THE PORT AUTHORITY OF NY & NJ

Kennedy • Newark Liberty • LaGuardia
Teterboro • Downtown Manhattan Heliport

Planning & Design for Terminals and Facilities

Airport Standards Manual

First Edition • May 2005

Appendix 3 Passenger Terminal Planning Standards

CONTENTS

Chapter 1
INTRODUCTION

1.1 BACKGROUND

The Port Authority's airports terminals are operated by private operators, commercial airlines, and the Port Authority. At most terminal facilities, aircraft gates are under the control of the terminal operators. At Newark Liberty International Airport, Terminal A concessions are managed by Unison Maximus, while the operation of the terminal is under the control of United Airlines, Terminal B concessions are managed by Unison Maximus, with the operation of concourse B1 under the control of Delta Air Lines and concourses B2 and B3 under the control of the Port Authority. Terminal C falls under the exclusive control of Continental Airlines. (see figure 1.1). At LaGuardia Airport, the Central Terminal Building (CTB) is the only facility operated by the Port Authority except for the gate areas that are under the control of the airlines. The other LaGuardia terminal facilities are owned and operated by Delta Air Lines and US Airways (see figure 1.2). At John F. Kennedy International Airport, Terminal 1 is operated by Terminal One Management Company, Terminal 2 and 3 by Delta Air Lines, Terminal 4 by JFKIAT Management and Schiphol USA, Terminal 6 by JetBlue, Terminal 7 by British Airways, and Terminal 8-9 by American Airlines. The exception at JFK is Terminal 5, the former TWA terminal; it is owned by the Port Authority and currently not in operation. The future programmatic functions of the Terminal 5 building have yet to be finalized by the Port Authority (see figure 1.3).

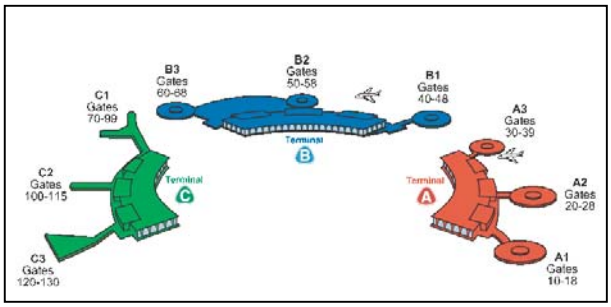


Figure 1.1 – Newark Liberty International Airport

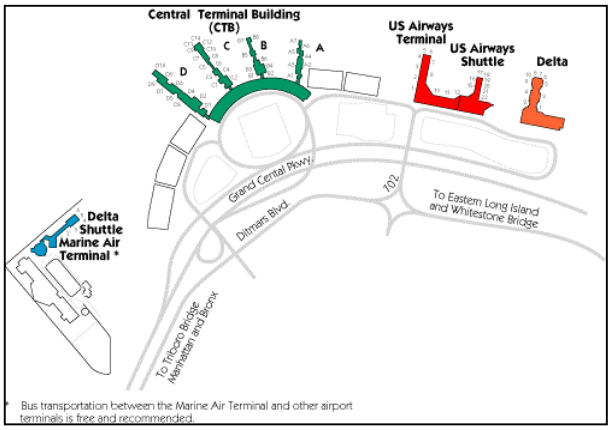


Figure 1.2 – LaGuardia Airport

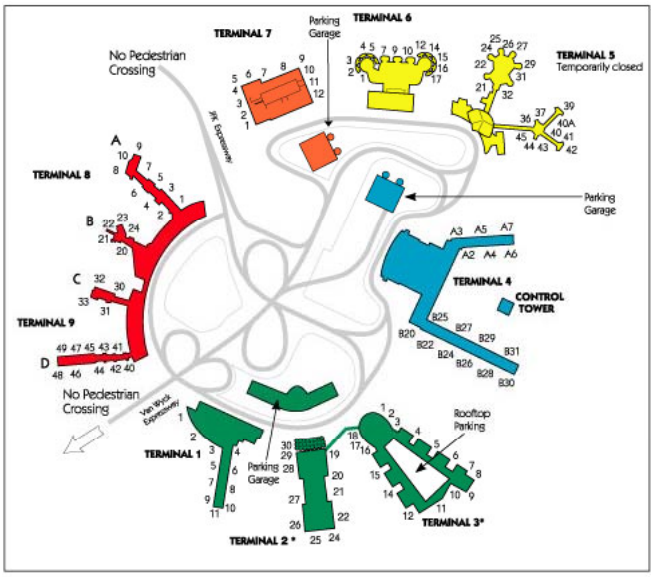


Figure 1.3 – John F. Kennedy International Airport

1.2 PURPOSE

Regardless of their unique leasing and operating arrangements, all terminal operator alteration proposals will be, as have been, subject to Port Authority approval in the Tenant Alteration Application (TAA) and permitting process. To augment this process, the Port Authority has developed a series of planning and performance standards for new as well as existing terminal operators to review, agree to, and commit to maintaining in their lease areas. These standards have been developed as part of the Tenant Alteration Application Manual (TAA) and, as such, all Port Authority terminal operators are subject to these standards, as applicable.

