

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE <div style="text-align: center;">J</div>		PAGE OF PAGES <div style="text-align: center;">1 114</div>	
2. AMENDMENT/MODIFICATION NO. <div style="text-align: center;">0003</div>		3. EFFECTIVE DATE <div style="text-align: center;">23-May-2016</div>		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO.(If applicable)	
6. ISSUED BY <div style="text-align: center;">CODE</div> USA ENGINEER DISTRICT, JACKSONVILLE CONTRACTING DIVISION 701 SAN MARCO BLVD JACKSONVILLE FL 32207-8175		W912EP		7. ADMINISTERED BY (If other than item 6) <div style="text-align: center;">CODE</div> <div style="text-align: center; font-size: 1.2em;">See Item 6</div>			
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)				X		9A. AMENDMENT OF SOLICITATION NO. W912EP-16-R-0010	
				X		9B. DATED (SEE ITEM 11) 26-Apr-2016	
						10A. MOD. OF CONTRACT/ORDER NO.	
						10B. DATED (SEE ITEM 13)	
CODE		FACILITY CODE					
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS							
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input type="checkbox"/> is extended, <input checked="" type="checkbox"/> is not extended. Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning <u>1</u> copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required)							
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.							
B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).							
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:							
D. OTHER (Specify type of modification and authority)							
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) HERBERT HOOVER DIKE REHABILITATION, STRUCTURE REPLACEMENTS, S-291 (IP-3) RECONSTRUCTION, GLADES COUNTY, FLORIDA This Amendment is being issued to revise Section 00100A: 1.Delete in it's entirety Section 00100A SOLICITATION PROVISIONS and replace with Section 00100A SOLICITATION PROVISIONS. 2.Delete in it's entirety Clause 999.215-4003 ELECTRONIC PROPOSALS and replace with the attached Clause 999.215-4003 ELECTRONIC PROPOSALS 3.Section 13A of SF1442 "Sealed offers in original and (See Section 00100A Attachment 8 - PROPOSAL FORMAT) All other conditions remain unchanged.							
Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
				TEL: _____ EMAIL: _____			
15B. CONTRACTOR/OFFEROR _____ (Signature of person authorized to sign)		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA BY _____ (Signature of Contracting Officer)		16C. DATE SIGNED	

HERBERT HOOVER DIKE REHABILITATION, STRUCTURE REPLACEMENTS
S-291 (IP-3) RECONSTRUCTION, GLADES COUNTY, FLORIDA

SUMMARY OF CHANGES

1. SPECIFICATIONS:

A. In some Volume 1 sections, asterisks appear before and after the line or lines where revisions have been made to the text, and pertain only to changes made by this amendment. In some cases, replacement clauses are attached to this amendment.

B. In Volume 2 sections, the text changes have been updated with additions noted by underlined text and deletions noted by line/cross-outs, and pertain only to changes made by this amendment. The entire section is replaced if there is any change.

Changes to Specifications:

Volume 1 of 2 - Contract Documents:

DELETE Section 00010A and **REPLACE** with the attached revised Section 00010A.
DELETE Section 00100A and **REPLACE** with the attached revised Section 00100A.

ADD the following clause to Section 00800:

ELECTRONIC PROPOSALS

(a) Definition. Electronic proposal, as used in this provision, means a proposal, revision or modification of a proposal, or withdrawal of a proposal that is transmitted to and received by the Government via Compact Disc (CD) or other means for transmitting electronic data. Flash drives will NOT be accepted.

(b) In order to be considered for award offerors must submit electronic proposals concurrent with the paper-copy proposals by the date and time established in the solicitation for receipt of proposals. In accordance with Section 00100A, Paragraph D. PROPOSAL REQUIREMENTS AND SUBMISSION FORMAT, the offeror is required to submit one electronic copy that contains all three volumes (Technical Merit, Past Performance, and Price), in separate files. The electronic proposal is in addition to any hard-copy documents required by the solicitation.

(c) The Government reserves the right to make award solely on the paper proposal. In the event of conflicts between paper and electronic proposals the paper copy proposal shall govern.

(End of paragraph 999.215-4003)

Volume 2 of 2 - Technical Specifications:

DELETE Section 01 22 00 and **REPLACE** with the attached revised Section 01 22 00.
DELETE Section 05 50 14 and **REPLACE** with the attached revised Section 05 50 14.
DELETE Section 26 51 00 and **REPLACE** with the attached revised Section 26 51 00.
DELETE Section 33 71 02 and **REPLACE** with the attached revised Section 33 71 02.

See next page for summary of changed drawings and other available information.

SF 30 CONTINUATION SHEET

HERBERT HOOVER DIKE REHABILITATION, STRUCTURE REPLACEMENTS
S-291 (IP-3) RECONSTRUCTION, GLADES COUNTY, FLORIDA

2. DRAWINGS:

DELETE Drawing No. C-04 and **REPLACE** with the attached revised Drawing No. C-04.
DELETE Drawing No. C-08 and **REPLACE** with the attached revised Drawing No. C-08.
DELETE Drawing No. C-25 and **REPLACE** with the attached revised Drawing No. C-25.
DELETE Drawing No. S-39 and **REPLACE** with the attached revised Drawing No. S-39.
DELETE Drawing No. S-61 and **REPLACE** with the attached revised Drawing No. S-61.
DELETE Drawing No. S-62 and **REPLACE** with the attached revised Drawing No. S-62.
DELETE Drawing No. S-63 and **REPLACE** with the attached revised Drawing No. S-63.
DELETE Drawing No. E-04 and **REPLACE** with the attached revised Drawing No. E-04.
DELETE Drawing No. E-05 and **REPLACE** with the attached revised Drawing No. E-05.

3. OTHER AVAILABLE INFORMATION: 13-078_USACE.zip (survey zip file, 13-078_USACE.dtm).

(End of Summary of Changes)

SECTION 00010A
LINE ITEMS AND PRICING SCHEDULE

HERBERT HOOVER DIKE REHABILITATION, STRUCTURE REPLACEMENTS
S-291 (IP-3) RECONSTRUCTION
GLADES COUNTY, FLORIDA

LINE ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
0001	ACCESS		LUMP SUM		\$ _____
0002	TURBIDITY MONITORING		LUMP SUM		\$ _____
0003	COFFERDAM STEEL PILE		LUMP SUM		\$ _____
0004	EARTHEN COFFERDAM AND PLUGS		LUMP SUM		\$ _____
0005	COFFERDAM ARMORING (ESTIMATED QUANTITY)	110	SQUARE YARD	\$ _____	\$ _____
0006	COFFERDAM SEEPAGE PROTECTION (ESTIMATED QUANTITY)	275	SQUARE YARD	\$ _____	\$ _____
0007	DEWATERING		LUMP SUM		\$ _____
0008	EXCAVATION		LUMP SUM		\$ _____
0009	DEMOLITION		LUMP SUM		\$ _____
0010	SHEETPILE SCOUR CUTOFF WALLS		LUMP SUM		\$ _____
0011	MUD MAT		LUMP SUM		\$ _____
0012	LAKESIDE HEADWALL REINFORCED CONCRETE		LUMP SUM		\$ _____
0013	LAKESIDE WING WALLS REINFORCED CONCRETE		LUMP SUM		\$ _____
0014	LANDSIDE HEADWALL REINFORCED CONCRETE		LUMP SUM		\$ _____
0015	LANDSIDE WING WALLS REINFORCED CONCRETE		LUMP SUM		\$ _____
0016	CULVERT STRUCTURE REINFORCED CONCRETE		LUMP SUM		\$ _____
0017	LAKESIDE HEADWALL EMBEDDED METALS		LUMP SUM		\$ _____
0018	LANDSIDE HEADWALL EMBEDDED METALS		LUMP SUM		\$ _____
0019	MISCELLANEOUS METALS		LUMP SUM		\$ _____
0020	COMBINATION SLIDE/FLAP GATE WITH ACTUATOR	2	EACH	\$ _____	\$ _____
0021	MANATEE SCREEN/DEBRIS BARRIER	2	EACH	\$ _____	\$ _____
*					
0022	EMBANKMENT FILL	50,000	CUBIC YARD	\$ _____	\$ _____
					*
0023	SOIL-BENTONITE CORE		LUMP SUM		\$ _____
0024	CHIMNEY DRAIN, DRAINAGE BLANKENT AND FILTER COLLAR		LUMP SUM		\$ _____
0025	LIMEROCK SURFACE (ESTIMATED QUANTITY)	2,800	SQUARE YARD	\$ _____	\$ _____

SECTION 00010A
LINE ITEMS AND PRICING SCHEDULE

HERBERT HOOVER DIKE REHABILITATION, STRUCTURE REPLACEMENTS
S-291 (IP-3) RECONSTRUCTION
GLADES COUNTY, FLORIDA

LINE ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
0026	RESTORATION RIPRAP (ESTIMATED QUANTITY)	650	SQUARE YARD	\$_____	\$_____
0027	INTAKE AND OUTLET CHANNEL		LUMP SUM		\$_____
0028	SITE SIGNAGE		LUMP SUM		\$_____
0029	CONTROL BUILDING		LUMP SUM		\$_____
0030	ELECTRICAL AND TELECOMMUNICATIONS WORK AND EQUIPMENT		LUMP SUM		\$_____
0031	SODDING (ESTIMATED QUANTITY)	21,500	SQUARE YARD	\$_____	\$_____
0032	ELECTRICAL UTILITIES		LUMP SUM		\$150,000.00
0033	DUAL LEAF GATES	2	EACH	\$_____	\$_____
0034	ABANDONMENT GROUTING (ESTIMATED QUANTITY)	250	CUBIC YARD	\$_____	\$_____
0035	STILLING WELLS		LUMP SUM		\$_____
0036	EMBANKMENT SEEPAGE PROTECTION (ESTIMATED QUANTITY)	153	SQUARE YARD	\$_____	\$_____
0037	CONTRACTING OFFICER'S FIELD OFFICE	29	MONTH	\$_____	\$_____
TOTAL BID (LINE ITEMS 0001 THROUGH 0037)					\$_____

NOTES: (1) See Section 00100 INSTRUCTIONS TO OFFERORS.

(2) Quantities shown are estimated, actual quantities may vary. See Clause 52.211-18 "Variation in Estimated Quantity" of Section 00700 CONTRACT CLAUSES.

(3) Offerors must price all line items.

(4) Failure to complete and return all required submissions (see Section 00100A) could render your proposal ineligible for award.

(5) Digital Terrain Models (DTM) and requisite raw data in XLM format are available for informational purposes only. The Government assumes no responsibility for any apparent errors that may be present in the DTM or raw data; nor does the Government assume responsibility for any conclusions or interpretations made by the Contractor based on the provided DTM or raw data. The DTM and raw data are available in compressed (zip) format for download by offerors with the solicitation on the Federal Business Opportunities (www.fbo.gov) web site. The available information may include DTM surfaces for the existing site grades, excavation grades, and finished grades. The excavation DTM may not fully define surfaces related to temporary cuts required for site features such as stormwater management and erosion control components. Further, the excavation DTM may not reflect embankment foundation details such as soil benching. The finished DTM may not fully define surfaces related to site features such as stormwater management and erosion control components. Further, the finished grade DTM may not reflect embankment penetrations, internal embankment components such as seepage collection systems, nor embankment slope protection.

* Deleted note.

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SECTION 00100A
SOLICITATION
PROVISIONS

A. DESCRIPTION OF THE PROGRAM

The Jacksonville District of the US Army Corps of Engineers will construct Herbert Hoover Dike Rehabilitation Structure Replacements, S-291 (IP-3) Reconstruction, Glades County, Florida. The work includes in-place abandonment of the existing Herbert Hoover Dike Culvert IP-3 and the construction of new water control structure S-291 at the adjacent location. The demolition and reconstruction efforts will require the installation of steel sheet pile cofferdams with earthen plugs on the lakeside and an earthen cofferdam on the landside of the culvert in order to dewater the construction site. The structure will include cast-in-place reinforced concrete foundations, headwalls, and box culverts. Combination flap/slide gates will be installed at the lakeside headwall and dual leaf gates on the landside headwall of the structure. S-291 will consist of two (2) 7-foot by 7-foot culverts with approximate barrel lengths of 84 feet. At the completion of the embankment reconstruction at the structure, the crest elevation will be 30.5 feet NAVD88. Riprap will be installed along the lakeside embankment face, and a control building will be installed on the lakeside work platform at each structure. Work also includes operation of the by-pass structure, grassing and turbidity monitoring.

B. ACQUISITION APPROACH

The Jacksonville District will award, administer and manage the contract for the Herbert Hoover Dike Rehabilitation Structure Replacements, S-291 (IP-3) Reconstruction, Glades County, Florida. A single award of a Firm-Fixed Price (FFP) contract will be competed through full and open or unrestricted competition. In accordance with FAR 19.203(c), consideration was made for the small business socioeconomic contracting programs and subsequently, a small business set-aside. To accurately assess potential opportunities for a small business set-aside, market research was conducted with the SBA Dynamic Small Business Search. The utilization of NAICS code 237990 and acceptable bonding level of \$15,000,000.00 culminated in the identification of 122 small businesses. Upon further review of the provided capability narratives, 26 small business firms are potentially capable of performing the work associated with various aspects of the project. This determination is based upon their experience in the realms of cofferdams, concrete, construction, demolition, dewatering and sheet piles. Given the provided information, it is believed the best method for procuring this Government requirement is the utilization of an unrestricted solicitation.

Therefore, Based on the current and past market research, it is in the best interest of the Government to advertise this requirement as Unrestricted.

SECTION II SOLICITATION PROVISIONS

A. BASIS FOR AWARD

The award will be made based on the best overall (i.e., best value) proposal that is determined to be the most beneficial to the Government, with appropriate consideration given to the four evaluation factors: Technical Merit, Past Performance, Small Business Utilization Plan and Price. The Contracting Officer will use a trade-off process to determine which offer represents the best value to the Government. This process allows the Contracting Officer to consider making award to other than the lowest priced offeror or other than the highest technically rated offeror. **To receive consideration for award, a rating of no less than "Acceptable" must be achieved for the Technical Merit factor. Offerors are cautioned that the award may not necessarily be made to the lowest price offeror or the highest technically rated offeror.** All evaluation factors other than price, when combined, are considered slightly more important than price.

Note: A rating of unacceptable for any individual sub-factor/sub-element will result in an overall rating of unacceptable for the entire factor.

Limitations on Substitutions for Certain Positions and/or Subcontractors

Certain items of work are considered particularly critical to successful completion of the project and may be completed by subcontractors. The Government will consider the qualifications of these subcontractors during its evaluation of the offeror's proposal*. In accordance with the Limitations On Substitutions For Certain Positions and/or Subcontractors paragraph of this solicitation (999.215-4001, Section 00800), if the offeror is awarded a contract the offeror will not be permitted to make substitutions without the approval of the Contracting Officer or Administrative Contracting Officer. If the offeror does not name a subcontractor for any identified item of work, the Government will assume the offeror intends to perform the work with its own forces and, if the offeror receives the contract, no substitutions will be allowed without prior approval of the Contracting Officer.

*See "Proposal Submission" for specific requirements regarding subcontractors.

B. FACTORS AND SUB-FACTORS TO BE EVALUATED

The following evaluation factors and sub-factors will be used to evaluate each proposal: award will be made to the offeror whose proposal is most advantageous to the Government based upon an integrated assessment of the evaluation factors and sub-factors described below.

FACTOR 1 – TECHNICAL MERIT: Technical Merit is slightly more important than Past Performance and significantly more important than Small Business Participation.

Technical merit consists of two sub-factors, sub-factor 1 Demonstrated Experience and sub-factor 2 Implementation Plan and Construction Schedule. Sub-factor 1 is considered slightly more important than sub-factor 2.

FACTOR 2 – PAST PERFORMANCE: The Past Performance factor is slightly less important than the Technical Merit factor and significantly more important than the Small Business Participation factor.

FACTOR 3 – SMALL BUSINESS PARTICIPATION: The Small Business Participation factor is significantly less important than both the Technical Merit factor and the Past Performance factor. The Small Business Participation Plan consists of two sub-factors, sub-factor 1 Small Business Participation Plan, and sub-factor 2 Past Utilization of Small Business Concerns. Both sub-factors are equally important.

FACTOR 4 – PRICE: The Price factor is not rated. It is evaluated for reasonableness. Additionally, a price realism evaluation maybe performed. Offerors are advised that their business decision to submit a low-priced proposal can be considered in assessing their understanding or the risk associated with their proposal. All evaluation factors other than price, when combined, are slightly more important than price.

C. EVALUATION APPROACH

All proposals shall be subject to evaluation by a team of Government evaluators. Proposals will be evaluated on the basis of the factors stated in the solicitation to select the responsible offeror whose proposal is most advantageous to the Government. All responsible offerors whose proposals are among the most highly rated may be included in the competitive range in accordance with FAR 15.306(c)(1) & (2). However, the Government reserves the right to limit the number of proposals in the competitive range for purposes of efficiency.

By submitting an offer in response to this solicitation, offerors are agreeing to comply with all terms and conditions contained in the solicitation. Unless the solicitation specifically invites the offeror to submit exceptions, the Source Selection Authority/Contracting Officer may reject any offer that contains exceptions and or qualifying language. In this solicitation, the words “offer” and “proposal” are used interchangeably. (See definition of “offer” at FAR 2.101.) Except for any portions of the offeror’s proposal incorporated into the resulting contract by specific reference, the terms and conditions included in the solicitation, including any amendments, shall take precedence over the offeror’s proposal.

Proposal Evaluation

The Government intends to evaluate proposals and award a contract without discussions with

offerors (except clarifications as described in FAR 15.306(a)). Therefore, the offeror's initial proposal should contain the offeror's best terms from a price and technical standpoint. The Government reserves the right to conduct discussions if the Contracting Officer later determines them to be necessary. Further, if the Contracting Officer determines that discussions are necessary and if the Contracting Officer determines that the number of proposals that would otherwise be in the competitive range exceeds the number at which an efficient competition can be conducted, the Contracting Officer may limit the number of proposals in the competitive range to the greatest number that will permit an efficient competition among the most highly rated proposals.

Source Selection Decision

The Source Selection Authority/Contracting Officer, independently exercising prudent business judgment, will make the source selection decision based on the proposal that represents the best value to the Government. The Source Selection Authority/Contracting Officer will not receive a recommendation from any individual or body as to which offeror should receive the award and additionally will not receive a rank order or order of merit list pertaining to the offers being evaluated.

D. PROPOSAL REQUIREMENTS AND SUBMISSION FORMAT

The offeror's proposal shall be submitted in hard copy, with accompanying digital copy, see Paragraph 999.215-4003, Section 00100. The RFP shall provide the Government address and receipt date for proposal submittal.

The proposal shall be divided into volumes as indicated below. Each set of volumes shall be submitted sealed separately. Each volume shall be marked with the offeror's name, the solicitation number, the volume number and stamped with "Original" or "Copy." Each respective original or copy shall be separately bound or placed in a three-ring binder.

All proposals shall contain the evaluation requirements stated herein and every binder shall also contain: Table of Contents, List of Tables (if required), List of Figures (if required), List of Appendices, and Name/Address/Telephone Number/e-mail address of the Offeror. Proposal clarity, organization, and cross-referencing are mandatory. No material (information not part of proposal) shall be incorporated by reference. The offeror shall submit in the proposal the requested information specified herein.

***In accordance with Paragraph 999.215-4003 - Electronic Proposals, Section 00100, submit one electronic copy (CD Only) that contains all four volumes (Technical Merit, Past Performance, Small Business Participation and Price).**

FACTOR 1 (VOLUME ONE) – Technical Merit Package (1 Original, 5 Copies)

DO NOT INCLUDE PRICING INFORMATION IN THE TECHNICAL MERIT PROPOSAL. Responses to Each Sub-Factor/Sub-element shall be organized in Volume 1 as follows:

Part 1 – Sub-Factor 1 Demonstrated Experience of Contractor/Subcontractors. Sub-Factor 1 consists of four sub-elements. The sub-elements are considered equally important for this sub-factor.

Tab A – Sub-Element (A) – Successfully install a cofferdam system, with a minimum 10 foot head differential, maintained across the structure from the head water to the tail water (or dewatered water level), immediately adjacent to or within a labeled body of water.

Tab B – Sub-Element (B) – Successfully install, operate, and maintain a dewatering system, with a minimum head differential of 10 feet maintained during dewatering operations immediately adjacent to or within a labeled body of water.

Tab C- Sub-Element (C) - Successful construction of gated concrete hydraulic control structures (i.e. water control structure such as a pump station, spillway, outlet works, or culvert) with water control gates with a minimum 10 foot hydraulic head differential maintained across the structure.

Tab D – Sub-Element (D) - Successful construction of permanent earthen dam or new (nonmodified) permanent levee embankments (water retaining structure) at least 15 feet in height, as measured from the toe of the constructed embankment to the embankment crest.

Part 2 – Sub-Factor 1 Implementation Plan/Construction Schedule

(both equally important)

Tab A – Sub-Element (A) - Implementation Plan

Tab B – Sub-Element (B) - Construction

Schedule

FACTOR 2 (VOLUME TWO) – Past Performance Package (1 Original, 1 Copy)

FACTOR 3 (VOLUME THREE) – Small Business Participation (1 Original, 2 Copies)

Tab A – Sub-Factor 1 – Proposed Small Business Participation Plan

Tab B – Sub-Factor 2 – Past Utilization of Small Business Concerns

FACTOR 4 (VOLUME FOUR) – Price and Price Related Information (1 Original, 1 Copy)

FACTOR 1 – TECHNICAL MERIT

In responding to this factor, the objective should be to instill confidence that the offeror thoroughly understands the requirements and complexities of this project, has the knowledge, expertise, equipment, and experience required to meet or exceed the terms and conditions of these specifications, and the ability to successfully accomplish and complete the project within the required time frame.

In accordance with the non-substitution clause in Section 00800 (999.215-4001), Limitations on Substitutions for Certain Positions and/or Subcontractors, a letter of commitment must be provided for any proposed major subcontractor. Failure to provide a letter of commitment from a proposed major subcontractor will be noted as a weakness. Use the form letter in Attachment 2 to provide letters of commitment.

A letter of commitment is defined as a letter from the subcontractor on official Company letterhead (1) addressed to the prime contractor, (2) identifying the work they intend to perform, and (3) stating that they are willing to be bound to perform the identified work if the prime receives this contract.

A major subcontractor is defined as any subcontractor that is critical for successfully completing the project and that is identified in paragraph 999.215-4001 Limitations on Substitutions for Certain Positions and/or Subcontractors.

SUB-FACTOR 1 – DEMONSTRATED EXPERIENCE

Notes:

If any portion of the work provided as demonstrated experience was subcontracted, clearly identify that work as it relates to this project. This Subcontractor is also required to be identified as the subcontractor performing this effort as such and provide the

required experience of that subcontractor as it relates to work the subcontractor is performing on this project.

Any demonstrated experience (to include subcontractors) provided for consideration in this sub-factor shall also have a corresponding submission in the Past Performance Factor. If Past Performance information is not provided for a demonstrated experience, that demonstrated experience will not be evaluated.

It is not necessary that all the elements required on this sub-factor be performed on the same project; however, experiences that include all the elements being accomplished on the same project would carry more weight when being evaluated.

Demonstrated Experience submitted under this sub-factor that mirrors the specifications in relation to scope and complexity will earn a higher technical rating than Demonstrated Experience that is only similar in some areas.

Submission Requirements

This sub-factor contains four sub elements; Sub-elements A, B, C and D are considered equally important.

Provide a minimum of three (3) but not more than five (5) examples of completed hydraulic control structure construction projects or close to complete projects for each sub-element. It is not necessary for one company to demonstrate all experience listed for this solicitation.

Note 1: The evaluation board will not evaluate more than five projects for each sub-element. Therefore, no additional projects will be evaluated and no additional consideration will be given for the submission of more than five projects in response to each sub-element.

