Charlotte·Douglas
INTERNATIONAL AIRPORT

REQUEST FOR PROPOSALS

REPLACEMENTOF CS1 LEGACY CONVEYORS

Rev.9/29/2014
RFP# 09-001, Issue Date September 14, 2017

I. INTRODUCTION

A. INVITATION TO PROPOSE

Pursuant to this Request for Proposals ("RFP"), Charlotte Douglas International Airport ("CLT" or "Airport"), which is owned and operated by the City of Charlotte, North Carolina ("City"), is seeking Proposals from qualified and experienced companies (individually or collectively, the "Proposer") interested in providing installation services for CS1 Legacy Conveyors (the "Work"). Details of the requested Work are attached hereto as **Exhibit A**.

The Work will be governed by a contract, a sample of which will is attached hereto as **Exhibit B** (the "Agreement"). Proposers are advised to carefully read and review the form Agreement as they prepare their Proposals to this RFP. CLT reserves the right to revise the terms of the form Agreement at any time during the RFP process and to negotiate different terms with the selected Proposer.

Proposers are encouraged to also carefully review all sections of this RFP including all attachments and exhibits as they prepare their Proposals. Failure to comply with the terms, conditions and requirements of this RFP may result in disqualification of the Proposer in the sole discretion of CLT.

B. SCHEDULE

DATE	ACTIVITY (All times are EST)
9/14/2017	Issue RFP
9/20/2017	Deadline for Submission of RFP Acknowledgement
9/21/2017	Non-Mandatory (Highly Recommended) Pre-Proposal Conference at 9:00am
9/28/2017	Deadline for Submission of Written Questions
10/5/2017	Proposals are Due, 3:00pm
12/11/2017	City Council Date
2/5/2018	Estimated Start Date

CLT reserves the right to modify the deadline set forth in the above table in its sole discretion. Any such modifications will be stated in an addendum as described in **Section II. B** below.

II. RFP SELECTION PROCESS

A. POINT OF CONTACT

The point of contact for all submissions and correspondence regarding this RFP will be Gary Peeples ("RFP Project Manager") and may be reached by email at ghpeeples@cltairport.com . Submissions of questions, correspondence or requests for clarifications to persons other than the RFP Project Manager will not receive a response.

B. INTERPRETATION AND ADDENDA

No interpretation or clarification regarding this RFP will be made verbally to any Proposer. Requests for interpretation or clarification must be submitted electronically to the RFP Project Manager. When submitting a request for interpretation or clarification, Proposers are encouraged to reference the RFP page and topic number pertinent to the question(s). All questions must be submitted no later than the date and time stated in the RFP Schedule as the deadline for submission of questions. Any questions received after that time will not be addressed.

Interpretations, clarifications and supplemental instructions from CLT will be in the form of a written addendum, which will be posted to the CLT website at www.cltairport.com, on the Advertising for Bids and Proposals page located under the Business with CLT section. Proposers shall acknowledge their receipt and review of all posted addenda on the Proposal Form attached hereto as **Form 2**.

Only the written interpretations, clarifications or supplemental instructions set forth in the posted addenda shall be binding, and Proposers are warned that no other source is authorized to give information concerning, explaining or interpreting this RFP.

C. ATTEMPTS TO INFLUENCE THE SELECTION PROCESS

Except for clarifying written questions sent to CLT, all Proposers, including any and all persons acting on their behalf, are strictly prohibited from contacting City staff or evaluation committee members on or regarding any matter relating to this RFP from the time the RFP is issued until the intent to award is communicated to Proposers.

CLT reserves the right to disqualify any Proposer who contacts a City staff or evaluation committee members concerning this RFP other than in accordance with this section.

D. RFP ACKNOWLEDGMENT

Proposers shall thoroughly examine and become familiar with this RFP, including forms, attachments, exhibits and any addenda that may be issued. The failure or the neglect of a proposer to receive or examine any RFP document shall in no way relieve it from any obligation with respect to its proposal or the obligations that flow from making a selected proposal. No claim based upon a lack of knowledge or understanding of any document or its contents shall be allowed.

Please acknowledge receipt of this RFP by email on or before the date stated in the RFP Schedule using the Request for Proposals Acknowledgement form attached hereto as **Form 1**. This form will provide CLT with an attendee count for the Pre-Proposal Conference. Proposers are required to email the completed Request for Proposals Acknowledgment to the RFP Project Manager at the email listed in Section II. A. above.

E. NON-MANDATORY (Highly Recommended) PRE-PROPOSAL CONFERENCE

A Pre-Proposal Conference will be conducted on the date and at the time stated in the RFP Schedule above. The Pre-Proposal Conference will be held at the CLT Center, 5601 Wilkinson Blvd., Charlotte, NC 28208. If special accommodations are required for attendance, please notify the RFP Project Manager

in advance of the Pre-Proposal Conference identifying the special accommodation(s) required. All Proposers are required to sign in at the CLT Center's front desk and provide vehicle license tag numbers (if applicable).

The Pre-Proposal Conference will include an information session and a walkthrough of the facilities. Proposers are encouraged to dress accordingly. If the pre-proposal is mandatory, proposals will not be accepted from companies that do not attend.

F. SELECTION CRITERIA AND MINIMUM REQUIREMENTS

Upon review and evaluation of all qualifying proposals, including any interviews that the CLT may require, the Evaluation Committee will select and recommend the Proposer that, in its sole judgment, is most responsive in meeting the requirements and objectives of this RFP as set forth below.

Selection Criteria		Weight
Experience	The BHS Contractor as the Prime Contractor must have a minimum of three – (3) years that demonstrate experience as a contractor/installer of BHS equipment/components, including modifications to PLC and MDS systems, with the completion of a minimum of three – (3) existing BHS system modifications/installations with a minimum value of at least $500,000 per project	25%
Operations Plan	Identify in the bid submission any design aspect or specification requirement that is believed to be inappropriate or inadequate and shall propose alternate solutions to alleviate the perceived problem but shall, in all cases, include in the bid submittal pricing for the base system presented in the drawings. Any alternate designs developed must meet or exceed the design criteria as listed in the specifications.	25%
Staffing	CLT will consider the plan to provide necessary staffing and the experience of the individual team members proposed to provide the Work.	15%
Compensation	CLT will evaluate the Proposer on the overall compensation proposed related to the provision of the Work.	25%
References	CLT will consider the extent and quality of the Proposer's requested references	10%

G. EVALUATION COMMITTEE AND AWARD OF CONTRACT

The Aviation Director, or his designee, will appoint an Evaluation Committee to review all Proposals. As part of the evaluation process, the Evaluation Committee may engage in discussions with any Proposer to determine in greater detail the Proposer's qualifications and to learn about the Proposer's proposed method of performance to facilitate arriving at an agreement that will be satisfactory to CLT.

CLT may in its discretion require one or more Proposers to make presentations to the Evaluation Committee or appear before CLT and/or its representatives for an interview. During such interview, the Proposer may be required to present its Proposal and to respond in detail to any questions posed. Additional meetings may be held to clarify issues or to address comments, as CLT deems appropriate. Proposers will be notified in advance of the time and format of such interviews and/or meetings.

The Evaluation Committee will consider all relevant materials and information in making its selection. The Evaluation Committee will select and recommend the Proposer that it determines, in its sole discretion, is best able to provide the Work.

CLT will inform the selected Proposer that it has been selected, subject to final agreement on all terms and conditions of the Agreement. Upon Proposer's execution of the Agreement, the Aviation Director may submit it to City Council for approval. If CLT and the selected Proposer are unable to agree on the final terms, the selected Proposer will be excused from further consideration and CLT may, at their option, select another Proposer.

The City Council may, in its sole and absolute discretion, accept or reject the recommendation of the Evaluation Committee, Agreement, and supporting ancillary documents. The City shall have no obligations under this RFP until City Council has formally approved the award of the Agreement to the selected Proposer and the Agreement has been executed by both parties.

H. CONSENT TO INVESTIGATE

The selection of the proposer will be based on a thorough investigation of the proposals submitted in response to this RFP. As part of the selection process, CLT may request that Proposers provide additional information, including without limitation, financial records, certified bank statements or other company records relevant to the Evaluation Committees review of the proposals. By submitting a Proposal, each Proposer consents to any investigation the City deems necessary.

I. TITLE VI SOLICITATION NOTICE.

The City, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all proposers that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit proposals in response to this request and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

J. E-VERIFY

Where applicable, the successful proposer must agree to meet the E-Verify requirements as set forth in the sample contract below.

K. Iran Divestment Act.

Where applicable, the successful proposer must certify that it meets the Iran Divestment Act requirements as set forth in the sample contract below.

L. CHARLOTTE BUSINESS INCLUSION PROGRAM / DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

1. Overview

The City has a long history of creating and implementing strategies to support and encourage local business growth. In 2013, the City Council adopted the CBI policy to promote diversity, inclusion, and local business opportunities in the City's contracting and procurement process for Minority, Women, and Small Business Enterprises ("MWSBEs").

For this RFP, the City will negotiate an MWSBE participation goal ("Contract Goal") with the selected firm. The Contract Goal will be made part of the selected firm's Agreement. Firms are

required to complete and attach CBI Form #3 – Utilization Commitment to their Statements of Qualifications. A complete list of registered MWSBEs as well as a copy of the CBI Policy is available on the City's website at www.charlottebusinessinclusion.com.

The selected firm will be required to submit CBI Form #4 – Letter of Intent for each MWSBE the selected firm commits to use to meet the Contract Goal. These forms are due no later than three (3) business days from the time they are requested by CLT, unless otherwise agreed by the parties. During the term of the Agreement, the selected firm shall be required to submit CBI Form #6 – Payment Affidavit with each invoice submitted to CLT for payment.

Form copies of CBI Form #3 – Utilization Commitment, CBI Form #4 – Letter of Intent and CBI Form #6 – Payment Affidavit are attached hereto as **Form 5.**

2. Submission Requirements

Although the CBI Program allows CLT to negotiate a goal with the selected firm, CLT would like to see how the selected firm expects to utilize MWSBEs throughout the course of the Project.

CBI Form # 3 should be submitted for this section, stating the MWSBE company(s) that selected firm intends to use and a description of the scope of work for each MWSBE company identified, EXCLUDING % or dollar values.

CBI Form #3 is the **ONLY CBI form that should be attached to the Statement of Qualifications.

III. ELIGIBILITY AND DISQUALIFICATION OF PROPOSERS

FINANCIAL SECURITY

A. Prior to execution of the Agreement, the selected Proposer may be required to furnish CLT with a bond, letter of credit, or other credit instrument ("Financial Security") to secure performance under the Agreement. The form, amount and terms of the Financial Security will be governed by the Agreement. The selected proposer is required to maintain the Financial Security for as long as the completed Agreement is in effect.

B. FINANCIAL CAPACITY

1. Proposer is expected to have the financial ability to move forward with the Work, however, Proposer's financial information will not be a required as part of the Proposal. Upon inspection of the Proposals, CLT reserves the right to request any and all financial information it deems relevant in assessing the validity of the Proposal. Such materials may include, without limitation, an official bank statement, copies of account records certified by a CPA or a letter of credit. If, after reviewing the Proposals, the City requests that Proposer submit financial information as part of its Proposal, Proposer may choose to seal it in envelope and mark it "CONFIDENTIAL.". Financial information submitted in this manner may not be subject to disclosure under North Carolina's public records laws.

C. DISQUALIFICATION OF PROPOSAL

Without in any way limiting CLT's right to reject any or all Proposals, Proposers are advised that any of the following may be considered as sufficient cause for the disqualification of a Proposer and the rejection of a Proposal: (i) failure to meet the eligibility requirements set forth in the Scope of Work; (ii) submission of more than one proposal by an individual, firm, partnership or corporation under the same or different names, including the names it does business under; (iii) evidence of collusion among proposers; or (iv) improper communication as described in Section II. B. Proposals will be considered irregular and may be rejected for omission, alterations of form, additions not called for, conditions, limitation, unauthorized alternate proposals or other irregularities of any kind. All of the foregoing notwithstanding, however, CLT reserves the right to waive any such irregularities.

IV. PROPOSAL FORMAT AND SUBMISSION REQUIREMENTS

A. PROPOSAL FORMAT

CLT desires all Proposals to be identical in format in order to facilitate the evaluation process. Failure to comply with the format requirements set forth herein may result in rejection of the Proposal. Proposals must be structured as follows:

1. Cover letter

The Proposal must include a letter of transmittal attesting to its accuracy, signed by an individual authorized to execute binding legal documents on behalf of the Proposer. The cover letter shall provide the name, address, telephone and facsimile numbers of the Proposer and the executive that has the authority to contract with CLT. The Cover Letter should also include an Executive Summary outlining how the Company best meets the requirements under this RFP.

Each Proposer shall make the following representations and warranty in the Cover Letter, the falsity of which may result in rejection of its Proposal or termination of the resulting Agreement: **"The information contained in this Proposal or any part thereof, including its Forms, Attachments, Exhibits and other documents and instruments delivered or to be delivered to CLT, is true, accurate, and complete. This Proposal includes all information necessary to ensure that the statements therein do not in whole or in part mislead CLT as to any material facts."**

2. Request for Proposals Acknowledgment – Form 1
3. Proposal Form and supporting documentation – Form 2
4. Qualifications Form and supporting documentation – Form 3
5. Non-Discrimination Certification – Form 4
6. Charlotte Business Inclusion Program Forms – Form 3

B. SUBMISSION REQUIREMENTS

Proposers must submit Five (5), unbound, original and complete Proposals signed in ink by a company official authorized to make a legal binding offer and an electronic version on a flash drive in searchable Adobe Acrobat .pdf format to the RFP Project Manager no later than the date and time set forth in the RFP Schedule above, according to CLT's clock. Submission may be by mail or hand-delivery as follows:

1. By Mail – Attn: Gary Peeples RFP Project Manager, CLT Center, 5601 Wilkinson Boulevard, Charlotte, NC 28208; or

2. By Hand-delivery – Proposals may hand-delivered to the office attendant in the front lobby of the CLT Center, 5601 Wilkinson Boulevard, Charlotte, NC 28208.

Proposals will be time and date stamped upon receipt (by either mail or hand-delivery).

All Proposals shall be 8 1/2" x 11" format with all standard text no smaller than eleven (11) points. All Proposals should use double-sided copying and be unbound with tab dividers corresponding to the format requirements specified above. Failure of the Proposer to organize the information required by this RFP as outlined herein may result in CLT, at its sole discretion, deeming the Proposal non-responsive to the requirements of this RFP. The Proposer, however, may reduce the repetition of identical information within several sections of the Proposal by making the appropriate cross-references to other sections of the Proposal. Appendices for certain technical or financial information may be used to facilitate Proposal preparation.

C. WITHDRAWAL OF PROPOSAL; CORRECTION OF ERRORS

Withdrawal of the proposal may occur at any time prior to the submission deadline as set forth in the RFP Schedule above, by written request, sent by email to the RFP Project Manager. A request for withdrawal will not be effective until CLT has confirmed, in writing, the receipt of such request. A request to withdraw a Proposal by telephone or facsimile shall not be considered a valid request to withdraw a Proposal. Withdrawal of one proposal will not preclude the submission of another timely proposal but no withdrawal will be allowed after the submission deadline.

If Proposer desires to amend a submitted Proposal before the Proposal Due Date, Proposer must follow the withdrawal procedures described in this Section and resubmit the amended Proposal on or before the Proposal Due Date in a manner consistent with the Submission Requirements. Where there are corrections prior to submission, the Proposer's representative signing the Proposal must initial erasures or other corrections in the Proposal. The Proposer further agrees that in the event of any obvious errors, CLT reserves the right to waive such errors in its sole discretion.

D. PROPOSAL TERMS FIRM AND IRREVOCABLE

The signed Proposal shall be considered a firm offer on the part of the Proposer. All Proposal responses (including all statements, claims, declarations, prices and specifications in the Proposals) shall be considered firm and irrevocable for purposes of contract negotiations unless specifically waived in writing by CLT. The selected Proposer should be prepared to have its Proposal and any relevant correspondence or documentation incorporated into the Agreement, either in part or in its entirety, at CLT's election. Any false or misleading statements found in the Proposal may be grounds for disqualification and termination of the Agreement.

This RFP does not constitute an offer by CLT. No binding contract, obligation to negotiate, or any other obligation shall be created on the part of CLT unless CLT and the Proposer execute the Agreement following award of such agreement by the City Council.

V. RFP TERMS AND CONDITIONS

A. CLT's RIGHTS AND OPTIONS

CLT reserves the following rights, which may be exercised at CLT's sole discretion:

i. To supplement, amend, substitute, withdraw or otherwise modify this RFP at any time;
ii. To issue additional requests for information;
iii. To require a Proposer to supplement, clarify or provide additional information in order for CLT to evaluate its Proposal;
iv. To conduct investigations with respect to the qualifications and experience of each Proposer;
v. To waive any defect or irregularity in any Proposal received;
vi. To share the Proposals with City and/or CLT employees other than the Evaluation Committee as deemed necessary;
vii. To award all, none, or any part of the scope of work set forth in this RFP that is in the best interest of CLT with or without re-solicitation;
viii. To discuss and negotiate with selected Proposer(s) any terms and conditions in the Proposals including but not limited to financial terms;
ix. To enter into any agreement deemed by CLT to be in the best interest of CLT;
x. To reject any or all proposals submitted; and
xi. To re-advertise for proposals using this RFP or a different RFP or solicitation.

B. ACCURACY OF RFP AND RELATED DOCUMENTS

CLT assumes no responsibility for conclusions or interpretations derived from the information presented in this RFP, or otherwise distributed or made available during this selection process. In addition, CLT will not be bound by or be responsible for any explanation, interpretation or conclusions of this RFP or any documents other than those provided by CLT through the issuance of addenda. In no event may a Proposer rely on any oral statement in relation to this RFP.

Should a Proposer find discrepancies or omissions in this RFP or any other documents provided by CLT, the Proposer should immediately notify CLT of such discrepancy or omission in writing, and a written addendum may be issued if CLT determines clarification necessary. Each Proposer requesting a clarification or interpretation will be responsible for delivering such requests to CLT as directed in **Section II.B** of this RFP.

The information contained in this RFP forms, exhibits and attachments, hereto, and any addendum that may be issued, has been obtained from sources thought to be reliable, but the City and its elected officials, officers, employees, agents and contractors, are not liable for the accuracy of the information or its use by prospective respondents.

C. PROPOSER'S COST OF PROPOSAL PREPARATION

Proposers are responsible for any and all costs associated with the proposal process including, but not limited to, the creation of the proposal and any interviews (if applicable). CLT will not accept any promotional items as part of the proposal process and any such items included will either be discarded or, if so requested, returned to the Proposer at Proposer's cost.

D. REPRESENTATION BY BROKER

The City will not be responsible for any fees, expenses or commissions for brokers or their agents. Communications by or between employees of or contractors to the City and any potential or actual respondent broker or agent are not to be construed as an agreement to pay, nor will the City pay any such

fees, expenses or commissions. By submitting its proposal, respondent agrees to hold the City harmless from any claims, demands, actions or judgments in connection with such broker fees, expenses or commissions.

E. RIGHT TO TERMINATE NEGOTIATIONS / DISCUSSIONS

The Proposer's participation in this process might result in CLT selecting the Proposer to engage in further discussions including the negotiation of the Scope of Work. The commencement of such discussions and negotiations, however, does not signify a commitment by CLT to execute the Agreement or to continue discussions and negotiations. CLT may terminate discussions and/or negotiations at any time and for any reason prior to the award of a binding contract by the City Council, and either abandon the selection process or select another Proposer with whom to enter into negotiations.

F. RESERVATION OF RIGHT TO AMEND RFP

CLT reserves the right to amend or supplement this RFP at any time during the process, if it believes that doing so is in the best interests of CLT. Any such amendment or supplement will be fully explained in an addendum posted to the CLT website as described in **Section II.B** of this RFP.

G. OWNERSHIP AND PUBLIC RECORDS LAW

All proposals and supplementary material provided as part of this process will become the property of the City. Proposers are advised that all information included in the material provided is public record except for information that falls under one or more of the statutory exceptions set forth in Chapter 132 and 66-152 *et seq.* of the North Carolina General Statutes. Proposer may only designate information confidential that it, in good faith, considers a trade secret or confidential under North Carolina public records and trade secret law. However, CLT reserves the right to review and make any final determination on if any material submitted is in fact protected by an exception to North Carolina's public record law. In submitting a proposal, each Proposer agrees that the CLT may reveal any trade secrets or confidential information to CLT staff, consultants or third parties assisting with this RFP and resulting Agreement. Where information is marked Trade Secret or confidential, Proposer agrees to indemnify, defend and hold harmless the City and each of its officers, employees and agents from all costs, damages and expenses incurred in connection with the City choosing to withhold any material based on Proposer's designation of said material as a trade secret or confidential.

H. DISCLAIMER

The information contained in this RFP forms, exhibits and attachments, hereto, and any addendum that may be issued, are provided to assist prospective proposers in the preparation of proposals. The information has been obtained from sources thought to be reliable, but the City and its elected officials, officers, employees, agents and contractors, are not liable for the accuracy of the information or its use by prospective respondents.

I. PREFERRED BRAND OPTIONAL WORK

The City is included preferred brand optional work as part of this project. The preferred brands identified in this project will provide cost savings and maintain compatibility and functionality of our CBIS system by reducing the variety of required spare parts and the types of training required for City employees and contractors who maintain the system. Further, the interconnectivity of this system is necessary to ensure proper and continuous functionality through the shared control system. This system is critical to the continued operations of the Airport.

FORM 1
REQUEST FOR PROPOSALS ACKNOWLEDGMENT

A. Acknowledgment

The Proposer hereby certifies receipt of the Request for Proposals for the Replacement of CS1 Legacy Conveyors. This form should be completed upon receipt of the City's Request for Proposals and emailed to the project manager as listed in **Section II. A** on or before the date set forth in the RFP Schedule above.

B. Pre-Proposal Conference

Names, titles and email addresses of Proposer's representatives attending the Pre-Proposal Conference, which will be held on the date and at the time listed in the RFP Schedule above, are:

_____

_____

_____

_____

_____

C. Confidentiality Requirements

As a condition of this RFP, Proposer agrees to comply with all Confidentiality Requirements set forth in this Section. Failure to comply with the Confidentiality Requirements set forth herein may result in the rejection of Proposer's Proposal.

1. **CONFIDENTIAL INFORMATION**. "Confidential Information" means any information in any medium (whether written, oral or electronic), obtained from the City or any of its suppliers, contractors or licensors which falls within any of the following general categories:

   1.1. *Plans and Drawings*. Building plans of city-owned buildings or infrastructure facilities, including without limitation as-built drawings of the Facilities, as well as specific details of public security plans, as provided by N.C. General Statute 132-1.7 (a);

   1.2. *Trade secrets.* For purposes of this RFP, trade secrets consist of information of the City or any of its suppliers, contractors or licensors: (a) that derives value from being secret; and (b) that the owner has taken reasonable steps to keep confidential. Examples of trade secrets include information relating to proprietary software, new technology, new products or services, flow charts or diagrams that show how things work, manuals that tell how things work and business processes and procedures;

   1.3. *Security Plans*. Plans to prevent or respond to terrorist activity, including vulnerability and risk assessments, potential targets, specific tactics or specific security or emergency procedures, the disclosure of which would jeopardize the safety of government personnel or the general public or the security of any governmental facility, structure or information storage system as provided by N.C. General Statute 132-1.7 (a);

   1.4. *Privileged Information*. Any attorney / client privileged information disclosed by the City.

   1.5. *Other Information*. Other information that is exempt from disclosure under the North Carolina public records laws.

For purposes of this Section, the term "Restricted Data" refers to and includes: (a) all Confidential Information that the City is restricted from disclosing under state or federal law; and (b) all Confidential

Information that the City is permitted to withhold from disclosure under state or federal law and has elected to withhold from disclosure.

The information described in Sections 1.1 and 1.3 is a subcategory of Confidential Information called "Highly Restricted Information." Highly Restricted Information is subject to all requirements applicable to Confidential Information, but is also subject to additional restrictions as set forth in this RFP.

The parties acknowledge that Confidential Information includes information disclosed prior to submission of a Proposal as well as information disclosed after submission.

2. RESTRICTIONS AND REQUIREMENTS. The Proposer shall comply with the following restrictions and requirements regarding Confidential Information:

2.1. Proposer shall comply with the City's Restricted Data Policy, a copy of which is posted on the City's website, and with any instructions or procedures issued by City key business units from time to time with respect to protecting specific types of Confidential Information.

2.2. Proposer shall not copy, modify, enhance, compile or assemble (or reverse compile or disassemble), or reverse engineer Confidential Information, except as authorized by the City in writing.

2.3. Proposer shall not, directly or indirectly, disclose, divulge, reveal, report or transfer Confidential Information to any third party, other than an agent, subcontractor or vendor of the City or Proposer who: (a) has a need to know such Confidential Information for purpose of performing work contemplated by written agreements between the City and the Proposer, and (b) has executed a confidentiality agreement incorporating substantially the form of these requirements. Notwithstanding the forgoing, Proposer shall not directly or indirectly, disclose, divulge, reveal, report or transfer Highly Restricted to any third party without the City's prior written consent.

2.4. Proposer shall not use any Confidential Information for its own benefit or for the benefit of a third party, except to the extent such use is authorized under these Confidentiality Requirements or other written agreements between the parties hereto, or is for the purpose for which such Confidential Information is being disclosed.

2.5. Proposer shall not remove any proprietary legends or notices, including copyright notices, appearing on or in the Confidential Information.

2.6. Proposer shall use reasonable efforts (including but not limited to seeking injunctive relief where reasonably necessary) to prohibit its employees, vendors, agents and subcontractors from using or disclosing the Confidential Information in a manner not permitted by these Confidentiality Requirements.

2.7. In the event that any demand is made in litigation, arbitration or any other proceeding for disclosure of Confidential Information, Proposer shall assert these Confidentiality Requirements as grounds for refusing the demand and, if necessary, shall seek a protective order or other appropriate relief to prevent or restrict and protect any disclosure of Confidential Information.

2.8. All materials which constitute, reveal or derive from Confidential Information shall be kept confidential to the extent disclosure of such materials would reveal Confidential Information, and unless otherwise agreed, all such materials shall be returned to the City or destroyed upon satisfaction of the purpose of the disclosure of such information.

2.9. Proposer shall restrict employee access to the Confidential Information to those employees having a need to know for purposes of their jobs.

2.10. Proposer shall take reasonable measures to prevent the use or disclosure of Confidential

Information by its employees in a manner not permitted by these Confidentiality Requirements. Proposer shall have each of its employees who will have access to the Confidential Information sign a confidentiality agreement which provides the City and its vendors, licensors, subcontractors, employees and taxpayers the same level of protection as provided by these Confidentiality Requirements.

2.11. Proposer shall ensure that each person who obtains access to Confidential Information through Proposer (including but not limited to Proposer's employees and subcontractors) has undergone training sufficient to understand his or her responsibilities with respect to these Confidentiality Requirements.

3. EXCEPTIONS. The City agrees that Proposer shall have no obligation with respect to any Confidential Information that the Proposer can establish:

3.1. was already known to Proposer prior to being disclosed by the City;

3.2. was or becomes publicly known through no wrongful act of Proposer;

3.3. was rightfully obtained by Proposer from a third party without similar restriction and without breach hereof;

3.4. was used or disclosed by Proposer with the prior written authorization of the City;

3.5. was disclosed pursuant to the requirement or request of a governmental agency, which disclosure cannot be made in confidence, provided that, in such instance, Proposer shall first give to the other party notice of such requirement or request;

3.6. was disclosed pursuant to the order of a court of competent jurisdiction or a lawfully issued subpoena, provided that the Proposer shall take reasonable steps to obtain an agreement or protective order providing that these Confidentiality Requirements will be applicable to all disclosures under the court order or subpoena.

4. REMEDIES. Proposer acknowledges that the unauthorized disclosure of the Confidential Information will diminish the value of the proprietary interests therein. Accordingly, it is agreed that if Proposer breaches its obligations hereunder, the City shall be entitled to equitable relief to protect its interests, including but not limited to injunctive relief, as well as monetary damages.

5. DATA. The Proposer will treat as Confidential Information all data provided by the City or processed for the City or for citizens under these Confidentiality Requirements (including metadata). Such data shall remain the exclusive property of the City. The Proposer will not reproduce, copy, duplicate, disclose, or in any way treat the data supplied by the City in any manner except that contemplated by this Confidentiality Requirements.

Authorized Signature: _____

Printed Name and Title: _____

Company Name: _____

Contact Name: _____

Contact E-Mail Address: _____

FORM 2

PROPOSAL FORM

A. COMPENSATION

Line Item	Description	QTY	Unit	Unit Price	Amount
1	Lump Sum Price for Work as Specified	1	LS		
2	Allowance – 1 Fire Proofing	1	LS		NTE $20,000.00
3	Allowance-2 Electrical Control/Programing	1	LS		NTE $20,000.00
	Electrical allowance work will be provided at the rates listed below but NTE the $20,000 listed above.				
	Electrician	1	HR		
	Controls Engineer	1	HR		
	Journeyman/Mechanic	1	HR		
Total Price					

City's Contingency (Contingency 10% of Lump Sum) Not **to be include in Lump Sum**

_____Dollars ($_____)

Additional Optional Work – **Not to be included in Lump Sum Amount or Allowances**

Line Item	Description	Lump Sum
1	Installation and added functionality (HSD divert and merge control as a minimum) to divide long conveyor CS1-22 into two (2) conveyor segments (CS1-22A & 22B, ref drawings B1.01.02), provide new head and tail rollers and a drive package for CS1-22B.	
2	Demolition/installation and added functionality to divide RC2-40 into two (2) conveyor segments (RC2-40A and RC2-40B), provide new head and tail rollers as required and a new drive package for RC2-40B; (ref - drawing B2.02.03) and Installation and added functionality of a trigger photo cell at tail end of RC2-43.	

Optional Preferred Brand List

Line Item	Description	Preferred Brand	Lump Sum	Manufacture & Model
1	Belting	Forbo/Siegling Americas, Inc.		
2	Belt Lacing	Clipper Belt Lacer		

		Company		
3	Bearings	Dodge/ Seal Master/ SKF		
4	Clutches	Dodge, Reliance,Warner,		
5	Brakes	Nord		
6	Motorized Pulleys:	Vander Graaf		
7	Power and Spiral Turns	Portec, Flo-Masters Division		
8	Incline Plate Makeup Devices	The Five Star Company, Buemer/ Glide Path, Jervis B. Webb, Siemens, Pteris		
9	Control/Communication Products	Allen-Bradley		
10	Motors	Nord Gears		
11	Variable Frequency Drives (VFD)	Nord Gears		
12	Roller Chains	Acme, Diamond Chain Company, Dodge, Morse		
13	Rollers and Pulleys:	Chatland, Precisions		
14	Signaling Devices audible/visual	Allen Bradely		
15	Draft Curtains	TRAX Industrial Products		
16	Powered Fire/Security Doors	Vigneaux, Cookson		
17	Soft Start Devices	Allen Bradely		
18	Power Regulators	Sola/Hevi Duty Electric		
Total	Provide a lump sum for project with including only the Optional Preferred Brands Listed Above			

B. NON-COLLUSION AFFIDAVIT

In submitting this Proposal, Proposer hereby declares that the only person or persons interested in this Proposal as principal or principals is or are named herein and that no person other than herein mentioned has any interest in this Proposal or in the contract to be entered into; that this Proposal is made without connection with any other person, company or parties submitting a Proposal in response to this RFP; and that it is in all respects fair and in good faith without collusion or fraud. Proposer represents to the City that, except as may be disclosed in an Addendum hereto, no officer, employee or agent of the City presently has any interest, either directly or indirectly, in the business of Proposer, and that any such officer, employee or agent of the City having a present interest in the business of Proposer shall not have any such interest at any time during the term of the Agreement should it be awarded to the Proposer.

C. ACKNOWLEDGEMENT OF ADDENDA

Proposer further declares that it has examined the RFP including all Attachments, Exhibits and Addenda, as acknowledged below, and that he/she has satisfied himself/herself relative to the requirements, procedures and rights of this RFP. Acknowledgment is hereby made of receipt of the following Addenda (identified by number) since issuance of the RFP.

Addendum Number	Date

D. SUBCONTRACTORS

Proposer must list all proposed subcontractors, if any, in the table provided below. No change in the proposed subcontractors listed herein will be allowed without the express written consent of CLT. All proposed subcontractors must be able to demonstrate their ability to perform the Work proposed to the complete satisfaction of CLT.

Name of Subcontractor	Description of Work to be Performed

E. PROPOSAL CHECKLIST

Proposal must initial each item below to confirm that it has been included in the Proposal. Proposals must be formatted in the same order as the checklist below.

	Cover Letter
	Executive Summary
	Request for Proposals Acknowledgment
	Proposal Form
	Qualifications and Proposer Requirements
	Non-Discrimination Certification
	Charlotte Business Inclusion or Disadvantaged Business Enterprise Program Submittal

F. VERIFICATION AND CERTIFICATION OF AUTHENTICITY OF PROPOSAL

Submission of this Proposal is the duly authorized official act of the Proposer and the person(s) executing this Proposal and is in accordance with the terms and conditions as set forth in the RFP. The Proposer is duly authorized and designated to execute this Proposal on behalf of and as of the official act of Proposer, this _____ day of _____, 20___.

Name: _____

Signature: _____

Printed Name: _____

Title: _____

Address: _____

_____

_____

FORM 3
QUALIFICATIONS AND PROPOSER REQUIREMENTS

All statements contained herein must be true and correct. Any omissions or inaccuracies may result in the rejection of this Proposal by CLT. Proposers should note that some responses require separate sheet(s) for response. Those responses should be appropriately marked corresponding to the question. Proposers should use as many additional sheets of paper as necessary to completely answer the question.

All of the information requirements in this **Form 3** are required for Proposer and all subcontractors identified in the Proposal. Therefore, the use of the term "Proposer" in this **Form 3** applies to Proposer and all subcontractors of Proposer that will be involved in the performance of the Work pursuant to the Agreement.

A. EXPERIENCE AND QUALIFICATIONS

1. Furnish a statement detailing Proposer's background, experience and qualifications. This should include the following:
   - Number of years in business.
   - Description of Proposer's corporate structure (corporation, partnership, joint venture, partnership) including state of incorporation, the executive team and any substantive changes to the corporate structure within the previous five (5) years.
   - Descriptions of current business operations, including (i) number; (ii) type; (iii) location; and (iv) a description of services provided.
   - Organizational chart including descriptions and resumes of key personnel that would be involved in providing the management and maintenance services described in this Proposal and RFP. Key personnel shall include at a minimum managers and supervisors.
   - Information on quality monitoring programs that Proposer has implemented at other venues, including both descriptive information and sample evaluation forms from quality audits, performance standard evaluations or other similar programs.

2. Names and addresses of company for which the Proposer provided substantially similar Work in the prior (5) years. Please provide for each, (i) the name of the owner; (ii) a description of the Work provided; (iii) dates the Proposer provided the work; (iv) operating budget; (v) compensation; and (vi) a point of contact for each company (name, address and telephone number).

3. Provide any other information that supports Proposer's experience that may be beneficial to CLT's review of this Proposal.

4. Provide a three business references and three financial references related to its business operations in the previous three (3) years.

B. PROPOSER HISTORY

1. Has Proposer ever been subject to claims, actions, demands, suits or other litigation (collectively litigation) brought by any airport owner/operator or others over non-payment of rent or fees, or non-performance of similar Work as that requested under this RFP ? Yes ( ) No ( ).

   If the answer is "Yes," attach a detailed explanation of the nature and result of such litigation.

2. Does the Proposer have any past due arrearages or is the Proposer in breach of any previous or

existing contract with the City?
Yes ( ) No ( ).

3. Has Proposer declared bankruptcy in the past ten (10) years? Yes ( ) No ( ).

   If the answer is "Yes," attach a detailed explanation including the date of filing, the jurisdiction (state and court), the amounts of assets and liabilities and the disposition of that action.

4. During the past ten (10) years, have any of Proposer's concession agreements, management agreements, leases or other contractual agreements been canceled or terminated, either voluntarily or involuntarily, by an Airport owner/operator?
   Yes ( ) No ( )

   If the answer is "Yes," attach a detailed explanation including the date and circumstances of such cancellation/termination.

FORM 4
CITY OF CHARLOTTE
NONDISCRIMINATION CERTIFICATION

All requests for bids or proposals issued for City contracts shall include a certification to be completed by the Proposer in substantially the following form:

The undersigned Proposer hereby certifies and agrees that the following information is correct:

1. In preparing the enclosed proposal, the Proposer has considered all proposals submitted from qualified, potential subconsultants and suppliers and has not engaged in discrimination as defined in Section 2.
2. For purposes of this Section, *discrimination* means discrimination in the solicitation, selection, or treatment of any subcontractor, vendor or supplier on the basis of race, ethnicity, gender, age or disability or any otherwise unlawful form of discrimination. Without limiting the foregoing, *discrimination* also includes retaliating against any person or other entity for reporting any incident of *discrimination*.
3. Without limiting any other remedies that the City may have for a false certification, it is understood and agreed that, if this certification is false, such false certification will constitute grounds for the City to reject the proposal submitted with this certification and terminate any contract awarded based on such proposal. It shall also constitute a violation of the City's Commercial Non-Discrimination Ordinance and shall subject the Proposer to any remedies allowed thereunder, including possible disqualification from participating in City contracts or bid processes for up to two years.
4. As a condition of contracting with the City, the Proposer agrees to promptly provide to the City all information and documentation that may be requested by the City from time to time regarding the solicitation and selection of subconsultants in connection with this solicitation process. Failure to maintain or failure to provide such information shall constitute grounds for the City to reject the proposal submitted by the Proposer and terminate any contract awarded on such bid. It shall also constitute a violation of the City's Commercial Non-Discrimination Ordinance and shall subject the Proposer to any remedies allowed thereunder.
5. As part of its bid or proposal, the Bidder or Proposer shall provide to the City a list of all instances within the past ten years where a complaint was filed or pending against Bidder or Proposer in a legal or administrative proceeding alleging that Bidder or Proposer discriminated against its subcontractors, vendors or suppliers, and a description of the status or resolution of that complaint, including any remedial action taken.
6. As a condition of submitting a proposal to the City, the Proposer agrees to comply with the City's Commercial Non-Discrimination Policy as described in Section 2, Article V of the Charlotte City Code, and consents to be bound by the award of any arbitration conducted thereunder.

