SP-150853
(New)

SPECIAL PROVISIONS
FOR
WORK IN THE LEVEE BUFFER ZONE

Scott County
IM-074-1(210)5--13-82

Effective Date
June 21, 2022

THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

150853.01 DESCRIPTION.

A. The work under this contract is located adjacent to a federally constructed levee along the Mississippi River. No improvement shall be passed over, under, or through the levee, improved channels or floodways, nor shall any excavation or construction be permitted within the limits of the Levee Buffer Zone other than the construction under this contract without prior approval of the Engineer, the City of Bettendorf and the United States Army Corps of Engineers (USACE) and subject to the Conditions of the Section 408 Permit. The limits of the Levee Buffer Zone are 300 feet riverward and 500 feet landward of the centerline of the levee. Any work performed in the Levee Buffer Zone shall be subject to these special provisions.

B. The following I-74 Project elements which have been or will be constructed in close proximity to the levee are subject to special requirements for backfill, as detailed in the Materials section below and in the contract documents:

- Relocation of an existing 66 inch sanitary sewer: partial removal of the existing sewer to allow tie-in; construction of a new 66 inch sanitary sewer further landward of the levee and away from Piers 16 EB and WB; and grouting / backfilling of the abandoned sewer segment.
- Construction of drilled shaft foundations for Piers 16 EB and WB, landward of the levee.
- Removal of an existing 18 inch storm sewer.
- Construction of two 36 inch storm sewers, landward of the levee.
- Partial removal of existing Viaduct Piers EB1, WB1, EB2 and WB2, to below grade.
- Partial removal of existing suspension bridge anchorage piers, to below grade.
- Levee improvements including placement of fill, grading, and landscaping to accommodate a new bike trail and connection, and restoration of the levee and adjacent ground surfaces, including erosion protection of the riverside slope.

- Installation of bollards and revetment on the bike trail and the landward side of the levee.

C. Seepage control under the levee, preserving levee stability, and flood protection shall be given special consideration by the Contractor: The following is included as background information for the Contractor:

- Seepage control is currently provided by the existing levee through the use of an engineered zoned embankment comprised of fine grain impervious soil materials constructed over top limestone bedrock. The zoned earthen embankment consists of compacted impervious fill, and compacted random fill over top a relatively compact and impervious limestone bedrock, which limit levee thru seepage and under seepage. In general utilities, crossings, and any penetrations of the levee cross section, which have the potential to cause discontinuities in the levee and promote possible seepage paths, have been founded in bedrock or in the levee cross section, with compacted impervious fill material used to backfill any excavation, thereby maintaining the necessary seepage control. The existing 8.5 foot by 6.5 foot government interceptor sewer, which runs beneath and approximately parallel to the levee generally landside of the crest, has a zone of compacted impervious fill above the cast-in-place concrete sewer and, is founded directly in limestone bedrock, which together forms a barrier to seepage.
- Levee stability is provided by the existing levee through the use of an engineered zoned earthen embankment consisting of compacted material having the necessary strength founded on limestone bedrock, with the levee geometry including crest width and side slopes, necessary to provide the required factors of safety against foundation and slope instability under the design load cases. Riprap / bedding stone materials, which provide erosion protection, assist in stabilizing the riverside levee slope.
- The City of Bettendorf operates and maintains the levee in accordance with the Public Works Department Emergency Operations Manual as part of the City of Bettendorf Emergency Operations Plan. This is necessary to provide flood protection for the City of Bettendorf against Mississippi River design flood levels.

150853.02 WORK ZONE REQUIREMENTS.

A. All construction access for work on the land side of the levee shall be gained land-side of the levee without traversing or damaging the levee section. No construction activities shall be performed within the limits of the Restricted Area shown in Figure 1, except as detailed in the contract documents and in the Contractor's Work Plan approved by the Engineer, the City of Bettendorf and the USACE. No heavy equipment or stockpiling of materials shall be allowed within the Restricted Area.

B. The riverside slope of the levee shall not be disturbed during construction. Should the riverside slope of the levee be disturbed due to any activity of the Contractor, the slope shall be repaired using bedding stone and riprap as specified in the Materials section below.