Note 2: A Joint Venture entity shall submit the designated number (at least three (3) projects but a total of no more than five (5) projects for each sub-element for the combined Joint Venture). As stated in Note 1 above, no additional projects will be evaluated. These projects will be evaluated separately; however, the overall evaluation for demonstrated experience will be combined to form one overall evaluation rating for the Joint Venture.

Using Attachment 1, provide a detailed narrative that explains how each provided demonstrated experience is similar to the work described in the solicitation. Failure to provide sufficient detail explaining how each provided demonstrated experience is similar to the work described in the solicitation may be noted as a deficiency. This narrative should demonstrate that the offeror clearly has the capability to successfully complete the project. Please note, in all likelihood, the technical evaluators are unfamiliar with the demonstrated experiences that offerors provide; this is why a lack of detail explaining the work and how it is similar to the work described in the solicitation may be considered a deficiency.

Demonstrated experiences provided should include the location/conditions, duration, dollar value, any unusual coordination requirements as well as any problems encountered and corrective action taken to successfully complete the project. Each project identified must include a contract number, a reference contact name, address and telephone number, as well as email address.

If any portion of the work is provided as demonstrated experience from a parent company, clearly identify that work as it relates to this project. Using Attachment 2, provide a letter of commitment from the parent company clearly stating that they will provide their expertise and support, as necessary, as it relates to the portion of work used as demonstrated experience for this project. Failure to include a letter of commitment may be noted as a deficiency.

If any portion of the work is provided as demonstrated experience is subcontracted, clearly identify that work *as it relates to this project. The Subcontractor is also required to be identified as the subcontractor performing this effort* as such and provide the required experience of that subcontractor as it relates to work the subcontractor performing on this project. Using Attachment 2, provide a letter of commitment from the proposed subcontractor. Failure to include a letter of commitment may be noted as a deficiency.

The projects must have been completed projects or close to completed projects within the last ten (10) years from the date of this solicitation. A completed project is defined as work performed under a “project” that is physically complete and has been accepted by the customer. A close to complete project is defined as work performed under a “project” that is over 75% physically complete based on billing progress, and/or has been accepted by the customer. If a project is presented and has not been completed, the offeror shall explain which elements of the work are not completed and the percentage. Applicable demonstrated experiences should include the following:

SUB-ELEMENT A – Successfully install a cofferdam system, with a minimum 10 foot head differential, maintained across the structure, from the head water to the tail water (or dewatered water level), immediately adjacent to or within a labeled body of water.

- At least two of the cofferdam systems must be driven pile systems.
- Clearly state the type of cofferdam system used to retain body of water.
- Clearly state the head differential maintained by each cofferdam system.

The evaluation will carry more weight for demonstrated experience with: 1) a head differential of at least 20 feet across the structure.

SUB-ELEMENT B – Successfully install, operate, and maintain a dewatering system, with a minimum head differential of 10 feet maintained during dewatering operations, immediately adjacent to or within a labeled body of water.

- At least two of the dewatering systems must include pre-drainage, defined as dewatering prior to excavation (Examples: deeps wells, well point systems and/or ejectors).
- Clearly state the type of dewatering system used.

- Clearly state the head differential maintained by each system submitted.
- Clearly describe the geology in which each dewater system was installed.

A demonstrated experience with a head differential of at least 20 feet and/or systems installed in similar geology to the project site, as characterized in the Geotechnical Data Report (GDR), will carry more weight when evaluated.

SUB-ELEMENT C – Successful construction of gated concrete hydraulic control structures (i.e. water control structure such as a pump station, spillway, outlet works, or culvert) with water control gates with a minimum 10 foot hydraulic head differential maintained across the structure.

- At least two of the submitted experiences must be for a completed hydraulic control structure including reinforced concrete, hydraulic steel structures (gates) and controls.
- At least one of the submitted experiences must involve placement and instrumentation of mass structural concrete.
- At least one of the submitted experiences must be for the fabrication of hydraulic steel structures (steel water control gates)
- Each demonstrated experience shall include a minimum gated hydraulic opening of 49 square feet per opening.
- Clearly state the operating head differential (headwater minus tailwater) across the gate.

A demonstrated experience with an operating head differential of at least 30 feet across the gate will carry more weight when evaluated.

Demonstrated experience of a concrete hydraulic control structure with a permanent hydraulic loading (such as an outlet works for a dam) will carry more weight when evaluated than a concrete hydraulic control structure with a temporary hydraulic loading (such as a surge barrier or flood wall).

Demonstrated experience related to placement and instrumentation of mass structural concrete within a water control structure will receive a higher rating than demonstrated experience unrelated to placement and instrumentation of mass structural concrete within a water control structure.

SUB-ELEMENT D – Successful construction of permanent earthen dam or new (nonmodified) permanent levee embankments (water retaining structure) at least 15 feet in height, as measured from the toe of the constructed embankment to the embankment crest.

A demonstrated experience related to zoned embankments of similar configuration and

composition to the zoned embankments shown in the plans and specifications will carry more weight when evaluated than demonstrated experience for homogenous embankments. A zoned embankment is herein defined as one containing zones of different engineered soils within its interior (i.e., impervious core, filter, drain, embankment fill). Exterior surface features such as erosion control measures (e.g. riprap, Turf Reinforcement Mat, Articulated Concrete Block Mat, etc.) are not herein considered a zoned embankment.

SUB-FACTOR 2 – IMPLEMENTATION PLAN AND CONSTRUCTION SCHEDULE

Submission Requirements

This sub-factor consists of two sub-elements: The Implementation Plan and the Construction Schedule. The Implementation Plan (Sub-element A) is slightly more important than the Construction Schedule (Sub-element B). However, the sub-elements shall be evaluated as one sub-factor therefore, the plan and the schedule should support each other, demonstrating that the project can be accomplished as proposed.

SUB-ELEMENT A – Implementation Plan

In a narrative format, the offeror shall describe the proposed Implementation Plan regarding how the work will be executed from start to completion. The Plan shall include a description of related activities and items of work, to include coordination with major subcontractors and the type of equipment that would be utilized, if appropriate. Also, identify potential risks and plans for mitigating those risks. At a minimum, the plan shall discuss the following:

- Site access and maintenance of traffic
- Sequence of cofferdam system construction
- Installation of dewatering system (include sequencing and effluent management)
- Foundation mapping and acceptance
- Installation and sequence of construction of structural works (i.e. concrete construction and steel fabrication)
- Detail plan of zoned embankment construction (include equipment and sequence)
- Erosion Control

SUB-ELEMENT B – Construction Schedule

Provide a schedule of construction in the format of a Gantt, PERT, or similar graphical timeline, showing the start and completion dates, concurrent work, interdependence of activities and other relative scheduling factors and items of work. This schedule will be reviewed in concert with the Implementation Plan submission of this package. At a minimum the schedule should show all of the following items of work:

- Mobilization & Preparatory Work

- Critical Submittals (to include dewatering plan, long led items, and access/traffic control plan)
- Temporary Access Construction
- Foundation mapping/acceptance period as annotated in section 35 41 00
- Riprap Source Selection and Delivery
- Cofferdam Steel Source Selection and Delivery
- Installation and Removal of Cofferdam System
- Installation and Removal of Dewatering System
- Excavation
- Demolition
- Detailed Sequence of New Water Control Structure (Concrete and Steel)
- Detailed Sequence of Zoned-Embankment Construction
- Installation of Control Building, Gate Controls and Sensors
- Installation of Temporary and Permanent Erosion Control Measures
- Demobilization
- Site Restoration/Turf Establishment

Evaluation Method

In responding to this sub-factor, the objective is to demonstrate to the technical evaluators that the offeror clearly has the capability to successfully complete the project by explaining in detail how the provided demonstrated experiences are similar to the work described in the solicitation. See “Technical Merit Rating Definitions”.

The Implementation Plan and Construction Schedule will be evaluated as separate sub-elements and then will be assigned an overall sub-factor rating. The overall evaluation of this sub-factor will take into consideration the individual ratings given to the Implementation Plan and the Construction Schedule, as well as how the two complement each other. Any conflicts between the two may be noted as a weakness. See “Technical Merit Rating Definitions” below.

TECHNICAL RATINGS

TECHNICAL MERIT RATING DEFINITIONS

Note: Demonstrated Experience Ratings will be based on the level of detail and the number of projects provided that are similar in relation to scope, complexity and dollar value to the Herbert Hoover Dike Rehabilitation Structure Replacements, S-291 (IP-3) Reconstruction, Glades County, Florida

Outstanding – Proposal meets requirements and indicates an exceptional approach and understanding of the requirements. Strengths far outweigh any weaknesses. Risk of unsuccessful performance is very low. ***Risk Level: Very Low***

Good – Proposal meets requirements and indicates a thorough approach and understanding of

the requirements. Proposal contains strengths which outweigh any weaknesses. Risk of unsuccessful performance is low. ***Risk Level: Low***

Acceptable – Proposal meets requirements and indicates an adequate approach and understanding of the requirements. Strengths and weaknesses are offsetting or will have little or no impact on contract performance. Risk of unsuccessful performance is no worse than moderate. ***Risk Level: Moderate***

Marginal - Proposal does not clearly meet requirements and has not demonstrated an adequate approach and understanding of the requirements. The proposal has one or more weaknesses which are not offset by strengths. Risk of unsuccessful performance is high. ***Risk Level: High***

Unacceptable - Proposal does not meet requirements and contains one or more deficiencies. **Proposal is unawardable.**

FACTOR 2 – PAST PERFORMANCE

Submission Requirements

Offerors shall submit one NAVFAC/USACE Past Performance Questionnaire (see Attachment 3), completed and signed by an Owner of the Project (Client) point of contact or “POC” for each of the projects submitted under sub-factor 1 – Demonstrated Experience. If a project submitted under sub-factor 1 was completed by the offeror’s major subcontractor, the offeror is responsible for coordinating with their major subcontractor and submitting a completed NAVFAC/USACE Past Performance Questionnaire on their major subcontractor’s behalf. All pages of each NAVFAC/USACE Past Performance Questionnaire must be initialed and dated on the bottom right-hand corner by the POC. Failure to provide a completed and signed NAVFAC/USACE Past Performance Questionnaire for each project as described above may be noted as a deficiency. **If a Construction Contractor Appraisal Support System (CCASS) or a Contractor Performance Assessment Reporting System (CPARS) record is available for any of the projects submitted under Sub-factor 1-Demonstrated Experience, the CCASS or CPARS record may be submitted in lieu of the completed Past Performance Questionnaire or an official Performance Evaluation from the owner.**

The Owner of the Project (Client) or “POC” is defined as the entity that took ownership of the project after construction was complete.

If the offeror is unable to obtain a completed Past Performance Questionnaire from the Owner of the Project (Client), before the proposal receipt date, the offeror shall complete and submit with the proposal the first page of the Questionnaire (Blocks 1-8) that contains contract and client information for the submitted project. Note: it is the offeror’s responsibility to ensure that the client’s point of contact information is current and correct. The client point of contact reflected in (Blocks 1-8) should also be familiar with the past performance they are being asked to verify and

informed that they will be contacted by the Government to verify past performance.

The Government reserves the right to obtain copies of all CCASS or CPARS records contained in the CCASS or CPARS database for the offeror or offeror's major subcontractors.

For each past performance submitted, explain why it is relevant to this project, this discussion should include a summary of the project description provided in the respective demonstrated experience submitted for Factor 1. (Relevancy is defined in the DOD Source Selection Procedures Guide for collection and use of past performance as "information that has a logical connection with the matter under consideration and applicable time span."). Offerors should provide a narrative and be as specific as possible when explaining how a past performance is relevant to this project. **The following are examples of topics that should be discussed at a minimum: timeliness, environmental issues, responsiveness to customer needs, quality control, cost control, change order work and compliance with safety requirements. Emphasis should be made on quality, customer satisfaction and the resolution of problems encountered during performance.**

Evaluation Method

The past performance evaluation is an assessment of the offeror's probability of meeting the solicitation requirements. The assessment considers each offeror's demonstrated recent and relevant past performances in supplying services that meet the solicitation requirements. There are two aspects to the past performance evaluation.

The first evaluates whether the offeror's past performance is relevant or not relevant to the effort to be acquired. The technical evaluation Board will evaluate the demonstrated experiences provided by the offeror under Sub-Factor 1 above. Relevancy will be determined based on the timeframe for project completion given under Sub-Factor 1 and the level of similarity between the offeror provided demonstrated experiences and the solicitation requirements. For example, a demonstrated experience provided under Sub-Factor 1 that was completed within the last ten years (measured from the date of the solicitation) that involves essentially the same scope and magnitude of effort and complexities as this solicitation requires will most likely be given a relevancy rating of Very Relevant (see Relevance Rating Definitions below).

The second aspect of the past performance evaluation is to determine how well the contractor performed a demonstrated experience submitted in Sub-Factor 1. This will be determined by utilizing the completed NAVFAC/USACE Past Performance Questionnaires or submitted CCASS or CPARS records. The POC provided on the NAVFAC/USACE Past Performance Questionnaire will be contacted to verify the past performance ratings provided. If the POC cannot be contacted, the past performance rating will be noted as "Unknown." It is the offeror's responsibility to ensure that the POC's contact information is current (i.e. names, addresses, telephone numbers and email addresses). The point of contact should be familiar with the

performance they are intended to verify and be aware that they will be contacted by the Government.

Once Relevancy Ratings are assigned and Past Performance Ratings are verified, the Government will conclude the past performance evaluation with a performance confidence assessment. The performance confidence assessment will be based on the relevance of the projects provided and the ratings received based on the submitted and completed NAVFAC/USACE Past Performance Questionnaires as well as CCASS or CPARS records if available. The performance confidence is the level of risk associated with the offeror as it relates to the probability that the offeror will successfully complete this project (see Performance Confidence Assessments Definitions below).

Past Performance Ratings

Relevance Rating Definitions

Very Relevant – Present/past performance effort involved essentially the same scope and magnitude of effort and complexities this solicitation requires.

Relevant – Present/past performance effort involved similar scope and magnitude of effort and complexities this solicitation requires.

Somewhat Relevant - Present/past performance effort involved some of the scope and magnitude of effort and complexities this solicitation requires.

Not Relevant – Present/past performance effort involved little or none of the scope and magnitude of effort and complexities this solicitation requires.

Performance Confidence Assessment Definitions

Substantial Confidence – Based on the offeror's recent/relevant performance record, the Government has a high expectation that the offeror will successfully perform the required effort.

Satisfactory Confidence – Based on the offeror's recent/relevant performance record, the Government has a reasonable expectation that the offeror will successfully perform the required effort.

Limited Confidence – Based on the offeror's recent/relevant performance record, the Government has a low expectation that the offeror will successfully perform the required effort.

No Confidence – Based on the offeror's recent/relevant performance record, the Government has no expectation that the offeror will successfully perform the required effort.

Unknown Confidence – No recent/relevant performance record is available or the offeror's performance record is so sparse that no meaningful confidence assessment rating can be reasonably assigned.

FACTOR 3 –SMALL BUSINESS PARTICIPATION

Submission Requirements

SUB-FACTOR 1 – Proposed Small Business Participation Plan

All offerors (both other than small and small) shall complete a Proposed Small Business Participation Plan (SBPP) using the template found at Attachment (4). A minimum Small Business Participation goal of twenty percent (20%) of Total Contract Value has been assigned to this project.

- Large businesses primes may achieve the small business participation goals through subcontracting to small businesses.
- Small business primes may achieve small business participation goals through their own performance/participation as a prime and also through subcontracting to other small businesses.

SUB-FACTOR 2 - Past Utilization of Small Business Concerns

This sub-factor applies to offerors that are small business concerns (including all categories) and to offerors that are other than small business concerns. For each of the three most recently completed Federal contracts submit one of the following: (i) if the contract required a subcontracting plan submit the FINAL Individual Subcontracting Report (ISR). **ISR reports for projects that are not marked FINAL but well underway will be accepted IF the offeror explains which elements of the work are not completed and provide the percentage of completion. A well underway project is defined as at least 80% construction progress completed** (ii) if the contract did not require a subcontracting plan, complete and submit the Past Performance of Small Business Participation Plan Collection Sheet (See Attachment 5). Offerors that are SB, SDB, VOSB, SDVOSB, HUBZone SB, or WOSB may count work performed with in-house resources toward compliance with FAR 52.219-8 in the category (or categories) to which they belong. (For example, a HUBZone could count work in 2 categories: SB and HUBZone) IF YOU HAVE NOT HAD A CONTRACT THAT INCLUDED THE CLAUSE FAR 52.219-8, YOU MUST INDICATE IN WRITING IN YOUR PROPOSAL. FAILURE TO DO SO WILL BE CONSIDERED A WEAKNESS AND/OR A DEFICIENCY FOR THIS SUB-FACTOR.

Note for joint ventures: If the Joint Venture has no subcontracting past performance, then each member of the Joint Venture must provide the most recent subcontracting past performance.

Evaluation Method

In this factor, all offerors (both other than small and small businesses) will be evaluated on the level of small business commitment they are demonstrating for the proposed acquisition, and their prior level of commitment to utilizing small businesses in performance of prior contracts.

SUB-FACTOR 1 – Proposed Small Business Participation Plan

Small Business Participation Plans (from other than small and small businesses) will be evaluated on the basis of:

- The extent to which such firms, as defined in FAR Part 19, are specifically identified in the proposal;
- Identification of the complexity and variety of the work small business firms are to perform;
- The extent (ie. **length of and formality considerations**) of demonstrated commitment to use such firms (enforceable commitments (JV, MP or written teaming agreements) will be considered more favorably than non-enforceable ones; refer to Attachment 5;
- The extent of participation of Prime offerors(both large and small) and small business subcontractors in terms of the total value of the acquisition vs the large business participation percentage;

The extent to which the offeror **meets or exceeds** the suggested socioeconomic category goals. These goals are a percentage of the value of the **total** acquisition. A minimum Total Small Business Participation goal of **20% of the total contract value** is assigned to this acquisition

In addition to the minimum Small Business Participation goal of 20% of the TOTAL contract value, the following goals are suggested for the individual socioeconomic categories and determined to be reasonable based on market research for this requirement.

Goals are based on **% of TOTAL contract value**:

- { **3%** } Small Disadvantaged Business
- { **3%** } Woman-Owned Small Business (WOSB)
- { **3%** } Historically Underutilized Zone (HUB Zone) Small Business
- { **2%** } Veteran Owned Small Business (VOSB)
- { **1%** } Service Disabled Veteran Owned Small Business (SDVOSB)

SUB-FACTOR 2 – Past Utilization of Small Business Concerns

All Offerors regardless of size will be evaluated by assessing its records or information in complying with requirements of the clauses at FAR 52.219-8, Utilization of Small Business Concerns, and, for all other than small business offerors, FAR 52.219-9, Small Business Subcontracting Plan. If the offeror has never had a contract that included FAR 52.219-8, Evaluation of Small Business Participation will be based solely on the offeror's proposed small business participation plan for this contract. Past Utilization of Small Business will be evaluated on the basis of:

- The extent of commitment to the policy stated in FAR 52.219-8 and FAR 52.219-9 reflected in the offeror's past performance.
- The extent the offeror documented obstacles in meeting goals or shows evidence of good faith effort.

The Government may use information supplied by the offeror and information obtained from other sources to evaluate past utilization of small business concerns.

Small Business Participation Adjectival Ratings

Small Business Participation will be rated using the adjectival ratings listed below.

Outstanding – Proposal meets small business requirements and indicates an exceptional approach and understanding of the small business requirements. Strengths far outweigh any weaknesses.

Good – Proposal meets small business requirements and indicates a thorough approach and understanding of the small business requirements. The proposal contains strengths which outweigh any weaknesses.

Acceptable – Proposal meets small business requirements and indicates an adequate approach and understanding of the small business requirements. Strengths and weaknesses are offsetting or will have little or no impact on contract performance.

Marginal – Proposal does not clearly meet small business requirements and has not demonstrated an adequate approach and understanding of the small business requirements. The proposal has one or more weaknesses which are not offset by strengths.

Unacceptable – Proposal does not meet small business requirements and contains one or more deficiencies.

FACTOR 4 – PRICE AND PRICE RELATED INFORMATION

Submission Requirements

The offeror shall submit the following price and price related information:

- a. Proposal Data Sheet (See Attachment 6)
- b. Standard Form 1442 (Solicitation, Offer and Award) and Section 00010A (Line Items and Pricing Schedule)

Include the completed Standard Form 1442 for the RFP, along with the completed Pricing Schedule. The total cost for the construction will be considered for evaluation, including all options and alternates (if applicable).

- c. Section 00101, Representations, Certifications, and Other Statements of Offerors.
- d. In accordance with FAR Clause 52.228-1, Bid Guarantee, an original bid guarantee shall be submitted with each offer.
- e. Responsibility Determination (Attachment 8)
- f. Small Business Subcontracting Plan (For other than Small Offerors)
- g. Joint Venture Agreement (If Applicable)

Evaluation Method

Complete Attachment 6 Proposal Data Sheet. The proposal data sheet is not considered for evaluation but is required as part of the Offeror's proposal.

After resolution of minor or clerical errors and/or mistakes, the Contracting Officer will perform a price analysis on all proposals received. Price analysis will be performed in accordance with FAR 15.404-1(b), to determine fairness and reasonableness and the adequacy of the offer in fulfilling the requirements of the proposal. The price analysis will also check for the appearance of unbalanced line item prices. Additionally, offerors' price proposals maybe evaluated for price realism to determine if there are proposals that are unrealistic low in terms of overall price or reflective of an inherent lack of management and/or technical competence or comprehension of the requirements.

Completeness addresses the extent to which the elements of the price proposal are consistent with the requirements of the RFP. Fairness, Reasonableness, and Realism will be established using historical price information, price competition information, the Independent Government Estimate (IGE), and any other pricing tools necessary.

Submittal of Section 00101 is not considered for evaluation, but is required as part of the offeror's proposal of this solicitation. The information requested in this Section needs to be fully completed along with completion of Online Representations and Certifications Application (ORCA) per FAR 52.204-8 ANNUAL REPRESENTATIONS AND CERTIFICATIONS. The submitted information will be reviewed for completeness by Contracting Personnel.

Bid bonds will be reviewed for acceptability. Any offeror whose bid bond is unacceptable, will be eliminated without further consideration unless the Source Selection Authority/Contracting Officer later determines that discussions are necessary and decides that the offeror's proposal should be included in the competitive range.

Use Attachment 8 to provide the information required for the Responsibility Determination.

In addition to other proposal information, the Contracting Officer shall use this information in making an affirmative responsibility determination for award to the Successful Offeror, in accordance with FAR Part 9.

Each Large Business offeror shall provide a Small Business Subcontracting Plan that contains all the elements required by FAR 52.219-9, Alt II, in Section 00700. This plan shall be submitted separately from the Small Business Participation information required in factor 3, which applies to both large and small businesses. The Small Business Subcontracting Plan is not a requirement for evaluation in source selection, but rather a requirement for award to a large business and will be incorporated into any resultant contract.

The Small Business Subcontracting Plan shall be thorough and complete. The Subcontracting Plan will be incorporated into the contract upon award of the contract to the Offeror, if acceptable and upon final approval of the Contracting Officer.

FACTOR 4 – PRICE

The Price factor is not rated. It is evaluated for reasonableness. Additionally, a price realism evaluation may be performed. Offerors are advised that their business decision to submit a low-priced proposal can be considered in assessing their understanding or the risk associated with their proposal. All evaluation factors other than price, when combined, are significantly more important than price.

Submission Requirements

The offeror shall submit the following price and price related information:

- a. Proposal Data Sheet (Attachment 6)
- b. Standard Form 1442 (Solicitation, Offer and Award) and Section 00010A (Line Items and Pricing Schedule)

Include the completed Standard Form 1442 for the RFP, along with the completed Pricing Schedule. The total cost for the construction will be considered for evaluation, including all options and alternates (if applicable).

- c. Section 00101, Representations, Certifications and Other Statements of Offerors.
- d. In accordance with FAR Clause 52.228-1, Bid Guarantee, an original bid guarantee shall be submitted with each offer.
- e. Responsibility Determination (Attachment 7)

E. OTHER GENERAL REVIEW

System for Award Management

Offerors will be checked against the System for Award Management (SAM) system. Any offeror who is listed with any active exclusion will be eliminated without further consideration.

