

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE		PAGE OF PAGES	
				1		48	
2. AMENDMENT/MODIFICATION NO. A0001		3. EFFECTIVE DATE 17-Apr-2018		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO.(If applicable)	
6. ISSUED BY CODE USA ENGINEER DISTRICT, JACKSONVILLE CONTRACTING DIVISION 701 SAN MARCO BLVD JACKSONVILLE FL 32207-8175		W912EP		7. ADMINISTERED BY (If other than item 6) CODE			
				See Item 6			
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)				X		9A. AMENDMENT OF SOLICITATION NO. W912EP18R0013	
				X		9B. DATED (SEE ITEM 11) 22-Mar-2018	
						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 checked="" type="checkbox"/> is extended, <input 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-288 (HP-1) Reconstruction, Glades County, Florida See Continuation Sheet for complete description of changes. The Proposal due date is changed from 23 April 2018 @ 2:00 PM EST to 27 April 2018 @ 2:00 PM. 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		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA		16C. DATE SIGNED	
 (Signature of person authorized to sign)				BY (Signature of Contracting Officer)			
EXCEPTION TO SF 30 APPROVED BY OIRM 11-84				30-105-04		STANDARD FORM 30 (Rev. 10-83) Prescribed by GSA FAR (48 CFR) 53.243	

SF 30 CONTINUATION
SHEET

Herbert Hoover Dike Rehabilitation, Structure Replacement S-288 (HP-1) Reconstruction
Amendment 0001

SUMMARY OF CHANGES

1. SPECIFICATIONS:

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. The Project Table of Contents and Submittal Register are replaced without underlines and cross-outs if there are changes to these documents.

Changes to Specifications:

Volume 1 of 2 - Technical Specifications:

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

Volume 2 of 2 - Technical Specifications:

DELETE Section 01 22 00 and **REPLACE** with the attached revised Section 01 22 00.

ADD Florida Bonneted Bat Consultation Guidelines to Section 01 57 20.

DELETE Section 26 29 10 and **REPLACE** with the attached revised Section 26 29 10.

2. DRAWINGS:

DELETE Drawing No. S-63 and **REPLACE** with the attached revised Drawing No. S-63.

(End of Summary of
Changes)

SECTION 00010A
LINE ITEMS AND PRICING SCHEDULE

HERBERT HOOVER DIKE REHABILITATION, STRUCTURE REPLACEMENTS
S-288 (HP-1) RECONSTRUCTION
GLADES COUNTY, FLORIDA

LINE ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
0001	ACCESS		JOB		\$ _____
0002	TURBIDITY MONITORING		JOB		\$ _____
0003	SHEET PILE COFFERDAM		JOB		\$ _____
0004	EARTHEN COFFERDAM AND PLUGS	11,500	CUBIC YARD		\$ _____
0005	COFFERDAM ARMORING (ESTIMATED QUANTITY)				
<u>0005</u>	IMPORT RIPRAP	620	SQUARE YARD	\$ _____	\$ _____
<u>0006</u>	HPTRM & SOD	380	SQUARE YARD	\$ _____	\$ _____
<u>0007</u>	ROLLED EROSION CONTROL PRODUCT	4,412	SQUARE YARD	\$ _____	\$ _____
<u>0008</u>	COFFERDAM SEEPAGE PROTECTION (ESTIMATED QUANTITY)	1,735	SQUARE YARD	\$ _____	\$ _____
<u>0009</u>	DEWATERING		JOB		\$ _____
<u>0010</u>	EXCAVATION		JOB		\$ _____
<u>0011</u>	DEMOLITION		JOB		\$ _____
<u>0012</u>	SHEETPILE SCOUR CUTOFF WALLS		JOB		\$ _____
<u>0013</u>	MUD MAT		JOB		\$ _____
<u>0014</u>	LAKESIDE HEADWALL REINFORCED CONCRETE		JOB		\$ _____
<u>0015</u>	LAKESIDE WING WALLS REINFORCED CONCRETE		JOB		\$ _____
<u>0016</u>	LANDSIDE HEADWALL REINFORCED CONCRETE		JOB		\$ _____
<u>0017</u>	LANDSIDE WING WALLS REINFORCED CONCRETE		JOB		\$ _____
<u>0018</u>	CULVERT STRUCTURE REINFORCED CONCRETE		JOB		\$ _____
<u>0019</u>	LAKESIDE HEADWALL EMBEDDED METALS		JOB		\$ _____
<u>0020</u>	LANDSIDE HEADWALL EMBEDDED METALS		JOB		\$ _____
<u>0021</u>	MISCELLANEOUS METALS		JOB		\$ _____
<u>0022</u>	COMBINATION SLIDE/FLAP GATE WITH ACTUATOR	1	EACH	\$ _____	\$ _____
<u>0023</u>	MANATEE SCREEN/DEBRIS BARRIER	2	EACH	\$ _____	\$ _____
<u>0024</u>	EMBANKMENT FILL	33,760	CUBIC YARD	\$ _____	\$ _____

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LINE ITEMS AND PRICING SCHEDULE

HERBERT HOOVER DIKE REHABILITATION, STRUCTURE REPLACEMENTS
S-288 (HP-1) RECONSTRUCTION
GLADES COUNTY, FLORIDA

<u>0025</u>	SOIL-BENTONITE CORE		JOB		\$ _____
LINE ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
<u>0026</u>	CHIMNEY DRAIN, DRAINAGE BLANKET AND FILTER COLLAR		JOB		\$ _____
<u>0027</u>	LIMEROCK SURFACE (ESTIMATED QUANTITY)	2,840	SQUARE YARD	\$ _____	\$ _____
<u>0028</u>	ASPHALT SURFACE (ESTIMATED QUANTITY)	1,810	SQUARE YARD	\$ _____	\$ _____
<u>0029</u>	RESTORATION RIPRAP (ESTIMATED QUANTITY)	835	SQUARE YARD	\$ _____	\$ _____
<u>0030</u>	INTAKE AND OUTLET CHANNEL		JOB		\$ _____
<u>0031</u>	SITE SIGNAGE		JOB		\$ _____
<u>0032</u>	CONTROL BUILDING		JOB		\$ _____
<u>0033</u>	ELECTRICAL AND TELECOMMUNICATIONS WORK AND EQUIPMENT		JOB		\$ _____
<u>0034</u>	RESTORATION SODDING (ESTIMATED QUANTITY)	19,655	SQUARE YARD	\$ _____	\$ _____
<u>0035</u>	RESTORATION GEOTEXTILE AND BEDDING STONE (ESTIMATED QUANTITY)	70	SQUARE YARD	\$ _____	\$ _____
<u>0036</u>	STILLING WELLS		JOB		\$ _____
<u>0037</u>	CONTRACTING OFFICER'S FIELD OFFICE	26	MONTH	\$ _____	\$ _____
<u>0038</u>	BY PASS PUMP(S) OPERATION		JOB	\$ _____	\$ _____
<u>0039</u>	BY PASS PUMP(S) STANDBY TIME		JOB	\$ _____	\$ _____
TOTAL BID (LINE ITEMS 0001 THROUGH <u>0039</u>)					\$ _____

- 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) All specification references to "LUMP SUM" shall apply to line items indicating "JOB" as a unit.
- (6) 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;

SECTION 00010A
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HERBERT HOOVER DIKE REHABILITATION, STRUCTURE REPLACEMENTS
S-288 (HP-1) RECONSTRUCTION
GLADES COUNTY, FLORIDA

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.

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01 22 00

MEASUREMENT AND PAYMENT

PART 1 GENERAL

- 1.1 SUMMARY
- 1.2 RESIDENT MANAGEMENT SYSTEM (RMS)
 - 1.2.1 Definition
 - 1.2.2 Instructions
- 1.3 SUBMITTALS
- 1.4 PAYMENT PROCEDURES
 - 1.4.1 Job
 - 1.4.2 Unit Price
- 1.5 LINE ITEMS
 - 1.5.1 Access (Line Item 0001)
 - 1.5.2 Turbidity Monitoring (Line Item 0002)
 - 1.5.3 Sheet Pile Cofferdam (Line Item 0003)
 - 1.5.4 Earthen Cofferdam and Plugs (Line Item 0004)
 - 1.5.5 Import Rip Rap (Line Item 0005)
 - 1.5.6 HPTRM & Sod (Line Item 0006)
 - 1.5.7 Rolled Erosion Control Product (RECP) (Line Item 0007)
 - 1.5.8 Cofferdam Seepage Protection (Line Item 0008)
 - 1.5.9 Dewatering (Line Item 0009)
 - 1.5.10 Excavation (Line Item 0010)
 - 1.5.11 Demolition (Line Item 0011)
 - 1.5.12 Sheetpile Scour Cutoff Walls (Line Item 0012)
 - 1.5.13 Mud Mat (Line Item 0013)
 - 1.5.14 Lakeside Headwall Reinforced Concrete (Line Item 0014)
 - 1.5.15 Lakeside Wing Walls Reinforced Concrete (Line Item 0015)
 - 1.5.16 Landside Headwall Reinforced Concrete (Line Item 0016)
 - 1.5.17 Landside Wing Walls Reinforced Concrete (Line Item 0017)
 - 1.5.18 Culvert Structure Reinforced Concrete (Line Item 0018)
 - 1.5.19 Lakeside Headwall Embedded Metals (Line Item 0019)
 - 1.5.20 Landside Headwall Embedded Metals (Line Item 0020)
 - 1.5.21 Miscellaneous Metals (Line Item 0021)
 - 1.5.22 Combination Slide/Flap Gate with Actuator (Line Item 0022)
 - 1.5.23 Manatee Screen/Debris Barrier (Line Item 0023)
 - 1.5.24 Embankment Fill (Line Item 0024)
 - 1.5.25 Soil-Bentonite Core (Line Item 0025)
 - 1.5.26 Chimney Drain, Drainage Blanket and Filter Collar (Line Item 0026)
 - 1.5.27 Limerock Surface (Line Item 0027)
 - 1.5.28 Asphalt Surface (Line Item 0028)
 - 1.5.29 Restoration Riprap (Line Item 0029)
 - 1.5.30 Intake and Outlet Channel (Line Item 0030)
 - 1.5.31 Site Signage (Line Item 0031)
 - 1.5.32 Control Building (Line Item 0032)
 - 1.5.33 Electrical and Telecommunications Work and Equipment (Line Item 0033)

Herbert Hoover Dike Rehabilitation, Structure Replacements
S-288 (HP-1) Reconstruction - Glades County, Florida

- 1.5.34 Restoration Sodding (Line Item 0034)
- 1.5.35 Restoration Geotextile and Bedding Stone (Line Item 0035)
- 1.5.36 Stilling Wells (Line Item 0036)
- 1.5.37 Contracting Officer's Field Office (Line Item 0037)
- 1.5.38 Bypass Pump(s) Operation (Line Item 0038)
- 1.5.39 Bypass Pump(s) Standby Time (Line Item 0039)

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 PAYMENT PROCEDURES

- 3.1.1 Requesting Progress Payment
- 3.1.2 Options and Modification CLINS

-- 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 RESIDENT MANAGEMENT SYSTEM (RMS)

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 Resident Management System (RMS) 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 30 calendar days after Notice to Proceed:

SD-01 Preconstruction Submittals

Schedule of Values; G, RO

Provide a breakdown of Job 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 RMS payment data base.

