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Safety Guidelines SG 901: New Baggage Handling for Passenger Terminals



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A4A Facility Planning Guidelines SG 901

New Baggage Handling Systems for Passenger Terminals

Revision 2018.1

Airlines for America
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Chapter 1. Introduction

1-1. Why a publication "Facility Planning Guidelines – New Baggage Handling Systems for Passenger Terminals?"

A longstanding concern of airlines is the interface between baggage handling personnel and the equipment they use in performing their duties. Good equipment and good procedures can be instrumental in reducing injuries and improving efficiency of those who handle baggage. Individually, airlines have observed various standards for baggage systems in order to improve ergonomic characteristics of the equipment used. As a result, work-related injuries have decreased, along with concomitant decreases in costs to employees and employers, while productivity has increased.

The experience gained by airlines has not automatically transferred to other industry parties who are involved in the design and construction of new airport facilities where baggage handling takes place. Therefore, these guidelines have been assembled to assist all parties who design, manufacture, install and utilize baggage-handling systems.

The primary use for these guidelines will be in the development and implementation of new systems. Since most existing systems cannot be modified at a reasonable cost, the guidelines are not intended for retroactive application.

Mechanical aids as an assist to ergonomic design are in a constant state of development. At present, flexible conveyors used in the aircraft hold are on the market. Mechanical arms for lifting bags in the baggage make-up room are at the trial stage, as are mechanical aids for lift on/lift off of wheelchair passengers. The guidelines do not address these new developments. However, it is important for designers, manufacturers and users to take developing technology into consideration at design stage.

Chapter 2. Curbside Conveyor Systems

2-1. General Criteria

The dimensional criteria for a typical curbside conveyor are shown in [Figure 2-1.1] and [Figure 2-1.2].

