



# REPAIR STORM DAMAGED HANGARS



## WAUCHULA MUNICIPAL AIRPORT

WAUCHULA, FLORIDA

# PROJECT MANUAL

FOR BIDDING ONLY

AUG 2025

Prepared for  
CITY OF WAUCHULA

Prepared for  
**AVCON, INC.**  
5555 E. Michigan Street, Suite 200  
Orlando, FL 32822  
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407.599.1133  
[www.avconinc.com](http://www.avconinc.com)  
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# **CONTRACT FORMS**



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**ADVERTISEMENT**

**LOCATION: WAUCHULA MUNICIPAL AIRPORT  
WAUCHULA, FLORIDA**

**PROJECT: REPAIR STORM DAMAGED HANGARS**

**1. Description:**

The project includes the following primary sub-elements:

- a. Removal and Replacement of Hangar Doors and Tracks.
- b. Removal and Replacement of Interior Wall Panels and Girts.
- c. Repair and Splice Plates at Damaged Area in Building.

2. No pre-bid conference will be held. See below for procedures on site visits and questions.

3. SEALED BIDS will be received by the City of Wauchula, Florida, at City Hall, 126 South 7<sup>th</sup> Avenue, Wauchula, Florida, 33873 on **Thursday, September 18, 2025 until 2:00 PM (Local Time).**

The Owner reserves the right to hold all bids for a maximum period of 180 calendar days prior to awarding the contract or rejecting all bids.

4. At the time mentioned above, bidding will be closed and those proposals received will be publicly opened and read aloud in the Office.

5. All proposals shall be submitted on the forms furnished by the Owner. Each proposal submitted shall be placed with all required attachments in a sealed envelope, and this envelope shall in turn be placed in a 9 x 12 inch envelope. Both envelopes must be sealed and marked as follows:

**Bids for the Project: REPAIR STORM DAMAGED HANGARS  
Wauchula Municipal Airport  
Wauchula, Florida**

**To Be Opened: Thursday, September 18, 2025 – 2:00PM**

**Firm Submitting Bid:** \_\_\_\_\_

6. Contract (Bid) Documents (consisting of the construction plans and project manual) will be available on and after **Tuesday, August 12, 2025**, and may be examined at no expense at the office of Ms. Olivia Minshew, City Manager, City of Wauchula, (863) 773-9193. No contract documents will be sold to bidders by the City.

7. On and after **Tuesday, August 12, 2025**, Bid Documents will be available electronically and may be obtained by contacting Sue Finney, phone: (407) 599-1122; email: [sfinney@avconinc.com](mailto:sfinney@avconinc.com). **Bidders must be registered through AVCON, Inc. to be eligible to submit a Bid for the project.** A complete examination and understanding of the drawings and specifications contained in the Bid Documents is necessary in order for the Bidder to properly submit a Bid. The Bid Documents also include a detailed set of Instructions to Bidders. All Bids shall be prepared in accordance with the Instructions to Bidders. The failure to comply with any requirement contained in the Bid Documents may result in the rejection of the Bid as non-responsive or a finding that the Bidder is not qualified for this Project.
8. Any questions relative to this Project shall be submitted no later than **Thursday, June 5, 2025, at 5:00 pm local time** in writing only via letter, fax, or email, to AVCON, INC. 5555 East Michigan Street, Suite 200, Orlando, Florida 32822. **Attention: Mr. Russell D. Holliday, PE, Senior Project Manager-Airports, email [rholliday@avconinc.com](mailto:rholliday@avconinc.com), Fax 407-599-1133.** Copies of written responses will be provided to all prospective Bidders who purchase bidding contract documents via the Addendum process.
9. A certified check, drawn upon a state or national bank, or a bid bond issued by a corporate Surety licensed to conduct business in the State of Florida, in a sum not less than five percent (5%) of the total amount bid, made payable to the City of Wauchula, Florida is required with each bid.
10. A Performance Bond for an amount not less than 100% of the bid price and a Payment Bond for an amount not less than 100% of the bid prices will be required from the selected bidder at the time he/she enters into a contract with the City.
11. The Owner reserves the right to waive any informalities or technicalities, to reject any or all Bids, or to re-advertise for Bids. Award, if made, will be to the responsible and qualified Bidder whose Bid is responsive to the invitation and is most advantageous to the Owner, price and other factors considered.
12. No proposal may be withdrawn after the scheduled closing time for the receipt of proposals for a period of 180 calendar days.
13. Liquidated damages for delay in completion of the contract will be in accordance with the Contract Documents.
14. Bids must be submitted on an exact reproduction of the bid forms supplied, including any addenda which may be issued, in sealed envelopes and Description(s) in bold as specified above.
15. Bidders shall submit a general one year project warranty certificate on workmanship and labor, in addition to any product, equipment, and/or materials-specific manufacturer's warranties prior to final payment.
16. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is Hardee County.

17. The apparent low bidder will be announced based on the Total Bid. The contract will be awarded to a successful bidder based on a review of all bids received on all bid schedules and alternates in accordance with the contract documents. Bid Schedules or Alternates may or may not be awarded depending on available funds. The Owner reserves the right to award any combination of Bid Schedules/Alternates, or to reject all Bid Schedules/Alternates, or to reject any combination of Bid Schedules/Alternates, which are most advantageous to the Owner, price and all other factors considered, and as specified in accordance with the Contract Documents.
18. Site visits may be scheduled during the bidding period by contacting the Airport Manager prior to bidding and a minimum 24 hours in advance. It will be the responsibility of the contractor to provide transportation for any site visit.

CITY OF WAUCHULA, FLORIDA

BY \_\_\_\_\_  
Mr. John Eason, Deputy City Manager

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## **INSTRUCTIONS TO BIDDERS**

### **1. DESCRIPTION OF WORK**

The work identified in the Advertisement for Bids consists of Airport Construction to be performed by qualified contractors as follows:

#### **REPAIR STORM DAMAGED HANGARS**

**The project includes, but is not limited to, the following primary sub-elements:**

- a. Removal and Replacement of Hangar Doors and Tracks.
- b. Removal and Replacement of Interior Wall Panels and Girts.
- c. Repair and Splice Plates at Damaged Area in Building.

### **EXAMINATION OF PLANS, SPECIFICATIONS, SITE AND OTHER PROVISIONS**

The following information is furnished in addition to and not in conflict with "General Provisions,"\* Section 20, paragraph 20-06.

The Bidder is required to examine carefully the site of the Work and the Drawings, Specifications and other Contract Documents for the work contemplated at the Wauchula Municipal Airport, Wauchula, Florida. By submitting a Bid, the Bidder represents to the Owner that it has investigated and is fully informed of the conditions to be encountered, of the character, quality and quantities of Work to be performed and materials to be furnished and of all the requirements of the Plans, Specifications and other Contract Documents. A complete listing of the plan sheets may be found in **Volume 3 – Construction Plans**.

**\* "General Provisions" referenced in this Contract Document is provided in Volume 2 "Technical Specifications."**

### **2.1 SILENCE OF SPECIFICATIONS**

The apparent silence of this specification and any supplemental specifications attached to the project manual as to any details or the omission from same of any detailed description concerning any point shall be regarded as meaning that only the best commercial practices are to prevail and that only materials of first quality and correct type, size, and design are to be used. All workmanship is to be first quality. All interpretations of these specifications shall be made upon the basis of this statement.

### **2.2 CONFLICT OF INTEREST**

The award hereunder is subject to the provisions of Chapter 112, Florida Statutes. All Bidders must disclose with their bid the name of any officer, director, or agent who is also an employee of the City or any of its agencies. Further, all Bidders must disclose the name of any City employee or volunteer working at the behest of the City, who owns, directly or indirectly, any interest of any amount in the Bidder's firm or any of its branches.



### **2.3 GENERAL SAFETY STANDARDS**

Unless otherwise stipulated in the bid, all manufactured items and fabricated assemblies shall comply with all applicable requirements of the Occupational Safety and Health Act (OSHA) and carry evidence of all applicable Underwriters Laboratories (UL) listings. All work in and around Airport property shall conform to the Site and Safety Plan(s) and notes portions of the drawings, as well as FAA AC 150/5370-2 (latest edition), which is available on the world-wide web at [www.faa.gov](http://www.faa.gov), if not attached to the project manual.

### **2.4 MEETS SPECIFICATIONS**

All equipment, accessories, and fabricated assemblies furnished under these specifications shall be new, the latest model in current production, and shall be of good quality workmanship and materials. The Bidder represents that all equipment, accessories, and fabricated assemblies shall meet or exceed the minimum requirements specified. Delivery, inspection, testing, labeling, and installation specifications per the manufacturer's recommendations shall be strictly adhered to.

### **2.5 QUALITY ASSURANCE VERSUS QUALITY CONTROL**

The Bidder will provide complete Quality Control testing, inspection, and daily supervision to satisfy itself that all constructed items as specified and bid conform to the contract documents and manufacturer's recommendations and requirements. All equipment, accessories, materials, fabricated assemblies, and any other products used on the project shall be tested and inspected according to the manufacturer's recommendations, the specifications, ASTM standards, and/or UL requirements. See other sections of the project manual for more detail on quality control and quality control programs.

The Owner or Owner's representative will provide Quality Assurance (also known as Quality Acceptance) testing at its discretion to assure itself that the project items are being constructed as represented by the Bidder. The Bidder will notify the Owner's Representative when it is ready for Quality Assurance testing by the Owner for each stage of construction, for each separate item to be constructed and tested according to the Technical Specifications, whether the specifications are performance in nature or not. The Bidder shall not proceed to cover up, backfill, or start (as applicable) the item in question until the Owner or Owner's Representatives have been first notified that the item is ready for QA testing (if testing is required by the specifications). The Owner or Owner's Representative will avail itself of the necessity of QA testing for its own purposes and notify the Bidder that it may or may not proceed. The Bidder will pay for all failing tests, operations, and remedies necessary to bring the item(s) up to the specification's standards.

### **2.6 MANUFACTURER'S NAMES AND APPROVED EQUIVALENTS**

Any manufacturer's names, trade names, brand names, information and/or catalog numbers listed in a specification, with or without the words "or approved equal" or "or approved equivalent", shall be interpreted as determining a standard of quality and shall not be construed as limiting of competition.

## **2.7 SAMPLES**

Samples of items, when called for, must be furnished free of expense and may upon request, be returned at the Bidder's expense. Each individual sample must be labeled with the Bidder's name, manufacturer's brand name and number, bid number, and item reference. Samples of successful Bidders' items may remain on file with the City for the term of the contract. Requests for return of samples shall be accompanied by instructions which include shipping authorization and name of carrier and must be received within ninety (90) calendar days after bid opening date. If instructions are not received within this time, the commodities shall be retained by the City indefinitely.

## **3. REGULAR CONSTRUCTION MEETINGS**

The Contractor shall provide a designated superintendent to be available at all times and shall attend a regular construction meeting held at the airport. The specific location, dates, and times shall be determined at the Pre-Construction Conference. The Contractor shall be represented by the superintendent and shall be knowledgeable of the day to day construction activities. The Contractor shall submit at the meetings an anticipated schedule of work for the following meeting. The Contractor's superintendent shall be on-site daily during the actual construction period.

## **4. RECORD DRAWINGS**

Record drawings shall be submitted by the Contractor within five (5) working days of the last working day of the contract. Record drawings shall be performed by a licensed surveyor in the state in which the work is being performed. The record drawings shall meet all guidelines established in Section 1A, paragraph 60-09 of the Technical Specifications. Failure to submit record drawings to the engineer in the time specified above will delay final payment to the Contractor.

## **5. OBLIGATION OF BIDDERS**

The Bidder must inform itself fully of the construction and labor conditions under which the Work is to be performed. The Bidder shall not be relieved of its obligation to furnish all material, equipment and labor necessary to carry out the provisions of the Contract Documents and to complete the contemplated Work for the consideration set forth in its Bid by reason and having failed to inform itself with respect to those matters.

## **6. ADDENDA - CHANGES WHILE BIDDING**

No interpretation of the Plans, Specifications or other Contract Documents or correction of any apparent ambiguity, inconsistency or error therein, will be made orally to any Bidder. Every request for such interpretation or corrections must be made in writing, addressed to the Engineer, AVCON, Inc., 5555 E. Michigan Street, Suite #200, Orlando, Florida 32822, and must be received at least seven (7) calendar days prior to the date fixed for the opening of Bids in order to be given consideration. All such interpretations, corrections and supplemental instructions will be in the form of written Addenda to the Contract Documents which, if issued, will be mailed, emailed, sent by facsimile, or delivered by a reputable courier/delivery service to all prospective Bidders (to the address furnished to the Owner by the prospective Bidder for such purposes) not later than 24 hours prior to the date fixed for the opening of Bids. If the Bidder fails to acknowledge receipt of any such Addendum in the space provided in the Bid Form, its Bid will nevertheless be construed as though the Addendum had been received and acknowledged, and the submission of its Bid will constitute acknowledgment of the receipt of the same.

Only the interpretation or correction so given by the Engineer in writing shall be binding, and prospective Bidders are warned that no other source is authorized to give information concerning, or to explain or interpret, the Contract Documents.

## 7. PREPARATION OF PROPOSAL

The following information is furnished in addition to and not in conflict with General Provision, Section 20, paragraph 20-7.

Bids shall be submitted on a reproduced copy of the attached Bid Form and shall include the following:

1. Statement of Bidder's Qualifications (Section SBQ)
2. Required Bid Guarantee (Section BB)
3. Receipt of all Addenda (Section BF)
4. Bid/Proposal Form Executed (Section BF)
5. Bid Schedules (Section(s) BS or BF)
6. Attach Proof of Insurances
7. Attach Powers of Attorney

All blank spaces in the Bid Form shall be completed legibly and correctly in ink. The Bidder shall specify the Total Bid Price for the entire Work described in the Contract Documents.

If the Bid is made by an individual, it must be signed in the name of the individual and identify the individual's post office address and the name and address of every person interested in the Bid as principal. If the Bid is made by a firm or partnership, its name and address must be stated, together with the name and address of each member of the firm, or partnership. If the Bid is made by a Corporation, the Bid must be signed by an authorized officer or agent, on behalf of the Corporation and the corporate seal must be affixed thereto. The officer or agent must also prove the state in which the Corporation is incorporated, the names and business addresses of the President, Secretary, and Treasurer, evidence that the Corporation is in good standing in its state of incorporation and in Florida, and evidence that the Corporation has registered with the Secretary of State of the State of Florida, as a foreign corporation for doing business in the State of Florida.

## 8. BID GUARANTY

Each Bid shall be accompanied by a Bid Guaranty in the form of a cashiers' check made payable to the Owner or a Bid Bond in the form contained in the Contract Documents, duly executed by the Bidder as Principal having a Surety thereon a surety company fulfilling the qualifications described in Paragraph entitled "Guaranty of Faithful Performance and Payment". The Bid Bond shall be written through a licensed Florida agency on behalf of a surety company licensed to do business in the State of Florida. The Bid Guaranty shall be in the amount not less than five percent (5%) of the amount of the Total Bid Price. The cashier's check, or Bid Bond shall be submitted with the understanding that it shall guarantee that the Bidder will not withdraw the Bid for a period of one hundred twenty (120) days after the time and date fixed for the opening of Bids, **that if the Bidder is provided with a Notice of Intent to Award the Contract, the Bidder will enter into a formal Contract with the Owner in the form contained in the Contract Documents, that the Bidder will supply evidence of the authority of the person executing the Contract and Bonds to do so, that the required Contract Bonds, Certificates of Insurance, certifications and submissions will be provided on the same day the contract is executed,** given, that all other Contract Documents will be executed in the form provided therein. If any of the foregoing

requirements are not met, the Owner shall be entitled to the full amount of the Bid Guaranty as damages to the Owner resulting from the Bidder's failure to meet those requirements. Cashier's checks or Bid Bonds will be returned to all except the three apparent low, qualified, responsible, responsive Bidders within ten (10) days after the opening of Bids, and the remaining cashier's checks or Bid Bonds will be returned within three (3) days after the Owner and successful Bidder have executed the Contract Documents required by the owner for the Work. Cash will not be accepted as a Bid Guaranty.

## **9. DELIVERY OF PROPOSALS**

The following information is furnished in addition to and not in conflict with General Provision, Section 20, paragraph 20-10.

All proposals shall be submitted in sealed envelopes bearing on the outside the name of the Bidder, the Bidder's address, the name of the Project for which the Proposal is submitted, and the time and date fixed for the opening of Proposals. The Bid Guaranty specified in Paragraph 10 above, recognition of addendum, shall be enclosed in the sealed envelope with the Bid. The Bid shall be delivered by hand, by registered mail, or by overnight package service to the **City of Wauchula, 126 South 7<sup>th</sup> Avenue, Wauchula, FL 33873 (see Page ADV-1)**. Bids submitted by facsimile transmission will not be accepted. Proposals received after the time and date specified in the Advertisement for Proposals will not be considered, but will be returned unopened.

## **10. WITHDRAWAL OR REVISION OF PROPOSALS**

A bidder may withdraw or revise his proposal in accordance with General Provision, Section 20, paragraph 20-11 reproduced as follows:

*A bidder may withdraw or revise (by withdrawal of one proposal and submission of another) a proposal provided that the bidder's request for withdrawal is received by the owner in writing or by telegram before the time specified for opening bids. Revised proposals must be received at the place specified in the advertisement before the time specified for opening all bids.*

## **11. DISQUALIFICATION OF BIDDERS**

General Provision, Section 20, paragraph 20-13 (a-c) is reproduced here for clarity with subparagraphs "d", "e", and "f" added as additional reasons for disqualifications.

**20-13 DISQUALIFICATION OF BIDDERS.** *A bidder shall be considered disqualified for any of the following reasons:*

- a. Submitting more than one proposal from the same partnership, firm, or corporation under the same or different name.*
- b. Evidence of collusion among bidders. Bidders participating in such collusion shall be disqualified as bidders for any future work of the owner until any such participating bidder has been reinstated by the owner as a qualified bidder.*
- c. If the bidder is considered to be in "default" for any reason specified in the subsection titled ISSUANCE OF PROPOSAL FORMS of this section.*

- d. Work for which the Bidder is committed by contract, which, in the Owner's judgment and sole discretion, might hinder or prevent the prompt completion of the Work under this contract if awarded to the Bidder;
- e. Being behind on the approved completion schedule for any existing contracts with the Owner, in litigation with the owner or having defaulted on a previous contract with the Owner;
- f. Any other cause which, in the Owner's judgment and sole discretion, is sufficient to justify disqualification of a Bidder or the rejection of its Bid.

## **12. REJECTION OF IRREGULAR PROPOSALS**

The following information is furnished in addition to and not in conflict with General Provision, Section 20, paragraph 20-08.

Bids will be considered irregular and may be rejected if they show omissions, alterations of form, additions not called for, conditions, limitations, unauthorized alternate bids or other irregularities of any kind.

The owner shall have the right to waive any informalities or irregularities of Bids, or to reject any or all Bids.

## **13. NOTICE OF INTENT TO AWARD CONTRACT**

Unless all Bids are rejected, a Notice of Intent to Award the Contract will be provided to the qualified, responsible Bidder whose Bid is responsive to the invitation and is most advantageous to the Owner, price and other factors considered.

If a conflict exists between the words and numerals of each Bid amount, the words shall govern.

## **14. GUARANTY OF FAITHFUL PERFORMANCE AND PAYMENT**

The following information is furnished in addition to and not in conflict with General Provision, Section 30, paragraph 30-05.

- a. A Performance Bond and a Payment Bond satisfactory to the Owner and in the form attached hereto, each in an initial amount of not less than the Total Contract Price, will be required of the successful Bidder for, among others, the following purposes:
  - 1. To guarantee faithful performance of the requirements of the Contract Documents, including all applicable warranties.
  - 2. To guarantee the payment of all labor, materials, or supplies used directly or indirectly in the prosecution of the Work provided for in the Contract.

The Penal Sum of the Performance Bond and the Payment Bond shall be increased or decreased during the course of the Work in the event that modifications, change orders or addenda increase or decrease the Total Contract Price so that the Penal Sum of each bond shall be in an amount equal to the completed Contract Price at the completion of the Work.

- b. The Bonds shall be exactly in the forms contained in the Contract Documents, and written through a licensed Florida agency on behalf of a surety company licensed to do business in the State of Florida, meeting the following requirements:
1. Qualification - Management and Strength: The Surety must be rated no less than "A" as to management and no less than XII as to strength, by the latest edition of Best's Insurance Guide, published by A.M. Best Company, Post Office Box 1107, Summit, New Jersey 07901.
  2. Qualification – Federal Project Approval: The Surety company executing the Bonds shall be on the current list of the U.S. Treasury Department as being approved by and for writing bonds for Federal projects in the amount not less than the Penal Sum of the bonds provided to the Owner.
  3. Bonds shall be on the current list of the U.S. Treasury Department as being approved by and for writing bonds for Federal projects in the amount not less than the Penal Sum of the bonds provided to the Owner.
  4. Bonding Limit - Any One Risk: The bonding limit of the Sureties shall not exceed five percent (5%) of the policy holder surplus (capital and surplus) as listed by the aforementioned Best's Insurance Guide.

The completed Bonds shall be delivered to the Owner with the executed Contract as required hereinafter in these Instructions to bidders, at the same time the executed contract is delivered.

Provisions for liquidated damages are provided in the Bid Form and Contract Documents.

#### **15. POWER OF ATTORNEY AND COUNTERSIGNATURE**

Attorneys-in-fact who sign Bid Bonds, Performance Bonds and Payment Bonds, must file with such Bonds a certified copy of their power-of-attorney to sign the bonds. All bonds must be countersigned by a resident Florida agent of the Surety, with proof of agency attached.

#### **16. EXECUTION OF CONTRACT**

The following information is furnished in addition to and not in conflict with General Provision, Section 30, paragraph 30-06.

The Bidder who received a Notice of Intent to Award the Contract shall, execute and deliver to the Owner the Contract Agreement, the completed Bonds listed above, satisfactory evidence of all required insurance coverage, and shall prove satisfactorily to the Owner of the authority of the person or persons executing the Contract Agreement and the Performance Bond and the Payment Bond on behalf of the Bidder. The above documents must be furnished, executed and delivered before the Contract Documents will be executed by the Owner. The Contract shall not be binding upon the Owner until it has been executed and approved by the Owner, and a copy of the fully executed Contract Documents is delivered to the Contractor. The Owner shall have the right to rescind its Notice of Intent to Award without liability, except for the return of the Bid Guaranty to the

Bidder, at any time before the Contract Documents have been fully executed by all parties and delivered to the Contractor.

**17. FAILURE TO EXECUTE CONTRACT - BID GUARANTY FORFEITED**

The following information is furnished in addition to and not in conflict with General Provision, Section 30, paragraph 30-08. If the Bidder receiving a Notice of Intent to Award the Contract fails to execute and deliver to the Owner the Contract Agreement, the completed Bonds listed in Paragraph 16 above, the required evidences of insurance coverage, and the evidence of authority to execute required in Paragraph 17 above, the Owner may elect to rescind the Notice of Intent to Award and shall be entitled to the full amount of the Bid Guaranty, not as a penalty, but in liquidation of and compensation for damages sustained. A Notice of Intent to Award may then be provided to the next most qualified, responsible Bidder whose Bid is responsive to the invitation and is most advantageous to the Owner, price and other factors considered. Otherwise, all Bids may be rejected.

**18. NOTICE AND SERVICE THEREOF**

All notices given by the Owner or the Engineer, under the provisions of the Contract Documents, shall be in writing and service of same may be by either of the following methods:

- a. By delivery of the notice to the Bidder or to any officer of the Bidder if Bidder is a corporation, or to any agent of the Bidder.
- b. By mailing the notice by United States mail to the address of the Bidder shown on the Bid.

Notices given by the Owner or Engineer shall be effective upon mailing, if mailed.

**19. FLORIDA SALES AND OTHER TAXES**

Work under this Contract is subject to the provisions of Chapter 212, Florida Statutes, Tax on Sales, Use and Other Transactions. Other state, local or federal taxes may be applicable. The Bidder is responsible to remit to the appropriate governmental entity all applicable taxes. Any applicable tax shall be included in the Total Bid Price by the Bidder.

**20. TIME OF COMPLETION**

The time of the completion is of the essence of the Contract and, each Bidder, if delivered an executed Contract, shall proceed with the Work in accordance with the approved schedule and within the Contract time period specified in the Contract Documents. In the event of failure to complete the Work within the time specified, the Owner may assess damages as provided by law or the Contract Documents, unless an appropriate extension of time has been granted.

**The time of completion for the entire project shall be 150 calendar days, regardless of the bid schedules awarded:**

- A. City Executes Contract with Successful Bidder
- B. Contractor Submits Shop Drawings for Approval to Engineer
- C. Engineer Issues Shop Drawing Approval
- D. City Issues Notice to Procure for Fabrication and Delivery of Materials – Contract Time Begins
- E. Contractor Takes Possession of the Materials

**F. City Issues Notice to Proceed – Construction Time Begins**

**150** Calendar Days Total

The bidder's attention is directed to the Project Phasing or Site and Safety Plans for more detailed information on construction sequencing.

**21. RECORD DOCUMENTS**

The Contractor shall keep one record copy of the Contract Documents, Shop Drawings and samples at the site, in good order and annotated daily to show all changes made during the construction process. These shall be available to the Engineer for examination and shall be delivered to the Engineer for the City upon completion of the Work. Failure to maintain record documents current may be cause to withhold partial payment.

**22. ADDITIONAL INSTRUCTIONS FOR APPARENT LOW, QUALIFIED, RESPONSIBLE, RESPONSIVE BIDDER**

Contractor assistance is essential to execute specific documents promptly to execute a Contract with the Owner and to prepare for a Contractor's Notice to Proceed.

Contractor is instructed to carefully examine the General Provisions and to understand what is expected during each phase of the Project's construction. The Owner will maintain the original Bid Form and Bid Bond on file for record purposes. The Contractor will furnish six (6) executed copies of the Contract Documents for the Owner. The Contractor shall complete, execute and submit all required documentation to the Owner. Specific items that must be completed and executed are:

**BID ITEMS** - The Contractor shall confirm with the Owner Bid Items to be awarded in the final Contract, to confirm Total Contract Price.

**CONTRACT, PAYMENT, PERFORMANCE AND GUARANTY BONDS** - Complete in the amount of Total Contract Price, effective upon Owner execution of Contract.

**EVIDENCE OF REQUIRED INSURANCE COVERAGE AND AUTHORITY TO EXECUTE** - Complete.

Upon Owner's notification of concurrence in Contract award by Insurance Underwriters, Re-Insurers, and FEMA representatives, the following items must be completed prior to issuance of a Notice to Proceed according to Paragraphs 80-02 and 80-03 of the GENERAL PROVISIONS:

**Owner:** Execute Contract Documents and forward copies to Contractor, Funding Agencies, and Engineer.

**Contractor:** Prepare detailed procurement and construction schedule for immediate submittal to the Owner and Engineer. Confirm all subcontractor names and material suppliers. Schedule shall be submitted to the Owner and Engineer for review at the scheduled date of the Preconstruction Conference.



## **23. NOTIFICATION TO ALL BIDDERS – PERMITS REQUIRED**

### **Design-Bid Projects:**

Approvals for the design permitting are forthcoming from the Southwest Florida Water Management District, the Florida Department of Environmental Protection, and the Federal Aviation Administration, as necessary and applicable to the project. Issuance of the Notices to Procure/Proceed may be withheld until such time that the City of Wauchula receives these agencies' approvals.

The Contractor is responsible for all City of Wauchula site permits, NPDES permits, and any other construction-related permits and fees.

### **Design-Build Projects:**

~~All approvals for the design permitting are the complete responsibility of Bidder/Contractor EXCEPT the Federal Aviation Administration Airspace Checklist approval. No construction shall take place without ALL of the necessary permits required for 100% design approval by all applicable agencies.~~

~~The Contractor is responsible for all City of Wauchula site permits, NPDES permits, and any other construction-related permits and fees.~~

## **24. CONTRACTOR'S LIABILITY INSURANCE REQUIREMENTS**

The bidder shall provide with the Proposal a listing of both automobile and personal liability insurance coverage currently in force, along with a copy of a Certificate of Insurance as verification of that coverage. In addition, the bidder shall provide a statement of premium cost issued by the agent or insurance carrier for that coverage.

In the event the Owner determines that the low bidder's coverage in force is inadequate, the Owner may require the low bidder to procure additional coverage in amounts specified by the Owner. The cost of premiums for such additional coverage shall be paid by the Owner in the form of a reimbursement under the contract.

Third Party Coverage. In the event the bidding documents require the contractor to name the consultant and/or the Owner as additional insured, the bidder shall show the premium cost for the additional insured in the Proposal in the item for additional coverage. The amount shown in the bid item for additional premium cost shall be that amount of additional premium above the premium for the coverage shown in the Certificate of Insurance submitted with the bid.

See Section 70 of the "Part 1A – Supplemental General Provisions" for detailed requirements for required Insurance coverage (amounts). All insurance shall comply with local ordinances. No relief from insurance coverage is allowed in any case.

**STATEMENT OF BIDDER'S QUALIFICATIONS**

**(Must Be Completed and Submitted with the Bid)**

Each proposer shall furnish with his proposal the following completed and signed statements on "evidence of competency" and "evidence of financial responsibility" in accordance with General Provision 20-02. In addition, the Owner reserves the right to conduct such additional investigation into the competency and responsibility of the proposers (or any particular proposer) as the Owner may deem necessary.

1. Name of Proposer: \_\_\_\_\_
2. Business address: \_\_\_\_\_  
\_\_\_\_\_
3. Telephone number: \_\_\_\_\_
4. When organized: \_\_\_\_\_
5. Where incorporated: \_\_\_\_\_
6. How many years have you been engaged in the contracting business under the present firm name?  
\_\_\_\_\_
7. What is the type of construction work in which you are principally engaged?  
\_\_\_\_\_
8. On separate sheet, list major contracts in past ten years.
9. On separate sheet, list equipment and plant available for this project.
10. Enclose evidence of financial responsibility per General Provisions Section 20-02.
11. Credit available for this Contract \$ \_\_\_\_\_
12. On a separate sheet, list all projects over \$50,000 presently under contract by name, gross amount, and percent complete.
13. Have you ever refused to sign a contract at your original proposal? \_\_\_\_\_
14. Have you ever been declared in default on a contract? \_\_\_\_\_
15. Total amount of bonding capacity \$ \_\_\_\_\_
16. Total bonding capacity available for the project \$ \_\_\_\_\_

17. Remarks:

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(The above statements must be subscribed and sworn to before a Notary Public.)

Date: \_\_\_\_\_

Firm Name: \_\_\_\_\_

By: \_\_\_\_\_  
(Signature)

Title: \_\_\_\_\_

STATE OF \_\_\_\_\_

COUNTY OF \_\_\_\_\_

PERSONALLY APPEARED BEFORE ME, the undersigned authority,

\_\_\_\_\_  
(Name of individual signing)

who, after first being sworn by me, affixed his/her signature in the space provided above on the  
\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_.

**NOTARY PUBLIC**

My Commission expires: \_\_\_\_\_

**END OF SECTION**

**BID FORM**

PROJECT:

Name of Bidder: (Type or Print)

**Repair Storm Damaged Hangars**

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TO:

The undersigned declares that no person in the employ the City of Wauchula, Florida, (herein referred to as OWNER) is pecuniarily interested in this proposal, or in the contract or the work which he proposed to do; that he has carefully examined the contract and the specifications and has informed himself fully in regard to all conditions pertaining to the site where the work is to be done and carefully estimated on the work. He understands that the OWNER, its agents, and employees, are not to be in any manner held responsible for the accuracy of, or bound by, any estimates or plans of underground structures relating to the work, and that if only have been given or made, they are to be considered solely as a base for filling out and preparing several proposals.

The undersigned proposes to furnish all labor, equipment material required for the above outlined construction at the airport known as Wauchula Municipal Airport located in the City of Wauchula, Florida, in accordance with the accompanying specifications and plans prepared for the OWNER for the sums specified herein, subject to additions and deductions according to the specifications and in all respects to the terms thereof.

It is understood that all workmanship and materials under all items of work are guaranteed for one year from the date of final acceptance, unless otherwise specified. It is understood that the OWNER reserves the right to accept or reject any or all bids and waive formalities.

It is agreed that the description under each item, being stated, implies although it does not mention, all incidentals and that the prices stated are intended to cover all such work, materials, and incidentals and constitute bidder's obligations as described in the specifications, and any details not specifically mentioned, by evidently included in the contract shall be compensated for in the item which most logically includes it.

It is understood that this proposal is submitted for the purpose of obtaining the work included in the subject project at the Wauchula Municipal Airport, City of Wauchula, Florida. Said work includes the following primary items:

**REPAIR STORM DAMAGED HANGARS**

**The project includes, but is not limited to, the following primary sub-elements:**

- a. Removal and Replacement of Hangar Doors and Tracks.
- b. Removal and Replacement of Interior Wall Panels and Girts.
- c. Repair and Splice Plates at Damaged Area in Building.

The bidder expressly agrees that should environmental permits not be granted for items contingent on their receipt, the OWNER may delete those items from the Contract without Supplemental Agreement or Change Order. In this event, the bidder agrees that the unit prices for non-environmentally contingent items will remain unchanged and that no claims relating to the deletion of items contingent on environmental permitting will be made.

The bidder's attention is called to the fact that the estimate of quantities of work to be done and materials to be furnished under these Specifications, as shown on the proposal form is approximate and is given only as a basis of calculation upon which the award of the contract is to be made. The OWNER reserves the right to increase or diminish any or all of the above-mentioned quantities or work and to omit any of them as it may deem necessary. The Contractor further agrees to accept the "Unit Bid" prices in compensation for any additions or deductions caused by variation in quantities due to more accurate measurement, or by any changes or alterations in the plans or specifications of the work.

The bidder agrees that this proposal will remain valid and in full force and effect for a minimum period of ninety (90) days following the official bid opening date.

The bidder agrees that within ten (10) days of receipt of written notice of an award of the contract that bidder will execute the standard contract form, in accordance with the bids as accepted, and will furnish the required performance bond, a payment bond and insurance affidavits with good and sufficient surety or sureties, as required by the Specifications.

The bidder further agrees that if awarded the contract, he will commence work within ten (10) days of the date of receipt of a "Notice to Proceed" and he will fully complete the work ready for use within contract time specified following the date of receipt of a "Notice to Proceed."

It is understood that for each calendar day that any work remains uncompleted after the contract time has expired (including all extensions and adjustments as provided in the subsection titled DETERMINATION AND EXTENSION OF CONTRACT TIME) the sum of Five Hundred (\$500) Dollars per calendar day as liquidated damages will be deducted from any money due or to become due to the Contractor or his surety. Such deducted sums shall not be deducted as a penalty but shall be considered as liquidation of a reasonable portion of damages that will be incurred by the OWNER should the Contractor fail to complete the work in the time provided in his contract.

Enclosed is security as required, consisting of (cash, certified check or bid bond) \_\_\_\_\_ payable to the City of Wauchula, Florida in the amount of \$ \_\_\_\_\_.  
This amount equals five percent of the total amount bid.

Acknowledgement of Receipt of Project Addenda:

Addendum No. 1 Received \_\_\_\_\_ (Date)

Addendum No. 2 Received \_\_\_\_\_ (Date)

Addendum No. 3 Received \_\_\_\_\_ (Date)

Addendum No. 4 Received \_\_\_\_\_ (Date)

Addendum No. 5 Received \_\_\_\_\_ (Date)

Addendum No. 6 Received \_\_\_\_\_ (Date)

Dated, \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Legal Name of Person, Firm, or Corporation

By: \_\_\_\_\_

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Business Address)

**TOTAL BID**

For all work required in accordance with the applicable drawings, Specifications and other Contract Documents including the cost of the required Bonds and Insurance, the undersigned submits a Total Bid Price of:

\_\_\_\_\_ and

\_\_\_\_\_/100 DOLLARS (\$ \_\_\_\_\_)

Based on the unit prices set forth in the following pages. The Total Bid Price represents the total amount of the Bid Schedules. It is the Owner's intent to award the Total Bid, should sufficient funding be available. Based on the actual amount of funding made available to complete the work, the project amount awarded may be less than the Total Bid Price.

WAUCHULA MUNICIPAL AIRPORT  
REPAIR STORM DAMAGED HANGARS

BID FORM

Enclosed is security as required, consisting of (cash, certified check or bid bond) payable to the City of Wauchula in the amount of \$\_\_\_\_\_. This amount equals five percent of the total amount of the Total Bid Price.

Dated \_\_\_\_\_, 20\_\_.

IF A CORPORATION

NAME

ADDRESS

|       |           |       |
|-------|-----------|-------|
| _____ | President | _____ |
| _____ | Secretary | _____ |
| _____ | Treasurer | _____ |

IF A PARTNERSHIP OR INDIVIDUAL

NAME

ADDRESS

|       |       |
|-------|-------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

**AFFIDAVIT**

The following affidavit must be executed in order that your quotation may be considered.

STATE OF \_\_\_\_\_  
COUNTY OF \_\_\_\_\_

\_\_\_\_\_ of lawful age, being first duly sworn, upon his oath deposes and says: That he executed the accompanying Quotation of behalf of the Contractor therein named, and that he had lawful authority so to do, and said Contractor has not directly or indirectly, entered into any agreement, expressed or implied, with any Contractor or Contractors, having to its object the controlling of the price or amount of such quotation or any quotations, the limiting of the Quotation or Contractors, the parceling or farming out to any Contractor or Contractors, to other persons of any part of the contract or any of the subject matter or the Quotations, or of the profits thereof, and that he has not and will not divulge the sealed Quotation to any person whomsoever, except those having a partnership or other financial interest with him in said Quotation or Quotations, until after the sealed Quotation or Quotations are opened.

Signed \_\_\_\_\_

Subscribed and sworn to before me this \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

My Commission Expires:

\_\_\_\_\_  
Notary Public

**END OF PROPOSAL**



**INSERT BID FORM  
(adjust page numbers)**

**BID BOND**

**(Must Be Completed and Submitted with the Bid Unless Certified Check is Submitted)**

**WAUCHULA MUNICIPAL AIRPORT**

**KNOW ALL MEN BY THESE PRESENTS: THAT WE, THE UNDERSIGNED** \_\_\_\_\_, as principal, and surety in the state of Florida to do business in the state of Florida and authorized to write this type of bond through a resident agent of the corporation located in the state of Florida, as surety, are held and firmly bound unto the City of Wauchula, Florida in the sum of \_\_\_\_\_ dollars (\$\_\_\_\_\_), which equals five percent of the amount bid, for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of the above obligation is such that if the attached proposal of \_\_\_\_\_ for the improvement of the airport facilities stipulated in said proposal in accordance with the plans and specifications provided therefore, is accepted and the contract awarded to the above-named bidder. The said principal shall within fifteen (15) days after notice of said award enter unto a contract in writing and furnish the required payment and performance bonds with surety, or sureties, to be approved by the City of Wauchula, Florida, this obligation shall be void: otherwise, the same shall be in full force and virtue of law, and the full amount of this proposal bond will be paid to the City of Wauchula, Florida, as stipulated for liquidated damages.

Signed this \_\_\_\_ Day of \_\_\_\_\_, 20\_\_.

(Principal must indicate whether corporation, partnership, company or individual)

\_\_\_\_\_

This person signing shall in his own handwriting sign the principal's name, and his title. Where the person signing for a corporation is other than the president or vice-president, he must, by affidavit, show his authority to bind the corporation.

\_\_\_\_\_  
Principal

By: \_\_\_\_\_

\_\_\_\_\_  
Title

\_\_\_\_\_  
Surety

**WAUCHULA MUNICIPAL AIRPORT**

**BOND AFFIDAVIT**

STATE OF \_\_\_\_\_

COUNTY OF \_\_\_\_\_

**BEFORE ME, THE UNDERSIGNED AUTHORITY, PERSONALLY APPEARED** \_\_\_\_\_  
\_\_\_\_\_, who being duly sworn, deposes and says that he is a duly authorized  
(resident) (nonresident) insurance agent, properly licensed under the laws of the state of \_\_\_\_\_,  
and the state of Florida, to represent \_\_\_\_\_ of \_\_\_\_\_  
\_\_\_\_\_ a company authorized to make corporate surety bonds under the laws of the state of  
Florida. Said \_\_\_\_\_ further certifies that as attorney-in-fact for the said \_\_\_\_\_  
\_\_\_\_\_ he has signed the attached bond in the sum of \_\_\_\_\_  
(U.S. \$ \_\_\_\_\_) on behalf of \_\_\_\_\_ covering the **Wauchula  
Municipal Airport**, said \_\_\_\_\_ further certifies that the premium on the said  
bond is \_\_\_\_\_, which will be paid in full direct to him as attorney-in-fact, and  
included in his regular accounts to said \_\_\_\_\_ and that he will receive his  
regular commission of \_\_\_\_\_ percent as attorney-in-fact for the execution of said bond and that his  
commission will not be divided with anyone except as follows, \_\_\_\_\_  
percent to \_\_\_\_\_, who is duly authorized resident insurance agent and  
properly licensed under the laws of the state of Florida.

Countersigned

\_\_\_\_\_  
Florida resident agent

\_\_\_\_\_  
Agent and attorney-in-fact

Acknowledgement for attorney-in-fact

Sworn and subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
Notary public, state of \_\_\_\_\_

My commission expires:

**CONTRACT AGREEMENT**

THIS CONTRACT is entered by and between City of Wauchula, Florida (hereinafter called the "City"), and \_\_\_\_\_ of \_\_\_\_\_, Florida (hereinafter called the "Contractor"), on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

WHEREAS, it has been determined that the execution of this contract is beneficial to the people of Wauchula, Florida;

WITNESSETH,

The City and the Contractor for TEN DOLLARS (\$10.00) and other good and valuable consideration hereby covenant and agree as set forth below:

**ARTICLE I.**

**THE CONTRACT DOCUMENTS**

1. The Contractor shall perform all the work required by the Contract Documents to complete the Project as described and detailed in the drawings entitled: **"REPAIR STORM DAMAGED HANGARS"** prepared by AVCON, Inc., and dated **June 2025** and in accordance with the Technical Specifications Manual prepared by AVCON, INC. all as pertaining to the City's property described in the Contract Documents. The Project comprises the completed construction required by the Contract Documents and includes all labor necessary to produce such construction, and all materials and equipment incorporated or to be incorporated in such construction.
2. Contractor represents and agrees that it has carefully examined and understands this Contract and the Contract Documents, has investigated the nature, locality and site of the Project and the conditions and difficulties under which it is to be performed, and that it enters into this Contract on the basis of its own examination, investigation and evaluation of all such matters and not in reliance upon any opinions or representations of the City, or of any of the City's agents, consultants or employees.

**ARTICLE III.**

**TIME OF COMMENCEMENT AND COMPLETION DATE**

1. The work to be performed under this Contract shall be commenced upon or immediately after delivery of notice from the City to Contractor to proceed ("Notice to Proceed"), Contractor shall thereafter diligently proceed with the completion of the Project within the number of calendar days specified in the contract documents, after Notice to Proceed (the "Completion Date").

2. Notwithstanding anything else contained herein, if the City in its sole judgment, shall deem it advisable to terminate this Contract before delivery of Notice to Proceed, then the City shall deliver written Notice of Termination of the Contract to the Contractor, the Contract shall be rendered null and void, and neither party shall be entitled to any damages or compensation in connection with such termination of the Contract.
3. Inasmuch as failure of the Contractor to complete the Project by the Completion Date may cause grave injury and damage to the City, time is of the essence in the performance of this Contract. Accordingly, the Contractor must commence work and complete the Project when and as required by this Contract.
4. In the event of delay in the completion of the Project by the Completion Date, the parties hereto acknowledge that the calculation of the actual damages to the City would be difficult, if not impossible, to determine. Consequently, should the Contractor fail to timely meet the work requirement of the Project by the Completion Date, the parties hereto agree that as liquidated damages, and not as penalty the Contractor will pay the City Five Hundred Dollars (\$500) for each calendar day after the Completion Date, until the Project is Completed, all as certified by the Engineer or the City representatives as may be designated by the City hereunder.
5. In the event that the Contractor shall fall behind in schedule at any time, for any reason, and such delay is adversely affecting the City's ability to timely occupy and use the Project for its intended purpose, the City shall be entitled to direct acceleration or re-sequencing of the work to bring the project back on schedule. The Contractor shall reserve in each of its subcontracts entered into in connection with the Project, a right to accelerate consistent with the Contractor's obligations hereunder. In the even the Contractor determines that the Completion Date cannot be met by re-sequencing the work, then the Contractor shall immediately provide the City and in any event within three (3) calendar days after the date of receipt of the City's instruction for re-sequencing or accelerating, a plan to complete the Project in the shortest possible time. No approval by the City of any plan for re-sequencing or accelerating of the work submitted by the Contractor pursuant to this clause shall constitute a waiver by the City of its rights of recovery from damages or losses which the City may suffer by reason of delayed Project Completion.
6. Contractor agrees to provide the City with each application for progress payment pursuant to Article V hereof, the Contractor's best estimate of any anticipated revision to the Completion date for the purpose of the City's planning, provided, however, and notwithstanding the making of any progress payments, no anticipated revisions to the Completion Date shall be effective and binding on the City and the Contractor without a written Change Order executed by the City in accordance with the procedure set forth in Article VI hereof.

**ARTICLE IV.**

**CONTRACT SUM**

1. In consideration of the performance of the Contract, the City agrees to pay the Contractor, by City's check, the contract sum of \_\_\_\_\_ Dollars (\_\_\_\_\_).
2. For changes in the work, ordered by the City, the contract sum shall be adjusted accordingly. Article VI stipulates the conditions governing changes in the work.
3. The Contractor shall be paid ninety percent (90%) of the proportional amount of the contract sum with each progress payment, (such payments to be in proportion to the percentage completion of the Project) and the balance of the contract sum shall be paid at the time of Final Payment as described in Article VII hereof.

**ARTICLE V.**

**PROGRESS PAYMENTS**

1. Based upon applications for payment submitted to the Engineer by the Contractor and certificates of payment assured by the Engineer and approved by the City, the City shall make progress payments to the Contractor as provided in the Contract Documents and as specified hereunder.
2. Applications for progress payments will be submitted not more often than monthly and shall be submitted on or before the twenty-fifth (25th) day of each month during the performance of the Contract for the Engineer's approval. Each such application for payment shall set forth the value of all work completed according to the Schedule of Values, including the sum of all prior payments. Quantities and other information shown on the Schedule of Values are for payment purposes only and are not to be construed as work description or limitation of quantities of materials required for completion of the Project. The Contract includes all labor and materials to complete the Project as described in the Contract Documents.
3. In each application for progress payment, the Contractor shall certify as follows: (A) "There are no known mechanic's or materialmen's liens outstanding at the date of this application other than those for which the Contractor has provided a bond or the approved security pursuant to the provisions of Article VII, paragraph 3, of the Construction Contract between City and the Contractor; all due and payable bills with respect to the Project have been paid to date or shall be paid from the proceeds of this application for payment; there is no known basis for the filing of any mechanic's or materialmen's liens on the Project, and waivers from all subcontractors and material men employed by the Contractor, have been or will be obtained in such form as to constitute an effective waiver of lien under the applicable laws of the State of Florida"; (B) "All improvements have been installed in accordance with the Contract Documents (except where noted or agreed upon in writing by the City pursuant to an approved Change order)".

4. Beginning with the second application for progress payment, the Contractor shall also deliver with each such application, as a condition precedent to payment thereof, waivers of lien for each of its subcontractors, current through the effective date of the previous application for payment. The Contractor may, if any subcontractor or supplier refuses to furnish a release in full, furnish a bond satisfactory to the City, against any lien.
5. The City shall promptly review each application for progress payment and make such exceptions as the City reasonable deems necessary or appropriate under the state of circumstances then prevailing.
6. On or about the fifteenth (15<sup>th</sup> or 25<sup>th</sup>) day of the month following application of progress payment, the City shall make payment to the Contractor in the amount approved, subject, however, to Article V, paragraph 8 hereof. The payment of any application for progress payment by the City, including the final application, does not constitute approval or acceptance of that part of the Project to which such payment relates or relieve the Contractor of any of its obligations hereunder with respect hereto.
7. The Contractor shall provide the City with each application for progress payment as an "as-built" diagram, drawing or an adequate number of photographs showing all improvements currently in place (foundations, roads, drives, water/sewer lines, etc.) including setbacks, rights of way and other restrictions governing the installation of improvements.
8. Any provisions hereof to the contrary notwithstanding, the City shall not be obligated to make current payment to the Contractor hereunder if any one of the following conditions exists:
  - A. the Contractor fails to diligently prosecute the work in an efficient, timely and workmanlike manner and in strict accordance with the provisions of the Contract Documents;
  - B. the Contractor fails to use an adequate number of qualified personnel and sufficient equipment to complete the Project without undue delay.
  - C. the Contractor fails to make prompt payments to its subcontractors, suppliers, material men or laborers;
  - D. any part of such payment to the Contractor is attributable to the work which is defective or not performed in accordance with the drawings and specifications; provided, however, such payment shall be made as to part thereof attributable to work which is performed in accordance with the drawings and specifications and is not defective;
  - E. the Contractor is otherwise in default of any of its obligations hereunder or otherwise is in default under any of the contract requirements; or
  - F. the Contractor fails to provide the City with an updated as-built diagram, as provided in Article V, paragraph 7, above.

**ARTICLE VI.**

**CHANGES**

1. The City may at any time, without notice to the sureties, make changes within the general scope of the project, issue additional instructions, require additional work or direct the omission of portions of the work; provided, however, that the Contractor shall not proceed with any change involving an increase or decrease in contract sum, without prior written authorization from the City in accordance with the procedure outlines hereunder.
2. The City shall order changes in the Project by giving the Contractor a written change order request ("Change Order Request"), receipt of a Change Order Request, the Contractor shall forthwith, but in no event later than 10 days thereafter, furnish to the City setting forth in detail, with a suitable breakdown by trades and work classifications, the Contractor's estimate of the changes in the contract sum attributable to the changes set forth in such Change Order Request, and a proposed adjustment to the Completion Date resulting from such changes and any adjustment of time and costs applicable to unchanged work resulting from such Contractor, such Change Order Request and such estimate shall constitute a Change Order, and the contract sum, and the Completion Date shall be adjusted as set forth in such estimate. The foregoing procedure shall apply to both additive and deductive settlement on all items covered therein, subject to performance thereof and payment thereof pursuant to the terms of this Contract. If the City and the Contractor cannot agree on the cost of any Change order work, then the City may direct the Contractor to proceed with the Change Order work and the cost will be determined in accordance the procedures established in the General Provisions of the Contract.
3. The price estimates for Change Order Requests shall be made on the basis of the actual cost of labor and materials involved in such work. Additional provision for determining the price of change orders are included in the General Provisions of the Contract.

**ARTICLE VII.**

**FINAL PAYMENT**

1. Final payment constituting the entire unpaid balance of the amount due to the Contractor under this Contract shall not be paid by the City to the Contractor until the Project has been completed, the Contract fully performed, and a final certificate for payment has been issued by the Engineer.
2. Anything to the contrary in this Contract or elsewhere in the Contract Documents notwithstanding, fifteen (15) days after final completion of the Project, including final punch-list items and acceptance thereof by the City or as soon thereafter as possible, the Contractor shall submit Final Application for payment ("Final Application") which shall set for the all amounts due to the Contractor and remaining unpaid. The City shall pay to the Contractor the amount due under such final application no sooner than twenty (20) days and not later than sixty (60) days following final completion of the Project (including final punch list items).



3. The Final Application shall not be made until the Contractor delivers to the City, a complete release of all liens arising out of this Contract in a form acceptable to the City and an affidavit that so far as the Contractor has knowledge or information, the release includes and covers all materials and services for which a lien could be filed, but the Contractor may, if any subcontractor or supplier refuses to furnish a release in full, furnish a bond satisfactory to the City, to properly indemnify the City against any lien.
4. In the event of a bona fide dispute by the City of any sums for which payment has been requested, no interest shall be due on disputed sums until such dispute is resolved, provided that all undisputed sums shall have been paid in due course.

#### **ARTICLE VIII.**

#### **TERMINATION**

1. The performance of work under this Contract may be terminated by the City in accordance with this clause in whole, or from time to time in part, whenever the City shall determine that such termination is in the best interest of the City. Any such termination shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which performance of work under the Contract is terminated, and the date upon which such termination becomes effective.
2. After receipt of a Notice of Termination, and except as otherwise directed by the City, the Contractor shall:
  - A. Stop work under the Contract on the date and to the extent specified in the Notice of Termination.
  - B. Place no further orders or subcontracts for materials, services or facilities, except as may be necessary for completion of such portion of the work under the contract as it is not terminated.
  - C. Terminate all orders and subcontracts to the extent that they relate to the performance of work terminated by the Notice of Termination.
  - D. Assign to the City, in the manner, at the times and to the extent directed by the City, all of the rights, title, and interest of the Contractor under the orders and subcontracts so terminated, in which case the City shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts.
  - E. Settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts, with the approval or ratification of the City, to the extent the City may require, which approval or ratification shall be final for all the purposes of this clause.
  - F. Transfer title and deliver to the City, in the manner, at the times, and to the extent, if any, directed by the City:

- (1) the fabricated or unfabricated parts, components of work in process, completed work, supplies, equipment and other materials produced as a part of or acquired in connection with the performance of the work terminated by the Notice of Termination; and
    - (2) the completed or partially completed "as built" drawings, information, and other property which, if the Contract had been completed, would have been required to be furnished to the City.
  - G. Complete performance of such part of the Contract as shall not have been terminated by the Notice of Termination.
3. After a receipt of Notice of Termination, the Contractor shall submit to the City its termination claim, in the form and with certification prescribed by the City. Such claim shall be submitted promptly but in no event later than thirty (30) days from the effective date of termination, unless one or more extension, in writing, are granted by the City upon request of the Contractor made in writing within such thirty (30) days period or authorized extension thereof. Upon failure of the Contractor to submit its termination claim within the time allowed, the City may determine on the basis of information available to it, the amount, if any, due to the Contractor by reason of the termination and shall thereupon pay to the Contractor the amount so determined.
  4. Subject to the provisions of Article VIII, paragraph 3 above, the Contractor and the City may agree upon the whole or any part of the amount or amounts to be paid to the Contractor by reason of the total or partial termination of work pursuant to this clause, which amount or amounts may include a reasonable allowance for profit on work done; provided, that such agreed amount or amounts exclusive of settlement costs, shall not exceed the total contract sum as reduced by the amount of payments otherwise made and as further reduced by the contract price of work not terminated. The Contract shall be amended accordingly and the Contractor shall be paid the agreed amount. Nothing in paragraph 5 hereof, prescribing the amount to be paid to the Contractor in the event of failure of the Contractor and the City to agree upon the whole amount to be paid to the Contractor by reason of the termination of work pursuant to this clause, shall be deemed to limit, restrict, or otherwise determine or affect the amount or amounts which may be agreed upon to be paid to the Contractor pursuant to this paragraph.
  5. In the event of the failure of the Contractor and the City to agree upon the whole amount to be paid to the Contractor by reason of the termination of work pursuant to this clause, as provided in paragraph 4 above, the city shall pay to the Contractor the amounts determined by the City as follows, but without duplication of any amount agreed upon in accordance with Article VIII, paragraph 4 above:
    - A. For completed work and services accepted by the City, the price or prices specified in the contract Document for such work, less any payments previously made.

- B.** The total of:
- (1)** the costs incurred in the performance of the work and services terminated, including initial costs and reparatory expenses allocable thereto, but exclusive of any costs attributable to the work and services paid or to be paid for under paragraph 5(a) hereof;
  - (2)** a sum, as profit on (i) above, determined by the City to be fair and reasonable.
- 6.** In the event the Contract is terminated because of the Contractor's default, the City may take over the work and services and complete the same by contract or otherwise, and the Contractor shall be liable to the City for any increased cost of the project.
- 7.** If the Contractor's failure to perform and default arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor (such causes may include, but are not restricted to act of God, acts of the public enemy, acts of the City in either its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes and unusually severe weather; but in every case the failure to perform must be beyond the control and without the fault or negligence of the Contractor) and the Contractor, within ten (10) days from the beginning of any such delay notifies the City in writing of the causes of delay, then the City shall ascertain the facts and the extent of delay and extend the time for completing the Project within the findings of fact justify such an extension.
- 8.** If, after Notice of Termination of the Contract for default, it is determined for any reason that the Contractor was not in default or that the default was excusable under the provisions of paragraph 7 above, the rights and obligations of the parties shall be the same as if the Notice of Termination had been issued pursuant to the stipulations of Article VIII paragraph 1, hereof.

## **ARTICLE IX**

### **MISCELLANEOUS PROVISIONS**

- 1.** Terms used in the Contract which are defined in the General Provisions of the Contract shall have the meanings designated in those Provisions.
- 2.** The Contractor shall provide insurance coverage in the amounts, type and classification required by the City, as provided in the Contract Documents, prior to commencement of the work. He shall provide all policies and certificates evidencing such insurance coverage for City's review and approval.
- 3.** The City shall require and the Contractor shall provide separate payment and performance bonds each in the amount of the contract sum, appearing in Article IV hereof, in such form as the City requires and with a surety acceptable to the City. The cost thereof is included in the contract sum. Upon approval by the City of any Change Order increasing the contract sum, Contractor shall provide new bonds reflecting the adjustment in Penal Sums, accordingly.

4. All references herein and in the General Provisions to "Engineer" in the context of supervisor/inspecting authority, including review of change orders and applications for payment, shall refer to any City's representative authorized as such by the City.
5. All covenants and agreements herein contained shall extend to and be obligatory on the successors and assigns of the Contractor and of the City, but the Contractor shall not assign this agreement or any payments to become due thereunder except with the prior written consent of the City. The Contractor agrees that its rights to payment hereunder and the rights of any assignee shall be subject to the rights of the City arising prior to such payment. The City shall have the right to assign its rights hereunder without prior notice to the Contractor and, in the event of such assignment, the Contractor shall continue to perform its obligations hereunder for the account of the assignee; provided, however, that such obligation shall be conditioned upon such assignee covenanting to make all payments required by the Contract Documents and not paid prior to the date of such substitution.
6. The Contractor hereby assigns to the City (and its assigns) all its interest in any subcontracts and purchase orders now existing or hereinafter entered into by the Contractor for performance of any part of the work which assignment will be effective upon acceptance by the City in writing and only as to those subcontracts and purchase orders which the City designates in said assignment at any time during the course of construction prior to final completion. IT IS FURTHER UNDERSTOOD AND AGREED THAT ALL SUBCONTRACTS AND PURCHASE ORDERS SHALL PROVIDE THAT THEY ARE FREELY ASSIGNABLE BY THE CONTRACTOR TO THE CITY AND/OR ITS ASSIGNS. THIS ASSIGNMENT IS PART OF THE CONSIDERATION FOR ENTERING INTO THIS CONTRACT WITH THE CONTRACTOR AND MAY NOT BE WITHDRAWN PRIOR TO FINAL COMPLETION OF THE PROJECT.
7. For purposes of verifying that cost or pricing data submitted, in conjunction with the negotiation of this Contract or any contract change or other modification, are accurate, complete, and current, the City or its authorized representatives, shall -- until the expiration of three (3) years from the date of Final Payment under this Contract -- have the right to examine those books, records, documents and other supporting data which will permit adequate evaluation of the cost or pricing data submitted, along with the computation and projections used therein, which are prepared by the Contractor prior to and after the date of execution of the Contract, but relating to the Contract. The Contractor agrees to insert the substance of this clause in all subcontracts hereunder so as to apply until three (3) years after Final subcontracts hereunder so as to apply until three (3) years after Final Payment under the subcontract, unless the price is based on established catalog or market prices of commercial items sold in substantial quantities to the general public, or prices are set by law or regulation.

**CONTRACT**

IN WITNESS WHEREOF, the parties have made and executed this Agreement, the day and year first above written.

\_\_\_\_\_  
BY: \_\_\_\_\_

(Seal)

\_\_\_\_\_  
(Title)

Date: \_\_\_\_\_

ATTEST:

\_\_\_\_\_

-----  
CITY OF WAUCHULA

BY: CITY OF WAUCHULA, FLORIDA

(Seal)

BY: CITY COMMISSION OF WAUCHULA, FLORIDA

BY: \_\_\_\_\_  
(MAYOR)

Date: \_\_\_\_\_

ATTEST:

\_\_\_\_\_

-----  
APPROVED AS TO FORM

TECHNICAL PROVISIONS OF  
CONTRACT APPROVED:

\_\_\_\_\_  
CITY ATTORNEY

\_\_\_\_\_  
CITY MANAGER

Date \_\_\_\_\_

Date \_\_\_\_\_

**PERFORMANCE BOND**

STATE OF FLORIDA  
COUNTY OF \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS that \_\_\_\_\_ a Principal, hereinafter called Contractor, and \_\_\_\_\_ as Surety, hereinafter called Surety, are held and firmly bound unto the City of Wauchula, Florida as Obligee, hereinafter called Owner, in the amount of \_\_\_\_\_ Dollars (\$) for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated \_\_\_\_\_, 20\_\_\_\_, entered into a Contract with Owner for: **REPAIR STORM DAMAGED HANGARS** in accordance with Contract Documents, Drawings, and Specifications prepared by the City's consultant, which Contract is by reference made a part hereof and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION ARE SUCH, that, if the Principal shall in all respects promptly and faithfully perform and comply with the terms and conditions of said Contract and his obligations thereunder and shall indemnify the Owner and the Consulting Engineer and save either or all of them against and from all costs, expenses and damages arising from the performance of said Contract or the repair of any work there under, then this obligation shall be void; otherwise, this Bond shall remain in full force and effect, in accordance with the following terms and conditions:

1. The Principal and Surety jointly and severally agree to pay the Owner any difference between the sum to which the said Principal would be entitled on the completion of the Contract, and that sum which the Owner may be obliged to pay for the completion of said work by Contract or otherwise, and any damages, direct or indirect or consequential, including without limitation those for delay, expenses, costs, and attorney's fees including appellate proceedings, which the said Owner may sustain on account of such work, or on account of the failure of said Contractor to properly and in all things, keep and execute all of the provisions of said Contract.
2. And this Bond shall remain in full force and effect for a period of one (1) year from the date of acceptance of the project by the Owner and shall provide that the Contractor guarantees to repair or replace for said period of one (1) year all work performed and materials and equipment furnished that were not performed and materials and equipment furnished that were not performed or furnished according to the terms of the Contract, and shall make good, defects thereof which have become apparent before the expiration of said period of one (1) year. If any part of the project, in the judgment of the Owner, for the reasons above stated needs to be replaced, repaired or made good during that time, the Owner shall so notify the Contractor in writing. If the Contractor refuses or neglects to do such work within five (5) days from the date of service of such Notice, the Owner shall have the work done by others and the cost thereof shall be paid by the Contractor or his Surety.

3. And the said Surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to work to be performed thereunder or the specifications accompanying the same shall in any wise affect its obligations on this bond, and it does hereby waive Notice of any change, extension of time, alteration or addition to the terms of the Contract or to the work or to the Specifications.
4. The Surety presents and warrants to the Owner that they have a Best's Key Rating Guide General Policyholder's Rating of "\_\_\_\_\_" and Financial Category of "Class\_\_\_".

IN WITNESS WHEREOF, the above bounded parties executed this instrument under their several seals, this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, A.D., the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

WAUCHULA MUNICIPAL AIRPORT  
REPAIR STORM DAMAGED HANGARS

PERFORMANCE BOND

WITNESS:

(If Sole Ownership or Partnership, two (2) Witnesses required).

(If Corporation, Secretary Only will attest and affix seal).

PRINCIPAL:

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Authorized Officer (Affix Seal)

WITNESSES:

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

Business Address

\_\_\_\_\_  
City State

SURETY:

\_\_\_\_\_  
Corporate Surety

\_\_\_\_\_  
Attorney-in-Fact (Affix Seal)

WITNESS:

\_\_\_\_\_

\_\_\_\_\_  
Title

Business Address

\_\_\_\_\_  
City State

\_\_\_\_\_  
Name of Local Insurance Agency



**CERTIFICATES AS TO CORPORATE PRINCIPAL**

I, \_\_\_\_\_, certify that I am the Secretary of the Corporation named as Principal in the within bond; that \_\_\_\_\_ who signed the said bond on behalf of the Principal, was then of said Corporation; that I know his signature, and his signature hereto is genuine; and that said bond was duly signed, sealed, and attested for and in behalf of said Corporation by authority of its governing body.

\_\_\_\_\_  
Secretary (Corporate Seal)

STATE OF FLORIDA  
COUNTY OF \_\_\_\_\_

Before me, a Notary Public, duly commissioned, qualified and acting, personally appeared to me well known, who being my first duly sworn upon oath, says that he is the Attorney-in-Fact, for the \_\_\_\_\_ and that he has been authorized by \_\_\_\_\_ to execute the foregoing bond on behalf of the Contractor named therein in favor of the City of Wauchula, Florida.

Subscribed and sworn to before me this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_, A.D.

[Attach Power of Attorney to Original Bid Bond and Financial Statement from Surety Company]

\_\_\_\_\_  
Notary Public  
State of Florida-at-Large

My Commission Expires:  
\_\_\_\_\_

**END OF PERFORMANCE BOND**

**CONSTRUCTION PAYMENT BOND**

STATE OF FLORIDA  
COUNTY OF \_\_\_\_\_

BOND NO: \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS that \_\_\_\_\_ a Principal, hereinafter called Contractor, and \_\_\_\_\_ as Surety, hereinafter called Surety, are held and firmly bound unto the City of Wauchula, Florida as Obligee, hereinafter called Owner, in the amount of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_) for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated \_\_\_\_\_, 20\_\_\_\_, entered into a Contract with Owner for the project "**REPAIR STORM DAMAGED HANGARS**" in accordance with Drawings and Specifications prepared by the City Engineers office, which Contract is by reference made a part hereof and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION ARE SUCH, that, if the Principal shall promptly make payments to all claimants, as hereinbelow defined, then this obligation shall be void; otherwise, this Bond shall remain in full force and effect, subject to the following terms and conditions:

1. A claimant is defined as any person supplying the Principal with labor, material and supplies, used directly or indirectly by the said Principal of any subcontractor in the prosecution of the work provided for in said Contract.
2. The above-named Principal and Surety hereby jointly and severally agree with the Owner that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after performance of the labor or after complete delivery of materials and supplies by such claimant, may sue on the Bond for the use of such claimant, prosecute the suite to final judgment for such sum or sums as may be justly due claimant, and have execution thereon. The Owner shall not be liable for the payment of the costs or expenses of any such suit.
3. No suit or action shall be commenced hereunder by any claimant:
  - A. Unless claimant, other than one having a direct contract with the Principal, shall within ninety (90) days after such claimant's performance of the labor or complete delivery of materials and supplies, deliver to the Principal written notice of the performance of such labor or delivery of such material and supplies and the nonpayment therefor.
  - B. After the expiration of one (1) year from the performance of the labor or completion of delivery of the materials and supplies; it being understood, however, that if any limitation embodied in this Bond is prohibited by any law controlling the construction hereof such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

- C. Other than in a state court of competent jurisdiction in and for the county or other political subdivision of the state in which the project, or any part thereof, is situated, or in the United States District Court for the district in which the project, or any part thereof, is situated, and not elsewhere.
- 4. The Principal and the Surety jointly and severally, shall repay the Owner any sum which the Owner may be compelled to pay because of any lien for labor or materials furnished for any work included in or provided by said Contract.
- 5. The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration of or addition to the terms of the Contractor r to the work to be performed thereunder or the Specifications applicable thereto shall in anywise affect its obligation on this Bond, and the Surety hereby waives notice of any such change, extension of time, alterations of or addition to the terms of the Contract, or to the work or the Specifications.
- 6. The Surety represents and warrants to the Owner that they have a Best's Key Rating Guide General Policyholder's Rating of "\_\_\_\_\_" and Financial Category of "Class \_\_\_\_\_".

WAUCHULA MUNICIPAL AIRPORT  
REPAIR STORM DAMAGED HANGARS

CONSTRUCTION PAYMENT BOND

IN WITNESS WHEREOF, the above bounded parties executed this instrument under their several seals, this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, A.D., the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

WITNESS:

(If Sole Ownership or Partnership, two (2) Witnesses required).

(If Corporation, Secretary Only will attest and affix seal).

PRINCIPAL:

\_\_\_\_\_  
\_\_\_\_\_

Authorized Officer (Affix Seal)

WITNESSES:

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Title

Business Address

\_\_\_\_\_  
City State

SURETY:

\_\_\_\_\_  
Corporate Surety

\_\_\_\_\_  
Attorney-in-Fact (Affix Seal)

WITNESS:

\_\_\_\_\_

\_\_\_\_\_  
Title

Business Address

\_\_\_\_\_  
City State

\_\_\_\_\_  
Name of Local Insurance Agency

**CERTIFICATES AS TO CORPORATE PRINCIPAL**

I, \_\_\_\_\_, certify that I am the Secretary of the Corporation named as Principal in the within bond; that \_\_\_\_\_ who signed the said bond on behalf of the Principal, was then of said Corporation; that I know his signature, and his signature hereto is genuine; and that said bond was duly signed, sealed, and attested for and in behalf of said Corporation by authority of its governing body.

\_\_\_\_\_  
Secretary (Corporate Seal)

STATE OF FLORIDA  
COUNTY OF \_\_\_\_\_

Before me, a Notary Public, duly commissioned, qualified and acting, personally appeared to me well known, who being my first duly sworn upon oath, says that he is the Attorney-in-Fact, for the \_\_\_\_\_ and that he has been authorized by \_\_\_\_\_ to execute the foregoing bond on behalf of the Contractor named therein in favor of the City of Wauchula, Florida.

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_, A.D.

[Attach Power of Attorney to Original Bid Bond and Financial Statement from Surety Company]

\_\_\_\_\_  
Notary Public  
State of Florida-at-Large

My Commission Expires:  
\_\_\_\_\_

**END OF PAYMENT BOND**

**OPINION OF ATTORNEY**

This is to certify that I have examined the attached Contract Documents, that after examination, I am of the opinion that such Documents conform to the laws of the State of Florida, that the execution of the construction contract and the Performance and Payment Bonds are in due and proper form, and that the representatives of the respective contracting parties have pull power and authority to execute such construction contract and bond on behalf of the respective contracting parties and that the foregoing agreements constitute valid and binding obligations on such parties.

\_\_\_\_\_  
Attorney for the City of Wauchula, Florida

THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_\_.

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**NOTICE OF INTENT TO AWARD**

**DATE:** See Signing Date(s) Below

**TO:**

**PROJECT: REPAIR STORM DAMAGED HANGARS  
WAUCHULA MUNICIPAL AIRPORT – WAUCHULA, FLORIDA**

The Owner has reviewed the Bid submitted by your firm for the above described work in response to its Advertisement for Bids dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ and the contract documents.

You are hereby notified that your Bid is being considered for acceptance for the PROJECT, in the Total Amount \_\_\_\_\_ **Dollars (\$ \_\_\_\_\_)** for the work, subject to the availability of funds, and less any items not to be constructed.

You are required by the Instructions to Bidders to execute five (5) copies of the Contract Documents and furnish the required Contractor's Performance Bond, Payment Bond, evidences of all required insurance coverage and authority to execute plus satisfactory evidence of compliance with the Bid Conditions pertaining to the Disadvantaged Business Enterprise Program within fifteen (15) calendar days from the date of this Notice to you.

If you fail to execute said Contract Documents and to furnish said Bonds and other required documents and information within the time specified, said Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your Bid as abandoned and as a forfeiture of your Bid Bond. The Owner will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this Notice of Intent to Award to the Owner.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

City of Wauchula  
Owner

By: \_\_\_\_\_  
Ms. Olivia Minshew

Title: \_\_\_\_\_  
City Manager

**ACCEPTANCE OF NOTICE**  
Receipt of the above Notice of Intent  
to Award is hereby acknowledged by:

\_\_\_\_\_  
on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

Signed: \_\_\_\_\_  
(Name) (Title)



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**NOTICE TO PROCEED**

**DATE:** \_\_\_\_\_

**TO:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**PROJECT: REPAIR STORM DAMAGED HANGARS  
WAUCHULA MUNICIPAL AIRPORT  
WAUCHULA, FLORIDA**

You are hereby given notice to commence Work on the Project in accordance with the Contract Agreement dated on the \_\_\_\_ day of \_\_\_\_\_ on or before the \_\_\_\_ day of \_\_\_\_\_, 20 and you are to substantially complete the Work within the times stipulated in the Special Provisions. The date of substantial completion of all Work is therefore the \_\_\_\_ day of \_\_\_\_ 20.

You are required to return an acknowledged copy of this Notice to Proceed to the Owner.

Owner: \_\_\_\_\_ City of Wauchula

By: \_\_\_\_\_  
Olivia Minshew

Title: \_\_\_\_\_ City Manager

**ACCEPTANCE OF NOTICE**

Receipt of the above Notice to Proceed is  
hereby acknowledged by:

\_\_\_\_\_  
on this \_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_\_.

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

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**NOTICE TO PROCURE**

**DATE:**

**TO:**

**PROJECT: REPAIR STORM DAMAGED HANGARS  
WAUCHULA MUNICIPAL AIRPORT  
WAUCHULA, FLORIDA**

You are hereby given notice to commence procurement of materials in accordance with the Contract Agreement dated the \_\_\_\_ day of \_\_\_\_\_, 20 for the contracted work. All materials necessary for the completion of the work shall be stored on site and/or immediately available for installation in-place within \_\_\_\_\_ calendar days of this Notice to Procure, unless extension has been granted by Owner in writing.

You are required to return an acknowledged copy of this Notice to Procure to the Owner.

Owner: City of Wauchula

By: Ms. Olivia Minshew

Title: Assistant City Manager

**ACCEPTANCE OF NOTICE**

Receipt of the above Notice to  
Procure is hereby acknowledged by:

\_\_\_\_\_  
on this \_\_\_\_ day of \_\_\_\_\_ 20\_\_.

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

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**FINAL RELEASE OF LIEN**

**CITY OF WAUCHULA**

KNOW ALL MEN BY THESE PRESENTS, that the undersigned, for and in consideration of the payment of the sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), paid by the City of WAUCHULA, Florida, hereinafter referred to as "Owner", receipt of which is hereby acknowledged as total compensation for performance of the below-described Contract for the Project, does hereby fully and completely discharge and release the owner from and waives any and all debts, accounts, promises, damages, liens, encumbrances, causes of action, suits, bonds, judgments, claims and demands whatsoever, in law or in equity, which the undersigned ever had, now has or might hereafter have on account of labor performed, material furnished or services rendered, directly or indirectly, for the Contract between the parties dated \_\_\_\_\_, 20\_\_\_\_, known as **REPAIR STORM DAMAGED HANGARS** except for those claims, disputes and other matters arising out of or relating to said Contract which have been raised by written demand in accordance with the Contract Documents prior to this date and identified by the Contractor as unsettled in the final Application for Payment and are either in arbitration or court litigation, as the case may be, in accordance with the Contract Documents.

The undersigned further covenants that subcontractors, suppliers, and material suppliers, and any or all other persons supplying materials, supplies, service or labor used directly or indirectly in the prosecution of the work provided for in the Contract, have been paid in full for all work under this contract.

The undersigned agrees to maintain in full force and effect the provisions of the Contract Documents respecting the guaranty against defective work, and any other special guaranties required by the Contract Documents, for the terms provided in the Contract Documents, which terms shall begin to run from the date specified in the Contract Documents.

The undersigned represents and warrants that the statements contained in the foregoing Release are true and correct.

WAUCHULA MUNICIPAL AIRPORT  
REPAIR STORM DAMAGED HANGARS

FINAL RELEASE OF LIEN

IN WITNESS WHEREOF, I have hereunto set my hand and seal this \_\_\_\_\_ day of

\_\_\_\_\_, 20\_\_\_\_,

WITNESSES:

\_\_\_\_\_  
CONTRACTOR

By: \_\_\_\_\_

Title: \_\_\_\_\_

STATE OF \_\_\_\_\_

COUNTY OF \_\_\_\_\_

Sworn to and subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_\_

\_\_\_\_\_  
NOTARY PUBLIC

(NOTARY SEAL)

My Commission Expires: \_\_\_\_\_

## **PROJECT CLOSEOUT**

Project closeout is hereby defined to include general requirements near end of contract time, in preparation for final acceptance, final payment, normal termination of contract, occupancy by Owner, and similar actions evidencing completion of the work. Specific requirements for individual units of work are specified in other sections. Time of closeout is directly related to substantial completion and, therefore, may be a single time period for entire work or a series of time periods for individual parts of the work which have been certified as substantially complete at different dates. The time variation, if any, shall be applicable to other provisions of this contract and the specifications.

## **PREREQUISITES TO FINAL ACCEPTANCE**

### **A. General**

Prior to requesting final payment, as required by General Conditions, complete the following and list known exceptions in request:

1. Submit final payment request with Final Release of Lien and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
2. Submit one year project warranty, equipment and materials-specific manufacturer's warranties, workmanship-maintenance bonds, maintenance agreements, final certifications, and similar documents. Certificate of Warranty form follows this page.
3. Submit lien waivers from all subcontractors and suppliers.
4. Submit consent of surety.
5. Submit red lined drawings and electronic as-built survey drawings on USB drive in AutoCAD version 2024 or earlier to the Engineer.



CERTIFICATE OF WARRANTY

Project Name: \_\_\_\_\_

Project Number: \_\_\_\_\_

Contractor: \_\_\_\_\_

Date of Substantial Completion: \_\_\_\_\_

I, \_\_\_\_\_, being the \_\_\_\_\_

\_\_\_\_\_ of \_\_\_\_\_ do hereby certify that  
the one (1) year warranty called for in the Contract Specifications is now in force and  
effect until after such time one (1) year has passed after the date of Final Completion.

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

STATE OF \_\_\_\_\_

COUNTY OF \_\_\_\_\_

Subscribed and sworn to before me, a Notary Public, in and for the County and State  
aforesaid by

\_\_\_\_\_ duly authorized so to sign this

\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

Notary Public \_\_\_\_\_

My commission expires: \_\_\_\_\_

# **GENERAL PROVISIONS**



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**GENERAL PROVISIONS**

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| Special Provisions.....                              | GP130-1 thru 12 |

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## **SECTION 1A SUPPLEMENTAL GENERAL PROVISIONS**

The following Supplemental General Provisions are included to supplement the Part I General Provisions as required by the FAA AC 150/5370-10, latest edition. If there is a conflict between the FAA Standard General Provisions and other provisions, the FAA Standard will prevail, unless the other provisions are more strict and required by local ordinances.

### **SECTION 10 DEFINITION OF TERMS**

**10-50a RESIDENT PROJECT REPRESENTATIVE.** An authorized representative of the Engineer assigned to make all necessary observations and/or tests of the work performed or being performed, or of the materials furnished or being furnished by the Contractor in the execution of this contract. The Resident Project Representative (RPR) is the Engineer's agent, will act as directed by and under the supervision of the Engineer, and will confer with the Engineer regarding his/her actions. The RPR's dealings in matters pertaining to the on-site work shall, in general, be only with Engineer and Contractor. Written communications with Owner will be through or as directed by the Engineer.

### **SECTION 20 PROPOSAL REQUIREMENTS AND CONDITIONS**

**Supplement to Paragraph 20-9 IRREGULAR PROPOSALS.** Proposals shall be considered irregular for any of the reasons stated in paragraph 20-08, and if the proposal is "nonresponsive" with respect to the requirements of Executive Order 11246 and 49 CFR Part 23.

### **Supplement to Paragraph 20-14 DISQUALIFICATION OF BIDDERS.**

A bidder shall be disqualified for any of the reasons stated in paragraph 20-14, as well as the following:

(d) Lack of responsibility as shown by past work judged from the standpoint of workmanship and/or performance as determined by the Owner;

(e) Lack of competency, as revealed by inability to produce valid license as required by law;

(f) Uncompleted work for which the bidder is committed by contract, which, in the judgment of the Owner, might hinder or prevent the prompt completion of work under this contract if awarded to such bidder; and

(g) Being in arrears on any of his existing contracts with the Owner or in litigation with the Owner resulting from having defaulted on a previous contract with the Owner.

### **SECTION 30 AWARD AND EXECUTION OF CONTRACT**

**Supplement to Paragraph 30-2 AWARD OF CONTRACT.** Award of the contract may be subject to the availability of FAA/FDOT AIP/PTGA funds, and will be made after the necessary determinations of the responsibility of the low bidders have been made. Upon approval by the Federal Aviation Administration and based on the recommendations of the Engineer, contract award notification will be made.

**Supplement to Paragraph 30-05 REQUIREMENTS OF CONTRACT BONDS.** For all contracts, separate performance and payment bonds shall each be in a sum equal to the full amount of the contract awarded. The bond shall be written through a company licensed to do business in the State of Florida and meeting the following requirements, ***in addition to local ordinances***.

(a) **Qualifications - Management and Strength**

(1) The surety must be rated no less than "A" as to management, and no less than VII as to strength, by the latest edition of Best's Insurance Guide, published by Alfred M. Best Company, Inc., 75 Fulton St., New York, New York 10038;

(2) The surety company executing the bond shall be listed by the U.S. Treasury Department as being approved by and for writing bonds for federal projects on its current list in an amount not less than the amount of the bond to the owner;

(b) **Bonding Limit - Any One Risk.** The bonding limit of the sureties shall not exceed five percent (5%) of the policyholder surplus (capital and surplus) as listed by the aforementioned Best's Insurance Guide; and

(c) **Authorization.** Attorneys-in-fact who sign performance, payment and guaranty bonds must file with such bond a certified copy of their power of attorney to sign such bonds. All bonds must be countersigned by a resident Florida agent of the surety with proof of agency attached.

**Supplement to Paragraph 30-06 EXECUTION OF CONTRACT.** The successful bidder shall provide satisfactory evidence of all required insurance coverage to the Owner or the persons executing the contract. The above documents must be furnished, executed, and delivered before the contract will be executed by the Owner and a copy of such fully executed contract is delivered to the Contractor. If the contract is mailed, special handling is recommended.

**SECTION 40 SCOPE OF WORK**

**40-1a PRE-CONSTRUCTION CONFERENCE.** After contract has been awarded and signed, but prior to the commencement of the work, a Pre-Construction Conference shall be held at the office of the Owner. Such conference shall be attended by authorized representatives of the Owner, Engineer, Contractor, and appropriate airport users. The purpose of this conference will be to review the Contractor's submitted progress schedule, clarify any issues that might arise with regard to responsibility and jurisdiction, and acquaint all parties with the respective authorized representatives.

The Contractor's progress schedule shall be furnished to the Engineer five (5) working days in advance of this conference. The exact time and place of this meeting shall be established by the Owner and written notice shall be given.

**Supplement to Paragraph 40-05 MAINTENANCE OF TRAFFIC.** Contractor vehicles, and construction equipment shall be limited to the areas of runway and taxiway which are closed to air traffic, except when approved by the Owner. Safety practices shall be in accordance with FAA AC 150/5370-2, latest edition, Operational Safety on Airports during Construction. Vehicle traffic patterns to and from construction areas shall be as approved by the Owner after coordination with the Owner. Grassed areas damaged by ground traffic will be restored by the Contractor at his expense prior to completion and acceptance of the project.

The Contractor shall furnish flaggers in sufficient numbers to protect and divert vehicular, aircraft, and pedestrian traffic from working areas closed to traffic, or to protect any new work. Failure to comply with these requirements will result in the Owner shutting down the work until the Contractor can demonstrate the necessary protection.

When contractor vehicles must repeatedly cross the active runway, or be within 250 feet of an active runway centerline, the Contractor shall furnish flagmen to control such movements to assure safety to aircraft and personnel using the active runway. Vehicles shall be flagged and lighted in accordance with AC 150/5370-2, latest edition.

**Supplement to 40-08 FINAL CLEANING UP.** Areas disturbed during construction are to be restored to the conditions existing prior to construction. No separate payment will be made for this work.

**40-09 UTILITIES AND TEMPORARY FACILITIES.**

(a) **Existing Utilities and Facilities** indicated on the drawings may not be complete and location could vary from that shown. The Contractor shall verify the exact location of those existing utilities and facilities which are directly involved in the construction and/or within the limits of the work.

(b) **Protection.** All active utilities and facilities traversing the site of the work shall be preserved in operating condition. All property including, but not limited to, sewer and water mains, conduit, manholes, catch basins, valve boxes, poles, guys, electrical and telephone cables and other appurtenances shall be protected. The Contractor shall repair damage to any such utility and facility due to the work under this contract to the satisfaction of the local authority and the utility, at no cost to the Owner.

(c) **Approval** shall be obtained from the appropriate utility authority prior to making adjustments to, or in any way altering the operation of existing utilities and facilities or making connections to existing pipes and structures.

(d) **Electrical Power.** Temporary wiring and electrical power for construction shall be furnished by the Contractor. Contractor shall make all necessary arrangements with the local power company for temporary services, at Contractor's expense.

(1) Temporary wiring shall meet all safety requirements of the National Electrical Code and local code requirements.

(2) Temporary power shall be made available by the Contractor to all subcontractors to enable them to properly carry out their work. An adequate number of outlets shall be provided, each properly and clearly labeled with maximum voltage and fuse protection, and provided with ground fault protection.

(3) Temporary lighting shall consist of a weatherproof socket properly insulated and provided with a locking wire-type guard.

(4) All devices shall be properly grounded.



(e) **Water.** The Contractor shall arrange with local authorities for water and pay all costs in connection therewith.

(f) **Temporary Sanitary Facilities.**

(1) Provide temporary toilet facilities separate from the job office. Maintain these during the entire period of construction under this Contract for use of all construction personnel on the job. Provide enough chemical toilets to conveniently serve the needs of all personnel.

(2) Chemical toilets and their maintenance shall meet the requirements of State and local health regulations and ordinances. Any facilities or maintenance methods failing to meet these requirements shall be corrected immediately.

**SECTION 50 CONTROL OF WORK**

**Supplement to Paragraph 50-01 AUTHORITY OF THE RESIDENT PROJECT REPRESENTATIVE (RPR).** All notices given by the Owner or the Engineer under the provisions of this contract shall be in writing and service of same may be in either of the following manners:

(a) By delivery of such notice to the Contractor or to any officer of the Contractor if said Contractor be a corporation, or to any agent or superintendent of the Contractor.

(b) By mailing such notice by certified mail to the address of the Contractor shown on the Contractor's bid.

The Engineer shall be permitted to inspect and review all payrolls, records or personnel, conditions of employment, invoices of materials, books of accounts, and other relevant data and records pertinent to the contract and subcontracts.

**Supplement to Paragraph 50-6 COOPERATION BETWEEN CONTRACTORS.** The Contractor shall not commit or permit any act which will interfere with the performance of the work by any other contractor or fail to perform such acts as required to avoid interference with the performance of work by any other contractor.

If there is a difference of opinion as to the respective rights of the Contractor and others doing the work within the limits of or adjacent to the project, the Engineer will decide as to the respective rights of the various parties involved in order to secure the completion of the Owner's work in general harmony and in a satisfactory manner. His decision shall be final and binding on the Contractor.

**Supplement to Paragraph 50-7 CONSTRUCTION LAYOUT AND STAKES.** The Contractor must establish all layout required for the construction of the work and shall perform all other surveys required during construction. Initial staking for the construction layout, grade control, and the final measurements for the proposed Work shall be performed by a competent licensed surveyor at the expense of the Contractor, who shall cooperate with the Engineer to facilitate checking of the work.

**Supplement to Paragraph 50-08, AUTHORITIES AND DUTIES OF QUALITY ASSURANCE (QA) INSPECTORS.** Resident Project Representative (RPR) will:

1. SCHEDULES: Review the progress schedule, schedule of Shop Drawing submissions and schedule of values prepared by Contractor and consult with Engineer concerning their acceptability.
2. CONFERENCES: Attend pre-construction conferences. Arrange a schedule of progress meetings and other job conferences as required in consultation with Engineer and notify those expected to attend in advance. Attend meetings, and maintain and circulate copies of minutes thereof.
3. LIAISON:
  - a. Serve as Engineer's liaison with Contractor, working principally through Contractor's superintendent and assist him in understanding the intent of the Contract Documents. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-site operations.
  - b. As requested by the Engineer, assist in obtaining from Owner additional details or information, when required at the job site for proper execution of the work.
4. SHOP DRAWINGS AND SAMPLES:
  - a. Receive and record date of receipt of shop drawings and samples, receive samples which are furnished at the site by Contractor, and notify Engineer of their availability for examination.
  - b. Advise Engineer and Contractor or its superintendent immediately of the commencement of any work requiring a shop drawing or sample submission if the submission has not been reviewed by the Engineer.
5. REVIEW OF WORK, REJECTION OF DEFECTIVE WORK, INSPECTIONS AND TESTS:
  - a. Conduct on-site observations of the work in progress to assist Engineer in determining if the work is proceeding in accordance with the Contract Documents and that completed work will conform to the Contract Documents.
  - b. Report to Engineer whenever he believes that any work is unsatisfactory, faulty or defective, or does not conform to the Contract Documents, or does not meet the requirements of any inspections, tests, or approval required to be made or has been damaged prior to final payment. Advise Engineer when he believes work should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
  - c. Verify that test, equipment and systems startups and operating and maintenance instructions are conducted as required by the Contract Documents and in presence of the required personnel, and the Contractor maintains adequate records thereof; observe, record and report to Engineer appropriate details relative to the test procedures and startups.
  - d. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the outcome of these inspections and report to Engineer.

6. INTERPRETATION OF CONTRACT DOCUMENTS: Transmit Engineer's clarification and interpretations of the Contract Documents to Contractor.
7. MODIFICATIONS: Consider and evaluate Contractor's suggestions for modifications in drawings or specifications and report them with recommendations to Engineer.
8. RECORDS:
  - a. Maintain at the job site orderly files for correspondence, reports of job conferences, shop drawings and sample submissions, reproductions of original Contract Documents, including all addenda, change orders, field orders, additional drawings issued subsequent to the execution of the contract, Engineer's clarifications and interpretations of the Contract Documents, progress reports and other project related documents.
  - b. Keep a diary or log book, recording hours on the job site, weather conditions, data relative to questions of extras or deductions, list of visiting officials and representatives or manufacturers, fabricators, suppliers and distributors, daily activities, decisions, observations in general and specific observations in more detail as in the case of observing test procedures. Send copies to Engineer.
  - c. Record names, addresses and telephone numbers of all contractors, subcontractors and major suppliers of material and equipment.
9. REPORTS:
  - a. Furnish Engineer daily reports as required to show progress of the work and Contractor's compliance with the approved progress schedule of shop drawing submissions.
  - b. Consult with Engineer in advance of scheduled major tests, inspections or start of important phases of the work.
  - c. Report immediately to Engineer upon the occurrence of any accident.
10. PAYMENT REQUISITIONS: Review applications for payment with Contractor for compliance with the established procedure for their submission and forward them with recommendations to Engineer, noting particularly their relation to the schedule of values, work completed and materials and equipment delivered at the site, but not incorporated in the work.
11. CERTIFICATES, MAINTENANCE AND OPERATION MANUALS: During the course of the work, verify that certificates, maintenance and operation manuals and other data required to be assembled and furnished by Contractor are applicable to the items actually installed; and deliver this material to Engineer for his review and forwarding to Owner prior to final acceptance of the work.
12. COMPLETION:
  - a. Before Engineer issues a Certificate of Substantial Completion, submit to Contractor a list of observed items requiring completion or correction.

- b. Conduct final inspection in the company of Engineer, Owner and Contractor and prepare a final list of items to be completed or corrected.
  - c. Verify that all items on final list have been completed or corrected and make recommendations to Engineer concerning acceptance.
13. PAYMENT OF COMPENSATION, ETC.: The payment of any compensation, whatever may be its character or form, or the giving of any gratuity, or the granting of any valuable favor by the Contractor to any inspector, directly or indirectly, is strictly prohibited and any such act on the part of the Contractor will constitute a violation of this contract.

#### LIMITATIONS OF AUTHORITY

Except upon written instructions of the Engineer, Resident Project Representative shall not:

- 1. Authorize any deviation from the Contract Documents or approve any substitute materials or equipment;
- 2. Exceed limitations of Engineer's authority as set forth in the Contract Documents;
- 3. Undertake any of the responsibilities of Contractor, subcontractor or Contractor's superintendent, or expedite the work;
- 4. Advise on, or issue, directions relative to any aspect of the means, methods, techniques, sequences, or procedures of construction unless such is specifically called for in the Contract Documents.
- 5. Advise on, or issue, directions as to safety precautions and programs in connection with the work;
- 6. Authorize Owner to occupy the project in whole or in part; and,
- 7. Participate in specialized field or laboratory tests.

**Supplement to Paragraph 50-10 REMOVAL OF UNACCEPTABLE AND UNAUTHORIZED WORK.** No work shall be done without lines and grades having been given to and approved by the Engineer.

#### **SECTION 60 CONTROL OF MATERIALS**

**Supplement to Paragraph 60-2 SAMPLES, TESTS, AND CITED SPECIFICATIONS.** All costs in connection with any failed tests necessary to confirm compliance with specifications, shall be borne by the Contractor.

**Supplement to Paragraph 60-3 CERTIFICATION OF COMPLIANCE/ANALYSIS (COC/COA).** Time expended by the Engineer in excess of one hour to establish or determine the "or equal" status of a material or product substitution shall be at Contractor's expense.

**60-09 RECORD DRAWINGS.** At the completion of the project construction and prior to the final inspection, the Contractor shall provide complete record drawings. The record drawings shall consist of one set of the latest edition of the contract drawings on which shall be clearly and neatly marked all variations from the contract drawings in the work actually installed. At every design elevation and dimension called out in the contract drawings, and areas as designated by the Engineer, the Contractor shall insure that a record elevation or dimension shall be provided for the record plans. The Contractor shall provide a competent, licensed surveyor to validate the record drawings. If any of the Contractor surveyor's data are found to be inaccurate, all (100%) of the record data shall be verified by a second independent registered land surveyor at the Contractor's expense.

## **SECTION 70 LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC**

**Supplement to Paragraph 70-6 SANITARY, HEALTH, AND SAFETY PROVISIONS.** The Contractor, his personnel, and subcontractors will not be permitted to use the sanitary facilities in the existing buildings on the airport, and all personnel at the site shall be so advised. Enclosed temporary toilets shall be provided in sufficient numbers and located where directed and approved by the Owner. Drinking water shall be provided from a safe and sanitary source. All such facilities shall be furnished in strict accordance with existing governing health regulations.

**Supplement to Paragraph 70-7 PUBLIC CONVENIENCE AND SAFETY.** Particular attention is directed to safety on the project during the construction set forth under this contract, in order that the Contractor's personnel as well as the general public will be adequately protected. Construction equipment will not be operated or parked in the vicinity of the active airport runway, taxiways and apron during construction. Trenches, channels, holes and the like, dug for installation of underground items, will be left open a minimum length of time.

Equipment not in use will be parked in areas designated on the drawings and at least **500 feet** from the active runway and at least **65.5 feet** from active taxiways and aprons. Working equipment closer than this to active paved areas will be permitted only with specific permission from and coordination with the Owner through the resident project representative.

No excavation will be made closer than 50 feet to active paved areas except with express permission and coordinated with the Owner through the resident project representative. All such excavation left open over night will be adequately lighted with flashing lights.

When construction requires cutting of active taxiways or runways, same shall have adequate warning barricades and flashing lights placed at key locations to insure safety of operations. The Owner will publish NOTAM stating times of construction on a runway and advise aviators that the runway is closed.

Precaution shall be exercised at all times for the protection of persons and property. The safety provisions of the Manual of Accident Prevention in Construction, published by the Association of General Contractors of America shall be followed to the extent that such provisions are not contrary to applicable law.

**Supplement to Paragraphs 70-11 RESPONSIBILITY FOR DAMAGE CLAIMS and 70-21 INSURANCE REQUIREMENTS.**

The Contractor shall not commence work under this contract until he has obtained the following required insurance and such insurance has been approved by the Owner, nor shall the Contractor allow any subcontractor to commence work on his subcontract until all the insurance required of the subcontractor has been obtained and approved, ***subject to local ordinance***. Prior to the commencement of work hereunder, the Contractor shall furnish to the Owner and Engineer certification that the above insurance requirements have been met by providing a Certificate of Insurance that names as an additional insured the Owner, and all of its Officers, Agents, Employees, and City Commissioners, excluding worker's compensation and professional liability, and that provides such insurance is primary to any other insurance available to the additional insureds with respect to claims covered under the policy, and that such insurance coverage applies separately to each insured against whom claims are made or suit is brought; but the inclusion of one or more insureds shall not operate to increase the insurer's limit of liability. The policies evidencing required insurance shall contain an endorsement to the effect that cancellation or any material change in the policies adversely affecting the interests of the Owner in such insurance shall not be effective until ten (10) days after written notice thereof to the owner and the Engineer. The Contractor shall indemnify and save harmless the Engineer and the Owner and their officers, and employees from all suits actions, or claims of any character brought because of any injuries or damage received or sustained by any person, persons, or property on account of the operations of the Contractor; or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in constructing the work; or because of any act or omission, neglect, or misconduct of said Contractor; or because of any claims or amounts recovered from any infringements of patent, trademark, or copyright; or from any claims or amounts arising or recovered under the "Workmen's Compensation Act," or any other law, ordinance, order, or decree. Money due the Contractor under and by virtue of his/her contract as may be considered necessary by the Owner for such purpose may be retained for the use of the Owner or, in case no money is due, his/her surety may be held until such suit(s), action(s), or claim(s) for injuries or damages as aforesaid shall have been settled and suitable evidence to that effect furnished to the Owner, except that money due the Contractor will not be withheld when the Contractor produces satisfactory evidence that he is adequately protected by public liability and property damage insurance. All policies required under this paragraph must be an "Occurrence" form. The policies shall contain a waiver of subrogation in favor of the City of Wauchula. All insurance coverage shall be written with an insurer having an A.M. Best Rating of a least the "A" category and size category of VIII. The Contractor's self-insured retention or deductible per line of coverage shall not exceed \$25,000.00 without the permission of the Owner. ***Minimum requirements and coverage amounts are as follows, not in conflict with other Sections, and whichever is requirement is greater:***

(a) **Compensation Insurance.** The Contractor shall take out and maintain during the life of this contract, Workmen's Compensation Insurance for all his employees at the site of the project and, in case any work is sublet, the Contractor shall require the subcontractor similarly to provide Workmen's Compensation Insurance for all of the latter's employees unless such employees are covered by the protection afforded by the Contractor. In case any class of employees engaged in hazardous work under this contract at the site of the project is not protected under the Workmen's Compensation Statute, the Contractor shall provide and cause each subcontractor to provide adequate insurance for the protection of his employees not otherwise protected.

(b) **Contractor's Public Liability and Property Damage Liability Insurance.** The Contractor shall take out and maintain regular Contractor's Public Liability and Property Damage Liability Insurance that will protect him from claims for damage for personal injury, including accidental death, as well as from claims for property damage that may arise from operations under this contract, whether such operations are by himself or by any subcontractor or by anyone directly or indirectly employed by either of them. The minimum amounts of such insurance shall be the greater of that as required by Local Ordinance and as follows:

(1) **Contractors' public liability insurance including automobile liability** in an amount not less than \$1,000,000 for injuries, including wrongful death to any one person and subject to the same limit for each person in an amount not less than \$1,000,000 for injuries including wrongful death to more than one person in any one occurrence.

(2) **Contractors' property damage liability insurance** in an amount not less than \$50,000 for damages on account of any one occurrence and in an amount not less than \$100,000 for damages on account of all occurrences.

(3) **Contractors' automobile property damage liability insurance** in an amount not less than \$1,000,000.

(c) **Contingent Liability.** The above policies for comprehensive liability and property damage insurance must be so written as to include contingent liability and contingent property damage insurance to protect the Contractor against claims arising from the operation of subcontractors.

(d) **Contractual Liability.** To recognize and hold harmless the requirements of this contract.

(e) **Builder's Risk.** The Contractor shall secure and maintain during the term of this contract, builder's risk insurance to include but not limited to fire, lightning, extended coverage, vandalism and malicious mischief, in the amount of the project value or greater.

(f) **Umbrella (Excess) Liability Insurance.** Umbrella Liability with limits of not less than \$1,000,000.00, exclusive of defense costs, to be in excess of all other coverages. Such coverage shall be at least as broad as the primary coverages above, with any excess umbrella layers written on a strict following form basis over the primary coverage. All such policies shall be endorsed to provide defense coverage obligations.

***See Sections 70-11 for additional information and requirements.***

**70-22 PROJECT INSPECTION BY OTHERS.** The Contractor is advised that the project may be inspected by the Design Engineers, City of Wauchula, Hardee County Inspectors, Insurance/Re-Insurance company appointed inspectors, and any other Agencies having jurisdiction over this project.

## **SECTION 80 EXECUTION AND PROGRESS**

**Supplement to Paragraph 80-04 LIMITATION OF OPERATIONS.** The construction work shall be accomplished in such a manner that the runway is subject to closure only during the times required for construction, and that such closures for construction receive timely publication of NOTAM as to timing and frequency of occurrences.

## **SECTION 90 MEASUREMENT AND PAYMENT**

**Supplement to Paragraph 90-09 ACCEPTANCE AND FINAL PAYMENT.** Before the final payment is made, the Contractor shall show to the Owner satisfactory evidence that all just liens, claims, and demands of his employees and of other parties from whom materials used in the construction of the work have been purchased or procured, are fully satisfied. The Contractor shall execute and furnish a release of lien of the form included with the contract documents.

Before acceptance and final payment is made, the Contractor shall furnish to the Owner a guarantee to remain in full force and effect for a period of one (1) year from the date of the acceptance of the project by the Owner. This guarantee shall provide that the Contractor shall repair or replace for said period of one year, all work performed and materials and equipment furnished that were not performed or furnished according to the terms of the contract, and made good all defects thereof that have become apparent before the expiration of one year. Such guarantees shall be covered by the surety bond. If any part of the project, in the opinion of the Owner for the reasons stated above, needs to be replaced, repaired or made good during that time, he shall so notify the Contractor in writing. If the Contractor refuses or neglects to do such work within five (5) days from the date of service of such notice, the Owner shall have the work done by others and the cost thereof shall be paid by the Contractor or his surety. Before the surety bond is released, the Owner shall certify in writing that the foregoing obligations have been fully discharged.

When the contract work has been accepted in accordance with the requirements of the subsection titled FINAL ACCEPTANCE of Section 50, the Engineer will prepare the final estimate of the items of work actually performed. The Contractor shall approve the Engineer's final estimate or advise the Engineer of his/her objections to the final quantities to be paid under the contract as amended by change order or supplemental agreement. The Contractor and the Engineer shall resolve all disputes (if any) in the measurement and computation of final quantities to be paid within 30 calendar days of the Contractor's receipt of the Engineer's final estimate. If, after such 30-day period, a dispute still exists, the Contractor may approve the Engineer's estimate under protest of the quantities in dispute, and such disputed quantities shall be considered by the owner as a claim in accordance with the subsection titled CLAIMS FOR ADJUSTMENT AND DISPUTES of Section 50.

After the Contractor has approved, or approved under protest, the Engineer's final estimate, final payment will be processed based on the entire sum, or the undisputed sum in case of approval under protest, determined to be due the Contractor less all previous payments and all amounts to be deducted under the provisions of the contract. All prior partial payments shall be subject to correction in the final estimate and payment.



If the Contractor has filed a claim for additional compensation under the provisions of paragraph 50-16, CLAIMS FOR ADJUSTMENTS AND DISPUTES of Section 50, or under the provisions of this subsection, such claims will be considered by the owner in accordance with local laws or ordinances. Upon final adjudication of such claims, any additional payment determined to be due the Contractor will be paid pursuant to a supplemental final estimate.

**END OF SECTION 1A**

## SECTION 10 DEFINITION OF TERMS

When the following terms are used in these specifications, in the contract, or in any documents or other instruments pertaining to construction where these specifications govern, the intent and meaning shall be defined as follows:

| <b>Paragraph Number</b> | <b>Term</b>                              | <b>Definition</b>                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>10-01</b>            | <b>AASHTO</b>                            | The American Association of State Highway and Transportation Officials.                                                                                                                                                                                                                                                                                                 |
| <b>10-02</b>            | <b>Access Road</b>                       | The right-of-way, the roadway and all improvements constructed thereon connecting the airport to a public roadway.                                                                                                                                                                                                                                                      |
| <b>10-03</b>            | <b>Advertisement</b>                     | A public announcement, as required by local law, inviting bids for work to be performed and materials to be furnished.                                                                                                                                                                                                                                                  |
| <b>10-04</b>            | <b>Airport</b>                           | Airport means an area of land or water which is used or intended to be used for the landing and takeoff of aircraft; an appurtenant area used or intended to be used for airport buildings or other airport facilities or rights of way; airport buildings and facilities located in any of these areas, and a heliport.                                                |
| <b>10-05</b>            | <b>Airport Improvement Program (AIP)</b> | A grant-in-aid program, administered by the Federal Aviation Administration (FAA).                                                                                                                                                                                                                                                                                      |
| <b>10-06</b>            | <b>Air Operations Area (AOA)</b>         | The term air operations area (AOA) shall mean any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft. An air operation area shall include such paved or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiway, or apron. |
| <b>10-07</b>            | <b>Apron</b>                             | Area where aircraft are parked, unloaded or loaded, fueled and/or serviced.                                                                                                                                                                                                                                                                                             |
| <b>10-08</b>            | <b>ASTM International (ASTM)</b>         | Formerly known as the American Society for Testing and Materials (ASTM).                                                                                                                                                                                                                                                                                                |
| <b>10-09</b>            | <b>Award</b>                             | The Owner's notice to the successful bidder of the acceptance of the submitted bid.                                                                                                                                                                                                                                                                                     |
| <b>10-10</b>            | <b>Bidder</b>                            | Any individual, partnership, firm, or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.                                                                                                                                                                                                       |
| <b>10-11</b>            | <b>Building Area</b>                     | An area on the airport to be used, considered, or intended to be used for airport buildings or other airport facilities or rights-of-way together with all airport buildings and facilities located thereon.                                                                                                                                                            |
| <b>10-12</b>            | <b>Calendar Day</b>                      | Every day shown on the calendar.                                                                                                                                                                                                                                                                                                                                        |
| <b>10-13</b>            | <b>Certificate of Analysis (COA)</b>     | The COA is the manufacturer's Certificate of Compliance (COC) including all applicable test results required by the specifications.                                                                                                                                                                                                                                     |

| Paragraph Number | Term                                   | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10-14            | <b>Certificate of Compliance (COC)</b> | The manufacturer's certification stating that materials or assemblies furnished fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer's authorized representative.                                                                                                                                                                                                                                                                                                                            |
| 10-15            | <b>Change Order</b>                    | A written order to the Contractor covering changes in the plans, specifications, or proposal quantities and establishing the basis of payment and contract time adjustment, if any, for work within the scope of the contract and necessary to complete the project.                                                                                                                                                                                                                                                                            |
| 10-16            | <b>Contract</b>                        | A written agreement between the Owner and the Contractor that establishes the obligations of the parties including but not limited to performance of work, furnishing of labor, equipment and materials and the basis of payment.<br>The awarded contract includes but may not be limited to: Advertisement, Contract form, Proposal, Performance bond, payment bond, General provisions, certifications and representations, Technical Specifications, Plans, Supplemental Provisions, standards incorporated by reference and issued addenda. |
| 10-17            | <b>Contract Documents</b>              | The complete documentation setting forth the contractual obligations set forth for the construction of the project, including but not limited to, the entire project manual (front ends, general and special provisions, technical specifications, and any referenced standards therein), as well as the construction plans and drawings. Contract Documents also refers to the contract agreement pages and other supporting advertisement, bidding requirements, and bidding procedures documents, also known as the "Front Ends".            |
| 10-18            | <b>Contract Item (Pay Item)</b>        | A specific unit of work for which a price is provided in the contract.                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 10-19            | <b>Contract Time</b>                   | The number of calendar days or working days, stated in the proposal, allowed for completion of the contract, including authorized time extensions. If a calendar date of completion is stated in the proposal, in lieu of a number of calendar or working days, the contract shall be completed by that date.                                                                                                                                                                                                                                   |
| 10-20            | <b>Contractor</b>                      | The individual, partnership, firm, or corporation primarily liable for the acceptable performance of the work contracted and for the payment of all legal debts pertaining to the work who acts directly or through lawful agents or employees to complete the contract work.                                                                                                                                                                                                                                                                   |

| <b>Paragraph Number</b> | <b>Term</b>                                        | <b>Definition</b>                                                                                                                                                                                                                                                                                                     |
|-------------------------|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>10-21</b>            | <b>Contractors Quality Control (QC) Facilities</b> | The Contractor's QC facilities in accordance with the Contractor Quality Control Program (CQCP).                                                                                                                                                                                                                      |
| <b>10-22</b>            | <b>Contractor Quality Control Program (CQCP)</b>   | Details the methods and procedures that will be taken to assure that all materials and completed construction required by the contract conform to contract plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors.                |
| <b>10-23</b>            | <b>Control Strip</b>                               | A demonstration by the Contractor that the materials, equipment, and construction processes results in a product meeting the requirements of the specification.                                                                                                                                                       |
| <b>10-24</b>            | <b>Construction Safety and Phasing Plan (CSPP)</b> | The overall plan for safety and phasing of a construction project developed by the airport operator, or developed by the airport operator's consultant and approved by the airport operator. It is included in the invitation for bids and becomes part of the project specifications.                                |
| <b>10-25</b>            | <b>Drainage System</b>                             | The system of pipes, ditches, and structures by which surface or subsurface waters are collected and conducted from the airport area.                                                                                                                                                                                 |
| <b>10-26</b>            | <b>Engineer</b>                                    | The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for engineering, inspection, and/or observation of the contract work and acting directly or through an authorized representative.                                                                                    |
| <b>10-27</b>            | <b>Equipment</b>                                   | All machinery, together with the necessary supplies for upkeep and maintenance; and all tools and apparatus necessary for the proper construction and acceptable completion of the work.                                                                                                                              |
| <b>10-28</b>            | <b>Extra Work</b>                                  | An item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, but which is found by the Owner's Engineer or Resident Project Representative (RPR) to be necessary to complete the work within the intended scope of the contract as previously modified. |
| <b>10-29</b>            | <b>FAA</b>                                         | The Federal Aviation Administration. When used to designate a person, FAA shall mean the Administrator or their duly authorized representative.                                                                                                                                                                       |
| <b>10-30</b>            | <b>Federal Specifications</b>                      | The federal specifications and standards, commercial item descriptions, and supplements, amendments, and indices prepared and issued by the General Services Administration.                                                                                                                                          |

| Paragraph Number | Term                            | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10-31            | Force Account                   | <p><b>a.</b> Contract Force Account - A method of payment that addresses extra work performed by the Contractor on a time and material basis.</p> <p><b>b.</b> Owner Force Account - Work performed for the project by the Owner's employees.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 10-32            | Intention of Terms              | <p>Whenever, in these specifications or on the plans, the words "directed," "required," "permitted," "ordered," "designated," "prescribed," or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Engineer and/or Resident Project Representative (RPR) is intended; and similarly, the words "approved," "acceptable," "satisfactory," or words of like import, shall mean approved by, or acceptable to, or satisfactory to the Engineer and/or RPR, subject in each case to the final determination of the Owner.</p> <p>Any reference to a specific requirement of a numbered paragraph of the contract specifications or a cited standard shall be interpreted to include all general requirements of the entire section, specification item, or cited standard that may be pertinent to such specific reference.</p> |
| 10-33            | Lighting                        | A system of fixtures providing or controlling the light sources used on or near the airport or within the airport buildings. The field lighting includes all luminous signals, markers, floodlights, and illuminating devices used on or near the airport or to aid in the operation of aircraft landing at, taking off from, or taxiing on the airport surface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 10-34            | Major and Minor Contract Items  | A major contract item shall be any item that is listed in the proposal, the total cost of which is equal to or greater than 20% of the total amount of the award contract. All other items shall be considered minor contract items.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 10-35            | Materials                       | Any substance specified for use in the construction of the contract work.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 10-36            | Modification of Standards (MOS) | Any deviation from standard specifications applicable to material and construction methods in accordance with FAA Order 5300.1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 10-37            | Notice to Proceed (NTP)         | A written notice to the Contractor to begin the actual contract work on a previously agreed to date. If applicable, the Notice to Proceed shall state the date on which the contract time begins.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

| Paragraph Number | Term                            | Definition                                                                                                                                                                                                                                                                                          |
|------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10-38            | Owner                           | The term "Owner" shall mean the party of the first part or the contracting agency signatory to the contract. Where the term "Owner" is capitalized in this document, it shall mean airport Sponsor only. The Owner for this project is <b><i>The City of Wauchula Municipal Airport.</i></b>        |
| 10-39            | Passenger Facility Charge (PFC) | Per 14 Code of Federal Regulations (CFR) Part 158 and 49 United States Code (USC) § 40117, a PFC is a charge imposed by a public agency on passengers enplaned at a commercial service airport it controls.                                                                                         |
| 10-40            | Pavement Structure              | The combined surface course, base course(s), and subbase course(s), if any, considered as a single unit.                                                                                                                                                                                            |
| 10-41            | Payment bond                    | The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will pay in full all bills and accounts for materials and labor used in the construction of the work.                                                                              |
| 10-42            | Performance bond                | The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will complete the work in accordance with the terms of the contract.                                                                                                               |
| 10-43            | Plans                           | The official drawings or exact reproductions which show the location, character, dimensions and details of the airport and the work to be done and which are to be considered as a part of the contract, supplementary to the specifications. Plans may also be referred to as 'contract drawings.' |
| 10-44            | Project                         | The agreed scope of work for accomplishing specific airport development with respect to a particular airport.                                                                                                                                                                                       |
| 10-45            | Proposal                        | The written offer of the bidder (when submitted on the approved proposal form) to perform the contemplated work and furnish the necessary materials in accordance with the provisions of the plans and specifications.                                                                              |
| 10-46            | Proposal guaranty               | The security furnished with a proposal to guarantee that the bidder will enter into a contract if their own proposal is accepted by the Owner.                                                                                                                                                      |
| 10-47            | Quality Assurance (QA)          | Owner's responsibility to assure that construction work completed complies with specifications for payment.                                                                                                                                                                                         |
| 10-48            | Quality Control (QC)            | Contractor's responsibility to control material(s) and construction processes to complete construction in accordance with project specifications.                                                                                                                                                   |

| <b>Paragraph Number</b> | <b>Term</b>                                   | <b>Definition</b>                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>10-49</b>            | <b>Quality Assurance (QA) Inspector</b>       | An authorized representative of the Engineer and/or Resident Project Representative (RPR) assigned to make all necessary inspections, observations, tests, and/or observation of tests of the work performed or being performed, or of the materials furnished or being furnished by the Contractor.                                                                                                 |
| <b>10-50</b>            | <b>Quality Assurance (QA) Laboratory</b>      | The official quality assurance testing laboratories of the Owner or such other laboratories as may be designated by the Engineer or RPR. May also be referred to as Engineer's, Owner's, or QA Laboratory.                                                                                                                                                                                           |
| <b>10-51</b>            | <b>Resident Project Representative (RPR)</b>  | The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for all necessary inspections, observations, tests, and/or observations of tests of the contract work performed or being performed, or of the materials furnished or being furnished by the Contractor, and acting directly or through an authorized representative.                                |
| <b>10-52</b>            | <b>Runway</b>                                 | The area on the airport prepared for the landing and takeoff of aircraft.                                                                                                                                                                                                                                                                                                                            |
| <b>10-53</b>            | <b>Runway Safety Area (RSA)</b>               | A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft. See the construction safety and phasing plan (CSPP) for limits of the RSA.                                                                                                                                                                                                                |
| <b>10-54</b>            | <b>Safety Plan Compliance Document (SPCD)</b> | Details how the Contractor will comply with the CSPP.                                                                                                                                                                                                                                                                                                                                                |
| <b>10-55</b>            | <b>Specifications</b>                         | A part of the contract containing the written directions and requirements for completing the contract work. Standards for specifying materials or testing which are cited in the contract specifications by reference shall have the same force and effect as if included in the contract physically.                                                                                                |
| <b>10-56</b>            | <b>Sponsor</b>                                | A Sponsor is defined in 49 USC § 47102(24) as a public agency that submits to the FAA for an AIP grant; or a private Owner of a public-use airport that submits to the FAA an application for an AIP grant for the airport.                                                                                                                                                                          |
| <b>10-57</b>            | <b>Structures</b>                             | Airport facilities such as bridges; culverts; catch basins, inlets, retaining walls, cribbing; storm and sanitary sewer lines; water lines; underdrains; electrical ducts, manholes, handholes, lighting fixtures and bases; transformers; navigational aids; buildings; vaults; and, other manmade features of the airport that may be encountered in the work and not otherwise classified herein. |
| <b>10-58</b>            | <b>Subgrade</b>                               | The soil that forms the pavement foundation.                                                                                                                                                                                                                                                                                                                                                         |

| <b>Paragraph Number</b> | <b>Term</b>                               | <b>Definition</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>10-59</b>            | <b>Superintendent</b>                     | The Contractor's executive representative who is present on the work during progress, authorized to receive and fulfill instructions from the RPR, and who shall supervise and direct the construction.                                                                                                                                                                                                                                                                                                                                                                      |
| <b>10-60</b>            | <b>Supplemental Agreement</b>             | A written agreement between the Contractor and the Owner that establishes the basis of payment and contract time adjustment, if any, for the work affected by the supplemental agreement. A supplemental agreement is required if: (1) in scope work would increase or decrease the total amount of the awarded contract by more than 25%; (2) in scope work would increase or decrease the total of any major contract item by more than 25%; (3) work that is not within the scope of the originally awarded contract; or (4) adding or deleting of a major contract item. |
| <b>10-61</b>            | <b>Surety</b>                             | The corporation, partnership, or individual, other than the Contractor, executing payment or performance bonds that are furnished to the Owner by the Contractor.                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>10-62</b>            | <b>Taxilane</b>                           | A taxiway designed for low speed movement of aircraft between aircraft parking areas and terminal areas.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>10-63</b>            | <b>Taxiway</b>                            | The portion of the air operations area of an airport that has been designated by competent airport authority for movement of aircraft to and from the airport's runways, aircraft parking areas, and terminal areas.                                                                                                                                                                                                                                                                                                                                                         |
| <b>10-64</b>            | <b>Taxiway/Taxilane Safety Area (TSA)</b> | A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an aircraft. See the construction safety and phasing plan (CSPP) for limits of the TSA.                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>10-65</b>            | <b>Work</b>                               | The furnishing of all labor, materials, tools, equipment, and incidentals necessary or convenient to the Contractor's performance of all duties and obligations imposed by the contract, plans, and specifications.                                                                                                                                                                                                                                                                                                                                                          |
| <b>10-66</b>            | <b>Working day</b>                        | A working day shall be any day other than a legal holiday, Saturday, or Sunday on which the normal working forces of the Contractor may proceed with regular work for at least six (6) hours toward completion of the contract. When work is suspended for causes beyond the Contractor's control, it will not be counted as a working day. Saturdays, Sundays and holidays on which the Contractor's forces engage in regular work will be considered as working days.                                                                                                      |



|       |                     |      |
|-------|---------------------|------|
| 10-67 | Owner Defined terms | None |
|-------|---------------------|------|

END OF SECTION 10

## **SECTION 20 PROPOSAL REQUIREMENTS AND CONDITIONS**

### **20-01 ADVERTISEMENT (NOTICE TO BIDDERS).**

The Owner, or his/her authorized agent, shall publish the advertisement at such places and at such times as are required by local law or ordinances. The published advertisement shall state the time and place for submitting sealed proposals; a description of the proposed work; instructions to bidders as to obtaining proposal forms, plans, and specifications; proposal guaranty required; and the Owner's right to reject any and all bids. ***See the Invitation to Bid.***

**20-02 QUALIFICATION OF BIDDERS.** Each bidder shall submit evidence of competency and evidence of financial responsibility to perform the work to the Owner at the time of bid opening.

