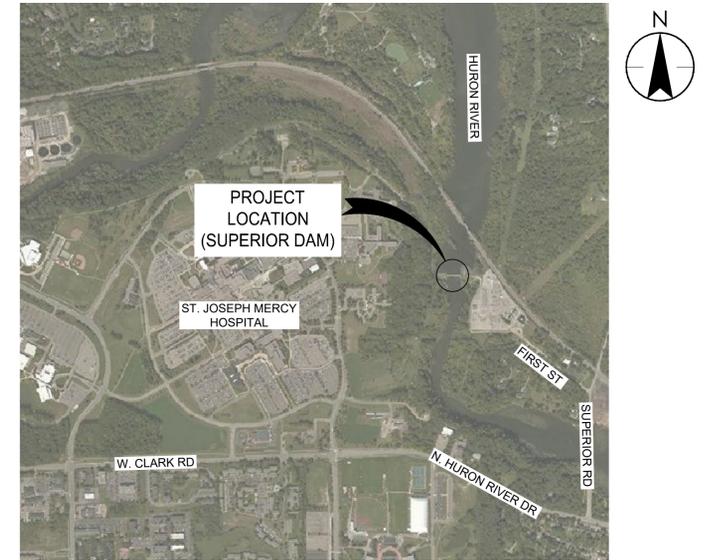




CITY OF ANN ARBOR

# SUPERIOR DAM GATE COATING AND REPAIRS ITB #4695

BID SET  
NOVEMBER, 2021  
PROJECT NUMBER: 2075151510



PROJECT LOCATION MAP  
NOT TO SCALE

SITE ADDRESS:  
GATED ENTRANCE ADJACENT TO  
6000 FIRST ST.  
YPSILANTI, MI 48198  
  
LOCATION OF STOPLOG STORAGE:  
BARTON DAM PUMP STATION  
1010 HURON RIVER DRIVE  
ANN ARBOR, MI 48103

DRAWING INDEX:

DWG	SHEET	TITLE
G-001	01	COVER SHEET
G-002	02	STEEL FABRICATION AND PAINTING
C-130	03	EXISTING CONDITIONS AND SITE PREPARATION
C-131	04	NEW WORK PLAN
S-231	05	GATE PLAN AND SECTIONS
S-531	06	GATE DETAILS I

REFERENCE DRAWINGS (HARZA, 1971)

520 M 330	SPILLWAY GATE & GUIDES SHEET 1
520 M 331	SPILLWAY GATE & GUIDES SHEET 2
520 M 332	SPILLWAY GATE HOIST & TRUNNION DETAILS

Paul J. Malocha, P.E.  
#53776



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www.stantec.com

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**Notes**

2	BID SET	PJM	PJM	2021.11.17
1	PRELIMINARY PLAN	PJM	PJM	2021.11.01
<b>Issued</b>		By	Appd	YYYY.MM.DD
File Name: 151510_G-002		BWA	PJM	PJM
		Dwn.	Dgnt.	Chkd.
				YYYY.MM.DD

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Client/Project  
CITY OF ANN ARBOR

SUPERIOR DAM GATE  
COATING AND REPAIRS  
ANN ARBOR, MI

Title  
STEEL FABRICATION AND  
PAINTING

Project No.	Scale
2075151510	
Revision	Sheet
0	02 of 09
<b>G-002</b>	

**1 - GENERAL NOTES**

- A. ALL STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH OTHER PROJECT DRAWINGS AND SPECIFICATIONS.
- B. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS, DIMENSIONS, ELEVATIONS, ETC., IN FIELD AND NOTIFY THE OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES PRIOR TO THE START OF CONSTRUCTION OR SHOP DRAWINGS.
- C. THE DRAWINGS ARE INTENDED TO REQUIRE AND TO INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT PROPER FOR THE WORK.
- D. ALL WORK SHALL COMPLY WITH ALL LOCAL, STATE AND NATIONAL CODES AND REQUIREMENTS.
- E. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND SAFETY PROCEDURES. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACTS OR OMISSIONS OF THE CONTRACTOR, SUBCONTRACTORS OR THEIR AGENTS OR EMPLOYEES OR ANY OTHER PERSONS PERFORMING ANY OF THE WORK.
- F. OBSERVE ALL OSHA / MIOSHA AND OTHER APPLICABLE SAFETY REQUIREMENTS INCLUDING THE USE OF SAFETY GLASSES, USE OF HARD HATS, ALL OTHER APPROPRIATE PERSONAL PROTECTION EQUIPMENT, AND PROTECTION OF AREA WHEN WORKING OVERHEAD. THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR CONSTRUCTION SAFETY AT ALL TIMES.
- G. COORDINATE WORK OF ALL DISCIPLINES (STRUCT., ELECT., ETC.) WITH EXISTING CONDITIONS, SPECIAL REQUIREMENTS, CONSTRUCTION SCHEDULE AND OTHER CONTRACTORS PERFORMING WORK AT THE SITE.
- H. THE CONTRACTOR SHALL DESIGN AND PROVIDE ANY TEMPORARY SHORING, BRACING, ETC., AS NEEDED FOR THE WORK SO AS NOT TO ENDANGER THE WORKERS OR THE STRUCTURAL INTEGRITY OF ANY EXISTING FEATURE.
- I. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR ANY DAMAGE DONE TO EXISTING FEATURES AS A RESULT OF THIS WORK. DAMAGED ITEMS SHALL BE REPLACED IN KIND AND AT NO ADDITIONAL COST TO THE OWNER.
- J. SEE SPECIFICATIONS FOR FULL SCOPE OF REQUIREMENTS APPLICABLE TO THIS PROJECT.
- K. SHOP DRAWINGS: REPRODUCTION OF DESIGN DRAWINGS SHALL NOT BE PERMITTED FOR SHOP DRAWING SUBMISSIONS. THE GENERAL CONTRACTOR SHALL REVIEW AND PROVIDE REVIEW STAMP ON SHOP DRAWING SUBMISSIONS PRIOR TO SUBMITTAL TO ENGINEER INDICATING UNDERSTANDING AND ACCEPTANCE OF SUBMITTAL AND CONFIRMING CONFORMANCE TO PROJECT PLANS/SPECIFICATIONS.
- L. PRIOR TO PERFORMING ANY METAL REPAIRS, ABRASIVE BLAST TANTER GATE AND COORDINATE GATE INSPECTION WITH ENGINEER. PARTICULAR REPAIRS SHALL BE FIELD DETERMINED BY CONSULTATION BETWEEN THE OWNER, CONTRACTOR AND ENGINEER.
- M. TRUNNION PIN AND BUSHING REPLACEMENT ARE INDICATED AS OPTIONAL WORK. TRUNNION HUB IS TO REMAIN IN PLACE ON THE PIN UNLESS PIN AND BUSHING REPLACEMENT IS SELECTED BY THE OWNER, ON A CASE BY CASE BASIS. OTHER PORTIONS OF THE GATE MAY BE REMOVED AT THE CONTRACTOR'S DISCRETION FOR COMPLETING SPECIFIED WORK.
- N. DIVERS WILL BE REQUIRED TO SET THE STOP LOGS AND CLEAR DEBRIS FROM THE CHANNELS.

**2 - METAL COMPONENTS**

- A. STEEL WORK INCLUDES ALL COMPONENTS OF GATES (BEAMS, COLUMNS, CHANNELS, ANGLES, JOISTS, LINTELS, BEARING PLATES, ETC.), AS INDICATED ON THE DRAWINGS.
- B. COMPLY WITH THE FOLLOWING CODES AND STANDARDS:
  - 1. USACE ETL 1110-2-584
  - 2. AISC STEEL CONSTRUCTION MANUAL.
  - 3. AMERICAN WELDING SOCIETY (AWS) D1.1 "STRUCTURAL WELDING CODE STEEL", LATEST EDITION.
  - 4. CURRENT OSHA ERECTION AND FABRICATION REQUIREMENTS.
- C. MATERIALS:
  - 1. W SHAPES: ASTM A992
  - 2. STANDARD ANGLES, BARS AND PLATES: ASTM A572 G50.
  - 3. HIGH STRENGTH BOLTS: ASTM F3125, GRADE A325.
  - 4. WELDS: E70XX ELECTRODES.
  - 5. SEAL BOLTS/SCREWS: ASTM F-593 OR A193, 316 SS.
  - 6. SEAL NUTS: ASTM B21, C46400, HALF HARD, NAVAL BRASS (MAIN AND JAM NUTS AND WASHERS)
  - 7. STAINLESS STEEL PLATES: ASTM A240, 316 SS
  - 8. STAINLESS STEEL SHAPES: ASTM A276, 316SS.
- D. ALL STRUCTURAL STEEL SHOP CONNECTIONS SHALL BE WELDED AND ALL FIELD CONNECTIONS SHALL BE HIGH-STRENGTH BOLTED UNLESS SHOWN OTHERWISE.
- E. ALL BOLTS SHALL BE TIGHTENED TO THE SNUG TIGHT CONDITION UNLESS NOTED OTHERWISE. SLIP CRITICAL BOLTS SHALL BE USED AT ALL MOMENT CONNECTIONS.
- F. PROVIDE S.S. ANCHORS AND OTHER DEVICES TO BE BUILT INTO CONCRETE WORK, UNLESS NOTED OTHERWISE.
- G. STEEL SHALL RECEIVE PAINT SYSTEM AS PER PAINT SPECIFICATIONS (SECTION 09900).
- H. SHOP DRAWINGS: SUBMIT SHOP DRAWINGS INCLUDING COMPLETE DETAILS AND SCHEDULES FOR FABRICATION AND ASSEMBLY OF STRUCTURAL STEEL MEMBERS, PROCEDURES AND DIAGRAMS.
- I. ALL FASTENERS THAT CONNECT FROM DRY TO WET SIDE SHALL HAVE A NEOPRENE GASKET ON THE WET SIDE.

**3 - FABRICATION**

- A. ALL WELDS TO BE CONTINUOUS FILLET 1/4" UNLESS NOTED OTHERWISE.
- B. ALL CORNERS AND EDGES IN CONTACT WITH RUBBER SEALS TO BE ROUNDED. ALL CUT OR DRILLED EDGES SHALL BE SMOOTHENED AND DEBURRED.
- C. FOR TOLERANCES SEE SPECIFICATIONS.
- D. SEALS SHALL BE CONTINUOUS, WATERTIGHT AND SPLICES IF REQUIRED SHALL BE VULCANIZED. NUMBER OF SPLICES SHALL BE MINIMIZED.
- E. WELDS ARE TO BE GROUND FLUSH WHERE IN CONTACT WITH SEALS.
- F. ALL SURFACE FINISHES SPECIFIED IN  $\mu$  INCHES TEXTURE.
- G. UNLESS NOTED OTHERWISE, FAYING SURFACES SHALL BE FINISHED TO 125 $\mu$  INCHES.
- H. APPROXIMATE ANGLES AND DIMENSIONS SHOWN ON DRAWINGS, REPLACEMENT COMPONENTS SHALL BE FABRICATED TO MATCH EXISTING, BASED ON THE CONTRACTORS FIELD MEASUREMENTS.
- I. ROLLED BATONS ANGLES FOR SIDE SEAL MOUNTING MUST BE FLAT ON THE SIDE FACING THE WALL. BEFORE PAINTING, ROLLED ANGLES SHALL BE INSPECTED FOR FLATNESS AND RELAXED AS REQUIRED.
- J. APPLY NEVER-SEIZE TO THREADS BEFORE FASTENING SS NUTS AND BOLTS. THIS IS NOT REQUIRED WITH BRASS NUTS.
- K. UNLESS OTHERWISE NOTED, ALL SEAL FASTENERS (INCLUDING CLAMP BAR, ANGLES, ETC.) SHALL HAVE A BRASS MAIN NUT AND LOCK/JAM NUT.

