

6

CHAPTER

PASSENGER TERMINALS



PASSENGER TERMINALS

Chapter 6

6.1 INTRODUCTION

Toronto Pearson International Airport is the primary air transportation gateway for the Greater Toronto Area (GTA), the south-central Ontario region, and Canada as a whole. Toronto Pearson is also one of the major air transportation gateways to North America. As managers and operators of Toronto Pearson, the GTAA is required to provide appropriate passenger facilities to ensure the safe and efficient transfer of passengers at a level of service that also contributes to the economic growth of southern Ontario.

It is for this reason that, since 1996, the GTAA has invested significant time and resources in redeveloping the terminal area through the Airport Development Program (ADP). With this work complete, Toronto Pearson is now entering a new phase of planned development with a base on which it can build toward the current site's optimum capacity, currently estimated at approximately 50 million passengers per year.

With this new phase in Toronto Pearson's development comes a revised approach to the planning

and the staging of the expansion and improvement of passenger terminal facilities. The ADP comprised the wholesale replacement of existing facilities which were at the end of their physical and economic life cycle. The GTAA will now focus on incremental development aimed at bringing required capacity online "just in time" while accommodating increased opportunities for non-aeronautical revenue generation in the most financially sustainable manner.

Toronto Pearson's terminal development strategy is intended to allow phased expansion of facilities to accommodate forecast growth in demand in a timely and cost-effective manner. To ensure that facilities are used to their optimum capacity before new facilities are brought into service, development will be timed based on defined facility utilization rate targets.

The airline industry itself has experienced a radical rethink concerning how it does business. As the airline industry has evolved to reflect the increasing "commoditization" of air travel, so too must airports change to reflect a move from a "utility" model to a more "business-based" approach to the provision

of facilities and services. As such, the GTAA will be more active in influencing its business drivers. This will be reflected in changes to facility design assumptions and approaches.

This chapter provides an overview of existing passenger terminal facilities and options for further development as demand increases.

6.2 CURRENT FACILITIES

The air terminal buildings at Toronto Pearson are the result of a recently completed redevelopment program culminating in the completion of Stage 2 of Terminal 1. With the decommissioning of Terminal 2 as of January 30, 2007, Toronto Pearson now operates two main passenger terminals, Terminal 1 and Terminal 3 (see Figure 6-1). Additional holdrooms and aircraft gates are provided at the Terminal 1 and Terminal 3



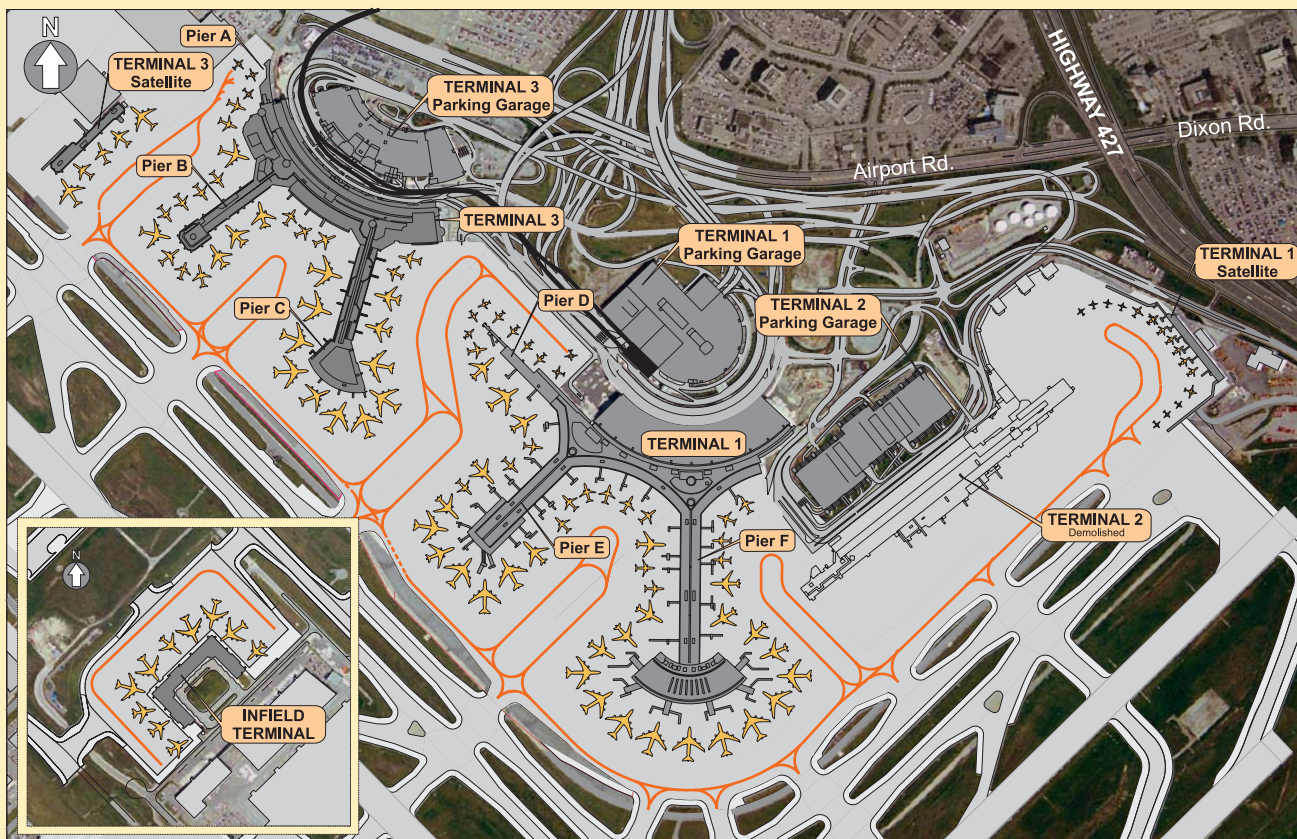


FIGURE 6-1 EXISTING TERMINAL FACILITIES

Satellites and at the Infield Terminal (IFT).

The passenger terminal facilities at Toronto Pearson currently have a combined total of 97 bridged gates and 32 commuter aircraft positions¹. This results in a combined capacity of approximately 39 million enplaned and deplaned passengers annually. Figure 6-1 illustrates the location and extent of the existing terminals.

6.2.1 Terminal 1

Terminal 1 is the newest of the two main terminal facilities at

Toronto Pearson. Stage 1 of the terminal opened in April 2004 with 14 bridged gates and nine commuter aircraft positions, supplemented by an 11-gate Infield Terminal (IFT). At that time, Terminal 1 accommodated Air Canada domestic and international operations along with its Star Alliance international partners. Ten additional bridged gates became operational in October 2005 (for a total of 24), allowing some international aircraft activity to be relocated from the IFT gates to Terminal 1, as well as supplementing domestic gating capacity.

