



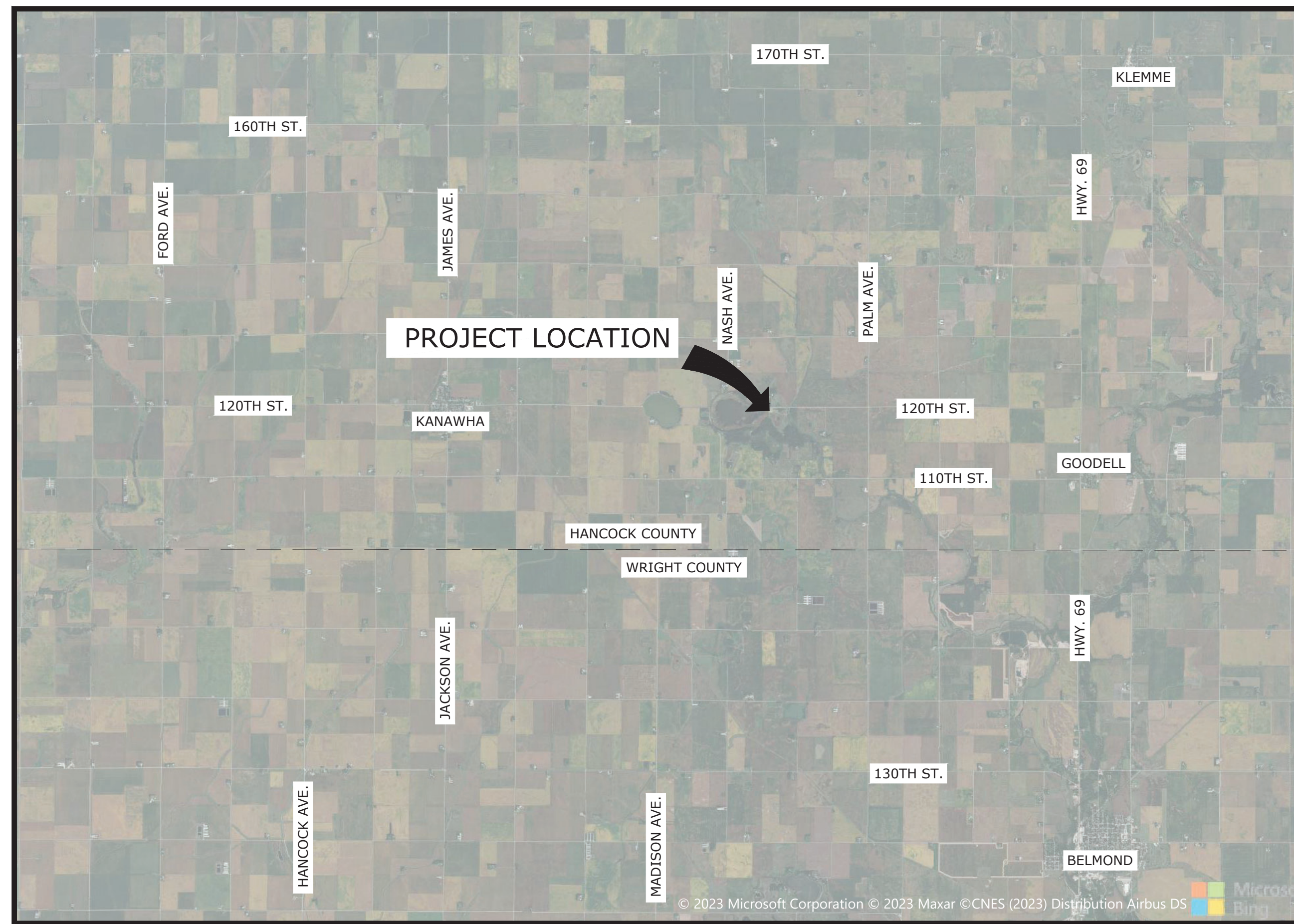
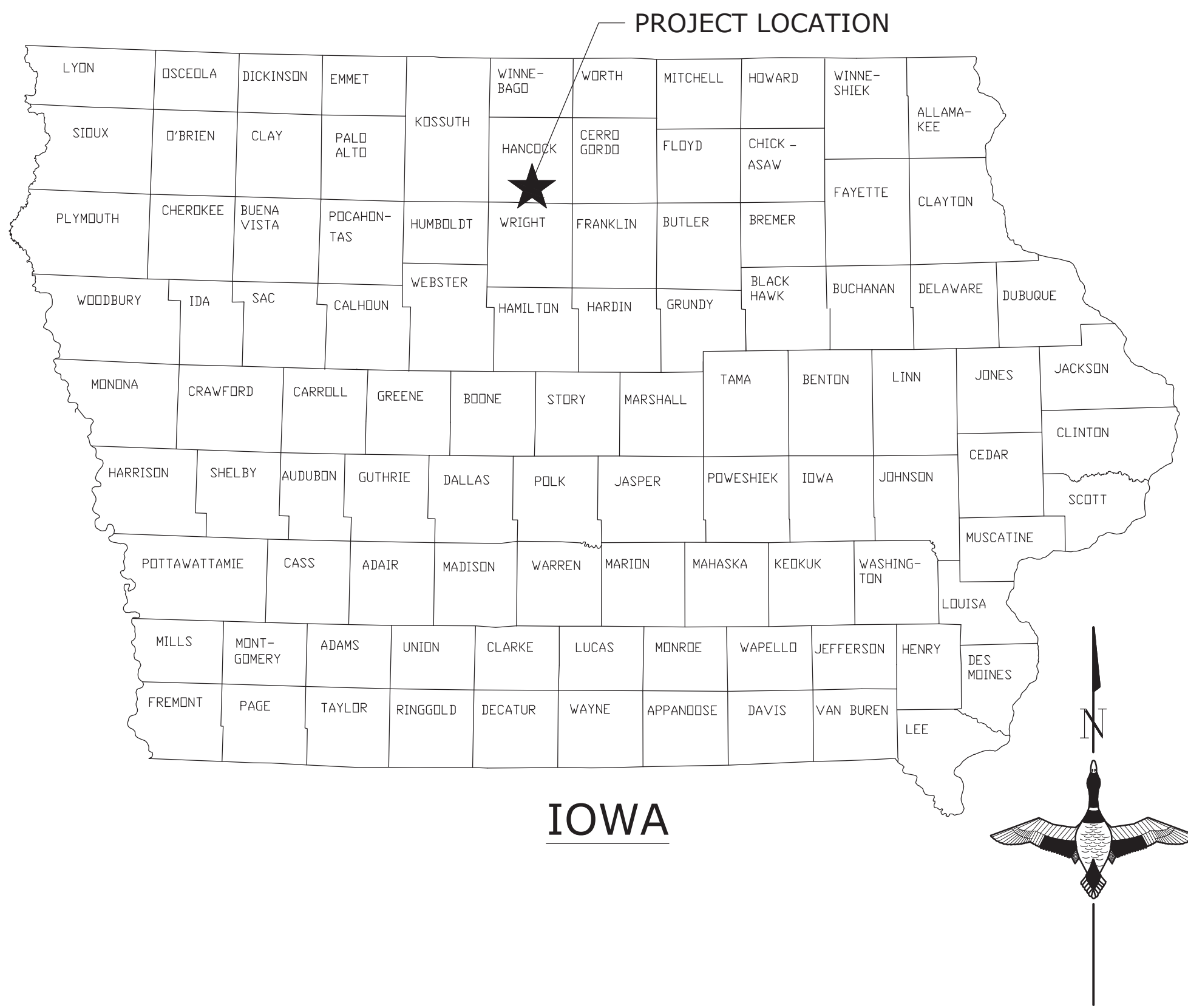
EAST TWIN LAKE ENHANCEMENTS REBID

EAST TWIN LAKE
SECTION 29, TWIN LAKE TOWNSHIP
HANCOCK COUNTY, IOWA
IN COOPERATION WITH
IOWA DEPARTMENT OF NATURAL RESOURCES
DNR PROJECT # 25-02-41-02

GREAT LAKES/ATLANTIC REGIONAL OFFICE
7322 NEWMAN BOULEVARD, BUILDING 1
DEXTER, MICHIGAN 48130
(734) 623-2000
www.ducks.org

AFFIX SEAL: DUCKS UNLIMITED, INC.
ON:

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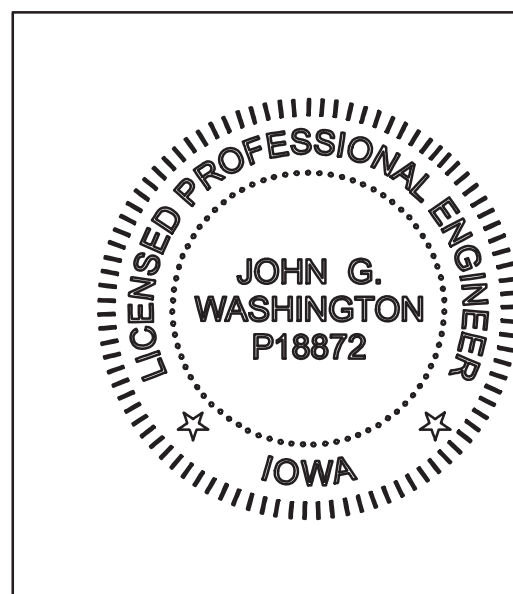


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C002	SPECS & NOTES
C051	OVERALL TOPOGRAPHY
C052	PROJECT AREA TOPOGRAPHY
C053	REMOVALS & TOPO DETAIL UPPER STRUCTURE
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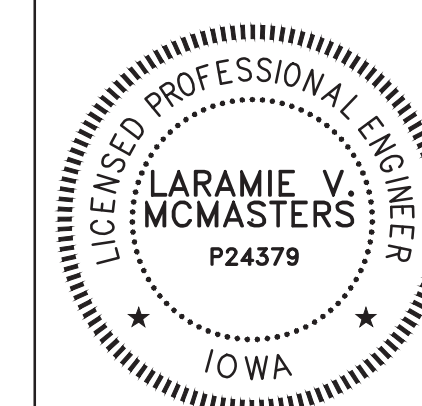
PROJECT LOCATION MAP
SCALE: NOT TO SCALE



AUTHORIZATION TO BID
 Digitally signed by George Antoniou
 George Antoniou
 Date: 2024.09.24 10:51:38 -05'00'
 AUTHORIZED - PARKS | WILDLIFE | FISHERIES | LAW ENFORCEMENT
 DATE
 Digitally signed by Travis Baker
 Travis Baker
 Date: 2024.09.24 11:49:41 -05'00'
 ENGINEERING BUREAU CHIEF
 DATE



I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.
 John G. Washington, P.E. Date: 9/17/2024
 My license number is P18872
 My license renewal date is December 31, 2025
 Pages or sheets covered by this seal:
 C001, C002, C051, C052, C053, C054, C101, C102, C301, C302, C306, C307



I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.
 Laramie V. McMasters Date: 9/17/2024
 LARAMIE V. MCMASTERS, PE
 MY LICENSE NUMBER IS P24379
 MY LICENSE RENEWAL DATE IS DECEMBER 31, 2024
 PAGES OR SHEETS COVERED BY THIS SEAL:
 C303, C304, C305

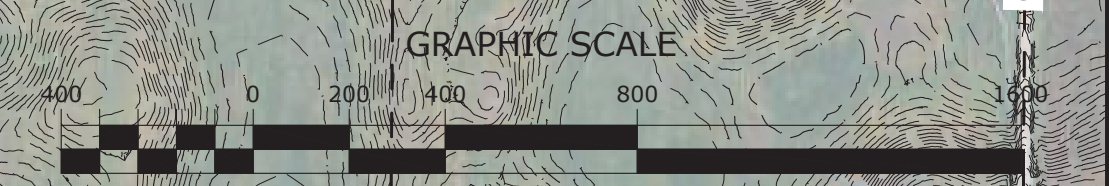
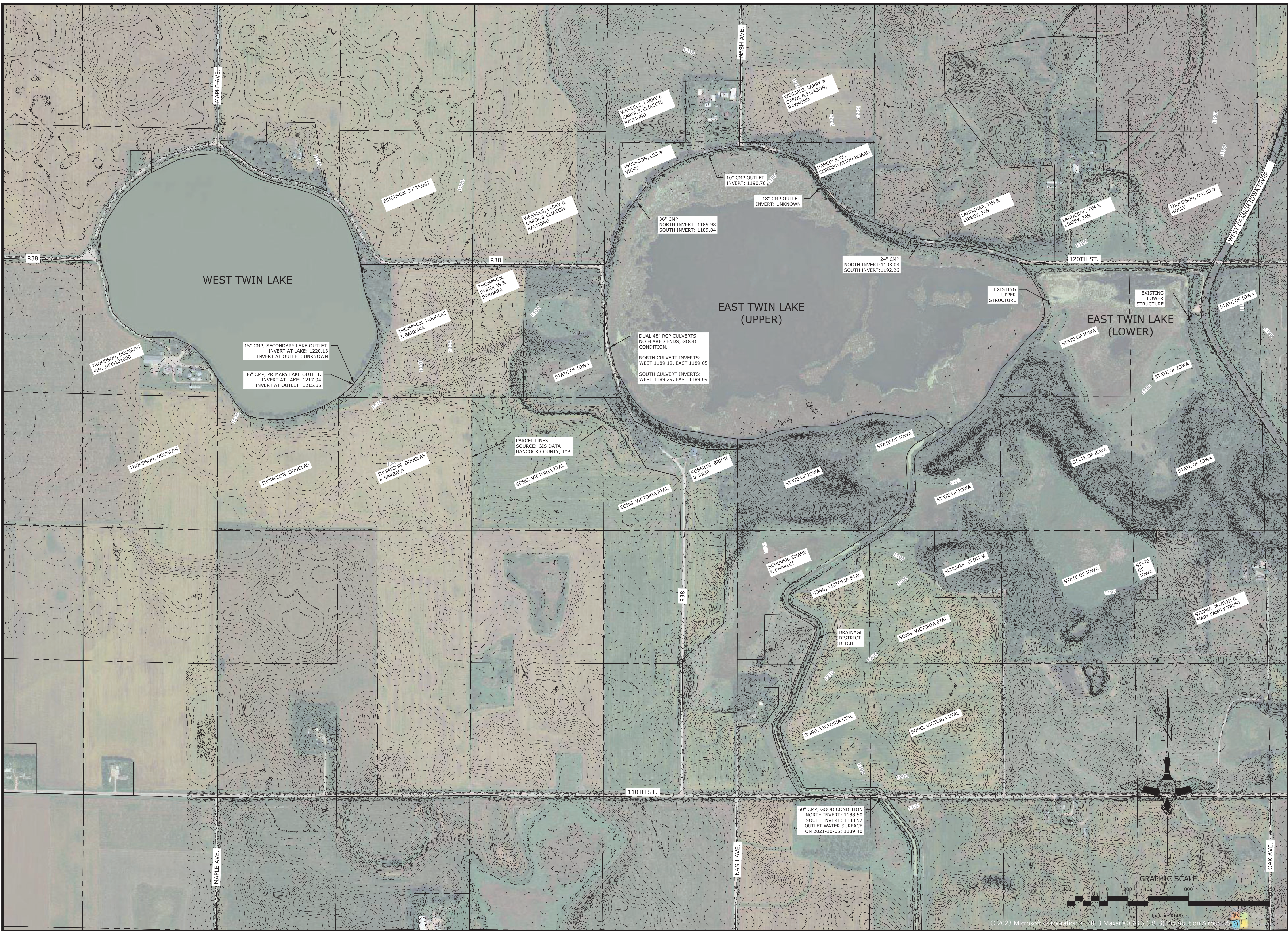
COVER SHEET
EAST TWIN LAKE
ENHANCEMENTS
EAST TWIN LAKE
HANCOCK COUNTY, IOWA

Revision	By	Date

CAD FILE:
IA-356-1 Cover and Notes
DESIGNED BY: JGW
DRAWN BY: JGW
SURVEYED BY: JGW/AB
BIOLOGIST: MS
DATE:
09/09/24
PROJECT NUMBER:
US-IA-356-1
C001

NOTICE: CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. DUCKS UNLIMITED, INC. SHALL NOT ASSUME ANY RESPONSIBILITY FOR THE SAFETY OF THE WORK PERFORMED, PERSONS ENGAGED IN THE WORK, NEARBY STRUCTURES, OR OF OTHER PERSONS ON SITE. THIS MATERIAL, DATA AND INFORMATION IS PROVIDED FOR THE PROJECT AND NOT FOR ANY OTHER PURPOSE. DUCKS UNLIMITED, INC. MAKES NO WARRANTY, REPRESENTATION OR GUARANTEE OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE ACCURACY, COMPLETENESS, TIMELINESS, OR FITNESS FOR A PARTICULAR PURPOSE OF THIS MATERIAL, DATA AND INFORMATION. DUCKS UNLIMITED, INC. MAKES NO WARRANTY, REPRESENTATION OR GUARANTEE OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE ACCURACY, COMPLETENESS, TIMELINESS, OR FITNESS FOR A PARTICULAR PURPOSE OF THIS MATERIAL, DATA AND INFORMATION. DUCKS UNLIMITED, INC. MAKES NO WARRANTY, REPRESENTATION OR GUARANTEE OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE ACCURACY, COMPLETENESS, TIMELINESS, OR FITNESS FOR A PARTICULAR PURPOSE OF THIS MATERIAL, DATA AND INFORMATION. DUCKS UNLIMITED, INC. MAKES NO WARRANTY, REPRESENTATION OR GUARANTEE OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE ACCURACY, COMPLETENESS, TIMELINESS, OR FITNESS FOR A PARTICULAR PURPOSE OF THIS MATERIAL, DATA AND INFORMATION. DUCKS UNLIMITED, INC. MAKES NO WARRANTY, REPRESENTATION OR GUARANTEE OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE ACCURACY, COMPLETENESS, TIMELINESS, OR FITNESS FOR A PARTICULAR PURPOSE OF THIS MATERIAL, DATA AND INFORMATION.

