

PEDESTRIAN RAILROAD OVERPASS

WATERLOO, IA 50702

CEE: 4850

PROJECT DESCRIPTION:

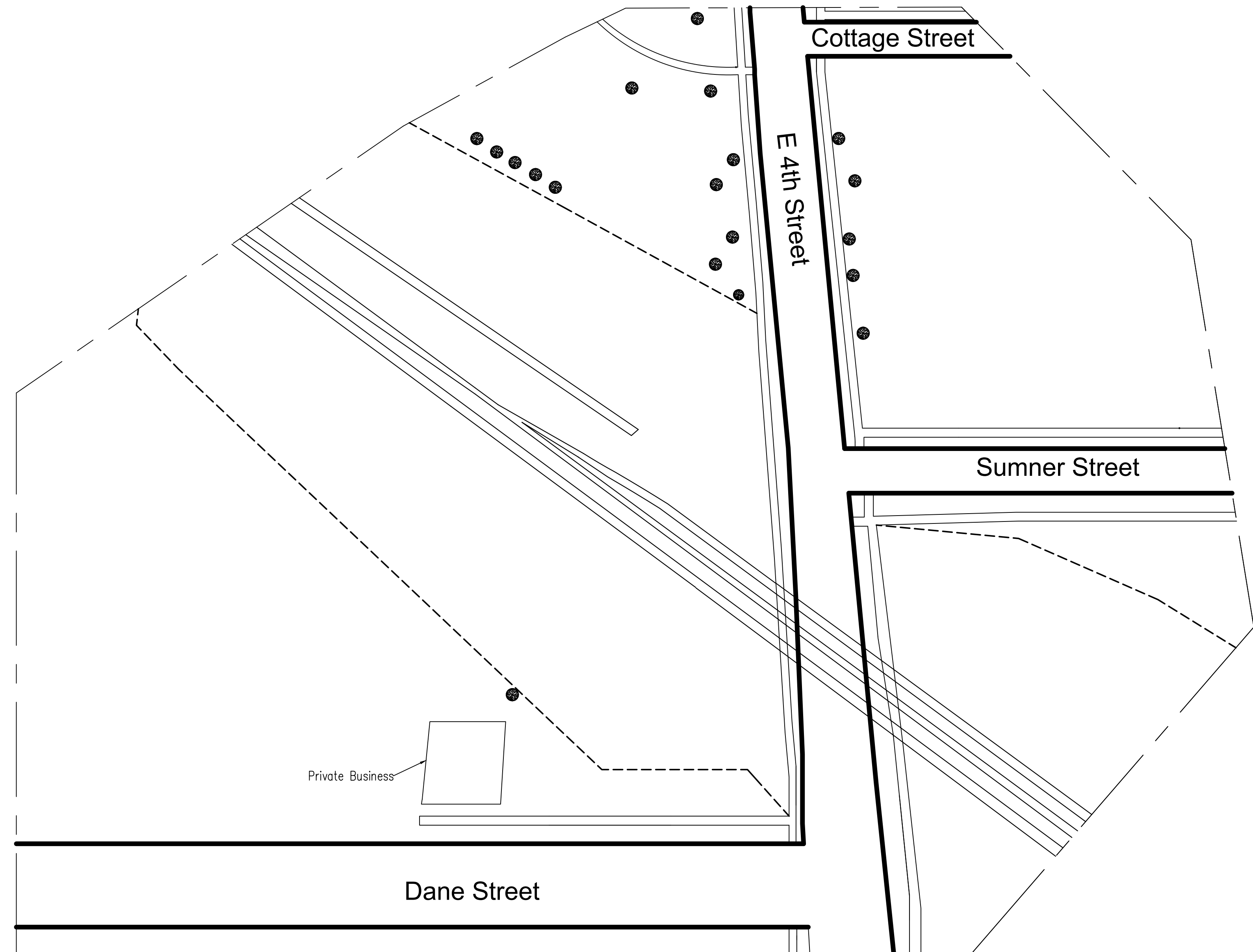
This project is for the design and construction of a pedestrian cable-stayed bridge crossing the Canadian National Railroad's tracks in Waterloo, IA. The span of this structure runs parallel to East 4th Street on the west side of the road.

CLIENT:
 Jamie Knutson
 CITY OF WATERLOO

ENGINEERS:
 Sydney Bortscheller
 Alexander Kettering
 April Vande Brake
 Nicholas Moioffer

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2. EXISTING SITE
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9. SPIRAL RAMP
10. SPIRAL RAMP SECTION DETAILS
11. ELEVATOR TOWER WITH STAIRS
12. PILE FOUNDATIONS
13. BACK-STAY ANCHORAGE



Project Location
 Scale: 1":50'

PROJECT:	CEE: 4850
DATE :	05/12/2021
DRAWN BY:	SRB
REVISION:	

THE UNIVERSITY OF IOWA
CIVIL AND ENVIRONMENTAL ENGINEERING
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PEDESTRIAN OVERPASS

WATERLOO, IA 50702

SHEET NAME

TITLE SHEET

SHEET NO.

T-01

BUILD MATERIAL QUANTITY ESTIMATES

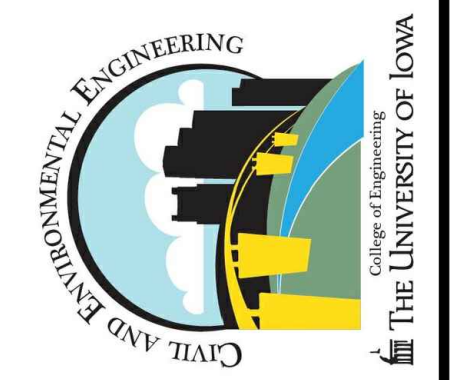
Superstructure/Pylon/App	Unit	Quantity
W36X853 Steel Beams (ft)	525	2
CC Deck 8" depth x 10' wide(yd^3)	132	1
Deck Rebar (ft^2)	5250	1
Stay Cables (ft)	8850	2
Pylon/Pier CC (yd^3)	2	120
Elevator Tower Steel FramingW4x13(ft)	630	1
Pylon/Pier Rebar (ft^2)	3500	2
Elevator	1	1
Ramp Approach CC(yd^3)	375	1
Ramp Approach Rebar (lb)	18000	1
Steel Paint (LS)	1	1
Ramp Approach Stirrups	1	160
Roller Support	1	2
Tower Support	1	2
Crane+Operator(hr)	400	1
Safety Fencing (/7ft)	186	1
Deck Lighting (fixture)	1	12
Structure Lighting (fixture)	1	6
Elevator Tower Windows	1	8
Bridge Steel Handrail (ft)	650	2
Precast CC Steps (step)	30	1
Elevator Tower Roof (ft^2)	634	1
CC Stair Landings	1	3
Elevator Tower Steel FramingW4x13(ft)	164	1
Elevator Tower Steel FramingW8x10	110	1

Site Design	Unit	Quantity
Land Grading (ft^2)	20000	1
Subbase (yd^3)	484	1
Lamposts	1	3
Silt Fence (ft)	600	1
Native Grass (acre)	0.3	1
Trees	1	6
CC Sidwalk (yd^3)	30	1
Rebar (ft^2)	700	1

Substructure	Unit	Quantity
HP18X204 Steel Piles (ft)	60	60
HP14X117 Steel Piles (ft)	30	12
CC Pile Caps/Anchors (yd^3)	130	2
Excavation (yd^3)	210	1
Crane+Operator(hr)	40	2
Rebar (ft^2)	2400	1

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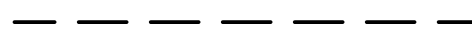



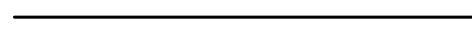
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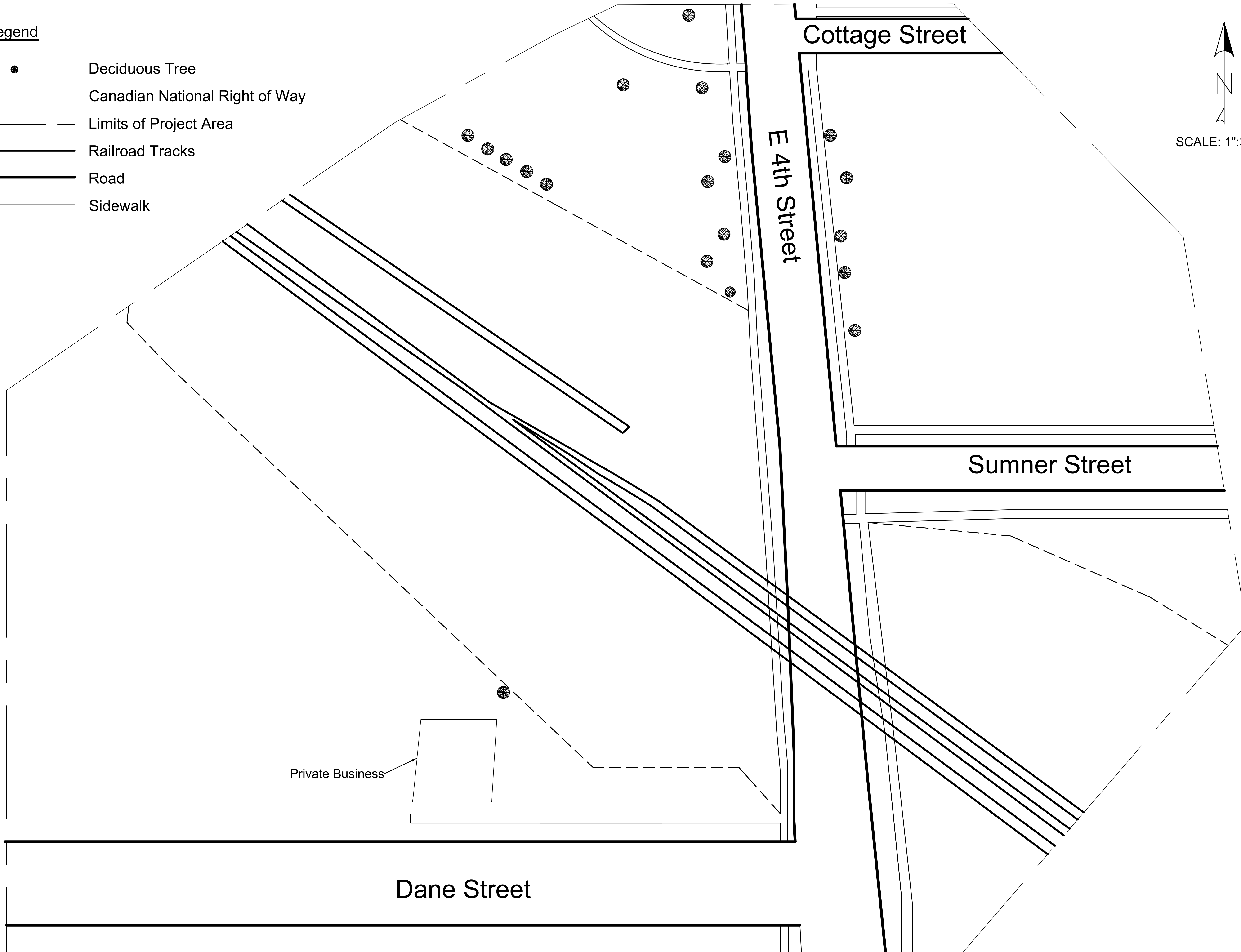
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SHEET NAME
 MATERIAL SUMMARY

SHEET NO.
1/13

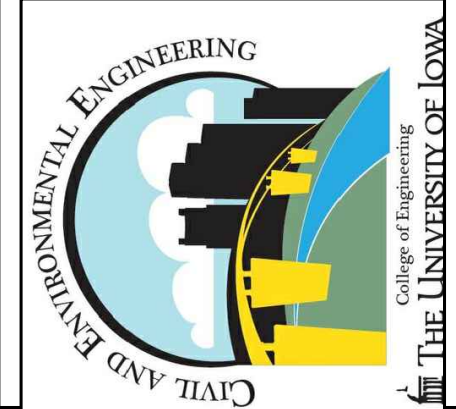
Legend

-  Deciduous Tree
-  Canadian National Right of Way
-  Limits of Project Area
-  Railroad Tracks
-  Road
-  Sidewalk



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SHEET NAME
 EXISTING SITE

SHEET NO.
2/13

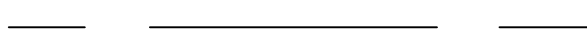
Legend



Deciduous Tree



Canadian National Right of Way



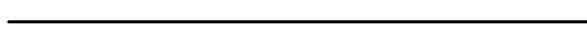
Limits of Project Area



Railroad Tracks



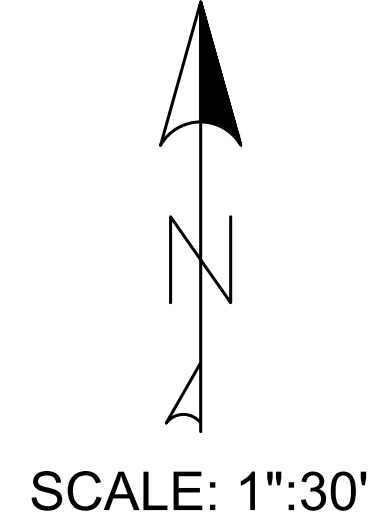
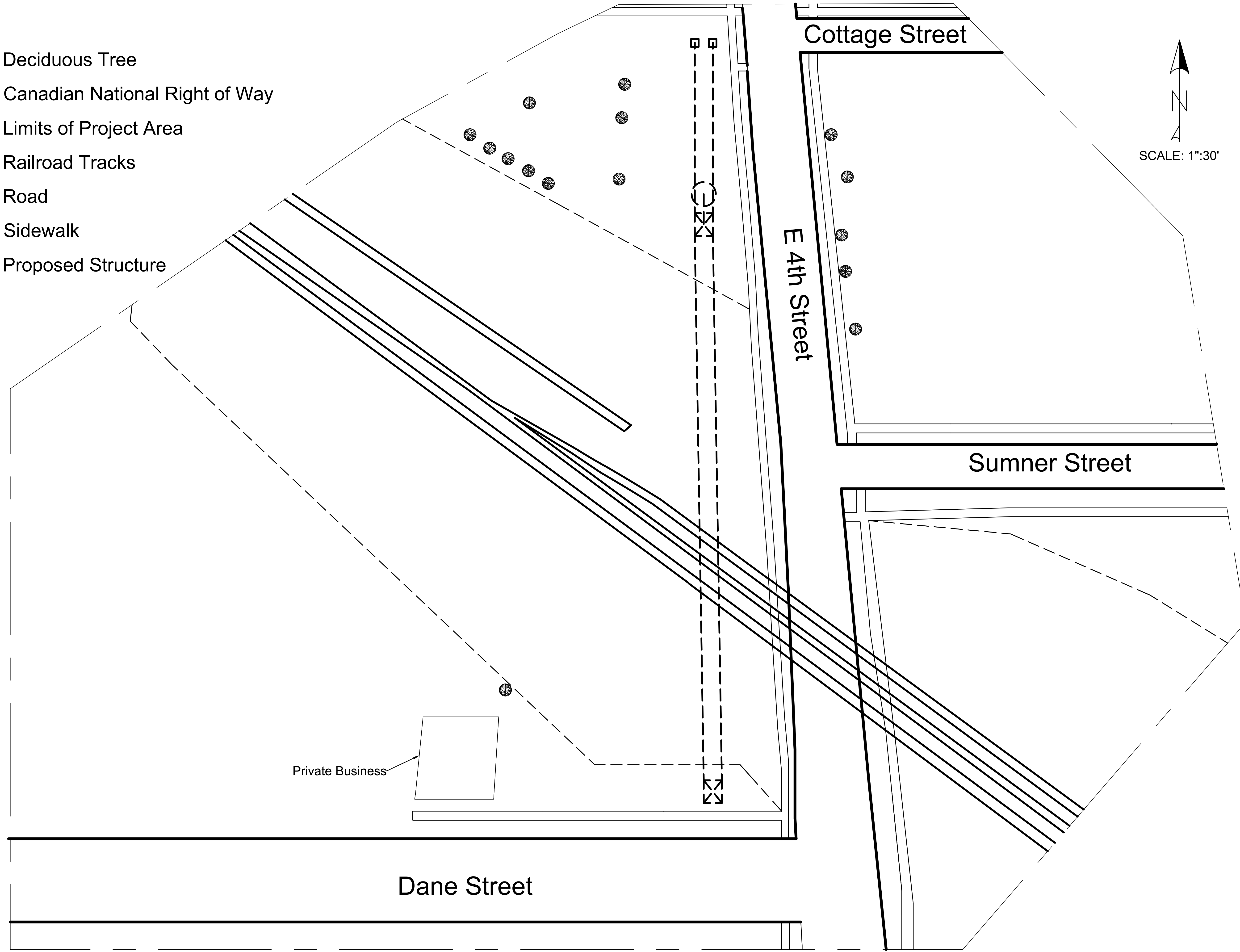
Road



