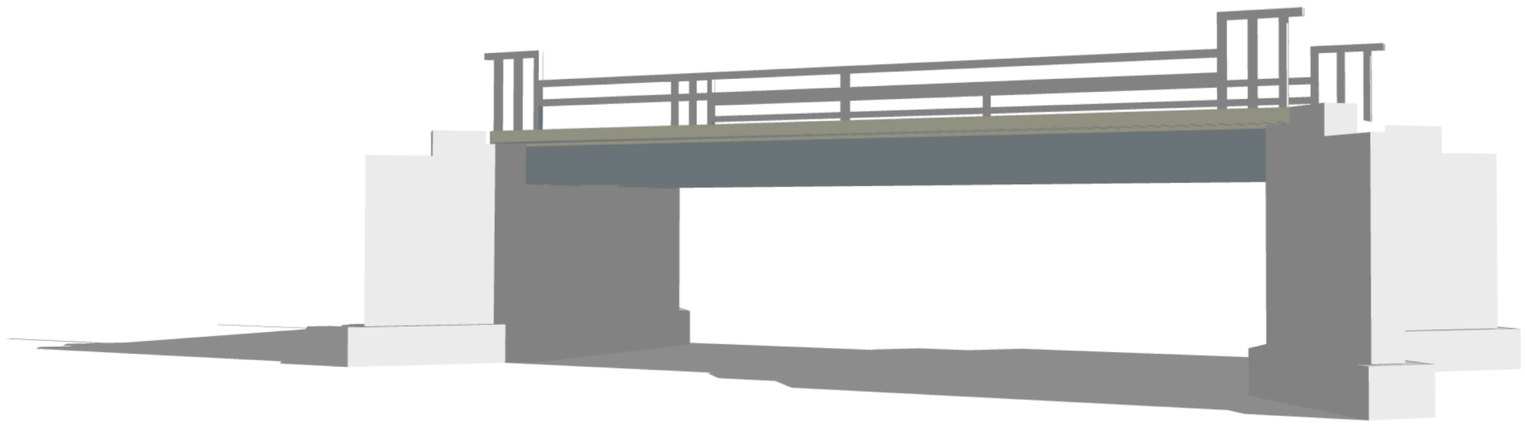
Mitchell Bridge

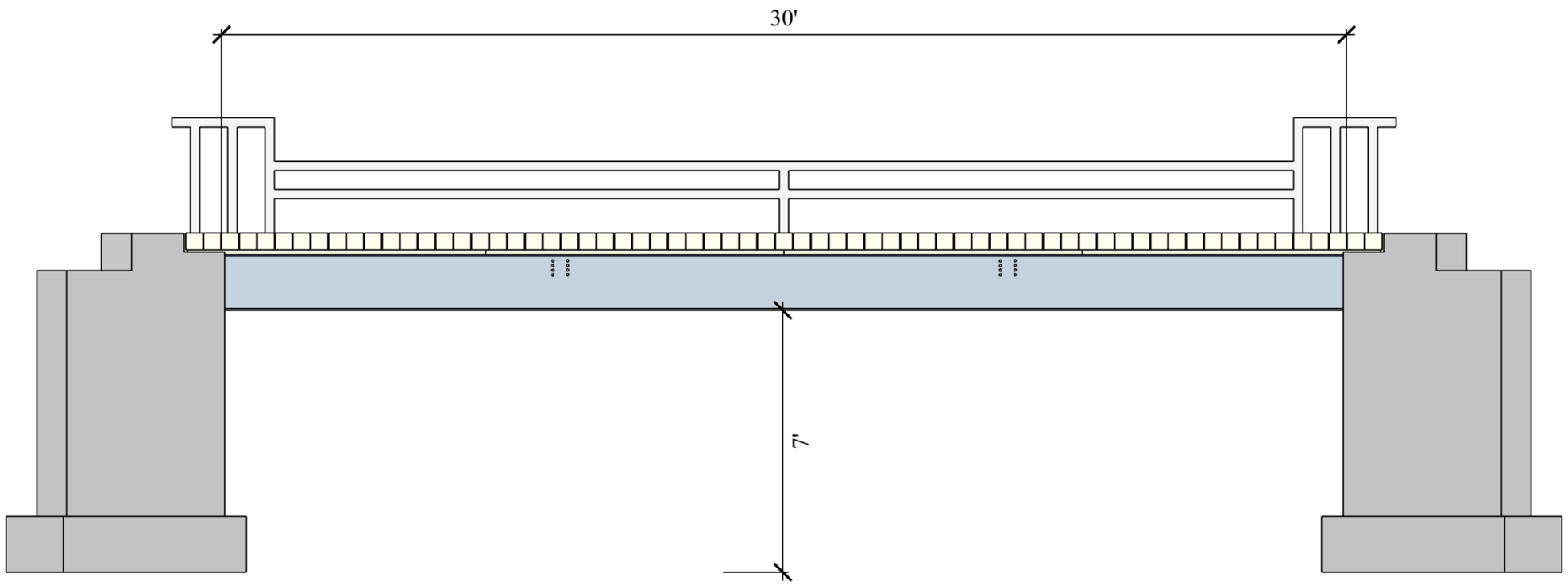
43° 45’ 46.08” N
72° 22’ 45.12” W



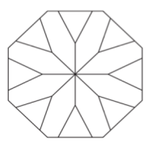
Mitchell Bridge

Designed June 2018

Left



Nick Fabrikant