**4-PAINTING**

- A. IT IS THE INTENTION THAT ALL EXISTING AND NEW REPLACEMENT CARBON STEEL PARTS OF GATES AND ASSOCIATED EQUIPMENT, EXCEPT THOSE EXISTING PIECES MARKED FOR REPLACEMENT, ARE TO BE CLEANED AND PAINTED. THIS INCLUDES, BUT IS NOT LIMITED TO: SKIN PLATE, BEAMS, CHANNELS, GATE ARMS, HOIST BAY COVER, TORQUE TUBE, ETC.
- B. WHERE POSSIBLE ITEMS SHALL BE SHOP PAINTED OFF SITE. OTHER ITEMS SHALL BE PAINTED IN PLACE WITH CONTAINMENT.
- C. PROTECT ALL CONCRETE FROM BLAST MEDIA AND BLASTING PROCESS.
- D. PROTECT ALL MECHANICAL, ELECTRICAL AND OTHER COMPONENTS NOT INTENDED TO BE BLASTED. PROTECT GREASED LIFT CHAINS.
- E. TESTING CONFIRMS THE PRESENCE OF LEAD PAINT ON THESE PROJECT SITES. SEE APPENDIX OF THE SPECIFICATIONS FOR TEST RESULTS. THE CONTRACTOR SHALL ADHERE TO ALL REQUIREMENTS OF SECTION 01370 (LEAD BASED PAINT REMOVAL) IN THE SPECIFICATIONS.
- F. EXISTING EMBEDDED STAINLESS STEEL SEALING PLATES SHALL NOT BE PAINTED. THE CONTRACTOR SHALL REMOVE ANY EXISTING COATINGS OR DIRT FROM THE EXISTING S.S. SEALING PLATES AS PART OF INSTALLING NEW SEALS.
- G. REMOVE ANY MANUFACTURER NAMEPLATES, TAGS, ETC PRIOR TO BLASTING AND PAINTING. REATTACH WITH STAINLESS STEEL RIVETS.
- H. BLAST MEDIA AND FUGITIVE DUST SHALL BE FULLY CONTAINED AND IS NOT PERMITTED TO WASH INTO THE WATERWAYS.
- I. EACH GATE SHALL BE ABRASIVE BLASTED TO REMOVE COATINGS AND RUST TO EXPOSE CLEAN METAL FOR AN INSPECTION BY THE ENGINEER. BASED ON THE INSPECTION, ADDITIONAL METAL REPAIRS AND REPLACEMENTS SHALL BE DETERMINED. AFTER MAKING SPECIFIED REPAIRS, EACH GATE SHALL BE BLASTED A SECOND TIME TO NEAR WHITE METAL. PRIOR TO COATINGS APPLICATIONS, INDEPENDENT PAINT INSPECTION IS REQUIRED FOR THE SECOND BLASTING BUT NOT THE FIRST.
- J. UNLESS NOTED OTHERWISE, ALL METAL TO BE COATED SHALL BE PREPARED SSPC-SP 10 NEAR WHITE METAL PRIOR TO PLACING COATINGS.
- K. THE TRUNNION BEARINGS SHALL BE PROTECTED DURING CLEANING AND PAINTING.
- L. IT IS EXPECTED THAT THE GATES WILL HAVE TO BE RAISED UP TO COMPLETE THE CLEANING AND PAINTING. NOTE THAT THERE IS MINIMAL SPACE AVAILABLE BETWEEN THE CLOSED GATE AND THE STOP LOGS.

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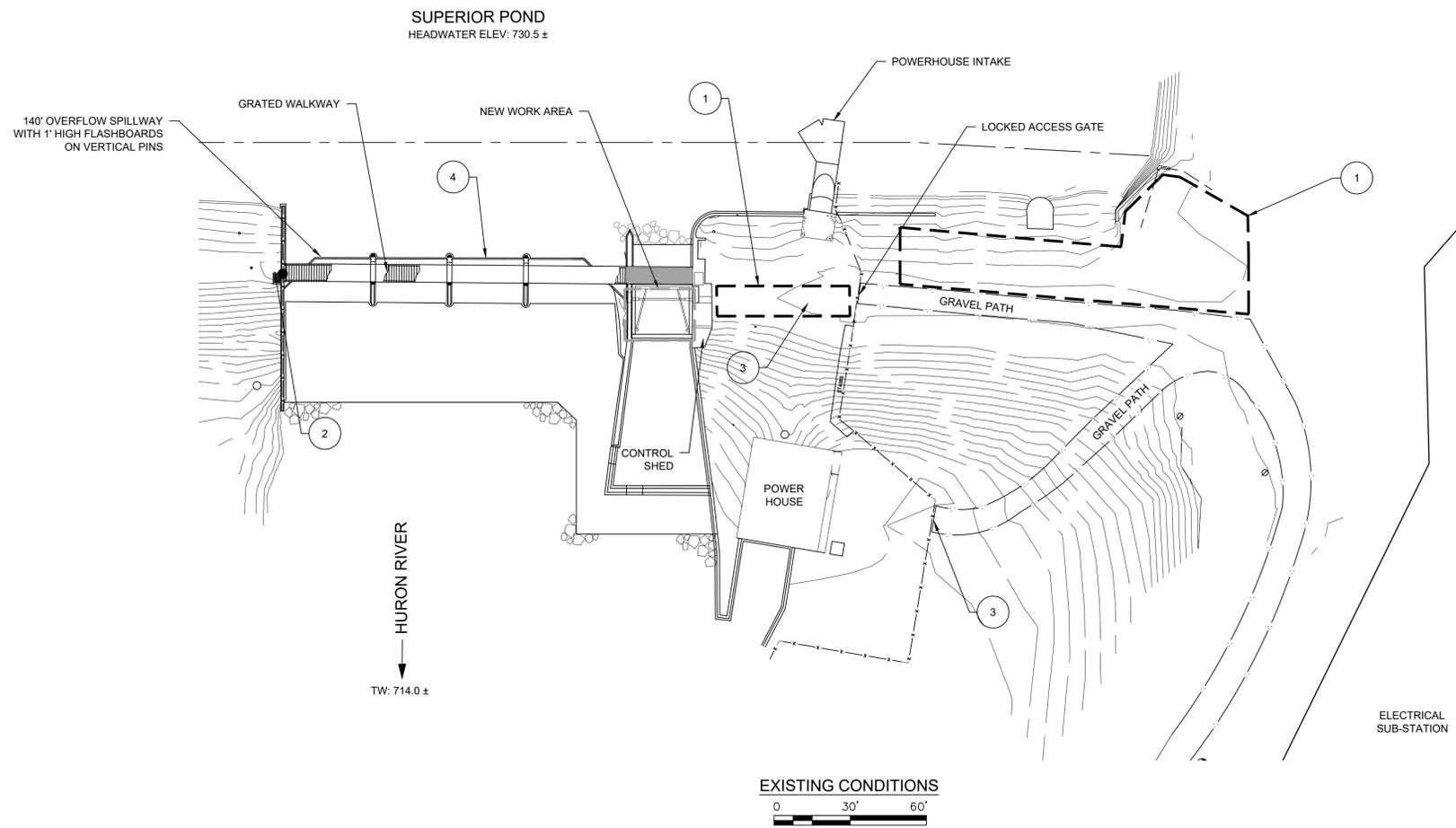
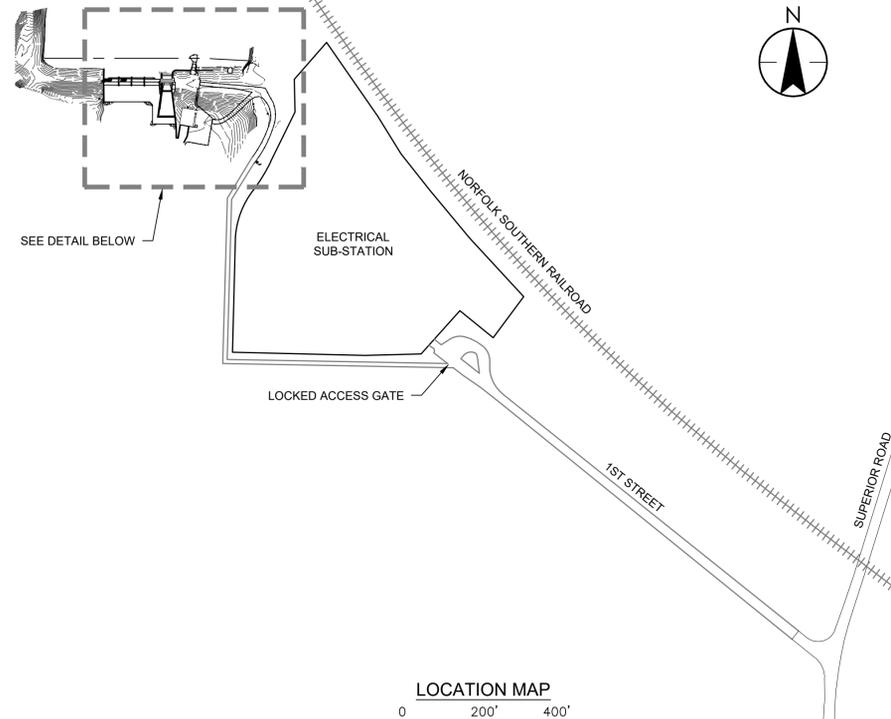
Notes

- 1 CONTRACTOR EQUIPMENT AND MATERIAL LAYDOWN.
- 2 INSTALL PEDESTRIAN BARRICADES TO PREVENT ACCESS WHILE WORKING ON THE ACCESS BRIDGE.
- 3 MAINTAIN ACCESS TO POWERHOUSE AND CONTROL SHED.
- 4 THE CITY OF ANN ARBOR WILL OPERATE THE TURBINE. THE CONTRACTOR WILL BE RESPONSIBLE FOR REMOVING DAM FLASH BOARDS AS NEEDED TO MAINTAIN POND LEVEL AND FOR REINSTALLING FLASH BOARDS AT THE END OF THE PROJECT.

TYPICAL FLOWS ARE INDICATED FOR THE CONTRACTOR'S INFORMATION. HIGHER RIVER FLOWS ARE POSSIBLE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING THE WORK THROUGH THE FULL RANGE OF POSSIBLE FLOWS.

