557 (Modified Proctor). Fill shall be placed in layers not to exceed 12 inches.

GROUT NOTES

NON-SHRINK GROUT

1. Non-shrink grout shall conform to the requirements of ASTM C1107.

2. Non-shrink grout shall meet the following strength requirements:

1 day: 3,200 psi
7 days: 6,000 psi

EPOXY GROUT

1. Epoxy grout shall consist of a 3-component epoxy resin system.

Two liquid epoxy components.
One inert aggregate filler component.

CONTROLLED LOW-STRENGTH MATERIAL (CLSM)

1. Controlled Low-Strength Material is a self-compacting, cementitious fill material with an unconfined compressive strength of 50 to 300 psi. The mixture shall consist of water, Portland cement, fly ash, and sound fine or coarse aggregate or both. The mix design shall allow adequate flowability without segregation of aggregates. Hardening time is of prime importance and CLSM should develop 50 psi in about one hour. The maximum layer thickness for CLSM shall be three feet. Additional layers shall not be placed until the CLSM has lost sufficient moisture to be walked on without indenting more than two inches.

CONSTRUCTOR NOTES (WHEN APPLICABLE)

CONSTRUCTOR DEFINITION

Construction By	Term	Refers To
UPRR	Constructor	Manager Bridge Construction
Contractor	Constructor	Contractor

DIVISION OF RESPONSIBILITY

A. RAILROAD (Unless Noted Otherwise by MBC)

1. Remove ties, rail and OTM from existing bridge.

2. Provide and install ballast, ties, rail and OTM for proposed bridge.

3. Provide material as shown in the Bill of Material.

4. Provide and install Private Property/No Trespassing sign and bridge marker signs on right side at each end of bridge.

B. CONSTRUCTOR

1. Coordinate all construction activities with the Railroad.

2. Before ordering any material, Constructor shall make a detailed field inspection of the site verifying all pertinent dimensions and elevations. Any variations in dimensions or elevations from those shown on the drawings shall be reported immediately to the UPRR Project Manager.

3. Any modifications to this design shall be approved by the UPRR Office of Structures Design prior to construction.

4. Verify the location, relocation, abandonment, and/or temporary support of all utilities affected by the construction of the structure and embankment and coordinate these activities with the appropriate utility companies, agencies and/or authorities.

5. Apply for and obtain all construction permits necessary to perform the work.

6. Bill of Material and Schedules are provided for information only. Constructor shall be responsible for providing all material, not provided by the Railroad, required to complete the work.

7. Perform all work not performed by the Railroad.

8. Provide the Railroad with a detailed construction plan defining the activity, schedule and procedure for each aspect of the work. Construction shall not begin until the construction plan has been approved by the Railroad.

9. Provide all temporary structures (shoring, bracing and/or falsework) required to support and protect the existing embankments and structures affected by the work. Provide the Railroad with details, design and procedure for all temporary structures. All temporary structures shall be designed, signed and sealed by a professional engineer registered in the State that the structure is to be constructed. All temporary structures shall be approved by the UPRR Office of Structures Design prior to beginning construction.

10. Provide temporary guardrail system as directed by UPRR Project Manager. Guardrails on shoring shall include but not be limited to the following:

The top edge height of the top rail shall be 42" +/- 3" above the walking/working surface.

At least one midrail shall be provided, evenly spaced between walking/working surface and top rail.

Metal or timber posts or uprights shall be spaced at maximum intervals of 10'-0".

Entire guardrail system, including anchorages, shall be capable of withstanding without failure, a force of 200 lbs. applied in any outward or downward direction at any point.

Guardrail system shall be surfaced to prevent injuries from punctures and lacerations and prevent snagging of clothing. The ends of top rails and midrails shall not extend past the posts or uprights.

If conditions warrant, i.e. pedestrian traffic/weather, additional protection shall be provided such as screens or mesh to prevent slipping between the midrail and walking/working surface.

11. Direct channel flow as required to perform work.

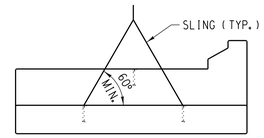
12. Remove debris and ballst from channel as directed by the Railroad.