Name of Company: _____

Signature: _____

Printed Name: _____

Title: _____

Date: _____

FORM 3
CHARLOTTE BUSINESS INCLUSION ROGRAM / DISDVANTAGED ENTERPRISE

Charlotte Business INClusion
CBI FORM 3: Subcontractor / Supplier Utilization Commitment (page 1 of 2)
This form **MUST** be submitted at the time of Proposal Submission Date. *Copy this CBI Form 3 as needed.*

*This form (**CBI Form 3**), captures information regarding the MWSBEs and other subcontractors and suppliers that the Proposer intends to use on the Contract **FOR ALL TIERS.***

Proposer Name:			
Contract Name:			
Contract Nº:	N/A	**Established MWSBE Goal:**	**To Be Negotiated**

List below all **MWSBEs** that you intend to use on this contract.

MWSBE Vendor Name (Specify Certification type for each firm)	**Description of work**	**NIGP Code**	**Vendor #**	**Total Projected Utilization ($)**
				N/A
				N/A
				N/A
				N/A
				N/A

List below all **non-MWSBEs (subcontractors and suppliers)** that you intend to use on this contract

Firm Name	**Description of work**	**NIGP**	**Vendor #**	**Projected Utilization (if known) ($)**
				N/A
				N/A
				N/A
				N/A

Total MWSBE Utilization	**$ N/A**
Total Bid Amount (including Contingency)	**$ N/A**
Percent MWSBE Utilization* (Total MWSBE Utilization *divided by* Total Bid Amount)	**% N/A**

** The MWSBE Utilization percentage stated here MUST be rounded to (2) decimal places.*

Charlotte Business INClusion

CBI FORM 3: Subcontractor / Supplier Utilization Commitment (page 2 of 2)

Letters of Intent submitted upon notice from the City

Within three (3) Business Days after receiving a request from the City (or within such longer time as may be communicated by the City in writing), Proposers must submit a separate Letter of Intent (**CBI Form 4**) for each MWSBE it commits to use to meet the Contract goal. Each Letter of Intent must be executed by both the MWSBE and the Proposer. The City shall not count proposed MWSBE utilization for which it has not received a Letter of Intent by this deadline.

Adding subcontractors or suppliers after submitting this form

Nothing in this certification shall be deemed to preclude you from entering into subcontracting arrangements after submission of this form. However, per Part D of the CBI Policy, you must comply with the following:

- You must maintain the level of MWSBE participation committed throughout the duration of the Contract, except as specifically allowed in Part D.
- If you need to terminate or replace a MWSBE, you must comply with Part D, Section 5.
- If the scope of work on the Contract increases, or if you elect to subcontract any portion of work not identified on this form as being subcontracted, then you must comply with Part D, Section 6.
- A Letter of Intent (**CBI Form 4**) must also be submitted for each MWSBE you add subsequent to contract award.

All Subcontractors and Suppliers must be registered with the City of Charlotte.

Pursuant to the City's Vendor Registration Policy, each subcontractor or supplier (non-MWSBE and MWSBEs) that you use on this contract must be registered in the City's vendor database. You will need to provide the vendor number for each subcontractor or supplier used on this contract as a condition for receiving payment on this Contract.

Per Part C, Section 3.3, a Regular Dealer as defined in the CBI Policy shall only count 60% of all expenditures towards the MWSBE Goal. In addition, a Hauler, Broker, or Packager shall only count fees or commissions charged by the MWSBE toward the MWSBE Goal. The Bidder is still obligated to pay the MWSBE the full amount listed on the Contract with the MWSBE regardless of what percentage is actually counted towards the MWSBE Goal.

Signature

Your signature below indicates that the undersigned firm certifies and agrees that:

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(a) It has complied with all provisions of the CBI Policy; and,
(b) Failure to properly document such compliance in the manner and within the time periods established by the CBI Policy shall constitute grounds for rejection of your proposal.

Signature of Authorized Official	Printed Name	Title	Submittal Date

EXHIBIT A

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SCOPE OF WORK

CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT

Specifications for the Design, Manufacture and Construction of the MU1 and CS1Replacement Baggage Handling System
at the
Charlotte Douglas International Airport

Issue for Bid

September 14, 2017

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MU1 and CS1 Replacement
Charlotte Douglas International Airport

SECTION 34 77 16

SECTION PARTS

PART I - GENERAL SPECIFICATIONS

PART II - PRODUCT SPECIFICATIONS

PART III - EXECUTION SPECIFICATIONS

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SECTION 34 77 16

BAGGAGE HANDLING SYSTEM

PART I - GENERAL SPECIFICATIONS

1.01 SUMMARY

A. General

1. Section 34 77 16 of the Project Specifications is divided into four (4) parts as follows:

a. Part I specifies general administrative, performance, and procedural requirements for the BHS installation as specified herein and in the accompanying drawings.

b. Part II specifies product information including BHS Manufacturers and Integrators, BHS Equipment suppliers, materials to be used on this project along with control system design and approved equipment requirements.

c. Part III specifies execution requirements for the BHS installation and demolition that are required for this project.

d. Part IV specifies minimum field Quality Control that shall be maintained and performed by the BHS Contractor for this project, including required system acceptance inspections and testing.

2. The BHS Specification (34 77 16) and accompanying BHS/CBIS Contract Drawings are intended to outline the work, define functional requirements, establish minimum standards of quality for the Project, outline all local, state and federal laws, codes and safety standards and assure a safe and efficient system for all personnel who operate, maintain or have access to the completed baggage handling system.

3. The laws of the City of Charlotte, the State of North Carolina, and the United States of America (USA) shall apply and govern the Contract.

4. Unless otherwise specified, all references to sums of money shall be in United States Dollars (USD), the currency of the United States of America (USA).

1.02 RELATED DOCUMENTS.

A. General

1. These written Specifications, in conjunction with the accompanying Contract Drawings, constitute the Contract Documents for the Project. If there are any discrepancies between these written Specifications and the Contract Drawings, the more stringent requirement will apply as interpreted by the Owner or his representative.

B. Drawings

1. Specification Drawings and associated Phasing Plans (Ref. Drawing B. 01 for listing) apply to the work of this Section.

2. Assume responsibility to request and obtain architectural drawings, MEP (Mechanical, Electrical and Plumbing) drawings, and Structural drawings applicable to this project from the Owner or his representative, including those which may pertain to any concurrent projects at the Charlotte Douglas International Airport Terminal.

C. Existing Equipment Drawings.

1. The BHS Contractor that is awarded this project shall obtain information regarding existing conveyor equipment designated for modification or to remain (including but not limited to, electrical as-built drawings,

O&M Manuals, computer and PLC architecture, source codes and other relative documentation relating to the existing BHS, and layout drawings/documents) from the Owner or his representative. Contact the Owner and request the necessary documents that would be required for coordination and reference purposes between the existing system and the proposed BHS modifications for the implementation of the new conveyors. If As-built documentation is not available, engage the necessary staff to obtain the needed information on the existing systems and equipment via site survey.

D. Other Related Documents

1. Existing CLT Terminal Baggage Handling Systems – Operations and Maintenance Manuals (copies can be obtained from the Owner by the successful BHS Contractor)
2. Existing CLT Terminal Baggage Handling Systems – As-Built Drawings (mechanical/electrical (copies can be obtained from the Owner by the successful BHS Contractor)).
3. Existing CLT Terminal Baggage Handling Systems – PLC Codes (copies can be obtained from the Owner by the successful BHS Contractor).

1.03 DEFINITIONS

A. Abbreviations

1. AFF shall mean Above Finished Floor
2. ANS shall mean American National Standards
3. ANSI shall mean American National Standards Institute
4. AIRPORT shall mean the Charlotte Douglas International Airport
5. ASCII shall mean American Standard Code for Information Interchange
6. AOA shall mean Airport Operations Area
7. ATO shall mean Airline Ticket Office
8. BHS shall mean Baggage Handling System
9. BNP shall mean BNP Associates, Inc., the Baggage Handling System Consultant/Engineer.
10. CEMA shall mean Conveyor Equipment Manufacturers Association
11. COF shall mean Coefficient of Friction
12. EIA shall mean Electronic Industry Association
13. EMT shall mean Electrical Metallic Tubing
14. FAA shall mean Federal Aviation Administration
15. FLA shall mean Full Load Ampacity or Full Load Amperes
16. FPM shall mean Feet Per Minute
17. GSE shall mean Ground Service Equipment
18. HVAC shall mean Heating, Ventilating and Air Conditioning
19. ID shall mean Identification
20. IEC shall mean International Electromechanical Commission
21. IMC shall mean Intermediate Metal Conduit
22. I/O Module shall mean Input / Output Module
23. IT shall mean Information Technology
24. CLT shall mean Charlotte Douglas International Airport

25. LCD shall mean Liquid Crystal Display
26. MCP shall mean Motor Control Panel. The MCP contains the electrical control and power circuit devices for the control of the baggage system(s).
27. MDS shall mean Maintenance Diagnostics System
28. MEP shall mean Mechanical, Electrical and Plumbing System
29. MIS shall mean Maintenance Information System
30. MTBF shall mean - Mean Time Between Failures
31. NEC shall mean National Electrical Code
32. NEMA shall mean National Electrical Manufacturers' Association
33. NFPA shall mean National Fire Protection Association
34. NIC shall mean Not In Contract
35. NRT shall mean Near Real Time
36. NTP shall mean Notice-to-Proceed.
37. O & M shall mean Operations and Maintenance
38. OEM shall mean Original Equipment Manufacturer
39. OSHA shall mean Occupational Safety and Health Administration
40. Owner shall mean City of Charlotte Aviation Department
41. PAX shall mean Passenger
42. PLC shall mean Programmable Logic Controller, a microprocessor which controls BHS operations.
43. PM shall mean Project or Program Manager
44. RFI shall mean Request For Information
45. RMC shall mean Rigid Metal Conduit
46. ROW shall mean Right of Way
47. RT shall mean Real Time
48. SD shall mean Security Door(s)
49. TOB shall mean Top of Belt
50. USS shall mean Uniform Symbology Specification
51. VFD shall mean Variable Frequency Drive
52. VOM shall mean Volt Ohm Meter

B. Authorized Representative

1. The Owner may designate by written notice to the BHS Contractor or by provision elsewhere in this Contract one or more persons, firms or corporation to act as its Authorized Representative in connection with the administration of this Contract. Except as otherwise provided in such written notice or elsewhere herein, such Authorized Representative shall have the authority to act for the Owner with respect to the performance of this Contract by the BHS Contractor with the objective of achieving full compliance by the BHS Contractor of the terms and provisions of the Contract.
2. Accept and comply with instructions from such Authorized Representative as though such instructions had been given by the Owner and the BHS Contractor shall deal directly with such Authorized Representative in all matters arising under this Contract, including but not limited to matters involving Contract interpretation, disputes and arbitration procedures. However, such Authorized Representative is authorized to act in

connection with this Contract solely as the representative of the Owner and not as principal hereunder.

C. General

1. Baggage Handling System (BHS) shall mean all components, installation materials, interfaces and other components, all necessary hardware, software, installation coordination and construction supervision of computers/PLC, controls and control hardware and software, management and support services required to implement the work and supply a fully functioning system as described by the Contract Documents.

2. Baggage Handling System Contractor shall be synonymous with Equipment Contractor, Equipment Supplier, Baggage Contractor and BHS Contractor (i.e. Prime Contractor for this project) and shall mean the firm or company that is responsible for the turnkey design, engineering, manufacture, and installation of the conveyor equipment and facility access as required to implement the work and supply a fully functioning system as described by the Contract Documents.

3. In these written Specifications and on the Contract Drawings (unless inconsistent with the content or subject matter or unless a contrary intention otherwise appears) the following clarifications/definitions shall apply:

   a. As Built shall encompass all elements of the term As Executed.

   b. Bill of Quantities shall mean a document named therein as a Bill of Quantities issued to bidders by or on behalf of the Owner, stating quantities of work to be carried out.

   c. Cold Back-up shall mean that redundancy is based on the removal of a failed primary component (e.g., PLC) and subsequent replacement with a fully programmed component (PLC).

   d. Completion shall mean:

      1.) That stage of the execution of the Work under the Contract when the Works are completed and all other things, which are required by the Contract to be performed by the Contractor before completion, have been performed and accepted.

      2.) Where contract or specifications provide a period of time for completion, the last day of the period.

      3.) However, if the Owner grants an extension of time for completion, it means the date resulting from the extension of time.

   e. Contract means this Deed of Agreement between the Owner and the Contractor for the performance of the Works, together with all schedules, attachments, annexure and other documents incorporated into this Contract.

   f. Date for Completion shall mean:

      1.) Where contract provides a date for completion that date.

      2.) Where contract or specifications provide a period of time for completion, the last day of the period.

      3.) However, if the Owner grants an extension of time for completion, it means the date resulting from the extension of time.

      4.) The date certified by the Owner in a Certificate of Completion to be the date upon which the Works have reached completion.

   g. Day means a calendar day.

   h. Other Contractor or Other shall mean a firm or person other than the BHS Contractor who shall enter or has entered into a Contract with the Owner.

   i. Charlotte Douglas International Airport Terminal, MU1 and CS1 Replacement Project shall mean the construction of the Terminal – MU1 and CS1 Replacement project at Charlotte Douglas International Airport, as described in these written Specifications and on the Contract Drawings.

   j. Schedule of Rates shall mean any schedule included in the Contract, which, in respect of any section or item of work to be carried out, shows the rate or respective rates of payment for execution of that work, and which may also include provisional items, provisional sums, quantities and prices. The schedules of rates are fixed sums for the duration of the Contract with the Owner.

k. Site means the lands and other places made available or to be made available to the Contractor by the Owner for the purpose of the Contract.

l. Specifications means the Specification for the Works included in the Contract and any modification of such Specification thereafter.

m. Subsystem shall mean a set of conveyor segments and its related field elements (e.g., control stations, consoles, scanners), which is a system itself, and a part of the whole system.

n. Temporary Work shall mean any work required in the execution of the Contract but not forming part of the Works.

o. The Contract Drawings shall mean the drawings referred to in these written Specifications or The Contract; the Owner may from time to time supply modifications/revisions of such drawings and other drawings to the Contractor for the purposes of the Contract.

p. The Works shall mean the whole of the work to be executed in accordance with the Contract, including variations provided for by the Contract.

q. Words importing the singular include plural and words importing the plural include the singular.

r. Words importing persons include a partnership and a body corporate.

s. Words importing the masculine gender include the feminine and neuter genders.

t. Work under the Contract shall mean any work the BHS Contractor is or may be required to execute under the Contract and includes variations, remedial work and Temporary Work.

1.04 SCOPE OF WORK

A. General

1. Provide the design, engineering, fabrication, transportation to/from the site, installation, removal, demolition, testing, and turning over in working order the BHS described herein, in compliance with these written Specifications and the accompanying drawings

2. Provide a complete, operable, maintainable and safe system on a "turnkey basis", including all supports, header steel (unless otherwise specified), hangers, anchors, framing, trim, electrical power to the BHS from the sources indicated on the accompanying Contract Drawing Package (i.e., from BHS, PDPs, MCPs to associated BHS field components), motors, motor starters, disconnects, controls, pushbuttons, conduit, wiring, cabinets, and all other components, whether specifically shown and described, or implied in the plans and specifications or wherever required to effectively accomplish the intended functions of the BHS. In all cases where a device or part of the equipment is herein referred to in the singular number, it is intended that such reference shall apply to as many such devices as are required to satisfactorily complete the installation.

3. Provide all labor, materials, and equipment required for implementing the BHS as defined by these specifications, including but not limited to installation, all required acceptance testing, all necessary wiring between BHS components, necessary protection of conveyor equipment that is under construction, materials, new conveyor equipment with all related components, crossovers (including Control Stop/Start control stations at all BHS area crossovers), and all as required for implementing the new components defined by these specifications.

4. The BHS Contractor shall be responsible (as the Prime Contractor) to both provide access into the ceiling spaces to remove/install conveyors and then to return the ceiling to its existing condition. Close coordination is required with the Owner and its representative should temporary office relocation of personnel/operation etc. be required. Work carried out above passenger (i.e. inbound claim area) or operating office space shall be performed on off-hours.

5. Submit implementation schedules and associated phasing plan documentation with the operating and maintenance documentation to the Owner or his representative, including required manuals, equipment parts lists and shop drawings - all in strict accordance with the specifications and applicable drawings, and subject to the terms and conditions of the Contract.

6. Provide all hardware, software, and construction supervision to ensure that the BHS equipment operates on a fully integrated “Turnkey” basis.

7. The Contract Drawings are intended to generally outline the conveyor system configuration and function desired. Pertinent building dimensions are noted along with some specified conveyor dimensions and elevations. An attempt has been made to present approximate conveyor length and right-of-ways, but these shall necessarily be determined by review and inspection of building construction drawings and verified by actual field measurements by the BHS Contractor prior to preparing shop and erection drawings. An attempt has also been made to present the number, size and locations of the existing BHS Motor Control Panels (MCPs); verify the final number of panels with related cabinet sizes and locations based on their electrical shop drawings within 30 days of contract award.

8. Coordinate the BHS installation with any other ongoing projects at the CLT Terminal. The coordination between the design of other systems and the BHS equipment shall ensure other systems do not interfere with the BHS operation or related maintenance access and baggage flow right-of-ways. The coordination shall ensure the required interface between the BHS equipment and the adjoining architectural building elements.

9. Identify all building interface requirements necessary to install the BHS over and above those shown on the contract drawings in the bid documents. Verify as-built conditions and notify the Owner or his representative of conflicts. Any additional building modifications or alterations not so identified in the contract bid shall be borne by the BHS Contractor

10. All temporary and final conveyor equipment supports shall be designed, engineered and installed so as not to infringe on the Owner's maintenance access, operational areas, drive aisles or cart staging areas.

11. Construction of all the new equipment and components of the system(s) shall be 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 i.e., NFPA, OSHA, SAE publications, National Electrical Code (NEC), American National Standards. Design all parts and sub-assemblies in accordance with good commercial practice and assure safe, efficient and practical design in keeping with requirements peculiar to this type of system. All equipment shall be in imperial dimensions.

12. Submit to the Owner or his representative any request for information, clarification of specification, and variance from the specifications as a Request for Information (RFI).

13. Obtain and pay for all electrical/mechanical permits, inspection fees, and certificates relative to the BHS construction.

14. Be responsible for all employee (including sub-contractors) badges as required by the Airport for this project. The Owner shall not provide escort services for employees on the ATO and AOA side of the facility.

15. Perform a complete mechanical and electrical field survey of the existing BHS conveyor equipment and maintain consistency with the existing conveyor components, in terms of motors, gearboxes, bearing, belting, field control components and MCP control components to simplify spare parts inventory.

16. After installation of MU1 and CS1, demonstrate their operating capability. Accomplish prior to the start of the Systems Acceptance Testing all “debugging” and internal testing. In addition, carry out a “dry test run” of all Acceptance Tests prior to conducting such tests with the Owner or his representative to ensure that tests conducted with the Owner or his representative are successful. Submit to the Owner on a daily basis any and all records of internal testing and debugging (with corrective action) performed prior to Acceptance Testing.

17. Upon completion of the MU1 and CS1 installation, all related programming and internal testing/debugging, demonstrate the system’s operating capability to the Owner and his representatives for acceptance to confirm compliance with the specified requirements. Provide all labor and test material as specified elsewhere in this document, including service technicians and test material handlers for the BHS Acceptance Testing.

18. It is recommended to visit the project site prior to bidding, to thoroughly be acquainted with the scope of work and installation restrictions directly associated with the existing area of the facility. Coordinate a pre-bid walk-through with the Owner or his representative. The following requirements associated with the existing BHS modifications should be reviewed and surveyed during this site visit.

    a. Existing Conveyor line modifications/reconfigurations.

    b. Existing/potential terminal ceiling access locations.

c. CS1 curbside subsystem location

d. Location of MU1

e. BHS computer system modifications for report functionality changes etc. (located in the BHS control room(s)).

f. Maintenance Diagnostics System modifications, located in the BHS Control Room(s).

g. MCP and PLC system locations and modification requirements.

B. System Description

1. The Baggage Handling System (BHS) to be provided is illustrated on the accompanying Drawing Package (Ref. Drawing Number B0.00.00 for a complete listing of drawings).

2. The base scope of works for the Baggage Handling System for Charlotte International Airport - Make-Up #1 (MU1), Recirculation Line #2 (RC2), and Curbside #1 (CS1) Replacement / Modifications is as follows:

a. Provision of all new components, to be consistent with existing components (trim, finish, etc.) as coordinated with the Owner or his representative.

b. MU1 shall be replaced in total with a new Slope Plate Make-Up device of the same footprint (ref: Demolition Drawing B1.01.01 and Construction Drawing B2.01.01)

c. The BHS Contractor shall replace the existing CS1-02 Power Turn with a new turn that will be provided by CLT Maintenance. The BHS Contractor, as the Prime Contractor, will be responsible for all ROW and access work in the ceiling area for the removal/installation of the CS1-02 power turn (e.g. subcontract the work as required to general contractors etc. (demolition and repair etc.)).

d. The BHS Contractor shall provide, install and integrate a new fire doors at both CS1-01 and CS1-04 (ref - drawing B2.02.01). The BHS Contractor, as the Prime Contractor, will be responsible for ensuring/modifying the wall penetration to/is the correct size. To allow for the CS1-04 fire door penetration between the conveyors to provide the fire separation between the ceiling space and the outbound bagroom, existing conveyor CS1-04 shall be modified to become CS1-04A and CS1-04B, provide new head and tail rollers and a drive unit as required.

e. The BHS Contractor (as the Prime Contractor), will be responsible for any ROW and access work for the CS1-04A through CS1-08 conveyor demolition/installation.

f. Existing conveyors CS1-07A and CS1-07B shall be replaced with new conveyors CS1-07A, 7B, 7C, 7D, & 7E, (ref Drawing B2.02.02).

g. Provide new controls for both the new and legacy CS1 conveyors. Maintain consistency with the existing Outbound/CBIS control devices, control stations, and related interlock functionality (e.g., E-stop, Jam Detection/Reset) as the existing conditions of the BHS. The status of new/existing portions of CS1system (CS1-01 through CS1-08) shall be displayed both graphically and in text on the existing MDS system.

h. Maintain the existing CS1 bag throughput rate

i. Provide and install all BHS related maintenance catwalks, ladders, stairs and cross-overs as illustrated in the contract drawings.

3. Additional Optional Work

a. Include separate line item cost for this installation and added functionality of a trigger photo cell at tail end of RC2-43.

b. Include separate line item cost for the installation and added functionality (HSD divert and merge control as a minimum) to divide long conveyor CS1-22 into two (2) conveyor segments (CS1-22A & 22B, ref drawings B1.01.02), provide new head and tail rollers and a drive package for CS1-22B.

c. Include separate line item cost for the demolition/installation and added functionality to divide RC2-40 into two (2) conveyor segments (RC2-40A and RC2-40B), provide new head and tail rollers as required and a new drive package for RC2-40B; (ref - drawing B2.02.03)

1.05 BHS EQUIPMENT IDENTIFICATION

A. General

1. The item numbering system and format used for physical identification of new components and associated equipment shall be consistent with the existing subsystem identification detailed on the drawing documents. The equipment shall be numbered in consecutive order.

B. Equipment Identification

1. The item numbering system and format used for physical identification of conveyors and associated equipment and in all documentation, shall be the same as that indicated on the Contract Drawings. The equipment in each subsystem are to be renumbered and/or numbered in consecutive order.

1.06 SUBMITTALS

A. General

1. .

2. Submit the following documentation at the time specified during the course of the work, and in accordance with the following Submittal Deadlines.

3. Prepare all documents in the English language.

B. Drawings Submitted for Review

1. Submit for review two - (2) hardcopies and an electronic copy of each shop and installation drawing (e.g., PDF format submitted on CDROM or DVDROM). These shop submittals shall not include any hand-written markups/drawings.

2. The Owner or his representative shall review the drawings and return them for revision and re-submittal within seven – (7) days, where re-submittals are required. Revise and re-submit drawings for final review by the Owner or his representative within seven – (7) days. Any corrections or changes indicated on Shop Drawings shall not be considered as an extra work order. Do not start fabrication until receipt of the Owner or his representative's approval.

3. The comments from the Owner or his representative shall not be taken to imply that the arrangement has been checked in detail. The BHS Contractor shall be fully responsible for the suitability, adequacy, integrity, durability and practicality of the arrangement or assembly, components, and systems as set out in the drawings, specifications, and other information submitted for acceptance by the Owner or his representative including all subsequent amendments. In no case shall the Owner's or his representative's review or comments relieve the Contractor in any way of his responsibility of ensuring that the equipment supplied complies with all specification and functions in accord with the wording and the intent of the applicable Specifications.

4. Do not submit drawings which are not in full compliance with the specifications unless an Engineering Change Order Request (ECR) requesting a variable from the specifications accompanies the submittal. In this case, the Owner or his representative will endeavor to respond within seven – (7) days, but shall be under no obligation to do so.

5. Approved shop drawings shall be at the site at all times for use in the construction of the work. Failure to supply such drawings will be deemed sufficient cause to delay the work until such drawings are available for field use and reference.

6. Submit a drawing log that contains a complete list of all anticipated installation and shop drawings and submit an updated copy with each drawing submission.

C. Submittal Deadlines

1. Listed below are the submittals and dates referred to in the applicable sections. (Indicate in the proposal submission if an adjustment to these dates is required (days indicated are working days)).

Submittal Item	Deadline

Submittal Item	Deadline
Safety Program Manual	5 days after NTP
Project Management Team	5 days after NTP
Detailed Master Schedule	5 days after NTP
Phasing Schedule	5 days after NTP
Catalog Cuts and Equipment Specifications	10 days after NTP
Emergency Stop Zone Drawings	10 days after NTP
Controls System Description	15 days after NTP
Shop Detail Drawings	10 days prior to fabrication
Motor Schedule	10 days prior to fabrication
Installation Drawings (PE stamped)	15 days prior to fabrication
Revise & Re-issue Drawing Period	7 days
Owner Re-review Period	7 days
Training Program	10 days prior to turn-over of BHS equipment for beneficial use
Estimated Parts List	10 days after NTP
Inspection and Test Program	10 days prior to Pre-Test Readiness Review/Tests
Final Parts List	10 days prior to turn-over of MU1/CS1
Work Activities Bulletin	7 days prior to each activity
Certificate of Testing Compliance	5 days after testing
Certificate of Installation Compliance	5 days after completion of installation
As-Built Drawings (PE Stamped)	10 days after substantial acceptance of the of BHS
List of Lubricants	10 days prior to turn-over of MU1/CS1
Periodic Maintenance Inspection and Lubrication Chart	10 days prior to turn-over of MU1/CS1
O&M Addendum	10 days prior to turn-over MU1/CS1
Weekly Report	Last day of each week

D. Detailed Master Schedule

1. Submit a detailed Master Schedule as specified below for review and approval by the Owner or his representative before commencing with any work. Display schedule in graphic form, large and spacious enough to be updated directly on the original submittal during the course of the project. Show the principal dates and commensurate activity times for each entry. Include in the schedule:

2.

3. If the weekly schedule update reflects, or the Owner or his representative determines, that the BHS Contractor is at least ten percent (10%) or fourteen - (14) or more calendar days behind the original progress schedule (whichever is less) for the BHS project as a whole, a major Contract item, an item of BHS which is on the critical path, or an item of BHS not on the original critical path but that, because of the delay or anticipated delay, becomes a critical path item, a proposed recovery plan shall be submitted for bringing the BHS project back on schedule and for completing the BHS within the Date of Completion with the weekly schedule update.

4. Allow for the co-ordination and interfacing of his work in line with the construction work of any other concurrent projects at the CLT Terminal, and other such contractors. Such co-ordination and interfacing shall include for permitting the direct contractors to complete their work before proceeding to complete the balance of project under this BHS Contract. In the event of failure to allow for such co-ordination and interfacing, no claim whatsoever shall be entertained by the Owner or his representative for any additions, amendment, re-medial or abortive works to be carried out by the BHS Contractor or the contractors to ensure satisfactory completion of the project.

5. Revisions to the Project Schedule may be requested in the event the BHS Contractor's planning for the work is revised. If there are desired changes in the Project Schedule to reflect revisions in the method of operating and scheduling of the work, notify the Owner or his representative in writing, stating the reason for the proposed revision.

6. Ensure there are sufficient personnel available for the purpose of coordination to ensure timely completion of the BHS and to ensure that the BHS Contractor does not hinder the work of other trades. Provide personnel with the required experience for coordination at meetings as required by the Owner or his representative so that decisions regarding coordination issues can be made during coordination meetings and the BHS Contractor

E. Schedule

1. Coordinate with the Owner or his representative to develop a BHS installation phasing plan

2. Submit a detailed phasing plan for each subsystem designated for replacement/modification (if existing), installation, description of the work, staffing requirements and schedule per phase. The overall plan/schedule shall be broken down by subsystem of activity (as coordinated with the Owner or his representative).

3. The phasing scope of works is proposed to be as follows:

   a. Phase 1: Demolition and installation of MU1

   b. Phase 2: CS1-22 modifications (add alternate)

   c. Phase 3: RC2-40 modifications (add alternate)

   d. Phase 4: CS1-07C through CS1-08

   e. Phase 5: CS1-04A through CS1-07B

   f. Phase 6: CS1-02 power turn

F. Shop Drawings, Installation Drawings, and As-Built Documents

1. General

   a. All drawings submitted shall become the property of the Owner.

   b. All drawing submittals shall be to scale. The scale utilized shall be clearly defined in the title block.

c. The North arrow shall also be shown on all mechanical drawings.

d. Drawings shall include the following items unless otherwise specified.

1.) Document Title Blocks

a.) In addition to information normally presented in a drawing title block, each drawing title block shall provide the following specific information:

(1.) Three letter airline code for airport designation of the project location

(2.) Name of the Baggage Handling System

(3.) Drawing scale

(4.) Drawing title

(5.) Drawing number/sheet number

(6.) Drawing date

(7.) Drawing revision date and revision number

(8.) NOTE: All drawing revisions shall be foot noted on the drawing face as well as in the appropriate revisions section of the title block.

e. Professional Engineer Approval Requirements

1.) The BHS Contractor shall engage a Professional Engineer(s) licensed in the State of North Carolina in the relevant disciplines to review and certify the design and installation of the BHS equipment structural systems and associated attachments to the building structure, which shall include all necessary associated temporary and final works.

2.) Minimum requirements for Professional Engineer signed and sealed drawings and calculations to be submitted are defined below. Submit any additional signed and sealed drawings, calculations or submissions required by federal, state or local codes. As a minimum, the following drawings, calculations and submissions shall be signed and sealed:

a.) Mechanical/Structural

(1.) All structural and seismic attachment details and design computations for the BHS and associated catwalks

(2.) All structural support details and design computations for the BHS and associated catwalks

(3.) Drawings and design computations of all structural attachment points to the parent building including imposed load on the building

(4.) Drawings defining all structural supports and attachment types and locations. Generic details will not be acceptable for this purpose.

(5.) Drawings defining all maintenance catwalks and methods of catwalk access including details of handrails, access stairs and ladders, and catwalk construction details.

b.) Electrical

(1.) All new and existing modified BHS PDP and motor control panel connected load calculations

c.) Provide the above mechanical/electrical PE signed and sealed drawings/calculations as listed above in part a.) and b.) in two separate submittals:

(1.) "For Construction" drawings/calculations

(2.) Final "As-Built" drawings/calculations

2. Drawing Submittal Package Requirements

a. Submit to the Owner or his representative final installation drawings defining BHS erection procedures, mechanical and electrical component layouts and the relationship of the equipment components to each other and to the facility prior to the commencement of fabrication. Submit a motor schedule listing: motor horsepower, voltage, source of feed, circuit breaker size, disconnect size, conduit and wire size and overload heater size selected to be used, prior to the installation of overload heaters on the controllers.

b. Submit As-Built drawings as per the specified submittal schedule (plans and associated sections/elevations) indicating the location of the BHS, including all mechanical components, electrical devices, MCPs, switches, and other control devices. Ensure that the submitted "As-Built" documents and related information that is issued on CDROMs (or DVDROMs) are accurate and include all BHS related Final Descriptions of Operations, Final copy of the Programmable Logic Controller (PLC) programs, and all relevant drawings, and all manufacturer maintenance manuals.

c. Submit final assembly drawings, shop detail drawings and any other pertinent drawing files in AutoCAD.DXF format, version 2009 or higher, for all phases of the work, indicating BHS components, construction and assembly details of all components prior to releasing drawings for fabrication.

d. As-Built drawings shall be submitted on CDROM (or DVDROM) in addition to other forms of media described herein.

3. Mechanical Drawing Submittal Requirements

a. General

1.) If standard parts are purchased, reproduced details and identifying part numbers shall be provided.

2.) Each BHS device or conveyor that appears on plan, elevation and section drawings of the BHS shall be identified with the appropriate ID, as established in this Specification.

3.) Number conveyor equipment and control devices starting at the beginning of each conveyor system or subsystem. If there are any discrepancies between the contract document-specified equipment ID numbers and the actual identification of existing (to be retained) equipment, such discrepancies are to be brought to the attention of the Owner or his representative for immediate resolution.

4.) All plan views of the BHS shall be based on an overlay of the building structure as is appropriate.

5.) All plan, elevation and section drawings of the BHS shall also show the vertical and horizontal clearances between the related system equipment and the building structure with its related interferences.

b. Provide the following types of mechanical drawings:

1.) General arrangements with dimensions of all new equipment (plan, elevation, details and sections, as appropriate) for all mechanical, electrical motor control panels, electrical equipment support, and electrical control stations.

2.) Drawings with the appropriate level of detail, as noted in the specification and drawing documents, shall be provided for any equipment designed and manufactured for this project.

3.) Detailed drawings are required for all BHS equipment framing, supports, and other required supports.

4.) Detailed drawing indicating locations and type of safety signage.

5.) Detailed drawings with dimensions of all safety guards such as, but not limited, to the following:

a.) Drive chain guards

b.) Finger guards

4. Electrical Drawing Submittal Requirements

a. General

1.) Each BHS device or conveyor and related control and power devices that appear on any electrical

drawings of the BHS shall be identified with the appropriate ID, as established in this Specification.

b. Submit the following types of electrical drawings:

1.) Plan view of the BHS noting the identity and location of each new component, including but not limited to Motor Control Panels, control devices, control stations, motors, safety disconnect switches, and junction boxes as related to each BHS device of the new subsystem. These drawings shall be provided with the following information:

a.) Detailed wiring connections for the above referenced field components, in block form, with a detail of the actual field wiring numbers and configuration.

b.) Detailed conduit routing diagrams indicating the size of conduits and the size/number of conductors for the above referenced equipment/components and associated MCPs.

2.) Layout of any additional MCP control devices.

3.) Detailed drawing indicating locations and type of safety signage.

4.) Motor Manifest indicating type, part number of driven equipment, power in horsepower, full load amperes and speed.

5.) Revised existing MCP general layout showing enclosure size, type, power requirements, equipment location and enclosed component general arrangement.

6.) Detailed block diagram representing the internal layout of components within each existing motor control panel (existing and new components).

c. Provide an approved 11" x 17" reduced copy of the schematic wiring diagram(s) of each MCP including outline and wiring diagram of all special devices which shall be placed in the door pocket of the MCP.

5. Control System Description Submittal

a. Submit Control System Description as specified in Parts II and III of this specification.

G. Catalog Cuts and Equipment Specifications

1. Submit a catalog cuts manual for all manufactured and purchased items (mechanical, electrical and control equipment) as per the specified submittal schedule.

2. The catalog cuts shall be contained in binders of the “presentation” type equipped with “D” rings. Additionally, the binders shall be equipped with a clear spine pocket to permit the insertion of the manual title. The catalog cut manual shall be contained within at least one volume of appropriate size and contain the following:

a. Record of Revisions: A "Record of Revisions" sheet shall be provided at the beginning of the catalog cut manual.

b. Table of Contents: A Table of Contents shall be provided at the beginning of the catalog cut manual.

c. Index Tabs: Each catalog cut shall be identified with an index tab with permanently printed information.

3. The catalog cuts must be completely legible and reproducible, directly relevant to the specific items as used in the system. Each individual item shall be clearly indicated by the inclusion of a highlighted/shaded arrow immediately adjacent to the item. Where a variation occurs from the standard component or a special custom ordered part has been used as a replacement for the standard supply, additional details shall be submitted to clarify the identity of the component.