Figure 2-1.1. **Dimensional Criteria for a Typical Curbside Conveyor**

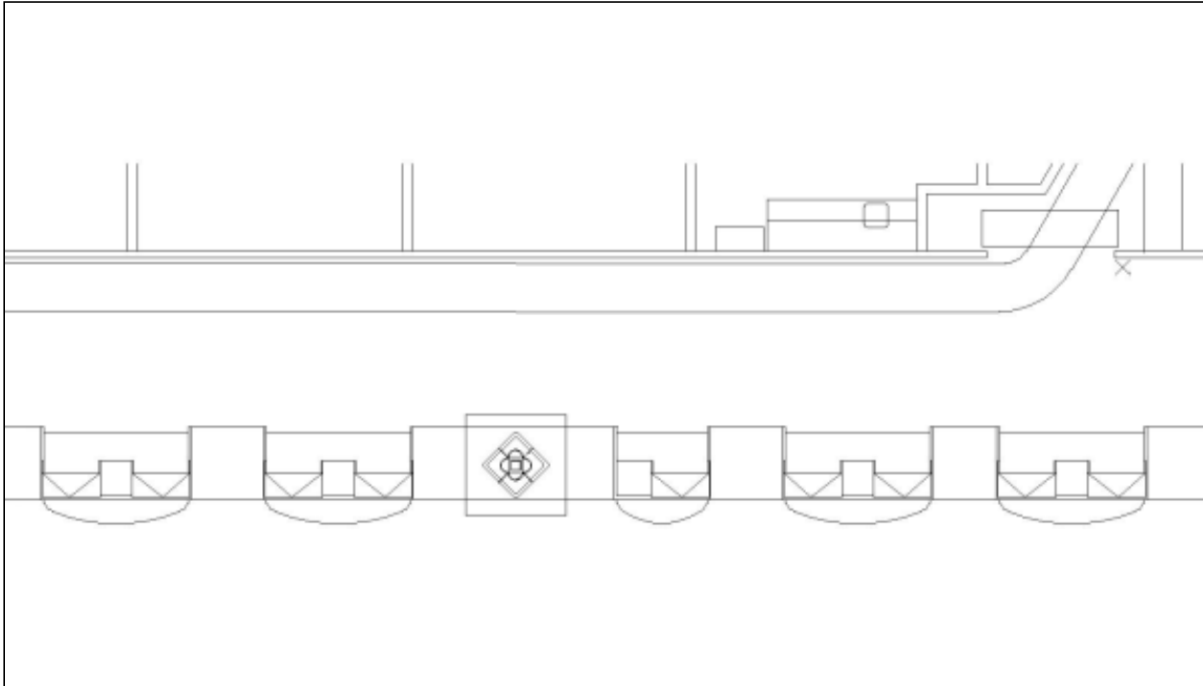
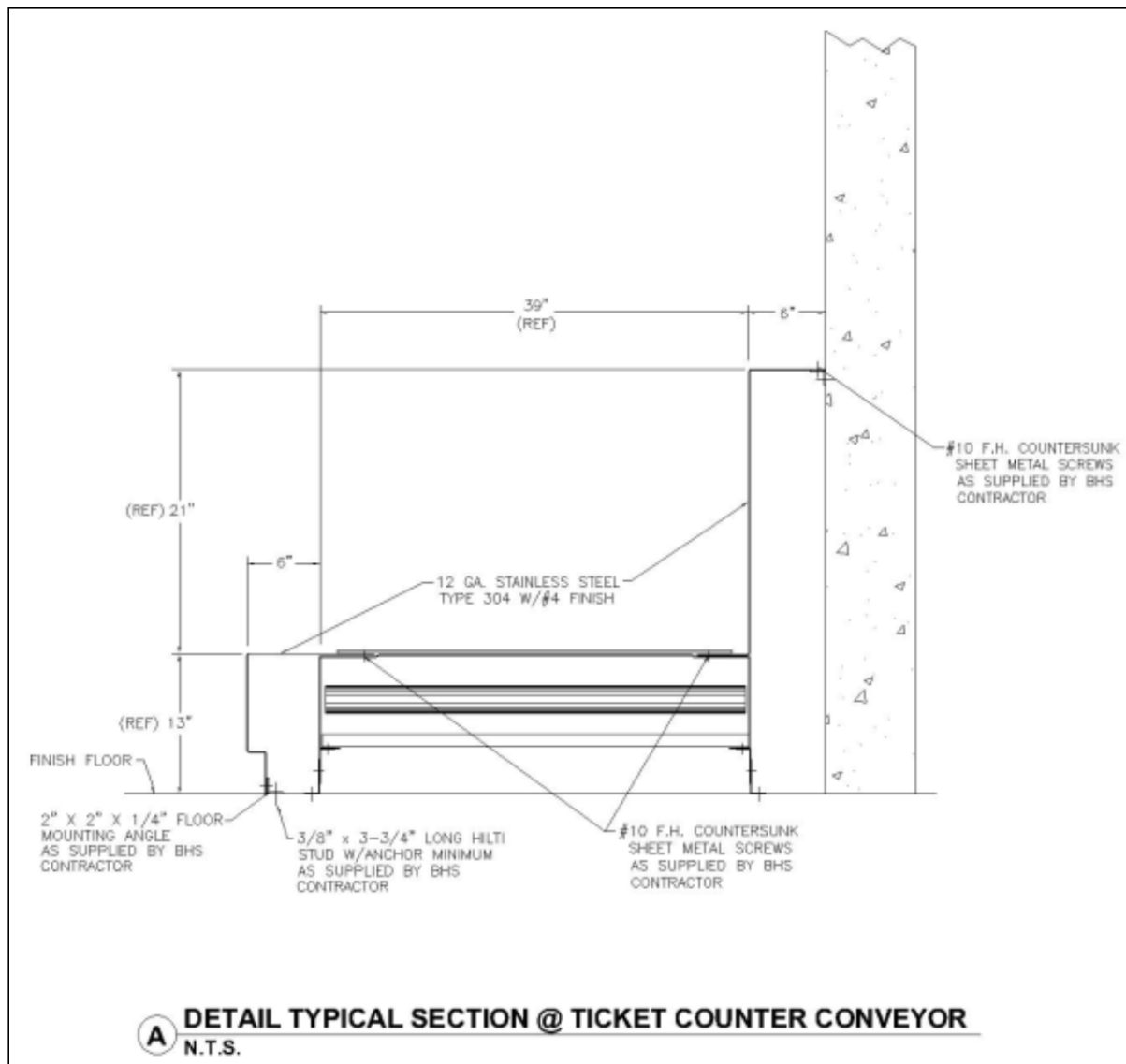


