REQUEST FOR QUALIFICATIONS
PASSENGER BOARDING BRIDGE SUPPLY AND INSTALLATION

Project Elevate
RFQ Number 1038

DUE DATE: February 18, 2020 at 2:00 pm

PRE-SUBMISSION CONFERENCE: January 30, 2020 at 2 pm

DESCRIPTION: Complete Construction Phase Services Including Relocation of existing Bridges and Installation of New Bridges

1. Introduction

The Gerald R. Ford International Airport Authority (GFIAA) is seeking a qualified Passenger Boarding Bridge (PBB) Contractor for Project Elevate. Project Elevate includes the Expansion and Widening of Concourse A at the Gerald R. Ford International Airport (GRR) terminal facility located at 5500 44th Street SE, Grand Rapids, MI 49512. The PBB Contractor, under the direction of the project Construction Manager, will be responsible for the supply and installation of eight new PBBs and the relocation of four existing PBBs as described in Exhibit F.

Project funding will include state and federal funding sources including the FAA AIP Program. All federal regulations related to the use of federal funding, including federal wage rates, must be adhered to under the contract resulting from this RFQ.

To obtain the highest quality facility within the required schedule and budget allocations, GFIAA seeks a PBB Supplier for Project Elevate through a Qualifications-Based Selection process which includes qualifications evaluation and fee proposals.

2. Pre-Submission Conference

CONFERENCE DATE: January 30, 2020 at 2 pm
CONFERENCE LOCATION: Airport Terminal, 5500 44th Street SE, Grand Rapids, MI 49512, 1st Floor – International Room

A pre-submission conference is scheduled for this request. Parking is available in the short term lot of the airport parking garage, parking tickets will be validated at the pre-proposal meeting. Equal opportunity will be provided for all Respondents to ask questions.

The pre-submission conference purpose is to provide equal opportunity for Respondents to review information related to the project, inspect the location, if applicable, and seek clarifications to the solicitation. Attendees shall have fully reviewed all solicitation documents and correspondence prior to the pre-submission meeting. The GFIAA will respond to post pre-submission meeting material inquiries at its sole discretion. Any material response to a post-submission meeting question will be publically posted on the inquiry page for this solicitation.

Attendees requiring special services are asked to provide their requirements to the GFIAA at least forty-eight (48) hours in advance to allow for accommodations.

3. Scope of Work

The GFIAA issues this Request for Qualifications (RFQ) in its process to obtain PBB Contractor services for the supply and installation of eight new PBBs and the relocation of four existing PBBs.

A. Design phase services may include the following:

- Work with GFIAA and the design/construction team as a partner in developing solutions for Project Elevate
- Provide detailed cost estimating and knowledge of marketplace conditions
- Provide project planning and scheduling related to PBBs
- Develop PBB construction phasing and scheduling that will minimize interruption to airport operations
- Advise GFIAA on ways to gain efficiencies in project delivery
- Participate with GFIAA in a process to set goals for DBE participation and implement the DBE program
- Protect the Owner's sensitivity to quality, safety, and environmental factors
- Completion and submission of submittal packages for Owner and Architect review and approval

B. Construction phase services may include the following:

- Arrange for procurement of materials and equipment
- Schedule and manage site operations
- Provide quality controls

- Bond and insure the PBB construction
- Address all federal, state and local permitting requirements
- Assist with resolving Owner issues and challenges
- Coordination with Owner-performed oversight and the Concourse A Expansion Construction Manager
- Document control for all communications, documents, submittals, etc.
- Relocation of existing PBBs
- Installation of new PBBs

4. Firm Qualifications

It is preferred by GFIAA that the selected firm have previous experience related to the following:

- Successful experience in the fabrication and installation of PBB's in the United States for a minimum period of 10 years. A listing of a minimum of five (5) completed projects in the United States.
- Successful experience in the relocation of existing PBB's in the United States within the past five (5) years. A listing of a minimum of five (5) completed projects in the United States.
- Ability to conform to the technical specifications as described in Exhibit F within the project timeframe expressed in Exhibit A.
- Ability and experience in conforming to the provisions of the FAA AIP Program.

5. Contractual Expectations

GFIAA anticipates utilizing the AIA A132 contract as basis for the contract resulting from this selection. Federal regulations related to the use of federal funding will be incorporated into the contract.

6. Statement of Qualifications (SOQ) Specifications

Qualifications must be submitted in and will be evaluated based on the format outlined below:

6.1 Executive Summary - One (1) page maximum – 5 points
Summarize your firm's strong points and describe how your experience, particularly with similar projects, will benefit GFIAA in its construction of Project Elevate.

6.2 Problem Statement & Management Summary - six (6) pages maximum – 25 points
State in succinct terms your understanding of the major issues of this project. Describe specifically your company's intended process to address the main issues of the project. Identify important steps your firm will take to meet the project goals and GFIAA expectations.

Include a narrative description of the Respondent's ability to comply with functional specifications provided to best suit the needs of the GFIAA; and support services in the form of response time and resources proposed to meet the project needs of supply new and relocating existing PBBs from award through delivery. Include the Respondent's anticipated schedule from bid award through delivery and on-site testing and training if applicable.

6.3 Experience and Past Performance – Nine (9) pages maximum – 25 points
Provide specific information on at least three (3), but no more than six (6) recently completed projects of similar scope (i.e. existing facility expansion under operation, cold climate work, PBB relocation etc.) and at least the scale of this project. Include the scope, schedule, key contact person from your company and the project Owner. For each project, indicate the pre-construction estimate, total final cost, number of change orders, and type of Owner/Contractor agreement and contractor references.

6.4 Capacity of the Respondent – Eight (8) pages maximum – 25 points
Provide a description of the resources (except for human resources) that the Respondent will employ to perform the work. Include a description of current workload and availability of resources to complete

the work and support the proposed work.

Propose a detailed project schedule for performing the work and providing all deliverables. Proposed completion date(s) must be provided in the Price Proposal Form.

Provide a chart with the staff you are committing to the project. Show lines of authority and communication, and provide a brief role description and responsibilities for each person as they relate to the project. Describe the expertise and experience provided by members of the manufacturing or service delivery team. List any relevant certifications held by any of the personnel expected to perform the work.

6.5 Price – Complete all price forms – 20 Points

- Price Proposal Form - Exhibit A
- Pricing for all Labor Categories - Exhibit B

7. Qualifications Submission

Responses may be delivered physically or electronically. To be considered, complete submissions must be received in the Gerald R. Ford International Airport Authority office located on the second floor of the terminal building or uploaded to the website provided prior to the due date and time specified (local time).

- Hard copy responses can be mailed or otherwise delivered to the address below.

Submission address:
Attn: Tom Cizauskas, Purchasing Manager
Gerald R Ford International Airport Authority
5500 44th St SE
Grand Rapids, MI 49512

- Electronic responses can be securely uploaded as a single pdf document to:
  https://www.dropbox.com/request/qjFJ2xtacR9pCLUV9Os3

Late responses will NOT be considered.

Hard copy submissions shall be submitted in an envelope clearly labeled with the solicitation number, Respondent's name, telephone number, and company name.

Electronic submissions shall be named with a form or portion of the firm's name as part of the document name.

By submitting the Respondent certifies that the response has not been made or prepared in collusion with any other Respondent and the prices, terms or conditions thereof have not been communicated by or on behalf of the Respondent to any other Respondent prior to the official opening of this request. This certification may be treated for all purposes as if it were a sworn statement made under oath, subject to the penalties for perjury. Moreover, it is made subject to the provisions of 18 U.S.C. Section 1001, relating to the making of false statements.

Sales and Marketing material beyond the scope of this request will not be used to determine the award and is not desired. Each submission should be simply and economically prepared, providing a concise description of the Respondent's ability to perform the product or services requested. Emphasis should be on completeness and clarity of content.

Submissions may be withdrawn by written request only if the request is received on or before the opening date and time.

Submissions not meeting these criterions may be deemed non-responsive.

GFIAA is not liable for any costs incurred by any prospective Respondent prior to the awarding of a contract, including any costs incurred in addressing this solicitation.

Each submission must be signed by a person authorized to sign contracts on the behalf of the Respondent. The name of the person signing must be followed by title.

8. Terms and Conditions

Information submitted in this solicitation is subject to the Michigan Freedom of Information Act (FOIA) and may not be held in confidence after the Respondent's submission is opened. A submission will be available for review after staff has evaluated it, or fifteen (15) business days after the opening date, whichever comes first. GFIAA cannot assure that any of the information submitted as part of or peripheral to the Respondent's submission will be kept confidential. Any Respondent submission language as confidential is considered automatically invalid and void. GFIAA is subject to FOIA which prohibits it from concealing information on or associated with responses, successful or unsuccessful, once they are opened.

Costs for Responding to this RFP – GFIAA will not pay for any information requested in the RFP or any cost incurred in submitting proposals, responding to additional questions, or participating in the interview process.

Rejection of Proposals – GFIAA reserves the right to reject any or all proposals in whole or in part and to waive irregularities in proposals received.

Evaluation, Status Updates, and Award Notification – GFIAA reserves the right to request additional information it may deem necessary after the submissions are received. As part of the evaluation process, Respondents may be requested to make an oral presentation, at the Respondent's expense, to an evaluation committee. Staff to be assigned to this project must participate in this presentation unless otherwise waived by GFIAA. The presentation will be followed by a question and answer session.

Any errors, omissions or discrepancies in the SOQ discovered by a prospective Respondent shall be brought to the attention of the GFIAA Purchasing Division as soon as possible after discovery. Further, the Respondent shall not be allowed to take advantage of error, omissions or discrepancies in the specifications.

GFIAA, at its sole discretion, reserves the right to award to the Respondent whose response is deemed most advantageous to GFIAA. GFIAA, at its sole discretion, shall select the most responsive and responsible Respondent and evaluate all responses based on the requirements and criterion set forth in this solicitation while reserving the right to weigh specifications and other factors in the award.

Proposer's Communications with Airport Officials and Employees Restricted – GFIAA staff will not be available for project related informational meetings until after the short list of firms has been identified. Persons or entities who intend to respond to the RFQ shall only discuss the RFQ with the designated contact person.

Non-Discrimination - The vendor shall not discriminate against an employee or applicant for employment with respect to hire, tenure, terms, conditions or privileges of employment, or a matter directly or indirectly related to employment, because of race, color, religion, national origin, age, sex, height, weight, marital status, or disability that is unrelated to the individual's ability to perform the duties of a particular job or position. The vendor shall observe and comply with all applicable federal, state and local laws, ordinances, rules and regulations which shall be deemed to include, but not be limited to, the Elliott-Larsen Civil Rights Act and the Persons with Disabilities Civil Rights Act.

Project funding will include state and federal funding sources including the FAA. All federal regulations related to the use of federal funding, including federal wage rates, must be adhered to under the construction contract resulting from this RFQ.

Disadvantaged Business Enterprise (DBE) - GFIAA encourages and solicits participation of qualified minority and women businesses consistent with the principle of utilizing the most highly qualified and competitive firms. The selected contractor will be expected to include DBE participation in the resulting contract at a rate to be determined by the Michigan Department of Transportation.

Signature - Each proposal must be signed by a person authorized to sign contracts on the behalf of the firm. The name of the person signing must be followed by title.

Addendums - Addendums are published on the airport's website. It is the vendor's sole responsibility to monitor the website for addendums and consider accordingly during preparation of this request.

Taxes - GFIAA is tax exempt. A copy of the Tax Certificate of Exemption is available upon request.

Inquiries - Questions regarding this solicitation are to be submitted in writing to purchasing@grr.org prior to 5 pm on February 12, 2020. Please note that staff interviews and/or site visits will not be granted until consultants have been invited for final interviews.

EXHIBIT A

PRICE PROPOSAL FORM

(Prices inclusive of all mobilization and overhead)

Gate #	COST UNIT	DESCRIPTION (Refer to EXHIBIT F for details)	COMPLETION DATES	PRICE
A1	EACH	Relocate Permanently	6/22/20 – 7/3/20	$
A3	EACH	Relocate Permanently	6/22/20 – 7/3/20	$
A5	EACH	Temporary Move with Corridor	7/20/20 – 7/31/20	$
A5	EACH	Relocate Permanently	7/5/21 – 7/16/21	$
A7	EACH	Temporary Move with Corridor	6/8/20 – 6/17/20	$
A7	EACH	Relocate Permanently	6/21/21 - /7/2/21	$
A8	EACH	Supply and install new PBB	2/22/21 – 6/18/21	$
A9	EACH	Supply and install new PBB	2/22/21 – 6/18/21	$
A10	EACH	Supply and install new PBB	2/22/21 – 6/18/21	$
A11	EACH	Supply and install new PBB	2/22/21 – 6/18/21	$
A12	EACH	Supply and install new PBB	2/22/21 – 6/18/21	$
A14	EACH	Supply and install new PBB	2/22/21 – 6/18/21	$
A15	EACH	Supply and install new PBB	2/22/21 – 6/18/21	$
A16	EACH	Supply and install new PBB	2/22/21 – 6/18/21	$
TOTAL CONTRACT BASE COST				$

EXHIBIT B

PRICING FOR LABOR CATEGORIES

(Prices are Basis for any Change Orders)

Labor Category	Standard Hourly Rate	Overtime Hourly Rate
Superintendent		
Rigging/Installation		
Electrical Technicians		
Mechanic		
Apprentice		
Shop/Manufacturing		
Consulting/Engineering		
Material		
Equipment:		
Flatbed/Delivery		
Tech Truck		
Service/Rigging Truck		
Equipment Rental		
Equipment Piece:		
Equipment Piece:		

PARTS (PERCENTAGE OF DISCOUNT FROM LIST PRICE): _____

EXHIBIT C

PASSENGER BOARDING BRIDGE SUPPLY AND INSTALLATION
Gerald R. Ford International Airport
PRELIMINARY SCHEDULE*

Request for Qualifications (RFQ) Issue Date: January 21, 2020

Pre-Proposal Meeting: January 30, 2020

Statement of Qualifications Due (SOQ): February 18, 2020

Airport Authority Committee Contract Review: February 19, 2020

Airport Authority Board Contract Review: March 2020

Concourse A Construction Begins**: April 2020

PBB Work Begins: June 2020

PBB Construction Completed: June 2021

Concourse A Construction Completed: Late 2021

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*This schedule is provided as an overview of the project and is subject to change as GFIAA's needs change or through negotiation with the successful Proposer.

**The construction schedule and phasing is dependent on funding and availability of funds and may be accelerated or delayed.

EXHIBIT D

GERALD R. FORD INTERNATIONAL AIRPORT AUTHORITY
AIRSIDE INSURANCE REQUIREMENTS

The Contractor shall purchase and maintain, at its sole expense and as long as it is providing services to the Gerald R. Ford International Airport Authority (Authority), the following insurance coverage:

a. Commercial General Liability – Occurrence form, including coverage for bodily injury, personal injury, property damage (broad form), premises/operations, blanket contractual, and products/completed operations. Coverage shall be endorsed to include the Gerald R. Ford International Airport Authority, Authority Board, and Kent County as an additional insured for work performed by the Contractor in accordance with the Agreement.

   Minimum Limits:
   - $10,000,000 per occurrence

b. Motor Vehicle Liability – Including Michigan No-Fault coverage -covering owned, hired, and non-owned automobiles.

   Minimum Limits:
   - No-fault coverages – statutory
   - $5,000,000 per occurrence combined single limit for bodily injury and property damage.

c. Workers' Compensation and Employer's Liability – Statutory coverage or proof acceptable to the Authority of approval as a self-insurer by the State of Michigan.

   Minimum Limits:
   - Workers' Compensation – statutory
   - Employer's Liability - $100,000 each accident/$100,000 disease – each employee
   - $500,000 disease – policy limit

Insurance coverage shall cover all claims against the Authority, their officials and employees, arising out of the work performed by the Contractor or any subcontractors under the Agreement. Should any work be subcontracted, it shall be the responsibility of the Contractor to maintain Independent Contractor's Protective Liability Insurance with limits equal to those specified above for Commercial General Liability Insurance. In addition, the Contractor shall provide proof of Workers' Compensation Insurance for all subcontractors in compliance with the required statutory limits of the State of Michigan.

The insurance policies shall be with companies licensed to do business in the State of Michigan and in a form satisfactory to the Authority. Certificates of insurance with a thirty-(30) day cancellation clause shall be filed with and approved by the Authority at least five (5) days in advance of commencing work under the Agreement. Cancellation, material restriction, nonrenewal or lapse of any of the required policies shall be grounds for immediate termination of the Agreement by the Authority.

The Authority reserves the right to request a complete certified copy of the policies for the above coverage's.

Any reduction or exhaustion in the limits of required insurance coverage shall not be deemed to limit the indemnification afforded in accordance with the Agreement or any amendments thereto.

EXHIBIT E
FEDERAL PROVISIONS

1. ACCESS TO RECORDS AND REPORTS

The Contractor must maintain an acceptable cost accounting system. The Contractor agrees to provide the Owner, the Federal Aviation Administration and the Comptroller General of the United States or any of their duly authorized representatives access to any books, documents, papers and records of the Contractor which are directly pertinent to the specific contract for the purpose of making audit, examination, excerpts and transcriptions. The Contractor agrees to maintain all books, records and reports required under this contract for a period of not less than three years after final payment is made and all pending matters are closed.

2. NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION to

ENSURE EQUAL EMPLOYMENT OPPORTUNITY

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Timetables

Goals for minority participation for each trade: 0%

Goals for female participation in each trade: 0%

These goals are applicable to all of the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a) and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs (OFCCP) within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

4. As used in this notice and in the contract resulting from this solicitation, the "covered area" is Grand Rapids, Kent County, Michigan.

3. BREACH OF CONTRACT TERMS

Any violation or breach of terms of this contract on the part of the [Contractor | Consultant] or its subcontractors may result in the suspension or termination of this contract or such other action that may be necessary to enforce the rights of the parties of this agreement.

Owner will provide [Contractor | Consultant] written notice that describes the nature of the breach and corrective actions the [Contractor | Consultant] must undertake in order to avoid termination of the contract. Owner reserves the right to withhold payments to Contractor until such time the Contractor corrects the breach or the Owner elects to terminate the contract. The Owner's notice will identify a specific date by which the [Contractor | Consultant] must correct the breach. Owner may proceed with termination of the contract if the [Contractor | Consultant] fails to correct the breach by the deadline indicated in the Owner's notice.

The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder are in addition to, and not a limitation of, any duties, obligations, rights and remedies otherwise imposed or available by law.

4. BUY AMERICAN PREFERENCE

The Contractor agrees to comply with 49 USC § 50101, which provides that Federal funds may not be obligated unless all steel and manufactured goods used in AIP funded projects are produced in the United States, unless the Federal Aviation Administration has issued a waiver for the product; the product is listed as an Excepted Article, Material Or Supply in Federal Acquisition Regulation subpart 25.108; or is included in the FAA Nationwide Buy American Waivers Issued list.

A bidder or offeror must complete and submit the Buy America certification included herein with their bid or offer. The Owner will reject as nonresponsive any bid or offer that does not include a completed Certificate of Buy American Compliance.

CERTIFICATE OF BUY AMERICAN COMPLIANCE FOR TOTAL FACILITY

As a matter of bid responsiveness, the bidder or offeror must complete, sign, date, and submit this certification statement with its proposal. The bidder or offeror must indicate how it intends to comply with 49 USC § 50101 by selecting one of the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (i.e. not both) by inserting a checkmark (✓) or the letter "X".

☐ Bidder or offeror hereby certifies that it will comply with 49 USC § 50101 by:

a) Only installing steel and manufactured products produced in the United States; or
b) Installing manufactured products for which the Federal Aviation Administration (FAA) has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing; or
c) Installing products listed as an Excepted Article, Material or Supply in Federal Acquisition Regulation Subpart 25.108.

By selecting this certification statement, the bidder or offeror agrees:

- To provide to the Owner evidence that documents the source and origin of the steel and manufactured product.
- To faithfully comply with providing U.S. domestic products.
- To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

☐ The bidder or offeror hereby certifies it cannot comply with the 100 percent Buy American Preferences of 49 USC § 50101(a) but may qualify for either a Type 3 or Type 4 waiver under 49 USC § 50101(b). By selecting this certification statement, the apparent bidder or offeror with the apparent low bid agrees:

a) To the submit to the Owner within 15 calendar days of the bid opening, a formal waiver request and required documentation that supports the type of waiver being requested.
b) That failure to submit the required documentation within the specified timeframe is cause for a non-responsive determination that may result in rejection of the proposal.
c) To faithfully comply with providing U.S. domestic products at or above the approved U.S. domestic content percentage as approved by the FAA.
d) To furnish U.S. domestic product for any waiver request that the FAA rejects.
e) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

Required Documentation

Type 3 Waiver – The cost of components and subcomponents produced in the United States is more than 60 percent of the cost of all components and subcomponents of the "facility". The required documentation for a Type 3 waiver is:

a) Listing of all manufactured products that are not comprised of 100 percent U.S. domestic content (excludes products listed on the FAA Nationwide Buy American Waivers Issued listing and products excluded by Federal Acquisition Regulation Subpart 25.108; products of unknown origin must be considered as non-domestic products in their entirety).

b) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly and installation at project location.
c) Percentage of non-domestic component and subcomponent cost as compared to total "facility" component and subcomponent costs, excluding labor costs associated with final assembly and installation at project location.

Type 4 Waiver – Total cost of project using U.S. domestic source product exceeds the total project cost using non-domestic product by 25 percent. The required documentation for a Type 4 of waiver is:

a) Detailed cost information for total project using U.S. domestic product
b) Detailed cost information for total project using non-domestic product

False Statements: Per 49 USC § 47126, this certification concerns a matter within the jurisdiction of the Federal Aviation Administration and the making of a false, fictitious or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code.

Date	Signature
Company Name	Title

Certificate of Buy American Compliance for Manufactured Products

As a matter of bid responsiveness, the bidder or offeror must complete, sign, date, and submit this certification statement with their proposal. The bidder or offeror must indicate how they intend to comply with 49 USC § 50101 by selecting one on the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (not both) by inserting a checkmark (✓) or the letter "X".

☐ Bidder or offeror hereby certifies that it will comply with 49 USC § 50101 by:

a) Only installing steel and manufactured products produced in the United States;

b) Installing manufactured products for which the Federal Aviation Administration (FAA) has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing; or

c) Installing products listed as an Excepted Article, Material or Supply in Federal Acquisition Regulation Subpart 25.108.

By selecting this certification statement, the bidder or offeror agrees:

1. To provide to the Owner evidence that documents the source and origin of the steel and manufactured product.
2. To faithfully comply with providing U.S. domestic product.
3. To furnish U.S. domestic product for any waiver request that the FAA rejects
4. To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

☐ The bidder or offeror hereby certifies it cannot comply with the 100 percent Buy American Preferences of 49 USC § 50101(a) but may qualify for either a Type 3 or Type 4 waiver under 49 USC § 50101(b). By selecting this certification statement, the apparent bidder or offeror with the apparent low bid agrees:

1. To the submit to the Owner within 15 calendar days of the bid opening, a formal waiver request and required documentation that supports the type of waiver being requested.
2. That failure to submit the required documentation within the specified timeframe is cause for a non-responsive determination may result in rejection of the proposal.
3. To faithfully comply with providing U.S. domestic products at or above the approved U.S. domestic content percentage as approved by the FAA.
4. To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

Required Documentation

Type 3 Waiver – The cost of the item components and subcomponents produced in the United States is more that 60 percent of the cost of all components and subcomponents of the "item". The required documentation for a Type 3 waiver is:

a) Listing of all product components and subcomponents that are not comprised of 100 percent U.S. domestic content (Excludes products listed on the FAA Nationwide Buy American Waivers Issued listing and products excluded by Federal Acquisition Regulation

Subpart 25.108; products of unknown origin must be considered as non-domestic products in their entirety).

b) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly at place of manufacture.
c) Percentage of non-domestic component and subcomponent cost as compared to total "item" component and subcomponent costs, excluding labor costs associated with final assembly at place of manufacture.

Type 4 Waiver – Total cost of project using U.S. domestic source product exceeds the total project cost using non-domestic product by 25 percent. The required documentation for a Type 4 of waiver is:

a) Detailed cost information for total project using U.S. domestic product
b) Detailed cost information for total project using non-domestic product

False Statements: Per 49 USC § 47126, this certification concerns a matter within the jurisdiction of the Federal Aviation Administration and the making of a false, fictitious or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code.

Date	Signature
Company Name	Title

5. GENERAL CIVIL RIGHTS PROVISIONS

The Contractor agrees to comply with pertinent statutes, Executive Orders and such rules as are promulgated to ensure that no person shall, on the grounds of race, creed, color, national origin, sex, age, or disability be excluded from participating in any activity conducted with or benefiting from Federal assistance.

This provision binds the Contractor and subcontractors from the bid solicitation period through the completion of the contract. This provision is in addition to that required by Title VI of the Civil Rights Act of 1964.

6. GENERAL CIVIL RIGHTS PROVISIONS

The (tenant/concessionaire/lessee) agrees to comply with pertinent statutes, Executive Orders and such rules as are promulgated to ensure that no person shall, on the grounds of race, creed, color, national origin, sex, age, or disability be excluded from participating in any activity conducted with or benefiting from Federal assistance. If the (tenant/concessionaire/lessee) transfers its obligation to another, the transferee is obligated in the same manner as the (tenant/concessionaire/lessor).

This provision obligates the (tenant/concessionaire/lessee) for the period during which the property is owned, used or possessed by the (tenant/concessionaire/lessee) and the airport remains obligated to the Federal Aviation Administration. This provision is in addition to that required by Title VI of the Civil Rights Act of 1964.

7. Title VI Solicitation Notice:

The **Gerald R Ford International Airport Authrority** in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 USC §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders or offerors that it will affirmatively ensure that any contract entered into pursuant to this advertisement, [select disadvantaged business enterprises or airport concession disadvantaged business enterprises] will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

Title VI List of Pertinent Nondiscrimination Acts and Authorities

During the performance of this contract, the Contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "Contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

- Title VI of the Civil Rights Act of 1964 (42 USC § 2000d *et seq*., 78 stat. 252) (prohibits discrimination on the basis of race, color, national origin);
- 49 CFR part 21 (Non-discrimination in Federally-assisted programs of the Department of Transportation—Effectuation of Title VI of the Civil Rights Act of 1964);
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 USC § 4601) (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Section 504 of the Rehabilitation Act of 1973 (29 USC § 794 *et seq*.), as amended (prohibits discrimination on the basis of disability); and 49 CFR part 27;
- The Age Discrimination Act of 1975, as amended (42 USC § 6101 *et seq*.) (prohibits discrimination on the basis of age);

- Airport and Airway Improvement Act of 1982 (49 USC § 471, Section 47123), as amended (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987 (PL 100-209) (broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, the Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act of 1990, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 USC §§ 12131 – 12189) as implemented by U.S. Department of Transportation regulations at 49 CFR parts 37 and 38;
- The Federal Aviation Administration's Nondiscrimination statute (49 USC § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures nondiscrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 USC 1681 et seq).

8. CLEAN AIR AND WATER POLLUTION CONTROL

Contractor agrees to comply with all applicable standards, orders, and regulations issued pursuant to the Clean Air Act (42 USC § 740-7671q) and the Federal Water Pollution Control Act as amended (33 USC § 1251-1387). The Contractor agrees to report any violation to the Owner immediately upon discovery. The Owner assumes responsibility for notifying the Environmental Protection Agency (EPA) and the Federal Aviation Administration.

Contractor must include this requirement in all subcontracts that exceeds $150,000.

9. CONTRACT WORKHOURS AND SAFETY STANDARDS ACT REQUIREMENTS

1. Overtime Requirements.

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic, including watchmen and guards, in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; Liability for Unpaid Wages; Liquidated Damages.

In the event of any violation of the clause set forth in paragraph (1) of this clause, the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such

contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this clause, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this clause.

3. Withholding for Unpaid Wages and Liquidated Damages.

The Federal Aviation Administration (FAA) or the Owner shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2) of this clause.

4. Subcontractors.

The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (1) through (4) and also a clause requiring the subcontractor to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this clause.

10. COPELAND "ANTI-KICKBACK" ACT

Contractor must comply with the requirements of the Copeland "Anti-Kickback" Act (18 USC 874 and 40 USC 3145), as supplemented by Department of Labor regulation 29 CFR part 3. Contractor and subcontractors are prohibited from inducing, by any means, any person employed on the project to give up any part of the compensation to which the employee is entitled. The Contractor and each Subcontractor must submit to the Owner, a weekly statement on the wages paid to each employee performing on covered work during the prior week. Owner must report any violations of the Act to the Federal Aviation Administration.

11. DAVIS-BACON REQUIREMENTS

1. Minimum Wages.

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalent thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the Contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (1)(iv) of this section; also, regular contributions made

or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided* that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under (1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the Contractor and its subcontractors at the site of the work in a prominent and accessible place where it can easily be seen by the workers.

(ii)(A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination;

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the Contractor, the laborers, or mechanics to be employed in the classification, or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii) (B) or (C) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the Contractor does not make payments to a trustee or other third person, the Contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program: *Provided* that the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding.

The Federal Aviation Administration or the sponsor shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the Contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the Contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of work, all or part of the wages required by the contract, the Federal Aviation Administration may, after written notice to the Contractor, Sponsor, Applicant, or Owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and Basic Records.

(i) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 1(b)(2)(B) of the Davis-Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the Contractor shall maintain records that show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and that show the costs anticipated or the actual costs incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The Contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Federal Aviation Administration if the agency is a party to the contract, but if the agency is not such a party, the Contractor will submit the payrolls to the applicant, Sponsor, or Owner, as the case may be, for transmission to the Federal Aviation Administration. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (*e.g.* the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at *www.dol.gov/whd/forms/wh347instr.htm* or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker and shall provide them upon request to the Federal Aviation Administration if the agency is a party to the contract, but if the agency is not such a party, the Contractor will submit them to the applicant, sponsor, or Owner, as the case may be, for transmission to the Federal Aviation Administration, the Contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the applicant, Sponsor, or Owner).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) The payroll for the payroll period contains the information required to be provided under 29 CFR § 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR § 5.5 (a)(3)(i), and that such information is correct and complete;

(2) Each laborer and mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations 29 CFR Part 3;

(3) Each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the Contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The Contractor or subcontractor shall make the records required under paragraph (3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the sponsor, the

Federal Aviation Administration, or the Department of Labor and shall permit such representatives to interview employees during working hours on the job. If the Contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the Contractor, Sponsor, applicant, or Owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and Trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program

for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination that provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate that is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal Employment Opportunity. The utilization of apprentices, trainees, and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act Requirements.

The Contractor shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this contract.

6. Subcontracts.

The Contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR Part 5.5(a)(1) through (10) and such other clauses as the Federal Aviation Administration may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR Part 5.5.

7. Contract Termination: Debarment.

A breach of the contract clauses in paragraph 1 through 10 of this section may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act Requirements.

All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes Concerning Labor Standards.

Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause

include disputes between the Contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of Eligibility.

(i) By entering into this contract, the Contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the Contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 USC 1001.

12. CERTIFICATION OF OFFERER/BIDDER REGARDING DEBARMENT

By submitting a bid/proposal under this solicitation, the bidder or offeror certifies that neither it nor its principals are presently debarred or suspended by any Federal department or agency from participation in this transaction.

13. CERTIFICATION OF LOWER TIER CONTRACTORS REGARDING DEBARMENT

The successful bidder, by administering each lower tier subcontract that exceeds $25,000 as a "covered transaction", must verify each lower tier participant of a "covered transaction" under the project is not presently debarred or otherwise disqualified from participation in this federally assisted project. The successful bidder will accomplish this by:

1. Checking the System for Award Management at website: http://www.sam.gov.
2. Collecting a certification statement similar to the Certification of Offerer /Bidder Regarding Debarment, above.
3. Inserting a clause or condition in the covered transaction with the lower tier contract.

If the Federal Aviation Administration later determines that a lower tier participant failed to disclose to a higher tier participant that it was excluded or disqualified at the time it entered the covered transaction, the FAA may pursue any available remedies, including suspension and debarment of the non-compliant participant.

<u>Information Submitted as a matter of bidder responsiveness:</u>
The Owner's award of this contract is conditioned upon Bidder or Offeror satisfying the good faith effort requirements of 49 CFR §26.53.

As a condition of bid responsiveness, the Bidder or Offeror must submit the following information with its proposal on the forms provided herein:

1) The names and addresses of Disadvantaged Business Enterprise (DBE) firms that will participate in the contract;
2) A description of the work that each DBE firm will perform;
3) The dollar amount of the participation of each DBE firm listed under (1)
4) Written statement from Bidder or Offeror that attests their commitment to use the DBE firm(s) listed under (1) to meet the Owner's project goal; and

5) If Bidder or Offeror cannot meet the advertised project DBE goal, evidence of good faith efforts undertaken by the Bidder or Offeror as described in appendix A to 49 CFR part 26.

Information submitted as a matter of bidder responsibility:

The Owner's award of this contract is conditioned upon Bidder or Offeror satisfying the good faith effort requirements of 49 CFR §26.53.

The successful Bidder or Offeror must provide written confirmation of participation from each of the DBE firms the Bidder or Offeror lists in its commitment within five days after bid opening.

1) The names and addresses of Disadvantaged Business Enterprise (DBE) firms that will participate in the contract;
2) A description of the work that each DBE firm will perform;
3) The dollar amount of the participation of each DBE firm listed under (1)
4) Written statement from Bidder or Offeror that attests their commitment to use the DBE firm(s) listed under (1) to meet the Owner's project goal; and
5) If Bidder or Offeror cannot meet the advertised project DBE goal, evidence of good faith efforts undertaken by the Bidder or Offeror as described in appendix A to 49 CFR part 26.

14. TEXTING WHEN DRIVING

In accordance with Executive Order 13513, "Federal Leadership on Reducing Text Messaging While Driving", (10/1/2009) and DOT Order 3902.10, "Text Messaging While Driving", (12/30/2009), the Federal Aviation Administration encourages recipients of Federal grant funds to adopt and enforce safety policies that decrease crashes by distracted drivers, including policies to ban text messaging while driving when performing work related to a grant or subgrant.

In support of this initiative, the Owner encourages the Contractor to promote policies and initiatives for its employees and other work personnel that decrease crashes by distracted drivers, including policies that ban text messaging while driving motor vehicles while performing work activities associated with the project. The Contractor must include the substance of this clause in all sub-tier contracts exceeding $3,500 that involve driving a motor vehicle in performance of work activities associated with the project.

15. ENERGY CONSERVATION REQUIREMENTS

Contractor and Subcontractor agree to comply with mandatory standards and policies relating to energy efficiency as contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 USC 6201*et seq*).

16. EQUAL OPPORTUNITY CLAUSE

During the performance of this contract, the Contractor agrees as follows:

(1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, sexual orientation, gender identify, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff, or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places,

available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive considerations for employment without regard to race, color, religion, sex, or national origin.

(3) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the Contractor's commitments under this section and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The Contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance*: Provided, however*, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

17. FEDERAL FAIR LABOR STANDARDS ACT (FEDERAL MINIMUM WAGE)

All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR part 201, the Federal Fair Labor Standards Act (FLSA), with the same force and effect as if given in full text. The FLSA sets minimum wage, overtime pay, recordkeeping, and child labor standards for full and part-time workers.

The [*Contractor* | *Consultant*] has full responsibility to monitor compliance to the referenced statute or regulation. The [*Contractor* | *Consultant*] must address any claims or disputes that arise from this requirement directly with the U.S. Department of Labor – Wage and Hour Division.

18. CERTIFICATION REGARDING LOBBYING

The Bidder or Offeror certifies by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the Bidder or Offeror, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

19. PROHIBITION OF SEGREGATED FACILITIES

(a) The Contractor agrees that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Contractor agrees that a breach of this clause is a violation of the Equal Employment Opportunity clause in this contract.

(b) "Segregated facilities," as used in this clause, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, or national origin because of written or oral policies or employee

custom. The term does not include separate or single-user rest rooms or necessary dressing or sleeping areas provided to assure privacy between the sexes.

(c) The Contractor shall include this clause in every subcontract and purchase order that is subject to the Equal Employment Opportunity clause of this contract.

20. OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970

All contracts and subcontracts that result from this solicitation incorporate by reference the requirements of 29 CFR Part 1910 with the same force and effect as if given in full text. The employer must provide a work environment that is free from recognized hazards that may cause death or serious physical harm to the employee. The employer retains full responsibility to monitor its compliance and their subcontractor's compliance with the applicable requirements of the Occupational Safety and Health Act of 1970 (20 CFR Part 1910). The employer must address any claims or disputes that pertain to a referenced requirement directly with the U.S. Department of Labor – Occupational Safety and Health Administration.

21. PROCUREMENT OF RECOVERED MATERIALS

Contractor and subcontractor agree to comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, and the regulatory provisions of 40 CFR Part 247. In the performance of this contract and to the extent practicable, the Contractor and subcontractors are to use products containing the highest percentage of recovered materials for items designated by the Environmental Protection Agency (EPA) under 40 CFR Part 247 whenever:

1) The contract requires procurement of $10,000 or more of a designated item during the fiscal year; or
2) The contractor has procured $10,000 or more of a designated item using Federal funding during the previous fiscal year.

The list of EPA-designated items is available at www.epa.gov/smm/comprehensive-procurement-guidelines-construction-products.

Section 6002(c) establishes exceptions to the preference for recovery of EPA-designated products if the contractor can demonstrate the item is:

a) Not reasonably available within a timeframe providing for compliance with the contract performance schedule;
b) Fails to meet reasonable contract performance requirements; or
c) Is only available at an unreasonable price.

22. SEISMIC SAFETY

The Contractor agrees to ensure that all work performed under this contract, including work performed by subcontractors, conforms to a building code standard that provides a level of seismic safety substantially equivalent to standards established by the National Earthquake Hazards Reduction Program (NEHRP). Local building codes that model their code after the current version of the International Building Code (IBC) meet the NEHRP equivalency level for seismic safety.

23. CERTIFICATION OF OFFERER/BIDDER REGARDING TAX DELINQUENCY AND FELONY CONVICTIONS

The applicant must complete the following two certification statements. The applicant must indicate its current status as it relates to tax delinquency and felony conviction by inserting a checkmark (✓) in the space following the applicable response. The applicant agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification in all lower tier subcontracts.

Certifications

1) The applicant represents that it is ( ) is not ( ) a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

2) The applicant represents that it is ( ) is not ( ) is not a corporation that was convicted of a criminal violation under any Federal law within the preceding 24 months.

Note

If an applicant responds in the affirmative to either of the above representations, the applicant is ineligible to receive an award unless the sponsor has received notification from the agency suspension and debarment official (SDO) that the SDO has considered suspension or debarment and determined that further action is not required to protect the Government's interests. The applicant therefore must provide information to the owner about its tax liability or conviction to the Owner, who will then notify the FAA Airports District Office, which will then notify the agency's SDO to facilitate completion of the required considerations before award decisions are made.

Term Definitions

> **Felony conviction:** Felony conviction means a conviction within the preceding twentyfour (24) months of a felony criminal violation under any Federal law and includes conviction of an offense defined in a section of the U.S. code that specifically classifies the offense as a felony and conviction of an offense that is classified as a felony under 18 U.S.C. § 3559.
>
> **Tax Delinquency**: A tax delinquency is any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

24. TERMINATION FOR CONVENIENCE (CONSTRUCTION & EQUIPMENT CONTRACTS)

The Owner may terminate this contract in whole or in part at any time by providing written notice to the Contractor. Such action may be without cause and without prejudice to any other right or remedy of Owner. Upon receipt of a written notice of termination, except as explicitly directed by the Owner, the Contractor shall immediately proceed with the following obligations regardless of any delay in determining or adjusting amounts due under this clause:

1. Contractor must immediately discontinue work as specified in the written notice.
2. Terminate all subcontracts to the extent they relate to the work terminated under the notice.
3. Discontinue orders for materials and services except as directed by the written notice.

4. Deliver to the Owner all fabricated and partially fabricated parts, completed and partially completed work, supplies, equipment and materials acquired prior to termination of the work, and as directed in the written notice.
5. Complete performance of the work not terminated by the notice.
6. Take action as directed by the Owner to protect and preserve property and work related to this contract that Owner will take possession.

Owner agrees to pay Contractor for:

3) completed and acceptable work executed in accordance with the contract documents prior to the effective date of termination;

4) documented expenses sustained prior to the effective date of termination in performing work and furnishing labor, materials, or equipment as required by the contract documents in connection with uncompleted work;

5) reasonable and substantiated claims, costs, and damages incurred in settlement of terminated contracts with Subcontractors and Suppliers; and

6) reasonable and substantiated expenses to the Contractor directly attributable to Owner's termination action.

Owner will not pay Contractor for loss of anticipated profits or revenue or other economic loss arising out of or resulting from the Owner's termination action.

The rights and remedies this clause provides are in addition to any other rights and remedies provided by law or under this contract.

25. TERMINATION FOR DEFAULT (EQUIPMENT)

The Owner may, by written notice of default to the Contractor, terminate all or part of this Contract if the Contractor:

1. Fails to commence the Work under the Contract within the time specified in the Notice- to-Proceed;
2. Fails to make adequate progress as to endanger performance of this Contract in accordance with its terms;
3. Fails to make delivery of the equipment within the time specified in the Contract, including any Owner approved extensions;
4. Fails to comply with material provisions of the Contract;
5. Submits certifications made under the Contract and as part of their proposal that include false or fraudulent statements; or
6. Becomes insolvent or declares bankruptcy.

If one or more of the stated events occur, the Owner will give notice in writing to the Contractor and Surety of its intent to terminate the contract for cause. At the Owner's discretion, the notice may allow the Contractor and Surety an opportunity to cure the breach or default.

If within [10] days of the receipt of notice, the Contractor or Surety fails to remedy the breach or default to the satisfaction of the Owner, the Owner has authority to acquire equipment by other procurement

action. The Contractor will be liable to the Owner for any excess costs the Owner incurs for acquiring such similar equipment.

Payment for completed equipment delivered to and accepted by the Owner shall be at the Contract price. The Owner may withhold from amounts otherwise due the Contractor for such completed equipment, such sum as the Owner determines to be necessary to protect the Owner against loss because of Contractor default.

Owner will not terminate the Contractor's right to proceed with the Work under this clause if the delay in completing the work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor. Examples of such acceptable causes include: acts of God, acts of the Owner, acts of another Contractor in the performance of a contract with the Owner, and severe weather events that substantially exceed normal conditions for the location.

If, after termination of the Contractor's right to proceed, the Owner determines that the Contractor was not in default, or that the delay was excusable, the rights and obligations of the parties will be the same as if the Owner issued the termination for the convenience the Owner.

The rights and remedies of the Owner in this clause are in addition to any other rights and remedies provided by law or under this contract.

26. TRADE RESTRICTION CERTIFICATION

By submission of an offer, the Offeror certifies that with respect to this solicitation and any resultant contract, the Offeror –

1) is not owned or controlled by one or more citizens of a foreign country included in the list of countries that discriminate against U.S. firms as published by the Office of the United States Trade Representative (USTR);

2) has not knowingly entered into any contract or subcontract for this project with a person that is a citizen or national of a foreign country included on the list of countries that discriminate against U.S. firms as published by the USTR; and

3) has not entered into any subcontract for any product to be used on the Federal project that is produced in a foreign country included on the list of countries that discriminate against U.S. firms published by the USTR.

This certification concerns a matter within the jurisdiction of an agency of the United States of America and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18 USC Section 1001.

The Offeror/Contractor must provide immediate written notice to the Owner if the Offeror/Contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The Contractor must require subcontractors provide immediate written notice to the Contractor if at any time it learns that its certification was erroneous by reason of changed circumstances.

Unless the restrictions of this clause are waived by the Secretary of Transportation in accordance with 49 CFR 30.17, no contract shall be awarded to an Offeror or subcontractor:

1) who is owned or controlled by one or more citizens or nationals of a foreign country included on the list of countries that discriminate against U.S. firms published by the USTR or
2) whose subcontractors are owned or controlled by one or more citizens or nationals of a foreign country on such USTR list or
3) who incorporates in the public works project any product of a foreign country on such USTR list.

Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by this provision. The knowledge and information of a contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

The Offeror agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in all lower tier subcontracts. The Contractor may rely on the certification of a prospective subcontractor that it is not a firm from a foreign country included on the list of countries that discriminate against U.S. firms as published by USTR, unless the Offeror has knowledge that the certification is erroneous.

This certification is a material representation of fact upon which reliance was placed when making an award. If it is later determined that the Contractor or subcontractor knowingly rendered an erroneous certification, the Federal Aviation Administration (FAA) may direct through the Owner cancellation of the contract or subcontract for default at no cost to the Owner or the FAA.

27. VETERAN'S PREFERENCE

In the employment of labor (excluding executive, administrative, and supervisory positions), the Contractor and all sub-tier contractors must give preference to covered veterans as defined within Title 49 United States Code Section 47112. Covered veterans include Vietnam-era veterans, Persian Gulf veterans, Afghanistan-Iraq war veterans, disabled veterans, and small business concerns (as defined by 15 USC 632) owned and controlled by disabled veterans. This preference only applies when there are covered veterans readily available and qualified to perform the work to which the employment relates.

"General Decision Number: MI20200088 01/03/2020

Superseded General Decision Number: MI20190088

State: Michigan

Construction Type: Building

County: Kent County in Michigan.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.80 for calendar year 2020 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.80 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2020. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/03/2020

ASBE0047-002 07/01/2019

	Rates	Fringes
ASBESTOS WORKER/HEAT & FROST INSULATOR	$ 31.82	17.88

BOIL0169-001 03/01/2018

	Rates	Fringes
BOILERMAKER	$ 38.65	26.22

BRMI0009-002 08/01/2019

	Rates	Fringes
TILE FINISHER	$ 22.78	15.66
TILE SETTER	$ 26.38	18.09

FOOTNOTE:

Paid Holiday: Fourth of July, if the worker has been employed by the contractor in any period of seven working days before said holiday within the current calendar year.

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* CARP1102-001 06/01/2019

	Rates	Fringes
MILLWRIGHT	$ 28.59	24.79

ENGI0324-035 06/01/2019

	Rates	Fringes
OPERATOR: Power Equipment		
GROUP 1	$ 33.63	24.35
GROUP 2	$ 31.92	24.35
GROUP 3	$ 31.92	24.35
GROUP 4	$ 26.06	24.35

PAID HOLIDAYS: New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Concrete Pump; Grader/Blade; Highlift; Hoist; Roller; Scraper; Trencher

GROUP 2: Broom/Sweeper

GROUP 3: Boom Truck (non-swinging)

GROUP 4: Oiler

IRON0340-006 06/19/2017

	Rates	Fringes
IRONWORKER, REINFORCING	$ 24.43	24.67

LABO0355-027 06/01/2018

	Rates	Fringes
LABORER		
Grade Checker; Sandblaster	$ 22.48	12.85

PAIN0845-006 06/01/2018

	Rates	Fringes
PAINTER: Brush and Spray	$ 23.35	13.79

PLUM0174-002 07/01/2019

	Rates	Fringes
PIPEFITTER (Including HVAC Pipe Installation; Excluding HVAC System Installation)	$ 35.26	22.52
PLUMBER, Excludes HVAC Pipe and Unit Installation	$ 35.26	22.52

SHEE0007-014 05/01/2018

	Rates	Fringes
SHEET METAL WORKER, Excludes HVAC Duct and Unit Installation	$ 30.63	14.74

SUMI2011-013 02/01/2011

	Rates	Fringes
BRICKLAYER	$ 21.45	5.00
CARPENTER (Acoustical Ceiling Installation Only)	$ 18.61	2.69
CARPENTER (Drywall Finishing/Taping Only)	$ 17.35	2.69

CARPENTER (Drywall Hanging Only)	$ 16.28	2.69
CARPENTER (Form Work Only)	$ 18.62	6.42
CARPENTER, Excludes Acoustical Ceiling Installation, Drywall Finishing/Taping, Drywall Hanging, and Formwork	$ 18.14	4.59
CEMENT MASON/CONCRETE FINISHER	$ 17.16	4.25
ELECTRICIAN, Excludes Low Voltage Wiring	$ 20.68	6.39
GLAZIER	$ 15.29	2.68
HVAC MECHANIC (Installation of HVAC Unit Only, Excludes Installation of HVAC Pipe and Duct)	$ 16.75	2.75
IRONWORKER, ORNAMENTAL	$ 18.48	7.93
IRONWORKER, STRUCTURAL	$ 18.07	4.84
LABORER: Common or General	$ 13.04	4.80
LABORER: Landscape & Irrigation	$ 10.47	0.00
LABORER: Mason Tender - Brick	$ 18.87	2.16
LABORER: Mason Tender - Cement/Concrete	$ 14.01	2.45
LABORER: Pipelayer	$ 18.32	3.28
OPERATOR: Backhoe/Excavator/Trackhoe	$ 20.23	9.10
OPERATOR: Bobcat/Skid Steer/Skid Loader	$ 16.50	6.17
OPERATOR: Bulldozer	$ 18.50	5.81
OPERATOR: Crane	$ 19.21	6.76

OPERATOR: Forklift..... $ 21.48 9.13

OPERATOR: Tractor..... $ 15.72 1.92

OPERATOR: Loader..... $ 17.16 4.05

PAINTER: Roller..... $ 16.21 2.81

ROOFER..... $ 14.05 6.06

SHEET METAL WORKER (HVAC Duct Installation Only)..... $ 18.32 4.66

SPRINKLER FITTER (Fire Sprinklers)..... $ 17.07 4.24

TRUCK DRIVER: Dump Truck..... $ 17.00 5.71

TRUCK DRIVER: Tractor Haul Truck..... $ 13.57 1.18

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor

200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION
"

PROJECT ELEVATE
GERALD R. FORD INTERNATIONAL AIRPORT
CONCOURSE A - GRAND RAPIDS, MICHIGAN

SECTION 11 8502

POU DX PCA UNITS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Direct Expansion, Point-of-Use Preconditioned Air Units

B. Work Includes: Designing, manufacturing, testing, furnishing, installing and commissioning Direct Expansion, Point-of-Use Preconditioned Air Units rated as indicated herein, with single output and dual output units, as indicated, to provide preconditioned air for both heating and cooling commercial aircraft.

1.02 RELATED SECTIONS

A. Drawings, General Provisions of the Contract, including General and Special Conditions, as well as General mechanical and electrical materials and methods of installation apply to work of this section.

1.03 DEFINITIONS

A. The terms "Direct Expansion (Dx), Point-of-Use (POU), Preconditioned Air Unit", "PCA Unit", "Unit", and "PCA" as used within this specification, shall be construed to mean the components, sub-components and sub-systems that constitute a complete, operable, and maintainable Direct Expansion, Point-of-Use Preconditioned Air Unit, including all ancillary equipment, such as air hoses, hose couplings, hose storage devices, etc.

B. PCA Unit Categories
   1. Class III: PCA unit shall be single output units capable of serving the following aircraft: All Class I & II aircraft as well as MD 80/90, B-737/3/4/5/6/7/8/9, and A319/320/321

1.04 GENERAL REQUIREMENTS

A. The PCA unit and all components thereof shall be constructed in accordance with all codes and standards and local laws and regulations applicable to the design and construction of this type of equipment, which are generally accepted and used as good practice throughout the industry, including without limitation, NFPA, Underwriter's Laboratories, OSHA, SAE Publications, American National Standards, Military Standards, etc. The design of all parts and subassemblies shall be in accordance with good commercial practice and shall be the responsibility of the manufacturer to assure safe, efficient and practical design in keeping with requirements peculiar to this type system.

B. The Manufacturer shall be a qualified source, who has been regularly engaged in the engineering, manufacturing and installation of commercial aviation PCA equipment and components for a minimum of five (5) years and with a minimum of five hundred (500) units installed.

C. Qualified manufacturers will have completed no less than ten (10) jobs of similar size and scope within the last five (5) years.

D. Submit manufacturers qualifications and references for those projects listed in 1.04.C with bid. References should include Project Names, Descriptions, and Durations, as well as Owner and Prime Architect contacts with Name, Fax and Phone contact information.

E. The Manufacturer shall have proven technical capabilities and adequate manufacturing facilities together with sufficient financial depth and stability to permit prompt and satisfactory execution of the contract.

F. Manufacturers are required to satisfy all requirements of this specification. Should the Manufacturer desire to deviate from any portion, either because the specification is in error, violation of any law or regulation, or is in need of modification to permit a more satisfactory functional and economical design, they must submit a written request for such deviation. The

Manufacturer shall not contract, purchase or cause to be delivered, equipment which does not meet all requirements of this document as specified, without obtaining prior written approval.

G. The Manufacturer shall be responsible for verifying installation locations and methods and shall notify the Engineer of any conflicts or code violations prior to manufacture of the PCA units. Modifications to eliminate conflicts or code violations will be coordinated with and approved by the Engineer. Modifications shall be made at no additional cost to the Owner.

H. The Manufacturer shall furnish and install all necessary equipment and incidentals to provide a complete operable and maintainable unit.

I. Should alternate mounting configurations or physical attributes, other than those specified herein, or indicated on the project drawings, be proposed, manufacturers shall submit alternates for approval prior to bid date. Alternate mounting, configurations, or attributes shall be provided at no additional cost to the Owner.