Stage 2 of the Terminal 1 development became operational in January 2007, providing full U.S. precleared passenger processing facilities, additional baggage makeup and claim capacity, and 25 additional bridged gates on the terminal expansion known as Pier F/ Hammerhead F. Two gates on Hammerhead F were configured to accommodate larger aircraft such as the Airbus A380. Each of these gates can connect two bridges to an A380-class aircraft, one to the main-deck door and one to either a second main-deck door or to an upper-deck door.

¹ The GTAA defines two types of gates:

- Bridged Gates – positions that have passenger boarding bridges (some of which will be able to accommodate regional jets).
- Commuter Aircraft Positions – positions whose critical aircraft is a turbo prop or regional jet, which do not have passenger boarding bridges and where passengers walk out to the aircraft.



Terminal 1

The completion of Stage 2 marked the end of the development defined within the ADP's Terminal Development Project, and allowed the closure of Terminal 2 (see Section 6.2.3). Terminal 1 now accommodates domestic, transborder and international traffic and primarily serves Star Alliance carriers, along with a few unaligned charter and international airlines.

Terminal 1 parking facilities were also provided through the Terminal Development Project. This eight-level structure has approximately 9,000 parking spaces. In its current form with approximately 346,000 m² (3,724,000 ft²) of operational space and with 49 bridged and 24 commuter aircraft positions (including the Terminal 1 Satellite), the terminal has a maximum capacity of approximately 21 million annual passengers. If the Infield Terminal gates are included in the Terminal 1 inventory, this increases to approximately 25 million annual passengers.

Retail in Terminal 1 is comprised of three distinct programs that effectively service each sector post-security. The full program consists of more than 64 retail concepts, including three duty-free locations, 35 food and beverage concepts, 14 specialty and service retail concepts and 12 news, books and music locations. Food and beverage, as well as news, books and music stores, are located in every sector. Specialty retail is predominantly located in the domestic sector while duty-free is exclusive to transborder and international areas.

6.2.2 Terminal 1 Satellite

The Terminal 1 Satellite located at the east edge of the apron and formerly associated with Terminal 2, continues to accommodate some Star Alliance transborder commuter aircraft operations, however, approximately 30 per cent of the transborder regional jet activity formerly allocated to this facility is now assigned to gates on Terminal 1. Passengers still using the satellite facility travel by

bus from Terminal 1, using the bus stations at Node F and on the eastern face of the Satellite.

With the closing of Terminal 2, transborder commuter aircraft positions accessed from the east end of Terminal 2 were deactivated. To accommodate this traffic, and the additional transborder commuter traffic expected to be transferred from Terminal 3, covered walkways were added to each end of the Terminal 1 Satellite building to allow access to seven additional commuter aircraft positions, bringing the total number of positions to 15.

6.2.3 Terminal 2

With the completion of Stage 2 of the Terminal Development Project and the transfer of Terminal 2 transborder traffic to Terminal 1 as of January 30, 2007, Terminal 2 was officially closed. The demolition process, that began when domestic operations were re-assigned to Piers D and E of Terminal 1, resumed in April 2007. The Terminal 2 Parking Garage has been temporarily converted for use as an employee parking facility pending completion of new facilities in Area 6B across



Former Terminal 2



FIGURE 6-2 **TERMINAL 1**

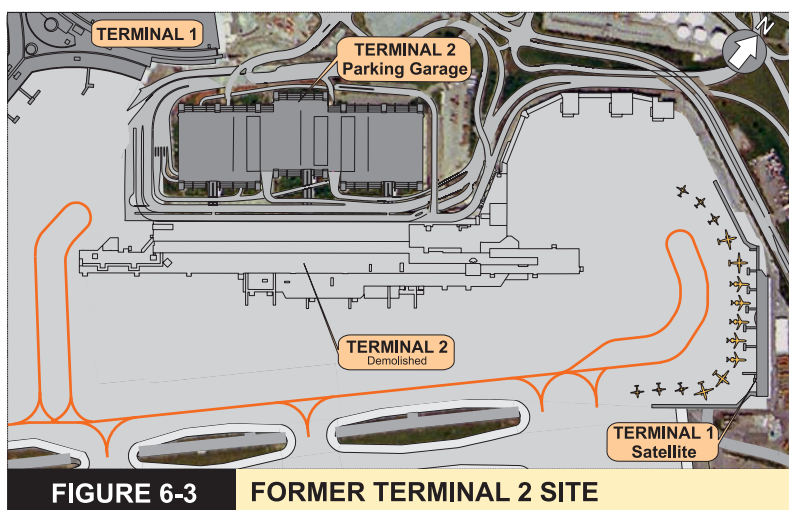
Airport Road. In 2006, its last full year of operation, Terminal 2 handled approximately 5.2 million enplaned and deplaned transborder passengers. Terminal 1 now handles all of this traffic.

6.2.4 Terminal 3

When it opened in 1991, Terminal 3 was the first major airport facility to be financed and operated by the private sector under a lease agreement with Transport Canada. The facility

was acquired by the GTAA in May 1997.

The terminal has undergone a number of significant upgrades and expansion projects since its opening. With the relocation of adjacent airline and airport



support functions as well as cargo facilities to the Infield, expansion on the east side of the easternmost pier (Pier C) was undertaken adding six additional bridged gates and holdrooms. The expanded Hammerhead C includes two gates which can be modified to accommodate larger aircraft such as the Airbus A380.

The parking garage was also expanded, increasing its capacity to about 4,200 spaces, of which 3,500 are available for public parking. More recently, the main processor has been extended to provide more check-in, security screening, inspection services and baggage handling capacity.

Terminal 3 currently has a gross floor area of approximately 159,000 m² (1,710,000 ft²), including the Terminal 3 Satellite, and has a total of 37 bridged gates and eight commuter aircraft positions, including five bridged and five commuter positions on the Terminal 3 Satellite.

In 2007, the principal air carriers operating out of the terminal include WestJet, oneworld alliance airlines and SkyTeam alliance airlines. Canadian charter carriers Skyservice and Air Transat also provide service out of Terminal 3 to a number of leisure destinations that vary by season.

The terminal has the capacity to process approximately 14 million passengers annually. In 2006, Terminal 3 handled approximately 11.3 million enplaned and deplaned passengers. Of these, 29 per cent were domestic, 33 per cent were transborder, and 38 per cent were international.



Terminal 3 and Terminal 3 Satellite

The retail program in Terminal 3 is spread out across the building to meet the needs of every passenger sector. The Terminal 3 retail program is comprised of more than 64 retail concepts consisting of six duty-free locations, 24 food and beverage concepts, 24 specialty and service retail concepts and 10 news, books and music locations.