C. Construction activities in close proximity to the levee, on the river side, including the removal of the existing suspension bridge anchorage piers, shall be limited to the traditional non-flood season, August 1 to February 28. Construction activities on the land side of the levee, including excavation below existing grade, may proceed at any time, subject to the approval and implementation of the Flood Contingency Plan as necessary.

D. Upon completion of construction or removal work, the site, including levee / access roads / staging area, construction limits and impacted adjacent lands, shall be restored to pre-construction conditions, except as otherwise shown in the contract documents and approved by the Engineer, the City of Bettendorf and the USACE.

E. The Contractor shall notify the Engineer, the City of Bettendorf and the USACE at least 72

hours prior to the commencement of work in close proximity to the levee.

150853.03 WORK PLAN.

A. Each Contractor subject to these Special Provisions shall develop and submit a Work Plan identifying construction sequence, means and methods; and any temporary excavation, temporary excavation support, or groundwater / storm water control measures. Details of protecting the levee and existing utilities, and minimizing disturbances to the ground, shall be included. The Contractor shall be responsible for design of all temporary excavation, temporary excavation support, and groundwater / storm water control measures.

B. The Work Plan shall be submitted to the Engineer, the City of Bettendorf, and the USACE, for approval 45 days prior to starting work in the Levee Buffer Zone. The Contractor shall not commence work in the Levee Buffer Zone prior to approval of their Work Plan.

150853.04 FLOOD CONTINGENCY PLAN.

A. Each Contractor subject to these Special Provisions shall develop, submit for approval, and be prepared to implement a Flood Contingency Plan, to provide for continuous flood protection during all construction and removal activities within the Levee Buffer Zone. The Flood Contingency Plan shall include, but is not limited to:

- Action water levels or stages where monitoring and restoring protection is necessary.
- Temporary measures needed to restore protection.
- Estimated time of year and duration of construction.
- Provisions for levee monitoring, inspection, and response during high river stages.
- Contingencies and mitigation measures which may be necessary to implement to assist in maintaining seepage control and levee stability during adjacent excavations and construction for design Mississippi River flood levels. Contingencies and mitigation measures may include on-site stockpiling of the necessary materials, such as soil and rock materials and steel sheet piling, and having equipment and labor readily available as necessary to implement the response to flooding and any potential seepage or instability that may occur.
- Demonstration of an understanding of the overall risk, including frequency and flashiness of potential high water events and consequences.
- Contact information for the individuals responsible for implementing the plan.

B. The Flood Contingency Plan shall be developed in concert with and for approval by the Engineer, the City of Bettendorf and the USACE. A Flood Contingency Plan template is provided in Appendix A of these Special Provisions, for the Contractor's use in development of a plan specific to their construction activities and contract requirements.

C. The Flood Contingency Plan shall be submitted to the Engineer, the City of Bettendorf, and the USACE, for approval 45 days prior to starting work in the Levee Buffer Zone. The Contractor shall not commence work in the Levee Buffer Zone prior to approval of their Flood Contingency Plan.

150853.05 MATERIALS.

A. Compacted Impervious Fill.

1. All material used to backfill excavation and utilities in close proximity to levee shall be compacted impervious fill, unless noted otherwise in the contract documents.

2. Impervious fill shall consist of cohesive materials with 45% or more passing the No. 200 sieve, have a plasticity index (PI) between 12 and 30, have no particles greater than 3/4 inch, and shall be obtained from approved borrow sources. Materials having 85% or more fines by weight that are smaller than 0.05 mm shall not be acceptable.

3. Impervious fill shall be spread uniformly on an acceptable soil surface in horizontal layers in maximum 12 inch lifts. The impervious fill shall be moisture conditioned to within 3% above or below the optimum moisture content, and compacted to a minimum 95% of the Standard Proctor Density with compaction equipment appropriate for the material being placed. For Impervious Fill materials beneath improved and or paved surfaces, the material shall be placed in maximum 9 inch lifts and compacted to a minimum 100% of the Standard Proctor Density.

B. Utility Backfill.

Subsequent to use of the standard storm water pipe bedding and backfill details for construction of any new or relocated storm water or sanitary sewers or connections, including bedding and backfill materials, impervious fill shall be used for all backfill from 6 inches above the pipe to the finish ground surface. Alternative backfill materials may be used near surface to facilitate the need for improved and or paved surfaces.