J. EMI/RFI: Unit shall be designed so as not to affect aircraft radio/navigation equipment. It shall be applicable throughout the entire aircraft radio frequency range. Provisions shall be designed into the unit to protect it from voltage fluctuations which might result from the operation of aircraft radio frequency equipment.

1.05 REFERENCES

A. The latest approved version or edition, by the authority having juridiction, of the following codes, references and standards shall apply. If the authority having jurisdiction has not approved or adopted a particular code, reference, or standard, the latest published edition shall be applicable.
   1. FM P7825 - Approval Guide; Factory Mutual Research Corporation; current edition.
   2. NEMA MG 1 - Motors and Generators; National Electrical Manufacturers Association
   3. NFPA 70 - National Electrical Code; National Fire Protection Association.
   4. NFPA - "Standard on Construction and Protection of Aircraft Loading Walkways No. 415".
   5. SSPC-Paint 15 - Steel Joist Shop Paint; Society for Protective Coatings; 1991 (Part of Steel Structures Painting Manual, Vol. Two).
   6. AFBMA - Anti-Friction Bearing Manufacturers Association.
   7. ARI - Air-Conditioning and Refrigeration Institute.
      a. ARI Standard 410 - Standard for Forced-Circulation Air-Cooling and Air Heating Coils.
      b. ARI Standard 850 - Commercial and Industrial Filter Equipment.
   8. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers.
      a. ASHRAE 52 - Method of Testing Air-Cleaning Device Used in General Ventilation for Removing Particulate Matter.
   9. NEBB - National Environmental Balancing Bureau Agency.
   10. ATA 101 - Air Transport Association of America - Specification for Ground Equipment Technical Data, 1986.
   11. SAE - Society of Automotive Engineers.
   12. AISC - American Institute of Steel Construction Code.
   13. ASME - American Society of Mechanical Engineers.
   14. OSHA - Occupational Safety and Health Act.
   15. UL - Underwriters Laboratories.
   16. MS-33562 - Military Specification, Connection, Aircraft Ground Air Conditioning, 8", latest edition.

1.06 SUBMITTALS

A. Bid-Submittals: The following submittals shall be included with bid.
   1. Alternates per 1.04.I.
   2. Spare Parts List: Provide manufacturer's recommended spare parts list. Spare parts list shall include Owner applicable pricing. Spare parts pricing shall remain valid for one year from the date of final completion.

3. UL Certification per 1.07.E.

B. Pre-Manufacture Submittals: The following submittals shall be made as necessary to meet the project schedule, and shall be submitted and approved prior to manufacturing the Dx POU PCA units.
   1. Product data for selected models including specialties, accessories, and the following:
      a. Direct expansion (Dx) Point-Of-Use (POU) Preconditioned Air (PCA) unit airflow performance curves with system operating conditions indicated; include: airflow vs static pressure and airflow vs blower horsepower.
      b. Manufacturer shall submit performance data of the Dx POU units at the design conditions indicated in this Section. Performance data shall include, but not be limited to, air flow, static pressures, temperatures and humidity levels, at points of significance through the unit and at the aircraft inlet, refrigerant pressures and temperatures at points of significance through the refrigeration circuits, and power requirements of major components as well as entire unit.
      c. Motor ratings and electrical characteristics including motor and fan accessories.
      d. Materials, gauges and finishes.
      e. Dampers, including housings, linkages, and operators.
      f. Air filter manufacturer's technical product data including dimensions, weights, required clearances and access, flow capacity including initial and final pressure drop at rated air flow, efficiency and test method, fire classification, and installation instructions.
      g. Certification report of airflow test apparatus by an independent third party such as the National Environmental Balancing Bureau (NEBB) or other approved agency.
      h. Dx POU unit air flow control, capacity control and defrost control.
      i. Flexible hoses, clamps, rigid ducts and mounting brackets.
   2. Shop Drawings: Provide schematics and interconnection diagrams, indicate front and side views of enclosures with overall dimensions and weights shown; conduit/cable entrance locations and requirements; and nameplate legends. Differentiate between manufacturer-installed wiring and field-installed connections. Include appurtenances such as hose baskets, ducts, pushbuttons, etcetera.
   3. Installation Details: Provide complete installation details including, without limitation, installation details of all appurtenances. Show installed configuration as well as any pertinent details regarding interface to other equipment and systems, include electrical connection service points.

C. Pre-Ship Submittals: The following shall be submitted and approved prior to shipping Dx POU units to the project site:
   1. Factory Test Reports: Indicate factory tests and results and inspection procedures.

D. Pre-Substantial Completion Submittals: The following submittals shall be submitted and approved prior to 14 days before substantial completion, unless otherwise noted herein.
   1. Operation and Maintenance Manuals.
   2. Training Program: At least 60 days prior to substantial completion, a training program summary, course syllabus, instructor qualifications, and copy of the training manual shall be submitted for review and approval.
   3. Field Commissioning Report: Submit proposed field commissioning report for approval. This approved form shall be utilized for the final field commissioning as specified in Section 3.

E. Pre-Final Completion Submittals: The following submittals shall be submitted and approved prior to 14 days before final completion.
   1. As-Built Drawings. Provide field edited redlined project drawings showing deviations from design documents.
   2. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and have been registered with the manufacturer.

3. Field Commissioning Report: A completed field commissioning report for each installed unit as specified herein. Utilize approved form.
4. Training Rosters. Provide training roster with trainee names, dates and types of training, as well as durations.
5. Original software and documentation registered in the Owner's name.
6. Hard copy and electronic version (compact disk or flash card) copies of all programs and settings loaded into equipment provided hereunder.
7. Training rosters.

1.07 QUALITY CONTROL

A. ARI Compliance: Air filter equipment shall comply with ARI 850.

B. ASHRAE Compliance: Air filters shall comply with ASHRAE Standard 52 for method of testing and for recording and calculating air flow rates.

C. NFPA Compliance: Comply with applicable portions of NFPA 70 and NFPA 415 for components and installed Dx POU Units.

D. NEMA Compliance: Motors, enclosures and electrical accessories shall comply with NEMA standards and be so rated.

E. UL Compliance: Dx POU units shall be UL, or ETL listed and shall be labeled by a nationally recognized testing laboratories at the time of bid. Submit verification with bid submittals.

1.08 DELIVERY, STORAGE, AND PROTECTION

A. Lift and support Dx POU units with the manufacturer's designated lifting or supporting points.

B. Provide Dx POU units which do not require disassembly and reassembly because of movement into the final location and follow manufacturer's written instructions.

C. Deliver equipment as a factory-assembled Dx POU unit whenever practical for shipping purposes with protective crating and covering.

D. Store equipment and material in suitable facilities until delivery, installation, and acceptance.

E. Coordinate the delivery acceptance of this equipment at the job site. Receive, offload, store and protect this equipment until such time as it has been final accepted.

F. Properly dispose of all waste including, but not limited to, packaging, crates, etcetera.

1.09 ROYALTIES AND LICENSE FEES

A. Pay all royalties and license fees and shall defend all suits or claims for whatever infringements of any prior, pending, or future patent rights and shall save the Owner and Engineer harmless from liability, expense, or loss on account thereof, with respect to any processes, devices, methods, articles, inventions, or procedures used by the manufacturer.

1.10 WARRANTY

A. Provide a full parts and labor warranty for the new units and ancillaries. Labor warranty shall be performed by factory trained service technicians. Warranty shall run one (1) year from the Date of Beneficial Use. Date of Beneficial Use is defined as the date the system is turned over by the manufacturer, and accepted by the Owner, for normal operation, or the date the equipment is placed in normal operation at the facility, whichever is later. All warranty services shall be at the site of the installation. Provider shall be responsible for all travel and sustenance expenses necessary for warranty services.

B. Shipping and handling charges for warranty parts are the responsibility of the Provider.

C. Warranty Services shall be commenced with on site representation, by qualified repair technicians, within 72 hours from the request of the Owner.

1.11 OPERATION AND MAINTENANCE MANUALS

A. Provide six (6) bound copies and three (3) electronic copies (CD or DVD) of the approved, comprehensive Operation and Maintenance Manual for each model PCA unit fourteen (14) days prior to Substantial Completion.

B. The content of the manuals shall be limited to information and data that specifically apply to products provided and shall include routine normal and special operating instructions and sequences. Also included shall be routine maintenance procedures and guides for troubleshooting, disassembly and reassembly instructions, and recommended spare parts list including current prices and sources.

C. Wiring diagrams and schematics shall be incorporated into the manuals to clearly show features such as controls, switches, instruments, points of connection, and indicators by name and location.

D. Operation and Maintenance Manuals: Include in ATA 101 format a general description, theory of operation and specification, schematics and wiring diagrams, start-up instructions, installation and maintenance procedures, parts list, recommended spare parts list, troubleshooting guides, controls and accessories information.
   1. Special Tools List: Provide a list of any special tools required to perform any field performable maintenance tasks.
   2. Spare Parts List: Provide manufacturer's recommended spare parts list.

1.12 TRAINING

A. Manufacturer shall provide a complete training program for the Owner's operating, engineering, and maintenance personnel. Training shall include both classroom and hands-on instruction and be of sufficient duration to adequately train personnel to perform on site routine, preventative, and remedial maintenance of the equipment, product or system. Unless noted otherwise, maintenance training shall consist of a minimum of eight (8) hours classroom instruction and eight (8) hours hands-on instruction for eight (8) personnel, and operator's training shall consist of a minimum of four (4) sessions of two (2) hours duration each, hands-on instruction for four (4) personnel.
   1. Some operator's training sessions may necessitate night training, at the discretion of, and without additional cost to, the Owner.

B. Operator training shall be completed no later than seven (7) days prior to beneficial use. The manufacturer shall provide maintenance training within 30 days of beneficial use. At least 60 days prior to substantial completion, a training program summary, course syllabus, instructor qualifications, and copy of the training manual shall be submitted for review and approval.

C. Training shall be conducted at the installation site property at the direction of the Owner.

D. Provide Owner a minimum of seven (7) days notice prior to conducting any training.

E. Compile rosters of all training classes and submit to the Owner.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Dx POU Unit:
   1. JBT AeroTech - Jetway Systems
   2. Inet/Cavotech
   3. ITW GSE
   4. Twist
   5. Substitutions: None.

2.02 BRANDING

A. The Owner, or Owner's tenant, reserves the right to provide branding on the exterior sides of the installed equipment and desires that this branding not be diminished by excessively large or aesthetically displeasing branding of individual pieces of equipment. All manufacturers branding, labeling, marking, etcetera, on their products shall be relaively small compared to the overall size of the piece of equipment. The Owner reserves the right to require any non-approved branding removed from finished products at no additional cost.

2.03 SCHEDULES

A. Provide quantities and types of equipment as detailed on the project drawings.

2.04 GENERAL DESCRIPTION

A. The manufacturer shall provide a new, compact, light-weight, low-noise and insulated Dx POU unit that can be mounted under the Passenger Boarding Bridge (PBB), such that the operational characteristics of the bridge are unrestricted and the bridge's structural integrity is uncompromised. It is the Engineer's intent to have the Dx POU units mounted under the "C" tunnel, at the aircraft end of the PBB.
   1. The Dx POU unit manufacturer shall ensure the unit and the unit's mounting methods are structurally sound and that they do not affect the structural integrity of the passenger boarding bridge. The Dx unit shall not cause deflections of the passenger boarding bridge tunnel sections or rails. The Dx POU unit shall not affect the dynamic operation of the passenger boarding bridge. All steel, rails, brackets, bolts, reinforcing, etcetera shall be provided and installed with the proper ratings for the finished system.

B. The Dx POU units shall have a minimum of two (2) distinct assemblies:
   1. A control assembly which contains the low voltage logic and control circuits.
   2. A blower/coil unit containing a blower, inlet butterfly damper, cooling coils, compressors, condenser coil, condenser fans, filters, complete motor starting equipment, outlet plenum and condensate drain pan to provide the required cooled or heated air to maintain the aircraft cabin temperature specified.

C. Each Dx POU unit shall be primed and painted to match the color of the newly installed passenger boarding bridge.

D. Each Dx POU unit shall operate properly to serve the full range of aircraft which park at its respective gate position. It shall be the manufacturer's responsibility to review the aircraft parking plans and verify that the units supplied will meet this requirement. Unit sizing indicated in the contract documents shall be considered the minimum sizing of units supplied.

E. Unit external static pressure shall be defined as the gauge pressure measured at the outlet of the Dx POU unit. The Dx POU units manufacturer shall submit the gauge pressure the Dx POU unit can produce at the outlet of the hose and at the aircraft connection through 75' of 14" hose.

F. The construction of the Dx POU units shall be of a material sufficient to provide adequate structural rigidity of frame and enclosure; of a non-corrosive nature; and shall be provided with thermal insulation for conditions encountered in normal usage. Equipment exterior the unit shall be prepared, primed, to match the PBB on which it is installed. Equipment interior the unit, finish shall be manufacturer's standard.

G. The maximum sound level for the Dx POU units at maximum cooling/heating shall not exceed 85 dBA at a distance of 15' from the unit (external) and 65 dBA inside the bridge (internal).

H. The Dx POU unit components shall operate satisfactorily under ambient temperature conditions of -20° to 140° F (-29° to 60° C) including static soak up to 48 hours within this range with or without wind of 50 MPH. All components shall be designed or selected for long service life under such conditions

I. The Dx POU units shall not produce or induce objectionable vibrations into the bridge structure. Vibration levels induced by the units and/or its components shall not be injurious to the units or the bridge structure or be harmful or annoying to passengers and employees. The manufacturer shall provide any and all necessary vibration insulation devices required to meet this requirement. The blower wheel and shaft assembly shall be direct coupled to the motor, and shall receive a two (2) plane dynamic balance at maximum RPM and the maximum allowable vibration velocity shall not exceed 0.1 inch/second or 0.5 MIL displacement.

J. The Dx POU units shall be designed so as not to affect aircraft radio/navigation equipment. It shall be applicable throughout the entire aircraft radio frequency range. Provisions shall be designed into the Dx POU unit to protect it from voltage fluctuations which might result from the operation of aircraft radio frequency equipment.

K. Where the Dx POU unit components are assembled within a unitized enclosure, provide access doors of the hinged and insulated type. Locate as required for proper access to the following:
   1. Filters.
   2. Coils.
   3. Compressors.
   4. Motors.
   5. Variable Frequency Drives (VFD).
   6. Smoke Detectors.
   7. Any other item requiring maintenance access at the discretion of the Engineer.

L. The Dx POU units shall be supplied with any and all necessary ducts, transition hoses and brackets required to route the discharge air from the Dx units to a point above and then to the hose storage device. Such installation method shall ensure that air flow equipment is not restricted or interfered with during any and all PBB operations.

M. The minimum reliability design requirement for the Dx POU units shall be to operate between preventative maintenance periods of a minimum of 840 operating hours or 12 weeks, whichever comes first.

N. The Dx POU unit design shall be based on the use of self-contained refrigeration systems and an electrical heater combined successively by the supply air passage and operationally by a common control system.
   1. Primary and secondary systems shall form the basic unit.
   2. Primary and/or secondary systems within the basic two-system arrangement may be divided into multiple refrigeration sub-systems for severe capacity requirements caused by extreme design ambient conditions and/or air flow parameters.

2.05 PERFORMANCE REQUIREMENTS

A. COOLING:
   1. The Dx POU units shall be designed to automatically maintain a 75°F cabin temperature in all aircraft within its specified class, based on the following design conditions.
      a. Design ambient temperatures: 89°F/77°F Dry Bulb/Wet Bulb.
      b. Passenger Load: Full (100%), for the largest aircraft in its classification, including full crew.
      c. Full solar load (bright sunshine).
      d. Aircraft electrical load: 75,000 BTU/h.
      e. One aircraft door open (typically either L1 or L2).
   2. Additional Design Requirements/Parameters:
      a. Class III Dx POU units: Shall be capable of providing a minimum of 240 lb/min of 35°F air at 22" of static pressure at the end of a single 14" diameter 75' long insulated air hose connected to an 8" diameter aircraft connector. Minimum nominal machine rating shall be 45 Tons.

b. Class IV Dx POU units: Shall be capable of providing a minimum of 400 lb/min of 35°F air at 22" of static pressure at the end of dual 14" diameter 75' long insulated air hoses connected to 8" diameter aircraft connectors. Minimum nominal machine rating shall be 75 Tons.
c. The Dx POU units shall be capable of operating at an increased air flow rate (up to 15% above the nominal value) with coincident decrease in static pressure. An operation at these conditions on design day will be allowed to raise the supply air temperature by up to 5°F.

3. All temperatures, air flow rates, and static pressures denoted in this section must be simultaneously achieved.

B. HEATING:
1. The Dx POU units shall be designed to automatically maintain a 70°F cabin temperature in all aircraft within its specified class, based on the following design conditions.
a. Design ambient temperatures: 1°F Dry Bulb.
b. Passenger Load: None (0%), for the largest aircraft in its classification.
c. No solar load.
d. Aircraft electrical load: 0 BTU/h.
e. One aircraft door open (typically either L1 or L2).
2. Additional Design Requirements/Parameters:
a. Class III Dx POU units: Shall be capable of providing a minimum of 120 lb/min of 140°F air at the end of a single 14" diameter 75' long insulated air hose connected to an 8" diameter aircraft connector.
b. Class IV Dx POU units: Shall be capable of providing a minimum of 200 lb/min of 140°F air at the end of dual 14" diameter 75' long insulated air hoses connected to 8" diameter aircraft connectors.
c. Class V Dx POU units shall be capable of providing a minimum of 225 lb/min of 140°F air at the end of dual 14" diameter 75' long insulated air hoses connected to 8" diameter aircraft connectors.
3. All temperatures, air flow rates, and static pressures denoted in this section must be simultaneously achieved.

2.06 ELECTRICAL REQUIREMENTS

A. All Dx POU units shall be constructed in accordance with standard electrical manufacturing processes, and shall comply with all applicable Federal, State, and Local laws, codes and ordinances.

B. Input Voltage Rating: 480V, 3 phase, 60 hertz.

C. The Dx POU units shall be provided with a built-in, main circuit breaker, or disconnect, of suitable size that provides an electrical disconnecting means for the Dx POU unit and protection from short circuits. This circuit breaker shall be lockable in the OFF position for maintenance purposes.
1. All primary disconnecting means shall be suitably rated to be capable of withstanding and interrupting fault currents available at the input.

D. Wiring, Motors and Electrical Components
1. All wiring shall be permanently identified. Wrap around adhesive style wire markers will not be permitted. Numbers are to be located one inch from the end of each termination point. If the wires are to be stamped, they must be numbered the full length with indelible ink, with the numbers no more than four inches apart, and the number shall be visible at all terminating points. Wires are to be numbered in a logical sequence. Manufacturer shall indicate all wire numbers on electrical drawings.
2. All circuits shall have suitable overload protection. Each conductor shall be sized to have current carrying capacity as allowed by the National Electrical Code (NEC) equal to or greater than the capacity of the circuit breaker provided in its circuit. Circuit breakers shall

be grouped in convenient locations and suitably marked for size and function. Logical grouping of circuits is anticipated. Protection devices shall be sized to protect wiring and motors from damage due to overload and prevent electrical or mechanical damage to associated PCA unit components in the event of failure of one of the components. Each electric motor shall have a suitable magnetic starter providing over-current and under-voltage protection, and each motor circuit shall be separately protected by fuses or circuit breakers. Optional and add on components shall be considered in sizing and in the number of conductors provided. Spare wires shall be provided as necessary.

3. All wiring shall be terminated on terminal blocks and/or suitable connectors. The wiring shall be formed and restrained to give a neat appearance. Common wiring splices shall not be used. Connections shall be made using terminal strips and staked lugs or by patent connectors.
4. Grommets and suitable anti-chafe material shall be used where wires are required to pass through structure or other similar relief or opening which exposes the wire to possible chafing. All wiring shall be in conduit (preferably automotive split loom) or spot-tied and shall be routed away from possible pinch points. Wiring shall be adequately supported to protect it from damage due to ice and snow buildup, bumping, kinking, and flexing.
5. All meter panels and any components containing printed circuit boards or solid state electronics shall be shock mounted.
6. Electrical interlocks shall be fail-safe design.
7. Electrical devices including switches, relays, wiring, and terminals when located in an area exposed to weather, shall be of weatherproof design or protected by weatherproof enclosures.
8. Weatherproof schematics shall be installed on the interior of the controller door. Schematics shall include all wiring and devices and shall include all wire numbers. Schematic shall be impervious to grease, water, ice, or other elements that they may be exposed to in an aviation maintenance environment on an active apron with the doors open.
9. All exterior conductors/cables shall be in conduit. Exposed cables will only be allowed where required due to flexibility needs and then will be limited to a maximum of 48".

E. Ampacity.
   1. Each POU PCA Dx unit shall operate satisfactorily, at full load, with the following electrical circuits provided. Each unit's minimum circuit ampacity, calculated in accordance with the NEC, shall not exceed the ampacity of the circuits provided. Circuits to be provided are:
      a. Class III: FLA 130A, MCA 160A, MOP 175A.

2.07 COMPONENTS AND OPERATION

A. Compressor(s):
   1. Compressor(s) shall be serviceable, single-speed, hermetic sealed scroll compressors with integral vibration isolators and crankcase heaters which de-energize during compressor operation. Safety controls shall include a low/high refrigerant pressure cutout with manual reset, a compressor motor overload with manual reset, an adjustable low-ambient lockout, and low oil pressure cutout with manual reset.
   2. High efficiency shall be achieved through the use of complete enclosed compression chamber design.
   3. Vibration isolator/absorber with a wire mesh-covered metallic bellows shall be installed in the suction and discharge line to isolate/absorb the compressor vibrations.
   4. A 2-pole compressor motor shall be designed as an integral part of the compressor assembly. It shall drive the compressor scroll or screw. Industrial Grade epoxy shall lock the motor windings in place and resist corrosion of insulation by refrigerant and oil.

B. Casing:
   1. Manufacturer's standard casing construction, having corrosion protection coating, and exterior finish. Where the Dx POU unit is provided as a unitized enclosure construction,

casings shall have removable panels or access doors for inspection and access to internal parts, a minimum of 1" thick thermal insulation, knockouts for electrical and exterior condensate drain connection, and lifting lugs.

C. Blower:
   1. Provide blower that is factory fabricated and assembled, factory tested and factory finished, with required capacities and characteristics. The blower shall be centrifugal type and sized for the appropriate constant volume airflow requirements in accordance with the selected size of the Dx POU unit. The blower motor shall be selected such that the fan brake horsepower does not exceed the maximum supplied by the motor over the design operating range of the Dx POU unit.
   2. Blower and Shafts: Statically and dynamically balanced and designed for continuous operation at the maximum rated fan speed and motor horsepower. Vibration shall not be more than 0.1 inches/second or 0.5 MIL displacement. Blower shaft to be turned, ground, and polished steel designed to operate at no more than 70% of the first critical speed at the top of the speed range of the fan's class.
   3. Shaft Bearings: Provide bearings having a median life "Rating Life" (AFBMA L50) of 200,000 calculated in accordance with AFBMA 9 for ball bearings or AFBMA 11 for roller bearings.
   4. Blower: Centrifugal, direct-drive fans; and permanently lubricated motor bearings where bearings are not accessible for greasing.
   5. A 2-pole, drip-proof blower motor shall be directly connected to the blower impeller. Motor shall be of NEMA Design B, Class F insulation, 1.15 S.F.

D. Condenser Fan:
   1. An axial type multi-blade fan shall be utilized for condenser air flow. Fan blades shall be constructed from spark and corrosion proof material. Each Dx POU unit shall utilize two (2) identical motor/fan assemblies.
   2. A 4-pole, totally enclosed fan-cooled fan motor shall be directly connected to the fan propeller. Motor shall be NEMA Design B, Class F insulation, 1.15 S.F.

E. Factory Finish:
   1. Exterior Sheet Metal Parts: Prime coating prior to final assembly. Final color to match the PBB on which it is installed.
   2. Interior Surfaces: All air flow surfaces shall be stainless steel or aluminum. Manufacturer's standard finish is acceptable on all other interior surfaces.

F. Coils:
   1. Aluminum plate fins and seamless copper tube. Fins shall have collars drawn, belled, and firmly bonded to the tubes by means of mechanical or hydraulic-expansion of the tubes. No soldering or tinning shall be used in the bonding process. Coils shall have a galvanized steel casing and shall be easily removable for maintenance.
   2. Microchannel aluminum-alloy condenser coils are acceptable in addition to the fin and tube arrangement described in the above paragraph.
   3. Coils shall be constructed and tested in general accordance with ASHRAE 15 and ARI 410.
   4. Coils shall be proof tested to 450 psig and leak tested to 250 psig with air pressure under water, cleaned, dehydrated, and sealed with a holding charge of nitrogen until serviced with refrigerant.
   5. Each compressor coil section shall have an expansion valve, a solenoid valve, and a distributor.

G. Airflow Control:
   1. Airflow control shall be via a a VFD driven blower motor to control the air flow capacity of the blower. The VFD shall automatically adjust the air flow during aircraft cooling to the requirements of the aircraft selected on the remote control station. During aircraft heating,

the VFD shall automatically adjust to the 50% mass air flow position for the aircraft selected on the remote control station.

H. Air Flow Ducting:
   1. All ducting, plenum transitions, and other air flow components shall be made from either aluminum or stainless steel.
   2. Plenum and air flow ductwork shall be properly insulated with polyurethane foam insulation so as to prevent the forming of condensation on ductwork surfaces and as necessary to minimize impacts to unit performance.

I. Inlet Air Filters:
   1. Inlet air filters shall be factory fabricated by a company regularly engaged and specialized in filter manufacturing. Filters shall be cleanable, encased in a metal frame, and rated for the application for which they are being used. The air filters shall meet the following minimum requirements.
      a. The metal enclosing frame shall be constructed of rigid, heavy duty, and at least 20 gauge galvanized steel.
      b. Face velocity shall be no greater than 500 feet per minute with an initial resistance of 0.3" water gauge, final resistance of 0.5" water gauge, and an average resistance of 80%.
      c. The filter section shall be furnished with a differential pressure sensor measuring across all filters to activate a "dirty filter" alarm. The PCA unit shall be equipped with a visual indicator for notification of alarm.
      d. Units shall be provided with spare filters for 1 year from date of benefitial use at manufacturer's recommended filter replacement intervals.

J. Refrigerant:
   1. Acceptable refrigerants:
      a. R-134A.
      b. R-407C
      c. R-410A

K. Refrigerant Filter-Dryer:
   1. A sealed type filter-dryer shall be installed in the liquid line to remove moisture and contamination from the refrigerant. The filter-dryer shall be soldered in place to preclude leakage. Location and installation method shall not inhibit or preclude field replacement of the filter-dryer unit. Filter-dryer shall contain a 100-mesh screen and molded blend of desiccant for acid and water removal.

L. Refrigerant Sight Glass:
   1. A combination moisture and liquid indicator shall be designed and installed in the liquid line to monitor the flow and moisture content of the refrigerant. The indicator shall have a large crystal clear glass for viewing and refrigerant and shall be protected by a pad and screen and shall change color on the basis of moisture content of the refrigerant.

M. Expansion Valve:
   1. A thermostatic expansion valve shall automatically meter the refrigerant flow to the evaporator coil by sensing the evaporating pressure and temperature of the vapor leaving the evaporator. The valve shall regulate the rate of liquid refrigerant flow into the evaporator coil in exact proportion to the rate of evaporation of the liquid refrigerant by maintaining the pre-adjusted superheat. This shall optimize the evaporator efficiency and prevent the return of the liquid refrigerant to the compressor. The valve shall also contain an external equalizer to compensate for the pressure drop in the evaporator coil.

N. Electric Heat:
   1. Staged Electric heat shall be provided on each Dx POU unit. Each Dx POU unit shall consist of a minimum of two (2) stages of electric heat. Each unit shall have a total heat capacity as necessary to meet the performance requirements outlined in the Heating

Section of this specification. The electric heater shall be designed such that the power consumption in the Heating mode shall not exceed the maximum power consumption in the Cooling mode. The intent of this paragraph is to maximize the available stages of heat for optimal performance.

2. Heat strips shall be interlocked to prevent energizing in the absence of adequate air flow across the heat strips.
3. The heat strips shall be locked out of operation if ambient is greater than 65° F. The heat strips shall be deactivated if the plenum temperature exceeds 150° F. Upon plenum temperature dropping below 150° F, the heat strips shall automatically re-activate.

O. Controls:
1. The PCA Dx Unit shall be provided with a programmable logic controller which shall monitor all phases of operation of the PCA Dx Unit. The controller shall be based on a 32 bit microprocessor and utilize flash memory technology to store operation parameter information. Operation parameters of controller shall not be affected by loss of 60 Hz power to controller. PCA manufacturer shall provide with their bid a detailed description of the controller, type of graphics and software, sequence of operation, types and number of control points, and limitations of the control system they intend to provide and install.
   a. The practice of sharing the passenger boarding bridge controller, either directly, or through remote I/O racks will not be permitted. Each Dx POU PCA unit shall have a dedicated and separate controller.
2. Control system shall be low voltage (12 & 24 VAC). Control transformer shall be provided and sized to adequately serve all connected loads.
3. Contactors shall be full voltage non-reversing type and designed to meet international standards including UL and IEC. Contactors shall be AC operated with 120V 50/60 Hz holding coil and functionally assigned for ON-OFF control.
4. Thermostats shall be utilized in the system to maintain the required temperature parameters of the supply air.

P. Interlocks
1. Unit shall interlock with the PBB to prevent PBB horizontal operation while PCA unit is operating.

Q. Remote Control Station:
1. The control station shall be housed in a NEMA 4X stainless steel enclosure, and shall operate on 24 volts or less and shall be located on the bridge lift column (aircraft side of the bridge), so as to be accessible from ground level. Coordinate this position with all other installed equipment and ancillaries so as to prevent interferences. The station shall be configured as indicated on the design drawings.
2. The control station shall have a fault-indicator lamp as follows.
   a. Flash: non-critical fault, Dx POU unit still operational.
   b. Steady: critical fault, Dx POU unit prevented from operating.
3. The control station shall have a selector switch to choose the aircraft the Dx POU Unit is to serve. This selector switch shall be as shown on the drawings and shall be labled with the abbreviations of the class of aircraft as follows:
   a. RJ (Regional Jets)
   b. NB (Narrow Body Aircraft)
   c. WB (Wide Body Aircraft)
   d. WBx2 (Wide Body Dual Output Mode)

R. Cabin Temperature Control:
1. Cabin Temperature control shall use either a variable controller or traditional style sensor.
2. The controller should have a metallic knob. The controller face should contain a rotated set of tick marks with the lables of "Cooler" and "Warmer" on the extreme ends. The tick marks and lables should be engraved or etched in the controller faceplate. The design

should be completed in a manner that simulates the electrical value of the targeted Cabin temperature setpoint when the knob is in the center of the scale.

3. The Dx POU temperature probe should originate from the right side of the cab looking out toward the ramp. The thermistor should be encased in a protective housing that plugs into a receptacle for storage. The temperature probe cable shall be provided with suitable means for storing when not in use, and out of the travel path from the boarding bridge to aircraft.

S. Condensate Drains:
   1. Condensate shall be routed across the bridge and deposited as indicated on the project drawings. A condensation pumping system utilizing lift pumps and drain pan shall be included. The condensate pump shall be lightweight, self-priming, and capable of running dry. Minimum pump rating shall be 3 gpm, 40' head, 1/3 hp or as required by the specific bridge configuration. Position the drain pan under the coil section. Drain pan shall be stainless steel. Condensate pump shall automatically expel condensate from the Dx POU unit as needed.
   2. The condensate system shall be equipped with a control system activated solenoid (open/close) drain valve to avoid freezing of the condensate by draining the system when the ambient temperature drops below 37°F.

T. PCA Air Hose:
   1. Each Dx POU unit shall be provided with single or dual, as specified, length as necessary to reach PCA input ports of all serviced aircraft with horizontal runs being level with the ramp surface, and shall consist of 14" diameter insulated hose sections and one 14" to 8" reducer terminating with an aircraft coupling. Complete hose assembly and connectors shall conform to MS-33562.
      a. Hose lengths specified, or indicated on drawings, are a minimum length only. Provide and install sufficient hose lengths to reach all aircraft capable of being serviced at the gates as indicated on the aircraft parking plans.
   2. Air delivery hose shall be of the lightweight insulated type, maximum thermal conductance of 1.28 BTU/hr/ft/°F, pressure rated for 50" water maximum. Hose shall be 14" diameter flat type. Hose is to be supplied in sections of no more than 25' in length, connected with Velcro seals, with a 14" to 8" diameter reducing adaptor on the end section. Approved Manufactures are:
      a. J&B Aviation (SuperHose)
      b. Estex
   3. All ducts, hose support sleeves and mounting hardware shall be provided and installed in accordance with the contract drawings and shall be painted to match the color of the newly installed passenger boarding bridge.

U. Hose Basket:
   1. The hose storage basket shall be manufactured and installed in accordance with the Project Drawings, suitably modified only to accommodate differences in bridge configuration. The basket shall be fabricated from a minimum of 1-1/2" steel tubing. The basket shall be equipped with four (4) swivel double casters permitting movement with the bridge and shall be designed with an "open" bottom allowing rain, snow, trash, etc. to pass through.

V. Mounting Brackets:
   1. Factory fabricated mounting brackets shall be utilized for installation of the PCA Dx unit. Design of these brackets shall be such so as to prevent any welding or cutting of the bridge components to facilitate installation. Brackets shall be universal in nature so as to allow for installation on industry standard, commercially available passenger boarding bridges.

W. Safety Provisions:

1. All corners of the unit's lower rim shall be equipped with corner bumpers.
2. The entire lower rim, and all vertical corner edges of the Dx POU unit shall be distinguished with an alternating yellow/black adhesive safety tape. Safety tape minimum width shall be 2 inches.
3. The electric circuitry of the Dx POU units shall be protected against short-circuit currents or grounds by means of circuit breakers.
4. Each motor shall have separate overload protection.
5. The Dx POU units shall be protected against overheating when in the Heating mode. Protection shall be automatically resetting.
6. The refrigeration system shall be protected against operation at abnormal refrigerant pressures by high and low limit switches.
7. The refrigerant compressor motors shall be protected against short-cycling. A timer shall be installed in the motor control circuit to provide an appropriate delay on re-energizing after each stop.
8. Smoke Detector:
   a. Each Dx POU unit shall be equipped with a factory installed and tested smoke detector.
   b. The smoke detector shall be of the ionization type and shall be mounted at each Dx POU unit discharge plenum. The smoke detector shall interface with the Dx POU unit control circuitry. When sufficient smoke is sensed, the entire Dx POU unit shall shut down. A manual switch shall be utilized to reset the smoke detector.
   c. A fault of the smoke detector itself shall also cause the entire unit to shut down and alarm.

2.08 CONFIGURATION

A. The manufacturer shall provide a new, compact, light-weight, low-noise, and insulated Dx POU unit that can be mounted under the Passenger Boarding Bridge (PBB), such that the operational characteristics of the bridge are unrestricted and the bridge's structural integrity is uncompromised. It is the Engineer's intent to have the Dx POU units mounted under the "C" tunnel, at the aircraft end of the PBB.

B. Manufacturer shall install units as necessary to prevent damage to the units while simultaneously allowing full passenger boarding bridge operational movement so as to service all aircraft as indicated.

C. In the event the manufacturer's equipment, or project conditions, will not allow for under "C" tunnel mounting, alternative mounting arrangements will be considered. Alternates, which include roof mounting, shall include all items necessary for a complete and safe system, including ductworks, brackets, access ladders and handrails to allow full maintenance of units in a safe and OSHA compliant manner.
   1. All mounting brackets, hose brackets, handrails, and other exposed metal surfaces shall be primed and painted to match the color of the new passenger boarding bridge.
   2. All unit exterior exposed ductwork shall be double wall insulated duct as indicated on the project drawings.

D. Maximum Dimensions and Weights: (LxWxH, weight)
   1. Class III: (120", 88", 45", 6500 lbs)
   2. Class IV: (212", 88", 62", 7500 lbs)

2.09 FACTORY TESTING

A. The manufacturer shall test every Dx POU unit to assure compliance with the specifications. Submit certification test sheets. The Owner shall be notified fourteen (14) days prior to the date of such tests. The Owner reserves the right to witness tests and request additional tests if necessary to demonstrate compliance with the specifications.

B. Factory mass flow tests shall be conducted for each size of Dx POU units at design ambient conditions with a test apparatus whose resulting calculated mass flow has been certified by the NEBB or other approved Agency. The submittal for the Dx POU units shall include the agency certification report of the test apparatus, sealed and authenticated by the agency.

C. Should factory tests fail to indicate compliance with specifications, all costs associated with re-testing, including costs associated with the Owner's witness services, will be the responsibility of the manufacturer.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installation services shall be provided by an installing contracting company that has a minimum of five (5) years documented experience of successful installations on projects of similar size and scope.

B. Install in accordance with manufacturer's instructions and project documents.

C. Equipment installation personnel shall meet all local security and safety requirements.

D. The Dx POU unit or its associated routing of hoses, air ducts, etc., shall not hinder or restrict the boarding bridge from operating within its full designed operating range.

E. Arrange installation of Dx POU units to provide adequate clearance for service and maintenance.

F. The Dx POU units shall be properly aligned, adjusted, and lubricated before final acceptance.

G. Install condensate discharge system as indicated on the contract drawings.

H. Complete all punchlist items.

3.02 EXAMINATION

A. Verify/perform the following items or tasks.
   1. Air inlets or exhaust louvers are not obstructed
   2. Check to be sure that there are no tools or loose objects in the unit.
   3. Make a final check of the security of the power connections.
   4. Re-install any covers removed during installation.
   5. Full passenger boarding bridge and related equipment operational non-interference test.

3.03 INTERFACE WITH OTHER WORK

A. Installation of unit shall be coordinated with other trades associated with the project.

3.04 CLEANING

A. Clean unit from all construction dust and debris prior to start-up.

B. Touch up scratched or marred surfaces to match original finish.

C. Protect the installed unit from subsequent construction operations.

3.05 STARTING EQUIPMENT AND SYSTEMS

A. Submit complete approved field commissioning report. Report shall include, but shall not be limited to, smoke test, communications test as applicable, cooling and heating test, aircraft model selector response.

B. Demonstrate complete functional operation of equipment to the satisfaction of the Owner.

END OF SECTION

SECTION 11 8504

PASSENGER BOARDING BRIDGE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This specification sets forth the description, technical and performance specifications for apron drive type passenger boarding bridges (PBB).
   1. This specification is intended to include both two and three tunnel type passenger boarding bridges, of corrugated or truss style construction, and all lengths thereof, as well as any fixed section of tunnel used as a walkway to the apron drive bridge.
   2. The aircraft parking requirements for each PBB are available upon request.

1.02 RELATED SECTIONS

A. Drawings, General Provisions of the Contract, including General and Special Conditions, as well as General mechanical and electrical materials and methods of installation apply to work of this section.

B. Section 118502 - Dx Point of Use Preconditioned Air Unit.

C. Section 118600 - Aircraft Ground Power Cable.

D. Section 118601 - Overbridge Device.

E. Section 118602 - Solid State Frequency Converter.

F. Section 118604 - Cable Hoists.

1.03 REFERENCES

A. The bridge shall conform to all applicable federal, state, and municipal codes and regulations that apply to the installation site. The design of all parts and subassemblies shall be in accordance with good commercial practices to assure safe, efficient, and practical designs in keeping with standards that have been adopted by the passenger loading bridge industry. Applicable documents include, but are not limited to, the following. The latest approved version or edition, by the authority having jurisdiction, of the following codes, references and standards shall apply. If the authority having jurisdiction has not approved or adopted a particular code, reference, or standard, the latest published edition shall be applicable.
   1. American Institute of Steel Construction (AISC)
   2. Society of Automotive Engineers (SAE) Standards
   3. American Society of Mechanical Engineers (ASME) Standards
   4. National Fire Protection Association (NFPA-415)
   5. Life Safety Code (NFPA-101)
   6. American's with Disabilities Act (ADA)
   7. Steel Structures Painting Council (SSPC)
   8. National Electrical Code (NEC)
   9. National Electrical Manufacturers Association (NEMA) Standards
   10. Occupational Safety and Health Administration (OSHA)
   11. American Welding Society (AWS) Standards
   12. American Society for Testing and Materials (ASTM)
   13. American Insurance Association (AIA)
   14. Structural Steel ASTM-A36
   15. Hollow Structural Sections (HSS) ASTM-500
   16. Wide Flange Sections ASTM-A992
   17. Steel Pipe ASTM-A53
   18. Steel Sheet ASTM-A570
   19. T-1 Steel ASTM-A514 and A517
   20. Hinge Pins ASTM-A 311 Grade 1018 and Grade 1144

21. Bolts—Standard ASTM-A307
22. Bolts—High Strength SAE-J429 Grade 5 and 8

B. In the event of conflict between a reference and another reference or this specification, request clarifications. All responses are final, and will be at no additional cost to the Owner.

1.04 GENERAL REQUIREMENTS

A. The term “Passenger Boarding Bridge”, "Passenger Loading Bridge", "Boarding Bridge" “Loading Bridge”, "bridge", "PLB", and “PBB” as used within this specification and throughout the contract documents is understood to mean the components, subcomponents and subsystems that constitute a complete, operable, and maintainable Passenger Boarding Bridge and as referred to herein, are synonymous.

B. The terms, “Seller”, “Contractor”, "Provider" and “Manufacturer” as referred to herein, are synonymous. The term Owner, shall include the Owner, or his authorized representative.

C. Applicable contract and terminal building drawings will be made available upon written request.

D. The PBB and all components thereof shall be constructed in accordance with all codes and standards and local laws and regulations applicable to the design and construction of this type of equipment, which are generally accepted and used as good practice throughout the industry, including without limitation, NFPA, Underwriter's Laboratories, OSHA, SAE Publications, American National Standards, Military Standards, etc. The design of all parts and subassemblies shall be in accordance with good commercial practice and shall be the responsibility of the manufacturer to assure safe, efficient and practical design in keeping with requirements peculiar to this type system.

E. The manufacturer shall be a qualified source, who has been regularly engaged in the engineering, manufacturing and installation of commercial aviation PBB equipment and components for a minimum of five (5) years and with a minimum of one hundred (100) units installed.

F. Qualified manufacturers and installers will have completed no less than five (5) jobs of similar size and scope within the last five (5) years.

G. The manufacturer shall have proven technical capabilities and adequate manufacturing facilities together with sufficient financial depth and stability to permit prompt and satisfactory execution of the contract.

H. Manufacturers are required to satisfy all requirements of this specification. Should the Manufacturer desire to deviate from any portion, either because the specification is in error, violation of any law or regulation, or is in need of modification to permit a more satisfactory functional and economical design, they must submit a written request for such deviation. The Manufacturer shall not contract, purchase or cause to be delivered, equipment which does not meet all requirements of this document as specified, without obtaining prior written approval.

I. The Manufacturer shall be responsible for verifying installation locations and methods and shall notify the Engineer of any conflicts or code violations prior to manufacture of the PBB units. Verifications shall include field verifications of terminal building heights, appurtenances and finishes, including terminal doors; electrical, mechanical, special systems, and communications interfaces; as well as PBB and walkway foundation locations, rotations, elevations and bolt details. Modifications to eliminate conflicts or code violations will be coordinated with and approved by the Engineer. Modifications shall be made at no additional cost to the Owner.

J. The Manufacturer shall furnish and install all necessary equipment to provide a complete, operable and maintainable unit.

K. Should alternate mounting configurations or physical attributes, other than those specified herein, or indicated on the project drawings, be proposed, manufacturers shall submit alternates for approval prior to bid date. Alternate mounting, configurations, or attributes shall be provided at no additional cost to the Owner.

L. EMI/RFI: Unit shall be designed so as not to affect aircraft radio/navigation equipment. It shall be applicable throughout the entire aircraft radio frequency range. Provisions shall be designed into the unit to protect it from voltage fluctuations which might result from the operation of aircraft radio frequency equipment.

M. The equipment and its accessories shall be designed and constructed with reliability of operation a primary consideration. The minimum reliability design requirement is that the equipment be designed to operate between periodic preventative maintenance periods of 300 operating hours or six weeks, whichever occurs first. The above interval does not apply to components in those cases where the component manufacturer recommends more frequent maintenance intervals.

1.05 SUBMITTALS

A. Drawings, sketches, details, and materials shall be submitted in the English language, with United States Units, including dimensions, volumes, weights, and forces. The use of the metric or SI units is not acceptable.

B. Bid-Submittals: The following submittals shall be included with bid.
   1. Alternate Configurations per 1.04.K.
   2. NFPA 415 certificates and manufacturer's compliance statement per 1.12.C.9.
   3. Spare Parts List: Provide manufacturer's recommended spare parts list. Spare parts list shall include Owner applicable pricing. Spare parts pricing shall remain valid for two (2) years from the date of final completion.
   4. Proposed PBB models with manufacturer's standard cut sheets for proposed models.
   5. Foundation loads for each passenger boarding bridge model proposed.
   6. UL/ETL Certification per 1.06.C.
   7. Routine maintenance schedule and procedures.

C. Pre-Manufacture Submittals: The following submittals shall be made as necessary to meet the project schedule, and shall be submitted to and approved prior to manufacturing the PBB units.
   1. The manufacturer shall submit shop drawings, technical specifications, and descriptive product data for review and approval. An index prepared in chronological order listing drawings, sketches, details, and material submitted shall be provided.
   2. Product data for selected models including specialties, accessories, and the following:
      a. Critical design items related to the human factors including operation and maintenance shall be addressed with Shop Drawing and shall include, but not be limited to:
         1) General:
            (a) General Arrangement drawings to include dimensions
            (b) General Erections drawings to include dimensions
         2) Interior Finishes:
            (a) Interior scheme of each type
            (b) Transition details
            (c) Wall finish attachment
            (d) Light fixture details and layout
            (e) Joint details
            (f) Interior Finishes
            (g) Carpet edging details, including, lines of demarcation between carpeted and hard surfaced floor at wall areas and treatment at doors and thresholds
         3) Exterior Configurations:
            (a) General bridge layout
            (b) Exterior sketch of each type
            (c) Graphics
            (d) Paint finishes

(e) Handrails
(f) Flashing (terminal to passenger loading bridge)
(g) Flashing (terminal to fixed walkway)
(h) Flashing (fixed walkway to passenger loading bridge)
(i) Flashing (bridge segments)
(j) Cab door seal
(k) Ramp Service Stairway

4) Cab:
(a) Operator's cone of visibility
(b) Control panel location and functional layout with labeling.
(c) View panels
(d) Interface with aircraft
(e) Designs necessary for appropriate mating with required aircraft types (including auto-leveling devices)
(f) Operator protection while bridge is in motion with weather door open
(g) Operator instruction placard
(h) Copies of all graphic screen shots in color, including indication of different colors for those items that change colors to indicate changing states of equipment or systems.

5) Safety Markings:
(a) All safety decals and stencils

b. PBB operational envelopes dimensioned.
c. Motor ratings and electrical characteristics including motor and fan accessories.
d. Materials, gauges and finishes, including paints, wallboards, floor coverings, etcetera.
e. Engineering Certification:
1) Manufacturer shall submit Engineering Certification stating that the PBB and all components thereof are constructed in accordance with this specification, as well as all codes and standards and local laws and regulations applicable to the design and construction of passenger boarding bridges, including without limitation, NFPA, Underwriter's Laboratories, and OSHA.
2) Structural shop drawings shall be submitted and shall be stamped by a registered State of Colorado Structural Engineer certifying structural integrity of the passenger boarding bridge system including all welds, fasteners and appurtenances for the intended use.
f. Shop Drawings: Provide schematics and interconnection diagrams, indicate front and side views of PBB with overall dimensions and weights shown; conduit/cable entrance locations and requirements; and nameplate legends. Differentiate between manufacturer-installed wiring and field-installed connections.

3. Installation Details: Provide complete installation details including, without limitation, installation details of all appurtenances. Show installed configuration as well as any pertinent details regarding interface to other equipment and systems, include electrical connection service points.

D. Pre-Ship Submittals: The following shall be submitted for approval prior to shipping PBB units to the project site:
1. Factory Test Reports: Indicate factory tests and results and inspection procedures.

E. Pre-Substantial Completion Submittals: The following submittals shall be submitted and approved prior to 14 days before substantial completion, unless otherwise noted herein.
1. Operation and Maintenance Manuals.
2. Training Program: At least 60 days prior to substantial completion, a training program summary, course syllabus, instructor qualifications, and copy of the training manual shall be submitted for review and approval.

3. Field Commissioning Report: Submit proposed field commissioning report for approval. This approved form shall be utilized for the final field commissioning as specified in Section 3.

F. Installation Submittals: The following submittals shall be submitted and approved during installation if necessary per these specifications.
   1. Welding Certifications per PBB Mechanical Erection and Lifting section of this specification.

G. Pre-Final Completion Submittals: The following submittals shall be submitted and approved prior to 14 days before final completion.
   1. As-Built Drawings. Provide field edited redlined project drawings showing deviations from design documents.
   2. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and have been registered with the manufacturer.
   3. Field Commissioning Report: A completed field commissioning report as specified herein. Utilize approved form.
   4. Training Rosters. Provide training roster with trainee names, dates and types of training, as well as durations.
   5. All original software packages and documentation, registered in the Owner's name.
   6. Hard copies as well as electronic (compact disk of flash card) copies of all final programs loaded into all machinery under this contract.

1.06 QUALITY CONTROL

A. NFPA Compliance: Comply with applicable portions of NFPA 70 and NFPA 415 for components and completed and installed products.

B. NEMA Compliance: Motors, enclosures and electrical accessories shall comply with NEMA standards and be so rated.

C. UL Compliance: PBB shall be UL, or ETL listed and shall be labeled by a nationally recognized testing laboratory at the time of bid. Submit verification with bid submittals.

1.07 DELIVERY, STORAGE, AND PROTECTION

A. Lift and support PBB's with the manufacturer's designated lifting or supporting points.

B. Deliver equipment as factory-assembled unit, or sub-units whenever practical for shipping purposes with protective covering.

C. Store equipment and material in suitable facilities until delivery, installation, and final acceptance.

D. Coordinate the delivery acceptance of this equipment at the job site. Receive, offload, store and protect this equipment until such time as it has been installed and final accepted by the Owner.

E. Properly dispose of all waste, including, but not limited to, packaging, crates, etcetera.

1.08 ROYALTIES AND LICENSE FEES

A. The PBB manufacturer shall pay all royalties and license fees and shall defend all suits or claims for whatever infringements of any prior, pending, or future patent rights and shall save the Owner and Engineer harmless from liability, expense, or loss on account thereof, with respect to any processes, devices, methods, articles, inventions, or procedures used by the manufacturer.

1.09 WARRANTY

A. Provide a full parts and labor warranty for the new units and ancillaries. Labor warranty shall be performed by factory trained service technicians. Warranty shall run one (1) year from the Date of Beneficial Use. Date of Beneficial Use is defined as the date the system is turned over by the manufacturer, and accepted by the Owner for normal operation, or the date that the facility/Gate is placed into commercial operation, whichever occurs later. All warranty services shall be at the

site of the installation. Provider shall be responsible for all travel and sustenance expenses necessary for warranty services.

B. Shipping and handling charges for warranty parts are the responsibility of the Provider.

C. Warranty Services shall be commenced with on site representation, by qualified repair technicians, within 72 hours from the request of the Owner.

1.10 OPERATION AND MAINTENANCE MANUALS

A. Provide two (2) bound copies, and three (3) electronic copies (CD or DVD) of the approved, comprehensive Operation and Maintenance Manual for each model PBB supplied fourteen (14) days prior to Substantial Completion.

B. The manuals shall fully describe each product, system, or subsystem numbered logically and separated into sections and contained in rigid plastic binders with identification inserted in clear plastic pockets on front and spine of each binder. Manuals shall be assembled in accordance with ATA 101

C. The content of the manuals shall be limited to information and data that specifically apply to products provided and shall include, at minimum, a general description, theory of operation, routine normal and special operating instructions and sequences. Also included shall be routine maintenance procedures and guides for troubleshooting, disassembly and reassembly instructions, and recommended spare parts list including current prices and sources.

D. Wiring diagrams and schematics shall be incorporated into the manuals to clearly show features such as controls, switches, instruments, and indicators by name and location.

E. Special Tools List: Provide a list of any special tools required to perform any field performable maintenance tasks.

F. Spare Parts List: Provide manufacturer's recommended spare parts list.

G. Lubricants list: Provide manufacturer's recommended lubrication product list. Base on a single lubricant manufacturer.

1.11 TRAINING

A. Manufacturer shall provide a complete training program for the Owner's operating, engineering, and maintenance personnel. Training shall include both classroom and hands-on instruction and be of sufficient duration to adequately train personnel to perform on site routine, preventative, and remedial maintenance of the equipment, product or system. Unless noted otherwise, maintenance training shall consist of one (1) training session of eight (8) hours classroom instruction and eight (8) hours hands-on instruction for eight (8) personnel, and operator's training shall consist of a minimum of four (4) classes at two (2) hours duration each hands-on instruction for six (6) personnel.

