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PURPOSE OF THE PROGRAM BRIEFING BOOK

The Port Authority of New York & New Jersey has prepared this Program Briefing Book to provide an overview of the Newark Liberty International Airport Terminal One Redevelopment Program. This document provides information on both the Terminal One Redevelopment Program, its various component projects, and the preliminary conceptual planning work on the Terminal A development needs for the Airport as envisioned by the Port Authority.

BACKGROUND

Newark Liberty International Airport ("the Airport" or "EWR"), is operated by the Port Authority and is located in the southeastern portion of the City of Newark in Essex County and the northeastern section of the City of Elizabeth in Union County, adjacent to Newark Bay. (See Figure 1.1.) It is only 12 miles from Lower Manhattan, New York by highway. The Airport consists of 2,027 acres, including 320 acres in the Terminal A area.

In 1973, the Airport’s original Central Terminal Area (CTA) opened, housing Terminals A, B and C. With ever-increasing passenger and air cargo demand, the Airport expanded over the years to accommodate its first international flights in the 1970s, the arrival of Virgin Atlantic Airways offering flights to London in 1984, Federal Express (FedEx) opening its second air cargo hub in 1986, and the expanded operations resulting from the 1987 People Express-Continental Airlines merger. To accommodate the fast-paced expansion of services, a steady progression of infrastructure and terminal upgrades has occurred over the years.

In 2015, the Airport ranked as the second-busiest airport in the New York-New Jersey metropolitan area and 14th in the nation based on enplanements. The Airport has two parallel runways, 4R-22L and 4L-22R, and a crosswind runway, 11-29. Runway 4R-22L is 9,980 feet long by 150 feet wide and is used primarily for landings. Runway 4L-22R is 11,000 feet long by 150 feet wide and is located 950 feet west of and parallel to runway 4R-22L. Crosswind Runway 11-29 is 6,800 feet long and 150 feet wide. More than 12 miles of 75-foot-wide taxiways, entirely equipped with centerline lighting, link the three runways with the central terminal and cargo areas.

Over the last 15 years, significant efforts have been made to modernize and redevelop the passenger terminals at EWR to respond to the evolving needs of airlines and passengers. The Existing Terminal A is the oldest terminal at the Airport, and underwent two upgrades in 1995 and 2004. Now, the facility is reaching the end of its useful service life, with deficiencies that challenge the efficient implementation of modern airline and security requirements, and cannot offer passengers the amenities that are commensurate with a world class airport. The Existing Terminal A passengers are subject to unacceptable congestion at the curbside check-in, long lines at the lobby check-in and security checkpoints, undersized passenger holdroom areas, inconvenient and an insufficient number of concessions and bathrooms, inconvenient access to elevators, and insufficient claim device capacity.
FIGURE 1.1: Aerial Photo, Newark Liberty International Airport
As 5.6 million passengers are added over the next 20 years, these adverse conditions will be exacerbated, further reducing the Level of Service (LOS). Without improvements, the LOS at the Existing Terminal A will continue to degrade and the Existing Terminal A passengers will suffer escalating delays and congestion. The Port Authority is committed to providing the most efficient and convenient air travel experience possible through improving the LOS for passengers in the New Terminal and all of its facilities. To meet the increasing demand and evolving needs of air travel, the Port Authority is undertaking a program to redevelop Terminal One in a new location on the airport property, south of the Existing Terminal A.

**PROGRAM OVERVIEW**

The Terminal One Redevelopment Program (the “Program”) will position the Airport to meet the needs of passengers and airlines alike in the 21st century. The Program will replace the Existing Terminal A building with a new terminal building (“Terminal One”), construct a new roadway access network, develop the airfield to serve the new terminal building and provide for a parking facility at the front of the terminal building (“Terminal Parking Facility”). In 2017, the Airport handled more than 43.3 million annual passengers (MAP) with Terminal A serving over 11.3 MAP. It is anticipated that by 2027 the New Terminal will need to serve 13.6 MAP with expansion capacity for 19.6 million MAP. The Program rectifies these issues and goes beyond to provide an open, modern terminal with ease of access to improve the passengers experience and the efficiency of their travel, as well as flexibility to grow and change with the increasing demands and the evolving requirements for air travel. The Program includes the construction of the following major elements:

- An approximate one-million-square-foot, 33-gate common-use domestic terminal building, with a pedestrian bridge providing direct access from the EWR AirTrain and a public parking facility
- A new aeronautical taxi-lane network and apron serving the new terminal
- Frontage roads/bridges, utilities and site work that will serve the new terminal
- A consolidated car rental (ConRac) and parking facility serves the new terminal
- To distinguish the new terminal from the existing, the new terminal has been given the name Terminal One.
PROGRAM OBJECTIVES

The Port Authority’s overarching objectives for the Program are to provide facilities and infrastructure that are efficient and expandable, enabling the Port Authority to continue to meet the demands of air travel, increasing access to the region and spurring economic growth through the coming decades. To that end, the following specific objectives for the Program emerged:

- **Replace a deteriorated and outdated Terminal A**: Replace aging and outmoded terminal and associated infrastructure that has deteriorated to unacceptable levels.

