Estimated Costs / Detailed Budget Supporting Documentation

DEPARTMENT OF THE ARMY
OMAHA DISTRICT, CORPS OF ENGINEERS
1616 CAPITOL AVENUE
OMAHA, NEBRASKA 68102-4901

REPLY TO
ATTENTION OF

District Commander

The Honorable Cathy Crain
1201 Main Street
Hamburg, IA 51640

Dear Mayor Crain:

Per your request, the Omaha District has developed an estimate of costs that the city would incur to raise the Hamburg – Ditch 6 levee from elevation 911 to elevation 919. The costs include: surveys, geotechnical investigation and testing, placing material on the levee berm, seepage protection measures, engineering and design costs, supervisory and administration costs of the construction contract, contingency costs, and an independent technical review of the design and construction documents to be developed. Finally, the costs also include a hydrologic study to make sure that the levee raise will not transfer potential risk or potentially cause damages in another areas. A breakdown of costs follows:

Surveys, geotechnical investigation and testing	$ 200,000
Hydrologic study	$ 125,000
Embankment earthwork	$4,225,000
Seepage control measures	$3,150,000
Engineering and design	$ 442,500
Supervision and administration	$ 442,500
Contingencies	$ 737,500
Independent technical review	$ 15,000
Total costs	**$9,337,500**

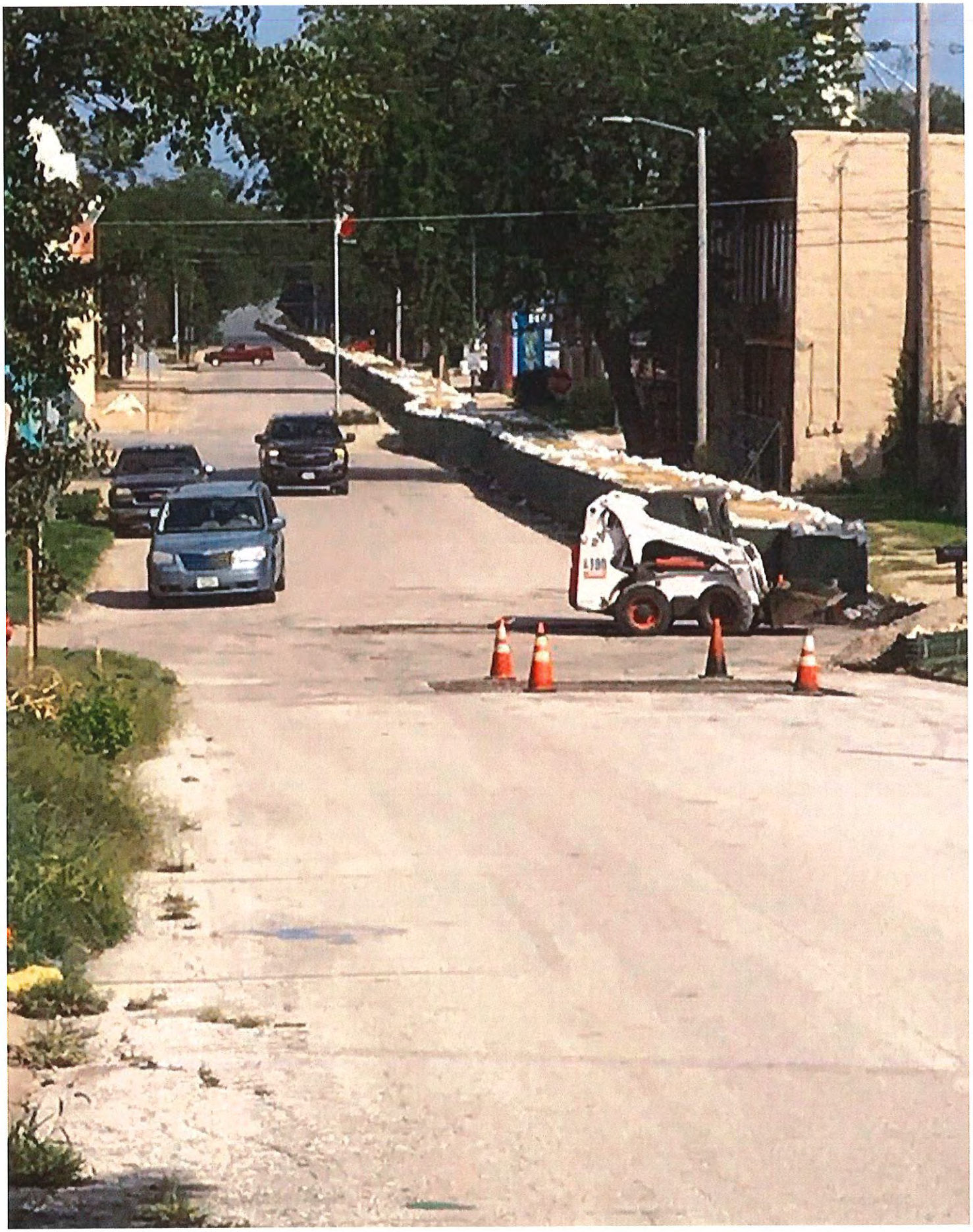
The costs presented above do not include any costs associated with acquiring borrow material (an estimation of 295,000 cubic yards), or lands, rights-of-way, or easements that may be necessary to construct the levee. These costs are considered sponsor costs and would be in addition to the costs above.

We look forward to continuing to work with you and your staff on the Hamburg Ditch 6 Levee. If you have any questions and/or concerns, please contact Mr. Matthew Krajewski, Chief, Readiness Branch at (402) 995-2448 or by email at Matthew.S.Krajewski@usace.army.mil.

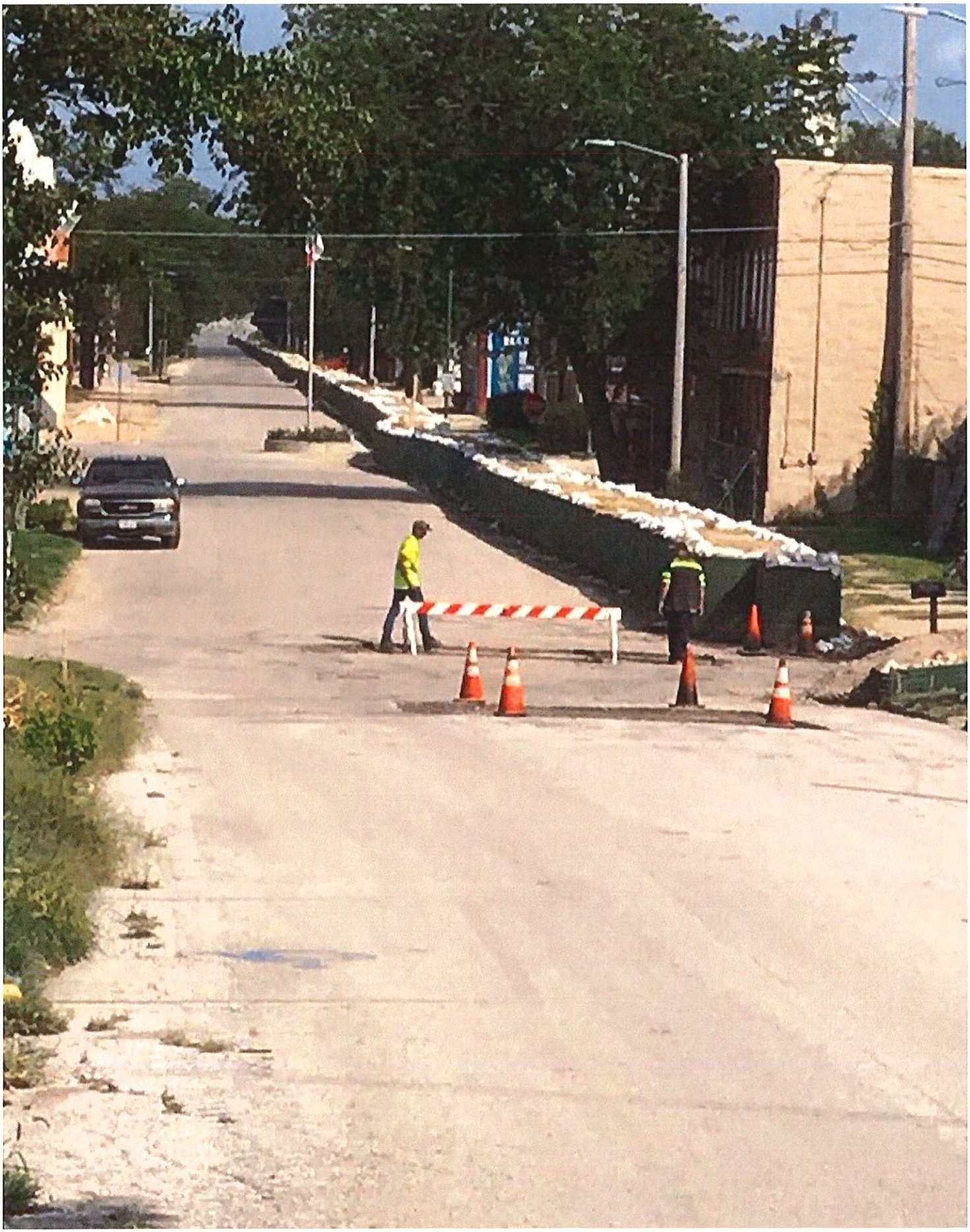
Sincerely,

John L. Hudson, P.E.
Colonel, Corps of Engineers
District Commander

2019 Flooding



HESCO barrier



HESCO barrier

919' Elevation - 2011

Cooperation Agreement Document

COOPERATION AGREEMENT BETWEEN
THE UNITED STATES OF AMERICA
and
City of Hamburg, Iowa
for
EMERGENCY ASSISTANCE

THIS AGREEMENT, entered into this ____ day of April 2019, by and between THE DEPARTMENT OF THE ARMY (hereinafter referred to as the "Government") acting by and through the District Engineer, Omaha District, U.S. Army Corps of Engineers, and the City of Hamburg, Iowa, (hereinafter referred to as the "Public Sponsor"), acting by and through the Mayor of Hamburg, Iowa.

WITNESSETH THAT:

WHEREAS, 33 USC 701n authorizes the Chief of Engineers to flood fight and perform rescue operations.