Debarred List

Offerors will be checked against the *List of Parties Excluded From Federal Procurement and Nonprocurement Programs*. Any offeror who is listed will be eliminated without further consideration.

Bid Bonds

Bid bonds will be reviewed for acceptability. Any offeror whose bid bond is unacceptable, will be eliminated without further consideration unless the Contracting Officer later determines that discussions are necessary and decides that the offerors proposal should be included in the competitive range.

Joint Venture

Contractors submitting an offer as a joint venture must provide a written copy of the joint venture agreement with the initial proposal. The joint venture agreement must be signed by both

parties and will be subject to review by District Office of Counsel. Also, if the joint venture involves an 8(a) small business, approval by the Small Business Administration will also be required. The joint venture must be registered in System for Award Management (SAM) as a joint venture in order for an award to be made. In addition, the SF 1442 as well as all future documents (modifications, bonds and etc.) must be signed by both parties.

Offerors are reminded if submitting as an 8(a) or HUBZone joint venture, the offeror shall ensure that it complies with the applicable requirements of 13 CFR Part 124 and 13 CFR Part 126, respectively. In addition, the joint venture must be registered in SAM as a joint venture in order for an award to be made.

Minor Informalities

Proposals will be checked for minor informalities or irregularities. The Contracting Officer will follow guidance at FAR 14.405 when resolving minor informalities or irregularities. The Contracting Officer will either give the offeror an opportunity to cure any defect resulting from a minor informality or irregularity or waive the defect, whichever is to the advantage of the Government.

Price Evaluation

Prices will be reviewed for minor or clerical errors. If necessary, offerors will be afforded an opportunity to resolve any such errors. Any exchange with offerors under this subparagraph shall be for the purpose of clarification (FAR 15.306(a)) and shall not constitute negotiations as defined at FAR 15.306(d). In the event of discrepancy between a unit price and the extended amount, the unit price shall be controlling.

Prices will be reviewed for apparent mistakes. Should this review reveal any prices that seem unreasonably low, the Contracting Officer will contact the offeror and ask the offeror to confirm the questioned price. If the offeror confirms the price, no further action will be taken under this subparagraph. If, however, the offeror alleges a mistake, the offeror may modify the proposal in accordance with FAR 52.215-1(c)(6). Any modification submitted for the purpose of correcting a mistake shall include documentation explaining how the mistake was made. After resolution of minor or clerical errors and/or mistakes, prices will be reviewed for reasonableness, realism, unbalanced pricing or any other price related issue that could pose an unacceptable risk to the Government or indicate the offeror does not clearly understand the requirement at hand.

Price Analysis

The Price factor is not rated. It is evaluated for reasonableness. Additionally, a price realism evaluation maybe performed. Offerors are advised that their business decision to submit a low-priced proposal can be considered in assessing their understanding or the risk associated with their proposal. All evaluation factors other than price, when combined, are significantly more important than price.

E. ATTACHMENTS

Attachment 1 – Demonstrated Experience (The space provided may not be sufficient. If this is the case, offerors are encouraged to provide additional information on supplemental pages attached to the collection sheet.)

Attachment 2 – Letter of Commitment from Key Subcontractors

Attachment 3 - NAVFAC/USACE Past Performance Questionnaire

Attachment 4 – Proposed Small Business Participation Plan

Attachment 5 – Past Utilization of Small Business Concerns Participation Plan Collection Sheet

Attachment 6- Proposal Data Sheet

Attachment 7–Determination of Responsibility

Attachment 8 – Proposal Format

ATTACHMENT 1
DEMONSTRATED EXPERIENCE

Provide the following information to show examples of projects your company constructed within the last ten (10) years indicating experience with projects of similar type and scope. Use one form per project. NOTE: Use additional pages as necessary to provide the information requested.

1. Type of Project Represented
2. Your Firm's Name
3. Project Name and Contract Number
4. Location of Project and Conditions
5. Owner
6. General Scope of Construction Project

Describe how this project is relevant and similar to the elements of the solicited (Mile Point Training Wall Reconfiguration, Duval County, Florida). Use additional pages as necessary to provide this information.

7. Your Role (Prime, Joint Venture, or Subcontractor, etc.) and Work Your Company Self-Performed :
8. Construction Cost:
9. Extent and Type of Work You Subcontracted Out
 10. Dates Construction: Began _____ Completed _____
 11. Your Performance Evaluation by Owner and Awards and Recognitions (if any)
 12. Were You Terminated or Assessed Liquidated Damages? (If either is "Yes", attach an Explanation)
 13. Owner's Point of Contact for Reference (Name and Company)
 14. Current Telephone Number and email address of Owner Reference
 12. Any unusual conditions requirements
 13. Any innovative ideas that were required during construction.

ATTACHMENT 2

LETTER OF COMMITMENT OF KEY SUBCONTRACTOR (USE SUBCONTRACTOR'S COMPANY LETTERHEAD)

TO: **Name of Offeror**

SUBJECT: Letter of Commitment for Proposed Contract for _____

Dear Sir or Madam:

I hereby make the unequivocal commitment that, in the event of an award of a contract to (Fill in name of Offeror), that (insert name of subcontractor firm, not individual) will fulfill the duties of (state specific items of work to be performed on this project)

Sincerely, (Authorized Subcontractor Official)

Date: _____

ATTACHMENT 3
TELEPHONE INTERVIEW QUESTIONNAIRE (FOR INFORMATION ONLY)
NAVFAC/USACE PAST PERFORMANCE QUESTIONNAIRE
ATTACHMENT 5 (Form PPQ-0) FOR INFORMATION ONLY

CONTRACT INFORMATION

1. Contractor Information

Firm Name:

CAGE Code:

Address:

DUNs Number:

Phone Number:

Email Address:

Point of Contact:

Contact Phone Number:

2. Work Performed as:

☐ Prime Contractor

☐ Sub Contractor

☐ Joint Venture

☐ Other (Explain)

Percent of project work performed:

If subcontractor, who was the prime (Name/Phone #):

3. Contract Information

Contract Number:

Delivery/Task Order Number (if applicable):

Contract Type: ☐ Firm Fixed Price ☐ Cost Reimbursement ☐ Other (Please specify):

Contract Title:

Contract Location:

Award Date (mm/dd/yy):

Contract Completion Date (mm/dd/yy):

Actual Completion Date (mm/dd/yy):

Explain Differences:

Original Contract Price (Award Amount):

Final Contract Price (*to include all modifications, if applicable*):

Explain Differences:

4. Project Description:

Complexity of Work ☐ High ☐ Med ☐ Routine

How is this project relevant to project of submission? (*Please provide details such as similar equipment, requirements, conditions, etc.*)

CLIENT INFORMATION (Client to complete Blocks 5-8)

5. Client Information

Name:

Title:

Phone Number:

Email Address:

6. Describe the client's role in the project:**7. Date Questionnaire was completed (mm/dd/yy):****8. Client's Signature:**

**ADJECTIVE RATINGS AND DEFINITIONS TO BE USED TO BEST REFLECT
THE EVALUATION OF THE CONTRACTOR'S PERFORMANCE**

RATING	DEFINITION	NOTE
(E) Exceptional	Performance meets contractual requirements and exceeds many to the Government/Owner's benefit. The contractual performance of the element or sub-element being assessed was accomplished with few minor problems for which corrective actions taken by the contractor was highly effective.	An Exceptional rating is appropriate when the Contractor successfully performed multiple significant events that were of benefit to the Government/Owner. A singular benefit, however, could be of such magnitude that it alone constitutes an Exceptional rating. Also, there should have been NO significant weaknesses identified.
(VG) Very Good	Performance meets contractual requirements and exceeds some to the Government's/Owner's benefit. The contractual performance of the element or sub-element being assessed was accomplished with some minor problems for which corrective actions taken by the contractor were effective.	A Very Good rating is appropriate when the Contractor successfully performed a significant event that was a benefit to the Government/Owner. There should have been no significant weaknesses identified.
(S) Satisfactory	Performance meets minimum contractual requirements. The contractual performance of the element or sub-element contains some minor problems for which corrective actions taken by the contractor appear or were satisfactory.	A Satisfactory rating is appropriate when there were only minor problems, or major problems that the contractor recovered from without impact to the contract. There should have been NO significant weaknesses identified. Per DOD policy, a fundamental principle of assigning ratings is that contractors will not be assessed a rating lower than Satisfactory solely for not performing beyond the requirements of the contract.

(M) Marginal	Performance does not meet some contractual requirements. The contractual performance of the element or sub-element being assessed reflects a serious problem for which the contractor has not yet identified corrective actions. The contractor's proposed actions appear only marginally effective or were not fully implemented.	A Marginal is appropriate when a significant event occurred that the contractor had trouble overcoming which impacted the Government/Owner.
(U) Unsatisfactory	Performance does not meet most contractual requirements and recovery is not likely in a timely manner. The contractual performance of the element or sub-element contains serious problem(s) for which the contractor's corrective actions appear or were ineffective.	An Unsatisfactory rating is appropriate when multiple significant events occurred that the contractor had trouble overcoming and which impacted the Government/Owner. A singular problem, however, could be of such serious magnitude that it alone constitutes an unsatisfactory rating.
(N) Not Applicable	No information or did not apply to your contract	Rating will be neither positive nor negative.

TO BE COMPLETED BY INTERVIEWEE DURING TELEPHONE INTERVIEW

PLEASE PROVIDE THE ADJECTIVE RATING WHICH BEST REFLECTS YOUR EVALUATION OF THE CONTRACTOR'S PERFORMANCE.					
1. QUALITY:					
a) Quality of technical data/report preparation efforts	E	VG	S	M	U
	N				
b) Ability to meet quality standards specified for technical performance	E	VG	S	M	U
	N				
c) Timeliness/effectiveness of contract problem resolution without extensive customer guidance	E	VG	S	M	U
	N				
d) Adequacy/effectiveness of quality control program and adherence to contract quality assurance requirements (without adverse effect on performance)	E	VG	S	M	U
	N				
2. SCHEDULE/TIMELINESS OF PERFORMANCE:					
a) Compliance with contract delivery/completion schedules including any significant intermediate milestones. <i>(If liquidated damages were assessed or the schedule was not met, please address below)</i>	E	VG	S	M	U
	N				
b) Rate the contractor's use of available resources to accomplish tasks identified in the contract	E	VG	S	M	U
	N				
3. CUSTOMER SATISFACTION:					
a) To what extent were the end users satisfied with the project?	E	VG	S	M	U
	N				
b) Contractor was reasonable and cooperative in dealing with your staff (including the ability to successfully resolve disagreements/disputes; responsiveness to administrative reports, businesslike and communication)	E	VG	S	M	U
	N				
c) To what extent was the contractor cooperative, businesslike, and concerned with the interests of the customer?	E	VG	S	M	U
	N				
d) Overall customer satisfaction	E	VG	S	M	U
	N				
4. MANAGEMENT/ PERSONNEL/ LABOR					
a) Effectiveness of on-site management, including management of subcontractors, suppliers, materials, and/or labor force?	E	VG	S	M	U
			N		
b) Ability to hire, apply, and retain a qualified workforce to this effort	E	VG	S	M	U
			N		
c) Government Property Control	E	VG	S	M	U
			N		

d) Knowledge/expertise demonstrated by contractor personnel	E	VG	S N	M	U
e) Utilization of Small Business concerns	E	VG	S N	M	U
f) Ability to simultaneously manage multiple projects with multiple disciplines	E	VG	S N	M	U
g) Ability to assimilate and incorporate changes in requirements and/or priority, including planning, execution and response to Government changes	E	VG	S N	M	U
h) Effectiveness of overall management (including ability to effectively lead, manage and control the program)	E	VG	S N	M	U
5. COST/FINANCIAL MANAGEMENT					
a) Ability to meet the terms and conditions within the contractually agreed price(s)?	E	VG	S N	M	U
b) Contractor proposed innovative alternative methods/processes that reduced cost, improved maintainability or other factors that benefited the client	E	VG	S N	M	U
c) If this is/was a Government cost type contract, please rate the Contractor's timeliness and accuracy in submitting monthly invoices with appropriate back-up documentation, monthly status reports/budget variance reports, compliance with established budgets and avoidance of significant and/or unexplained variances (under runs or overruns)	E	VG	S N	M	U
d) Is the Contractor's accounting system adequate for management and tracking of costs? <i>If no, please explain in Remarks section.</i>	Yes		No		
e) If this is/was a Government contract, has/was this contract been partially or completely terminated for default or convenience or are there any pending terminations? <i>Indicate if show cause or cure notices were issued, or any default action in comment section below.</i>	Yes		No		
f) Have there been any indications that the contractor has had any financial problems? <i>If yes, please explain below.</i>	Yes		No		
6. SAFETY/SECURITY					
a) To what extent was the contractor able to maintain an environment of safety, adhere to its approved safety plan, and respond to safety issues? (Includes: following the users rules, regulations, and requirements regarding housekeeping, safety, correction of noted deficiencies etc)	E	VG	S N	M	U
b) Contractor complied with all security requirements for the project and personnel security requirements.	E	VG	S N	M	U
7. GENERAL					
a) Ability to successfully respond to emergency and/or surge situations (including notifying COR, PM or Contracting Officer in a timely manner	E	VG	S N	M	U

Attachment 4–Proposed Small Business Participation Plan (Volume 3)

Proposed Small Business Participation Plan

(1) Check the applicable size and categories for the **PRIME** offeror -- Check all applicable boxes:

- ☐ Large Prime
OR
☐ Small Business Prime; also categorized as a
☐ Small Disadvantaged Business
☐ Woman-Owned Small Business
☐ HUB Zone Small Business
☐ Veteran Owned Small Business
☐ Service Disabled Veteran Owned Small Business

(2) Percentage of Total Contract Dollars/Price

(a) Total Contract Value: (Include options, etc) \$_____

(b) Dollar Value of your participation as a Prime Contractor: \$_____

(c) Submit the total combined percentage (must equal 100%) and dollars(must equal total contract value(2(a)) of work to be performed by both large and small businesses (include the percentage of work to be performed both by Prime and Subcontractors):

Example: If Prime proposes a price of \$1,000,000 (including all options), and small business(es) will provide \$250,000 in services/supplies as a prime or subcontractor, the % planned for small businesses is 25%; and 75% for large business equaling 100%.

Total percentage planned for Large Business(es)_____ % = \$ _____

Total Percentage planned for Small Business(es)_____ % = \$ _____

Total of both large and small and business 100% = \$ _____

3. Indicate the total percentage of participation to be performed by each type of small business. The percentage of work performed by Small Businesses that qualify in multiple small business categories may be counted in each category:

Example: Victory Prop Mgt (WOSB and SDVOSB) performing 2%; and Gentleman Concierge (HubZ and WOSB) performing 3%. Results equate to: HubZone 3%; WOSB 5%; SDVOSB 2%; VOSB 2%;). SDVOSBs are also VOSBs automatically; however VOSBs are not automatically SDVOSBs.

Dollar Value and Percentage of Total Contract Value of Subcontracts Planned For:

	Dollar Value	Percentage of Total Contract Value
Small Disadvantaged	\$	%
Woman-Owned Small	\$	%
HUB Zone Small	\$	%
Veteran Owned Small	\$	%
Service Disabled Veteran Owned Small	\$	%

(4) List principle supplies/services to be performed by Small Businesses:

Example: If a Small Business qualifies also as a WOSB and a SDVOSB, and you can add them to each category below in which they qualify.

	Name of Company	Identify Type of Service/Supply
Large:		
Small:		
Small		
Disadvantage:		
Women-Owned		
Small: HUB Zone		
Small: Veteran		
Owned Small:		
Service Disabled Veteran Owned Small:		

(5) Describe the extent of commitment to use each of the identified small business. Offerors do not need to submit copies of commitment instruments in their proposals. Rather, identify what types of commitments are in place with each company —i.e. a written contract, letter of commitment, verbal agreement, joint venture, mentor-protégé agreement, including how long agreement in place.

Additional Important Note for Large Businesses only.

Small Business Sub-Contracting Plans (FAR 52.219-9)

Separate from the Small Business Participation Plan, large business offerors must also submit a Subcontracting Plan (Individual Contract Plan) meeting the requirements of FAR 52.219-9 and DFARS 252.219-7003. Large businesses will not be eligible for award if they fail to submit an acceptable Subcontracting Plan. Subcontracting Plans shall reflect and be consistent with the commitments offered in the Small Business Participation Plan. In accordance with DFARS 215.304(c), when an evaluation assesses the extent that small businesses are specifically identified in proposals, the small businesses considered in the evaluation shall be listed in any subcontracting plan submitted.

Subcontracting plans must be submitted in Volume 4 Pricing and Price Related Information.

ATTACHMENT 5

Past Utilization of Small Business Concerns Participation Plan Collection Sheet

Past Utilization of Small Business Participation Plan Information Collection Sheet Completed Federal Contracts (Submit this sheet with Volume 3 of your proposal)								
TO BE COMPLETED BY THE OFFEROR. SUBMIT A SEPARATE SHEET FOR EACH REFERENCE.								
<p>The purpose of this sheet is to collect information regarding compliance with FAR 52.219-8 in previous contracts. The categories of interest are: small business (SB), small disadvantaged business (SDB), veteran-owned small business (VOSB), service-disabled veteran-owned small business (SDVOSB), HUBZone small business, and women-owned small business (WOSB). Definitions for all terms except small business concern can be found at FAR 2.101. The definition of small business concern can be found at FAR 19.001. For this collection sheet, any concern unable to meet the definition for small business concern shall be considered a large business (LB) concern. A SB concern may also qualify in one or more of the other categories. When completing the sheet, the offeror should check all categories that apply.</p>								
1. Your firm's name:				2. Contract number of referenced project:				
3. Date completed . (Do not submit information for an active contract.)				4. Contract price: \$				
5. Total amount subcontracted: \$ Amount subcontracted to: LB: \$ SB (in this total include all awards to SB, SDB, HUBZone SB, VOSB, SDVOSB, and WOSB): \$				6. Of the total amount subcontracted to SB, how much was subcontracted to: SDB: \$ HUBZone SB: \$ VOSB: \$ SDVOSB: \$ WOSB: \$				
7. Contracting Officer's name and telephone number:				8. In blocks below enter dollar amount for work performed by your firm and by each listed subcontractor:				
Name of Firm: Offeror		CHECK EACH CATEGORY THAT APPLIES						
Phone:		L B	S B	SD B	HUBZON E SB	VOS B	SDVO SB	WO SB
Amount: \$								
Name of Firm:		CHECK EACH CATEGORY THAT APPLIES						
Phone:		L B	S B	SD B	HUBZON E SB	VOS B	SDVO SB	WO SB
Amount: \$								
Name of Firm:		CHECK EACH CATEGORY THAT APPLIES						
Phone:		L B	S B	SD B	HUBZON E SB	VOS B	SDVO SB	WO SB
Amount: \$								
Name of Firm:		CHECK EACH CATEGORY THAT APPLIES						
Phone:		L B	S B	SD B	HUBZON E SB	VOS B	SDVO SB	WO SB

Amount: \$							
Name of Firm:	CHECK EACH CATEGORY THAT APPLIES						
Phone:	L B	S B	SD B	HUBZON E SB	VOS B	SDVO SB	WO SB
Amount: \$							
Name of Firm:	CHECK EACH CATEGORY THAT APPLIES						
Phone:	L B	S B	SD B	HUBZON E SB	VOS B	SDVO SB	WO SB
Amount: \$							

ATTACHMENT 6
PROPOSAL DATA SHEET

1. Solicitation W912EP-16-R-0010

2. Name of Firm:

Address:

Phone:

Fax:

E-mail:

DUNS # (used for accessing the Construction Contractor Appraisal Support System (CCASS). Also provide any other assigned number that identifies the member firm(s) CCASS databases. If a separate DUNS has been created for a joint venture (J-V) it must also be submitted. If the firm is a joint venture, list the individual firms and briefly describe the nature of the association. Provide DUNS for each.

Provide DUNS for any firm identified as a major subcontractor for which demonstrated experience has been submitted under Factor 1. Also, list the firm and briefly describe the nature of the association.

Firm 1:

Firm 2:

Firm 3:

Nature of Association:

3. AUTHORIZED NEGOTIATORS. FAR 52.215-11

The Offeror represents that the following persons are authorized to negotiate on its behalf with the Government in connection with this Request for Proposals (RFP).

[List names, titles, and telephone number of the authorized negotiator.]

Name of Person Authorized to Negotiate:

Negotiator's Address:

Negotiator's Telephone:

Negotiator's E-mail:

ATTACHMENT 7

DETERMINATION OF RESPONSIBILITY

The following information is provided to assist the contracting officer in determining whether or not the proposed contractor meets the general standards of responsibility enumerated at FAR 9.104-1 and DFARS 209.104-1.FAR 9.104-1 General Standards. To be determined responsible, a prospective contractor must --

(a) HAVE ADEQUATE FINANCIAL RESOURCES TO PERFORM THE CONTRACT, OR THE ABILITY TO OBTAIN THEM (SEE 9.104-3(b))

Banking References

Provide letters from the banking references to confirm this information.

***1st bank's name:** _____
Telephone #: _____
Address: _____
Person: _____
Title: _____
Length of time with bank: _____
Credit Rating: _____
Number/type of accounts: _____
Amount in each account (# of figures):Credit line:

Secured/Unsecured
Outstanding loans:_____Secured/Unsecured
Comments:

***2nd bank's name:** _____
Telephone #: _____
Address: _____
Person: _____
Title: _____
Length of time with bank: _____
Credit Rating: _____
Number/type of accounts: _____
Amount in each account (# of figures):Credit line:

Secured/Unsecured
Outstanding loans:_____Secured/Unsecured
Comments:

***** Provide letters from the banking references to confirm this information.**

(b) BE ABLE TO COMPLY WITH THE REQUIRED OR PROPOSED DELIVERY OR PERFORMANCE SCHEDULE, TAKING INTO CONSIDERATION ALL EXISTING COMMERCIAL AND GOVERNMENTAL BUSINESS COMMITMENTS

On budget? Quality of
work? Management
cooperative? Any
problems encountered: _____

(d) HAVE A SATISFACTORY RECORD OF INTEGRITY AND BUSINESS ETHICS

Trade References

***1st**

company: _____
Telephone #: _____
Address: _____
Name: _____
Title: _____
Length of time with _____
company: Credit line: _____
Average monthly _____
business: High credit: _____
Payment _____
history: Takes _____
discounts: _____
Comments: _____

***2nd**

Company: _____
Telephone #: _____
Address: _____
Name: _____
Title: _____
Length of time with _____
company: Credit line: _____
Average monthly _____
business: High credit: _____
Payment _____
history: Takes _____
discounts: _____
Comments: _____

(e) HAVE THE NECESSARY ORGANIZATION, EXPERIENCE, ACCOUNTING AND OPERATIONAL CONTROLS, AND TECHNICAL SKILLS, OR THE ABILITY TO OBTAIN THEM (INCLUDING, AS APPROPRIATE, SUCH ELEMENTS AS PRODUCTION CONTROL PROCEDURES, PROPERTY CONTROL SYSTEMS, QUALITY ASSURANCE MEASURES, AND SAFETY PROGRAMS APPLICABLE TO MATERIALS TO BE PRODUCED OR SERVICES TO BE PERFORMED BY THE PROSPECTIVE CONTRACTOR AND SUBCONTRACTORS) (SEE 9.104-3(b))

*Workman's Compensation Experience Modification Rate (EMR):

2013:_____2014:_____2015 _____

(f) HAVE THE NECESSARY PRODUCTION, CONSTRUCTION, AND TECHNICAL EQUIPMENT AND FACILITIES, OR THE ABILITY TO OBTAIN THEM (SEE 9.104-3(b))

(g) BE OTHERWISE QUALIFIED AND ELIGIBLE TO RECEIVE AN AWARD UNDER APPLICABLE LAWS AND REGULATIONS

**ATTACHEMENT 8
PROPOSAL FORMAT**

**PROPOSAL IN RESPONSE TO SOLICITATION NO:
W912EP-16-R-0010**

OFFEROR'S NAME: [Offeror enter]

OFFEROR'S ADDRESS: [Offeror enter]

OFFEROR'S POINT OF CONTACT (POC): [Offeror enter]

POC's TELEPHONE: [Offeror enter]

POC's FAX: [Offeror enter]

POC's EMAIL: [Offeror enter]

THIS OFFER IS SUBMITTED IN SEPARATE VOLUMES AS FOLLOWS: [Offeror check each applicable item and enter NA for non-applicable items.]