1. Operator's training may require some night hour training classes at the Owner's discretion without additional cost to the Owner.
2. The maintenance training course will fulfill the technical information requirements of the Owner's maintenance instructors, engineers and mechanics. This course, with number of classes as specified shall emphasize the following:
    a. Orientation providing overview of system/subsystem concept, configuration, and operation.
    b. Familiarization with and use of electrical schematics, control programs and functional block diagrams.
    c. Operations theory and interfaces.
    d. Instruction in basic theoretical and practical understanding of equipment appearance, layout, and functions.
    e. Safety precautions.
    f. Use of standard and special tools and test equipment.
    g. Adjustment, calibration, and use of related test equipment.

h. Detailed preventative maintenance activities.
i. Troubleshooting, diagnostics, and testing.
j. Equipment assembling/disassembling.
k. Repair and parts replacement.
l. Failure and recovery procedures.
m. Cabling and/or interface connectors.
n. Operation and Maintenance Manuals, and related reference publications familiarization.
o. Procedures, practices, documentation and materials required for system maintenance.
p. Towing and Jack Stand operations.

B. Operator training shall be completed no later than seven (7) days prior to beneficial use. The manufacturer shall provide maintenance training within 30 days of beneficial use. At least 60 days prior to substantial completion, a training program summary, course syllabus, instructor qualifications, and copy of the training manual shall be submitted for review and approval.

C. Training shall be conducted prior to final acceptance of respective equipment, products, and systems and shall be given at the installation site property at the direction of the Owner.

D. Provide Owner a minimum of seven (7) days notice prior to conducting any training.

1.12 SYSTEM DESCRIPTION

A. General
1. The aircraft passenger loading bridge covered by these specifications shall be designed to extend from the terminal departure lounge doorway to the aircraft boarding door so that passengers can walk between the two, completely protected from inclement weather, aircraft engine blast, and blown dust. The bridge shall provide a simple, convenient, safe, and controlled method for passenger boarding. The complete assembly shall be weatherproof, both when sealed to the aircraft and when parked with the cab weather door closed. Particular attention shall be given to the safety of the passengers.
2. The bridge shall consist of the following components:
a. Fixed Walkway
b. Rotunda Entry Corridor
c. Rotunda
d. Telescoping Tunnels (2 or 3 as specified)
e. Vertical and Horizontal Drive Column Assembly
f. Rotating Aircraft Cab with Operator Control Console
g. Automatic Leveling Device
h. Service Door, Landing and Service Stair
i. Canopy Closure to Aircraft
j. Electrical Distribution Systems and Components
k. Baggage Belt Loader

B. Application
1. The apron drive loading bridge must be capable of reaching all passenger doors of specified aircraft parking positions as indicated on the project drawings. The bridge cab shall have sufficient flexibility to enable it to mate with the aircraft passenger loading door when the aircraft is parked at the gate. The bridge shall have sufficient vertical travel to accommodate all aircraft specified on the aircraft parking layout drawings. The bridge shall have additional extended travel beyond the outer most aircraft operational requirement and additional retract travel from the closest aircraft operational requirement or PBB stow box as indicated on the project drawings.
a. Submit manufacturer's proposed PBB models with standard cut sheets with bid.

C. Safety Provisions

1. The bridge shall be designed to achieve the maximum safety of aircraft passengers, crew, operators, and maintenance personnel. The bridge shall conform to all current federal, state, and local Occupational Health and Safety Codes, along with standards developed and adopted by the passenger loading bridge industry.
2. All elements of the bridge shall be designed to be fail-safe in operation.
3. Operating controls and maintenance features shall be designed so that errors in the operation and maintenance of the bridge cannot cause structural damage to any of its elements.
4. All operating mechanisms shall be designed so that the drive mechanism is locked when power fails or is turned off. Electrical-Mechanical lift columns shall be equipped with a fault detector to sense differential motion of the ball screw assemblies. The detector shall disconnect electrical power from the vertical drive motors if a fault is detected.
5. Positive mechanical stops shall be provided to prevent hazardous over-travel where any component might become disengaged from its guiding or restraining component.
6. The operator's position in the cab shall be arranged to permit the operator to operate the loading bridge with the cab weather door closed.
7. Transition ramps shall have floor coverings as indicated in the finishes section with yellow chamfered edges and be equipped with brushed aluminum handrails on both sides.
8. Sheared or sharp metal edges must be deburred or broken and all exposed metal corners are to be rounded. All critical fasteners are to incorporate suitable locking devices.
9. The loading bridge shall conform to the requirements of the National Fire Protection Association (NFPA) "Standards of Construction and Protection of Aircraft Boarding Walkways," NFPA-415, latest edition.
    a. Submit certificates of compliance for its bridges including any assemblies or appurtenances affected, with NFPA 415, most recent edition, from a Nationally Recognized Testing Laboratory (NRTL) located in the United States.
    b. Provide written certification that the total PBB, including any design changes, is in compliance with NFPA 415, most recent edition.
10. The innermost or "A" tunnels, as well as the interiors of any fixed walkway section, and all interior ramps, to include brushed aluminum handrails on both sides. 1-1/2" O.D. with returns on ends.
11. Provide emergency lighting with 90-minute battery back-up complete with self-contained charger and automatic on-off control. Emergency lighting may be incorporated into normal lighting fixtures. Emergency lighting shall meet the minimum lighting level requirements of NFPA 101 - Life Safety Codes.
12. The PBB shall comply with all applicable Life Safety Codes in effect at the time of manufacture.

D. Personnel Safety
1. A high resolution color video camera (CCTV) shall be installed beneath the PBB in such a manner as to allow the PBB operator to view at a control console mounted monitor, the wheel bogey and service stair areas during PBB operation. Provide spare termination points, wiring, and conduit to allow for a second feed to a building internal location.
2. The operator’s position in the control cab shall be designed so as to permit the operator to position the loading bridge with the outer door open or closed. Suitable enclosures, guard rails, etc. shall be provided to protect the operators from being pitched out the open end of the cab in case of sudden stops or inadvertent movements of the bridge when operated with the outer door open.
3. Where required, heat shields or guards shall be installed to protect personnel operating the equipment or performing routine periodic maintenance on it against accidental contact with exposed parts which are subject to high operating temperatures.
4. The loading bridge shall be provided with a caged, OSHA approved roof access ladder accessed from the service stair platform. All items to be galvanized steel.

5. OSHA approved handrails will be installed atop 1/2 the outer most tunnel section to provide fall protection to personnel working on drive motors, etc. All remaining tunnel section(s), as well as any fixed walkway installed, shall be equipped with full length OSHA compliant fall protection. Handrails, ladders, cages, brackets, etcetera shall be galvanized steel.
6. OSHA and NFPA approved emergency lighting shall be provided as a means of safe exit in the event of a power interruption. They shall provide sufficient illumination throughout the PBB as specified herein.
7. Suitable OSHA compliant guards shall be provided for all sprockets, gears, chains, fans, belts, and other moving parts located where operating or maintenance personnel may make accidental contact with them. Warning decals shall be added where applicable.
8. Exposure of operating and maintenance personnel to electric shock hazards shall be minimized by provision of suitable interlocks, grounding means or protective devices.
9. Guards or enclosures shall be provided for all exposed portions of electrical equipment.
10. Elevating devices shall be protected from uncontrolled movement or actuation in the event of a power source failure of any type.
11. Electrically operated lifting devices shall be equipped with brakes to lock the system in the event of power failure or malfunction.
12. All pinch and shear points, sharp edges and protruding objects must be eliminated wherever possible and practical. If elimination is not possible, adequate guarding must be achieved to prevent injury and/or damage exposure.
13. All stairs, ladders, scaffolds, platforms, and handrails shall comply with all applicable OSHA requirements.
14. PBB design shall eliminate wherever possible all tripping hazards. Possible tripping hazards such as transition ramps (nosings), gutters, etc. shall be identified. Transition ramps shall be identified by using a durable, one-inch, yellow (OSHA Alert Yellow) trim band at the beginning of such ramp or hazard. Interior rain gutters shall be painted with alternating yellow/black safety striping the entire length. Other methods of striping may be acceptable, but shall be submitted for approval prior to installation.
15. All carpeting shall have edge strips to prevent fraying.

E. Equipment Safety
1. Sharp edges, projections and hinged devices with hazardous characteristics shall be avoided in the design and construction of the loading bridge. Suitable edge detailing shall be provided where necessary.
2. When in operate mode, all equipment shall be designed to be fail safe and bridge motion controls (i.e. horizontal and vertical travel, cab rotation) shall require the operator to apply constant pressure to remain engaged (dead-man).
3. All operating mechanisms, i.e. horizontal and vertical drive, cab rotation, etc. shall be designed so that the drive mechanism is locked when power fails or is shut “off”.
4. Positive mechanical stops shall be provided to prevent dangerous over travel when any component might become disengaged from its guiding or restraining component.
5. Externally mounted cab mirror(s), both sides, shall be provided for viewing the apron area from the operator’s position. Provide additional mirrors as necessary such that the operator can fully view the wheel bogey area and service stairs during operation.
   a. Mirror frames and brackets shall be galvanized.

F. Noise and Vibration
1. The maximum average sound level and loading bridge vibration limits shall comply with the requirements of S.A.E. ARP 1247, current revision.

G. Technical and Performance Requirements
1. The boarding bridge shall be designed to accommodate all imposed loads collectively. In the worst operating configuration, structural margins of safety as recommended by AISC specifications for the design and erection of steel structures shall be maintained.

2. In determining the design factor of safety, weld efficiencies as designated by the American Welding Society or applicable design codes shall be used.
3. Joint efficiencies shall be included in determination of the factor for bolted connections.
4. All lifting devices shall be designed to AISC standards, (except wire rope) with a minimum factor of safety of 5 based on ultimate strength.
5. The unit shall be designed with sufficient structural rigidity so that deflections due to load, wind, and motions of working parts do not create interferences, cause malfunctioning of the equipment, or present any safety hazards to personnel, aircraft, or the unit itself.
6. In the case of standard component or component assemblies used by the end product manufacturer, certification of the application by the component manufacturer will constitute structural acceptability of such components.
7. Shoulder bolts, bearings, or bushings shall be used when attaching parts that have relative rotary or linear motion.
8. The wheels used on the equipment shall be of a type and size which will not damage or cause undue wear to the surface over which they will normally operate. The tires must be capable of supporting the design load of the passenger boarding bridge, roof load, snow load, and all ancillary equipment. The tires must be capable, under dead load and/or roof load, including snow loads, of operating satisfactorily without operational degradation.
9. All mechanisms for actuating, restraining, and guiding the bridge and its components shall be designed so that no noise, sway, or sense of insecurity will be apparent to the passengers. No operating vibration or loads are to be transmitted to the terminal building.
10. The passenger boarding bridge(s) submitted shall be designed not to exceed 1 in 12 (8.33%) tunnel slope when servicing any aircraft in the fleet mix designated for the gate where the PBB is to be located; however, the PBB shall be capable of achieving a minimum of 12% slope without causing damage to the PBB or ancillary equipment, including PCA or 400 Hz equipment, for maintenance or irregular operation activities.
11. The bridge floor structure shall be designed to accommodate a dynamic load of 40 pounds per square foot over the total floor area.
12. The roof shall accommodate snow loads of 25 pounds per square foot over the total roof area, or as otherwise required by code, whichever is greater.
13. The bridge, when in use at any extended length, shall accommodate, while maintaining operability, a wind load of 12.5 pounds per square foot and a wind velocity of 60 M.P.H. from any direction without loss of stability or control.
14. In conditions of sustained wind loads greater than 60 M.P.H., the bridge will be stowed. At wind loads above 60 M.P.H., the bridge, when retracted to the stowed position, shall accommodate a wind load of 25 pounds per square foot and a wind velocity of 90 M.P.H., from any direction.
15. The bridge shall be able to accommodate the added loads of 400 HZ ground power and preconditioned air equipment, including appurtenances, including dynamic operational loads presented by the PBB and these additional equipment items. These loads may be applied in total or in part, singularly or simultaneously. The design shall be based on the combination, which imposes the most adverse loading.
16. The bridge when maintained in accordance with the manufacturer's O&M manual by Airport maintenance personnel trained by the manufacturer as indicated herein, shall provide a useful service life of 20 years minimum.

H. Environmental Considerations
1. The bridge shall function satisfactorily and in accordance with these specifications under ambient temperatures from -40 degrees F to 125 degrees F with winds up to 60 miles per hour on wet, iced, or snow laden apron surfaces.
2. The entire bridge is to be weatherproof.
3. Equipment and controls that are exposed to the weather are to be of a weatherproof type or housed in weatherproof boxes.

4. PBB shall be equipped with external tunnel roller ice scrapers to remove ice from the tracks prior to contact with the rollers.
5. Externally mounted electrical panels and/or cabinets shall be equipped with space heaters to control condensation as indicated herein.
6. Electro-mechanical drive systems shall have suitable protective coverings over motors, chains, sprockets, actuator arms, linear actuator arms, etcetera, to both protect operating personnel and passengers, as well as to protect the systems themselves from exposure to weather elements or traffic abuse.
7. The structure shall be designed to resist the accumulation of debris or water in low points and/or pockets in the structure. Dimpled drain holes or suitable covers will be provided where necessary. Drain holes shall be located so as to drain collection points with the bridge in any normal attitude. Scupper drains from the internal gutters shall carry moisture clear of the structure and shall be sized to eliminate blockage. Welding and drilling operations after application of prime coats shall be prohibited.
8. Where access holes have been created to gain access to components of the PBB, or where pockets otherwise exist, that could trap or accumulate debris, such pocket or opening shall be suitably covered with screw attached covers.
9. All parts shall be resistant to, or protected from corrosion caused by contaminated turbine fuel or moisture blown or splashed from the ground. Provisions shall be made to resist electrolytic corrosion where conditions tend to cause this corrosion. Fasteners shall be of corrosion resistant material or plated to prevent corrosion.
10. All edges of marine grade plywood are to be sealed with an approved APA sealer prior to installation.
11. All panels containing VFD inverters shall be equipped with space heaters as necessary for optimum VFD operations.

I. Service and Access
1. The design shall stress simplicity, ruggedness and ease of maintenance. All systems shall be designed to operate with a minimum of routine maintenance using long life components sealed or self-lubricating mechanisms, etc.
2. Equipment components and systems requiring frequent inspection or maintenance shall be readily accessible. Suitable access doors or removable enclosures shall be approved for this purpose.
3. Access doors, covers, and protective guards shall be designed for quick removal or opening.
4. Access panels shall be hinged, pinned, etc. to prevent loss from the unit. Large panels of over 4 feet, in both height and width, which are normally removed only for heavy maintenance, i.e. major component overhaul or removal, may be designed to be removed from the equipment when hinging or pinning is not practical.
5. Hinges shall be located on the forward edge of all vertically hung doors and on the lower edge of all horizontally hinged doors. Where possible, at least 8 inches of clearance above the ground shall exist when any door is open.
6. All hinge doors shall be provided with devices to secure them either in the open or closed position such that they will not be blown by jet blast or ambient winds.
7. Stops or bumpers shall be installed so that the doors, when open, do not mark or scratch the paint work.
8. Major assemblies and components shall be capable of being disconnected and removed from the equipment without the necessity for extensive disassembly of other components. A design goal shall be that any major component should be able to be removed and reinstalled in a period not to exceed eight man-hours. All components/assemblies exceeding 80 lb. for two person-handling or 30 lb. for single person handling, require mechanical assistance and shall be provided with lift eyes, forklift guides, etc.
9. Fastener heads and nuts shall be provided with adequate clearance for wrenches or drivers.

10. The design of the unit shall be such that only ordinary common hand tools and test equipment are required in routine maintenance operations and special tool requirements for overhaul/heavy repair work is kept at a minimum.
11. The equipment compartment shall be designed so as to provide easy access to the controls, relays, valves and other components within the enclosure. Provisions shall be made for ready adjustment, servicing, or replacement of these and other components frequently replaced or serviced.
12. Maintenance service points and access covers shall be located and positioned in such a manner that a minimum time and effort are required during servicing operations. There shall be no interference to the servicing or draining of lubricants to or from any assembly or component by frame members or other obstructions.
13. Any special tools or test equipment designed solely to service, overhaul or test performance of the loading bridge shall be identified in writing and included as part of the bid pricing.
14. Pressure lubrication fittings shall be provided at all points where heavy loads, close tolerance, relative rotary or linear motion of parts occurs. Where access to fittings are difficult, a lubrication panel should be utilized.
15. Components shall be protected from mechanical, electrical, and corrosion damage and malfunctions due to rain, snow, ice, sand, grit, deicing fluids, and other contaminants.
16. All chains and belt drives shall have provisions for adjustment, and once adjusted, a positive means of retaining this adjustment, as well as OSHA compliant covers or guards.

J. Materials, Parts and Processes
1. Only standard components of highest commercial quality, commercially available and conforming to recommendations of standards established by the Society of Automotive Engineers (SAE) and the American Society of Mechanical Engineers (ASME) will be used.
2. All material and components assembled or fabricated into the equipment are to be new, unused, of high quality, of current production and free from defects or imperfections which might affect the appearance or serviceability of the finished product.
3. All parts and materials needed to fabricate, assemble, and finish the equipment shall be furnished by the manufacturer unless otherwise specified.
4. All bolted, screwed, and threaded fastenings shall incorporate adequate locking devices. Safety wire shall be incorporated in critical applications.
5. Weldments requiring alignment with assemblies, interchangeability, fit, and flatness shall be fabricated with fixtures capable of maintaining dimensions in the finished part within design tolerance.
6. Specified sections and weld design and application shall be such that heat distortion of plates and members is minimized in the final weldment.
7. All intersecting steel planes, e.g. side to top, side to bottom, of exterior steel sections of the passenger boarding bridge shall be 100% welded. Caulk shall not be used to provide weather seals.
8. Components must be installed per the manufacturer's recommendations. Modification of the component which could affect its performance must be approved in writing from the manufacturer of the component. Any modified component should be identified as such to the Owner for purposes of interchangeability.
9. All components shall be chosen to be within their manufacturer's published ratings under the most severe conditions of operation. This shall include, but not be limited to the following:
    a. Mechanical Components: Speed, torque, force, environment, lubrication means, and expected service life of chains, belts, sheaves, sprockets, shafts, bearings, gears, etc.
    b. Electrical Components: Voltage, current, load characteristics, and duty cycle of electrical components.

c. Others: For components proprietary to the manufacturer, design shall conform to established industry practices.

10. Fastener heads shall not be located on rub or wear surfaces unless recessed below the surface.

K. Maintainability

1. The bridge shall be designed to emphasize simplicity, ruggedness, and ease of maintenance. There shall be no special tools required for routine maintenance.
2. Attention shall be given to the design of each component and assembly to minimize the number of routine maintenance items on the bridge.
3. Components shall be selected and assemblies shall be designed to facilitate troubleshooting and to minimize repair or replacement time.
4. Access panels enclosing areas requiring maintenance shall be large enough to permit accomplishment of the task required.
5. Where practical, components shall be built in subassemblies for ease of replacement and shall be designed to be installed or removed by one person.
6. Where the weight of a component requires mechanical assistance, the component shall be provided with lifting eyes or other suitable hoisting arrangement.
7. Drawings, sketches, details, and all materials/equipment shall be submitted and provided in the English language and systems of measure, including, without limitation, dimensions, volumes, weights, threads, forces, fasteners, devices, panels, labels, signs, notices. communications etcetera. The use of metric or SI units is not acceptable.
8. All parts having the same manufacturer's part number shall be directly and completely interchangeable with each other with respect to installation and performance.
9. All components and assemblies incorporated into the loading bridge shall be designed and manufactured to dimensional tolerances which will permit future interchangeability and facilitate replacement of parts.
10. The individual parts and components of each unit shall be of the same original manufacture and part number. Minor component parts need not comply with the above, provided interchangeability and safety are not compromised.

L. Workmanship

1. High standards of workmanship and methods shall be employed in the manufacture of the passenger boarding bridge. Particular attention shall be given to metal finishes to assure freedom from blemishes, defects, burrs and sharp edges. Quality of welding, painting, riveting and alignment of parts shall be maintained.
2. All welds shall be of adequate length, area and strength to sustain the design load. Welds shall be reasonably uniform in appearance and cross section, and shall be free of cracks, inclusion, porosity, cavities, and other physical and metallurgical defects. Welds shall not be ground in order to improve appearance except as required for flush surfaces or non-structural parts. All welding performed in the fabrication, assembly and/or mounting of the passenger boarding bridge shall be accomplished by an appropriately licensed certified welder.
3. Assembly screws, bolts, studs, and other threaded fasteners shall be corrosion-resistant material or plated to prevent corrosion. All fasteners shall be tight and shall retain tension in service.
4. All wires and lines subject to chafing shall be provided with some means of protection. Acceptable anti-chafing devices include grommets, flexible sleeves or jackets, and other approved materials.

M. Identification and Markings

1. All instruments, relays, circuit boards, pumps, motors, controls, etc. and instructions shall be suitably identified with permanent, non-fading placards, or pictographs impervious to the effects of weather, oil, cleaning solvents, aircraft hydraulic fluids, fuel and other effects of normal operation for the life of the equipment without deterioration, fading, or loosening.

2. Placards shall be in sharp color contrast in large enough letters to be easily read from the operator's position indicating the function, direction and/or identification.
3. A metal nameplate shall be riveted to the equipment specifying manufacturer's name and/or trademark, manufacturer's part or model number, manufacturer's serial number, date of manufacture, and equipment's rating.
4. Circuit breakers shall be labeled as to the circuit that they feed.

N. Fixed Walkway
1. Where indicated on the aircraft parking layout, fixed walkways are to be installed between the rotunda entry corridor and the terminal building exit. Construction of the fixed walkway shall be substantially identical to that of the bridge tunnels, and shall meet the same applicable specifications.
2. The fixed walkway shall be designed, furnished, and installed so as not to impose any load on the terminal building.
3. The contractor must provide all required supports and haunches for final support of walkways.
4. Coordinate base plate with details as indicated on the construction documents. Field verify details prior to manufacture.
5. Field verify all dimensions prior to manufacture.
6. The minimum inside height of the fixed walkway shall be 7 feet, 6 inches and the minimum inside width shall be 5 feet, 7 inches.
7. Walkway design shall meet the same design requirements as the apron drive passenger loading bridges.
8. The design of the walkway shall accommodate a terminal door sized 4'-0" x 6'-10" or as otherwise may be existing.
9. Walkways shall be equipped with handrails, both sides, to match "A" tunnel rails.
10. Exterior and interior construction and finish to match PBB tunnels.
11. Field verify all dimensions prior to manufacture.
12. One 120V convenience receptacle, GFCI style, should be installed for every 25' of walkway, with a minimum of one being installed on any walkway over 10'.

O. Rotunda Corridor
1. The minimum inside height of the corridor shall be 7 feet, 6 inches and the minimum inside width shall be 4 feet, 4 inches.
2. A polished aluminum diamond plate threshold plate with a non-slip surface shall bridge the gap between the terminal building and the adjacent fixed walkway or between the terminal building and the rotunda corridor.
3. Interior and exterior flashing shall be installed between the terminal building and the adjacent fixed walkway or between the terminal building and the rotunda corridor to effect a weather-tight connection. Interior flashing shall be stainless steel or painted metal to match bridge interior color. Exterior flashing shall be NFPA-415 compliant weather resistant fabric.
4. Provide extended corridors where indicated on project documents.

P. Rotunda
1. The rotunda is to be supported on an independent support column. It shall allow the telescoping tunnels to swing through an arc of 175 degrees (87.5 degrees clockwise and 87.5 degrees counterclockwise).
2. The rotunda support column shall not be anchored or secured to the terminal building, nor shall it transmit any live or dead loads or vibrations to the terminal building.
3. Coordinate base plate with details as indicated on the construction documents. Field verify prior to manufacture.
4. Field verify column dimensions prior to manufacture.
5. The rotunda shall be equipped with adjustable limit switches (to be set at time of installation) to control the swing angles of the bridge tunnels. If the limit switch is activated

by the bridge, the bridge shall be prevented from traveling further, but will not be prevented from driving off of the limit in the opposite direction.

6. The opening between the rotunda and the hinged telescoping tunnels shall have a complete weatherproof seal.
7. The side coiling curtain barrel assemblies shall be covered to protect them from the weather. These covers shall be hinged to allow easy access to curtain assemblies. Hinges shall be full length stainless steel.
8. The rotunda floor shall remain level regardless of the movements of the bridge tunnels.
9. The rotunda shall include positive bird nesting prevention features.
10. Weather seals shall be provided at curtains to prevent wind blown dust, rain or snow from entering bridge interior.
11. Curtains, seals and covers shall provide complete protection from the exterior elements. There shall be no visible gaps or daylight apparent through the rotunda.
12. Threshold plates shall have chamfered edges to reduce tripping hazards.

Q. Telescoping Tunnels
   1. The telescoping tunnels shall be rectangular in cross section and hinged for vertical motion at the rotunda.
      a. The telescoping tunnels shall permit servicing of all commercial jet aircraft as required by the aircraft parking layout such that the slope of the tunnels does not exceed 1 in 12 (8.33%), with the exception of the transition ramps.
      b. The minimum inside width of the tunnels shall be 4 feet, 10 inches and the minimum inside height shall be 6 feet 11 inches.
      c. Flexible seals are to be used between the tunnel sections to provide a weather-tight seal preventing entry of blowing dust, rain, or snow.
      d. Where the telescoping sections overlap, ramps shall be provided to accommodate the difference in elevation. The ramps shall have yellow chamfered edges and handrails on both sides. Ramps shall have floor coverings as indicated in the finishes section.
      e. All tunnels shall have flat roofs to prevent the collection of water. Corrugated roofs will not be approved. Flat roofs should be designed to facilitate positive water drainage.

R. Drive Column
   1. The drive column assembly shall provide the force to swing, extend or retract, and raise or lower the bridge. This assembly shall be electro-mechanical.
   2. The motors and mechanisms for vertical, horizontal, and radial motion shall be integral parts of the drive and lift column assembly and operate in a smooth and quiet manner.
   3. The assembly shall be designed to permit simultaneous vertical travel, horizontal travel, and steering to permit expeditious movement to the aircraft.
   4. The vertical lift speed as measured at the cab bumper shall be 2.5 - 3.6 FPM nominal.
   5. The drive system shall permit the unit to be extended/retracted and rotated to any point within its operating envelope and shall permit these movements at variable speeds between 0 and 90 FPM. Maximum speed shall be limited to 85-90 FPM. Control of the drive system shall be such as to provide smooth starts and stops and positive fail safe braking. The brakes shall remain effective with power removed from the unit.
   6. Axles, wheels and tires shall be operated within their respective manufacturer's recommendations. Tire footprint loads shall be limited to 200 P.S.I.
   7. Wheel/Tire assemblies shall be solid rubber tires on steel wheels as manufactured by Trelleborg or approved equal. Drive assembly shall operate satisfactorily as specified in the construction documents on wet, iced, or snow laden ramp surfaces.
   8. Provide a 2" wide reference stripe on each inner column tube indicating upper and lower travel limits.
   9. The assembly shall be electro-mechanical driven and the following requirements shall be met as applicable:
      a. Horizontal Drive—Electro-Mechanical

1) An electrical mechanical drive system shall provide extend, retract, swing, and steer capabilities at variable speeds up to 90 feet per minute. This two-wheeled system shall operate on solid tires. Both wheels shall be independently driven by AC gear motors with solid state silicon controlled rectifier (SCR) controls. The entire system shall be contained within the bridge and require only AC power.
2) A dynamic braking system shall allow the bridge to come to a smooth, controlled stop. Spring actuated brakes shall be located on each drive motor and lock the bridge in place whenever electrical power is cut off by moving the control lever to the neutral position or when there is a power failure.
3) The horizontal drive motors shall be equipped with brake releases. Connection lugs shall be provided to allow the bridge to be towed in the event of power failures.
4) Motors shall be equipped with motor covers and heaters.

b. Vertical Drive—Electrical Mechanical
1) The lift mechanism shall consist of two (2) recirculating ball bearing screw assemblies. Each assembly shall be independent of the other, with individual motors, and be capable of supporting the bridge under full design load and raising and lowering the bridge at an approximate speed of 2 feet, 6 inches per minute measured at the cab bumper. The ball nut of this assembly shall be equipped with wiper brushes to remove grit or dirt from screw threads and a self-locking Acme type thread to prevent unit collapse in the event of a ball nut failure.
2) The vertical drive motors shall be fitted with spring-applied brakes that release only when electric power is applied and vertical motion, up or down, is signaled from the operator's console or the auto-leveler system.
3) The brakes shall hold securely at all elevations, without creeping, whether the bridge is in operation or not.
4) Motors shall be equipped with motor covers and heaters as required for the operating conditions at the airfield in which it will be installed.

c. PBB's shall provide for "conventional steering" as well as "point & go" steering. The PBB shall be shipped selected to point & go steering, but mode shall be selectable through a password protected maintenance screen. PBB shall stay in last mode selected unless changed by authorized personnel.

S. Aircraft Cab with Operator's Station
1. The aircraft cab with operator's station shall be designed to rotate a minimum of 125 degrees, a minimum of 92.5 degrees counterclockwise and 32.5 degrees clockwise on bridges with right-side service stairs and a minimum of 92.5 degrees clockwise and 32.5 degrees counterclockwise on bridges with left-side service stairs from the tunnel centerline to facilitate alignment with multiple aircraft parking configurations. The rotation speed shall be between 2 and 2.5 degrees per second. The cab shall be enclosed to provide maximum security and protection from the outside environment throughout the docking and passenger loading operation.
a. All cab rotate motors shall be provided with VFD inverter drives suitably rated for the connected load.
1) Provides smooth start/stop functions.
2) Equip enclosure with heaters per environmental section.
2. Cab rotation pin assemblies shall be provided with accessible lubrication points and shall be included in the PBB preventative maintenance program.
3. The operator's station shall be located on the left-hand side of the cab and shall be protected from the outside environment as well as passenger interference. It shall consist of a forward facing, non-keyed control console positioned behind a safety glass window. This window shall be of sufficient size to allow the operator to operate the bridge with full

view of the aircraft contact area during normal operation, including the auto-leveler, without opening the weather door.

4. The cab shall have sufficient windows to allow the operator to view the ramp area during operation. Also, a round rear view mirror shall be provided on both sides of the cab to allow the operator full view of the horizontal drive wheels (wheel bogie) during operation. Provide additional mirrors as necessary such that operator has full view of wheel bogie and service stairs during bridge operations.
    a. Mirror frames and brackets shall be galvanized.
5. The cab side coiling curtain slats shall be equipped with upper and lower safety glass view panels to allow the operator maximum visibility of the aircraft and ramp during operation.
6. A closed circuit television system shall be provided complete with a 5" color monitor housed in or near the control console. The camera shall be focused on the drive bogie and service stair so that the operator has an unobstructed view when servicing all aircraft.
7. The side coiling curtain barrel assemblies shall be covered to protect them from the weather. Covers shall be hinged to allow easy access to curtain assemblies. Hinges shall be full length stainless steel.
8. Weather seals shall be provided at curtains to prevent wind blown dust, rain or snow from entering bridge interior.
9. Curtains, seals and covers shall provide complete protection from the exterior elements. There shall be no visible gaps or daylight apparent through the cab except at windows and clear curtain slats.
10. The cab shall have weather proof doors to protect the interior of the bridge when it is not in operation. These doors shall be located to the right of the operator's station and have the capability of being locked. These doors shall be double swinging weather doors. The opening shall have a clear width of 44 inches and a minimum clear height of 7 feet 6 inches, and shall be equipped with 1/2 door height wire reinforced safety glass windows to enhance visibility.
    a. Door to incorporate suitable stops to hold open when opened and closed when closed.
    b. Door to be lockable from inside the cab bubble area (non-keyed locking mechanism).
    c. Doors shall utilize a commercial grade door closer such that a minimum of effort is required to open or close the doors.
    d. Doors shall be fitted with three non corrosive hinges per door.
    e. Doors shall be anodized aluminum "cafe style"
11. The aircraft end of the cab floor shall be equipped with a full width aircraft spacer (bumper). The spacer shall be of a material that will retain its flexibility during constant usage regardless of the temperature and must be non-abrasive to prevent scratching or other damage to the aircraft fuselage. The spacer shall provide safe and secure human support when stepped upon. The color of the bumper shall be safety yellow. Appropriate designed and fabricated cut-outs shall be provided to accomodate all design aircraft devices, including without limitation, the door of the A300, MD80 and B737 series aircraft pitot tubes without violating NFPA 415, current edition, requirements. The PBB spacer material shall comply with NFPA 415, current edition, requirements.
12. The outer most end of the cab shall be equipped with an adjustable floor. The floor shall be actuated and independently adjustable to adapt to the slope of the aircraft door sills. It shall be designed to level automatically and be equipped with manual override control. The floor shall be capable of providing a level surface adjacent to the aircraft door sill for passenger loading bridge slopes from -12% to +12%. No portion of the cab floor shall exceed 8.33% slope in the direction of the expected passenger traffic. All actuators and the like, exposed to passenger view shall have removable painted metal covers installed. Paint shall match PBB color.
13. The floor shall be double hinged and shall provide a smooth transition between the level floor and the tunnel section. This transition floor shall provide a smooth platform sloped

approximately in the direction of passenger traffic flow. There shall be no raised surfaces that may introduce a tripping hazard to the passengers. Adjacent surfaces shall be the same level regardless of the position of the cab floor or the passenger loading bridge.

14. Operator's station shall be equipped with an operators platform for the operator to stand on while rotating the cab. This prevents the operator from having to walk while also attempting to operate the bridge.
15. Control console doors/lid shall be interlocked to drop main power in the event they are opened. These limit switch interlocks shall be defeatable by maintenance staff.
16. Control console doors/lid shall have hold open devices.
17. Provide Thermal brushes at tunnel lap sections.
18. Cab Floor De-Icer: A system to heat the floor area located outside and forward of the cab doors shall be provided for the purpose of melting, or preventing accumulation of, ice and snow. The floor heating system shall be controlled by an automatic adjustable thermostat, an overheat safety switch (manually reset) and a manual control switch at the operator's control console. The system shall incorporate an indicator light at the operator's station to indicate that the floor is heating.
19. Provide a cab floor to accommodate the CRJ and Embraer RJ's and Plug Type doors or storable handrails. The cab floor shall not preclude service to other aircraft up through B757 and larger where shown on the Construction Drawings. The cab floor shall be designed to provide a positive protection to the CRJ door. The floor shall be provided with a Side- Shifting Cab with leveling floor and side shift centering feature on the PBB. One button on the operator console is used to shift the cab portion in either direction from center of cab. The Side-Shift Cab shall shift up to 24-inches total travel from center of cab. The cab shall have a slide or movable floor that can move independently out towards the aircraft past the bumper of the cab and retreat away from the aircraft inward past the leading edge of the bumper. This feature provides a walkway, which allows passengers to board or deplane the aircraft without the need of a plank or other removable or replaceable device. Additionally, the cab shall have a flip-up floor panel to accommodate the stair cables for the CRJ aircraft. The cab shifting capability shall be independent of the PBB's main drive and independent of any tunnel of the PBB. Electrical interlock sensors shall be provided to modify the operation of the PBB when in close proximity to the aircraft.
    a. These shall include, but not be limited to:
        1) Reduce cab forward speed when within 6 to 10 feet of the aircraft.
        2) Safety limit switches around the cab floor opening and on the leading edge of the moveable section of the aircraft spacer.
        3) Built-in logic to ensure protection of the aircraft.
20. PBB Ventilator:
    a. Provide a 3000 CFM ventilator, mounted on the cab (bubble) roof, which exhausts hot air from the passenger boarding bridge. The damper shall be gravity operated and the ventilator shall be console operated. Provide a ceiling mounted smoke detector at rotunda and connect to shut down ventilator operation in the event of fire. Provide bird screen on exterior of ventilator.

T. Controls and Indicators
1. Controls
    a. The operator's control console shall be designed to allow accurate operation by personnel possessing no special skills and trained by the manufacturer or manufacturer-certified trainers, in accordance with the manufacturer's operation manual.
    b. A placard outlining the bridge operating instructions shall be displayed in a prominent location in the cab of each bridge so as to be easily visible to the Operator while operating the bridge.
    c. All motor controls shall be motion oriented. For example, in raise and lower functions, the "raise" push-button will be located above the "lower" push-button, etc.

d. All controls necessary for the operation and control of the loading bridge are to be located on the control console and grouped on control console faceplate in functional groups and labeled as to its function. The following controls shall be located on the control console:
    1) A three-position keyed selector switch with positions marked "Auto-level," "Off," and "Operate." The auto-leveler arm will extend when the switch is put in the "Auto" position.
    2) A "Power On" push-to-start button.
    3) An illuminated "Emergency Stop" push button. E-stop shall not interrupt power to PBB lighting circuits; it shall, however, activate the Auto-level alarms and illuminate in the event that it is depressed while auto leveler is in "Auto".
    4) A four quad "Joy Stick", shall control forward, reverse and steering functions. The steering rate shall produce smooth and reasonable steering, speed, acceleration, and deceleration. The speed of travel shall be proportional to the movement of the joy stick.
    5) Two individual push-buttons marked "Raise" and "Lower" for controlling the vertical travel of the bridge.
    6) Two individual push-buttons marked "Rotate Left" and "Rotate Right" for rotating the cab.
    7) A switch to control the floodlights that illuminate the ramp area under the aircraft and drive column undercarriage.
    8) A motion detecting switch to control the light in the cab.
    9) A switch to change the adjustable cab floor operation from automatic or manual.
    10) A push-button switch to control the adjustable cab floor while in the manual mode.
    11) Control requirements shall include a 10.5" Human Machine Interface (HMI) touch screen.
        (a) All control and display schemes shall be submitted for approval. See submittals section.
e. Control requirements shall include a Human Machine Interface (HMI) touch screen.
    1) All control and display schemes shall be submitted for approval. See submittals section.

2. Indicators. The following indicators shall be labeled to indicate function and shall be located on the control panel.
    a. A cab floor height indicator shall show when the cab floor elevation is at the proper height (theoretically correct) for each aircraft to be serviced.
    b. A wheel position indicator shall show the orientation of the wheels along with the true tunnel centerline, regardless of the cab's rotational position.
    c. An amber light to indicate that the auto level function is energized and operating.
    d. An auto level malfunction shall be indicated with a red light and shall be accompanied by an audible warning.
    e. A swing limit reached shall be indicated with a red light and shall be accompanied by an audible warning.
    f. An amber light shall indicate when the aircraft canopy closure is in the down position (aircraft closure must be retracted before the bridge can be moved). Green shall indicate up, red shall indicate canopy down and the key selector switch to ON.
    g. A red light shall indicate a lift column malfunction has occurred.
    h. A light shall indicate if the adjustable cab floor is in the automatic or manual mode.
    i. A red light shall indicate when the 400 Hz aircraft cable is deployed.
    j. An green light shall indicate when the 400 Hz SSFC or PCA units are operating, red shall indicate faults, amber shall indicate standby.

k. Any operator correctable condition that prevents the PBB from operating with the Key switch in the ON position should be displayed in an approved manner.
l. Any condition that causes an audible alarm shall be displayed.
m. Display requirements shall be met with a Human Machine Interface (HMI) touch screen.
    1) All control and display schemes shall be submitted for approval. See submittals section.

U. Maintenance Equipment
1. Provide one (1) A-frame jack stand mounted on wheels for towing that is capable of supporting the PBB during maintenance on PBB wheels, tires, wheel bogies, and lift columns.
2. Provide one (1) PBB tow bar capable of connecting a tug to the wheel bogey to allow movement of the PBB should it be inoperable.

V. Aircraft Canopy
1. The outermost end of the cab is to be equipped with an accordion-type bellows closure. Both sides of the closure shall be adjustable to provide a weather-tight seal against the most critical aircraft contours. When fitted against the aircraft fuselage, the closure shall enclose both the open aircraft door and doorway. The aircraft contact point of the closure shall be a soft material to prevent scratching or damage of any kind. The closure is to be non-abrasive, highly tear resistant, and weather resistant as well as able to remain elastic and flexible in extreme cold and hot climates and meet the requirements of NFPA-415, latest edition.
2. To maximize UV protection and increase service life, the assembly shall be two ply, the outer ply will be a rugged, polyester fabric while the inner ply will be a NFPA 415 compliant material.
3. The material for the outer ply shall meet the following minimum requirements: FIBER-Polyester, DENIER-1000, COUNT-18 x18, TEAR (LBS/IN)-242/213, TENSILE (LBS/IN)-439/441.
4. The material for the inner ply shall meet the following minimum requirements: FIBER-Fiberglass-Satin Weave, DENIER-, COUNT-, TEAR (LBS/IN)-50/45, TENSILE (LBS/IN)-300/275.
5. A minimum two (2) inch thick cushion pad shall be provided at the point of contact between the canopy and the aircraft fuselage to prevent damage to the aircraft skin and cabin or cockpit windows. Canopy supports in the leading edge of the canopy shall be padded to prevent contact with the aircraft. This padding shall be firmly attached in such a manner to prevent its slipping, turning, twisting, or distortion from normal usage. It shall be possible to replace the padding in sections without removal of the entire canopy.
6. The closure must be capable of mating with all aircraft from ERJ-135 to B737-9MAX. This shall be a minimum requirement. Additionally, the manufacturer shall review the aircraft parking planning drawings and shall ensure that all canopies shall mate properly to all indicated aircraft, irrespective of gate position.
7. The closure when in its retracted position shall be protected by a hood or other device to prevent water and/or debris from laying in the folds of the closure material when the bridge is not in use.

W. Auto Leveler
1. PBB's shall be equipped with an automatic leveling device which permits the bridge to automatically respond to changes, including small changes, in aircraft door sill height thus maintaining a constant relationship between the floor of the aircraft and the floor of the PBB. It shall not exert stress on the fuselage skin. The leveling device actuating mechanism or rotary sensor which contacts the aircraft shall be located on the right side of the cab in full view of the operator. If the actuating mechanism or sensor is located in the cab interior or other area normally exposed to passenger traffic, it shall be located in a

remote area not typically occupied by the passengers, and it shall be adequately protected and shrouded to preclude passenger interference. "DANGER - DO NOT TOUCH" shall be printed in 1/2" red letters on the device or shroud to advise passengers to stay clear. It shall function reliably on each specified aircraft regardless of door location, fuselage contour, and aircraft door sill height. The auto-leveler shall be engaged when the PBB is in the "AUTO" mode.

2. Safety Shoe Switch
   a. A safety shoe shall be required as a precaution to prevent aircraft damage in the event of a failure of the auto-leveler. The safety shoe shall be designed such that the operator places the shoe on the floor of the cab under the aircraft door. In the event the aircraft lowers and the aircraft door makes contact with the safety shoe, the auto-level alarm shall activate, if it is not already, and the PBB shall automatically lower until such time as the door is no longer in contact with the safety shoe. Subsequent contact with the shoe shall have similar results.
3. In the event of an auto leveler failure, an alarm shall sound and an "Auto Leveler" Warning light shall flash, at the console to alert the operator. The console alarm shall be a different alarm with a distinct sound so as to distinguish it from other PBB alarms. The audible alarm shall be of sufficient volume to be heard throughout the interior of the PBB.
4. Since the aircraft and PBB are exposed to various wind conditions and jet blast during the servicing period, the auto-leveler actuating mechanism shall be capable of activating within the full range of its horizontal and lateral clearance.
5. The control circuitry shall include an adjustable solid state timer which shall limit the auto-leveler's continuous response in either direction. The timer shall be adjustable from 1.6 to 16 seconds, and shall be preset to 2 seconds, and have a minimum rotation of one revolution and allow a range of adjustment of at least six inches up or down from a neutral position. The circuitry shall include both audible and visual alarms at the operator's console, and a bell or horn in the general ramp area, which shall produce a distinctively different sound from the other alarms on the unit, when the timer interrupts the response to the system. When the timer circuit de-activates the auto-leveler, the vertical lift system shall automatically be de-energized and locked in position, a vertical brake system shall automatically engage, and the audible and visual alarms at both the operator's console and ramp area shall be activated.
6. The auto-leveler actuating mechanism and sensor shall be durable and operate reliably even in the most adverse weather and ramp environment. It shall also be protected against accidental damage.
7. A remote audible alarm shall be located at the exterior wheel bogey and at the rotunda or fixed walkway, at the building interface to alert in the event of an auto leveler fault. This will be in addition to the console located audible alarm.

X. Slow and Stop Proximity Sensors
   1. The manufacturer shall equip each PBB with a proximity switch system, or comparable, to prevent the bridge bumper from hitting the aircraft, causing damage. At 2' to 10' (adjustable) from the aircraft, slow-down circuitry shall be initiated, slowing forward movement to half speed. As the bridge continues to approach the aircraft, stop proximity senors shall activate, no part of the bumper will be permitted to come within 0" to 2" (adjustable) of the aircraft. Appropriate forward motion and cab rotation in the direction of the aircraft will be locked out to prevent the bridge from contacting the aircraft. Movement away from the aircraft will be unrestricted.

Y. Service Door, Landing, and Stair
   1. A ramp service door, landing, and service stair shall be provided at the aircraft end of the bridge for apron access by authorized personnel. The door, landing, and stair shall be positioned on the right-hand side of the cab bubble unless otherwise indicated.
   2. The service door shall be a minimum of 2'-6" wide by 6'-8" high, half wire-glass hollow core, steel door, with a 45-minute fire rating. The door shall open outward on the landing

and be equipped with a heavy duty door closure. The door shall include a 30-inch stainless steel kick plate to cover the lower inside portion of the door along with weather stripping on the jambs and header and a vertically adjustable bottom weather-strip. The door shall be equipped with a keyed door handle with associated electronic door strike in the door frame conforming to the requirements of the Owner's Transportation Security Administration (TSA) approved Airport Security Program. Security system shall match airfield standard.

a. Electronic pushbuttons on both sides of door to be Alarm Lock Co. Model DL5200 IC/26D to match airfield standard.
    1) Include pre-wiring for maglock power supply.
b. Door shall incorporate hold open devices to hold door open in high wind conditions and due to forces associated with a sloping bridge.
c. Equip door exterior with gutter or drip diverter for overhead condensation.
d. Equip with weatherproof exterior adjustable heavy duty door closer

3. The service stairs shall have equally spaced, self-adjusting risers with open mesh non-skid type treads. All steps have equal rise with a minimum tread width of 28 inches, and a minimum depth of 9-1/2 inches. The bottom of the service stair shall be supported by casters with rubber tired cast iron wheels to roll on the apron. Both sides of the stairs shall be equipped with tubular steel handrails of proper height to meet applicable codes. Entire assembly, including, but not limited to, rails, treads, framework, landing, modesty shields, brackets and hardware shall be constructed of galvanized steel.
    a. The lower 6' section of the handrail assembly shall be designed to separate from the assembly and shall be connected with conventional fasteners to allow replacement of this section without cutting and welding.
4. The service landing shall be made of an open mesh, non-skid grating and be completely surrounded by tubular steel handrails of the proper height to meet applicable codes. The landing shall be level with the cab floor and shall be illuminated by an LED (100 watt equivalent) photocell actuated light, with interior bypass, which shall prevent the accumulation of water and snow.
5. A visual modesty shield shall be provided beneath the service stair landing. Design shall prevent the accumulation of rain or snow.
6. Service platform handrails shall incorporate industry standard "catering gate" handrail modifications. Catering gates shall be self closing and latching. Provisions shall also be provided to permanently securing catering gate for individual tenants who choose not to utilize them such as a bolted closure connection point.

Z. Baggage Belt Loader
1. New baggage conveyor/beltloader will be provided for each new PBB. Provide and install new baggage slides as follows:
    a. KCI GSE Belt loader Model No. JWBL-24, or approved equal. Model shall be provided as required for maximum aircraft door service height at each gate as indicated on the drawings.
    b. Belt loader shall be provided with stainless steel cover.
    c. Source single phase 120V power from the PBB. Provide and install circuit breaker within PBB panel as necessary per manufacturer's recommendations.

AA. Electrical System and Components
1. This panel shall also house thermal magnetic trip circuit breakers for the addition of the preconditioned air, 400 Hz and baggage valet equipment as applicable and as indicated on the project drawings.
    a. All circuit breakers shall be lockable in the "OFF" position.
    b. All primary disconnecting means shall be suitably rated to be capable of withstanding and interrupting fault currents available at the input.

   c. Baggage valet equipment will be installed on the fixed walkway. PBB will be equipped with appropriate 480V and 120V circuit breakers as required for the installation of a baggage valet.
2. All standard lighting, duplex receptacles, operator controls, and fractional HP motors shall operate on 120 volt, single phase, 60 Hz power. The transformer and separate circuit breakers for lighting and control power shall be mounted in the power control panel.
   a. All circuit breakers shall be lockable in the "OFF" position.
   b. All circuits and systems shall be protected by circuit breakers. Fuses will not be allowed.
3. Disconnect panel shall either be equipped with exterior handles, or shall be guarded such that all circuit breakers can be operated by an operator without having access to energized components.
4. All electrical components, which are exposed to the weather, shall be of a weatherproof type or housed in weather-tight NEMA 3R enclosures, except for main power disconnect(s), which shall be a NEMA 4 stainless steel enclosure. Where dictated by the environment, electrical enclosures shall be equipped with heaters to control condensation.
5. All electrical equipment and methods of installation shall conform to the requirements and recommendations of the American Insurance Association (AIA), the National Electrical Manufactures Association (NEMA), and the National Electrical Code (NEC).
6. All electrical components utilized shall be recognized by Underwriters Laboratories (UL) orcab an approved equal testing laboratory.
7. Wiring and installation shall be in accordance with National Electric Code and applicable local electrical codes.
8. Both ends of each conductor shall be color coded or identified. Particular attention shall be given to separating circuits of different voltages, emergency lighting, and telephone lines.
9. Five (5) dedicated unswitched, 120 volt, 1 phase, 60 Hz, 15 Amp three-conductor duplex receptacles shall be provided; one located near the operator's console, one in the Rotunda, one weatherproof outlet at the rotunda located disconnect panel, one weatherproof outlet at the wheel undercarriage near one of the lift columns, and one weatherproof outlet at the cab end of the roof. These outlets shall be GFCI protected.
   a. Exterior outlets shall be equipped with extra heavy duty, metallic, while in use - wet cover assemblies such as Red Dot Model CKMUV or equivalent.
10. Control console lid, wiring harness should be of sufficient length to allow the panel to be pulled out and turned over, facilitating repairs.
11. All wiring shall be brought to terminal blocks and/or suitable connectors. The wiring shall be formed and restrained to give a neat appearance. Wire splices shall not be used. Connections shall be made using terminal strips and staked lugs or by patent connectors.
12. Grommets and suitable anti-chafe material shall be used where wires are required to pass through structure or other similar relief or opening which exposes the wire to possible chafing. All wiring shall be in conduit (preferably automotive split loom) or spot-tied and shall routed away from possible pinch points. Wiring shall be adequately supported to protect it from damage due to ice and snow buildup, bumping, kinking, and flexing.
13. Quick disconnect fittings, where required, shall be UL or ETL approved.
14. All light bulbs shall be heavy-duty LED type.
15. All receptacles and light switch cover plates to be stainless steel, ANSI No. 4 finish.
16. Electrical interlocks shall be fail-safe design.
17. Electrical devices including lights, switches, relays, wiring, and terminals when located in an area exposed to weather, shall be of weatherproof design or protected by weatherproof enclosures. All exterior located limits switches, potentiometers, or other electrical devices, shall be protected by suitable covers to prevent the accumulation of snow or ice from preventing switch action or causing false switch action, as well as to protect the devices from physical damage.

18. Electrical conductors or cables exposed to weather shall be suitably rated and UL approved.
19. Flexible cables/conduits shall not exceed 24" except where relational motion is required. All cables and conduits shall be adequately supported.
20. Under bridge cable carrier systems are preferred. Side mounted cable carrier systems may be proposed; however, all cables installed within this style system shall be rated for UV exposure.
21. The bridge shall contain appropriate telephone communications equipment. The provisions shall include a flush mounted "J" box containing a 12-pair CAT-6 communication cable near the operator's position, include faceplate and RJ45 terminations. The communications cable shall extend across the PBB. Provide and install terminations at the cab and building face end of cable.
22. The bridge shall be designed with safety as the first priority; at a minimum, the following control features, interlocks, and warning devices shall be included in the bridge:
    a. With the PBB in the "Off" mode, all controls shall be inoperative.
    b. Spring-loaded wheel brake(s) shall be automatically set whenever controls for horizontal travel are not actuated by the operator. The drive system shall have provisions to manually release the brakes to permit towing of the unit in the event of a power failure.
    c. The vertical lift column safety stops are to be automatically engaged whenever controls for vertical travel are not actuated by the operator.
    d. With the PBB in the "Auto-Level" mode, all manual motion controls shall be inoperative. In this mode, vertical travel shall be regulated by the automatic leveling system.
    e. With the PBB in the "Operate" mode, the Auto-Leveler shall be retracted and become inoperative.
    f. The control circuits shall be designed and wired so that it is impossible to select opposite motions simultaneously, e.g., extend and retract or raise and lower travel.
    g. Two limit switches, one to slow the bridge to half speed and one to halt forward or reverse travel of the bridge when the tunnel extension or retraction limits have been reached.
    h. Limit switches shall prevent movement of the bridge beyond specified Rotunda operating parameters as specified in these Specifications.
    i. A 6-inch diameter alarm bell located under the aircraft cab shall sound continuously whenever the bridge is in drive mode of operation.
    j. An amber colored rotating beacon located under the aircraft cab shall illuminate when the selector switch on the operators' console is in the "Operate" position.
    k. Adjustable slope limit switches shall be added to prevent movement of the bridge in a way that can damage the loading bridge or any auxiliary equipment that is mounted on the bridge.
    l. Vertical travel limit switches shall be provided to prevent travel of the vertical lift columns into the mechanical stops.
    m. Horizontal travel limit switches shall be provided to prevent travel of the tunnels into the mechanical stops.
    n. Cab rotation limit switches shall prevent over rotation (left or right) of the cab into mechanical stops.
    o. Preconditioned air (if applicable) and 400 Hz operating interlocks shall prevent horizontal bridge motion while these units are operating or the 400 Hz aircraft cable is not in the stowed position. Suitable warning indicators shall be provided for each of these conditions. This shall apply to all PBBs (new) as well as all PCA and 400Hz equipment (new).
    p. Drive forward and cab rotate controls shall be locked out when canopy is down on the aircraft.

q. Forward or reverse “drive” controls are locked out by their respective extend or retract switches.
r. The bridge shall be fitted with slope vertical limiting switches which shall lock out appropriate vertical and drive functions if operated beyond 10.0% (or as required by airline specifications) slope limits.
s. Adjustable switches shall be provided to limit the swing or rotation of the bridge to prevent contact with the terminal building or other fixed obstruction. This system will stop drive motions in the direction of contact and the system shall incorporate suitable warning lights and buzzers on/or inside the operator’s panel.