The Port Authority has developed these passenger terminal planning and operational standards -to further a larger effort to increase airport-wide satisfaction for the traveling public, including the elderly and persons with reduced mobility. This technical appendix has been gleaned from key industry-wide passenger terminal planning and operational standards for the following areas:

- Passenger check-in and ticketing facilities
- Passenger gate areas/hold rooms
- Concessions locations
- Additional areas under development

The primary purpose of this document is to establish a general set of standards and performance criteria which the Port Authority can use to evaluate the tenants' proposals to maintain safe, functionally efficient, code-compliant, sound and acceptable terminal area operations while ensuring airport customer satisfaction in the process. The Standards set forth in this document are representative of the Port Authority's objectives in achieving the highest levels of customer satisfaction, safety and operational efficiency.

1.3 APPROACH

Existing industry standards were reviewed and assessed for their continued relevance as well as their potential shortcomings. The planning guidance and performance standards presented in this document are based on this historical information along with new information and data reflecting current operations at the Port Authority airports and other large U. S. airports resulting from recent and continuing changes in the airline industry (e.g., increased reliance on technological solutions) and enhanced security requirements.

As the aviation industry is experiencing significant volatility, it is anticipated that the standards in this document may be subject to some refinement and adjustment to reflect evolving industry conditions. Emerging terminal facilities issues, including new TSA checked baggage screening and secondary screening requirements, alternative passenger processing procedures (i.e., e-ticketing kiosks, on-line check-in), and myriad airlines cost-savings measures, have dramatically affected the methodology used in planning terminal facilities in the past. From the elimination of *at-gate* check-in options to the prohibition of well wishers and meeters and greeter in the secure area of the airport, many fundamental planning standards will need to be re-assessed in the immediate future.

As part of an ongoing task to develop a comprehensive series of customer service standards, passenger terminal planning standards shall be integrated as part of the overall airline or terminal operator requirements. However, due to the unique spatial and operational conditions within each terminal, it would be difficult to establish a set of standards that would be universally applicable. As such, these *standards* are to be utilized as a tool that reflects each terminal's operational, financial and physical realities.

To achieve these objectives the following should be analyzed and integrated early in the planning and development process:

- Existing and future air traffic growth:
  - Airline flight schedules future projection and related change in the aircraft flight mix
  - Passenger traffic trends (e.g. load factors, earliness distribution)
  - Gate utilization factor - # of turns/gate/day.
- Existing and future operations and facilities:
  - Airlines counter staffing schedules (peak and off-peak)
  - Airline-specific passenger average processing rates in each mode.
  - Ticket counter positions and self-service kiosk positions
  - Physical ticket lobby area

For a particular improvement or facility project, the Terminal Operator shall submit/declare the Level Of Service (LOS) as defined in the IATA Airport Development Reference Manual, 8th Edition, April 1995, their design is capable of achieving, if applicable. All applications must include with their submittals, (1) an itemized overview of all improvements or the entire facility project and, (2) detailed drawings of the improvements or facility project. The Terminal Operator will also be required to provide as-built drawings upon completion and approval of the improvements or project.

1.4 Scope

In recognizing the evolving nature of the industry, it is essential to establish flexible and responsive planning criteria. Distinct planning standards should be developed with the appropriate variables that recognize the following types of unique passenger processing operations:

- International Operations – common-use and exclusive-use associated passenger behavior (e.g. average processing times, average party-size, averages per check-in party, etc.)
- Domestic Operations – common-use, exclusive-use, regional/commuter, business/leisure, or IT-intensive associated passenger behavior
- Low-cost Domestic Carrier Operations – passenger trends and needs as well as airline operations characteristics (aircraft turn-around times, etc.)

1.5 reference sources

The current passenger terminal facilities standards reflect evolving standards established by the Air Transport Association (ATA), the Federal Aviation Administration (FAA), International Air Transport Association (IATA), and established air-industry planning and operating standards.

The following documents will serve as the primary reference material:

- **IATA Airport Development Reference Manual**, 8th Ed., April 1995

Historical documents that may also be referenced, including:

- **Airline Aircraft Gates and Passenger Terminal Space Approximations**, Report #4, Air Transport Association, July 1977

- **Pedestrian Planning and Design**, John J. Fruin, 1971

- **Planning and Design Standards for Airport Terminal Facilities**, Federal Aviation Administration Advisory Circular 150/5360-7A, DOT / FAA

- **IATA CUSS Manual**, as published in May, 2003

- **The Airport Passenger Terminal**, by Walter Hart, 1985

Chapter 2
STANDARDS FOR TICKET COUNTER CHECK-IN AREAS

2.1 Ticket Counter/check-in agent Positions

An assessment of ticket counter alterations/additions will be based on a variation of the IATA *Check-in Desks* formula (IATA Chapter 1.6.5.4). The existing IATA formula has been adjusted to reflect the tendency of passengers to check-in as groups, or check-in parties, rather than as individual passengers. Average processing times are also based on that of check-in parties. As such, the formula variables have been revised to produce the following recommended formula:

Recommended Formula - Ticketing positions required:

N = [(a+b)t]/60 min

a = peak hour originating check-in parties*
b = transfer check-in parties not processed airside*
t = average processing time per check-in party (minutes)
* generally assumes peak hour of peak month and high (e.g., 95%) load factor, thereby mitigating the need for a 10% buffer