SD-07 Certificates

Herbert Hoover Dike Rehabilitation, Structure Replacements
S-288 (HP-1) Reconstruction - Glades County, Florida

Request for Progress Payment; G, RO

Submit monthly in accordance with subparagraph "Requesting Progress Payment" below.

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 Job

Progress payments for Job 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 Job 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)

Job payment will be made for costs associated with or incidental to clearing and grubbing; silt fence; temporary fencing; and the construction, maintenance and removal of site access as shown. See Section 35 41 00 EMBANKMENT CONSTRUCTION.

1.5.2 Turbidity Monitoring (Line Item 0002)

Job 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 Sheet Pile Cofferdam (Line Item 0003)

Job 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)

Unit price payment will be made for cost associated with or incidental to placement, maintenance and removal of the earthen cofferdam and plugs. The unit of measure is cubic yard. This CLIN does not include surface treatments.

~~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 cofferdam surface treatments.~~

~~1.5.5.1 Import Rip Rap (Line Item 0006)~~

~~CLIN includes geotextile, bedding stone, and rip rap. Measurement will be made by the area placed. The unit of measure is square yard.~~

~~1.5.5.2 HPTRM & Sod (Line Item 0007)~~

~~Measurement will be made by the area placed. The unit of measure is square yard.~~

~~1.5.5.3 Rolled Erosion Control Product (RECP) (Line Item 0008)~~

~~Measurement will be made by the area placed. The unit of measure is square yard.~~

1.5.5 Import Rip Rap (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 associated with the cofferdam system. Measurement will be made by the area placed. The unit of measure is square yard.

1.5.6 HPTRM & Sod (Line Item 0006)

Unit price payment will be made for costs associated with or incidental to placement, maintenance and removal of high performance turf reinforcement mat (HPTRM) & sod, geotextile and irrigation as required to establish sod growth. Measurement will be made by the area placed. The unit of measure is square yard.

1.5.7 Rolled Erosion Control Product (RECP) (Line Item 0007)

Unit price payment will be made for costs associated with or incidental to placement and installation of the erosion control products. Also included is irrigation as required to establish vegetation growth. Measurement will be made by the area placed. The unit of measure is square yard.

1.5.8 Cofferdam Seepage Protection ~~(Line Item 0009)~~ (Line Item 0008)

Unit price payment will be made for costs associated with or incidental to placement, maintenance and removal of seepage protection, including

Herbert Hoover Dike Rehabilitation, Structure Replacements
S-288 (HP-1) Reconstruction - Glades County, Florida

bedding stone and geotextile. Measurement will be made by the area placed. The unit of measure is square yard. This CLIN does not include geotextile and bedding stone place beneath import riprap.

1.5.9 Dewatering ~~(Line Item 0010)~~ (Line Item 0009)

Job 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.

1.5.10 Excavation ~~(Line Item 0011)~~ (Line Item 0010)

Job 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.

1.5.11 Demolition ~~(Line Item 0012)~~ (Line Item 0011)

Job 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.

1.5.12 Sheetpile Scour Cutoff Walls ~~(Line Item 0013)~~ (Line Item 0012)

Job 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 the culvert.

1.5.13 Mud Mat ~~(Line Item 0014)~~ (Line Item 0013)

Job 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.

1.5.14 Lakeside Headwall Reinforced Concrete ~~(Line Item 0015)~~ (Line Item 0014)

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

1.5.15 Lakeside Wing Walls Reinforced Concrete ~~(Line Item 0016)~~ (Line Item 0015)

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

1.5.16 Landside Headwall Reinforced Concrete ~~(Line Item 0017)~~ (Line Item 0016)

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

Herbert Hoover Dike Rehabilitation, Structure Replacements
S-288 (HP-1) Reconstruction - Glades County, Florida

1.5.17 Landside Wing Walls Reinforced Concrete ~~(Line Item 0018)~~ (Line Item 0017)

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

1.5.18 Culvert Structure Reinforced Concrete ~~(Line Item 0019)~~ (Line Item 0018)

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

1.5.19 Lakeside Headwall Embedded Metals ~~(Line Item 0020)~~ (Line Item 0019)

Job 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.

1.5.20 Landside Headwall Embedded Metals ~~(Line Item 0021)~~ (Line Item 0020)

Job 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.

1.5.21 Miscellaneous Metals ~~(Line Item 0022)~~ (Line Item 0021)

Job 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.

1.5.22 Combination Slide/Flap Gate with Actuator ~~(Line Item 0023)~~ (Line Item 0022)

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.

1.5.23 Manatee Screen/Debris Barrier ~~(Line Item 0024)~~ (Line Item 0023)

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.

1.5.24 Embankment Fill ~~(Line Item 0025)~~ (Line Item 0024)

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, final construction of the new S-288 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.

1.5.25 Soil-Bentonite Core ~~(Line Item 0026)~~(Line Item 0025)

Job 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; providing and maintaining access to the work site(s) and borrow area(s); noise control; and debris removal.

1.5.26 Chimney Drain, Drainage Blanket and Filter Collar ~~(Line Item 0027)~~
(Line Item 0026)

Job 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.

1.5.27 Limerock Surface ~~(Line Item 0028)~~(Line Item 0027)

Unit price payment will be made for costs associated with or incidental to processing, transportation, and placement of aggregate limerock to the lines and grades shown. 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.

1.5.28 Asphalt Surface ~~(Line Item 0029)~~(Line Item 0028)

Unit price payment will be made for costs associated with or incidental to processing, transportation, and placement of aggregate base coarse, tack coat and asphalt surface course to the lines and grades shown. 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.

Herbert Hoover Dike Rehabilitation, Structure Replacements
S-288 (HP-1) Reconstruction - Glades County, Florida

1.5.29 Restoration Riprap ~~(Line Item 0030)~~(Line Item 0029)

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.

1.5.30 Intake and Outlet Channel ~~(Line Item 0031)~~(Line Item 0030)

Job 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.

1.5.31 Site Signage ~~(Line Item 0032)~~(Line Item 0031)

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

1.5.32 Control Building ~~(Line Item 0033)~~(Line Item 0032)

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

1.5.33 Electrical and Telecommunications Work and Equipment ~~(Line Item 0034)~~(Line Item 0033)

Job 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.

1.5.34 Restoration Sodding ~~(Line Item 0035)~~(Line Item 0034)

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

1.5.35 Restoration Geotextile and Bedding Stone ~~(Line Item 0036)~~(Line Item 0035)

Unit price payment will be made for costs associated with or incidental to placement geotextile and bedding stone on the reconstructed embankment. Measurement will be made by the area placed. The unit of measure is square yard.

1.5.36 Stilling Wells ~~(Line Item 0037)~~(Line Item 0036)

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

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

1.5.38 Bypass Pump(s) Operation ~~(Line Item 0039)~~ (Line Item 0038)

Job payment will be made for cost associated with or incidental to operating of the bypass pumping system including labor, material and equipment used to reposition, operate, maintain and secure bypass pumping system after operation. Costs indicated under line item "Bypass Pump(s) Standby Time" will not be paid for under this line item. For purposes of bidding, Contractor shall assume 1440 hours of bypass pump operation.

1.5.39 Bypass Pump(s) Standby Time ~~(Line Item 0040)~~ (Line Item 0039)

Job payment will be made for cost associated with or incidental to purchase and installation of bypass pump(s) and appurtenant equipment on standby. Pump(s) shall become Government property at the conclusion of the construction contract. Upon acceptance by the Government of substantial completion, Contractor shall transport (load, deliver, and unload) bypass pump(s) per the direction of the Contracting Officer to a location within 100 miles of the project site.

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 punch lists 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. Submit a [request for progress payment](#) monthly in accordance with Clause 52.232-5 PAYMENTS UNDER FIXED-PRICE CONSTRUCTION CONTRACTS of Section 00700 CONTRACT CLAUSES. In addition to the items listed in Clause 52.232-5(b)(1), submit the following in the [request for progress payment](#):

- a. Approved construction schedule.
- b. Up-to-date payroll records.
- c. Current submittal register.

Herbert Hoover Dike Rehabilitation, Structure Replacements
S-288 (HP-1) Reconstruction - Glades County, Florida

- d. Approved submittals on installed property.
- e. QA/QC deficiency tracking list.
- f. Current as-built drawings.

Once the complete pay application package is received to include the Contractor's signed ENG 93, the 14 calendar days will commence.

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 --

**U.S. Fish and Wildlife Service
South Florida Ecological Services Office**

FLORIDA BONNETED BAT CONSULTATION GUIDELINES

July 2017

Background

The South Florida Ecological Services Field Office (Service) developed the Florida Bonneted Bat Consultation Guidelines to assist in avoiding and minimizing effects to roosting and foraging habitat and assessing effects to the Florida bonneted bat from proposed projects. The following Consultation Area map (Figure 1), Consultation Flowchart (Figure 2), Consultation Key, Survey Framework (Appendices A-B), and Best Management Practices (BMPs) (Appendix C) are based upon the best available scientific information. As more information is obtained, these guidelines may be revised.

The final listing rule for the Florida bonneted bat (78 FR 61004) describes threats identified for the species. Habitat loss and degradation, as well as habitat modification, from human population growth and associated development and agriculture, have historically affected the species. New science shows that the Florida bonnet bat has characteristics more common to tropical bat species than temperate bat species in that it has small group sizes, a harem social structure, and is reproductively active throughout most of the year (Ober *et al.* 2016). The longer period of reproductive activity means that pups that are unable to fly are vulnerable to disturbance across a larger portion of the year than temperate bat species in United States (Ober *et al.* 2016). Retaining suitable roost structures (trees and snags with cavities or loose bark) throughout the species range is important (Braun de Torrez *et al.* 2016). The availability and distribution of roosts may alter social structure and ultimately limit local populations (Ober *et al.* 2016).

Wherever possible, proposed development projects should be designed to avoid and minimize take of Florida bonneted bats and to retain Florida bonneted bat habitat. Applicants are encouraged to enter into early consultation with the Service so we may provide recommendations for avoiding and minimizing take. These Consultation Guidelines are intended to assist in evaluating proposed projects and identifying the appropriate paths under sections 7 and 10 of the Endangered Species Act of 1973 (Act), as amended (87 Stat. 884; 16 U.S.C. 1531 *et seq.*).