C:\Users\jgsmith\OneDrive - Ducks Unlimited Incorporated\Iowa\02_C3D Projects\IA-356-1_East Twin Lake\C3D_DRAWING\IA-356-1_TOPO.dwg, 9/10/2024 11:19 AM, Gareth Smith, TOPO WIDE, None



GREAT LAKES/ATLANTIC REGIONAL OFFICE
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DEXTER, MICHIGAN 48130
(734) 623-2000
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ON:

**OVERALL TOPOGRAPHY
EAST TWIN LAKE
ENHANCEMENTS
EAST TWIN LAKE
HANCOCK COUNTY, IOWA**

Revision	Sheet	Revisions	Date	By

CAD FILE:
IA-356-1 TOPO
DESIGNED BY: JGW
DRAWN BY: JGW
SURVEYED BY: JGW/AB
BIOLOGIST: MS

DATE:
09/09/24
PROJECT NUMBER:
US-IA-356-1
C051

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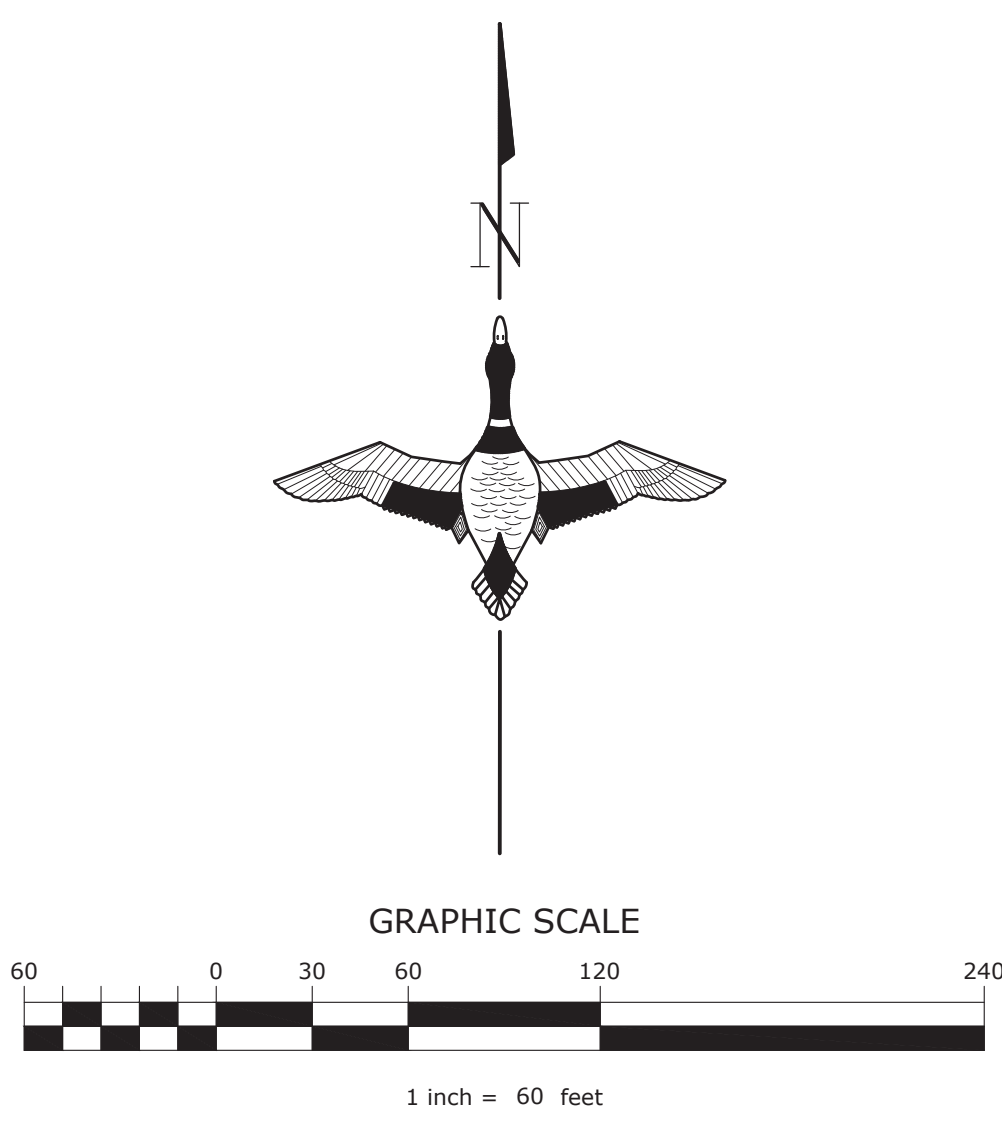


US-IA-356-1, EAST TWIN LAKE

HORIZONTAL CONTROL
 COORDINATES ARE IOWA STATE PLANE COORDINATES, NORTH ZONE 1401 IN US SURVEY FEET NAD 83 (CONUS 2011). THEY WERE ESTABLISHED FROM THE OPUS SOLUTION FOR CONTROL POINT 1 USING A TRIMBLE GPS BASE RECEIVER, OCCUPIED FOR 2.5 HOURS, ON OCTOBER 5, 2021.

VERTICAL CONTROL
 ELEVATIONS ESTABLISHED FROM THE OPUS SOLUTION FOR THE CONTROL POINT 1 USING (GEIOD18) CONUS FILE, ELEVATION OF 1194.33 FEET ON THE NAVAD 88.

POINT #	ELEVATION (NAVD88)	NORTH	EAST	DESCRIPTION
1	1194.33	3804300.99	4868180.00	SET CAPPED REBAR (OPUS)
2	1190.80	3804710.17	4866550.18	SET CAPPED REBAR (OPUS)



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PROJECT AREA TOPOGRAPHY
 EAST TWIN LAKE
 ENHANCEMENTS
 EAST TWIN LAKE
 HANCOCK COUNTY, IOWA

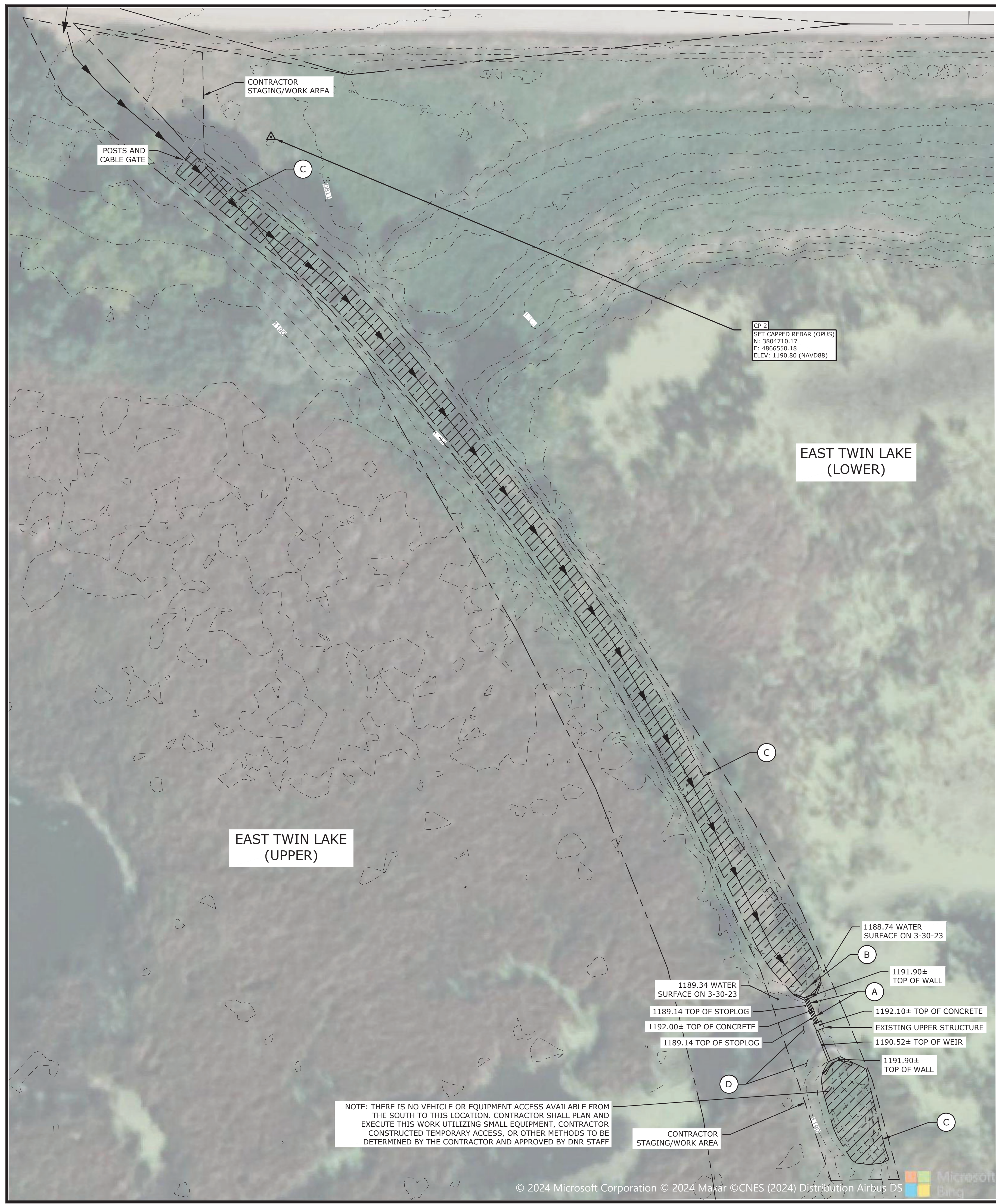
Revision	Sheet	Date	By

CAD FILE:
 IA-356-1 TOPO
 DESIGNED BY: JGW
 DRAWN BY: JGW
 SURVEYED BY: JGW/AB
 BIOLOGIST: MS

DATE:
 09/09/24
 PROJECT NUMBER:
 US-IA-356-1
C052

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C:\Users\gsmith\OneDrive - Ducks Unlimited Incorporated\Iowa\02_C3D Projects\IA-356-1 EAst Twin Lake\C3D_DRAWING\IA-356-1 TOPO.dwg, 9/10/2024 11:19 AM, Gareth Smith, REMOVALS UPPER STRUCTURE, None



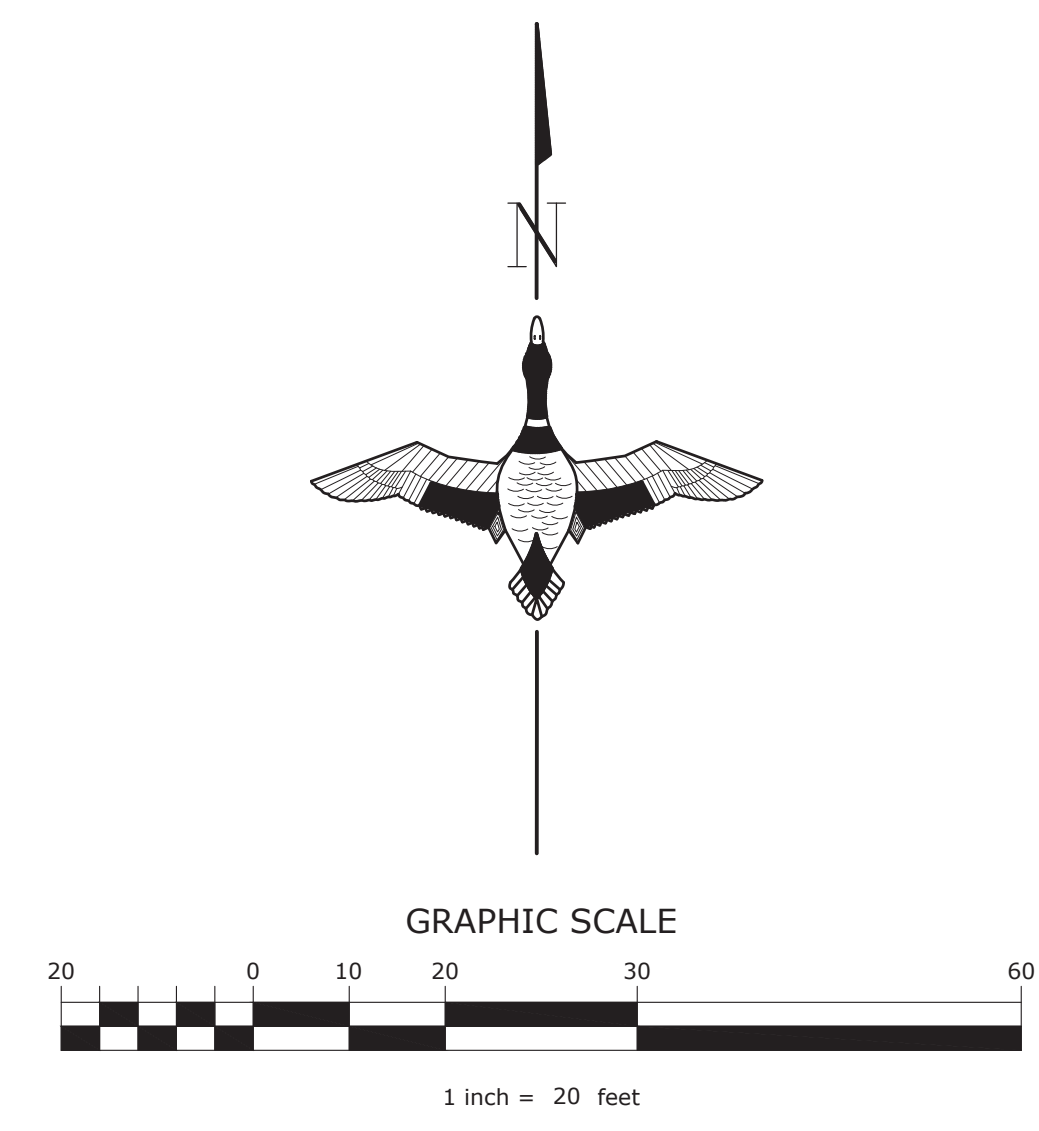
NOTE: THERE IS NO VEHICLE OR EQUIPMENT ACCESS AVAILABLE FROM THE SOUTH TO THIS LOCATION. CONTRACTOR SHALL PLAN AND EXECUTE THIS WORK UTILIZING SMALL EQUIPMENT, CONTRACTOR CONSTRUCTED TEMPORARY ACCESS, OR OTHER METHODS TO BE DETERMINED BY THE CONTRACTOR AND APPROVED BY DNR STAFF



LOOKING NORTH AT EXISTING UPPER STRUCTURE

REMOVAL KEYNOTES

- (A) REMOVE WOODEN PLANKS.
- (B) REMOVE TREE.
- (C) REMOVE TREES AND BRUSH. MOW VEGETATION TO PROVIDE 10' WIDE ACCESS AT TOP OF BERM BETWEEN EXISTING CABLE GATE AND EXISTING UPPER STRUCTURE. CONTACT DNR STAFF TO OPEN CABLE GATE.
- (D) REMOVE SEDIMENT AND DEPOSIT/SPREAD ON SOUTH SIDE OF SOUTH ABUTMENT WALL.



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AFIX SEAL: DUCKS UNLIMITED, INC.
ON:

REMOVALS & TOPO DETAIL
UPPER STRUCTURE
EAST TWIN LAKE
ENHANCEMENTS
EAST TWIN LAKE
HANCOCK COUNTY, IOWA

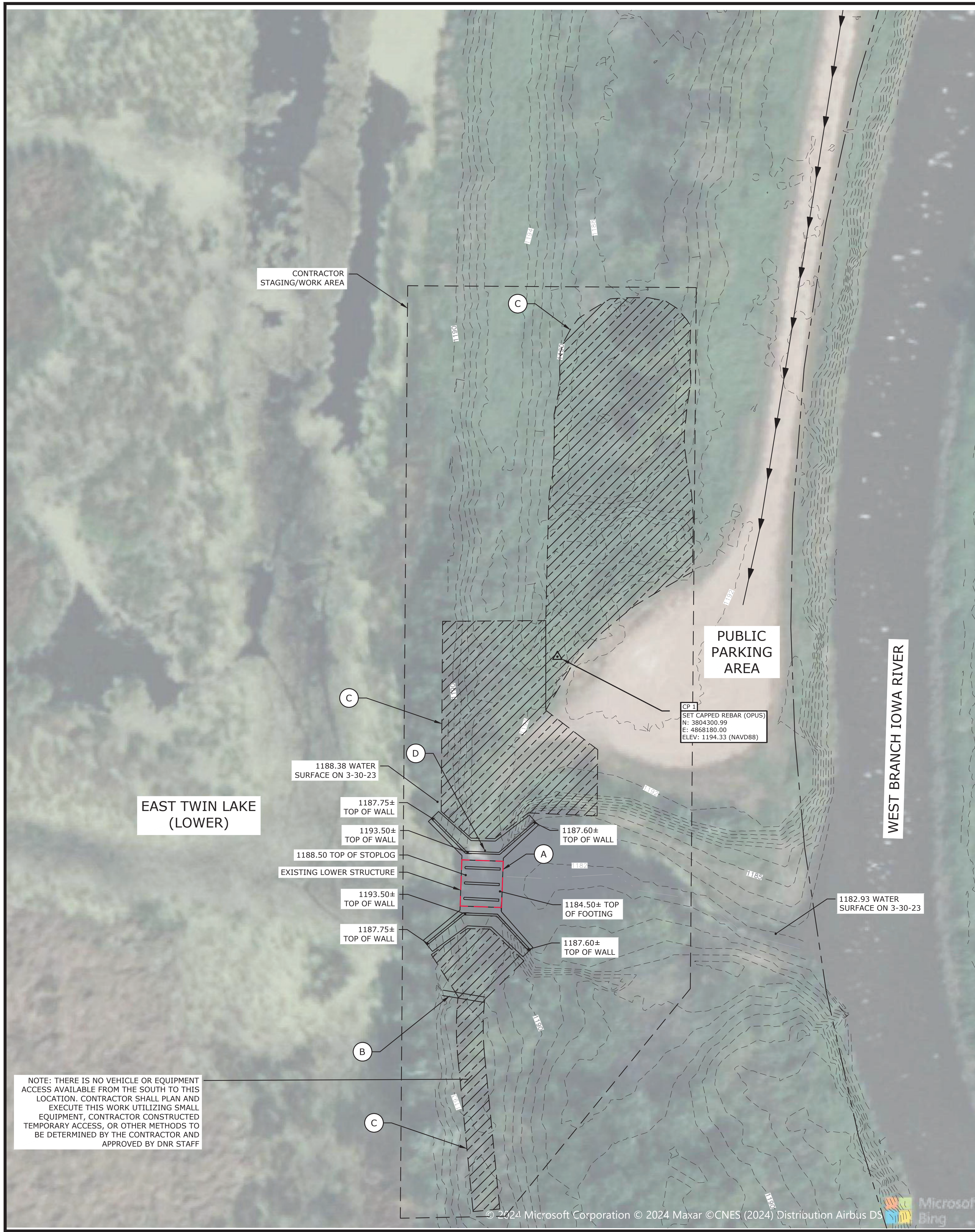
Revision	Sheet	By	Date

CAD FILE: IA-356-1 TOPO
DESIGNED BY: JGW
DRAWN BY: JGW
SURVEYED BY: JGW/AB
BIOLOGIST: MS

DATE: 09/09/24
PROJECT NUMBER: US-IA-356-1

C053

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NOTE: THERE IS NO VEHICLE OR EQUIPMENT ACCESS AVAILABLE FROM THE SOUTH TO THIS LOCATION. CONTRACTOR SHALL PLAN AND EXECUTE THIS WORK UTILIZING SMALL EQUIPMENT, CONTRACTOR CONSTRUCTED TEMPORARY ACCESS, OR OTHER METHODS TO BE DETERMINED BY THE CONTRACTOR AND APPROVED BY DNR STAFF



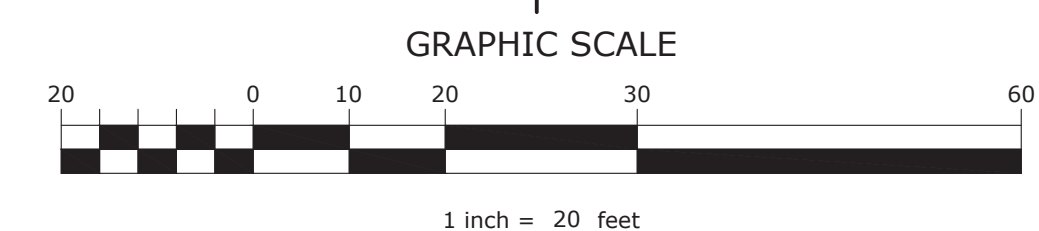
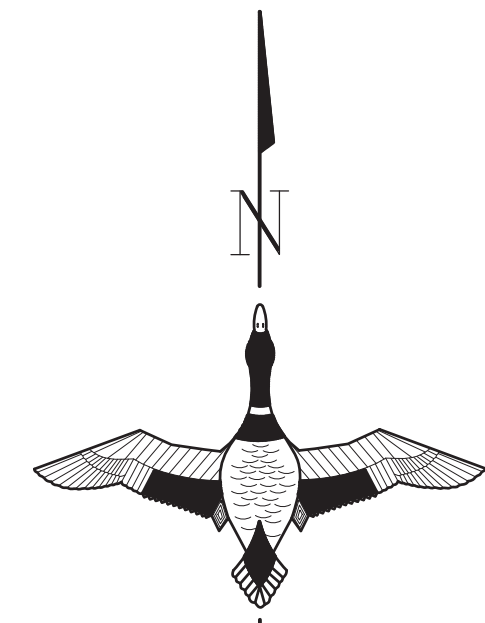
LOOKING WEST AT EXISTING LOWER STRUCTURE



LOOKING SOUTH AT EXISTING LOWER STRUCTURE

REMOVAL KEYNOTES

- (A) REMOVE MIDDLE CONCRETE BASE SLAB (BETWEEN EXISTING CONSTRUCTION JOINTS), THREE MIDDLE WALLS, STEEL BEAMS, WOOD DECKING AND STOPLOGS TO THE LIMITS OUTLINED ON THIS SHEET.
- (B) REMOVE CMP CULVERT (CRUSHED AND ROTTED).
- (C) REMOVE TREES AND BRUSH TO LIMITS SHOWN ON THIS PLAN. MOW VEGETATION TO PROVIDE 10' WIDE ACCESS AT TOP OF BERM SOUTH OF EXISTING STRUCTURE FOR APPROXIMATELY 110'.
- (D) REMOVE EXISTING BOLLARD