Evidence of competency, unless otherwise specified, shall consist of statements covering the bidder's past experience on similar work, and a list of equipment and a list of key personnel that would be available for the work.

Each bidder shall furnish the Owner satisfactory evidence of their financial responsibility. Evidence of financial responsibility, unless otherwise specified, shall consist of a confidential statement or report of the bidder's financial resources and liabilities as of the last calendar year or the bidder's last fiscal year. Such statements or reports shall be certified by a public accountant. At the time of submitting such financial statements or reports, the bidder shall further certify whether their financial responsibility is approximately the same as stated or reported by the public accountant. If the bidder's financial responsibility has changed, the bidder shall qualify the public accountant's statement or report to reflect the bidder's true financial condition at the time such qualified statement or report is submitted to the Owner.

~~Unless otherwise specified, a bidder may submit evidence that they are prequalified with the State Highway Division and are on the current "bidder's list" of the state in which the proposed work is located. Evidence of State Highway Division prequalification may be submitted as evidence of financial responsibility in lieu of the certified statements or reports specified above.~~

***Each bidder shall submit "evidence of competency" and "evidence of financial responsibility" to the Owner at the time of bid opening. Each bidder shall submit the information in Section SBQ of the Bid Proposal Forms.***

**20-03 CONTENTS OF PROPOSAL FORMS.** The Owner's proposal forms state the location and description of the proposed construction; the place, date, and time of opening of the proposals; and the estimated quantities of the various items of work to be performed and materials to be furnished for which unit bid prices are asked. The proposal form states the time in which the work must be completed, and the amount of the proposal guaranty that must accompany the proposal. The Owner will accept only those Proposals properly executed on physical forms or electronic forms provided by the Owner. Bidder actions that may cause the Owner to deem a proposal irregular are given in paragraph 20-09 *Irregular proposals*.

***Mobilization is limited to 10 percent of the total project cost.***

**20-04 ISSUANCE OF PROPOSAL FORMS.** The Owner reserves the right to refuse to issue a proposal form to a prospective bidder if the bidder is in default for any of the following reasons:

- a. Failure to comply with any prequalification regulations of the Owner, if such regulations are cited, or otherwise included, in the proposal as a requirement for bidding.
- b. Failure to pay, or satisfactorily settle, all bills due for labor and materials on former contracts in force with the Owner at the time the Owner issues the proposal to a prospective bidder.
- c. Documented record of Contractor default under previous contracts with the Owner.
- d. Documented record of unsatisfactory work on previous contracts with the Owner.

**20-05 INTERPRETATION OF ESTIMATED PROPOSAL QUANTITIES.** An estimate of quantities of work to be done and materials to be furnished under these specifications is given in the proposal. It is the result of careful calculations and is believed to be correct. It is given only as a basis for comparison of proposals and the award of the contract. The Owner does not expressly, or by implication, agree that the actual quantities involved will correspond exactly therewith; nor shall the bidder plead misunderstanding or deception because of such estimates of quantities, or of the character, location, or other conditions pertaining to the work. Payment to the Contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the plans and specifications. It is understood that the quantities may be increased or decreased as provided in the Section 40, paragraph 40-02, Alteration of Work and Quantities, without in any way invalidating the unit bid prices.

**20-06 EXAMINATION OF PLANS, SPECIFICATIONS, AND SITE.** The bidder is expected to carefully examine the site of the proposed work, the proposal, plans, specifications, and contract forms. Bidders shall satisfy themselves to the character, quality, and quantities of work to be performed, materials to be furnished, and to the requirements of the proposed contract. The submission of a proposal shall be prima facie evidence that the bidder has made such examination and is satisfied to the conditions to be encountered in performing the work and the requirements of the proposed contract, plans, and specifications.

**20-07 PREPARATION OF PROPOSAL.** The bidder shall submit their proposal on the forms furnished by the Owner. All blank spaces in the proposal forms, unless explicitly stated otherwise, must be correctly filled in where indicated for each and every item for which a quantity is given. The bidder shall state the price (written in ink or typed) both in words and numerals which they propose for each pay item furnished in the proposal. In case of conflict between words and numerals, the words, unless obviously incorrect, shall govern.

***Prices should be written in whole dollars and cents. The extended total amount of each item should not be rounded.***

The bidder shall correctly sign the proposal in ink. If the proposal is made by an individual, their name and post office address must be shown. If made by a partnership, the name and post office address of each member of the partnership must be shown. If made by a corporation, the person signing the proposal shall give the name of the state where the corporation was chartered and the name, titles, and business address of the president, secretary, and the treasurer. Anyone signing a proposal as an agent shall file evidence of their authority to do so and that the signature is binding upon the firm or corporation.

**20-08 RESPONSIVE AND RESPONSIBLE BIDDER.** A responsive bid conforms to all significant terms and conditions contained in the Owner's invitation for bid. It is the Owner's responsibility to decide if the exceptions taken by a bidder to the solicitation are material or not and the extent of deviation it is willing to accept.

A responsible bidder has the ability to perform successfully under the terms and conditions of a proposed procurement, as defined in 2 CFR § 200.318(h). This includes such matters as Contractor integrity, compliance with public policy, record of past performance, and financial and technical resources.

**20-09 IRREGULAR PROPOSALS.** Proposals shall be considered irregular for the following reasons:

- a. If the proposal is on a form other than that furnished by the Owner, or if the Owner's form is altered, or if any part of the proposal form is detached.
- b. If there are unauthorized additions, conditional or alternate pay items, or irregularities of any kind that make the proposal incomplete, indefinite, or otherwise ambiguous.
- c. If the proposal does not contain a unit price for each pay item listed in the proposal, except in the case of authorized alternate pay items, for which the bidder is not required to furnish a unit price.
- d. If the proposal contains unit prices that are obviously unbalanced.
- e. If the proposal is not accompanied by the proposal guaranty specified by the Owner.
- f. If the applicable Disadvantaged Business Enterprise information is incomplete.

The Owner reserves the right to reject any irregular proposal and the right to waive technicalities if such waiver is in the best interest of the Owner and conforms to local laws and ordinances pertaining to the letting of construction contracts.

**20-10 BID GUARANTEE.** Each separate proposal shall be accompanied by a bid bond, certified check, or other specified acceptable collateral, in the amount specified in the proposal form. Such bond, check, or collateral, shall be made payable to the Owner.

**20-11 DELIVERY OF PROPOSAL.** Each proposal submitted shall be placed in a sealed envelope plainly marked with the project number, location of airport, and name and business address of the bidder on the outside. When sent by mail, preferably registered, the sealed proposal, marked as indicated above, should be enclosed in an additional envelope. No proposal will be considered unless received at the place specified in the advertisement or as modified by Addendum before the time specified for opening all bids. Proposals received after the bid opening time shall be returned to the bidder unopened.

**20-12 WITHDRAWAL OR REVISION OF PROPOSALS.** A bidder may withdraw or revise (by withdrawal of one proposal and submission of another) a proposal provided that the bidder's request for withdrawal is received by the Owner in writing **by fax or by email** before the time specified for opening bids. Revised proposals must be received at the place specified in the advertisement before the time specified for opening all bids.

**20-13 PUBLIC OPENING OF PROPOSALS.** Proposals shall be opened, and read, publicly at the time and place specified in the advertisement. Bidders, their authorized agents, and other interested persons are invited to attend. Proposals that have been withdrawn (by written or telegraphic request) or received after the time specified for opening bids shall be returned to the bidder unopened.

**20-14 DISQUALIFICATION OF BIDDERS.** A bidder shall be considered disqualified for any of the following reasons:

a. Submitting more than one proposal from the same partnership, firm, or corporation under the same or different name.

b. Evidence of collusion among bidders. Bidders participating in such collusion shall be disqualified as bidders for any future work of the Owner until any such participating bidder has been reinstated by the Owner as a qualified bidder.

c. If the bidder is considered to be in "default" for any reason specified in paragraph 20-04, *Issuance of Proposal Forms*, of this section.

**20-15 Discrepancies and Omissions.** A Bidder who discovers discrepancies or omissions with the project bid documents shall immediately notify the Owner's Engineer of the matter. A bidder that has doubt as to the true meaning of a project requirement may submit to the Owner's Engineer a written request for interpretation no later than **seven 7 calendar** days prior to bid opening.

Any interpretation of the project bid documents by the Owner's Engineer will be by written addendum issued by the Owner. The Owner will not consider any instructions, clarifications or interpretations of the bidding documents in any manner other than written addendum.

**END OF SECTION 20**

## SECTION 30 AWARD AND EXECUTION OF CONTRACT

**30-01 CONSIDERATION OF PROPOSALS.** After the proposals are publicly opened and read, they will be compared on the basis of the summation of the products obtained by multiplying the estimated quantities shown in the proposal by the unit bid prices. If a bidder's proposal contains a discrepancy between unit bid prices written in words and unit bid prices written in numbers, the unit bid price written in words shall govern.

Until the award of a contract is made, the Owner reserves the right to reject a bidder's proposal for any of the following reasons:

- a. If the proposal is irregular as specified in Section 20, paragraph 20-09, *Irregular Proposals*.
- b. If the bidder is disqualified for any of the reasons specified Section 20, paragraph 20-14, *Disqualification of Bidders*.

In addition, until the award of a contract is made, the Owner reserves the right to reject any or all proposals, waive technicalities, if such waiver is in the best interest of the Owner and is in conformance with applicable state and local laws or regulations pertaining to the letting of construction contracts; advertise for new proposals; or proceed with the work otherwise. All such actions shall promote the Owner's best interests.

**30-02 AWARD OF CONTRACT.** The award of a contract, if it is to be awarded, shall be made within **180** calendar days of the date specified for publicly opening proposals, unless otherwise specified herein.

If the Owner elects to proceed with an award of contract, the Owner will make award to the responsible bidder whose bid, conforming with all the material terms and conditions of the bid documents, is the lowest in price.

**30-03 CANCELLATION OF AWARD.** The Owner reserves the right to cancel the award without liability to the bidder, except return of proposal guaranty, at any time before a contract has been fully executed by all parties and is approved by the Owner in accordance with paragraph 30-07 *Approval of Contract*.

**30-04 RETURN OF PROPOSAL GUARANTY.** All proposal guaranties, except those of the two lowest bidders, will be returned immediately after the Owner has made a comparison of bids as specified in the paragraph 30-01, *Consideration of Proposals*. Proposal guaranties of the two lowest bidders will be retained by the Owner until such time as an award is made, at which time, the unsuccessful bidder's proposal guaranty will be returned. The successful bidder's proposal guaranty will be returned as soon as the Owner receives the contract bonds as specified in paragraph 30-05, *Requirements of Contract Bonds*.

**30-05 REQUIREMENTS OF CONTRACT BONDS.** At the time of the execution of the contract, the successful bidder shall furnish the Owner a surety bond or bonds that have been fully executed by the bidder and the surety guaranteeing the performance of the work and the payment of all legal debts that may be incurred by reason of the Contractor's performance of the work. The surety and the form of the bond or bonds shall be acceptable to the Owner. Unless otherwise specified in this subsection, the surety bond or bonds shall be in a sum equal to the full amount of the contract.

***Separate performance and payment bonds are required for the contract.***

**30-06 EXECUTION OF CONTRACT.** The successful bidder shall sign (execute) the necessary agreements for entering into the contract and return the signed contract to the Owner, along with the fully executed surety bond or bonds specified in paragraph 30-05, *Requirements of Contract Bonds*, of this section, within **15** calendar days from the date mailed or otherwise delivered to the successful bidder.

**30-07 APPROVAL OF CONTRACT.** Upon receipt of the contract and contract bond or bonds that have been executed by the successful bidder, the Owner shall complete the execution of the contract in accordance with local laws or ordinances, and return the fully executed contract to the Contractor. Delivery of the fully executed contract to the Contractor shall constitute the Owner's approval to be bound by the successful bidder's proposal and the terms of the contract.

**30-08 FAILURE TO EXECUTE CONTRACT.** Failure of the successful bidder to execute the contract and furnish an acceptable surety bond or bonds within the period specified in paragraph 30-06, *Execution of Contract*, of this section shall be just cause for cancellation of the award and forfeiture of the proposal guaranty, not as a penalty, but as liquidated damages to the Owner.

**END OF SECTION 30**

## SECTION 40 SCOPE OF WORK

**40-01 INTENT OF CONTRACT.** The intent of the contract is to provide for construction and completion, in every detail, of the work described. It is further intended that the Contractor shall furnish all labor, materials, equipment, tools, transportation, and supplies required to complete the work in accordance with the plans, specifications, and terms of the contract.

**40-02 ALTERATION OF WORK AND QUANTITIES.** The Owner reserves the right to make such changes in quantities and work as may be necessary or desirable to complete, in a satisfactory manner, the original intended work. Unless otherwise specified in the Contract, the Owner's Engineer or RPR shall be and is hereby authorized to make, in writing, such in-scope alterations in the work and variation of quantities as may be necessary to complete the work, provided such action does not represent a significant change in the character of the work.

For purpose of this section, a significant change in character of work means: any change that is outside the current contract scope of work; any change (increase or decrease) in the total contract cost by more than 25%; or any change in the total cost of a major contract item by more than 25%.

Work alterations and quantity variances that do not meet the definition of significant change in character of work shall not invalidate the contract nor release the surety. Contractor agrees to accept payment for such work alterations and quantity variances in accordance with Section 90, paragraph 90-03, *Compensation for Altered Quantities*.

Should the value of altered work or quantity variance meet the criteria for significant change in character of work, such altered work and quantity variance shall be covered by a supplemental agreement. Supplemental agreements shall also require consent of the Contractor's surety and separate performance and payment bonds. If the Owner and the Contractor are unable to agree on a unit adjustment for any contract item that requires a supplemental agreement, the Owner reserves the right to terminate the contract with respect to the item and make other arrangements for its completion.

**Applicable federal contract provisions for procurement and contracting under AIP are found on the following website:**  
**[www.faa.gov/airports/aip/procurement/federal\\_contract\\_provisions/](http://www.faa.gov/airports/aip/procurement/federal_contract_provisions/)**

**40-03 OMITTED ITEMS.** The Owner, the Owner's Engineer or the RPR may provide written notice to the Contractor to omit from the work any contract item that does not meet the definition of major contract item. Major contract items may be omitted by a supplemental agreement. Such omission of contract items shall not invalidate any other contract provision or requirement.

Should a contract item be omitted or otherwise ordered to be non-performed, the Contractor shall be paid for all work performed toward completion of such item prior to the date of the order to omit such item. Payment for work performed shall be in accordance with Section 90, paragraph 90-04, *Payment for Omitted Items*.



**40-04 EXTRA WORK.** Should acceptable completion of the contract require the Contractor to perform an item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, Owner may issue a Change Order to cover the necessary extra work. Change orders for extra work shall contain agreed unit prices for performing the change order work in accordance with the requirements specified in the order, and shall contain any adjustment to the contract time that, in the RPR's opinion, is necessary for completion of the extra work.

When determined by the RPR to be in the Owner's best interest, the RPR may order the Contractor to proceed with extra work as provided in Section 90, paragraph 90-05, *Payment for Extra Work*. Extra work that is necessary for acceptable completion of the project, but is not within the general scope of the work covered by the original contract shall be covered by a supplemental agreement as defined in Section 10, paragraph 10-59, *Supplemental Agreement*.

If extra work is essential to maintaining the project critical path, RPR may order the Contractor to commence the extra work under a Time and Material contract method. Once sufficient detail is available to establish the level of effort necessary for the extra work, the Owner shall initiate a change order or supplemental agreement to cover the extra work.

Any claim for payment of extra work that is not covered by written agreement (change order or supplemental agreement) shall be rejected by the Owner.

**40-05 MAINTENANCE OF TRAFFIC.** It is the explicit intention of the contract that the safety of aircraft, as well as the Contractor's equipment and personnel, is the most important consideration. The Contractor shall maintain traffic in the manner detailed in the Construction Safety and Phasing Plan (CSPP).

**a.** It is understood and agreed that the Contractor shall provide for the free and unobstructed movement of aircraft in the air operations areas (AOAs) of the airport with respect to their own operations and the operations of all subcontractors as specified in Section 80, paragraph 80-04, *Limitation of Operations*. It is further understood and agreed that the Contractor shall provide for the uninterrupted operation of visual and electronic signals (including power supplies thereto) used in the guidance of aircraft while operating to, from, and upon the airport as specified in Section 70, paragraph 70-15, *Contractor's Responsibility for Utility Service and Facilities of Others*.

**b.** With respect to their own operations and the operations of all subcontractors, the Contractor shall provide marking, lighting, and other acceptable means of identifying personnel, equipment, vehicles, storage areas, and any work area or condition that may be hazardous to the operation of aircraft, fire-rescue equipment, or maintenance vehicles at the airport in accordance with the construction safety and phasing plan (CSPP) and the safety plan compliance document (SPCD).

**c.** When the contract requires the maintenance of an existing road, street, or highway during the Contractor's performance of work that is otherwise provided for in the contract, plans, and specifications, the Contractor shall keep the road, street, or highway open to all traffic and shall provide maintenance as may be required to accommodate traffic. The Contractor, at their expense, shall be responsible for the repair to equal or better than preconstruction conditions of any damage caused by the Contractor's equipment and personnel. The Contractor shall furnish, erect, and maintain barricades, warning signs, flag person, and other traffic control devices in reasonable conformity with the Manual on Uniform Traffic Control Devices (MUTCD) (<http://mutcd.fhwa.dot.gov/>), unless otherwise specified. The Contractor shall also construct and

maintain in a safe condition any temporary connections necessary for ingress to and egress from abutting property or intersecting roads, streets or highways.

**40-06 REMOVAL OF EXISTING STRUCTURES.** All existing structures encountered within the established lines, grades, or grading sections shall be removed by the Contractor, unless such existing structures are otherwise specified to be relocated, adjusted up or down, salvaged, abandoned in place, reused in the work or to remain in place. The cost of removing such existing structures shall not be measured or paid for directly, but shall be included in the various contract items.

Should the Contractor encounter an existing structure (above or below ground) in the work for which the disposition is not indicated on the plans, the Resident Project Representative (RPR) shall be notified prior to disturbing such structure. The disposition of existing structures so encountered shall be immediately determined by the RPR in accordance with the provisions of the contract.

Except as provided in Section 40, paragraph 40-07, *Rights in and Use of Materials Found in the Work*, it is intended that all existing materials or structures that may be encountered (within the lines, grades, or grading sections established for completion of the work) shall be used in the work as otherwise provided for in the contract and shall remain the property of the Owner when so used in the work.

**40-07 RIGHTS IN AND USE OF MATERIALS FOUND IN THE WORK.** Should the Contractor encounter any material such as (but not restricted to) sand, stone, gravel, slag, or concrete slabs within the established lines, grades, or grading sections, the use of which is intended by the terms of the contract to be embankment, the Contractor may at their own option either:

- a. Use such material in another contract item, providing such use is approved by the RPR and is in conformance with the contract specifications applicable to such use; or,
- b. Remove such material from the site, upon written approval of the RPR; or
- c. Use such material for the Contractor's own temporary construction on site; or,
- d. Use such material as intended by the terms of the contract.

Should the Contractor wish to exercise option a., b., or c., the Contractor shall request the RPR's approval in advance of such use.

Should the RPR approve the Contractor's request to exercise option a., b., or c., the Contractor shall be paid for the excavation or removal of such material at the applicable contract price. The Contractor shall replace, at their expense, such removed or excavated material with an agreed equal volume of material that is acceptable for use in constructing embankment, backfills, or otherwise to the extent that such replacement material is needed to complete the contract work. The Contractor shall not be charged for use of such material used in the work or removed from the site.

Should the RPR approve the Contractor's exercise of option a., the Contractor shall be paid, at the applicable contract price, for furnishing and installing such material in accordance with requirements of the contract item in which the material is used.

It is understood and agreed that the Contractor shall make no claim for delays by reason of their own exercise of option a., b., or c.

The Contractor shall not excavate, remove, or otherwise disturb any material, structure, or part of a structure which is located outside the lines, grades, or grading sections established for the work, except where such excavation or removal is provided for in the contract, plans, or specifications.

**40-08 FINAL CLEANUP.** Upon completion of the work and before acceptance and final payment will be made, the Contractor shall remove from the site all machinery, equipment, surplus and discarded materials, rubbish, temporary structures, and stumps or portions of trees. The Contractor shall cut all brush and woods within the limits indicated and shall leave the site in a neat and presentable condition. Material cleared from the site and deposited on adjacent property will not be considered as having been disposed of satisfactorily, unless the Contractor has obtained the written permission of the property Owner.

**END OF SECTION 40**

## **SECTION 50 CONTROL OF WORK**

**50-01 AUTHORITY OF THE RESIDENT PROJECT REPRESENTATIVE (RPR).** The RPR has final authority regarding the interpretation of project specification requirements. The RPR shall determine acceptability of the quality of materials furnished, method of performance of work performed, and the manner and rate of performance of the work. The RPR does not have the authority to accept work that does not conform to specification requirements.

**50-02 CONFORMITY WITH PLANS AND SPECIFICATIONS.** All work and all materials furnished shall be in reasonably close conformity with the lines, grades, grading sections, cross-sections, dimensions, material requirements, and testing requirements that are specified (including specified tolerances) in the contract, plans, or specifications.

If the RPR finds the materials furnished, work performed, or the finished product not within reasonably close conformity with the plans and specifications, but that the portion of the work affected will, in their opinion, result in a finished product having a level of safety, economy, durability, and workmanship acceptable to the Owner, the RPR will advise the Owner of their determination that the affected work be accepted and remain in place. The RPR will document the determination and recommend to the Owner a basis of acceptance that will provide for an adjustment in the contract price for the affected portion of the work. Changes in the contract price must be covered by contract change order or supplemental agreement as applicable.

If the RPR finds the materials furnished, work performed, or the finished product are not in reasonably close conformity with the plans and specifications and have resulted in an unacceptable finished product, the affected work or materials shall be removed and replaced or otherwise corrected by and at the expense of the Contractor in accordance with the RPR's written orders.

The term "reasonably close conformity" shall not be construed as waiving the Contractor's responsibility to complete the work in accordance with the contract, plans, and specifications. The term shall not be construed as waiving the RPR's responsibility to insist on strict compliance with the requirements of the contract, plans, and specifications during the Contractor's execution of the work, when, in the RPR's opinion, such compliance is essential to provide an acceptable finished portion of the work.

The term "reasonably close conformity" is also intended to provide the RPR with the authority, after consultation with the Sponsor, to use sound engineering judgment in their determinations to accept work that is not in strict conformity, but will provide a finished product equal to or better than that required by the requirements of the contract, plans and specifications.

The RPR will not be responsible for the Contractor's means, methods, techniques, sequences, or procedures of construction or the safety precautions incident thereto.

**50-03 COORDINATION OF CONTRACT, PLANS, AND SPECIFICATIONS.** The contract, plans, specifications, and all referenced standards cited are essential parts of the contract requirements. If electronic files are provided and used on the project and there is a conflict between the electronic files and hard copy plans, the hard copy plans shall govern. A requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In case of discrepancy, calculated dimensions will govern over scaled dimensions; contract technical specifications shall govern over contract

general provisions, plans, cited standards for materials or testing, and cited advisory circulars (ACs); contract general provisions shall govern over plans, cited standards for materials or testing, and cited ACs; plans shall govern over cited standards for materials or testing and cited ACs. If any paragraphs contained in the Special Provisions conflict with General Provisions or Technical Specifications, the Special Provisions shall govern.

From time to time, discrepancies within cited testing standards occur due to the timing of the change, edits, and/or replacement of the standards. If the Contractor discovers any apparent discrepancy within standard test methods, the Contractor shall immediately ask the RPR for an interpretation and decision, and such decision shall be final.

The Contractor shall not take advantage of any apparent error or omission on the plans or specifications. In the event the Contractor discovers any apparent error or discrepancy, Contractor shall immediately notify the Owner or the designated representative in writing requesting their written interpretation and decision.

#### **50-04 LIST OF SPECIAL PROVISIONS.**

**Special Provisions are listed in General Provision Section 130, and furthermore in the Technical Specifications as “SP-“ specifications.**

**50-05 COOPERATION OF CONTRACTOR.** The Contractor shall be supplied with *five* hard copies or an electronic PDF of the plans and specifications. The Contractor shall have available on the construction site at all times one hardcopy each of the plans and specifications. Additional hard copies of plans and specifications may be obtained by the Contractor for the cost of reproduction.

The Contractor shall give constant attention to the work to facilitate the progress thereof, and shall cooperate with the RPR and their inspectors and with other Contractors in every way possible. The Contractor shall have a competent superintendent on the work at all times who is fully authorized as their agent on the work. The superintendent shall be capable of reading and thoroughly understanding the plans and specifications and shall receive and fulfill instructions from the RPR or their authorized representative.

**50-06 COOPERATION BETWEEN CONTRACTORS.** The Owner reserves the right to contract for and perform other or additional work on or near the work covered by this contract.

When separate contracts are let within the limits of any one project, each Contractor shall conduct the work not to interfere with or hinder the progress of completion of the work being performed by other Contractors. Contractors working on the same project shall cooperate with each other as directed.

Each Contractor involved shall assume all liability, financial or otherwise, in connection with their own contract and shall protect and hold harmless the Owner from any and all damages or claims that may arise because of inconvenience, delays, or loss experienced because of the presence and operations of other Contractors working within the limits of the same project.

The Contractor shall arrange their work and shall place and dispose of the materials being used to not interfere with the operations of the other Contractors within the limits of the same project. The Contractor shall join their work with that of the others in an acceptable manner and shall perform it in proper sequence to that of the others.

**50-07 CONSTRUCTION LAYOUT AND STAKES.** The Engineer/RPR shall establish necessary horizontal and vertical control. The establishment of Survey Control and/or reestablishment of survey control shall be by a State Licensed Land Surveyor. Contractor is responsible for preserving integrity of horizontal and vertical controls established by Engineer/RPR. In case of negligence on the part of the Contractor or their employees, resulting in the destruction of any horizontal and vertical control, the resulting costs will be deducted as a liquidated damage against the Contractor.

Prior to the start of construction, the Contractor will check all control points for horizontal and vertical accuracy and certify in writing to the RPR that the Contractor concurs with survey control established for the project. All lines, grades and measurements from control points necessary for the proper execution and control of the work on this project will be provided to the RPR. The Contractor is responsible to establish all layout required for the construction of the project.

Copies of survey notes will be provided to the RPR for each area of construction and for each placement of material as specified to allow the RPR to make periodic checks for conformance with plan grades, alignments and grade tolerances required by the applicable material specifications. Surveys will be provided to the RPR prior to commencing work items that cover or disturb the survey staking. Survey(s) and notes shall be provided in the following format(s): **ASCII text or csv format compatible with AutoCAD Civil 3D Version 2024 or earlier.**

Laser, GPS, String line, or other automatic control shall be checked with temporary control as necessary. In the case of error, on the part of the Contractor, their surveyor, employees or subcontractors, resulting in established grades, alignment or grade tolerances that do not concur with those specified or shown on the plans, the Contractor is solely responsible for correction, removal, replacement and all associated costs at no additional cost to the Owner.

No direct payment will be made, unless otherwise specified in contract documents, for this labor, materials, or other expenses. The cost shall be included in the price of the bid for the various items of the Contract.

**50-08 AUTHORITY AND DUTIES OF QUALITY ASSURANCE (QA) INSPECTORS.** QA inspectors shall be authorized to inspect all work done and all material furnished. Such QA inspection may extend to all or any part of the work and to the preparation, fabrication, or manufacture of the materials to be used. QA inspectors are not authorized to revoke, alter, or waive any provision of the contract. QA inspectors are not authorized to issue instructions contrary to the plans and specifications or to act as foreman for the Contractor.

QA Inspectors are authorized to notify the Contractor or their representatives of any failure of the work or materials to conform to the requirements of the contract, plans, or specifications and to reject such nonconforming materials in question until such issues can be referred to the RPR for a decision.

**50-09 INSPECTION OF THE WORK.** All materials and each part or detail of the work shall be subject to inspection. The RPR shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

If the RPR requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for as extra work; but should the work so exposed or examined prove unacceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be at the Contractor's expense.

Provide advance written notice to the RPR of work the Contractor plans to perform each week and each day. Any work done or materials used without written notice and allowing opportunity for inspection by the RPR may be ordered removed and replaced at the Contractor's expense.

Should the contract work include relocation, adjustment, or any other modification to existing facilities, not the property of the (contract) Owner, authorized representatives of the Owners of such facilities shall have the right to inspect such work. Such inspection shall in no sense make any facility owner a party to the contract, and shall in no way interfere with the rights of the parties to this contract.

**50-10 REMOVAL OF UNACCEPTABLE AND UNAUTHORIZED WORK.** All work that does not conform to the requirements of the contract, plans, and specifications will be considered unacceptable, unless otherwise determined acceptable by the RPR as provided in paragraph 50-02, *Conformity with Plans and Specifications*.

Unacceptable work, whether the result of poor workmanship, use of defective materials, damage through carelessness, or any other cause found to exist prior to the final acceptance of the work, shall be removed immediately and replaced in an acceptable manner in accordance with the provisions of Section 70, paragraph 70-14, *Contractor's Responsibility for Work*.

No removal work made under provision of this paragraph shall be done without lines and grades having been established by the RPR. Work done contrary to the instructions of the RPR, work done beyond the lines shown on the plans or as established by the RPR, except as herein specified, or any extra work done without authority, will be considered as unauthorized and will not be paid for under the provisions of the contract. Work so done may be ordered removed or replaced at the Contractor's expense.

Upon failure on the part of the Contractor to comply with any order of the RPR made under the provisions of this subsection, the RPR will have authority to cause unacceptable work to be remedied or removed and replaced; and unauthorized work to be removed and recover the resulting costs as a liquidated damage against the Contractor.

**50-11 LOAD RESTRICTIONS.** The Contractor shall comply with all legal load restrictions in the hauling of materials on public roads beyond the limits of the work. A special permit will not relieve the Contractor of liability for damage that may result from the moving of material or equipment.

The operation of equipment of such weight or so loaded as to cause damage to structures or to any other type of construction will not be permitted. Hauling of materials over the base course or surface course under construction shall be limited as directed. No loads will be permitted on a concrete pavement, base, or structure before the expiration of the curing period. The Contractor, at their own expense, shall be responsible for the repair to equal or better than preconstruction conditions of any damage caused by the Contractor's equipment and personnel.

**50-12 MAINTENANCE DURING CONSTRUCTION.** The Contractor shall maintain the work during construction and until the work is accepted. Maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces so that the work is maintained in satisfactory condition at all times.

In the case of a contract for the placing of a course upon a course or subgrade previously constructed, the Contractor shall maintain the previous course or subgrade during all construction operations.

All costs of maintenance work during construction and before the project is accepted shall be included in the unit prices bid on the various contract items, and the Contractor will not be paid an additional amount for such work.

**50-13 FAILURE TO MAINTAIN THE WORK.** Should the Contractor at any time fail to maintain the work as provided in paragraph 50-12, *Maintenance during Construction*, the RPR shall immediately notify the Contractor of such noncompliance. Such notification shall specify a reasonable time within which the Contractor shall be required to remedy such unsatisfactory maintenance condition. The time specified will give due consideration to the exigency that exists.

Should the Contractor fail to respond to the RPR's notification, the Owner may suspend any work necessary for the Owner to correct such unsatisfactory maintenance condition, depending on the exigency that exists. Any maintenance cost incurred by the Owner, shall be recovered as a liquidated damage against the Contractor.

**50-14 PARTIAL ACCEPTANCE.** If at any time during the execution of the project the Contractor substantially completes a usable unit or portion of the work, the occupancy of which will benefit the Owner, the Contractor may request the RPR to make final inspection of that unit. If the RPR finds upon inspection that the unit has been satisfactorily completed in compliance with the contract, the RPR may accept it as being complete, and the Contractor may be relieved of further responsibility for that unit. Such partial acceptance and beneficial occupancy by the Owner shall not void or alter any provision of the contract.

**50-15 FINAL ACCEPTANCE.** Upon due notice from the Contractor of presumptive completion of the entire project, the RPR and Owner will make an inspection. If all construction provided for and contemplated by the contract is found to be complete in accordance with the contract, plans, and specifications, such inspection shall constitute the final inspection. The RPR shall notify the Contractor in writing of final acceptance as of the date of the final inspection.

If, however, the inspection discloses any work, in whole or in part, as being unsatisfactory, the RPR will notify the Contractor and the Contractor shall correct the unsatisfactory work. Upon correction of the work, another inspection will be made which shall constitute the final inspection, provided the work has been satisfactorily completed. In such event, the RPR will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of final inspection.

**50-16 CLAIMS FOR ADJUSTMENT AND DISPUTES.** If for any reason the Contractor deems that additional compensation is due for work or materials not clearly provided for in the contract, plans, or specifications or previously authorized as extra work, the Contractor shall notify the RPR in writing of their intention to claim such additional compensation before the Contractor begins the work on which the Contractor bases the claim. If such notification is not given or the RPR is not afforded proper opportunity by the Contractor for keeping strict account of actual cost as required, then the Contractor hereby agrees to waive any claim for such additional compensation.



Such notice by the Contractor and the fact that the RPR has kept account of the cost of the work shall not in any way be construed as proving or substantiating the validity of the claim. When the work on which the claim for additional compensation is based has been completed, the Contractor shall, within 10 calendar days, submit a written claim to the RPR who will present it to the Owner for consideration in accordance with local laws or ordinances.

Nothing in this subsection shall be construed as a waiver of the Contractor's right to dispute final payment based on differences in measurements or computations.

The provisions of this paragraph will apply only to contracts awarded to the lowest bidder pursuant to competitive bidding.

On projects with original contract amounts in excess of \$100,000, the Contractor may submit to the RPR, in writing, proposals for modifying the plans, specifications or other requirements of the contract for the sole purpose of reducing the cost of construction. The value engineering cost proposal shall not impair, in any manner, the essential functions or characteristics of the project, including but not limited to service life, economy of operation, ease of maintenance, desired appearance, design and safety standards. This provision shall not apply unless the proposal submitted is specifically identified by the Contractor as being presented for consideration as a value engineering proposal.

Not eligible for value engineering cost proposals are changes in the basic design of a pavement type, runway and taxiway lighting, visual aids, hydraulic capacity of drainage facilities, or changes in grade or alignment that reduce the geometric standards of the project.

As a minimum, the following information shall be submitted by the Contractor with each proposal:

- a. A description of both existing contract requirements for performing the work and the proposed changes, with a discussion of the comparative advantages and disadvantages of each.
- b. An itemization of the contract requirements that must be changed if the proposal is adopted.
- c. A detailed estimate of the cost of performing the work under the existing contract and under the proposed changes.
- d. A statement of the time by which a change order adopting the proposal must be issued.
- e. A statement of the effect adoption of the proposal will have on the time for completion of the contract.
- f. The contract items of work affected by the proposed changes, including any quantity variation attributable to them.

The Contractor may withdraw, in whole or in part, any value engineering cost proposal not accepted by the RPR, within the period specified in the proposal. The provisions of this subsection shall not be construed to require the RPR to consider any value engineering cost proposal that may be submitted.

The Contractor shall continue to perform the work in accordance with the requirements of the contract until a change order incorporating the value engineering cost proposal has been issued. If a change order has not been issued by the date upon which the Contractor's value engineering cost proposal specifies that a decision should be made, or such other date as the Contractor may subsequently have requested in writing, such value engineering cost proposal shall be deemed rejected.

The RPR shall be the sole judge of the acceptability of a value engineering cost proposal and of the estimated net savings from the adoption of all or any part of such proposal. In determining the estimated net savings, the RPR may disregard the contract bid prices if, in the RPR's judgment such prices do not represent a fair measure of the value of the work to be performed or deleted.

The Owner may require the Contractor to share in the Owner's costs of investigating a value engineering cost proposal submitted by the Contractor as a condition of considering such proposal. Where such a condition is imposed, the Contractor shall acknowledge acceptance of it in writing. Such acceptance shall constitute full authority for the Owner to deduct the cost of investigating a value engineering cost proposal from amounts payable to the Contractor under the contract.

If the Contractor's value engineering cost proposal is accepted in whole or in part, such acceptance will be by a contract change order that shall specifically state that it is executed pursuant to this paragraph. Such change order shall incorporate the changes in the plans and specifications which are necessary to permit the value engineering cost proposal or such part of it as has been accepted and shall include any conditions upon which the RPR's approval is based. The change order shall also set forth the estimated net savings attributable to the value engineering cost proposal. The net savings shall be determined as the difference in costs between the original contract costs for the involved work items and the costs occurring as a result of the proposed change. The change order shall also establish the net savings agreed upon and shall provide for adjustment in the contract price that will divide the net savings equally between the Contractor and the Owner.

The Contractor's 50% share of the net savings shall constitute full compensation to the Contractor for the value engineering cost proposal and the performance of the work.

Acceptance of the value engineering cost proposal and performance of the work shall not extend the time of completion of the contract unless specifically provided for in the contract change order.

**END OF SECTION 50**

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## SECTION 60 CONTROL OF MATERIALS

**60-01 SOURCE OF SUPPLY AND QUALITY REQUIREMENTS.** The materials used in the work shall conform to the requirements of the contract, plans, and specifications. Unless otherwise specified, such materials that are manufactured or processed shall be new (as compared to used or reprocessed).

In order to expedite the inspection and testing of materials, the Contractor shall furnish documentation to the RPR as to the origin, composition, and manufacture of all materials to be used in the work. Documentation shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials.

**Federal Contract Clauses are available at the following FAA website:**  
**[www.faa.gov/airports/aip/procurement/federal\\_contract\\_provisions/](http://www.faa.gov/airports/aip/procurement/federal_contract_provisions/)**

At the RPR's option, materials may be approved at the source of supply before delivery. If it is found after trial that sources of supply for previously approved materials do not produce specified products, the Contractor shall furnish materials from other sources.

The Contractor shall furnish airport lighting equipment that meets the requirements of the specifications; and is listed in AC 150/5345-53, *Airport Lighting Equipment Certification Program and Addendum*, that is in effect on the date of advertisement.

**60-02 SAMPLES, TESTS, AND CITED SPECIFICATIONS.** All materials used in the work shall be inspected, tested, and approved by the RPR before incorporation in the work unless otherwise designated. Any work in which untested materials are used without approval or written permission of the RPR shall be performed at the Contractor's risk. Materials found to be unacceptable and unauthorized will not be paid for and, if directed by the RPR, shall be removed at the Contractor's expense.

Unless otherwise designated, quality assurance tests will be made by and at the expense of the Owner in accordance with the cited standard methods of ASTM, American Association of State Highway and Transportation Officials (AASHTO), federal specifications, Commercial Item Descriptions, and all other cited methods, which are current on the date of advertisement for bids.

The testing organizations performing on-site quality assurance field tests shall have copies of all referenced standards on the construction site for use by all technicians and other personnel. Unless otherwise designated, samples for quality assurance will be taken by a qualified representative of the RPR. All materials being used are subject to inspection, test, or rejection at any time prior to or during incorporation into the work. Copies of all tests will be furnished to the Contractor's representative at their request after review and approval of the RPR.

A copy of all Contractor QC test data shall be provided to the RPR daily, along with printed reports, in an approved format, on a weekly basis. After completion of the project, and prior to final payment, the Contractor shall submit a final report to the RPR showing all test data reports, plus an analysis of all results showing ranges, averages, and corrective action taken on all failing tests.

The Contractor shall employ a Quality Control (QC) testing organization to perform all Contractor required QC tests in accordance with Item C-100 Contractor Quality Control Program (CQCP).

**60-03 CERTIFICATION OF COMPLIANCE/ANALYSIS (COC/COA).** The RPR may permit the use, prior to sampling and testing, of certain materials or assemblies when accompanied by manufacturer's COC stating that such materials or assemblies fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer. Each lot of such materials or assemblies delivered to the work must be accompanied by a certificate of compliance in which the lot is clearly identified. The COA is the manufacturer's COC and includes all applicable test results.

Materials or assemblies used on the basis of certificates of compliance may be sampled and tested at any time and if found not to be in conformity with contract requirements will be subject to rejection whether in place or not.

The form and distribution of certificates of compliance shall be as approved by the RPR.

When a material or assembly is specified by "brand name or equal" and the Contractor elects to furnish the specified "or equal," the Contractor shall be required to furnish the manufacturer's certificate of compliance for each lot of such material or assembly delivered to the work. Such certificate of compliance shall clearly identify each lot delivered and shall certify as to:

- a. Conformance to the specified performance, testing, quality or dimensional requirements; and,
- b. Suitability of the material or assembly for the use intended in the contract work.

The RPR shall be the sole judge as to whether the proposed "or equal" is suitable for use in the work.

The RPR reserves the right to refuse permission for use of materials or assemblies on the basis of certificates of compliance.

**60-04 PLANT INSPECTION.** The RPR or their authorized representative may inspect, at its source, any specified material or assembly to be used in the work. Manufacturing plants may be inspected from time to time for the purpose of determining compliance with specified manufacturing methods or materials to be used in the work and to obtain samples required for acceptance of the material or assembly.

Should the RPR conduct plant inspections, the following conditions shall exist:

- a. The RPR shall have the cooperation and assistance of the Contractor and the producer with whom the Contractor has contracted for materials.
- b. The RPR shall have full entry at all reasonable times to such parts of the plant that concern the manufacture or production of the materials being furnished.
- c. If required by the RPR, the Contractor shall arrange for adequate office or working space that may be reasonably needed for conducting plant inspections. Place office or working space in a convenient location with respect to the plant.

It is understood and agreed that the Owner shall have the right to retest any material that has been tested and approved at the source of supply after it has been delivered to the site. The RPR shall have the right to reject only material which, when retested, does not meet the requirements of the contract, plans, or specifications.

**60-05 ENGINEER/ RESIDENT PROJECT REPRESENTATIVE (RPR) FIELD OFFICE.**  
**Engineer's field office is not required for this project.**

**60-06 STORAGE OF MATERIALS.** Materials shall be stored to assure the preservation of their quality and fitness for the work. Stored materials, even though approved before storage, may again be inspected prior to their use in the work. Stored materials shall be located to facilitate their prompt inspection. The Contractor shall coordinate the storage of all materials with the RPR. Materials to be stored on airport property shall not create an obstruction to air navigation nor shall they interfere with the free and unobstructed movement of aircraft. Unless otherwise shown on the plans and/or CSPP, the storage of materials and the location of the Contractor's plant and parked equipment or vehicles shall be as directed by the RPR. Private property shall not be used for storage purposes without written permission of the Owner or lessee of such property. The Contractor shall make all arrangements and bear all expenses for the storage of materials on private property. Upon request, the Contractor shall furnish the RPR a copy of the property Owner's permission.

All storage sites on private or airport property shall be restored to their original condition by the Contractor at their expense, except as otherwise agreed to (in writing) by the Owner or lessee of the property.

**60-07 UNACCEPTABLE MATERIALS.** Any material or assembly that does not conform to the requirements of the contract, plans, or specifications shall be considered unacceptable and shall be rejected. The Contractor shall remove any rejected material or assembly from the site of the work, unless otherwise instructed by the RPR.

Rejected material or assembly, the defects of which have been corrected by the Contractor, shall not be returned to the site of the work until such time as the RPR has approved its use in the work.

**60-08 OWNER FURNISHED MATERIALS.** The Contractor shall furnish all materials required to complete the work, except those specified, if any, to be furnished by the Owner. Owner-furnished materials shall be made available to the Contractor at the location specified.

All costs of handling, transportation from the specified location to the site of work, storage, and installing Owner-furnished materials shall be included in the unit price bid for the contract item in which such Owner-furnished material is used.

After any Owner-furnished material has been delivered to the location specified, the Contractor shall be responsible for any demurrage, damage, loss, or other deficiencies that may occur during the Contractor's handling, storage, or use of such Owner-furnished material. The Owner will deduct from any monies due or to become due the Contractor any cost incurred by the Owner in making good such loss due to the Contractor's handling, storage, or use of Owner-furnished materials.

**END OF SECTION 60**

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## **SECTION 70 LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC**

**70-01 LAWS TO BE OBSERVED.** The Contractor shall keep fully informed of all federal and state laws, all local laws, ordinances, and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. The Contractor shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the Owner and all their officers, agents, or servants against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by the Contractor or the Contractor's employees.

**70-02 PERMITS, LICENSES, AND TAXES.** The Contractor shall procure all permits and licenses, pay all charges, fees, and taxes, and give all notices necessary and incidental to the due and lawful execution of the work.

**70-03 PATENTED DEVICES, MATERIALS, AND PROCESSES.** If the Contractor is required or desires to use any design, device, material, or process covered by letters of patent or copyright, the Contractor shall provide for such use by suitable legal agreement with the Patentee or Owner. The Contractor and the surety shall indemnify and hold harmless the Owner, any third party, or political subdivision from any and all claims for infringement by reason of the use of any such patented design, device, material or process, or any trademark or copyright, and shall indemnify the Owner for any costs, expenses, and damages which it may be obliged to pay by reason of an infringement, at any time during the execution or after the completion of the work.

**70-04 RESTORATION OF SURFACES DISTURBED BY OTHERS.** The Owner reserves the right to authorize the construction, reconstruction, or maintenance of any public or private utility service, FAA or National Oceanic and Atmospheric Administration (NOAA) facility, or a utility service of another government agency at any time during the progress of the work. To the extent that such construction, reconstruction, or maintenance has been coordinated with the Owner, such authorized work (by others) must be shown on the plans and is indicated as follows:

***No work by others is anticipated on this project.***

Except as listed above, the Contractor shall not permit any individual, firm, or corporation to excavate or otherwise disturb such utility services or facilities located within the limits of the work without the written permission of the RPR.

Should the Owner of public or private utility service, FAA, or NOAA facility, or a utility service of another government agency be authorized to construct, reconstruct, or maintain such utility service or facility during the progress of the work, the Contractor shall cooperate with such Owners by arranging and performing the work in this contract to facilitate such construction, reconstruction or maintenance by others whether or not such work by others is listed above. When ordered as extra work by the RPR, the Contractor shall make all necessary repairs to the work which are due to such authorized work by others, unless otherwise provided for in the contract, plans, or specifications. It is understood and agreed that the Contractor shall not be entitled to make any claim for damages due to such authorized work by others or for any delay to the work resulting from such authorized work.



**70-05 FEDERAL PARTICIPATION.** The United States Government may agree/may have agreed to reimburse the Owner for some portion of the contract costs. The contract work is subject to the inspection and approval of duly authorized representatives of the FAA Administrator. No requirement of this contract shall be construed as making the United States a party to the contract nor will any such requirement interfere, in any way, with the rights of either party to the contract.

**70-06 SANITARY, HEALTH, AND SAFETY PROVISIONS.** The Contractor's worksite and facilities shall comply with applicable federal, state, and local requirements for health, safety and sanitary provisions.

**70-07 PUBLIC CONVENIENCE AND SAFETY.** The Contractor shall control their operations and those of their subcontractors and all suppliers, to assure the least inconvenience to the traveling public. Under all circumstances, safety shall be the most important consideration.

The Contractor shall maintain the free and unobstructed movement of aircraft and vehicular traffic with respect to their own operations and those of their own subcontractors and all suppliers in accordance with Section 40, paragraph 40-05, *Maintenance of Traffic*, and shall limit such operations for the convenience and safety of the traveling public as specified in Section 80, paragraph 80-04, *Limitation of Operations*.

The Contractor shall remove or control debris and rubbish resulting from its work operations at frequent intervals, and upon the order of the RPR. If the RPR determines the existence of Contractor debris in the work site represents a hazard to airport operations and the Contractor is unable to respond in a prompt and reasonable manner, the RPR reserves the right to assign the task of debris removal to a third party and recover the resulting costs as a liquidated damage against the Contractor.

**70-08 CONSTRUCTION SAFETY AND PHASING PLAN (CSPP).** The Contractor shall complete the work in accordance with the approved Construction Safety and Phasing Plan (CSPP) developed in accordance with AC 150/5370-2, Operational Safety on Airports During Construction. The CSPP is on sheet(s) **G004 through G014** of the project plans.

**70-09 USE OF EXPLOSIVES.** The use of explosives is not permitted on this project.

**70-10 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE.** The Contractor shall be responsible for the preservation of all public and private property and shall protect carefully from disturbance or damage all land monuments and property markers until the Engineer/RPR has witnessed or otherwise referenced their location and shall not move them until directed.

The Contractor shall be responsible for all damage or injury to property of any character, during the execution of the work, resulting from any act, omission, neglect, or misconduct in manner or method of executing the work, or at any time due to defective work or materials, and said responsibility shall not be released until the project has been completed and accepted.

When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or in consequence of the non-execution thereof by the Contractor, the Contractor shall restore, at their expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, or otherwise restoring as may be directed, or the Contractor shall make good such damage or injury in an acceptable manner.

**70-11 RESPONSIBILITY FOR DAMAGE CLAIMS.** The Contractor shall indemnify and hold harmless the Engineer/RPR and the Owner and their officers, agents, and employees from all suits, actions, or claims, of any character, brought because of any injuries or damage received or sustained by any person, persons, or property on account of the operations of the Contractor; or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in constructing the work; or because of any act or omission, neglect, or misconduct of said Contractor; or because of any claims or amounts recovered from any infringements of patent, trademark, or copyright; or from any claims or amounts arising or recovered under the "Workmen's Compensation Act," or any other law, ordinance, order, or decree. Money due the Contractor under and by virtue of their own contract considered necessary by the Owner for such purpose may be retained for the use of the Owner or, in case no money is due, their own surety may be held until such suits, actions, or claims for injuries or damages shall have been settled and suitable evidence to that effect furnished to the Owner, except that money due the Contractor will not be withheld when the Contractor produces satisfactory evidence that he or she is adequately protected by public liability and property damage insurance.

**70-12 THIRD PARTY BENEFICIARY CLAUSE.** It is specifically agreed between the parties executing the contract that it is not intended by any of the provisions of any part of the contract to create for the public or any member thereof, a third-party beneficiary or to authorize anyone not a party to the contract to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of the contract.

**70-13 OPENING SECTIONS OF THE WORK TO TRAFFIC.** If it is necessary for the Contractor to complete portions of the contract work for the beneficial occupancy of the Owner prior to completion of the entire contract, such "phasing" of the work must be specified below and indicated on the approved Construction Safety and Phasing Plan (CSPP) and the project plans. When so specified, the Contractor shall complete such portions of the work on or before the date specified or as otherwise specified.

**Refer to the Construction Safety and Phasing Plans and Documentation (CSPP)**

Upon completion of any portion of work listed above, such portion shall be accepted by the Owner in accordance with Section 50, paragraph 50-14, *Partial Acceptance*.

No portion of the work may be opened by the Contractor until directed by the Owner in writing. Should it become necessary to open a portion of the work to traffic on a temporary or intermittent basis, such openings shall be made when, in the opinion of the RPR, such portion of the work is in an acceptable condition to support the intended traffic. Temporary or intermittent openings are considered to be inherent in the work and shall not constitute either acceptance of the portion of the work so opened or a waiver of any provision of the contract. Any damage to the portion of the work so opened that is not attributable to traffic which is permitted by the Owner shall be repaired by the Contractor at their expense.

The Contractor shall make their own estimate of the inherent difficulties involved in completing the work under the conditions herein described and shall not claim any added compensation by reason of delay or increased cost due to opening a portion of the contract work.

The Contractor must conform to safety standards contained AC 150/5370-2 and the approved CSPP.

Contractor shall refer to the plans, specifications, and the approved CSPP to identify barricade requirements, temporary and/or permanent markings, airfield lighting, guidance signs and other safety requirements prior to opening up sections of work to traffic.

**70-14 CONTRACTOR'S RESPONSIBILITY FOR WORK.** Until the RPR's final written acceptance of the entire completed work, excepting only those portions of the work accepted in accordance with Section 50, paragraph 50-14, *Partial Acceptance*, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part due to the action of the elements or from any other cause, whether arising from the execution or from the non-execution of the work. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any of the above causes before final acceptance and shall bear the expense thereof except damage to the work due to unforeseeable causes beyond the control of and without the fault or negligence of the Contractor, including but not restricted to acts of God such as earthquake, tidal wave, tornado, hurricane or other cataclysmic phenomenon of nature, or acts of the public enemy or of government authorities.

If the work is suspended for any cause whatever, the Contractor shall be responsible for the work and shall take such precautions necessary to prevent damage to the work. The Contractor shall provide for normal drainage and shall erect necessary temporary structures, signs, or other facilities at their own expense. During such period of suspension of work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established planting, seeding, and sodding furnished under the contract, and shall take adequate precautions to protect new tree growth and other important vegetative growth against injury.

**70-15 CONTRACTOR'S RESPONSIBILITY FOR UTILITY SERVICE AND FACILITIES OF OTHERS.** As provided in paragraph 70-04, *Restoration of Surfaces Disturbed by Others*, the Contractor shall cooperate with the owner of any public or private utility service, FAA or NOAA, or a utility service of another government agency that may be authorized by the Owner to construct, reconstruct or maintain such utility services or facilities during the progress of the work. In addition, the Contractor shall control their operations to prevent the unscheduled interruption of such utility services and facilities.

To the extent that such public or private utility services, FAA, or NOAA facilities, or utility services of another governmental agency are known to exist within the limits of the contract work, the approximate locations have been indicated on the plans and/or in the contract documents.

**Facilities on the Airport but not necessarily in the project area:**

**TECO Natural Gas Main – along Vandolah Road**

**Fiber Optic Cables – along Vandolah Road and possibly into the Airport**

**Facilities known to be in the project area:**

**Runway and taxiway lighting cables, including Primary Wind Cone**

**Automatic Security Gate Controllers, and Overhead Light Poles**  
**Underground single and 3-phase Power lines and service**  
**Overhead Apron lighting / poles**  
**Underground and overhead telephone and cable television lines – Owners Unknown**  
**Lift Station, Septic tanks and lines**  
**Drainage culverts**  
**Potable water services and sanitary mains (as applicable) – City of Wauchula Department of Public Works and Engineering**  
**Telephone lines and service**  
**High voltage 3-phase power underground lines east of the project along fence line**  
**Runway and Taxiway Lighting and Navigational Aids – City of Wauchula Municipal Airport**  
**Power Lines Duke Energy**

**See also the Design Survey and the Construction Plans for known utilities. It is the Contractor's responsibility to coordinate utilities, and call for locates prior to construction. By State of Florida Law, the Contractor is required to contact SUNSHINE STATE ONE CALL 811 prior to any construction activity.**

It is understood and agreed that the Owner does not guarantee the accuracy or the completeness of the location information relating to existing utility services, facilities, or structures that may be shown on the plans or encountered in the work. Any inaccuracy or omission in such information shall not relieve the Contractor of the responsibility to protect such existing features from damage or unscheduled interruption of service.

It is further understood and agreed that the Contractor shall, upon execution of the contract, notify the Owners of all utility services or other facilities of their plan of operations. Such notification shall be in writing addressed to "The Person to Contact" as provided in this paragraph and paragraph 70-04, *Restoration of Surfaces Disturbed By Others*. A copy of each notification shall be given to the RPR.

In addition to the general written notification provided, it shall be the responsibility of the Contractor to keep such individual Owners advised of changes in their plan of operations that would affect such Owners.

Prior to beginning the work in the general vicinity of an existing utility service or facility, the Contractor shall again notify each such Owner of their plan of operation. If, in the Contractor's opinion, the Owner's assistance is needed to locate the utility service or facility or the presence of a representative of the Owner is desirable to observe the work, such advice should be included in the notification. Such notification shall be given by the most expeditious means to reach the utility owner's "Person to Contact" no later than two normal business days prior to the Contractor's commencement of operations in such general vicinity. The Contractor shall furnish a written summary of the notification to the RPR.

The Contractor's failure to give the two days' notice shall be cause for the Owner to suspend the Contractor's operations in the general vicinity of a utility service or facility.

Where the outside limits of an underground utility service have been located and staked on the ground, the Contractor shall be required to use hand excavation methods within 3 feet (1 m) of such outside limits at such points as may be required to ensure protection from damage due to the Contractor's operations.

Should the Contractor damage or interrupt the operation of a utility service or facility by accident or otherwise, the Contractor shall immediately notify the proper authority and the RPR and shall take all reasonable measures to prevent further damage or interruption of service. The Contractor, in such events, shall cooperate with the utility service or facility owner and the RPR continuously until such damage has been repaired and service restored to the satisfaction of the utility or facility owner.

The Contractor shall bear all costs of damage and restoration of service to any utility service or facility due to their operations whether due to negligence or accident. The Owner reserves the right to deduct such costs from any monies due or which may become due the Contractor, or their own surety.

**70-15.1 FAA FACILITIES AND CABLE RUNS.** The Contractor is hereby advised that the construction limits of the project *may* include existing facilities and buried cable runs that are owned, operated and maintained by the FAA. The Contractor, during the execution of the project work, shall comply with the following:

a. The Contractor shall permit FAA maintenance personnel the right of access to the project work site for purposes of inspecting and maintaining all existing FAA owned facilities.

b. The Contractor shall provide notice to the FAA Air Traffic Organization (ATO)/Technical Operations/System Support Center (SSC) Point-of-Contact through the airport *manager* a minimum of seven (7) calendar days prior to commencement of construction activities in order to permit sufficient time to locate and mark existing buried cables and to schedule any required facility outages.

c. If execution of the project work requires a facility outage, the Contractor shall contact the FAA Point-of-Contact a minimum of 72 hours prior to the time of the required outage.

d. Any damage to FAA cables, access roads, or FAA facilities during construction caused by the Contractor's equipment or personnel whether by negligence or accident will require the Contractor to repair or replace the damaged cables, access road, or FAA facilities to FAA requirements. The Contractor shall not bear the cost to repair damage to underground facilities or utilities improperly located by the FAA.

e. If the project work requires the cutting or splicing of FAA owned cables, the FAA Point-of-Contact shall be contacted a minimum of 72 hours prior to the time the cable work commences. The FAA reserves the right to have a FAA representative on site to observe the splicing of the cables as a condition of acceptance. All cable splices are to be accomplished in accordance with FAA specifications and require approval by the FAA Point-of-Contact as a condition of acceptance by the Owner. The Contractor is hereby advised that FAA restricts the location of where splices may be installed. If a cable splice is required in a location that is not permitted by FAA, the Contractor shall furnish and install a sufficient length of new cable that eliminates the need for any splice.

**70-16 FURNISHING RIGHTS-OF-WAY.** The Owner will be responsible for furnishing all rights-of-way upon which the work is to be constructed in advance of the Contractor's operations.

**70-17 PERSONAL LIABILITY OF PUBLIC OFFICIALS.** In carrying out any of the contract provisions or in exercising any power or authority granted by this contract, there shall be no liability upon the Engineer, RPR, their authorized representatives, or any officials of the Owner either personally or as an official of the Owner. It is understood that in such matters they act solely as agents and representatives of the Owner.

**70-18 NO WAIVER OF LEGAL RIGHTS.** Upon completion of the work, the Owner will expeditiously make final inspection and notify the Contractor of final acceptance. Such final acceptance, however, shall not preclude or stop the Owner from correcting any measurement, estimate, or certificate made before or after completion of the work, nor shall the Owner be precluded or stopped from recovering from the Contractor or their surety, or both, such overpayment as may be sustained, or by failure on the part of the Contractor to fulfill their obligations under the contract. A waiver on the part of the Owner of any breach of any part of the contract shall not be held to be a waiver of any other or subsequent breach.

The Contractor, without prejudice to the terms of the contract, shall be liable to the Owner for latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards the Owner's rights under any warranty or guaranty.

**70-19 ENVIRONMENTAL PROTECTION.** The Contractor shall comply with all federal, state, and local laws and regulations controlling pollution of the environment. The Contractor shall take necessary precautions to prevent pollution of streams, lakes, ponds, and reservoirs with fuels, oils, asphalts, chemicals, or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.

**70-20 ARCHAEOLOGICAL AND HISTORICAL FINDINGS.** Unless otherwise specified in this subsection, the Contractor is advised that the site of the work is not within any property, district, or site, and does not contain any building, structure, or object listed in the current National Register of Historic Places published by the United States Department of Interior.

Should the Contractor encounter, during their operations, any building, part of a building, structure, or object that is incongruous with its surroundings, the Contractor shall immediately cease operations in that location and notify the RPR. The RPR will immediately investigate the Contractor's finding and the Owner will direct the Contractor to either resume operations or to suspend operations as directed.

Should the Owner order suspension of the Contractor's operations in order to protect an archaeological or historical finding, or order the Contractor to perform extra work, such shall be covered by an appropriate contract change order or supplemental agreement as provided in Section 40, paragraph 40-04, *Extra Work*, and Section 90, paragraph 90-05, *Payment for Extra Work*. If appropriate, the contract change order or supplemental agreement shall include an extension of contract time in accordance with Section 80, paragraph 80-07, *Determination and Extension of Contract Time*.

**70-21 INSURANCE REQUIREMENTS.**

a. Before any work commences, Contractor shall, without in any way altering their liability, obtain, pay for, and maintain insurance for the coverages and amounts of coverage not less than those set forth in the subsections below, and shall provide the CITY with a Certificate of Insurance and an opportunity to inspect a certified copy of each policy applicable to this Agreement. The

Certificate of Insurance must name as an additional insured the City of Wauchula and all of its Officers, Agents, Employees, and City Commissioners, excluding worker's compensation and professional liability; must provide that such insurance is primary to any other insurance available to the additional insureds with respect to claims covered under the policy; and must provide that such insurance coverage applies separately to each insured against whom claims are made or suit is brought; but the inclusion of more than one insured shall not operate to increase the insurer's limit of liability. Contractor shall thereafter provide the CITY an annual Certificate of Insurance satisfactory to the CITY to evidence such coverage. Such Certificates of Insurance will provide that there shall be no termination, non-renewal, modification or expiration of such coverage without thirty (30) days prior written notice to the CITY. Contractor shall maintain, at all times, the minimum levels of insurance set forth below.

b. The CITY shall be named as an additional insured on all Contractor policies related to the project, excluding professional liability and worker's compensation. All policies required under this section must be an "Occurrence" form. The policies shall contain a waiver of subrogation in favor of the City of Wauchula. All insurance coverage shall be written with an insurer having an A.M. Best Rating of a least the "A" category and size category of VIII.

c. The Contractor's self-insured retention or deductible per line of coverage shall not exceed \$25,000.00 without the permission of the CITY.

d. If there is any failure by the Contractor to comply with the provisions of this section, the CITY may, at its option, and on notice to the Contractor, suspend the Contractor's work for cause until there is full compliance.

e. CITY may, at its sole discretion, purchase such insurance at Contractor's expense provided that the CITY shall have no obligation to do so and if the CITY shall do so, it shall not relieve Contractor of its obligation to obtain insurance.

f. The Contractor shall not be relieved of or excused from the obligation to obtain and maintain such insurance amount and coverages.

g. To the extent applicable, Contractor will ensure that all subcontractors comply with the requirements of this Section relating to insurance, and maintain coverage throughout the term of the Service Agreement. All Contractor's sub-contractors shall be required to include CITY and Contractor as additional insured on their General Liability Insurance policies.

h. In the event that subconsultants used by the Contractor do not have insurance, or do not meet the insurance limits, Contractor shall indemnify and hold harmless the CITY for any claim in excess of the subconsultants' insurance coverage.

i. The Contractor shall not commence work under this Agreement until all insurance required as stated herein has been obtained and such insurance has been approved by the CITY.

1. Comprehensive Automobile Liability Insurance. \$1,000,000.00 combined single limit of liability for bodily injuries, death and property damage resulting from any one occurrence, including all owned, hired, and non-owned vehicles.

2. Commercial General Liability. \$1,000,000.00 combined single limit of liability for bodily injuries, death and property damage, and personal injury resulting from any one occurrence, including the following coverages:
3. Premises and Operations: Broad Form Commercial General Liability Endorsement to include Blanket Contractual liability (specifically covering, but not limited to, the contractual obligations assumed by the Firm); Personal Injury (with employment and contractual exclusions deleted); and Broad Form Property Damage coverage.
4. Independent Contractors: Delete Exclusion relative to collapse, explosion and underground; Property Damage Hazards; Cross Liability Endorsement; and Contractual liability (specifically covering, but not limited to, the contractual obligations assumed by the Firm)
5. Umbrella (Excess) Liability Insurance. Umbrella Liability with limits of not less than \$1,000,000.00, exclusive of defense costs, to be in excess of all other coverages. Such coverage shall be at least as broad as the primary coverages above, with any excess umbrella layers written on a strict following form basis over the primary coverage. All such policies shall be endorsed to provide defense coverage obligations.
6. Professional Liability Insurance. \$1,000,000.00 for design errors and omissions, exclusive of defense costs. Contractor shall be required to provide continuing Professional Liability Insurance to cover each project for a period of two (2) years after the project is completed. Insurance requirements may vary depending on projects as determined by the City Manager. The CITY may require the Contractor to provide a higher level of coverage for a specific project and time frame.
7. Performance, Payment and Other Bonds. Contractor shall furnish Performance and Payment Bonds specific to each project if required and agreed to under the Consultant Service Agreement for the project.
8. Worker's Compensation. The Contractor shall provide, pay for, and maintain worker's compensation insurance on all employees, its agents or subcontractors as required by Florida Statutes.

***Refer also to Section 70-11 of the Supplemental General Provisions and other sections of the Contract Documents for Insurance Requirements.***

## **70-22: UNITED STATES IRON AND STEEL PRODUCTS**

a. The Contractor acknowledges to and for the benefit of the Owner that it understands that the products to be installed as a part of this contract must be in compliance with 255.0993, Florida Statutes, Public works projects; United States-produced iron and steel products.



1. DEFINITIONS.— As used in this section, the term:

- a) “Governmental entity” means the state, or any office, board, bureau, commission, department, branch, division, or institution thereof, or a separate agency or unit of local government created or established by law or ordinance and the officers thereof. The term includes, but is not limited to, a county; a city, a town, or other municipality; or a department, a commission, an authority, a school district, a taxing district, a water management district, a board, a public corporation, an institution of higher education, or other public agency or body thereof authorized to expend public funds for the construction, maintenance, repair, renovation, remodeling, or improvement of public works.
- b) “Iron or steel product” means any product made primarily of iron or steel, including, but not limited to, lined or unlined pipes and fittings; bars and rods; wire, wire ropes, and link chains; forgings; grating and drainage products; access covers, hatches, manhole covers, and other castings; hydrants; electric transmission and distribution poles; tanks; flanges; pipe clamps and restraints; valves; structural steel and other steel mill products; materials made primarily of iron and steel within precast concrete; and other construction materials made primarily of iron or steel.
- c) “Manufacturing process” means the application of a process to alter the form or function of materials or elements of a product in a manner that adds value and transforms the materials or elements into a new finished product functionally different from a finished product produced merely from assembling materials or elements into a product without applying such a process.
- d) “Produced in the United States” means that, with respect to iron and steel, all manufacturing processes, from initial melting through application of coatings, occur in the United States, other than metallurgical processes to refine steel additives.
- e) “Public works project” means an activity paid for with any state-appropriated funds or state funds administered by a governmental entity which consists of the construction, maintenance, repair, renovation, remodeling, or improvement of a building, road, street, sewer, storm drain, water system, site development, irrigation system, reclamation project, gas or electrical distribution system, gas or electrical substation, or other facility, project, or portion thereof owned in whole or in part by any governmental entity.

2. UNITED STATES-PRODUCED IRON AND STEEL REQUIREMENT.

- a) Notwithstanding any other law, a governmental entity entering into a contract for a public works project or for the purchase of materials for a public works project must include in the contract a requirement that any iron or steel product permanently incorporated in the project be produced in the United States.
- b) Paragraph (a) does not apply if the governmental entity administering the funds for a public works project or the purchase of materials for a public works project solely determines that any of the following applies:

- 1) Iron or steel products produced in the United States are not produced in sufficient quantities, reasonably available, or of satisfactory quality.
- 2) The use of iron or steel products produced in the United States will increase the total cost of the project by more than 20 percent.
- 3) Complying with paragraph (a) is inconsistent with the public interest.
- c) When steel and iron materials are used in a public works project, paragraph (a) does not prevent a minimal use of foreign steel and iron materials if:
  1. Such materials are incidental or ancillary to the primary product and are not separately identified in the project specifications; and
  2. The cost of such materials does not exceed one-tenth of 1 percent of the total contract cost or \$2,500, whichever is greater. For purposes of this subparagraph, the cost of such materials is that shown to be the value of the iron or steel products as they are delivered to the project.
- (d) Electrical components, equipment, systems, and appurtenances, including supports, covers, shielding, and other appurtenances related to an electrical system, necessary for operation or concealment, except transmission and distribution poles, are not considered iron or steel products and are exempt from the requirements of paragraph (a).
3. INTERNATIONAL AGREEMENTS.—This section shall be applied in a manner consistent with, and may not be construed to impair, the state's obligations under any international agreement.
4. RULEMAKING.—The Department of Management Services shall develop guidelines and procedures by rule to implement this section.
5. APPLICABILITY.—This section does not apply to contracts procured by the Department of Transportation subject to the Buy America requirements of 23 C.F.R. s. 635.410.

## **70-23 E-VERIFY REQUIREMENTS**

Effective January 1, 2021, public and private employers, contractors, and subcontractors must require registration with, and use of the E-Verify system in order to verify the work authorization status of all newly hired employees. Contractor acknowledges and agrees to utilize the U.S. Department of Homeland Security's E-Verify System to verify the employment eligibility of:

- a. All persons employed by Contractor to perform employment duties within the State of Florida during the term of the Contract; and
- b. All persons (including subcontractors/subvendors/subconsultants) assigned by Contractor to perform work pursuant to this Contract with the City. Contractor acknowledges and agrees that the use of the U.S. Department of Homeland Security's E-Verify System during the term of this Contract is a condition of the Contract with the City.

By entering this Contract with the City, Contractor becomes obligated to comply with the provisions of Section 448.095, Florida Statutes, "Employment Eligibility." This includes, but is not limited to, use of the E-Verify System to verify the work authorization status of all newly hired employees, and requiring all subcontractors to provide an affidavit to Contractor attesting that the subcontractor does not employ, contract with, or subcontract with, an unauthorized alien. Contractor agrees to maintain a copy of such affidavit for the duration of this Contract. Failure to comply with this section will result in the termination of this Contract as provided in Section 448.095, Florida Statutes, and Contractor may not be awarded a public contract for at least one (1) year after the date on which the Contract was terminated. Contractor will also be liable for any additional costs to the City incurred as a result of the termination of this Contract in accordance with this section.

#### **70-24 PUBLIC RECORD LAWS**

The parties acknowledge and agree that the City is a public agency subject to Chapter 119, Florida Statutes. All documents, including but not limited to, letters, memos, e-mails, computer files, photographs, drawings, tracings, plans, specifications, maps, evaluations, reports and other records and data of any type relating to the Project received, prepared, or developed by Contractor under this Contract are public records subject to Florida Statutes Chapter 119 and shall not be destroyed. Accordingly, pursuant to Section 119.0701, Florida Statutes, the Contractor must comply with all public records laws in accordance with Chapter 119, Florida Statutes. In accordance with Chapter 119, Florida Statutes, the Contractor agrees to:

- a. Keep and maintain all records that ordinarily and necessarily would be required by the Owner to perform the services under this Contract.
- b. Upon request from the City, provide the City with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the costs provided in Chapter 119, Florida Statutes, or as otherwise provided by law.
- c. Ensure that public records that are exempt, or confidential and exempt, from public records disclosures are not disclosed as except as authorized by law for the duration of the Contract term and following completion of the Contract if the Contractor does not transfer the records to the City.
- d. Upon completion of the services under this Contract, at no cost to the City, either transfer to the City all public records in the Contractor's possession that were not previously provided or keep and maintain public records required by the City to perform the services. If the Contractor transfers all public records to the City upon completion of the services, the Contractor must destroy any duplicate public records that are exempt, or confidential and exempt, from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of the services under this Contract, its obligations shall survive the termination or expiration of the Contract, and the Contractor must meet all applicable requirements for retaining public records, including abiding by all State of Florida records retention schedules. All records stored electronically must be provided to the City, upon request from the City, in a format that is compatible with the information technology systems of the City.

**e. IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO ITS DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS AGREEMENT, CONTACT THE OWNER'S CUSTODIAN OF PUBLIC RECORDS AT: STEPHANIE CAMACHO, CITY CLERK, VIA EMAIL: SCAMACHO@CITYOFWAUCHULA.COM**

If the Contractor does not comply with the provisions of this section, the CITY will enforce the Contract provisions in accordance herewith and may unilaterally cancel this Contract in accordance with Florida law.

#### **70-25 TRADE SECRETS AND PROPRIETARY CONFIDENTIAL BUSINESS INFORMATION:**

a. Documents submitted by Contractor which it contends constitute trade secrets as defined in Sections 812.081 and 688.002, Florida Statutes, or confidential and propriety business information when held by the City as a utility owner, consistent with Section 119.0713(5), Florida Statutes, or information related to cybersecurity that is exempt and confidential under Section 119.0725, Florida Statutes, and which are clearly marked or stamped as confidential by the Contractor at the time of submission to the City, will not be subject to public access. Except as may be required under applicable law, court order, or regulation, or to the extent required to perform and enforce this Contract, both parties shall (and shall cause their employees and contractors to) keep all Confidential Information strictly confidential and shall not disclose it to any third party. The Confidential Information may be transmitted orally, in writing, electronically or otherwise observed by either party. However, should a requestor of public records challenge Contractor's claim of trade secret or confidential and proprietary business information, within five (5) calendar days of such challenge, Contractor must provide a separate written affidavit and a separate indemnification and release guarantee, as approved by the City's Attorney or designee, to the City to support its claim that the alleged trade secrets or proprietary and confidential business information actually constitutes same as defined by law. Contractor must demonstrate the need for confidentiality of the documentation by showing a business advantage or opportunity to obtain an advantage would be gained if the documentation were released. Otherwise, Contractor is required to timely seek a protective order in the Circuit Court of Hardee County to prevent the City's release of the requested records.

b. "Confidential Information" means all non-public information of either party, including the terms of this agreement, all technical information about either party's products or services, pricing information, marketing and marketing plans, other business and financial information of either party and all trade secrets of either party. Notwithstanding the foregoing, "Confidential Information" shall not include (i) any information that is in the public domain other than due to Recipient's breach of this Contract; (ii) any information in the possession of the Recipient without restriction prior to disclosure by the Discloser; or (iii) any information independently developed by the Recipient without reliance on the information disclosed hereunder by the Discloser. "Discloser" means either party that discloses Confidential Information, and "Recipient" means either party that receives it.

c. To the extent Contractor regards certain terms and provisions of this Contract to contain data or information that is covered by one or more of the following: (1) information related to critical infrastructure, and (2) network schematics, hardware and software configurations, or encryption information or information that identifies detection, investigation, or response practices for suspected or confirmed cybersecurity incidents, Contractor must clearly mark such provisions as confidential and exempt. To the extent such terms and provisions are clearly marked as confidential and exempt from public record law requirements, the parties agree to treat the terms and conditions in accordance with the provisions of Paragraph a) above.

#### **70-26 SOLICITATION OF CONTRACT**

Contractor warrants that it has not employed or retained any company or person, other than a bona fide employee working solely for Contractor, to solicit or secure this Contract and that it has not paid or agreed to pay any person, company, corporation, individual or firm, other than a bona fide employee working solely for Contractor, any fee, commission, percentage, gift, or other compensation contingent upon or resulting from the award or making of this Contract.

#### **70-27 PUBLIC ENTITY CRIME**

As provided by Florida Statute 287.133(2)(a), a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or a public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Florida Statute 287.017 for Category Two for a period of 36 months from the date of being placed on the convicted vendor list. Any person must notify the City within 30 days after a conviction of a public entity crime applicable to that person or to an affiliate of that person. By its execution hereof, Contractor certifies that neither it nor an affiliate is on the convicted vendor list.

#### **70-28 SCRUTINIZED COMPANIES LIST/COUNTRIES OF CONCERN/INTERESTS OF FOREIGN COUNTRIES**

Contractor hereby certifies that it: (a) has not been placed on the Scrutinized Companies that Boycott Israel List, nor is engaged in a boycott of Israel; (b) has not been placed on the Scrutinized Companies with Activities in Sudan List nor the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List; and (c) has not been engaged in business operations in Cuba or Syria. This Contract may be terminated at the option of the City if the Contractor is found to have submitted a false certification as provided under Florida Statute 287.135(5), been placed on the Scrutinized Companies that Boycott Israel List, or is engaged in a boycott of Israel, been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or been engaged in business operations in Cuba or Syria.

#### **70-29 ANTI-TRUST VENDOR VIOLATOR**

The Contractor has a continuous duty, throughout the entire Contract Term identified in Section 4, and any renewal, to disclose to the City if the Contractor or any of its affiliates, as defined by section 287.137(1), Fla. Stat., are placed on the Antitrust Violator Vendor List. Pursuant to section

287.137, Fla. Stat., "A person or an affiliate who has been placed on the antitrust violator vendor list following a conviction or being held civilly liable for an antitrust violation may not submit a bid, proposal, or reply for any new contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply for a new contract with a public entity for the construction or repair of a public building or public work; may not submit a bid, proposal, or reply on new leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a new contract with a public entity; and may not transact new business with a public entity."

#### **70-30 JESSICA LUNSFORD ACT (SECTION 1012.32, FLORIDA STATUTES)**

Background screening requirements for certain non-instructional school district employees and contractors. (1) Except as provided in s. 1012.467 or s. 1012.468, non-instructional school district employees or contractual personnel who are permitted access on school grounds when students are present, who have direct contact with students or who have access to or control of school funds must meet level 2 screening requirements as described in s. 1012.32. Contractual personnel shall include any contractor, individual, or entity under contract with a school or the school board. (2) Every 5 years following employment or entry into a contract in a capacity described in subsection (1), each person who is so employed or under contract with the school district must meet level 2 screening requirements as described in s. 1012.32, at which time the school district shall request the Department of Law Enforcement to forward the fingerprints to the Federal Bureau of Investigation for the level 2 screening. If, for any reason following employment or entry into a contract in a capacity described in subsection (1), the fingerprints of a person who is so employed or under contract with the school district are not retained by the Department of Law Enforcement under s. 1012.32(3)(a) and (b), the person must file a complete set of fingerprints with the district school superintendent of the employing or contracting school district. Upon submission of fingerprints for this purpose, the school district shall request the Department of Law Enforcement to forward the fingerprints to the Federal Bureau of Investigation for the level 2 screening, and the fingerprints shall be retained by the Department of Law Enforcement under s. 1012.32(3)(a) and (b). The cost of the state and federal criminal history check required by level 2 screening may be borne by the district school board, the contractor, or the person fingerprinted. Under penalty of perjury, each person who is employed or under contract in a capacity described in subsection (1) must agree to inform his or her employer or the party with whom he or she is under contract within 48 hours if convicted of any disqualifying offense while he or she is employed or under contract in that capacity. (3) If it is found that a person who is employed or under contract in a capacity described in subsection (1) does not meet the level 2 requirements, the person shall be immediately suspended from working in that capacity and shall remain suspended until final resolution of any appeals.

#### **70-31 CONFLICT OF INTEREST**

This Contract is subject to Chapter 112, Florida Statutes, and Contractor shall disclose the name of any officer, director, employee, or other agent who is also an employee of the City of Wauchula. The Contractor shall also disclose the name of any City of Wauchula employee who owns, directly or indirectly, more than a 5% interest in Contractor's, or its affiliates, business entity.

**70-32 CHOICE OF LAW, VENUE, AND WAIVER OF JURY TRIAL**

a. This Contract, and the rights and duties of the parties arising from or relating to this Contract or its subject matter, shall be construed in accordance with the laws of the State of Florida and the ordinances of the City of Wauchula without regard to its conflicts of law provisions. Each of the parties irrevocably submits to the exclusive jurisdiction of the courts of Hardee County, Florida, and further agree that the venue for any legal action brought by or filed against the City for any matter arising out of or relating to this Contract shall be exclusively in that state or federal court for Hardee County, Florida that has jurisdiction over such legal actions.

b. WAIVER OF JURY TRIAL. BY ENTERING INTO THIS AGREEMENT, THE CONTRACTOR AND THE CITY HEREBY EXPRESSLY AND IRREVOCABLY WAIVE ANY RIGHTS THEY MAY HAVE TO A TRIAL BY JURY IN ANY LITIGATION ARISING OUT OF OR RELATED TO THIS AGREEMENT.

**END OF SECTION 70**

## **SECTION 80 EXECUTION AND PROGRESS**

**80-01 SUBLETTING OF CONTRACT.** The Owner will not recognize any subcontractor on the work. The Contractor shall at all times when work is in progress be represented either in person, by a qualified superintendent, or by other designated, qualified representative who is duly authorized to receive and execute orders of the Resident Project Representative (RPR).

The Contractor shall perform, with his organization, an amount of work equal to at least **25%** percent of the total contract cost.

Should the Contractor elect to assign their contract, said assignment shall be concurred in by the surety, shall be presented for the consideration and approval of the Owner, and shall be consummated only on the written approval of the Owner.

**The Contractor shall provide copies of all subcontracts to the RPR 14 days prior to being utilized on the project. As a minimum, the information shall include the following:**

- Subcontractor's legal company name.
- Subcontractor's legal company address, including County name.
- Principal contact person's name, telephone and fax number.
- Complete narrative description, and dollar value of the work to be performed by the subcontractor.
- Copies of required insurance certificates in accordance with the specifications.
- Minority/ non-minority status.

**80-02 NOTICE TO PROCEED (NTP).** The notice to proceed shall state the date on which it is expected the Contractor will begin the construction and from which date contract time will be charged. The Contractor shall begin the work to be performed under the contract within 10 days of the date set by the Engineer in the written notice to proceed, but in any event, the Contractor shall notify the Engineer at least 24 hours in advance of the time actual construction operations will begin. The Contractor shall not commence any actual construction prior to the date on which the notice to proceed is issued by the Owner.

**80-03 EXECUTION AND PROGRESS.** Unless otherwise specified, the Contractor shall submit their coordinated construction schedule showing all work activities for the RPR's review and acceptance at least 10 days prior to the start of work. The Contractor's progress schedule, once accepted by the RPR, will represent the Contractor's baseline plan to accomplish the project in accordance with the terms and conditions of the Contract. The RPR will compare actual Contractor progress against the baseline schedule to determine that status of the Contractor's performance. The Contractor shall provide sufficient materials, equipment, and labor to guarantee the completion of the project in accordance with the plans and specifications within the time set forth in the proposal.



If the Contractor falls significantly behind the submitted schedule, the Contractor shall, upon the RPR's request, submit a revised schedule for completion of the work within the contract time and modify their operations to provide such additional materials, equipment, and labor necessary to meet the revised schedule. Should the execution of the work be discontinued for any reason, the Contractor shall notify the RPR at least 24 hours in advance of resuming operations.

The Contractor shall not commence any actual construction prior to the date on which the NTP is issued by the Owner.

The project schedule shall be prepared as a network diagram in Critical Path Method (CPM), Program Evaluation and Review Technique (PERT), or other format, or as otherwise specified. It shall include information on the sequence of work activities, milestone dates, and activity duration. The schedule shall show all work items identified in the project proposal for each work area and shall include the project start date and end date.

The Contractor shall maintain the work schedule and provide an update and analysis of the progress schedule on a twice monthly basis, or as otherwise specified in the contract. Submission of the work schedule shall not relieve the Contractor of overall responsibility for scheduling, sequencing, and coordinating all work to comply with the requirements of the contract.

**80-04 LIMITATION OF OPERATIONS.** The Contractor shall control their operations and the operations of their subcontractors and all suppliers to provide for the free and unobstructed movement of aircraft in the air operations areas (AOA) of the airport.

When the work requires the Contractor to conduct their operations within an AOA of the airport, the work shall be coordinated with airport operations (through the RPR) at least 48 hours prior to commencement of such work. The Contractor shall not close an AOA until so authorized by the RPR and until the necessary temporary marking, signage and associated lighting is in place as provided in Section 70, paragraph 70-08, *Construction Safety and Phasing Plan (CSPP)*.

When the contract work requires the Contractor to work within an AOA of the airport on an intermittent basis (intermittent opening and closing of the AOA), the Contractor shall maintain constant communications as specified; immediately obey all instructions to vacate the AOA; and immediately obey all instructions to resume work in such AOA. Failure to maintain the specified communications or to obey instructions shall be cause for suspension of the Contractor's operations in the AOA until satisfactory conditions are provided. The areas of the AOA identified in the Construction Safety Phasing Plan (CSPP) and as listed below, cannot be closed to operating aircraft to permit the Contractor's operations on a continuous basis and will therefore be closed to aircraft operations intermittently as follows:

***Taxiways shall be closed anytime there is activity within the Safety Area. Refer to the Construction Safety and Phasing Plan for detailed phasing requirements.***

The Contractor shall be required to conform to safety standards contained in AC 150/5370-2, Operational Safety on Airports During Construction and the approved CSPP.

**80-04.1 OPERATIONAL SAFETY ON AIRPORT DURING CONSTRUCTION.** All Contractors' operations shall be conducted in accordance with the approved project Construction Safety and Phasing Plan (CSPP) and the Safety Plan Compliance Document (SPCD) and the provisions set forth within the current version of AC 150/5370-2, Operational Safety on Airports During Construction. The CSPP included within the contract documents conveys minimum requirements for operational safety on the airport during construction activities. The Contractor shall prepare and submit a SPCD that details how it proposes to comply with the requirements presented within the CSPP.

The Contractor shall implement all necessary safety plan measures prior to commencement of any work activity. The Contractor shall conduct routine checks to assure compliance with the safety plan measures.

The Contractor is responsible to the Owner for the conduct of all subcontractors it employs on the project. The Contractor shall assure that all subcontractors are made aware of the requirements of the CSPP and SPCD and that they implement and maintain all necessary measures.

No deviation or modifications may be made to the approved CSPP and SPCD unless approved in writing by the Owner. The necessary coordination actions to review Contractor proposed modifications to an approved CSPP or approved SPCD can require a significant amount of time.

**80-05 CHARACTER OF WORKERS, METHODS, AND EQUIPMENT.** The Contractor shall, at all times, employ sufficient labor and equipment for prosecuting the work to full completion in the manner and time required by the contract, plans, and specifications.

All workers shall have sufficient skill and experience to perform properly the work assigned to them. Workers engaged in special work or skilled work shall have sufficient experience in such work and in the operation of the equipment required to perform the work satisfactorily.

Any person employed by the Contractor or by any subcontractor who violates any operational regulations or operational safety requirements and, in the opinion of the RPR, does not perform his work in a proper and skillful manner or is intemperate or disorderly shall, at the written request of the RPR, be removed immediately by the Contractor or subcontractor employing such person, and shall not be employed again in any portion of the work without approval of the RPR.

Should the Contractor fail to remove such person or persons, or fail to furnish suitable and sufficient personnel for the proper execution of the work, the RPR may suspend the work by written notice until compliance with such orders.

All equipment that is proposed to be used on the work shall be of sufficient size and in such mechanical condition as to meet requirements of the work and to produce a satisfactory quality of work. Equipment used on any portion of the work shall not cause injury to previously completed work, adjacent property, or existing airport facilities due to its use.

When the methods and equipment to be used by the Contractor in accomplishing the work are not prescribed in the contract, the Contractor is free to use any methods or equipment that will accomplish the work in conformity with the requirements of the contract, plans, and specifications.

When the contract specifies the use of certain methods and equipment, such methods and equipment shall be used unless otherwise authorized by the RPR. If the Contractor desires to use a method or type of equipment other than specified in the contract, the Contractor may request authority from the RPR to do so. The request shall be in writing and shall include a full description of the methods and equipment proposed and of the reasons for desiring to make the change. If approval is given, it will be on the condition that the Contractor will be fully responsible for producing work in conformity with contract requirements. If, after trial use of the substituted methods or equipment, the RPR determines that the work produced does not meet contract requirements, the Contractor shall discontinue the use of the substitute method or equipment and shall complete the remaining work with the specified methods and equipment. The Contractor shall remove any deficient work and replace it with work of specified quality, or take such other corrective action as the RPR may direct. No change will be made in basis of payment for the contract items involved nor in contract time as a result of authorizing a change in methods or equipment under this paragraph.

**80-06 TEMPORARY SUSPENSION OF THE WORK.** The Owner shall have the authority to suspend the work wholly, or in part, for such period or periods the Owner may deem necessary, due to unsuitable weather, or other conditions considered unfavorable for the execution of the work, or for such time necessary due to the failure on the part of the Contractor to carry out orders given or perform any or all provisions of the contract.

In the event that the Contractor is ordered by the Owner, in writing, to suspend work for some unforeseen cause not otherwise provided for in the contract and over which the Contractor has no control, the Contractor may be reimbursed for actual money expended on the work during the period of shutdown. No allowance will be made for anticipated profits. The period of shutdown shall be computed from the effective date of the written order to suspend work to the effective date of the written order to resume the work. Claims for such compensation shall be filed with the RPR within the time period stated in the RPR's order to resume work. The Contractor shall submit with their own claim information substantiating the amount shown on the claim. The RPR will forward the Contractor's claim to the Owner for consideration in accordance with local laws or ordinances. No provision of this article shall be construed as entitling the Contractor to compensation for delays due to inclement weather or for any other delay provided for in the contract, plans, or specifications.

If it becomes necessary to suspend work for an indefinite period, the Contractor shall store all materials in such manner that they will not become an obstruction nor become damaged in any way. The Contractor shall take every precaution to prevent damage or deterioration of the work performed and provide for normal drainage of the work. The Contractor shall erect temporary structures where necessary to provide for traffic on, to, or from the airport.

**80-07 DETERMINATION AND EXTENSION OF CONTRACT TIME.** The *number of calendar days* shall be stated in the proposal and contract and shall be known as the Contract Time.

If the contract time requires extension for reasons beyond the Contractor's control, it shall be adjusted as follows:

**80-07.1 CONTRACT TIME BASED ON CALENDAR DAYS.** Contract Time based on calendar days shall consist of the number of calendar days stated in the contract counting from the effective date of the Notice to Proceed and including all Saturdays, Sundays, holidays, and non-work days. All calendar days elapsing between the effective dates of the Owner's orders to suspend and resume all work, due to causes not the fault of the Contractor, shall be excluded.

At the time of final payment, the contract time shall be increased in the same proportion as the cost of the actually completed quantities bears to the cost of the originally estimated quantities in the proposal. Such increase in the contract time shall not consider either cost of work or the extension of contract time that has been covered by a change order or supplemental agreement. Charges against the contract time will cease as of the date of final acceptance.

**80-08 FAILURE TO COMPLETE ON TIME.** For each calendar day or working day, as specified in the contract, that any work remains uncompleted after the contract time (including all extensions and adjustments as provided in paragraph 80-07, *Determination and Extension of Contract Time*) the sum specified in the contract and proposal as liquidated damages (LD) will be deducted from any money due or to become due the Contractor or their own surety. Such deducted sums shall not be deducted as a penalty but shall be considered as liquidation of a reasonable portion of damages including but not limited to additional engineering services that will be incurred by the Owner should the Contractor fail to complete the work in the time provided in their contract.

| Schedule      | Liquidated Damages Cost | Allowed Construction Time |
|---------------|-------------------------|---------------------------|
| All Schedules | \$500 per Calendar Day  | 150 Calendar Days         |

The maximum construction time allowed for all Schedules will be the sum of the time allowed for individual schedules but not more than **150 Calendar** days. Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a wavier on the part of the Owner of any of its rights under the contract.

**80-09 DEFAULT AND TERMINATION OF CONTRACT.** The Contractor shall be considered in default of their contract and such default will be considered as cause for the Owner to terminate the contract for any of the following reasons, if the Contractor:

- a. Fails to begin the work under the contract within the time specified in the Notice to Proceed, or
- b. Fails to perform the work or fails to provide sufficient workers, equipment and/or materials to assure completion of work in accordance with the terms of the contract, or
- c. Performs the work unsuitably or neglects or refuses to remove materials or to perform anew such work as may be rejected as unacceptable and unsuitable, or
- d. Discontinues the execution of the work, or
- e. Fails to resume work which has been discontinued within a reasonable time after notice to do so, or
- f. Becomes insolvent or is declared bankrupt, or commits any act of bankruptcy or insolvency, or
- g. Allows any final judgment to stand against the Contractor unsatisfied for a period of 10 days, or
- h. Makes an assignment for the benefit of creditors, or
- i. For any other cause whatsoever, fails to carry on the work in an acceptable manner.

Should the Owner consider the Contractor in default of the contract for any reason above, the Owner shall immediately give written notice to the Contractor and the Contractor's surety as to the reasons for considering the Contractor in default and the Owner's intentions to terminate the contract.

If the Contractor or surety, within a period of 10 days after such notice, does not proceed in accordance therewith, then the Owner will, upon written notification from the RPR of the facts of such delay, neglect, or default and the Contractor's failure to comply with such notice, have full power and authority without violating the contract, to take the execution of the work out of the hands of the Contractor. The Owner may appropriate or use any or all materials and equipment that have been mobilized for use in the work and are acceptable and may enter into an agreement for the completion of said contract according to the terms and provisions thereof, or use such other methods as in the opinion of the RPR will be required for the completion of said contract in an acceptable manner.

All costs and charges incurred by the Owner, together with the cost of completing the work under contract, will be deducted from any monies due or which may become due the Contractor. If such expense exceeds the sum which would have been payable under the contract, then the Contractor and the surety shall be liable and shall pay to the Owner the amount of such excess.

**80-10 TERMINATION FOR NATIONAL EMERGENCIES.** The Owner shall terminate the contract or portion thereof by written notice when the Contractor is prevented from proceeding with the construction contract as a direct result of an Executive Order of the President with respect to the execution of war or in the interest of national defense.

When the contract, or any portion thereof, is terminated before completion of all items of work in the contract, payment will be made for the actual number of units or items of work completed at the contract price or as mutually agreed for items of work partially completed or not started. No claims or loss of anticipated profits shall be considered.

Reimbursement for organization of the work, and other overhead expenses, (when not otherwise included in the contract) and moving equipment and materials to and from the job will be considered, the intent being that an equitable settlement will be made with the Contractor.

Acceptable materials, obtained or ordered by the Contractor for the work and that are not incorporated in the work shall, at the option of the Contractor, be purchased from the Contractor at actual cost as shown by receipted bills and actual cost records at such points of delivery as may be designated by the RPR.

Termination of the contract or a portion thereof shall neither relieve the Contractor of their responsibilities for the completed work nor shall it relieve their surety of its obligation for and concerning any just claim arising out of the work performed.

**80-11 WORK AREA, STORAGE AREA AND SEQUENCE OF OPERATIONS.** The Contractor shall obtain approval from the RPR prior to beginning any work in all areas of the airport. No operating runway, taxiway, or air operations area (AOA) shall be crossed, entered, or obstructed while it is operational. The Contractor shall plan and coordinate work in accordance with the approved CSPP and SPCD.

**END OF SECTION 80**

## SECTION 90 MEASUREMENT AND PAYMENT

**90-01 MEASUREMENT OF QUANTITIES.** All work completed under the contract will be measured by the RPR, or their authorized representatives, using United States Customary Units of Measurement.

The method of measurement and computations to be used in determination of quantities of material furnished and of work performed under the contract will be those methods generally recognized as conforming to good engineering practice.

Unless otherwise specified, longitudinal measurements for area computations will be made horizontally, and no deductions will be made for individual fixtures (or leave-outs) having an area of 9 square feet (0.8 square meters) or less. Unless otherwise specified, transverse measurements for area computations will be the neat dimensions shown on the plans or ordered in writing by the RPR.

Unless otherwise specified, all contract items which are measured by the linear foot such as electrical ducts, conduits, pipe culverts, underdrains, and similar items shall be measured parallel to the base or foundation upon which such items are placed.

The term "lump sum" when used as an item of payment will mean complete payment for the work described in the contract. When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

When requested by the Contractor and approved by the RPR in writing, material specified to be measured by the cubic yard (cubic meter) may be weighed, and such weights will be converted to cubic yards (cubic meters) for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the RPR and shall be agreed to by the Contractor before such method of measurement of pay quantities is used.

### Measurement and Payment Terms

| Term                                        | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Excavation and Embankment Volume</b>     | In computing volumes of excavation, the average end area method will be used unless otherwise specified.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Measurement and Proportion by Weight</b> | The term "ton" will mean the short ton consisting of 2,000 pounds (907 kg) avoirdupois. All materials that are measured or proportioned by weights shall be weighed on accurate, independently certified scales by competent, qualified personnel at locations designated by the RPR. If material is shipped by rail, the car weight may be accepted provided that only the actual weight of material is paid for. However, car weights will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid for by weight shall be weighed empty daily at such times as the RPR directs, and each truck shall bear a plainly legible identification mark. |

| Term                         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Measurement by Volume</b> | Materials to be measured by volume in the hauling vehicle shall be hauled in approved vehicles and measured therein at the point of delivery. Vehicles for this purpose may be of any size or type acceptable for the materials hauled, provided that the body is of such shape that the actual contents may be readily and accurately determined. All vehicles shall be loaded to at least their water level capacity, and all loads shall be leveled when the vehicles arrive at the point of delivery.                                                                                                                                                                                       |
| <b>Asphalt Material</b>      | Asphalt materials will be measured by the gallon (liter) or ton (kg). When measured by volume, such volumes will be measured at 60°F (16°C) or will be corrected to the volume at 60°F (16°C) using ASTM D1250 for asphalts. Net certified scale weights or weights based on certified volumes in the case of rail shipments will be used as a basis of measurement, subject to correction when asphalt material has been lost from the car or the distributor, wasted, or otherwise not incorporated in the work. When asphalt materials are shipped by truck or transport, net certified weights by volume, subject to correction for loss or foaming, will be used for computing quantities. |
| <b>Cement</b>                | Cement will be measured by the ton (kg) or hundredweight (km).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Structure</b>             | Structures will be measured according to neat lines shown on the plans or as altered to fit field conditions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Timber</b>                | Timber will be measured by the thousand feet board measure (MFBM) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Plates and Sheets</b>     | The thickness of plates and galvanized sheet used in the manufacture of corrugated metal pipe, metal plate pipe culverts and arches, and metal cribbing will be specified and measured in decimal fraction of inch.                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Miscellaneous Items</b>   | When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by gauge, unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.                                                                                                                                                                                                                                                          |
| <b>Scales</b>                | <p>Scales must be tested for accuracy and serviced before use. Scales for weighing materials which are required to be proportioned or measured and paid for by weight shall be furnished, erected, and maintained by the Contractor, or be certified permanently installed commercial scales. Platform scales shall be installed and maintained with the platform level and rigid bulkheads at each end.</p> <p>Scales shall be accurate within 0.5% of the correct weight throughout the range of use. The Contractor shall have the scales checked under the observation of the RPR before beginning work and at such other times as</p>                                                      |

| Term                    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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|                         | <p>requested. The intervals shall be uniform in spacing throughout the graduated or marked length of the beam or dial and shall not exceed 0.1% of the nominal rated capacity of the scale, but not less than one pound (454 grams). The use of spring balances will not be permitted.</p> <p>In the event inspection reveals the scales have been "overweighing" (indicating more than correct weight) they will be immediately adjusted. All materials received subsequent to the last previous correct weighting-accuracy test will be reduced by the percentage of error in excess of 0.5%.</p> <p>In the event inspection reveals the scales have been under-weighing (indicating less than correct weight), they shall be immediately adjusted. No additional payment to the Contractor will be allowed for materials previously weighed and recorded.</p> <p>Beams, dials, platforms, and other scale equipment shall be so arranged that the operator and the RPR can safely and conveniently view them.</p> <p>Scale installations shall have available ten standard 50-pound (2.3 km) weights for testing the weighing equipment or suitable weights and devices for other approved equipment.</p> <p>All costs in connection with furnishing, installing, certifying, testing, and maintaining scales; for furnishing check weights and scale house; and for all other items specified in this subsection, for the weighing of materials for proportioning or payment, shall be included in the unit contract prices for the various items of the project.</p> |
| <b>Rental Equipment</b> | <p>Rental of equipment will be measured by time in hours of actual working time and necessary traveling time of the equipment within the limits of the work. Special equipment ordered in connection with extra work will be measured as agreed in the change order or supplemental agreement authorizing such work as provided in paragraph 90-05 <i>Payment for Extra Work</i>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Pay Quantities</b>   | <p>When the estimated quantities for a specific portion of the work are designated as the pay quantities in the contract, they shall be the final quantities for which payment for such specific portion of the work will be made, unless the dimensions of said portions of the work shown on the plans are revised by the RPR. If revised dimensions result in an increase or decrease in the quantities of such work, the final quantities for payment will be revised in the amount represented by the authorized changes in the dimensions.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |



**90-02 SCOPE OF PAYMENT.** The Contractor shall receive and accept compensation provided for in the contract as full payment for furnishing all materials, for performing all work under the contract in a complete and acceptable manner, and for all risk, loss, damage, or expense of whatever character arising out of the nature of the work or the execution thereof, subject to the provisions of Section 70, paragraph 70-18, *No Waiver of Legal Rights*.

When the "basis of payment" subsection of a technical specification requires that the contract price (price bid) include compensation for certain work or material essential to the item, this same work or material will not also be measured for payment under any other contract item which may appear elsewhere in the contract, plans, or specifications.

**90-03 COMPENSATION FOR ALTERED QUANTITIES.** When the accepted quantities of work vary from the quantities in the proposal, the Contractor shall accept as payment in full, so far as contract items are concerned, payment at the original contract price for the accepted quantities of work actually completed and accepted. No allowance, except as provided for in Section 40, paragraph 40-02, *Alteration of Work and Quantities*, will be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor which results directly from such alterations or indirectly from their own unbalanced allocation of overhead and profit among the contract items, or from any other cause.

**90-04 PAYMENT FOR OMITTED ITEMS.** As specified in Section 40, paragraph 40-03, *Omitted Items*, the RPR shall have the right to omit from the work (order nonperformance) any contract item, except major contract items, in the best interest of the Owner.

Should the RPR omit or order nonperformance of a contract item or portion of such item from the work, the Contractor shall accept payment in full at the contract prices for any work actually completed and acceptable prior to the RPR's order to omit or non-perform such contract item.

Acceptable materials ordered by the Contractor or delivered on the work prior to the date of the RPR's order will be paid for at the actual cost to the Contractor and shall thereupon become the property of the Owner.

In addition to the reimbursement hereinbefore provided, the Contractor shall be reimbursed for all actual costs incurred for the purpose of performing the omitted contract item prior to the date of the RPR's order. Such additional costs incurred by the Contractor must be directly related to the deleted contract item and shall be supported by certified statements by the Contractor as to the nature the amount of such costs.

**90-05 PAYMENT FOR EXTRA WORK.** Extra work, performed in accordance with Section 40, paragraph 40-04, *Extra Work*, will be paid for at the contract prices or agreed prices specified in the change order or supplemental agreement authorizing the extra work.

**90-06 PARTIAL PAYMENTS.** Partial payments will be made to the Contractor at least once each month as the work progresses. Said payments will be based upon estimates, prepared by the RPR, of the value of the work performed and materials complete and in place, in accordance with the contract, plans, and specifications. Such partial payments may also include the delivered actual cost of those materials stockpiled and stored in accordance with paragraph 90-07, *Payment for Materials on Hand*. No partial payment will be made when the amount due to the Contractor since the last estimate amounts to less than five hundred dollars.

From the total of the amount determined to be payable on a partial payment, **10** percent of such total amount will be deducted and retained by the Owner for protection of the Owner's interests. Unless otherwise instructed by the Owner, the amount retained by the Owner will be in effect until the final payment is made except as follows:

(1) Contractor may request release of retainage on work that has been partially accepted by the Owner in accordance with Section 50-14. Contractor must provide a certified invoice to the RPR that supports the value of retainage held by the Owner for partially accepted work.

(2) In lieu of retainage, the Contractor may exercise at its option the establishment of an escrow account per paragraph 90-08.

b. The Contractor is required to pay all subcontractors for satisfactory performance of their contracts no later than 30 days after the Contractor has received a partial payment. Contractor must provide the Owner evidence of prompt and full payment of retainage held by the prime Contractor to the subcontractor within 30 days after the subcontractor's work is satisfactorily completed. A subcontractor's work is satisfactorily completed when all the tasks called for in the subcontract have been accomplished and documented as required by the Owner. When the Owner has made an incremental acceptance of a portion of a prime contract, the work of a subcontractor covered by that acceptance is deemed to be satisfactorily completed.

c. When at least 95% of the work has been completed to the satisfaction of the RPR, the RPR shall, at the Owner's discretion and with the consent of the surety, prepare estimates of both the contract value and the cost of the remaining work to be done. The Owner may retain an amount not less than twice the contract value or estimated cost, whichever is greater, of the work remaining to be done. The remainder, less all previous payments and deductions, will then be certified for payment to the Contractor.

It is understood and agreed that the Contractor shall not be entitled to demand or receive partial payment based on quantities of work in excess of those provided in the proposal or covered by approved change orders or supplemental agreements, except when such excess quantities have been determined by the RPR to be a part of the final quantity for the item of work in question.

No partial payment shall bind the Owner to the acceptance of any materials or work in place as to quality or quantity. All partial payments are subject to correction at the time of final payment as provided in paragraph 90-09, *Acceptance and Final Payment*. ***Retainage shall be subject to Florida Law.***

The Contractor shall deliver to the Owner a complete release of all claims for labor and material arising out of this contract before the final payment is made. If any subcontractor or supplier fails to furnish such a release in full, the Contractor may furnish a bond or other collateral satisfactory to the Owner to indemnify the Owner against any potential lien or other such claim. The bond or collateral shall include all costs, expenses, and attorney fees the Owner may be compelled to pay in discharging any such lien or claim.

***Lien releases shall be subject to Florida Law.***

**90-07 PAYMENT FOR MATERIALS ON HAND.** Partial payments may be made to the extent of the delivered cost of materials to be incorporated in the work, provided that such materials meet the requirements of the contract, plans, and specifications and are delivered to acceptable sites on the airport property or at other sites in the vicinity that are acceptable to the Owner. Such delivered costs of stored or stockpiled materials may be included in the next partial payment after the following conditions are met:

- a. The material has been stored or stockpiled in a manner acceptable to the RPR at or on an approved site.
- b. The Contractor has furnished the RPR with acceptable evidence of the quantity and quality of such stored or stockpiled materials.
- c. The Contractor has furnished the RPR with satisfactory evidence that the material and transportation costs have been paid.
- d. The Contractor has furnished the Owner legal title (free of liens or encumbrances of any kind) to the material stored or stockpiled.
- e. The Contractor has furnished the Owner evidence that the material stored or stockpiled is insured against loss by damage to or disappearance of such materials at any time prior to use in the work.

It is understood and agreed that the transfer of title and the Owner's payment for such stored or stockpiled materials shall in no way relieve the Contractor of their responsibility for furnishing and placing such materials in accordance with the requirements of the contract, plans, and specifications.

In no case will the amount of partial payments for materials on hand exceed the contract price for such materials or the contract price for the contract item in which the material is intended to be used.

No partial payment will be made for stored or stockpiled living or perishable plant materials.

The Contractor shall bear all costs associated with the partial payment of stored or stockpiled materials in accordance with the provisions of this paragraph.

**90-08 PAYMENT OF WITHHELD FUNDS.** At the Contractor's option, if an Owner withholds retainage in accordance with the methods described in paragraph 90-06 *Partial Payments*, the Contractor may request that the Owner deposit the retainage into an escrow account. The Owner's deposit of retainage into an escrow account is subject to the following conditions:

- a. The Contractor shall bear all expenses of establishing and maintaining an escrow account and escrow agreement acceptable to the Owner.
- b. The Contractor shall deposit to and maintain in such escrow only those securities or bank certificates of deposit as are acceptable to the Owner and having a value not less than the retainage that would otherwise be withheld from partial payment.
- c. The Contractor shall enter into an escrow agreement satisfactory to the Owner.