While every sector has exposure to retail, the current program is predominantly pre-security and makes up the Retail Court. The Retail Court is a cluster of shops with merchandise ranging from food, leather goods, books, jewelry and clothing. Once post-security, Terminal 3 offers some limited retail opportunities including duty-free, news, books and food concepts, as well as limited specialty retail.

6.2.5 Infield Terminal

The Infield Terminal (IFT) was constructed to provide interim gating capacity during the phased construction of Terminal 1. The first two gates became operational in June 2002, with the remaining

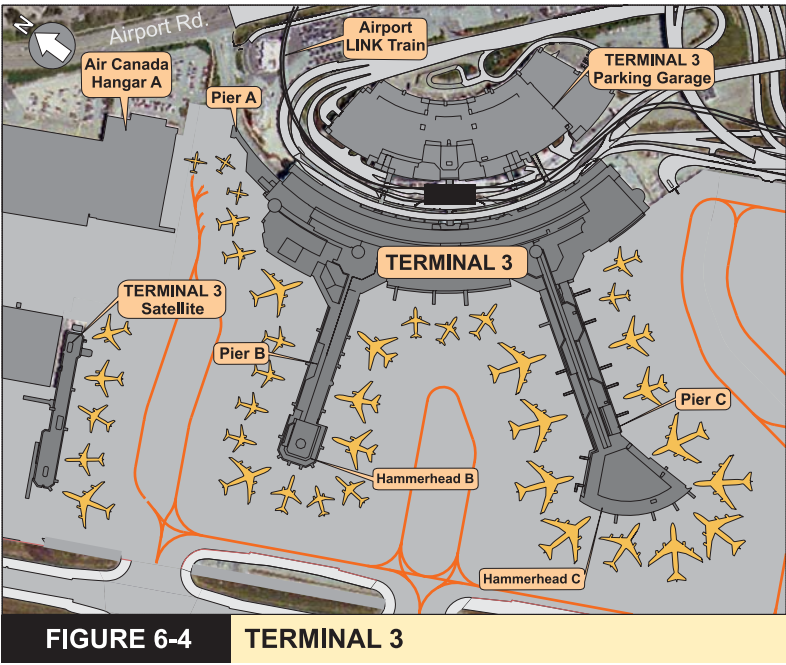


FIGURE 6-4 TERMINAL 3

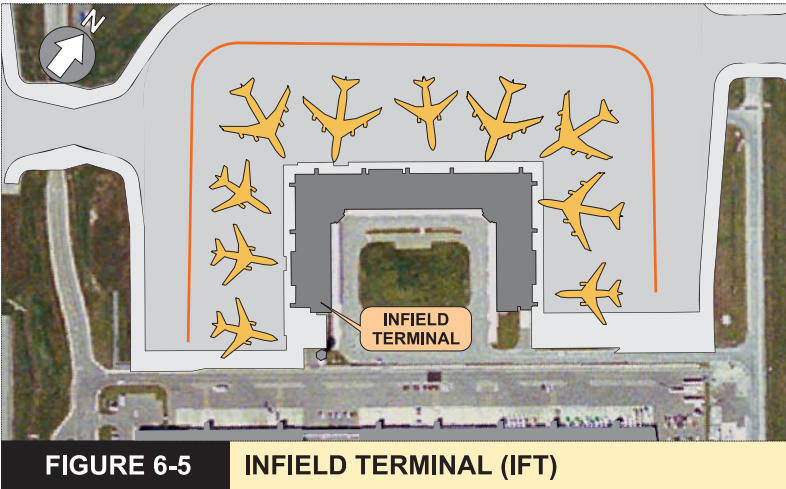


FIGURE 6-5 INFIELD TERMINAL (IFT)

nine gates opening the following year. (The final three gates opened in July 2003, bringing the total available to 11.)

Prior to the final closure of the original Terminal 1, increasing numbers of international flights operated by airlines assigned to that building were gated at the IFT, with transportation between the two buildings provided on busses specially designed for air-side use. Upon the opening of

new Terminal 1, the IFT continued to serve this function, with busses travelling between the IFT and bus stations at Node E of the new Terminal.

When additional gates became available on Terminal 1 in October 2005, some long-haul international flights were reassigned to the gates on Pier E and on the gates between Piers E and F, reducing the need to transport passengers between the two buildings by bus.

Pier F and Hammerhead F are capable of accommodating all international flights until utilization thresholds trigger construction of additional Terminal 1 gates. Hence, the IFT has been closed, with provisions made for quick recall to service should it be required to accommodate seasonal or overflow demand and to provide capacity during future terminal building construction.

6.3 DEMAND/CAPACITY ANALYSIS

6.3.1 Introduction

In order to determine what facilities will be required during the time horizon of this Master Plan, the demand forecasts for the planning period were converted into facility requirements and then compared to the capacities of each of the terminal facilities. The current Terminal facilities are summarized in Table 6-1. Any future requirements not accommodated by the existing facilities will form the basis of a business case for further development.

The starting point for the analysis involves considering the Terminal 3 requirements associated with airlines currently operating at



Infield Terminal (IFT) and North ASDE Tower

TABLE 6-1 CURRENT FACILITIES

Aircraft Gate Facilities	Total Airport	T1*	T3**	IFT
Bridged Gates	97	49	37	11
Commuter Positions	32	24	8	0
Transborder Passenger Departures Facilities	Total Airport	T1	T3	IFT
Check-in Counter Positions (All Functions)	145	74	71	0
Common Use Kiosks	74	64	10	0
U.S. Customs and Border Protection Counters	56	34	22	0
Registered Traveller Kiosks	6	4	2	
Canadian Air Transport Security Authority Security Lanes	19	12	7	0
Domestic/International Passenger Departure Facilities	Total Airport	T1	T3	IFT
Check-in Counter Positions (All Functions)	291	144	147	0
Common Use Kiosks	48	30	18	0
Canadian Air Transport Security Authority Security Lanes	42	25	17	0
Transborder/International Arrivals Facilities	Total Airport	T1	T3	IFT
Canadian Border Services Primary Inspection Line Counters	60	36	24*	0

* Includes T1 Satellite

** Includes T3 Satellite

Terminal 3. As Terminal 3 has been expanded to the maximum capability of its site, this terminal is expected to reach its practical capacity before Terminal 1 does. By determining when this will occur, a strategy for reallocating traffic can be developed. The traffic to be transferred will then form part of the requirements for the expansion of Terminal 1 along with the natural growth of carriers operating out of Terminal 1.