WHEREAS, the Public Sponsor has requested assistance under 33 USC 701n, and the Public Sponsor qualifies for such assistance in accordance with the established policies of the U.S. Army Corps of Engineers.

WHEREAS, the Public Sponsor hereby represents that it has the authority and legal capability to furnish the non-Federal cooperation hereinafter set forth and is willing to participate with the terms of this agreement.

NOW, THEREFORE, the parties agree as follows:

1. The Government will perform the work described in its scope of work (attached) that is made part of this agreement.

2. The Public Sponsor will:

a. Provide without cost to the Government all lands, easements, rights-of-ways, relocations, and borrow and dredged or excavated material disposal areas necessary for the work.

b. Hold and save the Government free from damages arising from construction, operation, maintenance, repair, replacement, and rehabilitation of the work, except damages due to the fault or negligence of the Government or its contractors.

c. Operate, maintain, repair, replace, and rehabilitate the completed work in a manner satisfactory to the Government.

d. Remove, at no cost to the Government, all temporary work constructed by the Government.

3. ATTACHMENTS:

a. Exhibit A - Government Scope of Work for Critical Infrastructure Emergency Flood Protection.

IN WITNESS WHEREOF, the parties hereto have executed this agreement of the day and year first above written.

THE DEPARTMENT OF THE ARMY

BY: _____

Colonel John L. Hudson
District Commander

DATE: 4-25-19

THE CITY OF HAMBURG, IOWA

BY: Kent Benefiel S.O.

Kent Benefiel
Mayor Pro Tem Hamburg, Iowa

DATE: 4-25-19

HAMBURG, IOWA
2019 SPRING FLOOD
DITCH 6 LEVEE RAISE TO ELEVATION 919
SCOPE-OF-WORK
12 April 2019

1.0 GENERAL

1.1 Project Features. The project generally consists of construction of emergency flood protection structures and all ancillary work and features to protect the City of Hamburg, Iowa from high Missouri River stages. The emergency flood control structures generally consist of earthen levees and HESCO Bastions structures as illustrated on the attached plans and as discussed in this scope-of-work (SOW).

A summary of the work included in this SOW and shown on the drawings includes:

- Hauling government provided HESCO baskets and unfilled sandbags from the Corps of Engineers warehouse at the Missouri River Project Office to a storage location as shown on the drawings.
- Procuring, hauling, and stockpiling quarried sand at location(s) shown on the drawings for future use to fill HESCO baskets and sandbags.
- Procuring, hauling, and storing plastic sheeting at location(s) shown on the drawings for future use as erosion protection at levee embankment closure structures, and to serve as a water resistant barrier along the riverside face of the HESCO baskets.
- Ditch 6 Levee Raise: Placement of levee embankment along existing Ditch 6 Levee alignment. (Borrow is provided at no cost to the Contractor. The Contractor is responsible for all excavation, borrow site restoration, hauling, placement, and compaction. Borrow site location(s) are shown on the drawings.)
- Ditch 6 Levee Raise: Procure and perform seeding and erosion control material placement/installations operations.
- Ditch 6 Levee Raise Closures: Hauling and stockpiling of levee embankment borrow material at a location(s) shown on the drawings for future work at the Highway 333 closure structure and at the railroad crossing closure structure.
- Ditch 6 Levee Raise Closures – Contract Option: Installation of levee embankment material, plastic sheeting erosion protection, and filled sandbags at the Highway 333 and the railroad crossing closure structures, as directed by the COR.
- Closure Structure Located Underneath of the I-29 Overpass: Hauling and stockpiling of levee embankment borrow material at a location(s) shown on the drawings for future work at the closure structure located underneath of the I-29 overpass, at the railroad crossing closure structure.
- Closure Structure Located Underneath of the I-29 Overpass – Contract Option: Installation of levee embankment material, plastic sheeting erosion protection,

and filled sandbags at the closure structure located underneath of the I-29 overpass, as directed by the COR.

- I-29 Closure Structure: Placement of HESCO baskets, plastic sheeting, and sandbags along the shoulder of I-29 at the locations shown on the drawings.
- Installation of levee embankment material, plastic sheeting erosion protection, and filled sandbags at the closure structure located underneath of the I-29 overpass, as directed by the COR.

All work and any modifications or changes to the plans and this SOW shall be coordinated through, and approved by, the Contracting Officer's Representative (COR).

1.2 Required Personnel. Personnel required on site at all times during construction:

1.2.1 Site Safety and Health Official (SSHO)

- The SSHO must meet the requirements of EM 385-1-1, Section 1, and ensure that the requirements of 29 CFR 1926.16 are met for the project. One Site Safety and Health Officer (SSHO) for the project.
- The SSHO or an equally-qualified Designated Representative/alternate shall be at the work site at all times (one individual for the project) to implement and administer the Contractor's safety program and government-accepted Accident Prevention Plan.
- The SSHO's training, experience, and qualifications shall be as required by EM 385-1-1 paragraph 01.A.17, entitled SITE SAFETY AND HEALTH OFFICER (SSHO), and all associated sub-paragraphs.
- A Competent Person shall be provided for all of the hazards identified in the Contractor's Safety and Health Program in accordance with the accepted Accident Prevention Plan, and shall be on-site at all times when the work that presents the hazards associated with their professional expertise is being performed.
- Provide the credentials of the Competent Persons(s) to the Contracting Officer for acceptance in consultation with the Safety Office.

1.2.2 Project Superintendent / CQC System Manager

- Establish and maintain an effective quality control (QC) system. QC consist of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements. Cover all construction operations, both onsite and offsite, and be keyed to the proposed construction sequence.
- The project superintendent will be held responsible for the quality of work and is subject to removal by the Contracting Officer for non-compliance with the either the established quality control system or quality requirements specified in the contract. In this context the highest level manager responsible for the overall construction activities at the site, including quality and production is the project superintendent. The project superintendent must maintain a physical presence at the site at all times and is responsible for all construction and related activities at the site, except as otherwise acceptable to the Contracting Officer.

- On-Site Project Superintendent must have a minimum of 5 years construction-related experience (within the last 10 years) as a superintendent on construction projects similar in monetary size and/or scope to this project.

2.0 EXECUTION PERIOD

The Ditch 6 levee raise shall be completed within twenty-eight (28) from issuance of the Notice to Proceed to the Contractor. All sand, sandbags, HESCO Bastion structures, rolls of plastic sheeting, and cohesive borrow material shall be placed or stockpiled on-site at the location shown on the drawings as indicated in this SOW or shown on the drawings. Unless otherwise directed herein or by the COR there are no restrictions on the order of construction of the Flood Protection Structures. Given the nature of work and schedule, night time operations are likely. The Contractor will provide portable light plants for night time operations.

3.0 DEFINITIONS

3.1 Flood Protection Structures. Any earthen levee, sandbag structure, HESCO Bastion structure, or other approved measures used to provide some level of flood protection to designated areas as shown on the plans, described in this SOW, or directed by the COR.

3.2 Earthen Levee. Flood Protection Structures constructed of compacted soil from the designated borrow source as shown on the plans, described in this SOW, or directed by the COR.

3.3 Sandbag Structure. Flood Protection Structures constructed of Burlap or Poly-propylene bags partially filled with sand and placed as shown on the plans, described in this SOW, or directed by the COR.

3.4 HESCO Bastion Structures. Flood Protection Structures constructed with a propriety product that consists of geotextile-lined, welded wire mesh framed unit. For purposes of the SOW, a unit is defined as being 3-feet wide by 3-feet wide by 4-foot high and is filled with sand. Multiple units are placed together to form the structure. The units are placed and erected as shown on the plans, described in this SOW, the attached assembly guide, or directed by the COR.

4.0 GENERAL HEALTH AND SAFETY REQUIREMENTS

All contract work shall conform to the most current U.S. Army Corps of Engineers safety and health requirements manual, EM 385-1-1 or OSHA requirements, as appropriate.

5.0 PROJECT COORDINATION

The COR and the Contractor shall establish and maintain coordination and communication throughout construction to include a formal morning daily meeting to be held by 8:00 AM. At the morning meeting, the Contractor will review their work status for each structure/segment to include degree of completion, scheduled completion date, remaining work, projected activities in next 24 hours, and issues.

6.0 SITE PREPARATION

6.1 Scope. The work covered under this section consists of furnishing all plant, labor, materials, and equipment for performing all operations necessary to clear and prepare subgrade and the existing ground surfaces along the proposed flood protection structure alignments, as specified herein, as shown in accompanying plans, or as staked in the field.

6.2 Stripping, Clearing and Grubbing for Earthen Levees. The area within the footprints of the earthen levee alignments shall be cleared of brush, trees, litter, debris, etc. and stripped of vegetation. The intent is to provide intimate contact/bond between the new levee embankment material and the prepared surface. Grubbing will be performed as necessary.

6.3 Subgrade Preparation for HESCO Bastion Containers. HESCO Bastion containers will be placed along the paved shoulder of Interstate 29 and therefore; no subgrade preparation is required at these locations. However, at the upstream HESCO/existing levee tie-off the subgrade will be leveled and proof rolled to provide a competent and level foundation. An uneven or poorly prepared subgrade can result in leaning structures, which will not be accepted.

6.4 Obstructions. Any fences, sheds, structures, or any other obstructions within the footprint of the flood protection structures not already removed by others shall be removed by the Contractor. Any structures or debris that results from these actions shall be placed adjacent to, but no closer than 10 feet from, the landside toe of the levee or structure.

7.0 FLOOD PROTECTION STRUCTURES

7.1 General. The work covered under this section consists of furnishing all plant, labor, materials, and equipment needed to perform all operations necessary to construct Flood Protection Structures along the proposed alignments, as specified herein, shown in the plans, or as staked in the field by the COR.

The Flood Protection Structures shall be constructed to the elevations shown on the plans, or as directed in the field by the COR. The elevations shown are referenced to the top of the Flood Protection Structures. Each Flood Protection

Structure shall be surveyed as indicated below to ensure as-built elevations meet the design elevations and tolerances indicated in the table below.

Flood Protection Structures As-Built Elevation Tolerances		
Structure Type	**Tolerance (1)**	**Notes**
Earthen Levees	-0 to +3 inches	Ditch 6 Levee Raise and Earthen Levee Closure Structures.
(1) As-built structures shall meet the elevations provided in the design requirements		

7.2 Foundation Preparation. All surfaces, within the footprint of the Flood Protection Structures shall be prepared in accordance with Section 6.0 Site Preparation.