13. Accomplish activities within the schedule specified in the approved construction plan.

CONCRETE CAP NAMING CONVENTION KEY

P = Precast Concrete, C = Cast-in-Place Concrete
C = Cap, WW = Wingwall, A = Assembly, BW = Backwall, SC = Supercap
2 Digit Number for Beam Depth in Inches (14, 20, 30, or 42)
E = End, I = Interior
1 = 1 Piece, 2 = 2 Piece
S = Single Track, L = Left, R = Right, C = Center, D = Dowels

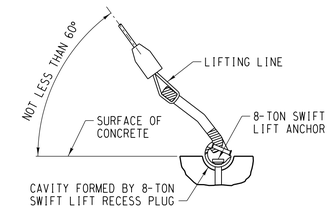
PC42E1S



2 POINT PICK DETAIL

SCALE: NONE

SINGLE PIECE END CAP AND LIFTING ANCHORS SHOWN, OTHER CAPS AND BACKWALLS AND LIFTING LOOPS SIMILAR



TYPICAL LIFTING DETAIL

SCALE: NONE

NOTE:
8-TON SWIFT LIFT RECESS PLUGS, ANCHORS AND LIFTING EYES ARE AVAILABLE FROM DAYTON SUPERIOR CORP., 1125 BYERS ROAD, MIAMISBURG, OHIO 45342, TELEPHONE (937) 866-0711. THE MATERIALS FOR THIS LIFTING SYSTEM ARE NOT INCLUDED IN THE BILL OF MATERIAL BUT ARE TO BE ORDERED AS REQUIRED.

REVISIONS		
DATE	LTR.	DESCRIPTION
/		
/		
/		
/		
/		
/		

DESIGN BY: UPRR | DRAWN BY: UPRR | CHECKED BY: HDR

APPROVED:

05-04-2020
UPRR - MGR SPECIAL PROJECTS STRUCTURES DESIGN

BRIDGE STANDARDS
CONCRETE BEAM BRIDGES
GENERAL NOTES

FILE OWNER: UPRR | DATE: MAY, 2020
PLAN NO.: 531100 | SHEET: T2

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PLOTTED: 5/4/2020 2:28:12 PM

FILE NAME: pw://HDR_US_National.OI/41951/10153247/531100_Single Track_General Arrangement.dgn

INCHES 1 2 3 4 5 6 7 8 9 10 11 12

PRECAST CONCRETE NOTES:

CONCRETE:

1. All concrete materials, placement and workmanship shall be in accordance with Part 1, Chapter 8 of the current AREMA Manual for Railway Engineering.
2. Minimum compressive strength - 4000 Lb. per square inch at 28 days.
3. Exposed surfaces shall be formed in a manner which will produce a smooth and uniform appearance without rubbing or plastering. Exposed edges of 90 degrees or less are to be chamfered ¾" x ¾". Top surface to have a smooth finish, free of all float or trowel marks.
4. Concrete shall be proportioned such that the water - cement ratio (by weight) does not exceed 0.45. Concrete must contain a minimum of 6½ sacks of cement per cubic yard of concrete. Flyash replacement may account for up to 25% of the cement.
5. Cement shall be Type I, Type II or Type III Portland Cement in accordance with ASTM C150 specifications.
6. Aggregates shall be graded in accordance with ASTM C33 specifications. Coarse aggregate shall be no. 67. Fine aggregate shall be natural sand.
7. Air content shall be between 5% and 7% (by volume).
8. Admixtures shall not be used without approval by Engineer.
9. Curing shall be accomplished by wet curing or the application of a Type 2 membrane.
10. The fabricator shall stencil the item name, date manufactured, name of manufacturer and actual lifting weight at location shown.
11. Production procedures for the manufacture of precast members shall be in accordance with the AREMA Manual for Railway Engineering and the Precast/Prestressed Concrete Institute's Manual MNL 116 for Quality Control.
12. Dimensional tolerances governing the manufacture of precast members shall conform to Division VI, Section 6.4 of the Precast/Prestressed Concrete Institute's Manual MNL 116 for Quality Control. Tolerance for location of lifting devices shall be ±½".
13. The fabricator will be responsible for loading and properly securing all precast concrete members for shipment. All concrete components shall be made available for inspection by the Railroad at the fabricator's plant prior to shipment, at the Railroad's discretion.