- **Provide an efficient and modern terminal**: A world-class terminal built to USGBC LEED Silver standards. Resolve functional space deficiencies and alleviate passenger congestion throughout.

- **Accommodate existing and future passenger travel demand**: Accommodate current and projected aviation demand at acceptable levels of service.

- **Enhance airfield capacity and improve operations**: Resolve operational deficiencies and alleviate airfield and terminal ramp congestion.

- **Enhance landside access and parking at the terminal**: Improve deficiencies in roadway access and circulation, add parking facilities, and reduce traffic congestion.

- **Enhance the passenger experience from drop-off/ parking to enplaning**: Improve check-in and security screening experiences, speed flow through, facilitate wayfinding and provide enriched amenities.

- **To ensure continuous flight operations at Terminal A**: The initial new terminal opening of 21 Group III aircraft gates with all associated functions including check-in, security screening, departure gates, baggage handling/ screening systems, baggage claim plus most of the concession development shall be operational by late year 2021.
PROGRAM COMPONENTS

The Program includes four main components: the New Terminal, Airside Infrastructure, Landside Infrastructure and the New Terminal Parking Facility. The scope of these components includes, but is not limited to the following key elements summarized below:

New Terminal (shown in yellow on Figure 1.2)
• A one-million-square-foot LEED Silver, flexible, 33-gate, common-use terminal building that will accommodate the forecast for 2027. The current concept includes a two-level T-shaped building with a central headhouse and a single secure concourse with single loaded north, and south piers, and a double-loaded Eastern pier. The terminal is expandable to a future 45-gate configuration.
• A weather-protected, climate-controlled, above-grade pedestrian bridge, with moving walkways for passenger convenience linking the terminal and the parking facility, and also providing a current and future link to AirTrain.

Airside Infrastructure (shown in purple on Figure 1.2)
• 140 acres of aeronautical paving contiguous with the new terminal and the existing adjacent airfield system that supports 33 ADG III Aircraft gates, dual ADG V taxi-lanes (North), dual ADG IV taxi-lanes (South), HOS/ TOS service roads and RON & GSE staging areas for the Terminal One Program.
• Demolition of the existing Terminal A satellites and all associated infrastructure.
• Hydrant fueling pits and associated equipment at all gates.

Landside Infrastructure (shown in green on Figure 1.2)
• A new roadway network connecting the New Terminal program with the Central Terminal Area which consists of eight new bridges, elevated and at grade frontage roads, loading dock approaches, ground transportation passenger pick-up/drop-off areas, taxi-queue and bus pick-up/drop-off areas.

Public Parking and Consolidated Rental Car Facility (ConRac) (shown in orange on Figure 1.2)
• A six-level, 2.1 million square foot naturally ventilated parking structure. Public parking for approximately 2,750 vehicles is located on Levels 4, 5 and 6. Toll collection facilities are on Level 4. The ConRac will occupy Levels 1, 2 and 3. It will be used by all EWR-based car rental companies for car rental operations. A photo-voltaic (solar power) system will be built above Level 6 to align with PANYNJ Environmental Initiatives for sustainable design and green technology.
FIGURE 1.2: Program Scope
EXISTING TERMINAL A PASSENGER ACTIVITY & FORECAST

For planning purposes, the Port Authority regularly prepares aircraft operations and total passenger forecasts for their airports and terminals. **Table 1**, represents the projected constrained moderate forecast of annual passenger volumes at Newark’s Terminal A through Year 2032. Passenger demands predicted for existing Terminal A are expected to reach approximately 14.1 million, compared to 8.5 million passengers in 2013 and 11.3 million in 2017. Aircraft operations at the terminal are anticipated to increase by 22 percent from 2013 to 2027 years, then decrease over the following five years as airlines adjust by upgauging their aircraft. We have already seen a growth in passengers from 2013 to 2015 with a coincident decrease in aircraft operations.

**Note**: These increasing levels of passenger demand will occur with or without a New Terminal; the issue is how that demand can be met in the Existing Terminal A, without significantly impacting ongoing airport and terminal operations in order to provide an acceptable level of service (LOS) and other benefits that are expected to be found in a modern terminal.