7.3 General Provisions. The following provisions are included in the SOW to provide the COR and the Contractor with information regarding the location of the Flood Protection Structures, access routes, and borrow sites.

7.3.1 Flood Protection Structure Locations. The locations of the Flood Protection Structures are shown on the drawings. The exact locations will be staked by the Contractor and approved by the COR.

7.3.2 Haul Routes. The Contractor shall coordinate haul routes and any other mobilization routes with the State Department of Transportation, the County Roads Superintendent, and the City of Hamburg. The haul routes shall also be approved by the COR.

7.3.3 Road Maintenance During Construction. All public and private roads utilized to perform work that remain open to the public shall be maintained generally free of debris, rutting, and excessive mud and/or soil as directed by the COR. On non-paved roads, the Contractor shall be responsible for placement of gravel surfacing and grading operations, as necessary, to maintain a road surface relatively rut-free so that the roads can remain open to public traffic.

7.4 Compacted Earthen Ditch 6 Levee and Compacted Earthen Levee Closure Structures.

7.4.1 Cohesive Soil. All cohesive soil shall be obtained from the designated borrow site(s), or as approved by the COR. Cohesive soil shall be free from roots and other organic debris. Seams of sand or other granular material in the borrow area, if encountered, shall be avoided to the extent practicable, as directed by the COR. The borrow site(s) for cohesive soil are identified on the drawings. The cohesive soil is provided at no charge for the material to the Contractor; however, the Contractor is responsible all costs incurred for excavation, borrow site restoration, hauling, placement, and compaction.

7.4.2 Placement and Compaction. Cohesive soil for the Ditch 6 levee raise, for other earthen levees, or earthen levee closure structure locations shall be placed in uncompacted lifts not to exceed 8 inches. Handling of the borrow material shall be such that excessive drying of the material does not take place and the material is placed in a moist state. Following placement of each lift, the material shall be compacted to a uniform dense state, utilizing three (3) passes of compaction equipment (sheepsfoot rollers) as directed in the field by the COR. The final levee surface shall be reasonably uniform and smooth and free from any loose and/or uncompacted material. Care shall be taken to ensure that all earthen levee surfaces conform to the elevations, grades, and slopes shown in the plans or specified within the SOW. The existing levee surfaces/closure structure abutment areas shall be scarified prior to placement of levee embankment material to assure a satisfactory bond is achieved. All rutting and erosion shall be repaired by the Contractor, at the Contractor's expense, prior to completion of the project.

7.4.3 Riverside Slope Plastic Sheeting at Closure Structures. (CONTRACT OPTION) Plastic sheeting shall be placed continuously over the riverside slope of the compacted earthen levee closure structures. Prior to the placement of plastic, the levee surface shall approved by the COR. Plastic Sheeting shall be clear polyethylene film, 6 mil minimum thickness (non-reinforced).

The plastic shall overlap the levee crest and extend beyond the riverside toe as shown on the plans. Any overlapped seams shall be perpendicular to the levee crest and shall be placed such that the upstream plastic sheet lies on top of downstream plastic sheet so that river flow does not separate the seam. The upstream plastic sheet shall overlap the downstream plastic sheet a minimum of 4 feet and shall be secured with sandbags.

Plastic sheeting will be taught and continuously anchored along the entire length of the riverside toe and riverside crest with sandbags as shown on the plans. Sandbags shall also be placed on the riverside slope over all overlap seams and every 100 feet on-center as shown on the drawings. Provide a continuous line of sandbags at the riverside toe.

7.4.4 Seeding. All disturbed Ditch 6 earthen levee locations, with the exception of closure structure areas along Ditch 6, shall be seeded. The seeding method shall be drill seeding (preferred), broadcast, and/or hydroseeding. Hydroseeding or broadcast seeding shall be used only in inaccessible hard to reach areas or areas too small for drill seeding equipment.

Seed Mix (Drill Seeding):

Common Oats	50 Pounds Live Seed/Acre
Brome	40 Pounds Live Seed/Acre

If hydroseeding or broadcast seeding is used, the quantity of seed shall be twice (2 times) the rates specified above.

Drill seeding shall use cultipacker seeders or grass seed drills. Drill seed uniformly to a maximum average depth of ½ inch. Half of the total amount of seed application shall be drilled in one direction, with the remaining seed drilled at a 90-degree angle to the initial direction. The level of the seed in the seed box shall be maintained half-full or above at all times.

Erosion Control Materials. Immediately after seeding is complete, installation of erosion control materials shall be performed.

- Riverside Toe, Riverside Slope, and Crest:

Erosion control material consisting of North American Green VMAX P550, Turf Reinforcement Mat, or equivalent, shall be placed per manufacturer's recommendations on the surface of the original levee crest, riverside levee slope, and the levee crest. As a minimum, manufacturer's recommended anchorage shall be installed at the riverside edge of the original levee crest, the newly constructed riverside toe, at the midpoint of the riverside levee slope, the riverside levee crest, and the landside levee crest.

- Landside Slope:

Erosion control material consisting of North American Green ERONET SC150, Erosion Control Blanket, or equivalent, shall be placed per manufacturers recommendations on the landside levee slope. As a minimum, manufacturer's recommended anchorage shall be installed at the landside levee crest, at the midpoint on the landside levee slope, and at the landside toe.

7.5 Sandbags. The Contractor is responsible for the, filling, transportation, and placement of burlap or polypropylene sandbags in the areas as shown on the plans or directed by the COR.

7.5.1 Fill Material. Sand bags shall be filled with quarried sand obtained from an approved quarry(s), as approved by the COR.

7.5.2 Riverside Face Plastic Sheeting at Closure Structures. Plastic sheeting will be placed over the riverside face of the sandbag structure to minimize water seeping through the structure. Plastic Sheeting shall be clear polyethylene film, 6 mil minimum thickness (non-reinforced).

The plastic will be anchored below the sandbag structure and placed over the riverside face as shown on the plans. The plastic will extend a

minimum of 5 feet beyond the crest (i.e., down the landside face) to allow for potential future sandbag raises. Sandbags will be placed continuously over the plastic along the crest and along the landside slope as necessary to prevent the plastic from blowing. Any overlapped seams shall be perpendicular to the structure crest and shall be placed such that the upstream plastic sheet lies on top of downstream plastic sheet so that river flow does not separate the seam. The upstream plastic sheet shall overlap the downstream plastic sheet a minimum of 4 feet and shall be secured with sandbags.

7.6 HESCO Units. The HESCO units will be provided to the Contractor at no expense. The Contractor is responsible for the transportation, assembly, installation, and placement of the units as recommended by the manufacturer and in accordance with the drawings and SOW, and approved by the COR.

7.6.1 Fill Material. HESCO units shall be filled with quarried sand obtained from an approved quarry(s), as approved by the COR

7.6.2 Riverside Face Plastic Sheeting. Plastic sheeting will be placed over the riverside face of the HESCO structures to minimize water seeping through the structure. Plastic Sheeting shall be clear polyethylene film, 6 mil minimum thickness (non-reinforced).

The plastic will be anchored under the riverside toe of the HESCO structures prior to filling of the structures, and on top of the units with sandbags. Any overlapped seams shall be perpendicular to the structure crest and shall be placed such that the upstream plastic sheet lies on top of downstream plastic sheet so that river flow does not separate the seam. The upstream plastic sheet shall overlap the downstream plastic sheet a minimum of 4 feet.

7.7 Closure Structures (CONTRACT OPTION)

7.7.1 Railway Closure. As indicated on the drawings, the closure structure will be erected to provide a positive seal across the tracks. Contractor will coordinate with the Sponsor and railroad prior to closing the railway. Contractor shall not install the closure structure unless high water has been forecasted. All materials shall be stockpiles in order to construct the closure structure within 12 hours of a high water forecast.

7.7.2 Highway 333 Closure. As indicated on the drawings, the closure structure will be erected to provide a positive seal across the pavement. An earthen levee will be constructed around and over the existing post/panel closure structure. Contractor will coordinate with the Sponsor and entity responsible for the highway prior to closing the road. Contractor shall not install the closure

structure unless high water has been forecasted. All materials shall be stockpiles in order to construct the closure structure within 24 hours of a high water forecast.

7.7.3 Closure Structure Underneath of Interstate 29. As indicated on the drawings, an earthen levee closure structure will be erected to provide a positive seal across the railroad tracks, roadway, and at the abutments. Contractor will coordinate with the Sponsor and railroad prior to closing the railway. Contractor shall not install the closure structure unless high water has been forecasted. All materials shall be stockpiles in order to construct the closure structure within 12 hours of a high water forecast.

7.7.4 I-29 Closure Structure. As indicated on the drawings, a HESCO basket closure structure will be erected along the paved shoulder of I-29 with a tie-off on the Ditch 6 levee crest. Contractor will coordinate with the Sponsor and railroad prior to closing the railway. Contractor shall not install the closure structure unless high water has been forecasted. All materials shall be stockpiles in order to construct the closure structure within 12 hours of a high water forecast.

8.0 CULVERT CLOSURES

Provided in the table below is a list of known culverts, pipes or other penetrations that will extend below the completed Flood Protection Structures. Contractor will also perform an inspection of the levee to identify any other levee drainage structures or penetrations not identified in this SOW. Contractor will ensure all flap gates and sluice gates close and form a positive seal and provide plugs as indicated on the drawings.

Culverts and Other Penetrations Requiring Closure		
Location	**Type**	**Notes**
Ditch 6 & I-29 Structures		
Culvert A, Station 14+30	48-In Dia RCP w/ Flap Gate	Plug inlet
Culvert B, Station 64+80	24" Dia RCP w/ Flap Gate	
Culvert C, Station 66+00	24" Dia RCP w/ Flap Gate	
Culvert D, Station 76+30	24" Dia RCP w/ Flap Gate	Plug Inlet
Unlabled Culvert, North of RR Closure	36-inch Dia w/Flap Gate	
Unlabled Culvert, South of RR Closure	30-inch Dia w/Flap Gate	
Under US Interstate 29	5'x4' RCB, Sluice Gate	
Under US Interstate 29	7'x5' RCB, Sluice Gate	

9.0 SURVEYS

9.1 General. The Contractor is responsible for providing all surveys necessary to complete the work to include pre- and post-construction verification surveys. A

surveyor licensed in the State of Iowa is required for post-construct survey work. The post-construction surveys will serve as the basis for earthwork quantities.