Roosting habitat includes forest and other areas with tall, mature trees or other areas with suitable roost structures. Forest is defined as all types including: pine flatwoods, scrubby flatwoods, pine rocklands, royal palm hammocks, mixed or hardwood hammocks, cypress, sand pine scrub, or other forest types. Roosting habitat is considered to contain some degree of foraging value. Artificial roosting structure includes buildings, bridges, and bat houses.

More specifically, this includes habitat for roosting and rearing of offspring. Such habitat provides structural features for rest, digestion of food, social interaction, mating, rearing of young, protection from sunlight and adverse weather, and cover to reduce predation risks for adults and young. In general, roosting habitat is characterized by: tall mature live or dead trees, tree snags, and trees with cavities, hollows, deformities, decay, crevices, or loose bark.

Structural characteristics are of primary importance. Bonneted bats have been found in habitat with the following structural features, but may also occur outside of these parameters: (a) trees greater than 20 feet (6 meters) in height, greater than 8 inches (20.3 centimeters) in diameter at breast height (DBH), with cavities greater than 15 feet (4.6 meters) high; (b) areas with a high incidence of large or mature live trees with various deformities (e.g., large cavities, hollows, broken tops, loose bark, and other evidence of decay) (e.g., pine flatwoods); (c) rock crevices (e.g., limestone in Miami-Dade County); and/or (d) artificial structures, mimicking natural roosting conditions (e.g., bat houses, bridges, telephone poles), situated in natural or semi-natural habitats. Structures similar to the above are expected to also provide roosting habitat, based upon the species' morphology and behavior. Florida bonneted bat roosts will be situated in areas with sufficient open space for these bats to fly (e.g., open or semi-open canopy, canopy gaps, and edges which provide relatively uncluttered conditions). The Service is working with partners on strategies to address issues involving bonneted bats inhabiting artificial structures and human dwellings.

Foraging habitat is comprised of relatively open (i.e., uncluttered) areas to find and catch prey, and sources of drinking water. This includes: open fresh water, permanent or seasonal freshwater wetlands, wetland and upland forests, and wetland and upland shrub. In urban and residential areas, suitable foraging conditions (i.e., open habitat structure) and drinking water can be found in relatively small patches of natural or semi-natural habitat.

Florida Bonneted Bat (FBB) Consultation Flowchart / Key

The **Consultation Flowchart** (Figure 2) and **Consultation Key** direct project proponents through a series of couplets that will provide a conclusion or determination for potential impacts to the Florida bonneted bat. (*If other listed, candidate, or proposed species or designated or proposed critical habitat may be affected, a separate evaluation will need to be conducted for the other species/critical habitat.*) The determination may be either “no effect,” “may affect, but is not likely to adversely affect” (MANLAA), or “may affect, and is likely to adversely affect” (LAA) (See Glossary for explanations of *Effect Determinations, Habitat, Surveys, and Results*).

Definitive determinations are made on a project by project basis and are often highly dependent upon an applicant's willingness and abilities to alter project designs. Therefore, we encourage early consultation with the Service.

The **Consultation Area** (Figure 1) represents the general range of the species and is delineated using a 15-mile (mi) (24-kilometer [km]) buffer around confirmed Florida bonneted bat detections with considerations for habitat features and connectivity. This consultation area is expanded from the one we delineated in 2013 to incorporate detections through June 2016. The 15-mi (24-km) buffer distance is based on the one-way distance the Florida bonneted bat, other

Eumops, or comparable species (i.e., large molossids) are generally capable of traveling from roost sites in any given night (Tibbitts *et al.* 2002; Marques *et al.* 2004; Siders 2005; Corbett *et al.* 2008; Rhodes and Catterall 2008; Ober 2015). Recent GPS and radio-telemetry data reinforce the concept that Florida bonneted bats move large distances and have large home ranges. Based upon new data from recovered GPS satellite tags, the maximum distance a Florida bonneted bat was detected from its capture site was 24 mi (38.6 km) (Ober 2016).

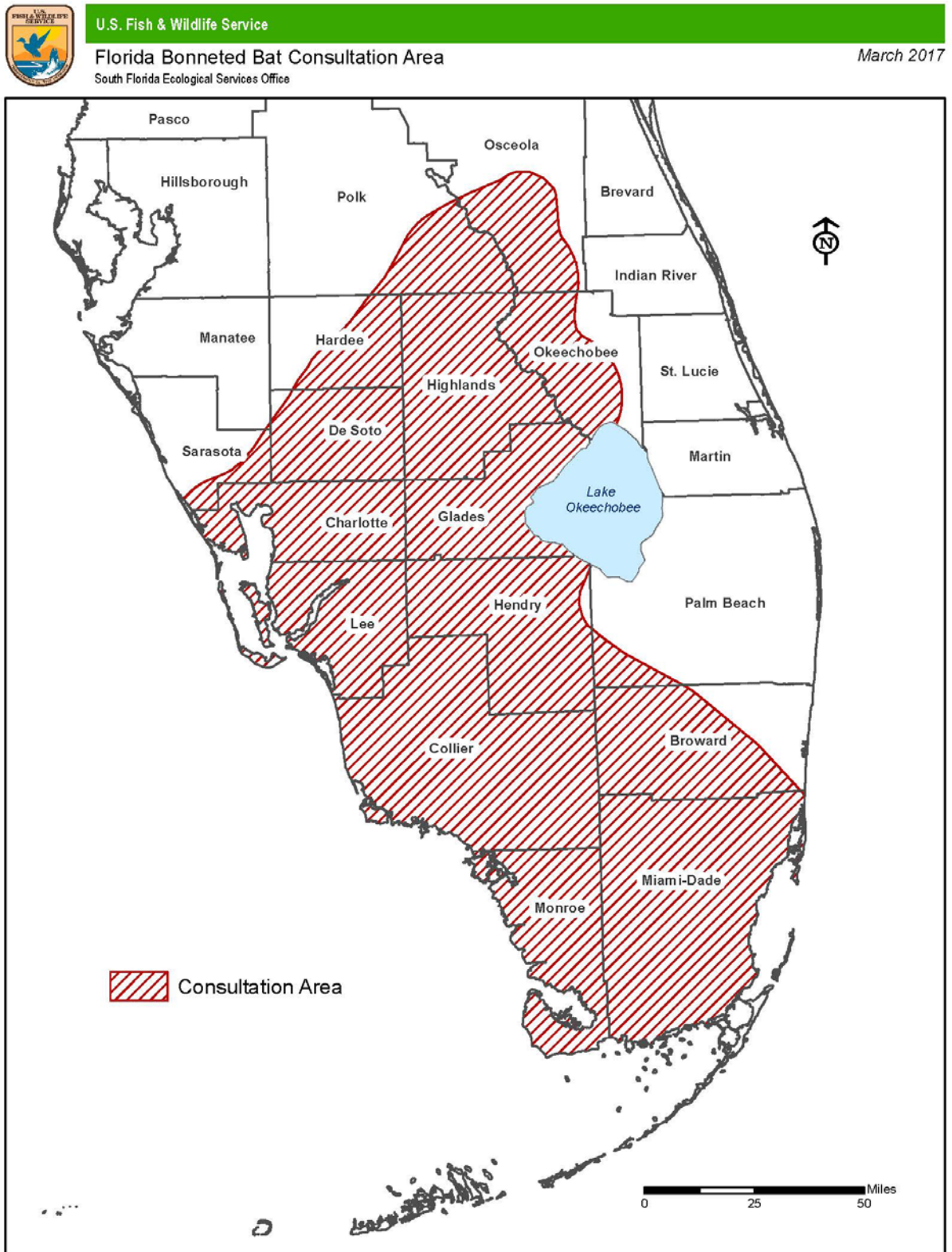
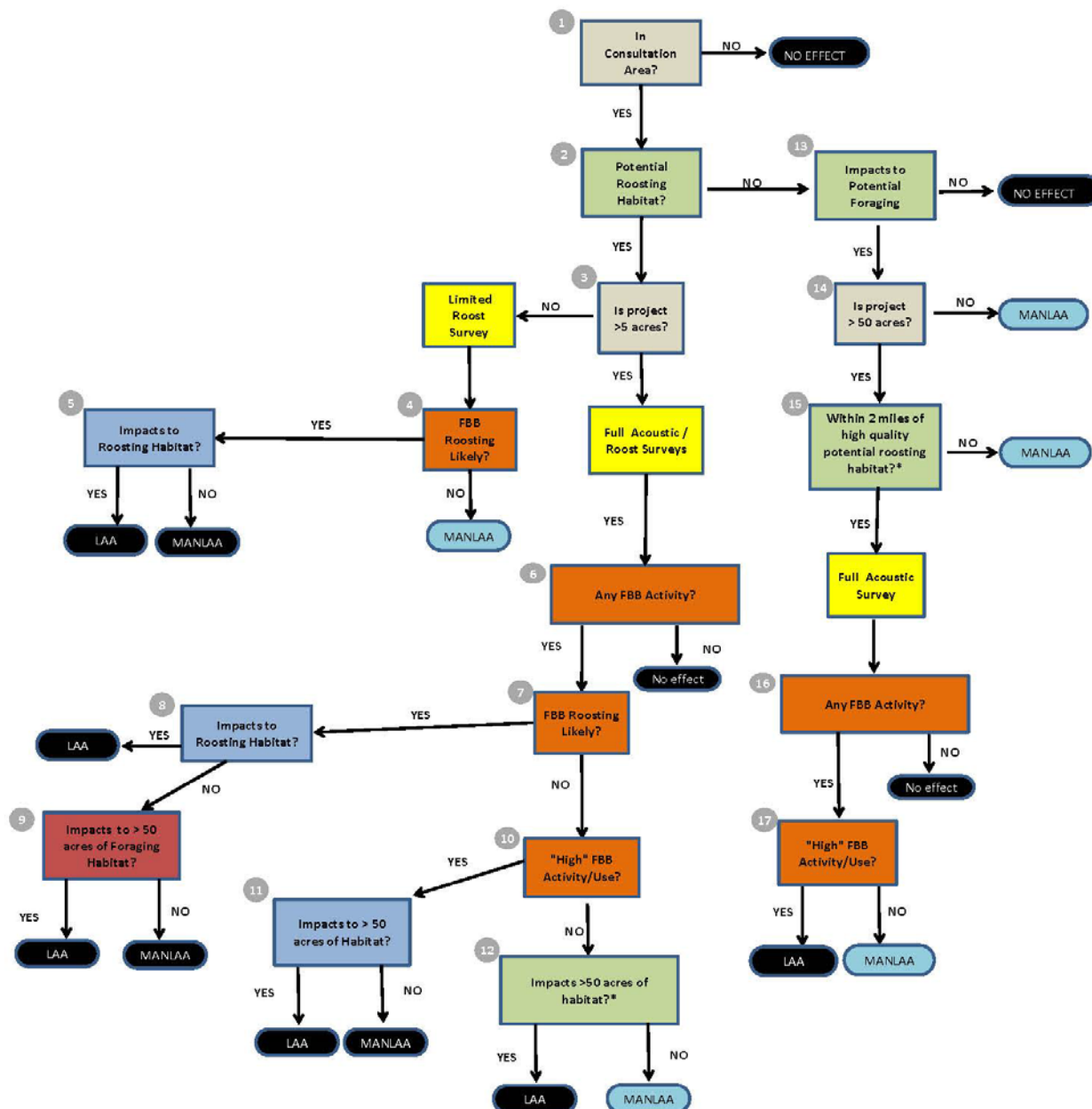


Figure 1. Florida bonneted bat Consultation Area.