**TABLE 1: Aircraft and Passenger Activity at Existing Terminal A**

<table>
<thead>
<tr>
<th>YEAR</th>
<th>AIRCRAFT OPERATIONS</th>
<th>PASSENGERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013 (actual)</td>
<td>161,200</td>
<td>8,500,000</td>
</tr>
<tr>
<td>2015 (actual)</td>
<td>145,783</td>
<td>10,567,423</td>
</tr>
<tr>
<td>2017 (actual)</td>
<td>140,528</td>
<td>11,338,210</td>
</tr>
<tr>
<td>2022</td>
<td>162,100</td>
<td>13,000,000</td>
</tr>
<tr>
<td>2027</td>
<td>196,900</td>
<td>13,500,000</td>
</tr>
<tr>
<td>2032</td>
<td>190,500</td>
<td>14,100,000</td>
</tr>
<tr>
<td>Compound Annual Growth Rate (CAGR) 2013 - 2032</td>
<td>0.63%</td>
<td>1.68%</td>
</tr>
</tbody>
</table>

*Note: These increasing levels of passenger demand will occur with or without a New Terminal; the issue is how that demand can be met in the Existing Terminal A, without significantly impacting ongoing airport and terminal operations in order to provide an acceptable level of service (LOS) and other benefits that are expected to be found in a modern terminal.*
Conceptual Rendering: Terminal One
PLANNING ELEMENTS
The Port Authority has made the following planning determinations while taking into consideration the New Terminal’s part in the larger Regional Airport System. These planning determinations are not intended to be a final determination of the programmatic elements of any future procurement processes related to the Program but were used to develop the concept to date as presented in this Brief.

- The New Terminal shall accommodate the 13.6 Million Annual Air Passengers (MAP), forecast for 2027.
- The Design Day, Peak-Hour domestic passenger demand is based on a 90% load factor for enplaned and 80% load factor for deplaning passengers. Given that the 33 gate DDFS peak hour departures and arrivals times are not coincident, the total demand is based on an 85% load factor.
- Ability to accommodate a future 45-gate domestic build-out of the New Terminal. The Design Day Flight Schedule (DDFS) is equivalent to 18.7 MAP. For the 45-gate (future) schedules, the total peak-hour load factor is assumed to be 80%.
- A 45-gate DDFS was also developed to include international departures and arrivals. This is a variation on the 45-gate domestic DDFS and assumes six of the gates will be used for international, non-Canadian flights, as well as domestic flights. This is referred to as the 45-gate, mixed DDFS. Annual passenger forecasts predict an 18.2 MAP-domestic and a 1.4 MAP-international demand, for a total demand of 19.6 MAP.
- Use of a similar 90% peak-hour load factor for the international component of the 45-gate, mixed DDFS results in international peak-hours demand of 740 enplanements and deplanements.

Table 2 below summarizes the passenger demand planning numbers used in the conceptual development of the Program.

Table 2: New Terminal – Design Day Peak Hour Passenger Demand

<table>
<thead>
<tr>
<th>PASSENGERS</th>
<th>33-GATE DOMESTIC</th>
<th>45-GATE DOMESTIC</th>
<th>45-GATE MIXED DOMESTIC</th>
<th>45-GATE MIXED INTERNATIONAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enplaning</td>
<td>2,350</td>
<td>3,280</td>
<td>3,280</td>
<td>740</td>
</tr>
<tr>
<td>Deplaning</td>
<td>2,240</td>
<td>3,020</td>
<td>2,980</td>
<td>740</td>
</tr>
<tr>
<td>Peak Hour TOTAL</td>
<td>3,580</td>
<td>4,310</td>
<td>4,110</td>
<td>950</td>
</tr>
</tbody>
</table>
FIGURE 2.1: New Terminal - Aerial Rendering
FIGURE 2.2: New Terminal - Site Plan
NEW TERMINAL LAYOUT

The conceptual layout of the New Terminal is shown in Figures 2.1 through 2.5. A description of the New Terminal design, as conceived, is presented below. A final design will be provided through a design-build contract which may alter the concept to some degree.

The proposed New Terminal would consist of a single secure concourse comprised of three piers with a central headhouse, all arranged in a skewed T-shape. (See Figure 2.2.) The proposed New Terminal footprint is to be situated outside of the Object Free Area (OFA) of the Existing Terminal A Taxiway to maintain its airside operations during construction. The construction of the new terminal will require abatement and demolition of two existing buildings, Building 345 (former USPS) and Building 350 (current UPS).

The headhouse is a two-level building with a mezzanine level between the Departures & Arrivals Levels to accommodate the pedestrian bridge connection from the New Terminal Parking facility and the present P1 and future AirTrain station. In addition, the mezzanine will contain some back-of-house operational spaces.