To assist in a traffic allocation strategy, a set of Air Carrier Terminal Allocation Principles were developed. These principles acted as a guide in selecting traffic to be reallocated from Terminal 3 to Terminal 1 as Terminal 3 reaches its practical capacity. They include:

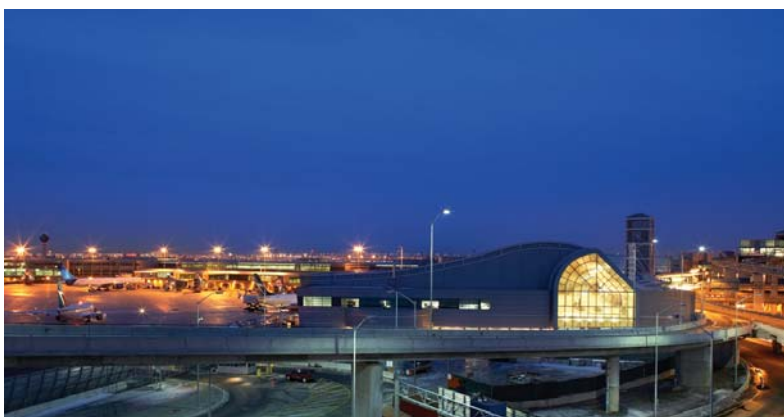
- Ensuring optimum utilization of facilities (based on average annual passengers per gate).
- Balancing facility demand against capacity.

- Accommodating all operations of each carrier within the same terminal.
- Accommodating all operations of member airlines of each airline alliance within the same terminal.
- Matching facility requirements associated with connecting versus Origin/Destination traffic with terminal flow characteristics.
- Meeting level of service expectations/standards.
- Matching carriers to retail/concessions and other amenities.
- Giving consideration to carriers'

economic contributions to the GTAA and surrounding region.

The demand/capacity analysis focuses on several key areas:

- gates (number of gates by facility and sector)
- check-in processors
- government inspection services (including both Canadian and U.S. Customs and Immigration)
- pre-board security screening
- baggage systems (system throughput as well as inbound and outbound induction and display devices).



Terminal 3 – Evening View



Terminal 3 Departures Hall

Sections 6.3.2–6.3.3 outline the requirements based upon this analysis. Terminal 3 is considered first as it will reach capacity first and thus the reallocation of some of its traffic will form a portion of the Terminal 1 demand.

The key time horizons considered are medium term (2015) and long term (2025).

6.3.2 Terminal 3

Gating

As demand for gates builds in Terminal 3, usage of the Terminal 3 Satellite will increase until an overall target level of gate utilization is achieved. As this target approaches, flights that cannot be accommodated at the facility will be gated at the IFT. Passengers associated with these flights would be processed at Terminal 3 and bussed to and from the IFT. It is anticipated that this will start to occur around 2010/2011.

As traffic continues to build, demand will approach the facility's combined Terminal 3/IFT gating capacity. It is anticipated that

some carriers may have to be moved to Terminal 1 prior to 2015. Based on the allocation principles identified above, the most likely candidates will be part of an airline alliance providing international and transborder services. These reallocations will create sufficient available capacity to accommodate the growth of the remaining Terminal 3 carriers through to 2025. In addition, the GTAA will be converting the area currently occupied by Air Canada Hangar "A" to aircraft apron associated with Terminal 3.

Check-In Facilities

Both Terminal 1 and Terminal 3 are equipped with common-use systems for check-in including self-service kiosks. These systems provide standard hardware and front-end software for all airlines which enables access to airline-specific reservations systems. This allows more flexible allocation of check-in facilities, facilitating more efficient use of space in the departures halls in both terminals.

Technological change is causing a major shift in the check-in process for most airlines, with self-serve

check-in kiosks and off-airport internet check-in accounting for an increasingly significant percentage of boarding pass procurement by passengers. As passengers take on increasing responsibility for the check-in process, most traditional full-service check-in counters will function as or be replaced by baggage weighing and tagging stations. This should provide a higher capacity per unit than conventional counters. The challenge from a planning perspective is to determine how these new processes will impact terminal requirements in the longer term. As such, the impact on facility requirements from these emerging process changes is still largely unknown, thus conventional check-in counter requirements have been used as the basis for this analysis.

To support this evolution in processing, the new generation of self-service kiosks now being installed incorporate document scanning technology that will allow more efficient validation of compatible passports or alternate travel documents. Recent developments including the incorporation of



Terminal 3 Check-in Facilities



Terminal 3 Departure Hall and Retail Court Entrance

baggage tag printing may also impact on check-in counter requirements.

The analysis illustrates that as Terminal 3 approaches the point at which it is constrained by its gate capacity, the demand for check-in counters (conventional) is also approaching the capacity of the existing inventory. However, the increase in demand for check-in facility space is anticipated to be tempered as the check-in process becomes more efficient and more of the process is carried out off-site. As such, in both 2015 and 2025, ample capacity is expected to meet the forecast demand.

Pre-Board Security Screening

The consequent security responses to events of September 11, 2001 and other threats have had a major impact on various functions within the passenger terminals. In particular, the implementation of more stringent pre-board security (PBS) screening procedures greatly reduced the anticipated capacity of passenger security inspection areas in the existing terminals. Actual

throughput rates fell from more than 250 passengers per hour per lane to, at worst, less than 100 passengers per hour per lane. Since terminal design criteria assumed rates of 200-250 passengers per hour per lane, this necessitated expansion of certain security screening areas in the existing terminals to allow for more lanes. Current throughput has recovered to approximately 100-120 passengers per hour per lane, with efforts continuing to increase efficiency through the optimization of screening processes. Within this context, passenger demand is expected to reach the capacity of Terminal 3's passenger PBS system about the same time as the Terminal 3 gate system. With the projected relocation of Terminal 3 carriers to Terminal 1, sufficient capacity will become available to accommodate growth past 2025.

Government Inspection Services (Canadian and American)

Processing requirements in both Canadian and U.S. Inspection Services have become more complex and time consuming.

However, the introduction of new technologies (NEXUS biometric identification kiosks and "E-PIL") could not only offset increased processing times, but possibly increase overall throughput capacity of existing Canadian Border Services Agency (CBSA) and U.S. Customs and Border Protection (U.S. CBP) facilities.

Demand/capacity analysis indicates that U.S. CBP will reach capacity around 2015. However, CBSA facilities are anticipated to become the constraining system, reaching capacity prior to 2015. The move of an airline alliance to Terminal 1 prior to 2015 will result in sufficient available U.S. CBP and CBSA capacity to accommodate growth in Terminal 3 past 2025.

Baggage Facilities

Following September 11, 2001, the Canadian government mandated the implementation of multi-level security screening of all checked baggage, including baggage on domestic flights. This required significant modifications to existing Terminal 3 outbound baggage systems and incorporation of Hold Bag Screening provisions in new and expanded Terminal 3 baggage systems.



Terminal 3 Retail Concession



Terminal 1 and Apron Control Tower

The constraining element of the Terminal 3 baggage system is forecast to be the outbound baggage devices. Capacity/demand analysis has indicated that the outbound international baggage devices will reach their capacity prior to 2015. This would therefore contribute to the need to move carriers to Terminal 1 prior to 2015.