C. Miscellaneous Fill.

1. Miscellaneous fill materials may be used to construct fill above the “net” levee section (overbuild such as levee connection ramps) defined as a minimum 10 foot wide levee crest at the design elevation, with 3H:1V side slopes.

2. Miscellaneous fill shall consist of soil materials with less than 40% retained on the No. 4 sieve, less than 30% retained on the 3/4 inch sieve, have no particles greater than 3 inches, and obtained from approved borrow sources.

3. Miscellaneous fill will be spread uniformly on an acceptable soil surface in horizontal layers in maximum 12 inch lifts. The miscellaneous fill will be moisture conditioned to within 3% above or below the optimum moisture content, and compacted to a minimum 95% of the Standard Proctor Density with compaction equipment appropriate for the material being placed. For miscellaneous fill materials beneath improved and or paved surfaces, the material will be placed in maximum 9 inch lifts and compacted to a minimum 100% of the Standard Proctor Density.

D. Bedding Stone.

1. For any repairs to the riverward slope of the levee, use bedding stone and riprap. Bedding stone shall be place first to restore a nominal 6 inch thick course.

2. Bedding stone shall meet the requirements of Articles 4130.03 and 4130.05 of the Standard Specifications, for erosion stone description and quality.

3. Bedding stone gradation shall meet the requirements of Gradation 4 of the Aggregate Gradation Table in the Appendix to Article 4109.02 of the Standard Specifications.

4. Provide bedding stone well-graded between the limits shown. Engineer will determine gradation compliance by visual inspection. After visual inspection and prior to loading, the Engineer may designate material as too fine or too coarse.

E. Riprap.

1. For any repairs to the riverward slope of the levee, Class A revetment shall be placed to restore a nominal 18 inch thick course, with bedding stone beneath.

2. Class A Revetment shall meet the requirements of Section 4130 of the Standard Specifications.

3. Provide riprap well-graded between the limits shown. Engineer will determine gradation compliance by visual inspection. After visual inspection and prior to loading, the Engineer may designate material as too fine or too coarse.

150853.06 CONSTRUCTION.

A. Construction means and methods shall minimize disturbed areas and protect the levee and existing utilities. In addition, the work area around the removal of existing and construction of new storm sewers, and existing anchorage structures, shall be limited to minimize ground disturbance. See Figure 1 for Restricted Area, in which no construction activities may occur, except as approved by the City of Bettendorf and the USACE, in the approved Work Plan.

B. This project includes limited removal of the existing Bettendorf Anchorage Structures as described in the contract documents. These structures are located within the existing levee and the work area around this removal shall be limited to minimize ground disturbance. In addition, this project includes removal of existing EB Viaduct including piers to below grade. Piers EB1 and EB2 are within the levee buffer zone and removal shall be limited to minimize ground disturbance. All work shall conform to the contract documents and the Contractor's Work Plan, as approved by the Engineer, the City of Bettendorf and the USACE.

150853.07 METHOD OF MEASUREMENT AND BASIS OF PAYMENT.

No separate payment will be made for costs incurred due to compliance with this Special Provision. The cost of materials specified for fill or levee repair is incidental to the cost of associated work.