Volume One (Technical Merit) is submitted in 1 Original and **5 Copies** and contains our technical proposal. There is no pricing information in this package.

Volume Two (Past Performance) is submitted in 1 Original and **1 Copy** and contains our past performance information.

Volume Three (Small Business Utilization) is submitted in 1 Original and **1 Copy**.

Volume Four (Price) is submitted in 1 Original and 1 Copy and contains our price proposal, original bid bond or offer guarantee (if required by the solicitation), and representations & certifications.

*Source Selection Information -- See FAR 2.101 and
3.104*

SOLICITATIONNO: W912EP-16-R-0010

OFFEROR: [Offeror enter]

**COVERSHEET
VOLUME ONE (FACTOR 1 – Technical Merit)**

[Offeror check applicable items]

- 1. Technical merit is not an evaluation factor in this solicitation; or,**
2. This package contains a full and complete response to each technical sub-factor.

In responding to this factor, the objective should be to instill confidence that the offeror thoroughly understands the requirements and complexities of this project, has the knowledge, expertise, equipment, and experience required to meet or exceed the terms and conditions of these specifications, and the ability to successfully accomplish and complete the project within the required time frame.

In accordance with the non-substitution clause in Section 00800 (999.215-4001), Limitations on Substitutions for Certain Positions and/or Subcontractors, a letter of commitment must be provided for any proposed major subcontractor.

A major subcontractor is defined as any subcontractor that is identified in paragraph 999.215-4001 Limitations on Substitutions for Certain Positions and/or Subcontractors .

A letter of commitment is defined as a letter from the subcontractor on official Company letterhead (1) addressed to the prime contractor, (2) identifying the work they intend to perform, and (3) stating that they are willing to be bound to perform the identified work if the prime receives this contract.

Failure to provide a letter of commitment from a proposed major subcontractor will be noted as a weakness.

*Source Selection Information -- See FAR 2.101 and
3.104*

SOLICITATIONNO: W912EP-16-R-0010

OFFEROR: [Offeror enter]

**VOLUME ONE (FACTOR 1 – Technical Merit) SUB-FACTOR 1 –
DEMONSTRATED EXPERIENCE**

(SEE IMPORTANT NOTES IN SECTION 00100A FOR DEMONSTRATED EXPERIENCE) Provide a minimum of three (3) but not more than five (5) examples of completed marine construction projects or close to complete projects for each sub-element. It is not necessary for one company to demonstrate all experience listed for this solicitation.

Using Attachment 1, provide a detailed narrative that explains how each provided demonstrated experience is similar to the work described in the solicitation. Failure to provide sufficient detail explaining how each provided demonstrated experience is similar to the work described in the solicitation may be noted as a deficiency. This narrative should demonstrate that the offeror clearly has the capability to successfully complete the project. Please note, in all likelihood, the technical evaluators are unfamiliar with the demonstrated experiences that offerors provide; this is why a lack of detail explaining the work and how it is similar to the work described in the solicitation may be considered a deficiency.

Demonstrated experiences provided should include the location/conditions, duration, dollar value, any unusual coordination requirements as well as any problems encountered and corrective action taken to successfully complete the project. Each project identified must include a contract number, a reference contact name, address and telephone number, as well as email address if available.

If any portion of the work provided as demonstrated experience is subcontracted, clearly identify that work as such and provide the required experience of that subcontractor as it relates to work the subcontractor is performing. Using Attachment 2, provide a letter of commitment from the parent company clearly stating that they will provide their expertise and support, as necessary, as it relates to the portion of the work used as demonstrated experience for this project. Failure to include a letter of commitment may be noted as a deficiency.

The projects must have been completed projects or close to complete projects within the last ten (10) years from the date of this solicitation. A completed project is defined as work performed under a “project” that is physically complete and has been accepted by the customer. A close to complete project is defined as work performed under a “project” that is over 75% physically complete and/or has been accepted by the customer. If a project is presented and has not been completed, the offeror shall explain which elements of the work are not completed and the

percentage. Applicable demonstrated experiences should include the following:

SUB-ELEMENT A – Successfully install a cofferdam system, with a minimum 10 foot head differential, maintained across the structure from the head water to the tail water (or dewatered water level), immediately adjacent to or within a labeled body of water.

- At least two of the cofferdam systems must be driven pile systems.
- Clearly state the type of cofferdam system used to retain body of water.
- Clearly state the head differential maintained by each cofferdam system.

The evaluation will carry more weight for demonstrated experience with: 1) a head differential of at least 20 feet across the structure.

SUB-ELEMENT B – Successfully install, operate, and maintain a dewatering system, with a minimum head differential of 10 feet maintained during dewatering operations, immediately adjacent to or within a labeled body of water.

- At least two of the dewatering systems must include pre-drainage, defined as dewatering prior to excavation (Examples: deeps wells, well point systems and/or ejectors).
- Clearly state the type of dewatering system used.
- Clearly state the head differential maintained by each system submitted.
- Clearly describe the geology in which each dewater system was installed.

A demonstrated experience with a head differential of at least 20 feet and/or predrainage systems installed in similar geology to the project site, as characterized in the Geotechnical Data Report (GDR), will carry more weight when evaluated.

SUB-ELEMENT C – Successful construction of gated concrete hydraulic control structures (i.e. water control structure such as a pump station, spillway, outlet works, or culvert) with water control gates with a minimum 10 foot hydraulic head differential maintained across the structure.

- At least two of the submitted experiences must be for a completed hydraulic control structure including reinforced concrete, hydraulic steel structures (gates) and controls.
- At least one of the submitted experiences must involve placement and instrumentation of mass structural concrete.
- At least one of the submitted experiences must be for the fabrication of hydraulic steel structures (steel water control gates)
- Each demonstrated experience shall include a minimum gated hydraulic opening of 49 square feet per opening.

- **Clearly state the operating head differential (headwater minus tailwater) across the gate.**

A demonstrated experience with an operating head differential of at least 30 feet across the gate will carry more weight when evaluated.

Demonstrated experience of a concrete hydraulic control structure with a permanent hydraulic loading (such as an outlet works for a dam) will carry more weight when evaluated than a concrete hydraulic control structure with a temporary hydraulic loading (such as a surge barrier or flood wall).

Demonstrated experience related to placement and instrumentation of mass structural concrete within a water control structure will receive a higher rating than demonstrated experience unrelated to placement and instrumentation of mass structural concrete within a water control structure.

SUB-ELEMENT D – Successful construction of permanent earthen dam or new (nonmodified) permanent levee embankments (water retaining structure) at least 15 feet in height, as measured from the toe of the constructed embankment to the embankment crest.

A demonstrated experience related to zoned embankments of similar configuration and composition to the zoned embankments shown in the plans and specifications will carry more weight when evaluated than demonstrated experience for homogenous embankments. A zoned embankment is herein defined as one containing zones of different engineered soils within its interior (i.e., impervious core, filter, drain, embankment fill). Exterior surface features such as erosion control measures (e.g. riprap, Turf Reinforcement Mat, Articulated Concrete Block Mat, etc.) are not herein considered a zoned embankment.

OUR PROPOSAL: [Offeror enter complete, detailed response.]

SOLICITATION NO: W912EP-16-R-0010

OFFEROR: [Offeror enter]

**VOLUME ONE (FACTOR 1 – Technical Merit)
SUB-FACTOR 2 – IMPLEMENTATION PLAN AND CONSTRUCTION SCHEDULE**

SUBMISSION REQUIREMENTS

This sub-factor consists of two sub-elements: The Implementation Plan and the Construction Schedule. The Implementation Plan (Sub-element A) is slightly more important than the Construction Schedule (Sub-element B). However, the sub-elements shall be evaluated as one sub-factor therefore, the plan and the schedule should support each other, demonstrating that the project can be accomplished as proposed.

SUB-ELEMENT A – Implementation Plan

In a narrative format, the offeror shall describe the proposed Implementation Plan regarding how the work will be executed from start to completion. The Plan shall include a description of related activities and items of work, to include coordination with major subcontractors and the type of equipment that would be utilized, if appropriate. Also, identify potential risks and plans for mitigating those risks. At a minimum, the plan shall discuss the following:

- Site access and maintenance of traffic
- Sequence of cofferdam system construction
- Installation of dewatering system (include sequencing and effluent management)
- Foundation mapping and acceptance
- Installation of structural works (i.e. concrete construction and steel fabrication)
- Detail plan of zoned embankment construction (include equipment and sequence)
- Erosion Control

***Source Selection Information -- See FAR 2.101
and 3.104***

SOLICITATIONNO: W912EP-16-R-0010

OFFEROR: [Offeror enter]

**VOLUME ONE (FACTOR 1 – Technical
Merit)**

SUB-FACTOR 2 – IMPLEMENTATION PLAN AND CONSTRUCTION SCHEDULE

SUB-ELEMENT B – Construction Schedule

Provide a schedule of construction in the format of a Gantt, PERT, or similar graphical timeline, showing the start and completion dates, concurrent work, interdependence of activities and other relative scheduling factors and items of work. This schedule will be reviewed in concert with the Implementation Plan submission of this package. At a minimum the schedule should show all of the following items of work:

- Mobilization & Preparatory Work
- Critical Submittals (to include dewatering plan, long led items, and access/traffic control plan)
- Temporary Access Construction
- Foundation mapping/acceptance period as annotated in section 35 41 00
- Riprap Source Selection and Delivery
- Cofferdam Steel Source Selection and Delivery
- Installation and Removal of Cofferdam System
- Installation and Removal of Dewatering System
- Excavation
- Demolition
- Detailed Sequence of New Water Control Structure (Concrete and Steel)
- Detailed Sequence of Zoned-Embankment Construction
- Installation of Control Building, Gate Controls and Sensors
- Installation of Temporary and Permanent Erosion Control Measures
- Demobilization
- Site Restoration/Turf Establishment

Evaluation Method

In responding to this sub-factor, the objective is to demonstrate to the technical evaluators that the offeror clearly has the capability to successfully complete the project by explaining in detail how the provided demonstrated experiences are similar to the work described in the solicitation. See “Technical Merit Rating Definitions”.

The Implementation Plan and Construction Schedule will be evaluated as separate sub-elements and then will be assigned an overall sub-factor rating. The overall evaluation of this sub-factor will take into consideration the individual ratings given to the Implementation Plan and the Construction Schedule, as well as how the two complement each other. Any conflicts between the two may be noted as a weakness. See “Technical Merit Rating Definitions” below.

*Source Selection Information -- See FAR 2.101 and
3.104*

SOLICITATIONNO: W912EP-16-R-0010

OFFEROR: [Offeror enter]

**COVERSHEET
VOLUME TWO (FACTOR 2 – Past Performance)**

This volume contains the following documents: [Offeror check applicable items and mark others]

- ___1. Past performance is not an evaluation factor in this solicitation; or,
- ___2. This package contains a Past Performance Information Collection Sheet for each Demonstrated Experience provided under Factor 1, Sub-Factor 1. On each collection sheet, we have explained how we determined that the project is relevant to this project.
- ___3. If there was not sufficient space on the Past Performance Information Collection Sheet, we have attached supplemental pages to the collection sheet.

*Source Selection Information -- See FAR 2.101 and
3.104*

SOLICITATIONNO: W912EP-16-R-0010

OFFEROR: [Offeror enter]

**COVERSHEET
VOLUME THREE (FACTOR 3 – Utilization of Small Business)**

[Offeror check applicable items]

- ____ 1. Small Business Utilization Plan
- ____ 2. Proposed Small Business Participation Plan
- ____ 3. Past Utilization of Small Business Concerns

*Source Selection Information -- See FAR 2.101 and
3.104*

SOLICITATIONNO: W912EP-16-R-0010

OFFEROR: [Offeror enter]

**COVERSHEET
VOLUME FOUR(FACTOR 4 - Price)**

[Offeror check applicable items]

- ____1. Signed price proposal (Standard Form 1442) with Line Item and Pricing Schedule (Section 00010A).
- ____2. Representations and Certifications and other statements of Offerors (Section 000101).
- ____3. Original Bid Bond Guarantee.

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-- End of Section Table of Contents --

SECTION 01 22 00

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 SUMMARY

This section describes how Line Items will be measured and paid for when making progress payments. Work to be measured is described in specification sections listed for each Line Item. Measurement procedures for payment, required quantity survey or procurement documentation and payment restrictions are described in applicable specification sections. Allocate costs for work not specifically mentioned to the Line Item most closely associated with work involved. Unless there is a specific Line Item for administrative costs, such as Quality Control and Safety, allocate such costs proportionally across all Line Items.

1.2 QUALITY CONTROL SYSTEM (QCS)

1.2.1 Definition

The terms "Contract Line Item Number (CLIN)" and "Line Item" are interchangeable herein (e.g.: CLIN 0001 is Line Item 0001). The term "CLIN" is a contracting term used in the Quality Control System (QCS) payment data base.

1.2.2 Instructions

See Section 01 45 04 CONTRACTOR QUALITY CONTROL for instructions on linking a CLIN to a schedule of values of pay activities and construction schedule, and in-depth payment procedure.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Transmit submittal items in accordance with Section 01 33 00 SUBMITTAL PROCEDURES. Submit the following preconstruction submittal items no later than 20 calendar days after award or 5 calendar days after Notice to Proceed, whichever is later:

SD-01 Preconstruction Submittals

Schedule of Values; G, RO

Provide a breakdown of lump sum items into proposed pay activities as part of the initial project schedule. Schedule of Values will become basis for CLIN and Pay Activity data in the QCS payment data base.

Utility Invoices

Submit invoices from the utility company indicating payment for services covered in Line Item 0033 "Electrical Utilities". Payment under this line item will not be made prior to submission of valid invoices to the Government. The Contractor will be reimbursed for costs indicated on these invoices only.

1.4 PAYMENT PROCEDURES

Payment items for the work in this contract on which the contract payments will be made are listed in the LINE ITEMS AND PRICING SCHEDULE and described below. The price and payment made for each item listed shall constitute full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for which separate payment is not otherwise provided. All costs for items of work, which are not specifically mentioned to be included in a particular payment item, shall be included in the listed item most closely associated with the work involved.

1.4.1 Lump Sum

Progress payments for lump sum CLINs will be made in accordance with the Payments Under Fixed-Price Construction Contracts clause of Section 00700 CONTRACT CLAUSES in Volume 1. Submit a list of pay activities, (Schedule of Values) to breakdown bid for each lump sum CLIN. The Schedule of Values shall be submitted for Government approval with the baseline schedule submittal (see Section 01 32 01 PROJECT SCHEDULE. An unbalanced Schedule of Values and Pay Activity Schedule will be returned for revision. If this contract contains either the Continuing Contracts clause or the Continuing Contracts (Alternate) clause, the Contractor should take into account the amount reserved for contract payments when preparing the construction schedule.

1.4.2 Unit Price

Each Unit Price CLIN may be a single pay activity item or may be broken down into pay activities with smaller quantities equal to CLIN total. Contract unit price multiplied by agreed quantity is full compensation.

1.5 LINE ITEMS

Line items will be paid in accordance with the paragraph PAYMENT PROCEDURES above and as required below. The following line items are included in Section 00010A LINE ITEMS AND PRICING SCHEDULE in Volume 1:

1.5.1 Access (Line Item 0001)

Lump sum payment will be made for costs associated with or incidental to clearing and grubbing; silt fence; cattle fence; and the construction, maintenance and removal of site access as indicated on the drawings. See Section 35 41 00 EMBANKMENT CONSTRUCTION.

1.5.2 Turbidity Monitoring (Line Item 0002)

Payment will be made for costs associated with or incidental to obtaining, analyzing, and reporting the results of monitoring for turbidity. See Section 01 57 25 TURBIDITY AND DISPOSAL MONITORING.

1.5.3 Cofferdam Steel Pile (Line Item 0003)

Lump sum payment will be made for costs associated with or incidental to construction, maintenance and removal of pile cofferdams, including cutting and abandoning in place.

1.5.4 Earthen Cofferdam and Plugs (Line Item 0004)

Lump Sum payment will be made for costs associated with or incidental to placement, maintenance and removal of earthen cofferdams and plugs.

1.5.5 Cofferdam Armoring (Line Item 0005)

Unit price payment will be made for costs associated with or incidental to placement, maintenance and removal of import riprap, bedding stone, and geotextile. Measurement will be made by the area placed. The unit of measure is square yard.

1.5.6 Cofferdam Seepage Protection (Line Item 0006)

Unit price payment will be made for costs associated with or incidental to placement, maintenance and removal of seepage protection, including Bedding Stone and geotextile. Measurement will be made by the area placed. The unit of measure is square yard.

1.5.7 Dewatering (Line Item 0007)

Lump sum payment will be made for costs associated with or incidental to installation, operation, maintenance and removal of dewatering equipment and drainage facilities. This includes permitting and preparation of the Dewatering Work Plan.

1.5.8 Excavation (Line Item 0008)

Lump sum payment will be made for costs associated with or incidental to excavation, transportation, and disposal of all materials not otherwise defined; excavation, hauling and stockpiling of topsoil; providing and maintaining access to the work site(s) and disposal area(s); noise control; erosion control; and debris removal.

1.5.9 Demolition (Line Item 0009)

Lump sum payment will be made for costs associated with or incidental to demolition, hauling, offsite disposal, and stockpiling of existing structures and features, including existing riprap and existing pavement, necessary to complete work. Demolition shall also include cost of decommissioning existing monitoring wells/piezometers.

1.5.10 Sheetpile Scour Cutoff Walls (Line Item 0010)

Lump sum payment will be made for costs associated with or incidental to construction and completion of the sheetpile scour cutoff walls under the headwalls and the wingwalls on both sides of each culvert.

1.5.11 Mud Mat (Line Item 0011)

Lump sum payment will be made for costs associated with or incidental to placement and completion of the unreinforced concrete mud mat required for the entire culvert structure foundation as shown on the drawings.

1.5.12 Lakeside Headwall Reinforced Concrete (Line Item 0012)

Lump sum payment will be made for costs associated with or incidental to placement and completion of reinforced concrete required for the structure.

1.5.13 Lakeside Wing Walls Reinforced Concrete (Line Item 0013)

Lump sum payment will be made for costs associated with or incidental to placement and completion of reinforced concrete required for the structure.

1.5.14 Landside Headwall Reinforced Concrete (Line Item 0014)

Lump sum payment will be made for costs associated with or incidental to placement and completion of reinforced concrete required for the structure.

1.5.15 Landside Wing Walls Reinforced Concrete (Line Item 0015)

Lump sum payment will be made for costs associated with or incidental to placement and completion of reinforced concrete required for the structure.

1.5.16 Culvert Structure Reinforced Concrete (Line Item 0016)

Lump sum payment will be made for costs associated with or incidental to placement and completion of reinforced concrete required for the structure.

1.5.17 Lakeside Headwall Embedded Metals (Line Item 0017)

Lump sum payment will be made for costs associated with or incidental to furnishing and installation of embedded metals required for bulkhead slots, sills and armors as shown on the drawings.

1.5.18 Landside Headwall Embedded Metals (Line Item 0018)

Lump sum payment will be made for costs associated with or incidental to furnishing and installation of embedded metals required for bulkhead slots, sills and armors as shown on the drawings.

1.5.19 Miscellaneous Metals (Line Item 0019)

Lump sum payment will be made for costs associated with or incidental to furnishing and installation of miscellaneous metals not paid for under the line item "Embedded Metals" above.

1.5.20 Combination Slide/Flap Gate with Actuator (Line Item 0020)

Unit price payment will be made for costs associated with or incidental to furnishing and installation of combination slide/flap gates with actuators. Measurement will be by the number of gates installed. Unit of measure is each.

1.5.21 Manatee Screen/Debris Barrier (Line Item 0021)

Unit price payment will be made for costs associated with or incidental to furnishing and installation of manatee screen/debris barriers. Measurement will be by the number of screen/barriers installed. Unit of measure is each.

1.5.22 Embankment Fill (Line Item 0022)

~~Lump sum~~ Unit price payment will be made for costs associated with or incidental to borrow, transportation, and placement of embankment or other fill to the lines and grades shown on the drawings for the L-59 Levee, final construction of the new S-291 Structure and final restoration of the site; noise control; erosion control; and debris removal. Payment under this line item includes compaction and placement of subgrades for roads, foundations and revetment, embankment and placement of topsoil. Payment under this line item does not include Soil-Bentonite Core, Chimney Drain, Drainage Blanket, or Filter Collar.

The total amount of material placed, and to be paid for under this contract, will be measured by the volume in-place with quantities determined by digital terrain model (DTM) surface to surface computations. The Government will perform initial and final surveys in accordance with the clause QUANTITY SURVEYS of Section 00700 CONTRACT CLAUSES in Volume 1. The initial and final DTM surfaces used for calculation of final quantities will be determined from the original (initial surface) survey performed by the Government after excavation and placement of concrete culvert structures, headwalls and wing walls, and before fill placement, and the finished grades (final surface) as shown on the drawings. The final survey performed by the Government will be used to verify that fill placement is complete to the required finished grades, and that tolerances have not been exceeded. Fill above required finished grades will not be included in quantities calculated for final payment. The estimated quantity for this line item does not include tolerances. The Contractor is responsible for considering the cost of required tolerances, and including this cost in the unit price for this line item (see Section 00010A LINE ITEMS AND PRICING SCHEDULE in Volume 1). DTM surfaces used for calculation of quantities for progress payments will be determined from the original survey performed by the Government, and elevations below finished grade obtained from progress surveys performed by the Contractor in accordance with the clause QUANTITY SURVEYS of Section 00700 CONTRACT CLAUSES in Volume 1. The calculated volumes of features located between initial and final DTM and paid for under other line items will be deducted from the calculated volume between initial and final DTM. The unit of measure is cubic yard.

1.5.23 Soil-Bentonite Core (Line Item 0023)

Lump sum payment will be made for costs associated with or incidental to borrow, transportation, mixing, placement and testing of Soil-Bentonite Fill to the lines and grades shown on the drawings; providing and maintaining access to the work site(s) and borrow area(s); noise control; and debris removal.

1.5.24 Chimney Drain, Drainage Blanket, and Filter Collar (Line Item 0024)

Lump sum payment will be made for costs associated with or incidental to borrow, transportation, placement and testing of all components of the Chimney Drain, Drainage Blanket, Filter Collar and internal drainage system, including Filter Soil, Filter Gravel and drain pipe to the lines and grades shown on the drawings; providing and maintaining access to the work site(s) and borrow area(s); noise control; and debris removal.

1.5.25 Limerock Surface (Line Item 0025)

Unit price payment will be made for costs associated with or incidental to processing, transportation, and placement of aggregate surface coarse

(limerock) to the lines and grades shown on the drawings. Compaction and placement of the subgrade will not be paid for under this line item. Measurement will be made by the area placed. The unit of measure is square yard.

1.5.26 Restoration Riprap (Line Item 0026)

Unit price payment will be made for costs associated with or incidental to processing, transportation, and placement of permanent geotextile, bedding stone and import riprap on the restored embankment slope and the restored channel to the lines and grades shown on the drawings. Compaction and placement of the subgrade will not be paid for under this line item. Measurement will be made by the area placed. The unit of measure is square yard.

1.5.27 Intake and Outlet Channel (Line Item 0027)

Lump sum payment will be made for costs associated with or incidental to excavation, transportation, and disposal of materials; excavation, hauling and stockpiling of topsoil; providing and maintaining access to the work site(s) and disposal area(s); installation of the bulkheads, associated grading; noise control; and, debris removal.

1.5.28 Site Signage (Line Item 0028)

Lump sum payment will be made for costs associated with or incidental to furnishing and installation of site signage as shown in the drawings, including all necessary assemblies and appurtenances.