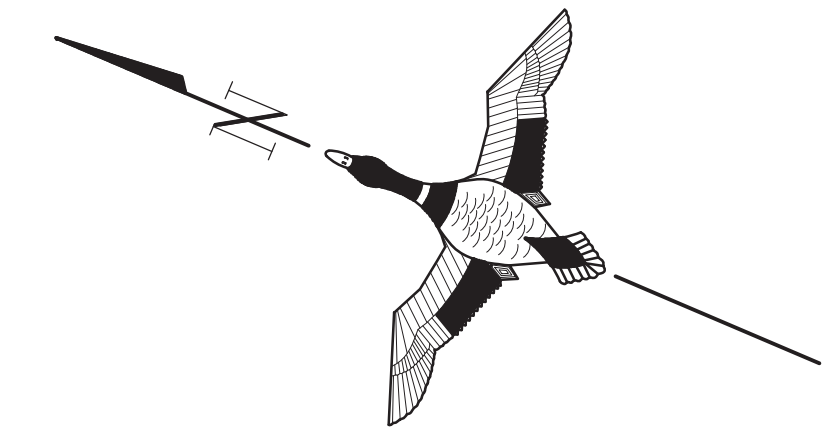
AFFIX SEAL: DUCKS UNLIMITED, INC.
ON:

REMOVALS & TOPO DETAIL
LOWER STRUCTURE
EAST TWIN LAKE
ENHANCEMENTS
EAST TWIN LAKE
HANCOCK COUNTY, IOWA

Revision	Sheet	Date	By

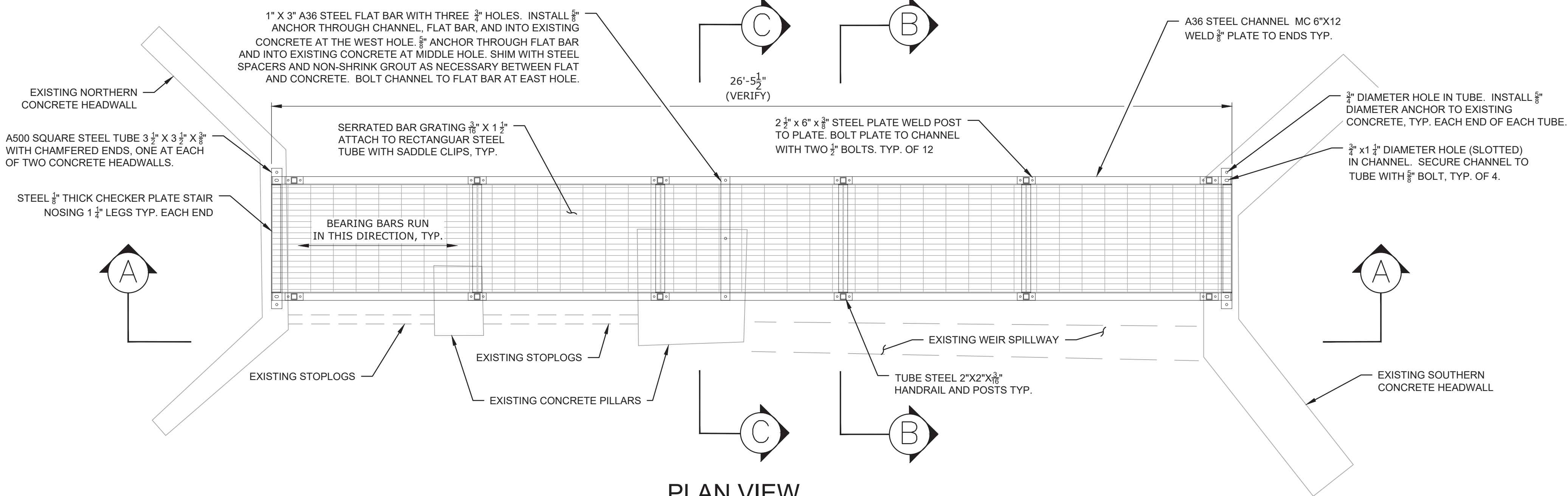
CAD FILE:
IA-356-1 TOPO
DESIGNED BY: JGW
DRAWN BY: JGW
SURVEYED BY: JGW/AB
BIOLOGIST: MS
DATE:
09/09/24
PROJECT NUMBER:
US-IA-356-1
C054

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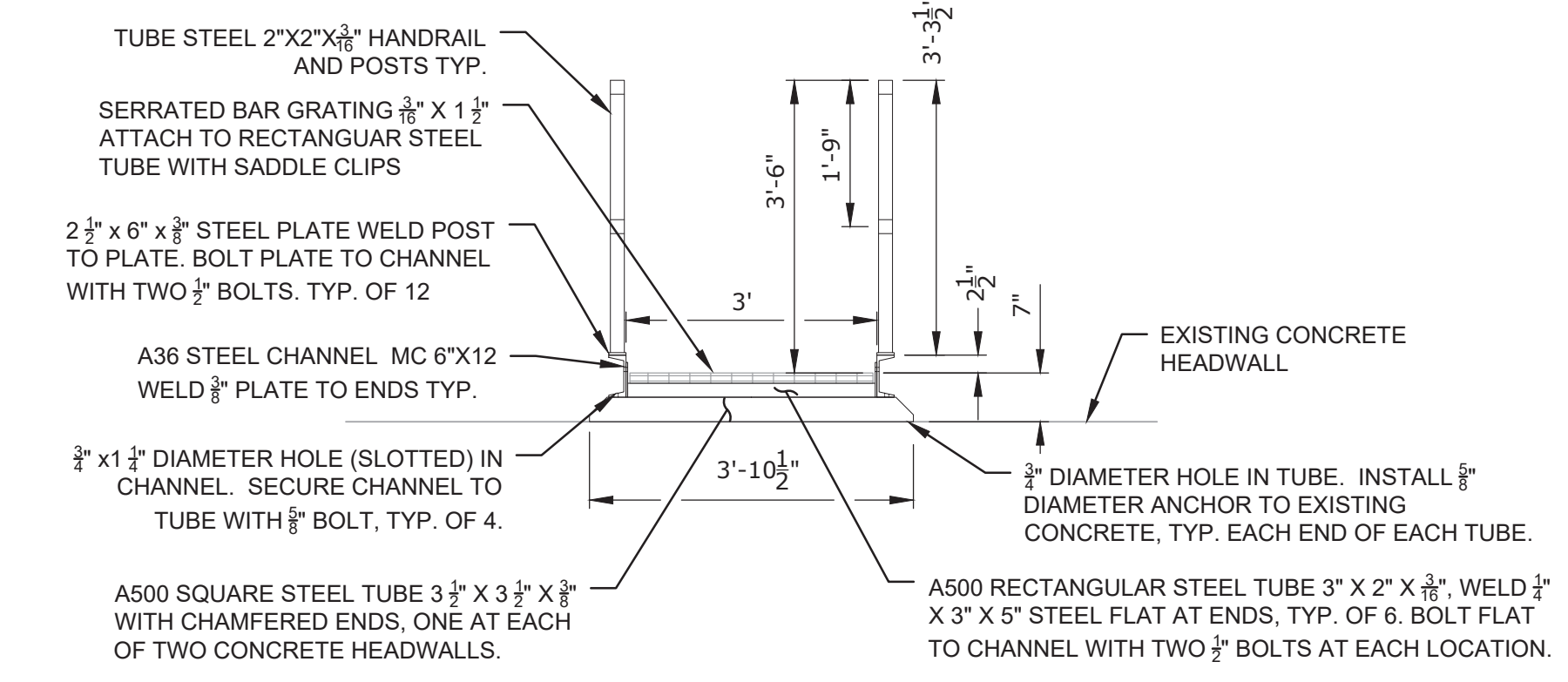


GENERAL NOTES

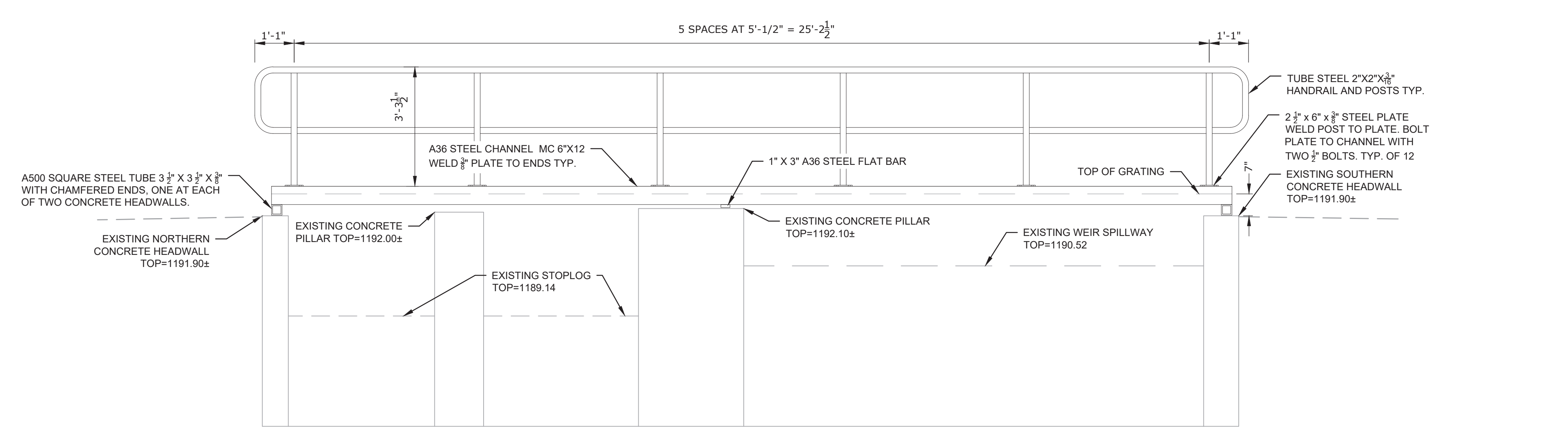
- CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.
- ALL MATERIALS INCLUDING HARDWARE SHALL BE HOT DIPPED GALVANIZED UNLESS OTHERWISE NOTED.
- ALL ANCHORS SHALL BE DRILLED AND EPOXIED WITH HILTI HIT-HY 200 OR APPROVED EQUAL, 8-INCH MINIMUM EMBEDMENT UNLESS NOTED OTHERWISE. DRILLED HOLES SHALL BE SIZED, BRUSHED, BLOWN OUT, AND CLEANED PER EPOXY MANUFACTURERS INSTRUCTIONS.
- ALL BOLTED CONNECTIONS AND ANCHORS SHALL INCLUDE FLAT WASHERS, LOCK WASHERS, AND NUTS AS APPROPRIATE.
- ALL STEEL TO STEEL CONTACT POINTS SHALL BE FULLY WELDED UNLESS A BOLTED CONNECTION OR STITCH WELD IS NOTED.
- ALL FABRICATING AND WELDING SHALL BE COMPLETED PRIOR TO HOT DIP GALVANIZING.
- SHIMMING, GROUTING, ADJUSTING, LEVELING, AND OTHERWISE COMPLETING THE INSTALLATION OF FABRICATED ITEMS IN A WORKMAN-LIKE MANNER IS INCIDENTAL.



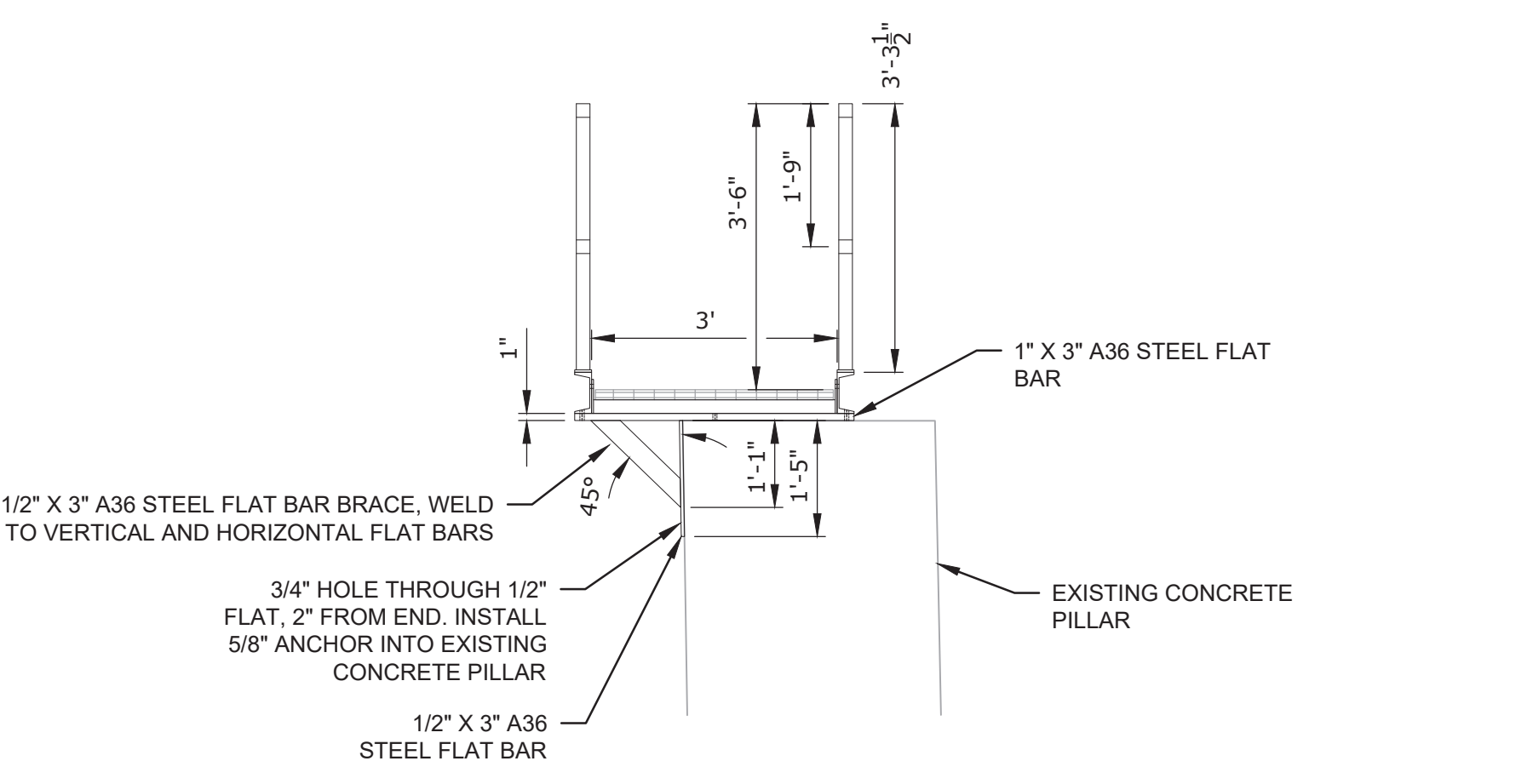
PLAN VIEW
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SECTION B
SCALE: $\frac{1}{2}'' = 1'-0''$



SECTION A
SCALE: $\frac{1}{2}'' = 1'-0''$



SECTION C
SCALE: $\frac{1}{2}'' = 1'-0''$

UPPER STRUCTURE DETAILS
EAST TWIN LAKE
ENHANCEMENTS
EAST TWIN LAKE
HANCOCK COUNTY, IOWA

Revision	Sheet	Revisions	Date	By

CAD FILE:
IA-356-1 Details
DESIGNED BY: JGW
DRAWN BY: JGW
SURVEYED BY: JGW/AB
BIOLOGIST: MS

DATE:
09/09/24
PROJECT NUMBER:
US-IA-356-1
C301



AFFIX SEAL: DUCKS UNLIMITED, INC.
 ON:

DETAILS - LOWER STRUCTURE
 GENERAL LAYOUT
 EAST TWIN LAKE
 ENHANCEMENTS
 EAST TWIN LAKE
 HANCOCK COUNTY, IOWA

Revision	Sheet	By	Date

CAD FILE:
 IA-356-1 Details
 DESIGNED BY: JGW
 DRAWN BY: JGW
 SURVEYED BY: JGW/AB
 BIOLOGIST: MS

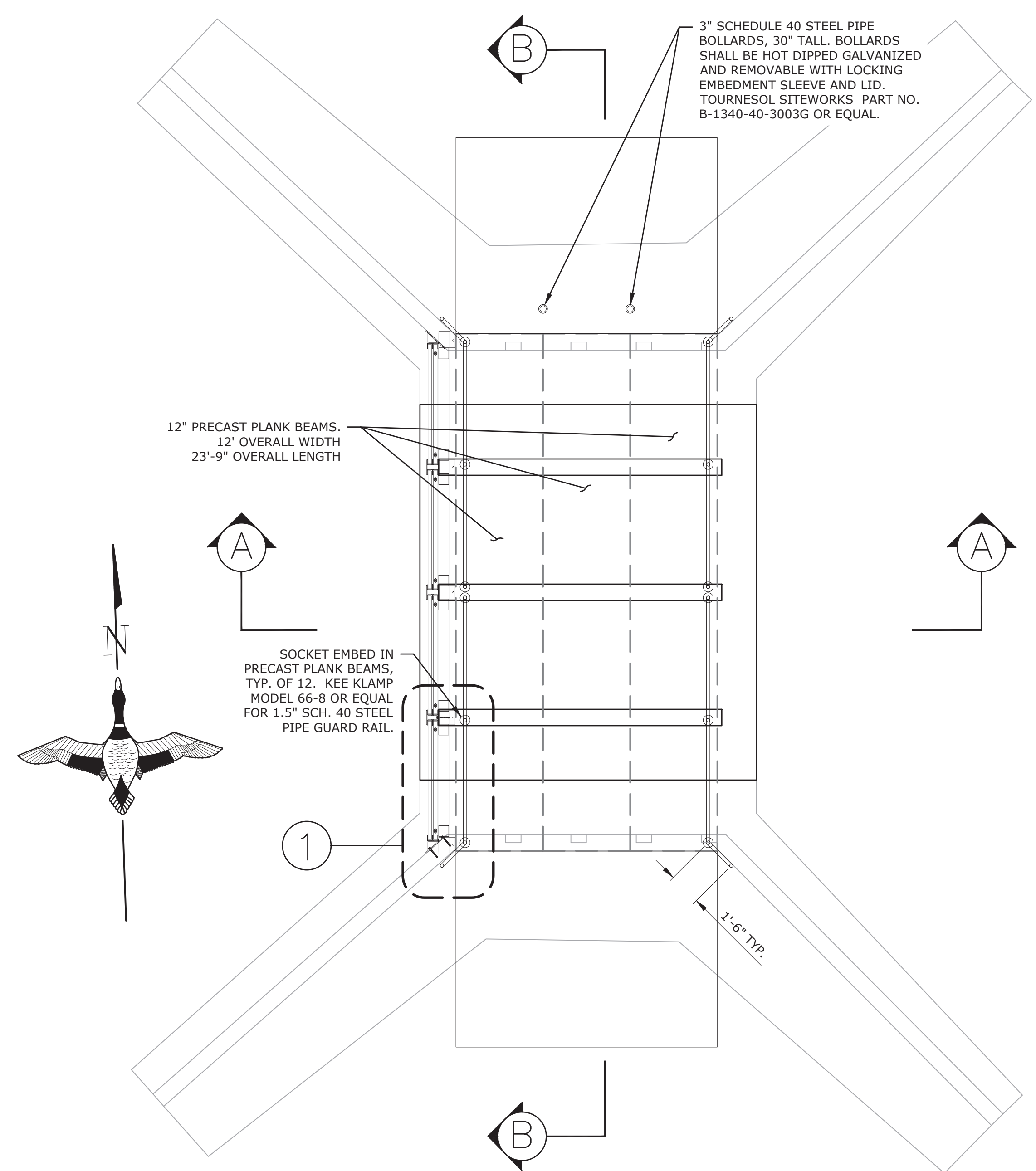
DATE:
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 US-IA-356-1