23. The operator shall be able to pre-position the bridge to the approximate height of the aircraft serviced while raising or lowering the bridge in the manual mode. A vertical height indicator shall be provided.
24. The following interior and exterior LED lights shall be provided:
    a. All interior and exterior lighting shall have a color temperature of 5000K.
    b. Interior lighting shall include the lighting in the cab/bubble and rotunda areas. The level of illumination shall be 200 lux at the finished floor level with the weather door closed.
    c. Tunnel lighting shall be provided by recessed LED panel fixtures with diffusers. The fixtures shall be 4 feet long and shall be positioned parallel to the tunnel centerline on a maximum of 8-foot centers or less as required to meet specified lighting levels. The lights shall be controlled by occupancy sensors to automatically turn lights on and off. Occupancy sensors shall be set to turn off after 30 minutes without motion. One shall be located in the control cab and one in the rotunda corridor adjacent to the terminal door. The level of illumination within the tunnels shall be uniform at 200 lux at the finished floor level.
    d. Rotunda and bubble area lighting shall be provided in a similar manner, shall meet the same lighting level requirements and shall be controlled from the same tunnel switches.
    e. The operator's console shall be provided additional lighting via recessed LED light fixtures which shall be controlled via a switch on the operator's console. Provide a minimum of 645 lux at the console faceplate.
    f. PBB electrical control cabinets shall be equipped with interior LED light fixtures as necessary to eliminate the controls for maintenance purposes, control via occupancy sensors to automatically turn lights on and off. Occupancy sensors shall be set to turn off after 30 minutes without motion.
    g. Two exterior LED floodlights shall be provided under the tunnel to illuminate the apron area ahead of the bridge. An additional LED floodlight shall be provided to illuminate the area around the drive column.
    h. A sealed exterior type LED fixture shall illuminate the cab area forward of the overhead roll-up door. Level of illumination shall be 200 lux at the finished floor level with the weather door closed.
    i. A weatherproof exterior fixture with a 100 watt LED equivalent lamp shall be installed over the service door to illuminate the service stairs and landing. It shall be controlled by a switch located on the inside wall of the tunnel adjacent to the door.
        1) Service door landing light shall be automatically controlled via an external photocell only.
    j. All PBB lighting, lamps, bulbs, indicator lamps, etcetera shall be LED type without ballasts.

AB. Finishes and Materials
1. The exterior and interior designs shall be aesthetically pleasing and in keeping with contemporary trends. Where necessary to meet this requirement, and when not in conflict with maintainability standards, enclosures should be utilized to cover unsightly appurtenances.

2. All Interior and exterior systems shall be fitted and trimmed as necessary to present a neat and clean finished product.
3. All finishes shall meet NFPA requirements.
4. For all finishes and materials, the contractor/manufacturer shall provide paint or carpet sample for airport approval.
5. Interior
    a. All interior surfaces of the structure shall be cleaned in accordance with SSPC-SP3 or sand/grit-blasted in accordance with SSPC-SP6, as appropriate, and shall be coated with a rust inhibiting primer applied to a minimum 4 mil total dry thickness over the average measured blast profile. Exposed interior surfaces shall be coated with an additional 2 mils of polyurethane finish coat.
        1) Color to match wall boards. Final selection to be approved by owner.
    b. Interior wall treatment shall consist of floor to ceiling 4-foot-wide laminated phenolic plastic panels, with aluminum trim and recessed black accent strips. Paint all exposed interior metal surfaces to match interior wall panels, except brushed aluminum or bright finish work. Walls shall be fully insulated to include fiberglass fire resistant insulation achieving a minimum R value of 9.5.
        1) Wilsonart #10734-60 Limber Maple or approved equivalent..
    c. Ceiling shall be an 8-inch-wide aluminum plank-type ceiling with a 1/2-inch fire resistant insulation blanket on top with an exposed, black backing- minimum combined R Value of 7.5. Planks shall run complete from bridge wall to wall.
        1) Finish: Brushed Aluminum or approved equivalent.
    d. The PBB's shall be carpeted with heavy commercial non-skid carpeting, or rubber as indicated. Flooring to be supplied and installed by bridge manufacturer in the factory.
        1) Mohawk Regents Row II.
        2) Color: Cypress Pattern #8646.
        3) Heavy Duty 1/4" ribbed rubber flooring to be installed in the cab areas (Interior/Exterior) of the PBB.
            (a) Type to be selected by Owner from PBB manufacturer's standard options.
    e. Sub-floors shall be constructed of 3/4" fire retardant marine plywood which shall be securely fastened with fasteners suitable for this purpose. Insure adjoining sheets are supported and fastened to a common member to provide smooth even joints. Any remaining uneveness will be removed with filler. The sub-floor fasteners will not protrude through the exterior tunnel siding.
        1) Alternate galvanealed panel subfloors shall be allowable to the extent remaining applicable specifications are adhered to.
6. Exterior
    a. All exterior surfaces, including support columns and base plates, shall be sand/grit blasted in accordance with specification SSPC-SP6 to a 1-1/2 mil minimum to 2 mil maximum profile.
    b. The exterior shall be coated with a rust inhibiting primer applied to a minimum of 4 mil total dry thickness over the average measured blast profile followed by a finish coat of 5-1/2 mil thickness catalyzed polyurethane enamel.
        1) Sherwin Williams #: G64WY8 Arctic White or approved equivalent.
        2) The cured dry film thickness of the total system shall achieve a minimum of 8 mils.
    c. Anodized aluminum, galvanized or stainless steel trim items, roll-up doors, and cab curtains shall be supplied in their original unpainted bright finish. Machined surfaces shall not be painted unless they are exposed after assembly.
    d. All exterior metals requiring primer and paint shall be painted to match the bridge.

1.13 CONTROL

A. The PBB shall control shall be provided with a programmable logic controller which shall monitor all phases of operation of the PBB. The controller shall be based on a 32 bit microprocessor and utilize flash memory technology to store operation parameter information. Operation parameters of controller shall not be affected by loss of 60 Hz power to controller. PBB manufacturer shall provide with their bid a detailed description of the controller, type of graphics and software, sequence of operation, types and number of control points, and limitations of the control system they intend to provide and install.
   1. The practice of sharing the passenger boarding bridge controller, either directly, or through remote I/O racks with the PCA unit controller will not be permitted. Each PBB shall have a dedicated and separate controller.

B. Portable Laptop Computer:
   1. A portable HP laptop computers operating on either Windows 10 (or 7) shall be provided by the manufacturer.
   2. The PBB manufacturer shall configure each portable laptop computer for Local access to each PBB unit controller, and shall provide all software and interconnection cables required to support local communications, troubleshooting and programming to/of the PBB controller. This access shall be password protected and shall be fully capable of controlling or modifying PBB unit's current database or control program. All Software shall be licensed and registered in the Owner's name.

1.14 RELATED EQUIPMENT PREPARATION

A. PBB shall be shipped prepared to field install the following equipment:
   1. 45 or 75 Ton Preconditioned Air Unit.
   2. 90kVA or 140kVA GPU with integral 28VDC power supply.
   3. Cable Hoists.
   4. Equip PBB with power circuit breakers, across the PBB power cables, control conductors, interlocks, etcetera for a complete preparation for the added equipment.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. JBT AEROTech - FMC Jetway

B. Thyssen Krupp Airport Systems

C. Substitutions: Or approved equal

2.02 BRANDING

A. The Owner, or Owner's tenant, reserves the right to provide branding on the exterior sides of the installed equipment and desires that this branding not be diminished by excessively large or aesthetically displeasing branding of individual pieces of equipment. All manufacturers branding, labeling, marking, etcetera, on their products shall be relatively small compared to the overall size of the piece of equipment. The Owner reserves the right to require any non-approved branding removed from finished products at no additional cost.

2.03 FACTORY TESTING

A. The manufacturer shall test one of each model (not size) of every PBB to assure compliance with the specifications. Certification test sheets shall be submitted. The Owner shall be notified fourteen (14) days prior to the date of such tests. The Owner reserves the right to witness tests and request additional tests if necessary to demonstrate compliance with the specifications.

B. Should factory tests fail to indicate compliance with specifications, all costs associated with re-testing, including costs associated with Owner's witness services, will be the responsibility of the manufacturer.

2.04 PRODUCT SUPPORT

A. Spare Parts
   1. The manufacturer shall maintain an adequate inventory of all proprietary or vendor fabricated or modified parts, especially the long lead time items, for routine maintenance of the unit. All stock shall be maintained, whether or not the unit is in current production, for a minimum of ten (10) years from the date of the last unit manufactured.

B. Field Support Services
   1. The manufacturer shall provide supervisory and service personnel, certified by the manufacturer, during the installation of the boarding bridge to assure proper installation.
   2. The manufacturer shall provide the Owner with all appropriate Service Bulletins for bridges supplied for a minimum of twenty years from the date of final acceptance.

PART 3 EXECUTION

3.01 GENERAL

A. This specification shall act as a supplement to the Manufacturer's standard installation procedures only, and in no way shall it be construed so as to limit the installing contractor from providing a complete and operable installation, in accordance with all generally accepted good passenger boarding bridge installation practices, as well as the manufacturer's written installation procedures. Any reference to the installing contractor or contractor herein shall be construed to mean that entity installing this equipment in the field.

B. Installations shall be performed in strict compliance with the Manufacturer's written Installation Procedures.
   1. Manufacturer shall submit a copy of their Installation Procedures for approval, prior to installation.

C. Remove and re-install any previously installed terminal door security/control devices.

3.02 PASSENGER BOARDING BRIDGE INSTALLATION

A. Any and all damage sustained by the new PBB caused by equipment used for the lifting, transportation, movement, staging, or otherwise, of the new PBB, assemblies, or components shall be the responsibility of the contractor.

B. PBB Mechanical Erection and Lifting
   1. Use of Heavy Equipment
      a. The use of crane(s), fork lifts, and/or other heavy equipment throughout the project shall be detailed in advance with and approved by appropriate Aviation Authority offices. Equipment used shall not exceeded maximum allowable airfield heights.
      b. Heavy equipment capacity and operator experience shall be adequate to ensure safe and efficient lifting of the PBB systems, assemblies, and/or components.
      c. Damage to the terminal building, apron, foundations, and/or PBB shall be the complete responsibility of the installing contractor.
      d. Paint damage to PBBs and related assemblies shall be minimized, and where occurring, shall be repaired in accordance with the "Exterior Finishes" section of this section.
      e. Heavy equipment operator's shall be fully trained and certified to operate equipment in their control.
   2. Rigging
      a. Original Manufacturer designed PBB lifting lugs shall be utilized for rigging and handling of PBB systems, assemblies, and/or components. Where lifting lugs are not present, approved straps, cradles, chains, couplings, cables, and/or fixtures shall be utilized.
      b. Where applicable, lifting tools shall be of the proper strength rating and shall have current certifications.

3. Tunnel/Drive System Assembly Installation
    a. The assembly of PBB vertical and horizontal drive assemblies shall be accomplished using safe and approved practices. All assembly shall be accomplished using new installation bolts/fasteners in accordance with manufacturer's specifications in the originally designed quantities.
    b. Any structural modifications necessary to allow the correct use of fasteners shall be accomplished in a safe and professional manner. All welds, where necessary shall be complete, continuous, and in compliance with AWS standards, and shall be performed by certified welders. Contractor's performing welding operations shall submit copies of the welder's certifications.
    c. PBB structural support integrity shall not be compromised.
    d. The complete tunnel assembly shall be pinned to the fixed rotunda assembly using manufacturer supplied hinge pins.
    e. If hinge pins, hinge pin plates, and/or associated welds show any damage, they are to be replaced.
    f. Ensure that the hinge pins are properly greased and installed without causing any damage or deformation to the pins.

C. Electrical Requirements
1. Miscellaneous Electrical Requirements
    a. All field terminated wiring, interior and exterior, shall be checked for damage and improper or unsafe installation. Damaged wires and cables shall be replaced. All replacement wiring and components shall be UL approved and shall be selected and/or sized in accordance with NEC based upon the intended use.
    b. Wiring shall be color coded in accordance with existing wiring and Manufacturer's specifications and shall be easily traced.
    c. Wiring shall be neatly routed in secured harnesses and shall be labeled.
    d. All electrical enclosures shall be UL approved, and NEMA rated.
    e. The installing contractor shall be responsible for all PBB related electrical inter-connects, component/assembly wiring, and PBB electro-mechanical system functions, unless specifically identified otherwise.
    f. All exterior or otherwise exposed conductors/cables shall be installed within conduit unless required for flexibility to be a flexible cable and then exposed cables shall be limited to 48", unless mechanical requirements dictate otherwise.
    g. All electrical devices/conduits shall be properly secured. Beam clamps will not be allowed.
2. Main Power Electrical Disconnect Assembly
    a. All cables/conductors shall be neatly color coded and marked.
    b. All original manufacturer rating and labels shall remain intact and unmarred.
    c. All enclosures shall be securely fastened to the stand using approved Manufacturer provided fasteners.
    d. All PBB power cables shall be verified to be in new condition. Damaged cables shall be replaced with OEM cables provided by the Manufacturer.
    e. All cables shall be safely routed between PBB junction boxes, utility carrier and the main PBB disconnect. All cables shall be secured to PBBs in accordance with Manufacturer's instructions.
    f. All power cables, wiring, and utilities installed the across the exterior "A" and "B" tunnels shall be installed in the utility carrier.
    g. All power cables, wiring and utilities installed across the exterior of of the outermost tunnel, shall be contained in conduit and shall be installed on the underside of the bridge.
    h. Conduits shall be attached to the PBBs using secure clamps or shall utilize bolted or welded mounting brackets.

i. All wire/cable terminations shall end neatly in PBB mounted junction boxes.

3.03 PASSENGER BOARDING BRIDGE SETUP

A. PBB Mechanical Setup
1. Limit Switches
a. All mechanical stops, limit switch mounting brackets, mechanical limit switch "trip tabs", and associated fasteners shall be inspected, repaired, secured, and/or replaced, as applicable, prior to final operational testing of PBB electrical systems. Limit switch mounting brackets shall be structurally sound and straightened, if necessary, to ensure proper alignment of limit switches. Where adjustable or sliding stops are utilized, slide tracks shall be securely attached to PBB structures and lock bolts, adjustment threads, etc. shall be fully functional.
2. PBB Lubrication
a. Ensure that all grease fittings are functional and that grease points have been properly purged of old grease material and foreign material by displacing old material with new material.
b. Perform all other OEM recommended lubrication of moveable areas throughout the PBBs. Only OEM approved lubricants shall be utilized. Chains containing old grease and/or foreign debris shall be fully degreased and re-lubricated. All residual grease and oil displaced or drained onto the PBBs shall be thoroughly cleaned. Lubrication shall include as applicable, but shall not necessarily limited to, the following:
1) Rotunda thrust bearing.
2) Wheel bogey thrust bearing.
3) Lift column screws.
4) Cab rotational guide chain.
3. Door Locks and Keys
a. Set proper stations code, as defined by stations personnel for service stair door.
b. Turn over all keys to stations personnel.

B. PBB Electrical System Setup
1. All wiring and electrical connections shall be safely completed in accordance with national, state, and local electrical code by qualified electricians.
2. Tunnel interconnects and primary electrical system wiring (480Volt) shall be checked and maintained as per the original manufacturer's design.
3. PBB electrical setup procedures shall be accomplished by the Contractor in accordance with Manufacturer's installation instructions and any pertinent service bulletins.
4. Limit Switches
a. PBB electrical limit settings shall be set to conform to the structural design limits of the PBBs and in accordance with aircraft parking requirements.
b. Rotunda limit switches (swing limits) shall be adjusted to prevent the PBBs from being capable of swinging into Ground Support Equipment (GSE) staging areas, the terminal building, or adjacent PBBs.
c. Rotunda mounted slope limits shall be set to prevent operational PBB slopes from exceeding 10.0 percent.
d. Tunnel travel limits ("full extend/retract" and "slow down") shall be set to safely meet each gate's operating requirements.
e. Oversteer limits for the wheel bogie assembly shall ensure that oversteer conditions cannot be encountered.
f. Ensure that the column travel limits and/or height indicator assembly is installed and functional so as to prevent damage to the vertical drive column assembly. Ensure that height indicator functions/limits are calibrated.
g. Ensure that the cab rotation limits are functional and that the cab cannot exceed safe rotations

5. Electrical System Inspection
    a. Test the auto-level system for proper operation prior to PBB use. Verify auto-level travel response time and time-out relay function. Ensure that the limit switch is in good working order.
    b. Ensure proper function of the canopy deployment system. Verify proper unit operation to ensure that excess canopy pressure on the aircraft will not occur. Ensure that canopy deployment speed is consistent on both sides and that no binding occurs.
    c. Perform a comprehensive operational inspection of all 480-Volt drive systems to ensure proper operation and condition.
    d. Ensure that all lighting circuits and lights are functioning as designed. Bulbs and ballasts shall be checked and replaced if non-operational. All bulbs should be the same style.
    e. Ensure that all other electrical systems, including all travel alarms, operation bell, indicator lights, and warning beacons or strobes are functioning properly.

3.04 INSPECTIONS

A. Manufacturing Representative
    1. Manufacturer's representative shall be on site, as necessary, during the installation of the equipment, as required to ensure the equipment is properly installed in accordance with the Project Specifications.
    2. Manufacturer's representative shall be present during preliminary equipment installation inspection.
    3. Manufacturer and/or contractor shall diligently pursue the completion of all punch list items.
    4. Manufacturer shall notify the Owner when the equipment installation is considered ready for a final inspection.
    5. Manufacturer's representative shall be present during final inspection.

B. The Owner will not accept the boarding bridge until it has been inspected to verify that the installation, function and quality of the PBB meet The Owner's standards. Any deficiencies and/or violations shall be immediately corrected by the Manufacturer at no additional cost to the Owner and shall be re-inspected.

C. The Manufacturer shall be responsible for providing all necessary test, measuring and recording devices required to demonstrate the boarding bridge's compliance with this specification.

3.05 INSTALLATION

A. Install in accordance with manufacturer's instructions.

3.06 INTERFACE WITH OTHER WORK

A. The Contractor shall cooperate and coordinate his work with the 400 Hz, PCA, and related equipment installations including ancillaries.

B. The Contractor shall coordinate with the 400 Hz, PCA, and related equipment for the provisions for or installation of all necessary infrastructure prior to final factory painting of the passenger boarding bridge. The intent is to eliminate site welding/painting after final factory painting.

C. Installation of units shall be coordinated with other trades and activities associated with the project and site.

D. Owner will install phone. PBB installer shall provide building phone service terminations and shall verify proper operation.

3.07 EXAMINATION

A. Verify/perform the following items or tasks.
    1. Verify all cables and conductors are properly terminated.
    2. Check to be sure that there are no tools or loose objects in the unit.
    3. Make a final check of the security of the power connections.

4. Re-install any covers removed during installation.
5. Perform full passenger boarding bridge and related equipment operational non-interference test.

3.08 CLEANING

A. Clean unit from all construction dust and debris prior to start-up.

B. Touch up scratched or marred surfaces to match original finish.

C. Protect the installed unit from subsequent construction operations.

D. Wash exterior of bridge.

E. Clean all windows, wallboards, windows and interior surfaces.

3.09 STARTING EQUIPMENT AND SYSTEMS

A. Complete approved field commissioning report, including, but not limited to the following:
1. Verification that the bridge swings to the right and left, and that the swing limits switches function as required.
2. Verification the bridge “raises” and “lowers”, and that the vertical limit switches function as required.
3. Verification that the rack limit switches function as required (if present).
4. Verification that the vertical drive brakes function as required (if present).
5. Verification that the bridge “extends” and “retracts”, and that the extend and retract limit switches function as required.
6. Verification that the cab rotates, and that the cab rotation limit switches function as required.
7. Verification that wheel alignment matches the gauge.
8. Verification that the canopy extends and retracts as required and that the canopy interlocks function as required.
9. Ensure that the bridge “autoleveler” functions, and it alarms after it times out.
10. Ensure that the “floor leveling” works as required.
11. Verification that the bridge “slow down” and “bumper proximity switches” function as required.
12. Ensure all lights, outlets, fans and other accessories function as required.
13. Ensure that all alarms, interlocks, emergency lighting and other safety features functions as required.
14. Ensure that the door locks work.
15. PBB OEM Lubrication.
16. All other items listed on the approved Field Commissioning Report.

B. Demonstrate complete functional operation of equipment to the satisfaction of the Owner.

END OF SECTION

SECTION 11 8561

SOLID STATE FREQUENCY CONVERTER

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Solid State Frequency Converter (SSFC).

B. Work Includes: Designing, manufacturing, testing, furnishing, installing and commissioning 60 Hz to 400 Hz pulse width modulated (PWM) frequency converters rated at a continuous capacity of 90 kVA single output and 180 kVA dual output, to provide 400 Hz power designed to conform to MIL-STD-704F standard for aircraft ground power systems.
   1. Units may also be required to provide 28.5 VDC power designed to conform to ISO 6858, non-concurrently.

1.02 RELATED SECTIONS

A. Drawings, General Provisions of the Contract, including General and Special Conditions, as well as General electrical materials and methods of installation apply to work of this section.

1.03 REFERENCES

A. The standards and codes applicable to only a portion of the work specified in this section are referenced in the relevant parts or clauses. Standards and codes which are generally applicable to the work of this section, are listed below. The latest approved version or edition, by the authority having juridiction, of the following codes, references and standards shall apply. If the authority having jurisdiction has not approved or adopted a particular code, reference, or standard, the latest published edition shall be applicable.

B. MIL-STD-704F Aircraft Electrical Power Characteristics.

C. MIL-STD-461D Electromagnetic Emission and Susceptibility Requirements for the Control of Electromagnetic Interference.

D. NFPA 70 National Electrical Code (NEC).

E. ANSI C2 National Electrical Safety Code.

F. Institute of Electrical and Electronic Construction Managers (IEEE) 127 and 519.

G. ARP-5015 SAE 400 Hertz Ground Power Performance.

H. DFS-400 (EURO-STANDARD 400 Hz).

I. Canadian Standards Association (CSA).

J. ICS 6-78 (NEMA) Enclosures for Industrial Control Devices and Systems.

K. ST 20 (NEMA) Dry Type Transformers for General Applications.

L. ICS-1 General Standards for Industrial Control and Systems.

M. ANSI C84.1-1977 Voltage Ratings for Electrical Power Systems and Equipment.

N. ATA-101 Rev. 4 Ground Equipment Technical Data.

O. ISO-1540 Aerospace Characteristics of Aircraft Electrical Systems.

P. ISO-6858 Aircraft Ground Support Electrical Supplies.

Q. IEC 201-1 Electrical Equipment of Industrial Machines.

R. MIL-S-19500 Semiconductor Devices

S. MIL-STD-461C Electromagnetic Interference Characteristics, Requirements for Equipment.

T. MIL-STD-462 Electromagnetic Interference Characteristics, Measurement of.

U. IEC 146 Semiconductor converters

V. ARP-1940 Solid State Frequency Converters

W. MIL-W-16878D Wire, Electrical Insulated, General Specification for.

X. UL 489-1980 Circuit Breakers, Molded Case and Circuit Breaker Enclosures.

Y. NEMA National Electrical Manufacturer's Association.

1.04 GENERAL

A. The SSFC and all components thereof shall be constructed in accordance with all codes and standards and local laws and regulations applicable to the design and construction of this type of equipment, which are generally accepted and used as good practice throughout the industry, including without limitation, NFPA, Underwriter's Laboratories, OSHA, SAE Publications, American National Standards, Military Standards, etc. The design of all parts and subassemblies shall be in accordance with good commercial practice and shall be the responsibility of the manufacturer to assure safe, efficient and practical design in keeping with requirements peculiar to this type system.

B. The Manufacturer shall be a qualified source, who has been regularly engaged in the designing, manufacturing and installation of commercial aviation power supply equipment and components for a minimum of five (5) years and with a minimum of five hundred (500) units installed.

C. Qualified manufacturers will have completed no less than ten (10) jobs of similar size and scope within the last five (5) years.

D. Manufacturers are required to satisfy all requirements of this specification. Should the Manufacturer desire to deviate from any portion, either because the specification is in error, violation of any law or regulation, or is in need of modification to permit a more satisfactory functional and economical design, they must submit a written request for such deviation. The Manufacturer shall not contract, purchase or cause to be delivered, equipment which does not meet all requirements of this document as specified, without obtaining prior written approval.

E. The Manufacturer shall be responsible for verifying installation locations and methods and shall notify the engineer of any conflicts or code violations prior to manufacture of the SSFC. Modifications to eliminate conflicts or code violations will be coordinated with and approved by the engineer. Modifications shall be made at no additional cost to the Owner.

F. The Manufacturer shall furnish and install all necessary equipment to provide a complete operable and maintainable unit.

G. Should alternate mounting configurations or physical attributes, other than those specified herein or indicated on the project drawings, be proposed, manufacturers shall submit alternates for approval prior to bid date. Alternate mounting, configurations, or attributes shall be provided at no additional cost to the Owner.

H. Schedule: See contract drawings for locations/types of SSFC's.

I. EMI/RFI: Unit shall be designed so as not to affect aircraft radio/navigation equipment. It shall be applicable throughout the entire aircraft radio frequency range. Provisions shall be designed into the unit to protect it from voltage fluctuations which might result from the operation of aircraft radio frequency equipment.

1.05 SUBMITTALS

A. Bid-Submittals: The following submittals shall be included with bid.
   1. Alternates per 1.04.G.
   2. UL Certification per 1.06.A.y
   3. Spare Parts List: Provide manufacturer's recommended spare parts list. Spare parts list shall include Owner applicable pricing. Spare parts pricing shall remain valid for two (2) years from the date of final completion.

B. Pre-Manufacture Submittals: The following submittals shall be made as necessary to meet the project schedule, and shall be submitted for approval prior to manufacturing the SSFC units.

1. Product Data and Specifications: Provide manufacturer's data and specifications indicating, as a minimum, input/output voltages and amperages, power rating, physical characteristics, short circuit ratings, dimensions, and enclosure details.
2. Shop Drawings: Provide schematics and interconnection diagrams, indicate front and side views of enclosures with overall dimensions and weights shown; conduit entrance locations and requirements; and nameplate legends. Differentiate between manufacturer-installed wiring and field-installed connections.
3. Installation Details: Provide complete installation details including, without limitation, installation details of all appurtenances. Show installed configuration as well as any pertinent details regarding interface to other equipment and systems, include electrical connection service points.

C. Pre-Ship Submittals: The following shall be submitted and approved prior to shipping SSFC units to the project site:
1. Factory Test Reports: Indicate factory tests and results and inspection procedures.

D. Pre-Substantial Completion Submittals: The following submittals shall be submitted and approved prior to 14 days before substantial completion, unless otherwise noted herein.
1. Operation and Maintenance Manuals.
2. Training Program: At least 60 days prior to substantial completion, a training program summary, course syllabus, instructor qualifications, and copy of the training manual shall be submitted for review and approval.
3. Field Commissioning Report: Submit proposed field commissioning report for approval. This approved form shall be utilized for the final field commissioning as specified in Section 3.

E. Pre-Final Completion Submittals: The following submittals shall be submitted and approved prior to 14 days before final completion.
1. As-Built Drawings. Provide field edited redlined project drawings showing deviations from design documents.
2. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and have been registered with the manufacturer.
3. Field Commissioning Report: A completed field commissioning report for each installed unit as specified herein. Utilize approved form.
4. Training Rosters. Provide training roster with trainee names, dates and types of training, as well as durations.
5. Original software and documentation registered in the Owner's name.
6. Hardcopy and electronic version (compact disk) copies of all programs and settings loaded into any equipment provided hereunder.
7. Training rosters.

1.06 QUALITY CONTROL

A. UL Certification: ULor ETL approved by a nationally recognized testing laboratory. Submit certification with bid.

1.07 DELIVERY, STORAGE, AND HANDLING

A. 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.

B. Handle in accordance with manufacturer's written instructions. Handle carefully to avoid damage to components, enclosure, and finish.

C. Provide units which do not require disassembly and reassembly because of movement into the final location and follow manufacturer's written instructions.

D. Deliver equipment as a factory-assembled unit with protective crating and covering.

E. Store equipment and material in suitable facilities until delivery, installation, and final acceptance by the Owner.

F. Coordinate delivery acceptance of this equipment at the job site. Offload, store and protect equipment until such time as it has been installed and accepted by the Owner.

G. Installing contractor shall properly dispose of all waste, including, but not limited to, packaging, crates, etcetera.

1.08 WARRANTY

A. Provide a full parts and labor warranty for the new units. Labor warranty shall be performed by factory trained service technicians. Warranty shall run one (1) year from the Date of Beneficial Use. Date of Beneficial Use is defined as the date the system is turned over by the manufacturer, and accepted by the Owner for normal operation. All warranty services shall be at the site of the installation. Provider shall be responsible for all travel and sustenance expenses necessary for warranty services.

B. Shipping and Handling charges for warranty parts shall be the responsibility of the provider.

C. Warranty Services shall be commenced with on site representation, by qualified repair technicians, within 72 hours from the request of the Owner.

1.09 OPERATION AND MAINTENANCE MANUALS

A. Provide six (6) bound copies and three (3) electronic copies (CD or DVD) for each model SSFC of the approved, comprehensive Operation and Maintenance Manual 14 days prior to Substantial Completion.

B. The manuals shall fully describe each product, system, or subsystem numbered logically and separated into sections and contained in rigid plastic binders with identification inserted in clear plastic pockets on front and spine of each binder. Manuals shall be assembled in accordance with ATA 101

C. The content of the manuals shall be limited to information and data that specifically apply to products provided and shall include a general decription, theory of operation, routine normal and special operating instructions and sequences. Also included shall be routine maintenance procedures and guides for troubleshooting, disassembly and reassembly instructions, and recommended spare parts list consisting of current prices and sources.

D. Wiring diagrams and schematics shall be incorporated into the manuals to clearly show features such as controls, switches, instruments, and indicators by name and location.

E. Special Tools List: Provide a list of any special tools required to perform any field performable maintenance tasks.

F. Spare Parts List: Provide manufacturer's recommended spare parts list.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. JBT AEROTech (Jetway)

B. Hobart

C. FCX

D. Substitutions: None.

2.02 BRANDING

A. The Owner, or Owner's tenant, reserves the right to provide branding on the exterior sides of the installed equipment and desires that this branding not be diminished by excessively large or aesthetically displeasing branding of individual pieces of equipment. All manufacturers branding, labeling, marking, etcetera, on their products shall be relaively small compared to the overall

size of the piece of equipment. The Owner reserves the right to require any non-approved branding removed from finished products at no additional cost.

2.03 INPUT

A. Input Voltage Rating: 480 Volts (nominal), +/-10%, 3-phase, 3-wire plus ground.

B. Frequency: 60 Hertz, +/- 5%.

C. Full Load Amperage:
   1. Single Output, 90 KVA Model: 100 amps, maximum.
   2. Dual Output, 180 KVA Model: 200 amps, maximum.

D. Input Power Factor: Unit shall be rated at a minimum of 0.95 power factor at 480 volts and loads of 25% or greater.

E. Phase Rotation: Any/or, with automatic phase lock for ABC (CBA) input phase rotation or protection and indication for out of phase condition

F. Inrush Current: Shall not exceed 100% of the input current required when unit is operating at rated load output.

G. Line Current Balance: From 10% to rated load, the input line current shall not differ by more than 5% from the arithmetic average current in the three (3) input lines.

2.04 OUTPUT

A. 400 Hz
   1. Single Output Rating: 90 KVA continuous at 0.8 power factor, lagging.
   2. Dual Output Rating: 180 KVA continuous at 0.8 power factor, lagging.
   3. Output Voltage: 118/204 Volts RMS, adjustable over a minimum range of +/- 10%, 3-phase, wye, 4-wire, grounded neutral in accordance with the international aircraft electrical power requirements.
   4. Phase Voltage Displacement: The phase angle between each of the three output phases will be 120 degrees +/- 1.5 degrees under all rated balanced loads.The phase angle displacement with an maximum unbalanced load of 15% shall be 120 +/- 4.0 degrees.
   5. Frequency: 400 Hertz +/- 0.1% and shall not be affected by load.
   6. With the SSFC operating at a constant load, a change in ambient temperature up to 55 degrees C in an eight (8) hour period, or as the SSFC stabilizes from cold condition at any load, shall not cause the voltage to change by more than 1% of its rated values.
   7. Voltage Waveform Discontinuities: There shall be no evident discontinuities, spikes, or notches in the waveform when viewed on a high frequency oscilloscope.
   8. Harmonic Distortion: Output voltage waveform shall not exceed 3% (THD) when measured line-to-line and line-to neutral from no load to and including full rated load. Any single harmonic shall not exceed 2% of the fundamental at steady state voltage.
   9. Efficiency: Shall be not less than 90% at any load. No load losses shall not exceed 0.5% of rated load.
   10. Voltage Recovery: When initially operating at rated input frequency and rated voltage, and following any sudden change in load of up to 100% of rated load, the transient output voltage shall not deviate beyond the limits of MIL-STD-704F.
   11. Voltage Phase Balance: The maximum phase voltage imbalance shall not exceed 3.0V rms, with any applied load from no load up to converter's overload rating. Maximum imbalanced loads shall be limited to within the limitations set forth in MIL-STD-704F, Figure 1.
   12. Voltage Modulation: Shall not exceed 0.5% at any steady state condition from no load up to and including 100% of the unit's rated KVA.
   13. Voltage Regulation: Shall not exceed 1% of rated voltage from no load to rated load and from rated load to no load. This regulation shall be maintained with the input line voltage variations of +/- 10%.

14. Voltage Trim Adjustment: The output voltage trim adjustment shall be +/- 15% of nominal output span.
15. Overload Capacity: Shall be capable of supplying overloads of up to 115% of rated load continuously, for up to 150% of rated load for five (5) minutes, and for up to 200% of rated load for 10 seconds while maintaining the output voltage within the regulation band.
16. Line Drop Compensation: Shall be 0 to 5% of voltage span and shall be adjustable.
17. Crest Factor: Shall be 1.414, +/- 0.5%.
18. Frequency Modulation: <+/- 0.10% of the period of output voltage wave, unaffected by load.
19. DC content shall not exceed 100 millivolts, under any load condition.

B. 28.5 VDC (If required by equipment schedules on drawings.)
1. Output Voltage: 28.5 VDC
2. Voltage Drift: With the unit operating at a constant load, a change in ambient temperature up to 55 degrees C in an eight hour period, or as the unit stablilizes from a cold condition at any load, the output voltage shall not change more than 1% of the original value.
3. Voltage Regulation: In accordance with ISO 6858.
4. Voltage Modulation: In accordance with ISO 6858.
5. Current:
   a. 0-450 A continuous.
   b. Max 2000A for aircraft starting currents.

2.05 PROTECTION

A. Input Protection
1. Phase Loss: The SSFC shall detect the loss of any phase and prevent unit from starting or shall shut down if already running.
2. Phase Rotation: The SSFC shall incoroprate automatic phase lock circuits, or shall detect incorrect phase rotation and prevent unit from starting.
3. High / Low Input Voltage.
4. Input Circuit Breaker: An internal circuit breaker of suitable size shall provide protection from short circuits and allow maintenance personnel the capability of completely removing power from the unit for maintenance purposes. Input circuit breaker shall be lockable in the off position.
   a. All primary disconnecting means shall be suitable rated to be capable of withstanding and interrupting fault currents available at the input.
5. Control Circuit Transformers: Shall have fused primaries and secondaries, suitably marked, for protection of all control and indicating devices.

B. Output Protection
1. Over/Under Voltage Protection: The SSFC shall detect if over/under voltage exceeds the voltage-time characteristics of MIL-STD-704E, or ISO 6858, and immediately shut down.
2. Overload/Short Circuit:
   a. The unit shall be isolated from the aircraft load by overload/short circuit protection specifically rated for 400 Hz or DC operation as applicable. The unit shall be capable of detecting overloads in excess of 200% of its rated capacity and shut down within 100msec
   b. The unit shall be capable of withstanding a bolted phase to ground, bolted phase to phase, or a three phase bolted fault at the output terminals without causing damage to the unit.
3. No Break Power Transfer: Unit shall be designed to provide continuous, trip free operation of aircraft designed for No Break Power Transfer operations during ground servicing at the gate.

2.06 CONTROLS

A. Remote Control Station:
   1. The control station shall be housed in a NEMA 4X stainless steel enclosure, and shall operate on 24 volts or less and shall be located on the bridge lift column (aircraft side of the bridge), so as to be accessible from ground level. Coordinate this position with all other installed equipment and ancillaries so as to prevent interferences. The station shall be configured as indicated on the design drawings. Modifications to this configuration must be approved by the Engineer.
   2. The control station shall have a fault-indicator lamp as follows.
      a. Flash: loss of E&F or 28.5 VDC feedback signal.
      b. Steady: critical fault, SSFC unit prevented from operating.

B. Voltage Adjustment Device: A device shall be provided within the unit's enclosure to adjust the output voltage of the unit by +/- 15% while viewing the voltmeter.

C. Aircraft Interlocks: The unit output shall incoporate interlock circuitry which shall instantaneously isolate the converter output in the absence of a 28 VDC feedback signal indicating the aircraft cable is attached to an aircraft.

D. Aircraft Interlock Bypass: A selector shall be provided inside the unit to remove 28 Volt DC interlock from internal circuitry and deliver output power without the presence of the 28VDC feedback signal. An interlock circuit bypass indicator shall be provided.

E. Line Drop Compensation: A means shall be provided to adjust the automatic line drop compensation for an aircraft cable of length from 0 to 100 feet.

F. Alarm Reset: A reset pushbutton shall be provided to reset all indicators from cleared alarm signals.

G. Diagnostic System: The unit shall be equipped with a complete diagnostic system including alarm messaging indicator. The diagnostic system shall permit testing of all critical circuits during normal operation.

2.07 PBB INTERLOCKS

A. Unit shall interlock with the PBB to prevent PBB horizontal operation while SSFC operating. Coordinate with the passenger boarding bridge manufacturer.

2.08 METERS AND INDICATORS

A. Voltmeter (Digital): The voltmeter shall be capable of displaying, on a single display, input and output voltages, line-to-line and line-to-neutral. The voltmeter shall be calibrated for 400 Hz and shall have an accuracy of +/-2% full scale.
   1. This meter may also be used to display line-to-line DC output voltages, or a separate meter may be provided as necessary.

B. Ammeter (Digital): The ammeter shall be capable of displaying, on a single display, the output current for each phase. The ammeter shall be calibrated for 400 Hz and shall have an accuracy of +/-2% full scale.
   1. This meter may also be used to display DC output currents, or a separate meter may be provided as necessary.

C. Frequency Meter (Digital): The frequency meter shall be capable of displaying, on a single display, the output frequency for the unit. The frequency meter shall be calibrated for 400 Hz and shall have an accuracy of +/-2% full scale.

D. Status Indicators: Three (3) indicating lights, visible from the designated front of the unit, shall be provided to indicate the following conditions:
   1. Power On
   2. Unit Fault
   3. Converter On

4. Interlock Bypass On
5. Input Phase Loss or Incorrect Rotation
6. Interlock Feedback Loss

E. Lamp Test. A lamp test push-button when depressed shall test all door mounted light indicators and digital display segments.

F. Elapsed Time Meter: A non-resettable hour meter shall be provided to register total hours equipment is providing a 400 Hz output. Meter shall register to 99,999 hours.

G. System Indicators: LEDs shall provide indication that all primary circuits and components are operating correctly.

H. Alarm messaging Indicator: A multi line alpha-numeric readout shall be provided to indicate an internal fault. Fault code shall remain displayed until the unit is reset, and shall automatically be re-displayed upon restoration of power should a power outage occur after unit faults and prior to re-setting of fault. The multi line display can be utilized to provide other indications specified, with exception of the Status Indicators.

I. Unit shall be equipped with a battery backup sustainable memory function with ten year performance during absence of input power. Memory shall catalog, date stamp and store the last 200 power deliveries and or faults.

2.09 PHYSICAL CHARACTERISTICS

A. Design and Construction
1. The unit shall be designed as a modular assembly containing a solid state, 400 Hz frequency converter and 28.5 VDC power supply and all accessories needed to form an operating power supply. Accessibility to all components, modules, and sub-assemblies, shall be maintained.
2. The unit shall be designed and constructed so that parts will not work loose in service. It shall be design to withstand the strains, jars, vibration and other conditions incident to shipping, storage, installation and service.
3. The converter and invertor sections of the unit shall be grouped for easy inspection or replacement. Each individual module shall be arranged for removal without disassembly of the unit. Control logic printed circuit cards shall be arranged for insertion in a standard card rack with vibration resistant latching mechanisms.
4. The phase modules shall be cooled by a long life fan(s) and the air flow shall be filtered and separated from the internal electronic components to provide a separate physically sealed, environmentally clean electronic sub-section. Cooling of the power transformers shall be convection.
5. The power transformers shall be mounted in separate compartments from the internal electric components.
6. The unit shall be equipped with approved weather tight fittings for all wiring that pass through the weather tight compartments to prevent the entrance of moisture and dust into isolated electronic compartments.
7. All major components and sub-assemblies shall be marked or labeled with an identification number or letter code, or both, on or near the device. The code shall be readily visible when examining the unit.
8. All wiring terminals shall result in a permanent, secure bond between the wire and terminal. All circuits which continue to field-wired components shall terminate at suitably identified and easily accessible terminal boards.
9. Control panel wiring shall be extra flexible, standard type conforming to MIL-W-16878D, or equal. Installation shall be color-coded to requirement of NEMA ICS-1. All wiring shall have ample service loops, shall be formed into neat appearance, and shall be laced tightly. All wiring shall be permanently marked with an indelible process such as wire stamping, slip-on type markers or other approved methods. Wrap around adhesive markers shall NOT be acceptable. Wire markers shall be within 1" of all terminations and shall be readily

visible. Wiring bundles shall be adequately supported and installed in the control cabinet in a neat workmanlike manner.

10. Workmanship: The unit, including all parts and accessories shall be fabricated and finished in a workmanlike manner. Particular attention shall be given to freedom from defects, burrs, sharp edges, quality of soldering, welding, brazing, painting, wiring, riveting, alignment or parts and tightness of assembly screws, bolts, etc.
11. Weatherproof schematics shall be installed on the interior of the controller door. Schematics shall include all wiring and devices and shall include all wire numbers. Schematic shall be impervious to grease, water, ice, or other elements that they may be exposed to in an aviation maintenance environment on an active apron with the doors open.
12. External conductors/cables shall be in conduit. Flexible cables outside of the unit will only be allowed where maximum flexibility is required and only in lengths of 48" or less.

B. Cabinet
1. The cabinet enclosure shall be designed to be suitable for the intended environmental conditions. The components and sub-assemblies shall be mounted in a suitable NEMA 3R, or IEC IP 54 enclosure.
2. Access doors and covers shall be provided for easy access to all component parts.
3. The control panel shall be mounted within the NEMA 3R enclosure with provisions included for attaching remote controls.
4. The unit shall be designed for lifting and transporting by forklift.
5. Door interlock switches shall be provided to shut down the unit, suitable warning labels or covers shall be provided where internal voltages decay slowly after shutdown
6. Factory fabricated mounting brackets shall be utilized for installation of the unit under the PBB. Design of these brackets shall be such so as to prevent any welding or cutting of the bridge components to facilitate installation. Brackets shall be universal in nature so as to allow for installation on industry standard, commercially available passenger boarding bridges.
7. Manufacturer shall provide all mounting brackets and hardware necessary to mount the SSFC beneath the cab of the PBB. Mounting brackets and hardware shall be painted to match SSFC.

C. Finishes
1. Case components and final assembly shall be painted and suitably protected from oxidation and corrosion to a color matching the passenger boarding bridge.

D. Maintainability and Repair
1. The unit shall have a minimum life expectancy of 20 years and a mean time between failures of 24,000 hours, while operating within the specifications herein at any load up to, and including, rated load.
2. The mean-time-to-repair shall be no greater than 30 minutes at the module level..
3. Replaceable module accessibility shall be consistent with mean-time-to-repair.
4. Test points shall be built into the equipment to permit rapid isolation of defective assemblies, modules, and piece parts, and facilitate alignment, calibration and test.
5. The unit design shall be such that no less than 99% of all faults are correctable at the user level using recommended spare parts.

2.10 ENVIRONMENTAL CONDITIONS

A. The unit shall successfully operate under the following conditions:
1. Ambient Temperature Range: -40 degrees F to 131 degrees F.
2. Relative Humidity: 10% to 100% non-condensing.
3. Wind: Up to 80 mph with gusts to 125 mph.
4. Altitude: Up to 7000 feet above mean sea level without derating.

5. Audible Noise: Shall not exceed 70 dBA at a height of 60 inches and a distance of 78 inches.

2.11 FACTORY TESTS

A. The Manufacturer shall test every unit to assure compliance with the Specifications. Dated and signed certification test sheets shall be submitted as indicated in the Submittals section of this specification. The Owner shall be notified 14 days prior to the date of such tests. The Owner reserves the right to witness tests and request additional tests that show compliance with the Specifications. Tests shall include, but not be limited to, the following:
   1. Operational Checkout:
      a. Unit shall undergo a high potential test of 2000V for two (2) minutes on the input of the unit to detect wiring errors. Additional checks shall include overtemp alarm, under voltage alarm, hour meter, and fans.
   2. No Load Losses:
      a. Operate at no load and nominal input voltage. Measure and record input voltage, output voltage, input current, output frequency, and input power factor.
   3. Load Test:
      a. Operate unit at 50%, and 100% loads. Measure and record output voltage, output frequency, output current, output voltage and input current THD.
   4. Burn-In:
      a. Before delivery, operate each unit for a minimum of 24 continuous hours.

B. Should factory tests fail to indicate compliance with specifications, all costs assciated with re-testing, including costs associated with Owner's witness services, will be the responsibility of the manufacturer.

2.12 SPECIAL FEATURES

PART 3 - EXECUTION

3.01 CABINET MOUNTING

A. SSFC shall be mounted as indicated in approved submittal drawings.

3.02 ELECTROMAGNETIC COMPATIBILITY

A. Grounding:
   1. Install grounding conductors as directed by manufacturer and in accordance with the NEC requirements for separately derived systems.

B. The chassis and enclosure shall be continuously welded for maximum shielding.

3.03 EXAMINATION

A. Verify/perform the following items or tasks.
   1. Air inlets or exhaust louvers are not obstructed
   2. Check to be sure that there are no tools or loose objects in the unit.
   3. Make a final check of the security of the power connections.
   4. Re-install any covers removed during installation.

3.04 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. The units shall not hinder or restrict the passenger boarding bridge or ancillary equipment from operating within its full designed operating range.

C. Arrange installation of cables to provide adequate clearance for service and maintenance.

D. The unit and cables shall be properly aligned and adjusted before final acceptance.

E. Wire mesh strain reliefs shall be utilized at locations as indicated in the contract drawings.

3.05 INTERFACE WITH OTHER WORK

A. Installation of unit shall be coordinated with other trades associated with project.

3.06 FIELD QUALITY CONTROL

A. Inspect for loose connections, proper grounding connections, and latching of circuit boards in card rack.

3.07 STARTING EQUIPMENT

A. Adjust for proper operation within manufacturer's published tolerances.

B. Field Tests
   1. The start up personnel shall test every unit to assure compliance with the Specifications. The Owner shall be notified 14 days prior to the date of such tests. Dated and signed Field Commissioning Reports shall be submitted within 14 days of performance of tests. The Owner reserves the right to witness tests and request additional tests that show compliance with the Specifications. Tests shall include, but not be limited to, the following:
      a. Operational Checkout:
         1) Local and remote pushbuttons shall be checked for operation.
         2) Correct phase rotation shall be verified by unit's status indicator.
         3) E&F circuit interlock and bypass operation shall be verified by unit's status indicators.
         4) Lamp Test shall be verified by unit's status indicators.
      b. No Load:
         1) Operate at no load and nominal input voltage. Measure and record input voltage, output voltage(s), and output frequency at aircraft cable plugs.
      c. Load Test:
         1) Operate 400 Hz unit output at 50%, and 100% loads. Measure and record output voltage at aircraft cable plugs for each load interval.
      d. Provide complete functional testing to the satisfaction of the Owner.

C. Complete all punchlist items.

3.08 ADJUSTING

A. Adjust line drop compensation to operate with length of aircraft cable installed. Proper test equipment shall be utilized to verify adjustment of line drop compensation circuit.

B. Operational Voltages:
   1. 400 Hz:
      a. No Load Voltage: 116.0 - 117.0 Volts.
      b. Full Load Voltage: 115.0 - 116.5 Volts.
   2. 28.5 VDC:
      a. No Load Voltage: 28.0 - 28.5 VDC.
      b. Full Load Voltage: 26.0 - 28.5 VDC.

3.09 CLEANING

A. Clean unit from all construction dust and debris prior to start-up.

B. Touch up scratched or marred surfaces to match original finish.

C. Protect the installed unit from subsequent construction operations.

END OF SECTION

SECTION 11 8570

OVERBRIDGE DEVICE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This Section of the Specifications covers the furnishing and installing of tubular frame high profile overbridge type raceway assemblies to facilitate the routing of 400 Hz and/or 60 Hz services from the terminal to the point of use, which of necessity, traverse Passenger Loading Bridges (PLB's).

B. Tubular frame high profile overbridge type raceway assembly mounted to Passenger Loading Bridges (PLB's).
   1. Devices may be referred to as "doglegs" or "pantagraphs".

1.02 RELATED SECTIONS

A. Drawings, General Provisions of the Contract, including General and Special Conditions, as well as General electrical materials and methods of installation apply to work of this section.

1.03 REFERENCES

A. NFPA 70 - National Electrical Code; National Fire Protection Association; 2011.

1.04 SUBMITTALS

A. Product Data for required units based on specific Passenger Loading Bridge conditions.

B. Installation, fastening details.

C. Detailed assembly drawings including weights and structural data.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

1.06 DELIVERY, STORAGE, AND PROTECTION

A. Provide units which do not require disassembly and reassembly because of movement into the final location and follow manufacturer's written instructions.

B. Deliver equipment as a factory-assembled cable with protective crating and covering.

C. Store equipment and material in suitable facilities until delivery, installation, and acceptance by the Owner.

D. Coordinate the delivery acceptance of this equipment at the job site. Receive, offload, store and protect this equipment until such time as it has been installed and accepted by the Owner.

E. Properly dispose of all waste, including, but not limited to, packaging, crates, etcetera.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Maintain full motion of passenger loading bridge during and after installation of overbridge device.

PART 2 PRODUCTS

2.01 DESCRIPTION

A. Overbridge device assembly shall be designed so that it connects and utilizes the side of either a two or three tunnel apron drive Passenger Loading Bridge as its sole means of attachment.

B. It shall be supplied as a prefabricated structure consisting of a system of hinged joints interconnected by aluminum tubular mast assemblies that permit it to extend and retract synchronously with the Passenger Loading Bridge and at the same time contain and protect the flexible power cable(s) along with auxiliary and control cables as called for elsewhere in the documents.

C. The overbridge device assemblies to the bridge, supports, and structure shall be mechanically designed to withstand the same dynamic operational requirements as the Passenger Loading Bridge, i.e., withstand wind loads of up to 110 MPH/ASCE 7-88 Exposure C, Factor 1.1, without impeding or restricting bridge motion and speed of operation in ambient temperatures from -20 to +122 degrees Fahrenheit.

2.02 SCOPE OF WORK

A. As part of the construction, furnish and install Overbridge device assemblies as required to provide the means by which power, control and signaling wiring is extended from junction boxes mounted on the exterior of the Terminal/Gate position and the various units mounted along the length of the Passenger Loading Bridge subject to extension and retraction.

2.03 MANUFACTURERS

A. JBT AEROTech - FMC Jetway

B. Thyssenkrupp Airport Systems

C. Ameribridge

D. Substitutions: Per General Conditions of the Contract.

2.04 MATERIALS

A. Tubes:
   1. Devices used to convey central ground power system power operating at 400 Hz shall be fabricated with aluminum tubes.
   2. Devices used to convey power operating at 60 Hz, DC, communications, control, or other systems may be fabricated from aluminum or steel tubes.