- d. The Contractor shall obtain the written consent of the surety to such agreement.

**90-09 ACCEPTANCE AND FINAL PAYMENT.** When the contract work has been accepted in accordance with the requirements of Section 50, paragraph 50-15, *Final Acceptance*, the RPR will prepare the final estimate of the items of work actually performed. The Contractor shall approve the RPR's final estimate or advise the RPR of the Contractor's objections to the final estimate which are based on disputes in measurements or computations of the final quantities to be paid under the contract as amended by change order or supplemental agreement. The Contractor and the RPR shall resolve all disputes (if any) in the measurement and computation of final quantities to be paid within 30 calendar days of the Contractor's receipt of the RPR's final estimate. If, after such 30-day period, a dispute still exists, the Contractor may approve the RPR's estimate under protest of the quantities in dispute, and such disputed quantities shall be considered by the Owner as a claim in accordance with Section 50, paragraph 50-16, *Claims for Adjustment and Disputes*.

After the Contractor has approved, or approved under protest, the RPR's final estimate, and after the RPR's receipt of the project closeout documentation required in paragraph 90-11, *Contractor Final Project Documentation*, final payment will be processed based on the entire sum, or the undisputed sum in case of approval under protest, determined to be due the Contractor less all previous payments and all amounts to be deducted under the provisions of the contract. All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

If the Contractor has filed a claim for additional compensation under the provisions of Section 50, paragraph 50-16, *Claims for Adjustments and Disputes*, or under the provisions of this paragraph, such claims will be considered by the Owner in accordance with local laws or ordinances. Upon final adjudication of such claims, any additional payment determined to be due the Contractor will be paid pursuant to a supplemental final estimate.

**90-10 CONSTRUCTION WARRANTY.**

a. In addition to any other warranties in this contract, the Contractor warrants that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, workmanship, or design furnished, or performed by the Contractor or any subcontractor or supplier at any tier.

b. This warranty shall continue for a period of one year from the date of final acceptance of the work, except as noted. If the Owner takes possession of any part of the work before final acceptance, this warranty shall continue for a period of one year from the date the Owner takes possession. However, this will not relieve the Contractor from corrective items required by the final acceptance of the project work. Light Emitting Diode emitting diode (LED) light fixtures with the exception of obstruction lighting, must be warranted by the manufacturer for a minimum of four (4) years after date of installation inclusive of all electronics.

c. The Contractor shall remedy at the Contractor's expense any failure to conform, or any defect. In addition, the Contractor shall remedy at the Contractor's expense any damage to Owner real or personal property, when that damage is the result of the Contractor's failure to conform to contract requirements; or any defect of equipment, material, workmanship, or design furnished by the Contractor.

d. The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for one year from the date of repair or replacement.

e. The Owner will notify the Contractor, in writing, within **14 calendar** days after the discovery of any failure, defect, or damage.

f. If the Contractor fails to remedy any failure, defect, or damage within **14 calendar** days after receipt of notice, the Owner shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense.

g. With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall: (1) Obtain all warranties that would be given in normal commercial practice; (2) Require all warranties to be executed, in writing, for the benefit of the Owner, as directed by the Owner, and (3) Enforce all warranties for the benefit of the Owner.

h. This warranty shall not limit the Owner's rights with respect to latent defects, gross mistakes, or fraud.

***Note that Engineering Brief (EB) #67, Light Sources Other than Incandescent and Xenon for Airport and Obstruction Lighting Fixtures, requires that all light-emitting diode (LED) light fixtures with the exception of obstruction lighting, (advisory circular (AC) 150/5345-43) must be warranted by the manufacturer for a minimum of four (4) years after date of installation inclusive of all electronics.***

**90-11 CONTRACTOR FINAL PROJECT DOCUMENTATION.** Approval of final payment to the Contractor is contingent upon completion and submittal of the items listed below. The final payment will not be approved until the RPR approves the Contractor's final submittal. The Contractor shall:

a. Provide two (2) copies of all manufacturers' warranties specified for materials, equipment, and installations.

b. Provide weekly payroll records (not previously received) from the general Contractor and all subcontractors.

c. Complete final cleanup in accordance with Section 40, paragraph 40-08, *Final Cleanup*.

d. Complete all punch list items identified during the Final Inspection.

e. Provide complete release of all claims for labor and material arising out of the Contract.

f. Provide a certified statement signed by the subcontractors, indicating actual amounts paid to the Disadvantaged Business Enterprise (DBE) subcontractors and/or suppliers associated with the project.

g. When applicable per state requirements, return copies of sales tax completion forms.

h. Manufacturer's certifications for all items incorporated in the work.

- i. All required record drawings, as-built drawings or as-constructed drawings.
- j. Project Operation and Maintenance (O&M) Manual(s).
- k. Security for Construction Warranty.
- l. Equipment commissioning documentation submitted, if required.

**END OF SECTION 90**

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**SECTION 130  
SPECIAL PROVISIONS**

**1.0 CONTRACT DOCUMENTS.** This section of these specifications is a part of the Contract Documents as defined in the General Provisions. All applicable parts of the balance of the Contract Documents are equally as binding for this as for all other sections.

**2.0 GENERAL.** The special requirements set forth in this section of these specifications shall govern any aspect of the contract work which such requirements are deemed applicable by the Owner or the Engineer. The purpose of these requirements is to ensure that the contract work does not damage private property or create any hazard to aircraft operations, and point out special coordination or schedule conditions that the Contractor should be aware of. It shall be the Contractor's responsibility to conduct all work in strict accordance with the special requirements set forth herein and to fully cooperate with the Owner and the Engineer in every way necessary to fulfill the purposes of these requirements.

All civil construction and earthwork to be accomplished in accordance with FAA Advisory Circulars 150/5370-10 Standards for Specifying Construction of Airports, 150/5370-7, Airport Construction Controls to prevent Air and Water Pollution, and FAA Advisory Circular 150/5320-5, Airport Drainage, latest versions, as applicable to the project.

**3.0 STRUCTURAL STANDARDS.** Refer to Structural General Notes sheet and Specification Section 13120 Pre-Engineered Metal Building for the applicable standards.

**4.0 DESCRIPTION OF WORK.** The project consists of the following primary sub-elements:

- a. Removal and Replacement of Hangar Doors and Tracks.
- b. Removal and Replacement of Interior Wall Panels and Girts.
- c. Repair and Splice Plates at Damaged Area in Building.

Attention shall be directed to the balance of these Contract Documents for more specific information on the work to be performed. All construction and materials will be specified in more detail on the drawings and hereinafter.

**5.0 SITE EXAMINATION.** The Contractor's attention is called to Section 20-6 of the General Provisions which requires all Bidders to examine the project site prior to submission of a proposal.

**6.0 CONSTRUCTION SEQUENCE AND CONTRACT TIME.** Upon execution of the Contract(s), the Owner shall issue a written "Notice To Proceed" which will specify an effective date for the Contractor(s) to commence work. Between the execution of the Contract and the date specified for the commencement of work, the Contractor shall prepare and submit the materials, equipment and work schedules as specified in the various sections of these specifications. Upon approval of the materials and equipment schedules by the Owner's Representative, the Contractor shall proceed with the ordering of the materials and equipment. The Contractor shall notify the Owner's Representative of the receipt of any materials and equipment and of any changes in the delivery schedules. During this period, the Contractor shall install the Owner's Representative's field office and may bring equipment and materials into the Contractor's staging area. All work under this Contract must be completed within the number of calendar days stated herein below of the date specified in the written "Notice To Proceed":



The number of calendar days for the completion of the Bid Schedules is presented as follows:

| <u>Segment</u>           | <u>Contract Time</u>                                                                                                                                                                   |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>All Bid Schedules</i> | <i>60 Calendar Days – Procurement**</i><br><i>75 Calendar Days – Substantial Completion</i><br><i><u>15 Calendar Days – Final Completion</u></i><br><br><i>150 Calendar Days Total</i> |

\*\* Procurement may be conducted in advance of or concurrent with construction; contractor's option.

**7.0 LIQUIDATED DAMAGES.** If the work remains incomplete after the time specified in paragraph 1-5.0 for the completion of all work, the Contractor shall pay the Owner as liquidated damages the sum of **Five Hundred Dollars (\$500.00)** per calendar day for each and every calendar day that the work remains incomplete beyond the above specified time as provided in the General Provisions.

*In addition, Runway 18-36 may not be closed for more than a cumulative total of 60 calendar days, day and night non-consecutively, or more than 3 weeks consecutively per month. Additional liquidated damages by phase, of Five Hundred Dollars (\$500.00) per calendar day, beyond the 60-calendar day total limitation will be assessed, not including stop clock order issued by the Engineer for pavement curing period, or other special periods.*

Following are the general objectives that must be attained in order to minimize time and economic loss to the aviation community, airline passengers, and construction contractors:

- Keep the airport operational for all user aircraft
- Minimize flight operation delays
- Maintain safety of aircraft operations
- Minimize delays to contractor activities
- Minimize aircraft operations and construction activity conflicts

**8.0 SCHEDULING OF WORK.** Prior to commencement of any work, the Contractor must confer with the Airport operator to assure that the scheduling of construction activities in conjunction with aircraft operations is fully understood.

**9.0 WORKING NEAR RUNWAYS AND/OR TAXIWAYS.** Normal airport operations will be conducted on the airfield during construction and the work shall be carried on in such a manner as not to interfere with the necessary operation of the airport. The Contractor shall take all precautions necessary to ensure the safety of operating aircraft as well as his own equipment and personnel.

No construction operations shall be carried on within 39.5 feet (12 m) from the centerline of any taxiway or within 75 feet (76 m) of the centerline of any active runway or within the limits of active runway approach zones unless prior approval has been obtained. When permission has been granted to work inside these limits, no equipment shall be left within the lines when not actually working. During lunch hour or other breaks in the daily work schedule, nights, weekends, and the days when work is not permitted or is not progressing, the equipment shall be located outside of these restriction lines. All booms shall be lowered when the equipment is not in operation. No construction operations, including an open flame such as welding or burning, shall be carried on near any aircraft.

**10.0 LIMITATION ON CONSTRUCTION.** (a) Open-flame welding or torch cutting operations is prohibited unless adequate fire and safety precautions are provided by the Contractor and have been approved by the airport operator.

(b) Open trenches, excavations and stockpiled material at the construction site will be prominently marked by red flags and lighted by light units (acceptable to the Airport Operator and the FAA) during the hours of restricted visibility and/or darkness.

(c) Stockpiled material will be constrained in a manner to prevent movement resulting from aircraft blast or wind conditions in excess of 10 knots.

(d) The fire department will be notified when construction could alter or block access routes.

(e) Local regulations regarding noise abatement will be adhered to.

(f) Where construction involves areas requiring maintenance of traffic with lighting and/or signage, the manual on Uniform Traffic Control Devices for Streets and Highways shall be followed.

**11.0 OBSTRUCTIONS TO NAVIGATION.** Penetration of approach/departure clearance surfaces and the transitional surfaces shall not be allowed without advance notification of the Project Engineer and approval by the Airport Operator and FAA. This includes any penetrations whatsoever by the Contractor including but not limited to motor vehicles, cranes, other construction equipment, structures, stockpiled materials, rock, aggregates, excavated earth, etc.

When such penetration is unavoidable they shall be brought to the attention of the FAA, the Airport Operator and the Engineer as far in advance as is practical to allow Notices to Airmen (NIGHTTIME) to be prepared and distributed to appropriate FAA divisions for publication and distribution.

**12.0 TAXIWAY CLEARANCES.** Large aircraft wings extend beyond the edges of paved taxiways when they are taxiing. It is therefore critical that no construction vehicles, equipment, or materials enter or be placed within taxiway obstacle free areas without prior approval from the Airport Owner, FAA and the Engineer. It is required during construction activities, taxiway obstacle free areas be flagged and lighted in critical areas of construction activity by the Contractor. The flagging alignments will be designated by the Airport Owner and the Engineer. When safety and obstacle free areas must be infringed upon by construction activities for extended periods of time, plans of infringements will be agreed by the Contractor with the Engineer, Airport Owner and FAA adequately in advance so that NOTAMS may be issues and airlines informed.

When required and approved, taxiways may be closed and aircraft detoured. Figure 1 depicts typical taxiway clearance and flagging requirements.

**13.0 NAVIGATIONAL AIDS.** Any unplanned, unapproved or accidental shutdown of any navigational aid requires immediate notification of the Airport Owner, and the FAA by the Engineer and the Contractor.

**14.0 DEBRIS, DIRT, ETC. ON APRON, RUNWAY OR TAXIWAYS.** Aprons, runways and taxiways shall be kept free of all debris, dirt, etc. at all times. Any accidental spillage of excavation or other materials shall be cleaned up immediately by the contractor after prompt notification by the Airport Owner or the Engineer. A program of regular apron and taxiway inspection will be planned by the Airport Owner, the Engineer and the Contractor. Inspections shall be made before the time for commencement of normal aircraft operations and more frequently if construction activities are of a nature that debris may accumulate on runway, taxiways or aprons.

**15.0 STORAGE OF EQUIPMENT, MATERIAL OR EXCAVATION.** The Contractor shall not store materials or park equipment in aircraft operational areas when the equipment or material is not in use or about to be installed. Material or equipment in use, in operation areas must be stored or parked in a manner that they may be quickly removed to accommodate aircraft operations.

No vehicles, equipment or material shall be operated or stored within 500' of the centerline of existing runway pavement or 65.5' of the centerline of existing taxiway pavement. A line 65.5' from the centerline of the existing taxiway or apron pavements will be flagged and lighted as required in AC 150/5370-2, latest edition, by the contractor.

Space will be made available at the site for the temporary field offices of the Contractor (and his subcontractor) and for storage of construction equipment and materials. The Contractor (and his subcontractor) shall provide all necessary temporary fencing and gates to protect materials from theft. The Contractor shall make arrangements with the Engineer for space for his own needs and the needs of his subcontractors.

**16.0 GROUND VEHICLE TRAFFIC CONTROL.** (a) When any vehicle other than those routinely used in the aircraft movement area and runway approach area is required to travel over any portion of that area, it should be escorted by a vehicle properly identified to operate in the area or provided with a flag on a staff so attached to the vehicle so that the flag will be readily visible. The flag should be not less than 3 feet square consisting of a checkered pattern on international orange and white squares of not less than 1 foot on each side and displayed in full view above the vehicle. A flag or escort vehicle is not required for vehicles which have been painted, marked and lighted for routine use on aircraft movement areas. Any vehicle operating on the movement area during the hours of darkness should be equipped with a flashing dome-type light, the color to be in accordance with local and/or state codes.

(b) Vehicular traffic crossing active movement areas must be controlled either by two-way radio with the Airport Traffic Control Tower's Ground Frequency (see safety notes plan), by escort, flagman, signal light or the means appropriate for the particular airport. The clearance should be confirmed by the driver's personal observation that no aircraft is approaching his position.

(c) All Contractor's vehicles shall have the company identification plainly visible on both sides of the vehicle in order to identify the vehicle. It may be desirable to clearly identify the vehicles for control purpose by either assigned initials or numbers prominently displayed on each side. The identifying symbols should be 8-inch minimum, black-type characters of a color easily read. They may be applied by use of tape or water soluble paint to facilitate removal.

(d) Security measures at the airport will require that Contractor employees park their personal cars in the area of the Contractor's storage area. Parking of personal cars at the site of the work will not be permitted. The Contractor, as a subsidiary obligation, shall provide adequate and safe transportation for his employees from the area where the cars are parked to and from the work area. Employees and drivers of work vehicles will be instructed as to proper access roads and will be cautioned that unauthorized use of aircraft pavements or other areas outside the designated work area may lead to their arrest and subsequent payment of fines.

(e) Trucks delivering material to an actual work area shall be provided with an escort.

**17.0 APPLICABLE STANDARDS.** Advisory Circular AC No. 150/5370-2 will be used as a guideline to assist in maintaining operational safety during construction activities. This document also refers to other applicable Advisory Circulars.

Federal Aviation Regulations - Part 77, not included herein, will also be used to define "Objects Affecting Navigable Airspace".

**18.0 OSHA and OTHER SAFETY PRECAUTIONS.** In addition to the safety requirements outlined thus far, all pertinent Occupational Safety and Health Administration rules shall be complied with. Specifically,

(a) Prior to each days work, the Contractor's supervisor should call the tower shift supervisor and inform him of that day's activities and where he will be working. The supervisor and one of his representatives shall have a two-way radio available at all times. It will be turned on any time work is underway adjacent to the terminal apron or any taxiway.

(b) The Contractor's supervisor shall be responsible for insuring all workmen comply with the Airport Security Program. He will control ingress and egress of his and subcontractor's personnel and ensure construction work gates remain locked or manned by a flagman at all times.

**19.0 CONFINED SPACE ENTRY PROCEDURES.** Contractor shall be aware of and follow proper confined space entry procedures as outlined by the National Institute for Occupational Safety and Health (NIOSH). Confined spaces are generally defined as spaces which:

1. Are NOT designed for continuous worker presence.
2. Have limited openings for entry or exit.
3. Have less than ideal natural ventilation.

The Contractor shall, as a minimum, have the following equipment on hand for use by his employees, subcontractors, inspectors, etc.:

- 3 Harnesses
- 3 40' Lengths of 5/8" Nylon Rope
- 3 Sets of Leather Gloves
- 3 Sets of Safety Glasses
- 1 Ventilation Blower
- 1 Tripod w/ Winch
- 1 Tri Gas Detectors of the latest approved models

Contractor shall make at least one person available as an assistant for all inspections in confined areas.

**20.0 VIOLATIONS.** The responsibilities of meeting the requirements of this Safety Plan rests with the Contractor. The Engineer, the appropriate FAA representative, and the Airport Operator each have the right to stop work at the Contractor's expense if violation of this plan is encountered.

**21.0 EXISTING FAA CABLE PROTECTION.** The local FAA Airway Facilities personnel will mark the cable alignment once prior to construction, thereafter, the cable alignment markings shall be maintained by the Contractor. The uncovering of the cables shall be performed in the presence of FAA local Airway Facilities personnel. A notice of 48 hours shall be given the FAA before commencing the excavation. Any cable that lays within the work areas shall be covered by planing or metal sheets to protect the cables from direct bearing pressure by heavy equipment. If the Contractor causes a disruption in FAA service due to cutting of the cable, he shall be liable for all costs of replacement plus a penalty fine of \$500.00 (Five Hundred Dollars) per day of disruption.

**22.0 PHASED CONSTRUCTION.** The Contractor will submit a proposed construction schedule within 15 days of Notice to Proceed. He will include calendar dates and will phase schedule his work to minimize any conflict with normal airport operation. The Contractor's attention is directed to the General Site and Safety Plan of the Contract Drawings for more specific detail on phasing construction.

**23.0 NIGHT WORK.** All necessary equipment including lights, generators, etc., required for night work shall be supplied by the Contractor and no separate measurement or payment will be made for lighting equipment, but rather it shall be considered incidental to the various contract work items. The Contractor may elect to work night hours in order to complete the project within the given time.

Before commencing with night work, the Contractor shall demonstrate the capabilities of his lighting system to the Engineer. If the Engineer is not completely satisfied that adequate light is being provided the Contractor shall provide additional lighting apparatus to the Engineer's satisfaction before the Contractor is allowed to commence work.

**24.0 PROJECT SCHEDULE.** Upon execution of a contract for the designated Bid Schedule, the Contractor may proceed with preparation and submittal of shop drawings for approval and with subsequent ordering and fabricating of materials. When the Contractor is ready to commence work on the site, he shall inform the Owner who will issue a written "Notice to Proceed" which will specify an effective date for the Contractor to commence work at the site. All work under this contract must be completed within the time schedule, as shown on page 3 of this section, of the date specified in the written "Notice to Proceed". The Owner reserves the right to issue the "Notice to Proceed" at any time in order to preclude the Contractor from taking an extraordinary amount of time to prepare for work at the site.

The Contractor shall be required to submit a tentative schedule of how the work will be accomplished over the contract period. This tentative schedule shall provide for a minimal disruption of general aviation and no disruption to the existing aircraft parking areas.

Also, in accordance with paragraph 80-02 of Section 80, the Contractor shall notify the Engineer at least 48 hours is the time required by the Owner to issue a proper Notice to Airmen (NOTAM) of the pending construction activities. The Contractor shall coordinate his overall schedule with the other contractors through the Owner. The Contractor's daily schedule must be coordinated with the Owner and the Engineer.

**25.0 WEEKLY SCHEDULE UPDATE REQUIRED.** To facilitate the specific requirements and intent of this section, the Contractor shall prepare and submit weekly, a schedule of operations for the following work week. The schedule shall be given to the Engineer by the end of the work week preceding the week covered by the schedule. The weekly schedules shall be subject to the approval of the Engineer, and shall include as a minimum, the following:

1. Major work items to be accomplished.
2. Number of men to be on site.
3. Type and quantity of equipment to be on site.
4. Areas of the site where construction is scheduled.
5. Any anticipated closing of facilities which will be required.
6. Other information requested by the Owner or Engineer.

The Engineer may disallow work in areas not included in the current work schedule.

**26.0 HAUL ROUTES AND AIRPORT ACCESS FOR CONSTRUCTION.** When public roads and highways must be used for haul routes, it will become the contractor's responsibility to obtain the proper permits needed for this function and to obey all rules and regulations pertinent to the public roads and highways. The Contractor shall be responsible for keeping the haul routes, including state, Owner, and county roads, swept clean of any debris introduced by his construction equipment.

Haul routes on the airport shall be as shown on the Contract Drawings or as directed by the Engineer. Access to the construction areas shall be in accordance with the General Site and Safety Plan of the Contract Drawings. Trucks loaded in the construction areas shall have loads trimmed as necessary to ensure that no particles, stones, or debris will fall off.

All paved haul routes or access roads shall be kept clean at all times to prevent the accumulation of dirt and mud and the generation of dust by sweeping, washing or other methods directed by the Engineer. Unpaved haul roads, if any, shall be maintained by blading and filling when directed by the Engineer, and dust shall be controlled at all times.

All haul roads disturbed shall be restored to their original or better condition before the Project will be considered complete. No separate payment will be made for the construction, repair and maintenance, including dust control of haul and access roads, and all costs thereof shall be included in the contract price for the various work.

**27.0 STORAGE AREA AND EQUIPMENT AREA.** The areas for the location of all of the Contractor(s)'s Field Offices and for storing materials and servicing, repairing and parking construction equipment are located where shown on the drawings. All material to be used in the work shall be stored in these areas. The Owner will not be responsible for any vandalized equipment or material stored in the Airport property. Any area occupied by the Contractor shall be maintained in a clean and orderly condition satisfactory to the Engineer. Particular attention shall be given to the elimination of combustible rubbish or debris in the areas, and none shall be left exposed overnight or at other periods of time the work is shut down. At the completion of the contract, all Contractor's and subcontractor's facilities will be removed promptly in a workmanlike manner, and the area left clean and free of all debris or surplus material.

**28.0 APPROVAL OF SUBCONTRACTORS.** The names of the subcontractors shall be submitted for approval. The Contractor shall submit a list of recent work of similar scope and nature that the proposed subcontractor has successfully completed. Failure of the Contractor to prove to the satisfaction of the Engineer that the subcontractor he proposes has expertise in the services to be performed will be cause for rejection.

**29.0 ENGINEER'S FIELD OFFICE AND SANITARY FACILITIES.** ~~Contractor shall furnish prior to beginning construction and maintain during construction of the improvements embraced in the contract a suitable field office for the Engineer at the site of the work. The location of the field office shall be approved by the Engineer. The Contractor shall maintain the office during construction and remove it upon completion of the work.~~

~~The office shall be equipped with electric lights, heating and air conditioning facilities and telephone service. The field office shall contain not less than 150 square feet of floor area and shall be provided with glazed and screened windows. Each door shall be equipped with locks. The office shall be equipped with the following furniture:~~

- ~~\_\_\_\_\_ 1 - standard size flat top desk~~
- ~~\_\_\_\_\_ 1 - table at least 2 feet 6 inches wide~~  
~~\_\_\_\_\_ and 5 feet long~~
- ~~\_\_\_\_\_ 1 - desk chair, 1 straight chair, and~~  
~~\_\_\_\_\_ 1 drafting stool~~
- ~~\_\_\_\_\_ 1 - drafting table~~
- ~~\_\_\_\_\_ 1 - shelving, closets and plan racks~~  
~~\_\_\_\_\_ as may be required~~
- ~~\_\_\_\_\_ 1 - telephone and 1 - fax machine or combination device~~
- ~~\_\_\_\_\_ 1 - telephone message recorder~~
- ~~\_\_\_\_\_ 1 - copier (may be shared in Contractor's office)~~
- ~~\_\_\_\_\_ 1 - at least one reverse cycle air conditioner capable of~~  
~~\_\_\_\_\_ maintaining the office at 72 degrees F.~~

~~The above Contractor shall be assessed \$800 per day for each day that the field office is not installed, while construction has started.~~

~~The Contractor awarded the contract shall pay all copying, telephone, heating, and electric bills applicable to the Contract incurred by the Engineer in the field office, except for **personal** long distance toll calls. Any long distance toll calls for project business purposes shall be borne by the Contractor. **An Engineer's Field Trailer will NOT be required on this project.**~~

**30.0 DISPOSAL SITE FOR SURPLUS AND UNSUITABLE MATERIALS.** ~~A disposal site for excavated surplus and unsuitable material will be available as shown on the plans or as otherwise specified or may be designated by the Owner prior to construction. The material if disposed of on airport property shall be maintained at a uniform height and shall be sloped and graded to drain. The area shown on the plans shall be graded level and compacted with a vibratory roller. Concrete debris and pavement excavation to be disposed of shall not exceed 4 feet in the maximum dimension and shall be buried and covered with the excavated materials. **No disposal site is authorized for this project. All unsuitable, unused, or unnecessary materials shall be hauled off of Airport property and legally disposed.**~~

**31.0 COORDINATION WITH OTHERS.** It is essential that work under this contract be coordinated with other Contractors, the Owner, county, and/or utilities companies which may be performing other work on or adjacent to the airport.

**32.0 AIRCRAFT BARRICADES.** The Contractor shall furnish and place as required, lighted barricades to clearly define work areas to aircraft operators. The barricades shall be placed as shown on the plans or as directed by the Engineer. The barricades shall be low profile type, a maximum of 24 inches high (including flag heights), shall be bright reflective red and white, with red and white striped or checkered flags, and shall be lighted with red reflective lights. No open flame lighting shall be used. All temporary lights and barricades shall be weighted against jet blast (100 mph). Barricades shall be placed no more than 8 feet apart.

Barricades shall be maintained throughout each calendar day for the duration of the project. Should moving the position of barricades to accomplish a day's work be necessary, the original position of the barricades shall be restored at each day's end.

**33.0 MEASUREMENT AND PAYMENT.** No separate measurement or payment will be made for the provisions of physical facilities or the compliance with requirements under this section of these specifications except for stated allowances. The provision of facilities and compliance with requirements covered by this section of these specifications shall be included in the unit price bid for mobilization.

**34.0 MATERIALS, WORKMANSHIP, AND EQUIPMENT SPECIFICATIONS.** Unless otherwise specifically provided for in the Technical Specifications, all workmanship, equipment, materials and articles incorporated in the work shall be new and the best grade of the respective kinds for the purpose. Where equipment, materials, articles, or workmanship are referred to in the Technical Specifications, as "equal to" or of a particular standard, the Owner's authorized representative shall decide the question of equality.

All materials, equipment, parts, and assemblies thereof, entering into the work shall be new and tested as specified. Unless waived in writing by the Owner, all field and operating tests shall be made in the presence of the Owner's authorized representative. When such a waiver is issued, a sworn statement in duplicate of the test made and the results thereof shall be furnished to the Owner by the Contractor or manufacturer. Costs of all test and trials specified hereto, other than laboratory tests, and with the exception of the Owner's expenses shall be borne by the Contractor and shall be included in the Contract price.



All workmanship and materials shall be of the highest quality. The equipment shall be the product of a manufacturer who is experienced and skilled in the field with an established record of research and development. No equipment will be considered unless the manufacturer has designed and manufactured equipment of comparable type and size for at least five (5) years.

The Contractor shall furnish to the Owner for approval the manufacturer's detailed specifications for all machinery, mechanical and other special equipment which he contemplates installing together with full information as to type, performance characteristics, and all other pertinent information as required, and shall likewise submit for approval as required full information concerning all other materials or articles which he proposes to incorporate in the work.

Machinery, mechanical, and other equipment, materials, or articles installed or used without such prior approval shall be at the risk of subsequent rejection.

Materials specified by reference to the number or symbol of a specific standard, such as ASTM standard, AASHTO standard, an FDOT specification, a Federal specification, the requirements in the Structural General Notes and Specification Section 13120 Pre-Engineered Metal Building, Underwriter's Laboratories number, Construction Specifications Institute specification, or other similar standard, shall conform and comply with requirements in the latest revision thereof, and any amendment or supplements thereto in effect on the date of the Instruction to Bidders, except as limited to type, class or grade, or modified in such reference. The standards referred to, except as modified in the Technical Specifications shall have full force and effect as though printed therein.

The Owner may require the Contractor to dismiss from the work such employee or employees as the Owner may deem incompetent, careless, or insubordinate.

**35.0 CARE AND PROTECTION OF THE WORK.** The Contractor shall be responsible for all damages to persons or property that occur as the result of its fault or negligence in connection with the prosecution of the work. The Contractor shall be responsible for the proper care and protection of all materials delivered and work performed until completion and final acceptance, whether or not the same has been covered in whole or in part by payments made by the Owner.

The Contractor shall shore up, brace, underpin, secure, and protect as may be necessary, all foundations and other parts of existing structures adjacent to, adjoining, and in the vicinity of the site, which may be in any way effected by the excavations or other operations connected with the construction of the improvements embraced by this Contract. The Contractor shall be responsible for the giving of any and all required notices to any adjoining or adjacent property owners or other party before commencement of any work. The Contractor shall indemnify and hold harmless the Owner from any damages on account of settlement or the loss of lateral support of adjoining or adjacent properties, and from all loss or expense and all damages for which the Owner may become liable in consequence of such injury or damages to adjoining and adjacent structures and/or their premises.

**36.0 DEWATERING AND STORM-WATER ABATEMENT.** The contractor shall maintain and protect the project from storm-water runoff and ground water at all times. The contractor shall provide all the necessary men, materials, and equipment necessary for construction of the project in dry conditions for the entire duration of the project. If no specific pay item is provided for dewatering, the contractor shall include money in other bid items for the cost of dewatering the site. The Owner will not be responsible for delays or other problems caused by groundwater

welling or storm-water runoff, due to the negligence of the contractor in providing the proper dewatering efforts necessary to build the project. The contractor is responsible for making all inquiries, examinations of the site, and requests for geotechnical information available regarding groundwater and storm-water runoff.

The contractor shall provide a temporary dewatering plan to the Engineer for review a minimum of 14 calendar days prior to the start of construction. The plan should incorporate any ditches, dikes, dams, swales, well points, sock pipes, ditch blocks, pumps, alum drips, hay bales, silt fences, concrete ditch paving, or any other features necessary for construction of the project in dry conditions with regard to ground-water; and necessary for the mitigation of storm-water runoff during a storm event. This would include any features necessary over and above those designed by the Engineer for the project.

The Engineer is not responsible for the sequencing, phasing, or means and methods of construction. The means and methods of providing groundwater dewatering and storm-water runoff abatement is the responsibility of the contractor. However, storm-water structures and dewatering features shall be constructed in the earliest point of the project possible so as to prevent detrimental effects from groundwater and storm-water run-off. The exact timing of such preventative constructions are the responsibility of the contractor.

It is the contractor's responsibility to prevent all upstream and downstream flooding of all properties and structures during the entire duration of the project. The contractor shall maintain and protect all existing, proposed, and temporary storm-water structures for the entire duration of the project in good working order so as to prevent such flooding.

The contractor shall provide the dewatering and storm-water run-off abatement men, materials, and equipment at no additional cost to the Owner above that specified in the executed contract.

**37.0 CONSTRUCTION SAFETY AND PHASING PLAN (CSPP).** The contractor shall fully comply with all safety requirements as indicated in the Construction Safety and Phasing Plan (CSPP) drawings included in the construction plans, as well as the approved CSPP document. The approved CSPP document submitted and approved by the FAA forms a part of these contract documents, whether physically attached or not, and will be made available to the contractor upon request. The report documentation describes in detail the additional requirements to preserve safety during the project, and is considered a supplement to the plans.

In addition to the CSPP documentation, the contractor is required to read and comply with Advisory Circular 150\5370-2, Operational Safety on Airports During Construction, latest edition. Refer also to the remainder of these General Provisions.

As part of the submittals process prior to construction, the contractor shall submit the Safety Plan Compliance Document (SPCD), to the Engineer for review and approval.

## END OF SECTION 130

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# **TECHNICAL SPECIFICATIONS**



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**TECHNICAL SPECIFICATIONS**

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**APPENDICES**

- Plans by Reference
- A/C Circular 150/5370-2G
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- Excerpts from Inline Consulting Estimate (pages 25-64)
- FEMA PRJ Report

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## SECTION 13120 - PRE-ENGINEERED STRUCTURES

### PART 1- GENERAL

#### 1.1 RELATED DOCUMENTS

- A. The General Provisions of the Contract, including General and Supplementary Conditions and General Requirements, apply to work specified in this Section.
- B. Section 09900 "Painting"
- C. Section 03300 "Structural Concrete"

Related work provided by the Pre-Engineered Structures:

- D. Section 13121 "Pre-Engineered Architecturally Exposed Structural Steel Framing"
- E. Section 13511 "Pre-Engineered Steel Stairs"
- F. Section 13521 "Pre-Engineered Pipe Railings"
- G. Section 13710 "Pre-Engineered Spiral Stairs"

#### 1.2 DESCRIPTION OF THE WORK

- A. The extent of the Work shall include hangar, two-story office spaces, stairs, balconies and lean-to. The design shall meet the standards set by the latest edition of the Florida Building Code for pre-engineered metal structures, walls, floors, stairs, and roofs (components of cladding).
- B. See structural Drawing for required loading and wind pressures required for design of structure and components of cladding, as well as second floor framing.

#### 1.3 QUALITY ASSURANCE

- A. Provide pre-engineered building components from a single-building manufacturer for the hangar/two-story office building.
- B. Metal building manufacturer shall be a member in good standing with "MBMA."

#### 1.4 SUBMITTAL

- A. As per Section 01340, provide fully engineered drawings and calculations signed and sealed by a P.E. registered in the State of Florida. The structural design shall include, but not limited to, all components including point load super imposed by the hoist, mechanical, and electrical equipment. Submit twelve (12) sets of signed and sealed drawings, and calculations of which six (6) shall be used for the Building Department for permits.



- B. Product data consisting of metal building structural framing system, roofing and siding panels, and other metal building components.
- C. Provide complete erection drawing prepared under the direction of a Florida Registered Professional Engineer. Include details showing fabrication and assembly of the metal building system. Show anchor bolt settings, reactions end-wall and roof framing. Include transverse cross-sections.
  - 1. Erection drawings prepared to scale will show the relationship of building components.
  - 2. Erection drawings show proposed openings coordinated for the size and location of component that is to be installed. Components include, but not limited to, louvers, doors, windows, storefront, hangar doors, balconies, canopies, stairs, changes in level, chases, ducts, fans, vents, and other building components shown on the drawings and other sections of the specifications.
- D. Roofing and Siding Panels: Provide layouts of panels on walls and roofs, details of edge conditions, joints, corners, custom profiles, supports, anchorages, trim, flashings, closures, and special details. Include flashing details of roof to wall intersection. Include transverse cross-sections.
- E. Provide details to drawn to scale of plan, section of opening conditions. Coordinate all required clearances for installation of all framing components and comply with rough opening requirements for components installed in the openings. Coordinate with drawings and other section of work shown and specified elsewhere in the specifications.
- F. Where UL-Listed assemblies are required by drawings and other sections of the specifications. Comply with the structural requirements for compliance with the UL listing. Fire ratings and details are shown on the drawings.
- G. Building Accessory Components: Provide details of metal building accessory components to clearly indicate methods of installation, including the following:
  - 1. Personnel doors: Provide elevations and details of each type of door and requirements for finish hardware. Provide schedule of doors and frames using the same reference numbers for details and openings as those indicated on the drawings; include complete hardware schedule.
  - 2. Aluminum louvers: Provide 1/4" scale elevations of louver units and not less than 3/4" scale details showing anchors, hardware, and flashing details.
  - 3. Sheet metal accessories: Provide layouts at 1/4" scale. Provide details of ventilators, louvers, gutters, downspouts, and other sheet metal accessories at not less than 1-1/2" scale showing profiles, methods of joining, and anchorages.
  - 4. All building accessory components will have wind-rated assemblies that comply and are installed per Miami/Dade County Approval System or the Florida Building Code Approval System for wind loads and exposure listed on the drawings.
- H. Samples for initial selection purposes in form of manufacturer's color charts or chips showing full range of colors, textures, and patterns available for metal roofing and siding panels with factory-applied finishes.

- I. Samples for verification purposes of roofing and siding panels. Provide sample panels 12" long by actual panel width, in the profile, style, color, and texture indicated. Include clips, battens, fasteners, closures, and other panel accessories.
- J. Installer certificates signed by metal building manufacturer written certification certifying that the installer complies with requirements included under the "Quality Assurance" Article.
- K. Professional Engineer's certificate prepared and signed by a Professional Engineer, legally authorized to practice in the jurisdiction where project is located, verifying that the structural framing and covering panels meet indicated loading requirements and codes of authorities having jurisdiction.

#### 1.5 DESIGN

##### A. Design Authorities:

- 1. Structural Steel: All structural steel sections and welded plate members shall be designed in accordance with the allowable stresses and design requirement sections of the latest edition of the "A.I.S.C. Manual of Steel Construction".
- 2. Cold-Formed: All cold-formed members, including exterior covering, shall be designed in accordance with the allowable stresses and design requirement sections of the latest edition of "The A.I.S.I. Cold-Formed Steel Design Manual".

#### 1.6 DESIGN LOADS

- A. Wind and Live Loads: Loads shall be applied in accordance with the requirements set forth by the "Florida Building Code 2023" requirements latest edition. Wind design three- (3) second gust at 140 m.p.h. minimum, Exposure Category C.
- B. Dead Loads: Dead loads shall be the weight of the structure, mechanical systems, electrical and lighting systems, suspended ceiling system, roof, insulation, hangar door with operators, partition walls and miscellaneous loads. Include dead load required by the Florida Building Code 2023 and as indicated in the plans.

#### 1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer to erect the pre-engineered metal building who has specialized in the erection and installation of types of metal buildings systems similar to that required for this project and who is certified in writing by the metal building system manufacturer as qualified for erection of the manufacturer's products.
- B. Manufacturer's Qualifications: Provide pre-engineered metal buildings manufactured by a firm experienced in manufacturing metal buildings systems that are similar to those indicated for this project and have a record of successful in-service performance.

- C. Single-Source Responsibility: Obtain the metal building system components, including structural framing, wall and roof covering, and accessory components, from one source from a single manufacturer.
- D. Design Criteria: The drawings indicate size, profiles, and dimensional requirements of the pre-engineered metal buildings and are based on the specific type and model indicated. Metal building systems having equal characteristics by other manufacturers may be considered provided that deviations in dimensions and profiles are minor and do not change the design concept or intended performance as judged by the Architect. The burden of proof of equality is on the proposer.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver prefabricated components, sheets, panels, and other manufactured items so they will not be damaged or deformed. Package wall and roof panels for protection against transportation damage.
- B. Handling: Exercise care in unloading, storing, and erecting wall and roof covering panels to prevent bending, warping, twisting, and surface damage.
- C. Stack materials on platforms or pallets, covered with tarpaulins or other suitable weather-tight ventilated covering. Store metal wall and roof panels so that water accumulations will drain freely. Do not store panels in contact with other materials that might cause staining, denting or other surface damage.

#### 1.9 WARRANTY

- A. Roofing and Siding Panel Finish Warranty: Furnish the roofing and siding panel manufacturer's written warranty, covering failure of the factory-applied exterior finish on metal wall and roof panels within the warranty period. This warranty shall be in addition to and not a limitation of other rights the Owner may have against the Contractor under the Contract Documents. Warranty period for factory-applied exterior finishes on wall and roof panels is twenty (20) years after the date of Substantial Completion.

#### 1.10 EXTRA MATERIALS

- A. Maintenance Stock: Furnish at least 5% excess over required amount of nuts, bolts, screws, washers, wall panels, trim, fascias, and other required fasteners. Pack in cartons labeled to identify the contents and store on the site where directed.

### PART 2 - PRODUCT

#### 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering metal building systems that may be incorporated in the work include, but are not limited to, the following:

1. Butler Manufacturing Company
2. Ceco Buildings Division
3. Gulf States Manufacturers, Inc.
4. Mesco Metal Buildings Corp.
5. Star Buildings Division, H.H. Robertson Company
6. Varco-Pruden Buildings
7. Whirlwind Steel Buildings, Inc.

## 2.2 LOAD COMBINATIONS

- A. The design load combinations for all buildings shall be the most stringent of the following specified by the "Florida Building Code 2007", latest edition through 2009 supplements. The Delegated Engineer shall design second floor framing as part of the entire shell design including the second floor balconies and elevated walkways. The most stringent load conditions in the building framing design shall be considered based on inclusion and exclusion of the second floor balconies and walkway (ADD ALTERNATE A scope of work).

## 2.3 ANCHOR BOLTS

- A. Anchor bolts shall be sized to resist all shears and uplifts induced by the structure and shall not be less than the sizes and quantities shown by the structural plans. All anchor bolts shall be unpainted to bond to the concrete and shall be set in strict accordance with the structural drawings. See Structural for foundation and load criteria.

## 2.4 MATERIALS

### 2.4.1 PRIMARY FRAMING STEEL

- A. Steel for hot-rolled structural sections shall conform to the requirements of ASTM specification A-36.
- B. Steel for all built-up sections shall meet as applicable the physical and chemical properties of ASTM A572-88C modified to 55,000 psi minimum yield and 70,000 psi minimum tensile strength, or ASTM A607-85, Grade 55, or ASTM A570-88, Grade 55. Steel for all end wall "C" sections shall meet the physical and chemical properties of ASTM A570-88, Grade 55.

### 2.4.2 SECONDARY FRAMING STEEL

- A. Steel used to form purlins, girts, eave struts, and "C" sections shall meet the physical and chemical properties of ASTM A570-88, Grade 55.

### 2.4.3 ROOF PANEL MATERIAL

- A. Roof for hangar and office:
  1. Standing seam.

2. 22-gauge, Grade 50B, aluminum-zinc, alloy-coated steel, coating designation, galvanized, factory-applied, baked-on paint with a total film thickness of 1 mil on exposed white as manufactured by Bethlehem, ASTM A792 sheet coating 55% aluminum, 43.4% zinc, 1.6% silicon nominal percentage by weight. Roof design based on Florida Building Code 2007 wind load requirement, but not less than 22-gauge material.

B. Fasteners:

1. Clips: 16-guage panel clips.
2. Cleats: Factory-caulked, mechanically seamed cleats formed from 24-gauge, Grade C, zinc-coated-steel sheets.

- C. All roofing components, fasteners, and connections will have wind-rated assemblies that comply and are installed as per Miami/Dade County Approval System or the Florida Building Code Approval System.

2.4.4 SIDING PANELS

- A. All materials and assemblies shall comply with the Florida Building Code wind pressures for cladding. Provide certified engineered lab test that shows compliance. See structural drawing for wind pressure and load required for compliance.

- B. Face Sheets: Fabricate wall and roof panel face sheets to the profile or configuration indicated from 22-gauge, structural quality, Grade 50B, alloy-coated steel. Coating designation, galvanized with factory-applied, baked-on paint with a total film thickness of 1 mil on exposed side. Color to be selected by Architect, Bethlehem, ASTM A792, sheet coating 55% aluminum, 43.4% zinc, 1.6% silicone, nominal percentage by weight.

- C. Fasteners: Self-tappings screws, bolts, nuts, self-locking rivets, self-locking bolts, end-welded studs, and other suitable fasteners designed to withstand design loads.

1. Provide metal-backed neoprene washers under heads of fasteners bearing on weather side of panels.
2. Use aluminum or stainless-steel fasteners for exterior application and galvanized or cadmium-plated fasteners for interior applications.
3. Locate and space fastenings in true vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of neoprene washer.
4. Provide fasteners with heads matching color of roofing or siding sheets by means of plastic caps or factory applied coating.

- D. Accessories: Provide the following sheet metal accessories factory-formed of the same material in the same finish as roof and wall panels:

1. Flashings
2. Closers
3. Fillers
4. Ridge covers

5. Fascias
  6. Inside closure strip
  7. Base angle
  8. Miscellaneous accessories as required to complete a weatherproof installation.
- E. Flexible Closure Strips: Closed-cell, expanded cellular rubber, self-extinguishing flexible closure strips. Cut or premold to match configuration of roofing and siding sheets. Provide closure strips where indicated or necessary to ensure weather-tight construction.
- F. Sealing Tape: Pressure-sensitive, 100% solid, gray polyisobutylene, compound-sealing tape with release paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2" wide and 1/8" thick.
- G. Joint Sealant: One-part elastomeric polyurethane, polysulfide, or silicone rubber sealant as recommended by the building manufacturer.
- H. Fluoropolymer Finish: Provide shop-applied fluoropolymer finish to galvanized-steel roofing and siding panels, and related trim and accessory elements.
1. Clean galvanized steel with an alkaline compound, then treat with a zinc phosphate conversion coating and seal with a chromic acid rinse.
  2. Apply a two- (2) coat fluoropolymer coating system to pretreated steel. Coating shall consist of a specially-formulated inhibitive primer applied to a dry film thickness of 0.15 mil to 0.25 mil, and a fluorocarbon color coat containing not less than 70% polyvinylidene fluoride resin by weight applied to a dry film thickness of 0.80 mils to 1.3 mils. Color to be selected by the Architect from the Architect's sample listed:
    - a. Imetco, Solar White
    - b. Imetco, Cardinal Red
- I. All roofing and wall components, fasteners, and connections will have wind-rated assemblies that comply and are installed as per Miami/Dade County Approval System or the Florida Building Code Approval System.

#### 2.4.5 OTHER MATERIALS

- A. Sealant Materials Provide:
1. Silicone Sealant: Single-component elastomeric silicone sealant complying with FS TT-S-001543, Class A, nonsag, and ASTM C920, Type S, Grade NS, Class 25, Uses G, A, and O. Provide low-modulus, nonacid curing type, except use acid type if channel surfaces are porous.
  2. Polysulfide Sealant: 2-component elastomeric polysulfide sealant complying with FS TT-S-00227, Class A, Type2, and ASTM C920, Type M, Grade NS, Class 25, Uses G, A, and O, as applicable.
  3. Acrylic Sealant: Single-component acrylic terpolymer or polypropenatate solvent-based, thermo-plastic sealant complying with FS 55-2-00230, Class B, Type II,

and ASTM C920, Type S, Grade NS, Class 12-1/2, Uses G, A, and O, as applicable.

4. Filler Rods: Compressible closed-cell or waterproof-jacketed rod stock of flexible and resilient synthetic rubber or plastic foam with 5-10 psi compression strength for 25% deflection.

- B. Thermal Insulation at roof of office; glass fiber blanket insulation, complying with ASTM C991, of 0.5 lb per cu. ft. density, thickness as indicated, with UL flame spread classification of 25 or less, and 2" wide continuous vapor-tight edge tabs, and retainer clips, 26-gauge, formed galvanized-steel retainer clip painted to match vinyl ad noted on the drawings.

- C. Thermal Insulation at roof of hangar; glass fiber blanket insulation, complying with ASTM C991, of 0.5 lb per cu. ft. density, thickness as indicated, with UL flame spread classification of 25 or less, and 2" wide continuous vapor-tight edge tabs as noted on drawings.

#### 2.4.6 PAINT AND COATING MATERIALS

- A. Comply with performance requirements of the federal specifications indicated. Unless specifically indicated otherwise, compliance with compositional requirements of federal specifications indicated is not required.

1. Shop Primer for Ferrous Metal: Fast-curing, lead-free, universal primer, selected by the manufacturer for resistance to normal atmospheric corrosion, compatibility with finish paint systems, and capability to provide a sound foundation for field-applied topcoats despite prolonged exposure. Comply with FS TT-P-636D.
2. Pre-painted galvalume panel each face.

- a. Roof Panels
- b. Wal Panels

#### 2.4.7 ROD

- A. All rod used as structural bracing shall have a minimum yield strength of 36,000 psi.

#### 2.4.8 HIGH-STRENGTH BOLTS

- A. All bolts used in primary structural connections shall be zinc-plated, high-strength (ASTM A325) bolts with a yellow dichromate dip.

#### 2.4.9 HIGH-STRENGTH NUTS

- A. ASTM 194 Grade 2H, ASTM 563 Grade C, C3, D, D4, D43

#### 2.4.10 STANDARD BOLTS

- A. All bolts used in secondary structural connections shall be standard zinc-plated machine bolts (ASTM A-307, Grade 2).

2.4.11 STANDARD NUTS

- A. ASTM A563 Grade A or Grade 2

2.4.12 WIND BRACING

- A. Wind bracing shall be as shown on the building manufacturer's erection drawings and shall be accomplished by diagonal, rod bracing, steel column, or other means necessary to satisfy roof and wall wind loads. All diagonal wind bracing shall include necessary hillside washers and adjustment nuts at each end. Do not use diagonal rod bracing at locations of doors, louvers, and openings.

2.5 HORIZONTAL ACCENT PANELS

- A. Manufacturer – Basis of Design: Centria, 1005 Beaver Grade Road, Moon Township, PA 15108
- B. Product: Econo Lap, 3/4" as manufactured by Centria. Profile shall have 34-2/3" of coverage width and 3/4" deep symmetrical corrugations spaced at 2.67" center to center. Exterior metal panels shall be fabricated from zinc-coated steel conforming to ASTM A653 SS, Grade 37, G90 coating. Material gauge shall be as required to meet specified structural performance requirements, but not less than 20 gauge. Metal panels shall have a smooth surface.
- C. Finish:
  - 1. Color: Custom color match, "Imetco" Cardinal Red
  - 2. Finish: Duragard, consisting of 0.8 mil primer with 0.8 mil 70% Keynar 500 coat.
- D. Accessories: As shown on drawings and as required by structural requirement and weather tightness.

2.6 BUILDING TRIM

- A. General: Preformed 24-gauge galvalume steel with factory baked-on paint flashing shall be provided at corners, end wall rakes, eaves, and openings to assure a neat, weather-tight structure. All trim shall comply with wind loads in structural drawing for wind pressures for components of cladding. Provide approved engineered testing certificates that show compliance with Florida Building Code.
- B. Eave Flashing: The junction of the roof panels and side wall panels shall be adequately flashed with preformed 24-gauge galvalume steel with factory baked-on paint. Eave flashing shall be as shown on Architectural drawings and as per manufacturer's recommendations.
- C. Eave Gutter: Eave gutter shall be a suspended box section supported at 3'-0" on center maximum and formed to match the configuration shown on Architectural drawings. Eave gutters shall have a minimum cross-sectioned area as required by rainfall amounts set by the Florida Building Code. Pop rivets and sealant shall be used to secure and seal the gutter end laps.



- D. Eave Gutter Downspouts: Downspouts shall be 28-gauge, galvalume, factory-painted, square sections sized per Florida Building Code Requirements. Spacing of the downspouts as shown on Architectural drawings. Eave gutter outlets shall be provided to connect the downspouts to the eave gutter. Field connected downspout elbows shall be provided to divert water away from the building.
- E. Corner Flashing: The junction of side wall panels and end wall panels shall be adequately flashed to provide weather tightness and good appearance. The flashing shall be designed to compliment the wall panel used and shall match the wall panel color.
- F. Accessory Flashing: Accessories which penetrate the wall or roof panels shall be adequately flashed and sealed as necessary for weather tightness and neat appearance.

#### 2.6.1 PERSONNEL DOORS

- A. Materials: Fabricate personnel doors and frames from commercial quality, cold-rolled carbon steel sheet, or commercial quality hot-rolled, pickled, and oiled carbon steel sheet.
  - 1. Zinc-coated Steel Sheets: Comply with ASTM A526; with G60 coating complying with ASTM A525, mill phosphatized.
- B. Anchors and Accessories: Provide manufacturer's standard units for items built into exterior walls, use galvanized units complying with ASTM A153. Spacing and type per Miami-Dade NOA-tested assembly.
- C. Doors: Provide doors of types and styles indicated. Comply with SDI-100 for material quality, metal gages, and construction details.
  - 1. Provide sightproof lovers for interior doors with indicated, constructed of 24-gauge (0.0239-inch) steel V-shaped or Y-shaped blades, set into 20-gauge (0.0359-inch) steel frame.
  - 2. Provide Miami-Dade NOA-tested assembly.
- D. Frames: Provide frames of the types and sizes indicated. Comply with SDI-100 for material quality, metal gages, and construction details.
  - 1. Provide standard hollow metal frames for doors, transoms, sidelights, borrowed lights, and other openings as indicated.
  - 2. Provide Miami-Dade NOA-tested assembly.
- E. Fabrication: Fabricate units to be rigid, neat in appearance, and free from defects, warp, or buckle. Provide continuous welds on exposed joints; grind, dress, and make welds smooth, flush, and invisible.
- F. Hardware: See Door Hardware Section 08700.

- G. Shop-paint exposed surfaces, including galvanized surfaces, using manufacturer's standard baked-on, rust-inhibitive primer.
- H. Factory-painted doors and door frames with baked enamel paint.

## 2.7 SOFFIT PANELS

- A. Product: Standard soffit panel. Profile is concealed fastener soffit, flat appearance 12" coverage with 1" panel depth. Panels shall be fabricated from zinc-coated steel conforming to ASTM A792 with coating class AZ50 or heavier, minimum spangle, as specified by coater - G90 coating. Material gauge shall be as required to meet specified structural performance requirements, but not less than 26 gauge. Metal panels shall have a smooth surface.
- B. Finish:
  - 1. Color: Custom color match, "Imetco" Cardinal Red
  - 2. Finish: Duragard, consisting of 0.8 mil primer with 0.8 mil 70% Keynar 500 coat.
- C. Accessories: As shown on drawings and as required by structural requirement and weather tightness.

## 2.8 SHOP FABRICATION

- A. Scope: All fabricated members shall be sheared, formed, punched, welded, painted in the plant of the manufacturer. All holes and clips required to facilitate the attachment of secondary framing shall be provided by the metal building manufacturer. See Architectural, Structural, Mechanical drawings for other items to be attached to the structure.
- B. Welding: All shop welding shall be in accordance with the American Welding Society's Structural Welding Code (AWS D1.1) current edition, except for Sections 3.5 and 8.13. All welding shall be done by welders certified in accordance with AWS Code. Flanges and webs of "I" sections shall be joined by a continuous automatic submerged arc welding process or a semi-automatic GMAW process. The web shall be joined to the flanges by a minimum of 50% web penetration.
- C. Structural Primer: All fabricated members other than galvalume, galvanized, pre-painted panel, and flashing material shall receive a factory-applied coat of rust-inhibiting green primer. The primer shall be formulated to equal or exceed the performance of Federal Specification TT-P-636D.
- D. Identification: All fabricated or purchased items shall have an identifying mark that corresponds to the mark shown on the erection drawings. The mark shall be stamped, stenciled, or printed on or attached to the items.

## 2.9 CLOSURE AND SEALANTS

- A. Closure Strips: The corrugations of the roof and wall panels shall be filled with preformed closed cell non-shrinking, laminated polyethylene closures along the eave, ridge, and rake for weather tightness.

- B. Metal Closures: The corrugations and pan area of the standing seam roof panel shall be filled with formed-metal closures. The closures shall be formed from 20-gauge steel to the shape of the configuration. The closure exterior finish shall be AZ 55 Aluminum-zinc alloy coated.
- C. Sealer: Standing Seam, side laps shall have factory-applied mastic, Sika SikaCaulk 501, or approved equal. Its composition shall be 91% solids by weight. Service temperature range shall be -60 degrees F to +250 degrees F. The material shall or surpass the requirements of Federal Specification TT-C-1796A, Type I, Class A.
- D. Sealer: Standing Seam, ridges and eave closures shall be sealed with tape mastic, Sika SikaTape 65, or approved equal. The material shall be non-staining, non-corrosive, non-toxic, and non-volatile. Composition shall be 100% solid-ethylene propylene copolymer tape. Service Temperature shall be from -60 degrees F to + 212 degrees F. The material shall meet or surpass the requirements of Federal Specifications TT-C-1796a Type II, Class B.
- E. Pipe Flashing: Manufactured one- (1) piece construction from EPDM membrane and shall have an aluminum base that can be field conformed to any panel configuration.
- F. Louvers: See drawing and Section 10200 for requirements.

## 2.10 MISCELLANEOUS TRIM

- A. Provide miscellaneous custom section, trim, flashing, and panels as required by the drawings to achieve final function and/or aesthetic effect.

## PART-3 EXECUTION

### 3.1 INSTALLATION

- A. The erection of the structural members and the installation of the standing seam roofing, insulation, wall panels and miscellaneous accessories shall be performed in accordance with the drawings, project manual, and in accordance to the manufacturers written and drawn instructions. The erection shall be performed by a manufacturer-approved erector. All erection practices shall conform to Section 6, Common Industry Practices found in the "Low Rise Building Systems Manual", MBMA latest edition. Do not make any field modifications to structural members without the written acceptance of the Architect/Engineer of Record.
- B. Clean surfaces as per manufacturer's recommendations.

### 3.2 ERECTION

- A. Framing: Erect framing true to line, level, plumb, rigid, and secure. Level base plates to a true even plane with full bearing to supporting structures, set with double-nutted anchor bolts. Use a non-shrinking grout to obtain uniform bearing and to maintain a level base line elevation. Moist cure grout for not less than seven (7) days after placement.

- B. Purlins and Girts: Provide rake or gable purlins with tight-fitting closure channels and fascias. Locate and space wall girts to suit door and window arrangements and heights. Secure purlins and girts to structural framing and hold rigidly to a straight line by sag rods.
- C. Bracing: Provide diagonal rod or angle bracing in roof and side walls as indicated.
  - 1. Movement-resisting frames may be used in lieu of side wall rod bracing, to suit manufacturer's standards.
  - 2. Where diaphragm strength of roof or wall covering is adequate to resist wind forces, rod or angle bracing will not be required.
- D. Framed Openings: Provide shapes of proper design and size to reinforce openings and to carry loads and vibrations imposed, including equipment furnished under mechanical and electrical work. Securely attach to building structural frame.
- E. Coordinate erection of structure with Section 09900 "Painting".

### 3.3 ROOFING AND SIDING

- A. General: Arrange and nest side lap joints so prevailing winds blow over, not into, lapped joints. Lap ribbed or fluted sheets one full-rib corrugation. Apply panels and associated items for neat and weather-tight enclosure. Avoid "panel creep" or application not true to line. Protect factory finishes from damage.
  - 1. Field cutting of exterior panels by torch is not permitted.
  - 2. Provide weather seal under ridge cap. Flash and seal roof panels at eave and rake with rubber, neoprene, or other closures to exclude weather.
- B. Standing-Seam Roof Panel System: Fasten roof panels to purlins with concealed clip in accordance with the manufacturer's instructions.
  - 1. Install clips at each support with self-drilling fasteners.
  - 2. At end laps of panels, install tape caulk between panels.
  - 3. Install factory-caulked cleats at standing-seam points. Machine-seam cleats to the panels to provide a weather-tight joint.
  - 4. Provide for system thermal expansion.
- C. Wall Sheets: Apply elastomeric sealant continuously between metal-base channel (sill angle) and concrete and elsewhere as necessary for waterproofing. Handle and apply sealant and backup in accordance with the sealant manufacturer's recommendations.
  - 1. Align bottom of wall panels and fasten panels with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws. Fasten window and door frames with machine screws or bolts. When building height requires two (2) rows of panels at gable ends, align lap of gable panels over wall panels at eave height.
  - 2. Install screw fasteners with power tools having controlled torque adjusted to compress neoprene washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.

3. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.
- D. Sheet Metal Accessories: Install gutters, downspouts, ventilators, louvers, and other sheet metal accessories in accordance with manufacturer's recommendations for positive anchorage to building and weather-tight mounting. Adjust operating mechanism for precise operation.
- E. Hollow Metal Doors and Frames: Install doors and frames straight, plumb, and level. Securely anchor frames to building structure. Set units with 1/8" maximum clearance between door and frame at jambs and head and 3/4" maximum between door and floor. Adjust hardware for proper operation.
- F. Aircraft Doors: Set doors and operating equipment complete with necessary hardware, jamb and head mold stops, anchors, inserts, hangers, and equipment supports in accordance with manufacturer's instructions. Adjust moving hardware for proper operation.
- G. Thermal Insulation: Install insulation concurrently with installation of roof panels in accordance with manufacturer's directions. Install blankets straight and true in one-piece lengths with both sets of tabs sealed to provide a complete vapor barrier. Locate insulation on underside of roof sheets, extending across the top flange of purlin members and held taut and snug to roofing panels with retainer clips. Install retainer strips at each longitudinal joint, straight and taut, nesting with roof rib to hold insulation in place.

END OF SECTION 13120

## SECTION SP-109S-26 05 01 - BASIC ELECTRICAL REQUIREMENTS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Contractual Conditions and other Specification sections apply to this section.

#### 1.2 SUMMARY

- A. This section includes Basic Electrical Requirements specifically applicable to Division 26 Sections.

#### 1.3 DESCRIPTION

- A. Provide and install all equipment, labor, material and accessories, and mounting hardware for a complete and operating system as described within these Division 26 Specification Sections.
- B. Furnish, perform, or provide all labor including planning, purchasing, transporting, storing, installing, testing, cutting and patching, trenching, excavating, backfilling, coordination, field verification, equipment (installation and safety), supplies, and materials necessary for the installation of complete electrical systems (as described or implied by these specifications and the applicable drawings) in strict accordance with applicable codes, which may not be repeated in these specifications, but are expected to be common knowledge of qualified Bidders.
- C. All work shall comply with all applicable codes as a minimum and with the additional requirements called for in these Contract Documents.
- D. Only trained and licensed personnel shall perform work. No Work shall be performed which violates applicable Codes, even if called for in the Contract Documents.
- E. Make connections of all items in the Work using electric power including wire, conduit, circuit protection, disconnects and accessories. Securing of roughing-in drawings and connection information for equipment involved shall also be included under this division. See other divisions for specifications for electrically operated equipment.

#### 1.4 QUALITY ASSURANCE

- A. Install Work in locations shown or described in the Contract Documents, unless prevented by Project conditions.

- B. Install all equipment so that all Code and Manufacturer recommended working and servicing clearances are maintained. Properly arrange and install all equipment within designated spaces. If a departure from the Contract Documents is necessary, submit to the RPR for approval, detailed drawings of the proposed changes with written reasons for the changes. No change shall be implemented without the issuance of a change order or other directive permitted by the General Conditions.
- C. The Contractor shall verify finish dimensions at the project site in preference to using dimensions noted on Contract Documents.

## 1.5 CONTRACT DOCUMENTS

- A. The drawings are diagrammatic and are not intended to include every detail of construction, materials, methods, and equipment. They indicate the result to be achieved by an assemblage of various systems. Coordinate equipment locations with Architectural and Structural drawings. Layout equipment before installation so that all trades may install equipment in spaces available. Coordinate installation in a neat and workmanlike manner. Provide 1/4" scale coordination drawings per specifications prior to start of work.
- B. Contractor shall provide 1/4" scale coordination drawings for all electrical, mechanical and communications rooms during the shop drawing submittal phase, utilizing detailed dimensions from equipment actually submitted (all disciplines) and field-measured/verified existing conditions. These drawings are also required for any room where conduits equal to or over 1-1/4" in size, equipment (panels, HVAC, disconnects, comm. racks) or other large objects are being installed. Drawings shall show all electrical, mechanical, plumbing, fire protection, structural, etc. coordinated so that problems are discovered/prevented prior to installation. Claims during construction for additional funding in rooms where properly coordinated drawings were not submitted will not be considered.
- C. Wiring arrangements for equipment shown on the drawings are intended to be diagrammatic and do not show all required conductors and functional connections. All such items incidental to a complete and operating system shall be provided.
- D. Submit specific shop drawings which indicate the fabrication, assembly, installation, and erection of particular systems' components. Drawings that are part of the Contract Documents shall not be considered a substitute for required shop drawings, field installation drawings, code requirements, or applicable standards.
- E. Locations indicated for outlets, switches, and equipment are approximate and shall be coordinated with the Contract Documents. Where instructions or notes are insufficient to locate the item, notify the RPR.

## 1.6 MATERIALS AND EQUIPMENT

- A. Unless otherwise noted, all material shall be new and UL listed or labeled. In lieu of UL listing or labeling, a statement or data demonstrating compliance with contract documents from a nationally recognized testing agency shall be submitted to the RPR.
- B. Where Contract Documents list design selection, manufacturer or type, this model shall set the standard of quality and performance required. Where no brand name is specified, the source and quality shall be subject to Designers/RPR review and approval. Where Contract Documents list approved substitutions, these items shall comply with specification requirements for substitutions.
- C. When a product is specified to be in accordance with a trade association or government standard and at the request of Designers/RPR the Contractor shall furnish a certificate that the product complies with the referenced standard and supporting test data to substantiate compliance.
- D. Where multiple items of the same equipment or materials are required, they shall be the product of the same Manufacturer.
- E. Prior to placing equipment orders, verify the physical size of specified equipment to fit spaces allotted on the drawings and with NEC working clearances. Internal access for proposed equipment substitutions shall be provided. Provide 1/4" scale drawings showing that this coordination has taken place.
- F. Electrical equipment shall be protected from the weather, during shipment, storage, and construction per manufacturer's recommendations. Should any apparatus be subjected to possible damage by water, it shall be thoroughly dried and put through a dielectric test, at the expense of the Contractor, to ascertain the suitability of the apparatus, or it shall be replaced without additional cost to the Owner.
- G. Inspect all electrical equipment and materials prior to installation. Damaged equipment and materials shall not be installed or placed in service. Replace or repair and test damaged equipment in compliance with industry standards at no additional cost to the Owner. Equipment required for the test shall be provided by the Contractor.
- H. Material and equipment shall be provided complete and shall function up to the specified capacity/function. Should any material or equipment as a part or as a whole fail to meet performance requirements, replacements shall be made to bring performance up to specified requirements. Damages to finish by such replacements, alterations, or repairs shall be restored to prior conditions, at no additional cost to the Owner.
- I. Where tamperproof screws are specified or required, Phillips head or Allen head devices shall not be accepted. For each type used, provide RPR with three tools. RPR will designate the specific hardware design to correspond with existing devices elsewhere in the building, to limit special tool requirements.



- J. Communications backboards shall be 3/4" A/B grade, Class A, flame spread, painted with light gray fire retardant paint. Neatly mask off a minimum of one (1) plywood Manufactures pre-printed certified fire rating stamp per section of board prior to application of paint. Remove masking after paint has cured.

#### 1.7 SUPERVISION OF THE WORK

- A. Reference the General Conditions for additional requirements.
- B. A qualified and experienced electrical superintendent shall be in charge of the work in progress at all times. If, in the judgement of the RPR, the electrical superintendent is not performing his duties satisfactorily, the Contractor shall immediately replace him upon receipt of a letter of request from the RPR. Once a satisfactory electrical superintendent has been assigned to the work, he shall not be withdrawn by the Contractor without the written consent of the RPR.
- C. Provide field superintendent who has had a minimum of four (4) years previous successful experience on projects of comparable sizes and complexity. Superintendent shall be present at all times that work under this Division is being installed or affected. All work performed by a non-licensed Journeyman shall be under the direct supervision (in the presence of) of a Licensed Journeyman as specified herein. Increase the quantity of licensed Journeymen as required for supervision of all areas where direct contact is not possible. Project Superintendent and supervising Journeyman shall have passed a proctored H.H. Block Journeyman Exam with 75% grade or better and shall be a licensed Journeyman within the State of Florida. A resume of the Project superintendent's experience shall be submitted to RPR before starting work. At least one member of the electrical contracting firm shall hold a State Master Certificate of Competency. Each Journeyman shall have possession of licensing documentation at all times during work. Display to designer/RPR when requested.
- D. Superintendent shall be employed by a State Registered (Type "E.R." License) or State certified (Type "E.C." License) electrical contractor.

#### 1.8 COORDINATION

- A. Provide all required coordination and supervision where work connects to or is affected by work of others, and comply with all requirements affecting this Division. Work required under other divisions, specifications or drawings to be performed by this Division shall be coordinated with the Contractor and such work performed at no additional cost to Owner including but not limited to electrical work required for:
  - 1. Door hardware
  - 2. Signage
- B. Provide electrical subcontractor a set of Contract Documents for all areas of Electrical Work.

- C. Installation studies shall be made to coordinate the electrical work with other trades. Work shall be preplanned. Unresolved conflicts shall be referred to the RPR prior to installation of the equipment.
- D. Coordination drawings shall be prepared prior to the start of work. Drawings shall show the actual physical dimension required for the installation to assure proper integration of equipment with building systems and NEC required clearances. Location of conduit racking, etc., shall be provided. Coordination drawings shall be provided for all areas.
- E. Secure approved shop drawings from all required disciplines and verify final electrical characteristics before roughing power feeds to any equipment. When electrical data on approved shop drawings differs from that shown or called for in Construction Documents, make adjustments to the wiring, disconnects, and branch circuit protection to match that required for the equipment installed. Adjustments to contract value will not be considered due to lack of coordination.
- F. Damage from interference caused by inadequate coordination shall be corrected at no additional cost to the Owner.
- G. Coordinate the exact location of floor outlets, floor ducts, floor stub-ups, etc. with RPR and Designer (and receive their approval) prior to rough-in. Locations indicated in Contract Documents are only approximate locations.
- H. The Contract Documents describe specific sizes of switches, breakers, fuses, conduits, conductors, motor starters and other items of wiring equipment. These sizes are based on specific items of power consuming equipment (heaters, lights, motors for fans, compressors, pumps, etc.). Coordinate the requirements of each load with each load's respective circuitry shown and with each load's requirements as noted on its nameplate data and manufacturer's published electrical criteria. Adjust circuit breaker, fuse, conduit, and conductor sizes to meet the actual requirements of the equipment being provided and installed and change from single point to multiple points of connection (or vice versa) to meet equipment requirements. Changes shall be made at no additional cost to the Owner.

#### 1.9 PROVISION FOR OPENINGS

- A. Locate openings required for work. Provide sleeves, guards or other approved methods to allow passage of items installed.
- B. Coordinate with roofing Contractor on installation of electrical items which penetrate the roof. Roof penetrations shall be installed so as to not void roof warranty.
- C. Where work pierces waterproofing, it shall maintain the integrity of the waterproofing. Coordinate roofing materials which pierce roof for compatibility with membrane or other roof types with Contractor.

#### 1.10 SURFACE MOUNTED EQUIPMENT

- A. Surface mounted fixtures, outlets, cabinets, conduit, panels, etc. shall have finish or shall be painted as directed by designer. Paint shall be in accordance with applicable sections and/or divisions of these specifications.

#### 1.11 CUTTING AND PATCHING

- A. New Construction:
  - 1. Cutting of work in place shall be cut, drilled, patched and refinished by trade responsible for initial installation.
  - 2. Backfill new grades to match adjacent undisturbed surface.

#### 1.12 INSTALLATION

- A. Erect equipment to minimize interference and delays with the execution of the Work.
- B. Take care in erection and installation of equipment and materials to avoid marring finishes or surfaces. Any damage shall be repaired or replaced as determined by the designer/RPR at no additional cost to the Owner.
- C. Equipment requiring electrical service shall not be energized or placed in service until RPR is notified and is present or have waived their right to be present. Where equipment to be placed in service involves service or connection from another Contractor or the RPR, notify the RPR in writing as appropriate when the equipment will be ready.
- D. Equipment supports shall be secured and supported from structural members unless written approval is granted by RPR.
- E. Plywood material shall not be used as a backboard for mounting panel boards, disconnects, motor starters, and dry type transformers. Provide "cast in place" type inserts or install expansion type anchor bolts. Electrical equipment shall not be mounted directly to dry wall for support without additional channels as anchors. Channels shall be anchored to the floor and structure above. Panelboards and terminal cabinets shall be provided with structural framing located within drywall partitions.
- F. Inserts, pipe sleeves, supports, and anchorage of electrical equipment shall be provided. Where items are to be set or embedded in concrete or masonry, the items shall be furnished and layout made for setting or embedment thereof so as to cause no delay.
- G. Conduit or piping systems that contain water or liquid of any kind shall not be installed over the top of any electrical equipment, transformers, racks, cabinets, or enclosures without prior written approval from the RPR.

### 1.13 AS-BUILT DOCUMENTS

- A. As-Built Documents: As-built Documents include Drawings, Shop Drawings, Specifications, Addenda, Change Orders, and other modifications permitted by the General Conditions.
- B. Comply with all requirements of Division 01
- C. Verify aspects of redlined as-builts for accuracy. As-Built Documents shall show all components including but not limited to:
  - 1. All raceways 1-1/4" and above, cable tray systems, and grouped raceway racking as installed, including dimensions from fixed building lines such as column lines.
  - 2. All site underground raceways and duct banks indicating burial depths and distances from fixed building lines or global tracking coordinates.
  - 3. Underground pull boxes and manholes including elevations. Detail manhole and pull boxes, conduit terminations (butterfly layout) including conduit sizes, designated systems and cabling description.
  - 4. General conduit routing from receptacle to receptacle, fixture to fixture, device to device. (Exact routing is not required for raceways 1" and smaller.)
  - 5. Lighting: Diagrammatically show junction boxes that are located above accessible ceiling with flexible conduit connections to luminaries.
  - 6. All junction boxes for Sections 28 31 11, 27 13 00 / 27 15 00, 27 13 00 / 27 15 00 and 27 51 16 shall be shown exactly where installed.
  - 7. Junction box splices shall be shown in exact location and clearly noted referring to the written authorization by the RPR.
  - 8. The first junction box within each homerun, regardless of size shall be shown in the installed location.
  - 9. All junction boxes and pull boxes located above non-accessible ceilings shall be shown in exact location. All junction boxes 6"X6" and larger shall be shown in exact location.
  - 10. Any combining of circuits (which is only allowed by specific permission) or change in homerun outlet box shall be indicated.
  - 11. Any circuit number changes.
  - 12. All conductors and cables, conductors and cable sizes, raceway sizes, etc not shown on contract documents and any changes from the documents.
  - 13. Any switchboard, panelboard, motor control center, relay panel, or dimming control panel schedule changes, including load changes.
  - 14. All access panels.
  - 15. All existing conditions.
  - 16. Location of lighting control devices such as photocell controls, space occupancy sensors, etc.
  - 17. Exact quantity of conductors and cables shall be shown for all raceway systems.
  - 18. All devices, wall outlet boxes, and control components.
  - 19. All wireway and cable tray systems.
  - 20. Exact location of all driven grounding electrodes including burial depths and dimensions from fixed building lines. Location of all grounding system busbars.
  - 21. All building automation system (BAS) control panels and associated electrical devices, connections, power supplies, and dampers.

22. Riser diagrams exactly as installed.
23. Motor control devices, terminal cabinets, equipment racks, disconnects and switches and surge protection devices.
24. Change the equipment schedules (i.e. symbol legends, light fixture schedule, etc) to agree with items actually furnished.
25. Change plan notes to agree with items actually furnished, actual installation methods, etc. respectfully.
26. Cross-out all items, circuitry, devices, etc. not applicable.

- D. As-Built red line information shall not compromise the clarity of the Contract Documents and Shop Drawings. Major components such as grouped raceway assemblies, cable tray systems, larger conduits, duct banks, racking, elevations, dimensions, etc. shall be shown on a clean architectural base plan(s) separate from the Contract Electrical Documents, as required to clearly delineate work. Obtain electronic base plan file from RPR.

#### 1.14 "OBSERVATION OF WORK" REPORT

- A. Reference the General Conditions.
- B. Items noted by designer/RPR during construction and before final acceptance which do not comply with the Contract Documents will be listed in a "Observation of Work" report which will be sent to the Contractor for action. Correct all deficiencies in a prompt concise manner. After completion of the outstanding items, provide a written confirmation report for each item. The report shall indicate each item noted, and method of correction. Enter the date on which the item was corrected, and return the signed reports so items can be rechecked. Failure to correct the deficiencies in a prompt concise manner or failure to return the signed reports shall be cause for disallowing request for payments.
- C. The electrical project superintendent shall be present at all required observation of work reviews as project progresses. Provide the RPR with equipment for access and review of all Work in place, as well as personnel fully familiar with all aspects of the work. Provide access to all electrical components such as junction boxes, panelboards, switchboards, devices and fixtures for their review by the designer/RPR.
- D. Prior to start of Substantial Completion inspection, provide access to and prepare all electrical equipment and related components complete and ready for review by designer/RPR including but not limited to the following :
1. All panelboard covers removed
  2. Switchboard and distributions panelboards readily for immediate removal of covers
  3. Terminal cabinet covers open or removed.
  4. Wireway covers open or removed
  5. Underground pull boxes ready for immediate removal of cover(s)
  6. Access to all grounding/bonding terminations
  7. Access to rated wall and through floor fire stopping
  8. Access to mechanical equipment, electrical connection points, and control devices

9. Access to all raceways crossing structural expansion/deflection joints.
10. Access to power company equipment
11. Removal of access panels
12. Each and every item deemed necessary by A/E to perform a comprehensive review of the work as installed relative to the contract documents.

- E. Items noted after acceptance during one-year guarantee period shall be checked by the Contractor in the same manner as above. The signed reports are to be returned by him when the items have been corrected.

#### 1.15 SYSTEMS WARRANTY

- A. Reference the General Conditions.
- B. Warranty shall be by the Contractor to the Owner and shall cover for a period of one year from the date of the Substantial Completion. Warranty shall not include light bulbs lamps in service after one month from date of substantial completion of the System.
1. Explain the provisions of warranty to the Owner at the "Demonstration of Completed System" meeting to be scheduled with the RPR upon project completion.
- C. Where items of equipment or materials carry a manufacturer's warranty for any period in excess of twelve (12) months, then the manufacturer's warranty shall apply for that particular piece of equipment or material.
- D. Where extended Guarantees are called for herein, furnish three copies to be inserted in Operation and Maintenance Manuals.
- E. All preventative maintenance and normal service will be performed by the Owner's maintenance personnel after final acceptance of the work which shall not alter the Contractor's warranty.

#### 1.16 WASTE MATERIALS DISPOSAL

- A. Include in base bid the transport and disposal or recycling of all waste materials generated by this project in accordance with all rules, regulations and guidelines applicable. Comply fully with Florida Statute 403.7186 regarding mercury containing devices and lamps. Lamps, ballasts and other materials shall be transported and disposed of in accordance with all DEP and EPA guidelines applicable at time of disposal. Provide RPR with written certification of approved disposal.

1.17 PROHIBITION OF ASBESTOS AND PCB

- A. Prior to the Final Review field visit the Contractor shall certify in writing that the equipment and materials installed in this Project under this Division 26 contain no asbestos or PCB. Additionally, all manufacturers shall provide a statement with their submittal that indicates that their product contains no asbestos or PCB. This statement shall be signed by a duly authorized agent of the manufacturer.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

PART 4 – MEASUREMENT AND PAYMENT

4.1 MEASUREMENT OF PAYMENT

- A. Measurement of electrical work will be made per lump sum.

4.2 BASIS OF PAYMENT

- A. Payment will be made at the contract unit price per lump sum of repair work per the National Electrical Code. This price shall be full compensation for removal and disposal of existing electrical equipment, wiring, wireways, duct banks and conduits as shown on the plans, furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item per the provisions and intent of the plans and specifications, and insurance company representatives evaluations, and the contractor's own inspections.

Payment will be made under:

|         |                                                                                               |                 |
|---------|-----------------------------------------------------------------------------------------------|-----------------|
| L-109-1 | Steel Electrical Boxes, #12 and #8 Copper Wire,<br>Conduit, and Installation Labor – Complete | - Lump Sum (LS) |
|---------|-----------------------------------------------------------------------------------------------|-----------------|

END OF SECTION L-109S-26 05 01

SECTION SP-109S-26 05 19 – LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS  
AND CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Contractual Conditions and Division 01 Specification sections apply to this section.

1.2 SUMMARY

- A. This section includes the requirements for provision and installation of Building Wire and Cable.

1.3 DESCRIPTION

- A. Provide all equipment, labor, material, accessories, and mounting hardware to properly install all conductors and cables rated 600 volts and less for a complete and operating system for the following:
  - 1. Building wire and cable.
  - 2. Wiring connectors and connections.
- B. No aluminum conductors shall be permitted.
- C. All sizes shall be given in American Wire Gauge (AWG) or in thousand circular mils (MCM/KCMIL).

1.4 SUBMITTALS

- A. Product Data: Submit catalog cut sheet showing, type and UL listing of each type of conductor, connector and termination.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years experience.

1.6 REFERENCES AND REGULATORY REQUIREMENTS

- A. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.



- B. Conform to the requirements of ANSI/NFPA 70.

#### 1.7 PROJECT CONDITIONS

- A. Verify that field measurements are as shown on Drawings.
- B. Conductor sizes are based on copper.
- C. Wire and cable routing shown on Drawings is approximate unless dimensioned. Route wire and cable as required to meet Project Conditions.
- D. Where wire and cable routing is not shown, and destination only is indicated, determine exact routing and lengths required. Record actual routing on red lined as-builts.
- E. Conductors with different voltages (i.e. 120 volt and 277 volt) shall not be combined in the same conduit without prior written approval from RPR and Engineer.
- F. Conductors for each branch of power (Normal, Life safety, Critical, Security, and Equipment) shall be installed in its own dedicated raceway system.

#### 1.8 COORDINATION

- A. Determine required separation between cable and other work.
- B. Coordinate cable routing to avoid interference with other work disciplines.

### PART 2 - PRODUCTS

#### 2.1 BUILDING WIRE AND CABLE

- A. Description: Single conductor insulated wire.
- B. Conductor: Copper.
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation: ANSI/NFPA 70, Type THHN/THWN and XHHW.
- E. Cable supports shall be O Z/Gedney Type "S" or approved substitution.

### PART 3 - EXECUTION

#### 3.1 GENERAL

- A. Install products in accordance with manufacturer's instructions.

- B. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- C. Before installing raceways and pulling wire to any mechanical equipment, verify electrical characteristics with final submittal on equipment to assure proper number and AWG of conductors. (As for multiple speed motors, different motor starter arrangements, etc.).
- D. Conductors #12 AWG shall be 600 volt type THHN/THWN, solid unless specifically noted otherwise, rated 90 degrees C. dry.
- E. Use conductor not smaller than 12 AWG for power and lighting circuits.
- F. Provide dedicated neutral conductor for each branch phase conductor for 120V and 277V circuits (power and lighting). Multi-pole breakers to comply with NEC 210.4 are not permitted.
- G. Use 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet (23 m).
- H. All conductors shall be installed in raceway.
- I. Conductor sizes indicated on circuit homeruns or in schedules shall be installed over the entire length of the circuit unless noted otherwise on the drawings or in these specifications.
- J. Coordinate all wire sizes with lug sizes on equipment, devices, etc. Provide/install lugs as required to match wire size.
- K. Where oversized conductors are called for due to voltage drop, etc., provide/install lugs as required to match conductors, or provide/install splice box, and splice to reduce conductor size to match lug size.

### 3.2 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that mechanical work likely to damage wire has been completed.

### 3.3 PREPARATION

- A. Completely and thoroughly swab raceway before installing wire.

### 3.4 WIRING METHODS

- A. Use only building wire, Type THHN/THWN insulation, in raceway unless noted otherwise.
- B. Wiring in vicinity of heat producing equipment: Use only XHHW insulation, in raceway.

- C. Conductors installed within fluorescent fixture channels shall be Type THHN or XHHW, rated 90 degrees C dry. Conductors for all other light fixtures shall have temperature ratings as required to meet the UL listing of the fixture; however, in no case shall the temperature rating be less than 90 degrees Centigrade. Remove incorrect insulation types in new work.

### 3.5 INTERFACE WITH OTHER PRODUCTS

- A. Identify wire and cable under provisions of Section 26 05 53 Identification for Electrical Systems.
- B. Identify each conductor with its circuit number or other designation indicated on Drawings.
- C. Identify neutrals with its associated circuit number(s) per NEC Article 210.4(D).

### 3.6 FIELD QUALITY CONTROL

- A. Perform field inspection and testing under provisions of the General Requirements of the Contract Documents and Section 26 08 10 Tests and Performance Verification.
- B. Inspect wire for physical damage and proper connection.
- C. Measure tightness of bolted connections and compare torque measurements with manufacturer's recommended values.
- D. Verify continuity of each branch circuit conductor.
- E. Submit "Conductor Insulation Resistance Test" form as required in Section 26 08 10.

### 3.7 VERTICAL RISERS

- A. Provide vertical cable riser supports per Article 300-19 in NFPA 70. These shall be located in accessible pullboxes of adequate size. Provide for adequate structural connection of cable supports to pullbox, which will transfer cable weight to building.

### 3.8 PULLING

- A. No wire shall be pulled until the conduit system is complete from pull point to pull point and major equipment terminating conduits have been fixed in position.
- B. Mechanical pulling devices shall not be used on conductors sized #8 and smaller. Pulling means which might damage the raceway shall not be used.
- C. Use only powdered soapstone or other pulling lubricant acceptable to the Designer/RPR. Compound or lubricant shall not cause the conductor or insulation to deteriorate.

- D. All conductors to be installed in a common raceway shall be pulled together. The manufacturer's recommended pulling tensions shall not be exceeded.
- E. Bending radius of insulated wire or cable shall not be less than the minimum recommended by the manufacturer.
- F. Where coaxial type conductors are installed, special requirements shall apply as outlined under that specific system detail specifications.
- G. Where control or signal circuits with a lower insulation rating enter an enclosure with conductors having a 600 volt or higher insulation rating, a separate wire way will be installed or proper clearance distance will be maintained per NEC.
- H. All conductors shall be pulled in conduits by industry approved cable pulling "tuggers" equipment. The use of construction equipment such as fork lifts, tractors and other vehicles will not be allowed. All conductors will be routed and protected by using the proper pulleys and sheaves.

### 3.9 CONTROL AND SIGNAL CIRCUITS

- A. For control and signal circuits above 50 VAC, conductors shall be #14 AWG minimum size, Type XHHW or THHN/THWN as permitted by NFPA 70, within voltage drop limits, increased to #12 AWG as necessary for proper operation.
- B. For control and signal circuits 50 VAC and below, conductors, at the Contractor's option, may be #16 AWG, 300 volt rated, PVC insulated, except where specifically noted otherwise in the contract documents.
- C. Conductor insulation for fire alarm systems shall be as approved by Code Inspection Authority only. Wire approvals by the Designer/RPR shall not supersede this final approval for conditions of this specific project.
- D. Install circuit conductors in conduit.
- E. Circuit conductors #10AWG and larger to be stranded.

### 3.10 COLOR CODING

- A. All power feeders and branch circuits No. 6 and smaller shall be wired with color-coded wire with the same color used for a system throughout the building. Power feeders above No. 6 shall either be fully color-coded or shall have black insulation and be similarly color-coded with tape in all junction boxes and panels. Tape shall completely cover the full length of conductor insulation within the box or panel.

- B. Unless otherwise approved or required by DESIGNER to match existing, color-code shall be as follows: Neutrals to be white for 120/208V system, natural grey for 277/480V system; ground wire green, bare or green, insulated ground conductor green with yellow tracer. 120/208V, Phase A - black; Phase B - red; Phase C - blue. 480/277V, Phase A brown; Phase B - orange; Phase C - yellow. All switch legs, other voltage system wiring, control and interlock wiring shall be color-coded other than those above.

### 3.11 TAPS/SPLICES/CONNECTORS/TERMINATIONS

- A. Taps and splices are not acceptable unless specifically noted otherwise on drawings or special written approval is granted by Designer/RPR. (See 3.1K) Submit locations, sizes, etc., where taps will be necessary to coordinate with lug sizes/quantities for review and approval prior to installation.
- B. Clean conductor surfaces before installing lugs and connectors.
- C. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
- D. Power and lighting conductors shall be continuous and unspliced where located within conduit. Splices shall occur within troughs, wireways, outlet boxes, or equipment enclosures where sufficient additional room is provided for all splices. No splices shall be made in in-ground pull boxes (without special written approval of RPR).
- E. Splices in lighting and power outlet boxes, wireway, and troughs shall be kept to a minimum, pull conductors through to equipment, terminal cabinets, and devices.
- F. No splices shall be made in junction box, and outlet boxes (wire No. 8 and larger) without written approval of RPR.
- G. No splices shall be made in communications outlet boxes, pull boxes or wireways (i.e., fire alarm, computer, telephone, intercom, sound system, etc.) without written approval of RPR. Pull cables through to equipment cabinets, terminal cabinets and devices.
- H. No splices shall be made in circuits of #8 AWG conductors or larger of 1000 feet or less without written approval of the RPR.
- I. Allow adequate conductor lengths in all junction boxes, pull boxes and terminal cabinets. All termination of conductors in which conductor is in tension will be rejected and shall be replaced with conductors of adequate length. This requirement shall include the providing by the Contractor of sleeve type vertical cable supports in vertical raceway installations provided in pullboxes at proper vertical spacings.
- J. A calibrated torque wrench shall be used for all bolt tightening. A torque mark should be used after torqueing is performed. Torque mark should consist of a permanent mark over the mechanical lug, bolt, nut, etc.

K. Interior Locations:

1. All (non-electronic systems) copper taps and splices in No. 8 or smaller shall be fastened together by means of "Screw-on spring type (wire nut)" connectors. All "Push-in" or "Stab-in" type connectors are prohibited. All taps and splices in wire larger than No. 8 shall be made with compression type connectors approved by RPR and taped to provide insulation equal to wire.

L. Exterior Locations:

1. Make splices, taps and terminations above grade in splice or termination cabinets. Do not splice any cable in ground or below finished grade.
2. All taps and splices shall be made with compression type connectors approved by RPR and covered with insulating material equivalent to conductor insulation or be terminated/connected to terminal strips in above grade terminal boxes suitable for use.
3. Provide and install above grade termination cabinets sized to meet applicable codes and standards, where required for splicing.

END OF SECTION SP-109S-26 05 19

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SECTION SP-109S-26 05 26 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Contractual Conditions and Division 01 Specification sections apply to this section.

1.2 SUMMARY

- A. This section includes the requirements for provision and installation of grounding and bonding.

1.3 DESCRIPTION

- A. Provide all labor, materials, and equipment necessary to properly install a grounding system conductor in all new branch wiring and feeder installations that shall be in full compliance with all applicable Codes as approved by the authorities having jurisdiction. The secondary distribution system shall include a grounding conductor in all raceways in addition to the return path of the metallic conduit.
- B. In general, all electrical equipment (metallic conduit, motor frames, panelboards, etc.) shall be bonded together with a green insulated or bare copper system grounding conductor in accordance with specific rules of Article 250 of the N.E.C. and State codes. Bonding conductor through the raceway system shall be continuous from main switch ground bus to panel ground bar of each panelboard, and from panel grounding bar of each panelboard to branch circuit equipment and devices.
- C. All raceways shall have an insulated copper system ground conductor throughout the entire length of circuit installed with-in conduit in strict accordance with NEC. Grounding conductor shall be included in total conduit fill determining conduit sizes, even though not included or shown on drawings. Grounding conductors run with feeders in PVC conduit outside of building(s) shall be bare only.
- D. Section Includes
  - 1. Grounding electrodes and conductors.
  - 2. Equipment grounding conductors.
  - 3. Bonding.
  - 4. Ground Ring.



#### 1.4 SUBMITTALS

- A. Submit catalog cut sheet showing brand and selection for all conductors, test wells, components, etc., as specified herein showing that all materials are UL listed and labeled as applicable and manufactured in the United States.
- B. Product data shall prove compliance with Contract Documents, National Electric Code, Underwriters Laboratories, manufacturer's specifications, manufacturer's written installation data and compliance with all performance criteria.
- C. Include instructions for storage, handling, protection, examination, preparation, operation and installation of product.
- D. Indicate application conditions and limitations of use stipulated by product testing agency specified under regulatory requirements.
- E. Show all dimensions, colors, configurations, covers and applicable labeling/stamping.
- F. Record actual locations of grounding electrodes on red lined as-built documents.
- G. Submit test results of each ground rod. See Section 26 00 90.

#### 1.5 REFERENCES AND REGULATORY REQUIREMENTS

- A. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.
- B. Conform to requirements of ANSI/NFPA 70 - National Electrical Code.

### PART 2 - PRODUCTS

#### 2.1 ROD ELECTRODE

- A. Material: Copper-clad steel.
- B. Diameter: 5/8 inch.
- C. Length: 30 feet minimum. Increase lengths as required to achieve specified resistance.

#### 2.2 MECHANICAL CONNECTORS

- A. All grounding connectors shall be in accordance with UL 467 and UL listed for use with rods, conductors, reinforcing bars, etc., as appropriate.

- B. Connectors and devices used in the grounding systems shall be fabricated of copper or bronze materials, and properly applied for their intended use. Specified items of designated manufacturers indicate required criteria and equal products may be provided if approved. All connectors and devices shall be compatible with the surfaces being bonded and shall not cause galvanic corrosion by dissimilar metals. Materials in items not listed herein shall be of equal quality to the following specified items:
  - 1. Lugs: substantial construction, of cast copper or cast bronze, with "ground" (micro-flat) surfaces equal to Burndy QQA-B Series, two hole, T&B, or approved substitution. Light weight and "competitive" devices shall be rejected.
  - 2. Grounding and Bonding Bushings: Malleable iron, Thomas and Betts (T&B), or approved substitution.
  - 3. Piping Clamps: Burndy "GAR-TC series" with two hole compression lug under U-Bolt nut, or T&B, or approved substitution.
  - 4. Grounding Screw and Pigtail: Raco No. 983 or approved substitution.
  - 5. Fastening hardware: Grade 5 silicone bronze with beveled washers. Copperplate is not acceptable
- C. Mechanical lugs or wire terminals shall be used to bond ground wires together or to junction boxes and panel cabinets and shall be manufactured by Anderson, Buchanan, Thomas and Betts Co., or Burndy.

## 2.3 WIRE

- A. Material: Stranded copper.
- B. Size: Size to meet NFPA 70 requirements as a minimum, increase size if called for on drawings, in these specifications, or as required for voltage drop.
- C. Insulated THWN (or bare as noted elsewhere).

## 2.4 GROUNDING WELL COMPONENTS

- A. Grass Non-Traffic Areas:
  - 1. Well: Minimum 12 inch long by 12 inch wide by 18 inches deep with open.
  - 2. Well Cover: High density plastic, composolite, or cast iron with legend "GROUND" embossed on cover.
  - 3. Material: Structural Plastic, composolite, or concrete.
  - 4. Manufacturer: Brooks Products 70 Series or equal by Quazite or approved substitution.
  - 5. Increase depth, diameter or size as required to provide proper access at installed location.
- B. Paving and Low Traffic Areas:
  - 1. Well: Minimum 12 inch long by 12 inch wide by 18 inches deep with open bottom.
  - 2. Well Cover: Traffic rated for use with "GROUND" embossed on cover.

3. Material: Composolite.
4. Manufacturer: Quazite or approved substitution.
5. Increase depth, diameter or size as required to provide proper access at installed location.

2.5 GROUNDING BARS/GROUND BUS (INCLUDING 'SYSTEMS' GROUND BUS/BARS AND GROUND BUS BARS)

- A. Ground bars shall be copper of the size and description as shown on the drawings. If not sized on drawings, bus bar shall be minimum 1/4" x 2" bus grade copper, spaced from wall on insulating 2" polyester molded insulator standoff/supports, and be 12" or greater minimum overall length, allowing 2" length per lug connected thereto. Increase overall length as required to facilitate all lugs required while maintaining 2" spacing. Size of bus bar used in main electrical room shall be similar except minimum of 4" high and 24" long.
- B. Provide bolt tapping lug with two hex head mounting bolts for each terminating ground conductor, sized to match conductors. Mount on bus bar at 2 inches on center spacing. Lugs to be manufactured by Burndy, T&B or approved substitution.
- C. Bus bar shall have rows of holes in accordance with NEMA Standards for specified lugs.
- D. Standoff supports to be 2" polyester as manufactured by Glastic #2015-4C or approved substitution.

PART 3 - EXECUTION

3.1 GENERAL

- A. Install products in accordance with manufacturer's instructions.
- B. Install grounding electrodes conductor, bonding conductors, ground rods, etc. with all required accessories.
- C. Grounding shall meet (or exceed as required to meet these specifications) all the requirements of the N.E.C., the NFPA, and applicable standards of IEEE.
- D. Where there is a conflict between these specifications and the above applicable codes or standards, or between this section and other specifications sections then the most stringent or excessive requirement shall govern. Where there is an omission of a code/standard requirement in these specifications then the code/standard requirements shall be complied with.
- E. Requirement in these specifications to comply with a specific code/standard article, etc. is not to be construed as deleting of requirements of other applicable codes/standards and their articles, etc.

- F. Verify that final backfill and compaction has been completed before driving rod electrodes.

### 3.2 GROUNDING ELECTRODES

- A. All connections shall be exothermic welded unless otherwise noted herein. All connections above grade and in accessible locations may be by exothermic welding or by brasing or clamping with devices UL listed as suitable for use except in locations where exothermic welding is specifically specified in these specifications or called for on drawings.
- B. Each rod shall be die stamped with identification of manufacturer and rod length.
- C. Install rod electrodes at locations indicated and/or as called for in these specifications.
- D. Ground Resistance:
  - 1. Main Electrical Service (to each building and Site) and Generator Locations:
    - a) Grounding resistance measured at each main service electrode system and at each generator electrode system shall not exceed 5 ohms.
  - 2. Lightning Protection Ground Locations:
    - a) Lightning Protection system ground locations shall not exceed 5 ohms measured at ground electrode.
  - 3. Site Distribution Counterpoise Ground Locations:
    - a) Counterpoise system ground locations shall not exceed 25 ohms measured at ground electrode.
  - 4. Other Locations:
    - a) Resistance to ground of all non-current carrying metal parts shall not exceed 25 ohms measured at motors, panels, busses, cabinets, equipment racks, light poles, transformers, and other equipment.
  - 5. Resistance called for above shall be maximum resistance of each ground electrode prior to connection to grounding electrode conductor. Where ground electrode system being measured consists of two (2) or more ground rod electrodes at each location, then the resistance specified above shall be the maximum resistance with two (2) or more rods connected together but not connected to the grounding electrode conductor.
- E. Install additional rod electrodes as required to achieve specified resistance to ground (specified ground resistance is for each ground rod location prior to connection to ground electrode conductor).

- F. Provide grounding well with cover at each rod location, with the only exception being a site distribution counterpoise ground rod. Install grounding well top flush with finished grade.
- G. Install ground rods not less than 1 foot below grade level and not less than 2 feet from structure foundation.

### 3.3 GROUND RESISTANCE AT LOCATION OTHER THAN LOCATION OF GROUNDING ELECTRODES.

- A. Resistance to ground of all non-current carrying metal parts shall not exceed 25 ohms measured at motors, panels, busses, cabinets, equipment racks, light poles, transformers, and other equipment.

### 3.4 GROUNDING ELECTRODE CONDUCTOR

- A. Conductor shall be sized to meet (or exceed requirements of Contract Documents) the requirements of NEC 250.66.

### 3.5 EQUIPMENT GROUNDING CONDUCTOR

- A. Grounding conductors shall be provided with every circuit to meet (or exceed requirements of Contract Documents) the requirements of NEC 250.122.
- B. At every voltage level, new portions of the electrical power distribution system shall be grounded with a dedicated copper conductor which extends from termination back to power source in supply panelboard.
- C. Provide separate, insulated (bare if with feeder in PVC conduit ) conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing.
- D. Except as otherwise indicated, each feeder raceway on the load side of the service entrance shall contain a ground conductor sized as indicated and where not shown shall be sized to meet (or exceed requirements of Contract Documents) the requirements of NEC 250.122. Conductor shall be connected to the equipment grounding bus in switchboards and panelboards, to the Grounding Bus in all motor control centers, and as specified, to lighting fixtures, motors and other types of equipment and outlets. The ground shall be in addition to the metallic raceway and shall be connected, using a lug device located within each item enclosure at the point of electric power connections to permit convenient inspection.
- E. Provide green insulated ground wire for all grounding type receptacles and for equipment of all voltages. In addition to grounding strap connection to metallic outlet boxes, a supplemental grounding wire and screw equal to Raco No. 983 shall be provided to connect receptacle ground terminal to the box.

- F. All plugstrips and metallic surface raceway shall contain a green insulation ground conductor from supply panel ground bus connected to grounding screw on each receptacle in strip and to strip channel. Conductor shall be continuous.
- G. Where integral grounding conductor is specified elsewhere in bus duct construction, provide equivalent capacity conductor from supply switchboard or panelboard grounding bus to the bus duct grounding conductor. Bond integral conductor to bus duct enclosure at each tap and each termination.
- H. All motors, all heating coil assemblies, and all building equipment requiring flexible connections shall have a green grounding conductor properly connected to the frames and extending continuously inside conduit with circuit conductors to the supply source bus with approved connectors regardless of conduit size or type. This shall include "Equipment By Owner" to which an electric conduit is provided under this Division.

### 3.6 MAIN ELECTRICAL SERVICE

- A. Complete installation shall meet or exceed the requirements of the NEC 250.
- B. Artificial electrodes shall be provided for the main service in sufficient number and configuration to secure resistance specified.
- C. Provide and bond to all of the following:
  - 1. Ground rods.
  - 2. Metal water pipe.
  - 3. Building metal frame, structural steel or reinforced structural concrete.
  - 4. Encased Electrodes.
  - 5. Ground ring.
  - 6. Site distribution counterpoise ground system.
  - 7. Lightning protection system.
- D. A main ground, bare copper conductor, sized per NEC Table 250.66, but in no case less than #2/0, shall be run in conduit from the main switchgear of each building to the building steel in respective building. This ground conductor shall also be run individually from the main switchgear and be bonded to the main water service ahead of any union in pipe and must be metal pipe of length and location as acceptable by authorities having jurisdiction. Provide properly sized bonding shunt around water meter and/or dielectric unions in the water pipe. Also required is the same size ground wire to ground rod electrode as called for below:
  - 1. Three 30 ft. ground rods in a delta configuration at no less than 30 ft. spacing driven to a minimum depth of 30 feet, one foot below grade.
  - 2. Bond ground rod electrodes together with a bare copper ground conductor that matches size required by NEC Table 250.66, but in no case less than #2/0.
  - 3. Provide additional rod electrodes as required to achieve specified ground resistance.
- E. Ground/bond neutral per NEC 250.

- F. A main ground, bare copper conductor, sized per applicable Table in NEC 250, but in no case less than #2/0, shall be run in conduit from the main switchgear of each building to a concrete encased electrode per NEC 250.52(3).
- G. Bond grounding electrodes to site counterpoise grounding system and lightning protection system where provided.
- H. Provide and install ground bus bar on wall near main service disconnect/switchboard. Connect to ground bar in disconnect/switchboard bonded to switchboard/disconnect enclosure/neutral with copper grounding conductor sized per NEC Table 250.66.

### 3.7 TRANSFORMER GROUNDING

- A. Ground all transformers and enclosures of 120/208V and 277/480V "separately derived systems" as specified herein.
  - 1. Ground per NEC 250 and these specifications.
  - 2. Bond neutral to transformer frame/enclosure and the equipment grounding conductors of the derived system with copper ground conductor sized per NEC Table 250.66.
  - 3. Connect transformer neutral/ground to grounding electrode per NEC 250.30 with grounding electrode conductor sized per NEC Table 250.66.
  - 4. In addition to connection to grounding electrode conductor called for above, provide supplemental grounding electrode as follows:
    - a) Where grounding required per NEC 250.30 is to building steel/structure, supplement this grounding with connection to nearest available effectively grounded metal water pipe.
    - b) Where grounding connection required per NEC 250.30 is to grounded metal water pipe, supplement with connection to building steel/structure in addition to any other available electrodes specified in NEC 250.50 and 250.52.
    - c) Where supplemental grounding electrodes required above is a ground rod electrode, provide two or more 30 ft. ground rod electrodes at no less than 30 ft. spacing, driven full length into the earth one foot below grade.
  - 5. Where neither building steel nor water pipe grounding electrodes are available (i.e. exterior locations with no available water pipe electrode) provide two (2) ground connections: each 30 ft. ground rod electrodes at not less than 30 ft. spacing, driven full length into the earth one foot below grade.
  - 6. Where transformer is mounted to exterior of building, one (1) of the two (2) ground electrodes required shall be ground rod electrode as called for in 5. above. This ground rod electrode shall also be connected to counterpoise system.
- B. Provide additional ground electrodes as required to achieve specified ground resistance.
- C. Where two or more ground electrodes are used at any required ground location, they shall be bonded together with a copper ground conductor, sized to meet NEC Table 250.66, but in no case less than #2/0.

- D. Complete installation shall meet or exceed the minimum requirements of NEC 250.
- E. Equipment ground conductors shall be provided in addition to above grounding. See 'EQUIPMENT GROUNDING CONDUCTOR', NEC 250.122.
- F. Provide ground bus bar on wall near transformer (or in associated electrical room for exterior mounted transformers). Connect to ground lug in transformer bonded to transformer enclosure/neutral with copper ground conductor sized per NEC Table 250.66.
- G. Multiple separately derived systems may be grounded as allowed in NEC 250-30(A)(4).

### 3.8 GENERATOR GROUNDING

- A. Separately derived systems (i.e. systems where generator neutral is not solidly interconnected to service supplied system neutral such as 4 pole switched neutral transfer switch systems).
  - 1. Ground per NEC 250.20, 250.30, 250.66 and these specifications.
  - 2. Bond neutral to transformer frame/enclosure and the equipment grounding conductors of the derived system with copper ground conductor sized per NEC Table 250.66.
  - 3. Connect generator neutral/ground to grounding electrodes per NEC 250.30 with grounding electrode conductor sized per NEC Table 250.66.
  - 4. In addition, provide supplemental grounding electrode as follows:
    - a) Where grounding required per NEC 250.30 is to building steel/structure, supplement with connection to nearest available effectively grounded metal water pipe.
    - b) Where grounding connection required per NEC 250.30 is to grounded metal water pipe, grounding with connection to other electrodes specified in NEC 250.50 and 250.52.
    - c) Where supplemental grounding electrode required above is a ground rod electrode, provide two or more 30 ft. ground rod electrodes at no less than 30 ft. spacing, driven vertical to a minimum depth of 30 ft. plus 1 foot below grade.
  - 5. Where neither building steel nor water pipe grounding electrodes are available provide two (2) ground connections: each to two (2) or more 30 ft. ground rod electrodes at no less than 30 ft. spacing, driven vertical to a minimum depth of 30 ft. plus 1 foot below grade.
  - 6. Where generator is mounted to exterior of building, one (1) of the two (2) ground electrodes required shall be ground rod electrode as called for in Paragraph 3.8 A.5. This ground rod electrode shall also be connected to counterpoise system.
- B. Provide additional ground electrodes as required to achieve specified ground resistance.



- C. Where two or more ground electrodes are used at any one required ground location, they shall be bonded together with a copper ground conductor, sized to meet NEC Table 250.66, but in no case less than #2/0.
- D. Complete installation shall meet or exceed the minimum requirements of NEC 250.
- E. Equipment ground conductors shall be provided in addition to above grounding. See 'EQUIPMENT GROUNDING CONDUCTOR'.

### 3.9 LIGHTNING PROTECTION SYSTEMS

- A. Ground per Section 26 41 13 – Lightning Protection for Structures, NFPA 780, and as specified herein. The most stringent requirements shall govern.
- B. Bond lightning protection system grounds to electrical service system ground, and counterpoise system ground where provided.

### 3.10 EXTERIOR GRADE (OR FREE STANDING ABOVE GROUND) MOUNTED EQUIPMENT

- A. General:
  - 1. All equipment mounted exterior to building shall have their enclosures grounded directly to a grounding electrode at the equipment location in addition to the building equipment ground connection.
  - 2. Bond each equipment enclosure, metal rack support, mounting channels, etc. to ground electrode system at each rack with an insulated copper ground conductor sized to match the grounding electrode conductor required by NEC Table 250.66 based on equipment feeder size, but in no case shall conductor be smaller than #6 copper or larger than #2 copper. This connection is in addition to grounding electrode connections required for services.
- B. Main electrical service rack mounted equipment.
  - 1. Ground per "MAIN ELECTRICAL SERVICE".
  - 2. Bond all metal parts as noted in this section.
- C. Electrical sub service rack mounted equipment.
  - 1. Ground per "MAIN ELECTRICAL SERVICE", except do not bond neutral to ground.
  - 2. Bond all metal parts as noted in this section.
- D. Electrical equipment connection rack mounted equipment.
  - 1. Bond all metal parts as noted in this section.
- E. Grounding electrodes (ground electrodes system) shall be:

1. Located at each rack location.
2. For service equipment: Ground electrode required per "MAIN ELECTRICAL SERVICE".
3. For equipment connection: Two or more 30 ft. ground rods at no less than 30 ft. spacing, driven vertical to a minimum depth of 30 ft. plus 1 ft. below grade. Bond ground rods together with a size to meet NEC Table 250.66, but no less than a #2 copper ground conductor. Provide additional rod electrodes as required to achieve specified ground resistance.

F. Complete installation shall meet or exceed the minimum requirements of NEC 250 and, when applicable, NFPA 78.

### 3.11 ROOF MOUNTED EQUIPMENT

A. Bond all roof mounted electrical equipment to lightning protection system (when provided) per NFPA 780.

### 3.12 LIGHTING FIXTURES

A. All new and reinstalled fixtures shall be provided with green grounding conductor, solidly connected to unit. Individual fixtures grounds shall be with lug to fixture body, locate at point of electrical connection to the fixture unit.

B. All suspended fixtures and those supplied through flexible metallic conduit shall have green ground conductor from outlet box to fixture. Cord connected fixtures shall contain a separate green ground conductor.

C. Pole Light Fixtures:

1. Metal Pole Light Fixtures:

- a) Freestanding pole mounted lighting fixtures shall each have a - Class I or Class II Materials - lightning protection main copper down conductor connected to grounding electrodes at base of pole.
- b) Conductor shall be bonded to metal pole via UL Listed ground clamp suitable for use. Locate ground lug opposite to handhole (or adjacent if visible through handhole).

2. Concrete or Non-Metallic Pole:

- a) Freestanding pole mounted lighting fixtures shall each have a Class I or Class II lightning protection main copper down conductor connected to grounding electrodes at base of pole.
- b) Conductor shall be extended from grounding electrode to top of pole and terminate at the top of pole in a Class I or Class II copper lightning protection air terminal.
- c) Each metal part of light fixture assembly, bracket, ballast cabinet, disconnect, transformer, etc. that is mounted to pole shall be bonded to down conductor.

3. Fixtures located on elevated roadway ramps: provide with a connection to lightning counterpoise grounding system.
4. Grounding electrode(s) at each pole shall be bonded to site distribution counterpoise system.
5. Grounding Electrodes:
  - a) Two or more 30 ft. ground rods at no less than 30 ft. spacing shall be driven full length into the earth one foot below grade.
  - b) Bond ground rod electrodes together with a Class I or Class II lightning protection main copper conductor.
  - c) Provide additional rod electrodes as required to achieve specified ground resistance.
  - d) Two (2) or more grounding rod electrodes shall be installed at each light pole.
6. Installation shall exceed minimum requirements of NFPA 780.

### 3.13 PULLBOX, MANHOLE, HANDHOLE GROUNDING.

- A. One 30 ft. ground rod electrode shall be driven vertically to a minimum depth of 30 ft. plus 1 ft. below grade in each manhole, handhole or pullbox (in ground).
- B. The complete installation shall exceed the minimum requirements of the NEC.
- C. Provide additional ground rod electrodes as required to provide resistance called for herein.
- D. Bond grounding electrode to all exposed metal parts of manhole, handhole, pullbox (including metal cover) with #6 copper ground conductor. Connect to ground rod electrode with exothermic weld. Connect to metal cover with exothermic weld. Connect to other metal parts with exothermic weld or UL approved grounding clamp. Provide minimum 3 ft. slack ground cable on cover connection to facilitate removal of cover.

### 3.14 HAZARDOUS LOCATIONS

- A. Grounding in hazardous locations shall be done in accordance with applicable portions of Articles 500, 501, 502, 503, 511 and 514 of the National Electrical Code.

### 3.15 GROUND RING

- A. Provide complete underground building perimeter ground ring system, completely encircling building.
- B. Install minimum 2-1/2 feet depth into earth.
- C. Install ground rods (minimum 30 ft. long) every 150 feet section of ground ring conductor.

- D. Bond ground ring to building steel every 150 feet of building perimeter, bond to any and all electrical and piping systems that cross the ground ring system, bond to lightning protection down conductors and to any lightning or other earth grounding electrodes that may be present on the premises.
- E. Bond to building service.