The formula above assumes that passengers arrive evenly distributed throughout the peak hour and that each of the required ticketing positions would be open with agents processing passengers continually throughout that hour. Because this uniform process is not realistic, the data used for the calculation should be based on peak traffic conditions to offset the potential underestimation that could occur with using the uniform arrival rate. As such, the following data should be obtained for the calculation and provided by the airline or terminal operator:

- peak hour (largest 60 minute period) passenger flow during peak month for each distinct ticketing zone (e.g. curbside, ticket lobby, e-ticketing kiosks)
- average check-in party size
- average processing time (per party)
- peak hour departing aircraft type (total seats departing)
- peak hour departing aircraft average load factor
- percentage originating passengers

2.2 EXAMPLE – TYPICAL CHECK-IN / TICKET LOBBY

The following exercise is an example of a typical ticket counter assessment. This example is based on an actual August 2002 schedule at LaGuardia Airport for *Airline A*. At the time of the proposed terminal alterations, the CTB leased 60 total *Airline A* passenger check-in positions.

Sample required airline data is as follows:

Table 2.1

Ticket lobby components	Airline data
Peak hour (60 min period)	6:20 – 7:20 AM
Peak hour passenger flow (pax/hr)	696 pax (lobby and kiosks)
	108 pax (curb)
Average check-in party size (pax)	1.5 pax
Average processing time (min/party)	3.5 min/party (lobby, kiosks)
	2.5 min/party (curbside)
Peak hour departing aircraft (seats)	AAA 6:30 (MD-80 - 129 seats)
	AAB 6:42 (B757 - 168 seats)
	AAC 6:50 (B757 - 176 seats)
	AAD 6:50 (EMB-135 - 37 seats)
	AAE 7:00 (MD-80 - 129 seats)
	AAF 7:00 (F-100 - 87 seats)
	AAG 7:19 (B757 - 176 seats)
Originating %	100%
Design load factor	90%

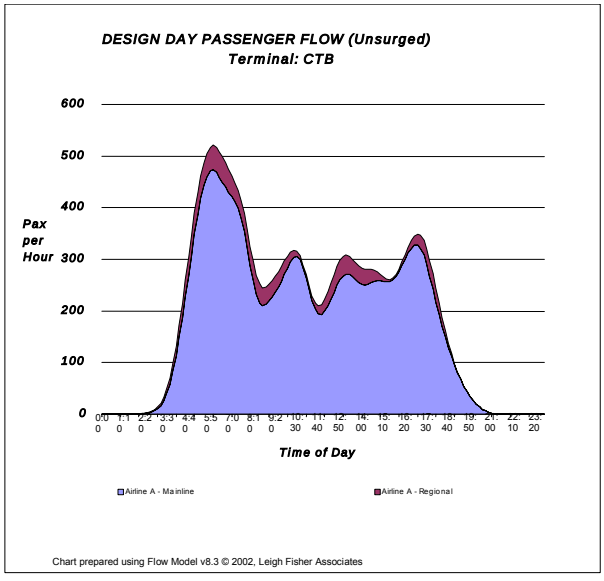


Figure 2.1 – Daily passenger flow for *Airline A* passengers at LGA

Based on data collected or submitted by the airline or terminal operator, minimum peak hour ticket agent position requirements are as follows:

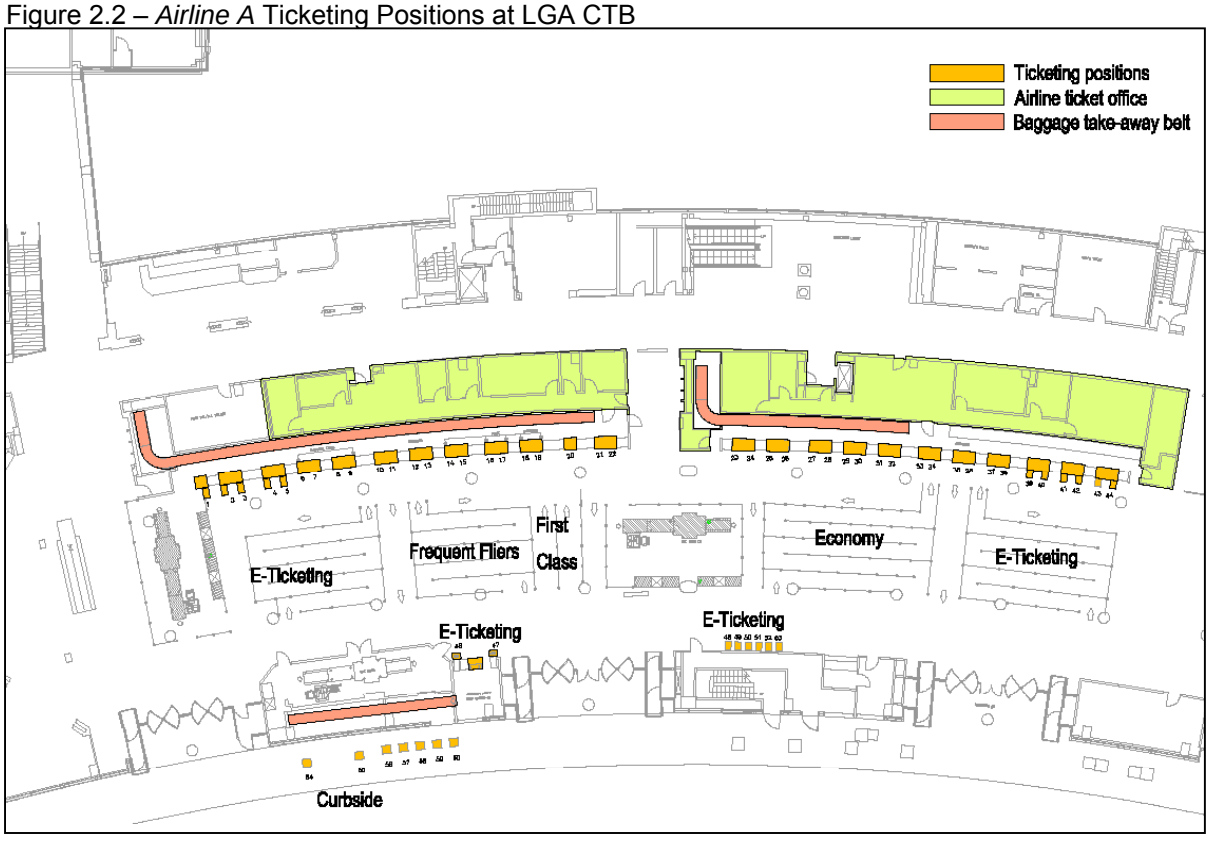
Recommended Formula - Ticketing positions required:

TICKET LOBBY	**CURBSIDE**
N = [(a+b)t]/60 min	**N = [(a+b)t]/60 min**
N = [(464)3.5]/60 min	N = [(72)2.5]/60 min
N = **27 positions**	N = **3 positions**
a = 464 parties b = 0 parties t = 3.5 minutes	a = 72 parties b = 0 parties t = 2.5 minutes

Total required positions: 30 positions (*please note that the e-ticketing positions may be relocated to mitigate cross-circulation congestion and to optimize kiosk performance)*
Total available positions: 60 positions

The passenger total passenger ticketing agent positions at *Airline A* (refer to figure 2.2).

Figure 2.2 – *Airline A* Ticketing Positions at LGA CTB



2.3 TICKET COUNTER DESIGN AND APPEARANCE

In the long-term, it is anticipated that most of the Port Authority airports will be transitioning into in-line checked baggage-screening systems. As such, ticket counter design and appearance standards will reflect that assumption. In response to the various options for ticket counter designs as well as the spatial constraints that may influence the various designs, the purpose of these standards is to establish dimensional criteria for the following key components of the passenger ticketing process:

- ticket counter
- baggage scale
- computing and telecommunications equipment

2.3.1 Ticket counter and operating area dimensions (including casework)

- Double positions: ticket counters working side shall be no more than 6'-6"wide, and 3'-6"deep. Passenger counter top 'shelves' are to be no more than 1' deep, no less than 3'-6" and no more than 4'-2" high. The working side counter height should be determined by the airlines mode of operation, e.g. standing, seated in chair or stool, etc. For multi-tenant terminal, the Terminal Operator, with concurrence from the Port Authority, will set all dimensions.

- Single positions: ticket counters are to be no more than 4'-3"wide, and 3'-6"deep. Passenger counter top 'shelves' are to be as called for in the double position counter above.

- In both previous instances: except for the amount of area this operation will occupy and the impact on the balance of the departure hall size and functionality, as long as the dimension chosen by the Terminal Operator is based on its particular mode of operation, the Terminal Operator will develop in concurrence with the Port Authority regardless if a single or multi-airline operation terminal.

- ADA requirements: ticket counters shall adhere to design standards and principles established by ADA Standards for Accessible Design (28 CFR Part 36), Latest Edition, regarding maximum counter shelf height, minimum passenger reach depth, and minimum visibility requirements for persons with reduced mobility.

2.3.2 Ticket counter finishes

- Terminal operator are strongly encouraged to use highly durable finishes, including clear, anodized, aluminum, stainless steel, and painted metal. Formed heavy gauge metal at outer corners and other vulnerable counter edges and surfaces shall be applied.

- Airline ticket counter finishes developed by the Terminal Operator shall be submitted and reviewed by the Port Authority Customer Services & Standards Division on a case-by-case basis.

2.3.3 Baggage scale / baggage take-away systems

- Baggage scales and take-away belts located directly adjacent the ticketing positions: scales are to be no more than 3' wide and no more than the depth of the ticket counter positions. Baggage take-away conveyors that collect all the checked baggage from a bank of counters shall be 3' minimum in width to fit the airline operations. For multi-tenant terminal, the Terminal Operator with concurrence of Port Authority, shall determine the take-away conveyor system.

- All baggage scales will be required to have baggage scale readers

2.3.4 Computer and telecommunications requirements

- CUTE system: computer, common-user ticketing software (i.e. CUTE or MUSE) common server, ticket printers, boarding pass collector and data feeds are to be provided by the CUTE system vendor/operator. Terminal operators are responsible for their own cable and conduit trays as well as installation of the system infrastructure/spine-network.

- All carriers shall integrate their flight information into a multi-user flight information display (MUFID).

