

## PART 1 - GENERAL

### 1.1 SECTION INCLUDES

- .1 Performance specifications for a Baggage Handling System (BHS) including all conveyance, mechanical, electrical and controls requirements.
- .2 The intent of this document is to outline the base system, provide a general description, specify absolute or minimum requirements, and indicates a concept or degree for quality of the Work.
- .3 Baggage Handling System drawings included with this document are diagrammatic and conceptual in nature, and are intended to convey the general content of the Work required and, as such, only indicate the general and approximate locations and sizing of components, equipment and devices.

### 1.2 APPLICATION

- .1 This section applies to the existing Passenger Terminal Building at the Wabush Airport.

#### REQUIREMENTS FOR PROPOSAL SUBMISSION (TO BE INCLUDED WITH RFP

### 1.3 RESPONSE)

- .1 Submit with bid, each under a separate heading
  - .1 Schedule - A development schedule including the start and finish dates of at least the following items:
    - .1 Demolition of existing conveyors and its components.
    - .2 Supply and installation of new conveyors, fire/security shutter door and flat plate carousel including gravity rollers and draft curtains.
    - .3 On-site commissioning, mechanical, electrical, and controls. This component shall break out contractor testing, owner testing and commissioning.

### 1.4 SCOPE OF WORK

- .1 The Contractor shall co-ordinate the design of the BHS directly with the Consultant with input from the Owner.
  - .2 Supply and install of flat plate carousel with public side stainless steel trim, with counter clock wise rotation.
  - .3 Installation of Pre-Board Screening (PBS), Hold Baggage Screening (HBS) x-ray and associated equipment.
  - .4 Supply and installation of new sloped infeed conveyor (Pacific Conveyor) for the HBS x-ray machine.
  - .5 Supply and installation of new conveyors as indicated on drawings including control stations, fire/security doors, and associated controls. All conveyor equipment shall be
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- new with nothing re-used. Conduit and junctions boxes are permitted to be re-used but must be code compliant.
- .6 All conduit, wire, hangers, and equipment associated with the BHS that is not required for the final functioning system shall be removed.
  - .7 Screening devices and walk-through metal detector will be supplied by others but they shall be installed by the BHS Contractor. Screening devices include two x-ray mainframes (baggage and passenger screening). The Contractor shall unload and install the screening units and the walk-through metal detector including all of its components and workstations to their final location. Testing of screening units is not included in the BHS scope.
  - .8 A competent representative with mechanical design skills shall be present at site to provide coordination with the design team. The representative shall be available for conference calls during the days they are not present at site.
  - .9 Final design drawings and as-built drawings shall be sealed by an Engineer licensed in Newfoundland and Labrador.
  - .10 Coordinate all new and removed equipment with the owner.

#### 1.5 WORK NOT INCLUDED

- .1 Supply of X-Ray Machines and associated workstations.
- .2 Supply of external UPS units for X-Ray machines and workstations.
- .3 Supply of walk-through metal detector.
- .4 Power supply feed to the Motor Control Panel (MCP).

#### 1.6 SUBMITTALS

- .1 Drawing Submittals
  - .1 Drawings and documents for submission shall be submitted electronically.
  - .2 Each drawing submission shall include PDF and CAD files. PDF files shall be size A1 and each drawing as a separate file.
- .2 Submit no later than 2 weeks from notice to proceed;
  - .1 An updated project schedule including:
    - .1 Equipment
      - .1 On Site
      - .2 Demolition of existing conveyor equipment
      - .3 Installation of new conveyors and associated field devices/components including motor control panel.
      - .4 Installation of X-ray machines and associated components
      - .5 Installation of the Pre Board Screening equipment.
      - .6 Power-up
    - .2 Owner testing and commissioning

#### 1.7 DESIGN

- .1 Conveyor Loads
  - .1 All new conveyor equipment shall be capable of supporting a single concentrated static load of 150 kg.