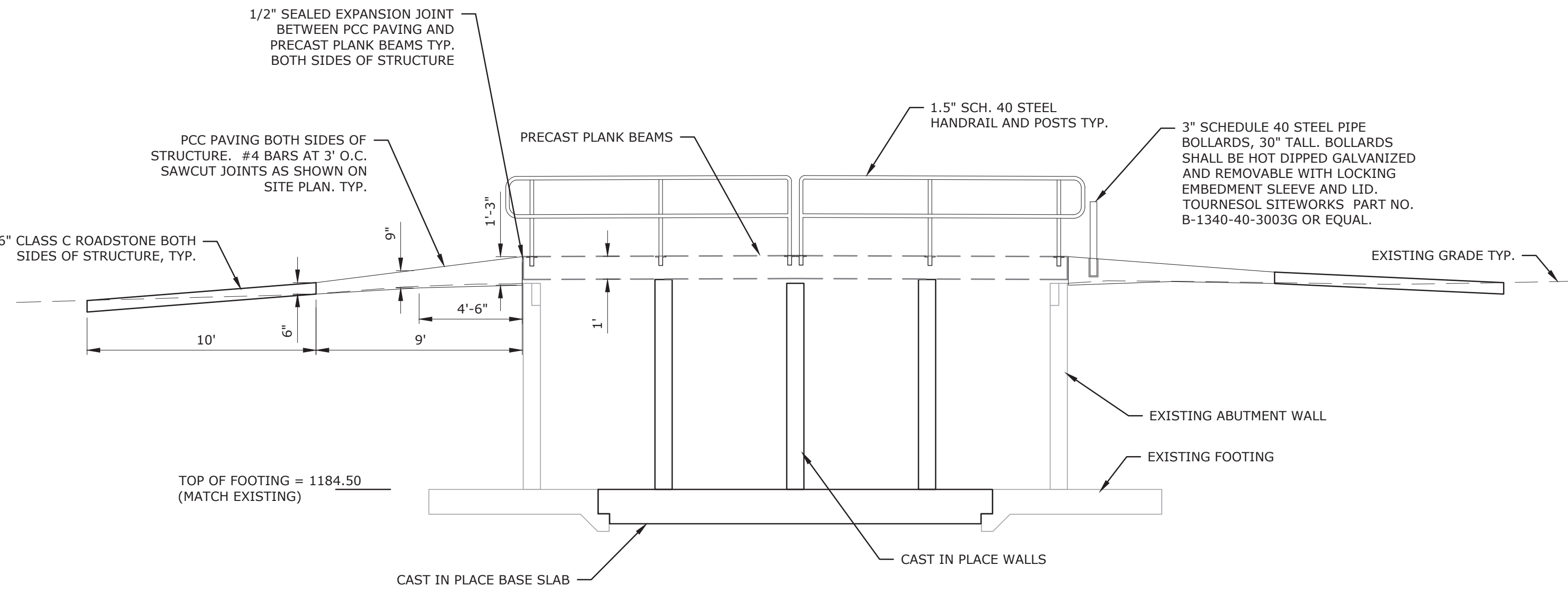
C302

GENERAL NOTES

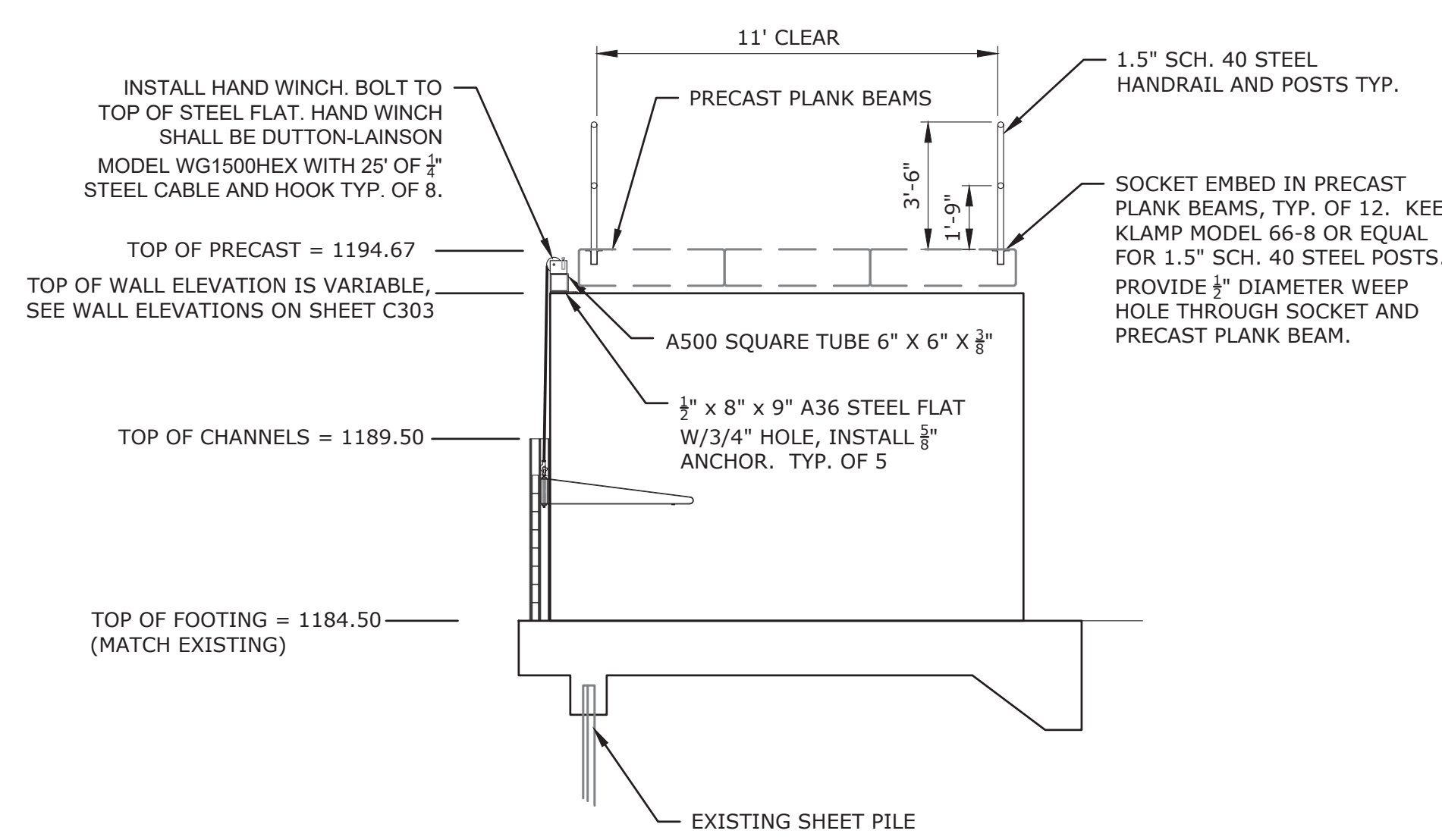
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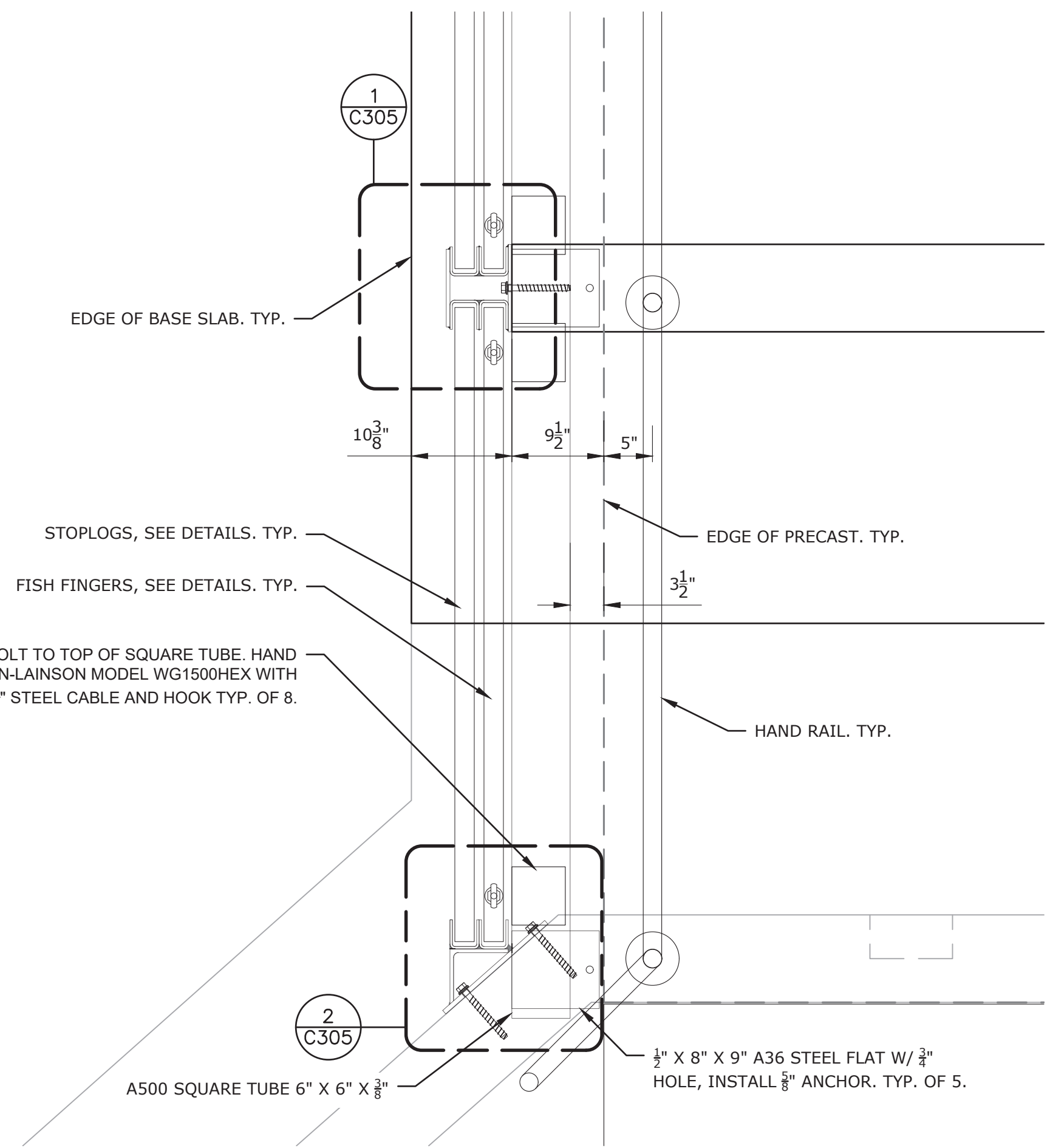
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SECTION
 SCALE: 1/2" = 1'-0"



SECTION
 SCALE: 1/2" = 1'-0"

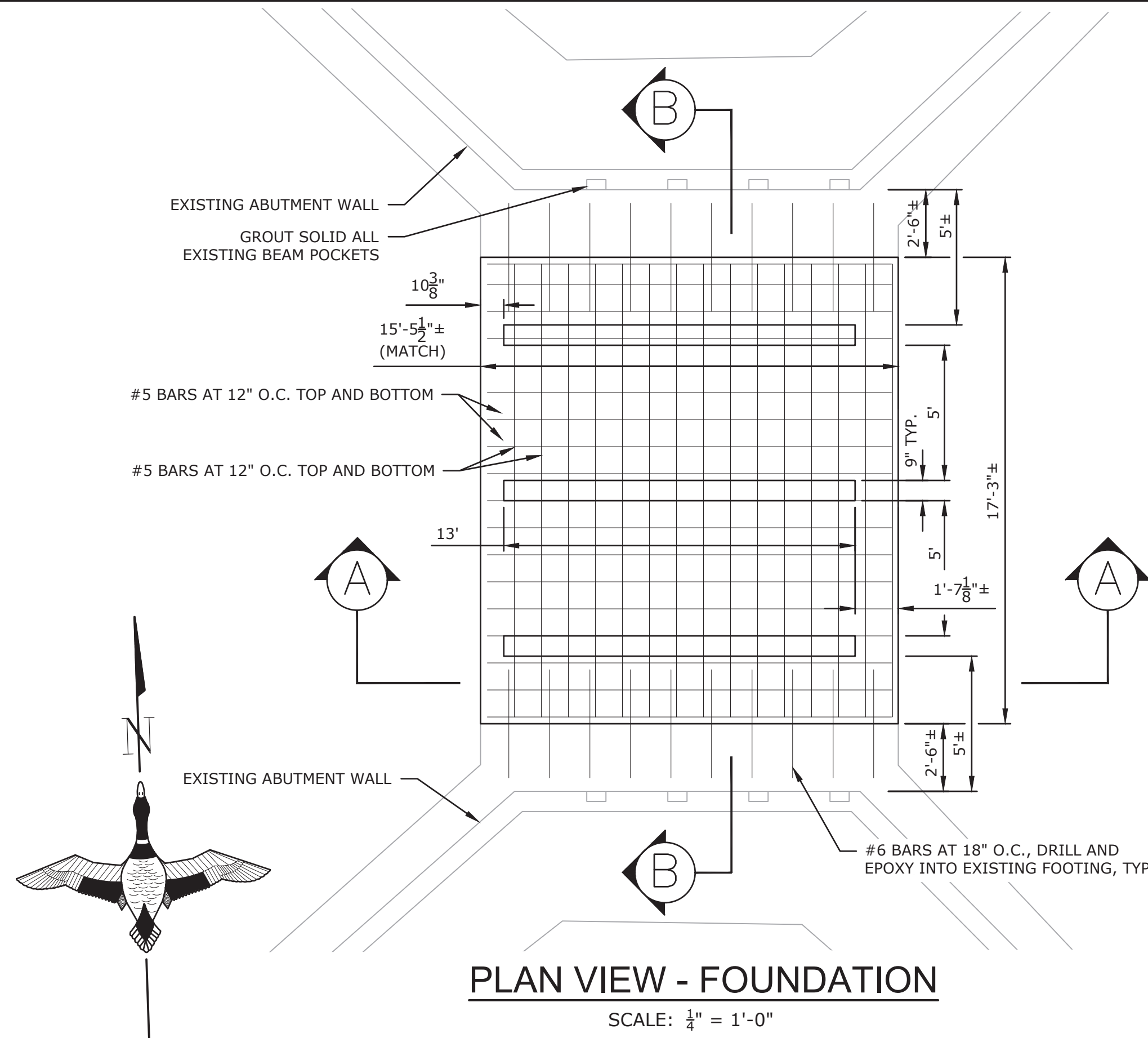


DETAIL
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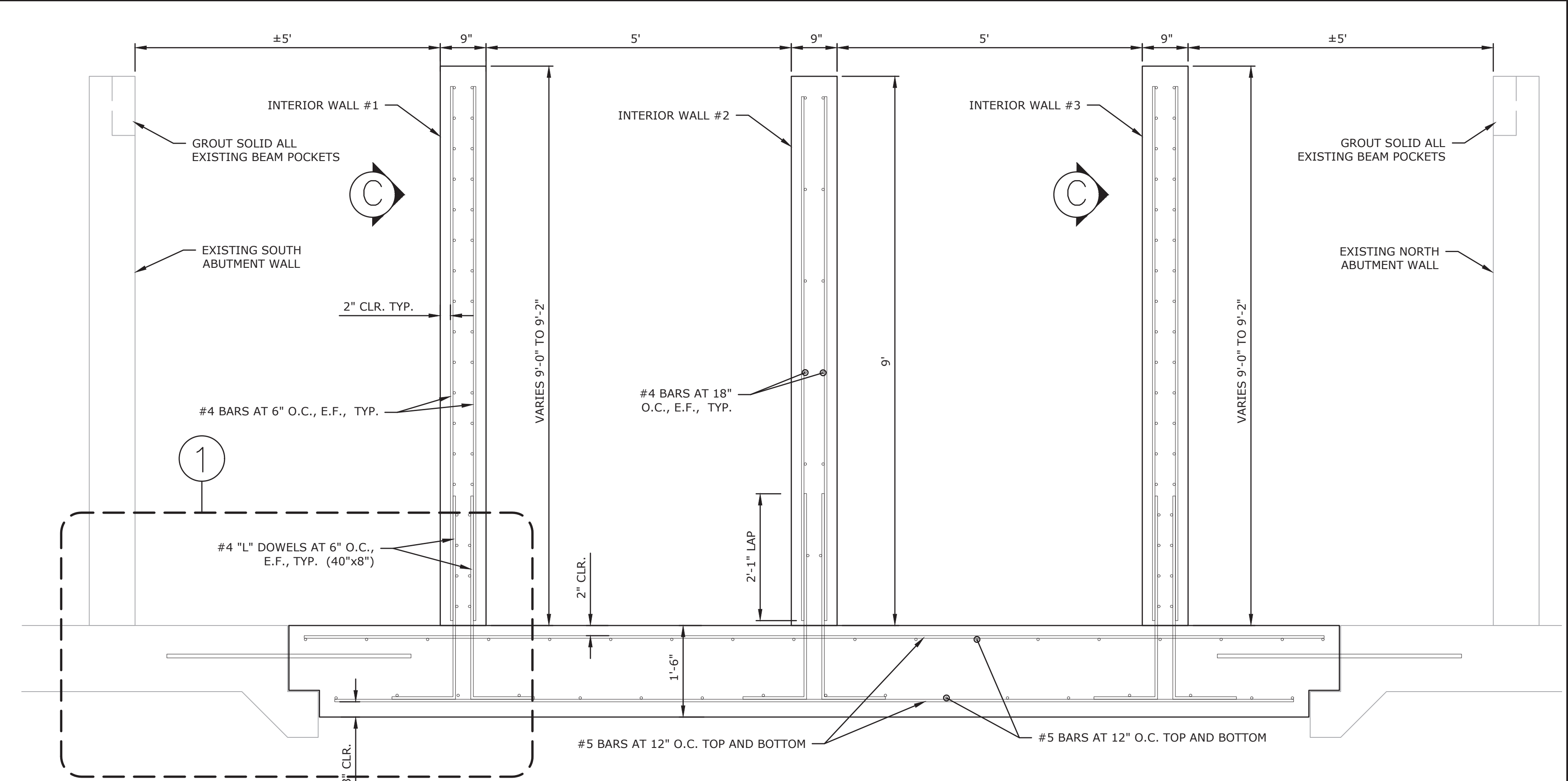
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C:\Users\gsmith\OneDrive - Ducks Unlimited Incorporated\Iowa\02_C3D Projects\IA-356-1 East Twin Lake\C3D_DRAWING\IA-356-1_Details.dwg, 9/10/2024 11:22 AM, Gareth Smith, C302 LOWER, None

