Flood Plain Development Application/Permit

Application/Permit# _____ Date _____

TO THE ADMINISTRATOR: The undersigned hereby makes application for a Permit to develop in a flood plain. The work to be performed, including flood protection works, is as described below and in attachments hereto. The undersigned agrees that all such work shall be done in accordance with the requirements of the City of Muscatine Plain Management Ordinance and with all other applicable city/county ordinances and the laws and regulations of the State of Iowa.

Owner/Agent: Grain Processing Corporation

Street Address: 1600 Oregon St. Phone: 563-264-4932

City/State/Zip: Muscatine, Iowa, 52761 Email: Jared.Huhndorf@grainprocessing.com

Builder: Seither & Cherry

Street Address: 2537 Henkel Avenue Phone: 319-524-5472

City/State Zip: Keokuk, Iowa, 52632 Email: Corby.hawkins@sc-ts.com

Project Location: ¼ _____ ¼ SE Section 10 Township 76 Range 2W

Latitude: 41.401419 Longitude: -91.059507 County: Muscatine

Project Street Address: 1600 Oregon St.

City/State/Zip: Muscatine, Iowa, 52761

Type(s) of Development

- ☐ Filling
- ☐ New Construction
- ☐ Routine Maintenance
- ☐ Excavation
- ☐ Grading
- ☐ Substantial Improvement
- ☐ Minor Improvement
- ☒ Other (describe below)

Development Description

There are 2 breasting cells that need replaced. They are each constructed of 16 flat sheets driven down to create a square cell with side walls approximately 65 inches wide. The structural integrity of these cells are compromised due to significant loss of backfill material. The 32 flat sheets that make up the two cells will be removed. A 36" heavy walled pipe (filled with 1" rock backfill) connected to two 20" heavy walled pipe (1" rock backfill) driven down to make up the new breasting point. The 36" pipe will be directly vertical while the 20" pipes will have a 3/1 slope and all be welded at the top. Horizontal bracing will hold this pyramid type structure together (sketches are attached). The new breasting points will be in the same locations as the old cells.

Size of Site (ft x ft): 200' X 50' Area of Site (sq. ft.): 10,000 Estimated Cost ($): $400,000

Principal Use: Breasting point for feed barge during loading

Accessory Uses (Storage, parking, etc.): _____

Addition or modification to non-conforming use: ☐ Yes ☒ No Assessed value of structure ($): _____

Is property located in a designated Floodway (FW District)? ☒ Yes ☐ No

IF "YES", CERTIFICATION MUST BE PROVIDED PRIOR TO THE ISSUANCE OF A PERMIT TO DEVELOP, THAT THE PROPOSED DEVELOPMENT WILL RESULT IN NO INCREASE IN THE 100 YEAR (BASE) FLOOD ELEVATION.

Is property located in a designated Floodway Fringe (FF), General Flood Plain (FP), or Shallow Flooding (SF) District?

☒ Yes ☐ No If "Yes", indicate which one: Floodway Fringe (FF)

Elevation datum used : ☒ NAVD88 ☐ NGVD29 ☐ Other (describe): _____

Elevation of the 100 year (Base) flood (ft): 556' Source: Fema Flood Maps (19139C0301D)

Elevation of the proposed development site (natural ground) (ft): River Bottom (526')

Required elevation/flood proofing elevation for lowest floor (ft): N/A

Proposed elevation/flood proofing level for lowest floor (including basement): N/A

Other information (identify and describe source): PE Flood Plain Elevation Memo – Shoemaker & Haaland

THIS PERMIT IS ISSUED WITH THE CONDITION THAT THE LOWEST FLOOR (INCLUDING BASEMENT) OF ANY NEW OR SUBSTANTIALLY IMPROVED RESIDENTIAL BUILDING WILL BE ELEVATED AT LEAST 1.0 FOOT ABOVE THE 100 YR. (BASE) FLOOD ELEVATION. IF THE PROPOSED DEVELOPMENT IS A NON-RESIDENTIAL BUILDING, THIS PERMIT IS ISSUED WITH THE CONDITION THAT THE LOWEST FLOOR (INCLUDING BASEMENT) OF A NEW OR SUBSTANTIALLY IMPROVED NON-RESIDENTIAL BUILDING WILL BE ELEVATED OR FLOOD PROOFED TO AT LEAST 1.0 FOOT ABOVE THE 100 YR. (BASE) FLOOD ELEVATION.

Other Permits Required

Iowa DNR Flood Plain Permit	☐ Yes ☒ No	Permit #		Date Received:	
US Army Corps of Engineers	☒ Yes ☐ No	Permit #		Date Received:	Requested
Other	☐ Yes ☒ No	Permit #		Date Received:	

All provisions of the City/County of _____, Flood Plain Management Ordinance (Ordinance Number _____) shall be complied with.

THIS PERMIT IS ISSUED WITH THE CONDITION THAT THE DEVELOPER/OWNER WILL PROVIDE CERTIFICATION BY A REGISTERED ENGINEER, ARCHITECT, OR LAND SURVEYOR OF THE "AS-BUILT" LOWEST FLOOR (INCLUDING BASEMENT) ELEVATION OF ANY NEW OR SUBSTANTIALLY IMPROVED BUILDING COVERED BY THIS PERMIT.