### 3.16 MISCELLANEOUS GROUNDING CONNECTIONS

- A. Provide bonding to meet regulatory requirements.
- B. Required connections to building steel shall be with UL approved non-reversible crimp type ground lugs exothermically welded to bus bar that is either exothermically welded to steel or bolted to steel in locations where weld will affect the structural properties of the steel.
- C. Install grounding conductors to permit shortest and most direct path from equipment to ground; install in conduit; bond to conduit at both ends when conduit is metal; have connections accessible for inspection; and made with approved solderless connectors brazed (or bolted) to the equipment ground; in NO case be a current carrying conductor; have a green jacket unless it is bare copper; be run in conduit with power and branch circuit conductors. The main grounding electrodes conductor shall be exothermically welded to ground rods, water pipe, and building steel.
- D. All surfaces to which grounding connections are made shall be thoroughly cleaned to maximum conductive condition immediately before connections are made thereto. Metal rustproofing shall be removed at grounding contact surfaces, for 0 ohms by digital Vm. Exposed bare metal at the termination point shall be painted.
- E. All ground connections that are buried or in otherwise inaccessible locations, shall be welded exothermically. The weld shall provide a connection which shall not corrode or loosen and which shall be equal or larger in size than the conductors joined together. The connection shall have the same current carrying capacity as the largest conductor.
- F. Install ground bushings on all metal conduits entering enclosures where the continuity of grounding is broken between the conduit and enclosure (i.e. metal conduit stub-up into a motor control center enclosure or at ground bus bar). Provide an appropriately sized bond jumper from the ground bushing to the respective equipment ground bus or ground bus bar.
- G. Each feeder metallic conduit shall be bonded at all discontinuities, including at switchboards and all subdistribution and branch circuit panels with conductors in accordance with Table 250.122 of NEC for parallel return with respective interior grounding conductor.
- H. Grounding provisions shall include double locknuts on all heavywall conduits.
- I. Install grounding bus in all existing panelboards of remodeled areas, for connection of new grounding conductors, connected to an approved ground point.

- J. Bond together reinforcing steel and metal accessories in pool and fountain structures and bond to electrical system per NEC.
  - K. Where reinforced concrete is utilized for building grounding system, proper reinforced bonding shall be provided to secure low resistance to earth with "thermite" type devices, and #10AWG wire ties shall be provided to not less than ten (10) full length rebars which contact the connected rebar. Provide size and length of rod to meet NEC requirements.
- 3.17 GROUNDING BAR/GROUND BUS (INCLUDING 'SYSTEMS' GROUND BUS/BAR ON GROUND BUS/BAR) INSTALLATION
- A. Where indicated on the drawings, provide grounding bar/ground bus (bus bar). Metal sheaths of underground cables are also to be grounded thereto at points of building entrance.
  - B. Mount bolt tapping lugs with hex head bolts to bus bar at 2" o.c. spacing, one for each ground conductor.
  - C. Mount bus bar to wall using 2" polyester molded insulator stand-off.
  - D. Extend a #2/0 (minimum size) or larger THWN insulated copper ground conductor (if larger size is called for on drawings or required by N.E.C. for service ground, etc.) in PVC conduit to approved service ground installation or ground bus/bar in main service equipment enclosure.
  - E. Extend #6 insulated copper ground wire from respective bus/bar to each 'local' ground bus/bar in each cabinet for system.
  - F. 'SYSTEMS' grounding bus/bar must be connected with #2/0 insulated copper conductor to grounding electrodes system as defined in NEC "Article 800-40(b).
- 3.18 TESTING AND REPORTS
- A. Raceway Continuity: Metallic raceway system as a component of the facilities ground system shall be tested for electrical continuity. Resistance to ground throughout the system shall not exceed specified limits.
  - B. Ground resistance measurements shall be made on each system utilized including:
    - 1. Building structural steel.
    - 2. Driven grounding system.
    - 3. Water pipe grounding system.
    - 4. Other approved systems.
  - C. Ground resistance measurements shall be made in normally dry weather, not less than 24 hours after rainfall, and with the ground under test isolated from other grounds and equipment. Resistances measured shall not exceed specified limits.

- D. Upon completion of testing, the testing conditions and results shall be certified by the Contractor and submitted to the Designer as called for in Section 26 00 90 - Test and Performance Verification.

### 3.19 INTERFACE WITH OTHER PRODUCTS

- A. Interface with site grounding system.
- B. Interface with lightning protection system installed under Section 26 41 13.

### 3.20 FIELD QUALITY CONTROL

- A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.
- B. Use suitable test instruments to measure resistance to ground of system. Perform testing in accordance with test instrument manufacturer's recommendations using the fall- of-potential method.

END OF SECTION SP-109S-26 05 26

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SECTION SP-109S-26 05 29 – HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Contractual Conditions and Division 01 Specification sections apply to this section.

1.2 SUMMARY

- A. This section includes the requirements for provision and installation of supporting devices.

1.3 DESCRIPTION

- A. Furnish and install all supports, anchors, fasteners, hangers and inserts required to mount fixtures, conduit, cables, pullboxes and other equipment furnished under this Division.

1.4 REFERENCES AND REGULATORY REQUIREMENTS

- A. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.
- B. Conform to the requirements of the following:
  - 1. NECA - National Electrical Contractors Association.
  - 2. ANSI/NFPA 70 - National Electrical Code.

1.5 SUBMITTALS

- A. Submit catalog cut sheet showing brand of conduit supporting hardware to be used and (where applicable) showing that conduit supporting hardware is UL listed and labeled, and manufactured in the United States.
- B. Submit catalog cut sheet on all types of conduit support fittings, hardware, straps, and hangers.
- C. Product data shall be submitted for approval on:
  - 1. Mounting hardware and inserts.
  - 2. Conduit straps, hangers and fittings.
  - 3. Supporting channel.



- D. Product data shall prove compliance with Contract Documents, National Electric Code, National Board of Fire Underwriters, manufacturer's specifications and written installation data.
- E. Submit shop drawing showing routing and location of all conduit racking systems. Provide coordination drawings.

## PART 2 - PRODUCTS

### 2.1 PRODUCT REQUIREMENTS

- A. Materials and Finishes: Provide corrosion resistance.
- B. Provide materials, sizes, and types of anchors, fasteners and supports to carry the loads of equipment and conduit. Consider weight of wire in conduit when selecting products.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Provide anchors, fasteners, and supports in accordance with NECA "Standard of Installation."
- C. Do not fasten supports to pipes, ducts, mechanical equipment, and conduit.
- D. Do not use spring steel clips and clamps and metal banding straps.
- E. Do not fasten supports to sides or bottom of pre-cast structural beams.
- F. Obtain permission from RPR before drilling, or cutting structural members.
- G. Fabricate supports from structural steel or steel channel. Rigidly weld members or use hexagon head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.
- H. Install surface-mounted cabinets and panelboards with minimum of four anchors.
- I. In wet and damp locations use stainless steel channel supports to stand cabinets and panelboards one inch (25) mm) off wall.
- J. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.

- K. All items shall be supported from the structural portion of the building, except standard ceiling-mounted lighting fixtures. Small devices may be supported from ceiling system where permitted by ceiling system manufacturer, however, no sagging of the ceiling will be permitted. Wire shall not be used as a support. Boxes and conduit shall not be supported or fastened to ceiling suspension wires or to ceiling channels.
- L. Lay out and install work in advance of the laying of floors or walls, and provide all sleeves that may be required for openings through floors, walls, or other assemblies. Where plans call for conduit to be run exposed, provide all inserts and clamps for the supporting of conduit.
- M. All conduits shall be securely fastened in place on maximum of 8 foot intervals. Hangers, supports or fastenings shall be provided at each elbow and at the end of each straight run terminating at a box or cabinet. The use of perforated iron for supporting conduits will not be permitted. The required strength of the supporting equipment and size and type of anchors shall be based on the combined weight of conduit, hanger and cables. Horizontal and vertical conduit runs may be supported by one-hole malleable straps, clamp-backs, or other approved devices with suitable bolts, expansion shields (where needed) or beam-clamps for mounting to building structure or special brackets.
- N. Where two or more conduits are ran parallel or in a similar direction, they shall be grouped together and supported by means of 1½" x 1½", 12 gauge, pre-galvanized zinc (B-Line or approved substitution), conduit channel trapeze hanger system (racking) consisting of concrete inserts, threaded rods, washers, double nuts for each rod, locknut washers and galvanized "L" angle iron, or Unistrut cross members. Where galvanized "L" angle iron is used, conduits shall be individually fastened to the cross members with malleable iron hangers listed and approved for use on "L" angle iron, bolted with proper size cadmium machine bolts, washers and nuts. Conduits supported to unistrut channel shall be individually fastened with two piece unistrut straps with bolts and nuts listed and approved for such use. Mineralak hangers or one hole type straps fastened to Kindorf racking is not acceptable. Beam clamps shall be malleable iron. All single panelboard, switchboard and motor control center feeder raceway runs shall be supported by means of a trapeze channel hanger support system with provisions for future as specified.
- O. All hangers and mounting hardware clamps shall be made of durable material suitable for the application involved. Where excessive corrosive conditions or exterior and damp conditions are encountered, hanger assemblies shall be malleable iron or protected after fabrication by hot dipped galvanizing and where written approval is authorized by the RPR, special paint or other suitable preservative methods may be used.
- P. On concrete or brick construction, an electric or hand drill shall be used for drilling holes for all inserts in brick, concrete or similar construction. In brick, inserts shall be near center of brick, not near edge or in joint. Where steel members occur, same shall be drilled and tapped, and round head machine screws shall be used. All screws, bolts and washers used for supporting conduit or outlets shall be fabricated from rust-resisting metal. Self-tapping power driven fasteners are acceptable on block or brick construction only. Plastic anchors are not acceptable.
- Q. Spring type conduit clip devices are not acceptable for conduit support.

- R. Threaded rod hangers shall be galvanized continuous thread type, minimum 3/8" diameter. Increase size as required to support assembly. Bending of rod hangers is not permitted.
- S. Concrete anchors, thread rods, or similar fasteners installed on side or bottom of pre-stressed beams are not acceptable.
- T. Group related conduits; support using conduit rack. Construct rack using steel channel in dry locations and galvanized channel or aluminum channel in damp or wet locations (minimum of 24", increase, distance as required for quantity of conduits and spare capacity) provide space on each rack for Building Automation Systems (BAS) raceways and 25 percent additional conduits. Group conduits on channel racking adjacent to each other at one side, allowing all remaining unused space as spare capacity. Spacing between conduits shall not exceed 1" unless written permission is granted by RPR.
- U. Each rack shall be provided with minimum of two (2) threaded rod hangers located at the ends of the channel. Increase number of hangers as required to support the assembly.
- V. Rack Mounted Equipment: Use channel support system for all rack mounted equipment including all free standing rack mounted equipment. Exterior rack support system to be stainless steel channel. See details on drawings where available. Exterior units shall be thoroughly inspected after installation.

END OF SECTION SP-109S-26 05 29

SECTION SP-109S-26 05 31 - PULL AND JUNCTION BOXES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Contractual Conditions and Division 1 Specification sections apply to this section.

1.2 SUMMARY

- A. This section includes the requirements for provision and installation of pull and junction boxes.

1.3 DESCRIPTION

- A. Provide and install all equipment, labor, material, accessories, and mounting hardware for a complete and operating distribution system.
- B. Install pull and junction boxes as shown on drawings or as required by the National Electric Code (NEC).
- C. Install pull and junction boxes wherever required for a complete and operating distribution system whether shown on drawings or not.
- D. Where outlet boxes are used for pull or junction boxes, they shall meet the requirements of the outlet box section of these specifications.

1.4 SUBMITTALS

- A. Submit product data on all pull boxes showing.
  - 1. Covers.
  - 2. Dimensions - inside and out.
  - 3. Rating of concrete or gauge of metal.
  - 4. Manufacturer.

## 1.5 PROJECT AS-BUILT DOCUMENTS

- A. Record actual locations and mounting heights of pull and junction boxes.

## 1.6 REFERENCES AND REGULATORY REQUIREMENTS

- A. Furnish products listed and classified by Underwriters Laboratories, Inc. and requirements of NEC as suitable for purpose specified and shown.
- B. Conform to requirements of the following:
  - 1. ANSI/NEMA FB 1 - Fittings and Supports for Conduit and Cable Assemblies.
  - 2. ANSI/NEMA OS 1 - Sheet-steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
  - 3. ANSI/NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports.
  - 4. ANSI/NFPA 70 - National Electrical Code.
  - 5. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

## 1.7 PROJECT CONDITIONS

- A. Verify field measurements shown on Drawings.
- B. Verify locations of pull and junction boxes prior to rough-in.
- C. Electrical boxes are shown on drawings in approximate locations unless dimensioned. Install at location required for box to serve intended purpose and to maintain required access.

## PART 2 - PRODUCTS

### 2.1 GENERAL

- A. Dimensions of pull and junction boxes shall meet dimensions shown on drawings or dimensions required by NEC, whichever is largest.
- B. Standard 25 cubic inch pull boxes shall meet the requirements of these specifications for outlet boxes as a minimum.
- C. All boxes of 100 cubic inches or more shall be constructed of 14 gauge steel with hot dip galvanized coating.

2.2 SHEET METAL BOXES:

- A. NEMA OS 1, galvanized steel.
- B. Pull and junction boxes (not in-ground type) used for systems (Sections 16700-16799) larger than 25 square inches shall be hinged cover type with flush latches operated with screwdriver.
- C. Large Pull Boxes: Boxes larger than 400 cubic inches in volume or 20 inches in any dimension:
  - 1. Use hinged enclosure under provisions of Section 16160 Cabinets and Enclosures.
- D. Exterior, damp location and wet location pull and junction boxes shall be NEMA 4x stainless steel.

2.3 SURFACE-MOUNTED CAST METAL BOX:

- A. NEMA 250, Type 4; flat-flanged, surface-mounted junction box.
- B. Material: Cast aluminum.
- C. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover screws.
- D. Provide all hubs as required for conduit connections.

2.4 IN-GROUND PULL BOXES:

- A. Material: Pre-cast concrete.
- B. Bottom: Open with 6" of gravel for drainage.
- C. Cover: Meet Florida Dept. of Transportation requirements for heavy traffic.
- D. Solid sides constructed to facilitate conduit entries.

PART 3 - EXECUTION

3.1 GENERAL

- A. Install per NEC.
- B. Install electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.

- C. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
- D. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches (150 mm) from ceiling access panel or from removable recessed luminaire.
- E. Install boxes to preserve fire resistance rating of partitions and other elements.
- F. Align adjacent wall-mounted boxes with each other.
- G. Use flush mounting boxes in finished areas.
- H. Do not install flush mounting boxes back-to-back in walls; provide minimum 6 inch separation. Provide minimum 24 inches separation in acoustic rated walls.
- I. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- J. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- K. Pull and junction boxes larger than 25 square inches shall be supported with (2) all-thread rod hangers minimum. Increase quantity and size of all-thread rod hangers as required for application, and to eliminate movement and swaying.
- L. Do not fasten boxes to ceiling support wires.
- M. Support boxes independently of conduit.
- N. Pull boxes shall be installed in straight runs of conduit only. Pull boxes shall not be used in place of a conduit bend.

### 3.2 IN GROUND PULL BOXES

- A. Provide and install ground rod in each pull box. Connect #2 copper ground wires (counterpoise) to ground rod, run out pullbox 6" over conduits to next pull box; tie to respective building electrical ground rod at each building.
- B. Install pull boxes flush with finished grade. Provide extensions as required.

### 3.3 INTERFACE WITH OTHER PRODUCTS

- A. Coordinate locations and sizes of required access doors.
- B. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.

### 3.4 ADJUSTING

- A. Install knockout closure in unused box opening.

END OF SECTION SP-109S-16133



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SECTION SP-109S-26 05 33.02 – WIREWAY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Contractual Conditions apply to this section.

1.2 SUMMARY

- A. This section includes requirements for provisions and installation of wireway(s).

1.3 DESCRIPTION

- A. Provide and install all equipment, labor, material, accessories and mounting hardware for a complete and operating wireway system for distribution and support of cables, installed in place.
- B. Wireway shall include all supporting devices and equipment specified, with necessary interconnections, and accessories required for installation.

1.4 SUBMITTALS

- A. Product Data: Provide dimensions, materials, fabrication details, finishes and accessories.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with NECA Standard of Installation.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this Section with minimum three years experience.

1.7 REGULATORY REQUIREMENTS

- A. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.
- B. Conform to the following:

1. ANSI/NFPA 70 - National Electrical Code.
2. NECA - National Electrical Contractor's Association, Standard of Installation.

#### 1.8 STORAGE, AND HANDLING

- A. Store, protect, and handle Products per manufacturer's recommendations.

### PART 2 - PRODUCTS

#### 2.1. MANUFACTURER

- A. Hoffman Engineering Company or approved substitution.

#### 2.2. DESCRIPTION

- A. General Purpose, Horizontal, lay-in type.
  1. Nema 1, interior dry location.
  2. Nema 3R, interior damp location.
  3. Nema 4X stainless steel, Interior wet location and exterior locations.

#### 2.3. KNOCKOUTS

- A. Wireway sides and bottom shall contain no knock-outs.
- B. Only punch holes required.

#### 2.4. SIZE

- A. As indicated on Drawings.

#### 2.5. MATERIAL

- A. Covers and bodies shall be 16 gauge steel.
- B. Cover shall be hinge type with quarter turn fasteners to hold cover shut.

#### 2.6. FINISH

- A. Rust inhibiting primer coating with gray enamel finish factory painted.

PART 3 - EXECUTION

3.1. INSPECTION

- A. Examine area to receive wireway to assure adequate clearance for installation.
- B. Start work only after unsatisfactory conditions are corrected.

3.2. INSTALLATION

- A. Install wireway in accordance with manufacturer's written instructions, NEC, NEMA, and NECA.
- B. Use flat-head screws, clips, and straps to fasten raceway to surfaces. Mount plumb and level.
- C. Use suitable insulating bushings and inserts at connections.
- D. Use threaded hubs at conduit terminations, at wet locations.
- E. Wireway Supports: Provide channel as specified in Division 26.
- F. Close ends of wireway and unused conduit openings.
- G. Ground and bond wireway under provisions of Division 26.

3.3. PAINTING

- A. Paint wireway as directed in field by Designer (i.e. paint on top of factory painting).

END OF SECTION SP109S-16119

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SECTION SP-109S-26 05 33.13 – CONDUIT FOR ELECTRICAL SYSTEMS

PART 1- GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Contractual Conditions and Division 01 Specification sections apply to this section.

1.2 SUMMARY

- A. This section includes the requirements for provision and installation of conduit for electrical systems.

1.3 DESCRIPTION

- A. Provide and install all equipment, labor, material, accessories, and mounting hardware for a complete and operating system for the following:
  - 1. Rigid Metallic Conduit (RMC)
  - 2. PVC coated Metal Conduit.
  - 3. Flexible metal conduit (FMC)
  - 4. Liquidtight flexible metal conduit (LFMC)
  - 5. Electrical metallic tubing (EMT)
  - 6. Rigid non-metallic conduit (PVC) (RNC)
  - 7. Fittings and conduit bodies.
- B. Raceways and conduits shall begin at an acceptable enclosure and terminate only in another such enclosure except conduit/raceway stub-outs.
- C. A raceway shall be provided for all electrical power, lighting and electrical systems.
- D. Where the Contract Documents refer to the terms "raceway," or "conduit" the materials shall be as listed above in conjunction with NEC article 100, definition of "raceway". MC and HCF flexible metal cables shall not be considered a substitute for raceway or conduit.

1.4 SUBMITTALS

- A. Submit catalog cut sheet showing brand of conduit to be used and showing that conduit is UL listed and labeled, and manufactured in the United States.
- B. Submit catalog cut sheet on all types of conduit bodies, and fittings.
- C. Submit product data on:

1. Conduits.
  2. Conduit straps, hangers and fittings.
  3. PVC solvent(s) and bending box.
  4. Fitting entering and leaving the ground or pavement.
  5. Cables
  6. Expansion/deflection fittings.
- D. Submit UL listed fire and smoke stopping assemblies for each applicable application. Provide details from UL Fire Directory and manufacturers' corresponding product data and details.
- E. Product data shall prove compliance with Specifications, National Electrical Code, National Board of Fire Underwriters, manufacturer's specifications and written installation data.

#### 1.5 PROJECT AS-BUILT DOCUMENTS

- A. As-built documents shall accurately record actual routing of conduits.

#### 1.6 REFERENCE AND REGULATORY REQUIREMENTS

- A. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.
- B. Conform to the following:
1. NFPA 70 - National Electrical Code (NEC).
  2. ANSI C80.1 - Electrical Rigid Steel Conduit (ERSC).
  3. ANSI C80.3 - Electrical Metallic Tubing (EMT).
  4. ANSI/UL 651 - Rigid Non Metallic Conduit (PVC)
  5. ANSI/NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing (EMT) and Cable.
  6. NECA "Standard of Installation."
  7. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit (IMC).
  8. NEMA TC 3 - Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing.
  9. ANSI/Fed. Spec. J-C-30B - Flexible Metal Cables, Galvanized steel jacket.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.
- B. Protect PVC conduit from sunlight.

## 1.8 PROJECT CONDITIONS

- A. Verify that field measurements are as shown on Drawings.
- B. Verify routing and termination locations of conduit prior to rough-in.
- C. Conduit routing is shown on Drawings in approximate locations unless dimensioned. Route as required to complete wiring system.
- D. Conductors with different voltages (i.e. 120 volt and 277 volt) shall not be combined in the same conduit without prior written approval from RPR and Engineer.
- E. Conductors for each branch of power (Normal, Life safety, Critical, Security, and Equipment) shall be installed in its' own dedicated raceway system.

## PART 2 - PRODUCTS

### 2.1 GENERAL

- A. All conduits shall bear UL label (or other nationally recognized testing agency).
- B. Conduit systems and all related fittings, boxes, supports, and hangers must meet all the requirements of national, state, requirements and all related FAA codes and other Federal codes where applicable.

### 2.2 MINIMUM TRADE SIZE

- A. Power/Lighting Homeruns 3/4"
- B. Power/Lighting Branch Circuits Between Devices 1/2"
- C. Systems Conduit 1"
- D. Flexible and Seal-tite metallic conduit – 1/2"C (maximum 6 ft. long).

### 2.3 RIGID METAL CONDUIT

- A. Comply with:
  - 1. ANSI C80.1
  - 2. UL 6
  - 3. NEC
  - 4. Fed. Specification WW-C-581e.
- B. Conduit material:
  - 1. Hot-dipped galvanized steel.



C. Fittings:

1. Threaded.
2. Insulated bushings shall be used on all rigid metal conduits terminating in panels, boxes, wire gutters, or cabinets, and shall be impact resistant plastic molded in an irregular shape at the top to provide smooth insulating surface at top and inner edge. Material in these bushings must not melt or support flame.
3. Hot-dipped galvanized malleable iron or steel manufactured in accord with ANSI C80.4.

D. Conduit Bodies:

1. Comply with ANSI/NEMA FB 1.
2. Threaded hubs.
3. Hot-dipped galvanized malleable iron.

2.4 PVC COATED METAL CONDUIT

A. Comply with:

1. UL6
2. ANSI C80.1
3. NEC
4. NEMA RN1
5. Fed. Specification WW-C-581E.

B. Conduit material: Hot-dipped galvanized rigid steel with external PVC coating, 20 mil. thick.

C. Fittings:

1. Threaded.
2. Insulated bushings on terminations.
3. Hot-dipped galvanized malleable iron or steel with external PVC coating, 20 mil. thick.

D. Conduit bodies:

1. Comply with:
  - a. ANSI/NEMA FB 1
  - b. Threaded hubs
  - c. Hot-dipped galvanized malleable iron.

2.5 FLEXIBLE METAL CONDUIT

A. Comply with:

1. NEC
2. ANSI/UL 1

3. Fed. Specification WW-C-566
- B. Conduit material: Hot-dip galvanized Steel, interlocked.
- C. Fittings:
  1. ANSI/NEMA FB 1
  2. ANSI/UL 514B
  3. Malleable iron, zinc plated.
  4. Direct flexible conduit bearing set screw type not acceptable.
  5. Insulated throat on terminations.
  6. Compression EMT to flexible conduit coupling is not acceptable unless special written permission is granted by RPR.
  7. Comply also with Fed. Specification W-F-406

## 2.6 LIQUID-TIGHT FLEXIBLE METAL CONDUIT

- A. Comply with:
  1. NEC
  2. ANSI/UL 360
- B. Conduit material:
  1. Flexible hot-dipped galvanized steel core, interlocked.
  2. Continuous copper ground, built into core up to 1-1/4" size.
  3. Extruded polyvinyl gray jacket.
- C. Fittings:
  1. Threaded for IMC/rigid conduit connections.
  2. Approved for hazardous locations where so installed.
  3. Provide sealing washer in wet/damp locations.
  4. Compression type.
  5. ANSI/NEMA FB 1.
  6. ANSI/UL 5148.
  7. Hot-dipped galvanized malleable iron or steel.
  8. Insulated throat on terminations.
  9. Comply with Fed. Specification W-F-406.
  10. Connections to vibrating equipment and transformers.
    - a. Connectors to have wire mesh conduit grip.

## 2.7 ELECTRICAL METAL CONDUIT

- A. Comply with:
  1. U.L 797
  2. ANSI C80.3

3. NEC
4. ANSI/UL797
5. Fed. Specification WWC-563

B. Conduit material: Hot-dip Galvanized steel tubing (Electrogalvanized zinc is not acceptable).

C. Fittings:

1. ANSI/NEMA FB 1
2. Compression type.
3. Insulated throat on terminations.
4. Hot-dipped galvanized malleable iron or steel.
5. Fed. Specification W-F-408.

## 2.8 RIGID NON-METALLIC CONDUIT (PVC)

A. Comply with:

1. NEMA TC-2
2. UL 651
3. NEC
4. Fed. Specification WC1094A.

B. Conduit material:

1. Shall be high impact P.V.C. - tensile strength 55 PSI, flexural strength 11000 PSI.

C. Fittings:

1. Comply with: NEMA TC-3 and UL 514.

D. General:

1. Shall be UL listed.
2. Fittings and elbows shall be by the same manufacture as conduit.

## 2.9 EXPANSION FITTINGS

A. Expansion/deflection fittings shall be:

1. Listed, hot dipped galvanized inside and outside providing a 4" expansion chamber and deflection (where applicable) when used with rigid conduit, intermediate metal conduit and electrical metallic conduit, or:
2. U.L. Listed, polyvinyl chloride providing a minimum 6" expansion chamber when used with non-metallic conduit (PVC), and shall meet the requirements of and as specified elsewhere for non-metallic conduit. Provide fittings as specified above for expansion/deflection conditions.

3. Hot dipped galvanized expansion and deflection (where applicable) fitting shall be provided with an external braided grounding and bonding jumper with approved clamps, UL Listed for the application.
4. Expansion fitting, UL Listed for the application and in compliance with the National Electrical Code without the necessity of an external bonding jumper may be considered. Submit fitting with manufacturer's data and UL Listing for approval prior to installation.

## PART 3 - EXECUTION

### 3.1 LOCATION REQUIREMENTS

#### A. Underground Installations:

1. Use Schedule 40 thickwall nonmetallic conduit only unless local authority having jurisdiction or applicable codes/utility requirements, etc. require rigid steel conduit.
2. Encase conduit in a concrete envelope of not less than 3" thickness on all sides and not less than 1-1/2" between conduits (where more than one conduit is installed together) for:
  - a. All conduits installed under roads, taxiways, and runways.
  - b. All conduits installed for primary electric circuits, main feeders, and data/communications systems (i.e. Telephone, data, parking revenue, radio, flight information, air traffic control systems, security, fiber optic).
3. All conduits or elbows entering or leaving any slab or the ground shall be rigid steel conduit coated with asphalt paint.
4. Where rigid metallic conduit is installed underground as noted above it shall be coated with waterproofing black mastic before installation, and all joints shall be re-coated after installation.
5. All PVC runs over 100 ft. in length shall utilize rigid steel 90° elbows at each horizontal change in direction. All PVC risers shall utilize rigid steel 90° elbows. Elbows shall be coated with black mastic or PVC coating. Bond all metal elbows per NEC.
6. Underground raceway systems shall conform to all national, state, local and FAA regulations, in general and Article 300, Section 300.5 of the National Electrical Code specifically.
  - a. Depth of conduits shall be not less than 18" with the following exceptions:
    - 1) Conduits installed in concrete floors of buildings to have a minimum concrete cover not less than 2".
    - 2) Conduits passing under taxiways, runways, ramps, holding areas, and docking areas, must be installed below the concrete pour, in the sub base, and shall be encased in not less than 3" of concrete, the specifications of which shall meet the same standards required for runways and taxiways except that slump shall be 3 to 4 inches.

7. Verify finished lines in areas where raceways will be installed underground before the grading is complete.
- B. In Slab, Above or On Grade:
1. Use coated rigid steel conduit, coated intermediate metal conduit (if approved) or thickwall nonmetallic conduit.
  2. In slab conduit is permitted only where written consent is granted by Architect and Structural Engineer, regardless of that shown or noted by drawings. Install as directed by Architect/Structural Engineer.
- C. Penetration of Slab:
1. Exposed Location:
    - a. Where penetrating a floor in an exposed location from underground or in slab, a black coated galvanized rigid steel conduit shall be used.
  2. Concealed Location:
    - a. Where penetrating a floor in a location concealed in block wall and acceptable by applicable codes, non-metallic conduit may be used up to first outlet box, provided outlet box is at a maximum height of 40" above finished floor.
    - b. Where penetrating a floor from underground or in slab, a coated galvanized rigid steel conduit shall be used.
- D. Outdoor Location:
1. Above Grade:
    - a. Where penetrating the finished grade, a coated galvanized rigid steel conduit shall be used.
    - b. All exterior conduit runs shall be rigid conduit and threaded connectors as specified elsewhere.
    - c. All areas subject to exterior conditions such as overhangs, galvanized rigid steel conduit shall be used.
  2. Roofs:
    - a. Conduit is not to be installed on roofs, without written authorization by RPR for specific conditions.
    - b. When approved by written authorization conduit shall comply with the following:
      - 1) Be PVC coated rigid galvanized metal conduit.
      - 2) All fittings, etc. are to be PVC coated.
      - 3) Conduit shall be supported above roof at least 6 inches using approved conduit supporting devices. Refer to applicable roofing specifications.
      - 4) Fasten supports to roof per roofing manufacturer's recommendations.

3. Cooling Towers:

- a. Conduit installed at cooling towers shall be PVC coated rigid galvanized conduit.

E. Interior Dry Locations:

1. Concealed:

- a. Use rigid galvanized steel and electrical metallic tubing. Thickwall non-metallic conduit (PVC) may be used inside block walls up to first outlet to a maximum of 40" A.F.F. except where prohibited by the NEC.

2. Exposed:

- a. Use rigid galvanized steel and electrical metallic tubing. EMT may only be used where not subject to damage which is interpreted by this specification to be above 96" AFF and exiting the top of panelboards, terminal cabinets, and control panels.

3. Concealed or exposed flexible conduit:

- a. Concealed: Flexible steel conduit or seal tight flexible steel conduit shall be in lengths not longer than six (6) feet in length with a ground conductor firmly attached to the terminating fitting at the extreme end of the flex. Direct change over from conduit to flexible conduit is not acceptable unless written permission is granted by RPR or specifically noted on drawings.
- b. Exposed: Liquid tight flexible steel conduit shall be used for connections to motors, movable equipment, or vibration equipment (transformers, pumps, AHU's, loading bridges, etc.) as specified herein. Lengths shall not exceed four (4) feet in length unless written authorization by RPR for specific conduits is granted. Connections to vibration equipment, motors, etc shall be made with wire mesh grip fittings as specified herein. Flexible steel conduit is not acceptable in exposed locations. All exposed flexible metal conduit shall be liquid tight.

F. Interior Wet and Damp Locations:

- 1. Use rigid galvanized steel in interior wet and damp locations. Areas which are subject to direct exterior conditions such as parking garages and open ramp overhangs shall be classified "WET/EXTERIOR LOCATION."

G. Concrete Columns or Poured in-place Concrete Wall Locations:

- 1. Use thickwall non-metallic conduit. Penetration shall be by approved metal raceway (i.e. metal conduit as required elsewhere in these specifications).

H. Corrosive Locations:

- 1. Comply with all codes and standards.

### 3.2 ADDITIONAL REQUIREMENTS FOR RIGID METAL STEEL CONDUIT

- A. Rigid metal conduit shall be cut and threaded with tools approved for the purpose and by qualified personnel.
  - 1. Approved pipe vise.
  - 2. Roller/bade type cutter or band saw.
  - 3. Reamer capable of completely removing al ridges or burrs left by the cutter. Reaming with pliers is not acceptable.
- B. Hangers shall be installed 8 ft. apart.
- C. Conduits stubbed through floor slabs, above grade and not contained inside walls, shall be rigid galvanized metallic conduit.
- D. One hole pipe straps shall be malleable iron. Wet location applications shall include malleable iron back clamp spacers.
- E. Use of two piece threaded union fittings and rigid set screw fittings are not permitted. Threaded unions may be acceptable where required for special field conditions only when special written permission is granted by RPR.

### 3.3 ADDITIONAL REQUIREMENTS FOR INTERMEDIATE METAL CONDUIT (IMC)

- A. May be installed only by special written permission.
- B. If written approval is received then IMC may be used in locations acceptable by NEC and elsewhere in these specifications, whichever is most stringent.

### 3.4 ADDITIONAL REQUIREMENTS FOR FLEXIBLE STEEL CONDUIT AND LIQUID-TITE FLEXIBLE METAL CONDUIT

- A. Shall be properly grounded.
- B. Shall be installed with approved fittings.
- C. Shall be used for final connections to vibrating equipment such as motors, pumps, transformers, etc.
- D. Liquid-tight conduit termination connectors at vibration equipment (i.e. pumps, AHU's, motors, moveable equipment, etc) shall be provided with wire mesh grips.

### 3.5 ADDITIONAL REQUIREMENTS FOR NON METALLIC CONDUIT (PVC)

- A. PVC conduit is not allowed anywhere inside building(s) except underground, in slab, in poured in place concrete, and in block wall up to first outlet box (if not over 40" AFF) if allowed by codes. In elevated slabs, conduit is permitted only where written consent is granted by Structural Engineer, regardless of that shown or noted by drawings. Install as directed by Architect/Structural Engineer.

- B. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum.
- C. Threads will not be permitted on PVC conduit and fittings, except for rigid steel to PVC couplings.
- D. Installation of PVC conduit shall be in accordance with manufacturer's recommendations.
- E. PVC conduit shall not be used to support fixture or equipment.
- F. Field bends or direction changes shall be by manufactured bends only. Heating with flame and hand held dryers are prohibited.
- G. PVC fittings and elbows shall be by same manufacture as conduit.

### 3.6 ADDITIONAL REQUIREMENTS FOR PVC COATED CONDUIT

- A. All cuts, pinholes and ends shall be sealed using liquid PVC patch. PVC coated conduit shall be thoroughly inspected after installation to assure all voids, cuts, pinholes or other violation of the integrity of the PVC coating are sealed.

### 3.7 SUPPORTS

- A. Comply with the requirements of Section 26 05 29 Hangers and Supports for Electrical Systems.
- B. Arrange supports to prevent misalignment during wiring installation.

### 3.8 EXPANSION/DEFLECTION FITTINGS

- A. Provide suitable fittings to accommodate expansion and deflection where conduit crosses, control and expansion joints.
- B. Expansion fittings shall be installed in the following cases:
  - 1. In each conduit run wherever it crosses an expansion joint in the concrete structure.
  - 2. On one side of joint with its sliding sleeve end flush with joint, and with a length of bonding jumper in expansion/deflection equal to at least three times the normal width of joints.
  - 3. In each conduit run which mechanically attaches to separate structures to relieve strain caused by shift on one structure in relation to the other.
  - 4. In straight conduit run above ground that is more than one hundred feet long and interval between expansion/deflection fittings in such runs shall not be greater than 100 feet.



### 3.9 GROUNDING

- A. All raceways shall have a copper system ground conductor throughout the entire length of circuit installed within conduit in strict accordance with NEC codes.
- B. Grounding conductor shall be included in total conduit fill determining conduit sizes, even though not included or shown on drawings.
- C. Grounding conductors run with exterior/ underground feeders shall be bare only.
- D. Grounding conductors run with feeders shall be bonded to portions of conduit that are metal by approved ground bushings.
- E. See other sections of these specifications for additional requirements.
- F. Grounding conductors (including lightning protection down conductors) run in metal conduit shall be bonded to metal conduit at both ends.

### 3.10 CONDUITS PENETRATING 2 HOUR ASSEMBLIES OR GREATER

- A. Conduits with conductors penetrating the wall shall have blow out patches on each side of the wall.
- B. Multiple conduits run through rated walls side by side shall have blow out patches on each side of the wall.
- C. Data or telephone conductors run exposed and penetrating a wall rated 2 hour for fire, smoke or smoke/fire shall be sleeved with steel conduits 30" each side of the wall and conduit ends packed with approved fire sealant.

### 3.11 FIRE AND SMOKE STOPPING

- A. Contractor is to provide fire stopping and smoke sealing for all penetrations of existing (or new if applicable) fire or smoke assemblies as required to maintain rating of assembly.
- B. All penetrations shall be fire stopped in strict accordance with UL Fire Directory. Submit applicable details for acceptance. Prepare and install as delineated by UL detail(s).
- C. Each penetration shall be identified with the corresponding UL fire assembly number. Labels shall be typed or computer generated minimum 1/2" high black lettering, self-adhesive type.
- D. Comply with UL Fire Directory "F" and "T" ratings respectfully.

### 3.12 FIRE PROTECTION

- A. Emergency life safety feeder-circuit wiring shall be installed either in spaces fully protected by an approved automatic fire suppression system or shall be a listed electrical circuit protection system with a 1-hour fire rating. Fire circuit protection shall be in accordance with UL Fire Protection equipment Directory and UL Building Materials Directory (latest edition).

### 3.13 VERTICAL RACEWAYS

- A. Cables in vertical raceways shall be supported per NEC Article 300.19. Provide supporting devices for cables, including any necessary accessible pull boxes as required regardless if shown on drawings or not. Provide and install access panels as required. Coordinate location of pull box and access panel with designer prior to installation. This includes empty raceways for future use.

### 3.14 GENERAL

- A. Install conduit in accordance with NECA "Standard of Installation." Contractor shall layout all work prior to rough-in.
- B. Install nonmetallic conduit in accordance with manufacturer's instructions.
- C. Arrange conduit to maintain headroom and present neat appearance.
- D. Route conduit installed above accessible ceilings or exposed to view parallel or perpendicular to walls. Do not run from point to point.
- E. Route conduit in and under slab from point-to-point.
- F. Do not cross conduits in slab.
- G. Maintain adequate clearance between conduit and piping.
- H. Maintain 12-inch (300-mm) clearance between conduit and surfaces with temperatures exceeding 104 degrees F (40 degrees C).
- I. Maintain minimum of 3" inch separation between power and communications raceways. Increase separation if so required to comply with EIA/TIA referenced standards.
- J. Systems raceways shall be installed in accordance with ANSI/EIA/TIA Communications Standards.
  - 1. Maintain proper separation between PDS system cables and all power and unshielded cables, as required to prevent noise or crosstalk interference.
  - 2. Raceway bends shall have minimum inside radius of 6 times the internal diameter. Increase bend radius to 10 times for raceway larger than 2 inch size. Provide proper bend for all changes of direction. Pull and splice boxes shall not be used in lieu of a bend.

3. Install raceways so no more than two 90o bends are in any raceway section without a pullbox. Install additional pull boxes as required to maintain maximum of two 90o bends between pull boxes and termination points.
  4. Install boxes in straight sections of raceway.
- K. Cut conduit square using saw or pipecutter; de-burr cut ends.
- L. Bring conduit to shoulder of fittings; fasten securely.
- M. Use conduit hubs or sealing locknuts to fasten conduit to sheet metal boxes in damp locations and to cast boxes. Use threaded conduit hubs to fasten conduit to sheet metal boxes, disconnects switches and equipment control panels in wet and exterior locations.
- N. Install no more than equivalent of three 90-degree bends between boxes for power and lighting systems. Use conduit bodies to make sharp changes in direction, as around beams. Use appropriate boxes and conduit bodies for fire alarm, voice/data and sound/paging systems. Use factory elbows for bends in metal conduit larger than 2-inch size.
- O. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.
- P. Provide pull boxes, junction boxes and fire barrier at fire rated walls as required by NEC Article 300, whether shown on drawings or not.
- Q. Provide continuous fiber poly line 1000 lb. minimum tensile strength pull string in each empty conduit except sleeves and nipples. This includes all raceways which do not have furnished conductors. Pull cords must be fastened to prevent accidental removal. A phenolic or brass nameplate shall be attached to each end indicating the location of both ends of conduit as follows: THIS END = "LOCATION," OTHER END = "LOCATION."
- R. Use suitable seals to protect installed conduit against entrance of dirt and moisture and insects.
- S. Ground and bond conduit under provisions of Section 26 05 26.
- T. Identify conduit under provisions of Section 26 05 53.
- U. Install all conduit concealed from view unless specifically shown otherwise on drawings
- V. Rigid steel box connections shall be made with double locknuts and bushings.
- W. All wire raceways shall be kept clear of plumbing fixtures to facilitate future repair or replacement of said plumbing fixtures without disturbing wire raceways. Except where it is necessary for control purposes, all raceways shall be kept away from items producing heat.
- X. All raceway runs in masonry shall be installed at the same time as the masonry so that no face cutting is required, except to accommodate boxes.

- Y. All raceways shall be run from outlet to outlet as shown on the drawings, unless permission is granted, to alter arrangement shown. If permission is granted arrangement shall be marked on red lined As-Built drawings as previously specified.
- Z. Spare conduit stubs shall be capped and location and use marked with concrete marker set flush with finish grade. Marker shall be 6" round x 6" deep with appropriate symbol embedded into top to indicate use. Also, tag conduits in panels where originating.
- AA. All conduit stubbed above floor shall be strapped to a metal channel supported by conduit driven into ground or tied to steel. Spare conduit stubs shall be capped with a UL listed and approved cap or plug for the specific intended use and identified with ink markers as to source and labeled "Spare".
- BB. All connections to motors or other vibrating equipment including transformers or at other locations where required shall be made with not less than 12" nor more than 24" of flexible liquid-tight steel conduit, with nylon insulated throat connectors and wire mesh grip fittings at both terminations of conduit. Use angle connectors wherever necessary to relieve angle strain on flex conduit.
- CC. Provide a conduit sealing fitting or pliable compound wherever conduit system is exposed to widely temperature changes which may cause condensation within the raceway; as from the inside to the outside of coolers or freezers.
- DD. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket. Coordinate location with roofing installation specified under other Sections of these specifications.
- EE. All raceways shall be run in neat and workmanlike manner and shall be properly in accordance with latest edition of NEC with approved conduit clamps, hanger rods and structural fasteners.
- FF. All raceway runs, whether terminated in boxes or not, shall be capped during the course of construction and until wires are pulled in, and covers are in place. No conductors shall be pulled into raceways until construction work which might damage the raceways has been completed.
- GG. Electrical raceways shall be supported independently of all other systems and supports, and shall in every case avoid proximity to other systems which might cause confusion with such systems or might provide a chance of electrolytic actions, contact with live parts or excessive induced heat.
- HH. Raceways, boxes, etc., shall not be attached to an acoustical grid ceiling system or support wire per NEC Article 300.11. Support all components directly from building structure.

END OF SECTION SP-109S-26 05 33.13

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SECTION SP-109S-26 05 33.16 - BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Contractual Conditions and Division 01 Specification sections apply to this section.

1.2 SUMMARY

- A. This section includes the requirements for provision and installation of pull and boxes.

1.3 DESCRIPTION

- A. Provide and install all boxes (flush or surface) complete with all accessories as required to facilitate installation of electrical system and as required by the N.E.C.
- B. Section includes: Wall and ceiling boxes and junction and pullboxes.
- C. Install pull and junction boxes wherever required for a complete and operating distribution system whether shown on drawings or not.

1.4 SUBMITTALS

- A. Submit catalog cut sheet/product data on:
  - 1. Surface cast boxes.
  - 2. Covers.
  - 3. Dimensions - inside and out.
  - 4. Rating of concrete or gauge of metal.
  - 5. Manufacturer
  - 6. All boxes to be used on project.

1.5 PROJECT AS-BUILT DOCUMENTS

- A. Record actual locations and mounting heights of pull and junction boxes.

1.6 REFERENCES AND REGULATORY REQUIREMENTS

- A. Furnish products listed and classified by Underwriters Laboratories, Inc. and requirements of NEC as suitable for purpose specified and shown.
- B. Conform to the requirements of the following:

1. ANSI/NEMA FB 1 - Fittings and Supports for Conduit and Cable Assemblies.
2. ANSI/NEMA OS 1 - Sheet-steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
3. ANSI/NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports.
4. ANSI/NFPA 70 - National Electrical Code.
5. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

## 1.7 PROJECT CONDITIONS

- A. Verify field measurements are as shown on Drawings.
- B. Verify locations of outlets in offices and work areas prior to rough-in.
- C. Verify locations of pull and junction boxes prior to rough-in.
- D. Electrical boxes are shown on Drawings in approximate locations unless dimensioned. Install at location required for box to serve intended purpose and to maintain required access.

## PART 2 - PRODUCTS

### 2.1 GENERAL

- A. Provide box accessories as required for each installation, including mounting brackets, wallboard hangers, extension rings, boxes, and corrosion-resistant knockout closures compatible with boxes being used and meeting requirements of individual wiring situations.
- B. All boxes shall be of the size and shape required by NFPA 70 for their respective locations.
- C. Boxes shall be of such form and dimensions as to be adapted to the specific use and location, type of device or fixtures to be used, and number and size of conductors and arrangement, size and number of conduits connecting thereto.
- D. Dimensions of pull and junction boxes shall meet dimensions shown on drawings or dimensions required by NEC, whichever is largest.
- E. Standard 25 cubic inch pull boxes shall meet the requirements of these specifications for outlet boxes as a minimum.
- F. All boxes of 100 cubic inches or more shall be constructed of 14 gauge steel with hot dip galvanized coating.
- G. Handy boxes shall not be used.
- H. Boxes to be one-piece.

- I. 4"x 4" boxes and 4 11/16" x 4 11/16" boxes used as junction boxes shall be one piece.

## 2.2 SHEET METAL BOXES:

- A. ANSI/NEMA OS 1, Galvanized Steel.
- B. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 1/2 inch (13 mm) male fixture studs where required.
- C. Concrete Ceiling Boxes: For concrete location installation, providing fire resistance rating as required.
- D. Interior flush boxes shall be galvanized steel constructed with stamped knockouts in back and sides, and threaded holes with screws for securing box coverplates or wiring devices. T & B, Steel City, Raco or approved substitution.
- E. Ceiling boxes shall be 4" octagonal or 4" square X 1 1/2" deep or larger as required for number and size of conductors and arrangement, size and number of conduits terminating at them.
- F. Switch, wall receptacle, telephone and other recessed wall boxes in drywall shall be 4" square X 1 1/2" deep. For recessing in exposed masonry, provide one piece 4" square x 1 1/2" deep wall boxes with appropriate 4" square cut tile wall covers Steel City series #52-C-49/52-C-52 or approved substitution. For recessing in furred-out block walls, provide 4" square box with required extension for block depth and required extension for drywall depth.
- G. For Communication/Systems Telephone, Data, TV, CCTV, Video, and Computer device boxes shall be 4" square x 2 1/8" deep, minimum. Increase box to 4-11/16" with single gang plaster ring as required for special devices respectfully.
- A. Large Pull Boxes: Boxes larger than 400 cubic inches in volume or 20 inches in any dimension:
  - 1. Use hinged enclosure under provisions of Section 26 27 16 Electrical Cabinets and Enclosures.
- H. Exterior, damp location and wet location pull and junction boxes shall be NEMA 4x stainless steel.

## 2.3 CAST BOXES:

- A. NEMA FB 1
- B. Interior surface boxes and conduit bodies installed from 0" AFF to 90" AFF (including fire alarm device backbox) shall be heavy cast aluminum or iron with external threaded hubs for power devices and threaded parts for low voltage devices - Appleton, Crouse Hinds or approved substitution. Trim rings shall also be of one piece construction.



- C. Weatherproof boxes shall be constructed of corrosion-resistant cast iron suited to each application and having threaded conduit hubs, cast metal face plate with spring-hinged waterproof cap suitable configured, gasket, and corrosion-proof fasteners.
- D. Boxes to be Type FD unless otherwise noted on drawings.
- E. Free standing cast boxes are to be type FSY (with flange). Other cast zinc boxes are not acceptable.

#### 2.4 SURFACE-MOUNTED CAST METAL BOX:

- A. NEMA 250, Type 4; flat-flanged, surface-mounted junction box.
- B. Material: Cast aluminum.
- C. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover screws.
- D. Provide all hubs as required for conduit connections.

#### 2.5 IN-GROUND PULL BOXES:

- A. Material: Pre-cast concrete.
- B. Bottom: Open with 6" of gravel for drainage.
- C. Cover: Meet Florida Dept. of Transportation requirements for heavy traffic.
- D. Solid sides constructed to facilitate conduit entries.

### PART 3 - EXECUTION

#### 3.1 GENERAL

- A. Install per NEC.
- B. Install electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.
- C. Install electrical boxes to maintain headroom and to present neat mechanical appearance.
- D. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
- E. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches (150 mm) from ceiling access panel or from removable recessed luminaire.

- F. Above ceiling outlet and junction boxes shall be installed to permit readily accessible access from ladder or staging from corresponding floor without the need to extend ladder up through ceiling system to facilitate ease of maintenance.
- G. Install boxes to preserve fire resistance rating of partitions and other elements.
- H. Align adjacent wall-mounted boxes for switches, thermostats, and similar devices with each other.
- I. Outlets for 120V clocks shall be recessed so that the clock will hang flush with the finished surface of the wall.
- J. Use flush mounting boxes in finished areas.
- K. Do not install flush mounting boxes back-to-back in walls; provide minimum 6 inch separation. Provide minimum 24 inches (one stud space) separation in acoustic and rated walls.
- L. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- M. Use stamped steel bridges to fasten flush mounting box between studs.
- N. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- O. Lighting control switches shall be located at the latch side of door. If the drawings indicate otherwise, issue a request for clarification prior to rough-in.
- P. Support all boxes from structure with minimum of one (1) 3/8" all-thread rod hangers. Boxes larger than 25 square inches shall be supported with two (2) all-thread rod hangers, minimum.
- Q. Do not fasten boxes to ceiling support wires.
- R. Support boxes independently of conduit.
- S. Pull boxes shall be installed in straight runs of conduit only. Pull boxes shall not be used in place of a conduit bend.
- T. Use gang box where more than one device is mounted together. Do not use sectional box.
- U. Use gang box with plaster ring for single device outlets.
- V. Comply with applicable portions of the National Electrical Contractor's Association's (NECA) "Standard of Installation".
- W. Install outlets in the locations shown on the drawings; however, the RPR shall have the right to make, prior to rough-in, slight changes in locations to reflect room furniture layouts.

- X. Coordinate each electrical box so that the type is suitable for the wall or ceiling construction anticipated and suitable fireproofing is built into fire rated assemblies.
- Y. Relocate electrical boxes as required so that electrical devices, once installed, will be symmetrically located with respect to the room layout.
- Z. All boxes shall be installed in a flush rigid manner with box lines at perpendicular and parallel angles to finished surfaces. Boxes shall be supported by appropriate hardware selected for the type of surface from which the box shall be supported. For example, provide metal screws for metal, wood screws for wood, and expansion devices for masonry or concrete. No surface mounted boxes will be allowed without RPR approval.
- AA. For damp and wet locations provide weatherproof boxes and accessories.
- BB. As a minimum, provide pull boxes in all raceways over 150 feet long. The pull box shall be located near the midpoint of the raceway length.
- CC. Provide knockout closures to cap unused knockout holes where blanks have been removed, and plugs for unused threaded hubs.
- DD. Provide conduit locknuts and bushings of the type and size to suit each respective use and installation.
- EE. Boxes and conduit bodies shall be located so that all electrical wiring is accessible.
- FF. Avoid using round boxes where conduit must enter box through side of box which would result in a difficult and insecure connection with a locknut or bushing on the rounded surface.
- GG. All flush outlets shall be mounted so that covers and plates will finish flush with finished surfaces without the use of shims, mats or other devices not submitted or approved for the purpose. Add-a-Depth rings or switch box extension rings (Steel City #SBEX) are not acceptable. Plates shall not support wiring devices. Gang switches with common plate where two or more are indicated in the same location. Wall-mounted devices of different systems (switches, thermostats, etc.) shall be coordinated for symmetry when located near each other on the same wall. Outlets on each side of walls shall have separate boxes. Through-wall type boxes shall not be permitted. Back-to-back mounting shall not be permitted. Trim rings shall be extended to within 1/8" of finish wall surface.
- HH. Boxes mounted in metal stud walls, are to be supported to studs with minimum of two (2) self-tapping screws inside, at the back of box, to a horizontal stud brace between vertical studs or pre-manufactured heavy duty box bracket equal to Caddy Corporation # SGB/TSGB series, to prevent movement of box after wall is finished.
- II. All boxes that do not receive devices in this contract are to have blank plates installed matching wiring device plates.
- JJ. Mount Height.

1. Height of wall outlets to bottom above finished floors shall be as follows, unless specifically noted otherwise, or unless otherwise required by applicable codes including ADA. Verify with the Architectural plans and shop drawings.
  - a) Switches: 4'-0" AFF to top
  - b) Receptacles: 1'-4" AFF to bottom
  - c) Lighting Panels: 6'-6" AFF maximum to centerline of highest breaker/fuse
  - d) Phone Outlets: 1'-4" AFF to bottom
  - e) ADA Wall Phones: (See part 3.1, Item JJ.(4.) below)
  - f) Fire Alarm Pull Stations: 4'-0" AFF to top
  - g) Fire Alarm Strobe Lights: 80" AFF to bottom of globe or 6" below ceiling to top, whichever is lower
2. Bottoms of outlets and switches above counter tops or base cabinets shall be minimum 2" above counter top or backsplash, whichever is highest. Outlets and switches may be raised so that bottom rests on top of concrete block course, but all outlets above counters in same area shall be at the same height. Coordinate outlet locations in relation to all casework shown on Architectural plans, prior to rough-in, regardless of height shown on Electrical drawings.
3. Height of wall-mounted fixtures shall be as shown on the drawings. Fixture boxes shall be equipped with fixture studs when supporting fixtures.
4. Coordinate locations and mounting heights of boxes for all phones with architect, phone system installer and approved shop drawings prior to rough-in. Install as directed, including requirements of ADA. In general, ADA wall phones shall be at a maximum of 48" to highest operable part essential to basic operation of telephone with side reach and maximum of 48" forward reach.

KK. Special Purpose Outlets.

1. Locate special purpose outlets as indicated on the drawings for the equipment served. Location and type of outlets shall be coordinated with appropriate trades involved. Coordinate roughing-in locations. Provide plug for each outlet.

LL. Outlets in Rated Assemblies and Smoke Barriers.

1. Metallic and approved non-metallic electrical boxes may be installed in vertical fire resistive assemblies or smoke barriers without affecting the classification, provided such openings occur on one side only in each framing space and that openings do not exceed 16 sq. inches.
2. All clearances between such boxes and the gypsum board must be completely filled with joint compound or other approved materials.
3. The wall must be built around outlets of larger size so as not to interfere with the integrity of the wall rating.

3.2 IN GROUND PULL BOXES

- A. Provide and install ground rod in each pull box. Connect #2 copper ground wires (counterpoise) to ground rod, run out pullbox 6" over conduits to next pull box; tie to respective building electrical ground rod at each building.

- B. Install pull boxes flush with finished grade. Provide extensions as required.

### 3.3 INTERFACE WITH OTHER PRODUCTS

- A. Coordinate installation of box for products furnished under all Sections of these specifications.
- B. Coordinate locations and sizes of required access doors with applicable sections in these specifications.
- C. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.
- D. Coordinate mounting heights and locations of outlets mounted above counters, benches and backsplashes.
- E. Position boxes to locate luminaires as shown on reflected ceiling plan.

### 3.4 ADJUSTING

- A. Adjust flush-mounting outlets to make front flush with finished wall material.
- B. Install knockout closure in unused box opening.
- C. Install pull and junction boxes as shown on drawings or as required by the National Electric Code (NEC). Identification of boxes is required. Phenolic labels or permanent marks with voltage, circuit, panel, fed from, location of source, location of load.
- D. Pull and junction boxes (not in-ground type) used for systems larger than 25 square inches shall be hinged cover type with flush latches operated with screwdriver.
- E. Pull and junction boxes larger than 25 square inches shall be supported with (2) all-thread rod hangers minimum. Increase quantity and size of all-thread rod hangers as required for application, and to eliminate movement and swaying.

END OF SECTION SP-109S-26 05 33.16

SECTION SP-109S-26 05 53 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Contractual Conditions and Division 01 Specification sections apply to this section.

1.2 SUMMARY

- A. This section includes the requirements for provision and installation of identification for electrical equipment.

1.3 DESCRIPTION

- A. Provide and install all equipment, labor and material for a complete identification system, including but not limited to:
  - 1. Nameplates and labels.
  - 2. Wire and cable markers.
  - 3. Conduit markers.
  - 4. Identify all new and existing conduits, boxes, equipment, etc. as specified herein.

1.4 REFERENCES AND REGULATORY REQUIREMENTS

- A. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.
- B. Conform to the requirements of the following:
  - 1. ANSI/NFPA 70 - National Electrical Code.
  - 2. Americans with Disabilities Act - 1990.

PART 2 - PRODUCTS

2.1 NAMEPLATES

- A. Nameplates for Life Safety Branch Power shall be laminated red phenolic plastic with chamfered edges and white engraved lettering. Orange phenolic plastic border to be added around nameplate to denote branch.
- B. Nameplates for Critical (Legally Required) Branch Power shall be laminated red phenolic plastic with chamfered edges and white engraved lettering. Green phenolic plastic border to be added around nameplate to denote branch.

- C. Nameplates for Security Branch Power shall be laminated red phenolic plastic with chamfered edges and white engraved lettering. Purple phenolic plastic border to be added around nameplate to denote branch.
  - D. Nameplates for Equipment Branch Power shall be laminated red phenolic plastic with chamfered edges and white engraved lettering. Blue phenolic plastic border to be added around nameplate to denote branch.
  - E. Nameplates for Normal Branch Power shall be laminated black phenolic plastic with chamfered edges and white engraved lettering.
  - F. Letter Size:
    - 1. 1/8 inch for identifying individual equipment and loads.
    - 2. 1/4 inch for identifying grouped equipment and loads.
  - G. Nameplates shall adequately describe the function of the particular equipment involved. Where nameplates are detailed on the drawings, inscription and size of letters shall be as shown and shop drawing submitted for approval. Nameplates for panelboards and switchboards shall include the panel designation, voltage and phase of the supply. For example, "Panel A, 120/208V, 3-phase, 4-wire". In addition, provide phenolic label in panel to describe where the panel is fed from. For example, "Fed From MDP-1:3:5". The name of the machine on the nameplates for a particular machine shall be the same as the one used on all motor starters, disconnect and P.B. station nameplates for that machine.
  - H. The following items shall be equipped with nameplates: All motors, motor starters, motor-control centers, push-button stations, control panels, time switches, disconnect switches, transformers, panelboards, circuit breakers (i.e., all 2 pole, 3 pole C.B.'s), contactors or relays in separate enclosures, power receptacles where the nominal voltage between any pair of contacts is greater than 150V, wall switches controlling outlets that are not located within sight of the controlling switch, high voltage boxes and cabinets, large electrical, and electrical systems junction and pull boxes (larger than 4 11/16"), terminal cabinets, terminal boards, and equipment racks. Nameplates shall also describe the associated panel and circuit number (if applicable).
  - I. All Electrical System panels, transfer switches, etc. shall be labeled per branch, i.e.: "Panel ABC-Life Safety Branch" (similar for critical or equipment branch).
  - J. All receptacles shall be clearly labeled with panel/circuit designation.
  - K. All junction/pull boxes shall receive phenolic labels clearly labeling circuitry/cabling/etc., within.
- 2.2 WIRE MARKERS
- A. Description: Cloth, tape, split sleeve, or tubing type wire markers.
  - B. Locations: Each conductor at panelboard gutters, pull boxes, outlet and junction boxes, and each load connection.

C. Legend:

1. Power and Lighting Circuits: Branch circuit or feeder number indicated on drawings including neutral conductor.
2. Low voltage circuits (circuits under 120V):

- D. Control wire number indicated on schematic and interconnection diagrams on shop drawings.

2.3 CONDUIT/JUNCTION BOX COLOR CODE

- A. All conduit system junction boxes (except those subject to view in public areas) shall be color coded as listed below:

| <u>Color Code for Junction Boxes</u> | <u>Krylon Paint Number</u> |
|--------------------------------------|----------------------------|
| System Emergency 277/480 volt        | Cherry Red K02101          |
| System Emergency 120/208 volt        | Zinger Pink S01150         |
| Fire Alarm                           | Popsicle Orange K02410     |
| Normal Power 277/480 Volt            | Leather Brown K02501       |
| Normal Power 120/208 Volt            | Glossy Black K01601        |
| Fiber Optics                         | Plum Purple K01929         |
| Sound System                         | Daisy Yellow K01813        |
| Clock                                | Light Blue S01540          |
| Intercom                             | True Blue K01910           |
| Computer Data                        | Gold K01701                |
| TV                                   | Glossy White K01501        |
| BAS                                  | Cameo White K04129         |
| FIDS/BIDS                            | Saddle Tan K03554          |
| Security/CCTV                        | John Deer Green K01817     |
| Telephone                            | Clover Green K02012        |
| Grounding                            | Fluorescent Green K03106   |
| Access Control System                | John Deer Green K01817     |
| Lightning Detection & Notification   | Global Blue K03546         |
| Elevator Status                      | Georgia Clay K03531        |
| 800 Mhz Radio                        | Copper Metallic K02203     |
| FCIC                                 | Clover Green K02012        |
| Positron                             | Clover Green K02012        |
| DC Controls                          | Clover Green K02012        |
| Duress                               | Fresh Salmon K03536        |



Fire Pump Status

Popsicle Orange K02410

Emergency Generator Status

Zinger Pink S01150

- B. Conduits (not subject to public view) longer than 20 feet shall be painted with above color paint band 20 ft. on center. Paint band shall be 4" in length. Where conduit are parallel and on conduit racking, the paint bands shall be evenly aligned. Paint shall be neatly applied and uniformed. Paint boxes and raceways prior to installation or tape conduits and surrounding surfaces to avoid overspray. Paint overspray shall be removed.
- C. Emergency (Backed by Generator). Conduit shall be painted red 20 ft. on center. Paint band shall be 4" in length. A smaller band, 1" in length, centered over the 4" red band shall be applied to denote Emergency Branch as follows:

| <u>Emergency Branch</u> | <u>Color Band</u> |
|-------------------------|-------------------|
| Life Safety             | Orange            |
| Critical                | Green             |
| Security                | Purple            |
| Equipment               | Blue              |

- D. Junction boxes and conduit located in public areas (i.e. areas that can be seen by the public) shall be painted to match surface attached to. Provide written request to DESIGNER for interpretation of those public areas which may be in question.
- E. Where two colors apply to the same raceway, paint on opposite corners leaving room for panel/ckt./system/etc., labeling in center.
- F. The Contractor may utilize conduit banding tape instead of paint, on interior conduits only, where specified colors are available. Surface of conduits shall be thoroughly cleaned prior to tape application, and tape shall be applied in a neat and workmanlike manner. Tape to be manufactured by Seton Identification Products only.

## 2.4 CONDUIT/JUNCTION BOX MARKER

- A. All new and existing junction boxes/cover plates for power, lighting and systems (except those installed in public areas) shall adequately identify its associated systems panel and circuit number. Identification shall be by means of black permanent marker. (Paint one-half cover plate with appropriate color above, and one-half with associated panel/circuit or system as described above.)

## 2.5 DEVICE COVER PLATE IDENTIFICATION

- A. Description: Self-adhesive clear printed labels with Black typed letters (pre-printed, dot matrix, or laser).
- B. Locations:
1. Each new receptacle cover plate.
  2. Each existing receptacle cover plate in areas of remodel/renovation.

C. Legend:

1. Receptacle plates shall adequately describe its associated panelboard and circuit reference.
2. System plates shall adequately describe its terminal board, or terminal cabinet, termination cable identifier and assigned user code number.

2.6 UNDERGROUND WARNING TAPE

- A. Description: 6 inch wide plastic tape, detectable type, colored red with suitable warning legend describing buried electrical lines, one strip per 24" of duct.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Degrease and clean surfaces to receive nameplates and labels.

3.2 APPLICATION

- A. Install nameplate parallel to equipment lines.
- B. Secure nameplate to equipment front using stainless steel pop rivets.
- C. Secure nameplate to inside surface of door on panelboard that is recessed in finished locations.
- D. Nameplates installed inside on dead front cover shall be self adhesive tape. (Do not drill or install screws in dead front.)
- E. Identify new and existing conduit, junction boxes, and outlet boxes using field painting.
- F. Identify new underground conduits using underground warning tape. Install one tape per 24 inches of trench at 3 inches below finished grade.
- G. Install wire markers at all new and existing connections and terminations.

END OF SECTION SP-109S-26 05 53

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SECTION SP-109S-26 05 73 – OVERCURRENT PROTECTION DEVICE  
COORDINATION STUDY

PART 1- GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Contractual Conditions and Division 01 Specification sections apply to this section.

1.2 SCOPE

- A. The contractor shall furnish short-circuit and protective device coordination studies as prepared by the electrical equipment manufacturer or an approved engineering firm.
- B. The contractor shall furnish an Arc Flash Hazard Analysis Study per the requirements set forth in NFPA 70E - Standard for Electrical Safety in the Workplace. The arc flash hazard analysis shall be performed according to the IEEE Std. 1584-2002 equations that are presented in NFPA70E-2009, Annex D.
- C. The scope of the studies shall include all new distribution equipment supplied by the equipment manufacturer under this contract as well as all directly affected existing distribution equipment associated with the Project.

1.3 DESCRIPTION

- A. Provide all labor, materials, and equipment necessary to properly and completely perform a Power Systems Study for the electrical distribution and control equipment and submit results in a report.
- B. Electrical distribution and control equipment is to include all equipment installed under this contract and all existing equipment that this project is connecting to, complete from new equipment to existing power company transformer(s) via all applicable existing power distribution and control equipment.
- C. Provide an up to date electrical system single-line diagram as required by NFPA 70E, "Standard for Electrical Safety in the Workplace," as referenced in OSHA 29 CFR 1910 Subpart S, Appendix A. This information shall include nameplate data for electrical components (e.g. transformers, medium voltage switchgear, panelboards, switchboards, motor control centers, etc.) for all portions of the electrical system from the utility intertie through the lowest rated panel.
- D. Cable sizes, types and lengths between electrical equipment components and up to date utility source data shall be provided for an accurate single-line representation of the electrical system. Unique characteristics of the equipment installation shall be provided which may impact the magnitude of the potential hazard (e.g. open space versus enclosure). Overcurrent device settings shall be verified.

- E. Data collection may require removal of barriers, opening of front panels, etc. while equipment is energized. The Contractor must provide proof (written documentation) that its employees working on the premises of the Landside Building have been properly trained in the use and application of personal protective equipment (PPE) and the hazards of working on or near energized equipment. The Contractor must provide its own PPE protection with a minimum arc thermal performance rating (ATPV) of 40 calories/cm<sup>2</sup>.
- F. The contractor shall be responsible for obtaining all required data of all equipment.
- G. The study shall verify adequacy of all equipment implemented under these specifications and to verify the correct application of circuit protective devices and other system components specified completely coordinated with the existing system.
- H. A comprehensive analysis of the electrical system shall be performed for all equipment up to 480 volts and by a 125kVA or larger transformer based on the up to date single-line diagram provided from "Section A". This analysis shall include the following:
  - 1. Short Circuit Study – A short circuit analysis shall be performed in accordance with ANSI standard C37 and IEEE standard 141-1993 (Red Book) for each electrical component as defined in "Section A. "
  - 2. Coordination Study – A coordination study shall be performed in accordance with IEEE 242-2001 "Buff" to determine the proper overcurrent device settings that will balance system reliability through selective coordination while minimizing the magnitude of an electrical arc flash hazard incident.
  - 3. Incident Energy Study – An incident energy study shall be done in accordance with the IEEE 1584-2004a, "IEEE Guide for Performing Arc Flash Hazard Calculations" as referenced in NFPA 70, "Standard for Electrical Safety in the Workplace", latest revision, in order to quantify the hazard for selection of personal protective equipment (PPE). Tables that assume fault current levels and clearing time for proper PPE selection are not acceptable.
- I. Reconcile arc flash protective device setting recommendations with the protective device time-current coordination study.
- J. Adjust the System Design to optimize the results of the study as it relates to safety and reliable electrical system operation (e.g. overcurrent device settings, working distances, current limiting devices). This includes mitigation, where possible, of incident energy levels that exceed 40 calories/cm<sup>2</sup>. A qualified engineer with power systems design experience shall provide this assistance
- K. The intent /goal of the protective system included herein is to establish arc flash levels that result in PPE levels of Category 2 or less.
- L. Identify locations where Category 2 cannot be achieved.
- M. The study shall address the case when the system is being powered from the normal source as well as from the on-site generating source.
- N. Minimum as well as maximum possible fault conditions shall be covered in the study.

- O. Fault conditions of all motors shall be considered.

#### 1.4 REFERENCES

A. Institute of Electrical and Electronics Engineers, Inc. (IEEE):

1. IEEE 141 – Recommended Practice for Electric Power Distribution and Coordination of Industrial and Commercial Power Systems
2. IEEE 242 – Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems
3. IEEE 399 – Recommended Practice for Industrial and Commercial Power System Analysis
4. IEEE 241 – Recommended Practice for Electric Power Systems in Commercial Buildings
5. IEEE 1015 – Recommended Practice for Applying Low-Voltage Circuit Breakers Used in Industrial and Commercial Power Systems.
6. IEEE 1584 - Guide for Performing Arc-Flash Hazard Calculations

B. American National Standards Institute (ANSI):

1. ANSI C57.12.00 – Standard General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers
2. ANSI C37.13 – Standard for Low Voltage AC Power Circuit Breakers Used in Enclosures
3. ANSI C37.010 – Standard Application Guide for AC High Voltage Circuit Breakers Rated on a Symmetrical Current Basis
4. ANSI C 37.41 – Standard Design Tests for High Voltage Fuses, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches and Accessories.

C. The National Fire Protection Association (NFPA)

1. NFPA 70 - National Electrical Code, latest edition
2. NFPA 70E – Standard for Electrical Safety in the Workplace

#### 1.5 SUBMITTALS FOR REVIEW/APPROVAL

- A. The short-circuit and protective device coordination results shall be submitted prior to receiving final approval of the distribution equipment shop drawings and prior to release of equipment drawings for manufacturing. This preliminary submittal of study data shall be sufficient to ensure that the selection of device and characteristics will be satisfactory.

B. SUBMITTALS FOR CONSTRUCTION

- C. The results of the short-circuit, protective device coordination and arc flash hazard analysis studies shall be summarized in a final report. For large system studies, submittals requiring more than five (5) copies of the report will be provided without the section containing the computer printout of the short-circuit input and output data.

Additional copies of the short-circuit input and output data, where required, shall be provided on CD in PDF format.

- D. For large system studies with more than 200 bus locations, the contractor is required to provide the study project files to the Owner in electronic format. In addition, a copy of the computer analysis software viewer program is required to accompany the electronic project files, to allow the Owner to review all aspects of the project and print arc flash labels, oneline diagrams, etc.
- E. The report shall include the following sections:
  - 1. Executive Summary.
  - 2. Descriptions, purpose, basis and scope of the study
  - 3. Tabulations of circuit breaker, fuse and other protective device ratings versus calculated short circuit duties
  - 4. Protective device time versus current coordination curves, tabulations of relay and circuit breaker trip unit settings, fuse selection
  - 5. Fault current calculations including a definition of terms and guide for interpretation of the computer printout
  - 6. Details of the incident energy and flash protection boundary calculations
  - 7. Recommendations for system improvements, where needed
  - 8. One-line diagram
- F. Arc flash labels shall be provided in hard copy only. For large system studies (more than 200 bus locations) arc flash labels shall be provided in hard copy and label images shall be provided in electronic format.
- G. Report shall include:
  - 1. Available fault current at each equipment location with comparison to equipment rating
  - 2. Overcurrent device settings (e.g. pick-up, time delay, curve), "as found" and "as recommended"
  - 3. Incident energy level (calories/cm<sup>2</sup>) for each equipment location and recommended PPE
  - 4. Overcurrent device coordination curves including related section of the single-line diagram
  - 5. List of prohibited energized work locations based on arc flash results.

## 1.6 QUALIFICATIONS

- A. The short-circuit, protective device coordination and arc flash hazard analysis studies shall be conducted under the supervision and approval of a Registered Professional Electrical Engineer skilled in performing and interpreting the power system studies.
- B. The Registered Professional Electrical Engineer shall be a full-time employee of the equipment manufacturer or an approved engineering firm.

- C. The Registered Professional Electrical Engineer shall have a minimum of five (5) years of experience in performing power system studies.
- D. The equipment manufacturer or approved engineering firm shall demonstrate experience with Arc Flash Hazard Analysis by submitting names of at least ten actual arc flash hazard analysis it has performed in the past year.

### 1.7 COMPUTER ANALYSIS SOFTWARE

- A. The studies shall be performed using the latest revision of the SKM Systems Analysis Power\*Tools for Windows (PTW) software program or prior approved equal.

## PART 2 - PRODUCTS (NOT USED)

## PART 3 - EXECUTION

### 3.1 STUDIES

- A. Contractor to furnish short-circuit and protective device coordination studies as prepared by equipment manufacturer or an approved engineering firm.
- B. The contractor shall furnish an Arc Flash Hazard Analysis Study per NFPA 70E - Standard for Electrical Safety in the Workplace, reference Article 130.3 and Annex D.

### 3.2 DATA COLLECTION

- A. Contractor shall furnish all data as required by the power system studies. The Engineer performing the short-circuit, protective device coordination and arc flash hazard analysis studies shall furnish the Contractor with a listing of required data after award of the contract. The Contractor shall expedite collection of the data to assure completion of the studies as required for final approval of the distribution equipment shop drawings and/or prior to the release of the equipment for manufacturing.
- B. Source combination shall include present and future motors and generators.
- C. Load data utilized may include existing and proposed loads obtained from Contract Documents provided by Owner, or Contractor when available.
- D. Include fault contribution of existing motors in the study. The Contractor shall obtain required existing equipment data, if necessary, to satisfy the study requirements.



### 3.3 SHORT-CIRCUIT AND PROTECTIVE DEVICE EVALUATION STUDY

- A. Use actual conductor impedances if known. If unknown, use typical conductor impedances based on IEEE Standard 141-1993.
- B. Minimum transformer design impedances shall be used when test impedances are not available.
- C. Provide the following:
  - 1. Calculation methods and assumptions
  - 2. Selected base per unit quantities
  - 3. One-line diagram of the system being evaluated
  - 4. Source impedance data, including electric utility system and motor fault contribution characteristics
  - 5. Tabulations of calculated quantities
  - 6. Results, conclusions, and recommendations.
- D. Calculate short-circuit momentary and interrupting duties for a three-phase bolted fault at each:
  - 1. Electric utility's supply termination point
  - 2. Incoming switchgear
  - 3. Unit substation primary and secondary terminals
  - 4. Low voltage switchgear
  - 5. Motor control centers
  - 6. Standby generators and automatic transfer switches
  - 7. Branch circuit panelboards
  - 8. Other significant locations throughout the system.
- E. For grounded systems, provide a bolted line-to-ground fault current study for areas as defined for the three-phase bolted fault short-circuit study.
- F. Protective Device Evaluation:
  - 1. Evaluate equipment and protective devices and compare to short circuit ratings
  - 2. Adequacy of switchgear, motor control centers, and panelboard bus bars to withstand short-circuit stresses
  - 3. Notify Owner in writing, of existing, circuit protective devices improperly rated for the calculated available fault current.

### 3.4 PROTECTIVE DEVICE COORDINATION STUDY

- A. Proposed protective device coordination time-current curves (TCC) shall be displayed on log-log scale graphs.
- B. Include on each TCC graph, a complete title and one-line diagram with legend identifying the specific portion of the system covered.

- C. Terminate device characteristic curves at a point reflecting maximum symmetrical or asymmetrical fault current to which the device is exposed.
- D. Identify the device associated with each curve by manufacturer type, function, and, if applicable, tap, time delay, and instantaneous settings recommended.
- E. Plot the following characteristics on the TCC graphs, where applicable:
  - 1. Electric utility's overcurrent protective device
  - 2. Medium voltage equipment overcurrent relays
  - 3. Medium and low voltage fuses including manufacturer's minimum melt, total clearing, tolerance, and damage bands
  - 4. Low voltage equipment circuit breaker trip devices, including manufacturer's tolerance bands
  - 5. Transformer full-load current, magnetizing inrush current, and ANSI through-fault protection curves
  - 6. Conductor damage curves
  - 7. Ground fault protective devices, as applicable
  - 8. Pertinent motor starting characteristics and motor damage points, where applicable
  - 9. Pertinent generator short-circuit decrement curve and generator damage point
  - 10. The largest feeder circuit breaker in each motor control center and applicable panelboard.
- F. Provide adequate time margins between device characteristics such that selective operation is provided, while providing proper protection.

### 3.5 ARC FLASH HAZARD ANALYSIS

- A. The arc flash hazard analysis shall be performed according to the IEEE Std. 1584-2002 equations that are presented in NFPA70E-2009, Annex D.
- B. The flash protection boundary and the incident energy shall be calculated at all significant locations in the electrical distribution system (switchboards, switchgear, motor-control centers, panelboards, busway and splitters) where work could be performed on energized parts.
- C. The Arc-Flash Hazard Analysis shall include all significant locations in 240 volt and 208 volt systems fed from transformers equal to or greater than 125 kVA where work could be performed on energized parts.
- D. Safe working distances shall be based upon the calculated arc flash boundary considering an incident energy of 1.2 cal/cm<sup>2</sup>.
- E. When appropriate, the short circuit calculations and the clearing times of the phase overcurrent devices will be retrieved from the short-circuit and coordination study model. Ground overcurrent relays should not be taken into consideration when determining the clearing time when performing incident energy calculations

- F. The short-circuit calculations and the corresponding incident energy calculations for multiple system scenarios must be compared and the greatest incident energy must be uniquely reported for each equipment location. Calculations must be performed to represent the maximum and minimum contributions of fault current magnitude for all normal and emergency operating conditions. The minimum calculation will assume that the utility contribution is at a minimum and will assume a minimum motor contribution (all motors off). Conversely, the maximum calculation will assume a maximum contribution from the utility and will assume the maximum amount of motors to be operating. Calculations shall take into consideration the parallel operation of synchronous generators with the electric utility, where applicable.
- G. The incident energy calculations must consider the accumulation of energy over time when performing arc flash calculations on buses with multiple sources. Iterative calculations must take into account the changing current contributions, as the sources are interrupted or decremented with time. Fault contribution from motors and generators should be decremented as follows:
  - 1. Fault contribution from induction motors should not be considered beyond 3-5 cycles.
  - 2. Fault contribution from synchronous motors and generators should be decayed to match the actual decrement of each as closely as possible (e.g. contributions from permanent magnet generators will typically decay from 10 per unit to 3 per unit after 10 cycles).
- H. For each equipment location with a separately enclosed main device (where there is adequate separation between the line side terminals of the main protective device and the work location), calculations for incident energy and flash protection boundary shall include both the line and load side of the main breaker.
- I. When performing incident energy calculations on the line side of a main breaker (as required per above), the line side and load side contributions must be included in the fault calculation.
- J. Mis-coordination should be checked amongst all devices within the branch containing the immediate protective device upstream of the calculation location and the calculation should utilize the fastest device to compute the incident energy for the corresponding location.
- K. Arc Flash calculations shall be based on actual overcurrent protective device clearing time. Maximum clearing time will be capped at 2 seconds based on IEEE Std. 1584-2002 section B.1.2. Where it is not physically possible to move outside of the flash protection boundary in less than 2 seconds during an arc flash event, a maximum clearing time based on the specific location shall be utilized.

### 3.6 REPORT SECTIONS

- A. Input data shall include, but not be limited to the following:

1. Feeder input data including feeder type (cable or bus), size, length, number per phase, conduit type (magnetic or non-magnetic) and conductor material (copper or aluminum).
  2. Transformer input data, including winding connections, secondary neutral-ground connection, primary and secondary voltage ratings, kVA rating, impedance, % taps and phase shift.
  3. Reactor data, including voltage rating, and impedance.
  4. Generation contribution data, (synchronous generators and Utility), including short-circuit reactance ( $X'd$ ), rated MVA, rated voltage, three-phase and single line-ground contribution (for Utility sources) and X/R ratio.
  5. Motor contribution data (induction motors and synchronous motors), including short-circuit reactance, rated horsepower or kVA, rated voltage, and X/R ratio.
- B. Short-Circuit Output Data shall include, but not be limited to the following reports:
1. Low Voltage Fault Report shall include a section for three-phase and unbalanced fault calculations and shall show the following information for each applicable location:
    - a) Voltage
    - b) Calculated fault current magnitude and angle
    - c) Fault point X/R ratio
    - d) Equivalent impedance
  2. Momentary Duty Report shall include a section for three-phase and unbalanced fault calculations and shall show the following information for each applicable location:
    - a) Voltage
    - b) Calculated symmetrical fault current magnitude and angle
    - c) Fault point X/R ratio
    - d) Calculated asymmetrical fault currents
      - 1) Based on fault point X/R ratio
      - 2) Based on calculated symmetrical value multiplied by 1.6
      - 3) Based on calculated symmetrical value multiplied by 2.7
    - e) Equivalent impedance
  3. Interrupting Duty Report shall include a section for three-phase and unbalanced fault calculations and shall show the following information for each applicable location:
    - a) Voltage
    - b) Calculated symmetrical fault current magnitude and angle
    - c) Fault point X/R ratio
    - d) No AC Decrement (NACD) Ratio
    - e) Equivalent impedance

- f) Multiplying factors for 2, 3, 5 and 8 cycle circuit breakers rated on a symmetrical basis
- g) Multiplying factors for 2, 3, 5 and 8 cycle circuit breakers rated on a total basis

C. Recommended Protective Device Settings:

1. Phase and Ground Relays:

- a) Current transformer ratio
- b) Current setting
- c) Time setting
- d) Instantaneous setting
- e) Recommendations on improved relaying systems, if applicable.

2. Circuit Breakers:

- a) Adjustable pickups and time delays (long time, short time, ground)
- b) Adjustable time-current characteristic
- c) Adjustable instantaneous pickup
- d) Recommendations on improved trip systems, if applicable.

D. Incident energy and flash protection boundary calculations

- 1. Arcing fault magnitude
- 2. Protective device clearing time
- 3. Duration of arc
- 4. Arc flash boundary
- 5. Working distance
- 6. Incident energy
- 7. Hazard risk category
- 8. Recommendations for arc flash energy reduction

3.7 FIELD ADJUSTMENT

- A. Adjust relay and protective device settings according to the recommended settings table provided by the coordination study. Field adjustments to be completed by the contractor and/or electrical equipment manufacturer's field service personnel.
- B. Make minor modifications to equipment as required to accomplish conformance with short circuit and protective device coordination studies.
- C. Notify Owner in writing of any required major equipment modifications.

### 3.8 ARC FLASH WARNING LABELS

- A. The contractor of the Arc Flash Hazard Analysis shall provide a 3.5 in. x 5 in. thermal transfer type label of high adhesion polyester for each work location analyzed.
- B. All labels will be based on recommended overcurrent device settings and will be provided after the results of the analysis have been presented to the owner and after any system changes, upgrades or modifications have been incorporated in the system.
- C. The label shall include the following information, at a minimum:
  - 1. Location designation
  - 2. Nominal voltage
  - 3. Flash protection boundary
  - 4. Incident energy or energy range corresponding to reported Hazard risk category.
  - 5. Working distance
  - 6. Engineering report number, revision number and issue date.
- D. Labels shall be machine printed, with no field markings.
- E. Arc flash labels shall be provided in the following manner and all labels shall be based on recommended overcurrent device settings.
  - 1. For each 600, 480 and applicable 208 volt panelboard, at least one arc flash label shall be provided.
  - 2. For each motor control center, one arc flash label shall be provided.
  - 3. For each switchboard, one arc flash label shall be provided.
  - 4. For each main switchboard with Utility Service, one flash label shall be provided for each section.
- F. Labels shall be field installed by the contractor.

### 3.9 ARC FLASH TRAINING

- A. The contractor of the Arc Flash Hazard Analysis shall train the owner's qualified electrical personnel of the potential arc flash hazards associated with working on energized equipment (minimum of 4 hours). The training shall be certified for continuing education units (CEUs) by the International Association for Continuing Education Training (IACET) or equivalent.

END OF SECTION SP-109S-26 05 73

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SECTION SP-109S-26 22 00 – LOW-VOLTAGE TRANSFORMERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Contractual Conditions and Division 01 Specification sections apply to this section.

1.2 SUMMARY

- A. This section includes the requirements for provision and installation of low-voltage transformers.

1.3 DESCRIPTION

- A. Provide and install all equipment, labor, material, accessories, and mounting hardware for a complete and operating system for low-voltage transformers.

1.4 SUBMITTALS

- A. Product Data: Provide outline and support point dimensions of enclosures and accessories, unit weight, voltage, KVA, and impedance ratings and characteristics, tap configurations, insulation system type, and rated temperature rise.

1.5 QUALIFICATIONS

- A. Manufacturer: Same as for products specified in Section 26 24 16 Panelboards.

1.6 REFERENCES AND REGULATORY REQUIREMENTS

- A. Furnish products listed and tested by UL as suitable for purpose specified and shown.
- B. Conform to requirements of the following:
  - 1. ANSI/NFPA 70 - National Electrical Code.
  - 2. NECA - Standard of Installation.
  - 3. NEMA ST 1 - Specialty Transformers.
  - 4. NEMA ST 20 - Dry Type Transformers for General Applications.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store, protect, and handle products per manufacturer's recommendations.



- B. Deliver transformers individually wrapped for protection and mounted on shipping skids.
- C. Accept transformers on site. Inspect for damage.
- D. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- E. Handle in accordance with manufacturer's written instructions. Lift only with lugs provided for the purpose. Handle carefully to avoid damage to internal components, enclosure, and finish.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Eaton.

### 2.2 TWO-WINDING TRANSFORMERS

- A. Description:
  - 1. NEM2A ST 20, factory-assembled, air cooled dry type transformers, ratings as indicated.
  - 2. Transformers serving computer loads (whether shown on drawings or not) shall be Non-Linear load K-13 rated.
  - 3. Other Non-Linear load transformers shall be as scheduled and noted on drawing.
  - 4. Isolation and shielded type transformers (if applicable) shall be as scheduled and noted on drawings.
- B. Insulation system and average winding temperature rise for rated KVA as follows:
  - 1. 1-15 KVA: Class 185 with 115 degrees C rise.
  - 2. 16-500 KVA: Class 220 with 115 degrees C rise.
- C. Case temperature: Do not exceed 35 degrees C rise above ambient at warmest point.
- D. Winding Taps:
  - 1. Transformers Less than 15 KVA: Two 5 percent below rated voltage, full capacity taps on primary winding.
  - 2. Transformers 15 KVA and Larger: NEMA ST 20.
- E. Sound Levels: NEMA ST 20.
- F. Basic Impulse Level: 10 KV.13
- G. Ground core and coil assembly to enclosure by means of a visible flexible copper grounding strap.

- H. Mounting: Suitable for wall, floor, or trapeze mounting, except transformers larger than 30 KVA, suitable for floor or trapeze mounting.
- I. Coil Conductors: Continuous windings with terminations brazed or welded.
- J. Transformer windings shall be continuous wound copper (98% conductivity) construction.
- K. Enclosure: NEMA ST 20; Type 1 or Type 3R ventilated as indicated. Provide lifting eyes or brackets.
- L. Isolate core and coil from enclosure using vibration-absorbing mounts.
- M. Nameplate: Include transformer connection data.
- N. Lugs: Suitable for terminating conductors sized for full load ampacity of transformer unit. Transformer lugs and mounting hardware shall be furnished by Manufacturer of transformer and shall be grade 5 with beveled washers. Hardware shall be of suitable size of pad opening per NEMA Standards.

## 2.3 SOURCE QUALITY CONTROL

- A. Provide production testing of each unit in accordance with NEMA ST 20.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify site condition. Do not install NEMA 1 equipment until building has reached the "dried-in" stage.
- B. Verify that surfaces are suitable for installing transformer supports.

### 3.2 PREPARATION

- A. Concrete Pad: Design per manufacturer's requirements plus three inches on all sides.

### 3.3 INSTALLATION

- A. Install Products in accordance with manufacturer's instructions.
- B. Set transformer plumb and level.
- C. Maintain clearances around enclosure for ventilation in accordance with manufacturer's instructions.

- D. Use flexible conduit, under the provisions of Section 26 05 33, one foot minimum length, for connections to transformer case. Make conduit connections to side panel of enclosure.
- E. Mount transformers on vibration isolating pads suitable for isolating the transformer noise from the building structure.
- F. Provide grounding and bonding in accordance with Section 26 05 26.
- G. Ground per NEC 250-26 and to meet local codes as applicable. Grounding lugs shall be multi-conductor type UL Listed for quantity and size of conductors terminated.
- H. Wall Mounted Transformers: Wall brackets shall be securely attached to concrete or masonry construction only and have supplemental support by means of all-thread rod hangers from superstructure above. Wall mounted transformers at non structural walls shall be supported from superstructure above with all-thread rod hangers, angle iron channel site manufactured structural stand, or combination thereof.
  - 1. Installation of wall mounted transformers shall be installed to maintain clear space about/above panels as defined by NEC.
- I. Conduit or piping systems that contain water or liquid of any kind shall not be installed over the top of any electrical equipment, transformers, racks, cabinets, or enclosures without prior written approval from the Owner.

#### 3.4 FIELD QUALITY CONTROL

- A. Install field inspect and test per manufacturer recommendations prior to energizing.
- B. Measure primary and secondary voltages and make appropriate tap adjustments.

END OF SECTION SP-109S-26 22 00

SECTION SP-109S-26 24 16 - PANELBOARDS

PART 1- GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Contractual Conditions and Division 01 Specification sections apply to this section.

1.2 SUMMARY

- A. This section includes the requirements for provision and installation of panelboards.

1.3 DESCRIPTION

- A. Provide all labor, materials, and equipment necessary to properly and completely install panelboards as scheduled on the drawings and as required by this section.

1.4 SUBMITTALS

- A. Submit product data on each basic panelboard construction type, showing manufacturer's standard construction data including:
  - 1. Cabinet construction/dimensions.
  - 2. Bus construction.
  - 3. UL labeling.
  - 4. Each overcurrent device.
- B. Shop drawings shall be submitted for each panel and clearly indicate the following information:
  - 1. Label.
  - 2. Each circuit breaker amperage rating, circuit number and position/location in panel.
  - 3. Electrical characteristics of panel.
  - 4. Mains rating.
  - 5. Main device rating.
  - 6. Mounting.
  - 7. Dimension, width, depth, height.
  - 8. Bus material.
  - 9. Interrupting capacity of minimum rated breaker.
  - 10. Panel type.

1.5 PROJECT AS-BUILT DOCUMENTS

- A. Record actual locations of Panelboards on red lined as-built documents and indicate actual branch circuit arrangement.

1.6 OPERATION AND MAINTENANCE DATA

- A. Provide spare parts data listing; source and current prices of replacement parts and supplies; and recommended maintenance procedures and intervals.

1.7 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing products specified for minimum ten years.

1.8 REFERENCES AND REGULATORY REQUIREMENTS

- A. Furnish products listed and classified by UL as suitable for purpose specified and indicated.
- B. Conform to the requirements of the following:
  - 1. ANSI/NFPA 70 - National Electrical Code.
  - 2. NECA (National Electrical Contractors Association) - "Standard of Installation."
  - 3. NEMA AB 1 - Molded Case Circuit Breakers.
  - 4. NEMA PB 1 - Panelboards.
  - 5. NEMA PB 1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.
  - 6. UL 67 - Panelboards
  - 7. UL 50 - Cabinets and Boxes
  - 8. Fed. Spec. W-P-115C

1.9 FIELD MEASUREMENTS

- A. Verify that field measurements are as instructed by manufacturer.

1.10 MAINTENANCE MATERIALS

- A. Provide two keys per panelboard.

1.11 DELIVERY, STORAGE AND HANDLING

- A. Handle panelboards and enclosures carefully to prevent damage.
- B. Store equipment indoors and protect from weather.
- C. Deliver tubs and internal assemblies sufficiently in advance of installation period as necessary to prevent delay of work.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Eaton, or approved substitutions.

### 2.2 GENERAL

- A. Lighting and Appliance Branch Circuit Panelboards: NEMA PB1, circuit breaker type, dead front, UL 67.
- B. Panelboard Bus: Copper ratings as indicated. Provide copper ground bus in each panelboard. Provide isolated full size neutral bus where neutral is applicable. Provide non-linear load panelboards as specified on drawings. Non-linear panelboards shall have 200 percent rated neutral busbar.
- C. Short-Circuit Rating:
  - 1. Minimum short circuit interrupting capacity: 10,000 amperes rms symmetrical for 240 volt panelboards; 14,000 amperes rms symmetrical for 480 volt panelboards. Bus shall be braced for minimum capacity equal to or greater than the lowest breaker symmetrical interrupting capacity. Minimum short circuit rating shall be increased to meet the following requirements:
    - a) Individual C.B. AIC Rating shown on panel schedules indicate lowest AIC rating allowed for individual circuit breaker in panel.
    - b) Circuit breakers shall be based on a fully rated system.
    - c) Circuit breaker types are not specified. Provide breakers to comply with the required AIC specified.
- D. Enclosure:
  - 1. Enclosures shall be at least 20 inches wide made from galvanized steel. Provide minimum gutter space in accordance with the National Electrical Code. Where feeder cables supplying the mains of a panel are carried through its box to supply other electrical equipment, the box shall be sized to include the additional required wiring space. At least four interior mounting studs with adjustable nuts shall be provided.
  - 2. Enclosures shall be provided with blank ends.
  - 3. Where indicated on the drawings, branch circuit panelboards shall be column width type.
  - 4. Regulatory Requirements:
    - a) NEMA PB 1, Type 1, Interior dry locations.
    - b) NEMA PB 1, Type 3R, Interior damp locations.

- c) NEMA PB 1, Type 4X stainless steel watertight, Exterior locations including those noted on drawings to be NEMA 3R.
- d) NEMA PB 1, Type 4X stainless steel watertight, interior wet locations, and wash-down areas, regardless of that noted on drawings.
- e) UL 50

E. Cabinet box:

- 1. 6 inches (153 mm) deep; width: 20 inches (508 mm), minimum.
- 2. Interior dry and damp locations shall be constructed of galvanized code gauge steel, to prevent rust.
- 3. Exterior, wash-down areas, and Interior wet locations shall be constructed of type 4X stainless steel, watertight.

F. Cabinet Front:

- 1. Flush or surface with concealed trim clamps, concealed hinge, and flush lock all keyed alike.
- 2. Shall be door-in-door construction.
- 3. Finish in manufacturer's standard baked enamel finish for interior dry locations. Interior damp location panels to be painted with rust inhibit primer epoxy paint top coat system.
- 4. Exterior, wash-down areas, and Interior wet locations shall be constructed of type 4X stainless steel, watertight.

G. Panels and breakers shall be rated for voltage and class of service to which applied.

H. Spaces:

- 1. Space provisions or spaces for future breakers shall be located at the bottom of the panel and be fully bussed complete with all necessary mounting hardware less the breaker.

## 2.3 MAINS

- A. Provide main lug only (MLO) or main circuit breaker (MCB) as noted on drawings either by riser diagram or by schedule. Where conflict exists, provide MCB.
- B. Regardless of what is shown on drawings provide the following minimum requirements.
  - 1. Main circuit breaker on each panel serving building main if required by applicable codes.
  - 2. Main circuit breaker on each panel fed directly from a transformer (unless disconnect with overcurrent devices is installed in feeder between transformer and panel).
- C. Provide lugs as required for conductors being connected to panelboard lugs, circuit breakers, etc.
- D. Main circuit breaker is not to be mounted as branch breaker or subfeed breaker.

## 2.4 CIRCUIT BREAKERS

### A. General

1. Molded Case Circuit Breakers: NEMA AB 1, plug-on type for 250V or less, bolt-on type for over 250V, thermal magnetic trip circuit breakers, with common trip handle for all poles. Provide circuit breakers UL listed as Type SWD for lighting circuits. Provide UL Class A ground fault interrupter circuit breakers where scheduled. Do not use tandem circuit breakers.
2. Current Limiting Molded Case Circuit Breakers: NEMA AB 1. Provide circuit breakers with integral thermal and instantaneous magnetic trip in each pole, coordinated with automatically resetting current limiting elements in each pole.

### B. Main Breakers:

1. Main breakers shall be individually mounted separate from branch breakers.
2. Covered by a metal plate, except for operating handle.
3. Connection from the load's side to the panel bus shall be bus bar. Insulated wire not permitted.

### C. Branch Breakers:

1. Thermal-magnetic, molded case, with inverse time-current overload and instantaneous magnetic tripping, unless otherwise shown. Breakers shall be calibrated for 40 degrees C or shall be ambient compensating.
2. Quick-make, quick-break, with tripped indication clearly shown by breaker handle taking a position between ON and OFF.
3. Multi-pole breakers shall have common internal trip. No handle ties between single pole breakers are acceptable for this Project.
4. Single pole 15 and 20 ampere circuit breakers shall be rated for switching duty and shall be labeled as "SWD".
5. Rating shall be as called for under "2.2 GENERAL".
6. Ground Fault Circuit Interrupters (GFI):
  - a) Provide UL Class (5 milliamp sensitivity) ground fault circuit protection on 120 VAC branch circuits for exterior location receptacles and for interior locations where required by NEC. (These may not be indicated on Panel Schedule.) This protection shall be an integral part of the branch circuit breaker which also provides overload and short circuit protection for branch circuit wiring. Tripping of a branch circuit breaker containing ground fault circuit interruption shall not disturb the feeder circuit to the panelboard. Provide separate neutral for circuits on GFI breakers whether indicated on drawings or otherwise.
7. Breakers feeding heating and air conditioning equipment shall be rated HACR type breaker.



## 2.5 SERVICE ENTRANCE EQUIPMENT

- A. Panelboards used as service entrance equipment shall be listed and labeled by UL for use as service equipment.

## PART 3 - EXECUTION

### 3.1 PREPARATION/INSPECTION/EXAMINATION

- A. Verify that surface is suitable for panelboard installation. Do not install NEMA 1 equipment until building has reached the "dried-in" stage.
- B. Examine area to receive panelboard to assure adequate clearance for panelboard installation.
- C. Verify prior to installation that National Electrical Code clearances will be maintained after installation. Rework equipment locations as required to provide electrical code clearances.
- D. Start Work only after unsatisfactory conditions are corrected.
- E. Submit coordination drawings of all electrical rooms, showing all equipment. Comply with Section 26 00 10 Basic Electrical Requirements.

### 3.2 INSTALLATION

- A. Install panelboards in accordance with NEMA PB 1.1. Install all panelboards and panelboard enclosures in accordance with the manufacturer's written instructions, NECA's "Standard of Installation", the applicable requirements of the National Electrical Code, and recognized industry practices.
- B. Install panelboards plumb. Install recessed panelboards flush with wall finishes. Provide supports in accordance with Section 26 05 29 Supporting Devices.
- C. Panelboards shall be provided with structural framing located within gypsum board partitions. All enclosures shall be firmly anchored to walls and supporting structures (where used) using appropriate hardware. Provide supporting channels on walls constructed of gypsum board or where otherwise necessary to provide a mechanically secure and permanent installation. Attach channels to framing provided within gypsum board partitions.
- D. Enclosures shall be installed so that the top is 6'-6" above finished floor.
  - 1. Where the size of the enclosure is such that the top cannot be installed at 6'-6", the top of the enclosure shall be kept as low as possible.
- E. Panelboard backboxes/trim covers mounted adjacent to each other (i.e. multi-section panels, etc.) installed in finished areas be of same size.

- F. Provide filler plates for unused spaces in panelboards.
- G. Provide typed circuit directory from panelboard manufacturers' original card stock, for each branch circuit panelboard. Mount a typewritten directory showing the actual circuit numbers, type of load and room names on inside of door. Room names shall be actual names or numbers used, not necessarily shown on the drawings. Progress Drawings shall show same arrangements as the Directory. Revise directory to reflect circuiting changes required to balance phase loads.
- H. Provide four each 1 inch spare conduits out of each recessed panelboard to an accessible location above ceiling. Identify each as SPARE.
- I. Clean the interior of each panelboard before installing conductors. At all times, keep the interior trim and exterior surfaces of the panelboard free of rust and debris. Repaint finishes if necessary.
- J. Coordinate all raceways and conductors with their respective panelboards so that all connections and conductors routing present an orderly appearance. Conductors in the panelboards shall be neatly laced and arranged in orderly manner.
- K. Collect all keys upon delivery of panelboard. Store keys on one ring to be kept by project superintendent. Forward key ring with keys to OAR at substantial completion.
- L. Provide a separate neutral conductor for each GFI breaker. These shall not be combined to serve more than 1 circuit, even where on different phases. Increase plan indications of conductors for neutral wires required, as necessary.
- M. Conduit or piping systems that contain water or liquid of any kind shall not be installed over the top of any electrical equipment, transformers, racks, cabinets, or enclosures without prior written approval from the Owner.

### 3.3 IDENTIFICATION

- A. Refer to Section 26 05 53 Electrical Identification for products and content.
- B. Provide engraved plastic nameplates under the provisions of 26 05 53.
- C. Nameplate shall show panel name, voltage and name of panel that feeds this respective panel, and UL short circuit rating.

### 3.4 FIELD QUALITY CONTROL

- A. Measure steady state load currents at each panelboard feeder; rearrange circuits in the panelboard to balance the phase loads to within 20 percent of each other. Maintain proper phasing for multi-wire branch circuits.
- B. Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers, fusible switches, and fuses.

- C. All circuits shall be operated to establish a good working order and checked for shorts.
- D. All panel directory circuit numbers shall be checked to verify accuracy of the number.
- E. Tests:
  - 1. Test Panelboards and panelboard feeders per requirements of Section 26 00 90 Tests and Performance Verification.
  - 2. Feeder conductors shall be checked by approved means to establish the absence of shorts to ground; insulation value, etc. and the result recorded and submitted to the Designer.
  - 3. Submit Conductor Insulation Resistance Test per requirements of Section 26 00 90.
  - 4. Submit Tabulation Data Voltage and Amperage Readings per requirements of Section 26 00 90.
- F. Equipment Checkout:
  - 1. Where and when requested by Designer/RPR provide (during construction):
    - a) Inspection of equipment by authorized equipment manufacturer technician complete with submittal of statement of findings by technician, and providing any adjustments deemed necessary for a complete and operating system.
    - b) Submit Equipment Checkout Memo per Section 26 00 90.

### 3.5 ADJUSTMENT AND CLEANING

- A. Adjust operating mechanisms for free mechanical movement.
- B. Tighten bus connections and mechanical fasteners.
- C. Touch up scratched and marred surfaces to match original finish.

END OF SECTION SP-109S-26 24 16

SECTION SP-109S-26 24 16.13 - DISTRIBUTION PANELBOARDS

PART 1- GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Contractual Conditions and Specifications sections apply to this section.

1.2 SUMMARY

- A. This section includes the requirements for provision and installation of distribution panelboards.

1.3 DESCRIPTION

- A. Factory-assembled, metal-enclosed panelboard for distribution and control of power from incoming line terminals to outgoing feeder terminals, installed and tested in place.
- B. Distribution panelboard shall include all protective devices and equipment as specified, with necessary interconnections, accessories and control wiring.

1.4 SUBMITTALS

- A. Product data shall be submitted on each basic Distribution Panelboard construction type, showing manufacturer's standard construction data, including:
  - 1. Cabinet construction/dimensions.
  - 2. Bus construction.
  - 3. UL labeling.
  - 4. Each overcurrent device.
  - 5. Provide electrical characteristics including voltage, frame size and trip ratings, fault current withstand ratings, and time-current curves of all equipment and components.
  - 6. Provide data on trip units and breaker interface module.
- B. Shop drawing shall be submitted for all distribution panelboard for this project clearly indicating the following:
  - 1. Label.
  - 2. Each circuit breaker amperage rating, circuit number and position/location in distribution panelboard.
  - 3. Electrical characteristics of distribution panelboard.
  - 4. Mains rating.
  - 5. Main device rating.
  - 6. Mounting.
  - 7. Dimension, width, depth, height..

8. Bus material.
  9. Interrupting capacity of minimum rated breaker.
  10. Distribution panelboard type.
  11. Engraved nameplate for each overcurrent device.
  12. Front and side views of enclosures with overall dimensions shown.
  13. Conduit entrance locations and requirements.
  14. Frame sizes and Interrupting Capacity of each breaker, and total assembly.
  15. Horsepower ratings at rated voltage of fused switches and/or breakers.
  16. Labels and labeling.
  17. Nameplate on main panelboard only giving name of project; Architect, Engineer and Contractor.
  18. Bus bar size, arrangement and spacing.
  19. Breaker interface module.
  20. Surge protection Device (SPD) Equipment
  21. Metering/Monitoring Equipment
- C. Submit Manufacturer's Instructions indicating application conditions and limitations of use stipulated by product testing agency specified under regulatory requirements. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.
- D. Submit Maintenance Data: Include spare parts data listing; source and current prices of replacement parts and supplies; and recommended maintenance procedures and intervals.
- E. Submit Spare Parts Certification Memo signifying that the spare parts required by the drawings and/or specifications have been turned over to the Owner.

#### 1.5 PROJECT AS-BUILT DOCUMENTS

- A. Record actual locations of distribution panelboards on red lined as-built documents indicating actual circuit arrangement.

#### 1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum 10 years experience.

#### 1.7 REFERENCES AND REGULATORY REQUIREMENTS

- A. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.
- B. Conform to the requirements of the following:
1. ANSI/NFPA 70 - National Electrical Code.
  2. NEMA AB 1 - Molded Case Circuit Breakers and Molded Case Switches.
  3. NEMA KS 1 - Enclosed Switches.

4. NEMA PB 1 - Panelboards.
5. NEMA PB 1.1 - Instructions for safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.
6. UL 67 - Panelboards
7. UL 50 - Cabinets and Boxes
8. Fed. Spec. W-P-115C

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver in 35 inch maximum width or depth (or dimension required to fit section through doors), individually wrapped for protection and mounted on shipping skids.
- B. Accept distribution panelboards on site. Inspect for damage.
- C. Store in a clean, dry space designated by RPR. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- D. Handle in accordance with NEMA PB 1 and manufacturer's written instructions. Lift only with lugs provided for the purpose. Handle carefully to avoid damage to distribution panelboard internal components, enclosure, and finish.

#### 1.9 ENVIRONMENTAL REQUIREMENTS

- A. Conform to NEMA PB 1 service conditions during and after installation of distribution panelboards.

#### 1.10 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated and comply with instructions by manufacturer.

#### 1.11 MAINTENANCE MATERIALS

- A. Provide two of each key (where applicable).
- B. Provide two fuse pullers (where applicable).

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Eaton (Basis of Design), SQ-D or approved substitutions.

## 2.2 GENERAL

- A. Distribution Panelboards shall have circuit breaker branch protective devices complying with NEMA PB1 as a minimum requirement. Panelboards shall be NEMA I and shall meet Underwriter's Laboratories enclosure requirements for service conditions.
- B. Distribution panelboards shall have UL label affixed, unless special construction prohibits and no labeling or listing is available.
- C. Short-Circuit Rating:
  - 1. Minimum integrated short circuit rating: 22,000 amperes rms symmetrical for 240 volt. Bus shall be braced for minimum capacity equal to or greater than the lowest breaker symmetrical interrupting capacity. Minimum short circuit rating shall be increased to meet the following requirements:
    - a) Individual C.B. AIC Rating shown on panel schedules indicate lowest AIC rating allowed for individual circuit breaker in panel.
    - b) Circuit breakers shall be based on a fully rated system.
    - c) Circuit breaker types are not shown or called for. The contractor must provide breakers in panel or feeder breakers in upstream breakers to comply with the required AIC specified.
    - d) Distribution panelboards to be freestanding type construction unless specifically specified otherwise.
  - 2. Short-Circuit Rating Label:
    - a) Panelboards shall be labeled with a UL short-circuit rating.
    - b) Series ratings shall not be used to achieve short circuit ratings.
- D. Enclosure:
  - 1. Enclosures shall be at least 20 inches wide made from galvanized steel. Provide minimum gutter space in accordance with the National Electrical Code. Where feeder cables supplying the mains of a panel are carried through its box to supply other electrical equipment, the box shall be sized to include the additional required wiring space. At least four interior mounting studs with adjustable nuts shall be provided.
  - 2. Enclosures shall be provided with blank ends.
  - 3. Where indicated on the drawings, branch circuit panelboards shall be column width type.
  - 4. Regulatory Requirements:
    - a) NEMA PB 1, Type 1, Interior dry locations.
    - b) NEMA BP 1 Type 3R, Interior damp locations
    - c) NEMA PB 1, Type 4X stainless steel watertight, Exterior locations including those notes on drawings to be NEMA 3R
    - d) NEMA PB 1, Type 4X stainless steel watertight, interior wet locations, and washdown areas, regardless of that noted on drawings.
    - e) UL 50

## 2.3 DISTRIBUTION PANELBOARDS

- A. Description: NEMA PB 1 with electrical ratings and configurations as indicated.
- B. Overcurrent Devices: Panel mounted.
- C. Bus Material: Copper standard size.
- D. Bus Connections: Bolted, accessible from front for maintenance.
- E. Ground Bus: Extend length of board.
- F. Molded Case Circuit Breakers - 1200A and Below:
  - 1. Protective devices shall be molded case circuit breakers with inverse time and instantaneous tripping characteristics.
  - 2. Circuit breakers shall be operated by a toggle-type handle and shall have a quick-make, quick-break over-center switching mechanism that is mechanically trip-free. Automatic tripping of the breaker shall be clearly indicated by the handle position.
  - 3. Circuit breakers shall have a minimum symmetrical interrupting capacity as indicated on the drawings and as specified herein.
  - 4. Circuit breakers 225 ampere and below shall have thermal-magnetic trip units and inverse time-current characteristics.
  - 5. Circuit breakers above 225 ampere shall have microprocessor based programmable RMS sensing trip units.
  - 6. Ground fault protection shall be provided where indicated.
  - 7. Where indicated circuit breakers shall be current limiting.
  - 8. Where indicated provide UL listed circuit breakers for applications at 100% of their continuous ampere rating in their intended enclosure.
- G. Programmable Trip Units: (Circuit Breakers Above 225 Ampere)
  - 1. Each circuit breaker microprocessor-based tripping system shall consist of three (3) current sensors, a trip unit and a flux-transfer shunt trip. The trip unit shall use microprocessor-based technology to provide the adjustable time-current protection functions. True rms sensing circuit protection shall be achieved by analyzing the secondary current signals received from the circuit breaker current sensors and initiating trip signals to the circuit breaker trip actuators when predetermined trip levels and time-delay settings are reached Basis of Design is Eaton type OPTIM 1050.
  - 2. Interchangeable rating plugs shall establish the continuous trip ratings of each circuit breaker. Rating plugs shall be fixed-type as indicated. Rating plugs shall be interlocked so they are not interchangeable between frames, and interlocked such that a breaker cannot be closed and latched with the rating plug removed.
  - 3. System coordination shall be provided by the following microprocessor-based programmable time/current curve shaping adjustments:
    - a) Programmable long-time pickup settings in 1% increments, with +/- 5% band tolerance
    - b) Programmable long-time delay with selectable I<sup>2</sup>t or I<sup>4</sup>t curve shaping.



- c) Programmable short-time settings (dependent on long-time setting) in 1% increments, with +/- 5% band tolerance.
  - d) Programmable short-time delay with selectable flat or I<sup>2</sup>t curve shaping.
  - e) Programmable instantaneous pickup settings in 1% increments.
  - f) Programmable ground fault pickup settings trip or alarm in 1% increments.
  - g) Programmable ground fault delay with selectable flat or I<sup>2</sup>t curve shaping.
- 4. The microprocessor-based trip unit shall have a powered/unpowered selectable thermal memory to provide protection against cumulative overheating should a number of overload conditions occur in quick succession.
  - 5. When the instantaneous setting has been deselected, a selectable discriminator circuit shall be provided to prevent the breaker being closed and latched on to a faulted circuit.
  - 6. Internal ground fault protection or alarm settings, if specified, shall not exceed 1200 amperes. Provide neutral ground fault sensor for four-wire loads.
  - 7. The trip unit shall have an information system that utilizes battery backed up LEDs to indicate mode of trip following an automatic trip operation. The indication of the mode of trip shall be retained after an automatic trip. The LEDs shall be complemented by trip event information stored in non-volatile memory after a trip event. A trip reset button shall be provided to turn off the LED indication and reset the memory after an automatic trip. A test pushbutton shall energize an LED to indicate battery status.
  - 8. A red LED shall be provided on the face of the trip unit and pre-set to flash on and off when an adjustable high-load level is exceeded. A time-delay shall be provided to avoid nuisance alarms. The microprocessor-based trip units shall be capable of monitoring the following data:
    - a) Instantaneous value of phase, neutral and ground current.
    - b) Minimum and maximum current values.
    - c) Average demand current.
    - d) System diagnostic information such as alarms and cause of trip.
    - e) Approximate level of fault current that initiated an automatic trip operation.
  - 9. The trip unit shall contain test capability. Testing shall be carried out by using a hand-held programmer, a breaker interface module or a remote computer to select the values of test current within a range of available settings. The basic protection functions shall not be affected during test operations. The breaker may be tested in either the "Trip" or "No Trip" test mode.
  - 10. A hand-held programming unit shall be provided to set/change the network communication breaker address for each device, set the stem baud rate, distribution frequency, display breaker information, and display monitored values. In addition, provide password protection for programming time/current set points and to perform functional testing of phase and ground trip characteristics. The programmer shall be self-powered by an internal battery. Provide two (2) hand-held programming units. Contractor shall submit Spare Parts Certification Memo certifying two hand-held programming units have been turned over to the Owner.
  - 11. The monitored data shall be displayed by a hand-held programmer, a breaker interface module and a remote computer.