4. The catalog cuts shall include the following items (this list is not to be construed as being complete since it is provided only as a guide):

a. Motors

b. Bearings

c. Roller chain and sprockets

d. Wiring devices

e. Control devices

f. Power turns

g. Soft starts, electronic

h. VFDs

i. Slope Plate devices

5. Be responsible for a thorough site survey of the existing subsystems and submit catalog cuts of all components to be utilized for the project. Clearly identify those components that cannot be matched with the existing component, for the Owner or his representative's review and approval.

H. Operation and Maintenance Manual Addendum

1. The prime purpose of the existing Operation and Maintenance (O&M) Manuals is to provide the Owner's operational and maintenance personnel with a thorough understanding of the layout of the system, its function, special features, operational requirements, maintenance requirements, parts information, warranty information, and safety considerations including operational and maintenance access requirements for operating and maintaining the system safely and effectively.

2. The BHS Contractor shall provide an addendum to supplement the existing O&M Manual to reflect all the changes as a result of the MU1 and CS1 replacement project. The format of the addendum shall match the existing O&M manual.

I. Periodic Maintenance Inspection and Lubrication Chart

1. Provide a master chart or series of charts involving periodic maintenance of all replacement equipment items in the system and defining, under equipment item subdivisions, the points and frequency of recommended periodic maintenance functions, including inspection, lubrication and replacement.

2. This chart need not detail the procedures involved with such periodic maintenance functions since such procedures will be found in the maintenance manual, but reference shall be made to specific sections or pages therein.

J. List of Lubricants

1. Submit a complete list of lubricants to be used on the replacement equipment components. This list shall be standardized on one supplier in order to minimize the number of different lubricants used.

K. Inspection, Functional Specification and Testing Program

1. Submit an Inspection, Functional Specification and Testing Program for the BHS to demonstrate compliance with all specified requirements. Prepare the inspection and test plans based on the information provided in this specification. Meet with the Owner and their representatives, at the Airport or other location as requested by the Owner, to review the test plan and obtain a copy, to ensure the completed system meets all the protocols and requirements contained within these Specifications and any additional requirements per the Owner. The BHS Contractor's test plan submittal shall include the tests that are outlined in Part III of this specification. This program shall comply with the guidelines presented in the Acceptance and Testing section of Part IV of these Specifications (34 77 16).

L. Test Reports

1. Submit a report after completion of the internal testing, debugging and system tests performed prior to Acceptance Testing summarizing the detailed results of the tests, to the Owner or his representative prior to requesting final acceptance testing by the Owner or his representative.

2. In addition carry out a "dry test run" of Acceptance Tests prior to conducting such tests with the Owner or his representative to ensure that tests conducted with the Owner or his representative are successful.

3. Provide the Owner or his representative, upon request; the results of all in-plant tests, conducted on assemblies or sub-assemblies of equipment or equipment of like that are installed.

M. Certification of Installation Compliance

1. Submit certificates issued by Regulating Authorities (in compliance with work permits (electrical, mechanical, welding, Fire Marshall and other Authorities)), that the equipment has been properly installed, meets all safety standards and is operating within the required accuracy.

N. Certification of Test Compliance

1. Submit BHS Equipment Supplier's Certification that the system has been tested in compliance with the supplier's requirements for testing and has met all testing requirements.

O. Final Parts List

1. Provide a detailed listing and description of all individual system (subsystem) components with reference to layout and assembly drawings.
2. The listing of system parts shall include the following information:
   a. Name of part
   b. Complete description of part
   c. Each specific location that the listed part is used in the system(s).
   d. Total number of parts in system(s)
   e. Manufacturer of part
   f. Manufacturer's part number
   g. Source of supply
   h. Recommended quantity of spares per each item
   i. Price per unit
   j. Lead time or availability of part
   k. Complete list of manufacturers, with addresses, telephone numbers and point of contact.
   l. Manufacturer's catalog literature and specifications for all purchased parts.
3. Spare parts are to be delivered to the Owner prior to the commissioning of MU1 and CS1.

P. Estimated Spare Parts List

1. Submit a list of estimated spare parts required for the Owners or his representative's review and consideration - include unit price per unit for the estimated spare parts list based on reasonable airline market rates. Spare parts may/shall be purchased for each phase prior to the commissioning of that phase. Include recommended inventory and replacement levels for each phase prior to commissioning as well as part description and identification quantities in system, delivery times, manufacturers and suppliers (their part or ordering numbers).
2. Include any special test instruments required for maintenance beyond the normal inventory of a conveyor maintenance shop.
3. Submit a spare parts list in accordance with Schedule of Submissions.

Q. Weekly Status Reports

1. The BHS Contractor's Project Manager shall submit a Weekly Status Report to the Owner or his representative, which shall include schedule updates in accordance with the provisions of the contract terms. The Owner or his representative shall have the right to change the time of submitting and the details of the report. The weekly status reports shall cover, including but not limited to, the following information:
   a. Percentage of mechanical, electrical and controls engineering completion, per claim
   b. Percentage of fabrication completed
   c. Equipment delivery schedule (month look ahead)

d. Percentage of equipment installed complete:

1.) Mechanical

2.) Electrical

3.) Controls

e. Updated detailed Project Schedule

f. Task activities planned for the next week

g. BHS Engineering Issues

h. Facility issues

i. Interface issues

j. Brief description with status of accepted and proposed change orders with associated cost

k. Status of payments

l. Manning by trade

m. Percentage of testing completed

n. Any other issues

1.07 CONTRACTOR'S QUALITY ASSURANCE GENERAL REQUIREMENTS

A. Laws, Codes, Rules and Regulations

1. Comply with applicable Local, State and Federal laws, rules and regulations pertaining to the following:

a. Installations, removal, and demolition, including but not limited to the Federal Occupational Safety and Health Act and the Construction Safety Act.

b. Protection of the public during installations, including but not limited to requirements for safety of operations, noise control, removal and disposal of waste materials, control of dust, dirt, pollutants, flammable materials, explosive materials, corrosive substances, and protection against fire.

1.08 PROJECT CONDITIONS

A. General

1. The Owner or his representative does not guarantee the accuracy or the completeness of the information relating to the new or existing utility services, facilities, or structures that may be shown on the drawings or encountered in the work. Any inaccuracy or omission in such information shall not relieve the responsibility to protect such existing features from damage or unscheduled interruption of operations and services.

2. Prior to commencing the work in the general vicinity of an existing system, utility service or facility, notify the Owner or his representative 72-hours in advance and obtain approval before proceeding with the work.

3. Failure to give the 72-hour notice shall be cause for the Owner or his representative to suspend the BHS Contractor's operations in the general vicinity of the System, utility service or facility.

4. Should damage to or unscheduled interruption of airline operations, utility service or airline facility occur by accident or otherwise, the BHS Contractor shall notify the Owner or his representative and take all reasonable measures to prevent further damage or interruption of service. In such events, cooperate with the utility service or, Airport until such damage has been repaired and service restored to the complete satisfaction of the utility service or the Airport.

5. Coordinate all building modifications performed by any trade to accommodate the installation of the BHS.

B. Installation Conditions

1. This BHS is to be installed within an existing Airport at both the existing CLT Main Terminal and its outbound bag room.

2. .

C. Lay-down Area Restrictions

1. Lay-down and shake out areas may be limited to the confines of the immediate building. All Lay-Down areas shall be designated and approved by the Owner or his representative.

2. Coordinate usage of lay-down areas with the Owner or his representative.

D. Restoration of Service Costs

1. The BHS Contractor shall incur all restoration of service costs due to the negligent or accidental damage of any airport utility service or facility. The Owner reserves the right to deduct such costs from any monies due, or which may become due, from the BHS Contractor, or its surety.

1.09 PROTECTION OF THE WORK

A. General

1. Make such explorations and probes as are necessary to ascertain any required protective measures before proceeding with installation, demolition and removal. Give particular attention to equipment supports and bracing requirements so as to prevent any damage to BHS equipment.

2. Provide dust partitions, lights, barriers, warning signs and other items as required for proper protection of operating personnel, the public, occupants of building, workmen engaged in installation, removal, and demolition operations, and adjacent construction. Comply with the requirements and restrictions of the Contract Drawings.

3. Do not store or place materials in passageways, stairs or other means of egress. Do not close or obstruct catwalks, walkways, passageways, stairways, streets, walks, terminals, runways, rights-of-way, or other occupied or used facilities without written permission from the Owner or his representative. Conduct operations with minimum traffic interference.

4. Provide and maintain temporary protection of the existing BHS designated to remain where demolition, removal and new work is being done, connections made, materials handled or equipment moved.

5. Protect unaltered portions of the existing system affected by the operations of the work, so that the normal activities conducted in such areas may continue with no interference.

6. Utilize suitable coverings to protect existing work. Be responsible for any damage to the existing BHS and facilities or other contents by reason of the insufficiency of protection provided. Promptly repair damage caused to adjacent facilities and restore as new.

7. Repair any damage to work in place. This includes repair of both new and existing fireproofing materials removed to allow the installation of BHS structural attachment supports and any other BHS equipment.

1.10 SYSTEM DESIGN AND PERFORMANCE REQUIREMENTS

A. General

1. All equipment shall be in strict accordance with the specifications described herein. It should be noted and stressed that the system shall be engineered, fabricated and installed with the objective of being of rugged, heavy-duty, impact resistant equipment capable of withstanding the abuse and exposure to damage experienced in an air transportation baggage handling facility. Other key factors to be considered in the development of the system and its elements shall be simplicity, reliability, maintainability, and safety, and compatibility with existing equipment.

2. The BHS Contractor is deemed to have studied the system design and requirements presented in the drawings and specification respectively and accepted the design and requirements as suitable and appropriate to safely accomplish the functions and processes described herein. Consideration shall be given to the design, fabrication and installation of all projections, welds, and transfer points between conveyor segments and conveyor items to eliminate damage to the various types of baggage processed.

B. Material and Equipment Approvals

1. Materials, components or equipment intended to be used in the work must be submitted as part of the

proposal including the manufacture, specific part number and relevant specification sheet this should include all equipment and materials requested within the specifications and for those provided on the preferred brand optional list. A priority for the Airport is to limit the variety of required spare parts for a particular product, all effort should be made to maintain consistency with the Airport's current environment.

2. Furnish all engineering data, engineering/shop drawings, literature, test results, calculations, and any other requested information, for review of substituted material, components or equipment. The BHS Contractor shall pay for any redesign necessary to accommodate an "approved equal".

C. System Safety

1. Design, manufacture, supply, install and construct the conveyor and makeup device in accordance with all of the requirements in the Specification Documents, and shall meet or exceed all applicable laws rules, orders, regulations and codes. In this regard, the BHS Contractor shall be responsible throughout this Contract to bring to the attention of the Owner or his representative in writing any changes in such laws, rules, orders, regulations and codes and any condition(s), whether caused by its design or any BHS Contract requirements, which the BHS Contractor believes may result in or has resulted in an unsafe condition(s). Rectify at the BHS Contractor's own cost any such condition(s) resulting from its design and not directly as a result of any Contract requirement(s). Where the Owner and the BHS Contractor mutually determine that such condition(s) is directly a result of any Contract requirement(s) or any changes in laws, rules, orders, regulations and codes, then the Owner and the BHS Contractor shall seek a mutual resolution of the condition(s) to be effected by a Change to the Contract.

2. Utilize control methods and techniques, circuitry, mechanical and electrical equipment and operating/maintenance procedures to provide maximum safety for operation and maintenance personnel and to minimize potential damage to the equipment and to the baggage being processed.

3. Ensure that all provided and installed equipment meets all applicable local, state and federal safety codes, including applicable OSHA standards and requirements, for baggage handling systems/conveyors and industrial machinery environments.

D. Personnel Safety

1. The operation of the system shall be convenient and safe to use, and control functions to be performed shall be simple to minimize possible errors. Provide convenient means for emergency system shutdown.

2. Provide adequate means for ensuring the safety of all personnel who have access to the system in the system design.

3. Provide sufficient safety signage throughout the system.

4. Provide lockable devices such as disconnect switches and lockouts to prevent the accidental activation of those portions of the system shut down for maintenance. These devices shall be located in all areas.

5. Provide equipment and component guards on all drives. House all moving parts in personnel areas with guards (such as bearings, return rollers, and return conveyor belts).

6. Provide sufficient work space in all limited access areas

7. Provide audible and visual warning signals along all areas of the system to make apparent any potential hazards to the public, operating and maintenance personnel resulting from moving or about-to-start equipment.

8. Provide protection from falling objects in work areas or aisles located beneath overhead portions of the system with gap pans or netting.

9. Locate conduits and all other electrical components where they shall not be subject to damage by maintenance or operational personnel.

10. Coordinate access provisions for operators so as to minimize obstructions. Locations of control stations and electrical boxes shall be coordinated to support unrestricted access by staff. The provisions of the conveyor supports, drive configurations, personnel guarding and side guards shall allow for maximum operator accessibility.

E. Noise Levels

1. Design, fabricate and install the BHS to limit combined equipment and controlled ambient noise levels to the following allowable maximum requirements. However, the BHS equipment shall not increase the ambient noise level by more than 15dB (A). In any case, ambient noise levels for the BHS equipment shall not exceed OSHA standards.

2. Design, fabricate and install the BHS to limit combined equipment and controlled ambient noise levels to the following allowable maximums

Noise Level	Ambient
45dB (A)	In adjacent or nearby office areas (measured at the center of room at a height of 5' 0" above the floor).
65dB (A)	In public areas, or ceiling above public areas and offices (measured at a number of positions normally occupied by passengers, public and staff).

3. Unless otherwise specified the measurements shall be taken at a maximum distance of 5' 0" vertically and 5' 0" horizontally from noise producing components.

4. The noise level measurement shall be accomplished utilizing an integrating sound level meter supplied by the BHS Contractor. A qualified person employed by the BHS Contractor shall accomplish measurements and evaluation. Submit a certificate of calibration to the Owner or his representative.

5. The noise level shall be the Equivalent Continuous Sound Pressure Level measured over a period of one minute or more at each location. In addition, to the overall A-weighted noise level, the Equivalent Continuous Sound Pressure Level shall be measured for each octave frequency band from 125Hz to 4000Hz.

6. Conveyor noise shall not be unduly impulsive. Observing the difference, between the measured Equivalent Continuous Sound Pressure Level and the instantaneous sound pressure level, shall test the impulsiveness of the noise. A component shall be considered unduly impulsive if the differences exceed 3dB (A).

7. Conveyor noise shall not be unduly tonal. Tonality shall be determined by observing the difference in level between any A-weighted octave band and each of its adjacent A-weighted octave bands. The sum of the differences shall not exceed 6dB (A). All octave bands from 125Hz to 4000Hz shall comply with this requirement.

8. Every conveyor component shall be tested. The components shall be tested at full design speed under load conditions.

9. Noise level measurements shall be taken during non-operational hours to ensure passenger conversations or movements do not unduly increase the ambient noise levels in public areas.

10. Measurements shall be taken during a time when the ambient noise levels are at least 6dB (A) below the conveyor noise level. The ambient noise level shall be determined both before and after the measurement of the components. The ambient noise level shall be determined as follows:

    a. The BHS equipment shall be turned off.

    b. All other equipment (e.g., air-conditioning, heating equipment) shall be on and outside noise sources (from aircraft and mobile ground equipment) shall be as normal.

    c. Noise level readings shall be taken throughout a zone 5' 0" vertically and 5' 0" horizontally from the BHS equipment using an integrated sound level meter set to the A-weighted network.

    d. After the ambient noise level has been determined, the BHS equipment shall be turned on and the total noise level shall be measured at the same points throughout the zone that the ambient levels were measured.

11. Submit a written report to the Owner or his representative detailing the results of the noise level measurements.

F. Maintainability, Life & Reliability

1. The requirements set forth in this section are minimum requirements and do not relieve the obligation to

provide a system in which all required maintenance tasks can be readily performed.

2. Design all components so they can be easily disconnected and removed from the equipment without the necessity for extensive disassembly. Design the components for removal and replacement by two - (2) staff in a period not to exceed two - (2) hours. Be prepared to demonstrate that any maintenance task, not so listed, can be accomplished as described above. Correct any installation, without charge, as required to accomplish this demonstration.

3. Design the system so that equipment components requiring inspection and servicing are readily accessible. Provide suitable doors for this purpose. Where necessary, provide access holes in frames or guards but keep them to a minimum number and size, and ensure that they do not create protrusions or discontinuities detrimental to the baggage being conveyed.

4. Design equipment to facilitate maintenance functions in preference to ease of fabrication.

5. Design equipment such that, whenever possible, assemblies shall not require dismantling in order to troubleshoot, repair or replace assemblies or components of assemblies involved in such servicing procedures.

6. Affix cover plate attachment hardware to, or hold captive in, the cover plate assemblies.

7. Provide all electric assemblies, panels, or boxes with the appropriate schematic, enclosed in a clear-faced envelope affixed in a location visible to personnel while servicing such items.

8. Provide one set of special test instruments and tools for each group of equipment items requiring such special test instruments and tools. These shall be provided in a metal toolbox with identification of the equipment for which the tools shall be used.

G. Standard/Interchangeable Components

1. Minimize the number of different types and makes of components used in the BHS to simplify spare part inventory.

2. Design all equipment and components to definite standard dimensions, tolerances, and clearances to provide maximum inter-changeability.

3. Provide like types of equipment from the same manufacturer wherever practicable.

H. System Reliability

1. Reliability requirements of the total BHS shall be measured in terms of "System Availability" (A_s).

2. Failure

a. A failure is defined as any malfunction of a System component, assembly, or subassembly which stops normal operations. A failure shall be charged against only the one subsystem, which causes that failure. The following shall not be classified as failures:

1.) Malfunctions caused by a failure on the Owner's part (after system acceptance) to properly maintain and operate the System in accordance with recommended procedures.

2.) Malfunctions due to causes outside the System such as but not limited to sabotage or general power outage.

3.) Malfunctions due to baggage jams not caused by failure of a system component, assembly or subassembly unless it is a defective part, a poor installation, or a failure of a component or subassembly to perform its intended function.

4.) Incipient failures, which are detected and repaired without affecting normal operation of the System.

3. Sub-System Availability (As)

a. Sub-System Availability (As) shall be defined by the following equation:

$$As = \frac{(ST - RT)}{ST}$$

ST = Scheduled Operating Time: The scheduled time that the BHS is available for baggage processing (normally 18 hours per day).

RT = Repair Time: The interval of time between initiation of repairs due to a failure and return of the BHS to operation.

I. Parts Availability

1. Maintain, for immediate delivery, an adequate inventory of spare parts (especially long lead time items) required for routine maintenance of the system. Ensure that critical spare and replacement parts required by the system are made available for a minimum of a fifteen - (15) year operational period through the availability of shop and as-built drawings and through the availability of the actual parts. Additionally, ensure the availability of custom or "special" components.

2. If such parts are not available during the fifteen - (15) year operation period or should pricing become unreasonably high on a competitive basis, the Owner has the right to permit the use of the project drawings, at their discretion, for fabricating such parts, or having such parts fabricated so as to maintain the specified system.

1.11 STANDARDS AND CONSTRUCTION CODES

A. General

1. The design and subsequent installation shall provide adequate safety factors and shall conform to all current standards and codes of the USA, the City of Charlotte, and Charlotte Douglas International Airport, or the country of design origin, whichever is more stringent.

B. Construction Codes

1. In the event no specific local codes or standards can be identified, the Contractor shall comply with the most recent version, applicable provisions and recommendations of the following:

a. American Welding Society (AWS)

1.) D-1.1 Welder Qualifications

2.) AWS-C1.1 Recommended Practice for Resistance Welding in Building Construction

3.) AWS-A2.0 Standard Welding Symbols

4.) D-1-0 Standard welding practice in building construction

b. American Gear Manufacturers Association Standards (AGMA)

1.) 6009-A00 Practice for Gear Motors

2.) 6035-A02 Practice for Worm Gear Motors

c. American National Standards Institute (ANSI)

1.) A-1264.1 Safety Code for Floor and Wall Openings, Railing, and Toe Boards

2.) B-20.1 Safety Code for Conveyors, Cableways, and Related Equipment

3.) B-29.10M Transmission Roller Chains and Sprocket Teeth

4.) C-33.1 Safety Standard for Flexible Cord and Fixture Wire

5.) Z535 Safety Color Code

d. National Bureau of Standards (NBS)

1.) Handbook H28 Screw-Thread Standards

e. National Fire Protection Association (NFPA)

1.) NFPA No. 70 National Electrical Code Volume 2, National Fire Code

2.) NFPA No. 79 Electrical Standards for Industrial Machinery

3.) NFPA No. 80 Standard for Fire Doors and Fire Windows

f. NEC National Electrical Code (most current version)

g. Underwriters Laboratories (UL) Standards (Components shall be labeled appropriately)

1.) UL 508 Industrial Controls Equipment

2.) UL 508A Industrial Control Panels

3.) UL 508C Power Conversion Equipment

4.) UL 1998 Software in Programming Components

5.) IEC 61508 Functional Safety Standard for Electrical/Electronic/Programmable Electronic (E/E/PES) Safety Related Systems

h. National Electrical Manufacturers Association Standards (NEMA)

1.) ICS Industrial Controls and Systems

2.) MG1 Motors and Gear Motors

i. American Society for Testing Materials (ASTM)

1.) A-36 Structural Steel

2.) A-794 Sheets cold rolled

3.) A-659 Sheets & Strip - hot rolled

4.) A-307 Fasteners (Bolts)

5.) A-563 Fasteners (Nuts)

6.) F-844 Fasteners (Washers)

j. American Wood Preservers Association (AWPA)

1.) C-27 Fire Retardant Wood

2. All equipment and accessory items furnished and installed under this Contract shall be governed at all times by applicable provisions of federal laws, including but not limited to the revision of the following in effect as of the Contract date:

a. Williams-Steiger Occupational Safety and Health Act (OSHA), of 1970, Public Law 91.596, most current version.

b. Occupational Safety and Health Administration (OSHA)

1.) 29 CFR Part 1910 Subpart D (Walking-Working Surfaces)

2.) 29 CFR Part 1910 -211 (Definitions)

3.) 29 CFR Part 1910 – 212 (General Industry Standards and Requirements) for machines

4.) 29 CFR Part 1917.48 (Conveyors)

5.) 29 CFR Part 1926.555 (Conveyors, Construction Industry Standards)

6.) 29 CFR Part 1926.1053 (Ladders)

c. Office of State Health Planning and Development (OSHPD)

d. American Society of Mechanical Engineers (ASME)

1.) ASME B20.1 2006 Safety Standards for Conveyors and Related Equipment, and all Addenda up to and including ASME B20.1-2006

e. Conveyor Equipment Manufacturers Association (CEMA)

1.) ANSI/CEMA 402-2003 Belt Conveyors

2.) ANSI/CEMA B105.1-2003 Specifications for Welded Steel Conveyor Pulleys with Compression-type Hubs

1.12 WARRANTIES

A. General Warranty

1. Warrant any new BHS equipment for one - (1) year against defective parts and labor beginning on the Final Acceptance Date as related to this Project.

2. Warrant all new BHS equipment for three - (3) years against design defects beginning on the Final Acceptance Date as related to this Project.

3. Assign the Owner all warranties for all materials and equipment received from Subcontractors and Suppliers.

4. The BHS Contractor shall not warrant and shall not be liable for design or throughput capability of the relocated/refurbished equipment (e.g., existing conveyor segments upstream and downstream of the new conveyor segments associated with the modified lines).

a. Upon the Substantial Completion Date of a given Sequence for all BHS related field components, such as motors, gearboxes, bearings, belting, field control components and MCP control components. Submit a certified warranty statement summarizing the type of warranty coverage with the warranty commencement date for that given Sequence and outlining the BHS equipment that has been substantially completed and turned over for operational use.

b. Upon the Final Acceptance Date as related to this project for all related BHS Computer Systems and PLC system hardware and software provisions. Submit a certified warranty statement summarizing the type of warranty coverage with the warranty commencement date and an outline of the BHS equipment that will be covered under the warranty.

B. Warranty Exclusion

1. This warranty shall not apply to any defects or inconsistencies, which are attributable to repair, alteration, misuse or abuses by any person other than authorized personnel or Subcontractors. Liability shall be limited to repairing or replacing defective or non-performing part(s) at no cost to the Owner.

C. Warranty Limitation

1. Liability shall be determined in the Contract Agreement and shall also include repairing or replacing defective or non-performing part or parts at no cost to the Owner.

D. Technical Support

1. Provide on-site technical support by personnel qualified to advise the Owner on training, provisioning, start-up and maintenance of the equipment.

2. The technical representative(s) for warranty support shall be within 6 hours travel distance of Charlotte Douglas International Airport, in the City of Charlotte, State of North Carolina, where the equipment is to be located, as required by the Owner.

E. Royalties and License Fees

1. Pay all royalties and license fees and defend all suits or claims for infringements of any prior or patent rights and save the Owner harmless from liability, expense of loss on account thereof, with respect to any processes, devices, methods, articles, inventions, things or procedures used in the project.

F. Labor Warranty

1. Warranty support shall be provided as follows:

a. Provide labor to accomplish any warranty repair work. In the event such labor is not provided in a timely fashion, pay the Owner to accomplish warranty labor repair with its maintenance staff.

b. Provide labor for work related to design deficiencies.

G. Parts Warranty

1. Terms

a. Provide a parts warranty which states material and equipment furnished and installed shall be new and free from faults and defects in material, workmanship, detail or incorrect component selection; shall conform to the functional and technical requirements of this Section and Contract Drawings contained herein; shall comply with all laws, statutes, ordinances and codes applicable at the installation site; and shall be suitable for the intended purposes. Excessive wear shall be considered a defect within the provisions hereof.

b. Parts shall be shipped freight pre-paid to the location specified by the Owner. Failed/malfunctioned parts shall be returned to the BHS Contractor, FOB, within ten - (10) days of notification of detection of such failed/malfunctioned parts.

2. Spare Parts

a. Spare parts for each phase, shall be made available for purchase by the Owner prior to the commissioning of the subsystem. The Owner may, taking the recommendations of the BHS Contractor, purchase such spare parts as it deems necessary, and said parts, shall be stocked on the Airport property. Stock control shall be by the Owner who shall grant reasonable access to the BHS Contractor's warranty service agency during the warranty period. All items withdrawn from stock shall be replaced, regardless of whether the item was purchased by the Owner or the Owner's Maintenance Group directly from the BHS Contractor or from a third party, pursuant to warranty services, within two weeks of such withdrawal.

b. Ending of the warranty period shall be contingent on the replacement of all stock withdrawn pursuant to warranty services whether the warranty service agency or the Owner accomplished such services. Where the BHS Contractor has cause to believe that an item or items may require stocking pursuant to the terms and conditions of warranty provisions, which item or items the Owner declines to stock, stock such items separately at no cost to the Owner. In no case shall the absence of appropriate spare parts in the Owner's spare parts stock be construed in any way to abridge or interfere with the responsibilities of the warranty services as defined herein.

H. Design Warranty

1. Terms

a. Provide a Design Warranty which states that the system, materials, equipment, and low level controls furnished and installed shall be free from faults and defects in design; shall conform to the functional and technical requirements of this Section and Contract Drawings contained herein; shall comply with all laws, statutes, ordinances and codes applicable at the installation site; and shall be suitable for the intended purposes. Excessive wear shall be considered a defect within the provisions hereof.

2. Design Failure

a. In the event a design failure occurs during the warranty period, replace all such components, assemblies or devices utilizing the design in a similar application in which the failure occurs by components, assemblies or devices redesigned to prevent such occurrences at no cost to the Owner. Submit proposed redesign drawings and re-selected component designations to the Owner for their approval. Issue a new warranty period upon the replacement of such redesigned items.

b. Components, assemblies or devices shall be considered as design failures if any of the following occurs during the warranty period:

1.) A leakage loss of over 10% of an operating fluid in any hydraulic assembly.

2.) A demand for frequent, unscheduled adjustment or other maintenance action in similar devices.

3.) Failure of a component to perform its specified function or a failure of a component to operate at its specified rate.

4.) Frequent activation of overload protection elements in similar devices.

5.) Loosening of anchoring or attachment provisions on similar devices.

6.) An increasing level of noise being generated by similar devices.

7.) A structural failure due to BHS supports.

8.) Inappropriate action of control or sensor elements during operational conditions.

9.) Occurrence of an accident or an imminent safety hazard revealed during operational conditions.

10.) Uncovering of a condition of specification non-compliance or degradation of specified functional requirements during the warranty period.

11.) More than two – (2) failures on one or more components or assemblies of components of similar construction or design, used in similar devices.

12.) More than two – (2) unscheduled replacements of an expendable component in similar devices.

c. The Owner shall act to resolve any disputes regarding the definition of a design failure in a fair and equitable manner.

3. Period and Responsibility

a. If, within three - (3) years from the date of Final Acceptance of the work, the work or the system, or any equipment, material or software is found, in any respect, not to conform to the Warranty set forth herein, within forty-eight - (48) hours of notification by the Owner, initiate the following series of steps in order to correct the deficiency:

1.) Determine the cause of failure.

2.) Prepare drawings showing recommended design changes and submit to the Owner or his representative.

3.) The Owner or his representative shall comment with a change request or approval.

4.) Make design changes if requested.

5.) After the Owner or his representative has approved the design, all components of the system incorporating the same design deficiency shall be modified as agreed upon by the Owner or his representative.

6.) The Parts Warranty period and the Design Warranty period shall start again for the changed item/system on the date that the design change has been incorporated if the make, manufacture or model is replaced.

- END OF PART I -

PART II - PRODUCT SPECIFICATIONS

2.01 BHS Equipment

A. General

1. For this project make every attempt to use materials/components that match the existing CLT Outbound and CBIS BHS so as to minimize the spare part requirements for the Owner. Perform a thorough site survey of the existing systems and submit catalog cuts of all components that are to be utilized, identifying those components that cannot be matched for the Owner or his representative to review:

2.02 MATERIALS

A. General

1. All welding and qualification of welders shall comply with AWS D1.1.

2. All fasteners shall be zinc-plated, cadmium plated or stainless steel. All fasteners shall be locked with lock nuts or lock washers.

3. Use of alternate materials

a. Whenever an article or any class of articles, devices or material are specified by the trade name or by the name of any particular patentee, manufacturer, or dealer, or by reference to the catalog of any such patentee, manufacturer or dealer, it shall be taken to mean and specify the articles, devices or materials specified and none other.

b. Submit to the Owner or his representative in writing for approval to use any articles or materials which is believed to be equal in quality, finish and durability, and equally as suitable for the purpose for which intended as the particular articles, devices or materials specified.

c. The articles, devices and materials specified shall not be changed except with the written consent of the Owner or his representative. Do not contract, purchase or cause to be delivered any substitute articles, devices or materials prior to obtaining consent.

B. Material

1. Structural Steel: ASTM A-36

2. Rubber/Neoprene: ASTM D-2000

2.03 FABRICATION

A. General

1. Fabricate equipment-using steel clean and free from rust, rust pits, kinks and sharp bends. Use forming methods that will not fracture or otherwise damage the metal. Remove burrs, sharp edges, and sharp corners. Smooth all joints and round all corners. Align joints in components to ensure smooth conveyance of baggage.

2. Holes in metal side guards for photocell beams are to be "punched", not burned, and tapered from the inside (wide) to the outside (narrow).

3. When two sections of conveyor bed meet, these joints shall be chamfered to ensure that there is no step-up condition between bed sections.

2.04 BELT CONVEYORS

A. Belting

1. General

a. All conveyor belting shall be flame retardant according to ISO 340, DIN 22103, ASTM D-378 and NFT-47108 or equal.

b. Belt widths shall be 3" less than the between frame (guard) dimension unless otherwise specified.

c. Ensure that no belt slippage occurs in order to meet all tracking performance requirements specified herein.

d. The actual length of belting installed on each unit shall be included on the system's drawings and in the spare parts list.

e. All belting shall have a minimum acceptable working tension of 100lbs per inch of belt.

f. Ensure all ratings for proposed belting designated for exterior use exceed the local environmental weather conditions.

g. Submit cut sheets for all types of belting being proposed for this project for review and approval by the Owner or his representative.

2. Conveyors

a. For level, general purpose baggage handling applications such as load, unload transport and inclines/declines of 7° or less use two ply urethane impregnate, solid woven fabric polyester or bare by bare (if not exposed to the public), top face of 0.02" PVC, smooth (public areas), maximum coefficient of friction of 0.3 with elongation of 1% maximum rated tension. For load conveyors provide belting that is flat lying, roll resistant and cut/wear resistant.

b. For incline and decline conveyors of greater than 7° use 0.08" PVC two ply urethane impregnate, solid woven fabric polyester or bare by bare, rough top, maximum coefficient of friction of 0.25 with elongation of 1% maximum rated tension.

c. For incline and decline conveyors or other locations where bag slippage may occur, the use of longitudinal rough top belt may be used.

d. Power Turns: Provide belts for power turns suitable for the application, as provided by the power turn manufacturer.

e. Spiral Turns: Provide belts for spiral turns suitable for the application, as provided by the spiral turn manufacturer.

B. Belt Splicing

1. Lacing

a. All belt lacing (except for power turns) shall be of the Clipper "Unibar" type with a minimum #2 hook type of the size recommended by the belt manufacturer for the belt being used. When cutting belts for proper length, sufficient material shall be allowed for take up pulleys to be at a maximum of one half the take up distance with the belt running.

b. Belt lacing for power turns shall be of the Clipper type with either #1 or #1A hook type of the size recommended by the belt manufacturer for the belt being used or as recommended by the power turn manufacturer. When sizing belts for proper length, sufficient material shall be allowed for take up pulleys to be at a maximum of one half the take up distance with the belt running.

c. Belting and related hardware must be trimmed in a 1" deep "V" notch fashion, lacing connecting pin must be either enlarged by heating lacing connecting pin nylon jacket or bent 90° to prevent lateral movement of the pin.

d. Belt lacing for applications in 45° merge conveyors shall be of the Clipper brand type of fastener.

e. Belt lacing connecting pins for the Clipper type-lacing materials shall be of the nylon covered steel cable type of appropriate diameter for the lacing hooks being used.

f. All rough top belting to be ground smooth within 1" of the cut end to allow proper seating of the belt lacing

C. Pulleys

1. General

a. All shafts shall be designed to CEMA standard No. 402-1992 and all subsequent revisions. Shafts are to be AISI 1018 steel, polished and ground and within tolerances for the associated bearings. (Standards to be changed to foreign applicable if not a US project)

b. All pulleys are to be dynamically balanced. Rollers of eccentric material, such as standard pipe, are to be dynamically balanced.

c. Run-out:

1.) The maximum shaft run-out of all assembled pulleys, shafts and bearings under a no-load condition, measured from the centerline of the bearing to the end of the related shaft furthermost from the conveyor, shall not exceed 0.0075" per inch.

2.) The maximum run-out of any pulley shell shall not exceed 0.060".

d. Machining:

1.) Swaged:

a.) Pulleys shall be 10-gauge (minimum) thickness with ⅜" (minimum) thick end plates.

b.) End pulleys are to be swaged between centers to create a trapezoidal face with a taper from the pulley end to a minimum 25% of the pulley length thereby having 50% of the pulley flat in the center.

2.) Machined:

a.) If end pulleys are machined (not swaged) using Schedule 40 pipe, center plates must be made from ½" thick steel plate and shall have bored centers to facilitate a slip fit on the shaft.

b.) Pulleys are to be turned between centers to create the crown or trapezoidal. Pulleys shall be crowned from each outer end to within ½" of the centerline leaving 1" straight but turned true to standard thickness required for each pulley application. When welding is involved, turn the assembly after welding to true the weldment and create the crown/trapezoidal.

c.) The recommended minimum wall thickness after crowning or trapezoidal shall be as follows:

Pulley Diameter	Minimum Wall Thickness
8⅝"	5/32"
12¾"	7/32"
16"	11/32"
18"	11/32"

e. Hub plates shall be made from ⅜" (minimum) thick steel plate turned and bored to fit on the shaft or have a taper locking hub arrangement welded in the end plate.

f. All pulleys shall be manufactured for high-speed application.

g. All bearings shall be supplied pre-lubricated and sealed for life with plugs inserted into the grease fitting bore. Bearings are to be secured to their respective shafts with an approved form (as specified in the submittal procedure) of eccentric or squeeze locking type collar arrangement.

2. Powered Pulleys

a. Drive pulleys

1.) All drive pulleys for intermediate-type drives shall be lagged with vulcanized lagging of 70 Durometer rating with a minimum thickness of ⅜". Lagging material on individual pulleys shall be compatible with the type of belting used on the associated conveyor. Examples of lagging material are as follows:

a.) Minimum 70 durometer carboxiled nitrile

b.) Minimum 70 durometer thermo-set urethane

2.) Powered pulleys shall be steel, crown faced, flat faced, or trapezoidal (per the belting manufacturer's recommendation), shall be equipped with taper-lock type hubs with 1-7/16"

minimum diameter shafts mounted in eccentric locking-type or squeeze locking type precision and ground flange-type ball-bearing units.

3.) The minimum acceptable belt wrap on drive pulleys shall be 210°.

4.) Drive pulleys for end-type drives must be lagged with a minimum 3/8" thick vulcanized lagging of 70 durometer, again using lagging material compatible with the type of belting used on the associated conveyor. In addition, powered pulleys shall be 6" with taper lock hubs with 1-7/16" minimum diameter 1018 TGP (turned, ground and polished) steel shafts mounted in eccentric locking type precision and ground flange ball bearing units.