* In Miami-Dade County, use any potential roosting areas (including urban) since high quality potential natural roosting habitats have been lost.

Figure 2. Florida bonneted bat consultation flowchart. “No effect” determinations do not need Service concurrence. “May affect, but is not likely to adversely affect” (MANLAA) determinations in black require consultation with the Service while MANLAAs in blue do not. “May affect, and is likely to adversely affect” (LAA) determinations require formal consultation with the Service. Consultation with the Service may identify project modifications that could change the LAA determinations in numbers 9, 11, 12, and 17 to MANLAA determinations.

Consultation Key

Please use the following key to evaluate potential effects to the FBB from the proposed project. Refer to the Glossary as needed.

- 1a. Proposed project or land use change is partially or wholly within the Consultation Area (Figure 1).....**Go to 2**
- 1b. Proposed project or land use change is wholly outside of the Consultation Area (Figure 1).....**No Effect**

- 2a. FBB roosting habitat exists within the project area.....**Go to 3**
- 2b. No FBB roosting habitat exists within the project area.....**Go to 13**

- 3a. Project size* \leq 5 acres (2 hectares).....**Conduct Limited Roost Survey (*Appendix B*) and Go to 4**
- 3b. Project size* $>$ 5 acres (2 hectares).....**Conduct Full Acoustic / Roost Surveys (*Appendix A*) and Go to 6**

- 4a. Results show FBB roosting is likely**Go to 5**
- 4b. Results do not show FBB roosting is likely..... **MANLAA if BMPs (*Appendix C*) used; no further consultation is necessary**

- 5a. Project will impact roosting habitat.....**LAA (Formal Consultation)**
- 5b. Project will not impact roosting habitat..... **MANLAA if BMPs (*Appendix C*) used; consultation with the Service required**

- 6a. Results show some FBB activity.....**Go to 7**
- 6b. Results show no FBB activity.....**No Effect**

- 7a. Results show FBB roosting is likely.....**Go to 8**
- 7b. Results do not show FBB roosting is likely.....**Go to 10**

- 8a. Project will not impact roosting habitat.....**Go to 9**
- 8b. Project will impact roosting habitat.....**LAA (Formal Consultation)**

- 9a. Project will impact* $>$ 50 acres (20 hectares) of foraging habitat.....**LAA (Consultation may conclude Formally or Informally)**
- 9b. Project will impact* \leq 50 acres (20 hectares) of foraging habitat..... **MANLAA if BMPs (*Appendix C*) used; consultation with the Service required**

- 10a. Results show high FBB activity/use.....**Go to 11**
- 10b. Results do not show high FBB activity/use.....**Go to 12**

- 11a. Project will impact* $>$ 50 acres (20 hectares) of habitat..... **LAA (Consultation may conclude Formally or Informally)**
- 11b. Project will impact* \leq 50 acres (20 hectares) of habitat..... **MANLAA if BMPs (*Appendix C*) used; consultation with the Service required**

- 12a. Project will impact* $>$ 50 acres (20 hectares) of habitat..... **LAA (Consultation may conclude Formally or Informally)**
- 12b. Project will impact* \leq 50 acres (20 hectares) of habitat..... **MANLAA if BMPs (*Appendix C*) used; no further consultation is necessary**

- 13a. FBB foraging habitat, but not roosting habitat, exists within the project area and foraging habitat will be impacted.....**Go to 14**
- 13b. FBB foraging habitat, but not roosting habitat, exists within the project area and foraging habitat will not be impacted **OR** no FBB foraging habitat exists within the project area.....**No Effect**
- 14a. Project size* > 50 acres (20 hectares).....**Go to 15**
- 14b. Project size* ≤ 50 acres (20 hectares)..... **MANLAA if BMPs (*Appendix C*) used; no further consultation necessary**
- 15a. Project is within 2 miles (3.2 kilometers) of high quality potential roosting areas^.....**Conduct Full Acoustic Survey (*Appendix A*)..... and Go to 16**
- 15b. Project is not within 2 miles (3.2 kilometers) of high quality potential roosting area^.....**MANLAA if BMPs (*Appendix C*) used; no further consultation is necessary**
- 16a. Results show some FBB activity.....**Go to 17**
- 16b. Results show no FBB activity.....**No Effect**
- 17a. Results show high FBB activity/use.....**LAA (Consultation may conclude Formally or Informally)**
- 17b. Results do not show high FBB activity/use..... **MANLAA if BMPs (*Appendix C*) used; no further consultation is necessary**

*Includes wetlands and uplands.

^Determining if high quality potential roosting areas are within 2 miles of a project is intended to be a desk-top exercise looking at most recent aerial imagery, not a field exercise.

GLOSSARY

Effect Determinations

BMPs – Best Management Practices. Recommendations for actions to conserve roosting and foraging habitat to be implemented before, during, and after proposed development, land use changes, and land management activities.

LAA - May Affect, and is Likely to Adversely Affect. The appropriate conclusion if any adverse effect to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not: discountable, insignificant, or beneficial (see definition of “is not likely to adversely affect”). In the event the overall effect of the proposed action is beneficial to the listed species, but also is likely to cause some adverse effects, then the proposed action is “likely to adversely affect” the listed species. If incidental take is anticipated to occur as a result of the proposed action, an “is likely to adversely affect” determination should be made. An “is likely to adversely affect” determination requires the initiation of formal section 7 consultation.

In some scenarios, applicants may be able to design projects that would not result in LAA. For example, if appropriate avoidance measures could be incorporated into the project’s design such that take is not be expected to occur as a result of the proposed project (i.e., not result in harassment, harm, injury, or death), then a MANLAA determination may be possible.

MANLAA - May Affect, but is Not Likely to Adversely Affect. The appropriate conclusion when effects on listed species are expected to be discountable, insignificant, or completely beneficial. Beneficial effects are contemporaneous positive effects without any adverse effects to the species. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur.

For the purposes of this consultation key, applicants will be expected to incorporate the appropriate BMPs to reach a MANLAA determination. The MANLAA determinations in the black ovals require Service concurrence while the MANLAA determinations in the blue ovals are given programmatic concurrence through the use of this key and no further consultation is required. The MANLAA determinations in the black ovals must be sent to the Service for concurrence so the Service is made aware of areas of high likelihood of FBB roosting or high FBB activity.

NO EFFECT - The appropriate conclusion when the action agency determines its proposed action will not affect listed species or designated critical habitat.

Habitat

FORAGING HABITAT - Sources of drinking water and prey and relatively open (i.e., uncluttered) areas to find and catch prey. This includes: open fresh water, permanent or

seasonal freshwater wetlands, wetland and upland forests, and wetland and upland shrub. In urban and residential areas, drinking water, prey base, and suitable foraging conditions (i.e., open habitat structure) can be found in relatively small patches of natural or semi-natural habitat.

HIGH QUALITY POTENTIAL ROOSTING AREAS - Sizable areas (>50 acres) [20 hectares] that contain large amounts of high-quality, natural roosting structure – (e.g., predominantly native, mature trees; especially pine flatwoods or other areas with a large number of cavity trees, tree hollows, or high woodpecker activity).

ROOSTING HABITAT - Includes forest and other areas with tall, mature trees or other areas with suitable roost structures. Forest is defined as all types including: pine flatwoods, scrubby flatwoods, pine rocklands, royal palm hammocks, mixed or hardwood hammocks, cypress, sand pine scrub, or other forest types. Roosting habitat is considered to contain some degree of foraging value. Artificial roosting structure includes buildings, bridges, and bat houses. More specifically, this includes habitat for roosting and rearing of offspring. Such habitat provides structural features for rest, digestion of food, social interaction, mating, rearing of young, protection from sunlight and adverse weather, and cover to reduce predation risks for adults and young. In general, roosting habitat is characterized by: tall mature live or dead trees, tree snags, and trees with cavities, hollows, deformities, decay, crevices, or loose bark. Structural characteristics are of primary importance. Bonneted bats have been found in habitat with the following structural features, but may also occur outside of these parameters: (a) trees greater than 20 feet (6 meters) in height, greater than 8 inches (20.3 centimeters) in diameter at breast height (DBH), with cavities greater than 15 feet (4.6 meters) high; (b) areas with a high incidence of large or mature live trees with various deformities (e.g., large cavities, hollows, broken tops, loose bark, and other evidence of decay) (e.g., pine flatwoods); (c) rock crevices (e.g., limestone in Miami-Dade County); and/or (d) artificial structures, mimicking natural roosting conditions (e.g., bat houses, bridges, telephone poles), situated in natural or semi-natural habitats. Structures similar to the above are expected to also provide roosting habitat, based upon the species' morphology and behavior. Florida bonneted bat roosts will be situated in areas with sufficient open space for these bats to fly (e.g., open or semi-open canopy, canopy gaps, and edges which provide relatively uncluttered conditions).

Surveys

FULL ACOUSTIC/ROOST SURVEY - This is a comprehensive survey that will involve robust acoustic surveys (i.e., surveys conducted sunset to sunrise, over multiple consecutive nights). Depending upon acoustic results and habitat type, targeted roost searches through thorough visual inspection using a tree-top camera system or observations at emergence or more acoustic surveys may be necessary. See also Appendix A.

LIMITED ROOST SURVEY - This is a reduced survey that may include the following methods: acoustics, observations at emergence, and visual inspection of trees with cavities or loose bark using tree-top cameras (or combination of these methods). Methods are fairly flexible and dependent upon composition and configuration of project site and willingness and ability of applicant and partners to conserve roosting structures on site. See also Appendix B.

Results

HIGH FBB ACTIVITY - High FBB activity or importance of an area is defined to be **ANY** of the following: (a) FBB feeding buzzes are detected; (b) FBB social calls are recorded; (c) large numbers of FBB calls are recorded throughout the night (e.g., > 20 calls in one night at a single acoustic station); and/or (d) large numbers of FBB calls are recorded over multiple nights (e.g., > 40 over two nights).