Two single-loaded, 700-foot-long concourses will extend to the north and south and an approximate 1,000-foot-long double-loaded concourse extends to the east from the central concession node following the passenger screenings checkpoint.
DEPARTURES LEVEL

The departures frontage and ticketing hall are located on the second floor of the headhouse, approximately 37 feet above the arrivals level with an intermediate mezzanine level between that interfaces with the pedestrian bridge. The pedestrian bridge provides access to the New Terminal Parking facility and serves the current AirTrain P-1 station. The pedestrian bridge shall also be required to interface with and accommodate the future AirTrain ridership. Also note:

- The Departures frontage roadway drop-off curb is approximately 1,000 feet long to meet the projected traffic demand and is centered on the ticketing hall.
- The conceptual design includes check-in/ticketing functions accomplished via six common-use-check-in Islands each containing up to 20 kiosks with the capability to offer varying levels and types of service. These islands will incorporate take-away bag belts and accommodate self-tagging functions. Premier check-in areas are also included as well as oversize/odd size bag belts.

- A limited amount of concessions space is provided pre-security, as well as restrooms.
- A consolidated passenger security screening checkpoint is located on the departures level just beyond the check-in area. Layout provides for 18 screening lanes and a generously-sized passenger queue area, as well as a re-composure zone post-security.
- Four airline club spaces are included that can be accessed directly by passengers, post-security screening, prior to traveling down to the concourse level.
- Screened passengers would travel down to the concourse level from a single vertical circulation point into a large central concession area on the way to their boarding gates.

(See Figure 2.3)
FIGURE 2.3: New Terminal - Departures Level
FIGURE 2.4: New Terminal - Concourse Level
CONCOURSE LEVEL

The concourse level provides 33 common use-contact gates, distributed among the Mid-Section, East Pier, North Pier and the South Pier as follows:

- **Mid-Section** – This is the center of the terminal, where passengers will flow down from the security screening area located on the Departures Level of the terminal. This area is the main concessions node and passenger circulation space with two gates on the south side of the building (one double holdroom) and two gates on the north side (one double holdroom), with additional concessions spaces and restrooms along the perimeter. A bus lounge is located on the north side to accommodate the transfer passengers (loading of buses takes place on the apron level below). Concessions support space is provided behind the main concessions node to avoid moving goods and trash in view of the passengers.

- **East Pier** – Double-loaded concourse with access to 18 gates, most holdrooms are sized and paired to provide the most aircraft gating flexibility, concessions spaces and restrooms along the perimeter, as well as a centrally located concessions node at the east end. Concessions support space has been provided at the east end of the pier, with access to the apron level below.

- **North Pier** – Single-loaded concourse with access to six gates, both single and paired holdrooms, smaller concessions areas and restrooms. Concessions spaces have access to the apron level for restocking.

- **South Pier** – Single-loaded concourse with access to five gates, including double and triple holdrooms, concessions areas and restrooms. Concessions spaces have access to the apron level for restocking.

As previously mentioned, the Terminal A apron has been sized to accommodate wide-body aircraft at most gates. To support this function, all but two holdrooms have been paired. Due to their length, moving walkways are provided in the north and south piers, and a series of two moving walkways provided in the east pier.

(See Figure 2.4)
ARRIVALS LEVEL

- The arrivals frontage roadway pick-up curb is approximately 950 feet long to meet the projected traffic demand and is centered on the bag claim area.

- At the apron level, the 100-foot-wide, double-loaded central concourse (east pier) houses airlines operation space, mechanical and electrical rooms and concessions storage. All areas are accessed by a central corridor.

- The north pier has a single-loaded corridor providing access to airlines operation space, mechanical and electrical rooms and concessions storage. The south pier has a similar layout, but also houses the secure access and screening area for a landside loading dock.

- The terminal mid-section houses the TSA checked baggage screening operations as well as building mechanical rooms.

- The out bound baggage make-up area consists of 12 flat plate race track devices to service all 33 gates.

- A drive-thru baggage tug road provides access to the inbound bag drop-off conveyor belts.

- The baggage claim hall includes two longer and four shorter, overhead-fed, sloped-plate claim devices. The longer claim devices shall have two feeds. Conveyor belt delivery of oversize baggage shall also be provided.

- A Port Authority Welcome Center is centrally located on the Arrivals Level. (See Figure 2.5)
FIGURE 2.5: New Terminal - Arrivals Level
FUTURE EXPANSION

The conceptual design was assessed to ensure that it could also provide for an anticipated 12-gate expansion to 45 group III aircraft gates (domestic). Efforts to date have focused on ensuring that the 33-gate concept is expandable to 45-gates, with no fatal flaws. The full concept for the terminal expansion remains under development, as does the decision on whether it would include International Arrivals Federal Inspection Services (FIS) and Customs and Border Protections (CBP) facilities.