Sidewalk



Proposed Structure



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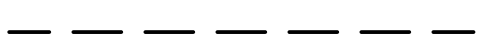
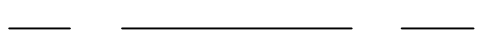


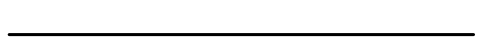

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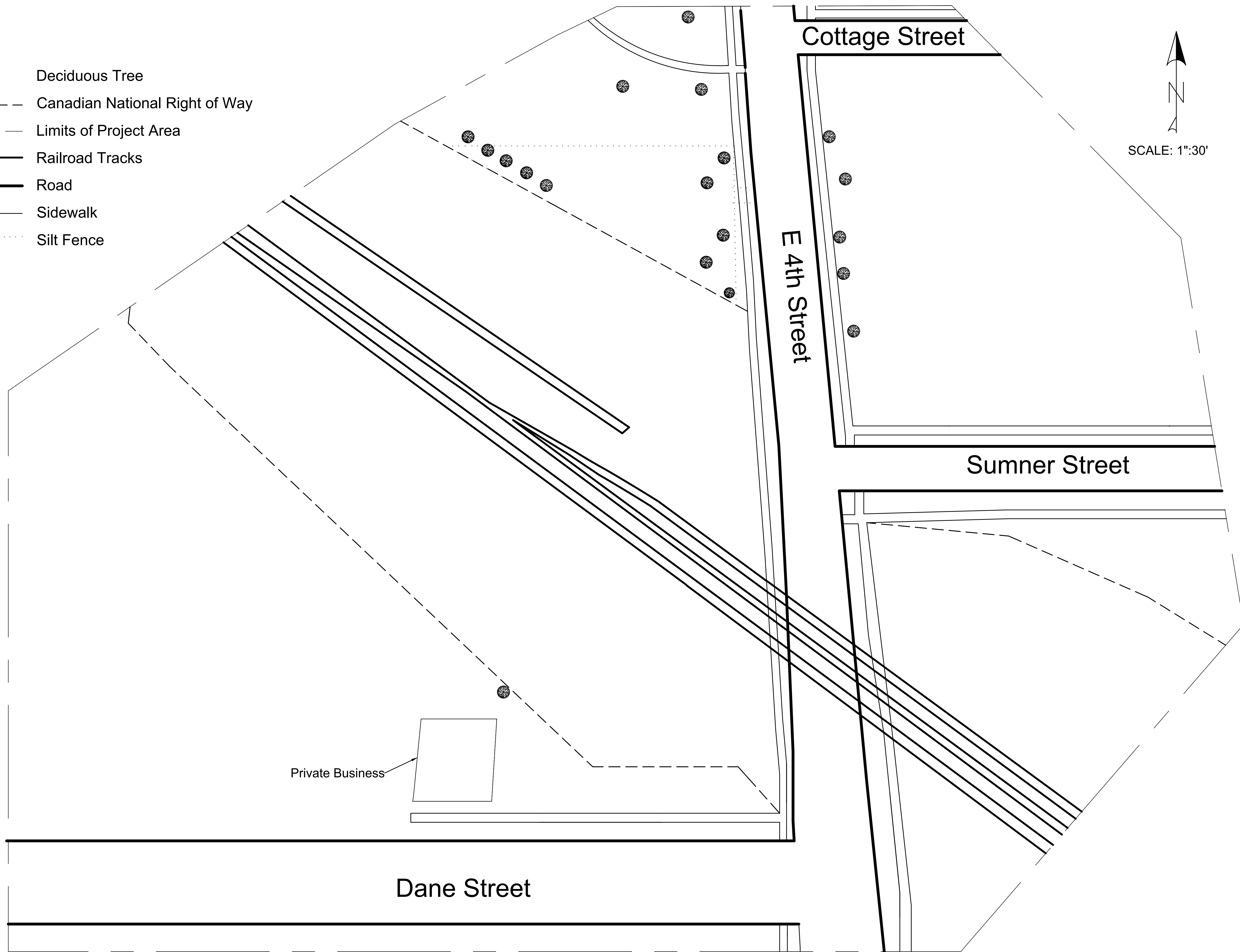
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SHEET NAME
 POST-CONSTRUCTION

SHEET NO.
3/13

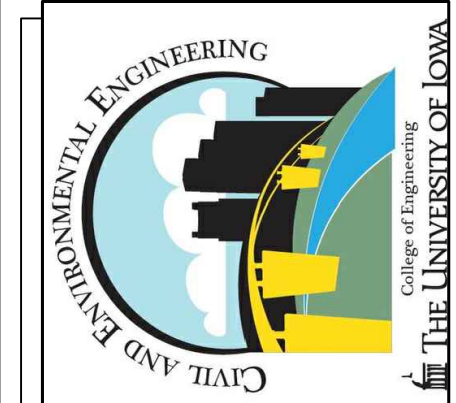
Legend

-  Deciduous Tree
-  Canadian National Right of Way
-  Limits of Project Area
-  Railroad Tracks
-  Road
-  Sidewalk
-  Silt Fence



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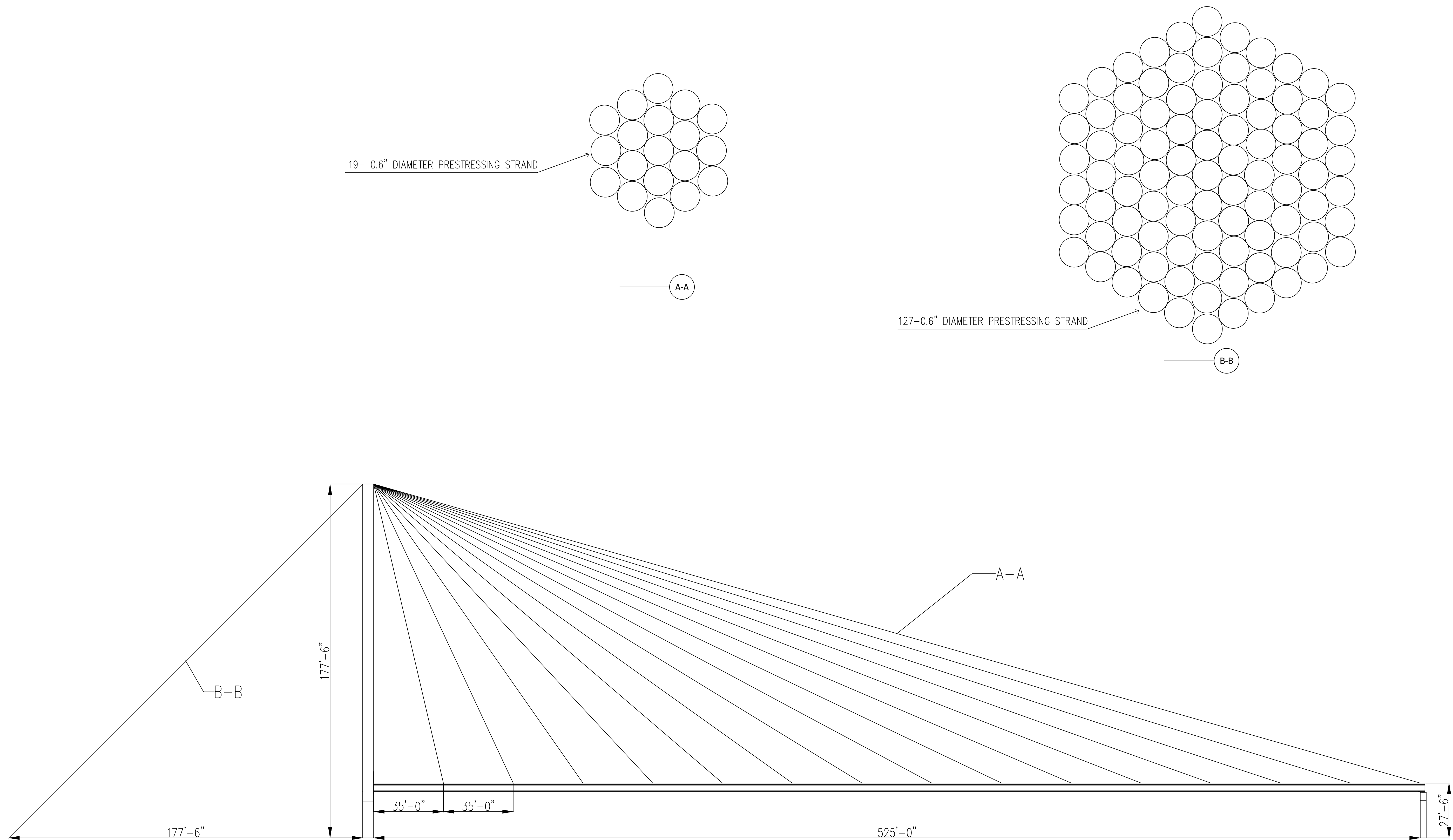


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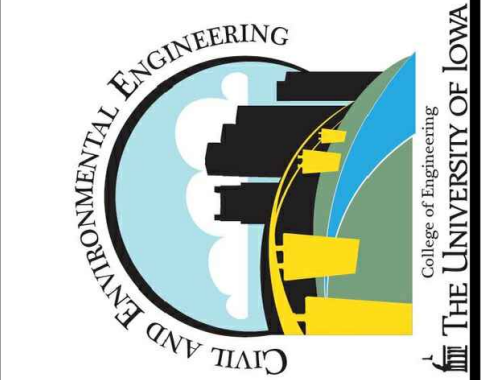
SHEET NAME	EROSION PLAN
SHEET NO.	4/13



1 ELEVATION VIEW
Scale: 1":25'

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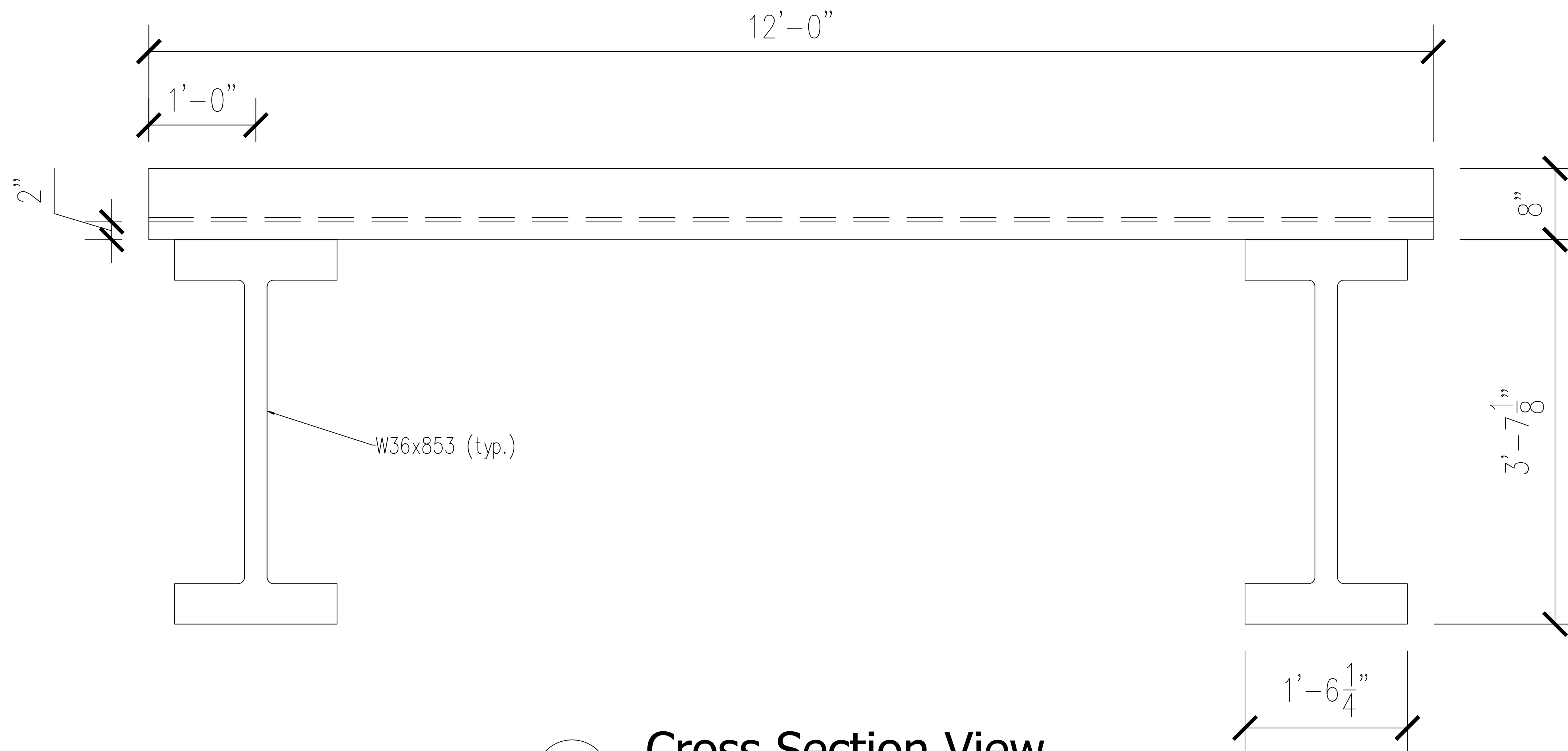


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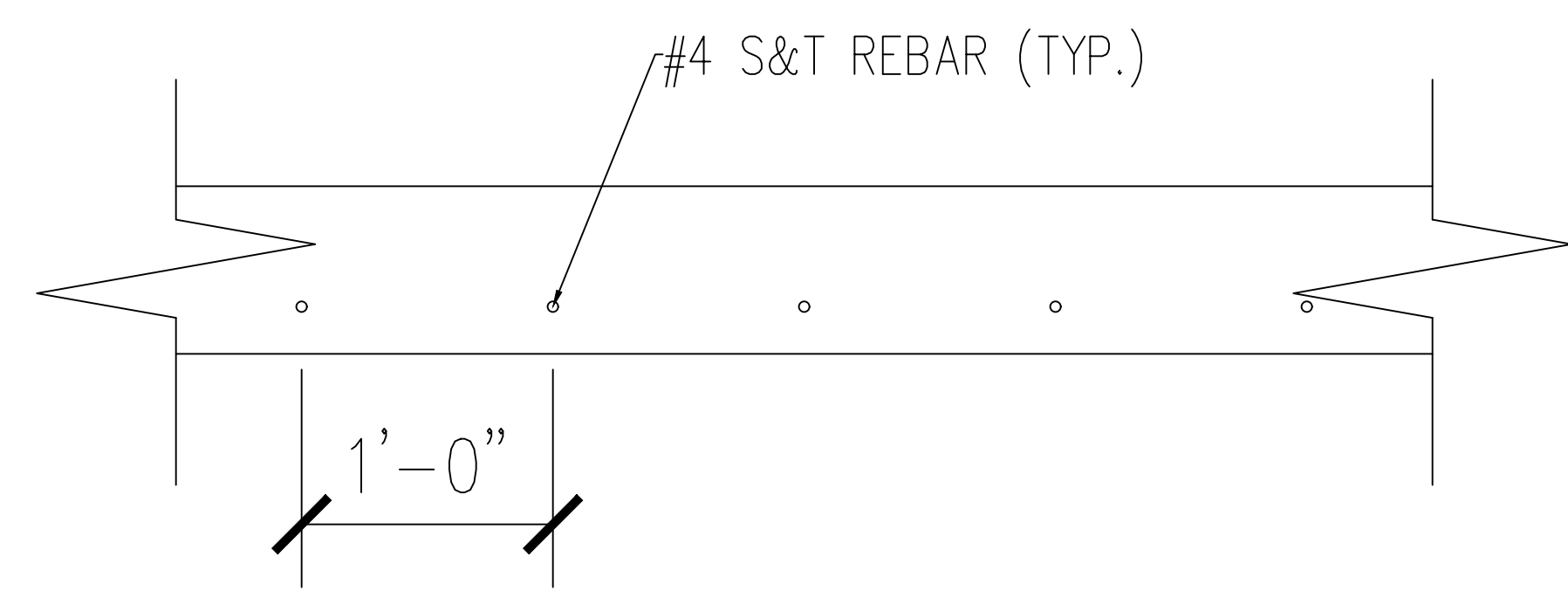
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SHEET NAME
 SUPERSTRUCTURE
 ELEVATION VIEW