- .2 The static load imposed on the building by the conveyor components, supports and baggage used for designing structural elements, rollers and pulleys shall be a maximum of 150 kg per linear meter.
- .2 Drive Power and Motor Location
  - .1 All new drive motors as required. Locate motors away from operation space if possible.
- .3 System Power Provisions
  - .1 Voltage on this project is 600 volt, 3 phase, 3 wire, grounded 60 Hz.
- .4 Inbound System Functionality
  - .1 The carousel shall sound an audible and visual start up alarm for 6 seconds prior to energizing the carousel motors.
  - .2 The start pushbutton on the secure side will start the system. The system cannot be started from the public side. No key switch is required for start-up.
  - .3 The inbound carousel shall move in a counter clockwise rotation.
  - .4 The carousel timeout shall be 1 carousel revolution from the time the last bag was seen by the photo eyes located at the fire/security shutters. Upon timeout, stop the carousel and close the fire/security shutters automatically.
  - .5 On system shutdown, close the fire/security shutters automatically. Do not close the shutter door if the photo eye at the door is blocked.
  - .6 If the shutter door photo eye is blocked when the door is closing, open the door and advance the carousel, close the door.
  - .7 If a photo eye is blocked for more than 8 seconds, stop the carousel and show a visual fault (no sound) to indicate a bag jam. To clear the bag jam, remove the photo eye blockage (remove the bag). Restart the system by pressing the reset pushbutton on the control station on either the secure side or the public side.
- .5 Outbound System Start-up Functionality
  - .1 Turn the key switch to ON (public side)
  - .2 Fire/security shutter shall open (belt does not start)
  - .3 Press the Start pushbutton, conveyor M1 and M2 start.
  - .4 M1 and M2 also start when the photo eye at the fire/security shutter is blocked (tail-end photo-eye of M1)
  - .5 Stop the conveyors in a cascade manner when the “full” photo eye at the end of M3 is blocked.
  - .6 M3 conveyor runs when M2 photo eye is blocked (accumulating). M3 also runs when the jog lanyard is activated, unless the M3 “full” photo eye is blocked.
- .6 Outbound System Shutdown Functionality
  - .1 Turn the key switch to OFF
  - .2 M1 conveyor shall stop and closes the fire/security shutter. Do not close the shutter if the photo eye at the shutter door wall penetration is blocked.
  - .3 Once the shutter door is closed, M1, M2, and M3 cannot be started until the start-up process is initiated.

## 1.8 QUALITY ASSURANCE

- .1 All equipment shall be installed in accordance with the equipment manufacturers requirements and recommendations.
- .2 Equipment installers shall be approved, trained and skilled in the Work of this section and shall use equipment of the approved product manufacturer(s). Baggage System Contractor Qualifications:

- .1 BHS Supplier: Belt conveyor manufacturer who has successfully completed the design and manufacturing of at least three airport baggage systems of similar size and scope as herein specified and who has an established, stable organization for service and spare parts.
- .2 Electrical/Controls Designer: Electrical/Controls Designer responsible for the design of the Baggage System controls shall have not less than five years' experience in the design of similar airport baggage handling system.
- .3 Mechanical Installer: If the Baggage System equipment is to be installed by an entity other than the Supplier, the Installer and Supervisory personnel shall comply with the following requirements. Qualified personnel shall install the equipment with factory-trained and certified supervisors. Supervisory personnel shall each have at least 5 years of successful experience with the installation of airport conveyors of the type specified herein.
- .3 Quality of Work
  - .1 Electrical components and material shall conform to applicable codes and requirements, including Canadian Standards Association (CSA) C22.1-1998 (1998 Canadian Electrical Code). Components shall be designed for continuous-duty service. Components shall be cUL or CSA approved and labelled.
  - .2 The following regulations, standards and codes in addition to all standards and codes required by local and federal agencies shall be complied with in developing the final solution. In the case of any overlap or differences in any of the required standards and codes, the most stringent standard will prevail.
    - .1 National Electrical Code (NEC)
    - .2 Conveyor Equipment Manufacturers Association (CEMA 402)
    - .3 ANSI/CEMA B105.1 Welded Steel Conveyor Pulleys
    - .4 ANSI
      - .1 A-12.1: Safety code for floor & wall openings, railings & toe boards.
      - .2 B-20.9: Transmission roller chains
      - .3 B4.1: Shafting
      - .4 B17.1: Keys & Keyways
    - .5 NEMA reference: Industrial Controls & Systems Motors & Gear Motors
    - .6 Newfoundland and Labrador Fire Code
    - .7 Newfoundland and Labrador Building Code
    - .8 Hold Baggage Screening (HBS) CATSA Design Guidelines (Will be issued to the BHS vendor after contract award)
    - .9 Any other applicable authority having jurisdiction