REINFORCING STEEL:

1. Reinforcing steel shall be deformed, new billet bars per current ASTM A615 Specifications and to meet grade 60 requirements.
2. Fabrication of reinforcing steel shall be per Chapter 7 of the CRSI Manual of standard practice. Dimensions of bending details are out to out of bar.
3. Reinforcing steel is to be blocked to proper location and securely wired against displacement. Tie wires shall be installed at every other bar intersection so that at least 50% of the intersections are tied. Tack welding of reinforcing is prohibited. Minimum concrete cover on reinforcement not otherwise noted shall meet current AREMA Manual for Railway Engineering requirements.

EMBEDDED STEEL:

1. Steel plate shall conform to ASTM A36 OR A709-Grade 36 Specifications. Studs shall be C1015, C1017 or C1020 cold drawn steel which conform to ASTM A108 Specifications.
2. Deformed bar anchors shall conform to ASTM A706 specifications. Welding of deformed bar anchors shall conform to AWS D1.4. Welding shall be performed by certified welder.
3. Where galvanizing is not indicated, material shall be plain.

LIFTING ANCHORS:

1. Swift lift anchors shall be Dayton Superior P-52 anchors or approved alternate with a minimum safe working load sufficient for the weight of the precast element including form removal. The safe working load shall provide a minimum safety factor of 4.

MISCELLANEOUS HARDWARE:

1. 8" T-Bar Anchors as manufactured by Meadow Burke Company, or approved alternate.

BEARING PAD SPECIFICATIONS:

1. Bearing pads shall be Random Oriented Fiber elastomeric material comprised of high-quality ozone-resistant virgin elastomer and synthetic fibers. Pads shall conform to the following minimum material properties:

Hardness (Shore A, ASTM D2240)	80 ± 5
Tensile Strength, psi (ASTM D412, Die C)	1000 ± 100
Ultimate Elongation, minimum %	40
Heat Aging (ASTM D573, 70 Hrs. @ noted temperature):	
Durometer, 212 °F, maximum point change	± 10
Tensile Strength, 158 °F, maximum % change	± 25
Ultimate Elongation, 212 °F, maximum % change	± 25
Compression, minimum ultimate strength, psi	8000
Apparent Shear Modulus (GA), psi, based on tests conducted at 70 °F to 80 °F under uniform compressive stresses of 500, 1000, and 1500 psi and at applied horizontal shear plus slip strain of 50%. GA is constant in all directions parallel to the bearing plane.	230 ± 30

2. Bearing pads shall be Voss Engineering, Inc., "Fiberlast" expansion bearing pads or approved equal.
3. Cutting of the pads shall be done so that the edges have no tears or other jagged areas.
4. Permissible tolerances of the pad shall be as stated in Chapter 15, Section 5.12.6 of the 2019 AREMA Manual for Railway Engineering.
5. The cap fabricator shall fasten the bearing pads to the cap by using the following procedure: clean pads according to manufacturer's recommendations; prime contact surface and glue to cap with Sikadur 31 Hi-Mod Gel (1:1 mix ratio) or approved equal.

MISCELLANEOUS STEEL NOTES:

1. Materials, fabrication, workmanship and erection per the current AREMA Manual for Railway Engineering, Chapter 15, Steel Structures.
2. Material shall conform to the following requirements:

Rolled Shapes & Plates	ASTM A36
Pipe	ASTM A53 Gr. B
Bolts	ASTM A307 Gr. A
Elastic Locknut	MIL-DTL-32258
Steel Washer	ASTM F436

3. Grating panels and fasteners shall conform to the following requirements:

Grating Fasteners:	
Saddle Clips	F-10 Galvanized Saddle Clips
Socket Cap Screws	SAE J429, Gr. 8, Zinc Coated
Elastic Locknut	MIL-DTL-32258
Steel Washer	ASTM F436
Nylon Washer	Nylon G16

Grating Panels:
Material shall comply with NAAMM Standard MBG 531-17
Size = W-19-4 (1¾" x 3/16" Serrated) Steel Galvanized.