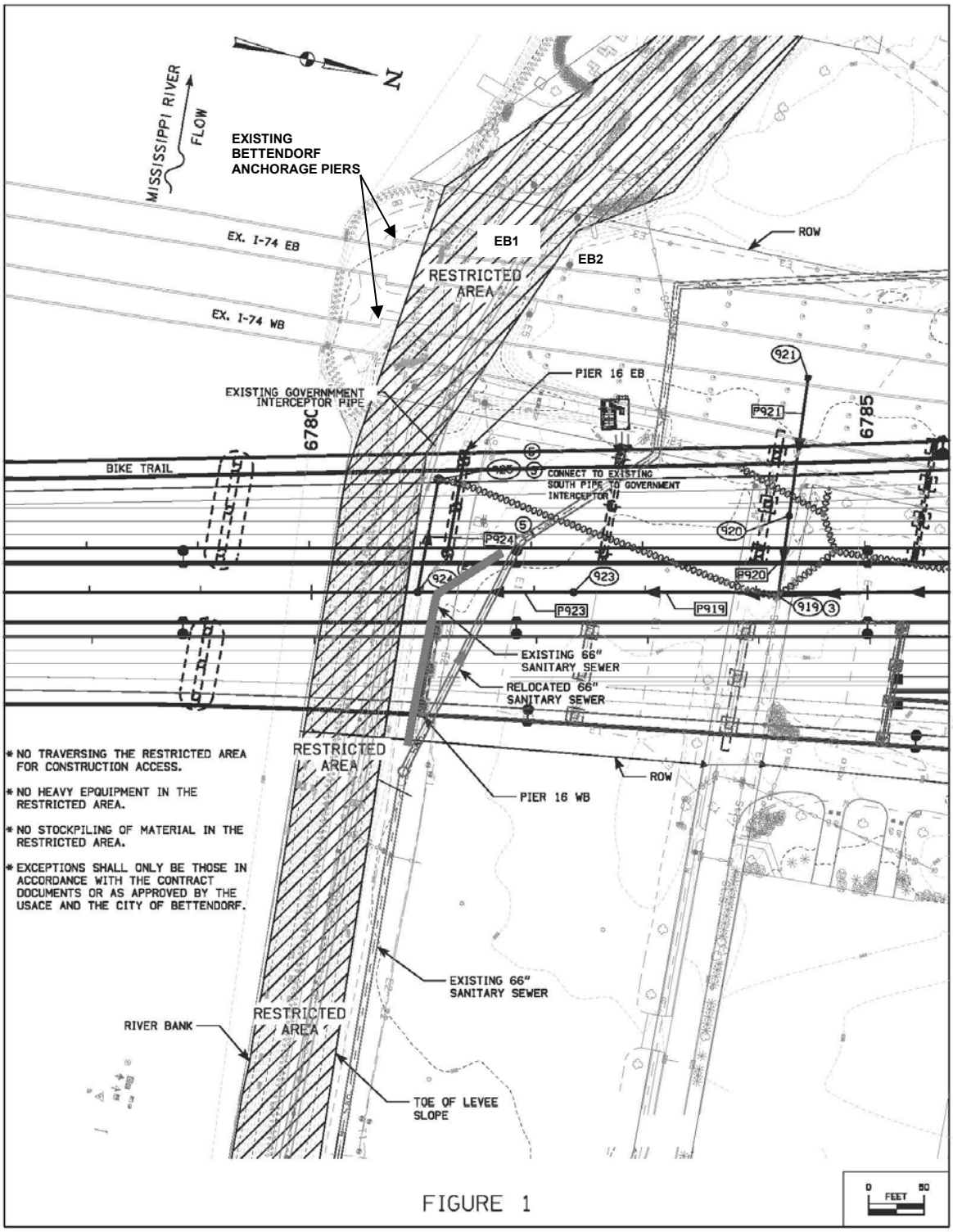
N
MISSISSIPPI RIVER FLOW
EXISTING BETTENDORF ANCHORAGE PIERS
EB1
EB2
ROW
RESTRICTED AREA
EX. I-74 EB
EX. I-74 WB
PIER 16 EB
EXISTING GOVERNMENT INTERCEPTOR PIPE
678C
6785
921
P921
BIKE TRAIL
CONNECT TO EXISTING SOUTH PIPE TO GOVERNMENT INTERCEPTOR
920
P924
924
923
P920
P923
P919
919
EXISTING 66" SANITARY SEWER
RELOCATED 66" SANITARY SEWER
* NO TRAVERSING THE RESTRICTED AREA FOR CONSTRUCTION ACCESS.
* NO HEAVY EPQUIPMENT IN THE RESTRICTED AREA.
* NO STOCKPILING OF MATERIAL IN THE RESTRICTED AREA.
* EXCEPTIONS SHALL ONLY BE THOSE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS OR AS APPROVED BY THE USACE AND THE CITY OF BETTENDORF.
RESTRICTED AREA
ROW
PIER 16 WB
EXISTING 66" SANITARY SEWER
RIVER BANK
RESTRICTED AREA
TOE OF LEVEE SLOPE
0
50
FEET