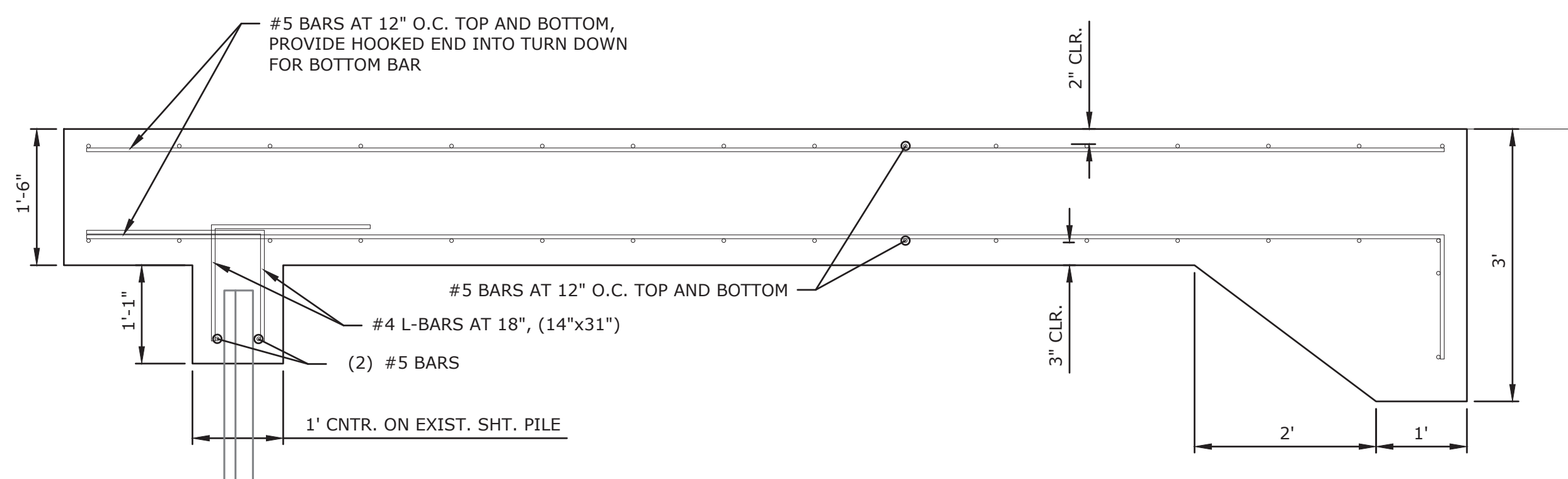
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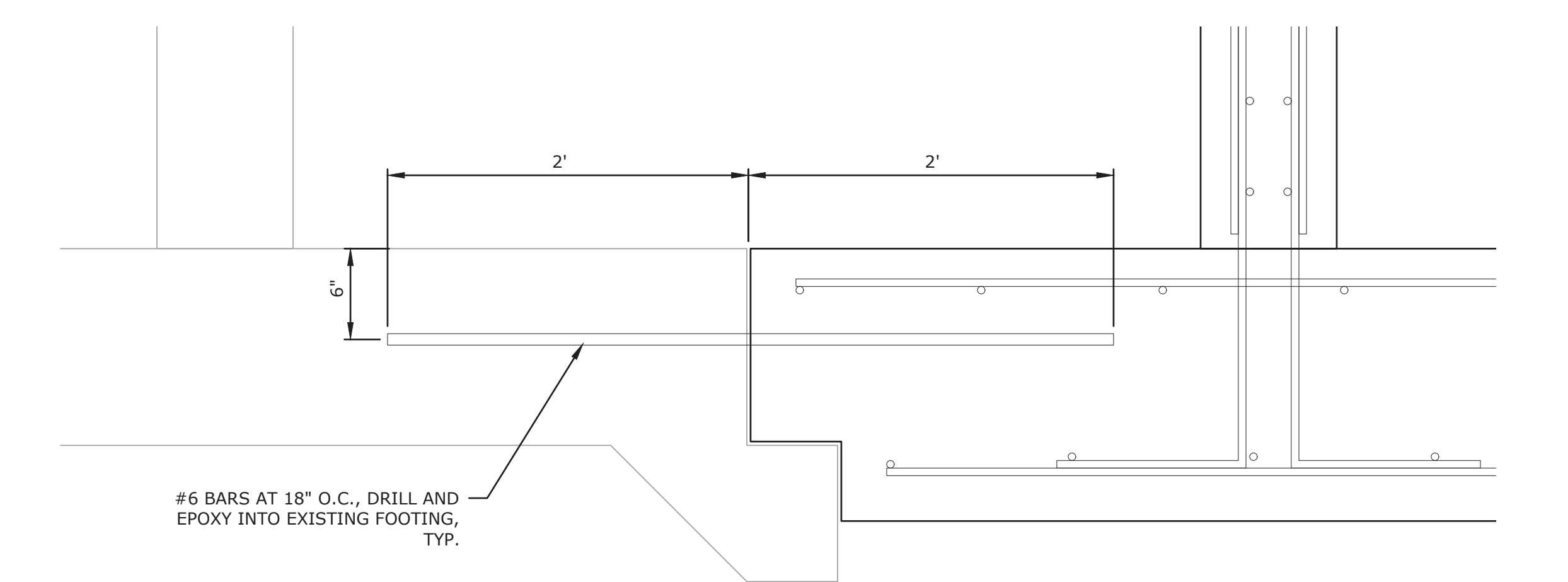
PLAN VIEW - FOUNDATION
SCALE: 1/4" = 1'-0"



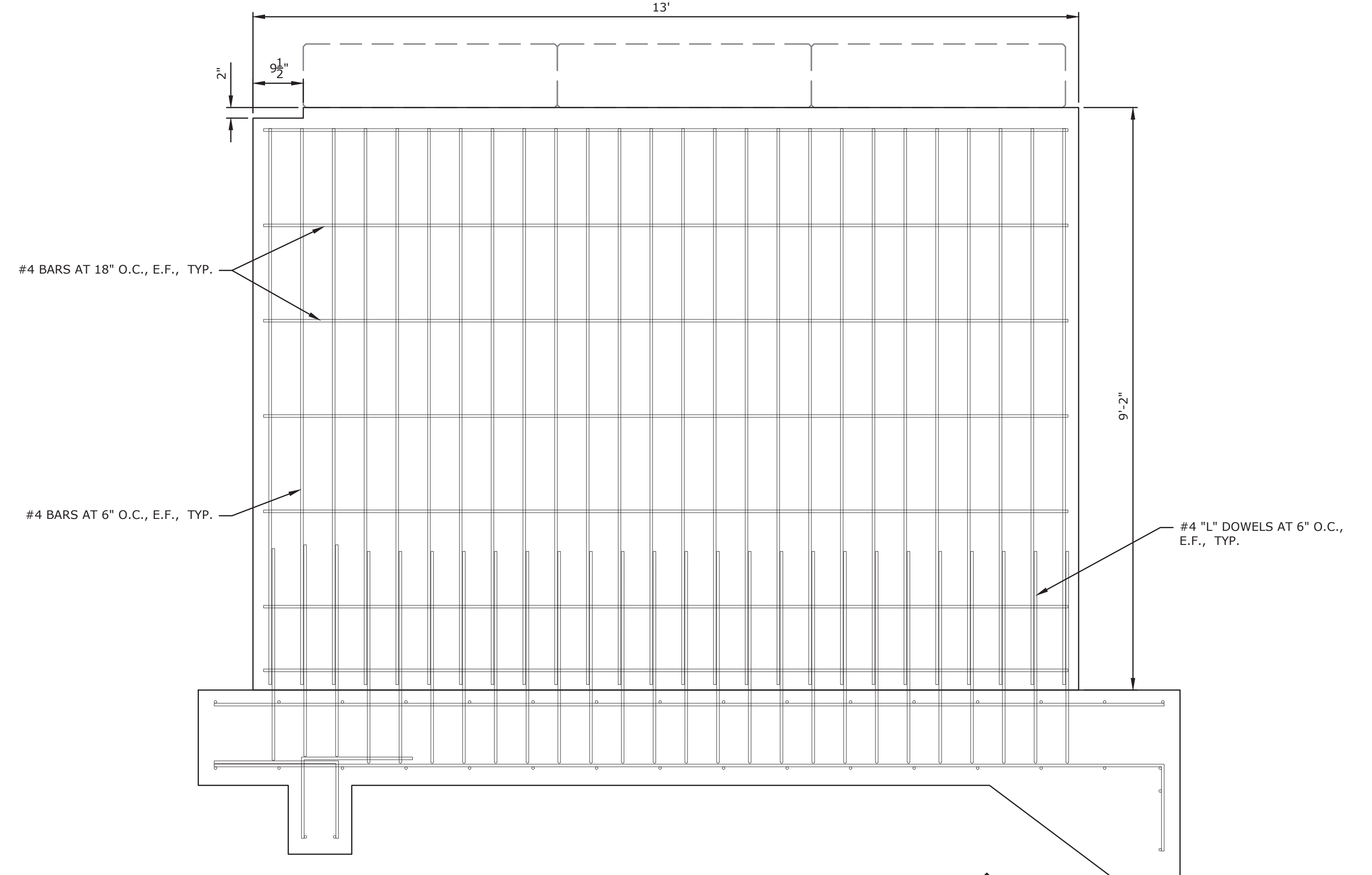
SECTION B-B
SCALE: 3/4" = 1'-0"



SECTION A-A
SCALE: 3/4" = 1'-0"



DETAIL 1
SCALE: 1 1/2" = 1'-0"



ELEVATION - INTERIOR WALLS #1 & #3
SCALE: 3/4" = 1'-0"

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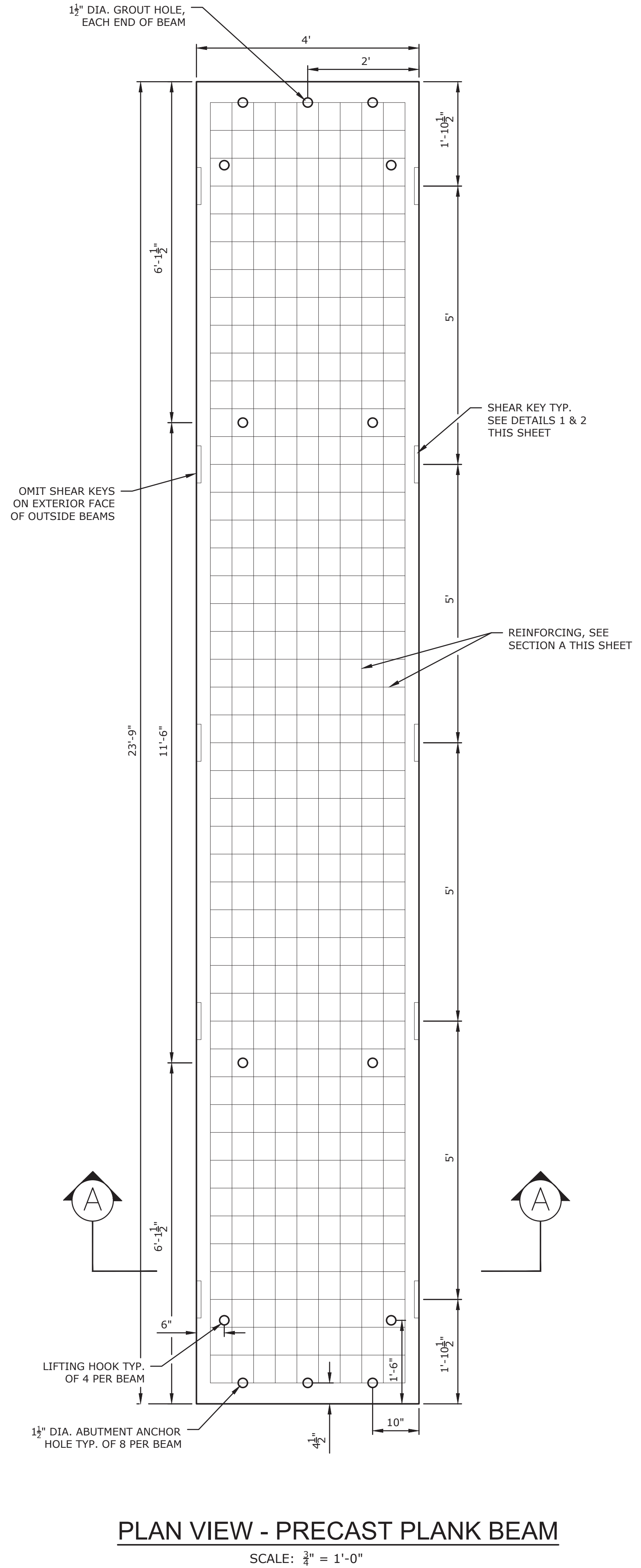
AFFIX SEAL: DUCKS UNLIMITED, INC.
ON:

**DETAILS - LOWER STRUCTURE
REINFORCING
EAST TWIN LAKE
ENHANCEMENTS
EAST TWIN LAKE
HANCOCK COUNTY, IOWA**

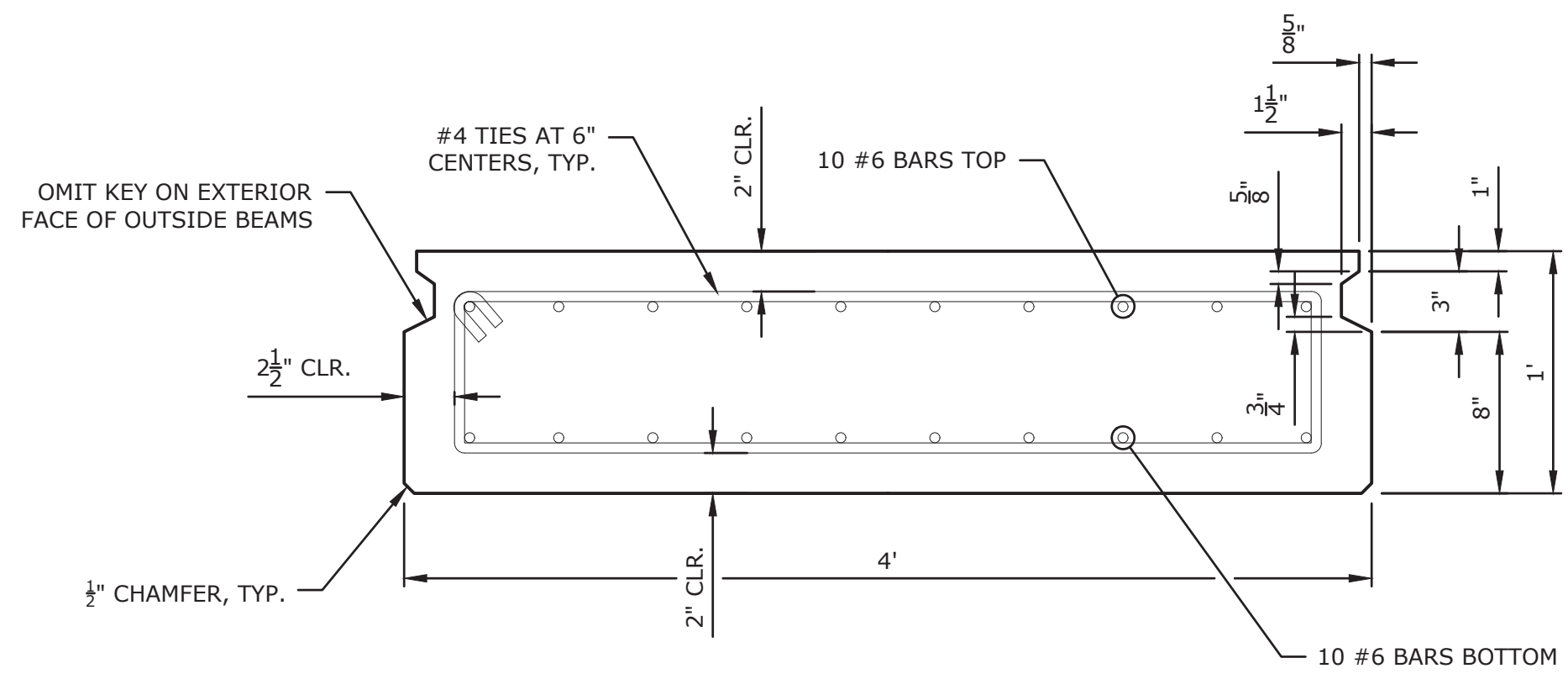
Revision	Sheet	Revisions	Date	By

CAD FILE:
IA-356-1 Details
DESIGNED BY: JGW
DRAWN BY: JGW
SURVEYED BY: JGW/AB
BIOLOGIST: MS
DATE:
09/09/24
PROJECT NUMBER:
US-IA-356-1
C303

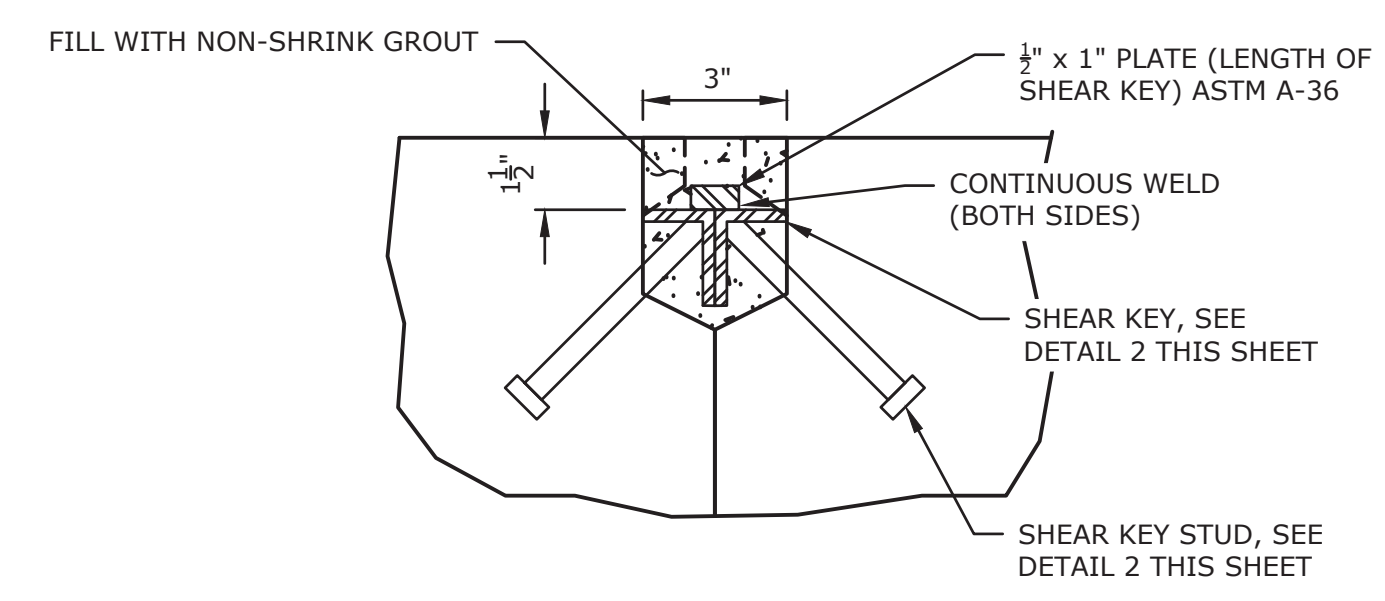
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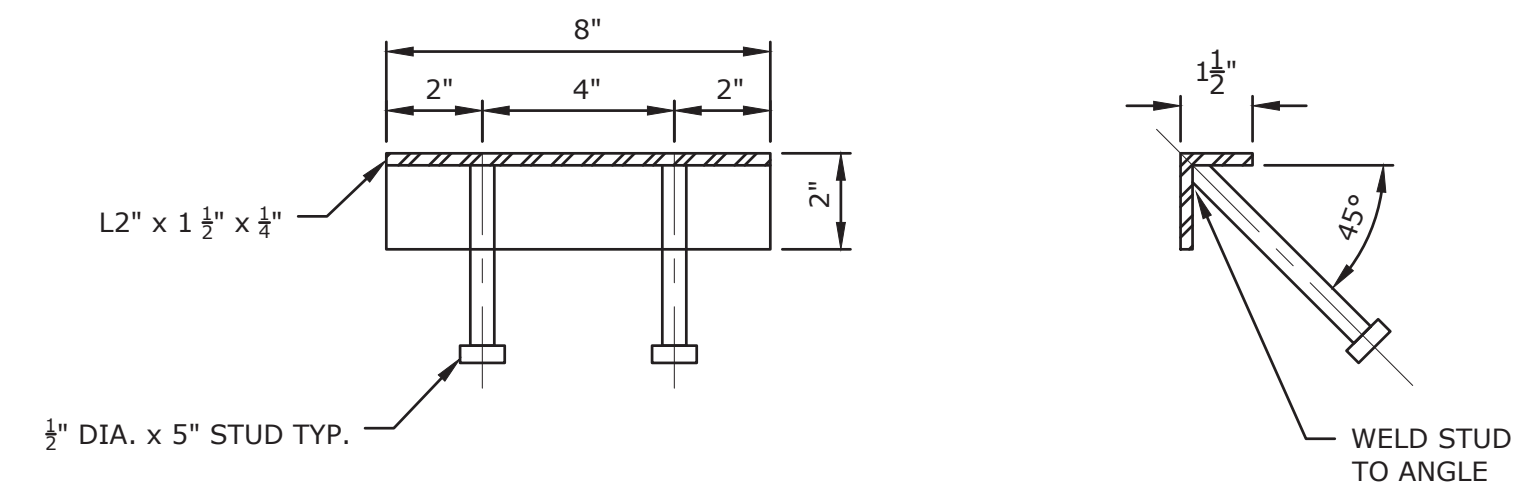
PLAN VIEW - PRECAST PLANK BEAM
SCALE: 3/4" = 1'-0"