SHEET NO.
5/13



1 Cross Section View
Scale: 1-1/2":1'



2 Rebar Detail
Scale: 1-1/2":1'

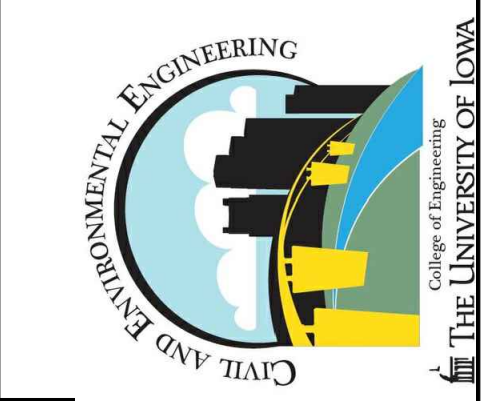
Notes:

$$f'_c = 4 \text{ ksi}$$

$$w_c = 145 \text{ PCF}$$

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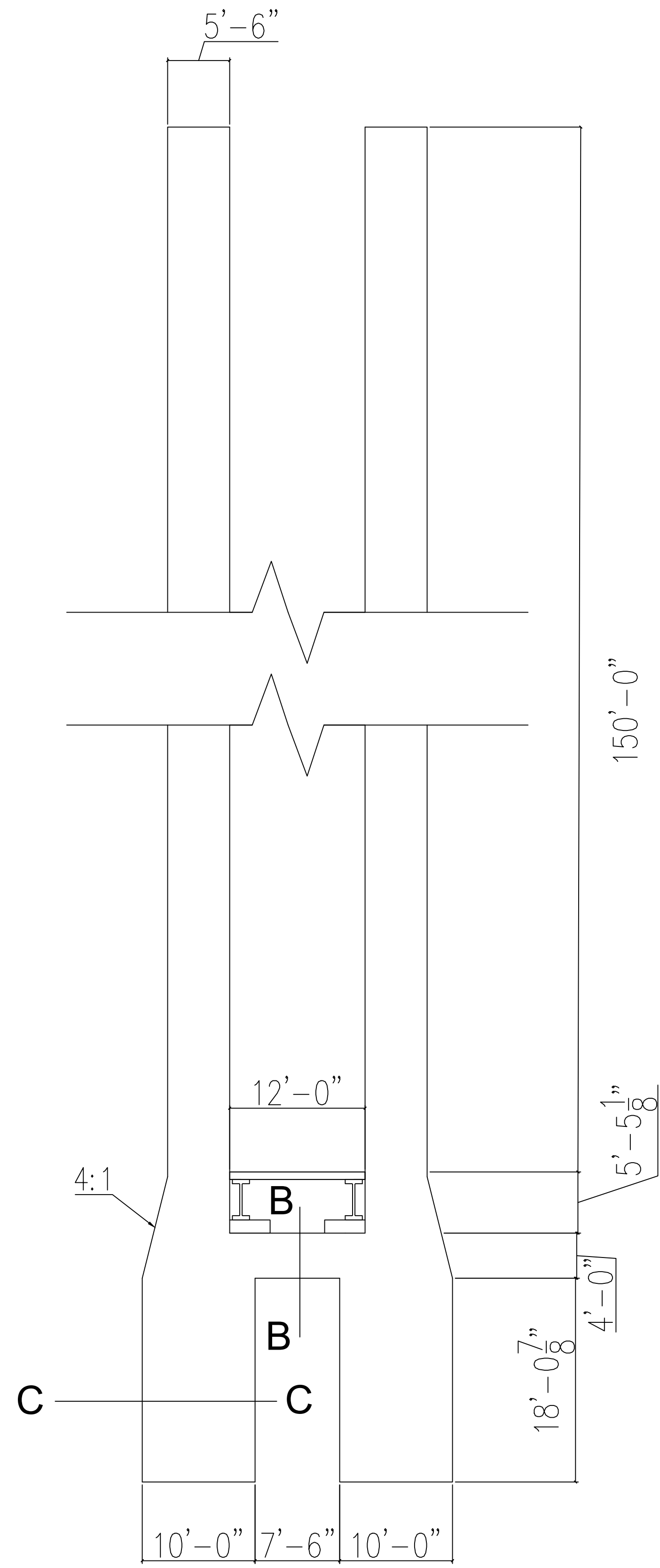


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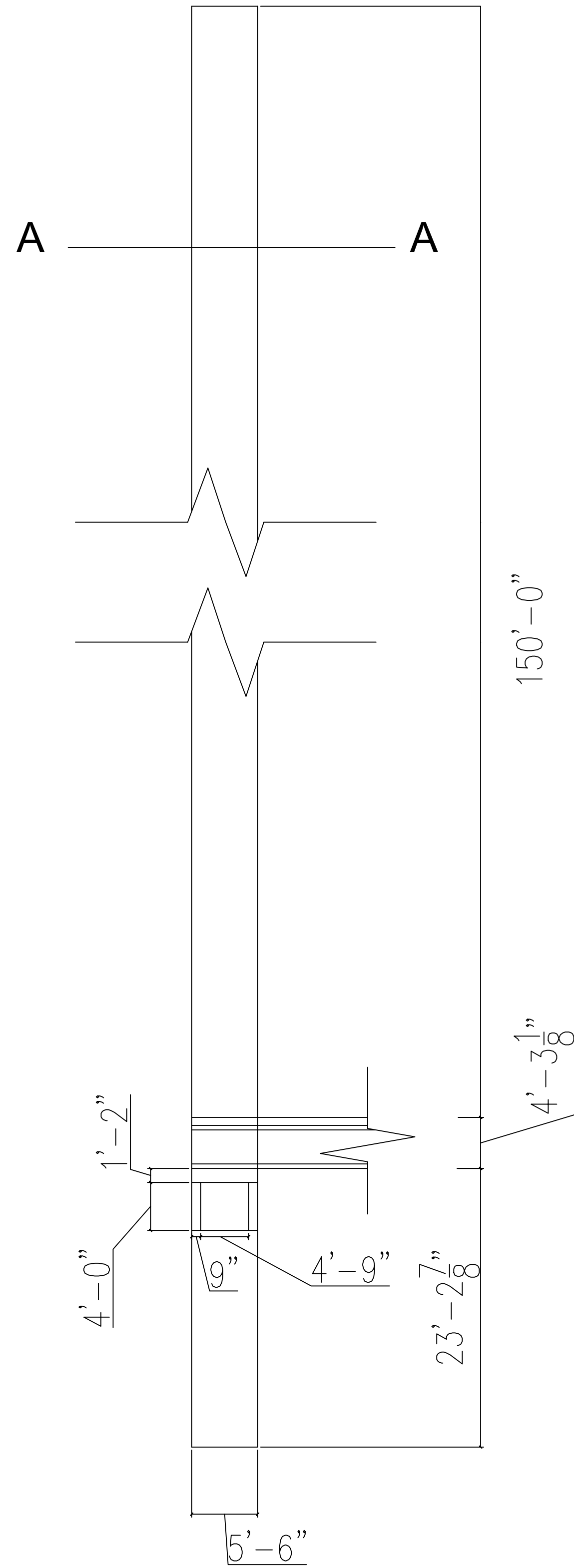
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SHEET NAME
 GIRDER AND DECK
 CROSS SECTION

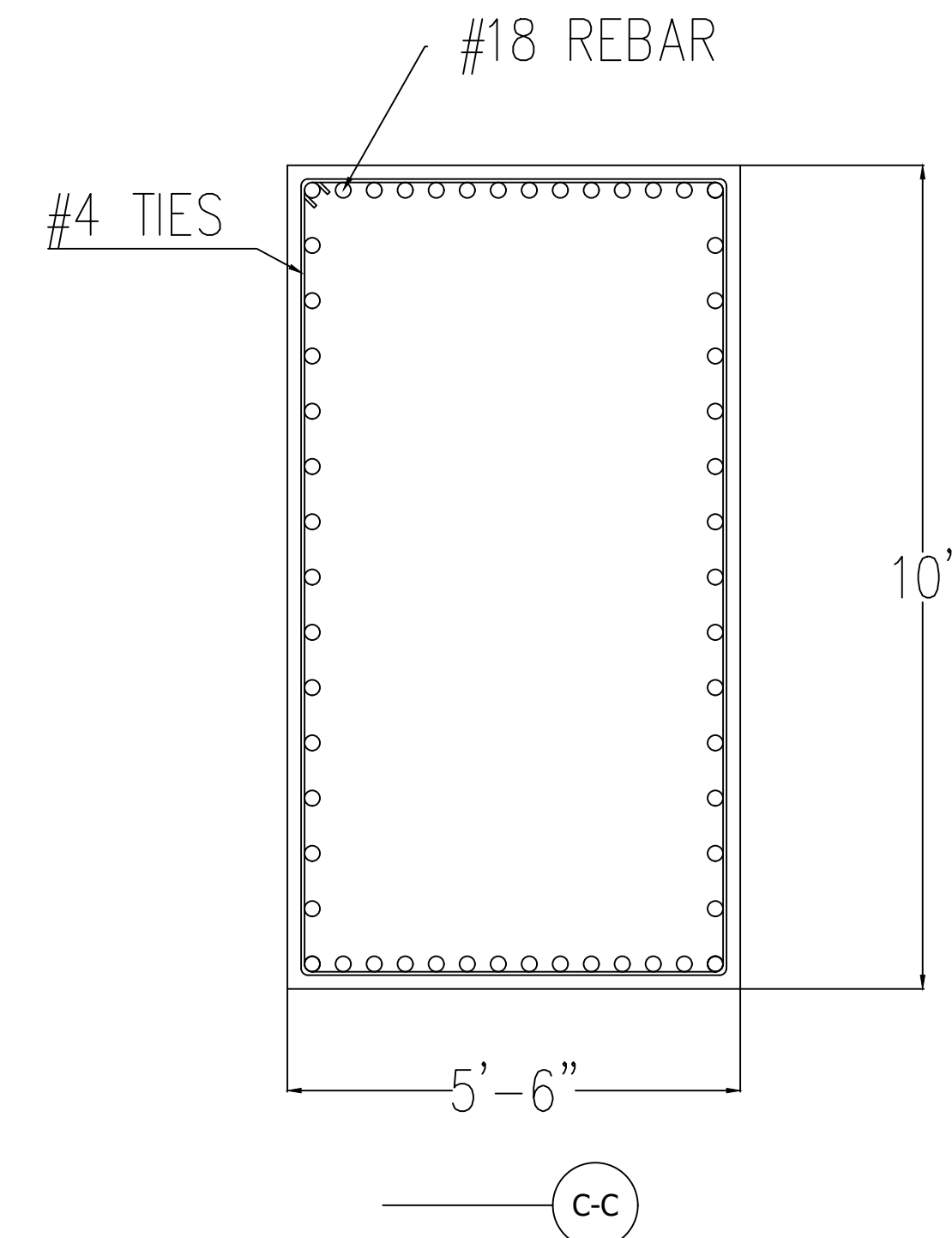
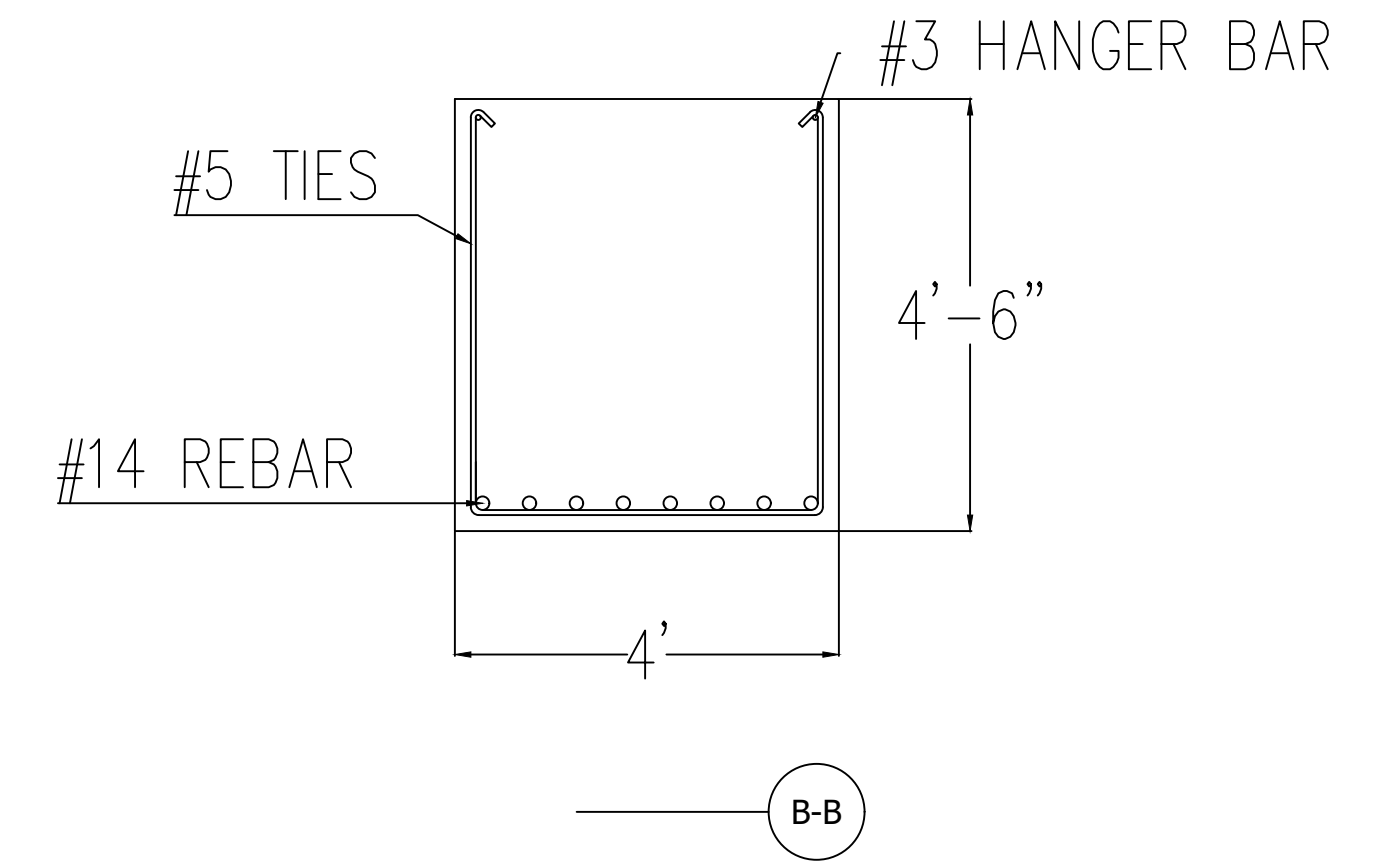
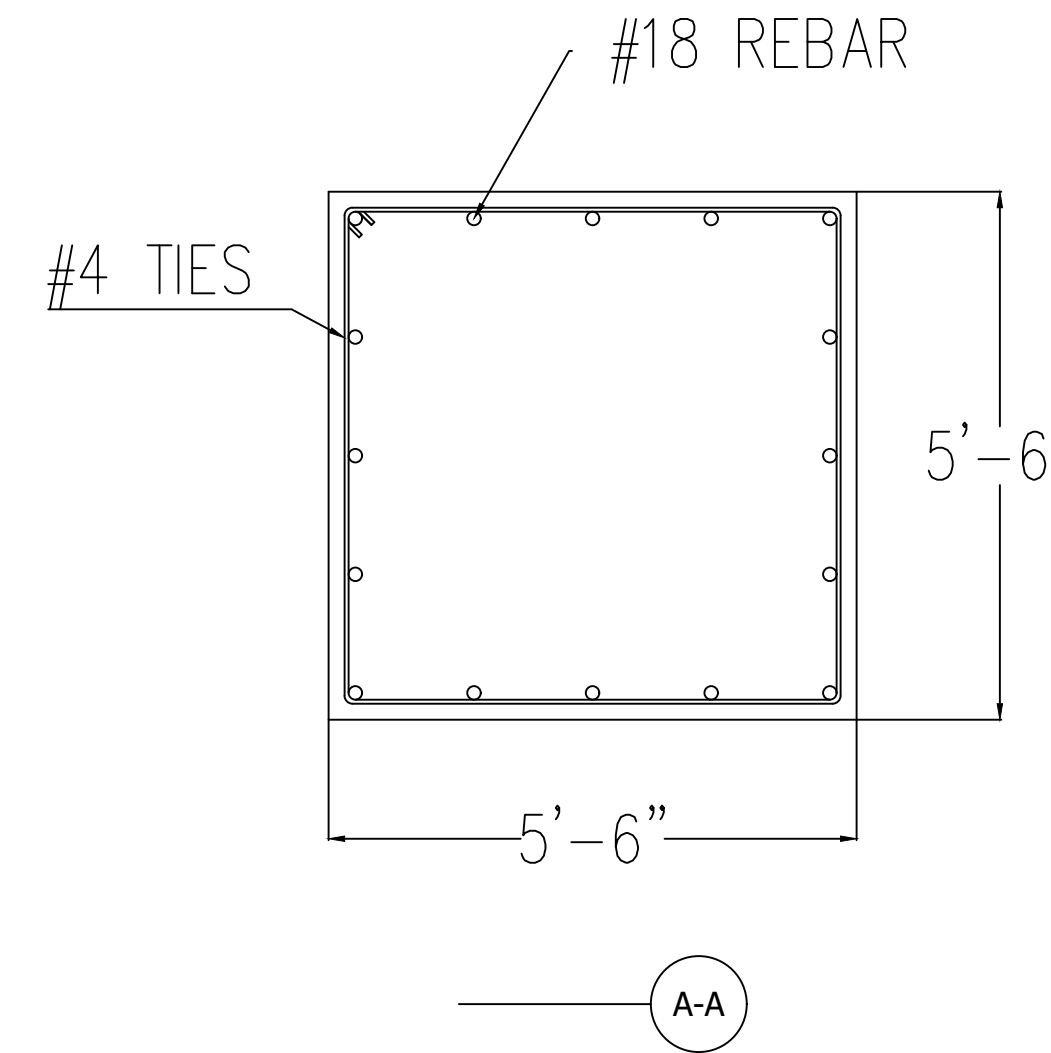
SHEET NO.
6/13