HURON RIVER TYPICAL FLOWS (CFS)												
MDEQ "LOW FLOW" ESTIMATE - 1999												
FRQ.	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
50%	310	580	610	520	540	970	1050	710	470	270	230	240
95%	170	270	280	220	230	340	590	380	230	150	130	110

HARMONIC MEAN: 400 CFS  
TURBINE FLOW CAPACITY: 650 CFS ±  
OVERFLOW CAPACITY (1' OF WATER OVER CONCRETE CREST AT 729.5'): 400 CFS ±



2	BID SET	PJM	PJM	2021.11.17
1	PRELIMINARY PLAN	PJM	PJM	2021.11.01
Issued		By	Appd	YYYY.MM.DD
File Name: 151510-C-130		BWA	PJM	PJM
		Dwn.	Dgri.	Chkd.
				YYYY.MM.DD

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Client/Project  
CITY OF ANN ARBOR

SUPERIOR DAM GATE  
COATING AND REPAIRS  
ANN ARBOR, MI

Title  
EXISTING CONDITIONS AND SITE  
PREPARATION

Project No. 20751510	Scale 0 30' 60'
Revision Sheet 0 03 of 09	Drawing No. C-130

Notes

- NEW WORK AREA
- 2 STOPLOGS PROVIDED BY THE CITY OF ANN ARBOR. THE CONTRACTOR SHALL PICK UP STOPLOGS FROM THE CITY'S STORAGE YARD, MAKE REPAIRS AS REQUIRED FOR LEAK-FREE OPERATION AND INSTALL FOR THE DURATION OF THE PROJECT. THE CONTRACTOR SHALL EMPLOY A DIVER TO ASSIST WITH INSTALLATION. STOPLOGS SHALL BE RIGGED SO THEY CAN BE REMOVED WITHOUT THE HELP OF A DIVER. UPON FINAL COMPLETION, THE CONTRACTOR SHALL REMOVE THE STOPLOGS AND RETURN THEM TO THE CITY'S STORAGE YARD.
- 3 CONTRACTOR IS RESPONSIBLE FOR MAINTAINING FLOW THROUGH THE SUPERIOR DAM. IF THE HEADWATER INCREASES, THE CONTRACTOR SHALL REMOVE FLASHBOARDS TO MAINTAIN TYPICAL HEADWATER ELEVATIONS. IN FLOOD CASES, THE CONTRACTOR MAY BE REQUIRED TO REMOVE ONE OR MORE STOPLOGS TO RE-OPEN THE BAY TO FLOW.
- 4 SANDBLAST AND REPAINT TORQUE TUBE, HOIST BASE, CHAIN COVER, TORQUE TUBE SUPPORTS AND ALL RELATED COMPONENTS VISIBLE OR EXPOSED TO WEATHER. INTENT OF THE PROJECT IS THAT ALL COMPONENTS WHETHER OR NOT SPECIFICALLY LISTED ARE TO BE FULLY PAINTED. GALVANIZED HOIST COVER SHALL BE BRUSH BLASTED TO REMOVE EXISTING PAINT COATINGS AND LEAVE A SURFACE PROFILE. GALVANIZED COATING SHALL NOT BE REMOVED. REMOVE COVER BEFORE BLASTING AND PROTECT MACHINERY WITH RIGID TEMPORARY COVER.
- 5 REPLACE HOIST ANCHOR BOLTS AS DIRECTED BY THE ENGINEER. 4 TOTAL. SEE DETAIL ON S-531.
- 6 REPLACE GATE LIFT CHAINS (5/8" LINK SIZE), SHACKLES AND COUPLING LINK. TWO (2) SETS TOTAL. RESETTING CHAINS REQUIRES RE-CALIBRATION OF THE HOIST MACHINERY BY THE OWNER'S PERSONNEL. THE CONTRACTOR SHALL NOTIFY THE CITY A MINIMUM OF 2 DAYS IN ADVANCE OF NEED FOR RECALIBRATION.

2	BID SET	PJM	PJM	2021.11.17
1	PRELIMINARY PLAN	PJM	PJM	2021.11.01
Issued		By	Appd	YYYY.MM.DD
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		Dwn.	Dgr.	Chkd.
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Client/Project  
CITY OF ANN ARBOR

SUPERIOR DAM GATE  
COATING AND REPAIRS  
ANN ARBOR, MI

Title  
NEW WORK PLAN

Project No. 2075151510  
Revision Sheet 0 04 of 09  
Scale  
Drawing No. C-131

SUPERIOR POND

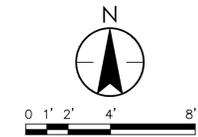
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PLAN VIEW  
SCALE: 1/4" = 1' - 0"  
TW = 714.0±

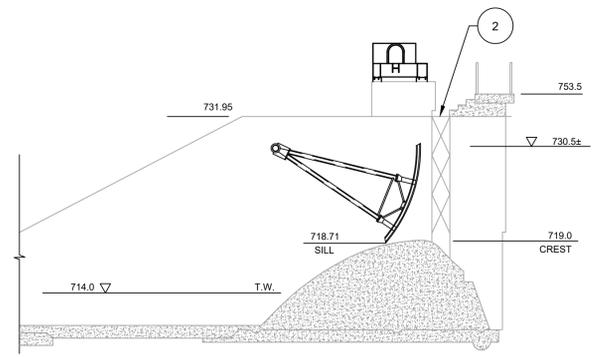
HURON RIVER  
FLOW

SLUICeway

A-A  
C-131



A-A SUPERIOR DAM SECTIONAL ELEVATION  
C-131 NOT TO SCALE



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Notes

- 1 REPLACE BOTTOM SEAL, CLAMP BAR, FASTENERS, AND BEVEL WASHERS.
- 2 REPLACE SIDE SEAL, CLAMP BAR, FASTENERS, AND BEVEL WASHERS. (BOTH SIDES). SEE DETAIL 1/S-531 AND 4/S-531.
- 3 REPLACE GUIDE ROLLER (2 PER SIDE). SEE DETAIL 1/S-531 AND 2/S-531.
- 4 REPLACE EMBEDDED SILL. SEE DETAILS 6/S-531 AND 7/S-531

2	BID SET	PJM	PJM	2021.11.17
1	PRELIMINARY PLAN	PJM	PJM	2021.11.01
Issued		By	Appd	YYYY.MM.DD
File Name: 151510-5-231		BWA	PJM	PJM
		Dwn.	Dgri.	Chkd.
				YYYY.MM.DD

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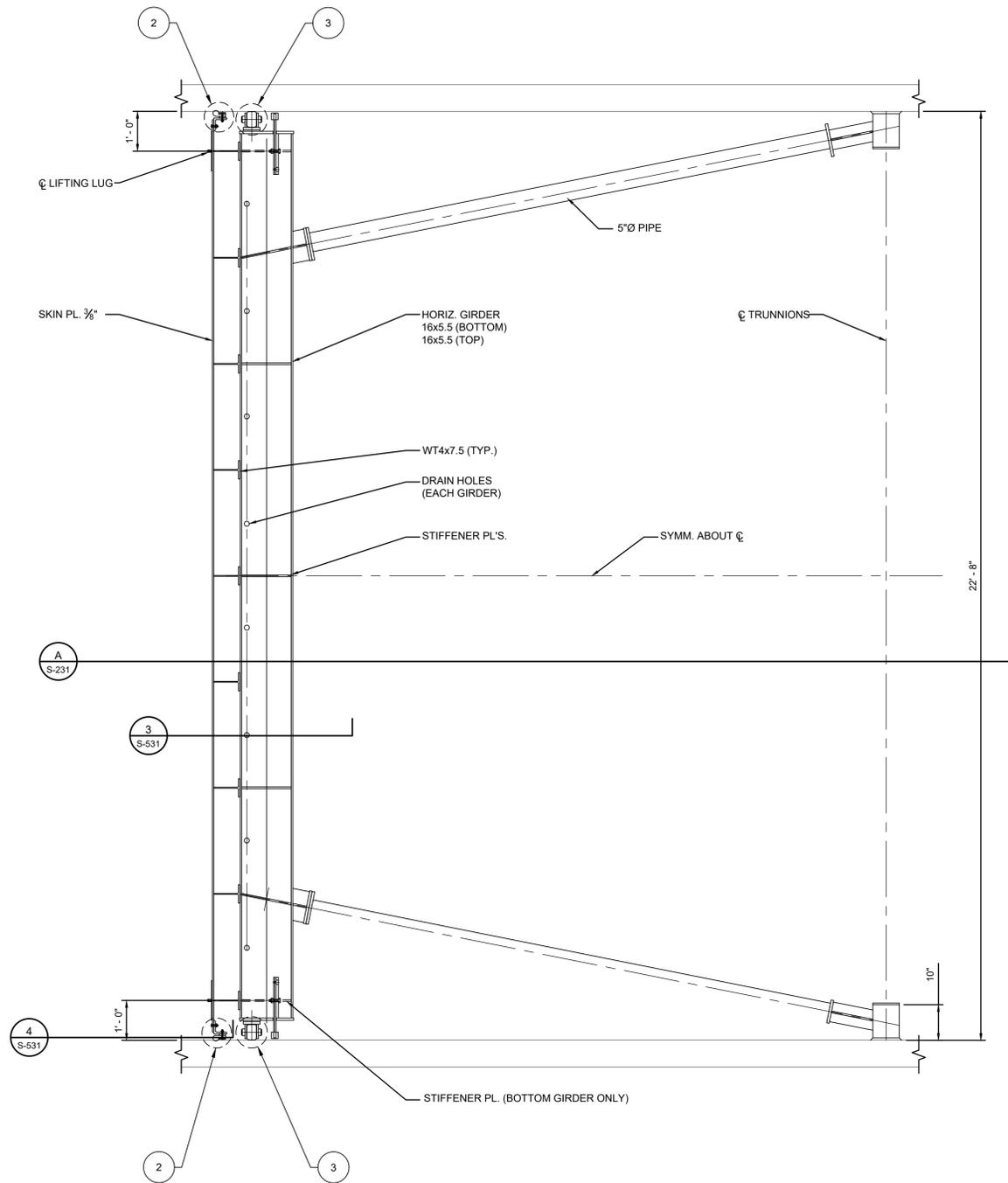
Client/Project  
CITY OF ANN ARBOR

SUPERIOR DAM GATE  
COATING AND REPAIRS  
ANN ARBOR, MI

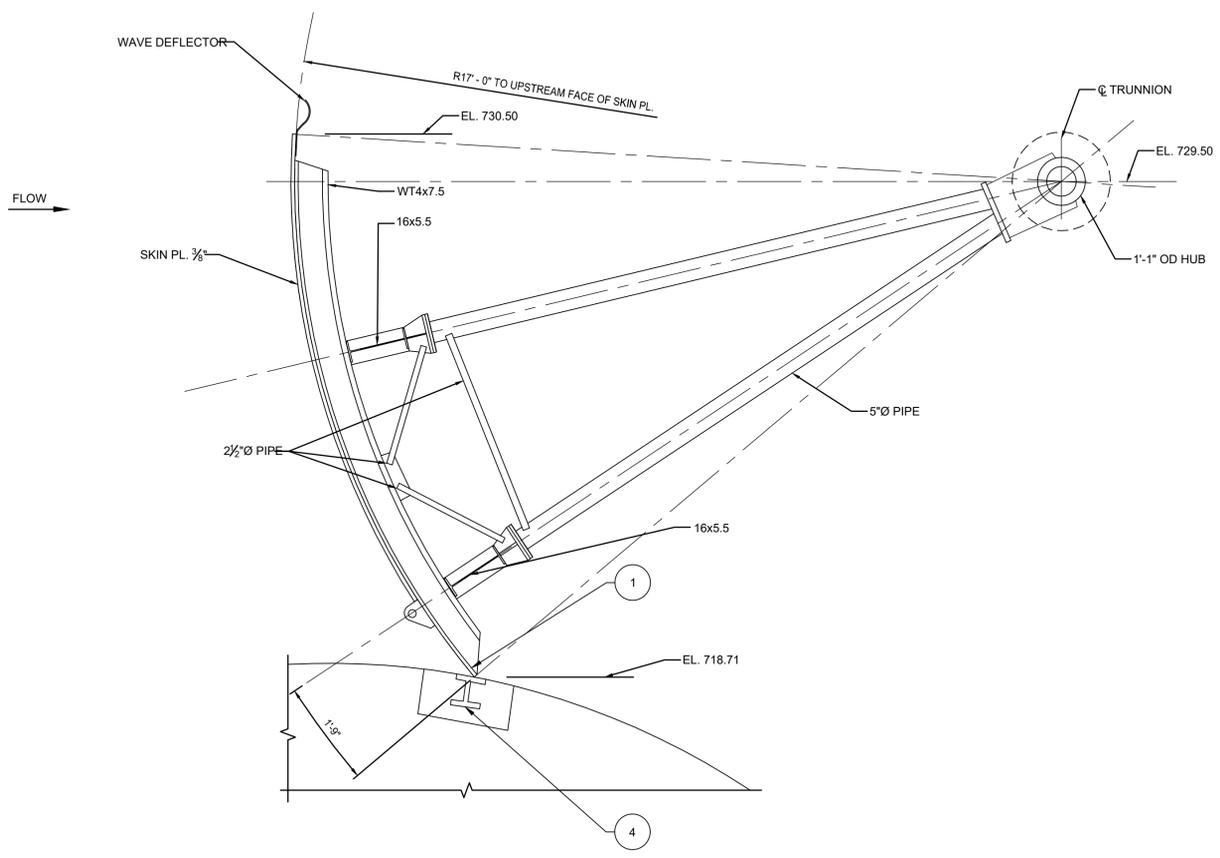
Title  
GATE PLAN AND SECTIONS

Project No. 2075151510 Scale

Revision Sheet 0 of 09 Drawing No. S-231



S1 GATE PLAN VIEW  
S-231



A GATE SECTION  
S-231

- Notes
- 1 REPLACE BOTTOM SEAL, CLAMP BAR, FASTENERS, AND WASHERS.
  - 2 REPLACE SIDE SEAL ANGLE (1 EACH SIDE), SEAL BAR, CLAMP BAR, AND FASTENERS.
  - 3 NOT USED
  - 4 REPLACE GUIDE ROLLER: 4 TOTAL
  - 5 DEMOLISH EXISTING SILL AND CONCRETE FILL IN BLOCKOUT. EXPOSE AND CLEAN WELD PAD. INSTALL NEW SILL AND ANCHOR WELD PAD. WELD NEW SILL PLATE TO EXISTING SIDE SEAL PLATES.