- Airline exclusive system: telephone, computer, ticket printers, and data feeds will vary by individual airlines. Terminal operators are responsible for their own cable and conduit trays as well as the installation of the system.

2.4 TICKETING QUEUE

In recognition of the myriad spatial peculiarities (especially variable queue depths) of the terminals, it is important to maintain minimum standards to ensure operational efficiencies, passenger safety, and general satisfaction. Additionally, please refer to the section on queue management Airport Standards Manual.

2.4.1 Passenger cross-circulation dimensions

- Ticket counter edge to queue stanchion edge: provide no less than 10' of clearance for passenger circulation and ticketing transactions
- Queue stanchion edge to edge of building/curtain wall: provide no less than 15' of clearance for two-way passenger cross flow where physically possible.
- It is recommended that airlines and operators refrain as much as possible from installing ticketing kiosks that affect the cross-circulation passenger flow from the main ticketing queues.

2.4.2 Queue line dimensions

- Queue line width: provide no less than 4' of clearance

2.4.3 Stanchions

- Stanchions, in general, should maintain at least 8' between centerline of posts

2.5 KIOSKS / CUSS DESIGN AND LOCATIONS

In acknowledgement of Common-Use Self Service (CUSS) system design and operating standards as published by IATA in May 2003, this document will be updated subsequently to reflect the newly adopted IATA standards.

Airline self-service kiosk design guidance for airline-exclusive layouts are as follows:

2.5.1 Location

- Free standing Kiosks shall be placed within the ticketing/check-in area. Installation shall be no less than 4" from the wall, or other vertical surface.
- At the ticket counters: kiosks should replace/substitute for individual ticketing positions while maintaining baggage check-in service.
- Free standing units located outside of the ticketing area: kiosk layout concepts developed by the Terminal operator shall be reviewed on a case-by-case basis for adequately maintaining circulation space, queuing space for the passenger screening station area and concession space.

2.5.2 Dimensions

- Kiosks shall be no higher than 4'-6" and shall have a footprint of no more than 6 square feet.

- Kiosks shall be planned to provide at least 10 square feet of passenger ticketing and processing area directly in front of the unit.

2.5.3 Finishes

- The appearance and maintenance of the Kiosk finishes shall be similar to those for the ticket counters noted above. All wiring shall be concealed within the kiosks casework.

- Plastic laminates, polycarbonates, as well as other composite plastic finishes are not recommended due to the limited durability of the materials however, finishes will be considered on a case-by-case basis.

  In all Terminal Facilities exposed to the traveling public, to prevent unsightly condition of finishes, designated Port Authority staff will conduct twice annual condition-inspections and in its sole opinion, determine unsightly deficiencies.

2.5.4 Airlines Graphics and Brochure Presentation within the Terminal

- Airlines corporate identification plans developed by the Terminal operator shall continue to be submitted and reviewed on a case-by-case basis.

- Airlines corporate identification (e.g. logos, symbols, colors, and affiliated graphics) may be affixed on the sides and the front of the kiosks.

  - Racks or containers for Airline brochures, informational material, and ticket envelopes may be incorporated into the kiosk casework. Rack concepts developed by the Terminal operator shall be submitted and reviewed on a case-by-case basis.

- Federal Passenger Information and Regulatory Signs must be displayed by the airlines either via the kiosk display system or on the kiosk itself. Other methods of displaying FAA signage will require coordination with the Port Authority.

Chapter 3

STANDARDS for GATE LOUNGES / HOLD ROOMS

3.1 HOLDROOM AREA

An assessment of aircraft gate hold room alterations/additions will be based on a variation of the IATA *Gate Hold Rooms* formula (IATA Chapter 1.6.5.9). The IATA level-of-service (LOS) guidance for hold room space (per passenger) is as follows in table 3.1:

Table 3.1

IATA LOS Classification	A	B	C	D	E
HOLD ROOM (SF / PAX)	15	13	11	9	7

Depending on aircraft size and hold room space availability, level of service (LOS) "C" may be acceptable at peak periods while level of service (LOS) "B" will be required for off-peak periods in the same area. The Port Authority reserves the right to review and approve all specific holds room alterations/projects. In any event, it is the Port Authority's Customer Service and Planning Divisions' objective to ensure that the hold rooms shall be designed to provide the highest level of service (LOS) possible for any given terminal facility. For example: the operation of larger capacity aircraft using a specific hold room may require the terminal operator to "share hold rooms" in order to meet the Port Authority's level of service (LOS) space requirements.