- The future expansion option includes extending the New Terminal headhouse to accommodate additional passenger processing facilities and extending the North Concourse to the east, parallel with the east concourse and similarly served by the dual group V aircraft taxilanes between them. It is further anticipated that the outbound make-up facilities would need to be expanded to handle the additional demand. The 12-gate extension shall also include head-of-stand and tail-of-stand roadways, minimum 250-foot deep aircraft stand apron area, hydrant fueling system, and commensurate quantities of restrooms, concessions and operational spaces.

- The flight schedule for the future 45-gate terminal anticipates the need to accommodate a number of wide-body Group V aircraft, which could be either domestic or international. The new parallel pier would accommodate the simultaneous gating of 6 wide-body aircraft or 12 group III B737-900ER sized aircraft, by utilizing appropriately spaced gates and paired holdrooms.

- If the New Terminal expansion is scheduled to handle international arrivals, then the development program shall include a Federal Inspection Services (FIS) and Customs and Border Patrol (CBP) facilities, including international baggage claim, Department of Agriculture facilities, and post-customs baggage re-check to facilitate transferring passengers. Further, Sterile corridors linking the build-out’s 6 wide-body gates to the FIS, shall be included.

- In addition, 3 wide-body capable gates on the 33-gate terminal North Pier may also be altered to handle international arrivals with the addition of vertical circulation and sterile corridors leading to the FIS.
Conceptual Rendering: Terminal One
**SCOPE ELEMENTS**

Encompassing an area of 140 acres, the Airside Infrastructure projects provide the taxilanes that will serve the New Terminal. The following have been identified as part of the airside redevelopment:

- Site clearance and utility work
- New stormwater collection system with the capability of isolating deicing fluids
- The reconfiguration of airside features, including RON aircraft parking areas and taxilanes
- The demolition of the following:
  a) Satellites A1, A2 and A3 and the connectors (the existing Terminal A headhouse shall remain)
  b) Building 342 and the reconfiguration of the existing FedEx cargo facility area
  c) Building 331 (Chelsea Kitchen)

**AIRSIDE PLANNING**

The focus of the airside planning effort is to define an airside program that provides the flexibility to accommodate changes in demand with respect to activity levels, airline tenants, aircraft fleet mix, and the Air Traffic Control system. With flexibility in mind, the program attempts to define the delicate balance between accommodating the future passenger levels and aircraft gauge while providing a configuration that has the layout to adapt and expand to allow for the unforeseen changes in demand. Several parameters were established and have been incorporated into both the near- and mid-term airside development plans.

**SITE CONSTRAINTS**

The near-term plan calls for a 33-gate terminal facility. The site constraints were determined by maintaining a segment of Earhart Drive on the west side of the layout, the Existing Terminal A headhouse and airside Restricted Service Road (RSR) on the north, the proposed ADG VI parallel taxiway object free area to the east, and by predetermined limits within the existing FedEx and Chelsea parcels to the south. Other key existing facilities that could not be impacted were the existing AirTrain infrastructure (i.e. tracks, stations, and substation Bldg. 121). Figure 3.1 depicts the proposed airside site constraints for the near-term development plan.

Establishing the east side constraint is determined by the potential development of additional parallel taxiways. The Program was scoped so that the terminal development did no extend into an area that may require demolishing any portion of the terminal structure to facilitate development of future airfield reconfiguration.
FIGURE 3.1: New Terminal - Airside Site Constraints Map
AIRSIDE PARAMETERS

The key airside planning parameters are listed in Table 3, which were established to ensure the airside would meet the program requirements, maximize future flexibility, and maximize operational efficiency. These parameters form the basis of the Conceptual Design of the airside described further in this section below.