Figure 2-1.2. Dimensional Criteria for a Typical Curbside Conveyor



2-2. Guidelines

1. Public Accessibility.
 - The configuration should consider public accessibility and should not present public safety hazards.
2. Preferred Type of Load Conveyor.
 - Side loaded conveyors are strongly preferred to avoid obstacles such as end caps. The conveyors exposure should be about 14'-0" (14 feet), where possible, and 3'-0 (3 feet) at a minimum.
3. Elevation of Load Conveyor.
 - The elevation of the load conveyor should be set at 1' – 1" (13 inches). This has been established as the minimum practical height that will accommodate a drive unit.
 - A lower height would be preferred, if practical, based on the assumption that the baggage will be lifted from the ground to the conveyor. Placing the conveyor at its lowest position minimizes the lift and resulting human stressors.
 - In those instances where a lower height can be accommodated, this would be preferable, provided maintenance accessibility can be maintained.
4. Speed of Load Conveyor.
 - Conveyor speed should be approximately 90 feet per minute.
5. Controls.
 - Control panels should be located to be easily accessible to the operators (less than 22" arm reach).
 - Control panels should not be located on the far side of the conveyor.
 - An audible and visual warning shall be actuated by the controller device starting the conveyor and shall continue for a required period of time before the conveyor starts.
6. Conveyor Operating Controls.
 - Conveyor operating controls ("E-Stops") shall be no further than 25' apart.
 - Conveyor operating controls shall act directly on the conveyor control and shall not depend on the stopping of any other equipment.
 - Conveyor operating controls shall be installed so that they cannot be overridden from other locations.
 - Conveyor operating controls be hardwired into the circuit and not rely on computer circuits and shall be of the "manual reset" type – [NFPA 79-2002].
 - The emergency stop actuator shall be colored red and feature a palm or mushroom-type head.

- The background of the device actuator shall be colored yellow.
- Conveyor operating controls should not be located on the backside of the conveyor, nor more than 22" reach away.
- Vertical location of conveyor operating controls accessed from a standing position should be between 33" and 64.5" in elevation and 21" to 39" for sitting.
- If the conveyor operating control will be used for clearing minor jams, it should be lockable.
- The audible and visual warning shall be actuated by the controller device starting the conveyor and shall continue for a required period of time before the conveyor starts.

7. Headroom & End-loading Design.

- Depending on the airline practices at a given airport, fixed or mobile counter podiums may be required (with or without bag wells). In any case, a clear path should be established that allows baggage to access the conveyor loading surface.
- Headroom clearance above the conveyor load point should be 7'- 0" (7 feet) minimum.
- End-loading designs, if used, should be of the open-end bracket type, i.e., without a pulley end guard covering the belting material, which can deflect under high loads.

8. Weigh Scales.

- Weigh scales (fixed or portable) should be provided at all curbside check-in locations. Installation and use of scales allow identification of bag weights and helps prevent acceptance of overweight and/or oversized bags.
- Full surface platform scales should be provided, to avoid having to shift each individual piece of baggage on the scale platform.

9. Access to Loading Surface.

- Dependent on the airline practices at a given airport, fixed or mobile counter podiums may be required (with or without baggage wells). In any case, a clear path should be established that allows baggage to access the conveyor loading surface.

10. Baggage wells.

- If bag wells are installed, baggage load platforms or baggage wells, whether or not including weigh scales, should be provided, and set at an elevation approximately 2" higher than the collection conveyor, i.e., about 1' - 3" (15 inches).
- This allows most baggage to be lifted or moved from the platform without requiring bending at the waist or knee. Bag well depth should not exceed 30", where possible, with an operator reach of less than 22".
- Inclusion of scales within each bag well is recommended.

11. Ergonomic Considerations.

- To reduce fatigue associated with prolonged standing, leaning devices are recommended for resting periods as long as the counters have a knee clearance of 6" - 11". Seated chairs are only acceptable for those counters specifically designed for that purpose.
- Foot rests/rails should be provided and located approximately 6" above the floor and span a minimum of 20" in length. The foot rail should be in the middle of the workstation and be at least 1" wide. The foot rest or rail should be recessed a minimum of 4" and a maximum of 6". A minimum 4" knee clearance should be available.