The following outlines the important variables that should be provided by airline terminal operator for hold room analyses:

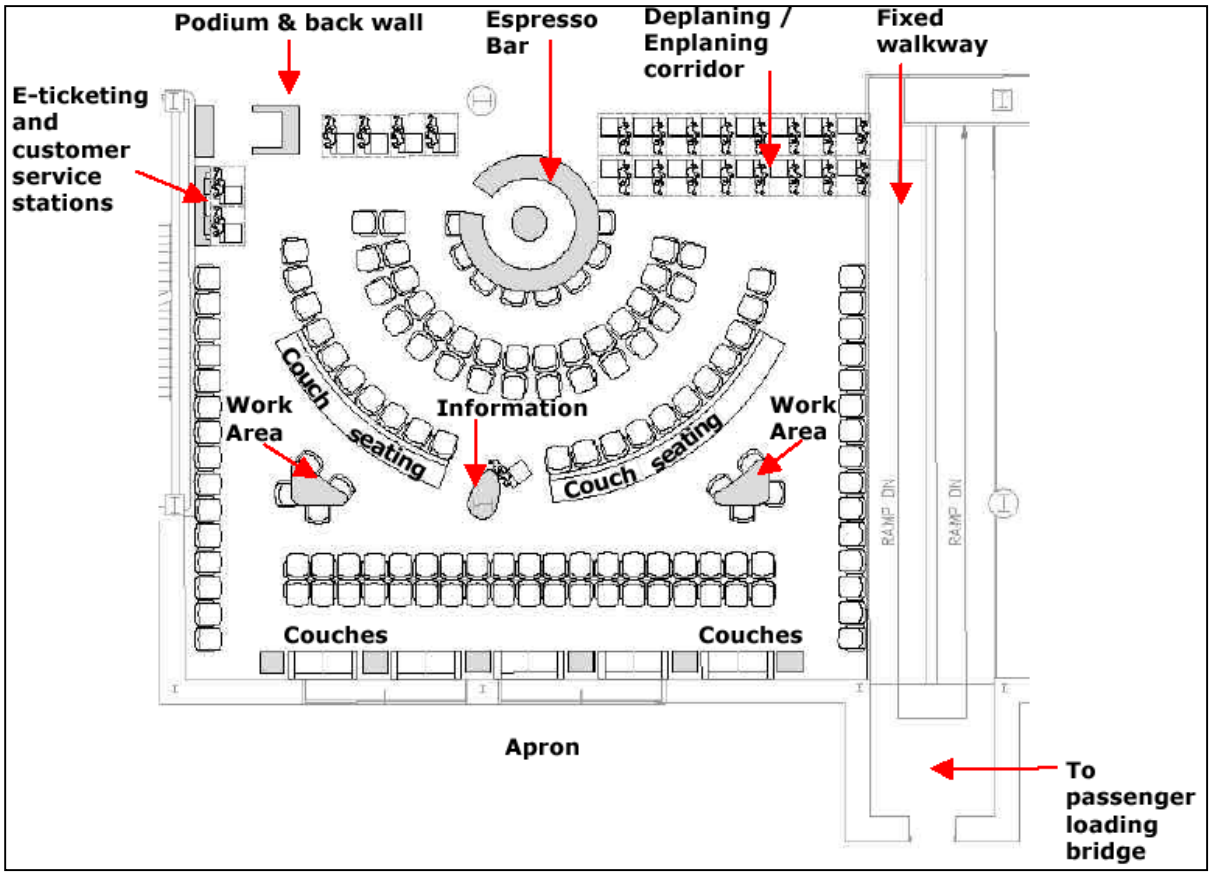
- Largest departing aircraft type and number of seats
- Peak load factor (e.g. summer peak)
- Dimensions for:
    - Podium, back-wall, and passengers queues
    - Deplaning corridor

3.2 HOLD ROOM AREA INTERIOR CONDITIONS

3.2.1 Hold room aisles

- Hold room seating: maintain at least 4’ between rows of seating
- Gate podium: maintain at least 6’ around podium and back wall
- Emergency egress: maintain at least 6’ clear for all accessible routes to egress stairs, or more to meet life-safety codes.
- It is encouraged that Terminal Operators consider concepts in which wider, comfortable seating and free-form aisle spaces that provide an alternative to typical and constrained/regimental hold area seating arrangements such as shown in Figure 3.1, an example of a potential hold room re-configuration.

Figure 3.1 – Potential Hold Room Reconfiguration



3.2.2 Lighting

- Sufficient hold room lighting shall conform to the Illuminating Engineering Society of North America (IES) ***Lighting Handbook, 8th Edition, Section 11***, as they pertain to hold room area lighting.

3.2.3 Flooring and finishes

- Hold room flooring and finishes selected by the Terminal operator shall be submitted and reviewed by the Port Authority on a case-by-case basis.

3.2.4 Passenger Amenities

- An adequate supply of electrical and telephone connections should be provided to meet the needs of passengers with computers, cellular telephones, or other personal data devices. An example of this would be the Terminal 7 food court counters with telephone dial-up and plug-in amenities.

3.2.5 Gate Podium

- Each position: podium counters are to be 4'-0" wide, and 3'-6"deep. Passenger side counter top 'shelves' are to be no more than 1' deep, and no less than 3'-6" and no more than 4'-2" high.

- ADA requirements: ticket counters shall adhere to design standards and principles established by **ADA Standards for Accessible Design (28 CFR Part 36)**, Latest Edition, regarding maximum counter shelf height, minimum passenger reach depth, and minimum visibility requirements for persons with reduced mobility.

3.3 TENANT SUBMISSION REQUIREMENTS

3.3.1 In the interest of providing sufficient operational flexibility and future growth, it is important that the TAA process require Terminal Operators to identify long-term growth factors, including equipment change and its associated space requirements when each application/proposal will cause the design capacity to be exceeded by 10% or more, or when the cumulative holdroom expansion proposals within a 2 year period cause the design capacity to be exceeded by 25% or more.