2	BID SET	PJM	PJM	2021.11.17
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File Name: 151510-S-531		BWA	PJM	PJM
		Dwn.	Dgrn.	Chkd.
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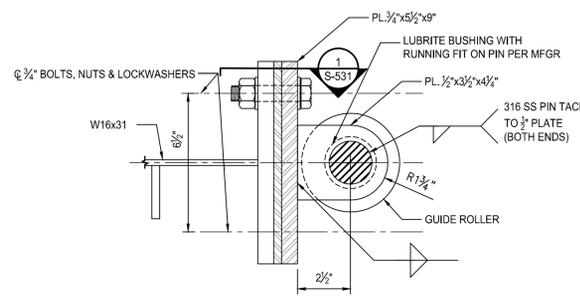
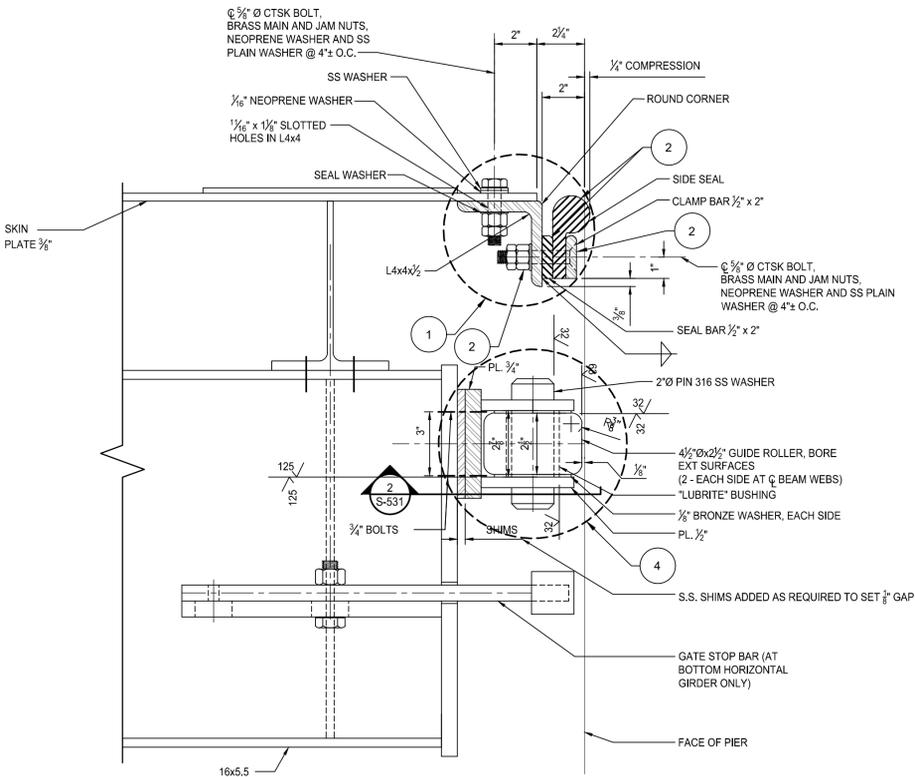
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Client/Project  
CITY OF ANN ARBOR

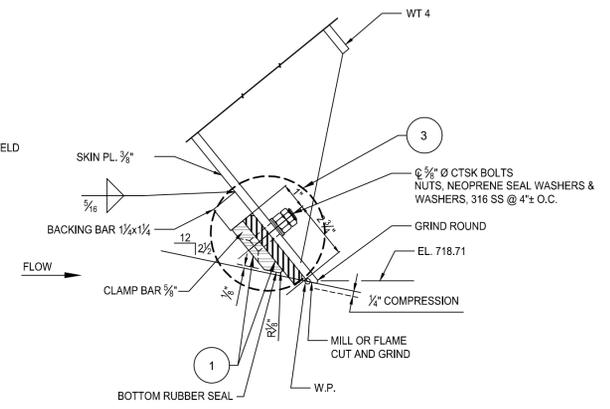
SUPERIOR DAM GATE COATING AND REPAIRS  
ANN ARBOR, MI

Title  
GATE DETAILS I

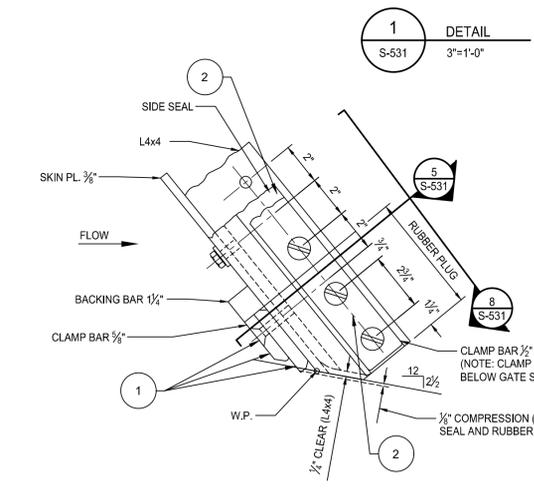
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2075151510	
Revision	Sheet
0	06 of 09
<b>S-531</b>	



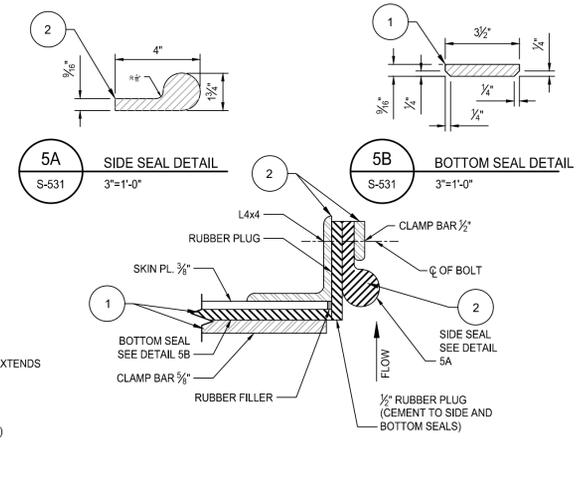
2 SECTION  
S-531 3"=1'-0"



3 DETAIL  
S-531 3"=1'-0"



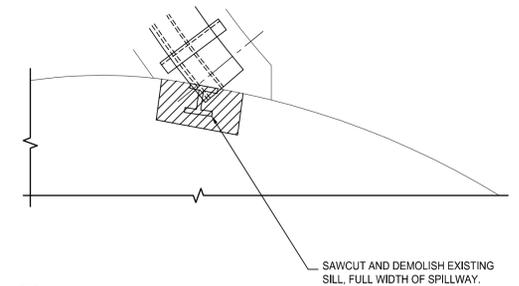
4 BOTTOM SEAL CORNER  
S-531 3"=1'-0"



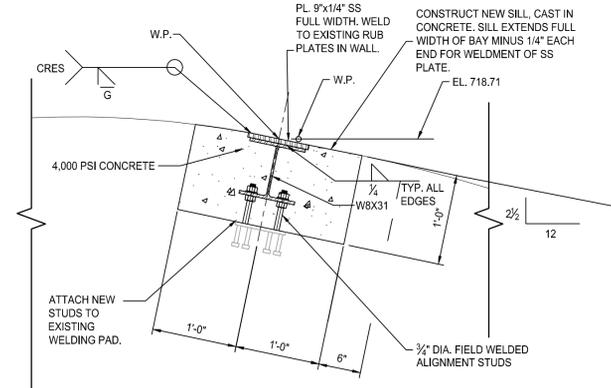
5A SIDE SEAL DETAIL  
S-531 3"=1'-0"

5B BOTTOM SEAL DETAIL  
S-531 3"=1'-0"

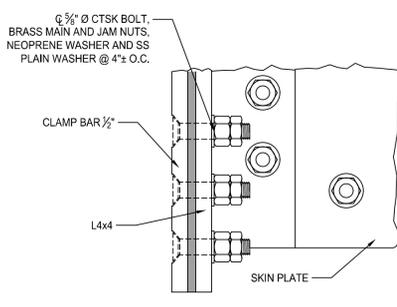
5 SECTION  
S-531 3"=1'-0"



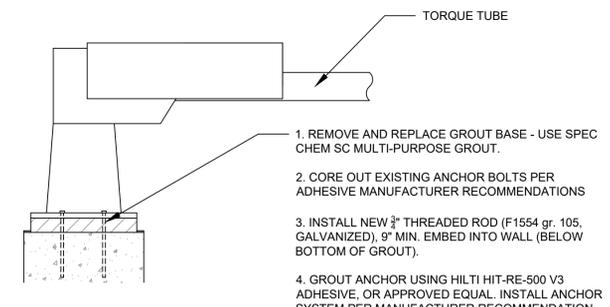
6 ELEVATION - EXISTING SILL DEMOLITION (5)  
S-531 1/2"=1'-0"