FIGURE 1

Appendix A

Flood Contingency Plan (template)

Construction of: _____

Contract_____

For Project: (_____)

Contractor:_____

(To be completed by the Contractor)

Revised February 1, 2017

Introduction

The City of Bettendorf, Iowa, operates and maintains the City of Bettendorf Levee which protects the City of Bettendorf from flood waters of the Mississippi River and its tributaries. The City of Bettendorf, Public Works Department, Emergency Operations Manual (updated January 5, 2017) and Emergency Operations Plan (January 13, 2016) provide guidance for operations and maintenance of the levee, including during flood events. During flood events, the City of Bettendorf may activate the Bettendorf Emergency Operations Center (BEOC) under the direction of the City Administrator. The Director of Public Works, and in turn his/her designee, the Deputy Director of Public Works, Operations, have operations and maintenance authority during a flood as per the Emergency Operations Plan. Operations and maintenance of the levee and response to high water events are critical to the successful flood protection of the City of Bettendorf. The City of Bettendorf operates and maintains the levee as local sponsor in concert with the U.S. Army Corps of Engineers, Rock Island District (USACE), the Federal partner. The City of Bettendorf Levee system includes an earthen levee and reinforced concrete flood wall that go through an annual inspection with the USACE. All directives for flood response activities will be at the discretion of the BEOC and the Director of Public Works.

The I-74 Iowa Viaduct project includes construction of a new Mississippi River bridge and Iowa approach, and demolition and removal of the existing bridge and approach. This includes construction activities in close proximity to the levee. The Flood Contingency Plan is to be used by the Contractor in performing construction activities in the Levee Buffer Zone, and monitoring and response to flood waters of the Mississippi River. The Levee Buffer Zone is defined as extending 300 feet riverward and 500 feet landward of the levee.

Purpose

Using this template, the Contractor will develop and submit for approval a Flood Contingency Plan for all work to be performed in the levee buffer zone. The plan shall be submitted to the Engineer, the City of Bettendorf, and the USACE, for approval 45 days prior to construction. The plan shall be developed with the Contractor demonstrating an understanding of the overall risk, including frequency and flashiness of potential high water events and consequences.

The plan shall include pertinent information from the City of Bettendorf, Emergency Operations Manual, supplemented as necessary to address the specific construction activities being performed as part of the contract. This information shall include but is not limited to: action water levels or stages where monitoring and protection are necessary; temporary measures needed to maintain and restore flood protection; estimated time of year and duration of construction; and contact information for personnel responsible for enacting the plan.

This Flood Contingency Plan template shall serve as a starting point for the Contractor to develop a Flood Contingency Plan specific to the contract. Pertinent information from the Emergency Operations Manual, included herein, shall be incorporated into the Contractor's Flood Contingency Plan. This template further provides placeholders and identifies additional information to be developed and provided by the Contractor.

The following provides details for which this plan has been developed and submitted for approval:

Construction of _____

Contract Number(s) for the Iowa DOT: _____

Project Number(s): (_____)

Contractor Designee (responsible for monitoring/reporting):

Name:_____ Phone Number: _____

Backup Contractor Designee (responsible for monitoring/reporting)

Name:_____ Phone Number: _____

City of Bettendorf Emergency Operations Center (BEOC) City Administrator:

Name:_____ Phone Number: _____

City of Bettendorf Director of Public Works:

Name:_____ Phone Number: _____

City of Bettendorf Deputy Director of Public Works, Operations:

Name:_____ Phone Number: _____

Construction (brief description) to be completed:

_____

_____

_____

_____

_____

Construction Sequence:

1. _____
2. _____
3. _____
4. _____
5. _____

Construction Schedule (of those elements within the Levee Buffer Zone):

1. _____
2. _____
3. _____
4. _____
5. _____

Flood Contingency Plan

The Contractor has developed this Flood Contingency Plan to monitor and respond to flood waters of the Mississippi River. Due to forecasting and the nature of upper Mississippi River, the Contractor has several days' notice prior to a flood event. The Contractor will monitor current and forecast water levels via the river gage at "Mississippi River at Rock Island" as reported by the NOAA National Weather Service. The Flood Contingency Plan shall be implemented when the river is forecast to be, or reported water stages are 15 feet or more, and shall be continuous through and until water stages fall below 15 feet for three consecutive days. The Contractor Designee will, during flood water stages, be responsible for monitoring the water levels and construction activities in the Levee Buffer Zone, on a daily basis. The Backup Contractor Designee will, in the absence of the primary designee, perform the same duties as necessary to ensure that the Contractor can take action at any time.