12. Computer Component Requirements

- Counter height should be fixed at 42.9" for a standing position and 29" for a seated position. Knee clearance for a seated position should be a minimum of 20".
- Keyboard should be adjustable for both standing and seated positions. Standing should adjust between 37- 47" (fixed at 42.9").
- Seated positions should adjust between 26 -30" (fixed at 29"). There should be adequate room for mouse travel if a mouse is required with the system.
- Monitor should be adjustable in height and angle. The angle should be between 0 and 60 degrees. Viewing distance should be a minimum of 20".
- Printers should be located with an operator reach of less than 22" and minimal operator twisting.
- Front edge of counter should be rounded, or wrist rest should be supplied.
- Reach to passenger documents (middle of counter) should be no more than 26".
- Workstation should be provided with anti-fatigue matting.
- Task lighting should be between 40 and 50 foot-candles. (Ref. [Chapter 13].)

Chapter 3. Check-in Counters: Conventional

3-1. General Criteria

The dimensional criteria for a typical conventional check-in system are shown in [Figure 3-1.1] and [Figure 3-1.2].

Figure 3-1.1. **Dimensional Criteria for a Typical Check-in Counter Conveyor**

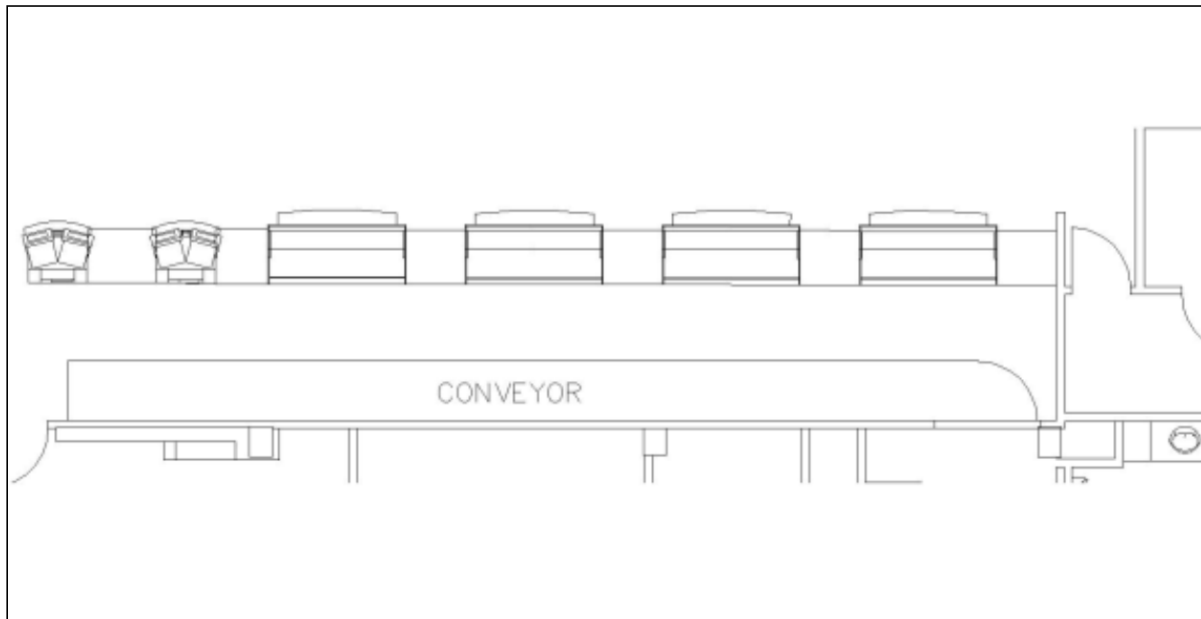
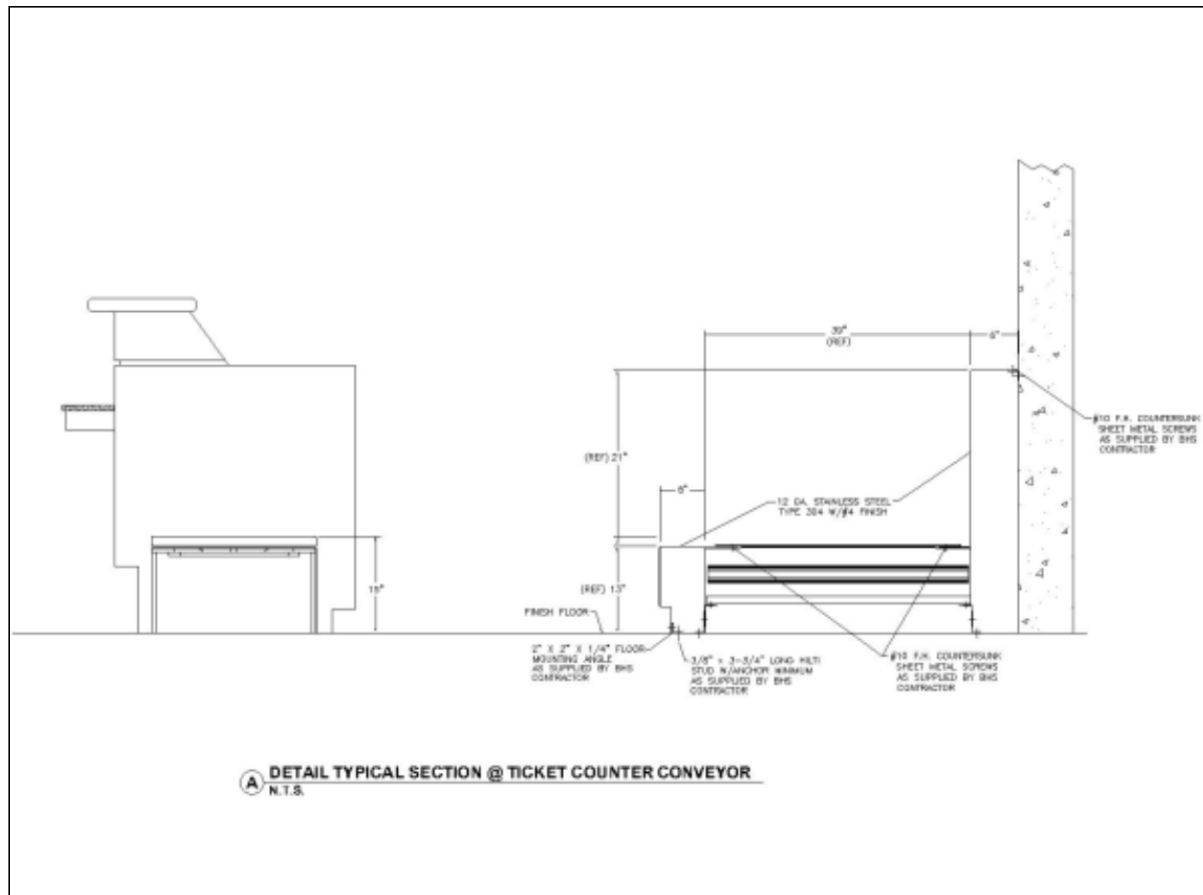