Civil Engineer

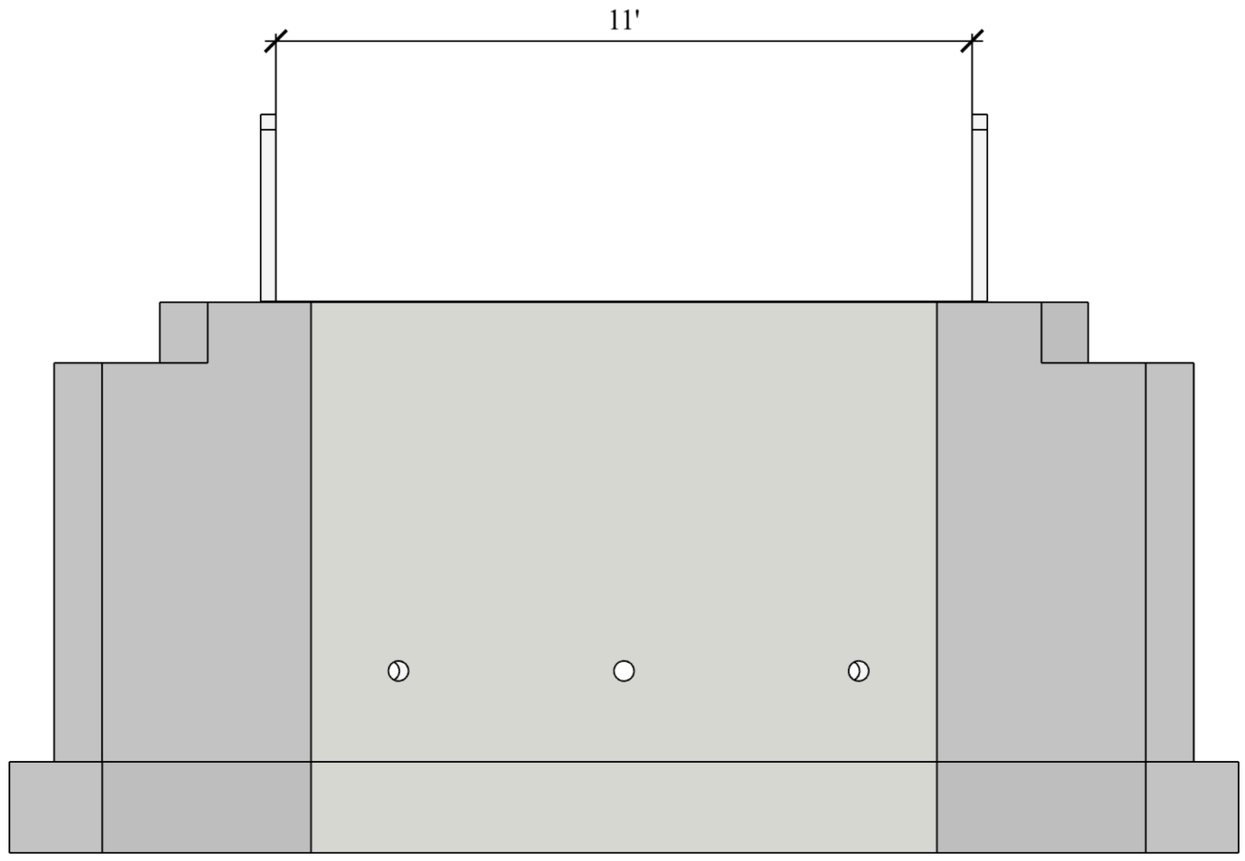


A3.1

Mitchell Bridge

Designed June 2018

Front



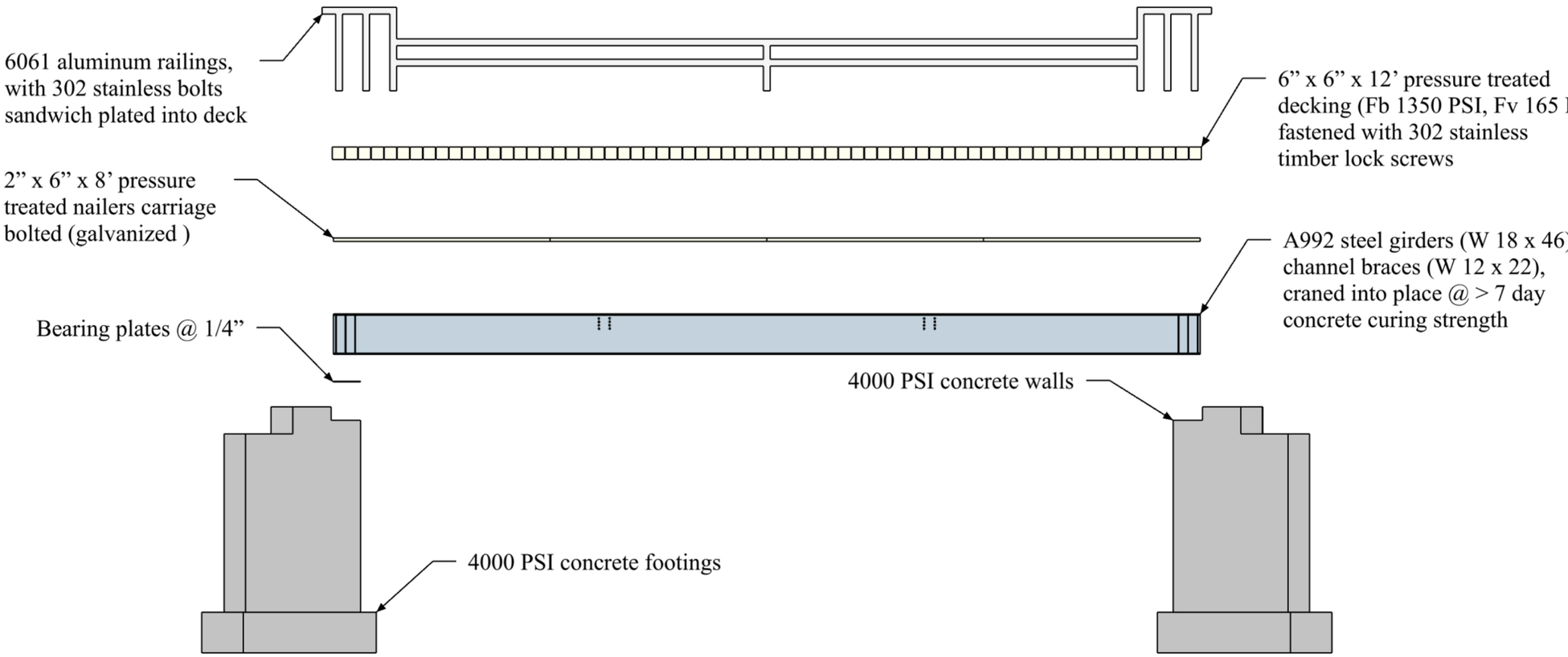
Nick Fabrikant
Civil Engineer

A3.2

Mitchell Bridge

Designed June 2018

Left