5.) Drive pulley and shaft sizes shall be determined by maximum belt pull. The following are provided as examples:

a.) Light-Duty: 250lb maximum belt pull. Consists of a 6¾" minimum diameter drive pulley with a 1-7/16" minimum diameter shaft. Bearings mounted with two bolts can be used with light duty applications.

b.) Normal-Duty: 500lb maximum belt pull. Consists of an 8¾" minimum diameter drive pulley with a 1-11/16" minimum diameter shaft. Roller chain, if used, shall not be less than RC - 60. Bearings mounted with two bolts can be used with normal duty applications.

c.) Intermediate-Duty: 1000lb maximum belt pull. Consists of a 10¾" minimum diameter drive pulley with a 1-15/16" minimum diameter shaft. Roller chain, if used, shall not be less than RC - 60. Bearings mounted with four bolts are to be used with intermediate duty applications.

d.) Heavy-duty: 1,500lb maximum belt pull. Consists of a 12¾" minimum diameter drive pulley with a 2-7/16" minimum diameter shaft. Roller chain, if used, shall not be less than RC - 80. Bearings mounted with four bolts are to be used with heavy-duty applications.

b. Motorized Pulleys

1.) The reduction gears and motors associated with power driven pulleys shall be mounted in an oil bath for lubrication and heat dissipation. The design of the pulley shall permit the lubrication oil level to be checked without dismounting or removing the drum motor from the conveyor frame. The lubricant shall be rated for 10,000 hours of life. Gears shall be hardened and ground steel alloy.

2.) In addition, drums shall be machine crowned and lagged to facilitate belt tracking. Lagging material on individual motorized pulleys shall be compatible with the type of belting used on the associated conveyor.

3.) Power: The power supply shall be connected directly to the starter without the use of slip rings and brushes. The terminal board housing (if used) must be capable of being rotated 180° to facilitate the direction of cable inlet.

3. Non-Powered Pulleys

a. Snub Pulleys

1.) Snub pulleys are to be installed on all conveyors at all points where the slack portion (non-load carrying portion) of the conveyor belt makes a change in vertical or horizontal direction. At a minimum, such points of vertical or horizontal change shall include:

a.) Points immediately adjacent to head, tail, take up and drive pulleys.

b.) Points on the underside of any conveyor where the belt bends vertically or horizontally (nose-over sections).

2.) All snub rolls shall be a minimum of 4" in diameter and equipped with fixed (welded) 1-7/16" minimum diameter shafts mounted in eccentric locking-type or squeeze lock type precision and ground flange-type ball-bearing units.

3.) Bearings are to be secured to their respective shafts with an approved form (as specified in the submittal procedure) of eccentric or squeeze locking type collar arrangement.

4.) All snub rollers used for belt tracking shall be equipped with jacking bolts to facilitate adjustment. Jacking bolts must be equipped with jam nuts to prevent the jacking bolts from loosening.

b. Take-Up Pulleys

1.) All take-up pulleys shall be steel, crown faced, flat faced, or trapezoidal (per the belting manufacturer's recommendation), and at a minimum 4" in diameter. Take-up pulleys are to be equipped with taper-lock type hubs or squeeze lock type and 1-7/16" minimum diameter shafts mounted in eccentric locking-type precision and ground flange-type ball-bearing units. Pulleys must be mounted on threaded take-up devices with steel guides and have a minimum allowable adjustment of 10" (6" on conveyors less than 12' 0" in length).

2.) All conveyors shall be provided with take-ups for field adjustment of 2% of the conveyor bed length. Take-ups shall be an integral part of the drive frames on all intermediate-drive conveyors.

3.) Automatic take-up devices shall be installed:

a.) On all conveyor sections in excess of 60' 0" in length

b.) On conveyors which operate outside the building or are subject to extreme temperature and humidity changes.

c.) In areas where belts are subject to stretch/shrinkage that will cause weekly adjustment.

4.) Spring take-ups are not acceptable. Design of the pulleys shall be subject to by the Owner or his representative's approval.

5.) Take-ups used in heavy-duty or high-speed applications shall be a minimum of 6" in diameter with a minimum 1-7/16" diameter shaft and shall otherwise comply with the above specifications.

6.) Bearings are to be secured to their respective shafts with an approved form (as specified in the submittal procedure) of eccentric or squeeze locking type collar arrangement.

7.) All take-up pulley bearing adjustors are to be chain coupled so that both bearings are tightened and slacked in equal increments. All belt lengths shall be adjusted so that the respective take-up pulley adjustments shall permit a further adjustment of 85% before the belt length needs to be shortened. The 15% maximum adjustment of the take-up pulley adjusters shall have been accomplished prior to Acceptance Inspection and Testing.

c. Head and Tail Pulleys

1.) All non-powered head and tail pulleys shall be steel, crown-faced or trapezoidal and equipped with taper-lock type hubs. Pulleys shall be equipped with shafts having a minimum diameter of 1-7/16" mounted with eccentric locking-type precision and ground flange type ball bearing units. All head and tail pulleys shall be a minimum of 6" diameter x #10-gauge wall. In addition, all head and tail pulleys shall be of a single-piece construction having steel end discs attached to the rim by continuous welding.

2.) Slider beds shall be arranged to minimize the gap between the end section and the end pulley such that the gap does not exceed 1" with a ½" design objective.

3.) All head and tail pulleys used for belt tracking shall be equipped with jacking bolts to facilitate adjustment. Jacking bolts are to be equipped with jam nuts to prevent the jacking bolts from loosening.

4.) Bearings are to be secured to their respective shafts with an approved form (as specified in the submittal procedure) of eccentric or squeeze locking type collar arrangement.

5.) Finger Safety Guards:

a.) All end pulley rollers in staffed areas (load conveyors (public and non-public areas) shall be narrower than the belt width by a distance not less than two times the difference between the belt width and the between-guides width of the conveyor (usually 6").

b.) A securely fastened steel finger guard matching the radius of the end roller shall take up the

remaining width on each side of the roller. Ensure that the outer surface of the finger guards are smooth and that the junctions between the finger guards and the slider bed and that between the finger guards and the pulley do not subject the belting to any undue damage or wear. Attachment of the finger guards shall be such that the guards will move with the pulley when it is adjusted, therefore ensuring proper alignment.

c.) At the tail end of load belts, pulleys shall also be covered with a removable metal shroud located just above, but not in contact with, the conveyor-belting surface. Where exposed to public view, these pulley shrouds shall be constructed of stainless steel matching that used on their respective conveyors (type 304 stainless steel with #4 brushed satin finish, unless otherwise specified).

d.) Submit to the Owner or his representative the proposed finger safety guard design for review and approval.

4. Return Rollers/Idlers

a. Return rollers shall be constructed from 12-gauge steel and must be full-faced with a minimum 2½" diameter equipped with an 11/16" hex axle for belt speeds up to 150fpm and a minimum of 3½" in diameter with 11/16" hex axle for belt speeds above 150fpm.

b. In locations that require a noise level of 65db (A) or less, such as the CBRA, use return rollers/idlers with female threaded spindles attached to the conveyor frame and bolted connections. Do not use spring loaded rollers.

c. All hex shaft return idler rollers shall be equipped with sealed, permanently lubricated, caged, semi-precision type ball-bearings. Return idlers shall be located on centers not exceeding 10' 0", with spacing being reduced in areas where belting may drag against the floor or conveyor structure. The shafts shall be mounted to the conveyor bed with adjustable retainers for proper belt tracking.

d. Provide two return rollers spaced on 5' 0" centers in each 10' 0" intermediate section from which lateral diversion of baggage takes place. Center the return rollers on the associated pusher or diverter.

e. Return rollers must not be used at snub points.

f. Provide a minimum of one return roller per 10' 0" section. The position of the return rollers shall assure that the return belt is routed and supported so that it does not contact any stiffening members. Mounting for the end of each return roller shall be adjustable for belt tracking.

g. For application where conveyors are exposed to inclement weather, provide a minimum of one return roller every 5' 0" on center on load and transfer belts to help the conveyors start when wet or frozen to the bed. The position of the return rollers shall ensure that the return belt is routed and supported so that it does not contact any stiffening members. Mounting for the end of each return roller shall be adjustable for belt tracking.

h. Provide return roller finger guards at all possible return roller mounting positions where accessible by personnel.

D. Drive Assemblies

1. Submit to the Owner or his representative for approval a schedule of all drive assemblies showing configuration of motor and reducer assembly. The selection of the drive assembly shall be based on efficiency, low noise, sized for the application, achieves long service life and has low maintenance.

2. End-type drive units may be used for conveyors 25' 0" or less in length, with intermediate drives used for conveyors over 25' 0" long.

3. The configuration of the drive assembly motors and reducers shall be based on a direct shaft mounted speed reducer and gear box design to simplify the installation, and maintenance of the equipment, noise levels, and spare parts considerations. The selection of the drive assembly shall be based on efficiency, low noise, sized for the application, achieves long service life and has low maintenance.

4. The use of a non-direct shaft mounted speed reducer and gear box design shall only be permitted in select locations upon the review and approval of the Owner.

5. For non-reversing conveyors, the drive assembly shall be located towards the head end of the conveyor.

6. For reversing conveyors, the drive assembly shall be located as close to the midpoint of the conveyor as possible.

7. For conveyors in areas with a maximum noise level of 65db (A) or less (such as the CBRA), use either shaft mounted drives or underslung drives with toothed belts (no chain drives) to minimize noise levels

8. To achieve maximum drive aisle clearance (minimum 8' 0" from finished floor to bottom of conveyor or overhead support structure) under the conveyor, the Contractor is permitted to utilize a low profile drive configuration (in addition to a side clip support attachment configuration, if required) only in locations over drive aisles where a standard profile drive configuration would impact the above drive aisle clearance. Submit drawings showing those areas where a low profile drive configuration shall be utilized to the Owner for approval.

9. Motors:

   a. The conveyors shall be driven by AC induction motors (except where motorized pulleys are used). The motors shall conform to AIEE, NEC and NEMA standards.

   b. Motors shall be sized for maximum load and belt speed requirements under continuous operation (minimum of 1hp unless approved by the Owner or his representative) and, where applicable, shall be capable of withstanding shock caused by frequent starting and stopping under full load conditions. Motor FLA will be measured with full load during load tests and any motor that draws more than the name plate FLA (after start up in rush current has flattened) must be replaced with a motor of appropriate size that will result in no more than the max name plate FLA during load test.

   c. Motors shall also be of the constant speed (nominally 1800 RPM), continuous service, and ball bearing type with a minimum of class "F" insulation. For 2hp motors and smaller class "B" insulation shall apply.

   d. If overrun is critical to system control operation (i.e., wherever baggage tracking is required), motors shall be equipped with automatically applied brakes to prevent overrun after the motors are de energized.

   e. With the exception of "High-Slip" design motors, for applications that require dual drives, and motors that are controlled by "VFDs", all of the BHS motors shall be copper wound NEMA Design "B" open drip proof or TEFC with Class F insulation, utilize a "T frame" base, and shall be provided with overload protection in the motor control panel. These motors shall have a minimum of 1.15-service factor. High-Slip Motors are required by specification where the use of dual drives is used. These motors shall be copper wound NEMA Design "D", Class "H" Insulation at 1.0 Service Factor with Class "F" temperature limits. Inverter Duty or Inverter Ready Motors shall be used at "VFD" controlled applications. These motors shall be copper wound NEMA MG1, Part 31 Rated Design "B", Class "H" Insulation at 1.0 Standard Service Factor with Class "H" temperature limits. All motors shall be of the "high efficiency - low energy" type. Delete VFD requirements if CB system

   f. All motors shall meet the following criteria:

      1.) Low noise

      2.) Fitted with low noise fan reduction guard or equivalent.

   g. Motor size selection shall be based on the design load and friction coefficient requirements as described in these specifications. Motor size shall not exceed 7½ HP, unless otherwise approved by the Owner or his representative. Use minimum 1 horsepower motors (unless other specified or approved by the Owner or his representative). All drive motors shall be provided in 1, 1½, 2, 3, 5 or 7½ horsepower. Size conveyor equipment drive motors to permit start-up under full load conditions at the specified frequency of start-up cycles per minute without exceeding a temperature rise of 68°C based on an ambient temperature of 40°C. Provide motors designed for 480 VAC, three phase, 60-Hertz operation.

   h. C faced motors (with VFD control) shall be utilized.

   i. Motor mounts shall be equivalent in function to Dodge Type "A" slide motor bases with bolt holes drilled and tapped, or tack welded nuts under the holes in the top portion of the mounting plate. Use of

loose nuts to hold the motor mount is unacceptable. Provide jacking bolts to resist effect of belt or chain pull on foot mounted motors.

j. On all belts with frequent start/stop operations, such as indexing belts, all motors shall be continuous running NEMA B design, coupled with VFD control.

10. Reducers

a. Shaft mounted reducers shall be attached with tapered type bushings or full length bore with keyway.

b. Reducers shall be sized for a Class II application (minimum). Based on actual motor horsepower, the service factor required to obtain an L10 life of 70,000 hours shall be as follows:

1.) For reducers utilizing ball bearings the service factor used shall be 2.4

2.) For reducers utilizing roller bearings the service factor used shall be 2.2.

c. Reducers shall have adequate provisions for drain, fill, inspection ports and sight gauge. The manufacturer's recommended lubrication shall be attached to the reducer by means of a riveted, or bolted stamped metal tag. All units shall be installed with proper lubrication and vent plugs intact upon startup of conveyor.

d. Reducers used on inclines where roll back would be critical shall be equipped with "backstop" devices or brake motors.

e. All bearings within the reducer shall have a minimum L 10 life of 70,000 hours based on service factor and loading of conveyors, and on the manufacturer's published data showing load rating of each bearing used.

11. General Drive Requirements

a. Where applicable, all gear reducer-mounting frames shall be fabricated from ¼" thick steel "C" channels. The mounting frame shall be so designed to allow bolting to both the bottom and sides of the conveyor bed. The mounting frame shall be a totally separate weldment that can be unbolted to allow for installation as either a right or left hand drive. The mounting frame shall span the full width of the conveyor bed and attach to both sides of the bed frame.

b. Electro-mechanical brakes, if required, shall be internally mounted. The stopping torque shall be at least equal to the starting torque of the motor.

c. The drive unit shall be provided with a factory warranty for two – (2) years or 15,000 operating hours, whichever is longer.

12. Mounting

a. C-Faced

1.) In-line foot mounted reducer is an acceptable mounting method.

2.) The C-faced configuration with VFD control used on conveyors capable of continuous stop/start operation (i.e. queues or indexing conveyors) shall be capable of a minimum of 60 continuous start/stop operations per minute in an unloaded condition.

b. Foot Mounted or Base Plate Reducer and Motor Mount

1.) The gear reducer shall be mounted on a fully adjustable mount. To allow for fast, easy motor and gear reducer replacement and adjustment, the mount shall be designed as follows:

a.) The mount shall be a two-piece assembly:

(1.) The bottom portion can be bolted or welded to the mounting frame (as specified above).

(2.) The top portion shall be designed to slide over the bottom portion and be adjustable via a single bolt adjustment. The top of the motor mount shall have bolt holes drilled and tapped to accept the layout pattern as the gear reducer mounting feet or the multi mount feet.

b.) Use of tack-welded nuts under the holes in the top portion of the mounting plate shall be acceptable in lieu of tapped holes; however, the use of nuts to hold the motor in place shall not be acceptable.

c.) The purpose of this design is to allow replacing the motor by using an extension and properly sized socket from above without having to hold locking nuts.

d.) Use of Dodge Type "A" Slide Motor Bases is recommended, or an approved equal, for this application.

e.) All drive units shall be equipped with a suitable guard of "clamshell" design with tamper-proof fasteners, and fabricated from a minimum of 16-gauge steel. All guards shall comply with applicable OSHA standards and have an expanded or slotted metal-screened window to allow belt inspection without removal of the guard.

13. All drive motors and reducers shall be equipped with drip pans. The drip pan shall be constructed out of minimum 14-gauge steel. The drip pan shall be appropriately mounted such that the pan must be secured in the horizontal attitude and shall not impact maintenance access.

14. Roller chain shall be compatible with the torque and horsepower requirements of the application and shall be RC 60 minimum size. The roller chain ends shall be connected with a removable connecting link.

15. All pulley and sprocket adjustments provided for the purpose of adjusting belt tension, belt tracking, drive chain tension, and drive chain alignment shall incorporate a positive means of adjustment and restraint (i.e., tensioning screws and locking nuts). Slotted holes for mounting bolts shall not in themselves be considered satisfactory.

16. Chain drive sprockets shall be designed for a sprocket ratio between the driven and drive sprockets as close as possible to 2:1, but not less than 1.5:1 or greater than 2.25:1. The maximum size for driven and drive sprockets shall be 35 and 18 tooth respectively. Wherever possible within the standard range of stock Taper lock type sprockets, hardened tooth sprockets shall be provided.

E. Flexible Couplings

1. Mount coupling hubs to their respective shafts with keys and two setscrews, one of which shall be over the key and the other 90° from the key. When keyways are used, they shall be secured by two sets of screws, one on top of the other to ensure positive locking of keyway. The use of a screw-locking compound in lieu of two - (2) setscrews is acceptable.

2. Select the coupling so as to permit the replacement of internal parts without removal of the motor or reducer.

F. Intermediate Sections

1. Provide conveyor frames capable of supporting a uniform load as specified with supports at a maximum center distance of 10' 0".

2. Construct the slider bed shell of 12-gauge minimum hot rolled steel and designed to present a smooth surface to the belt. The slider bed shall be well braced for rigid construction with the side frames a minimum of 6" x 1½" channel or equivalent. A minimum of 1¼" x 1¼" x 3/16" angle stiffeners shall be welded to the underside of the slider bed at a maximum center distance of 3' 4" on transport conveyors and 2' 6" centers on load conveyors. Butt-coupled joints shall be provided.

3. When two - (2) sections of slider bed meet, both sections shall have chamfered slider bed lips to ensure that there are no step-up conditions between slider beds.

G. Floor Supports

1. Provide floor supports for conveyors located within 7' 6" of the floor or any mezzanine that is shown on Contract Drawings. Locate floor supports at intermediate section splices or within 1' 0" of intermediate section splices at 10' 0" maximum spacing.

2. Supports shall be on 5' 0" centers on loading/unloading conveyors and on 10' 0" maximum centers elsewhere. In all cases, each bed joint shall be supported.

3. All floor supports shall be of an "H" type design (i.e. two legs with a horizontal brace member) with vertical

field adjustability of +/- 3". Floor support vertical members shall be constructed of 10-gauge, hot rolled formed steel channel with 10-gauge, hot rolled steel universal foot and head plates.

4. All conveyor floor supports shall be secured to the floor with a minimum of two - (2) anchoring devices per leg (e.g., stud expansion anchor bolts).

5. All conveyors shall be adequately sway braced in order to ensure that there is no lateral or longitudinal displacement.

6. All support structure must be designed and installed so that maintenance access to the conveyor components and access to catwalks, work areas and drive aisles are not blocked.

7. The location of the floor support shall not impede the installation/removal of the conveyor gap pan.

H. Overhead Supports

1. Accept responsibility for the design and structural integrity of all bolts, hangers, and support structures, and is to provide all necessary materials required for installation.

2. Provide overhead supports for conveyors located 7' 6" or more above the floor or any mezzanine that is shown on the Contract Drawings. Locate overhead supports at intermediate section splices or within 1' 0" of intermediate section splices at 10' 0" maximum spacing.

3. All supports shall not exceed a 10' 0" maximum on-center spacing. In all cases, each bed joint shall be supported.

4. Ceiling hangers of threaded rod shall have a minimum diameter of ¾" with structural angle, channel, unistrut or pipe sills. The hangers shall have provisions for anchoring to the building structure and header steel. A Structural Engineer must approve all hanger supports.

5. Threaded rods shall have a lock washer, a single flat washer, and a single nut above and below any header steel channel assembly. A 4" x 4" x ¼" minimum steel support plate shall be used on the load bearing side of the header between the channels and flat washer.

6. All conveyors shall be adequately sway braced in order to ensure that there is no lateral or longitudinal displacement, providing a rigid and rugged installation. Spacing must not exceed 20' 0".

7. Installation and layout of header steel and all support structure shall not pose interference to maintenance and operation access.

8. Repair/replace both new and existing fireproofing materials removed to allow the installation of BHS equipment header steel and support structures.

9. Equip all hangers with vibration isolators to ensure that there is no noticeable vibration transmitted to the building. Submit the proposed type of vibration isolator for review and approval by the Owner or his representative.

10. Where catwalks are specified, the conveyor and adjacent catwalks shall be supported by a double sill configuration wherever possible without inhibiting maintenance and operational access. A single sill application is permissible at specific locations as approved by the Owner or his representative.

11. To achieve maximum drive aisle clearance under the conveyor, utilize a side clip attachment configuration for the conveyor hanger to support the bed section instead of a sill type application. Submit drawings showing those areas where a side clip attachment configuration is to be utilized to the Owner or his representative for approval.

I. Safety Guards

1. Provide and install conveyor underpans on conveyors with clear heights between 18" and 7' 6" above the floor or within an envelope around a catwalk defined as 7' 6" high and 4' 0" wide on either side of such catwalk. Fabricate underpans of either solid sheet metal or expanded metal at least 14-gauge thick and fasten to the conveyor intermediate section. The underpans, regardless of type shall be hinged without a removable pin on one side and provided with tamper proof fasteners on the opposite side for easy maintenance access, with appropriate tools; the pin shall have a lanyard attached to reduce potential of losing the pin. Sheet metal screws will not be accepted.

2. Protect all exposed moving parts of conveyors, such as, but not limited to, pulleys, rollers, lower or return belts, shafts and couplings less than 7' 6" above the floor or within an envelope around a catwalk defined as 7' 6" high and 4' 0" wide on either side of such catwalk. The guards shall be made of sheet metal not less than 14-gauge thick, and secured with tamper proof fasteners for easy maintenance access, with appropriate tools.

3. Install appropriate safety guarding secured with tamper-proof fasteners on all exposed parts associated with the conveyor drive's rotating shaft and direct drive gearbox, in compliance with OSHA Standards 1910.219. Ensure that the proposed safety guarding does not restrict maintenance access and it is easily removable with appropriate tools, as the location requires, for maintenance access.

4. Eliminate or round unguarded exposed sharp corners and edges of items such as, but not limited to, support legs, braces and trim, to prevent injury to personnel or damage to their clothing. Locate no overhead steel framework, conveyor part, or support structure less than 8' 0" above any catwalk, ramp or stair tread nose. If due to building constraints, support structure is less than 8' 0", the structure, framework, and supports shall be encased in padding, identified with safety marking (yellow/black stripped tape) and a prominently positioned low overhead warning sign.

5. Install tamper proof fastened bearing covers on all exposed rotating shafts in workstation areas and in all maintenance areas with catwalks. Workstation areas shall, at a minimum, include manual encode stations, sort devices/conveyors, load conveyors, CBRA work areas and EDS work areas. Install appropriate safety guarding on all exposed parts associated with the conveyor drive's rotating shaft and direct drive gearbox, in compliance with OSHA Standards 1910.219. Ensure that the proposed safety guarding does not restrict maintenance access and it is easily removable with appropriate tools, as the location requires, for maintenance access.

6. Install tamper proof fastened finger guards on all Return/Idler Rollers on conveyors not equipped with underpans.

7. For conveyors in areas with a maximum noise level of 65db (A) or less, mount all guards with rubber isolation washers or strips (as applicable) between sideguards and the conveyor frame to minimize noise levels.

8. Gap pans must be provided and installed on all conveyor-to-conveyor junction points or transfer locations, where there is any likelihood of small objects falling to the floor, mezzanine or catwalk. Gap pans must be solid sheet metal not less than 12-gauge, unless otherwise approved by the Owner or his representative, with minimum 2" high sides on the edges. The gap pan must be no wider than the conveyor width and 8" - 12" long. Mounting must be such as to permit easy lowering and removal for cleaning.

9. Drive pans shall be provided and installed on all conveyor drive sections. Drive pans must be solid sheet metal. They shall be no wider than the conveyor and associated platform width, and no longer than the drive section.

10. All gearbox assemblies shall be equipped with drip pans. The drip pans shall be fitted with drain plugs to assist with clean up. Drip pans shall be solid sheet metal, not less than 12-gauge, unless otherwise approved by the Owner or his representative, with minimum ¾" high sides on all four edges. The drip pan shall be a bolt-mounted unit of the gearbox assembly.

11. Provide safety guards and signage adjacent to the pinch points associated to High Speed Paddle Diverters.

J. Side Guards

1. Provide side guards the full length of both sides of all conveyors except at points that baggage is loaded or removed.

2. Provide hinged or removable sections only where overhead clearance restricts access for clearing jams. Design hinged or removable side guards to permit rapid removal (removable without tools). The design must preserve rigidity and alignment equivalent to fixed side guards. The Owner or his representative must approve all locations where hinged or removable sections are to be used.

3. Side guards shall be minimum 12-gauge hot rolled steel, integral to the slider bed. Side guards shall incorporate a formed 90° edge turned away from the conveyor and a formed 90° edge turned down to eliminate sharp edges. There shall be no gap between the side guard and bed section that can cause jams or baggage tags to be snagged/ripped off.

4. Use cold rolled or hot rolled low carbon steel galvanized or hot dip, primed and painted on both surfaces in areas exposed to the weather.

5. Use cold rolled or hot rolled low carbon steel primed and painted on both surfaces in all interior areas.

6. Provide side guards with vertical stiffeners a maximum of 40" on center for transport conveyors and 30" on center for load conveyors. Make the stiffeners from steel angle at least 1¼" by 1¼" by 3/16".

7. Provide 30° transition panels between side and back guards of different heights.

8. Conveyor Side Guard Heights:

   a. Unless otherwise specified on drawings, construct conveyor side guards for this project to the following heights:

Conveyor Type	Side Guard Height
Curbside Take-away Back Guards	21"
Transport Conveyors	12"
Incline/Decline conveyor Side Guards	12"
Decline-fed Power Turns (flat or spiral)	21"
Power Turns (flat)	12"
Power Turns (spiral)	12"
Take Away Conveyor Side Guard directly opposite a diverter or 45 degree merge	12"

9. Provide holes 1½" in diameter located either 2½" or 3" from the top of the belt to the center of the hole through side guides for photocell beams as required. Punch the holes with a dimple away from baggage flow to minimize the possibility of snagging a bag and causing a jam. Deburr all photocell holes so that they are free of sharp edges and burrs.

10. Mounting of any mechanical or electrical equipment on the outside radius side guard of power turns is not accepted since it restricts maintenance access to the outer perimeter chain or guide bearings of the turn belt.

K. Break-Overs

1. Provide break-overs wherever conveyors follow a convex curve.

2. Vertical or horizontal to vertical bends shall be constructed in the same manner as slider bed conveyor sections. The bed shall have a 10' 0" radius break-over slider bed to effect a smooth change in belt direction.

3. For return belt idling, vertical horizontal to vertical bends shall be equipped with a snubber pulley to ensure that the return belt does not extend below the conveyor frame.

L. Straight Belt Conveyor

1. Construct transport, queue, incline and decline conveyors of components as specified previously.

2. Design each baggage handling belt conveyor with a length to width ratio less than 2.5 with special tracking provisions to ensure positive belt tracking.

3. The maximum length of a straight belt conveyor shall be 50' 0" unless otherwise shown in the contract drawings.

4. In the case where the conveyor line configuration, related controls and baggage input/processing are directly associated with a tracking zone, the conveyor shall be equipped with a VFD.

M. Power Turns

1. All power turns shall be provided with a four - (4) foot inside radius for standard conveyors and five - (5)

foot inside radius for oversize conveyors, unless noted on the contract drawings. All power turn support structures are to be of metal construction. Power turn shafts shall be 1-7/16" diameter 1018 TGP (turned, ground and polished) steel.

2. The conveyor system layout shall be designed to permit maximum radius power turns of 180° for flat power turns.

3. Ensure that the outside circumference side guard shall remain readily removable for maintenance. Ensure that no conduit is fastened to it.

4. To minimize the gap between a power turn and straight conveyor, ensure the end rollers (both power turn and straight conveyor) are extended to gain a maximum gap of 1" between the faces of the belts.

5. Design the power turn conveyor so that trained maintenance personnel can easily replace belts.

6. Belt speed shall be measured on belt centerline.

7. Drive assemblies, bearings, and pulleys shall be designed as per straight conveyors detailed within this section of the specification.

8. If a power turn is installed prior to a 45°°merge conveyor, the turn shall be equipped with a VFD so that baggage queuing can be achieved on the turn.

9. In the case where the conveyor line configuration, related controls and baggage input/processing are directly associated with a tracking zone, the turn shall be equipped with a VFD.

N. Queue Conveyors

1. Provide queue conveyors of the manufacturers approved design capable of sustaining continuous stop/start operation at thirty - (30) cycles per minute under loaded conditions, without compromising a sixty – (60) bag per minute minimum processing rate for the associated subsystem in which the queue conveyor is installed.

2. Design the queue conveyors so that trained maintenance personnel can easily accomplish belt tracking.

3. Design of the queue conveyor shall be so that adjustments to belt tracking should only be required at a maximum of once every thirty - (30) days.

4. Design, manufacture and installation of queue conveyors shall be in accordance with the design specifications of transport conveyors.

5. In the case where the conveyor line configuration, related controls and baggage input/processing are directly associated with a tracking zone, the conveyor shall be equipped with a VFD.

2.05 INCLINE PLATE MAKEUP DEVICE

A. General

1. Incline plate/slope pallet devices shall be constructed of articulating contoured pallets or flights forming a continuous, rotating, sloped surface. They shall be arranged to receive baggage from a feed conveyor(s) at a point on the inside rim as shown on the contract drawings. The unit shall be automatically fed via belt conveyor(s).

2. Submit as part of the bid proposal their standard incline plate/slope pallet device specifications for review. Final approval of the qualified manufacturer shall be at the discretion of the Owner or his representative. The design, manufacture, and installation of the incline plate/slope pallet device must conform to all sections of this specification as is appropriate.

B. Dimensions

1. The height of incline/slope pallet device shall be as follows unless otherwise specified by the Owner or his representative or shown on the Contract Drawings:

a. Makeup devices: 29" to 33"

C. Load Rating

1. The incline/slope pallet device shall be capable of supporting a minimum dynamic load of 125lb per linear ft.

D. Operating Speeds

1. The device operating speed for incline/slope pallet makeup device shall be 120 FPM.

2. Incline/slope pallet device shall be capable of accepting baggage per each in-feed conveyor at a rate of thirty - (30) bags per minute.

E. Drives

1. The drive shall consist of a heavy-duty, double pitch roller chain driven by a motor through a gear reducer and drive sprocket. The roller chain shall engage at least two modular flight assemblies at all times. Connect motor and reducer-using double grooved sheaves and matched V-belts.

2. Drives shall be equipped with an appropriately sized electronic soft start device.

3. The design of the drive motor circuitry shall provide that the related drive motor safety disconnect switches shall also open the control circuitry of the device whenever the disconnect switch is turned to the off position. Whenever, the disconnect switch is turned back on, it shall be necessary to reactivate the appropriate device start controls, thus allowing the drive motor start-up to be controlled by the soft-start controller.

4. A minimum of three – (3) drive units are required for MU1 baggage makeup application due to redundancy and load requirements. The device shall be designed and configured such that if one of the drive units should fail, the device shall continue to operate at 100% capacity including the ability to start-up under full load conditions with the remaining drive units. Easy access and means for disconnecting failed drive unit shall be provided to allow for system maintenance with a minimum of time and effort. Drive design and motor applications must provide for the potential of variations in “actual” motor speeds so that the drive motors are equally loaded. The motor used in the drive units is to be of the “high slip” design type.

5. High-Slip Motors are required by specification where the use of dual drive units is used. These motors shall be copper-wound NEMA Design "D", Class "H" Insulation at 1.0 Service Factor with Class "F" temperature limits. Inverter Duty or Inverter Ready Motors shall be used at "VFD" controlled applications. These motors shall be copper-wound NEMA MG1, Part 31 Rated Design "B", Class "H" Insulation at 1.0 Standard Service Factor with Class "H" temperature limits. All motors shall be of the "high efficiency - low energy" type.

6. For ease of drive synchronization, variable frequency controllers are acceptable.

7. The device drive and idler shaft sprockets must be restrained through the use of double setscrews to prevent any lateral movement of the sprockets on the respective shafts. Setscrews alone are not sufficient.

8. Drives shall be designed for operation from a 480VAC, 3 phase, and 60Hz power source. The drive shall be sized to permit start-up under full load conditions.

9. One 120VAC, single phase, 60Hz duplex outlet shall be provided as a maintenance outlet in the general vicinity of each drive assembly.

10. The baggage system control circuitry must be designed to assure that the claim device is running at full speed prior the start-up of any feed conveyors.

11. Install in close proximity to one of the drive units a control station with a Maint/Auto switch and a jog pushbutton for use by maintenance personnel only. When the switch is in the maintenance position, the device can move (jog) in the forward direction only when the jog pushbutton is held in.

F. Pallet/Flight Assemblies

1. Each flight assembly shall consist of a steel support assembly with upper support wheel, a flight (cover pan) and a segmented, molded rubber bumper at the lower end. Each module shall be connected at its lower end to a continuous device linkage, which incorporates the lower support wheels. Upper and lower support wheels shall have polyurethane (or similar non-metallic material) treads for quiet operation of the device. Flights shall be a minimum14-gauge stainless steel with Teflon tape rub strip applied to the underside of each flight at the trailing edge to prevent scratching or scoring of pallets.

G. Frame and Track

1. The frame shall consist of standard modular assemblies bolted together to form a support structure and guide for the flight assemblies. The track shall be of rolled or formed structural steel. Structural supports for the

tracks are to be spaced on a maximum of 5' 0" centers or as required to meet or achieve the specified load rating.

2. Once the structure of the device has been installed and properly aligned, all track joints and cam follower guide rail joints shall be welded and ground smooth to assure that the related track and guide surfaces are smooth and without vertical and horizontal differences.

3. The design of the incline pallet device shall incorporate a means of expansion of the device to offset any wear in the main link bushings/connecting link pins or similar components.

4. The design of the means of device expansion shall include, at a minimum, the following items:

   a. Overlapping design of the cam follower guide track so that the cam follower surface is always in contact with some portion of the guide track at the expansion joint.

   b. Heavy-duty jacking-bolt arrangement to assist in expanding the device when needed.

   c. Special attention is to be given to the design, manufacture and installation of the inner and outer perimeter finger guards as well as the vertical front face skirting at the expansion point.

   d. The design, manufacture and installation of the special expansion joint perimeter finger guards must assure that they do not create a snag point.

   e. To further reduce the potential of snagging baggage at these expansion joints, the special finger guards are to be welded and ground smooth on the upstream end of each of the special guards.

H. Finish and Trim

1. Baggage Make-Up Applications

   a. For baggage make-up applications in non-public areas, outer peripheral guards and trim strips shall be steel finished in wear and rust resistant gloss paint. As an alternative, a rust-resistant powder coat finish may be applied electro-statically to said surfaces. A 3" high toe space shall be provided at the base of the peripheral guards. The toe space kick plate shall extend to the finished floor.

   b. All steel trim elements must be properly aligned vertically and horizontally. Butt joints of adjacent trim elements must provide a smooth snag free surface. Voids between adjacent elements at the joints are not acceptable. Sharp edges on any of the trim elements are not acceptable. All radii of trim elements must match.

   c. The vertical and horizontal alignment of the adjacent butt joints of the finger/perimeter guards of the device must not be misaligned nor is there to be any gap between the adjacent guards.

   d. Side Guards

      1.) Incline plate/slope pallet make-up devices shall have a 12" inner perimeter back guard for the entire inner perimeter. It shall be butt jointed and bolted to the in-feed conveyor side guards so there are no snag points. The bottom of the guard shall be no more than ¼" above the pallets/flights.

      2.) The inner perimeter bag guard must be designed and installed to provide a means of diverting baggage on the device away from the transition plate of any in-feed conveyors so that this baggage does not jam or snag on the plate. This is to be accomplished with a flaring of the bag guard immediately upstream of the transition plate.

   e. Finger Guards

      1.) A finger guard consisting of 6" of minimum 12-gauge steel formed angle stock side rails shall be installed. The 6" total width of the finger guard shall overlap the pallets by 3" and shall overlap the outer radius of the turn when the pallet is bent at a 90° turn. The gap between the pallets and the finger guard shall not exceed 3/32". The vertical and horizontal alignment of the adjacent butt joints of the finger guards must not be misaligned, nor is there to be any gap between the adjacent guards.

      2.) Special attention is to be given to the design, manufacture and installation of the steel inner and outer perimeter finger guards as well as the vertical front face skirting at the expansion point of the

incline pallet device.

3.) The design, manufacture and installation of the perimeter finger guards at the device expansion points must assure that they do not create a snag point. To further reduce the potential of snagging baggage at these expansion joint locations, the finger guards are to be designed and installed in an overlapping manner. The overlapping finger guards are to be welded and ground smooth on the upstream end of each expansion joint location.

f. Transition Plate

1.) A transition plate shall be designed and installed at the discharge end of each in-feeding conveyor and provided with angled sides as illustrated in the accompanying drawing package for a smooth snag-free transfer of baggage onto the device. Special care must be taken in the design and installation to ensure re-circulating baggage on the device shall not be damaged or snagged by the plates. The discharge end of the plate should be extended and aligned with the inner perimeter back guard, which shall be installed past the outside edges of the slope pallets.