Table 3: Airside Planning Parameters

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PARAMETER</th>
</tr>
</thead>
</table>
| Design Aircraft                         | • ADG III: B737-900W
                                  | • ADG II: CRJ 190, ERJ-190
                                  | • Some projected operations by ADG V: A350-X, B747-400, B787-800/900
                                  | • Do not preclude ADG VI operations                                      |
| Taxiway/ Taxilane Clearances            | • Dual ADG V Taxilanes on the north side
                                  | • Dual ADG IV Taxilanes on the south side
<pre><code>                              | • Dual ADG V taxilane on the east side                                   |
</code></pre>
<p>| Aircraft Maneuvering                    | • Maximize operational flexibility                                        |
| Wingtip Clearance                       | • 25-foot wingtip clearance minimum                                        |
| Passenger Boarding Bridge (PBB)         | • Three tunnel apron drive bridges at all gates to accommodate the full fleet mix |
| Aircraft Jetblast                       | • Minimize 50-mph impact on aircraft stands                               |
| Blast Fence Locations                   | • Install where able to protect service roads and vehicles                |
| Snow Melter Locations                   | • To be determined                                                         |</p>
<table>
<thead>
<tr>
<th>ITEM</th>
<th>PARAMETER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxilane Centerline Alignments</td>
<td>• Maximize operational efficiency while allowing flexibility to accommodate changes in fleet mix</td>
</tr>
<tr>
<td>Head of Stand (HOS) Roads</td>
<td>• 30 feet wide</td>
</tr>
<tr>
<td>Tail of Stand (TOS) Roads</td>
<td>• 24 feet wide</td>
</tr>
<tr>
<td>Restricted Service Road (RSR)</td>
<td>• 30 feet wide</td>
</tr>
<tr>
<td>Aircraft Startup Pad Locations</td>
<td>• Maximize the number of start-up positions</td>
</tr>
<tr>
<td>Off-gate Aircraft Hardstand Locations</td>
<td>• One ADG II, six ADG III and eleven ADG V positions to support Terminals A &amp; B</td>
</tr>
<tr>
<td>Triturator Locations</td>
<td>• To be determined</td>
</tr>
<tr>
<td>Off-gate Aircraft Deicing Locations</td>
<td>• See off-gate aircraft hardstand locations above</td>
</tr>
<tr>
<td>Mobile Ground Support Equipment (GSE &amp; eGSE)</td>
<td>• Number of eGSE charging stations TBD</td>
</tr>
<tr>
<td>Mobile GSE Staging</td>
<td>• To be determined</td>
</tr>
<tr>
<td>Hydrant Fueling</td>
<td>• 33 Aircraft Gate Positions</td>
</tr>
<tr>
<td></td>
<td>• 3 (Minimum) Widebody Aircraft Capable Gate Positions</td>
</tr>
</tbody>
</table>
**TAXILANE CENTERLINE ALIGNMENTS**

The taxilane centerline alignments are configured to accommodate dual ADG V operations on the north side of the pier and dual ADG IV operations on the south side of the pier. If the proposed terminal accommodates international operations in the future, the Federal Inspection Services (FIS) would be located on the north side of the headhouse, hence the dual ADG V taxilane infrastructure on the north.

The northern ADG V taxilanes would extend east to tie into the reconfigured taxiway in Figure 3.2 existing Taxiway RC. On the south side of the pier, the dual ADG IV taxilanes would extend east and terminate at existing Taxiway RB. The section that is east of the proposed terminal would operate as terminal area taxilanes to accommodate push back operations from the gates at the end of the east pier and provide a connection from the north side of the airfield to the south side of the airfield.

Should an ADG VI operation be required, the dual ADG V taxilanes would be restricted to a single ADG VI taxilane. If ADG VI operations occur on a frequent basis, then the outboard taxilane could be restriped to meet ADG VI taxilane separation standards. Therefore, infrastructure improvements on the north side of the dual taxilanes should not preclude the airport from upgrading the taxilane. The ADG VI aircraft could utilize any of the gates on the north side of the New Terminal with minimal impact to ground operations.

(See Figure 3.2)

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**REMAIN OVER-NIGHT (RON) AIRCRAFT PARKING POSITIONS**

The RON requirements for the new Terminal One were established by developing a 33-gate design day flight schedule (DDFS). The DDFS indicates that the 33 gates provided at the new terminal are sufficient to accommodate the RONs at the gates, without the need for towing aircraft to remote hardstands.

In order to replace the 11 aircraft parking on hardstands Lindy, Wilbur and Amelia that will be lost as a result of the new terminal location, new hardstands are being created adjacent to Terminal One. 10 parking positions will be located to the north of the new terminal, in the location of the existing Terminal A satellites. 8 additional positions are being created to the northeast of the new terminal, in the area bounded by Taxiways “RC”, “PA” and “RB”, for a total of 18 hardstand positions. These consist of one ADG II, six ADG III and 11 ADG V positions, which will support the Terminal B requirements. An additional three positions are available during off peak operation.

The final RON positions are contingent upon the layout of the other airside support facilities, such as GSE equipment storage, snow removal & melting pit locations, triturators, etc.
FIGURE 3.2: New Terminal - Airside Taxilane Layout
SCOPE ELEMENTS

The Program’s Landside Infrastructure consists of separate access roadways leading from the existing Airport entrance to the New Terminal, as well as other dedicated-frontage roadways. The redirection of Existing Terminal traffic to the New Terminal will result in less congestion at the Terminals B and C frontage roadways. The scope of this element includes the following projects:

- The excavation of side slopes of the existing Peripheral Ditch
- Eight elevated roadway bridge structures, as shown in Figure 4.3 and described below.
  
  a) Bridge N57 is a curved bridge of ~500 feet length that spans over the existing Peripheral Ditch and connects the new roadway network on each side of the ditch.
  