## PART 2 – PRODUCTS

### 2.1 GENERAL REQUIREMENTS

- .1 This section is for manufacturer's new equipment.
- .2 Acceptable Manufacturers - In order to establish a minimum standard of quality and reliability, the following manufacturers have been listed for various components of the proposed system. The foregoing list is intended to establish a minimum or acceptable product standard. The manufacturers included in the list shall not be perceived or construed as favoured or preferred. The list shall, in no way, preclude other sources of

supply, provided that their equipment and/or components have been reviewed by the Owner and determined to be of equivalent or similar quality, functionality and reliability. To propose other manufacturers, indicate the alternate cost in the pricing proposal, including model numbers and they must be approved in writing by the owner before proceeding.

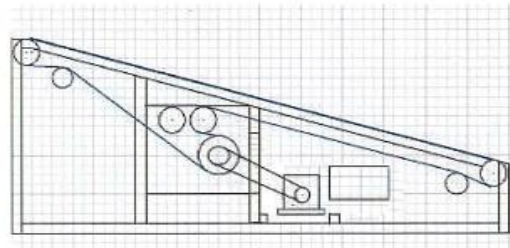
- .3 Bearings:
  - .1 FAG
  - .2 SKF
  - .3 NTN
  - .4 or approved equivalent
- .4 Power Turns:
  - .1 Portec, Flo-master Division
  - .2 or approved equivalent
- .5 Motor Starters:
  - .1 Allen Bradley Bulletin 140 Series
  - .2 Siemens
  - .3 or approved equivalent
- .6 Programmable Logic Controllers (PLC's):
  - .1 Rockwell Automation, Allen Bradley Control Logix
  - .2 Siemens Simatic S7
- .7 Soft Start Devices:
  - .1 Allen Bradley
  - .2 Siemens
  - .3 or approved equivalent
- .8 Relays
  - .1 Allen Bradley
  - .2 Siemens
  - .3 Omron
  - .4 or approved equivalent
- .9 Motors:
  - .1 SEW
  - .2 or approved equivalent
- .10 Reducers:
  - .1 SEW – Eurodrive
  - .2 or approved equivalent
- .11 Terminal Strips
  - .1 Allen Bradley 1492 Series
  - .2 or approved equivalent
- .12 Variable Frequency Drives
  - .1 Allen Bradley Powerflex
  - .2 Seimens
  - .3 or approved equivalent
- .13 Fire/security doors
  - .1 Vigneaux
  - .2 Raynor
  - .3 or approved equivalent
- .14 Limit switches
  - .1 Allen Bradley
  - .2 or approved equivalent
- .15 Selector switches / Pushbuttons

- .1 Allen Bradley
- .2 Siemens
- .3 or approved equivalent
- .16 Photo eyes
  - .1 Banner
  - .2 Sick
  - .3 Allen Bradley
  - .4 or approved equivalent
- .17 Sloped Infeed Conveyor
  - .1 Pacific Conveyor

#### EQUIPMENT SPECIFICATIONS

[Pacific Conveyors Ltd. MODEL SB650 conveyors are engineered to start fully loaded, and to handle a load of 60 Kg per Meter of length, with a minimum service factor of 1.38]