2.06 MISCELLANEOUS MECHANICAL EQUIPMENT

A. General

1. Certain portions of this project require the modification, interfacing with, removal and demolition of existing conveyor equipment as shown on the Contract Drawings. Accomplishment of this work shall have to be carefully coordinated with the ongoing operations of the airlines as well as ongoing construction work in the East Terminal area associated with the existing baggage system in the building area.

2. Conduct a thorough field check of the existing conveyors and their relationship within the existing system as well as their relationship with the configuration of the specified system. This shall include coordinating with other projects which may be concurrently modifying or replacing relevant portions of the existing BHS.

3. Ensure that the design and installation of all conveyor equipment provides maximum access for operation and maintenance personnel.

B. Catwalks

1. Provide as a minimum, the maintenance catwalks as located on the Contract Drawings or as required to ensure safe access for all personnel who operate, maintain or have access to the BHS. Coordinate with the Owner or his representative to confirm the final number and locations for all maintenance catwalks and crossovers.

2. Design, provide and install all maintenance catwalks and access ladders required to allow easy access to all who are responsible to clear bag jams during the normal operational period. Submit to the Owner the design of the catwalk and access ladders for review and approval.

3. Include personnel protection at all catwalks to ensure that any potential injury is minimized. This includes swing gates or off-sets at access locations per OSHA standards 1910.23, padding, rounded corners, smooth welds, deburred surfaces and any other measures as may be necessary.

4. Attach all catwalks to the support structure, whether using decking of either sheet steel using stitch welds every 24" or as dictated by OSHA standards. Coordinate the type of catwalk deck (solid) with the Owner or his representative to ensure fire code/protection measures and lighting considerations are complied with.

5. Design catwalks to provide adequate space for operating and maintenance personnel.

6. Design structure to limit the deflection to 1/360 of the unsupported span length, under a concentrated 300-pound load.

7. Design all catwalks capable of supporting a minimum uniformly distributed live load of 40lbs per square foot and a dead load of 25lbs per square foot (total load of 65lbs per square foot). The use of pan type catwalks constructed of #12-gauge hot rolled steel is acceptable.

8. Notch the decking where needed to clear obstructions. Add angle clips as required to maintain adequate support of notched structure.

9. Where lengths of decking are butted end to end, ensure that the joint falls on a structural cross member.

10. Securely weld all pieces of decking to the catwalk frame and all structural cross members.

11. Any catwalks with inclines of up to 8° will be equipped with an anti-skid walking surface. Catwalks with inclines of more than 8° will be equipped with steps as well as the anti-skid material.

12. Provide steps at all locations where there is an elevation change in excess of 8". Paint the step “yellow”.

13. Minimum catwalk width shall be nominally 36" with a 3" gap between the conveyor and the catwalk.

14. Unless otherwise noted on the drawings, the top of catwalk shall be installed 8" below the top of belt at the intermediate section of the conveyor (between drive sections) and 15" below the top of belt at the drive sections.

15. Design and installation of access into the conveyor catwalk areas shall not be less than a 36" wide by 44" high, clear access envelope, to allow fire fighters with breathing apparatus enough room to climb up to and access the catwalk area.

C. Toeboards

1. Provide toeboards on both sides of all catwalks and ramps 24" or more above the finished floor except where adjacent equipment or building structure provides the required function. Construct toeboards' of ¼" x 4" minimum steel flat stock and install so as to leave no gap between the catwalk walking surface and the lower edge of the toeboard. It is acceptable to use 12-gauge rolled steel 4" high toeboard. Securely weld toeboards to vertical handrail posts and to the access way support structure.

2. Design toeboards in accordance with OSHA standards.

D. Stairs

1. Provide as a minimum the stairs as located on the Contract Drawings or as required to ensure safe access for all personnel who operate, maintain or have access to the BHS. Coordinate with the Owner or his representative to confirm the final number and locations for all stairs/ladders.

2. Design stairs to the following specifications or per local code if more stringent:

   a. Treads:

      1.) Minimum of 10" deep

      2.) Non-skid upper surface

      3.) Extend front edge of tread over rear edge of lower tread a maximum of 1¼".

   b. Risers:

      1.) 8" (maximum)

      2.) Equal in height in any one flight within ⅛"

   c. Angle between stringer and horizontal - 38° (maximum)

   d. Provide catwalks as required so that intermediate flights do not exceed 15 steps.

   e. Provide protective measures (i.e. swing gate or offset) at the top of stairs.

3. Design stairs in accordance with OSHA standards, section 1910.24 and 1910.23.

4. Provide stairs with handrails from top to bottom in accordance with OSHA sections 1926.500 and 1926.501.

5. Handrails shall be painted “yellow”.

E. Handrails

1. Provide handrails around all catwalks more than 24" above the adjacent floor and on all stairways. Design handrails to withstand a minimum load of 200lbs. applied in any direction at any point on the top rail. Vertical support posts shall be spaced not more than 8' 0" on centers. Make handrails continuous.

2. Design all handrails to consist of a top rail with one intermediate rail positioned halfway between the top of the walking surface and the top of the top rail as per OSHA code of Federal Regulation Part 1926.500

3. In areas of restricted clearance (vertically or horizontally), make intermediate rails spanning across conveyor drive locations removable for drive maintenance access.

4. Close all open handrail ends, vertical or horizontal, by welding a metal cap.

5. Grind smooth all handrail welds.

6. Handrails shall be painted “yellow”.

F. Maintenance Ladder

1. Vertical Fixed Maintenance Ladders

a. Provide fixed, 90° ladders to reach catwalks as shown on the Contract Drawings. Provide additional maintenance ladders as required to ensure safe access for all personnel who operate, maintain or have access to the BHS. Coordinate with the Owner or his representative to confirm the final number and locations for all maintenance access ladders.

b. Design ladders to meet or exceed OSHA standards, section 1910.27 and 1910.23.

c. All fixed ladders shall be of steel construction as specified elsewhere in this document.

d. The distance between rungs shall be no more than 12" and shall be uniform throughout the height of the ladder. All rungs shall have a minimum diameter of ¾" and shall withstand a 400lb load when in use. All rungs shall be a minimum of 24" wide. The live loads imposed by personnel occupying the ladder shall be considered to be concentrated at such points as shall cause the maximum stress in the structural member being considered.

e. Grind smooth all rough surfaces and edges.

f. Side rails shall be of such cross section as to afford adequate gripping surface without sharp edges or burrs.

g. Allow a minimum of 7" between the back of the ladder and the nearest permanent object. Allow a minimum of 30" between the front of the ladder and the nearest permanent object. Allow 16" from the center of the ladder to the nearest object on each side. The step-across distance from the nearest ladder edge to the nearest equipment or structure edge shall be a minimum of 2½" and shall not exceed 12"

h. Provide both safety ladder hand bars per OSHA requirements and swing gate (s) at the top of all ladders.

i. Provide fixed vertical ladders with handrails from top to bottom in accordance with OSHA section 1926.500 and 1926.501.

j. Paint all fixed vertical ladders in “yellow”.

2. Ship’s Ladders

a. Provide fixed maintenance ship’s ladders to access catwalks as shown on the Contract Drawings. Provide additional maintenance ladders as required to ensure safe access for all personnel who operate, maintain or have access to the BHS. Coordinate with the Owner or his representative to confirm the final number and locations for all ladders.

b. Design ladders to meet or exceed OSHA standards, section 1910.27 and 1910.23.

c. Provide serrated modified steel treads a minimum of 6" by 3lb per linear foot channel 30" long (unless noted otherwise in the Typical Details for Catwalk Access and Ladder Details in the Contract Drawings) covered with non-skid safety tread finish. The live loads imposed by personnel occupying the ladder shall be considered to be concentrated at such points as shall cause the maximum stress in the structural member being considered.

d. Provide steel stringers using minimum 7" by 4.72lbs per foot channel.

e. Design ladder so that the angle between the stringer and the floor is not less than 60° and not more than 65°.

f. Make the distance between treads a maximum of 12". The distance between treads shall be uniform throughout the height of the ladder.

g. Provide handrails on both sides using 1¼" by 1¼" by ⅛" aluminum tubing.

h. Provide protective measures (i.e. swing gate or off-set) at the top of stairs.

i. Grind smooth all rough surfaces and edges.

j. All ship's ladders shall be of steel construction as specified elsewhere in this document.

k. Provide ship's ladders with handrails from top to bottom in accordance with OSHA section 1926.500 and 1926.501.

l. Paint all ship's ladders in "yellow".

3. Swing Down Ladders

a. Provide swing down ladders to access catwalks as shown on the Contract Drawings. The landing or top of the ladder should be adjacent to the associated catwalk not a part of it. Provide additional maintenance ladders as required to ensure safe access for all personnel who operate, maintain or have access to the BHS. Coordinate with the Owner or his representative to confirm the final number and locations for all ladders.

b. Swing down ladders are to be of Type 1A, 300lb capacity extra heavy-duty construction.

c. Provide 1-5/8" serrated "D" rungs hydraulically double crimped in place. The live loads imposed by personnel occupying the ladder shall be considered to be concentrated at such points as will cause the maximum stress in the structural member being considered.

d. Provide 3" wide I-beam side rails.

e. Design ladder so that the angle between the side rails and the floor is not less than 60° and not more than 65°.

f. Make the distance between treads a maximum of 12" on center. The distance between treads shall be uniform throughout the height of the ladder.

g. The minimum inside clear width for a swing-down ladder shall be 30".

h. Provide lifting mechanism, counter balance, and pulleys to hold ladder in the up position when not in use. The ladder should be stable either in the up or down position due to the counter weight without requiring any tie off or similar.

i. Provide protective measures (i.e. swing gate or off-set) at the top of the ladder.

j. Design ladders to meet or exceed OSHA standards, section 1910.26 and 1910.23.

k. Grind smooth all rough surfaces and edges.

l. Provide swing down aluminum ladders with handrails from top to bottom in accordance with OSHA section 1926.500 and 1926.501.

m. Provide swing down ladders with a small pull cord and counterbalance that is set up so that at no time is a force more than 2lbs required to either lift up, pull down or stop the ladder in mid motion. If such balance can't be achieved, gas springs can be used as "assist" mechanisms to achieve the maximum required force requirement, but counterbalance will still be required.

n. Swing Down Ladder Advisory/Warning Beacon

1.) Furnish a failsafe interlock with associated swing down ladder. Provide the following equipment/controls:

a.) An Amber rotating beacon as a swing down ladder warning in the vicinity of each swing down ladder that will be visible to tug and cart drivers entering the immediate area of the respective ladder.

b.) Activation of the beacon shall occur as the swing down ladder is traveling from the full up position to the full down position and be maintained while in the down position.

c.) Deactivation of the beacon will occur when the swing down ladder is in the full up position.

2.07 ELECTRICAL TECHNICAL REQUIREMENTS

A. Electrical Service

1. The new MU1 device and CS1 conveyors shall utilize the existing respective MCP's, and the existing PDP's.

B. Raceways

1. General

a. Enclose all power and control wiring, including low-voltage wiring, in Rigid Metal Conduit, Electrical Metallic Tubing, Liquid Tight Flexible Metal Conduit or wireways. Intermediate Metal Conduit is not acceptable.

b. Horizontal runs of conduit shall not be supported by power turns, their safeguards, or by any side guard that is designated to be removable for the purpose of maintenance access. Rack such horizontal runs and support them from the building roof or mezzanine steel in locations not interfering with the BHS, maintenance areas, or catwalk areas.

c. Install drops to motors or other devices adjacent to the nearest available equipment or building column. Mezzanine supported equipment may be electrically fed from below the mezzanine from racked conduit supported below.

d. Avoid conduit runs on the floor. Provide minimum clearance of 6" below horizontal conduit to the floor. The Owner or his representative must approve exceptions to the above.

e. RMC and EMT Conduit runs must be mounted so as not to restrict maintenance access to the BHS equipment, conveyors and system/conveyor components that required servicing.

f. Do not run communication, low voltage (less than 30volts), or DC control wires in the same conduit, wireway or panduit with power wires.

g. It is acceptable to run 120VAC minimum control wire and 480VAC maximum power wire in the same conduit, wireway or panduit provided it is in conformance with local codes and VFD manufacturer's guidelines, as applicable.

h. It is acceptable to run shielded 90VDC clutch brake control wire and 480VAC maximum power wire in the same conduit, wireway or panduit provided it is in conformance with local codes and VFD manufacturer's guidelines in lieu of running these clutch brake DC control wires in a separate conduit or wireway.

i. Conduit runs must not be run or mounted on outside guards or perimeter chain guards of power turns.

j. Conduit runs shall be mounted on unistrut using a two piece unistrut strap or other means of fastening which is suitable for BHS applications as approved by the Owner.

2. Rigid Metal Conduit

a. Conform to all aspects of NEC Article 344 for RMC (or applicable local code).

b. Use a minimum ¾" for all wiring.

c. Run all conduits parallel or at right angles to structural members and equipment.

d. Do not run conduits underground or in floor slabs unless provided for that purpose by the Building Contractor.

e. In public areas, make conduit runs inconspicuous by running under cover plates, behind conveyors or otherwise concealed from public view.

f. In non-public areas, run exposed conduit in protected locations to prevent damage by moving vehicles, equipment or maintenance personnel.

g. Use Rigid Metal Conduit in all areas of the BHS installation that are at elevations less than 8' 0" above the buildings local finished floor and in all areas that are exposed to vehicular traffic and possible damage by operating or maintenance personnel.

h. Use malleable iron or steel threaded fittings.

i. Include gaskets and covers for all fittings.

j. Use standard threaded couplings at all conduit joints.

k. Ensure that the ends of the conduit are cut square, reamed and joined butt-tight.

l. Electro-galvanize all conduit, elbows, fittings, couplings and nipples.

m. Make changes to conduit size only at pull boxes, distribution panels, or branches to motors. Do not use reducers for in-line reduction of conduit size.

n. Remote control, signaling and power limited circuits shall be installed in compliance with NEC Article 725, (or applicable local code) as applicable.

o. Support conduit at intervals not to exceed 10' 0". Every individual conduit section must be supported. Install conduit supported from building walls with a clearance of not less than ¼" from the wall to ensure against the accumulation of dirt and moisture behind the conduit, using one-hole malleable iron clamps and clamp backs. For parallel conduit runs provide trapeze hangers or wall brackets fabricated from preformed channel with conduit clamps. Make anchors in concrete of the expansion shield type. Limit conduit run on a given conveyor to that, which is required for that particular conveyor or directly adjacent (downstream/upstream) to that particular conveyor.

p. Ensure that motor disconnect boxes, control stations, outlet boxes, junction boxes, pull boxes and cover plates are compatible with the RMC conduit used and conform to the National Electrical Code (or applicable local code) for minimum wiring space requirements and material thickness. Provide all boxes with screw fastened covers. Use NEMA 12 enclosures for interior equipment. Provide metal boxes; non-metal boxes shall not be used.

q. Appropriately sized insulated bushings and jumpers shall be installed on all conduits and conduit fittings that enter MCP(s).

3. Electrical Metallic Tubing

a. Apply the above requirements for Rigid Metal Conduit to EMT except as noted below:

1.) Use rain and concrete type compression fittings with steel compression nuts.

2.) Use insulated throat type connectors with case hardened nuts.

3.) Use minimum size tubing of ¾" diameter.

4.) Use EMT only in areas at elevations greater than 8' 0" above the buildings local finished floor and not exposed to vehicular traffic or possible damage by operating and maintenance personnel.

5.) Appropriately sized insulated bushings and jumpers shall be installed on all conduits and conduit fittings that enter MCP(s), control stations, disconnects, or j-box/pull box(s).

6.) Ensure that motor disconnect boxes, control stations, outlet boxes, junction boxes, pull boxes, and cover plates are compatible with the EMT used and conform to the National Electrical Code (or applicable local code) for minimum wiring space requirements and material thickness. Provide all boxes with screw fastened covers. Use NEMA 12 enclosures for interior equipment.

b. Conform to all aspects of the more stringent between this specification and NEC Articles 300 and 358 for EMT (or applicable local code).

4. Flexible Metal Conduit

a. Conform to all aspects of the more stringent between this specification and NEC Articles 300 and 348 (or applicable local code) for flexible metal conduit and fittings.

b. Use liquid-tight flexible metal conduit for connection to motors, photocells, limit switches or any device, which may be subject to vibrations or require adjustment after installation. The use of non-liquid-tight flexible metal conduit such as “green field” is not acceptable.

c. Do not exceed 3' 0" in length.

d. Every section of flexible metal conduit must be clamped/supported.

e. Appropriately sized insulated bushings and jumpers shall be installed on all conduits and conduit fittings that enter metallic or non-metallic MCP(s), outlet boxes, control stations, disconnects, or j-box/pull box(s).

f. Use minimum ½" for power wire.

g. Use minimum ½" for control wire.

5. Wireways

a. Wireways may be used in place of rigid conduit provided the application conforms to the requirements of National Electric Code Articles 376 and 378 (or applicable local code).

b. Use wireways with hinged, solid covers.

c. Position wireways to permit access with the equipment fully operational.

d. Fasten covers using captive screws or some other means of fastening not subject to loss such as clamps.

e. Do not use wireways in areas subjected to vehicular traffic.

f. It is not acceptable for any means of splicing in wireways such as terminal strips, wire nuts or other mechanical means of joining wires.

g. Metal dividers are acceptable in wireways as a means of separation between communications/DC wiring and AC wiring to ensure no induced voltages from the AC wiring to the communications/DC wiring.

h. Use lay-in type wireways to avoid the necessity of threading wires through end connectors.

C. Wire and Cable

1. General

a. Use stranded copper conductors of appropriate gauge, Type THHN or approved equal, with insulation rated for 600 volts. Use type XHHW only if required by code or the governing Airport prohibits the use of PVC insulation. Conform to all aspects of the more stringent between this specification and NEC or applicable local code.

b. As an alternate to the use of stranded copper conductor wire Type THHN or XHHW as described above, it is acceptable to use stranded copper conductor wire Type MTW for internal MCP wiring.

c. Connect pre-wired electrical devices to terminal blocks mounted in junction boxes adjacent to the devices.

d. Do not use blade connectors (such as but not limited to fork or ring style) for connections.

e. It is acceptable to use multi-conductor cable for connecting portable electronic equipment. Refer to National Electrical Code (or applicable local code) for requirements on multi-conductor use.

f. Tag control and power circuit conductors with “machine” printed identification numbers at both ends of the wire. Tag method shall be of the sleeve or other permanent type submitted to and approved by the Owner or his representative. The use of multiple tags to create a single tag is not acceptable.

g. Keep all wires on reels while being pulled. Do not allow wires to contact the ground or floor.

2. Minimum wire size

a.	Power	12-gauge
b.	Control	14-gauge
c.	PLC I/O	16-gauge
d.	Communication Circuits	18-gauge

3. Splicing

a. Splicing of 480VAC power wiring is unacceptable. All 480VAC wire pulls shall be from the MCP to the device (e.g., from MCP to the individual motor safety disconnect).

b. Splices are acceptable when parallel type connections are used for "hot" and "neutral" control wires (e.g., power wire for photocells, and e-stop circuits within a subsystem).

c. Do not splice signal wires between I/O panel and component.

d. Terminate control wires on terminal strips or on screw connectors at each component only.

4. Spare Conductors

a. Provide a minimum of 5% spare conductors in all conduit home runs, with a minimum of two – (2) spare control wires and one spare power wire.

b. Coil all spare conductors allowing sufficient length to permit future connection.

c. Tag spare conductors as required above, i.e. each spare conductor is to be identified as a spare with its own unique wire identification number and field termination location.

5. Wiring Identification

a. Color code all electric wire and cable as follows:

1.) MCP Power Wiring: Match Existing

a.) Apply the following to all MCP power wiring from source to line and load side of Main Disconnect fuses for MCPs. Verify color-coding of phase conductors on the line side to ensure compatibility with normal electrical supply available at the airport. Terminate the neutral, if applicable, at the terminal board:

Item	Wire Color
Phase A (480VAC)	Brown
PhaseB (480VAC)	Orange
PhaseC (480VAC)	Yellow
Neutral	Grey
Mechanical Ground	Green

2.) BHS Field Components Power and Control Wiring: Load Side

a.) Apply the following to power and control wiring from the load side of fuses in MCPs to all devices that are powered and controlled from the respective MCP as follows:

Item	Wire Color
Power (To Motors and Control Transformers)	Match existing conditions
AC Control:	Red
DC Control:	Blue
AC Neutral:	White
Mech. Ground	Green

b.) Submit to the Owner or his representative for review and approval the wire color method to be employed for this project.

D. Grounding

1. Ground all electrical equipment to building ground mat by a dedicated equipment-grounding conductor installed in accordance with the applicable codes. Obtain from the appropriate airport authorities, local codes or the Owner's Electrical Contractor the extent and type of grounding, wiring method and points of connection required.
2. Appropriately sized insulated bushings shall be installed on all conduits and conduit fittings that enter and exit the MCP or j-box/pull box.
3. Include a green 600V insulated copper ground conductor in each conduit (raceway).
4. Refer to National Electrical Code Article 348 (or applicable local code) for flexible metal conduit grounding requirements.
5. Refer to National Electrical Code Article 250 (or applicable local code) to determine grounding conductor requirements and sizes.

E. Support

1. Mount conduit supported from building wall using uni-strut type mounting channels to provide clearance to the wall.
2. Do not weld conduit to structural members.
3. Avoid conduit runs to the floor. Provide minimum clearance of 6" between horizontal conduit and the floor and do not allow runs to cross any walk or access aisles.
4. Support cordsets running to items such as, but not limited to, photocells and shaft encoders with cable mounting clips only. The cordset shall not be supported/secured with plastic wire ties.

F. Boxes

1. Provide outlet boxes, junction boxes, pull boxes and cover plates compatible with the conduit used. Provide boxes with screw fastened covers. Use NEMA 12 for interior equipment.
2. Conform to NEC Article 314 (or applicable local code) for minimum requirements for outlet boxes, junction boxes, pull boxes and cover plates.
3. Appropriately sized waterproof bushings/seals shall be installed on all conduits and conduit fittings that enter/exit the box(s).
4. Unused openings in junction boxes, raceways, cabinets, and pull boxes shall be effectively closed to afford protection substantially equivalent to the wall of the equipment.

2.08 ELECTRICAL COMPONENTS

A. Wiring Devices

1. Provide full size oil-tight operators.
2. As much as possible, use the same type sensors (such as but not limited to photocells and limit switches) to minimize the number and type of spares. Select sensors with the same mounting system wherever practical.
3. Use plug-in type electrical components wherever available. Do not use blade connectors (such as but not limited to fork or ring style).

B. Control Devices/Stations

1. Control Device Locations

a. Control Stations and Control Devices shall be located as specified herein. The location of the Control Stations and Control Devices is to be such as to provide maximum possible access to the Devices for servicing of the devices. For example, all Jam Detector and Head End Sensor Photocell devices are to be mounted so that they are accessible from catwalks adjacent to conveyors. In certain areas, protective guarding may be required to protect the Control Stations and Control Devices. However, the design and installation of this protective guarding must not prevent quick access to the control devices for adjustment, servicing or replacements.

b. The location, mounting and guarding of control stations and control devices must not in any manner restrict the access and servicing of any mechanical components of the BHS.

2. Control Device Mounting

a. The mounting of Control Stations and Control Devices, shall comply with the basic requirements established in the Contract Drawings and as noted in the following:

1.) Control Stations in Public View

a.) All Control Stations located in the view of the public shall be flush mounted with stainless steel cover plates. Such stainless steel cover plates must be secured to the adjacent wall or conveyor trim member with either Truss or Oval Head Phillips stainless steel machine screws of appropriate size. Control stations located in the view of the public shall not be mounted on the top surface of the conveyor front cladding. Pan Head screws are not acceptable.

b.) All Control Stations located in the view of the public at load conveyors (i.e., curbside conveyor control stations) shall be mounted flush to the adjacent wall in a location that someone operating the Control Device shall not have to lean over the conveyor to access it (either upstream or downstream of the load conveyor) or mounted on a stainless steel stanchion. Note that the design, manufacture and installation of the stainless steel shrouding on the collection conveyor must reflect these requirements.

2.) Control Devices

a.) Indicating lamps, other than those associated with MCPs, are to be located as required to properly alert personnel.

b.) Start-up warning alarms (i.e., audible and visual) shall be located at strategic locations to alert operations and maintenance personnel of the imminent start-up of conveyor equipment. As a minimum provide start-up alarms at baggage input areas, on top of the MCPs and along the conveyor line right-of-ways (e.g., ceiling supported or mezzanine mounted conveyors.). Audible/Visual Fault Warning and Start-up Alarms may utilize the same control devices. However, the audible and visual indications shall differentiate between the two separate functions.

c.) Fault warning alarms (i.e., audible and visual) shall be appropriately located to alert operations and maintenance personnel of conveyor subsystem fault conditions. As a minimum provide fault alarms on top of the MCPs. Audible/Visual Fault Warning and Start-up Alarms may utilize the same control devices. However, the audible and visual indications shall differentiate between the two separate functions.

d.) System Start-up and Fault Indication Rotating Beacons: System start-up and fault indication beacons, with amber globes, shall be located on top of the MCPs, at the baggage input areas and along the conveyor right-of-ways (e.g., ceiling supported or mezzanine mounted conveyor equipment).

e.) Emergency Stop Switch Rotating Beacons: Emergency Stop Switch beacon with red rotating globe shall be mounted on top of the associated subsystem MCP.

3. Types of Control Devices

a. Pushbutton Switches: All Momentary Contact Pushbutton switches shall be of the Allen Bradley Series 800T type (or Square D 9001K series, or equivalent as reviewed and approved by the Owner or his representative). The color coding for the Pushbuttons shall be as follows:

Function	Color
Start/Restart (non-public locations)	Green (flush head)
Normal Stop (non-public locations)	Red (flush head)
Alarm Silence (non-public locations)	Yellow (flush head)

Lamp Test (non-public locations)	Gray (flush head)
Jam Reset (non-public locations)	Orange (flush head)
Others (non-public locations)	Black (flush head)

b. Illuminated Pushbutton Switches: All Illuminated momentary contact pushbutton switches shall be of the Allen Bradley 800T - PA16 type switch with guards (or Square D 9001K series, or equivalent as reviewed and approved by the Owner or his representative). The color coding for the Pushbuttons shall be as follows:

Function	Color
Start (for initial start-up conditions at public areas)	Green
Jam Reset	Amber
Emergency Stop Reset	Red
Over-Height/Over-Length Reset	White

c. Emergency Stop Pushbutton Switches: All Emergency Stop pushbutton switches shall be of the Maintained Contact, "Push to Stop" Illuminated Red Mushroom Head switch, Allen Bradley 800T - FXP16RA1 type (or Square D 9001K Series, or equivalent as reviewed and approved by the Owner or his representative). Note that the Emergency Stop pushbutton switches must be equipped with a manual lockout clip manufactured by the switch manufacturer for locking the switch in the “conveyor off” position.

d. Selector Switches: All Selector Switches shall be of the appropriate series based on the application, as specified, and of the Allen Bradley 800T type switch (or Square D 9001K Series, or equivalent as reviewed and approved by the Owner or his representative).

e. Key Operated Switches

1.) "Off/On Function" and "Start Function" Key operated Switches for application in Public Areas shall be of the type manufactured by the Best Lock Company (or Square D 9001K Series with Best Lock Company core, or equivalent as reviewed and approved by the Owner or his representative) but must use a six-pin lock cylinder and core. The Owner will provide the final Operational Core. The Construction Core, normally supplied with the lock, must be removed before the project will be accepted. The switch must provide a spring loaded center return.

2.) Key operated Switches for all functions other than the "Off/On Function" and "Start Function" in Public Areas shall be Allen Bradley type 800T, (or Square D 9001K Series, or equivalent as reviewed and approved by the Owner or his representative).

f. Audible Warning Alarms

1.) Start-Up Warning Alarms for other locations shall be of appropriate frequency and volume levels for the application location.

g. Audible/Visual Combination Alarms:

1.) Combination alarms for start-up or fault warnings mounted to MCPs, or elsewhere as approved by the Owner or his representative, may be Allen-Bradley 855E Series with 120VAC control.

h. Lanyard Activated Switches

1.) The design and location of the supports for the cable lanyard shall be provided as not to be easily damaged by baggage equipment or personnel.

2.) Systems that will require the application of lanyard activated safety switches for either subsystem

or system Emergency Stop Switches. Such Safety Switches must be of the "manual re-settable" type with padlock attachment as manufactured by Rees, Cat. #04944 xxx, Conveyor Components Corporation or Telemecanique, Version XY2CE, (or equivalent as reviewed and approved by the Owner or his representative).

3.) Emergency stop lanyard operated limit switches and their associated lanyard cables shall be mounted along the catwalk or above the conveyor mounted on the stanchions associated to the conveyor.

4.) The E-stop Lanyard cables shall be color coded Red

i. Motor Safety Disconnect Switches

1.) Provide motor safety disconnect switches of the 3-pole, heavy-duty type, horsepower rated and non-fusible with a quick-make and quick-break operating mechanism and a means of padlocking the switch in the OFF position.

2.) Provide a N.O. auxiliary contact for connection to a PLC input.

3.) Motor safety disconnect switches for motors equipped with soft start devices must have an auxiliary N.O. contact interlocked with the associated emergency stop circuit.

4.) Each Motor safety disconnect switch shall be identified with a permanently attached white phenolic plate, engraved with black characters, providing the identification of the conveyor with which the motor is associated. Dymo type labels are not acceptable. Attaching the ID plate to the safety disconnect door is acceptable.

5.) Use NEMA 12 enclosures for interior equipment.

j. Relays: Use general-purpose industrial, panel-mounted relays with convertible contacts rated at ten – (10) amperes continuous current at 120VAC Ensure that all relays are capable of manual operation.

k. Timers: Provide solid state timers or utilize timer functions by PLC logic. All timers' are to be mounted within the appropriate MCP. Use of timer devices within photocells is not acceptable.

l. Soft Start Devices

1.) Provide a soft start device for all drive units within any slope pallet baggage make-up device as recommended by the manufacturer. The use of a VFD device instead of a soft start device is acceptable.

2.) Provide an electrical/electronic soft start device with adjustable starting curve from 0 to 10 seconds for any conveyor drive equipped with a 7½ HP motor or larger.

3.) Ensure that the electrical control circuitry design provides that the soft start device is always used whenever the associated drive motor(s) are started, regardless of start condition, i.e. regardless if drive motors are started with a control sequence or with activation of the related motor safety disconnect switch.

4.) The approved soft start devices, noted in the acceptable manufacturers listing, must be sized for the specific application.

m. Variable Frequency Drives

1.) A programmable Variable Frequency Device shall be utilized to control the operation of three phase makeup device induction AC motors in lieu of a soft start device.

2.) Type of VFD utilized shall be UL listed and IEC compliant.

3.) Provide a means of dissipating drive shaft voltages and bearing currents to ground for all conveyors which are provided with a VFD to prevent premature bearing failures.

4.) To conserve MCP space, VFDs should be installed remotely at the drive unit.

5.) Provide the ability to program and monitor all drive parameters. Provide programming devices with pre-programmed parameters for various types of VFD programs (e.g., standard queue, merge) to

allow simple downloading of such programs when replacement or reprogramming of a VFD is required.

6.) Provide a local keypad control for start, stop, speed reference and reverse functions.

7.) Provide dynamic braking resistors where required for faster stopping.

8.) VFDs shall be capable of permitting the appropriate number of engagement cycles per minute for the specific application under full load with no objectionable heating, overload tripping or other VFD faults. Factor this when designing the system and provide VFDs and dynamic braking resistors of a larger power rating if required to meet the application's requirements.

9.) When using VFDs, either an approved method of wiring by the VFD OEM shall be provided or VFD rated shielded cable needs to be used. Use Belden, O'flex or equivalent cable. The shield should be connected to both the motor and the PE (Potential Earth) ground on the AC drive.

10.) For cable length of 50' 0" or more between the drive and motor, a minimum of 1 additional amp needs to be added to the drive rating to handle cable-charging current. For Cable greater than 100' 0" in length, a minimum of two – (2) amps need to be added to the drive rating for cable charging current.

11.) If the transformer which is powering the MCP is greater than 10 times the drive rating, an input line reactor shall be provided for each AC drive.

12.) Enunciate all individual variable frequency drive (VFD) failures on the MDS system. Automatic resetting of certain faults shall be permitted; however, all such faults shall be enunciated and logged regardless of whether or not they have been automatically reset.

13.) Submit to the Owner or his representative catalog cuts of the type of VFD proposed for review and approval.

C. Electrical Device Identification

1. The electrical control stations, their related control devices, field wired control devices shall be identified with a permanently attached white phenolic plate, engraved with black characters, providing the identification of the control station or control device. Dymo type labels are not acceptable. Do not attach the white phenolic plate to any field device that can be easily replaced due to failure ((i.e., plug-in type photocell or its wired base) as this would also require the removal and reattachment of the ID plate), attach the plate to the side guard or non-removable structure adjacent to the device.

2. The electrical control stations, their related control devices, field wired control devices and the electrical control devices mounted within the BHS related motor control panels (MCPs) shall use the following device identification format and designations. The format and identification that are used in this specification are to be used throughout the BHS project and are to appear on the designated equipment and the entire project related documentation.

a. Control Stations

1.) Control Stations shall be identified with the prefix CS followed by the actual Conveyor or BHS Equipment Identification Number to which the Control Station is related. For example, CS/CS1-6 identifies a Control Station located on Curbside Subsystem #1 related Conveyor #6.

2.) Each Control Station shall be identified with a permanently attached white phenolic plate, engraved with black characters, providing the identification of the Control Station. Dymo type labels are not acceptable.

b. Control Station Devices

1.) Control Station Devices shall be identified as follows:

Control Station Device	Identification
Start Re-Start Push-Button	SPB
Normal Stop Push-Button	PBS

Control Station Device	Identification
Emergency Stop Push-Button	EPB
Reset Push-Button	RPB
Selector Switch	SSW
Key Operated Switch	KSW
Sonalert Warning Device	ALM
Door Close Push-Button	CPB
Door Open Push-Button	OPB
Forward Jog Push-Button	JFB
Reverse Jog Push-Button	JRB
Jog Push-Button	JPB
Jog Selector Switch	JSW
Colored Indicator Light (the first letter of the lamp color will appear instead of the underscore)	LT_

2.) For example: The designation CS/CS1-06/RPB identifies a Reset Pushbutton in the Control Station located at Curbside Conveyor CS1-06.

3.) Note that the above Control Station Device designations are to appear on all electrical drawings, including wiring and schematics.

4.) Control Station Control Devices (pushbuttons, pilot lights, switches and audible alarms) identification descriptors shall be clearly identified by permanently attached white phenolic plates, engraved with black characters, except emergency stop devices which are to be red with white letters, showing their operational relationships to the system(s) or subsystem(s).

5.) All e-stop pushbuttons shall clearly indicate all conveyors affected by that e-stop (i.e., CS1-01/CS1-08 indicates that the E-stop will stop conveyors CS1-01 through CS1-08). Dymo type labels are not acceptable.

6.) All Jam reset pushbuttons shall indicate the conveyor segments, which are controlled by that jam reset control station.

7.) Control Station Control Device Function ID Tags must be positioned for ease of reading. Align the tag's legend so that it is legible (oriented) from the operator's access side of the control station.

c. Field Wired Control Devices

1.) Warning Alarms shall be identified as WA followed by the Identification of the Baggage Handling Device or Conveyor to which the Warning Alarm is related. For example: WA/MU1 identifies a Warning Alarm associated with Makeup Device #1.

2.) Lights shall be identified as LT followed by the identification of the Baggage Handling Device or Conveyor on which the light is mounted. For example: LT/CS1-01 identifies a light located adjacent or mounted on Curbside Conveyor CS1-01.

3.) Emergency Stop Lanyards shall be identified as EL followed by the identification of the Baggage System Conveyor on which the Emergency Stop Lanyard Limit Switch is mounted. For example: EL/MU1 identifies an Emergency Stop lanyard related to Makeup Device MU1.

4.) Motor Safety Disconnect Switches shall be identified as "MSD" followed by the identification of the Baggage System Conveyor to which the Motor Safety Disconnect Switch is related. For

example: MSD/CS1-09 identifies a Motor Safety Disconnect Switch related to Curbside Conveyor CS1-09.

5.) All field installed Junction Boxes are to be provided with white phenolic plates engraved with black characters. The ID tags are to be located, so as to be easily read from the adjacent maintenance access areas. The ID tags must be consistent with the associated subsystem identifications noted on the wiring schematics. For example the second junction box from MCP-CS1 would be "JB/CS1-02".

2.09 MOTOR CONTROL PANELS (MCP)

A. General

1. All control equipment for the new MU1 and CS1 components shall be housed within the existing motor control panel(s) for the associated subsystems which they are replacing.

B. Shop Drawings

1. Submit shop drawings to show:

a. Revised General layouts of existing MCPs

b. Power, wiring and schematic diagrams

c. Outline and wiring diagrams of all special devices

d. Manufacturer’s data for all components

2. Control Devices within Motor Control Panels

a. The identification of new control devices and components such as relays, timers, transformers, power supplies, overloads, fuses, and PLCs within motor control panels must be identified with I.D. tags.

b. The I.D. tags must be constructed of a white phenolic plate engraved with black characters. Dymo type labels are not acceptable. The I.D. tags must be located so that they can be easily read when the related motor control panel, workstation or computer cabinet door is opened.

c. The I.D. tags are not to be mounted on the covers of the Panduit wireways within the related cabinet or control panel.

d. The I.D. tags for motor starters must contain the conveyor I.D. For example: The motor starter I.D. tag for conveyor TC1-1 would be "TC1-1M".