  b) Bridge N58 is a curved bridge of ~840 feet length that spans over the existing Peripheral Ditch and connects the new roadway on the west side of the ditch to Bridge N60 at the departures level of the New Terminal.
  
  c) Bridge N59 is a curved bridge of ~700 feet length that spans over the existing Peripheral Ditch and connects the new roadway on the west side of the ditch to the arrivals level of the New Terminal.
  
  d) Bridge N60 is a bridge of ~1,000 feet length that spans the frontage of the New Terminal and includes an accessible curb and sidewalk to provide pedestrian access to the departures level.
  
  e) Bridge N61 is a bridge of ~790 feet length that connects Bridge N60 from the departures level of the New Terminal to Bridge N63.
  
  f) Bridge N62 is a bridge of ~480 feet length that connects the arrivals level of the New Terminal to Bridge N63.
  
  g) Bridge N63 is a bridge of ~570 feet length that spans over the new on-grade roadway and connects bridges N61 and N62 down to the new on-grade roadway.
  
  h) Bridge N64 is a bridge of ~180 feet length that spans over the existing Hotel Road in the Central Terminal Area and provides access to short-term parking and ground transportation.
Conceptual Rendering: Terminal One
VEHICULAR TRAFFIC PLANNING ELEMENTS

The landside conceptual roadway layout depicted in Figures 4.1 through 4.3, was developed concurrently with the latest airside and terminal building designs. Vehicular access to and from the proposed New Terminal is primarily facilitated through the existing “throat”, main entrance to the Airport. Secondary access to and from the New Terminal would also be provided via Brewster Road from the south. Some of the major driving factors in developing the depicted roadway alignment included constraints such as:

- Avoiding impacts to existing AirTrain structure and support facilities; planning for the new AirTrain Station location serving the New Terminal
- Avoiding impacts to and maintaining connectivity between relevant existing airport roadways and functions
- Providing for all proposed connectivity to and from the New Terminal
- Maintaining some form of existing access, although limited, to the Existing Terminal
- Avoiding significant impacts to the Peripheral Ditch and other environmentally sensitive areas
- Limiting impacts to the airside sections of the airport
**FIGURE 4.1:** New Terminal - Frontage Roadway Network Rendering

Conceptual Rendering: Terminal One
FIGURE 4.2: New Terminal - Landside Roadway Network
FIGURE 4.3: New Terminal - Landside Roadway Bridges

[Diagram showing landside roadway bridges with labels N64, N63, N62, N61, N60, N58, N59, and N57.]

- Quick Turnaround Area
- CONRAC / Parking Garage
- PSE&G Switching Station
### NEW TERMINAL FRONTAGE

The scheme proposed for the Program as part of the planning effort yields a curb frontage length of approximately 950 feet for the Arrivals Level and 1000 feet for the Departures level.

Table 4 summarizes the Frontage Requirements.

#### Table 4: New Terminal – Frontage Requirements

<table>
<thead>
<tr>
<th>VEHICLE TYPE</th>
<th>REQUIRED CURB (FEET) LOS = C 33 GATE</th>
<th>REQUIRED CURB (FEET) LOS = C 45 GATE</th>
<th>AVAILABLE CURB (FEET)</th>
<th>LEVEL OF SERVICE 33 GATE</th>
<th>LEVEL OF SERVICE 45 GATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrivals (Autos &amp; For-Hire Cars/Taxi)</td>
<td>538/100</td>
<td>712/125</td>
<td>950/500</td>
<td>A/ A</td>
<td>A/ A</td>
</tr>
<tr>
<td>Shuttle and Buses (H.O.V.)</td>
<td>145</td>
<td>145</td>
<td>610</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Departures Frontage</td>
<td>679</td>
<td>834</td>
<td>1,000</td>
<td>A</td>
<td>B</td>
</tr>
</tbody>
</table>
ROADWAY PARAMETERS
The landside conceptual roadway layout depicted was developed using the following landside design assumptions for airport roadways and terminal frontages:

- On-airport roadways are designed for a minimum of 15 mph, 25 mph desirable, geometric standards.
- Transition roads between the off-airport roads and the on-airport roads are designed for 40 mph geometric standards.
- Vertical clearance is a minimum of 14.5 feet.
- Terminal frontages provide sufficient curb length to accommodate various ground transportation modes and provide dedicated areas for private auto/LOV, taxi, and HOV.
- The lane adjacent to the curb is a minimum of ten feet wide.
- All other frontage lanes are a minimum of twelve feet wide.
- Minimum of two bypass lanes are provided.
- Minimum three-foot shoulder is provided for the outside bypass lane.
- Minimum three-foot shoulder is provided for both the left and right shoulder areas of any one-lane or multilane section of new roadways.
- Pedestrian sidewalks and frontage islands are a minimum of twenty-five feet wide.
- Pedestrian crosswalks are signaled controlled.