However, as airline business models evolve to view passenger baggage as a business opportunity, the implementation of additional charges to check baggage may change passenger behaviour and the number of checked bags per passenger may decline from historical rates. This would have the effect of delaying the time when the system reaches capacity.

Concessions Facilities

Opportunities for non-aeronautical revenue generation will be fully explored in future expansion, and renovation projects will incorporate retail space allocation during the planning and design phases.

Current best-practices and trends indicate that the Retail Court layout at Terminal 3 is no longer

appropriate and that retail offerings should be relocated so the majority of locations are post-security. New post-security retail will be clustered and feature an abundance and variety of shops in an area (or areas) where there is the greatest potential for passenger exposure and dwell time. Ideally, passengers would be “funneled” into and through retail on their way to the gates, to provide full access to services and amenities.

Careful consideration will also be given to the impact on concessions of gates which are used for more than one sector and hence have restrictions on passenger flows. These “swing gates” can increase or decrease the amount of accessible retail to passengers at a

moment's notice, resulting in dramatic reductions in sales and revenue at affected concessions.

Terminal 3 Summary

Demand/capacity analysis indicates that aircraft demand can be accommodated up until 2015 by using IFT gates. However, as a result of constraints on certain passenger processors and baggage facilities, a move of some Terminal 3 traffic to Terminal 1 will be required prior to 2015. This may occur in stages between 2010 and 2015. After this traffic transfer, sufficient capacity will be available in Terminal 3 to accommodate forecast growth past 2025.

6.3.3 Terminal 1

Gating

Demand/capacity analysis for Terminal 1 is driven by both the growth in its current carriers, predominately Air Canada and its Star Alliance partners, and by the projected reallocation of some traffic from Terminal 3 to Terminal 1 prior to 2015.

Terminal 1 facilities, including the apron around the future Pier G



Terminal 1 Check-in Facilities



Terminal 1 Holdrooms, Pier F Hammerhead

provided as part of the post-ADP work (described in Section 6.4.2), are anticipated to accommodate Terminal 1 gating requirements until future additional facilities become operational. Current forecasts show a requirement for additional gate capacity by 2014. This requirement will be met through provision of Pier G with a minimum of 22 bridged gates based upon forecast demand. This will increase passenger processing capacity by approximately 7-8 million enplaned and deplaned passengers annually.

Beyond 2015, growth forecasts indicate a requirement for additional capacity beyond Pier G. This requirement will be fulfilled by additional pier development. Although conceptually conceived as Piers H and I, these concepts will be reviewed to ensure their continued viability.

Check-In Facilities

As in Terminal 3, the impact of new technologies and new approaches to the check-in process makes the assessment of future

check-in facility requirements difficult. By analyzing the facility requirements based upon a conventional check-in process, an estimate of requirements can be made. Based on this approach, current facilities will be adequate to accommodate traffic until the opening of Pier G. Ultimately, decisions regarding additional check-in facilities associated with post-Pier G development will need to be made closer to the construction phase when there is a clearer picture of how check-in processes will evolve.

Pre-Board Security Screening

With the dramatic increase in processing time described in Section 6.3.2, one of the issues that will have to be dealt with in Terminal 1 prior to the next phase of development is pre-board security (PBS) screening capacity. Based upon current processing rates, the domestic and international PBS portals will be capable of accommodating the growth in traffic until the opening of Pier G. However, assuming current processing rates, the transborder PBS

facilities are anticipated to reach capacity prior to this time. As the physical location and layout of the current transborder PBS precludes significant increases in capacity, it is this facility that will require the most innovative solutions.

The shortage in Terminal 1 transborder PBS capacity will be resolved through provision of new outbound transborder facilities coincidental with or prior to the opening of Pier G around 2014 (see below).

Government Inspection Services (Canadian and American)

The capacity/demand analysis, based upon today's processing rates, indicates that there is ample capacity in the U.S. Customs and Border Protection (CBP) facility to accommodate demand past 2020. However, other factors, including the limited space available for U.S. departures pre-board security screening, will require eventual relocation of U.S. CBP to Node G.

Existing Canadian Border Services Agency (CBSA) facilities can accommodate forecast growth up to the opening of Pier G. With the opening of Pier G, an additional Primary Inspection Line (PIL) facility with over 30 positions will



Terminal 1 Domestic Baggage Claim



Terminal 1 Retail Concessions

be required. This facility would be used as a dedicated transborder PIL making the existing CBSA facilities available for dedicated international traffic. Both facilities will accommodate forecast growth in traffic to beyond 2025.

Baggage Facilities

While the original design of the Terminal 1 baggage systems predated the requirement for screening of all checked baggage, the international and transborder systems included general provision for the introduction of in-line screening equipment. However, a requirement for screening of all domestic checked baggage was not anticipated. Significant alterations were required to all systems to comply with the government legislation in this area.

Based on current processing rates, and barring any unforeseen changes in regulation, it is anticipated that the current baggage system within Terminal 1 should provide acceptable levels of service in the domestic and international sectors until the opening of Pier G in 2014. However, the transborder system is expected to approach capacity based on forecast growth and the projected transfer of some airlines from Terminal 3. As such,

it is anticipated that Pier G will require a transborder baggage system at some point in the future, if not upon its opening.

The requirement for baggage capacity for Pier G will be driven by the trend in the number of checked bags per passenger as a result of evolving travel patterns and potential changes in airline business models.

Concessions Facilities

In Terminal 1, the domestic sector is well served through effective retail clustering in Hammerhead E and the growing cluster in Node F. Further expansion of the retail program for international passengers will relate to location opportunities to focus or funnel passenger flows.

Transborder passengers will be provided additional retail opportunities post-security as part of the Pier G development. This will also be in a clustered format.

The Transborder sector is currently impacted by the requirement to accommodate non-Transborder traffic at Node F which means that Transborder passengers would not have access to the retail in this area during certain times. As such, future clusters will be located to minimize exposure to such “swing” gates.

Limited additional pre-security retail is also currently planned for the Pier G project.

Terminal 1 Summary

The Terminal 1 demand/capacity analysis has been driven by both

the traffic growth of the Terminal 1 carriers, as well as the projected reallocation of some transborder and international traffic from Terminal 3 to Terminal 1 leading up to the opening of Pier G. Accommodation of gating demand prior to the opening of Pier G may require the use of the IFT as well as some off-gate operations during peak periods.

Passenger processing facilities are forecast to accommodate traffic growth until the opening of Pier G, however, transborder PBS will require some innovative approaches to ensure reasonable levels of service.

With the opening of Pier G, additional check-in, PBS, and CBSA facilities are required to support the additional gate capacity.