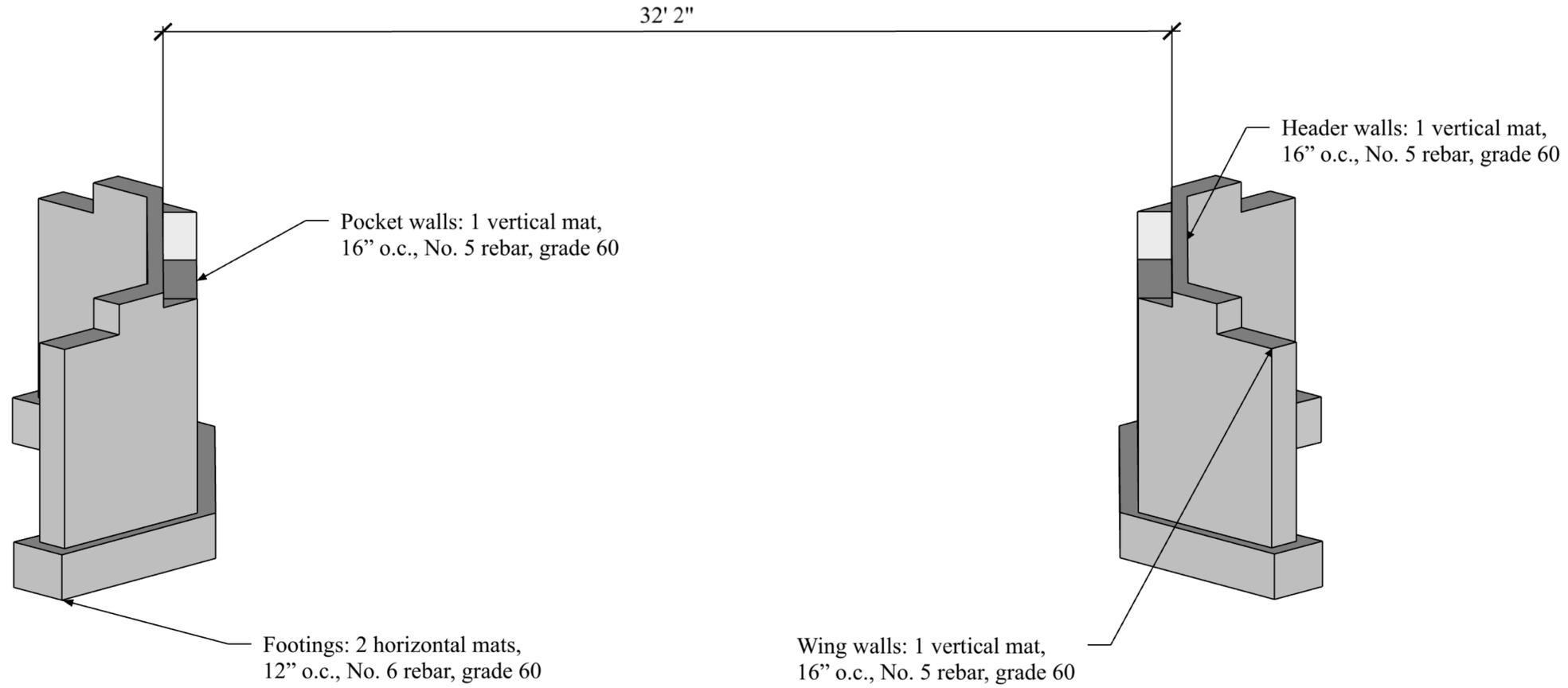
Nick Fabrikant
Civil Engineer

A3.3

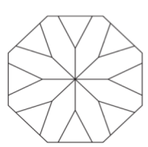
Mitchell Bridge

Designed June 2018

All concrete @ 4000 PSI,
footings pinned to existing ledge,
or established 5’ below stream grade