12. Circuit breakers, 1200 ampere frame and below, shall be provided with a 24 volt DC power supply mounted within the assembly. In addition, provide a minimum of one (1) auxiliary switch and one (1) bell alarm, each with form C contacts in each breaker. Provide additional auxiliary switches, bell alarms, shunt trips, and undervoltage releases where indicated on the drawings.
  13. The trip unit shall be capable of two-way communication via a network twisted pair for remote monitoring and control. The trip unit shall be provided with an address register for identification on the network. All monitored values shall be transmittable over the network.
  14. The trip unit shall include zone interlocking capability for the short-time delay and ground fault delay trip functions for improved system coordination. The zone interlocking system shall restrain the tripping of an upstream circuit breaker, and allow the circuit breaker closest to the fault to trip with no intentional time delay. In the event that the downstream breaker does not trip, the upstream breaker shall trip after the pre-set time delay. Factory wire zone interlocking system for breakers within each assembly.
  15. Molded case circuit breakers shall be provided with a potential transformer, suitable for operation up to 600 volts. The potential transformer shall be mounted externally to the circuit breakers and provided with a dielectric disconnect fuse.
  16. For enhanced system analysis, the following additional parameter values shall be monitored:
    - a) Peak demand (kW)
    - b) Present demand (kW)
    - c) Reverse energy (kWh)
    - d) Forward energy (kWh)
    - e) Total energy (kWh)
    - f) Power factor
    - g) Percentage harmonic content
    - h) Total Harmonic Distortion (THD).
- H. Ground Fault Sensor (where called for on drawings): Zero sequence of ground return type.
- I. Future Provisions: Fully equip spaces for future devices with bussing and bus connections, suitably insulated and braced for short circuit currents. Provide continuous current rating as indicated.
- J. Enclosure: Type 1 - General Purpose for interior locations. Type 2 - Rain tight for damp locations.
1. Align sections at front and rear.
  2. Finish:
    - a) Interior dry locations: Manufacturer's standard light gray enamel over external Interior surfaces. Coat internal surfaces with minimum one coat corrosion-resisting paint, or plate with cadmium or zinc.
    - b) damp locations: Coat interior and exterior of enclosure with rust inhibiting primer and paint over with epoxy paint.
    - c) Exterior, wash-down areas, and Interior wet locations: NEMA 4X stainless steel, watertight.

## 2.4 DISTRIBUTION ENTRANCE EQUIPMENT

- A. Panelboards used as service entrance equipment shall be listed and labeled by UL for use as service equipment.

## PART 3 - EXECUTION

### 3.1 PREPARATION, INSPECTION, EXAMINATION

- A. Verify that surface is suitable for panelboard installation. Do not install NEMA 1 equipment until building has been "dried-in" stage.
- B. Examine area to receive panelboard to assure adequate clearance.
- C. Verify National Electrical Code clearances will be maintained after installation. Rework equipment locations as required to provide Electrical code clearances.
- D. Start Work only after unsatisfactory conditions have been corrected.
- E. Submit coordination drawings of all electrical rooms, showing all electrical (and mechanical) equipment. Comply with requirements of Section 26 05 01.

### 3.2 INSTALLATION

- A. Install panelboards in accordance with NEMA PB 1.1. Install all panelboards and distribution panelboard enclosures in accordance with the manufacturer's written instructions, NECA's "Standard of Installation", the applicable requirements of the National Electrical Code, and recognized industry practices.
- B. Install panelboards plumb. Install recessed distribution panelboards flush with wall finishes. Provide supports in accordance with Section 26 05 29.
- C. Panelboards and terminal cabinets shall be provided with structural framing located within gypsum board partition. All enclosures shall be firmly anchored to walls and supporting structures (where used) using appropriate hardware. Provide supporting (unistrut type) channels on walls constructed of gypsum board or where otherwise necessary to provide a mechanically secure and permanent installation. Attach channels to framing provided within gypsum board partitions
- D. Install enclosures so that the top is 6'-6" above finished floor. Where the size of the enclosure is such that the top cannot be installed at 6'-6", the top of the enclosure shall be kept as low as possible.
- E. Provide filler plates for unused spaces in distribution panelboards.
- F. Provide spare conduits out of each recessed distribution panelboard to an accessible location above ceiling. Minimum spare conduits: 4 empty 1 inch. Identify each as SPARE.

- G. Install distribution panelboards so that proper working clearances shall be maintained at every distribution panelboard location.
- H. Clean the interior of each distribution panelboard before installing conductors. At all times, keep the interior trim and exterior surfaces of the distribution panelboard free of rust and debris. Repaint finishes if necessary.
- I. Coordinate all raceways and conductors with their respective distribution panelboards so that all connections and conductors routing present an orderly appearance. Conductors in the distribution panelboards shall be laced and arranged in orderly manner.
- J. Provide a separate neutral conductor for each GFI breaker. These shall not be combined to serve more than 1 circuit, even where on different phases. Increase plan indications of conductors for neutral wires required, as necessary.
- K. Provide and install separate 120 volt, 20 AMP circuit complete with circuit breaker, transformer, conduit, and wire as required to power any shunt-trip function specified.
- L. Conduit or piping systems that contain water or liquid of any kind shall not be installed over the top of any electrical equipment, transformers, racks, cabinets, or enclosures without prior written approval from the Owner.

### 3.3 IDENTIFICATION

- A. Refer to Section 26 05 53.
- B. Provide engraved plastic nameplates under the provisions of 26 05 53.

### 3.4 FIELD QUALITY CONTROL

- A. Measure steady state load currents at each distribution panelboard feeder; rearrange circuits in the distribution panelboard to balance the phase loads to within 20 percent of each other. Maintain proper phasing for multi-wire branch circuits.
- B. Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers, fusible switches, and fuses.
- C. All circuits shall be operated to establish a good working order and checked for shorts.
- D. All panel directory circuit numbers shall be checked to verify accuracy of the number.
- E. Measure insulation resistance of each bus section phase to phase and phase to ground for one minute each, at test voltage of 1000 volts; minimum acceptable value for insulation resistance is 2 megohms.
- F. Check tightness of accessible bolted bus joints using calibrated torque wrench.
- G. Physically test key interlock systems to insure proper function.

H. Tests:

1. Test Distribution panelboards and distribution panelboard feeders per requirements of Section 26 08 10.
2. Feeder conductors shall be checked by approved means to establish the absence of shorts to ground; insulation value, etc. and the result recorded and submitted to the Designer.
3. Submit Conductor Insulation Resistance Test per requirements of Section 26 08 10.
4. Submit Tabulation Data Voltage and Amperage Readings per requirements of Section 26 08 10.

I. Equipment Checkout:

1. When requested by Designer provide (during construction):
  - a) Inspection of equipment by authorized equipment manufacturer technician complete with submittal of statement of findings by technician, and providing any adjustments deemed necessary for a complete and operating system.
  - b) Submit Equipment Checkout Memo per Section 26 08 10.

3.5 ADJUSTING

- A. Adjust all operating mechanisms for free mechanical movement.
- B. Tighten bolted bus connections in accordance with manufacturer's instructions.
- C. Adjust circuit breaker trip and time delay settings to values per manufacturer's recommendation.

END OF SECTION SP-109S-26 24 16.13

SECTION SP-109S-26 27 16 – ELECTRICAL CABINETS AND ENCLOSURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Contractual Conditions and Division 1 Specification sections apply to this section.

1.2 SUMMARY

- A. This section includes the requirements for provision and installation of cabinets and enclosures.

1.3 DESCRIPTION

- A. Provide and install all equipment, labor, material, accessories, and mounting hardware for a complete and operating system for the following:
  - 1. Hinged cover enclosures.
  - 2. Cabinets.
- B. Cabinets and enclosures are to include:
  - 1. Terminal blocks,
  - 2. Mounting panel,
  - 3. Ground bus/bar, and
  - 4. All accessories as required for a complete and operating system.
- C. Provide cabinets and enclosures for all systems specified in Division 16.

1.4 REFERENCES AND REGULATORY REQUIREMENTS

- A. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.
- B. Conform to the requirements of the following:
  - 1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
  - 2. NEMA ICS 4 - Terminal Blocks for Industrial Control Equipment and Systems.
  - 3. ANSI/NFPA 70 - National Electrical Code.

1.5 SUBMITTALS

- A. Submit Product Data: Provide manufacturer's standard data for enclosures and cabinets.

- B. Submit Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under regulatory requirements. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of Product.
- C. Submit shop drawings on all cabinets and enclosures showing:
  - 1. Covers.
  - 2. Dimensions - inside and out.
  - 3. Gauge of metal.
  - 4. Manufacturer.
  - 5. Terminal mounting plate, construction, etc.
  - 6. Ground bus/bar.

## 1.6 EXTRA MATERIALS

- A. Provide two keys for each type of lock.

## PART 2 - PRODUCTS

### 2.1 GENERAL

- A. Unless specifically called for otherwise on contract drawings, provide "CABINETS" as specified herein for terminal cabinets mounted indoor. Similarly, provide "HINGED COVER ENCLOSURES" as specified herein for terminal cabinets mounted outdoors or in locations other than NEMA 1 locations. Also, provide "HINGED COVER ENCLOSURES" for locations where size required is not available in "CABINET" construction, or if specifically specified as "enclosure" on contract documents.
- B. Size.
  - 1. Dimensions of cabinets and enclosures shall meet the dimensions shown on drawings, dimensions required by NEC, or dimensions sized as required to facilitate all equipment/connections involved installation, whichever is largest.
  - 2. Coordinate sizes required and assure that equipment cabinets or enclosures will house and facilitate proper installation and access to equipment.
- C. Provide metal barriers to separate compartments containing control wiring operating at less than 50 volts from power wiring or where wiring from separate systems of Normal and Emergency Power are required to be in one enclosure.
- D. Provide accessory feet or mounting brackets for free-standing equipment.

### 2.2 HINGED COVER ENCLOSURES

- A. Construction:

1. Interior Dry Locations: NEMA Type 1 (unless otherwise noted), steel.
  2. Exterior and Interior Wet Locations: NEMA Type 4X: Stainless steel.
- B. Covers: Continuous hinge.
- C. Enclosure Finish:
1. NEMA 1: manufacturer's standard metallic gray enamel over phosphatized surfaces.
  2. NEMA 4X: Stainless steel.
- D. Lock/handle.
1. Provide key lock handle on all enclosures mounted in areas that are not dedicated electrical or mechanical rooms. Enclosures installed in electrical rooms are not required to be lockable.
- E. Interior mounting plate.
1. Each enclosure is to have interior mounting plate/panel for mounting terminal blocks and electrical components.
  2. Plate/panel is to be metal.
- F. Ground bus/bar.
1. Each enclosure housing surge suppression equipment or other equipment shall have "local" ground bar/bus installed. See Article "Local Ground Bus/Bar".

## 2.3 CABINETS

- A. Construction: Specified gauge steel with removable enwalls.
- B. Finish:
1. Boxes:
    - a) Surface mounted: Gray baked enamel.
    - b) Flush mounted: Galvanized steel.
  2. Fronts: Gray baked enamel.
- C. Fronts:
1. Electrical or mechanical room locations: screw cover with hinged door and flush handle or as noted below.
  2. Other locations: mono-flat with concealed trim clamps, concealed hinges, flush lock lockable handle, and custom color finish in interior public areas to match mounting surface.
  3. Flush or surface type as shown or called for on contract documents.



D. Interior mounting plate.

1. Each enclosure is to have interior mounting plate/panel for mounting terminal blocks and electrical components.
2. Panel/plate shall be metal.

E. Ground bus/bar.

1. Each cabinet housing surge suppression equipment or other equipment shall have "local" ground bar/bus installed. See specification for "Local Ground Bus/Bar" included within this section.

2.4 TERMINAL BLOCKS

- A. Terminal Blocks: ANSI/NEMA ICS 4.
- B. Power Terminals: Unit construction type with closed back and tubular pressure screw connectors, rated 600 volts.
- C. Signal and Control Terminals: Modular construction type, suitable for channel mounting, with tubular pressure screw connectors, rated 300 volts.
- D. Provide ground bus terminal block, with each connector bonded to enclosure.

2.5 LOCAL GROUND BUS/BAR

- A. Size to handle #6 through #14 AWG copper ground wire.
- B. Length as required for circuits.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces are ready to receive Work.

3.2 INSTALLATION

- A. Install Products in accordance with manufacturer's instructions.
- B. Install enclosures and cabinets plumb. Anchor securely to wall and structural supports at each corner.
- C. Install cabinet fronts plumb.
- D. Install per N.E.C. and as required for proper clearance. Coordinate with panels.

- E. Provide and install terminal cabinets as shown on drawings or as required by the National Electrical Code (NEC).
- F. Provide terminal cabinets wherever required for a complete and operating distribution system whether shown on drawings or not.
- G. Install local ground bus/bar in each terminal cabinet/enclosure that houses surge suppression equipment or other equipment and bond to cabinet enclosure via mounting screws or #6 AWG copper ground wire.
- H. Ground local ground bus to "SYSTEMS" ground bus/bar with minimum #6 AWG copper ground wire. Increase size if so required on drawings.
- I. Install enclosures. Identification of cabinets is required. Phenolic labels with voltage, circuit, panel, fed from, location of source, location of load.

END OF SECTION SP-109S-26 27 16

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SECTION SP-109S-26 27 26 - WIRING DEVICES

PART 1- GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Contractual Conditions and Division 01 Specification sections apply to this section.

1.2 SUMMARY

- A. This section includes the requirements for provision and installation of wiring devices.

1.3 DESCRIPTION

- A. Provide and install all equipment, labor, material, accessories, and mounting hardware for a complete and operating system for the following:
  - 1. Wall switches.
  - 2. Wall dimmers.
  - 3. Receptacles.
  - 4. Device plates and decorative box covers.

1.4 SUBMITTALS

- A. Submit Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations including all types of wiring devices, plates and engraving.
- B. Submit Manufacturer's Instructions:
  - 1. Indicate application conditions and limitations of use stipulated by product testing agency specified under regulatory requirements.
  - 2. Include instructions for storage, handling, protection, examination, preparation, operation and installation of product.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years experience.

1.6 REFERENCES AND REGULATORY REQUIREMENTS

- A. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

B. Conform to the requirements of the following:

1. ANSI/NFPA 70 - National Electrical Code
2. NEMA WD 1 - General Purpose Wiring Devices.
3. NEMA WD 5 - Wiring Devices, Special Purpose
4. NEMA WD 6 - Wiring Device Configurations.

## 1.7 EXTRA MATERIALS

A. Provide a minimum of two (2) screw drivers of each type of tamper proof screw used on project. Turn over to RPR. Include receipt in O&M manual.

## PART 2 - PRODUCTS

### 2.1 GENERAL

- A. All devices shall be Specification Grade as minimum.
- B. General purpose wiring devices shall meet NEMA standard WD-1, wiring devices, general purpose. Special purpose devices shall conform to the requirements of NEMA standard WD-5, wiring devices, special purpose.
- C. All wiring devices shall bear UL labels.
- D. All devices of one type shall be by the same Manufacturer.
1. "Hazardous Location" and special purpose devices as may not be available from the same manufacturer shall constitute the only exception to this requirement of single source.
- E. Corrosion resistant devices shall be as specified for normal usages, and fabricated of yellow color melamine plastic. Where "Weatherproof" type is indicated for exterior or wet locations, provide matching self-closing cover, with gasketed seals at plate/wall junctions and for cover.
1. Provide factory packaged wiring devices having high impact strength molded plastic bodies.
- F. Except where specifically required, the use of interchangeable type or combination switch-receptacle-pilot devices are not acceptable.

### 2.2 WALL SWITCHES

- A. General:
1. Snap switches for general use shall be maintained contact types, and shall be single-pole, double-pole, three-way, or four-way as required for the specific switching arrangements shown on the drawings. They shall be quiet tumbler

- operation types, having silver alloy contacts, and meeting all NEMA performance standards. Color to match plates unless specifically noted otherwise.
2. Switches shall be toggle or key-operated types, as indicated on the drawings. All key-operated switches shall be keyed alike.
  3. Where switches are denoted as having pilot lights, pilot lights shall glow when the switches are "ON". Provide pilot light switch with lamp and miniature step-down transformer. The pilot light shall have a red lens, and the lamp shall be long-life type.
  4. Jewels for use with switches controlling motors shall be green, and jewels for other purposes shall be amber. All units shall be front relampable.
  5. Snap switches installed in hazardous locations shall be UL listed for the type of location (class and division).
  6. Switches connected to emergency power shall have red lighted handles which shall illuminate when the switches are "Off".
  7. Voltage and ampere rating of switches shall be marked on switch, and shall conform to voltage of system to which applied.
  8. Switches shall have back and side wired screw pressure terminals.
- B. Description: NEMA WD 1, heavy-duty, AC only general-use snap switch.
- C. Voltage Rating: 120-277 volts, AC.
- D. Current Rating: 20 amperes minimum.
- E. Ratings: Match branch circuit and load characteristics.

## 2.3 WALL DIMMERS

- A. Description: NEMA WD 1, semiconductor dimmer for incandescent lamps, type as indicated on Drawings.
- B. Device Body: Present, linear slide as called for on drawings.
- C. Voltage: 120 volts or as required to match application.
- D. Power Rating: Match load shown on Drawings; 600 Watts minimum.
- E. Accessory Wall Switch:
1. Match dimmer appearance.
  2. Same manufacturer and style as dimmer switch.

## 2.4 RECEPTACLES

- A. General:
1. All receptacles shall be of standard NEMA configuration, as indicated on the drawings, and shall comply with the respective ANSI C73 series standard for the NEMA configuration. Color to match plates unless specifically noted otherwise.

2. Duplex receptacles shall have integral UL listed self-grounding clips. Similar, single receptacles shall be provided for plug-in connections of industrial fluorescent light fixtures on the same switching circuit. Receptacle face to be impact resistant nylon.
3. Weatherproof duplex receptacles shall be provided in all exterior locations, and shall be Ground Fault Circuit Interrupting (GFCI) types, with weatherproof stainless steel cover plates.
4. Special purpose receptacles for specific equipment shall be grounding types, having the number of poles, voltage and ampere ratings, and NEMA configurations required by the equipment. For each special purpose receptacle, provide an identical mating plug equipped with cord grip, secured to cord.
5. Duplex receptacles shall have back and side wired screw pressure terminals.
6. Receptacles to be installed in shower rooms, locker rooms, toilet rooms, janitors closets, exterior, elevator pit and machine rooms, escalator pits, within six (6) feet of a sink, and other areas as required by NEC, and OSHA Standards shall be ground fault circuit interrupting (GFCI) type, whether specified or not.
7. Receptacles installed for water coolers shall be GFCI type, or a single receptacle as permitted by NEC.

- B. Description: NEMA WD 1; heavy-duty general use receptacle.
- C. Configuration: NEMA WD 6; heavy-duty, general use type as specified and indicated.
- D. Convenience Receptacle: Type 5-20.
- E. GFCI Receptacle: Convenience receptacle with integral ground fault circuit interrupter, and automatic "self-testing feature" to meet regulatory requirements.

## 2.5 COVER PLATES

- A. All wiring devices shall be provided with standard size one-piece cover plates of suitable configuration for the number and type of devices to be covered.
- B. Metallic cover plates shall be used in interior spaces, except as noted below, and shall be fabricated of corrosion-resistant #302 stainless steel, having a nominal thickness of .04", and a brushed finish. Screws securing the plates shall have flush (when installed) heads with finish to match plates. Metallic cover plates shall meet all requirements of the National Electrical Code and Federal Specifications.
- C. Cover plates for switches located in corrosive atmospheres (where vaporproof is not indicated) shall consist of a one piece neoprene boot with matching pressswitch.
- D. Cover plates for exterior receptacles shall be gasketed covers with hinge allowing plug and cord to be plugged in and activated with cover closed.
- E. Cover plate engraving, where required, shall be accomplished by cover plate manufacturer in accordance with instructions given on the drawings. Metallic plates and nylon plates in ivory, beige, gray, and white shall be engraved with black fill. Red, brown, and black nylon plates shall be engraved with white fill.

- F. Plates for devices connected to emergency power shall be as specified for devices connected to normal circuits, but shall be engraved reading "Emergency", see drawings for other engraving requirements.
- G. Plates for devices connected to computer power panels shall be engraved reading "Computer". Devices connected to emergency computer power panels shall be red in color.
- H. Plates for devices connected to UPS power systems shall be as specified for devices connected to normal circuits, but shall be engraved reading "UPS POWER", see drawings for other engraving requirements.
- I. Unless specifically noted otherwise in specs or on drawings all outlets for telephone and other communications and data systems shall be provided with standard size one-piece cover plates having a minimum 3/4 inch diameter, with bushing, in the center unless specifically noted otherwise. Where telephone conductors are installed, plates shall contain telephone type, polarized plug-in receptacles.
- J. Device plates located in secure areas, as noted on drawings, shall have security wall plates (10 gauge) with 12 gauge galvanized steel backplate. All device plates shall have tamperproof screws.

## 2.6 COLOR

- A. Wiring devices connected to normal power shall be gray unless specifically noted otherwise.
- B. All devices and coverplates in paneled walls shall have finish to match paneling.
- C. Devices connected to emergency power shall be red color. (Including devices connected to emergency computer power panels).
- D. Devices connected to separate computer power panels shall be black in color.
- E. Modify any given catalog numbers as required to procure devices and plates of the proper color.
- F. Devices connected to UPS systems shall be orange (isolated ground).

## 2.7 FLUORESCENT DIMMERS

- A. Dimmers shall be electronic type and include a remote control where required. Special dimming ballasts shall be included on fixtures to be dimmed. Ballasts shall be compatible with dimmer being provided.

## 2.8 LED DIMMERS

- A. Dimmers shall be electronic and compatible with light fixtures provided.



## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify outlet boxes are installed at proper height.
- B. Verify wall openings are neatly cut and will be completely covered by wall plates.
- C. Verify floor boxes are adjusted properly.
- D. Verify branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

### 3.2 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean debris from outlet boxes.

### 3.3 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install devices plumb and level.
- C. Install switches with OFF position down.
- D. In general, lighting control switches shall be located at the lock/strike plate side of door(s). If the drawings indicate otherwise, issue a request for clarification prior to rough-in.
- E. Install wall dimmers to achieve full rating specified and indicated after derating for ganging as instructed by manufacturer.
- F. Do not share neutral conductor on load side of dimmers.
- G. Install receptacles with grounding pole on bottom.
- H. Where 2 or more switches or receptacles are to be installed adjacent to one another, provide a multi-gang coverplate. Provide proper NEC barriers in boxes which serve devices for both the Normal and Emergency Systems or a combined system voltage of 480 volt.
- I. Provide device coverplates for every device installed. Cover plates shall be installed so that they appear straight with no gaps between plate edges and the wall. Maintain vertical and horizontal to within 1/16 of an inch.
- J. In finished areas, provide same type of plate for all surface mounted devices as for recessed mounted devices.

- K. In any room, where new and existing construction is present, all receptacles, switches, and coverplates which are existing to remain shall be changed, to match new work.
- L. Wiring devices shall not be installed in exposed masonry until cleaning of masonry with acids has been completed.
- M. All receptacles and switches shall be grounded by means of a ground wire from device ground screw to outlet box screw and branch circuit ground conductor. Strap alone will not constitute an acceptable ground.
- N. All wiring devices, relays, contactors, pushbuttons, selector switches, pilot lights, etc. shall be installed in approved enclosures rated for the appropriate NEMA classified environment.
- O. All devices shall be installed so that only one wire is connected to each terminal.
- P. Once construction is substantially completed, replace all damaged, burned, or scorched wiring devices.
- Q. Receptacles shown to be floor mounted shall be installed in floor boxes (with coverplates) which are approved for this use.
- R. Connect wiring devices by back wiring conductor into compression terminal.
- S. Install protective rings and split nozzle on active flush cover service fittings.

### 3.4 NEUTRAL CONDUCTOR CONNECTIONS

- A. At each receptacle "in" and "out" phase and neutral conductors shall have an additional conductor "pigtail" for connection to device. The practice of "looping" conductors through receptacle boxes shall not be acceptable.

### 3.5 INTERFACE WITH OTHER PRODUCTS

- A. Coordinate locations of outlet boxes to obtain specified mounting heights.

### 3.6 FIELD QUALITY CONTROL

- A. Inspect each wiring device for defects.
- B. Operate each wall switch with circuit energized and verify proper operation.
- C. Verify that each receptacle device is energized.
- D. Test each receptacle device for proper polarity.
- E. Test each GFCI receptacle device for proper operation.

3.7 ADJUSTING

- A. Adjust devices and wall plates to be flush and level.

END OF SECTION SP-109S-26 27 26

SECTION SP-109S-26 28 16 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1- GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Contractual Conditions and Division 01 Specification sections apply to this section.

1.2 SUMMARY

- A. This section includes the requirements for provision and installation of enclosed switches and circuit breakers.

1.3 DESCRIPTION

- A. Provide all labor, materials, and equipment necessary to properly install switches as shown on the drawings and as required by codes.
- B. Coordinate with Division 23 for disconnect switches for mechanical equipment. Provide all other disconnect switches required for a complete operating system.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver switches in factory wrapped packaging. Handle switches carefully to prevent damage. Store in a clean, dry space protected from dirt, water, and physical damage. Reject damaged switches.

1.5 QUALIFICATIONS

- A. Manufacturer: Same manufacturer as that for products specified in Section 26 24 13.

1.6 SUBMITTALS

- A. Submit catalog cut sheet on each type of disconnect switch to be used on this project.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Eaton/Cutler Hammer, or approved substitutions.

## 2.2 CONSTRUCTION

- A. Switches shall be heavy-duty type with visible, quick-make, quick-break blades.
- B. Units for 2-speed motors shall be 6-pole in a single enclosure. Use of 2, 3-pole units will not be acceptable.
- C. Provide ground bus and where required, a solid neutral bus.
- D. Switches shall be fusible or non-fusible as noted on the drawings or as required by the equipment served from the switch. Fusible switches shall have rejection type fuse holders.
- E. Terminal lugs shall be rated for 75 degrees Centigrade.
- F. Enclosures, unless otherwise noted, shall be:
  - 1. Interior dry locations shall be NEMA 1.
  - 2. Wash-down areas, interior wet locations or similar shall be NEMA 4X stainless steel watertight, corrosion resistant.
  - 3. Exterior locations shall be NEMA 4X stainless steel watertight, corrosion resistant, including those noted on drawings to be NEMA 3, minimum.
- G. The enclosure shall be interlocked with the switch handle such that the enclosure door or cover cannot be opened with the switch in the "ON" position. The switch handle shall be capable of being padlocked in the "OFF" position but not in the "ON" position.
- H. Finish for NEMA I units shall be standard baked gray enamel finish over a rust inhibiting phosphate primer.

## 2.3 RATING

- A. The size, number of poles, and fusing for each switch shall be as noted on the drawings. As a minimum, no less than one pole for each ungrounded conductor shall be provided. Switches shall be rated 250 VAC or 600 VAC as required by the circuit to which it is connected.
- B. Switches serving motors with more than one set of windings shall have the number of poles necessary to disconnect all conductors to all windings in a single switch.
- C. Switches serving motor loads shall be horsepower rated to match motor and of sufficient size to handle the load regardless if rating noted on drawings is provided in ampere.

## 2.4 SERVICE ENTRANCE EQUIPMENT

- A. Switches used as service entrance equipment shall be listed and labeled by UL for use as service equipment.

## 2.5 FUSES

### A. General:

1. All fuses shall be of the same manufacture to retain selectability as designed. No fuse shall be installed until equipment is ready to be energized and after tightening of all electrical connections, inspection of all ground and grounding conductors and a megger test of adequate insulation to ground of all circuits.
2. All fuses shall be current limiting with 200,000 amperes interrupting capacity.
3. Fuses rated 601 amperes and larger shall be UL Class L and have a minimum time-delay of 45 seconds at 300% rating and have O-ring gas seals at the end bells.
4. Fuses rated 600 amperes or less, installed ahead of circuit breakers or circuit breaker panels, shall be UL Class K-1.
5. Fuses rated 600 amperes or less for all general power circuits shall be dual-element, UL Class RK-5 time-delay type. They shall be self protecting from extraneous heat.
6. Fuses installed in individual motor circuits shall be dual element time-delay type, UL Class RK-5. Provide fuse reducers when necessary.
7. Fuses called for to be rejection type are to have rejection fuse holders.
8. Fused disconnect switches for elevators and escalators shall have rejection fuse holders.

### B. Fuse Requirements:

1. Dimensions and Performance: NEMA FU 1, Class as indicated.
2. Voltage: Rating suitable for circuit phase-to-phase voltage.
3. Power Load Feeder Switches Larger than 600 amperes: Class L (time delay).
4. Power Load Feeder Switches: Class RK1 (time delay) or RK5 (based on load).
5. Motor Load Feeder Switches: Class RK5.
6. Lighting Load Feeder Switches Larger than 600 amperes: Class L time delay.
7. Lighting Load Feeder Switches: Class RK1 (time delay).
8. Other Feeder Switches Larger than 600 amperes: Class L time delay.
9. Other Feeder Switches: Class RK1 (time delay) or RK5 (based on load).
10. Power Branch Circuits: Class RK1 (time delay) or RK5 (based on load).
11. Motor Branch Circuits: Class RK5.
12. Lighting Branch Circuits: Class G.

### C. Identification Label:

1. Provide a fuse identification label inside each fused switch, showing type and size of each fuse specified or as recommended by the manufacture of the equipment served.
2. Labeling for rejection type fused switches shall read "Warning-Use Only Current Limiting Fuses Class \_\_\_, Type \_\_\_, MFR \_\_\_".

### D. Spare Fuse Cabinet:

1. Ten percent (minimum of three) of each size and type of fuse and current limiter shall be placed in a spare fuse cabinet, wall mounted near the electric service.
2. Cabinet shall be aluminum sized as required to store all fuses neatly (minimum 30" x 24" x 12"). Cabinet shall contain shelves and/or slots as required to separate types of fuses. Cabinet door shall be hinged with latch.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install all switches in accordance with the manufacturer's written instructions, NECA's "Standard of Installation", the applicable requirements of the National Electrical Code, and recognized industry practice.
- B. All switches shall be firmly anchored to walls and supporting structures (where used). Switches shall be installed with the turning axis of their handles approximately 5'-0" above finished floor unless otherwise indicated. Provide rigid steel (galvanized for exterior use) mounting stands, brackets, plates, hardware, and accessories for a complete installation.
- C. Switches shall be mounted in accessible locations. Where a switch serves as the disconnecting means for a load, the switch shall be located as close as practical to the load with the switch handle within sight of the load.
- D. Provide lugs on disconnect switch as required to accept conductors called for on drawings.
- E. Disconnect switches shall not be mounted on equipment, unless specifically noted or required and meet all applicable codes. If switches are noted or required to be mounted on equipment they shall have vibrator clips on fuses and be connected to conduit system with liquid tight flexible conduit.
- F. Coordinate all requirements for controls between variable speed drive units and its respective motor with drive specification, manufacturer, provider and installer. Provide auxiliary contacts, relays, etc. as required.
- G. Install fuses in accordance with manufacturer's instructions, the NEC, and NEMA Standards.
- H. Install fuse with label oriented such that manufacturer, type, and size are easily read.
- I. Label each fuse.
- J. Conduit or piping systems that contain water or liquid of any kind shall not be installed over the top of any electrical equipment, transformers, racks, cabinets, or enclosures without prior written approval from the Owner.

END OF SECTION SP-109S-26 28 16

SECTION SP-109S-26 41 13 - LIGHTNING PROTECTION FOR STRUCTURES

PART 1- GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Contractual Conditions and Division 01 Specification sections apply to this section.

1.2 SUMMARY

- A. This section includes the requirements for provision and installation of a complete lightning protection system.

1.3 DESCRIPTION

- A. A Lightning Protection System shall be provided and installed on the structure even though not shown on drawings, by experienced LPI Certified Installers in compliance with provisions of Code for Lightning Protection Systems as adopted by the National Fire Protection Association and Underwriters' Laboratories. All equipment to that result shall be included whether or not specifically called for herein with the additional requirement that the system shall meet all the requirements of LPI.
- B. Materials shall comply in weight, size and composition with the requirements of Underwriters' Laboratories and the National Fire Protection Code relating to this type of installation, and shall be UL Labeled.
- C. All materials, where available by any one manufacturer, shall be cast.
- D. System shall comply with the following:
  - 1. LPI
  - 2. ANSI/NFPA 780; Class I (Class II for buildings over 75 feet in height)
  - 3. UL 96A; Master Label for:
    - a. New installation

1.4 REFERENCES

- A. ANSI/NFPA 780 - Lightning Protection Code.
- B. ANSI/UL 96 - Lightning Protection Components.
- C. LPI - Lightning Protection Institute.
- D. UL 96A - Installation Requirements for Lightning Protection Systems.



## 1.5 SUBMITTALS

- A. Submit shop drawings showing layout of air terminals, grounding electrodes, and bonding connections to structure and other metal objects. Include terminal, electrode, and conductor sizes, and connection and termination details. Drawings shall include full layout of cabling and points, and connections.
- B. Submit product data showing dimensions and materials of each component, and include indication of listing in accordance with ANSI/UL 96.
- C. Submit manufacturer's installation instructions.
- D. Submittal shall include ground rods and ground wells as called for in Section 26 05 26 – Grounding and Bonding.

## 1.6 PROJECT AS-BUILT DOCUMENTS

- A. Record actual locations of air terminals, grounding electrodes, bonding connections, and routing of system conductors on red lined as-built documents.

## 1.7 QUALIFICATIONS

- A. Manufacturer: Company specialized in lightning protection equipment with minimum five (5) years documented experience and member of the Lightning Protection Institute.
- B. Installer: Authorized installer of manufacturer with minimum five (5) years documented experience and member of the Lightning Protection Institute.

## 1.8 PRE-INSTALLATION CONFERENCE

- A. Convene a pre-installation conference one (1) week prior to commencing lightning protection work.

## 1.9 SEQUENCING AND SCHEDULING

- A. Coordinate the work of this Section with roofing and exterior and interior finish installations.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Thompson Lightning Protection, Inc.: Premium Line.
- B. Independent Protection Company, Inc.: Premium Line.

- C. Heary Bros. Lightning Protection: Premium Lines.

## 2.2 MATERIALS

- A. Components: In accordance with ANSI/UL 96 and LPI.
- B. Air Terminals:
  - 1. Air Terminals shall be solid (aluminum) as required to match roof conductors, and shall have proper base support for surface on which they are attached, and shall be securely anchored to this surface.
  - 2. Terminal length: Comply with NFPA 780.
  - 3. Air Terminal for Chimneys: Lead-coated copper.
- C. Conductors:
  - 1. Roof conductors shall consist of aluminum complying with the weight and construction requirements of the Code. Roof conductor material shall match and be compatible with roof flashing material.
  - 2. Down conductors shall be copper, and shall be provided where shown installed in PVC conduit and hidden within the structure.
- D. Fastener: Conductor fasteners shall be of the same material as the conductor, having ample strength to support conductor.
- E. Connectors and Splicers: Bronze or aluminum as required to be compatible with conductor being connected.
- F. Ground Rods: Comply with all requirements of Sections 26 05 26.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify that surfaces are ready to receive work.
- B. Verify that field measurements are as shown on shop drawings.
- C. Beginning of installation means installer accepts existing conditions.

### 3.2 PROTECTION OF SURROUNDING ELEMENTS

- A. Protect elements surrounding work of this Section from damage or disfiguration.

### 3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in accordance with UL 96A, ANSI/NFPA 780, and LPI.
- C. Install ground rods in accordance with Section 26 05 26. Where conflict exists between the requirements of Section 26 05 26 and this Section, the most stringent shall govern.
- D. Installation shall be made in an inconspicuous manner with conductors routed to conceal as much as possible. Down conductors shall be concealed within structure, and shall be run in 1" PVC conduit. See Paragraph 'F' below and NFPA 780 4.15.1.
- E. Where fasteners are to be mounted in masonry or structural work, they shall be furnished to the Masonry or Structural Contractor so they may be installed during construction of the project.
- F. Conductors concealed in steel reinforced concrete shall be installed and bonded per NFPA 780 4.15.3. Specific attention is brought to the requirements of 4.9.13 requiring down conductors to be connected to reinforced steel at its upper and lower ends.
- G. Lightning protection system shall be bonded to metal bodies as required by NFPA 780 4.21.
- H. Provide proper connections of lightning protection system to all grounded media in and around the protected structure per NFPA 780 4.20 "Potential Equalization".
- I. Provide proper grounding of all grounding media in, on and around structure to provide common ground potential per NFPA 780 4.14 including electric service, telephone and antenna system grounds as well as underground metallic piping systems, underground metal conduits, etc.
- J. Ground Ring: Bond to ground ring system. See Section 26 05 26. Items required to be bonded/connected in 'H' and 'I' above shall be bonded/connected via ground ring system where available and applicable.
- K. All exposed conductors located 6 ft. or less above finished floor or finished grade are to be suitably protected/shielded as well as other exposed locations where conductor is subject to mechanical damage.
- L. Coordinate and receive approval of all penetrations of roofing system and mounting to roofing system with Designer and Roofing Contractor prior to submittal of shop drawings.
- M. Coordinate and receive approval of all connections to structural steel, rebar, and other structural elements with Structural Engineer prior to submittal of shop drawings.
- N. Ground Terminals:

1. Ground connections shall be made in accordance with requirements of all applicable codes and Section 26 05 26 (including but not limited to requirements for testing, ground rods, materials, wells, etc.).
2. Ground rods shall be placed outside, a minimum of two (2) feet from building foundations. Top of rod shall be at least one (1) foot deep into earth (i.e., with minimum earth cover of one (1) foot).
3. Each and every ground rod location shall consist of:
  - a. Two or more 30 ft. ground rods (5/8" copper) at no less than 30 ft. spacing shall be driven vertically to a depth resulting in one (1) foot earth cover.
  - b. Bond the two or more ground rods together with a cable size that meets the applicable requirements of NFPA 780 for Class I or II locations as applicable.
  - c. Provide additional rod electrodes as required to achieve specified ground resistance.
  - d. Complete installation shall exceed the minimum requirements of NFPA 780.
  - e. Provide grounding well enclosure at each ground rod location in accordance with Section 260526.

#### 3.4 FIELD QUALITY CONTROL

- A. Test grounds per Section 26 05 26.
- B. Obtain UL Master Label and attach to building at location directed by RPR. Submit copy of paperwork to RPR and submit in O & M Manual.
- C. Submit test results on each ground location including final length of each ground rod and final distance between each installed ground rod at each ground rod location.
- D. Test results per section 00 65 00.

END OF SECTION SP-109S-26 41 13

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# APPENDICES

- Plans by Reference
- A/C Circular 150/5370-2G
- Halliwell CAR Report
- McLarens Inspection Field Report
- FEMA Assessment Report
- ESI Report
- Excerpts from Inline Consulting Estimate (pages 25-64)
- FEMA PRJ Report

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U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

# Advisory Circular

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**Subject:** Operational Safety on  
Airports During Construction

**Date:** 12/13/2017

**AC No:** 150/5370-2G

**Initiated By:** AAS-100

**Change:**

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1      **Purpose.**

This AC sets forth guidelines for operational safety on airports during construction.

2      **Cancellation.**

This AC cancels AC 150/5370-2F, *Operational Safety on Airports during Construction*, dated September 29, 2011.

3      **Application.**

This AC assists airport operators in complying with Title 14 Code of Federal Regulations (CFR) Part 139, *Certification of Airports*. For those certificated airports, this AC provides one way, but not the only way, of meeting those requirements. The use of this AC is mandatory for those airport construction projects receiving funds under the Airport Improvement Program (AIP). See Grant Assurance No. 34, *Policies, Standards, and Specifications*. While we do not require non-certificated airports without grant agreements or airports using Passenger Facility Charge (PFC) Program funds for construction projects to adhere to these guidelines, we recommend that they do so to help these airports maintain operational safety during construction.

4      **Related Documents.**

ACs and Orders referenced in the text of this AC do not include a revision letter, as they refer to the latest version. Appendix A contains a list of reading material on airport construction, design, and potential safety hazards during construction, as well as instructions for obtaining these documents.

5      **Principal Changes.**

The AC incorporates the following principal changes:

1. Notification about impacts to both airport owned and FAA-owned NAVAIDs was added. See paragraph 2.13.5.3, NAVAIDs.



2. Guidance for the use of orange construction signs was added. See paragraph 2.18.4.2, Temporary Signs.
3. Open trenches or excavations may be permitted in the taxiway safety area while the taxiway is open to aircraft operations, subject to restrictions. See paragraph 2.22.3.4, Excavations.
4. Guidance for temporary shortened runways and displaced thresholds has been enhanced. See Figure 2-1 and Figure 2-2.
5. Figures have been improved and a new Appendix F on the placement of orange construction signs has been added.

Hyperlinks (allowing the reader to access documents located on the internet and to maneuver within this document) are provided throughout this document and are identified with underlined text. When navigating within this document, return to the previously viewed page by pressing the “ALT” and “←” keys simultaneously.

Figures in this document are schematic representations and are not to scale.

6 **Use of Metrics.**

Throughout this AC, U.S. customary units are used followed with “soft” (rounded) conversion to metric units. The U.S. customary units govern.

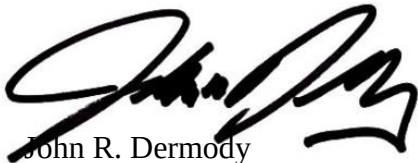
7 **Where to Find this AC.**

You can view a list of all ACs at

[http://www.faa.gov/regulations\\_policies/advisory\\_circulars/](http://www.faa.gov/regulations_policies/advisory_circulars/). You can view the Federal Aviation Regulations at [http://www.faa.gov/regulations\\_policies/faa\\_regulations/](http://www.faa.gov/regulations_policies/faa_regulations/).

8 **Feedback on this AC.**

If you have suggestions for improving this AC, you may use the Advisory Circular Feedback form at the end of this AC.



John R. Dermody  
Director of Airport Safety and Standards

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## CHAPTER 1. PLANNING AN AIRFIELD CONSTRUCTION PROJECT

### 1.1 Overview.

Airports are complex environments, and procedures and conditions associated with construction activities often affect aircraft operations and can jeopardize operational safety. Safety considerations are paramount and may make operational impacts unavoidable. However, careful planning, scheduling, and coordination of construction activities can minimize disruption of normal aircraft operations and avoid situations that compromise the airport's operational safety. The airport operator must understand how construction activities and aircraft operations affect one another to be able to develop an effective plan to complete the project. While the guidance in this AC is primarily used for construction operations, the concepts, methods and procedures described may also enhance the day-to-day airport maintenance operations, such as lighting maintenance and snow removal operations.

### 1.2 Plan for Safety.

Safety, maintaining aircraft operations, and construction costs are all interrelated. Since safety must not be compromised, the airport operator must strike a balance between maintaining aircraft operations and construction costs. This balance will vary widely depending on the operational needs and resources of the airport and will require early coordination with airport users and the FAA. As the project design progresses, the necessary construction locations, activities, and associated costs will be identified and their impact to airport operations must be assessed. Adjustments are made to the proposed construction activities, often by phasing the project, and/or to airport operations to maintain operational safety. This planning effort will ultimately result in a project Construction Safety and Phasing Plan (CSPP). The development of the CSPP takes place through the following five steps:

#### 1.2.1 Identify Affected Areas.

The airport operator must determine the geographic areas on the airport affected by the construction project. Some, such as a runway extension, will be defined by the project. Others may be variable, such as the location of haul routes and material stockpiles.

#### 1.2.2 Describe Current Operations.

Identify the normal airport operations in each affected area for each phase of the project. This becomes the baseline from which the impact on operations by construction activities can be measured. This should include a narrative of the typical users and aircraft operating within the affected areas. It should also include information related to airport operations: the Aircraft Approach Category (AAC) and Airplane Design Group (ADG) of the airplanes that operate on each runway; the ADG and Taxiway Design Group (TDG)<sup>1</sup> for each affected taxiway; designated approach visibility minimums;

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<sup>1</sup> Find Taxiway Design Group information in AC 150/5300-13, Airport Design.

available approach and departure procedures; most demanding aircraft; declared distances; available air traffic control services; airport Surface Movement Guidance and Control System (SMGCS) plan; and others. The applicable seasons, days and times for certain operations should also be identified as applicable.

1.2.3 Allow for Temporary Changes to Operations.

To the extent practical, current airport operations should be maintained during the construction. In consultation with airport users, Aircraft Rescue and Fire Fighting (ARFF) personnel, and FAA Air Traffic Organization (ATO) personnel, the airport operator should identify and prioritize the airport's most important operations. The construction activities should be planned, through project phasing if necessary, to safely accommodate these operations. When the construction activities cannot be adjusted to safely maintain current operations, regardless of their importance, then the operations must be revised accordingly. Allowable changes include temporary revisions to approach procedures, restricting certain aircraft to specific runways and taxiways, suspension of certain operations, decreased weights for some aircraft due to shortened runways, and other changes. An example of a table showing temporary operations versus current operations is shown in Appendix E.

1.2.4 Take Required Measures to Revise Operations.

Once the level and type of aircraft operations to be maintained are identified, the airport operator must determine the measures required to safely conduct the planned operations during the construction. These measures will result in associated costs, which can be broadly interpreted to include not only direct construction costs, but also loss of revenue from impacted operations. Analysis of costs may indicate a need to reevaluate allowable changes to operations. As aircraft operations and allowable changes will vary widely among airports, this AC presents general guidance on those subjects.

1.2.5 Manage Safety Risk.

The FAA is committed to incorporating proactive safety risk management (SRM) tools into its decision-making processes. FAA Order 5200.11, *FAA Airports (ARP) Safety Management System (SMS)*, requires the FAA to conduct a Safety Assessment for certain triggering actions. Certain airport projects may require the airport operator to provide a Project Proposal Summary to help the FAA determine whether a Safety Assessment is required prior to FAA approval of the CSPP. The airport operator must coordinate with the appropriate FAA Airports Regional or District Office early in the development of the CSPP to determine the need for a Safety Risk Assessment. If the FAA requires an assessment, the airport operator must at a minimum:

1. Notify the appropriate FAA Airports Regional or District Office during the project "scope development" phase of any project requiring a CSPP.
2. Provide documents identified by the FAA as necessary to conduct SRM.
3. Participate in the SRM process for airport projects.
4. Provide a representative to participate on the SRM panel.

5. Ensure that all applicable SRM identified risks elements are recorded and mitigated within the CSPP.

### 1.3 **Develop a Construction Safety and Phasing Plan (CSPP).**

Development of an effective CSPP will require familiarity with many other documents referenced throughout this AC. See Appendix A for a list of related reading material.

#### 1.3.1 List Requirements.

A CSPP must be developed for each on-airfield construction project funded by the Airport Improvement Program (AIP) or located on an airport certificated under Part 139. For on-airfield construction projects at Part 139 airports funded without AIP funds, the preparation of a CSPP represents an acceptable method the certificate holder may use to meet Part 139 requirements during airfield construction activity. As per FAA Order 5200.11, projects that require Safety Assessments do not include construction, rehabilitation, or change of any facility that is entirely outside the air operations area, does not involve any expansion of the facility envelope and does not involve construction equipment, haul routes or placement of material in locations that require access to the air operations area, increase the facility envelope, or impact line-of-sight. Such facilities may include passenger terminals and parking or other structures. However, extraordinary circumstances may trigger the need for a Safety Assessment and a CSPP. The CSPP is subject to subsequent review and approval under the FAA's Safety Risk Management procedures (see paragraph 1.2.5).

#### 1.3.2 Prepare a Safety Plan Compliance Document (SPCD).

The Safety Plan Compliance Document (SPCD) details how the contractor will comply with the CSPP. Also, it will not be possible to determine all safety plan details (for example specific hazard equipment and lighting, contractor's points of contact, construction equipment heights) during the development of the CSPP. The successful contractor must define such details by preparing an SPCD that the airport operator reviews for approval prior to issuance of a notice-to-proceed. The SPCD is a subset of the CSPP, similar to how a shop drawing review is a subset to the technical specifications.

#### 1.3.3 Assume Responsibility for the CSPP.

The airport operator is responsible for establishing and enforcing the CSPP. The airport operator may use the services of an engineering consultant to help develop the CSPP. However, writing the CSPP cannot be delegated to the construction contractor. Only those details the airport operator determines cannot be addressed before contract award are developed by the contractor and submitted for approval as the SPCD. The SPCD does not restate nor propose differences to provisions already addressed in the CSPP.



#### 1.4 **Who Is Responsible for Safety During Construction?**

##### 1.4.1 Establish a Safety Culture.

Everyone has a role in operational safety on airports during construction: the airport operator, the airport's consultants, the construction contractor and subcontractors, airport users, airport tenants, ARFF personnel, Air Traffic personnel, including Technical Operations personnel, FAA Airports Division personnel, and others, such as military personnel at any airport supporting military operations (e.g. national guard or a joint use facility). Close communication and coordination between all affected parties is the key to maintaining safe operations. Such communication and coordination should start at the project scoping meeting and continue through the completion of the project. The airport operator and contractor should conduct onsite safety inspections throughout the project and immediately remedy any deficiencies, whether caused by negligence, oversight, or project scope change.

##### 1.4.2 Assess Airport Operator's Responsibilities.

An airport operator has overall responsibility for all activities on an airport, including construction. This includes the predesign, design, preconstruction, construction, and inspection phases. Additional information on the responsibilities listed below can be found throughout this AC. The airport operator must:

- 1.4.2.1 Develop a CSPP that complies with the safety guidelines of Chapter 2, Construction Safety and Phasing Plans, and Chapter 3, Guidelines for Writing a CSPP. The airport operator may develop the CSPP internally or have a consultant develop the CSPP for approval by the airport operator. For tenant sponsored projects, approve a CSPP developed by the tenant or its consultant.
- 1.4.2.2 Require, review and approve the SPCD by the contractor that indicates how it will comply with the CSPP and provides details that cannot be determined before contract award.
- 1.4.2.3 Convene a preconstruction meeting with the construction contractor, consultant, airport employees and, if appropriate, tenant sponsor and other tenants to review and discuss project safety before beginning construction activity. The appropriate FAA representatives should be invited to attend the meeting. See AC 150/5370-12, Quality Management for Federally Funded Airport Construction Projects. (Note “FAA” refers to the Airports Regional or District Office, the Air Traffic Organization, Flight Standards Service, and other offices that support airport operations, flight regulations, and construction/environmental policies.)
- 1.4.2.4 Ensure contact information is accurate for each representative/point of contact identified in the CSPP and SPCD.
- 1.4.2.5 Hold weekly or, if necessary, daily safety meetings with all affected parties to coordinate activities.
- 1.4.2.6 Notify users, ARFF personnel, and FAA ATO personnel of construction and conditions that may adversely affect the operational safety of the airport via Notices to Airmen (NOTAM) and other methods, as appropriate. Convene a meeting for review and discussion if necessary.
- 1.4.2.7 Ensure construction personnel know applicable airport procedures and changes to those procedures that may affect their work.
- 1.4.2.8 Ensure that all temporary construction signs are located per the scheduled list for each phase of the project.
- 1.4.2.9 Ensure construction contractors and subcontractors undergo training required by the CSPP and SPCD.
- 1.4.2.10 Ensure vehicle and pedestrian operations addressed in the CSPP and SPCD are coordinated with airport tenants, the airport traffic control tower (ATCT), and construction contractors.
- 1.4.2.11 At certificated airports, ensure each CSPP and SPCD is consistent with Part 139.

- 1.4.2.12 Conduct inspections sufficiently frequently to ensure construction contractors and tenants comply with the CSPP and SPCD and that there are no altered construction activities that could create potential safety hazards.
  - 1.4.2.13 Take immediate action to resolve safety deficiencies.
  - 1.4.2.14 At airports subject to 49 CFR Part 1542, *Airport Security*, ensure construction access complies with the security requirements of that regulation.
  - 1.4.2.15 Notify appropriate parties when conditions exist that invoke provisions of the CSPP and SPCD (for example, implementation of low-visibility operations).
  - 1.4.2.16 Ensure prompt submittal of a Notice of Proposed Construction or Alteration (Form 7460-1) for conducting an aeronautical study of potential obstructions such as tall equipment (cranes, concrete pumps, other), stock piles, and haul routes. A separate form may be filed for each potential obstruction, or one form may be filed describing the entire construction area and maximum equipment height. In the latter case, a separate form must be filed for any object beyond or higher than the originally evaluated area/height. The FAA encourages online submittal of forms for expediency at <https://oeaaa.faa.gov/oeaaa/external/portal.jsp>. The appropriate FAA Airports Regional or District Office can provide assistance in determining which objects require an aeronautical study.
  - 1.4.2.17 Ensure prompt transmission of the Airport Sponsor Strategic Event Submission, FAA Form 6000-26, located at [https://oeaaa.faa.gov/oeaaa/external/content/AIRPORT\\_SPONSOR\\_STRATEGIC\\_EVENT\\_SUBMISSION\\_FORM.pdf](https://oeaaa.faa.gov/oeaaa/external/content/AIRPORT_SPONSOR_STRATEGIC_EVENT_SUBMISSION_FORM.pdf), to assure proper coordination for NAS Strategic Interruption per Service Level Agreement with ATO.
  - 1.4.2.18 Promptly notify the FAA Airports Regional or District Office of any proposed changes to the CSPP prior to implementation of the change. Changes to the CSPP require review and approval by the airport operator and the FAA. The FAA Airports Regional or District office will determine if further coordination within the FAA is needed. Coordinate with appropriate local and other federal government agencies, such as Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), Transportation Security Administration (TSA), and the state environmental agency.
- 1.4.3 Define Construction Contractor's Responsibilities.
- The contractor is responsible for complying with the CSPP and SPCD. The contractor must:

- 1.4.3.1 Submit a Safety Plan Compliance Document (SPCD) to the airport operator describing how it will comply with the requirements of the CSPP and supply any details that could not be determined before contract award. The SPCD must include a certification statement by the contractor, indicating an understanding of the operational safety requirements of the CSPP and the assertion of compliance with the approved CSPP and SPCD unless written approval is granted by the airport operator. Any construction practice proposed by the contractor that does not conform to the CSPP and SPCD may impact the airport's operational safety and will require a revision to the CSPP and SPCD and re-coordination with the airport operator and the FAA in advance.
- 1.4.3.2 Have available at all times copies of the CSPP and SPCD for reference by the airport operator and its representatives, and by subcontractors and contractor employees.
- 1.4.3.3 Ensure that construction personnel are familiar with safety procedures and regulations on the airport. Provide a point of contact who will coordinate an immediate response to correct any construction-related activity that may adversely affect the operational safety of the airport. Many projects will require 24-hour coverage.
- 1.4.3.4 Identify in the SPCD the contractor's on-site employees responsible for monitoring compliance with the CSPP and SPCD during construction. At least one of these employees must be on-site when active construction is taking place.
- 1.4.3.5 Conduct sufficient inspections to ensure construction personnel comply with the CSPP and SPCD and that there are no altered construction activities that could create potential safety hazards.
- 1.4.3.6 Restrict movement of construction vehicles and personnel to permitted construction areas by flagging, barricading, erecting temporary fencing, or providing escorts, as appropriate, and as specified in the CSPP and SPCD.
- 1.4.3.7 Ensure that no contractor employees, employees of subcontractors or suppliers, or other persons enter any part of the air operations area (AOA) from the construction site unless authorized.
- 1.4.3.8 Ensure prompt submittal through the airport operator of Form 7460-1 for the purpose of conducting an aeronautical study of contractor equipment such as tall equipment (cranes, concrete pumps, and other equipment), stock piles, and haul routes when different from cases previously filed by the airport operator. The FAA encourages online submittal of forms for expediency at <https://oeaaa.faa.gov/oeaaa/external/portal.jsp>.

- 1.4.3.9 Ensure that all necessary safety mitigations are understood by all parties involved, and any special requirements of each construction phase will be fulfilled per the approved timeframe.
- 1.4.3.10 Participate in pre-construction meetings to review construction limits, safety mitigations, NOTAMs, and understand all special airport operational needs during each phase of the project.

1.4.4 Define Tenant's Responsibilities.

If planning construction activities on leased property, Airport tenants, such as airline operators, fixed base operators, and FAA ATO/Technical Operations sponsoring construction are strongly encouraged to:

1. Develop, or have a consultant develop, a project specific CSPP and submit it to the airport operator. The airport operator may forgo a complete CSPP submittal and instead incorporate appropriate operational safety principles and measures addressed in the advisory circular within their tenant lease agreements.
2. In coordination with its contractor, develop an SPCD and submit it to the airport operator for approval issued prior to issuance of a Notice to Proceed.
3. Ensure that construction personnel are familiar with safety procedures and regulations on the airport during all phases of the construction.
4. Provide a point of contact of who will coordinate an immediate response to correct any construction-related activity that may adversely affect the operational safety of the airport.
5. Identify in the SPCD the contractor's on-site employees responsible for monitoring compliance with the CSPP and SPCD during construction. At least one of these employees must be on-site when active construction is taking place.
6. Ensure that no tenant or contractor employees, employees of subcontractors or suppliers, or any other persons enter any part of the AOA from the construction site unless authorized.
7. Restrict movement of construction vehicles to construction areas by flagging and barricading, erecting temporary fencing, or providing escorts, as appropriate, as specified in the CSPP and SPCD.
8. Ensure prompt submittal through the airport operator of Form 7460-1 for conducting an aeronautical study of contractor equipment such as tall equipment (cranes, concrete pumps, other), stock piles, and haul routes. The FAA encourages online submittal of forms for expediency at <https://oeaaa.faa.gov/oeaaa/external/portal.jsp>.
9. Participate in pre-construction meetings to review construction limits, safety mitigations, NOTAMs, and understand all special airport operational needs during each phase of the project.

## CHAPTER 2. CONSTRUCTION SAFETY AND PHASING PLANS

### 2.1 Overview.

Aviation safety is the primary consideration at airports, especially during construction. The airport operator's CSPP and the contractor's Safety Plan Compliance Document (SPCD) are the primary tools to ensure safety compliance when coordinating construction activities with airport operations. These documents identify all aspects of the construction project that pose a potential safety hazard to airport operations and outline respective mitigation procedures for each hazard. They must provide information necessary for the Airport Operations department to conduct airfield inspections and expeditiously identify and correct unsafe conditions during construction. All aviation safety provisions included within the project drawings, contract specifications, and other related documents must also be reflected in the CSPP and SPCD.

### 2.2 Assume Responsibility.

Operational safety on the airport remains the airport operator's responsibility at all times. The airport operator must develop, certify, and submit for FAA approval each CSPP. It is the airport operator's responsibility to apply the requirements of the FAA approved CSPP. The airport operator must revise the CSPP when conditions warrant changes and must submit the revised CSPP to the FAA for approval. The airport operator must also require and approve a SPCD from the project contractor.

### 2.3 Submit the CSPP.

Construction Safety and Phasing Plans should be developed concurrently with the project design. Milestone versions of the CSPP should be submitted for review and approval as follows. While these milestones are not mandatory, early submission will help to avoid delays. Submittals are preferred in 8.5 × 11 inch or 11 × 17 inch format for compatibility with the FAA's Obstruction Evaluation / Airport Airspace Analysis (OE / AAA) process.

#### 2.3.1 Submit an Outline/Draft.

By the time approximately 25% to 30% of the project design is completed, the principal elements of the CSPP should be established. Airport operators are encouraged to submit an outline or draft, detailing all CSPP provisions developed to date, to the FAA for review at this stage of the project design.

#### 2.3.2 Submit a CSPP.

The CSPP should be formally submitted for FAA approval when the project design is 80 percent to 90 percent complete. Since provisions in the CSPP will influence contract costs, it is important to obtain FAA approval in time to include all such provisions in the procurement contract.

### 2.3.3 Submit an SPCD.

The contractor should submit the SPCD to the airport operator for approval to be issued prior to the Notice to Proceed.

### 2.3.4 Submit CSPP Revisions.

All revisions to a previously approved CSPP must be re-submitted to the FAA for review and approval/disapproval action.

## 2.4 **Meet CSPP Requirements.**

2.4.1 To the extent possible, the CSPP should address the following as outlined in Chapter 3, Guidelines for Writing a CSPP. Details that cannot be determined at this stage are to be included in the SPCD.

1. Coordination.
  - a. Contractor progress meetings.
  - b. Scope or schedule changes.
  - c. FAA ATO coordination.
2. Phasing.
  - a. Phase elements.
  - b. Construction safety drawings.
3. Areas and operations affected by the construction activity.
  - a. Identification of affected areas.
  - b. Mitigation of effects.
4. Protection of navigation aids (NAVAIDs).
5. Contractor access.
  - a. Location of stockpiled construction materials.
  - b. Vehicle and pedestrian operations.
6. Wildlife management.
  - a. Trash.
  - b. Standing water.
  - c. Tall grass and seeds.
  - d. Poorly maintained fencing and gates.
  - e. Disruption of existing wildlife habitat.
7. Foreign Object Debris (FOD) management.
8. Hazardous materials (HAZMAT) management.
9. Notification of construction activities.

- a. Maintenance of a list of responsible representatives/ points of contact.
  - b. NOTAM.
  - c. Emergency notification procedures.
  - d. Coordination with ARFF Personnel.
  - e. Notification to the FAA.
10. Inspection requirements.
- a. Daily (or more frequent) inspections.
  - b. Final inspections.
11. Underground utilities.
12. Penalties.
13. Special conditions.
14. Runway and taxiway visual aids. Marking, lighting, signs, and visual NAVAIDs.
- a. General.
  - b. Markings.
  - c. Lighting and visual NAVAIDs.
  - d. Signs, temporary, including orange construction signs, and permanent signs.
15. Marking and signs for access routes.
16. Hazard marking and lighting.
- a. Purpose.
  - b. Equipment.
17. Work zone lighting for nighttime construction (if applicable).
18. Protection of runway and taxiway safety areas, object free areas, obstacle free zones, and approach/departure surfaces.
- a. Runway Safety Area (RSA).
  - b. Runway Object Free Area (ROFA).
  - c. Taxiway Safety Area (TSA). Provide details for any adjustments to Taxiway Safety Area width to allow continued operation of smaller aircraft. See paragraph 2.22.3.
  - d. Taxiway Object Free Area (TOFA). Provide details for any continued aircraft operations while construction occurs within the TOFA. See paragraph 2.22.4.
  - e. Obstacle Free Zone (OFZ).
  - f. Runway approach/departure surfaces.
19. Other limitations on construction.
- a. Prohibitions.



b. Restrictions.

2.4.2 The Safety Plan Compliance Document (SPCD) should include a general statement by the construction contractor that he/she has read and will abide by the CSPP. In addition, the SPCD must include all supplemental information that could not be included in the CSPP prior to the contract award. The contractor statement should include the name of the contractor, the title of the project CSPP, the approval date of the CSPP, and a reference to any supplemental information (that is, “I, (Name of Contractor), have read the (Title of Project) CSPP, approved on (Date), and will abide by it as written and with the following additions as noted:”). The supplemental information in the SPCD should be written to match the format of the CSPP indicating each subject by corresponding CSPP subject number and title. If no supplemental information is necessary for any specific subject, the statement, “No supplemental information,” should be written after the corresponding subject title. The SPCD should not duplicate information in the CSPP:

1. Coordination. Discuss details of proposed safety meetings with the airport operator and with contractor employees and subcontractors.
2. Phasing. Discuss proposed construction schedule elements, including:
  - a. Duration of each phase.
  - b. Daily start and finish of construction, including “night only” construction.
  - c. Duration of construction activities during:
    - i. Normal runway operations.
    - ii. Closed runway operations.
    - iii. Modified runway “Aircraft Reference Code” usage.
3. Areas and operations affected by the construction activity. These areas and operations should be identified in the CSPP and should not require an entry in the SPCD.
4. Protection of NAVAIDs. Discuss specific methods proposed to protect operating NAVAIDs.
5. Contractor access. Provide the following:
  - a. Details on how the contractor will maintain the integrity of the airport security fence (gate guards, daily log of construction personnel, and other).
  - b. Listing of individuals requiring driver training (for certificated airports and as requested).
  - c. Radio communications.
    - i. Types of radios and backup capabilities.
    - ii. Who will be monitoring radios.
    - iii. Who to contact if the ATCT cannot reach the contractor’s designated person by radio.

- d. Details on how the contractor will escort material delivery vehicles.
- 6. Wildlife management. Discuss the following:
  - a. Methods and procedures to prevent wildlife attraction.
  - b. Wildlife reporting procedures.
- 7. Foreign Object Debris (FOD) management. Discuss equipment and methods for control of FOD, including construction debris and dust.
- 8. Hazardous Materials (HAZMAT) management. Discuss equipment and methods for responding to hazardous spills.
- 9. Notification of construction activities. Provide the following:
  - a. Contractor points of contact.
  - b. Contractor emergency contact.
  - c. Listing of tall or other requested equipment proposed for use on the airport and the timeframe for submitting 7460-1 forms not previously submitted by the airport operator.
  - d. Batch plant details, including 7460-1 submittal.
- 10. Inspection requirements. Discuss daily (or more frequent) inspections and special inspection procedures.
- 11. Underground utilities. Discuss proposed methods of identifying and protecting underground utilities.
- 12. Penalties. Penalties should be identified in the CSPP and should not require an entry in the SPCD.
- 13. Special conditions. Discuss proposed actions for each special condition identified in the CSPP.
- 14. Runway and taxiway visual aids. Including marking, lighting, signs, and visual NAVAIDs. Discuss proposed visual aids including the following:
  - a. Equipment and methods for covering signage and airfield lights.
  - b. Equipment and methods for temporary closure markings (paint, fabric, other).
  - c. Temporary orange construction signs.
  - d. Types of temporary Visual Guidance Slope Indicators (VGSI).
- 15. Marking and signs for access routes. Discuss proposed methods of demarcating access routes for vehicle drivers.
- 16. Hazard marking and lighting. Discuss proposed equipment and methods for identifying excavation areas.
- 17. Work zone lighting for nighttime construction (if applicable). Discuss proposed equipment, locations, aiming, and shielding to prevent interference with air traffic control and aircraft operations.

18. Protection of runway and taxiway safety areas, object free areas, obstacle free zones, and approach/departure surfaces. Discuss proposed methods of identifying, demarcating, and protecting airport surfaces including:
  - a. Equipment and methods for maintaining Taxiway Safety Area standards.
  - b. Equipment and methods to ensure the safe passage of aircraft where Taxiway Safety Area or Taxiway Object Free Area standards cannot be maintained.
  - c. Equipment and methods for separation of construction operations from aircraft operations, including details of barricades.
19. Other limitations on construction should be identified in the CSPP and should not require an entry in the SPCD.

## 2.5 **Coordination.**

Airport operators, or tenants responsible for design, bidding and conducting construction on their leased properties, should ensure at all project developmental stages, such as predesign, prebid, and preconstruction conferences, they capture the subject of airport operational safety during construction (see AC 150/5370-12, *Quality Management for Federally Funded Airport Construction Projects*). In addition, the following should be coordinated as required:

### 2.5.1 Progress Meetings.

Operational safety should be a standing agenda item for discussion during progress meetings throughout the project developmental stages.

### 2.5.2 Scope or Schedule Changes.

Changes in the scope or duration at any of the project stages may require revisions to the CSPP and review and approval by the airport operator and the FAA (see paragraph 1.4.2.17).

### 2.5.3 FAA ATO Coordination.

Early coordination with FAA ATO is highly recommended during the design phase and is required for scheduling Technical Operations shutdowns prior to construction. Coordination is critical to restarts of NAVAID services and to the establishment of any special procedures for the movement of aircraft. Formal agreements between the airport operator and appropriate FAA offices are recommended. All relocation or adjustments to NAVAIDs, or changes to final grades in critical areas, should be coordinated with FAA ATO and may require an FAA flight inspection prior to restarting the facility. Flight inspections must be coordinated and scheduled well in advance of the intended facility restart. Flight inspections may require a reimbursable agreement between the airport operator and FAA ATO. Reimbursable agreements should be coordinated a minimum of 12 months prior to the start of construction. (See paragraph 2.13.5.3.2 for required FAA notification regarding FAA-owned NAVAIDs.)

## 2.6 **Phasing.**

Once it has been determined what types and levels of airport operations will be maintained, the most efficient sequence of construction may not be feasible. In this case, the sequence of construction may be phased to gain maximum efficiency while allowing for the required operations. The development of the resulting construction phases should be coordinated with local Air Traffic personnel and airport users. The sequenced construction phases established in the CSPP must be incorporated into the project design and must be reflected in the contract drawings and specifications.

### 2.6.1 Phase Elements.

For each phase the CSPP should detail:

- Areas closed to aircraft operations.
- Duration of closures.
- Taxi routes and/or areas of reduced TSA and TOFA to reflect reduced ADG use.
- ARFF access routes.
- Construction staging, disposal, and cleanout areas.
- Construction access and haul routes.
- Impacts to NAVAIDs.
- Lighting, marking, and signing changes.
- Available runway length and/or reduced RSA and ROFA to reflect reduced ADG use.
- Declared distances (if applicable).
- Required hazard marking, lighting, and signing.
- Work zone lighting for nighttime construction (if applicable).
- Lead times for required notifications.

### 2.6.2 Construction Safety Drawings.

Drawings specifically indicating operational safety procedures and methods in affected areas (i.e., construction safety drawings) should be developed for each construction phase. Such drawings should be included in the CSPP as referenced attachments and should also be included in the contract drawing package.

## 2.7 **Areas and Operations Affected by Construction Activity.**

Runways and taxiways should remain in use by aircraft to the maximum extent possible without compromising safety. Pre-meetings with the FAA ATO will support operational simulations. See Appendix E for an example of a table showing temporary operations versus current operations. The tables in Appendix E can be useful for coordination among all interested parties, including FAA Lines of Business.

## 2.7.1 Identification of Affected Areas.

Identifying areas and operations affected by the construction helps to determine possible safety problems. The affected areas should be identified in the construction safety drawings for each construction phase. (See paragraph 2.6.2.) Of particular concern are:

### 2.7.1.1 **Closing, or Partial Closing, of Runways, Taxiways and Aprons, and Displaced Thresholds.**

When a runway is partially closed, a portion of the pavement is unavailable for any aircraft operation, meaning taxiing, landing, or takeoff in either direction on that pavement is prohibited. A displaced threshold, by contrast, is established to ensure obstacle clearance and adequate safety area for landing aircraft. The pavement prior to the displaced threshold is normally available for take-off in the direction of the displacement and for landing and takeoff in the opposite direction. Misunderstanding this difference, may result in issuance of an inaccurate NOTAM, and can lead to a hazardous condition.

#### 2.7.1.1.1 Partially Closed Runways.

The temporarily closed portion of a partially closed runway will generally extend from the threshold to a taxiway that may be used for entering and exiting the runway. If the closed portion extends to a point between taxiways, pilots will have to back-taxi on the runway, which is an undesirable operation. See Figure 2-1 for a desirable configuration.

#### 2.7.1.1.2 Displaced Thresholds.

Since the portion of the runway pavement between the permanent threshold and a standard displaced threshold is available for takeoff and for landing in the opposite direction, the temporary displaced threshold need not be located at an entrance/exit taxiway. See Figure 2-2.

2.7.1.2 Closing of aircraft rescue and fire fighting access routes.

2.7.1.3 Closing of access routes used by airport and airline support vehicles.

2.7.1.4 Interruption of utilities, including water supplies for fire fighting.

2.7.1.5 Approach/departure surfaces affected by heights of objects.

2.7.1.6 Construction areas, storage areas, and access routes near runways, taxiways, aprons, or helipads.

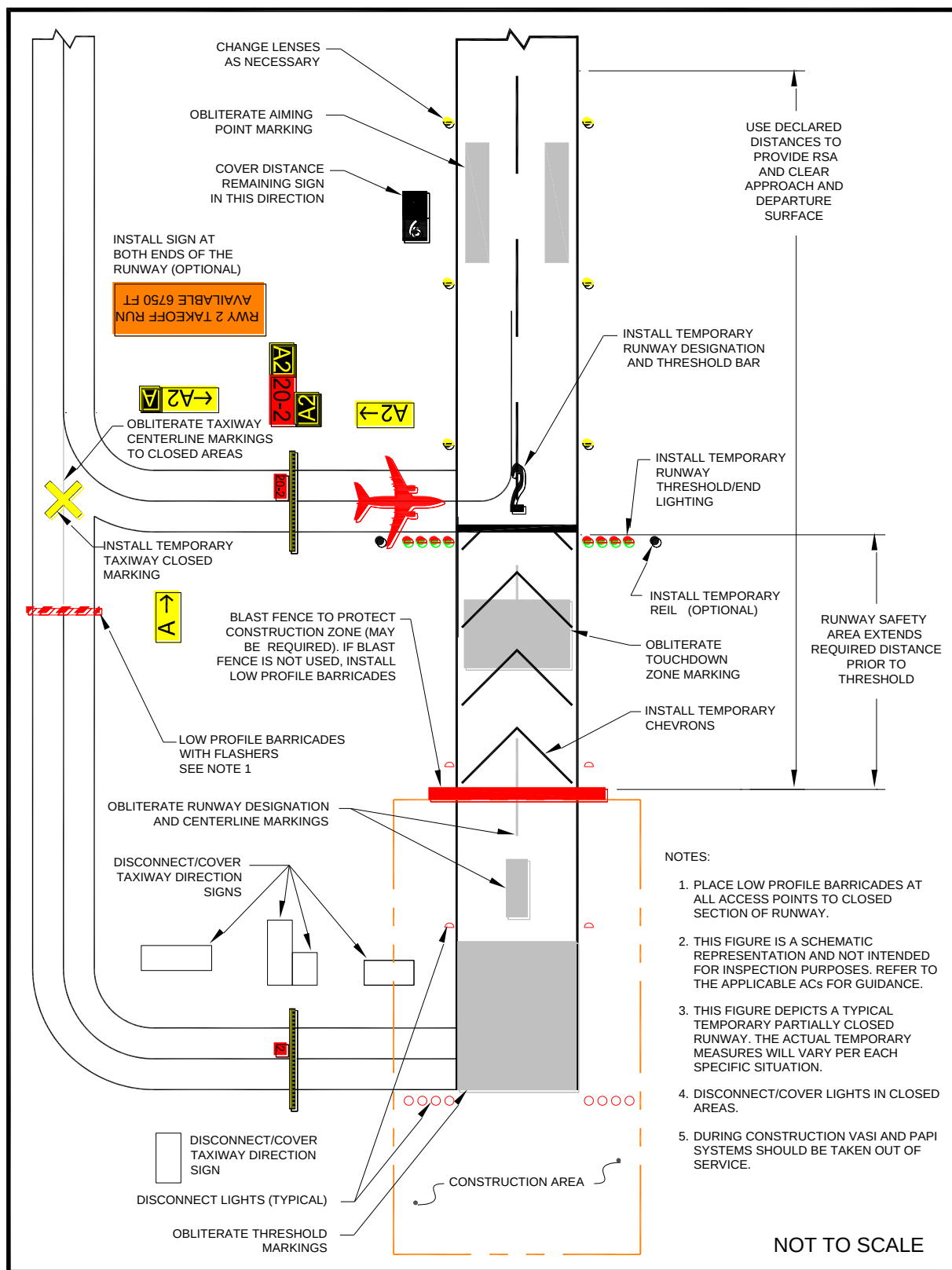
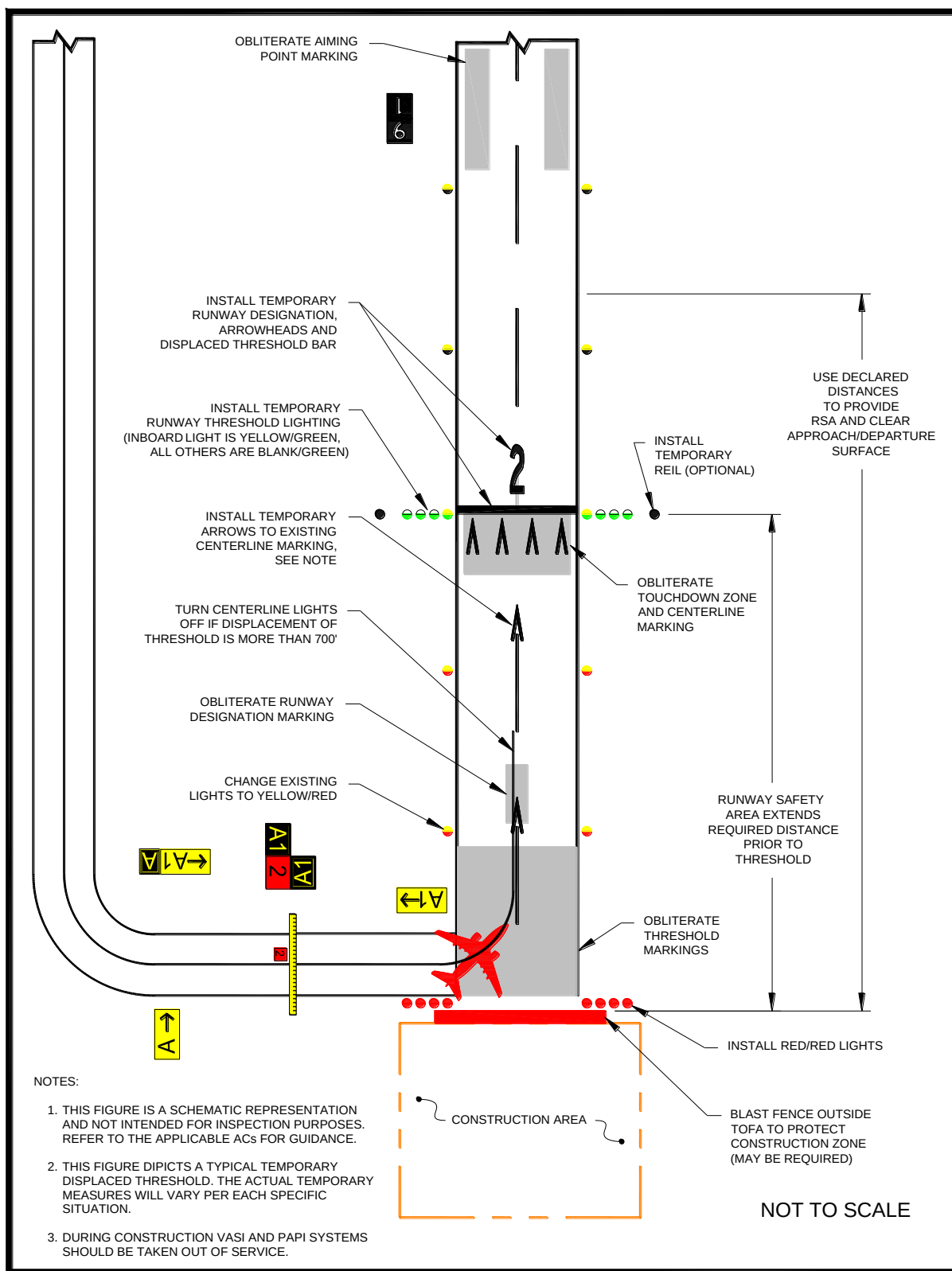
**Figure 2-1. Temporary Partially Closed Runway**

**Figure 2-2. Temporary Displaced Threshold**

**Note:** See paragraph 2.18.2.5.

### 2.7.2 Mitigation of Effects.

Establishment of specific procedures is necessary to maintain the safety and efficiency of airport operations. The CSPP must address:

- 2.7.2.1 Temporary changes to runway and/or taxi operations.
- 2.7.2.2 Detours for ARFF and other airport vehicles.
- 2.7.2.3 Maintenance of essential utilities.
- 2.7.2.4 Temporary changes to air traffic control procedures. Such changes must be coordinated with the ATO.

### 2.8 **Navigation Aid (NAVAID) Protection.**

Before commencing construction activity, parking vehicles, or storing construction equipment and materials near a NAVAID, coordinate with the appropriate FAA ATO/Technical Operations office to evaluate the effect of construction activity and the required distance and direction from the NAVAID. (See paragraph 2.13.5.3.) Construction activities, materials/equipment storage, and vehicle parking near electronic NAVAIDs require special consideration since they may interfere with signals essential to air navigation. If any NAVAID may be affected, the CSPP and SPCD must show an understanding of the “critical area” associated with each NAVAID and describe how it will be protected. Where applicable, the operational critical areas of NAVAIDs should be graphically delineated on the project drawings. Pay particular attention to stockpiling material, as well as to movement and parking of equipment that may interfere with line of sight from the ATCT or with electronic emissions. Interference from construction equipment and activities may require NAVAID shutdown or adjustment of instrument approach minimums for low visibility operations. This condition requires that a NOTAM be filed (see paragraph 2.13.2.). Construction activities and materials/equipment storage near a NAVAID must not obstruct access to the equipment and instruments for maintenance. Submittal of a 7460-1 form is required for construction vehicles operating near FAA NAVAIDs. (See paragraph 2.13.5.3.)

### 2.9 **Contractor Access.**

The CSPP must detail the areas to which the contractor must have access, and explain how contractor personnel will access those areas. Specifically address:

#### 2.9.1 Location of Stockpiled Construction Materials.

Stockpiled materials and equipment storage are not permitted within the RSA and OFZ, and if possible should not be permitted within the Object Free Area (OFA) of an operational runway. Stockpiling material in the OFA requires submittal of a 7460-1 form and justification provided to the appropriate FAA Airports Regional or District Office for approval. The airport operator must ensure that stockpiled materials and equipment adjacent to these areas are prominently marked and lighted during hours of restricted visibility or darkness. (See paragraph 2.18.2.) This includes determining and



verifying that materials are stabilized and stored at an approved location so as not to be a hazard to aircraft operations and to prevent attraction of wildlife and foreign object damage from blowing or tracked material. See paragraphs 2.10 and 2.11.

## 2.9.2 Vehicle and Pedestrian Operations.

The CSPP should include specific vehicle and pedestrian requirements. Vehicle and pedestrian access routes for airport construction projects must be controlled to prevent inadvertent or unauthorized entry of persons, vehicles, or animals onto the AOA. The airport operator should coordinate requirements for vehicle operations with airport tenants, contractors, and the FAA air traffic manager. In regard to vehicle and pedestrian operations, the CSPP should include the following, with associated training requirements:

### 2.9.2.1 **Construction Site Parking.**

Designate in advance vehicle parking areas for contractor employees to prevent any unauthorized entry of persons or vehicles onto the AOA. These areas should provide reasonable contractor employee access to the job site.

### 2.9.2.2 **Construction Equipment Parking.**

Contractor employees must park and service all construction vehicles in an area designated by the airport operator outside the OFZ and never in the safety area of an active runway or taxiway. Unless a complex setup procedure makes movement of specialized equipment infeasible, inactive equipment must not be parked on a closed taxiway or runway. If it is necessary to leave specialized equipment on a closed taxiway or runway at night, the equipment must be well lighted. Employees should also park construction vehicles outside the OFA when not in use by construction personnel (for example, overnight, on weekends, or during other periods when construction is not active). Parking areas must not obstruct the clear line of sight by the ATCT to any taxiways or runways under air traffic control nor obstruct any runway visual aids, signs, or navigation aids. The FAA must also study those areas to determine effects on airport design criteria, surfaces established by 14 CFR Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace (Part 77), and on NAVAIDs and Instrument Approach Procedures (IAP). See paragraph 2.13.1 for further information.

### 2.9.2.3 **Access and Haul Roads.**

Determine the construction contractor's access to the construction sites and haul roads. Do not permit the construction contractor to use any access or haul roads other than those approved. Access routes used by contractor vehicles must be clearly marked to prevent inadvertent entry to areas open to airport operations. Pay special attention to ensure that if construction traffic is to share or cross any ARFF routes that ARFF right of way is not impeded at any time, and that construction traffic on haul

roads does not interfere with NAVAIDs or approach surfaces of operational runways. Address whether access gates will be blocked or inoperative or if a rally point will be blocked or inaccessible.

- 2.9.2.4 Marking and lighting of vehicles in accordance with AC 150/5210-5, *Painting, Marking, and Lighting of Vehicles Used on an Airport.*
- 2.9.2.5 Description of proper vehicle operations on various areas under normal, lost communications, and emergency conditions.
- 2.9.2.6 Required escorts.
- 2.9.2.7 **Training Requirements for Vehicle Drivers to Ensure Compliance with the Airport Operator's Vehicle Rules and Regulations.**

Specific training should be provided to vehicle operators, including those providing escorts. See AC 150/5210-20, *Ground Vehicle Operations on Airports,* for information on training and records maintenance requirements.
- 2.9.2.8 **Situational Awareness.**

Vehicle drivers must confirm by personal observation that no aircraft is approaching their position (either in the air or on the ground) when given clearance to cross a runway, taxiway, or any other area open to airport operations. In addition, it is the responsibility of the escort vehicle driver to verify the movement/position of all escorted vehicles at any given time. At non-towered airports, all aircraft movements and flight operations rely on aircraft operators to self-report their positions and intentions. However, there is no requirement for an aircraft to have radio communications. Because aircraft do not always broadcast their positions or intentions, visual checking, radio monitoring, and situational awareness of the surroundings is critical to safety.
- 2.9.2.9 **Two-Way Radio Communication Procedures.**
- 2.9.2.9.1 General.

The airport operator must ensure that tenant and construction contractor personnel engaged in activities involving unescorted operation on aircraft movement areas observe the proper procedures for communications, including using appropriate radio frequencies at airports with and without ATCT. When operating vehicles on or near open runways or taxiways, construction personnel must understand the critical importance of maintaining radio contact, as directed by the airport operator, with:

  1. Airport operations
  2. ATCT

3. Common Traffic Advisory Frequency (CTAF), which may include UNICOM, MULTICOM.
4. Automatic Terminal Information Service (ATIS). This frequency is useful for monitoring conditions on the airport. Local air traffic will broadcast information regarding construction related runway closures and “shortened” runways on the ATIS frequency.

2.9.2.9.2 Areas Requiring Two-Way Radio Communication with the ATCT.

Vehicular traffic crossing active movement areas must be controlled either by two-way radio with the ATCT, escort, flagman, signal light, or other means appropriate for the particular airport.

2.9.2.9.3 Frequencies to be Used.

The airport operator will specify the frequencies to be used by the contractor, which may include the CTAF for monitoring of aircraft operations. Frequencies may also be assigned by the airport operator for other communications, including any radio frequency in compliance with Federal Communications Commission requirements. At airports with an ATCT, the airport operator will specify the frequency assigned by the ATCT to be used between contractor vehicles and the ATCT.

2.9.2.9.4 Proper radio usage, including read back requirements.

2.9.2.9.5 Proper phraseology, including the International Phonetic Alphabet.

2.9.2.9.6 Light Gun Signals.

Even though radio communication is maintained, escort vehicle drivers must also familiarize themselves with ATCT light gun signals in the event of radio failure. See the FAA safety placard “Ground Vehicle Guide to Airport Signs and Markings.” This safety placard may be downloaded through the Runway Safety Program Web site at [http://www.faa.gov/airports/runway\\_safety/publications/](http://www.faa.gov/airports/runway_safety/publications/) (see “Signs & Markings Vehicle Dashboard Sticker”) or obtained from the FAA Airports Regional Office.

2.9.2.10 **Maintenance of the secured area of the airport, including:**

2.9.2.10.1 Fencing and Gates.

Airport operators and contractors must take care to maintain security during construction when access points are created in the security fencing to permit the passage of construction vehicles or personnel. Temporary gates should be equipped so they can be securely closed and locked to prevent access by animals and unauthorized people. Procedures should be in place to ensure that only authorized persons and vehicles have access to the AOA and to prohibit “piggybacking” behind another person or vehicle. The Department of Transportation (DOT) document DOT/FAA/AR-

00/52, *Recommended Security Guidelines for Airport Planning and Construction*, provides more specific information on fencing. A copy of this document can be obtained from the Airport Consultants Council, Airports Council International, or American Association of Airport Executives.

2.9.2.10.2 Badging Requirements.

Airports subject to 49 CFR Part 1542, *Airport Security*, must meet standards for access control, movement of ground vehicles, and identification of construction contractor and tenant personnel.

2.10 **Wildlife Management.**

The CSPP and SPCD must be in accordance with the airport operator's wildlife hazard management plan, if applicable. See AC 150/5200-33, *Hazardous Wildlife Attractants On or Near Airports*, and CertAlert 98-05, *Grasses Attractive to Hazardous Wildlife*. Construction contractors must carefully control and continuously remove waste or loose materials that might attract wildlife. Contractor personnel must be aware of and avoid construction activities that can create wildlife hazards on airports, such as:

2.10.1 Trash.

Food scraps must be collected from construction personnel activity.

2.10.2 Standing Water.

2.10.3 Tall Grass and Seeds.

Requirements for turf establishment can be at odds with requirements for wildlife control. Grass seed is attractive to birds. Lower quality seed mixtures can contain seeds of plants (such as clover) that attract larger wildlife. Seeding should comply with the guidance in AC 150/5370-10, *Standards for Specifying Construction of Airports*, Item T-901, Seeding. Contact the local office of the United States Department of Agriculture Soil Conservation Service or the State University Agricultural Extension Service (County Agent or equivalent) for assistance and recommendations. These agencies can also provide liming and fertilizer recommendations.

2.10.4 Poorly Maintained Fencing and Gates.

See paragraph 2.9.2.10.1.

2.10.5 Disruption of Existing Wildlife Habitat.

While this will frequently be unavoidable due to the nature of the project, the CSPP should specify under what circumstances (location, wildlife type) contractor personnel should immediately notify the airport operator of wildlife sightings.

**2.11 Foreign Object Debris (FOD) Management.**

Waste and loose materials, commonly referred to as FOD, are capable of causing damage to aircraft landing gears, propellers, and jet engines. Construction contractors must not leave or place FOD on or near active aircraft movement areas. Materials capable of creating FOD must be continuously removed during the construction project. Fencing (other than security fencing) or covers may be necessary to contain material that can be carried by wind into areas where aircraft operate. See AC 150/5210-24, *Foreign Object Debris (FOD) Management*.

**2.12 Hazardous Materials (HAZMAT) Management.**

Contractors operating construction vehicles and equipment on the airport must be prepared to expeditiously contain and clean-up spills resulting from fuel or hydraulic fluid leaks. Transport and handling of other hazardous materials on an airport also requires special procedures. See AC 150/5320-15, *Management of Airport Industrial Waste*.

**2.13 Notification of Construction Activities.**

The CSPP and SPCD must detail procedures for the immediate notification of airport users and the FAA of any conditions adversely affecting the operational safety of the airport. It must address the notification actions described below, as applicable.

2.13.1 List of Responsible Representatives/points of contact for all involved parties, and procedures for contacting each of them, including after hours.

**2.13.2 NOTAMs.**

Only the airport operator may initiate or cancel NOTAMs on airport conditions, and is the only entity that can close or open a runway. The airport operator must coordinate the issuance, maintenance, and cancellation of NOTAMs about airport conditions resulting from construction activities with tenants and the local air traffic facility (control tower, approach control, or air traffic control center), and must either enter the NOTAM into NOTAM Manager, or provide information on closed or hazardous conditions on airport movement areas to the FAA Flight Service Station (FSS) so it can issue a NOTAM. The airport operator must file and maintain a list of authorized representatives with the FSS. Refer to AC 150/5200-28, *Notices to Airmen (NOTAMs) for Airport Operators*, for a sample NOTAM form. Only the FAA may issue or cancel NOTAMs on shutdown or irregular operation of FAA owned facilities. Any person having reason to believe that a NOTAM is missing, incomplete, or inaccurate must notify the airport operator. See paragraph 2.7.1.1 about issuing NOTAMs for partially closed runways versus runways with displaced thresholds.

2.13.3 Emergency notification procedures for medical, fire fighting, and police response.

2.13.4 Coordination with ARFF.

The CSPP must detail procedures for coordinating through the airport sponsor with ARFF personnel, mutual aid providers, and other emergency services if construction requires:

1. The deactivation and subsequent reactivation of water lines or fire hydrants, or
2. The rerouting, blocking and restoration of emergency access routes, or
3. The use of hazardous materials on the airfield.

2.13.5 Notification to the FAA.

2.13.5.1 **Part 77.**

Any person proposing construction or alteration of objects that affect navigable airspace, as defined in Part 77, must notify the FAA. This includes construction equipment and proposed parking areas for this equipment (i.e., cranes, graders, other equipment) on airports. FAA Form 7460-1, *Notice of Proposed Construction or Alteration*, can be used for this purpose and submitted to the appropriate FAA Airports Regional or District Office. See Appendix A to download the form. Further guidance is available on the FAA web site at [oeaaa.faa.gov](http://oeaaa.faa.gov).

2.13.5.2 **Part 157.**

With some exceptions, Title 14 CFR Part 157, *Notice of Construction, Alteration, Activation, and Deactivation of Airports*, requires that the airport operator notify the FAA in writing whenever a non-Federally funded project involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport. Notification involves submitting FAA Form 7480-1, *Notice of Landing Area Proposal*, to the nearest FAA Airports Regional or District Office. See Appendix A to download the form.

2.13.5.3 **NAVAIDs.**

For emergency (short-notice) notification about impacts to both airport owned and FAA owned NAVAIDs, contact: 866-432-2622.

2.13.5.3.1 Airport Owned/FAA Maintained.

If construction operations require a shutdown of 24 hours or greater in duration, or more than 4 hours daily on consecutive days, of a NAVAID owned by the airport but maintained by the FAA, provide a 45-day minimum notice to FAA ATO/Technical Operations prior to facility shutdown, using Strategic Event Coordination (SEC) Form 6000.26 contained within FAA Order 6000.15, *General Maintenance Handbook for National Airspace System (NAS) Facilities*.

#### 2.13.5.3.2 FAA Owned.

1. The airport operator must notify the appropriate FAA ATO Service Area Planning and Requirements (P&R) Group a minimum of 45 days prior to implementing an event that causes impacts to NAVAIDs, using SEC Form 6000.26.
2. Coordinate work for an FAA owned NAVAID shutdown with the local FAA ATO/Technical Operations office, including any necessary reimbursable agreements and flight checks. Detail procedures that address unanticipated utility outages and cable cuts that could impact FAA NAVAIDs. Refer to active Service Level Agreement with ATO for specifics.

### 2.14 **Inspection Requirements.**

#### 2.14.1 Daily Inspections.

Inspections should be conducted at least daily, but more frequently if necessary to ensure conformance with the CSPP. A sample checklist is provided in Appendix D, Construction Project Daily Safety Inspection Checklist. See also AC 150/5200-18, Airport Safety Self-Inspection. Airport operators holding a Part 139 certificate are required to conduct self-inspections during unusual conditions, such as construction activities, that may affect safe air carrier operations.

#### 2.14.2 Interim Inspections.

Inspections should be conducted of all areas to be (re)opened to aircraft traffic to ensure the proper operation of lights and signs, for correct markings, and absence of FOD. The contractor should conduct an inspection of the work area with airport operations personnel. The contractor should ensure that all construction materials have been secured, all pavement surfaces have been swept clean, all transition ramps have been properly constructed, and that surfaces have been appropriately marked for aircraft to operate safely. Only if all items on the list meet with the airport operator's approval should the air traffic control tower be notified to open the area to aircraft operations. The contractor should be required to retain a suitable workforce and the necessary equipment at the work area for any last minute cleanup that may be requested by the airport operator prior to opening the area.

#### 2.14.3 Final Inspections.

New runways and extended runway closures may require safety inspections at certificated airports prior to allowing air carrier service. Coordinate with the FAA Airport Certification Safety Inspector (ACSI) to determine if a final inspection will be necessary.

**2.15 Underground Utilities.**

The CSPP and/or SPCD must include procedures for locating and protecting existing underground utilities, cables, wires, pipelines, and other underground facilities in excavation areas. This may involve coordinating with public utilities and FAA ATO/Technical Operations. Note that “One Call” or “Miss Utility” services do not include FAA ATO/Technical Operations.

**2.16 Penalties.**

The CSPP should detail penalty provisions for noncompliance with airport rules and regulations and the safety plans (for example, if a vehicle is involved in a runway incursion). Such penalties typically include rescission of driving privileges or access to the AOA.

**2.17 Special Conditions.**

The CSPP must detail any special conditions that affect the operation of the airport and will require the activation of any special procedures (for example, low-visibility operations, snow removal, aircraft in distress, aircraft accident, security breach, Vehicle / Pedestrian Deviation (VPD) and other activities requiring construction suspension/resumption).

**2.18 Runway and Taxiway Visual Aids.**

This includes marking, lighting, signs, and visual NAVAIDs. The CSPP must ensure that areas where aircraft will be operating are clearly and visibly separated from construction areas, including closed runways. Throughout the duration of the construction project, verify that these areas remain clearly marked and visible at all times and that marking, lighting, signs, and visual NAVAIDs that are to continue to perform their functions during construction remain in place and operational. Visual NAVAIDs that are not serving their intended function during construction must be temporarily disabled, covered, or modified as necessary. The CSPP must address the following, as appropriate:

**2.18.1 General.**

Airport markings, lighting, signs, and visual NAVAIDs must be clearly visible to pilots, not misleading, confusing, or deceptive. All must be secured in place to prevent movement by prop wash, jet blast, wing vortices, and other wind currents and constructed of materials that will minimize damage to an aircraft in the event of inadvertent contact. Items used to secure such markings must be of a color similar to the marking.

**2.18.2 Markings.**

During the course of construction projects, temporary pavement markings are often required to allow for aircraft operations during or between work periods. During the design phase of the project, the designer should coordinate with the project manager,



airport operations, airport users, the FAA Airports project manager, and Airport Certification Safety Inspector for Part 139 airports to determine minimum temporary markings. The FAA Airports project manager will, wherever a runway is closed, coordinate with the appropriate FAA Flight Standards Office and disseminate findings to all parties. Where possible, the temporary markings on finish grade pavements should be placed to mirror the dimensions of the final markings. Markings must be in compliance with the standards of AC 150/5340-1, *Standards for Airport Markings*, except as noted herein. Runways and runway exit taxiways closed to aircraft operations are marked with a yellow X. The preferred visual aid to depict temporary runway closure is the lighted X signal placed on or near the runway designation numbers. (See paragraph 2.18.2.1.2.)

#### **2.18.2.1 Closed Runways and Taxiways.**

##### **2.18.2.1.1 Permanently Closed Runways.**

For runways, obliterate the threshold marking, runway designation marking, and touchdown zone markings, and place an X at each end and at 1,000-foot (300 m) intervals. For a multiple runway environment, if the lighted X on a designated number will be located in the RSA of an adjacent active runway, locate the lighted X farther down the closed runway to clear the RSA of the active runway. In addition, the closed runway numbers located in the RSA of an active runway must be marked with a flat yellow X.

##### **2.18.2.1.2 Temporarily Closed Runways.**

For runways that have been temporarily closed, place an X at each end of the runway directly on or as near as practicable to the runway designation numbers. For a multiple runway environment, if the lighted X on a designated number will be located in the RSA of an adjacent active runway, locate the lighted X farther down the closed runway to clear the RSA of the active runway. In addition, the closed runway numbers located in the RSA of an active runway must be marked with a flat yellow X. See Figure 2-3. See also paragraph 2.18.3.3.

##### **2.18.2.1.3 Partially Closed Runways and Displaced Thresholds.**

When threshold markings are needed to identify the temporary beginning of the runway that is available for landing, the markings must comply with AC 150/5340-1. An X is not used on a partially closed runway or a runway with a displaced threshold. See paragraph 2.7.1.1 for the difference between partially closed runways and runways with displaced thresholds. Because of the temporary nature of threshold displacement due to construction, it is not necessary to re-adjust the existing runway centerline markings to meet standard spacing for a runway with a visual approach. Some of the requirements below may be waived in the cases of low-activity airports and/or short duration changes that are measured in days rather than weeks. Consider whether the presence of an airport traffic

control tower allows for the development of special procedures. Contact the appropriate FAA Airports Regional or District Office for assistance.

**Figure 2-3. Markings for a Temporarily Closed Runway**

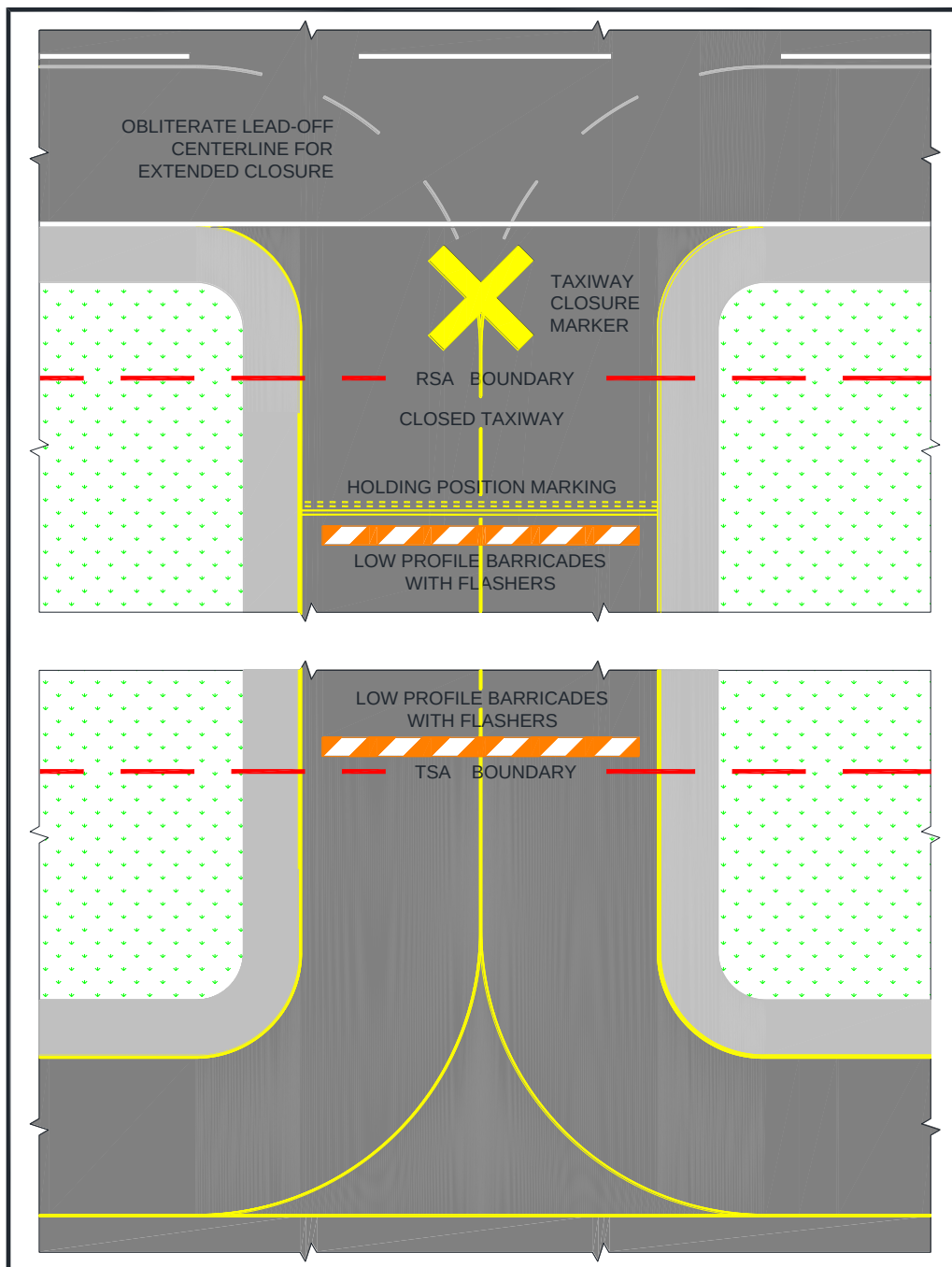


1. **Partially Closed Runways.** Pavement markings for temporary closed portions of the runway consist of a runway threshold bar, runway designation, and yellow chevrons to identify pavement areas that are unsuitable for takeoff or landing (see [AC 150/5340-1](#)). Obliterate or cover markings prior to the moved threshold. Existing touchdown zone markings beyond the moved threshold may remain in place. Obliterate aiming point markings. Issue appropriate NOTAMs regarding any nonstandard markings. See [Figure 2-4](#).
2. **Displaced Thresholds.** Pavement markings for a displaced threshold consist of a runway threshold bar, runway designation, and white arrowheads with and without arrow shafts. These markings are required to identify the portion of the runway before the displaced threshold to provide centerline guidance for pilots during approaches, takeoffs, and landing rollouts from the opposite direction. See [AC 150/5340-1](#). Obliterate markings prior to the displaced threshold. Existing touchdown zone markings beyond the displaced threshold may remain in place. Obliterate aiming point markings. Issue appropriate NOTAMs regarding any nonstandard markings. See [Figure 2-2](#).

#### 2.18.2.1.4 Taxiways.

1. **Permanently Closed Taxiways.** AC 150/5300-13 Airport Design, notes that it is preferable to remove the pavement, but for pavement that is to remain, place an X at the entrance to both ends of the closed section. Obliterate taxiway centerline markings, including runway leadoff lines, leading to the closed taxiway. See Figure 2-4.

**Figure 2-4. Temporary Taxiway Closure**



2. **Temporarily Closed Taxiways.** Place barricades outside the safety area of intersecting taxiways. For runway/taxiway intersections, place an X at the entrance to the closed taxiway from the runway. If the taxiway will be closed for an extended period, obliterate taxiway centerline markings, including runway leadoff lines and taxiway to taxiway turns, leading to the closed section. Always obliterate runway lead-off lines for high speed exits, regardless of the duration of the closure. If the centerline markings will be reused upon reopening the taxiway, it is preferable to paint over the marking. This will result in less damage to the pavement when the upper layer of paint is ultimately removed. See Figure 2-4.

2.18.2.1.5 Temporarily Closed Airport.

When the airport is closed temporarily, mark all the runways as closed.

- 2.18.2.2 If unable to paint temporary markings on the pavement, construct them from any of the following materials: fabric, colored plastic, painted sheets of plywood, or similar materials. They must be properly configured and appropriately secured to prevent movement by prop wash, jet blast, or other wind currents. Items used to secure such markings must be of a color similar to the marking.

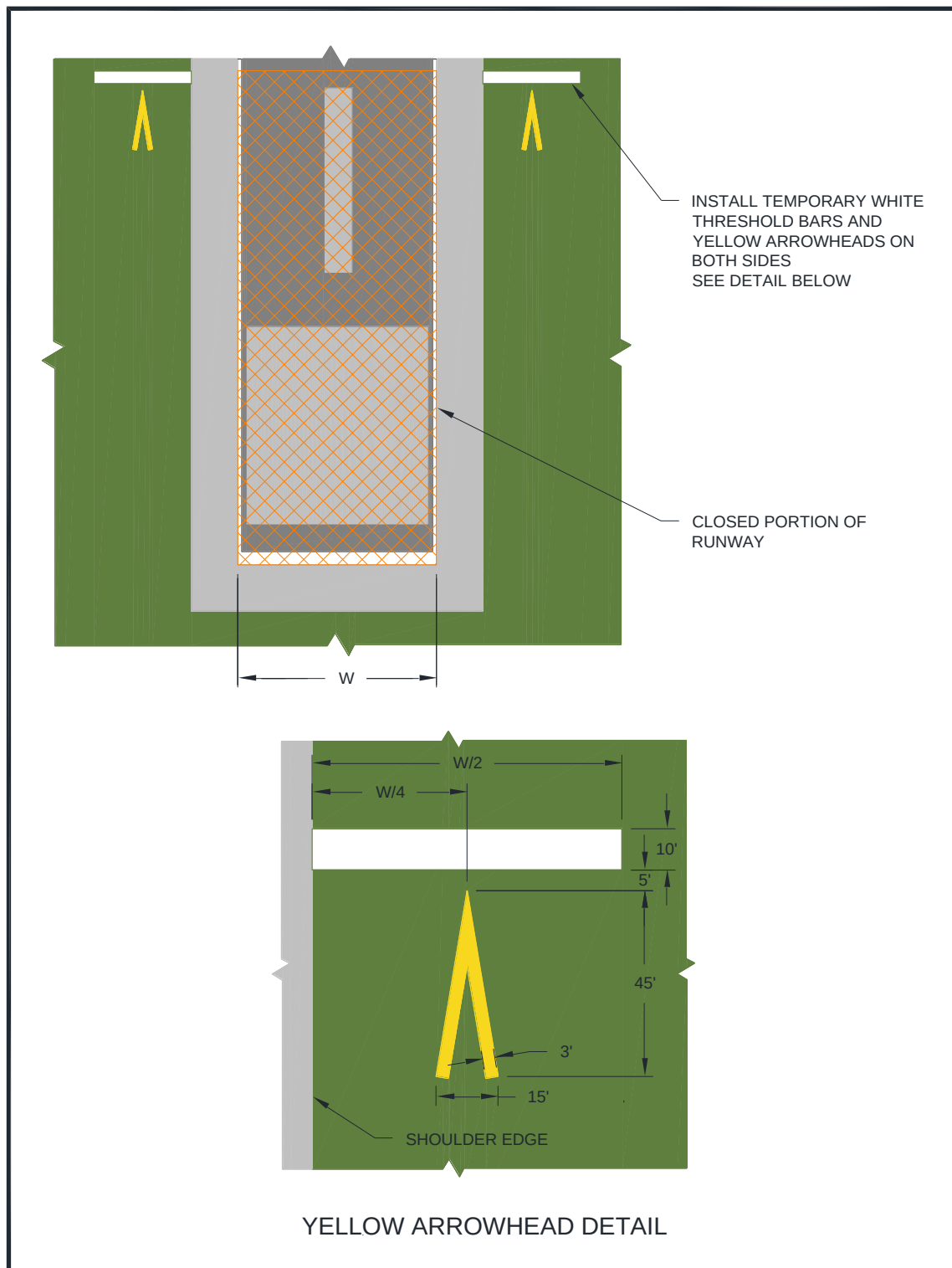
- 2.18.2.3 It may be necessary to remove or cover runway markings, including but not limited to, runway designation markings, threshold markings, centerline markings, edge stripes, touchdown zone markings and aiming point markings, depending on the length of construction and type of activity at the airport. When removing runway markings, apply the same treatment to areas between stripes or numbers, as the cleaned area will appear to pilots as a marking in the shape of the treated area.

- 2.18.2.4 If it is not possible to install threshold bars, chevrons, and arrows on the pavement, “temporary outboard white threshold bars and yellow arrowheads”, see Figure 2-5, may be used. Locate them outside of the runway pavement surface on both sides of the runway. The dimensions must be as shown in Figure 2-5. If the markings are not discernible on grass or snow, apply a black background with appropriate material over the ground to ensure they are clearly visible.

- 2.18.2.5 The application rate of paint to mark a short-term temporary runway and taxiway markings may deviate from the standard (see Item P-620, “Runway and Taxiway Painting,” in AC 150/5370-10), but the dimensions must meet the existing standards. When applying temporary markings at night, it is recommended that the fast curing, Type II paint be used to help offset the higher humidity and cooler temperatures often experienced at night. Diluting the paint will substantially increase cure time and is not recommended. Glass beads are not recommended for temporary markings. Striated markings may also be used for certain temporary markings. AC

150/5340-1, Standards for Airport Markings, has additional guidance on temporary markings.

**Figure 2-5. Temporary Outboard White Threshold Bars and Yellow Arrowheads**



### 2.18.3 Lighting and Visual NAVAIDs.

This paragraph refers to standard runway and taxiway lighting systems. See below for hazard lighting. Lighting installation must be in conformance with AC 150/5340-30, *Design and Installation Details for Airport Visual Aids*, and fixture design in conformance with AC 150/5345-50, *Specification for Portable Runway and Taxiway Lights*. When disconnecting runway and taxiway lighting fixtures, disconnect the associated isolation transformers. See AC 150/5340-26, *Maintenance of Airport Visual Aid Facilities*, for disconnect procedures and safety precautions. Alternately, cover the light fixture in such a way as to prevent light leakage. Avoid removing the lamp from energized fixtures because an excessive number of isolation transformers with open secondaries may damage the regulators and/or increase the current above its normal value. Secure, identify, and place any above ground temporary wiring in conduit to prevent electrocution and fire ignition sources. Maintain mandatory hold signs to operate normally in any situation where pilots or vehicle drivers could mistakenly be in that location. At towered airports certificated under Part 139, holding position signs are required to be illuminated on open taxiways crossing to closed or inactive runways. If the holding position sign is installed on the runway circuit for the closed runway, install a jumper to the taxiway circuit to provide power to the holding position sign for nighttime operations. Where it is not possible to maintain power to signs that would normally be operational, install barricades to exclude aircraft. Figure 2-1, Figure 2-2, Figure 2-3, and Figure 2-4 illustrate temporary changes to lighting and visual NAVAIDs.

#### 2.18.3.1 **Permanently Closed Runways and Taxiways.**

For runways and taxiways that have been permanently closed, disconnect the lighting circuits.

#### 2.18.3.2 **Temporarily Closed Runways and New Runways Not Yet Open to Air Traffic.**

If available, use a lighted X, both at night and during the day, placed at each end of the runway on or near the runway designation numbers facing the approach. (Note that the lighted X must be illuminated at all times that it is on a runway.) The use of a lighted X is required if night work requires runway lighting to be on. See AC 150/5345-55, *Specification for L-893, Lighted Visual Aid to Indicate Temporary Runway Closure*. For runways that have been temporarily closed, but for an extended period, and for those with pilot controlled lighting, disconnect the lighting circuits or secure switches to prevent inadvertent activation. For runways that will be opened periodically, coordinate procedures with the FAA air traffic manager or, at airports without an ATCT, the airport operator. Activate stop bars if available. Figure 2-6 shows a lighted X by day. Figure 2-7 shows a lighted X at night.