HIGH LIKELIHOOD OF ROOSTING - High likelihood of roosting in an area if **ANY** of the following occurs: (a) FBB calls are recorded within 1½ hours after sunset or 1½ hours before sunrise; (c) human observers see (or hear) FBBs flying from or to potential roosts just after sunset (e.g., within 1½ hour of) or just before sunrise; (e) human observers see and identify FBBs within a natural roost or artificial roost; and/or (f) other bat sign (e.g., guano, staining, etc.) is found that is identified to be FBB through additional follow-up. FBB social calls and large numbers of FBB calls recorded throughout the night or over multiple nights may also occur near roosts, but they are not diagnostic of a roost.

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Appendix A: Full Acoustic / Roost Survey Framework

Purpose: The purpose of this survey is to: (1) determine if Florida bonneted bats are likely to be actively roosting or using the site; (2) locate active roost(s) and avoid the loss of the structure, if possible; and, (3) avoid or minimize the losses of individuals. In some cases, changes in project designs or activities can help avoid and minimize losses. For example, project proponents may be able to retain suspected roosts or conserve foraging habitats. Changing the timing or nature of activities can also help reduce the losses of non-volant young or impacts to pregnant or lactating females.

General Description: This is a *comprehensive survey effort*, and robust acoustic surveys (i.e., surveys conducted sunset to sunrise, over multiple nights) are a fundamental component of the approach. Depending upon acoustic results and habitat type, it may also include: observations at emergence (e.g., emergence surveys), visual inspection of trees/snags (i.e., those with cavities, hollows, and loose bark) with tree-top cameras, or follow-up targeted acoustic surveys. Methods are dependent upon composition and configuration of project site and willingness and ability of applicant and partners to conserve roosting and foraging habitats on site.

General Survey Protocol:

[Note: The Service will provide more information in detailed survey protocols later this year. This will include specific information on: detector types, placement, orientation, verification of proper functioning, analysis, reporting requirements, etc.]

- Approach is intended for project sites > 5 acres (2 hectares).
- For sites containing roosting habitat, acoustic surveys should primarily focus on assessing roosting habitat within the project site that will be lost or modified (i.e., areas that will not be conserved). This will help avoid or minimize the loss of an active roost and individuals. Secondly, since part of the purpose is to determine if bonneted bats are using the site, acoustic devices should also be placed near open water and wetlands to maximize chances of detection and aid in assessing foraging habitat that may be lost.
- For sites that do not contain ANY roosting habitat, but do contain foraging habitat (see Figure 2 - Consultation Flowchart and Key, Step 2 [no], Step 13 [yes]), efforts should focus on assessing foraging habitat within the project site that will be lost or modified (i.e., areas that will not be conserved).
- Acoustic surveys should be performed by those who are trained and experienced in setting up, operating, retrieving, analyzing, and interpreting data. Surveyors should have completed one or more of the available bat acoustic courses/workshops, or be able to show similar on-the-job or academic experience (Service 2016).
- Acoustic devices should be set up to record from sunset to sunrise for multiple nights, under suitable weather conditions. If any of the following weather conditions exist at a survey site during acoustic sampling, note the time and duration of such conditions, and repeat the acoustic sampling effort for that night: (a) temperatures fall below 65°F (18.3°C) during the first 5 hours of survey period; (b) precipitation, including rain and/or fog, that exceeds 30 minutes or continues intermittently during the first 5 hours of the survey period; and (c) sustained wind speeds greater than 9 miles/hour (4 meters/second; 3 on Beaufort scale) for 30 minutes or more during the first 5 hours of the survey period

(Service 2016). At a minimum, nightly weather conditions for survey sites should be checked using the nearest NOAA National Weather Service station and summarized in the survey reports.

- The number of acoustic survey sites and nights needed for the assessment is dependent upon the overall acreage of suitable habitat proposed to be impacted by the action.
 - For non-linear projects, a minimum of 16 detector nights per 20 acres of suitable habitat expected to be impacted is recommended.
 - For linear projects (e.g., roadways, transmission lines), a minimum of five detector nights per 0.60 mi (0.97 km) is recommended. Detectors can be moved to multiple locations within each kilometer surveyed, but must remain in a single location throughout any given night.
- If results of acoustic surveys show high Florida bonneted bat activity/use or Florida bonneted bat roosting likely (e.g., high activity early in the evening) (see Glossary), follow-up methods such as emergence surveys, visual inspection of the roosting structures, or follow-up acoustic surveys are recommended to locate potential roosts. Using a combination of methods may be helpful.
- For bat emergence surveys, multiple observers should be stationed at potential roosts if weather conditions (as above) are suitable. Surveyors should be stationed before sunset so they are ready to look and listen for emerging Florida bonneted bats from sunset to 1½ hours after sunset.
- Visual inspection of trees with cavities and loose bark during the day may be helpful. Active RCW trees should not be visually inspected during the RCW breeding season (April 15 through June 15).
- Visual inspection alone is not recommended due to the potential for roosts to be too high for cameras to reach, too small for cameras to fit, or shaped in a way that contents are out of view (Braun de Torrez *et al.* 2016).
- If roosting is suspected on site, use tree-top cameras to search those trees/snags during the day that have potential roost structures (i.e., cavities or loose bark). If unsuccessful (e.g., cannot see entire contents within a given cavity, cannot reach cavity) OR no roosts are found with the tree-top camera within the focal area, we recommend emergence surveys.
- Provide report showing effort, methods, findings, and summary of acoustic data relating to Florida bonneted bats by date (e.g., # of calls, time of calls). **Raw acoustic data should be provided as “all raw data” and “all raw data with signatures below 20kHz”. Data can be submitted to the Service via flash drive, memory stick, or hard drive.**

Appendix B: Limited Roost Survey Framework

Purpose: The purpose of this survey is to: (1) determine if Florida bonneted bats are likely to be actively roosting within suitable structures on-site; (2) locate active roost(s) and avoid the loss of the structure, if possible; and, (3) avoid or minimize the losses of individuals. In some cases, changes in project designs or activities can help avoid and minimize losses. For example, applicants and partners may be able to retain the roost tree or structure. Changing the timing of activities can also help reduce the losses of non-volant young or impacts to pregnant or lactating females.

General Description: This is a *reduced survey effort* that may include the following methods: acoustic surveys, observations at emergence, visual inspection of trees/snags (i.e., those with cavities, hollows, and loose bark) with tree-top cameras, or a combination of these methods. Methods are fairly flexible and dependent upon composition and configuration of project site and willingness and ability of applicant and partners to conserve roosting habitat on site.

General Survey Protocol:

[Note: The Service will provide more information in detailed survey protocols later this year. This will include specific information on: detector types, placement, orientation, verification of proper functioning, analysis, reporting requirements, etc.]

- Approach is intended only for small project sites (i.e., sites ≤ 5 acres [2 hectares]).
- Efforts should focus on assessing roosting habitat within the project site that will be lost or modified (i.e., areas that will not be conserved).
- Acoustic surveys are necessary in predominantly forested areas and highly recommended in predominantly non-forested sites.
 - For predominantly forested sites – It would be difficult to assess roosting solely with emergence surveys. Visual inspection of cavity trees alone is also not recommended due to the potential for roosts to be too high for cameras to reach, too small for cameras to fit, or shaped in a way that contents are out of view (Braun de Torrez *et al.* 2016). A combination of methods may be used. For example, if devices cannot be left in place for the entire night for multiple nights as above, then a combination of short acoustic surveys (from sunset and extending for 2 hours) AND stationed observers for emergence surveys OR visual inspection of trees/snags with tree-top cameras may be acceptable.
 - For predominantly non-forested sites – Deploy detectors and station observers near potential roosting structures. For bat emergence surveys, multiple observers should be stationed at potential roosts one half hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats.
- Acoustic surveys should be performed by those who are trained and experienced in setting up, operating, retrieving, analyzing, and interpreting data. Surveyors should have completed one or more of the available bat acoustic courses/workshops, or be able to show similar on-the-job or academic experience.
- Acoustic devices should be set up to record from sunset to sunrise for multiple nights, under suitable weather conditions. Acoustic devices should be set up to record from

sunset to sunrise for multiple nights, under suitable weather conditions. If any of the following weather conditions exist at a survey site during acoustic sampling, note the time and duration of such conditions, and repeat the acoustic sampling effort for that night: (a) temperatures fall below 65°F (18.3°C) during the first 5 hours of survey period; (b) precipitation, including rain and/or fog, that exceeds 30 minutes or continues intermittently during the first 5 hours of the survey period; and (c) sustained wind speeds greater than 9 miles/hour (4 meters/second; 3 on Beaufort scale) for 30 minutes or more during the first 5 hours of the survey period (Service 2016). At a minimum, nightly weather conditions for survey sites should be checked using the nearest NOAA National Weather Service station and summarized in the survey reports.

- Acoustic surveys should be conducted over a minimum of four nights.
- If roosting is suspected on site, use tree-top cameras to search those trees/snags during the day that have potential roost structures (i.e., cavities or loose bark). If unsuccessful (e.g., cannot see entire contents within a given cavity, cannot reach cavity) OR no roosts are found with the tree-top camera within the focal area, we recommend emergence surveys.
- Provide report showing effort, methods, findings, and summary of acoustic data relating to Florida bonneted bats by date (e.g., # of calls, time of calls). **Raw acoustic data should be provided as “all raw data” and “all raw data with signatures below 20kHz”. Data can be submitted to the Service via flash drive, memory stick, or hard drive.**

Appendix C: Best Management Practices

Ongoing research and monitoring will continue to increase the understanding of the Florida bonneted bat and its habitat needs and will continue to inform habitat and species management recommendations. These Best Management Practices (BMPs) incorporate what is known about the species and also include recommendations that are beneficial to all bat species in Florida. These BMPs are intended to provide recommendations for improving conditions for use by Florida bonneted bats, and to help conserve Florida bonneted bats that may be foraging or roosting in an area.

The BMPs required to reach a “may affect, but is not likely to adversely affect (MANLAA)” determination vary depending on the couplet from the Consultation Key used to reach that particular MANLAA. The requirements for each couplet are provided below followed by the list of BMPs. If the applicant is unable or does not want to do the required BMPs, then an individual consultation with the Service is required.

Couplet Number for MANLAA from Consultation Key	Required BMPs
4b	BMP number 1, and any 3 BMPs out of BMPs 3 through 11
5b	BMP number 2, and any 3 BMPs out of BMPs 3 through 11
9b	BMPs number 2 and 3, and any 3 BMPs out of BMPs 4 through 11
11b	BMPs number 1 and 3, and any 3 BMPs out of BMPs 4 through 11
12b	BMP number 1, and any 3 BMPs out of BMPs 3 through 11
14b	Any 2 BMPs out of BMPs 3 through 11
15b	Any 3 BMPs out of BMPs 3 through 11
17b	BMP number 3, and any 3 BMPs out of BMPs 4 through 11

BMPs for development, construction, and other general activities:

1. If potential roost trees need to be removed, check cavities for bats prior to removal of trees or snags. If evidence of use by any bat species is observed, discontinue removal efforts in that area and coordinate with the Service on how to proceed.
2. When using heavy equipment, establish a 250 foot (61 m) buffer around known roosts to limit disturbance to roosting bats.
3. For every 5 acres of impact, retain 0.25 acre of native vegetation.
4. Conserve open freshwater and wetland habitats to promote foraging opportunities and avoid impacting water quality.
5. Conserve and/or enhance riparian habitat. A 50-ft (15.2 m) buffer is recommended around water bodies and stream edges.
6. Avoid or limit widespread application of insecticides in areas where Florida bonneted bats are known to forage or roost.
7. Retain natural vegetation to promote insect diversity, availability, and abundance.
8. Retain mature trees and snags that could provide roosting habitat. These may include live trees of various sizes and dead or dying trees with cavities, hollows, crevices, and loose bark. See “Roosting Habitat” in “Background” above.