<b>Belt Conveyor 1.</b>	<b>MODEL SB650 "Trackmaster"</b>
	<b>Scanner feeder conveyor, Length 3249 mm (6' 0")</b>
<b>End rolls</b>	Lynx MODEL "BT" Style C Diameter 114 mm Face width 660 mm, dual crowned Internal bearings for 1.00" (25 mm) shaft
<b>Take up</b>	Lynx MODEL "BT" Style C Diameter 114 mm Face width 635 mm, dual crowned Internal bearings for 1.00" (25 mm) shaft
<b>Drive roll</b>	Lynx MODEL "BT" Style B Diameter 152 mm Face width 660 mm, dual crowned Keyed bushings for 1.00" (50 mm) shaft Vulcanised friction lagging 6 mm thick
<b>Bearings</b>	SBFL205-100
<b>Snub rolls</b>	Lynx MODEL "BT" Style C Diameter 76 mm Face width 660 mm, dual crowned Internal bearings for 1.00" (25 mm) shaft
<b>Belt</b>	Habasit Trackmate Type NSL-11ESBV Flame retardant to DIN 22103, ISO 340 Width 647 mm Length 4700 mm Mild steel clipper lacing
<b>Motor</b>	Iron Horse MTRP50-3DB18 1725 rpm @ 60 hz, 1/2 HP (.38 kW) FLA 1.9 amps
<b>Gearbox</b>	Iron Horse WG175-020-D
<b>Sprockets</b>	40B18 x 7/8 (on gearbox) 40B 32 x 1" (on driven shaft)
<b>Chain</b>	#40 premium rivetted Length 40" (80 pitches including con link)
<b>Controller</b>	KB Electronics MODEL KBMA
<b>Foot switch</b>	SSC Control Company Model S100-1501