It is anticipated that additional baggage systems may be required coincidental with the opening of Pier G. However, when they will be required and the size of baggage systems associated with both Pier G and post-Pier G developments requires further study.

6.4 TERMINAL DEVELOPMENT

6.4.1 Scope

With the completion of Stage 2 of Terminal 1 (including Pier F, Hammerhead F and gates on the main building east of Pier F), the Terminal Development Project has come to an end, setting the framework for the ultimate devel-

opment of the Toronto Pearson site. However, to achieve the site's optimal capacity, and to ensure balanced capacity of airside, terminal and groundside systems, significant terminal development is still required.

The current pause in construction activity has afforded the GTAA the opportunity to re-evaluate the remaining terminal area development, in particular Pier G. The aim of this effort is to ensure that the design concept originally conceived and outlined in the previous Master Plan – a horseshoe processor with multiple piers – was still optimal. This was done during the spring and summer of 2006 when a study was carried out to assess a broad range of alternative design concepts for the remaining development. The scope of the study was limited to the parcel of land to the east of the current Terminal 1 structure, which had been identified and reserved for additional terminal development in the previous Master Plan.

From this study, it was determined that the concept for the ultimate build out of Terminal 1 identified in the previous Master Plan was still valid.

Potential future development at Terminal 3 is much more limited in scope. With a lack of space available for further development, capacity improvements will focus on facility optimization and process improvements, particularly in the case of passenger and

baggage processing, with limited development of new facilities. Increases in gating capacity will come through increased utilization of existing facilities, densification of existing gates and development of the reclaimed Hangar “A” area as active terminal apron.

6.4.2 Post Airport Development Program (ADP)

The immediate next stage in Toronto Pearson's development is the phased construction of apron parking in the area of the soon-to-be demolished Terminal 2 and its parking garage by the beginning of 2009. The extent of the apron to be constructed is illustrated in Figure 6-6.

6.4.3 Terminal 1 Pier G

The next phase of terminal capacity expansion will be the further development of Terminal 1. This is currently projected to be required by 2014 and will involve construction of an additional pier (Pier G) and may include some limited expansion at the east end of the main processor building.

A new approach to operating Terminal 1 is being considered with the planned addition of Pier G into the Terminal 1 inventory. Prior to this point, both Piers E and F have handled a mix of sectors. For example, Hammerhead F has been operated as an international facility, while the neck of the Pier has accommodated transborder operations.

Once Pier G opens, with some facility modifications, it would be possible to accommodate domestic growth on Pier F gates and accommodate international traffic further down the pier.

Allowing domestic flights on Pier F will displace transborder demand to Pier G, allowing it to operate as a pure transborder pier. Pier F would also remain available to transborder flights during peak transborder periods. Although this may require facility alterations in Pier F, it has the benefit of reducing the required number of additional gates associated with Pier G by increasing the utilization of Pier F gates. Pier G may also be sized to accommodate the transborder commuter aircraft currently operating out of the Terminal 1 Satellite.

One of the key drivers of the complexity, and thus cost, of Pier G is the physical separation required between the arriving and departing transborder passengers. Changes in U.S. regulations regarding in-transit operations at U.S. airports since September 11, 2001 require that all international passengers arriving in the U.S. be cleared by U.S. CBP at their point of entry. This results in all passengers who



Terminal 1 Retail Concessions

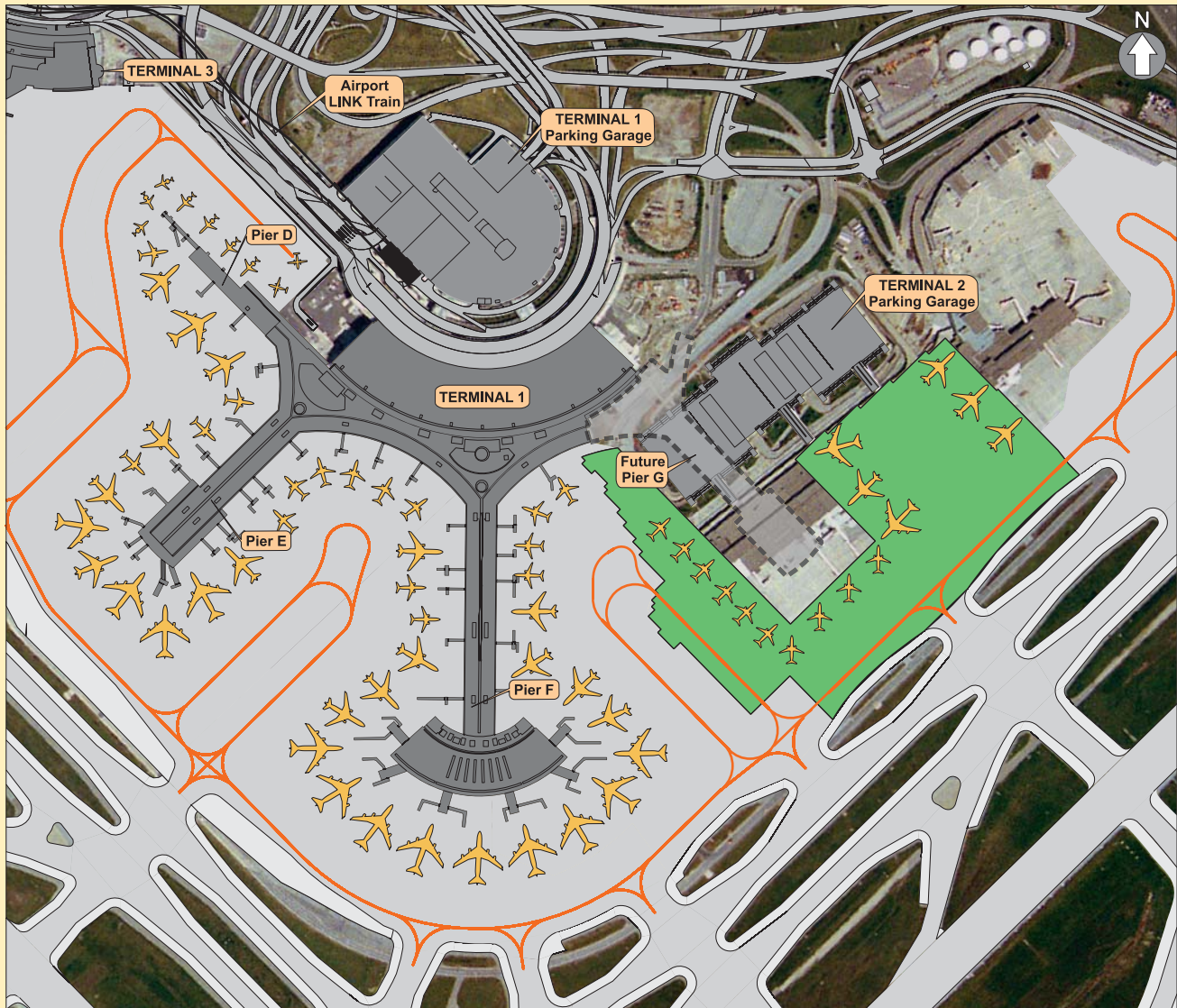


FIGURE 6-6 POST ADP DEVELOPMENT - 2009

New Apron

historically could transfer through the U.S. on their way to Toronto without seeing a U.S. CBP officer, having to clear at their connecting U.S. airport. This combined with the U.S. Preclearance operation at Toronto Pearson means that all passengers within a transborder secure area have now cleared U.S. CBP. For this reason, the U.S.