**Figure 2-6. Lighted X in Daytime****Figure 2-7. Lighted X at Night**

#### 2.18.3.3 **Partially Closed Runways and Displaced Thresholds.**

When a runway is partially closed, a portion of the pavement is unavailable for any aircraft operation, meaning taxiing and landing or taking off in either direction. A displaced threshold, by contrast, is put in place to ensure obstacle clearance by landing aircraft. The pavement prior to the displaced threshold is available for takeoff in the direction of the displacement, and for landing and takeoff in the opposite direction. Misunderstanding this difference and issuance of a subsequently inaccurate NOTAM can result in a hazardous situation. For both partially

closed runways and displaced thresholds, approach lighting systems at the affected end must be placed out of service.

2.18.3.3.1 Partially Closed Runways.

Disconnect edge and threshold lights on that part of the runway at and behind the threshold (that is, the portion of the runway that is closed). Alternately, cover the light fixtures in such a way as to prevent light leakage. See Figure 2-1.

2.18.3.3.2 Temporary Displaced Thresholds.

Edge lighting in the area of the displacement emits red light in the direction of approach and yellow light (white for visual runways) in the opposite direction. If the displacement is 700 feet or less, blank out centerline lights in the direction of approach or place the centerline lights out of service. If the displacement is over 700 feet, place the centerline lights out of service. See AC 150/5340-30 for details on lighting displaced thresholds. See Figure 2-2.

2.18.3.3.3 Temporary runway thresholds and runway ends must be lighted if the runway is lighted and it is the intended threshold for night landings or instrument meteorological conditions.

2.18.3.3.4 A temporary threshold on an unlighted runway may be marked by retroreflective, elevated markers in addition to markings noted in paragraph 2.18.2.1.3. Markers seen by aircraft on approach are green. Markers at the rollout end of the runway are red. At certificated airports, temporary elevated threshold markers must be mounted with a frangible fitting (see 14 CFR Part 139.309). At non-certificated airports, the temporary elevated threshold markings may either be mounted with a frangible fitting or be flexible. See AC 150/5345-39, Specification for L-853, Runway and Taxiway Retroreflective Markers.

2.18.3.3.5 Temporary threshold lights and runway end lights and related visual NAVAIDs are installed outboard of the edges of the full-strength pavement only when they cannot be installed on the pavement. They are installed with bases at grade level or as low as possible, but not more than 3 inch (7.6 cm) above ground. (The standard above ground height for airport lighting fixtures is 14 inches (35 cm)). When any portion of a base is above grade, place properly compacted fill around the base to minimize the rate of gradient change so aircraft can, in an emergency, cross at normal landing or takeoff speeds without incurring significant damage. See AC 150/5370-10.

2.18.3.3.6 Maintain threshold and edge lighting color and spacing standards as described in AC 150/5340-30. Battery powered, solar, or portable lights that meet the criteria in AC 150/5345-50 may be used. These systems are intended primarily for visual flight rules (VFR) aircraft operations but may



be used for instrument flight rules (IFR) aircraft operations, upon individual approval from the Flight Standards Division of the applicable FAA Regional Office.

- 2.18.3.3.7 When runway thresholds are temporarily displaced, reconfigure yellow lenses (caution zone), as necessary, and place the centerline lights out of service.
- 2.18.3.3.8 Relocate the Visual Glide Slope Indicator (VGSI), such as Visual Approach Slope Indicator (VASI) and Precision Approach Path Indicator (PAPI); other airport lights, such as Runway End Identifier Lights (REIL); and approach lights to identify the temporary threshold. Another option is to disable the VGSI or any equipment that would give misleading indications to pilots as to the new threshold location. Installation of temporary visual aids may be necessary to provide adequate guidance to pilots on approach to the affected runway. If the FAA owns and operates the VGSI, coordinate its installation or disabling with the local ATO/Technical Operations Office. Relocation of such visual aids will depend on the duration of the project and the benefits gained from the relocation, as this can result in great expense. See FAA JO 6850.2, *Visual Guidance Lighting Systems*, for installation criteria for FAA owned and operated NAVAIDs.
- 2.18.3.3.9 Issue a NOTAM to inform pilots of temporary lighting conditions.
- 2.18.3.4 **Temporarily Closed Taxiways.**  
If possible, deactivate the taxiway lighting circuits. When deactivation is not possible (for example other taxiways on the same circuit are to remain open), cover the light fixture in a way as to prevent light leakage.

#### 2.18.4 Signs.

To the extent possible, signs must be in conformance with AC 150/5345-44, *Specification for Runway and Taxiway Signs*, and AC 150/5340-18, *Standard for Airport Sign Systems*.

##### 2.18.4.1 **Existing Signs.**

Runway exit signs are to be covered for closed runway exits. Outbound destination signs are to be covered for closed runways. Any time a sign does not serve its normal function or would provide conflicting information, it must be covered or removed to prevent misdirecting pilots. Note that information signs identifying a crossing taxiway continue to perform their normal function even if the crossing taxiway is closed. For long term construction projects, consider relocating signs, especially runway distance remaining signs.

#### 2.18.4.2 **Temporary Signs.**

Orange construction signs comprise a message in black on an orange background. Orange construction signs may help pilots be aware of changed conditions. The airport operator may choose to introduce these signs as part of a movement area construction project to increase situational awareness when needed. Locate signs outside the taxiway safety limits and ahead of construction areas so pilots can take timely action. Use temporary signs judiciously, striking a balance between the need for information and the increase in pilot workload. When there is a concern of pilot “information overload,” the applicability of mandatory hold signs must take precedence over orange construction signs recommended during construction. Temporary signs must meet the standards for such signs in Engineering Brief 93, *Guidance for the Assembly and Installation of Temporary Orange Construction Signs*. Many criteria in AC 150/5345-44, *Specification for Runway and Taxiway Signs*, are referenced in the Engineering Brief. Permissible sign legends are:

1. CONSTRUCTION AHEAD,
2. CONSTRUCTION ON RAMP, and
3. RWY XX TAKEOFF RUN AVAILABLE XXX FT.

Phasing, supported by drawings and sign schedule, for the installation of orange construction signs must be included in the CSPP or SPCD.

##### 2.18.4.2.1 Takeoff Run Available (TORA) signs.

**Recommended:** Where a runway has been shortened for takeoff, install orange TORA signs well before the hold lines, such as on a parallel taxiway prior to a turn to a runway hold position. See EB 93 for sign size and location.

##### 2.18.4.2.2 Sign legends are shown in Figure F-1.

**Note:** See Figure E-1, Figure E-2, Figure E-3, Figure F-2, and Figure F-3 for examples of orange construction sign locations.

#### 2.19 **Marking and Signs for Access Routes.**

The CSPP should indicate that pavement markings and signs for construction personnel will conform to AC 150/5340-18 and, to the extent practicable, with the Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD) and/or State highway specifications. Signs adjacent to areas used by aircraft must comply with the frangibility requirements of AC 150/5220-23, *Frangible Connections*, which may require modification to size and height guidance in the MUTCD.

## 2.20 **Hazard Marking, Lighting and Signing.**

2.20.1 Hazard marking, lighting, and signing prevent pilots from entering areas closed to aircraft, and prevent construction personnel from entering areas open to aircraft. The CSPP must specify prominent, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles. Hazard marking and lighting must also be specified to identify open manholes, small areas under repair, stockpiled material, waste areas, and areas subject to jet blast. Also consider less obvious construction-related hazards and include markings to identify FAA, airport, and National Weather Service facilities cables and power lines; instrument landing system (ILS) critical areas; airport surfaces, such as RSA, OFA, and OFZ; and other sensitive areas to make it easier for contractor personnel to avoid these areas.

### 2.20.2 Equipment.

#### 2.20.2.1 **Barricades.**

Low profile barricades, including traffic cones, (weighted or sturdily attached to the surface) are acceptable methods used to identify and define the limits of construction and hazardous areas on airports. Careful consideration must be given to selecting equipment that poses the least danger to aircraft but is sturdy enough to remain in place when subjected to typical winds, prop wash and jet blast. The spacing of barricades must be such that a breach is physically prevented barring a deliberate act. For example, if barricades are intended to exclude aircraft, gaps between barricades must be smaller than the wingspan of the smallest aircraft to be excluded; if barricades are intended to exclude vehicles, gaps between barricades must be smaller than the width of the excluded vehicles, generally 4 feet (1.2 meters). Provision must be made for ARFF access if necessary. If barricades are intended to exclude pedestrians, they must be continuously linked. Continuous linking may be accomplished through the use of ropes, securely attached to prevent FOD.

#### 2.20.2.2 **Lights.**

Lights must be red, either steady burning or flashing, and must meet the luminance requirements of the State Highway Department. Batteries powering lights will last longer if lights flash. Lights must be mounted on barricades and spaced at no more than 10 feet (3 meters). Lights must be operated between sunset and sunrise and during periods of low visibility whenever the airport is open for operations. They may be operated by photocell, but this may require that the contractor turn them on manually during periods of low visibility during daytime hours.

#### 2.20.2.3 **Supplement Barricades with Signs (for example) As Necessary.**

Examples are “No Entry” and “No Vehicles.” Be aware of the increased effects of wind and jet blast on barricades with attached signs.

#### 2.20.2.4 **Air Operations Area – General.**

Barricades are not permitted in any active safety area or on the runway side of a runway hold line. Within a runway or taxiway object free area, and on aprons, use orange traffic cones, flashing or steady burning red lights as noted above, highly reflective collapsible barricades marked with diagonal, alternating orange and white stripes; and/or signs to separate all construction/maintenance areas from the movement area. Barricades may be supplemented with alternating orange and white flags at least 20 by 20 inch (50 by 50 cm) square and securely fastened to eliminate FOD. All barricades adjacent to any open runway or taxiway / taxilane safety area, or apron must be as low as possible to the ground, and no more than 18 inches high, exclusive of supplementary lights and flags. Barricades must be of low mass; easily collapsible upon contact with an aircraft or any of its components; and weighted or sturdily attached to the surface to prevent displacement from prop wash, jet blast, wing vortex, and other surface wind currents. If affixed to the surface, they must be frangible at grade level or as low as possible, but not to exceed 3 inch (7.6 cm) above the ground. Figure 2-8 and Figure 2-9 show sample barricades with proper coloring and flags.

**Figure 2-8. Interlocking Barricades**



**Figure 2-9. Low Profile Barricades****2.20.2.5 Air Operations Area – Runway/Taxiway Intersections.**

Use highly reflective barricades with lights to close taxiways leading to closed runways. Evaluate all operating factors when determining how to mark temporary closures that can last from 10 to 15 minutes to a much longer period of time. However, even for closures of relatively short duration, close all taxiway/runway intersections with barricades. The use of traffic cones is appropriate for short duration closures.

**2.20.2.6 Air Operations Area – Other.**

Beyond runway and taxiway object free areas and aprons, barricades intended for construction vehicles and personnel may be many different shapes and made from various materials, including railroad ties, sawhorses, jersey barriers, or barrels.

**2.20.2.7 Maintenance.**

The construction specifications must include a provision requiring the contractor to have a person on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades. The contractor must file the contact person's information with the airport operator. Lighting should be checked for proper operation at least once per day, preferably at dusk.

**2.21 Work Zone Lighting for Nighttime Construction.**

Lighting equipment must adequately illuminate the work area if the construction is to be performed during nighttime hours. Refer to [AC 150/5370-10](#) for minimum illumination levels for nighttime paving projects. Additionally, it is recommended that all support equipment, except haul trucks, be equipped with artificial illumination to safely

illuminate the area immediately surrounding their work areas. The lights should be positioned to provide the most natural color illumination and contrast with a minimum of shadows. The spacing must be determined by trial. Light towers should be positioned and adjusted to aim away from ATCT cabs and active runways to prevent blinding effects. Shielding may be necessary. Light towers should be removed from the construction site when the area is reopened to aircraft operations. Construction lighting units should be identified and generally located on the construction phasing plans in relationship to the ATCT and active runways and taxiways.

## 2.22 **Protection of Runway and Taxiway Safety Areas.**

Runway and taxiway safety areas, OFZs, OFAs, and approach surfaces are described in AC 150/5300-13. Protection of these areas includes limitations on the location and height of equipment and stockpiled material. An FAA airspace study may be required. Coordinate with the appropriate FAA Airports Regional or District Office if there is any doubt as to requirements or dimensions (see paragraph 2.13.5) as soon as the location and height of materials or equipment are known. The CSPP should include drawings showing all safety areas, object free areas, obstacle free zones and approach departure surfaces affected by construction.

### 2.22.1 Runway Safety Area (RSA).

A runway safety area is the defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway (see AC 150/5300-13). Construction activities within the existing RSA are subject to the following conditions:

- 2.22.1.1 No construction may occur within the existing RSA while the runway is open for aircraft operations. The RSA dimensions may be temporarily adjusted if the runway is restricted to aircraft operations requiring an RSA that is equal to the RSA width and length beyond the runway ends available during construction. (See AC 150/5300-13). The temporary use of declared distances and/or partial runway closures may provide the necessary RSA under certain circumstances. Coordinate with the appropriate FAA Airports Regional or District Office to have declared distances information published, and appropriate NOTAMs issued. See AC 150/5300-13 for guidance on the use of declared distances.
- 2.22.1.2 The airport operator must coordinate the adjustment of RSA dimensions as permitted above with the appropriate FAA Airports Regional or District Office and the local FAA air traffic manager and issue a NOTAM.
- 2.22.1.3 The CSPP and SPCD must provide procedures for ensuring adequate distance for protection from blasting operations, if required by operational considerations.

**2.22.1.4 Excavations.**

2.22.1.4.1 Open trenches or excavations are not permitted within the RSA while the runway is open. Backfill trenches before the runway is opened. If backfilling excavations before the runway must be opened is impracticable, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operation of the heaviest aircraft operating on the runway across the trench without damage to the aircraft.

2.22.1.4.2 Construction contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the airport operator, and light them with red lights during hours of restricted visibility or darkness.

**2.22.1.5 Erosion Control.**

Soil erosion must be controlled to maintain RSA standards, that is, the RSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and fire fighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

**2.22.2 Runway Object Free Area (ROFA).**

Construction, including excavations, may be permitted in the ROFA. However, equipment must be removed from the ROFA when not in use, and material should not be stockpiled in the ROFA if not necessary. Stockpiling material in the OFA requires submittal of a 7460-1 form and justification provided to the appropriate FAA Airports Regional or District Office for approval.

**2.22.3 Taxiway Safety Area (TSA).**

2.22.3.1 A taxiway safety area is a defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway. (See AC 150/5300-13.) Since the width of the TSA is equal to the wingspan of the design aircraft, no construction may occur within the TSA while the taxiway is open for aircraft operations. The TSA dimensions may be temporarily adjusted if the taxiway is restricted to aircraft operations requiring a TSA that is equal to the TSA width available during construction. Give special consideration to TSA dimensions at taxiway turns and intersections. (see AC 150/5300-13).

2.22.3.2 The airport operator must coordinate the adjustment of the TSA width as permitted above with the appropriate FAA Airports Regional or District Office and the FAA air traffic manager and issue a NOTAM.

2.22.3.3 The CSPP and SPCD must provide procedures for ensuring adequate distance for protection from blasting operations.

2.22.3.4 **Excavations.**

1. Curves. Open trenches or excavations are not permitted within the TSA while the taxiway is open. Trenches should be backfilled before the taxiway is opened. If backfilling excavations before the taxiway must be opened is impracticable, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operation of the heaviest aircraft operating on the taxiway across the trench without damage to the aircraft.
2. Straight Sections. Open trenches or excavations are not permitted within the TSA while the taxiway is open for unrestricted aircraft operations. Trenches should be backfilled before the taxiway is opened. If backfilling excavations before the taxiway must be opened is impracticable, cover the excavations to allow the safe passage of ARFF equipment and of the heaviest aircraft operating on the taxiway across the trench without causing damage to the equipment or aircraft. In rare circumstances where the section of taxiway is indispensable for aircraft movement, open trenches or excavations may be permitted in the TSA while the taxiway is open to aircraft operations, subject to the following restrictions:
  - a. Taxiing speed is limited to 10 mph.
  - b. Appropriate NOTAMs are issued.
  - c. Marking and lighting meeting the provisions of paragraphs 2.18 and 2.20 are implemented.
  - d. Low mass, low-profile lighted barricades are installed.
  - e. Appropriate temporary orange construction signs are installed.
3. Construction contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the airport operator, and light them with red lights during hours of restricted visibility or darkness.

2.22.3.5 **Erosion control.**

Soil erosion must be controlled to maintain TSA standards, that is, the TSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.



#### 2.22.4 Taxiway Object Free Area (TOFA).

Unlike the Runway Object Free Area, aircraft wings regularly penetrate the taxiway object free area during normal operations. Thus, the restrictions are more stringent. Except as provided below, no construction may occur within the taxiway object free area while the taxiway is open for aircraft operations.

- 2.22.4.1 The taxiway object free area dimensions may be temporarily adjusted if the taxiway is restricted to aircraft operations requiring a taxiway object free area that is equal to the taxiway object free area width available. Give special consideration to TOFA dimensions at taxiway turns and intersections.
- 2.22.4.2 Offset taxiway centerline and edge pavement markings (do not use glass beads) may be used as a temporary measure to provide the required taxiway object free area. Where offset taxiway pavement markings are provided, centerline lighting, centerline reflectors, or taxiway edge reflectors are required. Existing lighting that does not coincide with the temporary markings must be taken out of service.
- 2.22.4.3 Construction activity, including open excavations, may be accomplished without adjusting the width of the taxiway object free area, subject to the following restrictions:
  - 2.22.4.3.1 Taxiing speed is limited to 10 mph.
  - 2.22.4.3.2 NOTAMs issued advising taxiing pilots of hazard and recommending reduced taxiing speeds on the taxiway.
  - 2.22.4.3.3 Marking and lighting meeting the provisions of paragraphs 2.18 and 2.20 are implemented.
  - 2.22.4.3.4 If desired, appropriate orange construction signs are installed. See paragraph 2.18.4.2 and Appendix F.
  - 2.22.4.3.5 Five-foot clearance is maintained between equipment and materials and any part of an aircraft (includes wingtip overhang). If such clearance can only be maintained if an aircraft does not have full use of the entire taxiway width (with its main landing gear at the edge of the usable pavement), then it will be necessary to move personnel and equipment for the passage of that aircraft.
  - 2.22.4.3.6 Flaggers furnished by the contractor must be used to direct and control construction equipment and personnel to a pre-established setback distance for safe passage of aircraft, and airline and/or airport personnel. Flaggers must also be used to direct taxiing aircraft. Due to liability issues, the airport operator should require airlines to provide flaggers for directing taxiing aircraft.

#### 2.22.5 Obstacle Free Zone (OFZ).

In general, personnel, material, and/or equipment may not penetrate the OFZ while the runway is open for aircraft operations. If a penetration to the OFZ is necessary, it may be possible to continue aircraft operations through operational restrictions. Coordinate with the FAA through the appropriate FAA Airports Regional or District Office.

#### 2.22.6 Runway Approach/Departure Areas and Clearways.

All personnel, materials, and/or equipment must remain clear of the applicable threshold siting surfaces, as defined in AC 150/5300-13. Objects that do not penetrate these surfaces may still be obstructions to air navigation and may affect standard instrument approach procedures. Coordinate with the FAA through the appropriate FAA Airports Regional or District Office.

2.22.6.1 Construction activity in a runway approach/departure area may result in the need to partially close a runway or displace the existing runway threshold. Partial runway closure, displacement of the runway threshold, as well as closure of the complete runway and other portions of the movement area also require coordination through the airport operator with the appropriate FAA air traffic manager (FSS if non-towered) and ATO/Technical Operations (for affected NAVAIDS) and airport users.

##### 2.22.6.2 **Caution About Partial Runway Closures.**

When filing a NOTAM for a partial runway closure, clearly state that the portion of pavement located prior to the threshold is not available for landing and departing traffic. In this case, the threshold has been moved for both landing and takeoff purposes (this is different than a displaced threshold). There may be situations where the portion of closed runway is available for taxiing only. If so, the NOTAM must reflect this condition).

##### 2.22.6.3 **Caution About Displaced Thresholds.**

Implementation of a displaced threshold affects runway length available for aircraft landing over the displacement. Depending on the reason for the displacement (to provide obstruction clearance or RSA), such a displacement may also require an adjustment in the landing distance available and accelerate-stop distance available in the opposite direction. If project scope includes personnel, equipment, excavation, or other work within the existing RSA of any usable runway end, do not implement a displaced threshold unless arrivals and departures toward the construction activity are prohibited. Instead, implement a partial closure.

#### 2.23 **Other Limitations on Construction.**

The CSPP must specify any other limitations on construction, including but not limited to:

### 2.23.1 Prohibitions.

- 2.23.1.1 No use of tall equipment (cranes, concrete pumps, and so on) unless a 7460-1 determination letter is issued for such equipment.
- 2.23.1.2 No use of open flame welding or torches unless fire safety precautions are provided and the airport operator has approved their use.
- 2.23.1.3 No use of electrical blasting caps on or within 1,000 feet (300 meters) of the airport property. See AC 150/5370-10.

### 2.23.2 Restrictions.

- 2.23.2.1 Construction suspension required during specific airport operations.
- 2.23.2.2 Areas that cannot be worked on simultaneously.
- 2.23.2.3 Day or night construction restrictions.
- 2.23.2.4 Seasonal construction restrictions.
- 2.23.2.5 Temporary signs not approved by the airport operator.
- 2.23.2.6 Grades changes that could result in unplanned effects on NAVAIDs.

## CHAPTER 3. GUIDELINES FOR WRITING A CSPP

### 3.1 General Requirements.

The CSPP is a standalone document written to correspond with the subjects outlined in paragraph 2.4. The CSPP is organized by numbered sections corresponding to each subject listed in paragraph 2.4, and described in detail in paragraphs 2.5 - 2.23. Each section number and title in the CSPP matches the corresponding subject outlined in paragraph 2.4 (for example, 1. Coordination, 2. Phasing, 3. Areas and Operations Affected by the Construction Activity, and so on). With the exception of the project scope of work outlined in Section 2. Phasing, only subjects specific to operational safety during construction should be addressed.

### 3.2 Applicability of Subjects.

Each section should, to the extent practical, focus on the specific subject. Where an overlapping requirement spans several sections, the requirement should be explained in detail in the most applicable section. A reference to that section should be included in all other sections where the requirement may apply. For example, the requirement to protect existing underground FAA ILS cables during trenching operations could be considered FAA ATO coordination (Coordination, paragraph 2.5.3), an area and operation affected by the construction activity (Areas and Operations Affected by the Construction Activity, paragraph 2.7.1.4), a protection of a NAVAID (Protection of Navigational Aids (NAVAIDs), paragraph 2.8), or a notification to the FAA of construction activities (Notification of Construction Activities, paragraph 2.13.5.3.2). However, it is more specifically an underground utility requirement (Underground Utilities, paragraph 2.15). The procedure for protecting underground ILS cables during trenching operations should therefore be described in 2.4.2.11: “The contractor must coordinate with the local FAA System Support Center (SSC) to mark existing ILS cable routes along Runway 17-35. The ILS cables will be located by hand digging whenever the trenching operation moves within 10 feet of the cable markings.” All other applicable sections should include a reference to 2.4.2.11: “ILS cables shall be identified and protected as described in 2.4.2.11” or “See 2.4.2.11 for ILS cable identification and protection requirements.” Thus, the CSPP should be considered as a whole, with no need to duplicate responses to related issues.

### 3.3 Graphical Representations.

Construction safety drawings should be included in the CSPP as attachments. When other graphical representations will aid in supporting written statements, the drawings, diagrams, and/or photographs should also be attached to the CSPP. References should be made in the CSPP to each graphical attachment and may be made in multiple sections.

### 3.4 **Reference Documents.**

The CSPP must not incorporate a document by reference unless reproduction of the material in that document is prohibited. In that case, either copies of or a source for the referenced document must be provided to the contractor. Where this AC recommends references (e.g. as in paragraph 3.9) the intent is to include a reference to the corresponding section in the CSPP, not to this Advisory Circular.

### 3.5 **Restrictions.**

The CSPP should not be considered as a project design review document. The CSPP should also avoid mention of permanent (“as-built”) features such as pavements, markings, signs, and lighting, except when such features are intended to aid in maintaining operational safety during the construction.

### 3.6 **Coordination.**

Include in this section a detailed description of conferences and meetings to be held both before and during the project. Include appropriate information from AC 150/5370-12. Discuss coordination procedures and schedules for each required FAA ATO Technical Operations shutdown and restart and all required flight inspections.

### 3.7 **Phasing.**

Include in this section a detailed scope of work description for the project as a whole and each phase of work covered by the CSPP. This includes all locations and durations of the work proposed. Attach drawings to graphically support the written scope of work. Detail in this section the sequenced phases of the proposed construction. Include a reference to paragraph 3.8, as appropriate.

### 3.8 **Areas and Operations Affected by Construction.**

Focus in this section on identifying the areas and operations affected by the construction. Describe corresponding mitigation that is not covered in detail elsewhere in the CSPP. Include references to paragraphs below as appropriate. Attach drawings as necessary to graphically describe affected areas and mechanisms proposed. See Appendix F for sample operational effects tables and figures.

### 3.9 **NAVAID Protection.**

List in this section all NAVAID facilities that will be affected by the construction. Identify NAVAID facilities that will be placed out of service at any time prior to or during construction activities. Identify individuals responsible for coordinating each shutdown and when each facility will be out of service. Include a reference to paragraph 3.6 for FAA ATO NAVAID shutdown, restart, and flight inspection coordination. Outline in detail procedures to protect each NAVAID facility remaining in service from interference by construction activities. Include a reference to paragraph 3.14 for the

issuance of NOTAMs as required. Include a reference to paragraph 3.16 for the protection of underground cables and piping serving NAVAIDs. If temporary visual aids are proposed to replace or supplement existing facilities, include a reference to paragraph 3.19. Attach drawings to graphically indicate the affected NAVAIDS and the corresponding critical areas.

### 3.10 **Contractor Access.**

This will necessarily be the most extensive section of the CSPP. Provide sufficient detail so that a contractor not experienced in working on airports will understand the unique restrictions such work will require. Due to this extent, it should be broken down into subsections as described below:

#### 3.10.1 Location of Stockpiled Construction Materials.

Describe in this section specific locations for stockpiling material. Note any height restrictions on stockpiles. Include a reference to paragraph 3.21 for hazard marking and lighting devices used to identify stockpiles. Include a reference to paragraph 3.11 for provisions to prevent stockpile material from becoming wildlife attractants. Include a reference to paragraph 3.12 for provisions to prevent stockpile material from becoming FOD. Attach drawings to graphically indicate the stockpile locations.

#### 3.10.2 Vehicle and Pedestrian Operations.

While there are many items to be addressed in this major subsection of the CSPP, all are concerned with one main issue: keeping people and vehicles from areas of the airport where they don't belong. This includes preventing unauthorized entry to the AOA and preventing the improper movement of pedestrians or vehicles on the airport. In this section, focus on mechanisms to prevent construction vehicles and workers traveling to and from the worksite from unauthorized entry into movement areas. Specify locations of parking for both employee vehicles and construction equipment, and routes for access and haul roads. In most cases, this will best be accomplished by attaching a drawing. Quote from AC 150/5210-5 specific requirements for contractor vehicles rather than referring to the AC as a whole, and include special requirements for identifying HAZMAT vehicles. Quote from, rather than incorporate by reference, AC 150/5210-20 as appropriate to address the airport's rules for ground vehicle operations, including its training program. Discuss the airport's recordkeeping system listing authorized vehicle operators.

#### 3.10.3 Two-Way Radio Communications.

Include a special section to identify all individuals who are required to maintain communications with Air Traffic (AT) at airports with active towers, or monitor CTAF at airports without or with closed ATCT. Include training requirements for all individuals required to communicate with AT. Individuals required to monitor AT frequencies should also be identified. If construction employees are also required to communicate by radio with Airport Operations, this procedure should be described in detail. Usage of vehicle mounted radios and/or portable radios should be addressed. Communication procedures for the event of disabled radio communication (that is, light

signals, telephone numbers, others) must be included. All radio frequencies should be identified (Tower, Ground Control, CTAF, UNICOM, ATIS, and so on).

3.10.4 **Airport Security.**

Address security as it applies to vehicle and pedestrian operations. Discuss TSA requirements, security badging requirements, perimeter fence integrity, gate security, and other needs. Attach drawings to graphically indicate secured and/or Security Identification Display Areas (SIDA), perimeter fencing, and available access points.

3.11 **Wildlife Management.**

Discuss in this section wildlife management procedures. Describe the maintenance of existing wildlife mitigation devices, such as perimeter fences, and procedures to limit wildlife attractants. Include procedures to notify Airport Operations of wildlife encounters. Include a reference to paragraph 3.10 for security (wildlife) fence integrity maintenance as required.

3.12 **FOD Management.**

In this section, discuss methods to control and monitor FOD: worksite housekeeping, ground vehicle tire inspections, runway sweeps, and so on. Include a reference to paragraph 3.15 for inspection requirements as required.

3.13 **HAZMAT Management.**

Describe in this section HAZMAT management procedures: fuel deliveries, spill recovery procedures, Safety Data Sheet (SDS), Material Safety Data Sheet (MSDS) or Product Safety Data Sheet (PSDS) availability, and other considerations. Any specific airport HAZMAT restrictions should also be identified. Include a reference to paragraph 3.10 for HAZMAT vehicle identification requirements. Quote from, rather than incorporate by reference, AC 150/5320-15.

3.14 **Notification of Construction Activities.**

List in this section the names and telephone numbers of points of contact for all parties affected by the construction project. We recommend a single list that includes all telephone numbers required under this section. Include emergency notification procedures for all representatives of all parties potentially impacted by the construction. Identify individual representatives – and at least one alternate – for each party. List both on-duty and off-duty contact information for each individual, including individuals responsible for emergency maintenance of airport construction hazard lighting and barricades. Describe procedures to coordinate immediate response to events that might adversely affect the operational safety of the airport (such as interrupted NAVAID service). Explain requirements for and the procedures for the issuance of Notices to Airmen (NOTAMs), notification to FAA required by 14 CFR Part 77 and Part 157 and in the event of affected NAVAIDs. For NOTAMs, identify an individual, and at least one alternate, responsible for issuing and cancelling each specific type of Notice to

Airmen (NOTAM) required. Detail notification methods for police, fire fighting, and medical emergencies. This may include 911, but should also include direct phone numbers of local police departments and nearby hospitals. Identify the E911 address of the airport and the emergency access route via haul roads to the construction site. Require the contractor to have this information available to all workers. The local Poison Control number should be listed. Procedures regarding notification of Airport Operations and/or the ARFF Department of such emergencies should be identified, as applicable. If airport radio communications are identified as a means of emergency notification, include a reference to paragraph 3.10. Differentiate between emergency and nonemergency notification of ARFF personnel, the latter including activities that affect ARFF water supplies and access roads. Identify the primary ARFF contact person and at least one alternate. If notification is to be made through Airport Operations, then detail this procedure. Include a method of confirmation from the ARFF department.

**3.15 Inspection Requirements.**

Describe in this section inspection requirements to ensure airfield safety compliance. Include a requirement for routine inspections by the resident engineer (RE) or other airport operator's representative and the construction contractors. If the engineering consultants and/or contractors have a Safety Officer who will conduct such inspections, identify this individual. Describe procedures for special inspections, such as those required to reopen areas for aircraft operations. Part 139 requires daily airfield inspections at certificated airports, but these may need to be more frequent when construction is in progress. Discuss the role of such inspections on areas under construction. Include a requirement to immediately remedy any deficiencies, whether caused by negligence, oversight, or project scope change.

**3.16 Underground Utilities.**

Explain how existing underground utilities will be located and protected. Identify each utility owner and include contact information for each company/agency in the master list. Address emergency response procedures for damaged or disrupted utilities. Include a reference to paragraph 3.14 for notification of utility owners of accidental utility disruption as required.

**3.17 Penalties.**

Describe in this section specific penalties imposed for noncompliance with airport rules and regulations, including the CSPP: SIDA violations, VPD, and others.

**3.18 Special Conditions.**

Identify any special conditions that may trigger specific safety mitigation actions outlined in this CSPP: low visibility operations, snow removal, aircraft in distress, aircraft accident, security breach, VPD, and other activities requiring construction suspension/resumption. Include a reference to paragraph 3.10 for compliance with airport safety and security measures and for radio communications as required. Include



a reference to paragraph 3.14 for emergency notification of all involved parties, including police/security, ARFF, and medical services.

**3.19 Runway and Taxiway Visual Aids.**

Include marking, lighting, signs, and visual NAVAIDS. Detail temporary runway and taxiway marking, lighting, signs, and visual NAVAIDS required for the construction. Discuss existing marking, lighting, signs, and visual NAVAIDS that are temporarily, altered, obliterated, or shut down. Consider non-federal facilities and address requirements for reimbursable agreements necessary for alteration of FAA facilities and for necessary flight checks. Identify temporary TORA signs or runway distance remaining signs if appropriate. Identify required temporary visual NAVAIDS such as REIL or PAPI. Quote from, rather than incorporate by reference, AC 150/5340-1, *Standards for Airport Markings*; AC 150/5340-18, *Standards for Airport Sign Systems*; and AC 150/5340-30, as required. Attach drawings to graphically indicate proposed marking, lighting, signs, and visual NAVAIDS.

**3.20 Marking and Signs for Access Routes.**

Detail plans for marking and signs for vehicle access routes. To the extent possible, signs should be in conformance with the Federal Highway Administration MUTCD and/or State highway specifications, not hand lettered. Detail any modifications to the guidance in the MUTCD necessary to meet frangibility/height requirements.

**3.21 Hazard Marking and Lighting.**

Specify all marking and lighting equipment, including when and where each type of device is to be used. Specify maximum gaps between barricades and the maximum spacing of hazard lighting. Identify one individual and at least one alternate responsible for maintenance of hazard marking and lighting equipment in the master telephone list. Include a reference to paragraph 3.14. Attach drawings to graphically indicate the placement of hazard marking and lighting equipment.

**3.22 Work Zone Lighting for Nighttime Construction.**

If work is to be conducted at night, specify all lighting equipment, including when and where each type of device is to be used. Indicate the direction lights are to be aimed and any directions that aiming of lights is prohibited. Specify any shielding necessary in instances where aiming is not sufficient to prevent interference with air traffic control and aircraft operations. Attach drawings to graphically indicate the placement and aiming of lighting equipment. Where the plan only indicates directions that aiming of lights is prohibited, the placement and positioning of portable lights must be proposed by the Contractor and approved by the airport operator's representative each time lights are relocated or repositioned.

**3.23 Protection of Runway and Taxiway Safety Areas.**

This section should focus exclusively on procedures for protecting all safety areas, including those altered by the construction: methods of demarcation, limit of access, movement within safety areas, stockpiling and trenching restrictions, and so on. Reference AC 150/5300-13, as required. Include a reference to paragraph 3.10 for procedures regarding vehicle and personnel movement within safety areas. Include a reference to paragraph 3.10 for material stockpile restrictions as required. Detail requirements for trenching, excavations, and backfill. Include a reference to paragraph 3.21 for hazard marking and lighting devices used to identify open excavations as required. If runway and taxiway closures are proposed to protect safety areas, or if temporary displaced thresholds and/or revised declared distances are used to provide the required Runway Safety Area, include a reference to paragraphs 3.14 and 3.19. Detail procedures for protecting the runway OFZ, runway OFA, taxiway OFA and runway approach surfaces including those altered by the construction: methods of demarcation, limit of cranes, storage of equipment, and so on. Quote from, rather than incorporate by reference, AC 150/5300-13, as required. Include a reference to paragraph 3.24 for height (i.e., crane) restrictions as required. One way to address the height of equipment that will move during the project is to establish a three-dimensional “box” within which equipment will be confined that can be studied as a single object. Attach drawings to graphically indicate the safety area, OFZ, and OFA boundaries.

**3.24 Other Limitations on Construction.**

This section should describe what limitations must be applied to each area of work and when each limitation will be applied: limitations due to airport operations, height (i.e., crane) restrictions, areas which cannot be worked at simultaneously, day/night work restrictions, winter construction, and other limitations. Include a reference to paragraph 3.7 for project phasing requirements based on construction limitations as required.

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**APPENDIX A. RELATED READING MATERIAL**

Obtain the latest version of the following free publications from the FAA on its Web site at <http://www.faa.gov/airports/>.

**Table A-1. FAA Publications**

| <b>Number</b>         | <b>Title and Description</b>                                                                                                                                                                                                                       |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>AC 150/5200-28</u> | <i>Notices to Airmen (NOTAMs) for Airport Operators</i><br>Guidance for using the NOTAM System in airport reporting.                                                                                                                               |
| <u>AC 150/5200-30</u> | <i>Airport Field Condition Assessments and Winter Operations Safety</i><br>Guidance for airport owners/operators on the development of an acceptable airport snow and ice control program and on appropriate field condition reporting procedures. |
| <u>AC 150/5200-33</u> | <i>Hazardous Wildlife Attractants On or Near Airports</i><br>Guidance on locating certain land uses that might attract hazardous wildlife to public-use airports.                                                                                  |
| <u>AC 150/5210-5</u>  | <i>Painting, Marking, and Lighting of Vehicles Used on an Airport</i><br>Guidance, specifications, and standards for painting, marking, and lighting vehicles operating in the airport air operations areas.                                       |
| <u>AC 150/5210-20</u> | <i>Ground Vehicle Operations to include Taxiing or Towing an Aircraft on Airports</i><br>Guidance to airport operators on developing ground vehicle operation training programs.                                                                   |
| <u>AC 150/5300-13</u> | <i>Airport Design</i><br>FAA standards and recommendations for airport design. Establishes approach visibility minimums as an airport design parameter, and contains the Object Free area and the obstacle free-zone criteria.                     |
| <u>AC 150/5210-24</u> | <i>Airport Foreign Object Debris (FOD) Management</i><br>Guidance for developing and managing an airport foreign object debris (FOD) program                                                                                                       |

| Number                | Title and Description                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>AC 150/5320-15</u> | <p><i>Management of Airport Industrial Waste</i></p> <p>Basic information on the characteristics, management, and regulations of industrial wastes generated at airports. Guidance for developing a Storm Water Pollution Prevention Plan (SWPPP) that applies best management practices to eliminate, prevent, or reduce pollutants in storm water runoff with particular airport industrial activities.</p> |
| <u>AC 150/5340-1</u>  | <p><i>Standards for Airport Markings</i></p> <p>FAA standards for the siting and installation of signs on airport runways and taxiways.</p>                                                                                                                                                                                                                                                                   |
| <u>AC 150/5340-18</u> | <p><i>Standards for Airport Sign Systems</i></p> <p>FAA standards for the siting and installation of signs on airport runways and taxiways.</p>                                                                                                                                                                                                                                                               |
| <u>AC 150/5345-28</u> | <p><i>Precision Approach Path Indicator (PAPI) Systems</i></p> <p>FAA standards for PAPI systems, which provide pilots with visual glide slope guidance during approach for landing.</p>                                                                                                                                                                                                                      |
| <u>AC 150/5340-30</u> | <p><i>Design and Installation Details for Airport Visual Aids</i></p> <p>Guidance and recommendations on the installation of airport visual aids.</p>                                                                                                                                                                                                                                                         |
| <u>AC 150/5345-39</u> | <p><i>Specification for L-853, Runway and Taxiway Retroreflective Markers</i></p>                                                                                                                                                                                                                                                                                                                             |
| <u>AC 150/5345-44</u> | <p><i>Specification for Runway and Taxiway Signs</i></p> <p>FAA specifications for unlighted and lighted signs for taxiways and runways.</p>                                                                                                                                                                                                                                                                  |
| <u>AC 150/5345-53</u> | <p><i>Airport Lighting Equipment Certification Program</i></p> <p>Details on the Airport Lighting Equipment Certification Program (ALECP).</p>                                                                                                                                                                                                                                                                |
| <u>AC 150/5345-50</u> | <p><i>Specification for Portable Runway and Taxiway Lights</i></p> <p>FAA standards for portable runway and taxiway lights and runway end identifier lights for temporary use to permit continued aircraft operations while all or part of a runway lighting system is inoperative.</p>                                                                                                                       |
| <u>AC 150/5345-55</u> | <p><i>Specification for L-893, Lighted Visual Aid to Indicate Temporary Runway Closure</i></p>                                                                                                                                                                                                                                                                                                                |

| <b>Number</b>         | <b>Title and Description</b>                                                                                                                                                                                                               |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>AC 150/5370-10</u> | <i>Standards for Specifying Construction of Airports</i><br>Standards for construction of airports, including earthwork, drainage, paving, turfing, lighting, and incidental construction.                                                 |
| <u>AC 150/5370-12</u> | <i>Quality Management for Federally Funded Airport Construction Projects</i>                                                                                                                                                               |
| EB 93                 | <i>Guidance for the Assembly and Installation of Temporary Orange Construction Signs</i>                                                                                                                                                   |
| FAA Order 5200.11     | <u>FAA Airports (ARP) Safety Management System (SMS)</u><br>Basics for implementing SMS within ARP. Includes roles and responsibilities of ARP management and staff as well as other FAA lines of business that contribute to the ARP SMS. |
| FAA Certalert 98-05   | <i>Grasses Attractive to Hazardous Wildlife</i><br>Guidance on grass management and seed selection.                                                                                                                                        |
| FAA Form 7460-1       | <u>Notice of Proposed Construction or Alteration</u>                                                                                                                                                                                       |
| FAA Form 7480-1       | <u>Notice of Landing Area Proposal</u>                                                                                                                                                                                                     |
| FAA Form 6000.26      | National NAS Strategic Interruption Service Level Agreement, Strategic Events Coordination, Airport Sponsor Form                                                                                                                           |

Obtain the latest version of the following free publications from the Electronic Code of Federal Regulations at <http://www.ecfr.gov/>.

**Table A-2. Code of Federal Regulation**

| <b>Number</b>          | <b>Title</b>                                                   |
|------------------------|----------------------------------------------------------------|
| Title 14 CFR Part 77   | Safe, Efficient Use and Preservation of the Navigable Airspace |
| Title 14 CFR Part 139  | Certification of Airports                                      |
| Title 49 CFR Part 1542 | Airport Security                                               |

Obtain the latest version of the Manual on Uniform Traffic Control Devices from the Federal Highway Administration at <http://mutcd.fhwa.dot.gov/>.

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**APPENDIX B. TERMS AND ACRONYMS****Table B-1. Terms and Acronyms**

| <b>Term</b>          | <b>Definition</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Form 7460-1          | Notice of Proposed Construction or Alteration. For on-airport projects, the form submitted to the FAA regional or airports division office as formal written notification of any kind of construction or alteration of objects that affect navigable airspace, as defined in 14 CFR Part 77, <i>Safe, Efficient Use, and Preservation of the Navigable Airspace</i> . (See guidance available on the FAA web site at <a href="https://oeaaa.faa.gov">https://oeaaa.faa.gov</a> .) The form may be downloaded at <a href="http://www.faa.gov/airports/resources/forms/">http://www.faa.gov/airports/resources/forms/</a> , or filed electronically at: <a href="https://oeaaa.faa.gov">https://oeaaa.faa.gov</a> . |
| Form 7480-1          | Notice of Landing Area Proposal. Form submitted to the FAA Airports Regional Division Office or Airports District Office as formal written notification whenever a project without an airport layout plan on file with the FAA involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport. The form may be downloaded at <a href="http://www.faa.gov/airports/resources/forms/">http://www.faa.gov/airports/resources/forms/</a> .                                                                                                                   |
| Form 6000-26         | Airport Sponsor Strategic Event Submission Form                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| AC                   | Advisory Circular                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| ACSI                 | Airport Certification Safety Inspector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| ADG                  | Airplane Design Group                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| AIP                  | Airport Improvement Program                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| ALECP                | Airport Lighting Equipment Certification Program                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| ANG                  | Air National Guard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| AOA                  | Air Operations Area, as defined in 14 CFR Part 107. Means a portion of an airport, specified in the airport security program, in which security measures are carried out. This area includes aircraft movement areas, aircraft parking areas, loading ramps, and safety areas, and any adjacent areas (such as general aviation areas) that are not separated by adequate security systems, measures, or procedures. This area does not include the secured area of the airport terminal building.                                                                                                                                                                                                                |
| ARFF                 | Aircraft Rescue and Fire Fighting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| ARP                  | FAA Office of Airports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| ASDA                 | Accelerate-Stop Distance Available                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| AT                   | Air Traffic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| ATCT                 | Airport Traffic Control Tower                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| ATIS                 | Automatic Terminal Information Service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| ATO                  | Air Traffic Organization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Certificated Airport | An airport that has been issued an Airport Operating Certificate by the FAA under                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |



| Term                 | Definition                                                                                                                                                                                                                                                                                                                   |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                      | the authority of 14 CFR Part 139, <i>Certification of Airports</i> .                                                                                                                                                                                                                                                         |
| CFR                  | Code of Federal Regulations                                                                                                                                                                                                                                                                                                  |
| Construction         | The presence of construction-related personnel, equipment, and materials in any location that could infringe upon the movement of aircraft.                                                                                                                                                                                  |
| CSPP                 | Construction Safety and Phasing Plan. The overall plan for safety and phasing of a construction project developed by the airport operator, or developed by the airport operator's consultant and approved by the airport operator. It is included in the invitation for bids and becomes part of the project specifications. |
| CTAF                 | Common Traffic Advisory Frequency                                                                                                                                                                                                                                                                                            |
| Displaced Threshold  | A threshold that is located at a point on the runway other than the designated beginning of the runway. The portion of pavement behind a displaced threshold is available for takeoffs in either direction or landing from the opposite direction.                                                                           |
| DOT                  | Department of Transportation                                                                                                                                                                                                                                                                                                 |
| EPA                  | Environmental Protection Agency                                                                                                                                                                                                                                                                                              |
| FAA                  | Federal Aviation Administration                                                                                                                                                                                                                                                                                              |
| FOD                  | Foreign Object Debris/Damage                                                                                                                                                                                                                                                                                                 |
| FSS                  | Flight Service Station                                                                                                                                                                                                                                                                                                       |
| GA                   | General Aviation                                                                                                                                                                                                                                                                                                             |
| HAZMAT               | Hazardous Materials                                                                                                                                                                                                                                                                                                          |
| HMA                  | Hot Mix Asphalt                                                                                                                                                                                                                                                                                                              |
| IAP                  | Instrument Approach Procedures                                                                                                                                                                                                                                                                                               |
| IFR                  | Instrument Flight Rules                                                                                                                                                                                                                                                                                                      |
| ILS                  | Instrument Landing System                                                                                                                                                                                                                                                                                                    |
| LDA                  | Landing Distance Available                                                                                                                                                                                                                                                                                                   |
| LOC                  | Localizer antenna array                                                                                                                                                                                                                                                                                                      |
| Movement Area        | The runways, taxiways, and other areas of an airport that are used for taxiing or hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading aprons and aircraft parking areas (reference 14 CFR Part 139).                                                                                          |
| MSDS                 | Material Safety Data Sheet                                                                                                                                                                                                                                                                                                   |
| MUTCD                | Manual on Uniform Traffic Control Devices                                                                                                                                                                                                                                                                                    |
| NAVAID               | Navigation Aid                                                                                                                                                                                                                                                                                                               |
| NAVAID Critical Area | An area of defined shape and size associated with a NAVAID that must remain clear and graded to avoid interference with the electronic signal.                                                                                                                                                                               |
| Non-Movement Area    | The area inside the airport security fence exclusive of the Movement Area. It is important to note that the non-movement area includes pavement traversed by aircraft.                                                                                                                                                       |

| <b>Term</b>              | <b>Definition</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NOTAM                    | Notices to Airmen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Obstruction              | Any object/obstacle exceeding the obstruction standards specified by 14 CFR Part 77, subpart C.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| OCC                      | Operations Control Center                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| OE / AAA                 | Obstruction Evaluation / Airport Airspace Analysis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| OFA                      | Object Free Area. An area on the ground centered on the runway, taxiway, or taxi lane centerline provided to enhance safety of aircraft operations by having the area free of objects except for those objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes. (See <u>AC 150/5300-13</u> for additional guidance on OFA standards and wingtip clearance criteria.)                                                                                                                                                                      |
| OFZ                      | Obstacle Free Zone. The airspace below 150 ft (45 m) above the established airport elevation and along the runway and extended runway centerline that is required to be clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance protection for aircraft landing or taking off from the runway and for missed approaches. The OFZ is subdivided as follows: Runway OFZ, Inner Approach OFZ, Inner Transitional OFZ, and Precision OFZ. Refer to <u>AC 150/5300-13</u> for guidance on OFZ. |
| OSHA                     | Occupational Safety and Health Administration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| OTS                      | Out of Service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| P&R                      | Planning and Requirements Group                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| NPI                      | NAS Planning & Integration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| PAPI                     | Precision Approach Path Indicator                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| PFC                      | Passenger Facility Charge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| PLASI                    | Pulse Light Approach Slope Indicator                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Project Proposal Summary | A clear and concise description of the proposed project or change that is the object of Safety Risk Management.                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| RA                       | Reimbursable Agreement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| RE                       | Resident Engineer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| REIL                     | Runway End Identifier Lights                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| RNAV                     | Area Navigation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| ROFA                     | Runway Object Free Area                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| RSA                      | Runway Safety Area. A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway, in accordance with <u>AC 150/5300-13</u> .                                                                                                                                                                                                                                                                                                                                       |
| SDS                      | Safety Data Sheet                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| SIDA                     | Security Identification Display Area                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| SMS                      | Safety Management System                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

| <b>Term</b>          | <b>Definition</b>                                                                                                                                                                                                                                                |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SPCD                 | Safety Plan Compliance Document. Details developed and submitted by a contractor to the airport operator for approval providing details on how the performance of a construction project will comply with the CSPP.                                              |
| SRM                  | Safety Risk Management                                                                                                                                                                                                                                           |
| SSC                  | System Support Center                                                                                                                                                                                                                                            |
| Taxiway Safety Area  | A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway, in accordance with <u>AC 150/5300-13</u> .                                                                    |
| TDG                  | Taxiway Design Group                                                                                                                                                                                                                                             |
| Temporary            | Any condition that is not intended to be permanent.                                                                                                                                                                                                              |
| Temporary Runway End | The beginning of that portion of the runway available for landing and taking off in one direction, and for landing in the other direction. Note the difference from a displaced threshold.                                                                       |
| Threshold            | The beginning of that portion of the runway available for landing. In some instances, the landing threshold may be displaced.                                                                                                                                    |
| TODA                 | Takeoff Distance Available                                                                                                                                                                                                                                       |
| TOFA                 | Taxiway Object Free Area                                                                                                                                                                                                                                         |
| TORA                 | Takeoff Run Available. The length of the runway less any length of runway unavailable and/or unsuitable for takeoff run computations. See <u>AC 150/5300-13</u> for guidance on declared distances.                                                              |
| TSA                  | Taxiway Safety Area, or<br>Transportation Security Administration                                                                                                                                                                                                |
| UNICOM               | A radio communications system of a type used at small airports.                                                                                                                                                                                                  |
| VASI                 | Visual Approach Slope Indicator                                                                                                                                                                                                                                  |
| VGSI                 | Visual Glide Slope Indicator. A device that provides a visual glide slope indicator to landing pilots. These systems include precision approach path indicator (PAPI), visual approach slope indicator (VASI), and pulse light approach slope indicator (PLASI). |
| VFR                  | Visual Flight Rules                                                                                                                                                                                                                                              |
| VOR                  | Very High Frequency Omnidirectional Radio Range                                                                                                                                                                                                                  |
| VPD                  | Vehicle / Pedestrian Deviation                                                                                                                                                                                                                                   |

**APPENDIX C. SAFETY AND PHASING PLAN CHECKLIST**

This appendix is keyed to Chapter 2. In the electronic version of this AC, clicking on the paragraph designation in the Reference column will access the applicable paragraph. There may be instances where the CSPP requires provisions that are not covered by the list in this appendix.

This checklist is intended as an aid, not a required submittal.

**Table C-1. CSPP Checklist**

| Coordination                                                                                                                                                  | Reference      | Addressed? |    |    | Remarks |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|----|----|---------|
|                                                                                                                                                               |                | Yes        | No | NA |         |
| General Considerations                                                                                                                                        |                |            |    |    |         |
| Requirements for predesign, prebid, and preconstruction conferences to introduce the subject of airport operational safety during construction are specified. | <u>2.5</u>     |            |    |    |         |
| Operational safety is a standing agenda item for construction progress meetings.                                                                              | <u>2.5</u>     |            |    |    |         |
| Scheduling of the construction phases is properly addressed.                                                                                                  | <u>2.6</u>     |            |    |    |         |
| Any formal agreements are established.                                                                                                                        | <u>2.5.3</u>   |            |    |    |         |
| Areas and Operations Affected by Construction Activity                                                                                                        |                |            |    |    |         |
| Drawings showing affected areas are included.                                                                                                                 | <u>2.7.1</u>   |            |    |    |         |
| Closed or partially closed runways, taxiways, and aprons are depicted on drawings.                                                                            | <u>2.7.1.1</u> |            |    |    |         |
| Access routes used by ARFF vehicles affected by the project are addressed.                                                                                    | <u>2.7.1.2</u> |            |    |    |         |
| Access routes used by airport and airline support vehicles affected by the project are addressed.                                                             | <u>2.7.1.3</u> |            |    |    |         |
| Underground utilities, including water supplies for firefighting and drainage.                                                                                | <u>2.7.1.4</u> |            |    |    |         |

| Coordination                                                                                                                        | Reference                              | Addressed? |    |    | Remarks |
|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------|----|----|---------|
|                                                                                                                                     |                                        | Yes        | No | NA |         |
| Approach/departure surfaces affected by heights of temporary objects are addressed.                                                 | <u>2.7.1.5</u>                         |            |    |    |         |
| Construction areas, storage areas, and access routes near runways, taxiways, aprons, or helipads are properly depicted on drawings. | <u>2.7.1</u>                           |            |    |    |         |
| Temporary changes to taxi operations are addressed.                                                                                 | <u>2.7.2.1</u>                         |            |    |    |         |
| Detours for ARFF and other airport vehicles are identified.                                                                         | <u>2.7.2.2</u>                         |            |    |    |         |
| Maintenance of essential utilities and underground infrastructure is addressed.                                                     | <u>2.7.2.3</u>                         |            |    |    |         |
| Temporary changes to air traffic control procedures are addressed.                                                                  | <u>2.7.2.4</u>                         |            |    |    |         |
| <b>NAVAIDs</b>                                                                                                                      |                                        |            |    |    |         |
| Critical areas for NAVAIDs are depicted on drawings.                                                                                | <u>2.8</u>                             |            |    |    |         |
| Effects of construction activity on the performance of NAVAIDS, including unanticipated power outages, are addressed.               | <u>2.8</u>                             |            |    |    |         |
| Protection of NAVAID facilities is addressed.                                                                                       | <u>2.8</u>                             |            |    |    |         |
| The required distance and direction from each NAVAID to any construction activity is depicted on drawings.                          | <u>2.8</u>                             |            |    |    |         |
| Procedures for coordination with FAA ATO/Technical Operations, including identification of points of contact, are included.         | <u>2.8, 2.13.1, 2.13.5.3.1, 2.18.1</u> |            |    |    |         |
| <b>Contractor Access</b>                                                                                                            |                                        |            |    |    |         |
| The CSPP addresses areas to which contractor will have access and how                                                               | <u>2.9</u>                             |            |    |    |         |

| Coordination                                                                                                                                                         | Reference               | Addressed? |    |    | Remarks |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------|----|----|---------|
|                                                                                                                                                                      |                         | Yes        | No | NA |         |
| the areas will be accessed.                                                                                                                                          |                         |            |    |    |         |
| The application of 49 CFR Part 1542 Airport Security, where appropriate, is addressed.                                                                               | <u>2.9</u>              |            |    |    |         |
| The location of stockpiled construction materials is depicted on drawings.                                                                                           | <u>2.9.1</u>            |            |    |    |         |
| The requirement for stockpiles in the ROFA to be approved by FAA is included.                                                                                        | <u>2.9.1</u>            |            |    |    |         |
| Requirements for proper stockpiling of materials are included.                                                                                                       | <u>2.9.1</u>            |            |    |    |         |
| Construction site parking is addressed.                                                                                                                              | <u>2.9.2.1</u>          |            |    |    |         |
| Construction equipment parking is addressed.                                                                                                                         | <u>2.9.2.2</u>          |            |    |    |         |
| Access and haul roads are addressed.                                                                                                                                 | <u>2.9.2.3</u>          |            |    |    |         |
| A requirement for marking and lighting of vehicles to comply with <u>AC 150/5210-5, Painting, Marking and Lighting of Vehicles Used on an Airport</u> , is included. | <u>2.9.2.4</u>          |            |    |    |         |
| Proper vehicle operations, including requirements for escorts, are described.                                                                                        | <u>2.9.2.5, 2.9.2.6</u> |            |    |    |         |
| Training requirements for vehicle drivers are addressed.                                                                                                             | <u>2.9.2.7</u>          |            |    |    |         |
| Two-way radio communications procedures are described.                                                                                                               | <u>2.9.2.9</u>          |            |    |    |         |
| Maintenance of the secured area of the airport is addressed.                                                                                                         | <u>2.9.2.10</u>         |            |    |    |         |
| <b>Wildlife Management</b>                                                                                                                                           |                         |            |    |    |         |
| The airport operator's wildlife management procedures are addressed.                                                                                                 | <u>2.10</u>             |            |    |    |         |

| Coordination                                                                                                                                                                                                   | Reference                      | Addressed? |    |    | Remarks |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|------------|----|----|---------|
|                                                                                                                                                                                                                |                                | Yes        | No | NA |         |
| Foreign Object Debris Management                                                                                                                                                                               |                                |            |    |    |         |
| The airport operator’s FOD management procedures are addressed.                                                                                                                                                | <u>2.11</u>                    |            |    |    |         |
| Hazardous Materials Management                                                                                                                                                                                 |                                |            |    |    |         |
| The airport operator’s hazardous materials management procedures are addressed.                                                                                                                                | <u>2.12</u>                    |            |    |    |         |
| Notification of Construction Activities                                                                                                                                                                        |                                |            |    |    |         |
| Procedures for the immediate notification of airport user and local FAA of any conditions adversely affecting the operational safety of the airport are detailed.                                              | <u>2.13</u>                    |            |    |    |         |
| Maintenance of a list by the airport operator of the responsible representatives/points of contact for all involved parties and procedures for contacting them 24 hours a day, seven days a week is specified. | <u>2.13.1</u>                  |            |    |    |         |
| A list of local ATO/Technical Operations personnel is included.                                                                                                                                                | <u>2.13.1</u>                  |            |    |    |         |
| A list of ATCT managers on duty is included.                                                                                                                                                                   | <u>2.13.1</u>                  |            |    |    |         |
| A list of authorized representatives to the OCC is included.                                                                                                                                                   | <u>2.13.2</u>                  |            |    |    |         |
| Procedures for coordinating, issuing, maintaining and cancelling by the airport operator of NOTAMS about airport conditions resulting from construction are included.                                          | <u>2.8, 2.13.2, 2.18.3.3.9</u> |            |    |    |         |
| Provision of information on closed or hazardous conditions on airport movement areas by the airport operator to the OCC is specified.                                                                          | <u>2.13.2</u>                  |            |    |    |         |
| Emergency notification procedures for medical, fire fighting, and police                                                                                                                                       | <u>2.13.3</u>                  |            |    |    |         |

| Coordination                                                                                                                       | Reference                                 | Addressed? |    |    | Remarks |
|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|------------|----|----|---------|
|                                                                                                                                    |                                           | Yes        | No | NA |         |
| response are addressed.                                                                                                            |                                           |            |    |    |         |
| Coordination with ARFF personnel for non-emergency issues is addressed.                                                            | <u>2.13.4</u>                             |            |    |    |         |
| Notification to the FAA under 14 CFR parts 77 and 157 is addressed.                                                                | <u>2.13.5</u>                             |            |    |    |         |
| Reimbursable agreements for flight checks and/or design and construction for FAA owned NAVAIDs are addressed.                      | <u>2.13.5.3.2</u>                         |            |    |    |         |
| <b>Inspection Requirements</b>                                                                                                     |                                           |            |    |    |         |
| Daily and interim inspections by both the airport operator and contractor are specified.                                           | <u>2.14.1, 2.14.2</u>                     |            |    |    |         |
| Final inspections at certificated airports are specified when required.                                                            | <u>2.14.3</u>                             |            |    |    |         |
| <b>Underground Utilities</b>                                                                                                       |                                           |            |    |    |         |
| Procedures for protecting existing underground facilities in excavation areas are described.                                       | <u>2.15</u>                               |            |    |    |         |
| <b>Penalties</b>                                                                                                                   |                                           |            |    |    |         |
| Penalty provisions for noncompliance with airport rules and regulations and the safety plans are detailed.                         | <u>2.16</u>                               |            |    |    |         |
| <b>Special Conditions</b>                                                                                                          |                                           |            |    |    |         |
| Any special conditions that affect the operation of the airport or require the activation of any special procedures are addressed. | <u>2.17</u>                               |            |    |    |         |
| <b>Runway and Taxiway Visual Aids - Marking, Lighting, Signs, and Visual NAVAIDs</b>                                               |                                           |            |    |    |         |
| The proper securing of temporary airport markings, lighting, signs, and visual NAVAIDs is addressed.                               | <u>2.18.1</u>                             |            |    |    |         |
| Frangibility of airport markings, lighting, signs, and visual NAVAIDs is specified.                                                | <u>2.18.1, 2.18.3, 2.18.4.2, 2.20.2.4</u> |            |    |    |         |



| Coordination                                                                                                                                                                                                                                                                                                        | Reference                              | Addressed? |    |    | Remarks |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------|----|----|---------|
|                                                                                                                                                                                                                                                                                                                     |                                        | Yes        | No | NA |         |
| The requirement for markings to be in compliance with <u>AC 150/5340-1</u> , <i>Standards for Airport Markings</i> , is specified.                                                                                                                                                                                  | <u>2.18.2</u>                          |            |    |    |         |
| Detailed specifications for materials and methods for temporary markings are provided.                                                                                                                                                                                                                              | <u>2.18.2</u>                          |            |    |    |         |
| The requirement for lighting to conform to <u>AC 150/5340-30</u> , <i>Design and Installation Details for Airport Visual Aids</i> ; <u>AC 150/5345-50</u> , <i>Specification for Portable Runway and Taxiway Lights</i> ; and <u>AC 150/5345-53</u> , <i>Airport Lighting Certification Program</i> , is specified. | <u>2.18.3</u>                          |            |    |    |         |
| The use of a lighted X is specified where appropriate.                                                                                                                                                                                                                                                              | <u>2.18.2.1.2</u> ,<br><u>2.18.3.2</u> |            |    |    |         |
| The requirement for signs to conform to <u>AC 150/5345-44</u> , <i>Specification for Runway and Taxiway Signs</i> ; <u>AC 150/5340-18</u> , <i>Standards for Airport Sign Systems</i> ; and <u>AC 150/5345-53</u> , <i>Airport Lighting Certification Program</i> , is specified.                                   | <u>2.18.4</u>                          |            |    |    |         |
| <b>Marking and Signs For Access Routes</b>                                                                                                                                                                                                                                                                          |                                        |            |    |    |         |
| The CSPP specifies that pavement markings and signs intended for construction personnel should conform to <u>AC 150/5340-18</u> and, to the extent practicable, with the MUTCD and/or State highway specifications.                                                                                                 | <u>2.18.4.2</u>                        |            |    |    |         |
| <b>Hazard Marking and Lighting</b>                                                                                                                                                                                                                                                                                  |                                        |            |    |    |         |
| Prominent, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles are specified.                                                                                                                                                   | <u>2.20.1</u>                          |            |    |    |         |

| Coordination                                                                                                                                                                                                             | Reference       | Addressed? |    |    | Remarks |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------|----|----|---------|
|                                                                                                                                                                                                                          |                 | Yes        | No | NA |         |
| Hazard marking and lighting are specified to identify open manholes, small areas under repair, stockpiled material, and waste areas.                                                                                     | <u>2.20.1</u>   |            |    |    |         |
| The CSPP considers less obvious construction-related hazards.                                                                                                                                                            | <u>2.20.1</u>   |            |    |    |         |
| Equipment that poses the least danger to aircraft but is sturdy enough to remain in place when subjected to typical winds, prop wash and jet blast is specified.                                                         | <u>2.20.2.1</u> |            |    |    |         |
| The spacing of barricades is specified such that a breach is physically prevented barring a deliberate act.                                                                                                              | <u>2.20.2.1</u> |            |    |    |         |
| Red lights meeting the luminance requirements of the State Highway Department are specified.                                                                                                                             | <u>2.20.2.2</u> |            |    |    |         |
| Barricades, temporary markers, and other objects placed and left in areas adjacent to any open runway, taxiway, taxi lane, or apron are specified to be as low as possible to the ground, and no more than 18 inch high. | <u>2.20.2.3</u> |            |    |    |         |
| Barricades are specified to indicate construction locations in which no part of an aircraft may enter.                                                                                                                   | <u>2.20.2.3</u> |            |    |    |         |
| Highly reflective barriers with lights are specified to barricade taxiways leading to closed runways.                                                                                                                    | <u>2.20.2.5</u> |            |    |    |         |
| Markings for temporary closures are specified.                                                                                                                                                                           | <u>2.20.2.5</u> |            |    |    |         |
| The provision of a contractor's representative on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades is specified.                                                                  | <u>2.20.2.7</u> |            |    |    |         |

| Coordination                                                                                                                                                                                          | Reference                            | Addressed? |    |    | Remarks |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------|----|----|---------|
|                                                                                                                                                                                                       |                                      | Yes        | No | NA |         |
| Work Zone Lighting for Nighttime Construction                                                                                                                                                         |                                      |            |    |    |         |
| If work is to be conducted at night, the CSPP identifies construction lighting units and their general locations and aiming in relationship to the ATCT and active runways and taxiways.              | <u>2.21</u>                          |            |    |    |         |
| Protection of Runway and Taxiway Safety Areas                                                                                                                                                         |                                      |            |    |    |         |
| The CSPP clearly states that no construction may occur within a safety area while the associated runway or taxiway is open for aircraft operations.                                                   | <u>2.22.1.1</u> ,<br><u>2.22.3.1</u> |            |    |    |         |
| The CSPP specifies that the airport operator coordinates the adjustment of RSA or TSA dimensions with the ATCT and the appropriate FAA Airports Regional or District Office and issues a local NOTAM. | <u>2.22.1.2</u> ,<br><u>2.22.3.2</u> |            |    |    |         |
| Procedures for ensuring adequate distance for protection from blasting operations, if required by operational considerations, are detailed.                                                           | <u>2.22.3.3</u>                      |            |    |    |         |
| The CSPP specifies that open trenches or excavations are not permitted within a safety area while the associated runway or taxiway is open, subject to approved exceptions.                           | <u>2.22.1.4</u>                      |            |    |    |         |
| Appropriate covering of excavations in the RSA or TSA that cannot be backfilled before the associated runway or taxiway is open is detailed.                                                          | <u>2.22.1.4</u>                      |            |    |    |         |
| The CSPP includes provisions for prominent marking of open trenches and excavations at the construction site.                                                                                         | <u>2.22.1.4</u>                      |            |    |    |         |
| Grading and soil erosion control to maintain RSA/TSA standards are                                                                                                                                    | <u>2.22.3.5</u>                      |            |    |    |         |

| Coordination                                                                                                                                                                       | Reference         | Addressed? |    |    | Remarks |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------|----|----|---------|
|                                                                                                                                                                                    |                   | Yes        | No | NA |         |
| addressed.                                                                                                                                                                         |                   |            |    |    |         |
| The CSPP specifies that equipment is to be removed from the ROFA when not in use.                                                                                                  | <u>2.22.2</u>     |            |    |    |         |
| The CSPP clearly states that no construction may occur within a taxiway safety area while the taxiway is open for aircraft operations.                                             | <u>2.22.3</u>     |            |    |    |         |
| Appropriate details are specified for any construction work to be accomplished in a taxiway object free area.                                                                      | <u>2.22.4</u>     |            |    |    |         |
| Measures to ensure that personnel, material, and/or equipment do not penetrate the OFZ or threshold siting surfaces while the runway is open for aircraft operations are included. | <u>2.22.4.3.6</u> |            |    |    |         |
| Provisions for protection of runway approach/departure areas and clearways are included.                                                                                           | <u>2.22.6</u>     |            |    |    |         |
| <b>Other Limitations on Construction</b>                                                                                                                                           |                   |            |    |    |         |
| The CSPP prohibits the use of open flame welding or torches unless adequate fire safety precautions are provided and the airport operator has approved their use.                  | <u>2.23.1.2</u>   |            |    |    |         |
| The CSPP prohibits the use of electrical blasting caps on or within 1,000 ft (300 m) of the airport property.                                                                      | <u>2.23.1.3</u>   |            |    |    |         |

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**APPENDIX D. CONSTRUCTION PROJECT DAILY SAFETY INSPECTION CHECKLIST**

The situations identified below are potentially hazardous conditions that may occur during airport construction projects. Safety area encroachments, unauthorized and improper ground vehicle operations, and unmarked or uncovered holes and trenches near aircraft operating surfaces pose the most prevalent threats to airport operational safety during airport construction projects. The list below is one tool that the airport operator or contractor may use to aid in identifying and correcting potentially hazardous conditions. It should be customized as appropriate for each project including information such as the date, time and name of the person conducting the inspection.

**Table D-1. Potentially Hazardous Conditions**

| <b>Item</b>                                                                                                                                                                                                                                                                                | <b>Action Required (Describe)</b> | <b>No Action Required (Check)</b> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|
| Excavation adjacent to runways, taxiways, and aprons improperly backfilled.                                                                                                                                                                                                                |                                   |                                   |
| Mounds of earth, construction materials, temporary structures, and other obstacles near any open runway, taxiway, or taxi lane; in the related Object Free area and aircraft approach or departure areas/zones; or obstructing any sign or marking.                                        |                                   |                                   |
| Runway resurfacing projects resulting in lips exceeding 3 inch (7.6 cm) from pavement edges and ends.                                                                                                                                                                                      |                                   |                                   |
| Heavy equipment (stationary or mobile) operating or idle near AOA, in runway approaches and departures areas, or in OFZ.                                                                                                                                                                   |                                   |                                   |
| Equipment or material near NAVAIDs that may degrade or impair radiated signals and/or the monitoring of navigation and visual aids. Unauthorized or improper vehicle operations in localizer or glide slope critical areas, resulting in electronic interference and/or facility shutdown. |                                   |                                   |
| Tall and especially relatively low visibility units (that is, equipment with slim profiles) — cranes, drills, and similar objects — located in critical areas, such as OFZ and                                                                                                             |                                   |                                   |

| <b>Item</b>                                                                                                                                                                                                                                                                                                                                                               | <b>Action Required (Describe)</b> | <b>No Action Required (Check)</b> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|
| approach zones.                                                                                                                                                                                                                                                                                                                                                           |                                   |                                   |
| Improperly positioned or malfunctioning lights or unlighted airport hazards, such as holes or excavations, on any apron, open taxiway, or open taxi lane or in a related safety, approach, or departure area.                                                                                                                                                             |                                   |                                   |
| Obstacles, loose pavement, trash, and other debris on or near AOA. Construction debris (gravel, sand, mud, paving materials) on airport pavements may result in aircraft propeller, turbine engine, or tire damage. Also, loose materials may blow about, potentially causing personal injury or equipment damage.                                                        |                                   |                                   |
| Inappropriate or poorly maintained fencing during construction intended to deter human and animal intrusions into the AOA. Fencing and other markings that are inadequate to separate construction areas from open AOA create aviation hazards.                                                                                                                           |                                   |                                   |
| Improper or inadequate marking or lighting of runways (especially thresholds that have been displaced or runways that have been closed) and taxiways that could cause pilot confusion and provide a potential for a runway incursion. Inadequate or improper methods of marking, barricading, and lighting of temporarily closed portions of AOA create aviation hazards. |                                   |                                   |
| Wildlife attractants — such as trash (food scraps not collected from construction personnel activity), grass seeds, tall grass, or standing water — on or near airports.                                                                                                                                                                                                  |                                   |                                   |
| Obliterated or faded temporary markings on active operational areas.                                                                                                                                                                                                                                                                                                      |                                   |                                   |
| Misleading or malfunctioning obstruction lights. Unlighted or unmarked obstructions in the approach to any open runway pose aviation hazards.                                                                                                                                                                                                                             |                                   |                                   |

| <b>Item</b>                                                                                                                                                                                                                                                                                           | <b>Action Required (Describe)</b> | <b>No Action Required (Check)</b> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|
| Failure to issue, update, or cancel NOTAMs about airport or runway closures or other construction related airport conditions.                                                                                                                                                                         |                                   |                                   |
| Failure to mark and identify utilities or power cables. Damage to utilities and power cables during construction activity can result in the loss of runway / taxiway lighting; loss of navigation, visual, or approach aids; disruption of weather reporting services; and/or loss of communications. |                                   |                                   |
| Restrictions on ARFF access from fire stations to the runway / taxiway system or airport buildings.                                                                                                                                                                                                   |                                   |                                   |
| Lack of radio communications with construction vehicles in airport movement areas.                                                                                                                                                                                                                    |                                   |                                   |
| Objects, regardless of whether they are marked or flagged, or activities anywhere on or near an airport that could be distracting, confusing, or alarming to pilots during aircraft operations.                                                                                                       |                                   |                                   |
| Water, snow, dirt, debris, or other contaminants that temporarily obscure or derogate the visibility of runway/taxiway marking, lighting, and pavement edges. Any condition or factor that obscures or diminishes the visibility of areas under construction.                                         |                                   |                                   |
| Spillage from vehicles (gasoline, diesel fuel, oil) on active pavement areas, such as runways, taxiways, aprons, and airport roadways.                                                                                                                                                                |                                   |                                   |
| Failure to maintain drainage system integrity during construction (for example, no temporary drainage provided when working on a drainage system).                                                                                                                                                    |                                   |                                   |

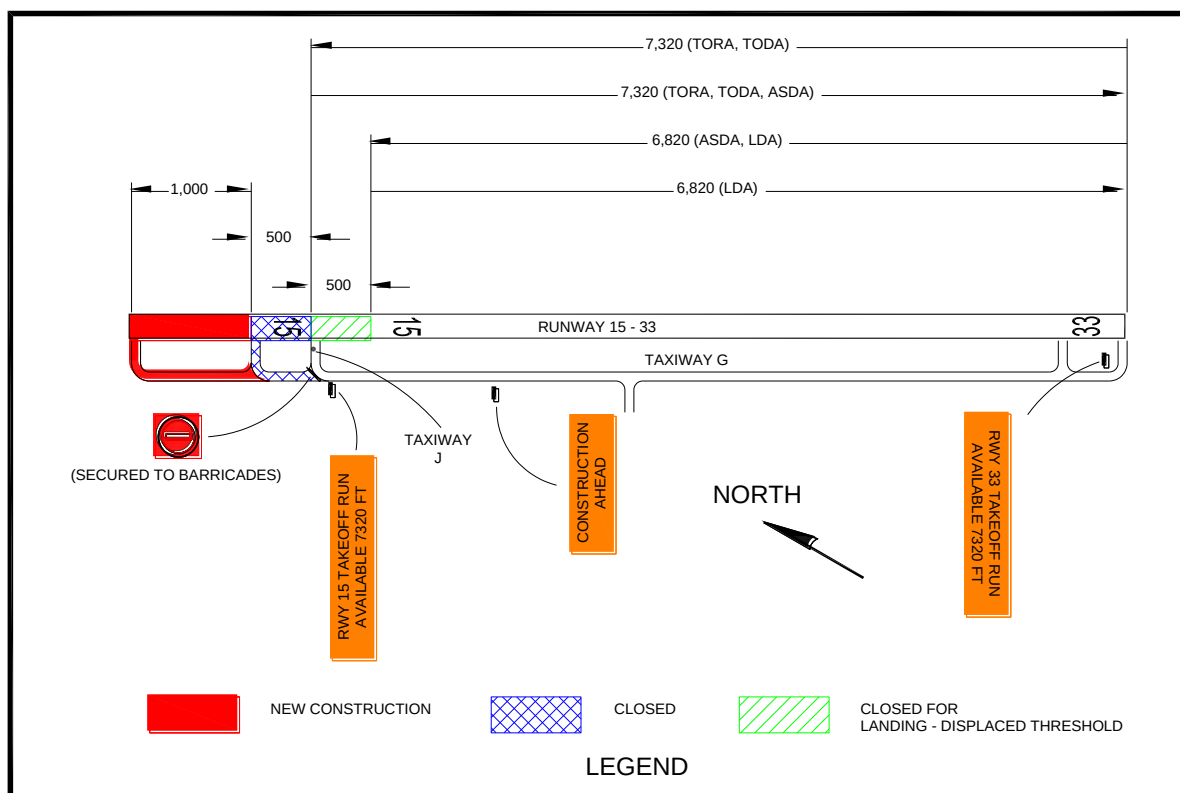


| <b>Item</b>                                                                                                                                                                                                              | <b>Action Required (Describe)</b> | <b>No Action Required (Check)</b> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|
| Failure to provide for proper electrical lockout and tagging procedures. At larger airports with multiple maintenance shifts/workers, construction contractors should make provisions for coordinating work on circuits. |                                   |                                   |
| Failure to control dust. Consider limiting the amount of area from which the contractor is allowed to strip turf.                                                                                                        |                                   |                                   |
| Exposed wiring that creates an electrocution or fire ignition hazard. Identify and secure wiring, and place it in conduit or bury it.                                                                                    |                                   |                                   |
| Site burning, which can cause possible obscuration.                                                                                                                                                                      |                                   |                                   |
| Construction work taking place outside of designated work areas and out of phase.                                                                                                                                        |                                   |                                   |

**APPENDIX E. SAMPLE OPERATIONAL EFFECTS TABLE****E.1 Project Description.**

Runway 15-33 is currently 7820 feet long, with a 500 foot stopway on the north end. This project will remove the stopway and extend the runway 1000 feet to the north and 500 feet to the south. Finally, the existing portion of the runway will be repaved. The runway 33 glide slope will be relocated. The new runway 33 localizer has already been installed by FAA Technical Operations and only needs to be switched on. Runway 15 is currently served only by a localizer, which will remain in operation as it will be beyond the future RSA. Appropriate NOTAMS will be issued throughout the project.

- E.1.1 During Phase I, the runway 15 threshold will be displaced 1000 feet to keep construction equipment below the approach surface. The start of runway 15 takeoff and the departure end of runway 33 will also be moved 500 feet to protect workers from jet blast. Declared distances for runway 33 will be adjusted to provide the required RSA and applicable departure surface. Excavation near Taxiway G will require its ADG to be reduced from IV to III. See [Figure E-1](#).

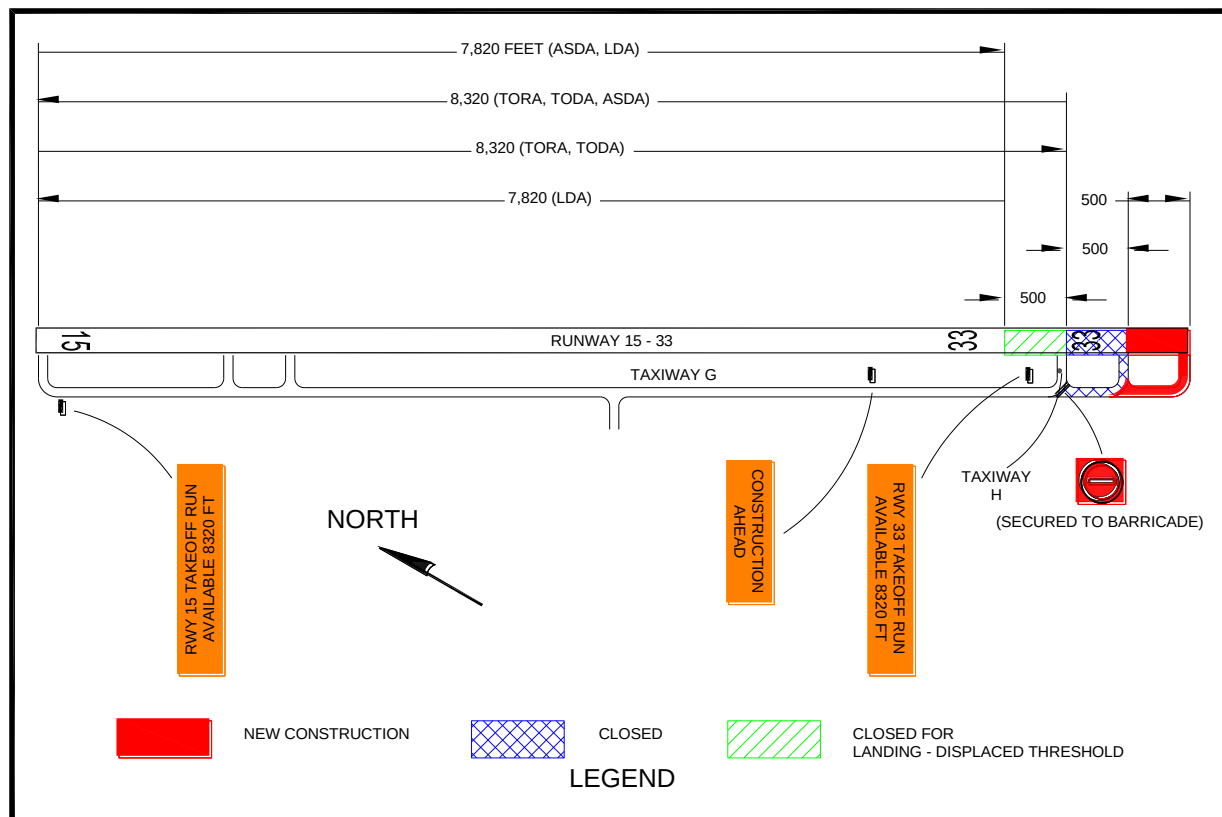
**Figure E-1. Phase I Example**

**Note 1:** Where hold signs are installed on both sides of a taxiway, install the TORA sign on the left side of the taxiway before the final turn to the runway intersection.

**Note 2:** Based on the declared distances for Runway 33 departures, the maximum equipment height in the construction area is 12.5 feet ( $500/40 = 12.5$ ).

- E.2 During Phase II, the runway 33 threshold will be displaced 1000 feet to keep construction equipment below the approach surface. The start of runway 33 takeoff and the departure end of runway 15 will also be moved 500 feet to protect workers from jet blast. Declared distances for runway 15 will be adjusted to provide the required RSA and applicable departure surface. See [Figure E-2](#).

### Figure E-2. Phase II Example



**Note 1:** Where hold signs are installed on both sides of a taxiway, install the TORA sign on the left side of the taxiway before the final turn to the runway intersection.

**Note 2:** Based on the declared distances for Runway 15 departures, the maximum equipment height in the construction area is 12.5 feet ( $500/40 = 12.5$ ).

- E.3 During Phase III, the existing portion of the runway will be repaved with Hot Mix Asphalt (HMA) and the runway 33 glide slope will be relocated. Construction will be accomplished between the hours of 8:00 pm and 5:00 am, during which the runway will be closed to operations.

**Figure E-3. Phase III Example**

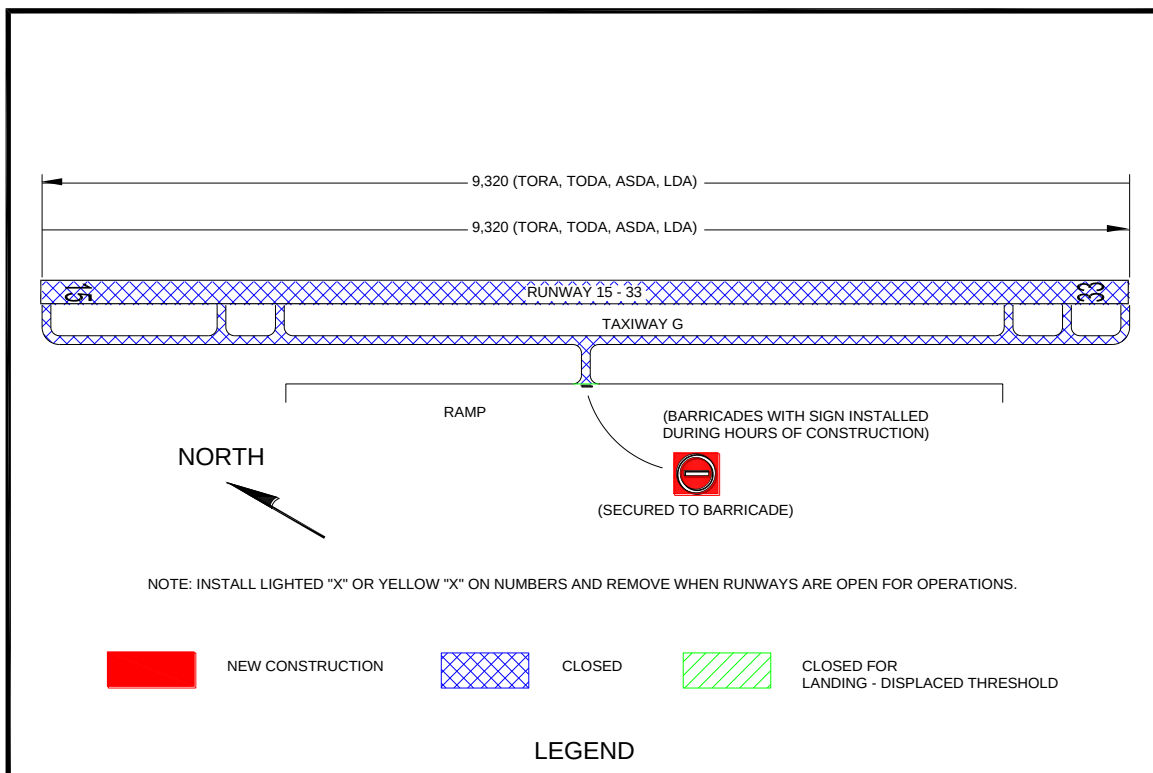


**Table E-1. Operational Effects Table**

| <b>Project</b>                                | <b>Runway 15-33 Extension and Repaving</b>           |                                                                                  |                                                                                |                                                                           |
|-----------------------------------------------|------------------------------------------------------|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| <b>Phase</b>                                  | <b>Normal (Existing)</b>                             | <b>Phase I: Extend Runway 15 End</b>                                             | <b>Phase II: Extend Runway 33 End</b>                                          | <b>Phase III: Repave Runway</b>                                           |
| <b>Scope of Work</b>                          | N/A                                                  | Extend Runway 15-33 1,000 ft on north end with Hot Mix Asphaltic Concrete (HMA). | Extend Runway 15-33 500 ft on south end with Hot Mix Asphaltic Concrete (HMA). | Repave existing runway with HMA<br>Relocate Runway 33 Glide Slope         |
| <b>Effects of Construction Operations</b>     | N/A                                                  | Existing North 500 ft closed                                                     | Existing South 500 ft closed                                                   | Runway closed between 8:00 pm and 5:00 am<br>Edge lighting out of service |
| <b>Construction Phase</b>                     | N/A                                                  | Phase I (Anticipated)                                                            | Phase II (Anticipated)                                                         | Phase III (Anticipated)                                                   |
| <b>Runway 15 Average Aircraft Operations</b>  | Carrier: 52 /day<br>GA: 26 /day<br>Military: 11 /day | Carrier: 40 /day<br>GA: 26 /day<br>Military: 0 /day                              | Carrier: 45 /day<br>GA: 26 /day<br>Military: 5 /day                            | Carrier: 45 / day<br>GA: 20 / day<br>Military: 0 /day                     |
| <b>Runway 33 Average Aircraft Operations</b>  | Carrier: 40 /day<br>GA: 18 /day<br>Military: 10 /day | Carrier: 30 /day<br>GA: 18 /day<br>Military: 0 /day                              | Carrier: 25 /day<br>GA: 18 /day<br>Military: 5 /day                            | Carrier: 20 /day<br>GA: 5 /day<br>Military: 0 /day                        |
| <b>Runway 15-33 Aircraft Category</b>         | C-IV                                                 | C-IV                                                                             | C-IV                                                                           | C-IV                                                                      |
| <b>Runway 15 Approach Visibility Minimums</b> | 1 mile                                               | 1 mile                                                                           | 1 mile                                                                         | 1 mile                                                                    |
| <b>Runway 33 Approach Visibility Minimums</b> | $\frac{3}{4}$ mile                                   | $\frac{3}{4}$ mile                                                               | $\frac{3}{4}$ mile                                                             | 1 mile                                                                    |

**Note:** Proper coordination with Flight Procedures group is necessary to maintain instrument approach procedures during construction.

| <b>Project</b>                               |             | <b>Runway 15-33 Extension and Repaving</b> |                                          |                                           |                                     |
|----------------------------------------------|-------------|--------------------------------------------|------------------------------------------|-------------------------------------------|-------------------------------------|
| <b>Phase</b>                                 |             | <b>Normal<br/>(Existing)</b>               | <b>Phase I: Extend<br/>Runway 15 End</b> | <b>Phase II: Extend<br/>Runway 33 End</b> | <b>Phase III: Repave<br/>Runway</b> |
| <b>Runway 15<br/>Declared<br/>Distances</b>  | <b>TORA</b> | 7,820                                      | 7,320                                    | 8,320                                     | 9,320                               |
|                                              | <b>TODA</b> | 7,820                                      | 7,320                                    | 8,320                                     | 9,320                               |
|                                              | <b>ASDA</b> | 7,820                                      | 7,320                                    | 7,820                                     | 9,320                               |
|                                              | <b>LDA</b>  | 7,820                                      | 6,820                                    | 7,820                                     | 9,320                               |
| <b>Runway 33<br/>Declared<br/>Distances</b>  | <b>TORA</b> | 7,820                                      | 7,320                                    | 8,320                                     | 9,320                               |
|                                              | <b>TODA</b> | 7,820                                      | 7,320                                    | 8,320                                     | 9,320                               |
|                                              | <b>ASDA</b> | 8,320                                      | 6,820                                    | 8,320                                     | 9,320                               |
|                                              | <b>LDA</b>  | 7,820                                      | 6,820                                    | 7,820                                     | 9,320                               |
| <b>Runway 15<br/>Approach<br/>Procedures</b> |             | LOC only                                   | LOC only                                 | LOC only                                  | LOC only                            |
|                                              |             | RNAV                                       | RNAV                                     | RNAV                                      | RNAV                                |
|                                              |             | VOR                                        | VOR                                      | VOR                                       | VOR                                 |
| <b>Runway 33<br/>Approach<br/>Procedures</b> |             | ILS                                        | ILS                                      | ILS                                       | LOC only                            |
|                                              |             | RNAV                                       | RNAV                                     | RNAV                                      | RNAV                                |
|                                              |             | VOR                                        | VOR                                      | VOR                                       | VOR                                 |
| <b>Runway 15<br/>NAVAIDs</b>                 |             | LOC                                        | LOC                                      | LOC                                       | LOC                                 |
| <b>Runway 33<br/>NAVAIDs</b>                 |             | ILS,<br>MALSR                              | ILS, MALSR                               | ILS, MALSR                                | LOC, MALSR                          |
| <b>Taxiway G ADG</b>                         |             | IV                                         | III                                      | IV                                        | IV                                  |
| <b>Taxiway G TDG</b>                         |             | 4                                          | 4                                        | 4                                         | 4                                   |
| <b>ATCT (hours open)</b>                     |             | 24 hours                                   | 24 hours                                 | 24 hours                                  | 0500 - 2000                         |
| <b>ARFF Index</b>                            |             | D                                          | D                                        | D                                         | D                                   |

| <b>Project</b>                | <b>Runway 15-33 Extension and Repaving</b>   |                                                                                        |                                                              |                                                                                                             |
|-------------------------------|----------------------------------------------|----------------------------------------------------------------------------------------|--------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| <b>Phase</b>                  | <b>Normal (Existing)</b>                     | <b>Phase I: Extend Runway 15 End</b>                                                   | <b>Phase II: Extend Runway 33 End</b>                        | <b>Phase III: Repave Runway</b>                                                                             |
| <b>Special Conditions</b>     | Air National Guard (ANG) military operations | All military aircraft relocated to alternate ANG Base                                  | Some large military aircraft relocated to alternate ANG Base | All military aircraft relocated to alternate ANG Base                                                       |
| <b>Information for NOTAMs</b> |                                              | Refer above for applicable declared distances.<br>Taxiway G limited to 118 ft wingspan | Refer above for applicable declared distances.               | Refer above for applicable declared distances.<br>Airport closed 2000 – 0500.<br>Runway 15 glide slope OTS. |

**Note:** This table is one example. It may be advantageous to develop a separate table for each project phase and/or to address the operational status of the associated NAVAIDs per construction phase.

Complete the following chart for each phase to determine the area that must be protected along the runway and taxiway edges:

**Table E-2. Runway and Taxiway Edge Protection**

| <b>Runway/Taxiway</b> | <b>Aircraft Approach Category*<br/>A, B, C, or D</b> | <b>Airplane Design Group*<br/>I, II, III, or IV</b> | <b>Safety Area Width in Feet Divided by 2*</b> |
|-----------------------|------------------------------------------------------|-----------------------------------------------------|------------------------------------------------|
|                       |                                                      |                                                     |                                                |
|                       |                                                      |                                                     |                                                |
|                       |                                                      |                                                     |                                                |
|                       |                                                      |                                                     |                                                |

\*See [AC 150/5300-13](#) to complete the chart for a specific runway/taxiway.

Complete the following chart for each phase to determine the area that must be protected before the runway threshold:

**Table E-3. Protection Prior to Runway Threshold**

| Runway End<br>Number | Airplane<br>Design<br>Group*<br>I, II, III, or<br>IV | Aircraft<br>Approach<br>Category*<br>A, B, C, or D | Minimum<br>Safety Area<br>Prior to the<br>Threshold* | Minimum Distance to<br>Threshold Based on<br>Required Approach Slope* |     |
|----------------------|------------------------------------------------------|----------------------------------------------------|------------------------------------------------------|-----------------------------------------------------------------------|-----|
|                      |                                                      |                                                    |                                                      | ft                                                                    | : 1 |
|                      |                                                      |                                                    |                                                      | ft                                                                    | : 1 |
|                      |                                                      |                                                    |                                                      | ft                                                                    | : 1 |
|                      |                                                      |                                                    |                                                      | ft                                                                    | : 1 |

\*See AC 150/5300-13 to complete the chart for a specific runway.

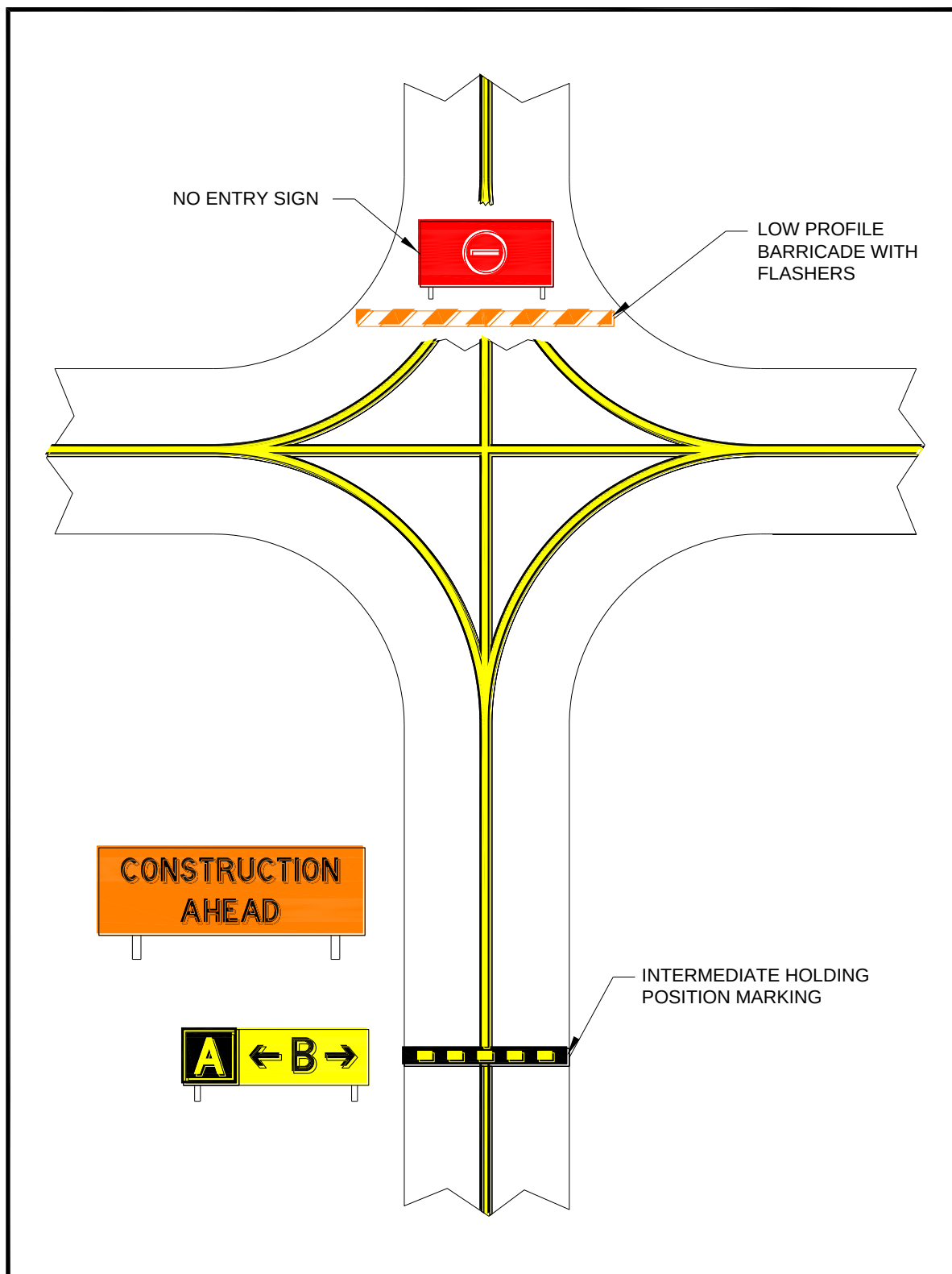


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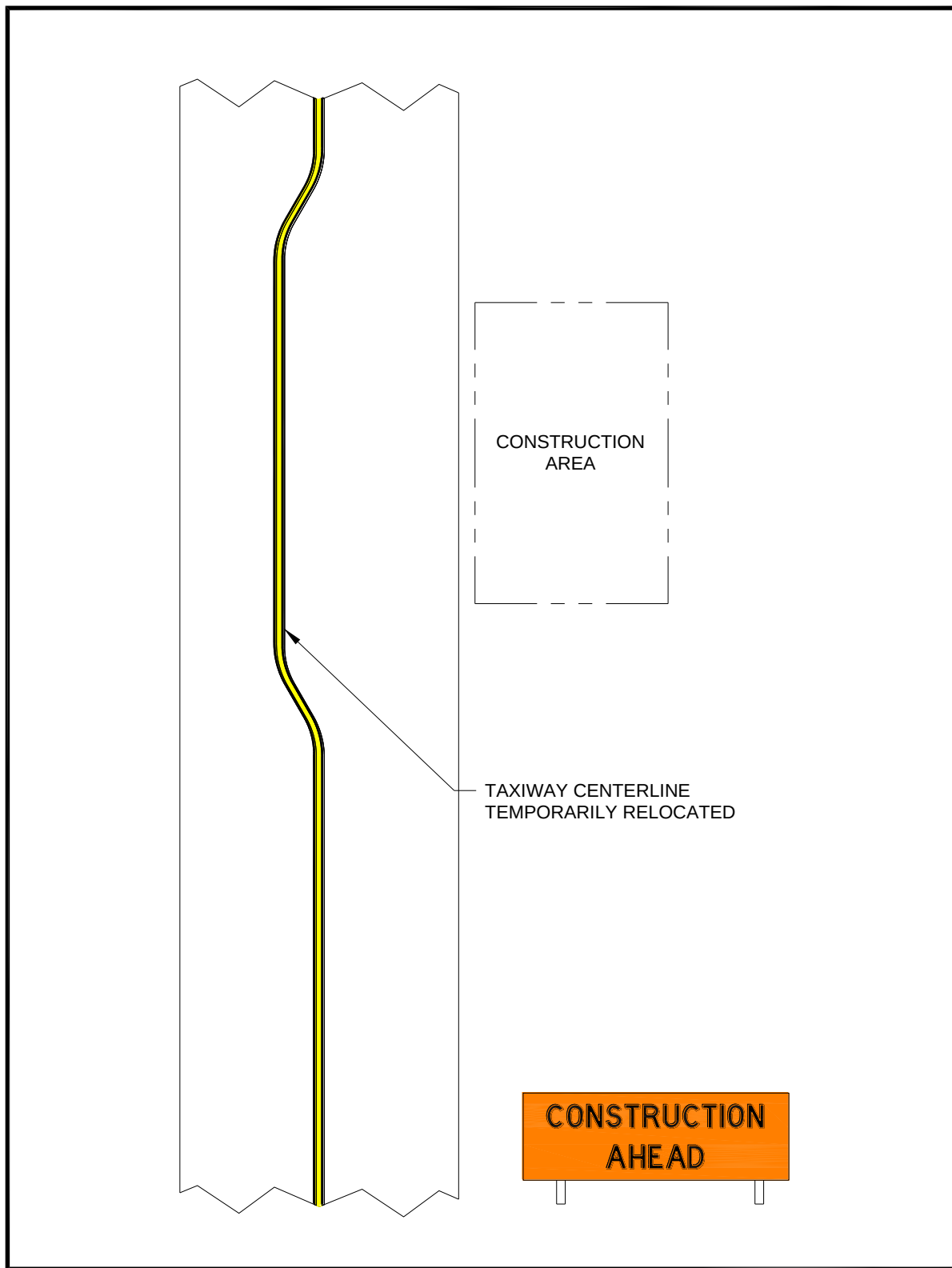
**APPENDIX F. ORANGE CONSTRUCTION SIGNS**

**Figure F-1. Approved Sign Legends**



**Figure F-2. Orange Construction Sign Example 1**

**Note:** For proper placement of signs, refer to EB 93.

**Figure F-3. Orange Construction Sign Example 2**

**Note:** For proper placement of signs, refer to EB 93.

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## Advisory Circular Feedback

If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by (1) mailing this form to Manager, Airport Engineering Division, Federal Aviation Administration ATTN: AAS-100, 800 Independence Avenue SW, Washington DC 20591 or (2) faxing it to the attention of the Office of Airport Safety and Standards at (202) 267-5383.

Subject: AC 150/5370-2G

Date: \_\_\_\_\_

*Please check all appropriate line items:*

- ☐ An error (procedural or typographical) has been noted in paragraph \_\_\_\_\_ on page \_\_\_\_\_.
- ☐ Recommend paragraph \_\_\_\_\_ on page \_\_\_\_\_ be changed as follows:
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- ☐ In a future change to this AC, please cover the following subject:  
(Briefly describe what you want added.)
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- ☐ Other comments:
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- ☐ I would like to discuss the above. Please contact me at (phone number, email address).
- \_\_\_\_\_

Submitted by: \_\_\_\_\_

Date: \_\_\_\_\_

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Halliwell Construction Services  
865 Waterman Ave  
East Providence, RI 02914

Insured: PRM Tower I Milton - City of Wauchula - Airport  
Property: 1202 Maurice Sonny Clovel Road  
Wauchula, FL 33873

Claim Rep.: Ying Tse  
Business: 10961 Countryway Blvd.  
Tampa, FL 33626

E-mail: ying.tse@mclarens.com

**Claim Number:** 010.016066.MI

**Policy Number:**

**Type of Loss:** Hurricane

Date of Loss: 10/10/2024 3:23 PM  
Date Inspected:

Date Received:  
Date Entered: 11/18/2024 3:17 PM

Price List: FLSE8X\_NOV24  
Restoration/Service/Remodel  
Estimate: 6321-WAUCHULA-AIRPRT

The following repair estimate is preliminary and based upon initial site inspection observations.