B. Brackets:
   1. All brackets shall be fabricated from steel.

2.05 FACTORY FINISHING

A. The overbridge device assembly shall be factory primed and finished with industrial grade enamel, electrostatically applied, and shall match finish of passenger loading bridge. Manufacturer shall obtain paint specifications or paint chip from bridge manufacturer to ensure match if necessary, and shall be responsible for coordination.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. The location of the welded overbridge device assemblies' attachments on the bridge tunnels and the degree of corrosion protection of the welded attachment points on the side of the bridge shall be coordinated with the Passenger Loading Bridge manufacturer.

3.02 STARTING EQUIPMENT

A. Demonstrate proper operation of equipment to Owner 's designated representative.

3.03 ADJUSTING

A. Adjust overbridge device for smooth operation with full motion of passenger loading bridge.

END OF SECTION

SECTION 11 8600

AIRCRAFT GROUND POWER CABLE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Work Includes: Designing, manufacturing, testing, furnishing, installing and commissioning 400 Hz and 28.5 VDC aircraft ground power cables.

1.02 RELATED SECTIONS

A. Drawings, General Provisions of the Contract, including General and Special Conditions, as well as General electrical materials and methods of installation apply to work of this section.

B. Section 118602: Solid State Frequency Converter.

C. Section 118504: Passenger Boarding Bridge.

D. Section 118604: Cable Hoists.

1.03 REFERENCES

A. The latest approved version or edition, by the authority having jurisdiction, of the following codes, references and standards shall apply. If the authority having jurisdiction has not approved or adopted a particular code, reference, or standard, the latest published edition shall be applicable.
   1. NFPA 70 - National Electrical Code; National Fire Protection Association
   2. MIL-C-7974
   3. MIL-C-5756
   4. MS25488

1.04 SUBMITTALS

A. Product Data: Provide manufacturer's catalog cut sheets.

B. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

C. Special Tools List: Provide a list of any special tools required to perform any field performable maintenance tasks.

D. UL certification per 1.06.B.

1.05 OPERATION AND MAINTENANCE MANUALS

A. Provide two (2) bound copies, and three (3) electronic copies (CD or DVD) of the approved, Operation and Maintenance manuals fourteen (14) days prior to Substantial Completion.

B. The manuals shall fully describe each product, system, or subsystem numbered logically and separated into sections and contained in rigid plastic binders with identification inserted in clear plastic pockets on front and spine of each binder. Manuals shall be assembled in accordance with ATA 101

C. The content of the manuals shall be limited to information and data that specifically apply to products provided and shall include, at minimum, a general description, theory of operation, routine normal and special operating instructions and sequences. Also included shall be routine maintenance procedures and guides for troubleshooting, disassembly and reassembly instructions, and recommended spare parts list including current prices and sources.

D. Wiring diagrams and schematics shall be incorporated into the manuals to clearly show features such as controls, switches, instruments, and indicators by name and location.

E. Special Tools List: Provide a list of any special tools required to perform any field performable maintenance tasks.

F. Spare Parts List: Provide manufacturer's recommended spare parts list.

1.06 QUALITY CONTROL

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

B. UL Compliance: Cables shall be UL or ETL approved by a nationally recognized testing laboratory at the time of bid. Submit verification with bid submittals.

1.07 DELIVERY, STORAGE, AND PROTECTION

A. Provide units which do not require disassembly and reassembly because of movement into the final location and follow manufacturer's written instructions.

B. Deliver equipment as a factory-assembled cable with protective crating and covering.

C. Store equipment and material in suitable facilities until delivery, installation, and acceptance by the Owner.

D. Coordinate the delivery acceptance of this equipment at the job site. Receive, offload, store and protect this equipment until such time as it has been installed and accepted by the Owner.

E. Properly dispose of all waste, including, but not limited to, packaging, crates, etcetera.

1.08 WARRANTY

A. Manufacturer shall provide a complete one (1) year warranty on all aircraft ground power cables. Said warranty shall commence on the date of beneficial use. This warranty shall not be required to cover normal wear and tear or abuse by the end users, but shall cover factory defects and failures.

B. Shipping and handling charges for warranty parts are the responsibility of the provider.

C. Warranty Services shall be commenced with on site representation, by qualified repair technicians, within 72 hours from the request of the Owner.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. 400 Hertz Cable With Aircraft Power Plug
   1. Physical Characteristics:
      a. Configuration: Single Jacketed configuration cable.
      b. Bend Radius Minimum: 10.0" (25.4 cm).
      c. Diameter: 1.65" (4.19 cm).
      d. Length: As indicated on the drawings.
      e. Weight Per Foot: 2 lbs. (0.9 KG)
   2. Environmental Characteristics:
      a. Temperature Range: -67° F to +130° (-55° C to +55° C).
      b. Storage Temp Range: -67° F to +150° F (-55° C to +65° C).
      c. Humidity: 0 to 100%.
      d. Bundling: Single Jacketed
   3. Electrical Characteristics:
      a. Voltage Rating: 600 VAC maximum
      b. Ampacity: 260 amperes
      c. Frequency: 400 Hertz
      d. Voltage Drop: 3.0 Volts. Measured at 90 kVA, 0.8 power factor on 65 ft. cables.
      e. Voltage Unbalance: 0.20 Volts. Measured at 90kVA, 0.8 power factor on 65 ft. cables.
   4. Removable Plug Section:
      a. Assembly shall include one (1) female connector to mate with the male aircraft connector.
      b. Easily changed or replaced in the field with bolted connections.

c. Molded tapered strain relief at plug/cable interface.

5. Components:
   a. Power Conductors: 6 - #4 AWG Class M stranding.
   b. Neutral Conductor: 1 - #1 AWG Class M stranding.
   c. Control Conductor: 18 - #18 AWG Class M stranding.
   d. Outer Jacket: Pressure extruded rayon-reinforced black neoprene 0.17: (0.43cm) nominal wall.

B. 28 VDC Aircraft Ground Power Cable With Plug Section
1. Cable shall be manufactured in accordance with MIL-C-5756 D.
2. Connectors shall be manufactured in accordance with MS25488.
3. Assembly shall be manufactured in accordance with MIL-C-7974D
4. Cable Power Conductors:
   a. #4/0 AWG
5. Plug Section:
   a. The oval plug section shall be of the three pin type.
6. Cable Terminal:
   a. Suitable for 3/8" studs.

2.02 MANUFACTURER

A. JBT AeroTech.

B. J&B Aviation.

C. U.S. Airmotive.

D. Substitutions: None

2.03 MARKINGS

A. Cables shall be marked in accordance with Articles 310-11 and 400-6 (NEC) which states all conductors and cables shall be marked to indicate the following information:
1. Maximum rated voltage for which the conductor was listed.
2. Type of rating on insulation.
3. The manufacturer's name, trademark, or other distinctive marking by which the organization responsible for the product can be readily identified.
4. The AWG size or circular-mil area.

PART 3 EXECUTION

3.01 INSTALLATION

A. Installation services shall be provided by an installing contracting company that has a minimum of three (3) years documented experience of successful installations on projects of similar size and scope.

B. Install in accordance with manufacturer's instructions.

C. The units shall not hinder or restrict the boarding bridge from operating within its full designed operating range.

D. Arrange installation of cables to provide adequate clearance for service and maintenance.

E. The cables shall be properly aligned and adjusted before final acceptance.

F. Commission equipment. Provide complete functional testing to the satisfaction of the Owner. Complete all punchlist items.

G. Wire mesh strain reliefs shall be utilized at termination locations.

3.02 INTERFACE WITH OTHER WORK

A. Cable shall be sufficiently stored after installation and during other construction activities to prevent cable from lying on the ramp where it is susceptible to damage by construction traffic.

B. The cable or its associated installation hardware shall not hinder or restrict the PBB from operating within its full designed operating range. Ensure aircraft cables are installed in such a manner as to prevent damage to any components throughout the full range of PBB motion.

3.03 FIELD QUALITY CONTROL

A. Test for electrical continuity and short circuits.

3.04 STARTING EQUIPMENT

A. Demonstrate proper operation of equipment to Owner.

END OF SECTION

SECTION 11 8604
CABLE HOISTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Work Includes: Designing, manufacturing, testing, furnishing, installing and commissioning cable hoists.

1.02 RELATED SECTIONS

A. Drawings, General Provisions of the Contract, including General and Special Conditions, as well as General electrical materials and methods of installation apply to work of this section.

B. Section 118604 - Aircraft Ground Power Cable.

C. Section 118504: Apron Drive Passenger Boarding Bridge.

1.03 REFERENCES

A. The latest approved version or edition, by the authority having jurisdiction, of the following codes, references and standards shall apply. If the authority having jurisdiction has not approved or adopted a particular code, reference, or standard, the latest published edition shall be applicable.
   1. NEMA MG 1 - Motors and Generators; National Electrical Manufacturers Association.
   2. NFPA 70 - National Electrical Code; National Fire Protection Association.

1.04 SUBMITTALS

A. Product Data: Provide wiring diagrams detailing power connections, control, safety and protective device considerations and arrangement for travel limit (up and down) of cable hoist.

B. Shop Drawings: Indicate mounting location of cable hoist for each passenger loading bridge using a fixed reference point.

C. Maintenance Data: Data for components, including motor, gear trane, cable sheave, control and limit devices.

D. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

E. Special Tools List: Provide a list of any special tools required to perform any field performable maintenance tasks.

F. UL Compliance certificates as required by 1.05.D.

1.05 QUALITY CONTROL

A. Supply, install and commission all cable hoists.

B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

C. Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years of documented experience.

D. UL Compliance: Cable hoist units shall be UL, or ETL approved by a nationally recognized testing laboratory at time of bid. Submit certifications with bid.

1.06 OPERATION AND MAINTENANCE MANUALS

A. Provide two (2) bound copies, and three (3) electronic copies (CD or DVD) of the Operation and Maintenance Manual for each model cable hoist supplied fourteen (14) days prior to Substantial Completion.

B. Provide seven (7) copies of the approved, comprehensive Operation and Maintenance Manual 14 days prior to Final Acceptance date.

C. The manuals shall fully describe each product, system, or subsystem numbered logically and separated into sections and contained in rigid plastic binders with identification inserted in clear plastic pockets on front and spine of each binder. Manuals shall be assembled in accordance with ATA 101

D. The content of the manuals shall be limited to information and data that specifically apply to products provided and shall include, at minimum, a general description, theory of operation, routine normal and special operating instructions and sequences. Also included shall be routine maintenance procedures and guides for troubleshooting, disassembly and reassembly instructions, and recommended spare parts list including current prices and sources.

E. Wiring diagrams and schematics shall be incorporated into the manuals to clearly show features such as controls, switches, instruments, and indicators by name and location.

F. Special Tools List: Provide a list of any special tools required to perform any field performable maintenance tasks.

G. Spare Parts List: Provide manufacturer's recommended spare parts list.

1.07 DELIVERY, STORAGE, AND PROTECTION

A. Lift and support cable hoist units with the manufacturer's designated lifting or supporting points.

B. Provide cable hoist units which do not require disassembly and reassembly because of movement into the final location and follow manufacturer's written instructions.

C. Deliver equipment as a factory-assembled unit whenever practical for shipping purposes with protective crating and covering.

D. Store equipment and material in suitable facilities until delivery, installation, and acceptance by the Owner.

E. Coordinate the delivery acceptance of this equipment at the job site, receive, offload, store and protect this equipment until such time as it has been installed and accepted by the Owner.

F. Properly dispose of all waste including, but not limited to, packaging, crates, etcetera.

1.08 WARRANTY

A. Provide a full parts and labor warranty for the new hoists. Labor warranty shall be performed by factory trained service technicians. Warranty shall run one (1) year from the Date of Beneficial Use. Date of Beneficial Use is defined as the date the system is turned over by the manufacturer, and accepted by the Owner for normal operation. All warranty services shall be at the site of the installation. Provider shall be responsible for all travel and sustenance expenses necessary for warranty services.

B. Shipping and handling charges for warranty parts are the responsibility of the provider.

C. Warranty Services shall be commenced with on site representation, by qualified repair technicians, within 72 hours from the request of the Owner.

1.09 TRAINING

A. Cable hoists should require minimal training. Provide operator's training at the time of, and to coincide with each session of the 400 Hz or PBB training.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. JBT AEROTech - Jetway.

B. MCM Engineering

C. Cavotec - Inet

D. Substitutions: None

2.02 BRANDING

A. The Owner, or Owner's tenant, reserves the right to provide branding on the exterior sides of the installed equipment and desires that this branding not be diminished by excessively large or aesthetically displeasing branding of individual pieces of equipment. All manufacturers branding, labeling, marking, etcetera, on their products shall be relatively small compared to the overall size of the piece of equipment. The Owner reserves the right to require any non-approved branding removed from finished products at no additional cost.

2.03 DESCRIPTION

A. A cable hoist shall be included for the "off-the-ramp" storage of the aircraft ground power cable. The use of under cab "Cable Retrievers" is not permitted.

B. The cable hoist shall be mounted on top of the outermost tunnel on the aircraft side of the PLB, or alternately on top of the bridge cab, or in a location approved by the Engineer. The mounting position or method shall not inhibit bridge movement in any way.

C. The cable hoist shall store the entire aircraft ground power cable (including the plug) off the apron at the side of the passenger boarding bridge tunnel (or cab), by means of saddles attached to the end of a stainless steel flexible cable which is wrapped on drum(s) mounted on the shaft of a gear reduction motor drive. When the aircraft ground power cable has been lowered to a usable position, the operator may unsnap the rings releasing the aircraft ground power cable so that it may be fully deployed and plugged into the aircraft. Conversely when the aircraft ground power cable is unplugged from the aircraft, it may be pulled back to the snap rings and hoisted from the apron.

2.04 COMPONENTS

A. Each cable hoist shall consist of the following components:
   1. Motor: 1/2 horsepower (minimum), rated at 480V, three phase, 60 Hz, and shall be fully capable of raising and lowering the aircraft cable as specified.
   2. Gear Reducer: NEMA rated Class D.
   3. Cable Drum: Shall be capable of housing entire length of cable used to raise and lower aircraft power cable.
   4. Protective Steel Housing.
   5. Cable: The cable system shall consist of a 5/32 " diameter wire rope tested in excess of 350 lbs. The cable shall be of adequate length to fully raise and lower the aircraft ground power cable.
   6. Limit Switches:
      a. Cable Down: An independent cable down limit switch shall prevent the wire cable from unfurling completely when pressing "down" pushbutton to lower aircraft power cable.
      b. Cable Up: An independent cable up limit switch shall deenergize the cable hoist drive motor, thereby setting the brake, when the cable is completely retrieved from the ramp and in its upmost position.
      c. PBB Interlock: An independent switch shall provide an interlock to the passenger boarding bridge. This limit switch shall be interlocked with the PBB control circuitry to prevent horizontal movement only, of the PBB, while the cable is deployed. This contractor shall install this interlock. (Vertical operation shall not be affected, including auto level circuits.)

2.05 ACCESSORIES

A. The following equipment shall be provided with each cable hoist:
   1. Mounting saddles
   2. Racks
   3. Cantilevers
   4. Mounting kits for proper installation as shown on the Drawings.

5. Industrial grade snap hooks.

B. Hardware shall be factory finish painted as specified in this section.

2.06 CONTROLS

A. RAISE/LOWER controls shall be externally provided. The control station shall be integrated with the 400 Hz control station and shall be housed in a NEMA 4X stainless steel enclosure, and shall operate on 24 volts or less and shall be located on the bridge lift column (aircraft side of the bridge), so as to be accessible from ground level. Coordinate this position with all other installed equipment and ancillaries so as to prevent interferences. The station shall be configured as indicated on the design drawings.

2.07 INTERLOCKS

A. Unit shall interlock with the PBB to prevent PBB horizontal operation while cable hoist is in the deployed state. Coordinate with requirements of Section 118604.

B. Unit shall interlock with the PBB to illuminate a "400 Hertz Aircraft Cable Deployed" warning light on the PBB console when the cable hoist is in the deployed state. Coordinate with requirements of Section 118604.

2.08 FACTORY FINISHING

A. Factory primed and finished with industrial grade enamel, electrostatically, or powder coat, applied, and shall match the color of the new passenger boarding bridge.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that cable hoist is installed in manufacturer's recommended location on the passenger boarding bridge.

3.02 INSTALLATION

A. Installation services shall be provided by an installing contracting company that has a minimum of three (3) years documented experience of successful installations on projects of similar size and scope.

B. Install in accordance with manufacturer's instructions.

3.03 STARTING EQUIPMENT

A. Adjust for proper operation within manufacturer's published tolerances.

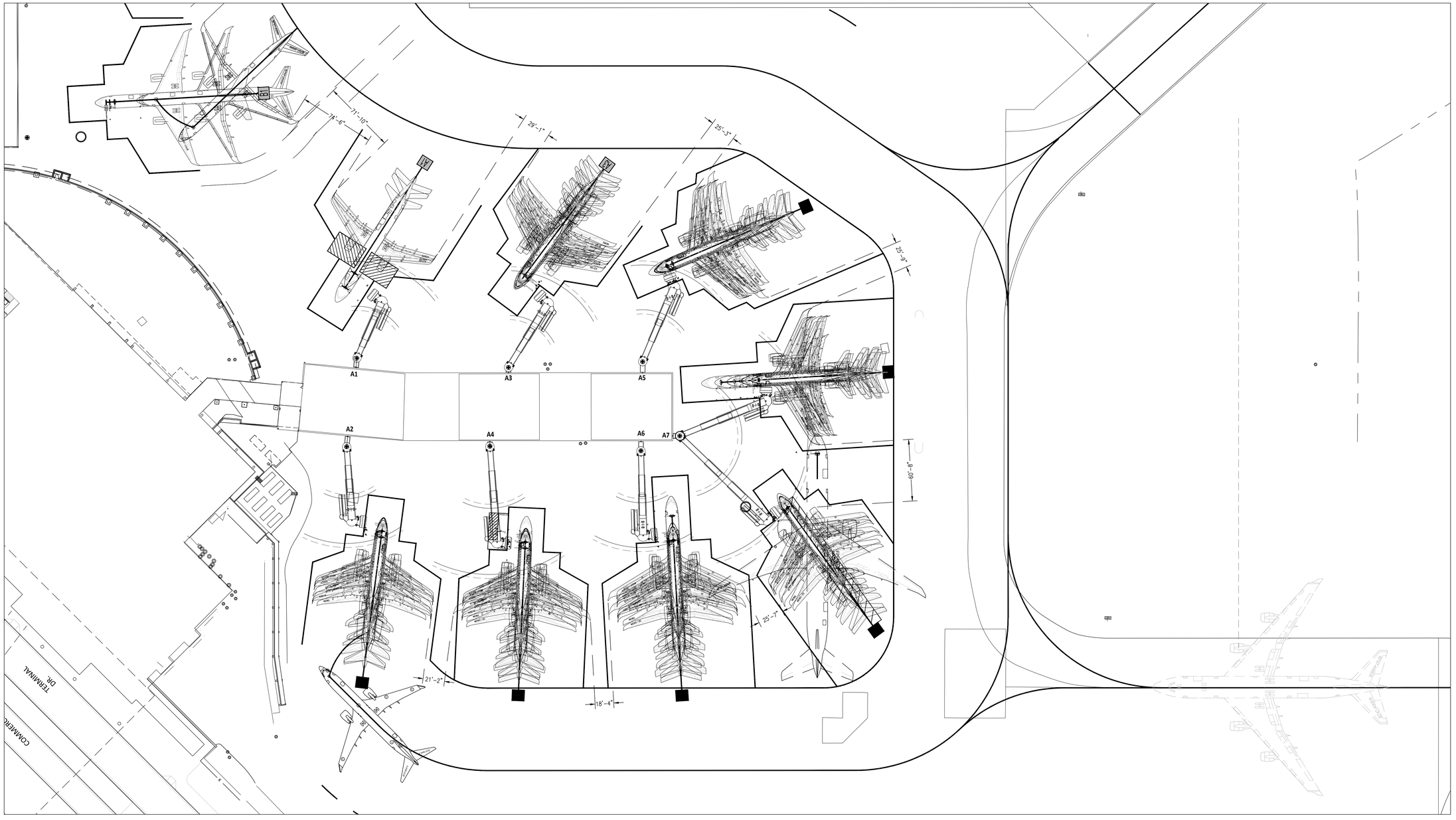
B. Demonstrate proper operation of equipment to Owner 's designated representative.

3.04 ADJUSTING

A. Adjust mounting saddles on aircraft power cable to adequately raise cables off the ramp when not in use and with passenger boarding bridge in its fully lowered position.

B. Ensure aircraft cables are installed in such a manner as to prevent damage to any components throughout the full range of PBB motion.

END OF SECTION



PASSENGER BOARDING BRIDGE AND SERVICE DATA – EXISTING					
GATE NO.	BOARDING BRIDGE MODEL	WALKWAY OR EXTENDED CORRIDOR	ROTUNDA FLOOR HEIGHT	PCA (POINT-OF-USE)	400HZ (POINT-OF-USE)
A1	(E) A3-58/110	(E) 5'-6" EXT. CORR.	11'-7 3/4"	(E) 30 TON	(E) 90 KVA
A2	(E) A3-58/110	(E) 5'-6" EXT. CORR.	11'-7 3/4"	(E) 30 TON	(E) 90 KVA
A3	(E) A3-58/110	N/A	11'-5 1/2"	(E) 30 TON	(E) 90 KVA
A4	(E) A3-68/141	N/A	11'-6 1/4"	(E) 30 TON	(E) 90 KVA
A5	(E) A3-58/110	(E) 5'-6" EXT. CORR.	11'-7"	(E) 30 TON	(E) 90 KVA
A6	(E) A3-58/110	(E) 5'-6" EXT. CORR.	11'-7"	(E) 30 TON	(E) 90 KVA
A7	(E) A3-68/141	(E) 1'-0" EXT. CORR.	11'-5"	(E) 75 TON	(E) 140 KVA

(E) EXISTING

AIRCRAFT SERVICE CHART								
	GATE NO.	A1	A2	A3	A4	A5	A6	A7A	A7B
ADG II	ERJ-135	–	–	X	–	–	–	–	–
	ERJ-145	–	X	X	X	X	X	X	X
	CRJ-200	–	X	X	X	X	X	X	X
	CRJ-700	–	X	X	X	X	X	X	X
ADG III	CRJ-900	–	X	X	X	X	X	X	X
	A220-100/CS100	–	–	–	X	X	X	–	X
	A220-300/CS300	–	–	–	–	–	–	–	–
	B717	–	X	X	X	X	X	X	X
	EMB-170	–	–	X	–	–	–	–	–
	EMB-175EWT	–	X	X	X	X	X	X	X
	EMB-190	–	–	X	–	–	–	–	–
	EMB-195	–	–	X	–	–	–	–	–
	MD80	–	X	X	X	–	X	–	–
	MD88	–	–	–	–	X	–	X	X
	MD90-30	–	–	–	X	X	X	X	X
	A319S	X	X	X	X	X	X	X	X
	A320S	X	X	X	X	X	X	X	X
	A321S	X	X	X	X	X	X	–	X
	B737-MAX 7	–	X	X	X	X	X	X	X
	B737-MAX 8	–	X	X	X	X	X	X	X
	B737-MAX 9	–	X	X	X	X	X	X	X
ADG IV	B757-200W	–	–	–	X	X	X	–	X
	B757-300W	–	–	–	X	–	X	–	X
	B767-300ERW	–	–	–	–	–	–	–	–
ADG V	B777-300	–	–	–	–	–	–	–	–
	B777-300ERW	–	–	–	–	–	–	–	–

AIRCRAFT SERVICE CHART LEGEND:

X = AIRCRAFT SERVICED.
– = AIRCRAFT NOT SERVICED.

GENERAL NOTES:

1. EXISTING CONDITIONS SHOWN ARE BASED OFF A FILE PROVIDED TO ASE BY OTHERS. ASE IS NOT RESPONSIBLE FOR ANY DIFFERENCES THEROF. CONTACT ENGINEER IF DISCREPANCIES ARISE.

PLOT DATE:
TEMPLATE VERSION:

ELEVATE
PROJECT TEAM

PROGRAM MANAGER / INTERIORS / PLANNING / MEP / FP
MEAD & HUNT

ARCHITECT
HKS INC

IT / SECURITY
MOYE CONSULTING

CIVIL / STRUCTURAL
C&S COMPANIES

SIMULATIONS / MODELING
TRANSSOLUTIONS

CONCESSIONS
ICF

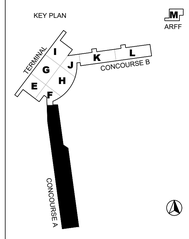
PASSENGER BOARDING BRIDGE CONSULTING
AERO SYSTEMS ENGINNERING

SURVEYOR
NEDERVELD

GEOTECHNICAL
SOMAT ENGINEERING

GRR - PROJECT ELEVATE
CONCOURSE A EXPANSION

KEY PLAN



REVISION

NO.	DESCRIPTION	DATE
1	ISSUED FOR BID	01.20.2020

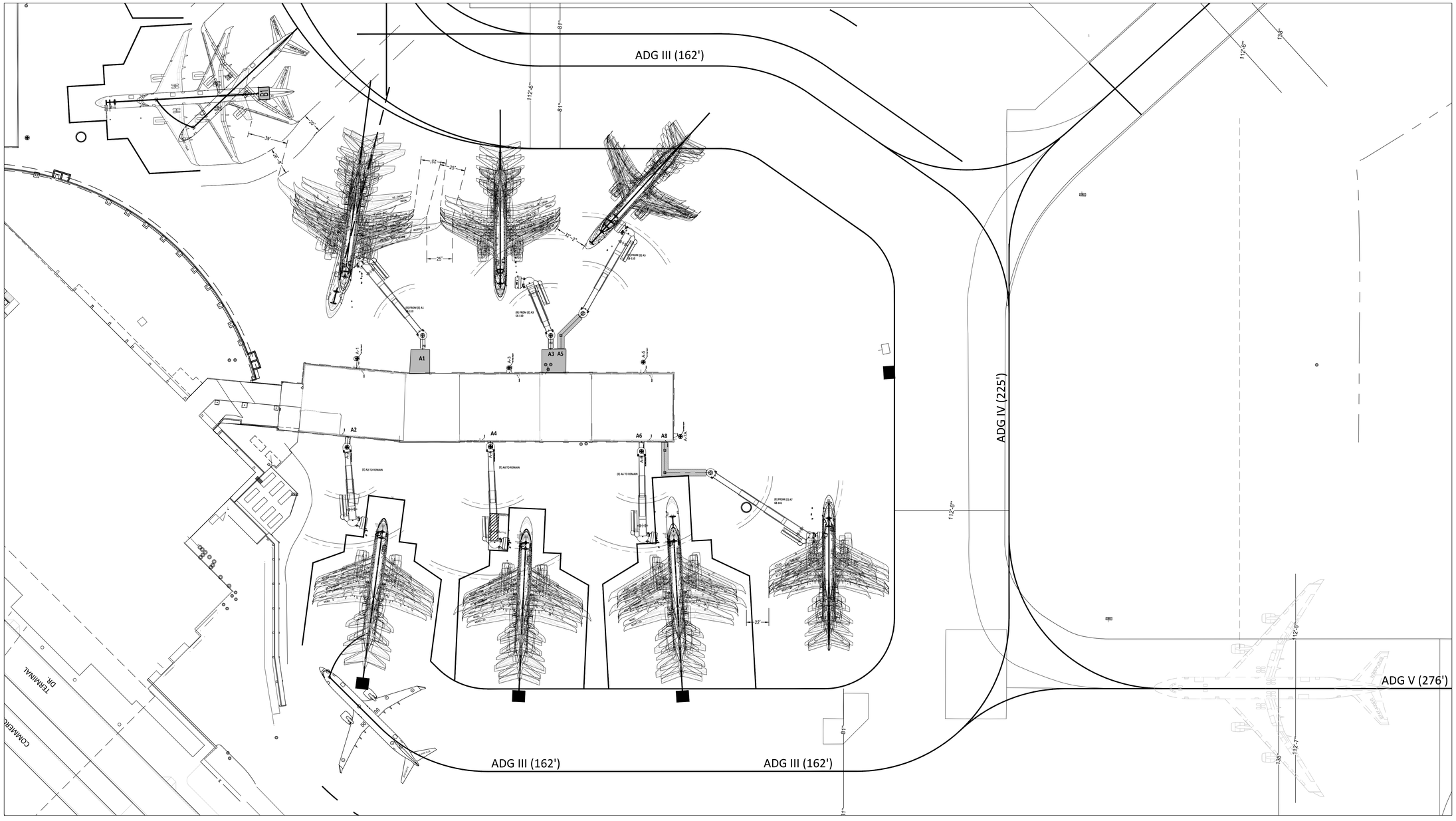
HKS PROJECT NUMBER
22284.000

DATE
12/19/2019

ISSUE
PBB PROCUREMENT

SHEET TITLE
EXISTING AIRCRAFT PARKING LAYOUT

SHEET NO.
AP-1.0



PASSENGER BOARDING BRIDGE AND SERVICE DATA – PHASE 1

GATE NO.	BOARDING BRIDGE MODEL	WALKWAY OR EXTENDED CORRIDOR	ROTUNDA FLOOR HEIGHT	PCA (POINT-OF-USE)	400HZ (POINT-OF-USE)	NOTES
A1	(R) A3-58/110	(N) 8'-6" EXT. CORR.	11'-7 3/4"	(R) 30 TON	(R) 90 KVA	(E) GATE A1 PBB, PCA, & 400HZ REMOVED AND REINSTALLED AT (N) GATE A1 LOCATION
A2	(E) A3-58/110	(E) 5'-6" EXT. CORR.	11'-7 3/4"	(E) 30 TON	(E) 90 KVA	(E) GATE A2 TO REMAIN
A3	(R) A3-58/110	(N) 8'-6" EXT. CORR.	11'-5 1/2"	(R) 30 TON	(R) 90 KVA	(E) GATE A3 PBB, PCA, & 400HZ REMOVED AND REINSTALLED AT (N) GATE A3 LOCATION
A4	(E) A3-68/141	N/A	11'-6 1/4"	(E) 30 TON	(E) 90 KVA	(E) GATE A4 TO REMAIN
A5	(R) A3-58/110	(N) 39' WALKWAY	11'-7"	(R) 30 TON	(R) 90 KVA	(E) GATE A5 PBB, PCA, & 400HZ REMOVED & RELOCATED TO (N) TEMPORARY GATE A5 LOCATION
A6	(E) A3-58/110	(E) 5'-6" EXT. CORR.	11'-7"	(E) 30 TON	(E) 90 KVA	(E) GATE A6 TO REMAIN
A8	(R) A3-68/141	(N) 75' WALKWAY	11'-5"	(R) 75 TON	(R) 140 KVA	(E) GATE A7 PBB, PCA, & 400HZ REMOVED & RELOCATED TO (N) TEMPORARY GATE A8 LOCATION

(E) EXISTING
(N) NEW
(R) RELOCATED

AIRCRAFT SERVICE CHART

	GATE NO.	A1	A2	A3	A4	A5	A6	A8
ADG II	ERJ-135	X	X	X	X	X	X	X
	ERJ-145	X	X	X	X	X	X	X
	CRJ-700	X	X	X	X	X	X	X
ADG III	CRJ-900	X	X	X	X	X	X	X
	A220-100/CS100	X	X	X(3)	X	X	X	X
	A220-300/CS300	X	X	X(3)	X	X	X	X
	EMB-175EWT	X	X	X	X	X	X	X
	EMB-190	X	X	X	X	X	X	X
	B717	X	X	X	X	X	X	X
	MD-88	X	X	X(3)	X	X	X	X
	MD-90	X	X	X(3)	X	X	X	X
	A319S	X	X	X(3)	X	X	X	X
	A320S	X	X	X(3)	X	X	X	X
	A321S	x	X	X(3)	X	X	X	X
	B737-400	X	X	X(3)	X	X	X	X
	B737-MAX 7	X	X	X(3)	X	X	X	X
	B737-MAX 8	X	X	X(3)	X	X	X	X
	B737-MAX 9	X	X	X(3)	X	X	X	X
ADG IV	B757-200W	X(2)	–	–	–	–	–	–
	B757-300W	X(2)	–	–	–	–	–	–
	B767-300ERW	X(1)	–	–	–	–	–	–
ADG V	B777-300	–	–	–	–	–	–	–
	B777-300ERW	–	–	–	–	–	–	–

AIRCRAFT SERVICE CHART LEGEND:

(1) AIRCRAFT SERVICE CLOSES GATE A3
(2) AIRCRAFT SERVICE RESTRICTS GATE A3 TO A MAXIMUM EMB-190
(3) AIRCRAFT SERVICE RESTRICTS GATE A1 TO A MAXIMUM 737-9MAX

GENERAL NOTES:

1. EXISTING CONDITIONS SHOWN ARE BASED OFF A FILE PROVIDED TO ASE BY OTHERS. ASE IS NOT RESPONSIBLE FOR ANY DIFFERENCES THEROF. CONTACT ENGINEER IF DISCREPANCIES ARISE.

2. RAMP STRIPING DRAWINGS TO BE PROVIDED UNDER A SEPARATE DESIGN PACKAGE.

PLOT DATE:
TEMPLATE VERSION:

ELEVATE
PROJECT TEAM

PROGRAM MANAGER / INTERIORS / PLANNING / MEP / FP
MEAD & HUNT

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IT / SECURITY
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GRR - PROJECT ELEVATE
CONCOURSE A EXPANSION

KEY PLAN
ARFF
TERMINAL
CONCOURSE B
CONCOURSE A

REVISION

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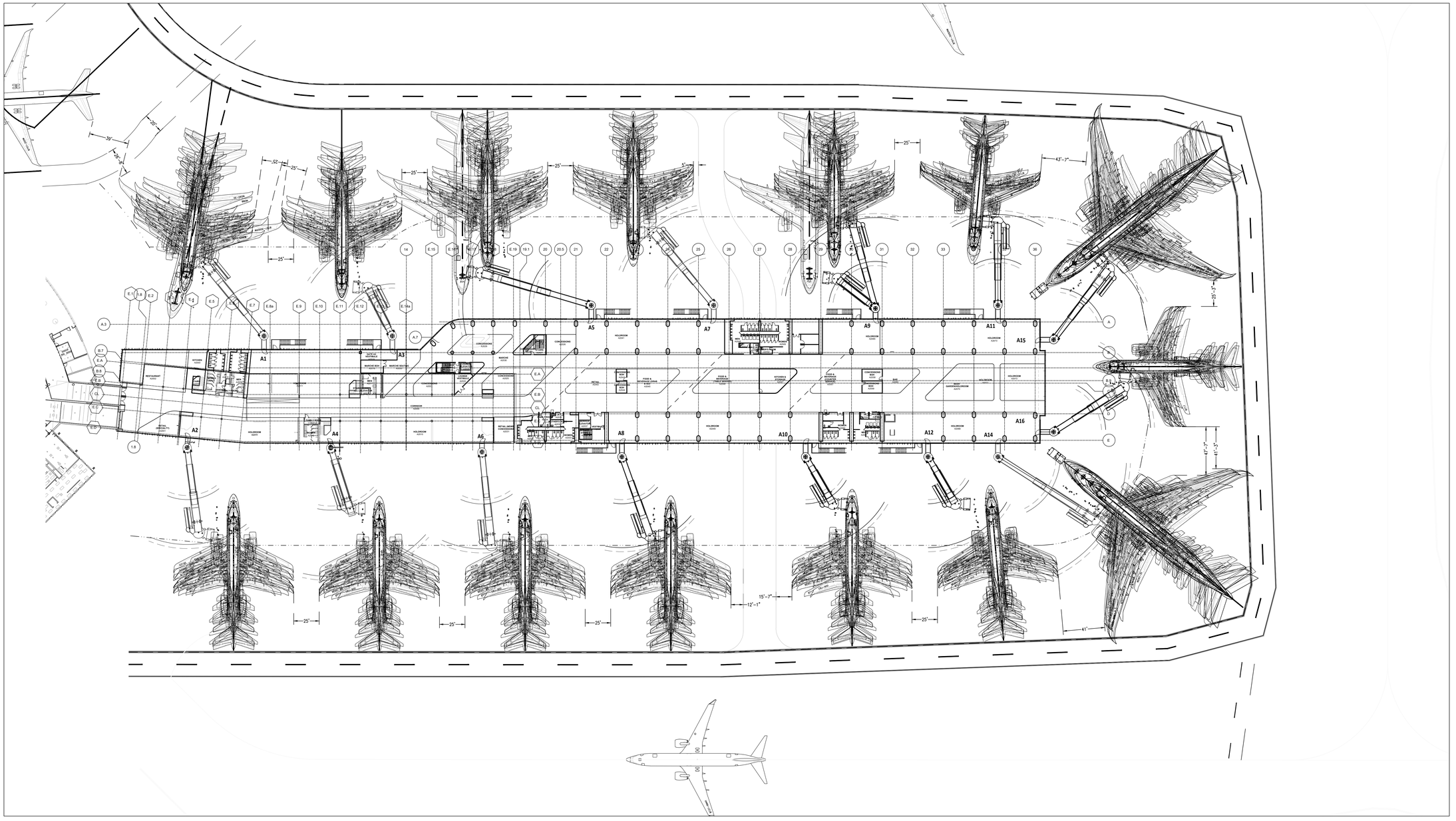
ISSUE
PBB PROCUREMENT

SHEET TITLE
TEMPORARY AIRCRAFT PARKING LAYOUT PHASE 1

SHEET NO.
AP-1.1



PASSENGER BOARDING BRIDGE AND SERVICE DATA

GATE NO.	BOARDING BRIDGE MODEL	WALKWAY OR EXTENDED CORRIDOR	ROTUNDA FLOOR HEIGHT	PCA (POINT-OF-USE)	400HZ (POINT-OF-USE)	NOTES
A1	(R) A3-58/110	(N) 8'-6" EXT. CORR.	11'-7 3/4"	(R) 30 TON	(R) 90 KVA	(E) GATE A1 PBB, PCA, & 400HZ REMOVED AND REINSTALLED AT (N) GATE A1 LOCATION
A2	(E) A3-58/110	(E) 5'-6" EXT. CORR.	11'-7 3/4"	(E) 30 TON	(E) 90 KVA	(E) GATE A2 PBB, PCA, & 400HZ TO REMAIN. (E) EXTENDED CORRIDOR TO BE MODIFIED TO ACCOMMODATE NEW EXTERIOR WALL LOCATION.
A3	(R) A3-58/110	(N) 8'-6" EXT. CORR.	11'-5 1/2"	(R) 30 TON	(R) 90 KVA	(E) GATE A3 PBB, PCA, & 400HZ REMOVED AND REINSTALLED AT (N) GATE A3 LOCATION
A4	(E) A3-68/141	N/A	11'-6 1/4"	(E) 30 TON	(E) 90 KVA	(E) GATE A4 PBB, PCA, & 400HZ TO REMAIN. INSTALL OFFSET ROTUNDA BASE PLATE ADAPTER TO ACCOMMODATE NEW EXTERIOR WALL LOCATION
A5	(N) A3-68/141	(N) 8'-6" EXT. CORR.	11'-6"	(N) 45 TON	(N) 90 KVA	(N) PBB, PCA, & 400HZ
A6	(E) A3-58/110	(E) 5'-6" EXT. CORR.	11'-7"	(E) 30 TON	(E) 90 KVA	(E) GATE A6 PBB, PCA, & 400HZ TO REMAIN. (E) EXTENDED CORRIDOR TO BE MODIFIED TO ACCOMMODATE NEW EXTERIOR WALL RELOCATION.
A7	(R) A3-58/110	(N) 8'-6" EXT. CORR.	11'-5"	(R) 30 TON	(R) 90 KVA	(E) GATE A5 PBB, PCA, & 400HZ RELOCATED TO (N) GATE A7 LOCATION
A8	(N) A3-53/104	(N) 8'-6" EXT. CORR.	11'-6"	(N) 45 TON	(N) 90 KVA	(N) PBB, PCA, & 400HZ
A9	(N) A3-53/104	(R) 5'-6" EXT. CORR.	11'-6"	(N) 45 TON	(N) 90 KVA	(N) PBB, PCA, & 400HZ, (E) EXTENDED CORRIDOR FROM (E) GATE A5 TO BE RELOCATED TO (N) GATE A9 LOCATION
A10	(N) A3-53/104	(N) 8'-6" EXT. CORR.	11'-6"	(N) 45 TON	(N) 90 KVA	(N) PBB, PCA, & 400HZ
A11	(N) A3-53/104	(N) 8'-6" EXT. CORR.	11'-6"	(N) 45 TON	(N) 90 KVA	(N) PBB, PCA, & 400HZ
A12	(N) A3-58/110	(N) 8'-6" EXT. CORR.	11'-6"	(N) 45 TON	(N) 90 KVA	(N) PBB, PCA, & 400HZ
A14	(R) A3-68/141	(N) 8'-6" EXT. CORR.	11'-7"	(R) 75 TON	(R) 140 KVA	(E) GATE A7 (TEMP. A8) PBB, PCA, & 400HZ RELOCATED TO (N) GATE A14 LOCATION
A15	(N) A3-58/110	(N) 8'-6" EXT. CORR.	11'-6"	(N) 75 TON	(N) 180 KVA	(N) PBB, PCA, & 400HZ
A16	(N) A3-58/110	(N) 8'-6" EXT. CORR.	11'-6"	(N) 45 TON	(N) 90 KVA	(N) PBB, PCA, & 400HZ

(E) EXISTING
(N) NEW
(R) RELOCATED

AIRCRAFT SERVICE CHART

	GATE NO.	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A14	A15	A16
ADG II	ERJ-135	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	ERJ-145	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	CRJ-700	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ADG III	CRJ-900	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	A220-100/CS100	X	X	X(3)	X	X	X	X	X	X	X	X	X	X	X	X
	A220-300/CS300	X	X	X(3)	X	X	X	X	X	X	X	X	X	X	X	X
	EMB-175EWT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	EMB-190	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	B717	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	MD-88	X	X	X(3)	X	X	X	X	X	X	X	–	X	X	X	–
	MD-90	X	X	X(3)	X	X	X	X	X	X	X	–	X	X	X	–
	A319S	X	X	X(3)	X	X	X	X	X	X	X	X	X	X	X	X
	A320S	X	X	X(3)	X	X	X	X	X	X	X	X	X	X	X	X
	A321S	x	X	X(3)	X	X	X	X	X	X	X	X	X	X	X	X
	B737-400	X	X	X(3)	X	X	X	X	X	X	X	X	X	X	X	X
	B737-MAX 7	X	X	X(3)	X	X	X	X	X	X	X	X	X	X	X	X
	B737-MAX 8	X	X	X(3)	X	X	X	X	X	X	X	X	X	X	X	X
	B737-MAX 9	X	X	X(3)	X	X	X	X	X	X	X	X	X	X	X	X
ADG IV	B757-200W	X(2)	–	–	–	X(1)	–	–	–	X	–	–	–	X	X	–
	B757-300W	X(2)	–	–	–	X(1)	–	–	–	X	–	–	–	X	X	–
	B767-300ERW	X(1)	–	–	–	X(1)	–	–	–	X	–	–	–	X	X	–
ADG V	B787-800	–	–	–	–	–	–	–	–	–	–	–	–	X	X	–
	B787-900	–	–	–	–	–	–	–	–	–	–	–	–	X	X	–
	A330-200	–	–	–	–	–	–	–	–	–	–	–	–	X	X	–
	A330-300	–	–	–	–	–	–	–	–	–	–	–	–	X	X	–
	A350-900	–	–	–	–	–	–	–	–	–	–	–	–	X	X	–
	B777-200LR	–	–	–	–	–	–	–	–	–	–	–	–	X	X	–

AIRCRAFT SERVICE CHART LEGEND:

(1) AIRCRAFT SERVICE CLOSES GATE A3
(2) AIRCRAFT SERVICE RESTRICTS GATE A3 TO A MAXIMUM EMB-190
(3) AIRCRAFT SERVICE RESTRICTS GATE A1 TO A MAXIMUM 737-9MAX & CLOSES POSITION A5A
(4) AIRCRAFT SERVICE CLOSES POSITION A5A

GENERAL NOTES:

1. EXISTING CONDITIONS SHOWN ARE BASED FILES PROVIDED TO ASE BY OTHERS. ASE IS NOT RESPONSIBLE FOR ANY DIFFERENCES THEROF. CONTACT ENGINEER IF DISCREPANCIES ARISE.

2. RAMP STRIPING DRAWINGS TO BE PROVIDED UNDER A SEPARATE DESIGN PACKAGE.

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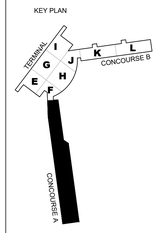

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SHEET TITLE
NEW AIRCRAFT PARKING LAYOUT

SHEET NO.
AP-2.0

SYMBOLS:

J	JUNCTION BOX
J	CEILING MOUNTED JUNCTION BOX
	PIN AND SLEEVE TYPE 3R CONNECTOR
	PUSH-BUTTON STATION
	DISCONNECT SWITCH – SIZE/POLES/FUSE/ENCLOSURE MOUNT 48" AFF
	EQUIPMENT CONTROLLER
	COMBINATION MOTOR CONTROLLER DISCONNECT SWITCH SIZE/POLES/FUSE/ENCLOSURE MOUNT 48" AFF
	FUSED DISCONNECT SWITCH
OR	FUSE
	FLEXIBLE RACEWAY (LIQUID-TIGHT AS NECESSARY)
ø	PHASE
	RACEWAY CONCEALED IN FLOOR OR UNDERGROUND
	EXPOSED RACEWAY
■	LIQUID TIGHT CABLE GRIP
■ WM	LIQUID TIGHT WIRE MESH STRAIN RELIEF
	CIRCUIT BREAKER W/ FRAME & TRIP RATINGS INDICATED
T	DRY TYPE TRANSFORMER (UNLESS OTHERWISE NOTED)
	GROUND CONNECTION
	GROUNDING ELECTRODE
	MOTOR, WITH HP INDICATED
E	ELECTRIC UTILITY METER AS NOTED
	POTABLE WATER CABINET

ABBREVIATIONS:

A	AMP OR AMPERE
ADGS	AIRCRAFT DOCKING GUIDANCE SYSTEM – AUTOMATIC
ADGU	AIRCRAFT DOCKING UNIT – MANUAL
AHU	AIR HANDLER UNIT
AIC	AMPERE INTERRUPTING CAPACITY
AFF	ABOVE FINISHED FLOOR
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AL	ALUMINUM
ALRC	ALUMINUM RIGID CONDUIT
ASE	AERO SYSTEMS ENGINEERING, INC.
ASY	ASYMMETRICAL
AWG	AMERICAN WIRE GAUGE
AWS	AMERICAN WELDING SOCIETY
BDP	BRIDGE DISTRIBUTION PANEL
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CLF	CURRENT LIMITING FUSE
CT	CURRENT TRANSFORMER
Cu	COPPER
CW	CLOCKWISE
CCW	COUNTER CLOCKWISE
CRS	COLD ROLLED STEEL
DISC.	DISCONNECT
DIA	DIAMETER
DX	DIRECT EXPANSION
(E)	EXISTING
EMT	ELECTRICAL METALLIC TUBING
F	FUSE
FIDS	FLIGHT INFORMATION DISLPLAY SYSTEM
FP	FIRE ALARM PULL STATION
FLA	FULL LOAD AMPS
FUS	FUSIBLE
G OR GND	GROUND
GPU	GROUND POWER UNIT (400HZ OR 28VDC AS INDICATED)
GS	GROUND SERVICES (AIRCRAFT)
GSE	GROUND SERVICES EQUIPMENT (AIRCRAFT)
H	HEIGHT
HP	HORSEPOWER
HZ	HERTZ
IMC	INTERMEDIATE METAL CONDUIT
J	JUNCTION BOX
KVA	KILOVOLT AMPERE
KW	KILOWATT
MLO	MAIN LUG ONLY
MNPT	MALE NATIONAL PIPE THREAD
(N)	NEW
N1	NEMA 1 OR INDOOR ENCLOSURE
N3R	NEMA 3R OR OUTDOOR ENCLOSURE
NEC	NATIONAL ELECTRICAL CODE
NF	NON-FUSIBLE
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OCP	OVER CURRENT PROTECTION
P	POLE
PBB	PASSENGER BOARDING BRIDGE, PASSENGER LOADING BRIDGE, OR LOADING BRIDGE
PCA	PRECONDITIONED AIR
POU	POINT OF USE
PVC	POLYVINYL CHLORIDE CONDUIT
PW	POTABLE WATER
PWC	POTABLE WATER CABINET
R	RADIUS
(R)	RELOCATED
RIDS	RAMP INFORMATION DISPLAY SYSTEM
RGS	RIGID GALVANIZED STEEL
RMS	ROOT MEAN SQUARE
SC	SCREW COVER
SD	SMOKE DETECTOR
SOW	SUNLIGHT, OIL AND WATER RESISTANT, SIZE AS INDICATED
SS	STAINLESS STEEL
SSFC	SOLID STATE FREQUENCY CONVERTER
SWBD	SWITCHBOARD
TSP	TWISTED SHIELDED PAIR
TYP	TYPICAL
UG	UNDERGROUND OR SUB-SURFACE
UL	UNDERWRITERS LABORATORIES
UPS	UN-INTERRUPTABLE POWER SUPPLY
V	VOLTS
VA	VOLT AMPERE
W	WIDTH
XFMR	TRANSFORMER
400HZ	400 HERTZ AIRCRAFT GROUND POWER

GENERAL NOTES:

1. DRAWING TITLES USED THROUGHOUT THIS PACKAGE ARE FOR CONVENIENCE ONLY AND SHOULD NOT BE CONSTRUED TO LIMIT THE CONTRACTOR'S WORK SHOWN THEREON. A GENERAL SUMMARY OF THE CONTRACTOR'S SCOPE OF WORK CAN BE SEEN IN THE BELOW SCHEDULE. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE AND INSTALL EQUIPMENT AS NECESSARY TO MEET THE DESIGN INTENT OF THIS PACKAGE AND TO PROVIDE AND INSTALL COMPLETE AND OPERABLE FINAL SYSTEMS.
2. NOT ALL SYMBOLS OR ABBREVIATIONS ARE NECESSARILY USED IN THIS DRAWING PACKAGE.
3. EQUIPMENT, TERMINATIONS, INSTALLATION DETAILS WITHIN THIS PACKAGE ARE PROVIDED AS A DESIGN INTENT ONLY. PROVIDE ALL INSTALLATION SERVICES, MATERIALS, ETC. AS NECESSARY TO INSTALL ACTUAL EQUIPMENT. ALL COSTS TO BE COVERED UNDER BASE BID.
4. ALL COMMISSIONING AND TESTING FOR INDICATED EQUIPMENT SHALL BE INCLUDED AS PART OF THIS CONTRACT.
5. THE TERM LOADING BRIDGE MAY ALSO BE REFERRED TO AS PASSENGER BOARDING BRIDGE (PBB) THROUGHOUT THE PROJECT. EITHER TERM IS USED TO IDENTIFY THE EQUIPMENT USED AS THE WALKWAY, FIXED AT THE TERMINAL OR BUILDING FACE, USED TO LOAD AND/OR OFFLOAD PASSENGERS TO/FROM AIRCRAFT PARKED AT THE GATE.
6. WORK AREAS AND STORAGE/LAY DOWN AREAS SHALL BE LIMITED TO THE RAMP AREA IN THE VICINITY OF THE SHUT DOWN GATE. DO NOT IMPACT OPERATIONS AT ADJACENT GATES.
7. PROVIDE APPROVED BARRICADES AROUND GATE AREAS DURING BRIDGE ERECTION AND CRANE OPERATIONS.
8. SEE SPECIFICATIONS FOR ADDITIONAL COORDINATION INFORMATION OR DETAILS.

ELEVATE
PROJECT TEAM

PROGRAM MANAGER / INTERIORS / PLANNING / MEP / FP
MEAD & HUNT

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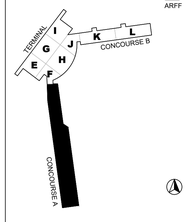

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PBB PROCUREMENT

SHEET TITLE
PBB SYMBOLS AND ABBREVIATIONS

SHEET NO.
PBB-0.1

PLOT DATE:
TEMPLATE VERSION:

GENERAL NOTES:

1. WORK ONLY WITHIN THE DESIGNATED CONSTRUCTION WORK LIMITS.

2. MEET WITH GERALD R. FORD INTERNATIONAL AIRPORT (GRR) PROJECT REPRESENTATIVE (PR) AT THE START OF EACH DAY TO COORDINATE DAILY CONSTRUCTION ACTIVITIES.

3. ALL PAVED AREAS AFFECTED BY CONSTRUCTION EQUIPMENT INGRESS AND EGRESS SHALL BE KEPT CLEAR OF FOREIGN OBJECT DEBRIS (FOD) AND SWEPT CLEAN CONTINUOUSLY, OR AS DIRECTED BY THE PR. THE ACCESS ROUTES ARE LOCATED ON AN ACTIVE AIRPORT AND ALL DEBRIS MUST BE REMOVED IMMEDIATELY TO ELIMINATE THE POTENTIAL OF FOD DAMAGE TO PROPERTY OR HARM TO PEOPLE.