4. Welding requirements:
   A. All welding shall be with the SAW, SMAW, or FCAW process.
   B. All welding per AWS D1.1, Structural Welding Code.
   C. Welders shall possess valid qualifications, including a Procedure Qualification Report (PQR) and Weld Procedure Specification (WPS) for each weld type to be performed as well as documentation verifying that they have performed the specific weld(s) within the prior six months.
5. Miscellaneous steel shall be plain unless noted otherwise.
6. Pieces or assemblies designated as galvanized shall be galvanized after fabrication in accordance with ASTM A123. After galvanizing, all elements shall be free of fins, abrasions, rough or sharp edges, and other surface defects.
7. Bolts and nuts to be zinc plated in accordance with ASTM A153 unless noted otherwise.

CAST-IN-PLACE CONCRETE NOTES:

CONCRETE:

1. All concrete materials, placement, workmanship and testing shall be in accordance with Part 1, Chapter 8 of the current AREMA Manual for Railway Engineering.
2. Minimum compressive strength at 28 days shall be as indicated on the design plans.
3. Exposed surfaces shall be formed in a manner which will produce a smooth and uniform appearance without rubbing or plastering. Exposed edges of 90 degrees or less are to be chamfered ¾" x ¾". Top surface to have a smooth finish, free of all float or trowel marks.
4. Concrete shall be proportioned as follows:

Concrete Strength:	3,000 psi	4,000 psi	5,000 psi	6,000 psi
Max. Water/Cement Ratio (by weight):	0.50	0.45	0.42	0.40
Min. Sacks of Cement per Cu. Yd.:	5.5	6.0	6.5	7.0

5. Flyash replacement may account for up to 25% of the cement by substitution.
6. Cement shall be Type I, Type II or Type III Portland Cement in accordance with ASTM C150 specifications.
7. Aggregates shall be graded in accordance with ASTM C33 specifications. Coarse aggregate shall be no. 67. Fine aggregate shall be natural sand.
8. Allowable air content shall be indicated on the design plans based on the following guidelines:

   Severe Exposure - 5% to 7%
   Exposed to wet freeze-thaw, de-icers, or other aggressive agents.

   Moderate Exposure - 4% to 7%
   Exposed to dry freeze-thaw and no de-icers or other aggresive agents.

   Mild Exposure - 3% to 5%
   Not exposed to freezing, de-icers or other aggressive agents.

9. Admixtures shall not be used without approval by Engineer. Where multiple admixtures are used, it is recommended that all admixtures be obtained from the same company.
10. Where exposed to air, curing shall be accomplished by wet curing or membrane curing compound. Membrane curing compound shall conform to ASTM C309, Type 2.
11. Do not use calcium chloride or any admixture containing intentionally added chloride ions. Testing for chloride ions is not required.
12. Apply a structural bonding agent to construction joints or when placing new concrete against existing concrete. Submit bonding agent to the Engineer for approval.

[Note 13 applies only when specifically stated in the Bill of Material descriptions.]
13. DCI-S, as manufactured by W.R. Grace, or approved alternate shall be added at a quantity of 5 gallons per cubic yard. Calcium nitrite solution shall contain 30% solids and shall provide 15.0 lbs. per cubic yard chloride protection. Mix shall also include 7%, by weight of cement, force 10,000 microsilllica slurry by W.R. Grace or approved addendum shall be used. Adjust weight of concrete mix water for weight of DCI-S used.

REINFORCING STEEL:

1. Reinforcing steel shall be deformed, new billet bars per current ASTM A615 Specifications and to meet grade 60 requirements.
2. Fabrication of reinforcing steel shall be per Chapter 7 of the CRSI Manual of standard practice. Dimensions of bending details are out to out of bar.
3. Reinforcing steel is to be blocked to proper location and securely wired against displacement. Tie wires shall be installed at every other bar intersection so that at least 50% of the intersections are tied. Tack welding of reinforcing is prohibited. Minimum concrete cover on reinforcement not otherwise noted shall meet current AREMA Manual for Railway Engineering requirements.

[Note 4 applies only when specifically stated in the Bill of Material descriptions.]
4. Reinforcing steel shall be epoxy coated per ASTM A775 specifications meeting Annex A1 for epoxy coating.