1 TOWER FACING SOUTH
Scale: 1/8"=1'



2 TOWER FACING EAST
Scale: 1/8"=1'



NOTES:

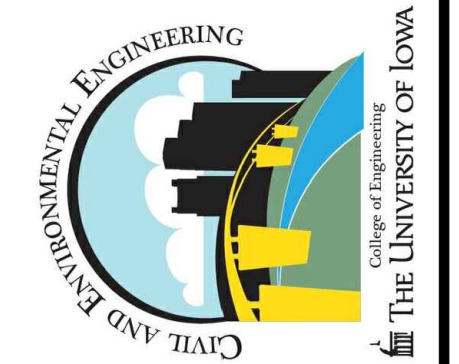
$f_c = 4 \text{ ksi}$

$w_c = 145 \text{ PCF}$

REINFORCING STEEL
GRADE 60

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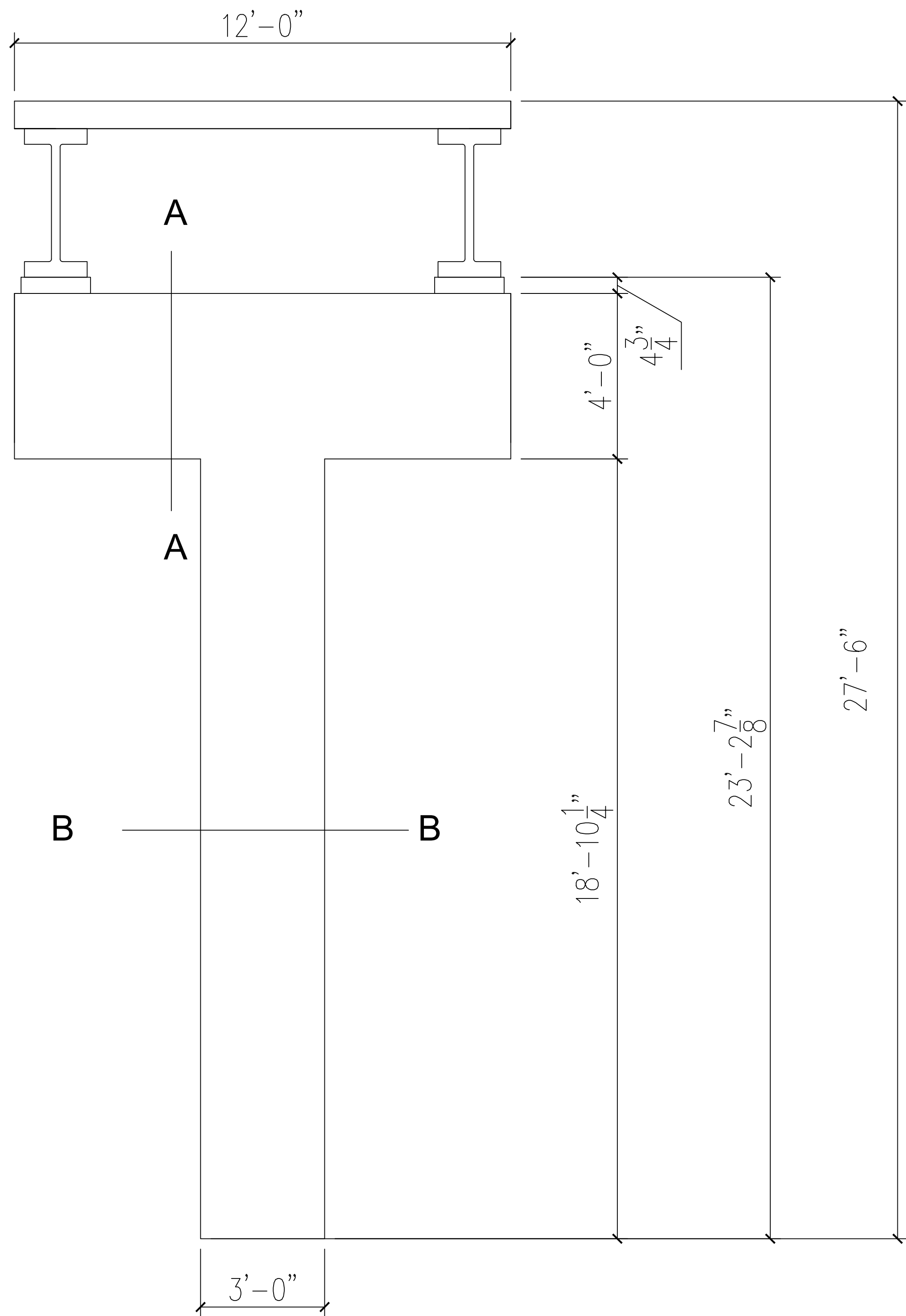
WATERLOO, IA 50702

SHEET NAME

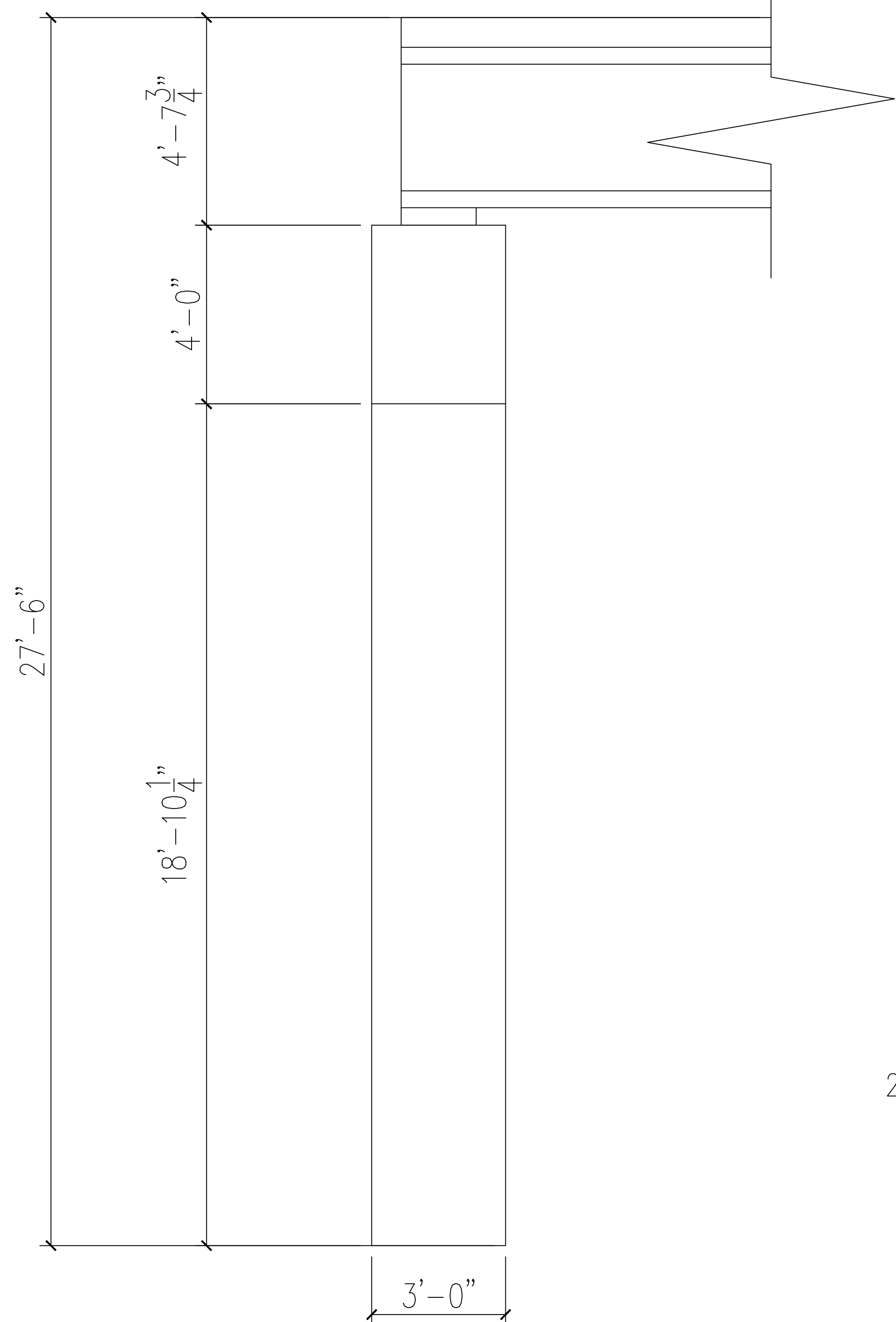
TOWER

SHEET NO.

7/13

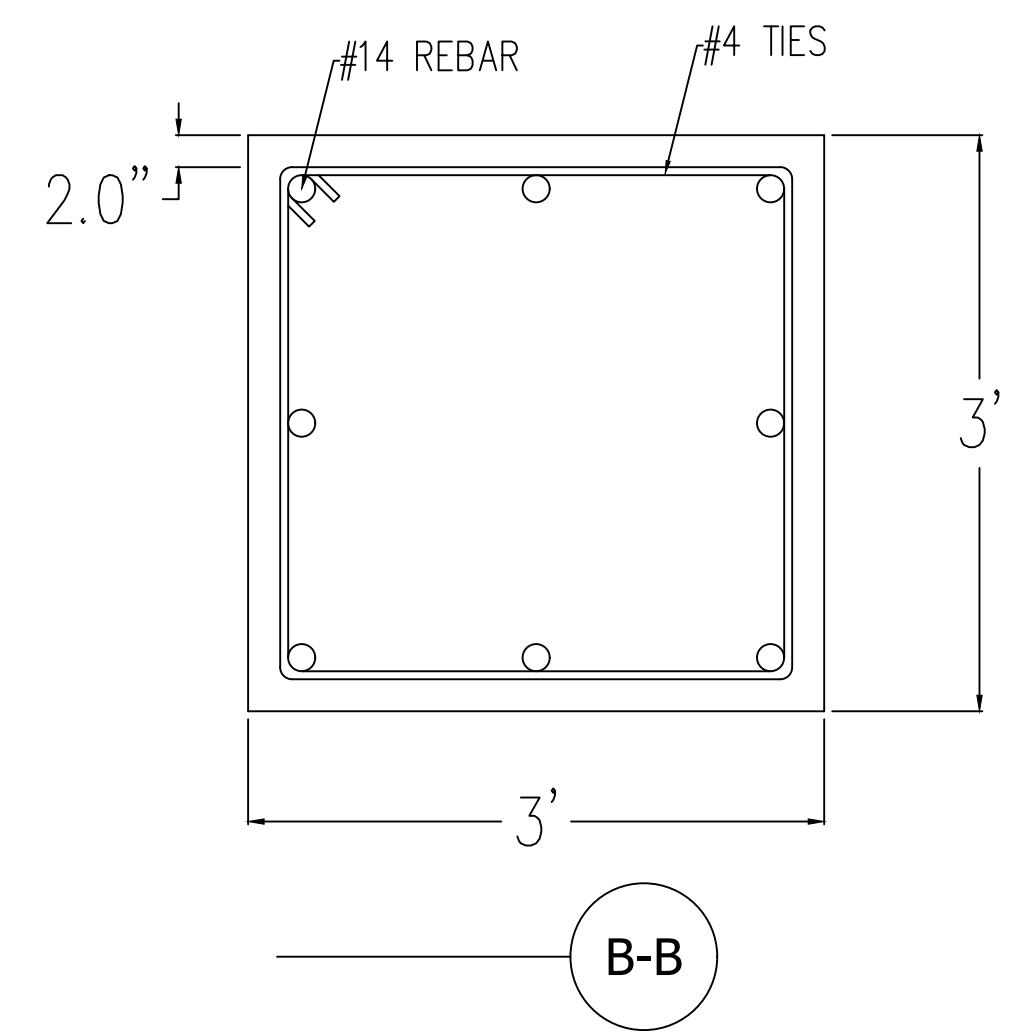
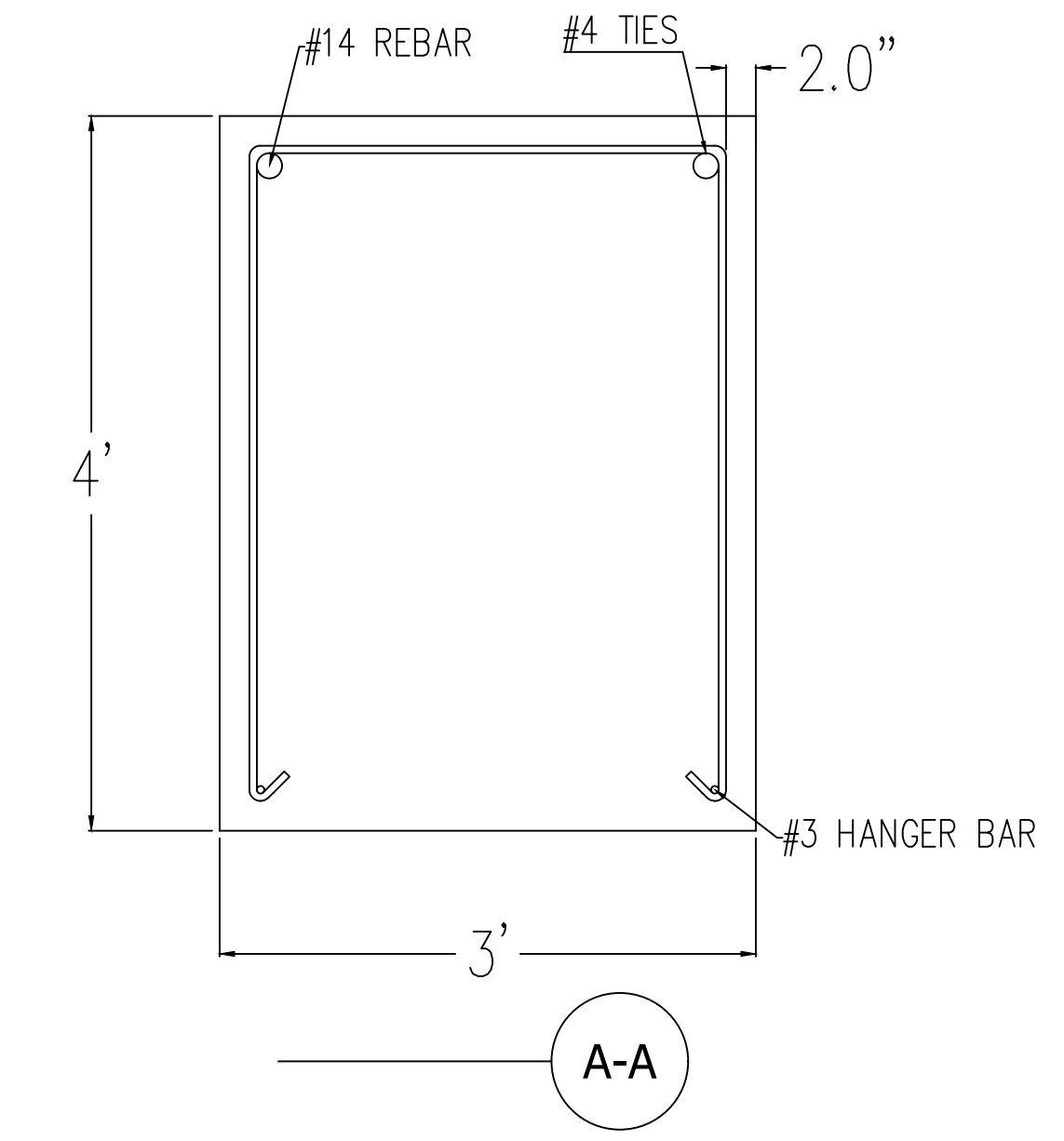