1.5.29 Control Building (Line Item 0029)

Lump sum payment will be made for costs associated with or incidental to furnishing and installation of the control building.

1.5.30 Electrical and Telecommunications Work and Equipment (Line Item 0030)

Lump sum payment will be made for costs associated with or incidental to furnishing and installation of electrical and telecommunication equipment including antenna and solar panel pole.

1.5.31 Sodding (Line Item 0031)

Unit price payment will be made for costs associated with or incidental to placement and establishment of sod. Measurement will be made by the area placed. The unit of measure is square yard.

~~1.5.32 Temporary Safety Barrier (Line Item 0032)~~

~~Lump sum payment will be made for costs associated with or incidental to furnishing, installation, maintenance and removal of a temporary safety barrier.~~

1.5.32 Electrical Utilities (Line Item ~~0033~~ 0032)

Payment will include full compensation for the charges paid to the utility company by the Contractor for furnishing all materials, equipment, and labor required to install electrical utility services in accordance with detailed work as shown in the drawings. Payment will be made for actual cost incurred for utility relocation and installation. Actual cost

incurred will be based on utility invoices indicated in paragraph
SUBMITTALS above.

1.5.33 Dual Leaf Gates (Line Item ~~0034~~ 0033)

Unit price payment will be made for costs associated with or incidental to installation of the manually operated double leaf gate systems including gate hardware and accessories. Measurement will be by the number of gates installed. Unit of measure is each.

1.5.34 Abandonment Grouting (Line Item ~~0035~~ 0034)

Unit price payment will be made for costs associated with or incidental to fully grouting culverts to be abandoned. Measurement will be made by the pumped volume of grout required to fill the culverts. Unit of measure is cubic yard.

1.5.35 Stilling Wells (Line Item ~~0036~~ 0035)

Lump sum payment will be made for costs associated with or incidental to furnishing and installation of stilling wells, including metal grates, pre-cast concrete piles, and hand-rails.

1.5.36 Embankment Seepage Protection (Line Item ~~0037~~ 0036)

Unit price payment will be made for costs associated with or incidental to the placement of seepage protection features on the landside of the culvert abandonment phase, including bedding stone, filter soil, riprap, and geotextile. Measurement will be made by the area placed. The unit of measure is square yard.

1.5.37 Contracting Officer's Field Office (Line Item ~~0038~~ 0037)

Unit price payment will be made for costs associated with or incidental to providing, maintaining, and final disposition of the Contracting Officer's field office including all costs for rent and provision of all services indicated in Section 01 52 10 CONTRACTING OFFICER'S FIELD OFFICE. Costs for such provision and maintenance of the Contractor's own field office and other facilities will not be paid for under this line item. Measurement will be the amount of time that the Contracting Officer's field office is available to the Government within the duration of the contract. Unit of measure is by month.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 PAYMENT PROCEDURES

Upon receiving initial Resident Management System import file, go to "Pay Activities" and establish a link between bid breakdown schedule of values of "Pay Activities" to contract CLINs using "Schedule Activities" data entry page.

3.1.1 Requesting Progress Payment

For progress payments, ensure "Activity Schedule", "Feature Schedule", submittal register, and punchlists are all up to date. Use "Progress Payments" to "request Activity Earnings" for both "Activity Earnings" data

entry page and "Other Earning". Provide hard copies of supporting invoices and quantity measurements to support all requested earnings. Ensure that sum of payment activities do not exceed contract award CLIN funding amounts, or "unbalanced" CLINs error will prevent processing the payment.

3.1.2 Options and Modification CLINS

When additional work is added by modification, existing CLINs funding amounts must be updated, or new CLINs for modification will be created. If contract has option CLINs not yet awarded, option CLINs will appear as zero dollar CLINs until option is awarded by modification. No payment may be requested for Options or Modification CLINs until contract modification has been funded and signed.

-- End of Section --

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SECTION 05 50 14

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SECTION 05 50 14

STRUCTURAL METAL FABRICATIONS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ALUMINUM ASSOCIATION (AA)

AA ADM (2010) Aluminum Design Manual

AMERICAN GEAR MANUFACTURERS ASSOCIATION (AGMA)

ANSI/AGMA 2005 (2003D; R 2008) Design Manual for Bevel Gears

ANSI/AGMA 6001 (2008E) Design and Selection of Components for Enclosed Gear Drives

AMERICAN SOCIETY FOR NONDESTRUCTIVE TESTING (ASNT)

ANSI/ASNT CP-189 (2011) ASNT Standard for Qualification and Certification of Nondestructive Testing Personnel (ANSI/ASNT CP-105-2006)

AMERICAN WELDING SOCIETY (AWS)

AWS B2.1/B2.1M (2009) Specification for Welding Procedure and Performance Qualification

AWS D1.1/D1.1M (2015) Structural Welding Code - Steel

AWS D1.2/D1.2M (2014) Structural Welding Code - Aluminum

AWS D1.3/D1.3M (2008; Errata 2008) Structural Welding Code - Sheet Steel

AWS D1.6/D1.6M (2007) Structural Welding Code - Stainless Steel

ASME INTERNATIONAL (ASME)

ASME B4.1 (1967; R 2009) Preferred Limits and Fits for Cylindrical Parts

ASME B46.1 (2009) Surface Texture, Surface Roughness, Waviness and Lay

ASTM INTERNATIONAL (ASTM)

ASTM A325	(2010) Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
ASTM A325M	(2013) Standard Specification for Structural Bolts, Steel, Heat Treated, 830 MPa Minimum Tensile Strength (Metric)
ASTM A380	(2006) Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems
ASTM A490	(2014) Standard Specification for Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength
ASTM A490M	(2014) Standard Specification for High-Strength Steel Bolts, Classes 10.9 and 10.9.3, for Structural Steel Joints (Metric)
ASTM A514/A514M	(2005; R 2009) Standard Specification for High-Yield-Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding
ASTM D962	(1981; E 2008; R 2008) Aluminum Powder and Paste Pigments for Paints
ASTM E165	(2009) Standard Test Method for Liquid Penetrant Examination
ASTM E709	(2008) Standard Guide for Magnetic Particle Examination
ASTM F436	(2011) Hardened Steel Washers
ASTM F436M	(2011) Hardened Steel Washers (Metric)

RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS (RCSC)

RCSC S348	(2014) RCSC Specification for Structural Joints Using ASTM A325 or A490 Bolts
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1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Quality Control Plan; G, DO
Detail Drawings; G, DO
Control Dimensions; G, DO

SD-03 Product Data

Welding of Structural Steel; G, DO
Welding of Stainless Steel; G, DO
Welding of Aluminum; G, DO
Structural Steel Welding Repairs; G, DO
Materials Orders
Materials List
Shipping Bill
Tubular Welding Schedule; G, DO

SD-06 Test Reports

Tests, Inspections, and Verifications
Fabrication Quality Control Reports

SD-07 Certificates

Qualification Of Structural Steel Fabricator; G, DO
Qualification of Welders and Welding Operators
Application Qualification for Steel Studs; G, DO
Application Qualification for Stainless Steel Studs; G, DO
Welding of Aluminum; G, DO
Inspector Qualifications; G, DO
NDT Equipment Calibration Records; G, DO

SD-08 Manufacturer's Instructions

Welding Procedure Specifications (WPS); G, DO
NDT Written Practice; G, DO

1.3 QUALITY ASSURANCE

1.3.1 Qualification of Welders and Welding Operators

Submit welder, welding operator and tack welder qualification certifications for each welder, welding operator or tack welder to the Contracting Officer for approval before fabrication begins. Welder and welding operator qualification test records shall be submitted on forms equivalent to the sample forms in [AWS D1.1/D1.1M](#). A CWI meeting the specified qualifications shall approve all welder qualifications. Welders, welding operators, and tack welders shall be limited to welding procedures for which they are certified. All welders shall be qualified according to [AWS D1.1/D1.1M](#) for structural welding [AWS D1.2/D1.2M](#) for structural aluminum welding, [AWS D1.3/D1.3M](#) for sheet steel welding and [AWS D1.6/D1.6M](#) for stainless steel welding. All qualifications shall be current prior to commencement of any work. Submit a continuity log for each welder showing that he/she is current in the process and procedures being proposed for this work. Before assigning any welder, welding operator or tack welder to work under this contract, submit the names of the welders, welding operators and tack welders to be employed, and certification that each individual is qualified as specified. The certification shall state the type of welding and positions for which the welder, welding operator or tack welder is qualified, the code and procedure under which the individual is qualified, the date qualified, and the name of the firm and person certifying the qualification tests. The certification shall be kept current for the duration of the contract. Require the welder and welding operators to repeat the qualifying tests when, in the opinion of the Contracting Officer, the work indicates a reasonable doubt as to

proficiency. In such cases, the welder is required to repeat the qualification process in its entirety. The welder's qualification will be reestablished upon successful completion of the test. The welder will be disqualified until successfully passing a retest. The Contracting Officer or ACO is required to be present during requalification. All expenses in connection with qualification and requalification will be borne by the Contractor.

1.3.2 Detail Drawings

Submit detail drawings for metalwork and machine work, prior to fabrication, include within the detail drawings catalog cuts, templates, fabrication and assembly details and type, grade and class of material as appropriate. Elements of fabricated items inadvertently omitted on contract drawings shall be detailed by the fabricator and indicated on the detail drawings.

1.3.3 Prefabrication Conference

Schedule a prefabrication conference as soon as possible after Notice to Proceed and prior to any fabrication. The prefabrication conference shall include, at a minimum, the Contractor (prime), fabricator, the fabricator's primary QC representative, the Contracting Officer or ACO, the GQAR, and the Engineer of Record for the structure(s) being fabricated. The prefabrication conference shall occur either at the fabrication facility or a similar location as deemed appropriate. The format of the prefabrication conference shall include a review of the these specifications, discussion of the fabricator's QCP, identification of roles and responsibilities including roles and responsibilities of fabrication subcontractors. The Contractor shall prepare for this meeting by reviewing plans and specifications and code concerns prior to this meeting and be prepared to discuss any issues regarding the fabrication including Welding Procedure Specifications (WPS) qualification requirements and required witnessing of testing. Complicated connections that may require prototyping for both welding and inspection shall be identified and discussed. In addition, hold points/witness points shall be established during the prefabrication conference.

1.3.4 QA Restriction

AWS B2.1/B2.1M shall not be permitted without Contracting Officer approval.

1.4 QUALITY CONTROL

1.4.1 Inspector Qualifications

a. Quality control personnel can be assigned to more than one task, provided they are qualified and able to fully perform the duties of each position. Individual(s) responsible for quality assurance/quality control may not serve as or report to production management.

b. All welding inspectors are required to be currently certified by the American Welding Society (AWS) as a Certified Welding Inspector (CWI) or Senior Certified Welding Inspector (SCWI). Non-certified inspectors and Certified Associate Welding Inspectors (CAWI) are not qualified to be used for inspection under these specifications. Designate an individual inspector as the "lead" inspector to be the primary point of contact for quality control of welding and fabrication. Submit copies of certification documentation as provided

by AWS.

c. Qualify Non-Destructive Testing technicians in accordance with ANSI/ASNT CP-189 to level II or III for each applicable method. In the event that a level III be required to perform NDT, a level II practical examination (conducted within the last two years) will be required in addition to the level III qualifications. Level I technicians will be permitted to conduct testing under the direct supervision of an approved level II or III. Submit level II qualification/certification documentation in a format similar to Appendix C: Sample Certification Form ANSI/ASNT CP-189. Submit qualifying level III certification as provided by ASNT.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Materials Orders

Furnish six copies of purchase orders, mill orders, shop orders and work orders for all materials orders prior to the use of the materials in the work. Where mill tests are required, purchase orders include the test site address and the name of the testing agency.

2.1.2 Materials List

Submit a list of the materials to be used in the fabrication of each item at the time of submittal of detail drawings.

2.1.3 Shipping Bill

Submit a shipping bill or memorandum of each shipment of finished pieces or members to the project site giving the designation mark and weight of each item, the number of items, the total weight, and the car initial and number if shipped by rail in carload lots. Promptly mail duplicate copies of shipping bills to the Contracting Officer's Representative.

2.2 FABRICATION

2.2.1 Structural Fabrication

Material shall be straight before being laid off or worked. Perform straightening, if necessary, by methods that will not impair the metal. Sharp kinks or bends will be cause for rejection of the material. Material with welds will not be accepted except where welding is definitely specified, indicated or otherwise approved. Make bends using approved dies, press brakes or bending rolls. Where heating is required, take precautions to avoid overheating the metal and allow it to cool in a manner that will not impair the original properties of the metal. Proposed flame cutting of material, other than structural steel, will be subject to approval and shall be indicated on detail drawings. Shearing shall be accurate and all portions of the work neatly finished. Corners shall be square and true unless otherwise shown. Re-entrant cuts shall be filleted to a minimum radius of 3/4 inch unless otherwise approved. Provide finished members free of twists, bends and open joints. Bolts, nuts and screws shall be tight.

2.2.1.1 Dimensional Tolerances for Structural Work

Measure dimensions using an approved calibrated steel tape of approximately the same temperature as the material being measured. The overall dimensions of an assembled structural unit shall be within the tolerances indicated on the drawings or as specified in the particular section of these specifications for the item of work. Where tolerances are not specified in other sections of these specifications or shown, an allowable variation of $1/32$ inch is permissible in the overall length of component members with both ends milled; component members without milled ends shall not deviate from the dimensions shown by more than $1/16$ inch for members 30 feet or less in length, and by more than $1/8$ inch for members over 30 feet in length.

2.2.1.2 Structural Steel Fabrication

Structural steel may be cut by mechanically guided or hand-guided torches, provided an accurate profile with a surface that is smooth and free from cracks and notches is obtained. Prepare surfaces and edges in accordance with AWS D1.1/D1.1M. Where structural steel is not to be welded, chipping or grinding will not be required except as necessary to remove slag and sharp edges of mechanically guided or hand-guided cuts not exposed to view. Chip, grind or machine to sound metal hand-guided cuts which are to be exposed or visible.

2.2.1.3 Structural Aluminum Fabrication

Lay out and cut aluminum in accordance with the AA ADM, Section 6.

2.2.2 Welding

2.2.2.1 Welding of Structural Steel

a. Prepare and qualify each WPS in accordance with the applicable provisions of AWS D1.1/D1.1M. In case of conflict between this specification and AWS D1.1/D1.1M ~~as applicable~~, this specification governs. A WPS is always required, even if the procedure is considered prequalified in accordance with AWS D1.1/D1.1M. Qualify all WPS by testing in the applicable process and position to be utilized. Qualify all combinations of required base metal by testing. Clearly identify each procedure as being either prequalified or qualified by tests. Individually identify WPS. Include in the WPS as a minimum the following: Indicate whether WPS is prequalified or qualified by testing, WPS ID number, revision number, date, name of company which created the WPS, supporting PQR number, joint design information (to include dimensional tolerances), base metal information, shielding information, preheat information, type of operation, position, electrical characteristics, technique, PWHT and joint sketch including all code required essential variables. Include filler metal data sheets with WPS and PQR. Submit all WPS with attached PQR and supporting test documentation on forms similar or equivalent to the sample forms in AWS D1.1/D1.1M.

b. Welding Process - Perform welding of structural steel by an electric arc welding process using a method which excludes the atmosphere from the molten metal and conforms to the applicable provisions of AWS D1.1/D1.1M. Minimize residual stresses, distortion and shrinkage from welding.

c. Welding Technique

(1) Filler Metal - The electrode, electrode-flux combination and grade of weld metal shall conform to the appropriate AWS specification for the base metal and welding process being used or be as shown where a specific choice of AWS specification allowables is required. Include the AWS designation of the electrodes to be used in the schedule of welding procedures. Use only low hydrogen electrodes for manual shielded metal-arc welding regardless of the thickness of the steel. Use a controlled temperature storage oven at the job site as prescribed by AWS D1.1/D1.1M, Subsection 3.5 to maintain low moisture of low hydrogen electrodes.

(2) Preheat and Interpass Temperature - Perform preheating as required by AWS D1.1/D1.1M, Subsection 3.5 or as otherwise specified.

(3) Stress-Relief Heat Treatment - Where stress relief heat treatment is specified or shown, perform in accordance with the requirements of AWS D1.1/D1.1M, Subsection 5.8 unless otherwise authorized or directed.

d. Workmanship - Perform welding workmanship in accordance with AWS D1.1/D1.1M, Section 3 and other applicable requirements of these specifications.

(1) Preparation of Base Metal - Prior to welding inspect surfaces to be welded to ensure compliance with AWS D1.1/D1.1M, Subsection 3.2.

(2) Temporary Welds - Make temporary welds, required for fabrication and erection, under the controlled conditions prescribed for permanent work. Make temporary welds using low-hydrogen welding electrodes and by welders qualified for permanent work as specified in these specifications. Conduct preheating for temporary welds as required by AWS D1.1/D1.1M for permanent welds ~~except that the minimum temperature shall be 120 degrees F in any case.~~ In making temporary welds, arcs shall not be struck in other than weld locations. Remove each temporary weld and grind flush with adjacent surfaces after serving its purpose.

(3) Tack Welds - Subject tack welds that are to be incorporated into the permanent work to the same quality requirements as the permanent welds; clean and thoroughly fuse them with permanent welds. Multiple-pass tack welds shall have cascaded ends. Remove defective tack welds before permanent welding.

(4) Surfaces on which weld metal is to be deposited shall be smooth, uniform, and free from fins, tears, cracks, and other discontinuities which would adversely affect the quality or strength of the weld. Surfaces to be welded and surfaces adjacent to a weld shall also be free from loose or thick scale, slag, rust, moisture, grease and other foreign material that would prevent proper welding or produce objectionable fumes.

(5) All temporary welds and/or tack welds not incorporated into the final weld shall be removed.

2.2.2.2 Welding of Steel Castings

Remove unsound material from the surfaces of steel castings, to be incorporated into welded connections, by chipping, machining, air-arc gouging or grinding. Do not weld major connections designed for transfer of stresses if the temperature of the casting is lower than 100 degrees F. Castings containing over 0.35 percent carbon or over 0.75 percent manganese shall be preheated to a temperature not to exceed 450 degrees F and conduct welding while the castings are maintained at a temperature above 350 degrees F. Welding will not be permitted on castings containing carbon in excess of 0.45 percent except on written authorization. Castings requiring welding repairs after the first annealing and castings involving welding fabrication shall be stress-relieved annealed prior to receiving final machining unless otherwise permitted.

2.2.2.3 Welding of Steel Studs

Conform to the requirements of AWS D1.1/D1.1M, Section 7, except as otherwise specified for the procedures for welding steel studs to structural steel, including mechanical, workmanship, technique, stud application qualification, production quality control and fabrication and verification inspection procedures.

a. Application Qualification for Steel Studs - As a condition of approval of the stud application process, furnish certified test reports and certification that the studs conform to the requirements of AWS D1.1/D1.1M, Subsections 7.2 and 7.3, certified results of the stud manufacturer's stud base qualification test, and certified results of the stud application qualification test as required by AWS D1.1/D1.1M, Subsection 7.6, prior to commencing fabrication, except as otherwise specified.

b. Production Quality Control - Conform to the requirements of AWS D1.1/D1.1M, Subsection 7.7, except as otherwise specified for quality control for production welding of studs. Studs on which pre-production testing is to be performed shall be welded in the same general position as required on production studs (flat, vertical, overhead or sloping). If the reduction of the length of studs becomes less than normal as they are welded, stop welding immediately and do not resume until the cause has been corrected.

2.2.2.4 Welding of Stainless Steel

a. Welding Procedures for Stainless Steel - Prequalify welding procedures for stainless steel as described in AWS D1.6/D1.6M, Subsection 3.0 or qualify by tests as prescribed in AWS D1.6/D1.6M, Section 4. Properly documented evidence of compliance with all requirements of these specifications for previous qualification tests shall establish a welding procedure as prequalified. For welding procedures qualified by tests, the test welding and specimen testing will be witnessed and the test report document signed by the Contracting Officer. Approval of any welding procedure will not relieve the Contractor of the responsibility for producing a finished structure meeting all requirements of these specifications. The Contractor will be directed or authorized to make any changes in previously approved welding procedures that are deemed necessary or desirable by the Contractor Officer. Submit a complete schedule of welding procedures for each stainless steel structure to be welded

prior to commencing fabrication. The schedule shall conform to the requirements specified in the provisions AWS D1.6/D1.6M, Sections 2, 3, 4, 6, and 7. Provide within the schedule detailed procedure specifications and tables or diagrams showing the procedures to be used for each required joint. Include in the welding procedures filler metal, preheat, interpass temperature and stress-relief heat treatment requirements. Each welding procedure shall be clearly identified as being prequalified or required to be qualified by tests. Welding procedures shall show types and locations of welds designated or in the specifications to receive nondestructive examination.

b. Welding Process - Perform welding of structural steel by an electric arc welding process using a method which excludes the atmosphere from the molten metal and conforms to the applicable provisions of AWS D1.6/D1.6M. Minimize residual stresses, distortion and shrinkage from welding.

c. Welding Technique

(1) Filler Metal - The electrode, electrode-flux combination and grade of weld metal shall conform to the appropriate AWS specification for the base metal and welding process being used or be as shown where a specific choice of AWS specification allowables is required. Include the AWS designation of the electrodes to be used in the schedule of welding procedures. Use a controlled temperature storage oven at the job site as prescribed by AWS D1.6/D1.6M, Subsection 3.10 to maintain low moisture of low hydrogen electrodes.

(2) Preheat and Interpass Temperature - Perform preheating as required by AWS D1.6/D1.6M, or as otherwise specified except that the temperature of the base metal shall be at least 70 degrees F. Slowly and uniformly preheat the weldments by approved means to the prescribed temperature, held at that temperature until the welding is completed and then permitted to cool slowly in still air.

d. Workmanship - Perform welding workmanship in accordance with AWS D1.6/D1.6M, Section 3 and other applicable requirements of these specifications.

(1) Preparation of Base Metal - Prior to welding inspect surfaces to be welded to ensure compliance with AWS D1.6/D1.6M.

(2) Temporary Welds - Make temporary welds, required for fabrication and erection, under the controlled conditions prescribed for permanent work. Make temporary welds by welders qualified for permanent work as specified in these specifications. Conduct preheating for temporary welds as required by AWS D1.6/D1.6M. In making temporary welds, arcs shall not be struck in other than weld locations. Remove each temporary weld and grind flush with adjacent surfaces after serving its purpose.

(3) Tack Welds - Subject tack welds that are to be incorporated into the permanent work to the same quality requirements as the permanent welds; clean and thoroughly fuse them with permanent welds. Multiple-pass tack welds shall have cascaded ends. Remove defective tack welds before permanent welding.

(4) Surfaces on which weld metal is to be deposited shall be smooth, uniform, and free from fins, tears, cracks, and other discontinuities which would adversely affect the quality or strength of the weld. Surfaces to be welded and surfaces adjacent to a weld shall also be free from loose or thick scale, slag, rust, moisture, grease and other foreign material that would prevent proper welding or produce objectionable fumes.

(5) All temporary welds and/or tack welds not incorporated into the final weld shall be removed.

2.2.2.5 Welding of Stainless Steel Studs

Conform to the requirements of AWS D1.6/D1.6M, Section 7, except as otherwise specified for the procedures for welding stainless steel studs to structural stainless steel, including mechanical, workmanship, technique, stud application qualification, production quality control and fabrication and verification inspection procedures.

a. **Application Qualification for Stainless Steel Studs** - As a condition of approval of the stud application process, furnish certified test reports and certification that the studs conform to the requirements of AWS D1.6/D1.6M, Subsections 7.2 and 7.3, certified results of the stud manufacturer's stud base qualification test, and certified results of the stud application qualification test as required by AWS D1.6/D1.6M, Subsection 7.6, prior to commencing fabrication, except as otherwise specified.

b. **Production Quality Control** - Conform to the requirements of AWS D1.6/D1.6M, Subsection 7.7, except as otherwise specified for quality control for production welding of studs. Studs on which pre-production testing is to be performed shall be welded in the same general position as required on production studs (flat, vertical, overhead or sloping). If the reduction of the length of studs becomes less than normal as they are welded, stop welding immediately and do not resume until the cause has been corrected.