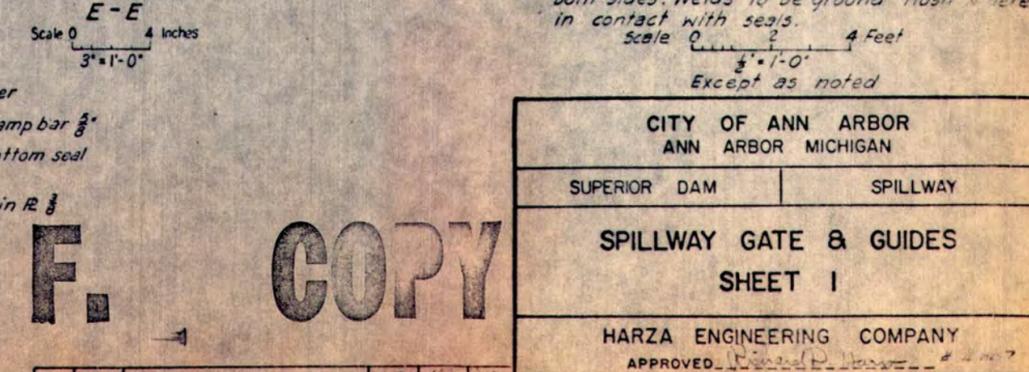
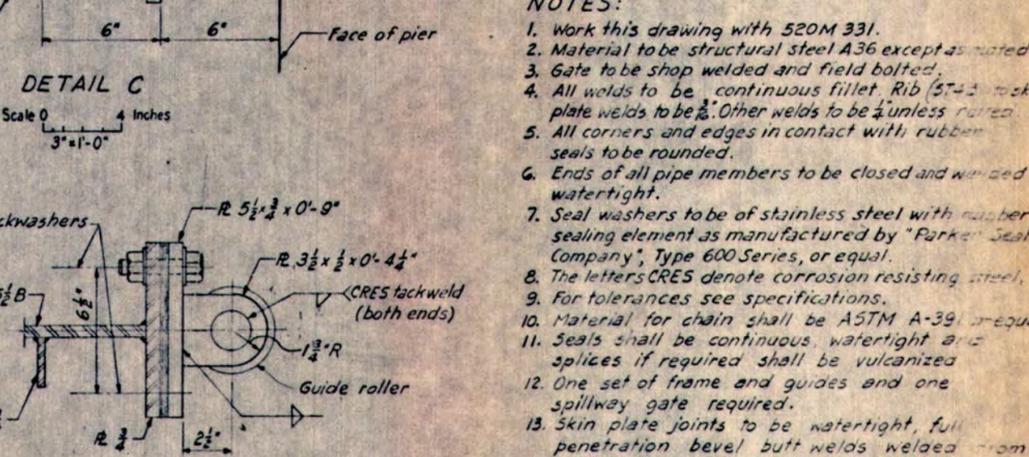
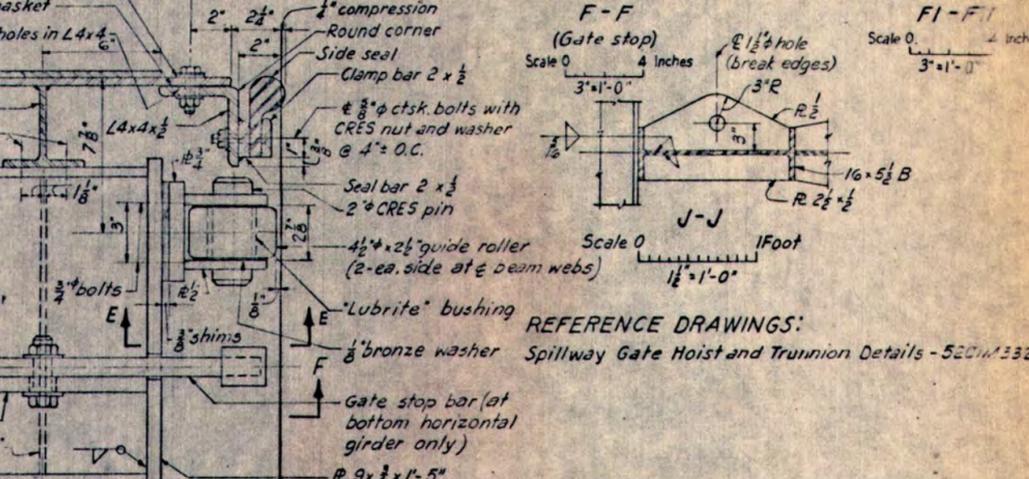
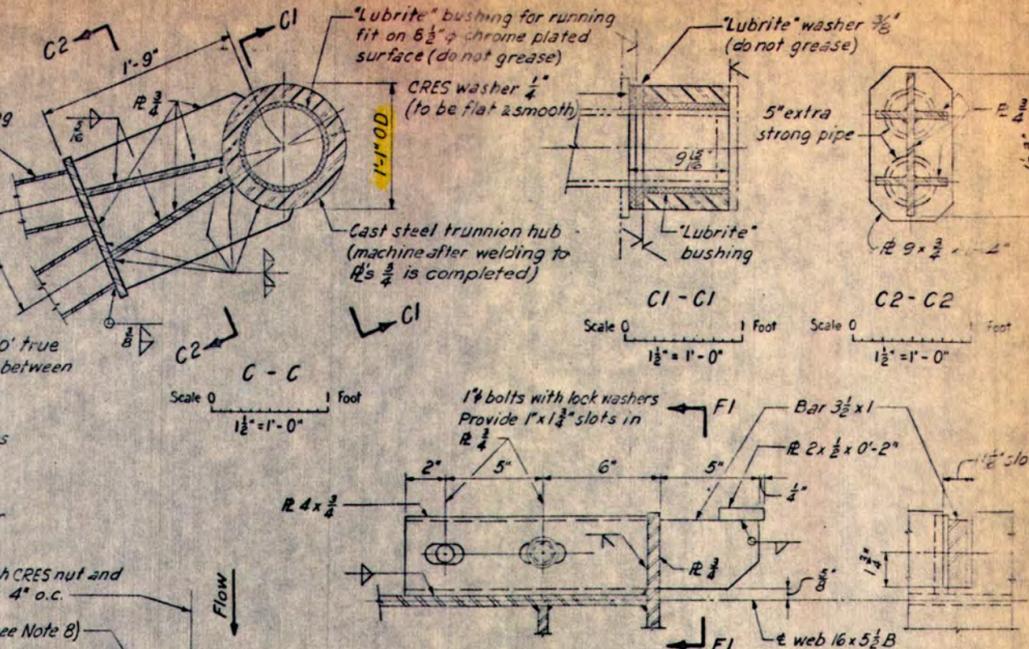
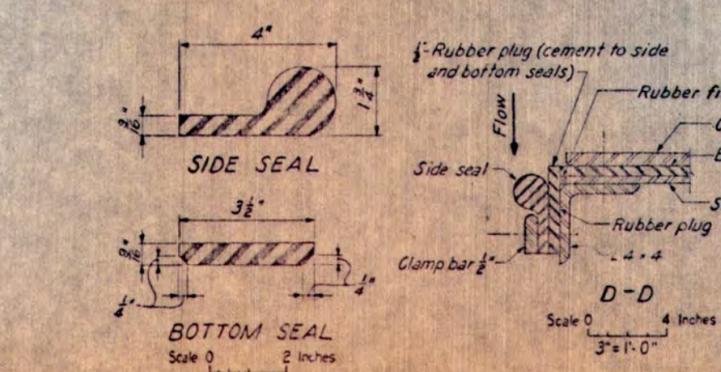
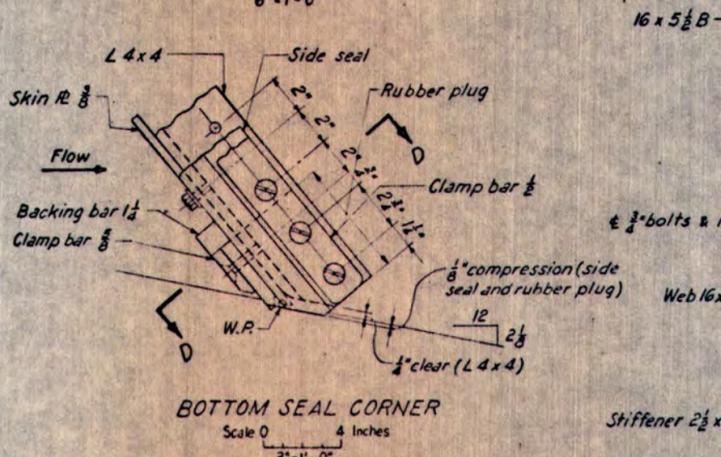
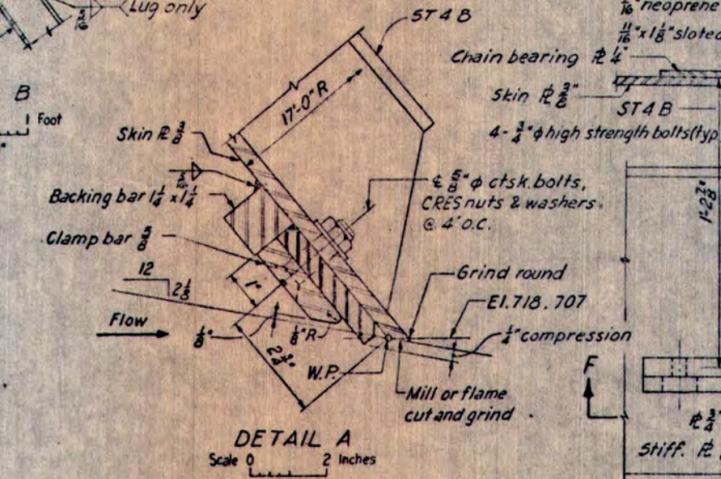
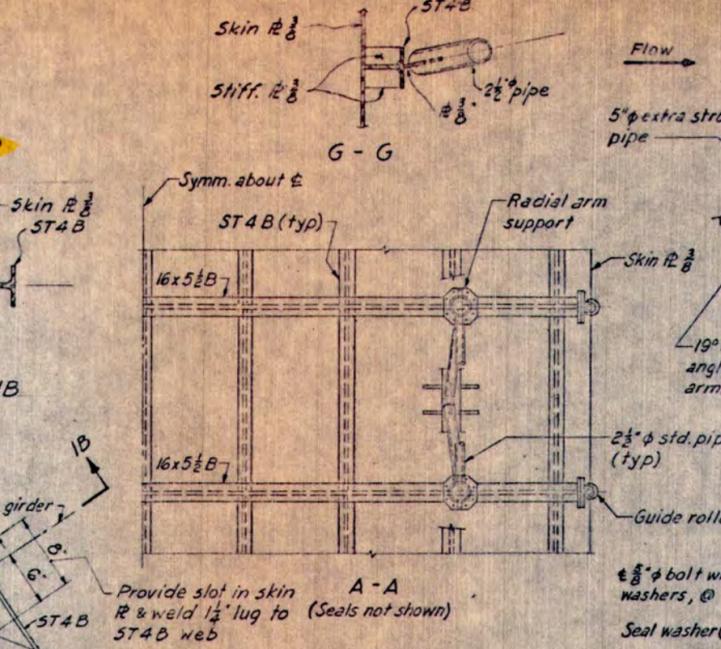
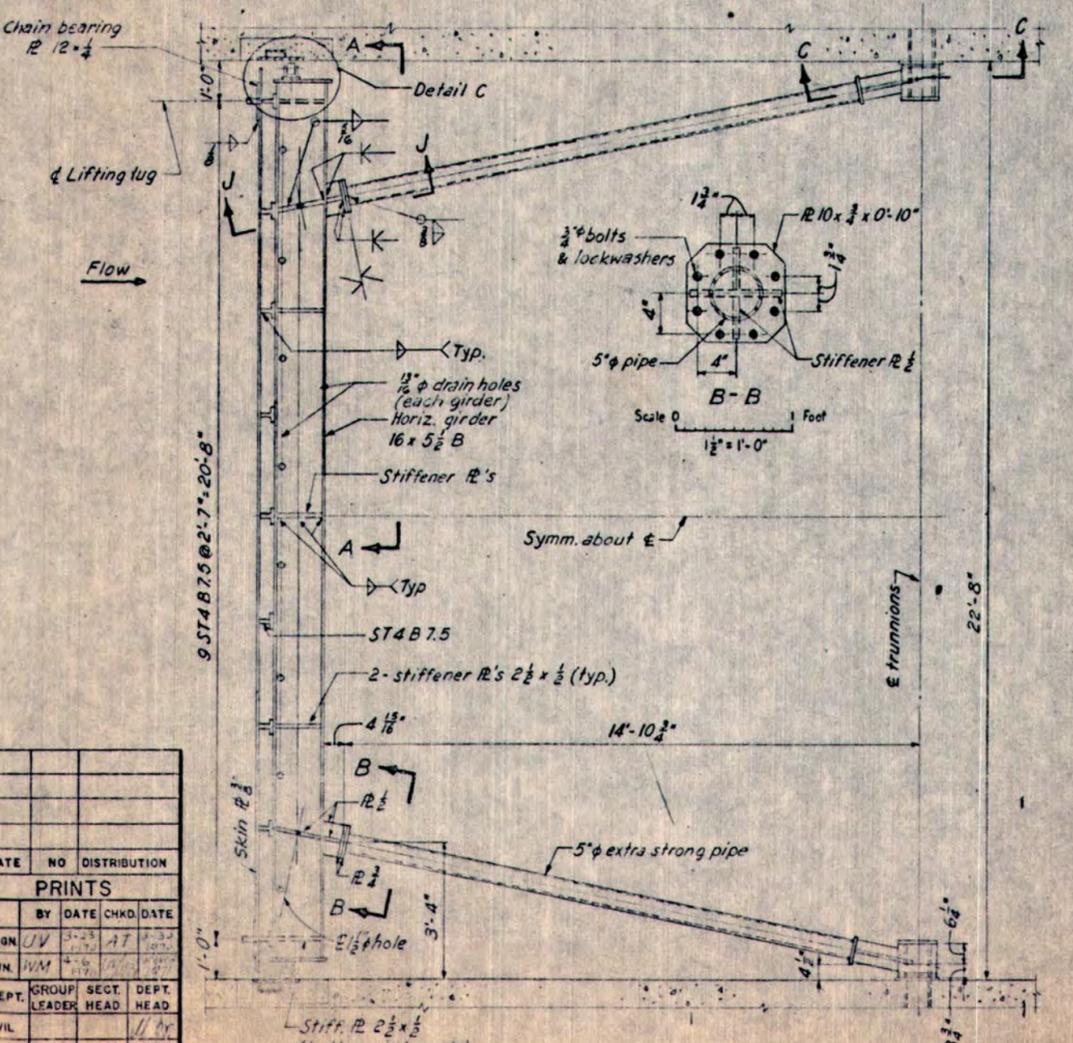
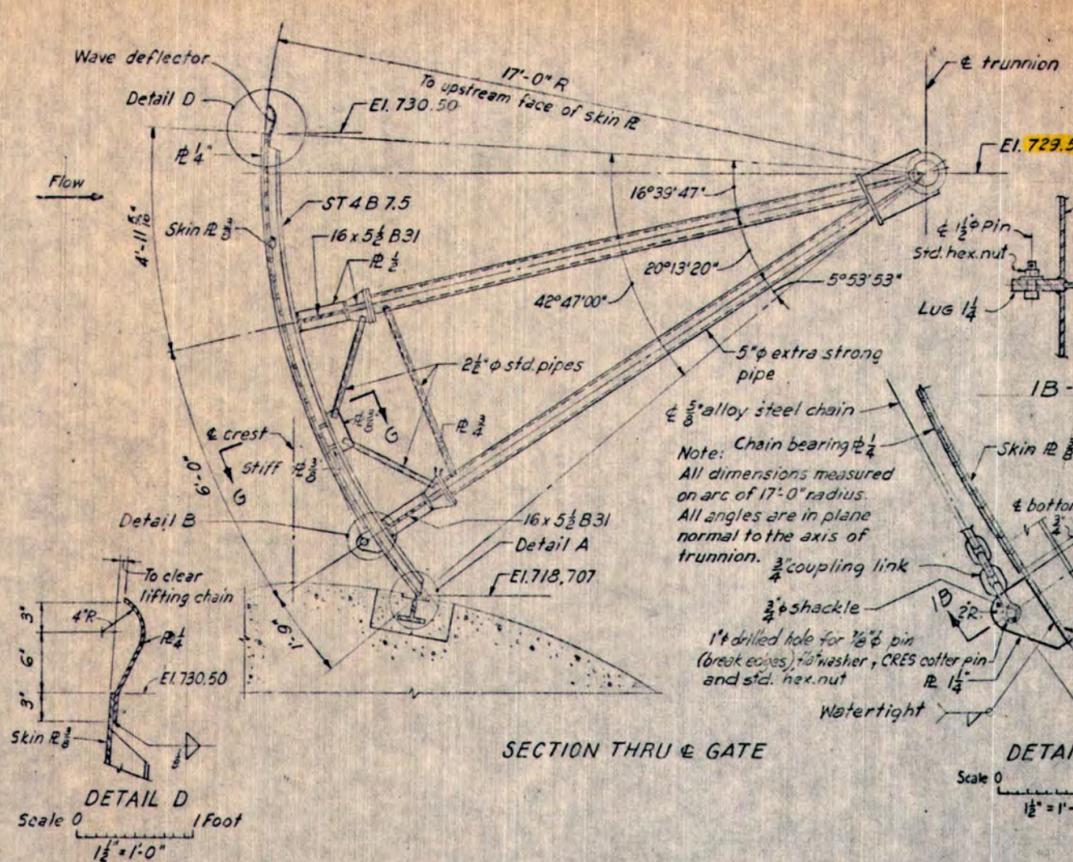
7 NEW SILL (5)  
S-531 1"=1'-0"