Plans and Specifications Approved Date _____

Signature of Owner/Agent: Jared Kuhndorf Date: 11/26/2018

Signature of Authorizing Official: _____ Date: _____


400 200 0 400 Feet
Date Source: Muscatine Area Geographic Information Consortium, DNR, and City of Muscatine
Prepared by: Andrew Fangman, City Planner
Date: November 26, 2018
N
Day St
Birch Dr
Earl Ave
Illinois St
Baker Ave
Oregon St
Nebraska St
Kansas St
Dewey Ave
Schley Ave
Miles Ave
Demorest Ave
Stewart Rd
Project Location

Shoemaker Haaland

319-351-7150

November 21, 2018

Jason Huhndorf
Grain Processing Corporation
1600 Oregon street
Muscatine, Iowa 52761

Re: Barge Cell Replacement (Latitude 41.401419- Longitude -91.059507) Grain Processing Corporation

Dear Mr. Huhndorf,

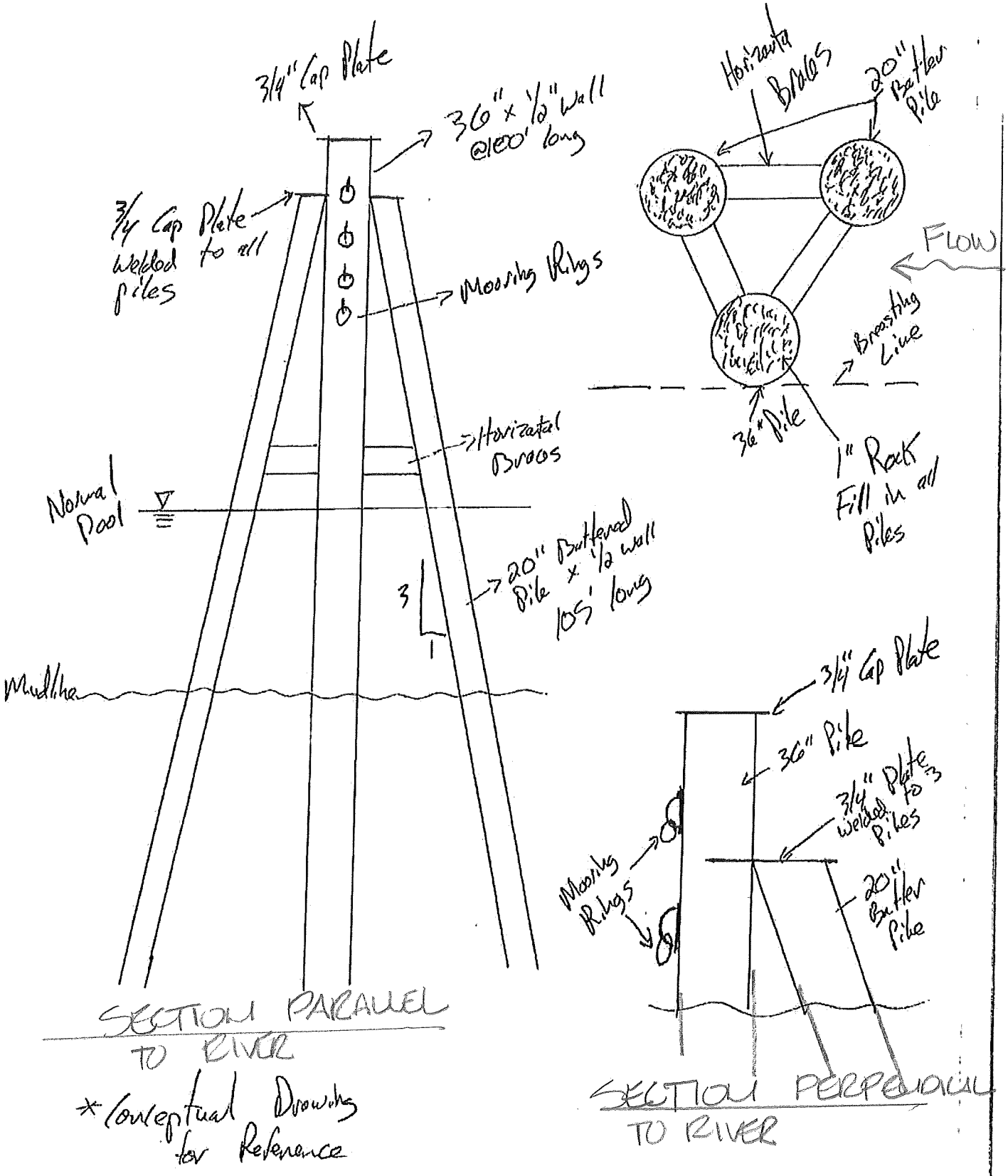
At your request, I have reviewed the attached materials for backwater, or rise, of the Mississippi River created by the replacement of 2 breast cells: one up stream and one downstream of the loadout cell at the location noted above.

Current, there is a 65-inch width breast cell. The breast cell will be replaced with one 36" round main pile and two 20" round battered piles. The replacement of these battered piles shadow each other in the river flow. Therefore, no additional rise to the river level would be anticipated.

If you should have further questions please do not hesitate to contact me.