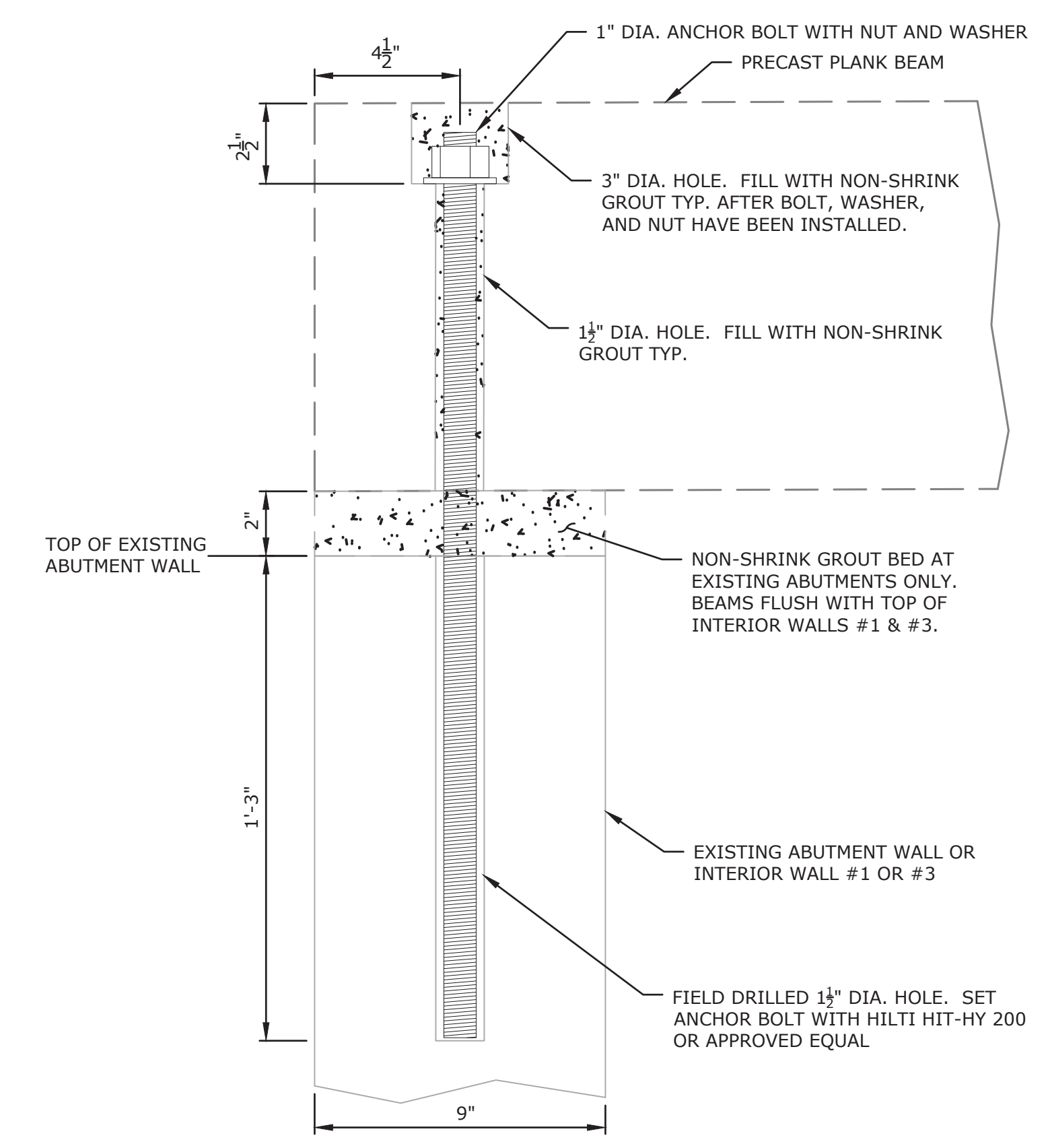
SECTION A
SCALE: 1 1/2" = 1'-0"



DETAIL - SHEAR KEY ①
SCALE: 3" = 1'-0"



DETAIL - SHEAR KEY EMBED ANGLES ②
SCALE: 3" = 1'-0"

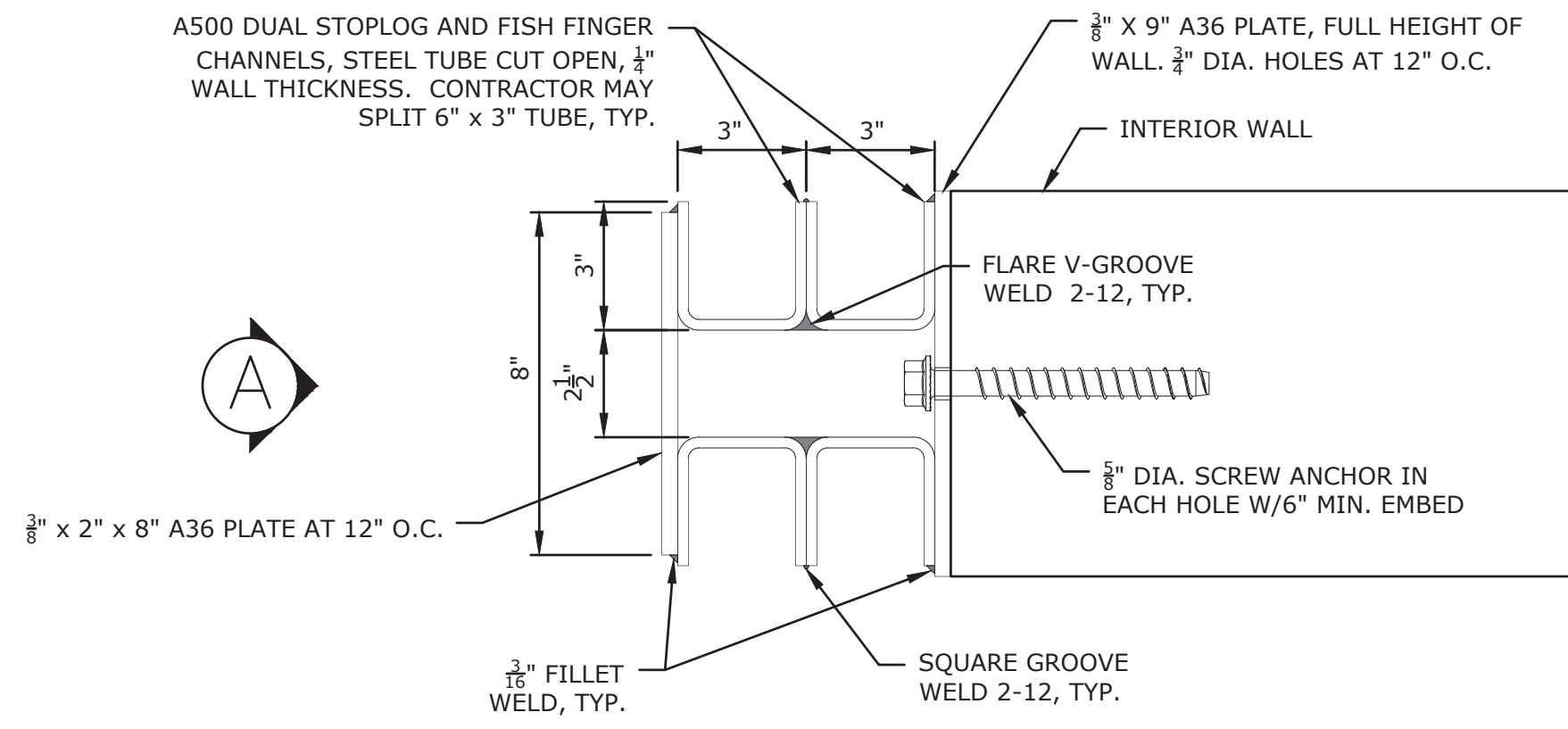


DETAIL - BEAM BEARING ③
SCALE: 3" = 1'-0"

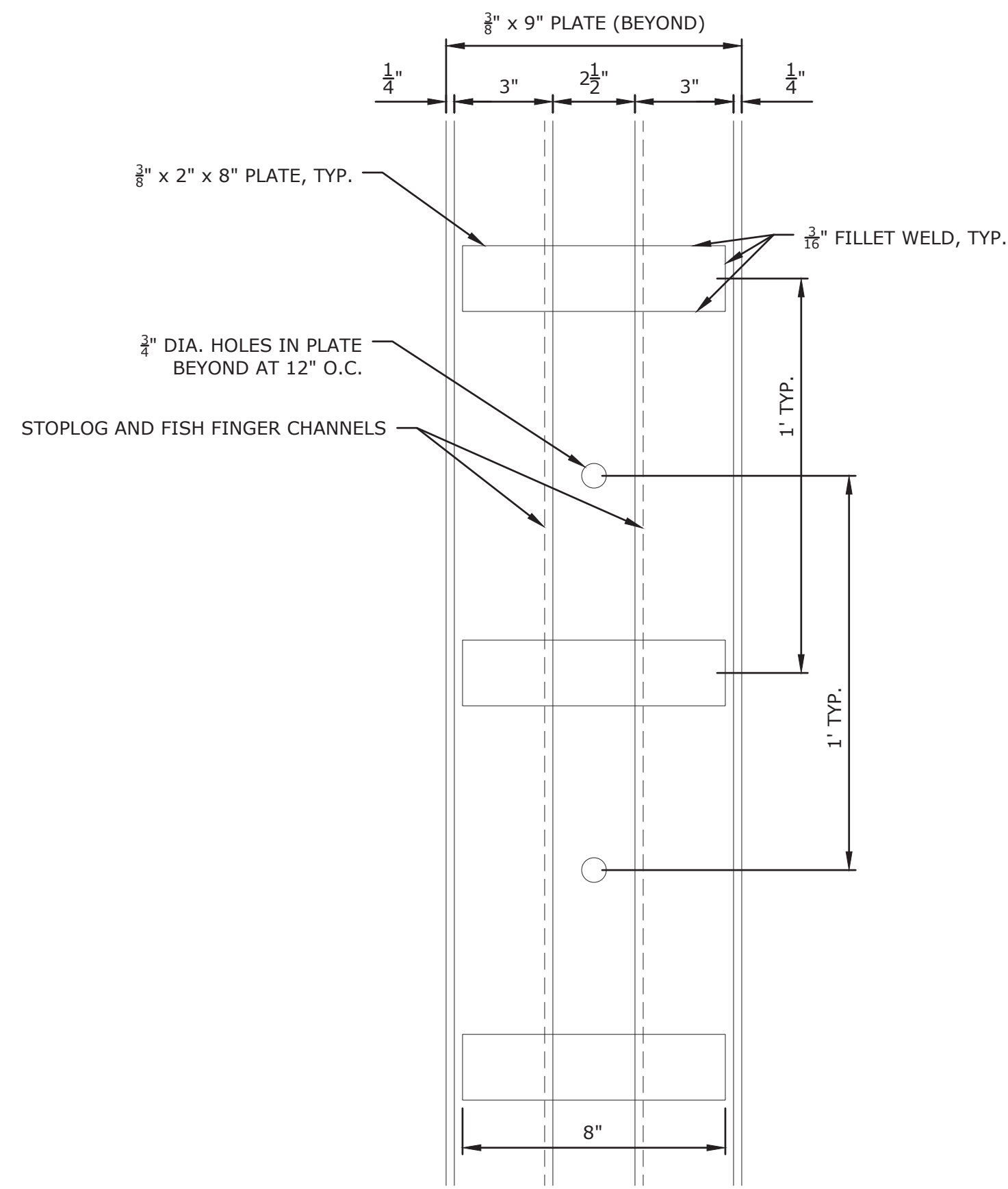
AFFIX SEAL: DUCKS UNLIMITED, INC.
ON:

DETAILS - PRECAST PLANK BEAMS
EAST TWIN LAKE ENHANCEMENTS
EAST TWIN LAKE
HANCOCK COUNTY, IOWA

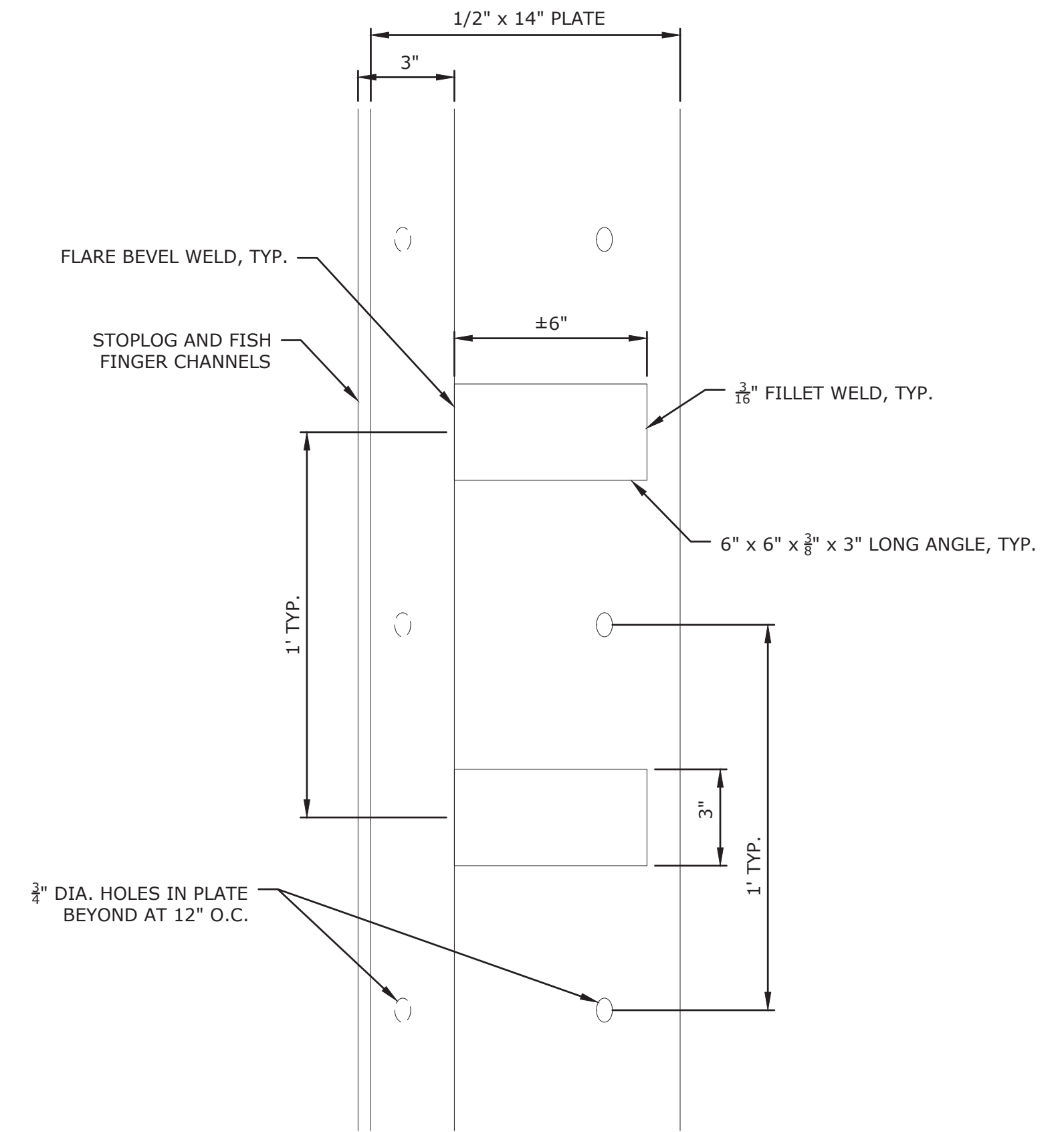
Revision	Sheet	Revisions	Date	By



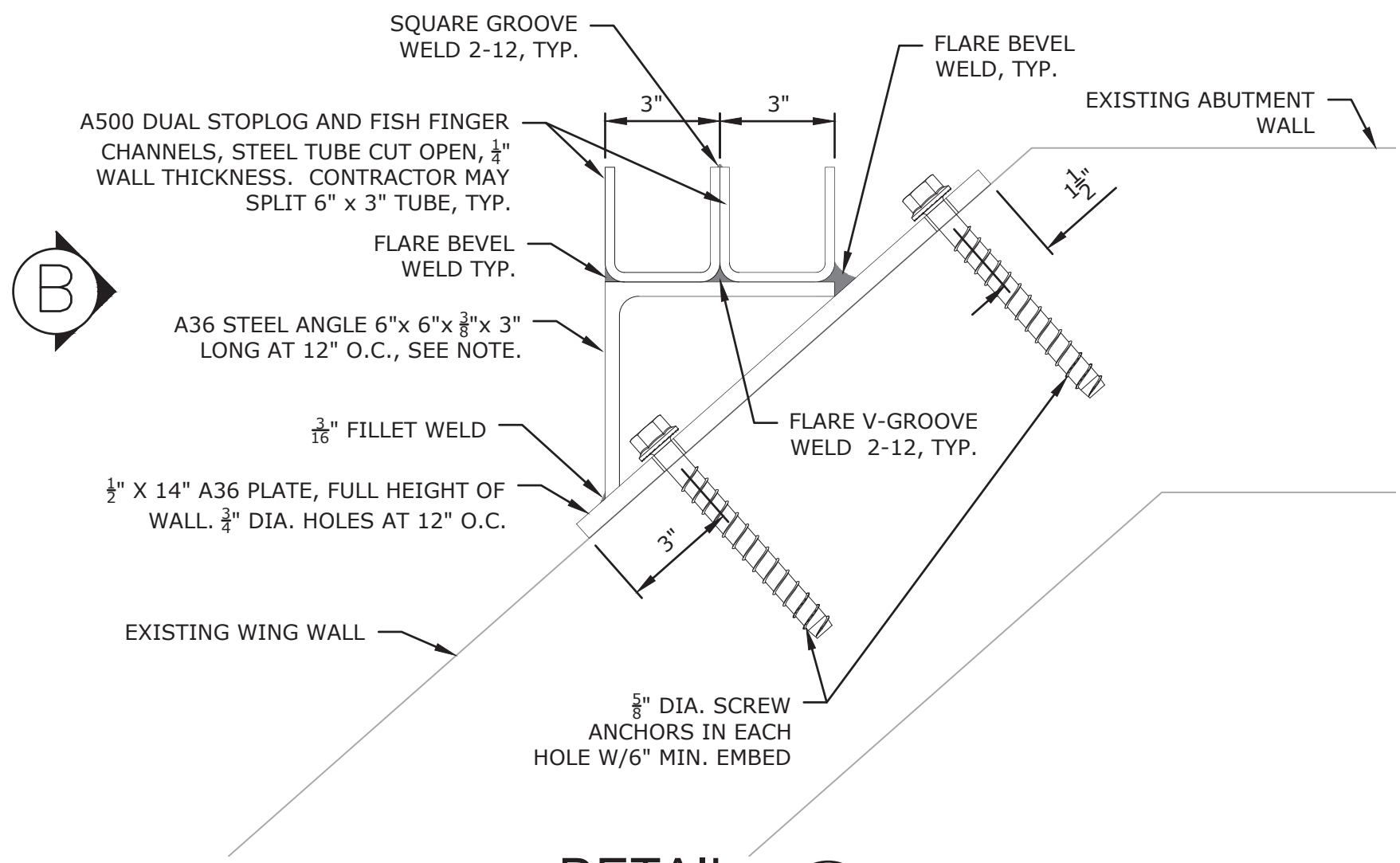
DETAIL 1
SCALE: 3" = 1'-0"



ELEVATION A
SCALE: 3" = 1'-0"



ELEVATION B
SCALE: 3" = 1'-0"



DETAIL 2
SCALE: 3" = 1'-0"

NOTE
CONTRACTOR SHALL FIELD VERIFY ANGLE OF EXISTING ABUTMENT WING WALL AND PROVIDE MODIFIED ANGLE PIECE OR BENT PLATE AS NECESSARY TO MATCH ANGLE OF WING WALL.