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865 Waterman Ave  
East Providence, RI 02914

6321-WAUCHULA-AIRPRT

Hangar (0057-B)

| DESCRIPTION                                                                 | QTY        |
|-----------------------------------------------------------------------------|------------|
| <b><u>Hangar door(s)</u></b>                                                |            |
| 1. Structural Steel Installer - per hour                                    | 160.00 HR  |
| *** 4 hours to assemble one door per 2 laborers. 2 doors per hangar bay.*** |            |
| 2. Angle - L 2" x 2" x 1/4" thick                                           | 200.00 LF  |
| 3. Steel purlins - C-shape - 8"                                             | 680.00 LF  |
| ***Center, bottom, and side support of hangar door.***                      |            |
| 4. Steel purlins - Z-shape - 8"                                             | 220.00 LF  |
| ***Top of hangar door.***                                                   |            |
| 5. Paint steel truss / bar joist - 8" to 24"                                | 660.00 LF  |
| *** Paint over bolts and welds prior to metal skin installation.***         |            |
| 6. Hangar door panel - ribbed - 26 gauge - up to 1"                         | 2750.00 SF |
| 7. Hangar wheels                                                            | 20.00 EA   |
| <b><u>Exterior</u></b>                                                      |            |
| 8. Flashing - L flashing - color finish                                     | 40.00 LF   |
| 9. Wall panel - ribbed - 26 gauge - up to 1"                                | 480.00 SF  |
| 10. Eave trim for metal roofing - 26 gauge                                  | 40.00 LF   |
| <b><u>Misc</u></b>                                                          |            |
| 11. Steel rebar - j-bar - #4, 2' 6"                                         | 5.00 EA    |
| 12. Hangar door sign                                                        | 5.00 EA    |
| 13. Door pull                                                               | 5.00 EA    |

NOTES:

General Conditions

| DESCRIPTION                                       | QTY     |
|---------------------------------------------------|---------|
| 14. Telehandler/forklift (per week) - no operator | 2.00 WK |

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East Providence, RI 02914

**CONTINUED - General Conditions**

| DESCRIPTION                                                | QTY      |
|------------------------------------------------------------|----------|
| 15. Dumpster load - Approx. 12 yards, 1-3 tons of debris   | 1.00 EA  |
| 16. Commercial Supervision / Project Management - per hour | 40.00 HR |
| 17. Temporary toilet (per month)                           | 0.50 MO  |

NOTES:

**Hangar (0057-C)**

| DESCRIPTION                                                                 | QTY        |
|-----------------------------------------------------------------------------|------------|
| <b><u>Hangar door(s)</u></b>                                                |            |
| 18. Structural Steel Installer - per hour                                   | 64.00 HR   |
| *** 4 hours to assemble one door per 2 laborers. 2 doors per hangar bay.*** |            |
| 19. Angle - L 2" x 2" x 1/4" thick                                          | 80.00 LF   |
| 20. Steel purlins - C-shape - 8"                                            | 272.00 LF  |
| ***Center, bottom, and side support of hangar door.***                      |            |
| 21. Steel purlins - Z-shape - 8"                                            | 88.00 LF   |
| ***Top of hangar door.***                                                   |            |
| 22. Paint steel truss / bar joist - 8" to 24"                               | 264.00 LF  |
| *** Paint over bolts and welds prior to metal skin installation.***         |            |
| 23. Hangar door panel - ribbed - 26 gauge - up to 1"                        | 1100.00 SF |
| 24. Hangar wheels                                                           | 8.00 EA    |
| <b><u>Exterior</u></b>                                                      |            |
| 25. Steel purlins - C-shape - 8"                                            | 16.00 LF   |
| 26. Angle - L 2" x 2" x 1/4" thick                                          | 16.00 LF   |
| 27. Flashing - L flashing - color finish                                    | 40.00 LF   |
| 28. Wall panel - ribbed - 26 gauge - up to 1"                               | 576.00 SF  |
| 29. Eave trim for metal roofing - 26 gauge                                  | 40.00 LF   |

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**CONTINUED - Hangar Doors & Exteriors**

| DESCRIPTION                         | QTY     |
|-------------------------------------|---------|
| <b>Misc</b>                         |         |
| 30. Steel rebar - j-bar - #4, 2' 6" | 2.00 EA |
| 31. Hangar door sign                | 2.00 EA |
| 32. Door pull                       | 2.00 EA |

NOTES:

**General Conditions**

| DESCRIPTION                                                | QTY      |
|------------------------------------------------------------|----------|
| 33. Telehandler/forklift (per week) - no operator          | 1.00 WK  |
| 34. Dumpster load - Approx. 12 yards, 1-3 tons of debris   | 1.00 EA  |
| 35. Commercial Supervision / Project Management - per hour | 20.00 HR |
| 36. Temporary toilet (per month)                           | 0.50 MO  |

NOTES:

**Hangar (0057-D)**

| DESCRIPTION                               | QTY      |
|-------------------------------------------|----------|
| <b>Hangar door(s)</b>                     |          |
| 37. Structural Steel Installer - per hour | 32.00 HR |

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East Providence, RI 02914

**CONTINUED - Hangar Doors**

| <b>DESCRIPTION</b>                                                          | <b>QTY</b> |
|-----------------------------------------------------------------------------|------------|
| *** 4 hours to assemble one door per 2 laborers. 2 doors per hangar bay.*** |            |
| 38. Angle - L 2" x 2" x 1/4" thick                                          | 264.00 LF  |
| 39. Paint steel truss / bar joist - 8" to 24"                               | 264.00 LF  |
| *** Paint over bolts and welds prior to metal skin installation.***         |            |
| 40. Hangar door panel - ribbed - 26 gauge - up to 1"                        | 594.00 SF  |
| 41. Hangar wheels                                                           | 4.00 EA    |
| 42. Steel door, 3' x 7'                                                     | 1.00 EA    |
| ***Access door through hangar door.***                                      |            |
| <b>MEP</b>                                                                  |            |
| 43. Exterior light fixture - High grade                                     | 1.00 EA    |
| <b>Misc</b>                                                                 |            |
| 44. Screen - High grade                                                     | 10.00 LF   |
| *** Ridge vent screen.***                                                   |            |
| 45. Steel rebar - j-bar - #4, 2' 6"                                         | 1.00 EA    |
| 46. Hangar door sign                                                        | 1.00 EA    |
| 47. Door pull                                                               | 1.00 EA    |

NOTES:

**General Conditions**

| <b>DESCRIPTION</b>                                         | <b>QTY</b> |
|------------------------------------------------------------|------------|
| 48. Telehandler/forklift (per week) - no operator          | 1.00 WK    |
| 49. Dumpster load - Approx. 12 yards, 1-3 tons of debris   | 1.00 EA    |
| 50. Commercial Supervision / Project Management - per hour | 20.00 HR   |
| 51. Temporary toilet (per month)                           | 0.50 MO    |

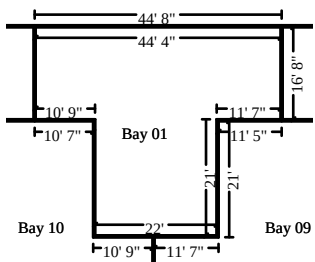
Halliwel Construction Services  
865 Waterman Ave  
East Providence, RI 02914

CONTINUED - General Conditions

| DESCRIPTION | QTY |
|-------------|-----|
|-------------|-----|

NOTES:

Hangar (0057-E)  
Hangar Doors, Exteriors, & Interiors



| Bay 01                     | Height: 16'               |
|----------------------------|---------------------------|
| 2624.00 SF Walls           | 1200.89 SF Ceiling        |
| 3824.89 SF Walls & Ceiling | 1200.89 SF Floor          |
| 133.43 SY Flooring         | 164.00 LF Floor Perimeter |
| 164.00 LF Ceil. Perimeter  |                           |

| DESCRIPTION | QTY |
|-------------|-----|
|-------------|-----|

**Hangar door(s)**

|                                                                                                                   |           |
|-------------------------------------------------------------------------------------------------------------------|-----------|
| 52. Structural Steel Installer - per hour                                                                         | 28.00 HR  |
| *** 4 hours to assemble one door per 2 laborers. 2 doors per hangar bay + 2 hours per set to reset panel wall.*** |           |
| 53. Square tube - 3" x 3" x .188 wall thickness                                                                   | 228.00 LF |
| ***Support of hangar door.***                                                                                     |           |
| 54. Paint steel truss / bar joist - 8" to 24"                                                                     | 114.00 LF |
| *** Paint over bolts and welds prior to metal skin installation.***                                               |           |
| 55. Hangar door panel - ribbed - 26 gauge - up to 1"                                                              | 594.00 SF |
| 56. Hangar wheels                                                                                                 | 4.00 EA   |

**Interior**

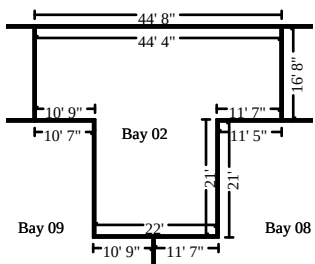
|                                               |           |
|-----------------------------------------------|-----------|
| 57. Angle - L 3" x 3" x 3/16" thick           | 54.33 LF  |
| ***Bottom track to divider wall.***           |           |
| 58. Steel purlins - C-shape - 8"              | 108.67 LF |
| ***Interior wall support.***                  |           |
| 59. X-bracing - 5/16" galvanized cable        | 150.00 LF |
| 60. Wall panel - ribbed - 26 gauge - up to 1" | 760.67 SF |

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CONTINUED - Bay 01

| DESCRIPTION                                            | QTY      |
|--------------------------------------------------------|----------|
| <b>MEP</b>                                             |          |
| 61. Rigid conduit, 1"                                  | 22.00 LF |
| 62. Electrician - per hour                             | 4.00 HR  |
| *** Tie in new wire to existing supply for service.*** |          |
| <b>Misc</b>                                            |          |
| 63. Steel rebar - j-bar - #4, 2' 6"                    | 1.00 EA  |
| 64. Hangar door sign                                   | 1.00 EA  |
| 65. Door pull                                          | 1.00 EA  |

NOTES:



Bay 02

Height: 16'

|                            |                           |
|----------------------------|---------------------------|
| 2624.00 SF Walls           | 1200.89 SF Ceiling        |
| 3824.89 SF Walls & Ceiling | 1200.89 SF Floor          |
| 133.43 SY Flooring         | 164.00 LF Floor Perimeter |
| 164.00 LF Ceil. Perimeter  |                           |

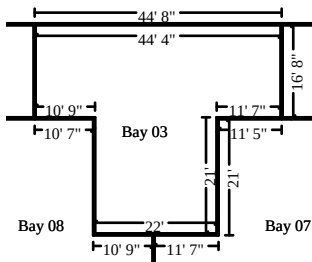
| DESCRIPTION                                                                                                       | QTY       |
|-------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Hangar door(s)</b>                                                                                             |           |
| 66. Structural Steel Installer - per hour                                                                         | 20.00 HR  |
| *** 4 hours to assemble one door per 2 laborers. 2 doors per hangar bay + 2 hours per set to reset panel wall.*** |           |
| 67. Square tube - 3" x 3" x .188 wall thickness                                                                   | 228.00 LF |
| ***Support of hangar door.***                                                                                     |           |
| 68. Paint steel truss / bar joist - 8" to 24"                                                                     | 114.00 LF |
| *** Paint over bolts and welds prior to metal skin installation.***                                               |           |
| 69. Hangar door panel - ribbed - 26 gauge - up to 1"                                                              | 594.00 SF |
| 70. Hangar wheels                                                                                                 | 4.00 EA   |

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CONTINUED - Bay 02

| DESCRIPTION                                            | QTY       |
|--------------------------------------------------------|-----------|
| <b>Interior</b>                                        |           |
| 71. Angle - L 3" x 3" x 3/16" thick                    | 16.67 LF  |
| ***Bottom track to divider wall.***                    |           |
| 72. Steel purlins - C-shape - 8"                       | 33.33 LF  |
| ***Interior wall support.***                           |           |
| 73. X-bracing - 5/16" galvanized cable                 | 25.00 LF  |
| 74. Wall panel - ribbed - 26 gauge - up to 1"          | 233.33 SF |
| <b>MEP</b>                                             |           |
| 75. Rigid conduit, 1"                                  | 22.00 LF  |
| 76. Electrician - per hour                             | 4.00 HR   |
| *** Tie in new wire to existing supply for service.*** |           |
| <b>Misc</b>                                            |           |
| 77. Steel rebar - j-bar - #4, 2' 6"                    | 1.00 EA   |
| 78. Hangar door sign                                   | 1.00 EA   |
| 79. Door pull                                          | 1.00 EA   |

NOTES:



| Bay 03                     | Height: 16'               |
|----------------------------|---------------------------|
| 2624.00 SF Walls           | 1200.89 SF Ceiling        |
| 3824.89 SF Walls & Ceiling | 1200.89 SF Floor          |
| 133.43 SY Flooring         | 164.00 LF Floor Perimeter |
| 164.00 LF Ceil. Perimeter  |                           |

| DESCRIPTION                               | QTY      |
|-------------------------------------------|----------|
| <b>Hangar door(s)</b>                     |          |
| 80. Structural Steel Installer - per hour | 24.00 HR |

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East Providence, RI 02914

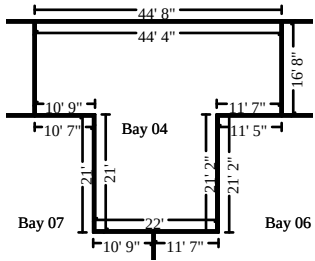
**CONTINUED - Bay 03**

| DESCRIPTION                                                                                                       | QTY       |
|-------------------------------------------------------------------------------------------------------------------|-----------|
| *** 4 hours to assemble one door per 2 laborers. 2 doors per hangar bay + 2 hours per set to reset panel wall.*** |           |
| 81. Square tube - 3" x 3" x .188 wall thickness                                                                   | 228.00 LF |
| ***Support of hangar door.***                                                                                     |           |
| 82. Paint steel truss / bar joist - 8" to 24"                                                                     | 114.00 LF |
| *** Paint over bolts and welds prior to metal skin installation.***                                               |           |
| 83. Hangar door panel - ribbed - 26 gauge - up to 1"                                                              | 594.00 SF |
| 84. Hangar wheels                                                                                                 | 4.00 EA   |
| <b><u>Interior</u></b>                                                                                            |           |
| 85. Angle - L 3" x 3" x 3/16" thick                                                                               | 37.67 LF  |
| ***Bottom track to divider wall.***                                                                               |           |
| 86. Steel purlins - C-shape - 8"                                                                                  | 66.67 LF  |
| ***Interior wall support.***                                                                                      |           |
| 87. X-bracing - 5/16" galvanized cable                                                                            | 92.00 LF  |
| 88. Wall panel - ribbed - 26 gauge - up to 1"                                                                     | 623.33 SF |
| <b><u>MEP</u></b>                                                                                                 |           |
| 89. Rigid conduit, 1"                                                                                             | 22.00 LF  |
| 90. Electrician - per hour                                                                                        | 4.00 HR   |
| *** Tie in new wire to existing supply for service.***                                                            |           |
| <b><u>Misc</u></b>                                                                                                |           |
| 91. Steel rebar - j-bar - #4, 2' 6"                                                                               | 1.00 EA   |
| 92. Hangar door sign                                                                                              | 1.00 EA   |
| 93. Door pull                                                                                                     | 1.00 EA   |

NOTES:



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**Bay 04**

**Height: 16'**

|                            |                           |
|----------------------------|---------------------------|
| 2626.67 SF Walls           | 1200.89 SF Ceiling        |
| 3827.55 SF Walls & Ceiling | 1200.89 SF Floor          |
| 133.43 SY Flooring         | 164.17 LF Floor Perimeter |
| 164.17 LF Ceil. Perimeter  |                           |

**DESCRIPTION**

**QTY**

**Hangar door(s)**

|                                                                                                                    |           |
|--------------------------------------------------------------------------------------------------------------------|-----------|
| 94. Structural Steel Installer - per hour                                                                          | 16.00 HR  |
| *** 4 hours to assemble one door per 2 laborers. 2 doors per hangar bay + 2 hours per set to reset panel wall. *** |           |
| 95. Square tube - 3" x 3" x .188 wall thickness                                                                    | 228.00 LF |
| ***Support of hangar door.***                                                                                      |           |
| 96. Paint steel truss / bar joist - 8" to 24"                                                                      | 114.00 LF |
| *** Paint over bolts and welds prior to metal skin installation. ***                                               |           |
| 97. Hangar door panel - ribbed - 26 gauge - up to 1"                                                               | 594.00 SF |
| 98. Hangar wheels                                                                                                  | 4.00 EA   |

**Interior**

|                                                |           |
|------------------------------------------------|-----------|
| 99. Angle - L 3" x 3" x 3/16" thick            | 21.00 LF  |
| ***Bottom track to divider wall.***            |           |
| 100. Steel purlins - C-shape - 8"              | 42.00 LF  |
| ***Interior wall support.***                   |           |
| 101. X-bracing - 5/16" galvanized cable        | 50.00 LF  |
| 102. Wall panel - ribbed - 26 gauge - up to 1" | 294.00 SF |

**MEP**

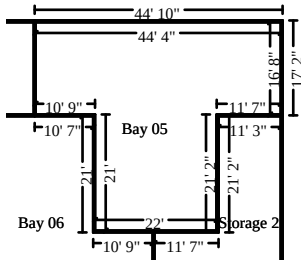
|                                                         |          |
|---------------------------------------------------------|----------|
| 103. Rigid conduit, 1"                                  | 22.00 LF |
| 104. Electrician - per hour                             | 4.00 HR  |
| *** Tie in new wire to existing supply for service. *** |          |

**Misc**

|                                      |         |
|--------------------------------------|---------|
| 105. Steel rebar - j-bar - #4, 2' 6" | 1.00 EA |
| 106. Hangar door sign                | 1.00 EA |
| 107. Door pull                       | 1.00 EA |

**NOTES:**

Halliwell Construction Services  
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**Bay 05**

**Height: 16'**

|                            |                           |
|----------------------------|---------------------------|
| 2626.67 SF Walls           | 1200.89 SF Ceiling        |
| 3827.55 SF Walls & Ceiling | 1200.89 SF Floor          |
| 133.43 SY Flooring         | 164.17 LF Floor Perimeter |
| 164.17 LF Ceil. Perimeter  |                           |

**DESCRIPTION**

**QTY**

**Hangar door(s)**

|                                                                                                                    |           |
|--------------------------------------------------------------------------------------------------------------------|-----------|
| 108. Structural Steel Installer - per hour                                                                         | 16.00 HR  |
| *** 4 hours to assemble one door per 2 laborers. 2 doors per hangar bay + 2 hours per set to reset panel wall. *** |           |
| 109. Square tube - 3" x 3" x .188 wall thickness                                                                   | 228.00 LF |
| ***Support of hangar door.***                                                                                      |           |
| 110. Paint steel truss / bar joist - 8" to 24"                                                                     | 114.00 LF |
| *** Paint over bolts and welds prior to metal skin installation. ***                                               |           |
| 111. Hangar door panel - ribbed - 26 gauge - up to 1"                                                              | 594.00 SF |
| 112. Hangar wheels                                                                                                 | 4.00 EA   |

**Interior**

|                                                |           |
|------------------------------------------------|-----------|
| 113. Angle - L 3" x 3" x 3/16" thick           | 21.00 LF  |
| ***Bottom track to divider wall.***            |           |
| 114. Steel purlins - C-shape - 8"              | 42.00 LF  |
| ***Interior wall support.***                   |           |
| 115. X-bracing - 5/16" galvanized cable        | 50.00 LF  |
| 116. Wall panel - ribbed - 26 gauge - up to 1" | 294.00 SF |

**MEP**

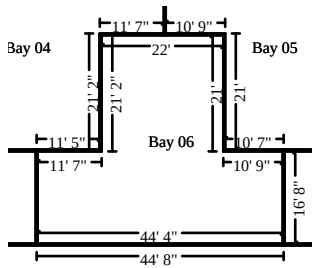
|                                                         |          |
|---------------------------------------------------------|----------|
| 117. Rigid conduit, 1"                                  | 22.00 LF |
| 118. Electrician - per hour                             | 4.00 HR  |
| *** Tie in new wire to existing supply for service. *** |          |

**Misc**

|                                      |         |
|--------------------------------------|---------|
| 119. Steel rebar - j-bar - #4, 2' 6" | 1.00 EA |
| 120. Hangar door sign                | 1.00 EA |
| 121. Door pull                       | 1.00 EA |

NOTES:

Halliwel Construction Services  
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### Bay 06

Height: 16'

|                            |                           |
|----------------------------|---------------------------|
| 2626.67 SF Walls           | 1200.89 SF Ceiling        |
| 3827.56 SF Walls & Ceiling | 1200.89 SF Floor          |
| 133.43 SY Flooring         | 164.17 LF Floor Perimeter |
| 164.17 LF Ceil. Perimeter  |                           |

### DESCRIPTION

### QTY

#### Hangar door(s)

|                                                                                                                    |           |
|--------------------------------------------------------------------------------------------------------------------|-----------|
| 122. Structural Steel Installer - per hour                                                                         | 24.00 HR  |
| *** 4 hours to assemble one door per 2 laborers. 2 doors per hangar bay + 2 hours per set to reset panel wall. *** |           |
| 123. Square tube - 3" x 3" x .188 wall thickness                                                                   | 228.00 LF |
| ***Support of hangar door.***                                                                                      |           |
| 124. Paint steel truss / bar joist - 8" to 24"                                                                     | 114.00 LF |
| *** Paint over bolts and welds prior to metal skin installation. ***                                               |           |
| 125. Hangar door panel - ribbed - 26 gauge - up to 1"                                                              | 594.00 SF |
| 126. Hangar wheels                                                                                                 | 4.00 EA   |

#### Interior

|                                                |           |
|------------------------------------------------|-----------|
| 127. Angle - L 3" x 3" x 3/16" thick           | 33.33 LF  |
| ***Bottom track to divider wall.***            |           |
| 128. Steel purlins - C-shape - 8"              | 66.67 LF  |
| ***Interior wall support.***                   |           |
| 129. X-bracing - 5/16" galvanized cable        | 50.00 LF  |
| 130. Wall panel - ribbed - 26 gauge - up to 1" | 466.67 SF |

#### MEP

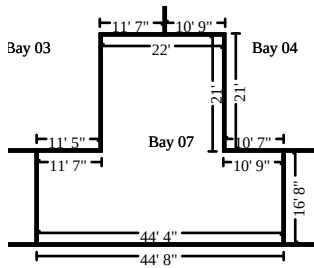
|                                                         |          |
|---------------------------------------------------------|----------|
| 131. Rigid conduit, 1"                                  | 22.00 LF |
| 132. Electrician - per hour                             | 4.00 HR  |
| *** Tie in new wire to existing supply for service. *** |          |

#### Misc

|                                      |         |
|--------------------------------------|---------|
| 133. Steel rebar - j-bar - #4, 2' 6" | 1.00 EA |
| 134. Hangar door sign                | 1.00 EA |
| 135. Door pull                       | 1.00 EA |

### NOTES:

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## Bay 07

Height: 16'

|                            |                           |
|----------------------------|---------------------------|
| 2624.00 SF Walls           | 1200.89 SF Ceiling        |
| 3824.89 SF Walls & Ceiling | 1200.89 SF Floor          |
| 133.43 SY Flooring         | 164.00 LF Floor Perimeter |
| 164.00 LF Ceil. Perimeter  |                           |

## DESCRIPTION

## QTY

### Hangar door(s)

|                                                                                                                    |           |
|--------------------------------------------------------------------------------------------------------------------|-----------|
| 136. Structural Steel Installer - per hour                                                                         | 20.00 HR  |
| *** 4 hours to assemble one door per 2 laborers. 2 doors per hangar bay + 2 hours per set to reset panel wall. *** |           |
| 137. Square tube - 3" x 3" x .188 wall thickness                                                                   | 228.00 LF |
| ***Support of hangar door.***                                                                                      |           |
| 138. Paint steel truss / bar joist - 8" to 24"                                                                     | 114.00 LF |
| *** Paint over bolts and welds prior to metal skin installation. ***                                               |           |
| 139. Hangar door panel - ribbed - 26 gauge - up to 1"                                                              | 594.00 SF |
| 140. Hangar wheels                                                                                                 | 4.00 EA   |

### Interior

|                                                |           |
|------------------------------------------------|-----------|
| 141. Angle - L 3" x 3" x 3/16" thick           | 16.67 LF  |
| ***Bottom track to divider wall.***            |           |
| 142. Steel purlins - C-shape - 8"              | 33.33 LF  |
| ***Interior wall support.***                   |           |
| 143. X-bracing - 5/16" galvanized cable        | 50.00 LF  |
| 144. Wall panel - ribbed - 26 gauge - up to 1" | 233.33 SF |

### MEP

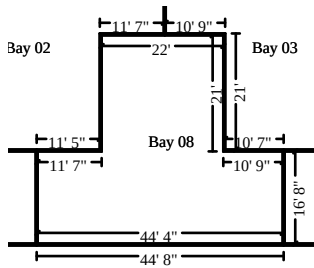
|                                                         |          |
|---------------------------------------------------------|----------|
| 145. Rigid conduit, 1"                                  | 22.00 LF |
| 146. Electrician - per hour                             | 4.00 HR  |
| *** Tie in new wire to existing supply for service. *** |          |

### Misc

|                                      |         |
|--------------------------------------|---------|
| 147. Steel rebar - j-bar - #4, 2' 6" | 1.00 EA |
| 148. Hangar door sign                | 1.00 EA |
| 149. Door pull                       | 1.00 EA |

## NOTES:

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**Bay 08**

**Height: 16'**

|                            |                           |
|----------------------------|---------------------------|
| 2624.00 SF Walls           | 1200.89 SF Ceiling        |
| 3824.89 SF Walls & Ceiling | 1200.89 SF Floor          |
| 133.43 SY Flooring         | 164.00 LF Floor Perimeter |
| 164.00 LF Ceil. Perimeter  |                           |

**DESCRIPTION**

**QTY**

**Hangar door(s)**

|                                                                                                                    |           |
|--------------------------------------------------------------------------------------------------------------------|-----------|
| 150. Structural Steel Installer - per hour                                                                         | 16.00 HR  |
| *** 4 hours to assemble one door per 2 laborers. 2 doors per hangar bay + 2 hours per set to reset panel wall. *** |           |
| 151. Square tube - 3" x 3" x .188 wall thickness                                                                   | 228.00 LF |
| ***Support of hangar door.***                                                                                      |           |
| 152. Paint steel truss / bar joist - 8" to 24"                                                                     | 114.00 LF |
| *** Paint over bolts and welds prior to metal skin installation. ***                                               |           |
| 153. Hangar door panel - ribbed - 26 gauge - up to 1"                                                              | 594.00 SF |
| 154. Hangar wheels                                                                                                 | 4.00 EA   |

**Interior**

|                                                |           |
|------------------------------------------------|-----------|
| 155. Wall panel - ribbed - 26 gauge - up to 1" | 176.00 SF |
|------------------------------------------------|-----------|

**MEP**

|                             |          |
|-----------------------------|----------|
| 156. Rigid conduit, 1"      | 22.00 LF |
| 157. Electrician - per hour | 4.00 HR  |

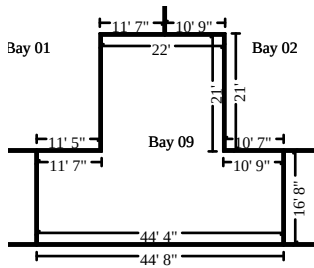
\*\*\* Tie in new wire to existing supply for service. \*\*\*

**Misc**

|                                      |         |
|--------------------------------------|---------|
| 158. Steel rebar - j-bar - #4, 2' 6" | 1.00 EA |
| 159. Hangar door sign                | 1.00 EA |
| 160. Door pull                       | 1.00 EA |

**NOTES:**

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**Bay 09**

**Height: 16'**

|                            |                           |
|----------------------------|---------------------------|
| 2624.00 SF Walls           | 1200.89 SF Ceiling        |
| 3824.89 SF Walls & Ceiling | 1200.89 SF Floor          |
| 133.43 SY Flooring         | 164.00 LF Floor Perimeter |
| 164.00 LF Ceil. Perimeter  |                           |

**DESCRIPTION**

**QTY**

**Hangar door(s)**

|                                                                                                                    |           |
|--------------------------------------------------------------------------------------------------------------------|-----------|
| 161. Structural Steel Installer - per hour                                                                         | 20.00 HR  |
| *** 4 hours to assemble one door per 2 laborers. 2 doors per hangar bay + 2 hours per set to reset panel wall. *** |           |
| 162. Square tube - 3" x 3" x .188 wall thickness                                                                   | 228.00 LF |
| ***Support of hangar door.***                                                                                      |           |
| 163. Paint steel truss / bar joist - 8" to 24"                                                                     | 114.00 LF |
| *** Paint over bolts and welds prior to metal skin installation. ***                                               |           |
| 164. Hangar door panel - ribbed - 26 gauge - up to 1"                                                              | 594.00 SF |
| 165. Hangar wheels                                                                                                 | 4.00 EA   |

**Interior**

|                                                |           |
|------------------------------------------------|-----------|
| 166. Angle - L 3" x 3" x 3/16" thick           | 16.67 LF  |
| ***Bottom track to divider wall.***            |           |
| 167. Steel purlins - C-shape - 8"              | 33.33 LF  |
| ***Interior wall support.***                   |           |
| 168. X-bracing - 5/16" galvanized cable        | 50.00 LF  |
| 169. Wall panel - ribbed - 26 gauge - up to 1" | 233.33 SF |

**MEP**

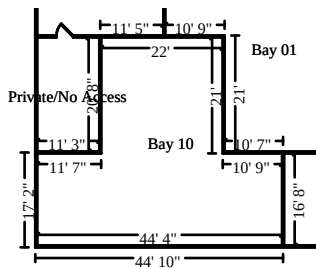
|                                                         |          |
|---------------------------------------------------------|----------|
| 170. Rigid conduit, 1"                                  | 22.00 LF |
| 171. Electrician - per hour                             | 4.00 HR  |
| *** Tie in new wire to existing supply for service. *** |          |

**Misc**

|                                      |         |
|--------------------------------------|---------|
| 172. Steel rebar - j-bar - #4, 2' 6" | 1.00 EA |
| 173. Hangar door sign                | 1.00 EA |
| 174. Door pull                       | 1.00 EA |

**NOTES:**

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Bay 10

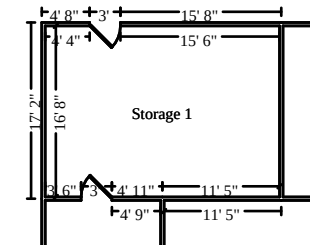
Height: 16'

|                            |                           |
|----------------------------|---------------------------|
| 2624.00 SF Walls           | 1200.89 SF Ceiling        |
| 3824.89 SF Walls & Ceiling | 1200.89 SF Floor          |
| 133.43 SY Flooring         | 164.00 LF Floor Perimeter |
| 164.00 LF Ceil. Perimeter  |                           |

| DESCRIPTION                                                                                                        | QTY       |
|--------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Hangar door(s)</b>                                                                                              |           |
| 175. Structural Steel Installer - per hour                                                                         | 16.00 HR  |
| *** 4 hours to assemble one door per 2 laborers. 2 doors per hangar bay + 2 hours per set to reset panel wall. *** |           |
| 176. Square tube - 3" x 3" x .188 wall thickness                                                                   | 228.00 LF |
| ***Support of hangar door.***                                                                                      |           |
| 177. Paint steel truss / bar joist - 8" to 24"                                                                     | 114.00 LF |
| *** Paint over bolts and welds prior to metal skin installation. ***                                               |           |
| 178. Hangar door panel - ribbed - 26 gauge - up to 1"                                                              | 594.00 SF |
| 179. Hangar wheels                                                                                                 | 4.00 EA   |
| <b>MEP</b>                                                                                                         |           |
| 180. Rigid conduit, 1"                                                                                             | 22.00 LF  |
| 181. Electrician - per hour                                                                                        | 4.00 HR   |
| *** Tie in new wire to existing supply for service. ***                                                            |           |
| <b>Misc</b>                                                                                                        |           |
| 182. Steel rebar - j-bar - #4, 2' 6"                                                                               | 1.00 EA   |
| 183. Hangar door sign                                                                                              | 1.00 EA   |
| 184. Door pull                                                                                                     | 1.00 EA   |

NOTES:

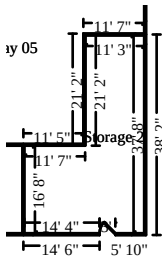
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| Storage 1                  |                          | Height: 16'             |
|----------------------------|--------------------------|-------------------------|
| 1224.01 SF Walls           | 380.56 SF Ceiling        |                         |
| 1604.57 SF Walls & Ceiling | 380.56 SF Floor          |                         |
| 42.28 SY Flooring          | 73.00 LF Floor Perimeter |                         |
| 79.00 LF Ceil. Perimeter   |                          |                         |
| Door                       | 3' X 6' 8"               | Opens into PRIVATE_NO_A |
| Door                       | 3' X 6' 8"               | Opens into Exterior     |

| DESCRIPTION                                            | QTY      |
|--------------------------------------------------------|----------|
| <b>MEP</b>                                             |          |
| 185. Rigid conduit, 1"                                 | 22.00 LF |
| 186. Electrician - per hour                            | 4.00 HR  |
| *** Tie in new wire to existing supply for service.*** |          |

NOTES:



| Storage 2                  |                           | Height: 16'         |
|----------------------------|---------------------------|---------------------|
| 1918.67 SF Walls           | 616.82 SF Ceiling         |                     |
| 2535.49 SF Walls & Ceiling | 616.82 SF Floor           |                     |
| 68.54 SY Flooring          | 118.17 LF Floor Perimeter |                     |
| 121.17 LF Ceil. Perimeter  |                           |                     |
| Door                       | 3' X 6' 8"                | Opens into Exterior |

| DESCRIPTION                                                    | QTY      |
|----------------------------------------------------------------|----------|
| <b>MEP</b>                                                     |          |
| 187. Rigid conduit, 1"                                         | 22.00 LF |
| 188. Electrician - per hour                                    | 4.00 HR  |
| *** Tie in new wire to existing supply for service.***         |          |
| 189. Megohmmeter check electrical circuits - average residence | 1.00 EA  |



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CONTINUED - Storage 2

| DESCRIPTION | QTY |
|-------------|-----|
|-------------|-----|

NOTES:

General Conditions

| DESCRIPTION                                                 | QTY       |
|-------------------------------------------------------------|-----------|
| 190. Commercial Supervision / Project Management - per hour | 120.00 HR |
| 191. Telehandler/forklift (per month) - no operator         | 1.00 MO   |
| 192. Dumpster load - Approx. 20 yards, 4 tons of debris     | 1.00 EA   |
| 193. Temporary toilet (per month)                           | 1.50 MO   |

NOTES:

Grand Total Areas:

|           |                    |           |                             |           |                        |
|-----------|--------------------|-----------|-----------------------------|-----------|------------------------|
| 30,392.02 | SF Walls           | 13,238.76 | SF Ceiling                  | 43,630.78 | SF Walls and Ceiling   |
| 13,238.76 | SF Floor           | 1,470.97  | SY Flooring                 | 1,892.50  | LF Floor Perimeter     |
| 0.00      | SF Long Wall       | 0.00      | SF Short Wall               | 1,904.50  | LF Ceil. Perimeter     |
| 13,238.76 | Floor Area         | 13,658.13 | Total Area                  | 30,392.02 | Interior Wall Area     |
| 11,650.34 | Exterior Wall Area | 687.67    | Exterior Perimeter of Walls |           |                        |
| 0.00      | Surface Area       | 0.00      | Number of Squares           | 0.00      | Total Perimeter Length |
| 0.00      | Total Ridge Length | 0.00      | Total Hip Length            |           |                        |

Project Name: PRM of FL Tower 1 – Milton - City of Wauchula  
Loss Address: Multiple, FL  
Client Name: McLarens  
Client File #: 010.016066.MI  
Date of Loss - Type: 10/10/24 - Hurricane Milton  
Prepared by: Don Royer

Rough Order of Magnitude (ROM)

| Item #                                        | Item/Area          | Draft Budget Scope                                                                                                                                                                                       |
|-----------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ADMINISTRATION POLICE STATION - A - CITY HALL |                    |                                                                                                                                                                                                          |
| 1                                             | Roof               | Repair a small section of the roof damaged by the antenna.                                                                                                                                               |
| 2                                             | Exteriors          | Allowance to Replace Antenna..                                                                                                                                                                           |
| 3                                             | MEP                | Replace electrical components attached to the antenna.                                                                                                                                                   |
| 4                                             | General Conditions | Indirect costs and administrative requirements of project management, including supervision, safety measures & permits.                                                                                  |
| 5                                             | Contingency        | Budgeted reserve set aside to address unexpected challenges or changes that may arise during the project, ensuring financial flexibility and risk management.                                            |
| 6                                             | Overhead & Profit  | Contractor's indirect costs and profit margin added covering essential business expenses and providing compensation for their services. Not included on stabilization, mitigation, or temporary repairs. |

Project Name: PRM of FL Tower 1 – Milton - City of Wauchula  
Loss Address: Multiple, FL  
Client Name: McLarens  
Client File #: 010.016066.MI  
Date of Loss - Type: 10/10/24 - Hurricane Milton  
Prepared by: Don Royer

## Rough Order of Magnitude (ROM)

| Item #                           | Item/Area          | Draft Budget Scope                                                                                                                                                                                       |
|----------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CITY HALL - A - CITY HALL</b> |                    |                                                                                                                                                                                                          |
| 1                                | Temp Roofing       | Installing temporary roofing to protect the building from further weather damage. This typically includes covering damaged areas with tarps or protective sheeting.                                      |
| 2                                | Interiors          | Replace affected ceiling tiles.                                                                                                                                                                          |
| 3                                | Roof               | Replace missing or damaged clay tiles and detached flashing.                                                                                                                                             |
| 4                                | MEP                | Reset detached compressor and replace 2 RTU access panel doors.                                                                                                                                          |
| 5                                | General Conditions | Indirect costs and administrative requirements of project management, including supervision, safety measures & permits.                                                                                  |
| 6                                | Contingency        | Budgeted reserve set aside to address unexpected challenges or changes that may arise during the project, ensuring financial flexibility and risk management.                                            |
| 7                                | Overhead & Profit  | Contractor's indirect costs and profit margin added covering essential business expenses and providing compensation for their services. Not included on stabilization, mitigation, or temporary repairs. |

|                                                   |                    |                                                                                                                                                                                                          |
|---------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CITY HALL - Z1 - PITO (AGGREGATE FOR SITE)</b> |                    |                                                                                                                                                                                                          |
| 8                                                 | Exteriors          | Replace 132 lf of vinyl fencing.                                                                                                                                                                         |
| 9                                                 | General Conditions | Indirect costs and administrative requirements of project management, including supervision, safety measures & permits.                                                                                  |
| 10                                                | Contingency        | Budgeted reserve set aside to address unexpected challenges or changes that may arise during the project, ensuring financial flexibility and risk management.                                            |
| 11                                                | Overhead & Profit  | Contractor's indirect costs and profit margin added covering essential business expenses and providing compensation for their services. Not included on stabilization, mitigation, or temporary repairs. |

Project Name: PRM of FL Tower 1 – Milton - City of Wauchula  
Loss Address: Multiple, FL  
Client Name: McLarens  
Client File #: 010.016066.MI  
Date of Loss - Type: 10/10/24 - Hurricane Milton  
Prepared by: Don Royer

Rough Order of Magnitude (ROM)

| Item #                                     | Item/Area          | Draft Budget Scope                                                                                                                                                                                       |
|--------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FARR FIELD - A - PITO (AGGREGATE FOR SITE) |                    |                                                                                                                                                                                                          |
| 1                                          | Exteriors          | Replace 10 LF of fencing .                                                                                                                                                                               |
| 2                                          | MEP                | Replace 1 scoreboard.                                                                                                                                                                                    |
| 3                                          | General Conditions | Indirect costs and administrative requirements of project management, including supervision, safety measures & permits.                                                                                  |
| 4                                          | Contingency        | Budgeted reserve set aside to address unexpected challenges or changes that may arise during the project, ensuring financial flexibility and risk management.                                            |
| 5                                          | Overhead & Profit  | Contractor's indirect costs and profit margin added covering essential business expenses and providing compensation for their services. Not included on stabilization, mitigation, or temporary repairs. |

Project Name: PRM of FL Tower 1 – Milton - City of Wauchula  
Loss Address: Multiple, FL  
Client Name: McLarens  
Client File #: 010.016066.MI  
Date of Loss - Type: 10/10/24 - Hurricane Milton  
Prepared by: Don Royer

## Rough Order of Magnitude (ROM)

| Item #                                            | Item/Area          | Draft Budget Scope                                                                                                                                                                                       |
|---------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AIRPORT - B - AIRPORT HANGARS (T-Hangar A)</b> |                    |                                                                                                                                                                                                          |
| 1                                                 | Exteriors          | Allowance to replace 6 Bi-Parting doors.                                                                                                                                                                 |
| 2                                                 | General Conditions | Indirect costs and administrative requirements of project management, including supervision, safety measures & permits.                                                                                  |
| 3                                                 | Contingency        | Budgeted reserve set aside to address unexpected challenges or changes that may arise during the project, ensuring financial flexibility and risk management.                                            |
| 4                                                 | Overhead & Profit  | Contractor's indirect costs and profit margin added covering essential business expenses and providing compensation for their services. Not included on stabilization, mitigation, or temporary repairs. |
| <b>AIRPORT - C - AIRPORT HANGARS (T-Hangar B)</b> |                    |                                                                                                                                                                                                          |
| 5                                                 | Exteriors          | allowance to replace 2 Bi-Parting doors.                                                                                                                                                                 |
| 6                                                 | Exteriors          | Exterior repairs and renovations, including siding, windows, doors, and any other external building components. Replace steel corner framing member.                                                     |
| 7                                                 | General Conditions | Indirect costs and administrative requirements of project management, including supervision, safety measures & permits.                                                                                  |
| 8                                                 | Contingency        | Budgeted reserve set aside to address unexpected challenges or changes that may arise during the project, ensuring financial flexibility and risk management.                                            |
| 9                                                 | Overhead & Profit  | Contractor's indirect costs and profit margin added covering essential business expenses and providing compensation for their services. Not included on stabilization, mitigation, or temporary repairs. |
| <b>AIRPORT - D - AIRPORT HANGARS (T-Hangar C)</b> |                    |                                                                                                                                                                                                          |
| 10                                                | Exteriors          | Allowance to replace 2 Bi-Parting doors.                                                                                                                                                                 |
| 11                                                | Exteriors          | Replace metal exterior door                                                                                                                                                                              |
| 12                                                | General Conditions | Indirect costs and administrative requirements of project management, including supervision, safety measures & permits.                                                                                  |
| 13                                                | Contingency        | Budgeted reserve set aside to address unexpected challenges or changes that may arise during the project, ensuring financial flexibility and risk management.                                            |
| 14                                                | Overhead & Profit  | Contractor's indirect costs and profit margin added covering essential business expenses and providing compensation for their services. Not included on stabilization, mitigation, or temporary repairs. |
| <b>AIRPORT - E - AIRPORT HANGARS (T-Hangar E)</b> |                    |                                                                                                                                                                                                          |
| 15                                                | Interiors          | Metal framing and wall panel replacement.                                                                                                                                                                |
| 16                                                | Exteriors          | Allowance to replace 2 Bi-Parting doors in section D-10.                                                                                                                                                 |
| 17                                                | General Conditions | Indirect costs and administrative requirements of project management, including supervision, safety measures & permits.                                                                                  |
| 18                                                | Contingency        | Budgeted reserve set aside to address unexpected challenges or changes that may arise during the project, ensuring financial flexibility and risk management.                                            |
| 19                                                | Overhead & Profit  | Contractor's indirect costs and profit margin added covering essential business expenses and providing compensation for their services. Not included on stabilization, mitigation, or temporary repairs. |

Project Name: PRM of FL Tower 1 – Milton - City of Wauchula  
Loss Address: Multiple, FL  
Client Name: McLarens  
Client File #: 010.016066.MI  
Date of Loss - Type: 10/10/24 - Hurricane Milton  
Prepared by: Don Royer

Rough Order of Magnitude (ROM)

| Item #                                          | Item/Area          | Draft Budget Scope                                                                                                                                                                                       |
|-------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OAK STREET PARK - A - PITO (AGGREGATE FOR SITE) |                    |                                                                                                                                                                                                          |
| 1                                               | Exteriors          | Resurface 1280 SF of the tennis court.                                                                                                                                                                   |
| 2                                               | Exteriors          | Replace 2 shade structures.                                                                                                                                                                              |
| 3                                               | Exteriors          | Replace Tennis court wind screens                                                                                                                                                                        |
| 4                                               | Exteriors          | Replace tennis court fencing.                                                                                                                                                                            |
| 5                                               | General Conditions | Indirect costs and administrative requirements of project management, including supervision, safety measures & permits.                                                                                  |
| 6                                               | Contingency        | Budgeted reserve set aside to address unexpected challenges or changes that may arise during the project, ensuring financial flexibility and risk management.                                            |
| 7                                               | Overhead & Profit  | Contractor's indirect costs and profit margin added covering essential business expenses and providing compensation for their services. Not included on stabilization, mitigation, or temporary repairs. |

Project Name: PRM of FL Tower 1 – Milton - City of Wauchula  
Loss Address: Multiple, FL  
Client Name: McLarens  
Client File #: 010.016066.MI  
Date of Loss - Type: 10/10/24 - Hurricane Milton  
Prepared by: Don Royer

Rough Order of Magnitude (ROM)

| Item #                                      | Item/Area          | Draft Budget Scope                                                                                                                                                                                       |
|---------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SEMINOLE PARK - Z1- PITO CHAIN LINK FENCING |                    |                                                                                                                                                                                                          |
| 1                                           | Exteriors          | Replace 80 lf of chain link fencing and repair 1 wood park bench.                                                                                                                                        |
| 2                                           | General Conditions | Indirect costs and administrative requirements of project management, including supervision, safety measures & permits.                                                                                  |
| 3                                           | Contingency        | Budgeted reserve set aside to address unexpected challenges or changes that may arise during the project, ensuring financial flexibility and risk management.                                            |
| 4                                           | Overhead & Profit  | Contractor's indirect costs and profit margin added covering essential business expenses and providing compensation for their services. Not included on stabilization, mitigation, or temporary repairs. |

Project Name: PRM of FL Tower 1 – Milton - City of Wauchula  
Loss Address: Multiple, FL  
Client Name: McLarens  
Client File #: 010.016066.MI  
Date of Loss - Type: 10/10/24 - Hurricane Milton  
Prepared by: Don Royer

## Rough Order of Magnitude (ROM)

| Item #                                                                 | Item/Area          | Draft Budget Scope                                                                                                                                                                                       |
|------------------------------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>COMMUNITY REDEVELOPMENT AGENCY - Z3 - PITO - (72) CLOTH BANNERS</b> |                    |                                                                                                                                                                                                          |
| 1                                                                      | Exteriors          | Replace 34 banners                                                                                                                                                                                       |
| 2                                                                      | General Conditions | Indirect costs and administrative requirements of project management, including supervision, safety measures & permits.                                                                                  |
| 3                                                                      | Contingency        | Budgeted reserve set aside to address unexpected challenges or changes that may arise during the project, ensuring financial flexibility and risk management.                                            |
| 4                                                                      | Overhead & Profit  | Contractor's indirect costs and profit margin added covering essential business expenses and providing compensation for their services. Not included on stabilization, mitigation, or temporary repairs. |

|                                                                                  |                    |                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>COMMUNITY REDEVELOPMENT AGENCY - Z5 - PITO - (10) METAL WAY-FINDING SIGNS</b> |                    |                                                                                                                                                                                                          |
| 5                                                                                | Exteriors          | Replace 3 way finding signs (3 each)                                                                                                                                                                     |
| 6                                                                                | General Conditions | Indirect costs and administrative requirements of project management, including supervision, safety measures & permits.                                                                                  |
| 7                                                                                | Contingency        | Budgeted reserve set aside to address unexpected challenges or changes that may arise during the project, ensuring financial flexibility and risk management.                                            |
| 8                                                                                | Overhead & Profit  | Contractor's indirect costs and profit margin added covering essential business expenses and providing compensation for their services. Not included on stabilization, mitigation, or temporary repairs. |



Project Name: PRM of FL Tower 1 – Milton - City of Wauchula  
Loss Address: Multiple, FL  
Client Name: McLarens  
Client File #: 010.016066.MI  
Date of Loss - Type: 10/10/24 - Hurricane Milton  
Prepared by: Don Royer

Rough Order of Magnitude (ROM)

| Item #                                  | Item/Area          | Draft Budget Scope                                                                                                                                                                                       |
|-----------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UNSCHEDULED- SOUTH D - STORAGE BUILDING |                    |                                                                                                                                                                                                          |
| 1                                       | Roof               | Replace the lower right roof section.                                                                                                                                                                    |
| 2                                       | Exteriors          | Replace 2 metal large Bi-Fold doors.                                                                                                                                                                     |
| 3                                       | General Conditions | Indirect costs and administrative requirements of project management, including supervision, safety measures & permits.                                                                                  |
| 4                                       | Contingency        | Budgeted reserve set aside to address unexpected challenges or changes that may arise during the project, ensuring financial flexibility and risk management.                                            |
| 5                                       | Overhead & Profit  | Contractor's indirect costs and profit margin added covering essential business expenses and providing compensation for their services. Not included on stabilization, mitigation, or temporary repairs. |

**SITE INSPECTION REPORT**  
**CATEGORY E – BUILDINGS, VEHICLES, EQUIPMENT**

|                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| Applicant<br><i>City of Wauchula</i>                                                                                                                                                                                                                                                                                      | PA ID #<br><i>049-75375-00</i>                                                                                                                                                         | Applicant Representative<br><i>James Braddock</i>                                                                                                                                                                                                                                                                                                                                                                  | Applicant Representative Title<br><i>Director of Support Services &amp; Internal Activity</i>  |
| Site Inspection Date<br><i>4/14/2023</i>                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                        | Site Inspector Name<br><i>Marilyn Garcia</i>                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                |
| Work Order #<br><i>85781</i>                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                        | Damage #<br><i>1266520</i>                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                |
| Facility: <input checked="" type="checkbox"/> Building <input type="checkbox"/> Vehicles <input type="checkbox"/> Equipment<br><i>Site 0057 Airport Bldg Hangar</i>                                                                                                                                                       |                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                |
| GPS Latitude<br><i>27.512402</i>                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                        | GPS Longitude<br><i>-81.883198</i>                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                |
| Physical Location (Address of Damage Site)<br><i>1202 Maurie Sonny Clavel Rd.<br/>Florida, 33873</i>                                                                                                                                                                                                                      | Date Damaged<br><i>9/28/22</i>                                                                                                                                                         | Age of Facility<br><input type="checkbox"/> Exact<br><input checked="" type="checkbox"/> Approximate<br>Year Built: <i>1995</i>                                                                                                                                                                                                                                                                                    | Legal Responsibility<br><input checked="" type="checkbox"/> Yes<br><input type="checkbox"/> No |
| Number of Stories<br><i>1</i>                                                                                                                                                                                                                                                                                             | Roof Type<br><input type="checkbox"/> Flat <input checked="" type="checkbox"/> Gable<br><input type="checkbox"/> Shed <input type="checkbox"/> HIP<br><input type="checkbox"/> Mansard | Roof Pitch<br><input checked="" type="checkbox"/> 1/12 <input type="checkbox"/> 7/12<br><input type="checkbox"/> 2/12 <input type="checkbox"/> 8/12<br><input type="checkbox"/> 3/12 <input type="checkbox"/> 9/12<br><input type="checkbox"/> 4/12 <input type="checkbox"/> 10/12<br><input type="checkbox"/> 5/12 <input type="checkbox"/> 11/12<br><input type="checkbox"/> 6/12 <input type="checkbox"/> 12/12 |                                                                                                |
| Basement<br><input type="checkbox"/> Yes<br><input checked="" type="checkbox"/> No                                                                                                                                                                                                                                        |                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                |
| <b>Facility Description: (Pre-disaster design, function, capacity, dimensions, and footprint)</b><br>Facility Description Only<br><b>Buildings:</b> Roof Type/Material/Pitch/Exterior Siding, etc<br><b>Vehicles /Equipment:</b> Year/Make/Model<br><br><i>A 14,000 SF All metal Aircraft hangar with concrete floor.</i> |                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                |

Applicant Representative Signature: \_\_\_\_\_

Page 1 of 7

Recipient Authorized Representative Signature (if applicable): \_\_\_\_\_

## Facility Component Damages

| Site #                                                                                                                                                                                                                          | Damage Component<br>Material/Model/Type/Capacity                                                                       | Location<br>Address/GPS/begin-end    | Damage Dimensions: (L x W x D/L x Dia)<br>Electrical/Mechanical/etc.                                                                                                                                                                                                     |              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| 1                                                                                                                                                                                                                               | 110 V receptacle wiring<br>+ EMT                                                                                       | Hanger D<br>27.549889<br>- 91.813522 | 360 FT L (3) missing                                                                                                                                                                                                                                                     |              |
| Method of Repair (change in design, materials, size, capacity etc.)                                                                                                                                                             |                                                                                                                        |                                      | Cause of Damage                                                                                                                                                                                                                                                          |              |
| Repair to pre-disaster design, function, capacity, dimensions and footprint                                                                                                                                                     |                                                                                                                        |                                      | FA                                                                                                                                                                                                                                                                       | Quantity 360 |
|                                                                                                                                                                                                                                 |                                                                                                                        |                                      | CTR X                                                                                                                                                                                                                                                                    | Units LF     |
|                                                                                                                                                                                                                                 |                                                                                                                        |                                      | Both                                                                                                                                                                                                                                                                     | % Complete 0 |
| Site #                                                                                                                                                                                                                          | Damage Component<br>Material/Model/Type/Capacity                                                                       | Location<br>Address/GPS/begin-end    | Damage Dimensions: (L x W x D/L x Dia)<br>Electrical/Mechanical/etc.                                                                                                                                                                                                     |              |
| 1                                                                                                                                                                                                                               | Hanger door. Non-motorized, manual opening. Steel framed w/ E+L Curved. Still open one side on rollers, overhead track | Hanger D                             | 23'w x 14'H all missing                                                                                                                                                                                                                                                  |              |
| Method of Repair (change in design, materials, size, capacity etc.)                                                                                                                                                             |                                                                                                                        |                                      | Cause of Damage                                                                                                                                                                                                                                                          |              |
| Repair to pre-disaster design function capacity dimensions and footprints                                                                                                                                                       |                                                                                                                        |                                      | FA                                                                                                                                                                                                                                                                       | Quantity 15  |
|                                                                                                                                                                                                                                 |                                                                                                                        |                                      | CTR X                                                                                                                                                                                                                                                                    | Units ea.    |
|                                                                                                                                                                                                                                 |                                                                                                                        |                                      | Both                                                                                                                                                                                                                                                                     | % Complete 0 |
| Site #                                                                                                                                                                                                                          | Damage Component<br>Material/Model/Type/Capacity                                                                       | Location<br>Address/GPS/begin-end    | Damage Dimensions: (L x W x D/L x Dia)<br>Electrical/Mechanical/etc.                                                                                                                                                                                                     |              |
| 1                                                                                                                                                                                                                               | Steel Columns.<br>16ga 4"x8" channel                                                                                   | Hanger D                             | 16 FT L (1) Missing balance damaged                                                                                                                                                                                                                                      |              |
| Method of Repair (change in design, materials, size, capacity etc.)                                                                                                                                                             |                                                                                                                        |                                      | Cause of Damage                                                                                                                                                                                                                                                          |              |
| Repair to pre-disaster design function capacity dimension and footprints                                                                                                                                                        |                                                                                                                        |                                      | FA                                                                                                                                                                                                                                                                       | Quantity 4   |
|                                                                                                                                                                                                                                 |                                                                                                                        |                                      | CTR 8                                                                                                                                                                                                                                                                    | Units ea.    |
|                                                                                                                                                                                                                                 |                                                                                                                        |                                      | Both                                                                                                                                                                                                                                                                     | % Complete 0 |
| Site #                                                                                                                                                                                                                          | Damage Component<br>Material/Model/Type/Capacity                                                                       | Location<br>Address/GPS/begin-end    | Damage Dimensions: (L x W x D/L x Dia)<br>Electrical/Mechanical/etc.                                                                                                                                                                                                     |              |
| 1                                                                                                                                                                                                                               | Steel Columns.<br>16ga. 3"x4" channel                                                                                  | Hanger D                             | 16 FT L exist, damaged                                                                                                                                                                                                                                                   |              |
| Method of Repair (change in design, materials, size, capacity etc.)                                                                                                                                                             |                                                                                                                        |                                      | Cause of Damage                                                                                                                                                                                                                                                          |              |
| Repair to pre-disaster design function capacity dimension and footprints                                                                                                                                                        |                                                                                                                        |                                      | FA                                                                                                                                                                                                                                                                       | Quantity 1   |
|                                                                                                                                                                                                                                 |                                                                                                                        |                                      | CTR X                                                                                                                                                                                                                                                                    | Units ea.    |
|                                                                                                                                                                                                                                 |                                                                                                                        |                                      | Both                                                                                                                                                                                                                                                                     | % Complete 0 |
| Component Types: 1-Exterior Building 2-Interior Building 3-Exterior Site 4-Vehicle 5-Equipment 6-Contents (Specify Each Component) 10-Median 11-Guardrail 12-Lighting 13-Signage 14-Culvert 15-Wall 16-Armor 17-Other (specify) |                                                                                                                        |                                      | Cause of Damage: 1- Surface water flooding 2-Wind Driven Rain 3-Sewer Back up 4-Foundation Seepage 5-Lightning 6-High Winds 7- Rising Water or Storm Surge 8-Wind Blown Debris 9-Earthquake 10- Fire 11- Earthquake 12- Electrical Power Surge 13- Snow or Ice 14- Other |              |

Applicant Representative Initials: \_\_\_\_\_

Recipient Authorized Representative Initials (if applicable): \_\_\_\_\_

## Facility Component Damages

| Site #                                                                                                                                                                                                                          | Damage Component Material/Model/Type/Capacity            | Location Address/GPS/begin-end         | Damage Dimensions: (L x W x D/L x Dia) Electrical/Mechanical/etc.                                                                                                                                                                                                        |   |            |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|------------|-----|
| 1                                                                                                                                                                                                                               | 12" w x 8" h x 10' L<br>mtl ridge vent unit              | Kanger D<br>27.549 989<br>- 91.813 522 | existing damaged                                                                                                                                                                                                                                                         |   |            |     |
| Method of Repair (change in design, materials, size, capacity etc.)                                                                                                                                                             |                                                          |                                        | Cause of Damage                                                                                                                                                                                                                                                          |   |            |     |
| Displaced by wind forces. Reset unit to roof @ former alignment w/ screws                                                                                                                                                       |                                                          |                                        | FA                                                                                                                                                                                                                                                                       |   | Quantity   | 10  |
|                                                                                                                                                                                                                                 |                                                          |                                        | CTR                                                                                                                                                                                                                                                                      | X | Units      | ea. |
|                                                                                                                                                                                                                                 |                                                          |                                        | Both                                                                                                                                                                                                                                                                     |   | % Complete | 0   |
| Site #                                                                                                                                                                                                                          | Damage Component Material/Model/Type/Capacity            | Location Address/GPS/begin-end         | Damage Dimensions: (L x W x D/L x Dia) Electrical/Mechanical/etc.                                                                                                                                                                                                        |   |            |     |
| 1                                                                                                                                                                                                                               | 1x4, 2-Lamp, Lensed<br>floor light fixture               | Kanger D.                              | Missing                                                                                                                                                                                                                                                                  |   |            |     |
| Method of Repair (change in design, materials, size, capacity etc.)                                                                                                                                                             |                                                          |                                        | Cause of Damage                                                                                                                                                                                                                                                          |   |            |     |
| Repair to pre-disaster design, function capacity, dimension and footprint                                                                                                                                                       |                                                          |                                        | FA                                                                                                                                                                                                                                                                       |   | Quantity   | 1   |
|                                                                                                                                                                                                                                 |                                                          |                                        | CTR                                                                                                                                                                                                                                                                      | X | Units      | ea. |
|                                                                                                                                                                                                                                 |                                                          |                                        | Both                                                                                                                                                                                                                                                                     |   | % Complete | 0   |
| Site #                                                                                                                                                                                                                          | Damage Component Material/Model/Type/Capacity            | Location Address/GPS/begin-end         | Damage Dimensions: (L x W x D/L x Dia) Electrical/Mechanical/etc.                                                                                                                                                                                                        |   |            |     |
| 1                                                                                                                                                                                                                               | 1/2" x 5" Anchor<br>bolts @ slab.<br>for walls + columns | Kanger D                               | Missing                                                                                                                                                                                                                                                                  |   |            |     |
| Method of Repair (change in design, materials, size, capacity etc.)                                                                                                                                                             |                                                          |                                        | Cause of Damage                                                                                                                                                                                                                                                          |   |            |     |
| Repair to pre-disaster design function capacity dimension and footprint                                                                                                                                                         |                                                          |                                        | FA                                                                                                                                                                                                                                                                       |   | Quantity   | 50  |
|                                                                                                                                                                                                                                 |                                                          |                                        | CTR                                                                                                                                                                                                                                                                      | X | Units      | ea. |
|                                                                                                                                                                                                                                 |                                                          |                                        | Both                                                                                                                                                                                                                                                                     |   | % Complete | 0   |
| Site #                                                                                                                                                                                                                          | Damage Component Material/Model/Type/Capacity            | Location Address/GPS/begin-end         | Damage Dimensions: (L x W x D/L x Dia) Electrical/Mechanical/etc.                                                                                                                                                                                                        |   |            |     |
| 1                                                                                                                                                                                                                               | Quad elec. receptacle<br>mtl. box. 110V                  | Kanger D.                              | (4) Missing                                                                                                                                                                                                                                                              |   |            |     |
| Method of Repair (change in design, materials, size, capacity etc.)                                                                                                                                                             |                                                          |                                        | Cause of Damage                                                                                                                                                                                                                                                          |   |            |     |
| Repair to pre-disaster design function capacity dimension and footprint                                                                                                                                                         |                                                          |                                        | FA                                                                                                                                                                                                                                                                       |   | Quantity   | 5   |
|                                                                                                                                                                                                                                 |                                                          |                                        | CTR                                                                                                                                                                                                                                                                      | X | Units      | ea. |
|                                                                                                                                                                                                                                 |                                                          |                                        | Both                                                                                                                                                                                                                                                                     |   | % Complete | 0   |
| Component Types: 1-Exterior Building 2-Interior Building 3-Exterior Site 4-Vehicle 5-Equipment 6-Contents (Specify Each Component) 10-Median 11-Guardrail 12-Lighting 13-Signage 14-Culvert 15-Wall 16-Armor 17-Other (specify) |                                                          |                                        | Cause of Damage: 1- Surface water flooding 2-Wind Driven Rain 3-Sewer Back up 4-Foundation Seepage 5-Lightning 6-High Winds 7- Rising Water or Storm Surge 8-Wind Blown Debris 9-Earthquake 10- Fire 11- Earthquake 12- Electrical Power Surge 13- Snow or Ice 14- Other |   |            |     |

Applicant Representative Initials: \_\_\_\_\_

Recipient Authorized Representative Initials (if applicable): \_\_\_\_\_

## Facility Component Damages

| Site #                                                                                                                                                                                                                          | Damage Component<br>Material/Model/Type/Capacity                              | Location<br>Address/GPS/begin-end   | Damage Dimensions: (L x W x D/L x Dia)<br>Electrical/Mechanical/etc.                                                                                                                                                                                                     |   |            |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|------------|-----|
| 1                                                                                                                                                                                                                               | Interior mtl. partitions.<br>Steel L+E framing w/<br>corr. mtl. skin one side | Hanger D<br>27.549339<br>-81.813522 | (3) 20 ft L x 15 ft H <sup>all missing</sup>                                                                                                                                                                                                                             |   |            |     |
| Method of Repair (change in design, materials, size, capacity etc.)                                                                                                                                                             |                                                                               |                                     | Cause of Damage                                                                                                                                                                                                                                                          |   | 6          |     |
| Replace to pre-disaster design, function,<br>capacity, dimensions + footprint                                                                                                                                                   |                                                                               |                                     | FA                                                                                                                                                                                                                                                                       |   | Quantity   | 900 |
|                                                                                                                                                                                                                                 |                                                                               |                                     | CTR                                                                                                                                                                                                                                                                      | X | Units      | SF  |
|                                                                                                                                                                                                                                 |                                                                               |                                     | Both                                                                                                                                                                                                                                                                     |   | % Complete | 0   |
| Site #                                                                                                                                                                                                                          | Damage Component<br>Material/Model/Type/Capacity                              | Location<br>Address/GPS/begin-end   | Damage Dimensions: (L x W x D/L x Dia)<br>Electrical/Mechanical/etc.                                                                                                                                                                                                     |   |            |     |
| 1                                                                                                                                                                                                                               | Interior mtl. partitions.<br>Steel L+E framing w/<br>corr. mtl. skin one side | Hanger D                            | (3) 16 ft H x 15 ft L <sup>all missing</sup>                                                                                                                                                                                                                             |   |            |     |
| Method of Repair (change in design, materials, size, capacity etc.)                                                                                                                                                             |                                                                               |                                     | Cause of Damage                                                                                                                                                                                                                                                          |   | 6          |     |
| Replace to pre-disaster design function<br>capacity dimension footprints                                                                                                                                                        |                                                                               |                                     | FA                                                                                                                                                                                                                                                                       |   | Quantity   | 720 |
|                                                                                                                                                                                                                                 |                                                                               |                                     | CTR                                                                                                                                                                                                                                                                      | X | Units      | SF  |
|                                                                                                                                                                                                                                 |                                                                               |                                     | Both                                                                                                                                                                                                                                                                     |   | % Complete | 0   |
| Site #                                                                                                                                                                                                                          | Damage Component<br>Material/Model/Type/Capacity                              | Location<br>Address/GPS/begin-end   | Damage Dimensions: (L x W x D/L x Dia)<br>Electrical/Mechanical/etc.                                                                                                                                                                                                     |   |            |     |
| 1                                                                                                                                                                                                                               | Interior/Ext. Mtl siding<br>corr. mtl. skin ONLY<br>3x16'                     | Hanger D                            | (11) 3x16' <sup>exist. damaged</sup>                                                                                                                                                                                                                                     |   |            |     |
| Method of Repair (change in design, materials, size, capacity etc.)                                                                                                                                                             |                                                                               |                                     | Cause of Damage                                                                                                                                                                                                                                                          |   | 6          |     |
| Replace to pre-disaster design function<br>capacity dimension footprints                                                                                                                                                        |                                                                               |                                     | FA                                                                                                                                                                                                                                                                       |   | Quantity   | 520 |
|                                                                                                                                                                                                                                 |                                                                               |                                     | CTR                                                                                                                                                                                                                                                                      | X | Units      | SF  |
|                                                                                                                                                                                                                                 |                                                                               |                                     | Both                                                                                                                                                                                                                                                                     |   | % Complete | 0   |
| Site #                                                                                                                                                                                                                          | Damage Component<br>Material/Model/Type/Capacity                              | Location<br>Address/GPS/begin-end   | Damage Dimensions: (L x W x D/L x Dia)<br>Electrical/Mechanical/etc.                                                                                                                                                                                                     |   |            |     |
| 1                                                                                                                                                                                                                               | Int. Mtl. Partition<br>displaced                                              | Hanger D                            | 15' x 20' <sup>exist. damaged</sup>                                                                                                                                                                                                                                      |   |            |     |
| Method of Repair (change in design, materials, size, capacity etc.)                                                                                                                                                             |                                                                               |                                     | Cause of Damage                                                                                                                                                                                                                                                          |   | 6          |     |
| Re-set existing wall sole to conc. flr.                                                                                                                                                                                         |                                                                               |                                     | FA                                                                                                                                                                                                                                                                       |   | Quantity   | 1   |
|                                                                                                                                                                                                                                 |                                                                               |                                     | CTR                                                                                                                                                                                                                                                                      | X | Units      | ea. |
|                                                                                                                                                                                                                                 |                                                                               |                                     | Both                                                                                                                                                                                                                                                                     |   | % Complete | 0   |
| Component Types: 1-Exterior Building 2-Interior Building 3-Exterior Site 4-Vehicle 5-Equipment 6-Contents (Specify Each Component) 10-Median 11-Guardrail 12-Lighting 13-Signage 14-Culvert 15-Wall 16-Armor 17-Other (specify) |                                                                               |                                     | Cause of Damage: 1- Surface water flooding 2-Wind Driven Rain 3-Sewer Back up 4-Foundation Seepage 5-Lightning 6-High Winds 7- Rising Water or Storm Surge 8-Wind Blown Debris 9-Earthquake 10- Fire 11- Earthquake 12- Electrical Power Surge 13- Snow or Ice 14- Other |   |            |     |

Applicant Representative Initials: \_\_\_\_\_

Recipient Authorized Representative Initials (if applicable): \_\_\_\_\_

## Facility Component Damages

| Site #                                                                       | Damage Component<br>Material/Model/Type/Capacity | Location<br>Address/GPS/begin-end     | Damage Dimensions: (L x W x D/L x Dia)<br>Electrical/Mechanical/etc. |            |
|------------------------------------------------------------------------------|--------------------------------------------------|---------------------------------------|----------------------------------------------------------------------|------------|
| 1                                                                            | Misc. Damaged Corr. mtl<br>Wall skin 3'W         | Hanger D<br>27.549 889<br>- 26.813522 | 20' exist. damaged                                                   |            |
| Method of Repair (change in design, materials, size, capacity etc.)          |                                                  |                                       | Cause of Damage                                                      |            |
| Repair to pre-disaster design, function, capacity,<br>dimensions + footprint |                                                  |                                       | FA                                                                   | Quantity   |
|                                                                              |                                                  |                                       | CTR                                                                  | Units      |
|                                                                              |                                                  |                                       | Both                                                                 | % Complete |
| Site #                                                                       | Damage Component<br>Material/Model/Type/Capacity | Location<br>Address/GPS/begin-end     | Damage Dimensions: (L x W x D/L x Dia)<br>Electrical/Mechanical/etc. |            |
|                                                                              |                                                  |                                       |                                                                      |            |
| Method of Repair (change in design, materials, size, capacity etc.)          |                                                  |                                       | Cause of Damage                                                      |            |
|                                                                              |                                                  |                                       | FA                                                                   | Quantity   |
|                                                                              |                                                  |                                       | CTR                                                                  | Units      |
|                                                                              |                                                  |                                       | Both                                                                 | % Complete |
| Site #                                                                       | Damage Component<br>Material/Model/Type/Capacity | Location<br>Address/GPS/begin-end     | Damage Dimensions: (L x W x D/L x Dia)<br>Electrical/Mechanical/etc. |            |
|                                                                              |                                                  |                                       |                                                                      |            |
| Method of Repair (change in design, materials, size, capacity etc.)          |                                                  |                                       | Cause of Damage                                                      |            |
|                                                                              |                                                  |                                       | FA                                                                   | Quantity   |
|                                                                              |                                                  |                                       | CTR                                                                  | Units      |
|                                                                              |                                                  |                                       | Both                                                                 | % Complete |
| Site #                                                                       | Damage Component<br>Material/Model/Type/Capacity | Location<br>Address/GPS/begin-end     | Damage Dimensions: (L x W x D/L x Dia)<br>Electrical/Mechanical/etc. |            |
|                                                                              |                                                  |                                       |                                                                      |            |
| Method of Repair (change in design, materials, size, capacity etc.)          |                                                  |                                       | Cause of Damage                                                      |            |
|                                                                              |                                                  |                                       | FA                                                                   | Quantity   |
|                                                                              |                                                  |                                       | CTR                                                                  | Units      |
|                                                                              |                                                  |                                       | Both                                                                 | % Complete |
| Site #                                                                       | Damage Component<br>Material/Model/Type/Capacity | Location<br>Address/GPS/begin-end     | Damage Dimensions: (L x W x D/L x Dia)<br>Electrical/Mechanical/etc. |            |
|                                                                              |                                                  |                                       |                                                                      |            |
| Method of Repair (change in design, materials, size, capacity etc.)          |                                                  |                                       | Cause of Damage                                                      |            |
|                                                                              |                                                  |                                       | FA                                                                   | Quantity   |
|                                                                              |                                                  |                                       | CTR                                                                  | Units      |
|                                                                              |                                                  |                                       | Both                                                                 | % Complete |

**Component Types:** 1-Exterior Building 2-Interior Building 3-Exterior Site 4-Vehicle 5-Equipment 6-Contents (Specify Each Component) 10-Median 11-Guardrail 12-Lighting 13-Signage 14-Culvert 15-Wall 16-Armor 17-Other (specify)

**Cause of Damage:** 1- Surface water flooding 2-Wind Driven Rain 3-Sewer Back up 4-Foundation Seepage 5-Lightning 6-High Winds 7- Rising Water or Storm Surge 8-Wind Blown Debris 9-Earthquake 10- Fire 11- Earthquake 12- Electrical Power Surge 13- Snow or Ice 14- Other

Applicant Representative Initials: \_\_\_\_\_

Recipient Authorized Representative Initials (if applicable): \_\_\_\_\_

Work Order # (if applicable): 85751 Damage # 1266520

**NOTE FOR SITE INSPECTOR:** Please ask the Applicant representative the following questions. Although the PDMG may have already asked some of these questions, the Applicant representative at the site inspection may have additional information. Use the additional Notes section to record any additional explanation.

**Mitigation Considerations**

FEMA Public Assistance encourages protection of disaster-damaged facilities by providing assistance for cost-effective hazard mitigation measures that reduce or eliminate the risk of similar damage from happening again in a future event. For each question, elaborate on the answer in the space provided for comments.

1. Identify the specific cause of damage (such as water flowed into the basement through the stairwell, floodwater rose 3 FT high on the first floor, wind blew off the roof covering, and rainwater entered the building, windblown rain entered around the windows and doors, etc.).
2. Does the Applicant plan to perform additional work to protect damaged facilities against similar damage in a future event?

High Winds

☐ Yes☒ No☐ Unsure

Comments:

Will the Applicant provide a proposal for hazard mitigation work?

☐ Yes☒ No☐ Unsure

Comments:

4. Would the Applicant like FEMA to prepare a proposal for hazard mitigation work?

☐ Yes☒ No☐ Unsure

Comments:

**Insurance Considerations**

FEMA is legally prohibited from duplicating benefits from other sources and will reduce eligible costs by the amount of insurance proceeds received.

Does the damaged facility have insurance coverage and/or is it an insurable risk (e.g., buildings, equipment, vehicles)?

☒ Yes☐ No☐ Unsure

Comments:

Public Risk Management Program

**Environmental & Historic Preservation Considerations**

FEMA is required to ensure that work complies with applicable environmental and historic preservation laws, regulations, and executive orders.

Is the damaged facility(ies) located within a floodplain or a coastal high hazard area and/or does it have an impact on a floodplain or wetland? Can the project site be impacted by flooding? Will work occur within 200 feet of a waterway/waterbody?

☐ Yes☒ No☐ Unsure

Comments:

2. Is the damaged facility located within or adjacent to a Coastal Barrier Resource System Unit or an Otherwise Protected Area?

☐ Yes☒ No☐ Unsure

Comments:

Applicant Representative Initials:   P  Page 6 of 7

Applicant Authorized Representative Initials (if applicable): \_\_\_\_\_



|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>3. Will the proposed facility repairs/reconstruction change the pre-disaster conditions (e.g., footprint – including depth of footprint, material, location, capacity, use or function), including construction of an access road, establishing a staging area, or other work outside of the constructed right-of-way? If yes, describe changes or work outside of the constructed right-of-way. Provide detailed justification for the change (e.g. codes and standards).</p> <p><input type="checkbox"/> Yes<br/><input checked="" type="checkbox"/> No<br/><input type="checkbox"/> Unsure</p> <p>Comments:</p> | <p>4. Is the damaged facility(ies) listed on a local/state/national historic register or is it a locally recognized landmark? Is it older than 45 years? (Provide the age of the facility) Are there more, similar buildings near the site?</p> <p><input type="checkbox"/> Yes<br/><input checked="" type="checkbox"/> No<br/><input type="checkbox"/> Unsure</p> <p>Comments:</p> |
| <p>5. Are there any large, undeveloped or undisturbed areas on, or near, the project site? (Select "yes" if there are large tracts of forestland, grassland, or naturally preserved areas, etc.)</p> <p><input type="checkbox"/> Yes<br/><input checked="" type="checkbox"/> No<br/><input type="checkbox"/> Unsure</p> <p>Comments:</p>                                                                                                                                                                                                                                                                              | <p>6. Are there any hazardous materials at or adjacent to the damaged facility?</p> <p><input type="checkbox"/> Yes<br/><input checked="" type="checkbox"/> No<br/><input type="checkbox"/> Unsure</p> <p>Comments:</p>                                                                                                                                                             |
| <p>7. Are there any other environmental or controversial issues associated with the damaged facility and/or work item? (select yes if facility is a road maintained by a Tribal Government or if the project necessitates the establishment of a new borrow area or the horizontal expansion of an existing borrow area.)</p> <p><input type="checkbox"/> Yes<br/><input checked="" type="checkbox"/> No<br/><input type="checkbox"/> Unsure</p> <p>Comments:</p>                                                                                                                                                     | <p>8. Are there any known endangered species in the work area?</p> <p><input type="checkbox"/> Yes<br/><input checked="" type="checkbox"/> No<br/><input type="checkbox"/> Unsure</p> <p>Comments:</p>                                                                                                                                                                              |
| <p>Additional Notes / Comments:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                     |

Applicant Representative Initials: \_\_\_\_\_

Recipient Authorized Representative Initials (if applicable): \_\_\_\_\_







# **Investigative Report**

**Public Risk Management**  
**Wauchula Municipal Airport**  
**Hurricane Ian**  
**Damage Assessment**

ESi Project No: 94586  
File No: 4046736



2870 Scherer Dr, Suite 200  
St. Petersburg, FL 33716

# Investigative Report

## Public Risk Management Wauchula Municipal Airport Hurricane Ian Damage Assessment

ESi Project No: 94586  
Crawford File No: 4046736

### Report Prepared For:

Mr. Bill Stewart  
National General Adjuster  
Crawford & Company  
101 Marketside Avenue, Suite 404-138  
Ponte Vedra, Florida 32081

### Submitted by:



Digitally signed by  
Andrew W. Johnson, P.E.  
69933 State of Florida  
Date: 2023.03.09 16:00:28  
-05'00'

Andrew W. Johnson, P.E., S.E.  
Principal & Senior Director,  
Civil & Structural Engineering  
FL License No. 69933/Expires 2/28/2025

### Technical Review by:

Jennifer E. Jirschevske, P.E., S.E.  
Senior Consultant  
Florida P.E. License No. 85980

This Item has been electronically signed and sealed by Andrew W. Johnson, P.E., S.E. on March 9, 2023, using Digital Signature.

Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies.

March 9, 2023  
Date

March 9, 2023  
Date

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[www.engsys.com](http://www.engsys.com)

## Introduction

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Engineering Systems Inc. (ESi) was retained by Crawford & Company to perform an investigation of claimed damage to Wauchula Municipal Airport located at 1202 Maurice 'Sonny' Clavel Road, Wauchula, Florida 33873. A claim was filed by the Insured, Public Risk Management, as a result of damage to the subject property which was reportedly the result of the weather associated with Hurricane Ian that occurred on or around September 28, 2022, the claimed date of loss.

## Purpose

The purpose of this investigation was to 1) verify the claimed cause and origin of the observed damage to the subject property; 2) determine the extent of damage to the subject property; and 3) provide a recommended scope of repair for the subject property for the damage that was the result of Hurricane Ian which occurred on the reported date of loss.

## Material Obtained and Reviewed

- Applicable sections of the 2020 Florida Building Code and the 2020 Florida Existing Building Code;
- The Hardee County Property Appraiser records were reviewed from the website <https://hardeepa.com/>;
- CompuWeather Hurricane Ian Maps prepared for use by Engineering Systems Inc. dated October 20, 2022 (*Appendix B*); and
- EagleView ClaimsReady Report for the subject property (*Appendix E*).

## Background

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Refer to *Appendix A* for a site location map and regional aerial images. The subject property is located in Hardee County, Florida. The property consists of asphalt runways, concrete and asphalt taxiways, four single-story aircraft hangars, a single-story maintenance shed, a single-story distribution center, and a single-story pre-manufactured residence. ESi inspected all four (4) aircraft hangars, the distribution center, and the pre-manufactured residence, as requested by Mr. Ward Grimes, a representative from the Insured, at the time of the inspection.

A review of the Hardee County Property Appraiser records indicated that the aircraft hangars, distribution center, and residential trailer were built between 1978 and 2009. While available records do not indicate specific building designations, based on the square footages indicated in the records, the following dates of construction were ascertained: Hangar A in 1986, Hangar B in 1991, Hangar D in 1995, Hangar C in 2000, the distribution center in 2009, and the residential trailer in 1978. The property, as a whole covers an area of approximately 120-acres and is located on the southwest corner of the intersection of Alton Carlton Road and Vandolah Road. Reference **Figure 1** for an aerial view of the subject property. Reference **Figure 2** for the individual building designations.

The aircraft hangars and distribution center consisted of structural steel beams and columns, light gauge metal purlins and girts, and light gauge metal roof and wall paneling. The hangar doors were constructed with steel frames and metal panel siding. The pre-manufactured residence was affixed to concrete masonry unit (CMU) piers and was clad with vinyl panel siding. The roof covering for the residence consisted of 3-tab asphalt shingles.



**Figure 1** – (Google Earth) Aerial view of the subject property. The red outline indicates the approximate extents of the subject property.



**Figure 2** – (Google Earth) Aerial view of the subject property with building designations.

## Investigation

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Pursuant to your request, Ms. Ashley Solek, EI and Mr. Harold Barrentine of ESi, performed an inspection of the subject property on December 15, 2022. A representative of the City of Wauchula, Mr. Ward Grimes, as well as a consultant with In-Line consulting met with ESi at the beginning of the inspection.

The scope of this investigation included an on-site visual inspection of the four (4) aircraft hangars, the distribution center, and the pre-manufactured residence, as requested by Mr. Ward Grimes at the time of the inspection. The inspection generally consisted of visual observations, photographs, written notes, and measurements. ESi also evaluated available weather data estimating the potential maximum wind speeds and rainfall that affected the structures at the subject property during the weather event on the claimed date of loss. No destructive or other material testing was performed during or after the inspection.

ESi's findings and conclusions were based on identifying the extent of structural damage to the building components that was directly attributable to the weather event that occurred on the claimed date of loss. This assessment was then used to develop the scope of repair required to restore the buildings to their pre-loss condition. The conclusions in this report are representative of ESi's visual observations, technical interpretation of the results of the weather data acquired during the investigation, discussions held during the site investigation, and professional experience.

## On-Site Inspection Observations

Please refer to Appendix C for a detailed list of the storm related damage observed, including recommended repairs for each item, and *Appendix D* for photographs from our site inspection of the subject property. According to Mr. Grimes, no damage to the maintenance shed at the southwest corner of the property was identified after the storm. The following is a summary of our findings:

1. The structural steel framing members at all hangars and the maintenance shed did not display any damage. The majority of the demising walls and non-load-bearing components at Hangar D were damaged and/or missing at the time of ESi's inspection. This includes the wall panels, girts, and columns comprising the interior demising walls.
2. All of the columns and sliding doors located along the north elevation of Hangar D were damaged and/or missing at the time of ESi's inspection. The damage consisted of bent and/or punctured metal panels, girts, and the metal channel track.
3. Sliding metal panel doors at various hangars had partially or fully detached from the steel framing at several locations. The majority of these doors were moved to a nearby field at the subject property before ESi's inspection.
4. Metal wall paneling still attached to the steel framing exhibited minor damage at hangars A, B, C, and D consisting of scrapes and denting. The metal panels were 3'-0" in width and ran the entire height of the building, approximately 14'-0".
5. The hangar structures and sliding doors were comprised of z-shaped girts spaced at 5'-0" on center supported by 8" by 3 ½" C-channel columns. The steel frame was constructed with tapered steel trusses supported by 10" by 6" wide flange steel columns.

6. The standing seam metal roof paneling throughout the property did not exhibit any damage visible from the ground. Due to the height of the roof, ESi was unable to access the top side of the roof at the time of the inspection.
7. A tarpaulin (tarp) secured with sandbags was visible at the northeast corner of the roof at the residential structure. The tarp was removed at the time of ESi's inspection. Missing, creased, and/or torn shingles were visible at the roof coverings. No damage to the standing seam metal roof panels over the porch was observed.
8. The residential structure also exhibited staining of the ceiling texturing at multiple locations along the exterior walls.
9. Sections of the metal roof panels were missing at the distribution center. Damaged purlins and girts were also observed at this location. The purlins and girts consisted of 4" by 6" light gauge metal z-sections.

## Meteorological Data

Hurricane Ian made landfall as a Category 4 hurricane on September 28, 2022 in southwest Florida on Cayo Costa Island with maximum sustained winds of 150 mph. A few hours later, by 7pm EST, Hurricane Ian had weakened to a Category 3 hurricane with maximum sustained winds of 125 mph, according to the National Hurricane Center Cyclone Report for September 28, 2022.

The subject property was located north of the eye of the hurricane as it made landfall, and thus was subjected to winds from a northwesterly, westerly, and southerly directions. **Figure 3** below shows Hurricane Ian's trajectory. Note that the rotation of the hurricane is counterclockwise.

Upon review of Hurricane Ian maps provided by CompuWeather (reference *Appendix B*), the subject property was located in a region that experienced between 18 and 22 inches of total rainfall. In the vicinity of the subject property, the maximum sustained wind recorded during September 26 through October 1, 2022 was 70 to 80 mph and the peak 3-second wind gusts recorded were 90 to 100 mph. For reference, Category 1 Hurricanes are classified with sustained winds of between 74 and 95 mph and category 2 hurricanes between 96 and 110 mph.

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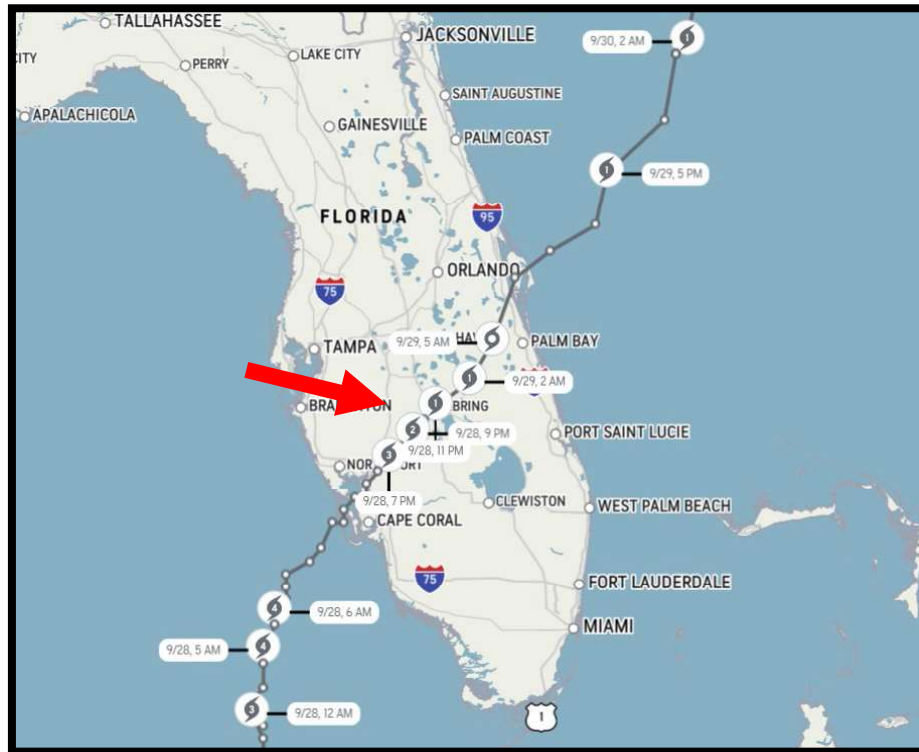


**Figure 3** – Imagery of Hurricane Ian’s trajectory. Approximate location of the subject property is indicated by the red arrow.

The review of available weather data is intended to evaluate potential weather events that may have likely impacted the subject property on the reported date of loss and is not intended to be a site specific or exhaustive review of weather data or events that may have impacted the subject property. Actual weather conditions at the subject property may vary from conditions at reporting stations. If confirmation of weather events and conditions impacting a specific property on a given date is required, ESI suggests obtaining site-specific weather reports and analysis from a certified consulting meteorologist.

## Building Code Analysis

Hardee County, Florida has officially adopted the 2020 Florida Building Code (FBC), 7th Edition. Therefore, all building code related recommendations or observations made in this report will use the elements of this building code as a basis for reference. The 2020 Florida Existing Building Code (FEBC) is used as applicable for individual items pertaining to existing buildings found at this location. We will take this opportunity to note the major portions of the 2020 Florida Existing Building Code (“the Code”) that will be typically applicable to this loss:

1. The Code draws a clear distinction between the words “repair” and “alteration.” Repair is defined in Section 202 as “the patching or restoration of materials, elements or equipment.” The Alterations definition in Section 202 is stated as “any construction or renovation to an existing structure other than a repair or addition.” These definitions are also echoed in Section 202 of the FBC. Therefore, “Repairs” are distinguished from “Alterations” and as such, limit the Code compliance responsibilities associated with those “Repair” items.



Repairs include the patching or restoration or replacement of damaged materials, elements, equipment, or fixtures for the purpose of maintaining such components in good or sound condition with respect to existing loads or performance requirements. When an existing building undergoes some form of reconstruction or renewal, the work is defined as a repair. The definition of repair in the Code implies that a repair is limited to work on the item and does not include complete or substantial replacement or other new work.

2. The Code defines “substantial structural damage” in Section 202 as *“A condition where one or both of the following apply:*
  - a) *The vertical elements of the lateral force-resisting system have suffered damage such that the lateral load carrying capacity of any story in any horizontal direction has been reduced by 33 percent from its predamage condition.*
  - b) *The capacity of any vertical component carrying gravity load, or any group of such components, that supports more than 30 percent of the total area of the structure’s floor(s) and roof(s) has been reduced more than 20 percent from its pre-damage condition and the remaining capacity of such affected elements, with respect to all dead and live loads, is less than 75 percent of that required by this code for new buildings of similar structure, purpose and location.”*

Further discussion with regard to how this building code section applies to the subject property is provided in the Damage Assessment section of this report.

3. The Code states in Section 406.2.1 that *“For damage less than substantial structural damage, the damaged elements shall be permitted to be restored to their predamage condition...”* This statement, by implication, accepts the position that elements of the building that, in their original condition, were not compliant with the current requirements of the FBC/FEBC, may therefore be replaced in kind without modification. It is our opinion that this “replacement” would also include the repairs to the original configurations of rooms, site elements and other building appurtenances.

## **Damage Assessment**

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Please refer to *Appendix C* for a summary tabulation of the wind damage observed to the buildings and the inspected interior areas of the property, including repair recommendations for each line item of damage. Please also refer to *Appendix D* for representative photographs, as referenced in the summary tabulations.

### **Hangars and Distribution Center**

The most prevalent damage attributable to Hurricane Ian is to the corrugated light gauge metal wall paneling and the doors to the aircraft hangars. High winds exert ‘positive’ pressures on windward sides of buildings, exerted towards the surface, whereas the side walls and leeward walls of buildings experience ‘negative’ suction pressures away from the surface. Given the changing wind direction the subject property experienced during the hurricane, it is likely that all sides of the building were at one point subjected to high wind pressures. This resulted in the light gauge metal wall paneling detaching from the supporting light gauge metal girts and, in some instances, the girts themselves detaching from the supporting structural steel. Several of the non-

load bearing members, such as the girts and channel columns were warped, bent, and/or had the fasteners pull out. These conditions were observed throughout Hangar D, which was located at the southwest corner of the property. This damage is consistent with high winds and is reasonably attributed to Hurricane Ian. This damage is not considered 'substantial structural damage' as defined by the Florida Building Code, as none of the damaged vertical elements supported the roof gravity load, nor were they part of the lateral force resisting system for the structure. Thus, the damaged elements can be replaced in like kind and quality.

Furthermore, the wind speeds experienced at the subject property were high enough to displace the panels, as well as various other debris around the hangars and the rest of the property. This resulted in impact damage to panels that remained attached to the buildings. The structural steel framing also exhibited some damage which similarly is attributable to windborne debris. While much of this impact damage appeared to be attributable to the hurricane, some of the damage appeared to be existing. For example, rusted fasteners, which did not match the typical fasteners, connected visibly damaged adjacent panels. Their rusted state indicates the fasteners had been exposed to weathering for some time and, therefore, were likely installed prior to the hurricane. Additional examples include isolated dents with little to no scrape marks, as well as minor dents and scrapes that occurred within the first 24-inches from the ground of the panels. The damage as indicated in *Appendix C* only includes wall panels that had detached from the building or had been damaged by windborne debris, and does not include damage that is not attributable to wind or wind driven rain from Hurricane Ian. Note that the quantities of damage are noted in *Appendix C*, however additional materials may be required to facilitate the repairs of the damaged areas.

Similar to exterior walls, roofs see a combination of positive pressures and negative pressures. As stated previously, at the time of the inspection, ESi was unable to access the topside of the roof. However, no punctures or missing panels were observed from the accessible interior spaces or visible from the exterior of hangars A, B, C, or D. Several of the roofing panels, as well as the purlins, were missing and/or damaged at the distribution center, likely as a result of high negative pressures. This damage was consistent with high winds and can be attributed to Hurricane Ian.

## **Residential Structure**

The pre-fabricated residence did not display signs of movement due to the high winds, or exhibit any exterior wall damage. Several asphalt shingles were missing, torn, and/or creased throughout the roof, including at the ridges and eaves. Wind pressures are typically higher at ridges and eaves. Therefore, the missing and damaged shingles at these locations are consistent with high wind pressures. This damage is reasonably attributable to Hurricane Ian. The damage to the field shingles was sporadic throughout the roof covering and is likely attributable to the high wind pressures experienced during Hurricane Ian. The roof coverings at the subject property were approximately thirteen (13) years of age at the time of the hurricane. Due to the deterioration of the shingles, localized repairs may be difficult to perform without substantial collateral damage to adjacent roof shingles.

A section of the plywood roof sheathing was visible at the eave. The damaged shingles at this location provided a wind created opening through which moisture was able to enter the building during Hurricane Ian. This resulted in moisture damage to the plywood sheathing, as well as allowing for water infiltration to the building interior. Moisture stains on the ceiling at the interior of the residence was observed at the time of ESi's inspection. ESi therefore recommends the removal and replacement of the stained drywall ceiling in this area.

## Conclusions

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Based on the above referenced investigation and analysis, the following conclusions are provided to a reasonable degree of engineering certainty:

1. Based on the Hurricane Ian maps provided by CompuWeather (reference *Appendix B*), the maximum sustained wind recorded during September 26-October 1, 2022, in the vicinity of the subject property was 70-80 mph, and the peak wind gust recorded was 90-100 mph. The rainfall at the subject property was in the range of 18 to 22 inches.
2. Structural damage attributable to Hurricane Ian is indicated in *Appendix C* and includes damaged and missing corrugated metal wall and roof paneling, damaged and missing steel purlins and girts, damaged steel columns, and damaged steel door tracks at the aircraft hangars, as well as missing roof shingles and moisture damage at the interior of the residential structure.

ESi reserves the right to supplement or amend these findings and conclusions if additional information becomes available or based upon additional work or analysis in this matter.

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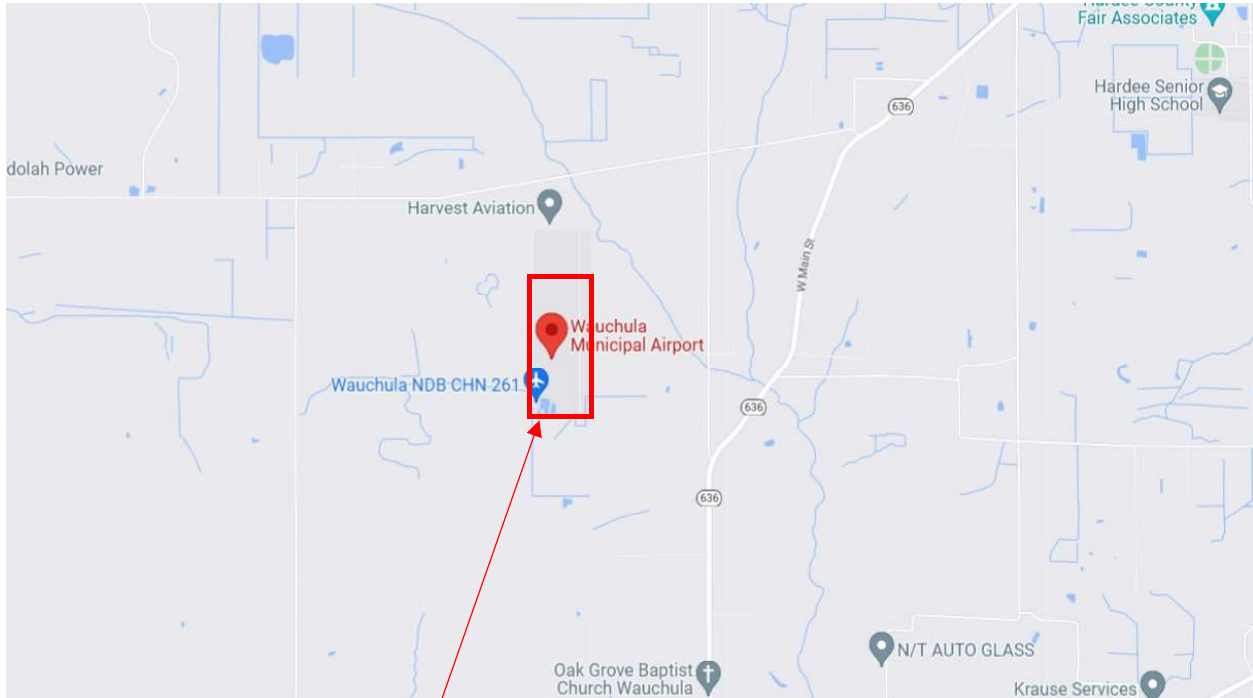
### **Attachments:**

- Appendix A: Site Location Maps and Aerial Photographs
- Appendix B: CompuWeather Hurricane Ian Maps
- Appendix C: Damage Summary
- Appendix D: Representative ESi Inspection Photographs
- Appendix E: EagleView ClaimsReady Report

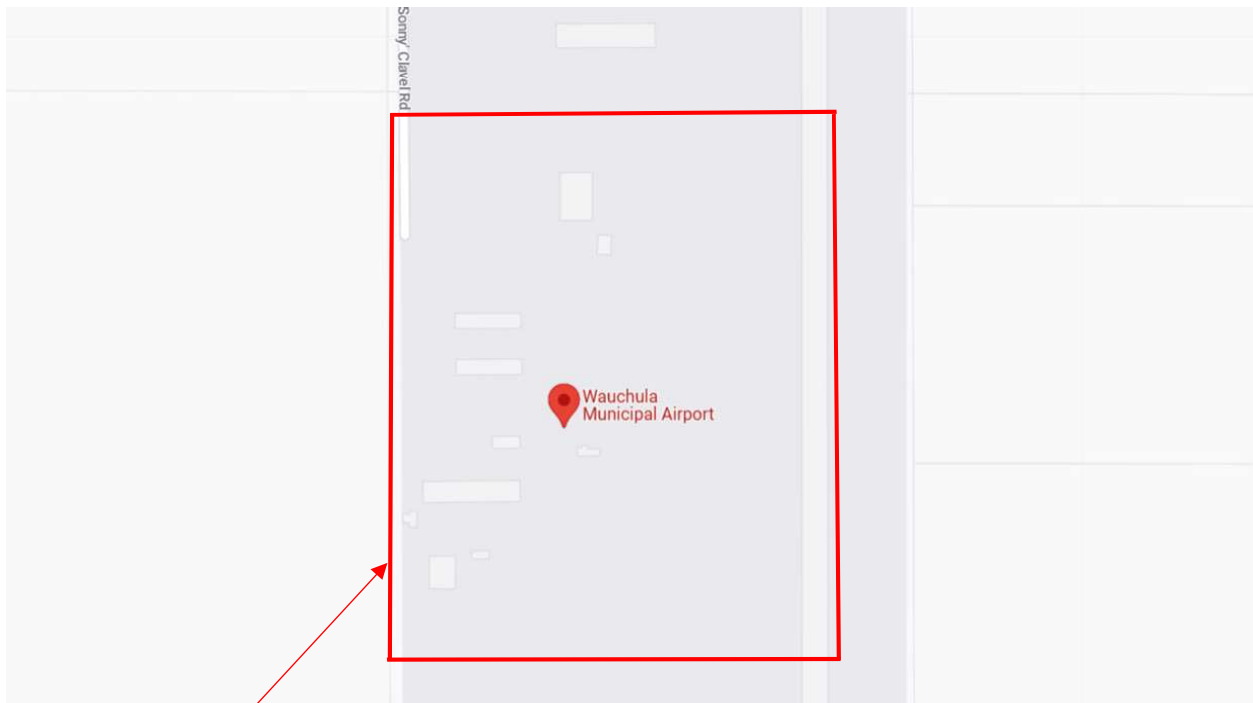
# APPENDIX A

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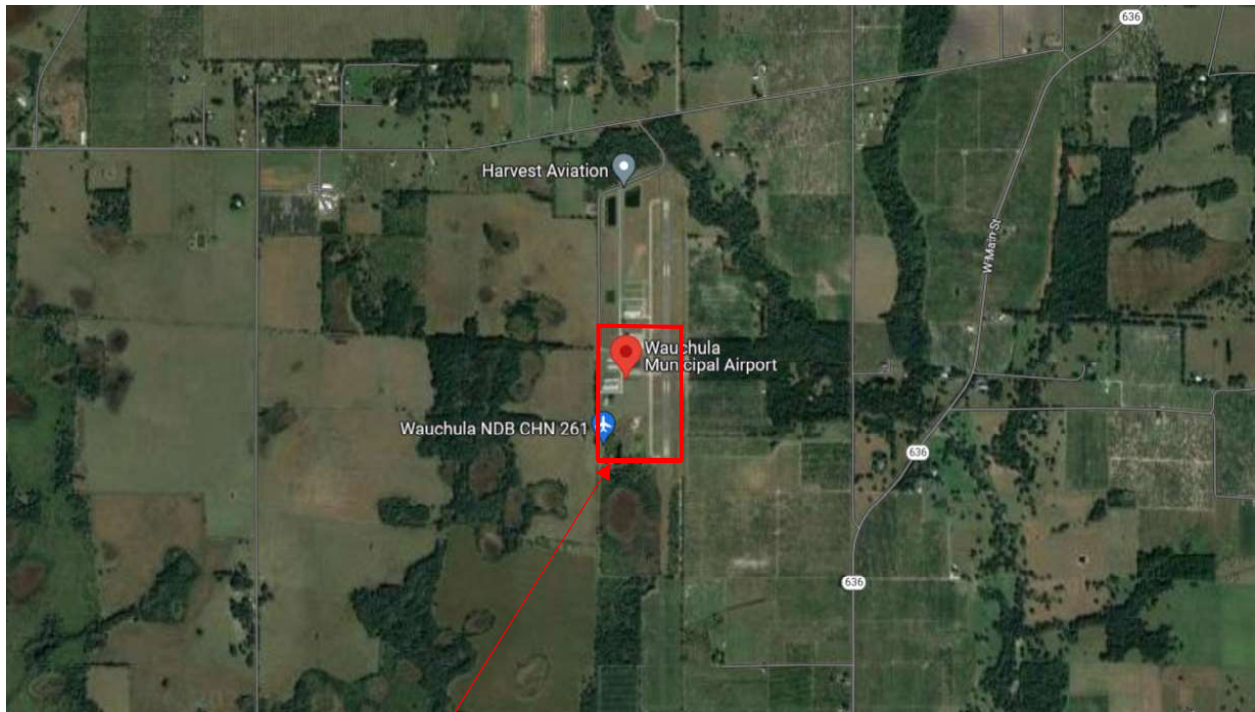
### Location Maps and Aerial Photographs



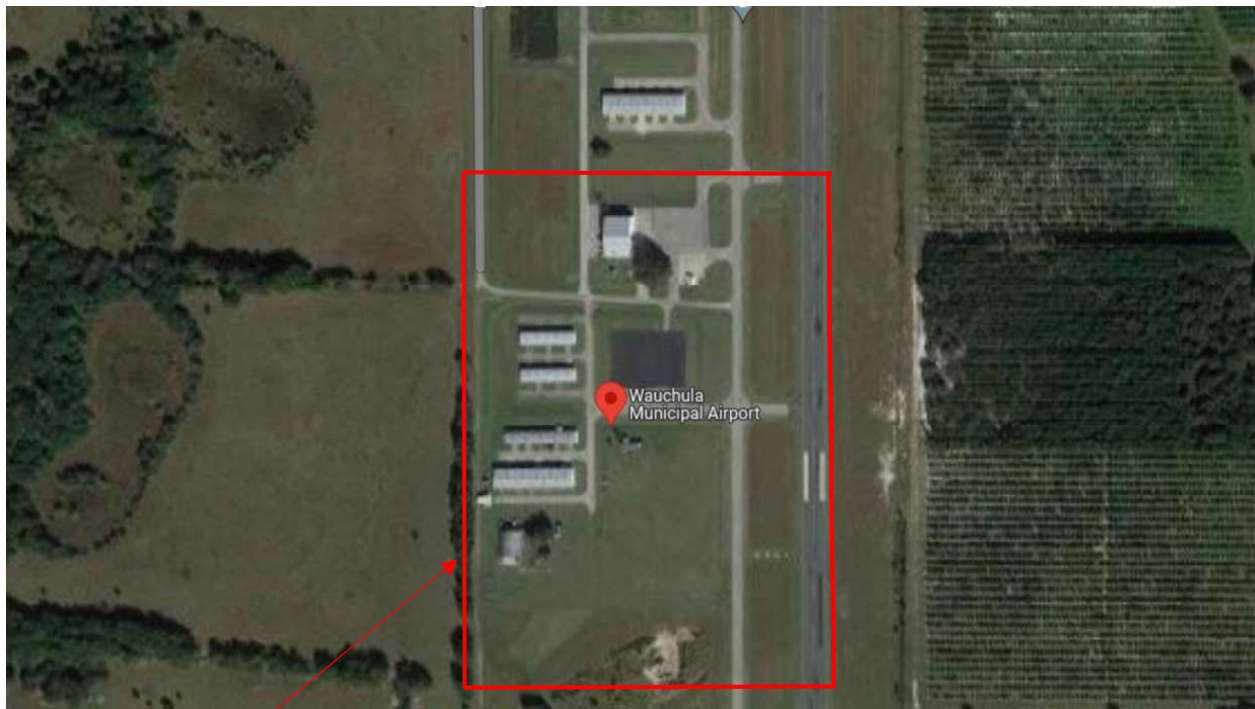
**Approximate Location of Property**



**Subject Property**



Approximate Location of Property



Subject Property

# APPENDIX B

---



# HURRICANE IAN – SEP 26 - OCT 1, 2022

**MAXIMUM SUSTAINED WIND (1 minute) MPH**

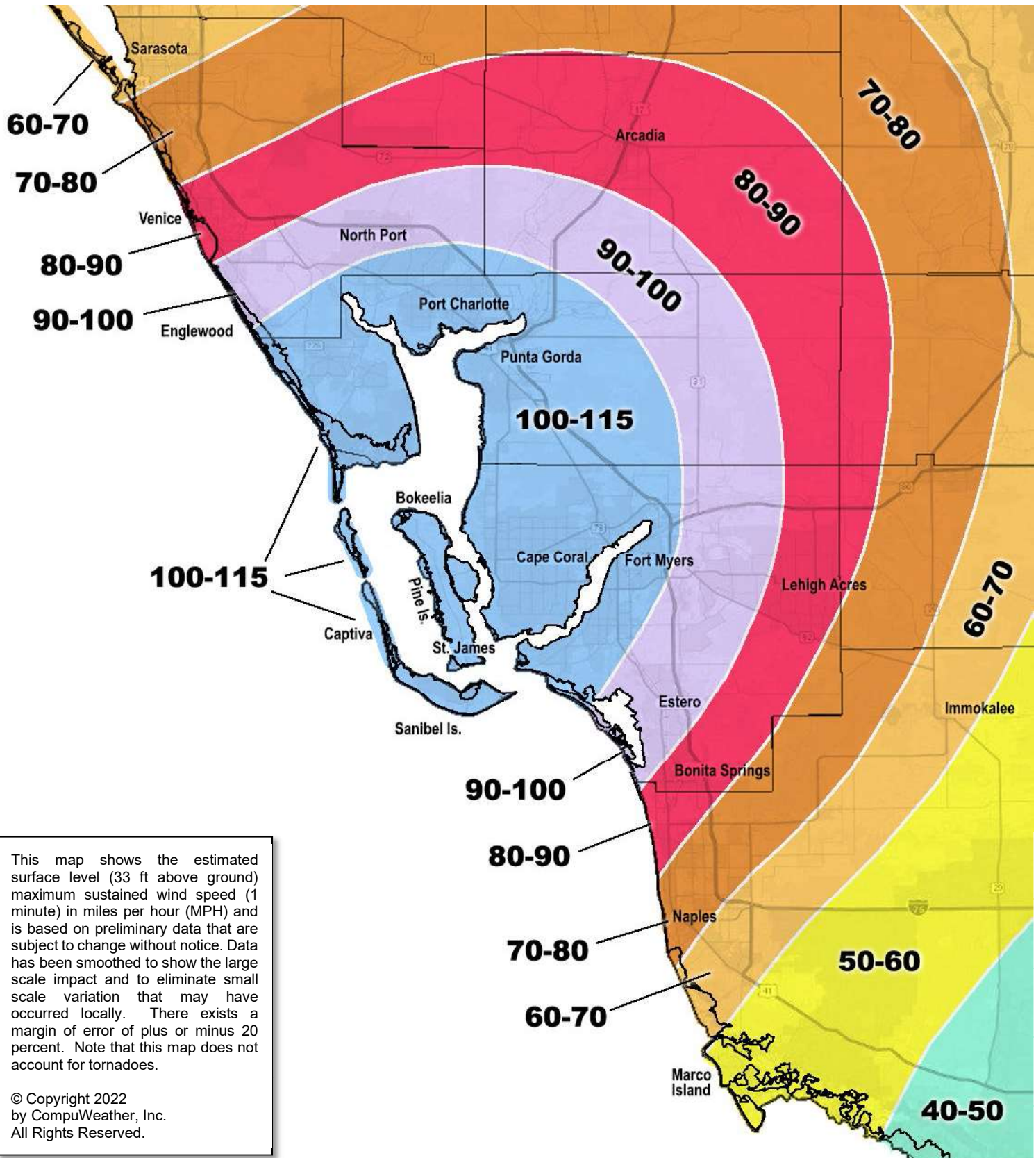
**Sarasota to Marco Island, Florida**

Prepared for use by Engineering Systems, Inc.

FOR GENERAL USE ONLY

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October 20, 2022





# HURRICANE IAN – SEP 26 - OCT 1, 2022

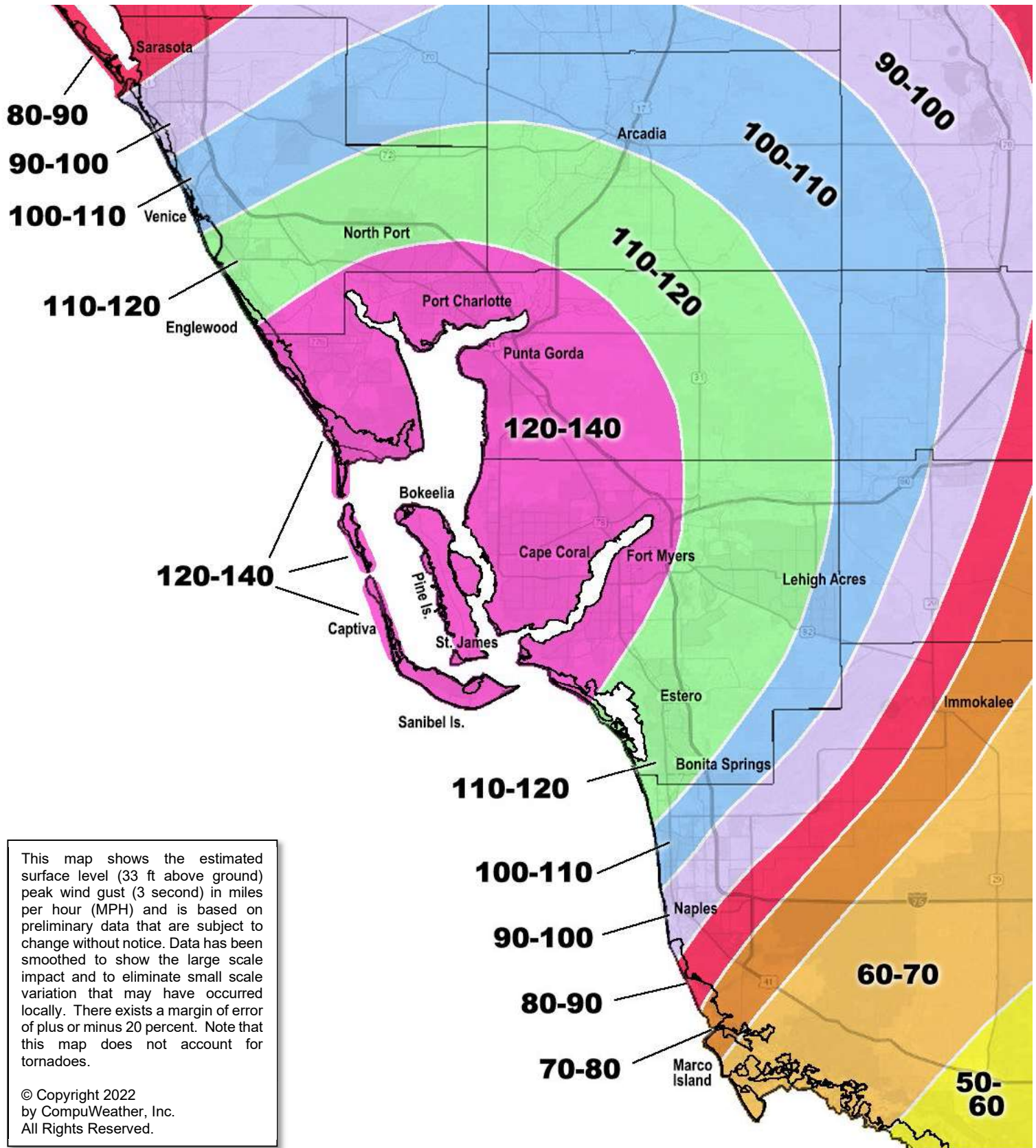
**PEAK WIND GUST (3 second) MPH**  
**Sarasota to Marco Island, Florida**

Prepared for use by Engineering Systems, Inc.

FOR GENERAL USE ONLY

Not to be retransmitted without consent from CompuWeather.

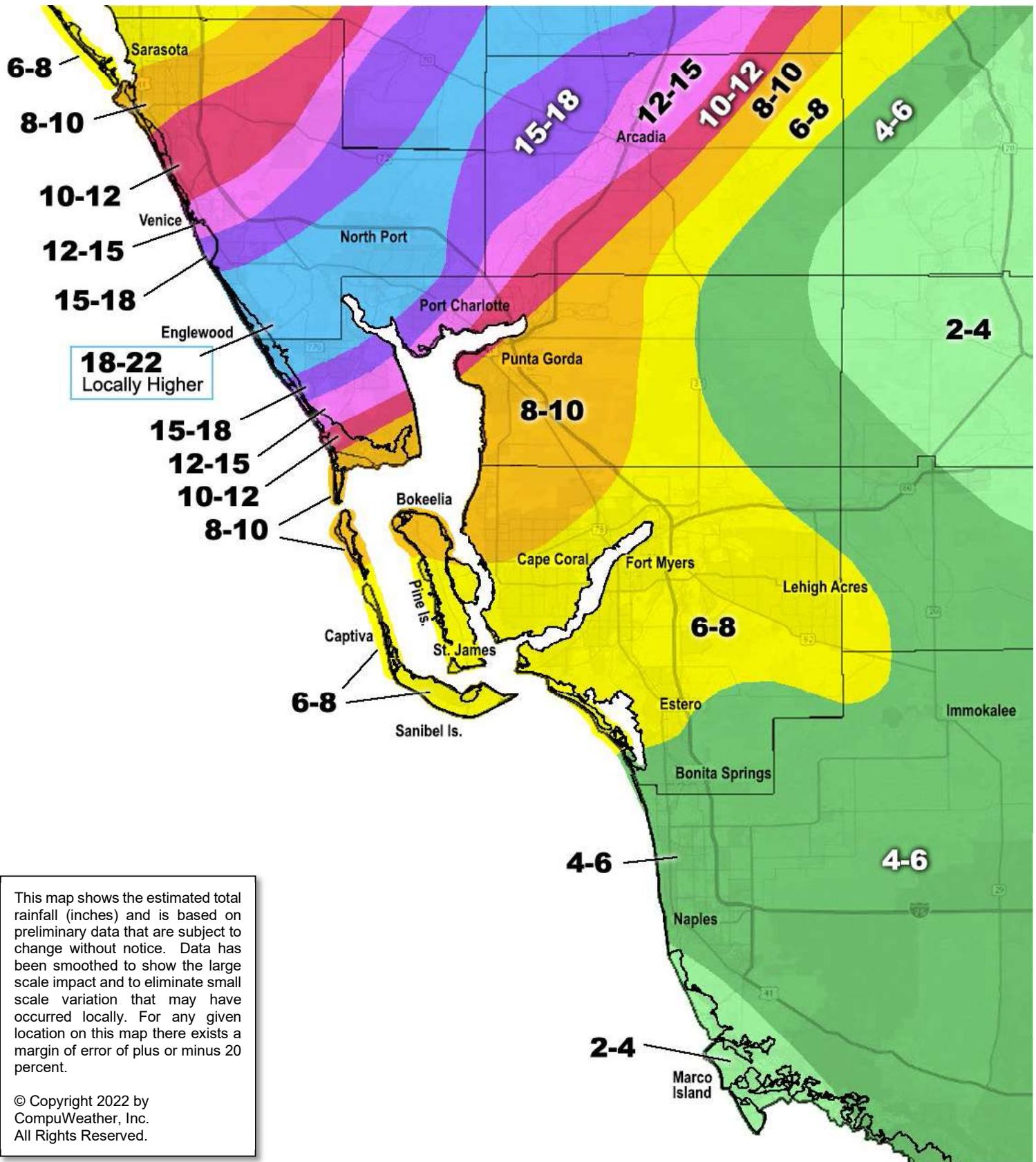
October 20, 2022



# HURRICANE IAN - SEP 26 - OCT 1, 2022

**RAINFALL (inches)**  
**Sarasota to Marco Island, Florida**

Prepared for use by Engineering Systems, Inc.  
FOR GENERAL USE ONLY  
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October 20, 2022





# HURRICANE IAN – SEP 26 - OCT 1, 2022

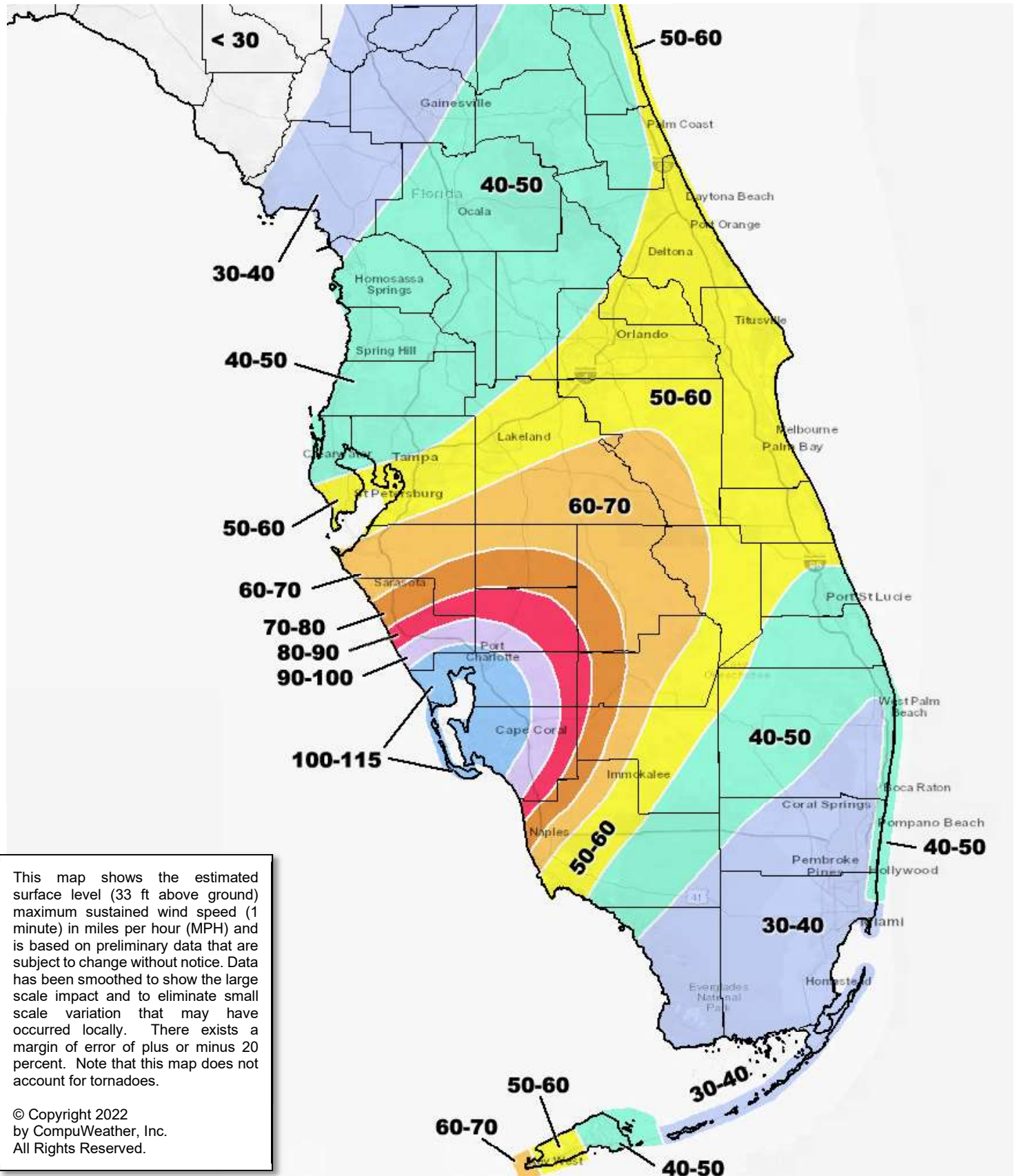
**MAX. SUSTAINED WIND (1 min) MPH – Florida Peninsula**

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October 20, 2022



# HURRICANE IAN - SEP 26 - OCT 1, 2022

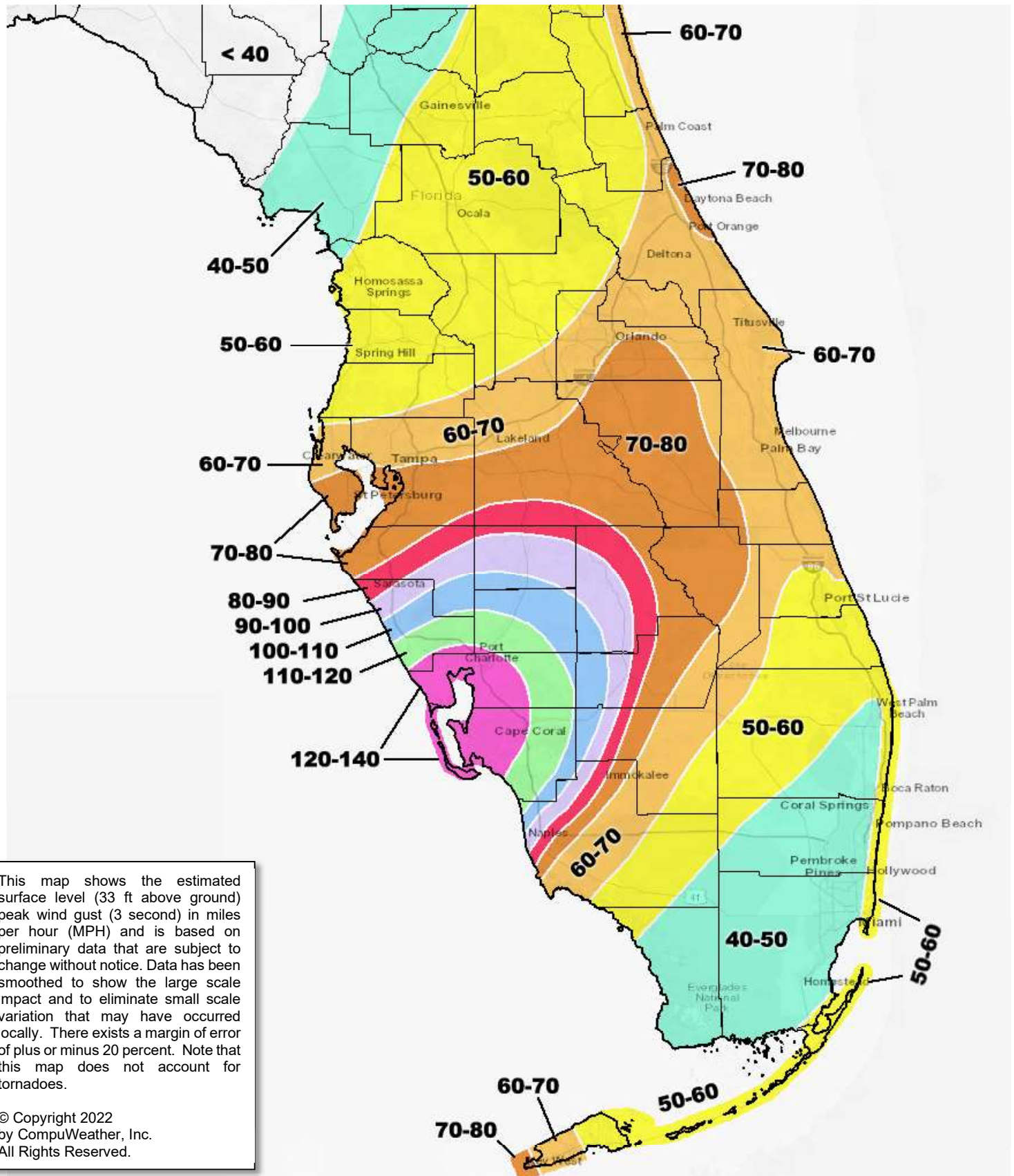
**PEAK WIND GUST (3 sec) MPH - Florida Peninsula**

Prepared for use by Engineering Systems, Inc.