Government has given permission to mix arriving and departing transborder passengers within one area without segregation. The GTAA is currently working with Transport Canada and CBSA to obtain permission to mix these passenger flows. With this permission, the cost of constructing the pier could be greatly reduced by, for example, eliminating the need

for a mezzanine level and the associated vertical circulation (currently designed on the outside of the structure).

With Pier G being a single sector transborder pier, and other transborder activity limited to Pier F, there would be a shift in transborder activity eastward within the existing processor. In the longer

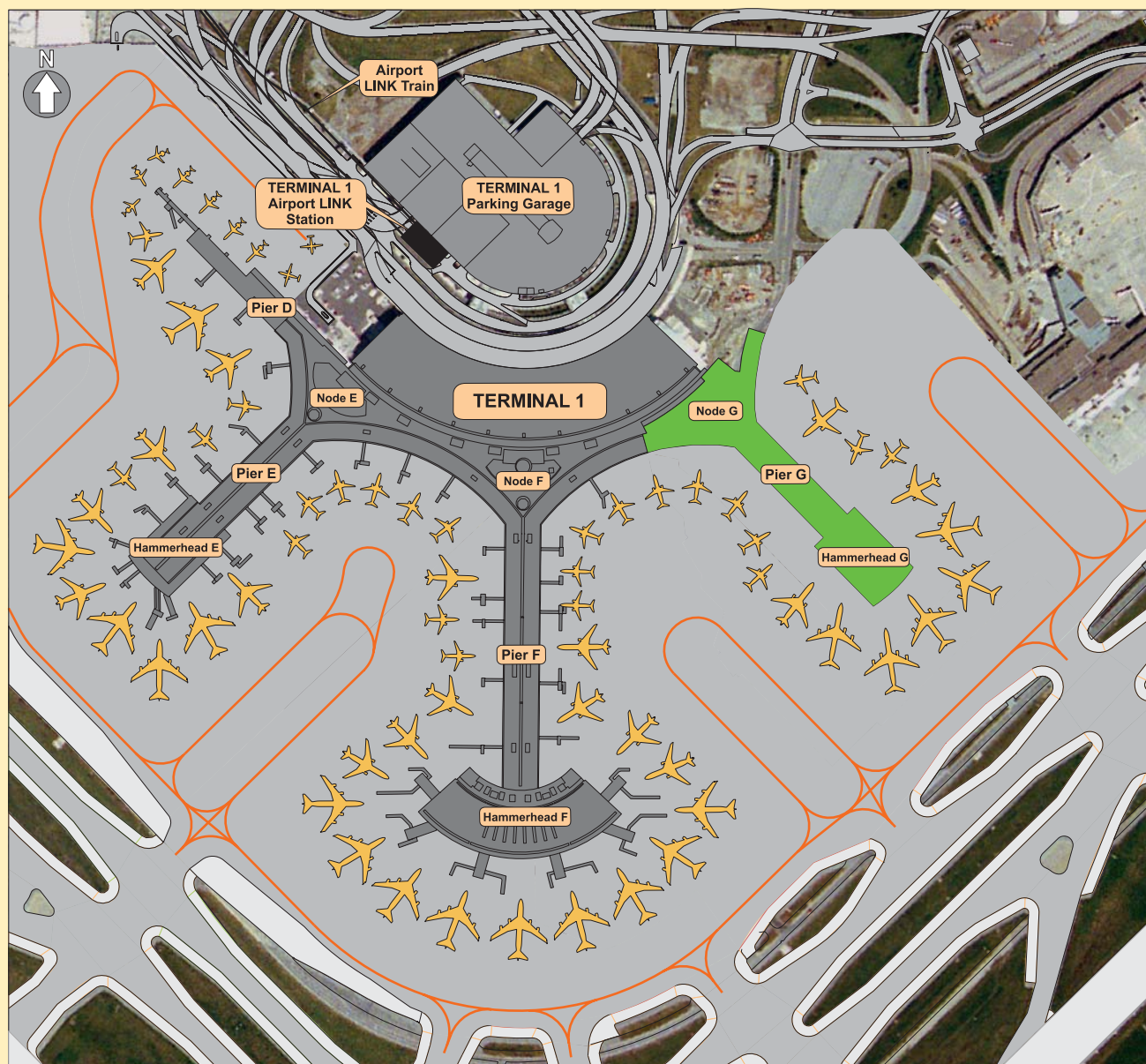


FIGURE 6-7 TERMINAL 1 DEVELOPMENT CONCEPT - 2014

term, this would become even more pronounced as transborder growth in Terminal 1 is accommodated to the east of Pier G.

In order to simplify passenger flows and to ensure minimum possible passenger travel times, relocation of transborder passenger

processing facilities would be prudent. This would result in a new outbound transborder facility consisting of a check-in area approaching 100 processors, a PBS area² with approximately 20 positions, and a U.S. CBP area with over 40 positions adjacent to Pier G.

In addition to being prudent from a passenger flow perspective, this move would provide an opportunity to repatriate the current transborder processing facilities for use as domestic/international passenger processing and provide additional concentrated concession opportunities.

² The PBS area would be located prior to U.S. CBP in compliance with up-to-date U.S. CBP design standards.