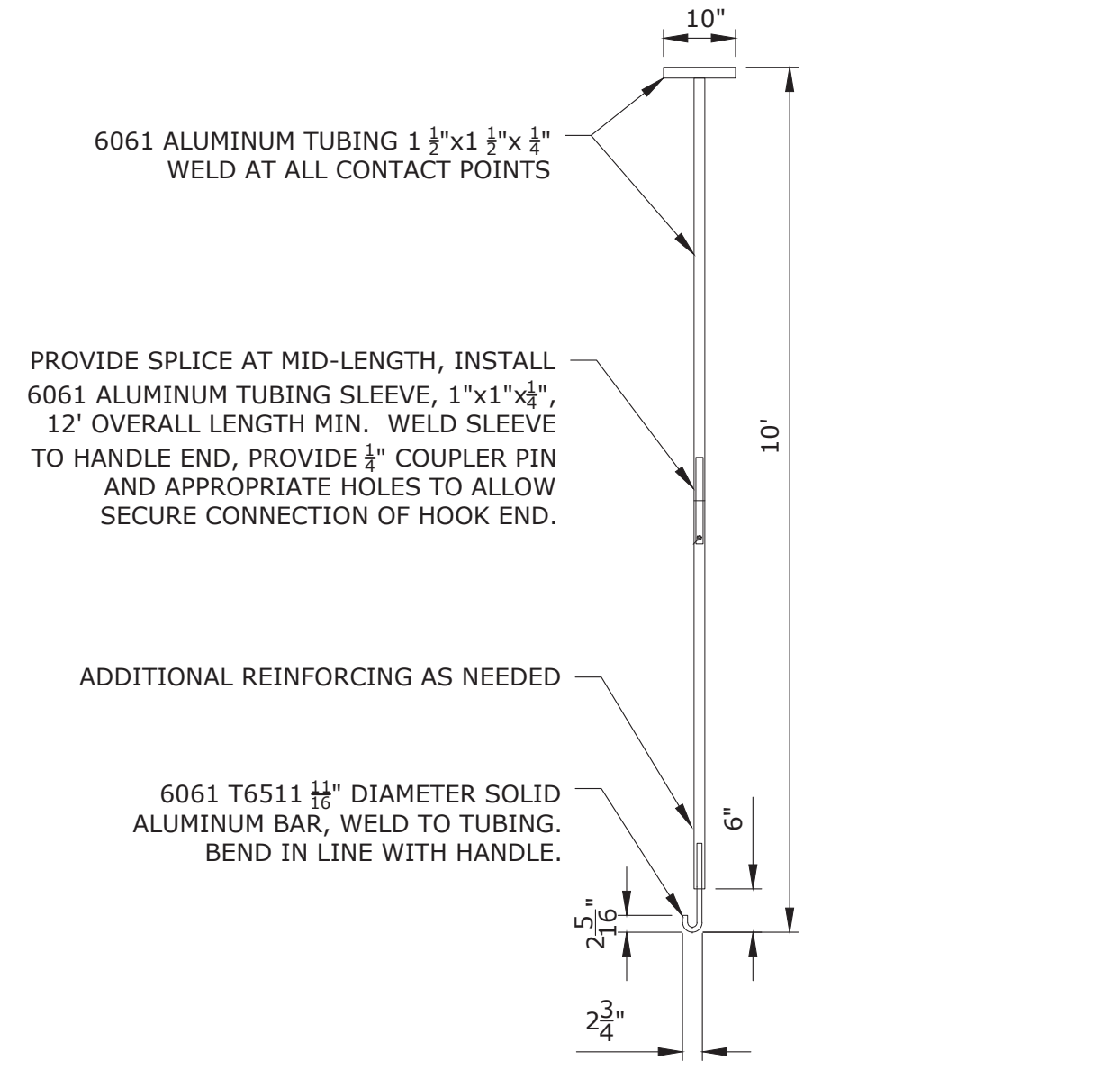
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AFFIX SEAL: DUCKS UNLIMITED, INC.
 ON:

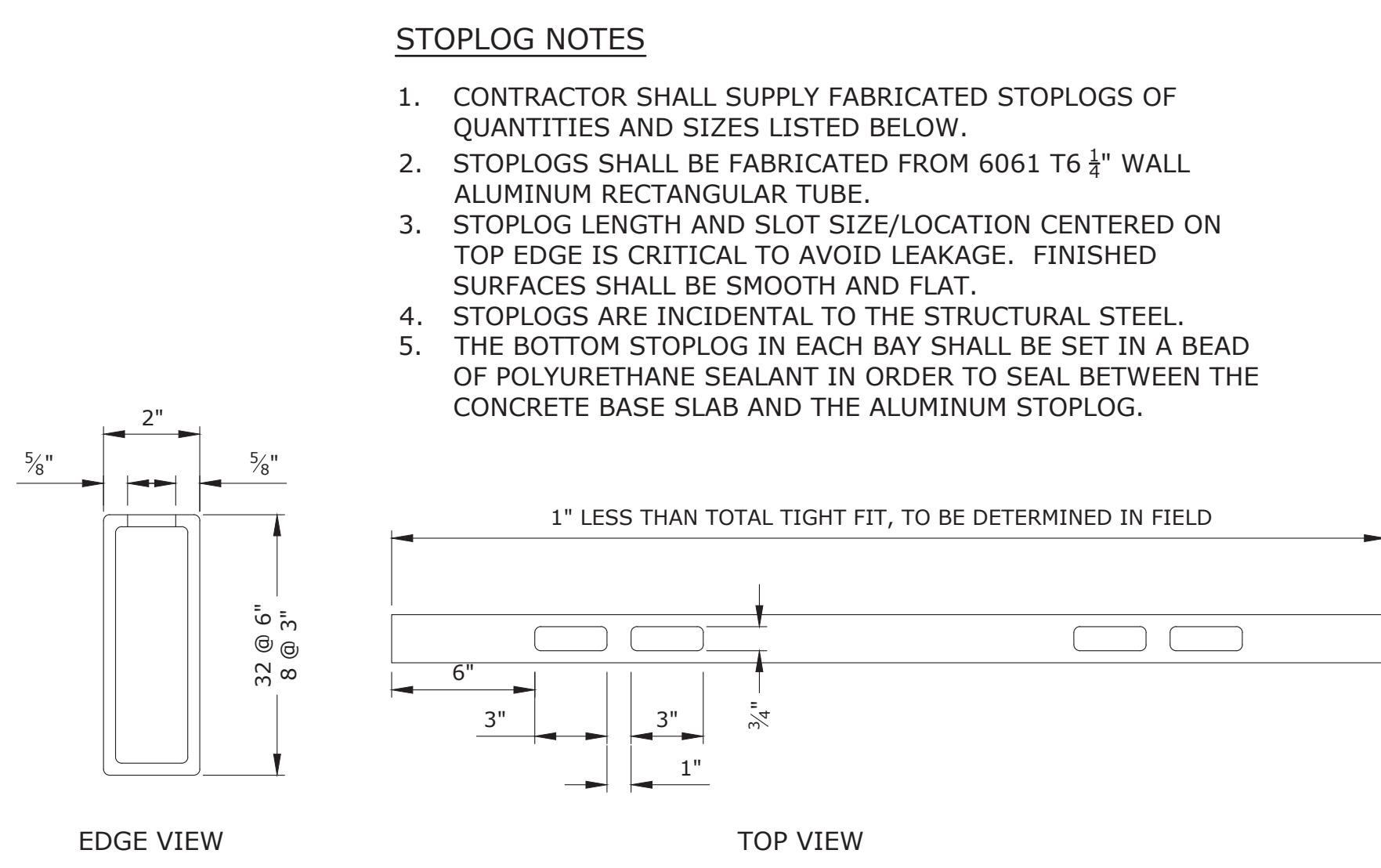
DETAILS - MISC.
 EAST TWIN LAKE
 ENHANCEMENTS
 EAST TWIN LAKE
 HANCOCK COUNTY, IOWA

Revision	Sheet	Revisions	Date	By

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ALUMINUM LIFTING HOOK DETAIL
NOT TO SCALE QUANTITY: 2



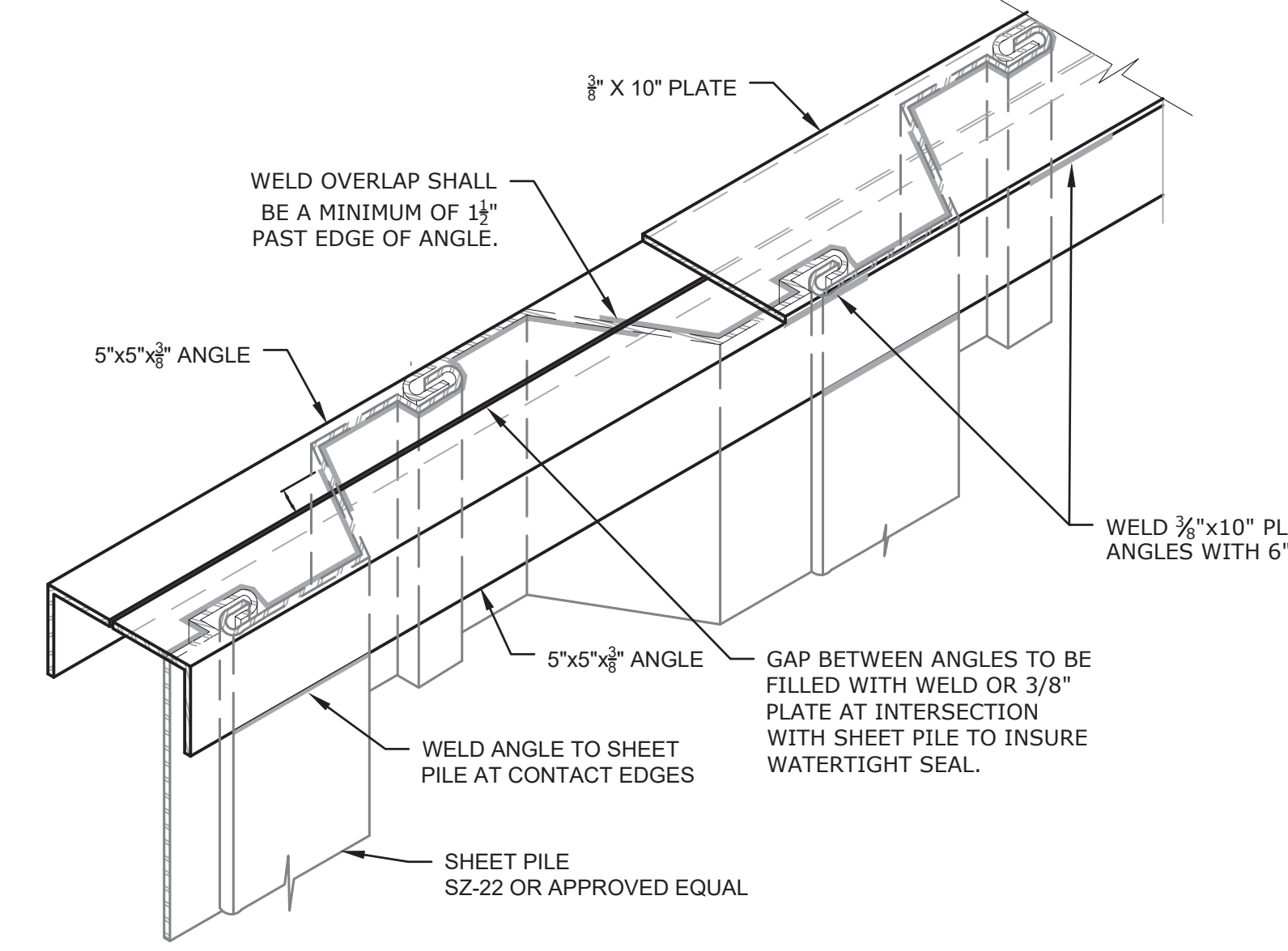
ALUMINUM STOPLOG DETAIL
NOT TO SCALE

STOPLOG NOTES

1. CONTRACTOR SHALL SUPPLY FABRICATED STOPLOGS OF QUANTITIES AND SIZES LISTED BELOW.
2. STOPLOGS SHALL BE FABRICATED FROM 6061 T6 1/4" WALL ALUMINUM RECTANGULAR TUBE.
3. STOPLOG LENGTH AND SLOT SIZE/LOCATION CENTERED ON TOP EDGE IS CRITICAL TO AVOID LEAKAGE. FINISHED SURFACES SHALL BE SMOOTH AND FLAT.
4. STOPLOGS ARE INCIDENTAL TO THE STRUCTURAL STEEL.
5. THE BOTTOM STOPLOG IN EACH BAY SHALL BE SET IN A BEAD OF POLYURETHANE SEALANT IN ORDER TO SEAL BETWEEN THE CONCRETE BASE SLAB AND THE ALUMINUM STOPLOG.

GENERAL NOTES

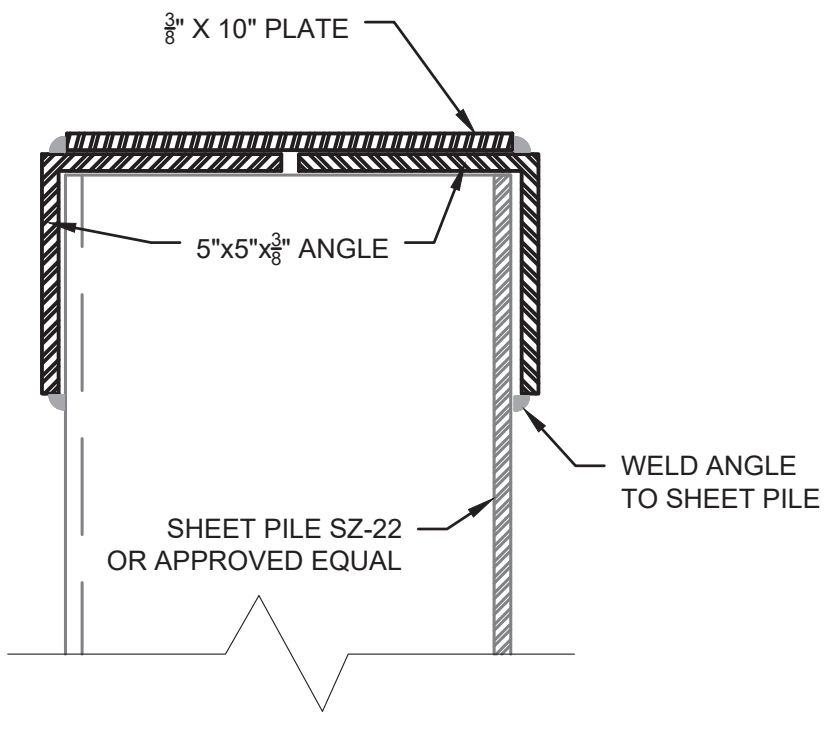
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.
2. ALL MATERIALS INCLUDING HARDWARE SHALL BE HOT DIPPED GALVANIZED UNLESS OTHERWISE NOTED.
3. ALL ANCHORS SHALL BE DRILLED AND EPOXIED WITH HILTI HIT-HY 200 OR APPROVED EQUAL, 8-INCH MINIMUM EMBEDMENT UNLESS NOTED OTHERWISE. DRILLED HOLES SHALL BE SIZED, BRUSHED, BLOWN OUT, AND CLEANED PER EPOXY MANUFACTURERS INSTRUCTIONS.
4. ALL BOLTED CONNECTIONS AND ANCHORS SHALL INCLUDE FLAT WASHERS, LOCK WASHERS, AND NUTS AS APPROPRIATE.
5. ALL STEEL TO STEEL CONTACT POINTS SHALL BE FULLY WELDED UNLESS A BOLTED CONNECTION OR STITCH WELD IS NOTED.
6. ALL FABRICATING AND WELDING SHALL BE COMPLETED PRIOR TO HOT DIP GALVANIZING.
7. SHIMMING, GROUTING, ADJUSTING, LEVELING, AND OTHERWISE COMPLETING THE INSTALLATION OF FABRICATED ITEMS IN A WORKMAN-LIKE MANNER IS INCIDENTAL.



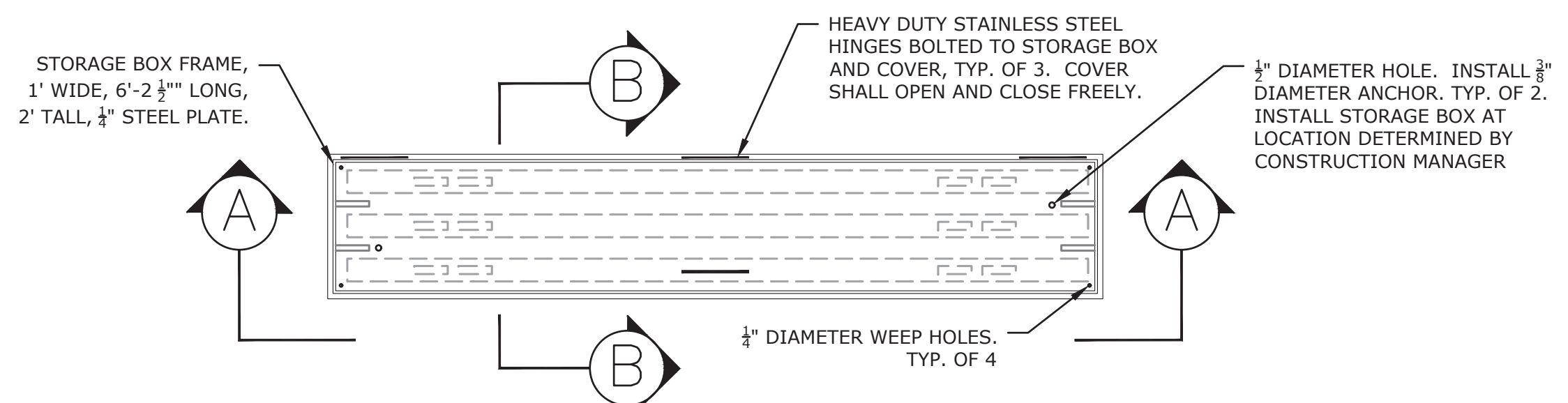
SHEET PILE CAP FABRICATION DETAIL
NOT TO SCALE

SHEET PILE AND PILE CAP NOTES:

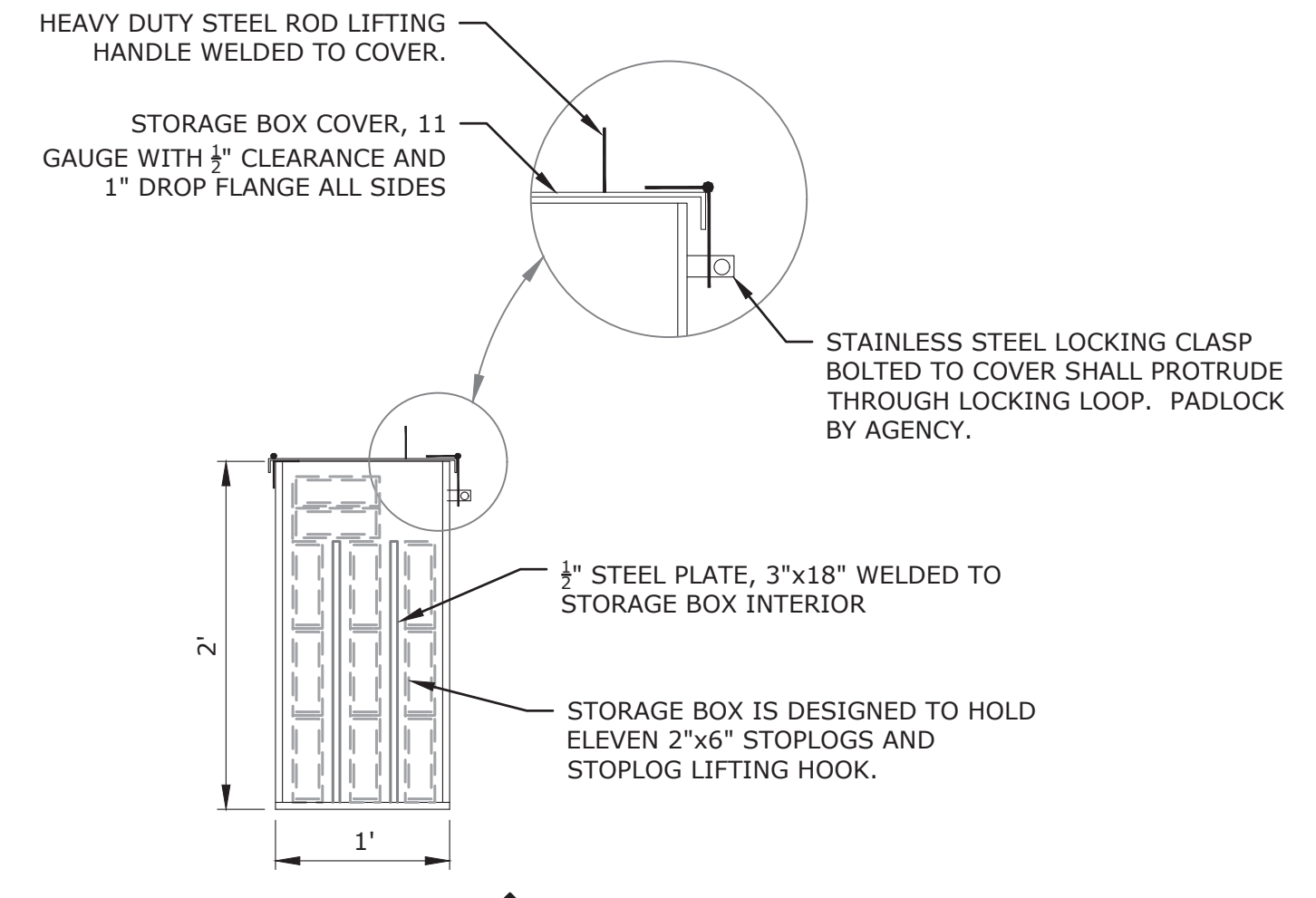
1. ALL WELDS TO BE 1/4" FILLET WELDS (SEE DU SPECIFICATIONS).
2. ALL WELDS ARE SUBJECT TO LAMPING, ANY AREAS FAILING WILL NEED TO BE RE-WELDED PRIOR TO ACCEPTANCE.
3. TOP OF SHEET PILE SHALL BE TRIMMED TO TO GRADE INDICATED ON THIS PLAN AND TO REMOVE ANY DAMAGED AREAS FROM DRIVING OPERATIONS. ANY TRIMMING OVER 3" SHALL BE CONSIDERED CUT-OFF AND WILL BE DEDUCTED FROM THE COST OF SHEET PILE INSTALLATION.
4. PILE CAP IS NOT REQUIRED TO BE WATERTIGHT. WELDS SHALL CONSIST OF A 6" LONG BEAD AT 18" OC. MIN.
5. CAP WIDTH SHALL BE UNIFORM ALONG THE LENGTH OF THE SHEET PILE WALL.
6. WELDED EMBED STUDS OR SIMILAR ARE REQUIRED AT 18" O.C., 3" BELOW TOP OF PILE CAP ADJACENT TO POURED CONCRETE OR FLOWABLE MORTAR.