Desire to maintain all vehicular circulation movements and the current parking capacity serving the terminal area during all phases of construction was considered in the development of the Program roadways concept and the overall staging and phasing plan.
PARKING DEMAND AND PLANNING ELEMENTS

The joint-use terminal parking facility (See Figure 5.1) will be built over approximately 19 acres and include two main structures, a six-level car rental / public parking (CR/PP) building and a six-level quick turnaround (QTA) building. The public parking garage will be located on Levels 4, 5 and 6 of the CR/PP building. The garage will provide approximately 2,750 public parking spaces, over 2.1 million square feet with toll collection facilities. The three lower levels of the facility will house a consolidated car rental (ConRac). Co-located will be an onsite location for rental companies to clean, fuel and turn cars back to rental condition. The combined facility will occupy the site currently occupied by AirTrain Station P1. The pedestrian bridge, from Terminal One, will connect to the core/customer service functional area, at Level 2 of the new facility and provide access to AirTrain via P2 Station.

DESIGN & FINISHES

The east and west facades of the joint-use facility will be prominent in the landscape, and can be openly viewed from the new Terminal One building, US 1&9 highway, and from the proposed future AirTrain alignment. Given this prominence, the facility will be visually compatible with the Terminal One design language to create unified visual context for these new projects. Exterior materials include aesthetic skins, and open, bright, aluminum and glass curtainwall at the customer service area.

The interior, public spaces of the customer service area will be designed to be both highly durable and visually compatible with proposed Terminal One finishes. The design will include contextual aesthetic elements to reflect the local Newark, Elizabeth, and New Jersey culture and nature, and provide a sense of place to the facility immediately recognizable to local and visiting passengers and rental car customers.

Photo-voltaic panels will be installed on the top floor of the facility to generate solar energy.

TOLL COLLECTION & EZ-PASS PLUS

The toll collection system will be a cashless system requiring EZ-PASS or credit cards. This system will integrate with the updated system being installed at the other EWR parking facilities. The garage will be equipped with a parking guidance system to improve customer experience.
FIGURE 5.1: Parking Facility Rendering
**PROJECT DELIVERY MODEL**

**METHODOLOGY AND STAGING OF WORK PACKAGES**

The parking facility will be a Tenant Alteration Application (TAA) package and the Terminal One/Pedestrian Bridge will be delivered using a design-build project delivery model.

The remainder of the various Program component projects will be delivered using a traditional design-bid-build delivery model. The issuance of procurement documents for the various component projects are shown in Table 6.

<table>
<thead>
<tr>
<th>CONTRACT</th>
<th>DESCRIPTION</th>
<th>INITIATE PROCUREMENT</th>
<th>AWARD/ START CONSTRUCTION</th>
<th>END CONSTRUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bridge N57, N58 &amp; N59</td>
<td>2016</td>
<td>2017</td>
<td>2020</td>
</tr>
<tr>
<td>2</td>
<td>Abate &amp; Demo Building 331 (Chelsea)</td>
<td>2019</td>
<td>2020</td>
<td>2020</td>
</tr>
<tr>
<td>3</td>
<td>Terminal One, Bridge N60, and Pedestrian Bridge Design-Build</td>
<td>2016</td>
<td>2018</td>
<td>2022</td>
</tr>
<tr>
<td>4</td>
<td>Hotel Road Widening and Bridge N64</td>
<td>2018</td>
<td>2018</td>
<td>2020</td>
</tr>
<tr>
<td>5</td>
<td>Bridges N61, N62, N63, At-Grade Roadways/Landscaping</td>
<td>2018</td>
<td>2018</td>
<td>2020</td>
</tr>
<tr>
<td>6</td>
<td>Parking Facility and Integrated Toll Plaza</td>
<td>2017</td>
<td>2019</td>
<td>2023</td>
</tr>
<tr>
<td>7</td>
<td>Airside Utilities &amp; Paving (South) Phase I/Phase II</td>
<td>2017/2018</td>
<td>2018/2019</td>
<td>2018/2021</td>
</tr>
<tr>
<td>8</td>
<td>Airside Utilities &amp; Paving (North)/Satellites Abatement &amp; Demolition</td>
<td>2020</td>
<td>2021</td>
<td>2023</td>
</tr>
</tbody>
</table>
The parking facility will be a Tenant Alteration Application (TAA) package and the Terminal One/Pedestrian Bridge will be delivered using a design-build project delivery model. The remainder of the various Program component projects will be delivered using a traditional design-bid-build delivery model. The issuance of procurement documents for the various component projects are shown in Table 6.