EMBEDDED STEEL:

1. Steel plate shall conform to ASTM A36 OR A709-Grade 36 Specifications. Studs shall be C1015, C1017 or C1020 cold drawn steel which conform to ASTM A108 Specifications.
2. Deformed bar anchors shall conform to ASTM A706 specifications. Welding of deformed bar anchors shall conform to AWS D1.4. Welding shall be performed by certified welder.
3. Where galvanizing is not indicated, material shall be plain.

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DESIGN BY: HDR | DRAWN BY: HDR | CHECKED BY: AJB

APPROVED:

05-04-2020
UPRR - MGR SPECIAL PROJECTS STRUCTURES DESIGN

UNION PACIFIC

BRIDGE STANDARDS

CONCRETE BEAM BRIDGES

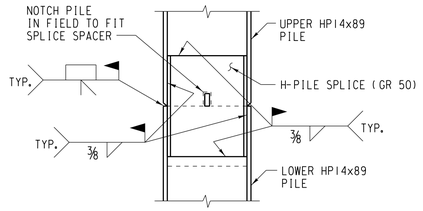
PIECE FABRICATION NOTES

FILE OWNER: UPRR | DATE: MAY, 2020
PLAN NO.: 531100 | SHEET: T3

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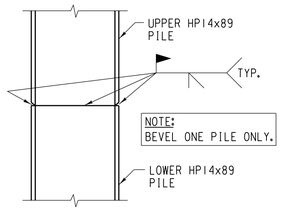
INSTALLATION INSTRUCTIONS:

(NOTE: SPLICE IS SHOWN INSTALLED ON UPPER PILE SECTION FIRST. ALTERNATIVELY, SPLICE MAY BE INSTALLED ON BOTTOM SECTION FIRST.)

1. NOTCH THE END OF H-PILE SECTION TO RECEIVE SPLICE FIRST (NOTCH TO ACCOMMODATE THE SPLICE SPACER BAR).
2. FIT SPLICE OVER NOTCHED END OF H-PILE AND FILLET WELD SPLICE END TO PILE WEB AS SHOWN.
3. PLACE THE UPPER H-PILE SECTION INTO POSITION ONTO THE LOWER SECTION.
4. COMPLETE FILLET WELD ALONG SPLICE EDGES.
5. WELD FLANGE JOINT BETWEEN UPPER AND LOWER PILE SECTIONS.

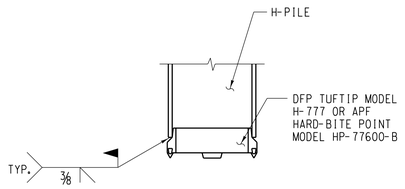
PILE SPLICE DETAIL

SCALE: 1"=1'-0"



ALTERNATE PILE SPLICE DETAIL

SCALE: 1"=1'-0"

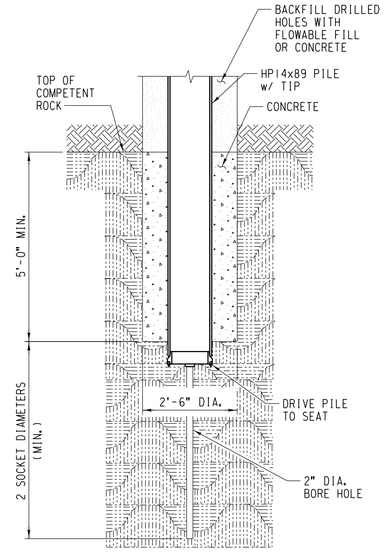


TIP REINFORCEMENT INSTALLATION INSTRUCTIONS:

1. FIT POINT ONTO SQUARE CUT PILE.
2. WELD POINT TO THE PILE IN EITHER FLAT OR VERTICAL POSITION.
3. FILL THE AREA ACROSS BOTH FLANGES WITH WELD.