Nick Fabrikant
Civil Engineer

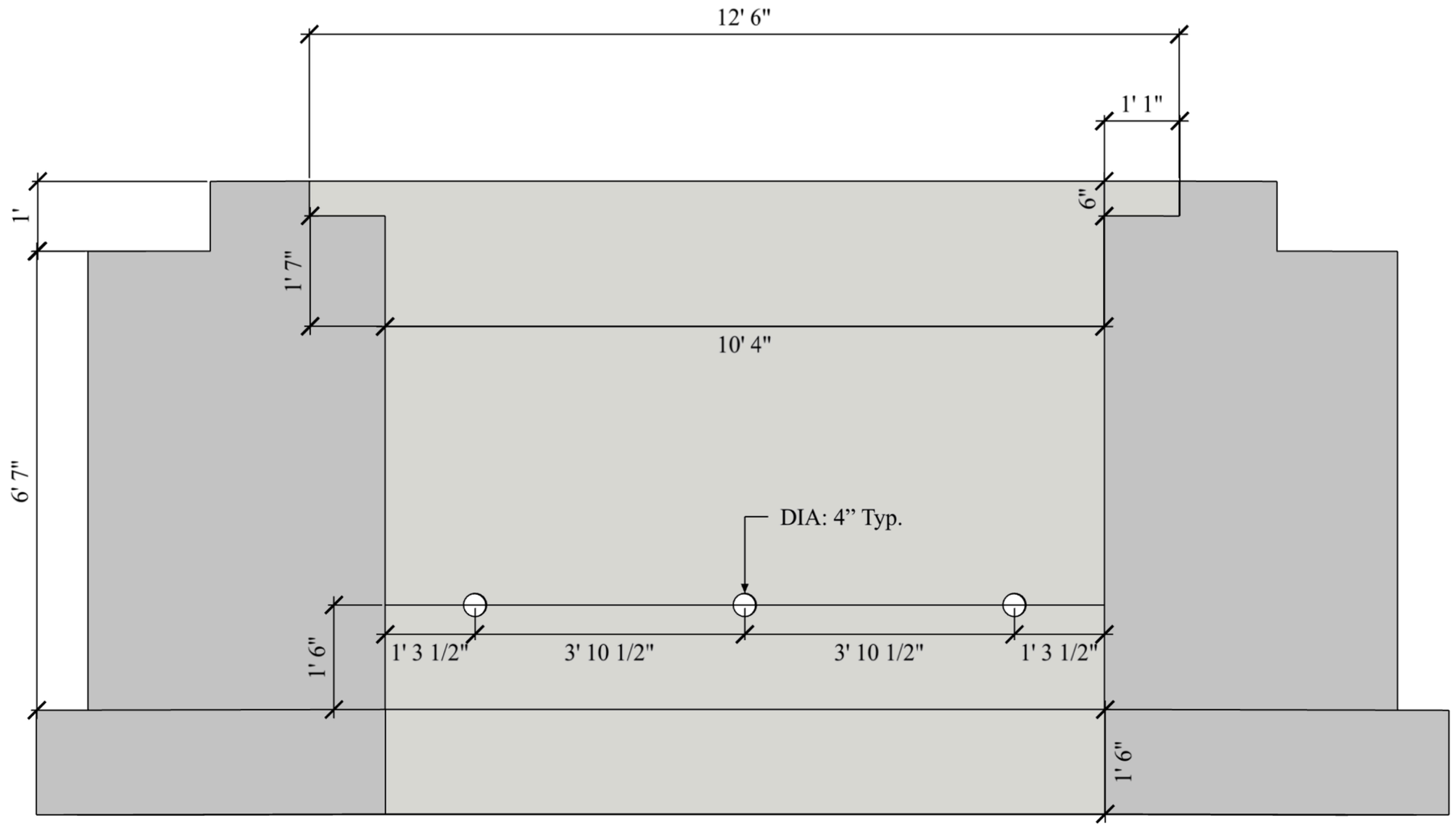


A3.4

Mitchell Bridge

Designed June 2018

Back



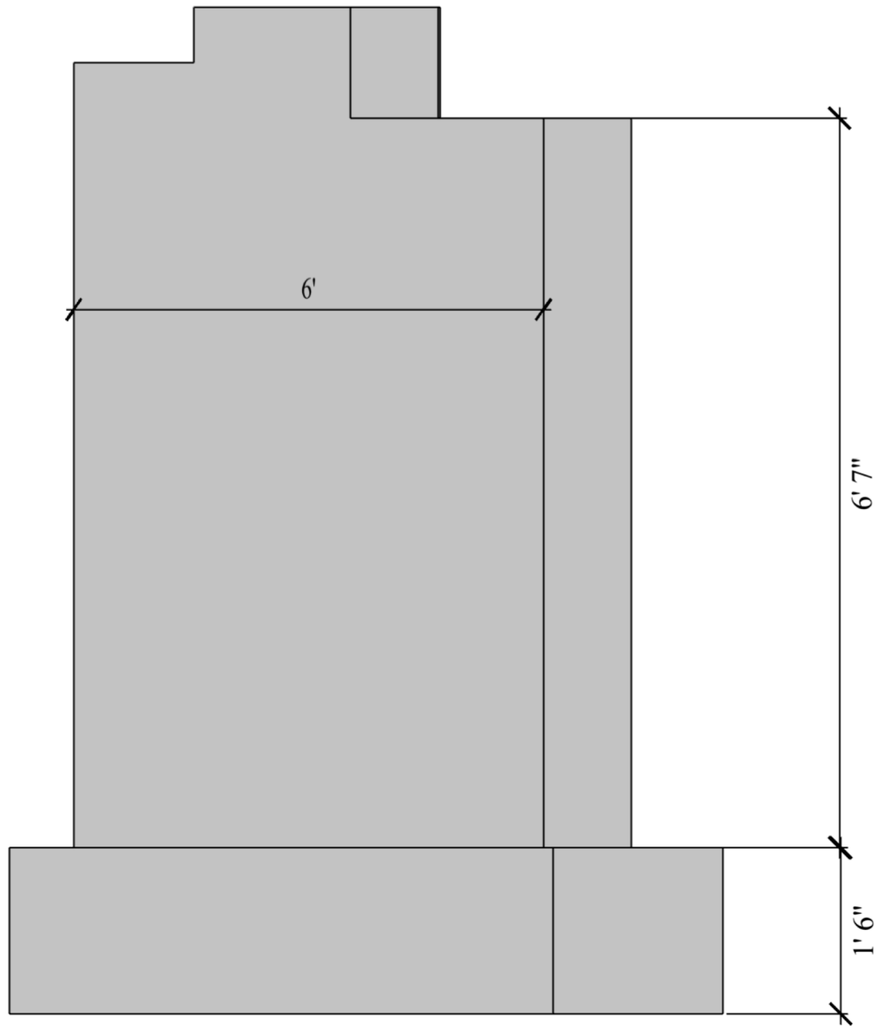
Nick Fabrikant
Civil Engineer

A3.5

Mitchell Bridge

Designed June 2018

Left



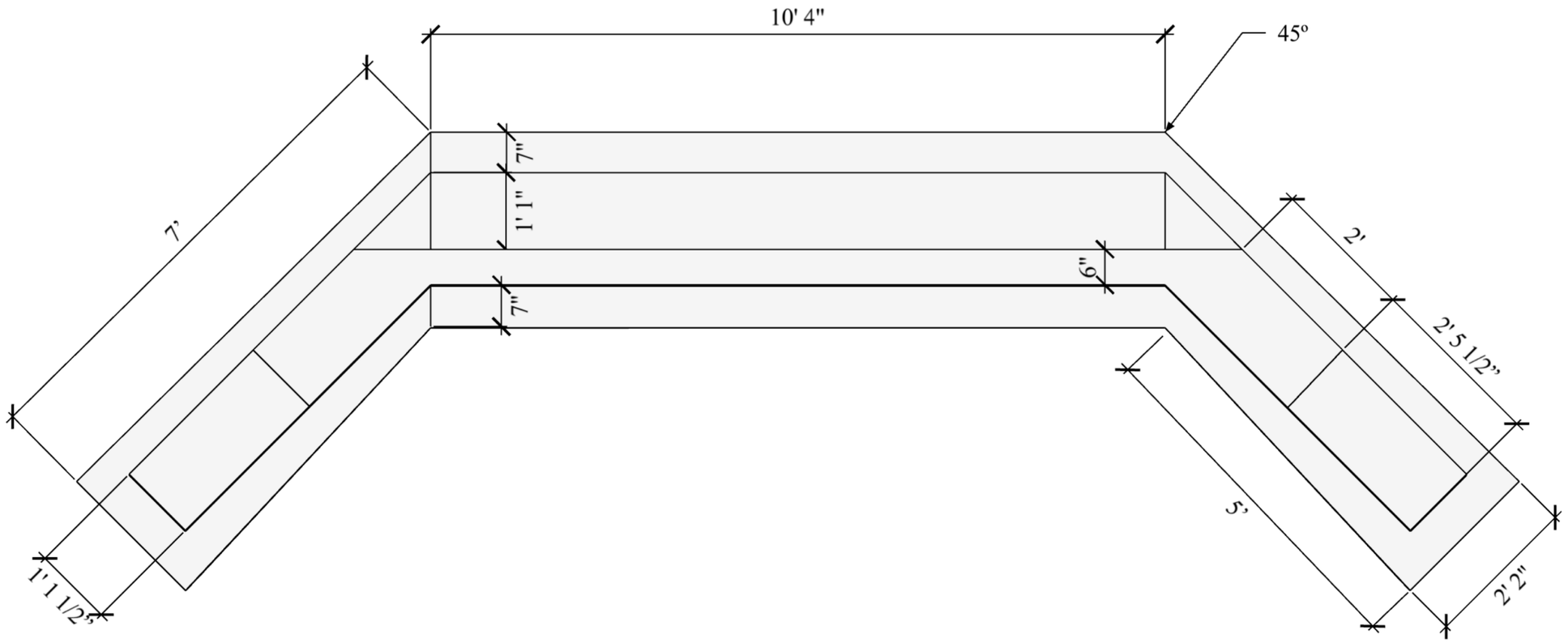
Nick Fabrikant
Civil Engineer

A3.6

Mitchell Bridge

Designed June 2018

Top

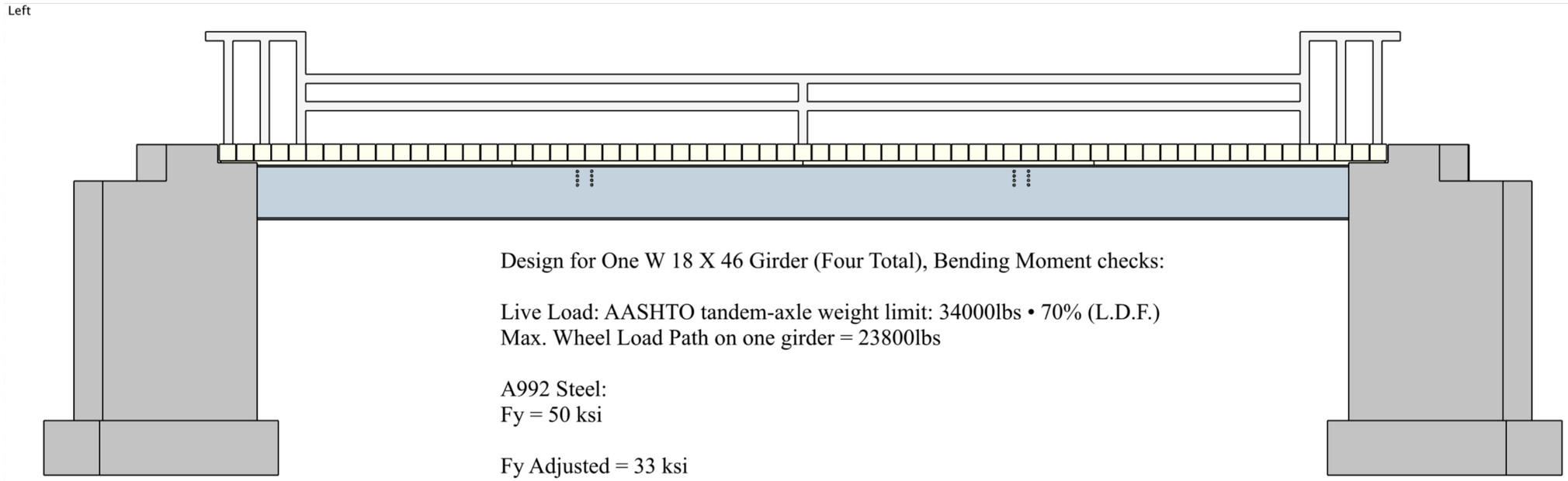


Nick Fabrikant
Civil Engineer

A3.7

Mitchell Bridge

Designed June 2018



Design for One W 18 X 46 Girder (Four Total), Bending Moment checks:

Live Load: AASHTO tandem-axle weight limit: 34000lbs • 70% (L.D.F.)
Max. Wheel Load Path on one girder = 23800lbs

A992 Steel:
Fy = 50 ksi

Fy Adjusted = 33 ksi

Design Point Load @ center of single girder, of a simply supported beam:

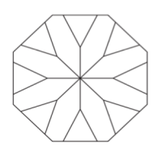
23800lbs • 31’ / 4 • = 184450 lbs.ft • 12” / 1000 lbs = 2214 kip.in

Mmax = 2214 kip.in (+) 200 kip.in Dead Load (with 1.2 F.O.S.)

Design Moment (Mmax) = 2412 kip.in

Design for Elastic Section Modulus:
Sx = Mmax / Fy Adjusted = 73.2in^3 < 78.8in^3, Satisfied