9.2 Datums. Vertical datums for the project will be as indicated below:

•Vertical datum: NAVD88

9.3 Construction Surveys. The Contractor shall conduct pre- and post-construction topographic surveys of all earthen embankment areas being placed and a profile survey of each structure prior to acceptance by the COR. A profile shall be developed for all structures with survey points taken at a minimum of 50 foot intervals, at any distinct changes in topography, and at any change in structure type (e.g., earthen levee to sand bags). Earthen levees shall also have cross sections taken approximately every 100 feet that encompass the levee toes, both sides of the crest and the centerline of the levee as shown on the plans. Note that water side toe shots may not be practicable given water conditions. If this is the case, this will be documented on the submitted cross sections and in the survey notes. For all other structures, cross sections will be taken every 100 feet with survey points taken along the centerline of the structure and at the landward natural ground surface immediately adjacent to the landside edge of the structure.

9.4 Survey Submittal. For each structure/segment, the Contractor shall submit pre and post surveys consisting of (1) electronic field notebook data and survey notes, (2) survey data in ASCII text, and csv files, (3) dtms (or tin including export in XML file), (4) Microstation or AutoCAD cadd files. The survey data files shall have coordinates with Point No., Northing, Easting, Elevation, Point description, pen code etc. The digital terrain model(s) shall consist of InRoads dtms or AutoCad Civil 3D models and tins. The tins shall be exported to a XML file with random points, breaklines, exterior boundary, etc. The Contractor shall submit plan and profile and cross-section drawings for each structure. The plan and profile drawings shall be 34x22 (ANSI D) sheets at 50 scale. Each structure shall have plan and profile on each sheet which are labeled to delineate the start and end points for each structure constructed (e.g., earthen levee, HESCO's, sandbag, etc.). Electronic data and 5 sets of all hard copy materials (drawings, survey notes, etc.) shall be submitted to the COR within 3 days of completion of flood protection structures.

10.0 EARTHEN LEVEE BORROW SOURCE

10.1 Location and Access. See attached plan for the general location(s) of cohesive borrow material. The exact areas shall be identified by the City of Hamburg and the COR.

10.2 Operations. Clearing, grubbing, disposal of debris, grading, and satisfactory drainage of borrow pits shall be performed by the Contractor as incidental operations to the borrow operation as directed by the COR. Stripping and stockpiling of topsoil shall be performed at the start of borrow pit development.

Following the completion of borrow operations, the stockpiled topsoil shall be placed back over the borrow area to a relatively uniform thickness at the direction of the COR. The borrow pits shall be restored to a uniform grade, graded to drain, with sideslopes no steeper than 1V:5H, or as directed by the COR.

11.0 GOVERNMENT AND LEVEE SPONSOR SUPPLIED MATERIALS

The following is a list of government provided materials that are provided at no expense to the Contractor for use in the completion of the Flood Protection Structures identified in this SOW.

Government Provided Material

- Cohesive Soil
- Sandbags
- HESCO Bastions

Levee Sponsor Provided Material

- Cohesive Soil

12.0 ACCEPTANCE OF WORK

12.1 Final Inspections. The COR will perform a final inspection of each structure/segment. A punch list will be developed, which the Contract will expediently remedy. A follow-up inspection will be performed by the COR as necessary to verify that punch list items have been satisfactorily completed.

12.2 Acceptance. As indicated above, post-construction surveys with a profile that demonstrates that the Flood Protection Structures have been constructed to a top elevation that meets specified tolerances is required prior to final acceptance.

13.0 SUBMITTAL SUMMARY

As outlined above, the following submittals are required from the Contractor.
- Surveys (Section 9)

HAMBURG, IOWA
EMERGENCY FLOOD PROTECTION STRUCTURES
BID SCHEDULE
9 April 2019

BASIC

Item	Unit	Est Quantity	Unit Cost	Total
1. Mobilization and Demobilization	JOB	1	$_____	$_____
2. Surveys	JOB	1	$_____	$_____
3. Borrow Site(s) Development and Restoration	JOB	1	$_____	$_____
4. Hauling HESCO Baskets and Sand Bags, Omaha to Hamburg	JOB	1	$_____	$_____
5. Quarried Sand	TON	13,600	$_____	$_____
6. Plastic Sheeting – Procuring, Hauling, and Storing	JOB	1	$_____	$_____
7. Ditch 6 Levee Raise	CY	266,000	$_____	$_____
8. Stockpiling Cohesive Levee Embankment Material for Closure Structures	CY	12,500	$_____	$_____
9. HESCO Basket Installation - Along I-29	JOB	1	$_____	$_____
10. All Remaining Work	JOB	1	$_____	$_____
BASIC Total				_____

OPTION

11. Completion of Closure Structures (Highway 333, Ditch 6 Railroad, and Underneath of I-29	CY	10,800	$_____	$_____

TOTAL (BASIC Total Plus OPTION) _____

MEASUREMENT

BASIC

1. Mobilization and Demobilization. This work includes all labor, materials, equipment, and other expenses necessary to mobilize and demobilize labor and equipment to the job site. Measurement is by JOB.

2. Surveys. This work includes all pre- and post-construction survey requirements and the preparation of as-built surveys surveying requirements. Measurement is by JOB.

3. Borrow Site Development and Restoration. This work includes clearing and topsoil stripping/stockpiling within the designated borrow site location. Following the completion of borrow site activities, the Contractor shall spread the topsoil back over the borrow site at a relatively uniform thickness, at the direction of the COR. Measurement is by JOB.

4. Hauling HESCO Baskets and Sand Bags, Omaha to Hamburg. HESCO Baskets and sand bags are being provided to the Contractor by the government. The Contractor is required to haul these materials from the Corps of Engineers warehouse in Omaha and deliver them to Hamburg. Measurement is by JOB.

5. Quarried Sand. All work, labor, equipment and other expenses associated with procuring, hauling, and placement/installation of sand in HESCO Baskets and sand bags. Measurement is by TON.

6. Plastic Sheeting – Procuring, Hauling, and Storing. All work, labor, equipment and other expenses associated with Procuring, Hauling, and Storing of plastic sheeting for placement on earthen levee riverside faces for erosion protection and to be placed on the riverside face of HESCO baskets. Measurement is by JOB.

7. Ditch 6 Levee Raise. This work includes all materials, equipment and labor to complete all items of work, including all costs associated with obtaining material from borrow sources, including excavation, hauling, placing, and compaction. Measurement is by CY of compacted in-place cohesive levee embankment material.

8. Stockpiling Cohesive Levee Embankment Material for Closure Structures. This work includes all materials, equipment and labor to complete all items of work, including all costs associated with obtaining material from borrow sources, including excavation, hauling, and stockpiling at a designated staging area. Measurement is by CY.

9. HESCO Basket Installation - Along I-29. This work includes all materials, equipment and labor to install HESCO baskets, plastic sheeting, and sandbags at locations shown on the drawings. Measurement is by JOB.

10. All Remaining Work. This item includes borrow site access road maintenance, seeding, erosion control material, culvert inspection and closure, and all work, labor, equipment and other expenses not associated with any of the line items listed above. Measurement is by JOB.

OPTION

11. Completion of Closure Structures (Highway 333, Ditch 6 Railroad, and Underneath of I-29. If executed, this Option would be performed during the Contract Execution Period at the direction of the COR. This work includes all materials, equipment and labor to complete all items of work, including all costs associated with hauling stockpiled cohesive levee embankment material from the staging area, placing and compaction of the material, and installing plastic sheeting and sandbags on the riverside face for erosion protection. Measurement is by CY of compacted in-place cohesive levee embankment material.

Appendix – Points-of-Contact

Army Corps of Engineers

Name	Position	Work #	Cell #
Jessica Jackson	Contract Specialist	402-995-2095	402-214-7854
Lee McCormick	Contracting Officer	402-995-2084	402-639-7771
TBD	Contracting Officer Representative	402-995-XXXX	402-
Matt Krajewski	Emergency Management	402-995-2448	402-650-3052
Nicole Cominoli	Emergency Management	402-994-2446	
Lowell Blankers	Levee Safety Program Manager	402-995-2323	
Andy Winslow	Project Manager	402-995-2767	
Larry Boardman	Geotechnical Engineering	402-995-2241	
Richard Taylor	Deputy Engineer	402-995-2096	402-779-1447
	Construction Quality Assurance		
Thomas Aldmeyer	Operations	402-996-3757	

*cost estimate drafts from March 2019; replaced by "Estimated Costs / Detailed Budget Supporting Documentation"

CI17757 Hamburg Advanced Flood Measures

Estimated by	
Designed by	
Prepared by	EMP
Preparation Date	3/25/2019
Effective Date of Pricing	3/25/2019
Estimated Construction Time	Days

Description	Quantity	UOM	ContractCost
Summary			10,200,989
1 - Hauling Hesco Baskets and Sand Bags, Omaha to Hamburg	1	EA	16,257
2 - Sand -- Nebraska State 47B or Equivalent	11,500	TON	894,622
3 - Plastic Sheeting -- Procuring, Hauling, and Storing	1	EA	199,125
4 - Ditch 6 Levee Raise	250,000	CY	7,899,540
5 - Stockpiling Cohesive Levee Embankment Material for Closure Structures	12,200	CY	203,320
6 - Hesco Basket Insatllation - Along I-29	1	EA	63,902
7 - Completion of Closure Structures CY (Highway 333, Ditch 6 Railroad, and Underneath of I-29)	10,800	CY	93,075
8 - All Remaining Work Including Seeding, Mulching, and Erosion Control Material	1	EA	831,149