PILE TIP DETAIL

SCALE: 1"=1'-0"



PILE SOCKET DETAIL

SCALE: ½"=1'-0"

EST. VOLUME OF CONCRETE = 0.9 CU.YD. PER 5' SOCKET DEPTH

PILE SOCKET NOTES:

1. SEE BENT DESIGN NOTES TO DETERMINE WHEN PILE SOCKETING IS REQUIRED.
2. PILING SHALL BE SEATED IN PREDRILLED HOLES IN THE ROCK AND ENCASED IN CONCRETE WITHIN THE BEDROCK (SEE DETAIL).
3. MINIMUM DEPTH OF PILE SOCKET SHALL BE 5'-0" INTO COMPENTENT ROCK.
4. PILING WITH TIP REINFORCEMENT SHALL BE PLACED INTO ROCK SOCKET AND DRIVEN TO ACHIEVE REQUIRED CAPACITY.
5. SEATED PILE SHALL BE ENCASED IN ROCK SOCKET WITH CONCRETE.
6. MINIMUM COMPRESSIVE STRENGTH OF CONCRETE SHALL BE 4000 LB. PER SQUARE INCH AT 28 DAYS.
7. BORE 2" DIA. HOLE IN CENTER OF PILE SEAT TO A MINIMUM DEPTH OF 2 SOCKET DIAMETERS.

GENERAL NOTES:

Longitudinal bracing between bents required in selected bays on bridges longer than 200 ft and some bridges not composed entirely of concrete spans. See Sheets H5 & H6.

Pile capacities:
For required driven pile capacities, see "Maximum Pile Load" table.

Steel:
Piles - ASTM A572, GR. 50
Pile splices - ASTM A572 Gr. 50
Bracing - ASTM A572

Coating Notes:
Where specified, coal tar coating shall be applied to the external face of piles in accordance with the following guidelines:

Surface Preparation	SSPC-SP6/NACE 3
Coating	2 Coats @ 8 Mils For A Total 16 Mil DFT
Masking	3" Mask On Each End
Material Specification	Corp of Engineers Formula C-200a & SSPC Paint 16

Welding:
Use shielded metal arc welding (SMAW) or flux core arc welding (FCAW) process per AWS D1.5. Acceptable welding electrodes shall be E7018 for SMAW or E71T-7 for FCAW. For other acceptable electrodes, refer to AWS D1.5.

Splices:
Splices shall be made a sufficient distance above the ground or water (not less than one foot) so that the splice can be observed during driving. The number of splices shall be kept to a minimum. Splicing cut-offs or short pieces to make a main bearing pile is not permitted. The pile shall be driven so that the upper splice is at least 10 feet below the ground surface.

Tip reinforcement:
Pile tip reinforcement shall be used where piles may be damaged by driving through heavy gravel, cobbles, boulders or formations known to contain obstructions. Tip reinforcement shall also be used when the pile will bear on rock.

Driving tolerances:
Variations greater than ¼ inch per foot from vertical or batter line shall not be allowed. The deviation of the top of piles in a bent shall not exceed one inch from the plan location. Rotation of pile about its centerline shall not exceed 5 degrees from its orientation as shown in plans. Piles not meeting tolerance requirements or out of line as to impair usefulness, or piles that are damaged in driving as to impair structural capacity, shall be pulled and redriven or an additional pile shall be driven to provide added support. If any numbered pile cannot be driven to their capacity, notify the UPRR Office of Structures Design.

BENT DESIGN NOTES:

Selection of pile configuration and maximum heights based on equilibrium superelevation (regardless of actual superelevation installed). Refer to UPRR Track Standards Book, Std. Dwg. 0020 latest revision.

Standard design is valid for minimum pile penetration of 10' if geotechnical investigation demonstrates that piles can be firmly seated in hard rock or shale; otherwise minimum pile penetration of 25' required. If these values cannot be achieved, piles shall be socketed into rock per detail on this sheet. For any other conditions, special design is required.

For span lengths less than 28', use values shown for 28' spans.

Bent shall be driven per requirements of longer span length supported. For example, for a bent supporting 28' and 34' spans, drive per 34' span requirements.

Maximum track offset (from bridge centerline) is 6" with this bent standard.

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UPRR - MGR SPECIAL PROJECTS STRUCTURES DESIGN

UNION PACIFIC

BRIDGE STANDARDS

CONCRETE BEAM BRIDGES

H-PILE FOUNDATIONS PILE INSTALLATION NOTES AND DETAILS

FILE OWNER: UPRR	DATE: MAY. 2020
PLAN NO.: 531110	SHEET: H1

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GENERAL NOTES:

DESIGN AND WORKMANSHIP

1. All requirements shown on these drawings shall be accomplished as specified in the most current edition of the American Railway Engineering and Maintenance-of-Way Association (AREMA) Manual for Railway Engineering.

