

## TANTER GATE STRUCTURAL GENERAL NOTES

1. UNLESS OTHERWISE NOTED ALL STRUCTURAL STEEL USED IN FABRICATION OF THE TANTER GATE SHALL BE ASTM A709 GR. 50F3. FOR REQUIREMENTS SEE SPECIFICATION 05 59 13.
2. ALL STRUCTURAL WELDING SHALL CONFORM TO ALL REQUIREMENTS AS STATED IN 05 59 13 FOR GATE CONNECTIONS U.N.O. WELDING THAT IS NOT SHOWN ON THE PLANS WILL NOT BE PERMITTED EXCEPT BY WRITTEN PERMISSION FROM THE CONTRACTING OFFICER.
3. ALL SHARP EDGES SHALL BE BROKEN TO A 1/16" RADIUS U.N.O. A SHARP EDGE IS DEFINED AS ANY EDGE THAT IS THE RESULT OF SHEARING, FLAME CUTTING OR MACHINING.
4. ALL WELDS NOT SHOWN ON THE CONTRACT DRAWINGS SHOULD BE ASSUMED TO BE FRACTURE CRITICAL CJP WELDS, AND SHALL BE IDENTIFIED ON THE SHOP DRAWINGS AND CLOUDED FOR APPROVAL. ALL MISSING WELDS ADDED BY THE CONTRACTOR TO THE SHOP DRAWINGS SHALL BE PROVIDED IN LIST FORM IDENTIFYING WHICH SHOP DRAWING SHEET THE WELD IS LOCATED ON. THE LIST SHALL BE ADDED TO THE FIRST PAGE OF THE SHOP DRAWINGS AND SHALL BE PROVIDED FOR CO APPROVAL.
5. PAINTING FOR TANTER GATES SHALL CONFORM TO ALL REQUIREMENTS STATED IN SPECIFICATION 09 97 02. ALL TANTER GATE COMPONENTS UPSTREAM AND DOWNSTREAM OF THE SKIN PLATE INCLUDING THE TRUNNION ASSEMBLY SHALL BE PAINTED WITH SYSTEM 5-E-Z, U.N.O.. THESE COMPONENTS INCLUDE BUT ARE NOT LIMITED TO THE TRUNNION ASSEMBLY.
6. WELD ACCESS HOLES ARE 2" R AND GROUND SMOOTH U.N.O.
7. ALL WELDS SHALL BE WRAPPED USING THE REQUIRED FILLET WELDS SIZE SHOWN ON THE DRAWINGS, OR THE REQUIRED REINFORCING FILLET WELD SIZE PER AWS D1.5. ANY WELDS THAT CANNOT BE WRAPPED SHALL BE SEALED WITH AN APPROVED CHALKING/SEALANT THAT ADHERES TO ALL SPECIFICATION REQUIREMENTS DETAILED IN 05 5913. APPLICATION AND STORAGE OF PRODUCT SHALL FOLLOW MANUFACTURER RECOMMENDATIONS. ANY WELD THAT CANNOT BE SEALED SHALL BE IDENTIFIED ON SHOP DRAWINGS AND SENT TO THE CO FOR REVIEW AND APPROVAL.
8. ALL QUANTITIES INDICATED ON STRUCTURAL SHEETS ARE FOR (1) GATE. SEE SPECIFICATIONS FOR THE REQUIRED NUMBER OF GATES.
9. ALL BOLTS SHALL BE ASTM A325 HOT DIPPED GALVANIZED U.N.O.
10. ALL HEADED REINF. SHALL BE ASTM A706 GR-60 STEEL, U.N.O.

### TANTER GATE DESIGN DATA

11. THE ESTIMATED DRY WEIGHT OF EACH GATE IS 95 KIPS  
 -H1 = EL. 922.0'  
 -H2 = EL. 922.0'  
 -H3 = N/A  
 -Q1 = Q2 = 0  
 -Q3 = 168 KIP  
 -JM = 5 KLF  
 -WIND = 50 PSF  
 -WAVE = P1 = 14 PSF, P2 = 0 PSF, P3 = 2 PSF  
 -TRUNNION FRICTION COEFFICIENT, U = 0.3  
 -SIDE SEAL FRICTION COEFFICIENT, U = 0.75
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS FOR THE TANTER GATES AND NOTING ANY DISCREPANCIES OR PROPOSED CHANGES ON THE SHOP DRAWINGS PRIOR TO MATERIAL ORDERING AND OR FABRICATION. ALL DISCREPANCIES OR CHANGES BETWEEN THE SHOP DRAWINGS AND CONTRACT DRAWINGS SHALL BE CLEARLY IDENTIFIED AND SUBMITTED FOR CO APPROVAL. SEE SPECIFICATIONS 05 59 13 FOR FURTHER REQUIREMENTS.
13. ALL COPE HOLES SHALL REMAIN OPEN TO PERMIT DRAINAGEAGE.
14. ALL STAINLESS STEEL MEMBERS SHALL BE WELDED IN ACCORDANCE TO AWS D1.6 SEE SPECIFICATIONS.