9. Protect known and historical Florida bonneted bat roost trees, even if not currently occupied, by establishing a buffer around the roost to ensure that roost sites remain suitable for use in the future. If possible, a 250 foot (61 m) buffer is preferred.
10. Avoid and minimize the use of artificial lighting, retain natural light conditions, and promote the use of environmentally friendly lighting practices to minimize impacts to wildlife. Limit permanent night-time lighting.
11. Incorporate engineering designs that discourage bats from using buildings or structures. If Florida bonneted bats take residence within a structure, contact the Service and FWC prior to attempting removal or when conducting maintenance activities on the structure.

Ecological Land Management

Ecological land management activities to restore and maintain native natural communities are beneficial to bats. These activities include prescribed fire, mechanical treatments to reduce vegetation densities, timber thinning to promote forest health, trail maintenance, and the treatment of exotic vegetation. The following BMPs provide recommendations for conserving Florida bonneted bat roosting and foraging habitat during ecological land management activities.

Ecological Land Management BMPs:

- Protect potential roosting habitat during ecological land management activities, if feasible. Avoid removing trees or snags with cavities.
- If potential roost trees need to be removed, check cavities for bats prior to removal of trees or snags. If evidence of use by any bat species is observed, discontinue removal efforts in that area and coordinate with the Service on how to proceed.
- Rake and/or clear vegetation around the base of known or suspected roost trees to remove fuel prior to prescribed burning. Suspected roost sites may be located based on one or more of the following: bonneted bats are observed emerging from a tree cavity, bat vocalizations (“chattering”) have been heard from a tree/snag cavity, large bats (>5 inches in length) have been seen flying or bats have been heard vocalizing in the vicinity, the tree/snag exudes an ammonia-like smell, or bat guano has been seen around the base of the tree/snag. If possible, use ignition techniques such as spot fires or backing fire to limit the intensity of fire around the base of the tree or snag containing the roost. The purpose of this action is to prevent the tree or snag from catching fire with roosting bats inside and also to attempt to limit the exposure of the roosting bats to heat and smoke. A 200-ft (61 m) buffer is recommended.
- When creating firebreaks or conducting fire-related mechanical treatment, mark and avoid any known or suspected bat roosts.
- When using heavy equipment, establish a buffer of 250 feet (61 m) around known roosts to limit disturbance to roosting bats.
- Establish forest management efforts to maintain tree species and size class diversity to ensure long-term supply of potential roost sites.
- For every 5 acres (2 hectares) of timber that is harvested, retain a clump of trees 0.25 acre (0.1 hectare) in size containing potential roost trees, snags, conifers, oaks and hickories, and less common native species. Additionally, large snags in open canopy should be preserved.

SECTION TABLE OF CONTENTS

DIVISION 26 - ELECTRICAL

SECTION 26 29 10

ELECTRIC MOTOR ACTUATOR FOR LIFT GATES

PART 1 GENERAL

- 1.1 SCOPE
- 1.2 REFERENCES
- 1.3 CORROSION PREVENTION AND FINISH PAINTING
 - 1.3.1 Fastenings and Fittings
 - 1.3.2 Corrosion-Resisting Materials
 - 1.3.3 Corrosion-Resisting Treatments
 - 1.3.4 Frames, Enclosing Cases, and Housings
 - 1.3.5 Finish Painting
- 1.4 SUBMITTALS
- 1.5 QUALITY ASSURANCE
- 1.6 DELIVERY, STORAGE, AND HANDLING
 - 1.6.1 Shipment Preparation
 - 1.6.2 Marking
- 1.7 SPARE PARTS AND EQUIPMENT
- 1.8 WARRANTY

PART 2 PRODUCTS

- 2.1 BASIC ACTUATOR
- 2.2 ENCLOSURE
- 2.3 CONTROL SYSTEM
- 2.4 MOTOR
- 2.5 POWER GEARING
- 2.6 LUBRICATION
- 2.7 SELF-LOCKING FEATURE
- 2.8 LOST MOTION DEVICE
- 2.9 MANUAL OPERATION
- 2.10 STEM NUT
- 2.11 POSITION LIMIT SWITCHES
- 2.12 TORQUE SWITCH
- 2.13 SWITCH CONTACT RATINGS
- 2.14 STEM LUBRICATION
- 2.15 BOTTOM STEM COVER
- 2.16 TOP STEM COVER
- 2.17 POSITION INDICATION
- 2.18 TESTS
 - 2.18.1 Motor Tests
 - 2.18.1.1 Routine Motor Tests
 - 2.18.2 Controller Tests
 - 2.18.2.1 Routine Controller Tests
 - 2.18.3 Limit-Switch Tests
 - 2.18.4 Wiring Tests
 - 2.18.5 Actuator Functional Test

Herbert Hoover Dike Rehabilitation, Structure Replacements
S-288 (HP-1) Reconstruction - Glades County, Florida

PART 3 EXECUTION

3.1 INSTALLATION

-- End of Section Table of Contents --

SECTION 26 29 10

ELECTRIC MOTOR ACTUATOR FOR LIFT GATES

PART 1 GENERAL

1.1 SCOPE

a. This Section includes electric motor actuators and accessories for vertical lift slide gates.

b. Actuators shall be supplied for the slide gates. shown on the drawings. See Section 35 20 16 VERTICAL LIFT SLIDE GATES for slide gate specifications.

c. Related Work Specified Elsewhere:

(1) Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM.

(2) Section 35 20 16 VERTICAL LIFT SLIDE GATES.

1.2 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.

ASTM INTERNATIONAL (ASTM)

ASTM A123/A123M (2017) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

ASTM A153/A153M (2016) Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

AMERICAN WATER WORKS ASSOCIATION (AWWA)

AWWA C513 (2005) Open Channel, Fabricated-Metal Slide Gates and Open Channel, Fabricated-Metal Weir Gates

AWWA C542 (2009) Electric Motor Actuators for Valves and Slide Gates

AWWA C560 (2000; Er 2002) Cast Iron Slide Gates

AWWA C561 (2004) Fabricated Stainless Steel Slide Gates

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE Std 112 (2004) Standard Test Procedure for Polyphase Induction Motors and Generators

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA ICS 2 (2000; R 2005; Errata 2008) Industrial Control and Systems Controllers, Contactors, and Overload Relays Rated 600 V

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (2017; ERTA 1-2 2017; TIA 17-1; TIA 17-2; TIA 17-3; TIA 17-4; TIA 17-5; TIA 17-6; TIA 17-7; TIA 17-8; TIA 17-9; TIA 17-10; TIA 17-11; TIA 17-12; TIA 17-13; TIA 17-14) National Electrical Code

NFPA 70E (2018; TIA 18-1; TIA 81-2) Standard for Electrical Safety in the Workplace

1.3 CORROSION PREVENTION AND FINISH PAINTING

All equipment furnished under these specifications will be subjected to severe moisture conditions, shall operate over a temperature range of 20 degrees F to 150 degrees F, and shall be designed to render it resistant to corrosion. The general requirements to be followed are specified below; any additional special treatment or requirement considered necessary for any individual item is specified under the respective item.

1.3.1 Fastenings and Fittings

Where practicable, all screws, bolts, nuts, pins, studs, springs, washers, and such other miscellaneous fastenings and fittings shall be of an approved corrosion-resisting material or shall be treated in an approved manner to render them resistant to corrosion.

1.3.2 Corrosion-Resisting Materials

Corrosion-resisting steel, copper, brass, bronze, copper-nickel, and nickel-copper alloys are acceptable corrosion-resisting materials. However, contact between dissimilar metals should be avoided as much as practicable, except where one of the dissimilar metals is steel or in the case of wiring and connections.

1.3.3 Corrosion-Resisting Treatments

Hot-dip galvanizing shall be in accordance with ASTM A123/A123M or ASTM A153/A153M as applicable. Other corrosion-resisting treatments may be used if approved by the Contracting Officer.

1.3.4 Frames, Enclosing Cases, and Housings

All surfaces of the enclosing cases or housings of controllers, limit switches, control stations, and other similar equipment, if other than plastic or stainless steel construction, shall be cleaned of rust, grease, mill scale, and dirt and then treated with an approved iron and zinc phosphate solution followed by rinsing with a chromic acid solution, bonderizing, or equivalent process. Immediately after rinsing and drying, the inside and outside surfaces shall be given one coat of a zinc molybdate primer and cured as required. For items of cast construction, the iron and zinc phosphate treatment may be omitted.

1.3.5 Finish Painting

A minimum of two coats of paint shall be applied to all equipment in accordance with the manufacturer's standard process for the conditions specified.

1.4 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

Controller, Terminal Leads, Terminal Blocks

Methods of identifying conductors, terminal leads, and terminal blocks.

Motor Nameplates, Equipment and Door Nameplates

Controller; G|DO

Copies of a description of the operation scheme, if other than herein specified or shown on the drawings, a dimensioned outline drawings showing specific relationships and clearances between equipment and their component parts.

Limit Switch; G|DO

Copies of dimensioned outline drawing of the limit switch and "Interrupter" drive. Drawings shall show specific relationships and clearances between equipment and their component parts.

Electric Motor Actuator; G|DO

Control Stations; G|DO

Enclosing Case; G|DO

Copies of dimensioned outline drawings showing specific relationships and clearances between equipment and their component parts.

SD-03 Product Data

Electric Motor Actuator; G|DO

Copies of catalog information/data providing technical information on the actuator assembly and its components, including all components (shaft, gearbox, etc.). Provide a parts breakdown of the actuator assembly with a description of all parts/components. Provide calculations that support the actuator selection showing, at a minimum, design heads, gate and stem weight, actuator loading, horsepower and torque requirements, stem characteristics, gate travel distance/stroke, and gate travel speed.

Actuator Motor; G|DO

Copies of motor characteristics, curves or tabulated data (tested or calculated), indicating the speed, power factor, efficiency, current and kilowatt input, all plotted or tabulated against torque or percent of rated motor load.

Copies of calculations to determine the required horsepower rating of each motor.