Currency in US dollars

Description	Quantity	UOM	ContractCost
Detail			**10,200,989**
1 - Hauling Hesco Baskets and Sand Bags, Omaha to Hamburg	**1**	**EA**	**16,257**
Haul	**1**	**EA**	**12,497**
TRUCK, HIGHWAY, 65,000 LB (29,484 KG) GVW, 6X6, 3 AXLE (ADD ACCESSORIES)	44	HR	5,114
Truck Drivers, Heavy	44	HR	7,383
Load/Unload	**1**	**EA**	**3,760**
FORK LIFT, ROUGH TERRAIN, 6,000 LBS @ 22' HIGH STRAIGHT MAST, 4X4	16	HR	779
Equip. Operators, Light	16	HR	2,981
2 - Sand -- Nebraska State 47B or Equivalent	**11,500**	**TON**	**894,622**
Sandbag Filling	**10,980**	**EA**	**82,932**
Laborers, (Semi-Skilled)	549	HR	82,932
HESCO Filling	**163**	**HR**	**63,489**
LOADER, FRONT END, TRACKED, 0.52 CY, 66" BUCKET	163	HR	6,479
Equip. Operators, Medium	163	HR	32,387
Laborers, (Semi-Skilled)	163	HR	24,623
Sand Purchase & Haul	**1**	**EA**	**748,201**
Aggregate, sand, washed, for concrete, loaded at the pit, prices per ton, includes material only	11,500	TON	478,053
DUMP TRUCK, HIGHWAY, 75,000 LBS GVW, 3 AXLE, 6X4 WITH REAR 16 - 20 CY DUMP BODY	921	HR	115,612
Truck Drivers, Heavy	921	HR	154,536
3 - Plastic Sheeting -- Procuring, Hauling, and Storing	**1**	**EA**	**199,125**
Plastic Sheeting	79,650	EA	199,125
4 - Ditch 6 Levee Raise	**250,000**	**CY**	**7,899,540**
Load & Haul	**1**	**EA**	**5,300,292**
Excavate and load, bank measure, medium material, 2-3/4 C.Y. bucket, track loader	275,000	BCY	1,015,220
Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 20 min load/wait/unload, 20 C.Y. truck, cycle 10 miles, 15 MPH, excludes loading equipment	312,500	LCY	4,285,072
Place & Compact	**1**	**EA**	**2,599,247**
Borrow, common earth, 5 C.Y. bucket, loading and/or spreading, front end loader, wheel-mounted	275,000	BCY	476,365
Compaction, structural, common fill, 8" lifts, sheepsfoot or wobbly wheel roller	250,000	ECY	812,347
Fill, dumped material, spread, by dozer, excludes compaction	312,500	LCY	1,310,535
5 - Stockpiling Cohesive Levee Embankment Material for Closure Structures	**12,200**	**CY**	**203,320**

Labor ID: EQ ID: EP16R05 Currency in US dollars TRACES MII Version 4.4

Description	Quantity	UOM	ContractCost
Excavate and load, bank measure, medium material, 2-3/4 C.Y. bucket, track loader	9,760	BCY	36,031
Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 20 min load/wait/unload, 20 C.Y. truck, cycle 10 miles, 15 MPH, excludes loading equipment	12,200	LCY	167,289
6 - Hesco Basket Insatllation - Along I-29	**1**	**EA**	**63,902**
HESCO Installation	**1**	**EA**	**41,795**
Equip. Operators, Heavy	136	HR	28,195
CRANES, HYDRAULIC, SELF-PROPELLED, YARD, 15.0 TON, 50' BOOM, 4X2, NON-ROTATING OPERATOR'S CAB	136	HR	13,600
Sandbag Installation	**1**	**EA**	**22,107**
Laborers, (Semi-Skilled)	110	HR	16,617
TRUCK, HIGHWAY, CREW, 1 TON PICKUP, 4X2	110	HR	5,490
7 - Completion of Closure Structures CY (Highway 333, Ditch 6 Railroad, and Underneath of I-29)	**10,800**	**CY**	**93,075**
Sandbag Installation	**1**	**EA**	**22,107**
Laborers, (Semi-Skilled)	110	HR	16,617
TRUCK, HIGHWAY, CREW, 1 TON PICKUP, 4X2	110	HR	5,490
Plastic Sheeting Installation	**1**	**EA**	**16,000**
Synthetic erosion control, jute mesh, 100 SY per roll, 4' wide, stapled	8,850	SY	16,000
Borrow Placing & Compaction	**1**	**EA**	**54,968**
Borrow, common earth, 5 C.Y. bucket, loading and/or spreading, front end loader, wheel-mounted	12,200	BCY	20,677
Compaction, structural, common fill, 8" lifts, sheepsfoot or wobbly wheel roller	10,800	ECY	34,291
8 - All Remaining Work Including Seeding, Mulching, and Erosion Control Material	**1**	**EA**	**831,149**
Borrow Site Development	**1**	**EA**	**241,056**
Clearing & Grubbing	**1**	**EA**	**39,626**
Clear and grub, light stumps, to 6" diameter, includes loading on site	16	ACR	39,626
Strip Topsoil	**1**	**EA**	**44,492**
Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 6" deep, 200' haul per C.Y.	12,500	CY	44,492
Spread Topsoil	**1**	**EA**	**129,450**
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	12,500	CY	129,450
Seeding	**1**	**EA**	**27,489**
Seeding, mechanical seeding, 215 lb./acre	16	ACR	27,489
Seeding	**1**	**EA**	**473,692**
Seeding, mechanical seeding, 215 lb./acre	23	ACR	40,062

Labor ID: EQ ID: EP16R05 Currency in US dollars TRACES MII Version 4.4

Description	Quantity	UOM	ContractCost
Soil preparation, mulching, oat straw, 1" deep, power mulcher, small	720	MSF	69,571
Synthetic erosion control, jute mesh, 100 SY per roll, 4' wide, stapled	80,000	SY	223,715
Rough grading, open site, large area, 75 H.P., dozer	1,094	CSY	140,344
Mob/Demob	**1**	**EA**	**101,822**
Mob/Demob	1	EA	101,822
Surveys	**1**	**EA**	**11,566**
Pre-Construction Surveys	**1**	**EA**	**5,783**
Boundary & survey markers, crew for roadway layout, 4 person crew	1	DAY	4,294
Technology plans, work plans	8	HR	398
Field Personnel, draftsman	1	DAY	1,091
Post-Construction Surveys	**1**	**EA**	**5,783**
Boundary & survey markers, crew for roadway layout, 4 person crew	1	DAY	4,294
Technology plans, work plans	8	HR	398
Field Personnel, draftsman	1	DAY	1,091
Pre-Construction Submittals	**1**	**EA**	**3,014**
Field personnel, field engineer, average	3	DAY	1,161
Field personnel, project manager, average	2	DAY	1,263
Field personnel, superintendent, average	1	DAY	591

Currency in US dollars

CI17757 Hamburg Advanced Flood Measures

Estimated by	
Designed by	
Prepared by	EMP
Preparation Date	3/25/2019
Effective Date of Pricing	3/25/2019
Estimated Construction Time	7 Days

Description	Quantity	UOM	ContractCost
Summary			59,691,276
Option 1 - Levee Alignment (Levee Raise and HESCOs)	1	EA	12,888,114
Option 2 - Levee Alignment (In addition to Option 1 Cohesive)	1	EA	24,556,439
Option 3 - Levee Alignment	1	EA	22,246,723

Description	Quantity	UOM	ContractCost
Detail			**59,691,276**
Option 1 - Levee Alignment (Levee Raise and HESCOs)	**1**	**EA**	**12,888,114**
1 - Mobilization/Demobilization	**1**	**EA**	**459,889**
Mobilization	**1**	**EA**	**245,571**
Mobilization or demobilization, delivery charge for equipment, hauled on 40-ton capacity towed trailer	16	EA	24,413
Mobilization or demobilization, delivery charge for equipment, hauled on 50-ton capacity towed trailer	14	EA	76,291
Mobilization or demobilization, delivery charge for equipment, hauled on 40-ton capacity towed trailer	11	EA	16,784
Mobilization or demobilization, crane, truck-mounted, up to 75 ton, (driver only)	2	EA	687
Mobilization or demobilization, delivery charge for equipment, hauled on 50-ton capacity towed trailer	6	EA	32,696
DUMP TRUCK, HIGHWAY, 75,000 LBS GVW, 3 AXLE, 6X4 WITH REAR 16 - 20 CY DUMP BODY	254	HR	23,955
Truck Drivers, Heavy	254	HR	36,478
Temporary fencing, chain link, rented up to 12 months, 6' high, 11 ga, over 1000'	2,250	LF	23,072
Fence, chain link industrial, double swing gates, 6' high, 20' opening, includes excavation, posts & hardware in concrete	2	OPN	4,744
Light Towers	18	EA	6,451
Office trailer, delivery, add per mile	0	MI	0
Pre-Construction Submittals	**1**	**EA**	**3,014**
Field personnel, field engineer, average	3	DAY	1,161
Field personnel, project manager, average	2	DAY	1,263
Field personnel, superintendent, average	1	DAY	591
Demobilization	**1**	**EA**	**211,304**
Mobilization or demobilization, delivery charge for equipment, hauled on 40-ton capacity towed trailer	16	EA	24,413
Mobilization or demobilization, delivery charge for equipment, hauled on 50-ton capacity towed trailer	14	EA	76,291
Mobilization or demobilization, delivery charge for equipment, hauled on 40-ton capacity towed trailer	11	EA	16,784
Mobilization or demobilization, crane, truck-mounted, up to 75 ton, (driver only)	2	EA	687
Mobilization or demobilization, delivery charge for equipment, hauled on 50-ton capacity towed trailer	6	EA	32,696
DUMP TRUCK, HIGHWAY, 75,000 LBS GVW, 3 AXLE, 6X4 WITH REAR 16 - 20 CY DUMP BODY	254	HR	23,955
Truck Drivers, Heavy	254	HR	36,478
2 - Surveys	**1**	**EA**	**36,774**
Surveys	**1**	**EA**	**36,774**
Pre-Construction Surveys	**1**	**EA**	**18,387**