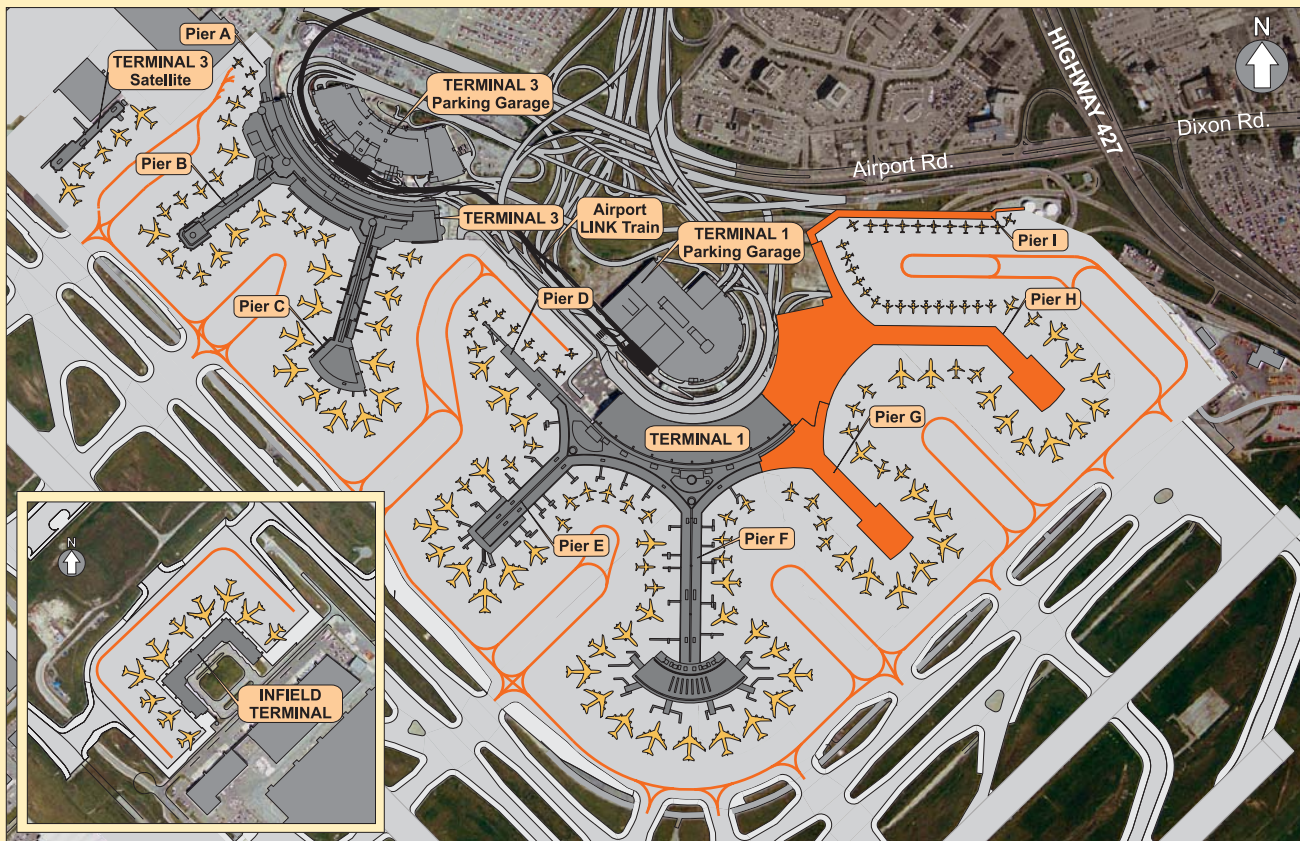


FIGURE 6-8 ULTIMATE TERMINAL 1 DEVELOPMENT CONCEPT

The detailed design of Pier G will take place commencing in 2008.

6.4.4 Terminal 1 Piers H and I

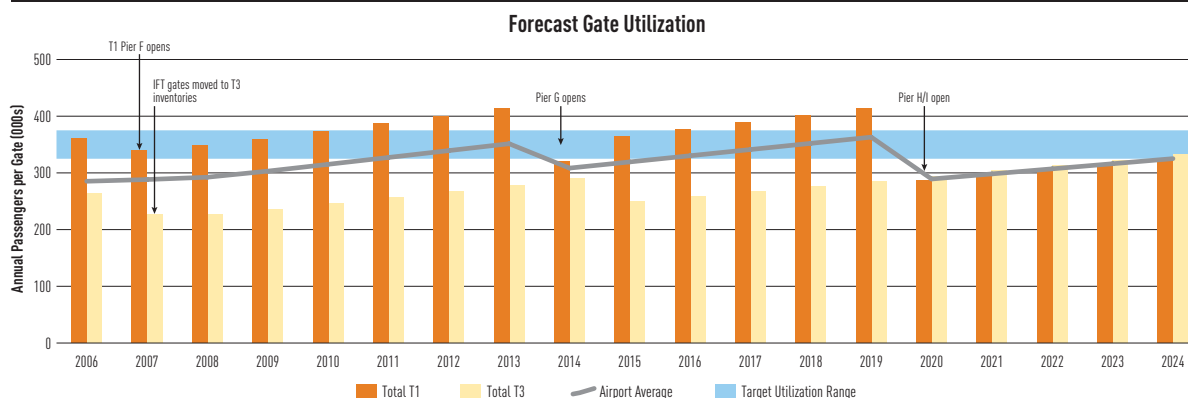
In the longer term, additional facilities are anticipated to be required associated with Terminal 1. The currently forecast target year for such expansion is 2020 and will be accomplished through the addition of Pier H. The requirements for these facilities will be driven not only by the growth in Terminal 1, but also by a further relocation of additional carriers from Terminal 3 as it once again approaches capacity.

Although the concept for this pier requires validation, the current concept is for Pier H to be attached to the main processor. The processor itself may require some expansion that could incorporate or be positioned around a hotel development.

The last phase of development for Terminal 1, Pier I, was originally identified in the previous Master Plan as a smaller commuter pier. Due to the extremely long walking distances, particularly for connecting traffic, this requirement has been incorporated into the plan for Pier G. Hence, the concept for the area originally slated for Pier “I” requires further review.

In its ultimate configuration, Toronto Pearson will consist of approximately 157 bridged gates and 32 commuter aircraft positions, for an equivalent gate count of 173. This corresponds to a practical capacity of 54 million passengers per year at an acceptable level of service. This is in balance with the maximum airside capacity of the six-runway system and would reflect some additional capacity within the terminal system to absorb passenger congestion in the buildings associated with peak activity periods and the impacts of potential airside delays.

FIGURE 6-9



6.5 TERMINAL UTILIZATION FORECAST

Timing of the provision of additional terminal facilities will be based upon a just-in-time approach to ensure optimal use of existing facilities before new facilities are built. This approach uses forecast gate utilization rates as the trigger for the addition of capacity to the operational inventory. A

gate utilization target of 350,000 annual passengers per equivalent gate³ across the Airport has historically been proven to be a realistic utilization rate which reflects a balance between demand patterns and level of service.

Figure 6-9 illustrates this concept, and identifies the forecast time-frames for the major facility expansions. The blue band identifies the target utilization rate with an upper and lower control limit.

As the Airport average utilization (seen in gray) rises to the top of the target band, additional facilities are required to maintain efficient operations and acceptable levels of service. By monitoring the utilization, the timings of each of the facility elements can be adjusted to ensure that additional capacity is being brought online when it is needed, and not before.

³ The intent of the Equivalent Gate metric is to reflect the lower utilization of the RJ and turboprop gates. An “Equivalent Gate” is defined as one bridged gate of any gauge, or two commuter aircraft positions.