1 SOUTH PIER SOUTH VIEW
Scale: 1/2":1'



2 SOUTH PIER FACING WEST
Scale: 1/2":1'

NOTES:
 $f'_c = 4 \text{ ksi}$
 $w_c = 145 \text{ PCF}$
REINFORCING STEEL
GRADE 60



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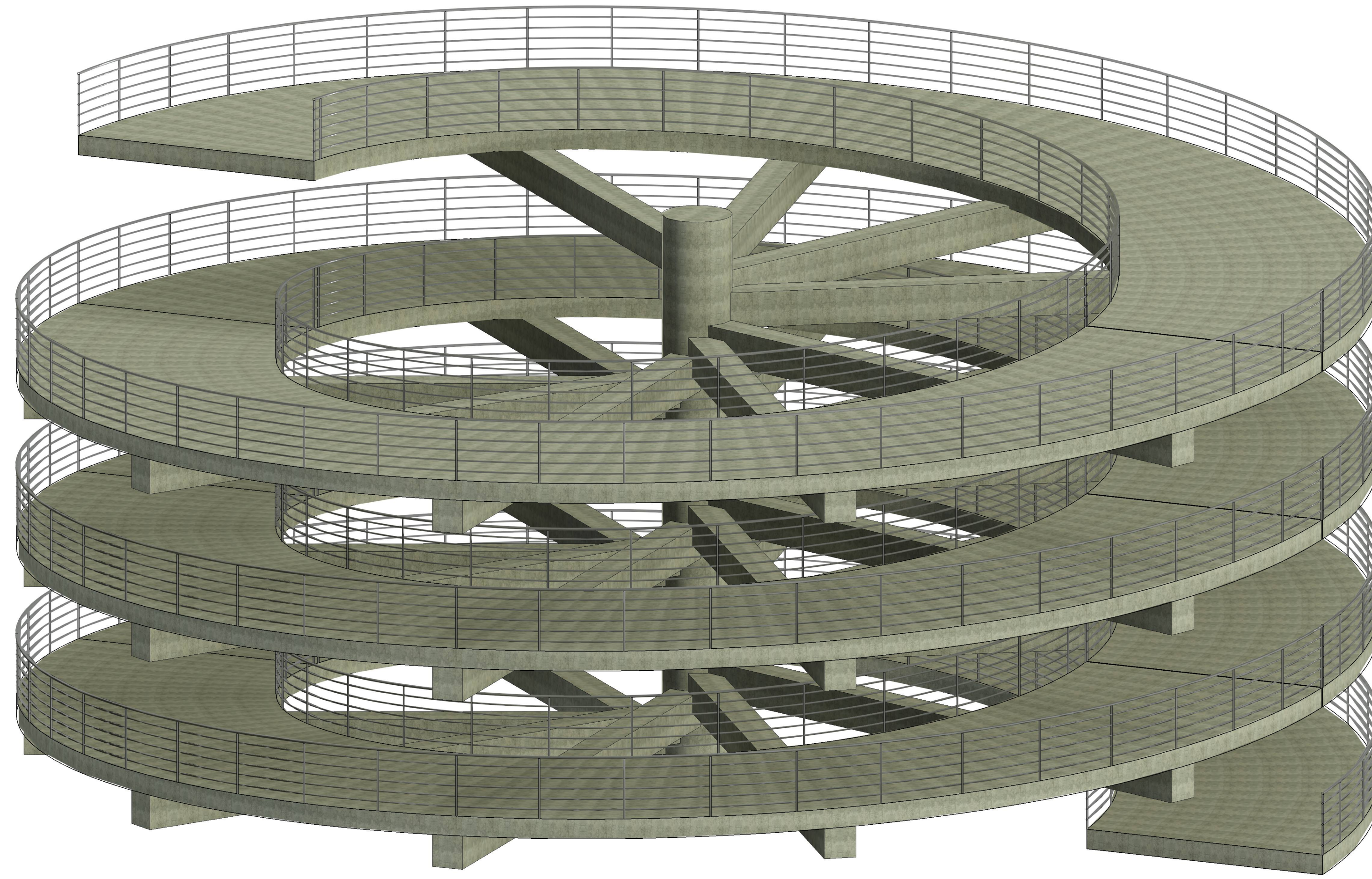


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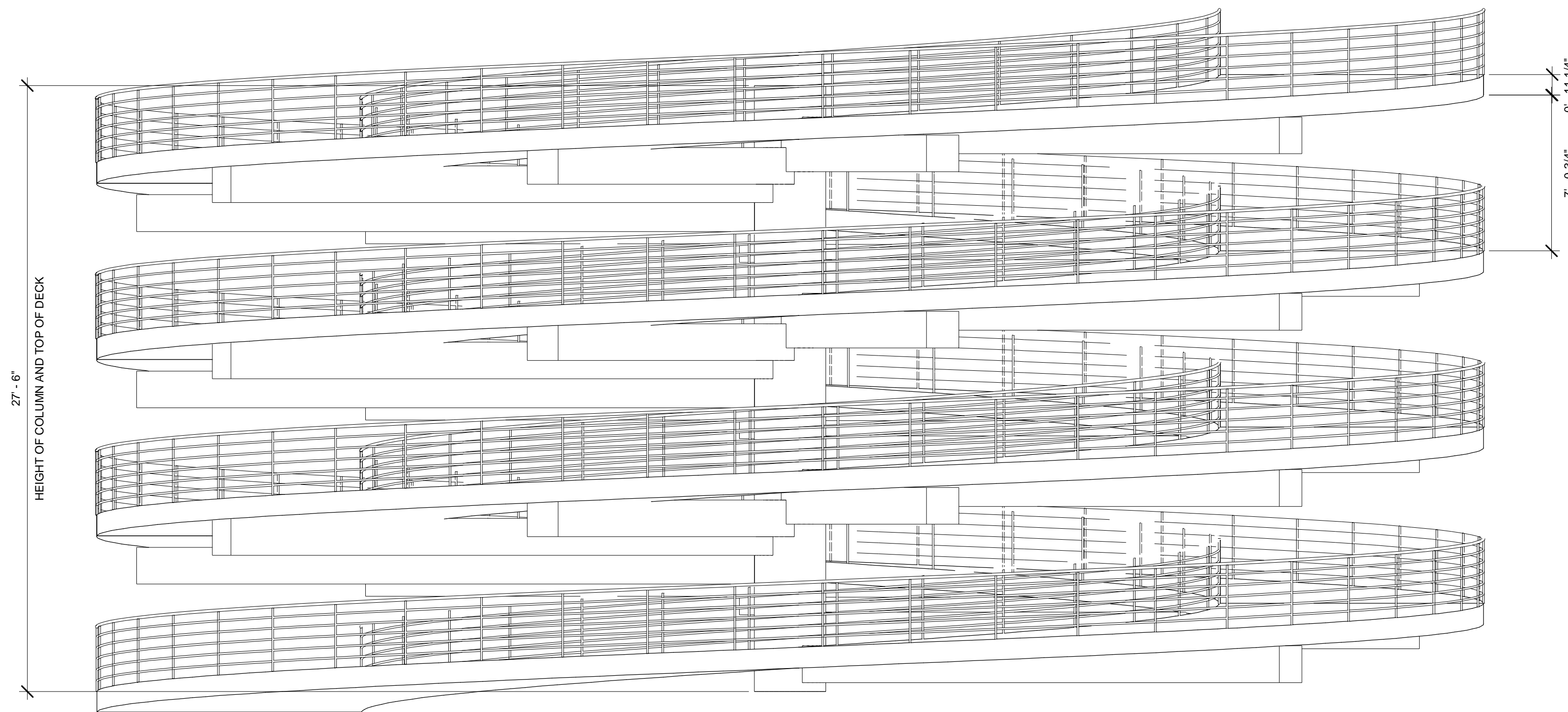
PEDESTRIAN OVERPASS
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SHEET NAME
 SOUTH PIER

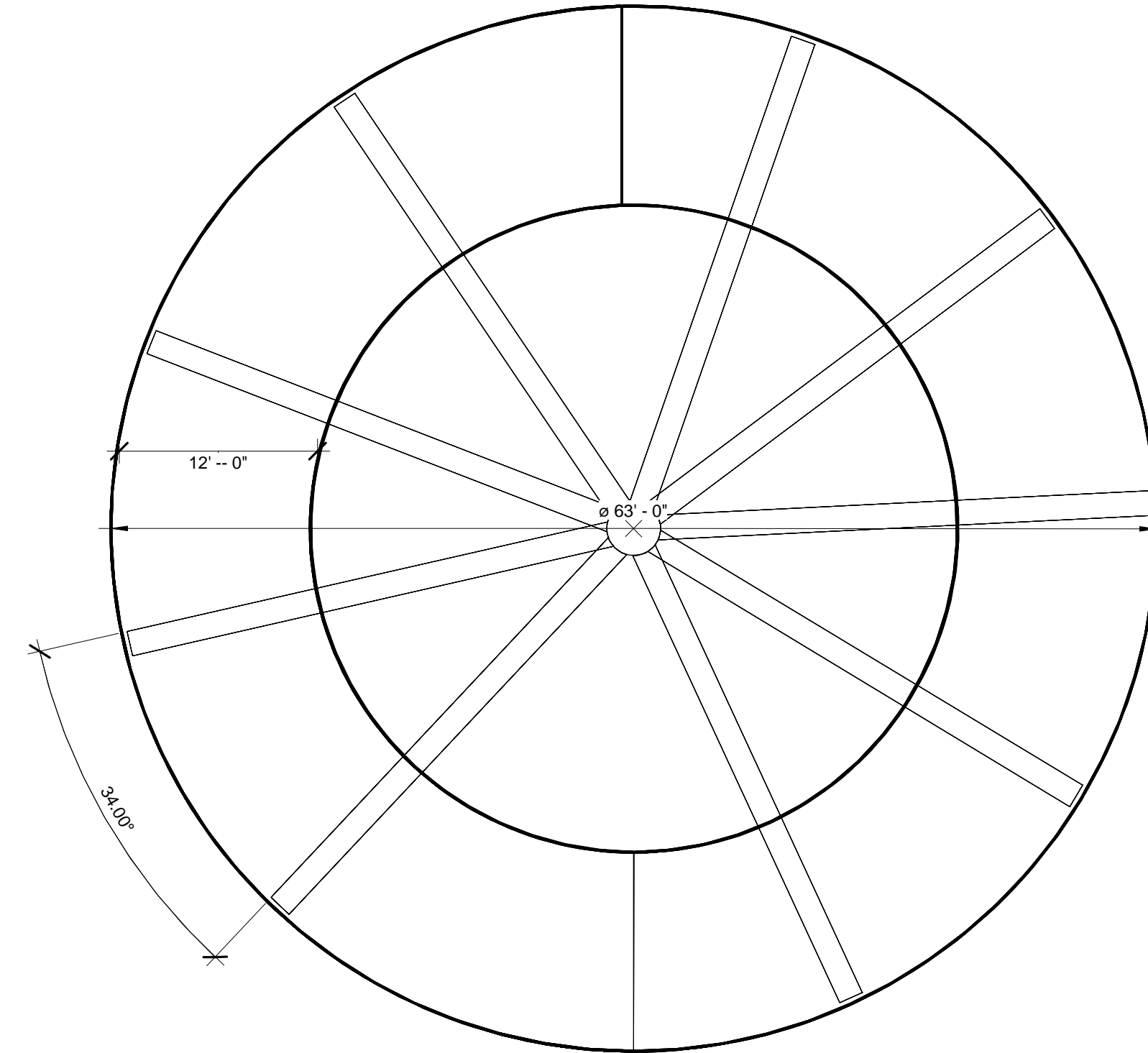
SHEET NO.
8/13



1 PERSPECTIVE VIEW



2 ELEVATION VIEW
1/4" = 1'-0"

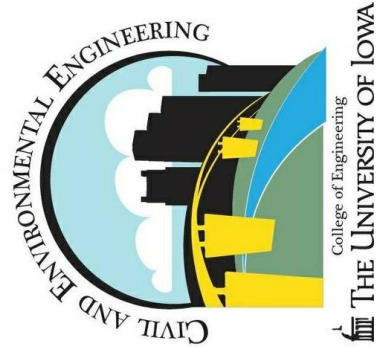


3 PLAN VIEW
1/8" = 1'-0"

- NOTES:
 1. GROUND SHOULD BE FILLED IN TO BOTTOM OF SLAB UNTIL 18 FEET AND 8 INCHES BEFORE FIRST BEAM SUPPORT
 2. MAXIMUM COMPRESSIVE STRENGTH OF ALL CONCRETE, $f'_c = 5000$ PSI
 3. RAILING IS CABLE RAILING SYSTEM

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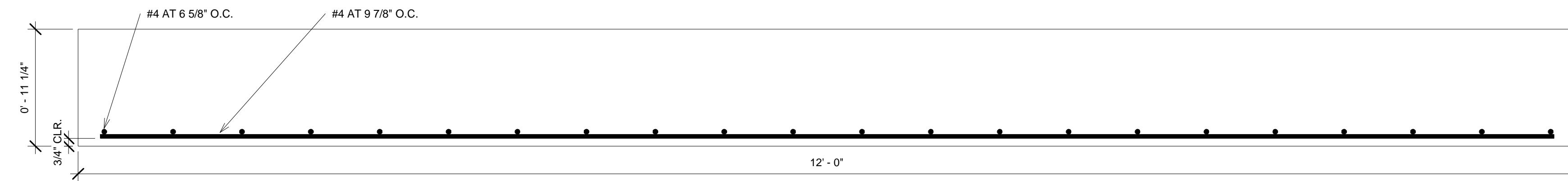
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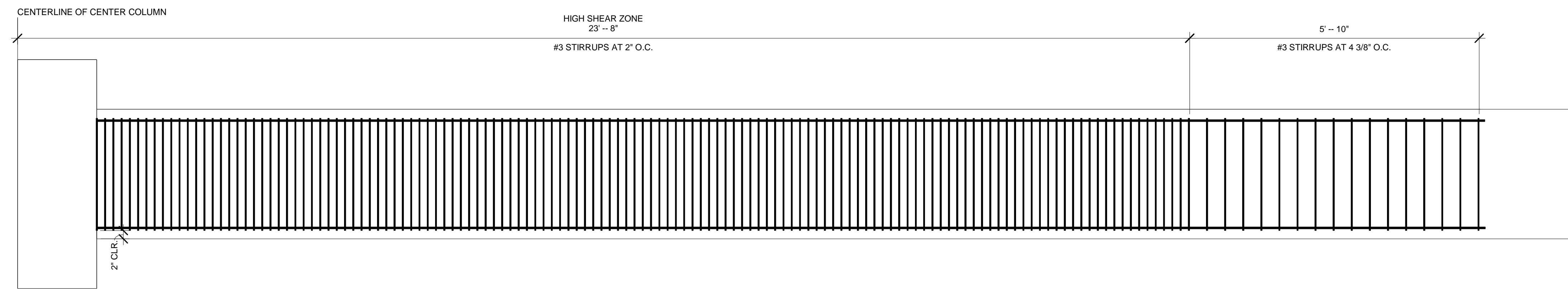
SHEET NAME
SPIRAL RAMP

SHEET NO.