Figure 3-1.2. Dimensional Criteria for a Typical Check-in Counter Conveyor



3-2. Guidelines

1. Public Accessibility.
 - The configuration should consider public accessibility and not present public safety hazards.
2. Elevation of Load Conveyor.
 - The elevation of the load conveyor should be set at 1'-1" (13 inches). This height has been established as the minimum practical height that will accommodate a drive unit.
 - A lower height would be preferred if practical, based on the assumption that the bag will be lifted from the baggage well platform to the conveyor.
 - The conveyor should not be higher than the platform.
3. Speed of Load Conveyor.
 - Conveyor speed should be approximately 90 feet per minute.
4. Scales.
 - Including scales within each baggage well is recommended.
5. Baggage Load Platforms & Well Dimensions.
 - Baggage load platforms or baggage wells, whether or not including weigh scales, should be provided and set at an elevation approximately 2" higher than the collection conveyor, i.e., about 1'-3" (15 inches). This allows most baggage to be lifted or moved from the platform without bending at the waist or knee.
 - Bagwell depth should not exceed 30" in depth, where possible, with an operator reach of less than 22".
 - The distance from the rear face of the check-in counter to the face of the load conveyor should be a minimum of 3'-6" (42 inches) with 4'-0" (48 inches) being the maximum dimension. If facility constraints require a greater distance, then a **bag well extension** should be used to achieve the 3'-6" dimension from the face of the collection conveyor to the baggage well.
6. Controls.
 - Control panels should be located to be easily accessible to the operators (less than 22" arm reach).
 - Control panels should not be located on the far side of the conveyor.
 - An audible and visual warning shall be actuated by the controller device starting the conveyor and shall continue for a required period of time before the conveyor starts.