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## 2.2 EQUIPMENT

- .1 Tapered Rollers
    - .1 If taper rollers are used they shall be vulcanized with high friction surface material and slave driven. The linear speed of the taper pulley at mid-section shall be equal to the speed of the conveyor belt upstream to the taper pulley.
  - .2 Conveyor Belting
    - .1 Existing conveyor belts shall not be re-used, new are required.
    - .2 Belting shall meet following minimum criteria:
      - .1 Work Load Rating: 26.8 kg/cm (150 lb/in) of width; except merge belt, which shall be minimum 14.3 kg/cm (80 lb/in).
      - .2 Break Point Rating: 268 kg/cm (1500 lb/in) of width; except merge belt, which shall be minimum 143 kg/cm (800 lb/in).
    - .3 Nominal belt width shall be a minimum of 910 mm (36").
    - .4 Belt Lacing:
      - .1 Size: Appropriate for the application with #2 fastener as minimum size.
      - .2 Connector Pin: Use nylon covered cable type of appropriate diameter.
    - .5 Supply conveyor belt lacing equipment required for repair or replacement of all new conveyor belts.
    - .6 Polyester monofilament, two plies is preferred, or approved equal.
    - .7 Vulcanized belting is permitted.
  - .3 Conveyor Beds
    - .1 Do not re-use existing conveyors or parts, all new is required.
  - .4 Floor Supports
    - .1 Securely anchor supports to floor using anchor bolts. Explosive type anchors shall not be used. Submit product data for approval prior to usage of any floor anchor.
  - .5 Side Guards
    - .1 Unless otherwise noted, provide guards on both sides except where baggage is being loaded or unloaded at which point only one guard shall be required. Maximum distance between side guards shall be a maximum of 80mm total greater than belt width.
    - .2 Side guards shall be integrated to the conveyor bed with a formed 90 degree edge turned away from the conveyor and a formed 90 degree edge turned down to eliminate sharp, exposed edges. In some cases lower side guards are preferred.
    - .3 Provide side guards with vertical stiffeners a maximum of 1500mm on center for transport conveyors and a maximum of 750mm on center for loading conveyors. Ensure persons leaning on side guards do not negatively impact the operation of photo eyes.
    - .4 Joints between conveyor sections shall be smooth, snag-free butt joints. Bolt side guard joints with butt couplings. Welded or epoxy joints or strap couplings are not acceptable. Side guards shall provide a continuous uninterrupted surface the entire length and height of the joints.
    - .5 Provide slots in side guards at fire and security doors, curved to ensure bags do not catch.
    - .6 Side guards shall be flared on the downstream side of any fire/security door intersection and the conveyor bed section shall have fillers to fill the void between the flared side guards and the conveyor bed section.
    - .7 Provide a turning post at the head-end section of M2 conveyor for smooth transition to the accumulating conveyor M3.
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- .6 Bearings
    - .1 All bearings shall be pre-lubricated, self-aligning, anti-friction and sealed with synthetic lip seals. Bearings shall have a minimum life of (B10) 100,000 hours based on 10% failure rate for service and loading of conveyors, and on manufacturer's published data showing the load rating of each bearing. Calculations shall be provided upon request. Bearings shall be grease-able.
    - .2 All bearings shall be surface mounted flange bearings attached to the outside of the conveyor bed.
    - .3 For all transport conveyors and carousel drives with difficult to reach bearing locations, provide bearing lubrication extensions.
  - .7 Conveyor Drives
    - .1 Drives shall be re-filled with high performance synthetic lubricant and sealed.
  - .8 Roller Beds
    - .1 Roller beds shall have end stops.
    - .2 Where rollers meet conveyors, the adjacent rollers shall be equipped with a removable pop out anti-pinch roller.
  - .9 Security Door / Fire Shutter Doors and Wall Penetrations
    - .1 The requirements below shall be met for the BHS shutter doors.
    - .2 Security/Fire Shutters in public view shall be stainless steel.
    - .3 The door shall rise and/or close whenever the respective key switch is turned ON/OFF. Supply and mount external limit switches on each door to sense the door fully open position and fully closed position.
    - .4 Provide all structural steel supports required for installation of security door.
    - .5 Provide draft curtains at security door wall penetration. Draft curtains shall be staggered layers of flexible 50 mm x 1.6mm (2" x 1/16") strips cut black rubber, neoprene or polyvinylchloride. The unit shall contain required mounting brackets and anchor bolts and be compatible in function and design with conveyor provided. All trim exposed to the public shall be stainless steel, with stainless steel fasteners.
    - .6 Security/Fire door shall have ULc and Factory Mutual (FM) labels for fire rating as required by ULc codes, and be installed in compliance with the manufacturer's instructions. Manufacturer's and model numbers are subject to approval. Fire door (shutter) shall comply with NFPA 80.
    - .7 Allow for one set of normally closed dry contact from the fire alarm system to be provided by others and shall be connected to a PLC I/O module for the fire door which shall open upon detection of a fire, heat and/or smoke condition, requiring the closure of the fire door.
    - .8 Fire door shall include a 65°C fusible link which, when broken, will cause the door to close automatically. The fusible link and temperature rating shall be in accordance with local codes. Fusible links are not required on the non-secure side of the door (as this would make the door unsecure).
    - .9 Provide a photo-eye sensor downstream of the shutter by the tail-end section of M1 conveyor and provide the associated control logic to insure the door does not automatically close on any bags passing through it. Any bags passing through the door at the time of an automatic closed request are to be cleared through the door before closing.
    - .10 Locate the disconnect switch, manual controls and door control panel on the secure side of the door opening where it is convenient for a person servicing the door.
  - .10 Inbound Carousel
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- .1 Flat plate carousel with public side stainless steel trim. Coordinate stainless steel type with architect. Top of conveyor surface shall be 300mm AFF.
- .2 Provide 2 emergency stop pushbuttons on the public side of the carousel located on a wall, one at each end and accessible to personal without climbing on top of the carousel. Each control stations also includes a reset pushbutton.
- .3 Provide photo eyes at each fire/security shutter door wall penetration.
- .4 Provide two control stations on the bag drop side of the carousel. Include start pushbuttons and emergency stop. The control stations are supported from the building wall with a pipe protruding outwards towards the operator. The control station is located over top of the carousel at approximately 2.1m.
- .5 Audible and visual alarms shall be located on both the public and secure side.