   Chapter 8 Concrete Structures and Foundations
   Chapter 15 Steel Structures

2. All elements of these standards have been designed for Cooper E80 Live Load (or Alternate Live Load where applicable), full impact, and 15" min. and 30" max. depths of ballast.
3. Design longitudinal load per 1996 edition of the AREA Manual.
4. Seismic loading has not been considered in these standards.

SUBSTRUCTURE: CAST-IN-PLACE CONCRETE

1. All concrete material, placement and workmanship shall be in accordance with Chapter 8 of the current edition of the AREMA Manual for Railway Engineering.
2. Compressive strength - 4000 lb. per square inch at 28 days.
3. Exposed surfaces shall be formed in a manner that will produce a smooth and uniform appearance without rubbing or plastering. Exposed edges of 90 degrees or less are to be chamfered ¾" x ¾". Top surface to have a smooth finish, free of all float or trowel marks.
4. Concrete shall be proportioned such that the water - cement ratio (by weight) does not exceed 0.45. Concrete must contain a minimum of 6 sacks of cement per cubic yard of concrete.
5. Cement shall be Type I, Type II, or Type III Portland Cement.
6. Aggregates shall be graded in accordance with ASTM C33.
7. Coarse aggregate shall be size no. 67.
8. Fine aggregate shall be natural sand.
9. Air content shall be between 5% and 7% (by volume).
10. Admixtures shall not be used without approval by the Railroad.
11. Curing shall be accomplished by wet curing or membrane curing compound. Membrane curing compound shall conform to ASTM C309 Type 2.
12. Apply Thoroc Epoxy Adhesive 24LPL or approved alternate before placing new concrete against hardened concrete surfaces.

SUBSTRUCTURE: PRECAST CONCRETE

1. All concrete material, placement and workmanship shall be in accordance with Chapter 8 of the current edition of the AREMA Manual for Railway Engineering.
2. Compressive strength - 4000 lb. per square inch at 28 days.
3. Exposed surfaces shall be formed in a manner that will produce a smooth and uniform appearance without rubbing or plastering. Exposed edges of 90 degrees or less are to be chamfered ¾" x ¾". Top surface to have a smooth finish, free of all float or trowel marks.
4. Concrete shall be proportioned such that the water - cement ratio (by weight) does not exceed 0.45. Concrete must contain a minimum of 6½ sacks of cement per cubic yard of concrete.
5. Cement shall be Type I, Type II, or Type III Portland Cement.
6. Aggregates shall be graded in accordance with ASTM C33.
7. Coarse aggregate shall be size no. 67.
8. Fine aggregate shall be natural sand.
9. Air content shall be between 5% and 7% (by volume).
10. Admixtures shall not be used without approval by the Railroad.
11. Curing shall be accomplished by wet curing or the application of a Type 2 membrane.
12. The fabricator shall stencil the fabricator's name, date of fabrication, bridge number, and piece mark at location shown on the drawings.
13. Production procedures for the manufacture of precast members shall be in accordance with the AREMA Manual for Railway Engineering and the Prestressed Concrete Institute's Manual MNL 116-77 for Quality Control.
14. Dimensional tolerances governing the manufacture of precast members shall conform to Division VI, Section 6.4.6. of the Precast Concrete Institute's Manual MNL 116-77 for Quality Control. Tolerance for location of lifting devices shall be ±½"
15. The fabricator will be responsible for loading and properly securing all precast concrete members for shipment. All concrete components shall be made available for inspection by the Railroad at the fabricator's plant prior to shipment, at the Railroad's discretion.

SUBSTRUCTURE: REINFORCING STEEL

1. Reinforcing steel shall be deformed, new billet bars per current ASTM A615 Specifications and meet Grade 60 requirements.
2. Fabrication of reinforcing steel shall be per Chapter 7 of the CRSI Manual of Standard Practice. Dimensions of bending details are out to out of bar.
3. Reinforcing steel is to be blocked and tied to proper location and securely wired against displacement. Tie wires are to be installed at every other bar intersection so that at least fifty percent of intersections are tied. Tack welding of reinforcing is prohibited. Minimum concrete cover on reinforcing not otherwise noted shall meet current AREMA Manual for Railway Engineering requirements.