Sincerely Yours,

Robert A. Bang, PE
Vice President
Iowa PE 11001



* Conceptual Drawing for Reference

JOINT APPLICATION FORM FOR IOWA

ITEMS 1 AND 2 FOR AGENCY USE

1. Application Number	2. Date Received

3. and 4. (SEE SPECIAL INSTRUCTIONS) NAME, MAILING ADDRESS AND TELEPHONE NUMBERS

3a. Applicant's Name	3b. Co-Applicant/Property Owner Name (if needed or if different from applicant)	4. Authorized Agent (an agent is not required)
Jared Huhndorf Company Name (if any) Grain Processing Corporation Address 1600 Oregon Street Muscatine Iowa 52761 Email Address Jared.Huhndorf@grainprocessing.com	Peter Simonsen Company Name (if any) Grain Processing Corporation Address 1600 Oregon St. Muscatine Iowa 52761 Email Address Pete.Simonsen@grainprocessing.com	Company Name (if any) Address Email Address
Applicant's Phone Nos. w/area code Business: 563-264-4932 Residence: Cell: Fax:	Applicant's Phone Nos. w/area code Business: 563-264-4598 Residence: Cell: Fax:	Agent's Phone Nos. w/area code Business: Residence: Cell: Fax:

STATEMENT OF AUTHORIZATION

I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____ _____

Applicant's Signature Date

5 ADJOINING PROPERTY OWNERS (Upstream and Downstream of the water body)

Name	Mailing Address	Phone No. w/area code
1.Grain Processing Corporation	1600 Oregon St., Muscatine, Iowa 52761	563-264-4932
2. Muscatine Power and Water	3205 Cedar St., Muscatine, Iowa 52761	563-264-2631
3.		
4.		

6. PROJECT TITLE:
Feed Barge Cell Replacement

7. PROJECT DESCRIPTION (Include all features): There are 2 breasting cells (1 above and 1 below the main barge loadout cell) that need replaced. These breasting cells are each constructed of 16 flat sheets driven down to create a square cell with side walls approximately 65 inches wide. The structural integrity of these cells are compromised due to significant loss of backfill material. The 32 flat sheets that make up the two cells will be removed. A 36" heavy walled pipe (filled with 1" rock backfill) connected to two 20" heavy walled pipe (filled with 1" rock backfill) driven down to make up the new breasting point. The 36" pipe will be directly vertical while the 20" pipes will have a 3/1 slope and all be welded at the top. Horizontal bracing will hold this pyramid type structure together (sketches are attached). The new breasting points will be in the same locations as the old cells.

8. PURPOSE AND NEED OF PROJECT: The structural integrity of the existing barge cells in question are compromised. These two cells make the most contact with the barges. Over the ~40 years they have been in service, they have lost significant amounts of backfill according to the attached dive inspection report. In order to continue loading out barges in the future, these cells need replaced.

Submission of the appropriate form(s) **is required** by the Iowa Department of Natural Resources Flood Plain Management Program (also known in this form as the Flood Plain Permits Section). The forms for various project types can be obtained online within http://floodplain.iowadnr.gov/ or by calling 866/849-0321.

COMPLETE THE FOLLOWING FOUR BLOCKS IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

9. REASON(S) FOR DISCHARGE:

10. TYPE(S) OF MATERIAL BEING DISCHARGED AND THE AMOUNT OF EACH TYPE IN CUBIC YARDS:

TYPE:

AMOUNT IN CUBIC YARDS:

11. SURFACE AREA IN ACRES OF WETLANDS OR OTHER WATERS FILLED, AND STREAM LENGTH IF APPLICABLE (See Instructions)

12. DESCRIPTION OF AVOIDANCE, MINIMIZATION AND COMPENSATION (See instructions)

13. PROJECT LOCATION

LATITUDE: 41.401419

LONGITUDE: -91.059507

GIS Coordinates in NAD 1983 UTM Zone 15

Northing:

Easting:

STREET, ROAD, OR OTHER DESCRIPTIVE LOCATION
1600 Oregon St. Muscatine Iowa

LEGAL DESCR | QUARTER | SECTION | TOWNSHIP NO. | RANGE

☒ IN OR ☐ NEAR CITY OR TOWN (check appropriate box)
Municipality Name

WATERWAY | RIVER MILE (if applicable)

COUNTY	STATE	ZIP CODE
Muscatine	Iowa	52761

14. Date activity is proposed to commence: Dec 2018

Date activity is expected to be completed: Dec 2018

15. Is any portion of the activity for which authorization is sought now complete? Yes ☐ No ☒

NOTE: If answer is "YES" give reasons in the Project Description and Remarks section. Indicate the existing work on drawings.

Month and Year the activity was completed: N/A

16. List all approvals or certification and denials received from other Federal, interstate, state, or local agencies for structures, construction, discharges or other activities described in this application.

Issuing Agency	Type of Approval	Identification No.	Date of Application	Date of Approval	Date of Denial

17. CONSENT TO ENTER PROPERTY LISTED IN PART 13 ABOVE IS HEREBY GRANTED. Yes No

18. APPLICATION VERIFICATION (SEE SPECIAL INSTRUCTIONS)

Application is hereby made for the activities described herein. I certify that I am familiar with the information contained in the application, and that to the best of my knowledge and belief, such information is true, complete, and accurate. I further certify that I possess the authority to undertake the proposed activities.