## TRUNNION GIRDER AND ANCHORAGE GENERAL NOTES

1. PIER CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI BEFORE POST TENSIONING. TRUNNION GIRDER SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 7000 PSI.
2. POST TENSIONING OPERATIONS FOR THE TRUNNION GIRDER AND PIER ANCHORAGE SYSTEMS SHALL BE COMPLETE FOR EACH PIER PRIOR TO COMMENCING POST TENSIONING OF TRUNNION YOKE FOR SAME PIER.
3. REINFORCING STEEL IN PIER ANCHORAGE ZONE AND TRUNNION GIRDERS SHALL BE ASTM A615.
4. REINFORCING STEEL DIMENSIONS ARE TO CENTERLINE OF BAR UNLESS NOTED OTHERWISE.
5. CHAMFER GIRDER EDGES 3" AS SHOWN.
6. SEE SPECIFICATIONS FOR ADDITIONAL FIELD FABRICATION.
7. TRUNNION GIRDER PRESTRESS BARS SHALL CONFIRM TO ASTM A722 TYPE 2 WITH A MINIMUM ULTIMATE STRENGTH OF 150,000 PSI. PIER PRESTRESS BARS SHALL BE ASTM A722 TYPE 2 EPOXY COATED BARS.
8. TRUNNION GIRDER AND PIER ANCHORAGE SHALL BE POST TENSIONED IN THE FOLLOWING SEQUENCE FOR EACH PIER.  
 A. 50% INITIAL FORCE IN TRUNNION GIRDER  
 B. 100% INITIAL FORCE IN TRUNNION GIRDER  
 C. 50% INITIAL FORCE IN PIER ANCHORAGE  
 D. 100% INITIAL FORCE IN PIER ANCHORAGE
9. HOLES IN BEARING PLATES SHALL BE DRILLED AND COUNTER-BORED TO SUIT ASTM A536 SPHERICAL HEX NUTS.
10. BEARING PLATES SHALL BE ASTM A588 GR 50. BEARING PLATES SHALL BE HOT DIPPED GALVANIZED ACCORDING TO ASTM A 123.
11. CONTRACTOR SHALL SUBMIT TO CONTRACTING OFFICER FOR REVIEW PRIOR TO FIELD PLACEMENT COMPLETE DETAILS OF SUPPORT FRAME SYSTEM.
12. CONTRACTOR SHALL PROVIDE ADDITIONAL SUPPORT SYSTEMS AS NECESSARY TO MAINTAIN ALIGNMENT TOLERANCE IN THE SPECIFICATIONS.
13. TEMPLATES FOR SHEATHING SHALL BE SUBMITTED TO CONTRACTING OFFICER PRIOR TO PLACEMENT.
14. ALL MATERIAL AND COMPONENTS FOR TRUNNION GIRDER AND PIER ANCHORAGE SHALL CONFORM TO PTI DC35.1-14
15. CONTRACTOR SHALL PERFORM A WICK INDUCED BLEED TEST OR SCHUPACK PRESSURE BLEED TEST AT THE BEGINNING OF EACH DAY'S PRODUCTION GROUTING IN ACCORDANCE WITH PTI M55.1-12.
16. GROUTING PROCEDURES SHALL CONFORM TO PTI M55.1-12 AND U.S. DEPARTMENT OF FEDERAL HIGHWAY ADMINISTRATION POST TENSIONING TENDON INSTALLATION AND GROUTING MANUAL.
17. IF GROUTING OF ANCHORAGE BOND HAS BEEN DETERMINED TO BE UNSUCCESSFUL THE CONTRACTOR SHALL SUBMIT A REPAIR PROCEDURE FOR GOVERNMENT APPROVAL AT NO ADDITIONAL COST.
18. ULTIMATE JACKING FORCES SHALL NOT EXCEED .75Fu.
19. FINAL WAXING OF POST TENSIONED END CAPS SHALL OCCUR FOLLOWING CONFIRMATION THAT EACH ANCHOR HAS MET THE MINIMUM POST TENSION DESIGN AFTER FINAL LIFT OFF TESTING AND APPROVAL FROM CONTRACTING OFFICER REPRESENTATIVE
20. ALL POST TENSIONING SHALL MEET THE REQUIREMENTS OF PROTECTION LEVEL 2 AS DETERMINED BY PTI/ASBI M50.3-12

### SUMMARY OF POST-TENSIONING FORCES (KIPS)

SYSTEM ELEMENT	POST-TENSION FORCE	INITIAL FORCE AT SEATING	TEST FORCE	DESIGN FORCE (FINAL EFFECTIVE)
ABUTMENT TRUNNION GIRDER		583	623	505
ABUTMENT		440	490	360
PIER		440	490	360
PIER TRUNNION GIRDER		583	623	505



MARK	DESCRIPTION	DATE	APPR. MARK
1	DWG REVISED WITH AMENDMENT NO. 0002	JULY 2016	

DESIGNED BY: U.S. ARMY CORPS OF ENGINEERS	DATE: 7/25/2016	DESIGNED BY: U.S. ARMY CORPS OF ENGINEERS	DATE: 7/25/2016
DRAWN BY: D.A.S.	CHECKED BY: C.A.N.	DESIGNED BY: U.S. ARMY CORPS OF ENGINEERS	DATE: 7/25/2016
SUBMITTED BY: T. SULLY	FILE NUMBER: FMMDIE_S-000XXXX-08n	DESIGNED BY: U.S. ARMY CORPS OF ENGINEERS	DATE: 7/25/2016

FMM DIVERSION INLET STRUCTURE  
 RED RIVER OF THE NORTH RIVER BASIN  
 FARGO-MOORHEAD FLOOD RISK MANAGEMENT  
 FARGO, ND  
 STRUCTURAL NOTES  
 2 OF 2

Sheet ID  
**S-002**

ELEVATION DATUM (VERTICAL CONTROL): COORDINATE SYSTEM (HORIZONTAL CONTROL):  
 NAVD 88 NAD 83 (2011)  
 GEOID12A ND SPCS, SOUTH ZONE-U.S. SURVEY FT.  
 COMBINED FACTOR (CF): 0.999996276