3. System Status

a. Status Monitoring on the existing MDS Workstation

1.) The complete CS1 conveyor and MU1 subsystem's status is to be monitored by the existing centralized BHS Maintenance Diagnostics System (MDS) workstation.

2.10 CONTROL SYSTEM DESIGN

A. General Design Requirements

1. This control system specification is intended to define the overall functional requirements of the system. The BHS Contractor is responsible for the definitive architecture and design which shall be subject to review and approval by the Owner or his representative.

2. The term “Control System” shall be understood to cover the control of all conveyors as part of the BHS. The MU1 and CS1 control system consists of existing PLC control systems.

3. Submittal of the proposal shall acknowledge the functional intent of the control system specification. Understanding the design shall be the result of modifications/refinements to the minimum requirements established herein. These changes shall not be the basis for increased cost requests.

4. Responsibility for Programming

a. Reprogram the PLCs to account for any additional motor installed with the new conveyors compared to

the existing conveyors associated with the project. Program the control system interfaces between the BHS and any other relevant interfacing system.

b. Programming techniques, data structures, and documentation shall be acceptable to, and approved by, the Owner or his representative. Details of the above shall be made available to the Owner or his representative.

c. Submit the modified as-built programming documentation for the BHS computers, PLCs, and system monitoring computers to the Owner as follows:

1.) Two complete (duplicate) CD sets covering all applicable computer, PLC and system monitoring programming documentation.

2.) Two complete (duplicate) sets of hard copy documentation (both programs).

3.) Software for the BHS computer systems as well as the BHS PLC control system including all PLC ladder logic shall be provided in both searchable .pdf format and software versions.

4.) The system software shall be written using as much non-proprietary software as possible.

B. Control System Architecture

1. General

a. The Control system architecture presented herein is intended to convey the minimum functional system requirements. Consider the following:

1.) MU1 and CS1 BHS equipment located within the existing Motor Control Panels with system status monitoring at the existing BHS computer/operation room (MDS workstation).

2.) Provide start-up warning alarms and sufficient start-up delay to comply with OSHA standards on all new and existing components.

3.) Provide all necessary controls for new components.

2. Maintenance Diagnostic System

a. The BHS Contractor shall be responsible to update/modify the existing MDS system located in the BHS Control room to reflect all the revised MU1 and CS1 conveyor modifications/additional controls, PE's, alarms etc. both on the displays and the alarm text.

C. Source Code

1. All software shall be delivered with well-commented source code in addition to the executable version. Software shall be delivered in both hard copy and machine-readable formats on a media acceptable to the Owner. The BHS Contractor may propose a non-disclosure agreement.

2. The Owner shall have permission to use the software as necessary to support operations at Charlotte Douglas International Airport, Charlotte, North Carolina once obtained from the BHS Contractor.

3. A back-up copy of the configured system software shall be provided on DVD-ROM or CD-ROM media. All original distribution software shall be delivered with an installable back-up. While DVD-ROM or CD-ROM is the preferred media types, tape or diskette is acceptable if required by the specific software.

- END OF PART II -

I PART III - EXECUTION SPECIFICATIONS

3.01 PREPARATION

A. General

1. Verify conditions in the field prior to start of work. If unanticipated mechanical, electrical, or other elements that conflict with intended function or design are encountered, investigate and measure both nature and extent of the conflict. Submit written report to the Owner in accurate detail. Pending receipt of directive from the Owner, rearrange work schedule as necessary to continue overall job progress without undue delay.

2. Cover and protect systems and equipment from damage and soiling during installation, demolition, removal or alteration work, including equipment to be salvaged and stored. Erect and maintain dust-proof partitions and closures to prevent spread of dust or fumes to occupied portions of the building.

3. Obtain and pay for all airport security badges, permits, inspection fees, and certificates relative to all phases of the BHS construction.

4. Provide supports or bracing to prevent movement, settling, or collapse in which an area is to be removed and adjacent system is to remain. If safety of system appears to be endangered, cease operations and notify the Owner immediately. Take precautions to support endangered work until determination is made for continuing operations.

5. Locate, identify, stub off and disconnect electrical system services that are not indicated to remain. Provide bypass connections to maintain continuity of electrical service to remaining system. Obtain permission and provide advance notice to the Owner if shutdown of electrical service is necessary during changeover.

3.02 WORKMANSHIP

A. General

1. Perform installations, demolition, and removal work as shown within the specified BHS right-of-ways, with due care, including support and bracing. Be responsible for damage, which may be caused by such work, to any part of the existing system or items designated for reuse.

2. Perform new work in accordance with applicable technical sections of the specifications. Where cutting and new work involve the exterior building envelope, consult the Owner to ascertain if existing guarantees, warranties or bonds are in force and execute the work so as not to invalidate such agreements.

3. Execute the work in a careful and orderly manner, with the least possible disturbance to the public and to the occupants of the building(s).

4. Materials installed, whether provided by the BHS Contractor or not, shall be installed in a neat and workmanlike manner. Particular attention shall be paid to manufacturer's instructions as to installation procedures.

5. Protect the employment and places of employment of each of his employees engaged in the construction work by complying with the appropriate standards as prescribed by OSHA.

6. Take necessary precautions to keep noise producing operations (e.g., impact hammering, Carborundum sawing, compressed air machinery) to a minimum. Select equipment, which is of a quieter nature than others and enclose areas of operation with acoustical screens and partitions or other means necessary to accomplish reduction of noise.

7. Equip motorized equipment with mufflers or other types of sound control and blanket equipment with acoustical materials.

8. Locate installation and demolition equipment safely so that no part thereof shall endanger normal airport operations, including runways, terminals, terminal buildings, approach ways, and power utility, lighting and communication lines.

9. Promptly remove debris to avoid interference with system operations.

10. Cut out embedded anchorage and attachment items as required to properly provide for patching and repair of the respective finishes.

11. Ensure that the standard of work and materials throughout the Project shall be of first-class quality and workmanship in every respect; the Owner will not accept workmanship, which for any reason, is otherwise.

12. Ensure that all equipment, components and materials are free from defects.

3.03 FABRICATION & INSTALLATION SPECIAL CONSIDERATIONS

A. General

1. Equipment is to be designed to meet the requirements of handling airline baggage. This entails consideration and care to be used particularly in fabrication of all components to ensure that projections, welds, sharp corners and transfer points that may cause possible damage to various types of bundles, handbags, suitcases, and trunks are eliminated. Ensure that bottom glides on cases, strings, tags, straps, bag handles, destination tags and the like are guarded against damage on side guards, transfer points, and all surfaces which baggage may contact on the conveyor system.

2. Coordinate all on-going site work and with concurrent airport/airline operations.

3. Take into effect any long lead procurement items and take the necessary actions required to complete any installation in the ceiling space.

3.04 DELIVERY, STORAGE, HANDLING AND ON-SITE RESPONSIBILITIES

A. Delivery, Storage, Handling

1. Assume responsibility for the receiving, unloading, storage, protection, security and distribution of all material delivered to the site associated with this Contract.

2. As necessary for the work, provide flagmen and erect proper barricades and other safeguards, post danger signs and other warnings as warranted by hazards and existing conditions.

3. Assume responsibility for receiving, storing, handling, setting and connecting all equipment required for the BHS installation.

4. Provide and maintain adequate protection against weather so as to preserve his work, materials, equipment, apparatus and fixtures free from injury, pilferage or damage.

5. Furnish to the Owner, on demand, Bills of Lading for all equipment being shipped to the work site. Identify on each Bill of Lading each component and assembly involved, the equipment items to which they belong, the date and time of pick-up and the expected date and time of delivery to site. The shipping of such material shall involve proper identification of items, proper packing and proper means for unloading them at the work site.

B. On-Site responsibilities

1. General

a. Erect all temporary barriers and barricades to separate work areas from areas of public access, as applicable.

b. Provide exhaust fans (e.g., HEPA filter) to limit fumes/odors from welding, metal cutting and painting if the work being carried out is in an occupied/operational area.

c. Coordinate with any interfacing, on-going site work.

d. Provide adequate portable office facilities, communication, equipment and locker room for field force.

e. Pay all costs of rental, installation, use and removal of accommodation and communication equipment.

f. Furnish shop drawings for any substitutions of equipment specified in this specification or shown on the drawings. During the progress of the job, revised drawings may be issued. Ensure all work is performed based on the latest drawings issued.

g. Clean and maintain work spaces, travel routes, and any other areas of work effected by his trade

including but not limited to:

1.) Remove on a daily basis of all erection rubbish and discarded materials.

2.) The burning of waste material is prohibited. Remove and dispose of scrap and waste material in accordance with applicable laws, codes, regulation ordinances and permits.

3.) Be responsible for all fines received for failure to maintain or perform cleaning, and all costs due to damages directly caused by this Contractor's work.

4.) Provide hoisting material for rubbish removal.

h. Be cognizant that the equipment and lay down areas for the work may/will require relocation as directed by the Owner.

i. Be responsible for any employee parking and any site transportation that may be required to/from the construction site.

j. Be responsible for any escort service required for the transportation of materials and employees on the ATO side of the facilities.

k. Enforce the Owner's instructions, laws, and regulations regarding signs, advertisements, fires and the presence of liquor and firearms by any person at the job site.

l. Provide the services of a competent full time field superintendent during erection, wiring, testing and correction of any discrepancies occurring during the Final Acceptance period.

m. Smoking shall only be allowed in areas as designated by the Owner.

2. Mechanical Work

a. Provide and install all supports, anchors and any other special considerations or requirements not provided for in this Specification but necessary to facilitate the complete mechanical installation and safe operation of all equipment and components.

b. Provide electrical connections for heavy-duty machinery, such as welding machines, and battery chargers as required for the installation of the BHS.

c. As construction proceeds, perform any additional site surveys which may be necessary.

d. Document in writing any mechanical, electrical or piping conflicts that may impact conveyor installation and submit to the Owner or his representative immediately following the site inspection and prior to the installation.

3. Electrical Work

a. Provide the necessary conduit, wiring and other electrical components to complete the electrical installation from power distribution points (PDPs), to the equipment and be responsible for all electrical interconnections within the equipment and system.

b. Provide all supervision, labor, materials, equipment and service necessary for and reasonably incidental to proper completion of all electrical work including electronic controls as required for the proper operation of the system as detailed in these specifications. Provide within the design standardization of components, function and maintenance procedures.

c. Drawings and specifications are to be considered as supplementing each other. Work specified but not shown, or shown but not specified, shall be performed or furnished as though mentioned in both specifications and drawings.

d. Provide and install as required, at no additional cost to the Owner, minor items, accessories or devices reasonably inferable, as necessary, to complete the electrical installation.

e. Refer all conflicts between the requirements of these specifications and drawings or between either and applicable codes to the Owner or his representative for clarification before proceeding with the affected portion of the installation.

f. Obtain and pay for all permits, inspection fees, and certificates relative to the mechanical and electrical

work. Deliver all certificates and letters of approval to the Owner upon completion of the work.

g. Locate all electrical equipment as shown on drawings. However, actual field conditions shall be checked to determine exact locations and avoid interference with other trades. The Owner or his representative must approve all deviations from the Contract Drawings.

h. At no additional cost do any reasonable location adjustment of electrical equipment requested by the Owner prior to installation.

i. At no expense to the Owner, correct work improperly installed due to lack of construction verification.

j. Install materials and components in a neat and proficient manner. Particular attention shall be paid to manufacturer's instructions as to installation procedures.

3.05 INSTALLATION

A. General

1. Installation of the BHS shall be in strict compliance with the Construction Drawings, to be prepared in compliance with this Specification document and Contract Drawing Package. These drawings shall show in detail the location of each component and the relationships between adjoining conveyors which might affect baggage movement.

2. Assume responsibility for all interfaces between the BHS and the Facility. Check the "As-Built" condition of the Facility as defined in drawings and as confirmed by site inspection prior to fabrication, installation or removal of any BHS equipment. The system arrangement and layout shall ensure equipment alignment and clearance when installed in the Facility.

3. Provide all equipment required to complete the total system. Furnish all tools and necessary equipment for the performance of the installation tasks and exhibit sufficient planning to ensure their availability at the job site as required by the workflow. The Owner will not furnish tools, forklifts or erection equipment.

4. Staff the project to ensure timely completion. Accelerate construction as required if schedule milestones are not met.

5. Provide all supports, anchors and any other items necessary to facilitate the complete mechanical installation and safe operation of all equipment and components.

6. Where equipment is to be installed in an operating facility provide a construction schedule to the Owner or his representative for approval that will minimize interference with normal operations.

B. Tolerances

1. Maintain the following tolerances for BHS equipment installation:

a. Maintain dimensions to exterior building walls or building columns within ¼".

b. Maintain side clearances to building elements including walls and columns a minimum of 6" unless otherwise specified.

c. Verify all “As-Built” and existing building conditions prior to final fabrication.

C. Floor Supports

1. All conveyors shall be adequately sway braced in order to ensure that there is no lateral or longitudinal displacement.

2. All support structure must be designed and installed so that maintenance access to the conveyor components, gap pans and access to catwalk(s), work areas and drive aisles are not blocked.

D. Anchoring

1. Firmly anchor all equipment and structures to the floor or building structure where permitted, subject to review and approval, by the Owner or his representative. Align, level and finish grout, as required.

2. Anchor floor supports to the floor with a minimum of two - (2) stud expansion anchors having a minimum size of ½" diameter by 2¾" long, unless otherwise noted on the specification drawings.

3. Weld floor supports, which rest on a steel mezzanine or intermediate structure.

4. Anchor impact protection with a minimum of four ¾" diameter epoxy adhesive anchors, each having a minimum tensile load of 7000lb, a minimum shear load of 4300lb, and a minimum embedment of 5-1/16", unless otherwise noted on the specification drawings. Baseplate shall be Grade 36 steel and supported by a ¼" thick (minimum) structural non-shrink grout with a minimum compressive strength of 2000 psi.

E. Lubrication

1. Fill all reducers to the proper oil level using oil recommended by the manufacturer.

2. Install breathers at the highest opening.

3. Clean roller chains of dirt or debris and manually lubricate per manufacturer's recommendations.

4. Replace all lubrication fluids if testing or checkout period exceeds manufacturer's suggested start-up change-out interval.

5. Apply grease per manufacturer's specifications to all grease fittings (unless they are sealed for life type bearings) prior to initial start-up of the equipment.

F. Motor Installation

1. Wire each motor on all components to a separate disconnect switch which shall be mounted within sight of the motor but not more than 3' 0" from the motor.

2. Provide a means of disconnecting power, including the capability of being locked in the “Off” position that meet or exceed the requirements of NEC Article 430 (or applicable local code), to any clutch or brake (if separately or group powered) mounted as part of drive unit so as to minimize the potential of electrical shock during any servicing or maintenance operations.

G. Sheave/Sprocket Alignment

1. Align shafts, sprockets and sheaves using a steel straight edge. The use of a string for this purpose is not acceptable. Demonstrate during Acceptance Test that corresponding surfaces of mating sprockets/sheaves are in line within 1/32" in 24". Misalignment shall be determined by placing the straight edge against the face of one sprocket/sheave and measuring the gap it makes with the opposite sprocket/sheave. The operation shall then be reversed so that a total misalignment can be determined.

H. Fasteners

1. Protect all fasteners (e.g., nuts, bolts, screws, and setscrews) against accidental loosening by the use of lock nuts, lock washers, jam nuts, or other suitable means, and against corrosion by plating or the use of corrosion resistant materials such as zinc plating or stainless steel materials.

I. Shaft Mounted Components

1. Mount all shaft mounted components using keys, splines, or equivalent, with positive retention devices.

J. Painting and Finishing

1. Equipment Finish

a. Protect all metal surfaces from corrosion using one or more of the following methods:

1.) Use cold rolled or hot rolled low carbon steel primed and painted on both surfaces in all interior areas.

2.) As an alternative to item 1) above, Powder Coating can be offered as an alternative due to superior quality and resistance to the elements.

3.) Use as received pre-painted housings from component supplier, such as motors, gearboxes and bearing housings.

4.) Finish paint electrical enclosures normally purchased primed prior to assembly and delivery to the construction site.

5.) Protect all unpainted surfaces with a suitable rust inhibitor during shipping and installation.

6.) Apply an industrial quality primer and enamel to all to-be-painted surfaces in accordance with the manufacturer's directions. All paint shall be of the same make, type and color.

b. Prepare surface to be painted in accordance with paint manufacturer's requirements and as described below. If there is a discrepancy between the two, the manufacturer's requirements will take precedence. Suitable precaution shall be taken to ensure cleanliness during the period between cleaning and other finishing processes.

1.) Preparation of Surface

a.) Prior to the application of any finish, clean all surfaces to be free of dirt, grease, oil, flux, flash metal, spatter metal, sand, rust, scale, or oxides, and all other debris that might interfere with the effective application of the finish. Clean surfaces immediately before the finishing operation. Take suitable precaution to ensure cleanliness during the period (which shall be of minimum duration) between cleaning and other finishing processes. For galvanized surfaces, adhere to the following:

(1.) Clean: Prepare surfaces so prime coat bonds well and adheres permanently.

(2.) Rust-Inhibitive Wash: Use a compatible chemical solution such as phosphoric metal etches. Thoroughly remove solution with water and allow drying.

2.) General Application: Apply primer and enamel to provide a surface of high quality appearance free from runs, sags, cracks, flaking, peeling, blushing, or other defects which may affect drying characteristics, durability, and appearance of the painted surfaces. Apply primer and enamel by brushing, spraying, or dipping.

3.) Basic Application: Finish surfaces with not less than one coat of primer and one coat of enamel. Apply the primer and one coat of enamel at the factory and the touch up of enamel, if required, shall be applied at the installation site, after erection, by brushing. When primer or enamel applied to the equipment prior to erection has been burned, chipped, or otherwise removed during erection, or where new unfinished metal is installed, finish the exposed surfaces with not less than one coat of primer and a finish coat of enamel, of the same color and type as originally painted, after sanding the surface to be painted down to the bare metal. After installation, clean and touch up all scuffed or otherwise marred surfaces, as above.

4.) Masking: Do not obscure equipment nameplates, identification plates, or other identifying markings when painting the equipment. Whenever possible, apply the plates and markings after painting. In all cases where they cannot be applied after painting, mask or otherwise protect them to retain their legibility. After painting, thoroughly and effectively remove all masking and protective coatings.

2. Conveyor Identification

a. Identify conveyors in public areas by means of engraved plaques (riveted or bolted) with 2" high black lettering on a stainless steel background.

b. Completely remove or print over any identification on reused equipment or any temporary markings associated on new conveyors for manufacture, shipping or installation.

c. Where temporary markings or labels on the conveyors or other equipment are required for installation, use a medium which is readily removable with water or a readily available commercial solvent, such that they may be removed without requiring any refinishing of the surface on which they appear. After installing, remove any temporary markings.

K. Safety Signage

1. Furnish and install safety signage throughout the BHS as described within these drawing and specification documents and any associated addendums. The safety signage shall be located in all areas and locations where there is exposure to hazards for maintenance/operational personnel and the public. Refer to OSHA, ANSI, NEC, National Safety Council, local, federal and state codes for recommended location, size, shape, design and verbiage required for safety signage, examples of some of the types of signs are included in the contract drawings, these examples are not to be construed as the only signs required. The verbiage of the sign

shall be appropriate for the particular location/hazard.

2. The safety signs shall be clearly visible and firmly affixed. The following is a list of locations where safety signage should be placed as a minimum, this list is not to be construed as being complete since it is only provided as a guide:

    a. All potential pinch points

    b. Rotating parts

    c. Chain and V-belt guards

    d. Outside of electrical cabinets and disconnects boxes

3. Placards/signs indicating locations of all E-stop control stations shall be clearly visible.

L. Welding

1. Nationally certified welders shall perform all welding, and all welding shall be in strict compliance with local and national codes. Provide to the Owner or his representative at the pre-installation meeting, copies of certificates verifying that the welder(s) are nationally certified.

2. Only compressed natural gas (CNG) and electric welders shall be used.

3. Connecting welding equipment to any MCP power supply shall not be acceptable.

4. Before approving any cutting or welding operation, a fire safety supervisor or appointee shall inspect the work area and confirm that the following indicated precautions have been taken in order to prevent fires:

    a. Ten pound ABC Dry Chemical Fire Extinguisher to be kept on-site.

    b. No flammable liquids permitted within 50' 0" of work.

    c. Floors swept clean of combustibles.

    d. All wall and floor openings covered.

    e. Covers suspended beneath work to collect sparks.

    f. Opaque screens placed between work and spectators.

    g. Fire watch is required to observe all work and shall remain on-site for a minimum of 30 minutes after completion of work.

    h. The Owner is to be notified prior to beginning work.

M. Maintenance Access

1. Where walls immediately adjacent to conveyor equipment affect maintenance access, advise the Owner or his representative of the location and size of the wall opening that needs to be developed to permit access to drive components, bearings, and other equipment that would normally be inaccessible because of the wall.

3.06 CONTROL REQUIREMENTS

A. Control Stations

1. Mount controls, consisting of but not limited to pushbuttons, selector switches, indicator lights, in Control Stations. All controls shall be grouped to minimize the number of operating points throughout the system. In the application of a single control for a specific function, pushbutton stations may be employed.

2. Locate control stations as specified. Position control stations so as not to impede access to the equipment for servicing.

3. Mount all Control Stations located in public areas flush to the equipment and equip with stainless steel cover plates. Control stations located in the view of the public shall not be mounted on the top surface of the conveyor front cladding.

4. Locate Control Stations so as to be clear of normal vehicular and personnel traffic lanes. Install guards to prevent inadvertent actuation where this cannot be accomplished.

5. Control Stations shall contain the appropriate control elements such as pushbuttons, selector switches, and those indicator lights, which will augment operations.

6. Control Station functions shall be identified in English using elementary concise terms supplemented by graphic symbols. All identification plates shall be mechanically affixed to the console face.

7. Control Stations shall conform to the environmental requirements specified herein.

8. Emergency Stop pushbuttons, disrupting electrical control power, shall be employed where an emergency may require immediate shut down. Where more than one emergency stop pushbutton is used in any circuit or subsystem, only the indicator lamp in the activated E-Stop pushbutton shall be energized. Actuation of any emergency stop shall be announced on the respective status monitoring system.

9. Indicator lights, especially outside the facility, shall not be affected by extraneous light, and shall be clearly visible in all lighting conditions.

10. Control elements such as but not limited to switches, pushbuttons, and handles, shall be selected for ease of operation in an industrial "bag room" environment.

11. Control elements such as but not limited to switches, pushbuttons, indicator lights, and bulbs, shall be easily replaceable and reasonably protected from physical damage.

12. Freestanding control stations shall be mounted on extremely rugged and braced pedestals with large firmly anchored base plates. The design shall account for extraneous loading and generally abusive conditions.

13. Provide independently anchored impact protection wherever control panels, control consoles or control stations are exposed to work area traffic.

B. Motor Overloads

1. Size the motor overload heaters not to exceed 115% of the full load amps as indicated on motor nameplate.

2. In the event of any subsystem motor drawing excess current, appropriate protection shall be provided to isolate supply to all subsystem elements. Either the single "motor overload" indicator on the affected MCP panels shall illuminate, or if individual “motor overload” indicators are specified for each drive then the effected drive indicator will illuminate.

3. Following rectification of the cause of the overload and resetting of the overload protection device in the motor control panel or motor control center as applicable, the system may be restarted by actuation of the "start" button, at which stage, the "motor overload" indicator shall be extinguished and normal control shall resume.

4. "Motor overload" fault conditions shall be reported both visually and audibly on the MCP and the MDS.

5. In the event of individual conveyor motor overloads, all upstream conveyors shall revert to cascade stop mode, while all downstream conveyors shall continue to run in normal mode of operations.

C. Jam Indication/Restart

1. Provide an Illuminated Amber Jam Light (in a common enclosure with an Emergency Stop pushbutton and green restart pushbutton) adjacent to all jam detection photocells as follows:

   a. As a minimum, provide jam detection photocells and a jam indicator with a jam/restart/emergency stop control station in areas that have a relatively high frequency of jams. This shall include the discharge ends of all conveyors feeding onto power turns, at the bottom of incline and decline conveyors, at all merges for both the primary and secondary lines, opposite all diverters, and at any other location where experience indicates a potential jam point.

2. Illuminate the Jam Lamp when the jam detection photocell senses a jam condition.

3. Restart the conveyor and extinguish the E-Stop indicator lamp and MCP fault light only after the following sequence:

   a. Actuate (push in) Emergency Stop pushbutton (E-Stop indicator lamp goes on)

   b. Clear the jam

c. The jam light shall “flash” (indicating the jam photocell has been cleared and the conveyor is ready for restart).

d. Reset (pull out) emergency stop pushbutton

e. Depress green “restart” pushbutton (E-Stop indicator lamp and MCP fault light turns off and conveyors restart after warning alarm sequence)

4. Paint the control station enclosure with "Safety" yellow paint and label with the conveyor Item Designations of the conveyors being controlled in ½" high block letters. Jam detection reset control stations shall be placarded with the conveyor designations, which are being controlled.

5. In most cases the control stations shall be located adjacent to the conveyors under control and shall be accessible only to the personnel clearing the jam to avoid a subsystem being restarted in an unsafe condition (e.g., personnel on conveyor). Note that all such control stations shall be located on the catwalk side of conveyors so equipped with catwalks.

D. Start-Up Warning

1. Provide amber rotating beacons and audible horn alarms as start-up warnings in areas as specified.

2. Activate the beacon and the horn for an adjustable period of time prior to the start-up of the conveyor system. Ensure the start-up warning is of a sufficient duration as to comply with OSHA standards or local safety standards, whichever is more stringent.

3. Appropriate audible start-up warning alarms shall be provided at public areas such as ticket counter, curbside check-in, makeup devices, and rechecked baggage input points.

E. Alarm Silence

1. Provide an ALARM SILENCE momentary contact pushbutton on the door of the MCP which, when depressed, shall silence the audible alarm. The design of the control circuitry shall be such that multiple faults shall always sound the associated fault warning alarm; i.e., if a jam condition has caused the alarm to have been sounded and the alarm has been silenced by the act fault but has not yet been corrected, a second fault occurring after the alarm has been silenced shall again cause the fault warning alarm to sound.

2. Do not extinguish the illuminated fault indicator until the fault has been corrected.

F. Emergency Stop Pushbuttons

1. Locate Pushbuttons as required to ensure that operating and maintenance personnel can easily and quickly reach an Emergency Stop Pushbutton from anywhere in the system. In addition, ensure that Emergency Stop Pushbuttons are installed at the following locations:

a. Around the perimeter of the makeup device.

b. At each end of load/unload conveyors.

c. Along lengths of conveyors, whether running at floor level or overhead mounted on conveyor support legs or building columns a maximum of 50' 0" apart.

d. In each jam indication enclosure.

2. Wire all Emergency Stop pushbuttons for a single emergency stop zone in series with the coils of one or more emergency stop relays. Size the normally open contacts of the relays in series with the power source of the PLC output module(s) controlling the conveyors in the emergency stop zone. The PLC shall not be required to remove power from the associated conveyors for an emergency stop condition.

3. Upon actuation of an Emergency Stop pushbutton, stop the associated conveyors in the emergency stop zone, illuminate the lamp in the head of the pushbutton in a steady burning mode, and illuminate the red emergency stop fault light at the MCP.

4. Restart the conveyors and extinguish the indicator lamp and MCP fault light only after the following sequence:

a. Reset (pull out) emergency stop pushbutton

b. Depress the green “Restart” pushbutton (E-Stop indicator lamp and MCP fault light turns off and conveyors restart after warning alarm sequence)

5. When the normal restart switch for the conveyor is actuated, extinguish all emergency stop pushbutton lamps within the subsystem associated with that particular emergency stop actuation, actuate the start-up warning alarms and, after a delay, start all conveyors in the subsystem.

6. Note that the activation of an Emergency Stop pushbutton switch must not close any powered fire/security door within the area of control of the Emergency Stop switch.

7. "E-Stop" conditions shall be reported both visually and audibly on the MCP and the MDS.

G. Fault Warning Alarm

1. Provide an audible/visual alarm on the MCP controlling the system.

2. Activate the alarm and one of the following indicator lights whenever any fault has caused a section of conveyor to stop or prevent it from starting:

Condition	Color
Jam	Amber
Motor Overload	Blue
Emergency Stop	Red

H. Merge and Priority Control

1. 45° Merges

a. Merge windows shall be dynamic in that the control system establishes a window only upon indication that a bag has arrived at either the merge or through line induction photocell (i.e., a fixed window control system will not be acceptable). Merge windows shall be variable and shall be established on the basis of bags per minute (BPM) throughput requirements per subsystem with associated window spacing. Bag length shall be measured by the control photocells to adjust the merge window length as required.

b. Photocells, timers and appropriate control stations shall be located on the conveyor equipment in 45° merge situations with functionality as follows. For all intents and purposes for this project, the conveyor line onto which bags are to be merged shall be referred to as the primary line, while the conveyor line from which bags are merged from shall be referred to as the secondary line:

1.) A photocell shall be located at the discharge end of the secondary line merge conveyor. This photocell shall have the functions of jam detection, head end sensing and priority control. The jam detection function of this photocell shall detect a jam at the merge point resulting from bags being transferred from the secondary line onto the primary line. When this occurs, both belts involved shall be stopped until the jam is cleared (along with other appropriate conveyors upstream that will cascade stop as necessary).

2.) All 45° merge conveyors are to be programmed in a run on demand mode and use energy management timers to stop. As a bag is transported towards the merge conveyor an auto- start photocell, located on the upstream conveyor, once blocked will actuate the start-up of the merge conveyor. If after 10 seconds (adjustable in the PLC) the auto-start photocell doesn't detect any baggage then the merge conveyor shall stop.

3.) Merge window logic in the PLC is used to monitor and track the flow of bags on the primary conveyor line upstream of the merge. The merge window logic shall use a photocell and timer to measure bag length in order to determine the required merge window for proper transfer onto the primary line. The merge window logic is used to track the position of bags and the space between the bags on the primary line. The head end photocell on the conveyor immediately upstream of the merge conveyor on the secondary line shall be used to measure the length of bags as they move

onto the 45° merge. The PLC utilizes this length to calculate the bag window size required on the primary line to merge a bag into. If the required bag window is determined to be available on the primary line then the bag is not stopped and is merged onto the primary line. If the bag window is determined to be unavailable then the bag is stopped and held on the merge conveyor until the appropriate size window is detected on the primary line.

4.) The merging function shall be provided in two modes. Primary priority and reverse priority. In primary priority mode (to be considered normal mode of operation) bags on the primary conveyor line shall have priority over bags on the secondary conveyor line. The secondary line will have to wait for openings between bags on the primary line to be able to merge into. Priority control shall monitor the time in which the photocell on the primary line is being blocked, indicating that the appropriate merge window is being searched for.

5.) Reverse priority mode shall be actuated in two different cases. First, if the 45° merge conveyor is stopped with bags in queue upstream (to a point which will be determined in design review meetings based upon criteria such as but not limited to subsystem length and BPM requirements) then the secondary line is considered to be full and the reverse priority function shall be actuated for the period of time it takes to empty the secondary line of bags from the point in which the reverse priority was actuated. Second, if a bag is on the 45° merge waiting for a window and an opening is not detected for 60 seconds (adjustable in the PLC) then reverse priority shall also be enabled. The primary line conveyor onto which bags are being merged shall be stopped, and all merge control functionality of the secondary line shall be disengaged to allow for continuous and uninterrupted baggage flow from the secondary onto the primary line for 60 seconds (adjustable in the PLC), thus purging the secondary line of bags. Upon completion the merging function will revert back to primary priority mode.

6.) In the event that there are multiple merges onto the mainline each merge should receive equal priority in order to prevent any one of the merges from not being able to discharge bags onto the mainline.

I. Auto Start

1. Provide CS1 Auto Start photocells upstream of sections of transport conveyors not specifically controlled by START/STOP switches. The same photocell may control both Auto Start and Auto Stop circuits.

2. Program CS1 Auto Start circuits to start a string of conveyors whenever an Auto Start photocell is interrupted.

3. Before any conveyors may be started, audible start-up warning alarms shall be actuated, audible throughout the area to be affected by the starting of the conveyors. Activation of the alarms shall be through the PLCs. The horn shall sound and after a period of between 5 and 25 seconds (adjustable in the PLC) the conveyor subsystem shall start.

4. Each conveyor in the subsystem shall be sequentially started from output to input point with an appropriate delay between each motor starter actuation as to ensure electrical power surges are minimized. The next sequence of conveyors controlled by Auto Start functionality shall start in a similar manner, triggered by baggage at a predetermined location within the line.

J. Auto Stop (Time-Out)

1. Provide CS1 Auto Stop photocells upstream of sections of transport conveyors not specifically controlled by START/STOP switches. The same photocell may control both Auto Start and Auto Stop circuits.

2. Program Auto Stop circuits to stop a string of conveyors if an Auto Stop photocell does not sense a bag for an adjustable time period (adjustable in the PLC).

3. If a conveyor stops for any reason, reset the auto stop timer and hold until the conveyor restarts.

3.07 ELECTRICAL & CONTROLS SPECIAL CONSIDERATIONS

A. Power Source

1. The electrical equipment and PLC control systems provided shall be compatible with, and operate reliably and effectively with, the normal electrical supply typically available at airport locations. The equipment shall

not be unduly sensitive to fluctuations in supply voltage which may typically vary by plus or minus ten percent (10%) of nominal values.

2. Provide necessary electrical supply filters, conditioners, and regulators for all equipment, which cannot meet the specifications stipulated.

B. CS1 Conveyor Line "Manual-Start" Sequence

1. CS1 Subsystem shall be initiated to start via the existing local subsystem start/stop control station. Actuation of the subsystem's Start pushbutton will energize the respective Visual/Audible warning alarms along the conveyor line, both in the public space and air side, for 10 seconds (adjustable) - e.g., associated unload conveyor, respective sub-system conveyor right-of-way and the makeup device. The Fire/security door(s) shall open while the "Run" 10 second alarm sounds and flashes. After the ten - (10) second "Run" alarm period and when the Fire/security door is fully opened, the subsystem's claim device shall start running. The CS1 transport conveyors shall also start sequentially from the output to the input with an appropriate delay between each motor starter actuation to ensure electrical power surges are minimized.

C. System Ready Indication

1. A green indicator light, labeled SYSTEM READY and located on the door of each MCP shall serve to indicate that the devices under its control are ready to operate upon receipt of a START signal, from the BHS control system and local card swipe device. To accomplish this, the light shall illuminate under the following conditions, per the respective subsystem:

a. Power is applied to the MCP.

b. The local conveyor motor disconnect switches are in the "ON" position.

c. All Emergency Stop pushbuttons are reset.

d. No Motor overloads are tripped.

e. No Jam conditions are indicated

f. No faults are indicated on the MDS and MCP.

D. Makeup Device Control Stations

1. Provide a minimum four – (4) "E-Stop" pushbutton control stations (two on the each side of the slope pallet device) and e-stop lanyards for Emergency Stop operation of the makeup device (as per the existing MU2 through MU4). Provide a "Start", "E-Stop" and Jam control station(s) on the makeup device opposite to the discharge onto the device from the feed conveyor(s). Provide location and mounting details for these control stations to the Owner or his representative for approval if different from the existing locations.

3.08 CONSTRUCTION SEQUENCE

A. General

1. The BHS installation will be required to be coordinated with the Owner or his representative.

2. The BHS implementation staging is of vital importance to the success of the BHS installation of the new conveyor equipment and removal of the existing devices. Installation of the new equipment and removal of the existing equipment will not occur simultaneously with on-going airline operations, and it is therefore vital that the FIS operations continue to process baggage throughout the implementation period without operational disruption or capacity reduction. Hours of work shall be 10pm through to 4am when there are no airline operations.

3. Schedule and coordinate the BHS Scope of Work (installation, removal, etc.), with the Owner, other disciplines working in the immediate area of construction, airline flight schedules and hours of operation, so as not to impact the Airport's normal functions and concurrent airline operations.

4. Short duration system shutdown will be permitted for the changeover from the existing subsystem configuration to the new. Shutdown of the system during changeover shall be scheduled during times of low impacted terminal operating demands. The BHS Contractor shall check and field-verify actual site conditions to determine and coordinate the schedule for any shutdown period. Notify the respective carrier 72 hours in

advance and obtain approval before proceeding with the shutdown of the system(s).

5. Provide as part of the contingency plan the use of a Porter(s) to transport bags from the curbside (CS1) to TC1 or CS2 load conveyors.

6. Phasing:

   a. Phase 1

      1.) Demolish the existing MU1 and replace with the new device

      2.) Witnessed functional and load testing to be completed prior to returning MU1 to airline operations.

   b. Phase 2

      1.) Modify conveyor RC2-40. Break conveyor upstream of HSD PE, to keep HSD clear and able to divert bags. RC2-40 becomes segmented into RC2-40A and RC2-40B conveyor sections.

         a.) RC2-40B is located at HSD, photo cell at head end of RC2-40A is for jam detection, count and bag divert trigger.

         b.) Install count photo cell at tail end of RC2-45 associated with new RC2-40A

      2.) Witness functional and load testing to be completed prior to turning section over for operation ensure all functionality/faults appear on the existing MDS

   c. Phase 3

      1.) Modify conveyor CS1-22 to become CS1-22A and CS1-22B. Reference BHS drawing B2.01.02

         a.) Move photo cell for XO6 merge management, upstream roughly 5 feet on CS1-22B.

         b.) Install HSD trigger photo cell at the head end of CS1-22A.

         c.) Cutovers will be completed at night to maintain daily airline operations.