Jared Hulmdorf — Signature of Applicant or Authorized Agent — 11/16/18 — Date

Pat Simonsen — Signature of Applicant or Authorized Agent — 11.16.2018 — Date

Signature of Applicant or Authorized Agent — Date

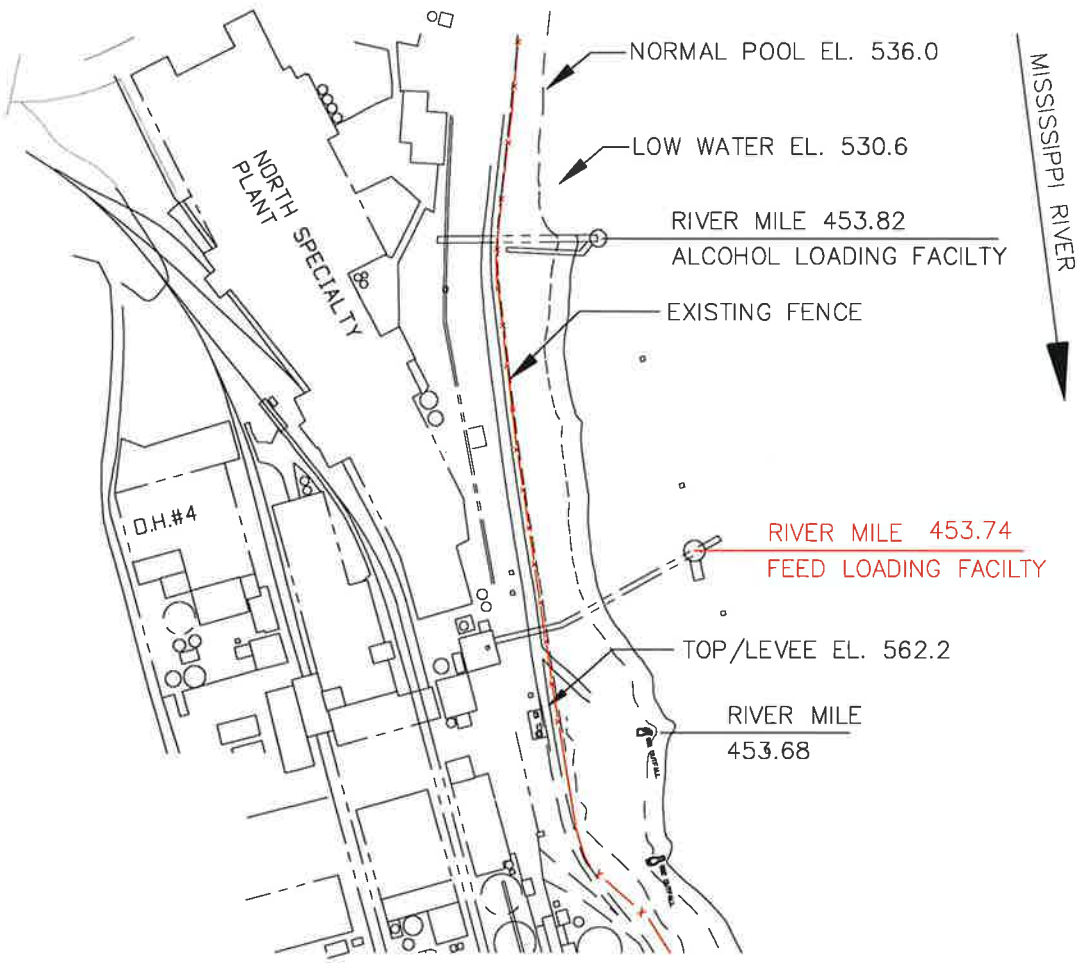
☐ Corps of Engineers Revised 2011

☐ Iowa Dept of Natural Resources ATTN: Floodplain Permits Section DNR FORM 36

☐ Iowa Dept of Natural Resources ATTN: Sovereign Lands DNR FORM 36

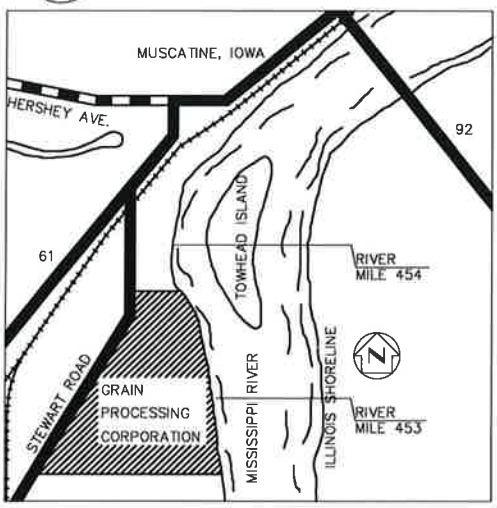
☐ Applicant's Copy

SEE INSTRUCTIONS FOR ADDRESS



SITE PLAN

SCALE: NONE



VICINITY MAP

1 0 1

SCALE: 1"=1 MILE

GPC™

GRAIN PROCESSING CORP.

FEED BARGE
CELL REPLACEMENT

DATE: 11/15/2018

LOCATION: MUSCATINE, IA
RIVER MILE 453.74

Underwater Inspection Report

Prepared by:

Marine Professionals Since 1919
BRENNAN

Owner: Grain Processing Corporation
Structure: Dock Cells
Location: Muscatine, Iowa
Inspection Date: July 27, 2018

Table of Contents

1. Introduction/Background

J.F. Brennan Company, Inc. (Brennan) performed an underwater inspection of the exterior surface of the underwater portions of the 2 sheet pile cells. The inspection was performed to provide a current condition report and document any damage of the two cells.