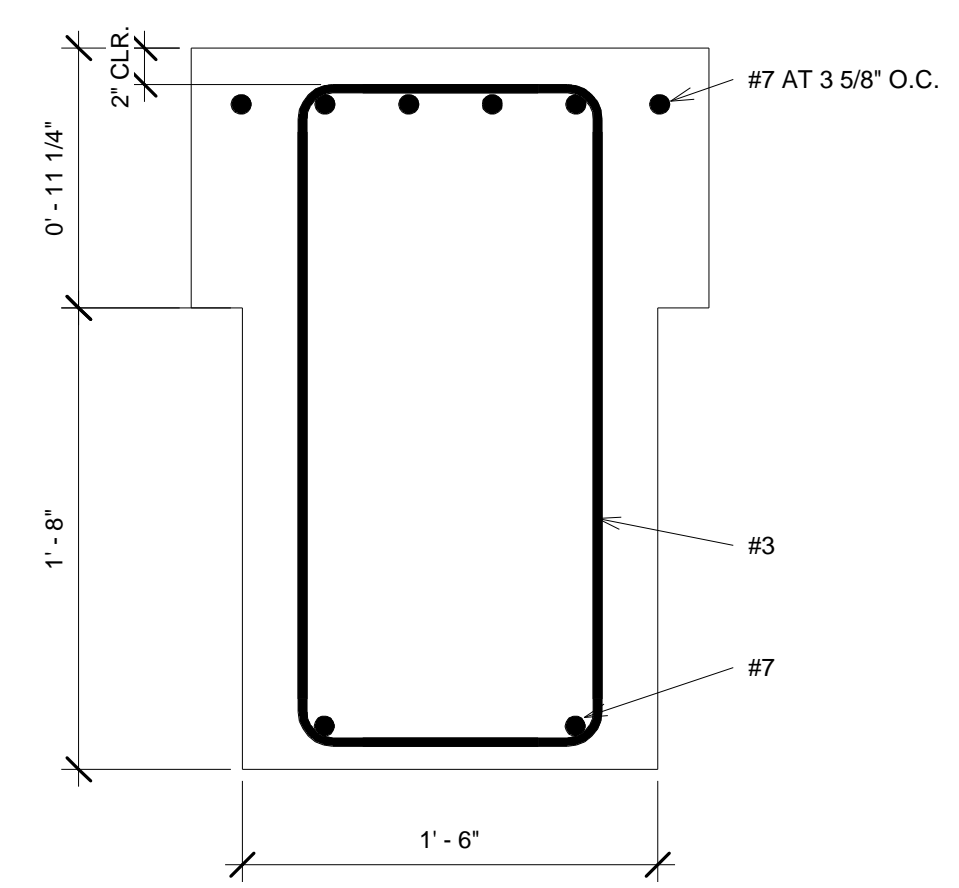
9/13



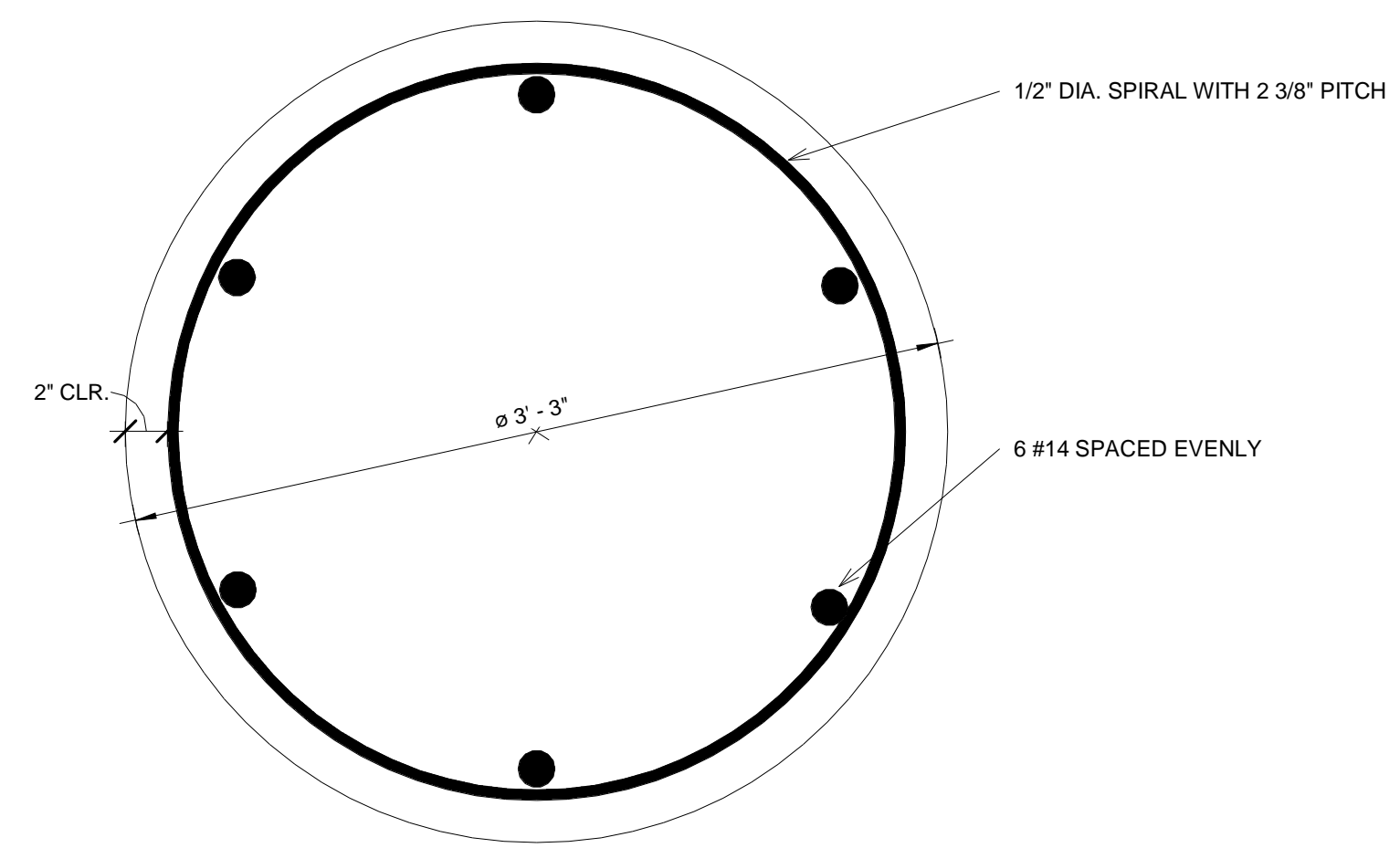
1 SLAB CROSS SECTION
1 1/2" = 1'-0"



2 BEAM ELEVATION SECTION
3/4" = 1'-0"



3 BEAM CROSS SECTION
1 1/2" = 1'-0"



4 CENTER COLUMN CROSS SECTION
1 1/2" = 1'-0"

NOTES:
1. MAXIMUM COMPRESSIVE STRENGTH OF ALL CONCRETE, f'_c = 5000 PSI
2. ALL REINFORCING STEEL IS GRADE 60

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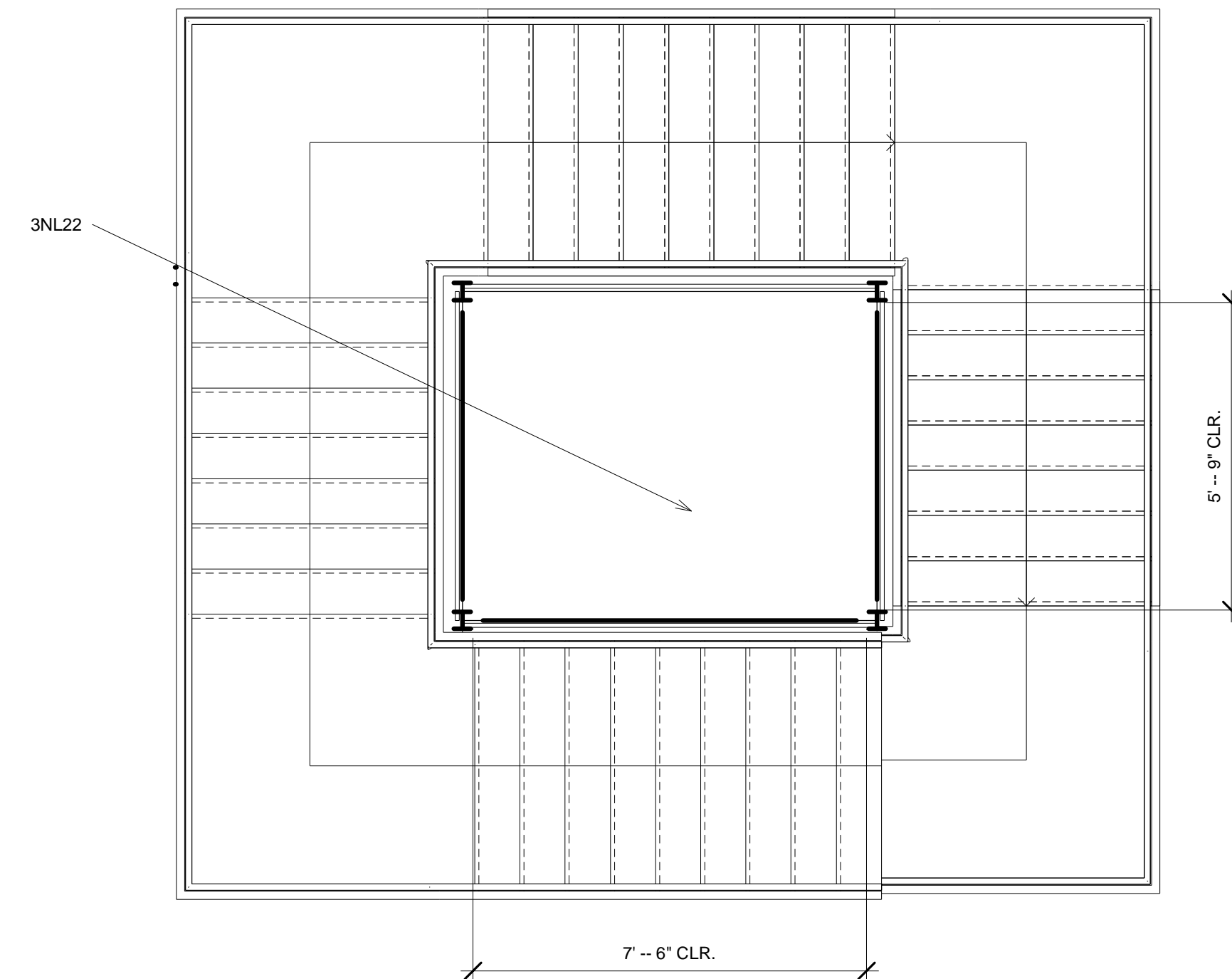
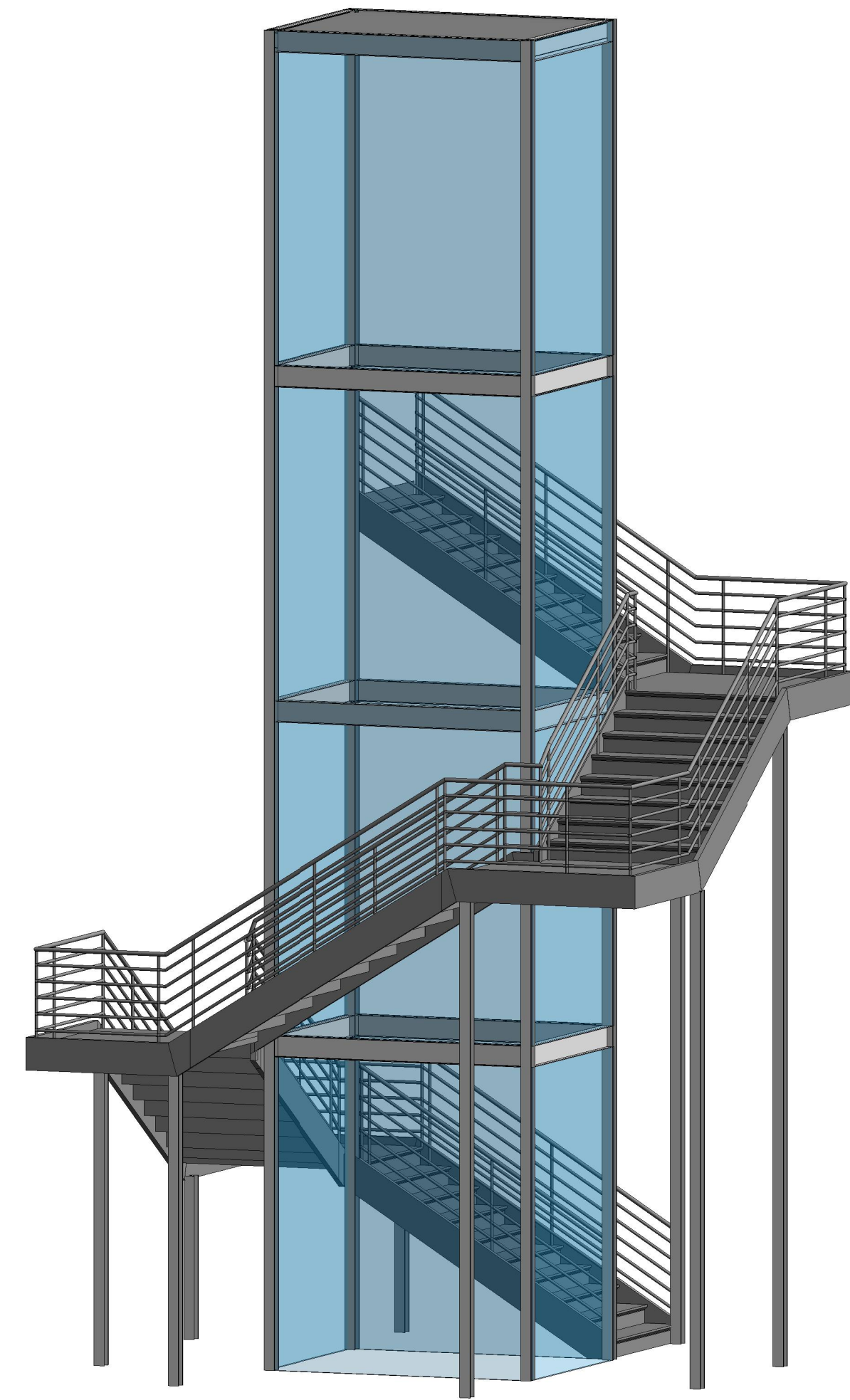
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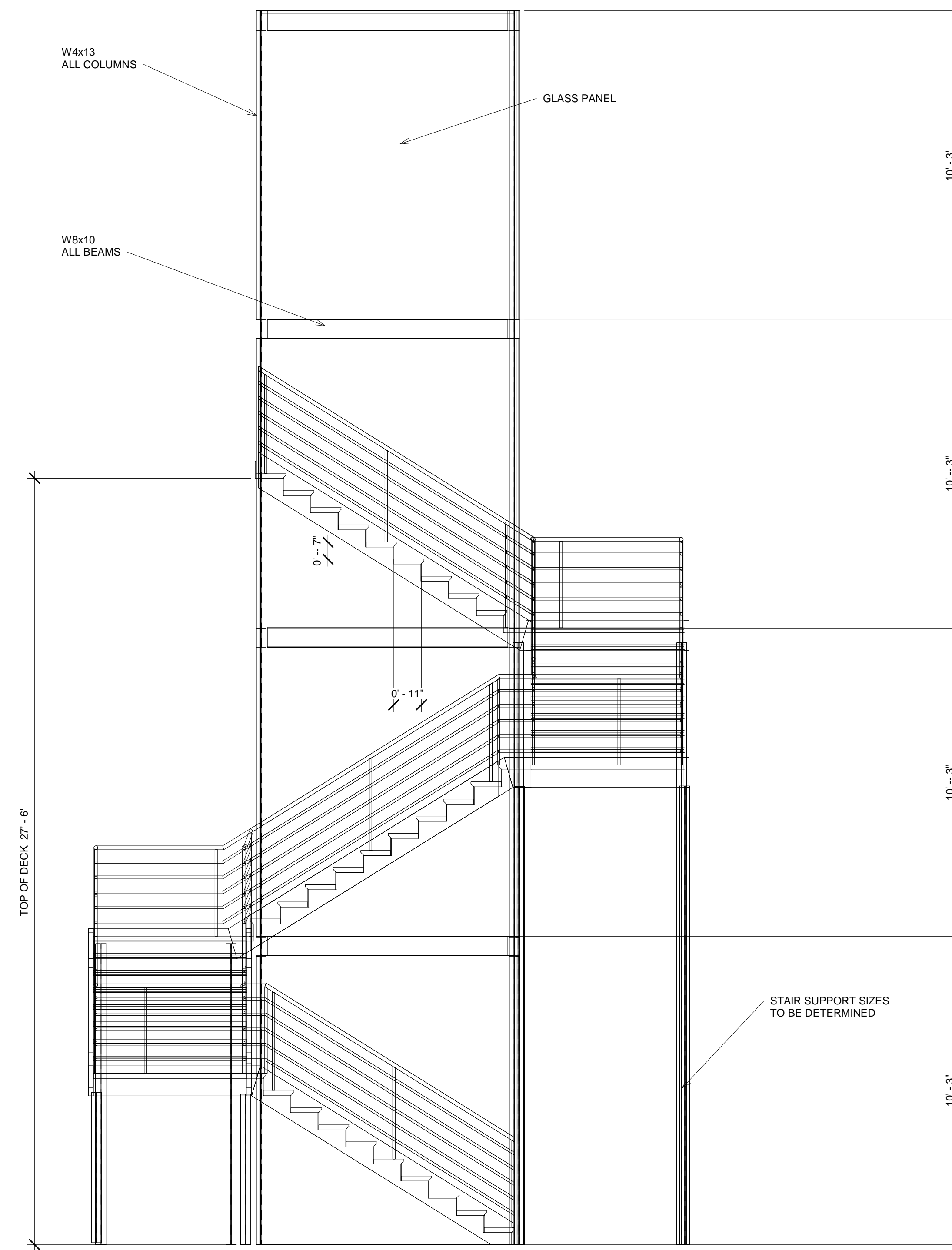
SHEET NAME
SPIRAL RAMP