2.2.3 Bolted Connections

2.2.3.1 Bolted Structural Steel Connections

Provide bolts, nuts and washers of the type specified or indicated. Equip all nuts with washers except for high strength bolts. Use beveled washers where bearing faces have a slope of more than 1:20 with respect to a plane normal to the bolt axis. Where the use of high strength bolts is specified or indicated, the materials, workmanship and installation shall conform to the applicable provisions of ASTM A325 or ASTM A325M, ASTM A490 or ASTM A490M, and RCSC S348. Washers to be used with high strength bolts shall conform to ASTM F436 or ASTM F436M.

a. Bolt holes shall be accurately located, smooth, perpendicular to the member and cylindrical.

b. Holes for regular bolts shall be drilled or subdrilled and reamed in the shop and not be more than 1/16 inch larger than the diameter of the bolt.

c. Holes for fitted bolts shall be match-reamed or drilled in the

shop. Remove burrs resulting from reaming. Keep bolt threads entirely outside of the holes. The body diameter of bolts shall have tolerances as recommended by [ASME B4.1](#) for the class of fit specified. Place fitted bolts in reamed holes by selective assembly to provide an LN-2 fit.

d. Holes for high strength bolts shall not have diameters more than [1/16 inch](#) larger than bolt diameters. If the thickness of the material is not greater than the diameter of the bolts, the holes may be punched. If the thickness of the material is greater than the diameter of the bolts the holes may be drilled full size or subpunched or subdrilled at least [1/8 inch](#) smaller than the diameter of the bolts and then reamed to full size. Poor matching of holes will be cause for rejection. Drifting occurring during assembly shall not distort the metal or enlarge the holes. Reaming to a larger diameter of the next standard size bolt will be allowed for slight mismatching.

2.2.3.2 Bolted Aluminum Connections

Conform to the requirements of [AA ADM](#), Section 6 for punching, drilling, reaming and bolting for bolted aluminum connections.

2.2.4 Castings

Each casting and castings weighing more than [500 required pounds](#) shall bear cast or stamped heat numbers. Deviations from the dimensions of castings shown shall not exceed amounts that will impair the strength of castings by more than 10 percent as computed from the dimensions shown. Dimensions of castings shown on approved detail drawings are finished dimensions. Castings that are warped or otherwise distorted or that are oversize to an extent that will interfere with proper fit with other parts of the machinery or structure will be rejected. The structure of metal in castings shall be homogeneous and free from excessive nonmetallic inclusions. Excessive segregation of impurities or alloys at critical points in castings will be cause for rejection. Do not make repairs to castings prior to approval. Minor surface imperfections not affecting the strength of casting may be welded in the "green" if approved. Surface imperfections will be considered minor when the depth of the cavity prepared for welding is the lesser of 20 percent of the actual wall thickness or [1 inch](#). Defects other than minor surface imperfections may be welded only when specifically authorized in accordance with the following requirements:

a. The defects have been entirely removed and are judged not to affect the strength, use or machineability of the castings when properly welded and stress relieved.

b. The proposed welding procedure, stress relief and method of examination of the repair work have been submitted and approved.

2.2.5 Machine Work

Tolerances, allowances and gauges for metal fits between plain, non-threaded, cylindrical parts shall conform to [ASME B4.1](#) for the class of fit shown or required unless otherwise shown on approved detail drawings. Where fits are not shown they will be suitable as approved. Tolerances for machine-finished surfaces designated by non-decimal dimensions shall be within [1/64 inch](#). Sufficient machining stock will be allowed on placing pads to ensure true surfaces of solid material. Provide finished contact

or bearing surfaces true and exact to secure full contact. Polish journal surfaces and finish all surfaces with sufficient smoothness and accuracy to ensure proper operation when assembled. Parts entering any machine shall be accurately machined and all like parts be interchangeable except that parts assembled together for drilling or reaming of holes or machining will not be required to be interchangeable with like parts. Accurately locate all drilled holes bolts.

2.2.5.1 Finished Surfaces

Provide surface finishes, indicated or specified, in accordance with [ASME B46.1](#). Values of required roughness heights are arithmetical average deviations expressed in [microinches](#). These values are maximum. Lesser degrees will be satisfactory unless otherwise indicated. Compliance with surface requirements shall be determined by sense of feel and visual inspection of the work compared to Roughness Comparison Specimens in accordance with the provisions of [ASME B46.1](#). Values of roughness width and waviness height shall be consistent with the general type of finish specified by roughness height. Where the finish is not indicated or specified use that which is most suitable for the particular surface, provide the class of fit required and be indicated on the detail drawings by a symbol which conforms to [ASME B46.1](#) when machine finishing is provided. Flaws such as scratches, ridges, holes, peaks, cracks or checks which will make the part unsuitable for the intended use will be cause for rejection.

2.2.5.2 Unfinished Surfaces

Lay out all work to secure proper matching of adjoining unfinished surfaces unless otherwise directed. Where there is a large discrepancy between adjoining unfinished surfaces chip and grind smooth or machine to secure proper alignment. Unfinished surfaces shall be true to the lines and dimensions shown and be chipped or ground free of all projections and rough spots. Fill in depressions or holes not affecting the strength or usefulness of the parts in an approved manner.

2.2.5.3 Pin Holes

Pin holes are to be bored true to gauges, smooth, straight and at right angles to the axis of the member. The boring shall be done after the member is securely fastened in position.

2.2.5.4 Gears

Provide gears that have machine cut teeth of a form conforming to applicable design requirements of [ANSI/AGMA 2005](#) and [ANSI/AGMA 6001](#) unless otherwise specified or shown.

2.2.5.5 Shafting

Turn or grind shafting with hot-rolled or cold-rolled steel, as required, unless otherwise specified or authorized. Provide fillets where changes in section occur. Cold-finished shafting may be used where keyseating is the only machine work required.

2.2.6 Miscellaneous Provisions

2.2.6.1 Cleaning of Corrosion-Resisting Steel

Remove oil, paint and other foreign substances from corrosion-resisting steel surfaces after fabrication. Perform cleaning by vapor degreasing or by the use of cleaners of the alkaline, emulsion or solvent type. After the surfaces have been cleaned give a final rinsing with clean water followed by a 24 hour period during which the surfaces are intermittently wet with clean water and then allowed to dry for the purpose of inspecting the clean surfaces. Visually inspect the surfaces for evidence of paint, oil, grease, welding slag, heat treatment scale, iron rust or other forms of contamination. If evidence of foreign substance is found, clean again in accordance with the applicable provisions of [ASTM A380](#). Furnish the proposed method of treatment for approval. Visually reinspect after treatment. Use only stainless steel or nonmetallic bristle brushes to remove foreign substances. Any contamination occurring subsequent to the initial cleaning shall be removed by one or more of the methods indicated above.

2.2.6.2 Lubrication

The arrangement and details for lubrication shall be as shown. Thoroughly clean and lubricate, with an approved lubricant, all bearing surfaces before erection or assembly.

2.2.7 Shop Assembly

Assemble each machinery and structural unit furnished in the shop to determine the correctness of the fabrication and matching of the component parts unless otherwise specified. Do not exceed those tolerances shown. Closely check each unit assembled to ensure that all necessary clearances have been provided and that binding does not occur in any moving part. Assembly in the shop shall be in the same position as final installation in the field unless otherwise specified. Perform assembly and disassembly work in the presence of the Contracting Officer unless waived in writing. Immediately remedy errors or defects disclosed by the Contractor without cost to the Government. Before disassembly for shipment each piece of a machinery or structural unit shall be match-marked to facilitate erection in the field. Indicate the location of match-marks by circling with a ring of white paint after the shop coat of paint has been applied or as otherwise directed.

2.3 TESTS, INSPECTIONS, AND VERIFICATIONS

Maintain an approved QC program and perform required inspections by approved quality control personnel. Conduct applicable inspections before, during and upon completion of welding as required. Inspect welding in order to determine conformance with the requirements set forth in this specification. Clean all completed welds and visually examine for rejectable indications to ensure compliance with the requirements of [AWS D1.1/D1.1M](#), [AWS D1.2/D1.2M](#), [AWS D1.3/D1.3M](#) or [AWS D1.6/D1.6M](#) whichever is applicable. In addition, the Government may choose to hire a third party inspector to perform verification of this work. The Government's third party inspection will occur at various times throughout the duration of fabrication. The Contractor will be advised when third party inspection must be coordinated with the Contracting Officer and the Contractor for all verification inspections selected by the Government. Fabrication cannot take place in locations with outstanding Department of State travel

warnings prior to approval from the Contracting Officer.

2.3.1 Nondestructive Testing

When doubt exists as to the soundness of any material part, such part may be subjected to any form of nondestructive testing determined by the Contracting Officer. This may include ultrasonic, magnaflux, dye penetrant, radiography or any other test that will thoroughly investigate the part in question. The cost of such investigation will be borne by the Government. Any defects will be cause for rejection; replace and retest rejected parts at the Contractor's expense.

2.3.2 Tests of Machinery and Structural Units

The details for tests of machinery and structural units shall conform to the requirements of the particular sections of these specifications covering these items. Assemble each complete machinery and structural unit and test them in the shop, in the presence of the Contracting Officer, unless otherwise directed. Waiving of tests will not relieve the Contractor of responsibility for any fault in operation, workmanship or material that occurs before the completion of the contract or guarantee. After being installed at the site, each complete machinery or structural unit shall be operated through a sufficient number of complete cycles to demonstrate to the satisfaction of the Contracting Officer that it meets the specified operational requirements in all respects.

2.3.3 Inspection of Structural Steel Welding

2.3.3.1 Visual Examination

Inspect 100 percent of all welds using a Government approved AWS Certified Welding Inspector (CWI) to ensure that the welds conform to the requirements of AWS D1.1/D1.1M for Structural Steel, AWS D1.2/D1.2M for Structural Aluminum, AWS D1.3/D1.3M for Sheet Steel, AWS D1.6/D1.6M for Stainless Steel and the approved welding procedure. Non-certified inspectors and certified associate weld inspectors (CAWI) must not be used for inspection under these specifications. An approved CWI will be present at all times during welding operations.

2.3.3.2 Nondestructive Examination

Perform as designated or described in the sections of these specifications, the nondestructive examination of shop and field welds covering the particular items of work.

a. Testing Agency - Perform the nondestructive examination of welds and the evaluation of examination tests as to the acceptability of the welds by a testing agency adequately equipped and competent to perform such services or by the Contractor using suitable equipment and qualified personnel. In either case written approval of the examination procedures is required. Inform the Government prior to testing. The evaluation of examination tests is subject to the approval of, and all records become the property of, the Government. Only individuals qualified for NDT Level II or Level III may perform nondestructive testing. The Level III NDT inspector who supervises all NDT is required to possess a currently valid American Society for Nondestructive Testing (ASNT) Level III certificate for each of the processes for which they are qualified. Include copies of the certifications, including the ASNT certificate of Level III NDT

Technician that certified the Level II Technicians in the submittals. Perform all nondestructive testing in accordance with AWS D1.1/D1.1M for Structural Steel, AWS D1.2/D1.2M for Structural Aluminum, AWS D1.3/D1.3M for Sheet Steel, AWS D1.6/D1.6M for Stainless Steel.

b. Examination Procedures - Conform examination procedures to the following requirements.

(1) Ultrasonic Testing (UT) - Perform ultrasonic testing of welds to the provisions of AWS D1.1/D1.1M for Structural Steel, AWS D1.2/D1.2M for Structural Aluminum, AWS D1.3/D1.3M for Sheet Steel, AWS D1.6/D1.6M for Stainless Steel. Longitudinally scan base metal for laminations prior to shearwave examination. Longitudinal examinations conducted by the material producer are not considered acceptable for this testing. Sensitivity reference levels for shear wave examinations must be established on an iiw type block utilizing the .060 sensitivity hole. Any alternative method is required to be approved by the engineer. The ultrasonic equipment must be capable of making a permanent record of the test indications. Make a record of each weld tested. PAUT may be used in lue of conventional ultrasonics and radiography with government approval of PAUT procedures, scan plan and acceptance criteria.

(2) Radiographic Testing (RT) - Make, evaluate and report radiographic testing of welds in accrodance with the applicable requirements of AWS D1.1/D1.1M for Structural Steel, AWS D1.2/D1.2M for Structural Aluminum, AWS D1.3/D1.3M for Sheet Steel, AWS D1.6/D1.6M for Stainless Steel. Ensure that radiographic film provided is developed with a film density from 2.5 to 3.5. The Government will retain ownership of radiographic film provided by the fabricator. Only ASNT RT Level III's or individuals specifically certified in radiographic film interpretation are allowed to perform the interpretation and acceptance/rejection of radiographs. Submit qualifying documentation for Government approval. Only wire IQI's are permitted for use. The designated wire must be visible from end to end with no breaks. Phase Array Ultrasonic Testing may be used in place of RT with Government approval of technique and acceptance criteria.

(3) Magnetic Particle Inspection (MT) - Perform magnetic particle inspection of welds in accordance with the provisions of ASTM E709 and AWS D1.1/D1.1M for Structural Steel, AWS D1.2/D1.2M for Structural Aluminum, AWS D1.3/D1.3M for Sheet Steel, AWS D1.6/D1.6M for Stainless Steel. MT by the prod method is prohibited. Permanent magnets are prohibited. Unless specifically approved, do not use magnetic particle media suspended in a liquid solution for field applications. MT particle media must be of a contrasting color to the test material. Use field indicators to verify the correct field strength and direction.

(4) Dye Penetrant Inspection (PT) - Perform dye penetrant inspection of welds conforming to the applicable provisions of ASTM E165.

c. Acceptability of Welds - Welds will be unacceptable if shown to have defects prohibited by AWS D1.1/D1.1M for Structural Steel, AWS D1.2/D1.2M for Structural Aluminum, AWS D1.3/D1.3M for Sheet Steel, AWS D1.6/D1.6M for Stainless Steel. Welded connections that cannot be examined in conformance with the applicable AWS welding code are

required to be tested by an alternative procedure developed by the Contractor's level III NDT inspector and approved by the Government.

d. Welds to be Subject to Nondestructive Examination - 100 percent of all welds will be visually inspected and accepted prior to subsequent NDT. Complete Joint Penetration (CJP) welds: 100 percent examination by UT or RT, 25 percent examination by MT or PT. Partial Joint Penetration (PJP) welds: Ultrasonic examination required if noted on drawings, 25 percent examination by MT or PT. Fillet Welds: 25 percent examination by MT or PT. Magnetic Particle Testing (MT) and Liquid Penetrant Testing (PT) methods are interchangeable unless base metal is not conducive to magnetism. Radiographic testing will be restricted to butt joints only. NDT examinations specified to be conducted at a percentage less than 100 percent will be distributed at random locations throughout the components being fabricated.

2.3.3.3 Test Coupons

The Government reserves the right to require the Contractor to remove coupons from completed work when doubt as to soundness cannot be resolved by nondestructive examination. Should tests of any two coupons cut from the work of any welder show strengths less than that specified for the base metal it will be considered evidence of negligence or incompetence and such welder will be removed from the work. When coupons are removed from any part of a structure, repair the members cut in a neat manner with joints of the proper type to develop the full strength of the members. Repaired joints shall be peened as approved or directed to relieve residual stress. The expense for removing and testing coupons, repairing cut members and the nondestructive examination of repairs shall be borne by the Government or the Contractor in accordance with the Contract Clauses INSPECTION AND ACCEPTANCE.

2.3.4 Structural Steel Welding Repairs

Repair defective welds in the structural steel welding repairs in accordance with AWS D1.1/D1.1M, Subsection 3.7. Remove defective weld metal to sound metal by use of air carbon-arc or oxygen gouging. Do not use oxygen gouging on ASTM A514/A514M steel. Thoroughly clean surfaces before welding. Retest welds that have been repaired by the same methods used in the original inspection. Except for the repair of members cut to remove test coupons and found to have acceptable welds costs of repairs and retesting will be borne by the Contractor. Submit welding repair plans for steel, prior to making repairs.

2.3.5 Inspection and Testing of Steel Stud Welding

Perform fabrication and verification inspection and testing of steel stud welding conforming to the requirements of AWS D1.1/D1.1M, Subsection 7.8 except as otherwise specified. The Contracting Officer or ACO will serve as the verification inspector. One stud in every 100 and studs that do not show a full 360 degree weld flash, have been repaired by welding or whose reduction in length due to welding is less than normal shall be bent or torque tested as required by AWS D1.1/D1.1M, Subsection 7.8. If any of these studs fail, bend or torque test two additional studs. If either of the two additional studs fails, all of the studs represented by the tests will be rejected. Studs that crack under testing in either the weld, base metal or shank will be rejected and replaced by the Contractor at no additional cost.

PART 3 EXECUTION

3.1 INSTALLATION

Thoroughly clean all parts to be installed. Remove packing compounds, rust, dirt, grit and other foreign matter. Clean holes and grooves for lubrication. Examine enclosed chambers or passages to make sure that they are free from damaging materials. Where units or items are shipped as assemblies they will be inspected prior to installation. Disassembly, cleaning and lubrication will not be required except where necessary to place the assembly in a clean and properly lubricated condition. Do not use pipe wrenches, cold chisels or other tools likely to cause damage to the surfaces of rods, nuts or other parts used for assembling and tightening parts. Tighten bolts and screws firmly and uniformly but take care not to overstress the threads. When a half nut is used for locking a full nut place the half nut first followed by the full nut. Lubricate threads of all bolts except high strength bolts, nuts and screws with an approved lubricant before assembly. Coat threads of corrosion-resisting steel bolts and nuts with an approved antigalling compound. Driving and drifting bolts or keys will not be permitted.

3.1.1 Alignment and Setting

Accurately align each machinery or structural unit by the use of steel shims or other approved methods so that no binding in any moving parts or distortion of any member occurs before it is fastened in place. The alignment of all parts with respect to each other shall be true within the respective tolerances required. Set true machines to the elevations shown.

3.1.2 Blocking and Wedges

Remove all blocking and wedges used during installation for the support of parts to be grouted in foundations before final grouting unless otherwise directed. Blocking and wedges left in the foundations with approval shall be of steel or iron.

Contractor shall coordinated with South Florida Operations Office (SFOO) through the Contracting Officer to have the existing emergency bulkheads delivered to the site for field fitting. Field fit the bulkhead slot frames and rails to emergency bulkhead before grouting.

3.1.3 Field Fitting for Existing Bulkheads

The Contractor shall coordinate with South Florida Operations Office (SFOO) through the Contracting Officer to have the existing bulkheads delivered to the site for field fitting. Field fit the guides and frames to the existing bulkheads before grouting.

3.2 TESTS

3.2.1 Workmanship

Workmanship must be of the highest grade and in accordance with the best modern practices to conform with the specifications for the item of work being furnished.

3.2.2 Production Welding

Perform production welding conforming to the requirements of AWS D1.1/D1.1M,

AWS D1.2/D1.2M, AWS D1.3/D1.3M, or AWS D1.6/D1.6M, as applicable. Studs, on which pre-production testing is to be performed, shall be welded in the same general position as required on production items (flat, vertical, overhead or sloping). Test and production stud welding will be subjected to visual examination or inspection. If the reduction of the length of studs becomes less than normal as they are welded, stop welding immediately and do not resume until the cause has been corrected.

3.3 PROTECTION OF FINISHED WORK

3.3.1 Machined Surfaces

Thoroughly clean foreign matter off machined surfaces. All finished surfaces shall be protected by suitable means. Oil and wrap unassembled pins and bolts with moisture resistant paper or protect them by other approved means. Wash finished surfaces of ferrous metals to be in bolted contact, with an approved rust inhibitor and coat them with an approved rust resisting compound for temporary protection during fabrication, shipping and storage periods.

3.3.2 Lubrication After Assembly

After assembly fill all lubricating systems with the lubricant specified and apply additional lubricant at intervals as required to maintain the equipment in satisfactory condition until acceptance of the work.

3.3.3 Aluminum

Protect aluminum that will be in contact with grout or concrete from galvanic or corrosive action, with a coat of zinc-chromate primer and a coat of aluminum paint. Protect aluminum in contact with structural steel against galvanic or corrosive action with a coat of zinc-chromate primer and a coat of aluminum paint. Provide aluminum paint consisting of a aluminum paste conforming to ASTM D962, spar varnish and thinner compatible with the varnish. Field mix the aluminum paint in proportion of 2 pounds of paste, not more than one gallon of spar varnish and not more than one pint of thinner.

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SECTION 26 51 00

INTERIOR LIGHTING

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA (IESNA)

IESNA HB-9 (2000; Errata 2004; Errata 2005; Errata 2006) IES Lighting Handbook

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE 100 (2000; Archived) The Authoritative Dictionary of IEEE Standards Terms

IEEE C2 (2012; Errata 2012; INT 1-4 2012) National Electrical Safety Code

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA 250 (2008) Enclosures for Electrical Equipment (1000 Volts Maximum)

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (2014) National Electrical Code

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

Energy Star (1992; R 2006) Energy Star Energy Efficiency Labeling System

UNDERWRITERS LABORATORIES (UL)

UL 1598 (2008; Reprint Oct 2012) Luminaires

1.2 RELATED REQUIREMENTS

Materials not considered to be lighting equipment or lighting fixture accessories are specified in Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM. ~~Lighting fixtures and accessories mounted on exterior surfaces of buildings are specified in this section.~~

1.3 DEFINITIONS

- a. Unless otherwise specified or indicated, electrical and electronics terms used in these specifications, and on the drawings, shall be as defined in IEEE 100.

- b. Average life is the time after which 50 percent will have failed and 50 percent will have survived under normal conditions.
- c. Total harmonic distortion (THD) is the root mean square (RMS) of all the harmonic components divided by the total fundamental current.

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

Data, drawings, and reports shall employ the terminology, classifications, and methods prescribed by the IESNA HB-9, as applicable, for the lighting system specified.

SD-03 Product Data

Luminaires; G|DO

Lamps; G|DO

SD-10 Operation and Maintenance Data

Operational Service; G|DO

Submit documentation that includes contact information, summary of procedures, and the limitations and conditions applicable to the project. Indicate manufacturer's commitment to reclaim materials for recycling and/or reuse.

1.5 QUALITY ASSURANCE

1.5.1 Regulatory Requirements

In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction," or words of similar meaning, to mean the Contracting Officer. Equipment, materials, installation, and workmanship shall be in accordance with the mandatory and advisory provisions of NFPA 70 unless more stringent requirements are specified or indicated.

1.5.2 Standard Products

Provide materials and equipment that are products of manufacturers regularly engaged in the production of such products which are of equal material, design and workmanship. Products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year period shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been on sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2-year period. Where two or more items of the same class of equipment are required, these items shall be products of a single manufacturer; however, the component parts of the item need not be the

products of the same manufacturer unless stated in this section.

1.5.2.1 Alternative Qualifications

Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturers' factory or laboratory tests, is furnished.

1.5.2.2 Material and Equipment Manufacturing Date

Products manufactured more than 3 years prior to date of delivery to site shall not be used, unless specified otherwise.

1.5.2.3 Energy Efficiency

Comply with National Energy Policy Act and **Energy Star** requirements for lighting products. Submit data indicating lumens per watt efficiency and color rendition index of light source with all submittals under SD-03 Product Data in paragraph SUBMITTALS above.

1.6 WARRANTY

The equipment items shall be supported by service organizations which are reasonably convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

PART 2 PRODUCTS

2.1 LUMINAIRES

UL 1598. Provide LED luminaires as indicated. Provide luminaires complete with lamps of number, type, and wattage indicated. Details, shapes, and dimensions are indicative of the general type desired, but are not intended to restrict selection to luminaires of a particular manufacturer. Luminaires of similar designs, light distribution and brightness characteristics, and of equal finish and quality will be acceptable as approved.

2.2 TOGGLE SWITCHES

Provide toggle switches as specified in Section **26 20 00** INTERIOR DISTRIBUTION SYSTEM.