4. THE CONTRACTOR IS TO INSTRUCT HIS PERSONNEL ON SAFETY ISSUES AND SEVERITY OF VIOLATIONS TO SAFETY ON AN OPERATIONAL AIRFIELD. REPEAT VIOLATIONS WILL BE GROUNDS FOR REFUSING ACCESS TO THE AIRFIELD FOR SPECIFIC INDIVIDUALS.

5. ANY DAMAGES INCURRED BY THE AIRPORT OR ITS TENANTS, CAUSED BY THE CONTRACTOR, SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

6. ALL AREAS OUTSIDE THE LIMITS OF CONSTRUCTION INCLUDING ACCESS ROADS WHICH ARE DAMAGED BY THE CONTRACTOR SHALL BE RESTORED TO THEIR ORIGINAL CONDITION TO THE SATISFACTION OF THE ENGINEER.

7. TAKE ALL NECESSARY PRECAUTIONS TO PREVENT WASTE AND LOOSE BLOWING MATERIALS (FOD) FROM GETTING INTO THE AOA.

8. ENSURE THAT ALL AIRPORT SURFACES (PAVED OR UNPAVED) REMAIN CLEAR OF ALL FOD.

9. OBTAIN ANY PERMITS THAT MAY BE NECESSARY FOR THE PROJECT.

10. AT NO TIME SHALL ANY EXCAVATED AREAS BE LEFT UNATTENDED IN THE VICINITY OF THE ACTIVE AIRFIELD, UNLESS ADEQUATELY PROTECTED SUBJECT TO THE REVIEW AND SATISFACTION OF THE OWNER.

11. THESE NOTES ARE SUPPLEMENTARY TO FAA ADVISORY CIRCULAR 150/5370-2F, "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION," AND THE CONSTRUCTION OPERATION PLANS. THE DIRECTION PROVIDED THEREIN MUST BE ADHERED TO.

12. REMOVE ALL WASTE MATERIALS FROM THE SITE ON A DAILY BASIS.

13. NOT ALL NOTES NECESSARILY APPLY TO THE INTENDED SCOPE.

14. APPROVED STANDARD BARRICADES ARE TO BE FURNISHED AND INSTALLED TO PREVENT INADVERTENT AIRCRAFT ENTRY INTO WORK AREAS.

15. CRANES:
    - A. USE OF TOWER CRANES OR OTHER CRANES OR HOISTING EQUIPMENT WITH FIXED BOOMS THAT CANNOT BE LOWERED ARE PROHIBITED.
    - B. TYPICAL CRANE USAGE SHALL BE LIMITED TO NO MORE THAN 125 TON HYDRAULIC RUBBER WHEELED CRANE.
    - C. OUTRIGGERS MUST USE PADS TO PREVENT DAMAGE TO RAMP SURFACES. MAINTAIN MINIMUM 5' FROM ANY CONCRETE EDGE.
    - D. BOOM MUST BE EQUIPPED WITH A 3'x3' ORANGE/WHITE CHECKERED FLAG AND WARNING LIGHTS WHEN OPERATING AT GREATER THAN 30' IN ACCORDANCE WITH FAA ADVISORY CIRCULAR 70/7460-1L.
    - E. CRANES NOT IN USE OR STAGED ON SITE SHALL BE KEPT IN A BOOM DOWN CONDITION.
    - F. BOOM HEIGHTS SHALL BE LIMITED TO A MAXIMUM OPERATIONAL HEIGHT OF 60' ABOVE RAMP LEVEL AND WITHIN FAA PART 77 SURFACE LIMITATIONS.

17. PROVIDE ALL MATERIALS AND WORKMANSHIP IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES, ORDINANCES, AND REGULATIONS. OBTAIN ALL REQUIRED PERMITS (BUILDING, BURN, ETC.), FINAL INSPECTIONS, CERTIFICATIONS AND CLOSE-OUT OF PERMITS.

18. CHECK ALL CONTRACT DOCUMENTS, FIELD CONDITIONS, AND DIMENSIONS FOR ACCURACY AND IF THERE ARE ANY QUESTIONS, OBTAIN A CLARIFICATION FROM THE ENGINEER BEFORE PROCEEDING WITH THE WORK IN QUESTION OR RELATED WORK.

19. DO NOT SCALE DRAWINGS, WRITTEN DIMENSIONS SHALL ALWAYS GOVERN. SCALES SHOWN ARE FOR REFERENCE ONLY. FIELD VERIFY ALL SCALES AND DIMENSIONS. CONTACT THE ENGINEER FOR ANY REQUIRED ADDITIONAL INFORMATION PRIOR TO PROCEEDING WITH THE WORK IN QUESTION.

20. LARGE SCALE DRAWINGS TAKE PRECEDENCE OVER SMALL SCALE, DETAILS TAKE PRECEDENCE OVER ALL. NOTIFY ENGINEER OF CONFLICTS IN WRITING, PRIOR TO PROCEEDING WITH THE WORK IN QUESTION.

21. AT COMPLETION OF THE WORK, REMOVE ALL MARKS, STAINS, FINGERPRINTS, DUST, DIRT, SPLATTERED PAINT, AND BLEMISHES RESULTING FROM THE VARIOUS OPERATIONS THROUGHOUT THE PROJECT.

22. DO NOT INTERRUPT SERVICE TO PARTS OF THE BUILDING OUTSIDE CONTRACT LIMITS OF THIS PROJECT.

23. DETAILS ARE USUALLY KEYED ONLY ONCE (ON THE PLANS OR ELEVATIONS WHEN THEY FIRST OCCUR) AND ARE TYPICAL FOR SIMILAR CONDITIONS THROUGHOUT UNLESS OTHERWISE NOTED.

24. "TYPICAL" OR "TYP." MEANS FOR ALL SIMILAR CONDITIONS, UNLESS OTHERWISE NOTED.

25. NOT ALL SYMBOLS ARE NECESSARILY USED ON THIS PROJECT.

26. ALL DIMENSIONS GIVEN AS CLEAR ARE NOT ADJUSTABLE WITHOUT ARCHITECT/ ENGINEERS APPROVAL.

27. ALL EXISTING MATERIALS ARE NOTED AS EXISTING OR (E). OTHER NOTES AND ITEMS ARE NEW OR (N), EITHER LABELED AS NEW OR NOT.

28. THIS DRAWING PACKAGE IS BASED ON CURSORY FIELD OBSERVATIONS AND IS USED TO DEPICT A DESIGN INTENT ONLY. FIELD VERIFY EXISTING CONDITIONS AND EXPECT SOME DEVIATIONS BETWEEN ACTUAL CONDITIONS AND DRAWINGS.

29. THESE DRAWINGS DEPICT EXISTING AND COMPLETED CONDITIONS. THEY DO NOT INCLUDE COMPONENTS THAT MAY BE NECESSARY FOR CONSTRUCTION SAFETY. CONTRACTOR SHALL BE RESPONSIBLE FOR SAFETY IN AND AROUND THE JOB SITE.

30. ALL WORK ASSOCIATED WITH THE REMOVAL AND INSTALLATION OF EQUIPMENT SHALL BE PERFORMED BY AN EXPERIENCED CONTRACTOR IN ACCORDANCE WITH THE SPECIFICATIONS. AIRPORT SHALL BE GIVEN 48 HOURS ADVANCED NOTICE OF WORK BEING PERFORMED, AND WORK TIMES SHALL OCCUR FROM 12AM TO 3:30 PM. NO PROCEDURES, MEANS, OR METHODS INDICATED HEREIN ARE TO BE CONSTRUED AS TO LIMIT THE CONTRACTOR(S)' MEANS, METHODS, TECHNIQUES OR SEQUENCES TO CARRY OUT THE WORK.

31. ALL POWER OUTAGES TO BE COORDINATED WITH THE OWNER. POWER OUTAGE WILL LIKELY BE BETWEEN 12:00AM AND 5:00AM ONLY.

32. THE FACILITY IS AN ACTIVE AIRPORT. ALL WORK IS TO BE COORDINATED WITH THE OWNER'S AUTHORIZED REPRESENTATIVE.

33. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. ADVISE ENGINEER IF MANUFACTURER'S INSTRUCTIONS DEVIATE FROM DESIGN INTENT OR DETAILS.

34. ALL EQUIPMENT DETAILS SHOWN ARE FOR REFERENCE ONLY. FIELD VERIFY ALL (E) DETAILS, AND COORDINATE THE (N) INSTALLATION BASED ON (E) CONDITIONS AS WELL AS DETAILS FOR THE EQUIPMENT PROVIDED HEREUNDER.

35. THE ENGINEER HAS MADE EVERY EFFORT TO SET FORTH IN THE BID DOCUMENTS THE COMPLETE SCOPE OF WORK FOR THE PROJECT. PROPOSERS ARE CAUTIONED THAT MINOR OMISSIONS AND DISCREPANCIES IN THE DOCUMENTS DO NOT EXCUSE OR EXCLUDE PROPOSERS FROM PROVIDING PROPOSAL PRICES TO COMPLETE THEIR RESPECTIVE PORTIONS OF THE PROJECT TO THE INTENT OF THESE DESIGN DOCUMENTS. IT IS THE RESPONSIBILITY OF THE PROPOSERS TO BRING ANY CONFLICTS, OMISSIONS OR DISCREPANCIES TO THE ATTENTION OF THE OWNER PRIOR TO THE SUBMITTAL OF THE PROPOSER'S BID. SUBMISSION OF BIDS OR OFFERS SHALL BE CONSIDERED AS PROPOSER'S EVIDENCE OF HAVING PERFORMED PROJECTS OF SIMILAR SIZE AND SCOPE AND AS PROPOSER'S ACCEPTANCE OF THESE TERMS AND CONDITIONS. AFTER EXECUTION OF THE CONTRACT, NO EXTRA CHARGE WILL BE ALLOWED FOR ITEMS OF WORK, WHERE SUCH ITEMS ARE CONCLUDED TO CONFORM WITH NORMAL CONSTRUCTION PRACTICES AND METHODS OF PROJECTS WITH SIMILAR SCOPES.

36. REPAIR ANY DAMAGE CAUSED OR CREATED BY CONTRACTOR TO (E) FACILITIES, EQUIPMENT, DEVICES, ETC. TO A PREVIOUSLY EXISTING CONDITION AT NO ADDITIONAL COST TO OWNER.

37. PROTECT ALL EQUIPMENT AND BRACKETS DURING MODIFICATIONS.

38. REPAIR ALL SCRATCHES, BLEMISHES, ETC. RESULTING FROM THE MODIFICATION OF EQUIPMENT.

39. ADJUST LIMITS OF PBB SUCH AS NECESSARY TO PREVENT ANY DAMAGE TO NEWLY INSTALLED OR EXISTING EQUIPMENT.

40. WHEN WELDING ON THE BRIDGE, MAINTAIN A MAXIMUM OF 18" BETWEEN THE ARCING ELECTRODE AND THE GROUNDING CONNECTION, SO AS TO ENSURE THAT WELDING CURRENT FLOWS IN THE ACTUAL MATERIAL BEING WELDED ONLY.

41. THE DRAWINGS ARE BASED ON AVAILABLE AS-BUILT INFORMATION AND CURSORY FIELD OBSERVATIONS BY THE ENGINEER. FIELD VERIFY ALL CONDITIONS PRIOR TO COMMENCING WITH THE WORK. EXPECT SOME DEVIATIONS.

42. NOT ALL SYSTEMS AND SERVICES SHOWN FOR CLARITY. ALL MAJOR POWER CIRCUITS SHOWN. DISCONNECT, EXTEND, REMOVE, DISCARD, REINSTALL, AND CONNECT AS REQUIRED TELEPHONE SERVICE, SECURITY DEVICES, TEMP SENSORS, COMMUNICATIONS BUSSES, ETCETERA FOR A COMPLETE AND OPERATIONAL INSTALLATION.

43. ALL PBB INTERIOR INSTALLATIONS ON WALL PANELS SHALL UTILIZE INSTALLATION METHODS THAT DO NOT REQUIRE PENETRATION OF WALL BOARDS WITH SCREWS OR THE LIKE.

44. PREPARE, PATCH, PRIME AND PAINT AS NECESSARY ALL POINTS OF DEMOLITION TO MATCH SURROUNDING SUBSTRATES.

45. ALL EQUIPMENT INSTALLED OR RE-INSTALLED ON PBB SHALL BE PAINTED TO MATCH THE PBB ON WHICH IT IS INSTALLED.

46. PROVIDE & INSTALL SECURE WEATHERPROOFING ON ANY WALKWAYS OR BUILDING ELEMENTS EXPOSED DUE TO CONSTRUCTION ACTIVITIES AS NECESSARY.

47. ALL (N) EQUIPMENT IDENTIFIED HEREIN REPRESENTS A DESIGN INTENT ONLY. MANUFACTURER AND CONTRACTOR SHALL COORDINATE AS NECESSARY TO DESIGN MANUFACTURE AND INSTALL IDENTIFIED EQUIPMENT IN A MANNER TO COORDINATE WITH ALL FIELD CONDITIONS AND OTHER IDENTIFIED EQUIPMENT.

PLOT DATE:

TEMPLATE VERSION:

ELEVATE

PROJECT TEAM

PROGRAM MANAGER / INTERIORS / PLANNING / MEP / FP
MEAD & HUNT

ARCHITECT
HKS INC

IT / SECURITY
MOYE CONSULTING

CIVIL / STRUCTURAL
C&S COMPANIES

SIMULATIONS / MODELING
TRANSSOLUTIONS

CONCESSIONS
ICF

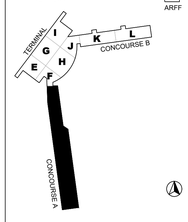
PASSENGER BOARDING BRIDGE CONSULTING
AERO SYSTEMS ENGINNERING

SURVEYOR
NEDERVELD

GEOTECHNICAL
SOMAT ENGINEERING

GRR - PROJECT ELEVATE CONCOURSE A EXPANSION

KEY PLAN



REVISION

NO.	DESCRIPTION	DATE
1	ISSUED FOR BID	01.20.2020

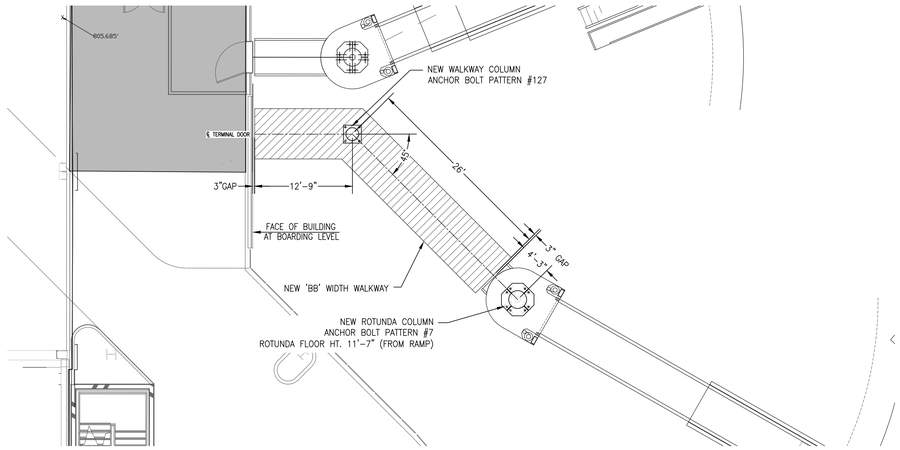
HKS PROJECT NUMBER
22284.000

DATE
12/19/2019

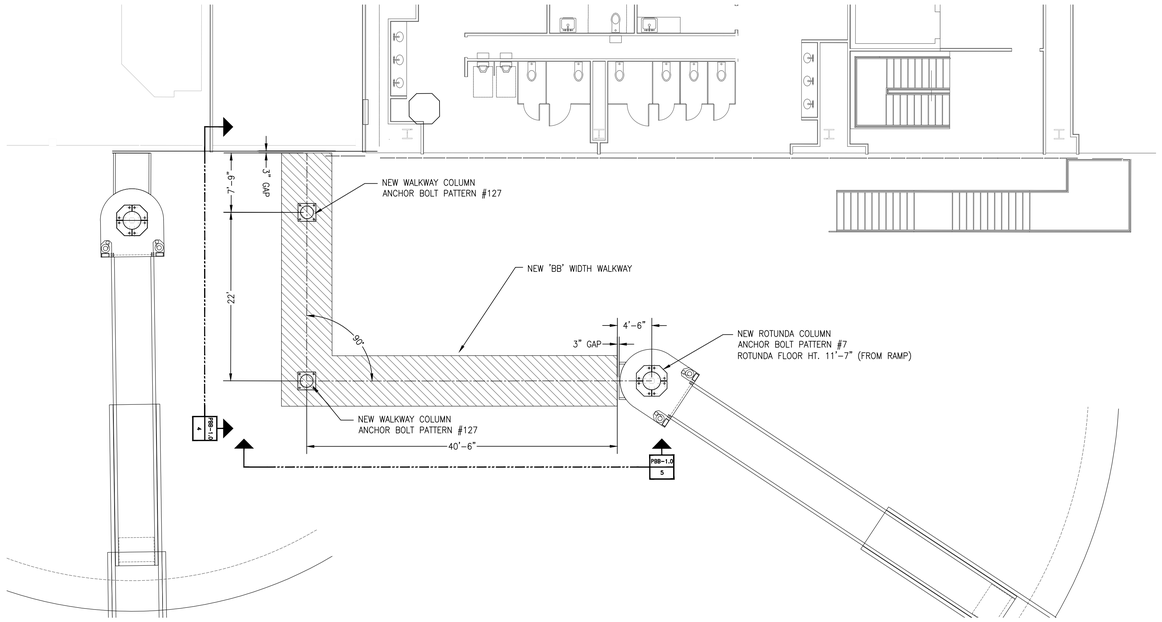
ISSUE
PBB PROCUREMENT

SHEET TITLE
PBB GENERAL NOTES

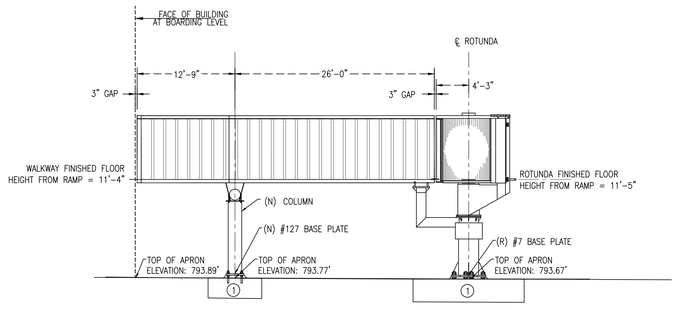
SHEET NO.
AP-0.2



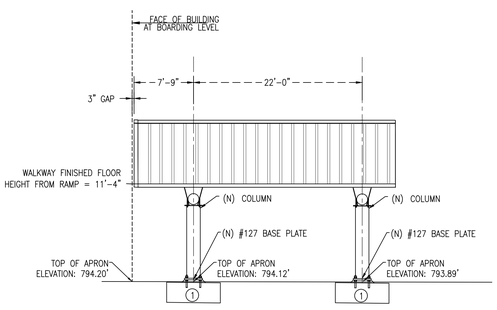
1 PBB-1.0 FIXED WALKWAY – PLAN VIEW – TEMPOARY GATE A5
SCALE: 1/8" = 1'-0"



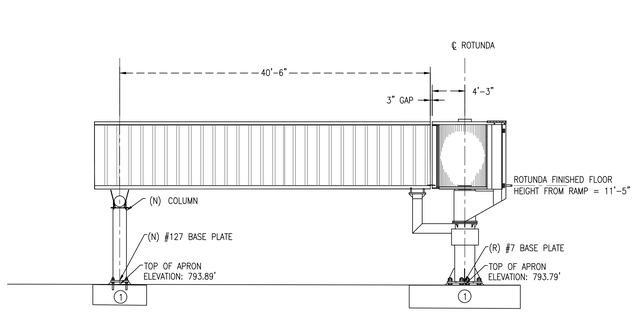
3 PBB-1.0 FIXED WALKWAY – PLAN VIEW – TEMPORARY GATE A8
SCALE: 1/8" = 1'-0"



2 PBB-1.0 FIXED WALKWAY – ELEVATION VIEW – TEMPORARY GATE A5
SCALE: 1/8" = 1'-0"



4 PBB-1.0 FIXED WALKWAY – ELEVATION VIEW – TEMPORARY GATE A8
SCALE: 1/8" = 1'-0"



5 PBB-1.0 FIXED WALKWAY – ELEVATION VIEW – TEMPORARY GATE A8
SCALE: 1/8" = 1'-0"

GENERAL NOTES:

1. GRIND, PRIME AND PAINT SURFACE AT ALL WELDS.
2. FIELD VERIFY EXACT LOCATION OF ALL EQUIPMENT/CONDUIT/CABLES, ETC. PRIOR TO MANUFACTURE OR INSTALLATION.
3. COORDINATE THE INSTALLATION OF ALL EQUIPMENT SUCH THAT BRIDGE MAINTAINS CAPACITY OF FULL DESIGN MOVEMENT. THE BRIDGE ROTATIONAL LIMITS ARE DEFINED AS THE EXTREME C.W. TO THE EXTREME C.C.W. POSITIONS, AS WELL AS THE EXTREME HIGH AND LOW AND EXTREME RETRACTABLE AND EXTENSION POSITIONS. THESE LIMITS SHALL BE THE MECHANICAL LIMITS OF THE BRIDGE AND CAB AS INSTALLED IRRESPECTIVE OF ELECTRICAL LIMIT SET POINTS.
4. ELECTRICAL AND MECHANICAL STOPS SHALL BE ADJUSTED/RELOCATED AS NECESSARY TO PREVENT DAMAGE TO BUILDING ELEMENTS AND/OR RAMP OBSTRUCTIONS, SUCH AS HIGH MAST LIGHTING, IN THE EVENT OF FAILURE OF ANY ELECTRONIC/ELECTRIC STOP CIRCUIT/SWITCH.
5. ALL UNDER BRIDGE CONDUITS AND CABLES SHALL BE INSTALLED SO AS TO MAINTAIN A CLOSE PROXIMITY TO THE BOTTOM OF THE BRIDGE. CABLES SHALL NOT HANG LOOSELY FROM BRIDGE.
6. WHEN WELDING ON THE BRIDGE, MAINTAIN A MAXIMUM OF 18" BETWEEN THE ARCING ELECTRODE AND THE GROUNDING CONNECTION, SO AS TO ENSURE THAT WELDING CURRENT FLOWS IN THE ACTUAL MATERIAL BEING WELDED.
7. EQUIPMENT AND DETAILS SHOWN ARE A DESIGN INTENT ONLY. PROVIDE ALL EQUIPMENT NECESSARY TO MEET THE DESIGN INTENT AND SPECIFICATIONS. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION DETAILS. SUBMIT ALL DETAILS FOR APPROVAL.
8. ALL STRUCTURAL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AWS D1.1.
9. NON DESTRUCTIVE TESTING IN ACCORDANCE WITH AWS STANDARDS SHALL BE PERFORMED ON ALL STRUCTURAL COMPLETE JOINT PENETRATION, PARTIAL JOINT PENETRATION, AND FILLET WELDS.
10. ALL STRUCTURAL STEEL FABRICATION AND ERECTION SHALL BE PROVIDED IN ACCORDANCE WITH THE AISC MANUAL OF STEEL CONSTRUCTION, CURRENT EDITION.
11. DRAWING BASED ON DRAWINGS PROVIDED BY OTHERS AND CURSORY FIELD INSPECTIONS BY THE ENGINEER. CONTRACTOR SHALL FIELD VERIFY ALL NECESSARY DETAILS. EXPECT SOME DEVIATIONS. CONTACT ENGINEER IF DEVIATIONS EXIST.
12. FLEXIBLE CONNECTIONS SHALL BE USED AT ALL PBB TO WALKWAY AND WALKWAY TO BUILDING FACE JUNCTIONS TO PREVENT TRANSMISSION OF VIBRATIONS.
13. ELEVATIONS SHOWN ARE BASED ON DRAWINGS PROVIDED TO AERO BY OTHERS. FIELD VERIFY TERMINAL DOOR HEIGHT AND LOCATIONS PRIOR TO FABRICATION.
14. ELEVATIONS AND DIMENSIONS ARE SHOWN AS A DESIGN INTENT ONLY. FIELD VERIFY ALL DIMENSIONS PRIOR TO EQUIPMENT MANUFACTURE OR INSTALLATION. DEVIATIONS MAY EXIST.
15. VERIFY LOCATION AND SIZES OF ANCHOR BOLTS PRIOR TO INSTALLATION.
16. SEE DRAWING PBB-5.1 FOR PASSENGER BOARDING BRIDGE DETAILS.

SHEET NOTES:

1. SEE STRUCTURAL DRAWINGS FOR WALKWAY AND PBB ROTUNDA FOUNDATION LOCATION AND DETAILS.

PLOT DATE:
TEMPLATE VERSION:

ELEVATE
PROJECT TEAM

PROGRAM MANAGER / INTERIORS / PLANNING / MEP / FP
MEAD & HUNT

ARCHITECT
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IT / SECURITY
MOYE CONSULTING

CIVIL / STRUCTURAL
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PASSENGER BOARDING BRIDGE CONSULTING
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SURVEYOR
NEDERVELD

GEOTECHNICAL
SOMAT ENGINEERING

GRR - PROJECT ELEVATE CONCOURSE A EXPANSION

KEY PLAN
M ARFF
TERMINAL
CONCOURSE B
CONCOURSE A

REVISION

NO.	DESCRIPTION	DATE
1	ISSUED FOR BID	01.20.2020

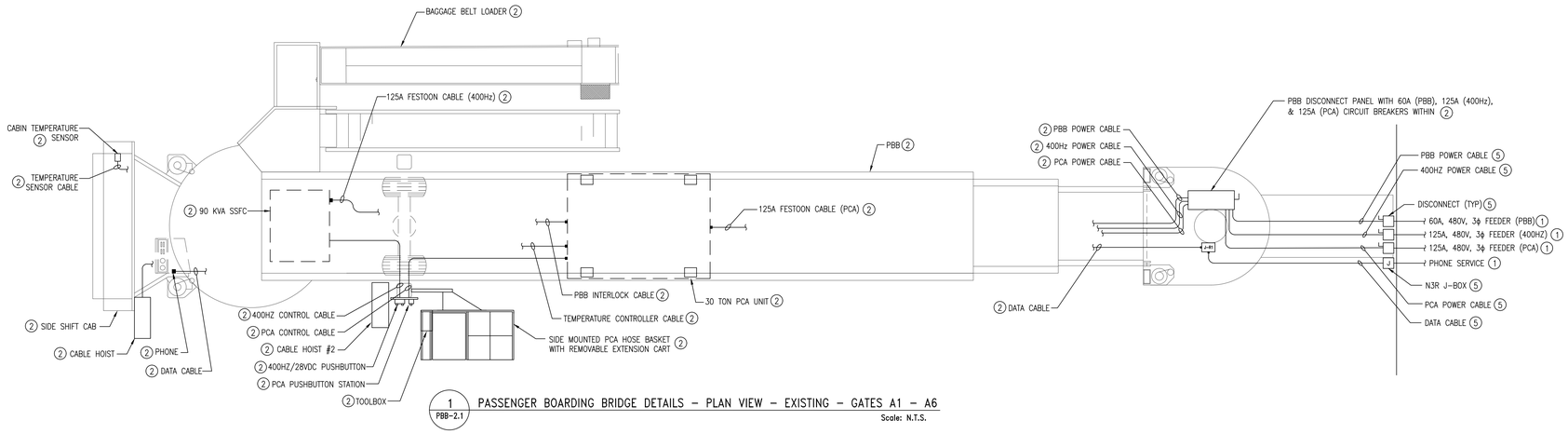
HKS PROJECT NUMBER
22284.000

DATE
12/19/2019

ISSUE
PBB PROCUREMENT

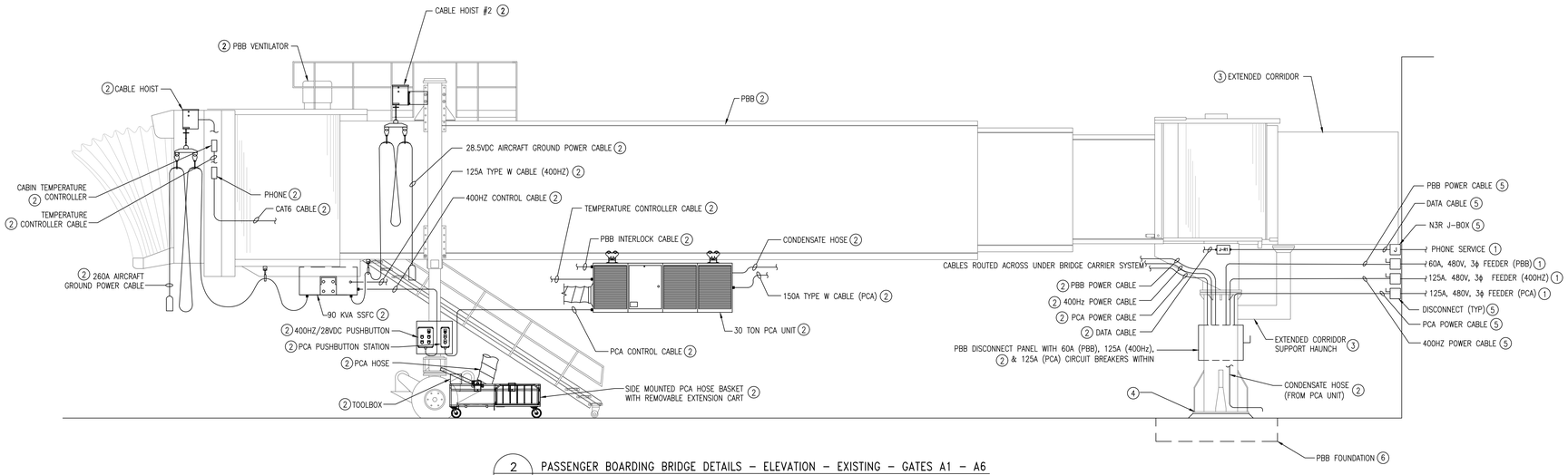
SHEET TITLE
PHASE 1 TEMPORARY WALKWAY DETAILS

SHEET NO.
PBB-1.0



1 PBB-2.1 PASSENGER BOARDING BRIDGE DETAILS – PLAN VIEW – EXISTING – GATES A1 – A6

Scale: N.T.S.



2 PBB-2.1 PASSENGER BOARDING BRIDGE DETAILS – ELEVATION – EXISTING – GATES A1 – A6

Scale: N.T.S.

NOTE:
FOR CLARITY, ALL EQUIPMENT, CONDUIT AND J-BOXES ARE NOT SHOWN.

FOR CLARITY, SOME EQUIPMENT SHOWN OUT OF POSITION.

LEGEND NOTES:

(1) SEE BUILDING ELECTRICAL DRAWINGS FOR DETAILS.

(2) GATE A1: REMOVE AND RELOCATE TO NEW GATE A1 FINAL LOCATION.
GATE A2: EXISTING TO REMAIN.
GATE A3: REMOVE AND RELOCATE TO NEW GATE A3 FINAL LOCATION.
GATE A4: EXISTING TO REMAIN.
GATE A5: REMOVE AND RELOCATE TO TEMPORARY GATE A5 LOCATION.
GATE A6: EXISTING TO REMAIN.

(3) GATE A1 & A5: REMOVE AND DISCARD EXISTING EXTENDED CORRIDOR SECTION. STORE ONE EXTENDED SECTION FOR REUSE AT FINAL GATE A9 LOCATION.
GATE A2 & A6: EXISTING EXTENDED CORRIDOR SECTION TO BE MODIFIED TO ACCOMMODATE NEW BUILDING FACE LOCATION (APPROX. 8" OFFSET FROM THE EXISTING BUILDING FACE LOCATION). FIELD VERIFY DIMENSIONS PRIOR TO MODIFICATION.
GATE A3 & A4: NO EXTENDED CORRIDOR AT THIS GATE.

(4) GATE A4 ONLY: PROVIDE OFFSET ROTUNDA BASE PLATE TO ACCOMMODATE APPROX. 8" OFFSET FROM THE EXISTING BASE PLATE LOCATION.

(5) GATE A1: REMOVE AND DISCARD EXISTING CABLES AND J-BOX/DISCONNECTS.
GATE A2: EXISTING TO REMAIN. BLDG FACE J-BOX/DISCONNECTS TO BE RELOCATED TO NEW BLDG FACE LOCATION.
GATE A3: REMOVE AND DISCARD EXISTING CABLES AND J-BOX/DISCONNECTS.
GATE A4: EXISTING TO REMAIN. BLDG FACE J-BOX/DISCONNECTS TO BE RELOCATED TO NEW BLDG FACE LOCATION.
GATE A5: REMOVE AND DISCARD EXISTING CABLES. BLDG FACE J-BOX/DISCONNECTS TO BE RELOCATED TO TEMPORARY BLDG FACE LOCATION.
GATE A6: EXISTING TO REMAIN. BLDG FACE J-BOX/DISCONNECTS TO BE RELOCATED TO NEW BLDG FACE LOCATION.

(6) SEE BUILDING STRUCTURAL DRAWINGS FOR DETAILS.

GENERAL NOTES:

1. PATCH, PRIME, PAINT SURFACES AT ALL DEMOLITION POINTS TO MATCH EXISTING SURROUNDING SUBSTRATES. FIRE SEAL PENETRATIONS.
2. GRIND, PRIME AND PAINT SURFACE AT ALL WELDS. PAINT SHALL MATCH EXISTING BRIDGE COLOR.
3. VERIFY EXACT LOCATION OF ALL EQUIPMENT/CONDUIT/CABLES, ETC. PRIOR TO INSTALLATION.
4. COORDINATE THE INSTALLATION OF ALL EQUIPMENT SUCH THAT BRIDGE MAINTAINS CAPACITY OF FULL DESIGN MOVEMENT. THE BRIDGE ROTATIONAL LIMITS ARE DEFINED AS THE EXTREME C.W. TO THE EXTREME C.C.W. POSITIONS. THESE LIMITS SHALL BE THE MECHANICAL LIMITS OF THE BRIDGE AND CAB AS INSTALLED IRRESPECTIVE OF ELECTRICAL LIMIT SET POINTS.
5. ALL UNDER BRIDGE CONDUITS AND CABLES SHALL BE INSTALLED SO AS TO MAINTAIN A CLOSE PROXIMITY TO THE BOTTOM OF THE BRIDGE. CABLES SHALL NOT HANG LOOSELY FROM BRIDGE.
6. ELECTRICAL AND MECHANICAL STOPS SHALL BE ADJUSTED/RELOCATED AS NECESSARY TO PREVENT DAMAGE TO BUILDING ELEMENTS AND/OR RAMP OBSTRUCTIONS, SUCH AS HIGH MAST LIGHTING, IN THE EVENT OF FAILURE OF ANY ELECTRONIC/ELECTRIC STOP CIRCUIT/SWITCH.
7. WHEN WELDING ON THE BRIDGE, MAINTAIN A MAXIMUM OF 18" BETWEEN THE ARCING ELECTRODE AND THE GROUNDING CONNECTION, SO AS TO ENSURE THAT WELDING CURRENT FLOWS IN THE ACTUAL MATERIAL BEING WELDED. HOT WORK PERMIT REQUIRED DAILY FOR ANY AND ALL WELDING ACTIVITIES.
8. ALL EQUIPMENT INSTALLED ON BRIDGE SHALL BE PAINTED TO MATCH INSTALLED BRIDGE COLOR.
9. DRAWING BASED ON RECORD DRAWINGS AND CURSORY FIELD INSPECTIONS BY THE ENGINEER. CONTRACTOR SHALL FIELD VERIFY ALL NECESSARY DETAILS. EXPECT SOME DEVIATIONS. CONTACT ENGINEER IF DEVIATIONS EXIST.
10. COORDINATE FLASHING INSTALLATION WITH SECURITY DEVICES INSTALLED. REMOVE AND REINSTALL AS NECESSARY.
11. VERIFY LOCATION AND SIZES OF ANCHOR BOLTS PRIOR TO INSTALLATION.
12. VISUALLY INSPECT FOUNDATIONS AND ANCHOR BOLTS AFTER REMOVAL OF (E) PBB'S. NOTIFY ENGINEER IF DEFICIENCIES ARE OBSERVED.
13. SEE ELECTRICAL DRAWINGS FOR PANEL LOCATIONS.
14. PROVIDE OWNER 72 HOURS NOTICE PRIOR TO REMOVING ANY EQUIPMENT FOR DISPOSAL. PROVIDE OWNER AN OPPORTUNITY TO REMOVE ANY DESIRED SPARE PARTS OR COMPONENTS FOR RETENTION PRIOR TO REMOVAL AND DISPOSAL.
15. EQUIPMENT AND DETAILS SHOWN ARE A DESIGN INTENT ONLY. PROVIDE ALL EQUIPMENT NECESSARY TO MEET THE DESIGN INTENT AND SPECIFICATIONS. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION DETAILS. SUBMIT ALL DETAILS FOR APPROVAL.
16. ALL STRUCTURAL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AWS D1.1.
17. NON DESTRUCTIVE TESTING IN ACCORDANCE WITH AWS STANDARDS SHALL BE PERFORMED ON ALL STRUCTURAL COMPLETE JOINT PENETRATION, PARTIAL JOINT PENETRATION, AND FILLET WELDS.
18. ALL STRUCTURAL STEEL FABRICATION AND ERECTION SHALL BE PROVIDED IN ACCORDANCE WITH THE AISC MANUAL OF STEEL CONSTRUCTION, CURRENT EDITION.

TEMPLATE VERSION:
PLOT DATE:

ELEVATE
PROJECT TEAM

PROGRAM MANAGER / INTERIORS / PLANNING / MEP / FP
MEAD & HUNT

ARCHITECT
HKS INC

IT / SECURITY
MOYE CONSULTING

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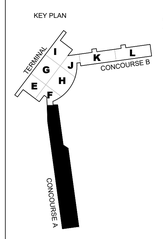
PASSENGER BOARDING BRIDGE CONSULTING
AERO SYSTEMS ENGINNERING

SURVEYOR
NEDERVELD

GEOTECHNICAL
SOMAT ENGINEERING

GRR - PROJECT ELEVATE
CONCOURSE A EXPANSION

KEY PLAN



REVISION

NO.	DESCRIPTION	DATE
1	ISSUED FOR BID	01.20.2020

HKS PROJECT NUMBER
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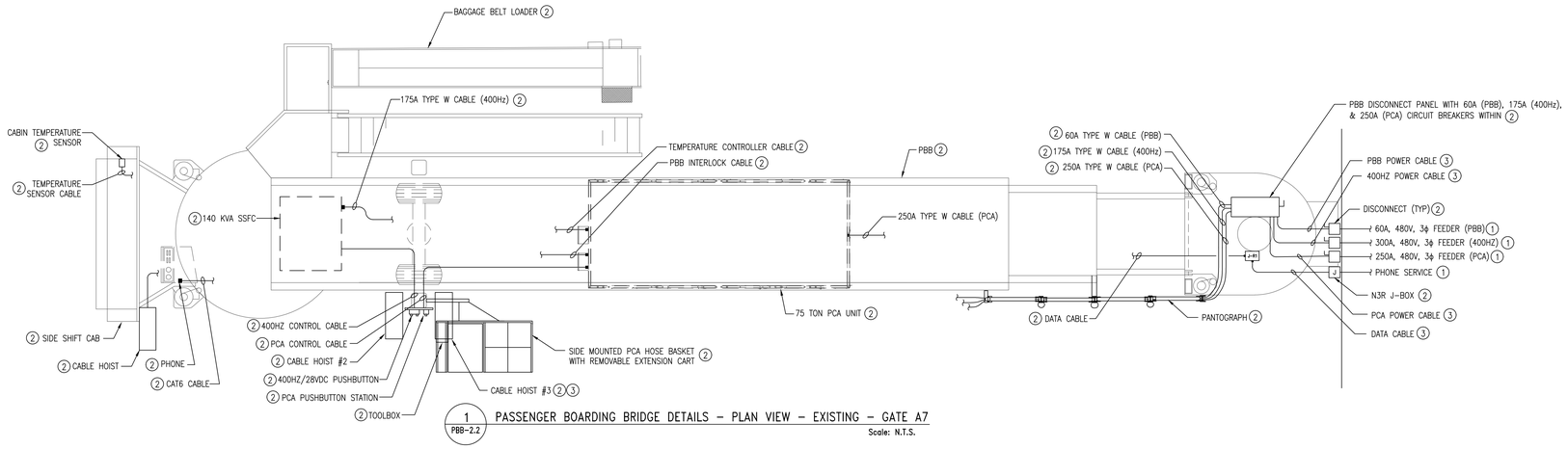
DATE
12/19/2019

ISSUE
PBB PROCUREMENT

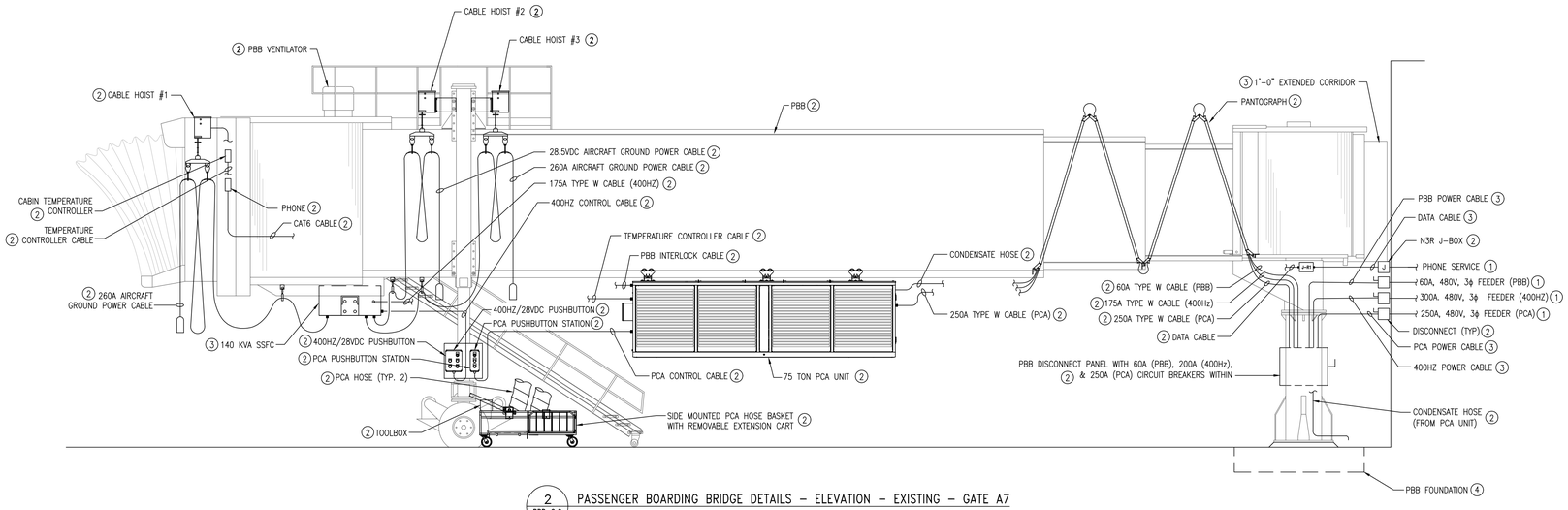
SHEET TITLE
EXISTING PASSENGER BOARDING BRIDGE LAYOUT - GATES A1 - A6

SHEET NO.
PBB-2.1



1 PBB-2.2 PASSENGER BOARDING BRIDGE DETAILS – PLAN VIEW – EXISTING – GATE A7

Scale: N.T.S.



2 PBB-2.2 PASSENGER BOARDING BRIDGE DETAILS – ELEVATION – EXISTING – GATE A7

Scale: N.T.S.

NOTE:
FOR CLARITY, ALL EQUIPMENT, CONDUIT AND J-BOXES ARE NOT SHOWN.

FOR CLARITY, SOME EQUIPMENT SHOWN OUT OF POSITION.

LEGEND NOTES:

1. SEE BUILDING ELECTRICAL DRAWINGS FOR DETAILS.
2. REMOVE AND RELOCATE TO TEMPORARY GATE A8 LOCATION.
3. REMOVE AND DISCARD.
4. SEE BUILDING STRUCTURAL DRAWINGS FOR DETAILS.

GENERAL NOTES:

1. PATCH, PRIME, PAINT SURFACES AT ALL DEMOLITION POINTS TO MATCH EXISTING SURROUNDING SUBSTRATES. FIRE SEAL PENETRATIONS.
2. GRIND, PRIME AND PAINT SURFACE AT ALL WELDS. PAINT SHALL MATCH EXISTING BRIDGE COLOR.
3. VERIFY EXACT LOCATION OF ALL EQUIPMENT/CONDUIT/CABLES, ETC. PRIOR TO INSTALLATION.
4. COORDINATE THE INSTALLATION OF ALL EQUIPMENT SUCH THAT BRIDGE MAINTAINS CAPACITY OF FULL DESIGN MOVEMENT. THE BRIDGE ROTATIONAL LIMITS ARE DEFINED AS THE EXTREME C.W. TO THE EXTREME C.C.W. POSITIONS. THESE LIMITS SHALL BE THE MECHANICAL LIMITS OF THE BRIDGE AND CAB AS INSTALLED IRRESPECTIVE OF ELECTRICAL LIMIT SET POINTS.
5. ALL UNDER BRIDGE CONDUITS AND CABLES SHALL BE INSTALLED SO AS TO MAINTAIN A CLOSE PROXIMITY TO THE BOTTOM OF THE BRIDGE. CABLES SHALL NOT HANG LOOSELY FROM BRIDGE.
6. ELECTRICAL AND MECHANICAL STOPS SHALL BE ADJUSTED/RELOCATED AS NECESSARY TO PREVENT DAMAGE TO BUILDING ELEMENTS AND/OR RAMP OBSTRUCTIONS, SUCH AS HIGH MAST LIGHTING, IN THE EVENT OF FAILURE OF ANY ELECTRONIC/ELECTRIC STOP CIRCUIT/SWITCH.
7. WHEN WELDING ON THE BRIDGE, MAINTAIN A MAXIMUM OF 18" BETWEEN THE ARCING ELECTRODE AND THE GROUNDING CONNECTION, SO AS TO ENSURE THAT WELDING CURRENT FLOWS IN THE ACTUAL MATERIAL BEING WELDED. HOT WORK PERMIT REQUIRED DAILY FOR ANY AND ALL WELDING ACTIVITIES.
8. ALL EQUIPMENT INSTALLED ON BRIDGE SHALL BE PAINTED TO MATCH INSTALLED BRIDGE COLOR.
9. DRAWING BASED ON RECORD DRAWINGS AND CURSORY FIELD INSPECTIONS BY THE ENGINEER. CONTRACTOR SHALL FIELD VERIFY ALL NECESSARY DETAILS. EXPECT SOME DEVIATIONS. CONTACT ENGINEER IF DEVIATIONS EXIST.
10. COORDINATE FLASHING INSTALLATION WITH SECURITY DEVICES INSTALLED. REMOVE AND REINSTALL AS NECESSARY.
11. VERIFY LOCATION AND SIZES OF ANCHOR BOLTS PRIOR TO INSTALLATION.
12. VISUALLY INSPECT FOUNDATIONS AND ANCHOR BOLTS AFTER REMOVAL OF (E) PBB'S. NOTIFY ENGINEER IF DEFICIENCIES ARE OBSERVED.
13. SEE ELECTRICAL DRAWINGS FOR PANEL LOCATIONS.
14. PROVIDE OWNER 72 HOURS NOTICE PRIOR TO REMOVING ANY EQUIPMENT FOR DISPOSAL. PROVIDE OWNER AN OPPORTUNITY TO REMOVE ANY DESIRED SPARE PARTS OR COMPONENTS FOR RETENTION PRIOR TO REMOVAL AND DISPOSAL.
15. EQUIPMENT AND DETAILS SHOWN ARE A DESIGN INTENT ONLY. PROVIDE ALL EQUIPMENT NECESSARY TO MEET THE DESIGN INTENT AND SPECIFICATIONS. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION DETAILS. SUBMIT ALL DETAILS FOR APPROVAL.
16. ALL STRUCTURAL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AWS D1.1.
17. NON DESTRUCTIVE TESTING IN ACCORDANCE WITH AWS STANDARDS SHALL BE PERFORMED ON ALL STRUCTURAL COMPLETE JOINT PENETRATION, PARTIAL JOINT PENETRATION, AND FILLET WELDS.
18. ALL STRUCTURAL STEEL FABRICATION AND ERECTION SHALL BE PROVIDED IN ACCORDANCE WITH THE AISC MANUAL OF STEEL CONSTRUCTION, CURRENT EDITION.

PLOT DATE:
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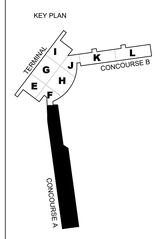
PASSENGER BOARDING BRIDGE CONSULTING
AERO SYSTEMS ENGINNERING

SURVEYOR
NEDERVELD

GEOTECHNICAL
SOMAT ENGINEERING

GRR - PROJECT ELEVATE CONCOURSE A EXPANSION

KEY PLAN



REVISION

NO.	DESCRIPTION	DATE
1	ISSUED FOR BID	01.20.2020

HKS PROJECT NUMBER
22284.000

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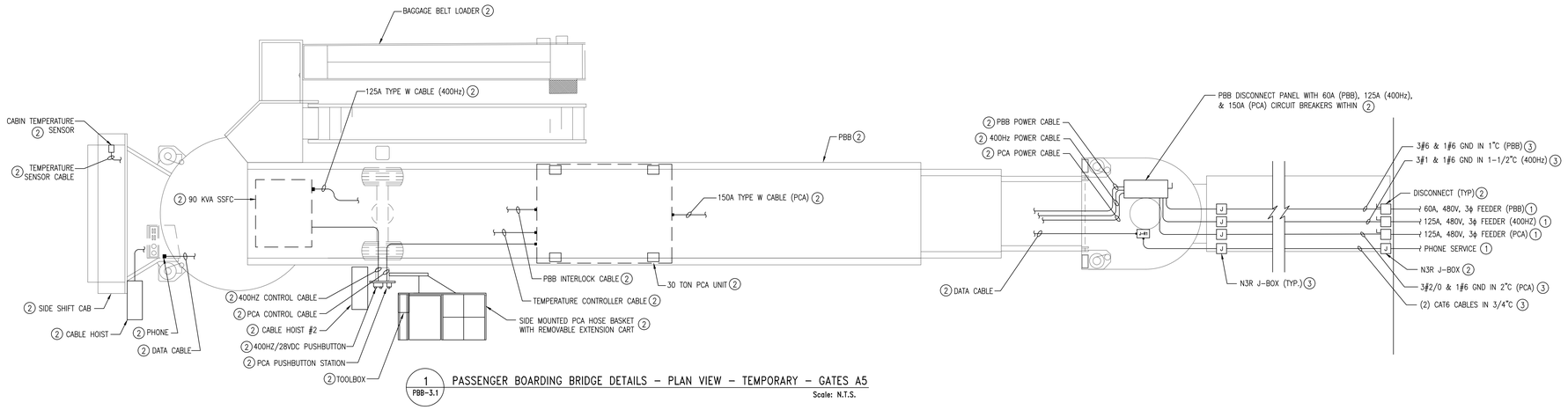
12/19/2019

ISSUE
PBB PROCUREMENT

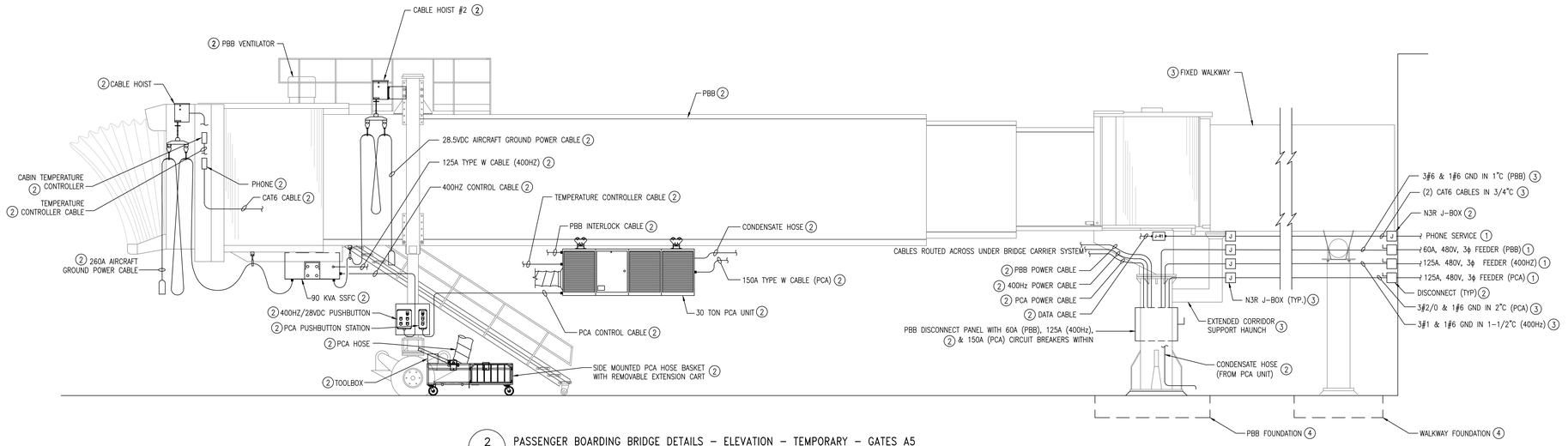
SHEET TITLE
EXISTING PASSENGER BOARDING BRIDGE LAYOUT - GATE A7

SHEET NO.
PBB-2.2



1 PBB-3.1 PASSENGER BOARDING BRIDGE DETAILS – PLAN VIEW – TEMPORARY – GATES A5

Scale: N.T.S.