Copies of detailed descriptive specifications of the motor, with necessary cuts, photographs, and drawings to clearly indicate the construction of the machine. Special emphasis shall be given to describing and illustrating features of "Insulated Windings," "Winding Heaters," "Bearings and Lubrication," and "Terminal Leads."

Limit Switch; G|DO

Copies of all limit switch computations used to determine the selection of gear ratios and calibration for gate travel.

Copies of complete descriptive data covering the limit switch with necessary cuts, photographs, and drawings to indicate clearly the construction, materials used in the parts, rating, accuracy of tripping and reset, method of adjustment, and safeguards.

Overload Relays; G|DO

Copies of curves showing the overload relay tripping time versus current characteristics of the overload relays for the controller.

Controller

Copies of detailed descriptive data covering all component parts of the controller.

Control Stations; G|DO

Copies of detailed descriptive data covering the control station(s).

Wiring; G|DO

Copies of data sufficient to demonstrate that the proposed wire and cable conform to these specifications.

Spare Parts List

Copies of the spare parts list.

Protective Coating List

Copies of the protective coating system.

SD-09 Manufacturer's Field Reports

Tests

Certified copies of the reports of all complete and routine tests, including complete test data.

Certified copies of the results of a complete test for duplicate equipment will be accepted in lieu of the requirement of the complete test specified. Reports shall include analysis and interpretation of test results and shall be properly identified with the test systems and materials. The contractor shall provide test reports for "complete tests" on the motor, and controller. Performance curves indicating the results of the motor tests shall be furnished as follows:

- a. Excitation Tests. Volts or percent of rated voltage as abscissa vs. amperes and watts as ordinates.
- b. Impedance Tests. Volts or percent of rated voltage as abscissa vs. amperes and watts as ordinates.
- c. Performance Test. Torque or percent of rated horsepower output as abscissa vs. efficiency, power factor, amperes watts, and rpm or percent slip as ordinates.
- d. Speed-Torque Test. Torque in foot-pounds as abscissa vs. speed in rpm or percent of synchronous speed as ordinates.
- e. Temperature Test. Time in minutes as abscissa vs. temperature rise in degrees C as ordinate.
- f. Insulation Resistance Test. Test result values shall be plotted on semilogarithmic graphs, the insulation resistance values as logarithmic ordinates, and the temperature values as uniform abscissa.

Routine test reports shall include analysis and interpretation of test results and shall be properly identified with the test systems and materials. No substitute will be accepted for the routine test. The contractor shall provide test reports for "routine tests" on the motor, controller, limit switch, (interrupter,) and wiring.

SD-10 Operation and Maintenance Data

Operation and Maintenance Data; G|DO

Submit operation and maintenance data in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA, Data Package 3. Submit O&M Manuals for the entire actuator and all of its parts, components and accessories.

1.5 QUALITY ASSURANCE

Manufacturers shall be experienced in the design and manufacture of equipment and accessories for a minimum period of 10 years.

1.6 DELIVERY, STORAGE, AND HANDLING

1.6.1 Shipment Preparation

Prepare equipment and materials for shipment in a manner to facilitate

unloading and handling, and to protect against damage or unnecessary exposure in transit and storage. Include the following:

- a. Crates or other suitable packaging materials.
- b. Covers and other means to prevent corrosion, moisture damage, mechanical injury and accumulation of dirt in motors, electrical equipment and machine.
- c. Suitable rust-preventive compound on exposed machined surfaces and unpainted iron and steel
- d. Grease packing or oil lubrication in all bearings and similar items.

1.6.2 Marking

- a. Tag or mark each item of equipment or material as identified in the delivery schedule or on Submittals and include complete packing lists and bills of material with each shipment. Each piece of every item need not be marked separately provided that all pieces of each item are packed or bundled together and the packages or bundles are properly tagged and marked.
- b. Mark partial deliveries of component parts of equipment to identify the equipment, to permit easy accumulation of parts, and to facilitate assembly.

1.7 SPARE PARTS AND EQUIPMENT

Submit spare parts data for each different (size, type, model, etc.) actuator supplied under this contract, after approval of detail drawings. Include in the data a complete list of parts and supplies, with current unit prices and source of supply, recommended spare parts, and a list of the parts recommended by the manufacturer to be replaced on a routine basis. Provide a complete spare electric motor actuator for each different (size, type, model, etc.) electric motor actuator supplied under this contract.

1.8 WARRANTY

The installed electric motor actuators shall be guaranteed to provide trouble free service for a period of not less than two years. During the warranty period, and by the direction of the Customer (Government), any defects in material, workmanship and/or design shall be corrected within 36 hours of notification at no additional cost to the Customer.

PART 2 PRODUCTS

2.1 BASIC ACTUATOR

There shall be one electric motor actuator installed per gate. See structural drawings. The electric actuator shall include the motor, reversible motor starter, actuator unit gearing, limit switch gearing, position limit switches, torque switches, position potentiometer, stem nut, declutch lever, and handwheel as a self-contained unit. The reversible motor starter shall be furnished by the actuator supplier or the gate supplier. The slide gate and actuator combination must be self locking. The actuator shall be a proper selection and a compatible match

for the gate assembly. Design water levels shall be as shown on the drawings. See Section 35 20 16 VERTICAL LIFT SLIDE GATES for sizing information. The actuator shall conform to AWWA C542. The actuator shall operate the gate at a speed of 6 inches per minute (plus or minus 10 percent). The actuator shall, also, have a second input shaft extension with a 1 inch hex head for emergency manual operation.

2.2 ENCLOSURE

- a. The actuator and motor enclosure shall be NEMA 4 (watertight) for outdoor service.
- b. The actuator shall be furnished with power and control terminal strips, limit switches, torque switches, all housed in a control compartment meeting NEMA 4 (weatherproof). The enclosure shall have a bonded o-ring seal and a hinged cover. Cover bolting shall be captive stainless steel hex head screws.

2.3 CONTROL SYSTEM

The gate shall be controllable from the structure's local control station, located in a hardened vandal proof lockable box, on the structure walkway. No controls shall be located in the gate actuator.

2.4 MOTOR

The actuator shall have an electric motor sized for the torque and loading requirements. The motor horsepower (HP) shall be calculated and rated no more than the HP as specified on the drawings. The motor shall be totally enclosed construction and specifically designed for gate actuator service. The electric motor shall have a minimum service factor of 1.15 and be continuous duty. The actuator motor shall be in compliance with NFPA 70 (NEC), Article 430. Motor insulation shall be a minimum NEMA Class F, with a maximum continuous temperature rating of 190 degrees F (rise plus ambient) for the duty cycle specified. The motor shall be of sufficient size to open or close the gate at the maximum stated torque and the specified speed of 6 inches per minute (plus or minus 10 percent). The motor shall be capable of operating at plus or minus 10 percent of specified voltage. The motor duty rating shall be 15 minutes for single phase motors, minimum, without exceeding its temperature rating. Motor bearings shall be of the anti-friction type, and permanently lubricated. The motor shall be an independent sub-assembly, to allow for motor or gear changes dictated by system operation requirements. The motor shall be equipped with 120 volt AC heaters.

2.5 POWER GEARING

The actuator shall be a multiple reduction unit with power gearing consisting of spur, helical, or bevel gears, and worm gearing. The spur, helical, or bevel gearing and worm shall be of hardened alloy steel, and the worm gear shall be alloy bronze. All gearing shall be accurately cut. Non-metallic, aluminum, or cast gearing shall not be allowed. Anti-friction bearings shall be used throughout.

2.6 LUBRICATION

All rotating power train components shall be immersed in grease with provisions for inspection and relubrication without disassembly. Lubricants shall be suitable for ambient conditions of minus 20 degrees F

to 150 degrees F. Adequate seals shall be provided on all shafting.

2.7 SELF-LOCKING FEATURE

Actuator gearing and/or stem threading shall be self-locking.

2.8 LOST MOTION DEVICE

A hammerblow feature is required and the mechanical advantage may either be distributed through the drive sleeve components or via the motor/worm connection. If via the motor/worm connection, then the actuator shall permit a "GATE JAMMED ENTRY" to occur at least one time should the electronics detect a "jammed gate".

2.9 MANUAL OPERATION

An aluminum hand wheel shall be provided for manual operation with an arrow to indicate "open" rotation. The hand wheel shall not rotate during motor operation. An inoperative motor shall not prevent manual operation. When in the manual operating mode, the actuator will remain in this mode until the motor is energized, at which time the actuator will automatically return to electric operation. Movement from motor operation to hand wheel operation shall be accomplished by a positive padlockable declutch levers which mechanically disengages the motor and related gearing. It shall be impossible for simultaneous manual and motor operation to occur. Friction type declutch mechanism is not acceptable.

2.10 STEM NUT

The gate actuator shall have a removable stem nut or drive bushing of high tensile bronze or other material compatible with the valve stem material.

2.11 POSITION LIMIT SWITCHES

Position limit switches and the associated gearing shall be integral part of the gate actuator. Limit switch gearing shall be of the intermittent type, made of bronze or stainless steel, grease lubricated, and totally enclosed to prevent dirt and foreign matter from entering the gear train. Switches shall be adjustable, allowing for trip points from fully open to fully closed positions of gate travel. They shall not be subject to breakage or slippage due to over-travel. Limit switch contacts shall be heavy-duty, silver-plated with wiping action. The actuators shall have 16 contacts, 4 contacts/4 rotor type, all of the same basic design. Contacts shall be convertible from N/O, to N/C or reverse. Switch design shall permit visual verification of switch position without disassembly.

2.12 TORQUE SWITCH

The gate actuator shall be equipped with a switch, that will interrupt the control circuit in both the opening and closing directions when gate torque overload occurs or when the gate requires torque seating in the closed or open position. In addition, spare normally open contacts that operate with an over torque condition in the open direction or in the close direction shall be provided for remote signaling by others. Contacts shall be silver-plated. The torque switch shall have graduated dials for both open and close directions of travel and each shall be independently adjustable, with a positive means to limit the adjustability so as not to exceed the actuator output torque capability. Switch design

shall permit visible verification of switch position without disassembly.

2.13 SWITCH CONTACT RATINGS

The position limit switch and torque switch shall be rated 600 volts per NEMA ICS 2-125, heavy-duty.

2.14 STEM LUBRICATION

Lubrication of the stem shall be by grease. Grease shall be stored/packed in a grease reservoir at the electric motor actuator for the stem. The packed grease shall allow for constant grease tracking onto the stem. The grease reservoir shall incorporate a grease fitting to allow for repacking of the grease reservoir. Grease shall be as recommended by the equipment manufacturers.

2.15 BOTTOM STEM COVER

Provide a flexible protective cover, properly sized, for the stem section between the top of the gate and the bottom of the operator pedestal. Cover material shall be rated for outdoor use including UV protection. Use stainless steel mounting hardware. Provide a standard sewn circular screw cover, as manufactured by Gortite of A and A Manufacturing Company, New Berlin, Wisconsin, or an approved equal.