3.3.2 The Terminal Operator, in addition to identifying the largest aircraft to be serviced (within the next 2 years) at the proposed hold area, shall be requested to identify future aircraft (up to a five-year planning horizon) fleet mix requirements to ensure adequate facilities to accommodate future equipment changes. If it is determined that the operator's future equipment type cannot be

sufficiently served using the proposed hold area, the operator shall either propose the appropriate adjustments (i.e. expansion, maintain an empty adjacent gate, etc.) or request another available gate hold area.

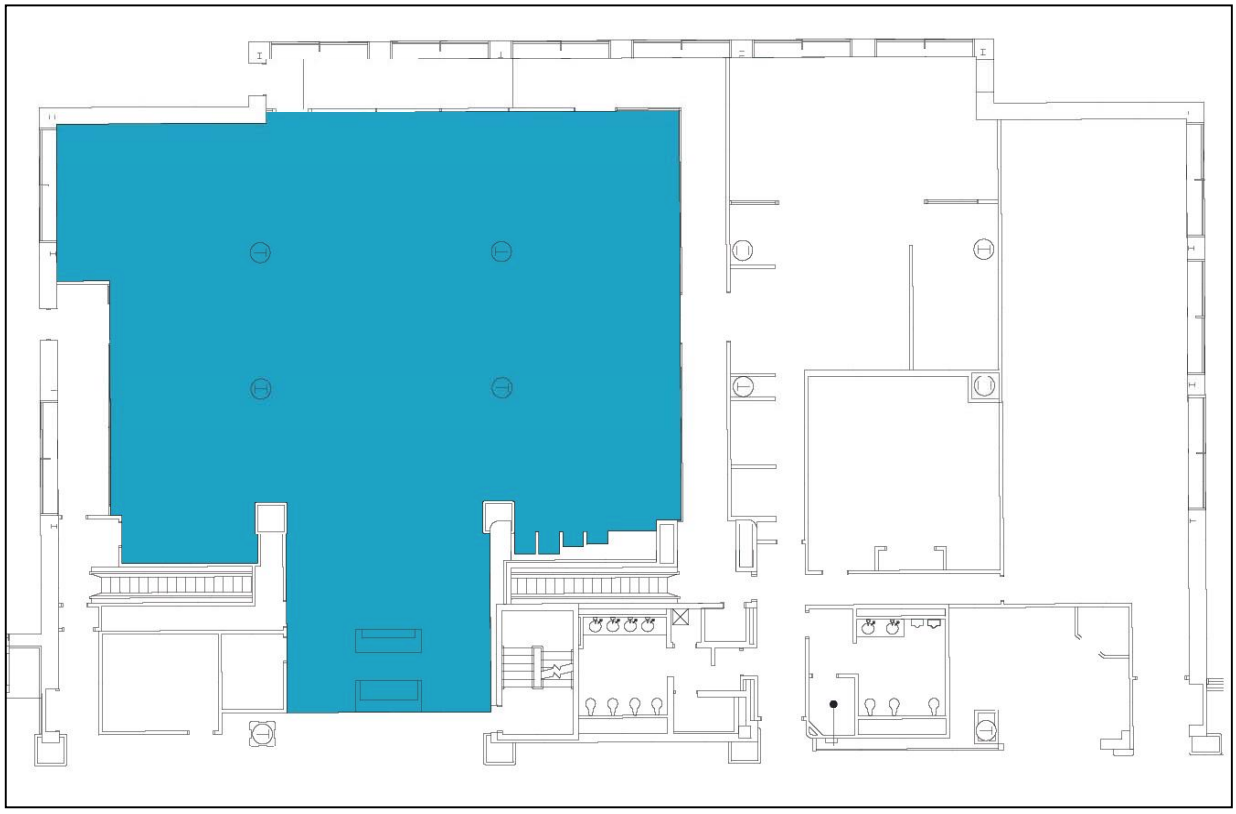
3.3.3 The operator shall be required to specifically identify in the TAA application the proposed hold room alterations and flight passenger characteristics (including average peak day of the peak month load factors). In addition, the application submission should indicate all levels of service that can be provided using the aforementioned Port Authority methodology, indicating:

- Comparison of existing space to space requirements as determined by level of service C, B, and A

3.4 EXAMPLE – TYPICAL HOLD ROOM

The following exercise is an example of a typical hold room assessment. The sample hold room space is approximately 4,450 SF (refer to figure 3.1).

Figure 3.2 – Typical Hold Room



Required airline data is as follows in table 3.3:

Table 3.3

Hold Room Components	Airline data
Largest departing aircraft (seats)	420 seats (B747-400)
Departing aircraft load factor	100%
Hold room split (seated/standing)	60% seated / 40% standing
% Passengers accommodated in hold room	95% (based on professional judgment and historical data collection results, approximately 5% of passengers tend to dwell outside of hold room)
Ticket counter podium, back wall, and passenger queue dimensions	2 counters and 2 passenger queues
Deplaning corridor dimensions	6 FT wide by 30 FT long

Based on data collected or submitted by the airline or terminal operator, requirements are as follows:

Recommended Formula - Hold Room area required for Level of Service 'B':

$A_T = A_P + A_D + A_C$

A_T = 5187 SF + 180 SF + 136 SF = 5503 SF

Where:

1) Area for passengers

A_P = S x LF x P x A

A_P = 420 x 1.0 x .95 x 13 = 5187 SF

S = aircraft seats = 420
LF = load factor = 100%
P = percentage in hold room = 95%
A = area per passenger = (15SF x 0.60) + (10SF x 0.40) = 13 SF per passenger (or Level of Service 'B')

2) Area for deplaning corridor

A_D = w x l

A_D = 6 x 30 = 180 SF

w = 6 FT
l = 30 FT

3) Area for Gate Check-in Positions and Podium Queue

A_{C1} = # x check-in positions

A_{C1} = 2 x (4 x 7) = 56 SF

A_{C2} = # x queues

A_{C2} = 2 x (4 x 20) = 160 SF

Total required area for Level of Service 'B' hold room: 5503 SF

Total available area in hold room: 4450 SF

The hold room at this gate does not meet the Level of Service 'B' or "C" requirements. The current hold room accommodations would meet Level of Service 'D' requirements

Chapter 4

STANDARDS FOR CONCESSIONS

4.1 CONCESSIONS

In planning the amount of concession area in a terminal building, there are no set industry standards or standards on the method or criteria that should be used. There are, however, many factors to be considered in the planning process. The factors include:

- *The position of the concession*. The location of concessions in relation to primary passenger flows is of singular importance to the success of concession operations. Location will have a critical impact on customer penetration and the size of the concession. Consideration must be given to airport operations. Concessions should not impede passenger flows or visibility. While airlines may not always agree with the location of concessions, the terminal operator must weigh the needs of the consumer and the potential loss in revenue of a poor location. Concessions should be located pre- and post-security as discussed below. For concourses with 8 or more domestic gates, or 4 or more international gates, concessions should be located within the concourse adjacent to the gates. Ideally, concessions should be situated in the "mid-point" of the concourse.

- *The type of traffic using the airport.* This will have an important bearing on how long passengers spend in the airport and what concessions need to be provided. Before planning concessions, it is necessary to determine who are the potential concession customers. In general, consumers fall into the following groups:

    14. Domestic Passengers
    15. International Passengers
    16. Meeter-Greeters (persons meeting arriving passengers)
    17. Well-Wishers (persons sending-off departing passengers)
    18. Airport Employees

  All of these consumers have different spending habits and needs, and each should be accounted for in any airport concession plan.

- *The design and shape of the airport terminal building*. Most terminal buildings were not designed with the objective of feeding passengers through concession areas or maximizing concession exposure. However, the use of kiosks and retail merchandising units can provide service in space-constrained locations.

- *The mix of existing and new concessions to be accommodated.* Some existing concessions will require larger areas, and accurate estimates need to be made of the space requirements for new concessions. There should be a synergy between concessions, particularly food and beverage and retail.

- *The performance of current concessions.* Good operations in adequate space need to be compared with concessions not performing well. Some may simply have too much or too little space, poor signage, or poor merchandising.

- *Comparisons with other airports.* The experience of other airports can be important in establishing a benchmark to ensure that concession space is correctly allocated.

- *The volume of potential customers who will be exposed to each concession area.* This is used to determine spend rates and shop sizes.

For the purpose of assessing concessions alterations / additions, the Port Authority may consider initially applying the following planning standards that reflect emerging post-September 11th national passenger arrivals and consumption trends:

Overall concessions space: 10% of total (gross) terminal space

Concessions distribution between secure and non-secure terminal area:
- Domestic terminals: 10% landside / 90% airside
- International terminals: 30-40% landside / 60-70% airside
- *Mixed* terminals: 10-20% landside / 90-80% airside (the more International activity, the more landside concessions will be necessary)

Space per enplaned passengers:
- Retail: 2.0 SF* per 1,000 enplanements
- Food and Beverage: 4.3 – 5.0 SF* per 1,000 enplanements

* Based on a national average of 25 large-hub airports

The objectives of the concession planning portion of a terminal complex master plan is to provide the framework to develop an optimal layout that would enhance the concession environment in meeting the needs of passengers, airport visitors and employees. Recognizing that the concession recommendations must coordinate with and complement the planned terminal design, the concession program should meet the following goals and objectives:

- Plan and design the space to increase the revenue potential for both the concessions operators and the terminal operator by providing the appropriate mix of food and beverage and retail offerings in "strategic locations", such as the one detailed in figure 3.1. Other strategic locations may include, but are not limited to, the creation of exciting, but comfortable "centralized terminal area public spaces" (pre and post security) that will invite passengers, well wishers/ meter-greeters, or both to linger and patronize the retail facilities and services.

- Ensure the creation of welcoming and attractive places designed for the comfort, convenience, and well being of passengers.

4.2 EXAMPLE – LGA CTB CONCESSIONS

The following is an example of a concessions program that does not meet the aforementioned standards. The example, LaGuardia Airport (refer to figure 4.1), largely due to numerous long-term constraints, has a concessions distribution that is primarily on the non-secure side. The airside concourses lack the recommended concessions area to support their high enplanement levels. As such, the space constraints in the concourses prevent the concession program from meeting the needs of passengers and optimizing revenues.

Figure 4.1 – LaGuardia Airport, Central Terminal Building Retail Plan