Nick Fabrikant
Civil Engineer



A3.8

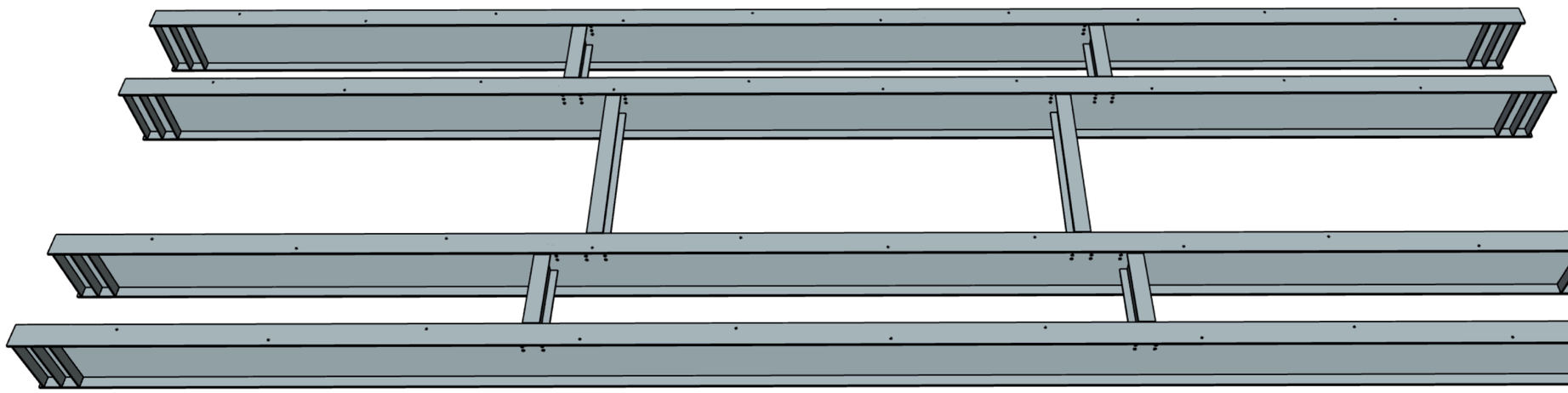
Mitchell Bridge

Designed June 2018

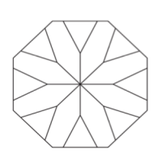
W 18 X 46 Main Girders, 4 total

W 12 X 22 Channel Braces, 6 total

All W-sections, Angles, A325 Bolts, Galvanized



Nick Fabrikant
Civil Engineer

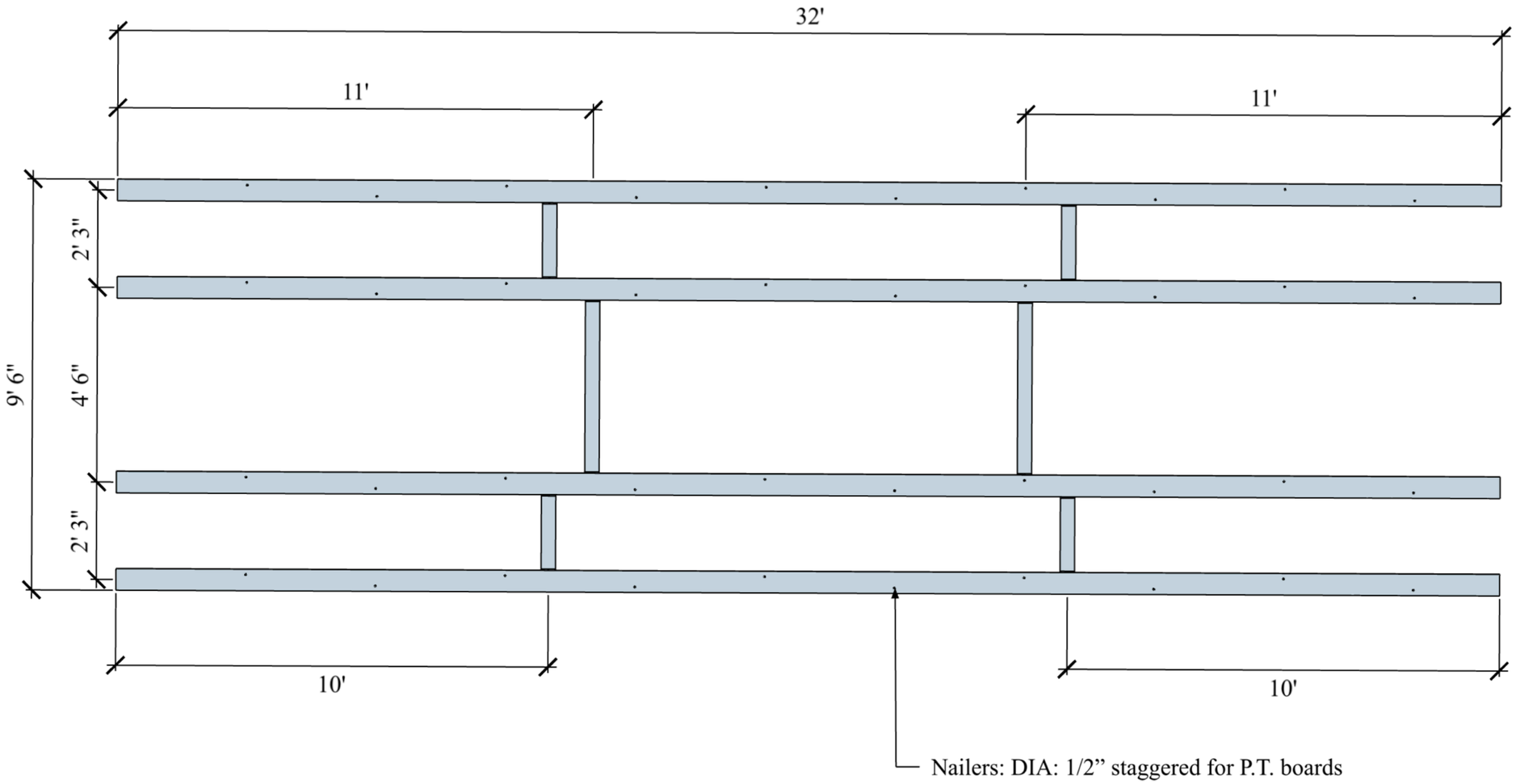


A3.9

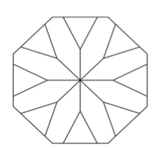
Mitchell Bridge

Designed June 2018

Top