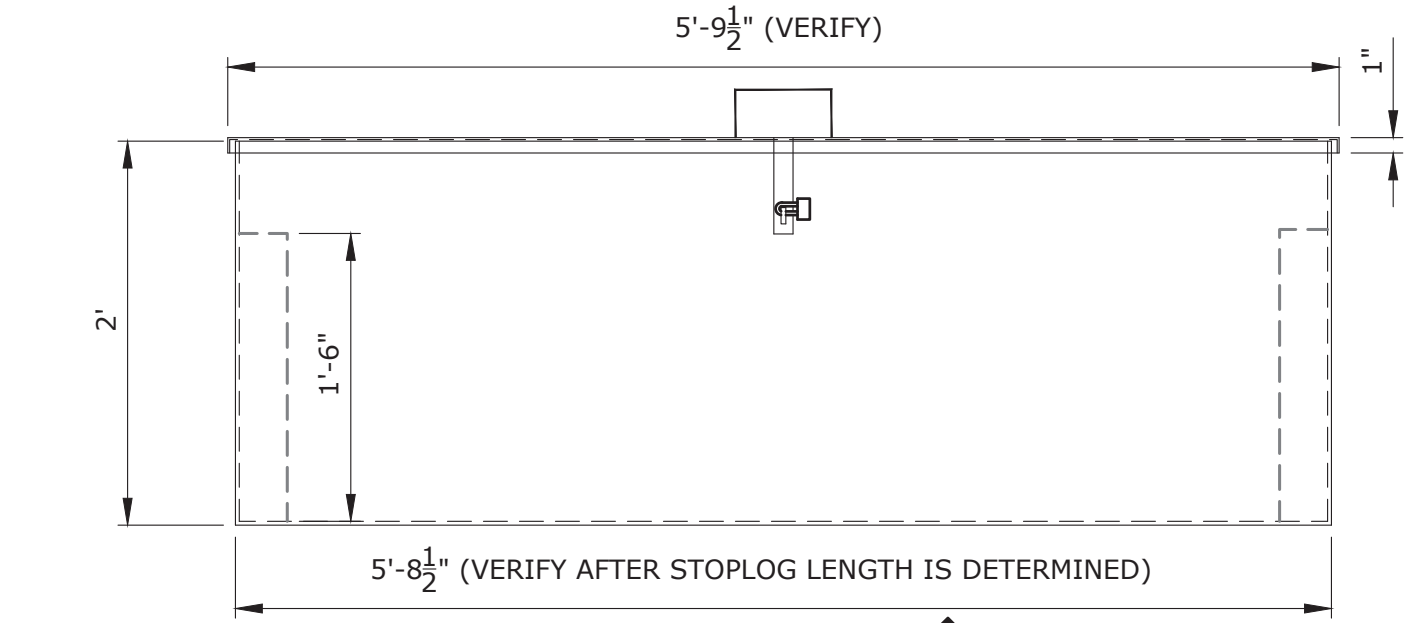
PILE CAP SECTION VIEW
NOT TO SCALE



PLAN VIEW - STOPLOG STORAGE BOX DETAIL
NOT TO SCALE QUANTITY: 1



SECTION
NOT TO SCALE



SECTION
NOT TO SCALE



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DEXTER, MICHIGAN 48130
(734) 623-2000
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AFFIX SEAL: DUCKS UNLIMITED, INC.
ON:

Revision	By	Date

DETAILS - MISC.
EAST TWIN LAKE
ENHANCEMENTS
EAST TWIN LAKE
HANCOCK COUNTY, IOWA

CAD FILE:
IA-356-1 Details

DESIGNED BY: JGW

DRAWN BY: JGW

SURVEYED BY: JGW/AB

BIOLOGIST: MS

DATE:
09/09/24

PROJECT NUMBER:
US-IA-356-1

C306

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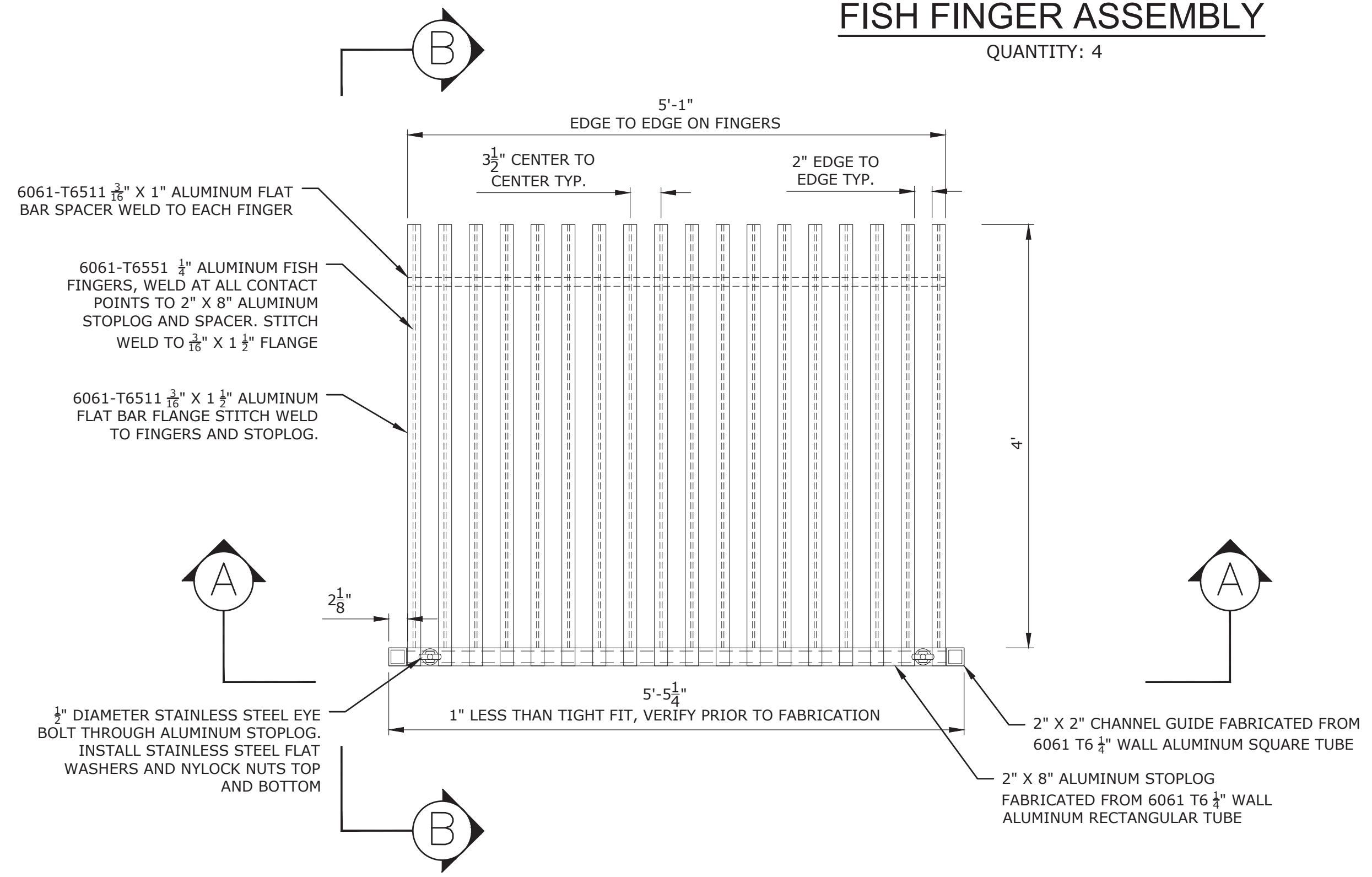
GENERAL NOTES

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AFFIX SEAL: DUCKS UNLIMITED, INC.
 ON:

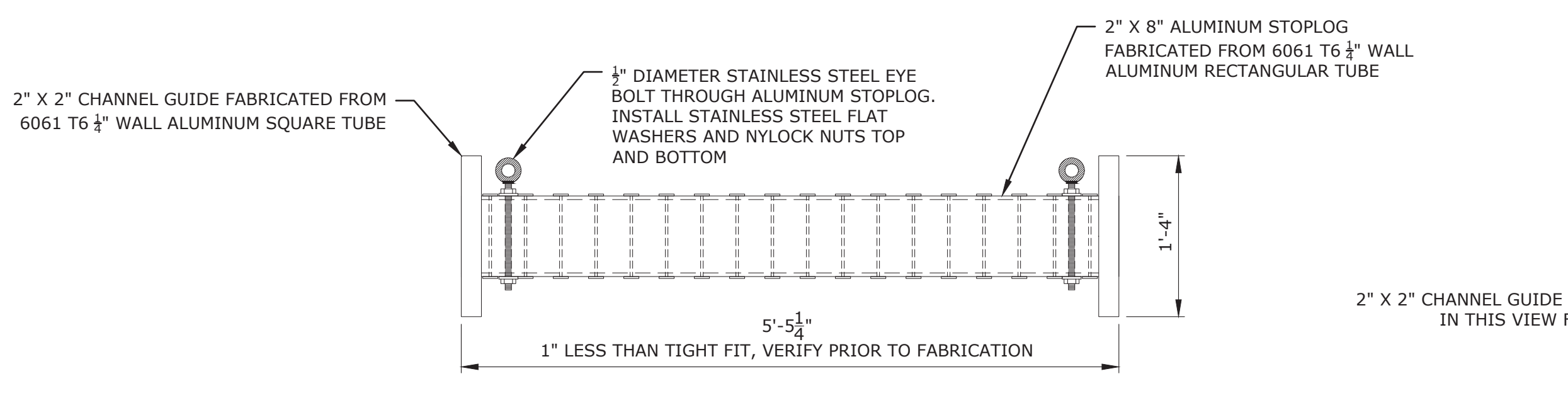
FISH FINGER ASSEMBLY

QUANTITY: 4



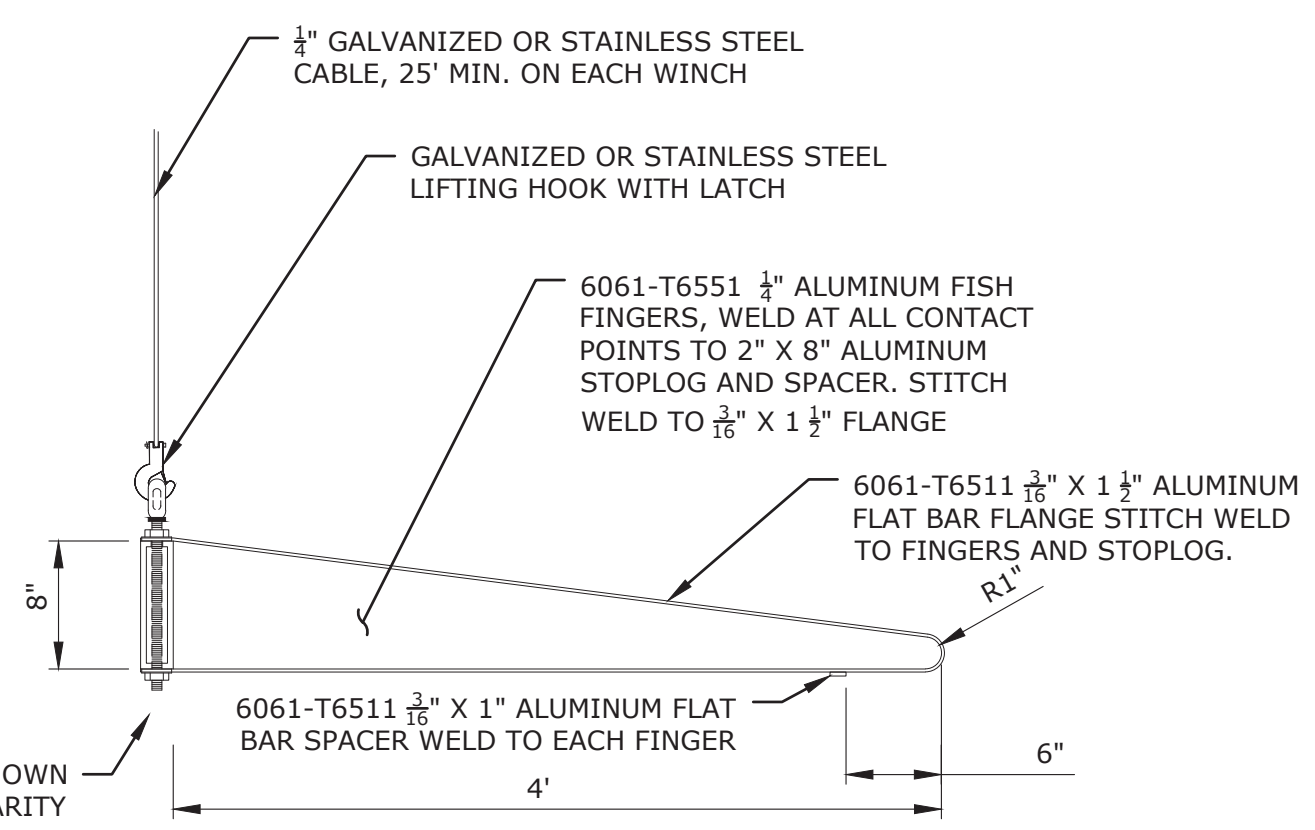
PLAN VIEW - FISH FINGER DETAIL

1" = 1"



SECTION A

1" = 1"

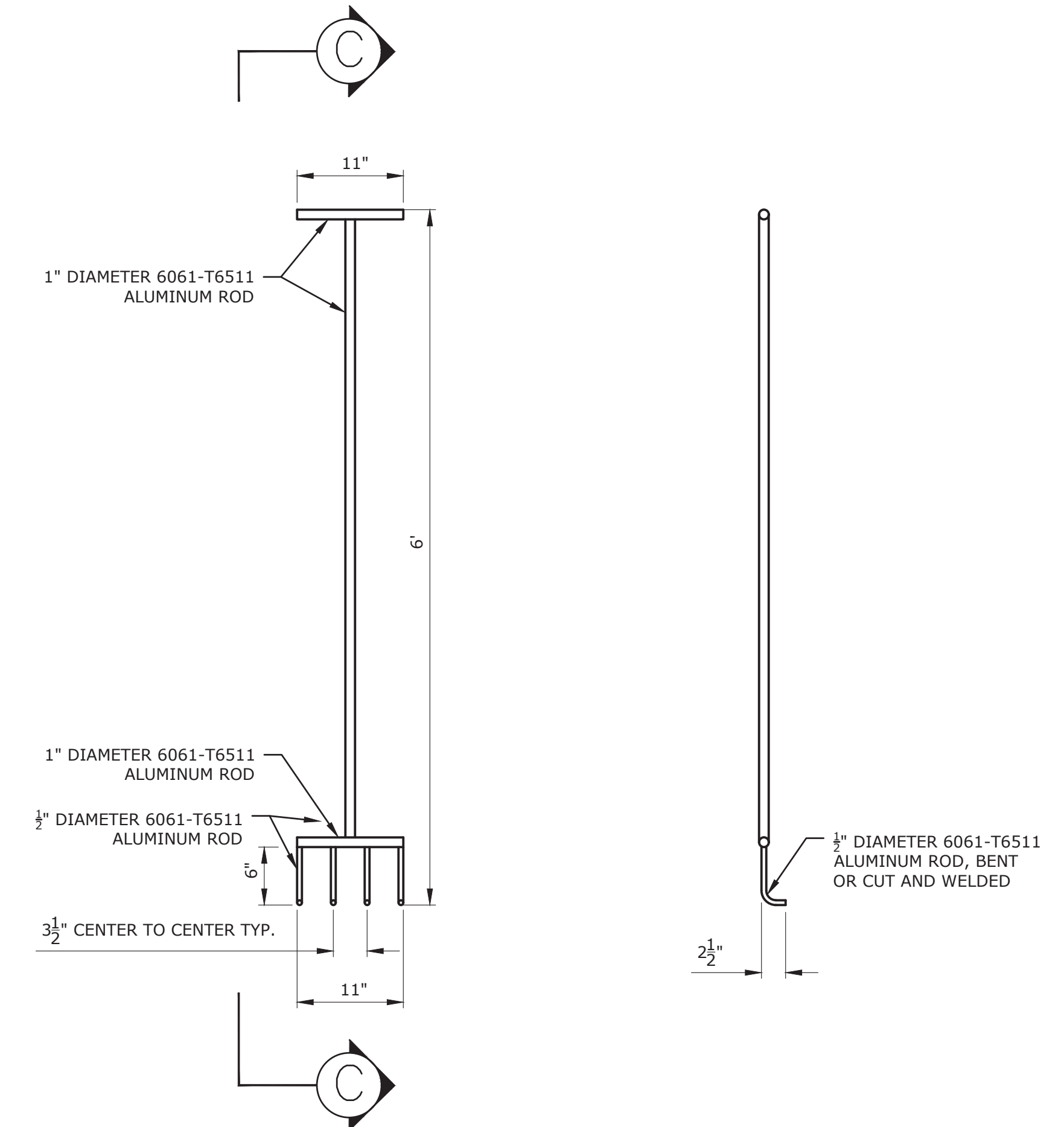


SECTION B

1" = 1"

CLEANING RAKE

QUANTITY: 1



CLEANING RAKE DETAIL

1" = 1"

SECTION C

1" = 1"

DETAILS - MISC.
 EAST TWIN LAKE
 ENHANCEMENTS
 EAST TWIN LAKE
 HANCOCK COUNTY, IOWA

Revision	Sheet	Revisions	Date	By