SHEET NO.
10/13

① PERSPECTIVE VIEW



② PLAN VIEW
3/8" = 1'-0"

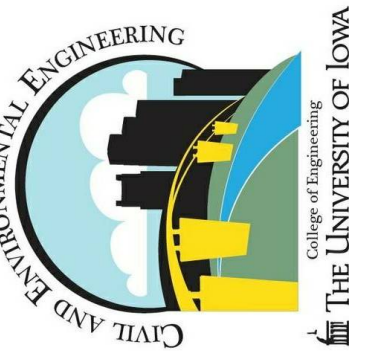


③ ELEVATION VIEW
3/8" = 1'-0"

- NOTES:
1. $F_y = 50$ KSI FOR ALL STEEL MEMBERS
 2. WALL PANELS ARE ASSUMED TO BE GLASS PANELS
 3. STAIR STEPS ARE PRECAST CONCRETE LONG SPAN STEP TREADS
 4. RAILING IS CABLE RAILING SYSTEM
 5. STAIR SUPPORT MEMBERS ARE YET TO BE DESIGNED

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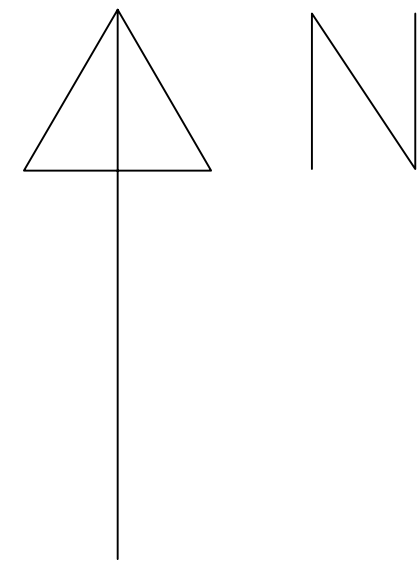
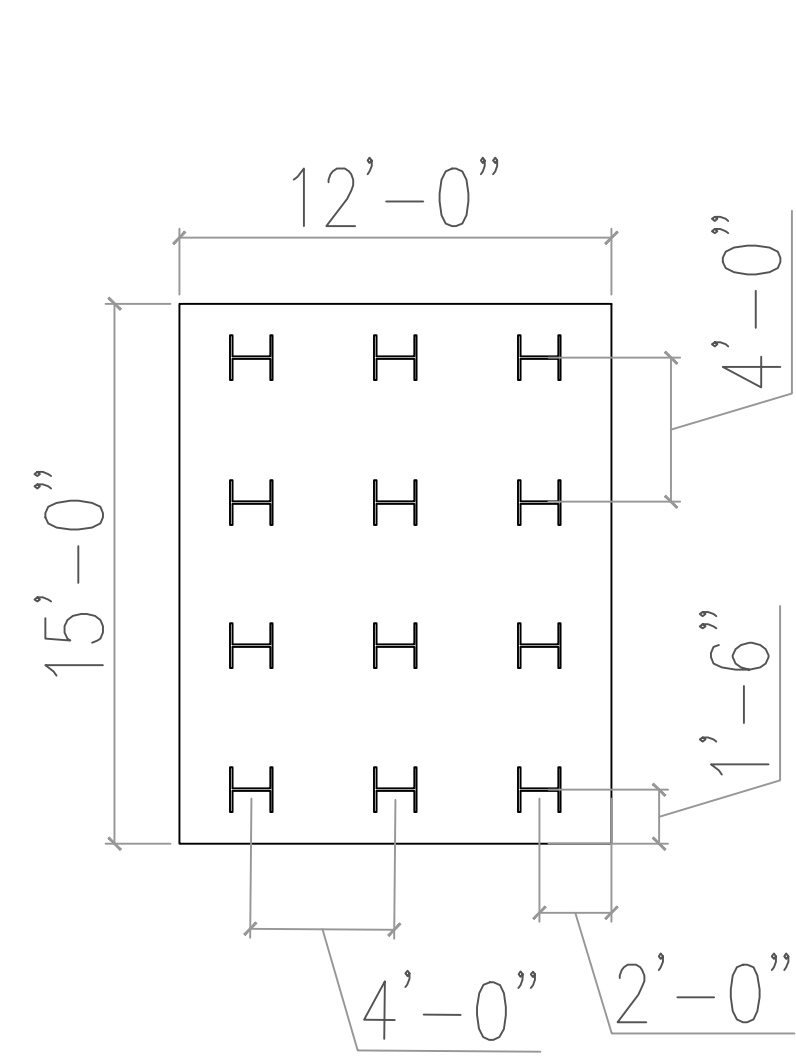
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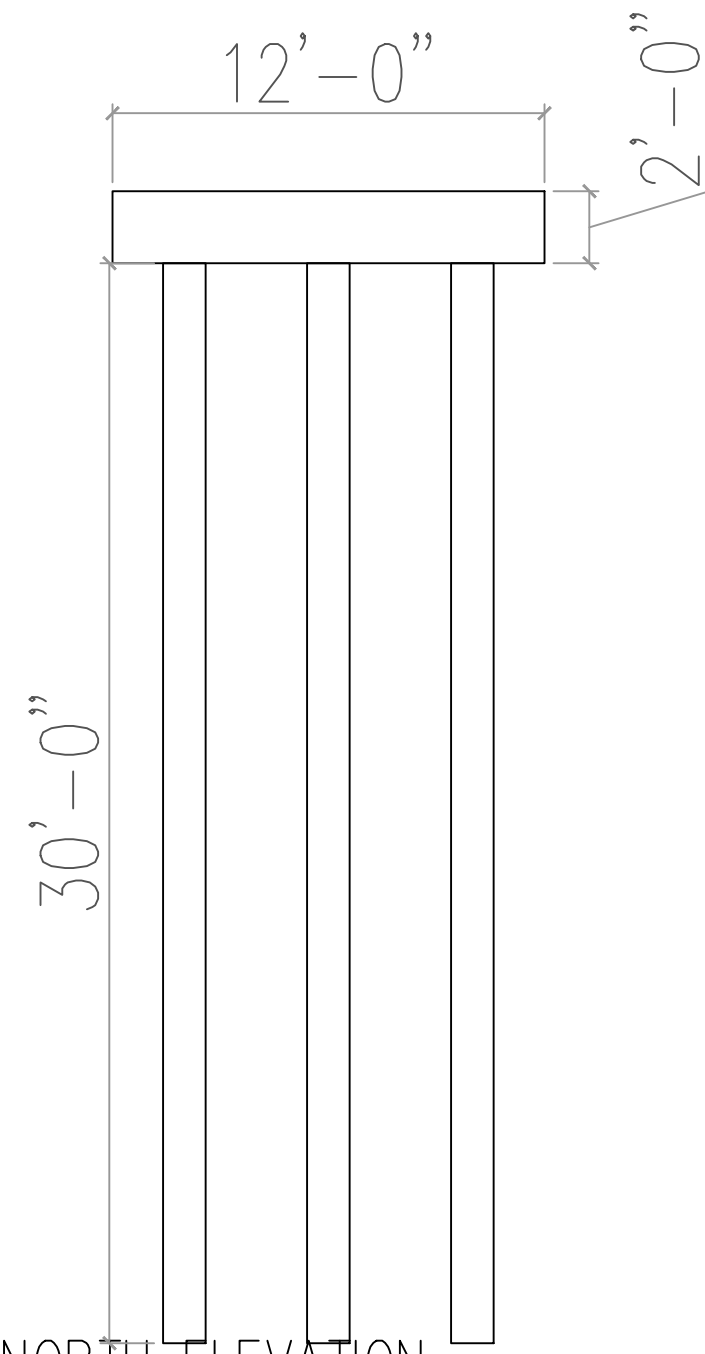
SPIRAL RAMP

SHEET NO.