## PART 2B PRODUCTS – ELECTRICAL

### 2B.1 LOCAL SAFETY DISCONNECTS

- .1 Replace existing disconnects and control boxes.

### 2B.2 PUSHBUTTON STATIONS

- .1 New control stations including pushbuttons are required.

### 2B.3 CONDUIT

- .1 Except as otherwise noted, electrical control wiring shall be enclosed in EMT conduit of trade size 1/2" (12.7 mm) or larger. Except as otherwise noted, electrical power wiring shall be enclosed in EMT conduit of trade size 3/4" (19 mm) or larger.
- .2 All fittings shall be a minimum of concrete-tight, non-cast, steel set screw type, weather tight in exterior locations. Use compression fittings for areas of high vibration.
- .3 Conduit fill shall be a maximum of 80% of allowable fill adopted in the NEC.
- .4 Spares shall be pulled with all wire runs at a ratio of 2 to 10 for control wiring. These spares must be included in the 80% calculations noted above.
- .5 Except in public areas, conduit shall be installed exposed in locations selected to prevent damage to conduit by moving vehicles or equipment.
- .6 Wire ways may be used where protection is adequate in accordance with applicable codes. Any wire ways used shall have covers.
- .7 Flexible conduit, where used, shall be liquid-tight (Sealtite or approved alternative) with liquid tight fittings by the same manufacturer.
- .8 Electrical conduit and fittings entering a junction box, pull box, or MCP shall be equipped with thread on style nylon bushings to prevent damage to wire insulation.
- .9 Outlet, junction and pull boxes, and cover plates shall be suitable for use with EMT conduit and shall conform to applicable codes for minimum wiring space requirements and material thickness. Boxes shall have screw-fastened covers. Box knock-outs shall match trade size EMT fittings without the use of reducer bushings.
- .10 Label all junction boxes and conduit, include voltage on label.

#### 2B.4 WIRE AND CABLE CONDUCTORS

- .1 Power conductors shall be a minimum of No.12 AWG, 600 volt, Teck 90 cable.
- .2 Control circuit wiring shall have a minimum of 16 AWG copper.

#### 2B.5 WIRE AND CABLE IDENTIFICATION

- .1 Field electric wire and cable shall be color-coded and shall have the wire numbers as shown on the electrical shop drawings affixed to both ends of each wire.
- .2 Wiring in control panels and field must be labelled with mechanically printed tags. Motor power wires shall be labelled at all connection points on load and line side.
- .3 All wires shall be labelled on both ends.

### PART 3 – EXECUTION

#### 3.1 EXAMINATION

- .1 Verify that critical dimensions are correct and conditions are acceptable. Proceed with installation only after unsatisfactory conditions have been coordinated.
- .2 Prior to commencement of Work, examine current site conditions and inform the Consultant and/or the Owner of any unusual existing conditions that may affect Work.

#### 3.2 PREPARATION

- .1 If any, provide templates for anchor bolts and other items encased in concrete or below finished surfaces so as not to delay the Work.
- .2 Cooperate and coordinate with the Consultant and/or the Building Contractors for the location of all mechanical, plumbing, electrical right-of-ways and access/egress to any area required to remain accessible for maintenance and removal of equipment or related components.
- .3 Coordinate with all necessary contractor disciplines on site and with the Consultant and the Owner, the overall project schedule, the equipment and system equipment layout in relation to the facility, work aisle or equipment removal paths and drive aisles to avoid any conflicts.
- .4 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.
- .5 Cover and protect systems equipment from damage and soiling during installation, demolition, removal and/or alteration work, including equipment to be stored.