2 PBB-3.1 PASSENGER BOARDING BRIDGE DETAILS – ELEVATION – TEMPORARY – GATES A5

Scale: N.T.S.

NOTE:
FOR CLARITY, ALL EQUIPMENT, CONDUIT AND J-BOXES ARE NOT SHOWN.

FOR CLARITY, SOME EQUIPMENT SHOWN OUT OF POSITION.

LEGEND NOTES:

1. SEE BUILDING ELECTRICAL DRAWINGS FOR DETAILS.
2. RELOCATED FROM EXISTING GATE A5 LOCATION.
3. NEW.
4. SEE BUILDING STRUCTURAL DRAWINGS FOR DETAILS.

GENERAL NOTES:

1. PATCH, PRIME, PAINT SURFACES AT ALL DEMOLITION POINTS TO MATCH EXISTING SURROUNDING SUBSTRATES. FIRE SEAL PENETRATIONS.
2. GRIND, PRIME AND PAINT SURFACE AT ALL WELDS. PAINT SHALL MATCH EXISTING BRIDGE COLOR.
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14. PROVIDE OWNER 72 HOURS NOTICE PRIOR TO REMOVING ANY EQUIPMENT FOR DISPOSAL. PROVIDE OWNER AN OPPORTUNITY TO REMOVE ANY DESIRED SPARE PARTS OR COMPONENTS FOR RETENTION PRIOR TO REMOVAL AND DISPOSAL.
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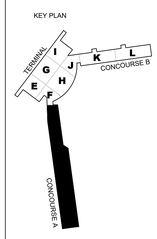
GRR - PROJECT ELEVATE
CONCOURSE A EXPANSION

KEY PLAN



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1	ISSUED FOR BID	01.20.2020

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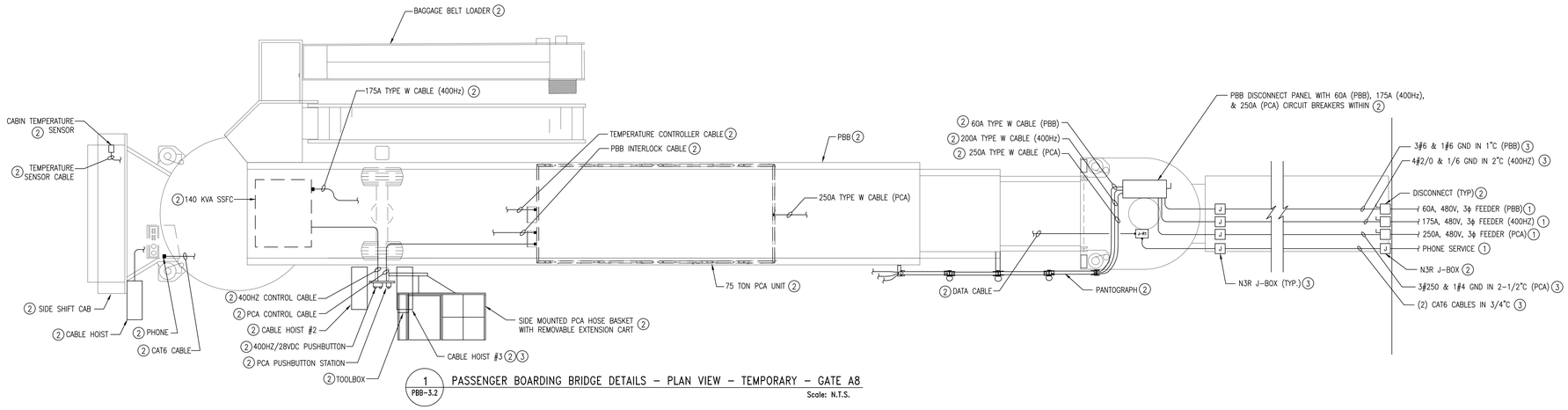
12/19/2019

ISSUE
PBB PROCUREMENT

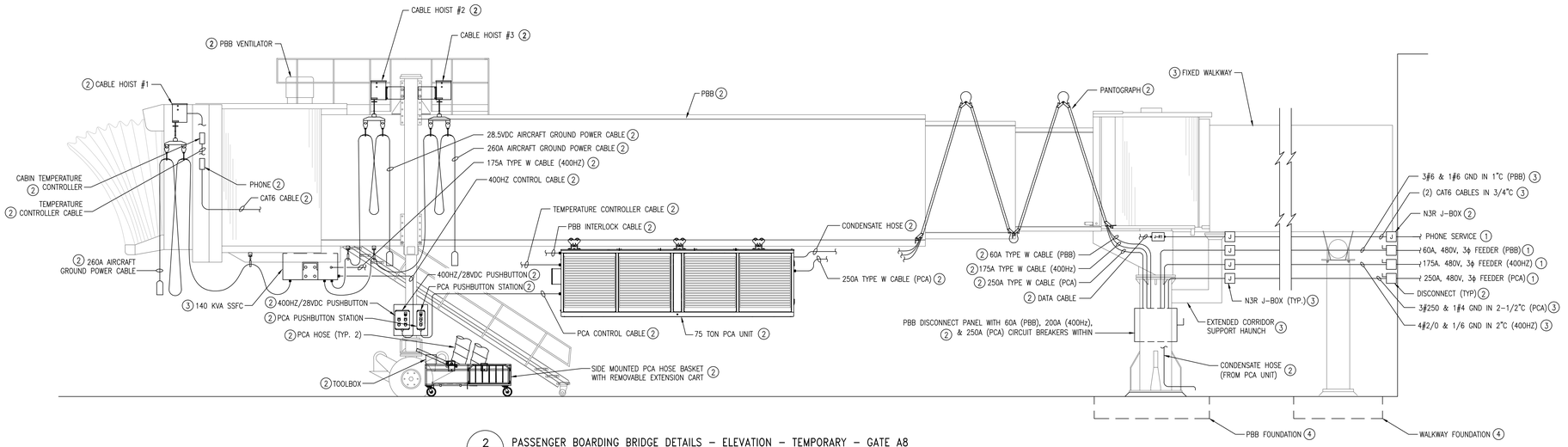
SHEET TITLE
TEMPORARY PASSENGER BOARDING BRIDGE LAYOUT - GATE A5

SHEET NO.
PBB-3.1



1 PBB-3.2 PASSENGER BOARDING BRIDGE DETAILS – PLAN VIEW – TEMPORARY – GATE A8

Scale: N.T.S.



2 PBB-3.2 PASSENGER BOARDING BRIDGE DETAILS – ELEVATION – TEMPORARY – GATE A8

Scale: N.T.S.

NOTE:
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FOR CLARITY, SOME EQUIPMENT SHOWN OUT OF POSITION.

LEGEND NOTES:

1. SEE BUILDING ELECTRICAL DRAWINGS FOR DETAILS.
2. RELOCATED FROM EXISTING GATE A7 LOCATION.
3. NEW.
4. SEE BUILDING STRUCTURAL DRAWINGS FOR DETAILS.

GENERAL NOTES:

1. PATCH, PRIME, PAINT SURFACES AT ALL DEMOLITION POINTS TO MATCH EXISTING SURROUNDING SUBSTRATES. FIRE SEAL PENETRATIONS.
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PASSENGER BOARDING BRIDGE CONSULTING
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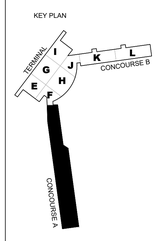
GRR - PROJECT ELEVATE
CONCOURSE A EXPANSION

KEY PLAN



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HKS PROJECT NUMBER
22284.000

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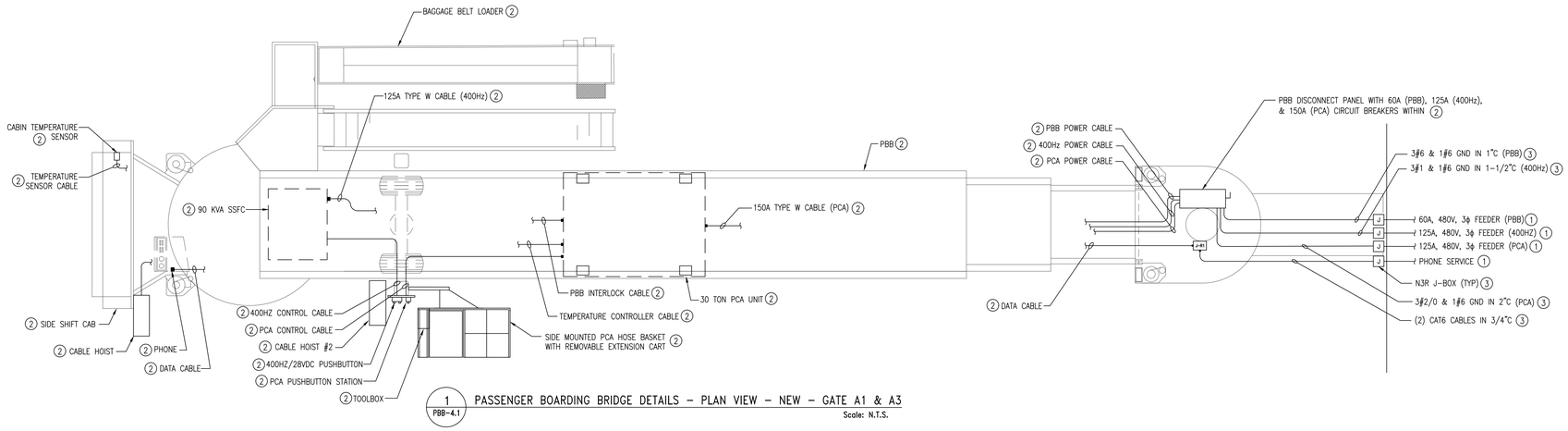
ISSUE
PBB PROCUREMENT

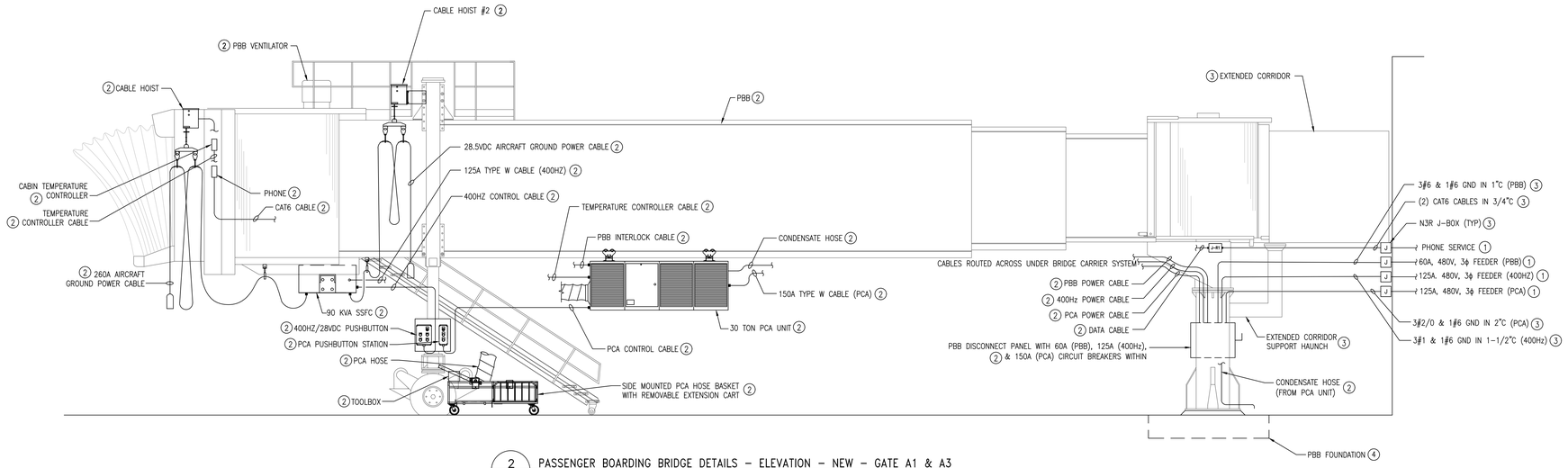
SHEET TITLE
TEMPORARY PASSENGER BOARDING BRIDGE LAYOUT - GATE A8

SHEET NO.
PBB-3.2



1 PBB-4.1 PASSENGER BOARDING BRIDGE DETAILS – PLAN VIEW – NEW – GATE A1 & A3

Scale: N.T.S.



2 PBB-4.1 PASSENGER BOARDING BRIDGE DETAILS – ELEVATION – NEW – GATE A1 & A3

Scale: N.T.S.

NOTE:
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FOR CLARITY, SOME EQUIPMENT SHOWN OUT OF POSITION.

LEGEND NOTES:

1. SEE BUILDING ELECTRICAL DRAWINGS FOR DETAILS.
2. GATE A1: RELOCATED FROM EXISTING GATE A1 LOCATION.
   GATE A3: RELOCATED FROM EXISTING GATE A3 LOCATION.
3. NEW.
4. SEE BUILDING STRUCTURAL DRAWINGS FOR DETAILS.

GENERAL NOTES:

1. PATCH, PRIME, PAINT SURFACES AT ALL DEMOLITION POINTS TO MATCH EXISTING SURROUNDING SUBSTRATES. FIRE SEAL PENETRATIONS.
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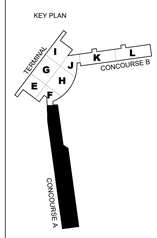

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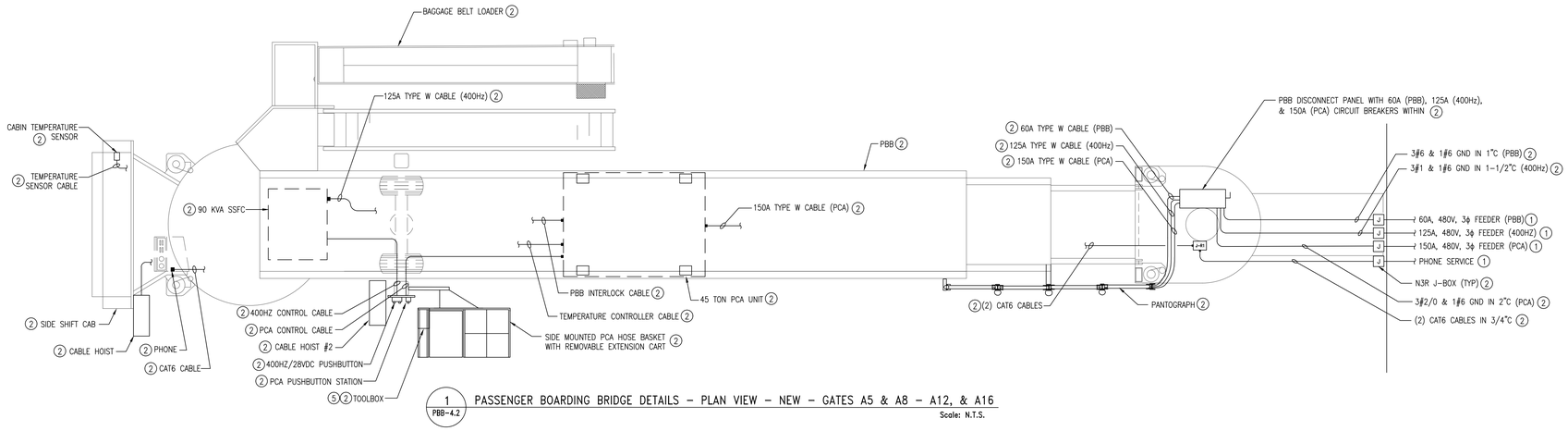
ISSUE
PBB PROCUREMENT

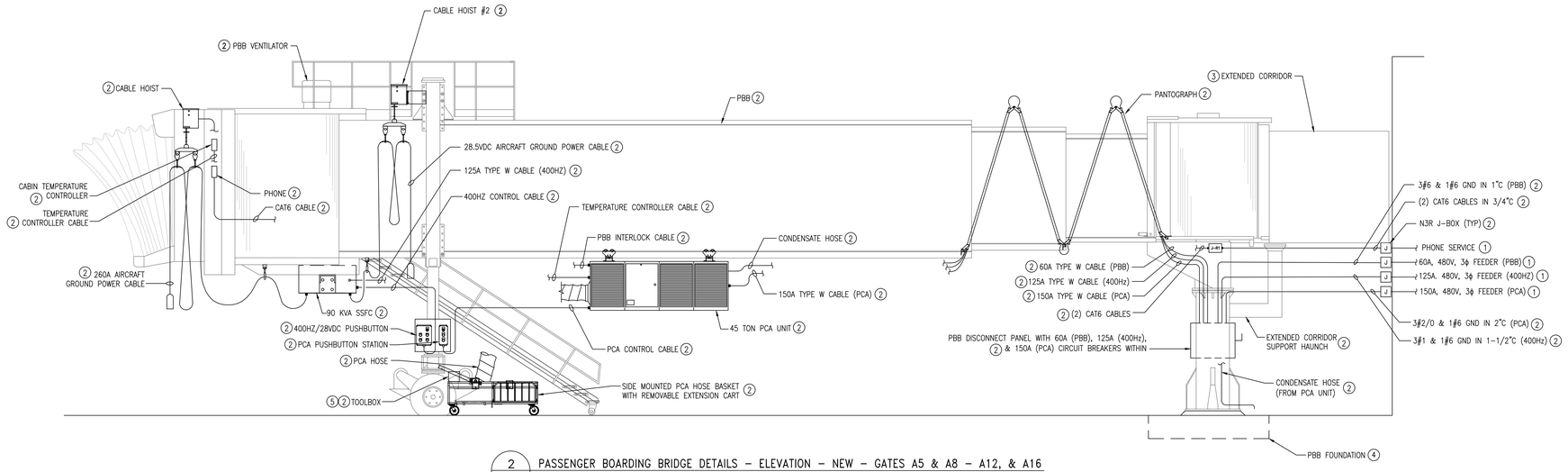
SHEET TITLE
NEW PASSENGER BOARDING BRIDGE LAYOUT - GATES A1 & A3

SHEET NO.
PBB-4.1



1 PBB-4.2 PASSENGER BOARDING BRIDGE DETAILS – PLAN VIEW – NEW – GATES A5 & A8 – A12, & A16

Scale: N.T.S.



2 PBB-4.2 PASSENGER BOARDING BRIDGE DETAILS – ELEVATION – NEW – GATES A5 & A8 – A12, & A16

Scale: N.T.S.

NOTE:
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FOR CLARITY, SOME EQUIPMENT SHOWN OUT OF POSITION.

LEGEND NOTES:

1. SEE BUILDING ELECTRICAL DRAWINGS FOR DETAILS.
2. NEW
3. GATE A9 ONLY: INSTALL EXISTING EXTENDED CORRIDOR SECTION FROM EXISTING GATE A1 OR A3.
4. SEE BUILDING STRUCTURAL DRAWINGS FOR DETAILS.
5. MOUNT NEW TOOLBOX TO PCA HOSE BASKET. MATCH EXISTING. SUBMIT TOOLBOX TYPE FOR OWNER APPROVAL.

GENERAL NOTES:

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8. ALL EQUIPMENT INSTALLED ON BRIDGE SHALL BE PAINTED TO MATCH INSTALLED BRIDGE COLOR.
9. DRAWING BASED ON RECORD DRAWINGS AND CURSORY FIELD INSPECTIONS BY THE ENGINEER. CONTRACTOR SHALL FIELD VERIFY ALL NECESSARY DETAILS. EXPECT SOME DEVIATIONS. CONTACT ENGINEER IF DEVIATIONS EXIST.
10. COORDINATE FLASHING INSTALLATION WITH SECURITY DEVICES INSTALLED. REMOVE AND REINSTALL AS NECESSARY.
11. VERIFY LOCATION AND SIZES OF ANCHOR BOLTS PRIOR TO INSTALLATION.
12. VISUALLY INSPECT FOUNDATIONS AND ANCHOR BOLTS AFTER REMOVAL OF (E) PBB'S. NOTIFY ENGINEER IF DEFICIENCIES ARE OBSERVED.
13. SEE ELECTRICAL DRAWINGS FOR PANEL LOCATIONS.
14. PROVIDE OWNER 72 HOURS NOTICE PRIOR TO REMOVING ANY EQUIPMENT FOR DISPOSAL. PROVIDE OWNER AN OPPORTUNITY TO REMOVE ANY DESIRED SPARE PARTS OR COMPONENTS FOR RETENTION PRIOR TO REMOVAL AND DISPOSAL.
15. EQUIPMENT AND DETAILS SHOWN ARE A DESIGN INTENT ONLY. PROVIDE ALL EQUIPMENT NECESSARY TO MEET THE DESIGN INTENT AND SPECIFICATIONS. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION DETAILS. SUBMIT ALL DETAILS FOR APPROVAL.
16. ALL STRUCTURAL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AWS D1.1.
17. NON DESTRUCTIVE TESTING IN ACCORDANCE WITH AWS STANDARDS SHALL BE PERFORMED ON ALL STRUCTURAL COMPLETE JOINT PENETRATION, PARTIAL JOINT PENETRATION, AND FILLET WELDS.
18. ALL STRUCTURAL STEEL FABRICATION AND ERECTION SHALL BE PROVIDED IN ACCORDANCE WITH THE AISC MANUAL OF STEEL CONSTRUCTION, CURRENT EDITION.

PLOT DATE:
TEMPLATE VERSION:

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MEAD & HUNT

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HKS INC

IT / SECURITY
MOYE CONSULTING

CIVIL / STRUCTURAL
C&S COMPANIES

SIMULATIONS / MODELING
TRANSSOLUTIONS

CONCESSIONS
ICF

PASSENGER BOARDING BRIDGE CONSULTING
AERO SYSTEMS ENGINNERING

SURVEYOR
NEDERVELD

GEOTECHNICAL
SOMAT ENGINEERING

GRR - PROJECT ELEVATE
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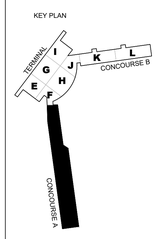


REVISION

NO.	DESCRIPTION	DATE
1	ISSUED FOR BID	01.20.2020

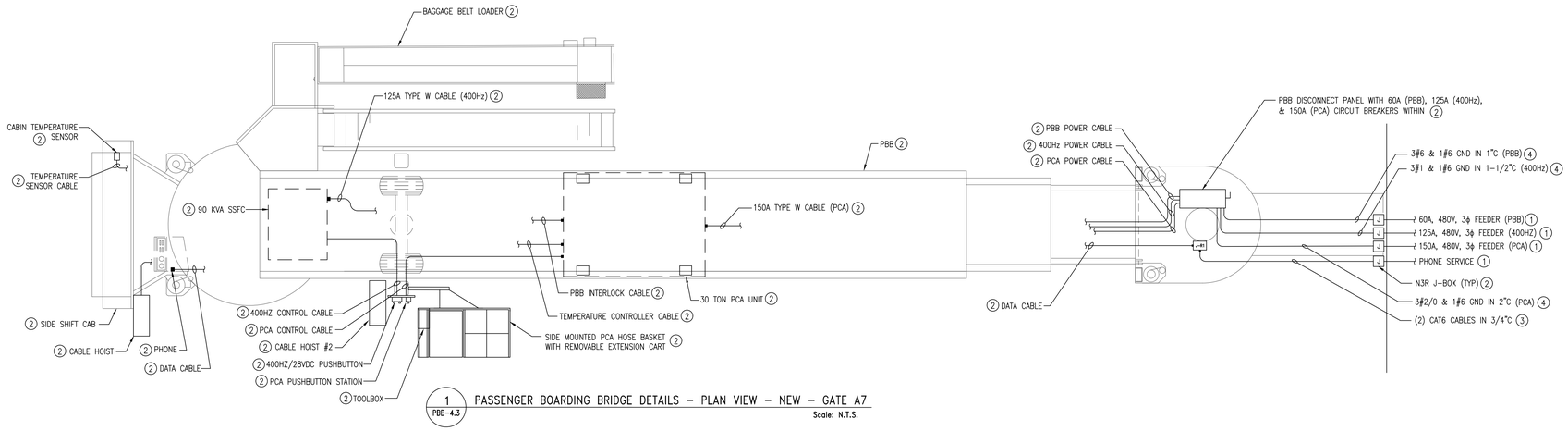
HKS PROJECT NUMBER
22284.000

DATE
12/19/2019

ISSUE
PBB PROCUREMENT

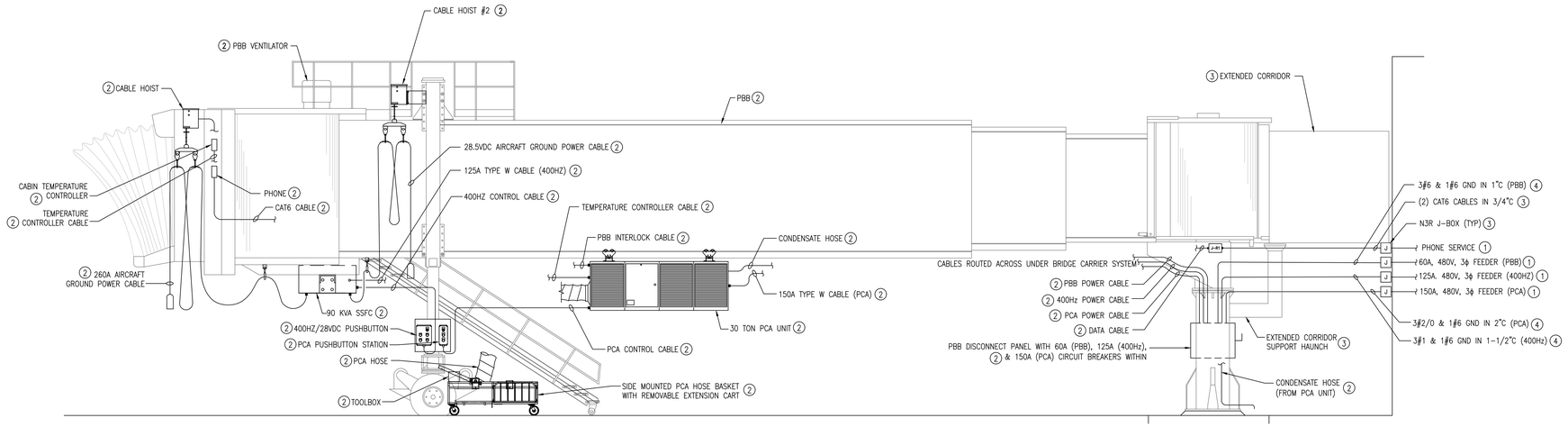
SHEET TITLE
NEW PASSENGER BOARDING BRIDGE LAYOUT - GATES A5 & A8 - A12, & A16

SHEET NO.
PBB-4.2



1 PBB-4.3 PASSENGER BOARDING BRIDGE DETAILS – PLAN VIEW – NEW – GATE A7

Scale: N.T.S.



2 PBB-4.3 PASSENGER BOARDING BRIDGE DETAILS – ELEVATION – NEW – GATE A7

Scale: N.T.S.

NOTE:
FOR CLARITY, ALL EQUIPMENT, CONDUIT AND J-BOXES ARE NOT SHOWN.

FOR CLARITY, SOME EQUIPMENT SHOWN OUT OF POSITION.

LEGEND NOTES:

(1) SEE BUILDING ELECTRICAL DRAWINGS FOR DETAILS.

(2) RELOCATED FROM TEMPORARY GATE A5 LOCATION.

(3) NEW.

(4) PROVIDE NEW OR MODIFY AND REUSE EXISTING CABLE AND CONDUIT FROM TEMPORARY A5 LOCATION.

(5) SEE BUILDING STRUCTURAL DRAWINGS FOR DETAILS.

GENERAL NOTES:

1. PATCH, PRIME, PAINT SURFACES AT ALL DEMOLITION POINTS TO MATCH EXISTING SURROUNDING SUBSTRATES. FIRE SEAL PENETRATIONS.
2. GRIND, PRIME AND PAINT SURFACE AT ALL WELDS. PAINT SHALL MATCH EXISTING BRIDGE COLOR.
3. VERIFY EXACT LOCATION OF ALL EQUIPMENT/CONDUIT/CABLES, ETC. PRIOR TO INSTALLATION.
4. COORDINATE THE INSTALLATION OF ALL EQUIPMENT SUCH THAT BRIDGE MAINTAINS CAPACITY OF FULL DESIGN MOVEMENT. THE BRIDGE ROTATIONAL LIMITS ARE DEFINED AS THE EXTREME C.W. TO THE EXTREME C.C.W. POSITIONS. THESE LIMITS SHALL BE THE MECHANICAL LIMITS OF THE BRIDGE AND CAB AS INSTALLED IRRESPECTIVE OF ELECTRICAL LIMIT SET POINTS.
5. ALL UNDER BRIDGE CONDUITS AND CABLES SHALL BE INSTALLED SO AS TO MAINTAIN A CLOSE PROXIMITY TO THE BOTTOM OF THE BRIDGE. CABLES SHALL NOT HANG LOOSELY FROM BRIDGE.
6. ELECTRICAL AND MECHANICAL STOPS SHALL BE ADJUSTED/RELOCATED AS NECESSARY TO PREVENT DAMAGE TO BUILDING ELEMENTS AND/OR RAMP OBSTRUCTIONS, SUCH AS HIGH MAST LIGHTING, IN THE EVENT OF FAILURE OF ANY ELECTRONIC/ELECTRIC STOP CIRCUIT/SWITCH.
7. WHEN WELDING ON THE BRIDGE, MAINTAIN A MAXIMUM OF 18" BETWEEN THE ARCING ELECTRODE AND THE GROUNDING CONNECTION, SO AS TO ENSURE THAT WELDING CURRENT FLOWS IN THE ACTUAL MATERIAL BEING WELDED. HOT WORK PERMIT REQUIRED DAILY FOR ANY AND ALL WELDING ACTIVITIES.
8. ALL EQUIPMENT INSTALLED ON BRIDGE SHALL BE PAINTED TO MATCH INSTALLED BRIDGE COLOR.
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10. COORDINATE FLASHING INSTALLATION WITH SECURITY DEVICES INSTALLED. REMOVE AND REINSTALL AS NECESSARY.
11. VERIFY LOCATION AND SIZES OF ANCHOR BOLTS PRIOR TO INSTALLATION.
12. VISUALLY INSPECT FOUNDATIONS AND ANCHOR BOLTS AFTER REMOVAL OF (E) PBB'S. NOTIFY ENGINEER IF DEFICIENCIES ARE OBSERVED.
13. SEE ELECTRICAL DRAWINGS FOR PANEL LOCATIONS.
14. PROVIDE OWNER 72 HOURS NOTICE PRIOR TO REMOVING ANY EQUIPMENT FOR DISPOSAL. PROVIDE OWNER AN OPPORTUNITY TO REMOVE ANY DESIRED SPARE PARTS OR COMPONENTS FOR RETENTION PRIOR TO REMOVAL AND DISPOSAL.
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16. ALL STRUCTURAL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AWS D1.1.
17. NON DESTRUCTIVE TESTING IN ACCORDANCE WITH AWS STANDARDS SHALL BE PERFORMED ON ALL STRUCTURAL COMPLETE JOINT PENETRATION, PARTIAL JOINT PENETRATION, AND FILLET WELDS.
18. ALL STRUCTURAL STEEL FABRICATION AND ERECTION SHALL BE PROVIDED IN ACCORDANCE WITH THE AISC MANUAL OF STEEL CONSTRUCTION, CURRENT EDITION.

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NEDERVELD

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SOMAT ENGINEERING

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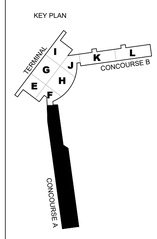
KEY PLAN



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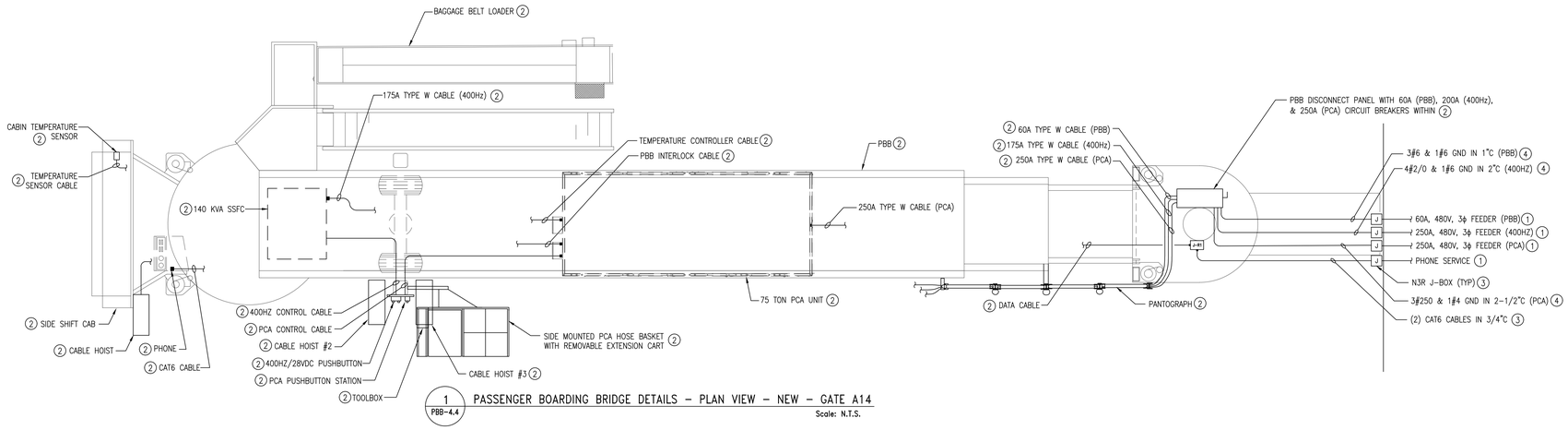
ISSUE
PBB PROCUREMENT

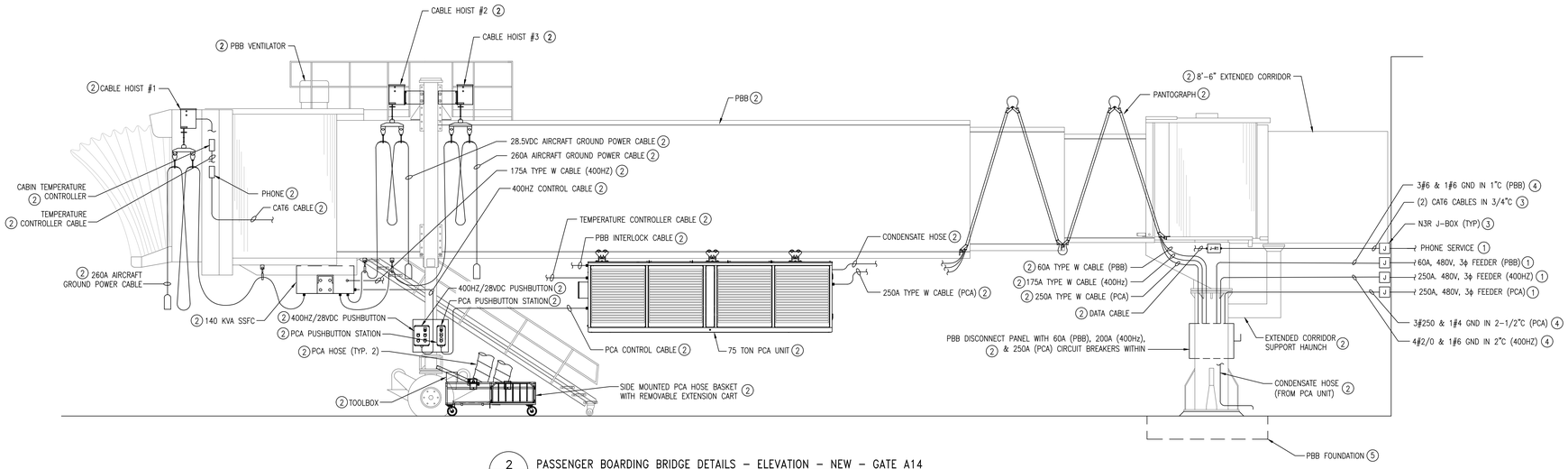
SHEET TITLE
NEW PASSENGER BOARDING BRIDGE LAYOUT - GATE A7

SHEET NO.
PBB-4.3



1 PBB-4.4 PASSENGER BOARDING BRIDGE DETAILS – PLAN VIEW – NEW – GATE A14

Scale: N.T.S.



2 PBB-4.4 PASSENGER BOARDING BRIDGE DETAILS – ELEVATION – NEW – GATE A14

Scale: N.T.S.

NOTE:
FOR CLARITY, ALL EQUIPMENT, CONDUIT AND J-BOXES ARE NOT SHOWN.

FOR CLARITY, SOME EQUIPMENT SHOWN OUT OF POSITION.

LEGEND NOTES:

1. SEE BUILDING ELECTRICAL DRAWINGS FOR DETAILS.
2. RELOCATED FROM TEMPORARY GATE A8 LOCATION.
3. NEW.
4. PROVIDE NEW OR MODIFY AND REUSE EXISTING CABLE AND CONDUIT FROM TEMPORARY A8 LOCATION.
5. SEE BUILDING STRUCTURAL DRAWINGS FOR DETAILS.

GENERAL NOTES:

1. PATCH, PRIME, PAINT SURFACES AT ALL DEMOLITION POINTS TO MATCH EXISTING SURROUNDING SUBSTRATES. FIRE SEAL PENETRATIONS.
2. GRIND, PRIME AND PAINT SURFACE AT ALL WELDS. PAINT SHALL MATCH EXISTING BRIDGE COLOR.
3. VERIFY EXACT LOCATION OF ALL EQUIPMENT/CONDUIT/CABLES, ETC. PRIOR TO INSTALLATION.
4. COORDINATE THE INSTALLATION OF ALL EQUIPMENT SUCH THAT BRIDGE MAINTAINS CAPACITY OF FULL DESIGN MOVEMENT. THE BRIDGE ROTATIONAL LIMITS ARE DEFINED AS THE EXTREME C.W. TO THE EXTREME C.C.W. POSITIONS. THESE LIMITS SHALL BE THE MECHANICAL LIMITS OF THE BRIDGE AND CAB AS INSTALLED IRRESPECTIVE OF ELECTRICAL LIMIT SET POINTS.
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6. ELECTRICAL AND MECHANICAL STOPS SHALL BE ADJUSTED/RELOCATED AS NECESSARY TO PREVENT DAMAGE TO BUILDING ELEMENTS AND/OR RAMP OBSTRUCTIONS, SUCH AS HIGH MAST LIGHTING, IN THE EVENT OF FAILURE OF ANY ELECTRONIC/ELECTRIC STOP CIRCUIT/SWITCH.
7. WHEN WELDING ON THE BRIDGE, MAINTAIN A MAXIMUM OF 18" BETWEEN THE ARCING ELECTRODE AND THE GROUNDING CONNECTION, SO AS TO ENSURE THAT WELDING CURRENT FLOWS IN THE ACTUAL MATERIAL BEING WELDED. HOT WORK PERMIT REQUIRED DAILY FOR ANY AND ALL WELDING ACTIVITIES.
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10. COORDINATE FLASHING INSTALLATION WITH SECURITY DEVICES INSTALLED. REMOVE AND REINSTALL AS NECESSARY.
11. VERIFY LOCATION AND SIZES OF ANCHOR BOLTS PRIOR TO INSTALLATION.
12. VISUALLY INSPECT FOUNDATIONS AND ANCHOR BOLTS AFTER REMOVAL OF (E) PBB'S. NOTIFY ENGINEER IF DEFICIENCIES ARE OBSERVED.
13. SEE ELECTRICAL DRAWINGS FOR PANEL LOCATIONS.
14. PROVIDE OWNER 72 HOURS NOTICE PRIOR TO REMOVING ANY EQUIPMENT FOR DISPOSAL. PROVIDE OWNER AN OPPORTUNITY TO REMOVE ANY DESIRED SPARE PARTS OR COMPONENTS FOR RETENTION PRIOR TO REMOVAL AND DISPOSAL.
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16. ALL STRUCTURAL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AWS D1.1.
17. NON DESTRUCTIVE TESTING IN ACCORDANCE WITH AWS STANDARDS SHALL BE PERFORMED ON ALL STRUCTURAL COMPLETE JOINT PENETRATION, PARTIAL JOINT PENETRATION, AND FILLET WELDS.
18. ALL STRUCTURAL STEEL FABRICATION AND ERECTION SHALL BE PROVIDED IN ACCORDANCE WITH THE AISC MANUAL OF STEEL CONSTRUCTION, CURRENT EDITION.

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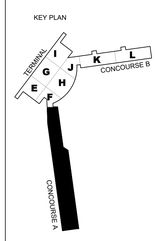

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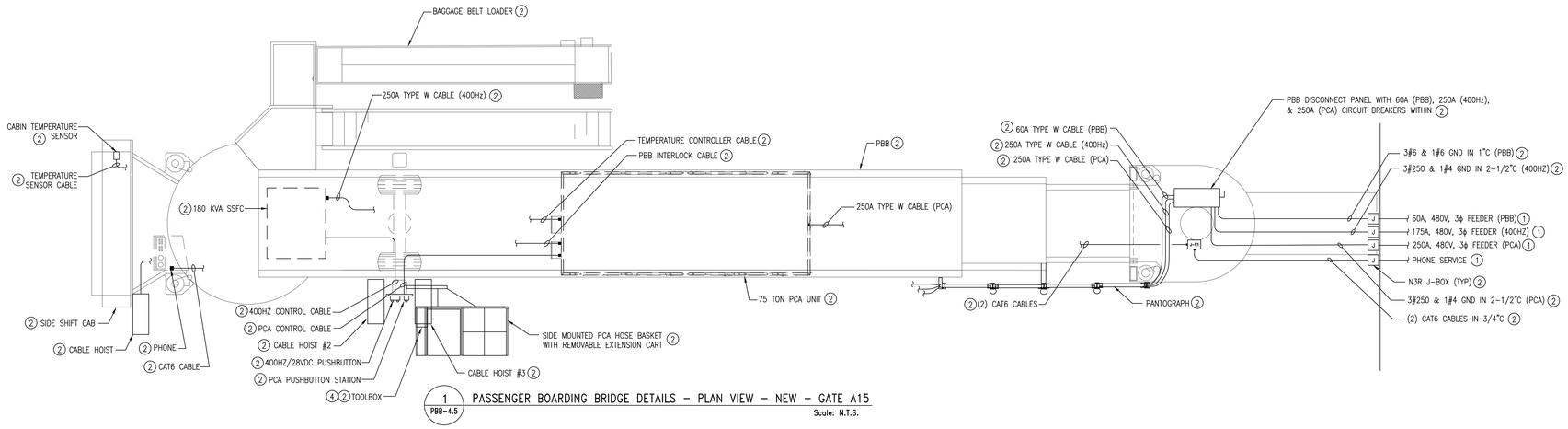
ISSUE
PBB PROCUREMENT

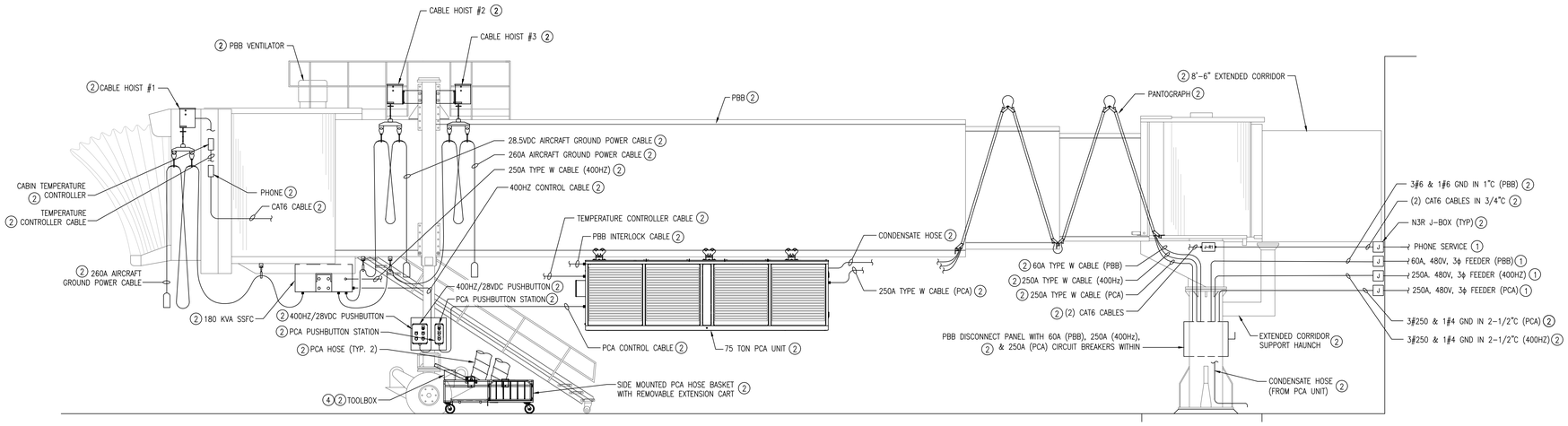
SHEET TITLE
NEW PASSENGER BOARDING BRIDGE LAYOUT - GATE A15

SHEET NO.
PBB-4.4



1 PBB-4.5 PASSENGER BOARDING BRIDGE DETAILS – PLAN VIEW – NEW – GATE A15

Scale: N.T.S.



2 PBB-4.5 PASSENGER BOARDING BRIDGE DETAILS – ELEVATION – NEW – GATE A15

Scale: N.T.S.

NOTE:
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FOR CLARITY, SOME EQUIPMENT SHOWN OUT OF POSITION.

LEGEND NOTES:

1. SEE BUILDING ELECTRICAL DRAWINGS FOR DETAILS.
2. NEW.
3. SEE BUILDING STRUCTURAL DRAWINGS FOR DETAILS.
4. MOUNT NEW TOOLBOX TO PCA HOSE BASKET. MATCH EXISTING. SUBMIT TOOLBOX TYPE FOR OWNER APPROVAL.

GENERAL NOTES:

1. PATCH, PRIME, PAINT SURFACES AT ALL DEMOLITION POINTS TO MATCH EXISTING SURROUNDING SUBSTRATES. FIRE SEAL PENETRATIONS.
2. GRIND, PRIME AND PAINT SURFACE AT ALL WELDS. PAINT SHALL MATCH EXISTING BRIDGE COLOR.
3. VERIFY EXACT LOCATION OF ALL EQUIPMENT/CONDUIT/CABLES, ETC. PRIOR TO INSTALLATION.
4. COORDINATE THE INSTALLATION OF ALL EQUIPMENT SUCH THAT BRIDGE MAINTAINS CAPACITY OF FULL DESIGN MOVEMENT. THE BRIDGE ROTATIONAL LIMITS ARE DEFINED AS THE EXTREME C.W. TO THE EXTREME C.C.W. POSITIONS. THESE LIMITS SHALL BE THE MECHANICAL LIMITS OF THE BRIDGE AND CAB AS INSTALLED IRRESPECTIVE OF ELECTRICAL LIMIT SET POINTS.
5. ALL UNDER BRIDGE CONDUITS AND CABLES SHALL BE INSTALLED SO AS TO MAINTAIN A CLOSE PROXIMITY TO THE BOTTOM OF THE BRIDGE. CABLES SHALL NOT HANG LOOSELY FROM BRIDGE.
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7. WHEN WELDING ON THE BRIDGE, MAINTAIN A MAXIMUM OF 18" BETWEEN THE ARCING ELECTRODE AND THE GROUNDING CONNECTION, SO AS TO ENSURE THAT WELDING CURRENT FLOWS IN THE ACTUAL MATERIAL BEING WELDED. HOT WORK PERMIT REQUIRED DAILY FOR ANY AND ALL WELDING ACTIVITIES.
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14. PROVIDE OWNER 72 HOURS NOTICE PRIOR TO REMOVING ANY EQUIPMENT FOR DISPOSAL. PROVIDE OWNER AN OPPORTUNITY TO REMOVE ANY DESIRED SPARE PARTS OR COMPONENTS FOR RETENTION PRIOR TO REMOVAL AND DISPOSAL.
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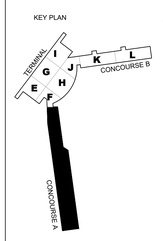

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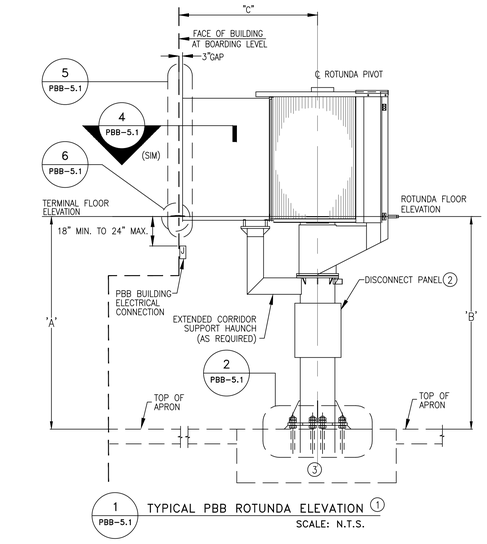
SHEET TITLE
NEW PASSENGER BOARDING BRIDGE LAYOUT - GATE A15

SHEET NO.
PBB-4.5



PBB OVERALL DIMENSIONS SCHEDULE
NEW PASSENGER BOARDING BRIDGES

GATE #	"A" TERMINAL FLOOR HEIGHT	"B" ROTUNDA FLOOR HEIGHT	"C" CORRIDOR
A1	11'-4"	11'-7 3/4"	13'-0"
A2	11'-4"	11'-7 3/4"	10'-0" (4) (5)
A3	11'-4"	11'-5 1/2"	13'-0"
A4	11'-4"	11'-6 1/4"	4'-6" (4)
A5	11'-4"	11'-6"	13'-0"
A6	11'-4"	11'-7"	10'-0" (4) (5)
A7	11'-4"	11'-5"	13'-0"
A8	11'-4"	11'-6"	13'-0"
A9	11'-4"	11'-6"	10'-0" (4)
A10	11'-4"	11'-6"	13'-0"
A11	11'-4"	11'-6"	13'-0"
A12	11'-4"	11'-6"	13'-0"
A14	11'-4"	11'-7"	13'-0"
A15	11'-4"	11'-6"	13'-0"
A16	11'-4"	11'-6"	13'-0"

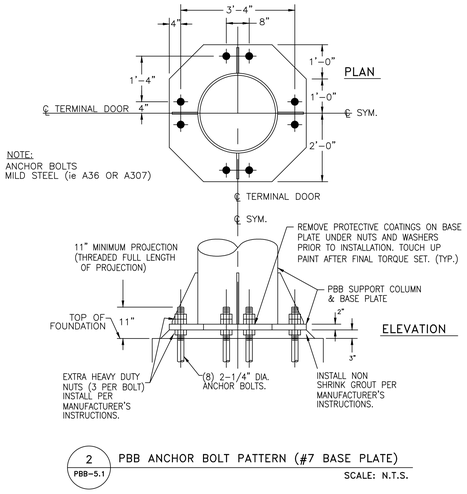
* NOTE: EXISTING CORRIDOR SECTIONS TO BE RE-UTILIZED

SHEET NOTES

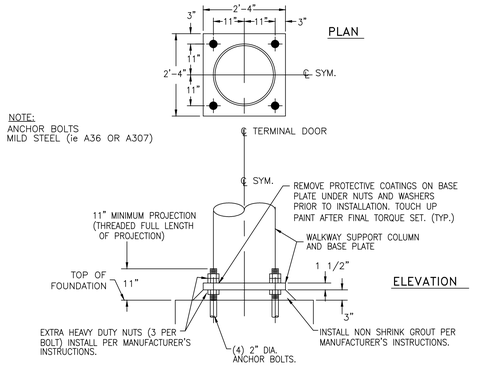
1. ELEVATIONS AND DIMENSIONS ARE SHOWN AS A DESIGN INTENT ONLY. FIELD VERIFY ALL DIMENSIONS PRIOR TO EQUIPMENT MANUFACTURE OR INSTALLATION. DEVIATIONS MAY EXIST.
2. DISCONNECT PANEL MAY INCLUDE, SEPARATE DISCONNECTS (BREAKERS) FOR PBB, PCA AND SSFC. BREAKERS SHALL BE LABELED IN ACCORDANCE WITH THE SPECIFICATIONS AND SHALL BE LOCKABLE IN THE OFF POSITION. COORDINATE WITH FIELD CONDITIONS SO AS TO MEET ACCESSIBILITY AND WORKING CLEARANCE REQUIREMENTS OF THE NEC.
3. SEE STRUCTURAL DRAWINGS FOR NEW FOUNDATION DETAILS.
4. EXISTING CORRIDOR SECTIONS TO BE RE-UTILIZED.
5. EXISTING EXTENDED CORRIDOR TO BE MODIFIED TO ACCOMMODATE NEW BUILDING FACE LOCATION (APPROX. 8" CLOSER TO ROTUNDA). FIELD CONFIRM DISTANCE PRIOR TO MODIFICATION.