2.16 TOP STEM COVER

~~Provide a rigid protective cover for the stem section above the operator. The cover shall be made of clear butyrate plastic that will not discolor or become opaque for at least five years after installation. The cover shall be of sufficient diameter and length to permit full travel of the threaded stem without obstruction. The top of the stem cover shall be closed. The bottom end of the stem cover shall be vented and drained to avoid condensation, and mounted in a housing or adapter plate for easy field mounting installation. Provide graduation marks on the cover for gate position indication.~~

Provide a rigid protective cover for the stem section above the operator. The cover shall be made of clear butyrate plastic that will not discolor or become opaque for at least five years after installation. The cover shall be of sufficient diameter and length to permit full travel of the threaded stem without obstruction. The cover shall be fastened to the housing or adapter plate for easy installation and removal. The cover shall be vented through four holes, designed to minimize condensation and prevent debris from entering the stem cover (e.g. fitted with downward facing fitting). An insect screen shall be installed over the openings. The holes shall be located near the top and bottom of the stem cover. The top of the stem cover shall be closed/capped. Provide graduation marks on the cover for gate position indication. All plastic components shall be UV resistant.

Furnish a stem cover bracing system. The bracing system shall secure the stem cover and prevent it from being dislodged during weather events (e.g. during strong winds). The bracing system shall be easily removable and shall not obstruct or prevent operation and maintenance of the actuator, stem, or gate. The design shall be coordinated with the gate/actuator system suppliers. The bracing system shall be designed by the contractor and shall be in accordance with wind load provisions of the Florida Building Code.

2.17 POSITION INDICATION

The electric motor actuator shall be provided with a dial window indicator. The indicator shall be located on the limit switch compartment cover and labeled 0 to 100 percent open, and graduated in 10 percent increments, as a minimum. Also, provide a 1000 ohm potentiometer for remote position indication. The potentiometer shall move in step with valve position at all times, whether operation is electrical or manual. The potentiometer shall operate at all times, including when the motor is not energized.

2.18 TESTS

Each item of equipment furnished, one of each rating and type and selected at random by the Contracting Officer, shall be given a complete test. The remaining items of equipment shall be given a routine test. All complete tests required herein shall be witnessed by the Contracting Officer, unless waived in writing, and no equipment shall be shipped until it has been approved for shipment by the Contracting Officer. The Contractor shall notify the Contracting Officer sufficiently in advance of the date of the tests, so that arrangements can be made for the Contracting Officer to be present at the tests. The test equipment and the test methods used shall conform to the applicable requirements of ANSI, IEEE, and NEMA standards and shall be subject to the approval of the Contracting Officer. Certified copies of "Complete Tests" on duplicate equipment may be accepted with the approval of the Contracting Officer. No substitute will be accepted for the routine test. The cost of performing all tests shall be borne by the Contractor and shall be included in the price bid. Operational tests shall be made on equipment after it is installed.

2.18.1 Motor Tests

All tests shall be performed in accordance with the requirements of IEEE Std 112 for single-phase induction motors.

2.18.1.1 Routine Motor Tests

The routine tests shall include the following:

- a. Excitation test: (One point - no load, volts, amperes, and watts.)
- b. Impedance test: (One point - half-voltage amperes and watts.)
- c. General operation.
- d. Insulation resistance - temperature test (one point).
- e. Resistance measurements.
- f. Dielectric.
- g. Motor winding heater test.
 - (1) Successful operation.
 - (2) Dielectric.

2.18.2 Controller Tests

2.18.2.1 Routine Controller Tests

The routine tests shall include the following:

- a. Adjustment, fit, and material.
- b. Successful operation.
- c. Resistance.
- d. Dielectric.
- e. Insulation Resistance.
- f. Enclosure space heater test.
 - (1) Successful operation.
 - (2) Dielectric.

2.18.3 Limit-Switch Tests

Each drive shall be tested in the manufacturers shop by suitable means, simulating service conditions, to ascertain that it will transmit the correct information for the control sequence specified. In addition, the routine tests shall include the following:

- a. Adjustment, fit, and material.
- b. Accuracy of trip and reset.
- c. Successful operation.
- d. Dielectric.
- e. Insulation resistance.

2.18.4 Wiring Tests

All wiring shall be given a dielectric test following installation by applying, for no more than five (5) seconds, a voltage test of 1,000 volts to each circuit and ground and between each conductor and all other conductors in the same conduit.

2.18.5 Actuator Functional Test

After the electric motor actuator is installed, it shall be operated to raise and lower the gate in a proper and acceptable manner in the presence of the Contracting Officer. The gate shall be operated through two cycles per [AWWA C542](#). The success of this test is subject to approval by the Contracting Officer.

PART 3 EXECUTION

3.1 INSTALLATION

- a. Comply with provisions of [AWWA C513](#), [AWWA C542](#), [AWWA C560](#),

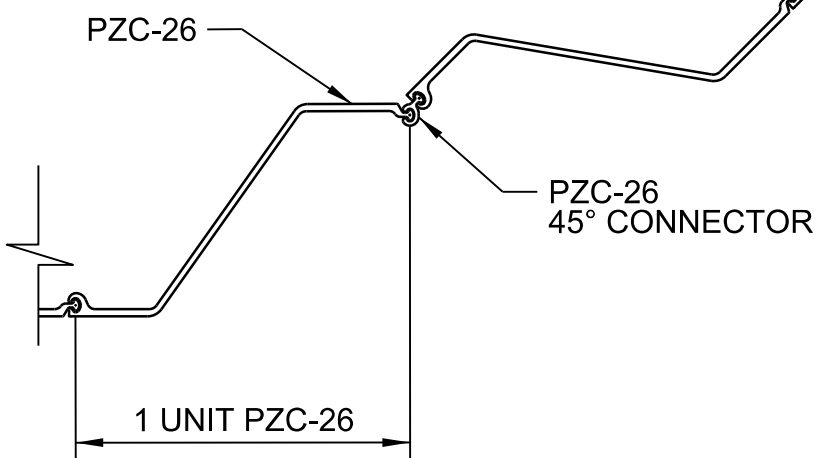
AWWA C561, NFPA 70, and NFPA 70E, where applicable, and as specified.

b. Provide manufacturer's field services if required during and after installation.

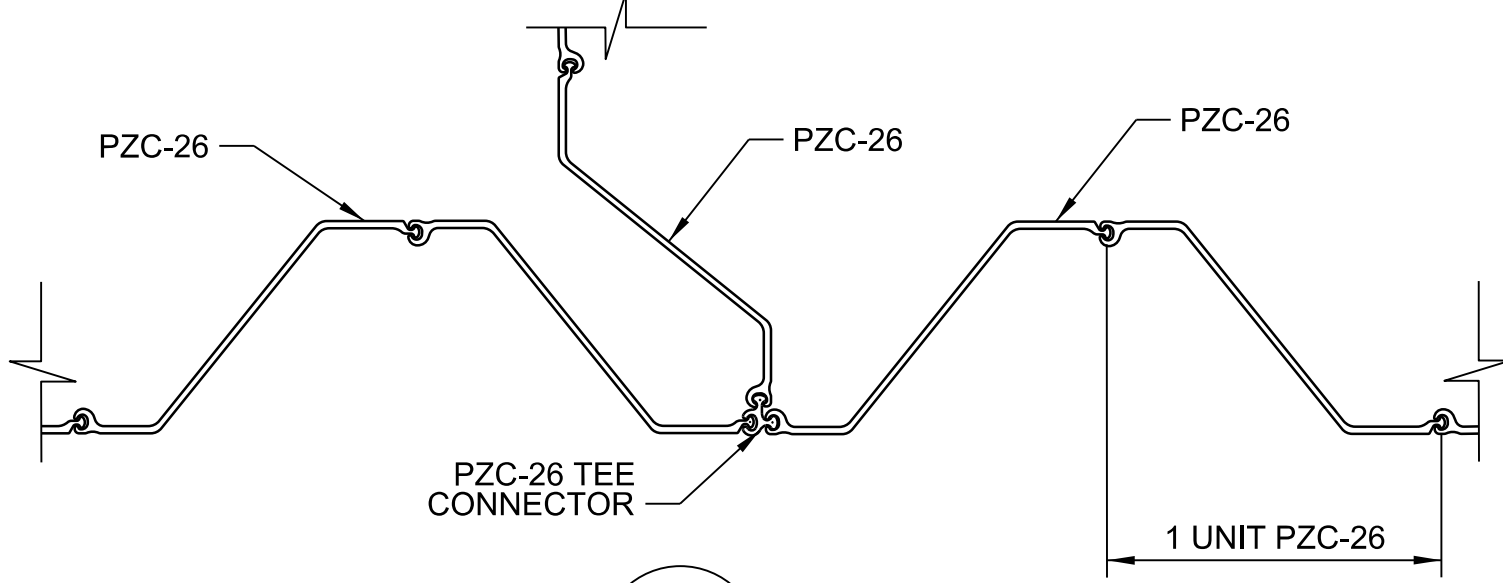
c. Perform equipment tests during and after start-up to determine if equipment is performing as specified.

d. Lubricate all bearings and gears before placing gate in operation.

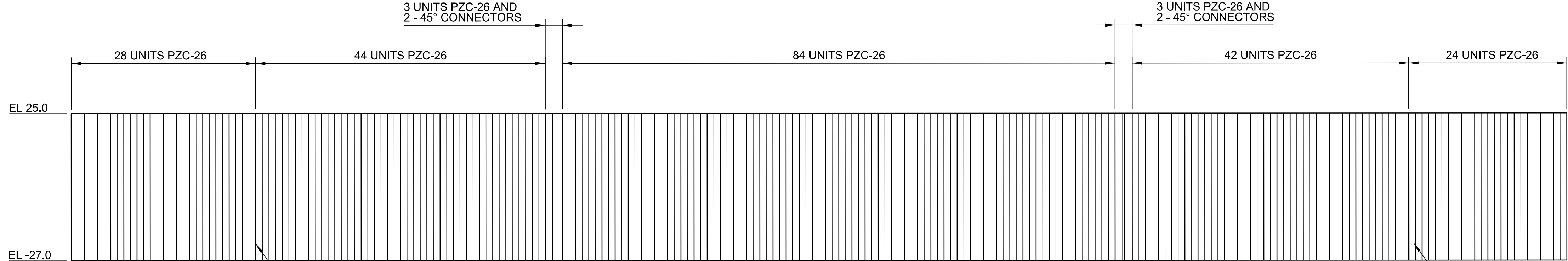
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3
S-63 **DETAIL**
SCALE: A



2 **DETAIL**
S-63 SCALE: A



2
S-63

2
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S-288 (HP-1) RECONSTRUCTION
STRUCTURAL
STEEL COFFERDAM PLAN, ELEVATION AND DETAILS

5-63