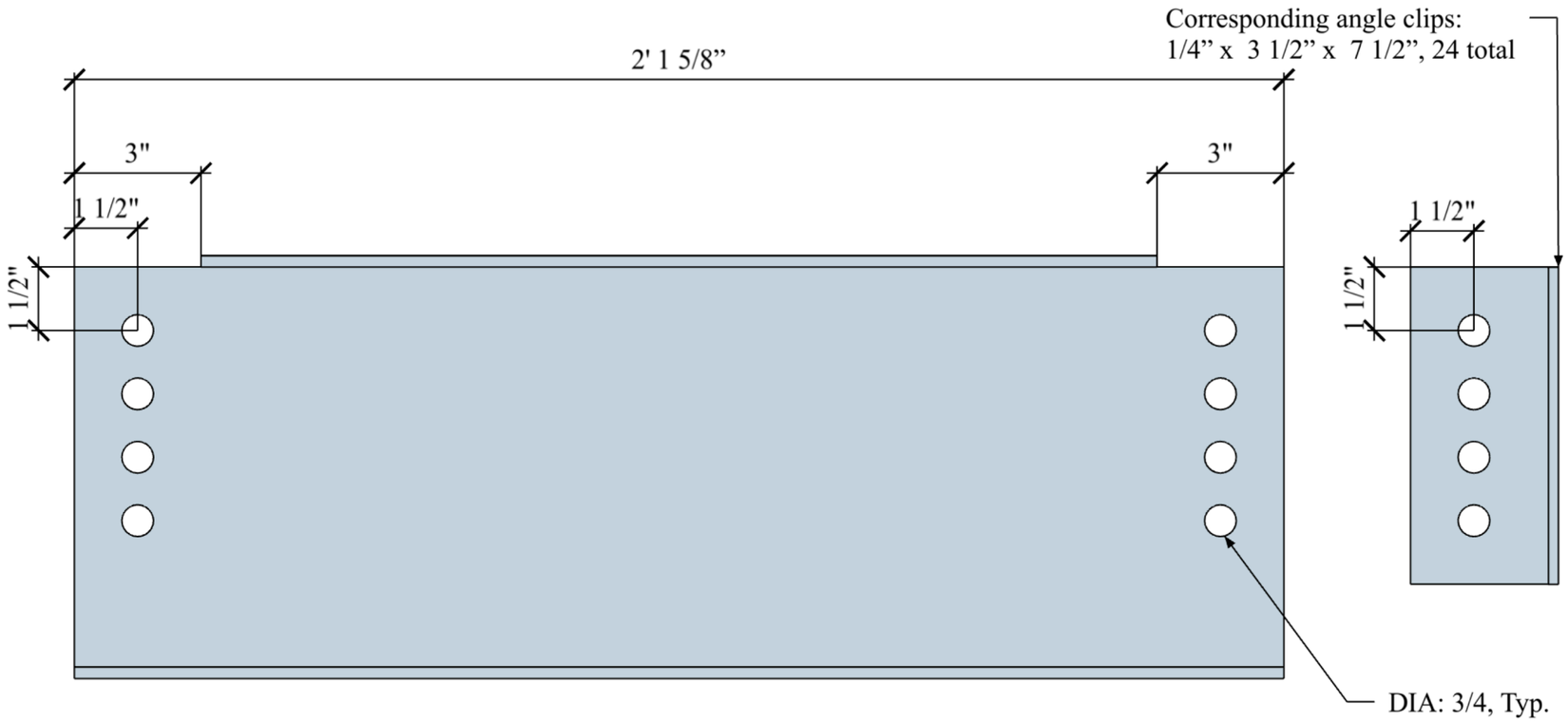
Nick Fabrikant
Civil Engineer



A3.10

Back

4 Channel Braces, W 12 X 22, A 325 Bolt Connections

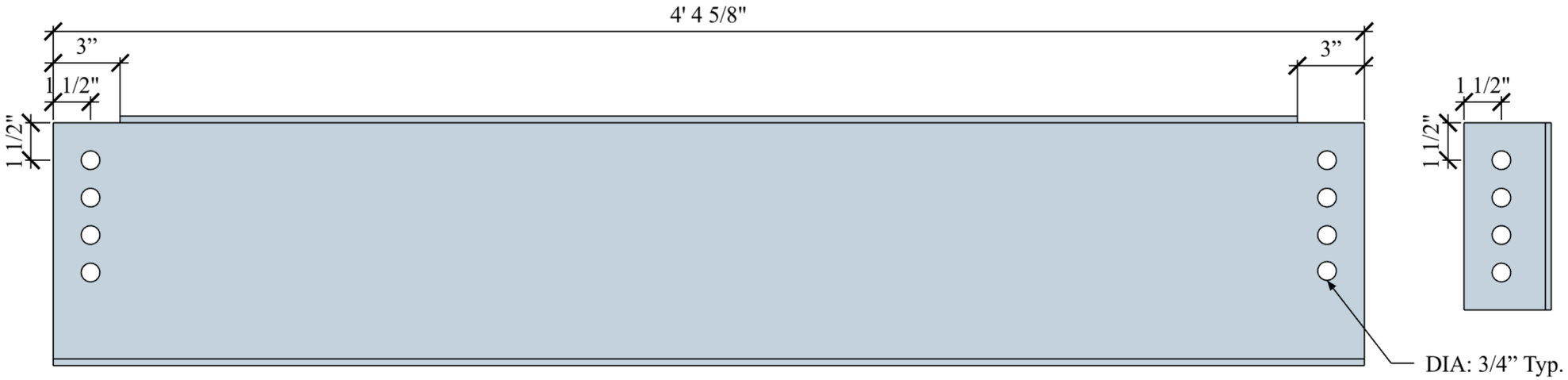


Nick Fabrikant
Civil Engineer

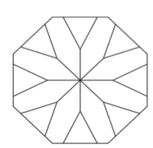
A3.11

Back

2 Channel Braces, W 12 X 22, A 325 Bolt Connections

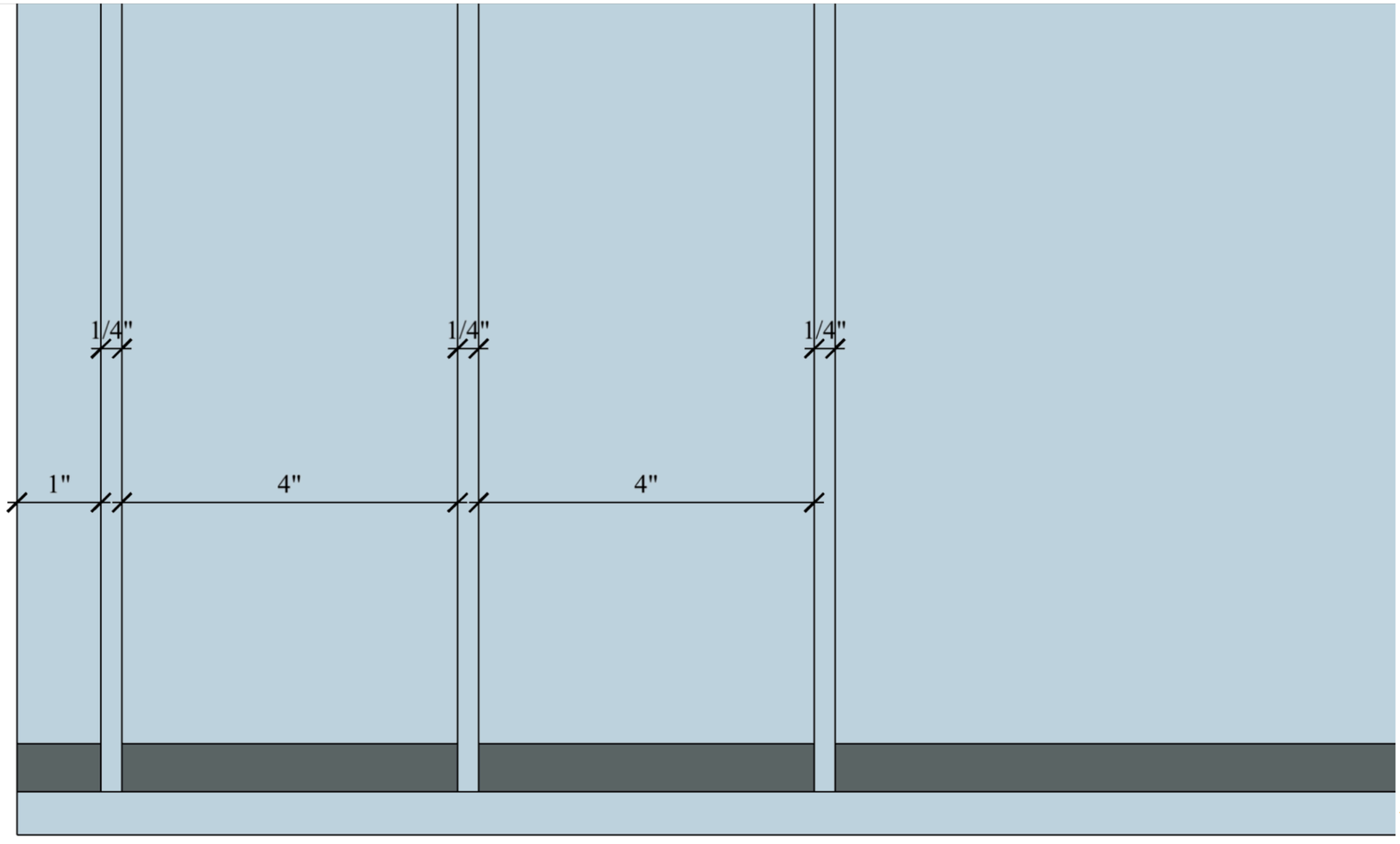


Nick Fabrikant
Civil Engineer

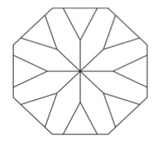


A3.12