#### 3.3 WORKMANSHIP

- .1 Ensure that all equipment, components and materials are free from defects.
  - .2 Ensure the standard of work is first class quality. The Owner will not accept
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- workmanship which does need meet this standard.
- .3 Promptly remove debris to avoid interference with airport operations.
  - .4 Perform installation, removal and alteration work as shown, with due care, including support, bracing, etc. Successful Proponent is responsible for damage, which may be caused by such work, to any part of existing system or items designated for reuse. Perform new work in accordance with applicable technical section of the specifications. Where cutting and new work involve the exterior building envelope, including the new apron pavement, 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.
  - .5 Execute the work in a careful and orderly manner, with the least possible disturbance or conflict to operations, other construction work and occupants if affected area is designated as being occupied during installation.
  - .6 Take necessary precautions to keep noise producing operations to a minimum. Select equipment, which is of a quieter nature than others, and enclose areas of operations with acoustical screens, if necessary.

### 3.4 SPECIAL CONSIDERATIONS

- .1 Take all necessary actions required to complete any installation within specifically defined work areas.

### 3.5 DELIVERY, STORAGE AND SITE CONDITIONS

- .1 The Successful Proponents project manager shall not be changed without the Owner's written approval.
- .2 The Successful Proponent shall be responsible for the receiving, unloading, storage, protection, security and distribution of all material and equipment associated with this contract delivered to the work site. All equipment must be protected against weather, external damage and pilferage.
- .3 Successful Proponent to remove on a daily basis, all erection rubbish and discarded materials.
- .4 Supply the necessary conduit, wiring and other electrical components to complete the electrical installation from the power distribution points, to the equipment and be responsible for all electrical interconnections within the equipment and system.
- .5 Provide and install all supports, anchors and any other special and safe operation of all equipment and components.
- .6 Provide a competent field superintendent during erection, wiring, testing and correction of any deficiencies occurring during the Commissioning period.
- .7 Check "As-Built" conditions of the work site as defined in drawings and as confirmed by site inspection prior to fabrication and installation of any BHS equipment.
- .8 Where equipment is to be installed in an operating area, provide a detailed installation/construction schedule to the Consultant or the Owner for approval that will minimize interference with normal airline/airport operations.
- .9 Locate, confirm and protect utilities.
- .10 At end of each day's work, leave work in safe, secure and stable condition.

### 3.6 INSTALLATION

- .1 Install all equipment according to manufacturer's written instructions, placement drawings and to the acceptance of Engineer.
- .2 Execute all work in accordance all local codes, ordinances, and regulations.
- .3 Set units and components true to line and level, properly supported and anchored to building structure or floor. Ensure required clearances are met, and make field adjustments to suit circumstances encountered on site, at no additional cost to Owner.
- .4 Ground clamp of welding machine shall be attached to section being worked on. Minimize amount of on-site welding by using bolted connections where ever possible.
- .5 Do not install guards, covers, and housings on conveyors until after inspection by the Contractor Administrator. Inspections will include mountings, connections, welds, tracks, guides and drive units for proper installation.
- .6 Repair damaged components and finishes or, if damaged beyond acceptable condition (as determined by the Consultant, replace damaged components or finishes.
- .7 Do not negatively impact regular airport operations at any time. Any work to systems shall be coordinated. Any work that may impact airport operations or portions the BHS in operation shall be planned, coordinated, and a back out plan specified. Prior to performing this type of work, submit a work plan for approval.

### 3.7 PROTECTION

- .1 After installing clean-finished surfaces, touch up shop-applied finishes as required to restore damaged areas.
- .2 Provide final protection and maintain conditions, in a manner acceptable to manufacturer and installer, which ensure equipment is without damage or deterioration at the time of Initial Acceptance.

### 3.8 CLEAN UP

- .1 Remove all unnecessary tools and equipment, unused materials, packing materials, and debris from each area where work has been completed unless designated for storage.
- .2 Clean up all areas around system equipment and ensure that internal equipment component area is free from debris.