FOR GENERAL USE ONLY

Not to be retransmitted without consent from CompuWeather.

October 20, 2022





# HURRICANE IAN - SEP 26 - OCT 1, 2022

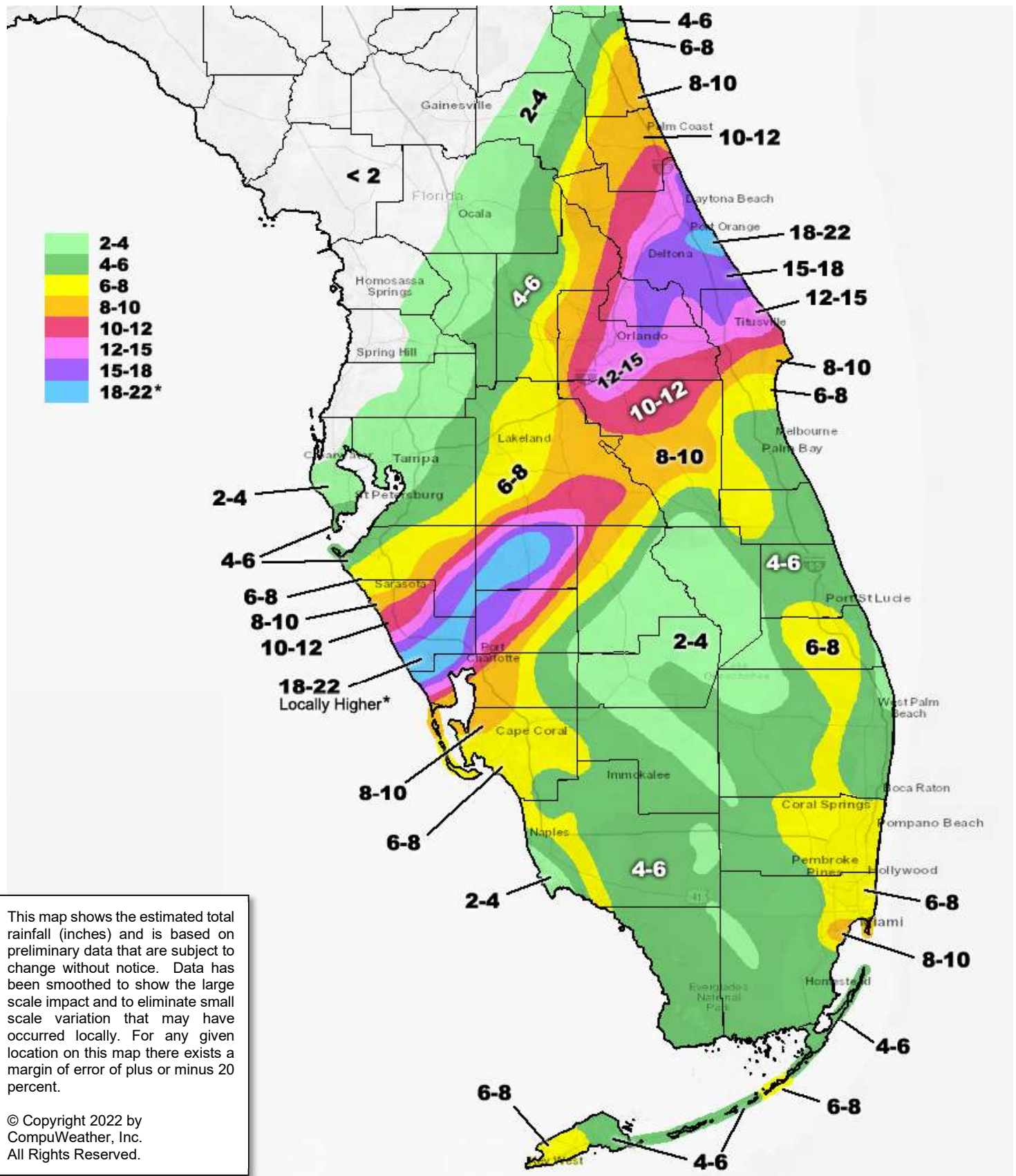
## RAINFALL (inches) - Florida Peninsula

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October 20, 2022



This map shows the estimated total rainfall (inches) and is based on preliminary data that are subject to change without notice. Data has been smoothed to show the large scale impact and to eliminate small scale variation that may have occurred locally. For any given location on this map there exists a margin of error of plus or minus 20 percent.

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# HURRICANE IAN – SEP 26 - OCT 1, 2022

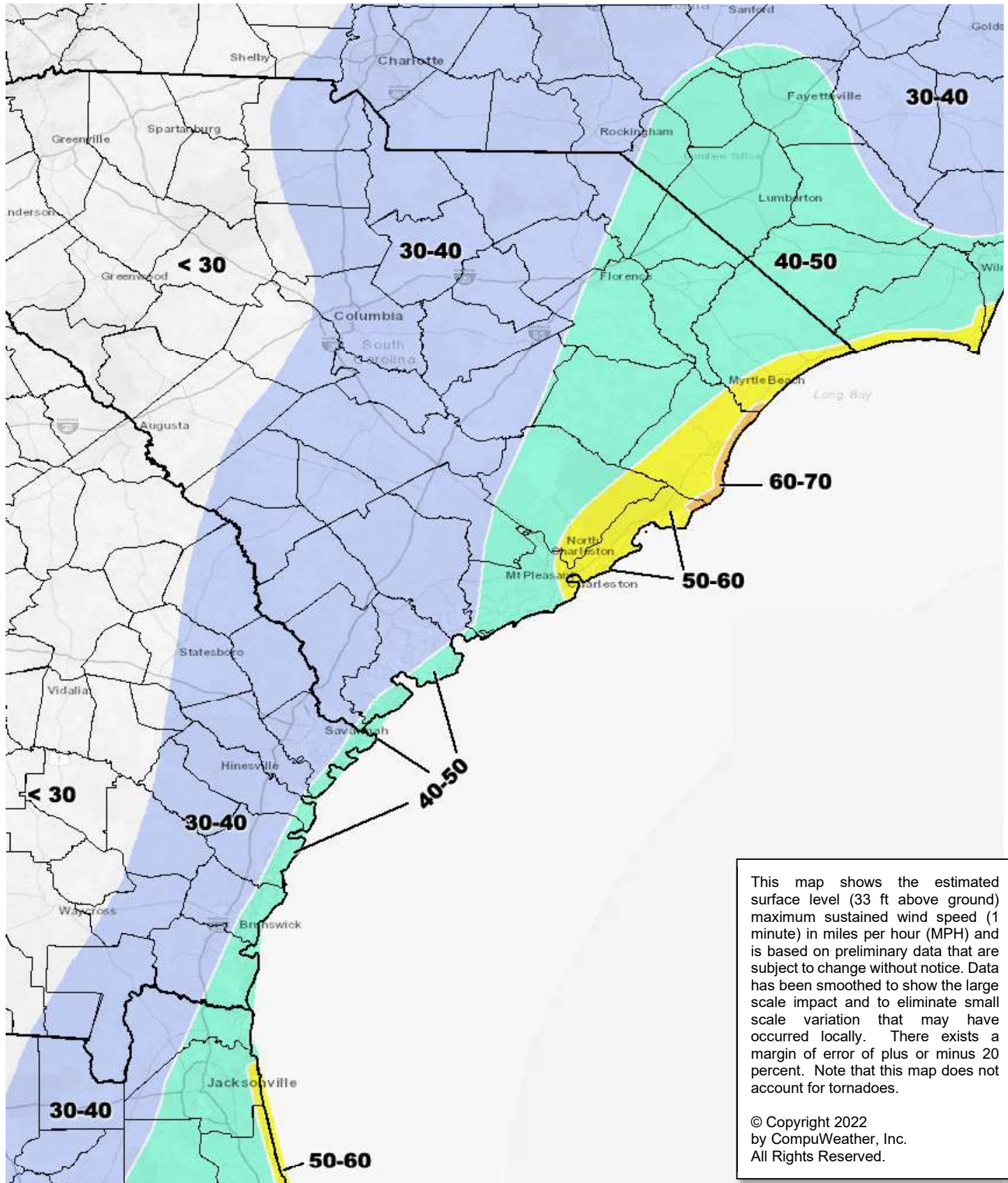
**MAX. SUSTAINED WIND (1 min) MPH – S. Carolina/Georgia**

Prepared for use by Engineering Systems, Inc.

FOR GENERAL USE ONLY

Not to be retransmitted without consent from CompuWeather.

October 20, 2022





# HURRICANE IAN – SEP 26 - OCT 1, 2022

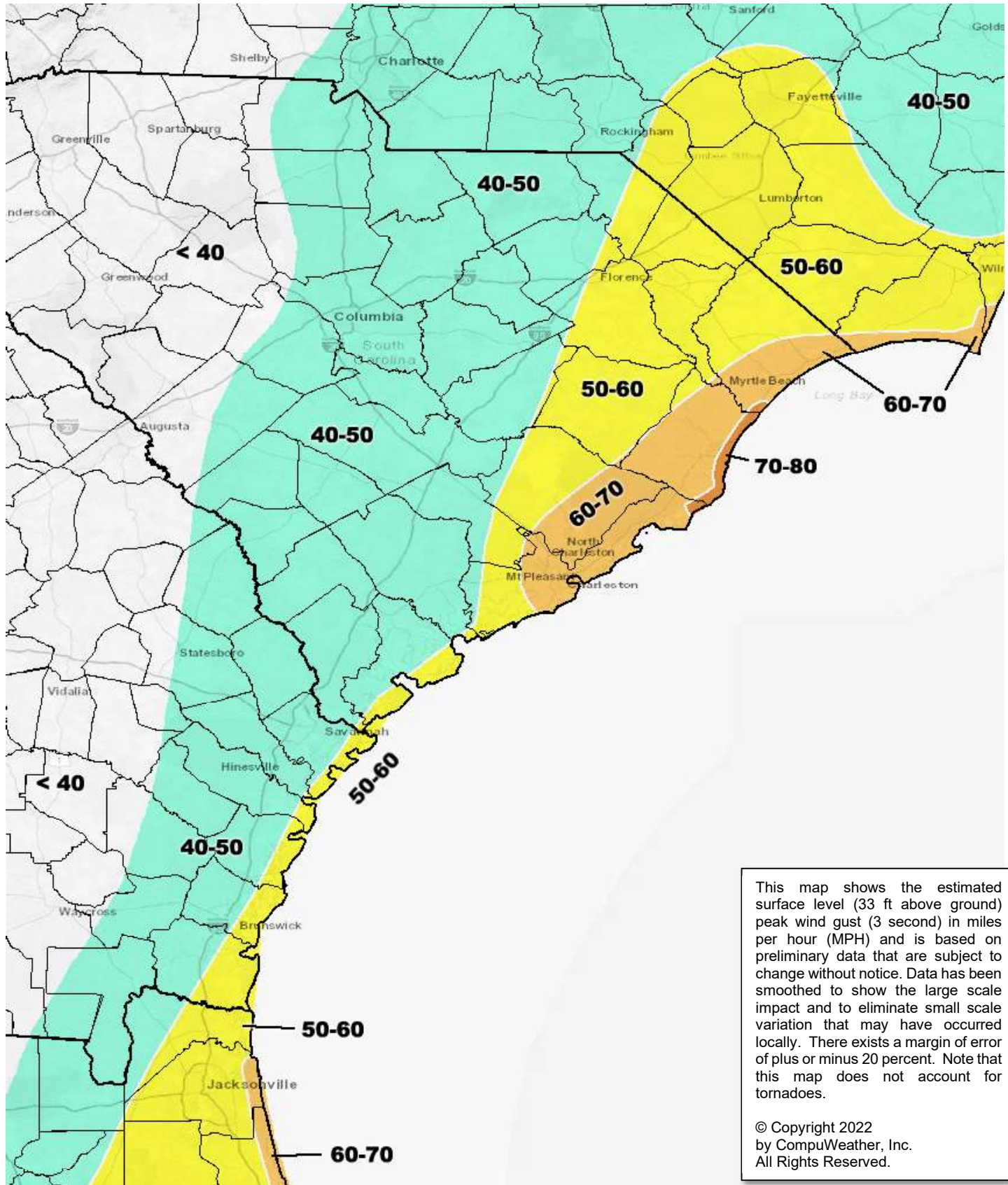
**PEAK WIND GUST (3 sec) MPH – S. Carolina / Georgia**

Prepared for use by Engineering Systems, Inc.

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Not to be retransmitted without consent from CompuWeather.

October 20, 2022



# HURRICANE IAN – SEP 26 - OCT 1, 2022

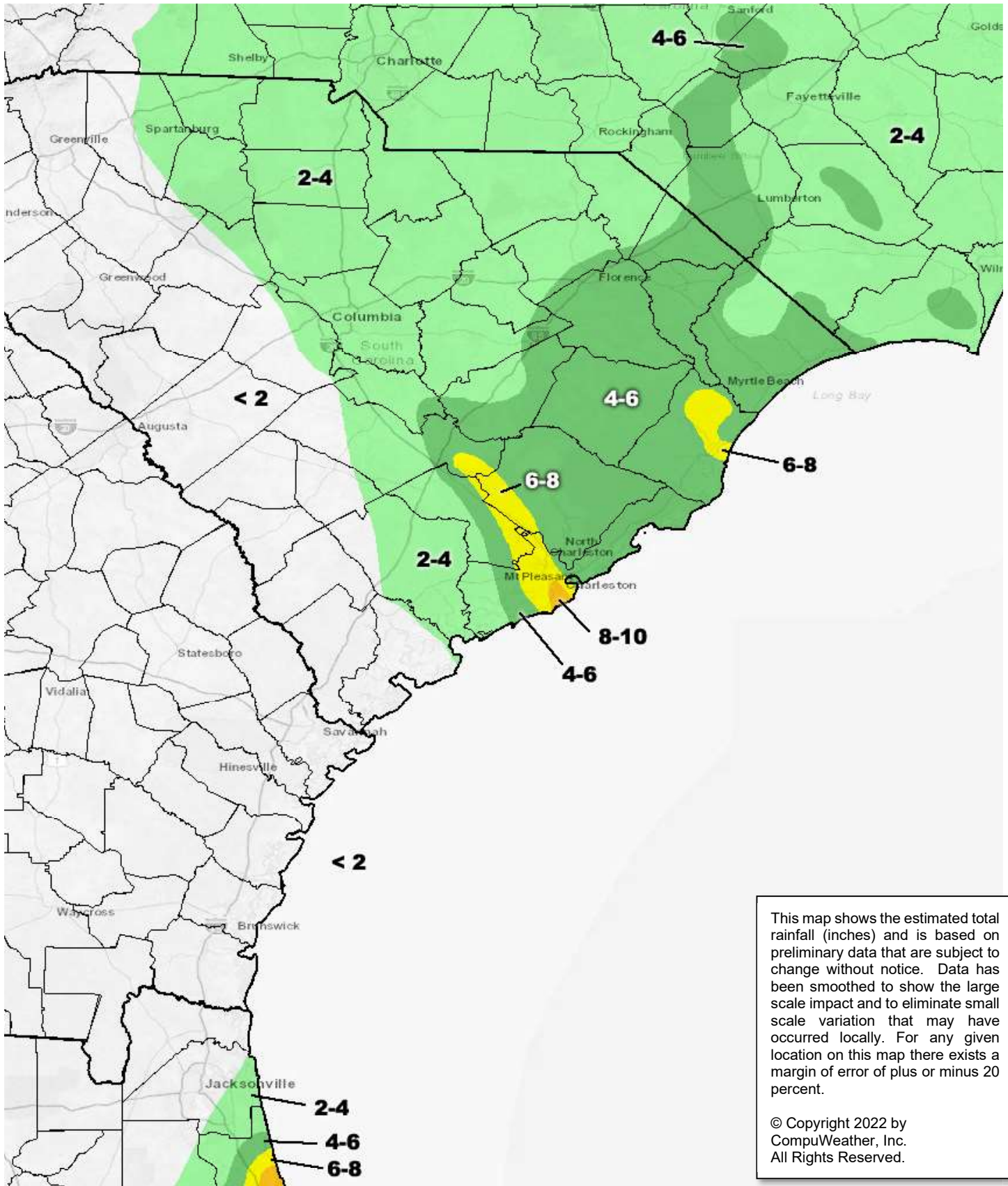
**RAINFALL (inches) – S. Carolina / Georgia**

Prepared for use by Engineering Systems, Inc.

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Not to be retransmitted without consent from CompuWeather.

October 20, 2022





# HURRICANE IAN - SEPTEMBER 26 - OCTOBER 1, 2022

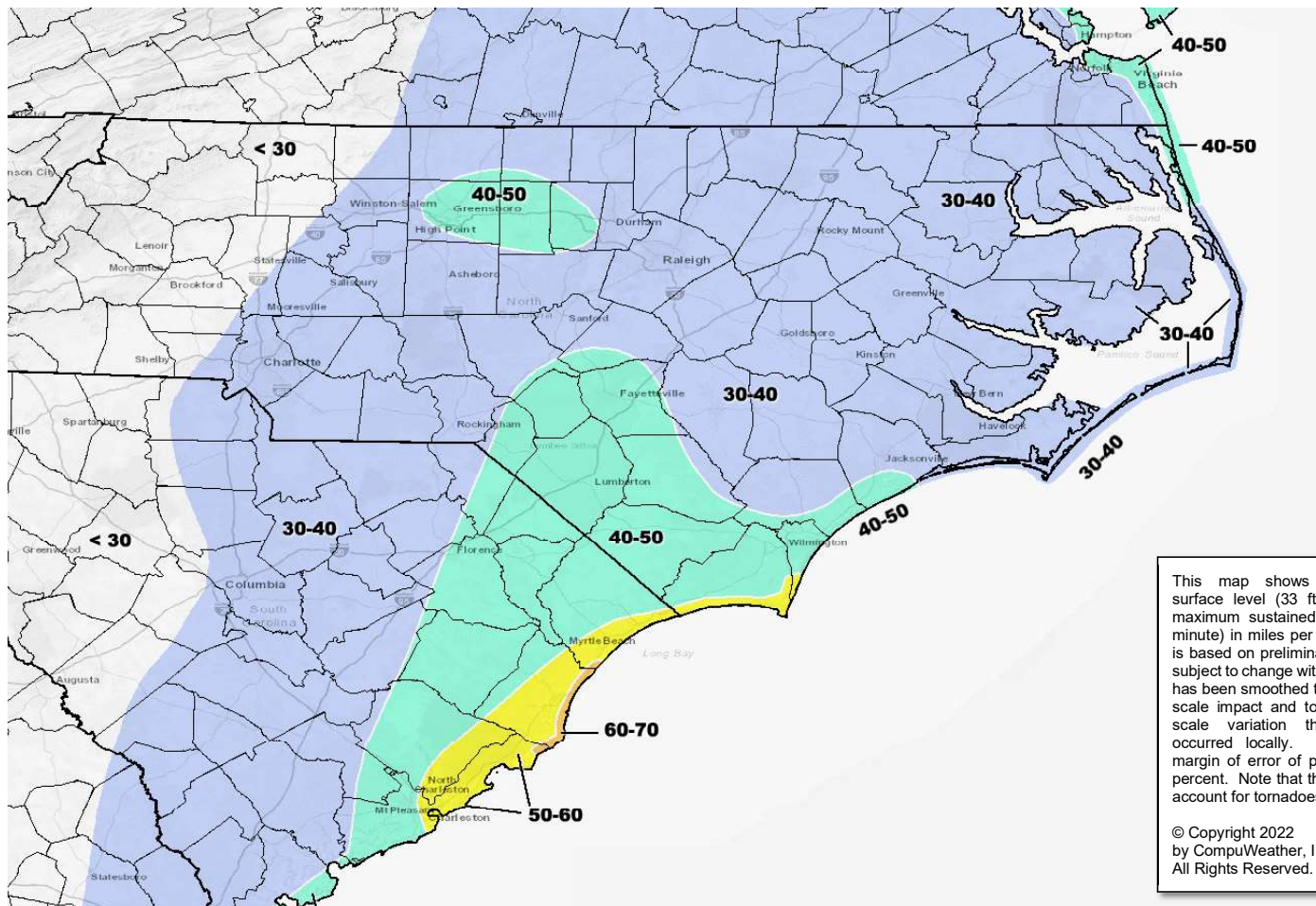
**MAXIMUM SUSTAINED WIND (1 minute) MPH - North & South Carolina**

Prepared for use by Engineering Systems, Inc.

FOR GENERAL USE ONLY

Not to be retransmitted without consent from CompuWeather.

October 20, 2022



## HURRICANE IAN - SEPTEMBER 26 - OCTOBER 1, 2022

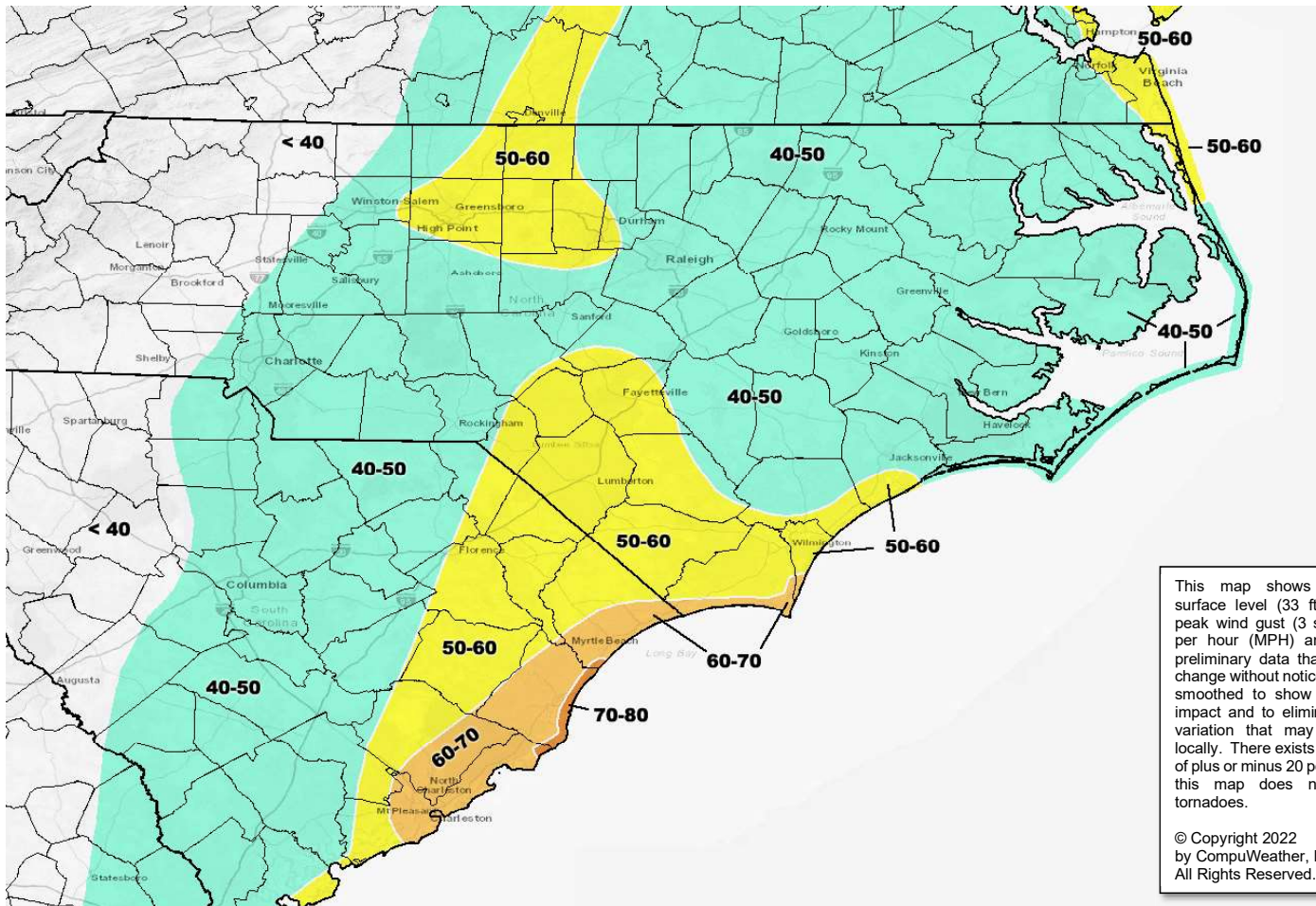
**PEAK WIND GUST (3 second) MPH - North & South Carolina**

Prepared for use by Engineering Systems, Inc.

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October 20, 2022





## HURRICANE IAN - SEPTEMBER 26 - OCTOBER 1, 2022

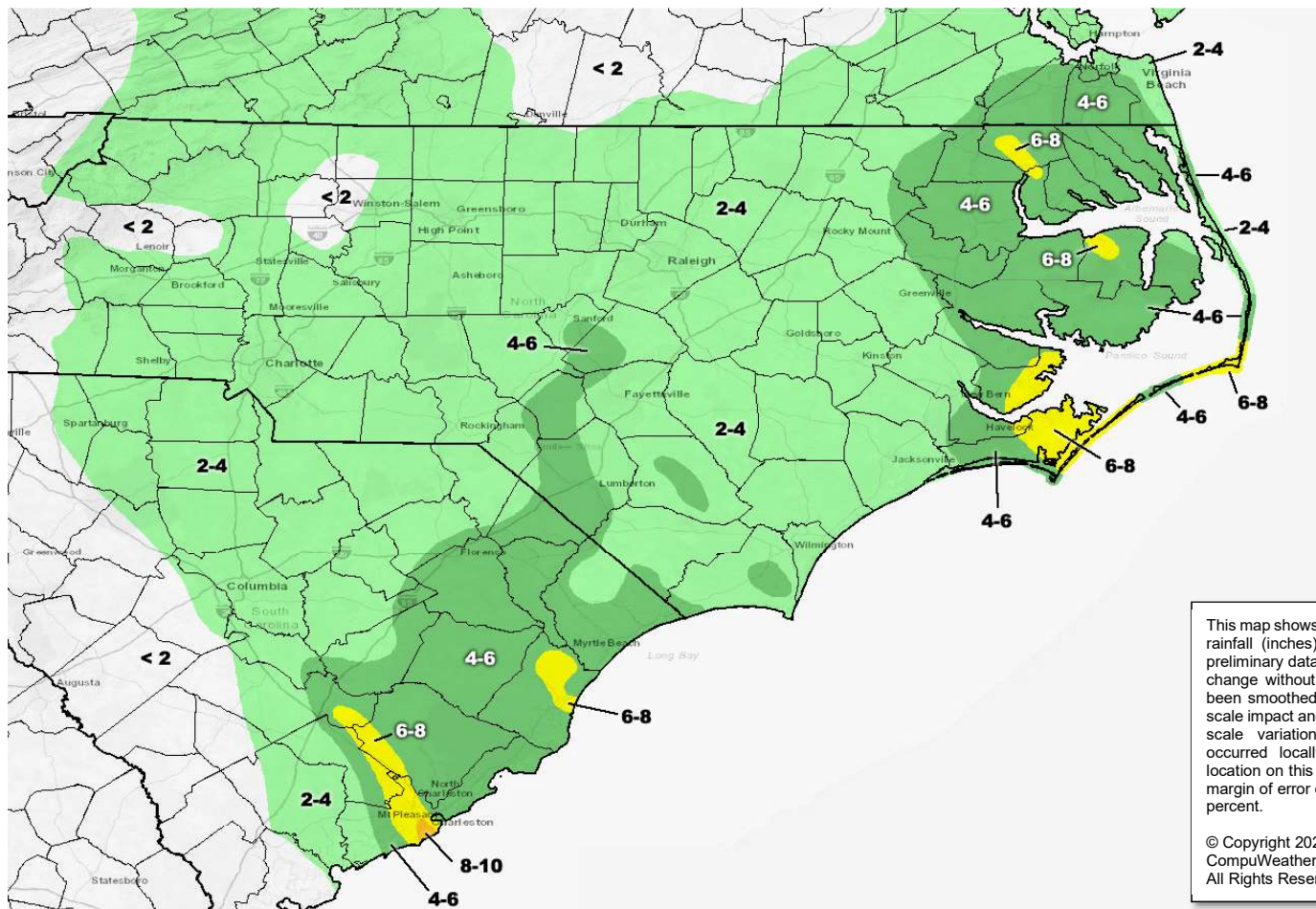
### RAINFALL (inches) - North & South Carolina

Prepared for use by Engineering Systems, Inc.

FOR GENERAL USE ONLY

Not to be retransmitted without consent from CompuWeather.

October 20, 2022



# APPENDIX C

---

| Building              | Item              | Appendix Photo(s) | Storm Related Damage                                                                                                                                                                                                                                                                                    | Repair                                                                                                                                                                                                          |
|-----------------------|-------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hangar A              | Exterior Walls    | D1                | Three (3) 2'-0" by 3'-0" wide (over door) corrugated metal wall panels.<br>One (1) 14'-0" partial width panel adjacent to the sliding door.<br>Two (2) sliding metal doors missing.<br>One (1) sliding metal door off the track.<br>Two (2) steel channels utilized as a sliding door track.            | Remove and replace damaged metal wall panels.<br>Replace missing sliding metal panel doors with steel frames.<br>Reset sliding metal door.<br>Remove and replace both 20 LF steel channel door tracks.          |
|                       | Roof              |                   | No visible storm damage was observed.                                                                                                                                                                                                                                                                   | -                                                                                                                                                                                                               |
|                       | Steel Frame       |                   | No visible storm damage was observed.                                                                                                                                                                                                                                                                   | -                                                                                                                                                                                                               |
| Hangar B              | Exterior Walls    | D2                | Two (2) full length 3'-0" width panels at the interior.<br>Four (4) 2'-0" by 3'-0" wide (over door) corrugated metal wall panels.<br>Two (2) 14'-0" partial width panels at each side of the sliding door.<br>Steel channel utilized as a door track.<br>One (1) sliding door missing.                  | Remove and replace damaged metal wall panels.<br>Replace missing sliding metal panel doors with steel frames.<br>Remove and replace 20 LF of steel channel door track.                                          |
|                       | Roof              |                   | No visible storm damage was observed.                                                                                                                                                                                                                                                                   | -                                                                                                                                                                                                               |
|                       | Steel Frame       |                   | No visible storm damage was observed.                                                                                                                                                                                                                                                                   | -                                                                                                                                                                                                               |
| Hangar C              | Exterior Walls    | D3                | No visible storm damage was observed.                                                                                                                                                                                                                                                                   | -                                                                                                                                                                                                               |
|                       | Roof              |                   | No visible storm damage was observed.                                                                                                                                                                                                                                                                   | -                                                                                                                                                                                                               |
|                       | Steel Frame       |                   | No visible storm damage was observed.                                                                                                                                                                                                                                                                   | -                                                                                                                                                                                                               |
| Hangar D              | Exterior Walls    | D4                | Fifty-two (52) metal panels were damaged.<br>Approximately 111 LF of demising walls were missing.<br>All sliding doors at the north elevation.<br>Three (3) sliding doors at the south elevation.<br>Three (3) 14'-0" by 3'-0" metal panels and two (2) girts at a sliding door at the south elevation. | Remove and replace damaged metal panels.<br>Replace missing metal panels and steel framing at demising walls.<br>Replace missing sliding doors.<br>Remove and replace damaged panels and girts at sliding door. |
|                       | Roof              |                   | No visible storm damage was observed.                                                                                                                                                                                                                                                                   | -                                                                                                                                                                                                               |
|                       | Steel Frame       |                   | Six (6) nonload-bearing columns at the north elevation were bent and/or missing.<br>Approximately 21'-9" of detached bottom track at demising wall.<br>Eight (8) 21'-9" girts bent and/or warped at multiple demising walls.                                                                            | Replace damaged 8" by 3½" channel columns at north elevation.<br>Reset detached bottom track at demising wall.<br>Remove and replace damaged girts at demising walls.                                           |
| Distribution Facility | Exterior Walls    | D5                | Four (4) 20 LF girts missing.<br>380 square feet corrugated metal wall panel missing.                                                                                                                                                                                                                   | Replace four (4) missing girts.<br>Replace 380 square feet of missing metal wall panels.                                                                                                                        |
|                       | Roof              |                   | One (1) 20 LF z-purlin missing.<br>480 square feet corrugated metal decking missing.                                                                                                                                                                                                                    | Replace 20 LF z-purlin.<br>Replace 480 square feet of missing decking.                                                                                                                                          |
|                       | Steel Frame       |                   | Four (4) 20 LF girts missing.                                                                                                                                                                                                                                                                           | Replace missing girts.                                                                                                                                                                                          |
| Residential Structure | Exterior Wall     | D6                | No visible storm damage was observed.                                                                                                                                                                                                                                                                   | -                                                                                                                                                                                                               |
|                       | Roof              |                   | 10 SQFT of ridge caps were missing.<br>20 SQFT of asphalt shingles were missing and/or damaged.<br>5 SQFT of damaged plywood roof sheathing.                                                                                                                                                            | Remove and replace roof coverings.<br>Remove and replace damaged section of plywood roof sheathing.                                                                                                             |
|                       | Interior Finishes |                   | 60 SQFT of water staining present at sheetrock ceiling texturing.                                                                                                                                                                                                                                       | Remove and replace damaged sheetrock.                                                                                                                                                                           |

# APPENDIX D

---

## Appendix D1 - Referenced Photographs



Photograph 1 - Overall view of hangar exterior with missing doors.



Photograph 2 - Damaged wall panel.



Photograph 3 - Damaged steel framed door.



Photograph 4 - Missing purlin.



Photograph 5 - Damaged steel door track.



## Appendix D2 - Referenced Photographs



Photograph 1 - Overall view of hangar.



Photograph 2 - Metal wall panel damage.



Photograph 3 - Metal wall panel damage at roof.



Photograph 4 - Metal wall panel and steel door track damage at roof.



Photograph 5 - Steel column damage.



Photograph 6 - Location of (2) missing doors.

### Appendix D3 - Referenced Photographs



Photograph 1 - Overall view of hangar.



Photograph 2 - Pre-existing damage at metal wall panel.



Photograph 3 - Pre-existing damage at metal wall panel.



Photograph 4 - Pre-existing damage at metal wall panel.



## Appendix D4 - Referenced Photographs



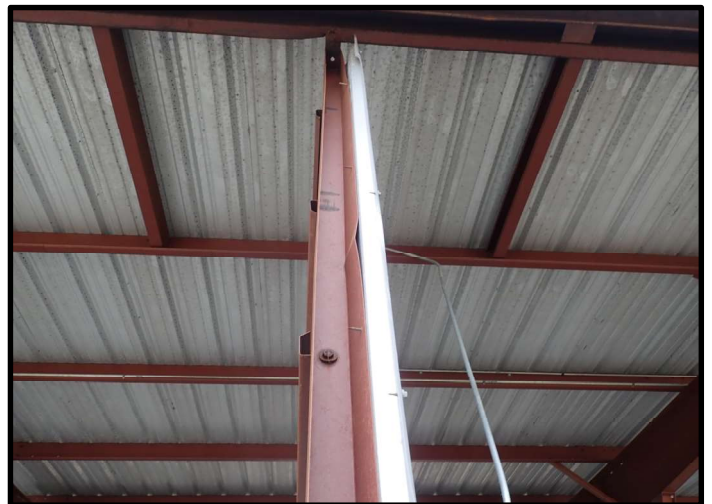
Photograph 1 - Overall view of hangar.



Photograph 2 - Damaged girt and wall paneling.

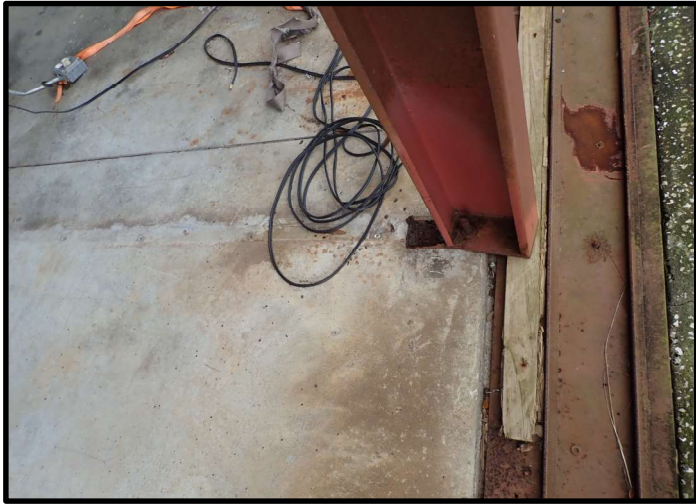


Photograph 3 - Damaged wall paneling.



Photograph 4 - Damaged steel column.





Photograph 5 - Damaged steel column.



Photograph 6 - Location of detached demising wall bottom track.

## Appendix D5 - Referenced Photographs



Photograph 1 - Missing roof panels.



Photograph 2 - Missing roof panels.



Photograph 3 - Missing roof and wall panels.



## Appendix D6 - Referenced Photographs



Photograph 1 - Overall view of building exterior.



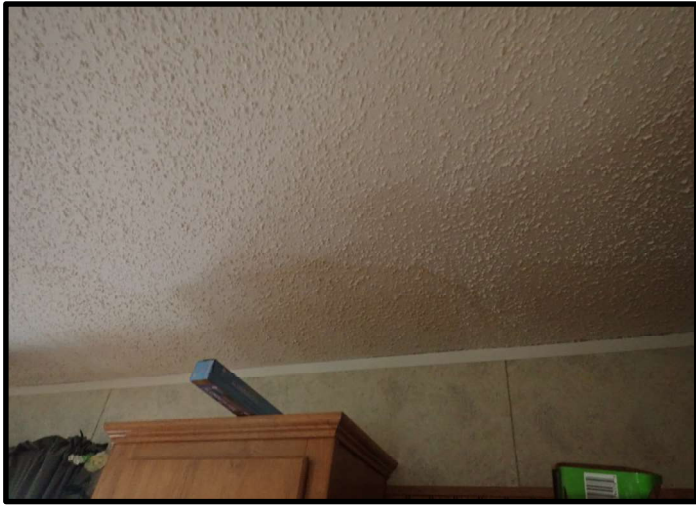
Photograph 2 - Overall view of roof.



Photograph 3 - Closeup of ridge shingles missing.



Photograph 4 - Closeup of shingle starter course missing.



Photograph 5 - Water staining at interior ceiling.

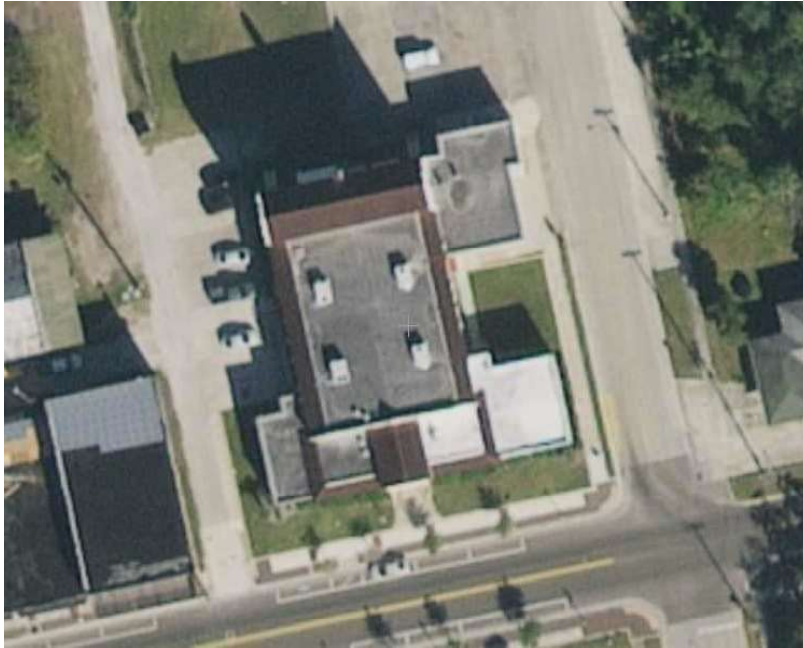


# APPENDIX E

---

# Precise Aerial Roof Measurement Report

Prepared for you by ESI



225 E Main St, Wauchula, FL 33873-2702

ESi  
2870 Scherer Dr, Suite 200  
Saint Petersburg, FL 33716

Andrew Johnson  
tel. 3522798979  
email: [awjohnson@engsys.com](mailto:awjohnson@engsys.com)



# PRE-PITCH 2D REPORT

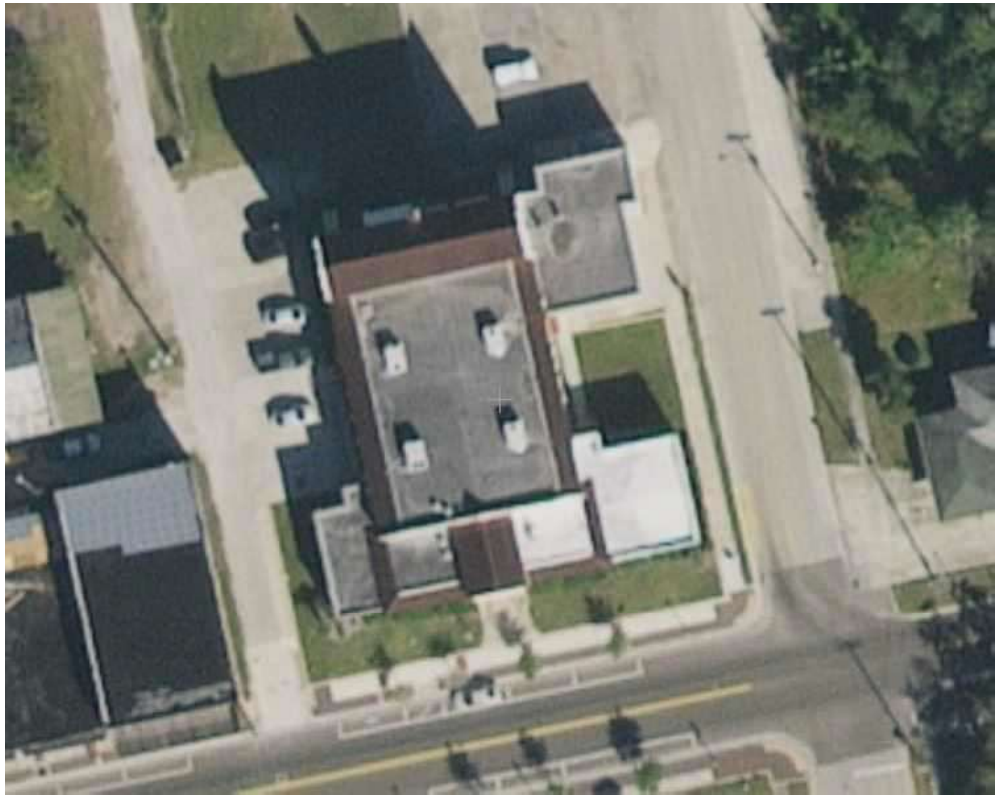
Enclosed is your Pre-pitch 2D report. It is not the completed measurement report but includes data to assist you in the field.

To generate the completed measurements that will include the line, pitch and area diagrams, please navigate to the link below and enter the pitch.

[Enter pitch values](#)

If you have questions or need assistance, please contact Customer Service at 1-866-659-8439.

225 E Main St, Wauchula, FL 33873-2702



Report Details

Report: 49992390  
Claim: 4046736 - ESI #94586  
September 28, 2022

Property Details

Total Roof Area = 12,134 sq ft  
Total Roof Facets = 19  
Longitude = -81.8097431  
Latitude = 27.5482355  
Number of Stories > 1

Online map of property  
[http://maps.google.com/maps?f=q&source=s\\_q&hl=en&q=225+E+Main+St,Wauchula,FL,33873-2702](http://maps.google.com/maps?f=q&source=s_q&hl=en&q=225+E+Main+St,Wauchula,FL,33873-2702)

Report Contents

Notes Diagram.....2  
Facet Area Table.....3

Contact: Andrew Johnson  
Company: **Engineering Systems Incorporated**  
Address: 2870 Scherer Dr N Suite 200  
Saint Petersburg, FL 33716-1037

Measurements provided by [www.eagleview.com](http://www.eagleview.com)

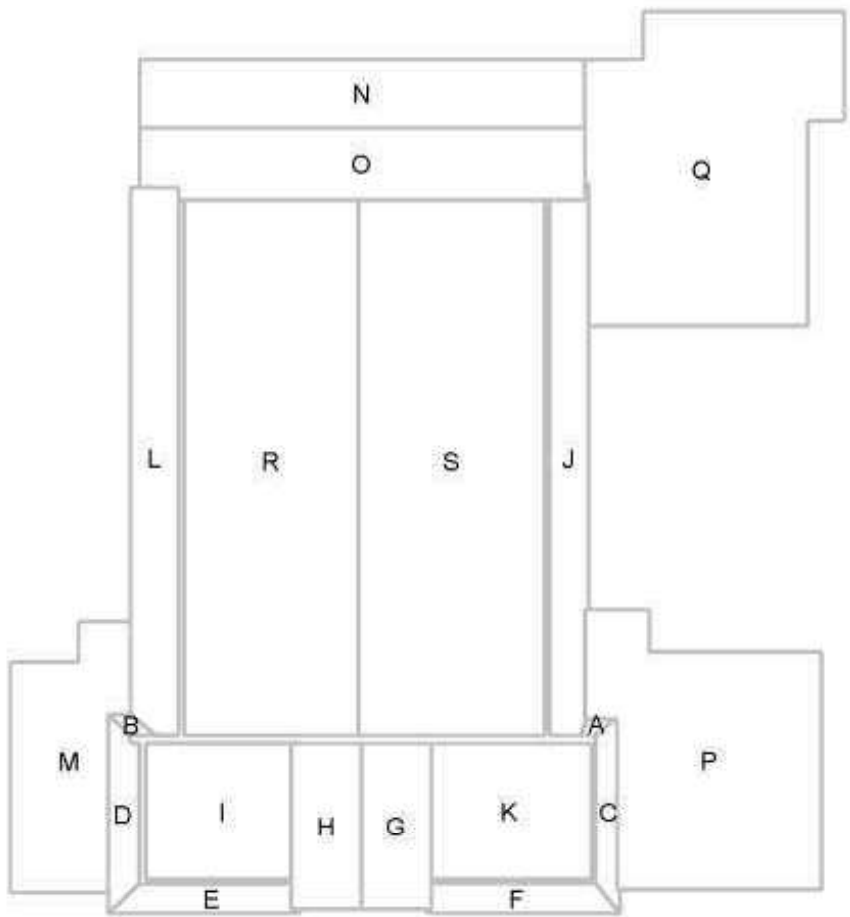


**Satisfaction Guaranteed**  
[www.eagleview.com/guarantee](http://www.eagleview.com/guarantee)

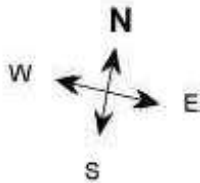
An accuracy certificate is not available for this address due to image limitations.

Notes Diagram

Roof facets are labeled from smallest to largest (A to Z) for easy reference. Total Roof Facets = 19



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**Facet Area (sq ft) Based Upon Pitch**

The area for each facet appears in the column under the appropriate pitch.

| Facet | Pitch(inches per foot) |        |        |        |        |        |        |        |        |        |        |
|-------|------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|       | 0                      | 2      | 4      | 6      | 8      | 10     | 12     | 14     | 16     | 18     | 20     |
| A     | 10.9                   | 11.1   | 11.5   | 12.2   | 13.1   | 14.2   | 15.4   | 16.7   | 18.2   | 19.7   | 21.2   |
| B     | 11.1                   | 11.3   | 11.7   | 12.4   | 13.3   | 14.4   | 15.7   | 17.1   | 18.5   | 20     | 21.6   |
| C     | 93.2                   | 94.5   | 98.2   | 104.2  | 112    | 121.3  | 131.8  | 143.2  | 155.3  | 168    | 181.1  |
| D     | 116.2                  | 117.8  | 122.5  | 129.9  | 139.7  | 151.3  | 164.3  | 178.6  | 193.7  | 209.5  | 225.9  |
| E     | 116.2                  | 117.8  | 122.5  | 129.9  | 139.7  | 151.3  | 164.3  | 178.6  | 193.7  | 209.5  | 225.9  |
| F     | 119.7                  | 121.4  | 126.2  | 133.8  | 143.9  | 155.8  | 169.3  | 183.9  | 199.5  | 215.8  | 232.7  |
| G     | 256                    | 259.5  | 269.8  | 286.2  | 307.7  | 333.2  | 362    | 393.4  | 426.7  | 461.5  | 497.6  |
| H     | 258.2                  | 261.8  | 272.2  | 288.7  | 310.3  | 336.1  | 365.1  | 396.7  | 430.3  | 465.5  | 501.9  |
| I     | 462.7                  | 469.1  | 487.7  | 517.3  | 556.1  | 602.3  | 654.4  | 711    | 771.2  | 834.1  | 899.3  |
| J     | 466.1                  | 472.5  | 491.3  | 521.1  | 560.2  | 606.7  | 659.2  | 716.2  | 776.8  | 840.3  | 905.9  |
| K     | 497.3                  | 504.2  | 524.2  | 556    | 597.7  | 647.3  | 703.3  | 764.1  | 828.8  | 896.5  | 966.6  |
| L     | 579.7                  | 587.7  | 611.1  | 648.1  | 696.7  | 754.6  | 819.8  | 890.8  | 966.2  | 1045.1 | 1126.7 |
| M     | 617.8                  | 626.3  | 651.2  | 690.7  | 742.5  | 804.2  | 873.7  | 949.3  | 1029.7 | 1113.8 | 1200.8 |
| N     | 667.7                  | 676.9  | 703.8  | 746.5  | 802.5  | 869.2  | 944.3  | 1026   | 1112.8 | 1203.7 | 1297.8 |
| O     | 705.1                  | 714.8  | 743.2  | 788.3  | 847.4  | 917.8  | 997.2  | 1083.5 | 1175.2 | 1271.1 | 1370.5 |
| P     | 1179.8                 | 1196.1 | 1243.6 | 1319.1 | 1417.9 | 1535.8 | 1668.5 | 1812.9 | 1966.3 | 2126.9 | 2293.1 |
| Q     | 1627.9                 | 1650.4 | 1716   | 1820   | 1956.5 | 2119.1 | 2302.2 | 2501.4 | 2713.2 | 2934.7 | 3164.1 |
| R     | 2100.1                 | 2129.1 | 2213.7 | 2348   | 2524   | 2733.7 | 2970   | 3227   | 3500.2 | 3786   | 4081.9 |
| S     | 2248                   | 2279   | 2369.6 | 2513.3 | 2701.8 | 2926.2 | 3179.2 | 3454.3 | 3746.7 | 4052.6 | 4369.3 |
| Total | 12134                  | 12301  | 12790  | 13566  | 14583  | 15794  | 17160  | 18645  | 20223  | 21874  | 23584  |

Each value is rounded to the nearest square foot. The totals are based on the unrounded values.

Access and edit your Adjuster Assisted 2D Report by logging into your account here:

[#https://my.eagleview.com/EditPitches.aspx?ReportId=NmtDV1VPTWIPN2Z0MUNUK240bzNtZz09](https://my.eagleview.com/EditPitches.aspx?ReportId=NmtDV1VPTWIPN2Z0MUNUK240bzNtZz09)



Report: 49992390  
Claim: 4046736 - ESI  
#94586

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## IN-Line Consulting, LLC

---

402 Bell Court  
Woodstock, GA 30188

Insured: City of Wauchula Airport 016308-IAN22-013-0057-B, C, E

Property: Vandolah Rd  
Wauchula, FL 33873

Claim Rep.: Steve Landon  
Position: National General Adjuster  
Company: Crawford GTS

Business: (616) 213-5798  
E-mail: steve\_landon@us.crawco.com

Estimator: JR Cline  
Position: Executive Consultant  
Company: IN-Line Consulting, LLC  
Business: 40151 Deerwood Park Blvd., Bldg 200, Ste 250  
Jacksonville, FL 32256

Business: (904) 497-8521  
E-mail: jrcline@inline.us

**Claim Number:** 016308-JAN22-013-0057-B, C, E

**Policy Number:** MULTIPLE

**Type of Loss:** Hurricane

Date Contacted: 11/1/2022 12:00 AM

Date of Loss: 9/28/2022 12:00 AM

Date Inspected: 11/16/2022 10:30 AM

Date Received: 11/1/2022 12:00 AM

Date Entered: 11/10/2022 8:17 AM

Price List: FLSE8X\_OCT22  
Restoration/Service/Remodel

Estimate: 6171-L57-R042023





File No.: 22-6171    Claim No.: Multiple    File No.: 4046736

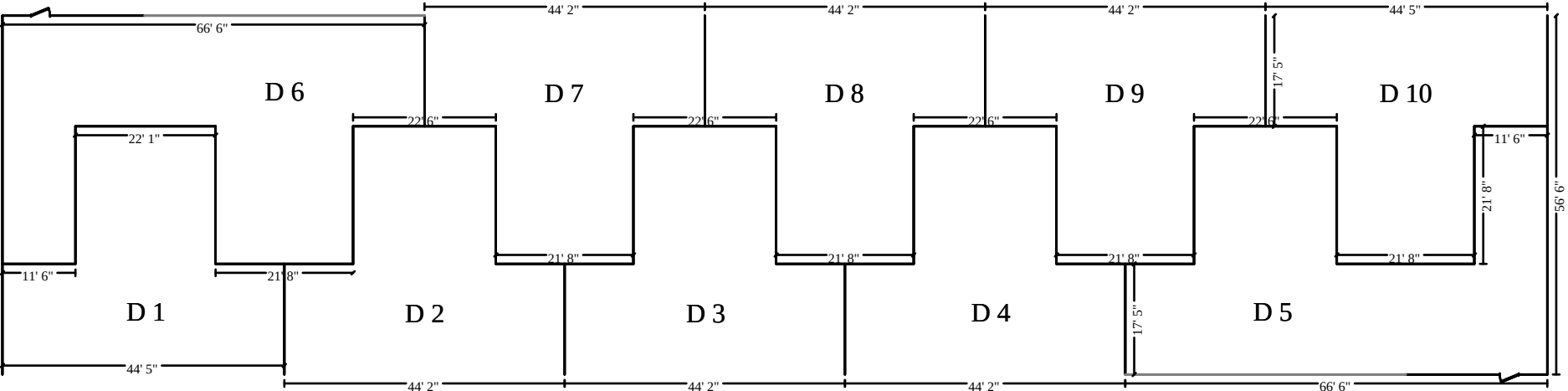
**This estimate is preliminary and subject to review and revision.**

**This estimate does not address any code upgrades which may be required.**

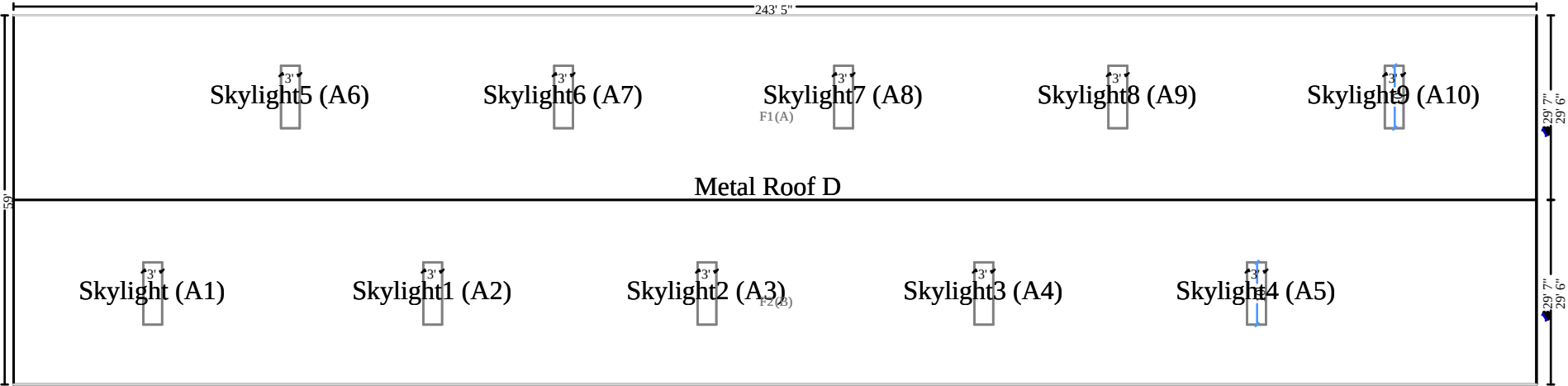
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Hanger D



Roof, Hanger D

Insured: City of Wauchula  
Property: Vandolah Rd  
Wauchula, FL 33873

Claim Rep.: Steve Landon  
Position: National General Adjuster  
Company: Crawford GTS

Business: (616) 213-5798  
E-mail: steve\_landon@us.crawco.com

Estimator: Steve Landon  
Position: National General Adjuster  
Company: Crawford GTS

Business: (616) 213-5798  
E-mail: steve\_landon@us.crawco.  
com

**Claim Number:** 016308-IAN22-013-  
0057-BCE

**Policy Number:**

**Type of Loss:**

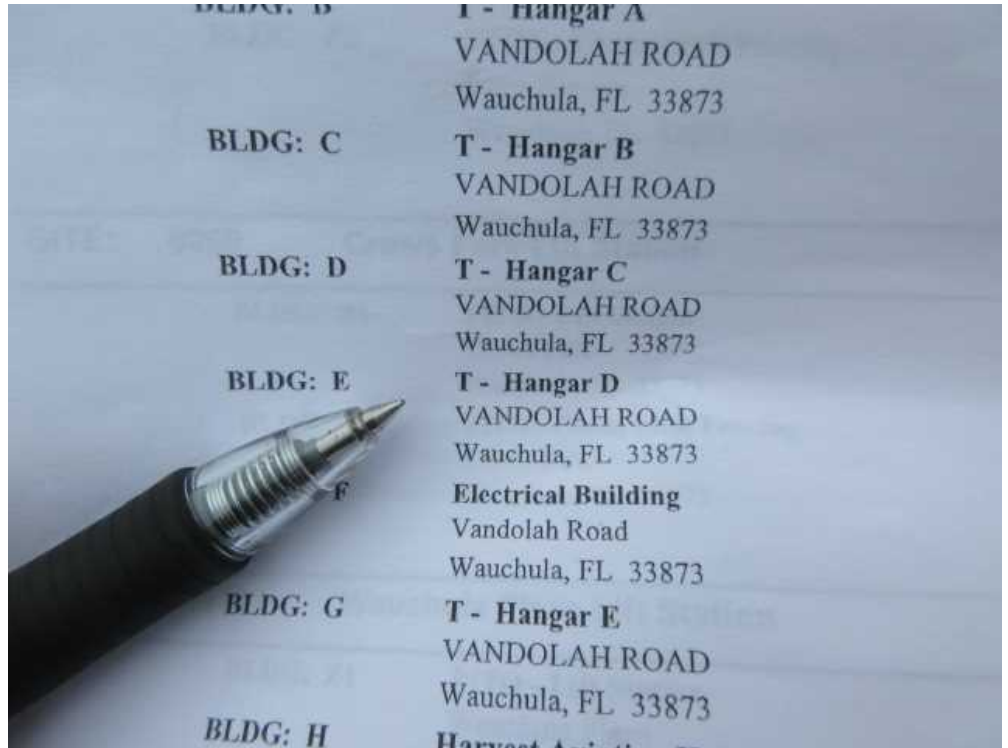
Date Contacted: 10/13/2022 12:00 PM  
Date of Loss: 9/28/2022 12:00 PM  
Date Inspected: 10/13/2022 12:00 PM

Date Received: 10/13/2022 12:00 PM  
Date Entered: 12/14/2022 9:59 AM

Price List: FLSE8X\_OCT22  
Restoration/Service/Remodel  
Estimate: IAN22-013-0057-BCE

1 1-589  
Date Taken: 10/13/2022

The next series of photos were taken  
at Location 0057, Building E which is  
T-Hangar D.



2 3-591  
Date Taken: 10/13/2022

T-Hangar D.



3 2-590

Date Taken: 10/13/2022

T-Hangar D overview. Doors  
missing.



4 4-592

Date Taken: 10/13/2022

T-Hangar D door panels.



5 5-593  
Date Taken: 10/13/2022

T-Hangar D door panels.



6 6-594  
Date Taken: 10/13/2022

T-Hangar D door panels.





7 7-595  
Date Taken: 10/13/2022

T-Hangar D door panels.



8 8-596  
Date Taken: 10/13/2022

T-Hangar D door panels.





9 9-597  
Date Taken: 10/13/2022

T-Hangar D door panels.



10 10-598  
Date Taken: 10/13/2022

T-Hangar D door panels.



11 11-599  
Date Taken: 10/13/2022

T-Hangar D door panels.



12 12-600  
Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection. Doors missing.



13 13-601

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection. Interior  
damage.



14 14-602

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection.





15 15-603

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection. Door tracks.



16 16-604

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection.



17 17-605

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection. Interior panels  
displaced.



18 18-606

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection.



19 19-607

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection. Interior panels  
displaced.



20 20-608

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection.





21 21-609

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection. Impact  
damage to interior panels.



22 22-610

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection.



23 23-611

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection. Doors  
displaced.



24 24-612

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection. Doors  
displaced.





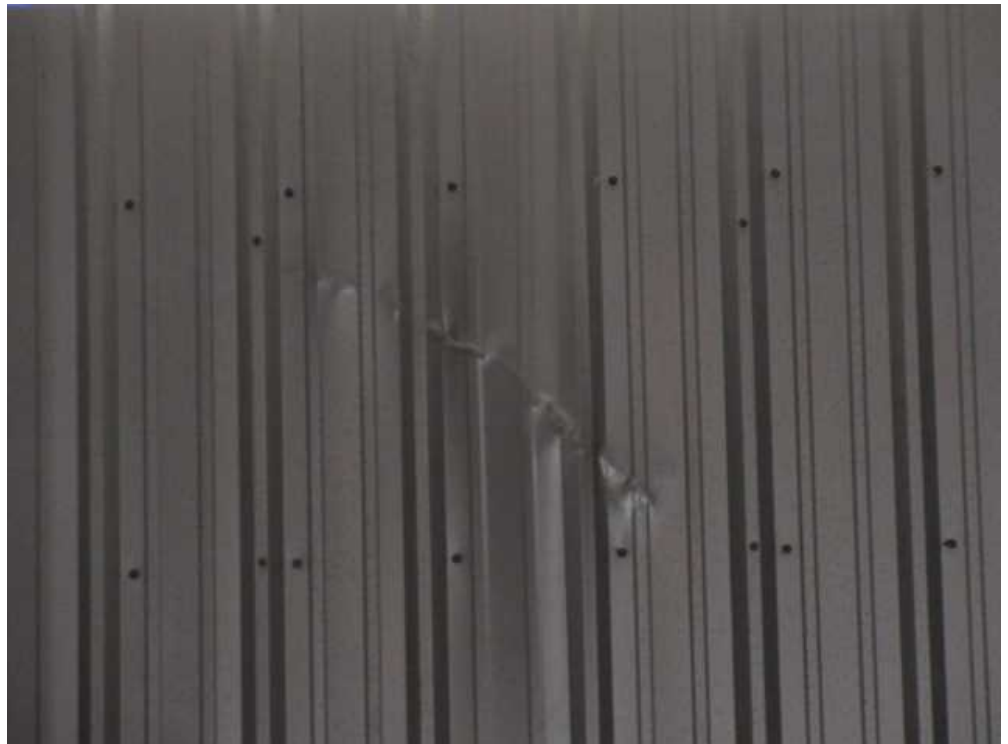
25 25-613  
Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection.



26 26-614  
Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection. Impact  
damage to panels.



27 27-615

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection.



28 28-616

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection.



29 29-617

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection.



30 30-618

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection.





31 31-619

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection. Doors missing.



32 32-620

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection. Interior walls  
displaced.



33 33-621

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection. Damage to  
partition wall panel.



34 34-622

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection.



35 35-623

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection. Interior wall  
displaced.



36 36-624

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection.





37 37-625

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection.



38 38-626

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection. Partition wall  
damage.



39 39-627

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection.



40 40-628

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection.





41 41-629

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection.



42 42-630

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection.



43 43-631

Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection.



44 44-632

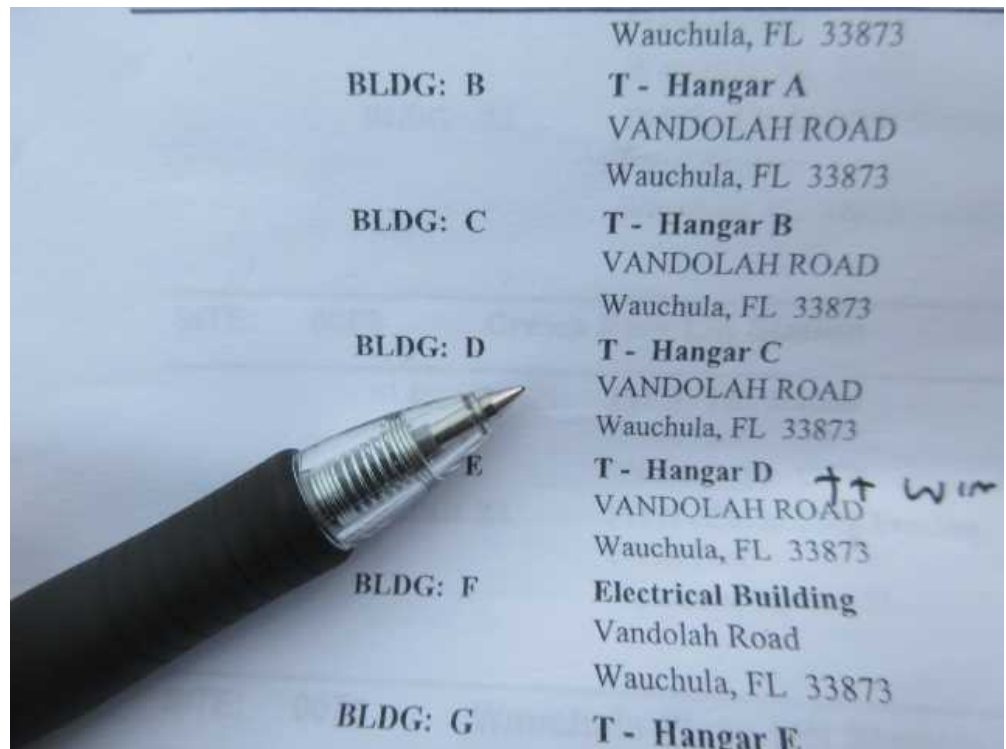
Date Taken: 10/13/2022

Condition of T-Hangar D as viewed  
during site inspection. Walls and  
doors missing.



45 45-633  
Date Taken: 10/13/2022

The next series of photos were taken  
at Location 0057, Building D which is  
T-Hangar C.



46 46-634  
Date Taken: 10/13/2022

No damage noted. T-Hangar C.



47 47-635

Date Taken: 10/13/2022

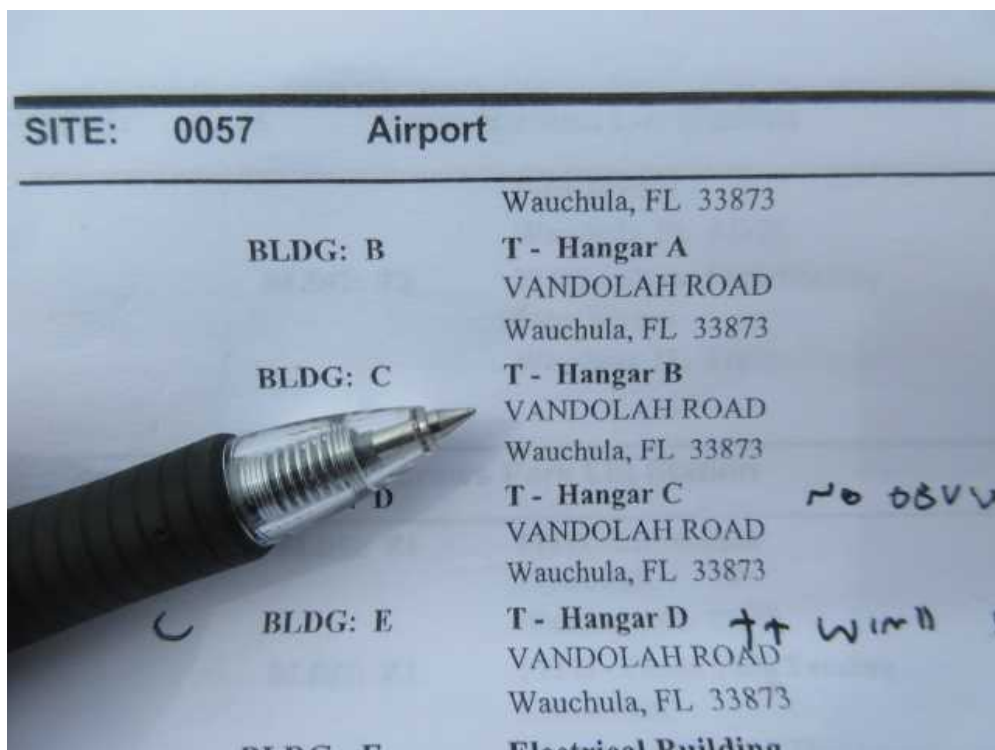
No damage noted.



48 48-636

Date Taken: 10/13/2022

The next series of photos were taken at Location 0057, Building C which is T-Hangar B.





49 53-641  
Date Taken: 10/13/2022

T-Hangar B.



50 49-637  
Date Taken: 10/13/2022

Condition of T-Hangar B as viewed  
during site inspection.



51 50-638

Date Taken: 10/13/2022

Condition of T-Hangar B as viewed  
during site inspection.



52 51-639

Date Taken: 10/13/2022

Condition of T-Hangar B as viewed  
during site inspection.



53 52-640

Date Taken: 10/13/2022

Condition of T-Hangar B as viewed  
during site inspection.



54 54-642

Date Taken: 10/13/2022

Condition of T-Hangar B as viewed  
during site inspection. Door panel  
damaged.



55 55-643

Date Taken: 10/13/2022

Condition of T-Hangar B as viewed  
during site inspection. Damage to  
door panels.



56 56-644

Date Taken: 10/13/2022

Condition of T-Hangar B as viewed  
during site inspection. Door panels.





57 57-645

Date Taken: 10/13/2022

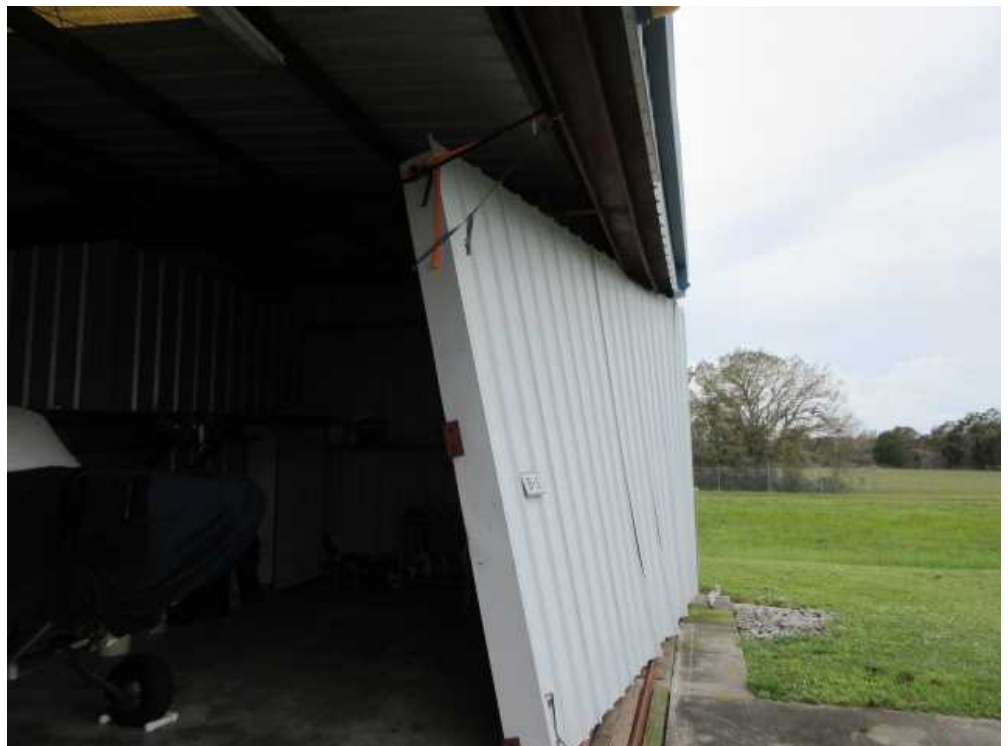
Condition of T-Hangar B as viewed  
during site inspection.



58 58-646

Date Taken: 10/13/2022

Condition of T-Hangar B as viewed  
during site inspection. Door panels  
damaged.



59 59-647  
Date Taken: 10/13/2022

Condition of T-Hangar B as viewed  
during site inspection. Door panel  
displaced.



60 60-648  
Date Taken: 10/13/2022

Condition of T-Hangar B as viewed  
during site inspection. Door panel on  
the ground.



61 61-649

Date Taken: 10/13/2022

Condition of T-Hangar B as viewed  
during site inspection.



62 62-650

Date Taken: 10/13/2022

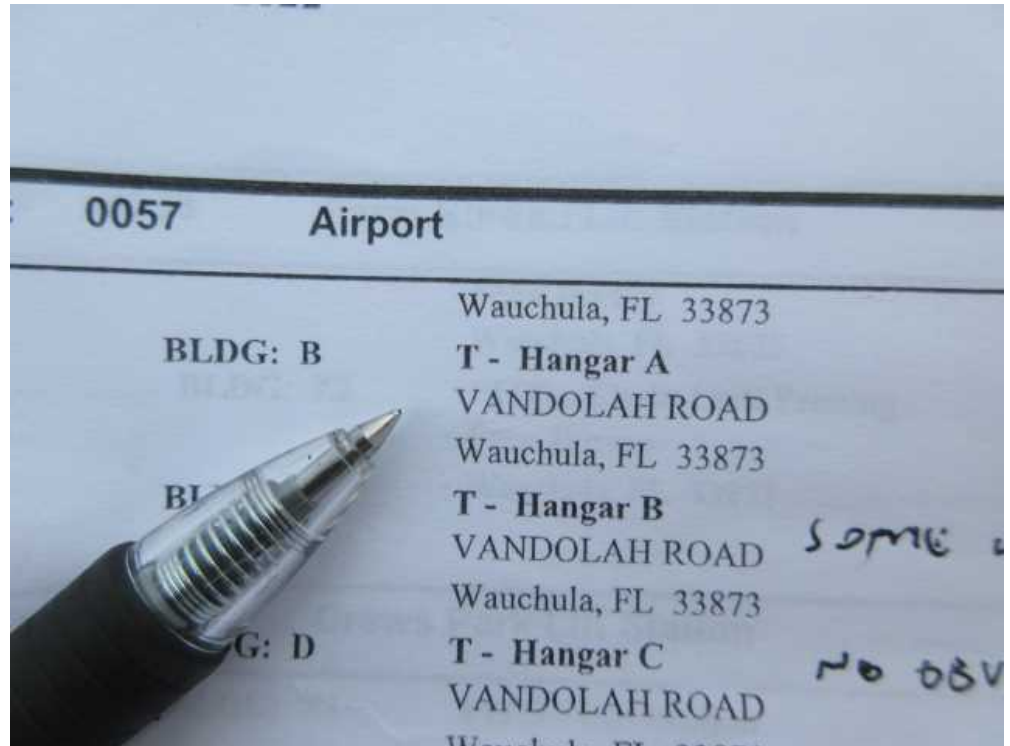
Condition of T-Hangar B as viewed  
during site inspection.



63 63-651

Date Taken: 10/13/2022

The next series of photos were taken  
at Location 0057, Building B which is  
T-Hangar A.



64 64-652

Date Taken: 10/13/2022

Condition of T-Hangar A as viewed  
during site inspection.





65 65-653

Date Taken: 10/13/2022

Condition of T-Hangar A as viewed  
during site inspection. Door displaced.



66 66-654

Date Taken: 10/13/2022

Condition of T-Hangar A as viewed  
during site inspection.



67 67-655

Date Taken: 10/13/2022

Condition of T-Hangar A as viewed  
during site inspection. Door down.



68 68-656

Date Taken: 10/13/2022

Condition of T-Hangar A as viewed  
during site inspection.



69 69-657

Date Taken: 10/13/2022

Condition of T-Hangar A as viewed  
during site inspection.



70 70-658

Date Taken: 10/13/2022

Condition of T-Hangar A as viewed  
during site inspection.





71 71-659

Date Taken: 10/13/2022

Condition of T-Hangar A as viewed  
during site inspection.



72 72-660

Date Taken: 10/13/2022

Condition of T-Hangar A as viewed  
during site inspection.





73 73-661

Date Taken: 10/13/2022

Condition of T-Hangar A as viewed  
during site inspection.



74 74-662

Date Taken: 10/13/2022

Condition of T-Hangar A as viewed  
during site inspection.



75 75-663

Date Taken: 10/13/2022

Condition of T-Hangar A as viewed  
during site inspection. Door panels  
displaced.



76 76-664

Date Taken: 10/13/2022

Condition of T-Hangar A as viewed  
during site inspection.





## Department of Homeland Security Federal Emergency Management Agency

### General Info

|                                 |                             |             |      |                            |                                  |
|---------------------------------|-----------------------------|-------------|------|----------------------------|----------------------------------|
| <b>Project #</b>                | 692450                      | <b>PW #</b> | 1860 | <b>Project Type</b>        | Standard                         |
| <b>Project Category</b>         | E - Buildings and Equipment |             |      | <b>Applicant</b>           | Wauchula, City of (049-75375-00) |
| <b>Project Title</b>            | Wauchula City Airport       |             |      | <b>Event</b>               | 4673DR-FL (4673DR)               |
| <b>Project Size</b>             | Small                       |             |      | <b>Declaration Date</b>    | 9/29/2022                        |
| <b>Activity Completion Date</b> | 3/29/2024                   |             |      | <b>Incident Start Date</b> | 9/23/2022                        |
| <b>Process Step</b>             | Obligated                   |             |      | <b>Incident End Date</b>   | 11/4/2022                        |

### Damage Description and Dimensions

The Disaster # 4673DR, which occurred between **09/23/2022** and **11/04/2022**, caused:

#### Damage #1263321; Site 0057 Airport Bldg Hanger A

##### General Facility Information:

- **Facility Type:** Building
- **Building Type:** Transportation Facility (Airport/Bus/Train)
- **Facility:** Site 0057 Airport Bldg. Hanger A
- **Facility Description:** A 5,775 SQ FT Hangar is a building designed to storage several aircraft, the hangar is built of gable metal roof, walls and concrete floor.
- **Approx. Year Built:** 1991
- **Location Description:** 1202 Maurice Sonny Clavel Rd. Wauchula, Florida, 33873
- **GPS Latitude/Longitude:** 27.51354, -81.88057
- **Number of Stories:** 1

##### General Damage Information:

- **Date Damaged:** 9/28/2022
- **Cause of Damage:** High winds and winds driven rain from the remnants of the Hurricane Ian caused rain to enter the building through the doors.

##### Building Damage:

###### 27.513542,-81.883057:

- Building Interior, galvanized 5/16 IN cable, 80 LF long, blown away due to high winds, 0% work completed.
- Building Interior, 26-gauge wall panel, 60 LF long, ripped due to high winds, 0% work completed.
- Building Interior, ribbed 24-gauge wall panel, 440 LF long, bend due to high winds, 0% work completed.
- Building Interior, overhead door track, 50 LF long, bend due to high winds, 0% work completed.
- Building Interior, steel girder roof system, 50 LF long, detach and bend due to high winds, 0% work completed.
- Building Interior, steel 8 IN c shape door frame, 40 LF long, detach and bend due to high winds, 0% work completed.

- Building Interior, metal angle L shape, 150 LF long, detach and bend to high winds, 0% work completed.

## **Damage #1263328; Site 0096 Bldg. A Airport Custodian House.**

### **General Facility Information:**

- **Facility Type:** Building
- **Building Type:** Transportation Facility (Airport/Bus/Train)
- **Facility:** Site 0096 Bldg A - Airport Custodian House
- **Facility Description:** 1-Story Airport Custodian House, 56 FT long x 13.75 FT wide and 770 SF area. Gabled Roof Shingles at 2/12 pitch and 8 FT high Exterior Vinyl Siding walls.
- **Approx. Year Built:** 1978
- **Location Description:** 1202 Maurice 'Sonny' Clavel Rd, Wauchula, Florida 33873
- **GPS Latitude/Longitude:** 27.51268, -81.88224
- **Number of Stories:** 1

### **General Damage Information:**

- **Date Damaged:** 9/28/2022
- **Cause of Damage:** Roof and Rear Stairs damaged by high winds. Building interior damaged by wind driven rain thru Roof damaged by high winds.

### **Building Damage:**

#### **BATHROOM-MASTER:**

- Building Interior, 18 SF of Acoustic ceiling (popcorn) textured, Photo #10, 3 FT long x 6 FT wide, Building interior damaged by wind driven rain thru Roof damaged by high winds, 100% work completed.

#### **BATHROOM-SPARE:**

- Building Interior, 9 SF of Acoustic ceiling (popcorn) textured, Photo #13, 3 FT long x 3 FT wide, Building interior damaged by wind driven rain thru Roof damaged by high winds, 100% work completed.

#### **BEDROOM-MASTER:**

- Building Interior, 24 SF of Acoustic ceiling (popcorn) textured, Photo #12, 2 FT long x 12 FT wide, Building interior damaged by wind driven rain thru Roof damaged by high winds, 100% work completed.

#### **KITCHEN:**

- Building Interior, 62 SF of Acoustic ceiling (popcorn) textured, Photo #8, 8.85 FT long x 7 FT wide, Building interior damaged by wind driven rain thru Roof damaged by high winds, 100% work completed.
- Building Interior, 2 each of Wood Base Cabinet, Photo #9, 24 IN long x 24 IN wide x 34 IN high, Building interior damaged by wind driven rain thru Roof damaged by high winds, 0% work completed.
- Building Interior, 1 each of Wood Base Cabinet, Photo #9, 16 IN long x 24 IN wide x 34 IN high, Building interior damaged by wind driven rain thru Roof damaged by high winds, 0% work completed.
- Building Interior, 1 each of Wood Sink Base Cabinet, Photo #9, 30 IN long x 24 IN wide x 34 IN high, Building interior damaged by wind driven rain thru Roof damaged by high winds, 0% work completed.

#### **LIVING ROOM/KITCHEN:**

- Building Interior, 56 SF of Acoustic ceiling (popcorn) textured, Photo #11, 2 FT long x 28 FT wide, Building interior damaged by wind driven rain thru Roof damaged by high winds, 100% work completed.

#### **REAR STAIRS:**

- Building Exterior, 2 each of PT Pine #2 Prime, Photo #14, 2 IN high x 6 IN wide x 8 FT long, Rear Stairs damaged by High Winds, 100% work completed.
- Building Exterior, 4 each of PT Pine #2, Photo #14, 4 IN high x 4 IN wide x 8 FT long, Rear

Stairs damaged by High Winds, 100% work completed.

- Building Exterior, 5 each of PT Pine #2, Photo #14, 2 IN high x 10 IN wide x 8 FT long, Rear Stairs damaged by High Winds, 100% work completed.
- Building Exterior, 4 each of 5-Step Riser Stringer, Photo #14, Rear Stairs damaged by High Winds, 100% work completed.
- Building Exterior, 5 each of White Lattice Big Hole, PVC, Photo #14, 4 FT high x 8 FT long, Rear Stairs damaged by High Winds, 100% work completed.
- Building Exterior, 1 LB of Primeguard Plus, Exterior Metal Screws, Photo #14, No.10 Wire x 3.5 IN long, Rear Stairs damaged by High Winds, 100% work completed.
- Building Exterior, 1 LB of Grip-Rite Exterior Metal Screws, Photo #14, No. 9 Wire x 3 IN long, Rear Stairs damaged by High Winds, 100% work completed.

**ROOF:**

- Building Exterior, 980 SF of 25-year Composition Shingle Roofing, Photos #1, #2, #3 and #4, 58.5 FT long x 16.75 FT wide, Roof damaged by High Winds, 100% work completed.

**Damage #1266516; Site 0057 Airport Bldg Hanger B**

**General Facility Information:**

- **Facility Type:** Building
- **Building Type:** Other: Not Listed
- **Facility:** Site 0057 Airport Bldg. Hanger B
- **Facility Description:** A 5,5775 SF hangar building, designed to storage aircrafts at the moment of the disaster passed. The hangar is built of gable roof, metal walls, roof walls seams and concrete floor.
- **Approx. Year Built:** 1991
- **Location Description:** 1202 Maurice Clavel Road, Wauchula, Florida 33873
- **GPS Latitude/Longitude:** 27.51323, -81.88304
- **Number of Stories:** 1

**General Damage Information:**

- **Date Damaged:** 9/28/2022
- **Cause of Damage:** High winds and winds driven rain from the remnants of the Hurricane Ian caused rain to enter the building though the doors.

**Building Damage:**

**27.513226,-81.883044:**

- Building Interior, metal overhead door track, 50 LF long, blown away due to high winds, 0% work completed.
- Building Interior, 440 SF of ribbed 1 IN-24gauge wall door panel, 31 FT wide x 14 FT high, bend to high winds, 0% work completed.
- Building Interior, 168 SF of ribbed 26-gauge wall door panel, 12 FT wide x 14 FT high, ripped due to high winds, 0% work completed.
- Building Interior, galvanize cable, 80 LF long, blown away due to high winds, 0% work completed.
- Building Interior, aluminum gutter downspout box, 60 LF long, detach and bend high winds, 0% work completed.
- Building Interior, steel girder, 50 LF long, detach and bend to high winds, 0% work completed.
- Building Interior, steel c shape door frame, 150 LF long, bend to high winds, 0% work completed.
- Building Interior, steel 8 IN purlin, 12 LF long, bend to high winds, 0% work completed.

**Damage #1266520; Site 0057 Airport Bldg Hanger D**

**General Facility Information:**

- **Facility Type:** Building
- **Building Type:** Other: Not Listed
- **Facility:** Site 0057 Airport bldg. Hanger D

- **Facility Description:** A 14000 SF all metal aircraft hangar with concrete floor.
- **Approx. Year Built:** 1995
- **Location Description:** 1202 Maurice Sonny Clavel Rd. Florida 33873
- **GPS Latitude/Longitude:** 27.51240, -81.88320
- **Number of Stories:** 1

#### General Damage Information:

- **Date Damaged:** 9/28/2022
- **Cause of Damage:** High winds and winds driven rain from the remnants of the Hurricane Ian caused rain to enter the building through the doors.

#### Building Damage:

##### 27.549889,-81.813522:

- Building Interior, 110 v receptacle wiring, 360 LF long, blow away due to high winds, 0% work completed.
- Building Interior, 15 each of corrugated steel hangar door nonmotorized manual opening, 23 FT wide x 14 FT high, bend due to high winds, 0% work completed.
- Building Interior, 4 each of 16 GA steel 5 IN x 8 IN columns channel, 16 FT high, bend to high winds, 0% work completed.
- Building Interior, 1 each of 16 GA steel 3 IN x 4 IN columns channel, 16 FT high, bend to high winds, 0% work completed.
- Building Interior, 10 each of metal ridge vent unit, 10 FT long x 12 IN wide x 8 IN high, bent due to high winds, 0% work completed.
- Building Interior, 1 each of fluorescent fixture lamp, 1 IN long x 4 IN wide, blown away due to high winds, 0% work completed.
- Building Interior, 50 each of anchor 1/2 IN x 5 IN bolts, bend due to high winds, 0% work completed.
- Building Interior, 5 each of quadruple electric receptacle multiple boxes, 110 Volt, blown away due to high winds, 0% work completed.
- Building Interior, 900 SF of metal interior partitions steel L + C framing with corrugated metal skin one side, 3 (20 FT H x 15 FT L), bend due to high winds, 0% work completed.
- Building Interior, 720 SF of metal interior partitions steel L + C framing with corrugated metal skin one side, 3 (16 FT H x 15 FT L), bend due to wind blown debris, 0% work completed.
- Building Exterior, 528 SF of metal interior / exterior siding skin only, 11(3 FT x 16 FT), bend due to high winds, 0% work completed.
- Building Interior, 1 each of metal interior partition displaced, 20 FT long x 15 FT wide, bend due to high winds, 0% work completed.
- Building Interior, 60 SF of corrugated metal wall skin 3 FT w, 20 FT high, bend due to wind blown debris, 0% work completed.

## Final Scope

1263321 **Site 0057 Airport Bldg Hanger A**

#### Work to be Completed

The applicant will utilize force account and/or contracts for in-kind repairs to the Wauchula City Airport Hanger A to restore this facility back to its pre-disaster design, function and capacity within the existing footprint.

- Replace galvanized 5/16 IN cable, 80 LF long
- Replace 26-gauge wall panel, 60 LF long, ripped due to high wind
- Replace ribbed 24-gauge wall panel, 440 LF long

- D. Replace overhead door track, 50 LF long
- E. Replace steel girder roof system, 50 LF long
- F. Replace steel 8 IN c shape door frame, 40 LF long
- G. Replace metal angle L shape, 150 LF long

Work to be Completed total: \$\_\_\_\_\_

#### Project Notes:

1. The FEMA CRC performed cost estimation of the damages as listed in the DDD using RS Means 2022 for Tampa, FL. Please see attachment **692450 – DR4673FL – CRC Costing Spreadsheet.xlsx**
2. The Payroll Policy has been provided and reviewed. See attachments **June 2018 Revised -Storm-PLD.doc**.
3. The Applicant's procurement policy has been reviewed. Reference **DR 4673 Project # 692442 Purchasing Policy.pdf**.
4. If funding from other federal grants is applied to, the subrecipient must report it to the recipient. FEMA will adjust the total funding for the project based on duplicated funding. The amount of FEMA funding will be determined after the adjustment. Alternate Federal funding can not be used to offset the non-Federal cost share of the work.
5. All demolition debris must be disposed of at a permitted landfill. Documentation of demolition disposal shall be provided at project close-out.
6. For work to be completed, the applicant is required to obtain any necessary Federal, State, and Local environmental permits prior to the start of construction.
7. Building Damage GPS Coordinates in DDD for DI#1266520 are incorrect. The correct GPS Coordinates are (27.51240, -81.88320).

1263328 **Site 0096 Bldg. A Airport Custodian House.**

#### Work to be Completed

The applicant will utilize force account and/or contracts for in-kind repairs to the Wauchula City Airport Custodian Building to restore this facility back to its pre-disaster design, function and capacity within the existing footprint.

##### BATHROOM-MASTER:

- A. Replace 18 SF of Acoustic ceiling (popcorn) textured, 3 FT long x 6 FT wide

##### BATHROOM-SPARE:

- B. Replace 9 SF of Acoustic ceiling (popcorn) textured, 3 FT long x 3 FT wide

##### BEDROOM-MASTER:

- C. Replace 24 SF of Acoustic ceiling (popcorn) textured, 2 FT long x 12 FT wide

##### KITCHEN:

- D. Replace 62 SF of Acoustic ceiling (popcorn) textured, 8.85 FT long x 7 FT wide
- E. Replace 2 each of Wood Base Cabinet, 24 IN long x 24 IN wide x 34 IN high
- F. Replace 1 each of Wood Base Cabinet, 16 IN long x 24 IN wide x 34 IN high
- G. Replace 1 each of Wood Sink Base Cabinet, 30 IN long x 24 IN wide x 34 IN high

##### LIVING ROOM/KITCHEN:

- H. Replace 56 SF of Acoustic ceiling (popcorn) textured, 2 FT long x 28 FT wide



REAR STAIRS:

- I. Replace 2 each of PT Pine #2 Prime, 2 IN high x 6 IN wide x 8 FT long
- J. Replace 4 each of PT Pine #2, 4 IN high x 4 IN wide x 8 FT long,
- K. Replace 5 each of PT Pine #2, 2 IN high x 10 IN wide x 8 FT long
- L. Replace 4 each of 5-Step Riser Stringer
- M. Replace 5 each of White Lattice, PVC, 4 FT high x 8 FT long
- N. Replace 1 LB of Primeguard Plus, Exterior Metal Screws
- O. Replace 1 LB of Grip-Rite Exterior Metal Screws

ROOF:

- P. Replace 980 SF of 25-year Composition Shingle Roofing, 58.5 FT long x 16.75 FT wide

Work to be Completed total: \$ \_\_\_\_\_

**Scope Note:**

1. The work on this damage inventory is not 100% complete and invoices/force account information is not available. The FEMA CRC performed cost estimation on these damages.

**1266516 Site 0057 Airport Bldg Hanger B**

**Work to be Completed**

The applicant will utilize force account and/or contracts for in-kind repairs to the Wauchula City Airport Hanger B to restore this facility back to its pre-disaster design, function and capacity within the existing footprint.

- A. Replace metal overhead door track, 50 LF long
- B. Replace 440 SF of ribbed 1 IN-24gauge wall door panel, 31 FT wide x 14 FT high
- C. Replace 168 SF of ribbed 26-gauge wall door panel, 12 FT wide x 14 FT high
- D. Replace galvanize cable, 80 LF long
- E. Replace aluminum gutter downspout box, 60 LF long
- F. Replace steel girder, 50 LF long
- G. Replace steel c shape door frame, 150 LF long
- H. Replace steel 8 IN purlin, 12 LF long

Work to be Completed total: \$ \_\_\_\_\_

**1266520 Site 0057 Airport Bldg Hanger D**

**Work to be Completed**

The applicant will utilize force account and/or contracts for in-kind repairs to the Wauchula City Airport Hanger D to restore this facility back to its pre-disaster design, function and capacity within the existing footprint.

- A. Replace 110 v receptacle wiring, 360 LF long
- B. Replace 15 each of corrugated steel hangar door nonmotorized manual opening, 23 FT wide x 14 FT high
- C. Replace 4 each of 16 GA steel 5 IN x 8 IN columns channel, 16 FT high

- D. Replace 1 each of 16 GA steel 3 IN x 4 IN columns channel, 16 FT high
- E. Replace 10 each of metal ridge vent unit, 10 FT long x 12 IN wide x 8 IN high
- F. Replace 1 each of fluorescent fixture lamp, 1 IN long x 4 IN wide
- G. Replace 50 each of anchor 1/2 IN x 5 IN bolts
- H. Replace 5 each of quadruple electric receptacle multiple boxes, 110 Volt
- I. Replace 900 SF of metal interior partitions steel L + C framing with corrugated metal skin one side, 3 (20 FT H x 15 FT L)
- J. Replace 720 SF of metal interior partitions steel L + C framing with corrugated metal skin one side, 3 (16FT H x 15 FT L)
- K. Building Exterior, 528 SF of metal interior / exterior siding skin only, 11(3 FT x 16 FT)
- L. Replace 1 each of metal interior partition displaced, 20 FT long x 15 FT wide
- M. Replace 60 SF of corrugated metal wall skin 3 FT w, 20 FT high

Work to be Completed total: \$\_\_\_\_\_

Cost

| Code            | Quantity | Unit     | Total Cost | Section     |
|-----------------|----------|----------|------------|-------------|
| 9001 (Contract) | 1.00     | Lump Sum |            | Uncompleted |
| 9001 (Contract) | 1.00     | Lump Sum |            | Uncompleted |
| 9001 (Contract) | 1.00     | Lump Sum |            | Uncompleted |
| 9001 (Contract) | 1.00     | Lump Sum |            | Uncompleted |

|                            |            |
|----------------------------|------------|
| CRC Gross Cost             | \$ _____   |
| Total 406 HMP Cost         | \$ _____   |
| Total Insurance Reductions | (\$ _____) |
| CRC Net Cost               | \$ _____   |
| Federal Share (90.00%)     | \$ _____   |
| Non-Federal Share (10.00%) | \$ _____   |

## Award Information

### Version Information

| Version # | Eligibility Status | Current Location | Bundle Number                | Project Amount | Cost Share | Federal Share Obligated | Date Obligated |
|-----------|--------------------|------------------|------------------------------|----------------|------------|-------------------------|----------------|
| 0         | Eligible           | Awarded          | PA-04-FL-4673-PW-01860(1984) |                | 90%        |                         | 2/14/2024      |

### Drawdown History

| EMMIE Drawdown Status As of Date | IFMIS Obligation # | Expenditure Number | Expended Date | Expended Amount |
|----------------------------------|--------------------|--------------------|---------------|-----------------|
| 3/6/2024                         | 4673DRFLP00018601  | 20223MOC-03052024  | 3/4/2024      |                 |

### Obligation History

| Version # | Date Obligated | Obligated Cost | Cost Share | IFMIS Status | IFMIS Obligation # |
|-----------|----------------|----------------|------------|--------------|--------------------|
|-----------|----------------|----------------|------------|--------------|--------------------|

## Subgrant Conditions

- As described in Title 2 Code of Federal Regulations (C.F.R.) § 200.333, financial records, supporting documents, statistical records and all other non-Federal entity records pertinent to a Federal award must be retained for a period of three (3) years from the date of submission of the final expenditure report or, for Federal awards that are renewed quarterly or annually, from the date of the submission of the quarterly or annual financial report, respectively, as reported to the Federal awarding agency or pass-through entity in the case of a subrecipient. Federal awarding agencies and pass-through entities must not impose any other record retention requirements upon non-Federal entities. Exceptions are stated in 2 C.F.R. §200.333(a) – (f)(1) and (2). All records relative to this project are subject to examination and audit by the State, FEMA and the Comptroller General of the United States and must reflect work related to disaster-specific costs.
- In the seeking of proposals and letting of contracts for eligible work, the Applicant/Subrecipient must comply with its Local, State (provided that the procurements conform to applicable Federal law) and Federal procurement laws, regulations, and procedures as required by FEMA Policy 2 CFR Part 200, Procurement Standards, §§ 317-326.
- The Recipient must submit its certification of the subrecipient's completion of all of its small projects and compliance with all environmental and historic preservation requirements within 180 days of the applicant's completion of its last small project, or the latest approved deadline, whichever is sooner.
- When any individual item of equipment purchased with PA funding is no longer needed, or a residual inventory of unused supplies exceeding \$ \_\_\_\_\_ remains, the subrecipient must follow the disposition requirements in Title 2 Code of Federal Regulations (C.F.R.) § 200.313-314.
- The terms of the FEMA-State Agreement are incorporated by reference into this project under the Public Assistance award and the applicant must comply with all applicable laws, regulations, policy, and guidance. This includes, among others, the Robert T. Stafford Disaster Relief and Emergency Assistance Act; Title 44 of the Code of Federal Regulations; FEMA Policy No. 104-009-2, Public Assistance Program and Policy Guide; and other applicable FEMA policy and guidance.
- The DHS Standard Terms and Conditions in effect as of the declaration date of this emergency declarations or major disaster, as applicable, are incorporated by reference into this project under the Public Assistance grant, which flow down from the Recipient to subrecipients unless a particular term or condition indicates otherwise.
- The Uniform Administrative Requirements, Cost Principles, and Audit Requirements set forth at Title 2 Code of Federal Regulations (C.F.R.) Part 200 apply to this project award under the Public Assistance grant, which flow down from the Recipient to all subrecipients unless a particular section of 2 C.F.R. Part 200, the FEMA-State Agreement, or the terms and conditions of this project award indicate otherwise. See 2 C.F.R. §§ 200.101 and 110.
- The subrecipient must submit a written request through the Recipient to FEMA before it makes a change to the approved scope of work in this project. If the subrecipient commences work associated with a change before FEMA approves the change, it will jeopardize financial assistance for this project. See FEMA Policy No. 104-009-2, Public Assistance Program and Policy Guide.
- Pursuant to section 312 of the Stafford Act, 42 U.S.C. 5155, FEMA is prohibited from providing financial assistance to any entity that receives assistance from another program, insurance, or any other source for the same work. The subrecipient agrees to repay all duplicated assistance to FEMA if they receive assistance for the same work from another Federal agency, insurance, or any other source. If an subrecipient receives funding from another federal program for the same purpose, it must notify FEMA through the Recipient and return any duplicated funding.

## Insurance

### Additional Information

01/10/2024

## **FACTS**

During the declared incident period heavy rains and high winds caused damage to facilities owned by Wauchula, City of.

## **REPETITIVE DAMAGES**

No previous disaster requirements were found for the location(s) identified in this project.

## **FINDINGS**

The Applicant submitted a commercial property policy through Public Risk Management of Florida. The policy number is PRM021-008. The policy period is from 10/01/2021 to 10/01/2022. The coverage totals for building and property is per scheduled location within the schedule of values. The policy has a \$\_\_\_\_\_ basic deductible per occurrence. Named windstorm deductible is 2% of the total insurance value (TIV) per unit, per occurrence.

### **Damage #1263321; Site 0057 Airport Bldg Hanger A; \$\_\_\_\_\_**

The facility was damaged by wind. No prior Obtain and Maintain (O&M) insurance requirement was found for this facility. The facility is scheduled location #0057 building B. The Building is scheduled for \$\_\_\_\_\_ and subject to a 2% windstorm deductible of \$\_\_\_\_\_. Coverage is anticipated. A reduction for anticipated insurance proceeds will be made in the amount of \$\_\_\_\_\_ (Repairs \$\_\_\_\_\_ – Deductible \$\_\_\_\_\_ = \$\_\_\_\_\_). An O&M will be mandated on the building for wind in the amount of \$\_\_\_\_\_.

### **Damage #1263328; Site 0096 Bldg. A Airport Custodian House; \$\_\_\_\_\_**

The facility was damaged by wind. No prior Obtain and Maintain (O&M) insurance requirement was found for this facility. The facility is scheduled location #0096 building A. The Building is scheduled for \$\_\_\_\_\_ and subject to a 2% windstorm deductible of \$\_\_\_\_\_. Coverage is anticipated. A reduction for anticipated insurance proceeds will be made in the amount of \$\_\_\_\_\_ (Repairs \$\_\_\_\_\_ – Deductible \$\_\_\_\_\_ = \$\_\_\_\_\_). An O&M will be mandated on the building for wind in the amount of \$\_\_\_\_\_.

### **Damage #1266516; Site 0057 Airport Bldg Hanger B; \$\_\_\_\_\_**

The facility was damaged by wind. No prior Obtain and Maintain (O&M) insurance requirement was found for this facility. The facility is scheduled location #0057 building C. The Building is scheduled for \$\_\_\_\_\_ and subject to a 2% windstorm deductible of \$\_\_\_\_\_. Coverage is anticipated. A reduction for anticipated insurance proceeds will be made in the amount of \$\_\_\_\_\_ (Repairs \$\_\_\_\_\_ – Deductible \$\_\_\_\_\_ = \$\_\_\_\_\_). An O&M will be mandated on the building for wind in the amount of \$\_\_\_\_\_.

### **Damage #1266520; Site 0057 Airport Bldg Hanger D; \$\_\_\_\_\_**

The facility was damaged by wind. No prior Obtain and Maintain (O&M) insurance requirement was found for this facility. The facility is scheduled location #0057 building E. The Building is scheduled for \$\_\_\_\_\_ and subject to a 2% windstorm deductible of \$\_\_\_\_\_. Coverage is anticipated. A reduction for anticipated insurance proceeds will be made in the amount of \$\_\_\_\_\_ (Repairs \$\_\_\_\_\_ – Deductible \$\_\_\_\_\_ = \$\_\_\_\_\_). An O&M will be mandated on the building for wind in the amount of \$\_\_\_\_\_.

## **FEMA Policy 206-086-1**

## **PART 2: Other Insurance-Related Provisions. (Sections 312 and 406(d) of the Stafford Act)**

**A. Duplication of Benefits.** FEMA cannot provide assistance for disaster-related losses that duplicate benefits available to an applicant from another source, including insurance.

1. Before FEMA approves assistance for a property, an applicant must provide FEMA with information about any actual or anticipated insurance settlement or recovery it is entitled to for that property.
2. FEMA will reduce assistance to an applicant by the amount of its actual or anticipated insurance proceeds.
3. Applicants must take reasonable efforts to recover insurance proceeds that they are entitled to receive from their insurer(s).

### **REQUIREMENTS**

The Obtain & Maintain requirements are listed below:

**Damage #1263321;** 1202 Maurice Sonny Clavel Rd. Wauchula, Florida, 33873, Site 0057 Airport Bldg Hanger A, 27.51354, -81.88057, will be required to Obtain and Maintain Commercial Insurance Coverage for the Building for Wind Damage in the amount of \$\_\_\_\_\_.

**Damage #1263328;** 1202 Maurice Sonny Clavel Rd. Wauchula, Florida, 33873, Site 0096 Bldg. A Airport Custodian House, 27.51268, -81.88224, will be required to Obtain and Maintain Commercial Insurance Coverage for the Building for Wind Damage in the amount of \$\_\_\_\_\_.

**Damage #1266516;** 1202 Maurice Sonny Clavel Rd. Site 0057, Airport Bldg Hanger B, 27.51323, -81.88304, will be required to Obtain and Maintain Commercial Insurance Coverage for the Building for Wind Damage in the amount of \$\_\_\_\_\_.

**Damage #1266520;** 1202 Maurice Sonny Clavel Rd. Site 0057, Airport Bldg Hanger D, 27.51240, -81.88320, will be required to Obtain and Maintain Commercial Insurance Coverage for the Building for Wind Damage in the amount of \$\_\_\_\_\_.

44 CFR § 206.253 Insurance requirements for facilities damaged by disasters other than flood.

(d) The requirements of section 311 of the Stafford Act are waived when eligible costs for an insurable facility do not exceed \$5,000. The Regional Administrator may establish a higher waiver amount based on hazard mitigation initiatives which reduce the risk of future damages by a disaster similar to the one which resulted in the major disaster declaration which is the basis for the application for disaster assistance.

(e) The recipient shall provide assurances that the required insurance coverage will be maintained for the anticipated life of the restorative work or the insured facility, whichever is the lesser.

(f) No assistance shall be provided under section 406 of the Stafford Act for any facility for which assistance was provided as a result of a previous major disaster unless all insurance required by FEMA as a condition of the previous assistance has been obtained and maintained.

FEMA Policy 206-086-1

F. Timeframes for Obtaining Insurance. FEMA will only approve assistance under the condition that an applicant obtains and maintains the required insurance.

1. The applicant must document its commitment to comply with the insurance requirement with proof of insurance.
2. If an applicant cannot insure a facility prior to grant approval (for example, if a building is being reconstructed), the applicant may provide a letter of commitment stating that they agree to the insurance requirement and will obtain the types and extent of insurance required, followed at a later date by proof of insurance once it is obtained. In these cases, the applicant should insure the property:
  - a. When the applicant resumes use of or legal responsibility for the property (for example, per terms of construction contract or at beneficial use of the property); or
  - b. When the scope of work is complete.
3. FEMA and the recipient will verify proof of insurance prior to grant closeout to ensure the applicant has complied with the insurance requirement.
4. An applicant should notify FEMA—in writing through the recipient—of changes to their insurance which impact their ability to satisfy the insurance requirement after it provides proof of insurance to FEMA. This includes changes related to self-insurance. If an applicant fails to do this, FEMA may de-obligate assistance and not provide assistance in a future disaster.

Miguel Lopez, Insurance Specialist, FEMA CRC EAST

## O&M Requirements

| Insured Peril | Item Type | Description                                                                                                                                                                                                                                                               | Required Coverage Amount |
|---------------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Wind          | Building  | Damage #1263321; 1202 Maurice Sonny Clavel Rd. Wauchula, Florida, 33873, Site 0057 Airport Bldg Hanger A, 27.51354, -81.88057, will be required to Obtain and Maintain Commercial Insurance Coverage for the Building for Wind Damage in the amount of \$_____.           |                          |
| Wind          | Building  | Damage #1263328; 1202 Maurice Sonny Clavel Rd. Wauchula, Florida, 33873, Site 0096 Bldg. A Airport Custodian House, 27.51268, -81.88224, will be required to Obtain and Maintain Commercial Insurance Coverage for the Building for Wind Damage in the amount of \$_____. |                          |
| Wind          | Building  | Damage #1266516; 1202 Maurice Sonny Clavel Rd. Site 0057, Airport Bldg Hanger B, 27.51323, -81.88304, will be required to Obtain and Maintain Commercial Insurance Coverage for the Building for Wind Damage in the amount of \$_____.                                    |                          |
| Wind          | Building  | Damage #1266520; 1202 Maurice Sonny Clavel Rd. Site 0057, Airport Bldg Hanger D, 27.51240, -81.88320, will be required to Obtain and Maintain Commercial Insurance Coverage for the Building for Wind Damage in the amount of \$_____.                                    |                          |

## 406 Mitigation

There is no additional mitigation information on **Wauchula City Airport**.

## Environmental Historical Preservation

Is this project compliant with EHP laws, regulations, and

Yes



executive orders?

## EHP Conditions

- Any change to the approved scope of work will require re-evaluation for compliance with NEPA and other Laws and Executive Orders.
- This review does not address all federal, state and local requirements. Acceptance of federal funding requires recipient to comply with all federal, state and local laws. Failure to obtain all appropriate federal, state and local environmental permits and clearances may jeopardize funding.
- If ground disturbing activities occur during construction, applicant will monitor ground disturbance and if any potential archaeological resources are discovered, will immediately cease construction in that area and notify the State and FEMA.
- SHM&SW CONDITION: If any asbestos containing material, lead-based paint, or other hazardous materials are found during remediation or repair activities, the subrecipient must comply with all federal, state, local abatement, and disposal requirements. Coordination with the FDEP Division of Air Resource Management or the local pollution control agency PRIOR to any demolition or renovations of buildings that contain asbestos or asbestos-containing materials is required. Failure to comply with these conditions may jeopardize FEMA funding; verification of compliance will be required at project closeout.
- SHM&SW CONDITION: The subrecipient shall ensure that all demolition debris is disposed of in a manner consistent with FDEP regulations. Failure to comply with these conditions may jeopardize FEMA funding; verification of compliance will be required at project closeout.

## EHP Additional Info

There is no additional environmental historical preservation on **Wauchula City Airport**.

## Final Reviews

### Final Review

**Reviewed By** DUFOUR, MATHEW R.

**Reviewed On** 02/06/2024 6:06 PM EDT

### Review Comments

*No comments available for the Final Review step*

### Recipient Review

**Reviewed By** Hayth, John

**Reviewed On** 02/08/2024 9:09 AM EDT

### Review Comments

Advanced

## Project Signatures

**Signed By** Minshew, Olivia

**Signed On** 02/12/2024