Web stiffeners, 48 total, flush with web, top and bottom flange, dimensions Typ.



Nick Fabrikant
Civil Engineer



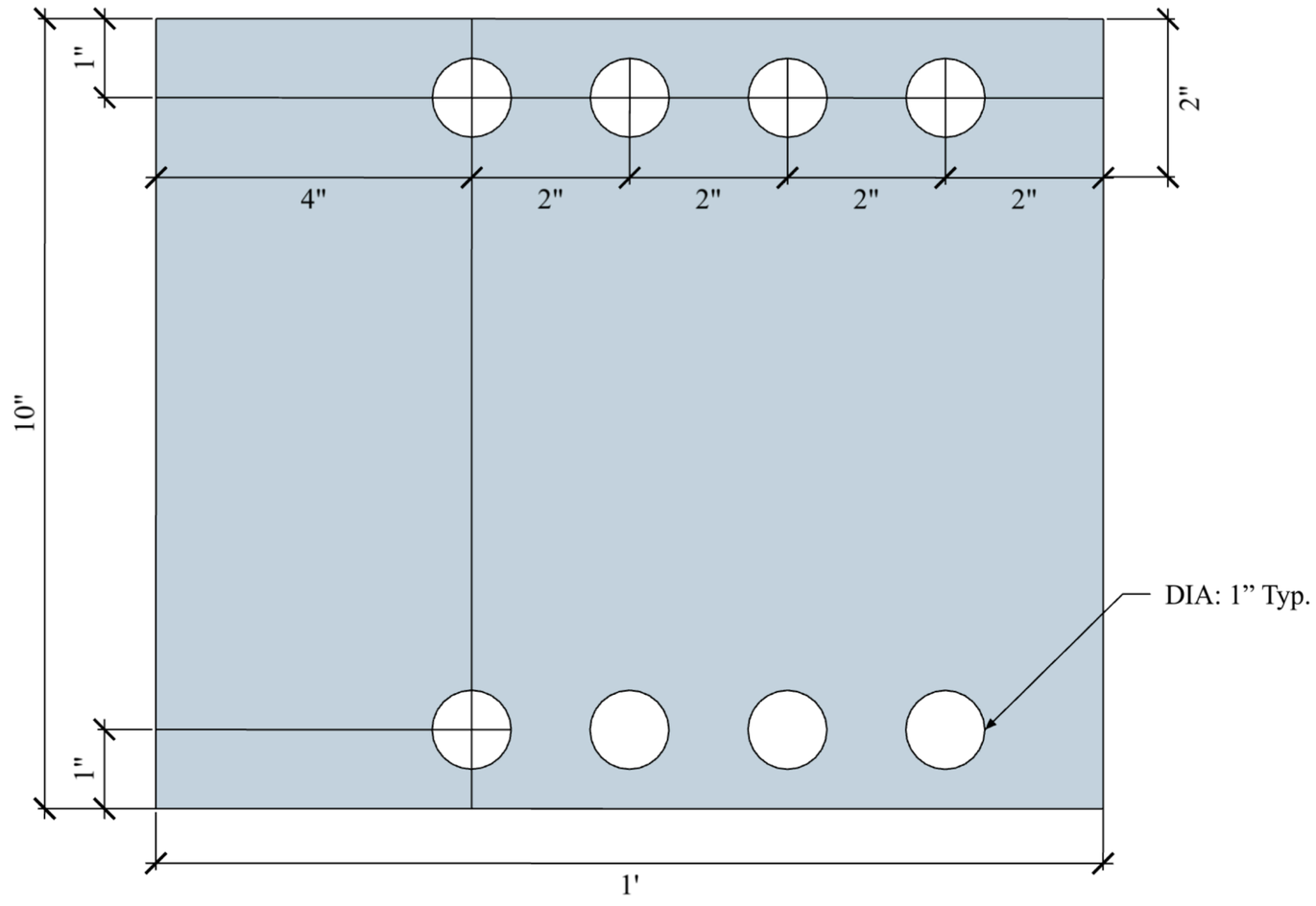
A3.13

Mitchell Bridge

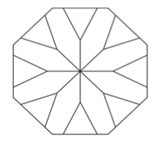
Designed June 2018

Top

Bearing plates @ 1/4”, 8 total, using A325 epoxied threaded bolts (bottom girder flanges welded to plates 2” off longitudinal edges in-shop)



Nick Fabrikant
Civil Engineer



A3.14

Thank You

43° 45’ 46.08” N
72° 22’ 45.12” W