      2.) Witness functional and load testing to be completed prior to turning section over for operation ensure all functionality/faults appear on the existing MDS

   d. Phase 4

      1.) Preliminary electrical work to be in place prior to the start of work in Phase 4.

      2.) A Controls Engineer must be present onsite throughout duration of this phase.

      3.) Demolish existing conveyor CS1-7C and catwalk, then install new CS1-7C, D, E and CS1-08 conveyor, and catwalk for new conveyor. Reference BHS drawing B1.02.02, B2.02.02, and B3.02.02.

         a.) Cutovers will be completed at night to maintain operation, CS1-7 included in overnight cutovers and catwalk installation.

         b.) For CS1-7C, CS1-7D, CS1-7E conveyor installation reference drawing B2.02.02 for correct conveyor section numbers to be used for installed.

         c.) Conveyor CS1-8 and catwalk to be installed overnight.

      4.) Witness functional and load testing to be completed prior to turning section over for operation ensure all functionality/faults appear on the existing MDS

   e. Phase 5

      1.) Curbside operations can still be maintained by using TC1 or CS2 inputs.

      2.) Demolish CS1-04 through CS1-07A. Install new conveyor CS1-04A through CS1-07B

      3.) Modify the wall opening as required to accommodate the new CS1-04 fire door. Modify CS1-04 to become CS1-04A and CS1-04B

      4.) Install and functionally test the fire door at CS1-04B

5.) Witness functional and load testing to be completed prior to turning section over for operation ensure all functionality/faults appear on the existing MDS

f. Phase 6

1.) BHS contractor to utilize existing conveyor pathway and floor penetrations for removal/installation of power turn CS1-02.

2.) Curbside operations can still be maintained by using TC1or CS2 input.

3.) Demolish and remove existing CS1-02 conveyor, replace the power turn (supplied by CLT) per BHS drawings B1.02.01, B2.02.01, and B3.02.01.

4.) Provide new controls for CS1-01 through CS1-4A, test functionality and ensure all functionality/faults appear on the existing MDS

3.09 DEMOLITION/EQUIPMENT REMOVAL

A. Maintain Operations

1. Remove existing equipment indicated on the Contract Drawings as "To Be Removed". Maintain operation of unaffected baggage handling equipment through the implementation of temporary electrical connections or the addition of supports to replace connections or supports removed in the demolition process.

2. If the removal of equipment creates unsecured access to a secured area, provide a guard on a 24-hour per day basis until installation of equipment returns the area to secured status.

B. Conduit Removal

1. Remove conduit including junction boxes and control/wiring devices rendered unused by the demolition process in its entirety to the motor control panel. Exception: abandon in place the imbedded portion only of any imbedded conduit after removing all conductors. Where a conduit passes through a floor or wall, cut the unused conduit flush with both surfaces of such floor or wall and abandon the section within the floor or wall if it cannot be removed without breaking masonry. Ensure that any area where material has been cut away is left in a clean and flush condition with no holes or protrusions showing. Where removal creates an indentation in concrete, chip away the surrounding concrete, cut the material (e.g., anchor bolts, conduit) below floor level and fill flush with cement.

C. Support Steel Removal

1. Remove support steel including header beams and attachments rendered unused by the demolition process in their entirety. Remove anchor bolts flush with floor, wall, or ceiling by burning or cutting.

3.10 DEMOLISHED MATERIALS TO BE DISPOSED

A. General

1. Remove and dispose of any materials or items demolished and not designated to become the property of the Owner or to be reinstalled.

B. Equipment Disposal

1. Remove from the CLT airport site all debris, rubbish and other materials resulting from demolition and alternation operations on a daily basis. Transport and legally dispose of equipment off-site in legal landfills or scrap yards. Obtain written permission from the property owner on whose property the removed materials shall be placed, and submit a copy of the agreement to the Owner.

2. Burning of removed materials is not permitted on the project site.

3. Store materials which cannot be removed daily in areas specified by the Owner.

4. Do not store or sell removed items on-site.

END OF PART 3

II PART IV - QUALITY CONTROL SPECIFICATIONS

4.01 FIELD QUALITY CONTROL

A. Quality Control Manual

1. Provide a Quality Control Manual acceptable to the Owner or his representative prior to the pre-installation meeting.

2. Indicate inspection lists and methods that will be utilized for quality control inspection and testing to confirm compliance with the specified requirements.

3. The Quality Control Manual shall assure that there is a system for final inspection and testing of completed products, construction, and installation. Such testing shall provide a measure of the overall quality of the completed product and shall be performed so that it simulates product end use and function. Final inspection and testing shall provide for reporting to the Owner or his representative any difficulties, deficiencies, or questionable conditions. When modifications, repairs, or replacements are required after final inspection or testing, there shall be re-inspection and re-testing of any characteristics affected.

4. The Quality Control Manual shall provide instructions for handling, storage, preservation, packaging, and shipping to protect the quality of products and prevent damage, loss, deterioration, degradation, or substitution of products. It shall also require and monitor the use of procedures to prevent handling damage to articles. Products in storage shall be protected against deterioration and damage.

B. Quality Assurance

1. The BHS Contractor shall be responsible for all quality control of its Work, including work performed by any of its subcontractors. Include in its own direct subcontracts those provisions which are necessary to assure that the quality of subcontracted work will be as good as the requirements herein.

2. The Owner or his representative shall have the right to audit and inspect the BHS Contractor's and its direct subcontractors' quality systems. Such audits may be conducted on a random or routine basis and may include an audit of the BHS Contractor's inspection and test records. The Owner or his representative shall have the right to witness any tests or inspections and shall have access to all test data including test procedures, test specifications, and test results. The Owner or his representative shall have the right to conduct independent tests or inspections at its own expense on any material or equipment to be used on the project. Should such the Owner or his representative directed independent test result in failure, the BHS Contractor shall reimburse the Owner's expense for the test. The objective of all audits, inspections, or tests conducted by the Owner or his representative is to ensure that all performed work is accomplished in compliance with the Contract Documents.

3. The Owner or his representative shall have the right to reject, and the BHS Contractor shall replace at the BHS Contractor's cost, any construction, production or installation, or portion thereof, which has not been accomplished or documented as accomplished in accordance with the accepted Quality Control Plan.

C. Quality Assurance Representative

1. Appoint a Quality Assurance Representative acceptable to the Owner or his representative who shall be responsible for the overall quality assurance implementation and monitoring of the general requirements.

2. The quality assurance representative shall be available on-site during the construction period at all times and be qualified to advise the Owner or his representative on the overall BHS scope of work (i.e., installation/removal procedures, provisioning, start-up and maintenance of the equipment).

D. Safety Program Manual

1. Prepare a site-specific safety program manual acceptable to the Owner or his representative and provide a final copy prior to the pre-installation meeting.

2. Designate a Safety Manager/Coordinator acceptable to the Owner or his representative.

3. The Safety Program shall be implemented to identify and resolve hazards. The Safety Program shall emphasize the prevention of accidents by resolving hazards in a systematic manner. The Safety Program Plan, as described below, will identify the responsibilities of all parties for implementing the Safety Program.

4. The Safety Program shall demonstrate compliance with all applicable safety rules and regulations. The levels of compliance shall meet the OSHA Standards, ANSI Standards, NFPA Standards, NEC Standards, and trade association standards and recommendations as applicable.

5. The safety program manual shall contain as a minimum the following:

    a. Have as its objective to provide for the safety of the passengers, employees, general public and equipment.

    b. Encompass all elements within the provided BHS.

    c. Include all interfaces with Facilities provided by others and identify all hazards within the Facilities that may result from the unique characteristics of the BHS.

    d. Identify the safety roles and responsibilities of all the BHS Contractors' organizational elements and require accountability of each.

    e. Contain a hazard resolution process that includes the procedures necessary to identify and resolve hazards.

    f. Indicate safety inspection lists and methods that shall be utilized by all personnel employed on this project.

    g. A plan for furnishing and enforcing the use of individual protective equipment including hard hats, rain gear, protective footwear, protective clothing and gloves, eye protection, ear protection, and high visibility reflective safety vests.

    h. A plan for providing first aid facilities, supplies, and trained personnel.

    i. A plan for employee safety training to include employee safety orientation during the first week of work, weekly work crew safety meetings, periodic safety meetings for supervisory personnel, and special training prior to working with especially hazardous materials or operations.

    j. Emergency plans for items such as, but not limited to, fire emergencies, severe weather, earthquakes and other geologic hazards, or flooding emergencies, seriously injured personnel, traffic accidents along the project site, and injuries of members of the public.

    k. Pre-construction planning relative to safety and control of hazards including special tools, equipment, facilities, and individual protective gear.

    l. A plan for periodic safety inspections, investigations of all accidents and injuries and submission of timely reports.

    m. Submission of injury/accident/incident data for statistical analysis.

E. Project Management Team

1. Submit to the Owner or his representative for review and approval, the following listing of key personnel with resumes, qualifications and contact details that will be working on the project:

    a. Project Manager

    b. On-Site Field Supervisor

    c. Safety Manager

    d. QA/QC Manager

    e. Electrical and Control Systems Engineering

    f. Mechanical Engineering

2. Include on-site and off-site participating personnel and the percent of anticipated participation on this project. The Owner or his representative reserves the right to approve or reject key personnel from the list.

3. The Project Manager and on-site Superintendent(s) shall not be changed without the Owner’s or his representative’s written approval.

4. The BHS Contractor, individuals or entities constituting the BHS Contractor and the officers or directors of the BHS Contractor or entities or key members of the Project Management Team shall have records of past performance sufficient to assure the Owner or his representative that they have the experience, competence

and integrity to successfully complete a project of this magnitude.

F. Workmanship

1. Ensure that all equipment is manufactured and installed in accordance with the best commercial practices consistent with the intended design and usage and is acceptable to the Owner or his representative.

2. Ensure that all materials and components are new and free from defects. Do not supply used equipment, whether refurbished or reconditioned, unless indicated in the specifications and drawings or without the express approval of the Owner or his representative.

3. The Owner or his representative shall reserve the right to inspect any conveyor component at the BHS Contractor's factory prior to shipment of said components. Coordinate with the Owner or his representative, fabrication of any components that the Owner or his representative requests to inspect such that said components are fully assembled and available for inspection by the Owner or his representative at the previously arranged time of the factory visit.

G. Pre-Installation Meeting

1. Prior to the start of the installation; attend meetings on-site as required or requested by the Owner or his representative. The Owner or his representative will schedule the Pre-Installation meetings, for the purpose of coordinating the on-site installation with ongoing airport operations.

2. Provide at the initial pre-installation meeting to the Owner or his representative the following:

   a. Master schedule

   b. Safety Program Manual

   c. Quality Control Manual

   d. Submittal Schedule

   e. Project Organization Chart to include Subcontractors

   f. Principle suppliers to include planned procurement dates

   g. Insurance enrollment forms

   h. Plans for coordination and notification for utility work

   i. Plans for coordination with the work of other contractors and procedures for sharing access to the work site.

   j. Schedule of deliveries of major equipment

   k. Example of Work Activities Bulletin

H. Pre-Demolition Meeting

1. Prior to the start of any demolition; attend meetings on-site as required or requested by the Owner or his representative. The Owner or his representative shall schedule the Pre-Demolition meetings for the purpose of coordinating the on-site removal of the BHS equipment with ongoing airport operations.

I. Work Activities Bulletin

1. Submit a detailed work plan for individual subsystem testing, every planned cutover, demolition, and system outage. A BHS specific "Work Activities Bulletin" must be submitted to the Owner or his representative for distribution to the impacted airlines, other impacted contractors and the Owner a minimum of 7 days prior to the testing, demolition or cutover activity-taking place.

2. No work should be commenced unless the BHS Contractor has a signed "Work Activities Bulletin" in hand, and has distributed copies the User Airlines, the Owner or his representative.

3. The "Work Activities Bulletin" shall contain the following as a minimum:

   a. Contractor's internal deadlines for completion of pertinent facility interfaces by other disciplines (e.g., permanent system power, support structure, or other facility interface requirements).

   b. Date and time planned activity to take place from start to finish

   c. User Airlines that are impacted

d. Details of all conveyors to be removed with duration (attach drawings)

e. Details of all conveyors to be installed with duration (attach drawings)

f. Electrical installation duration

g. Contractor's internal testing with duration

h. Witnessed system testing with duration

i. Full details of contingency plans

j. Details of person(s) (with qualifications) overseeing the activity

k. Details and number of personnel to be present who are qualified to troubleshoot all aspects of their respective equipment during the planned activity, for example:

1.) Mechanics

2.) Electricians

3.) Controls Engineers

l. Other affected equipment manufacturers (e.g., makeup device manufacturer). Confirmation that these manufacturers have been notified and will be in attendance if required.

4. Detailed description of activities required when completing overnight changeovers to ensure that disruption to baggage handling system is kept to a minimum. Include all preparatory work by other trades. Provide back-up plan for recovery of operations if changeover work will not be completed in time.

5. Coordination and operational interface to ensure on-going airline and airport operation, including work on other construction and BHS projects, is not disrupted.

6. Submit as part of the submittal process a sample of their proposed “Work Activities Bulletin” format for review and approval by the Owner or his representative.

J. Field Quality Control Services

1. Establish and maintain quality control for operations under this Section to ensure compliance with Contract Document requirements and maintain records of quality control for alteration and removal operations.

2. Submit quality control procedures for operations in conjunction with work under this Section for approval. Do not start work prior to receiving approval

3. The procedures shall include a checklist of points to be observed.

4. The actual quality control observations and inspections shall be documented and a copy of the documentation maintained on file.

5. Any work found not to be in compliance with the Contract Documents, shall be promptly corrected in an approved manner, at no additional cost to the Owner.

6. If the facility is under construction or modification, cooperate with other contractors who may be working in the immediate area for coordination of right-of-way clearances and verify as-built conditions.

7. Where walls immediately adjacent to conveyor equipment affect maintenance access, advise the Owner or his representative of the location and size of the wall opening that needs to be developed to permit access to drive components, bearings, and other equipment that would normally be inaccessible because of the wall.

8. Ensure that the design and installation of all conveyor equipment provides maximum access for operational and maintenance personnel.

K. Approval to Proceed

1. Before starting any work affecting existing baggage handling equipment that shall temporarily discontinue or disrupt service to the existing system/operations, notify the Owner or his representative 72 hours in advance and obtain the Owner or his representative approval in writing before proceeding with this phase of the work.

L. Preparatory Inspection

1. To be conducted prior to commencing work:

a. Check schedules, project conditions, protection, traffic arrangements, utilities services maintenance, and related preparatory work for conformance to submittals.

b. Check to assure adequate protection against damage.

c. Ensure that all workers are qualified.

d. Review installation, demolition, removal, and disposal procedures to assure coordination of Contract Documents requirements with each person involved in performing the work.

e. Verify as-built conditions and notify the Owner or his representative of conflicts.

M. Initial Inspection

1. To be conducted after a representative sample of the work is complete:

a. Review the representative sample of the work against the specification and code requirements previously discussed at preparatory inspection.

b. Check for workmanship.

c. Check installation, removal, and disposal of each item for conformance.

d. Check for damage and ensure that damaged work is corrected, at no additional cost to the Owner.

e. Submit documentation for review to the Owner or his representative detailing compliance of the above.

N. Follow-Up Inspection

1. Check completed work against results of initial inspection of representative sample of work against items mentioned in the preparatory inspection.

2. Verify that damaged work is corrected properly and approved by the Owner or his representative, at no additional cost to the Owner.

3. Submit documentation for review to the Owner or his representative detailing compliance of the above.

O. Inspection Results

1. Certify inspection results: This certification shall state that the observations were performed by or under the direct supervision of the BHS Contractor's Quality Assurance Representative and that the results are representative of the conditions being certified.

2. Work accomplished shall be considered satisfactory only when the records and inspections show that all variances have been corrected and that the work is in conformance with the Contract Documents.

3. Submit documentation for review to the Owner or his representative detailing compliance of the above.

4.02 TESTING AND ACCEPTANCE

A. Inspection and Testing Procedures

1. General

a. After installation of the BHS, demonstrate its operating capability. Accomplish prior to the start of the Systems Acceptance Testing all "debugging" and internal testing. In addition, carry out a "dry test run" of Acceptance Tests prior to conducting such tests with the Owner or his representative to ensure that tests conducted with the Owner or his representative are successful. Make available to the Owner on a daily basis any and all records of internal testing and debugging (with corrective action carried out) performed prior to Acceptance Testing.

b. The System shall be capable of handling the maximum and minimum specified sizes and weights without jamming, damage or toppling of the baggage.

c. Provide all actual weighted baggage required for testing. Actual baggage provided shall be representative of the many different types of baggage pieces encountered during live operations, including the maximum sizes and weights as defined in this specification. All baggage used for testing purposes shall be approved by the Owner or his representative prior to testing.

d. Provide appropriate service personnel "on-site" during the testing period to service or adjust, as required, the System equipment as well as to open all control boxes, control station covers, drive assembly

chain/V-belt guards, and covers for the Owner inspection of the system equipment.

e. Provide all necessary test, measuring, and recording devices required to demonstrate the operational characteristics and performance of the equipment to the satisfaction of the Owner (clamp-on type ammeter, direct read FPM digital readout tachometer, and all other required devices).

f. Provide written notice (minimum seven – (7) days) to the Owner prior to acceptance testing that they have completed all "dry test runs" of the acceptance tests and are ready for the witnessed testing. Ensure that the Owner or his representative witness all Acceptance Tests and shall indicate Acceptance by signing and dating the test data sheet. The Owner reserves the rights to back charge the BHS Contractor for the time and expenses of all who attended the Acceptance Testing on the Owner's behalf should the requested acceptance test(s) be unsuccessful and require re-testing at a later date.

2. System Inspection and Test Plan Submittal

a. Submit an Inspection and Test Plan for this Project based on the information provided below and submitted per the submittal schedule detailed Part I of this specification for review and approval by the Owner or his representative.

b. As various subsystems may require testing independent of one another, a number of tests will have to be conducted at the various stages of installation.

c. The test plan shall be submitted in both hard copies for field use during the testing process and a completed (based upon acceptance testing) electronic format agreed upon by the Owner or his representative.

d. The test plan shall include as a minimum the following:

1.) Description of each Test

2.) Pass/Fail Criteria

3.) Expected duration of the test

4.) Number of test bags required and where they are to be positioned for the start of the test

5.) List all test equipment required

6.) Number of personnel required for the test to include:

a.) Test Supervisor

b.) Mechanical

c.) Electrical

7.) List other affected equipment manufacturers that may be required for the test. Confirmation that these manufacturers have been notified and will be in attendance.

8.) Details of all reports to be printed after the test

9.) Pass/Fail and Notes/Comments sections.

10.) Section for witnessed sign off, to include as a minimum BHS Contractor, the Owner or his representative

e. The following is intended to be a guideline, and is not to be construed as all-inclusive:

1.) Mechanical Static Inspection: Submit a comprehensive, easy to read mechanical equipment inspection plan for every piece of mechanical equipment installed as part of the BHS. This inspection plan shall verify adherence to the Specification for the following items:

a.) Belt Conveyors: Gaps between adjacent head and tail pulleys - Vertical clearance - Angle of incline/decline - 4" conveyor I.D. - Gaps between adjacent bed sections - Gaps between adjacent side guard sections - Baggage snag points - Sharp edges or shear burrs - Condition of painted surfaces - Tightness of all hardware - Alignment of stainless steel trim and bed section filler plate - Spacing of vertical braces for side guards/back guards - Spacing of conveyor supports - Sway bracing - Trim securement screw type and countersinking - Safety guarding/belly pans - Anchoring/mounting of access ladders, - Installation of right angle transfer transition plate - Belting material and splicing - Belt lacing size and cable - 1"

V-notch in belting splice - Belt path routing - Belt wrap - Belt tension - Pulley diameter - Pulley shaft diameter - Vertical alignment of head and tail pulleys, - Lateral position of pulleys, - Return roller diameter - Return roller spacing - Bearing mounting lock washers - Bearing jacking bolts - Bearing grease zerk removal - Bearing caps - Motor and speed reducer mounting lock washers - Speed reducer drip pan - Motor/speed reducer related sprocket/sheave and shaft alignment - Motor/speed reducer related sprocket or sheave key tightness - Motor/speed reducer related chain/V-belt tension - Speed reducer leakage - Speed reducer lubrication level - Mounting of speed reducer torque arm - Safety finger guards on end pulleys at staffed conveyors (curbside load conveyors) - 25% take-up pulley position - Installation of strip door type draft curtain - Installation of fire/security doors - Removal of construction related debris - Maintenance access - Protective guard railing installation - Vertical clearance for traffic aisles.

b.) Incline Plate Devices: Vertical clearance above plates/pallets - Gaps between adjacent back guard sections - Gap between perimeter finger guard and top of pallet not in excess of ⅛" - Skirting above and below device conveying surface - Sharp edges or shear burrs - Condition of painted surfaces - Tightness of all hardware - Trim securement screw type and countersinking - Baggage snag points - Drive assembly safety guarding - Speed reducer drip pan - Motor/speed reducer type and alignment - Motor-driven sprockets/sheaves alignment - Motor-driven chain/V-belt tension - Speed reducer oil leakage - Removal of construction debris - Maintenance access - Protective guard railing - Pallet-driving sprocket alignment - Pallet-driving chain tightness.

2.) Electrical Static Inspection: Submit a comprehensive, easy to read electrical equipment inspection plan. For the determination of terminal tightness, all terminals in motor control panels or field mounted devices shall be tightened to the manufacturer's recommended torque specifications utilizing a certified calibrated torque wrench or appropriate tool. Demonstrate to the Owner or his representative that the screws are set at the proper torque value and include this information in the below referenced electrical static inspection reports. This inspection plan shall verify adherence to the Specification for the following items:

a.) Belt Conveyors: Control station I.D./function tags - control station and disconnect switch accessibility/location - illuminated pushbutton switch protective guard ring - tightness of all hardware - photocell mounting - tach mounting and coupling - control circuit wiring size, type, color, and number tag - power circuit wiring size, type, color, and number tag - wire "whiskers" at terminal points - wiring terminal point screw tightness - splice point wire nuts within junction boxes - conduit routing and mounting - tightness of conduit/sealtite fittings - junction box covers - unused openings in junction boxes or control device boxes - safety disconnect switch lockout capability - maintenance access - record motor name plate data, size of motor overload heaters, and size of all fuses.

b.) Incline Plate Devices: Control station and disconnect switch accessibility/location - control station ID/function tags - illuminated pushbutton switch protective guard ring - tightness of all hardware - photocell mounting - control circuit wiring size, type, color, and number tag - power circuit wiring size, type, color, and number tag - wire "whiskers" at terminal points - wiring terminal point screw tightness - splice point wire nuts within junction boxes - conduit routing and mounting - tightness of conduit/sealtite fittings - junction box covers - unused openings in junction boxes or control device boxes - safety disconnect switch lockout capability - maintenance access - record motor name plate data, size of motor overload heaters, and size of all fuses.

3.) Dynamic Mechanical Testing: Submit a comprehensive, easy to read mechanical test plan. This test plan, at a minimum, shall verify the specified functionality of the following:

a.) Belt Conveyors: Conveyor speed - belt tracking - shaft run-out on pulleys - excessive vibration - operation of clutch/brake units - lateral movement of speed reducer on shaft during start/stops - abnormal noises - torsion flexing of drive assembly during start/stop operation of controls

b.) Incline Plate Devices: Operation of "soft-start" device - engagement of plate cam followers with drive assembly - vertical or horizontal displacement of plates through drive assembly section - excessive vibration - abnormal noises - binding of perimeter finger guards with top surfaces of plates - operation of controls.

4.) Dynamic Electrical Testing: Submit a comprehensive, easy to read electrical test plan that clearly identifies all installed control devices, the control device locations in the BHS, the function of the control device, all conveyors affected by the control device, and the expected field result with applicable system monitor message/display. The test plan shall be submitted in both hard copy for field use during the testing process and a completed (based upon acceptance testing) electronic format agreed upon by the Owner or his representative.

a.) All Control Devices: Start-up alarms - fault warning alarms - fault warning alarm silence buttons - timer settings - auto shut-down - motor overloads - motor disconnects - auto-start - e-stop function - jam function.

5.) Empirical Readings

a.) The Empirical Readings which are to be taken at the time of Conditional Acceptance Testing are to include the following:

(1.) Main Feeds: Fuse size per phase, actual amperage per phase.

(2.) Transformers: Fuse size per phase, actual amperage per phase.

(3.) Conveyor/Device Speeds: Actual "center-line" speed of conveyor/device.

(4.) Motors: Nameplate data, horsepower, listed motor current; fuse size per phase, actual amperage per phase, overload heater size or designation.

(5.) VFDs: record all VFD settings.

6.) Load Testing: Submit a comprehensive, easy to read test plan listing the expected load rating for each device, at a minimum, provide the following:

a.) Individual device identifications with the expected load rating for each device (including tilt tray sorter).

b.) Amperage readings per phase under No Load conditions.

c.) Fuse Sizes (if applicable) and motor heater settings.

d.) Motor nameplate FLA for each device drive and HP.

e.) Amperage readings per phase under Full Load conditions.

f.) Pass/Fail and Notes/Comments sections.

All FLA readings taken during load testing shall be recorded and included in the Final O&M Manual Addendum for record. Motor FLA shall be measured with full load during load tests and any motor that draws more than the name plate FLA (after start-up in rush current has flattened) shall be replaced with a motor of appropriate size that shall result in no more than the max name plate FLA during load test.

7.) Test Failure

a.) A failure during any test period shall be defined as any design characteristic or malfunction of the furnished equipment or materials that damages product or reduces any operating rate below those "specified".

b.) Conditions resulting from improper loading of product or loading product of sizes not included in specification requirements will not be considered as failures.

B. Conditional Acceptance

1. Conditional Acceptance will only be considered after the following are completed:

a. The Conditional Acceptance Inspection and Testing procedures presented below are successfully completed as specified.

b. Final Operation and maintenance addendums have been delivered.

c. Spare parts as purchased by the Owner for that phase have been delivered.

d. All special tools and equipment required for maintenance purchased by the Owner have been delivered.

e. The name, address and a 24-hour phone number of a representative who has the authority and experience to make immediate replacements and repairs for the full life of all warranties has been provided.

2. Conditional Acceptance Inspection and Testing

a. The System, including all upper and lower level controls, shall demonstrate compliance with the approved Test Plan. The individual inspections and tests shall be performed in the order presented above. System deficiencies (punch list items) shall be corrected before performing the subsequent inspections or tests. The Owner at his discretion may request for reimbursement of costs from the BHS Contractor for multiple re-inspections of system deficiencies/punch list items.

1.) Mechanical Static Inspection

2.) Electrical Static Inspection

3.) Dynamic Electrical Testing

4.) Dynamic Mechanical Testing

5.) Empirical Readings

6.) Load Testing

3. Upon successful completion of the specified Inspections and Testing, the Owner will issue a written notice of Conditional Acceptance.

4. A Conditional Acceptance status will indicate that the Owner or his representative have approved the equipment as worthy for operational use.

5. The Conditional Acceptance shall not relieve the responsibility for maintenance, security and insurance on the system.

6. In no case, will Conditional Acceptance relieve the responsibility for performing all the work set forth in the Contract Documents.

7. At the time of Conditional Acceptance, the amount of retention held until issuance of a Certificate of Final Acceptance shall be a summation of 10% of the total value of the project and the assessed value of open punch list items (to be determined by the Owner).

8. Conditional Acceptance is applicable to each construction phase and must be issued in writing, by the Owner, prior to commencement of subsequent construction phases. Final Acceptance of individual construction phases or subsystems shall not apply.

9. Conditional Acceptance Operational Period

a. Upon issue of a Certificate of Conditional Acceptance, a ten - (10) day Operational Period will commence in which the Owner will put all systems into on-line operations processing the daily flow of baggage.

b. During the ten - (10) day Operational Period, the BHS Contractor shall be responsible for all maintenance required on the CS1 conveyors and MU1 makeup device. During this time period the BHS Contractor will be responsible for ensuring that the BHS is fully operational during Airport Operational hours. Should any downtime occur during these hours due to major faults in the BHS (i.e., motor overloads, motor faults, or any other faults deemed major by the Owner) the BHS Contractor will be responsible for immediate rectification and assisting the Owner in any way so that Operations is not impacted in any way.

C. Conditional Acceptance With Defects

1. If the System is found to be unacceptable at the time of Conditional Acceptance Inspection and Testing, the Owner will issue a written “Defects List” report containing information about the particular defects that must be remedied before Final Acceptance will be granted. At this time, if the defects do not affect the functionality of the System, the Owner may elect to advise in writing that “Conditional Acceptance with Defects” has been granted. All terms presented in the “Conditional Acceptance” portion of this Specification

will apply.

2. A “Conditional Acceptance with Defects” status, if issued, will indicate that the Owner has approved the equipment as worthy for operational use. Subsequent to “Conditional Acceptance with Defects” issuance, the ten - (10) day Operational Period will commence in which the Owner will put the System into on-line operations processing the daily flow of baggage. The Owner will maintain the right to judge whether any hazard may exist to personnel or equipment due to unacceptable inspection results and revoke this approval. In the event the approval is revoked, the ten - (10) day Operational Period will be suspended until the hazard is remedied.

3. The Owner will be entitled to retain from the project payments an amount commensurate with the value of work remaining to be accomplished. Further, all outstanding work must be performed at times during periods convenient to the Owner and to the requirements of a fully operating system.

4. The Contractor must notify the Owner within the ten - (10) day Operational Period that all outstanding items on the “Defects List” have been corrected and that Inspection and Testing may continue. When all items have been approved in accordance with the Specifications, this shall conclude Inspection and Testing of the BHS. Only the remaining time of the ten - (10) day Operational Period will be required prior to application of the Final Acceptance conditions.

D. Final Acceptance

1. Final Acceptance will only be considered after all phases have conformed to the Conditional Acceptance terms, all phases have successfully completed the ten - (10) day Operational Period, and the following criteria is met:

   a. The System has not experienced repeated repairs and adjustments and is achieving the specified rate, accuracy and availability standards as required by this Specification.

   b. The System has successfully completed the specified Inspections and Testing, with no outstanding punch list items.

   c. The System is in full compliance with the Contract Documents.

   d. The Owner and all other governing agencies have made their inspections and given their approvals.

   e. Certificates of Installation Compliance have been issued to the Owner.

   f. Warranties for all materials and equipment received from Subcontractors and Suppliers have been assigned to the Owner.

   g. A spare parts and tools audit has been conducted and all tools have been turned over to the Owner. All spare parts purchased by the Owner have been delivered.

   h. Accurate "PE Stamped As-built" drawings and all manuals as specified in this Specification have been delivered.

   i. Operation and maintenance training have been completed.

- END OF PART IV -

EXHIBIT B
SAMPLE CONTRACT

STATE OF NORTH CAROLINA

COUNTY OF MECKLENBURG

CONTRACT NO. _____

CONTRACT TO PROVIDE:

[Insert project name goods or services]

This Contract (the "Contract") is entered into as of this [insert date] (the "Effective Date"), by and between [insert vendor legal name]**,** a [insert business type i.e. corporation] registered under the laws of the State of [Insert state] and doing business in North Carolina (the "Company"), and the City of Charlotte, a municipal corporation of the State of North Carolina (the "City").

Statement of Background and Intent

A. The City is the owner and operator of the Charlotte Douglas International Airport ("Airport");

B. The City issued a Request for Proposal dated [insert date] requesting proposal from qualified firms to provide the City with [insert product/service description] hereafter referred to as the "Work". This Request for Proposal, together with all attachments and any amendments, is referred to herein as the "RFP";

C. The Company submitted a proposal in response to RFP on [insert date]. This proposal, together with all attachments is referred to herein as the "Proposal"; and

D. The Company wishes to provide the Work to the City in accordance with the terms and conditions set forth herein.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and in further consideration of the covenants and conditions contained in this Contract, the parties agree as follows:

AGREEMENT

1. **INCORPORATION OF EXHIBITS.** The following Exhibits are attached to the Contract and incorporated into and made a part of this Contract by reference:

   Exhibit A: Specifications

   Exhibit B: Proposal

   Exhibit C: Federal Requirements

Exhibit D: [CBI/DBE] Letters of Intent [Remove if no CBI/DBE requirement]

Any conflict between language in Exhibit A and the Contract shall be resolved in favor of the main body of this Contract. Any conflict between Exhibit B and the Contract or Exhibit A shall be resolved in the favor of Exhibit B. Each reference to [Insert Company Name] in the Exhibits shall be deemed to mean the Company.

2. **DEFINITIONS.** The following terms shall have the following meanings for purposes of this Contract (including all Exhibits):

   2.1. *Airport* shall mean Charlotte Douglas International Airport

   2.2. *Background Checks* shall have the meaning set forth in Section 24 below.

   2.3. *Change* shall have the meaning set forth in Section 27.5 below.

   2.4. *City* shall mean the City of Charlotte.

   2.5. *Company* shall mean the successful Proposer.

   2.6. *Contract* shall mean the terms and conditions under which the Company shall provide the Work.

   2.7. *Effective Date* shall mean the date set forth in the first paragraph above.

   2.8. *Exhibits* shall mean the documents specified in Section 1 and attached and incorporated into the Contract.

   2.9. *Project Manager* shall mean the Airport or Company employee who is the point of contact under this Contract.

   2.10. *Proposal* shall mean the response to this RFP completed on the Proposal Response Forms.

   2.11. *RFP* shall mean Request for Proposal.

   2.12. *Specifications* shall mean the scope and details of the Work set forth in **Exhibit A** that the Company will provide under the Contract.

   2.13. *Work* shall mean the actual products and/or services provided in compliance with the Specifications and under this Contract.

3. **TERM.** The term of the Contract will be for [insert term] from the Effective Date [with an option to renew for two (2) additional one-year terms]. The Contract may be extended only by a written amendment to the Contract signed by both parties.

4. COMPENSATION. The Company shall provide the Work in accordance with the Specifications set forth in Exhibit A to this Contract. The City shall pay the Company for the Work delivered in compliance with the Specifications and at the prices forth in Exhibit B. The maximum amount of the Contract shall not exceed [insert dollar amount in words] ($[insert amount in numbers]) This amount constitutes the maximum fees and charges payable to the Company in the aggregate under this Contract and will not be increased except by a written amendment duly executed by both parties. The Company shall not be entitled to charge the City any prices, fees or other amounts that are not listed in **Exhibit B**.

5. **BILLING.** Each invoice sent by the Company shall reference the appropriate contract number, purchase order (PO) number and PO line number for each item on the invoice. The City prefers *not* to receive invoices for goods and services paid for via a purchase card (P Card). When

presenting an invoice that has been paid via a P Card, indicate the total dollar amount due as "$0.00".

All invoices must include all reports, information and data required by this Contract (including the Exhibits) necessary to entitle the Company to the requested payment. Invoices shall be provided by the Company to the City at the frequency set forth in **Exhibit A** or where the exhibit is silent, invoices should be submitted monthly. The Company shall send one (1) copy only of each invoice to: cocap@charlottenc.gov with copy to procurement@cltairport.com.

The City is not tax exempt from sales tax. The Company shall include all applicable State and County sales taxes on the invoice and not combined with the cost of the services.

Payment of invoices shall be due within thirty (30) days after the City has received all of the following: (a) an accurate, properly submitted invoice, (b) all reports due for the month covered by the invoice; and (c) any other information reasonably requested by the City to verify the charges contained in the invoice.

6. **GENERAL WARRANTIES.** Company represents and warrants that:

   6.1. It is a legal entity, validly existing and in good standing under the laws of the State of [insert state], and is qualified to do business in North Carolina;

   6.2. It has all the requisite corporate power and authority to execute, deliver and perform its obligations under this Contract;

   6.3. The execution, delivery, and performance of this Contract have been duly authorized by Company;

   6.4. No approval, authorization or consent of any governmental or regulatory authority is required to be obtained or made by it in order for it to enter into and perform its obligations under this Contract;

   6.5. In connection with its obligations under this Contract, it shall comply with all applicable federal, state and local laws and regulations and shall obtain and provide to the City all applicable permits and licenses within ten (10) days of the Company receiving notice of award and within twenty-four (24) hours of demand at any time during the term; and

   6.6. The Company shall not violate any agreement with any third party by entering into or performing this Contract.

   6.7. The Work shall comply with all requirements set forth in this Contract, including but not limited to the attached Exhibits;

   6.8. The Company guarantees the materials and workmanship on all materials and services provided under the Contract and that it will fix any defects at its own expense that are discovered during the guarantee period at the time designated by and to the satisfaction of the Airport;

   6.9. All work performed by the Company and/or its subcontractors pursuant to this Contract shall meet industry accepted standards, and shall be performed in a professional and workmanlike manner by staff with the necessary skills, experience and knowledge; and

   6.10. The Work provided by the Company under this Contract will not infringe or misappropriate any patent, copyright, trademark or trade secret rights of any third party.

7. **INDEMNIFICATION.** The Company shall indemnify, defend and hold harmless the City and the City's officers, agents and employees from and against any and all claims, losses, damages, obligations, liabilities and expenses, including but not limited to attorneys' fees, arising out of or resulting from Company's performance, or allegations thereof, under this Contract, except to the extent that the claims, losses, damages, obligations, liabilities and expenses are caused by the sole negligence of the City, or the City's officers, agents and employees. Such liabilities shall include those arising from a violation of any federal, state or local law, regulation or ordinance by the Company or any of its subcontractors. Company shall purchase insurance, as described in Section 8 of the Contract, which shall include coverage for the contractual liability described herein. In any case in which Company provides a defense to the City pursuant to this indemnity, the defense will be provided by attorneys reasonably acceptable to the City. This provision shall survive the expiration or early termination of the Contract.