Labor ID: EQ ID: EP16R05 Currency in US dollars TRACES MII Version 4.4

Description	Quantity	UOM	ContractCost
Boundary & survey markers, crew for roadway layout, 4 person crew	2	DAY	13,231
Technology plans, work plans	16	HR	1,060
Field Personnel, draftsman	2	DAY	3,370
TRUCK, HIGHWAY, CREW, 3/4 TON PICKUP 4X4	16	HR	726
Post-Construction Surveys	**1**	**EA**	**18,387**
Boundary & survey markers, crew for roadway layout, 4 person crew	2	DAY	13,231
Technology plans, work plans	16	HR	1,060
Field Personnel, draftsman	2	DAY	3,370
TRUCK, HIGHWAY, CREW, 3/4 TON PICKUP 4X4	16	HR	726
3 - Hauling Hesco Baskets and Sand Bags, Omaha to Hamburg	**1**	**EA**	**11,228**
Haul	**1**	**EA**	**8,607**
TRUCK, HIGHWAY, 65,000 LB (29,484 KG) GVW, 6X6, 3 AXLE (ADD ACCESSORIES)	28	HR	3,254
Truck Drivers, Heavy	28	HR	5,352
Load/Unload	**1**	**EA**	**2,622**
FORK LIFT, ROUGH TERRAIN, 6,000 LBS @ 22' HIGH STRAIGHT MAST, 4X4	10	HR	487
Equip. Operators, Light	10	HR	2,135
4 - Sand -- Nebraska State 47B or Equivalent	**6,812**	**TON**	**809,811**
Sandbag Filling	**11,420**	**EA**	**99,937**
Laborers, (Semi-Skilled)	571	HR	99,937
HESCO Filling	**131**	**HR**	**80,884**
LOADER, FRONT END, TRACKED, 0.52 CY, 66" BUCKET	131	HR	5,207
Equip. Operators, Medium	131	HR	29,821
Laborers, (Semi-Skilled)	131	HR	22,928
Laborers, (Semi-Skilled)	131	HR	22,928
Sand Purchase & Haul	**6,812**	**TON**	**628,990**
Aggregate, sand, washed, for concrete, loaded at the pit, prices per ton, includes material only	6,812	TON	283,174
DUMP TRUCK, HIGHWAY, 75,000 LBS GVW, 3 AXLE, 6X4 WITH REAR 16 - 20 CY DUMP BODY	1,092	HR	137,078
Truck Drivers, Heavy	1,092	HR	208,738
5 - Plastic Sheeting -- Procuring, Hauling, and Storing	**1**	**EA**	**102,000**
Plastic Sheeting	40,800	SF	102,000

Currency in US dollars

Description	Quantity	UOM	ContractCost
6 - Ditch 6 Levee Raise	**276,573**	**ECY**	**8,724,470**
Load & Haul	**1**	**EA**	**5,764,727**
Excavate and load, bank measure, medium material, 2-3/4 C.Y. bucket, track loader	290,402	BCY	1,137,378
Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 20 min load/wait/unload, 20 C.Y. truck, cycle 10 miles, 15 MPH, excludes loading equipment	318,059	LCY	4,627,350
Place & Compact	**1**	**EA**	**2,884,102**
Borrow, common earth, 5 C.Y. bucket, loading and/or spreading, front end loader, wheel-mounted	290,402	BCY	528,762
Compaction, structural, common fill, 8" lifts, sheepsfoot or wobbly wheel roller	276,573	ECY	947,801
Fill, dumped material, spread, by dozer, excludes compaction	318,059	LCY	1,407,540
Underwater Fill	**1**	**EA**	**0**
Aggregate for earthwork, bank run gravel, spread with 200 H.P. dozer, includes load at pit and haul, 2 miles round trip, excludes compaction	0	LCY	0
Compaction, structural, common fill, 8" lifts, sheepsfoot or wobbly wheel roller	0	ECY	0
Stripping	**1**	**EA**	**75,641**
Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 6" deep, 200' haul per S.Y.	87,000	SY	75,641
7 - Stockpiling Cohesive Levee Embankment Material for Closure Structures	**15,569**	**LCY**	**282,183**
Excavate and load, bank measure, medium material, 2-3/4 C.Y. bucket, track loader	14,215	BCY	55,674
Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 20 min load/wait/unload, 20 C.Y. truck, cycle 10 miles, 15 MPH, excludes loading equipment	15,569	LCY	226,509
8 - Hesco Basket Insatllation - Along I-29	**1**	**EA**	**901,678**
HESCO Installation	**1**	**EA**	**53,827**
Equip. Operators, Heavy	105	HR	24,951
CRANES, HYDRAULIC, SELF-PROPELLED, YARD, 15.0 TON, 50' BOOM, 4X2, NON-ROTATING OPERATOR'S CAB	105	HR	10,500
Laborers, (Semi-Skilled)	105	HR	18,377
Sandbag Installation	**7,860**	**EA**	**62,873**
Laborers, (Semi-Skilled)	314	HR	55,027
TRUCK, HIGHWAY, CREW, 1 TON PICKUP, 4X2	157	HR	7,846
Plastic Sheeting Installation	**1**	**EA**	**8,258**
Synthetic erosion control, jute mesh, 100 SY per roll, 4' wide, stapled	36,300	SF	8,258
HESCO Foundation	**24,370**	**ECY**	**776,719**
Load & Haul	**1**	**EA**	**507,963**
Excavate and load, bank measure, medium material, 2-3/4 C.Y. bucket, track loader	25,589	BCY	100,221

Labor ID: EQ ID: EP16R05 Currency in US dollars TRACES MII Version 4.4

Description	Quantity	UOM	ContractCost
Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 20 min load/wait/unload, 20 C.Y. truck, cycle 10 miles, 15 MPH, excludes loading equipment	28,026	LCY	407,742
Place & Compact	**1**	**EA**	**254,133**
Borrow, common earth, 5 C.Y. bucket, loading and/or spreading, front end loader, wheel-mounted	25,589	BCY	46,592
Compaction, structural, common fill, 8" lifts, sheepsfoot or wobbly wheel roller	24,370	ECY	83,515
Fill, dumped material, spread, by dozer, excludes compaction	28,026	LCY	124,026
Stripping	**1**	**EA**	**14,623**
Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 6" deep, 200' haul per S.Y.	16,819	SY	14,623
9 - Completion of Closure Structures CY (Highway 333, Ditch 6 Railroad, and Underneath of I-29)	**10,800**	**CY**	**101,777**
Plastic Sheeting Installation	**1**	**EA**	**1,024**
Synthetic erosion control, jute mesh, 100 SY per roll, 4' wide, stapled	4,500	SF	1,024
Borrow Placing & Compaction	**1**	**EA**	**72,277**
Borrow, common earth, 5 C.Y. bucket, loading and/or spreading, front end loader, wheel-mounted	14,215	BCY	25,883
Compaction, structural, common fill, 8" lifts, sheepsfoot or wobbly wheel roller	13,538	ECY	46,394
Sandbag Installation	**3,560**	**EA**	**28,477**
Laborers, (Semi-Skilled)	142	HR	24,923
TRUCK, HIGHWAY, CREW, 1 TON PICKUP, 4X2	71	HR	3,554
10 - All Remaining Work Including Seeding, Mulching, and Erosion Control Material	**1**	**EA**	**1,027,793**
Borrow Site Development	**21**	**ACR**	**366,147**
Clearing & Grubbing	**1**	**EA**	**59,576**
Clear and grub, light stumps, to 6" diameter, includes loading on site	21	ACR	59,576
Strip Topsoil	**1**	**EA**	**66,336**
Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 6" deep, 200' haul per C.Y.	17,258	CY	66,336
Spread Topsoil	**1**	**EA**	**199,953**
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	17,258	CY	199,953
Seeding	**1**	**EA**	**40,282**
Seeding, mechanical seeding, 215 lb./acre	21	ACR	40,282
Seeding	**1**	**EA**	**614,139**
Seeding, mechanical seeding, 215 lb./acre	23	ACR	43,294
Soil preparation, mulching, oat straw, 1" deep, power mulcher, small	80,000	SY	70,765
Synthetic erosion control, jute mesh, 100 SY per roll, 4' wide, stapled	95,789	SY	285,112

Labor ID: EQ ID: EP16R05 Currency in US dollars TRACES MII Version 4.4

Description	Quantity	UOM	ContractCost
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	18,554	CY	214,968
Culvert Inspection	**1**	**EA**	**3,245**
Field Personnel, inspectors	2	DAY	2,637
Backfill, common earth, by hand, no compaction	6	LCY	387
Backfill, 6" layers, compaction in layers, hand tamp, add	5	ECY	220
On-Site Personnel	**1**	**EA**	**6,109**
Field personnel, project manager, average	1	WK	3,156
Field personnel, superintendent, average	1	WK	2,953
Office trailer, furnished, rent per month, 20' x 8', excl. hookups	0	EA	0
Temporary electrical power equipment (pro-rated per job), connections, office trailer, 60 amp	0	EA	0
Temporary utilities, temporary construction water bill per month, average	0	MO	0
Field office expense, office supplies, average	0	MO	0
Traffic Control	**7**	**DAY**	**38,152**
Laborers, General (Lowest paid)	168	HR	19,076
Laborers, General (Lowest paid)	168	HR	19,076
Seepage Berm	**13,767**	**ECY**	**430,510**
Load & Haul	**1**	**EA**	**286,949**
Excavate and load, bank measure, medium material, 2-3/4 C.Y. bucket, track loader	14,455	BCY	56,614
Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 20 min load/wait/unload, 20 C.Y. truck, cycle 10 miles, 15 MPH, excludes loading equipment	15,832	LCY	230,335
Place & Compact	**1**	**EA**	**143,561**
Borrow, common earth, 5 C.Y. bucket, loading and/or spreading, front end loader, wheel-mounted	14,455	BCY	26,320
Compaction, structural, common fill, 8" lifts, sheepsfoot or wobbly wheel roller	13,767	ECY	47,179
Fill, dumped material, spread, by dozer, excludes compaction	15,832	LCY	70,063
Option 2 - Levee Alignment (In addition to Option 1 Cohesive)	**1**	**EA**	**24,556,439**
1 - Mobilization/Demobilization	**1**	**EA**	**458,516**
Mobilization	**1**	**EA**	**244,885**
Mobilization or demobilization, delivery charge for equipment, hauled on 40-ton capacity towed trailer	16	EA	24,413
Mobilization or demobilization, delivery charge for equipment, hauled on 50-ton capacity towed trailer	14	EA	76,291
Mobilization or demobilization, delivery charge for equipment, hauled on 40-ton capacity towed trailer	11	EA	16,784
Mobilization or demobilization, delivery charge for equipment, hauled on 50-ton capacity towed trailer	6	EA	32,696