Structure Data

Owner:	Grain Processing Corporation
Structure:	Dock Cells
Location:	Muscatine, Iowa
Waterway:	Mississippi River

- The 2 sheet pile cells were constructed of flat steel sheeting driven to build a square cell.

No inspection was performed on the following: any substructure elements out of the channel, any superstructure elements, or any other bridge or approach/surrounding elements.

2. Method of Investigation

A Level I visual and tactile inspection of the structure and surrounding channel bed was used to observe signs of distress and deterioration including, but not limited to: movement, cracks, corrosion, and collision damage.

Date of Inspection:	July 27, 2018	
Brennan Dive Team:	Adam Funfsinn	Dive Supervisor / Inspection Team Leader
	Alexander Culver	Diver
	Kyle Kokrda	Tender

The crew and equipment accessed the wall by boat.

The inspection was conducted using surface-supplied air equipment including a Kirby Morgan dive helmet with full diver-to-surface communications. Depth soundings were taken using a metal measuring staff and/or the boat mounted Hummingbird depth finder.

3. Inspection Findings

Overall and at the time of inspection, the inspected in-water structure was considered to be in Poor condition. Additional and specific information can be seen below in 'Appendix A – CAD Drawings' and 'Appendix B – Photographs.'

South Cell **Condition: Poor**

The cell was constructed of 16 flat sheets that were driven to create a square cell. The sides of the cell were approximately 65 inches wide. The cell was filled with general backfill material.

- The cell had significant backfill loss inside the cell. The material had been carried away by the river flow with no buildup of material at the base of the structure.
- At the midpoint of the East face the knuckle was starting to split. The spit ran vertically from approximately 7 feet above the sediment line to approximately the waterline. There was no gap between the knuckles.
- The next knuckle upstream had a split that started approximately 5 feet above the mudline and extended approximately to the waterline. The split had a gap up to ½ inch between the knuckles.
- The next sheet upstream had significant damage from an apparent impact. The damaged started 9 feet above the sediment line, the sheet was ripped out creating a void 1 foot wide by 2 feet tall. The knuckle above the void was split 1 inch wide and extended 11 feet up to the waterline and extended 1.5 feet above the waterline.
- On upstream face and the first knuckle from the East corner there was a split in the sheet. The split started approximately 7 feet above the sediment line and extended to the waterline. The split had a gap up to 6 inches wide.
- Three sheets West of the Northeast corner the sheet had a dent. The dent was approximately 12 feet above the sediment line and was approximately 3 feet tall. The dent was pushed in 1 foot and extended to the Northeast corner.
- On the upstream face the second knuckle from the Northeast corner has a split that starts 5 feet above the mudline. The split extends up 7 feet to the dent. The split knuckle has a gap of approximately ¼ inches wide.
- The Northeast corner of the cell is dented and has a 6 foot long crack that starts 8 inches above the waterline. The crack is up to 1/4 inch wide.
- The general condition of the sheets
    - From the sediment line and extended 10 feet up the sheets had 80% surface corrosion.
    - From 10 feet above the sediment line to the waterline had 40% surface corrosion.

North Cell **Condition: Fair**

The cell was constructed of 16 flat sheets that were driven to create a square cell. The sides of the cell were approximately 65 inches wide. The cell had concrete at the top that had an impression on the top from material loss.

- The cell had significant backfill loss inside the cell. The material had been carried away by the river flow with no buildup of material at the base of the structure.
- At the midpoint of the East face the knuckle was starting to split. The spit ran vertically from approximately 7 feet above the sediment line to approximately the waterline. There was no gap between the knuckles.
- At the Southeast corner and approximately 10 feet above the mudline there was a 1 foot long horizontal crack. At the corner a vertical crack extended down from the horizontal crack. The vertical crack ran down to the mudline and through a 2-3/4 inch hole in the sheet. The crack was ¼ inch wide for the majority of the length. Near the bottom of the crack there was a 1 foot section that the crack was up to 2 inches wide.
- A split knuckle was found on the East face of the cell and just upstream of the downstream corner. The split starts approximately 6 feet below the waterline. The split was 14 feet long and up to 1-1/2 inch wide.

- A split knuckle was found on the East face of the cell and was the second knuckle from the Southeast corner. The split started approximately 5 feet below the waterline. The split was 3 feet long and up to ¼ inch wide.
- A crack was found on the East face of the cell and the first knuckle down from the Northeast corner. The horizontal crack was approximately 5 feet below the waterline. The crack was 6 inches wide and up to 1/8 inch wide.
- A knuckle with heavy corrosion was found on the upstream face and was the second knuckle from the Northwest corner. The area of heavy corrosion was located approximately 12 feet below the waterline. The area of heavy corrosion with noticeable section loss on the knuckle was approximately 2 feet tall.
- An area of removed sheeting was found at the Northwest corner and on the upstream sheet. The area of removed sheeting was approximately 10 feet below the waterline and was 6 inches high by 1 foot wide. The area appeared to have been cut out and had an open void.

4. Channel Bottom and Scour Assessment

At the time of the inspection the Mississippi River was experiencing generally normal conditions. The river bottom was gravel and rip rap. There were no signs of undermining or scour.