8 SEAL VIEW  
S-531 3"=1'-0"



9 ANCHOR BOLT REPLACEMENT  
S-531 N.T.S.



REFERENCE DRAWINGS:  
Spillway Gate Hoist and Trunnion Details - 520 M 332

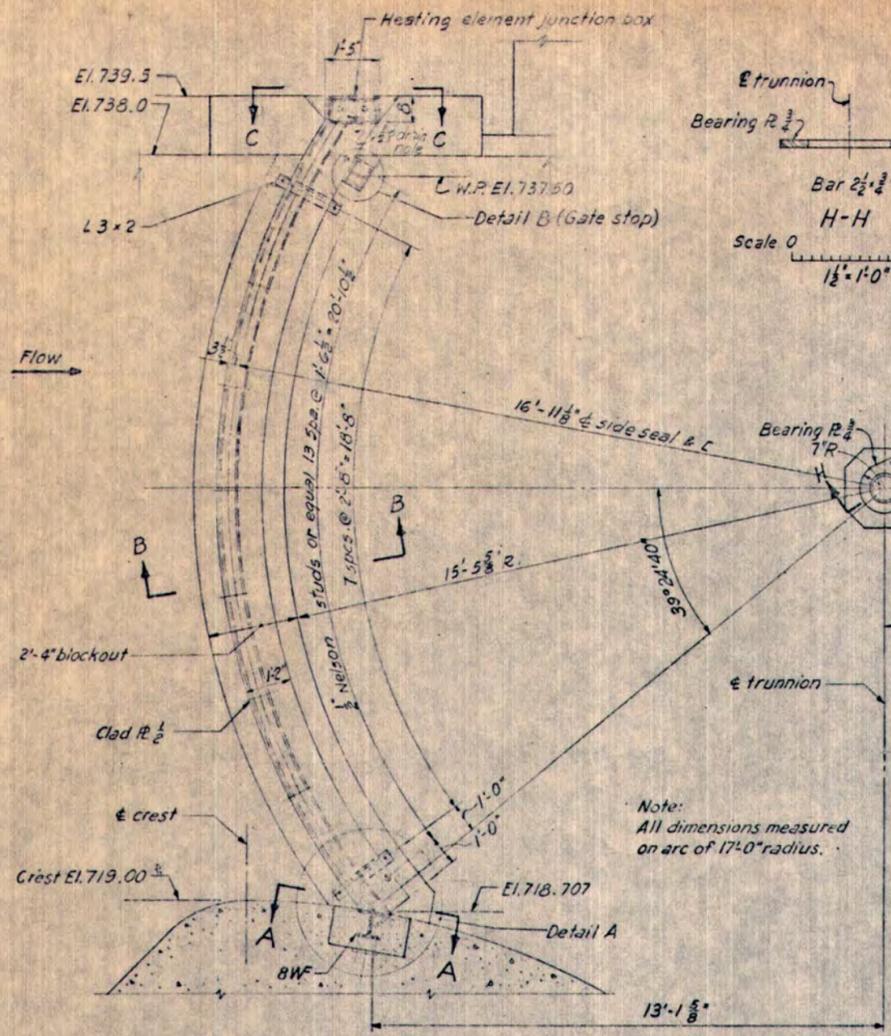
- NOTES:
1. Work this drawing with 520 M 331.
  2. Material to be structural steel A36 except as noted.
  3. Gate to be shop welded and field bolted.
  4. All welds to be continuous fillet. Rib (ST-3) to skin plate welds to be 1/4". Other welds to be 1/8" unless noted.
  5. All corners and edges in contact with rubber seals to be rounded.
  6. Ends of all pipe members to be closed and welded watertight.
  7. Seal washers to be of stainless steel with rubber sealing element as manufactured by "Parker Seal Company", Type 600 Series, or equal.
  8. The letters CRES denote corrosion resisting steel.
  9. For tolerances see specifications.
  10. Material for chain shall be ASTM A-39, or equal.
  11. Seals shall be continuous, watertight and splices if required shall be vulcanized.
  12. One set of frame and guides and one spillway gate required.
  13. Skin plate joints to be watertight, full penetration bevel butt welds welded from both sides. Welds to be ground flush where in contact with seals.
- Scale 0 4 Feet  
1 1/2" = 1'-0"  
Except as noted

DATE	NO	DISTRIBUTION
PRINTS		
BY	DATE	CHKD. DATE
DSGN	UV	AT
DWN	WM	AT
DEPT.	GROUP	SECT.
	LEADER	HEAD
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MECH.		
ELECT.		
PLAN.		
STAFF		
		CHEGOR

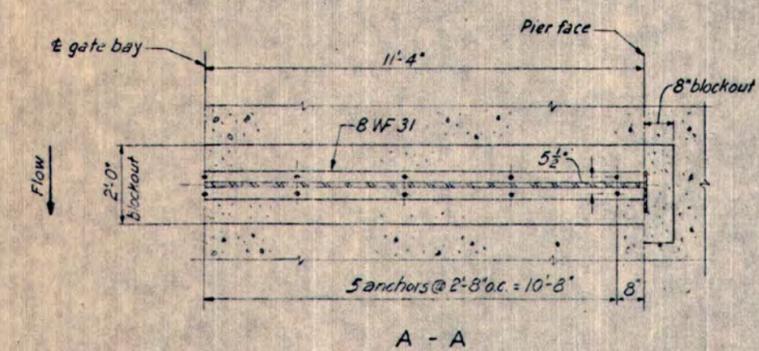
CITY OF ANN ARBOR ANN ARBOR MICHIGAN	
SUPERIOR DAM	SPILLWAY
SPILLWAY GATE & GUIDES SHEET 1	
HARZA ENGINEERING COMPANY	
APPROVED	DATE
CHICAGO, ILLINOIS	DWG. NO.
	520 M 330 R1

F. COPY

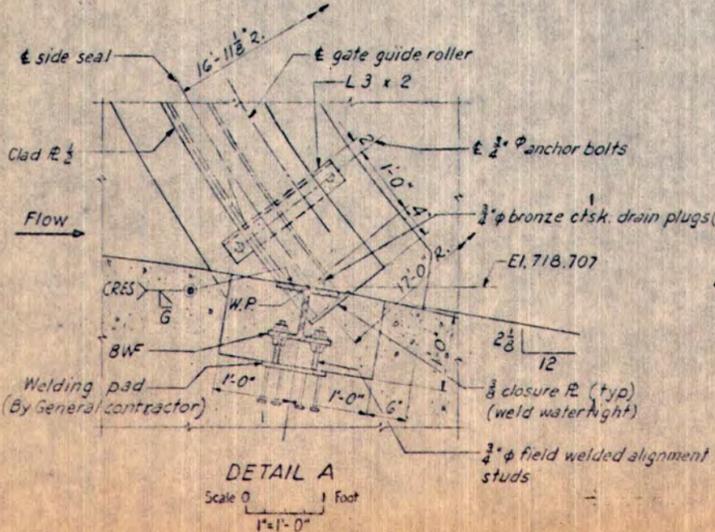
1	6-22-72	As built	MD	1/1/71	MD
REV. NO.	DATE	NATURE OF REVISION	BY	CHKD.	APPD.