8. **INSURANCE.** The Company shall provide and maintain at its expense during the term of this Contract the following program(s) of insurance covering its operations. Such insurance shall be

provided by insurer(s) satisfactory to the City as approved by the City's Risk Management Division and evidence of such programs satisfactory to the City shall be delivered to the City on or before the effective date of this Contract. Such evidence shall specifically identify this Contract and shall contain the express condition that the **City is to be given written notice of at least ten (10) days in advance of any modification or termination of any program of insurance.**

8.1. Automobile Liability. Evidence of current automobile insurance (attach copy of automobile Policy declarations Page(s) in the case of Personal Auto) which show the vehicle and coverage amounts as the appropriate one of the following:

8.1.1. If the Company owns or leases commercial vehicles to provide goods or perform a service under this Contract, Automobile Liability must be provided at a limit of not less than $1,000,000 per accident, combined single limit, each occurrence, for bodily injury and property damage liability covering all owned, non-owned, and hired vehicles.

8.1.2. If the Company does not own or lease any vehicles, but has employees using their vehicles to perform a service under this Contract, Company must provide Hired/non-owned Automobile Liability coverage at a limit of not less than $1,000,000 per occurrence aggregate.

8.1.3. If the Company does not own or lease any commercial vehicles to perform services under this Contract, and has no employees using their vehicles to perform services under this Contract, but uses his or her own personal vehicle to perform services under this Contract, Personal Automobile Liability may be provided at limits of not less than $100,000 each person, $300,000 each accident and property damage liability of $50,000.

8.1.4. If the Company is trucking fuel, the Automobile Liability coverage shall be broadened to include pollution coverage on covered autos, and a copy of endorsement CA 99 48 shall be provided to the City. Company must also supply the City with evidence of motor carrier endorsement MCS-90 as required by the Federal Motor Carrier Safety Administration's Motor Carrier Act.

8.1.5. However, if the Company has access to the Aircraft Operation Area (AOA), all automobile liability insurance limits shall increase to $5,000,000.00 per accident, combined single limit, each occurrence.

8.2. Commercial General Liability. Insurance with a limit not less than $1,000,000 per occurrence/aggregate including coverage for bodily injury, property damage, products and completed operations, personal/advertising injury liability and contractual liability.

8.3. Worker's Compensation and Employers Liability. Insurance meeting the statutory requirements of the State of North Carolina and any applicable Federal laws; and, Employers' Liability - $100,000 per accident limit, $500,000 disease per policy limit, $100,000 disease each employee limit**. If the Company does not employ more than 2 full time employees, Company must attest this fact on company letterhead and include such letter in this Contract.**

9. **OTHER INSURANCE REQUIREMENTS.**

9.1. "City of Charlotte, 600 East Fourth St. Charlotte, NC 28202" shall be named as an additional insured under the commercial general liability insurance for operations or

services rendered under this Contract.

9.2. The Company shall not commence any work in connection with this Contract until it has obtained all of the types of insurance set forth in this section and furnished the City with proof of insurance coverage by certificates of insurance accompanying the Contract.

9.3. The Company shall not allow any subcontractor to commence work until all such subcontractors have obtained the same insurance coverages as described above.

9.4. All insurance policies shall be written by insurers qualified to do business in the State of North Carolina. If any of the coverage conditions are met by a program of self-insurance, the Company must submit evidence of the right to self-insure as provided by the State of North Carolina.

9.5. The Company insurance shall be primary of any self-funding and/or insurance otherwise carried by the City for all loss or damages arising from the Company's operations under this Contract. The Company and each of its subcontractors shall and does waive all rights of subrogation against the City and each of the Indemnitees.

9.6. The City shall be exempt from, and in no way liable for any sums of money that may represent a deductible or self-insured retention in any insurance policy. The payment of the deductible/retention shall be the sole responsibility of the Company and/or subcontractor.

10. **TERMINATION.**

10.1. TERMINATION WITHOUT CAUSE. The City may terminate this Contract at any time without cause by giving thirty (30) days written notice to the Company.

10.2. TERMINATION FOR DEFAULT BY EITHER PARTY. By giving written notice to the other party, either party may terminate this Contract upon the occurrence of one or more of the following events:

10.2.1. The other party violates or fails to perform any covenant, provision, obligation, term or condition contained in this Contract, provided that, unless otherwise stated in this Contract, such failure or violation shall not be cause for termination if both of the following conditions are satisfied: (i) such default is reasonably susceptible to cure; and (ii) the other party cures such default within thirty (30) days of receipt of written notice of default from the non-defaulting party; or

10.2.2. The other party attempts to assign, terminate or cancel this Contract contrary to the terms hereof; or

10.2.3. The other party ceases to do business as a going concern, makes an assignment for the benefit of creditors, admits in writing its inability to pay debts as they become due, files a petition in bankruptcy or has an involuntary bankruptcy petition filed against it (except in connection with a reorganization under which the business of such party is continued and performance of all its obligations under this Contract shall continue), or if a receiver, trustee or liquidator is appointed for it or any substantial part of other party's assets or properties.

10.2.4. Any notice of default pursuant to this Section shall identify and state the party's intent to terminate this Contract if the default is not cured within the

specified period.

10.3. ADDITIONAL GROUNDS FOR DEFAULT TERMINATION BY THE CITY. By giving written notice to the Company, the City may also terminate the Contract upon the occurrence of one or more of the following events (which shall each constitute grounds for termination without a cure period and without the occurrence of any of the other events of default previously listed):

10.3.1. The Company makes or allows to be made any material written misrepresentation or provides any materially misleading written information in connection with the RFP, the Proposal, or any covenant, agreement, obligation, term or condition contained in this Contract; or

10.3.2. The Company takes or fails to take any action which constitutes grounds for immediate termination under the terms of this Contract, including but not limited to failure to obtain or maintain the insurance policies and endorsements or failure to provide the proof of insurance as required by this Contract.

10.3.3. The Company fails to meet delivery times or the Work does not comply with the terms of this Contract as set forth in **Exhibit A**.

10.4. NO EFFECT ON TAXES, FEES, CHARGES, OR REPORTS. Any termination of the Contract shall not relieve the Company of the obligation to pay any fees, taxes or other charges then due to the City, nor relieve the Company of the obligation to file any daily, monthly, quarterly or annual reports covering the period to termination nor relieve the Company from any claim for damages previously accrued or then accruing against the Company.

10.5. OBLIGATIONS UPON EXPIRATION OR TERMINATION. In the event this Contract is terminated by the City for any reason prior to the end of the term, the Company shall upon termination immediately discontinue all services in connection with this Contract and promptly cancel all existing orders and subcontracts, which are chargeable to this Contract. As soon as practicable after receipt of notice of termination, the Company shall submit a statement to the City showing in detail the Work performed under this Contract to the date of termination.

10.6. NO SUSPENSION. In the event that the City disputes in good faith an allegation of default by the Company, notwithstanding anything to the contrary in this Contract, the Company agrees that it will not terminate this Contract or suspend or limit the delivery of the Work or any warranties or repossess, disable or render unusable any Software supplied by the Company, unless (i) the parties agree in writing, or (ii) an order of a court of competent jurisdiction determines otherwise.

10.7. AUTHORITY TO TERMINATE. The Aviation Director or his designee is authorized to terminate this Contract on behalf of the City.

11. **TRANSITION SERVICES UPON TERMINATION.** Upon termination or expiration of this Contract, the Company shall cooperate with the City to assist with the orderly transfer of the Work, functions and operations provided by the Company hereunder to another provider or to the City as determined by the City in its sole discretion.

12. **REMEDIES.**

12.1. Right to Cover. If the Company fails to meet any completion date or resolution time set forth in this Contract (including all Exhibits), the City may take any of the following

actions with or without termination this Contract, and in addition to and without limiting any other remedies it may have:

12.1.1. Employ such means as it may deem advisable and appropriate to perform itself or obtain the Work from a third party until the matter is resolved and the Company is again able to resume performance under this Contract; and

12.1.2. Deduct any and all expenses incurred by the City in obtaining or performing the Work from any money then due or to become due to the Company and, should the City's cost of obtaining or performing the Work exceed the amount due the Company, collect the amount due the City from the Company.

12.2. Right to Withhold Payment. If the Company breaches any provision of this Contract, the City shall have the right to withhold all payments due to the Company until such breach has been fully cured.

12.3. Setoff. Each party shall be entitled to setoff and may deduct from any amounts owed to the other party under this Contract all damages and expenses incurred as a result of the other party's breach of this Contract.

12.4. Other Remedies. Upon breach of this Contract, each party may seek all legal and equitable remedies to which it is entitled. The remedies set forth herein shall be deemed cumulative and not exclusive and may be exercised successively or concurrently, in addition to any other available remedy. However, under no circumstances shall the Airport be liable to the Company for damages arising from delay, whether caused by the Airport or not.

13. **RELATIONSHIP OF THE PARTIES.** The relationship of the parties established by this Contract is solely that of independent contractors, and nothing contained in this Contract shall be construed to (i) give any party the power to direct or control the day-to-day activities of the other; (ii) constitute such parties as partners, joint ventures, co-owners or otherwise as participants in a joint or common undertaking; (iii) make either party an agent of the other for any purpose whatsoever, or (iv) give either party the authority to act for, bind, or otherwise create or assume any obligation on behalf of the other. Nothing herein shall be deemed to eliminate any fiduciary duty on the part of the Company to the City that may arise under law or under the terms of this Contract.

14. **AUDIT.** During the term of this Contract and for a period of one (1) year after termination of this Contract, the City shall have the right to audit, either itself or through an independent auditor, all books and records and facilities of the Company necessary to evaluate the Company's compliance with the terms and conditions of the Contract or the City's payment obligations. The City shall pay its own expenses, related to such audits, but shall not have to pay any expenses or additional costs of the Company. However, if non-compliance is found that would have cost the City in excess of $5,000 but for the audit, then the Company shall be required to reimburse the City for the cost of the audit.

15. **RECORDS.** The Company shall be responsible for keeping a record that accurately states the number of hours worked or quantity of goods provided by the Company in the process of providing the Work under the terms of the Contract. The City shall have the right to audit the Company's invoices, expense reports and other documents relating to the Work performed under the Contract, and shall not be required to pay for Work which did not occur or which occurred in breach of the Contract. The Company shall make such documents available for inspection and copying by the City in Charlotte, North Carolina between the hours of 9:00 a.m.

and 5:00 p.m., Monday through Friday, whenever requested by the City.

16. **INSPECTION.** The Airport reserves the right to inspect the equipment, plant or other facilities of the Company to confirm that such conform with the requirements set forth in **Exhibit A** and are adequate and suitable for proper and effective performance of this Contract. Such inspections shall be conducted during normal business hours and upon at least three (3) days' notice to the Company.

17. **ACCEPTANCE OF THE WORK.** The Work delivered under this Contract shall remain the property of the Company until the Airport physically inspects, actually uses and accepts the Work.

18. **COMPANY PROJECT MANAGER.** Where the RFP or the Contract requires the Company to provide a Project Manager, their duties shall include, but are not limited to, the following:

    18.1. Coordination of Project schedules and the Company's resource assignment based upon the City's requirements and schedule constraints;

    18.2. Acting as the Company's point of contact for all aspects of the Contract administration, including invoicing for the Work, and status reporting;

    18.3. Facilitation of review meetings and conferences between the City and the Company's executives when scheduled or requested by the City;

    18.4. Communications among and between the City and the Company's staff;

    18.5. Promptly responding to the City's Project Manager when consulted in writing or by e-mail with respect to the Work deviations and necessary documentation;

    18.6. Identifying and providing the City with timely written notice of all issues that may threaten the Company's ability to provide the Work in a manner contemplated by the Contract;

    18.7. Ensuring that adequate quality assurance procedures are in place through the duration of the Contract term; and

    18.8. Meeting with other companies working on City projects that relate to this effort as necessary to resolve problem and coordinate the provision of the Work.

19. **DUTY OF THE COMPANY TO IDENTIFY AND REQUEST INFORMATION, PERSONNEL AND FACILITIES.** The Company shall identify and request in writing from the City in a timely manner the following:

    19.1. All information reasonably required by the Company to perform each task comprising the Work;

    19.2. The City's personnel whose presence or assistance may reasonably be required by the Company to perform each task comprising the Work; and

    19.3. Any other equipment, facility or resource reasonably required by the Company to perform the Work.

    Notwithstanding the foregoing, the Company shall not be entitled to request the City provide information, personnel or facilities other than those which **Exhibit A** specifically requires the City to provide, unless the City can do so at no significant cost. The Company shall not be relieved of any failure to perform under this Contract by virtue of the City's failure to provide any information, personnel, equipment, facilities or resources that is not required under

Exhibit A or requested in writing. However, where the Company provides written notice and the City fails to provide included information, personnel, facility or resources, the Company shall notify the City in writing immediately in accordance with the notice provision of this Contract. Failure to do so shall constitute a waiver by the Company for any claim or defense it may otherwise have based on the City's failure to provide such information, personnel, facility or resource.

20. **NON-DISCRIMINATION.** As a condition of entering into this agreement, the Company represents and warrants that it will fully comply with the City's Commercial Non-Discrimination Policy, as described in Section 2, Article V of the Charlotte City Code, and consents to be bound by the award of any arbitration conducted thereunder. As part of such compliance, the Company shall not discriminate on the basis of race, gender, religion, national origin, ethnicity, age or disability in the solicitation, selection, hiring, or treatment of subcontractors, vendors or suppliers in connection with a City contract or contract solicitation process, nor shall the Company retaliate against any person or entity for reporting instances of such discrimination. The Company shall provide equal opportunity for subcontractors, vendors and suppliers to participate in all of its subcontracting and supply opportunities on City contracts, provided that nothing contained in this clause shall prohibit or limit otherwise lawful efforts to remedy the effects of marketplace discrimination that has occurred or is occurring in the marketplace. The Company understands and agrees that a violation of this clause shall be considered a material breach of this Agreement and may result in termination of this Agreement, disqualification of the Company from participating in City contracts or other sanctions.

    As a condition of entering into this Contract, the Company agrees to: (a) promptly provide to the City in a format specified by the City all information and documentation that may be requested by the City from time to time regarding the solicitation, selection, treatment and payment of subcontractors in connection with this Contract; and (b) if requested, provide to the City within sixty days after the request a truthful and complete list of the names of all subcontractors, vendors, and suppliers that the Company has used on City contracts in the past five years, including the total dollar amount paid by the Company on each subcontract or supply contract. The Company further agrees to fully cooperate in any investigation conducted by the City pursuant to the City's Non-Discrimination Policy, to provide any documents relevant to such investigation that are requested by the City, and to be bound by the award of any arbitration conducted under such Policy.

    The Company agrees to provide to the City from time to time on the City's request, payment affidavits detailing the amounts paid by the Company to subcontractors and suppliers in connection with this Contract within a certain period of time. Such affidavits shall be in the format specified by the City from time to time

    The Company understands and agrees that violation of this Commercial Non-Discrimination provision shall be considered a material breach of this Contract and may result in contract termination, disqualification of the Company from participating in City contracts and other sanctions.

21. **COMPANY WILL NOT SELL or DISCLOSE DATA**. The Company will treat as confidential information all data provided by the City in connection with this Contract. City data processed by the Company shall remain the exclusive property of the City. The Company will not reproduce, copy, duplicate, disclose, or in any way treat the data supplied by the City in any manner except that contemplated by this Contract.

22. **WORK ON CITY'S PREMISES.** The Company will ensure that its employees and agents shall, whenever on the City's premises, obey all instructions and directions issued by the City's Project Manager with respect to work on the City's premises. The Company agrees that its personnel and the personnel of its subcontractors will comply with all rules, regulations and security procedures of the City when on the city's premises.

23. **NO LIENS.** All products provided under this Contract shall be delivered and remain free and clear of all liens and encumbrances.

24. **BACKGROUND CHECKS.** Prior to starting work under this Contract, the Company is required to conduct a background check on each Company employee assigned to work under the Contract, and shall require its subcontractors (if any) to perform a background check on each of their employees assigned to work under the Contract (collectively, the "Background Checks"). Each Background Check must include: (a) the person's criminal conviction record from the states and counties where the person lives or has lived in the past seven years; and (b) a reference check.

    24.1. The Company must follow all State and Federal laws when conducting Background Checks, including but not limited to the Fair Credit Reporting Act requirements, and shall require its subcontractors to do the same.

    24.2. The Company shall notify the City of any information discovered in the Background Checks that may be of potential concern for any reason.

    24.3. The City may conduct its own background checks on principals of the Company as the City deems appropriate. By operation of the public records law, background-checks conducted by the City are subject to public review upon request.

25. **Charlotte Business INClusion ("CBI")/Disadvantaged Business Enterprise ("DBE)].**

    [For CBI use one of the following provisions]

    [Committed Goal]

    Goal. Company's CBI Participation Goal is hereby established at xxx percent (XX%) of the total agreement as stated above.

    The City has adopted a CBI Program, which is available online at www.charlottebusinessinclusion.com. Execution of the Agreement shall constitute an acknowledgement upon which the City may rely that the Company has thoroughly examined, and is familiar with the CBI Program and Agreement requirements. The parties agree that:

    (a) The terms of the City's CBI Program, as revised from time to time, together with all rules and guidelines established under such program (collectively, the "CBI Program") are incorporated into this Agreement by reference; and

    (b) A violation of the CBI Program shall constitute a material breach of this Agreement, and shall entitle the City to exercise any of the remedies set forth in Part D of the CBI Program, including but not limited to liquidated damages; and

    (c) Without limiting any of the other remedies the City has under the CBI Program, the City shall be entitled to withhold periodic payments and final payment due to the Company under this Agreement until the City has received in a form satisfactory to the City all claim releases, payment affidavits and other documentation, as applicable, required by the City's CBI Program, and in the event payments are withheld under this provision, the Company waives any right to

interest that might otherwise be warranted on such withheld amount; and

(d) The remedies set forth in Part D of the CBI Program shall be deemed cumulative and not exclusive and may be exercised successively or concurrently, in addition to any other available remedy; and

(e) The City will incur costs if the Company violates the CBI Program, and such costs are difficult to ascertain due to their indefiniteness and uncertainty. Accordingly, the Company agrees to pay the City liquidated damages at the rates set forth in Part D of the CBI Program.

(f) The Company agrees to participate in any dispute resolution process specified by the City from time to time for the resolution of disputes arising from the CBI Program.

(g) Nothing in this Section shall be construed to relieve a Company from any obligation it may have regarding the payment of subcontractors.

If the City agrees to modify or eliminate liquidated damages for a specific contract, then the specific modification or waiver agreed to must be set forth in subpart (e) above, and must specifically reference Part D of the CBI Program.

The executed letters of intent demonstrating the companies and the work planned to be utilized to meet the CBI goal above is attached hereto as **Exhibit D**.

[Zero Goal]

The City has set a CBI goal for this Agreement of zero percent (0%).

This Contract may be subject to the terms and conditions of the City's Charlotte Business INClusion (CBI) Program in connection with subcontracting opportunities that may arise during the term of the Contract. The CBI Program can be found at www.charlottebusinessinclusion.com. The Company shall thoroughly examine and be familiar with provisions of the CBI Program. Execution of the Contract shall constitute an acknowledgement upon which the City may rely that the Company has thoroughly examined, and is familiar with, said regulations and Contract requirements.

[If Contract is over 90k, check with CBI/DBE contact to determine if the below language should be included]

Should subcontracting opportunities arise at any point during this Contract, Company shall fill out and submit CBI Form 6- Payment Affidavit, attached hereto as **Exhibit D**, to be turned in with each invoice request.

Failure by the Company to comply with the CBI Program shall constitute a breach of the Contract exposing the Company to a potential termination of the Contract or other appropriate remedy, including withholding of funds, until such time as the Company complies with all the CBI Program requirements.

[For DBE use one of the following provisions]

[Committed Goal]

The Company has committed to **[write out percentage]** percent (**[XX.X]**%) of the total Contract amount (minus allowance, if any).

This Contract is subject to the terms and conditions of 49 CFR Part 26 and the City's DBE Program in connection with subcontracting opportunities that may arise during the term of the Contract. The DBE Program can be found at www.cltairport.com. The Company shall

thoroughly examine and be familiar with provisions of 49 CFR Part 26 and the DBE Program. Execution of the Contract shall constitute an acknowledgement upon which the City may rely that the Company has thoroughly examined, and is familiar with, said regulations and Contract requirements.

Failure by the Company to comply with the DBE Program shall constitute a breach of the Contract exposing the Company to a potential termination of the Contract or other appropriate remedy, including withholding of funds, until such time as the Company complies with all the DBE Program requirements.

The executed letters of intent demonstrating the companies and the work planned to be utilized to meet the DBE goal above is attached hereto as **Exhibit D**.

[Zero Goal]

The City has set a DBE goal for this Contract of zero percent (0%).

This Contract is subject to the terms and conditions of 49 CFR Part 26 and the City's DBE Program in connection with subcontracting opportunities that may arise during the term of the Contract. The DBE Program can be found at www.cltairport.com. The Company shall thoroughly examine and be familiar with provisions of 49 CFR Part 26 and the DBE Program. Execution of the Contract shall constitute an acknowledgement upon which the City may rely that the Company has thoroughly examined, and is familiar with, said regulations and Contract requirements.

Failure by the Company to comply with the DBE Program shall constitute a breach of the Contract exposing the Company to a potential termination of the Contract or other appropriate remedy, including withholding of funds, until such time as the Company complies with all the DBE Program requirements.

[For All DBE Contracts Include The Following]

Liquidated Damages. The City and the Company acknowledge and agree that the City will incur damages if the Company violates the DBE Program in one or more of the ways set forth below, including but not limited to the potential loss of federal grant funding and the diversion of internal staff resources. The parties further acknowledge and agree that the damages the City might reasonably anticipate to accrue as a result of such failures are difficult to ascertain due to their indefiniteness and uncertainty. Accordingly, the Company agrees to pay the liquidated damages assessed by the City at the rates set forth below for each specified violation of the DBE Program. The Company further agrees that for each specified violation the agreed upon liquidated damages are reasonably proximate to the loss the City will incur as a result of such violation:

(a) Failure to Meet Committed DBE Goal. If the City determines at any point during the Contract that it will not be possible for the Company to achieve the Committed DBE Goal, or, upon completion or termination of a Contract, determines that the Company did not meet a Committed DBE Goal, and further determines that such inability or failure is not otherwise excused under Section 26.53 of the DBE Program, then the City may assess the dollar difference between the Committed DBE Goal that was missed and the Company's actual DBE utilization toward that Goal. The City may also assess an additional amount to account for staff time expended to address DBE noncompliance, calculated by using reasonable estimates of staff time and hourly rates, but in an amount not to exceed $5,000 ("Staff Time Liquidated Damages").

(b) Use of a DBE as a Conduit. If the Company lists a DBE to receive credit toward a Committed DBE Goal with knowledge that the DBE will be acting as a Conduit or will not be performing a Commercially Useful Function reasonably commensurate with the payment amount for which the Company will be seeking credit, the City may assess the dollar amount the Company indicated that it would pay such DBE in the DBE contract (or if no contract has been signed, the DBE Letter of Intent). City will determine, in its discretion, whether the Company had knowledge sufficient to trigger this section by evaluating information including but not limited to site visits, records produced by Company, other documentation that is obtained by the City, and other facts and circumstances. Conduit shall mean any DBE listed by the Company but does not perform any Commercially Useful Function in advancement of the contract. The City may also assess Staff Time Liquidated Damages.

(c) Wrongful Termination or Replacement of DBE. If the Company terminates or replaces a DBE in violation of the DBE Program, the City may assess the dollar amount of the work remaining to be performed by the terminated DBE at the time it was terminated (or if the DBE was not terminated because it was never retained, then the dollar amount that the Company indicated it would pay the DBE in the DBE Letter of Intent). The City may also assess Staff Time Liquidated Damages. .

(d) Failure to Comply with DBE Program Following Termination or Withdrawal of a DBE. If the Company fails to comply with the Good Faith Efforts requirements (Subpart C, Section 26.53(f) of the DBE Program) in replacing a DBE that is terminated or withdraws from work on a project, the City may assess the dollar amount of the work remaining to be performed by the DBE that withdrew or was terminated at the time of the termination or withdrawal. The City may also assess Staff Time Liquidated Damages.

(e) Failure to Comply with DBE Program to Add New Subcontractors. If the Company fails to comply with the Modified Good Faith Efforts requirements (Subpart C, Section 26.53(f) of the DBE Program) in adding new subcontractors to a Contract or when the scope of work of a Contract changes and creates a new DBE subcontracting opportunity but Company fails to add new DBE subcontractors or Good Faith Efforts, the City may assess the dollar amount of the new or additional work. The City may also assess Staff Time Liquidated Damages.

(f) False Statements and Misrepresentations. If the Company makes a false statement or material misrepresentation or material misleading omission regarding any matter relevant to the DBE Program (including but not limited to information relating to good faith efforts, DBE utilization, DBE certification or payments to DBEs), the City may assess the dollar difference, if the misrepresentation relates to payment, between what the Company represented and the truth. The City may also assess Staff Time Liquidated Damages.

(g) Failure to Respond to Request for Information. If the Company fails to provide any report, documentation, affidavit, certification or written submission required under the DBE Program within the time period set forth therein, the City may assess $25 per day for each day that such report, documentation or written submission is overdue. The City may also assess Staff Time Liquidated Damages.

(h) Seeking Credit for Use of an Affiliate to Meet the Committed DBE Goal. If the City finds a violation of Section 26.53 of the DBE Program due to a Company seeking credit for utilizing a DBE that the City determines to be an Affiliate, the City may assess the dollar amount the Company counted towards its Committed DBE Goal for that DBE. Affiliate shall mean a DBE that is officially attached or connected (a subsidiary group or a person) to the Company. The City may also assess Staff Time Liquidated Damages.

If Company finds it impossible, for reasons beyond his control, to meet the intended DBE participation, he may at any time prior to completion of the project, and within a timely and reasonable fashion, provide a written request to the DBE office for a complete or partial waiver of liquidated damages. However, the City and/or the DBE office reserve the sole discretion to waive or deny to the Company's request under this provision. A request for waiver will not be considered if the potential non-compliance is not reported to the City or the DBE office. Any liquidated damage assessment will not be waived after final acceptance of the project.

26. **NOTICES.** Any notice, consent or other communication required or contemplated by this Contract shall be in writing, and shall be delivered in person, by U.S. mail, by overnight courier, by electronic mail or by telefax to the intended recipient at the address set forth below. Notice shall be effective upon the date of receipt by the intended recipient; provided that any notice which is sent by telefax or electronic mail shall also be simultaneously sent by mail deposited with the U.S. Postal Service or by overnight courier. Each party may change its address for notification purposes by giving the other party written notice of the new address and the date upon which it shall become effective.

    Communications that relate to any breach, default, termination, delay in performance, prevention of performance, modification, extension, amendment, or waiver of any provision of this Contract shall be sent to:

For The Company:	**For The City:**
	Charlotte Douglas International Airport
	Attn:
	5601 Wilkinson Boulevard
	Charlotte, NC 28208
	Phone: 704-
	Fax:
	E-mail:
With Copy To:	**With Copy To:**
	Charlotte Douglas International Airport
	Attn:
	5601 Wilkinson Boulevard
	Charlotte, NC 28208
	Phone:
	Fax:704-3
	E-mail:

    All other notices shall be sent to the other party's Project Manager at the most recent address provided in writing by the other party.

27. **MISCELLANEOUS.**

    27.1. Non-Exclusivity. The Company acknowledges that it is one of several providers of the Work to the City and the City is not obligated to contract with the Company for any particular project.

    27.2. Time is of the Essence. Time is of the essence in having the Company perform all Work and deliver all items within the time frames provided by this Contract and **Exhibit A**,

including all completion dates, response times and resolution time. Except as specifically stated in the Contract, there shall be no extensions of the stated time frames. All references to days in this Contract (including the Exhibits) shall refer to calendar days rather than business days, unless the Contract provides otherwise for a specific situation.

27.3. Entire Contract. This Contract including all Exhibits constitutes the entire agreement between the parties with respect to the subject matter herein. There are no other representations, understandings, or agreements between the parties with respect to such subject matter. This Contract supersedes all prior agreements, negotiations, representations and Bid, written or oral.

27.4. Amendment. No amendment or change to the Contract shall be valid unless in writing and signed by both parties to the Contract.

27.5. Service Changes and Change Orders. In the event changes to the Work (collectively "Change"), become necessary or desirable to the parties, the parties shall follow the procedures set forth in this Section. A Change shall be effective only when documented by a written amendment to this Contract executed by both parties. The amendment shall set forth in detail (i) the Change requested, including all modifications of the duties of the parties; (ii) the reason for the proposed Change; and (iii) a detailed analysis of the impact of the Change on the results of the Work including the impact on all delivery dates and any associated price.

In the event either party desires a Change, the Project Manager for such party shall submit to the other party's Project Manager a written request for the Change. If the receiving party does not accept the Change within ten (10) days, the receiving party shall be deemed to have rejected the Change request. If the parties cannot reach an agreement on a proposed Change, the Company shall nevertheless continue to render performance under this Contract in accordance with its (unchanged) terms and conditions.

Changes that involve or increase the amounts payable by the City require execution by the Aviation Director or a designee depending on the amount. Some increases may require execution by the City Manager or a designee or approval by Charlotte City Council.

27.6. Governing Law and Jurisdiction. North Carolina law shall govern the interpretation and enforcement of this Contract, and any other matters relating to this Contract (all without regard to North Carolina conflicts of law principles). All legal actions or other proceedings relating to this Contract shall be brought in a state or federal court sitting in Mecklenburg County, North Carolina. By execution of this Contract, the parties submit to the jurisdiction of said courts and hereby irrevocably waive any and all objections which they may have with respect to venue in any court sitting in Mecklenburg County, North Carolina.

27.7. Binding Nature and Assignment. This Contract shall bind the parties and their successors and permitted assigns. Neither party may assign this Contract without the prior written consent of the other. Any assignment attempted without the written consent of the other party shall be void. For purposes of this Section, a Change in Control, as defined in Section 27.13 constitute an assignment.

27.8. Survival of Provisions. Those Sections of the Contract and the Exhibits which by their

nature would reasonably be expected to continue after the termination or natural expiration of the Contract shall survive the termination or natural expiration of the Contract, including but not limited to all definitions and Sections 6.9, 6.10, 7, 10.5, 12, 14, 15 and 27.6.

27.9. Severability. The invalidity of one or more of the phrases, sentences, clauses or sections contained in this Contract shall not affect the validity of the remaining portion of this Contract so long as the material purposes of this Contract can be determined and effectuated. If any provision of this Contract is held to be unenforceable, then both parties shall be relieved of all obligations arising under such provision, but only to the extent that such provision is unenforceable, and this Contract shall be deemed amended by modifying such provision to the extent necessary to make it enforceable while preserving its intent.

27.10. No Publicity. No advertising, sales promotion or other materials of the Company or its agents or representations may identify or reference this Contract or the City in any manner without the prior written consent of the City. Notwithstanding the forgoing, the parties agree that the Company may list the City as a reference in responses to invitations to bid or requests for Bids, and may identify the City as a customer in presentations to potential customers.

27.11. No Manufacturer or Dealer Advertisement. No manufacture or dealer shall advertise on goods delivered to the Airport without prior approval by the Aviation Director, or his designee.

27.12. Waiver. No delay or omission by either party to exercise any right or power it has under this Contract shall impair or be construed as a waiver of such right or power. A waiver by either party of any covenant or breach of this Contract shall not constitute or operate as a waiver of any succeeding breach of that covenant or of any other covenant. No waiver of any provision of this Contract shall be effective unless in writing and signed by the party waiving the rights.

27.13. Change in Control. In the event of a change in "Control" of the Company (as defined below), the City shall have the option of terminating this Contract by written notice to the Company. The Company shall notify the City within ten days of the occurrence of a change in control. As used in this Contract the term "Control" shall mean the possession, direct or indirect, of either (i) the ownership of or ability to direct the voting of, as the case may be fifty-one percent (51%) or more of the equity interests, value or voting power in the Company or (ii) the power to direct or cause the direction of the management and policies of the Company whether through the ownership of voting securities, by contract or otherwise.

27.14. Force Majeure. Neither party hereto shall be liable to the other for any failure, delay or interpretation in the performance of any of the terms, covenants, or conditions of this Contract due to causes beyond the control of that party including, but not limited to, court order, shortages of materials, acts of God, act of the public enemy, acts of superior governmental authority, weather conditions, floods, riots, rebellion, sabotage or other circumstances for which such party is not responsible, which the party cannot reasonably circumvent or which are not in its power to control, for as long as such cause continues. This Section does not include strikes, slow-downs, walkouts, lockouts and individual disputes.

27.15. No Limitations on Disclosure. The Company agrees that the Airport shall be able to disclose and distribute to any persons or entities, without restrictions, all Work and samples provided under this Contract or the ITB. The Company specifically agrees that the Airport can and will provide samples of the Work provided under this Contract to the Company's competitors in any future procurement process.

27.16. No Bribery. The Company certifies that neither it, any of its affiliates or subcontractors, nor any employees of any of the forgoing has bribed or attempted to bribe an officer or employee of the City in connection with this Contract.

27.17. Familiarity and Compliance with Laws and Ordinances. The Company agrees to make itself aware of and comply with all local, state and federal ordinances, statutes, laws, rules and regulations applicable to the Work. The Company further agrees that it will at all times during the term of this Contract be in compliance with all applicable federal, state and/or local laws regarding employment practices. Such laws will include, but shall not be limited to workers' compensation, the Fair Labor Standards Act (FLSA), the Americans with Disabilities Act (ADA), the Family and Medical Leave Act (FMLA) and all OSHA regulations applicable to the work.

27.18. Taxes. The Company shall pay all applicable federal, state and local taxes which may be chargeable against the performance of the Work.

27.19. Prompt Payment. Provided that there has been no delay or default by city in making necessary funds available to it, Company shall make prompt and timely payment of all its obligations arising out of this Contract. Company shall pay out of its own funds any penalty, fine or like assessment resulting from any intentional or grossly negligent late payment of any obligation related to this Contract. City shall have the right to contact Company's vendors to verify compliance with this provision.

27.20. Ownership of Work Product. The City shall own title to and all intellectual property rights in and to all documents, reports, specifications, designs, developments, computations, and other materials prepared, obtained or delivered under the terms of this Contract (collectively the "Deliverables"). The City may use, transfer, copy and distribute the Deliverables without restriction or limitation. The City accepts responsibility for any changes made by the City to these Deliverables after final submittal by the Company. The City acknowledges and agrees that the Company may retain one copy of each Deliverable and use the Deliverable solely for its internal general reference. Any modification of the Deliverables by the City without the involvement of the Company shall be at the sole risk of the City. The Company shall cooperate with and provide reasonable assistance to the City as necessary to obtain or enforce any patents, copyrights or other proprietary rights in the Deliverables and to execute all Deliverables necessary to give the City full legal ownership of such Deliverables. The Company shall also take all necessary actions to ensure that all employees and approved subcontractors engaged by the Company in connection with the Contract are bound by the terms of this Section. The Company shall, as required for the performance under this Contract and otherwise upon the request of the City or upon expiration or termination of this Contract, deliver to the City all Deliverables.

27.21. No Third Party Benefit. The provisions of this Contract are for the sole benefit of the Parties hereto. Except as expressly provided herein, this Contract neither confers any rights, benefits, or claims upon any person or entity not a Party hereto nor precludes any actions against, or rights of recovery from, any persons or entities not Parties

hereto.

27.22. E-VERIFY. Unless otherwise exempted, Company shall comply with the requirements of Article 2 of Chapter 64 of the General Statutes. Further, if Company utilizes a subcontractor, Company shall require the subcontractor to comply with the requirements of Article 2 of Chapter 64 of the General Statutes.

27.23. Iran Divestment Act. Company certifies that: (i) it is not identified on the Final Divestment List or any other list of prohibited investments created by the NC State Treasurer pursuant to N.C.G.S. 147-86.58; (ii) it will not take any action causing it to appear on any such list during the term of this Contract; and (iii) it will not utilize any subcontractor that is identified on any such list to provide goods or services hereunder.

28. **NON-APPROPRIATION OF FUNDS.** If the City Council does not appropriate the funding needed by the City to make payments under this Contract for a given fiscal year, the City will not be obligated to pay amounts due beyond the end of the last fiscal year for which funds were appropriated. In such event, the City will promptly notify the Company of the non-appropriation and this Contract will be terminated at the end of the last fiscal year for which funds were appropriated. No act or omission by the City, which is attributable to non-appropriation of funds shall constitute a breach of or default under this Contract.

[Intentionally Left Blank]

IN WITNESS WHEREOF, and in acknowledgment that the parties hereto have read and understood each and every provision hereof, the parties have caused this Contract to be executed on the date first written above.

[ENTER COMPANY NAME]

BY: _____

SIGNATURE: _____

TITLE: _____

DATE: _____

CITY OF CHARLOTTE, AVIATION

BY: _____

SIGNATURE: _____

TITLE: _____

DATE: _____

This instrument has been pre-audited in the manner required by Local Government Budget and Fiscal Control Act.

CITY OF CHARLOTTE, FINANCE

BY: _____

SIGNATURE: _____

TITLE: _____

DATE: _____