SUBSTRUCTURE: MISCELLANEOUS STEEL

1. Steel plate and angles shall conform to ASTM A36 or A709 Gr. 36 Specifications.
2. Studs shall be C1015, C1017 or C1020 cold drawn steel which conform to ASTM A108 Specifications.
3. Where indicated, plate and angles shall be galvanized after fabrication in accordance with ASTM A123 Specifications.
4. Where indicated, bolts shall be galvanized after fabrication in accordance with ASTM 153 Specifications.
5. Where galvanizing is not indicated, material shall be plain.

SUBSTRUCTURE: LIFTING DEVICES AND INSERTS

1. Swift Lift Anchors and recess plugs shall be Dayton/Richmond P-52 SL.
2. Swift Lift Lifting Eyes shall be Dayton/Richmond P-50 SL.
3. Alternate lifting devices of equivalent strength may be used, subject to approval by the Railroad.
4. The Fabricator is responsible for insuring that the lifting anchors as installed provide a safety factor of 4 on the working load.
5. Inserts for attaching precast concrete wingwalls to end caps shall be Dayton/Richmond B-17 Double Flared Coil Loop Inserts.

END BENTS: MISCELLANEOUS

1. Drainage pipe shall be 2" dia. PVC Type 1, Grade 1, Schedule 40.
2. Screen for drainage pipes shall be aluminum wire #4 mesh hardware cloth.

SUPERSTRUCTURE

1. Material shall conform to the following requirements:

Beams	ASTM A709 Gr. 50W T2
Deck Plate	ASTM A709 Gr. 36 T2
Drain Pipe	ASTM A53 Gr. B
Handrail	ASTM A847
Cover Plates	ASTM A36
All Remaining Steel	ASTM A588
Bolts	ASTM A325 Type 3
M. Bolts	ASTM A307
Anchor Rods	ASTM F1554, Grade 36
Bearing Pads	Cast Polyurethane (70 Durometer)
Protective Pads	Elastomeric Bearing Roll (60 Durometer)

2. Design, fabrication and erection per the AREMA Manual for Railway Engineering, Chapter 15, Steel Structures. Design per 2006 edition (except as otherwise noted), fabrication and erection per current edition.
3. Bolts and M. Bolts shall include compatible hex nuts and flat washers.
4. Open holes to be 1/16" diameter larger than nominal bolt diameter unless otherwise noted.
5. All faying surfaces, regardless of location, shall be cleaned to a minimum of SSPC-SP6, Commercial Blast Cleaning.
6. Welding:
   a. All beam to deck plate shop welding shall be with the SAW process.
   b. All field welding shall be with the SMAW or FCAW process. Welding electrodes must be E7018 for SMAW or E70T-1,5 for FCAW.
   c. All other welding shall be with the SAW or SMAW process.
   d. All welding per AWS D1.5, Bridge Welding Code.
   e. Welders must possess valid certification.
7. All steel surfaces, except as noted hereafter and above, shall be cleaned to a minimum of SSPC-SP1, Solvent Cleaning.
8. All surfaces visible from sides (beams, curbs and brackets) shall be cleaned to a minimum of SSPC-SP6, Commercial Blast Cleaning.
9. Structural steel shall not be painted.
10. Bearing pads shall be shipped flat.
11. Bearing pads shall meet the requirements of Table 15-10-2 of the AREMA Manual for Railway Engineering.
12. Carlisle CCW-201 shall be used to fill gaps between field welded deck plates at the rate of one gallon per 37.9 linear feet. Carlisle CCW-201 is a multi-component, single base, non-sag polyurethane sealant by:

    Carlisle Coating & Waterproofing Incorporated
    900 Hensley Lane
    Wylie, TX 78098
    Phone (800) 527-7092

    Follow manufacturer's instructions for mixing, surface preparation and application.

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DESIGN BY: HDR | DRAWN BY: HDR | CHECKED BY: HDR

APPROVED:

UPRR - MGR SPECIAL PROJECTS STRUCTURES DESIGN

UNION PACIFIC

BRIDGE STANDARDS

W18 & W24 BEAM SPAN, 14' TO 34' LENGTHS

GENERAL NOTES

FILE OWNER: UPRR | DATE:

PLAN NO.: 580000 | SHEET: G1

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