2.3 EQUIPMENT IDENTIFICATION

2.3.1 Manufacturer's Nameplate

Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

2.3.2 Labels

Provide labeled luminaires in accordance with **UL 1598** requirements. All luminaires shall be clearly marked for operation of specific lamps and ballasts according to proper lamp type. All markings related to lamp type

shall be clear and located to be readily visible to service personnel, but unseen from normal viewing angles when lamps are in place. Ballasts shall have clear markings indicating multi-level outputs and indicate proper terminals for the various outputs.

2.4 FACTORY APPLIED FINISH

Electrical equipment shall have factory-applied painting systems which shall, as a minimum, meet the requirements of **NEMA 250** corrosion-resistance test.

PART 3 EXECUTION

3.1 INSTALLATION

Electrical installations shall conform to **IEEE C2**, **NFPA 70**, and to the requirements specified herein.

3.1.1 Lamps

Lamps of the type, wattage, and voltage rating indicated shall be delivered to the project in the original cartons and installed just prior to project completion. Lamps installed and used for working light during construction shall be replaced prior to turnover to the Government if more than 15 percent of their rated life has been used. Lamps shall be tested for proper operation prior to turn-over and shall be replaced if necessary with new lamps from the original manufacturer. Provide 10 percent spare lamps of each type from the original manufacturer.

3.1.2 Lighting Fixtures

Set lighting fixtures plumb, square, and level with ceiling and walls, in alignment with adjacent lighting fixtures, and secure in accordance with manufacturers' directions and approved drawings. Installation shall meet requirements of **NFPA 70**. Mounting heights specified or indicated shall be to the bottom of fixture for ceiling-mounted fixtures and to center of fixture for wall-mounted fixtures. Obtain approval of the exact mounting for lighting fixtures on the job before commencing installation and, where applicable, after coordinating with the type, style, and pattern of the ceiling being installed.

3.2 FIELD APPLIED PAINTING

Paint electrical equipment as required to match finish of adjacent surfaces or to meet the indicated or specified safety criteria. Painting shall be per manufacturer's recommendations.

3.3 FIELD QUALITY CONTROL

Upon completion of installation, verify that equipment is properly installed, connected, and adjusted. Conduct an operating test to show that equipment operates in accordance with requirements of this section.

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SECTION 33 71 02

UNDERGROUND ELECTRICAL DISTRIBUTION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN CONCRETE INSTITUTE INTERNATIONAL (ACI)

ACI 318M (2011; Errata 2013) Building Code
Requirements for Structural Concrete &
Commentary

ACI SP-66 (2004) ACI Detailing Manual

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
(AASHTO)

AASHTO HB-17 (2002; Errata 2003; Errata 2005, 17th
Edition) Standard Specifications for
Highway Bridges

AASHTO M 198 (2010) Standard Specification for Joints
for Concrete Pipe, Manholes, and Precast
Box Sections Using Preformed Flexible
Joint Sealants

ASTM INTERNATIONAL (ASTM)

ASTM B1 (2012) Standard Specification for
Hard-Drawn Copper Wire

ASTM B3 (2012) Standard Specification for Soft or
Annealed Copper Wire

ASTM B8 (2011) Standard Specification for
Concentric-Lay-Stranded Copper Conductors,
Hard, Medium-Hard, or Soft

ASTM C139 (2011) Standard Specification for Concrete
Masonry Units for Construction of Catch
Basins and Manholes

ASTM C309 (2011) Standard Specification for Liquid
Membrane-Forming Compounds for Curing
Concrete

ASTM C478 (2013) Standard Specification for Precast
Reinforced Concrete Manhole Sections

ASTM C857	(2013) Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures
ASTM F512	(2012) Smooth-Wall Poly (Vinyl Chloride) (PVC) Conduit and Fittings for Underground Installation
INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)	
IEEE C2	(2012; Errata 2012; INT 1-4 2012; INT 5 2013) National Electrical Safety Code
IEEE 100	(2000; Archived) The Authoritative Dictionary of IEEE Standards Terms
IEEE 81	(2012) Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System
INTERNATIONAL ELECTRICAL TESTING ASSOCIATION (NETA)	
NETA ATS	(2013) Standard for Acceptance Testing Specifications for Electrical Power Equipment and Systems
NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)	
NEMA C119.1	(2006) Sealed Insulated Underground Connector Systems Rated 600 Volts
NEMA RN 1	(2005) Polyvinyl-Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit
NEMA TC 6 & 8	(2003) Standard for Polyvinyl Chloride (PVC) Plastic Utilities Duct for Underground Installations
NEMA TC 9	(2004) Standard for Fittings for Polyvinyl Chloride (PVC) Plastic Utilities Duct for Underground Installation
NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)	
NFPA 70	(2014) National Electrical Code
TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA)	
TIA-758-A	(2004) Customer-Owned Outside Plant Telecommunications Cabling Standard
U.S. DEPARTMENT OF AGRICULTURE (USDA)	
RUS Bull 1751F-644	(2002) Underground Plant Construction

UNDERWRITERS LABORATORIES (UL)

UL 44	(2010) Thermoset-Insulated Wires and Cables
UL 467	(2007) Grounding and Bonding Equipment
UL 486A-486B	(2013) Wire Connectors
UL 510	(2005; Reprint Apr 2008) Polyvinyl Chloride, Polyethylene and Rubber Insulating Tape
UL 514A	(2013) Metallic Outlet Boxes
UL 514B	(2012) Conduit, Tubing and Cable Fittings
UL 6	(2007; reprint Nov 2010) Electrical Rigid Metal Conduit-Steel
UL 651	(2011; Reprint Mar 2012) Standard for Schedule 40 and 80 Rigid PVC Conduit and Fittings
UL 854	(2004; Reprint Sep 2011) Standard for Service-Entrance Cables

1.2 DEFINITIONS

- a. Unless otherwise specified or indicated, electrical and electronics terms used in these specifications, and on the drawings, shall be as defined in IEEE 100.
- b. In the text of this section, the words conduit and duct are used interchangeably and have the same meaning.
- c. In the text of this section, "medium voltage cable splices," and "medium voltage cable joints" are used interchangeably and have the same meaning.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Precast underground structures; G, DO

SD-03 Product Data

Precast concrete structures; G, DO

Sealing Material

Handhole frames and covers; G, DO

Composite/fiberglass handholes; G, DO

Cable supports (racks, arms and insulators); G, DO

Pulling-In Irons; G, DO

SD-06 Test Reports

Field Acceptance Checks and Tests; G

Cable Installation Plan and Procedure

Six copies of the information described below in 8-1/2 by 11 inch binders having a minimum of three rings from which material may readily be removed and replaced, including a separate section for each cable pull. Sections shall be separated by heavy plastic dividers with tabs, with all data sheets signed and dated by the person supervising the pull.

- a. Site layout drawing with cable pulls numerically identified.
- b. A list of equipment used, with calibration certifications. The manufacturer and quantity of lubricant used on pull.
- c. The cable manufacturer and type of cable.
- d. The dates of cable pulls, time of day, and ambient temperature.
- e. The length of cable pull and calculated cable pulling tensions.
- f. The actual cable pulling tensions encountered during pull.

1.4 QUALITY ASSURANCE

1.4.1 Precast Underground Structures

Submittal required for each type used. Provide calculations and drawings for precast handholes bearing the seal of a registered professional engineer including:

- a. Material description (i.e., f'_c and F_y)
- b. Manufacturer's printed assembly and installation instructions
- c. Design calculations
- d. Reinforcing shop drawings in accordance with ACI SP-66
- e. Plans and elevations showing opening and pulling-in iron locations and details
- f. Precast underground structures provided by the utility provider.

1.4.2 Regulatory Requirements

In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" had been

substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction," or words of similar meaning, to mean the Contracting Officer. Equipment, materials, installation, and workmanship shall be in accordance with the mandatory and advisory provisions of NFPA 70 unless more stringent requirements are specified or indicated.

1.4.3 Standard Products

Provide materials and equipment that are products of manufacturers regularly engaged in the production of such products which are of equal material, design and workmanship. Products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year period shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been on sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2-year period. Where two or more items of the same class of equipment are required, these items shall be products of a single manufacturer; however, the component parts of the item need not be the products of the same manufacturer unless stated in this section.

1.4.3.1 Alternative Qualifications

Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturers' factory or laboratory tests, is furnished.

1.4.3.2 Material and Equipment Manufacturing Date

Products manufactured more than 3 years prior to date of delivery to site shall not be used, unless specified otherwise.

PART 2 PRODUCTS

2.1 CONDUIT, DUCTS, AND FITTINGS

2.1.1 Rigid Metal Conduit

UL 6.

2.1.1.1 Rigid Metallic Conduit, PVC Coated

NEMA RN 1, Type A40, except that hardness shall be nominal 85 Shore A durometer, dielectric strength shall be minimum 400 volts per mil at 60 Hz, and tensile strength shall be minimum 3500 psi.

2.1.2 Plastic Conduit for Direct Burial

UL 651, Schedule 80.

2.1.3 Plastic Duct for Concrete Encasement

NEMA TC 6 & 8 and ASTM F512, UL 651, EPC-80-PVC.

2.1.4 Innerduct

Provide corrugated or solid wall polyethylene (PE) or PVC innerducts with pullwire. Size as indicated.

2.1.5 Conduit Sealing Compound

Compounds for sealing ducts and conduit shall have a putty-like consistency workable with the hands at temperatures as low as 35 degrees F, shall neither slump at a temperature of 300 degrees F, nor harden materially when exposed to the air. Compounds shall adhere to clean surfaces of fiber or plastic ducts; metallic conduits or conduit coatings; concrete, masonry, or lead; any cable sheaths, jackets, covers, or insulation materials; and the common metals. Compounds shall form a seal without dissolving, noticeably changing characteristics, or removing any of the ingredients. Compounds shall have no injurious effect upon the hands of workmen or upon materials. Inflatable bladders may be used as an option.

2.1.6 Fittings

2.1.6.1 Metal Fittings

UL 514B.

2.1.6.2 PVC Conduit Fittings

UL 514B, UL 651.

2.1.6.3 PVC Duct Fittings

NEMA TC 9.

2.1.6.4 Outlet Boxes for Steel Conduit

Outlet boxes for use with rigid or flexible steel conduit shall be cast-metal cadmium or zinc-coated if of ferrous metal with gasketed closures and shall conform to UL 514A.

2.2 LOW VOLTAGE INSULATED CONDUCTORS AND CABLES

Insulated conductors shall be rated 600 volts and conform to the requirements of NFPA 70, including listing requirements. Wires and cables manufactured more than 24 months prior to date of delivery to the site shall not be accepted. Service entrance conductors shall conform to UL 854, type USE.

2.2.1 Conductor Types

Cable and duct sizes indicated are for copper conductors and THHN/THWN unless otherwise noted. Conductors No. 10 AWG and smaller shall be solid copper. Conductors No. 8 AWG and larger shall be stranded copper. All conductors shall be copper.

2.2.2 Conductor Material

Unless specified or indicated otherwise or required by NFPA 70, wires in conduit, other than service entrance, shall be 600-volt, Type XHHW conforming to UL 44. Copper conductors shall be annealed copper complying with ASTM B3 and ASTM B8.

2.2.3 Jackets

Multiconductor cables shall have an overall PVC outer jacket.

2.2.4 Direct Buried

Single-conductor and multi-conductor cables shall be of a type identified for direct burial.

2.2.5 In Duct

Cables shall be single-conductor cable.

2.2.6 Cable Marking

Insulated conductors shall have the date of manufacture and other identification imprinted on the outer surface of each cable at regular intervals throughout the cable length.

Each cable shall be identified by means of a fiber, laminated plastic, or non-ferrous metal tags, or approved equal, in each manhole, handhole, junction box, and each terminal. Each tag shall contain the following information; cable type, conductor size, circuit number, circuit voltage, cable destination and phase identification.

Conductors shall be color coded. Conductor identification shall be provided within each enclosure where a tap, splice, or termination is made. Conductor identification shall be by color-coded insulated conductors, plastic-coated self-sticking printed markers, colored nylon cable ties and plates, heat shrink type sleeves, or colored electrical tape. Control circuit terminations shall be properly identified. Color shall be green for grounding conductors and white for neutrals; except where neutrals of more than one system are installed in same raceway or box, other neutrals shall be white with a different colored (not green) stripe for each. Color of ungrounded conductors in different voltage systems shall be as follows

a. 208/120 volt, three-phase

- (1) Phase A - black
- (2) Phase B - red
- (3) Phase C - blue

b. 480/277 volt, three-phase

- (1) Phase A - brown
- (2) Phase B - orange
- (3) Phase C - yellow

c. 120/240 volt, single phase: Black and red

2.3 LOW VOLTAGE WIRE CONNECTORS AND TERMINALS

Shall provide a uniform compression over the entire conductor contact surface. Use solderless terminal lugs on stranded conductors.

- a. For use with copper conductors: **UL 486A-486B.**

2.4 LOW VOLTAGE SPLICES

Provide splices in conductors with a compression connector on the conductor and by insulating and waterproofing using one of the following methods which are suitable for continuous submersion in water and comply **NEMA C119.1**.

2.4.1 Heat Shrinkable Splice

Provide heat shrinkable splice insulation by means of a thermoplastic adhesive sealant material which shall be applied in accordance with the manufacturer's written instructions.

2.4.2 Cold Shrink Rubber Splice

Provide a cold-shrink rubber splice which consists of EPDM rubber tube which has been factory stretched onto a spiraled core which is removed during splice installation. The installation shall not require heat or flame, or any additional materials such as covering or adhesive. It shall be designed for use with inline compression type connectors, or indoor, outdoor, direct-burial or submerged locations.

2.5 TAPE

2.5.1 Insulating Tape

UL 510, plastic insulating tape, capable of performing in a continuous temperature environment of 80 degrees C.

2.5.2 Buried Warning and Identification Tape

Provide detectable tape in accordance with Section **35 41 00 EMBANKMENT CONSTRUCTION**.

2.6 PULL ROPE

Shall be plastic or flat pull line (bull line) having a minimum tensile strength of **200 pounds**.

2.7 GROUNDING AND BONDING

2.7.1 Driven Ground Rods

Provide copper-clad steel ground rods conforming to **UL 467** not less than **3/4 inch** in diameter by **10 feet** in length. Sectional type rods may be used for rods 20 feet or longer.

2.7.2 Grounding Conductors

Stranded-bare copper conductors shall conform to **ASTM B8**, Class B, soft-drawn unless otherwise indicated. Solid-bare copper conductors shall conform to **ASTM B1** for sizes No. 8 and smaller. Insulated conductors shall be of the same material as phase conductors and green color-coded, except that conductors shall be rated no more than 600 volts. Aluminum is not acceptable.

2.8 CAST-IN-PLACE CONCRETE

Provide concrete in accordance with Section **03 31 01 CAST-IN-PLACE STRUCTURAL CONCRETE FOR CIVIL WORKS**. In addition, provide concrete for

encasement of underground ducts with 3000 psi minimum 28-day compressive strength. Concrete associated with electrical work for other than encasement of underground ducts shall be 4000 psi minimum 28-day compressive strength unless specified otherwise.

2.9 UNDERGROUND STRUCTURES

Provide precast concrete underground structures or standard type cast-in-place manhole types as indicated, conforming to ASTM C857 and ASTM C478. Top, walls, and bottom shall consist of reinforced concrete. Walls and bottom shall be of monolithic concrete construction. Locate duct entrances and windows near the corners of structures to facilitate cable racking. Covers shall fit the frames without undue play. Form steel and iron to shape and size with sharp lines and angles. Castings shall be free from warp and blow holes that may impair strength or appearance. Exposed metal shall have a smooth finish and sharp lines and arises. Provide necessary lugs, rabbets, and brackets. Set pulling-in irons and other built-in items in place before depositing concrete. Install a pulling-in iron in the wall opposite each duct line entrance. Cable racks, including rack arms and insulators, shall be adequate to accommodate the cable.

2.9.1 Cast-In-Place Concrete Structures

Concrete shall conform to Section 03 31 01 CAST-IN-PLACE STRUCTURAL CONCRETE FOR CIVIL WORKS. Construct walls on a footing of cast-in-place concrete except that precast concrete base sections may be used for precast concrete manhole risers. Concrete block shall conform to ASTM C139.

2.9.2 Precast Concrete Structures, Risers and Tops

In lieu of cast-in-place, Contractors, at their option, may provide precast concrete underground structures subject to the requirements specified below. Precast units shall be the product of a manufacturer regularly engaged in the manufacture of precast concrete products, including precast manholes.

2.9.2.1 General

Precast concrete structures shall have the same accessories and facilities as required for cast-in-place structures. Likewise, precast structures shall have plan area and clear heights not less than those of cast-in-place structures. Concrete materials and methods of construction shall be the same as for cast-in-place concrete construction, as modified herein. Slope in floor may be omitted provided precast sections are poured in reinforced steel forms. Concrete for precast work shall have a 28-day compressive strength of not less than 4000 psi. Structures may be precast to the design and details indicated for cast-in-place construction, precast monolithically and placed as a unit, or structures may be assembled sections, designed and produced by the manufacturer in accordance with the requirements specified. Structures shall be identified with the manufacturer's name embedded in or otherwise permanently attached to an interior wall face.

2.9.2.2 Design for Precast Structures

ACI 318M. In the absence of detailed on-site soil information, design for the following soil parameters/site conditions:

- a. Angle of Internal Friction (ϕ) = 30 degrees

- b. Unit Weight of Soil (Dry) = 110 pcf, (Saturated)
= 130 pcf
- c. Coefficient of Lateral Earth Pressure (Ka) = 0.33
- d. Ground Water Level = 3 feet below ground elevation
- e. Vertical design loads shall include full dead, superimposed dead, and live loads including a 30 percent magnification factor for impact. Live loads shall consider all types and magnitudes of vehicular (automotive, industrial, or aircraft) traffic to be encountered. The minimum design vertical load shall be for H20 highway loading per AASHTO HB-17.
- f. Horizontal design loads shall include full geostatic and hydrostatic pressures for the soil parameters, water table, and depth of installation to be encountered. Also, horizontal loads imposed by adjacent structure foundations, and horizontal load components of vertical design loads, including impact, shall be considered, along with a pulling-in iron design load of 6000 pounds.
- g. Each structural component shall be designed for the load combination and positioning resulting in the maximum shear and moment for that particular component.
- h. Design shall also consider the live loads induced in the handling, installation, and backfilling of the manholes. Provide lifting devices to ensure structural integrity during handling and installation.

2.9.2.3 Construction

Structure top, bottom, and wall shall be of a uniform thickness of not less than 6 inches. Thin-walled knock-out panels for designed or future duct bank entrances shall not be permitted. Quantity, size, and location of duct bank entrance windows shall be as directed, and cast completely open by the precaster. Size of windows shall exceed the nominal duct bank envelope dimensions by at least 12 inches vertically and horizontally to preclude in-field window modifications made necessary by duct bank misalignment. However, the sides of precast windows shall be a minimum of 6 inches from the inside surface of adjacent walls, floors, or ceilings. Form the perimeter of precast window openings to have a keyed or inward flared surface to provide a positive interlock with the mating duct bank envelope. Provide welded wire fabric reinforcing through window openings for in-field cutting and flaring into duct bank envelopes. Provide additional reinforcing steel comprised of at least two No. 4 bars around window openings. Provide drain sumps a minimum of 12 inches in diameter and 4 inches deep for precast structures.

2.9.2.4 Joints

Provide tongue-and-groove joints on mating edges of precast components. Shiplap joints are not allowed. Design joints to firmly interlock adjoining components and to provide waterproof junctions and adequate shear transfer. Seal joints watertight using preformed plastic strip conforming to AASHTO M 198, Type B. Install sealing material in strict accordance with the sealant manufacturer's printed instructions. Provide waterproofing at conduit/duct entrances into structures, and where access frame meets the top slab, provide continuous grout seal.

2.9.3 Handhole Frames and Covers

Frames and covers of steel shall be welded by qualified welders in accordance with standard commercial practice. Steel covers shall be rolled-steel floor plate having an approved antislip surface. Hinges shall be of wrought steel, 5 by 5 inches by approximately 3/16 inch thick, without screw holes, and shall be for full surface application by fillet welding. Hinges shall have nonremovable pins and five knuckles. The surfaces of plates under hinges shall be true after the removal of raised antislip surface, by grinding or other approved method.

2.9.4 Composite/Fiberglass Handholes and Covers

Provide handholes and covers of polymer concrete, reinforced with heavy weave fiberglass.

2.10 CABLE SUPPORTS (RACKS, ARMS, AND INSULATORS)

The metal portion of racks and arms shall be zinc-coated after fabrication.

2.10.1 Cable Racks

The wall bracket shall be 4 inches by approximately 1-1/2 inch by 3/16 inch channel steel, 48 inches long (minimum) in manholes. Slots for mounting cable rack arms shall be spaced at 8 inch intervals.

2.10.2 Rack Arms

Cable rack arms shall be steel or malleable iron or glass reinforced nylon and shall be of the removable type. Rack arm length shall be a minimum of 8 inches and a maximum of 12 inches.

2.10.3 Insulators

Insulators for metal rack arms shall be dry-process glazed porcelain. Insulators are not required for nylon arms.

2.11 UNDERGROUND UTILITY

2.11.1 GEC ~~FPL~~ Responsibilities

~~Florida Power and Light (FPL) will modify the existing overhead power lines near spillway S-84A with new pole (if required) and all other necessary hardware to make connections for the new underground utility as shown on the contract plan to provide a 120/240VAC, 150A, 1-phase, 60 Hz service. FPL will furnish primary conductors, conduits, pull boxes, meter, transformer, and transformer base. FPL will install primary conductors, meter, pad-mounted transformer, and high side service connections at the new service point.~~ Glades Electric Cooperative Inc. (GEC) will modify the existing GEC overhead power lines near the replacement structure S-291 and furnish all other necessary hardware to install approximately 960 linear feet of underground primary utility along the HHD to the location adjacent to pump station G-208 and spillway S-72 as shown on the drawings (C-25). The new underground primary utility will provide power for both pump station and spillway. GEC will install a new pad-mounted transformer next to the S-291 control building to provide a 120/240VAC, 150A, 1-phase, 60 Hz service to the gated culvert from the new primary utility. GEC will furnish primary conductors, conduits, pull boxes, meter, transformer, and

transformer base. GEC will install primary conductors, meter, pad-mounted transformer, and high side service connections at the new service point for the gated culvert.

2.11.2 Contractor Responsibilities

~~The Contractor shall coordinate with FPL to install approximately one linear mile of underground utility along the access road next to canal C 41A from the FPL pole near spillway S 84A to new structure S 65EX1. The Contractor shall arrange appropriately with FPL to pick up FPL furnished materials and equipment or to have them delivered to the site accordingly. The Contractor shall clearly understand what FPL will furnish and perform and what contractor shall furnish and perform to avoid any conflict or disruption during the contact work. The Contractor shall install underground conduits and pull boxes at locations as shown on the contract plan. The Contractor shall furnish and install pull wires along the underground conduit at each pull box for FPL to install primary conductors. The Contractor shall furnish and install meter socket, protective bollards, and other necessary hardware as required by FPL standards. The Contractor shall furnish and install the underground secondary conduit and cable. The Contractor shall coordinate with FPL for point of connection, power line routing, overall planning and scheduling for time completion of the new power line. The Contractor shall make all necessary arrangements with FPL for final inspection and complete testing. The Contractor shall pay FPL specified amount of expenses (as shown in the Bid Schedule) for upgrade or modification of existing FPL power lines system. The Contractor shall be responsible for any accidental service charges connected therewith and for monthly energy charges thereafter until acceptance of the complete work by the Contracting Officer. Upon acceptance, the meter shall be read and the Contractor shall be relieved of responsibility for energy charges as of the date and meter reading. In addition, the Contractor shall perform all other required work for complete operational system as specified in the contract plans and specifications.~~

The Contractor shall work and coordinate closely with GEC to arrange a timely schedule for installing the new underground primary utility as shown on the drawings (C-25) at the proper phase of the contract work. The Contractor shall coordinate with GEC for location of the new pad-mounted transformer and perform any other requirements for a 120/240VAC, 150A, 1-phase, 60 Hz service to the gated culvert. The Contractor shall clearly understand what GEC will furnish and perform and what contractor shall furnish and perform to avoid any conflict or disruption during the contact work. The Contractor shall furnish and install meter socket, protective bollards, and other necessary hardware as required by GEC standards. The Contractor shall furnish and install the underground secondary conduit and cables. The Contractor shall coordinate with GEC for point of connections, cable routing, overall planning and scheduling for time completion of the new service. The Contractor shall make all necessary arrangements with GEC for final inspection and complete testing. The Contractor shall pay GEC upon receiving an invoice (see Section 01 22 00 MEASUREMENT AND PAYMENT) for new underground primary utility, upgrade, or modification of the existing GEC power lines system. The Contractor shall be responsible for any accidental service charges connected therewith and for monthly energy charges thereafter until acceptance of the complete work by the Contracting Officer. Upon acceptance, the meter shall be read and the Contractor shall be relieved of responsibility for energy charges as of the date and meter reading. In addition, the Contractor shall perform all other required work for complete operational system as specified in the drawings.