5. Evaluation and Recommendations

Based on the underwater inspection findings at the time of inspection, the Dock Cells were considered to be in Poor condition. The downstream cluster had significant damage to the Northeast corner and heavy fill loss from inside the cell. The downstream cluster was noticeably weakened and should be repaired or replaced. The upstream cell had moderate deterioration with splits and cracks which have allowed some fill loss. The splits and cracks of the upstream cell should be repaired to stop deterioration of the structure and backfill loss.

We appreciate the opportunity to work with you on this project. If you have any questions or concerns regarding the information within this report please don't hesitate to contact me directly.

Respectfully submitted,

Travis Sperberg
Dive Division
direct 608.519.5364 | *cell* 608.792.3062
office 608.784.7173 |
tsperberg@jfbrennan.com

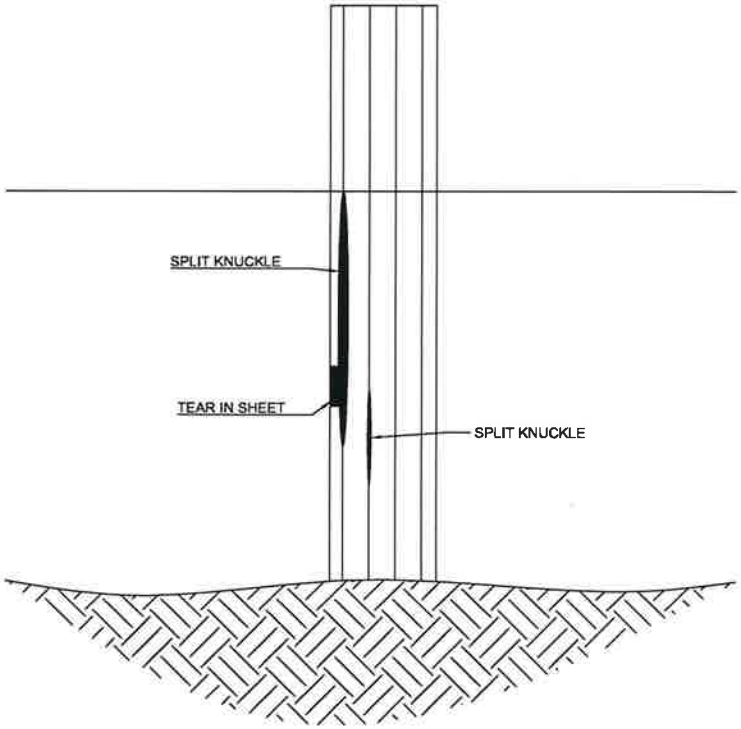
J.F. Brennan Company, Inc.
818 Bainbridge St., La Crosse, WI 54603
www.jfbrennan.com

Appendix A – Drawings

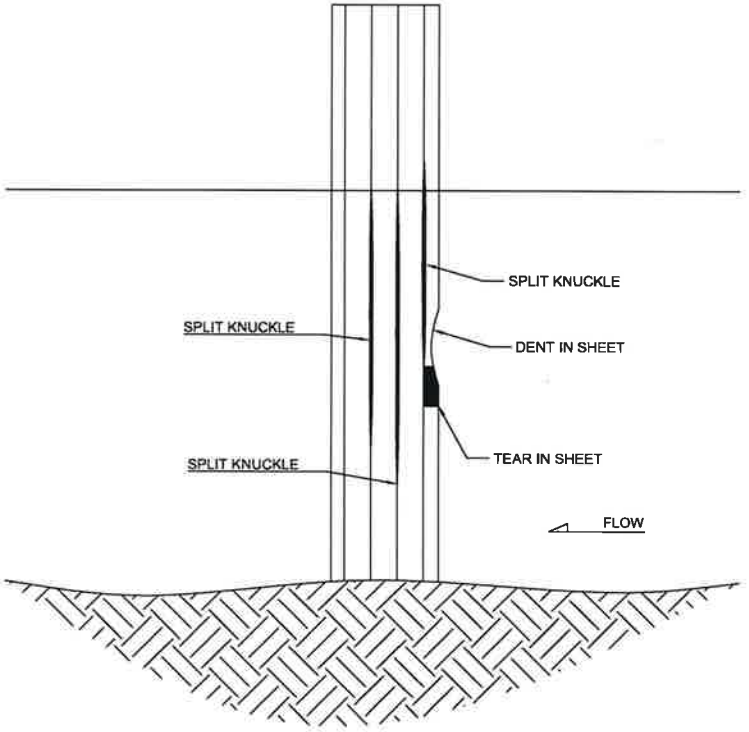
List of Drawings

- Drawing A-2 DOWNSTREAM CELL- ELEVATION VIEWS
- Drawing A-3 UPSTREAM CELL- ELEVATION VIEWS

DOWNSTREAM CELL- UPSTREAM FACE



DOWNSTREAM CELL- EAST FACE



BRENNAN
J.F. BRENNAN CO., INC.
541 BAINBRIDGE STREET
LA CROSSE, WISCONSIN 54603
PHONE: (608)784-1173 www.jfbrennan.com