GENERAL NOTES

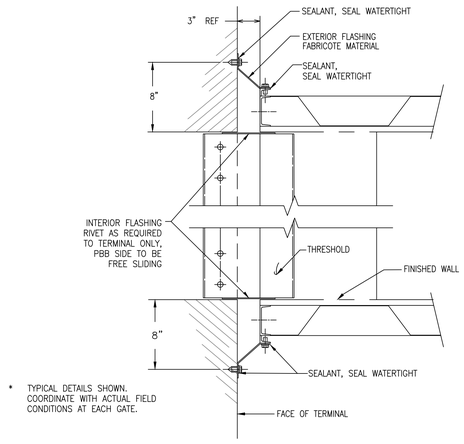
1. GRIND, PRIME AND PAINT SURFACE AT ALL WELDS. PAINT SHALL MATCH EXISTING BRIDGE COLOR.
2. VERIFY EXACT LOCATION OF ALL EQUIPMENT/CONDUIT/CABLES, ETC. PRIOR TO INSTALLATION.
3. COORDINATE THE INSTALLATION OF ALL EQUIPMENT SUCH THAT BRIDGE MAINTAINS CAPACITY OF FULL DESIGN MOVEMENT. THE BRIDGE ROTATIONAL LIMITS ARE DEFINED AS THE EXTREME C.W. TO THE EXTREME C.C.W. POSITIONS, AS WELL AS THE EXTREME HIGH AND LOW AND EXTREME RETRACTABLE AND EXTENSION POSITIONS. THESE LIMITS SHALL BE THE MECHANICAL LIMITS OF THE BRIDGE AND CAB AS INSTALLED IRRESPECTIVE OF ELECTRICAL LIMIT SET POINTS.
4. ELECTRICAL AND MECHANICAL STOPS SHALL BE ADJUSTED/RELOCATED AS NECESSARY TO PREVENT DAMAGE TO BUILDING ELEMENTS AND/OR RAMP OBSTRUCTIONS, SUCH AS HIGH MAST LIGHTING, IN THE EVENT OF FAILURE OF ANY ELECTRONIC/ELECTRIC STOP CIRCUIT/SWITCH.
5. ALL UNDER BRIDGE CONDUITS AND CABLES SHALL BE INSTALLED SO AS TO MAINTAIN A CLOSE PROXIMITY TO THE BOTTOM OF THE BRIDGE. CABLES SHALL NOT HANG LOOSELY FROM BRIDGE.
6. WHEN WELDING ON THE BRIDGE, MAINTAIN A MAXIMUM OF 18" BETWEEN THE ARCING ELECTRODE AND THE GROUNDING CONNECTION, SO AS TO ENSURE THAT WELDING CURRENT FLOWS IN THE ACTUAL MATERIAL BEING WELDED.
7. ALL EQUIPMENT INSTALLED ON BRIDGE SHALL BE PAINTED TO MATCH INSTALLED BRIDGE COLOR.
8. EQUIPMENT AND DETAILS SHOWN ARE A DESIGN INTENT ONLY. PROVIDE AND INSTALL ALL EQUIPMENT NECESSARY TO MEET THE DESIGN INTENT AND SPECIFICATIONS. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION DETAILS. SUBMIT ALL DETAILS FOR APPROVAL.
9. ALL STRUCTURAL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AWS D1.1.
10. NON DESTRUCTIVE TESTING IN ACCORDANCE WITH AWS STANDARDS SHALL BE PERFORMED ON ALL STRUCTURAL COMPLETE JOINT PENETRATION, PARTIAL JOINT PENETRATION, AND FILLET WELDS.
11. ALL STRUCTURAL STEEL FABRICATION AND ERECTION SHALL BE PROVIDED IN ACCORDANCE WITH THE AISC MANUAL OF STEEL CONSTRUCTION, CURRENT EDITION.
12. VERIFY LOCATION AND SIZES OF ANCHOR BOLTS PRIOR TO INSTALLATION.
13. COORDINATE FLASHING INSTALLATION WITH SECURITY DEVICES INSTALLED. REMOVE AND REINSTALL AS NECESSARY.
14. VISUALLY INSPECT FOUNDATIONS AND ANCHOR BOLTS AFTER REMOVAL OF (E) PBB'S. NOTIFY ENGINEER IF DEFICIENCIES ARE OBSERVED.
15. DRAWING BASED ON DRAWINGS PROVIDED BY OTHERS AND CURSORY FIELD INSPECTIONS BY THE ENGINEER. CONTRACTOR SHALL FIELD VERIFY ALL NECESSARY DETAILS. EXPECT SOME DEVIATIONS. CONTACT ENGINEER IF DEVIATIONS EXIST.



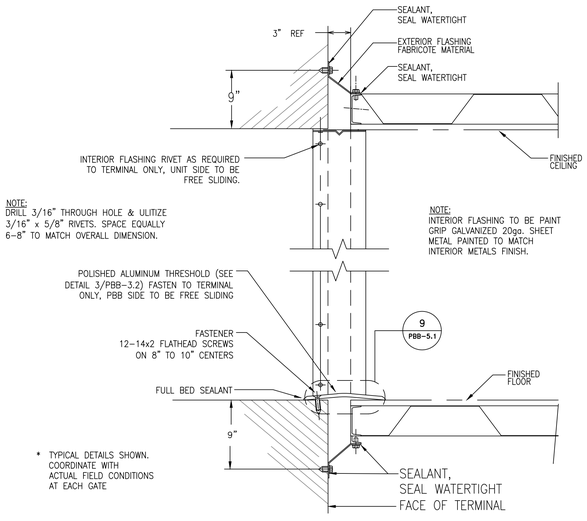
2 PBB-5.1 PBB ANCHOR BOLT PATTERN (#7 BASE PLATE)
SCALE: N.T.S.



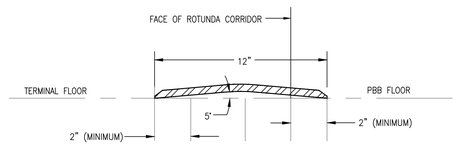
3 PBB-5.1 WALKWAY ANCHOR BOLT PATTERN (#127 BASE PLATE)
SCALE: N.T.S.



4 PBB-5.1 PBB INTERIOR & EXTERIOR FLASHING DETAIL – DOOR JAMBS
SCALE: N.T.S.



5 PBB-5.1 PBB INTERIOR & EXTERIOR FLASHING DETAIL – HEADER & THRESHOLD
SCALE: N.T.S.



NOTE:
INSTALL THRESHOLD PLATE PER DETAILS IN MANUFACTURER'S PUBLISHED DATA.

6 PBB-1.0 PBB THRESHOLD PLATE DETAIL
SCALE: N.T.S.

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KEY PLAN
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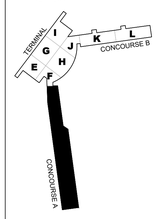


REVISION

NO.	DESCRIPTION	DATE
1	ISSUED FOR BID	01.20.2020

HKS PROJECT NUMBER
22284.000

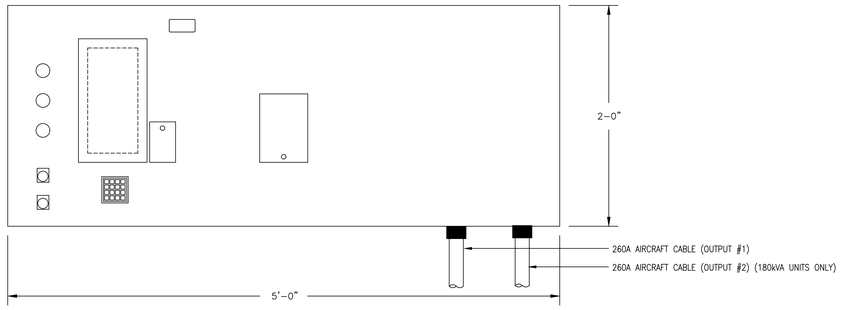
DATE
12/19/2019

ISSUE
PBB PROCUREMENT

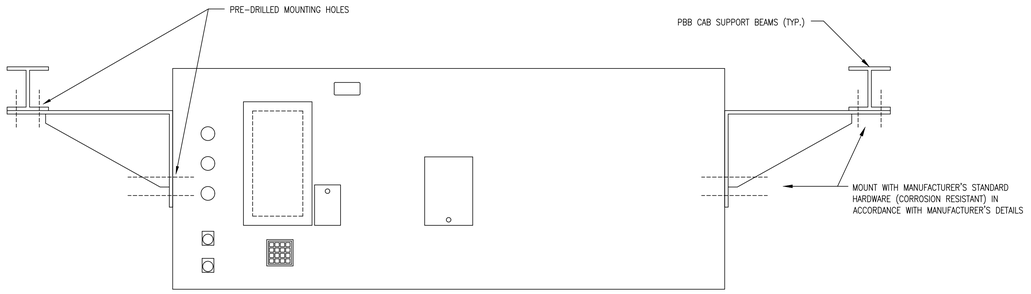
SHEET TITLE
PASSENGER BOARDING BRIDGE DETAILS

SHEET NO.
PBB-5.1

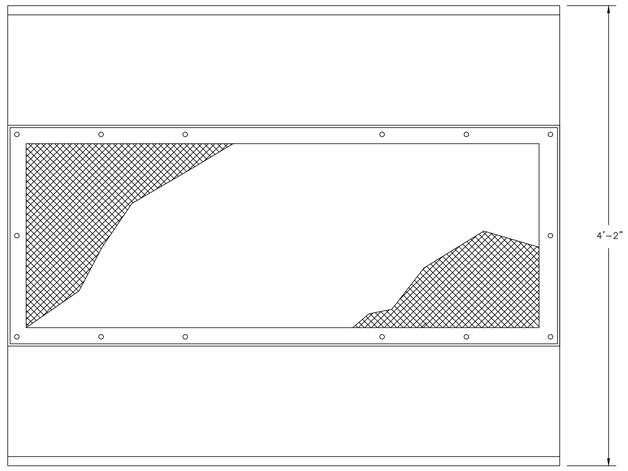
TEMPLATE VERSION:
PLOT DATE:



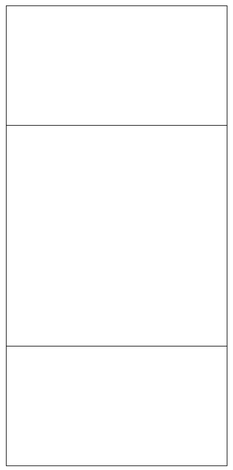
FRONT VIEW



1 / PBB-6.1 — 90kVA/180kVA SSFC MOUNTING BRACKET
SCALE: N.T.S.



BOTTOM VIEW



SIDE VIEW

2 / PBB-6.1 — 90kVA/140kVA SOLID STATE FREQUENCY CONVERTER (SSFC)
WEIGHT: 90kVA – APPROXIMATELY 1200 LBS.
140 kVA – APPROXIMATELY 2000 LBS.
SCALE: N.T.S.

400HZ EQUIPMENT SCHEDULE

GATE	KVA	FLA @480V	QTY OF A/C CABLES	EQUIP. BASIS OF DESIGN	QTY/TYPE OF PUSHBUTTON STATION (1)	COMMENTS
A1	90	100A	1	JETPOWER PWM2 W/ 28.5VDC	1 (E)	(E) 400HZ UNIT ON (E) PBB RELOCATED FROM (E) GATE A1
A2	90	100A	1	JETPOWER PWM2 W/ 28.5VDC	1 (E)	(E) 400HZ UNIT TO REMAIN ON (E) PBB
A3	90	100A	1	JETPOWER PWM2 W/ 28.5VDC	1 (E)	(E) 400HZ UNIT ON (E) PBB RELOCATED FROM (E) GATE A3
A4	90	100A	1	JETPOWER PWM2 W/ 28.5VDC	1 (E)	(E) 400HZ UNIT TO REMAIN ON (E) PBB
A5	90	100A	1	JETPOWER PWM2 W/ 28.5VDC	1 (N)	(N) 400HZ UNIT ON (N) PBB
A6	90	100A	1	JETPOWER PWM2 W/ 28.5VDC	1 (E)	(E) 400HZ UNIT TO REMAIN ON (E) PBB
A7	90	100A	1	JETPOWER PWM2 W/ 28.5VDC	1 (E)	(E) 400HZ UNIT ON (E) PBB RELOCATED FROM (E) GATE A5
A8	90	100A	1	JETPOWER PWM2 W/ 28.5VDC	1 (N)	(N) 400HZ UNIT ON (N) PBB
A9	90	100A	1	JETPOWER PWM2 W/ 28.5VDC	1 (N)	(N) 400HZ UNIT ON (N) PBB
A10	90	100A	1	JETPOWER PWM2 W/ 28.5VDC	1 (N)	(N) 400HZ UNIT ON (N) PBB
A11	90	100A	1	JETPOWER PWM2 W/ 28.5VDC	1 (N)	(N) 400HZ UNIT ON (N) PBB
A12	90	100A	1	JETPOWER PWM2 W/ 28.5VDC	1 (N)	(N) 400HZ UNIT ON (N) PBB
A14	140	200A	2	JETPOWER PWM2 W/ 28.5VDC	1 (E)	(E) 400HZ UNIT ON (E) PBB RELOCATED FROM (E) GATE A7 (TEMP A8)
A15	180	200A	2	JETPOWER PWM2 W/ 28.5VDC	1 (N)	(N) 400HZ UNIT ON (N) PBB
A16	90	100A	1	JETPOWER PWM2 W/ 28.5VDC	1 (N)	(N) 400HZ UNIT ON (N) PBB

(N) – NEW
(E) – EXISTING
(1) – SEE DRAWING PBB-3.3 FOR PUSHBUTTON STATION DETAILS

GENERAL NOTES:

1. WHEN WELDING ON THE BRIDGE, MAINTAIN A MAXIMUM OF 18" BETWEEN THE ARCING ELECTRODE AND THE GROUNDING CONNECTION, SO AS TO ENSURE THAT WELDING CURRENT FLOWS IN THE ACTUAL MATERIAL BEING WELDED.
2. ATTACH AIRCRAFT CABLE TO SSFC UTILIZING WIRE MESH STRAIN RELIEF.
3. DRAWING ISSUED FOR REFERENCE ONLY. INSTALLATION TO BE PROVIDED IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION DETAILS. SUBMIT INSTALLATION DETAILS FOR APPROVAL.
4. NEW SSFC AND MOUNTING BRACKETS SHALL BE FACTORY PAINTED TO MATCH THE PBB INSTALLED.
5. INSTALLATION AND EQUIPMENT DESIGN SHALL NOT INTERFERE WITH ACCESS TO OTHER J-BOXES, DEVICES, ETC., ON THE PASSENGER BOARDING BRIDGE.

PLOT DATE:
TEMPLATE VERSION:

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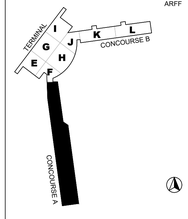

REVISION

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1	ISSUED FOR BID	01.20.2020

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12/19/2019

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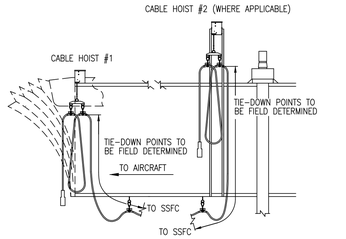
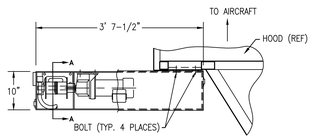
PBB PROCUREMENT

SHEET TITLE
400HZ EQUIPMENT DETAILS

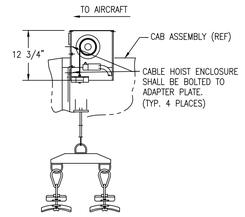
SHEET NO.
PBB-6.1



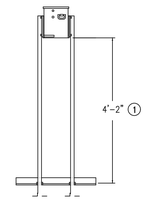
1 PBB-6.2 CABLE HOIST INSTALLATION – ELEVATION VIEW
SCALE: N.T.S.



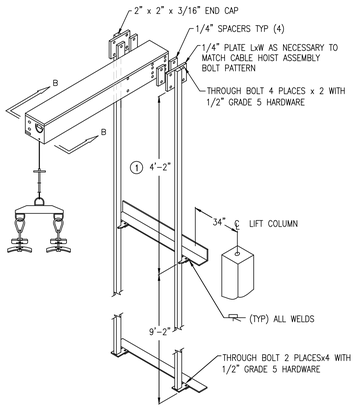
2 PBB-6.2 CABLE HOIST INSTALLATION – TOP VIEW
SCALE: N.T.S.



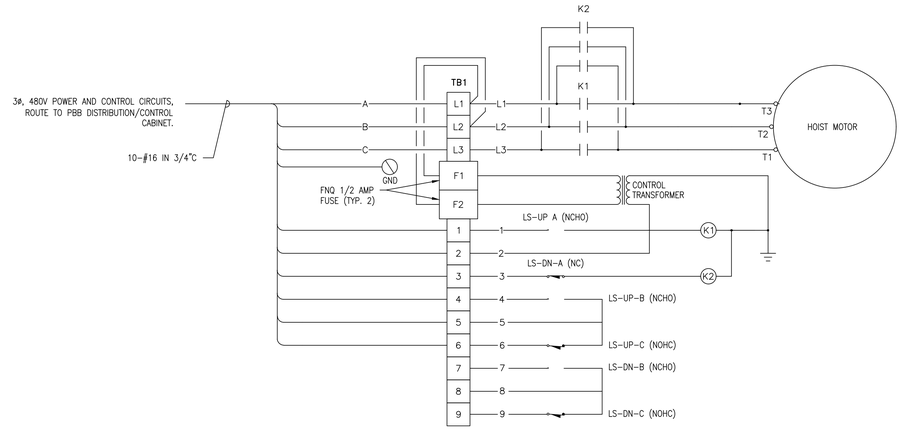
3 PBB-6.2 CH#1 CABLE HOIST INSTALLATION – SECTION A–A
SCALE: N.T.S.



4 PBB-6.2 CH#2 CABLE HOIST INSTALLATION – SECTION B–B
SCALE: N.T.S.



5 PBB-6.2 CH#2 CABLE HOIST INSTALLATION – ISOMETRIC
SCALE: N.T.S.



NOTE: ALL SWITCHES ARE SHOWN WITH THE HOIST IN THE UP POSITION.

6 PBB-6.2 NEW CABLE HOIST WIRING DIAGRAM 2
SCALE: N.T.S.

GENERAL NOTES

1. THIS DRAWING REPRESENTS A TYPICAL CABLE HOIST INSTALLATION. VERIFY CONDITIONS PRIOR TO INSTALLATION OF NEW CABLE HOISTS.
2. WHEN WELDING ON THE BRIDGE, MAINTAIN A MAXIMUM OF 18" BETWEEN THE ARCING ELECTRODE AND THE GROUNDING CONNECTION, SO AS TO ENSURE THAT WELDING CURRENT FLOWS IN THE ACTUAL MATERIAL BEING WELDED.
3. FURNISH ALL MISCELLANEOUS BOLTS, NUTS, WASHERS ETC. AS NECESSARY. ALL HARDWARE TO BE STAINLESS STEEL.
4. INSTALL CABLE HOISTS USING BRACKETS AND HARDWARE PROVIDED BY THE MANUFACTURER. DETAILS SHOWN FOR REFERENCE ONLY. REFER TO MANUFACTURER'S PUBLISHED DATA FOR ACTUAL INSTALLATION DETAILS AND INSTRUCTIONS.
5. GRIND ALL WELDS SMOOTH, PRIME AND PAINT ENTIRE BRACKET TO MATCH BRIDGE. TOUCH UP PAINT ANY SURFACES BLEMISHED DURING INSTALLATION.
6. EQUIPMENT LAYOUT IS BASED ON SPECIFIC MANUFACTURERS, AND IS SUBJECT TO CHANGE. FIELD VERIFY DIMENSIONS OF ALL EQUIPMENT PRIOR TO INSTALLATION AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
7. EQUIPMENT AND DETAILS SHOWN ARE A DESIGN INTENT ONLY. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION DETAILS. SUBMIT ALL DETAILS FOR APPROVAL.
8. ALL NEW EQUIPMENT INSTALLED ON BRIDGE SHALL BE PAINTED TO MATCH THE INSTALLED PBB.
9. CABLE HOIST SHALL BE INTERLOCKED WITH PBB #2 TO PREVENT HORIZONTAL DRIVE MOTION ANYTIME THE CABLE HOIST IS DEPLOYED.

SHEET NOTES

1. ATTACH AIRCRAFT CABLE TO PBB IN A MANNER SUCH AS TO PREVENT INTERFERENCE WITH HOSE BASKET AND OTHER APPURTENANCES.
2. SCHEMATIC SHOWN FOR A TYPICAL INSTALLATION ONLY. SUBMIT ACTUAL SCHEMATICS WITH PBB SUBMITTAL PACKAGE. LIMIT SWITCHES SHALL FUNCTION AS NECESSARY TO PROVIDE INTERLOCKS THAT PREVENT PBB HORIZONTAL MOTION WHILE CABLE HOIST IS DEPLOYED.

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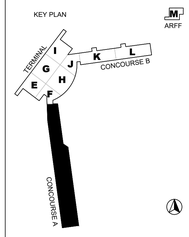

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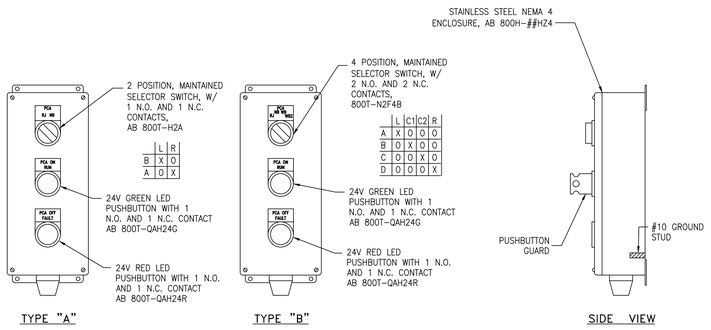
PBB PROCUREMENT

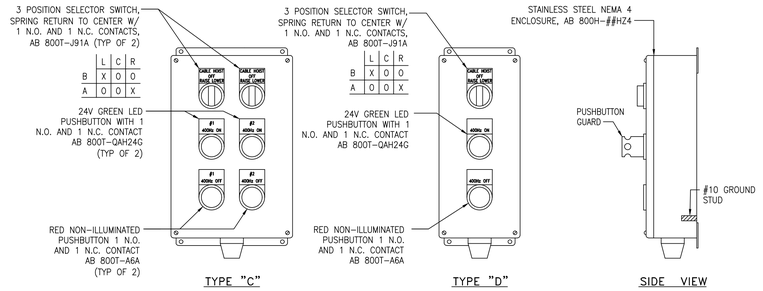
SHEET TITLE
400HZ CABLE HOIST DETAILS

SHEET NO.
PBB-6.2

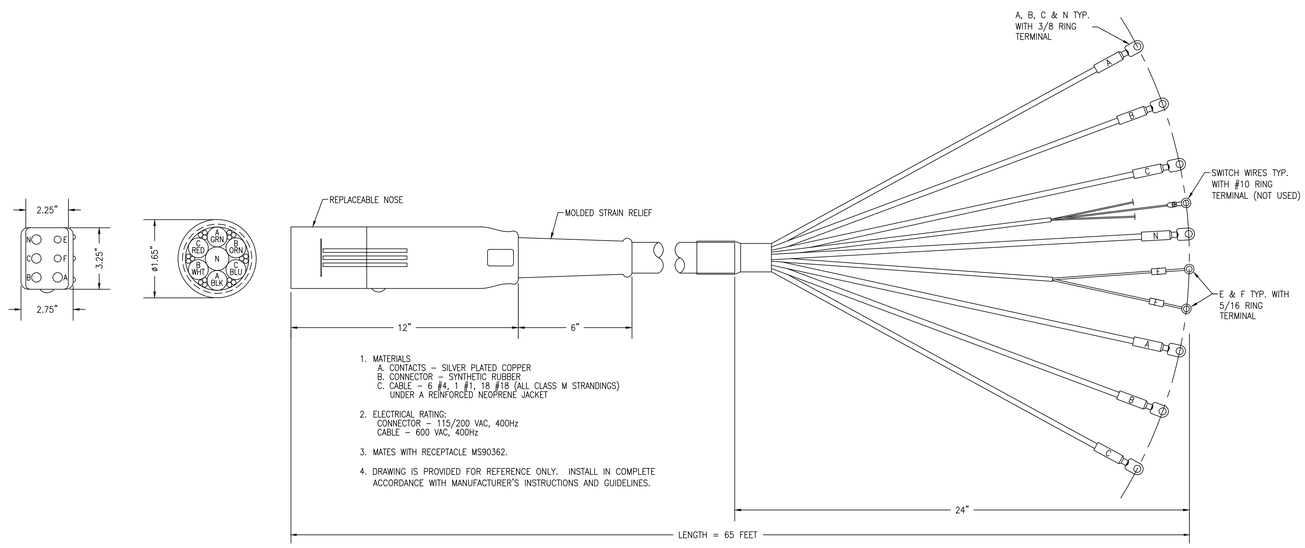
PLOT DATE:
TEMPLATE VERSION:



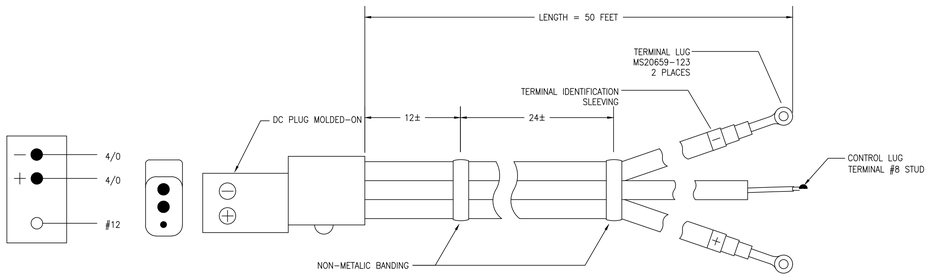
1 PBB-6.3 NEW PCA PUSHBUTTON STATION
Scale: N.T.S.



2 PBB-6.3 NEW 400HZ PUSHBUTTON STATION
Scale: N.T.S.



3 PBB-6.3 400HZ AIRCRAFT GROUND POWER CABLE DETAIL
Scale: N.T.S.



3 PBB-6.3 28.5 VDC AIRCRAFT GROUND POWER CABLE DETAIL
Scale: N.T.S.

PUSHBUTTON AND AIRCRAFT GROUND POWER CABLE SCHEDULE

GATE #	QTY. OF 400Hz CABLES	PUSHBUTTON TYPE		COMMENTS
		400Hz	PCA	
A1	1	D	A	(E) COMPONENTS RELOCATED FROM (E) GATE A1
A2	1	D	A	(E) COMPONENTS TO REMAIN
A3	1	D	A	(E) COMPONENTS RELOCATED FROM (E) GATE A1
A4	1	D	A	(E) COMPONENTS TO REMAIN
A5	1	D	A	(N) COMPONENTS
A6	1	D	A	(E) COMPONENTS TO REMAIN
A7	1	D	A	(E) COMPONENTS RELOCATED FROM (E) GATE A5
A8	1	D	A	(N) COMPONENTS
A9	1	D	A	(N) COMPONENTS
A10	1	D	A	(N) COMPONENTS
A11	1	D	A	(N) COMPONENTS
A12	1	D	A	(N) COMPONENTS
A14	2	C	B	(E) COMPONENTS RELOCATED FROM (E) GATE A7 (TEMP A8)
A15	2	C	B	(N) COMPONENTS
A16	1	D	A	(N) COMPONENTS

GENERAL NOTES

1. LEGEND PLATES SHALL BE METAL AND SHALL BE ENGRAVED AS INDICATED, AND SHALL BE OF THE TYPE CAPTURED BETWEEN ENCLOSURE AND PUSHBUTTON LOCK RING. ENGRAVINGS SHALL BE PAINTED TO PROVIDE A HIGH CONTRAST BETWEEN THE LETTERING AND THE BACKGROUND.
2. ALL WIRE TERMINATIONS SHALL BE LABELED IN ACCORDANCE WITH THE SPECIFICATIONS.
3. ALL CONTROLLERS AND MOUNTING PLATES SHALL BE INSTALLED IN SUCH A MANNER AS TO ALLOW FOR FULL BRIDGE DESIGN MOVEMENT AND SHALL BE COORDINATED SUCH THAT OPERATION DOES NOT INTERFERE WITH HOSE BASKET OR OTHER ANCILLARY EQUIPMENT.
4. PROVIDE AND INSTALL A PUSHBUTTON MOUNTING PLATE OF SUFFICIENT SIZE TO ALLOW MOUNTING OF THE INDICATED PUSHBUTTON STATION.
5. LAYOUT SHOWN IS A DESIGN INTENT ONLY. PROVIDE, INSTALL AND COMMISSION A COMPLETE AND OPERABLE SYSTEM IN ACCORDANCE WITH THE DESIGN INTENT AND SPECIFICATIONS. SUBMIT EQUIPMENT LAYOUT DRAWINGS FOR APPROVAL.
6. LENGTHS SHOWN SHALL BE CONSIDERED MINIMUM. PROVIDE IN ACCORDANCE WITH THE SPECIFICATIONS.

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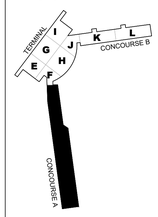

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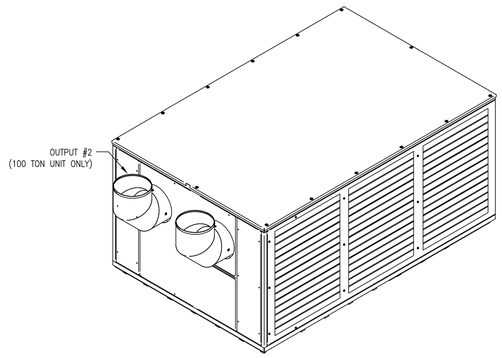
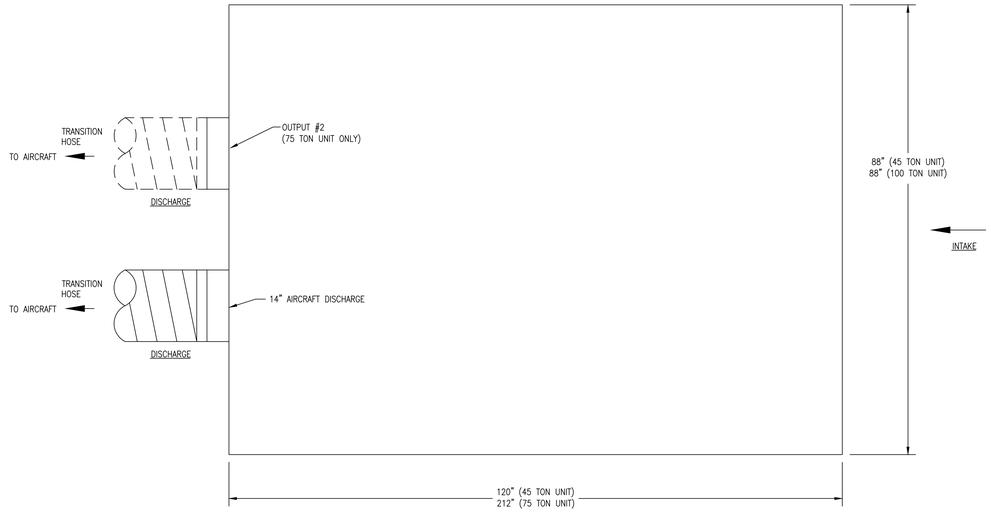
ISSUE
PBB PROCUREMENT

SHEET TITLE
PUSHBUTTON AND 400HZ CABLE DETAILS

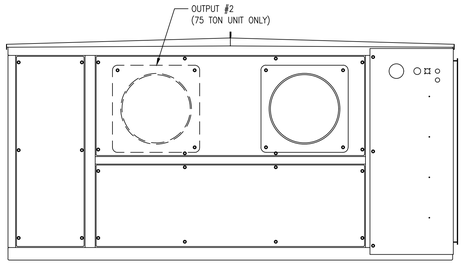
SHEET NO.
PBB-6.3

PLOT DATE:
TEMPLATE VERSION:

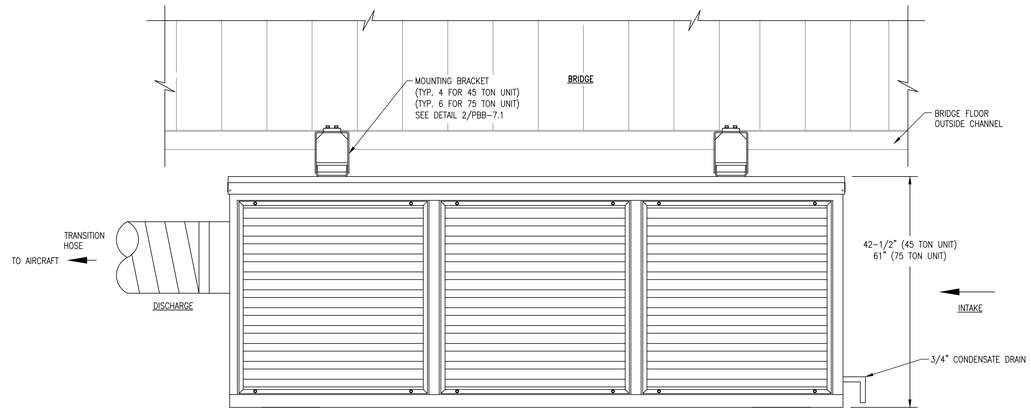




PLAN VIEW



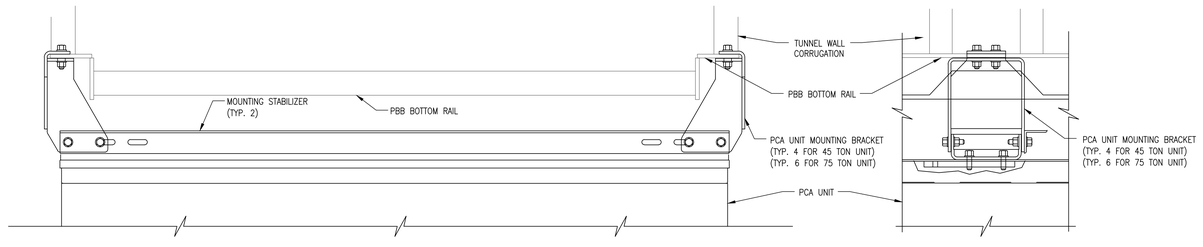
ELEVATION VIEW – FRONT



ELEVATION VIEW – SIDE

1 PBB-7.1 PCA DX UNIT INSTALLATION DETAILS
SCALE: N.T.S.

POINT OF USE (POU) PCA DX SCHEDULE					
GATE	COMMENTS	SUPPLY AIRFLOW (LB/MIN)	SUPPLY AIR PRESSURE (IN. H20)	NOMINAL CAPACITY	EQUIPMENT BASIS OF DESIGN
A1	(E) PCA UNIT ON (E) PBB RELOCATED FROM (E) GATE A1	180	22	30	JET AIRE
A2	(E) PCA UNIT TO REMAIN ON (E) PBB	180	22	30	JET AIRE
A3	(E) PCA UNIT ON (E) PBB RELOCATED FROM (E) GATE A3	180	22	30	JET AIRE
A4	(E) PCA UNIT TO REMAIN ON (E) PBB	180	22	30	JET AIRE
A5	(N) PCA UNIT ON (N) PBB	240	22	45	JET AIRE
A6	(E) PCA UNIT TO REMAIN ON (E) PBB	180	22	30	JET AIRE
A7	(E) PCA UNIT ON (E) PBB RELOCATED FROM (E) GATE A5	180	22	30	JET AIRE
A8	(N) PCA UNIT ON (N) PBB	240	22	45	JET AIRE
A9	(N) PCA UNIT ON (N) PBB	240	22	45	JET AIRE
A10	(N) PCA UNIT ON (N) PBB	240	22	45	JET AIRE
A11	(N) PCA UNIT ON (N) PBB	240	22	45	JET AIRE
A12	(N) PCA UNIT ON (N) PBB	240	22	45	JET AIRE
A14	(E) PCA UNIT ON (E) PBB RELOCATED FROM (E) GATE A7	400	22	75	JET AIRE
A15	(N) PCA UNIT ON (N) PBB	400	22	75	JET AIRE
A16	(N) PCA UNIT ON (N) PBB	240	22	45	JET AIRE



FRONT VIEW

SIDE VIEW

2 PBB-7.1 PCA DX UNIT MOUNTING BRACKET DETAIL (TYP.)
SCALE: N.T.S.

GENERAL NOTES

1. UNIT HOUSING SHALL RESIST CORROSION FOR UP TO 20 YRS IN A COASTAL ENVIRONMENT.
2. PCA DX UNIT SHALL BE EQUIPPED WITH SMOKE DETECTORS IN COMPLIANCE WITH NFPA-415. PCA UNIT TO BE SHUT DOWN IN THE EVENT OF RAMP FIRE.
3. PCA DX UNIT SHALL UTILIZE A VFD FOR AIRFLOW CONTROL OF THE BLOWER.
4. DATA AND DIMENSIONS ARE A DESIGN INTENT. MANUFACTURER'S ACTUAL EQUIPMENT MAY VARY.
5. PCA UNIT TO BE PAINTED TO MATCH PBB.
6. PCA UNIT SHALL BE EQUIPPED WITH INTEGRAL CONDENSATE PUMP.

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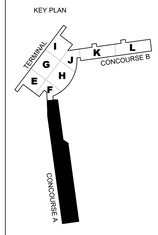
KEY PLAN



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1	ISSUED FOR BID	01.20.2020

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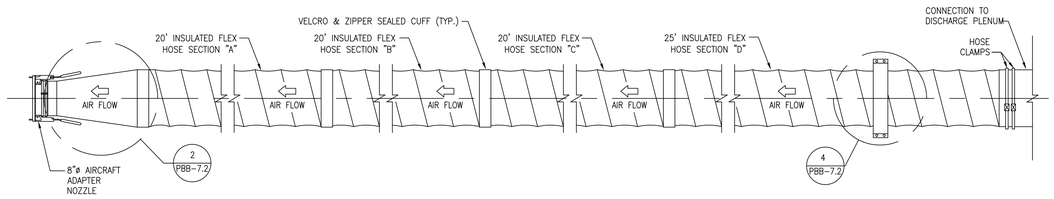
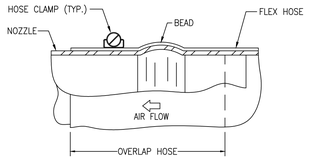
SHEET TITLE
PCA EQUIPMENT DETAILS - PART ONE

SHEET NO.
PBB-7.1



1 PBB-7.2 PCA HOSE CONFIGURATION – 14"ø ③④

Scale: N.T.S

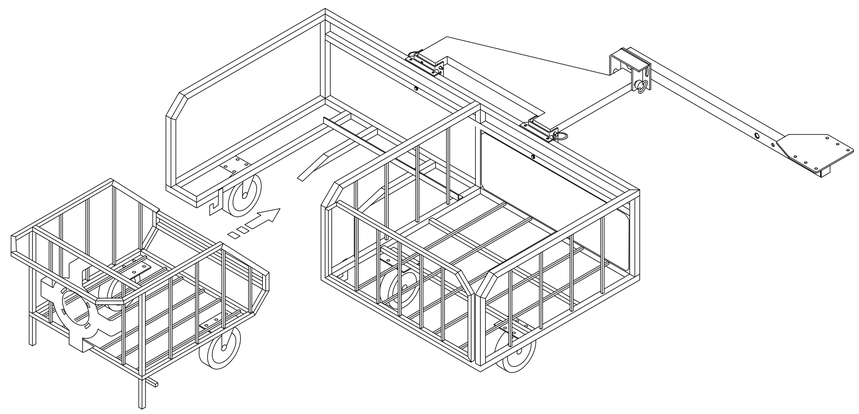


3 PBB-7.2 FLEXIBLE HOSE TERMINATION DETAIL

Scale: N.T.S

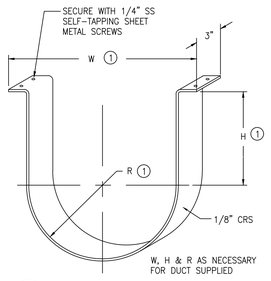
2 PBB-7.2 14" TO 8" FLEXIBLE HOSE REDUCER DETAIL

Scale: N.T.S



6 PBB-7.2 SIDE MOUNT PCA HOSE BASKET DETAIL②

Scale: N.T.S



4 PBB-7.2 DUCT SUPPORT DETAIL

Scale: N.T.S

GENERAL NOTES

1. WHEN WELDING ON THE BRIDGE, MAINTAIN A MAXIMUM OF 18" BETWEEN THE ARCING ELECTRODE AND THE GROUNDING CONNECTION, SO AS TO ENSURE THAT WELDING CURRENT FLOWS IN THE ACTUAL MATERIAL BEING WELDED.
2. ALL EQUIPMENT CORNERS AND EDGES SHALL BE BEVELED AS NECESSARY, TO REMOVE BURS AND SHARP EDGES.
3. LAYOUT SHOWN IS A DESIGN INTENT ONLY. PROVIDE, INSTALL AND COMMISSION IN ACCORDANCE WITH THE DESIGN INTENT AND SPECIFICATIONS. SUBMIT EQUIPMENT LAYOUT DRAWINGS FOR APPROVAL.
4. INSTALLATION AND EQUIPMENT DESIGN SHALL NOT INTERFERE WITH ACCESS TO OTHER J-BOXES, DEVICES, ETC., ON THE PASSENGER BOARDING BRIDGE.
5. GRIND, PRIME AND TOUCH UP PAINT ALL WELDS.
6. PCA HOSES, ELBOWS, DUCTS, ETCETERA SHALL BE INSTALLED IN SUCH A MANNER SO AS NOT TO RESTRICT AIR FLOW THROUGHOUT THE OPERATIONAL RANGE OF THE PBB.

SHEET NOTES

① AS REQUIRED FOR HOSE PROVIDED.

② HOSE BASKET SHOWN IS A DESIGN INTENT. SUBMIT DETAILS FOR APPROVAL. PROVIDE SWIVEL JOINTS SUCH THAT BASKET CAN PIVOT AS NECESSARY TO ACCOMMODATE SLOPING LIFT COLUMNS AND SLOPING RAMPS.

③ HOSE LENGTH INDICATED IS A MINIMUM LENGTH ONLY. PROVIDE SUFFICIENT OUTPUT HOSE TO REACH THE PCA SERVICE PORT OF ALL AIRCRAFT THAT PARK AT EACH GATE.

④ PCA HOSE SHALL HAVE VELCRO & ZIPPER CUFFS AT EACH CONNECTION.

NEW HOSE BASKET AND PCA HOSE SCHEDULE	
A5, A8, A9, A10, A11, A12, & A16	(1) PRIMARY HOSE BASKET W/ 85' PCA HOSE, REDUCER, AND AIRCRAFT ADAPTER (1) EXTENSION HOSE BASKET W/ 25' PCA HOSE, REDUCER, AND AIRCRAFT ADAPTER
A15	(1) PRIMARY HOSE BASKET W/ 85' PCA HOSE, REDUCER, AND AIRCRAFT ADAPTER (2) SECONDARY HOSE BASKET W/ 85' PCA HOSE, REDUCER, AND AIRCRAFT ADAPTER (1) EXTENSION HOSE BASKET W/ 25' PCA HOSE, REDUCER, AND AIRCRAFT ADAPTER

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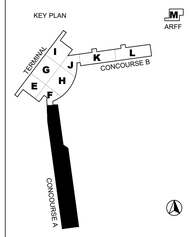

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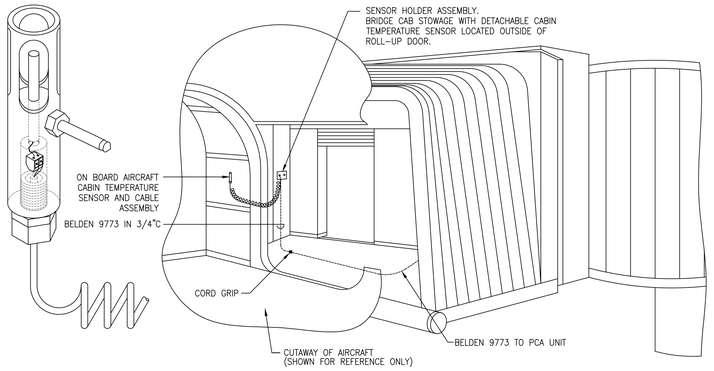
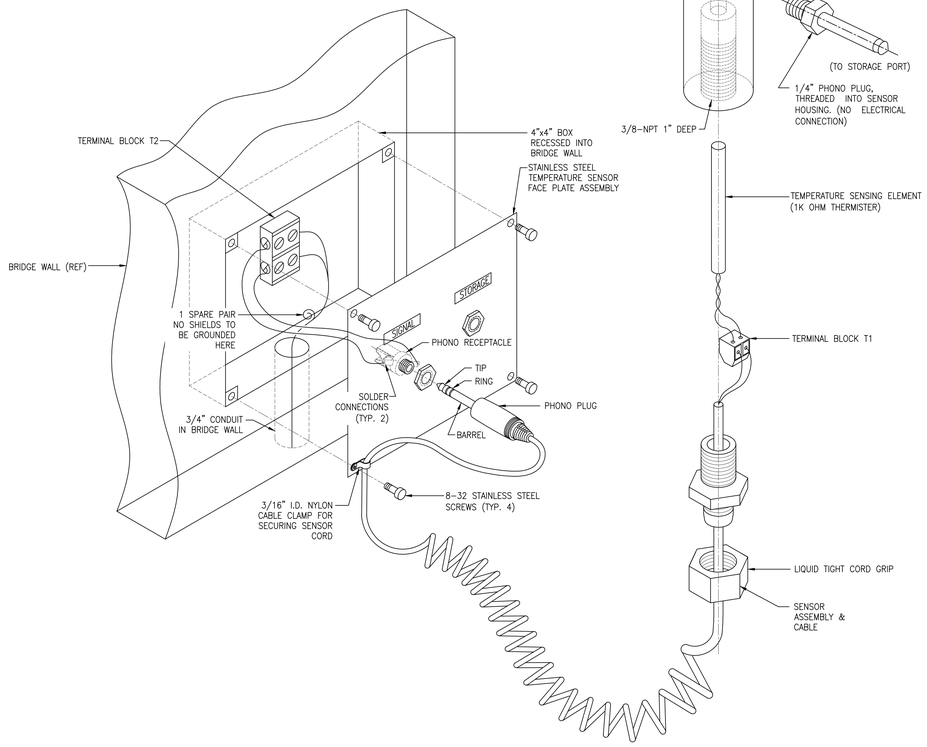
SHEET TITLE
PCA EQUIPMENT DETAILS - PART TWO

SHEET NO.
PBB-7.2



1 PBB-7.3 CABIN TEMPERATURE SENSOR LOCATION DETAIL
(VIEW FROM AIRCRAFT CAB IN DOOR TOWARD GATE) SCALE: N.T.S.



6 PBB-7.3 SENSOR INSTALLATION DETAIL
SCALE: N.T.S.

GENERAL NOTES:

1. LAYOUT SHOWN IS A DESIGN INTENT ONLY. PROVIDE, INSTALL AND COMMISSION IN ACCORDANCE WITH THE DESIGN INTENT AND SPECIFICATIONS. SUBMIT EQUIPMENT LAYOUT DRAWINGS FOR APPROVAL.

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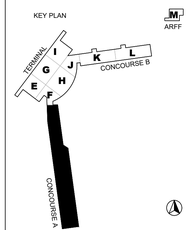

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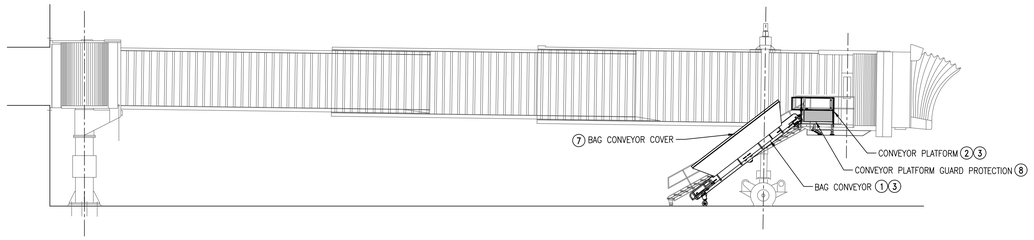
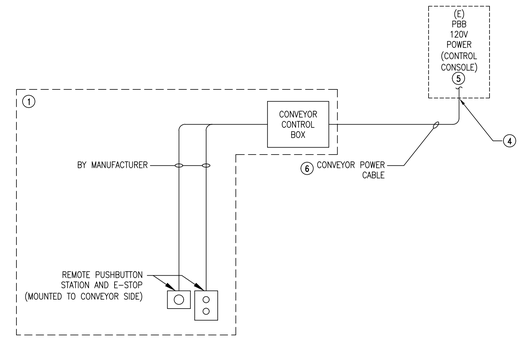
SHEET TITLE
PCA EQUIPMENT DETAILS - PART THREE

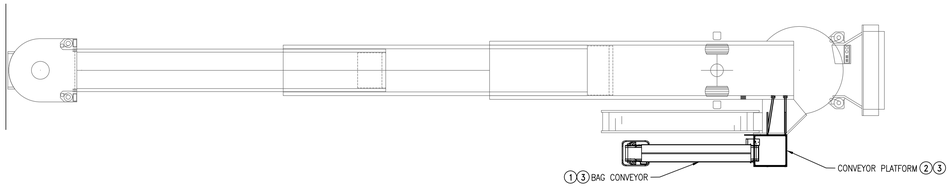
SHEET NO.
PBB-7.3



1 PBB-1 COVERED BAG CONVEYOR – ELEVATION VIEW – TYPICAL
Scale: N.T.S.



3 PBB-1 COVERED BAG CONVEYOR – ONE LINE
Scale: N.T.S.



2 PBB-1 COVERED BAG CONVEYOR – PLAN VIEW – TYPICAL
Scale: N.T.S.

LEGEND NOTES

1. INSTALL (N) KCI BAG CONVEYOR IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
2. INSTALL (N) BAG CONVEYOR PLATFORM IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
3. PROVIDED BY MANUFACTURER, INSTALLED BY CONTRACTOR.
4. PROVIDE AND INSTALL KNOCKOUT & WEATHER TIGHT CABLE GRIP.
5. PROVIDE AND INSTALL 15A, 120VAC CIRCUIT BREAKER IN PBB CONSOLE. EATON FAZ SERIES OR EQUIVALENT.
6. CONVEYOR TYPE W POWER CABLE TO BE PROVIDED BY MANUFACTURER AND INSTALLED BY CONTRACTOR.
7. PROVIDE STAINLESS STEEL COVER. MATCH EXISTING PBB COVER ASSEMBLIES.
8. PROVIDE STAINLESS STEEL GUARD PROTECTION AT BAG CONVEYOR PLATFORM. MATCH EXISTING.

GENERAL NOTES

1. GRIND, PRIME AND PAINT SURFACE AT ALL WELDS. PAINT SHALL MATCH EXISTING BRIDGE COLOR.
2. VERIFY EXACT LOCATION OF ALL EQUIPMENT/CONDUIT/CABLES, ETC. PRIOR TO INSTALLATION.
3. COORDINATE THE INSTALLATION OF ALL EQUIPMENT SUCH THAT BRIDGE MAINTAINS CAPACITY OF FULL DESIGN MOVEMENT. THE BRIDGE ROTATIONAL LIMITS ARE DEFINED AS THE EXTREME C.W. TO THE EXTREME C.C.W. POSITIONS. THESE LIMITS SHALL BE THE MECHANICAL LIMITS OF THE BRIDGE AND CAB AS INSTALLED IRRESPECTIVE OF ELECTRICAL LIMIT SET POINTS.
4. ALL UNDER BRIDGE CONDUITS AND CABLES SHALL BE INSTALLED SO AS TO MAINTAIN A CLOSE PROXIMITY TO THE BOTTOM OF THE BRIDGE. CABLES SHALL NOT HANG LOOSELY FROM BRIDGE.
5. WHEN WELDING ON THE BRIDGE, MAINTAIN A MAXIMUM OF 18" BETWEEN THE ARCING ELECTRODE AND THE GROUNDING CONNECTION, SO AS TO ENSURE THAT WELDING CURRENT FLOWS IN THE ACTUAL MATERIAL BEING WELDED.
6. DRAWING PACKAGE IS USED TO DEPICT A DESIGN INTENT ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING EXISTING CONDITIONS PRIOR TO SUBMITTING BIDS OR OFFERS TO PERFORM WORK. EXPECT SOME DEVIATIONS BETWEEN DRAWINGS AND ACTUAL FIELD CONDITIONS.

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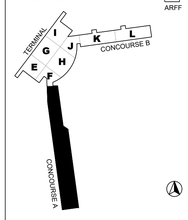
KEY PLAN



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SHEET TITLE
NEWBAGGAGE CONVEYOR - GATES A5, A8 - A12, & A15

SHEET NO.
PBB-8.1