Labor ID: EQ ID: EP16R05 Currency in US dollars TRACES MII Version 4.4

Description	Quantity	UOM	ContractCost
DUMP TRUCK, HIGHWAY, 75,000 LBS GVW, 3 AXLE, 6X4 WITH REAR 16 - 20 CY DUMP BODY	254	HR	23,955
Truck Drivers, Heavy	254	HR	36,478
Temporary fencing, chain link, rented up to 12 months, 6' high, 11 ga, over 1000'	2,250	LF	23,072
Fence, chain link industrial, double swing gates, 6' high, 20' opening, includes excavation, posts & hardware in concrete	2	OPN	4,744
Light Towers	18	EA	6,451
Office trailer, delivery, add per mile	0	MI	0
Pre-Construction Submittals	**1**	**EA**	**3,014**
Field personnel, field engineer, average	3	DAY	1,161
Field personnel, project manager, average	2	DAY	1,263
Field personnel, superintendent, average	1	DAY	591
Demobilization	**1**	**EA**	**210,618**
Mobilization or demobilization, delivery charge for equipment, hauled on 40-ton capacity towed trailer	16	EA	24,413
Mobilization or demobilization, delivery charge for equipment, hauled on 50-ton capacity towed trailer	14	EA	76,291
Mobilization or demobilization, delivery charge for equipment, hauled on 40-ton capacity towed trailer	11	EA	16,784
Mobilization or demobilization, delivery charge for equipment, hauled on 50-ton capacity towed trailer	6	EA	32,696
DUMP TRUCK, HIGHWAY, 75,000 LBS GVW, 3 AXLE, 6X4 WITH REAR 16 - 20 CY DUMP BODY	254	HR	23,955
Truck Drivers, Heavy	254	HR	36,478
2 - Surveys	**1**	**EA**	**36,774**
Surveys	**1**	**EA**	**36,774**
Pre-Construction Surveys	**1**	**EA**	**18,387**
Boundary & survey markers, crew for roadway layout, 4 person crew	2	DAY	13,231
Technology plans, work plans	16	HR	1,060
Field Personnel, draftsman	2	DAY	3,370
TRUCK, HIGHWAY, CREW, 3/4 TON PICKUP 4X4	16	HR	726
Post-Construction Surveys	**1**	**EA**	**18,387**
Boundary & survey markers, crew for roadway layout, 4 person crew	2	DAY	13,231
Technology plans, work plans	16	HR	1,060
Field Personnel, draftsman	2	DAY	3,370
TRUCK, HIGHWAY, CREW, 3/4 TON PICKUP 4X4	16	HR	726
3 - Hauling Hesco Baskets and Sand Bags, Omaha to Hamburg	**1**	**EA**	**2,215**

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Description	Quantity	UOM	ContractCost
Haul	**1**	**EA**	**1,691**
TRUCK, HIGHWAY, 65,000 LB (29,484 KG) GVW, 6X6, 3 AXLE (ADD ACCESSORIES)	6	HR	639
Truck Drivers, Heavy	6	HR	1,051
Load/Unload	**1**	**EA**	**524**
FORK LIFT, ROUGH TERRAIN, 6,000 LBS @ 22' HIGH STRAIGHT MAST, 4X4	2	HR	97
Equip. Operators, Light	2	HR	427
4 - Sand -- Nebraska State 47B or Equivalent	**109**	**TON**	**40,435**
Sandbag Filling	**3,560**	**EA**	**31,154**
Laborers, (Semi-Skilled)	178	HR	31,154
Sand Purchase & Haul	**1**	**EA**	**9,281**
Aggregate, sand, washed, for concrete, loaded at the pit, prices per ton, includes material only	109	TON	4,531
DUMP TRUCK, HIGHWAY, 75,000 LBS GVW, 3 AXLE, 6X4 WITH REAR 16 - 20 CY DUMP BODY	15	HR	1,883
Truck Drivers, Heavy	15	HR	2,867
5 - Plastic Sheeting -- Procuring, Hauling, and Storing	**1**	**EA**	**11,250**
Plastic Sheeting	4,500	SF	11,250
6 - Ditch 6 Levee Raise	**276,573**	**ECY**	**8,724,470**
Load & Haul	**1**	**EA**	**5,764,727**
Excavate and load, bank measure, medium material, 2-3/4 C.Y. bucket, track loader	290,402	BCY	1,137,378
Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 20 min load/wait/unload, 20 C.Y. truck, cycle 10 miles, 15 MPH, excludes loading equipment	318,059	LCY	4,627,350
Place & Compact	**1**	**EA**	**2,884,102**
Borrow, common earth, 5 C.Y. bucket, loading and/or spreading, front end loader, wheel-mounted	290,402	BCY	528,762
Compaction, structural, common fill, 8" lifts, sheepsfoot or wobbly wheel roller	276,573	ECY	947,801
Fill, dumped material, spread, by dozer, excludes compaction	318,059	LCY	1,407,540
Underwater Fill	**1**	**EA**	**0**
Aggregate for earthwork, bank run gravel, spread with 200 H.P. dozer, includes load at pit and haul, 2 miles round trip, excludes compaction	0	LCY	0
Compaction, structural, common fill, 8" lifts, sheepsfoot or wobbly wheel roller	0	ECY	0
Stripping	**1**	**EA**	**75,641**
Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 6" deep, 200' haul per S.Y.	87,000	SY	75,641
7 - Stockpiling Cohesive Levee Embankment Material for Closure Structures	**15,569**	**LCY**	**282,183**
Excavate and load, bank measure, medium material, 2-3/4 C.Y. bucket, track loader	14,215	BCY	55,674

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Description	Quantity	UOM	ContractCost
Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 20 min load/wait/unload, 20 C.Y. truck, cycle 10 miles, 15 MPH, excludes loading equipment	15,569	LCY	226,509
9 - Completion of Closure Structures CY (Highway 333, Ditch 6 Railroad, and Underneath of I-29)	**10,800**	**CY**	**101,777**
Plastic Sheeting Installation	**1**	**EA**	**1,024**
Synthetic erosion control, jute mesh, 100 SY per roll, 4' wide, stapled	4,500	SF	1,024
Borrow Placing & Compaction	**1**	**EA**	**72,277**
Borrow, common earth, 5 C.Y. bucket, loading and/or spreading, front end loader, wheel-mounted	14,215	BCY	25,883
Compaction, structural, common fill, 8" lifts, sheepsfoot or wobbly wheel roller	13,538	ECY	46,394
Sandbag Installation	**3,560**	**EA**	**28,477**
Laborers, (Semi-Skilled)	142	HR	24,923
TRUCK, HIGHWAY, CREW, 1 TON PICKUP, 4X2	71	HR	3,554
10 - All Remaining Work Including Seeding, Mulching, and Erosion Control Material	**1**	**EA**	**2,031,048**
Borrow Site Development	**46**	**ACR**	**778,491**
Clearing & Grubbing	**1**	**EA**	**126,668**
Clear and grub, light stumps, to 6" diameter, includes loading on site	46	ACR	126,668
Strip Topsoil	**1**	**EA**	**141,042**
Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 6" deep, 200' haul per C.Y.	36,694	CY	141,042
Spread Topsoil	**1**	**EA**	**425,135**
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	36,694	CY	425,135
Seeding	**1**	**EA**	**85,646**
Seeding, mechanical seeding, 215 lb./acre	46	ACR	85,646
Seeding	**1**	**EA**	**1,243,203**
Seeding, mechanical seeding, 215 lb./acre	47	ACR	88,470
Soil preparation, mulching, oat straw, 1" deep, power mulcher, small	185,303	SY	163,911
Synthetic erosion control, jute mesh, 100 SY per roll, 4' wide, stapled	185,303	SY	551,548
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	37,914	CY	439,275
Culvert Inspection	**1**	**EA**	**3,245**
Field Personnel, inspectors	2	DAY	2,637
Backfill, common earth, by hand, no compaction	6	LCY	387
Backfill, 6" layers, compaction in layers, hand tamp, add	5	ECY	220
On-Site Personnel	**1**	**EA**	**6,109**

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Description	Quantity	UOM	ContractCost
Field personnel, project manager, average	1	WK	3,156
Field personnel, superintendent, average	1	WK	2,953
Office trailer, furnished, rent per month, 20' x 8', excl. hookups	0	EA	0
Temporary electrical power equipment (pro-rated per job), connections, office trailer, 60 amp	0	EA	0
Temporary utilities, temporary construction water bill per month, average	0	MO	0
Field office expense, office supplies, average	0	MO	0
Seepage Berm	**13,767**	**ECY**	**430,510**
Load & Haul	**1**	**EA**	**286,949**
Excavate and load, bank measure, medium material, 2-3/4 C.Y. bucket, track loader	14,455	BCY	56,614
Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 20 min load/wait/unload, 20 C.Y. truck, cycle 10 miles, 15 MPH, excludes loading equipment	15,832	LCY	230,335
Place & Compact	**1**	**EA**	**143,561**
Borrow, common earth, 5 C.Y. bucket, loading and/or spreading, front end loader, wheel-mounted	14,455	BCY	26,320
Compaction, structural, common fill, 8" lifts, sheepsfoot or wobbly wheel roller	13,767	ECY	47,179
Fill, dumped material, spread, by dozer, excludes compaction	15,832	LCY	70,063
Additional Cohesive	**394,469**	**ECY**	**12,437,260**
Load & Haul	**1**	**EA**	**8,222,073**
Excavate and load, bank measure, medium material, 2-3/4 C.Y. bucket, track loader	414,192	BCY	1,622,209
Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 20 min load/wait/unload, 20 C.Y. truck, cycle 10 miles, 15 MPH, excludes loading equipment	453,639	LCY	6,599,864
Place & Compact	**1**	**EA**	**4,113,518**
Borrow, common earth, 5 C.Y. bucket, loading and/or spreading, front end loader, wheel-mounted	414,192	BCY	754,158
Compaction, structural, common fill, 8" lifts, sheepsfoot or wobbly wheel roller	394,469	ECY	1,351,824
Fill, dumped material, spread, by dozer, excludes compaction	453,639	LCY	2,007,536
Stripping	**1**	**EA**	**101,669**
Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 6" deep, 200' haul per S.Y.	116,937	SY	101,669
Option 3 - Levee Alignment	**1**	**EA**	**22,246,723**
1 - Mobilization/Demobilization	**1**	**EA**	**458,516**
Mobilization	**1**	**EA**	**244,885**
Mobilization or demobilization, delivery charge for equipment, hauled on 40-ton capacity towed trailer	16	EA	24,413
Mobilization or demobilization, delivery charge for equipment, hauled on 50-ton capacity towed trailer	14	EA	76,291