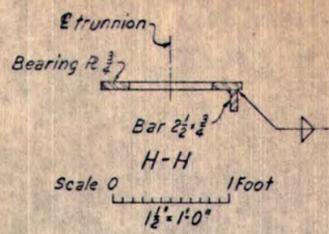
ELEVATION-GATE SIDE SEAL AND GUIDE FRAME



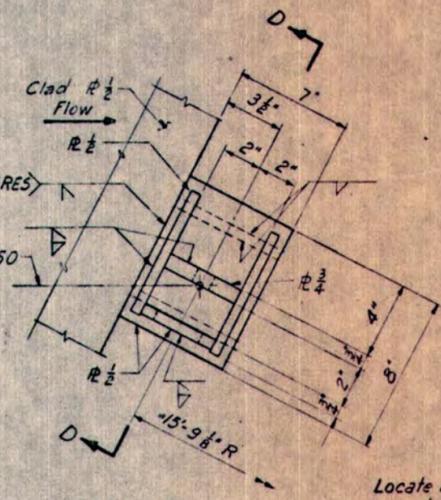
A - A



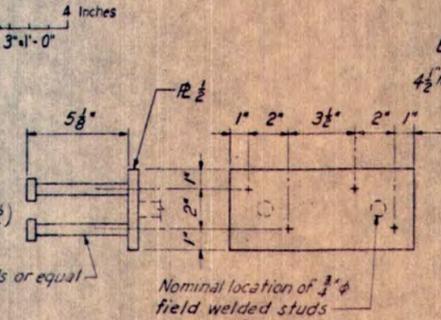
DETAIL A



H - H

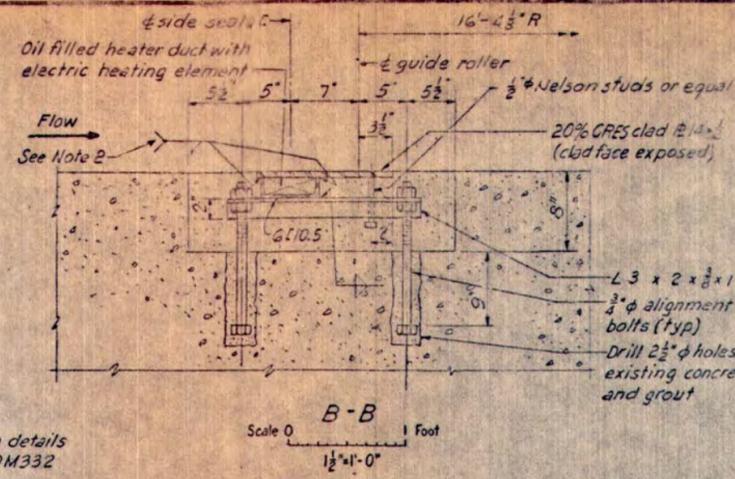


DETAIL B (Spring not shown)

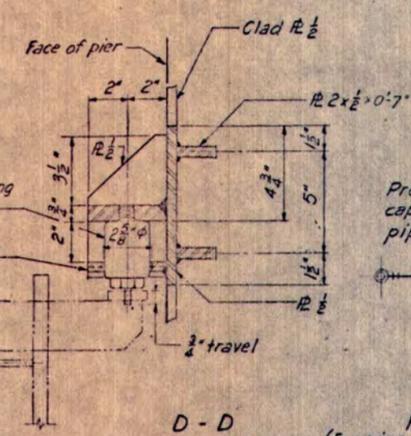


WELDING PAD DETAIL (By General contractor) See Note 7

Scale 0 4 inches 3" = 1'-0"

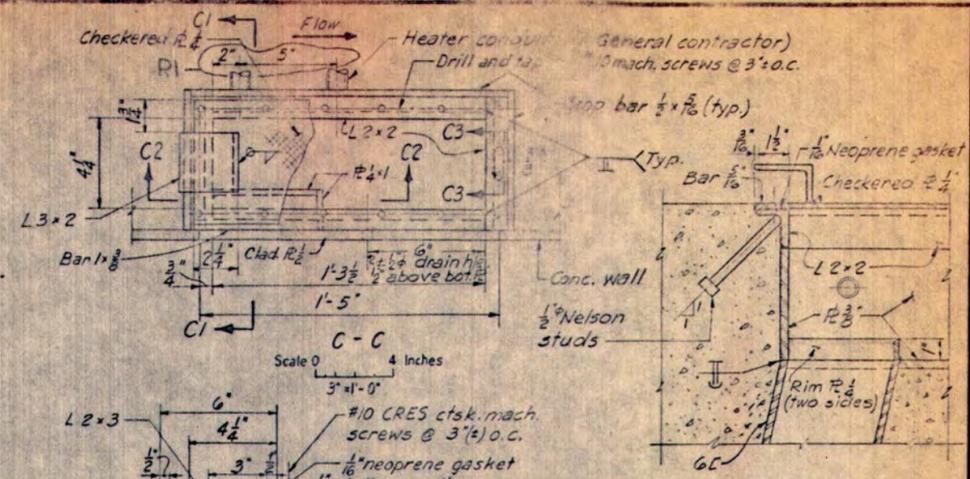


B - B

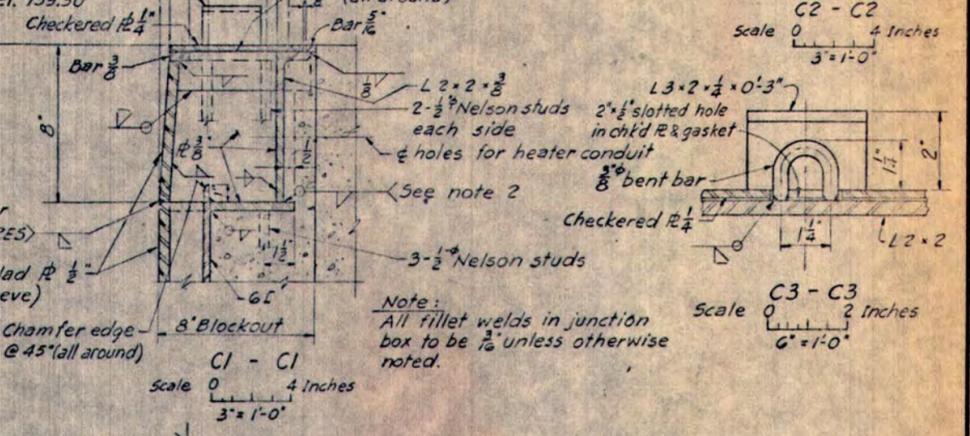


D - D (Gate stop)

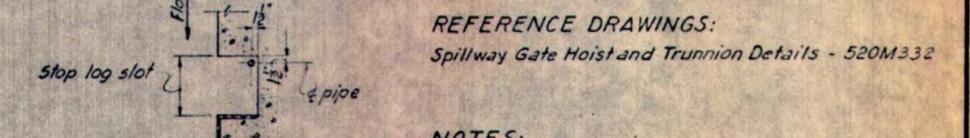
F - F (for pipe at center of gate opening only) N.T.S.



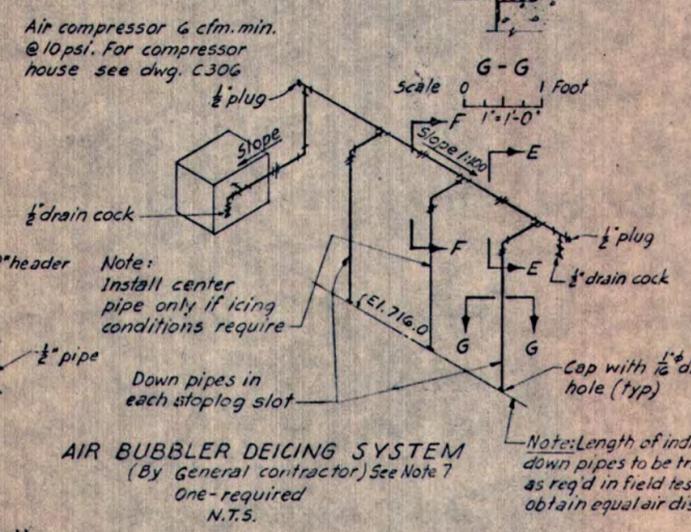
C - C



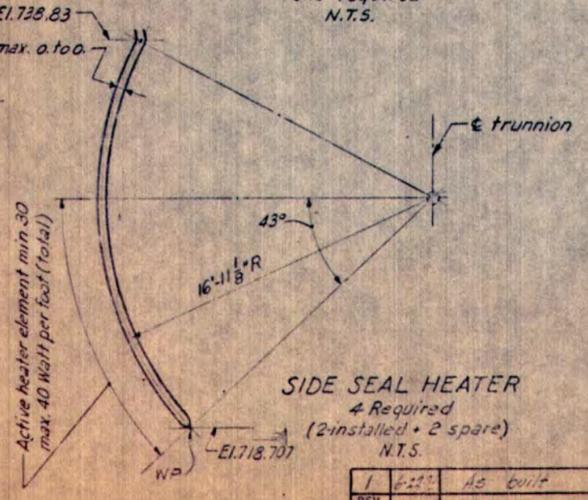
C2 - C2



C3 - C3



AIR BUBBLER DEICING SYSTEM (By General contractor) See Note 7 One-required N.T.S.



SIDE SEAL HEATER 4 Required (2-installed + 2 spare) N.T.S.

REFERENCE DRAWINGS:  
Spillway Gate Hoist and Trunnion Details - 520M332

- NOTES:
1. Work this drawing with 520M330
  2. All welds around heater ducts and junction box to be watertight.
  3. All holes for 3/4" alignment studs and bolts to be made 1/8" oversize.
  4. All alignment studs and bolts to be provided with 2 washers.
  5. The gate stop to be a spring device as manufactured by Strippit Division of Houdaille Industries, Inc., Akron New York, Model 85 K18, Catalog No. 55720-000.
  6. The letters N.T.S. denote not to scale.
  7. Welding pads and Air Bubbler Deicing System with supports shall be furnished and installed by General Contractor.

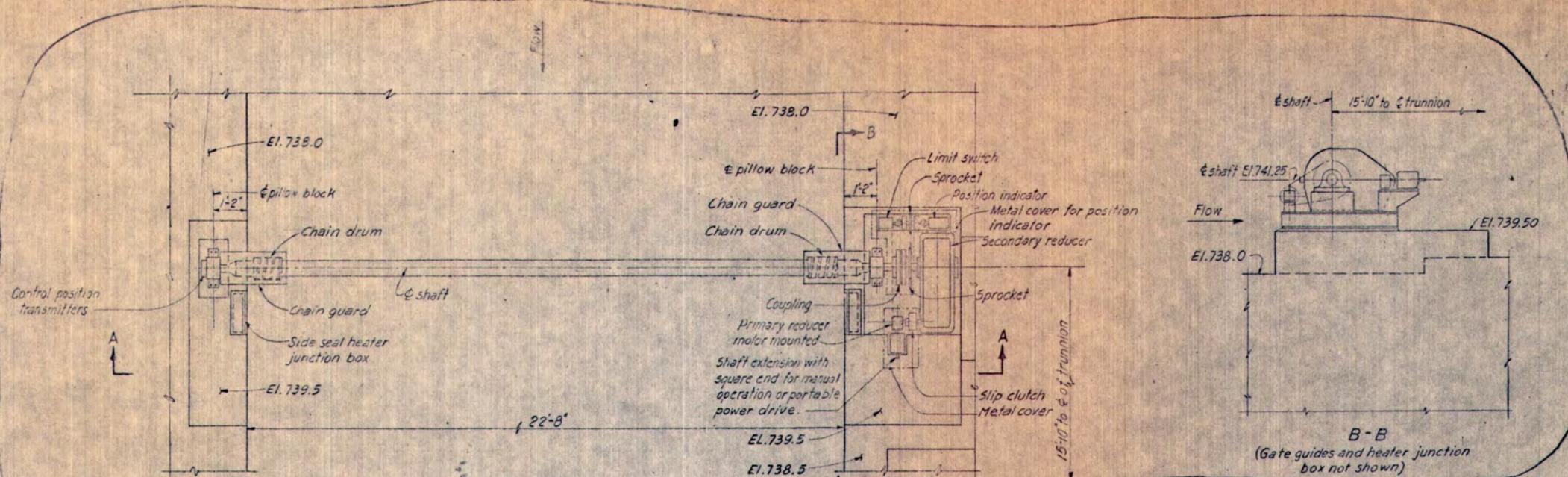
**F. COPY**

Scale 0 2 4 Feet  
1/2" = 1'-0"  
Except as noted

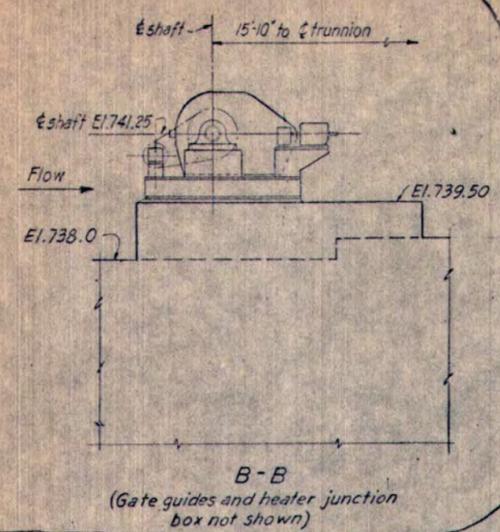
CITY OF ANN ARBOR ANN ARBOR MICHIGAN	
SUPERIOR DAM	SPILLWAY
SPILLWAY GATE & GUIDES SHEET 2	
HARZA ENGINEERING COMPANY	
APPROVED: [Signature]	
CHICAGO, ILLINOIS	DATE: [ ] [ ] [ ] DWG. NO. 520 M 331