PART 3 EXECUTION

3.1 INSTALLATION

Install equipment and devices in accordance with the manufacturer's published instructions and with the requirements and recommendations of NFPA 70 and IEEE C2 as applicable. In addition to these requirements, install telecommunications in accordance with TIA-758-A and RUS Bull 1751F-644.

3.2 CABLE INSPECTION

Prior to installation, each cable reel shall be inspected for correct storage positions, signs of physical damage, and broken end seals. If end seal is broken, moisture shall be removed from cable prior to installation in accordance with the cable manufacturer's recommendations.

3.3 CABLE INSTALLATION PLAN AND PROCEDURE

The Contractor shall obtain from the manufacturer an installation manual or set of instructions which addresses such aspects as cable construction, insulation type, cable diameter, bending radius, cable temperature limits for installation, lubricants, coefficient of friction, conduit cleaning, storage procedures, moisture seals, testing for and purging moisture, maximum allowable pulling tension, and maximum allowable sidewall bearing pressure. The Contractor shall then perform pulling calculations and prepare a pulling plan which shall be submitted along with the manufacturers instructions in accordance with SUBMITTALS. Cable shall be installed strictly in accordance with the cable manufacturer's recommendations and the approved installation plan.

Calculations and pulling plan shall include:

- a. Site layout drawing with cable pulls identified in numeric order of expected pulling sequence and direction of cable pull.
- b. List of cable installation equipment.
- c. Lubricant manufacturer's application instructions.
- d. Procedure for resealing cable ends to prevent moisture from entering cable.
- e. Cable pulling tension calculations of all cable pulls.
- f. Cable percentage conduit fill.
- g. Cable sidewall bearing pressure.
- h. Cable minimum bend radius and minimum diameter of pulling wheels used.
- i. Cable jam ratio.
- j. Maximum allowable pulling tension on each different type and size of conductor.
- k. Maximum allowable pulling tension on pulling device.

3.4 UNDERGROUND FEEDERS SUPPLYING BUILDINGS

Terminate underground feeders supplying building at a point **5 feet** outside the building and projections thereof, except that conductors shall be continuous to the terminating point indicated. Coordinate connections of the feeders to the service entrance equipment with Section **26 20 00** INTERIOR DISTRIBUTION SYSTEM. Conduit shall be PVC, Type EPC-40 from the supply equipment to a point **5 feet** outside the building and projections thereof. Protect ends of underground conduit with plastic plugs until connections are made.

3.5 UNDERGROUND STRUCTURE CONSTRUCTION

Provide standard type cast-in-place construction as specified herein and as indicated, or precast construction as specified herein. Underground precast structures as shown on the drawings and are provided by the local utility provider will be acceptable. Horizontal concrete surfaces of floors shall have a smooth trowel finish. Cure concrete by applying two coats of white pigmented membrane forming-curing compound in strict accordance with the manufacturer's printed instructions, except that precast concrete may be steam cured. Curing compound shall conform to **ASTM C309**. Locate duct entrances and windows in the center of end walls (shorter) and near the corners of sidewalls (longer) to facilitate cable racking and splicing. Covers for underground structures shall fit the frames without undue play. Steel and iron shall be formed to shape and size with sharp lines and angles. Castings shall be free from warp and blow holes that may impair strength or appearance. Exposed metal shall have a smooth finish and sharp lines and arises. Provide necessary lugs, rabbets, and brackets. Set pulling-in irons and other built-in items in place before depositing concrete.

3.5.1 Cast-In-Place Concrete Structures

Construct walls on a footing of cast-in-place concrete except that precast concrete base sections may be used for precast concrete manhole risers. Provide concrete block conforming to **ASTM C139**.

3.5.2 Precast Concrete Construction

Set commercial precast structures on **6 inches** of level, 90 percent compacted granular fill, **3/4 inch to 1 inch** size, extending **12 inches** beyond the structure on each side. Compact granular fill by a minimum of four passes with a plate type vibrator. Installation shall additionally conform to the manufacturer's instructions.

3.5.3 Pulling-In Irons

Provide steel bars bent as indicated, and cast in the walls and floors, if indicated. Alternatively, pipe sleeves may be precast into the walls and floors where required to accept U-bolts or other types of pulling-in devices possessing the strengths and clearances stated herein. The final installation of pulling-in devices shall be made permanent. Cover and seal exterior projections of thru-wall type pulling-in devices with an appropriate protective coating. In the floor the irons shall be a minimum of **6 inches** from the edge of the sump, and in the walls the irons shall be located within **6 inches** of the projected center of the duct bank pattern or precast window in the opposite wall. However, the pulling-in iron shall not be located within **6 inches** of an adjacent interior surface, or duct or precast window located within the same wall as the iron. If a pulling-in

iron cannot be located directly opposite the corresponding duct bank or precast window due to this clearance limitation, locate the iron directly above or below the projected center of the duct bank pattern or precast window the minimum distance required to preserve the 6 inch clearance previously stated. In the case of directly opposing precast windows, pulling-in irons consisting of a 3 foot length of No. 5 reinforcing bar, formed into a hairpin, may be cast-in-place within the precast windows simultaneously with the end of the corresponding duct bank envelope. Irons installed in this manner shall be positioned directly in line with, or when not possible, directly above or below the projected center of the duct bank pattern entering the opposite wall, while maintaining a minimum clear distance of 3 inches from any edge of the cast-in-place duct bank envelope or any individual duct. Pulling-in irons shall have a clear projection into the structure of approximately 4 inches and shall be designed to withstand a minimum pulling-in load of 6000 pounds. Irons shall be hot-dipped galvanized after fabrication.

3.5.4 Cable Racks, Arms and Insulators

Cable racks, arms and insulators shall be sufficient to accommodate the cables. Racks in power manholes shall be spaced not more than 3 feet apart, and each manhole wall shall be provided with a minimum of two racks. Racks in signal manholes shall be spaced not more than 16 1/2 inches apart with the end rack being no further than 12 inches from the adjacent wall. Methods of anchoring cable racks shall be as follows:

- a. Provide a 5/8 inch diameter by 5 inch long anchor bolt with 3 inch foot cast in structure wall with 2 inch protrusion of threaded portion of bolt into structure. Provide 5/8 inch steel square head nut on each anchor bolt. Coat threads of anchor bolts with suitable coating immediately prior to installing nuts.
- b. Provide concrete channel insert with a minimum load rating of 800 pounds per foot. Insert channel shall be steel of the same length as "vertical rack channel;" channel insert shall be cast flush in structure wall. Provide 5/8 inch steel nuts in channel insert to receive 5/8 inch diameter by 3 inch long steel, square head anchor bolts.
- c. Provide concrete "spot insert" at each anchor bolt location, cast flush in structure wall. Each insert shall have minimum 800 pound load rating. Provide 5/8 inch diameter by 3 inch long steel, square head anchor bolt at each anchor point. Coat threads of anchor bolts with suitable coating immediately prior to installing bolts.

3.5.5 Field Painting

Cast-iron frames and covers not buried in concrete or masonry shall be cleaned of mortar, rust, grease, dirt and other deleterious materials, and given a coat of bituminous paint.

3.6 UNDERGROUND CONDUIT AND DUCT SYSTEMS

3.6.1 Requirements

Depths to top of the conduit shall be in accordance with NFPA 70. Run conduit in straight lines except where a change of direction is necessary. Numbers and sizes of ducts shall be as indicated. Ducts shall have a continuous slope downward toward underground structures and away from

buildings, laid with a minimum slope of 4 inches per 100 feet. Depending on the contour of the finished grade, the high-point may be at a terminal, a manhole, a handhole, or between manholes or handholes. Short-radius manufactured 90-degree duct bends may be used only for pole or equipment risers, unless specifically indicated as acceptable. The minimum manufactured bend radius shall be 18 inches for ducts of less than 3 inch diameter, and 36 inches for ducts 3 inches or greater in diameter. Otherwise, long sweep bends having a minimum radius of 25 feet shall be used for a change of direction of more than 5 degrees, either horizontally or vertically. Both curved and straight sections may be used to form long sweep bends, but the maximum curve used shall be 30 degrees and manufactured bends shall be used. Ducts shall be provided with end bells whenever duct lines terminate in structures.

3.6.2 Treatment

Ducts shall be kept clean of concrete, dirt, or foreign substances during construction. Field cuts requiring tapers shall be made with proper tools and match factory tapers. A coupling recommended by the duct manufacturer shall be used whenever an existing duct is connected to a duct of different material or shape. Ducts shall be stored to avoid warping and deterioration with ends sufficiently plugged to prevent entry of any water or solid substances. Ducts shall be thoroughly cleaned before being laid. Plastic ducts shall be stored on a flat surface and protected from the direct rays of the sun.

3.6.3 Conduit Cleaning

As each conduit run is completed, for conduit sizes 3 inches and larger, draw a flexible testing mandrel approximately 12 inches long with a diameter less than the inside diameter of the conduit through the conduit. After which, draw a stiff bristle brush through until conduit is clear of particles of earth, sand and gravel; then immediately install conduit plugs. For conduit sizes less than 3 inches, draw a stiff bristle brush through until conduit is clear of particles of earth, sand and gravel; then immediately install conduit plugs.

3.6.4 Jacking and Drilling Under Roads and Structures

Conduits to be installed under existing paved areas which are not to be disturbed, and under roads and railroad tracks, shall be zinc-coated, rigid steel, jacked into place. Where ducts are jacked under existing pavement, rigid steel conduit will be installed because of its strength. To protect the corrosion-resistant conduit coating, predrilling or installing conduit inside a larger iron pipe sleeve (jack-and-sleeve) is required. For crossings of existing railroads and airfield pavements greater than 50 feet in length, the predrilling method or the jack-and-sleeve method will be used. Separators or spacing blocks shall be made of steel, concrete, plastic, or a combination of these materials placed not farther apart than 4 feet on centers.

3.6.5 Multiple Conduits

Separate multiple conduits by a minimum distance of 2 1/2 inches, except that light and power conduits shall be separated from control, signal, and telephone conduits by a minimum distance of 3 inches. Stagger the joints of the conduits by rows (horizontally) and layers (vertically) to strengthen the conduit assembly. Provide plastic duct spacers that interlock vertically and horizontally. Spacer assembly shall consist of

base spacers, intermediate spacers, ties, and locking device on top to provide a completely enclosed and locked-in conduit assembly. Install spacers per manufacturer's instructions, but provide a minimum of two spacer assemblies per 10 feet of conduit assembly.

3.6.6 Conduit Plugs and Pull Rope

New conduit indicated as being unused or empty shall be provided with plugs on each end. Plugs shall contain a weephole or screen to allow water drainage. Provide a plastic pull rope having 3 feet of slack at each end of unused or empty conduits.

3.6.7 Conduit and Duct Without Concrete Encasement

Provide not less than 3 inches clearance from the conduit to each side of the trench. Grade bottom of trench smooth; where rock, soft spots, or sharp-edged materials are encountered, excavate the bottom for an additional 3 inches, fill and tamp level with original bottom with sand or earth free from particles, that would be retained on a 1/4 inch sieve. The first 6 inch layer of backfill cover shall be sand compacted as previously specified. The rest of the excavation shall be backfilled and compacted in 3 to 6 inch layers. Provide color, type and depth of warning tape as specified in Section 35 41 00 EMBANKMENT CONSTRUCTION.

3.6.7.1 Encasement Under Roads and Structures

Under roads, paved areas, and railroad tracks, install conduits in concrete encasement of rectangular cross-section providing a minimum of 3 inch concrete cover around ducts. Concrete encasement shall extend at least 5 feet beyond the edges of paved areas and roads, and 12 feet beyond the rails on each side of railroad tracks.

3.6.8 Duct Encased in Concrete

Construct underground duct lines of individual conduits encased in concrete. Do not mix different kinds of conduit in any one duct bank. Concrete encasement surrounding the bank shall be rectangular in cross-section and shall provide at least 3 inches of concrete cover for ducts. Separate conduits by a minimum concrete thickness of 2 1/2 inches, except separate light and power conduits from control, signal, and telecommunications conduits by a minimum concrete thickness of 3 inches. Before pouring concrete, anchor duct bank assemblies to prevent the assemblies from floating during concrete pouring. Anchoring shall be done by driving reinforcing rods adjacent to duct spacer assemblies and attaching the rods to the spacer assembly. Provide color, type and depth of warning tape as specified in Section 35 41 00 EMBANKMENT CONSTRUCTION.

3.6.8.1 Connections to Manholes

Duct bank envelopes connecting to underground structures shall be flared to have enlarged cross-section at the manhole entrance to provide additional shear strength. Dimensions of the flared cross-section shall be larger than the corresponding manhole opening dimensions by no less than 12 inches in each direction. Perimeter of the duct bank opening in the underground structure shall be flared toward the inside or keyed to provide a positive interlock between the duct bank and the wall of the structure. Use vibrators when this portion of the encasement is poured to assure a seal between the envelope and the wall of the structure.

3.6.8.2 Connections to Existing Underground Structures

For duct bank connections to existing structures, break the structure wall out to the dimensions required and preserve steel in the structure wall. Cut steel and bend out to tie into the reinforcing of the duct bank envelope. Chip the perimeter surface of the duct bank opening to form a key or flared surface, providing a positive connection with the duct bank envelope.

3.6.8.3 Connections to Existing Concrete Pads

For duct bank connections to concrete pads, break an opening in the pad out to the dimensions required and preserve steel in pad. Cut the steel and bend out to tie into the reinforcing of the duct bank envelope. Chip out the opening in the pad to form a key for the duct bank envelope.

3.6.8.4 Connections to Existing Ducts

Where connections to existing duct banks are indicated, excavate the banks to the maximum depth necessary. Cut off the banks and remove loose concrete from the conduits before new concrete-encased ducts are installed. Provide a reinforced concrete collar, poured monolithically with the new duct bank, to take the shear at the joint of the duct banks.

3.6.8.5 Partially Completed Duct Banks

During construction wherever a construction joint is necessary in a duct bank, prevent debris such as mud, and, and dirt from entering ducts by providing suitable conduit plugs. Fit concrete envelope of a partially completed duct bank with reinforcing steel extending a minimum of 2 feet back into the envelope and a minimum of 2 feet beyond the end of the envelope. Provide one No. 4 bar in each corner, 3 inches from the edge of the envelope. Secure corner bars with two No. 3 ties, spaced approximately one foot apart. Restrain reinforcing assembly from moving during concrete pouring.

3.7 CABLE PULLING

Test existing duct lines with a mandrel and thoroughly swab out to remove foreign material before pulling cables. Pull cables down grade with the feed-in point at the manhole or buildings of the highest elevation. Use flexible cable feeds to convey cables through manhole opening and into duct runs. Do not exceed the specified cable bending radii when installing cable under any conditions, including turnups into switches, transformers, switchgear, switchboards, and other enclosures. Cable with tape or wire shield shall have a bending radius not less than 12 times the overall diameter of the completed cable. If basket-grip type cable-pulling devices are used to pull cable in place, cut off the section of cable under the grip before splicing and terminating.

3.7.1 Cable Lubricants

Use lubricants that are specifically recommended by the cable manufacturer for assisting in pulling jacketed cables.

3.8 CABLES IN UNDERGROUND STRUCTURES

Do not install cables utilizing the shortest path between penetrations, but route along those walls providing the longest route and the maximum spare

cable lengths. Form cables to closely parallel walls, not to interfere with duct entrances, and support on brackets and cable insulators. Support cable splices in underground structures by racks on each side of the splice. Locate splices to prevent cyclic bending in the spliced sheath. Install cables at middle and bottom of cable racks, leaving top space open for future cables, except as otherwise indicated for existing installations. Provide one spare three-insulator rack arm for each cable rack in each underground structure.

3.8.1 Cable Tag Installation

Install cable tags in each manhole as specified, including each splice. Tag wire and cable provided by this contract. Install cable tags over the fireproofing, if any, and locate the tags so that they are clearly visible without disturbing any cabling or wiring in the manholes.

3.9 CONDUCTORS INSTALLED IN PARALLEL

Conductors shall be grouped such that each conduit of a parallel run contains 1 Phase A conductor, 1 Phase B conductor, 1 Phase C conductor, and 1 neutral conductor.

3.10 LOW VOLTAGE CABLE SPLICING AND TERMINATING

Make terminations and splices with materials and methods as indicated or specified herein and as designated by the written instructions of the manufacturer. Do not allow the cables to be moved until after the splicing material has completely set. Make splices in underground distribution systems only in accessible locations such as manholes, handholes, or aboveground termination cabinets.

3.11 GROUNDING SYSTEMS

Provide grounding system as indicated, in accordance with NFPA 70 and IEEE C2, and as specified herein.

Noncurrent-carrying metallic parts associated with electrical equipment shall have a maximum resistance to solid earth ground not exceeding the following values:

Pad-mounted transformers without protective fences	5 ohms
Ground in manholes	5 ohms
Grounding other metal enclosures of primary voltage electrical and electrically-operated equipment	5 ohms

3.11.1 Grounding Electrodes

Provide cone pointed driven ground rods driven full depth plus 6 inches, installed to provide an earth ground of the appropriate value for the particular equipment being grounded.

If the specified ground resistance is not met, an additional ground rod shall be provided in accordance with the requirements of NFPA 70 (placed not less than 6 feet from the first rod). Should the resultant (combined) resistance exceed the specified resistance, measured not less than 48 hours

after rainfall, the Contracting Officer shall be notified immediately.

3.11.2 Grounding Connections

Make grounding connections which are buried or otherwise normally inaccessible, by exothermic weld or compression connector.

- a. Make exothermic welds strictly in accordance with the weld manufacturer's written recommendations. Welds which are "puffed up" or which show convex surfaces indicating improper cleaning are not acceptable. Mechanical connectors are not required at exothermic welds.
- b. Make compression connections using a hydraulic compression tool to provide the correct circumferential pressure. Tools and dies shall be as recommended by the manufacturer. An embossing die code or other standard method shall provide visible indication that a connector has been adequately compressed on the ground wire.

3.11.3 Grounding Conductors

Provide bare grounding conductors, except where installed in conduit with associated phase conductors. Ground cable sheaths, cable shields, conduit, and equipment with No. 6 AWG. Ground other noncurrent-carrying metal parts and equipment frames of metal-enclosed equipment. Ground metallic frames and covers of handholes and pull boxes with a braided, copper ground strap with equivalent ampacity of No. 6 AWG.

3.11.4 Ground Cable Crossing Expansion Joints

Protect ground cables crossing expansion joints or similar separations in structures and pavements by use of approved devices or methods of installation which provide the necessary slack in the cable across the joint to permit movement. Use stranded or other approved flexible copper cable across such separations.

3.11.5 Manhole Grounding

Loop a 4/0 AWG grounding conductor around the interior perimeter, approximately 12 inches above finished floor. Secure the conductor to the manhole walls at intervals not exceeding 36 inches. Connect the conductor to the manhole grounding electrode with 4/0 AWG conductor. Connect all incoming 4/0 grounding conductors to the ground loop adjacent to the point of entry into the manhole. Bond the ground loop to all cable shields, metal cable racks, and other metal equipment with a minimum 6 AWG conductor.

3.11.6 Fence Grounding

Fences shall be grounded with a ground rod at each fixed gate post and at each corner post. Drive ground rods until the top is 12 inches below grade. Attach a No. 4 AWG copper conductor, by exothermic weld to the ground rods and extend underground to the immediate vicinity of fence post. Lace the conductor vertically into 12 inches of fence mesh and fasten by two approved bronze compression fittings, one to bond wire to post and the other to bond wire to fence. Each gate section shall be bonded to its gatepost by a 1/8 by one inch flexible braided copper strap and ground post clamps. Clamps shall be of the anti-electrolysis type.

3.12 EXCAVATING, BACKFILLING, AND COMPACTING

Provide in accordance with NFPA 70 and Section 35 41 00 EMBANKMENT CONSTRUCTION.

3.12.1 Reconditioning of Surfaces

3.12.1.1 Unpaved Surfaces

Restore to their original elevation and condition unpaved surfaces disturbed during installation of duct. Preserve sod and topsoil removed during excavation and reinstall after backfilling is completed. Replace sod that is damaged by sod of quality equal to that removed. When the surface is disturbed in a newly seeded area, re-seed the restored surface with the same quantity and formula of seed as that used in the original seeding, and provide topsoiling, fertilizing, liming, seeding, sodding, sprigging, or mulching.

3.12.1.2 Paving Repairs

Where trenches, pits, or other excavations are made in existing roadways and other areas of pavement where surface treatment of any kind exists, restore such surface treatment or pavement the same thickness and in the same kind as previously existed, except as otherwise specified, and to match and tie into the adjacent and surrounding existing surfaces.

3.13 CAST-IN-PLACE CONCRETE

Provide concrete in accordance with Section 03 31 01 CAST-IN-PLACE STRUCTURAL CONCRETE FOR CIVIL WORKS.

3.13.1 Concrete Slabs for Equipment

Unless otherwise indicated, the slab shall be at least 8 inches thick, reinforced with a 6 by 6 - W2.9 by W2.9 mesh, placed uniformly 4 inches from the top of the slab. Slab shall be placed on a 6 inch thick, well-compacted gravel base. Top of concrete slab shall be approximately 4 inches above finished grade with gradual slope for drainage. Edges above grade shall have 1/2 inch chamfer. Slab shall be of adequate size to project at least 8 inches beyond the equipment.

Stub up conduits, with bushings, 2 inches into cable wells in the concrete pad. Coordinate dimensions of cable wells with transformer cable training areas.

3.13.2 Sealing

When the installation is complete, the Contractor shall seal all conduit and other entries into the equipment enclosure with an approved sealing compound. Seals shall be of sufficient strength and durability to protect all energized live parts of the equipment from rodents, insects, or other foreign matter.

3.14 FIELD QUALITY CONTROL

3.14.1 Performance of Field Acceptance Checks and Tests

Perform in accordance with the manufacturer's recommendations, and include the following visual and mechanical inspections and electrical tests,

performed in accordance with NETA ATS.

3.14.1.1 Grounding System

a. Visual and mechanical inspection

Inspect ground system for compliance with contract plans and specifications

b. Electrical tests

Perform ground-impedance measurements utilizing the fall-of-potential method in accordance with IEEE 81. On systems consisting of interconnected ground rods, perform tests after interconnections are complete. On systems consisting of a single ground rod perform tests before any wire is connected. Take measurements in normally dry weather, not less than 48 hours after rainfall. Use a portable megohmmeter tester in accordance with manufacturer's instructions to test each ground or group of grounds. The instrument shall be equipped with a meter reading directly in ohms or fractions thereof to indicate the ground value of the ground rod or grounding systems under test.

3.14.2 Follow-Up Verification

Upon completion of acceptance checks and tests, the Contractor shall show by demonstration in service that circuits and devices are in good operating condition and properly performing the intended function. As an exception to requirements stated elsewhere in the contract, the Contracting Officer shall be given 5 working days advance notice of the dates and times of checking and testing.

-- End of Section --