### 3.9 TESTING AND COMMISSIONING

- .1 Testing is defined as the contractors work associated with making the system ready to demonstrate functionality to the Owner and their representatives. Commissioning is defined as the Contractor demonstrating the system
  - .2 The responsibility for meeting all criteria specified in the referenced providing a fully functioning system and is responsible for all costs related to adjustments/modifications required to bring the system to a level of functionality and performance in compliance with these specifications. The owners commissioning agent shall participate in commissioning activities.
  - .3 X-ray equipment Site Acceptance Testing (SAT) shall be performed by the X-ray equipment manufacturer prior to conveyor testing.
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- .4 The following summarizes acceptance testing activities that shall be included in the acceptance testing schedule of activities. The activities include, but are not limited to;
  - .1 Acceptance Plan Submission
  - .2 Training and Testing Plan Submitted
  - .3 Final As-Built Drawings Submitted.
- .5 The BHS contractor shall participate in all testing and commissioning activities. The following list indicates the minimum tests the owner anticipates to prepare the system.
  - .1 Mechanical Static Test – mechanical inspection of the installation including slopes and clearances, installed as per drawings
  - .2 Electrical Static Test – electrical inspection of the installation, as per drawings.
  - .3 Functional Testing – test the system for basic functionality such as bag jam, cascade, disconnect/drive fault, E-stop functions and ensure the logic works then run the system with test bags and/or tubs to simulate a live environment.
  - .4 CATSA testing and certification.
- .6 Substantial Performance
  - .1 Acceptance: After completion of the system performance tests, an acceptance inspection will be made by the Consultant and a representative of the Contractor.
  - .2 Even though the equipment will be inspected and accepted, the Substantial Performance and Project Closeout activity will not occur before all contractual obligations are completed including delivery of all digital "as-built" drawings.

### 3.10 PROJECT ACCEPTANCE

- .1 Acceptance by the Owner of all the work shall be by mutual agreement and shall not relieve any party of their responsibilities under the Contract.
- .2 Prior to acceptance, Contractor shall carry out inspections to determine the condition of the area to be occupied and to record deficiencies and incomplete work. Contractor shall make every effort to correct the deficiencies and complete the work to meet the schedule turnover date. Contractor will be given access to the turned over areas to correct and complete the work where acceptance is required prior to the completion of deficiencies. The Contractor is to arrange to have the work done in a manner and during a time that will cause the least amount of disruption. The Contractor is to protect from, and will be responsible for, any damage caused within the turned over areas during the transitional period required for completion of work in the area.
- .3 The contract will be considered as “Totally Performed” when the Consultant provides certification approval for the BHS, all deficiencies are complete and are satisfactory to the Consultant and the Owner with all the as-built drawings received in their final form.

### 3.11 CONTRACT CLOSEOUT

- .1 The Closeout of the contract will be in accordance with procedures and the requirements herein specific to the baggage handling system.

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3.12 WARRANTY

- .1 General Warranty
  - .1 Warranty Exclusion: This warranty shall not apply, with respect to any defects or inconsistencies which are attributable to repair, alteration, misuse or abuses by any person other than authorized personnel or BHS Subcontractors. Liability shall be limited to repairing or replacing defective or non-performing part(s) at no cost to the Owner.
  - .2 Technical Support: Provide technical support, as required by the Contract Documents, and agreed upon by the Owner/Contractor Administrator. This support shall be by personnel qualified to advise the Owner/Contractor Administrator on training, provisioning, start-up and maintenance of the equipment.
  - .3 Warranty Limitation: Liability shall be determined in the Contract Documents.
  - .4 Royalties and License Fees: 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.
- .2 Labour Warranty: Warranty support shall be provided as follows:
  - .1 Pay for the Owner to accomplish the normal warranty labour repair work with its maintenance staff.
  - .2 Provide labour for work related to design deficiencies.
- .3 Parts Warranty
  - .1 Terms: 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.
  - .2 Period and Responsibility: If, within three (3) years from the date of total performance of the work or the system, any equipment or material is found, in any respect, not to conform to the Contract requirements, within forty-eight (48) hours of notification by the Owner, initiate the following series of steps in order to correct the deficiency under the warranty provisions of the Contract:
  - .3 After the Owner has approved the design, all components of the system incorporating the same design deficiency shall be modified as agreed upon by the Owner.
  - .4 The Parts Warranty period and the Design Warranty period shall start again for the redesigned assemblies and associated components on the date that the design change has been incorporated.

END

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