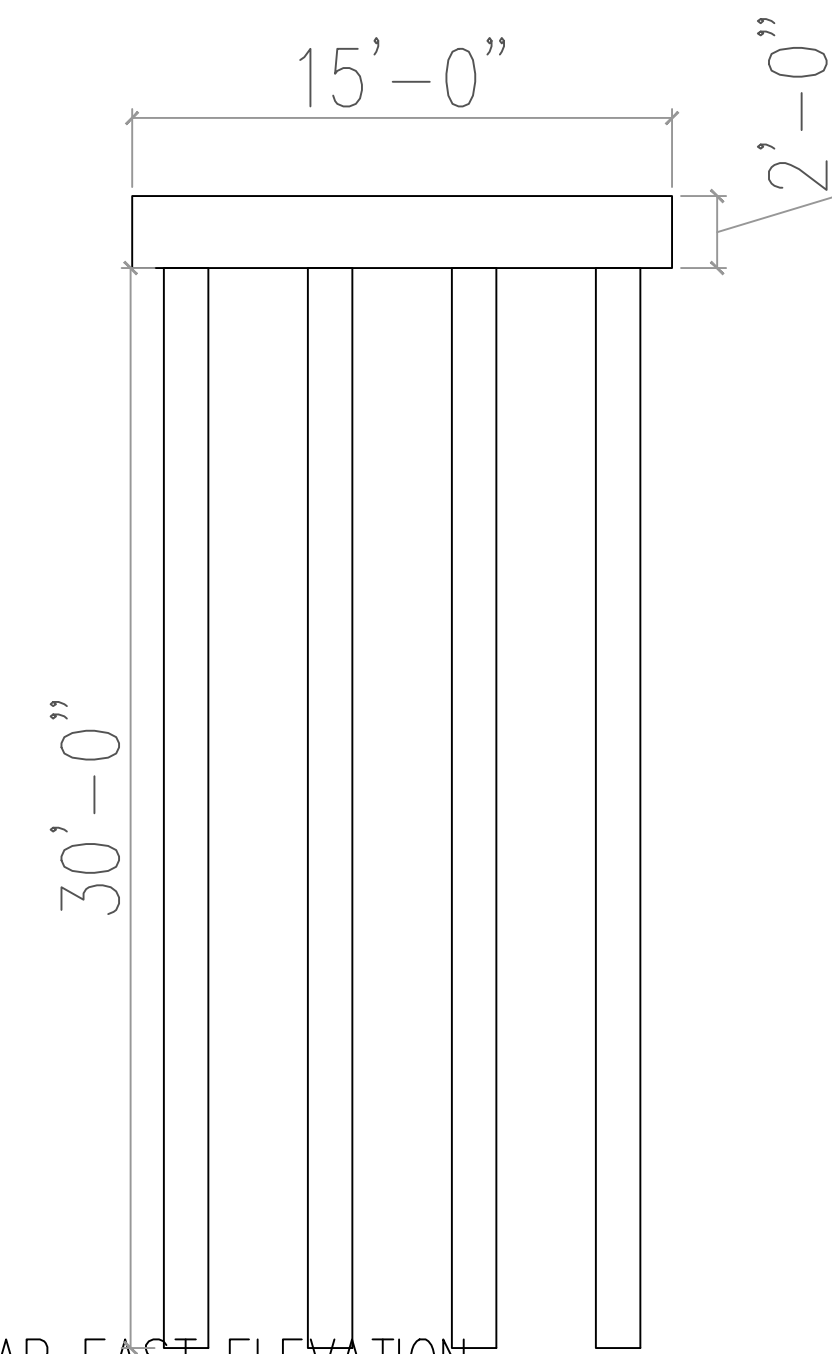
11/13



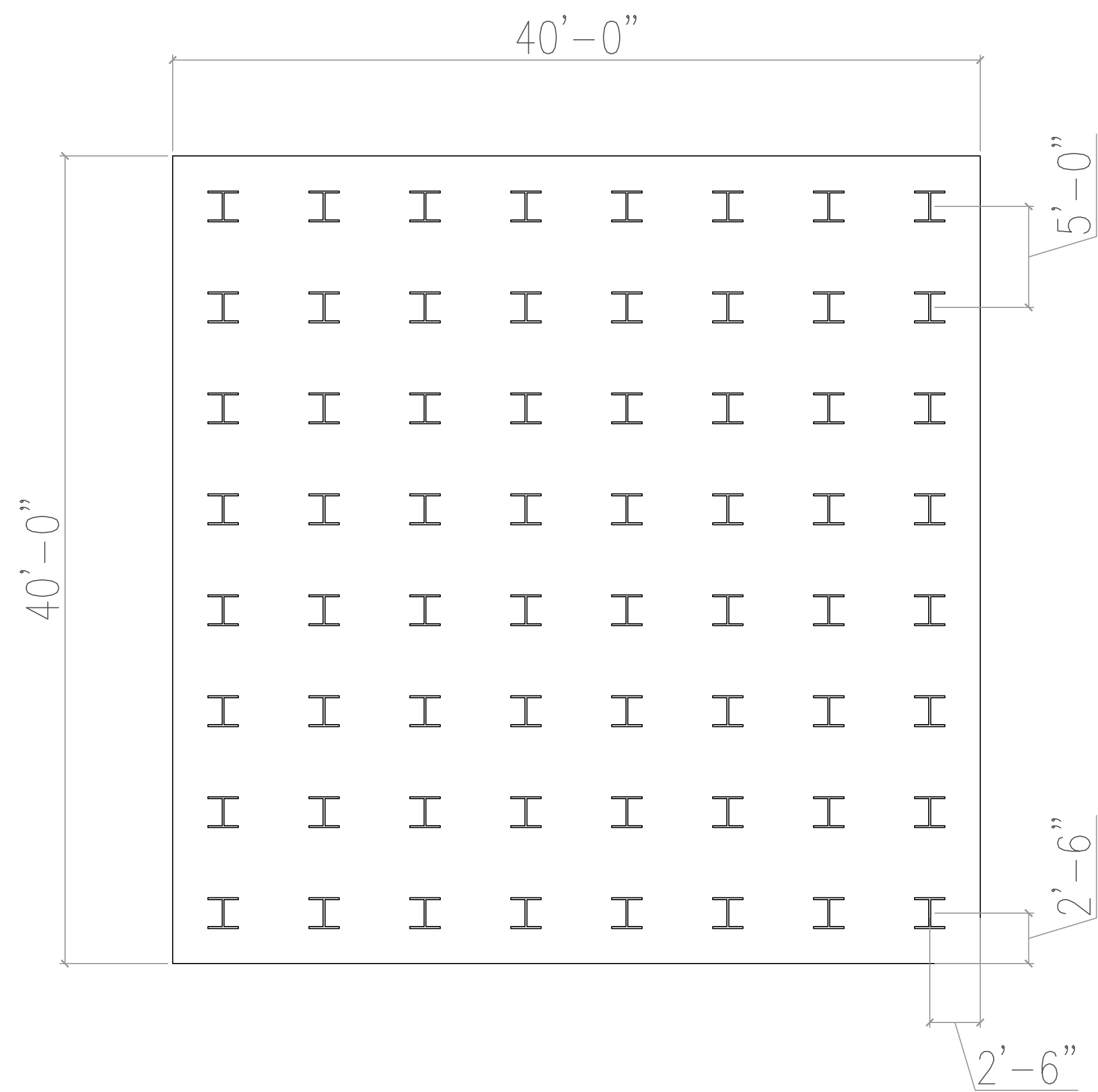
1 SOUTH PILE CAP PLAN VIEW
A.1.0 3/16" = 1'



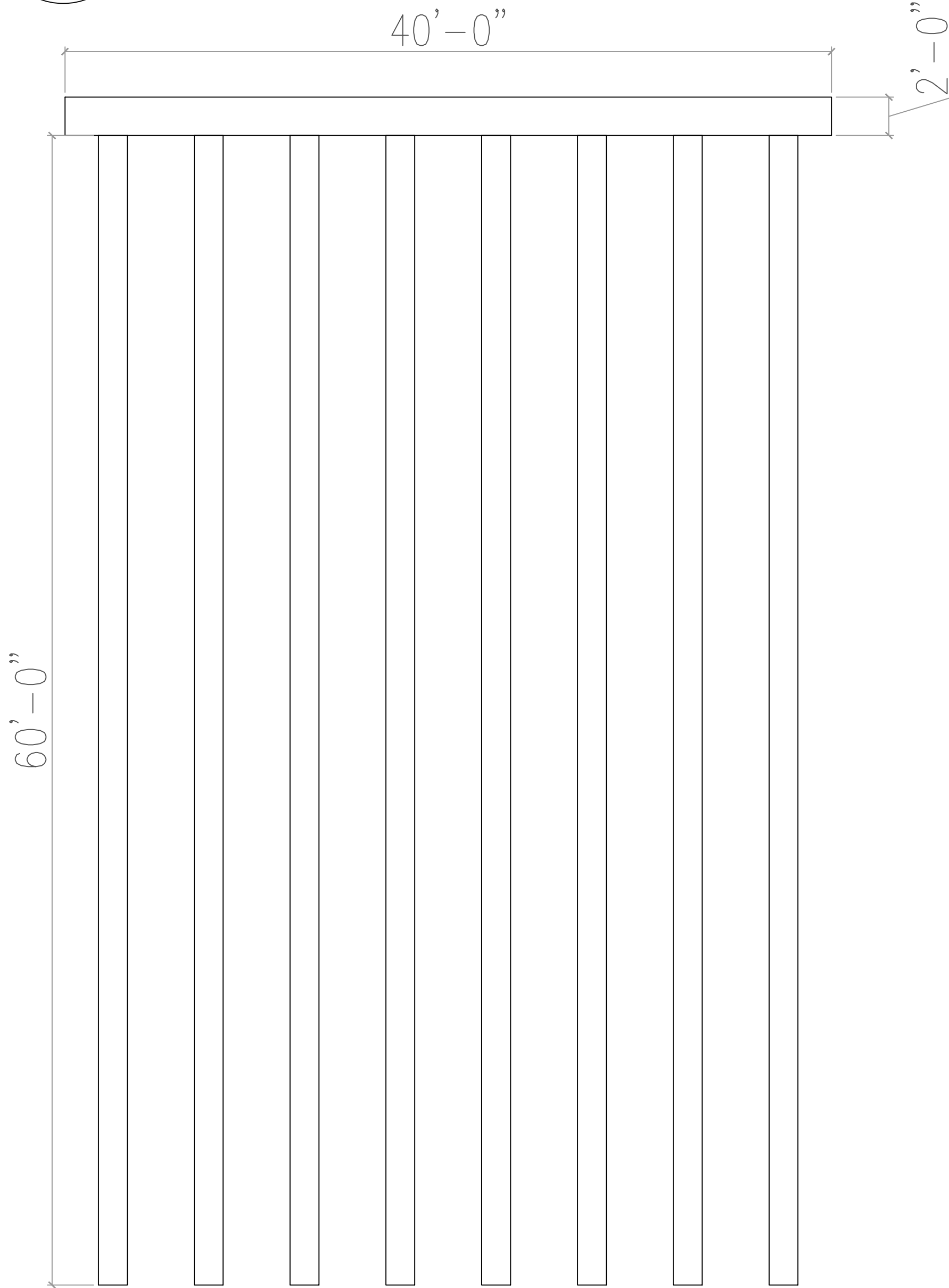
2 SOUTH PILE CAP NORTH ELEVATION
A.1.0 3/16" = 1'



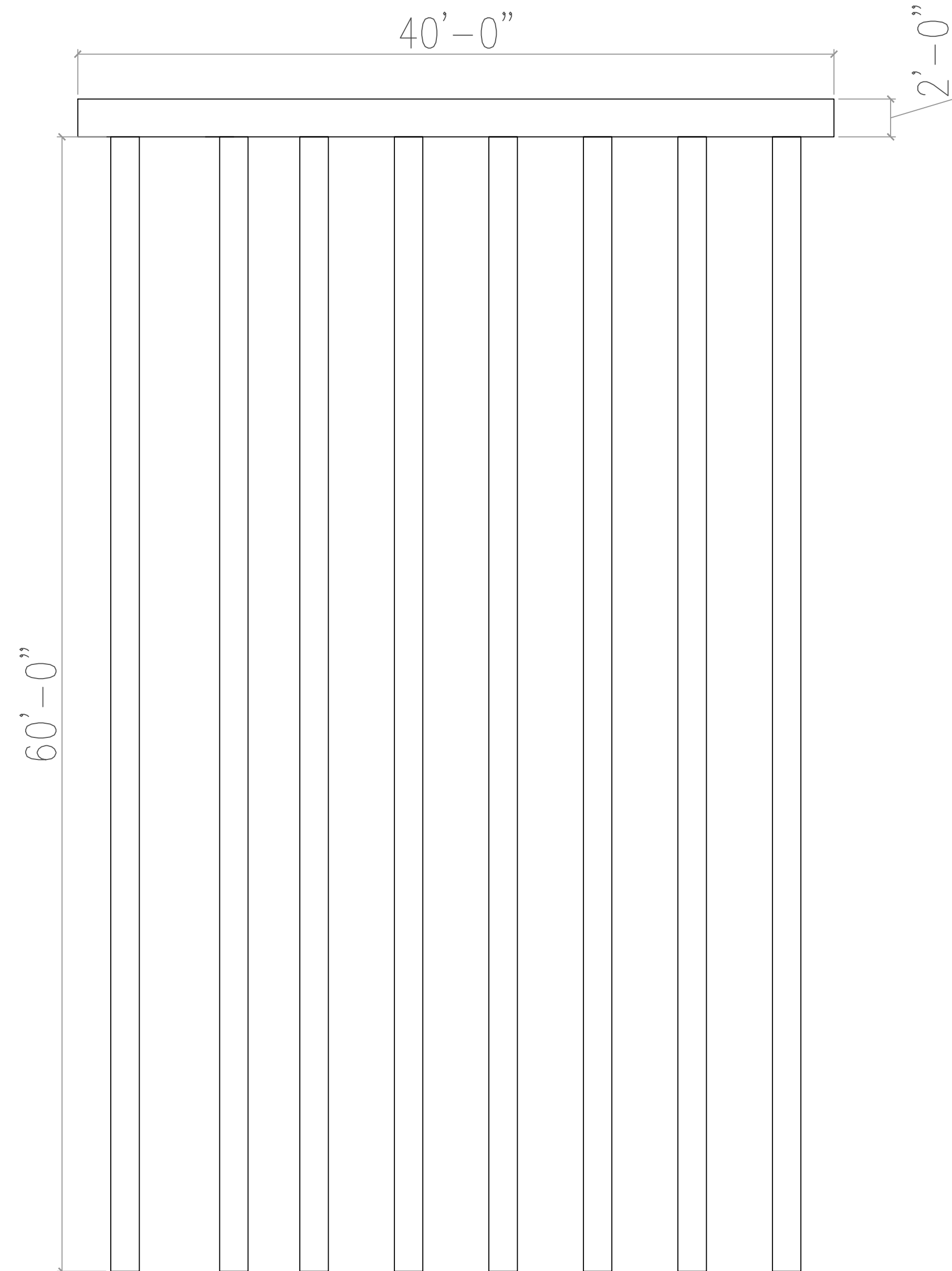
3 SOUTH PILE CAP EAST ELEVATION
A.1.0 3/16" = 1'



1 NORTH PILE CAP PLAN VIEW
A.1.0 3/16" = 1'



2 NORTH PILE CAP NORTH ELEVATION
A.1.0 3/16" = 1'



3 NORTH PILE CAP EAST ELEVATION
A.1.0 3/16" = 1'

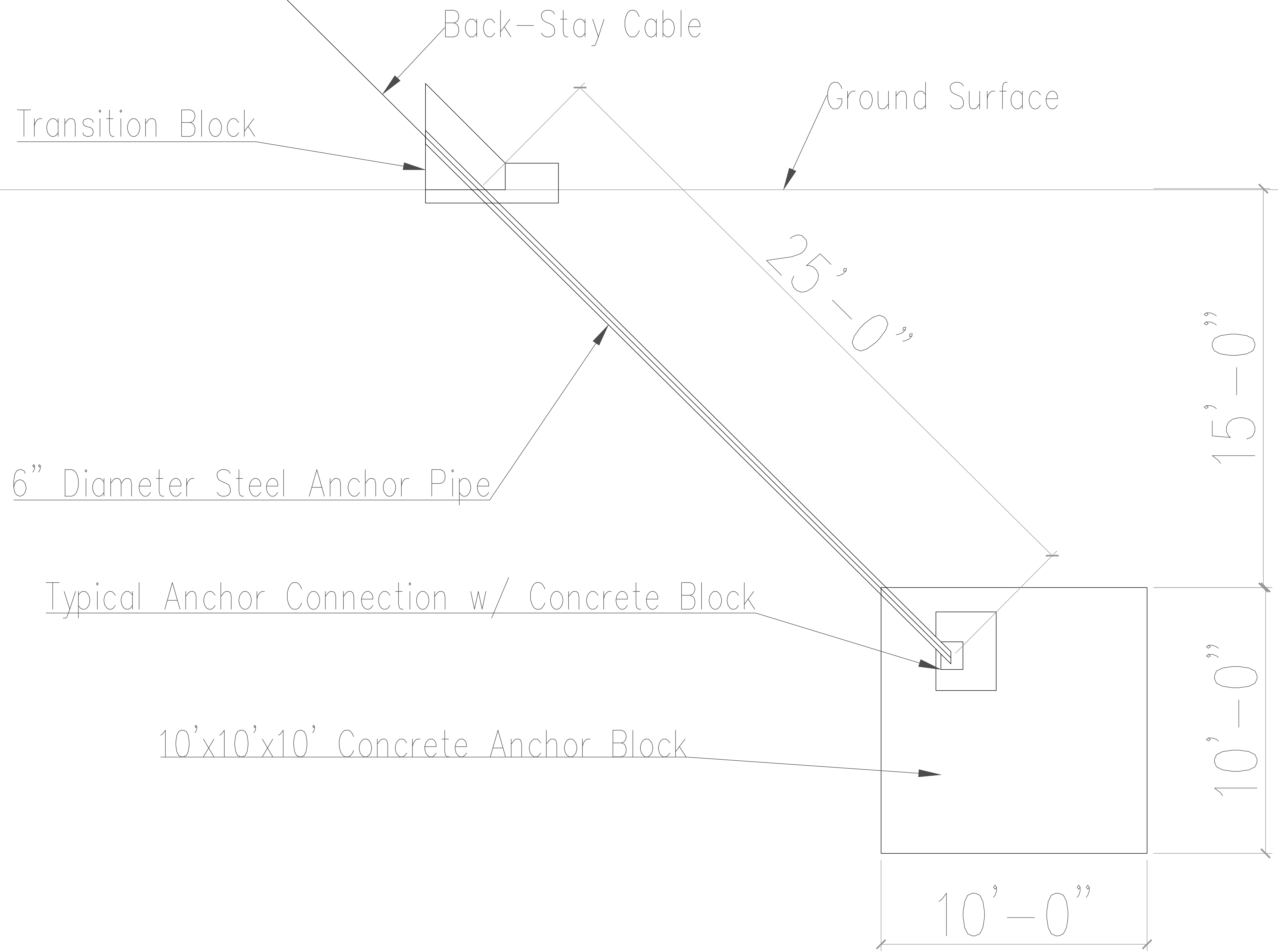


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PEDESTRIAN OVERPASS
FOUNDATION
WATERLOO, IOWA, 50702

SHEET NAME
PILE FOUNDATION

SHEET NO.
12/13



PROJECT: CEE 4850
 DATE : --/--/2021
 DRAWN BY: Nicholas D. Moller
 REVISION:

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SHEET NAME
 BACK-STAY
 ANCHORAGE

SHEET NO.
13/13