The Contractor will monitor the flood water stages (river gauge 15 feet or higher), and construction activities in the Levee Buffer Zone, and implement necessary mitigation measures against observed seepage and or instability. Mitigation measures may include but are not limited to: driving sheet piling, backfilling with gravel and riprap, or buttressing excavations or slopes to arrest ground instability; or backfilling with sand, gravel, and riprap to mitigate seepage and potential ground loss. The Contractor will maintain constant communications with the Engineer, the City of Bettendorf, and the USACE, and communicate daily his /her flood water level and construction activity monitoring, and responses, including any mitigation measures. Mitigation measures will be implemented in concert with the City of Bettendorf and the USACE. The Contractor will use on-site, equipment, labor, and materials, as necessary to implement any mitigation measures. The Contractor will have on-site the necessary equipment and stockpiled materials at all times during construction activities in the Levee Buffer Zone, in addition to on-call labor required to implement any mitigations measures promptly. In an emergency the Contractor shall call 911.

The Contractor's on-site equipment, stockpiled materials, and on-call labor will be as follows.

Contractor on-site equipment includes:

1. *(examples: hydraulic excavator(s), dump truck(s), etc.)*
2. _____
3. _____
4. _____
5. _____

Contractor on-site stockpiled materials and quantities include:

1. *(examples: riprap, gravel, sand, sheet piling, etc.)*
2. _____
3. _____
4. _____
5. _____

Contractor on-call labor includes:

1. *(examples: foremen(x), equipment operators(x), laborers(x), etc.)*
2. _____
3. _____
4. _____
5. _____

The Contractor's mitigation measures proposed to be undertaken against possible seepage and/or instability may include but are not limited to the following:

1. _ *(example: driving sheet piling, backfilling with gravel and riprap, or buttressing excavations or slopes to arrest ground instability)* _
2. _ *(example: backfilling with sand, gravel, and riprap to mitigate seepage and potential ground loss)* _
3. _____
4. _____
5. _____

Approvals

The Contractor will submit the Flood Contingency Plan to the Engineer, the City of Bettendorf, and the USACE for approval 45 days prior to construction. The Contractor will continue to evaluate the Flood Contingency Plan during flood stages and any modifications to the plan will be done so only upon approval of the Engineer, the City of Bettendorf, and the USACE.

Reference Data

The following general reference data will be used to guide the Contractor's monitoring and response.

River Gauge Height (feet) / River Stage (feet)

Flood Stage: 557.5 / 15
Gauge Zero: 542.5 / 0.0

Flood Categories (river gage - feet)

Major Flood Stage:	18
Moderate Flood Stage:	16
Flood Stage:	15
Action Stage:	13

Approximate Flood Impacts (river gage – feet)

29	Water reaches the top of the flood walls and levees in Bettendorf.
27	Water reaches the bottom of the Arsenal Bridge deck.
26	Water reaches the top of the lowest section of the flood wall at Leach Park in Bettendorf.
21.5	Water affects the Rock Island Arsenal Bridge. Bettendorf's Leach Park is underwater.
20	Lock and Dam 15 is closed.
18.95	Leach Park opening is closed
17.5	Water affects Bettendorf's Leach Park.

References

1. City of Bettendorf, Public Works Department, Emergency Operations Manual (updated 01/05/17)

2. City of Bettendorf, Emergency Operations Plan (January 13, 2016)

3. U.S. Army Corps of Engineers, Rock Island District, City of Bettendorf, Iowa, Levee Alteration Approval letter (re: Engineering Circular 1165-2-216) to City of Bettendorf (January 29, 2017)

4. Iowa DOT Special Provisions for Work in the Levee Buffer Zone

5. NOAA National Weather Service, “Mississippi River at Rock Island, Lock & Dam 15”, river gage http://water.weather.gov/ahps2/hydrograph.php?wfo=dvn&gage=rcki2