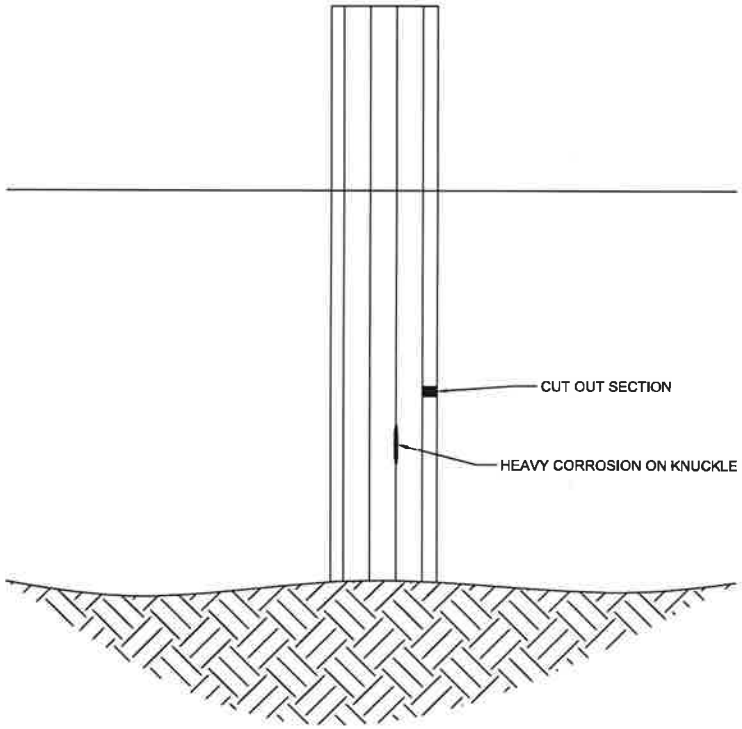
INSPECTION DATE: JULY 27, 2018
DRAWN BY: TRAVIS SPERBERG
REVISED DATE:
REVISED BY:

PROJECT:
UNDERWATER DIVE INSPECTION
GRAIN PROCESSING CORPORATION
MUSCATINE, IOWA

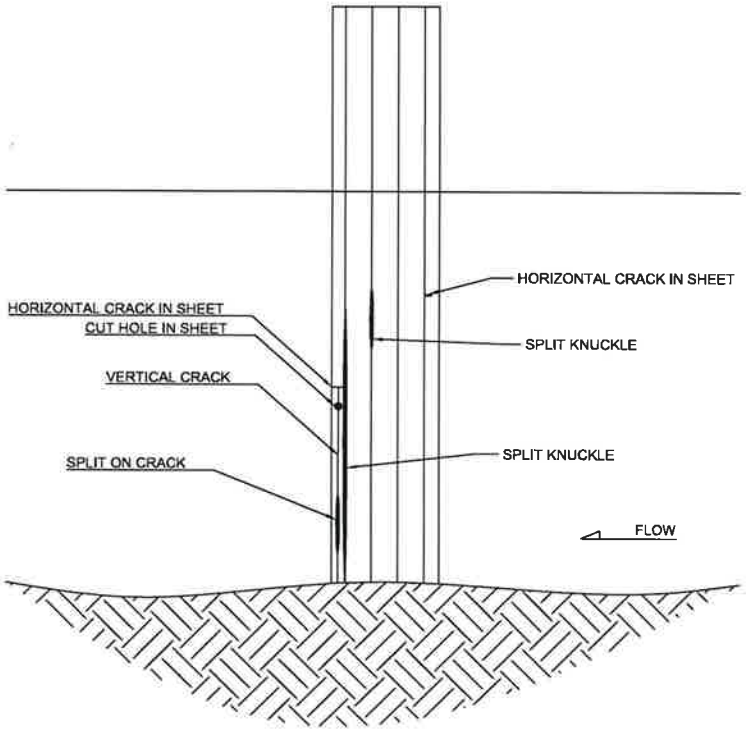
DOWNSTREAM CELL- ELEVATION VIEWS

FIGURE NUMBER
A-2

DOWNSTREAM CELL- UPSTREAM FACE



DOWNSTREAM CELL- EAST FACE



J.F. BRENNAN CO., INC.
400 MARKET STREET
LA CROSSE, WISCONSIN 54603
PHONE: (608)784-7173 www.jfbrennan.com

INSPECTION DATE: JULY 27, 2018
DRAWN BY: TRAVIS SPERBERG
REVISED DATE:
REVISED BY:

PROJECT:
UNDERWATER DIVE INSPECTION
GRAIN PROCESSING CORPORATION
MUSCATINE, IOWA

UPSTREAM CELL- ELEVATION VIEWS

FIGURE NUMBER
A-3

Appendix B – Photographs

List of Figures

Figure 1- Downstream Cell

Figure 2- Downstream Cell

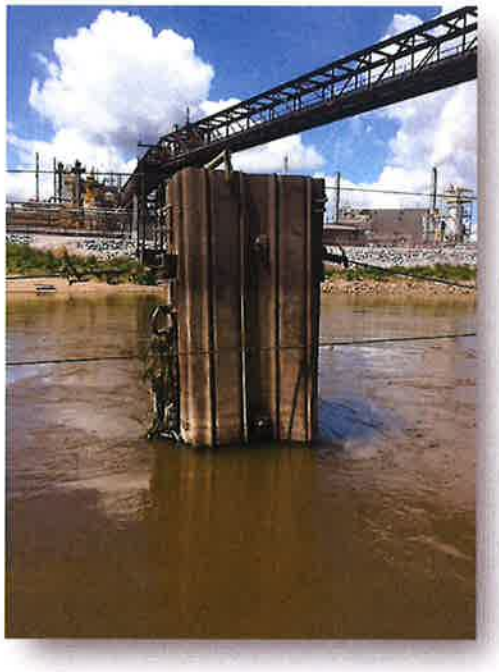


Figure 3- Downstream Cell

Figure 4- Upstream Cell

Figure 5- Upstream Cell

Figure 6- Upstream Cell

Figure 7- Upstream Cell

Figure 8- Upstream Cell

Appendix C – Data

Marine Professionals Since 1919
BRENNAN

Client: Grain Processing Corporation

Location: Muscatine, Iowa

Date: 27-Jul-18

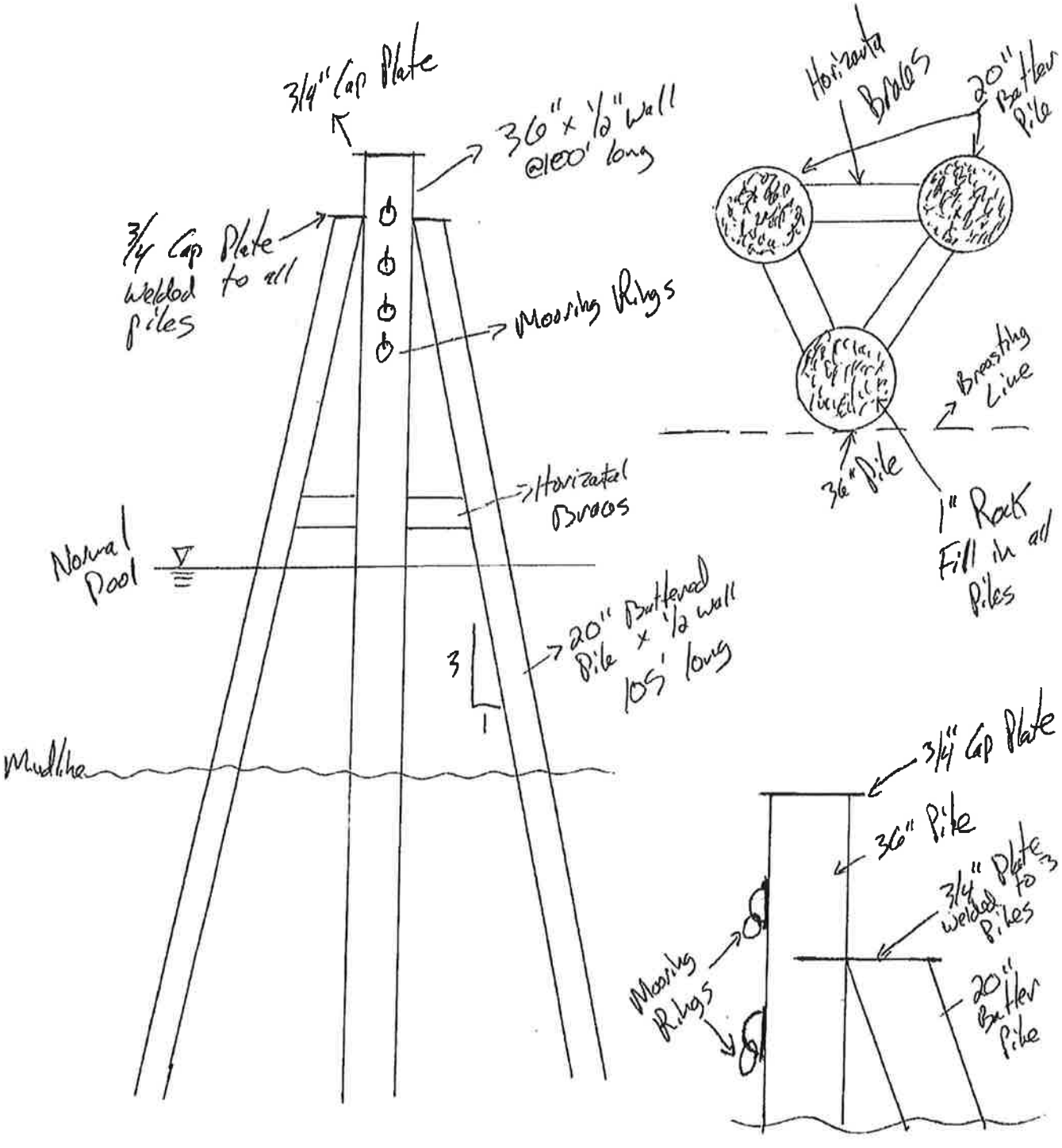
Steel Thickness Measurments

South Cell

Side	Taken on Center Sheet 2+	0	2-	-10	-20
North	0.375	0.380	0.380	0.370	0.335
East	0.365	0.365	0.360	0.400	0.365
South	0.370	0.375	0.390	0.300	0.300
West	0.380	0.365	0.365	0.365	0.380

North Cell

Side	Taken on Center Sheet 2+	0	2-	-10	-20
North	0.370	0.315	0.320	0.370	0.380
East	0.310	0.315	0.360	0.370	0.370
South	0.370	0.375	0.350	0.330	0.335
West	0.370	0.370	0.360	0.365	0.330



* Conceptual Drawing for Reference