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Description	Quantity	UOM	ContractCost
Mobilization or demobilization, delivery charge for equipment, hauled on 40-ton capacity towed trailer	11	EA	16,784
Mobilization or demobilization, delivery charge for equipment, hauled on 50-ton capacity towed trailer	6	EA	32,696
DUMP TRUCK, HIGHWAY, 75,000 LBS GVW, 3 AXLE, 6X4 WITH REAR 16 - 20 CY DUMP BODY	254	HR	23,955
Truck Drivers, Heavy	254	HR	36,478
Temporary fencing, chain link, rented up to 12 months, 6' high, 11 ga, over 1000'	2,250	LF	23,072
Fence, chain link industrial, double swing gates, 6' high, 20' opening, includes excavation, posts & hardware in concrete	2	OPN	4,744
Light Towers	18	EA	6,451
Office trailer, delivery, add per mile	0	MI	0
Pre-Construction Submittals	**1**	**EA**	**3,014**
Field personnel, field engineer, average	3	DAY	1,161
Field personnel, project manager, average	2	DAY	1,263
Field personnel, superintendent, average	1	DAY	591
Demobilization	**1**	**EA**	**210,618**
Mobilization or demobilization, delivery charge for equipment, hauled on 40-ton capacity towed trailer	16	EA	24,413
Mobilization or demobilization, delivery charge for equipment, hauled on 50-ton capacity towed trailer	14	EA	76,291
Mobilization or demobilization, delivery charge for equipment, hauled on 40-ton capacity towed trailer	11	EA	16,784
Mobilization or demobilization, delivery charge for equipment, hauled on 50-ton capacity towed trailer	6	EA	32,696
DUMP TRUCK, HIGHWAY, 75,000 LBS GVW, 3 AXLE, 6X4 WITH REAR 16 - 20 CY DUMP BODY	254	HR	23,955
Truck Drivers, Heavy	254	HR	36,478
2 - Surveys	**1**	**EA**	**36,774**
Surveys	**1**	**EA**	**36,774**
Pre-Construction Surveys	**1**	**EA**	**18,387**
Boundary & survey markers, crew for roadway layout, 4 person crew	2	DAY	13,231
Technology plans, work plans	16	HR	1,060
Field Personnel, draftsman	2	DAY	3,370
TRUCK, HIGHWAY, CREW, 3/4 TON PICKUP 4X4	16	HR	726
Post-Construction Surveys	**1**	**EA**	**18,387**
Boundary & survey markers, crew for roadway layout, 4 person crew	2	DAY	13,231
Technology plans, work plans	16	HR	1,060
Field Personnel, draftsman	2	DAY	3,370

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Description	Quantity	UOM	ContractCost
TRUCK, HIGHWAY, CREW, 3/4 TON PICKUP 4X4	16	HR	726
3 - Hauling Hesco Baskets and Sand Bags, Omaha to Hamburg	**1**	**EA**	**2,215**
Haul	**1**	**EA**	**1,691**
TRUCK, HIGHWAY, 65,000 LB (29,484 KG) GVW, 6X6, 3 AXLE (ADD ACCESSORIES)	6	HR	639
Truck Drivers, Heavy	6	HR	1,051
Load/Unload	**1**	**EA**	**524**
FORK LIFT, ROUGH TERRAIN, 6,000 LBS @ 22' HIGH STRAIGHT MAST, 4X4	2	HR	97
Equip. Operators, Light	2	HR	427
4 - Sand -- Nebraska State 47B or Equivalent	**109**	**TON**	**40,435**
Sandbag Filling	**3,560**	**EA**	**31,154**
Laborers, (Semi-Skilled)	178	HR	31,154
Sand Purchase & Haul	**1**	**EA**	**9,281**
Aggregate, sand, washed, for concrete, loaded at the pit, prices per ton, includes material only	109	TON	4,531
DUMP TRUCK, HIGHWAY, 75,000 LBS GVW, 3 AXLE, 6X4 WITH REAR 16 - 20 CY DUMP BODY	15	HR	1,883
Truck Drivers, Heavy	15	HR	2,867
5 - Plastic Sheeting -- Procuring, Hauling, and Storing	**1**	**EA**	**11,250**
Plastic Sheeting	4,500	SF	11,250
6 - Ditch 6 Levee Raise	**276,573**	**ECY**	**8,724,470**
Load & Haul	**1**	**EA**	**5,764,727**
Excavate and load, bank measure, medium material, 2-3/4 C.Y. bucket, track loader	290,402	BCY	1,137,378
Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 20 min load/wait/unload, 20 C.Y. truck, cycle 10 miles, 15 MPH, excludes loading equipment	318,059	LCY	4,627,350
Place & Compact	**1**	**EA**	**2,884,102**
Borrow, common earth, 5 C.Y. bucket, loading and/or spreading, front end loader, wheel-mounted	290,402	BCY	528,762
Compaction, structural, common fill, 8" lifts, sheepsfoot or wobbly wheel roller	276,573	ECY	947,801
Fill, dumped material, spread, by dozer, excludes compaction	318,059	LCY	1,407,540
Underwater Fill	**1**	**EA**	**0**
Aggregate for earthwork, bank run gravel, spread with 200 H.P. dozer, includes load at pit and haul, 2 miles round trip, excludes compaction	0	LCY	0
Compaction, structural, common fill, 8" lifts, sheepsfoot or wobbly wheel roller	0	ECY	0
Stripping	**1**	**EA**	**75,641**
Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 6" deep, 200' haul per S.Y.	87,000	SY	75,641

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Description	Quantity	UOM	ContractCost
7 - Stockpiling Cohesive Levee Embankment Material for Closure Structures	**15,569**	**LCY**	**282,183**
Excavate and load, bank measure, medium material, 2-3/4 C.Y. bucket, track loader	14,215	BCY	55,674
Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 20 min load/wait/unload, 20 C.Y. truck, cycle 10 miles, 15 MPH, excludes loading equipment	15,569	LCY	226,509
9 - Completion of Closure Structures CY (Highway 333, Ditch 6 Railroad, and Underneath of I-29)	**10,800**	**CY**	**101,777**
Plastic Sheeting Installation	**1**	**EA**	**1,024**
Synthetic erosion control, jute mesh, 100 SY per roll, 4' wide, stapled	4,500	SF	1,024
Borrow Placing & Compaction	**1**	**EA**	**72,277**
Borrow, common earth, 5 C.Y. bucket, loading and/or spreading, front end loader, wheel-mounted	14,215	BCY	25,883
Compaction, structural, common fill, 8" lifts, sheepsfoot or wobbly wheel roller	13,538	ECY	46,394
Sandbag Installation	**3,560**	**EA**	**28,477**
Laborers, (Semi-Skilled)	142	HR	24,923
TRUCK, HIGHWAY, CREW, 1 TON PICKUP, 4X2	71	HR	3,554
10 - All Remaining Work Including Seeding, Mulching, and Erosion Control Material	**1**	**EA**	**1,839,843**
Borrow Site Development	**41**	**ACR**	**701,497**
Clearing & Grubbing	**1**	**EA**	**114,140**
Clear and grub, light stumps, to 6" diameter, includes loading on site	41	ACR	114,140
Strip Topsoil	**1**	**EA**	**127,093**
Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 6" deep, 200' haul per C.Y.	33,065	CY	127,093
Spread Topsoil	**1**	**EA**	**383,088**
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	33,065	CY	383,088
Seeding	**1**	**EA**	**77,176**
Seeding, mechanical seeding, 215 lb./acre	41	ACR	77,176
Seeding	**1**	**EA**	**1,128,992**
Seeding, mechanical seeding, 215 lb./acre	43	ACR	80,940
Soil preparation, mulching, oat straw, 1" deep, power mulcher, small	167,356	SY	148,036
Synthetic erosion control, jute mesh, 100 SY per roll, 4' wide, stapled	167,356	SY	498,129
Topsoil placement and grading, loam or topsoil, F.E. loader, 1-1/2 C.Y., remove and stockpile on site, spread from pile to rough finish grade	34,687	CY	401,887
Culvert Inspection	**1**	**EA**	**3,245**
Field Personnel, inspectors	2	DAY	2,637
Backfill, common earth, by hand, no compaction	6	LCY	387

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Description	Quantity	UOM	ContractCost
Backfill, 6" layers, compaction in layers, hand tamp, add	5	ECY	220
On-Site Personnel	**1**	**EA**	**6,109**
Field personnel, project manager, average	1	WK	3,156
Field personnel, superintendent, average	1	WK	2,953
Office trailer, furnished, rent per month, 20' x 8', excl. hookups	0	EA	0
Temporary electrical power equipment (pro-rated per job), connections, office trailer, 60 amp	0	EA	0
Temporary utilities, temporary construction water bill per month, average	0	MO	0
Field office expense, office supplies, average	0	MO	0
Seepage Berm	**13,767**	**ECY**	**430,510**
Load & Haul	**1**	**EA**	**286,949**
Excavate and load, bank measure, medium material, 2-3/4 C.Y. bucket, track loader	14,455	BCY	56,614
Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 20 min load/wait/unload, 20 C.Y. truck, cycle 10 miles, 15 MPH, excludes loading equipment	15,832	LCY	230,335
Place & Compact	**1**	**EA**	**143,561**
Borrow, common earth, 5 C.Y. bucket, loading and/or spreading, front end loader, wheel-mounted	14,455	BCY	26,320
Compaction, structural, common fill, 8" lifts, sheepsfoot or wobbly wheel roller	13,767	ECY	47,179
Fill, dumped material, spread, by dozer, excludes compaction	15,832	LCY	70,063
Additional Cohesive	**394,469**	**ECY**	**10,318,750**
Load & Haul	**1**	**EA**	**6,821,525**
Excavate and load, bank measure, medium material, 2-3/4 C.Y. bucket, track loader	343,639	BCY	1,345,884
Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 20 min load/wait/unload, 20 C.Y. truck, cycle 10 miles, 15 MPH, excludes loading equipment	376,366	LCY	5,475,642
Place & Compact	**1**	**EA**	**3,412,821**
Borrow, common earth, 5 C.Y. bucket, loading and/or spreading, front end loader, wheel-mounted	343,639	BCY	625,695
Compaction, structural, common fill, 8" lifts, sheepsfoot or wobbly wheel roller	327,275	ECY	1,121,554
Fill, dumped material, spread, by dozer, excludes compaction	376,366	LCY	1,665,572
Stripping	**1**	**EA**	**84,404**
Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 6" deep, 200' haul per S.Y.	97,079	SY	84,404

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