DATE	NO	DISTRIBUTION
PRINTS		
BY	DATE	CHKD DATE
DSGN	UK	AT
DWN	WJM	
DEPT.	GROUP	SECT. DEPT. HEAD
CIVIL		
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ELECT		
PLAN		
STAFF		CHENGR

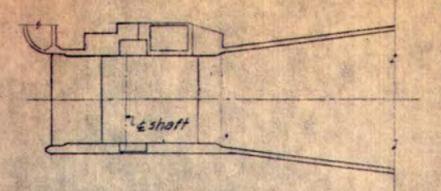
REV. NO.	DATE	NATURE OF REVISION	BY	CHKD.	APPD.
1	2-22-57	As built			



PLAN



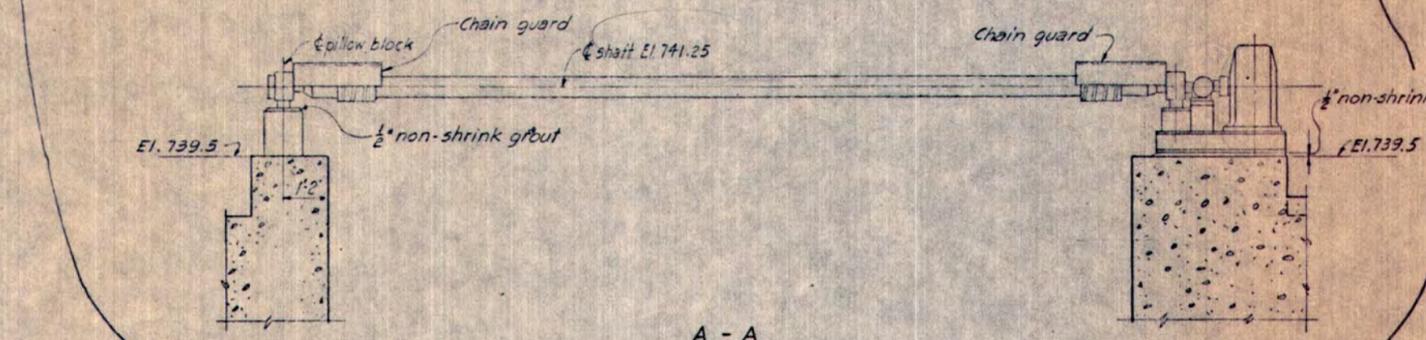
B-B  
(Gate guides and heater junction box not shown)



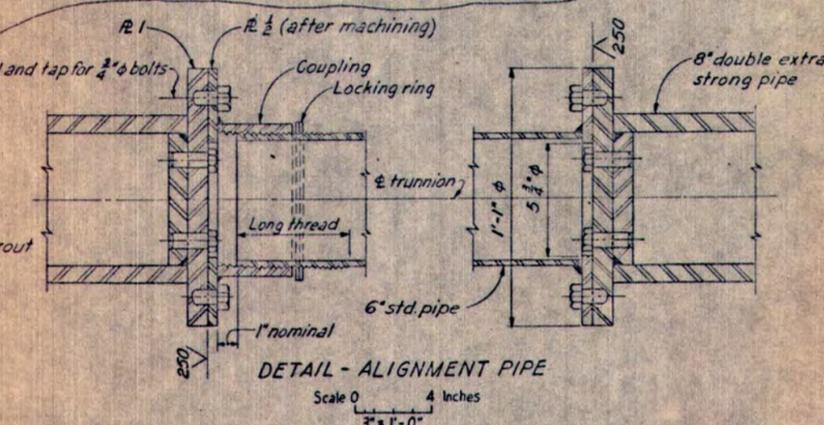
KEY PLAN  
1'-20"

FOR RADIAL GATE HOIST ASSEMBLY SEE "LAKESIDE BRIDGE & STEEL CO." DWGS: 8936-941, 8936-942, 8936-40 thru 8936-45

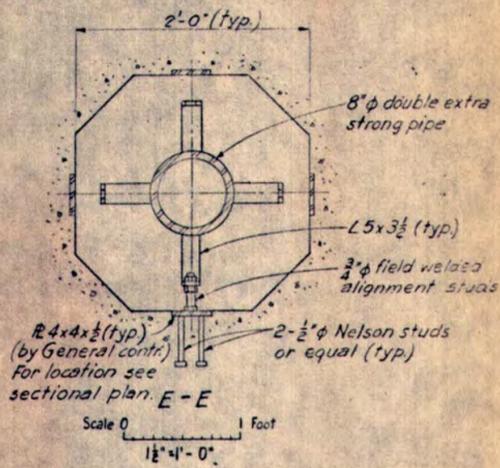
LRI



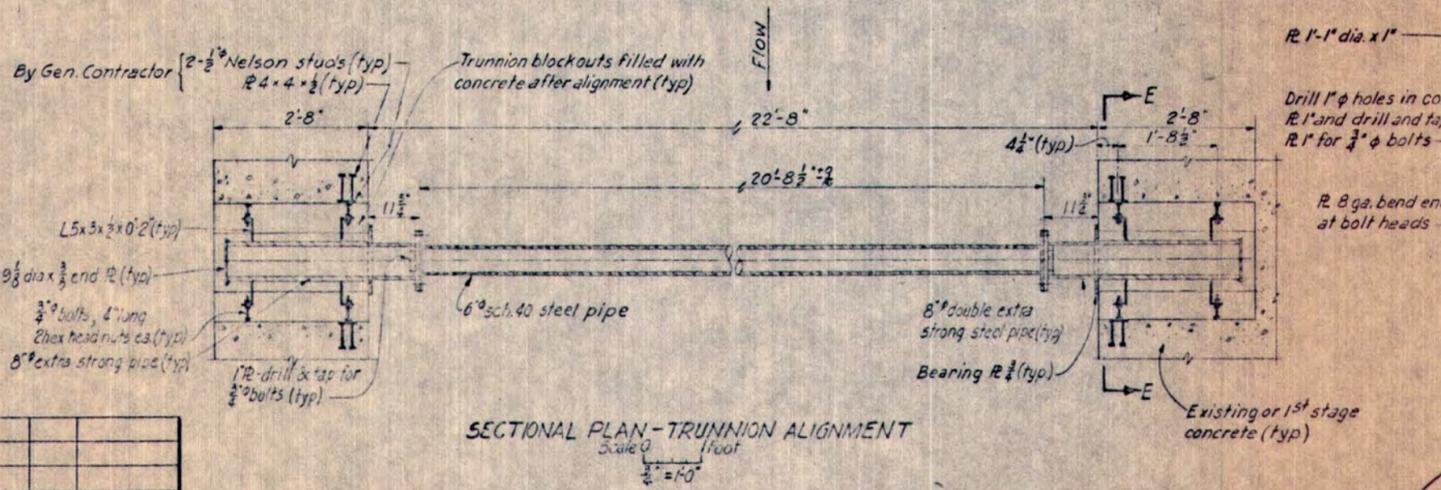
A-A



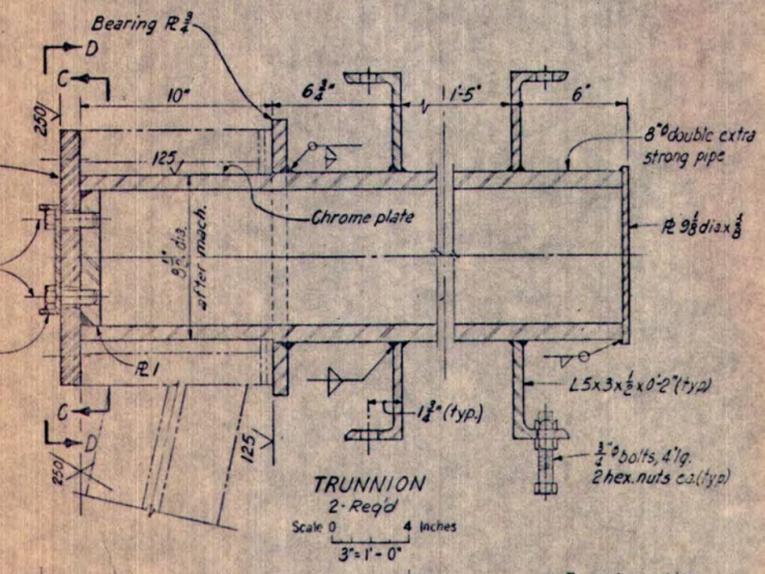
DETAIL - ALIGNMENT PIPE  
Scale 0 4 Inches  
3"=1'-0"



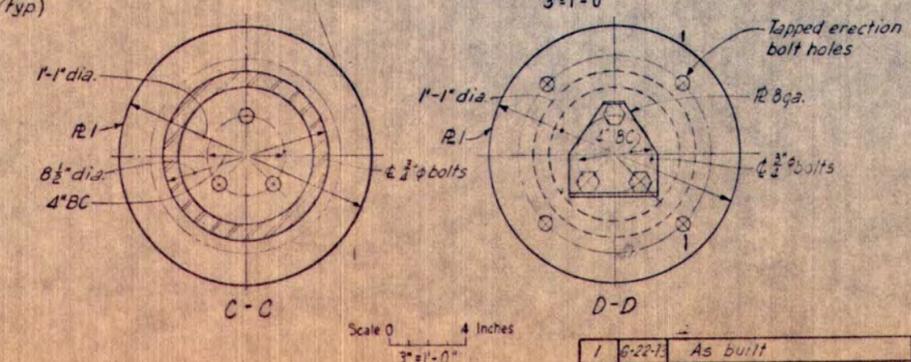
SECTIONAL PLAN - TRUNNION ALIGNMENT  
Scale 0 1 Foot  
1 1/2"=1'-0"



SECTIONAL PLAN - TRUNNION ALIGNMENT  
Scale 0 4 Feet  
3"=1'-0"



TRUNNION  
2-Req'd  
Scale 0 4 Inches  
3"=1'-0"



C-C

D-D

Scale 0 4 Inches  
3"=1'-0"

REFERENCE DRAWINGS:  
Spillway Gate and Guides, Sheet 1 - 520M330  
Spillway Gate and Guides, Sheet 2 - 520M331

NOTES:  
1. All welds to be 1/4" fillet welds except as noted.  
2. Trunnion running surface to be machined after welding of trunnion parts is completed.

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Scale 0 2 4 Feet  
1/2"=1'-0"  
Except as noted

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PRINTS			
BY	DATE	CHKD	
DSGN			
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CIVIL			
MECH.			
ELECT			
PLAN			
STAFF	CHENOR		

CITY OF ANN ARBOR ANN ARBOR MICHIGAN	
SUPERIOR DAM	SPILLWAY
SPILLWAY GATE HOIST & TRUNNION DETAILS	
HARZA ENGINEERING COMPANY	
APPROVED: _____	
REV. NO.	DATE
1	6-22-73
NATURE OF REVISION: As built	
BY	CHND. APPD.
MD	1/1/74
CHICAGO, ILLINOIS	
DATE	DWG. NO.
1/1/74	520 M 332 R1